Test Report

FCC Part 15.247 for DSSS systems

Model #: A1303
FCC ID: BCGA1303A

Apple Inc.
1 Infinite Loop Mail Stop26A
Cupertino, California 95014
U.S.A

TEST REPORT #: EMC_APPLE_047_09001_15.247_BCGA1303A
DATE: 2009-5-27

Bluetooth Qualification Test Facility (BQTF)

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 Part 15.247 of the Code of Federal Regulations.

Company	Description	Model #
Apple Inc.	This device is a GSM and WCDMA smart handset with WiFi, Bluetooth +EDR, and iPod and application functions.	A1303

Technical responsibility for area of testing:

Date	Section	Name	Signature
2009-5-27	EMC & Radio	Heiko Strehlow (Director Regulatory and Antenna Services)	Heiko Strehlow Digitally signed by Heiko Strehlow DN: cn=Heiko Strehlow, c=US, o=CETECOM Inc., email=heiko.strehlow@cetecomusa.com Date: 2009.05.28 16:14:59 -07'00'

This report is prepared by:

Date	Section	Name	Signature
2009-5-27	EMC & Radio	Marc Douat (Test Lab Manager)	Marc Douat 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:	**EMC**
Address:	**411 Dixon Landing Road** **Milpitas, CA 95035** **U.S.A.**
Telephone:	**+1 (408) 586 6200**
Fax:	**+1 (408) 586 6299**
Responsible Test Lab Manager:	**Heiko Strehlow**
Responsible Project Leader:	**Marc Douat**

2.2 Identification of the Client

APPLICANT	
Applicant (Company Name)	**Apple Inc.**
Street Address	**1 Infinite Loop Mail Stop26A**
City/Zip Code	**Cupertino, California 95014**
Country	**USA**
Contact Person	**Robert Steinfeld**
Telephone	**408-974-2618**
Fax	**408-862-5061**
e-mail	**steinfe1@apple.com**

2.3 Identification of the Manufacturer

Same as above applicant.

3 Equipment Under Test (EUT)

3.1 Specification of the Equipment under Test

EUT	
Marketing Name of EUT (if not same as Model No.)	**iPhone 3G**
Description	**This device is a GSM and WCDMA smart handset with WiFi, Bluetooth +EDR, and iPod and application functions.**
Model No.	**A1303**
H/W	**REV4-16GB**
	04.24.02 (7A290)
FCC-ID:	**BCGA1303A**

Frequency Range:	**2400MHz – 2483.5MHz**
Type(s) of Modulation:	**CCK, OFDM**
Number of Channels:	**11**
Antenna Type:	**IFA - inverted F Antenna 1.2dBi gain**
Output Power:	**Conducted 802.11b: 19.94 dBm, 98.6 mW** **Conducted 802.11g: 25.58 dBm, 361.4 mW** **Radiated 802.11b: 21.14 dBm, 130.0 mW** **Radiated 802.11g: 26.78 dBm, 476.4 mW**

3.2 Identification of the Equipment under Test (EUT)

EUT #	TYPE	MANF.	MODEL
1	EUT	Apple Inc	A1303

3.3 Identification of Accessory equipment

AE #	TYPE	MANF.	MODEL
1	AC/DC ADAPTER	Flextronics	A1265

4 Subject Of Investigation

During the testing process the EUT was tested in b mode with 11Mbps data rate and in g mode with 54Mbps data rate which yielded the worst case results. All data in this report shows the worst case between horizontal and vertical polarization for above 1GHz.

The objective of the measurements done by Cetecom Inc. was to measure the performance of the EUT as specified by requirements listed in FCC rules Part 15.247 of Title 47 of the Code of Federal Regulations.

5 Measurements (Radiated)

5.1 MAXIMUM PEAK OUTPUT POWER § 15.247 (RADIATED)

5.1.1 LIMIT SUB CLAUSE § 15.247 (b) (1) (2) (3) (4)

Frequency range	RF power output
2400-2483.5 MHz	36dBm EIRP

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

5.1.2 EIRP

EIRP = Conducted Output Power + Antenna Gain (1.2dBi)

TEST CONDITIONS	MAXIMUM PEAK OUTPUT POWER (dBm)		
Frequency (MHz)	2412	2437	2462
802.11b	20.14	20.53	21.14
802.11g	26.5	26.78	26.39
Measurement uncertainty	±0.5dBm		

5.2 RESTRICTED BAND EDGE COMPLIANCE RADIATED §15.247/15.205

5.2.1 LIMITS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

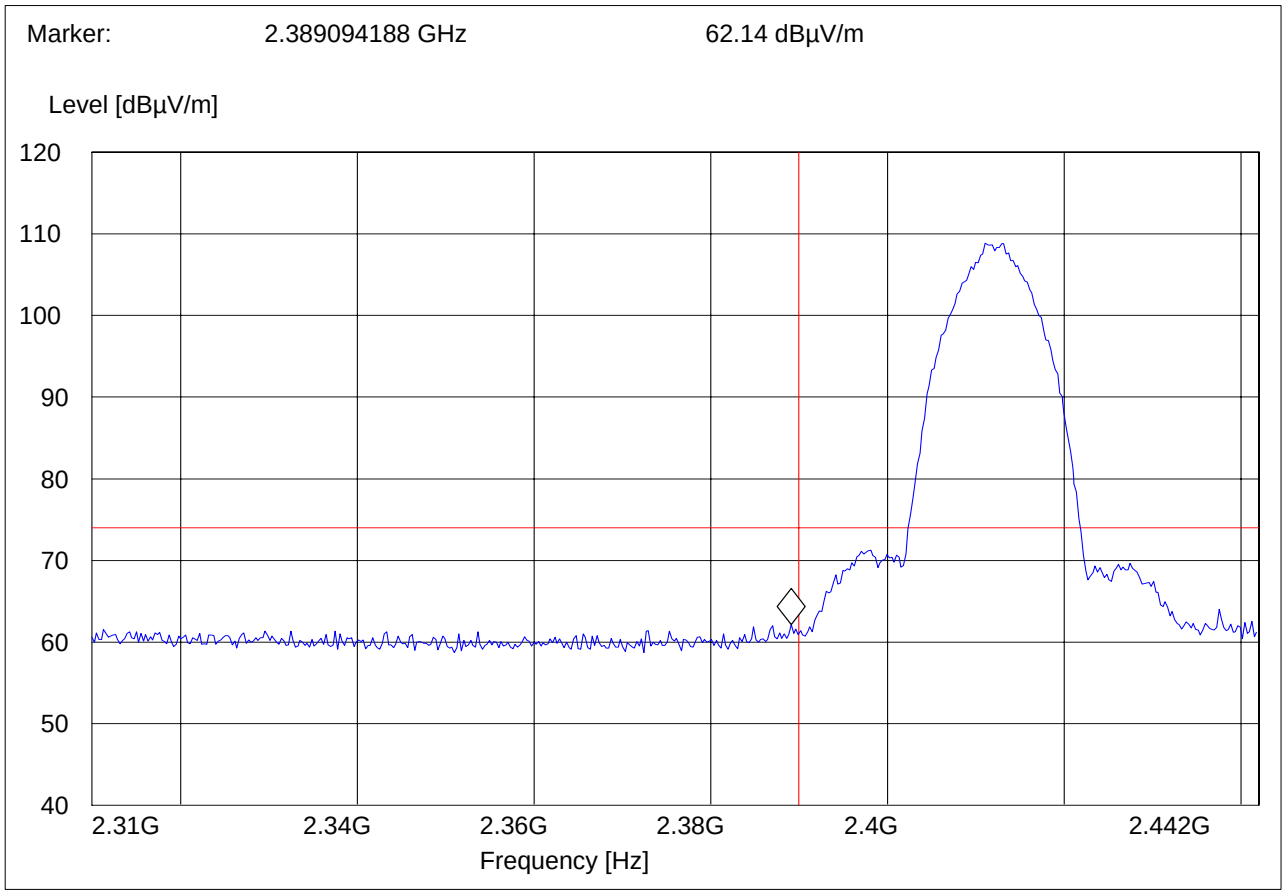
***PEAK LIMIT= 74dBuV/m**
***AVG. LIMIT= 54dBuV/m**

PEAK, 802.11 b MODE (2412MHz)

EUT: A1303
Customer:: APPLE
Test Mode: 802.11b
ANT Orientation: H
EUT Orientation: V
Test Engineer: SAM
Voltage: BATTERY
Comments: 16.5 dbm

SWEEP TABLE: "FCC15.247 LBE_PK 3m"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.3 GHz	2.4 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert MaxPeak

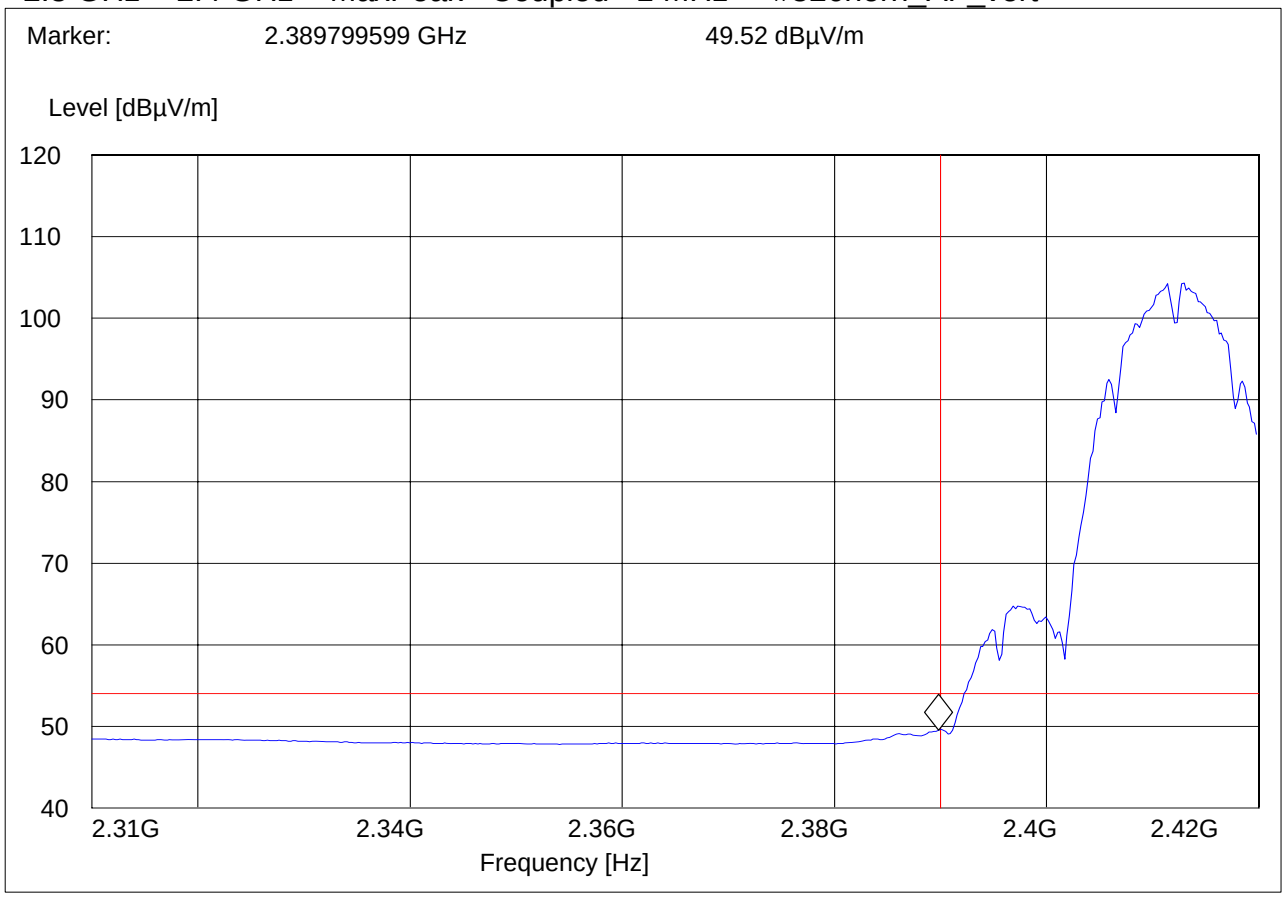


AVG, 802.11 b MODE (2412MHz)

EUT: A1303
Customer:: APPLE
Test Mode: 802.11b
ANT Orientation: H
EUT Orientation: V
Test Engineer: SAM
Voltage: BATTERY
Comments: 16.5 dbm

SWEEP TABLE: "FCC15.247 LBE_AVG 3m"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.3 GHz	2.4 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

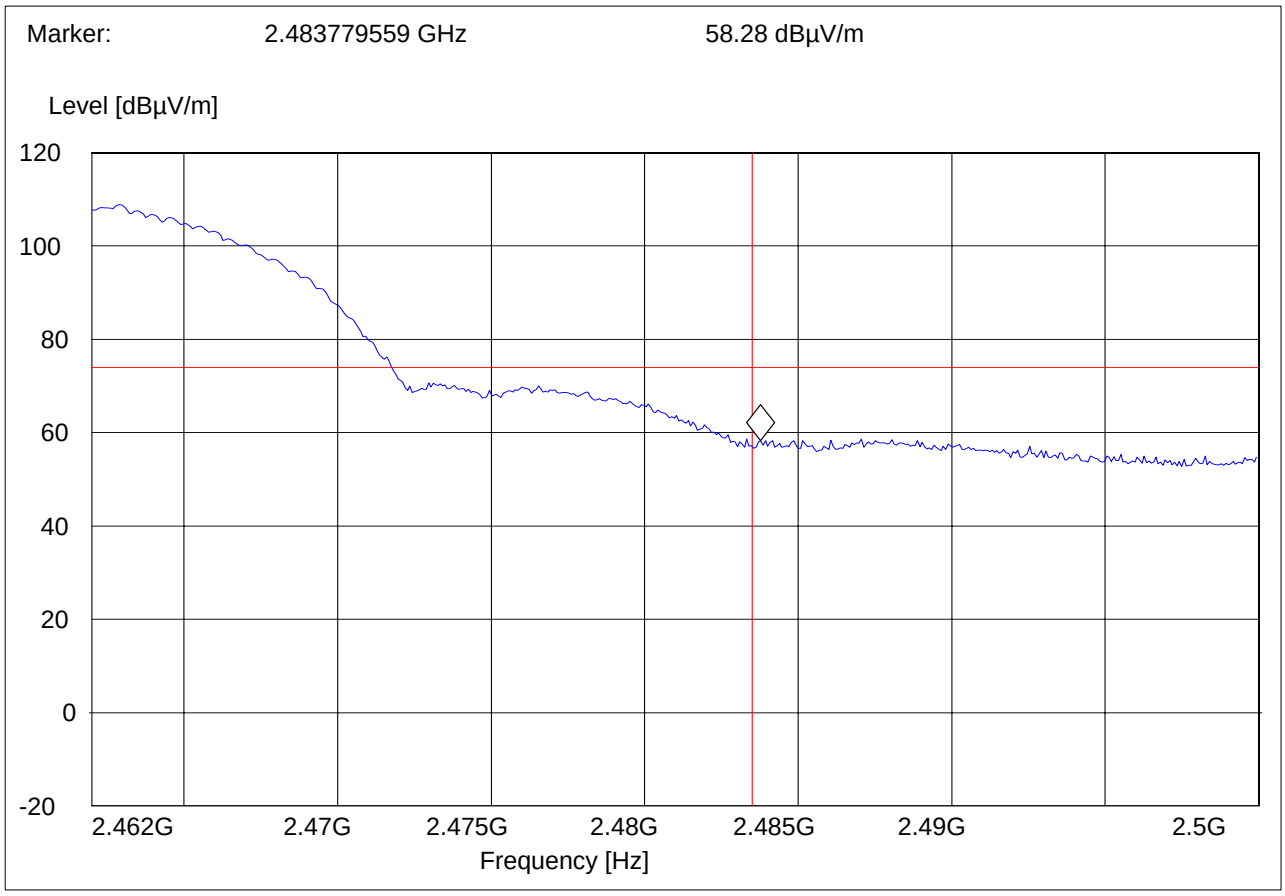


PEAK, 802.11 b MODE (2462MHz)

EUT: A1303
Customer:: APPLE
Test Mode: 802.11b
ANT Orientation: H
EUT Orientation: V
Test Engineer: SAM
Voltage: BATTERY
Comments: 16.5 dbm

SWEEP TABLE: "FCC15.247 HBE_PK 3m"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.5 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert MaxPeak

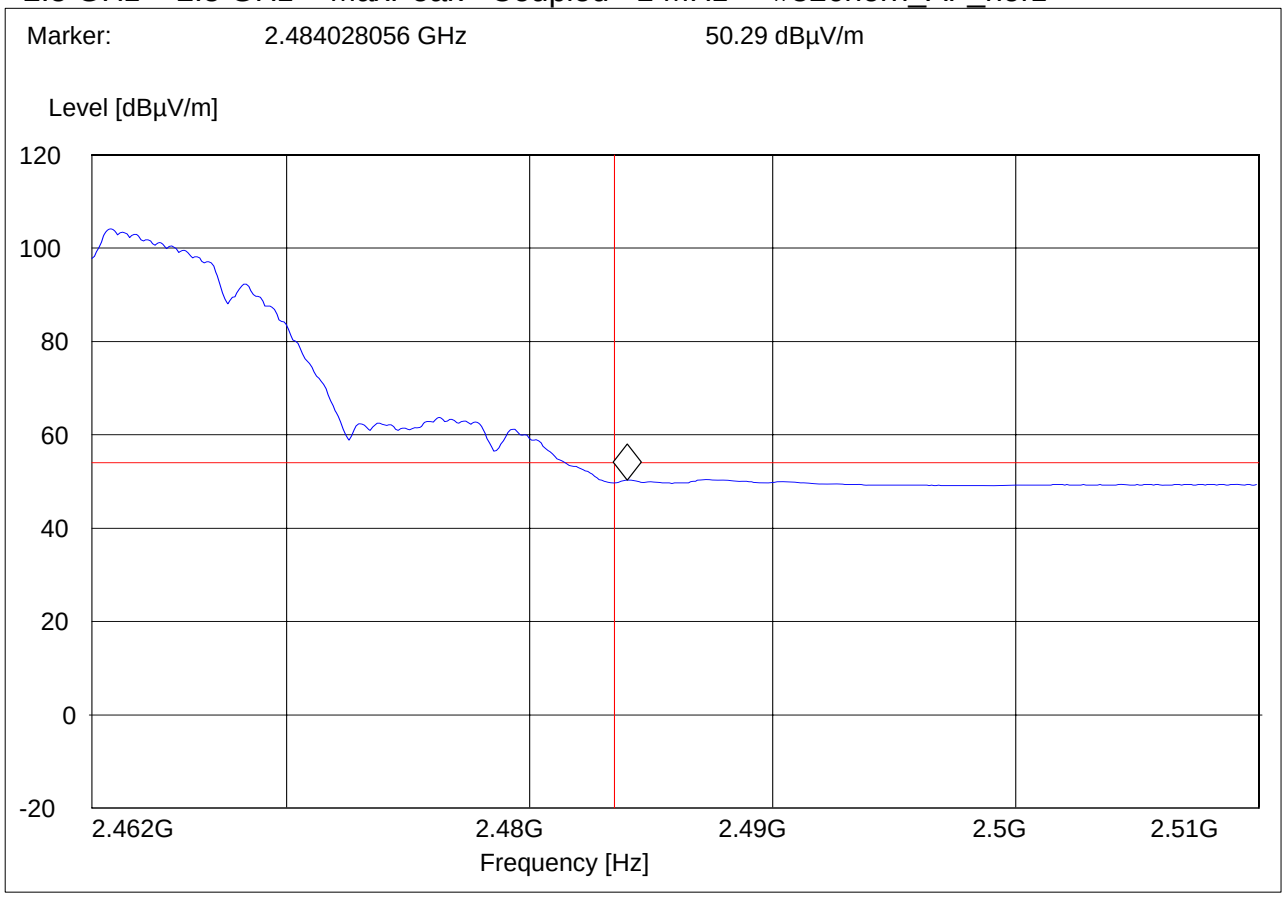


AVG, 802.11 b MODE (2462MHz)

EUT: A1303
Customer:: APPLE
Test Mode: 802.11b
ANT Orientation: H
EUT Orientation: V
Test Engineer: SAM
Voltage: BATTERY
Comments: 16.5 dbm

SWEEP TABLE: "FCC15.247 HBE_AVG 3m"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.5 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz

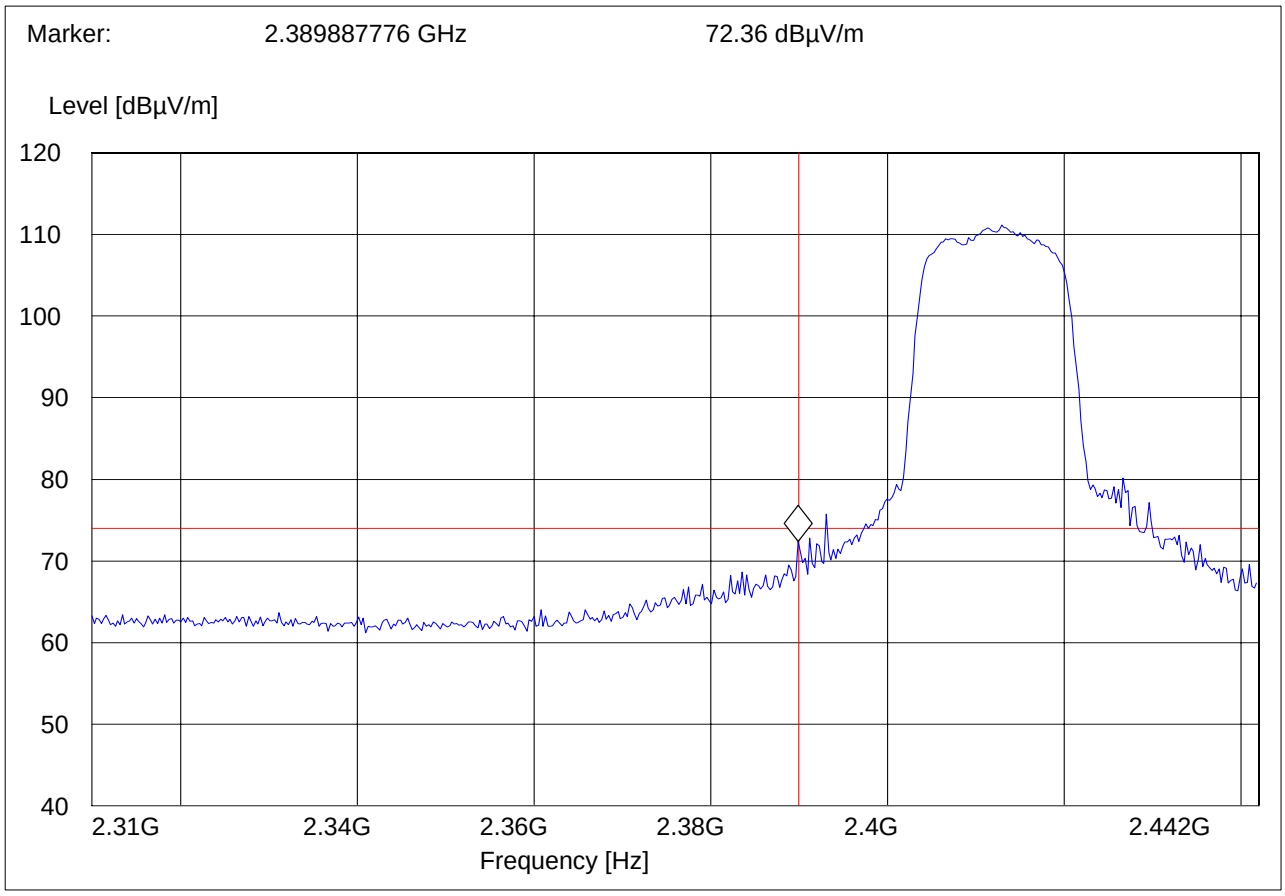


PEAK, 802.11g MODE (2412MHz)

EUT: A1303
Customer:: APPLE
Test Mode: 802.11g
ANT Orientation: H
EUT Orientation: V
Test Engineer: SAM
Voltage: BATTERY
Comments: 15.5 dbm

SWEEP TABLE: "FCC15.247 LBE_PK 3m"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.3 GHz	2.4 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert MaxPeak

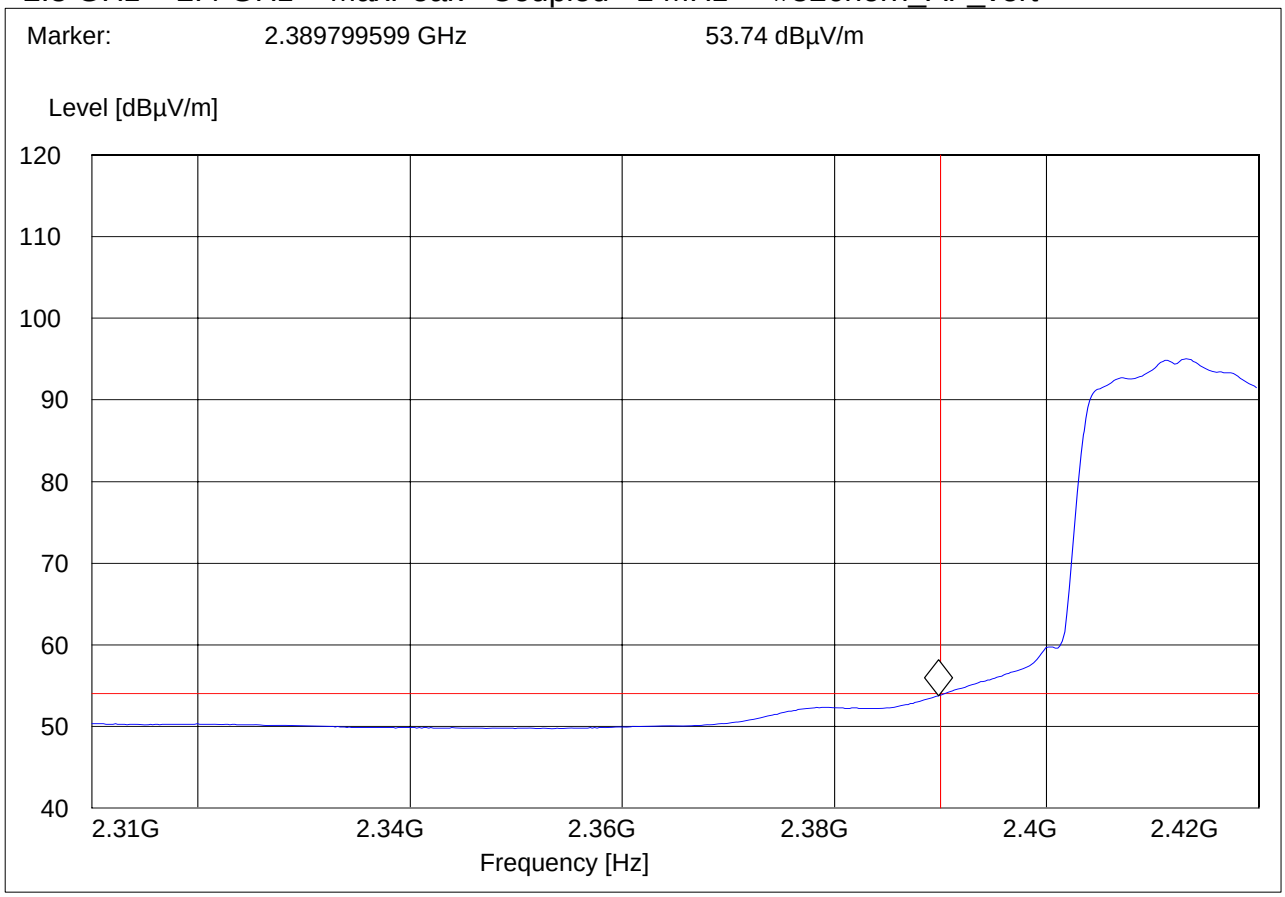


AVG, 802.11g MODE (2412MHz)

EUT: A1303
Customer:: APPLE
Test Mode: 802.11g
ANT Orientation: H
EUT Orientation: V
Test Engineer: SAM
Voltage: BATTERY
Comments: 15.5 dbm

SWEEP TABLE: "FCC15.247 LBE_AVG 3m"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.3 GHz	2.4 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

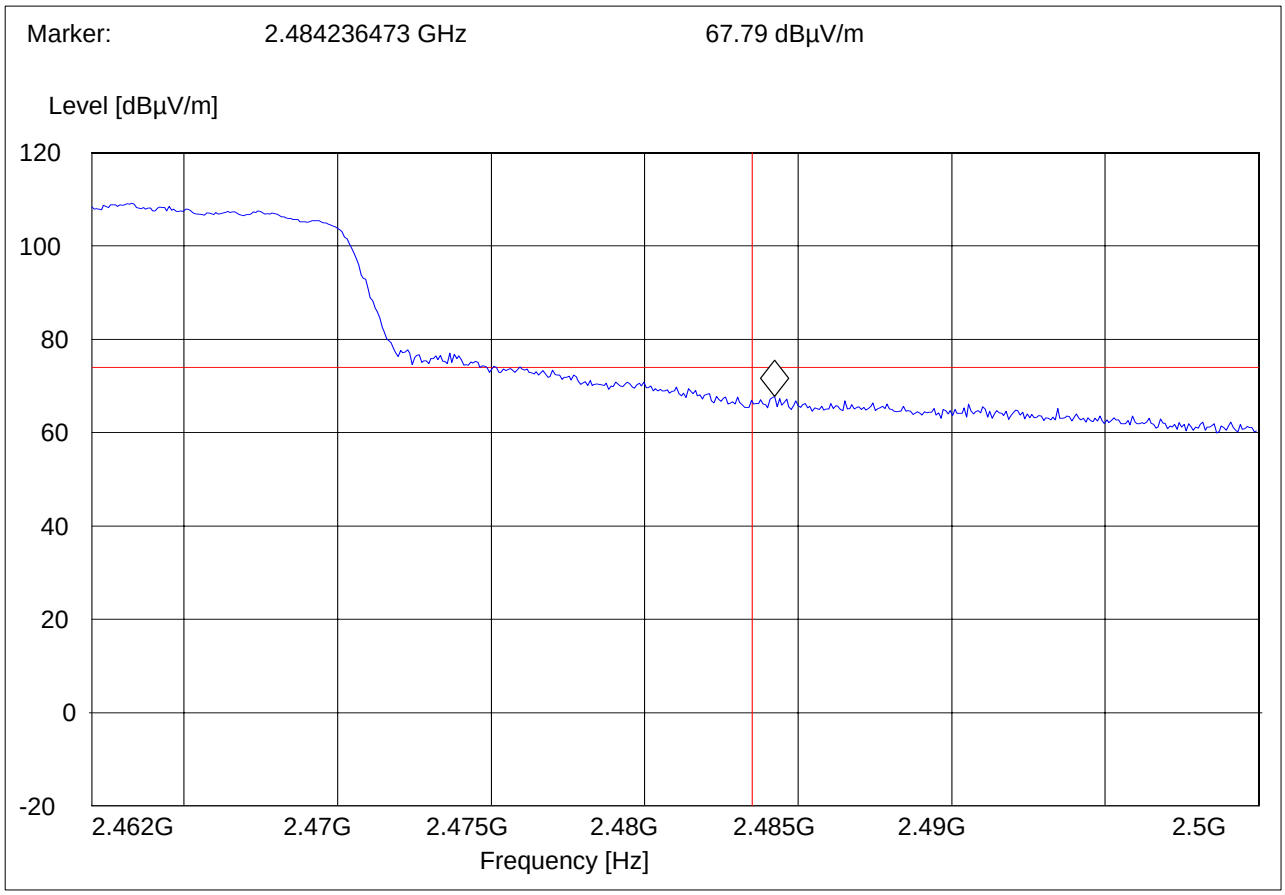


PEAK, 802.11g MODE (2462MHz)

EUT: A1303
Customer:: APPLE
Test Mode: 802.11g
ANT Orientation: H
EUT Orientation: V
Test Engineer: SAM
Voltage: BATTERY
Comments: 16.5 dbm

SWEEP TABLE: "FCC15.247 HBE_PK 3m"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.5 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert MaxPeak

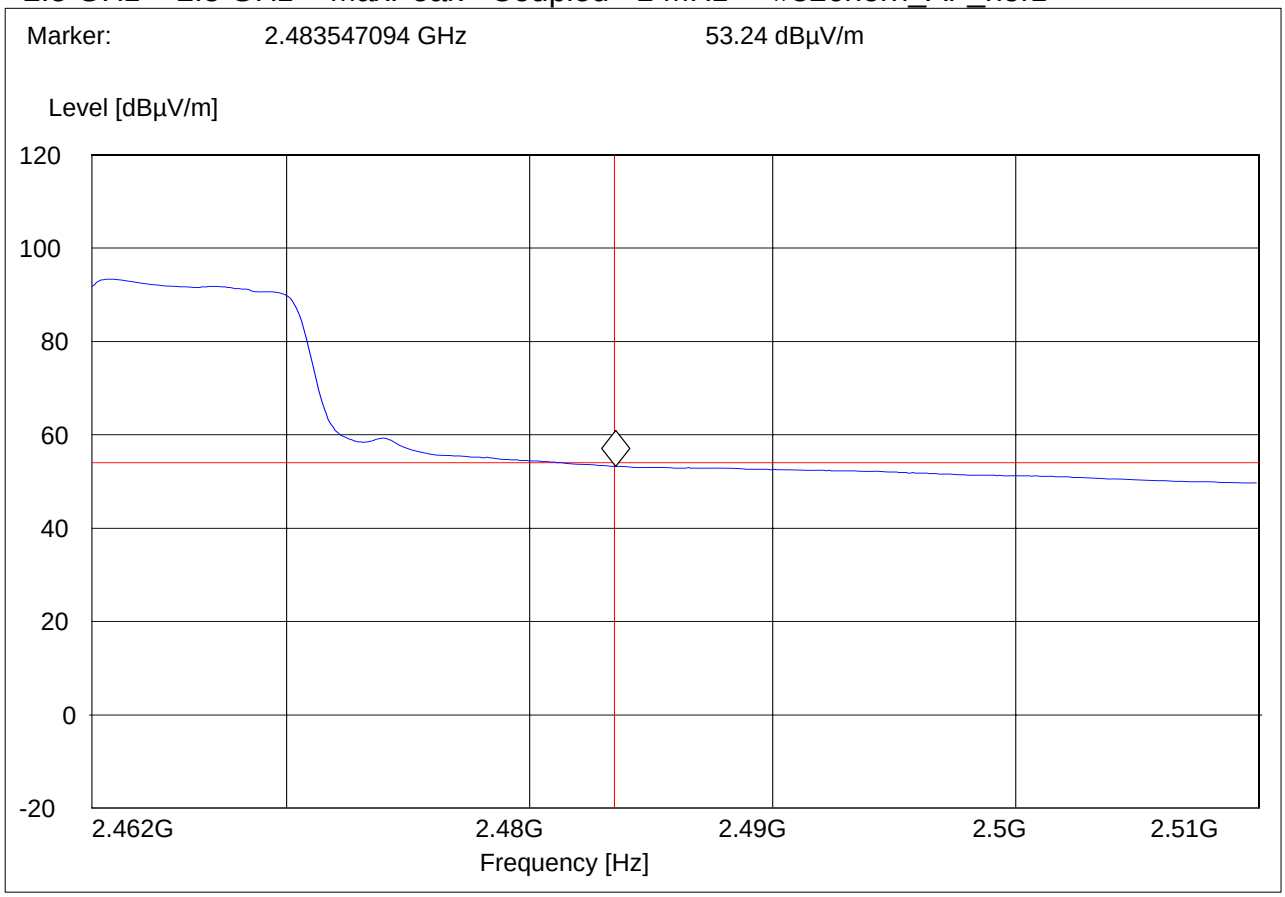


AVG, 802.11g MODE (2462MHz)

EUT: A1303
Customer:: APPLE
Test Mode: 802.11g
ANT Orientation: H
EUT Orientation: V
Test Engineer: SAM
Voltage: BATTERY
Comments: 16.5 dbm

SWEEP TABLE: "FCC15.247 HBE_AVG 3m"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
2.5 GHz	2.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz



5.3 TRANSMITTER SPURIOUS EMISSIONS RADIATED § 15.247/15.205/15.209

5.3.1 LIMITS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
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6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

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

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

2. All measurements are done in peak mode using an average limit , unless specified with the plots.

Results for the radiated measurements below 30MHz according § 15.33

Frequency	Measured values	Remarks
9KHz – 30MHz	No emissions found, caused by the EUT	This is valid for all the tested channels

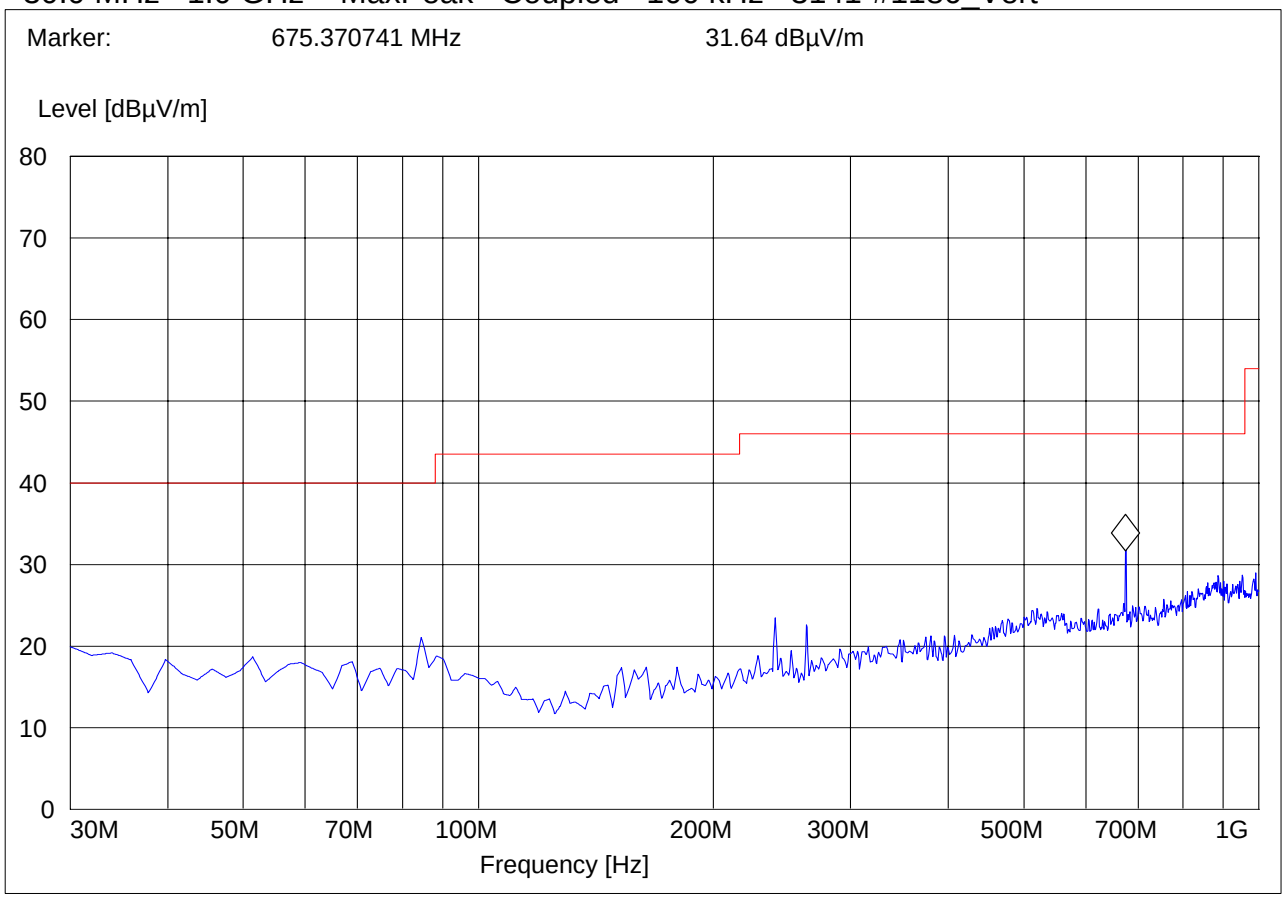
5.3.2 RESULTS 802.11g (worst case)

30MHz – 1GHz
Antenna: vertical
Note: This plot is valid for low, mid, high channels and both polarizations (worst-case plot)

EUT: A1303
Customer:: Apple
Test Mode: 802.11g
ANT Orientation: V
EUT Orientation: V
Test Engineer: Chris
Voltage: AC Adapter
Comments:

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

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

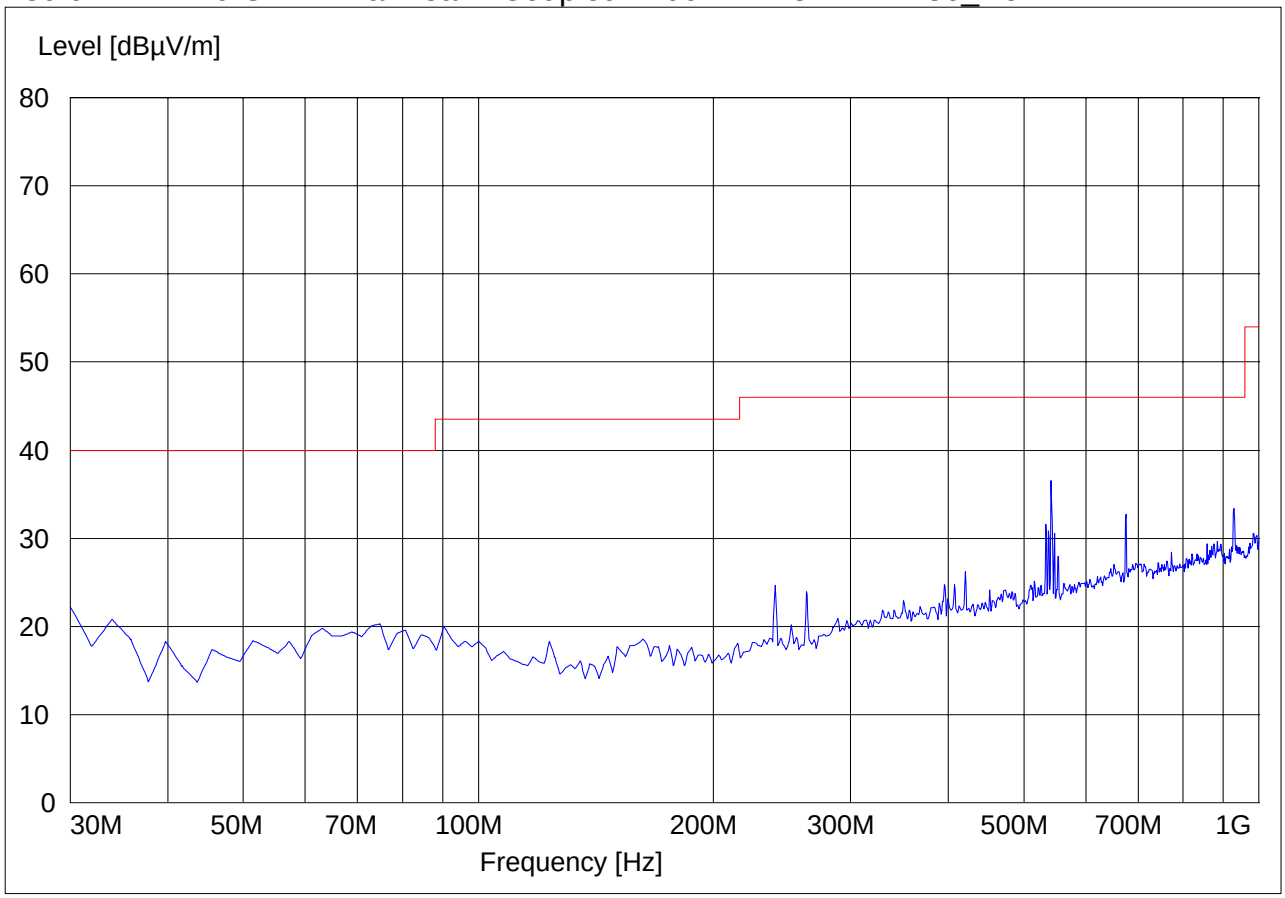


30MHz – 1GHz
Antenna: Horizontal
Note: This plot is valid for low, mid, high channels and both polarizations (worst-case plot)

EUT: A1303
Customer:: Apple
Test Mode: 802.11
ANT Orientation: H
EUT Orientation: V
Test Engineer: Chris
Voltage: AC Adapter
Comments:

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

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

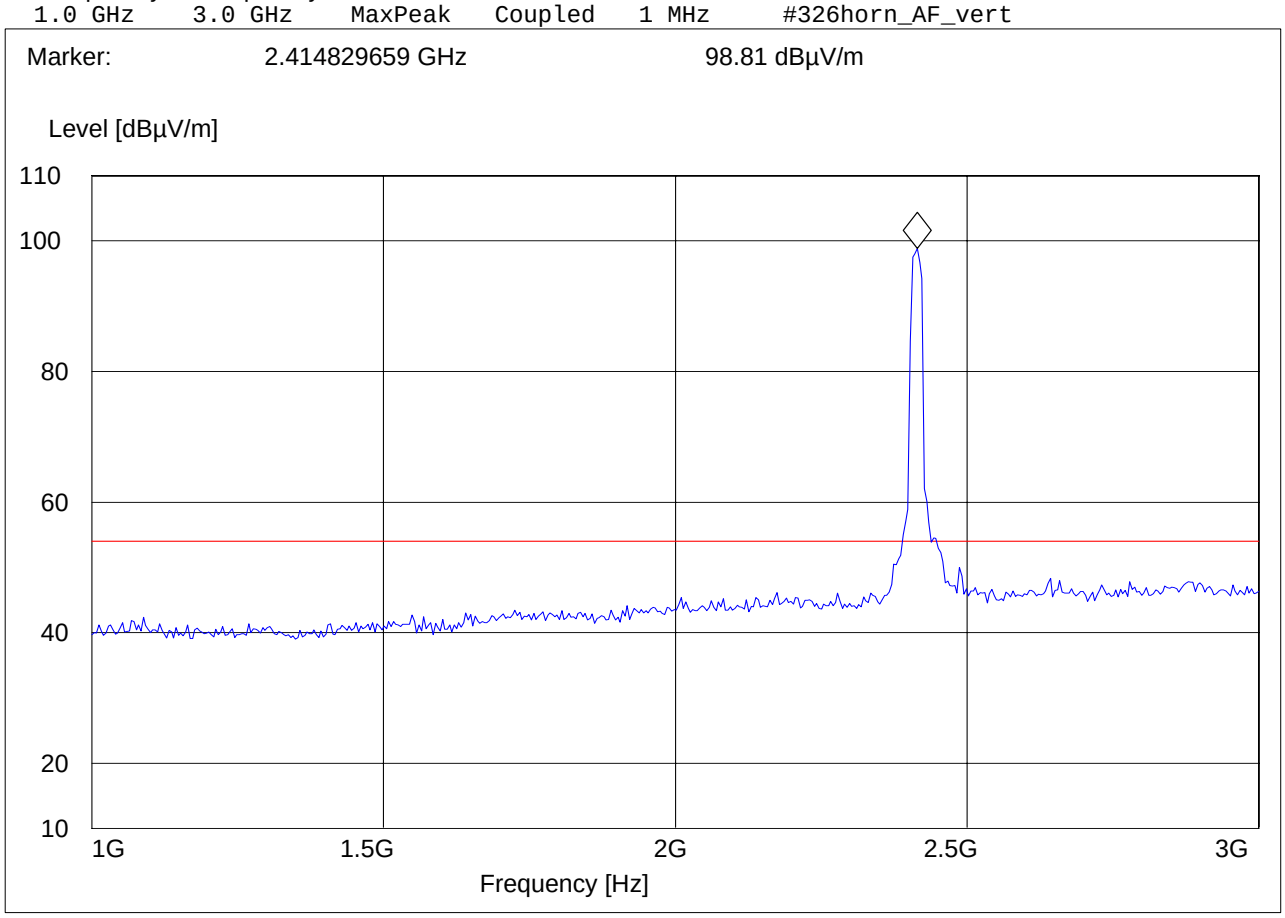


1-3GHz (2412MHz)
Note: The peaks above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              A1303
Customer::        Apple
Test Mode:        802.11
ANT Orientation:  H
EUT Orientation:  V
Test Engineer:    Chris
Voltage:          AC Adapter
Comments:
```

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

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

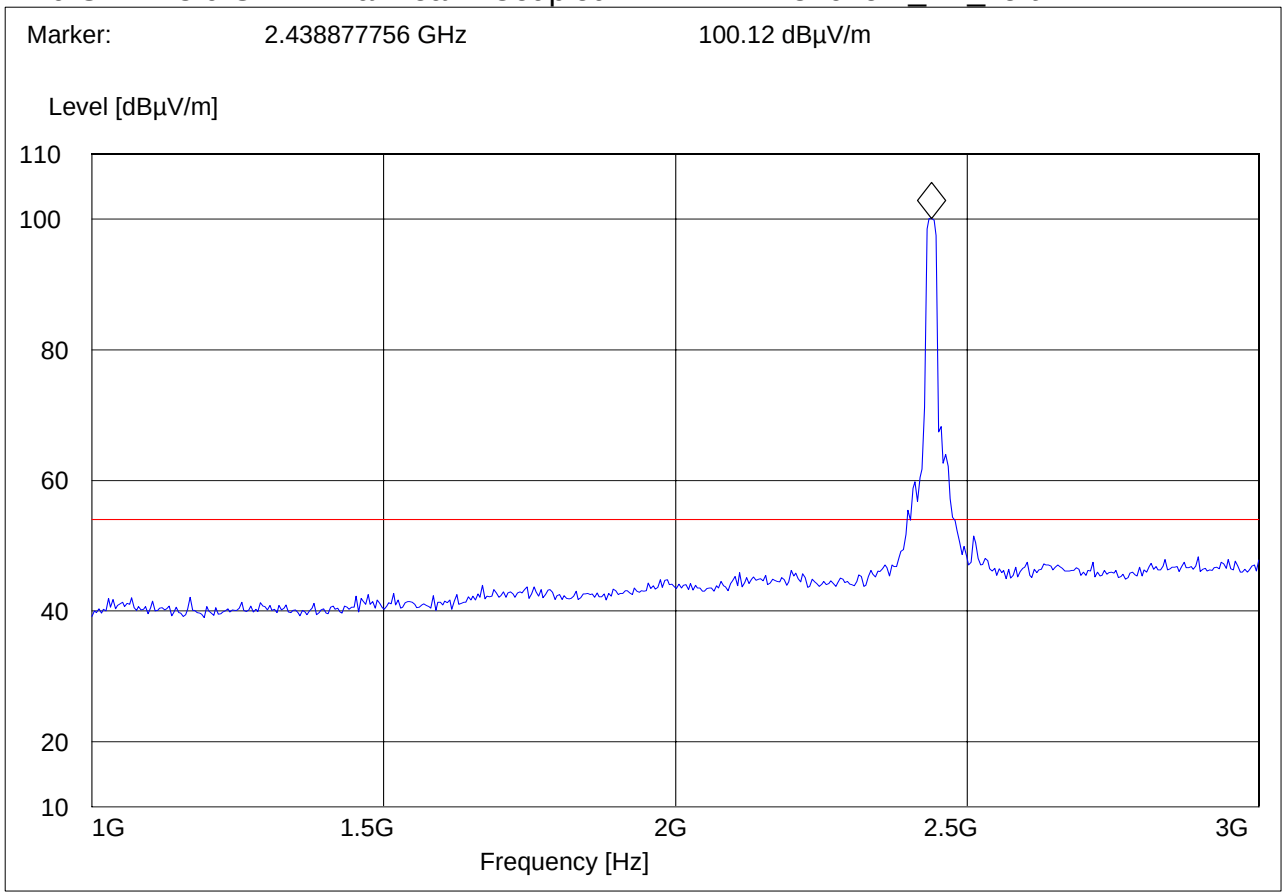


1-3GHz (2437MHz)
Note: The peaks above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

EUT: A1303
Customer:: Apple
Test Mode: 802.11
ANT Orientation: H
EUT Orientation: V
Test Engineer: Chris
Voltage: AC Adapter
Comments:

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

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

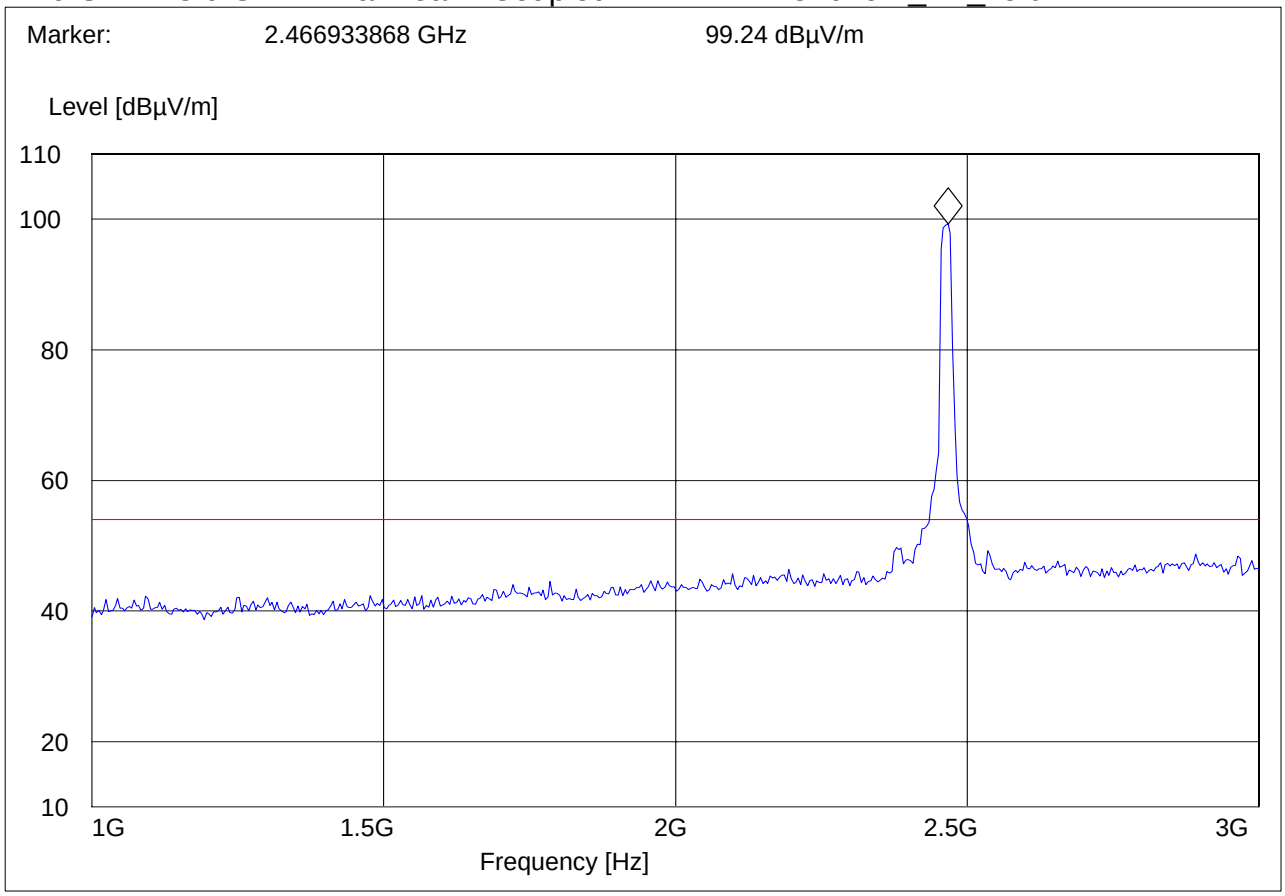


1-3GHz (2462MHz)
Note: The peaks above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

EUT: A1303
Customer:: Apple
Test Mode: 802.11
ANT Orientation: H
EUT Orientation: V
Test Engineer: Chris
Voltage: AC Adapter
Comments:

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

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	3.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert

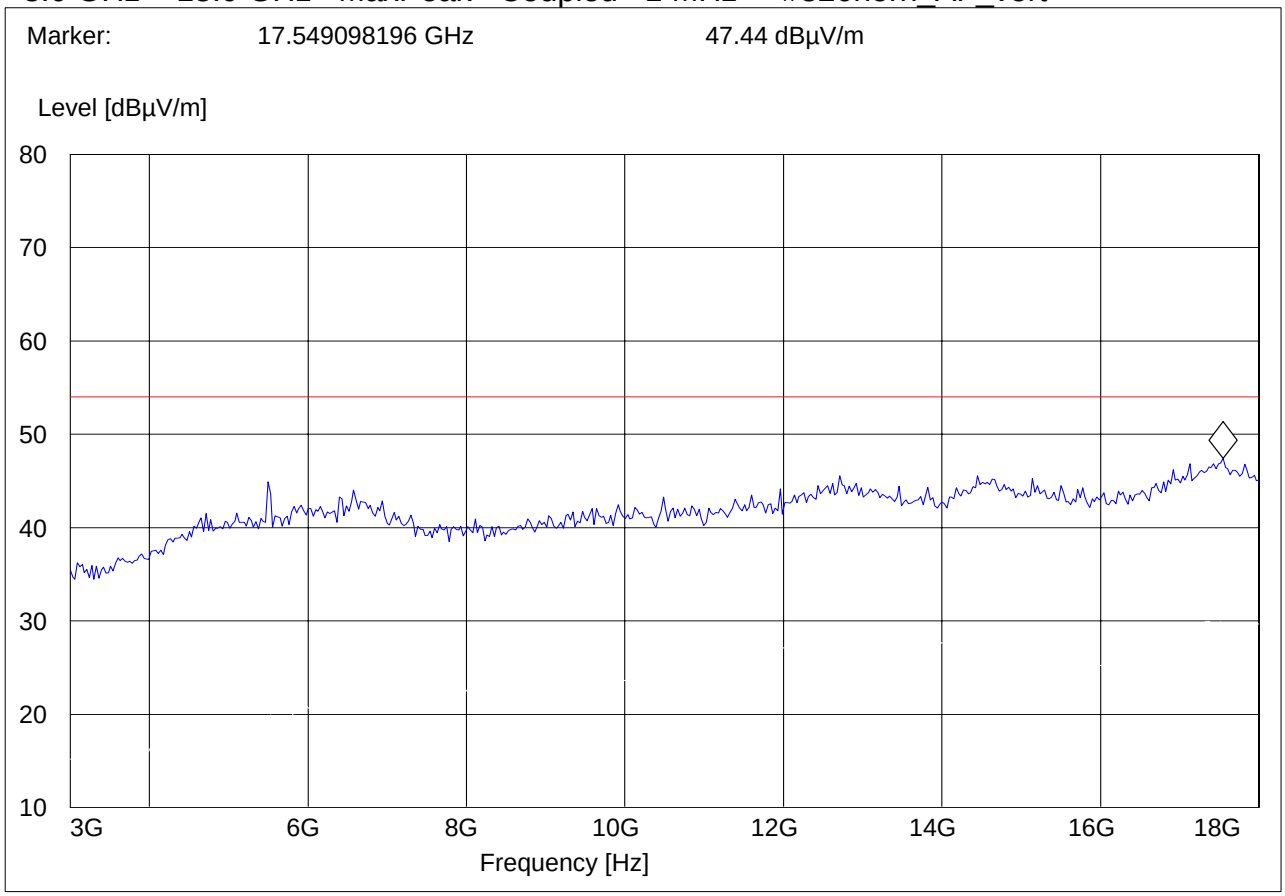


3-18GHz (2412MHz)
Note: Peak Reading vs. Average limit

EUT: A1303
Customer:: Apple
Test Mode: 802.11
ANT Orientation: H
EUT Orientation: V
Test Engineer: Chris
Voltage: AC Adapter
Comments:

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

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

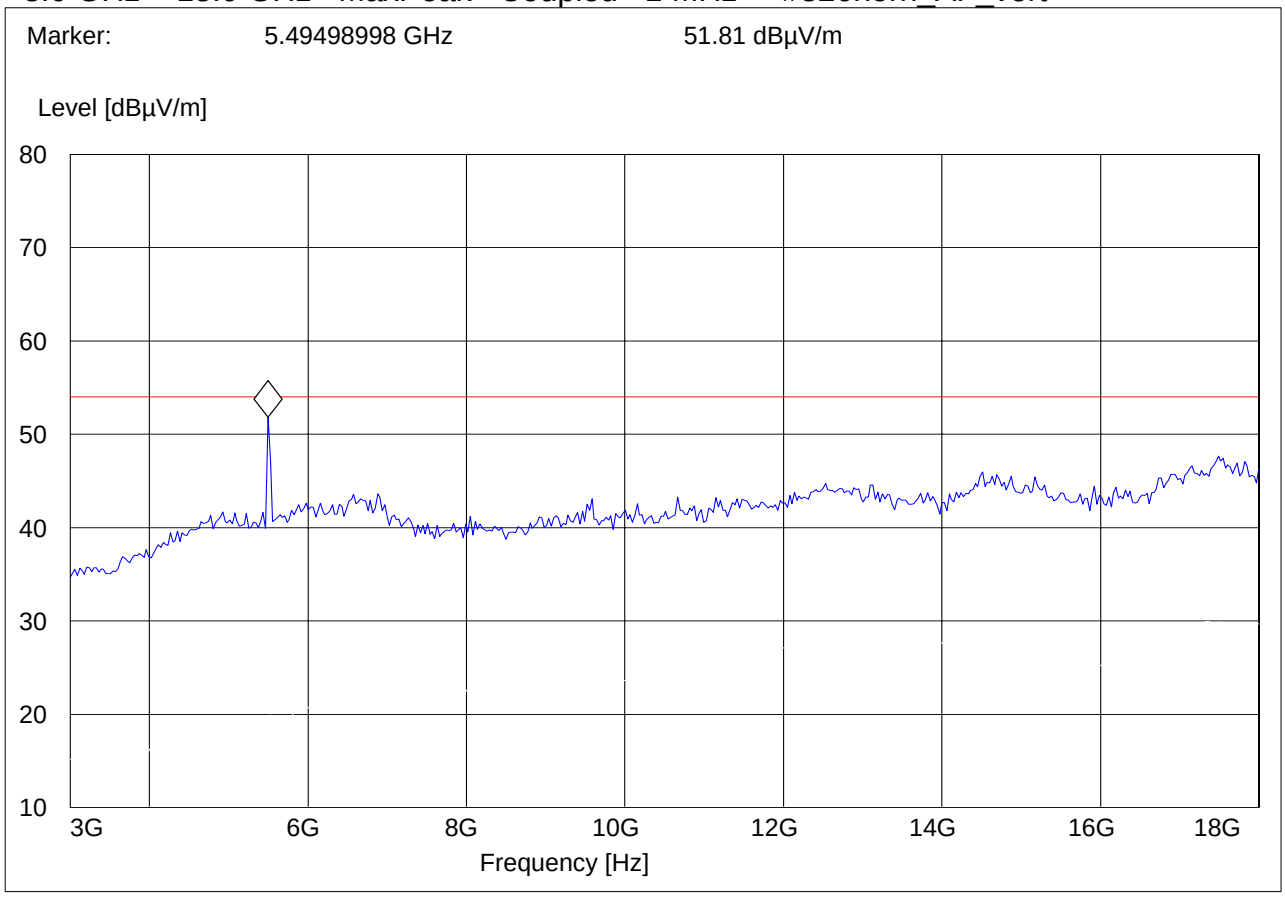


3-18GHz (2437MHz)
Note: Peak Reading vs. Average limit

EUT: A1303
Customer:: Apple
Test Mode: 802.11
ANT Orientation: H
EUT Orientation: V
Test Engineer: Chris
Voltage: AC Adapter
Comments:

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

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

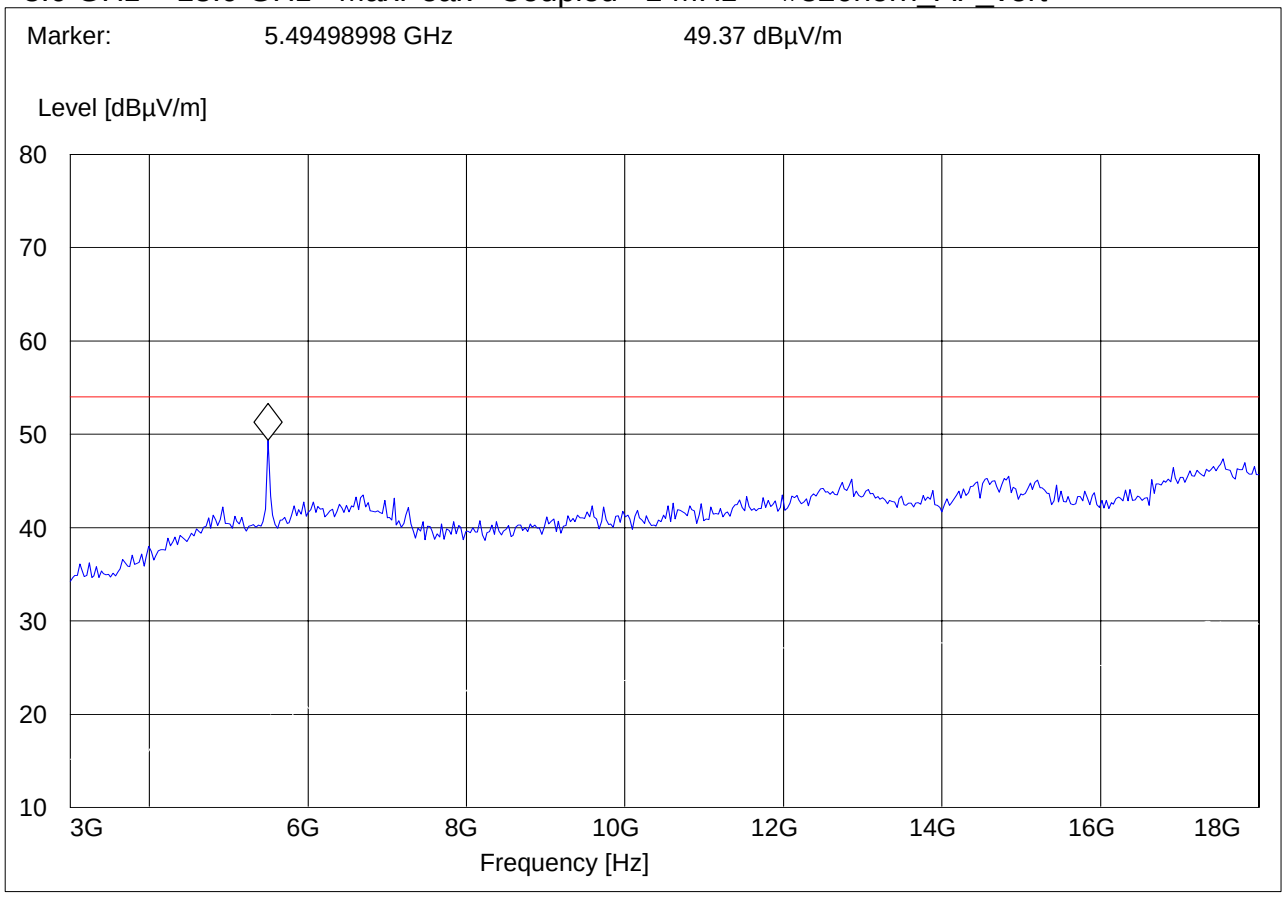


3-18GHz (2462MHz)
Note: Peak Reading vs. Average limit

EUT: A1303
Customer:: Apple
Test Mode: 802.11
ANT Orientation: H
EUT Orientation: V
Test Engineer: Chris
Voltage: AC Adapter
Comments:

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

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

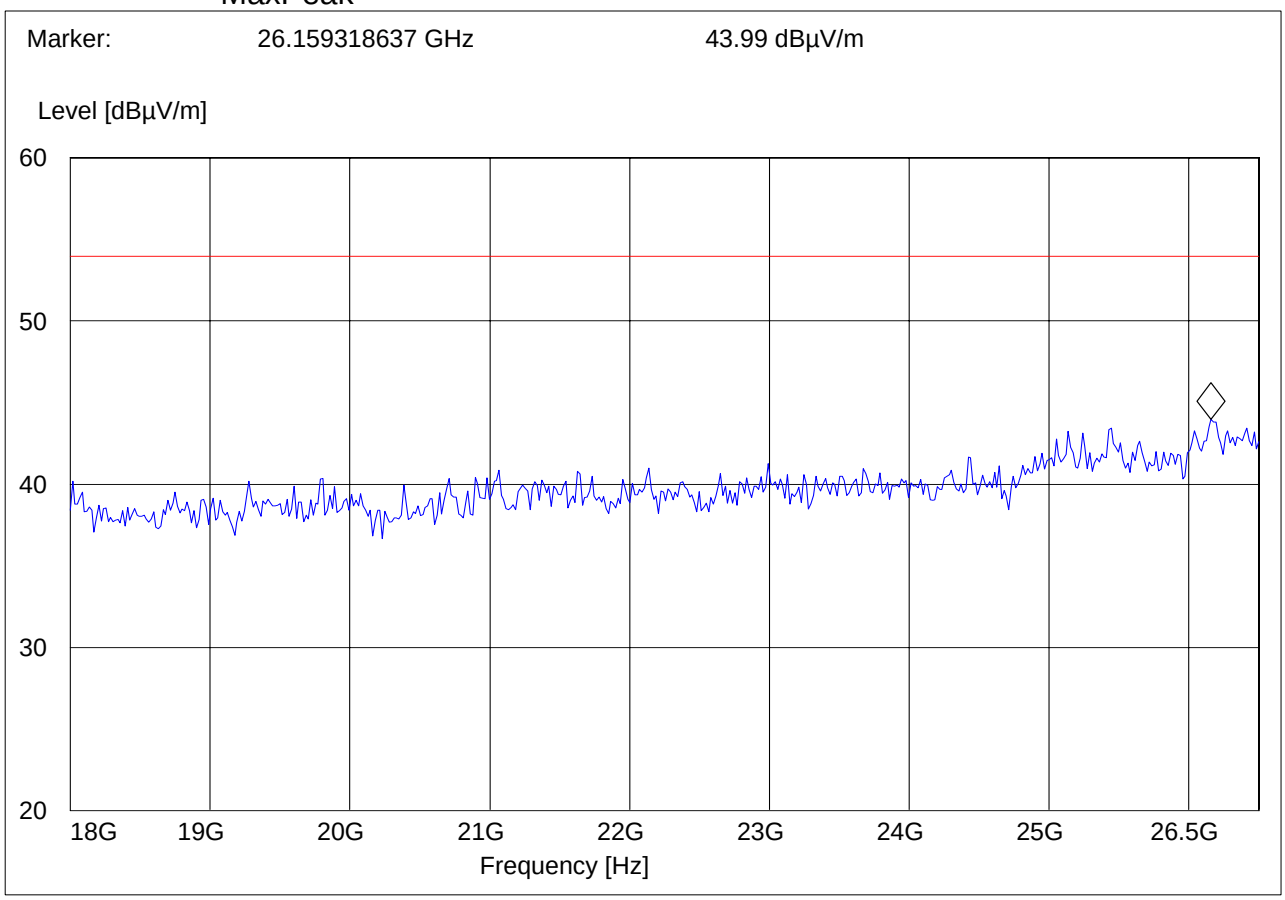


18-25GHz
Note: This plot is valid for low, mid, high channels (worst-case plot)
Note: Peak Reading vs. Average limit

EUT: A1303
Customer:: Apple
Test Mode: 802.11b Ch.11
ANT Orientation: H
EUT Orientation: V
Test Engineer: Chris
Voltage: AC Adapter
Comments:

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

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.5 GHz	MaxPeak	Coupled	100 kHz	Horn # 3116_18-40G
		MaxPeak			



5.4 RECEIVER SPURIOUS RADIATION § 15.209/RSS210

5.4.1 LIMITS

Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

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

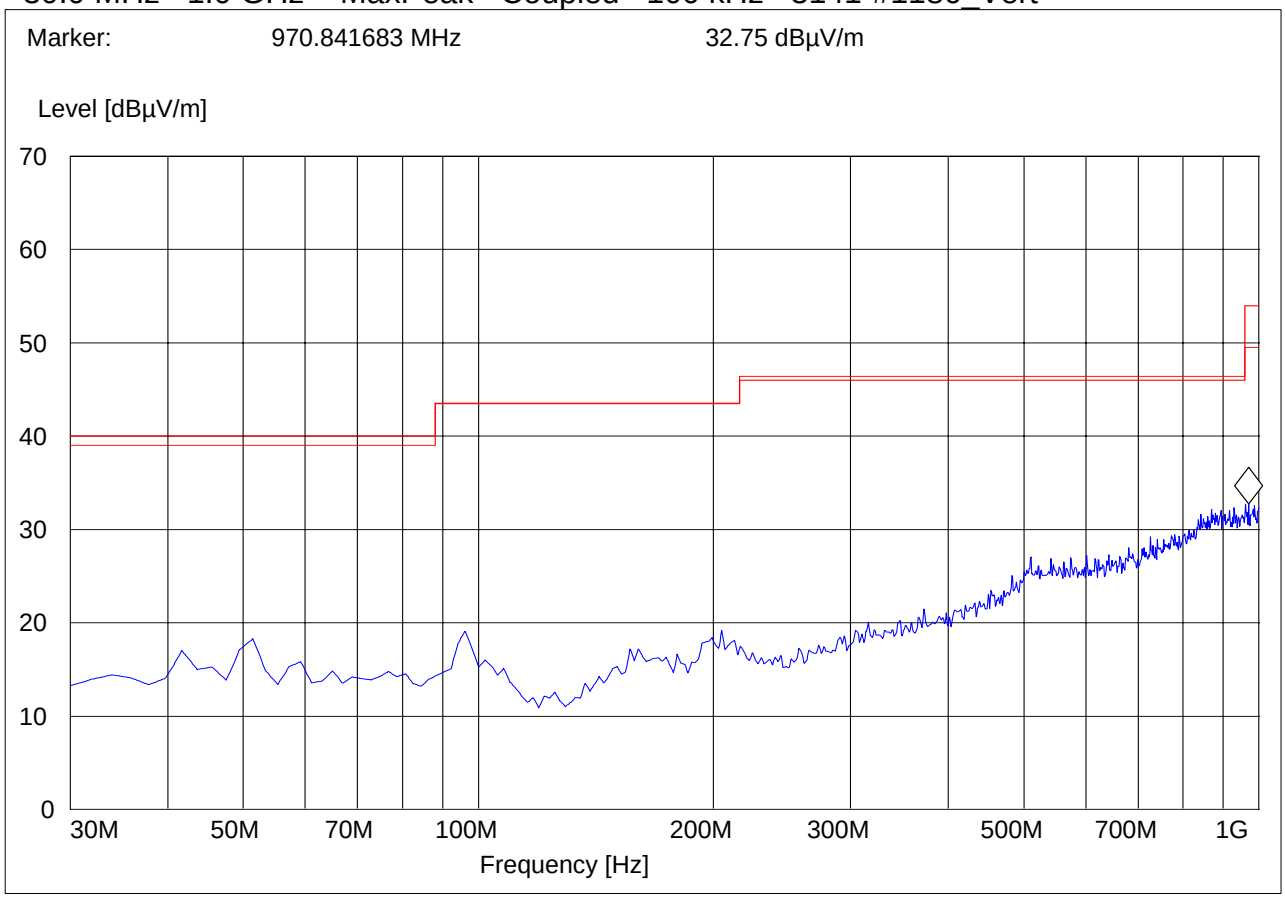
2. All measurements are done in peak mode using an average limit , unless specified with the plots.

30MHz – 1GHz
Antenna: vertical
Note: This plot is valid for low, mid, high channels and both polarizations (worst-case plot)

EUT: A1303
Customer:: Apple
Test Mode: RX
ANT Orientation: V
EUT Orientation: V
Test Engineer: SAM
Voltage: AC
Comments: FCC Adapter

SWEEP TABLE: "CANADA RE_30M-1G_Ver"

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

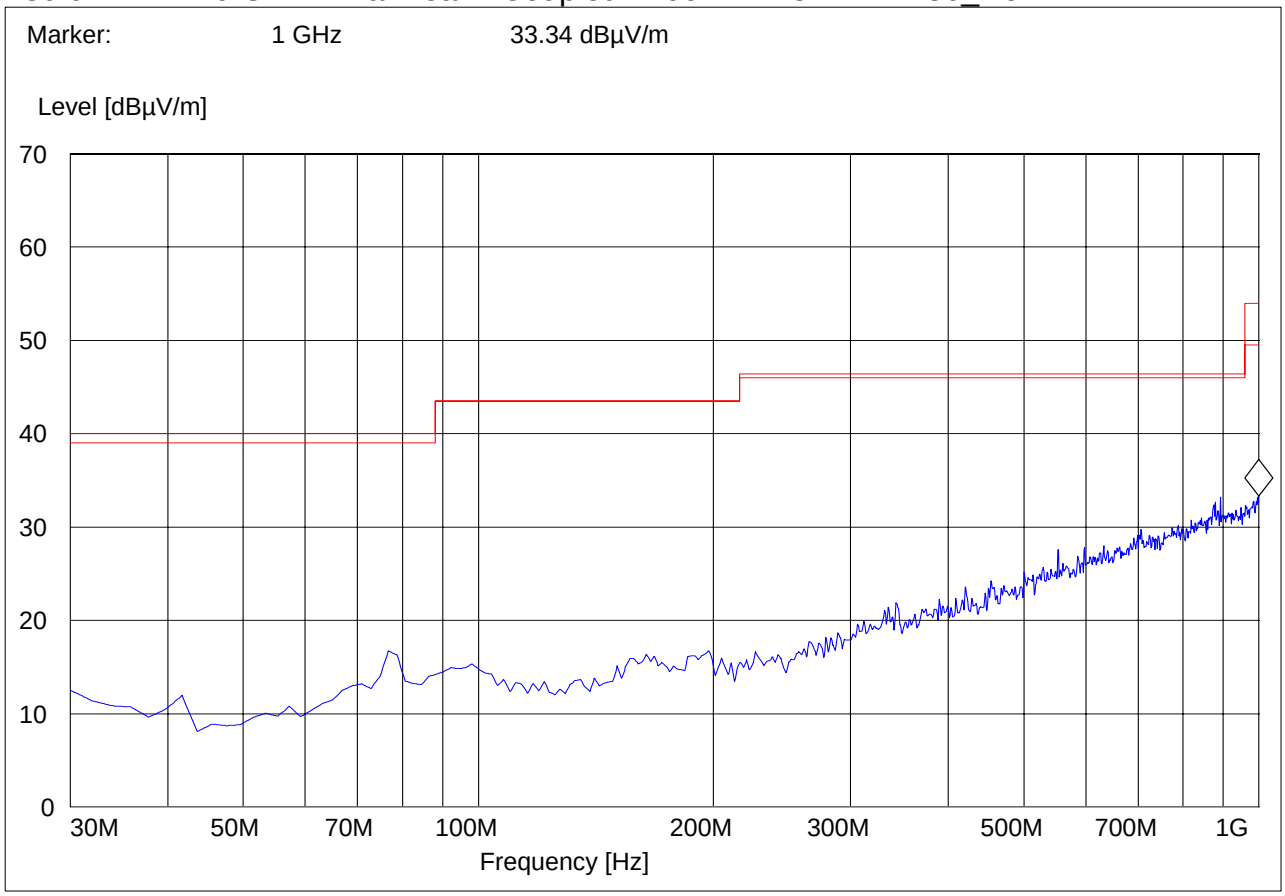


30MHz – 1GHz
Antenna: Horizontal
Note: This plot is valid for low, mid, high channels and both polarizations (worst-case plot)

EUT: A1303
Customer:: Apple
Test Mode: RX
ANT Orientation: H
EUT Orientation: V
Test Engineer: SAM
Voltage: AC
Comments: FCC Adapter

SWEEP TABLE: "CANDA RE_30M-1G_Hor"

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

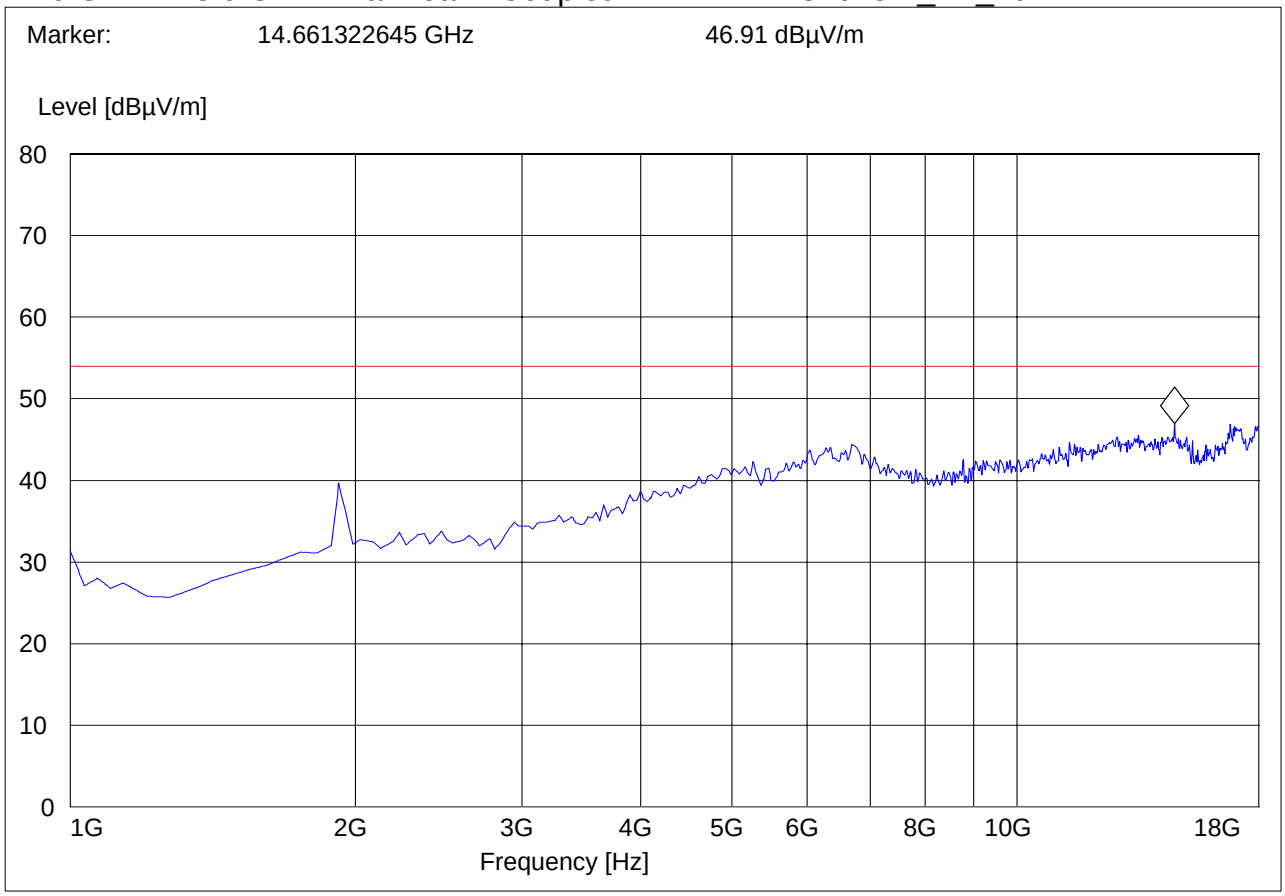


1-18GHz
Note: Peak Reading vs. Average limit
Note: This plot is valid for low, mid, high channels and both polarizations (worst-case plot)

EUT / Description: A1303
Customer: Apple
Operation Mode: Rx
ANT Orientation: : H
EUT Orientation:: V
Test Engineer: Chris
Voltage: FCC AC Adapter
Comments::

SWEEP TABLE: "CANADA RE_1-18G"

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



6 Measurements (CONDUCTED)

6.1 MAXIMUM OUTPUT POWER § 15.247 (CONDUCTED)

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

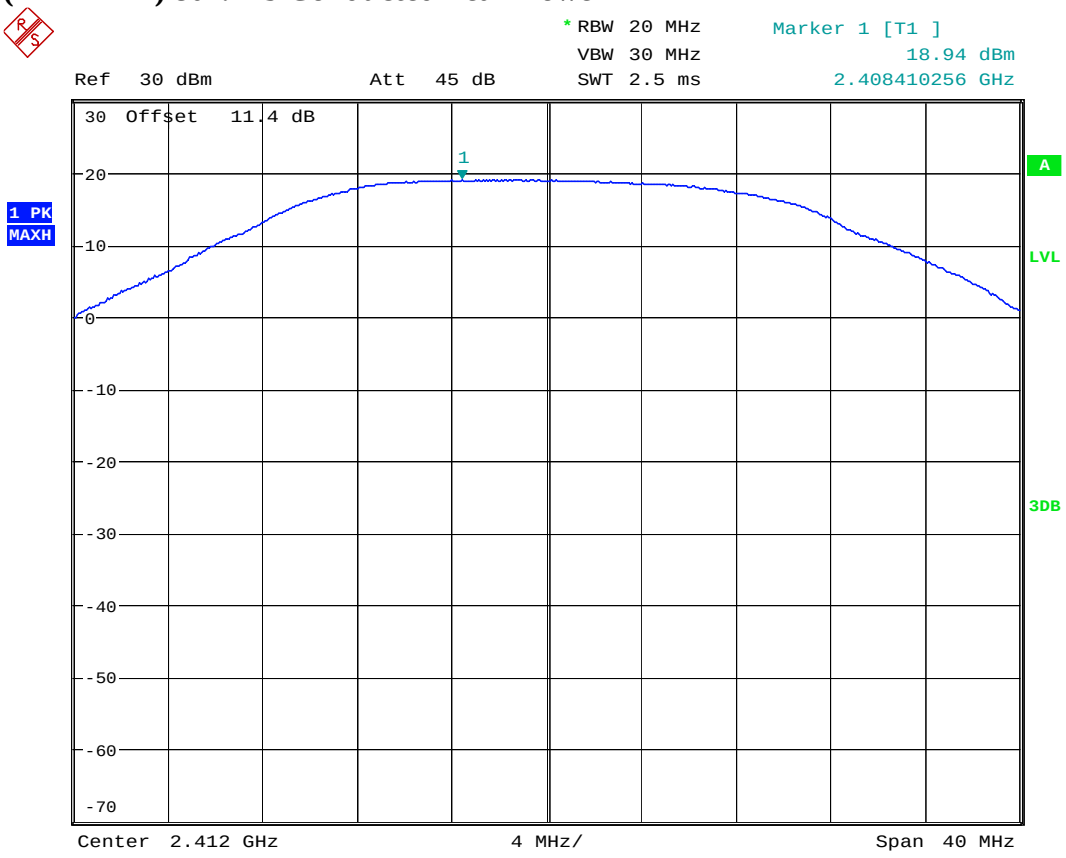
Frequency range	RF power output
2400-2483.5 MHz	30dBm

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

6.1.2 RESULTS:

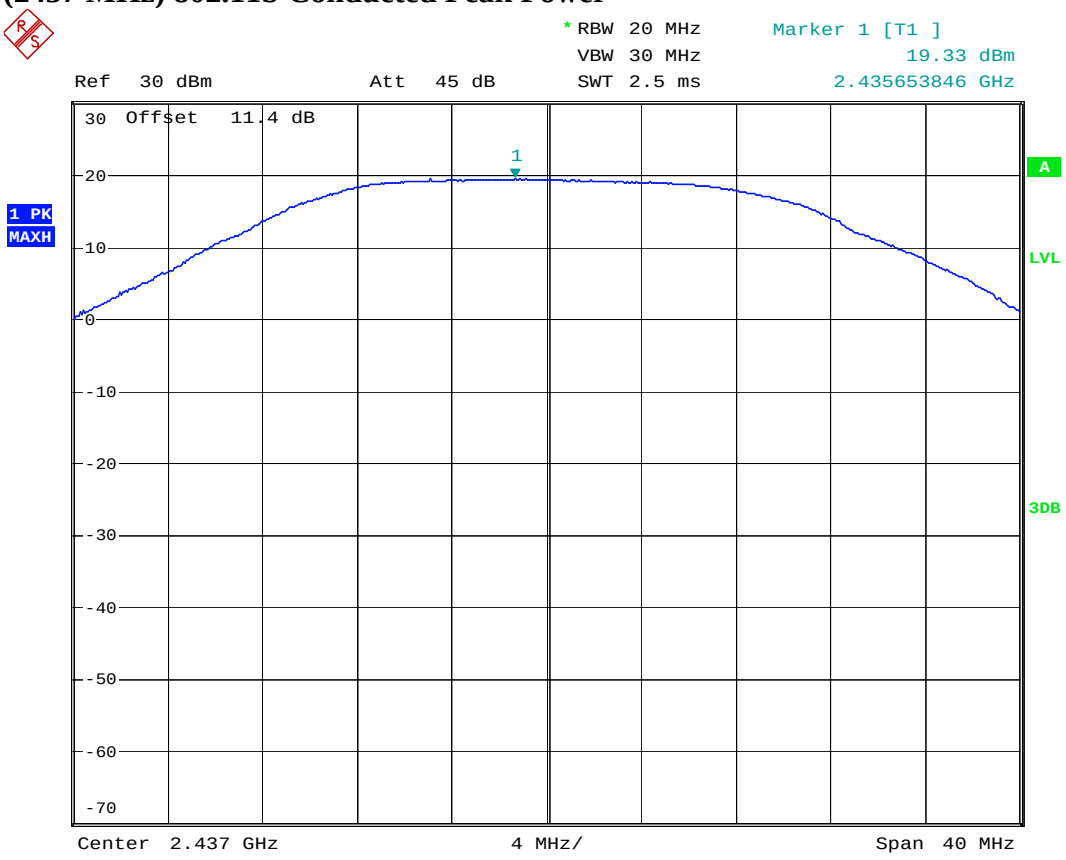
TEST CONDITIONS	MAXIMUM OUTPUT POWER (dBm)		
Frequency (MHz)	2412 MHz	2437 MHz	2462 MHz
802.11b	18.94	19.33	19.94
802.11g	25.3	25.58	25.19

(2412 MHz) 802.11b Conducted Peak Power



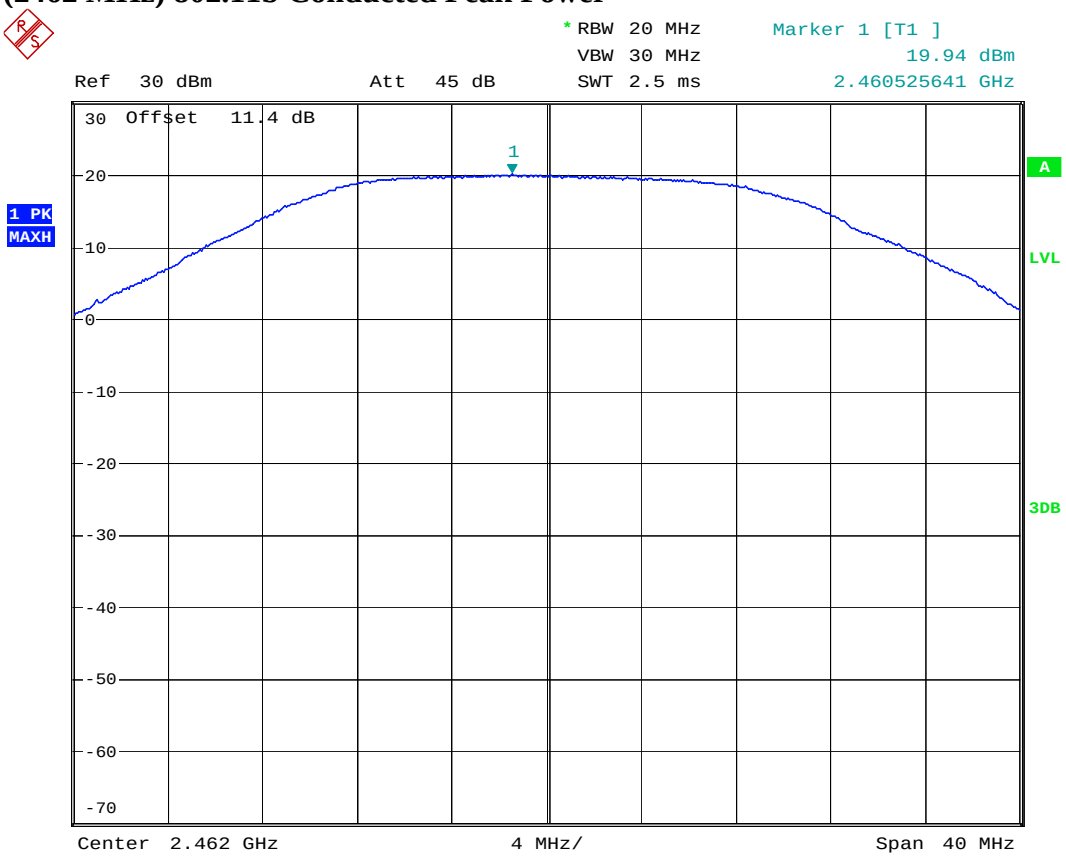
Date: 12.MAY.2009 16:16:00

(2437 MHz) 802.11b Conducted Peak Power



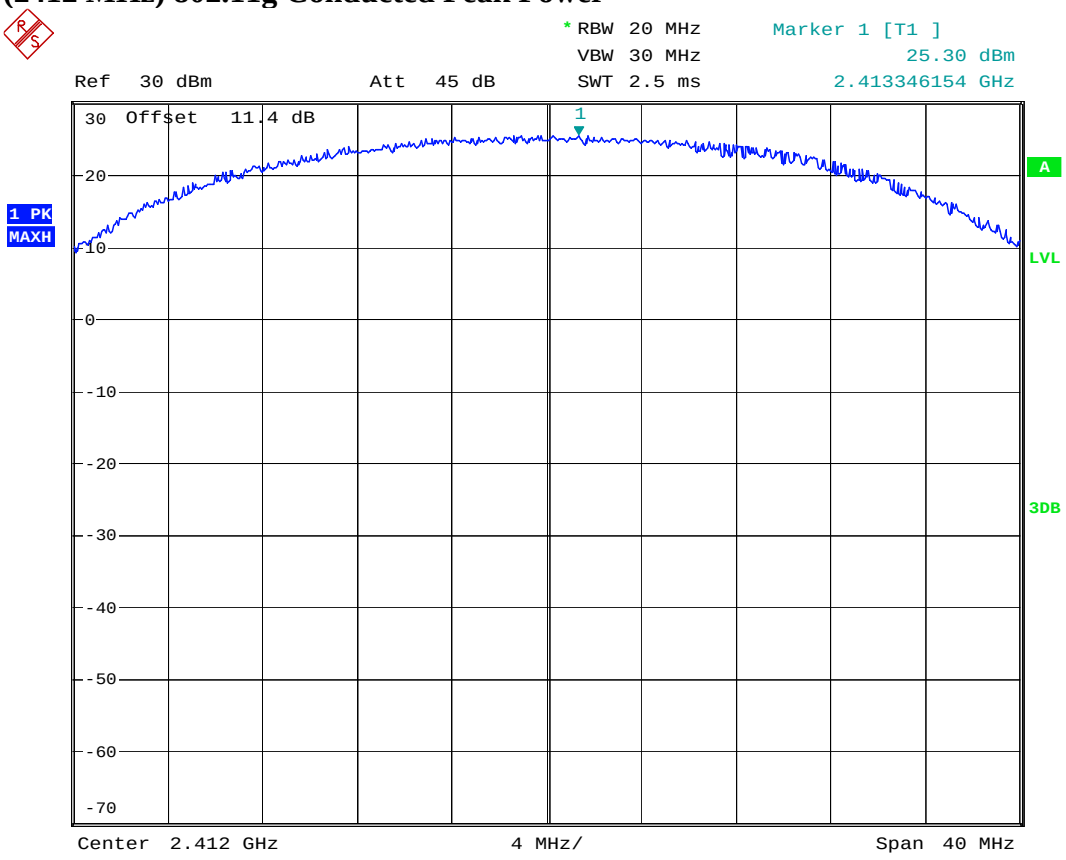
Date: 12.MAY.2009 16:19:55

(2462 MHz) 802.11b Conducted Peak Power



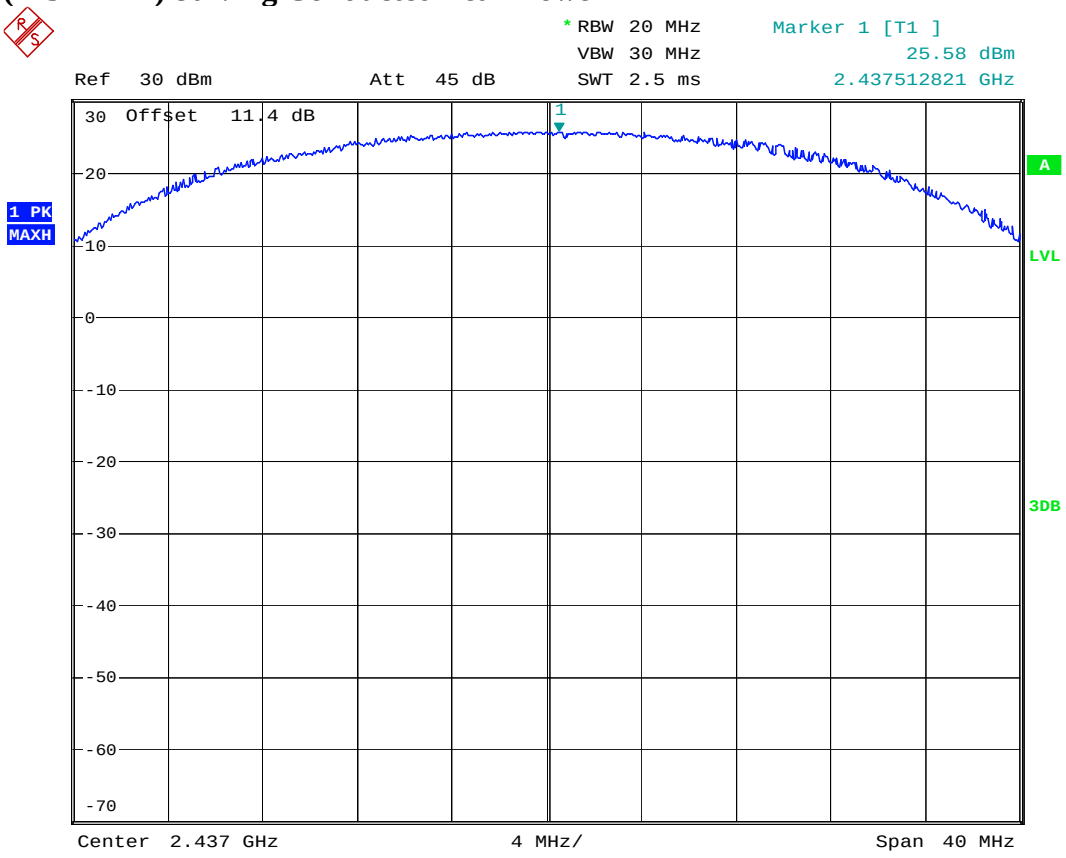
Date: 12.MAY.2009 16:18:37

(2412 MHz) 802.11g Conducted Peak Power



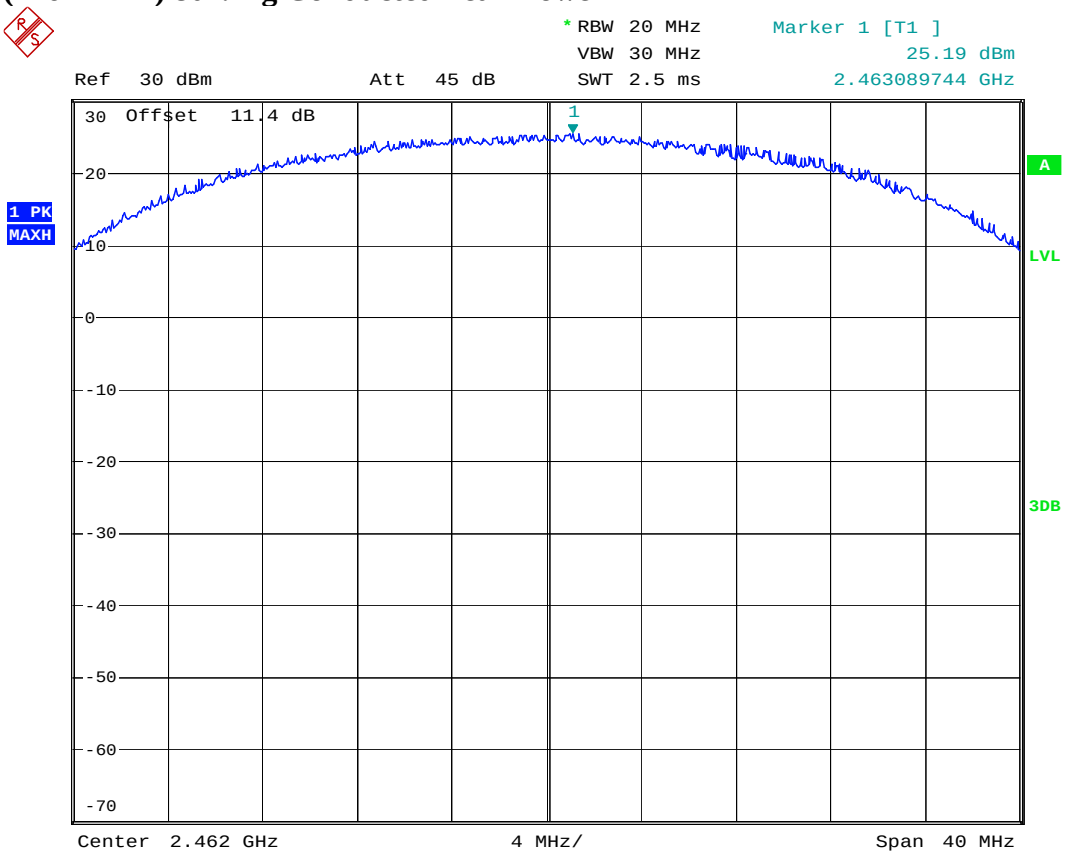
Date: 12.MAY.2009 16:23:11

(2437 MHz) 802.11g Conducted Peak Power



Date: 12.MAY.2009 16:21:31

(2462 MHz) 802.11g Conducted Peak Power



Date: 12.MAY.2009 16:24:25

6.2 6dB BANDWIDTH

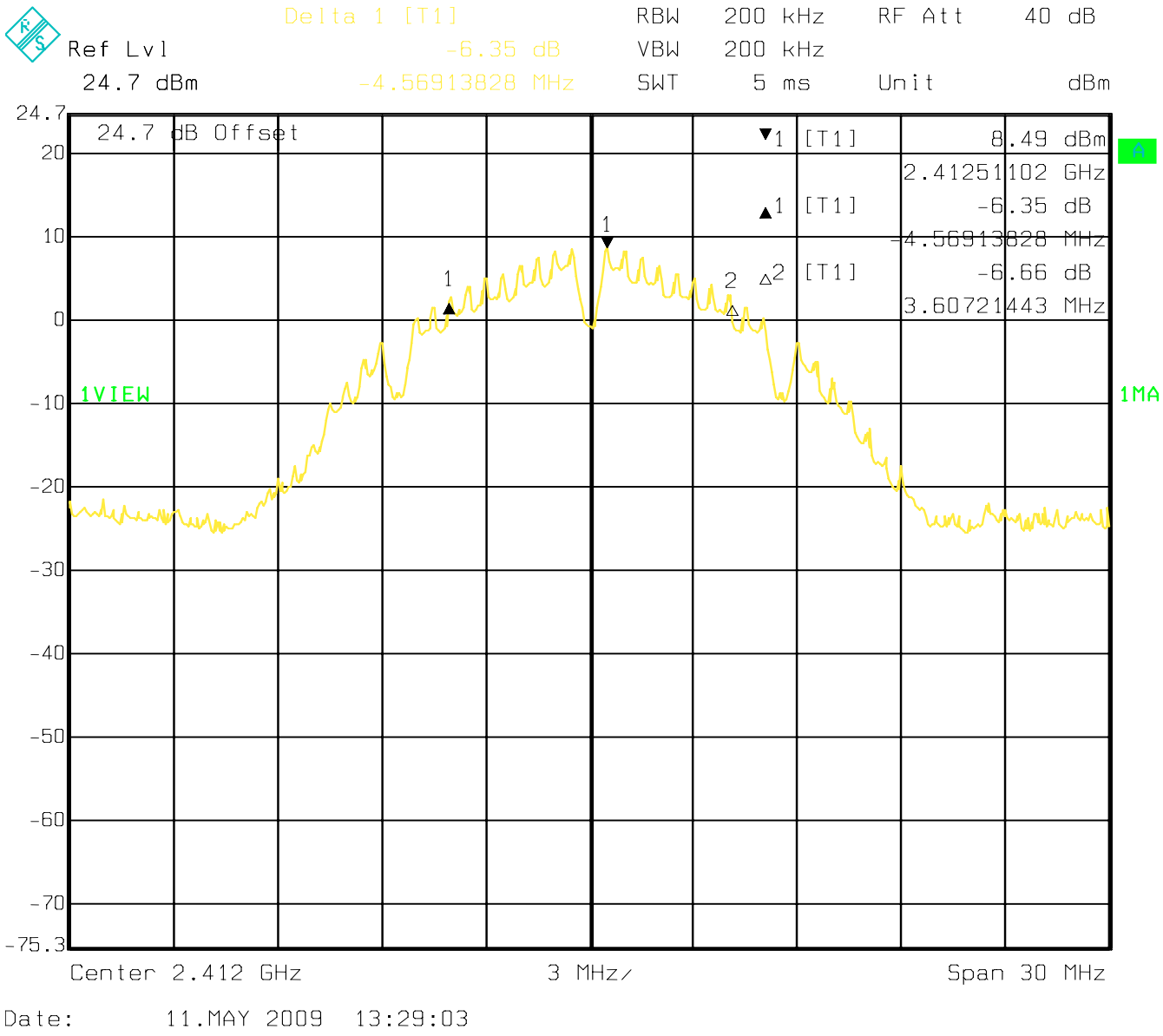
6.2.1 LIMIT SUB CLAUSE § 15.247 (a) (2)

(2) Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

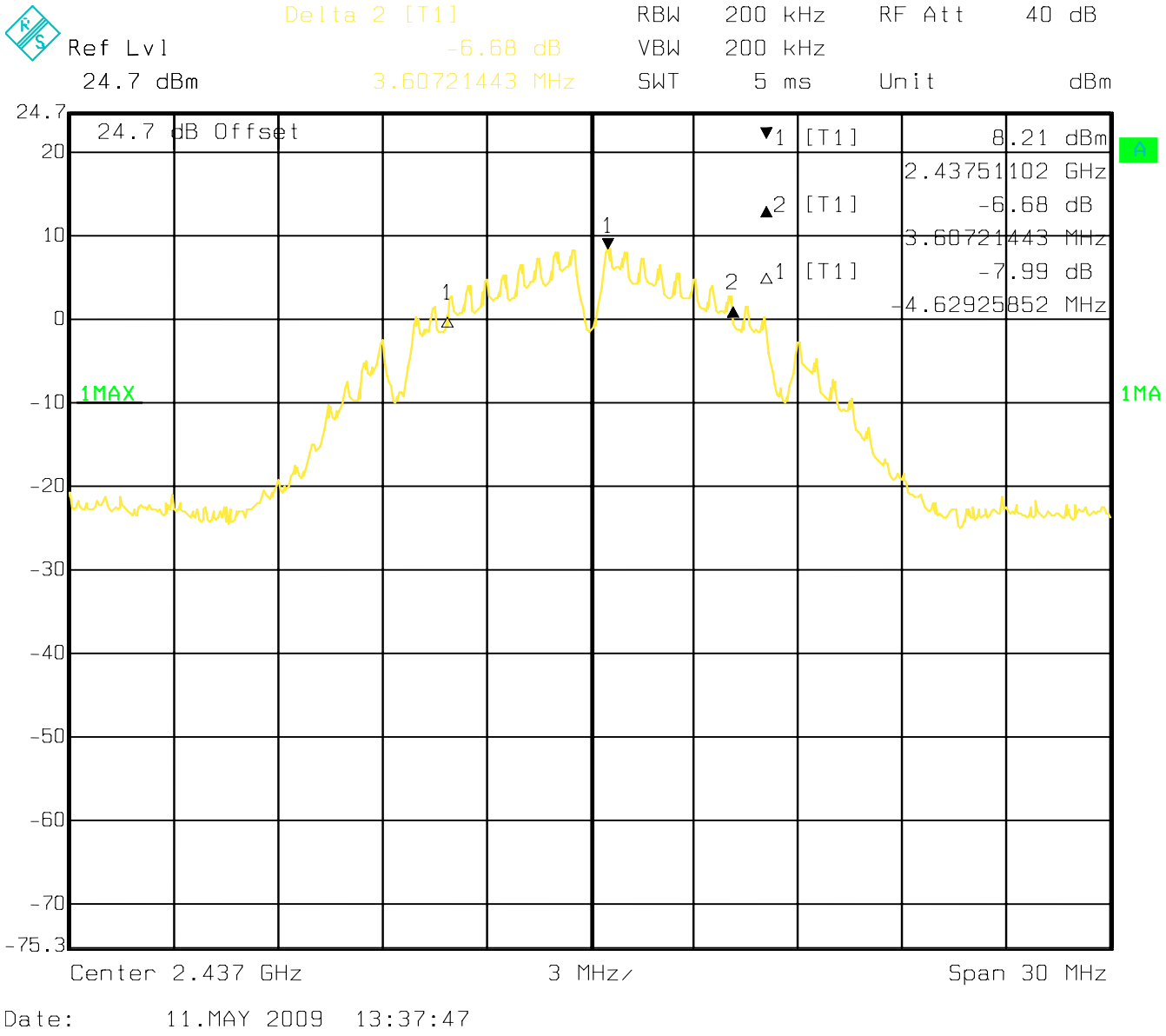
Frequency range	6dB Band width
2400-2483.5 MHz	500kHz

TEST CONDITIONS	6dB BANDWIDTH (MHz)		
Frequency (MHz)	2412 MHz	2437 MHz	2462 MHz
802.11b	8.176	8.236	8.236
802.11g	16.112	16.172	16.052

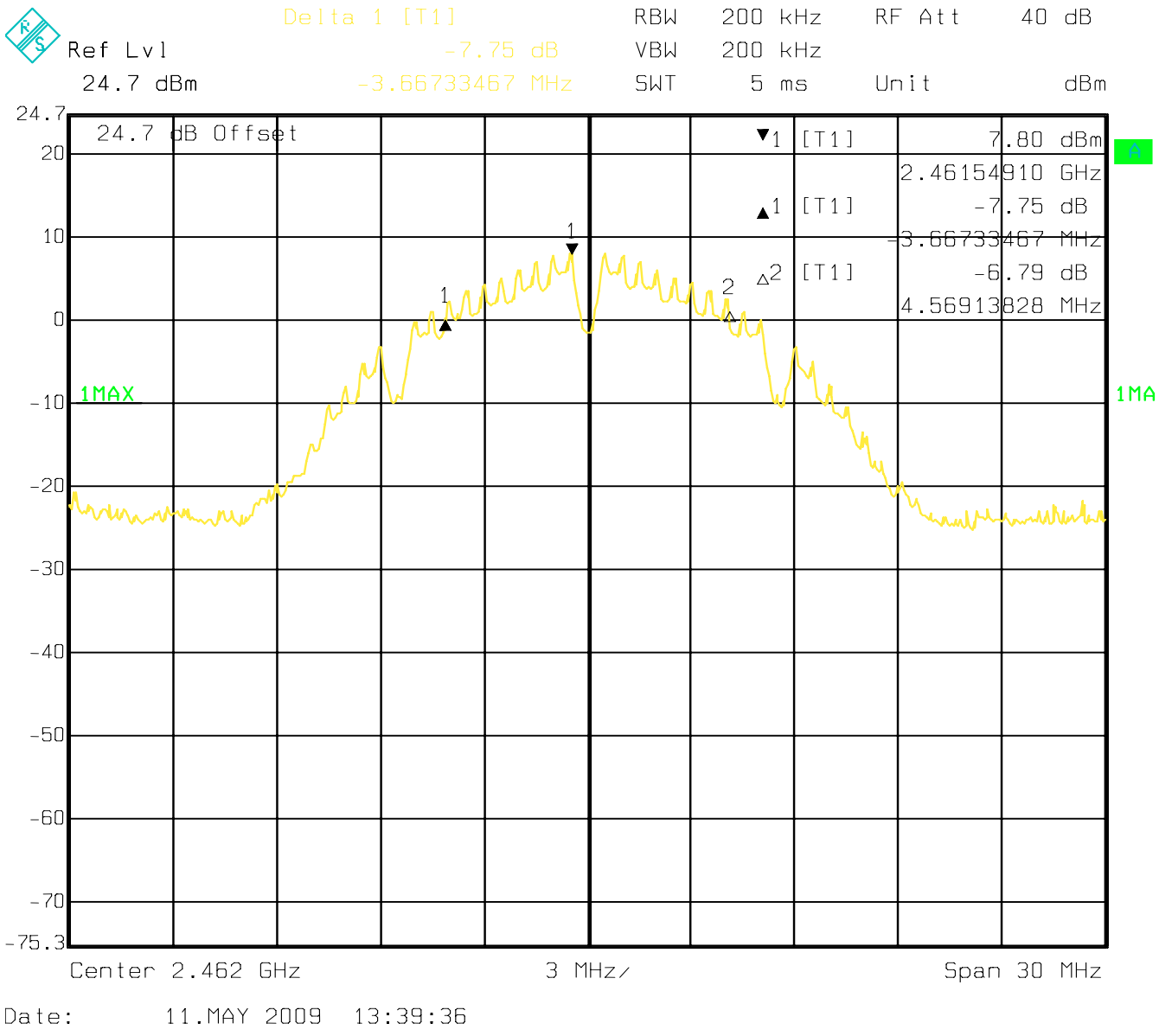
(2412 MHz) 802.11b 6dB BW



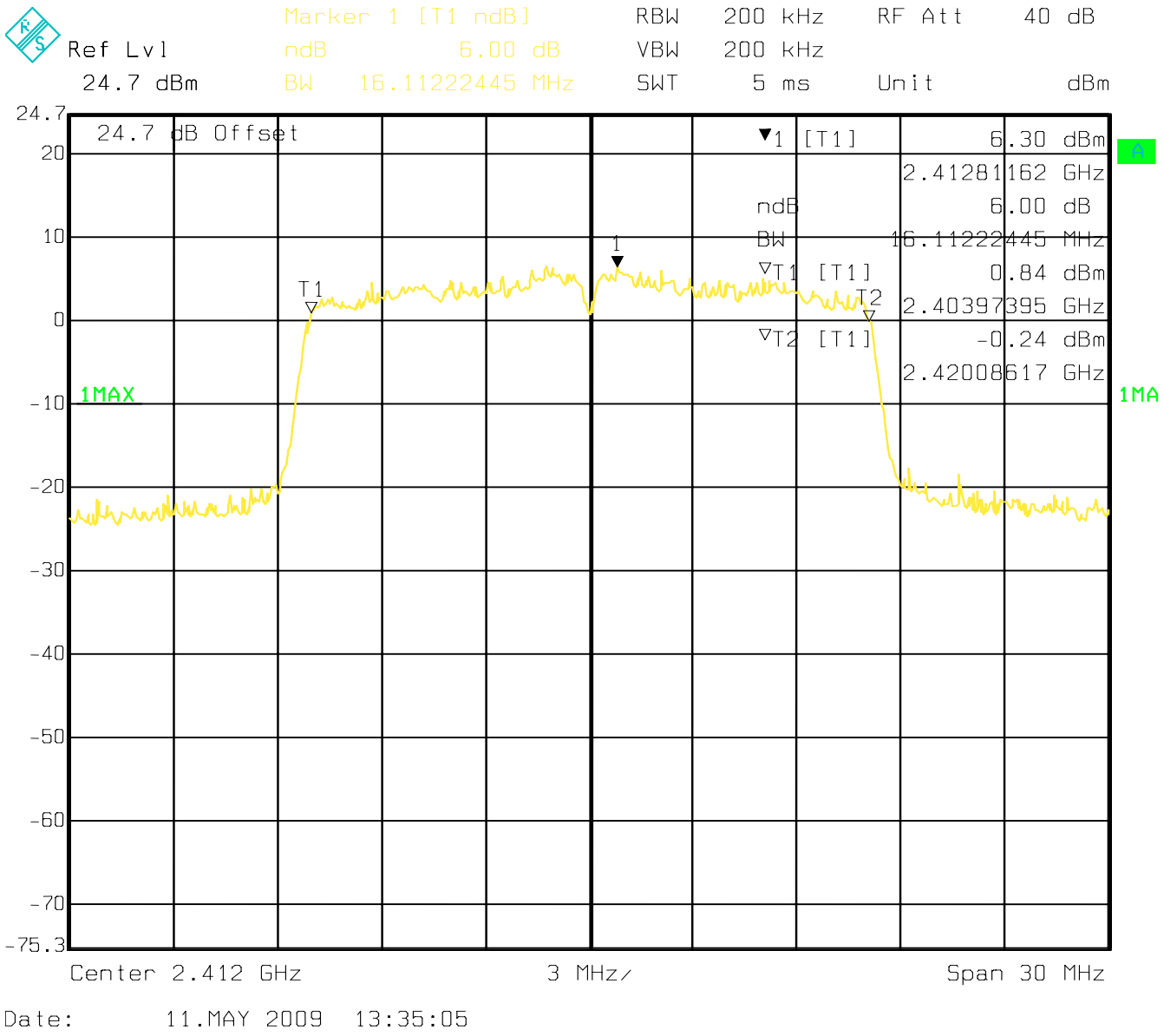
(2437 MHz) 802.11b 6dB BW



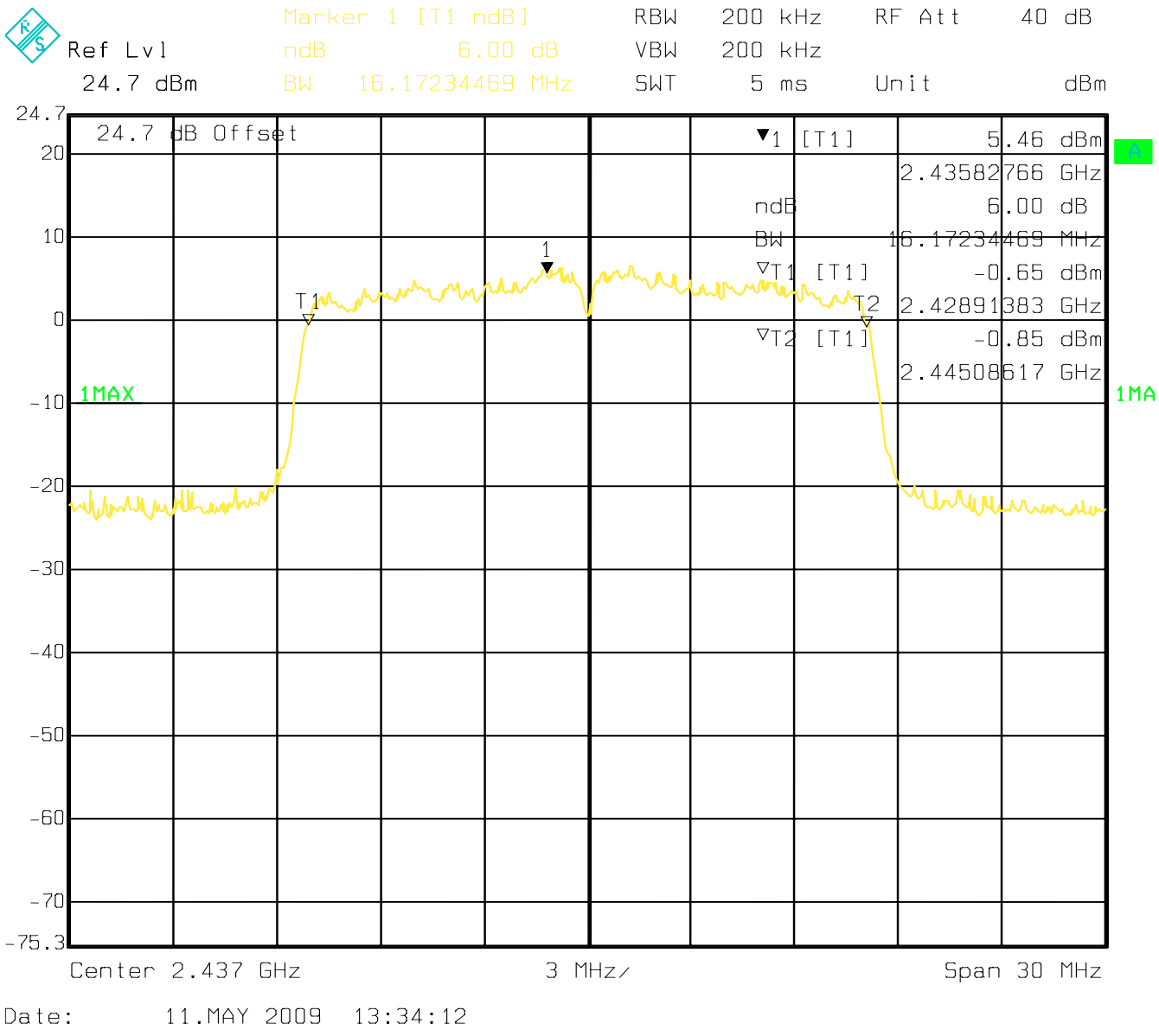
(2462 MHz) 802.11b 6dB BW



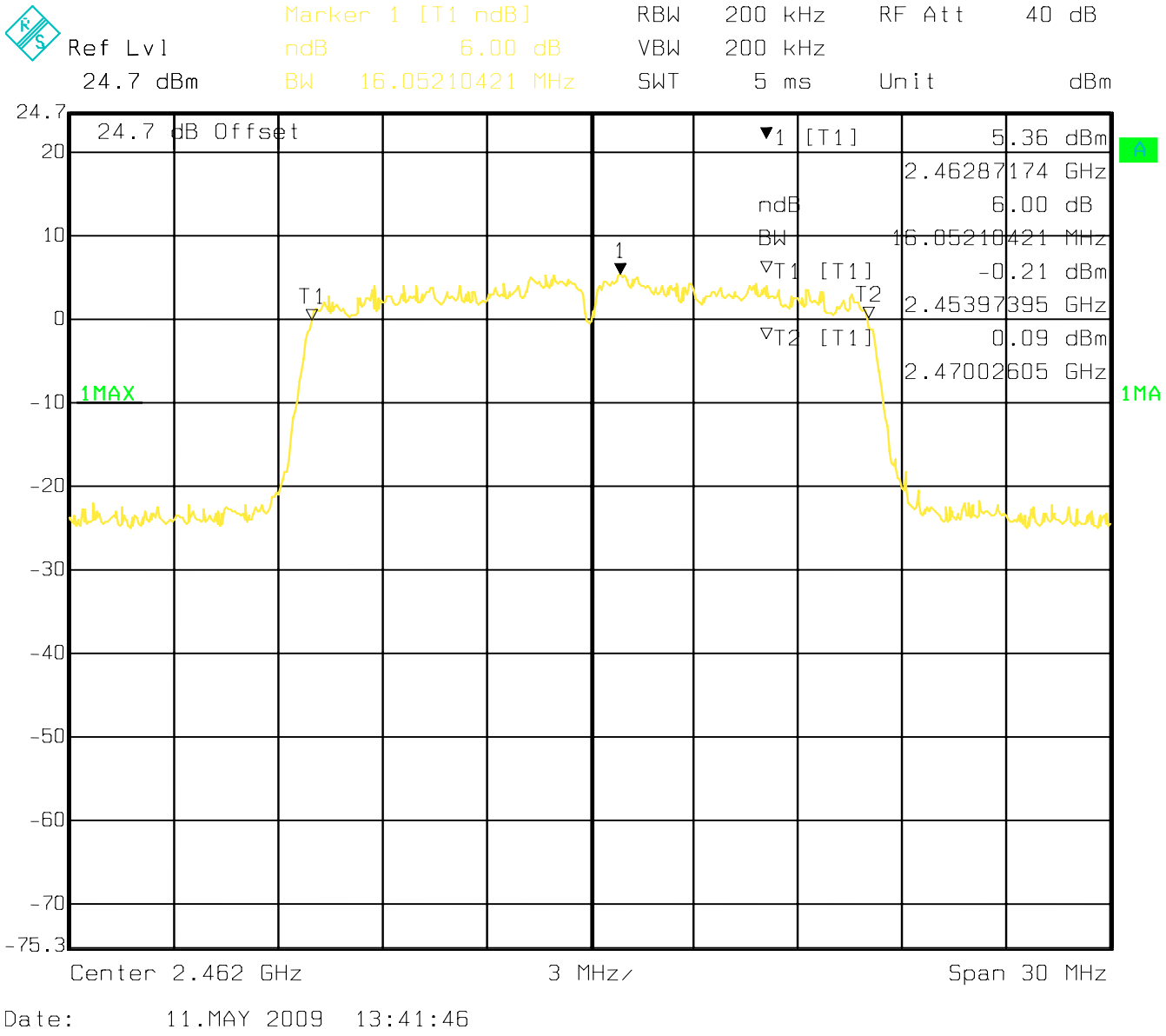
(2412 MHz) 802.11g 6dB BW



(2437 MHz) 802.11g 6dB BW



(2462 MHz) 802.11g 6dB BW



6.3 99% BANDWIDTH

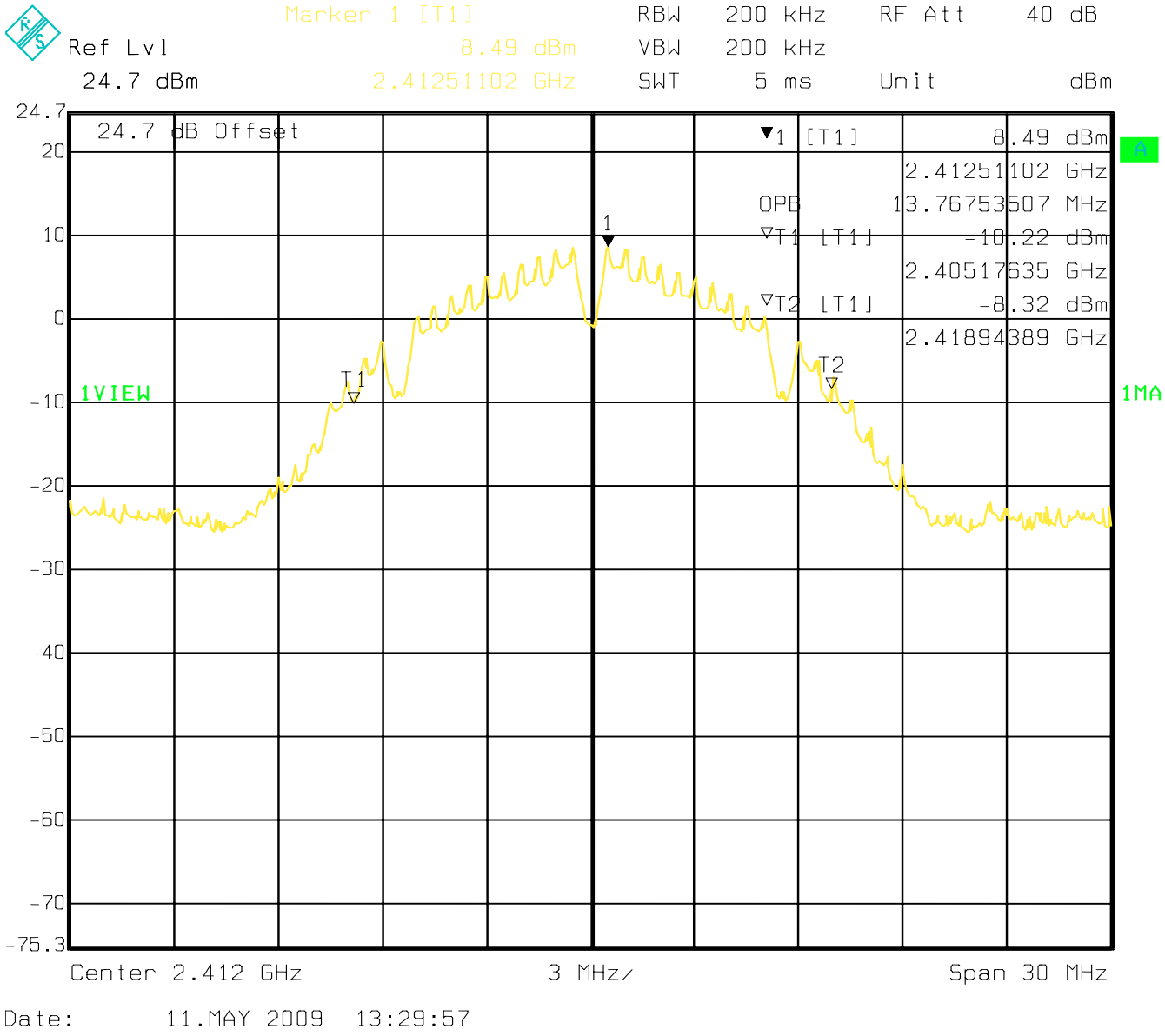
6.3.1 LIMIT SUB CLAUSE § RSS-210 (A8.2)(a)

99% BW shall be at least 500kHz

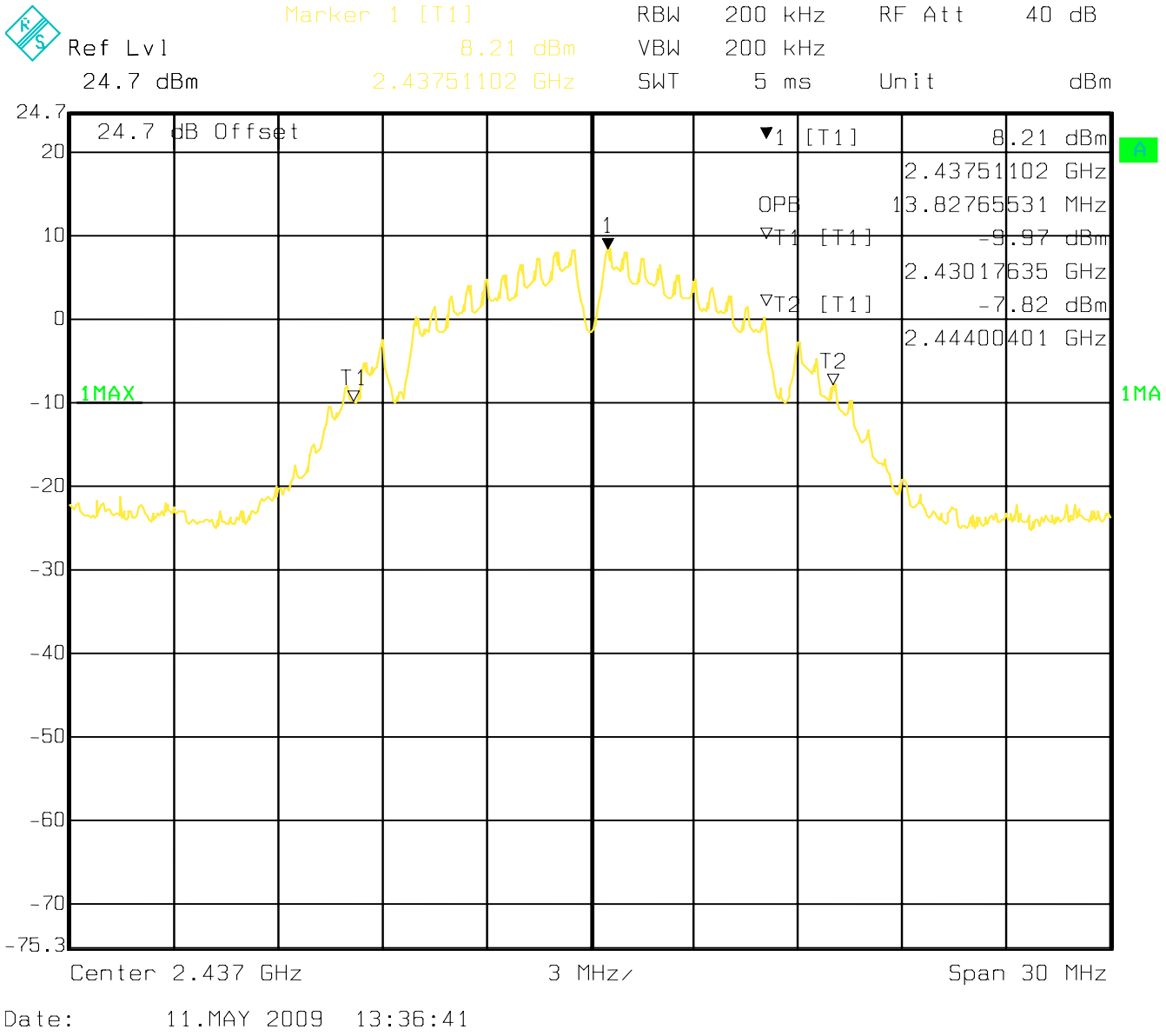
Frequency range	99% Band width
2400-2483.5 MHz	500kHz

TEST CONDITIONS	99% BANDWIDTH (MHz)		
Frequency (MHz)	2412 MHz	2437 MHz	2462 MHz
802.11b	13.768	13.828	13.948
802.11g	16.293	16.293	16.353

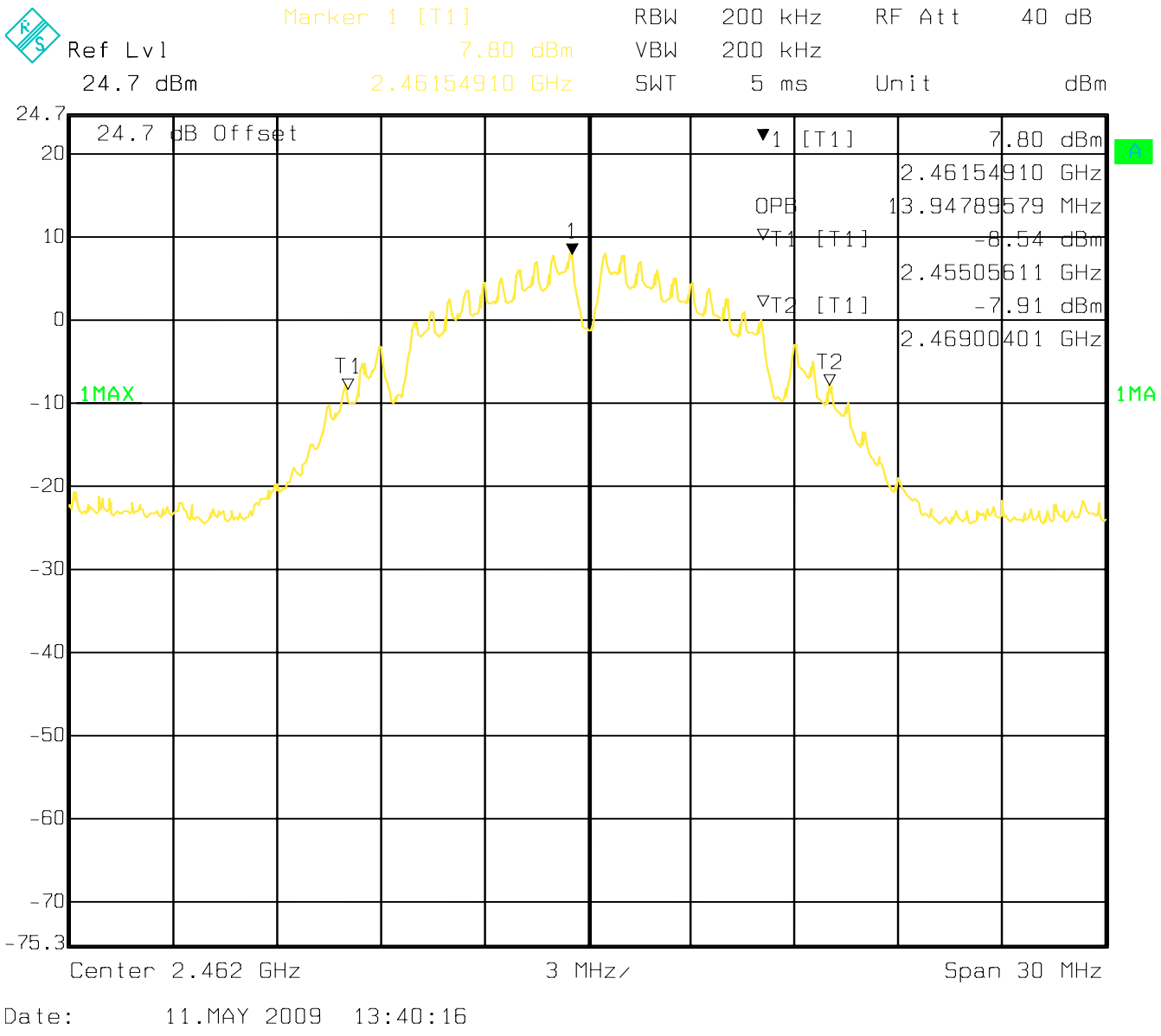
(2412 MHz) 802.11b 99% BW



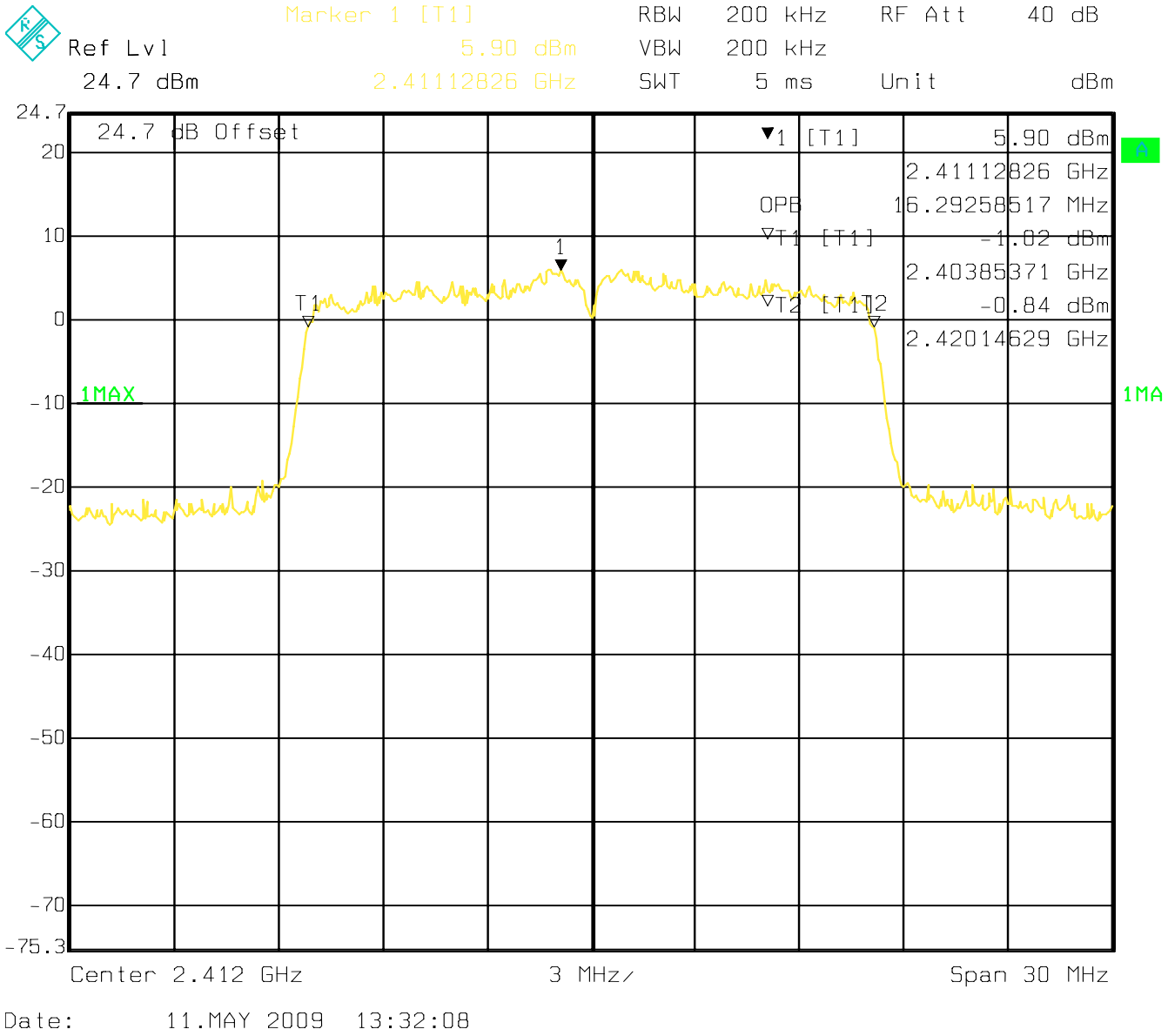
(2437 MHz) 802.11b 99% BW



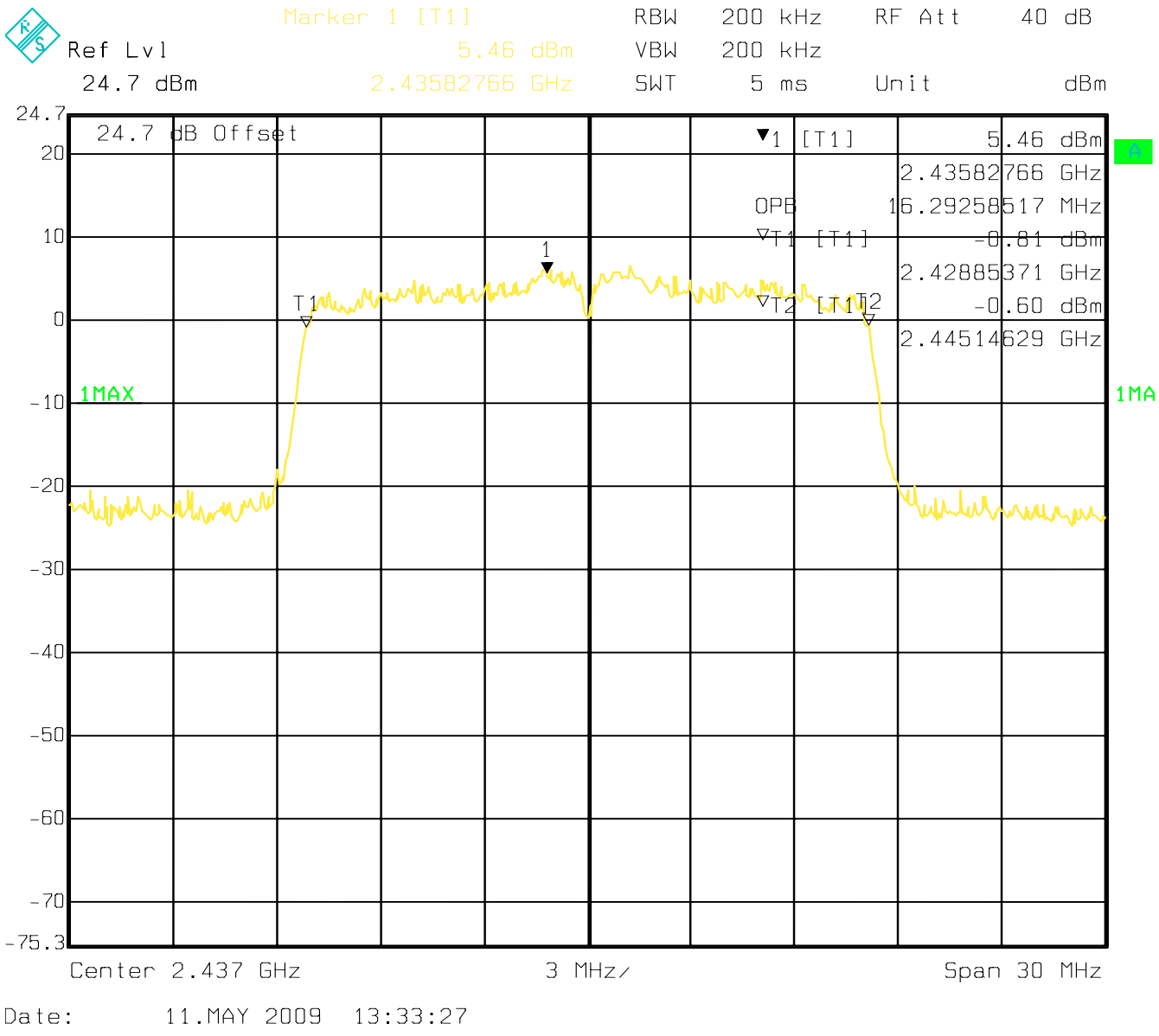
(2462 MHz) 802.11b 99% BW



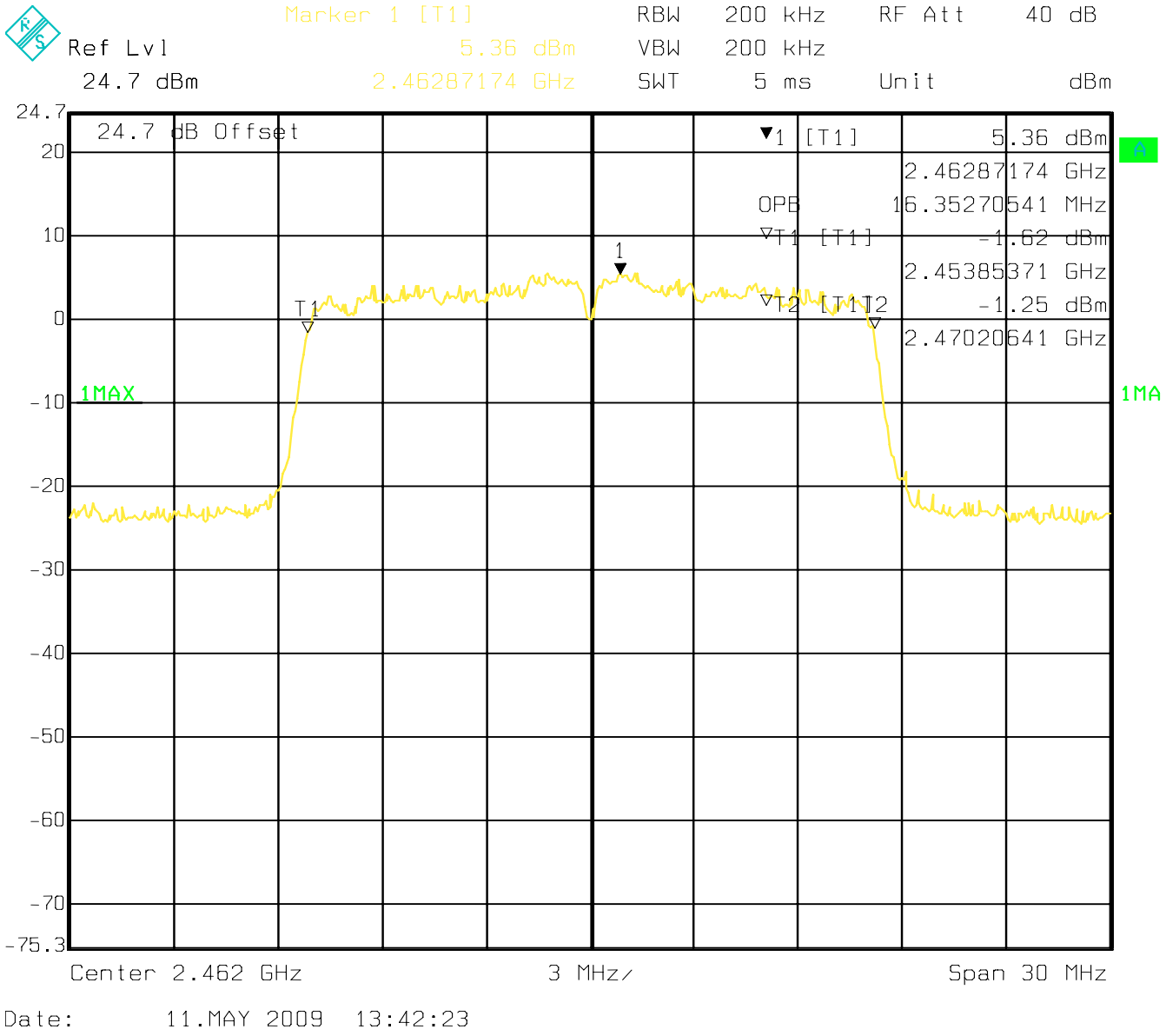
(2412 MHz) 802.11g 99% BW



(2437 MHz) 802.11g 99% BW



(2462 MHz) 802.11g 99% BW



6.4 POWER SPECTRAL DENSITY

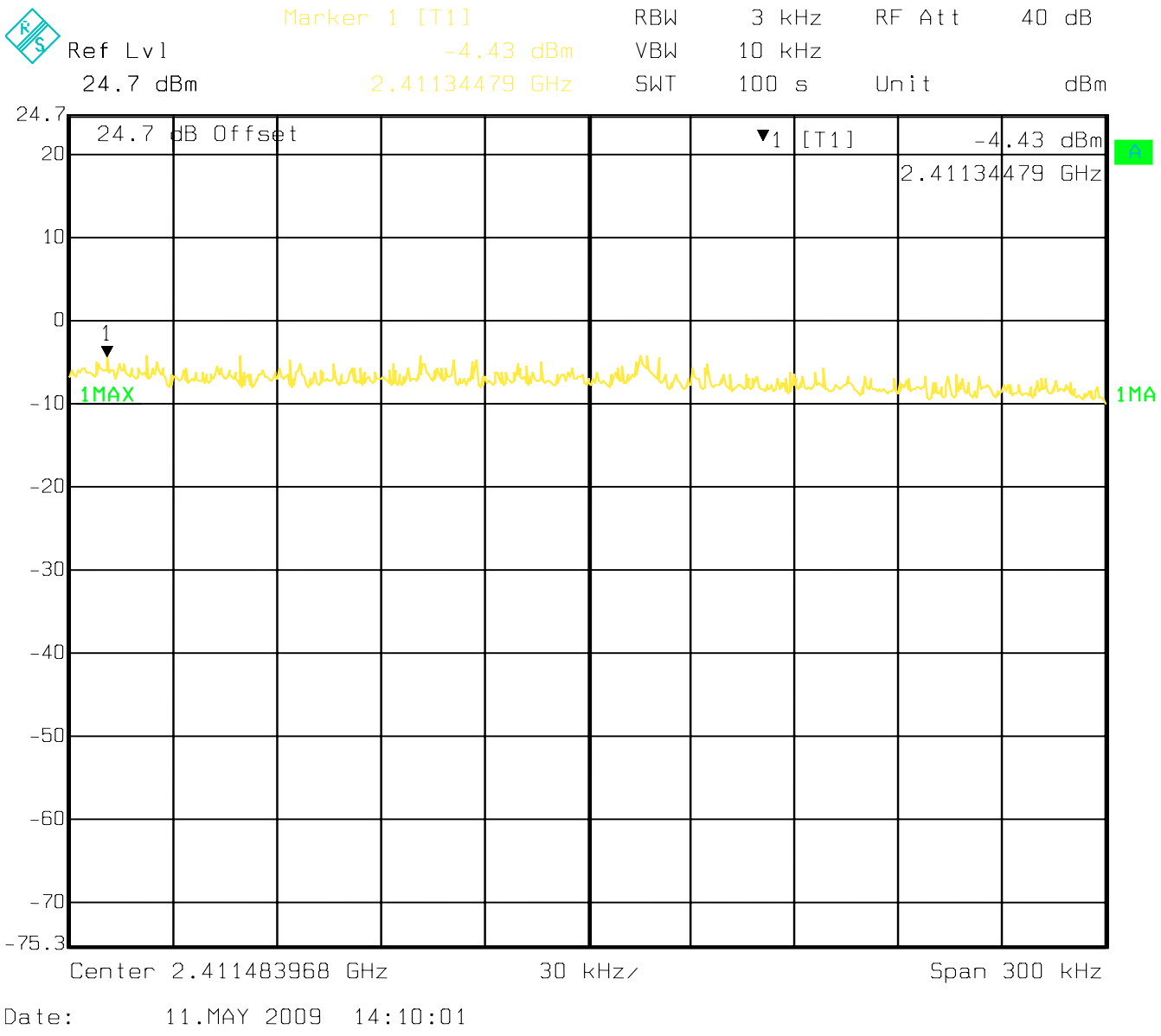
6.4.1 LIMIT SUB CLAUSE § 15.247 5 (d)

FREQUENCY RANGE	limit
2400-2483.5	8dBm (in 3kHz BW)

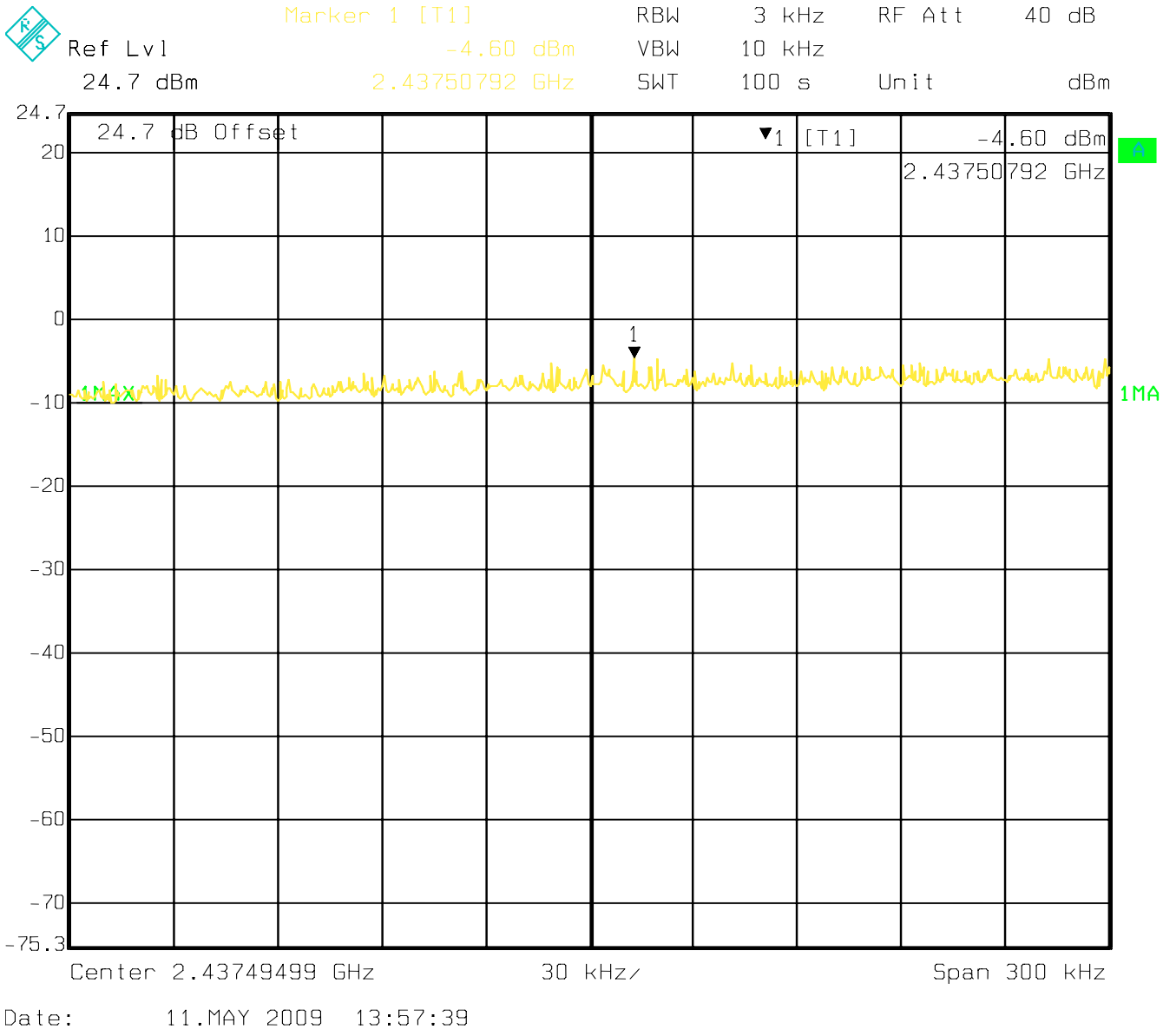
6.4.2 RESULTS:

TEST CONDITIONS	POWER SPECTRAL DENSITY (dBm)		
Frequency (MHz)	2412 MHz	2437 MHz	2462 MHz
802.11b	-4.43	-4.60	-5.30
802.11g	-8.81	-10.51	-10.57

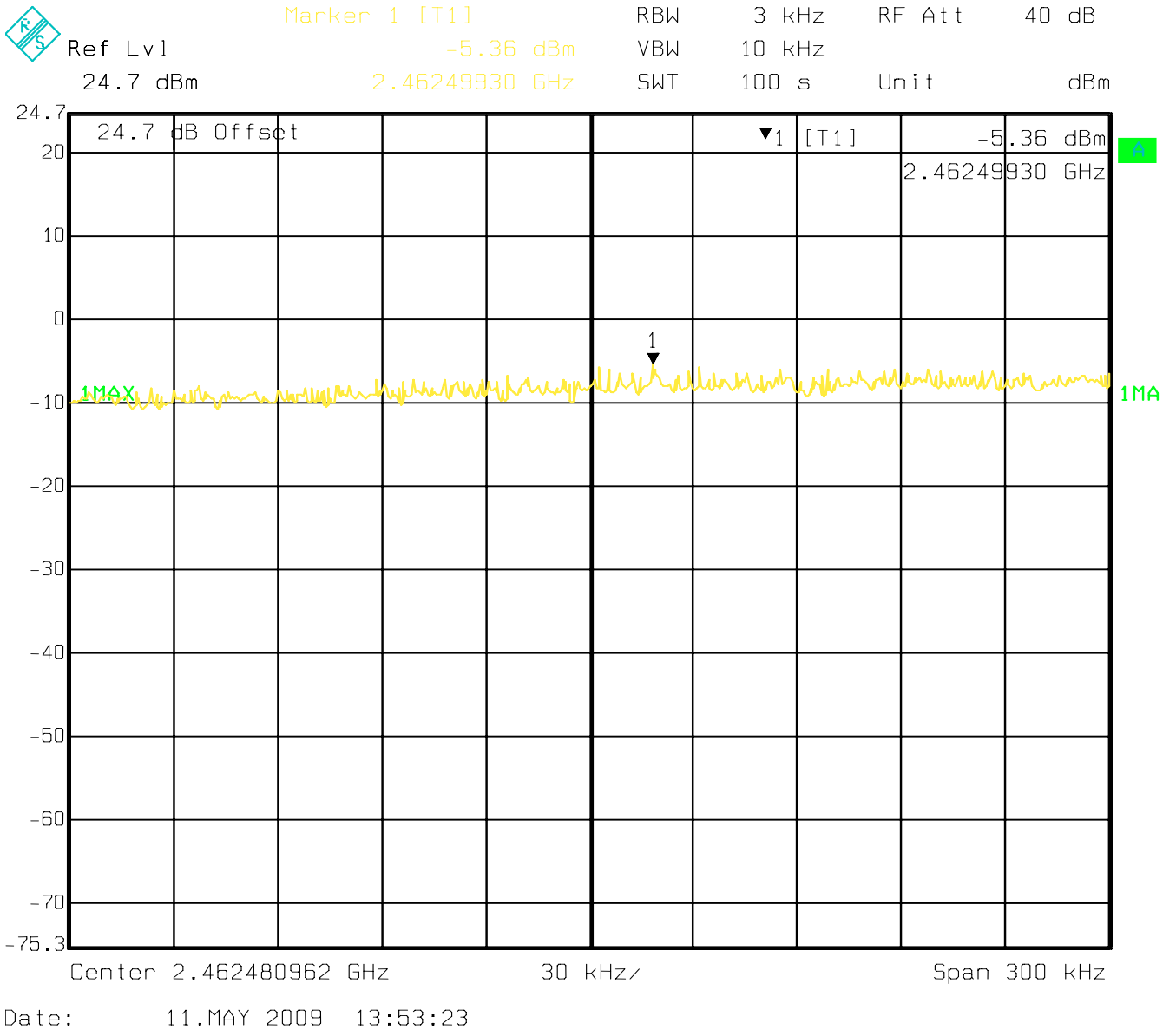
(2412 MHz) 802.11b POWER SPECTRAL DENSITY



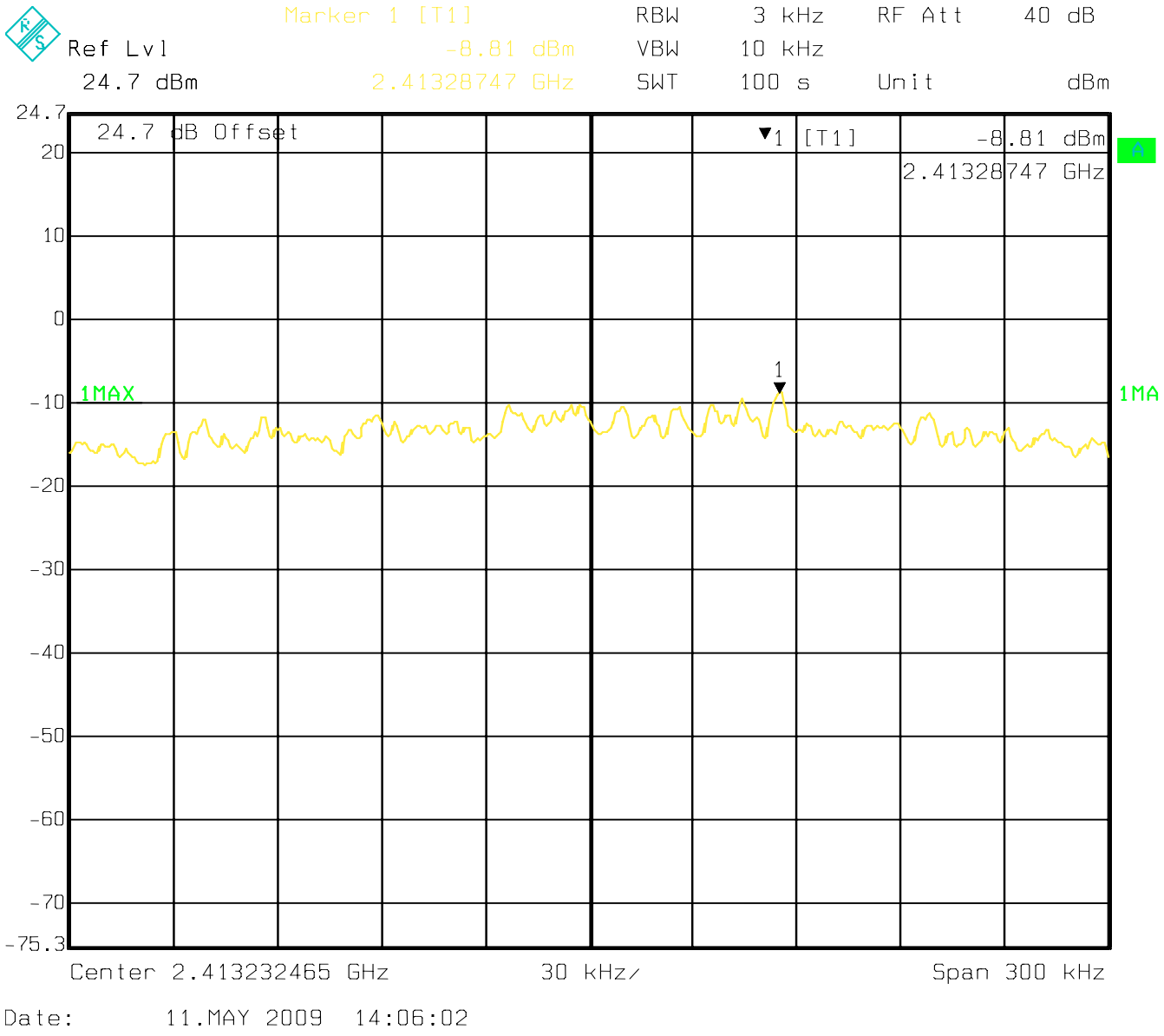
(2437 MHz) 802.11b POWER SPECTRAL DENSITY



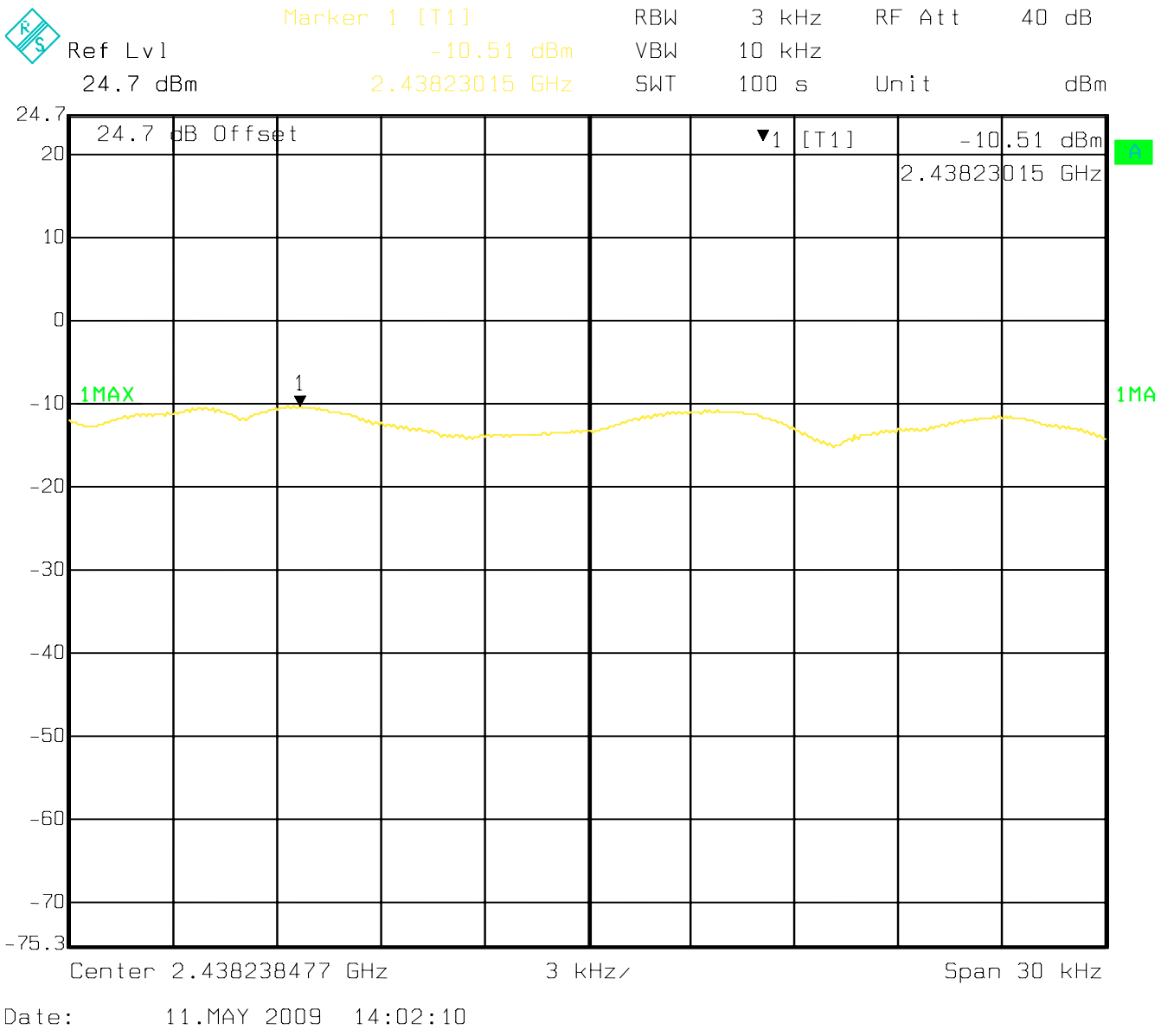
(2462 MHz) 802.11b POWER SPECTRAL DENSITY



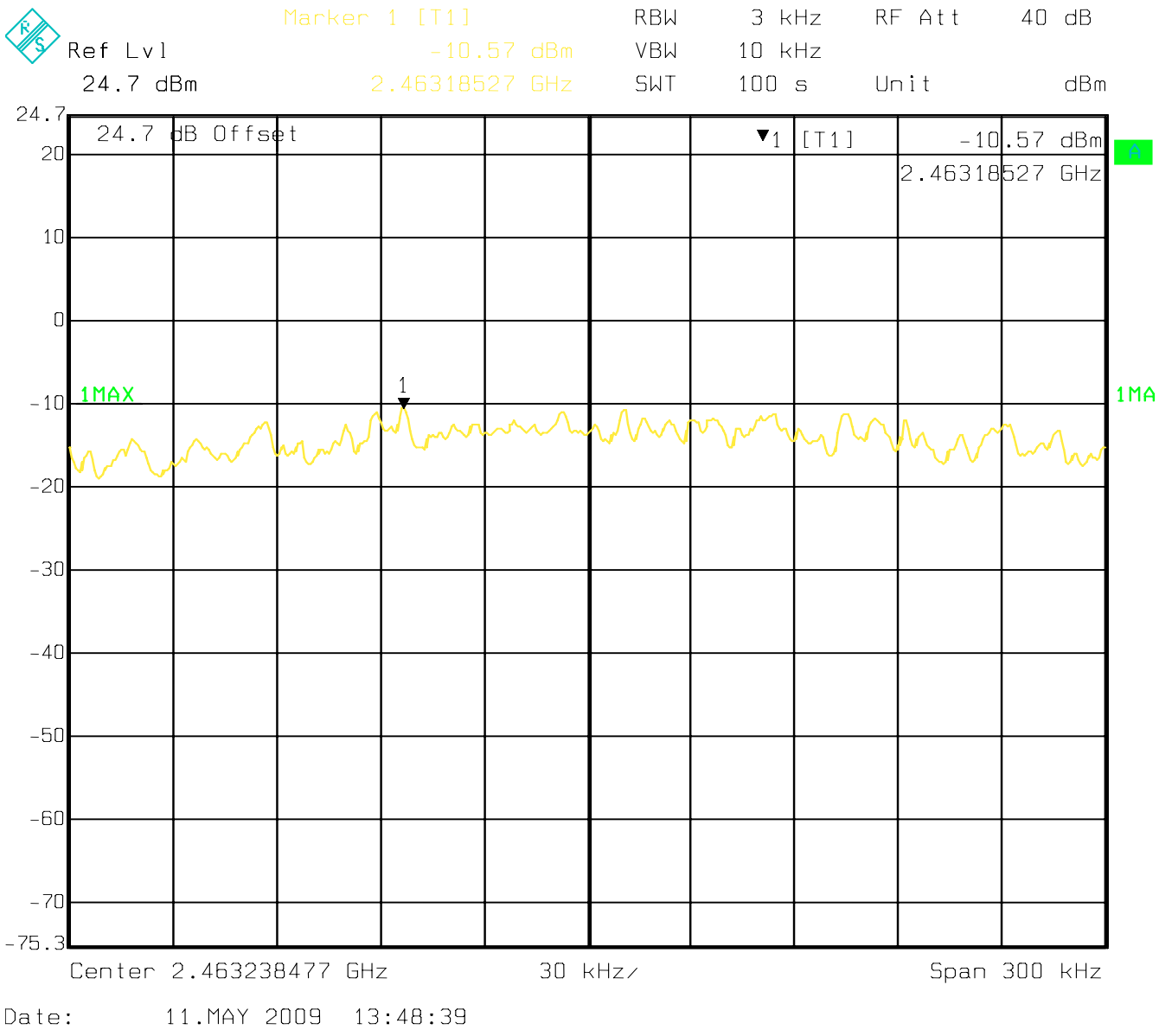
(2412 MHz) 802.11g POWER SPECTRAL DENSITY



(2437 MHz) 802.11g POWER SPECTRAL DENSITY



(2462 MHz) 802.11g POWER SPECTRAL DENSITY



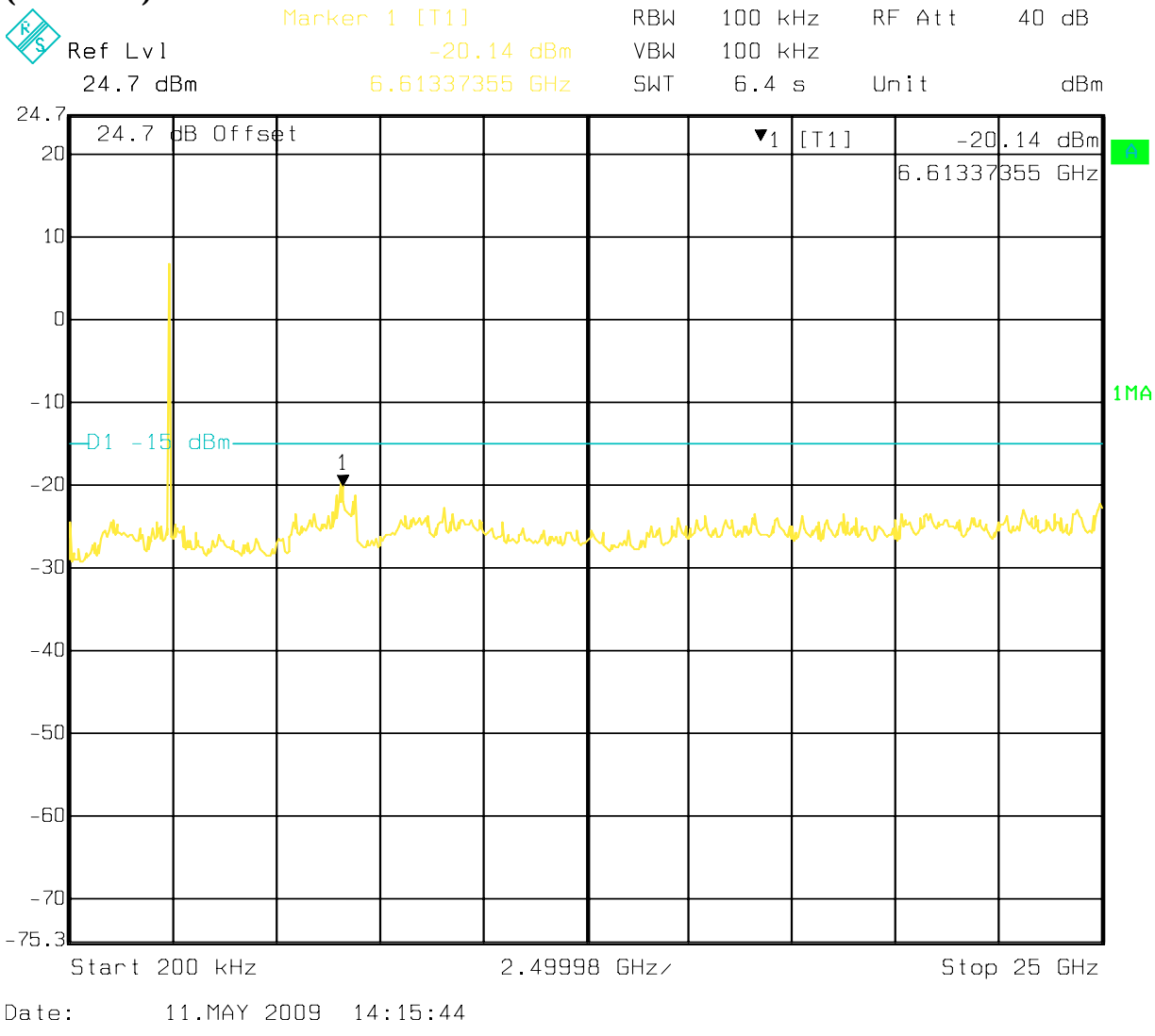
6.5 CONDUCTED SPURIOUS EMISSION

6.5.1 LIMIT SUB CLAUSE § 15.247 (d)

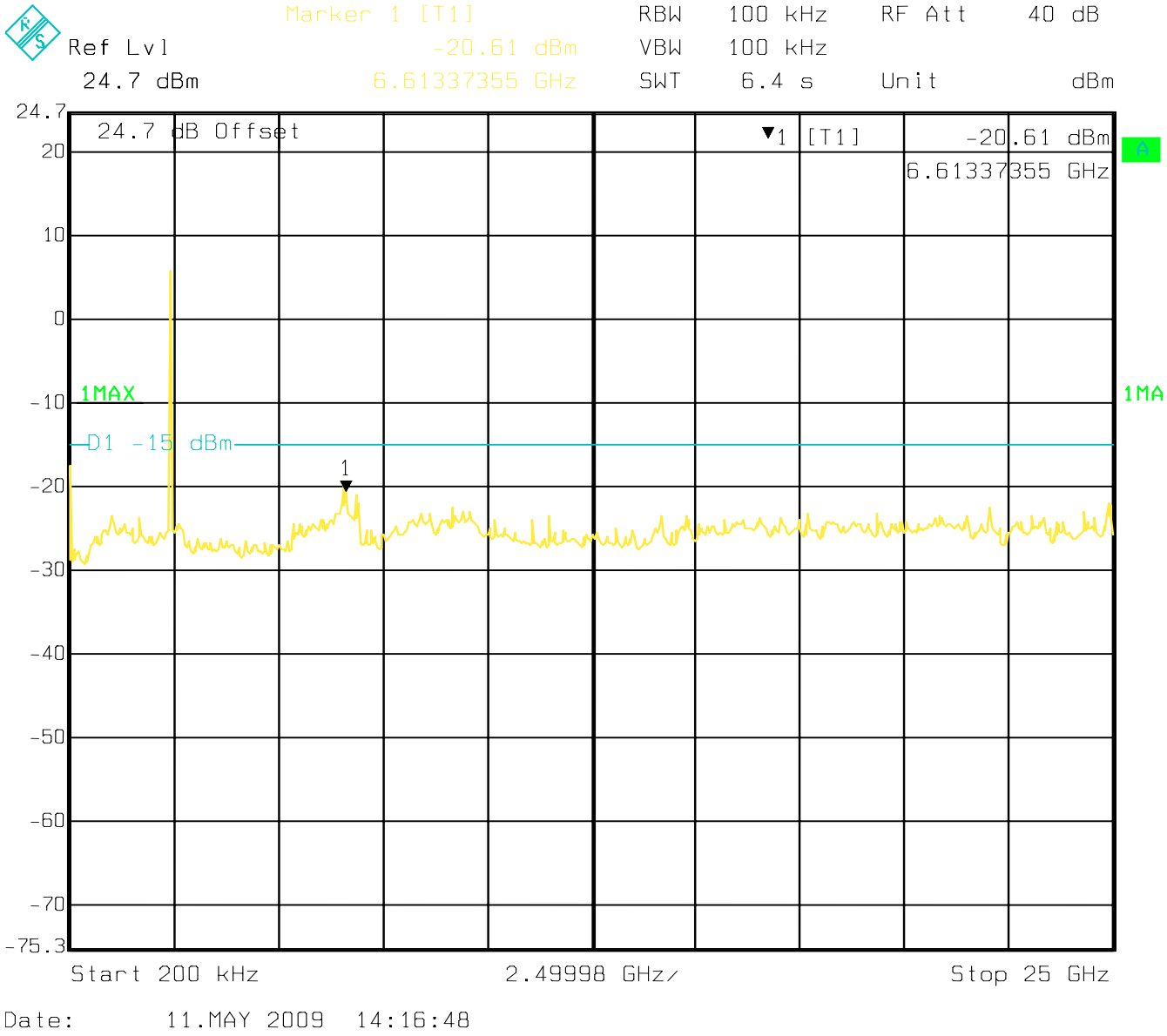
FREQUENCY RANGE	limit
30M-25GHz	-20dBc

6.5.2 RESULTS: Tnom(23)°C VnomVDC Worst case for all modes. Emission above limit is transmission frequency.

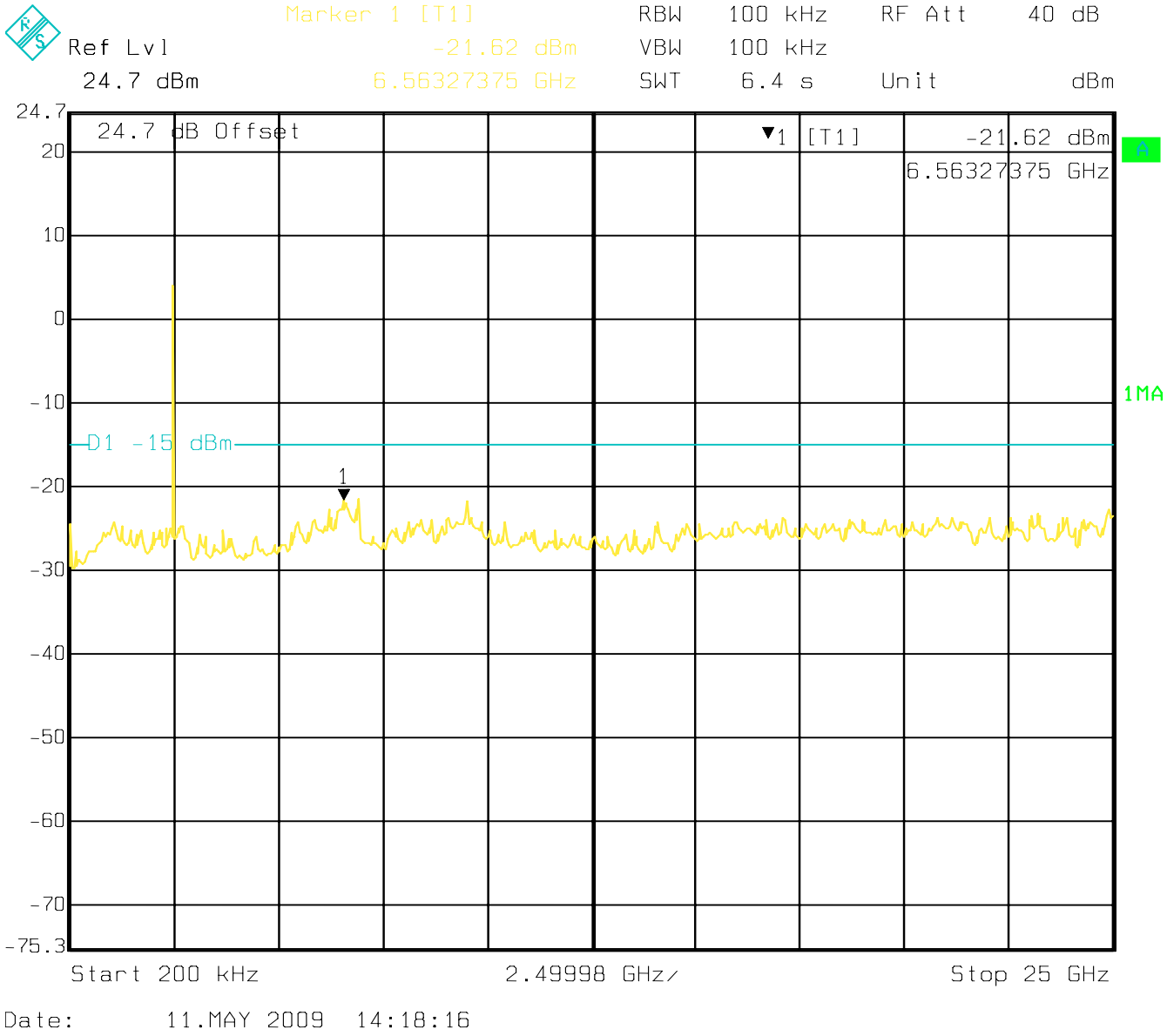
(2412MHz) 802.11



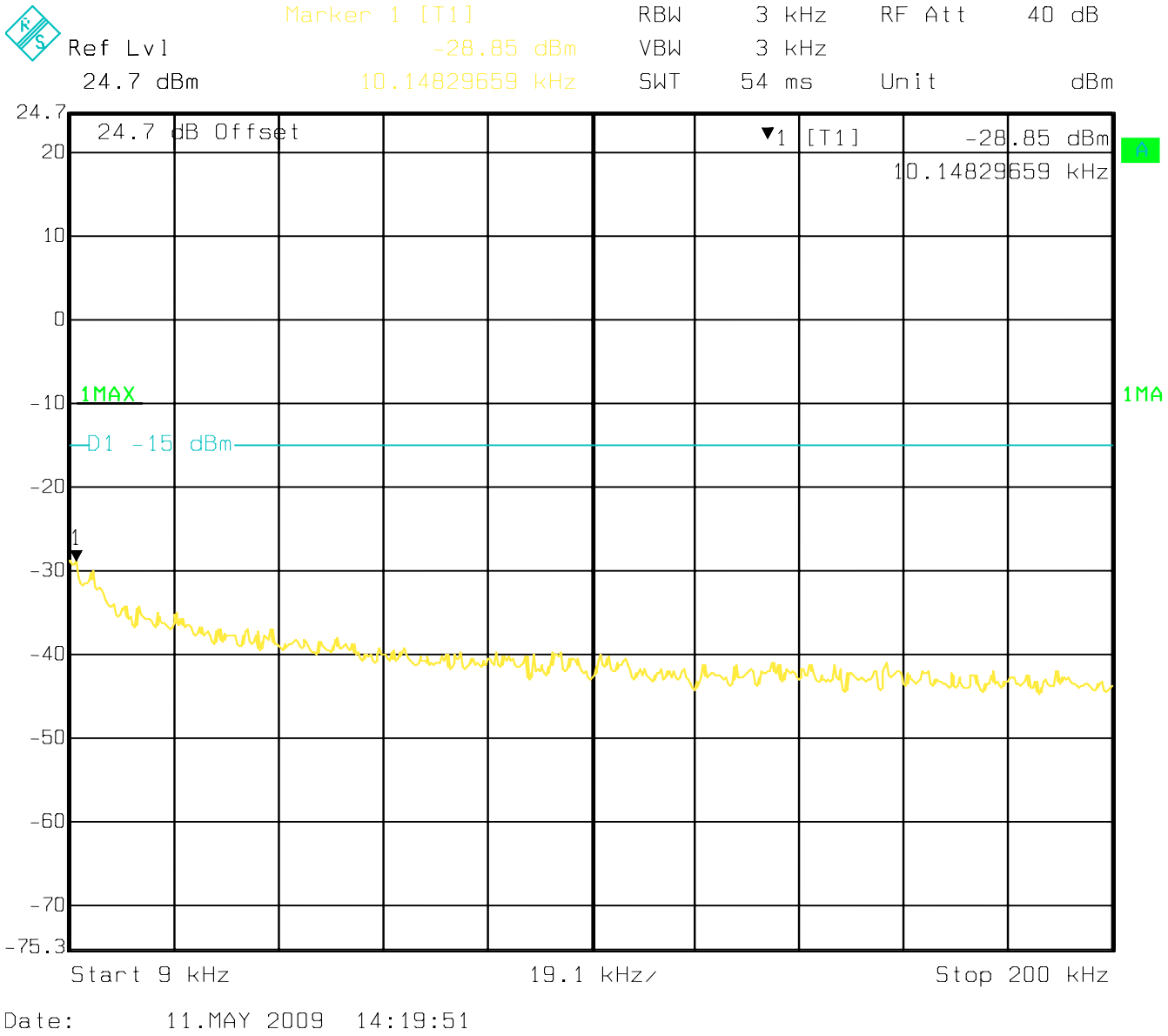
(2437MHz) 802.11



(2462MHz) 802.11



9 kHz - 200 kHz
Worst case for all modes and channels



6.6 AC POWER LINE CONDUCTED EMISSIONS § 15.107/207

6.6.1 LIMITS

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

§15.107 (a) Except for Class A digital devices, for equipment 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.

Limit

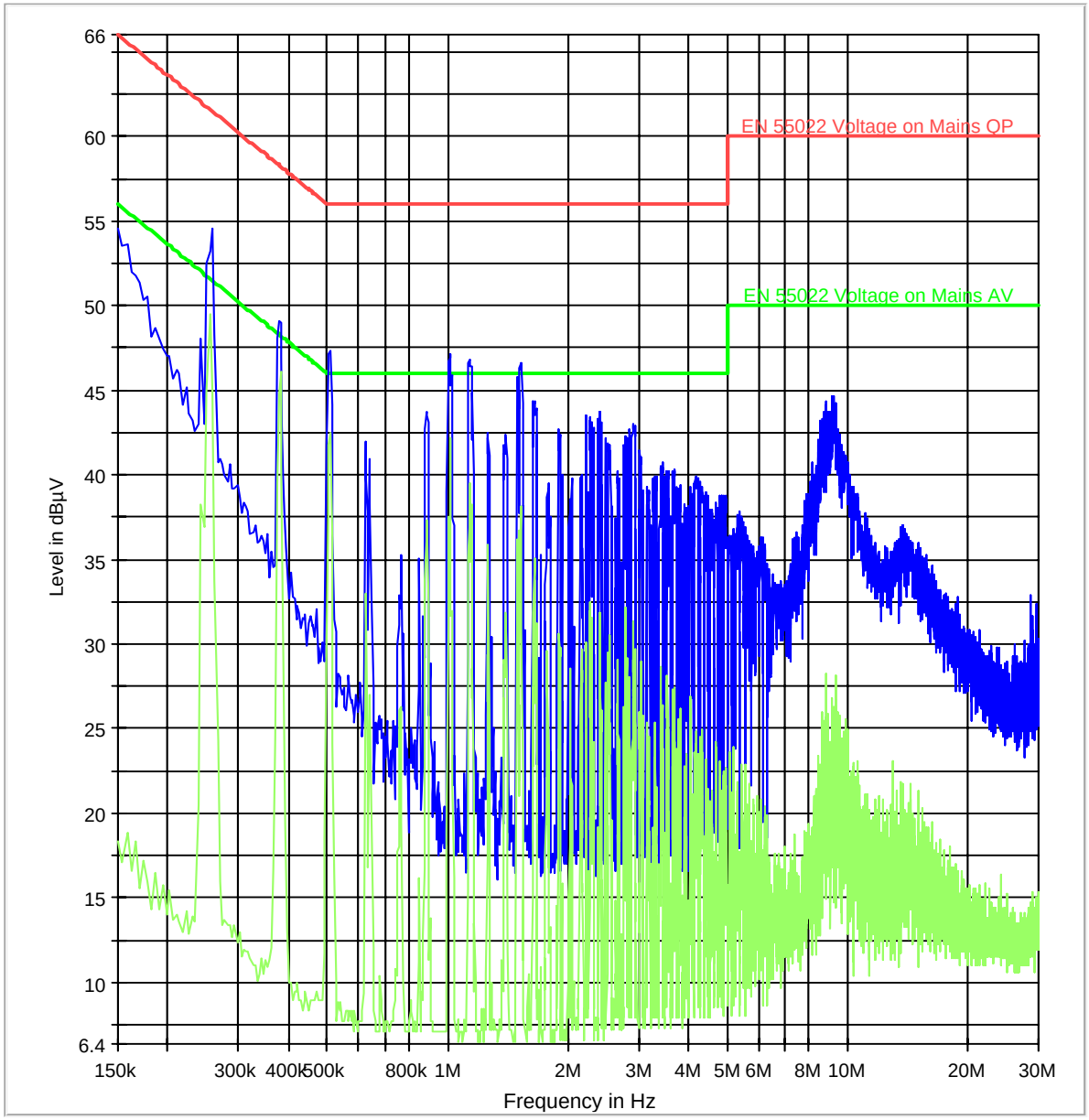
Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50
* Decreases with logarithm of the frequency		

ANALYZER SETTINGS: RBW = 10KHz VBW = 10KHz

Results repots here represents the worse case emission in all operating modes.

6.6.2 RESULTS Line:

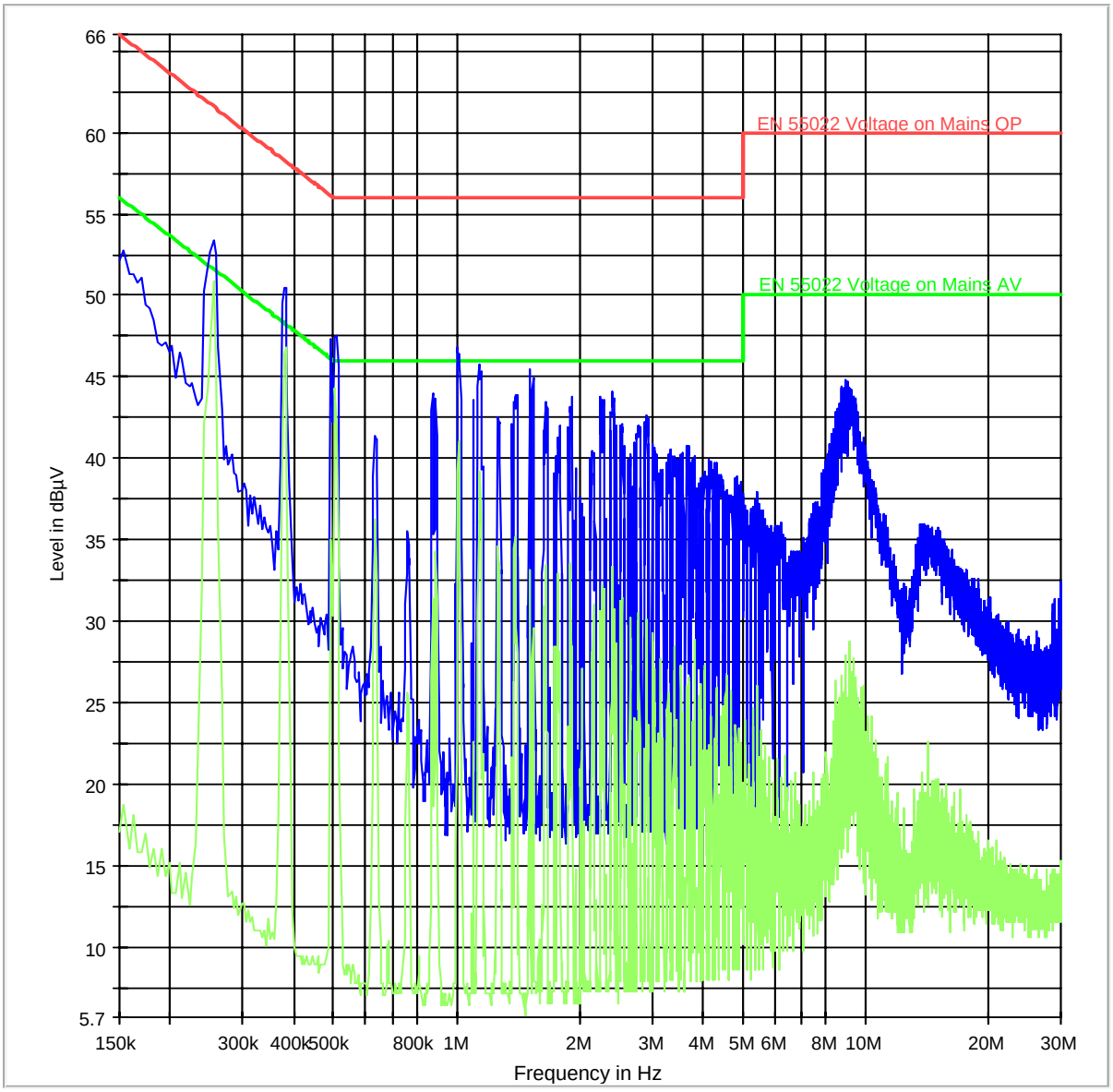
CISPR 22 Mains Conducted - L



EN 55022 Voltage on Mains QP.LimitLine
Preview Result 1
EN 55022 Voltage on Mains AV.LimitLine
Preview Result 2

Neutral:

CISPR 22 Mains Conducted - N



EN 55022 Voltage on Mains QP.LimitLine
Preview Result 1
EN 55022 Voltage on Mains AV.LimitLine
Preview Result 2

7 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	March 2010	1 year
06	Horn Antenna (1-18GHz)	SAS-200/571	AH Systems	325	February 2010	1 year
07	Horn Antenna (18-26.5GHz)	3160-09	EMCO	1240	February 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 2009	2 years

8 BLOCK DIAGRAMS

Radiated Testing