FCC/IC Test Report

FOR:

Model Name: 7545MBW
Handheld Computer
FCC ID: GM37545MBW
IC ID: 2739D-7545MBW

47 CFR Part 15.407

IC RSS-210 Issue 8

TEST REPORT #: EMC_PSION_007_10001_15.407
DATE: 2011-06-17

ACCREDITED
TESTING LABORATORY
Certificate #2135.01

Bluetooth Qualification Test Facility (BQTF)

CTIA Authorized Test L
LAB CODE 20020328-00

FCC listed
A2LA Accredited

IC recognized # 3462B

***CETECOM* Inc.**
411 Dixon Landing Road ◆ Milpitas, CA 95035 ◆ U.S.A.
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CETECOM Inc. is a Delaware Corporation with Corporation number: 2113686
Board of Directors: Dr. Harald Ansorge, , Hans Peter May

TABLE OF CONTENTS

1 Assessment

The following is in compliance with the applicable criteria specified in FCC rules Parts 15.407 of Title 47 of the Code of Federal Regulations and Industry Canada Standards RSS 210 Issue 8.

Company	Description	Model #
Psion Inc.	**Handheld Computer**	**7545MBW**

Responsible for Testing Laboratory:

Date	Section	Name	Signature
2011-06-17	Compliance	Sajay Jose (Test Lab Manager)	Sajay Jose 2011.06.20 09:16:30 -07'00'

Responsible for the Report:

Date	Section	Name	Signature
2011-06-17	Compliance	Satya Radhakrishna (EMC Engineer)	

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
Test Lab Director:	Heiko Strehlow
Responsible Project Leader:	Satya Radhakrishna

2.2 Identification of the Client

Applicant's Name:	Psion Inc.
Street Address:	2100 Meadowvale Boulevard,
City/Zip Code	Mississauga, Ontario
Country	Canada
Contact Person:	Sada Dharwarkar
Phone No.	905 812 6200 Ext. 3358
Fax:	905 812 6301
e-mail:	Sada.Dharwarkar@psion.com

2.3 Identification of the Manufacturer

Same as above applicant.

3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

Marketing Name:	7545MBW
Model No:	7545MBW
Product Type:	Handheld Computer
Hardware Revision :	A
Software Revision :	2.0.0.0
FCC-ID:	GM37545MBW
IC-ID :	2739D-7545MBW
Frequency:	5150-5250MHz, 5250-5350MHz, 5470-5725MHz
Type(s) of Modulation:	OFDM with BPSK, QPSK, 16QAM, 64QAM
Is MIMO supported?	No
Bandwidths supported in 802.11n mode	■20MHz ☐40MHz
Antenna Type/Gain:	Type: PCB Peak Gain: 2 dBi
Equipment Classification:	☐Fixed ☐Vehicular ■Portable ☐Module
Power Supply:	3.7 VDC battery, 110VAC Adapter
Temperature Range:	-20°C to 55°C

3.2 Identification of the Equipment Under Test (EUT)

EUT #	Model No.	Serial Number	HW Status	SW Status	Notes
1	7545MBW	STC02A3933	A	2.0.0.0	Radiated Unit
2	7545MBWM	STC02A393384E2	A	2.0.0.0	Conducted Unit

3.3 Identification of Accessory equipment

AE #	Type	Manufacturer	Model	Serial Number
1	AC Adapter Holster	Psion Inc.	ST4001	SU0SAA470076
2	Ac adapter	Phihong	PSC30U-120V	P03003256A1

3.4 Test modes of operation:

During the tests, the different modes of operation, modulation schemes and channels were selected using the built-in software installed on the device.

Settings:

In the 5150-5250 MHz band

Mode	Power Level	Data Rate
802.11a	6 dBm	6M
802.11n	6 dBm	6.5M

In the 5250-5350 MHz and 5470-5725 MHz bands,

Mode	Power Level	Data Rate
802.11a	11dBm	6M
802.11n	11dBm	6.5M

Note: In all tests in this report each mode was tested at the data rate mentioned in the table.
The reason 1Mbps, 6Mbps and 6.5 Mbps are used are they are the lowest available data rates in the 802.11b, 802.11g and 802.11n modes respectively and they have the maximum available duty cycle as a result. Since the duty cycle is the highest in these data rates, the transmitter is on for a greater duration and hence this is the worst case to test under.
Regarding duty cycle used, the device has a user interface which enables adjusting the frame size and delay between frames. In all tests, the frame size was set to 1000 and delay between frames was set to 10µs to have maximum duty cycle possible.
When operating in the 802.11n mode, the device only supports 20MHz bandwidth and whenever 802.11n appears in this report it refers to 802.11n with 20MHz bandwidth (802.11n HT20).

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 15.407 of Title 47 of the Code of Federal Regulations and Industry Canada rules RSS-210 Issue 8.

This test report is to support a request for new equipment authorization under the FCC ID GM37545MBW and IC ID 2739D-7545MBW.

Radiated measurements were performed on the product referred to in Section 3 as EUT, conducted measurements were performed on the radio installed on a test fixture. This test report contains full radiated and conducted testing results as per FCC15.407.

Low, mid and high channels and all modes were tested. All data in this report shows the worst case between horizontal and vertical polarization measurements.

7545MBW refers to model with only WLAN, BT and GPS radios.
7545MBWM refers to model with WLAN, BT, GPS, Cinterion MC75i WWAN radios.

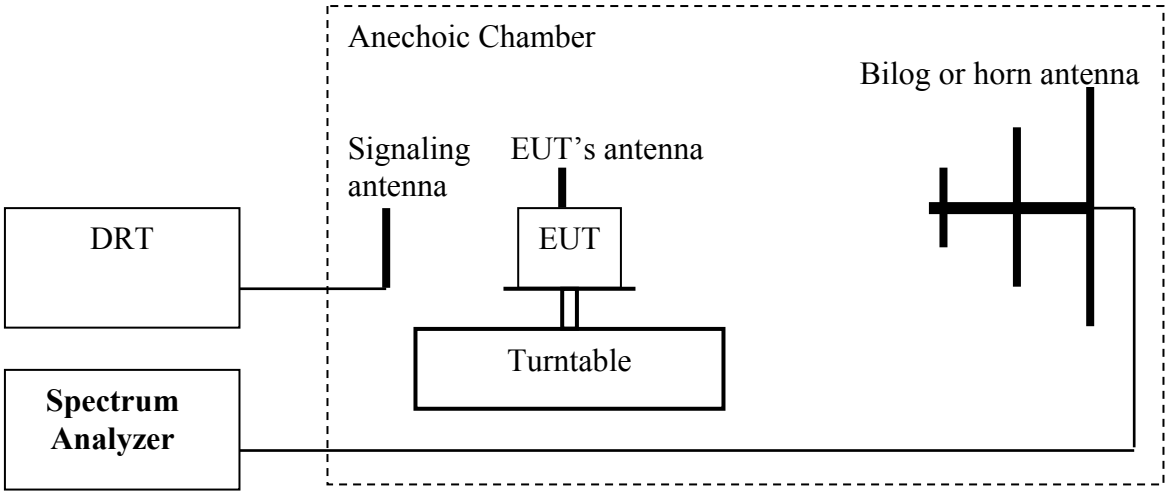
Both models have WLAN, BT and GPS radios and are absolutely identical except that the 7545MBWM additionally has a Cinterion MC75i WWAN radio.

All radiated testing for this report was performed on the 7545MBW model. All conducted testing was performed on the 7545MBWM model.

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=10MHz

ANSI C63.4-2003 Section 8.3.1.1: Exploratory radiated emission measurements

Exploratory radiated measurements shall be performed at the measurement distance or at a closer distance than that specified for compliance to determine the emission characteristics of the EUT. At near distances, for EUTs of comparably small size, it is relatively easy to determine the spectrum signature of the EUT and, if applicable, the EUT configuration that produces the maximum level of emissions. A shielded room may be used for exploratory testing, but may have anomalies that can lead to significant errors in amplitude measurements.

Broadband antennas and a spectrum analyzer or a radio-noise meter with a panoramic display are often useful in this type of testing. It is recommended that either a headset or loudspeaker be connected as an aid in detecting ambient signals and finding frequencies of significant emission from the EUT when the exploratory and final testing is performed in an OATS with strong ambient signals. Caution should be taken if either antenna height between 1 and 4 meters or EUT azimuth is not fully explored. Not fully exploring these parameters during exploratory testing may require complete testing at the OATS or semi-anechoic chamber when the final full spectrum testing is conducted.

The EUT should be set up in its typical configuration and arrangement, and operated in its various modes. For tabletop systems, cables or wires should be manipulated within the range of likely arrangements. For floor-standing equipment, the cables or wires should be located in the same manner as the user would install them and no further manipulation is made. For combination EUTs, the tabletop and floor-standing portions of the EUT shall follow the procedures for their respective setups and cable manipulation. If the manner of cable installation is not known, or if it changes with each installation, cables or wires for floor-standing equipment shall be manipulated to the extent possible to produce the maximum level of emissions.

For each mode of operation required to be tested, the frequency spectrum shall be monitored. Variations in antenna height between 1 and 4 m, antenna polarization, EUT azimuth, and cable or wire placement (each variable within bounds specified elsewhere) shall be explored to produce the emission that has the highest amplitude relative to the limit. A step-by-step technique for determining this emission can be found in Annex C.

When measuring emissions above 1 GHz, the frequencies of maximum emission shall be determined by manually positioning the antenna close to the EUT and by moving the antenna over all sides of the EUT while observing a spectral display. It will be advantageous to have prior knowledge of the frequencies of emissions above 1 GHz. If the EUT is a device with dimensions approximately equal to that of the measurement antenna beamwidth, the measurement antenna shall be aligned with the EUT.

ANSI C63.4-2003 Section 8.3.1.2: Final radiated emission measurements

Based on the measurement results in 8.3.1.1, the one EUT, cable and wire arrangement, and mode of operation that produces the emission that has the highest amplitude relative to the limit is selected for the final measurement. The final measurement is then performed on a site meeting the requirements of 5.3, 5.4, or 5.5 as appropriate without variation of the EUT arrangement or EUT mode of operation. If the EUT is relocated from an exploratory test site to a final test site, the highest emission shall be remaximized at the final test location before final radiated emissions measurements are performed. However, antenna height and polarity and EUT azimuth are to be varied. In addition, the full frequency spectrum (for the range to be checked for meeting compliance) shall be investigated.

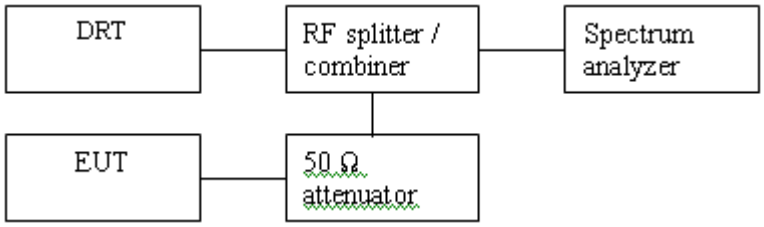
This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. During the full frequency spectrum investigation, particular focus should be made on those frequencies found in exploratory testing that were used to find the final test configuration, mode of operation, and arrangement (associated with achieving the least margin with respect to the limit). This full spectrum test constitutes the compliance measurement.

For measurements above 1 GHz, use the cable, EUT arrangement, and mode of operation determined in the exploratory testing to produce the emission that has the highest amplitude relative to the limit. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the antenna in the “cone of radiation” from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response. The antenna may have to be higher or lower than the EUT, depending on the EUT’s size and mounting height, but the antenna should be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. If the transmission line for the measurement antenna restricts its range of height and polarization, the steps needed to ensure the correct measurement of the maximum emissions, shall be described in detail in the report of measurements. Data collected shall satisfy the report requirements of Clause 10.

NOTES

1— Where limits are specified by agencies for both average and peak (or quasi-peak) detection, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.
2—Use of waveguide and flexible waveguide may be necessary at frequencies above 10 GHz to achieve usable signal-to noise ratios at required measurement distances. If so, it may be necessary to restrict the height search of the antenna, and special care should be taken to ensure that maximum emissions are correctly measured.
3—All presently known devices causing emissions above 10 GHz are physically small compared with the beam-widths of typical horn antennas used for EMC measurements. For such EUTs and frequencies, it may be preferable to vary the height and polarization of the EUT instead of the receiving antenna to maximize the measured emissions.

5.2 Conducted Measurement Procedure



1. Connect the equipment as shown in the above diagram.
2. Adjust the settings of the Digital Radio Communication 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: §15.407

Conducted Output Power is defined as the following (reduced if directional gain > 6dBi):
Conducted output power shall not reduce the lesser of the following

Sub-band 1: 5150-5250MHz: 15.407(a)(1): 50mW(17dBm) or 4dBm + 10log(B),
Sub-band 2: 5250-5350MHz: 15.407(a)(2): 250mW(24dBm) or 11dBm + 10log(B)
Sub-band 3: 5470-5725MHz: 15.407(a)(2): 250mW(24dBm) or 11dBm + 10log(B)

B is the 26–dB emission bandwidth in MHz.
EIRP limit = Conducted Limit + 6dB

5.3.2 Test Conditions:

Tnom: 21°C; Vnom

5.3.3 Test Result:

EIRP = conducted output power + antenna gain (2 dBi)

		Max. Peak Output Power – EIRP (dBm)			Margin(dBm)/Verdict	
Frequency (MHz)	**Channel**	**a**	**n HT20**	**Limit**	**a**	**n HT20**
5180	**36**	14.77	14.53	23	8.23/pass	8.47/pass
5220	**44**	14.83	14.75	23	8.17/pass	8.25/pass
5240	**48**	14.86	14.55	23	8.14/pass	8.45/pass
5260	**52**	24.69	24.68	30	5.31/pass	5.32/pass
5300	**60**	24.70	24.74	30	5.3/pass	5.26/pass
5320	**64**	24.76	24.80	30	5.24/pass	5.2/pass
5500	**100**	25.18	25.20	30	4.82/pass	4.8/pass
5600	**120**	25.29	25.30	30	4.71/pass	4.7/pass
5700	**140**	25.28	25.33	30	4.72/pass	4.67/pass
Measurement Uncertainty: ±0.5dB						

		Max Peak Output Power –Conducted (dBm)			Margin(dBm)/Verdict	
Frequency (MHz)	**Channel**	**a**	**n HT20**	**Limit**	**a**	**n HT20**
5180	**36**	12.77	12.53	17	4.23/pass	4.47/pass
5220	**44**	12.83	12.75	17	4.17/pass	4.25/pass
5240	**48**	12.86	12.55	17	4.14/pass	4.45/pass
5260	**52**	22.69	22.68	24	1.31/pass	1.32/pass
5300	**60**	22.70	22.74	24	1.3/pass	1.26/pass
5320	**64**	22.76	22.80	24	1.24/pass	1.2/pass
5500	**100**	23.18	23.20	24	0.82/pass	0.8/pass
5600	**120**	23.29	23.30	24	0.71/pass	0.7/pass
5700	**140**	23.28	23.33	24	0.72/pass	0.67/pass
Measurement Uncertainty: ±0.5dB						

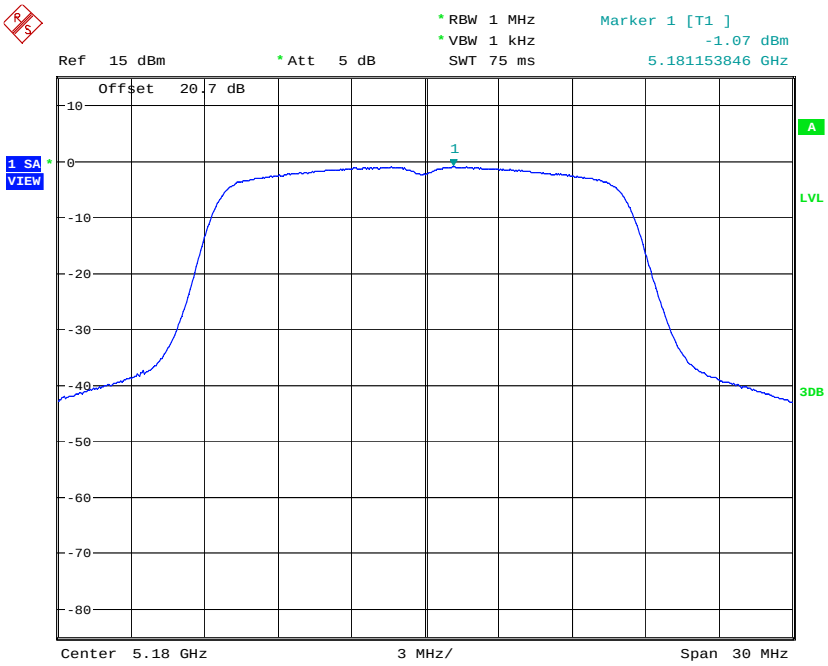
Note: As mentioned in section 3.4, the power level setting for the 5150-5250 MHz band was 6dBm and the power level setting for the 5250-5350 MHz and the 5470-5725MHz bands was 11dBm.

Method #3 as described in FCC Public Notice DA 02-2138, Measurement Procedure Updated for Peak Transmit Power in the Unlicensed National Information Infrastructure (U-NII) Bands was used to measure power in the 5150-5250 MHz band. Power in the 5250-5350 MHz and the 5470-5725MHz bands was measured using NRP-Z81 Rohde and Schwarz wide band power sensor.

Frequency (MHz)	**Mode**	**Initial Reading (IR)(dBm)**	**Emission Bandwidth (MHz)**	**Correction Factor(CF) (dB) 10log(EBW/1MHz)**	**Final reading=IR+CF Peak Power(dBm)**
5180	**802.11a**	-1.07	24.20	13.84	12.77
5220	**802.11a**	-1.09	24.68	13.92	12.83
5240	**802.11a**	-0.98	24.20	13.84	12.86
5180	**802.11n**	-1.46	25.08	13.99	12.53
5220	**802.11n**	-1.39	25.96	14.14	12.75
5240	**802.11n**	-1.35	24.57	13.90	12.55

5.3.4 Test data plots

802.11a Ch 36



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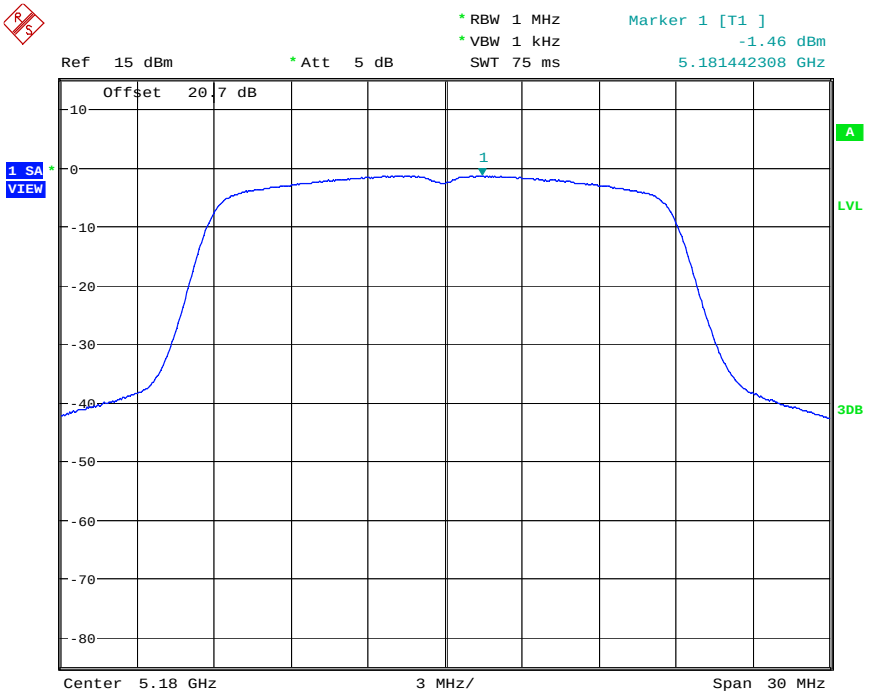

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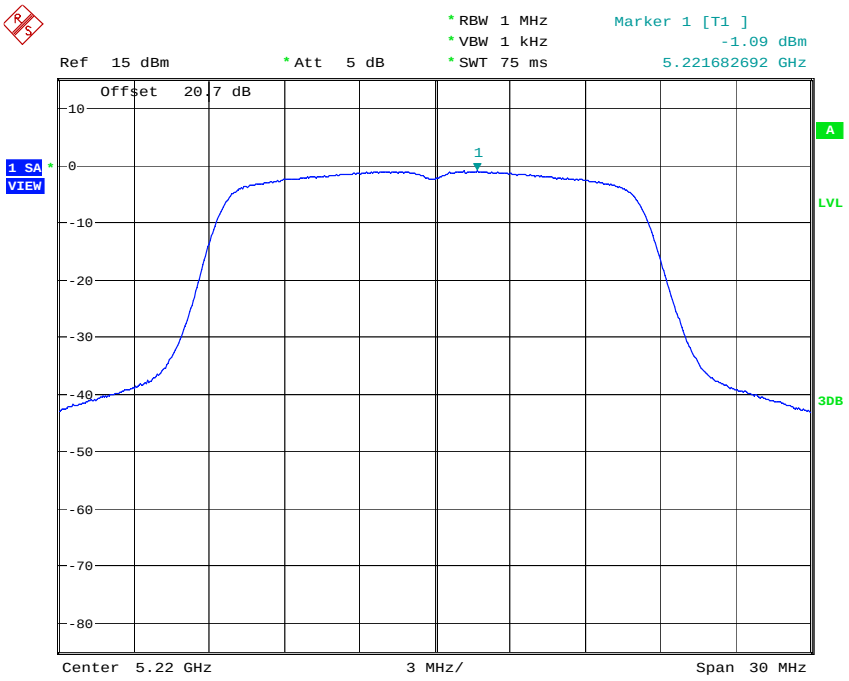

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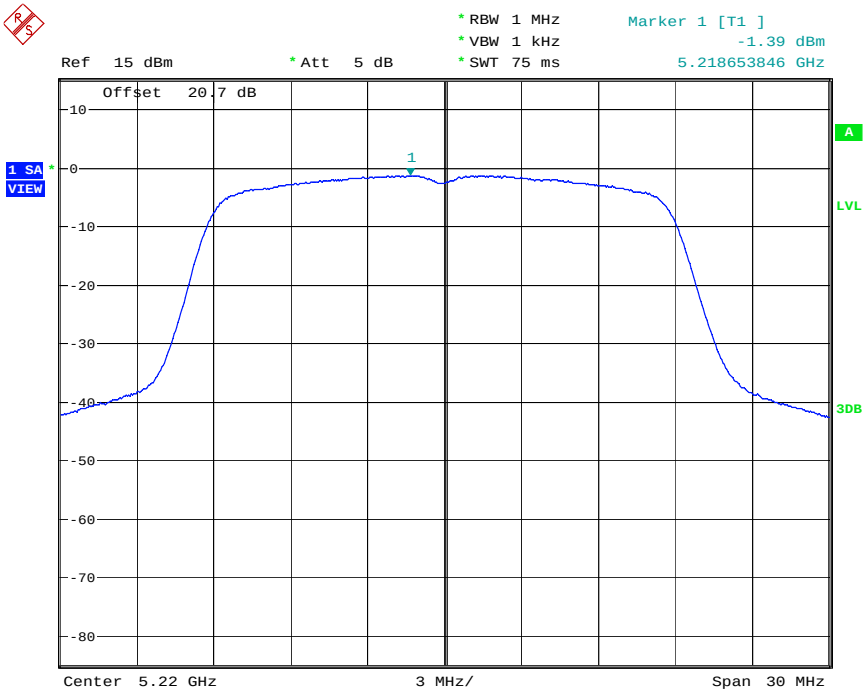

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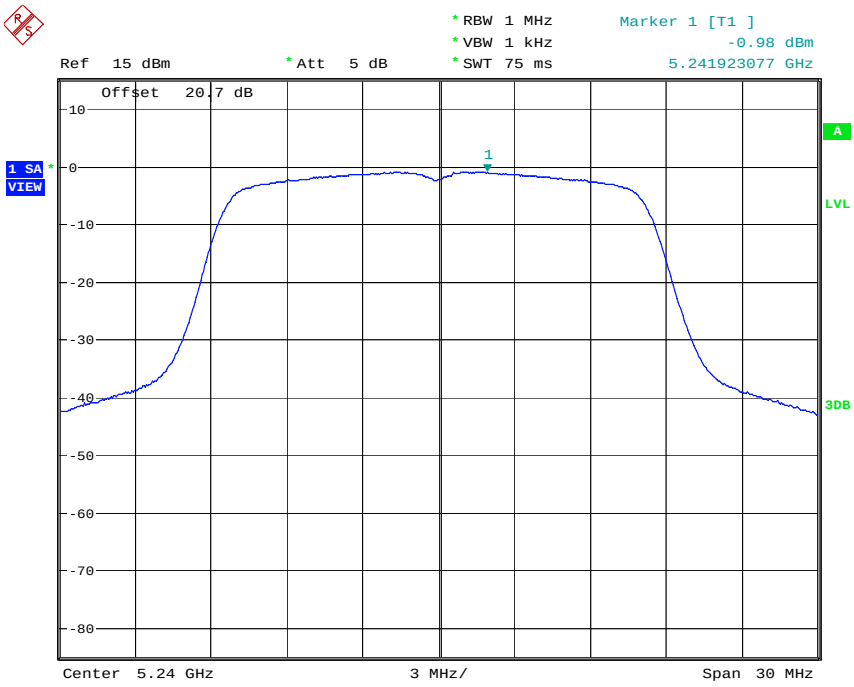

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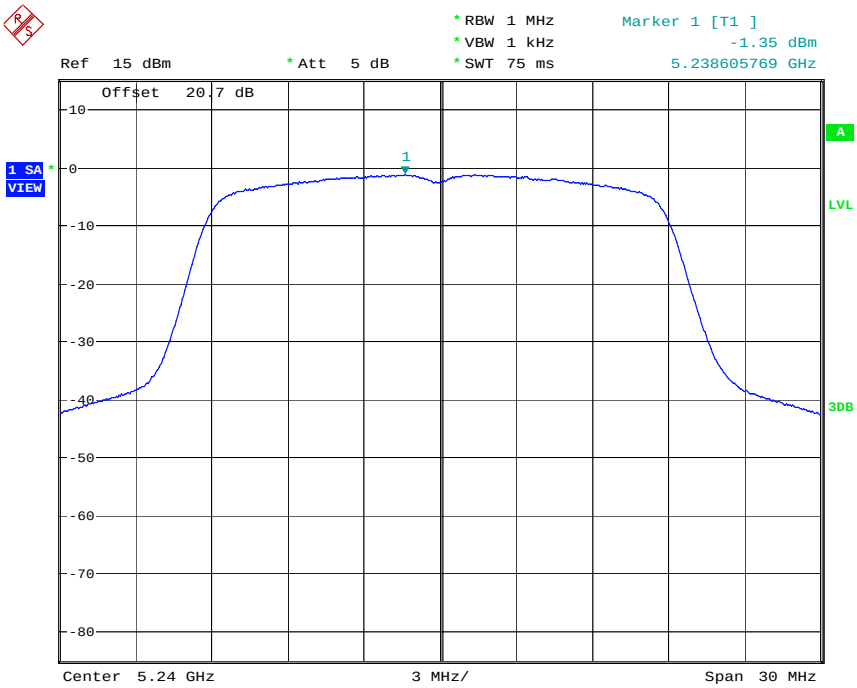

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5.4 Restricted Band Edge Compliance

5.4.1 Limits: §15.205

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			

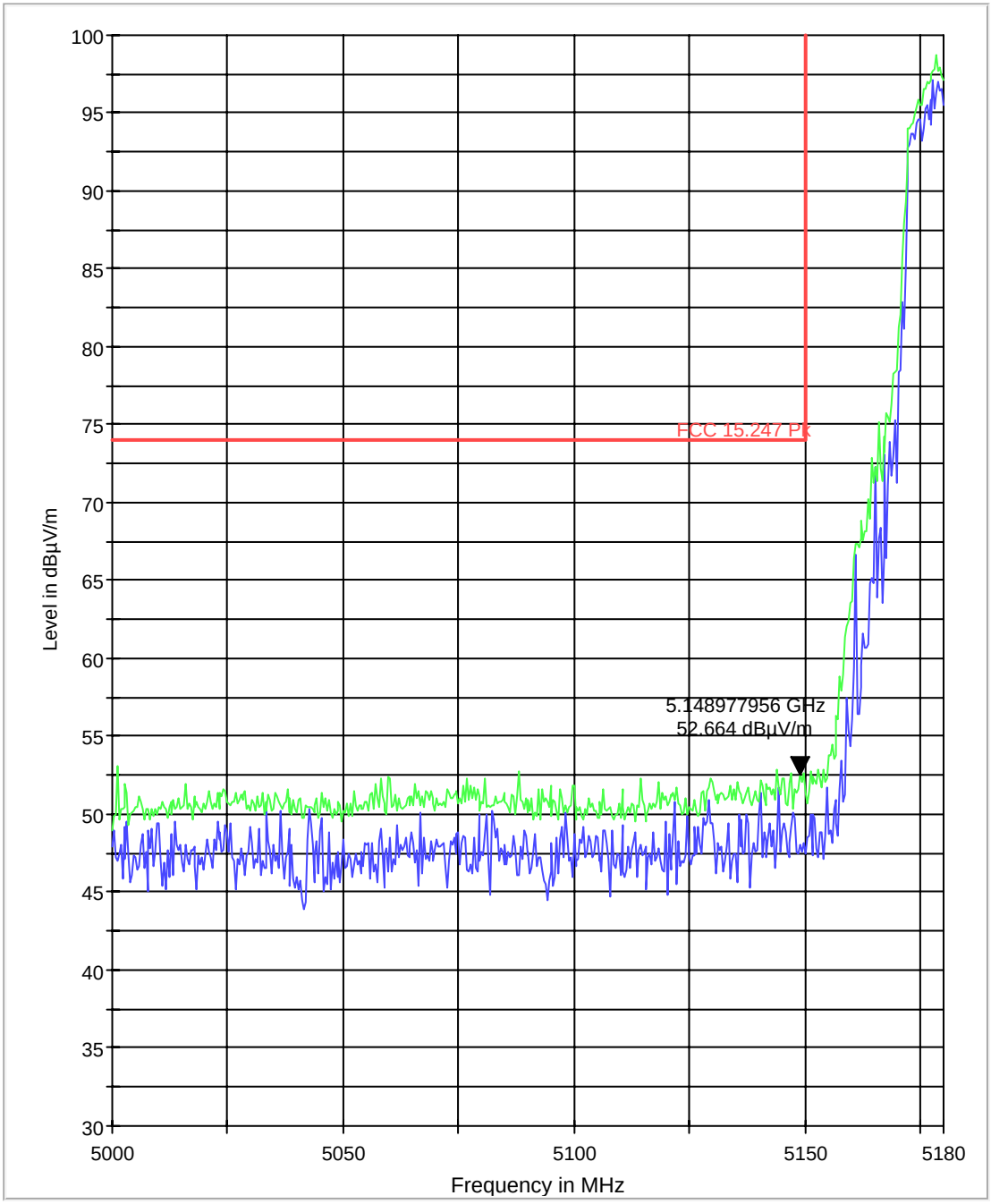
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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:

802.11a Channel 36 Low Band Edge Peak measurement

FCC 15.407 5.15 LBE Pk 3m



802.11a Channel 36 Low Band Edge Average measurement

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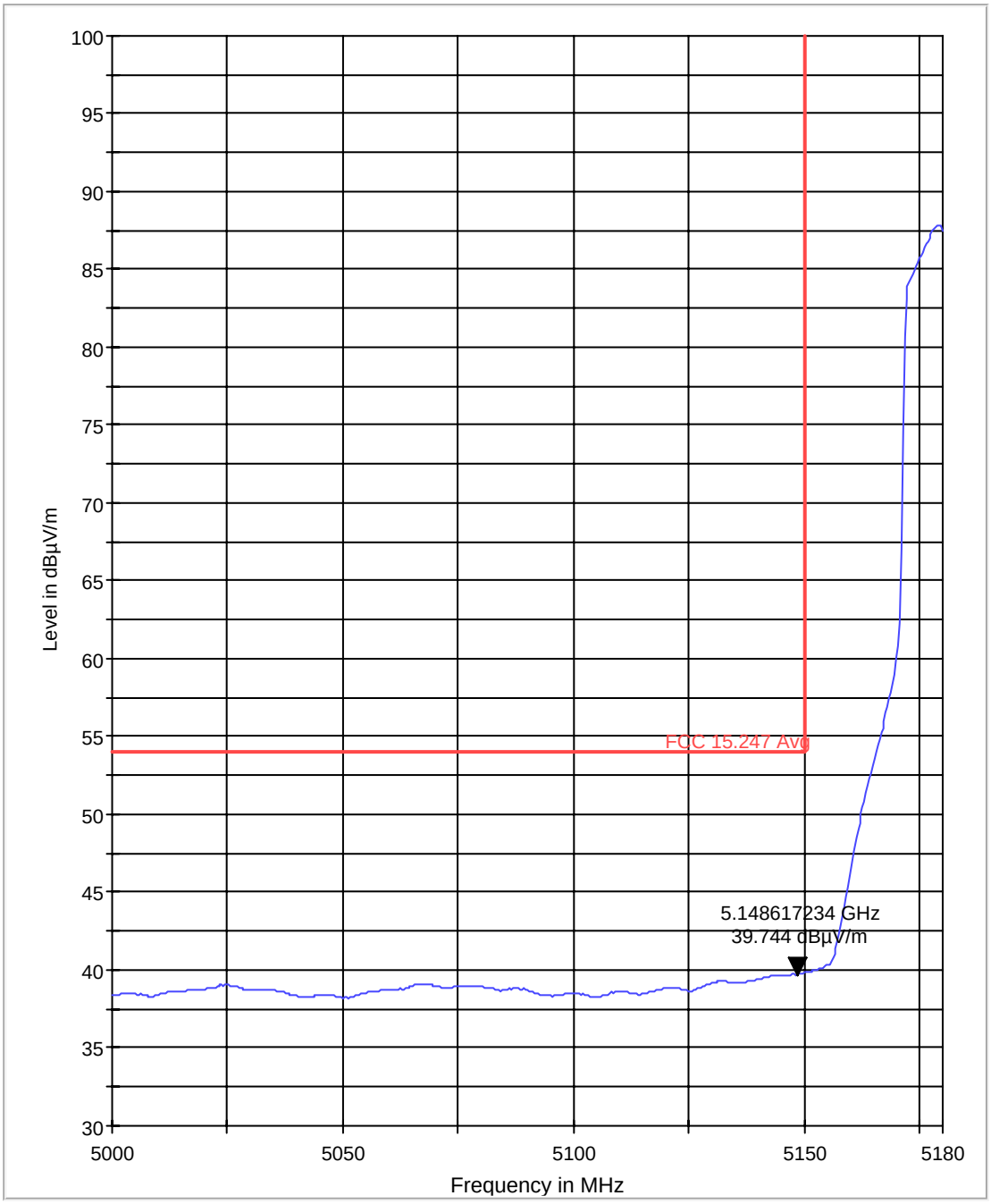
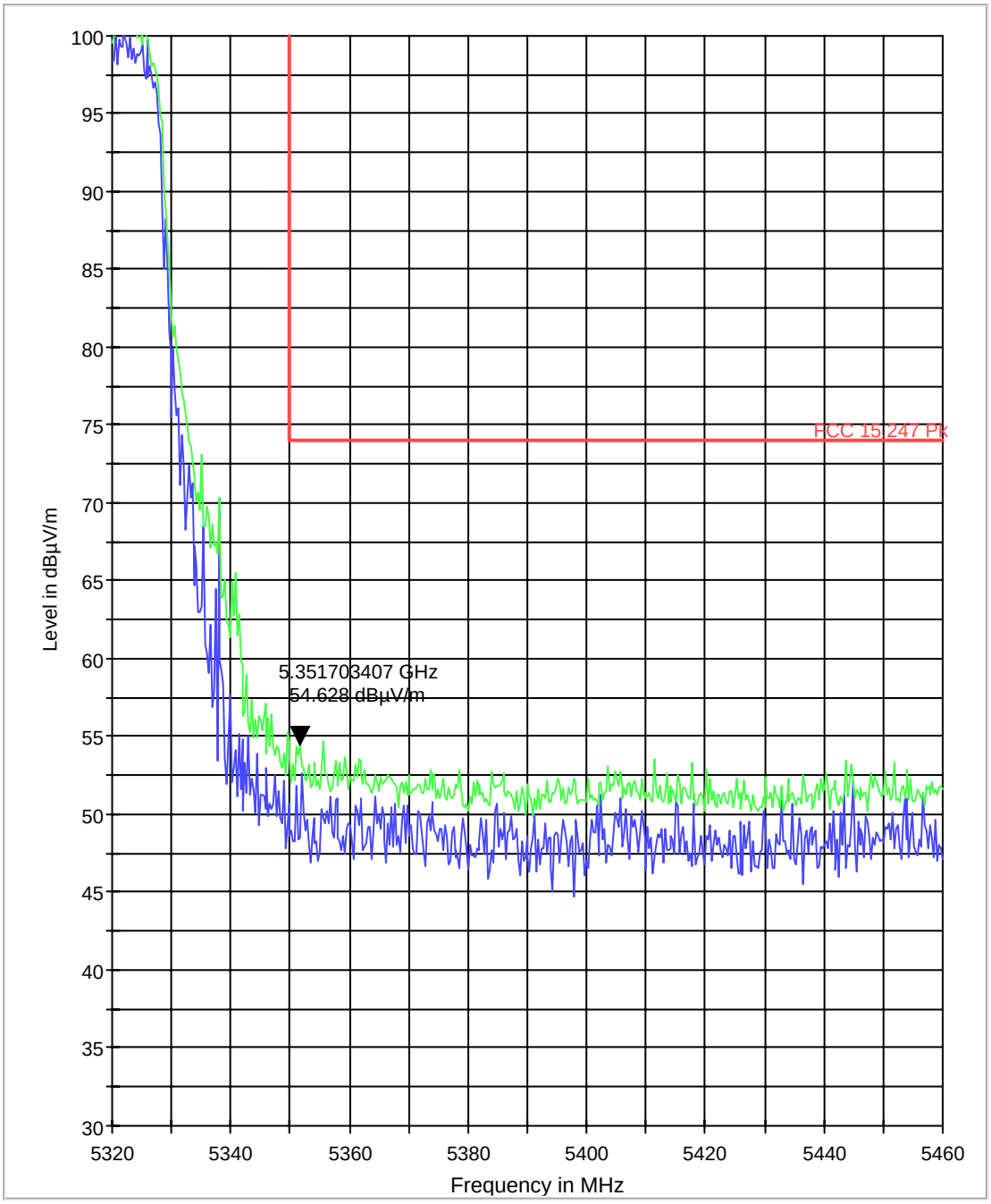


802.11a Channel 64 High Band Edge Peak measurement

FCC 15.407 5.35 HBE Pk 3m



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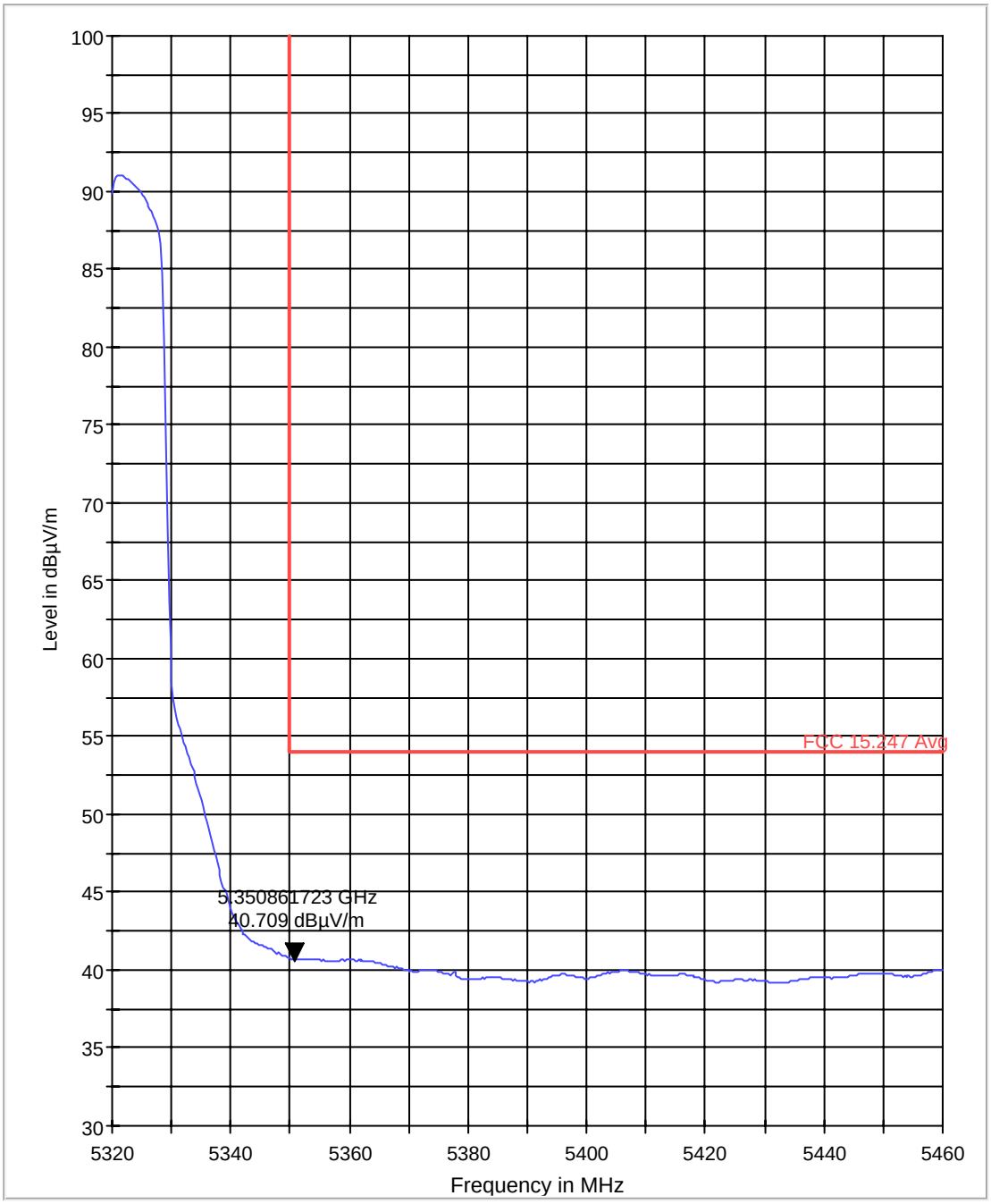
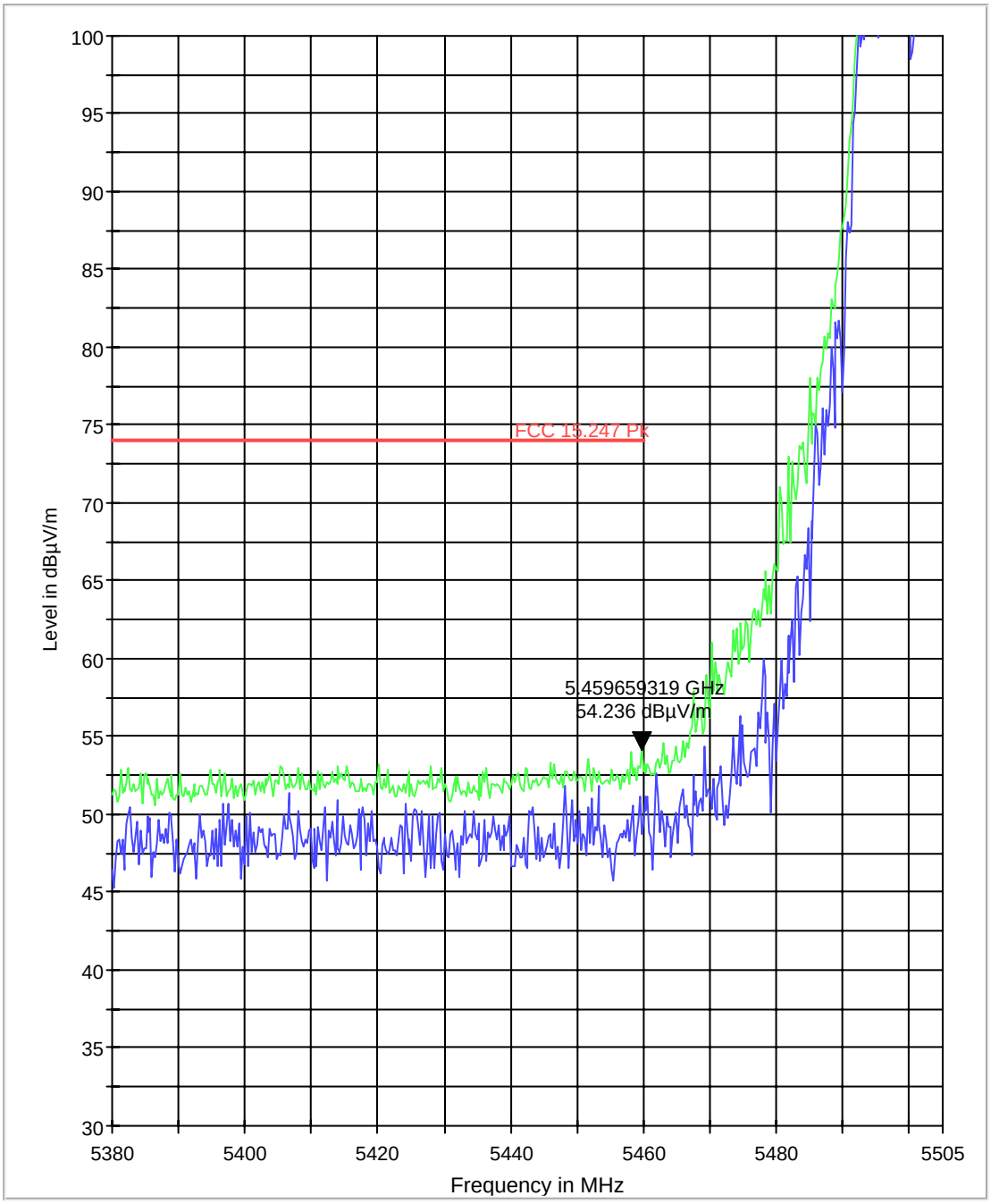


802.11a Channel 100 Low Band Edge Peak measurement

FCC 15.407 5.46 LBE Pk 3m



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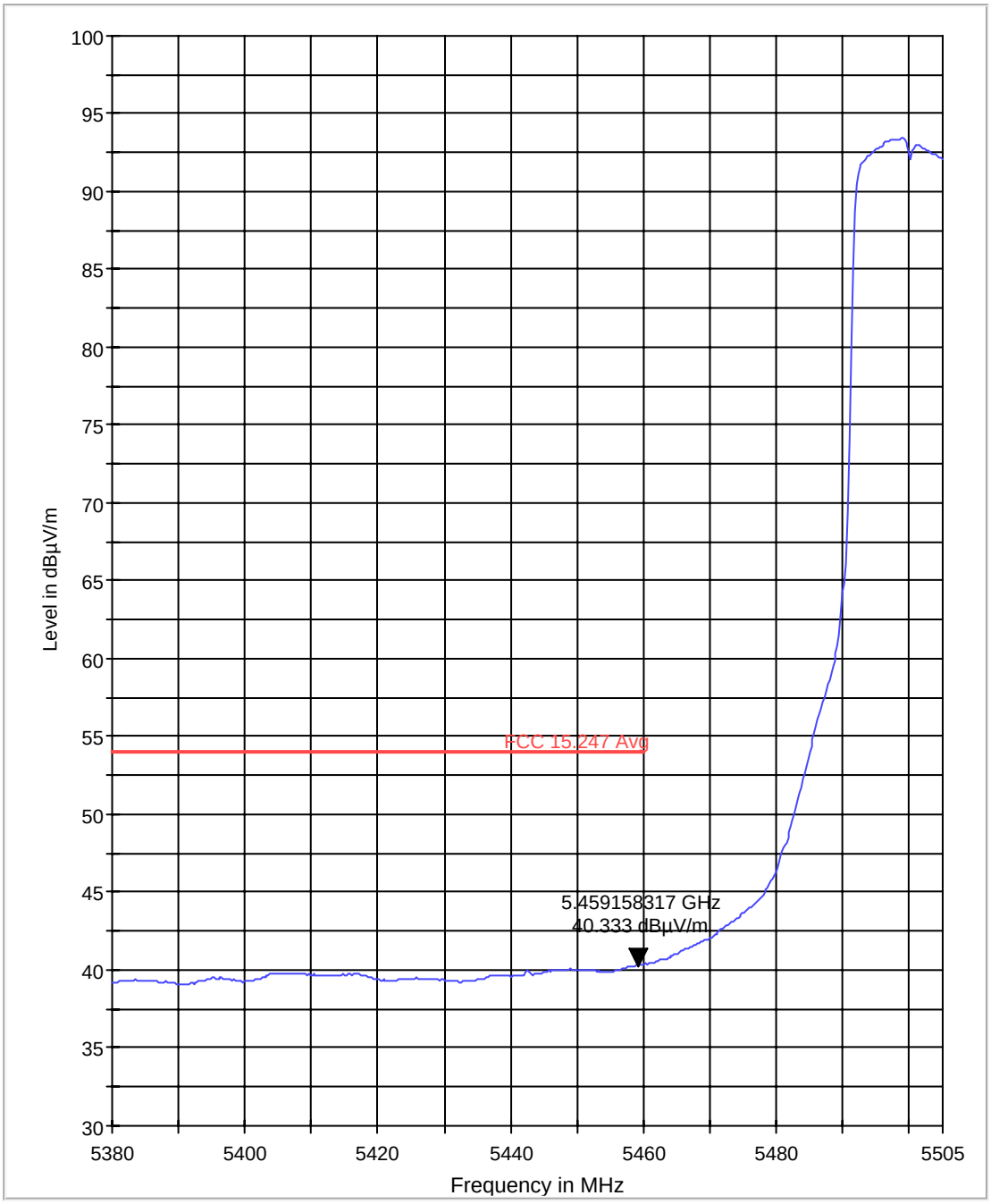
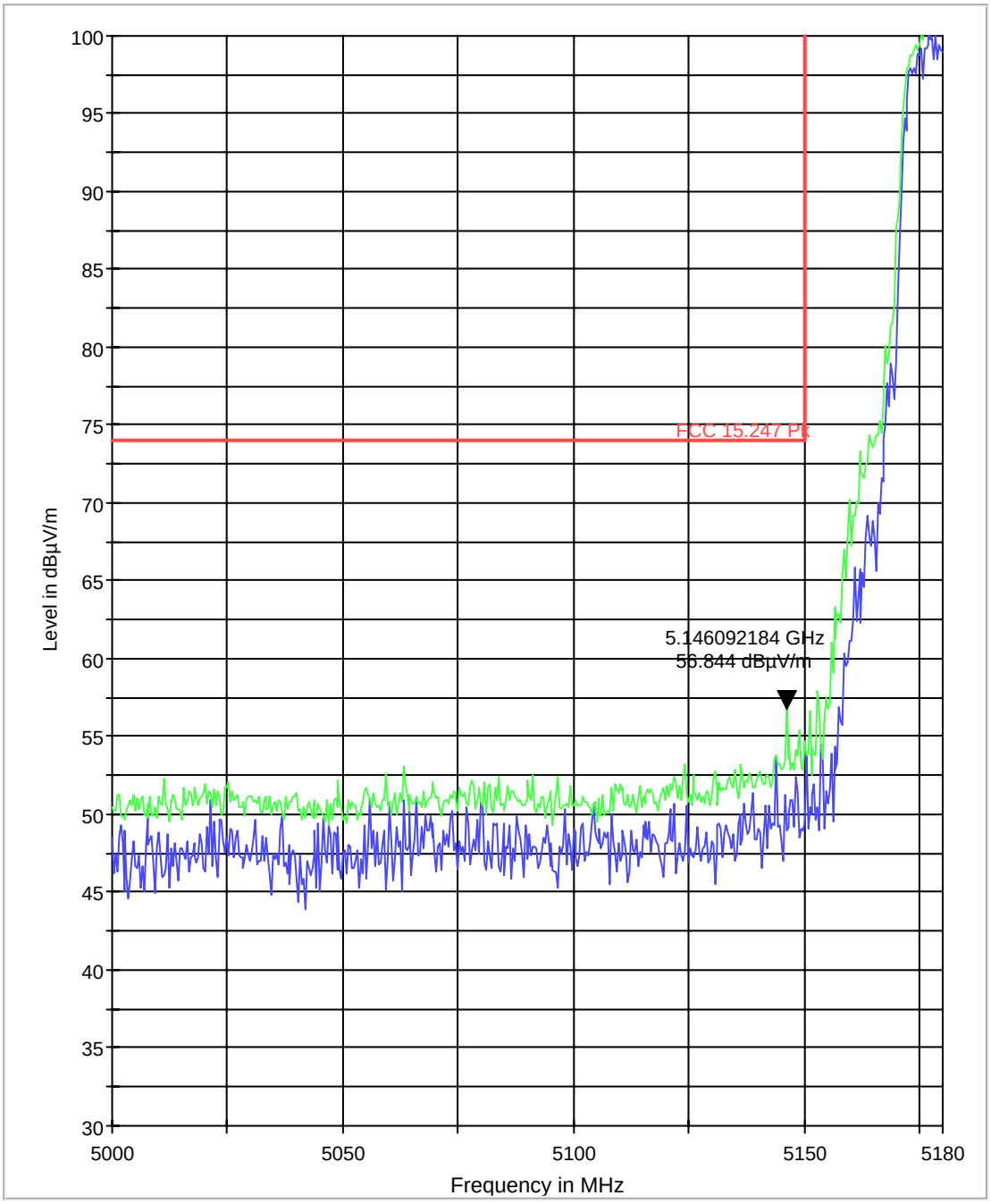


802.11n Channel 36 Low Band Edge Peak measurement

FCC 15.407 5.15 LBE Pk 3m



802.11n Channel 36 Low Band Edge Average measurement

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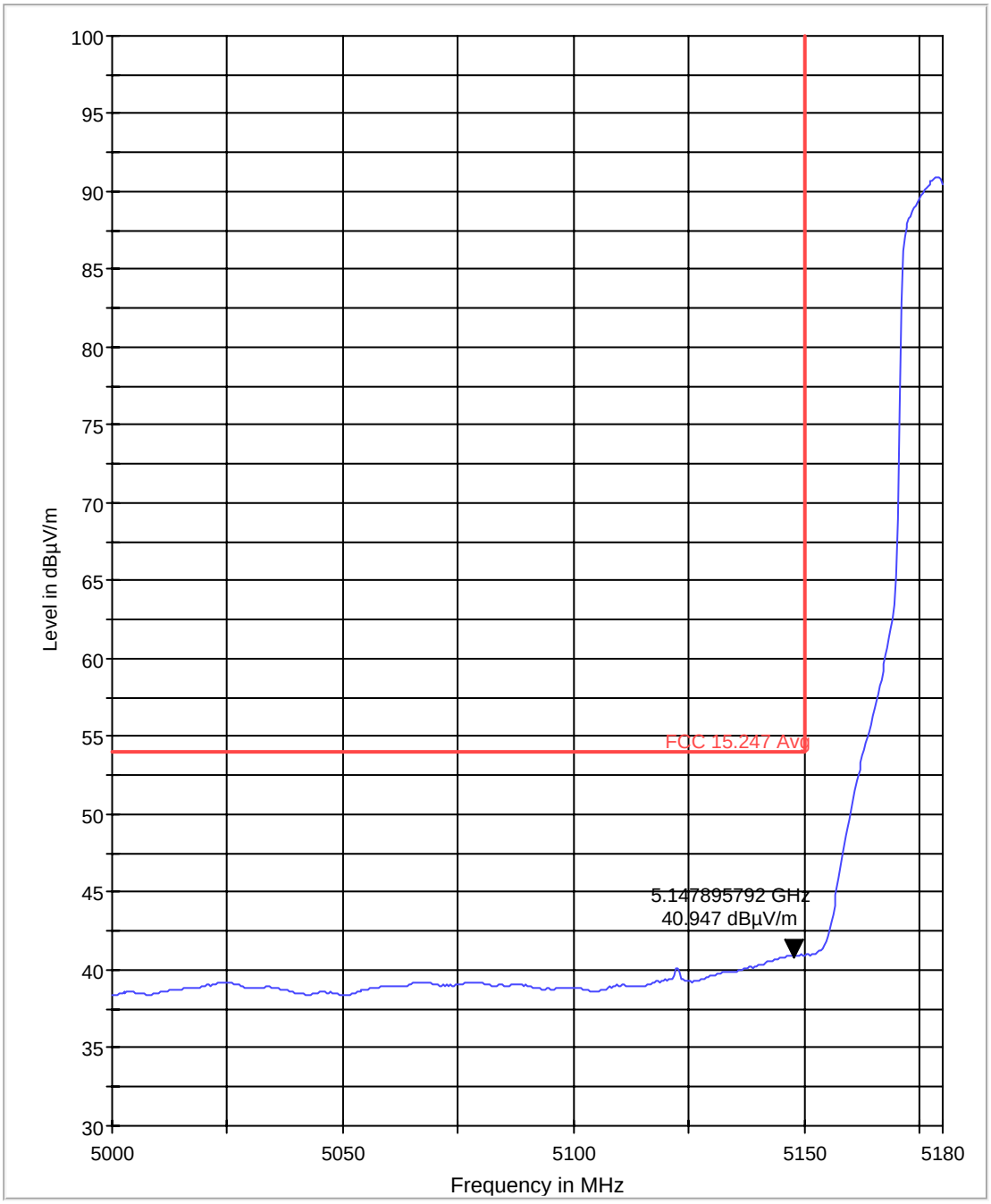
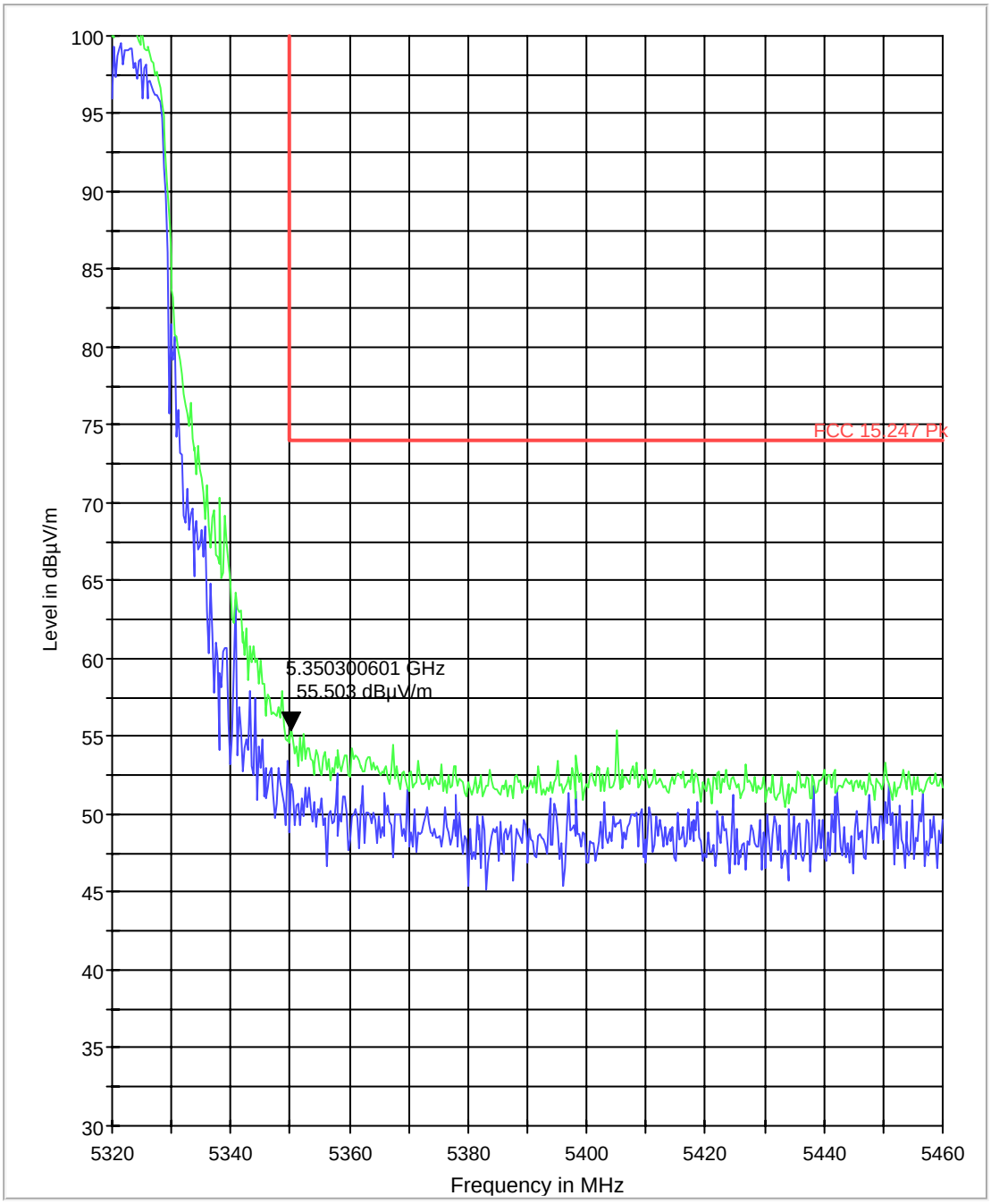


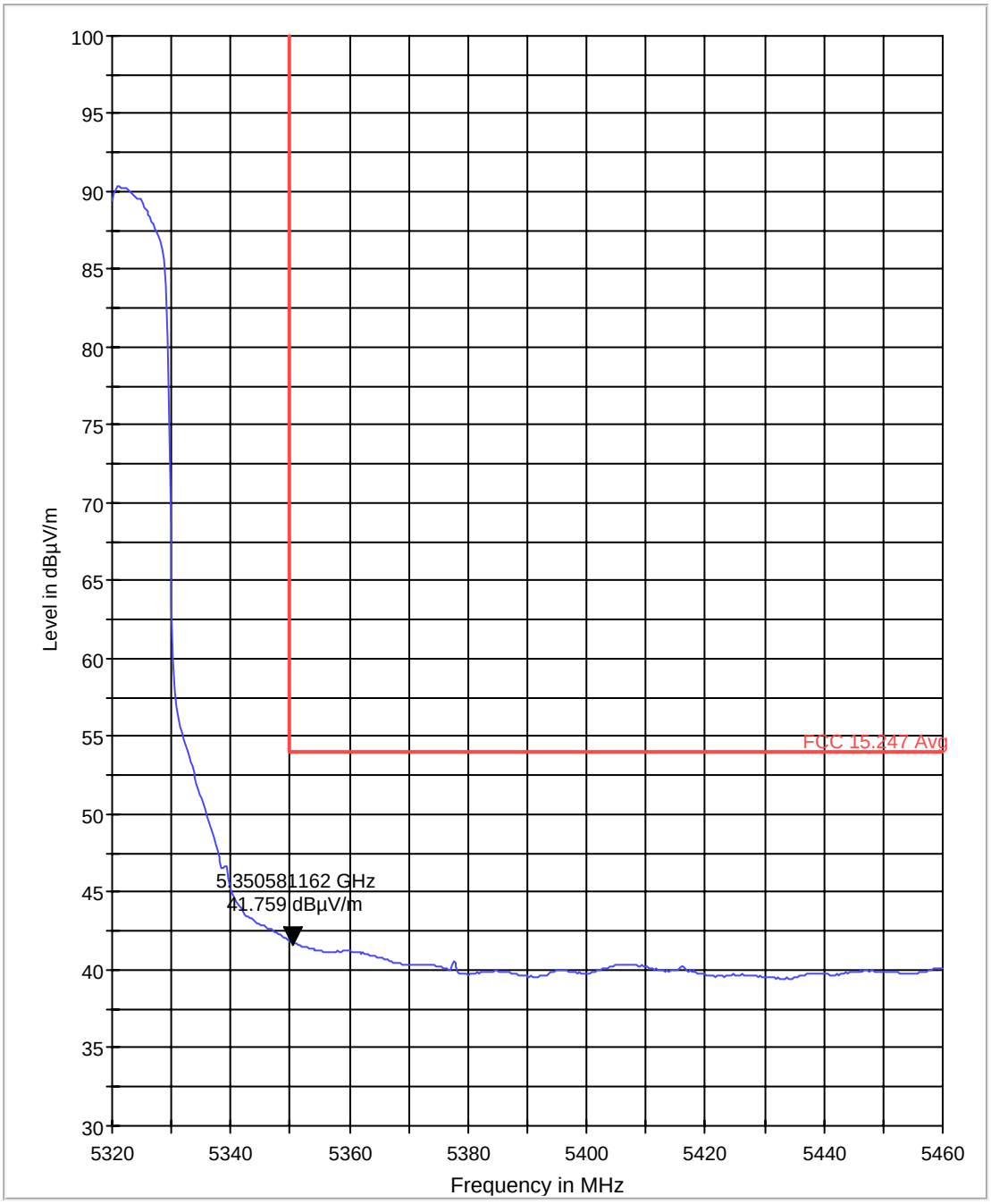
802.11n Channel 64 High Band Edge Peak measurement

FCC 15.407 5.35 HBE Pk 3m



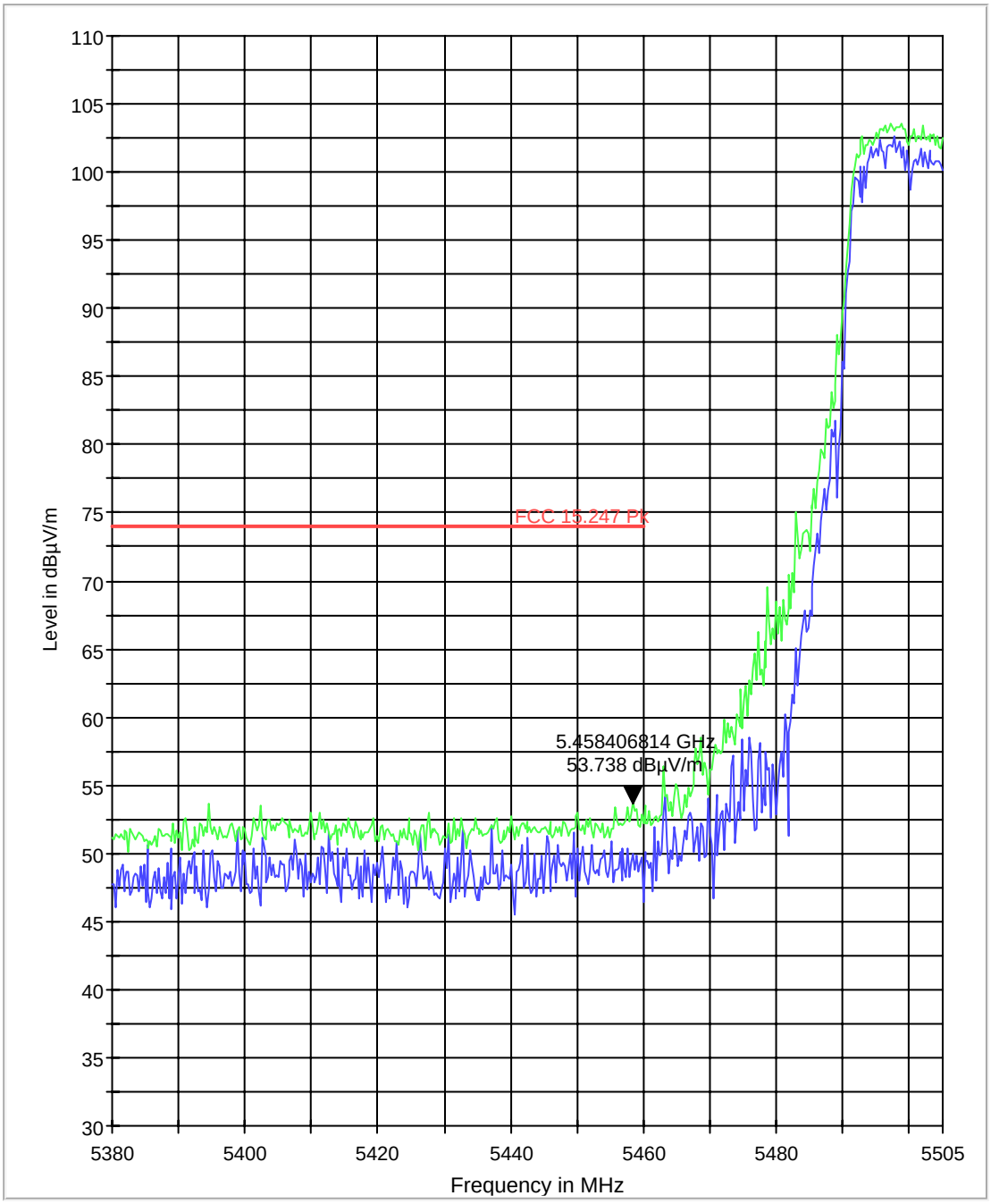
802.11n Channel 64 High Band Edge Average measurement

FCC 15.407 5.35 HBE Avg 3m



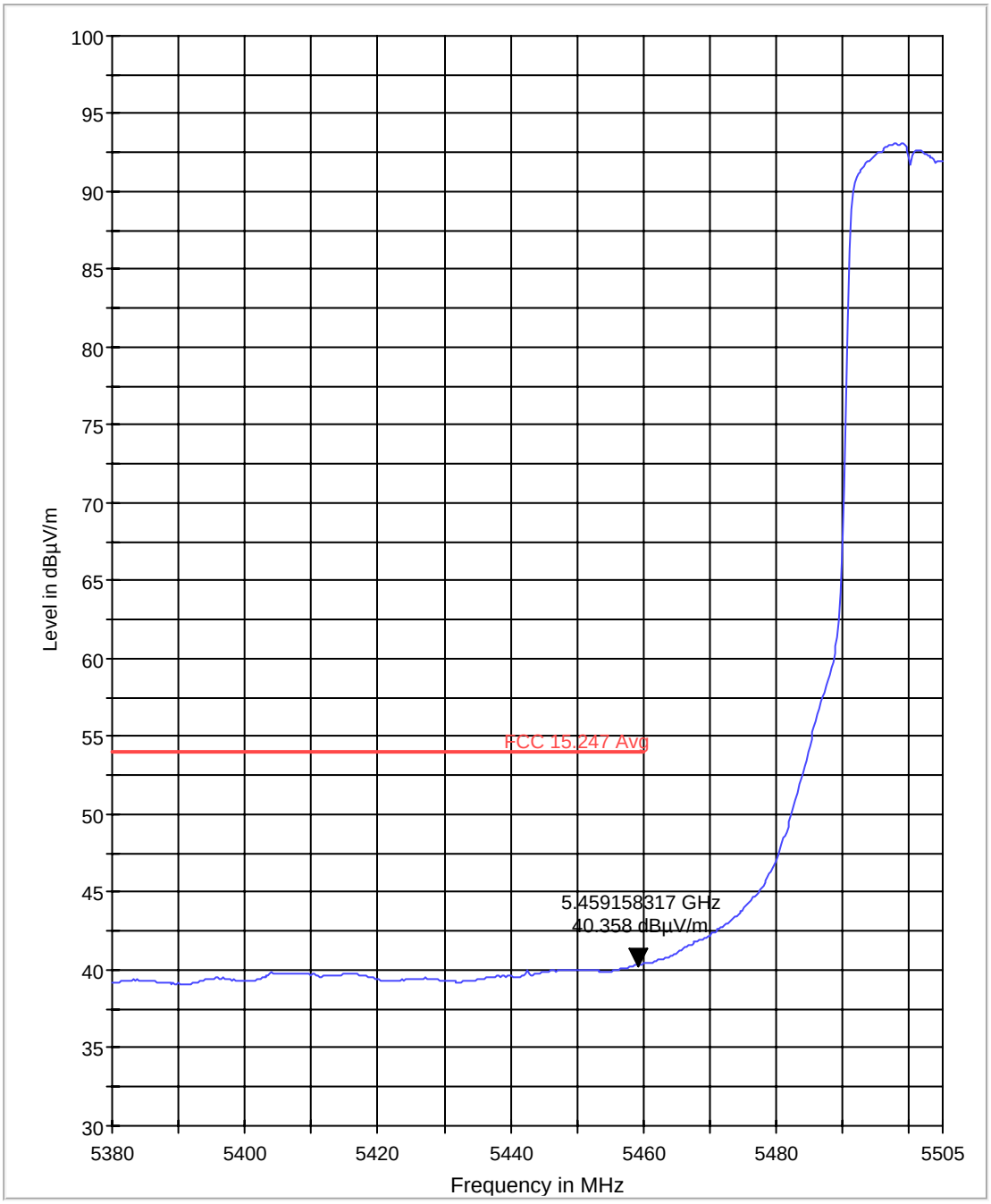
802.11n Channel 100 Low Band Edge Peak measurement

FCC 15.407 5.46 LBE Pk 3m



802.11n Channel 100 Low Band Edge Average measurement

FCC 15.407 5.46 LBE Avg 3m



5.5 Occupied Bandwidth

5.5.1 Limits:

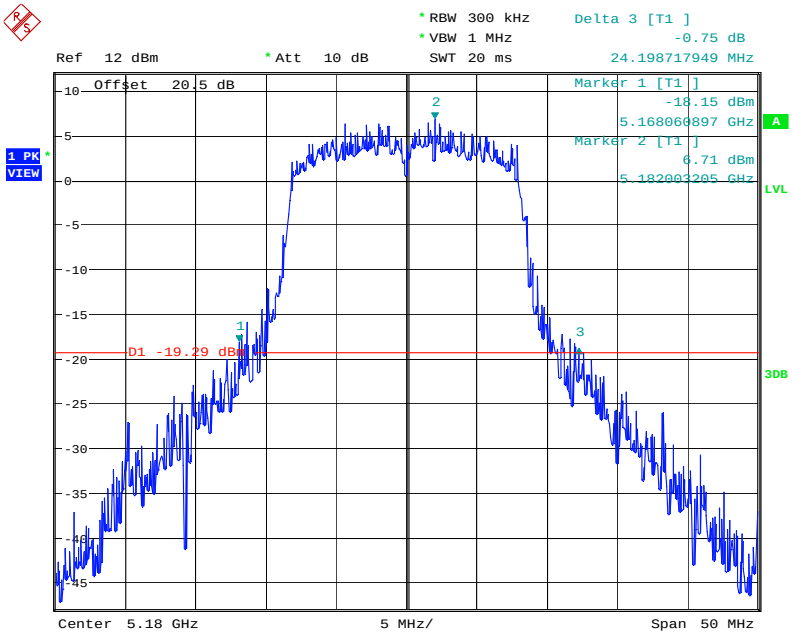
None

5.5.2 Test Result:

Occupied Bandwidth (MHz)					
Frequency (MHz)	Channel	a		n	
		26 dB	99%	26 dB	99%
5180	36	24.20	22.92	25.08	24.19
5220	44	24.68	23.72	25.96	24.54
5240	48	24.20	23.43	24.57	23.64
5260	52	26.92	22.68	25.80	24.76
5300	60	23.40	23.08	25.80	24.12
5320	64	23.99	23.75	27.04	24.56
5500	100	24.44	23.16	23.64	23.48
5600	120	24.20	22.44	23.48	22.20
5700	140	23.00	22.20	23.80	21.72
Measurement Uncertainty: ±0.01 MHz					

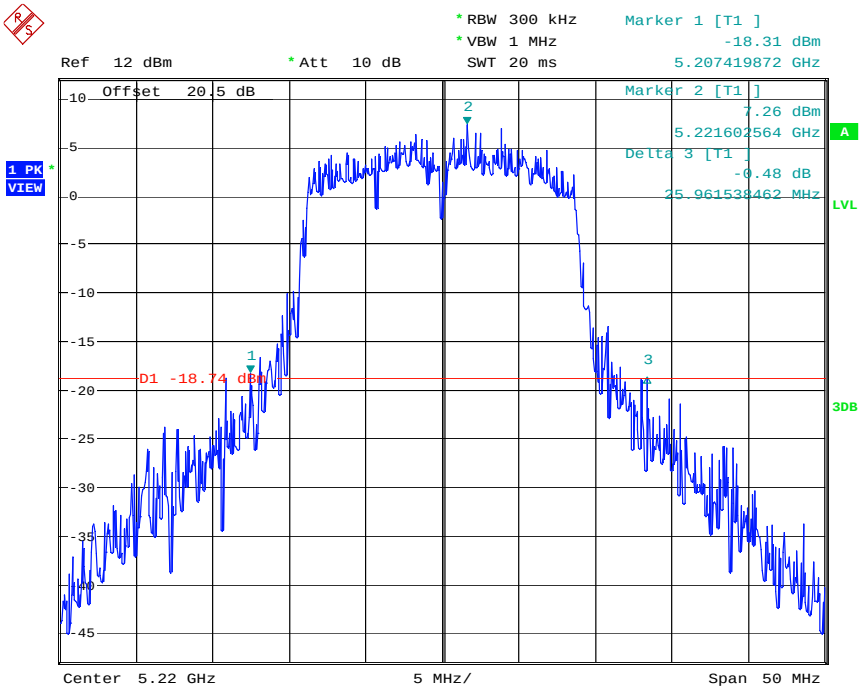
5.5.3 Plots

802.11a Channel 36 26dB BW



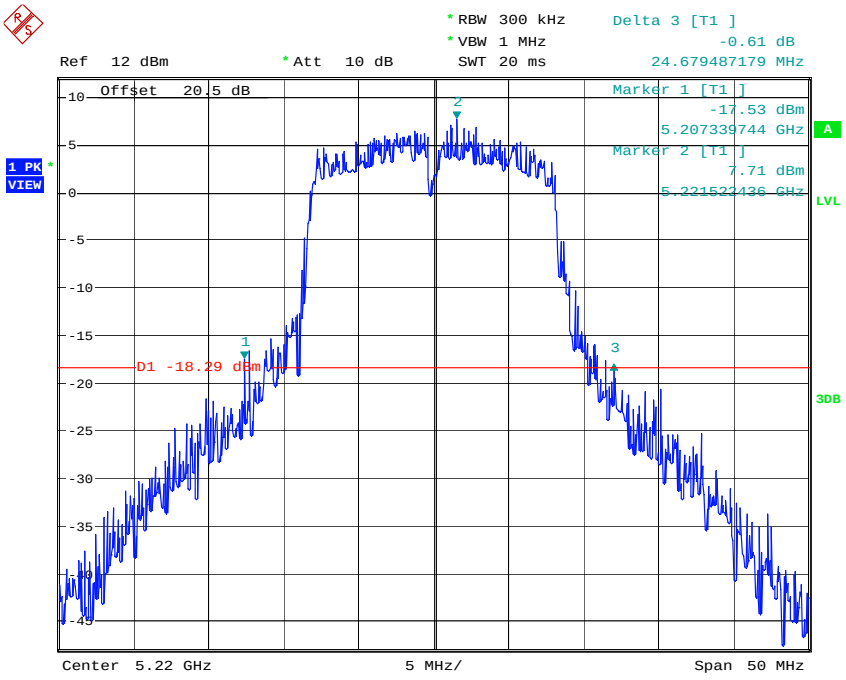
Date: 15.APR.2011 17:44:39

802.11n Channel 36 26dB BW



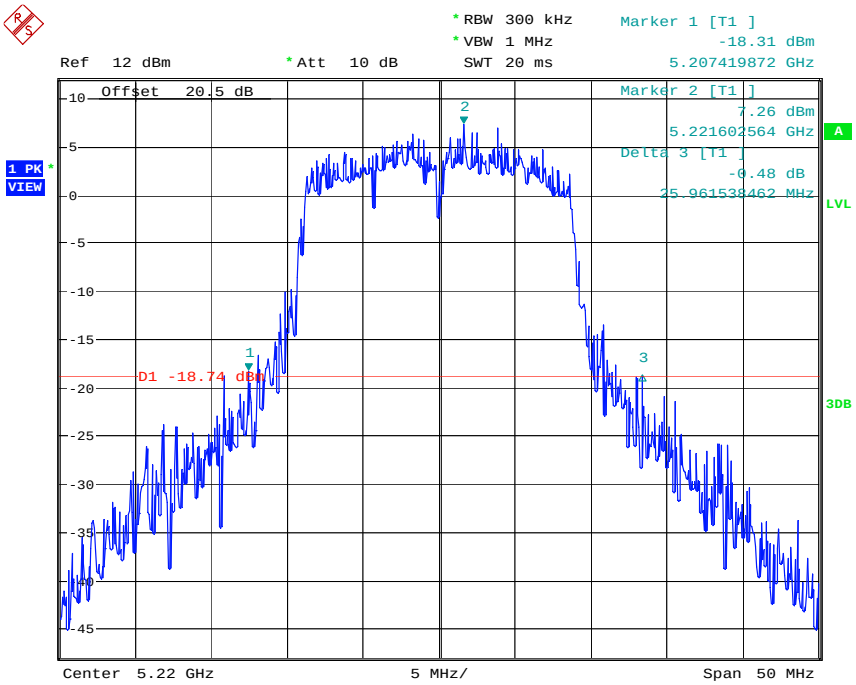
Date: 15.APR.2011 17:52:28

802.11a Channel 44 26dB BW



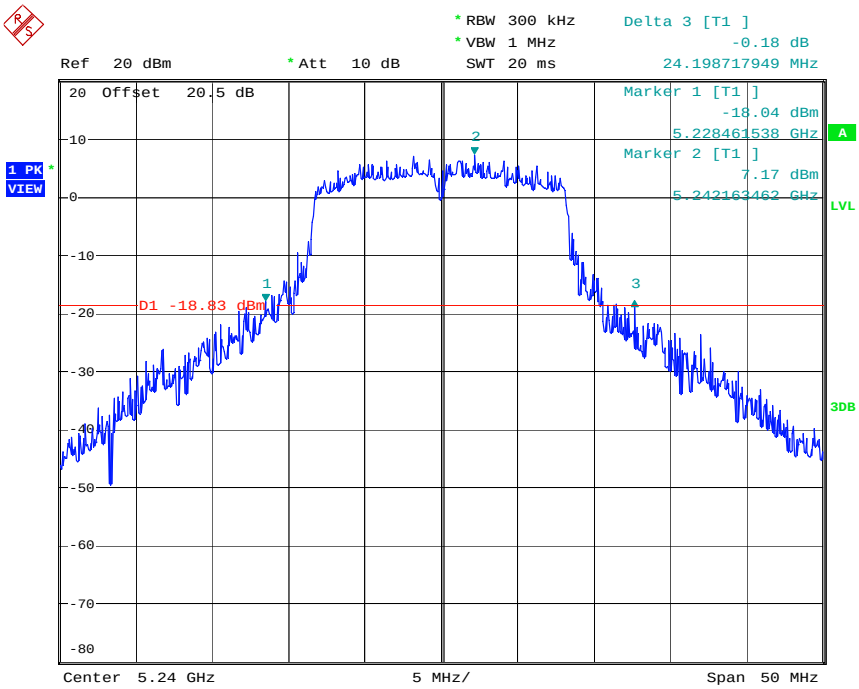
Date: 15.APR.2011 17:55:12

802.11n Channel 44 26dB BW



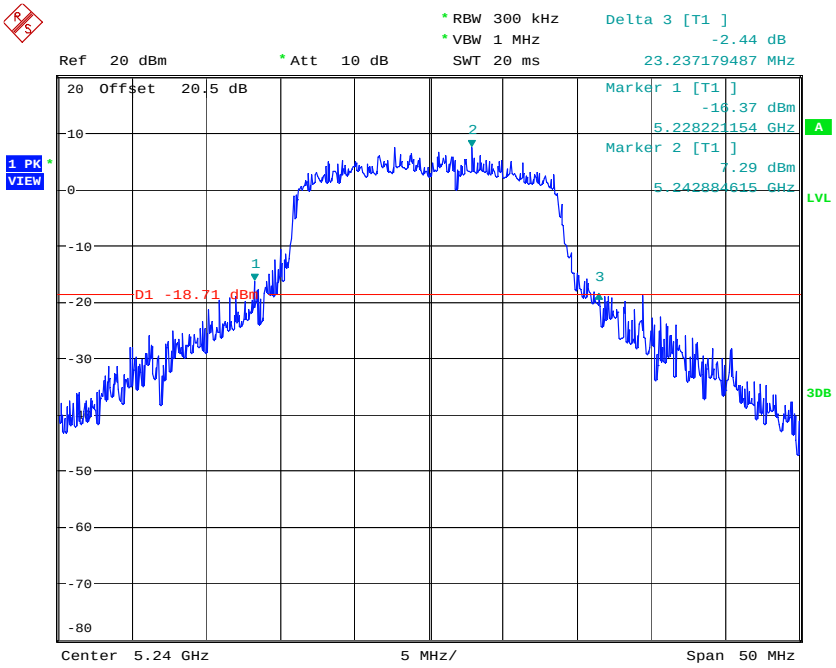
Date: 15.APR.2011 17:52:39

802.11a Channel 48 26dB BW



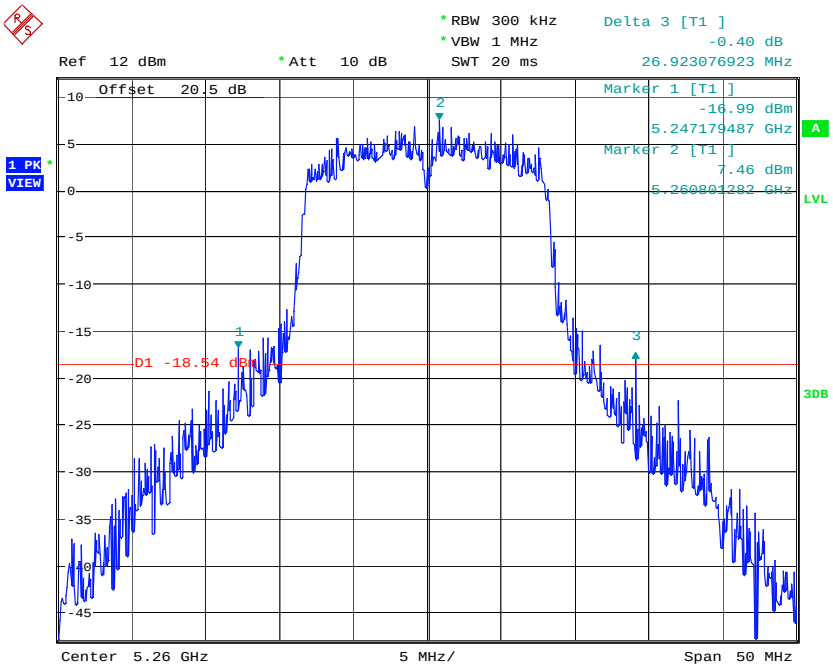
Date: 15.APR.2011 16:45:40

802.11n Channel 48 26dB BW



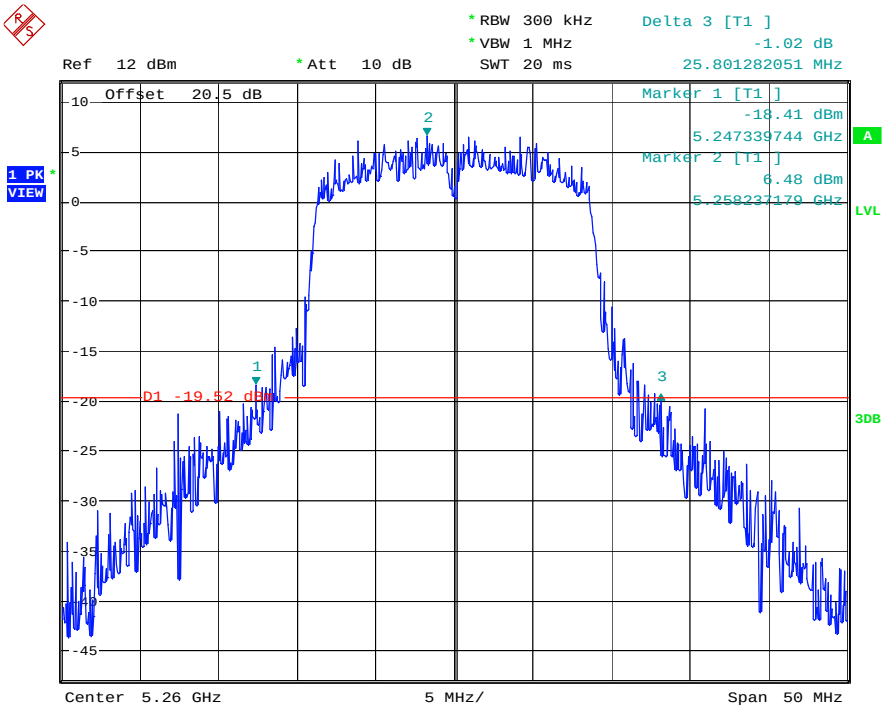
Date: 15.APR.2011 16:49:09

802.11a Channel 52 26dB BW



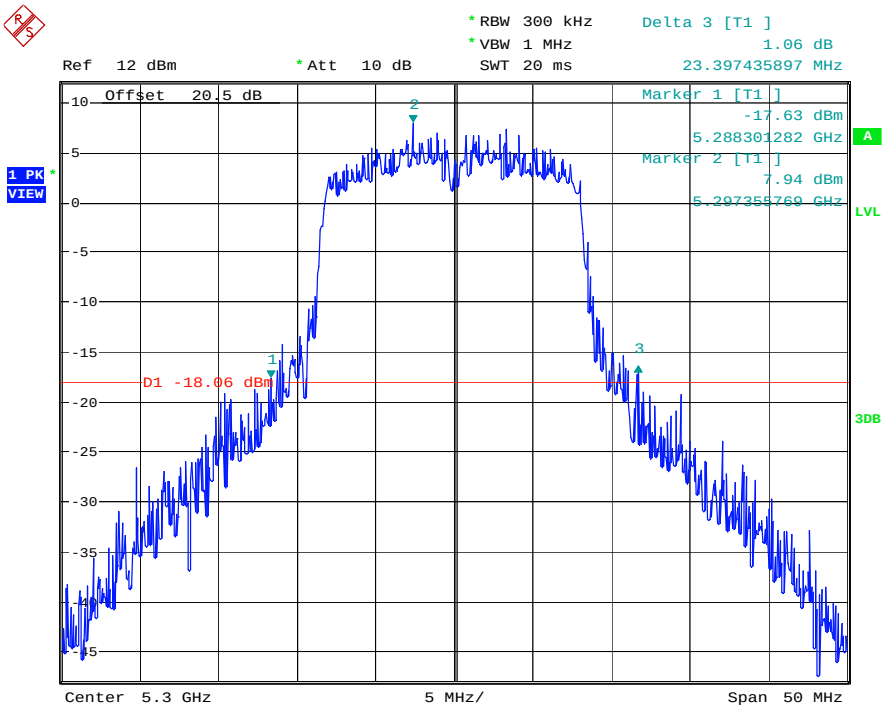
Date: 15.APR.2011 17:18:52

802.11n Channel 52 26dB BW



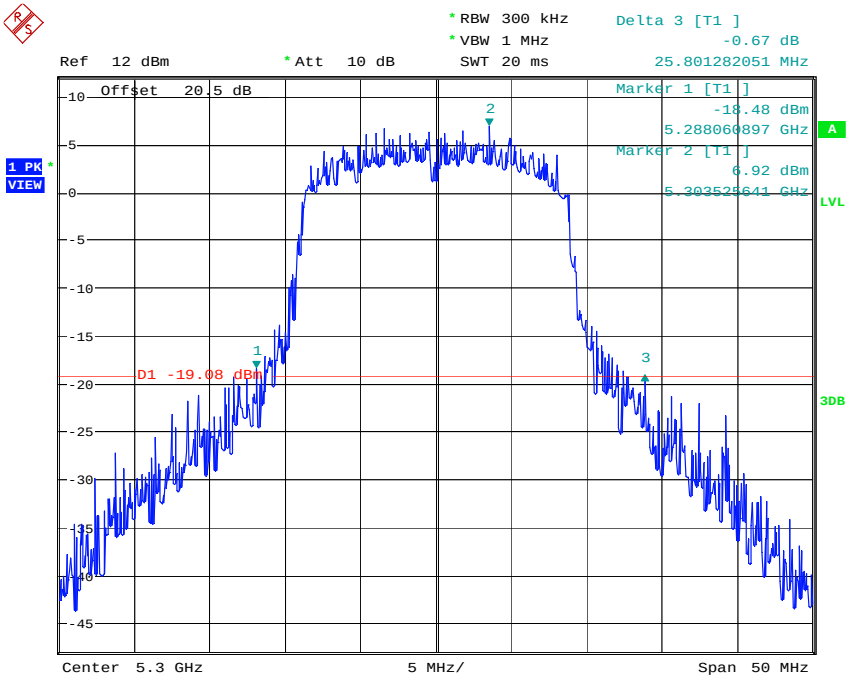
Date: 15.APR.2011 17:20:28

802.11a Channel 60 26dB BW



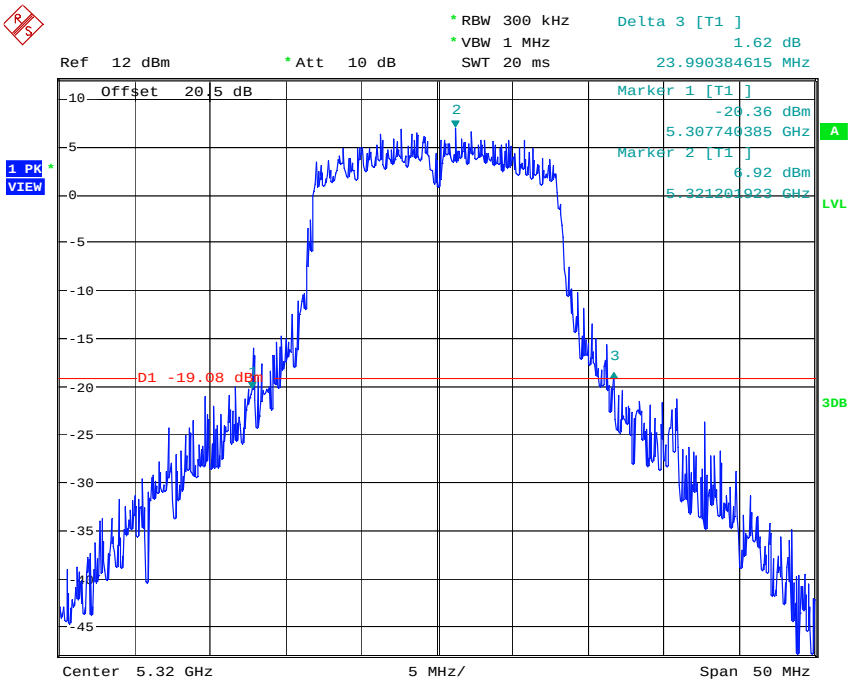
Date: 15.APR.2011 17:24:31

802.11n Channel 60 26dB BW



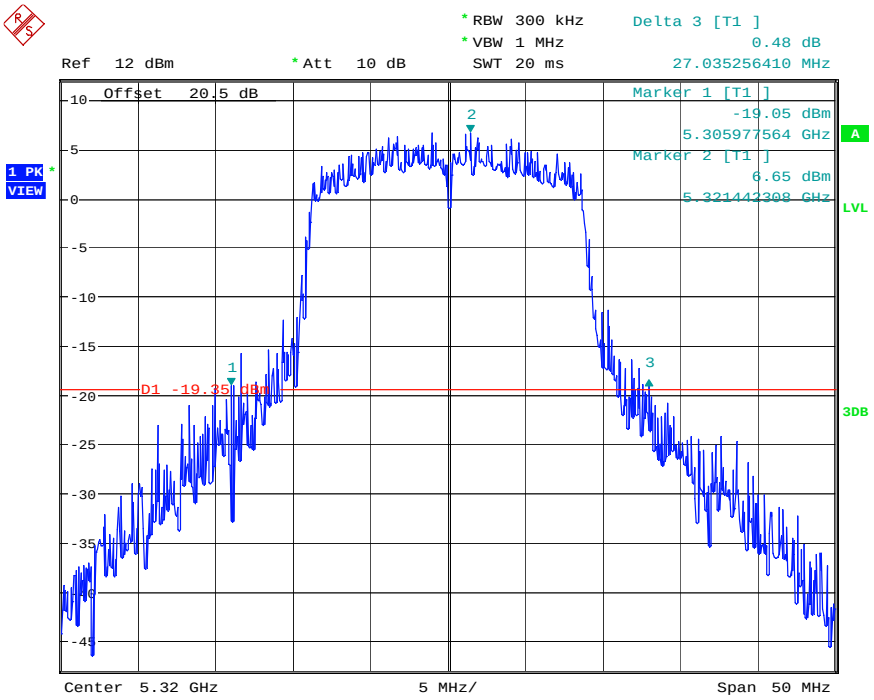
Date: 15.APR.2011 17:22:39

802.11a Channel 64 26dB BW



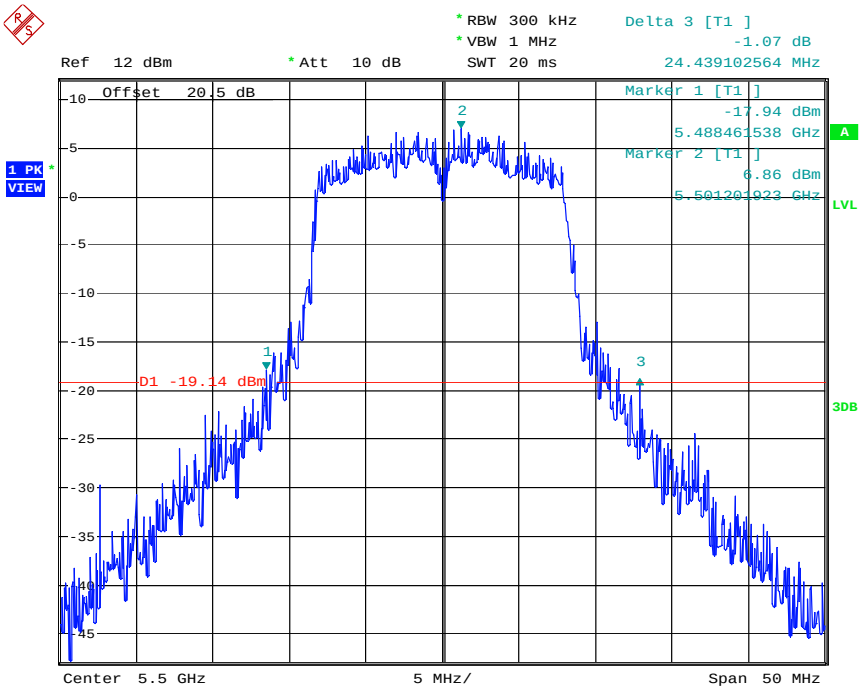
Date: 15.APR.2011 17:26:58

802.11n Channel 64 26dB BW



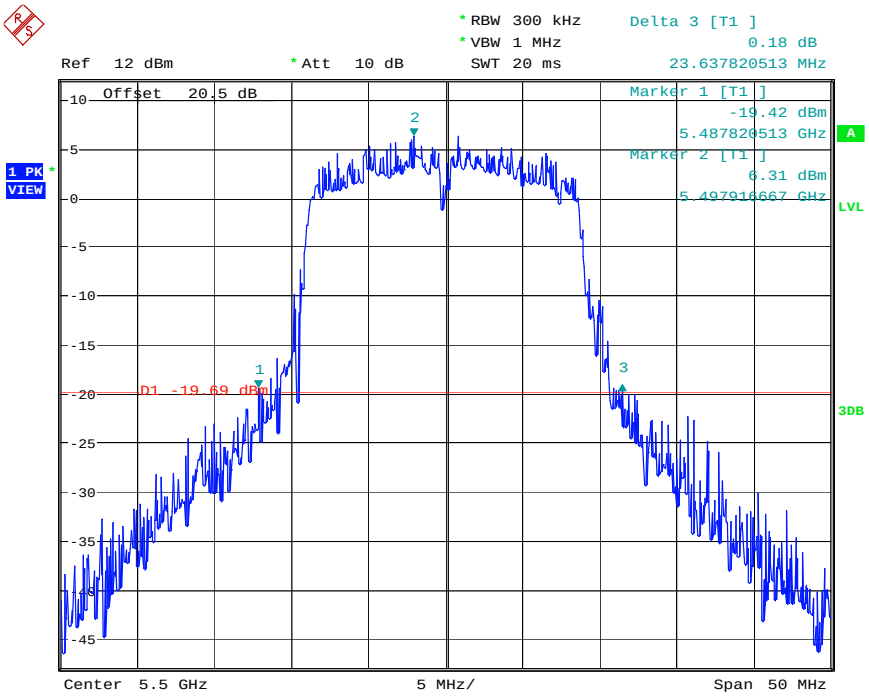
Date: 15.APR.2011 17:28:21

802.11a Channel 100 26dB BW



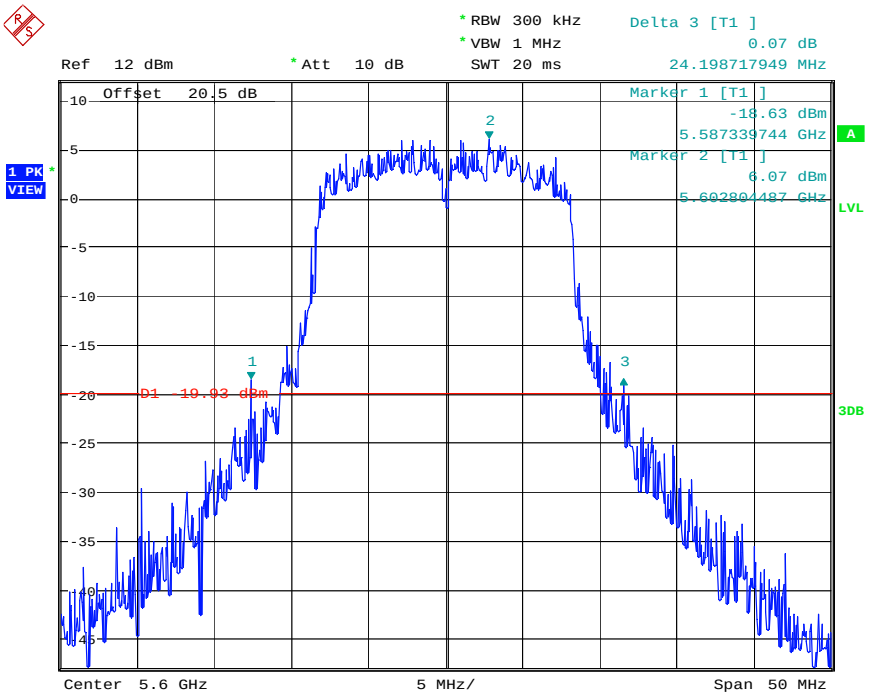
Date: 15.APR.2011 17:31:21

802.11n Channel 100 26dB BW



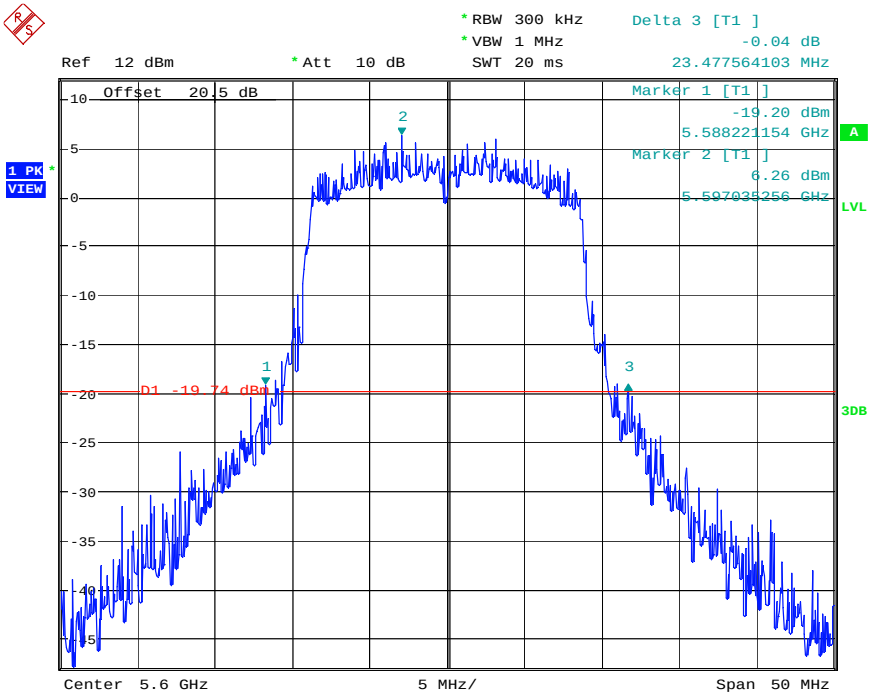
Date: 15.APR.2011 17:33:25

802.11a Channel 120 26dB BW



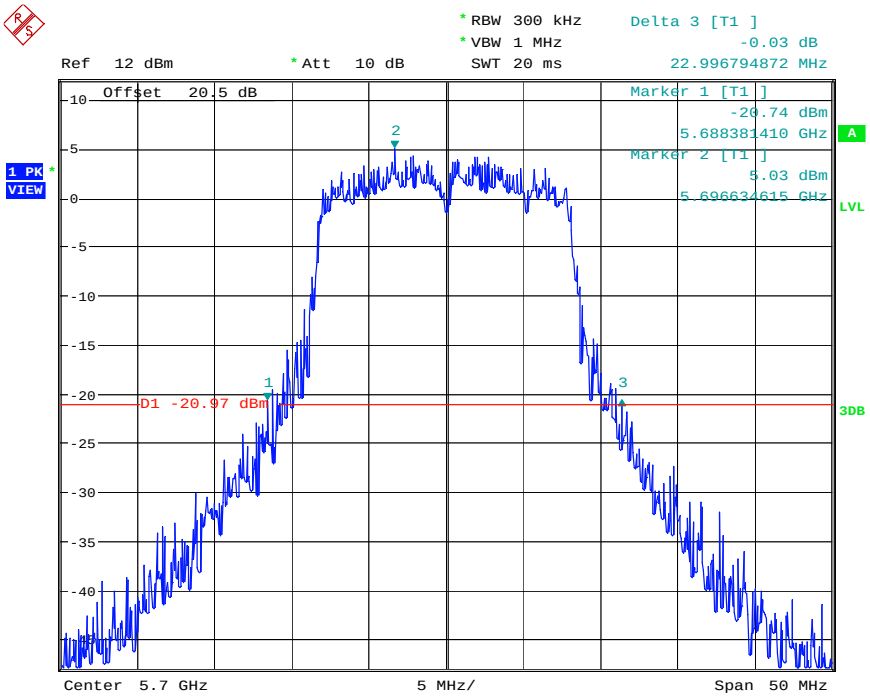
Date: 15.APR.2011 17:37:36

802.11n Channel 120 26dB BW



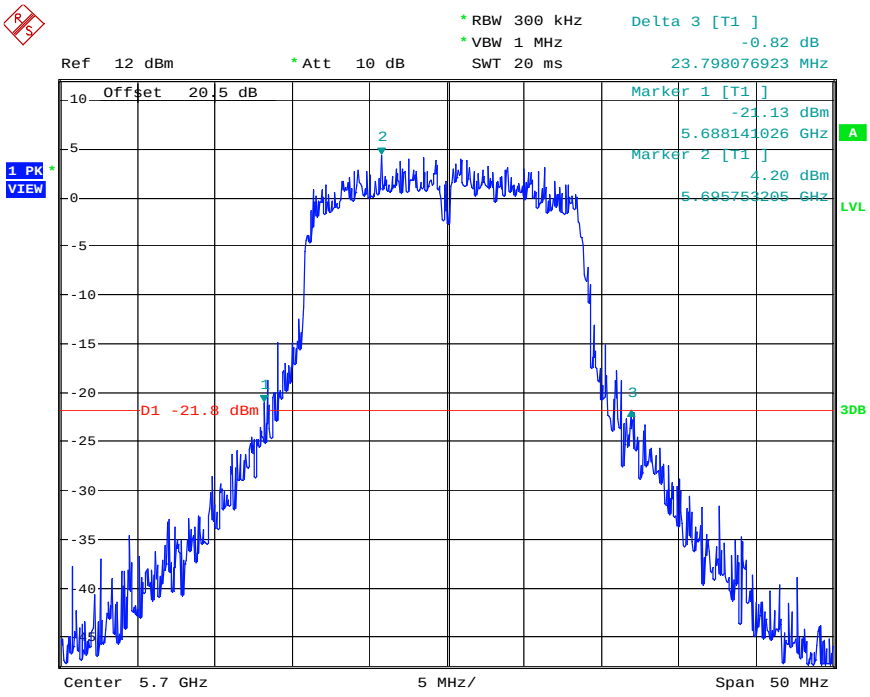
Date: 15.APR.2011 17:36:05

802.11a Channel 140 26dB BW



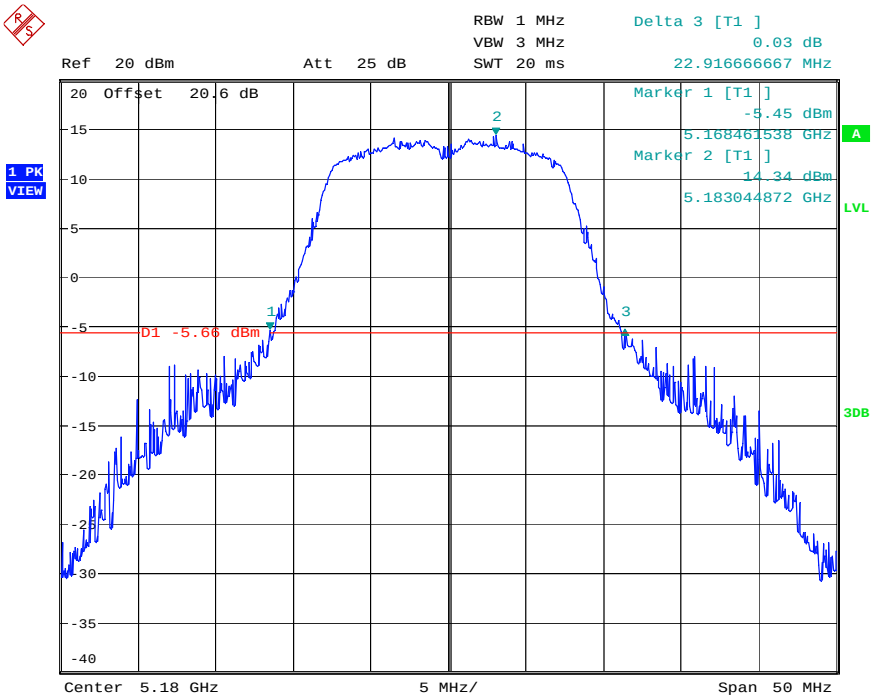
Date: 15.APR.2011 17:40:31

802.11n Channel 140 26dB BW



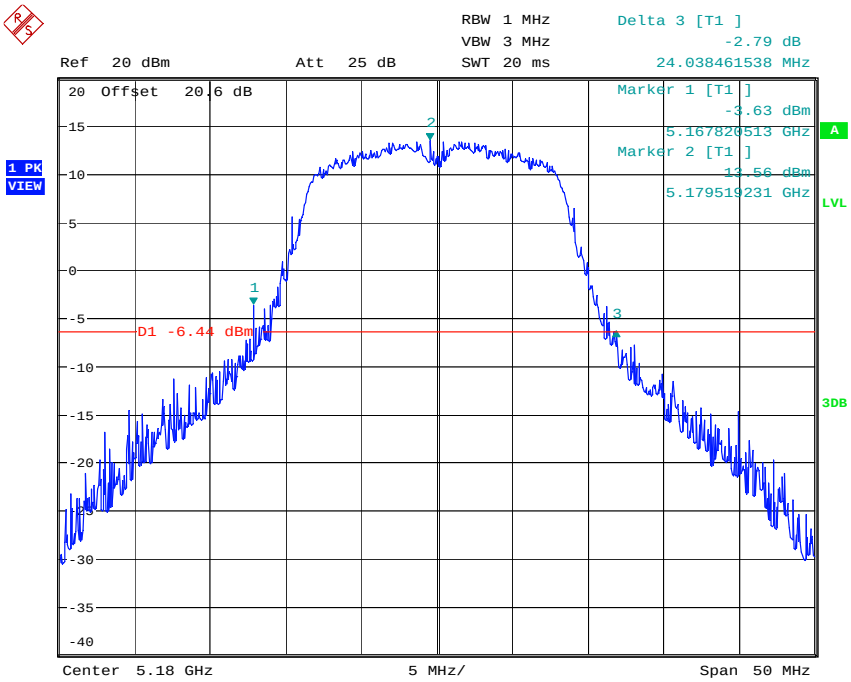
Date: 15.APR.2011 17:42:33

802.11a Channel 36 99% BW



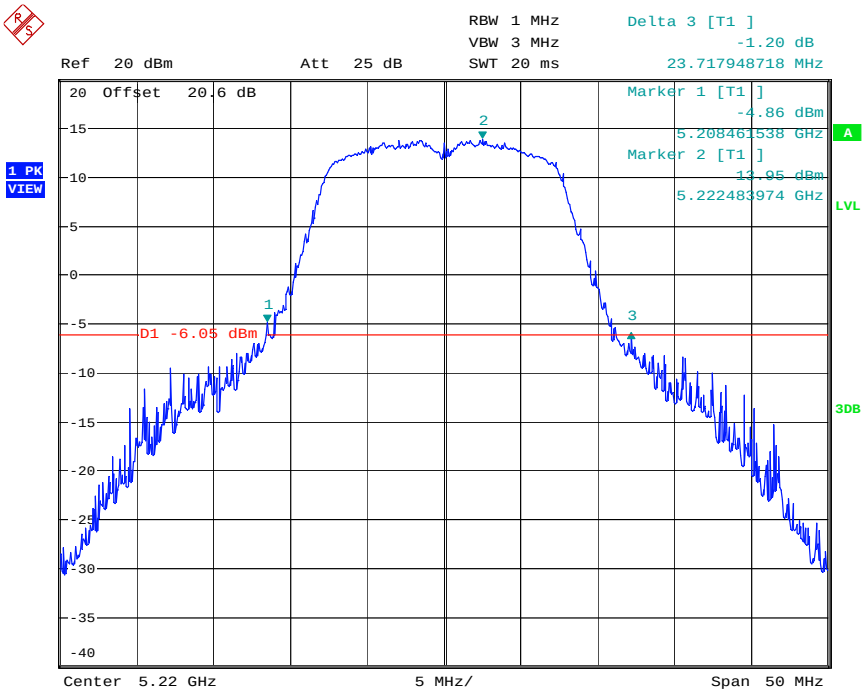
Date: 18.APR.2011 09:35:55

802.11n Channel 36 99% BW



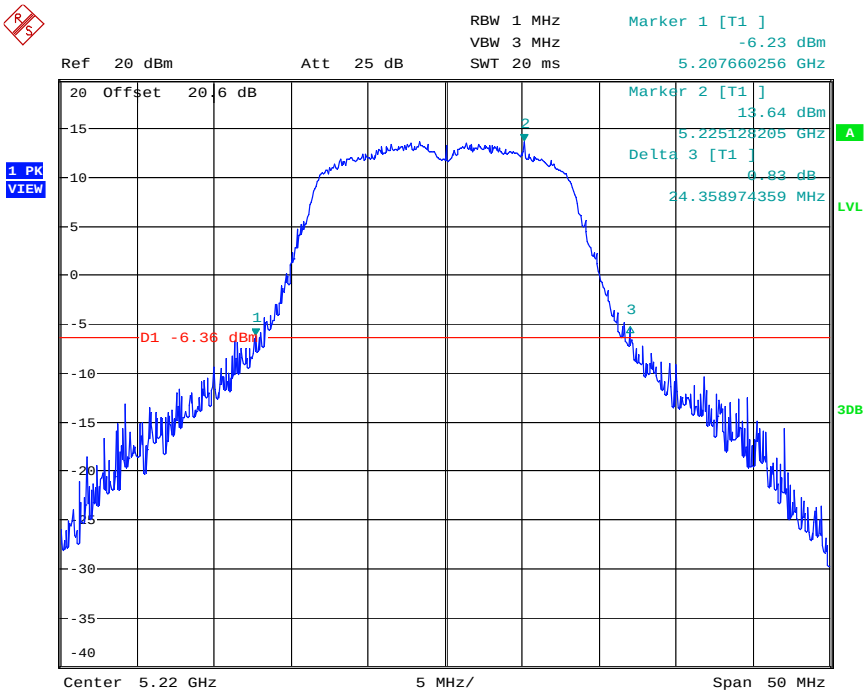
Date: 18.APR.2011 09:40:22

802.11a Channel 44 99% BW



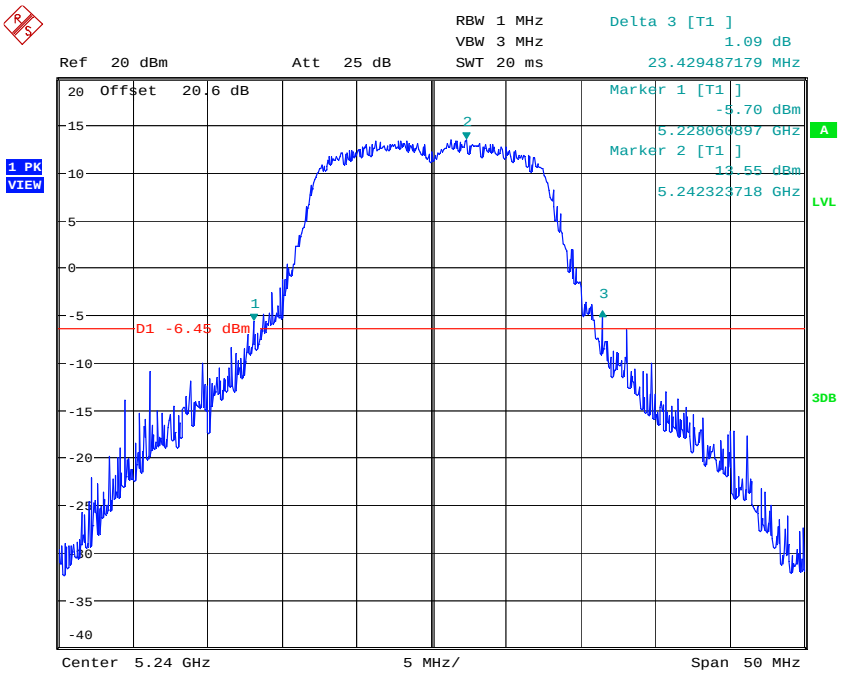
Date: 18.APR.2011 09:44:18

802.11n Channel 44 99% BW



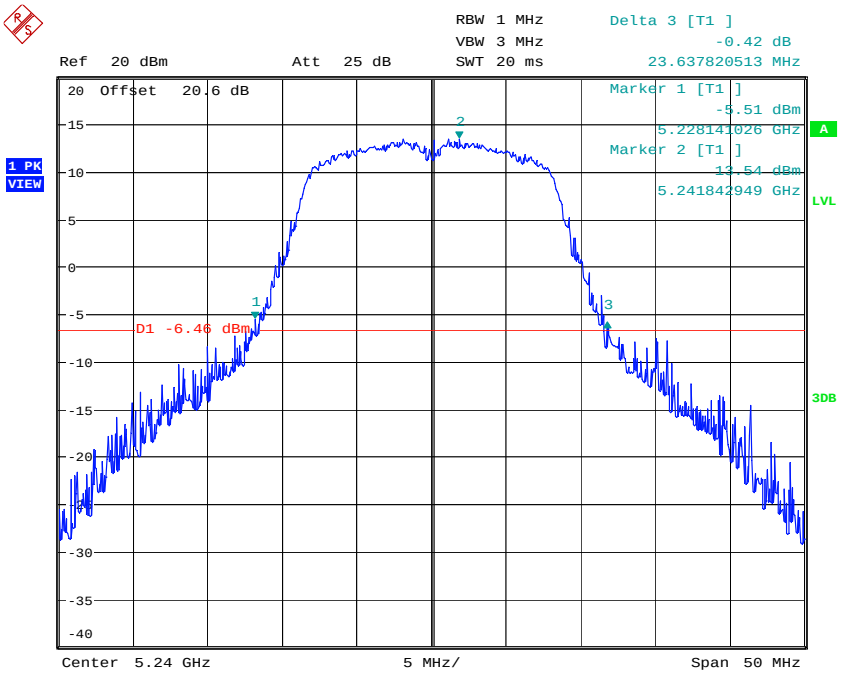
Date: 18.APR.2011 09:46:56

802.11a Channel 48 99% BW



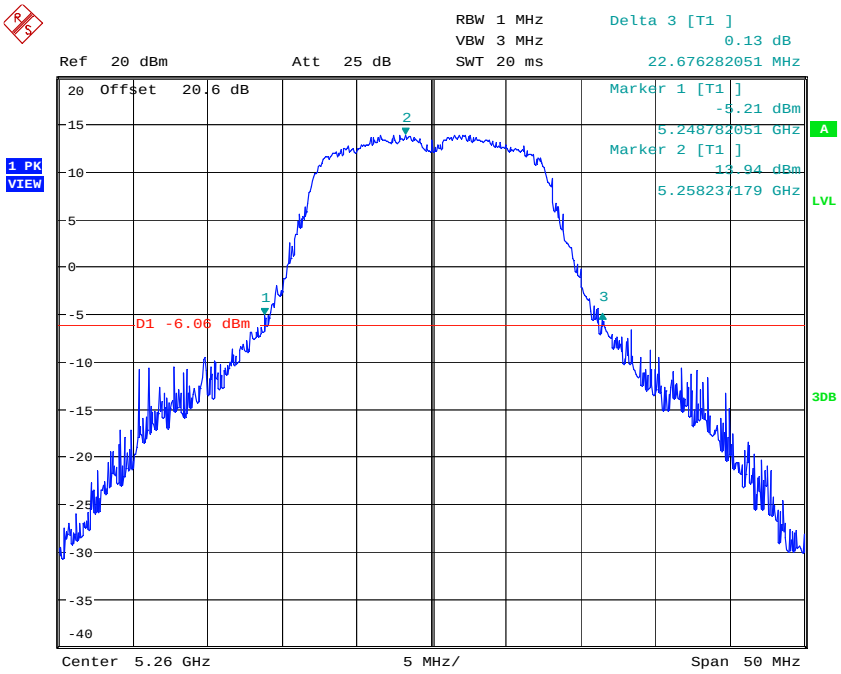
Date: 18.APR.2011 09:51:13

802.11n Channel 48 99% BW



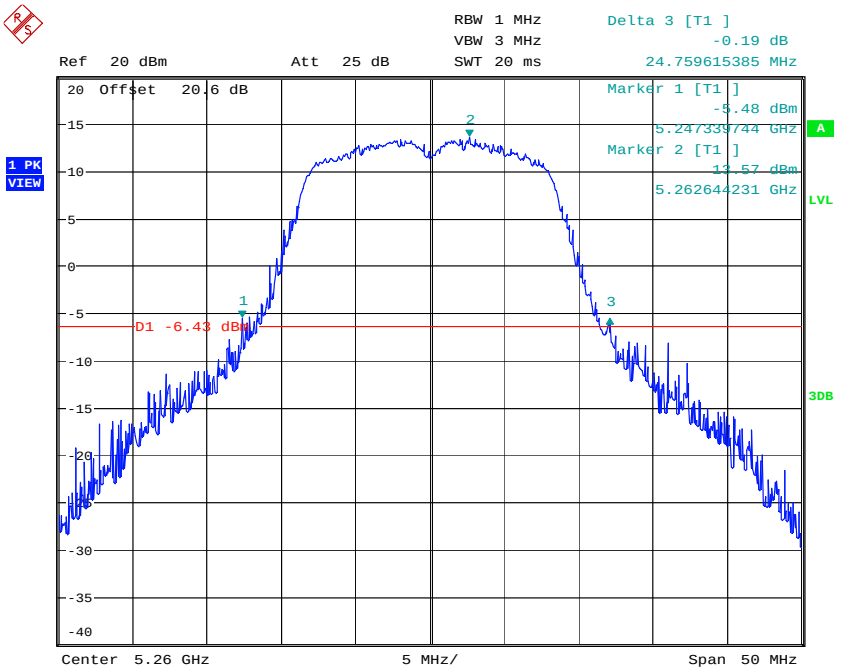
Date: 18.APR.2011 09:53:42

802.11a Channel 52 99% BW



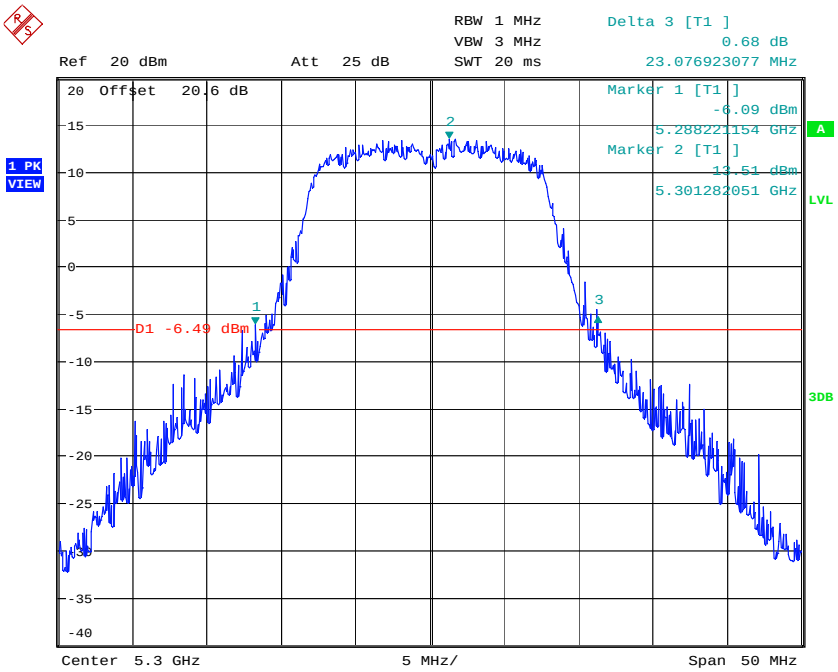
Date: 18.APR.2011 10:18:21

802.11n Channel 52 99% BW



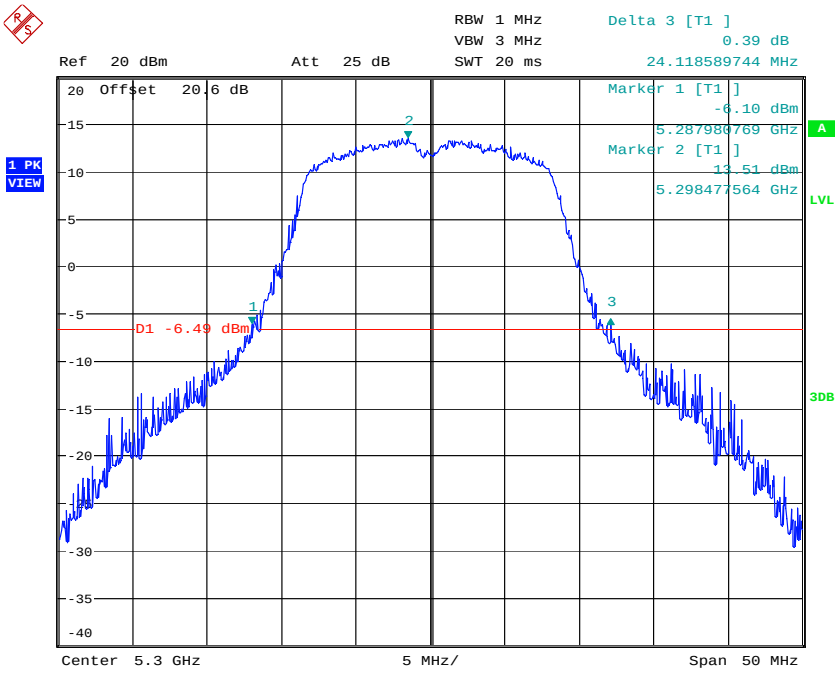
Date: 18.APR.2011 10:20:18

802.11a Channel 60 99% BW



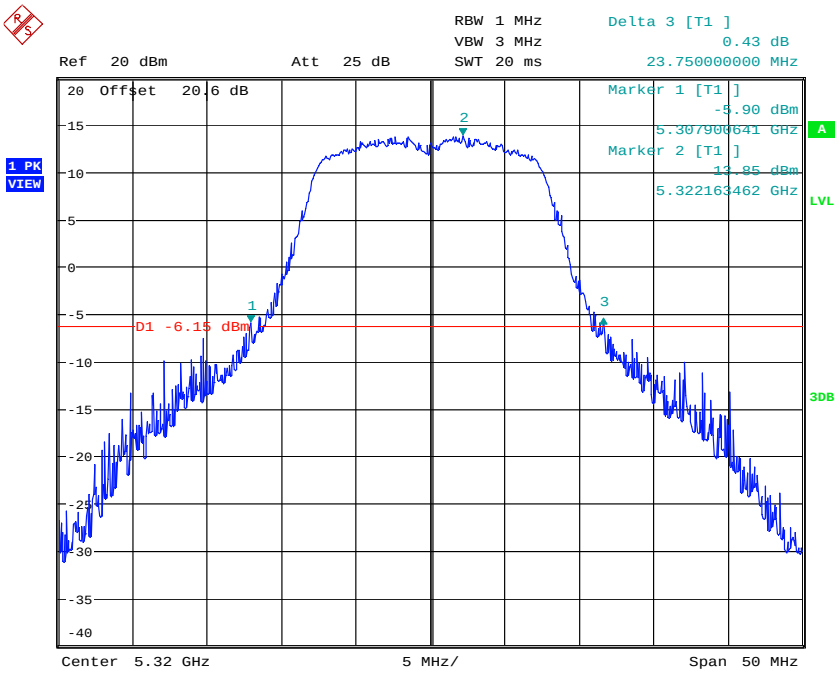
Date: 18.APR.2011 10:29:02

802.11n Channel 60 99% BW



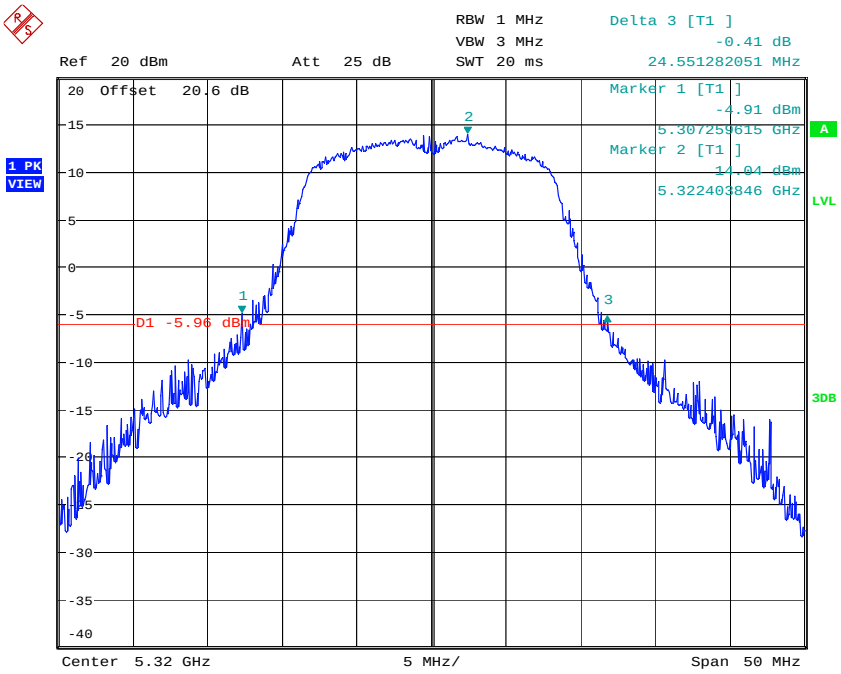
Date: 18.APR.2011 10:30:33

802.11a Channel 64 99% BW



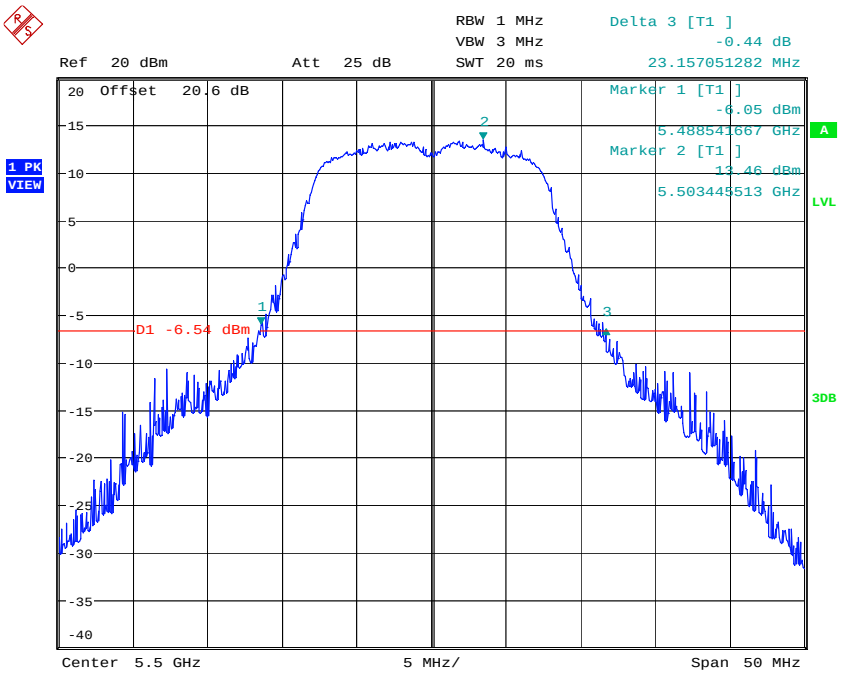
Date: 18.APR.2011 10:32:57

802.11n Channel 64 99% BW



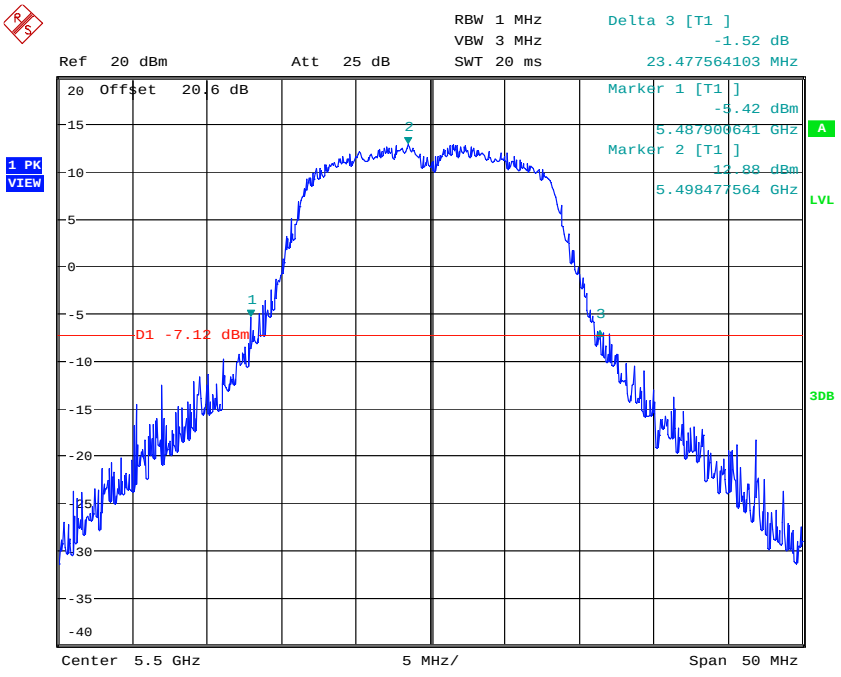
Date: 18.APR.2011 10:34:14

802.11a Channel 100 99% BW



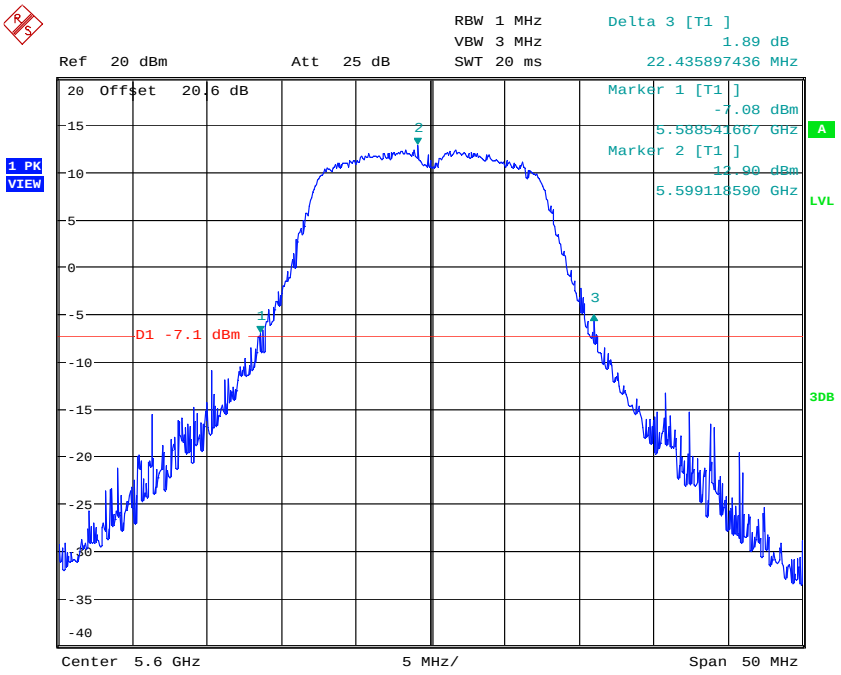
Date: 18.APR.2011 10:36:21

802.11n Channel 100 99% BW



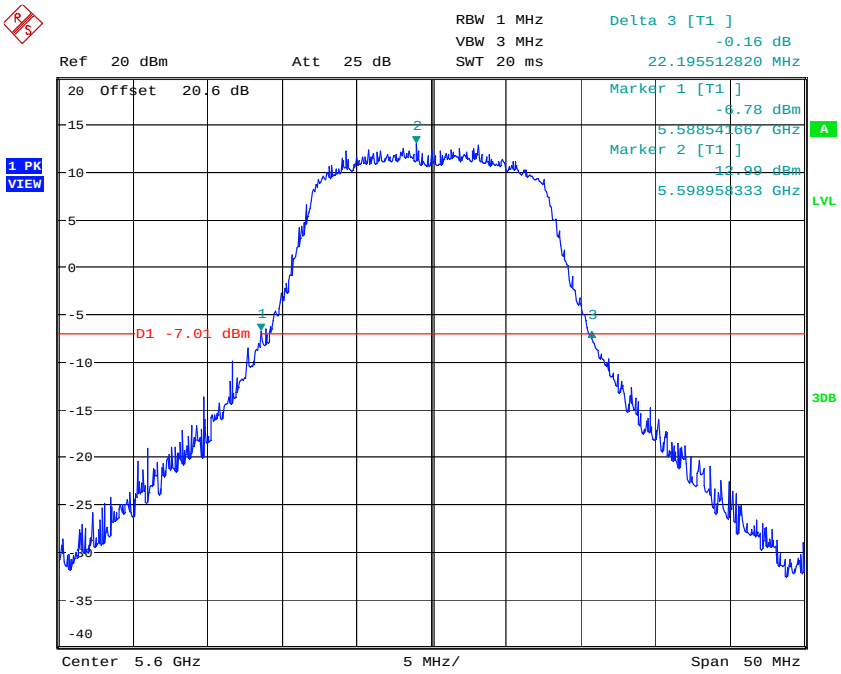
Date: 18.APR.2011 10:40:51

802.11a Channel 120 99% BW



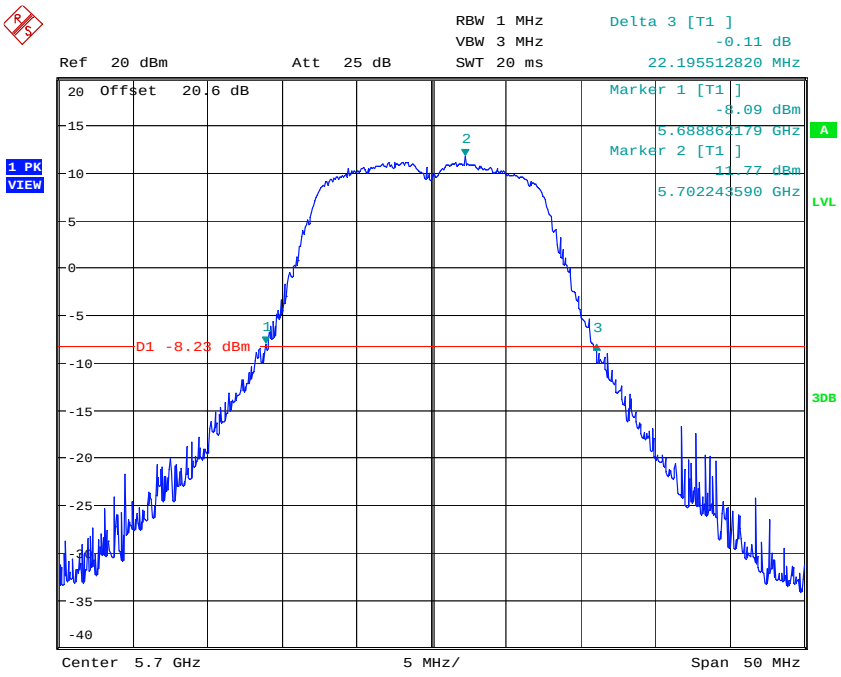
Date: 18.APR.2011 10:46:13

802.11n Channel 120 99% BW



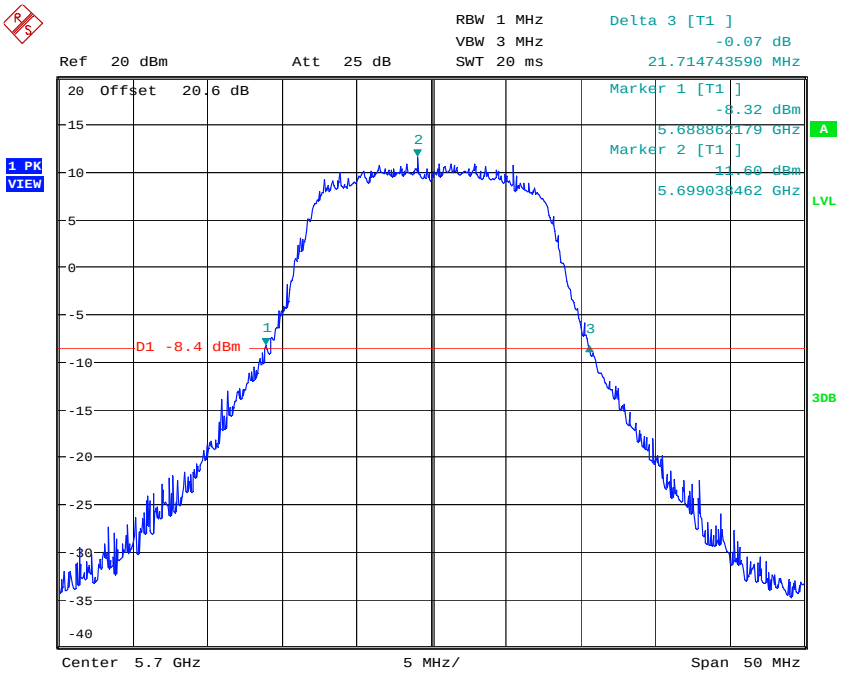
Date: 18.APR.2011 10:47:50

802.11a Channel 140 99% BW



Date: 18.APR.2011 10:51:45

802.11n Channel 140 99% BW



Date: 18.APR.2011 10:49:53

5.6 Peak Power Spectral Density

5.6.1 Limits:

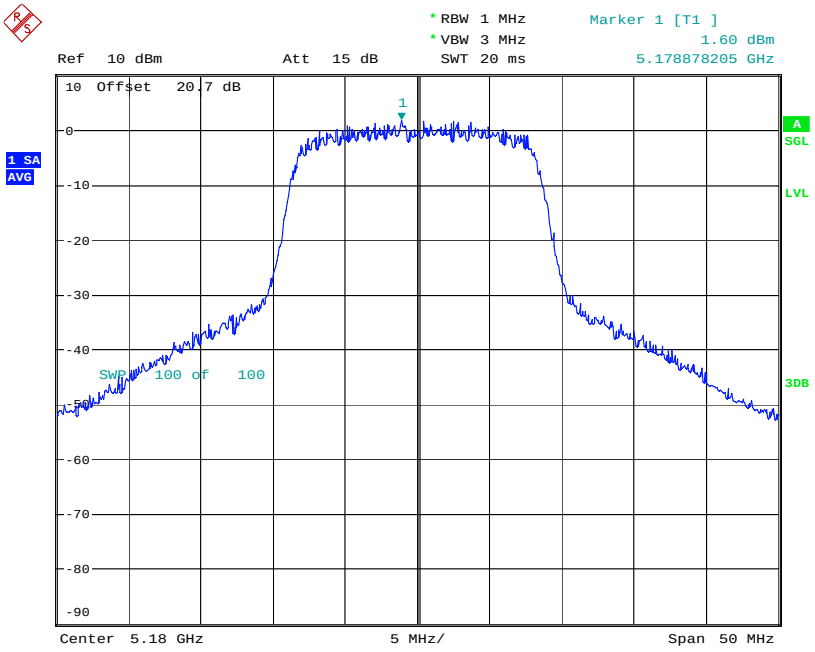
Sub-band 1: 5150-5250MHz 15.407(a) (1): 4dBm in any 1–MHz band
Sub-band 2: 5250-5350MHz 15.407(a) (2): 11dBm in any 1–MHz band
Sub-band 3: 5470-5725MHz 15.407(a) (2): 11dBm in any 1–MHz band

5.6.2 Results

Method 2 specified in FCC public knowledge DA-02-2138A1 was used.

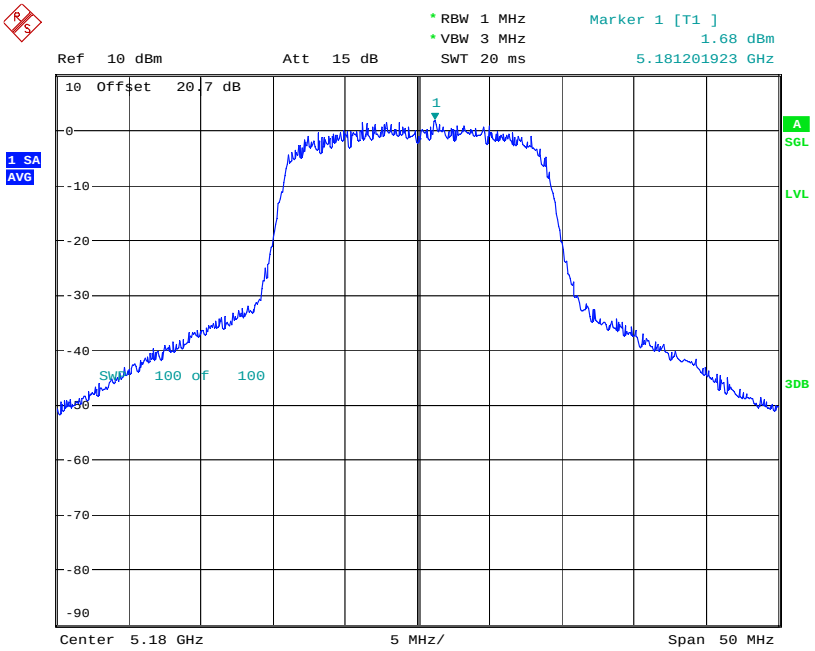
Peak Power Spectral Density (dBm)			
Frequency (MHz)	**Channel**	**a**	**n HT20**
5180	**36**	1.60	1.68
5220	**44**	1.68	1.42
5240	**48**	2.16	1.30
5260	**52**	4.05	3.60
5300	**60**	3.72	4.07
5320	**64**	3.98	3.46
5500	**100**	3.58	3.52
5600	**120**	2.64	2.63
5700	**140**	1.31	1.65

802.11a Ch36



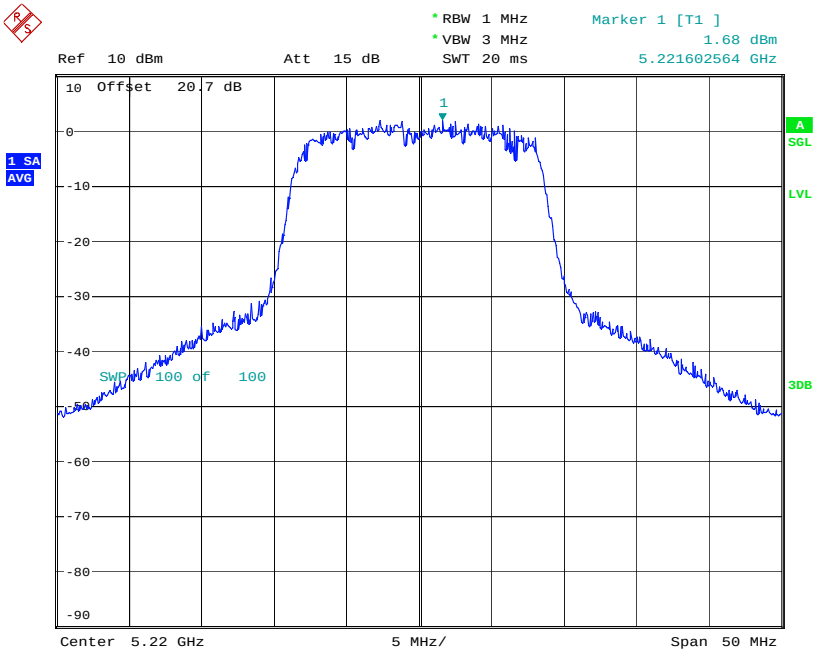
Date: 21.MAY.2011 16:03:39

802.11n Ch36



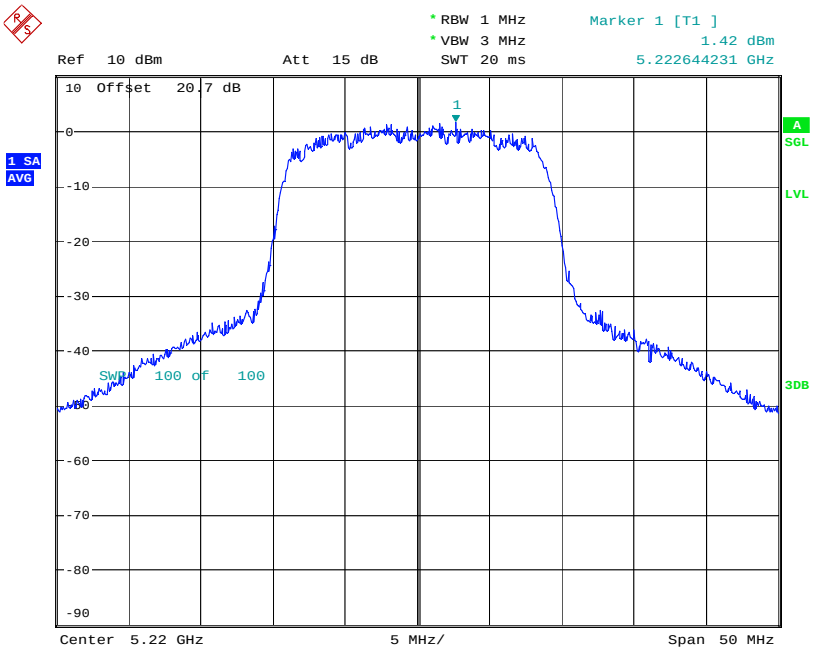
Date: 21.MAY.2011 16:05:55

802.11a Ch44



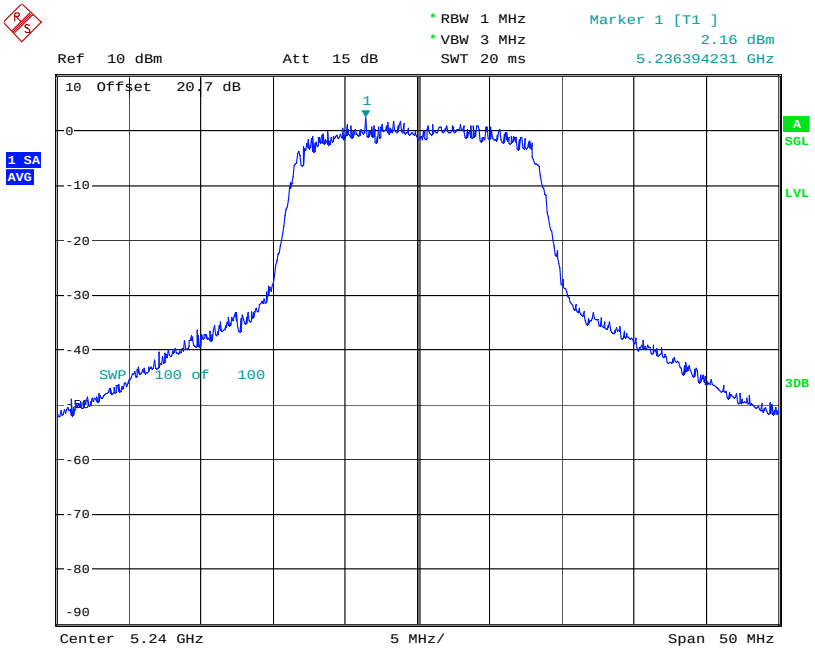
Date: 21.MAY.2011 16:07:29

802.11n Ch44



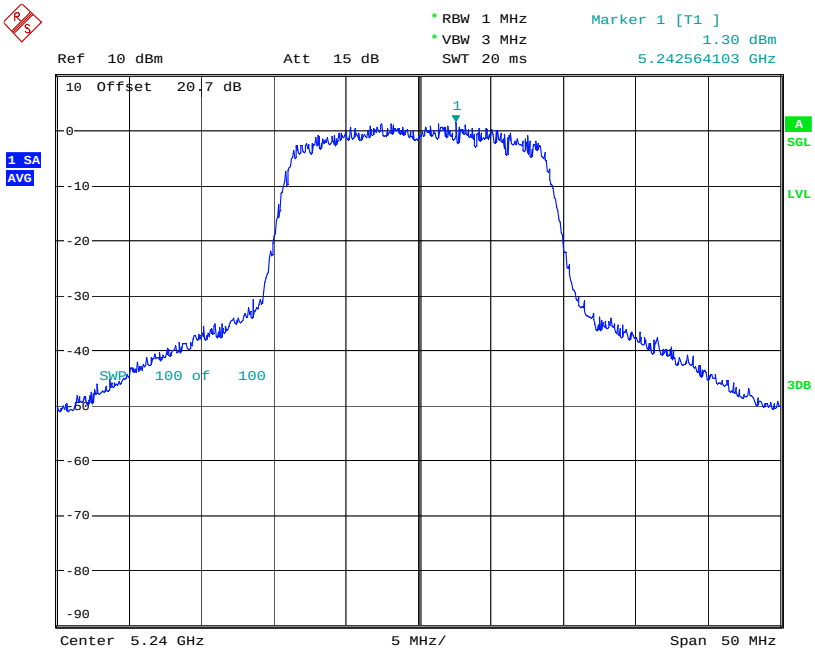
Date: 21.MAY.2011 16:08:26

802.11a Ch48



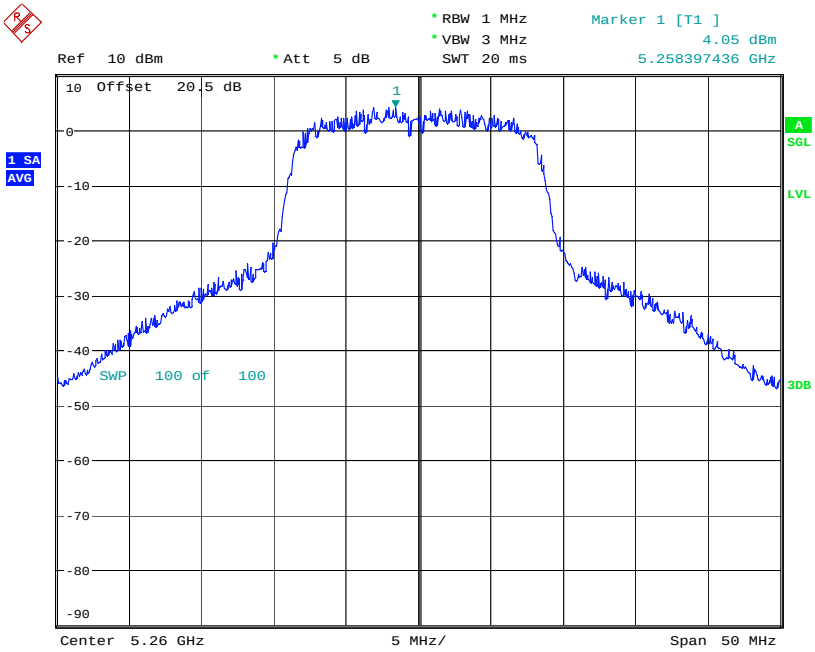
Date: 21.MAY.2011 16:09:43

802.11n Ch48



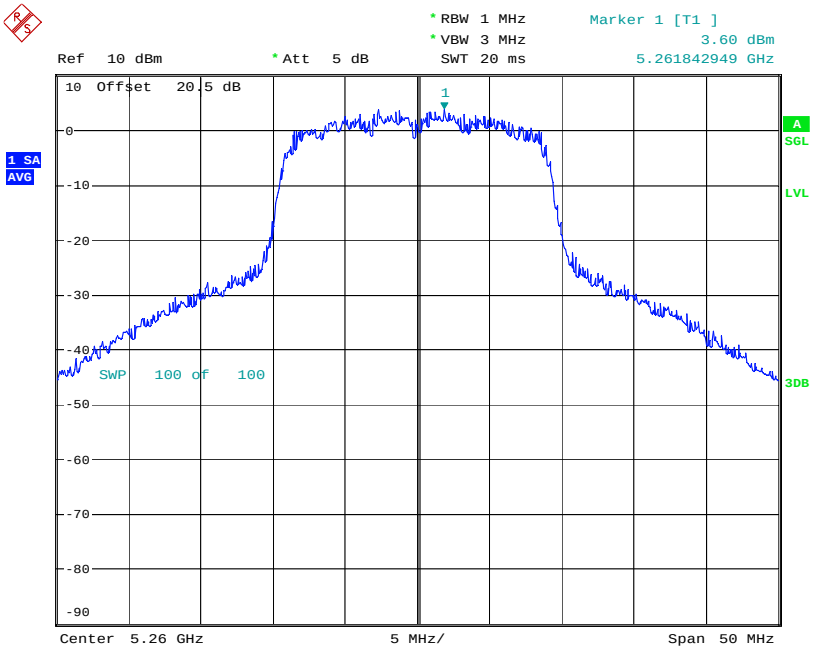
Date: 21.MAY.2011 16:10:45

802.11a Ch52



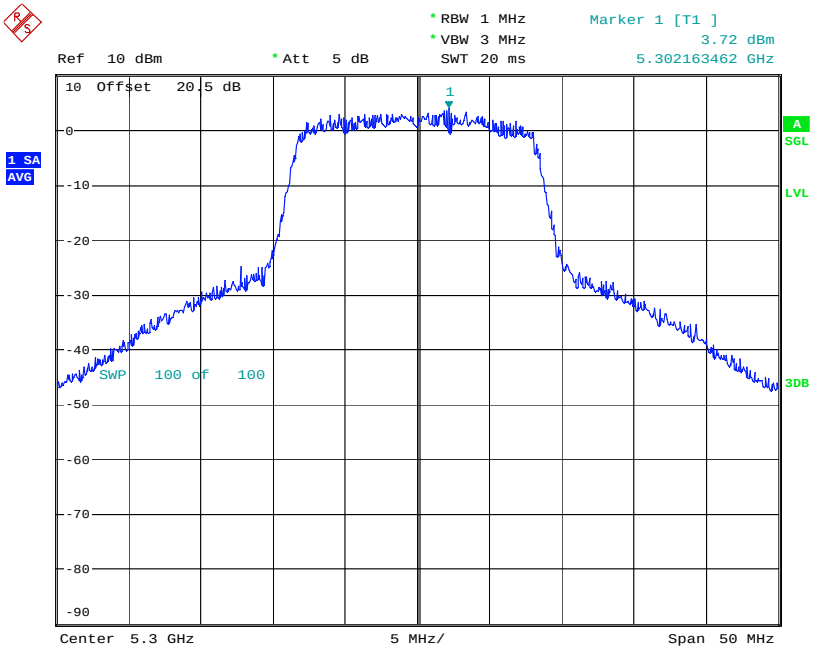
Date: 15.APR.2011 13:59:58

802.11n Ch52



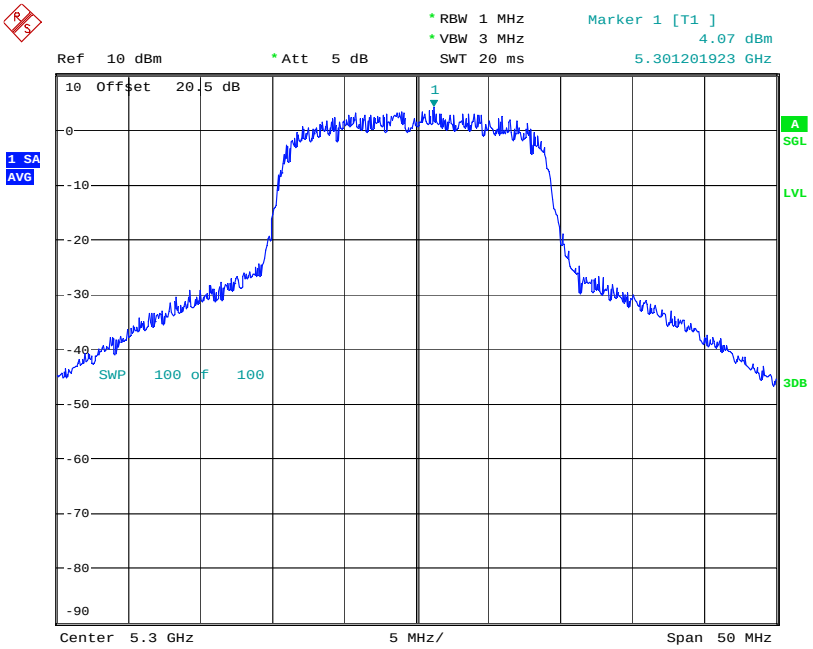
Date: 15.APR.2011 14:01:21

802.11a Ch60



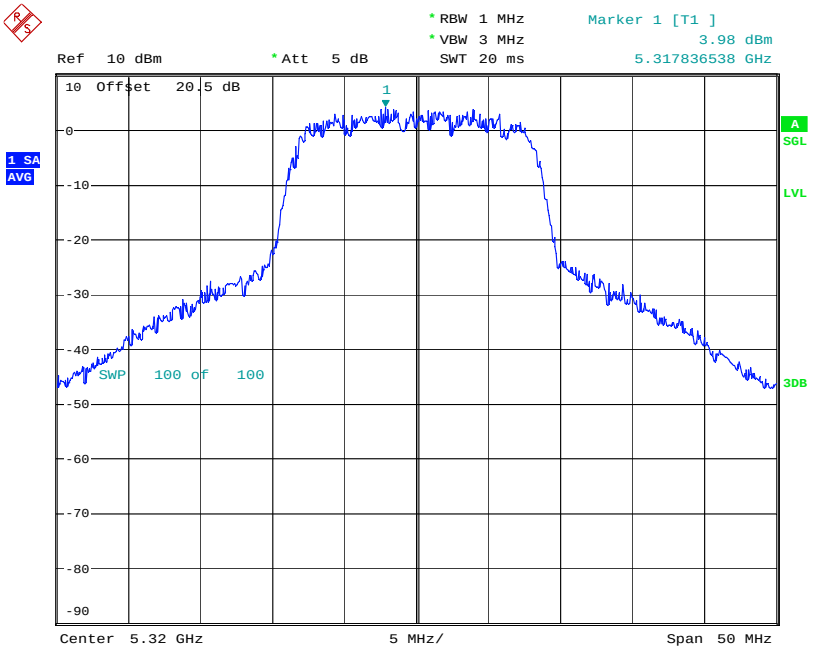
Date: 15.APR.2011 14:03:50

802.11n Ch60



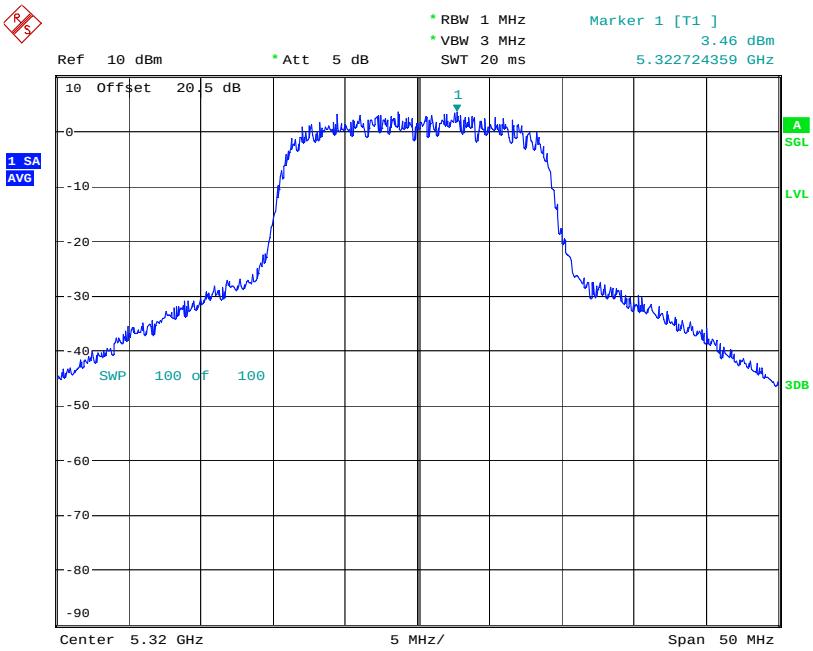
Date: 15.APR.2011 14:02:52

802.11a Ch64



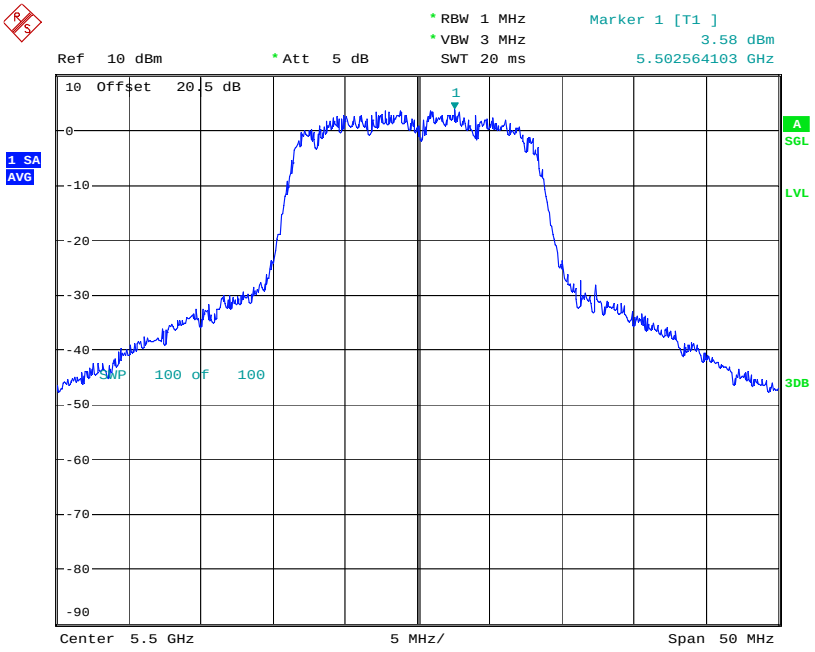
Date: 15.APR.2011 14:05:07

802.11n Ch64



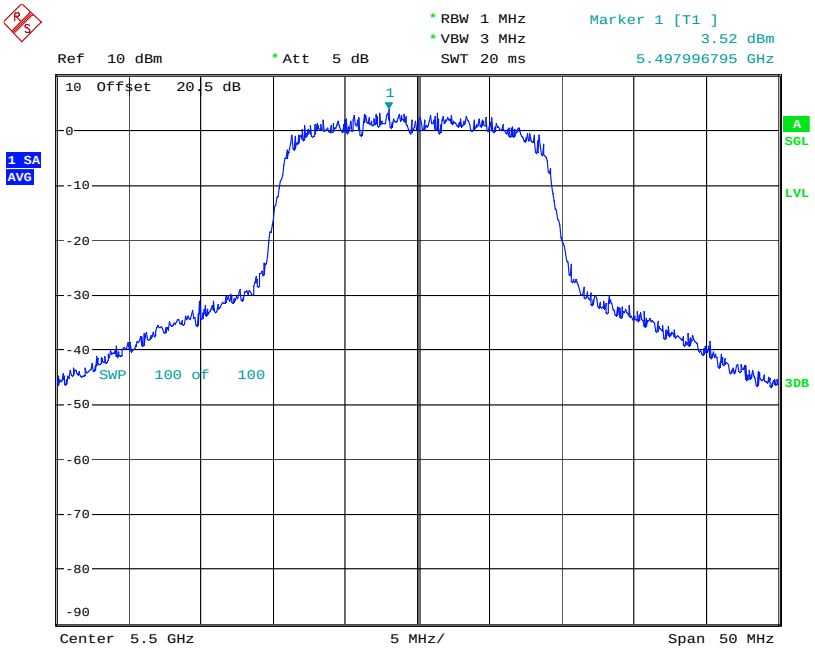
Date: 15.APR.2011 14:05:44

802.11a Ch100



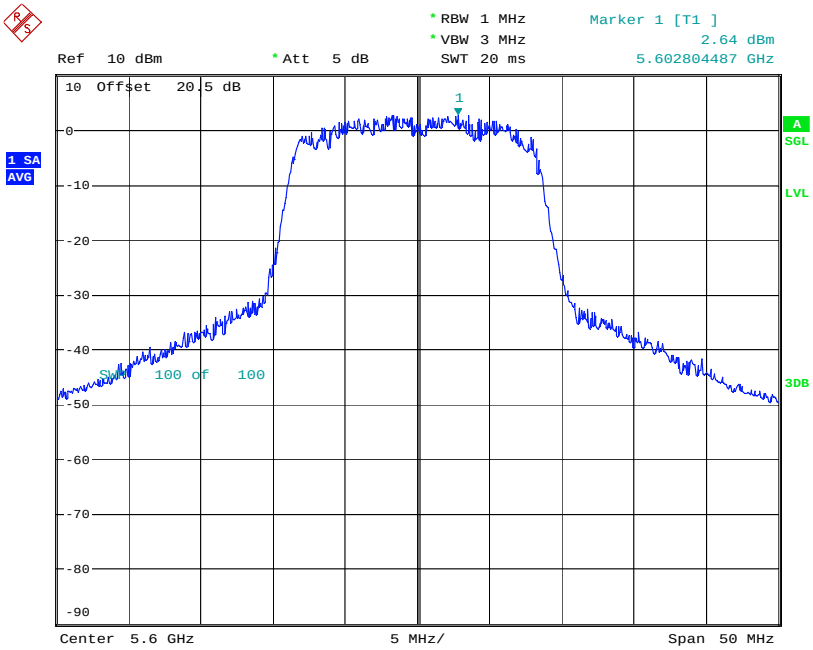
Date: 15.APR.2011 14:07:53

802.11n Ch100



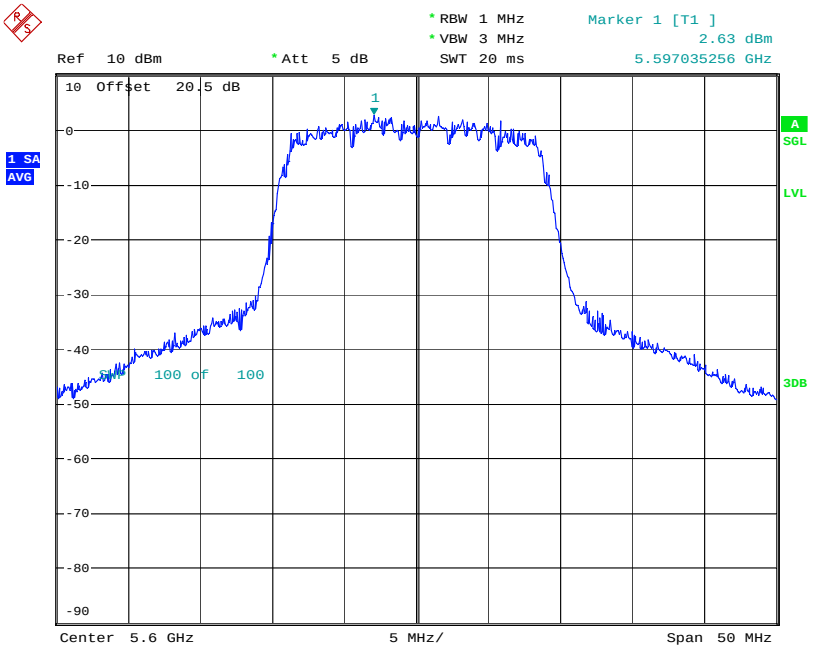
Date: 15.APR.2011 14:07:08

802.11a Ch120



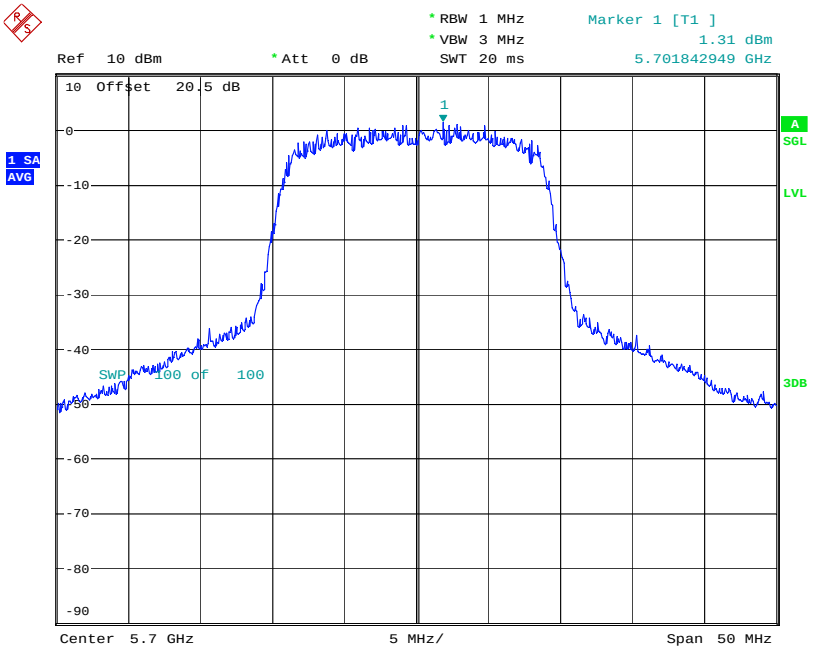
Date: 15.APR.2011 14:08:51

802.11n Ch120



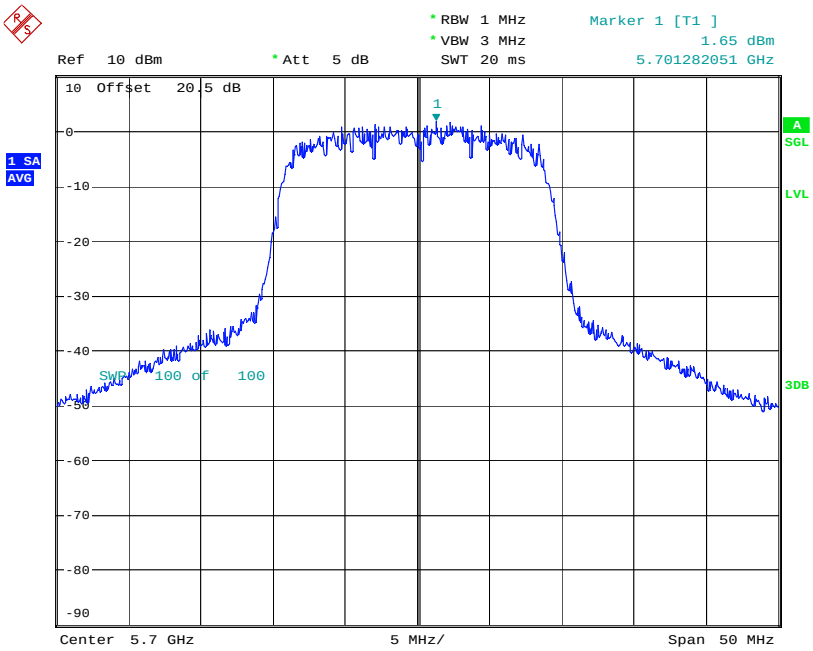
Date: 15.APR.2011 14:09:54

802.11a Ch140



Date: 15.APR.2011 14:14:09

802.11n Ch140



Date: 15.APR.2011 14:11:02

5.7 Peak Excursion

5.7.1 Limit

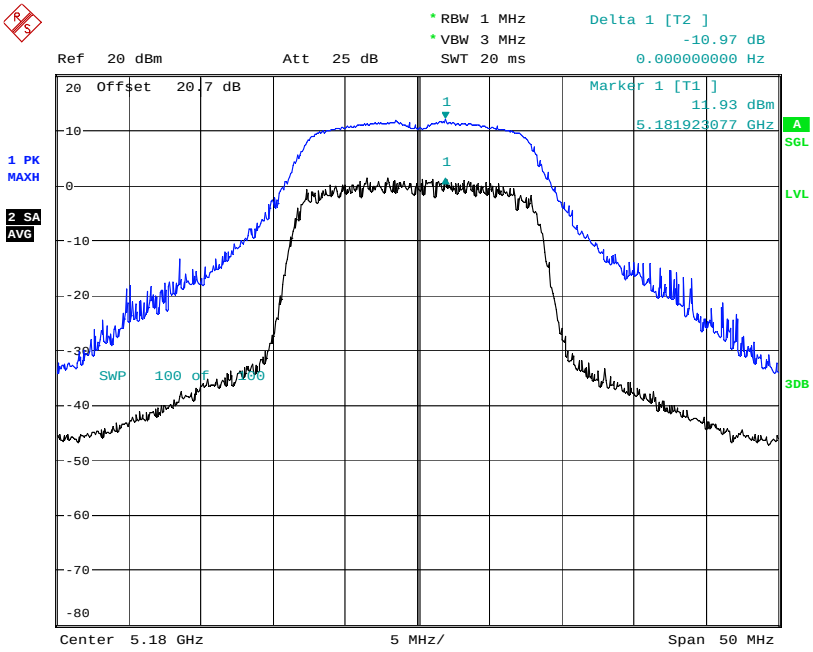
FCC15.407 (A)(6): The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

5.7.2 Results

The peak conducted power is measured with a spectrum analyzer and method 2 specified in FCC public knowledge DA-02-2138A1.

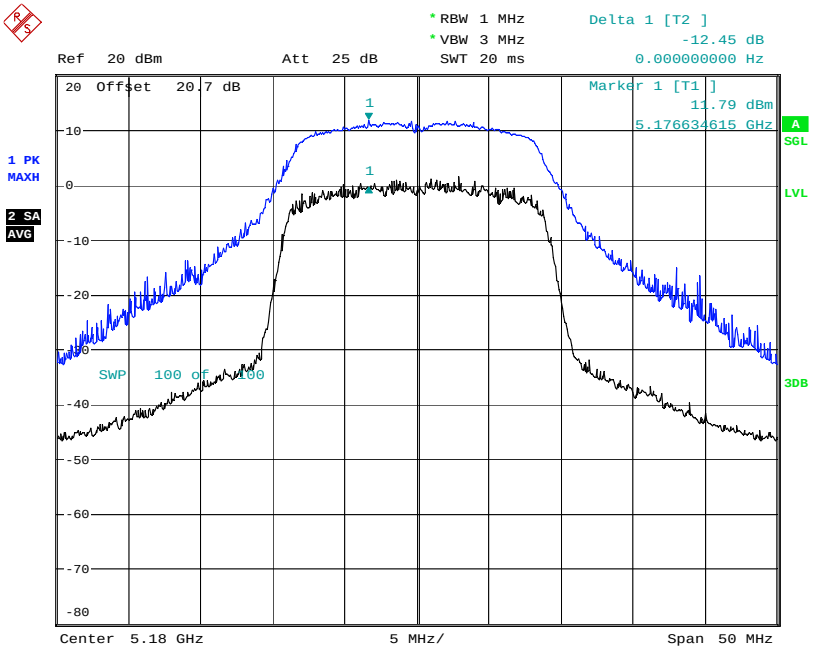
Peak Excursion (dB)			
Frequency (MHz)	**Channel**	**a**	**n**
5180	**36**	10.97	12.45
5200	**40**	11.53	11.97
5240	**48**	12.49	11.19
5260	**52**	11.58	11.61
5300	**60**	11.17	11.12
5320	**64**	11.33	11.29
5500	**100**	11.05	11.14
5600	**120**	11.73	11.51
5700	**140**	11.69	11.49

802.11a Ch36



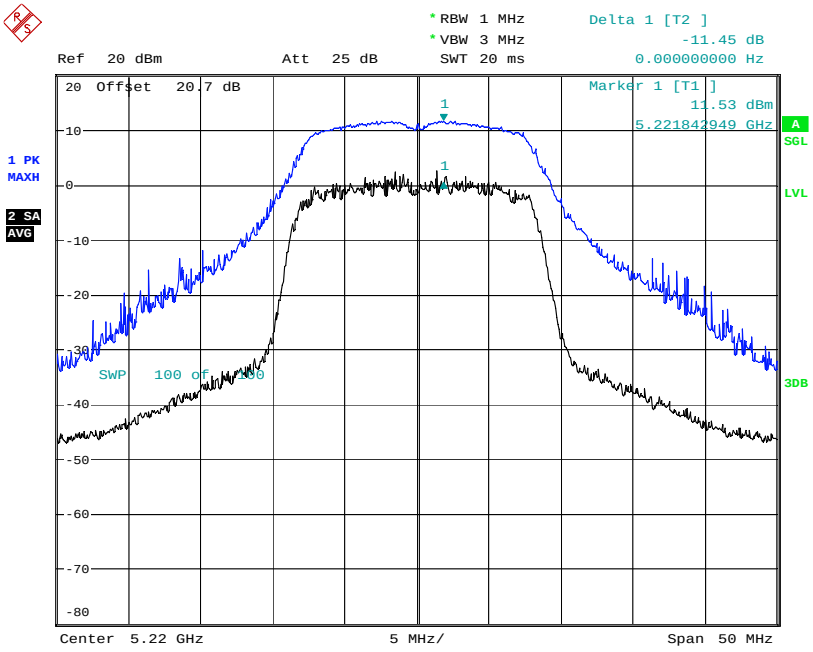
Date: 21.MAY.2011 16:25:52

802.11n Ch36



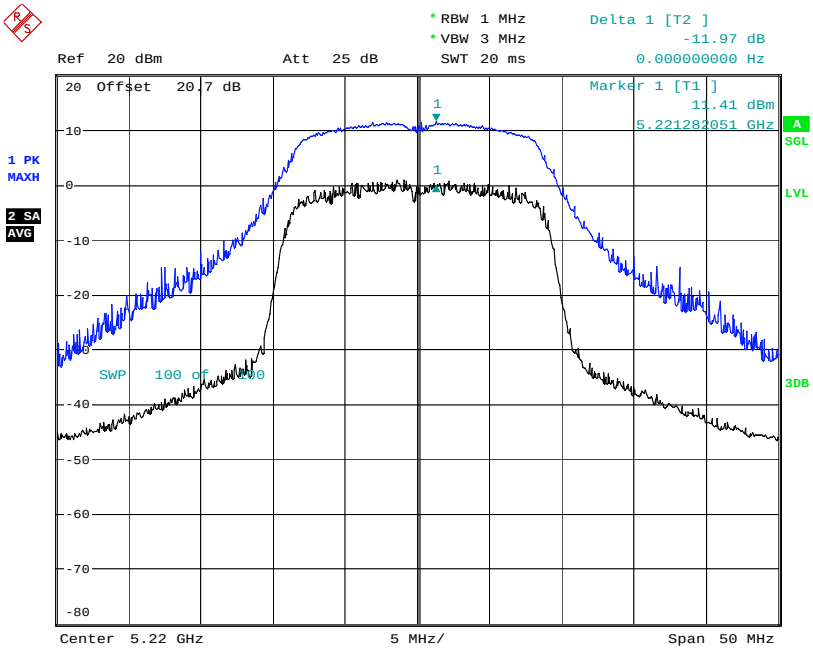
Date: 21.MAY.2011 16:28:11

802.11a Ch44



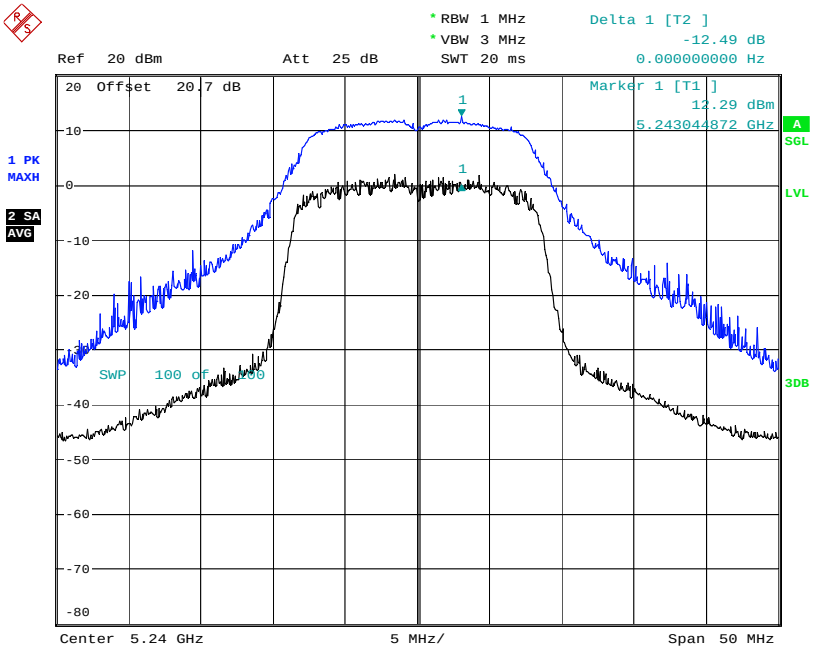
Date: 21.MAY.2011 16:30:20

802.11n Ch44



Date: 21.MAY.2011 16:33:11

802.11a Ch48



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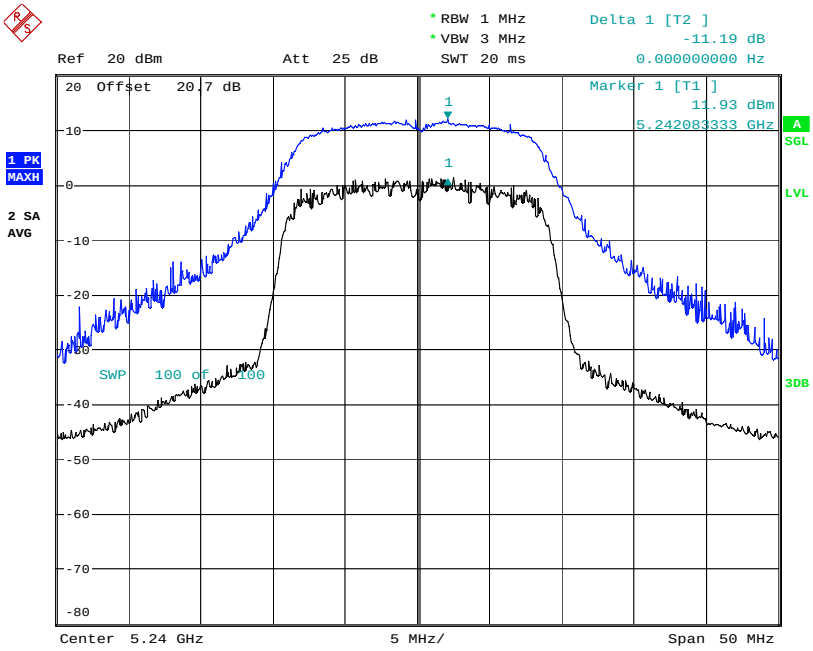
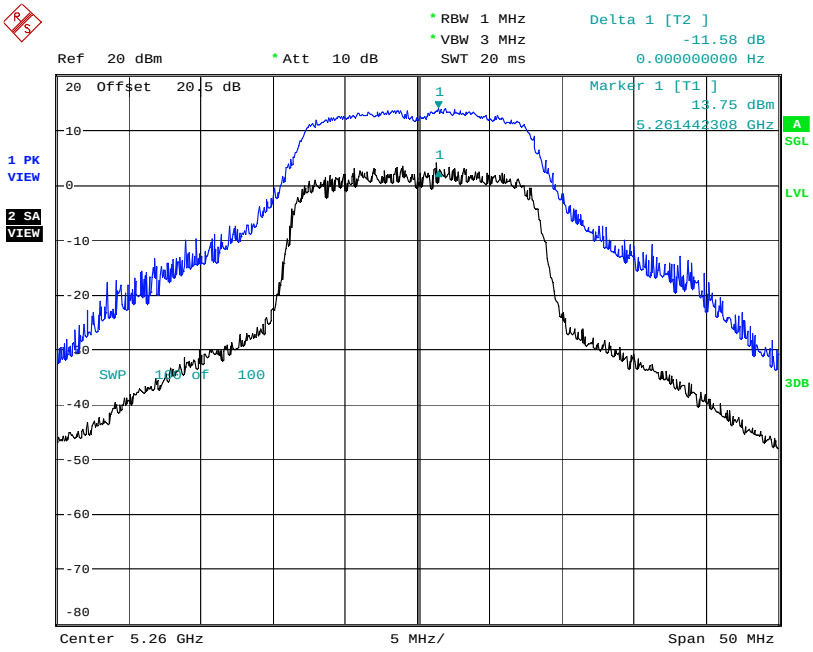
802.11n Ch48



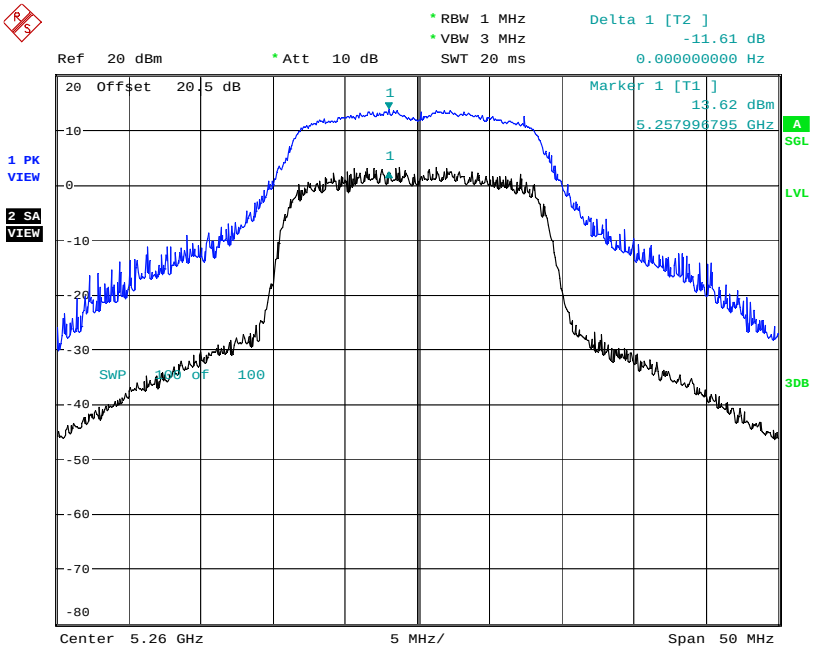
Date: 21.MAY.2011 16:19:05

802.11a Ch52



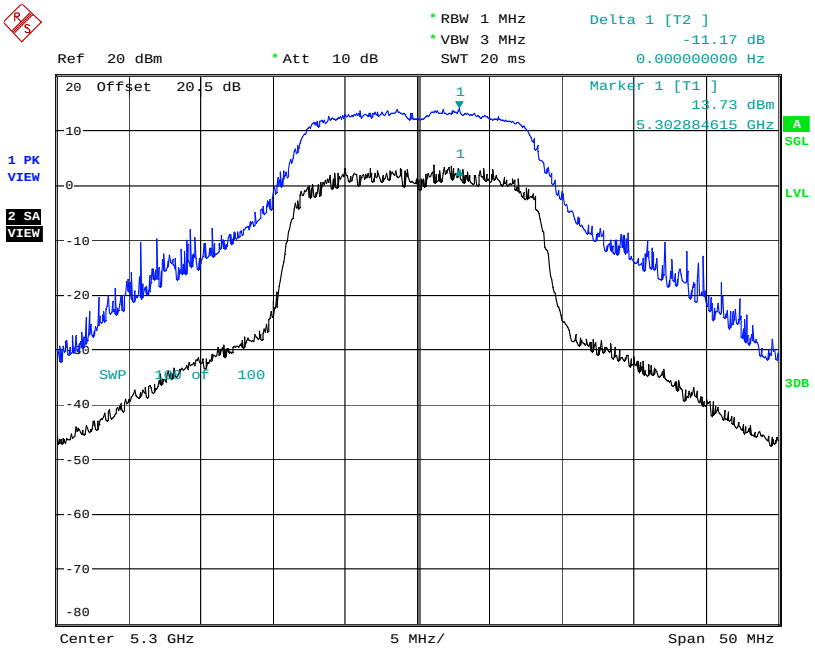
Date: 15.APR.2011 15:17:23

802.11n Ch52



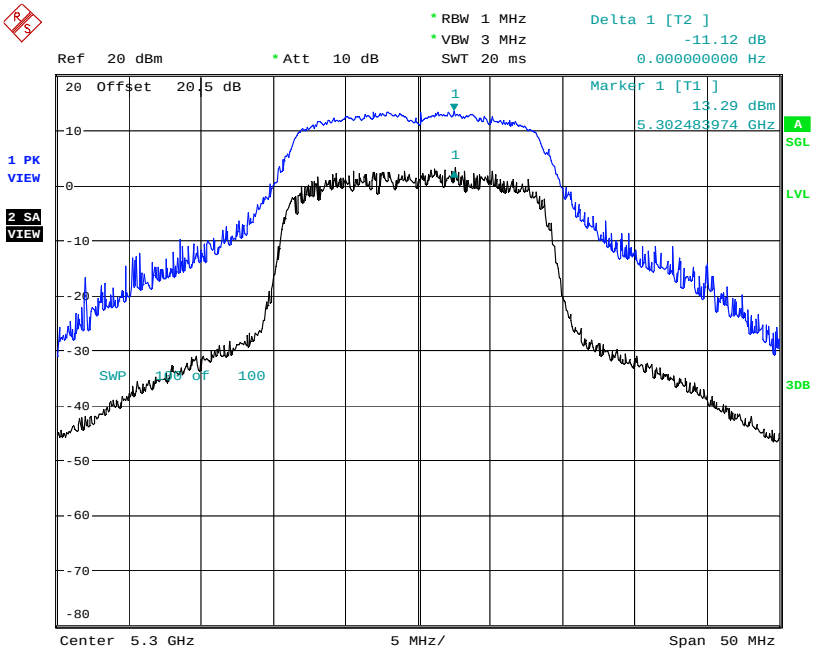
Date: 15.APR.2011 15:18:59

802.11a Ch60



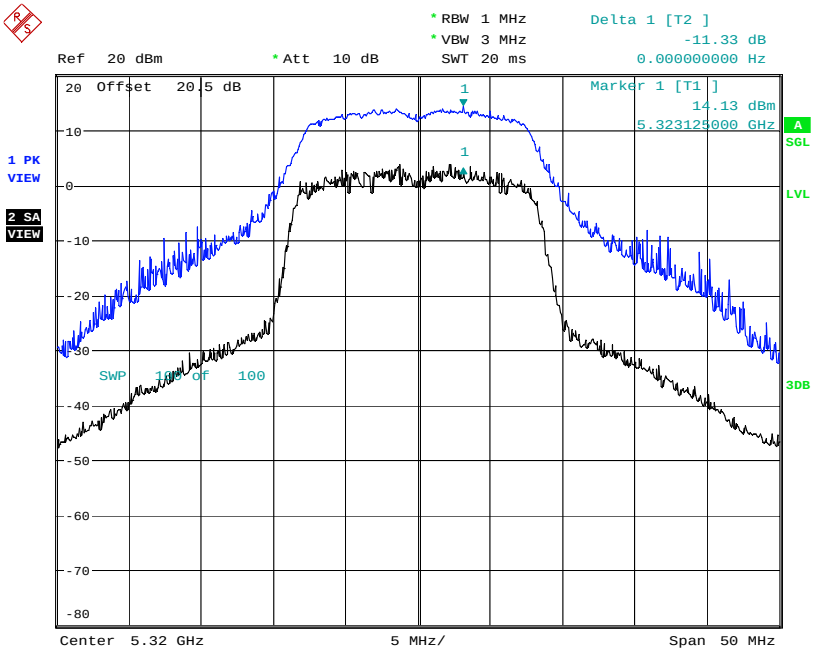
Date: 15.APR.2011 15:22:05

802.11n Ch60



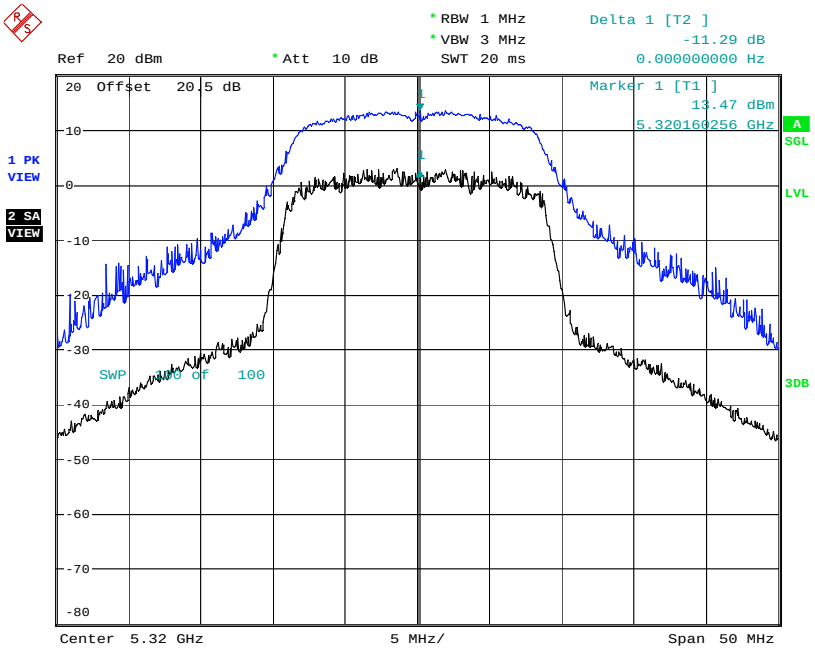
Date: 15.APR.2011 15:20:48

802.11a Ch64



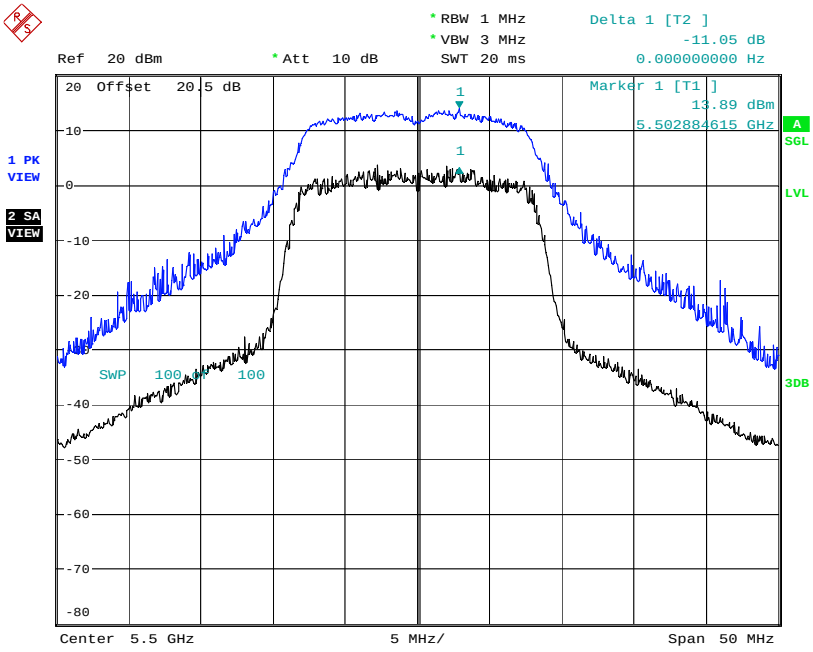
Date: 15.APR.2011 15:24:11

802.11n Ch64



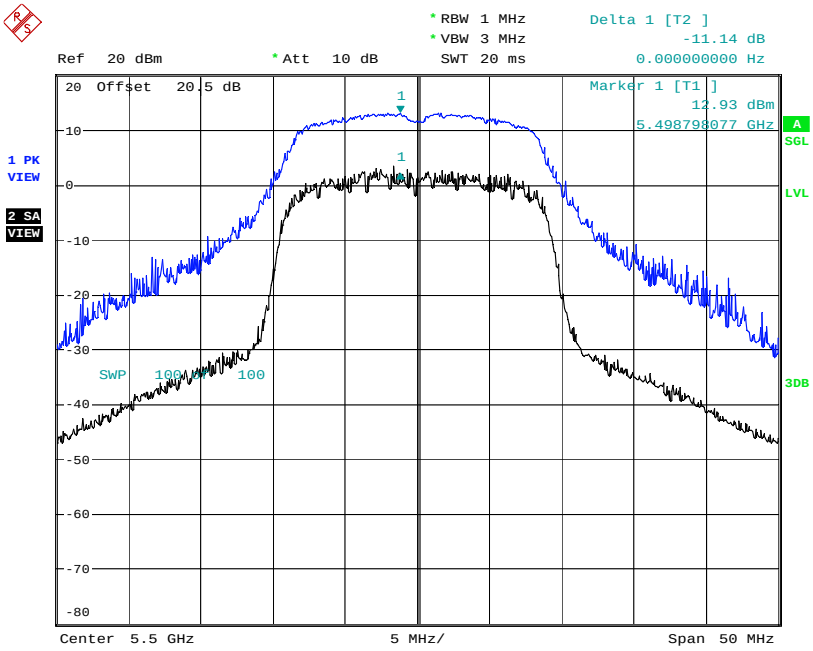
Date: 15.APR.2011 15:31:40

802.11a Ch100



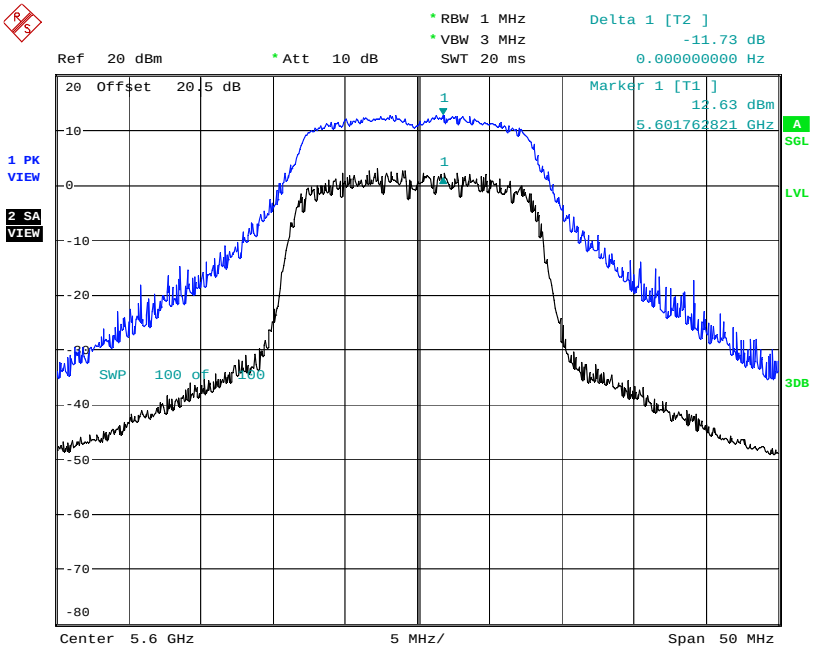
Date: 15.APR.2011 15:15:12

802.11n Ch100



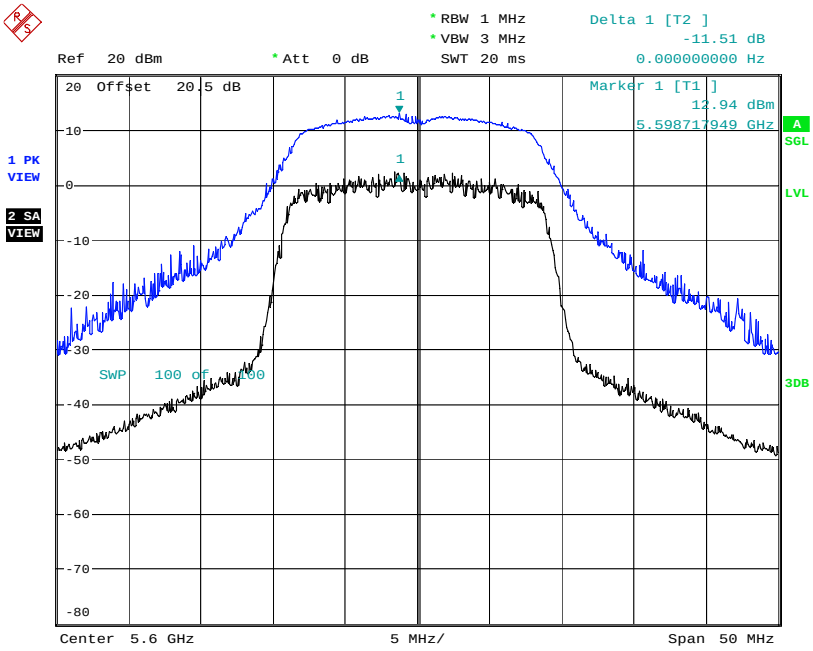
Date: 15.APR.2011 15:06:39

802.11a Ch120



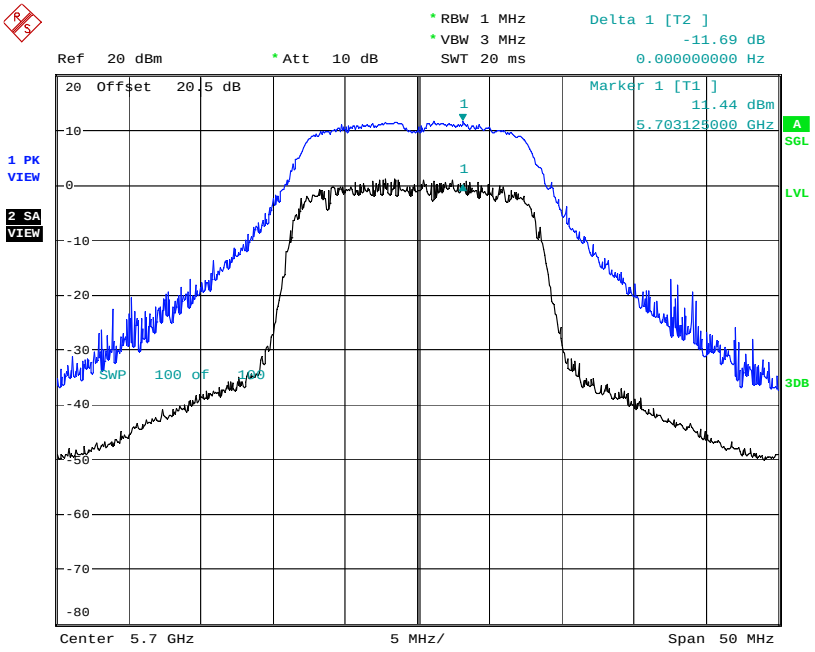
Date: 15.APR.2011 15:13:11

802.11n Ch120



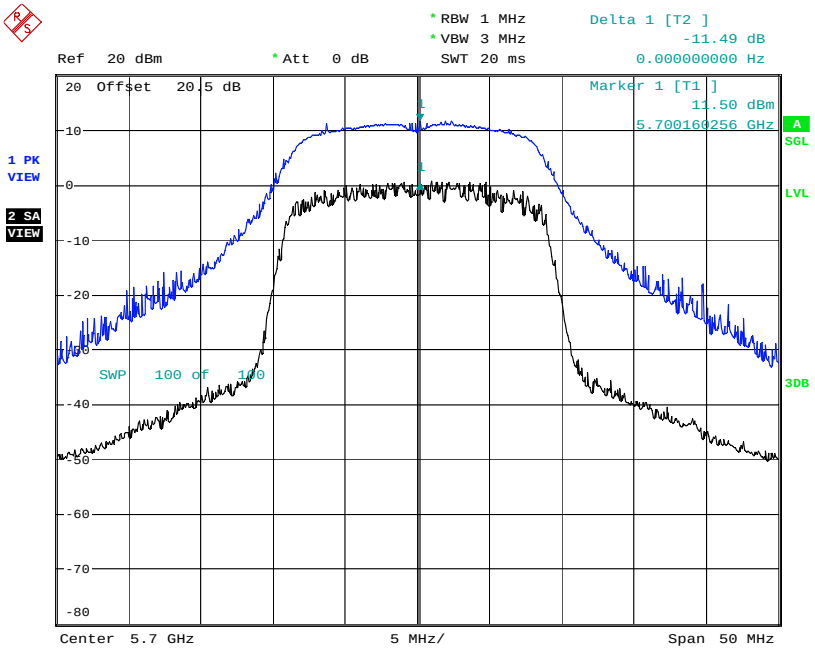
Date: 15.APR.2011 14:43:46

802.11a Ch140



Date: 15.APR.2011 15:10:53

802.11n Ch140



Date: 15.APR.2011 14:41:43

5.8 Transmitter Spurious Emissions- Conducted

5.8.1 Limits: § 15.407 (b)

-27 dBm / MHz EIRP

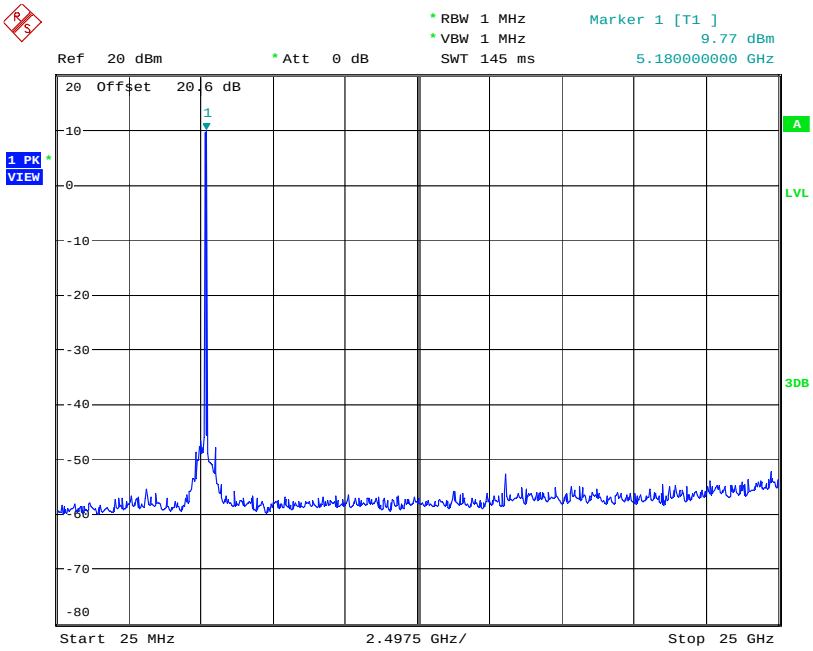
5.8.2 Test data/ plots:

Conducted Spurious Emissions			
Frequency (MHz)	**Channel**	**a**	**n HT20**
5180	**36**	Pass	Pass
5200	**40**	Pass	Pass
5240	**48**	Pass	Pass
5260	**52**	Pass	Pass
5300	**60**	Pass	Pass
5320	**64**	Pass	Pass
5500	**100**	Pass	Pass
5600	**120**	Pass	Pass
5700	**140**	Pass	Pass

5.8.3 Test data/ plots:

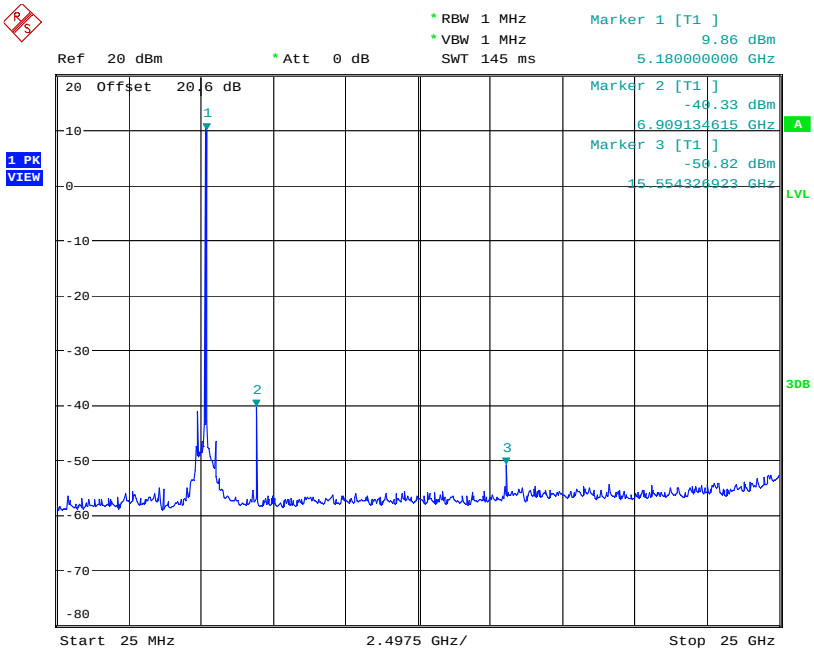
25 MHz-25GHz

802.11a Ch36



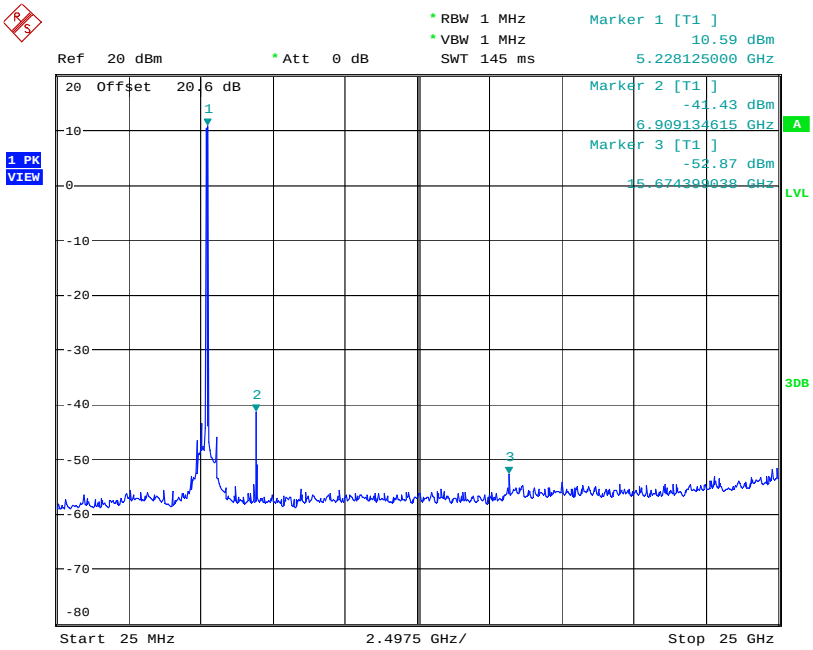
Date: 18.APR.2011 17:18:32

802.11n Ch36



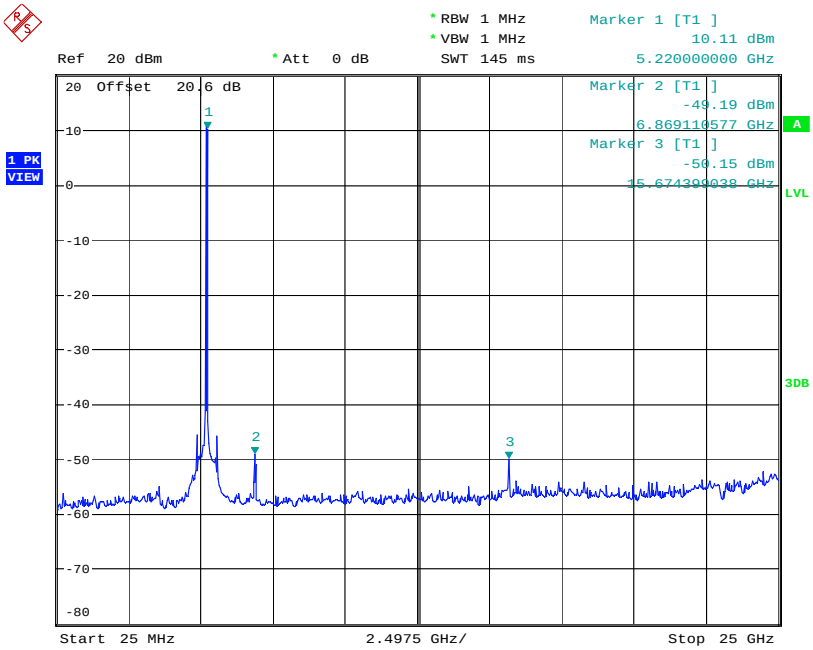
Date: 18.APR.2011 17:20:05

802.11a Ch44



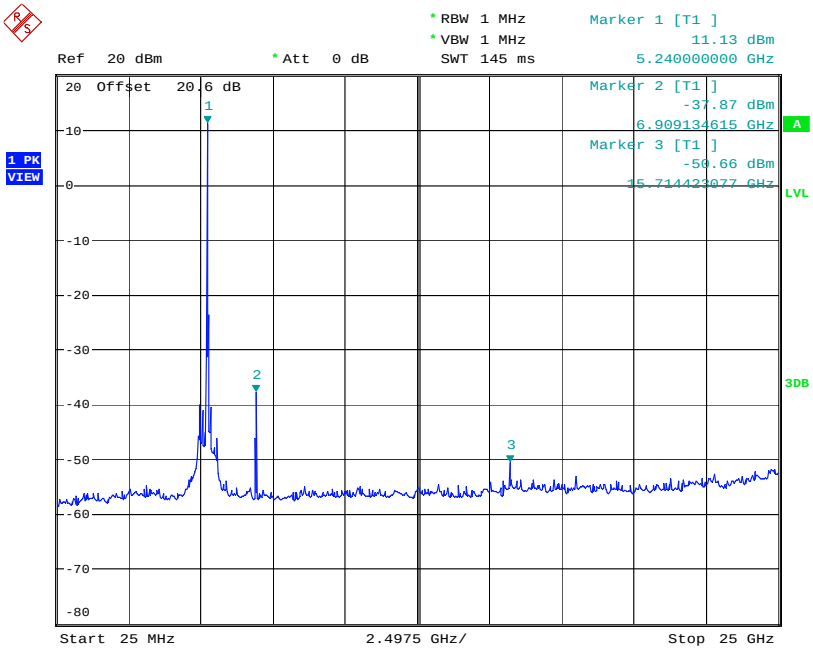
Date: 18.APR.2011 17:23:55

802.11n Ch44



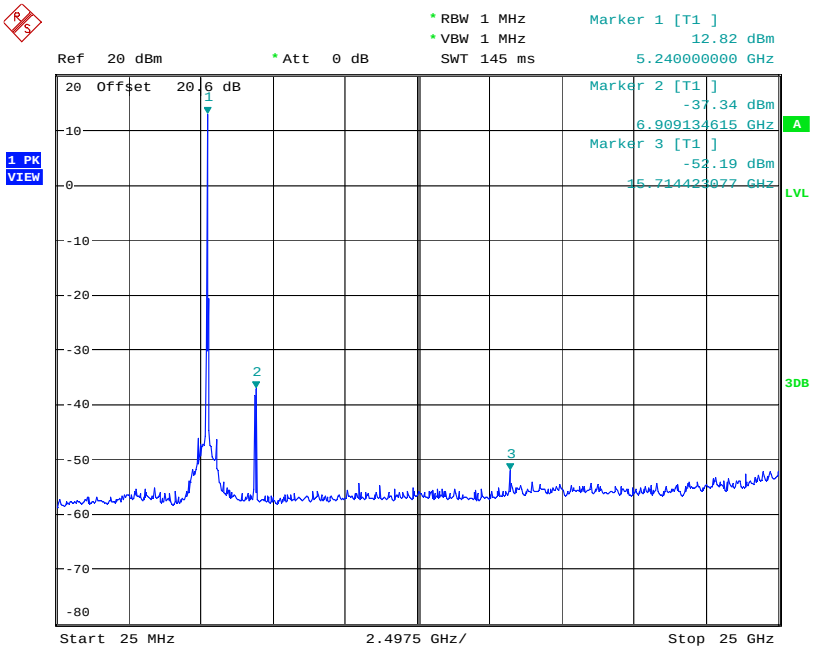
Date: 18.APR.2011 17:22:16

802.11a Ch48



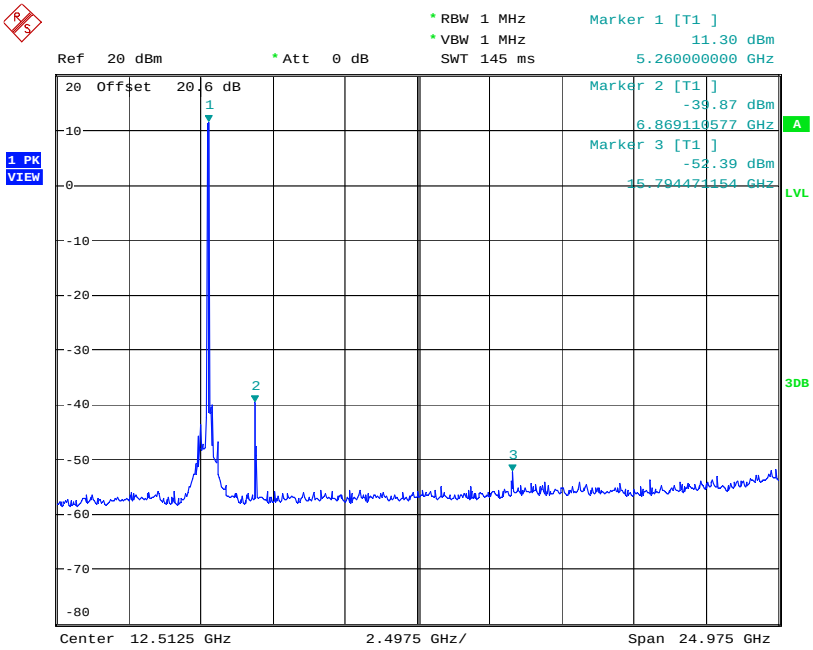
Date: 18.APR.2011 17:24:57

802.11n Ch48



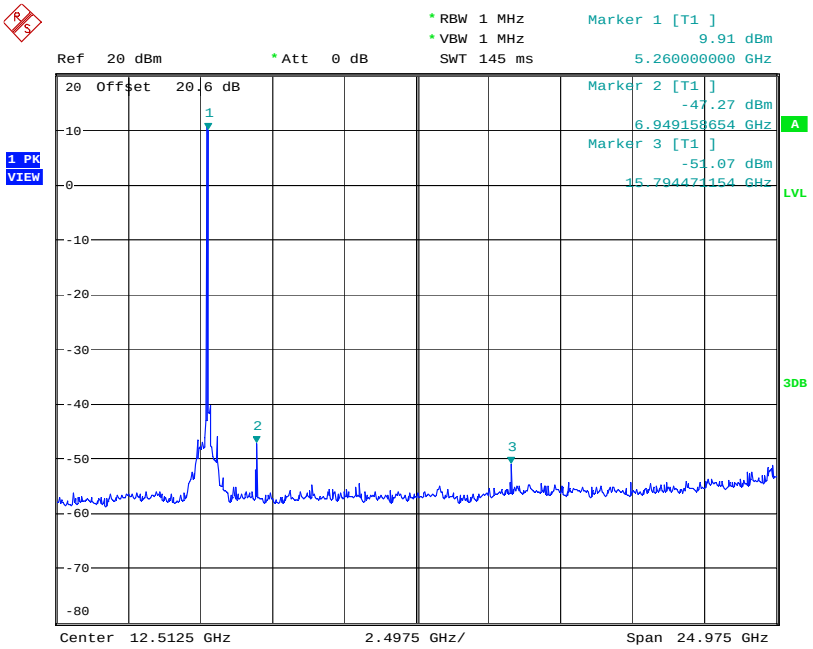
Date: 18.APR.2011 17:26:14

802.11a Ch52



Date: 18.APR.2011 17:28:42

802.11n Ch52



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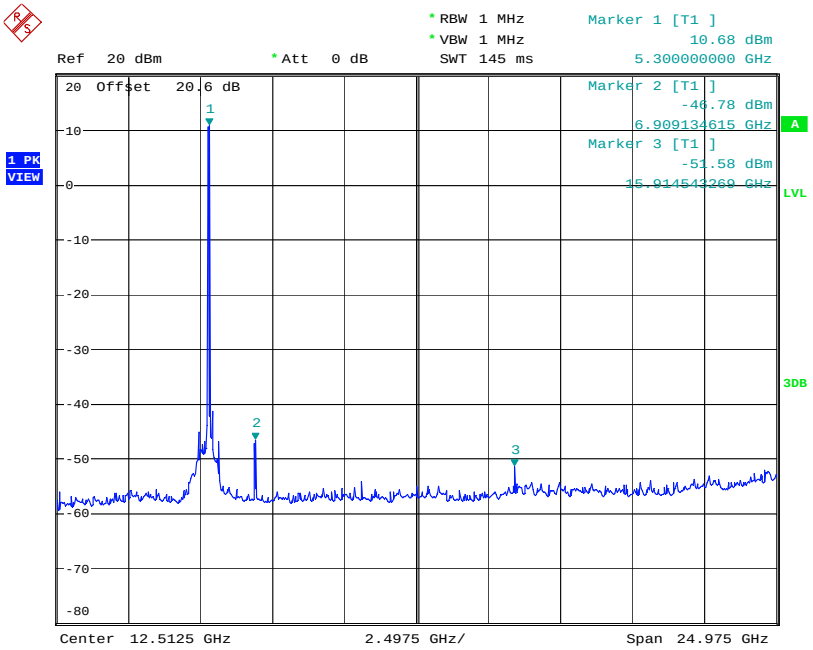
802.11a Ch60



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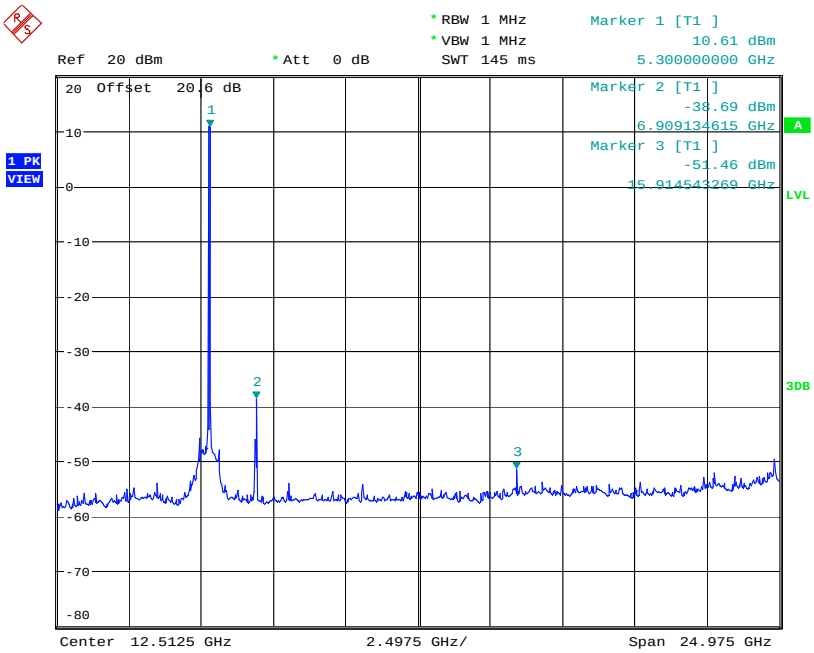
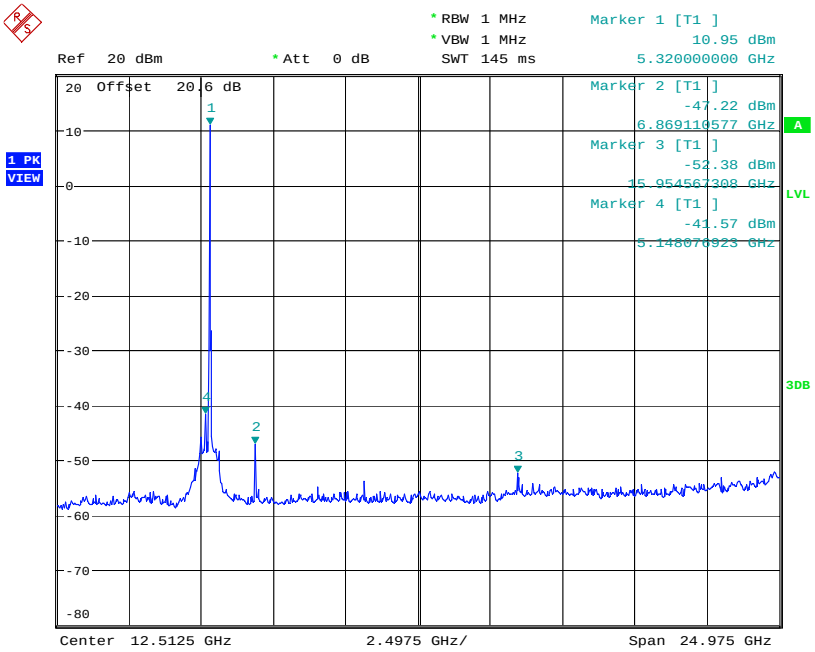
802.11n Ch60



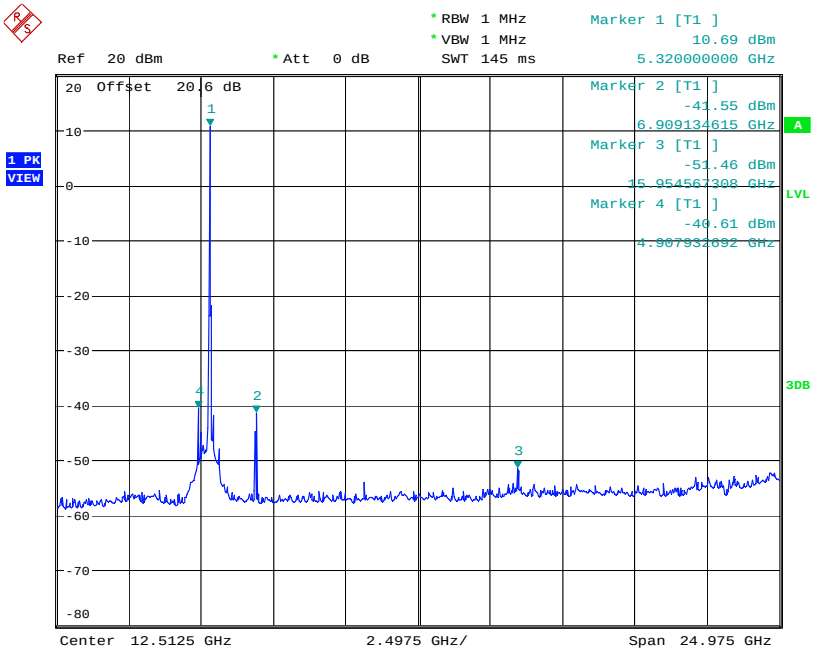
Date: 18.APR.2011 17:31:14

802.11a Ch64



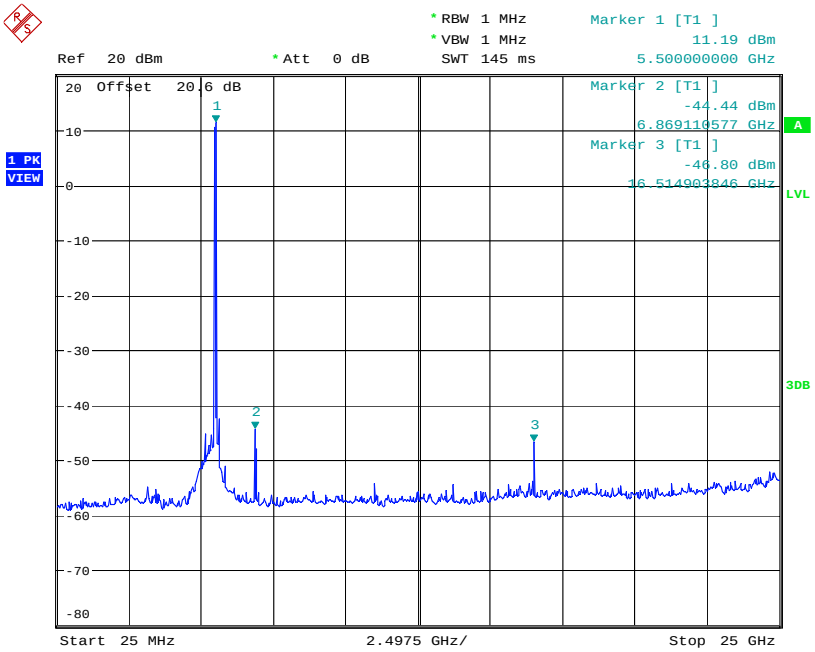
Date: 18.APR.2011 17:33:08

802.11n Ch64



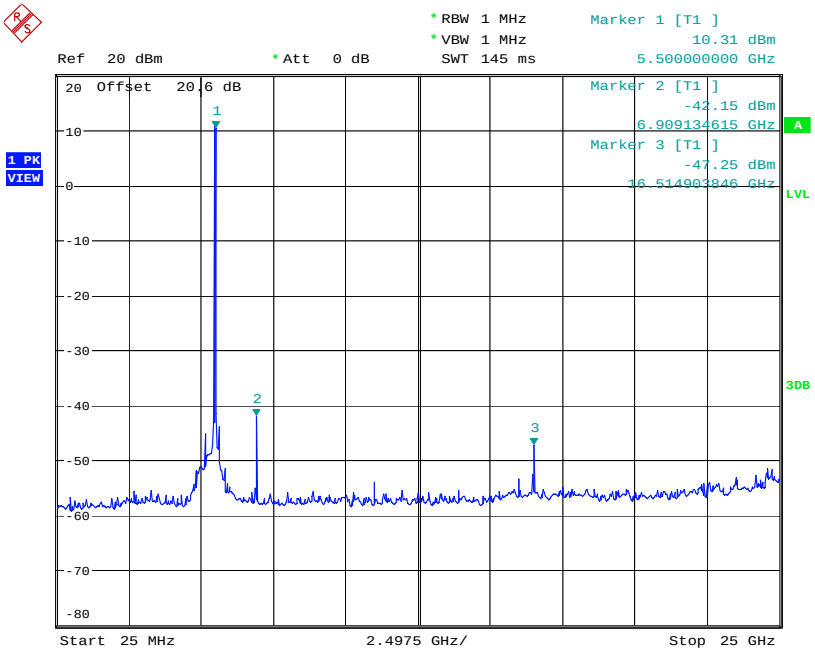
Date: 18.APR.2011 17:32:14

802.11a Ch100



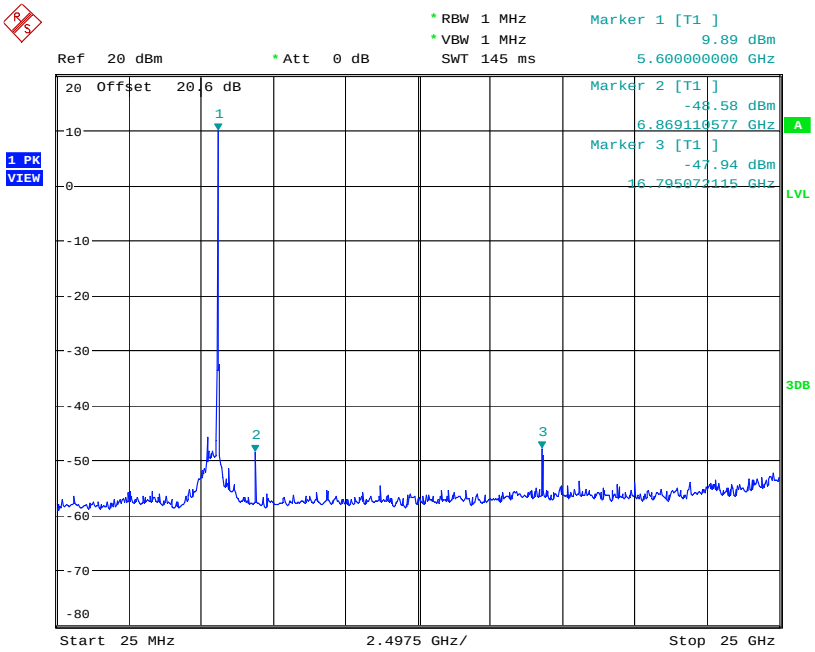
Date: 18.APR.2011 17:34:34

802.11n Ch100



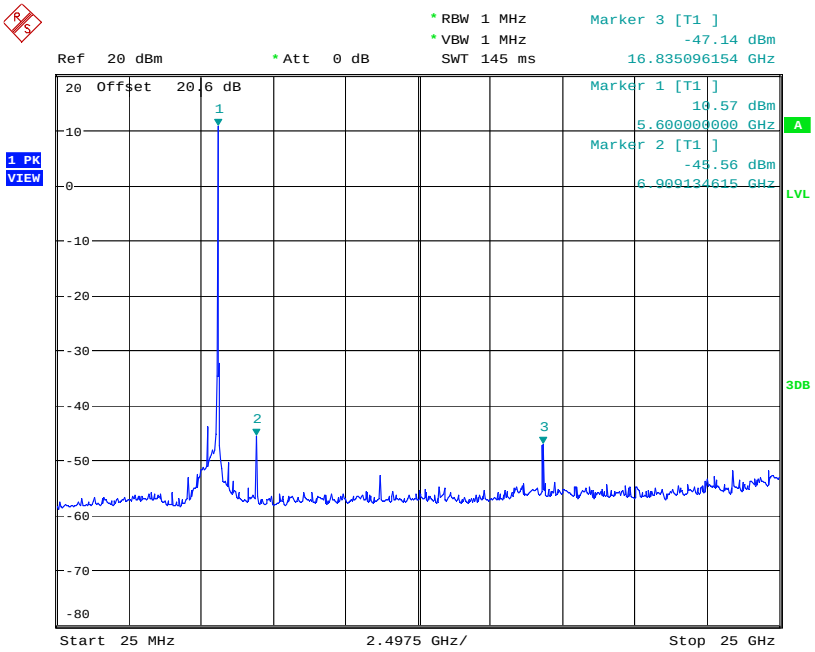
Date: 18.APR.2011 17:35:46

802.11a Ch120



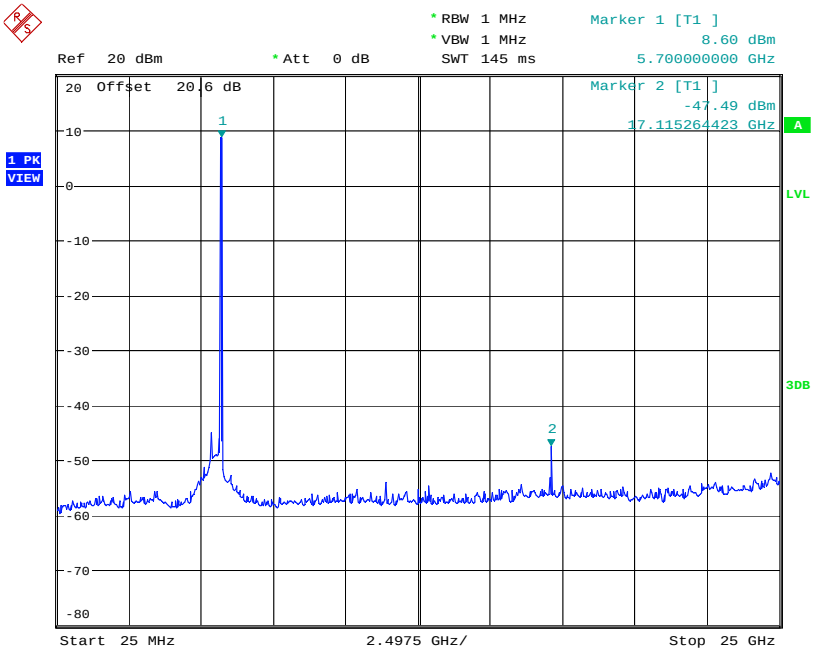
Date: 18.APR.2011 17:39:01

802.11n Ch120



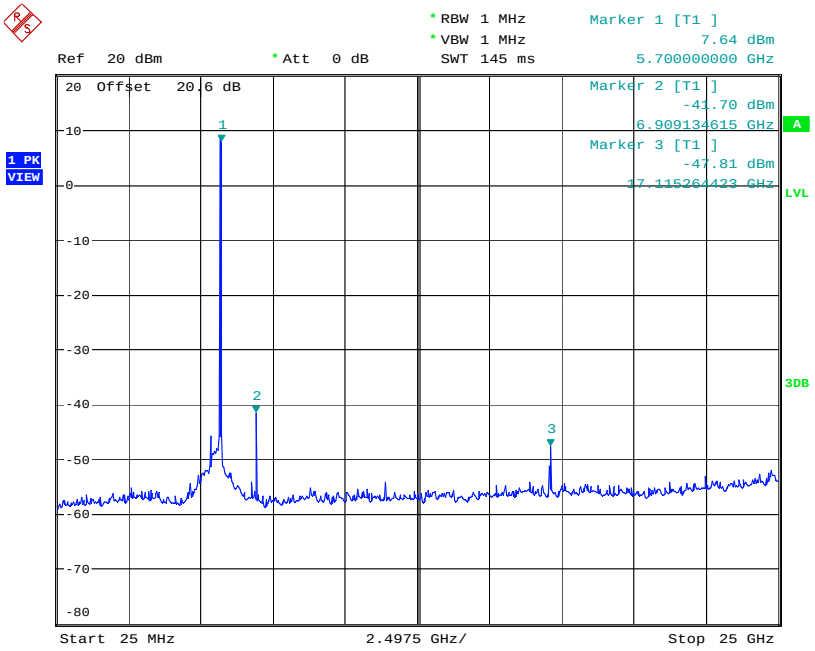
Date: 18.APR.2011 17:37:31

802.11a Ch140



Date: 18.APR.2011 17:40:21

802.11n Ch140

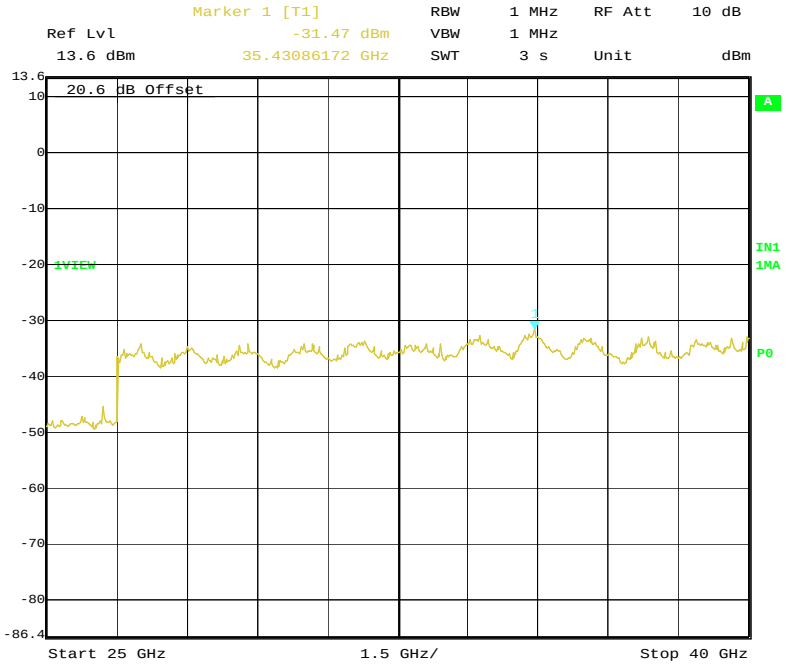


Date: 18.APR.2011 17:41:25

25GHz-40 GHz

802.11a Ch36

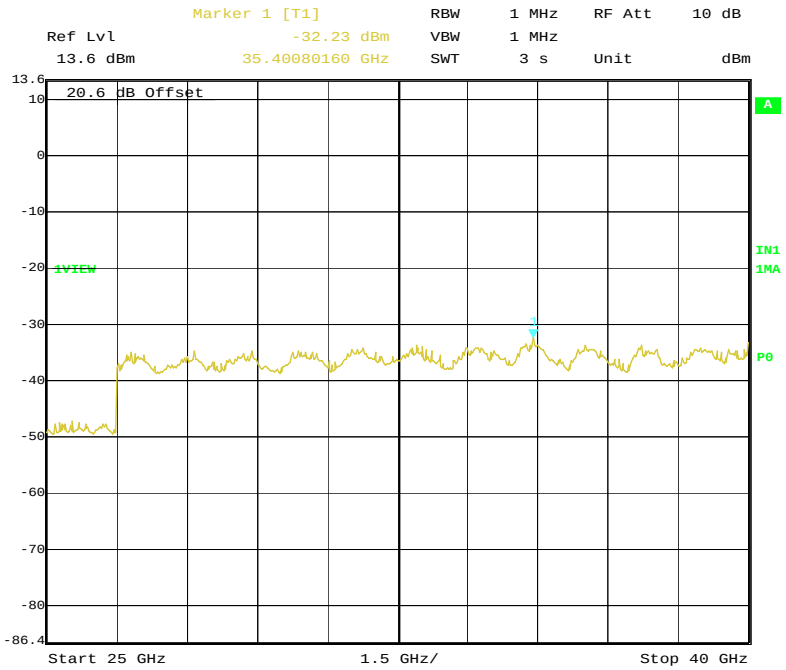
Note: Result is worst case measurement for 5150-5250MHz, 5250-5350MHz and 5470-5725MHz bands.



Date: 19.APR.2011 08:39:58

802.11n Ch36

Note: Result is worst case measurement for 5150-5250MHz, 5250-5350MHz and 5470-5725MHz bands.



Date: 19.APR.2011 08:41:32

5.9 Transmitter Spurious Emissions- Radiated

5.9.1 Limits: §15.205

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

5.9.2 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:

2010 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.

5.9.3 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

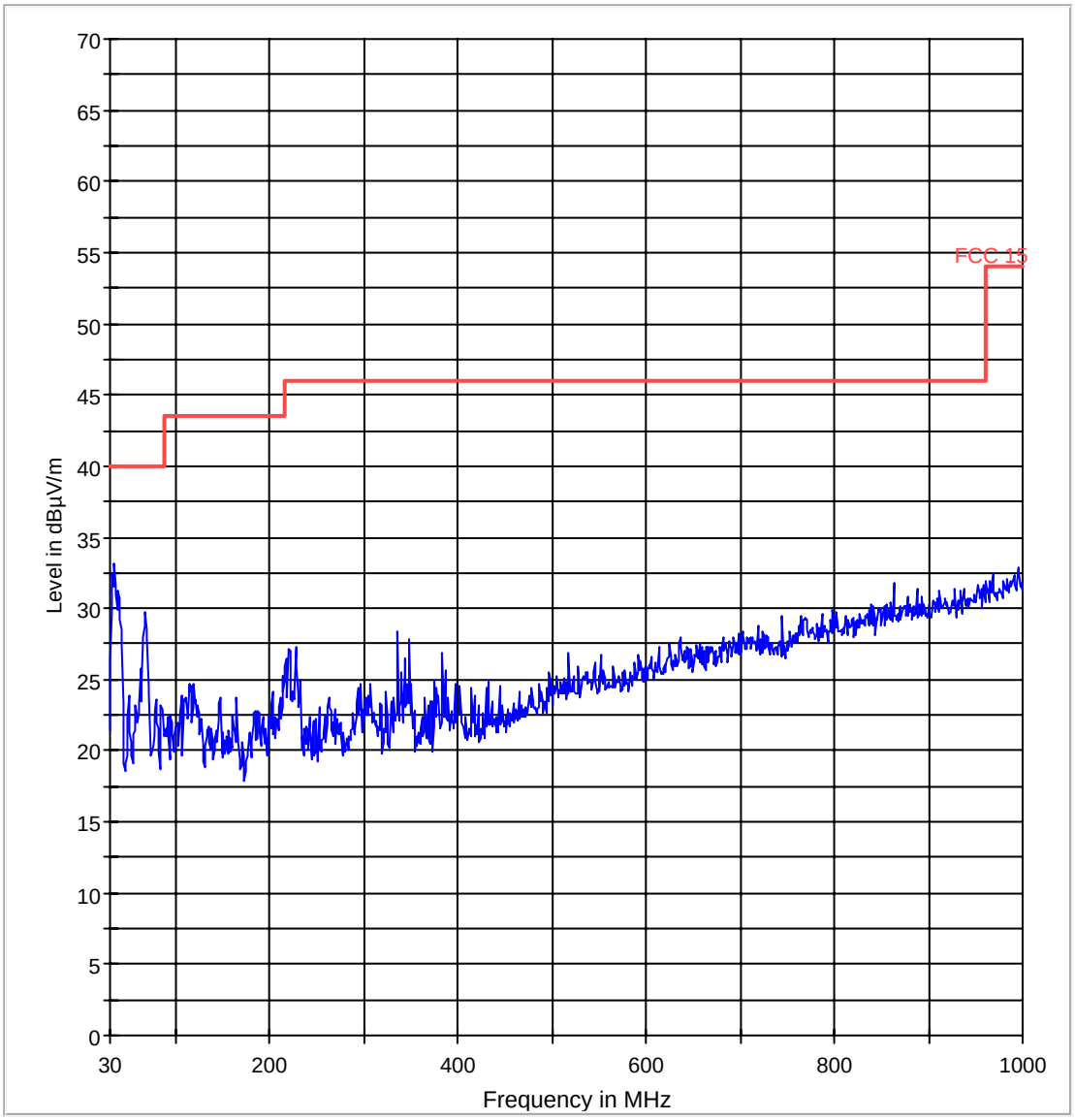
5.9.4 Test Result:

No significant emissions measurable. Plots reported here represent the worse case emissions, and both Horizontal and Vertical polarizations.

5.9.5 Test data/ plots:

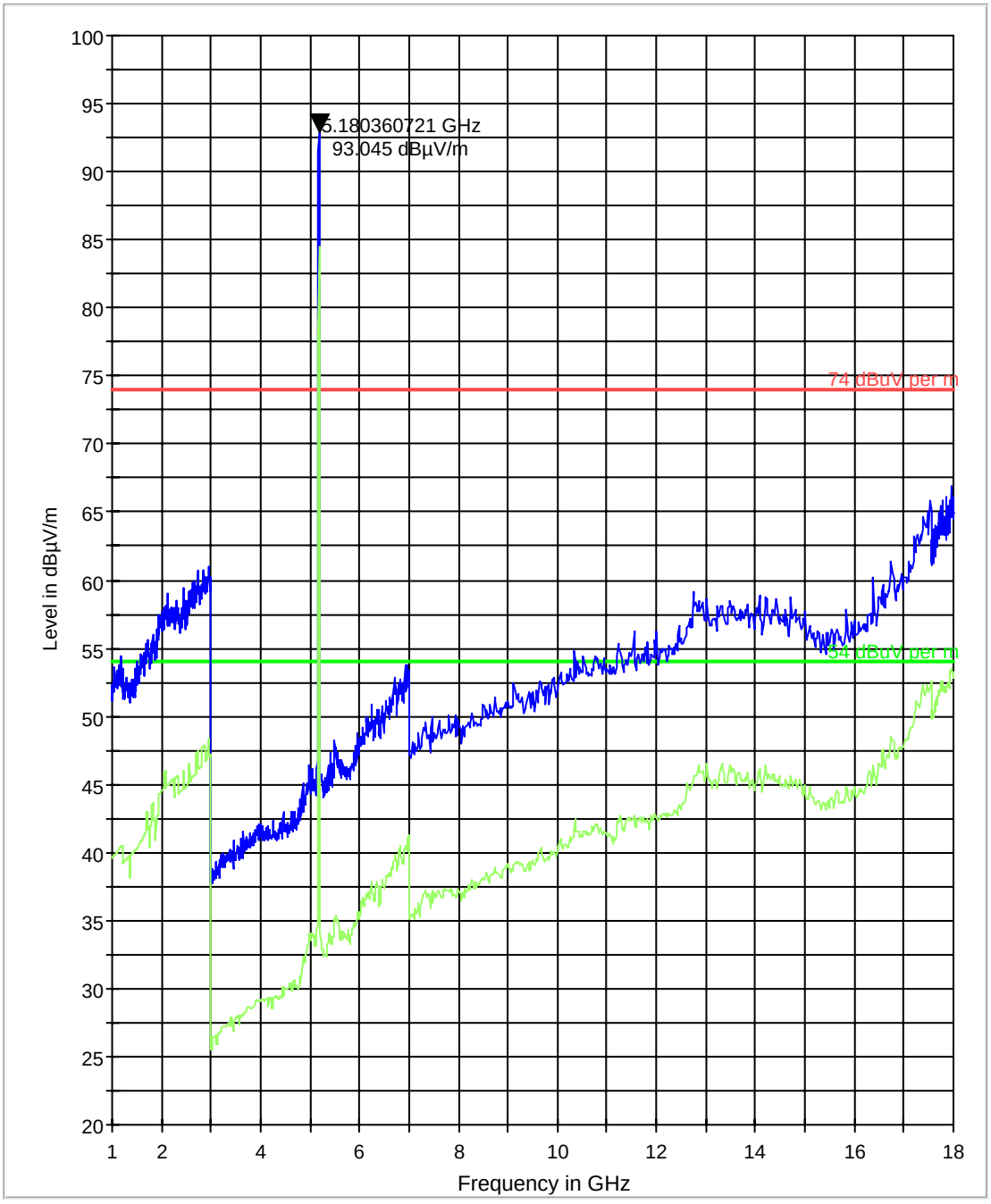
30MHz-1GHz mode: 802.11 a Ch36

FCC 15 30-1000MHz



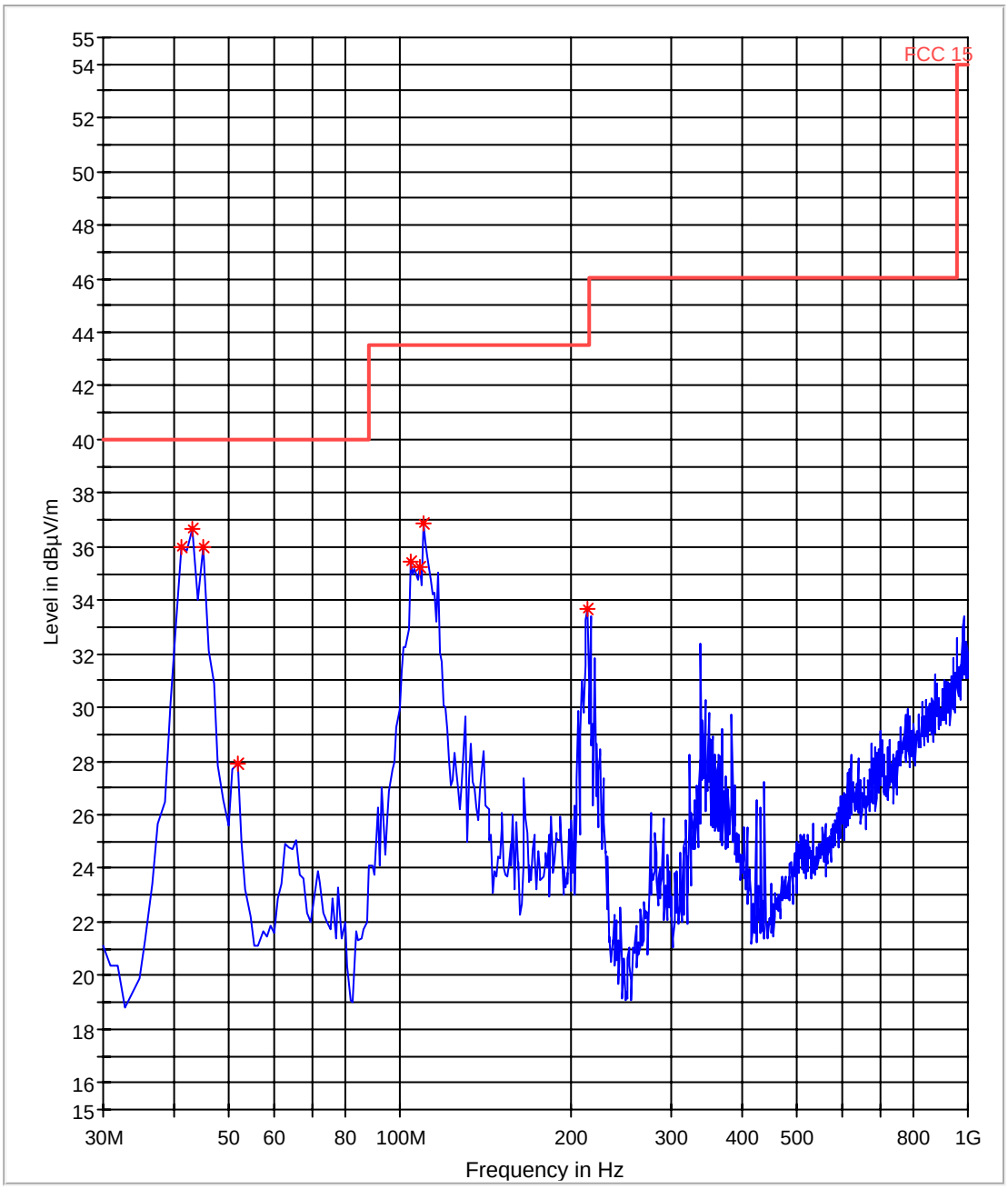
1GHz-18GHz mode: 802.11 a Ch36
Note: Marker is placed on transmit signal

FCC 15 1-18GHz



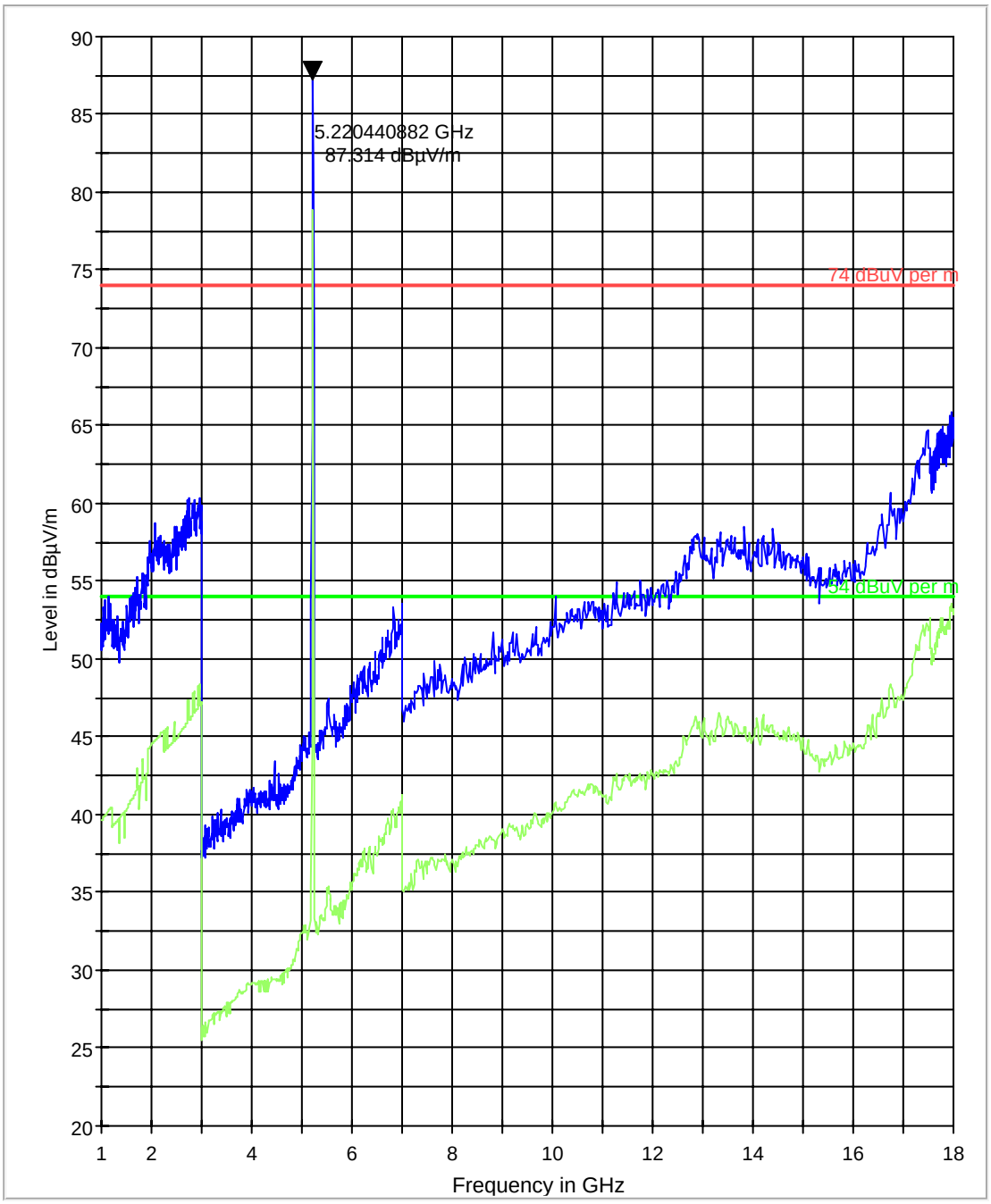
30MHz-1GHz mode: 802.11 a Ch44

FCC 15 30-1000MHz

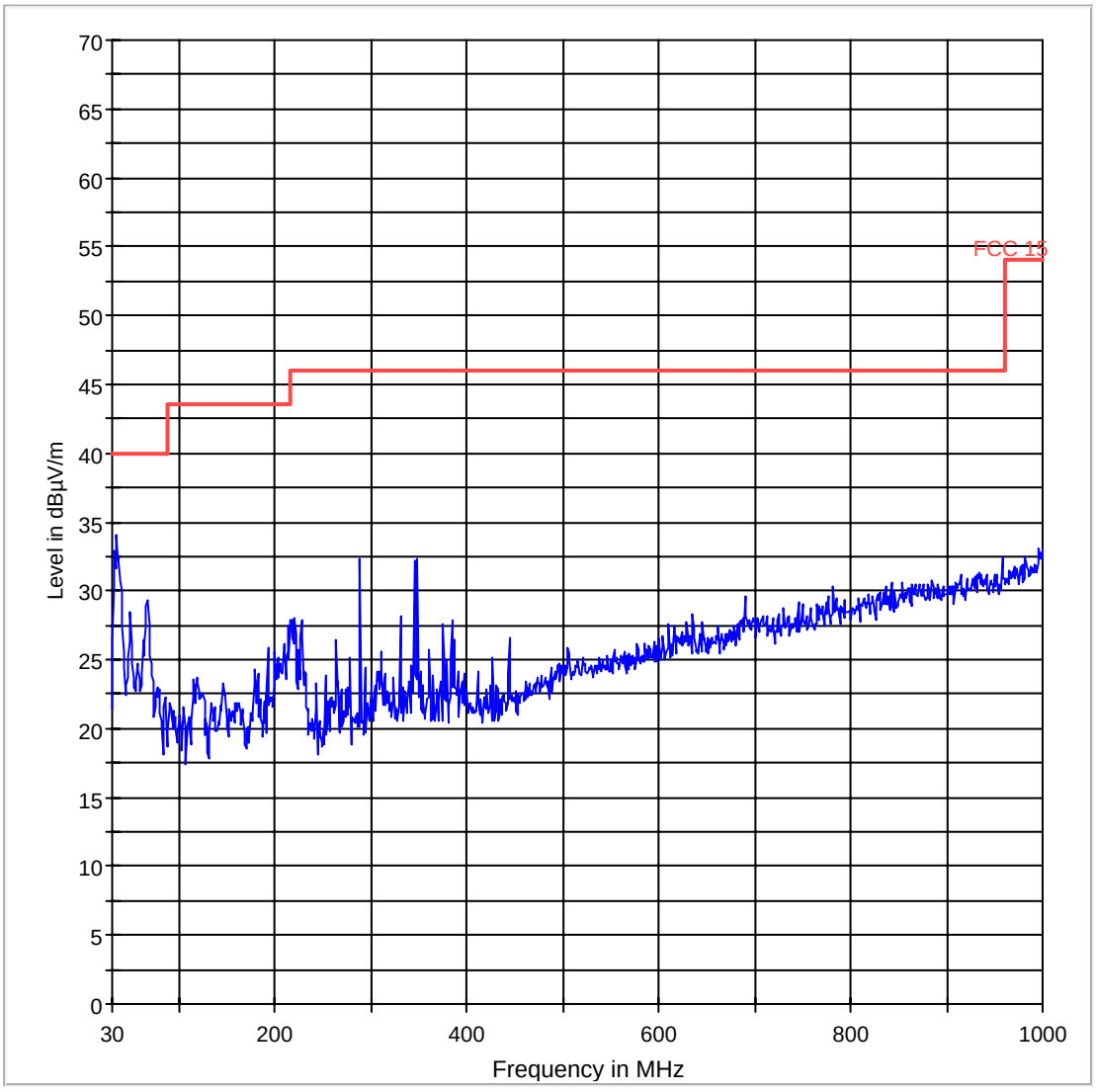


1GHz-18GHz mode: 802.11 a Ch44
Note: Marker is placed on transmit signal

FCC 15 1-18GHz

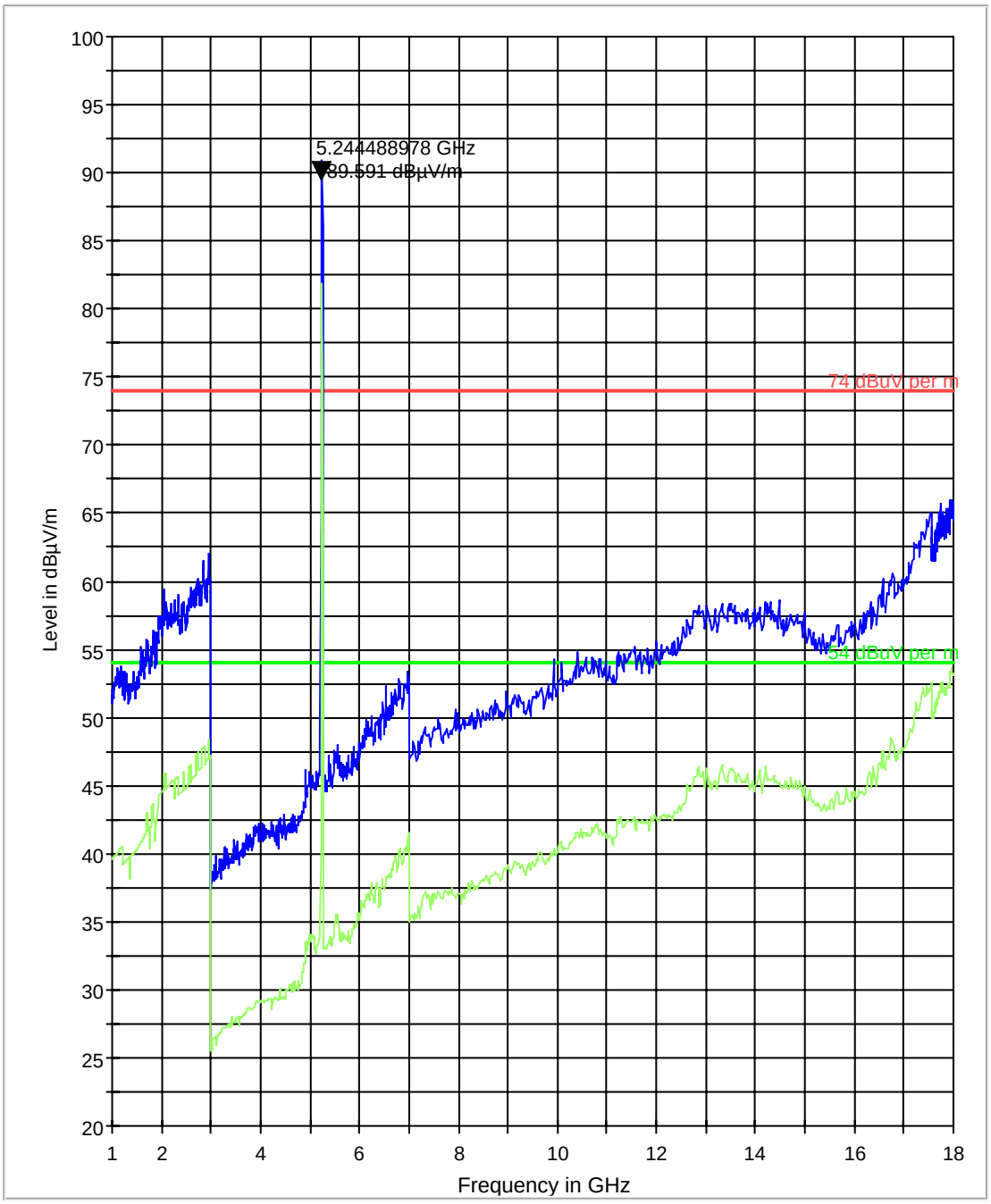


30MHz-1GHz mode: 802.11 a Ch48



1GHz-18GHz mode: 802.11 a Ch48
Note: Marker is placed on transmit signal

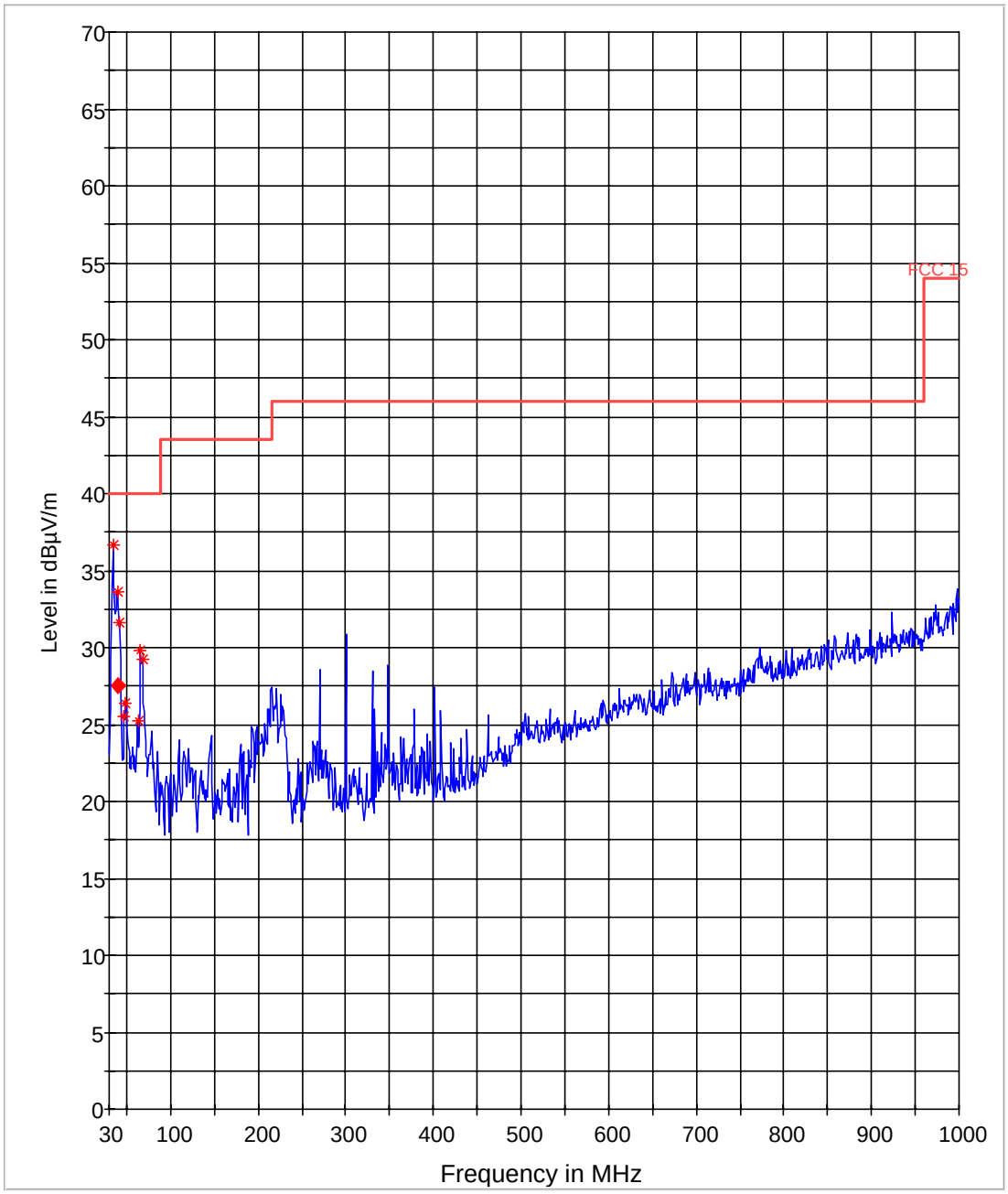
FCC 15 1-18GHz



30MHz-1GHz mode: 802.11 a Ch52

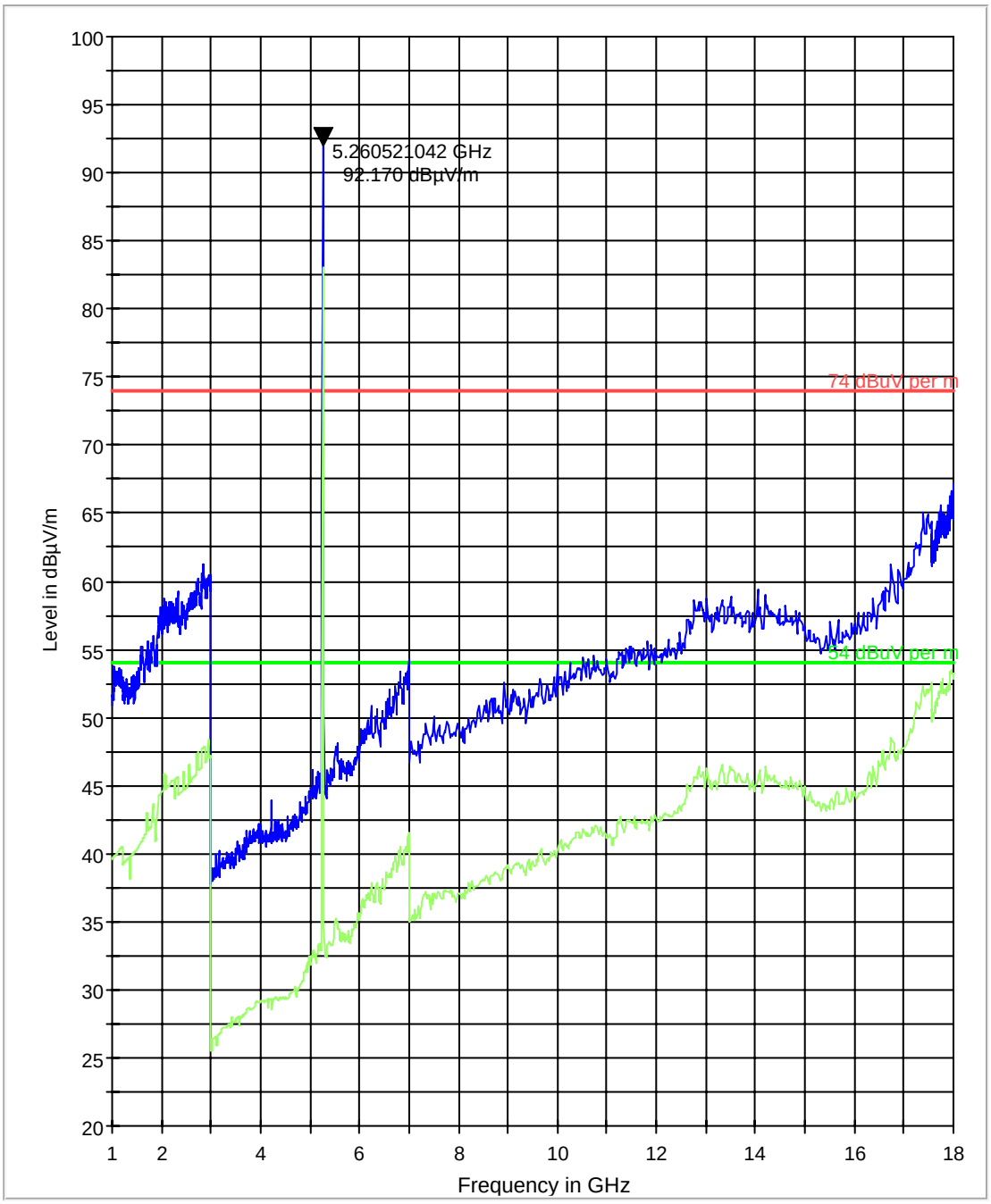
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Comment
39.424763	27.5	20.0	120.000	120.0	V	0.0	5.6	

FCC 15 30-1000MHz



1GHz-18GHz mode: 802.11 a Ch52
Note: Marker is placed on transmit signal

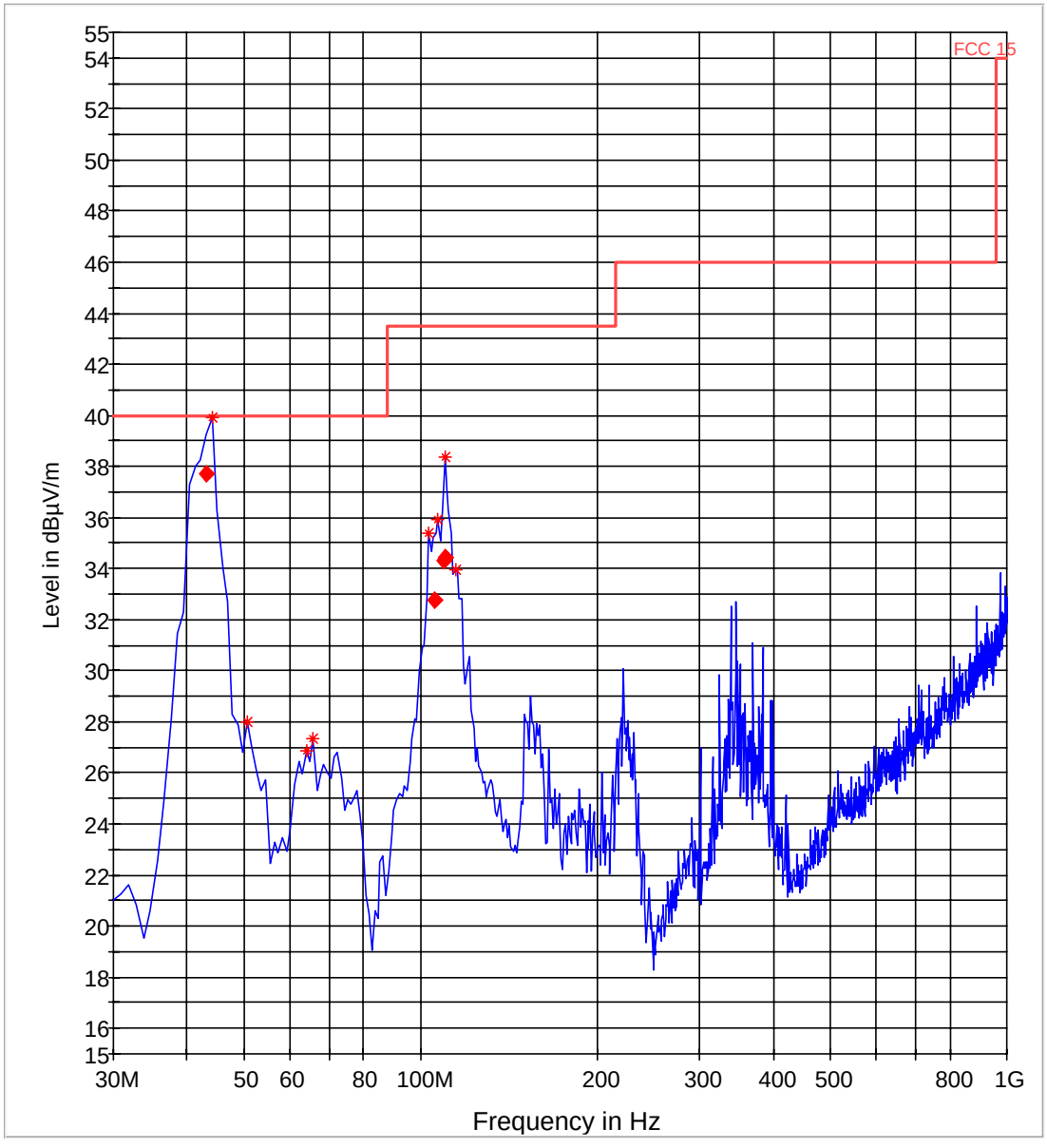
FCC 15 1-18GHz



30MHz-1GHz mode: 802.11 a Ch60

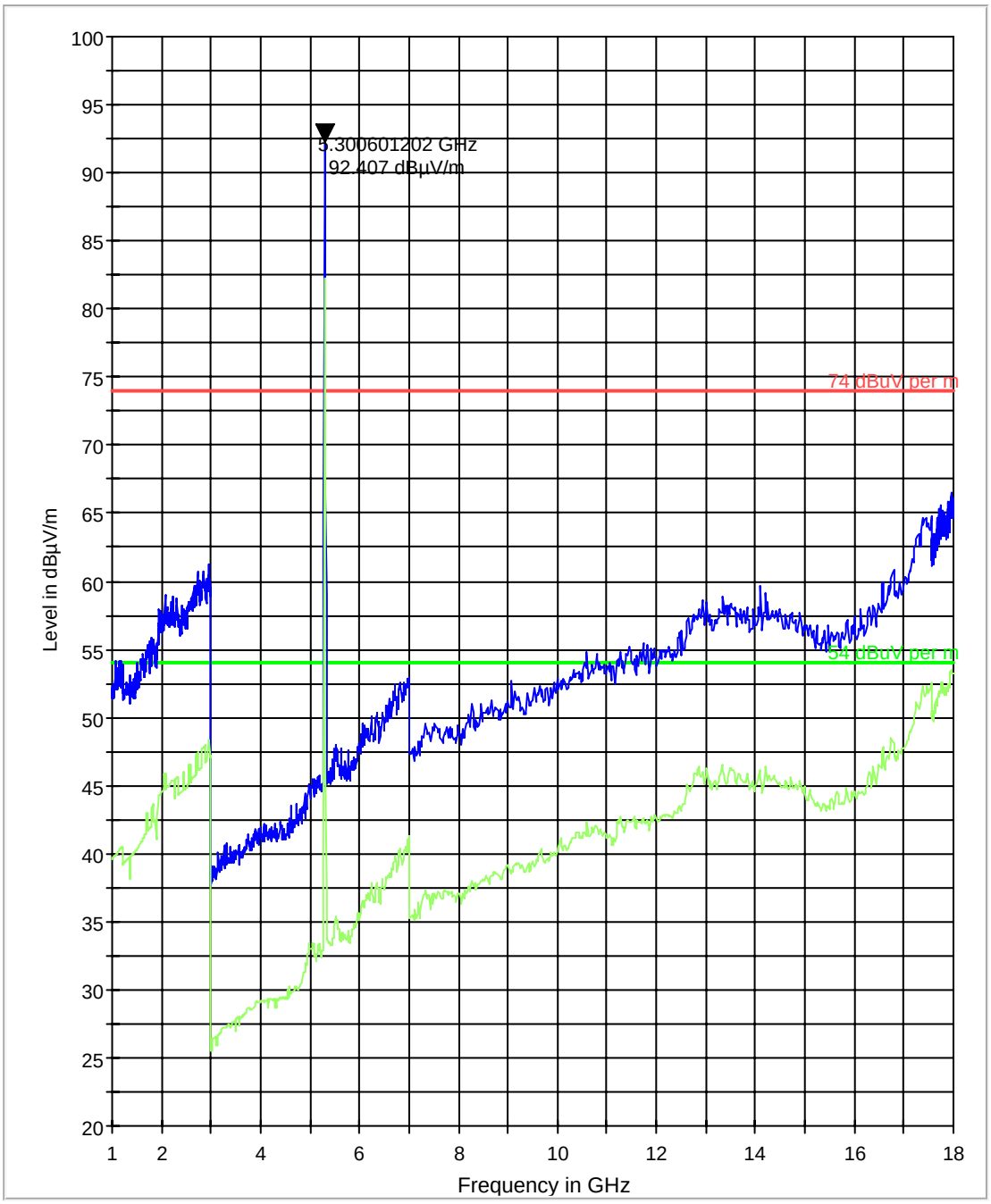
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Comment
43.135778	37.7	20.0	120.000	120.0	V	66.0	5.9	
105.970500	32.8	20.0	120.000	120.0	V	22.0	9.2	
109.711305	34.3	20.0	120.000	120.0	V	0.0	8.9	
110.175915	34.4	20.0	120.000	120.0	V	22.0	8.8	

FCC 15 30-1000MHz

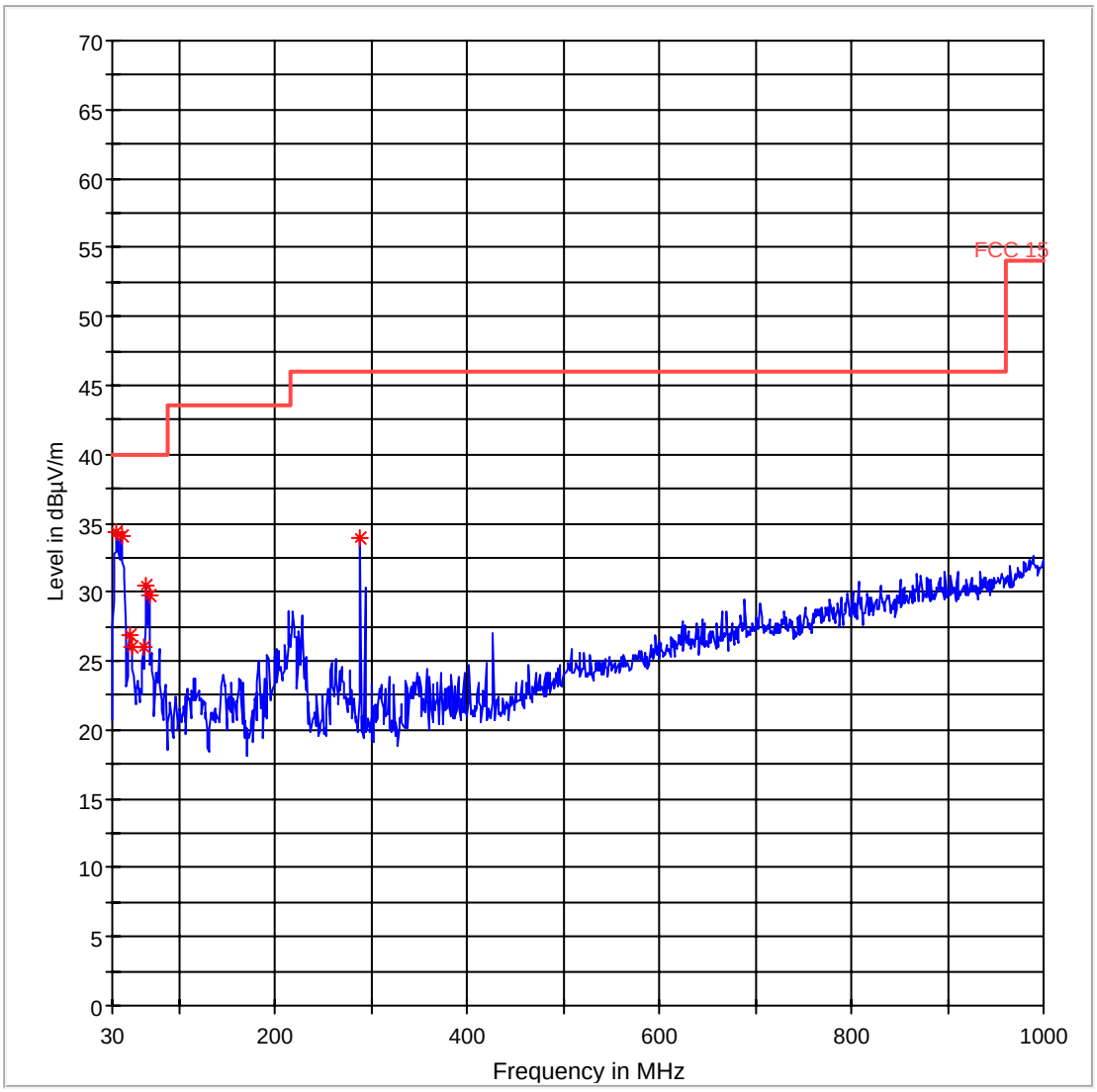


1GHz-18GHz mode: 802.11 a Ch60
Note: Marker is placed on transmit signal

FCC 15 1-18GHz

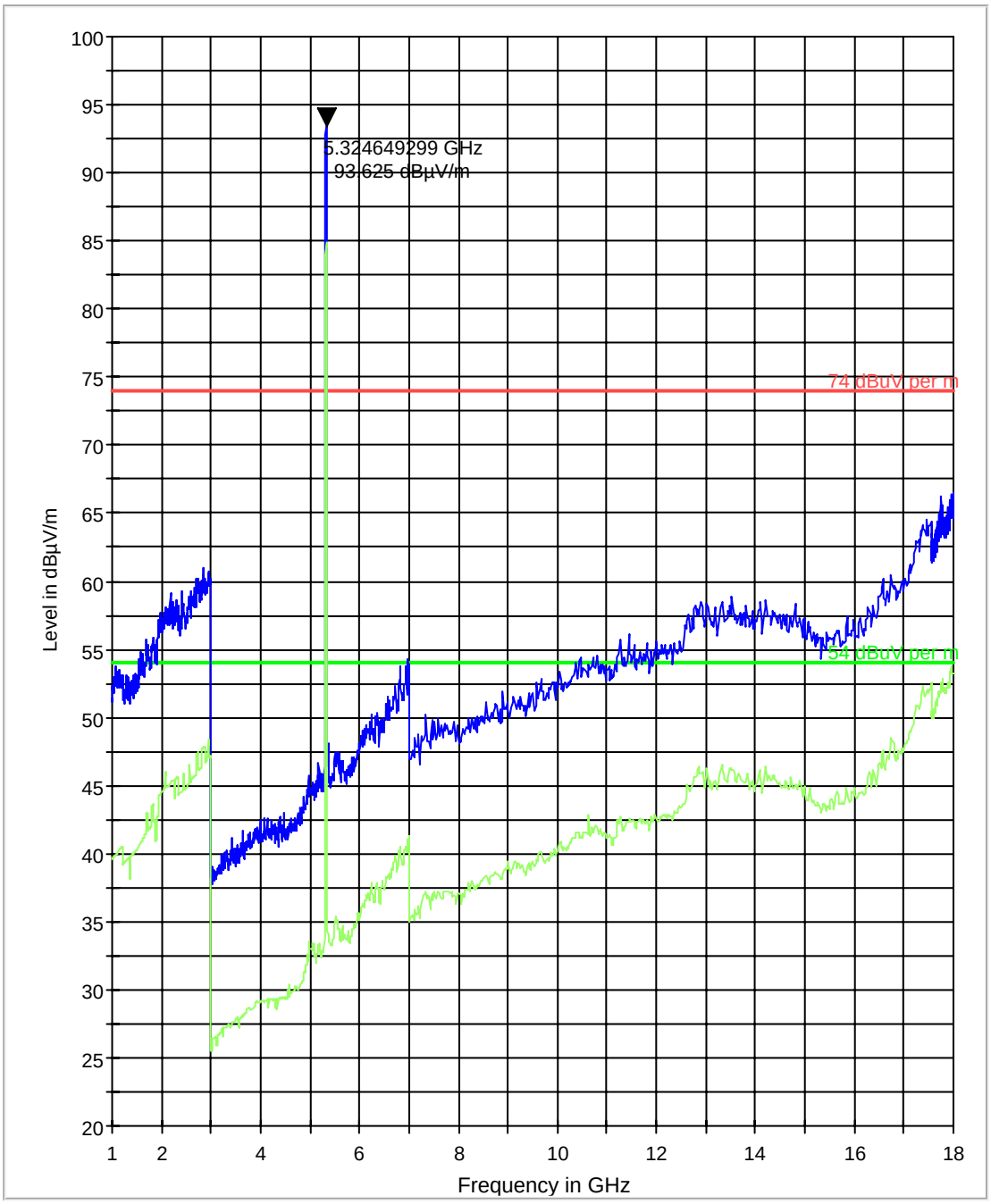


30MHz-1GHz mode: 802.11 a Ch64



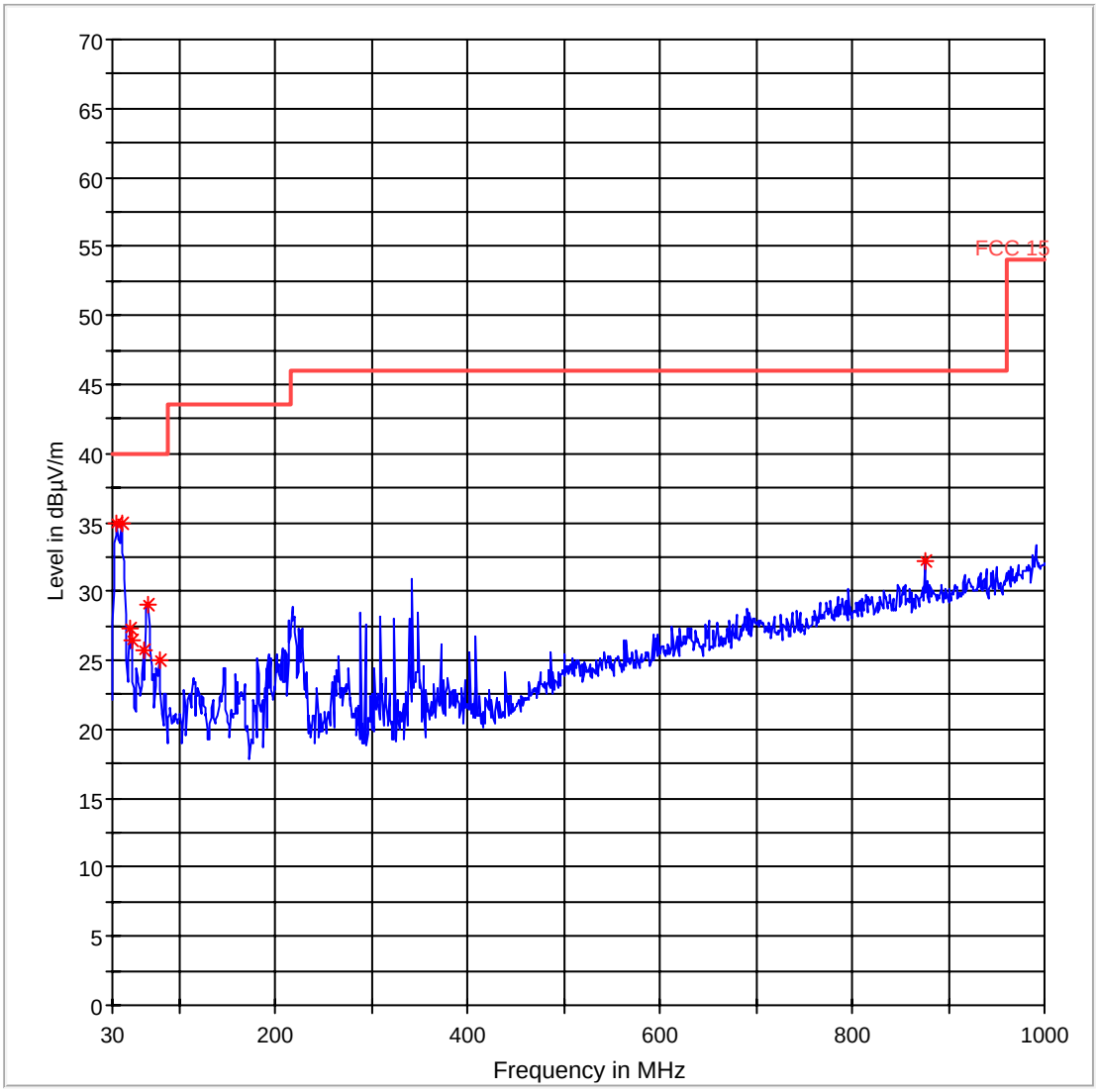
1GHz-18GHz mode: 802.11 a Ch64
Note: Marker is placed on transmit signal

FCC 15 1-18GHz



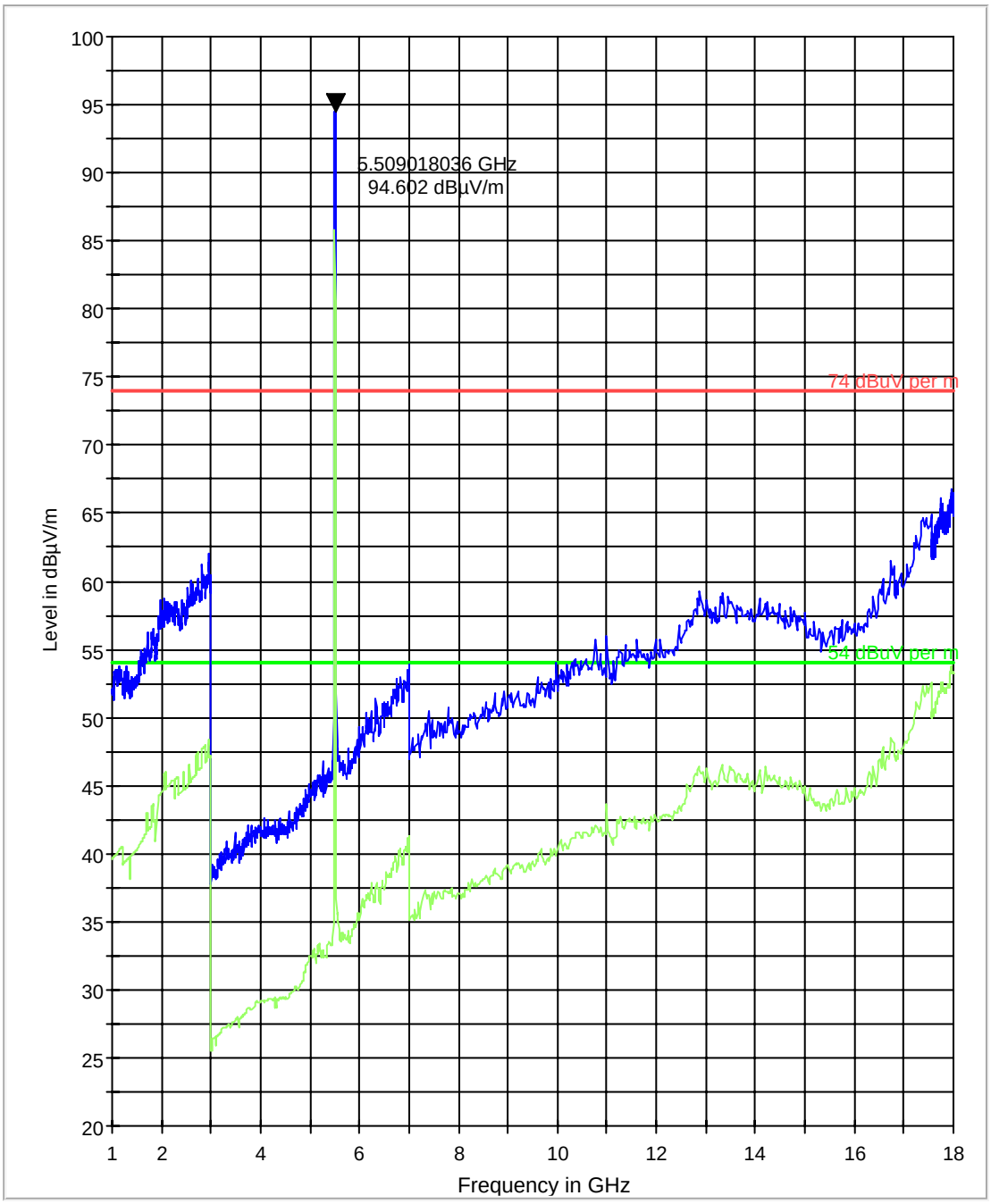
30MHz-1GHz mode: 802.11 a Ch100

FCC 15 30-1000MHz



1GHz-18GHz mode: 802.11 a Ch100
Note: Marker is placed on transmit signal

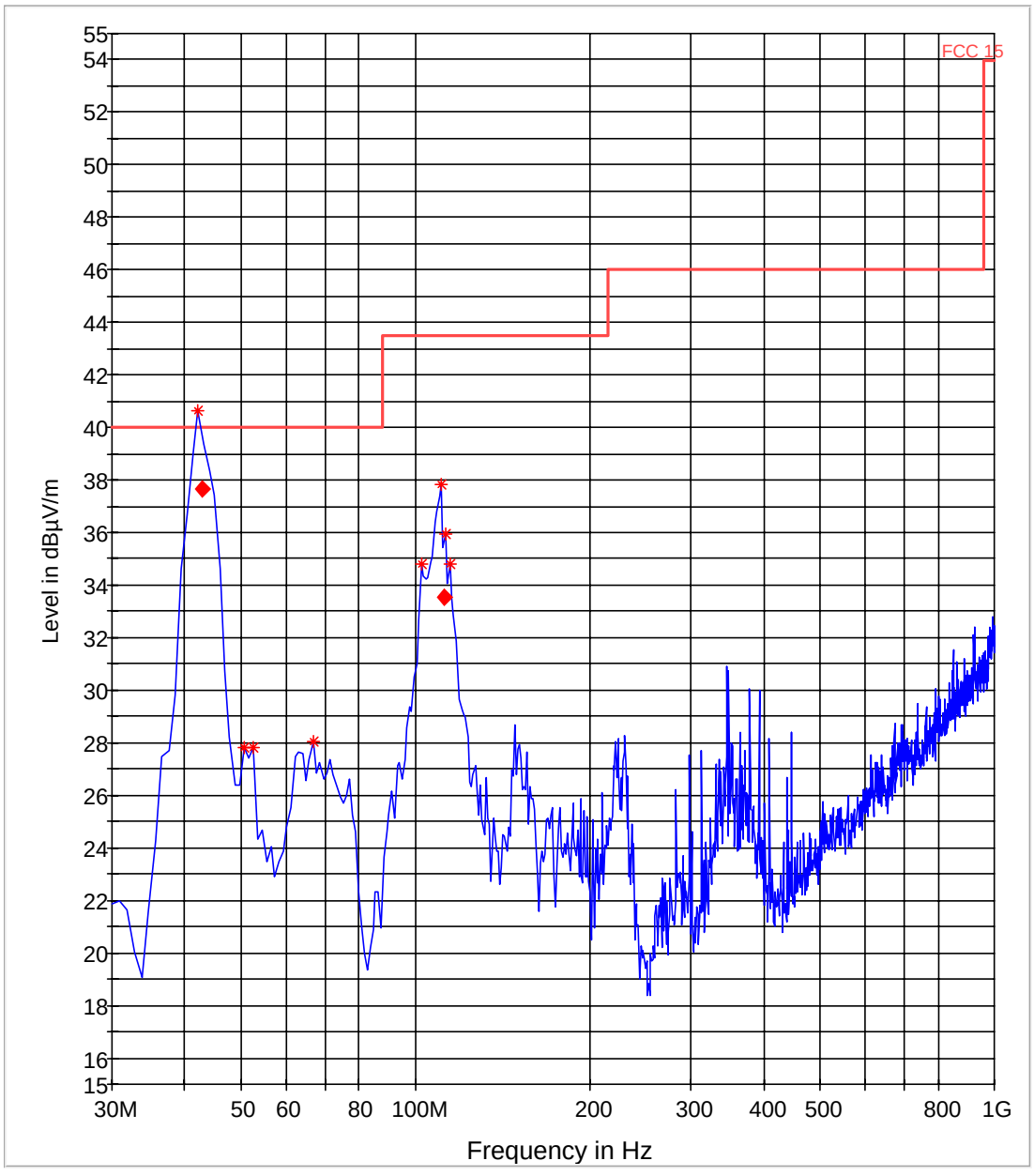
FCC 15 1-18GHz



30MHz-1GHz mode: 802.11 a Ch120

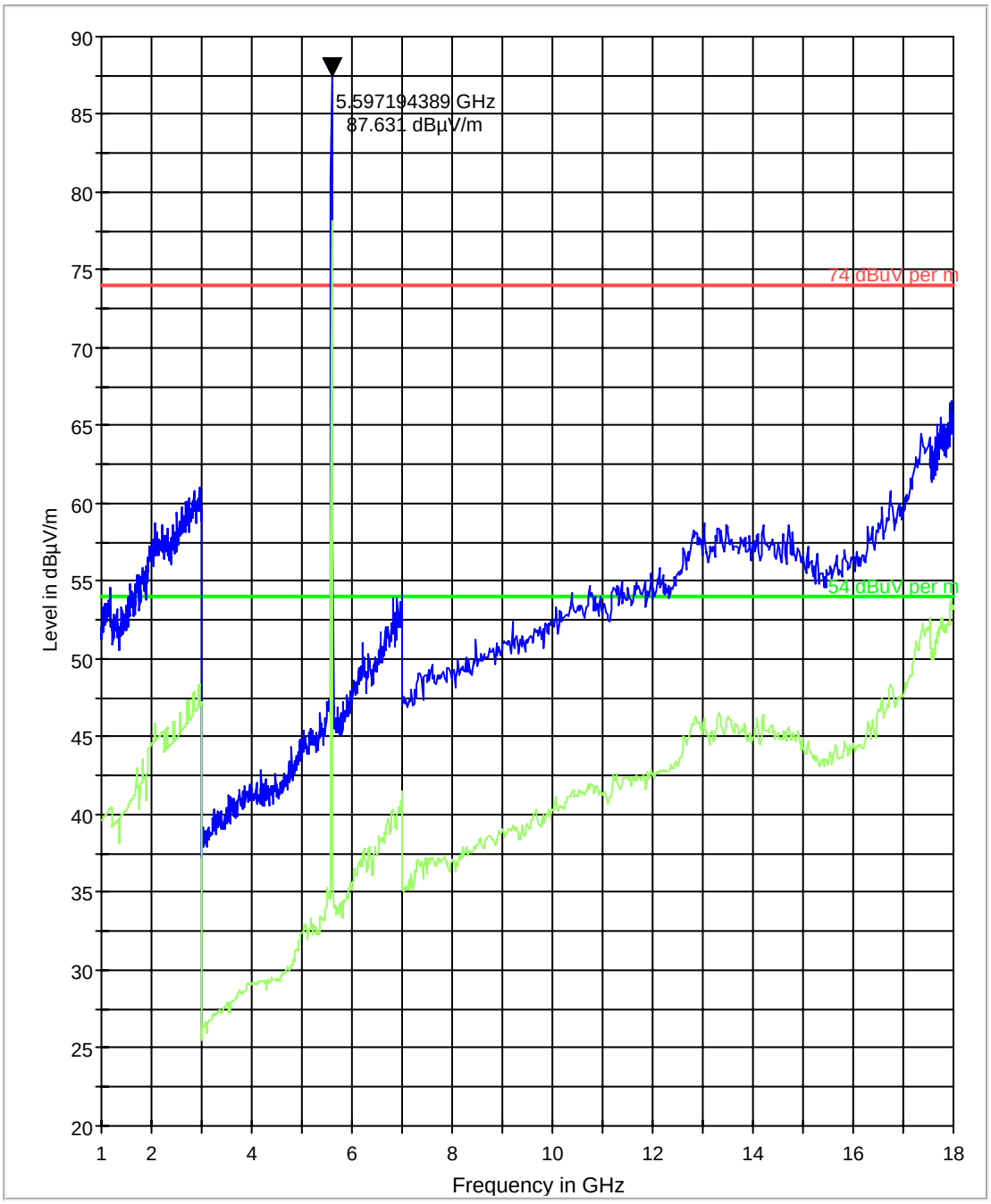
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Comment
42.978822	37.7	20.0	120.000	120.0	V	0.0	5.8	
112.084523	33.6	20.0	120.000	120.0	V	0.0	8.7	

FCC 15 30-1000MHz



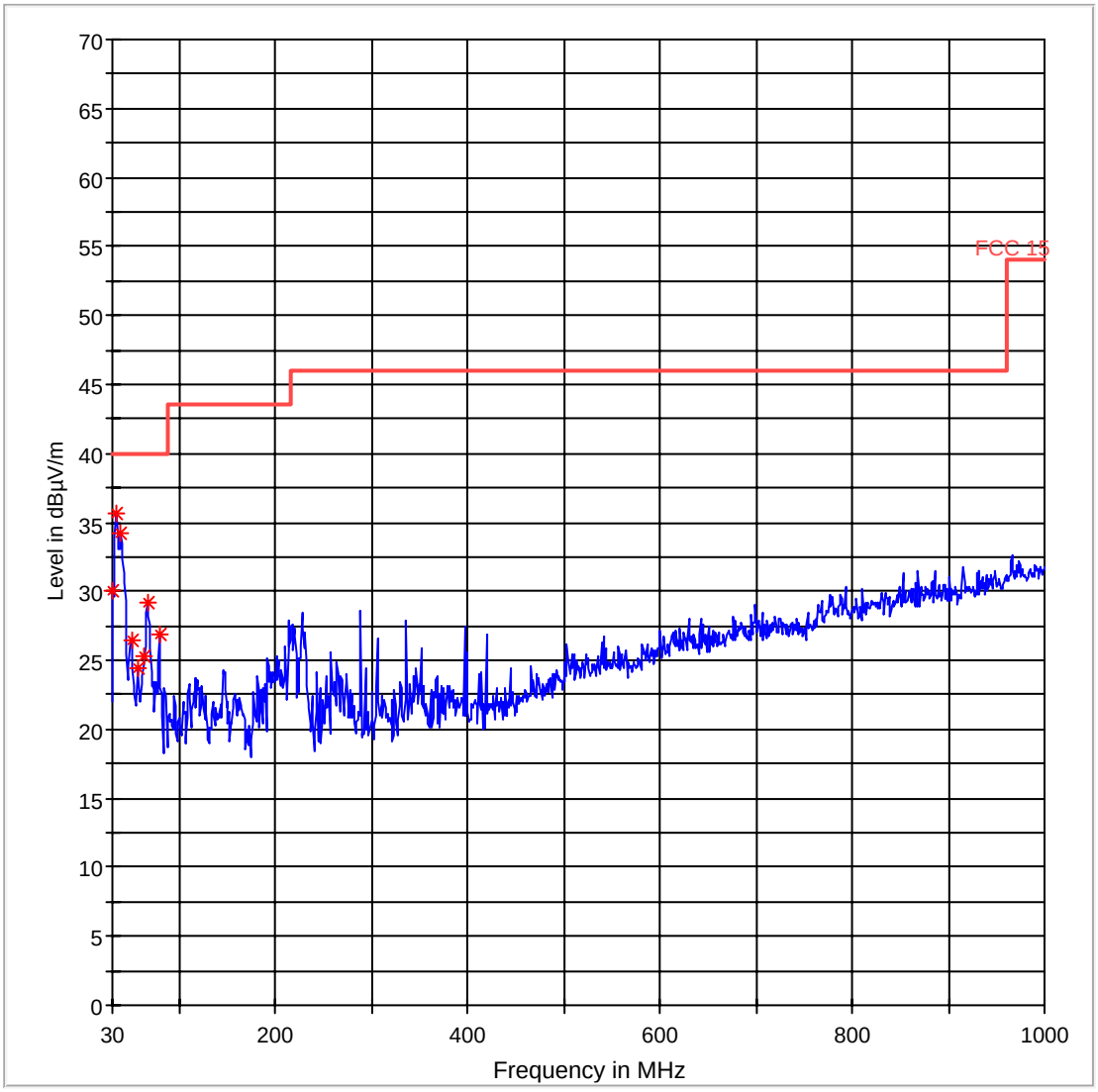
1GHz-18GHz mode: 802.11 a Ch120
Note: Marker is placed on transmit signal

FCC 15 1-18GHz



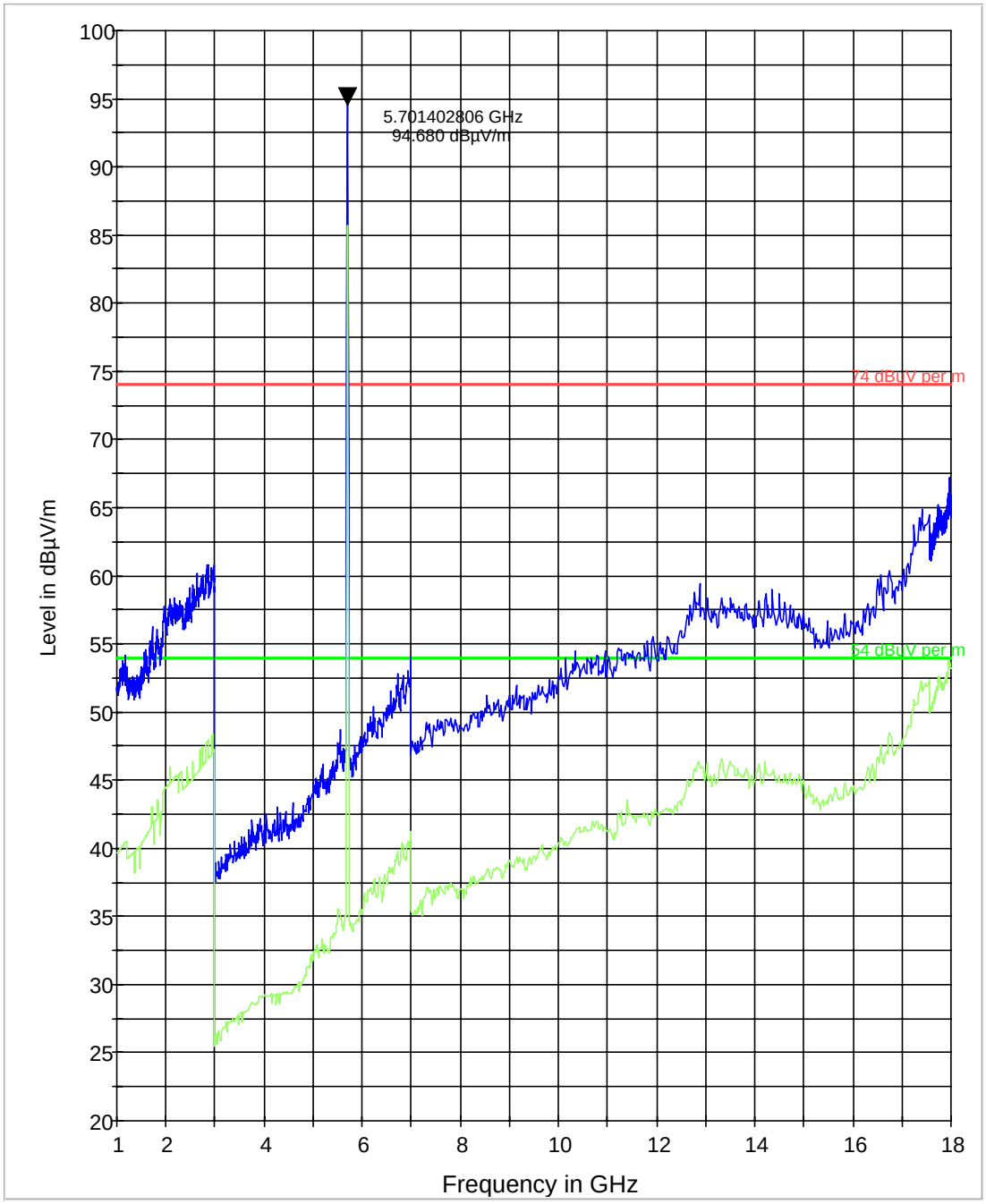
30MHz-1GHz mode: 802.11 a Ch140

FCC 15 30-1000MHz



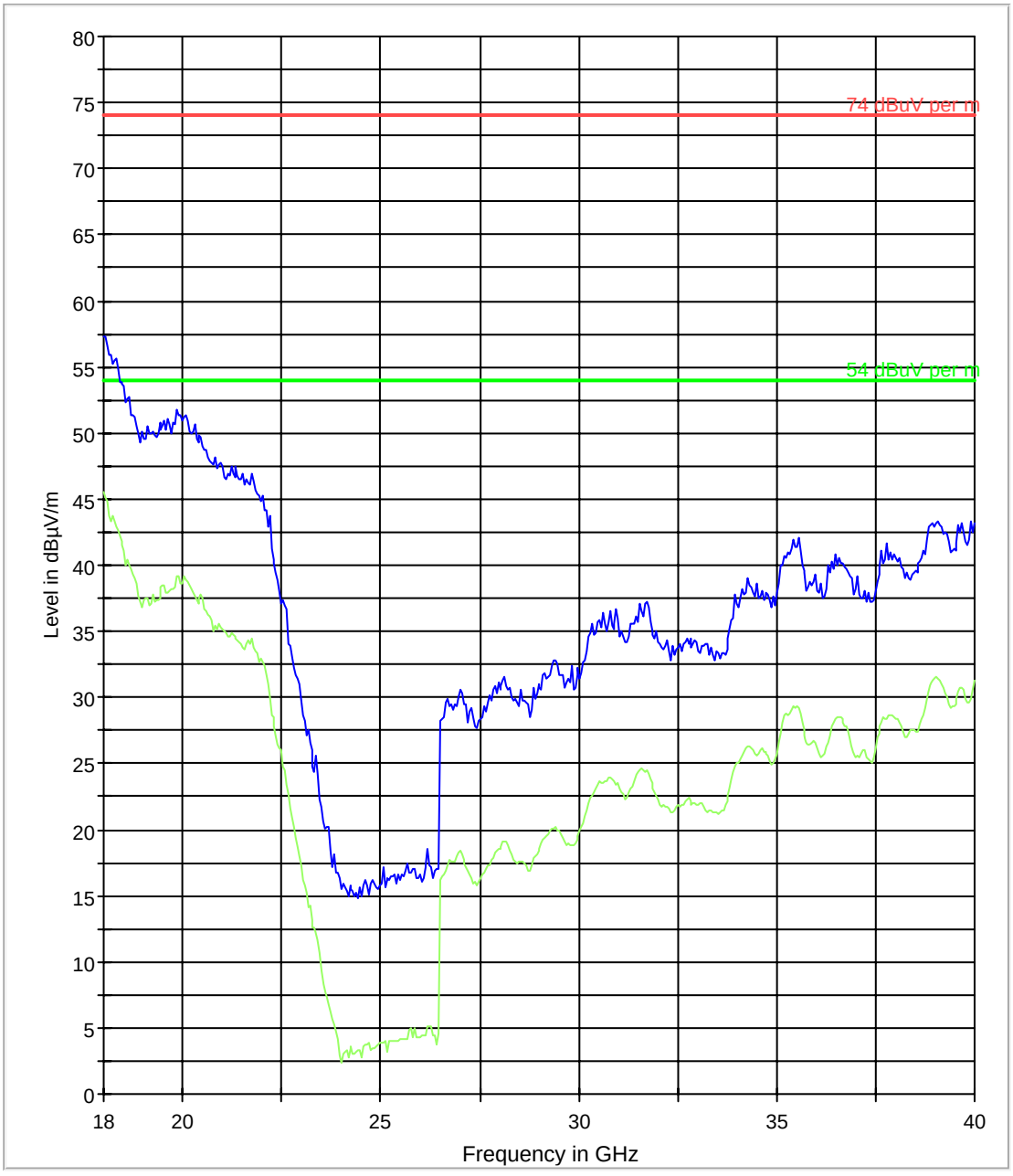
1GHz-18GHz mode: 802.11 a Ch140
Note: Marker is placed on transmit signal

FCC 15 1-18GHz



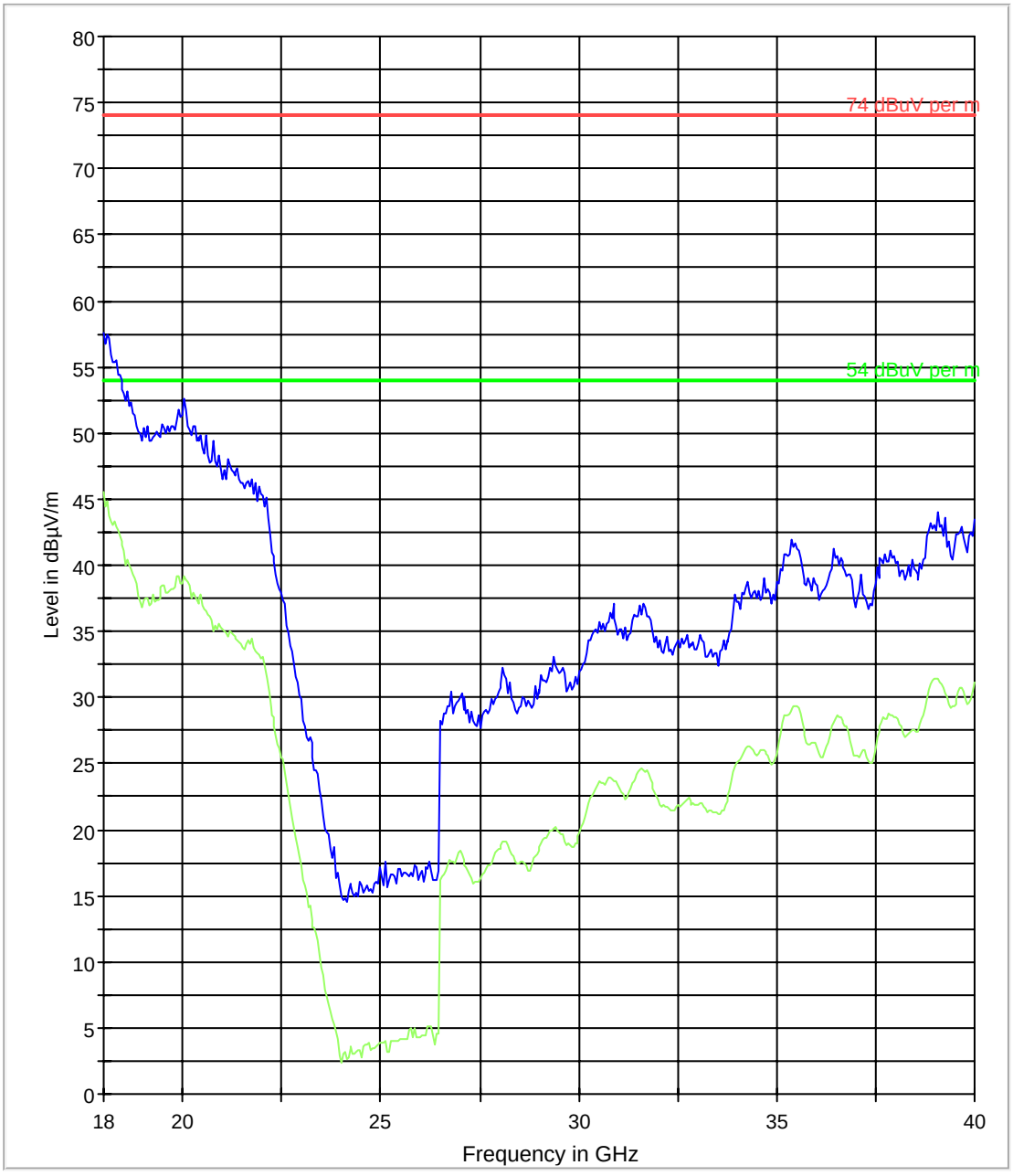
18GHz-40GHz mode: 802.11 n Ch44 (worst case in 5150MHz-5250MHz band)

FCC 15 18-40GHz



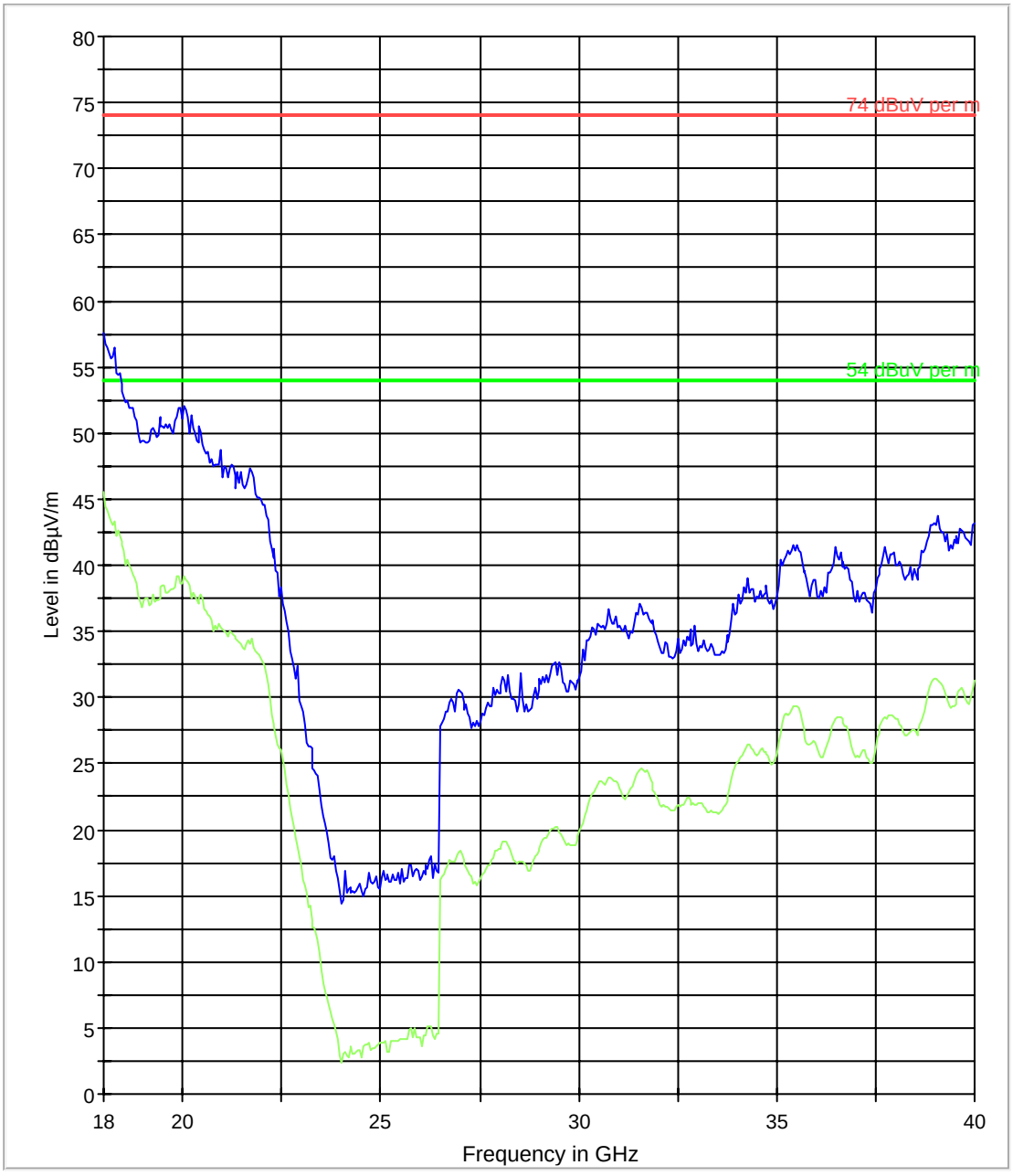
18GHz-40GHz mode: 802.11 n Ch60 (worst case in 5250MHz-5350MHz band)

FCC 15 18-40GHz



18GHz-40GHz mode: 802.11 n Ch120 (worst case in 5470MHz-5725MHz band)

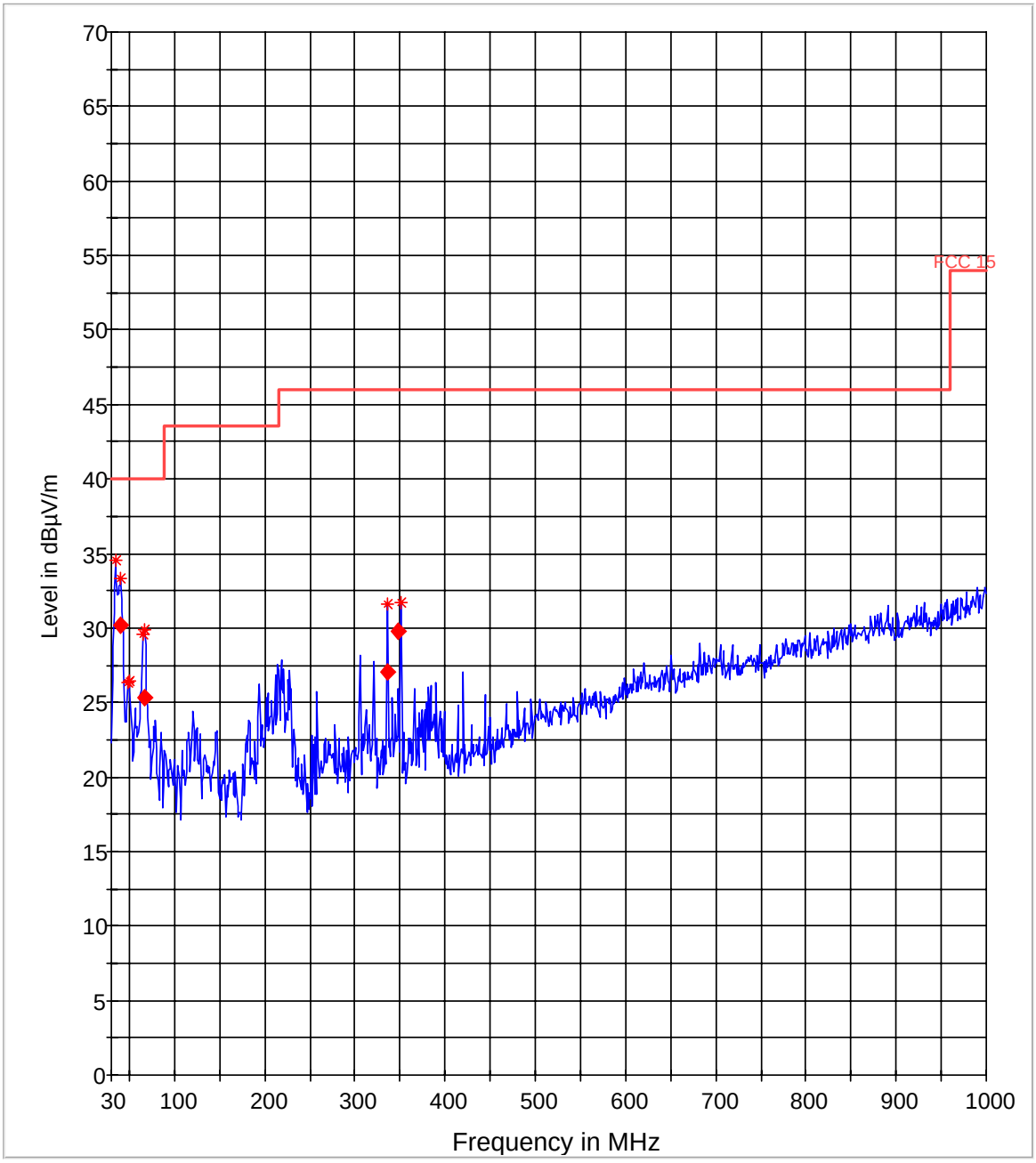
FCC 15 18-40GHz



30MHz-1GHz mode: 802.11 n Ch36

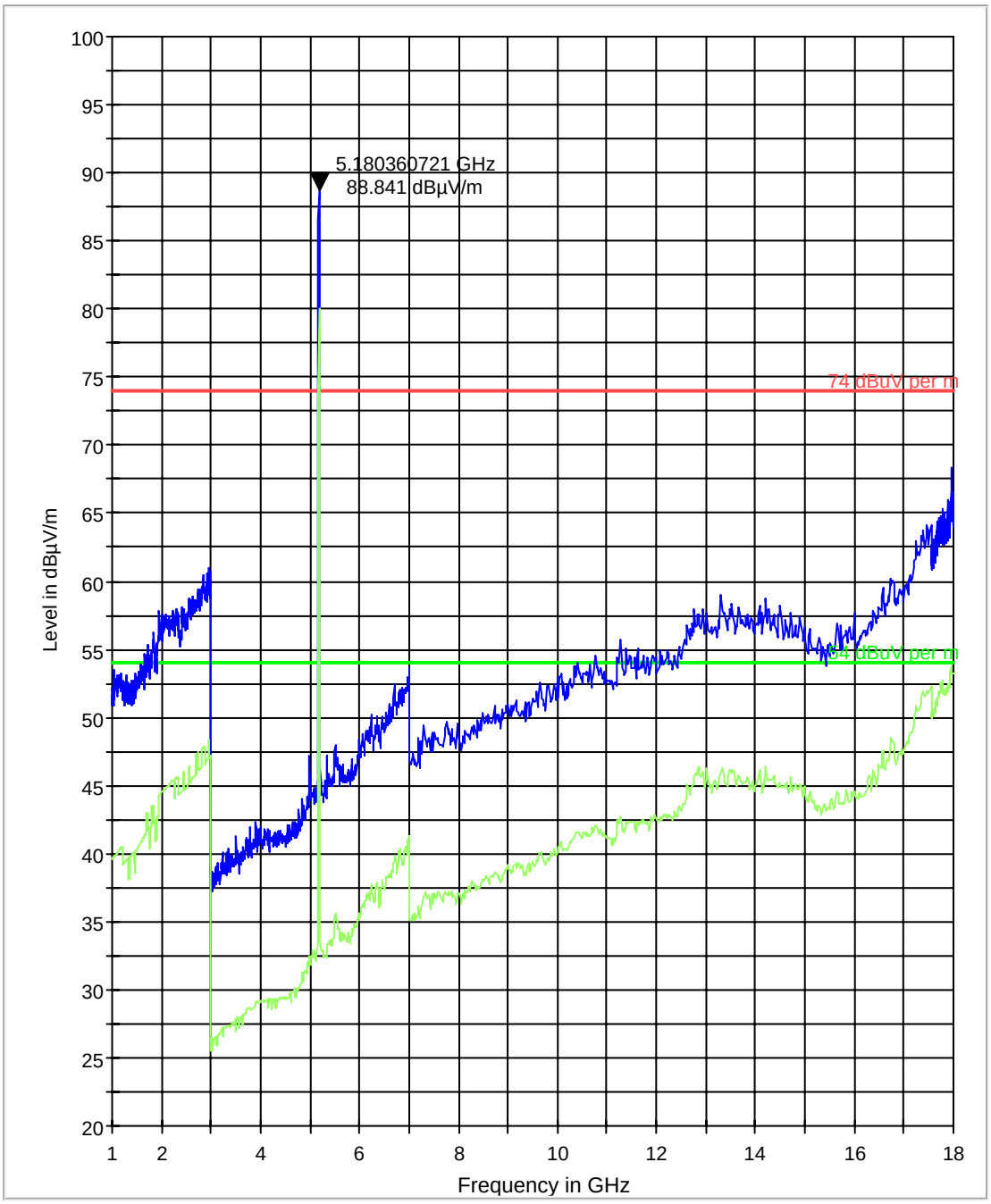
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Comment
39.436647	30.2	20.0	120.000	120.0	V	0.0	5.6	
66.171837	25.3	20.0	120.000	120.0	V	0.0	8.7	
335.926988	27.0	20.0	120.000	144.0	H	263.0	17.1	
347.962629	29.8	20.0	120.000	138.0	H	256.0	17.5	

FCC 15 30-1000MHz



1GHz-18GHz mode: 802.11 n Ch36
Note: Marker is placed on transmit signal

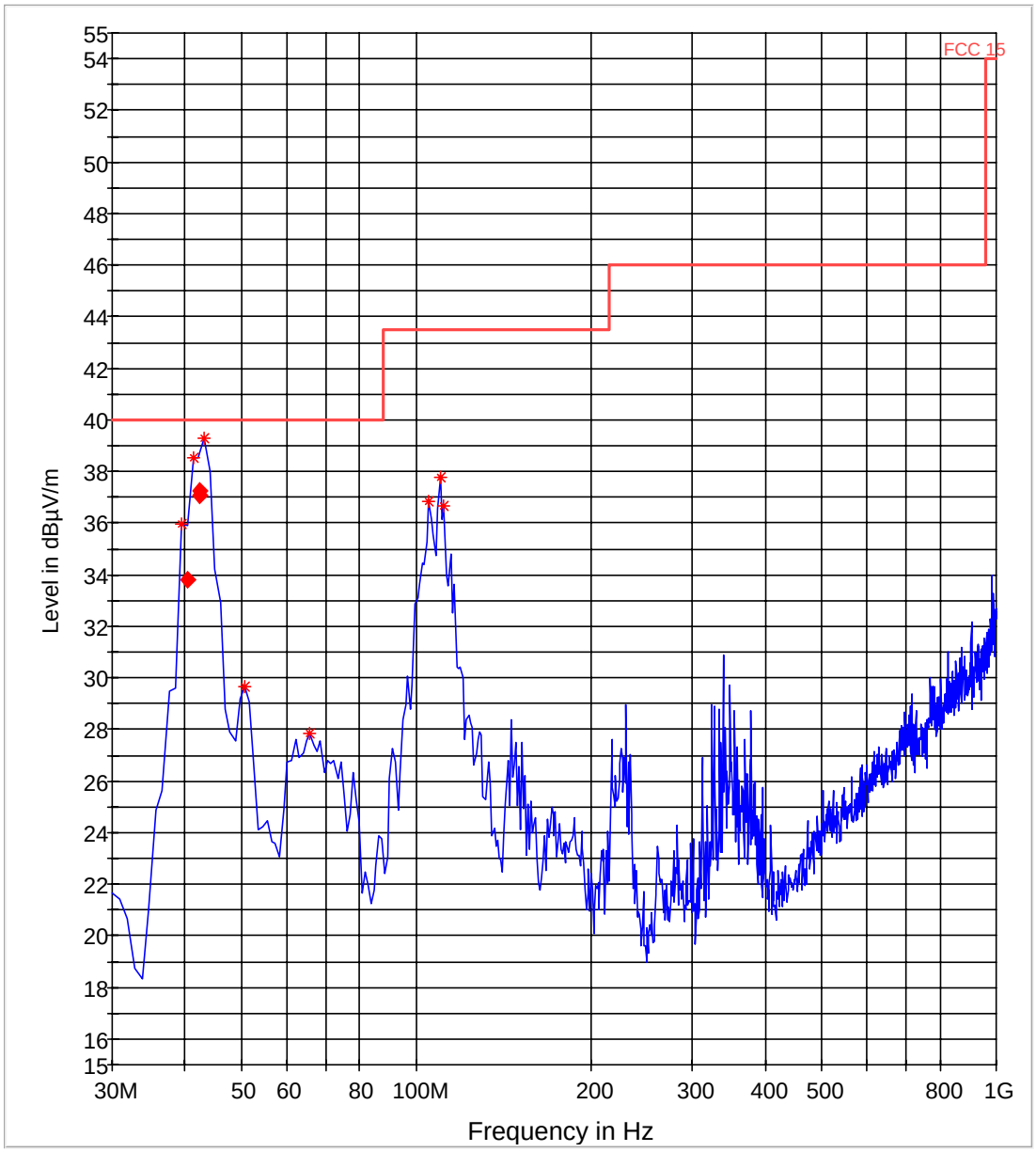
FCC 15 1-18GHz



30MHz-1GHz mode: 802.11 n Ch44

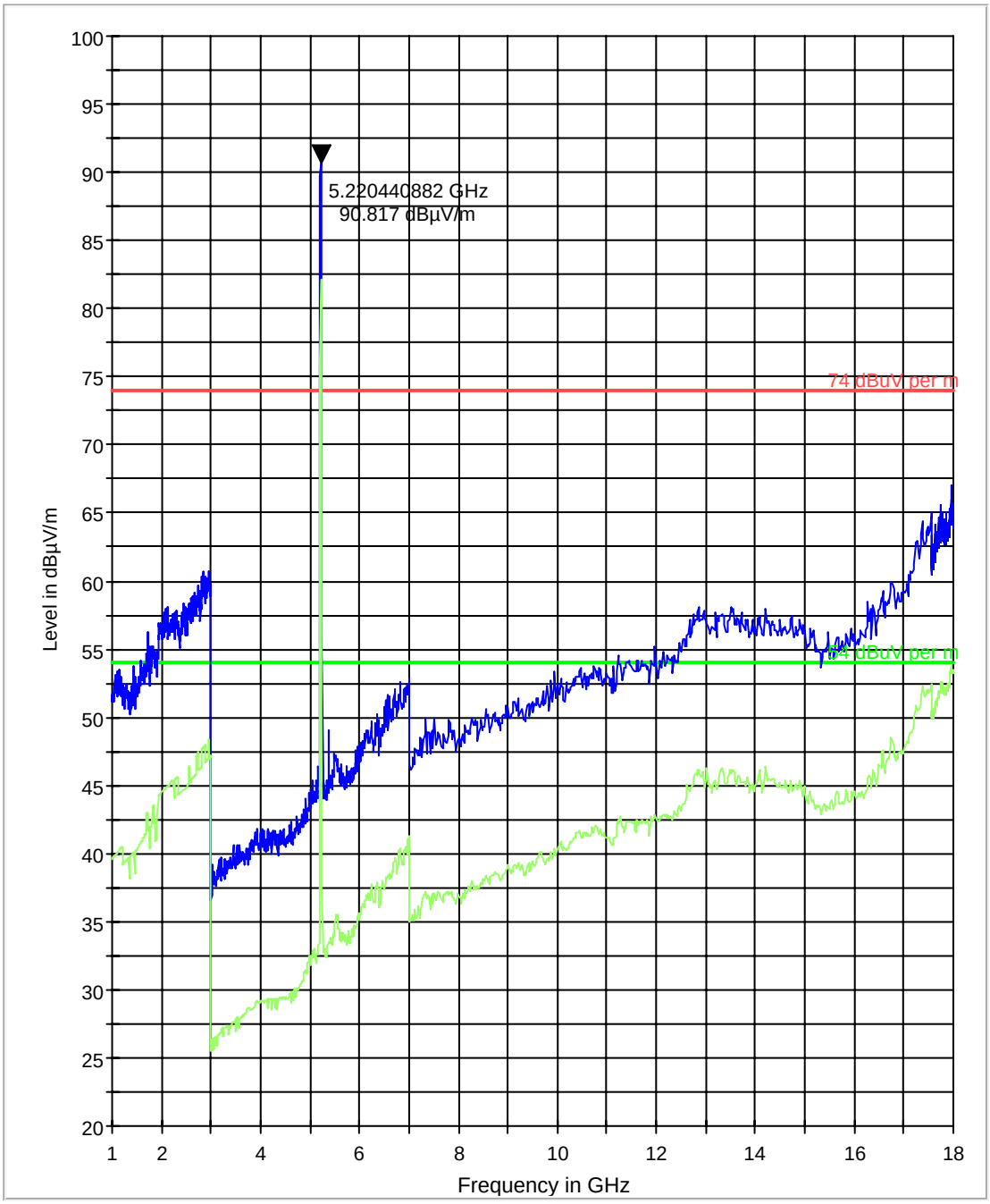
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Comment
40.368789	33.8	20.0	120.000	120.0	V	0.0	5.5	
42.310275	37.1	20.0	120.000	120.0	V	0.0	5.8	
42.323206	37.3	20.0	120.000	120.0	V	0.0	5.8	

FCC 15 30-1000MHz



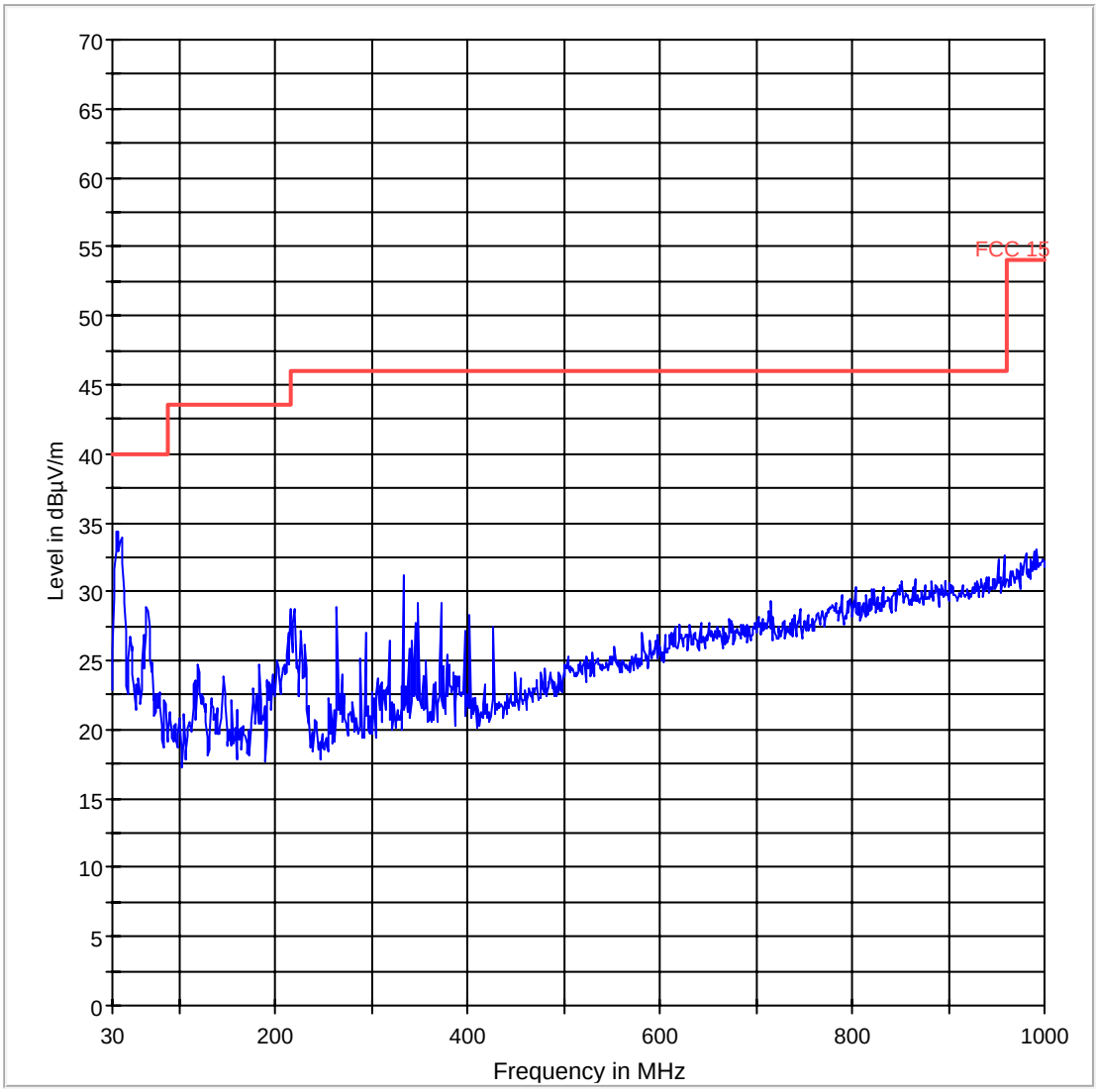
1GHz-18GHz mode: 802.11 n Ch44
Note: Marker is placed on transmit signal

FCC 15 1-18GHz



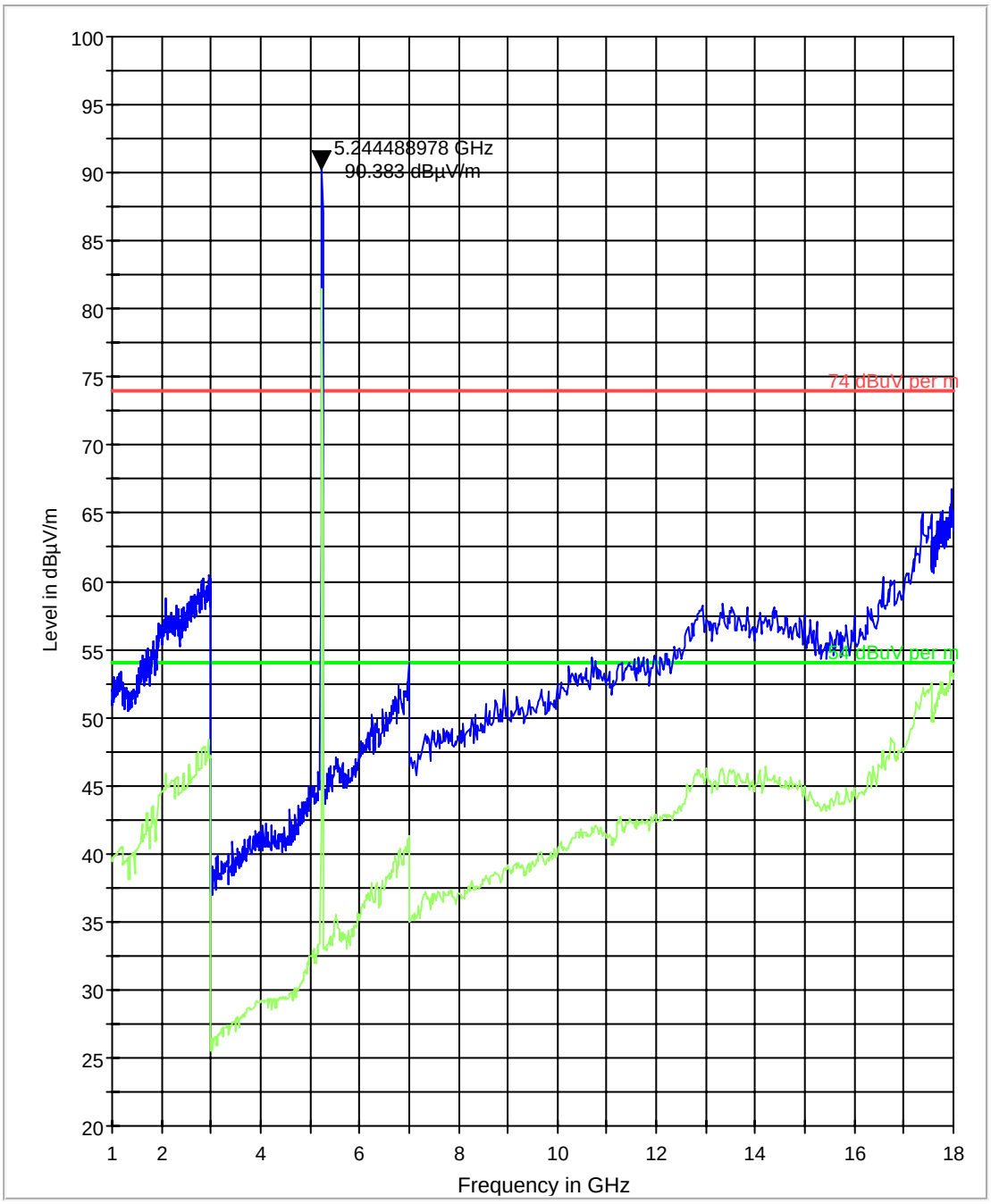
30MHz-1GHz mode: 802.11 n Ch48

FCC 15 30-1000MHz



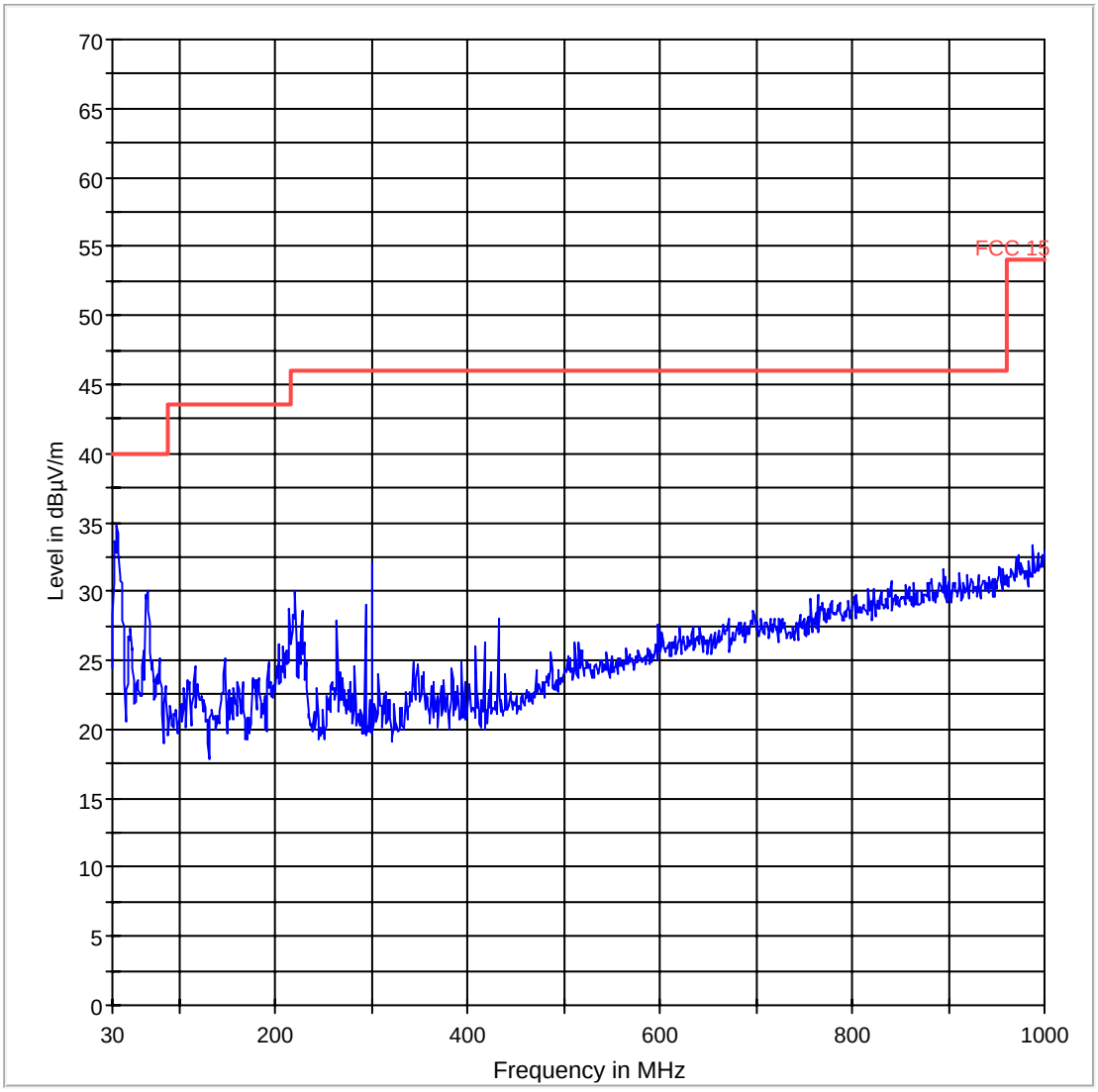
1GHz-18GHz mode: 802.11 n Ch48
Note: Marker is placed on transmit signal

FCC 15 1-18GHz



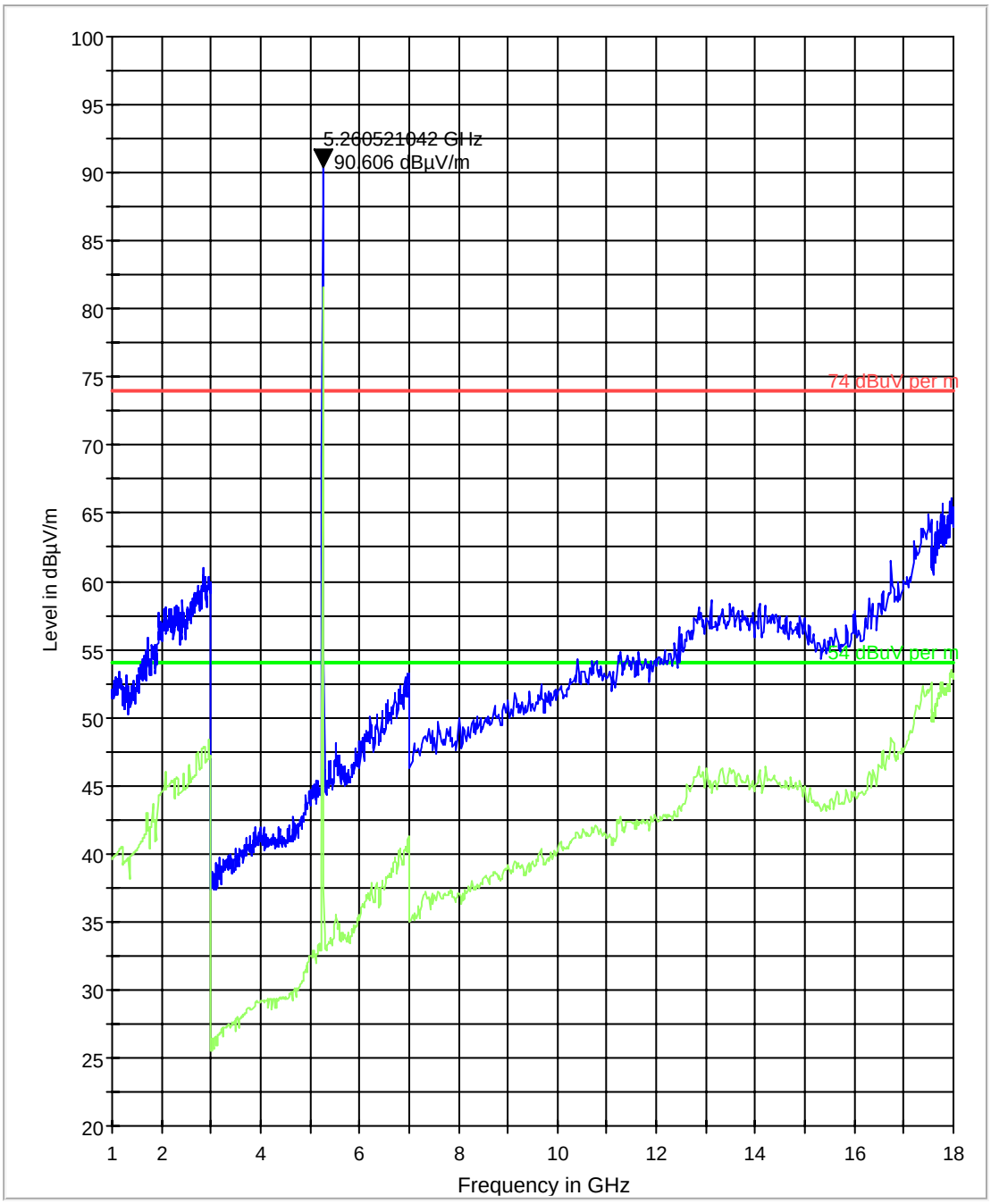
30MHz-1GHz mode: 802.11 n Ch52

FCC 15 30-1000MHz



1GHz-18GHz mode: 802.11 n Ch52
Note: Marker is placed on transmit signal

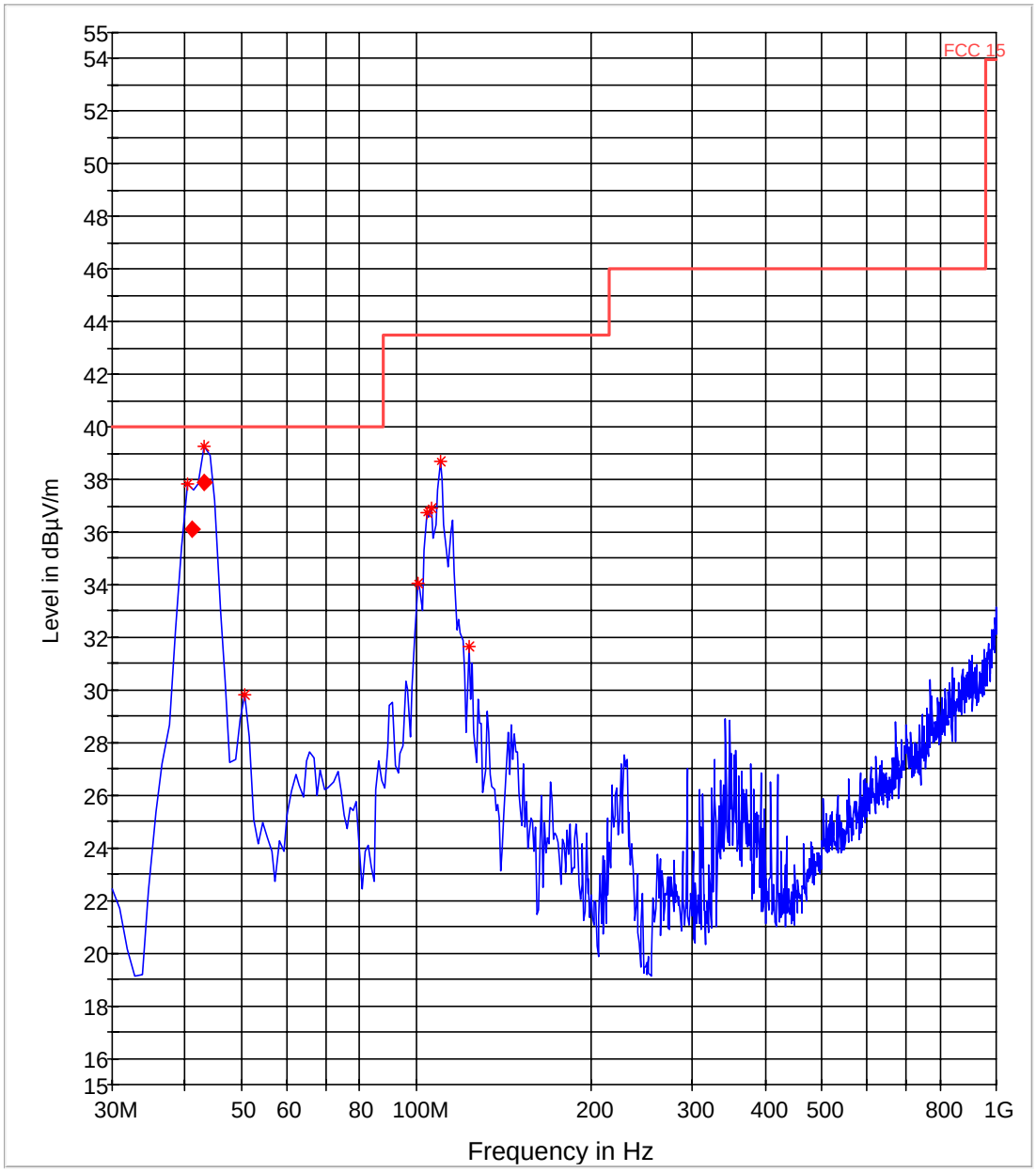
FCC 15 1-18GHz



30MHz-1GHz mode: 802.11 n Ch60

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Comment
41.199869	36.1	20.0	120.000	120.0	V	0.0	5.6	
43.119310	37.9	20.0	120.000	120.0	V	0.0	5.9	

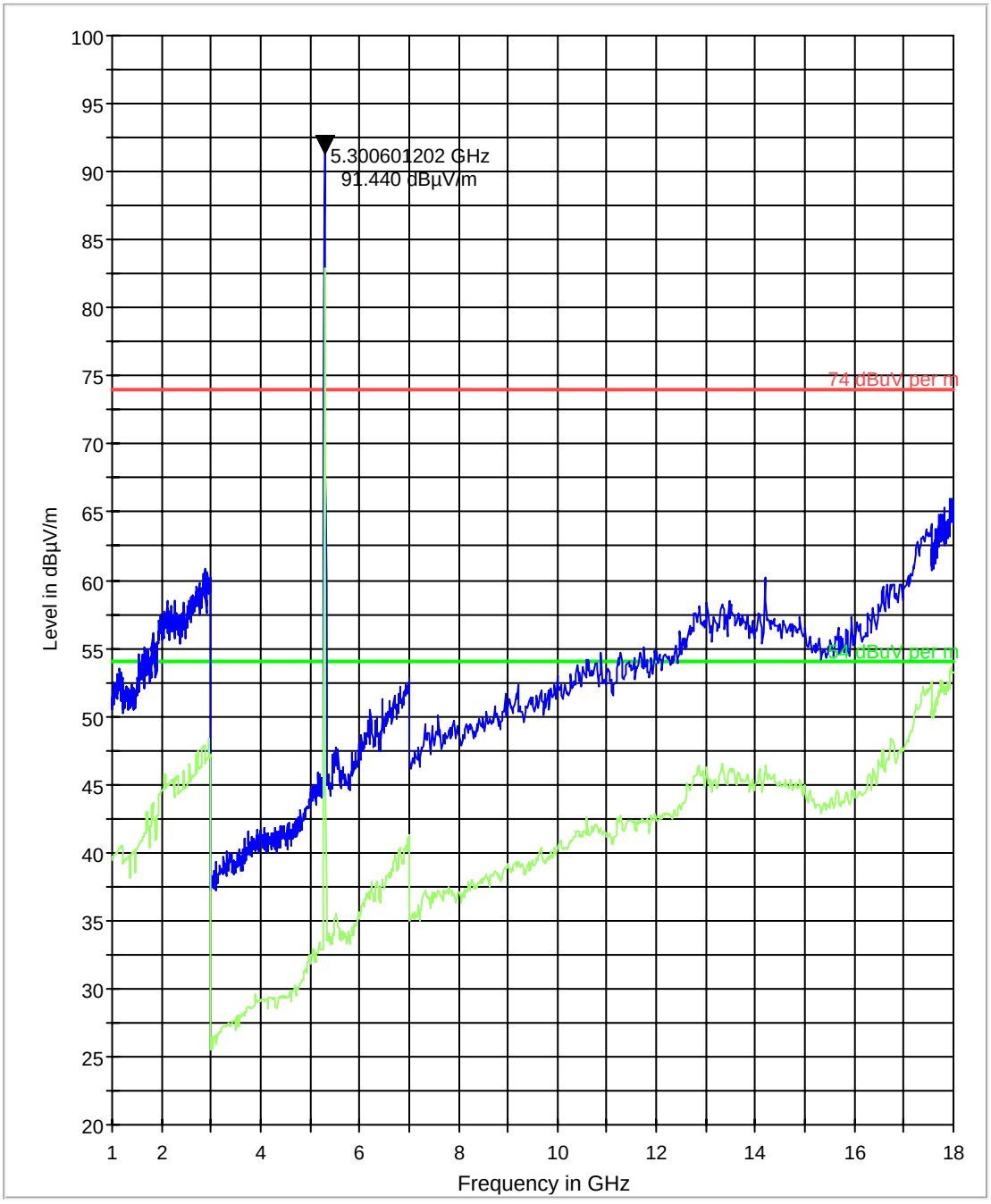
FCC 15 30-1000MHz



FCC 15.LimitLine Preview Result 1 Data Reduction Result 1 [3] Final Measurement Result 1

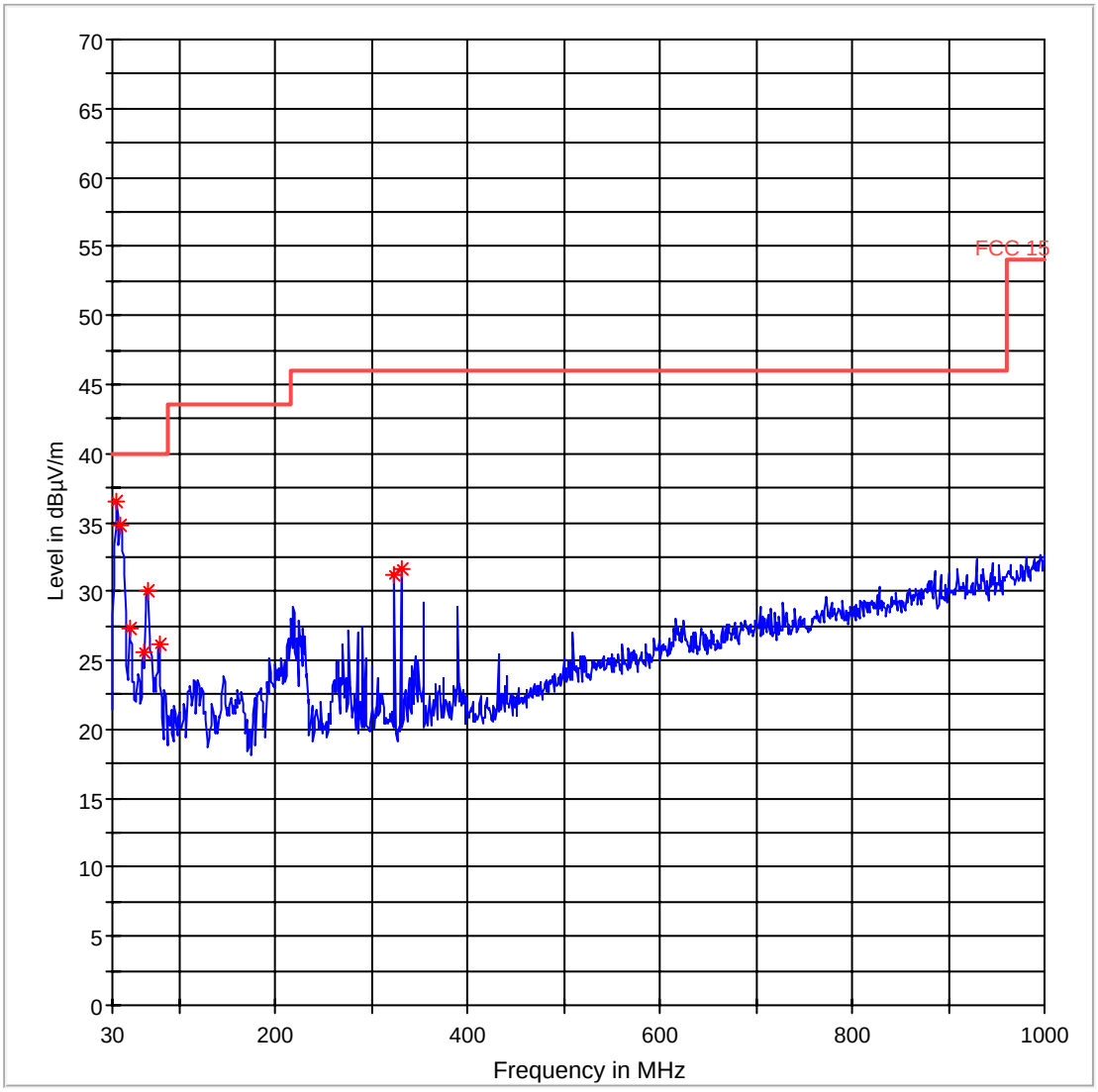
1GHz-18GHz mode: 802.11 n Ch60
Note: Marker is placed on transmit signal

FCC 15 1-18GHz



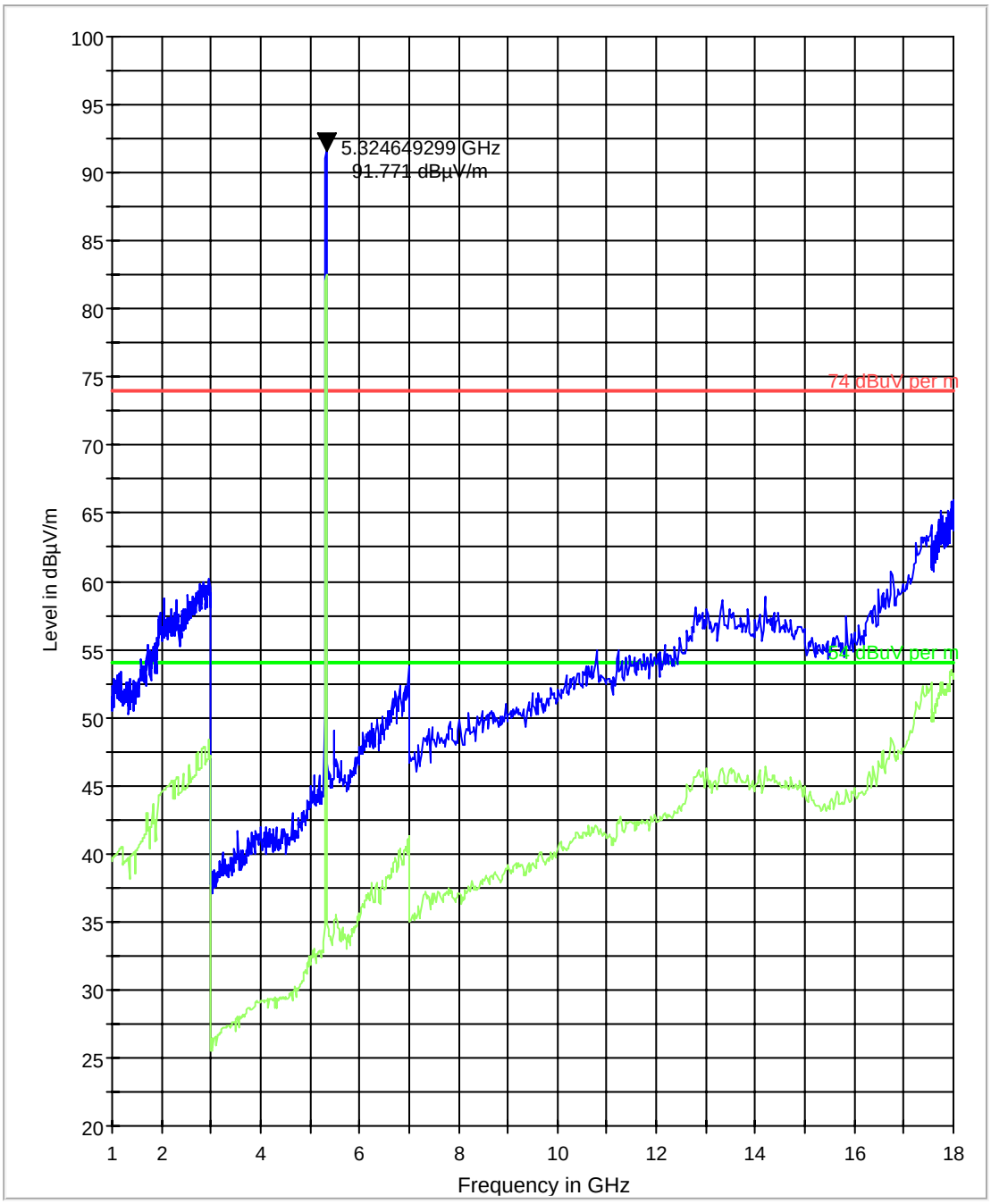
30MHz-1GHz mode: 802.11 n Ch64

FCC 15 30-1000MHz



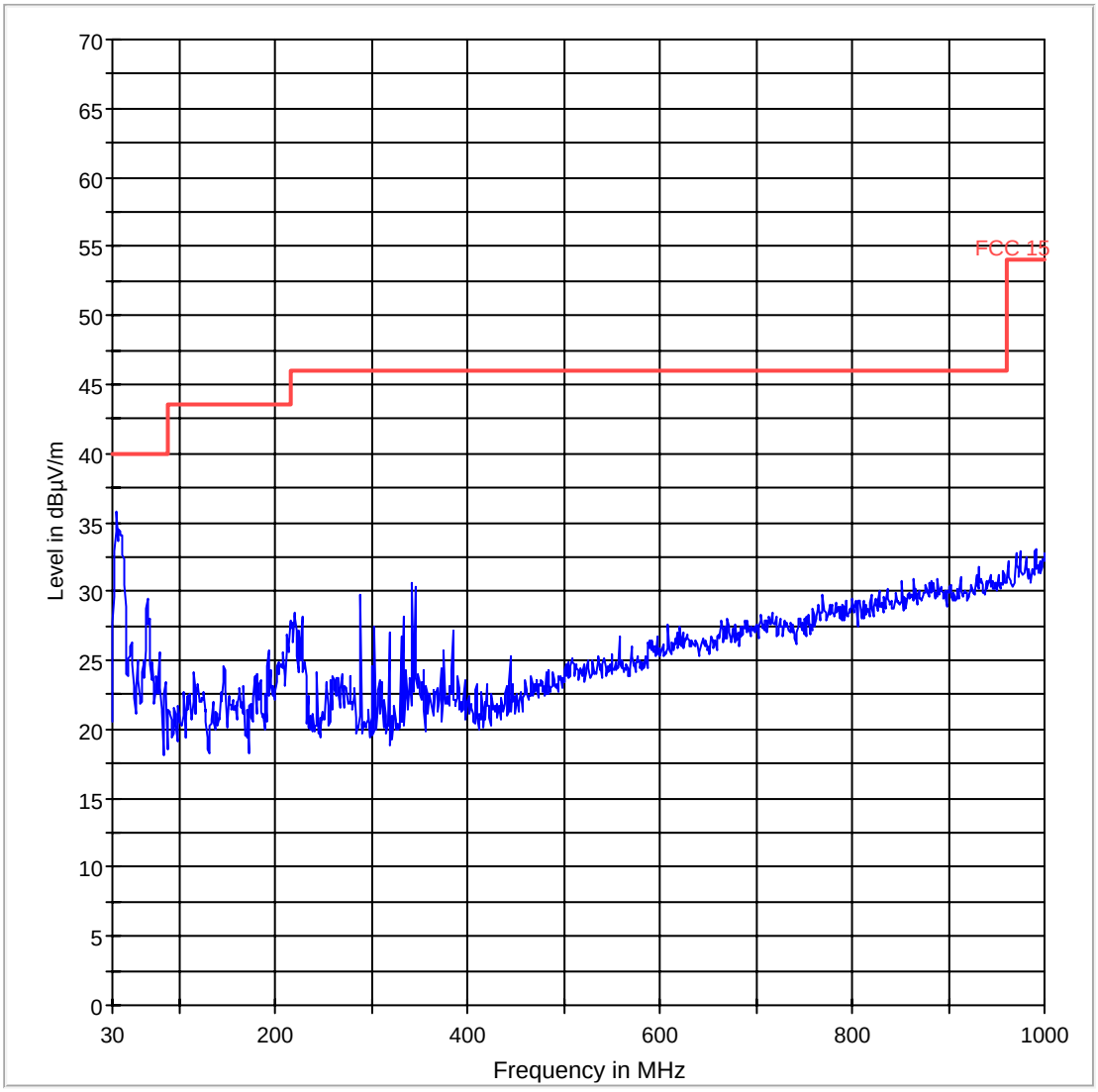
1GHz-18GHz mode: 802.11 n Ch64
Note: Marker is placed on transmit signal

FCC 15 1-18GHz



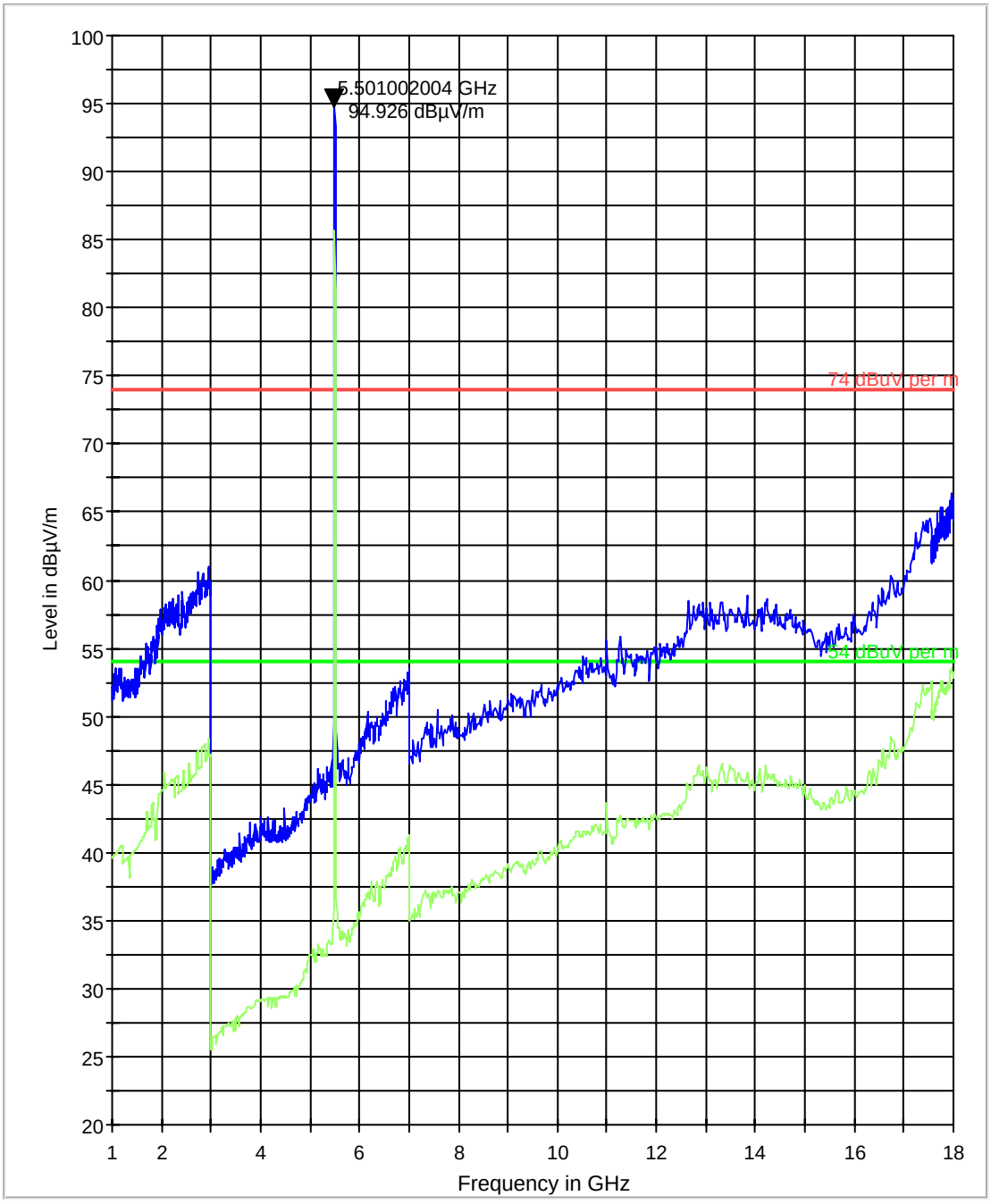
30MHz-1GHz mode: 802.11 n Ch100

FCC 15 30-1000MHz



1GHz-18GHz mode: 802.11 n Ch100
Note: Marker is placed on transmit signal

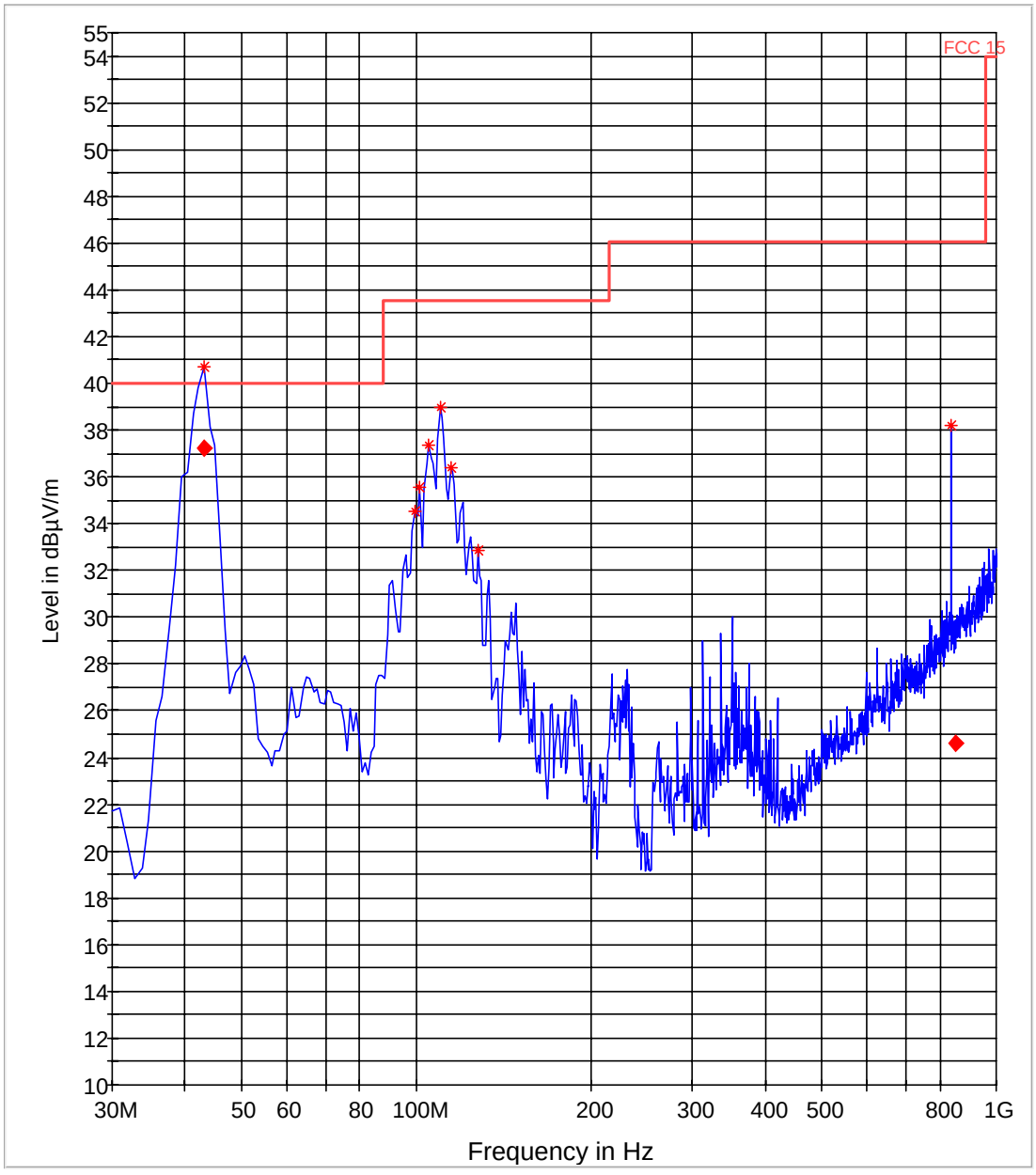
FCC 15 1-18GHz



30MHz-1GHz mode: 802.11 n Ch120

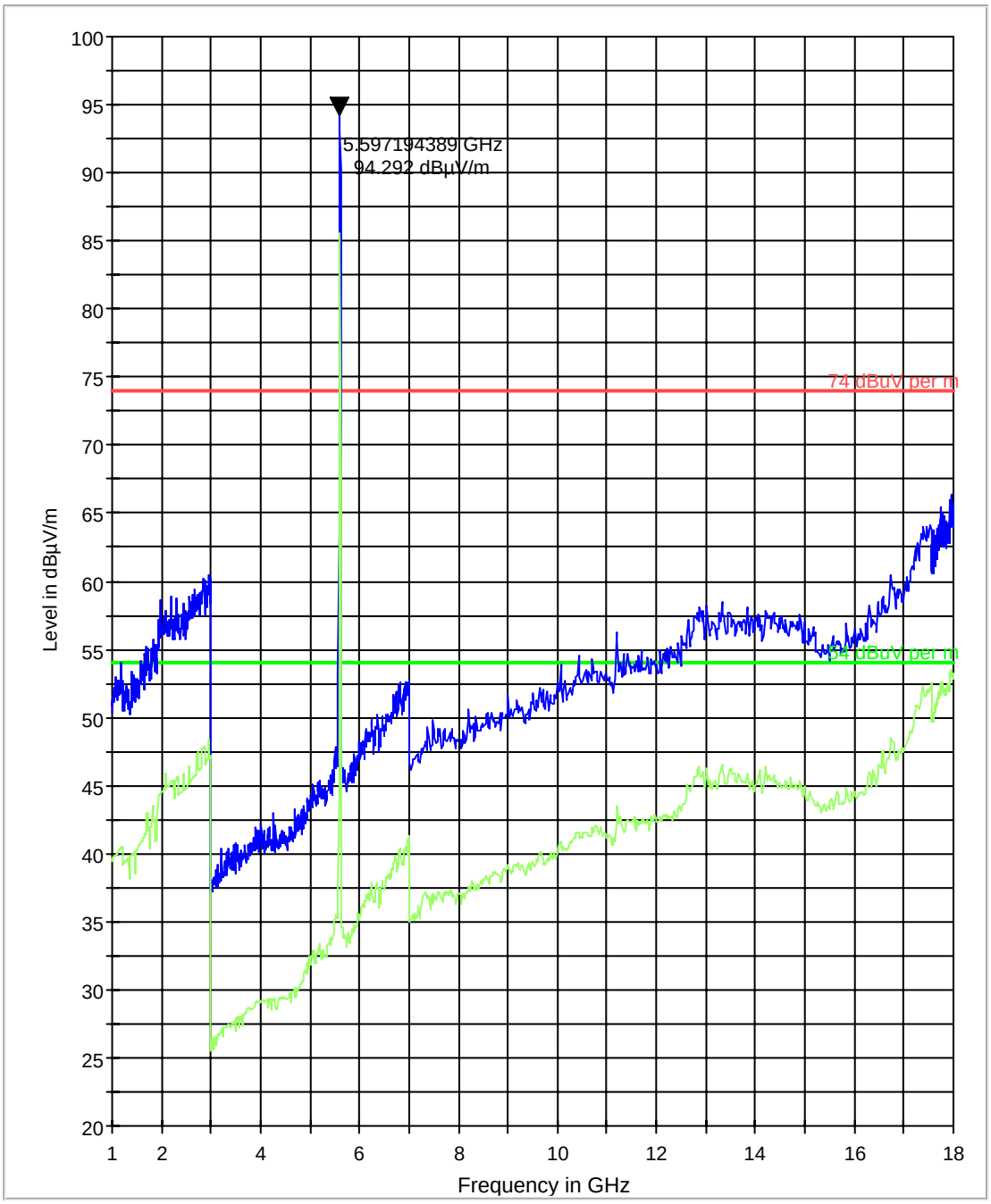
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Comment
43.184210	37.3	20.0	120.000	120.0	V	0.0	5.9	
848.845178	24.6	20.0	120.000	144.0	H	202.0	26.0	

FCC 15 30-1000MHz



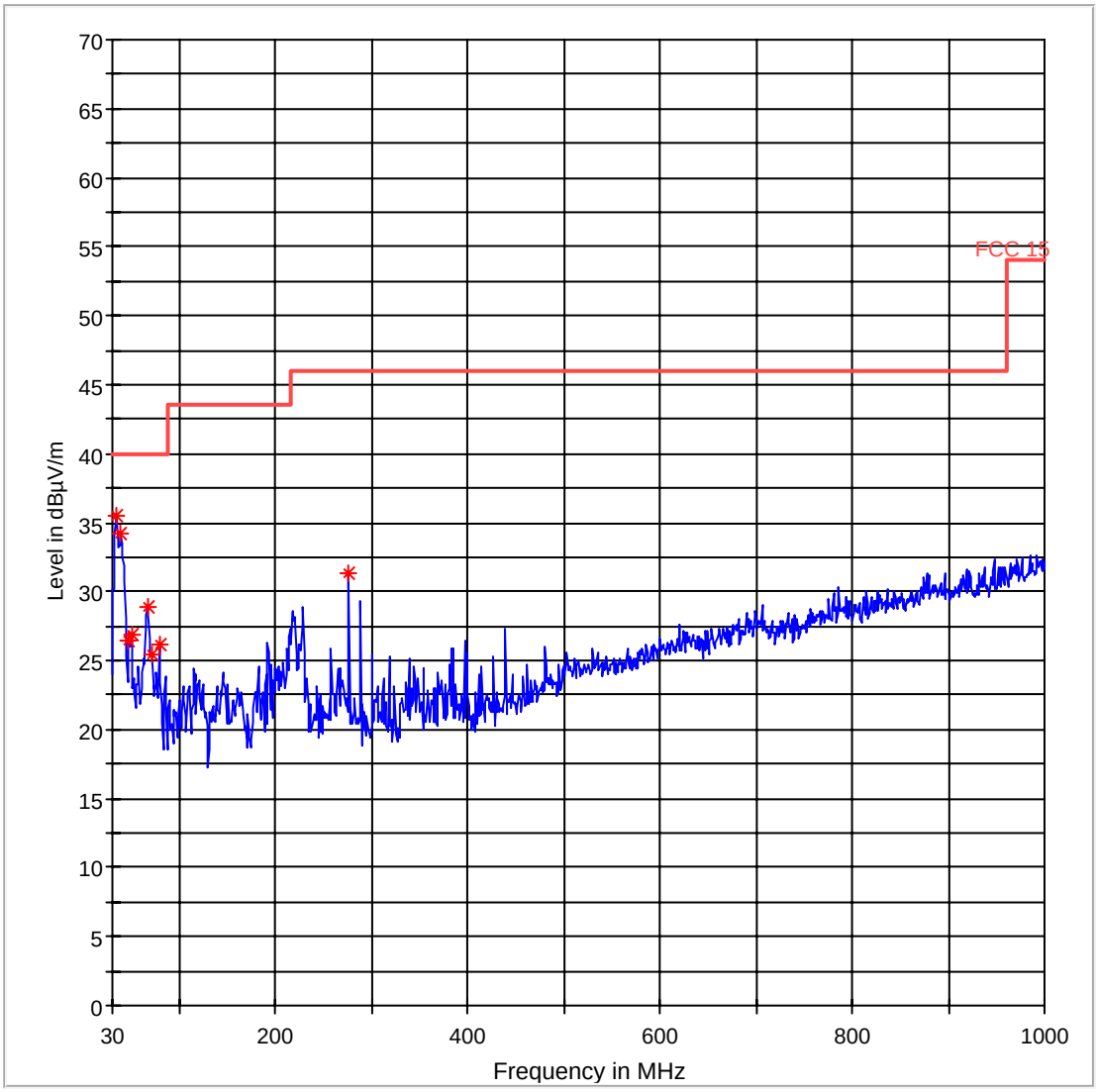
1GHz-18GHz mode: 802.11 n Ch120
Note: Marker is placed on transmit signal

FCC 15 1-18GHz



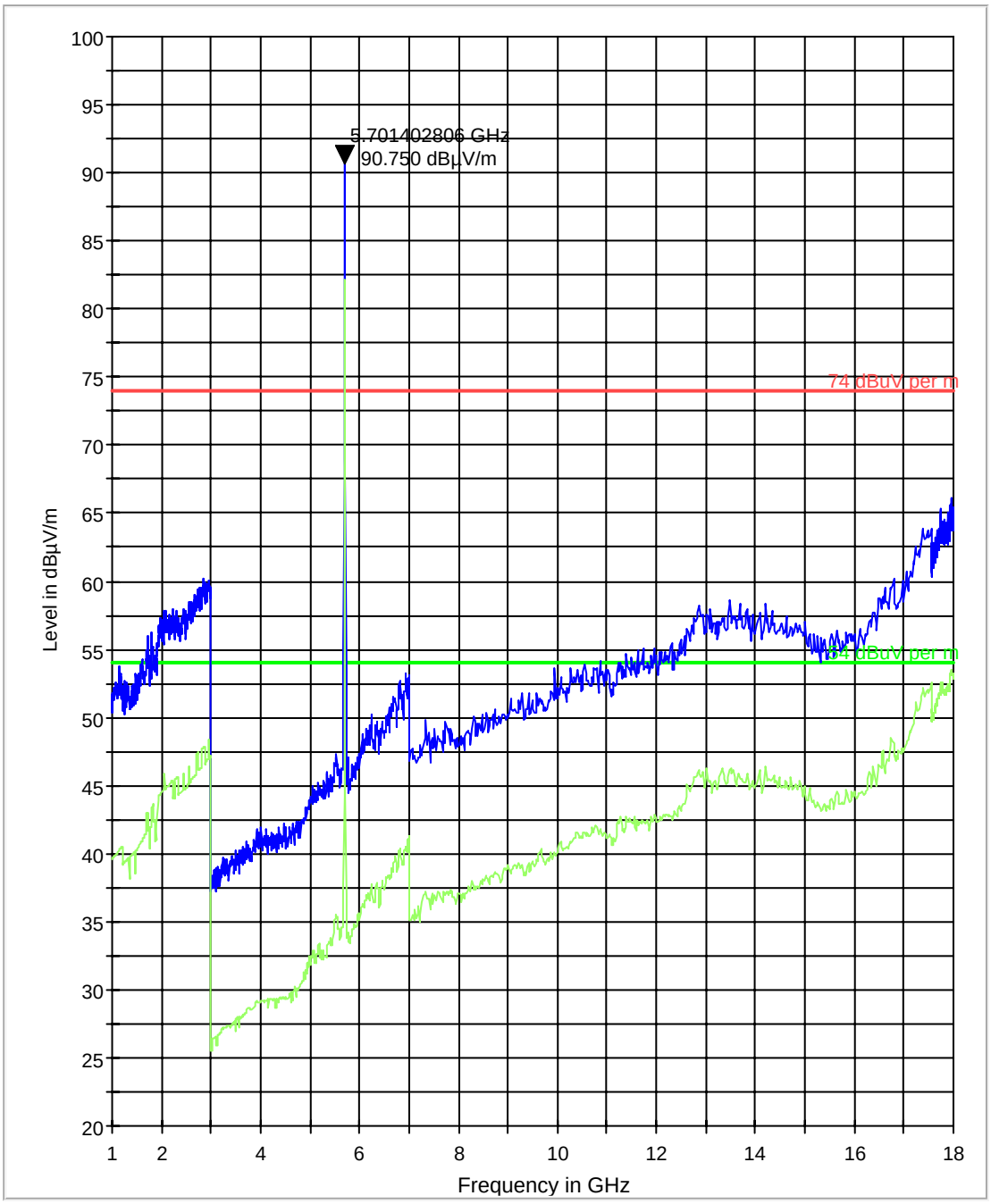
30MHz-1GHz mode: 802.11 n Ch140

FCC 15 30-1000MHz



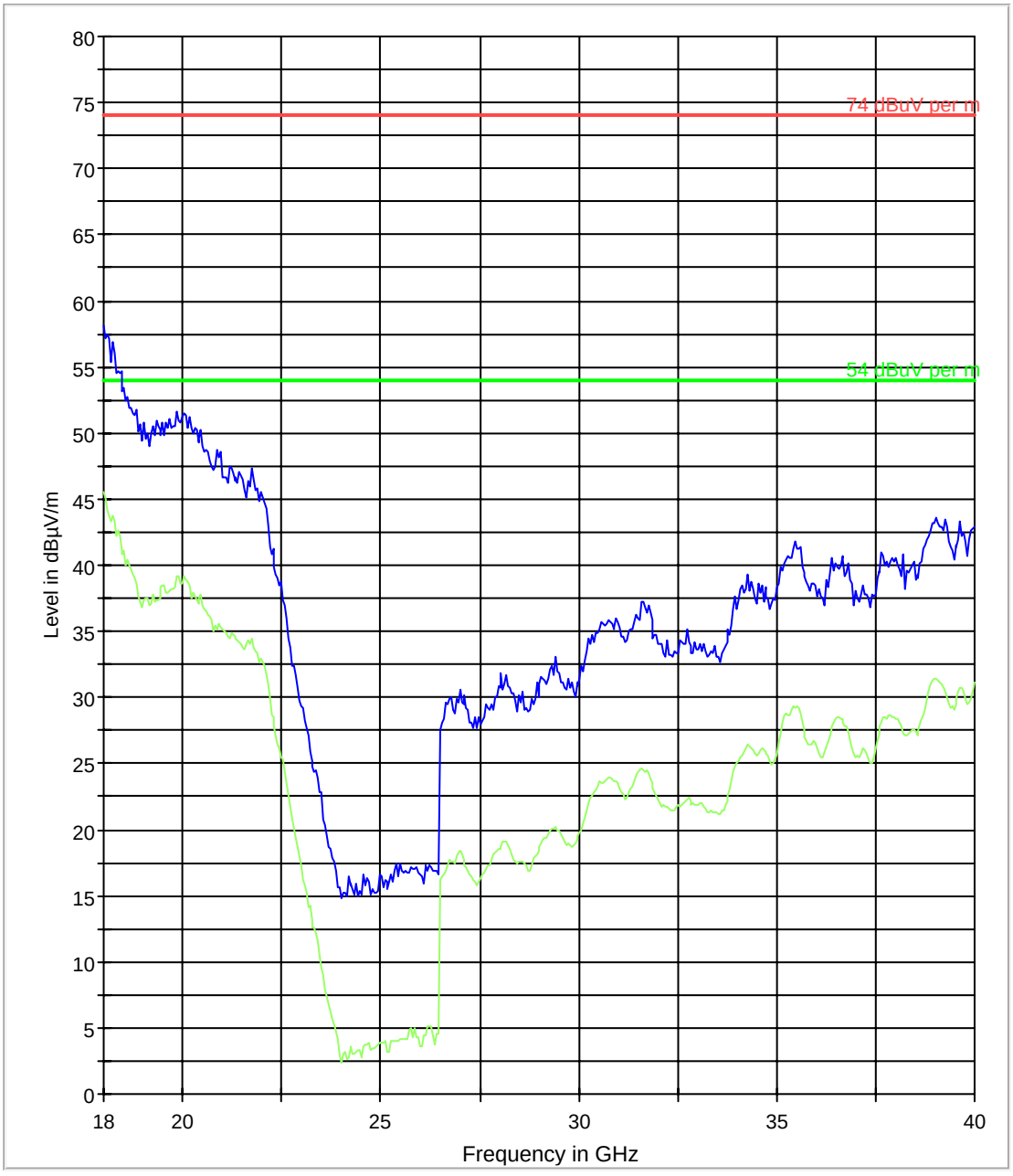
1GHz-18GHz mode: 802.11 n Ch140
Note: Marker is placed on transmit signal

FCC 15 1-18GHz



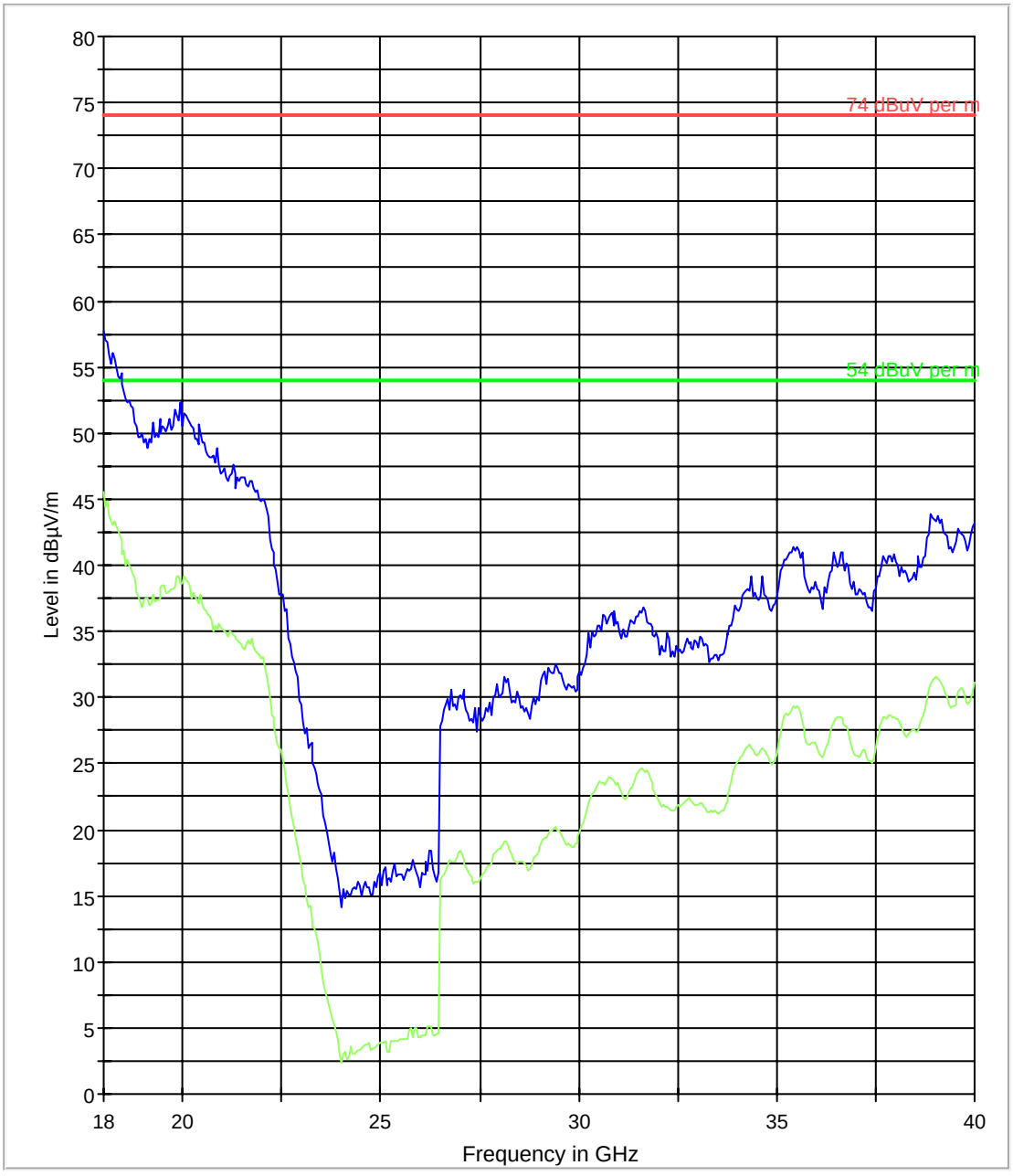
18GHz-40GHz mode: 802.11 n Ch44 (mid channel in 5150MHz-5250MHz band)

FCC 15 18-40GHz



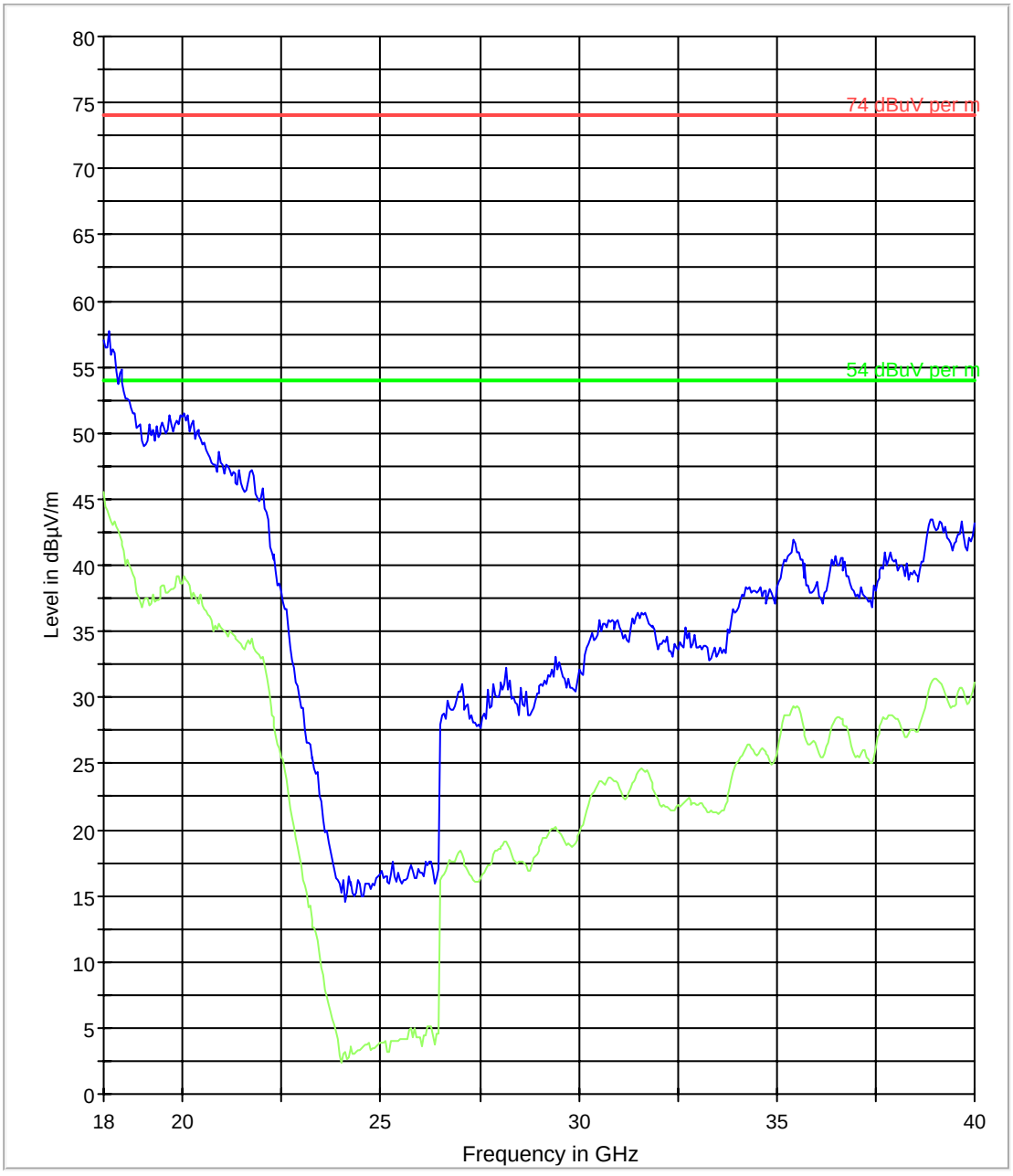
18GHz-40GHz mode: 802.11 n Ch60 (mid channel in 5250MHz-5350MHz band)

FCC 15 18-40GHz



18GHz-40GHz mode: 802.11 n Ch120 (mid channel in 5470MHz-5725MHz band)

FCC 15 18-40GHz



74 dBuV per m.LimitLine
Preview Result 1
54 dBuV per m.LimitLine
Preview Result 2

5.10 Receiver Spurious Emissions- Radiated

5.10.1 Limits: §15.109

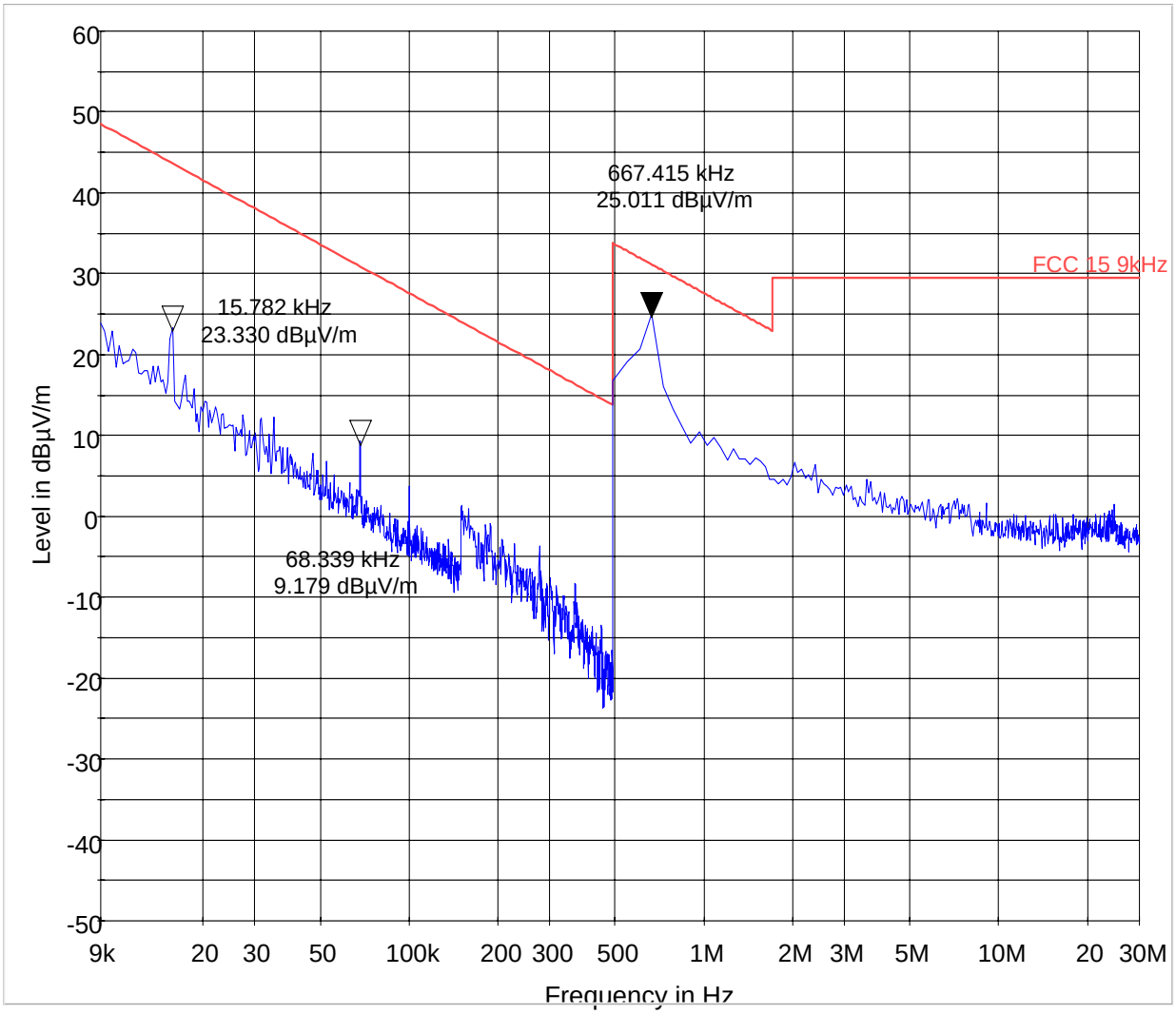
Frequency of emission (MHz)	Field strength (µV/m)	Measurement Distance (m)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100 (40dBµV/m)	3
88–216	150 (43.5 dBµV/m)	3
216–960	200 (46 dBµV/m)	3
Above 960	500 (54 dBµV/m)	3

5.10.2 Test Result:

Plots reported here represent the worse case emissions.

5.10.3 Test data/ plots:

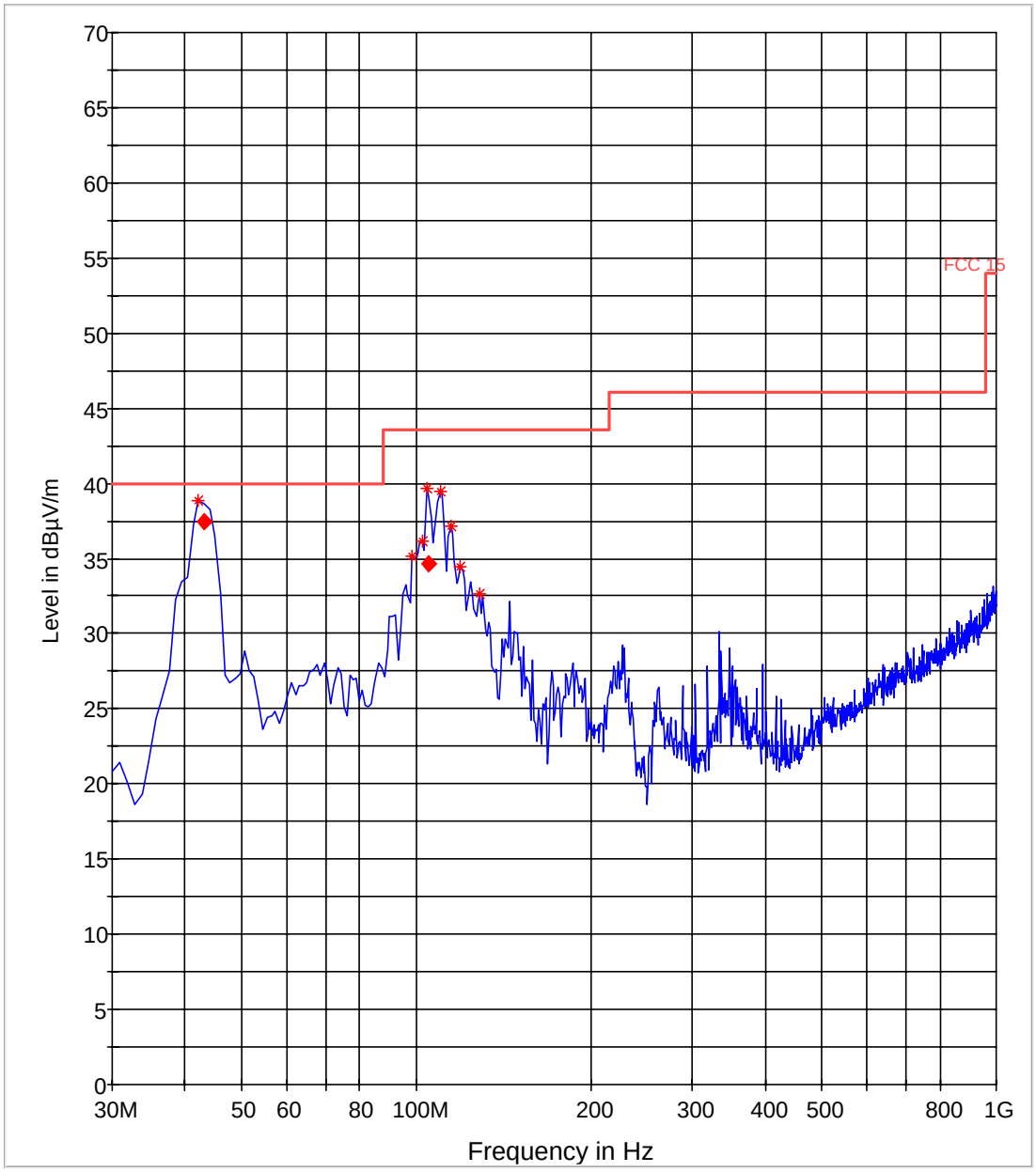
9kHz-30MHz



30MHz-1GHz

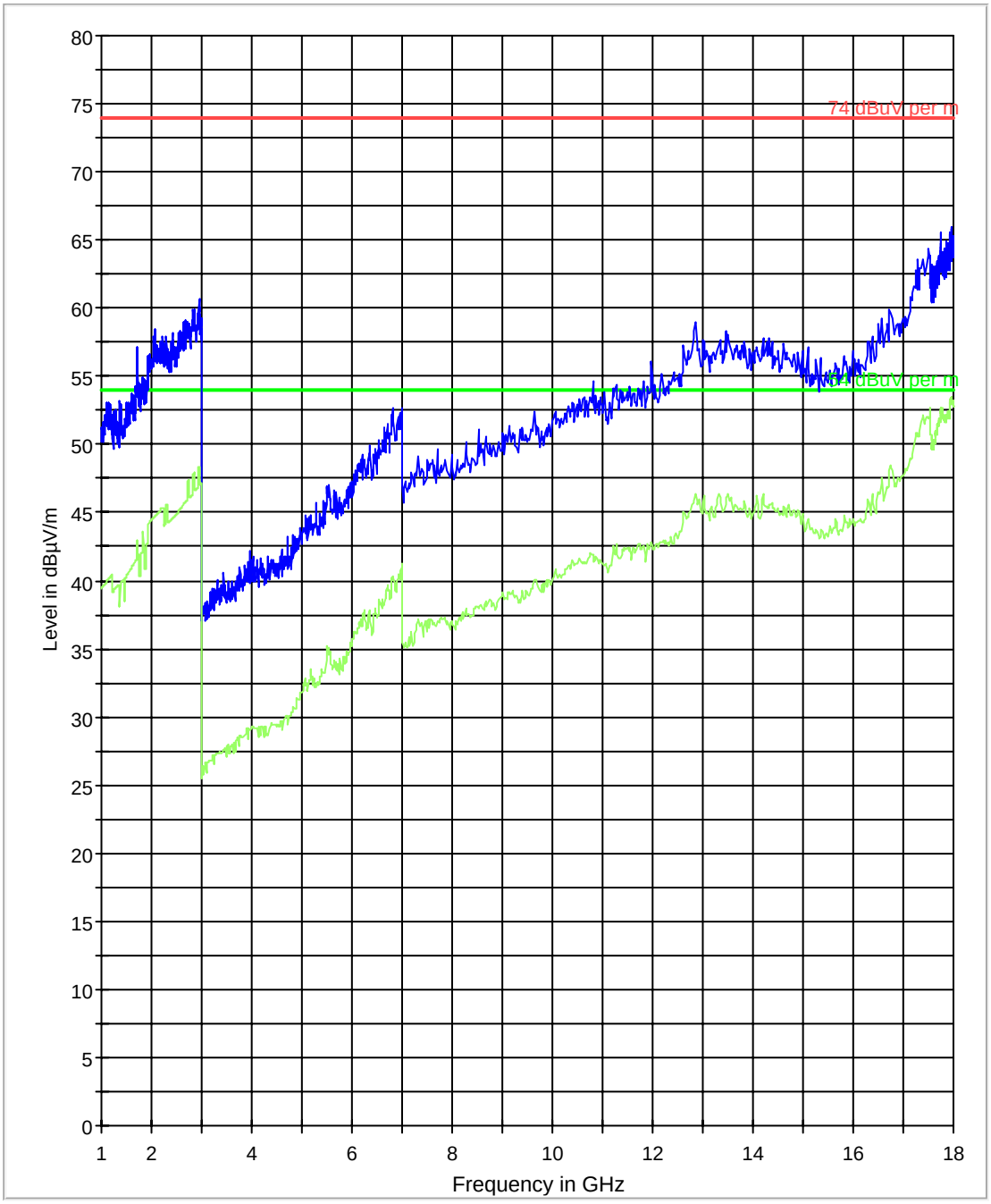
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Comment
43.270862	37.5	20.0	120.000	120.0	V	45.0	5.9	
105.041704	34.6	20.0	120.000	120.0	V	0.0	9.3	

FCC 15 30-1000MHz



1GHz-18GHz

FCC 15 1-18GHz



5.11 AC Power Line Conducted Emissions

5.11.1 Limits: §15.107/15.207

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.

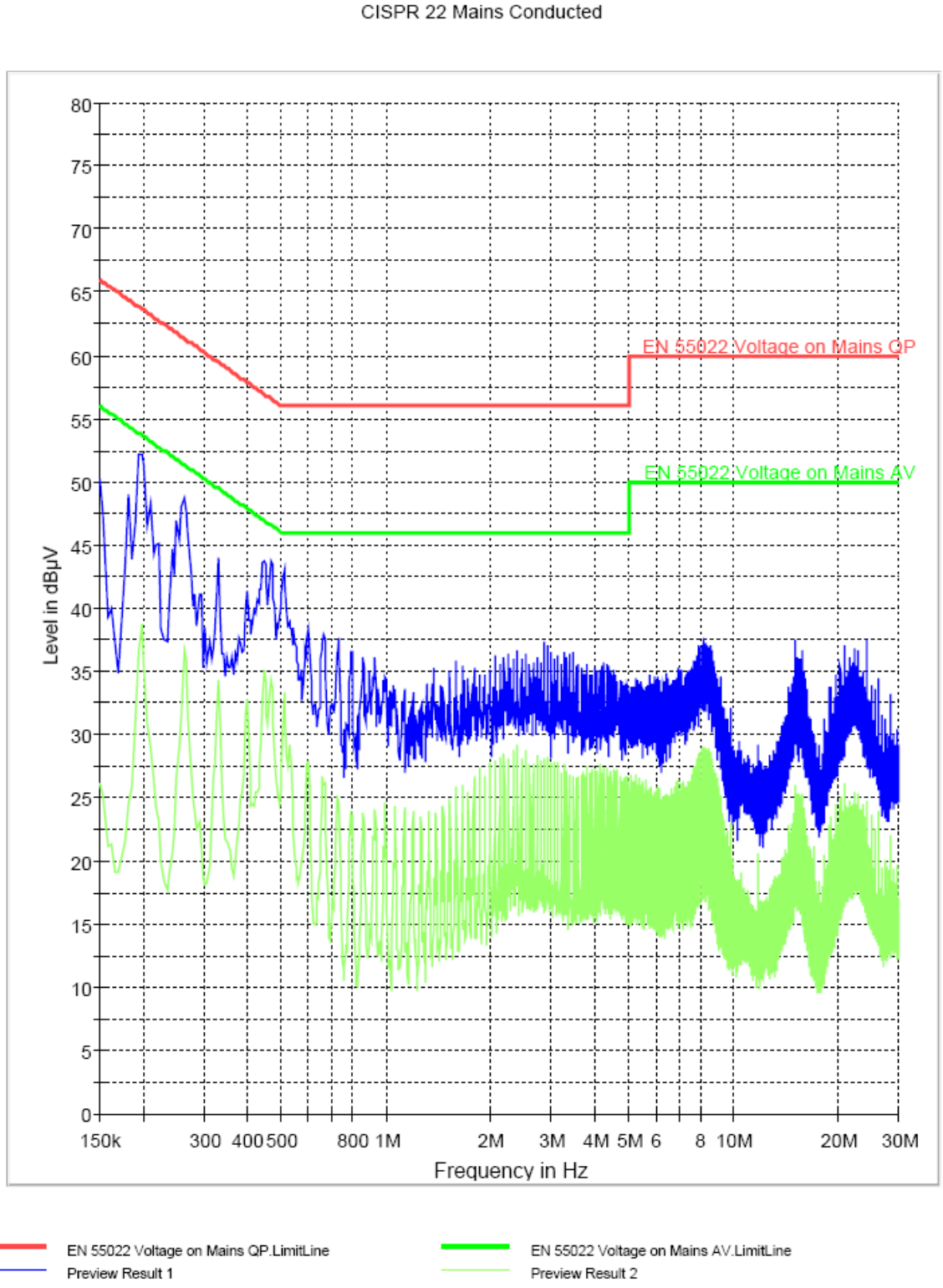
Analyzer Settings: RBW = 10 kHz; VBW = 10 kHz

5.11.2 Test Result:

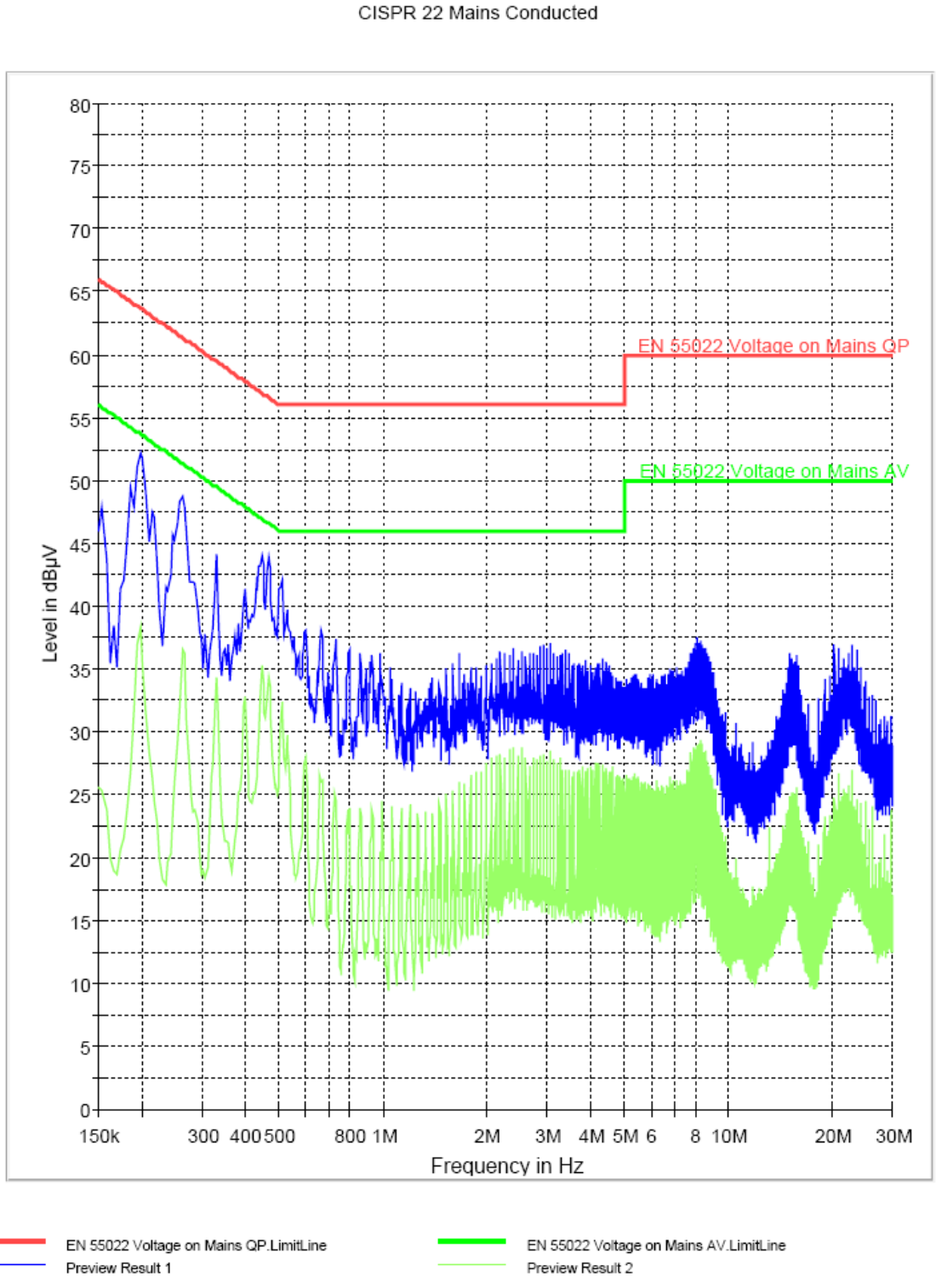
No significant emissions measurable. Plots reported here represent the worse case emissions.

5.11.3 Test data/ plots:

TX Mode- Line & Neutral



RX Mode- Line & Neutral



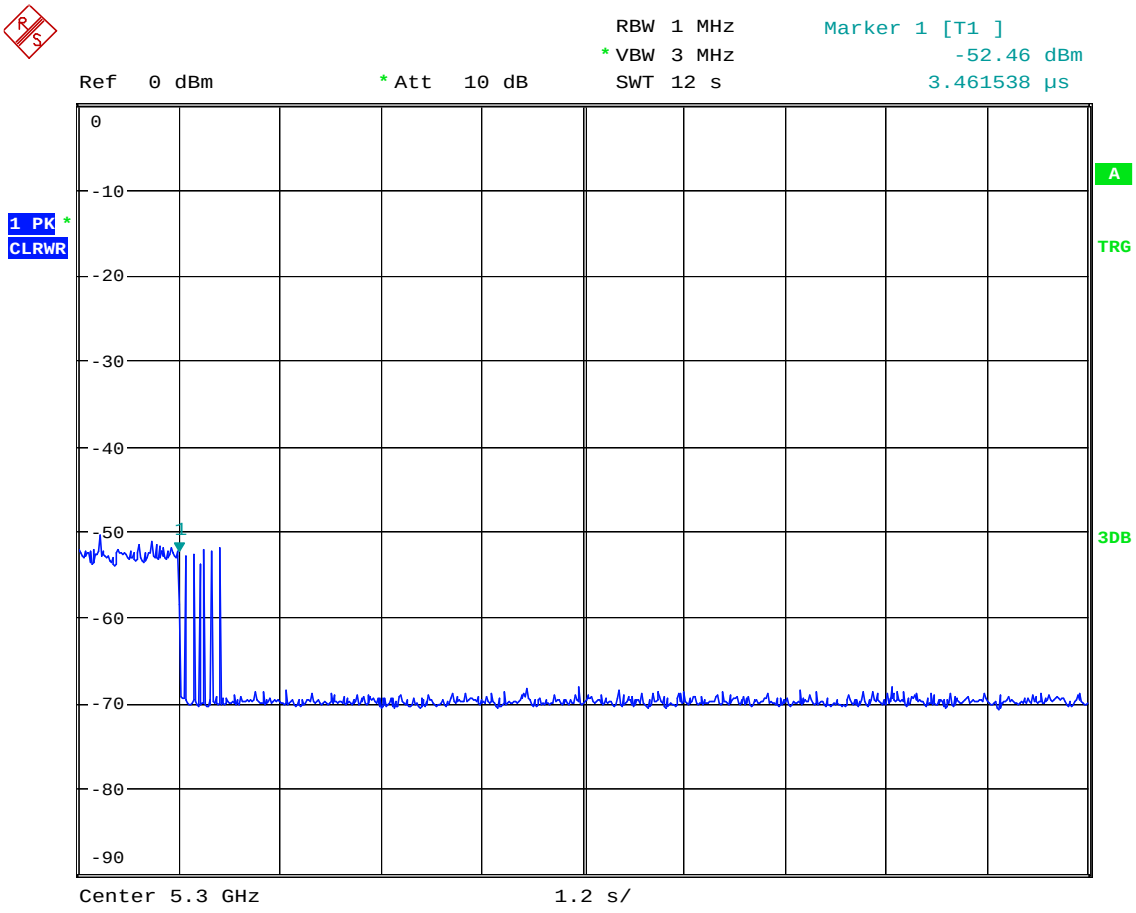
6 Dynamic Frequency Selection

6.1 Channel Move Time

6.1.1 Limits

Channel must move within 10 seconds

6.1.2 Results



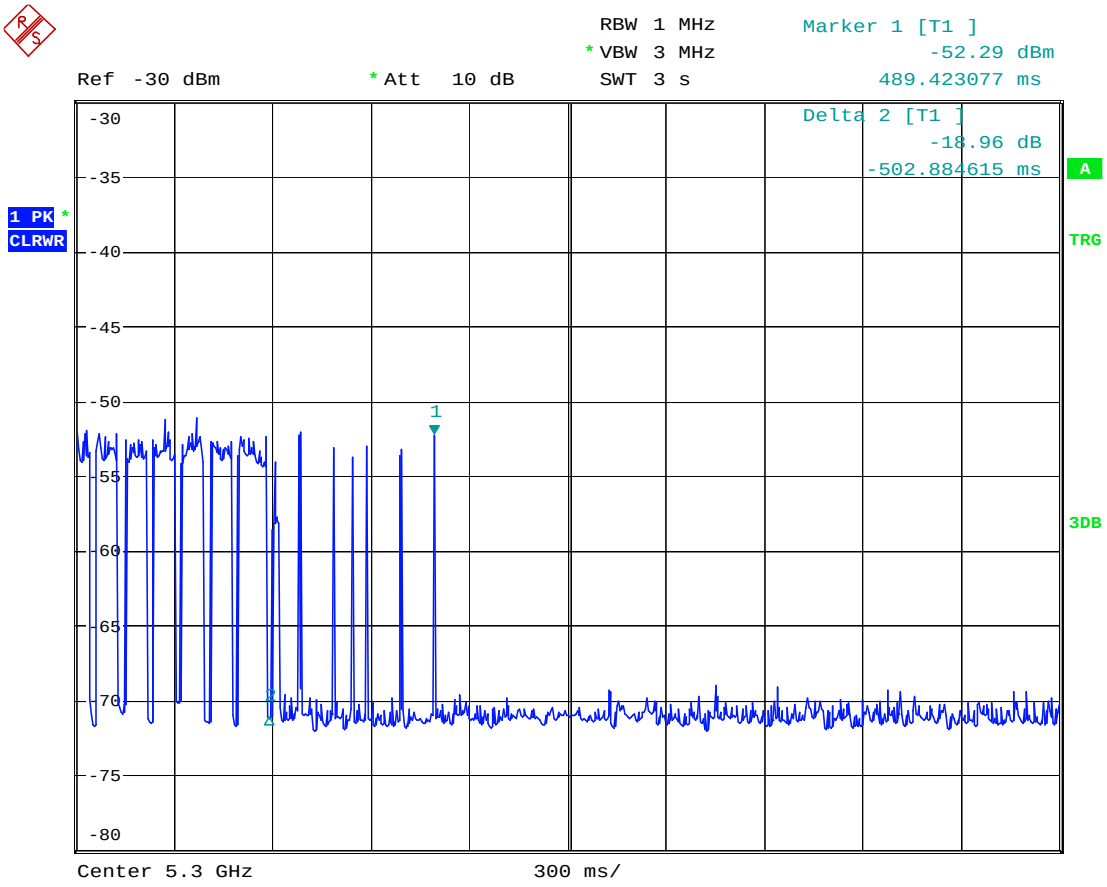
Date: 10.FEB.2011 14:51:36

6.2 Channel Closing Time

6.2.1 Limits

Closing time must be less than 200ms + and aggregate of 60 ms over the remaining 10 second period

6.2.2 Results



Date: 10.FEB.2011 15:40:05

Analyzer Total bins	625
# of Bins	500.00
Analyzer Sweep (s)	3.00
Analyzer (ms)	3,000.0
Transmission Time (seconds)	2.400
Transmission Time (ms)	2,400.0
Dwell time per bin (second)	0.00480
Dwell time per bin (ms)	4.80000
Number of bins with WLAN Tx	8.0
Aggregate (seconds)	0.0384
Aggregate (ms)	38.4
FCC result	Pass

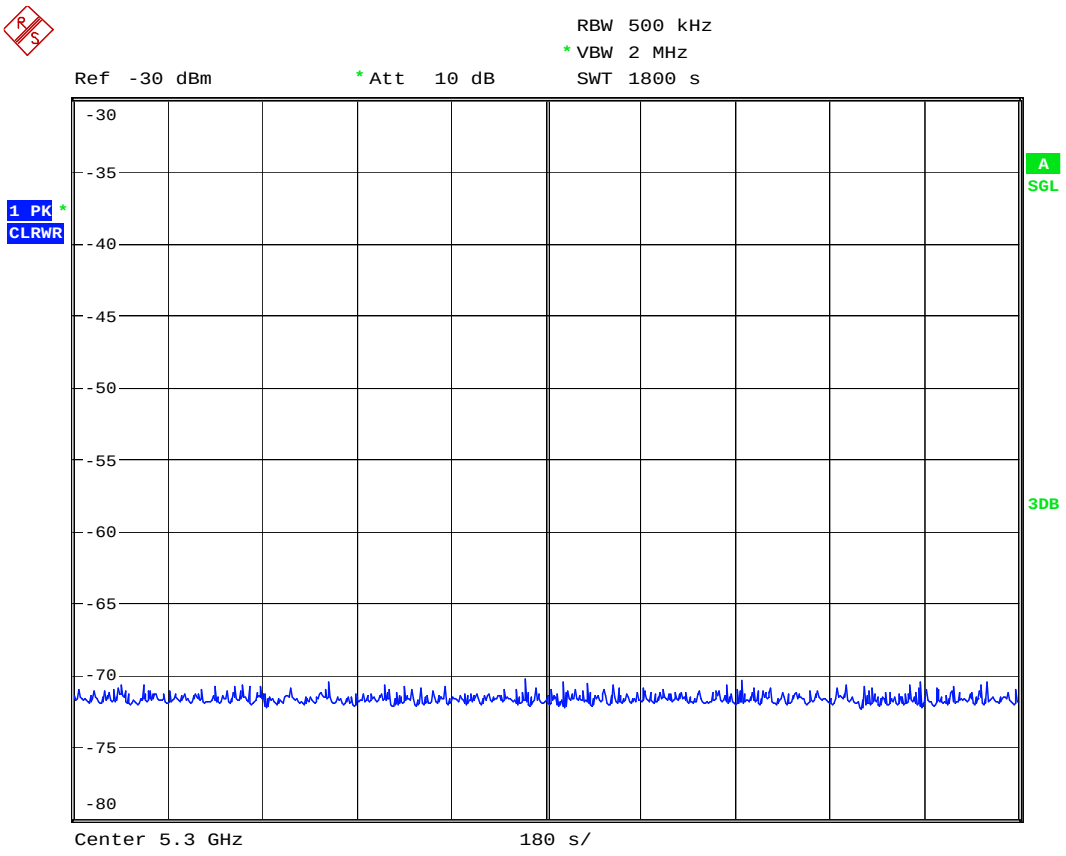
6.3 30 Minute Beacon Test

6.3.1 Limits

Client cannot transmit beacons

6.3.2 Results

Spectrum Analyzer was set to a sweep time of 30 minutes. During that time no emissions were observed.

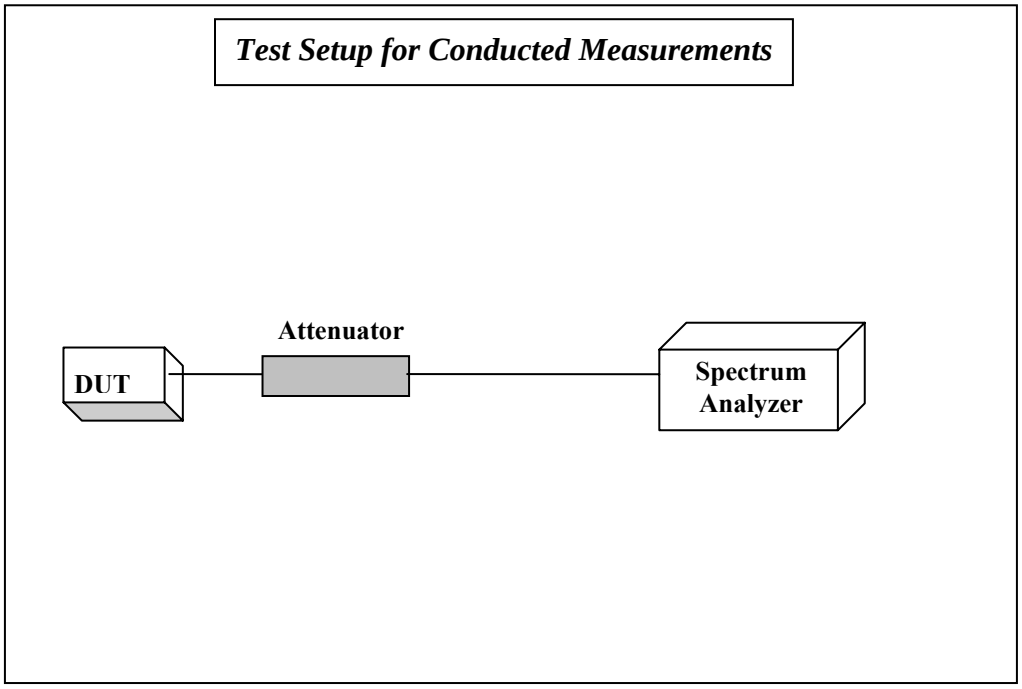


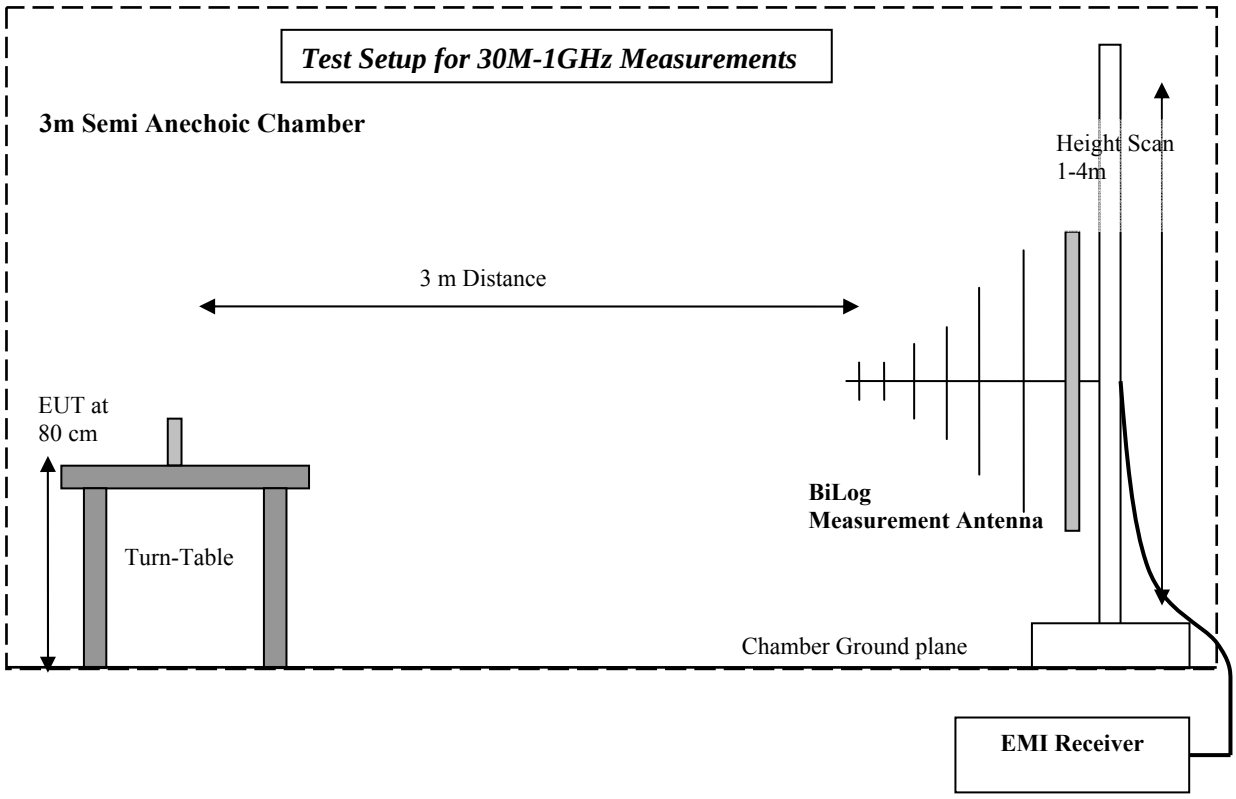
Date: 10.FEB.2011 16:28:52

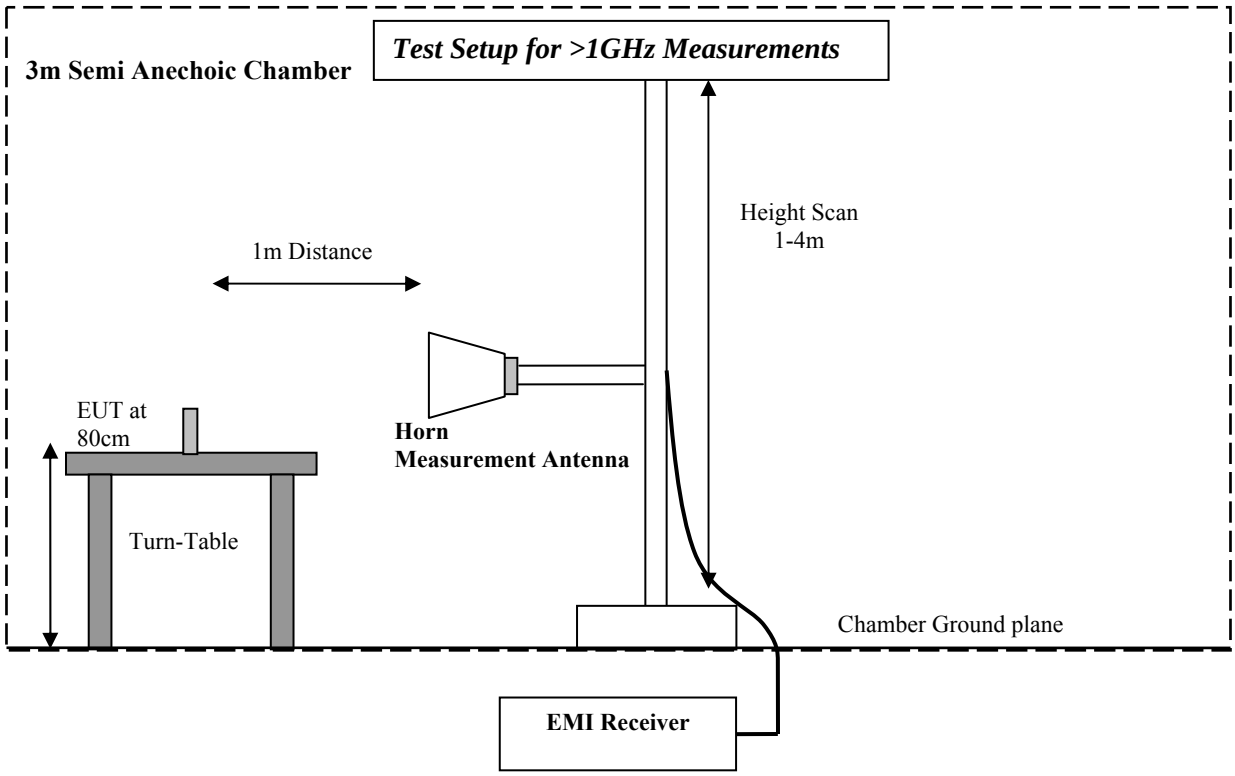
7 Test Equipment and Ancillaries used for tests

Instrument/Ancillary	Model	Manufacturer	Serial No.	Cal Date	Cal Interval
EMI Receiver/Analyzer	ESIB 40	Rohde & Schwarz	100107	May 2011	1 year
Spectrum Analyzer	FSU	Rohde & Schwarz	200302	May 2011	1 year
Loop Antenna	6512	EMCO	00049838	April 2009	3 years
Biconilog Antenna	3141	EMCO	0005-1186	June 2009	3 years
Horn Antenna (1-18GHz)	3115	ETS	00035111	Jan 2009	3 years
Horn Antenna (18-40GHz)	3116	ETS	00070497	Jan 2009	3 years
Communication Antenna	IBP5-900/1940	Kathrein	n/a	n/a	n/a
High Pass Filter	5HC2700	Trilithic Inc.	9926013	Part of system calibration	
High Pass Filter	4HC1600	Trilithic Inc.	9922307	Part of system calibration	
6GHz High Pass Filter	HPM50106	Microtronics	001	Part of system calibration	
Pre-Amplifier	JS4-00102600	Miteq	00616	Part of system calibration	
LISN	50-25-2-08	FCC	08014	June 2011	1 year
Power Smart Sensor	R&S	NRP-Z81	100161	May 2011	1 Year
DC Power Supply	E3610A	Hewlett Packard	KR83021224	n/a	n/a
Multimeter	MM200	Klein	N/A	Apr 2011	1 Year
Temp Hum Logger	TM320	Dickson	03280063	Feb 2011	1 Year
Temp Hum Logger	TM325	Dickson	5285354	Feb 2011	1 Year
ASCOR Upconverter	7206	National Instruments	N/A	Dec 2010	3 year
DFS Waveform Generator / PXI 5421 Card	NI PXI-1042	National Instruments	E965F1	Sep. 2010	3 year
DFS Signal Generator / PXI 5610 Card	NI PXI 1042	National Instruments	E93740	Aug. 2010	3 year

8 BLOCK DIAGRAMS






3m Semi Anechoic Chamber
Test Setup for >1GHz Measurements
Height Scan
1-4m
1m Distance
EUT at
80cm
Horn
Measurement Antenna
Turn-Table
Chamber Ground plane
EMI Receiver

9 Revision History

Date	Report Name	Changes to report	Report prepared by
2011-06-17	EMC_PSION_007_10001_15.407	Original	Satya Radhakrishna