FCC Test Report

FOR:

Dell Inc.
Model Name: V01B
FCC ID: E2KV01B001

47 CFR Part 15.247 for FHSS Systems

TEST REPORT #: EMC_001_09003_15.247_BT
DATE: 2010-04-07

ACCREDITED
TESTING LABORATORY
CERTIFICATE # 2135.01

Bluetooth Qualification Test Facility (BQTF)

CTIA Authorized Test Lab
LAB CODE 20020328-00

FCC listed
A2LA Accredited

IC recognized # 3462B

***CETECOM* Inc.**
411 Dixon Landing Road ◆ Milpitas, CA 95035 ◆ U.S.A.
Phone: + 1 (408) 586 6200 ◆ Fax: + 1 (408) 586 6299 ◆ E-mail: info@cetecomusa.com ◆ http://www.cetecom.com
CETECOM Inc. is a Delaware Corporation with Corporation number: 2113686
Board of Directors: Dr. Harald Ansorge, Dr. Klaus Matkey, Hans Peter May

TABLE OF CONTENTS

1 Assessment

The following is in compliance with the applicable criteria specified in FCC rules Parts 15.247 of Title 47 of the Code of Federal Regulations.

Company	Description	Model #
Dell Inc.	**GSM/UMTS Mobile Phone**	**V01B**

Responsible for Testing Laboratory:

Date	Section	Name	Signature
2010-04-07	Compliance	Marc Douat (Test Lab Manager)	

Responsible for the Report:

Date	Section	Name	Signature
2010-04-07	Compliance	Satya Radhakrishna (EMC Project Engineer)	Satya Radhakrishna I am the author of this document

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Address:	411 Dixon Landing Road Milpitas, CA 95035 U.S.A.
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
Responsible Test Lab Manager:	Heiko Strehlow
Responsible Project Leader:	Satya Radhakrishna

2.2 Identification of the Client

Applicant's Name:	Dell Inc.
Street Address:	One Dell Way Round Rock, TX 78682 Mail stop PS4-30
City/Zip Code	Round Rock, TX 78682
Country	USA
Contact Person:	Richard Worley
Phone No.	+1-512-728-1081
Fax:	+1-512-728-5278
e-mail:	Richard_Worley@dell.com

2.3 Identification of the Manufacturer

Same as above

3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

Marketing Name:	Aero
Model No:	V01B
Product Type:	Portable
Hardware Revision :	EPR2
Software Revision :	1001210212ZEN_FBW1.4BENZ_WBD_512rabbit_318953310623 1764066729122
FCC-ID:	E2KV01B001
Frequency:	2400-2483.5 MHz
Type(s) of Modulation:	GFSK, π/4 DQPSK, 8- DPSK (FHSS)
Number of channels:	79
Antenna Type/Gain:	Integral/-3.7 dBi
Equipment Classification:	☐Fixed ☐Vehicular ■Portable ☐Module
Power Supply:	AC, Battery
Temperature Range:	-10°C to 55°C

3.2 Identification of the Equipment Under Test (EUT)

EUT #	Serial Number	HW Version	SW Version
1	BZ3EA000002597	EPR2	1001210212ZEN_FBW1.4BENZ_WBD_512rabbit_3189533106231764066729122

3.3 Identification of Accessory equipment

AE #	Type	Manufacturer	Model	Serial Number
1	USB Cable	N/A	N/A	N/A
2	AC Adapter	N/A	N/A	N/A

4 Subject Of Investigation

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.

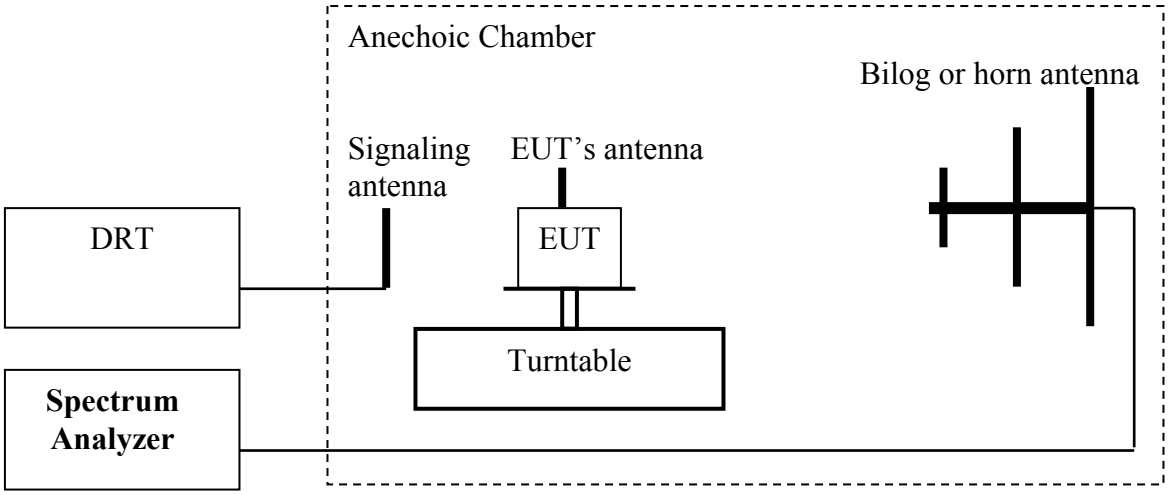
This test report is to support a request for new equipment authorization under the FCC ID **E2KV01B001.**
All testing was performed on the product referred to in Section 3 as EUT. This test report contains full radiated and conducted testing results as per FCC15.247.

During the testing process the EUT was tested on a single channel using PRBS payload using DH5, 2DH5 or 3DH5 packets, all data in this report shows the worst case between horizontal and vertical polarization measurements.

5 Measurements

5.1 Radiated Measurement Procedure

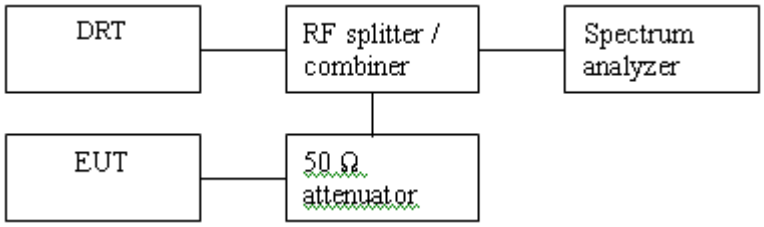
Ref: TIA-603C 2004 -2.2.17.2 Effective Radiated Power (ERP) or Effective Isotropic Radiated Power (EIRP)



1. Connect the equipment as shown in the above diagram with the EUT's antenna in a vertical orientation.
2. Adjust the settings of the Digital RadioCommunication Tester (DRT) to set the EUT to its maximum power at the required channel.
3. Set the spectrum analyzer to the channel frequency. Set the analyzer to measure peak hold with the required settings.
4. Rotate the EUT 360°. Record the peak level in dBm (**LVL**).
5. Replace the EUT with a vertically polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
6. Connect the antenna to a signal generator with known output power and record the path loss in dB (**LOSS)**. **LOSS** = Generator Output Power (dBm) – Analyzer reading (dBm).
7. Determine the ERP using the following equation:
   ERP (dBm) = **LVL** (dBm) + **LOSS** (dB)
8. Determine the EIRP using the following equation:
   EIRP (dBm) = **ERP** (dBm) + 2.14 (dB)
9. Measurements are to be performed with the EUT set to the low, middle and high channels.

Spectrum analyzer settings: RBW=VBW=3MHz

5.2 Conducted Measurement Procedure



1. Connect the equipment as shown in the above diagram.
2. Adjust the settings of the Digital RadioCommunication Tester (DRT) to set the EUT to its maximum power at the required channel.
3. Measurements are to be performed with the EUT set to the low, middle and high channels.

5.3 Maximum Peak Output Power

5.3.1 Limits: §15.247 (b)(1)

Nominal Peak Output Power < 30 dBm (1W)

5.3.2 Test Conditions:

Tnom: 22°C; Vnom: AC

5.3.3 Test Result:

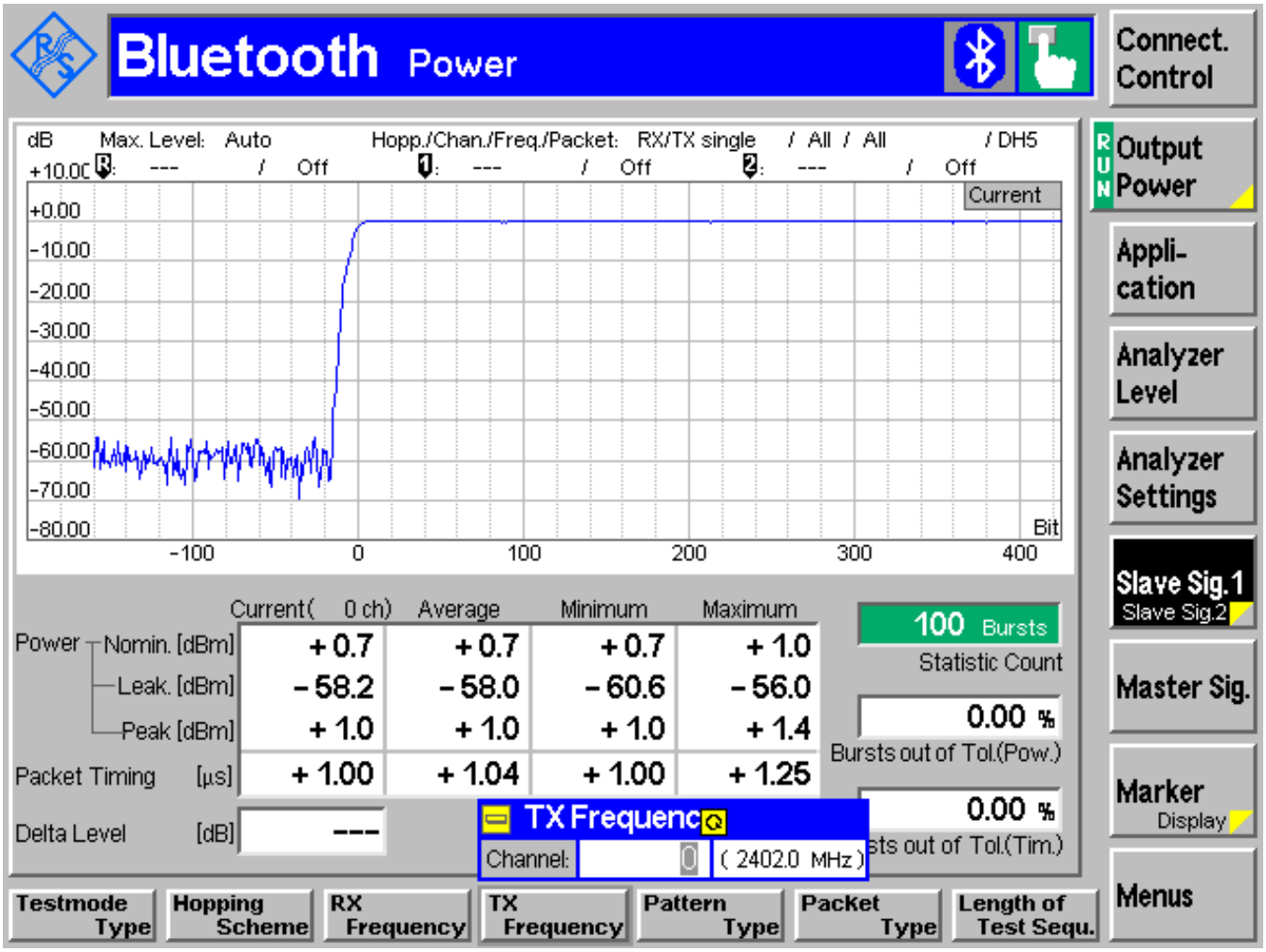
Max Peak Output Power- Conducted (dBm)			
Modulation	**Frequency (MHz)**		
	2402	**2442**	**2480**
GFSK	1.4	1.1	0.1
π/4 DQPSK	-0.5	-0.6	-1.6
8-DPSK	-0.5	-0.6	-1.5
Measurement Uncertainty: ±0.5dB			

EIRP values are calculated by adding antenna gain to the Peak Conducted Power values.
EIRP =Antenna Gain(dBi) + Conducted Peak Power(dBm) Antenna Gain=-3.7dBi

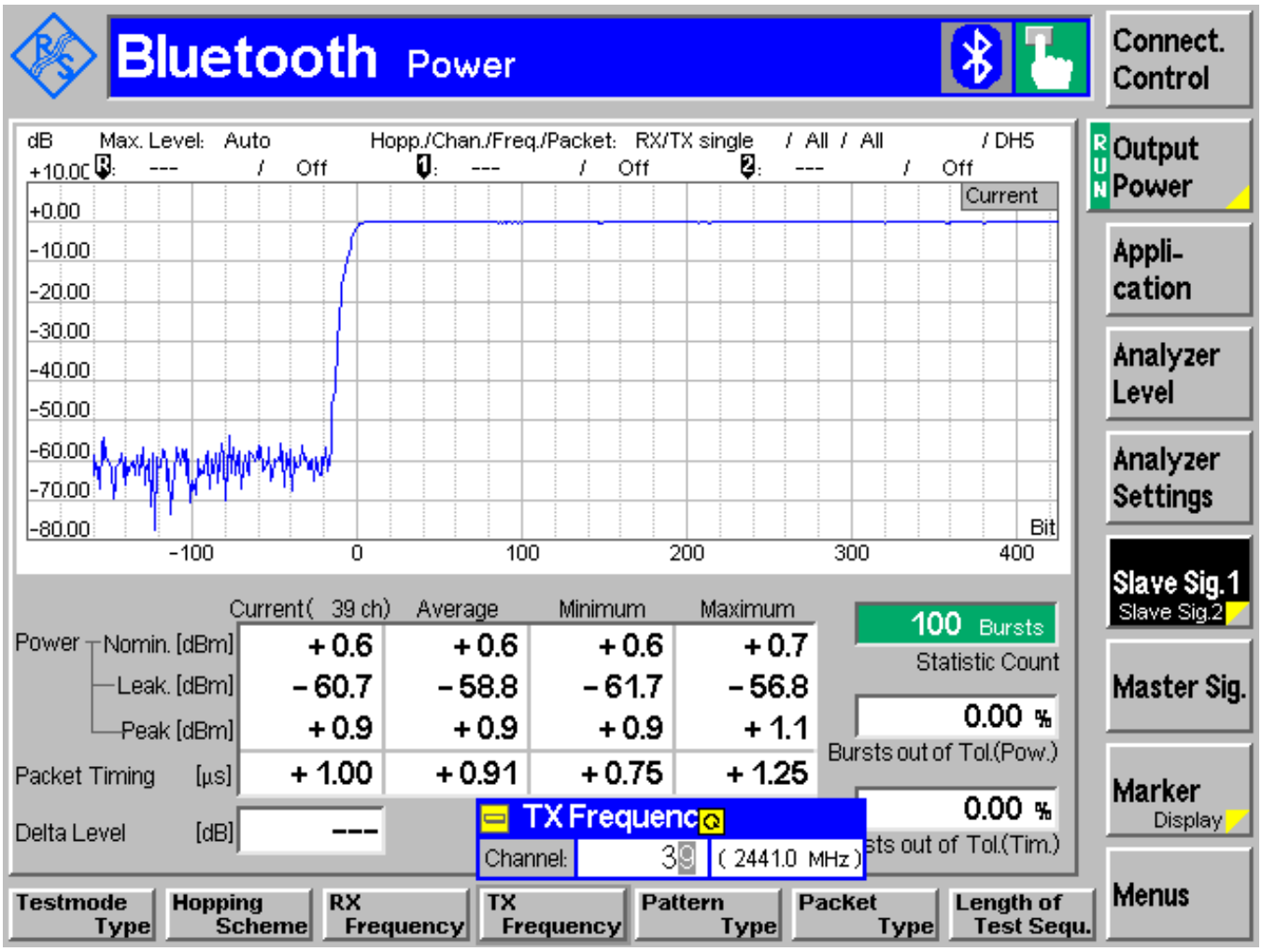
Max Peak Output Power- Radiated (dBm)			
Modulation	**Frequency (MHz)**		
	2402	**2442**	**2480**
GFSK	2.3	2.6	-3.6
π/4 DQPSK	-4.2	-4.3	-5.3
8-DPSK	-4.2	-4.3	-5.2
Measurement Uncertainty: ±3dB			

5.3.4 Test Data/plots:

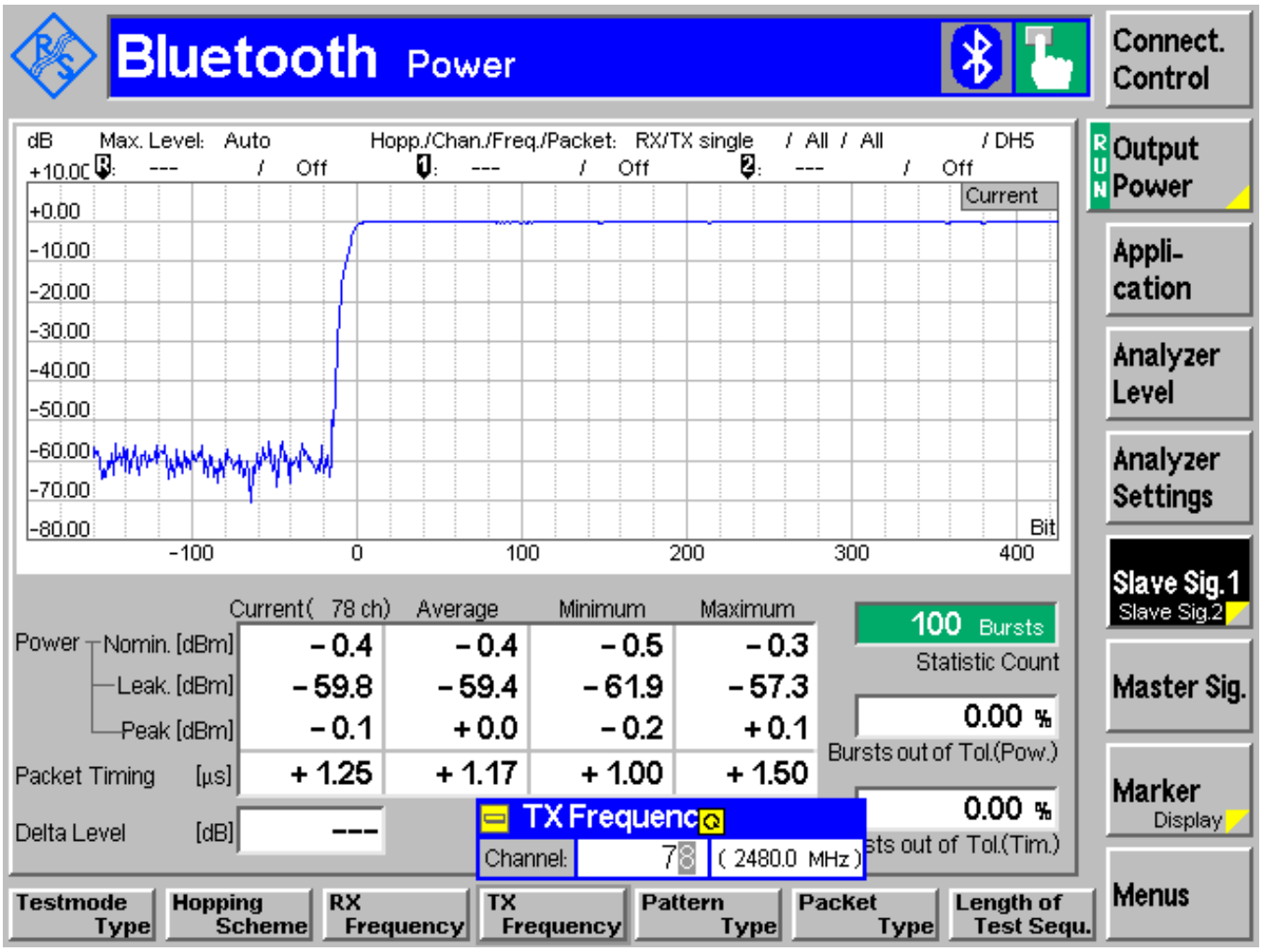
Conducted Peak Power GFSK 2402 MHz



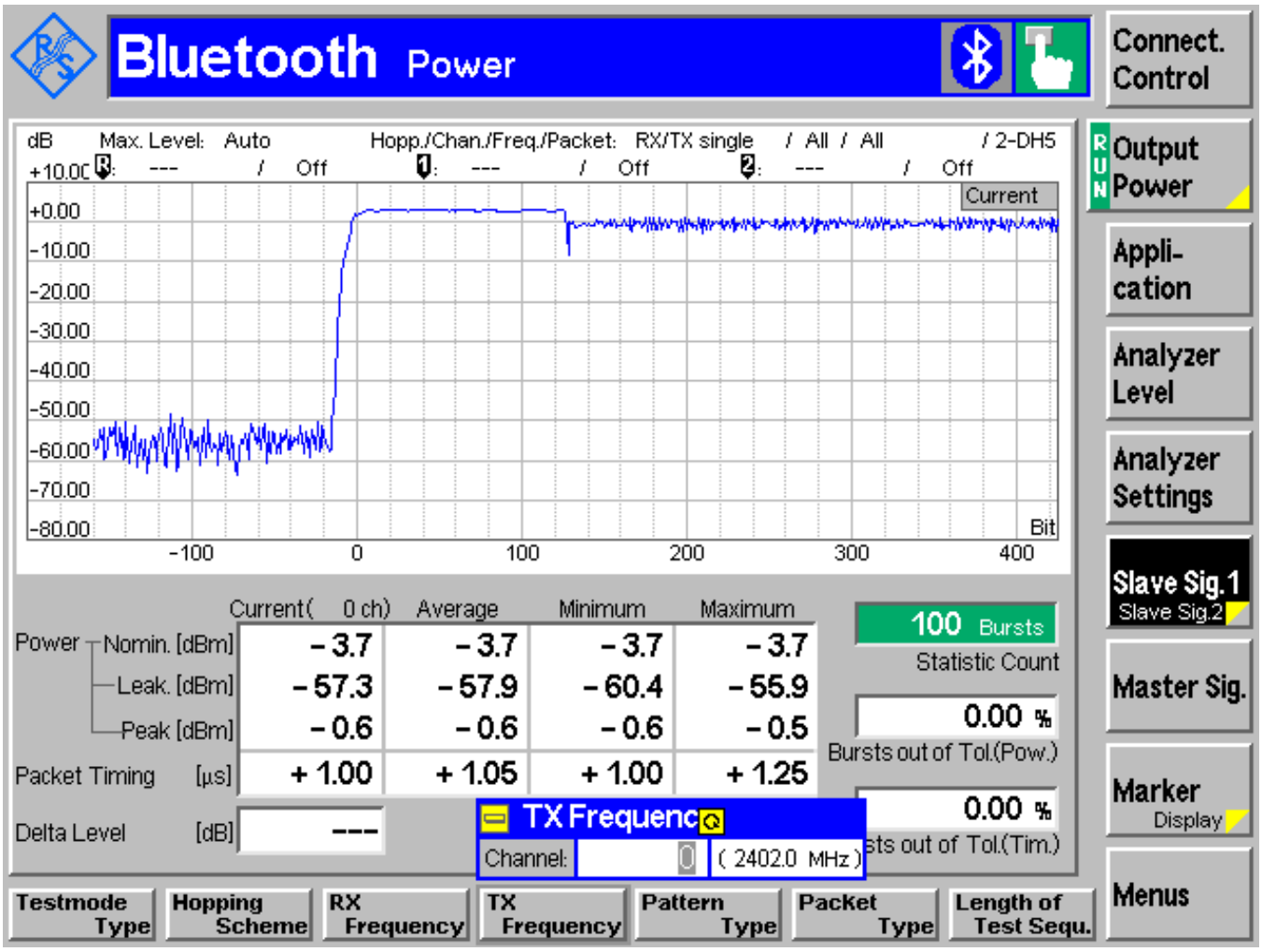
Conducted Peak Power GFSK 2441 MHz



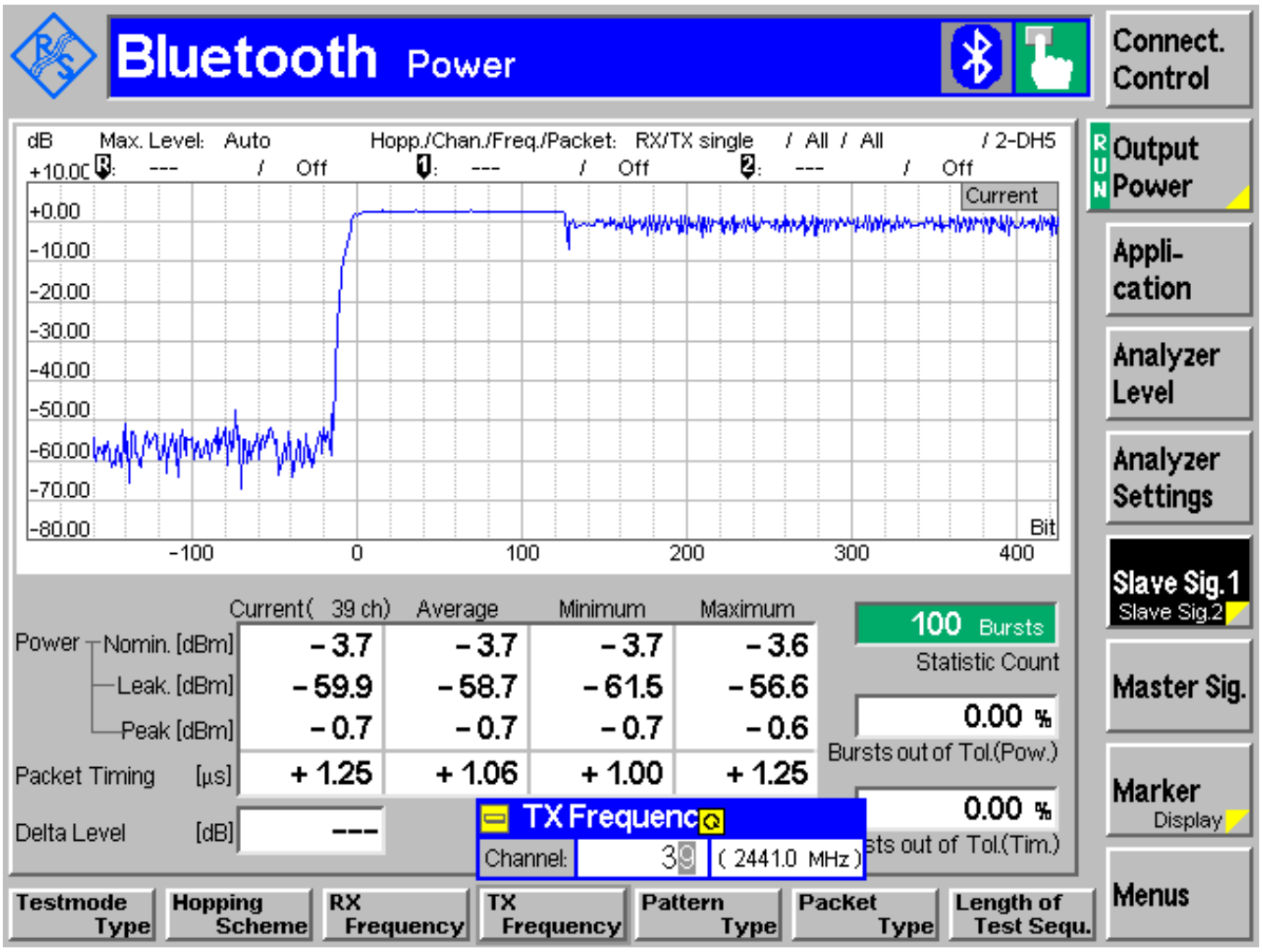
Conducted Peak Power GFSK 2480 MHz



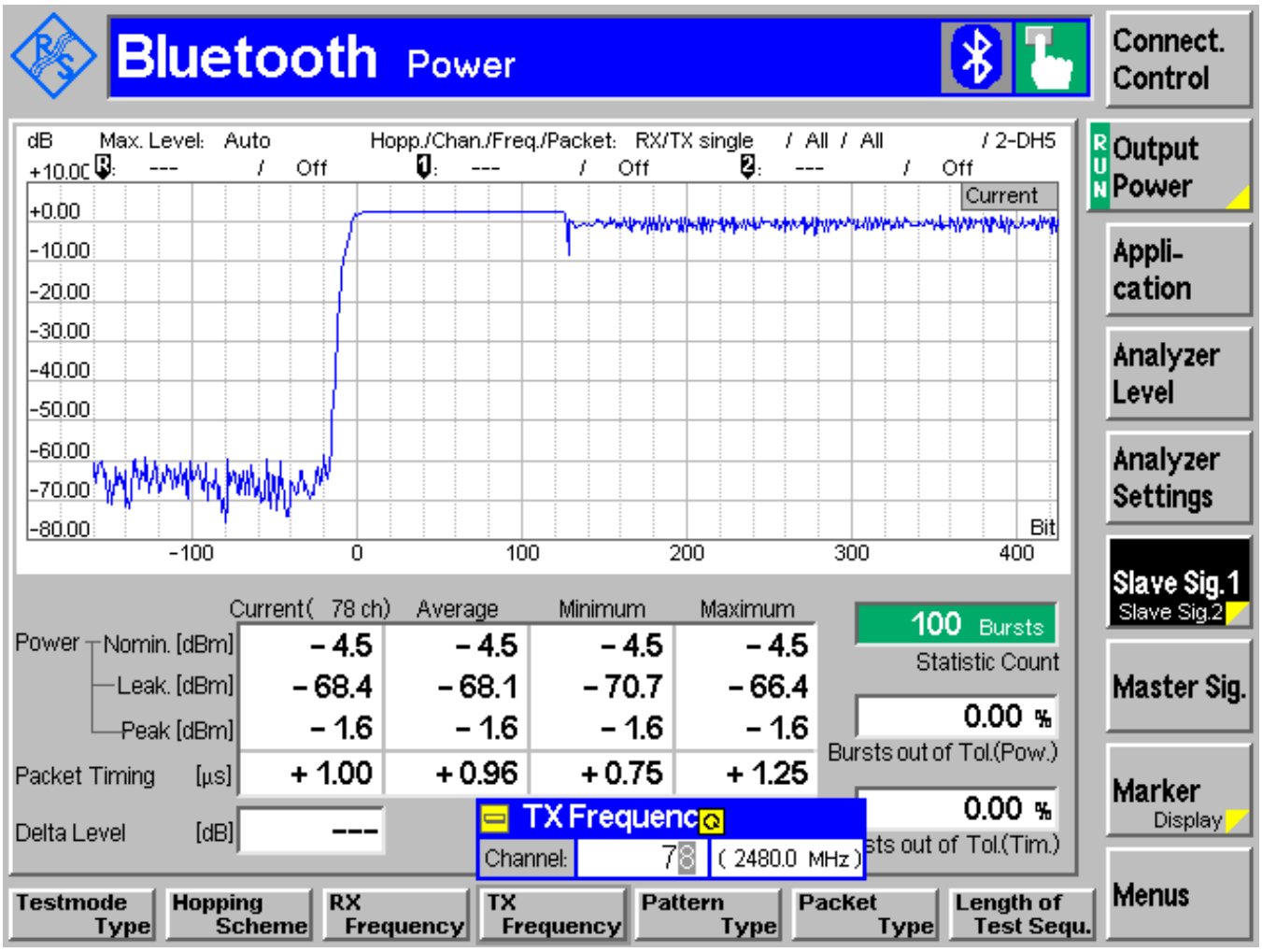
Conducted Peak Power π / 4 DQPSK 2402 MHz



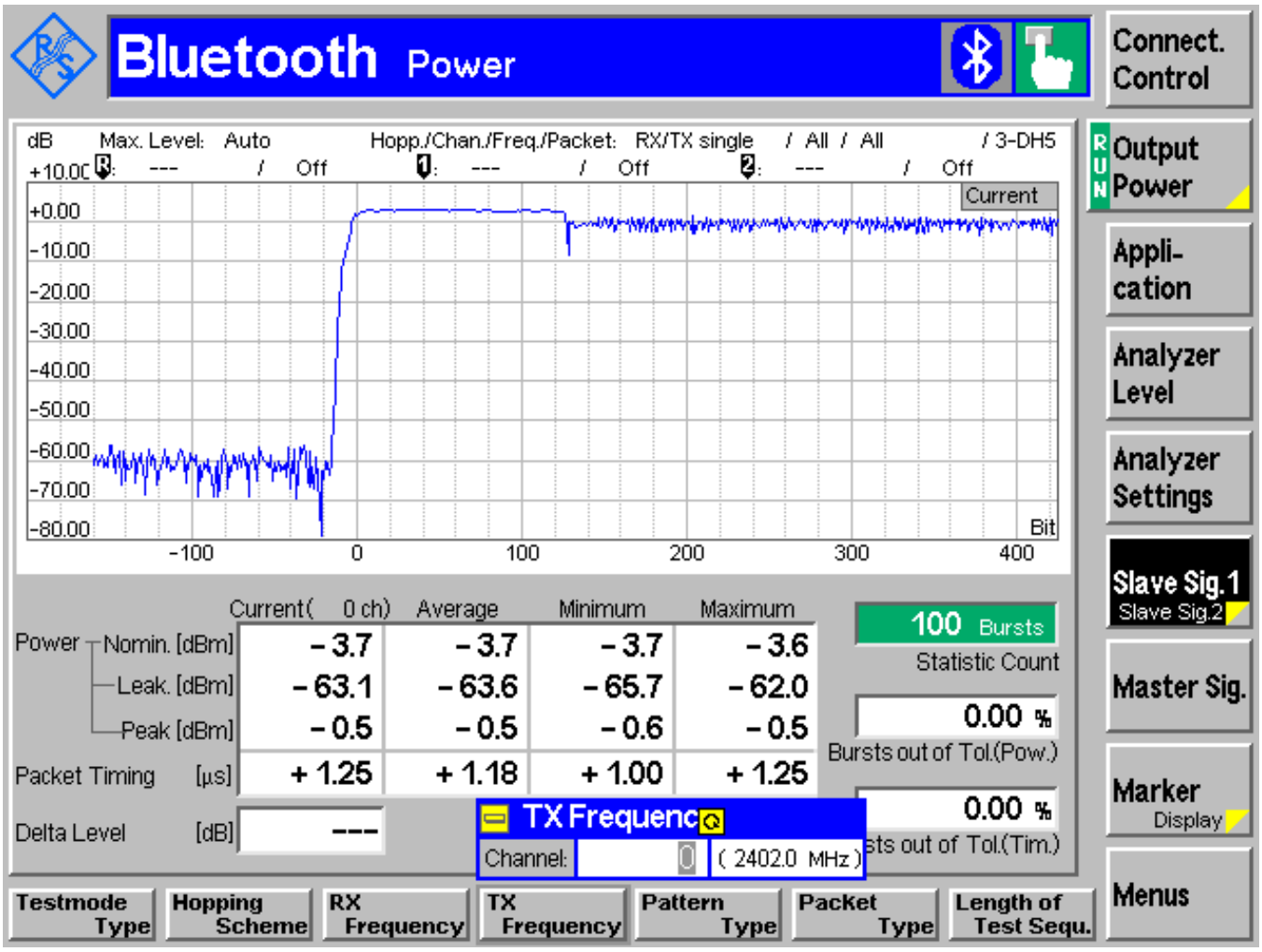
Conducted Peak Power π / 4 DQPSK 2441 MHz



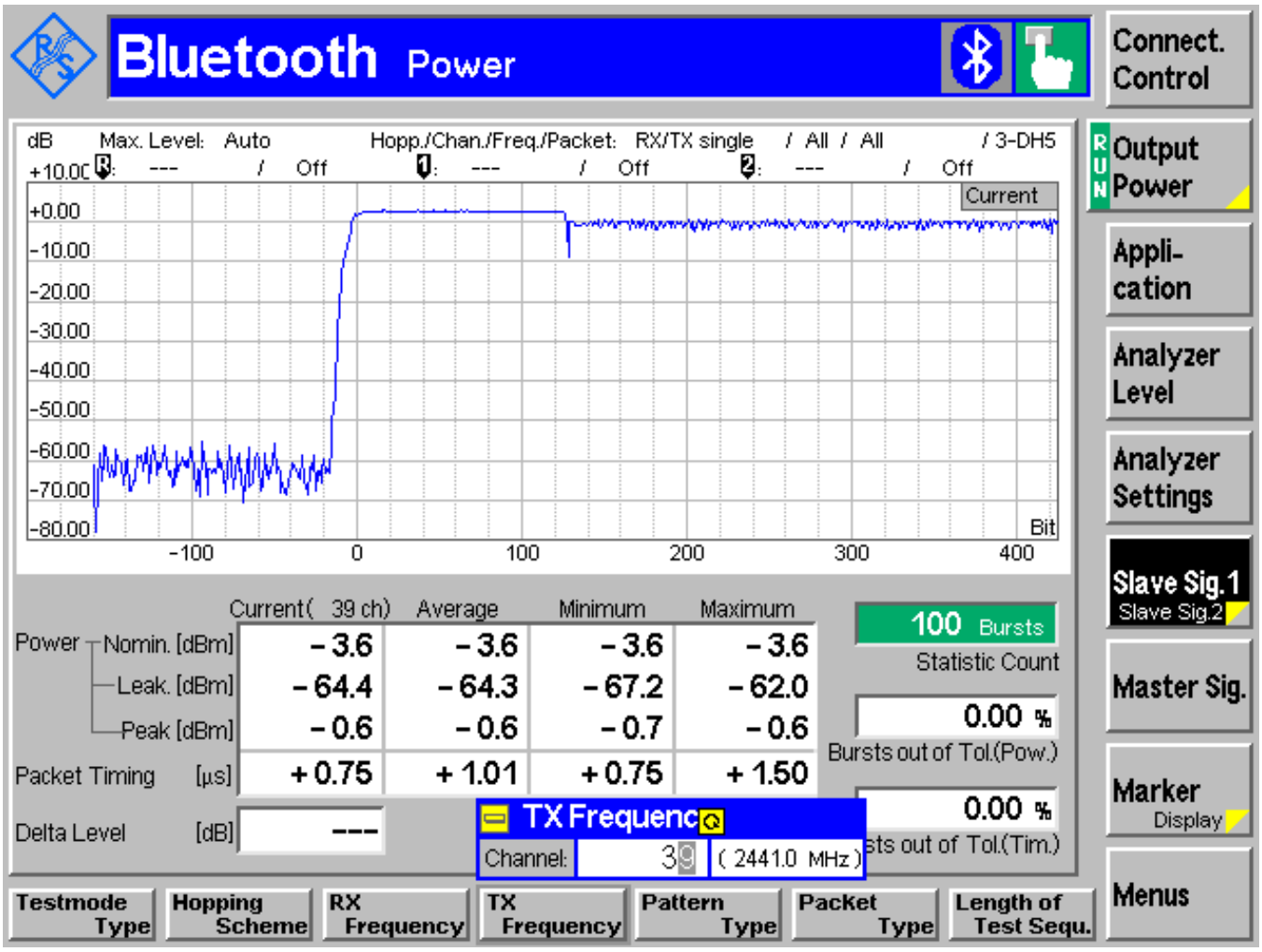
Conducted Peak Power π / 4 DQPSK 2480 MHz



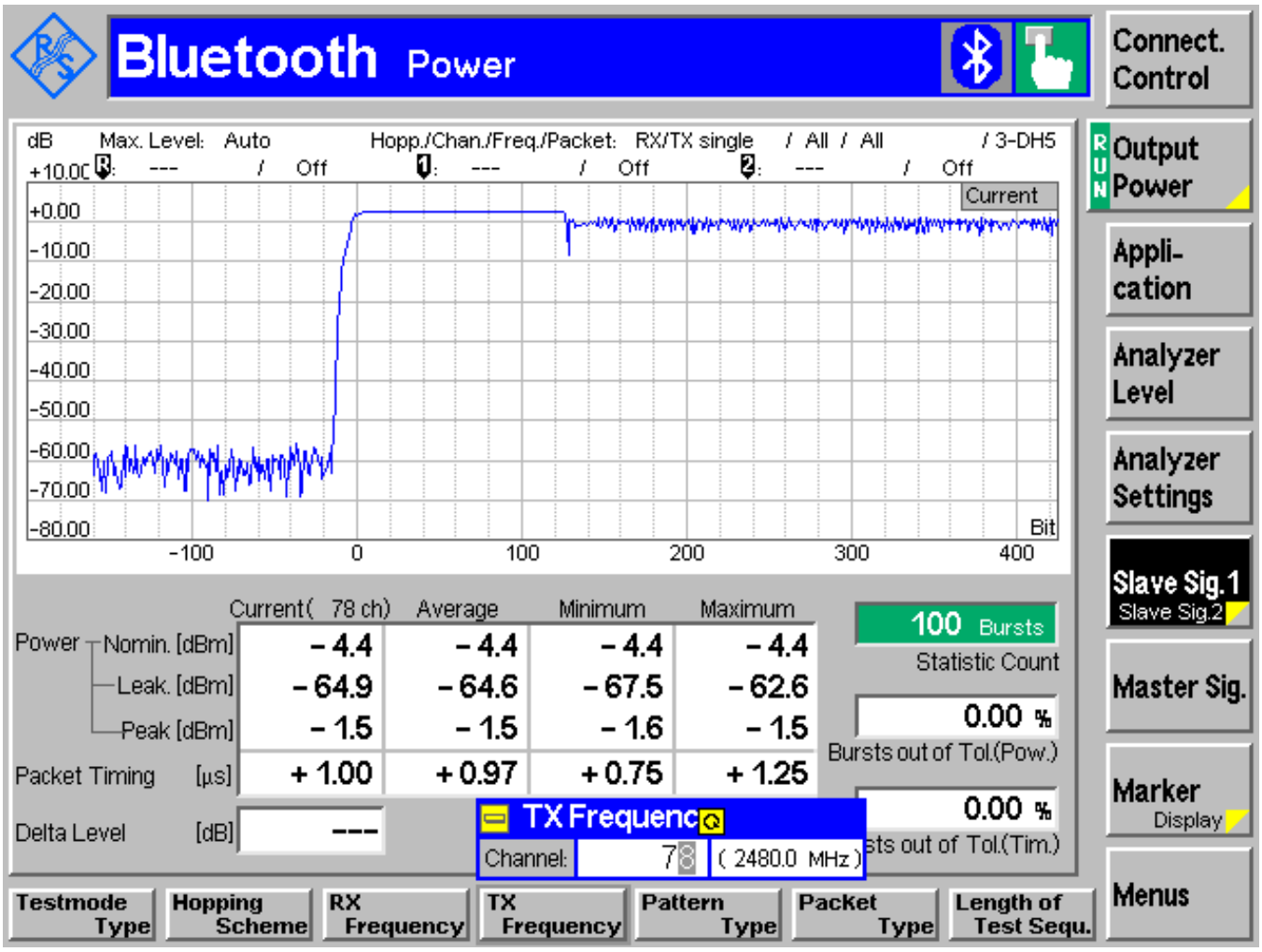
Conducted Peak Power 8DPSK 2402 MHz



Conducted Peak Power 8DPSK 2441 MHz



Conducted Peak Power 8DPSK 2480 MHz



5.4 Restricted Band Edge Compliance

5.4.1 Limits: §15.247/15.205

(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			

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. 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)).

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

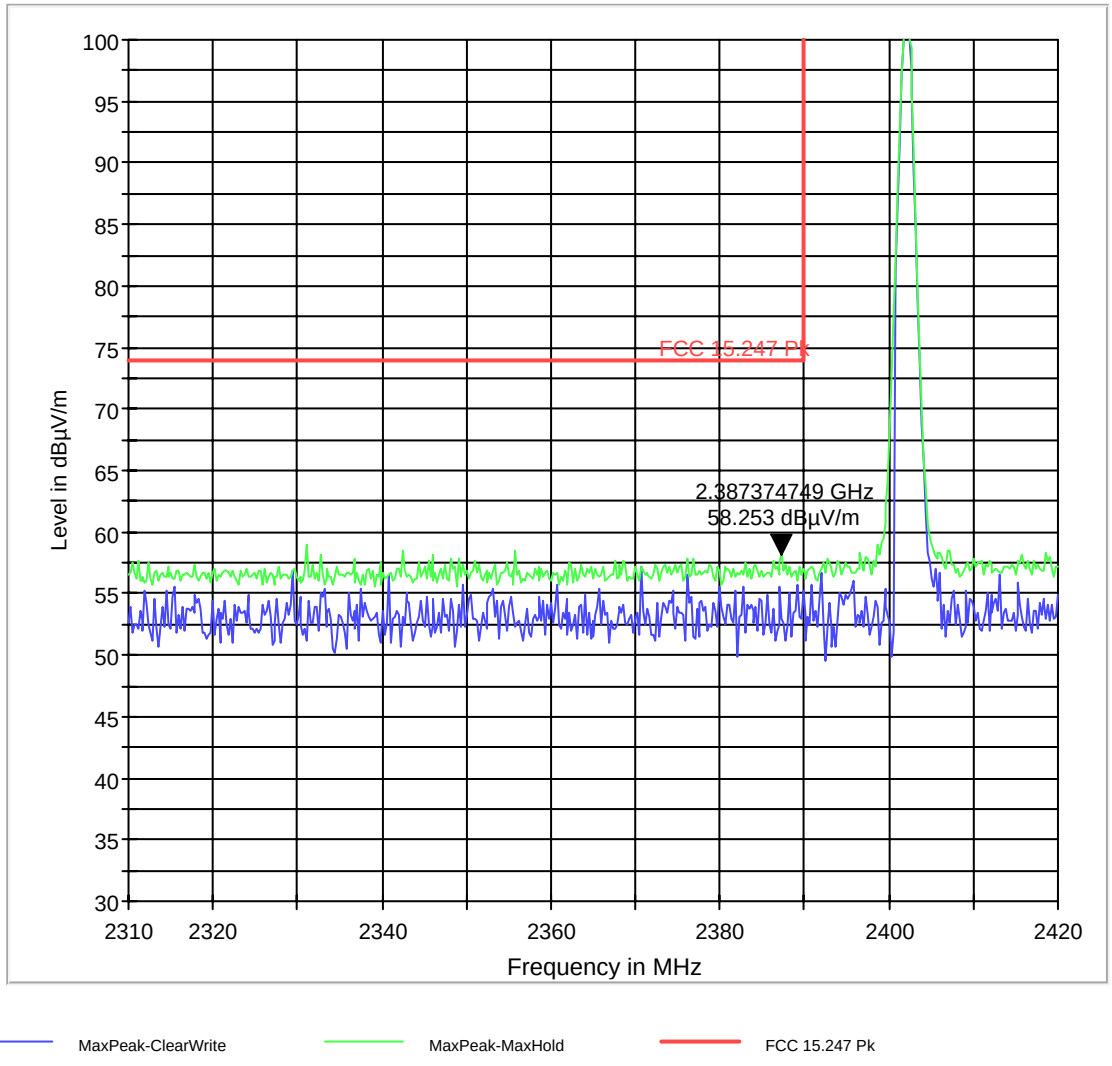
5.4.2 Test Data/plots:
Lower band edge peak -GFSK modulation

EUT Information

Description:

EUT Name:	V01B
Manufacturer:	Dell Inc.
Serial Number:	
Test Mode:	BT DH-5 CH 0
Voltage:	ac adapter
EUT Orientation:	
Comment:	

FCC 15.247 LBE Pk 3m



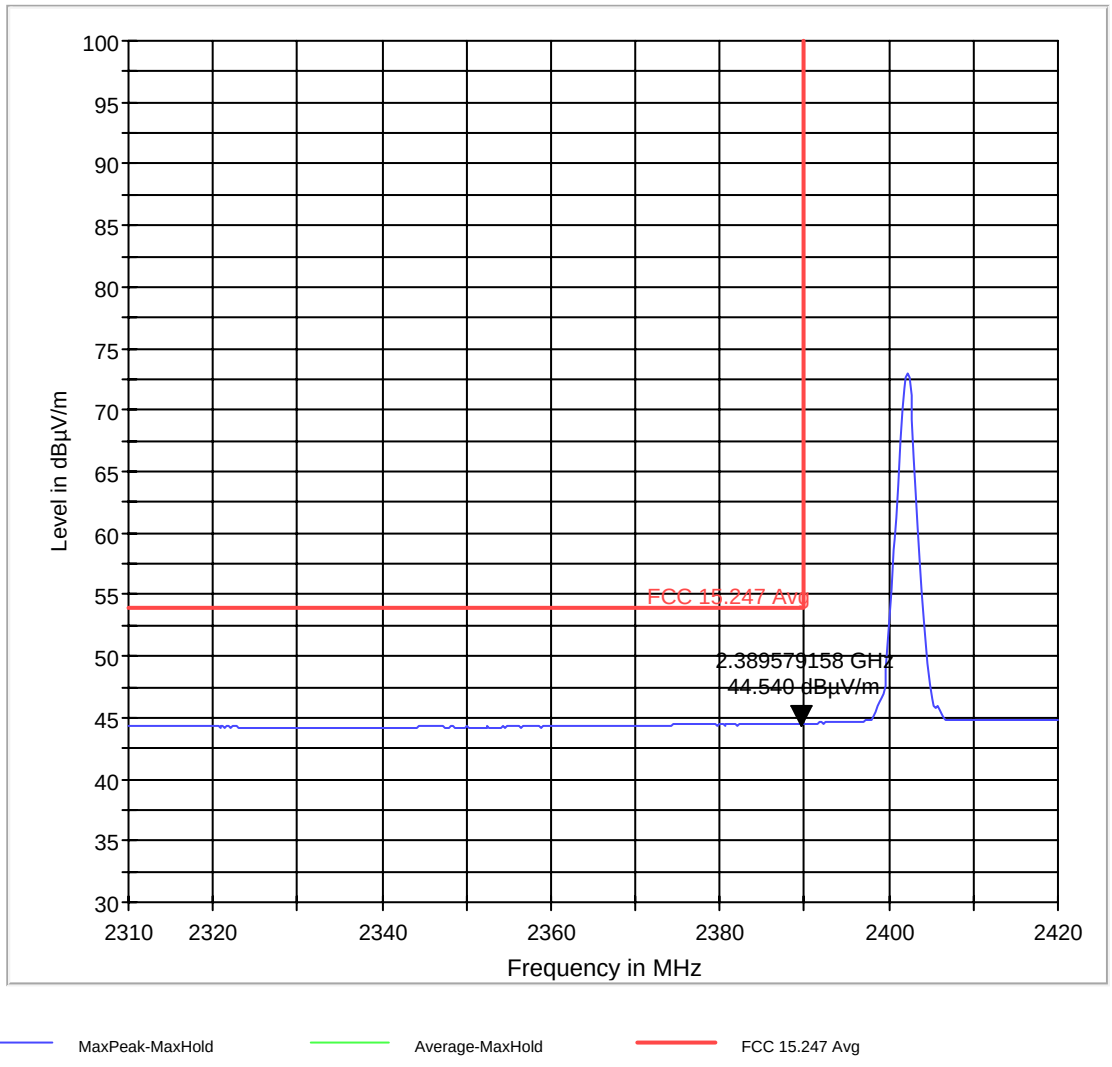
Lower band edge average -GFSK modulation

EUT Information

Description:

EUT Name:	V01B
Manufacturer:	Dell Inc.
Serial Number:	
Test Mode:	BT DH-5 CH 0
Voltage:	ac adapter
EUT Orientation:	
Comment:	

FCC 15.247 LBE Avg 3m

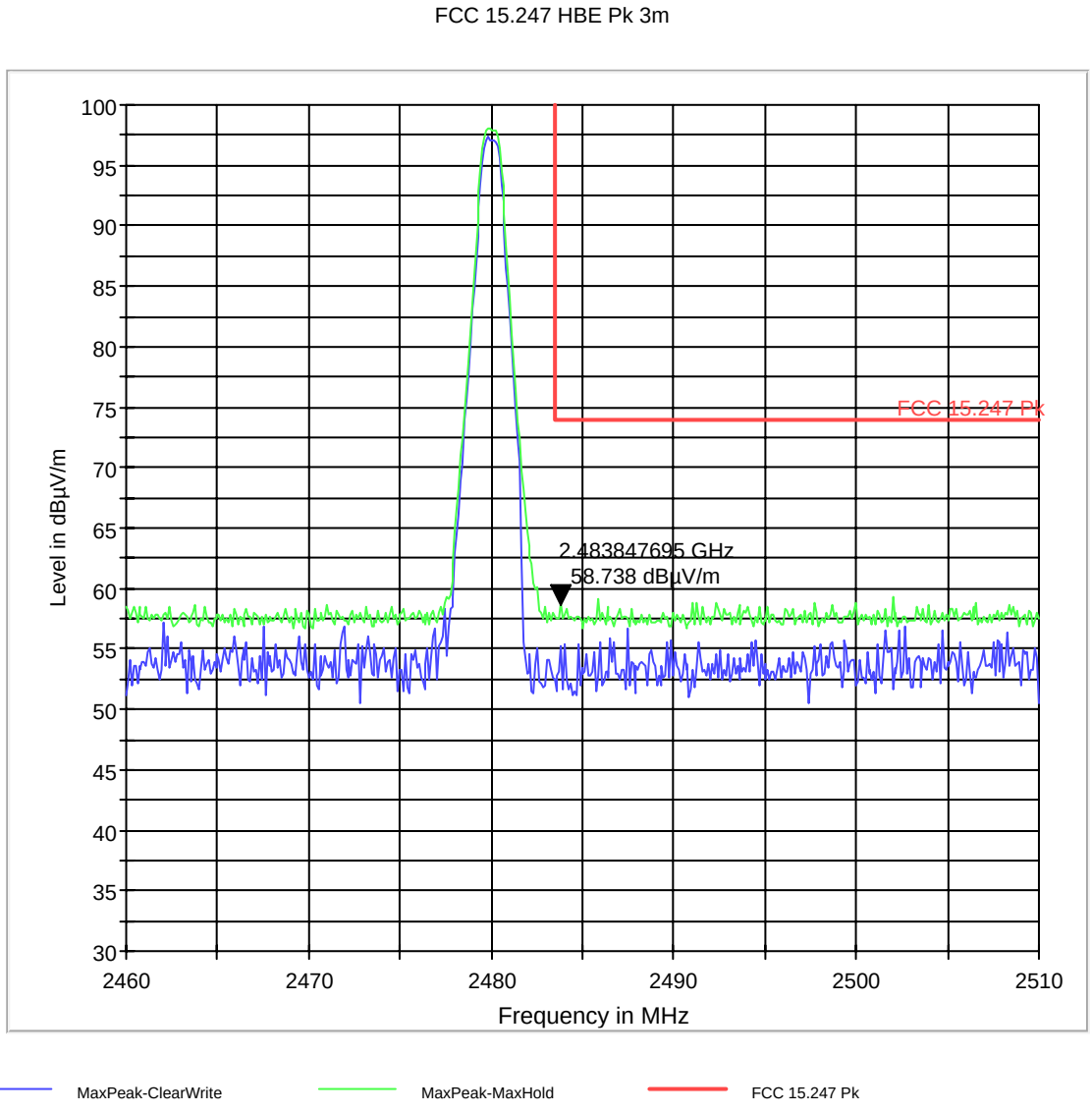


Higher band edge peak -GFSK modulation

EUT Information

Description:

EUT Name:	V01B
Manufacturer:	Dell Inc.
Serial Number:	
Test Mode:	BT DH-5 CH 78
Voltage:	ac adapter
EUT Orientation:	
Comment:	



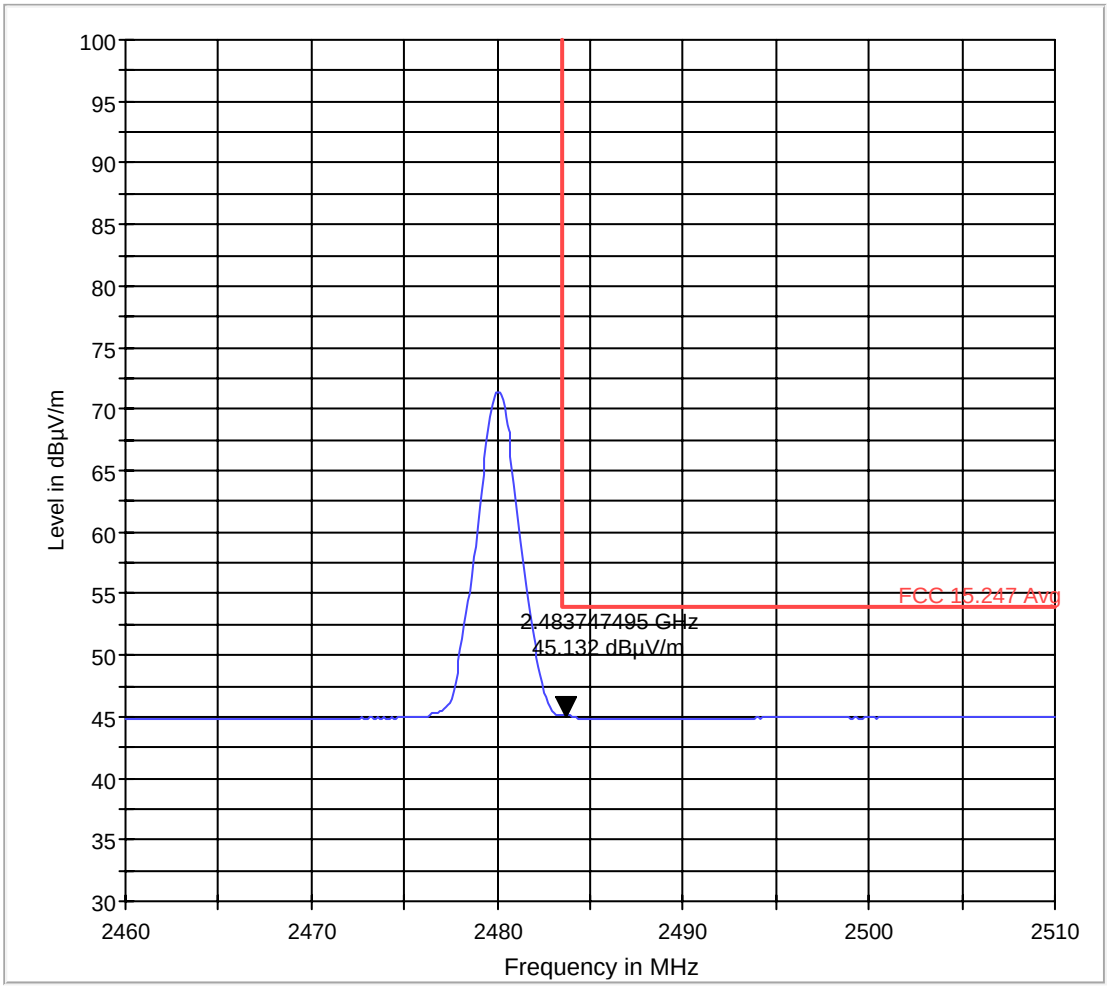
Higher band edge average-GFSK modulation

EUT Information

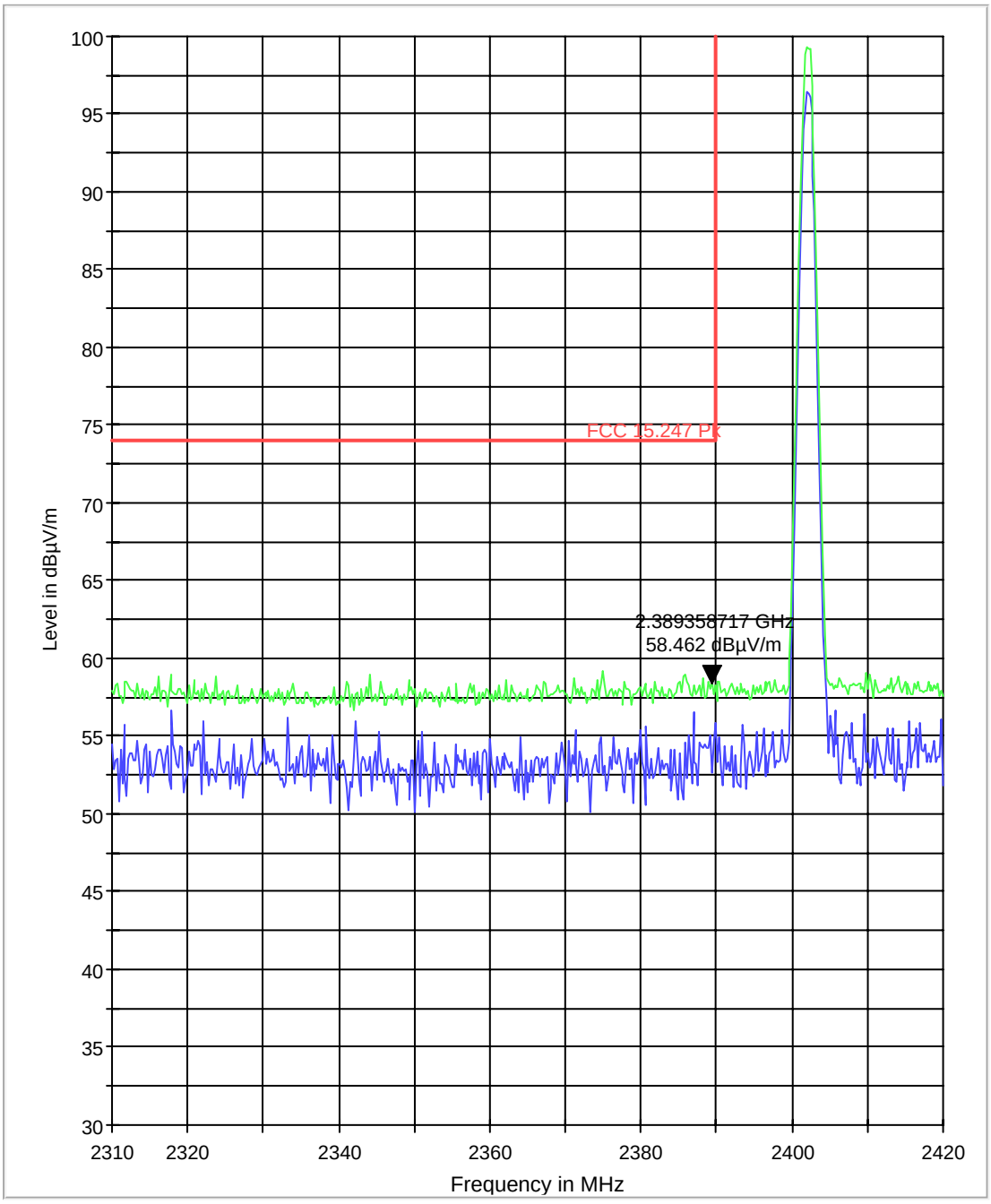
Description:

EUT Name:	V01B
Manufacturer:	Dell Inc.
Serial Number:	
Test Mode:	BT DH-5 CH 78
Voltage:	ac adapter
EUT Orientation:	
Comment:	

FCC 15.247 HBE Avg 3m

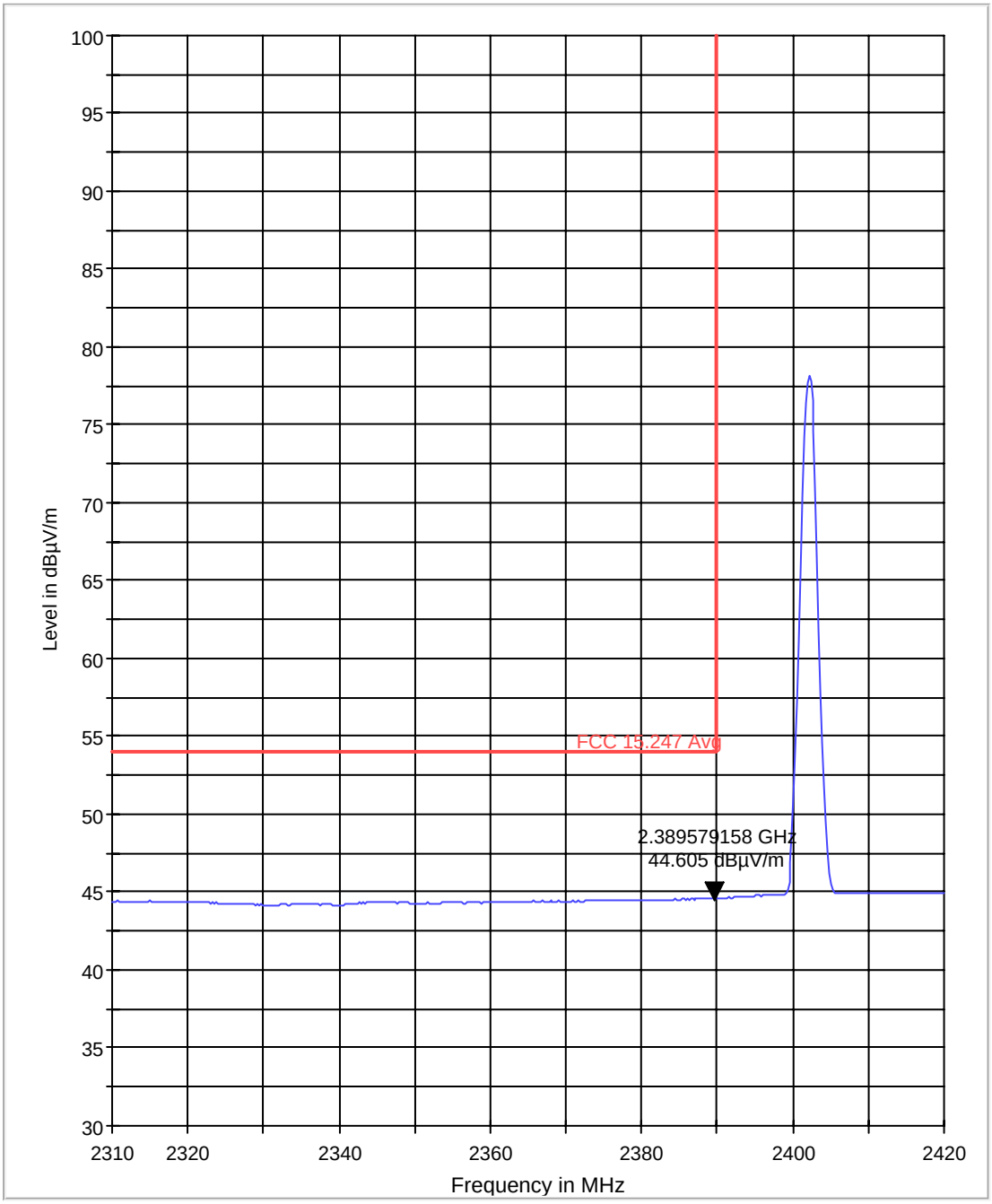


Lower band edge peak - π/4 DQPSK modulation

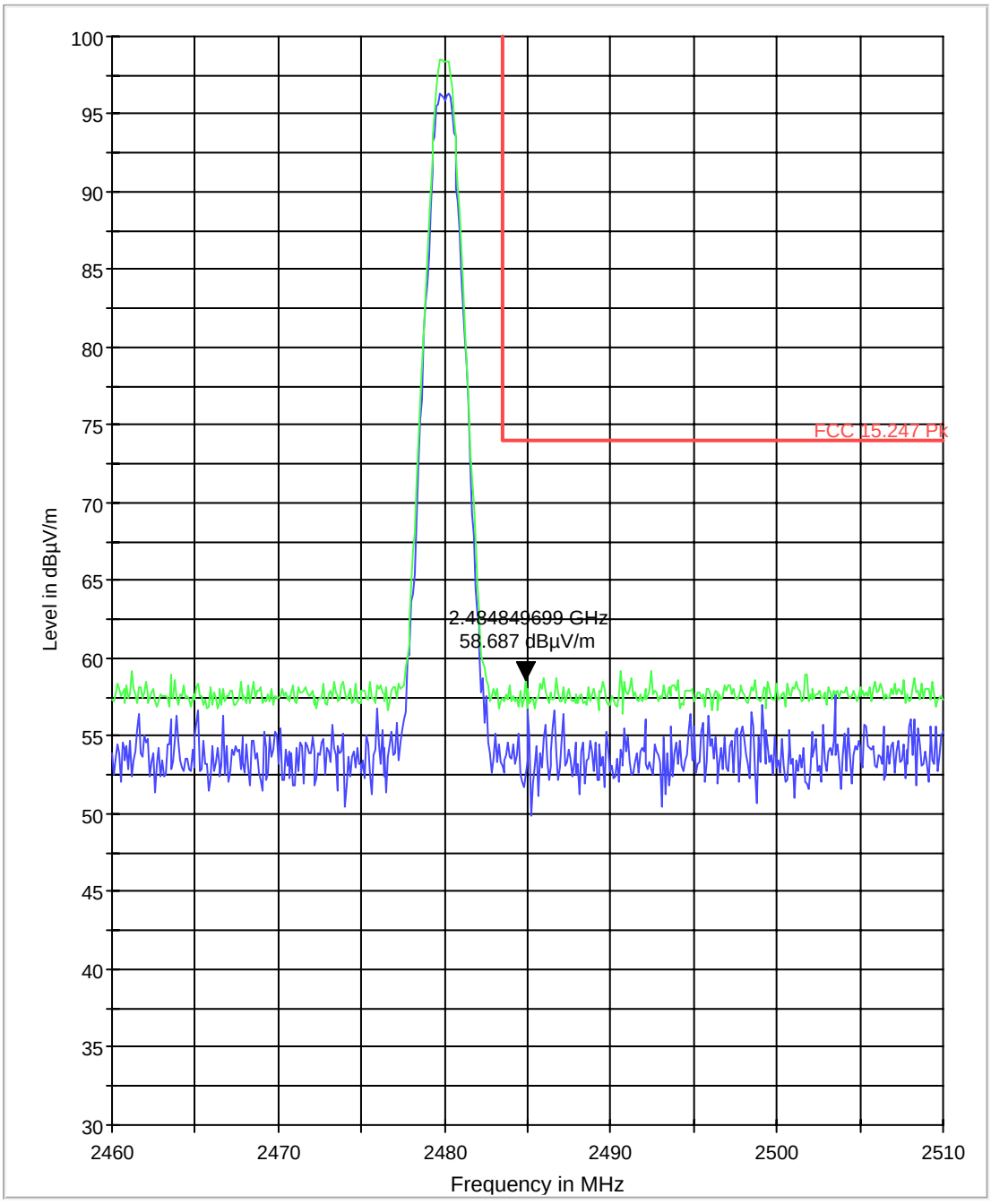


Lower band edge average -π/4 DQPSK modulation

FCC 15.247 LBE Avg 3m

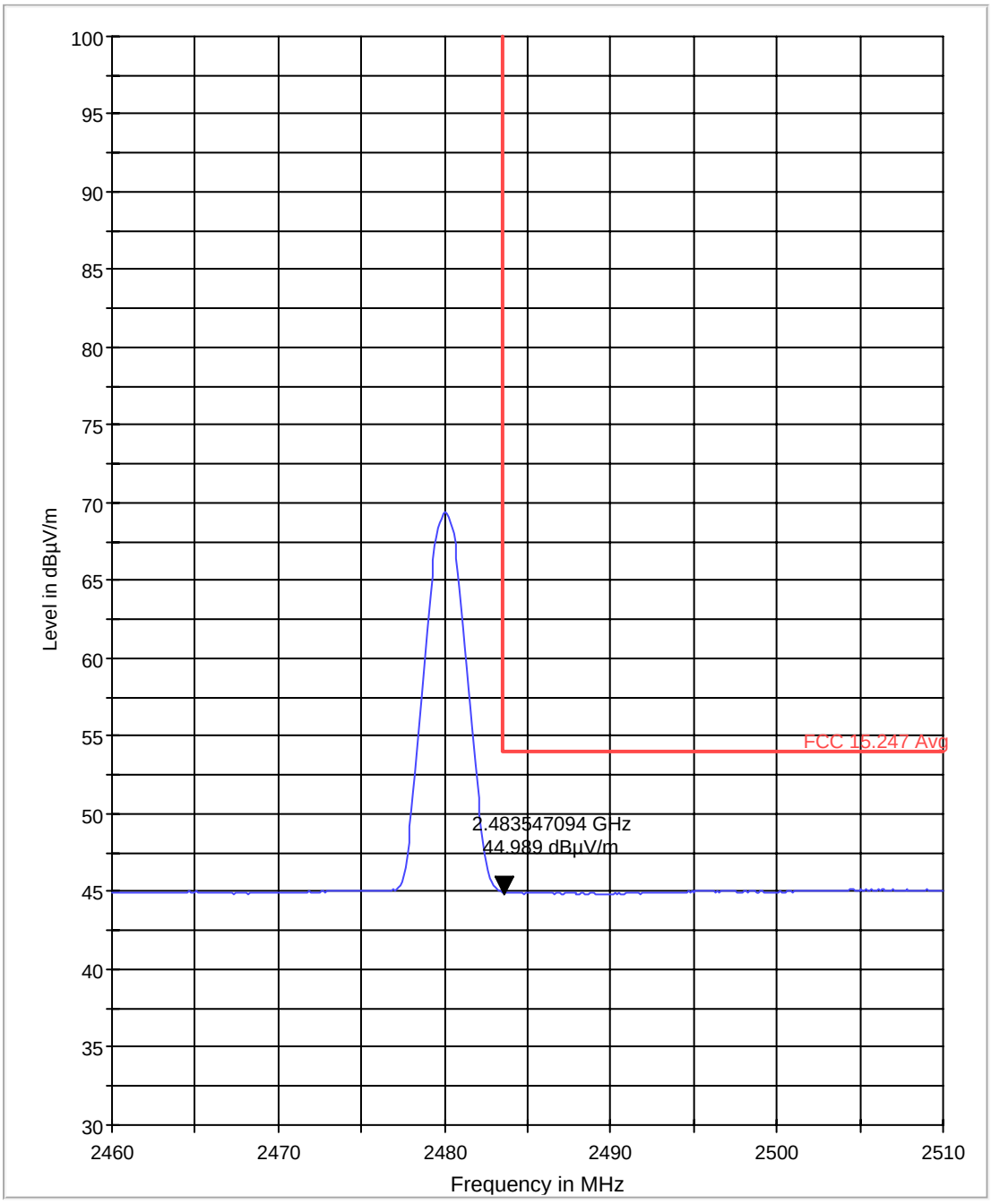


Higher band edge peak -π/4 DQPSK modulation

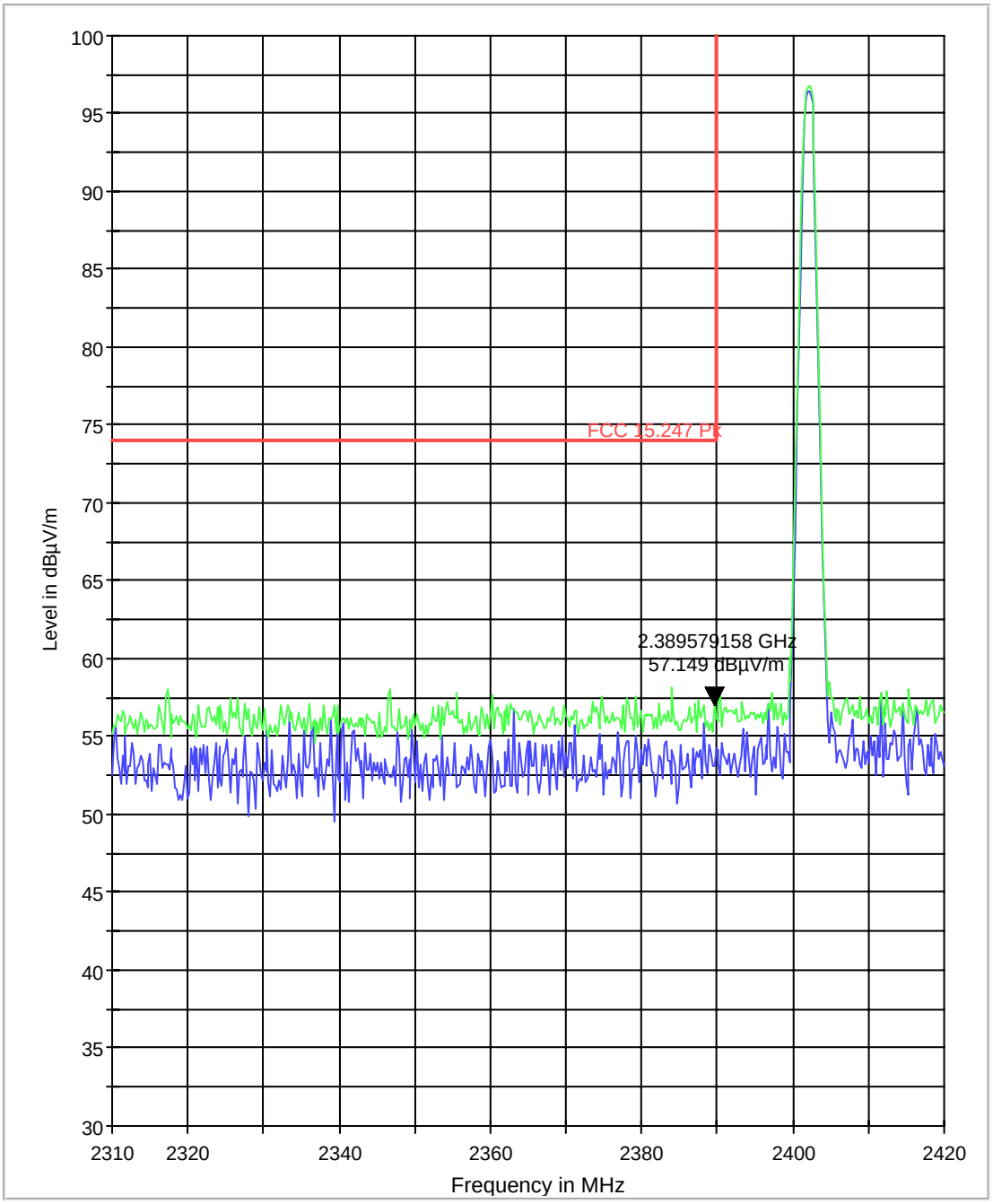


Higher band edge average- π/4 DQPSK modulation

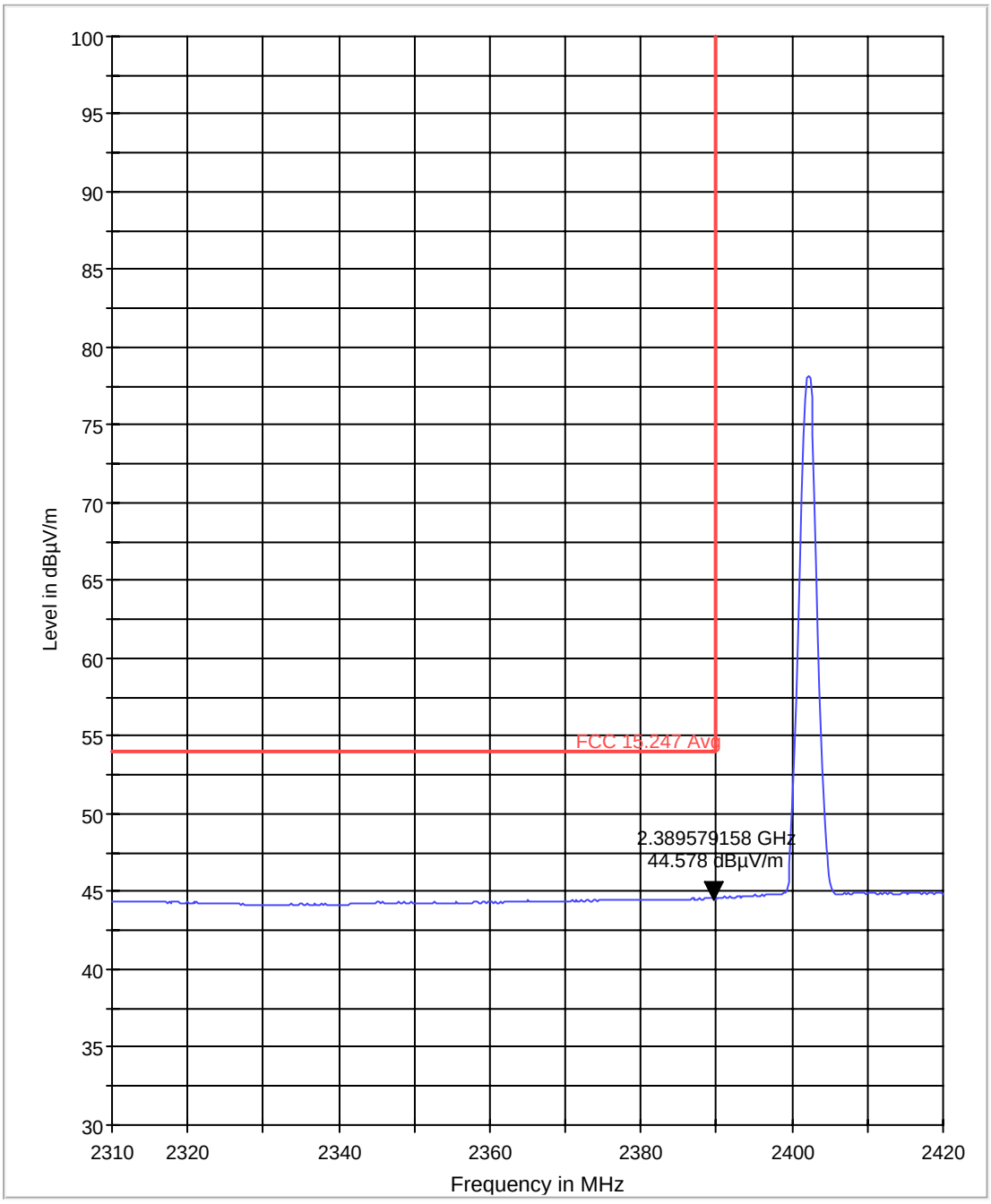
FCC 15.247 HBE Avg 3m



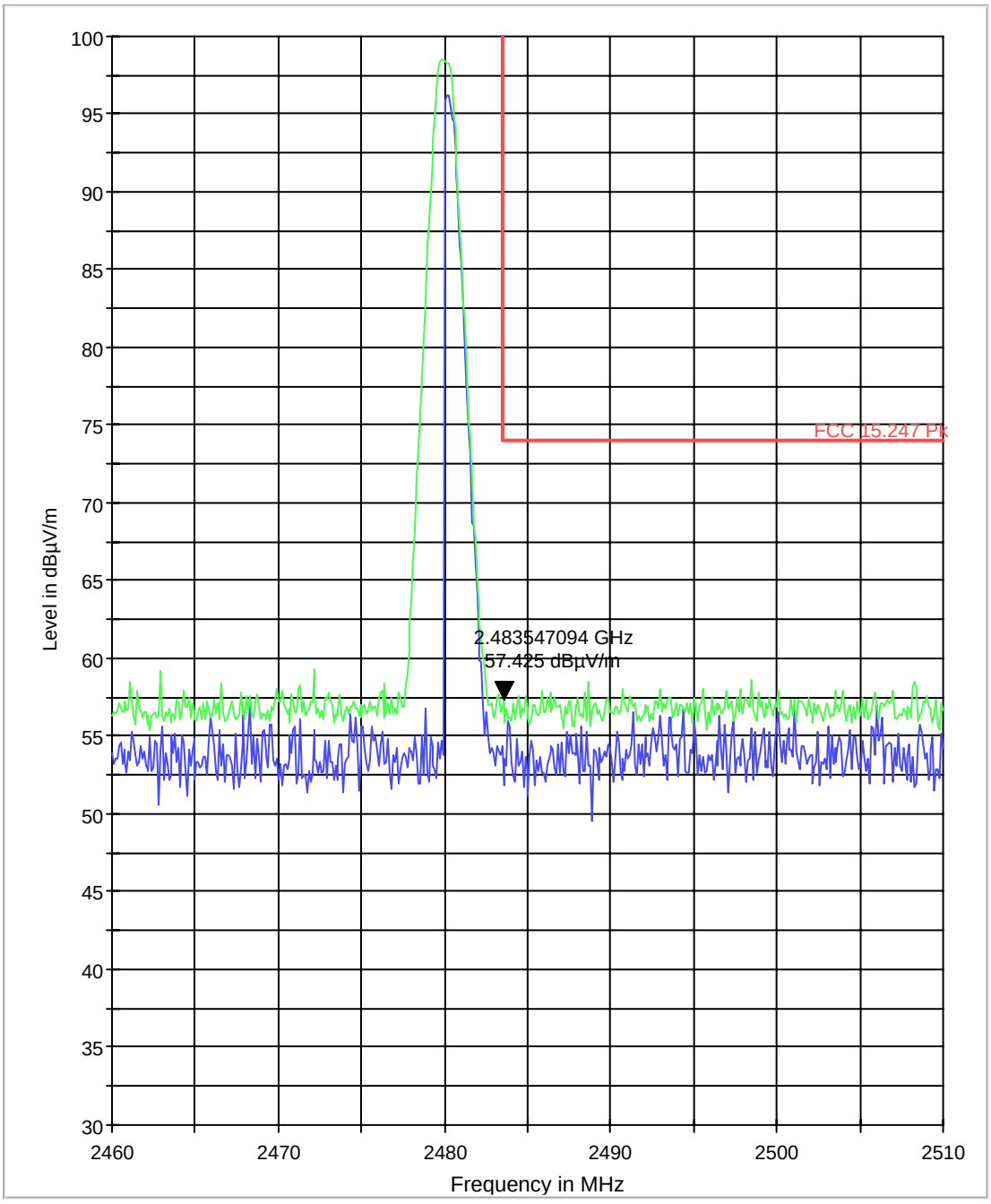
Lower band edge peak - 8DPSK modulation



Lower band edge average -8DPSK modulation

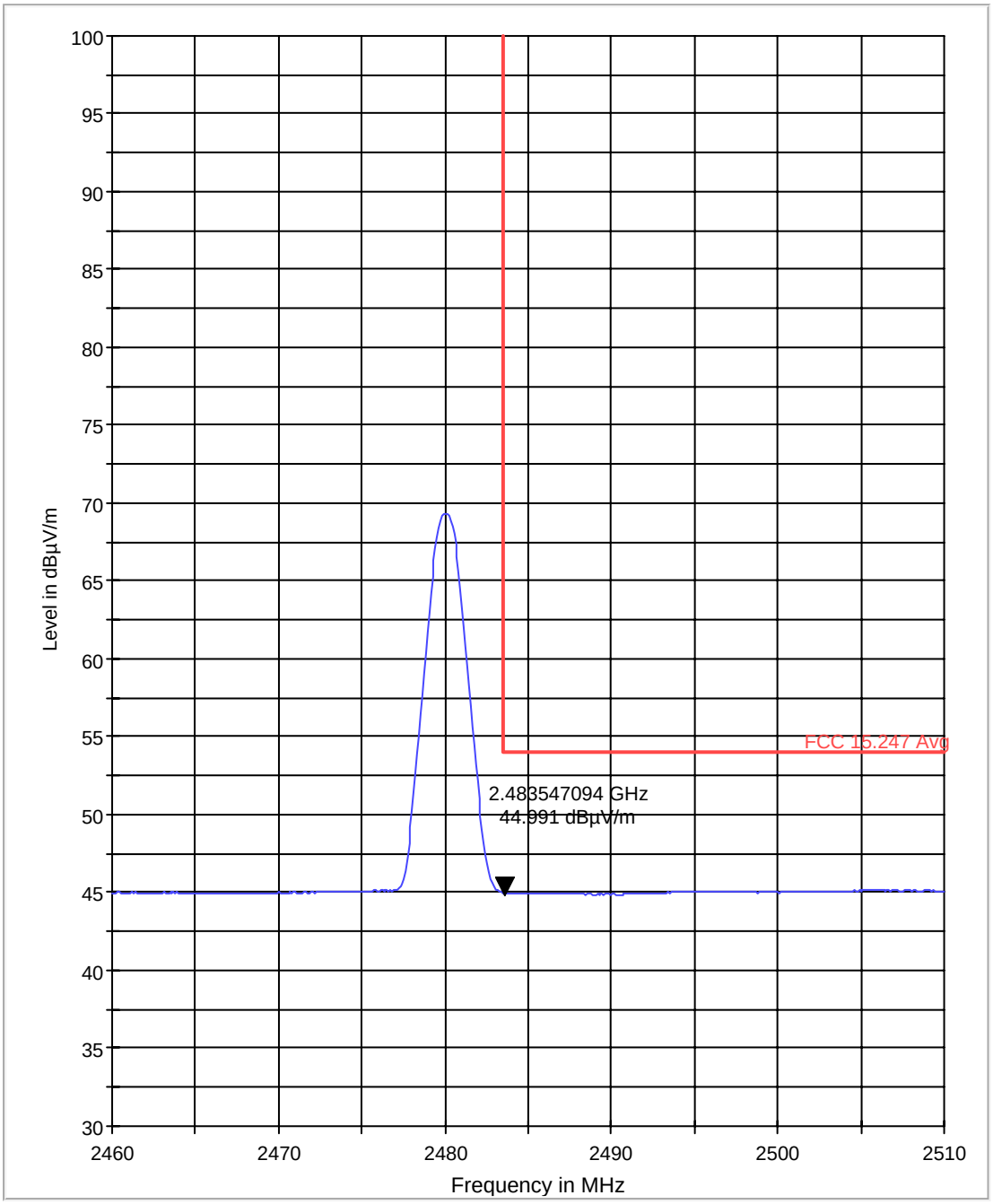


Higher band edge peak - 8DPSK modulation



Higher band edge average-8DPSK modulation

FCC 15.247 HBE Avg 3m



5.5 Spectrum Bandwidth/ 20dB Bandwidth

5.5.1 Limits: § 15.247 (a)(1)

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.

GFSK < 1000 kHz
π / 4 DQPSK < 1500 kHz
8 dPSK < 1500kHz

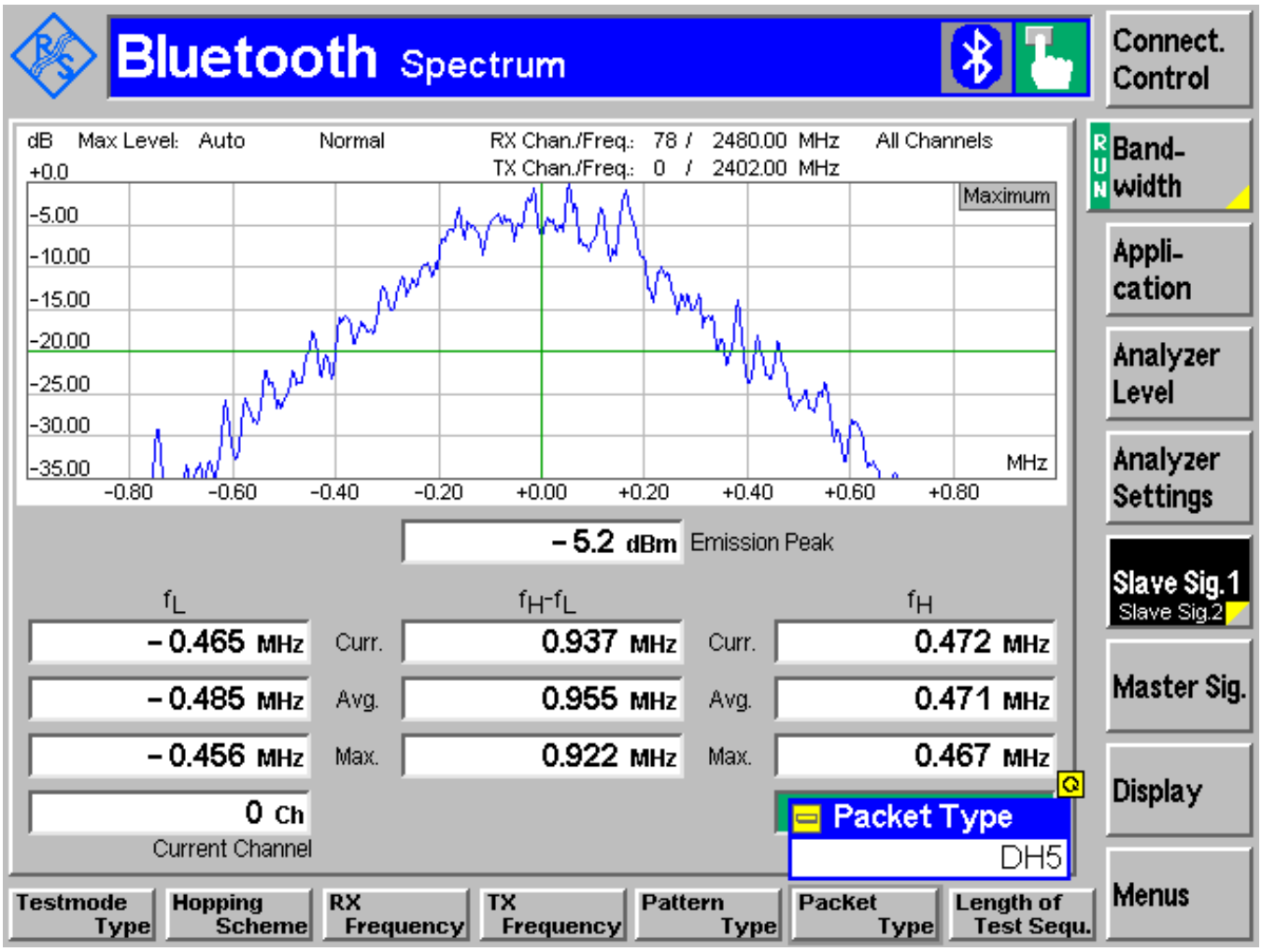
5.5.2 Test Result:

20dB Bandwidth (MHz)			
Modulation	**Frequency (MHz)**		
	2402	**2442**	**2480**
GFSK	0.922	0.922	0.855
π/4 DQPSK	1.177	1.178	1.179
8-DPSK	1.220	1.222	1.222
Measurement Uncertainty: ±1 kHz			

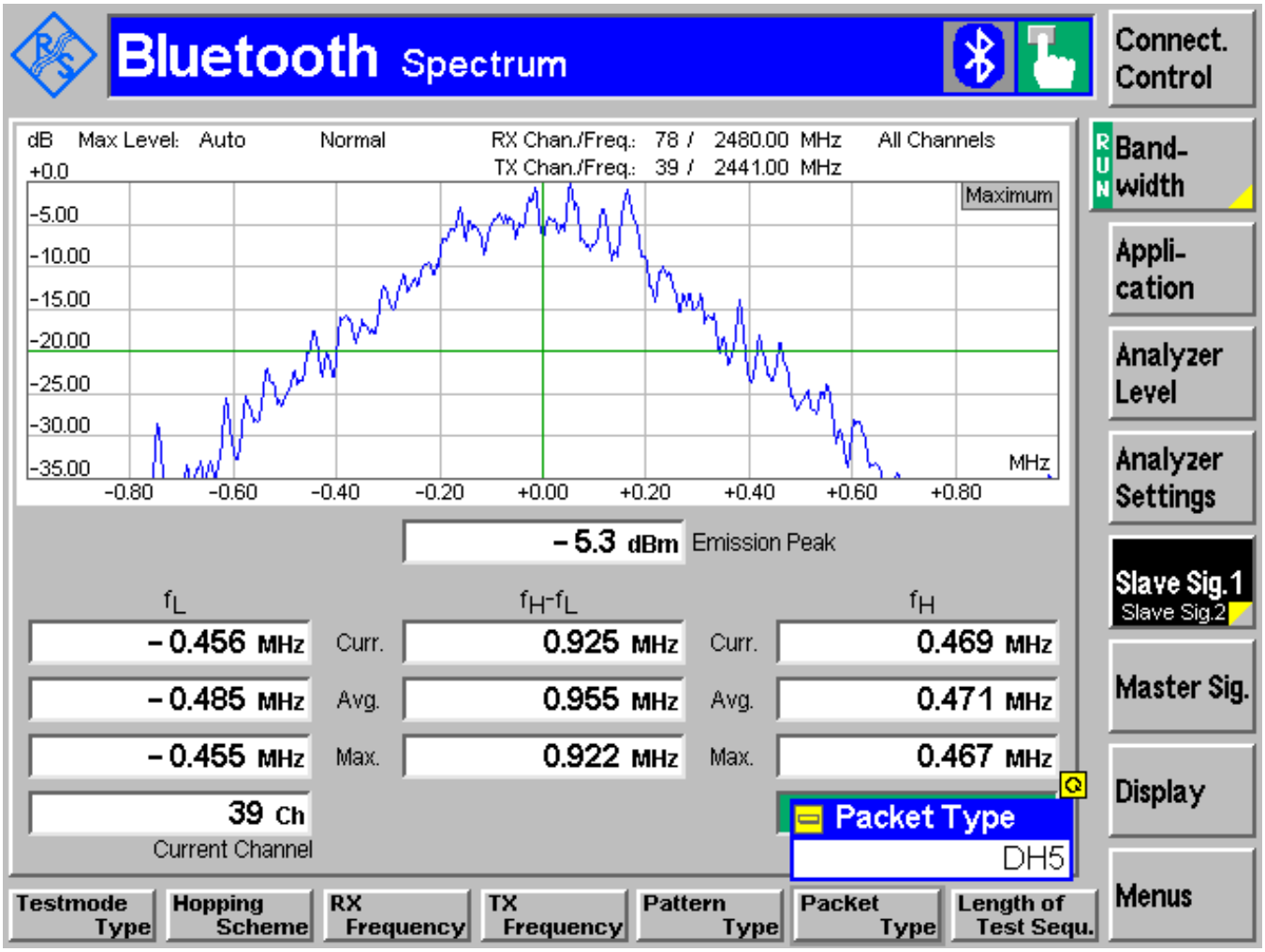
RBW=VBW=10 kHz

5.5.3 Test Data/plots:

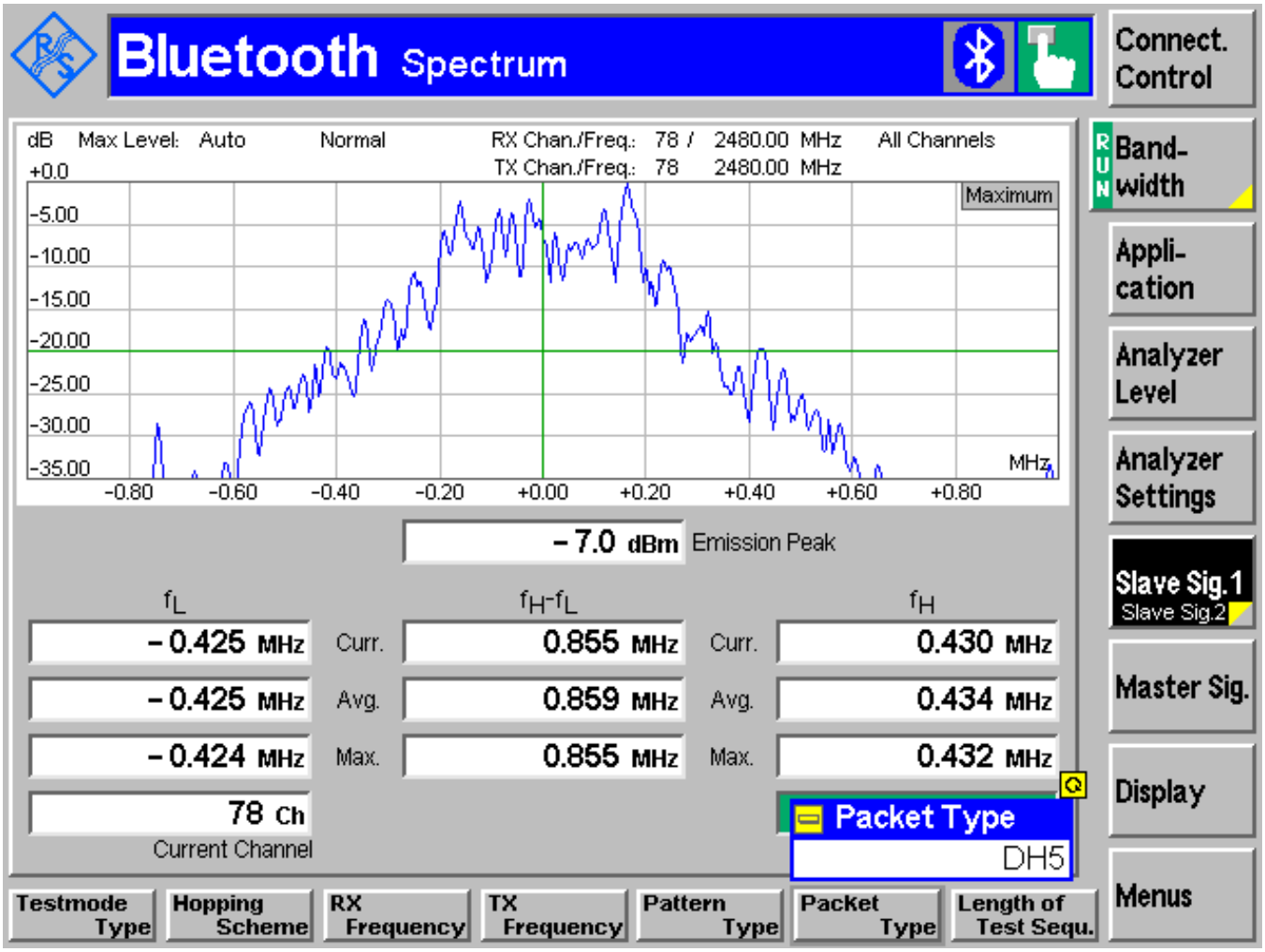
20dB Bandwidth GFSK 2402MHz



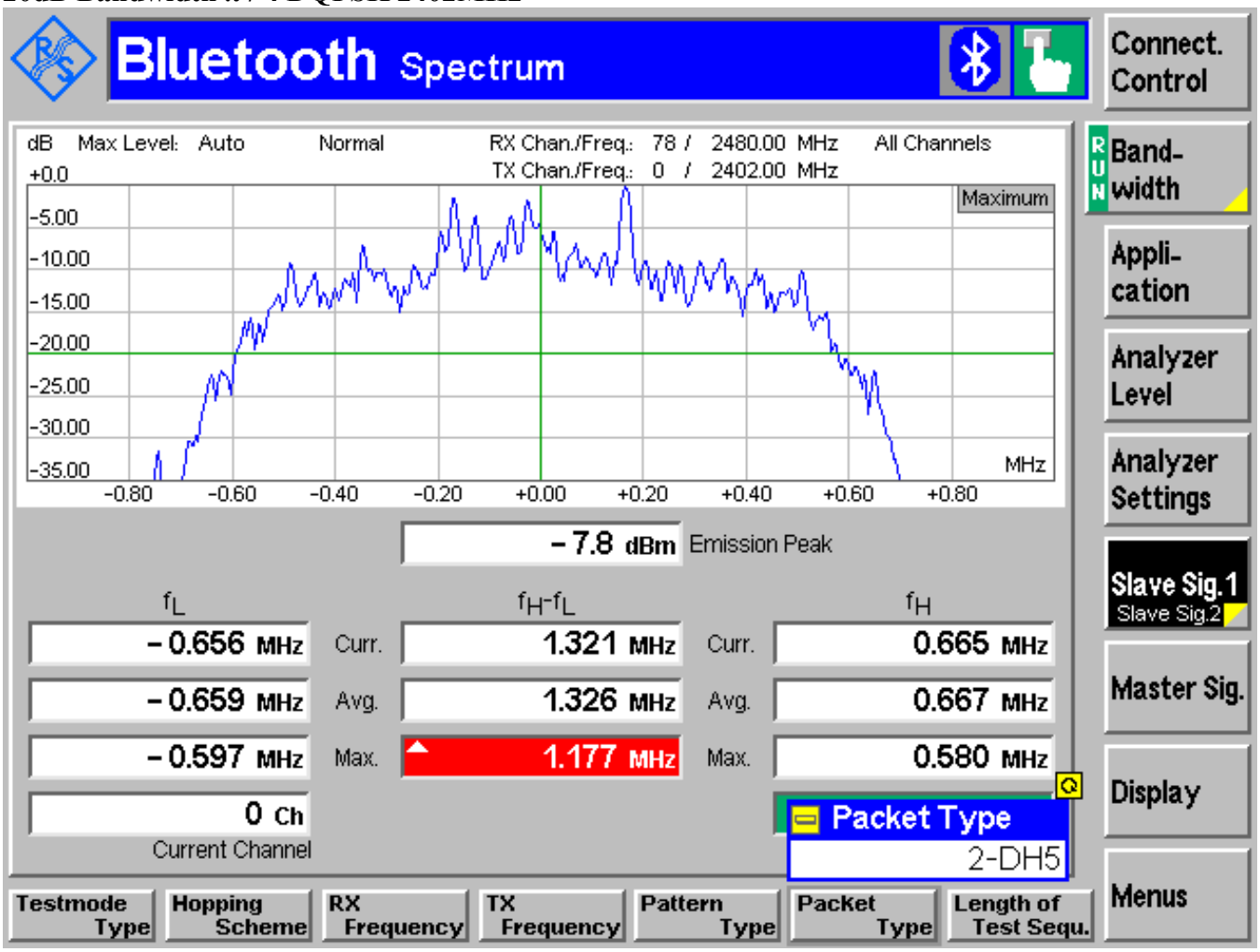
20dB Bandwidth GFSK 2441MHz



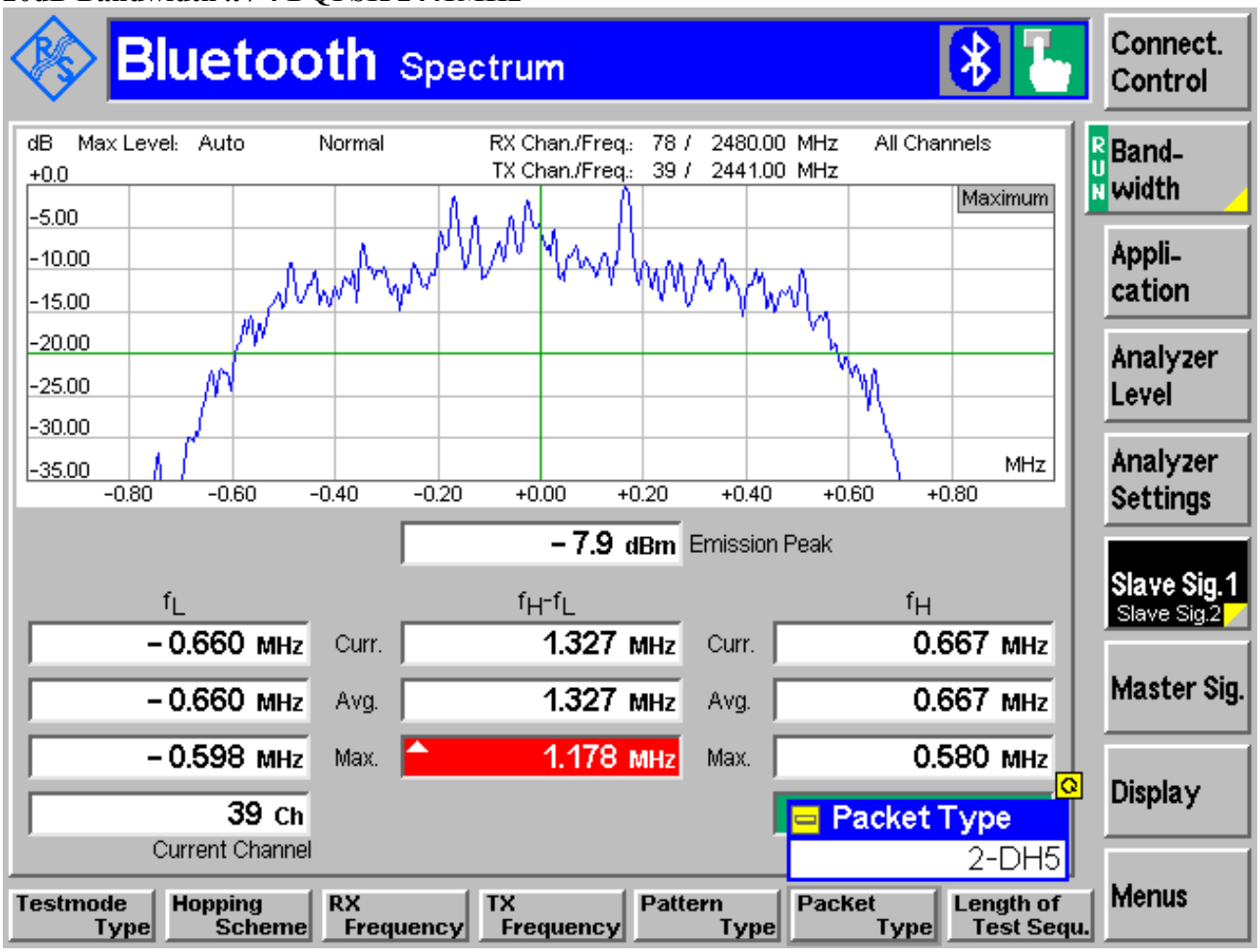
20dB Bandwidth GFSK 2480MHz



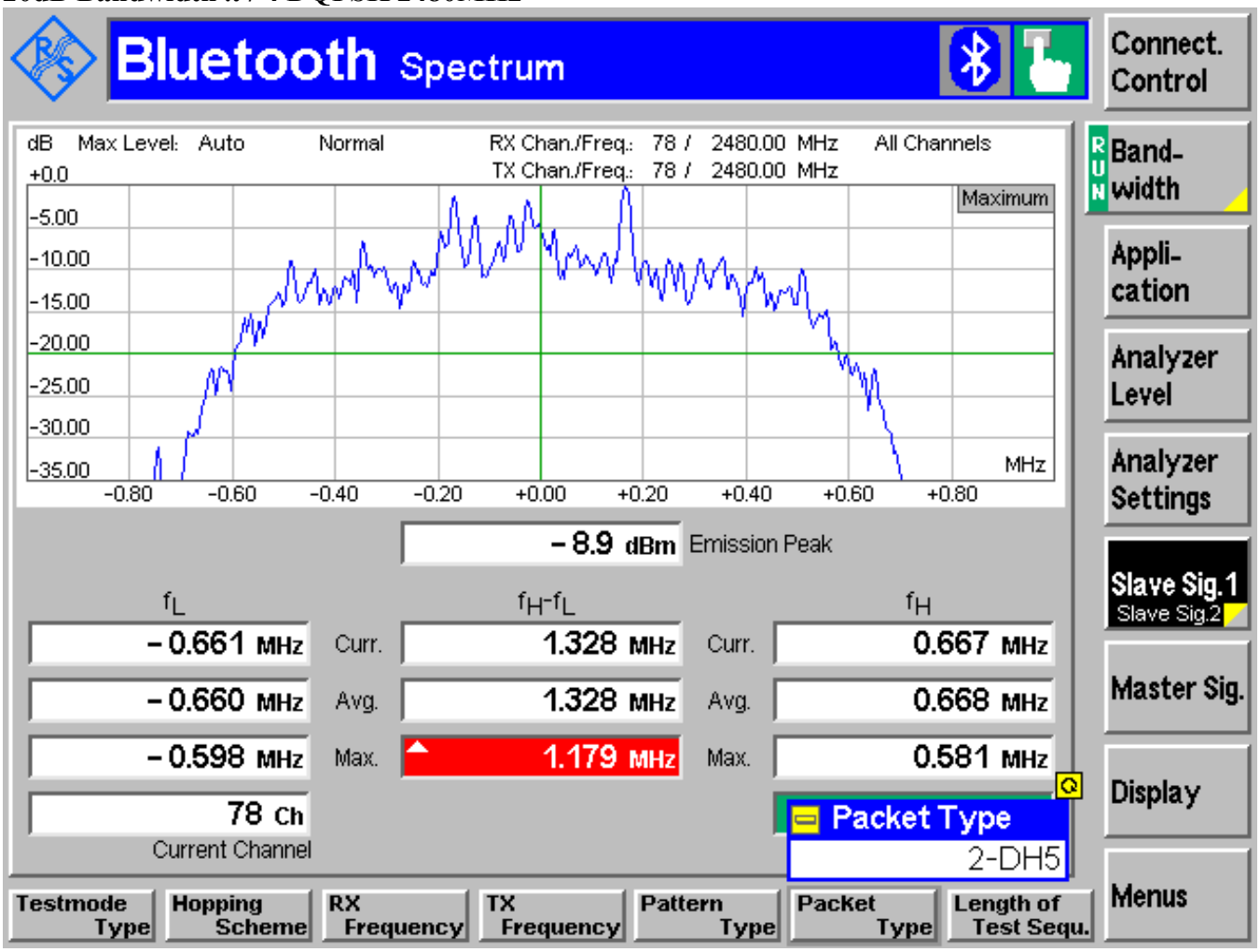
20dB Bandwidth π / 4 DQPSK 2402MHz



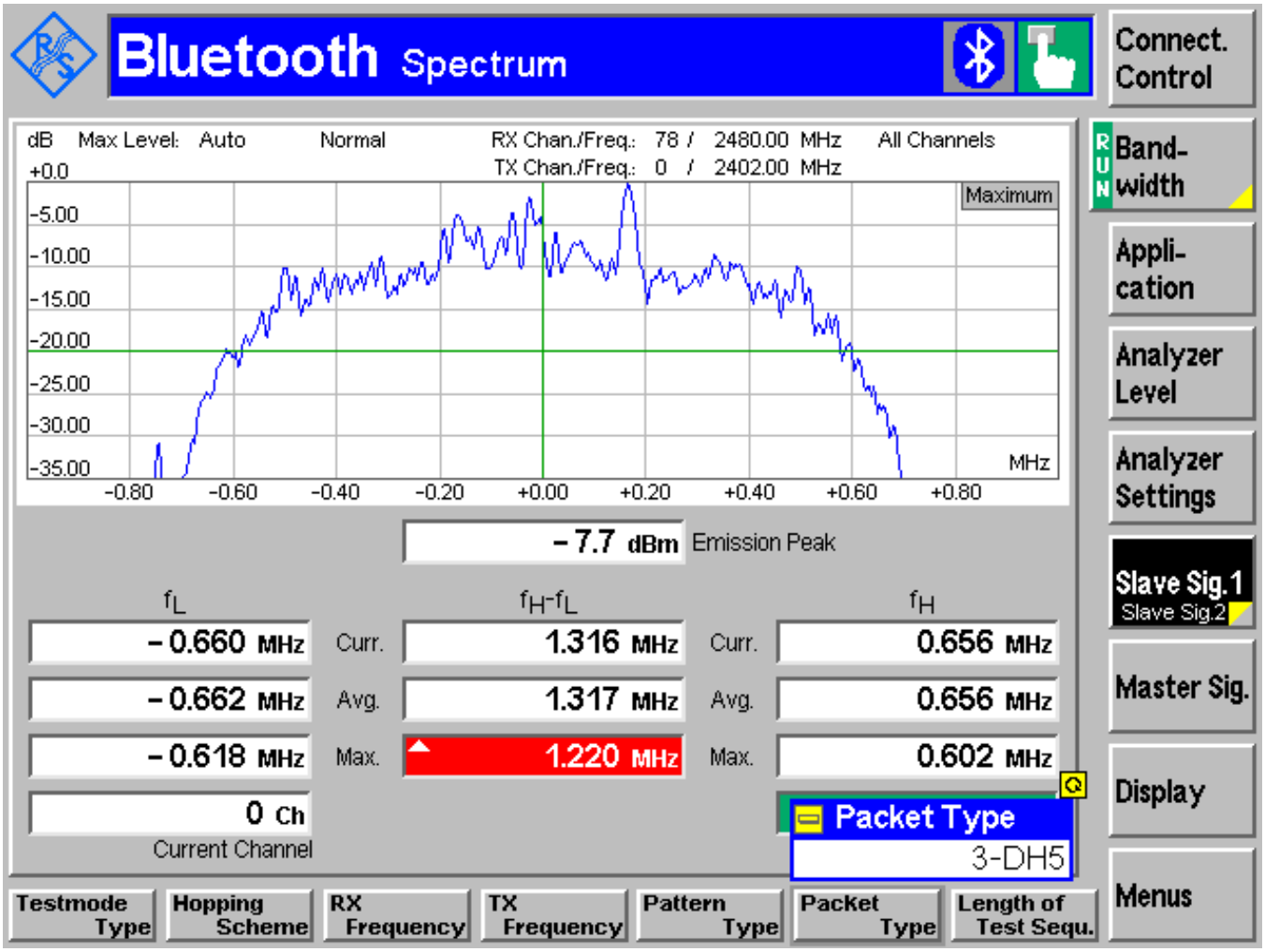
20dB Bandwidth π / 4 DQPSK 2441MHz



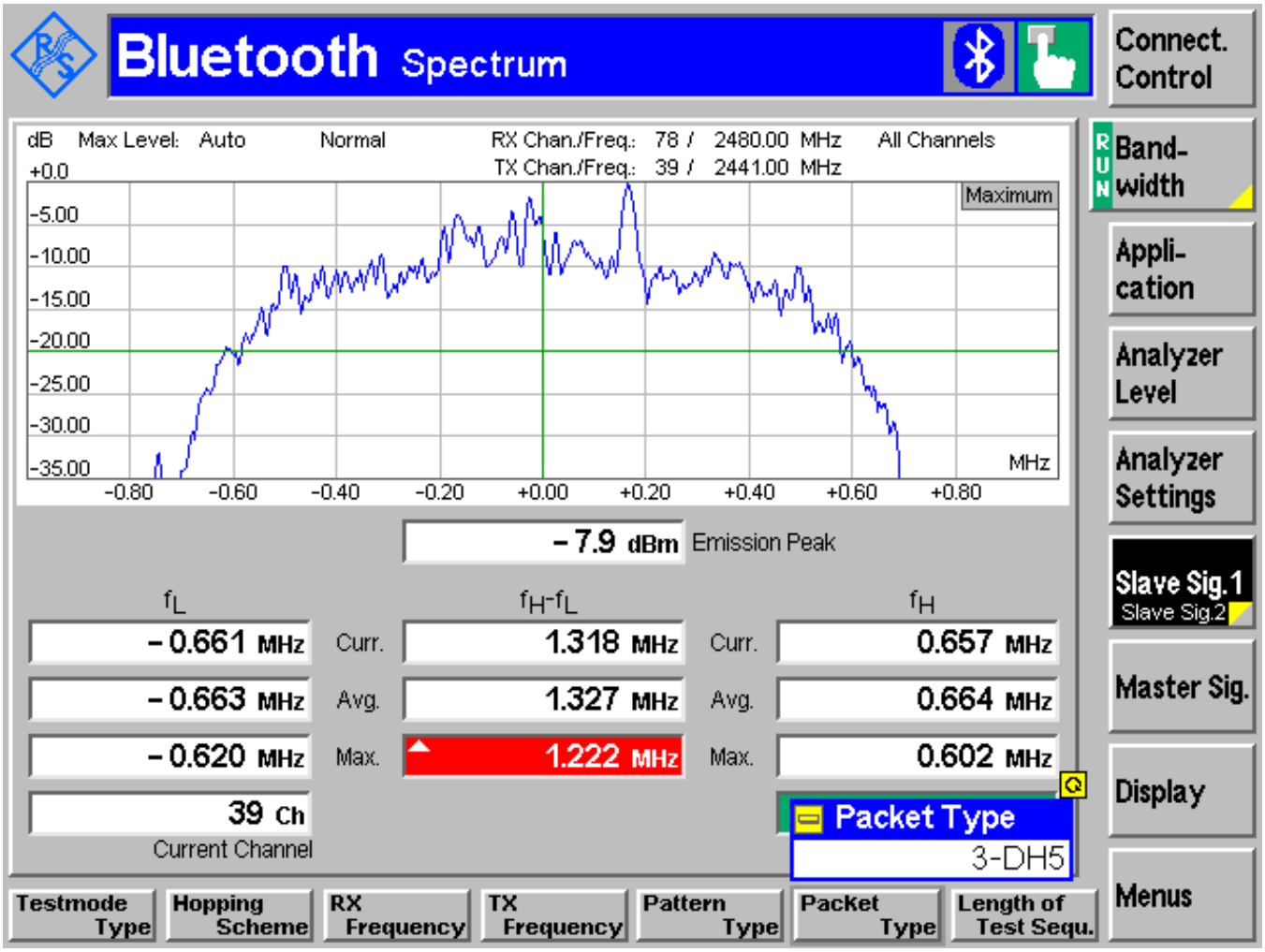
20dB Bandwidth π / 4 DQPSK 2480MHz



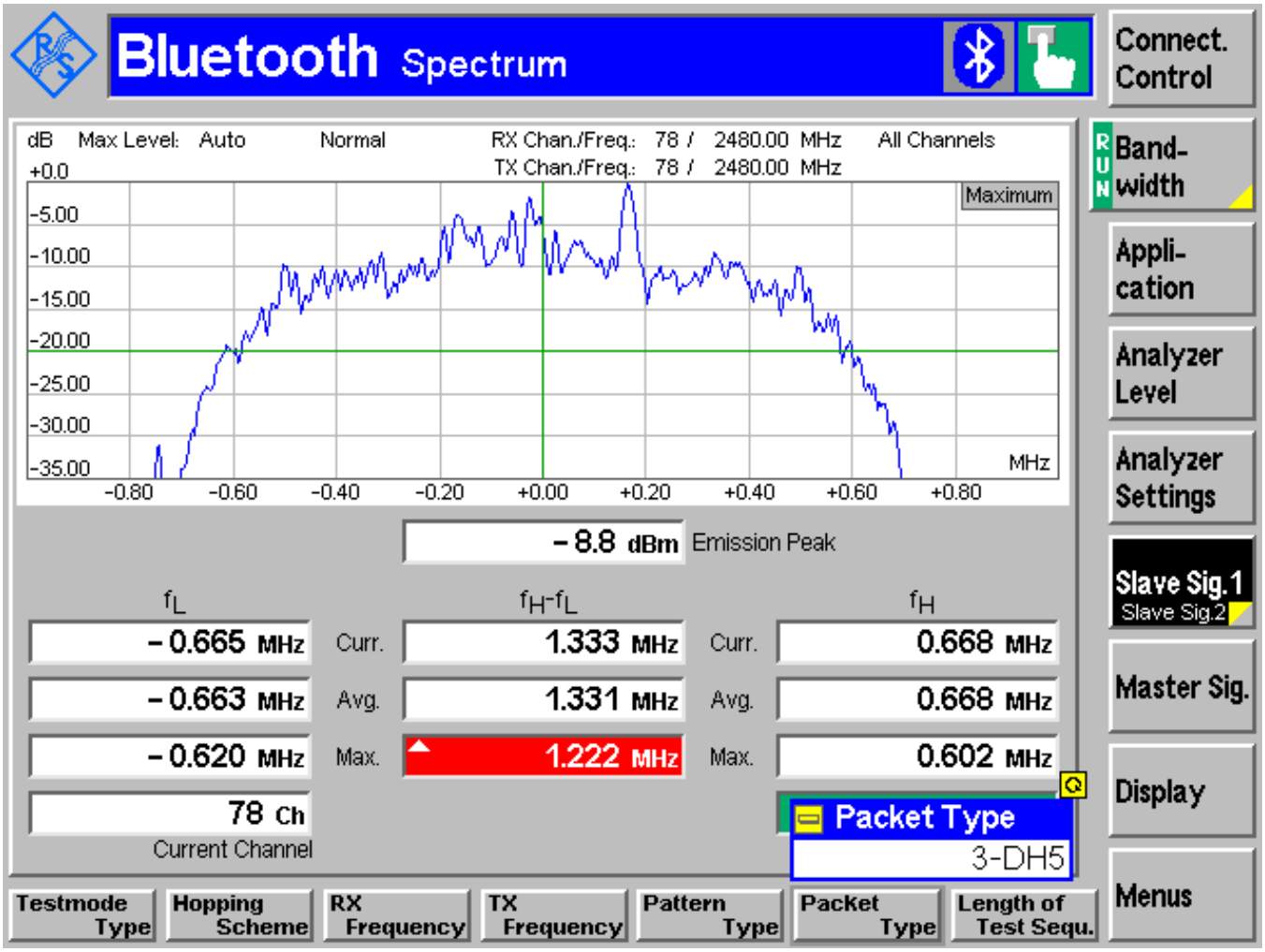
20dB Bandwidth 8PSK 2402MHz



20dB Bandwidth 8PSK 2441MHz



20dB Bandwidth 8PSK 2480MHz



5.6 Carrier Frequency Separation

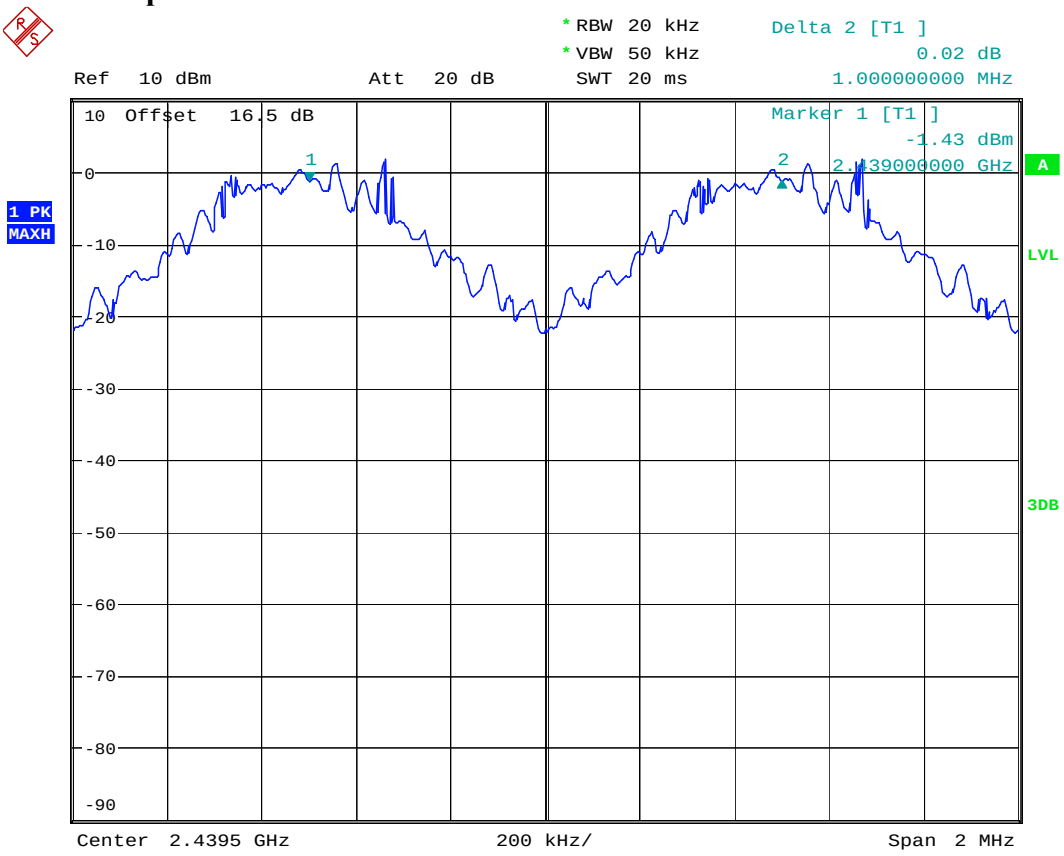
5.6.1 Limits: § 15.247 (a) (1)

Minimum 25kHz or 2/3 of the 20dB bandwidth of the hopping system

5.6.2 Test Result:

Modulation: GFSK
Channel Spearation: 1.0 MHz

5.6.3 Test Data/plot:



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5.7 Number of hopping channels

5.7.1 Limits: § 15.247 (a) (1)

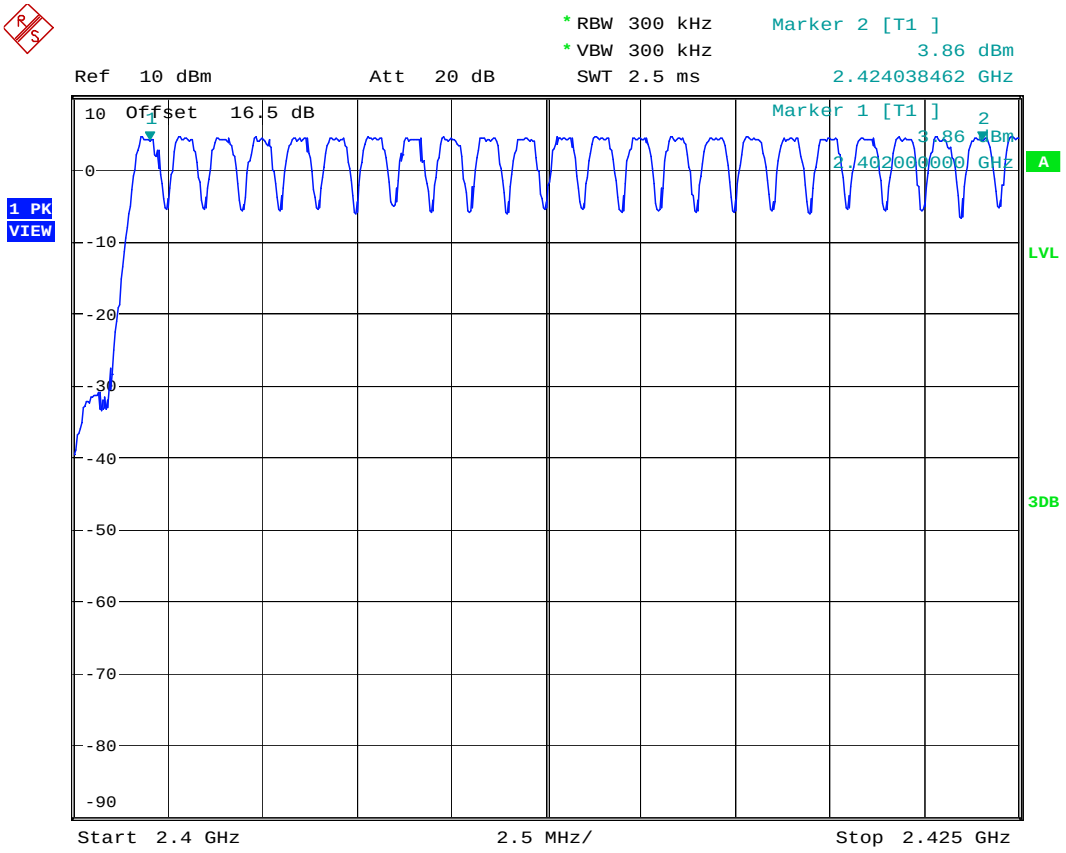
Atleast 15 non-overlapping channels

5.7.2 Test Result:

Modulation: GFSK
Number of hopping channels: 79

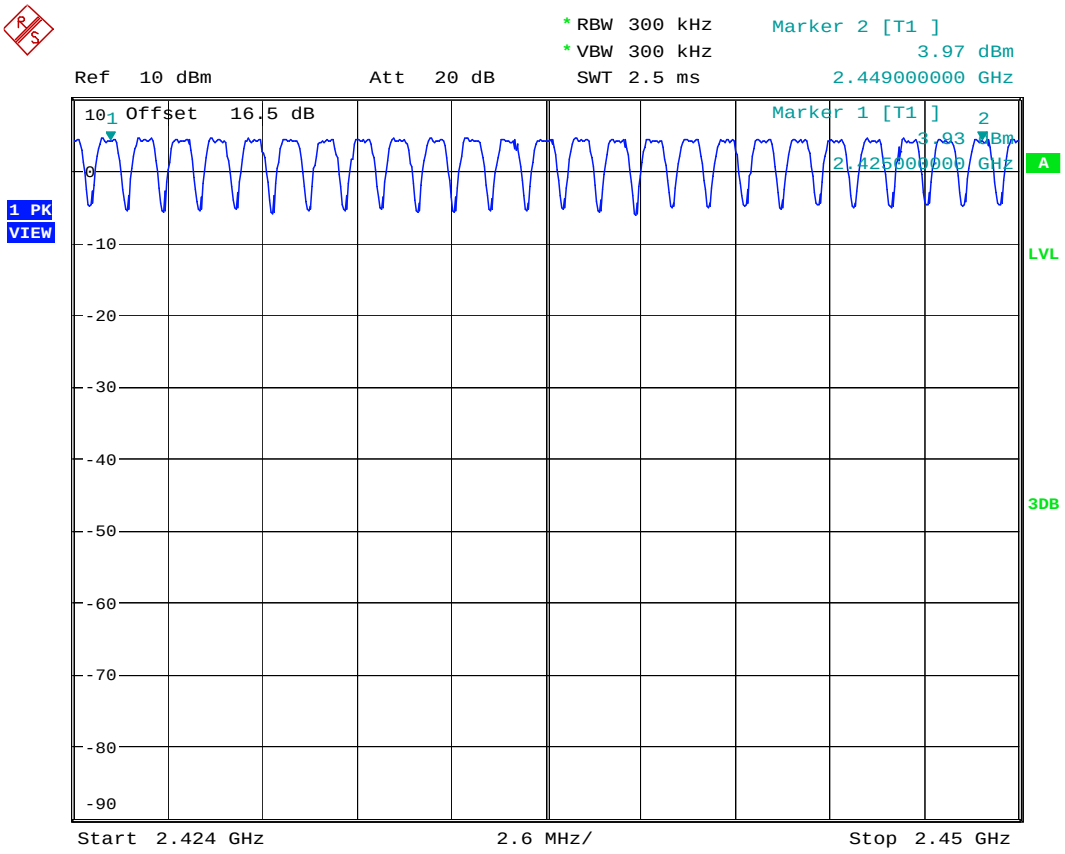
5.7.3 Test Data/plot:

2402 – 2424 MHz



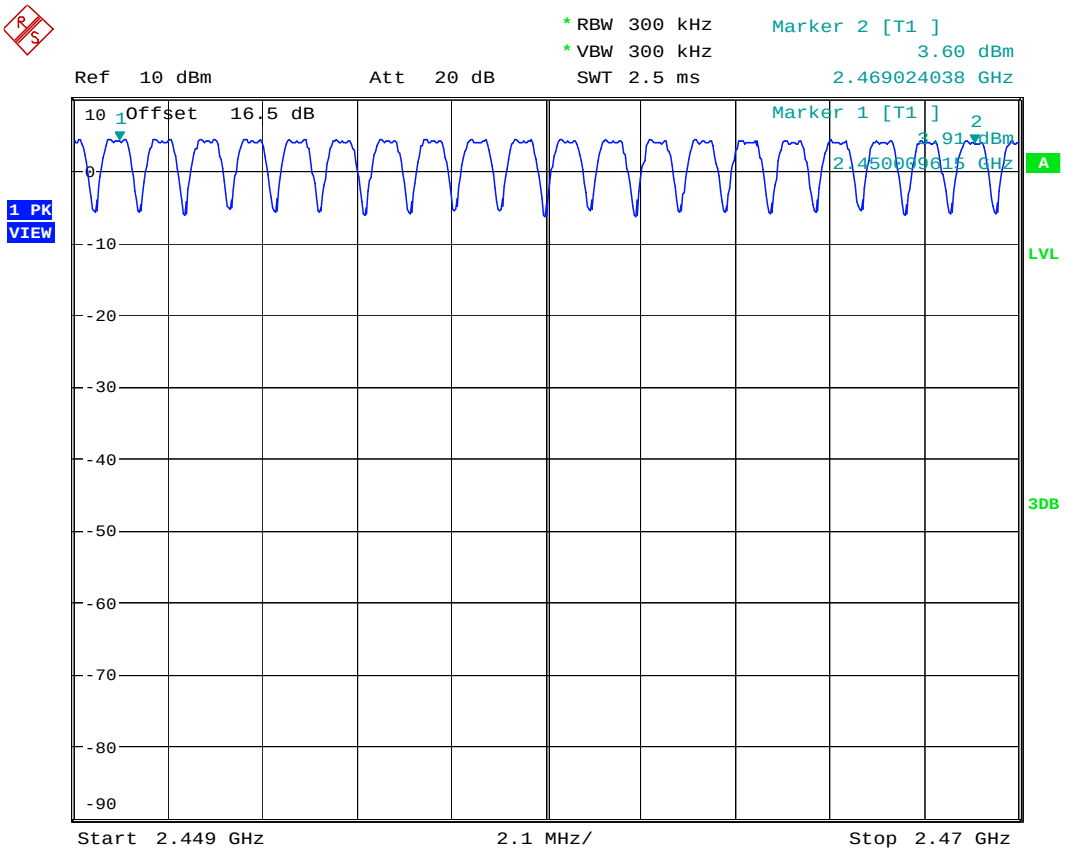
Date: 30.JAN.2010 12:42:49

2425-2449 MHz



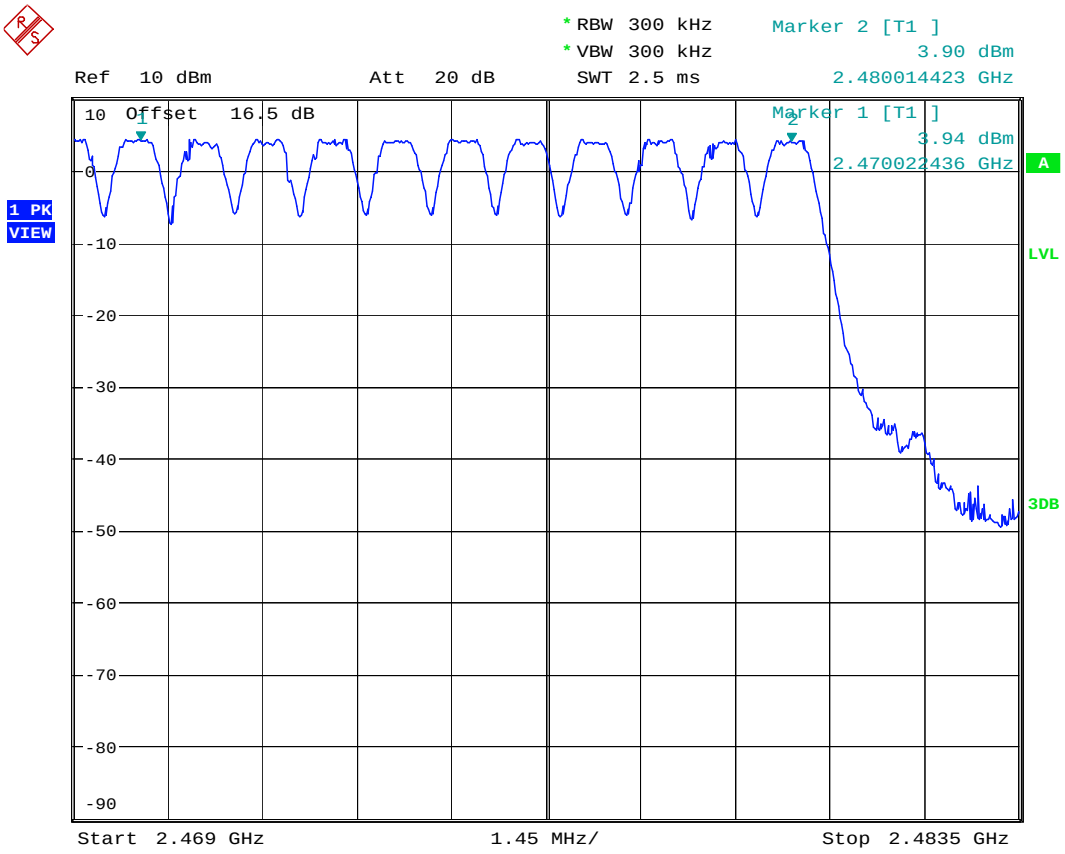
Date: 30.JAN.2010 12:46:10

2450-2469MHz



Date: 30.JAN.2010 12:48:09

2470-2480 MHz



Date: 30.JAN.2010 14:35:51

5.8 Time of occupancy (Dwell time)

5.8.1 Limits: § 15.247 (a) (1) (iii)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

5.8.2 Test Result:

For Bluetooth devices:

The dwell time of 0.4 s within a 31.6 second period in data mode is independent from the packet type (packet length). The calculation for a 31.6 second period is a follows:

Dwell time = time slot length * hop rate / number of hopping channels *31.6 s

Example for a DH1 packet (with a maximum length of one time slot)
Dwell time = 625 µs * 1600 1/s / 79 * 31.6 s = 0.4 s (in a 31.6 s period)

For multi-slot packet the hopping is reduced according to the length of the packet.
Example for a DH5 packet (with a maximum length of five time slots)
Dwell time = 5 * 625 µs * 1600 * 1/5 *1/s / 79 * 31.6 s = 0.4 s (in a 31.6 s period)

This is according to Bluetooth Core Specification for all Bluetooth devices. Therefore all BT devices satisfy FCC requirement on time of occupancy (dwell time) in the data mode.

5.9 Power Spectral Density (Hybrid system in Inquiry mode/ Page scan)

5.9.1 Limits: § 15.247 (e)

For digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

5.9.2 Test Result:

Not Applicable.

5.10 Transmitter Spurious Emissions- Conducted

5.10.1 Limits: § 15.247 (d)

30dBm for the transmitter.
-20dBc in the frequency range 30MHz- 25GHz.

5.10.2 Test Conditions:

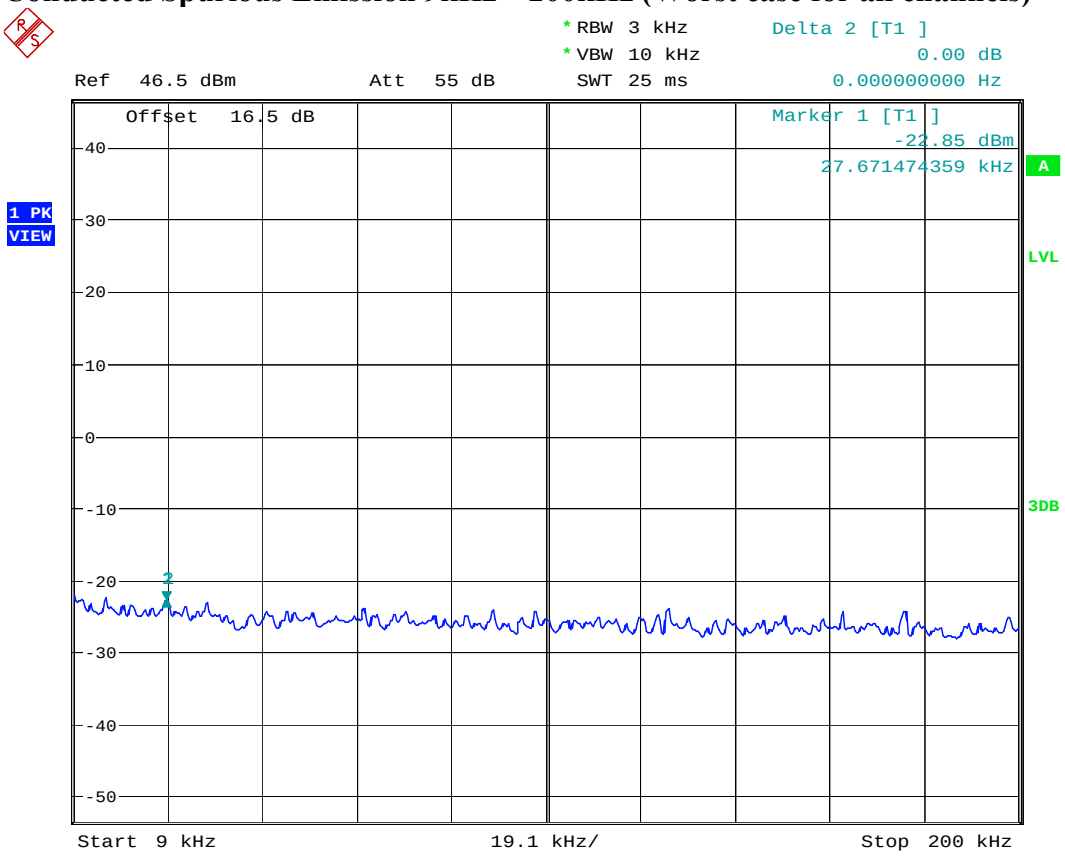
Modulation: GFSK
Analyzer settings: Frequency 9kHz-200kHz: RBW=3kHz, VBW=10 kHz
Frequency 200kHz-30MHz: RBW=VBW=100 kHz
Frequency 30MHz-25GHz: RBW=100kHz, VBW=300kHz

5.10.3 Test data/ plots:

Conducted Spurious Emissions			
Channel	**Frequency (MHz)**	**Amplitude (dBm)**	**Limits**
Low	**2402**	2.62	30dBm
	No critical peaks		-20dBc
Mid	**2442**	0.14	30 dBm
	No critical peaks		-20dBc
High	**2480**	2.91	30 dBm
	No critical peaks		-20dBc
Measurement Uncertainty: ±1 dB			

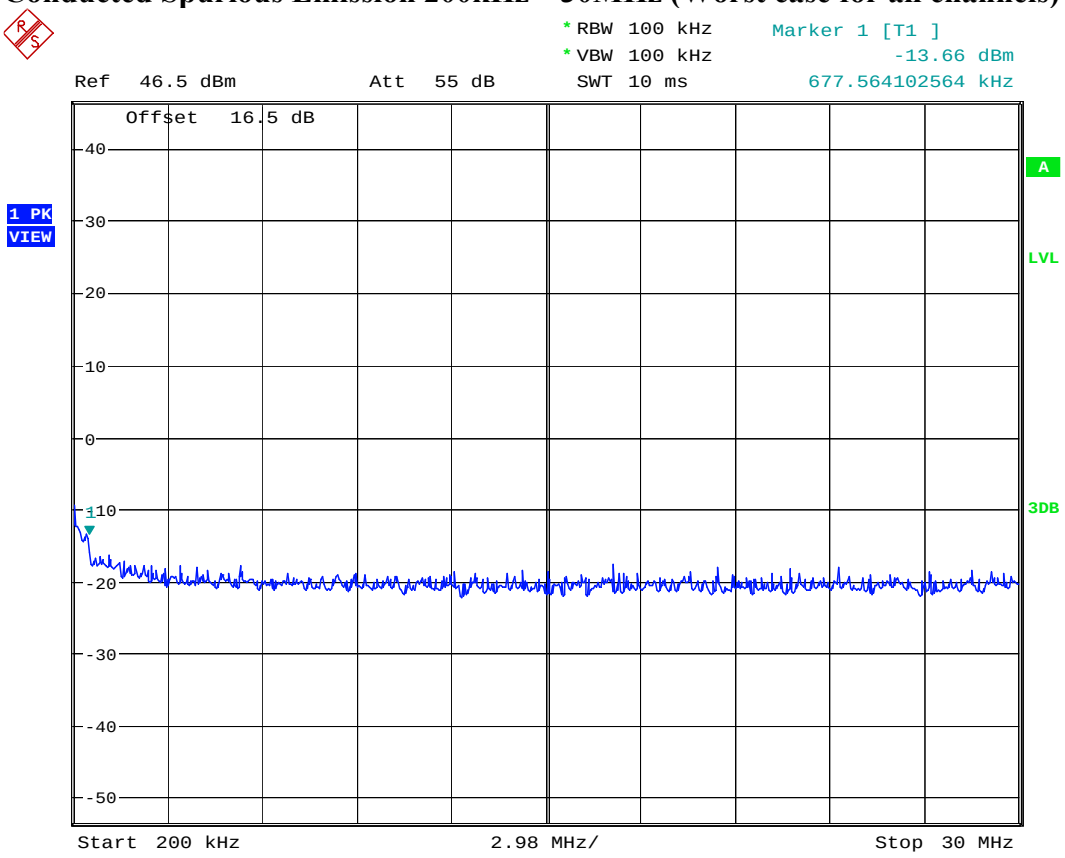
5.10.4 Test data/ plots:

Conducted Spurious Emission 9kHz – 200kHz (Worst case for all channels)



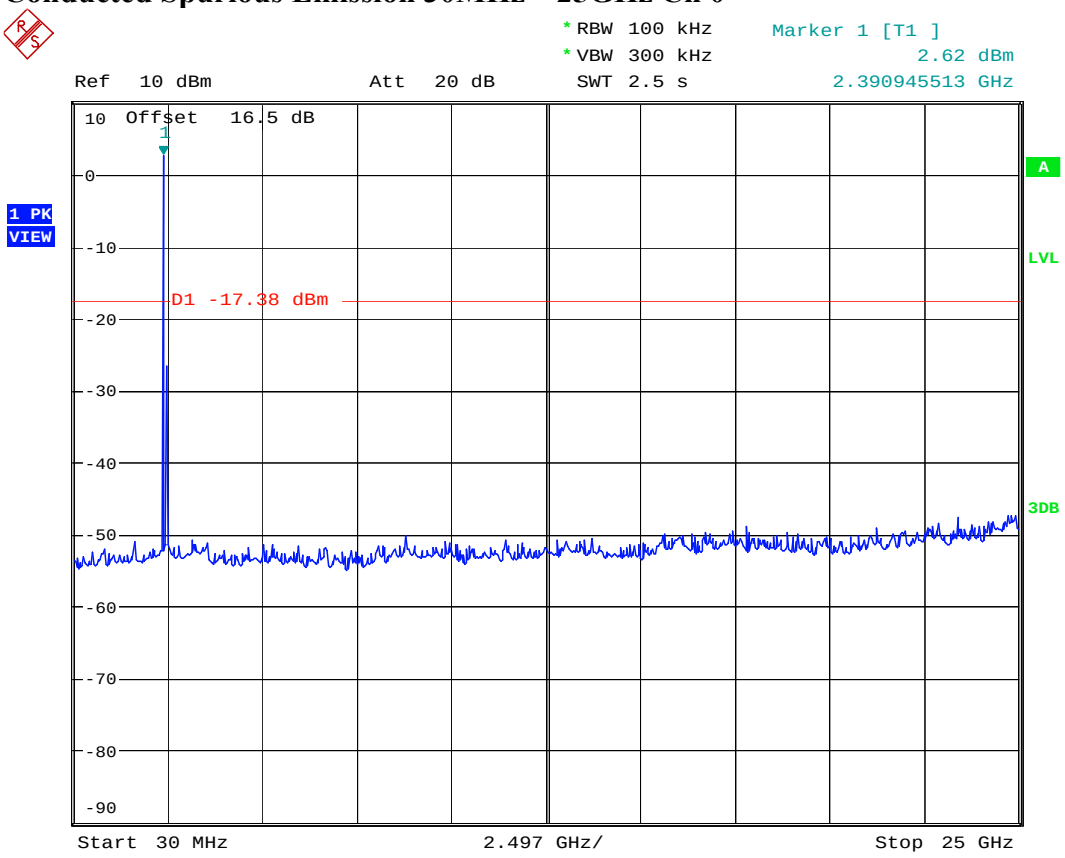
Date: 30.JAN.2010 14:48:26

Conducted Spurious Emission 200kHz – 30MHz (Worst case for all channels)



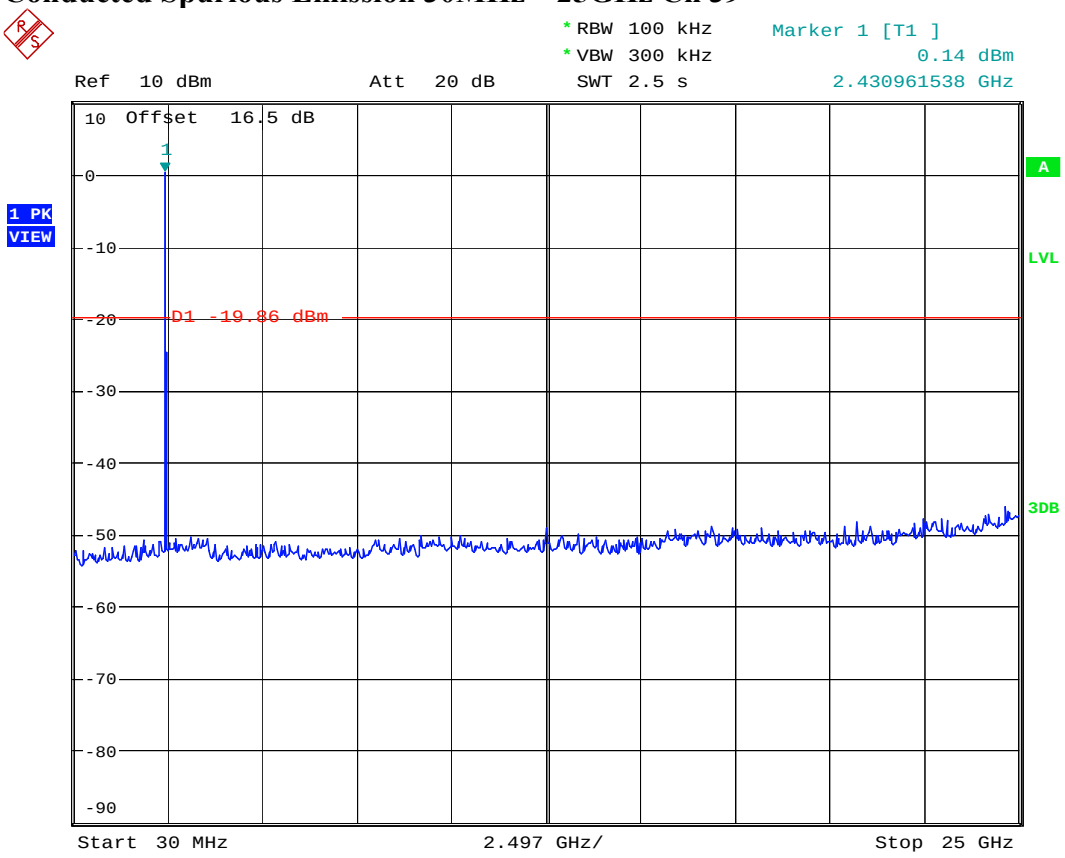
Date: 30.JAN.2010 14:49:36

Conducted Spurious Emission 30MHz – 25GHz Ch 0



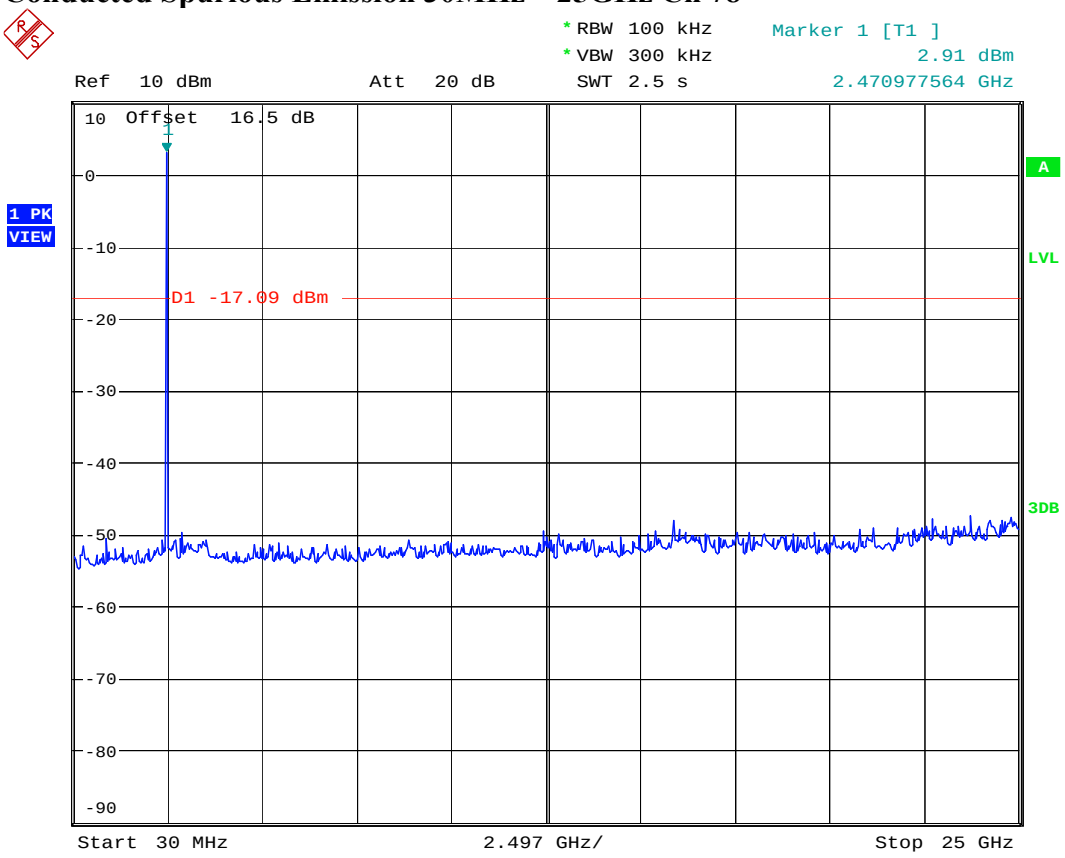
Date: 30.JAN.2010 14:39:40

Conducted Spurious Emission 30MHz – 25GHz Ch 39



Date: 30.JAN.2010 14:41:20

Conducted Spurious Emission 30MHz – 25GHz Ch 78



Date: 30.JAN.2010 14:43:16

5.11 Transmitter Spurious Emissions- Radiated

5.11.1 Limits: §15.247/15.205

(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			

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. 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)).
*PEAK LIMIT= 74dBµV/m
*AVG. LIMIT= 54dBµV/m

5.11.2 Limits: §15.209

(For measurement distance of 3m)

Frequency of emission (MHz)	Field strength (µV/m)
30–88	100 (40dBµV/m)
88–216	150 (43.5 dBµV/m)
216–960	200 (46 dBµV/m)
Above 960	500 (54 dBµV/m)

NOTE:
1. The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3 and 25 GHz very short cable connections to the antenna was used to minimize the noise level.

2. All measurements are done in Peak mode using an Average limit, unless specified within the plots.

5.11.3 Limits: §15.209

Frequency of emission (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

5.11.4 Test Result:
No significant emissions measurable. Plots reported here represent the worse case emissions for all operating modes.

Frequency of emission	Result
9KHz – 30MHz	No significant emissions measurable

5.11.5 Test data/ plots:

30MHz – 1GHz

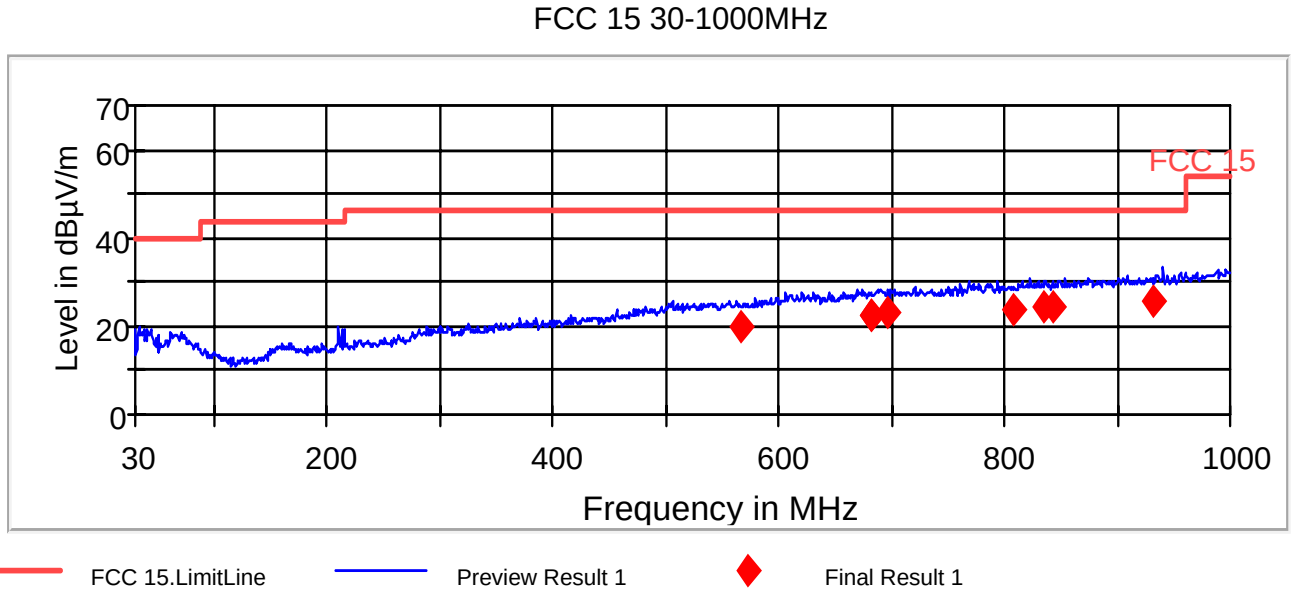
NOTE: Worst case for all channels

Description:

EUT Name:	V01B
Manufacturer:	Dell Inc.
Test Mode:	BT CH 39
Voltage:	ac adapter

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
567.290760	20.0	20.000	120.000	270.0	H	210.0	21.8	26.0	46.0
681.649410	22.5	20.000	120.000	186.0	H	287.0	24.3	23.5	46.0
682.919975	22.5	20.000	120.000	256.0	H	45.0	24.4	23.5	46.0
696.619380	22.9	20.000	120.000	143.0	H	1.0	24.7	23.1	46.0
807.303862	23.9	20.000	120.000	270.0	H	309.0	25.5	22.1	46.0
835.777081	24.3	20.000	120.000	153.0	H	64.0	25.9	21.7	46.0
842.716718	24.5	20.000	120.000	199.0	H	315.0	25.9	21.5	46.0
931.784077	25.6	20.000	120.000	120.0	H	315.0	26.8	20.4	46.0

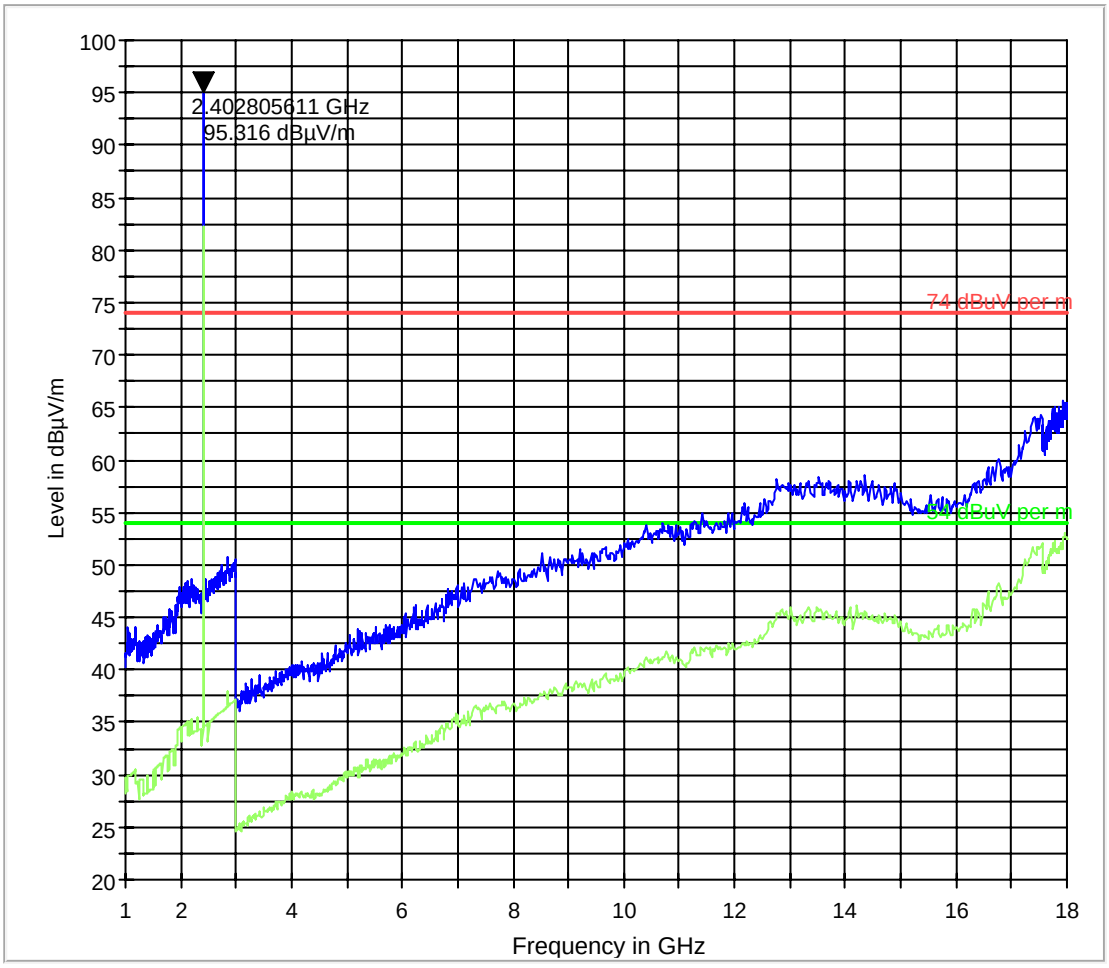


1GHz – 18GHz Channel 0
NOTE: Peak over the limit is the carrier frequency

EUT Name: V01B
Manufacturer: Dell Inc.

Test Mode: BT CH 0
Voltage: ac adapter

FCC 15 1-18GHz

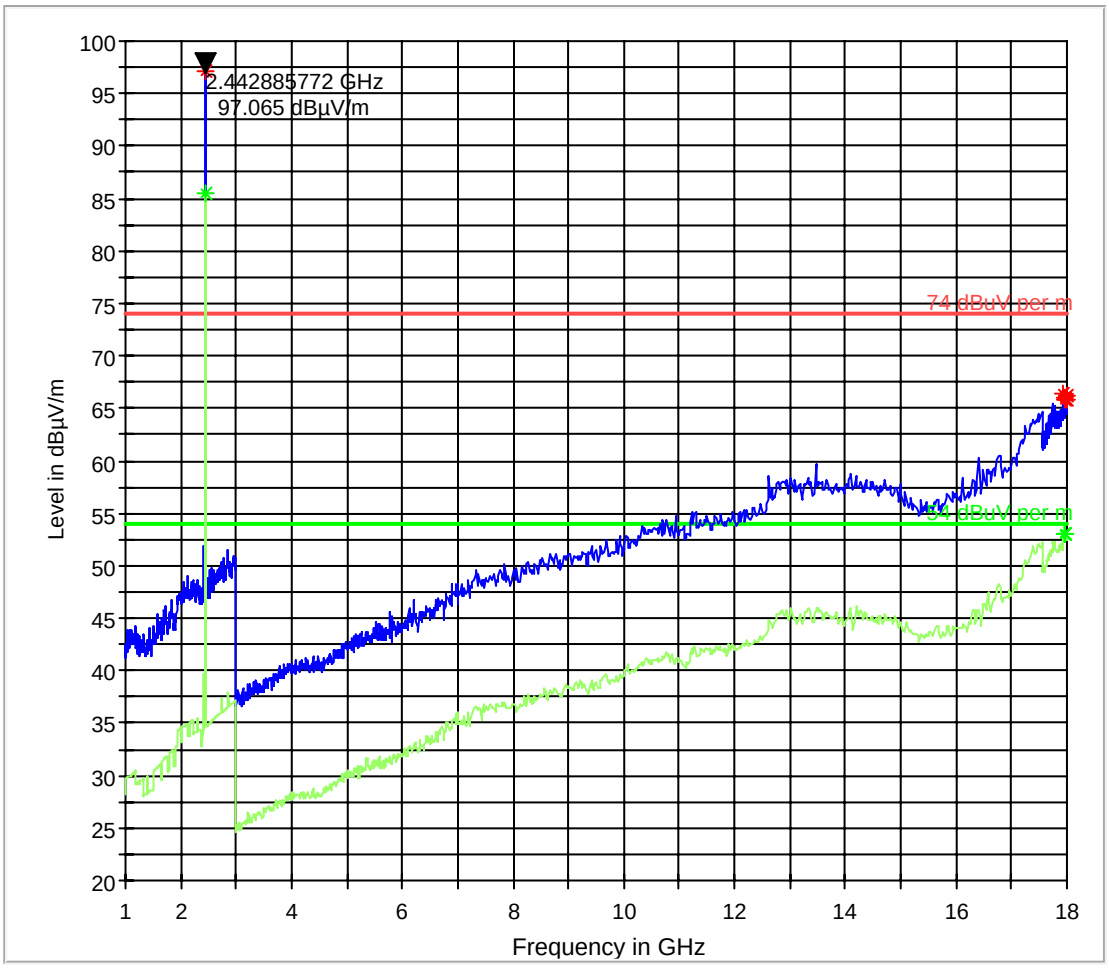


1GHz – 18GHz Channel 39

NOTE: Peak over the limit is the carrier frequency

EUT Name:	V01B
Manufacturer:	Dell Inc.
Test Mode:	BT CH 39
Voltage:	ac adapter

FCC 15 1-18GHz



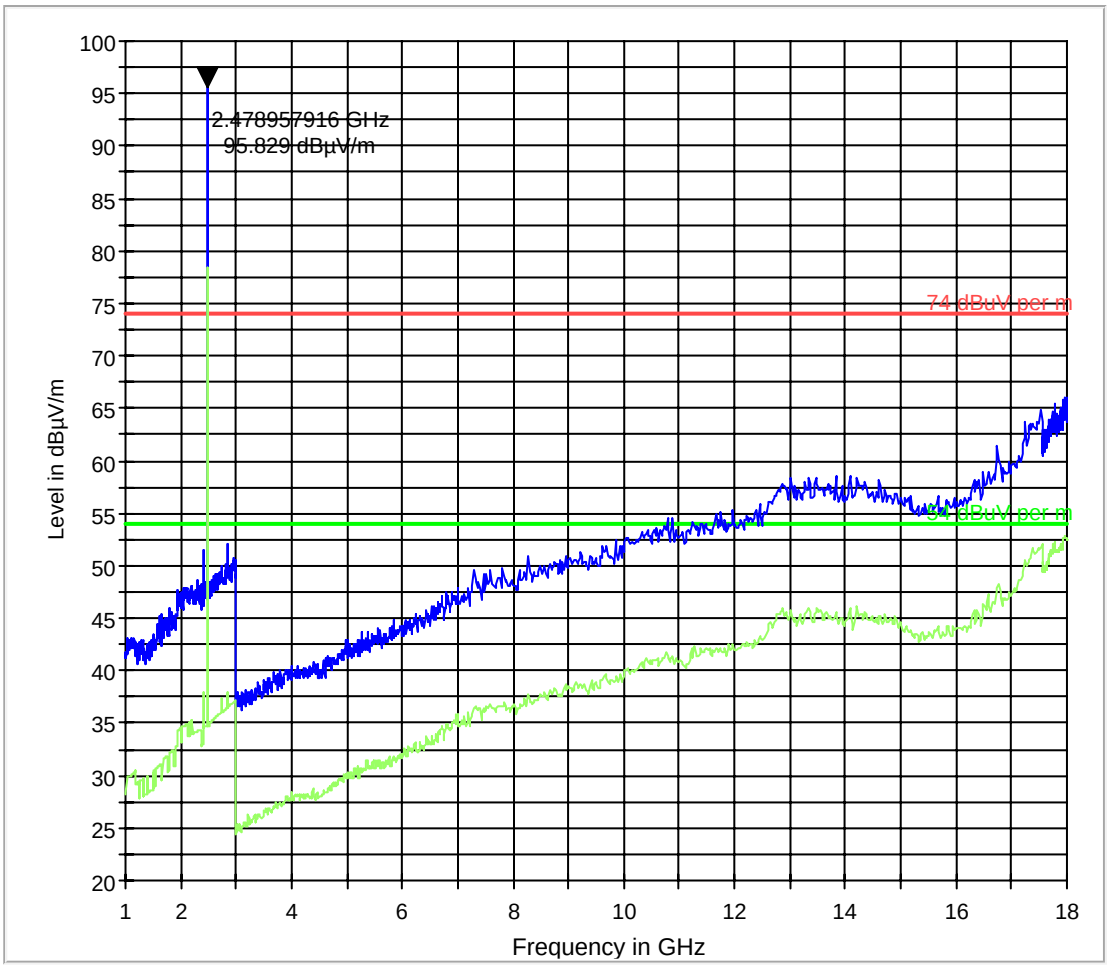
1GHz – 18GHz Channel 78

NOTE: Peak over the limit is the carrier frequency

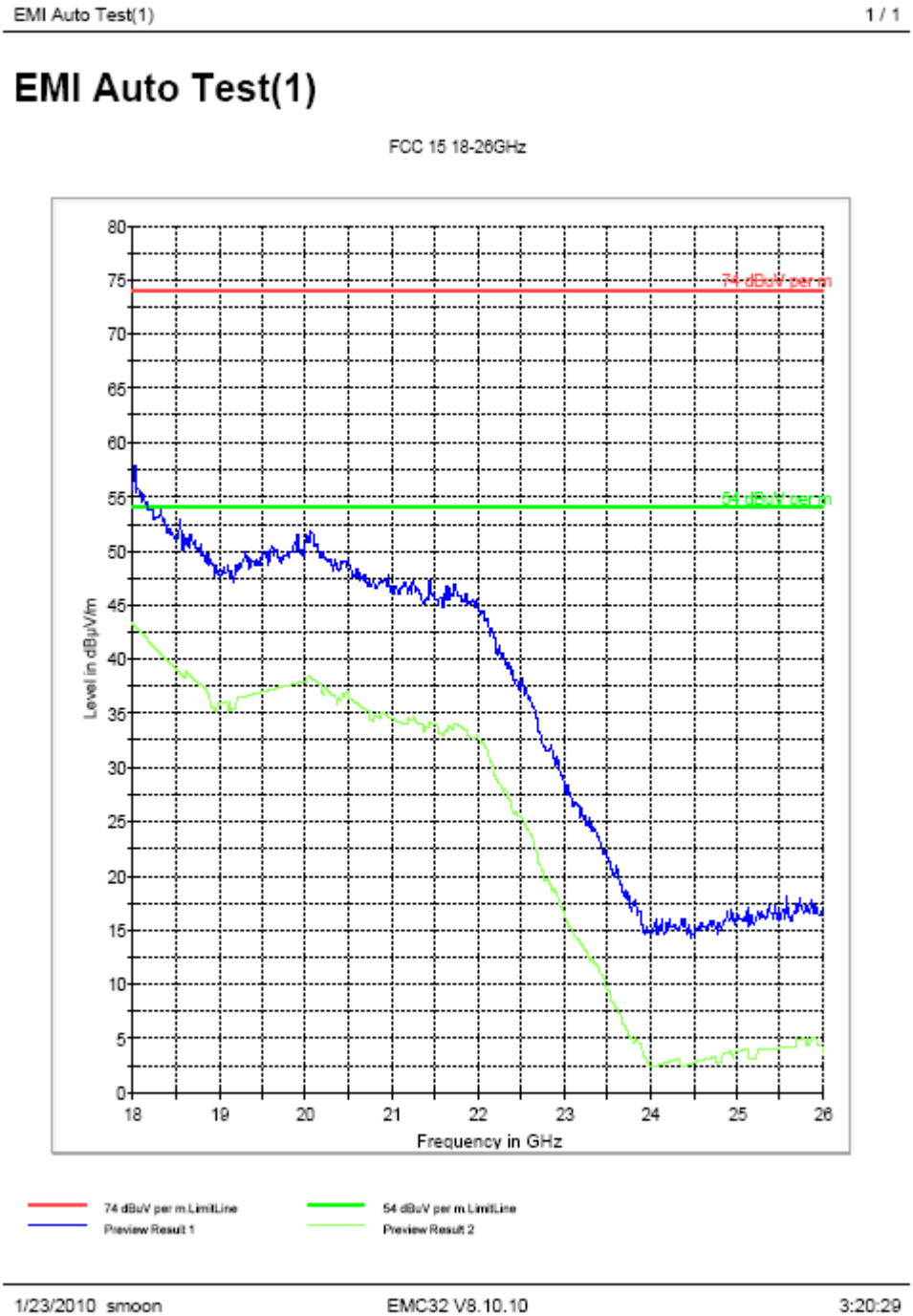
EUT Name: V01B
Manufacturer: Dell Inc.

Test Mode: BT CH 78
Voltage: ac adapter

FCC 15 1-18GHz



18GHz – 26GHz
NOTE: Worst case for all channels



5.12 Receiver Spurious Emissions- Radiated

5.12.1 Limits: §15.109

Frequency of emission (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 (40dBµV/m)	3
88–216	150 (43.5 dBµV/m)	3
216–960	200 (46 dBµV/m)	3
Above 960	500 (54 dBµV/m)	3

5.12.2 Test Conditions:
Modulation: GFSK

5.12.3 Test Result:
No significant emissions measurable. Plots reported here represent the worse case emissions for all operating modes and all channels.

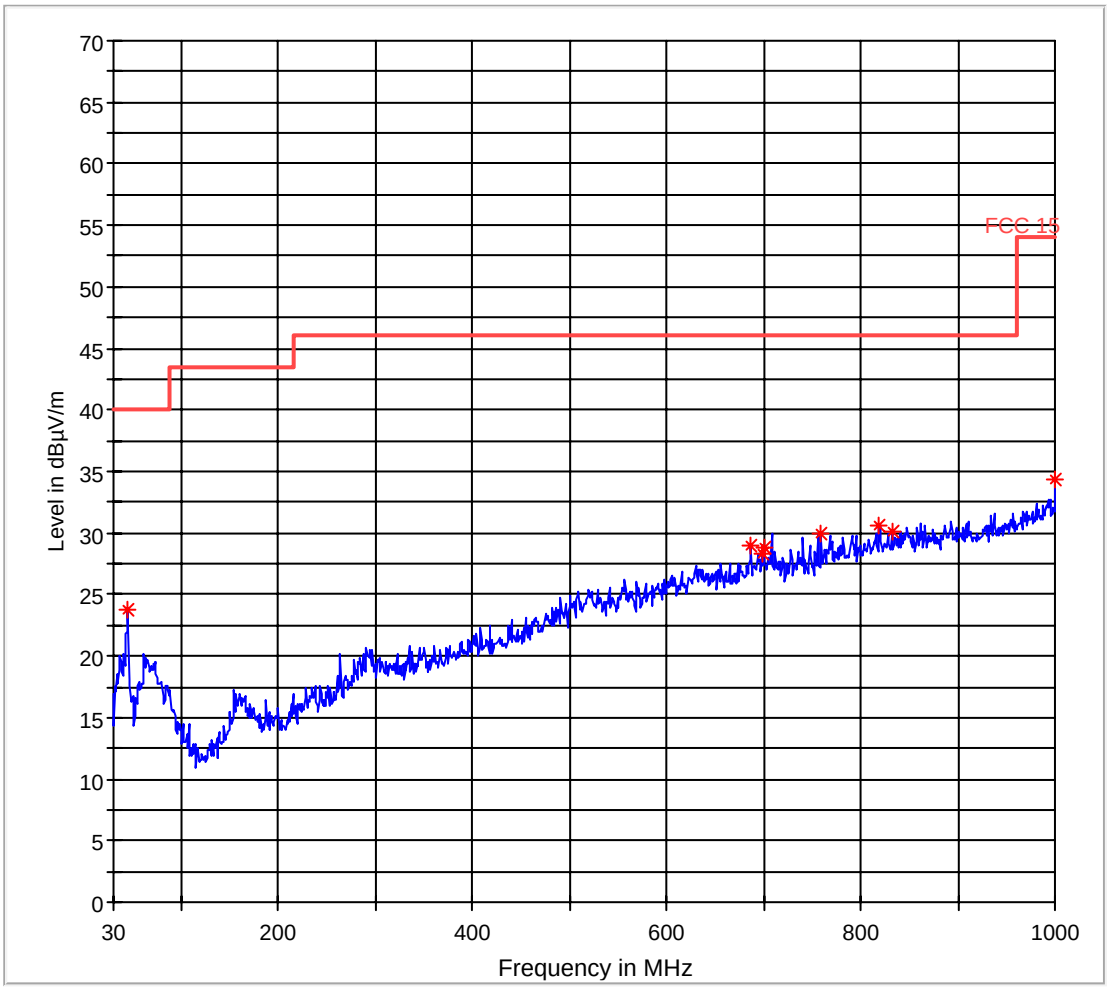
5.12.4 Test data/ plots:

30MHz – 1GHz

EUT Name: V01B
Manufacturer: Dell Inc.

Test Mode: BT RX
Voltage: ac adapter

FCC 15 30-1000MHz

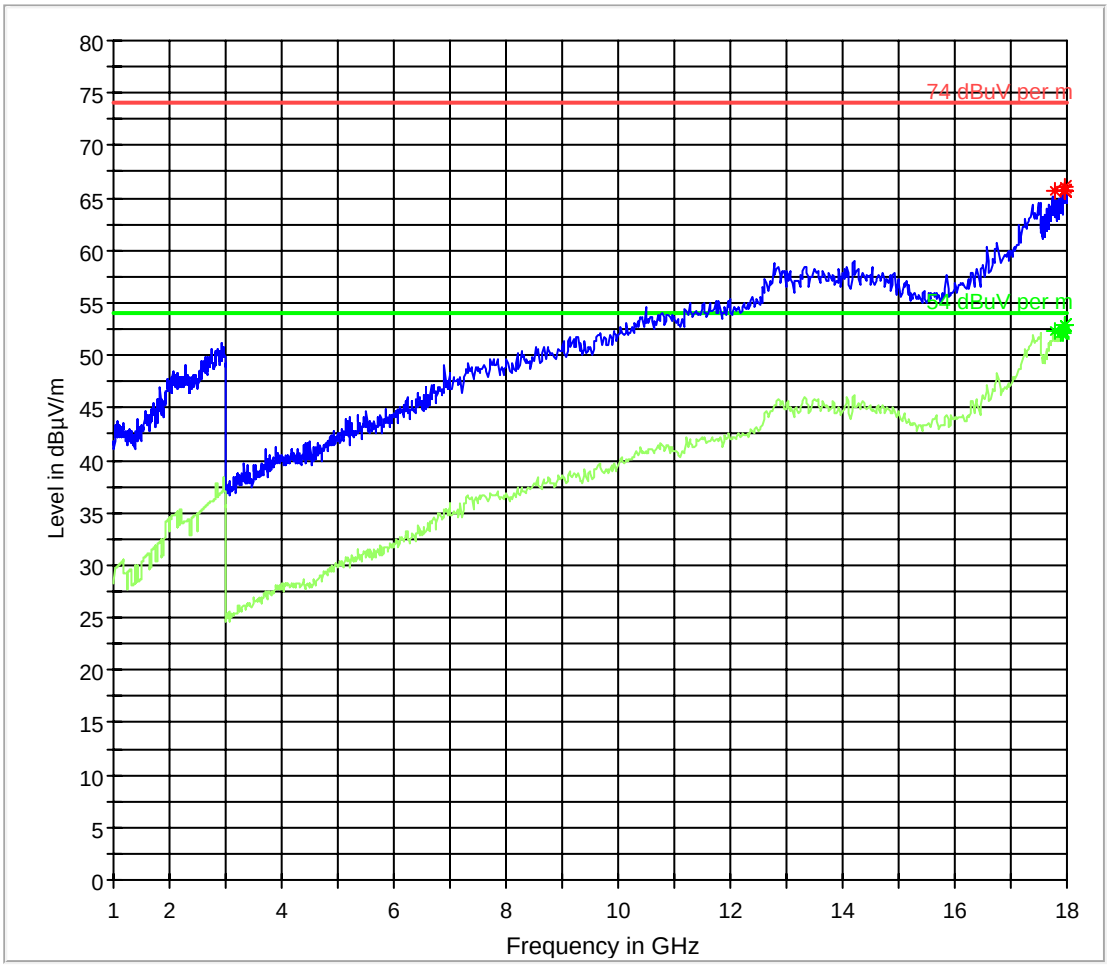


1GHz – 18GHz

EUT Name: V01B
Manufacturer: Dell Inc.

Test Mode: BT RX
Voltage: ac adapter

FCC 15 1-18GHz



74 dBuV per m.LimitLine
54 dBuV per m.LimitLine
Preview Result 1
Preview Result 2
Data Reduction 1 [2]
Data Reduction 2 [2]

5.13 AC Power Line Conducted Emissions

5.13.1 Limits: §15.107/15.207

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

*Decreases with the logarithm of the frequency.

Analyzer Settings: RBW = 10KHz; VBW = 10KHz

5.13.2 Test Conditions:

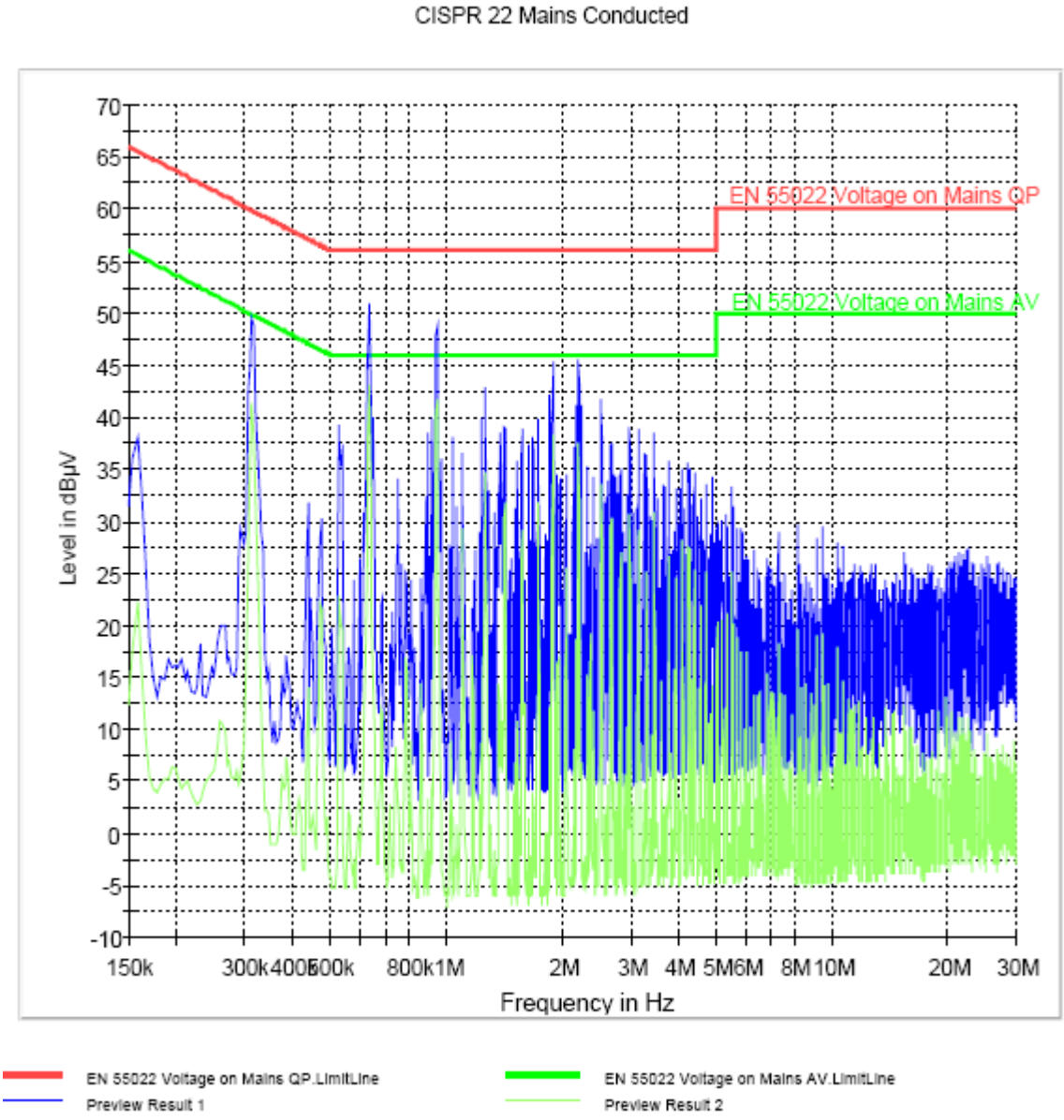
Modulation: GFSK

5.13.3 Test Result:

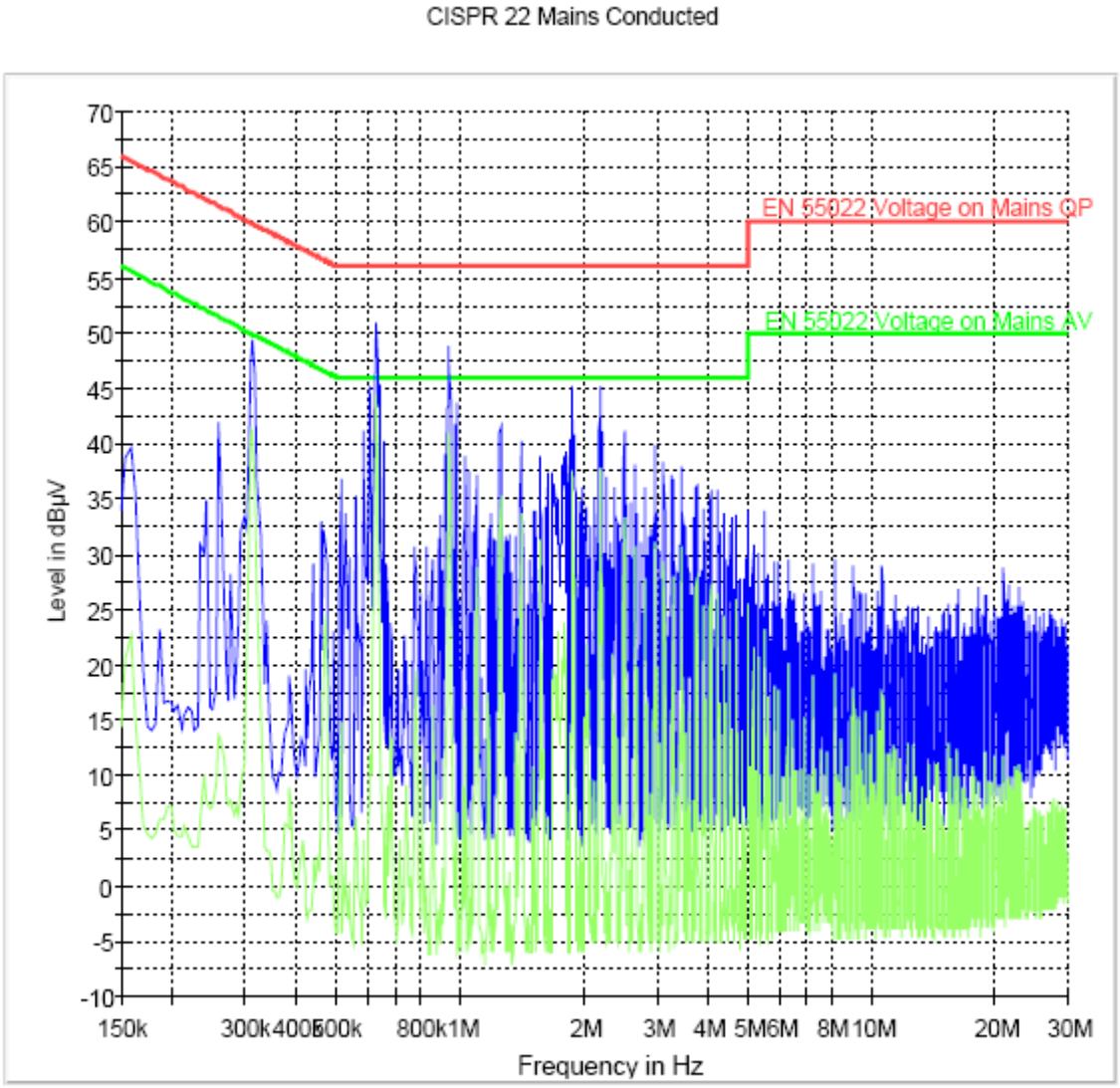
No significant emissions measurable. Plots reported here represent the worse case emissions.

5.13.4 Test data/ plots:

TX Mode



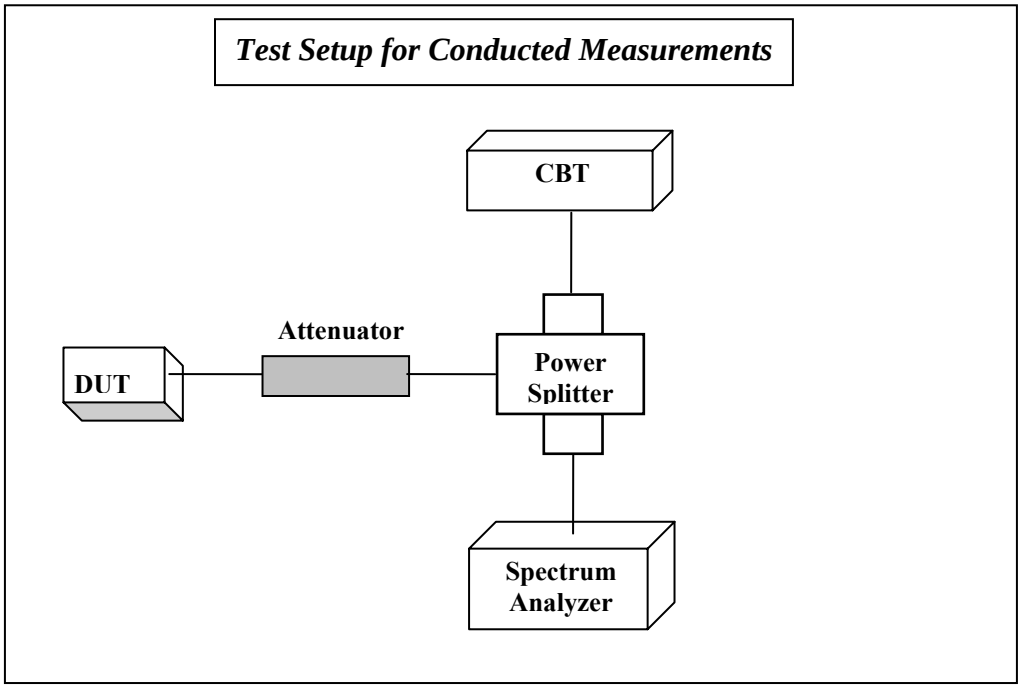
RX Mode

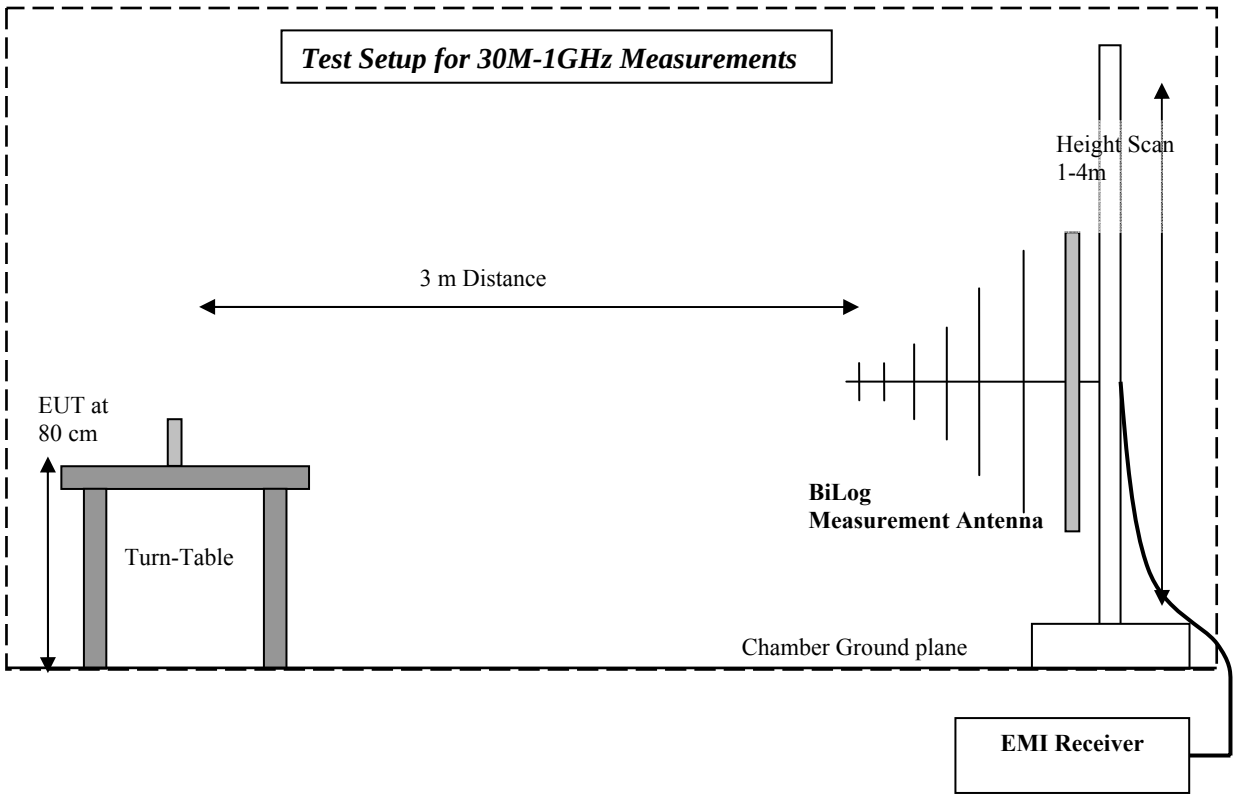

CISPR 22 Mains Conducted
EN 55022 Voltage on Mains QP
EN 55022 Voltage on Mains AV
Level in dBµV
Frequency in Hz
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
-5
-10
150k
300k
400k
500k
800k
1M
2M
3M
4M
5M
6M
8M
10M
20M
30M
EN 55022 Voltage on Mains QP.LimitLine
Preview Result 1
EN 55022 Voltage on Mains AV.LimitLine
Preview Result 2

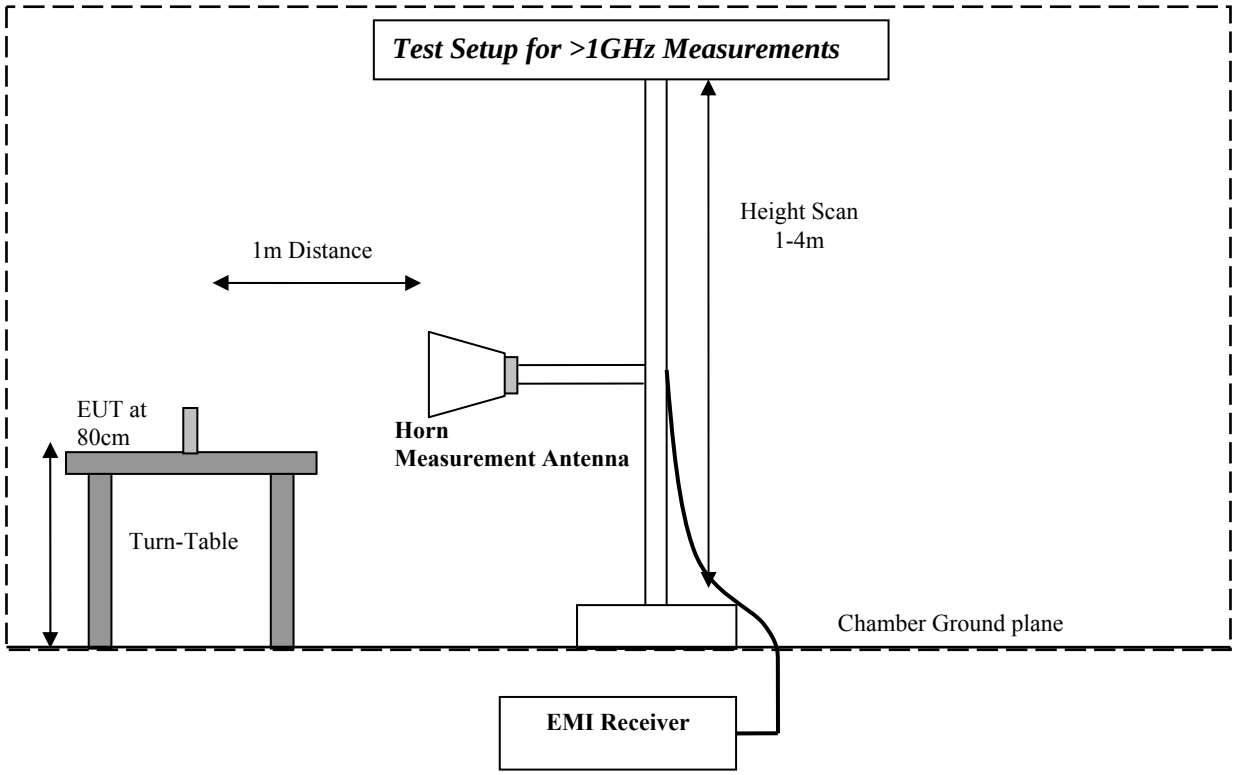
6 Test Equipment and Ancillaries used for tests

No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Cal Due	Interval
01	Spectrum Analyzer	ESIB 40	Rohde & Schwarz	100107	May 2010	1 year
02	Spectrum Analyzer	FSEM 30	Rohde & Schwarz	100017	May 2010	1 year
03	Signal Generator	SMY02	Rohde & Schwarz	836878/011	May 2010	1 year
04	Power-Meter	NRVD	Rohde & Schwarz	0857.8008.02	May 2010	1 year
05	Biconilog Antenna	3141	EMCO	0005-1186	June 2010	1 year
06	Horn Antenna (1-18GHz)	SAS-200/571	AH Systems	325	June 2010	1 year
07	Horn Antenna (18-26.5GHz)	3160-09	EMCO	1240	June 2010	1 year
08	Power Splitter	11667B	Hewlett Packard	645348	n/a	n/a
09	Climatic Chamber	VT4004	Voltsch	G1115	May 2010	1 year
10	High Pass Filter	5HC2700	Trilithic Inc.	9926013	n/a	n/a
11	High Pass Filter	4HC1600	Trilithic Inc.	9922307	n/a	n/a
12	Pre-Amplifier	JS4-00102600	Miteq	00616	May 2010	1 year
13	Power Sensor	URV5-Z2	Rohde & Schwarz	DE30807	May 2010	1 year
14	Digital Radio Comm. Tester	CMD-55	Rohde & Schwarz	847958/008	May 2010	1 year
15	Universal Radio Comm. Tester	CMU 200	Rohde & Schwarz	832221/06	May 2010	1 year
16	LISN	ESH3-Z5	Rohde & Schwarz	836679/003	May 2010	1 year
17	Loop Antenna	6512	EMCO	00049838	July 2010	2 years

7 BLOCK DIAGRAMS






Test Setup for >1GHz Measurements
Height Scan
1-4m
1m Distance
EUT at
80cm
Horn
Measurement Antenna
Turn-Table
Chamber Ground plane
EMI Receiver

8 Revision History

Date	Changes to report	Report prepared by
2010-04-07	**Original Report**	**Satya Radhakrishna**