FCC/IC Test Report

FOR

Manufacturer: Sony
Type Number: PM-0745-BV
FCC ID: PY7PM-0745

47 CFR Part 15.247 for Bluetooth

TEST REPORT #: CETEC_063_13001_BT_15.247
DATE: 2014-01-22

FCC :
Accredited

IC recognized #
3462B-1

***CETECOM* Inc.**
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CETECOM Inc. is a Delaware Corporation with Corporation number: 2905571

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1 Assessment

The following equipment (and as identified in Ch.3 of this test report) was evaluated against the applicable criteria specified in FCC CFR47 Part 15.247, 15.207, 15.209.
No deviations were ascertained during the course of the tests performed.

Company	Description	Type #
Sony	Phablet	PM-0745-BV

Responsible for Testing Laboratory:

Date	Section	Name	Signature
2014-01-22	Compliance	Franz Engert (Manager Compliance)	Digitally signed by Franz Engert DN: cn=Franz Engert, c=US, o=CETECOM, ou=Complience, email=franz.engert@cetecom.com Date: 2014.01.22 19:45:20 -08'00'

Responsible for the Report:

Date	Section	Name	Signature
2014-01-22	Compliance	Josie Sabado (Lab Manager SAR)	

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the 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 Manager:	Franz Engert
Responsible Project Leader:	Franz Engert

2.2 Identification of the Client

Applicant's Name:	Nya Vattentornet
Street Address:	22188 Lund / SWEDEN
City/Zip Code	---
Country	SWEDEN
Contact Person:	Mikael Nilsson
Phone No.	+46 7 03 22 75 03
Fax:	---
e-mail:	Micke.nilsson@sonymobile.com

2.3 Identification of the Manufacturer

Same as above client.

3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

Product Type:	Portable
Prototype/Production:	Pre-Production
RF Exposure Environment:	General / Uncontrolled
Dimensions:	73.3 x 146.8 x 8.2 mm
Exposure Conditions:	Held next to the ear Body worn Personal Wireless Router
Type No:	PM-0745-BV
FCC ID:	PY7PM-0745
Antenna Type:	Cellular: Internal 1 Tx/Rx antenna 1 Rx only antenna WLAN/BT: Internal
Operating Voltage Range:	Power Supply: 3.7 V DC by embedded battery
Operating Temperature Range:	Temperature range: -30°C to +60°C
Supported Radios:	GSM/GPRS/EGPRS MS Class 12, DTM MS Class 11, Power Class 4/1, Mobile Class A WCDMA/HSDPA/DC-HSDPA/HSUPA/HSPA+, Power Class 3, DL cat 24, UL cat 6 (5.7 Mbps uplink and QPSK) LTE Bluetooth v2.1 + EDR, Bluetooth 4.0 ANT+ 802.11 b/g/n (HT20)/ac (VHT-20) SISO 802.11 a/n (HT20, HT40)/ac (VHT-20, VHT-40, VHT-80) SISO GPS receiver at 1.575 MHz NFC
Power Back-Off Modes:	None

3.2 Identification of the Equipment Under Test (EUT)

EUT #	Serial Number	HW Version	SW Version	Comment
	CB5A1W5TQV	AP1.1	ETS SW	ETS SW

3.3 Identification of Accessory Equipment

AE #	Type	Manufacturer	Type	Serial Number
1	AC Power Adapter	SONY	PM-0745-BV	CB5A1

3.4 Environmental conditions during Test:

The following environmental conditions were maintained during the course of testing:
Ambient Temperature: 20-25°C
Relative humidity: 40-60%

3.5 Dates of Testing:

January 7th, 2014 – January 21th, 2014

3.6 Other Testing Notes

The device was configured with a manufacturer provided ETS test SW, capable of setting the unit in different supported modulation schemes, data rates and channels of operation.

The Device was set to TX (burst) with a duty Cycle of 77% per test SW.

The below listed modulations were tested for band edge compliance.
For radiated emissions the scope of testing Frequency <30MHz and >18GHz was only carried out for MidChannel.
For ACLine Emissions BT DH5 was tested.

Mode		Data rate (Mbps)	Modulation scheme
2.4 GHz	**BT DH5**	1.0	GFSK
	BT 2DH5	2.0	Pi/4
	BT 3DH5	3.0	8-DPSK

4 Subject of Investigation

The objective of the measurements applied by CETECOM Inc. was to establish compliance of the EUT as described under Ch. 3 of this Test Report, with the applicable criteria specified in

- FCC CFR47 Parts 15.247, 15.207, 15.209

This test report is to support a request for new equipment authorization under the
FCC ID: PY7PM-0745

5 Summary of Measurement Results

Test Specification	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§15.247(d)	Unwanted Emissions into Restricted Frequency Bands: Band Edge-Radiated	Nominal	BT/BT-EDR	■	☐	☐	☐	Complies
§15.209(a) §15.247(d)	Unwanted Emissions into Restricted Frequency Bands - Radiated	Nominal	BT/BT-EDR	■	☐	☐	☐	Complies
§15.207(a)	AC Line Conducted Emissions<30MHz	Nominal	BT/BT-EDR	■	☐	☐	☐	Complies
§15.109	RX Spurious emissions-Radiated	Nominal	RX	■	☐	☐	☐	Complies

Note: NA= Not Applicable; NP= Not Performed.

6 Measurements

6.1 Measurement Method:

In addition to the related rules in FCC 15.247 and RSS-210 the measurement guidelines in FCC publication KDB558074 D01Meas Guidance v03: Measurement Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) operating under 15.247, April 2013 has been applied.

6.1.1 ANSI C63.4 (2009) 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 beam width, the measurement antenna shall be aligned with the EUT.

6.1.2 ANSI C63.4 (2009) 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 re-maximized 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.

Radiated Measurement Uncertainty: ±3dB

6.1.3 Sample Calculations for Radiated Measurements

6.1.3.1 Field Strength Measurements:

Measurements from the Spectrum Analyzer/ Receiver are used to calculate the Field Strength, taking into account the following parameters:

1. Measured reading in dBµV
2. Cable Loss between the receiving antenna and SA in dB and
3. Antenna Factor in dB/m

FS (dBµV/m) = Measured Value on SA (dBµV) + Cable Loss (dB) + Antenna Factor (dB/m)
Eg:

Frequency (MHz)	Measured SA (dBµV)	Cable Loss (dB)	Antenna Factor Correction (dB)	Field Strength Result (dBµV/m)
1000	80.5	3.5	14	98.0

All radiated measurement plots in this report are taken from a test SW that calculates the Field Strength based on the above equation.

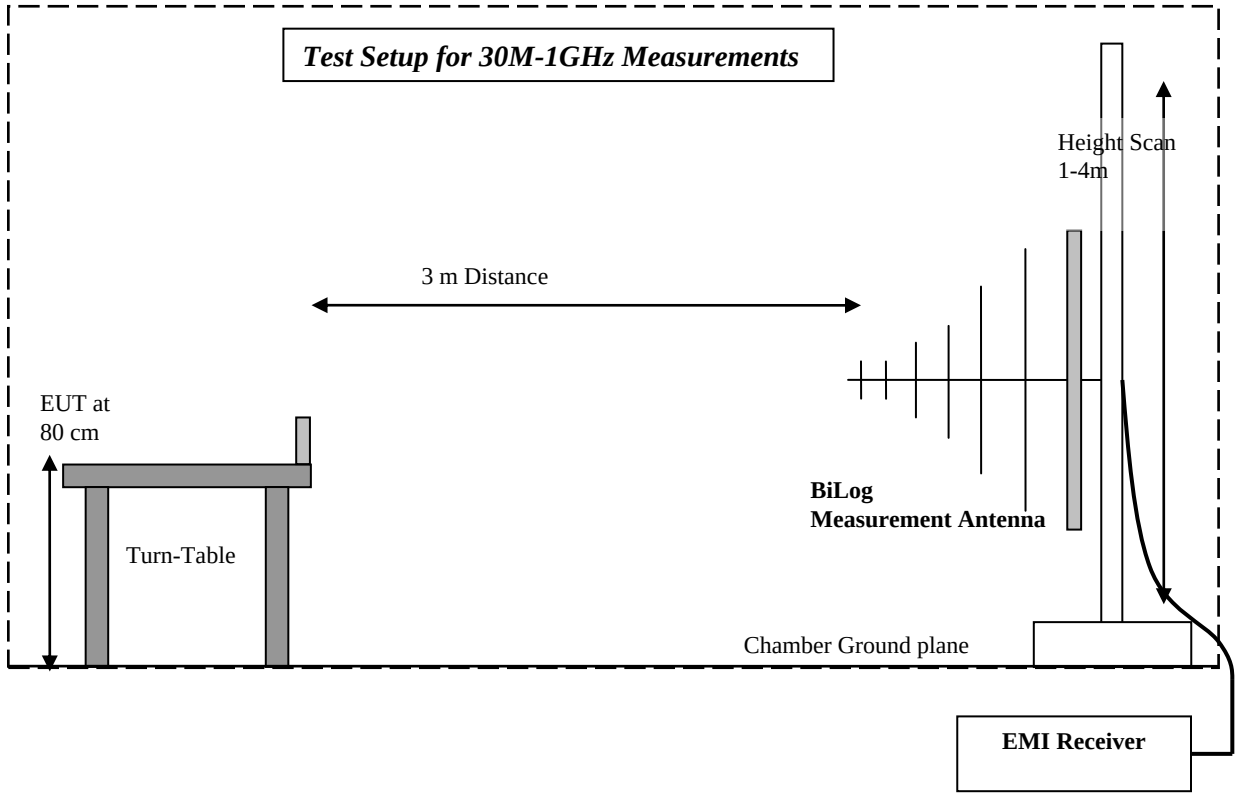
6.1.3.2 **Power Measurements using Substitution Procedure:**

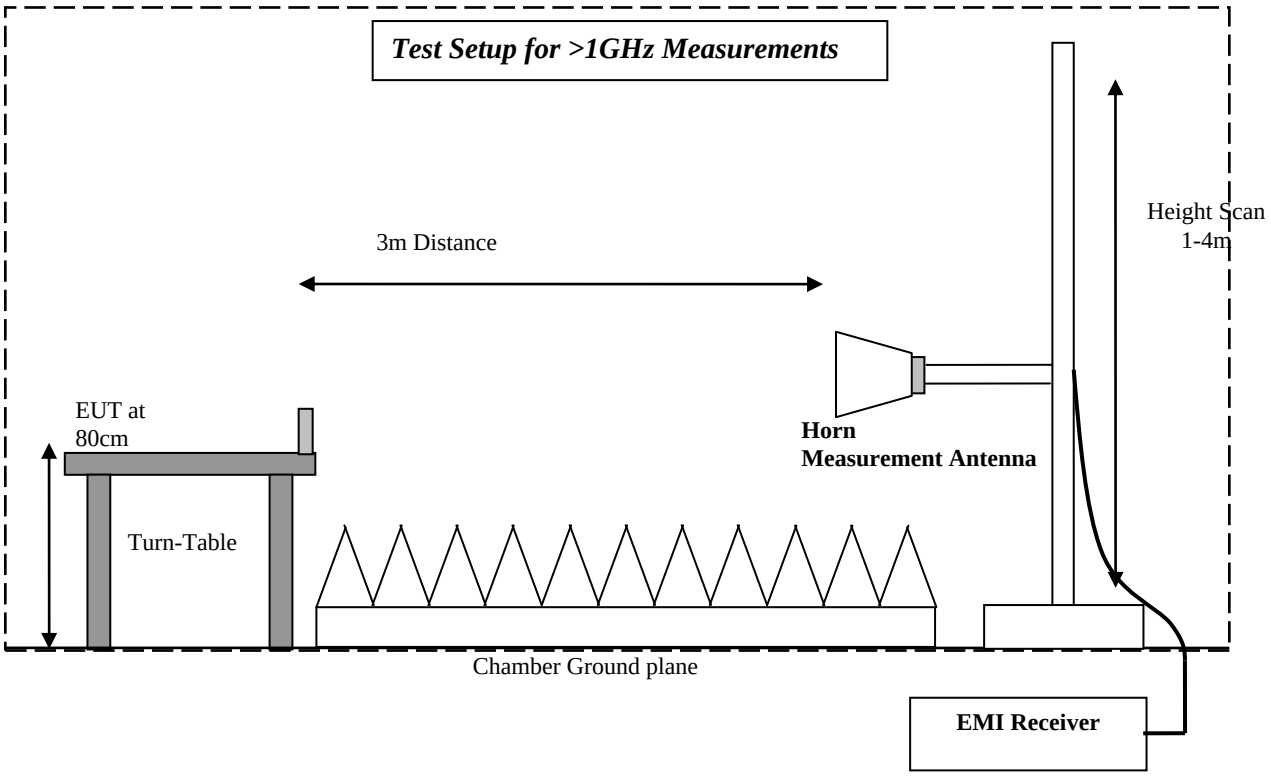
The measurement on the Spectrum Analyzer is used as a basis for the Substitution procedure.
The EUT is replaced with a Signal Generator and an antenna. The setting on the Signal Generator is varied until the Spectrum Analyzer displays the original reading. EIRP is calculated as-

EIRP (dBm)= Signal Generator setting (dBm)- Cable Loss (dB)+ Antenna Gain (dBi)
Eg:

Frequency (MHz)	Measured SA (dBµV)	Signal Generator setting (dBm)	Antenna Gain (dBi)	Dipole Gain (dBd)	Cable Loss (dB)	EIRP (dBm)
1000	95.5	24.5	6.5	0	3.5	27.5

6.1.4 Test Setup Diagrams





6.2 Antenna gain

6.2.1 Limits:

FCC	-/-
Antenna Gain	
6 dBi	

6.2.2 Results:

T_{nom}	V_{nom}	lowest channel 2402 MHz	middle channel 2441 MHz	highest channel 2480 MHz
Gain [dBi] Declared by the manufacturer		-2.7	-1.7	-0.6

6.2.3 Result:

Passed

6.3 Unwanted Emissions into Restricted Frequency Bands: Band Edge - Radiated

6.3.1 Limits:

§15.247/15.205

15.247 (d) 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).

15.205 (a) 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			

15.209 (a) Emission Limits:

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength (microvolts/meter)	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

6.3.2 Test Conditions:

Tnom: 20°C; Vnom: 3.8 VDC

6.3.3 Test Procedure:

Marker delta method according to ANSI C63.10

Peak measurements are made using a peak detector and RBW=1MHz.
*PEAK LIMIT= 74dBµV/m

Average measurements performed using a peak detector and according to video averaging procedure with RBW=1MHz and VBW=10Hz.
*AVG. LIMIT= 54dBµV/m

Measurement Uncertainty: ±3.0dB

6.3.4 Measurement Result – Unwanted Emissions into Restricted Frequency Bands:

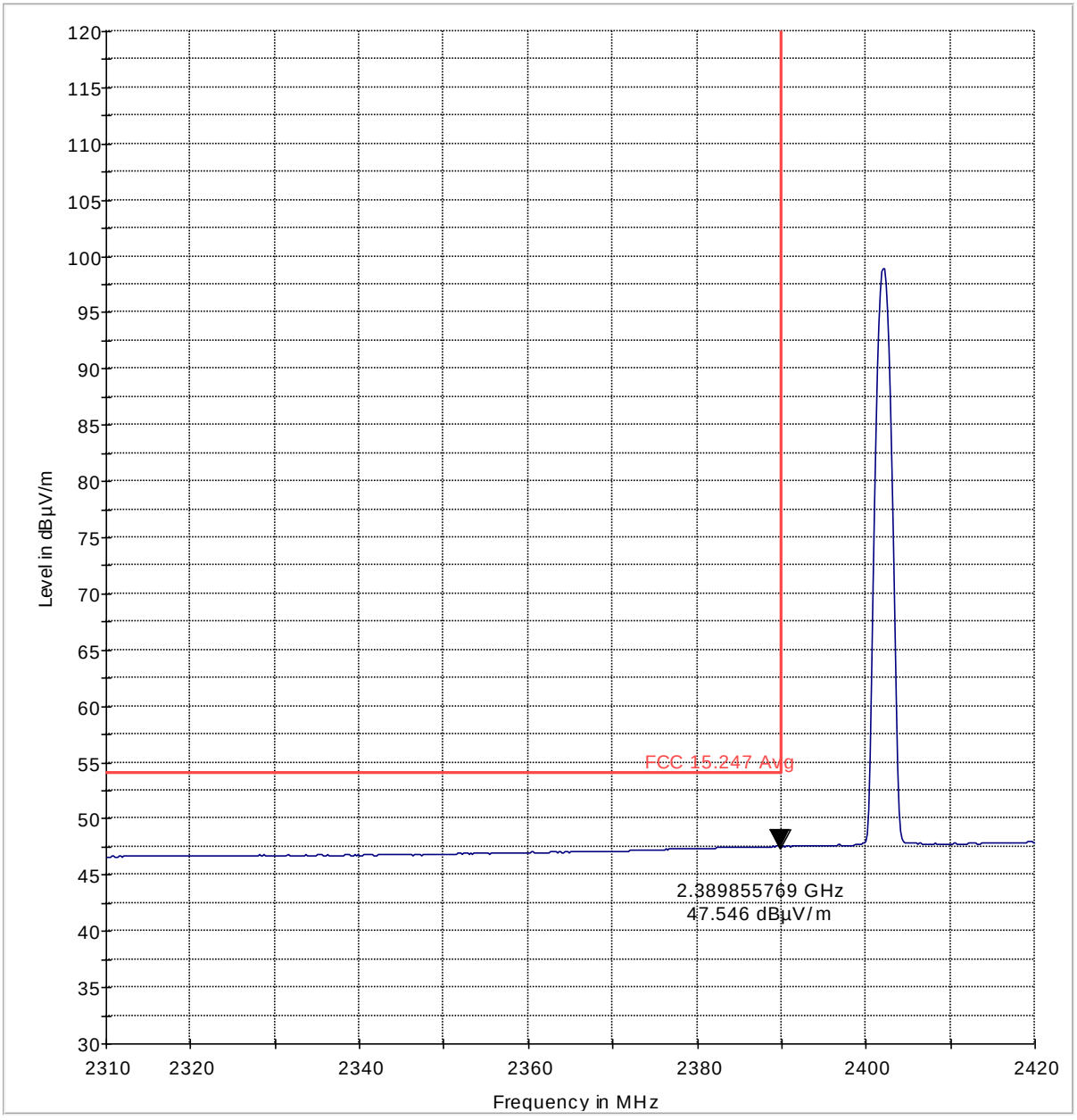
Band Edge - Radiated

Pass.

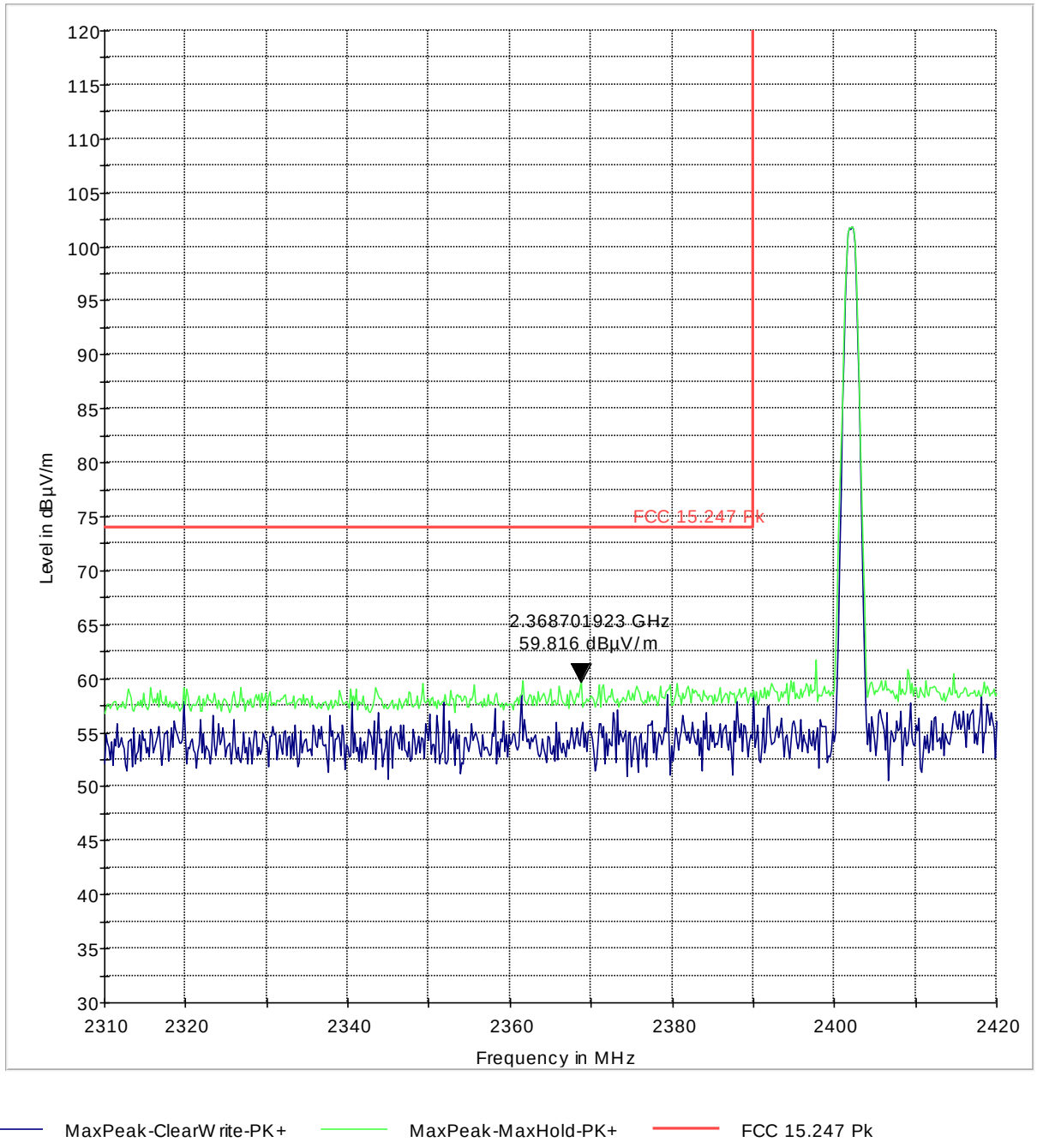
6.3.5 Bandedge Test Data/plots:

6.3.5.1 Bandedge Bluetooth DH5

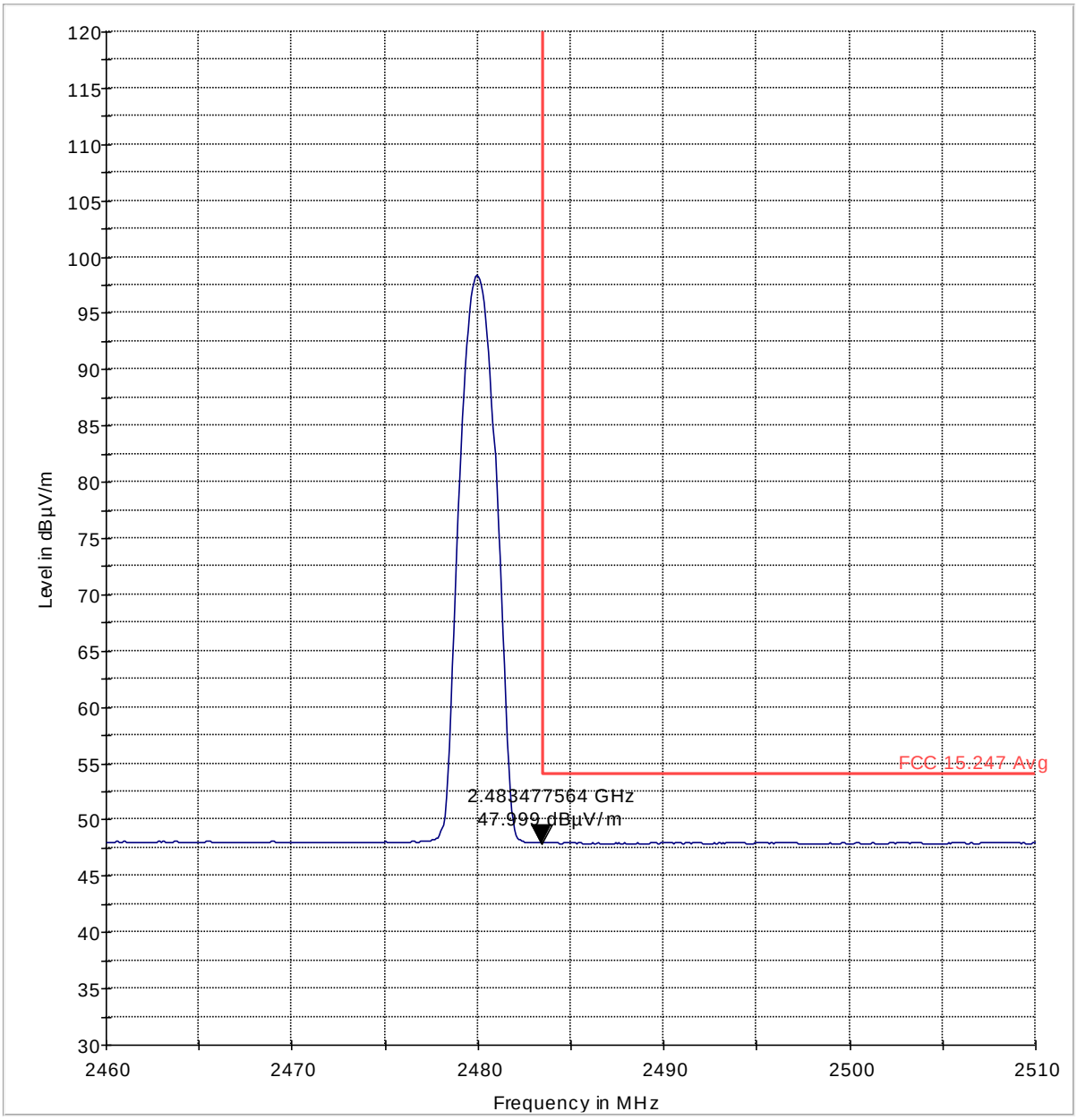
DH5 Low Bandedge Average



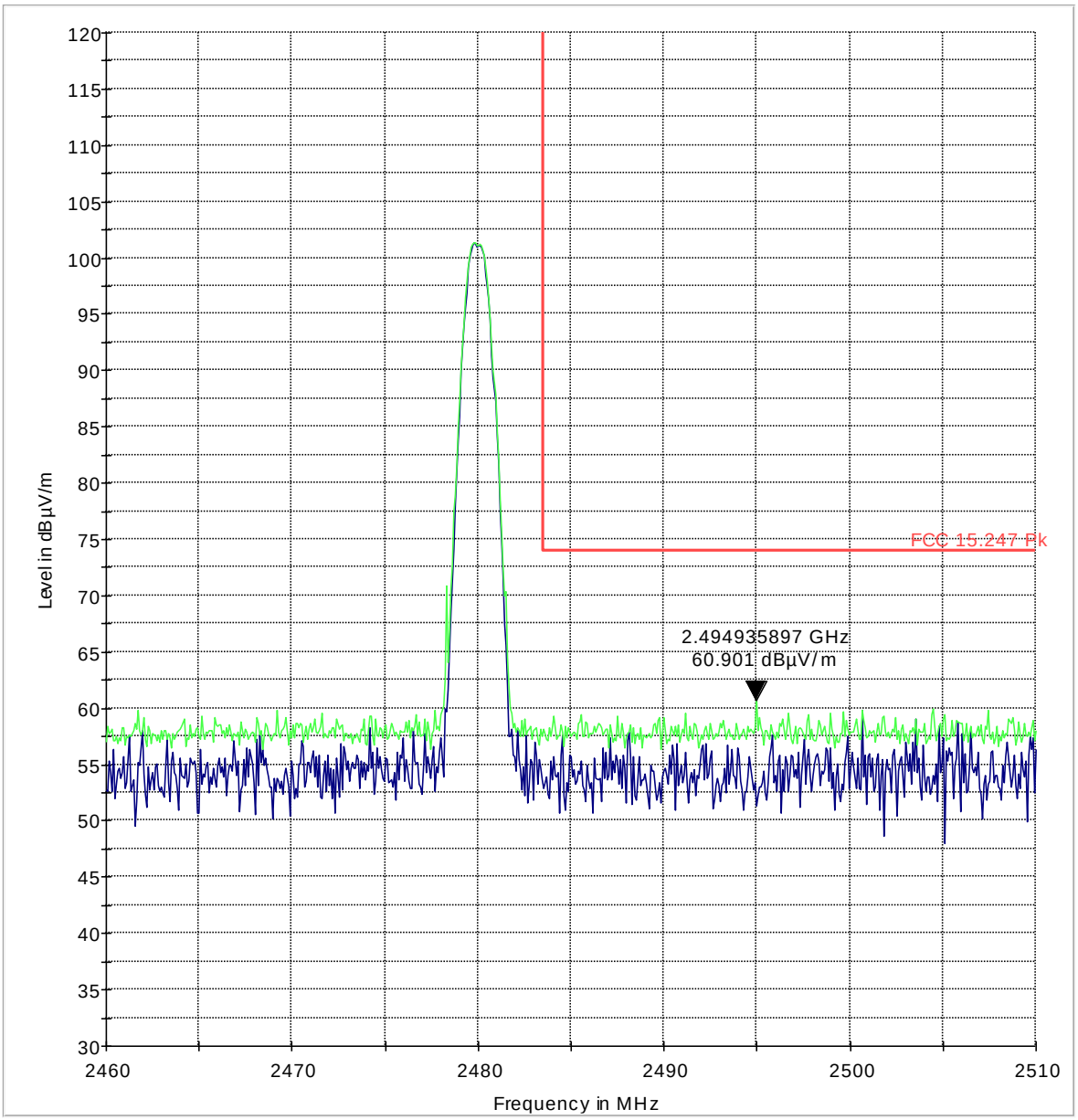
DH5 Low Bandedge Peak



DH5 High Bandedge Average

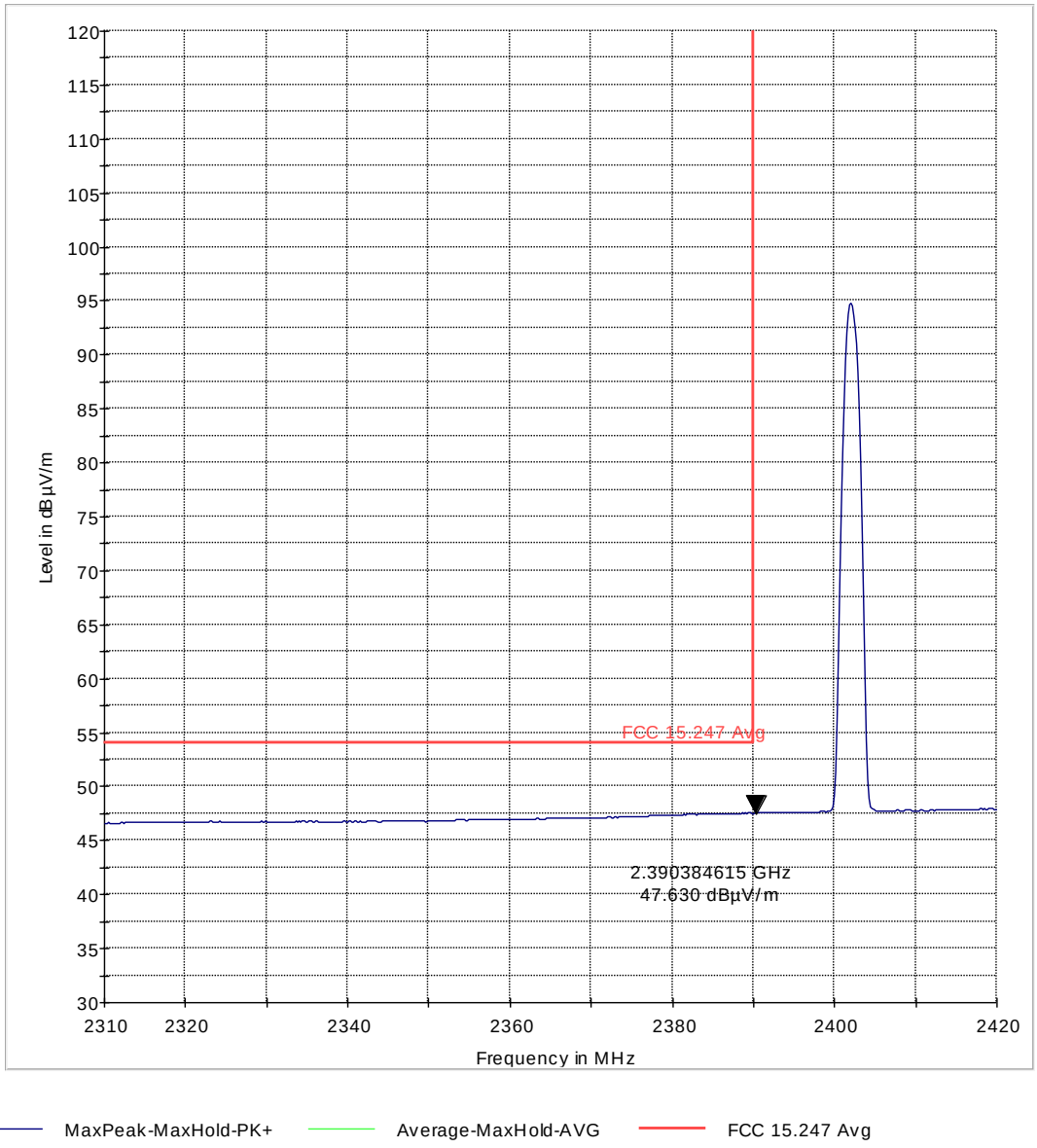


DH5 High Bandedge Peak

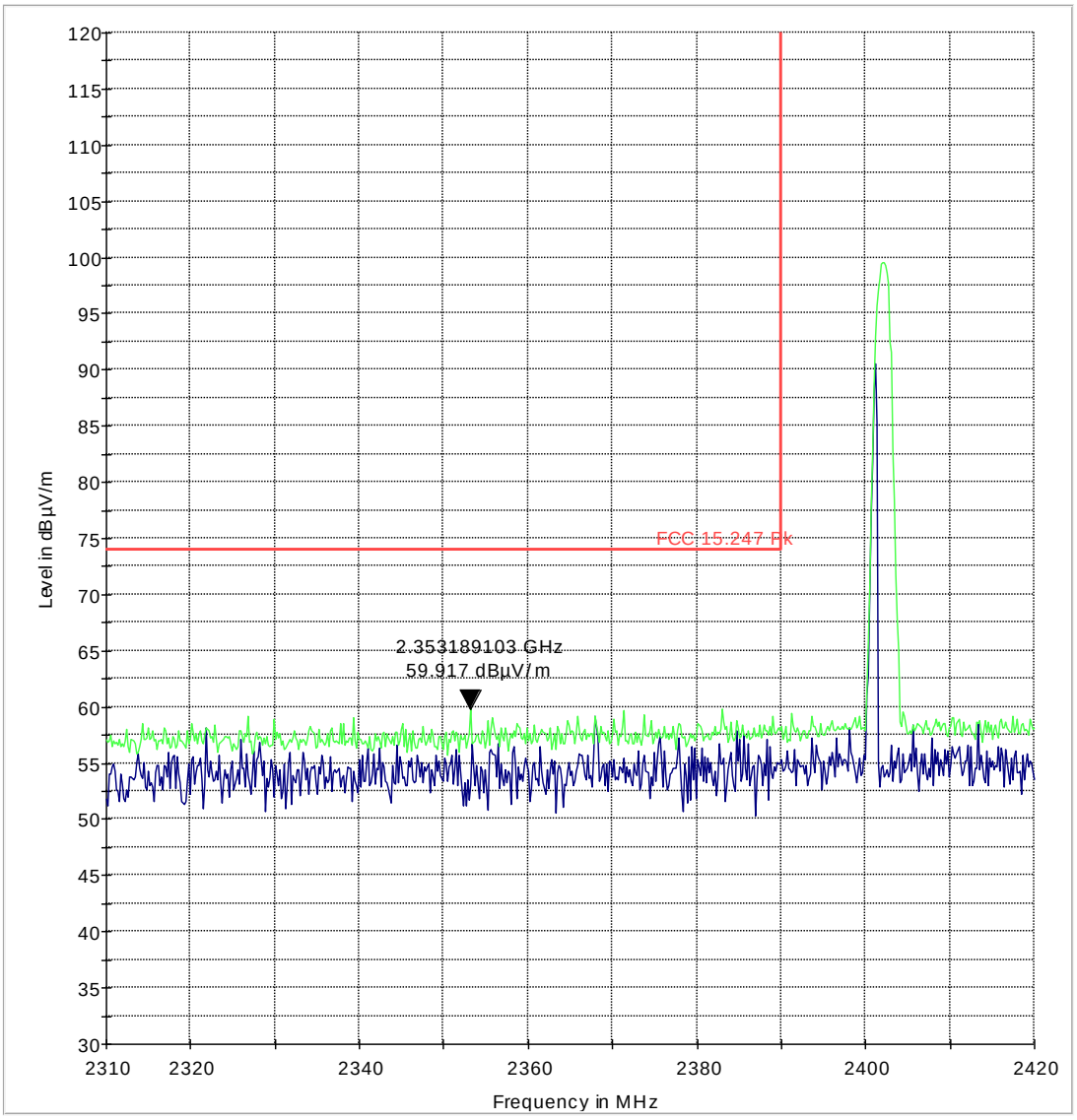


6.3.5.2 Bandedge Bluetooth EDR 2DH5

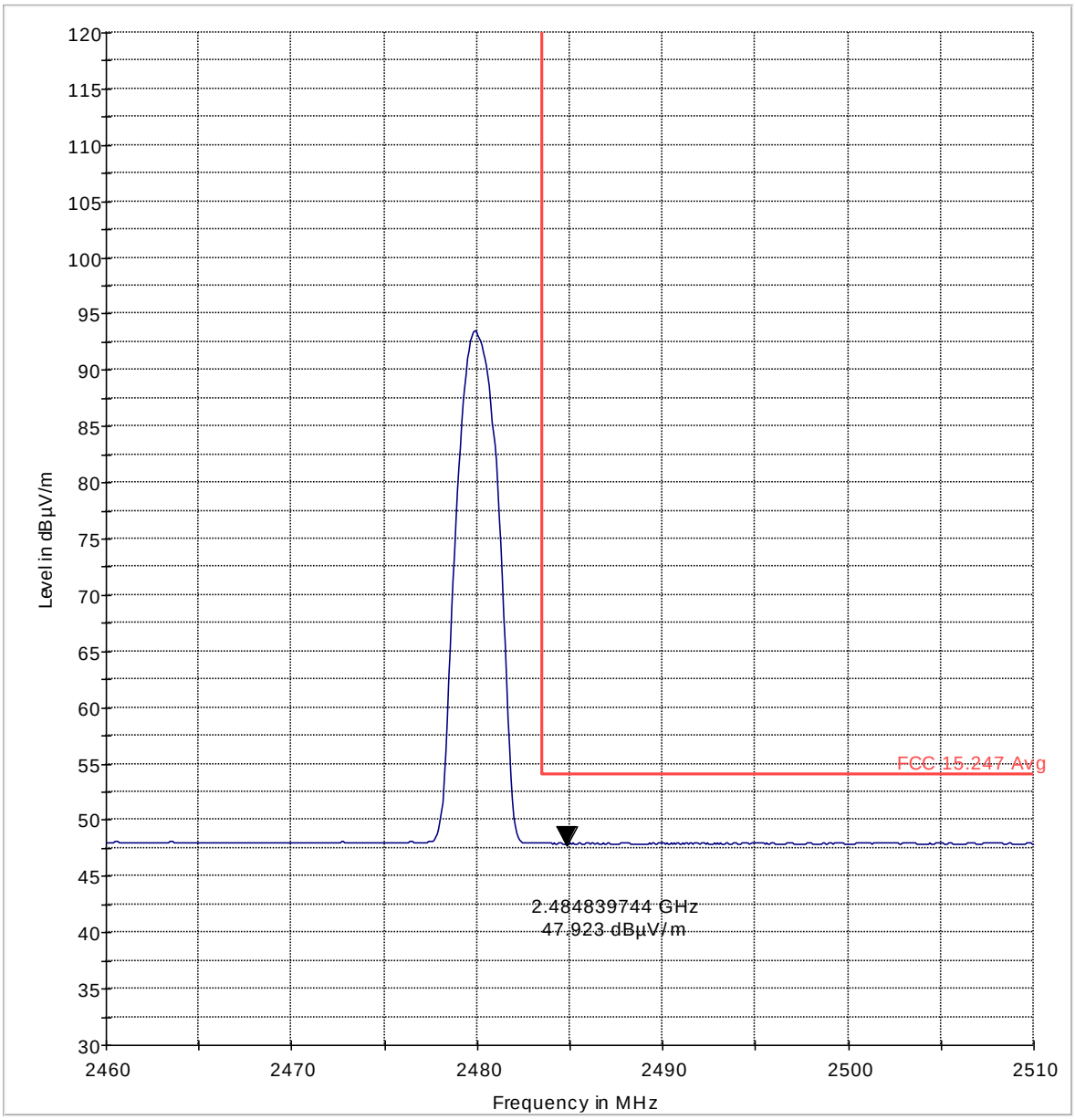
2DH5 Low Bandedge Average



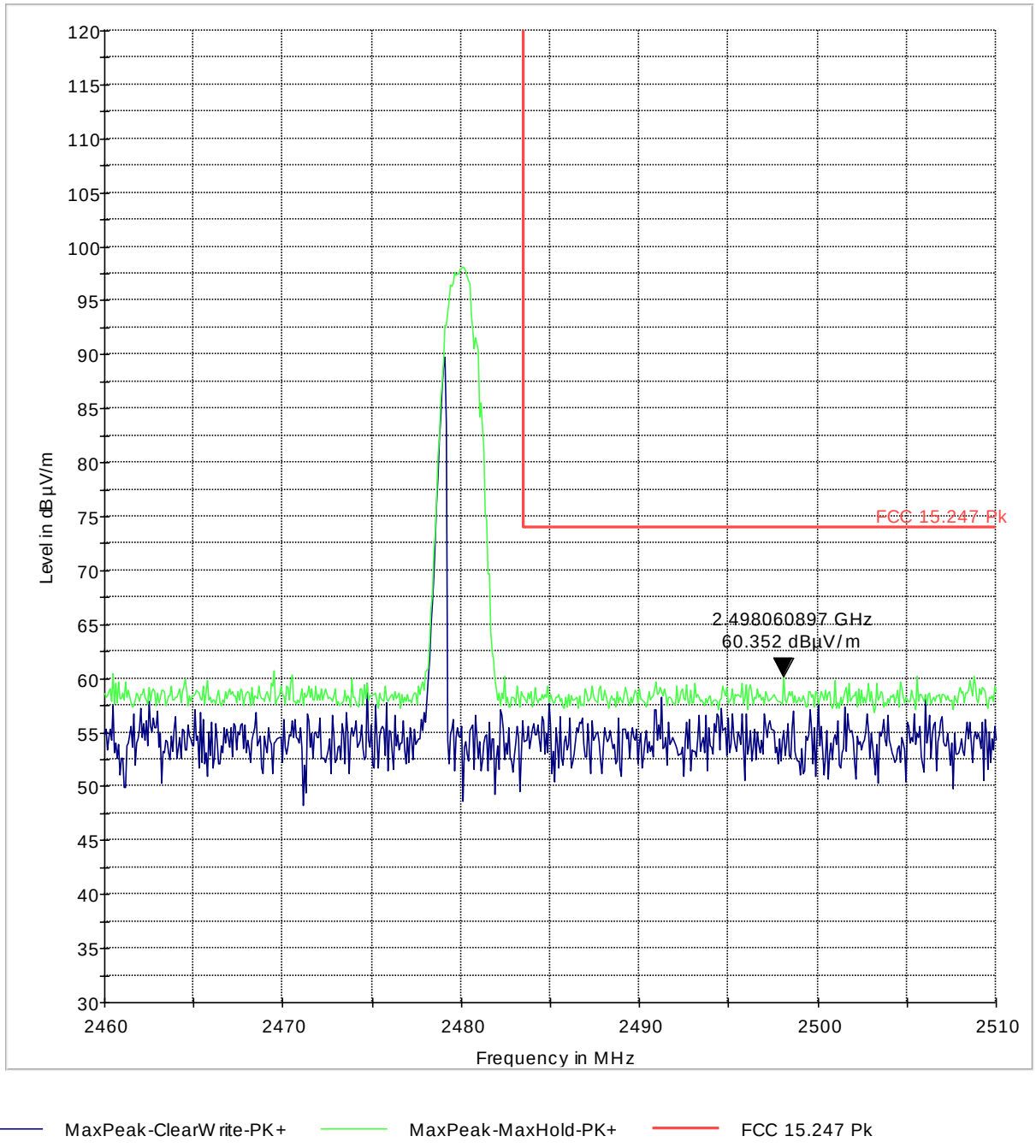
2DH5 Low Bandedge Peak



2DH5 High Bandedge Average

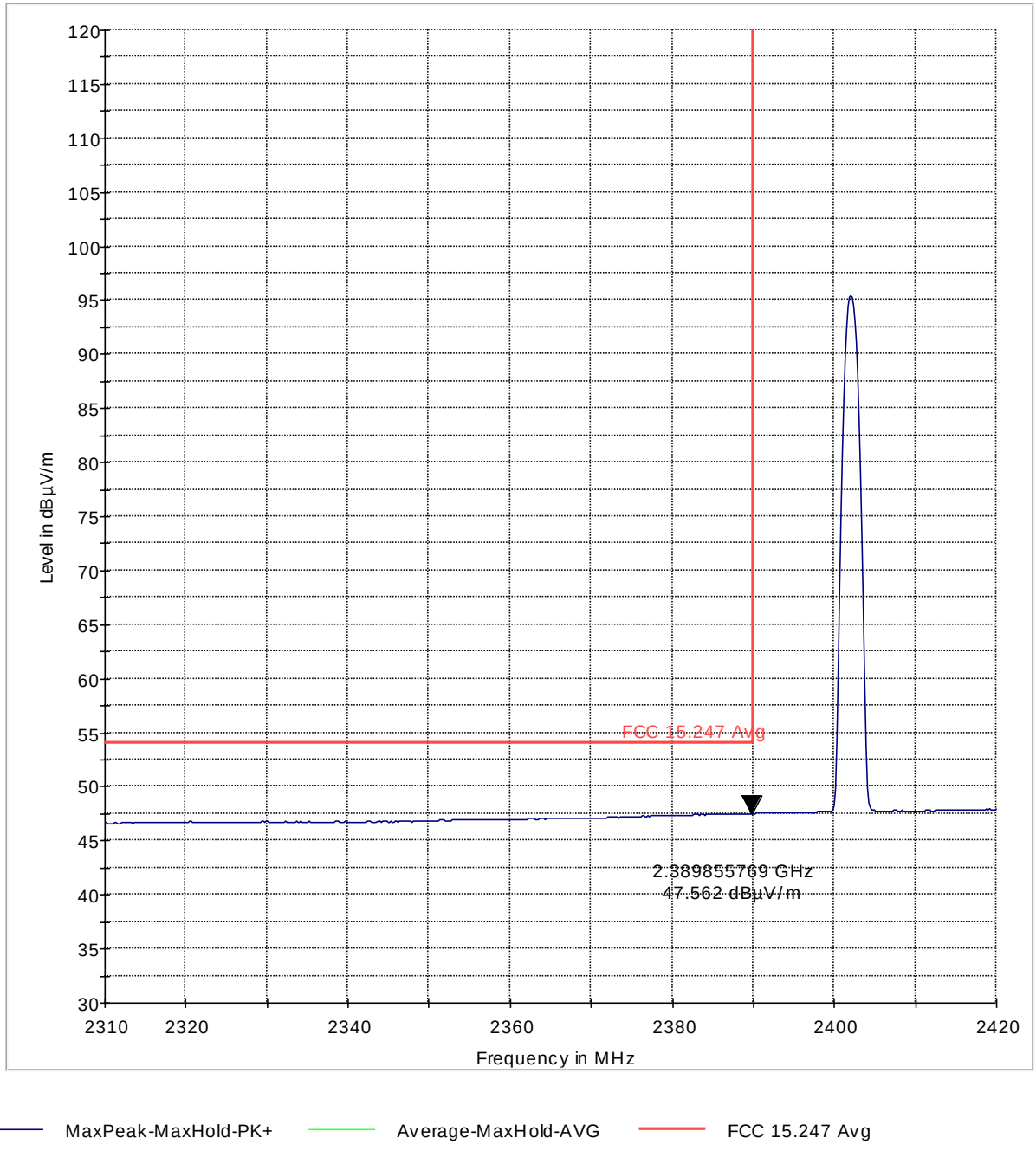


2DH5 High Bandedge Peak

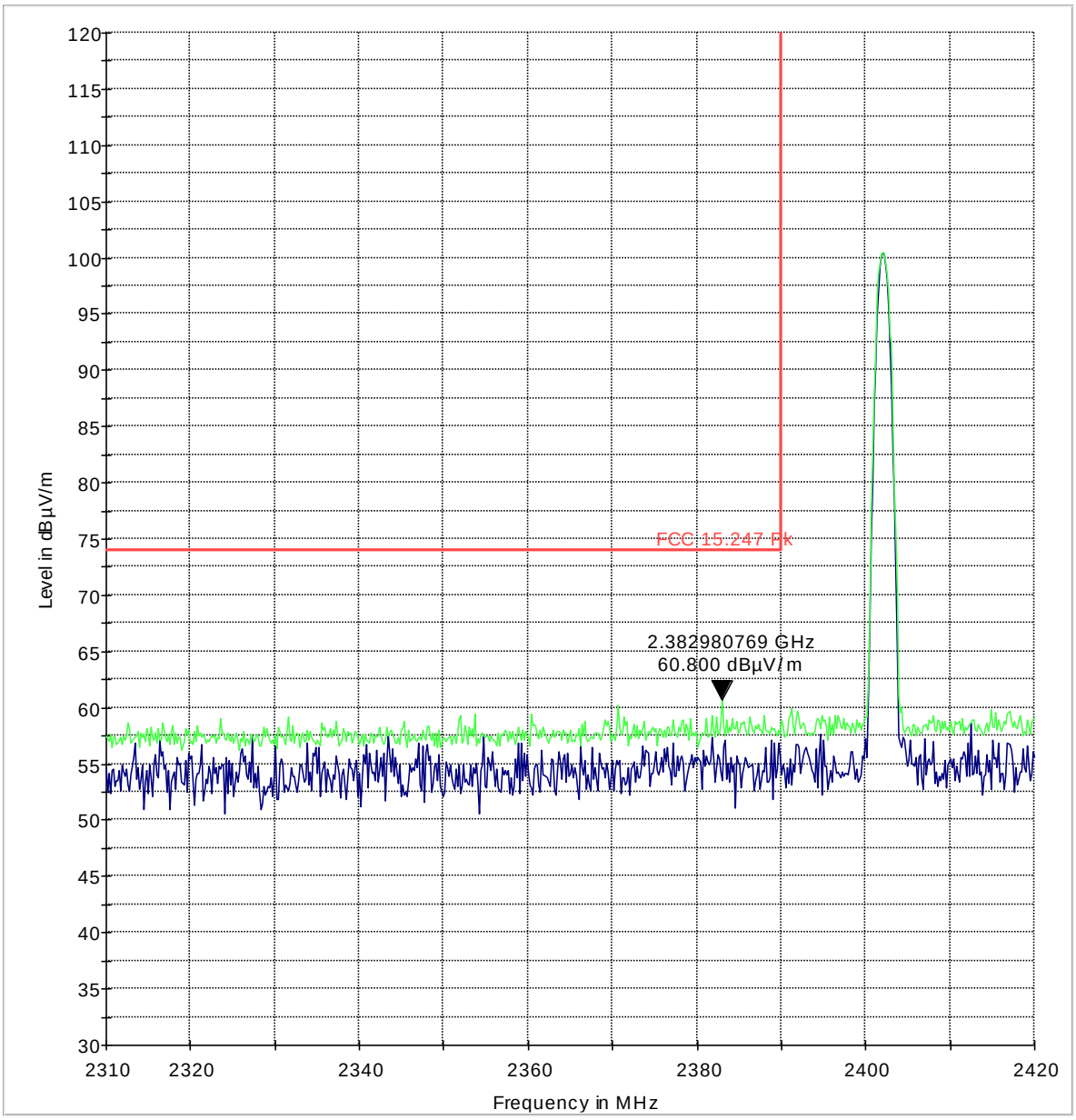


6.3.5.3 Bandedge Bluetooth EDR 3DH5

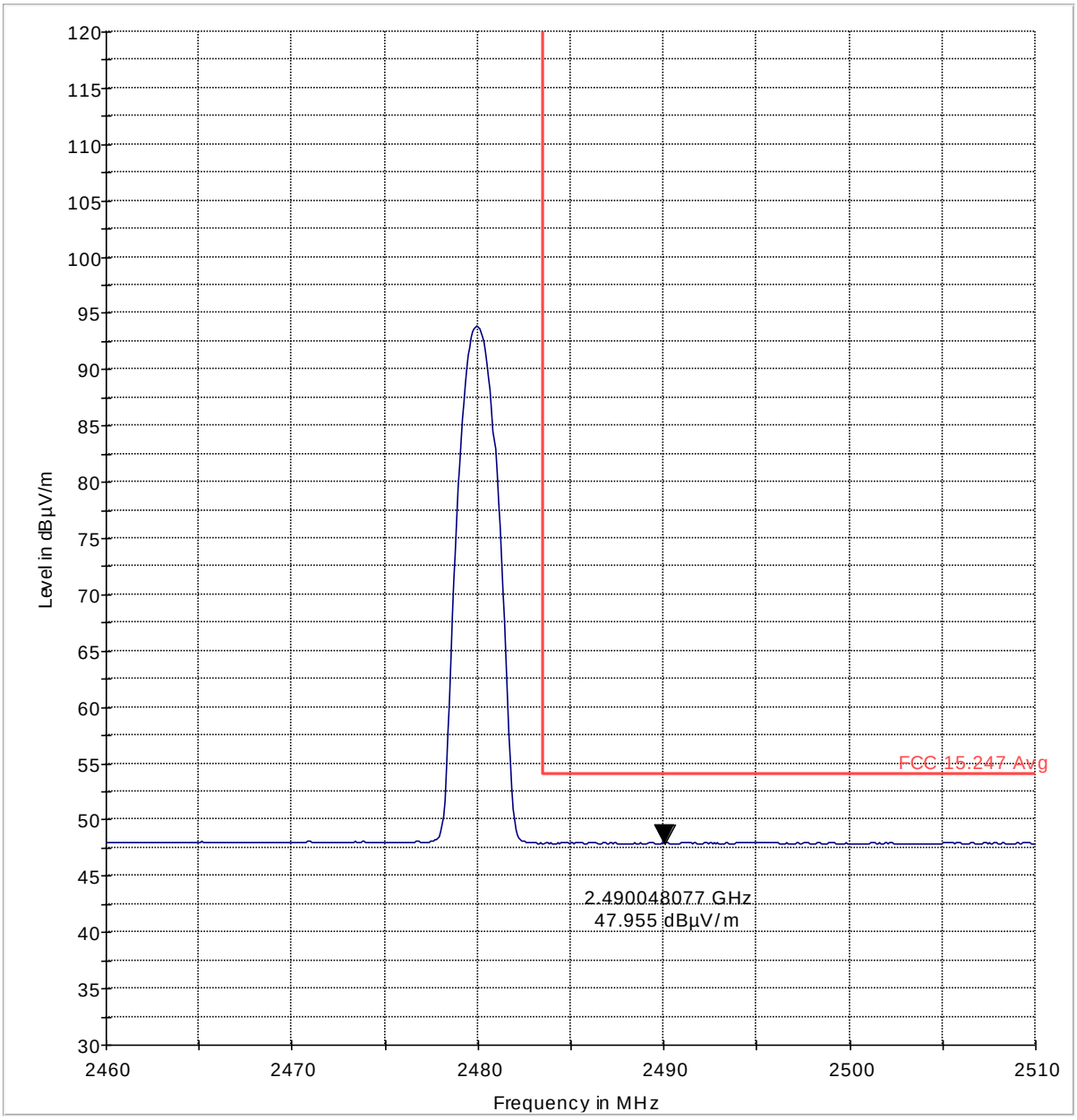
3DH5 Low Bandedge Average



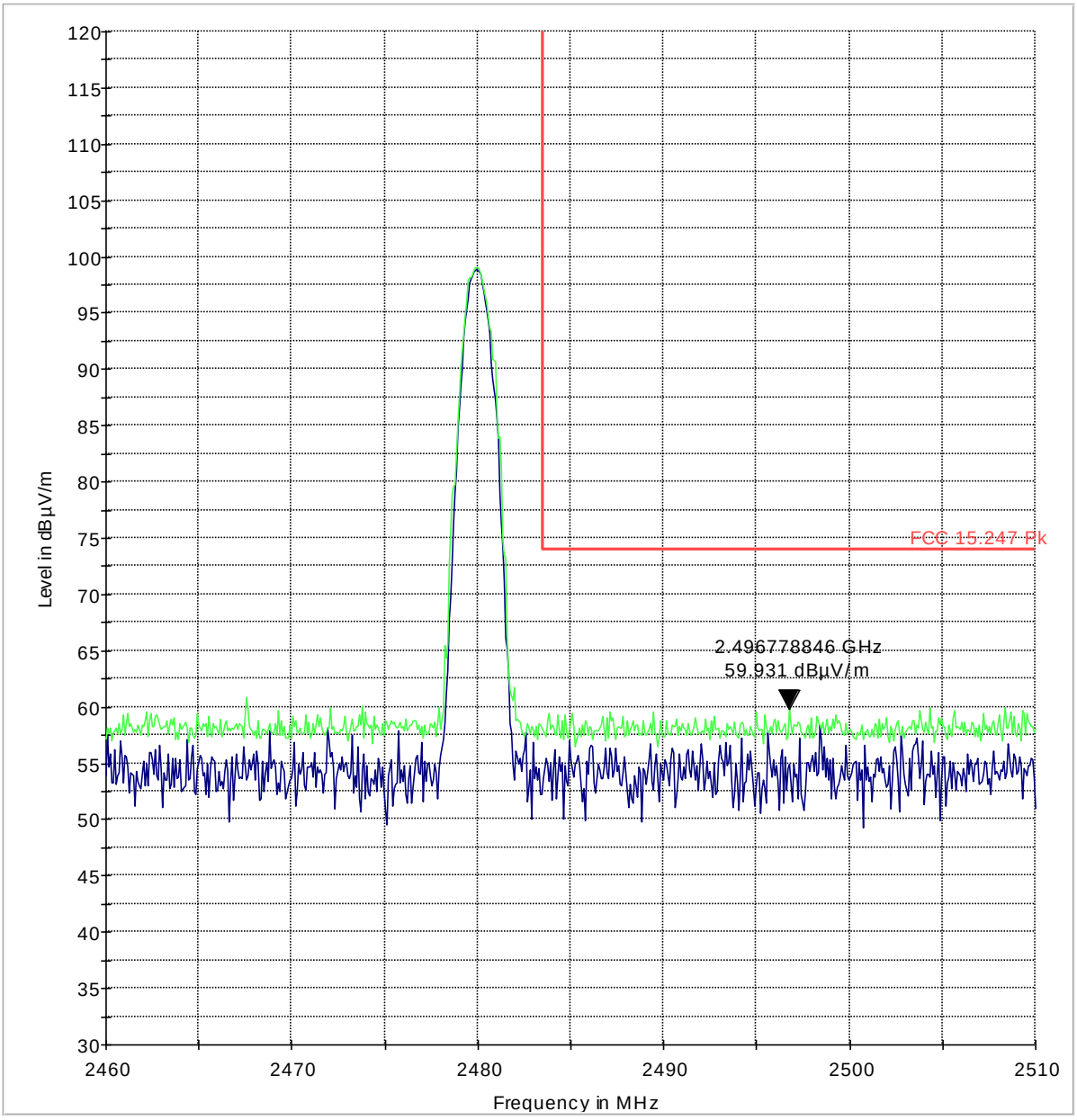
3DH5 Low Bandedge Peak



3DH5 High Bandedge Average



3DH5 High Bandedge Peak



6.4 Unwanted Emissions into Restricted Frequency Bands - Radiated

6.4.1 Limits:
§15.209/15.205

15.205 (a) 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			

15.209 (a) Emission Limits:

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength (microvolts/meter)	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

6.4.2 Test Conditions:
Tnom: 20°C; Vnom: 3.8 VDC

6.4.3 Test Result:
All inadvertent emissions are below the applicable limits.

6.4.4 Testing Notes
The following plots show the worst case per frequency range out of all tested modes of operation.

For the measurement range up to 30 MHz in the following plots the field strength results from 3m distance measurement are extrapolated to 300m and 30m distance respectively, by 40dB/decade, according to part 15.31(f)(2), per antenna factor scaling.
The red limit line shows the 300 m limit up to 490 kHz, the 30m limit up to 30 MHz and 3m limit above 30MHz.

Frequencies below 1GHz and above 18GHz are checked for MidChannel only. In case these results are within 3dB of the limit line these frequencies are also measured for LowChannel and HighChannel.

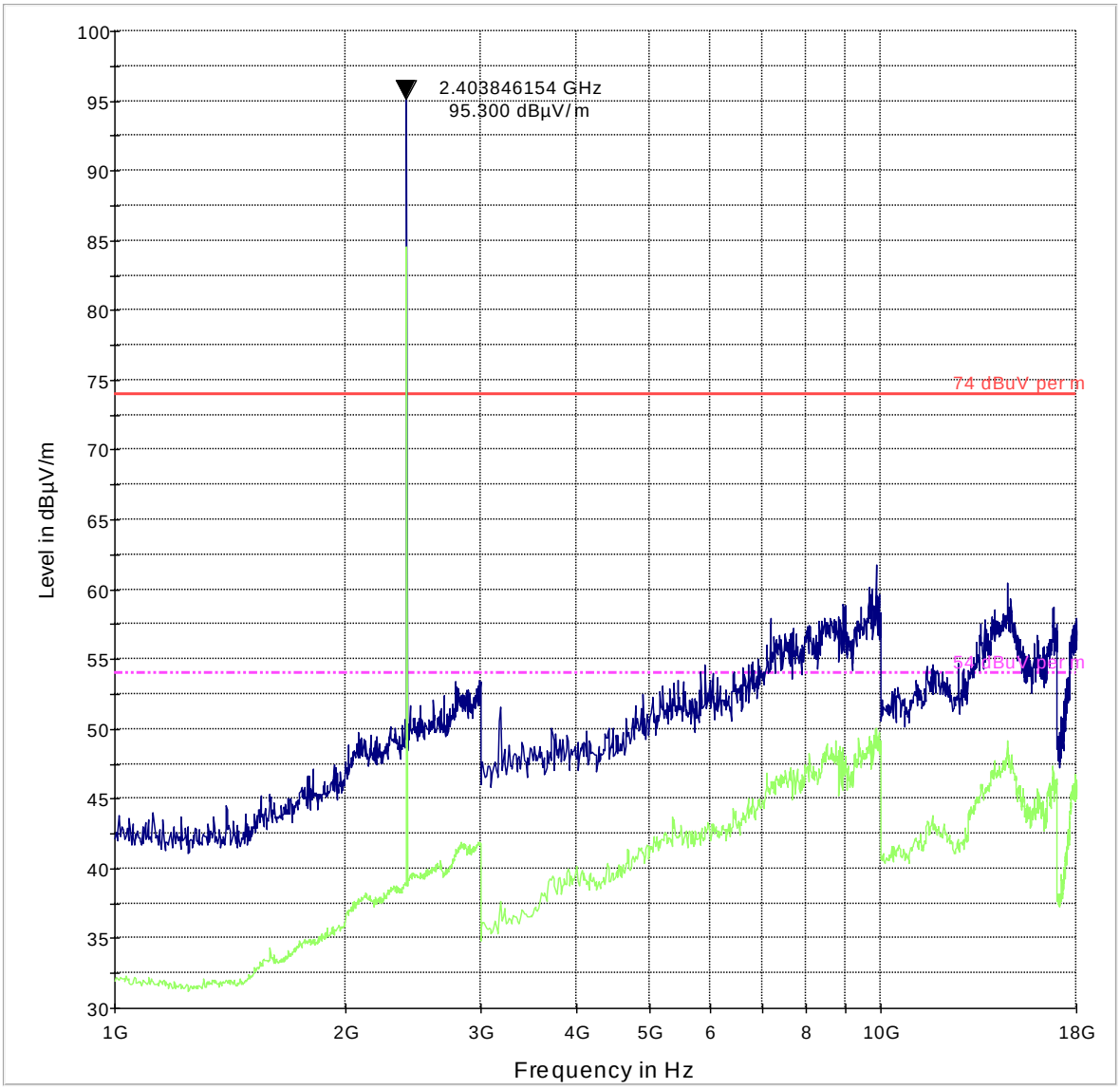
Unless mentioned otherwise, the emissions outside the limit lines in the plots are from the transmit signal.

Measurement Uncertainty: ±3.0dB

6.4.5 Measurement Verdict – Unwanted Emissions into Restricted Frequency Bands - Radiated
Pass.

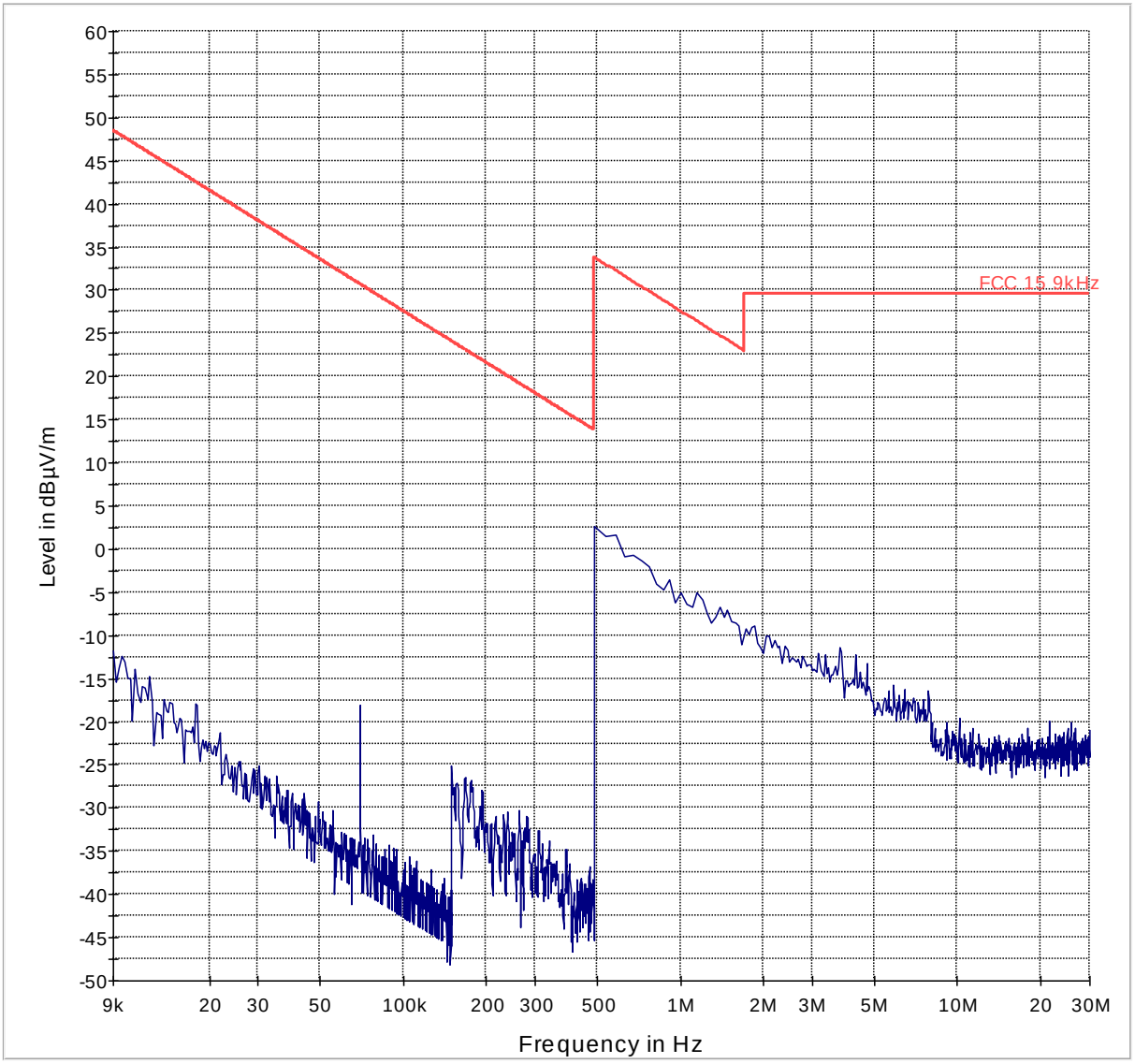
6.4.6 Test data/plots

Bluetooth DH5 LowChannel
1GHz – 18GHz

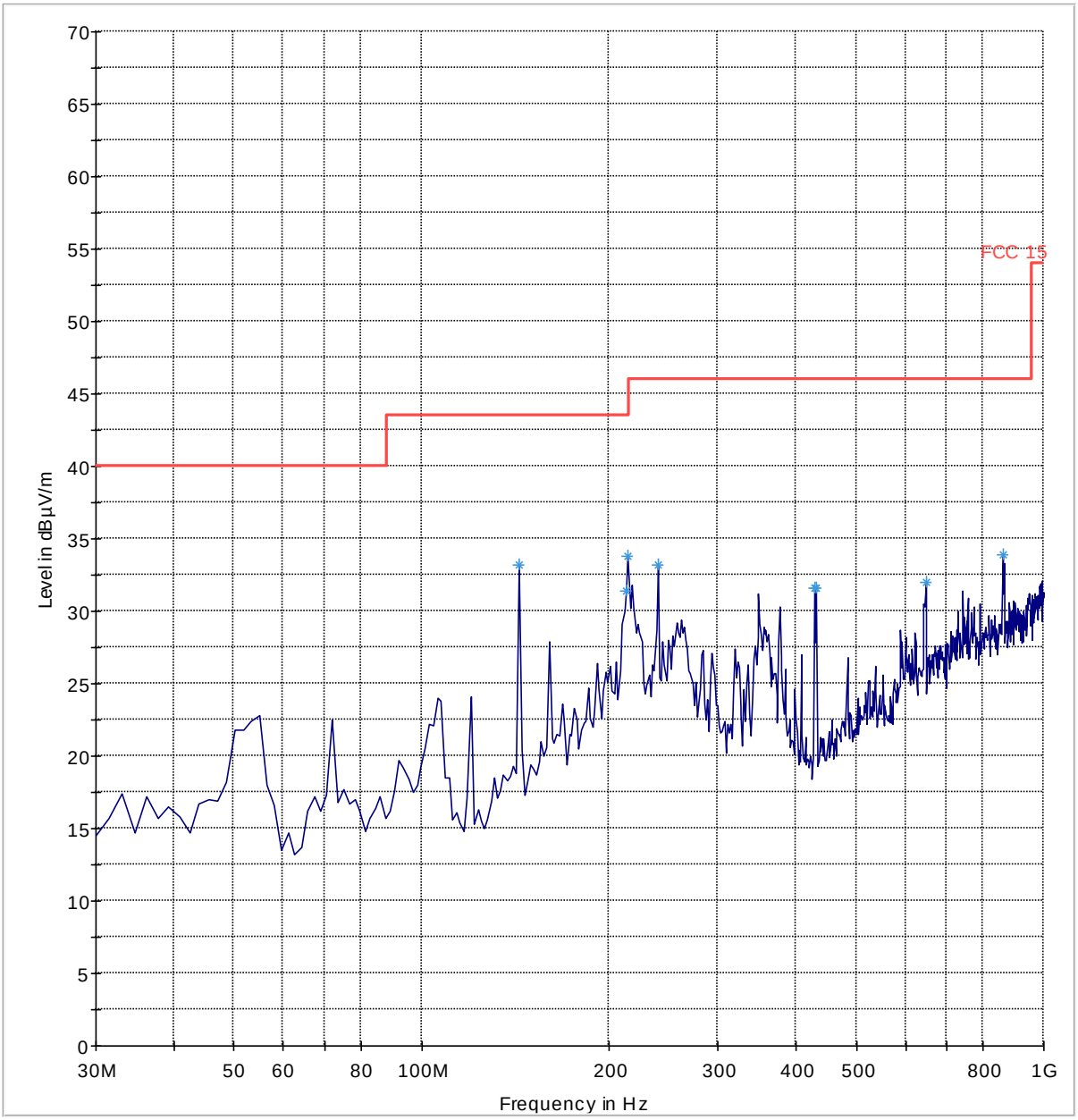


6.4.6.1 Radiated Emissions Bluetooth DH5 MidChannel

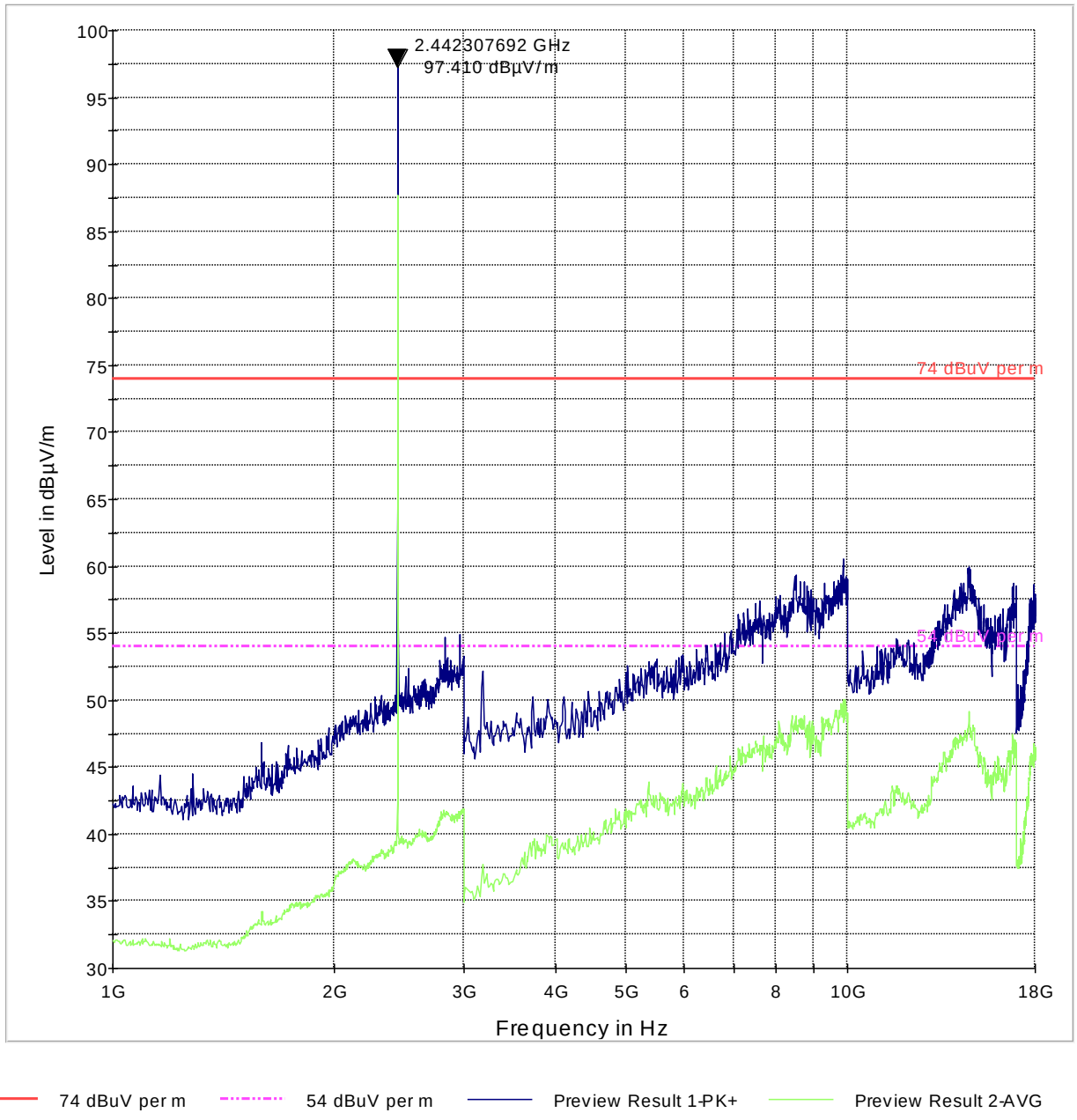
Bluetooth DH5 MidChannel
<30MHz



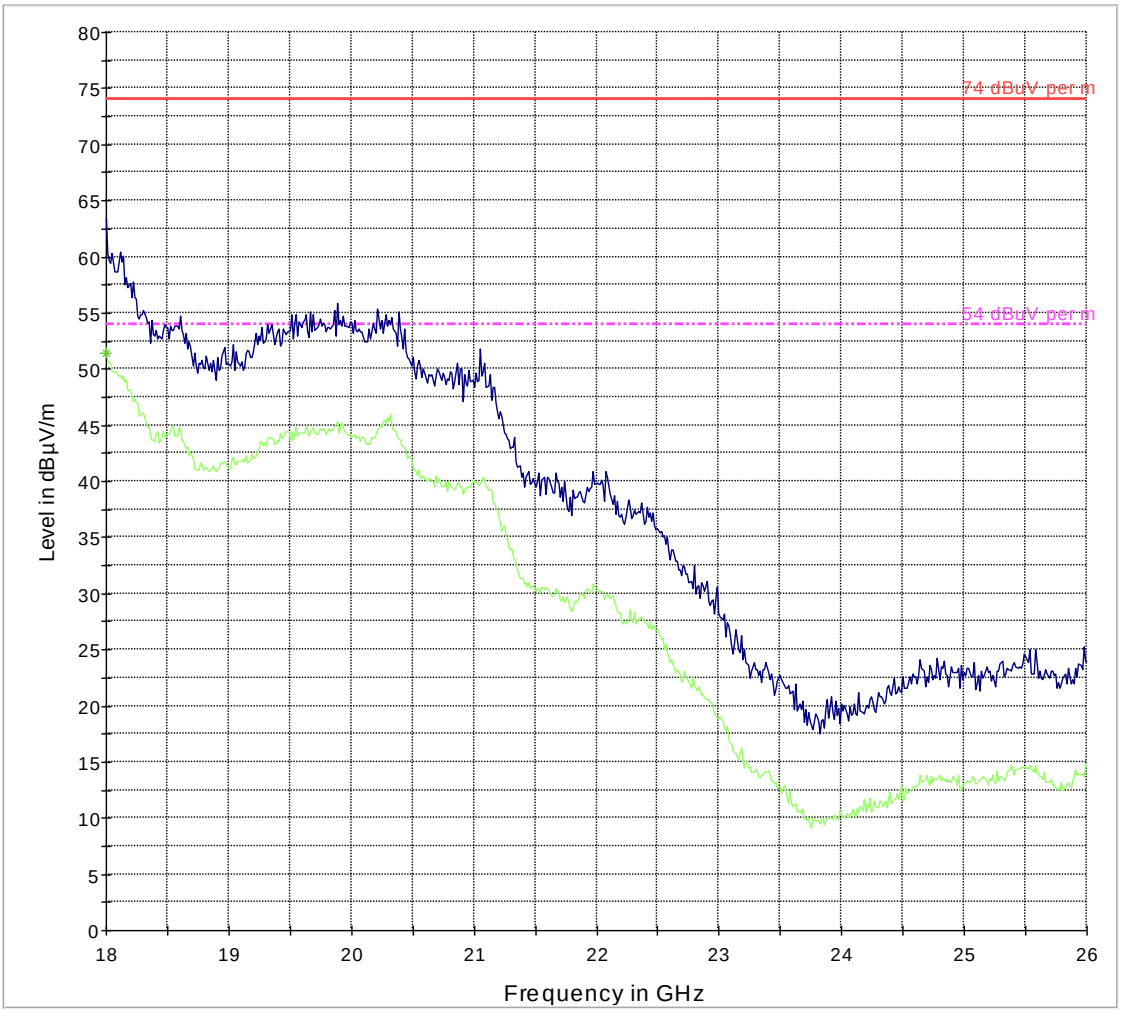
Bluetooth DH5 MidChannel
30MHz -1GHz



Bluetooth DH5 MidChannel
1GHz – 18GHz

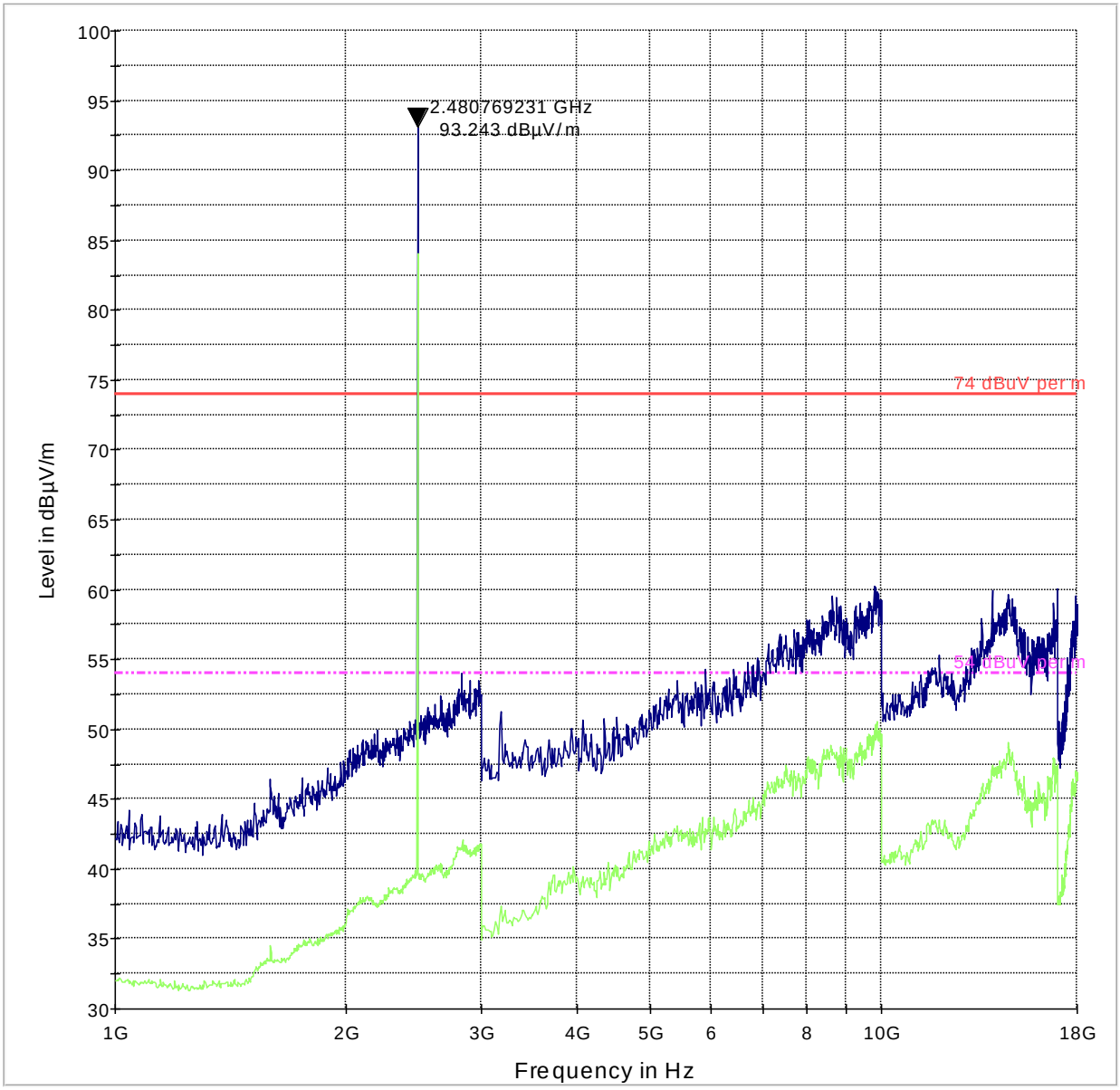


Bluetooth DH5 MidChannel
18GHz – 26GHz



6.4.6.2 Radiated Emissions Bluetooth DH5 HighChannel

Bluetooth DH5 HighChannel
1GHz – 18GHz



6.5 AC Power Line Conducted Emissions

6.5.1 References:

FCC: CFR Part 15.207
The purpose of this test is to measure unwanted radio frequency currents induced in any AC conductor external to the equipment which could conduct interference to other equipment via the AC electrical network.

6.5.2 Limits:

§15.207 Conducted limits- Intentional Radiators:

(a) Except as shown in paragraphs (b) and (c) of this section of the CFR, 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 (1), 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.

Table 1:

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: CISPR Bandwidth- 9 KHz.

6.5.3 Test Conditions:

Modulation: 802.11g mode.
Measurement Uncertainty: ±3.0dB

6.5.4 Results

All emissions are below applicable limits.

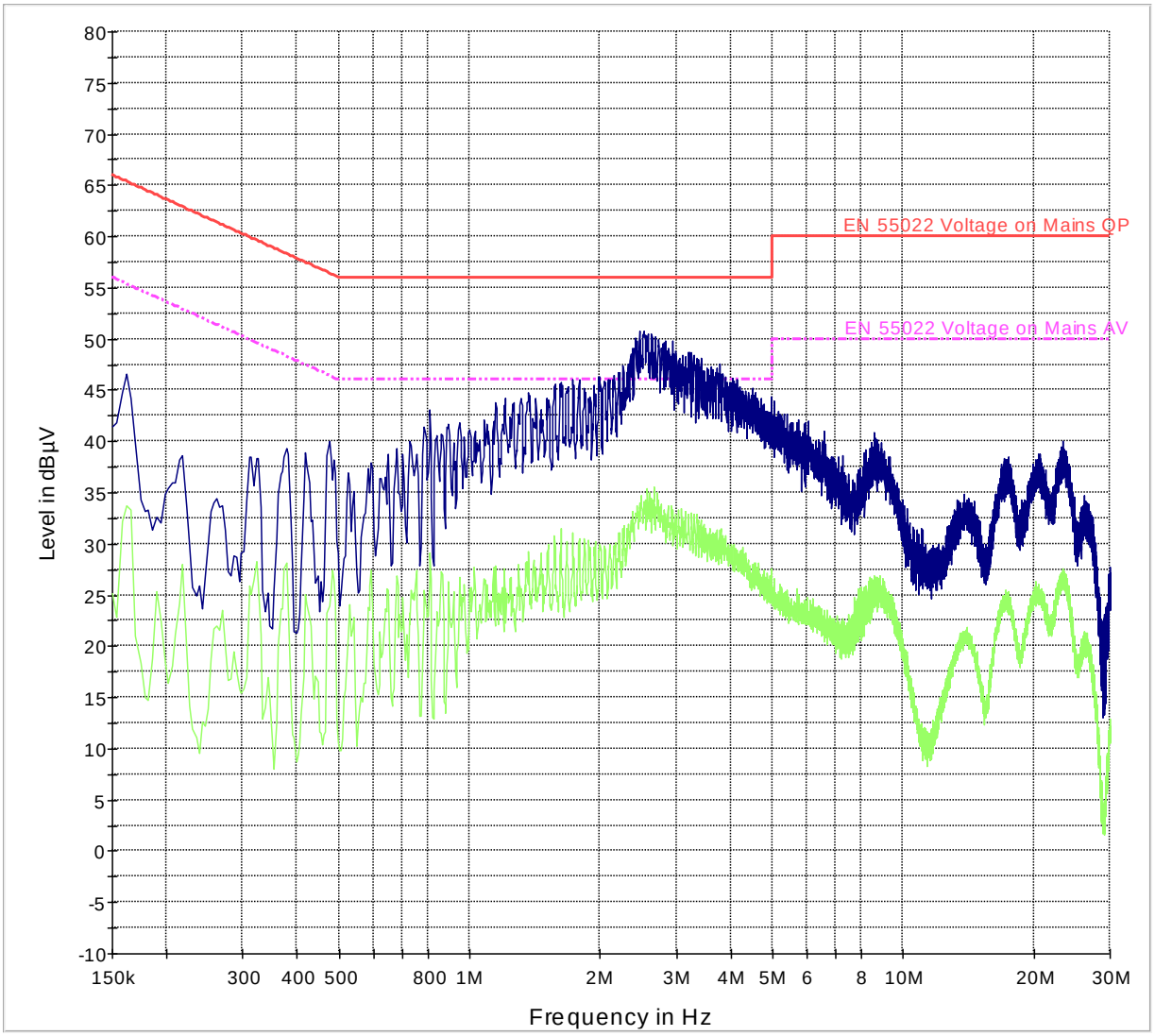
Plots shown here represent the combined worse case emissions for power lines, phases and neutral line.

6.5.5 Measurement Verdict – AC Power Line Conducted Emissions

Pass.

6.5.6 Test data/plots:

6.5.6.1 **AC Line Emissions** Bluetooth DH5



EN 55022 Voltage on Mains QP
Preview Result 1-PK+
EN 55022 Voltage on Mains AV
Preview Result 2-AVG

6.6 Unwanted RX Emissions into restricted and non-restricted bands

6.6.1 Limits: §15.109

FCC		IC
RX Spurious Emissions Radiated		
Frequency (MHz)	Field Strength (dBµV/m)	Measurement distance
30 - 88	30.0	10
88 – 216	33.5	10
216 – 960	36.0	10
Above 960	54.0	3

6.6.2 Test Conditions

- Tnom: 20°C;
- Vnom: 3.7V DC
- Measurement distance: 3m
- The unit was switched on into normal operation. No networks were available in the chamber to connect to. The resulting emissions are thus a summary of the RX spurious of all the radios of the EUT.

6.6.3 Measurement parameter

Measurement parameter	
Detector:	Peak / Quasi Peak / RMS
Sweep time:	Auto
Resolution bandwidth:	F > 1 GHz: 1 MHz F < 1 GHz: 100 kHz
Video bandwidth:	3 x RBW Remeasurement: 10 Hz / 3 MHz
Span:	30 MHz to 40 GHz
Trace-Mode:	Max Hold

6.6.4 Result

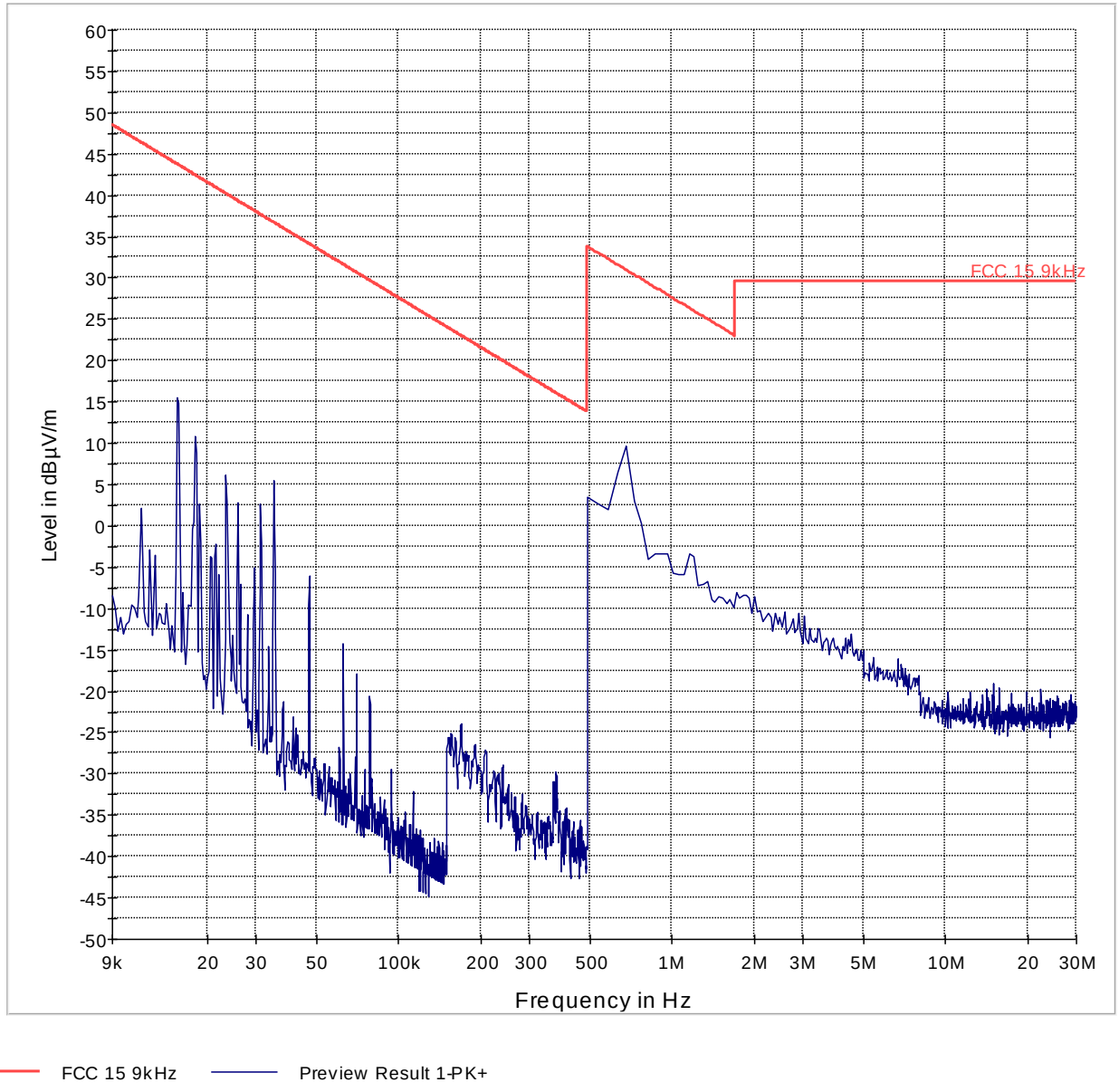
RX Spurious Emissions Radiated [dBµV/m]		
F [MHz]	Detector	Level [dBµV/m]
For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.		
All detected peaks are below the average limit!		
Measurement uncertainty	± 3 dB	

6.6.5 Verdict

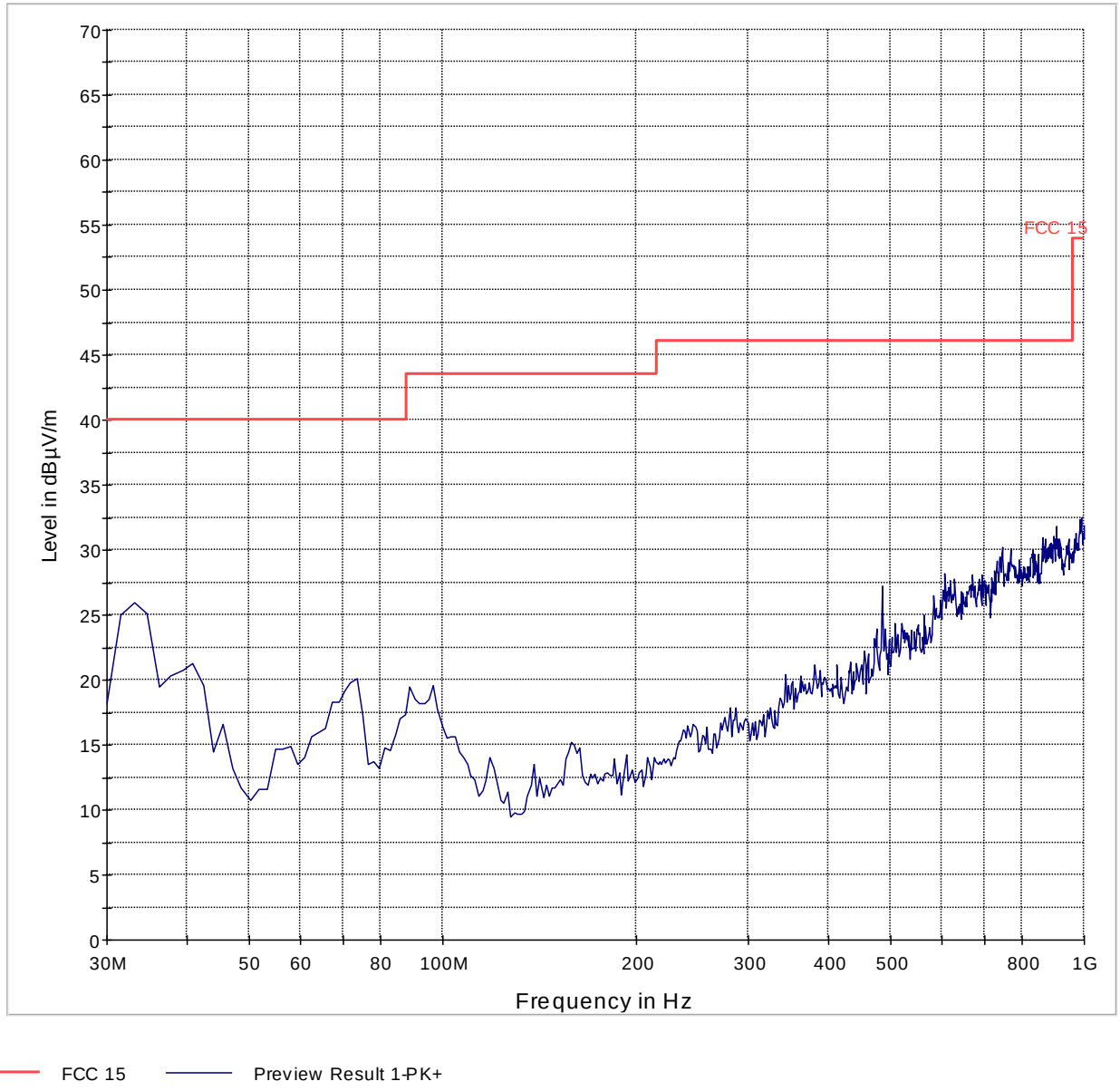
Pass

6.6.6 Plots

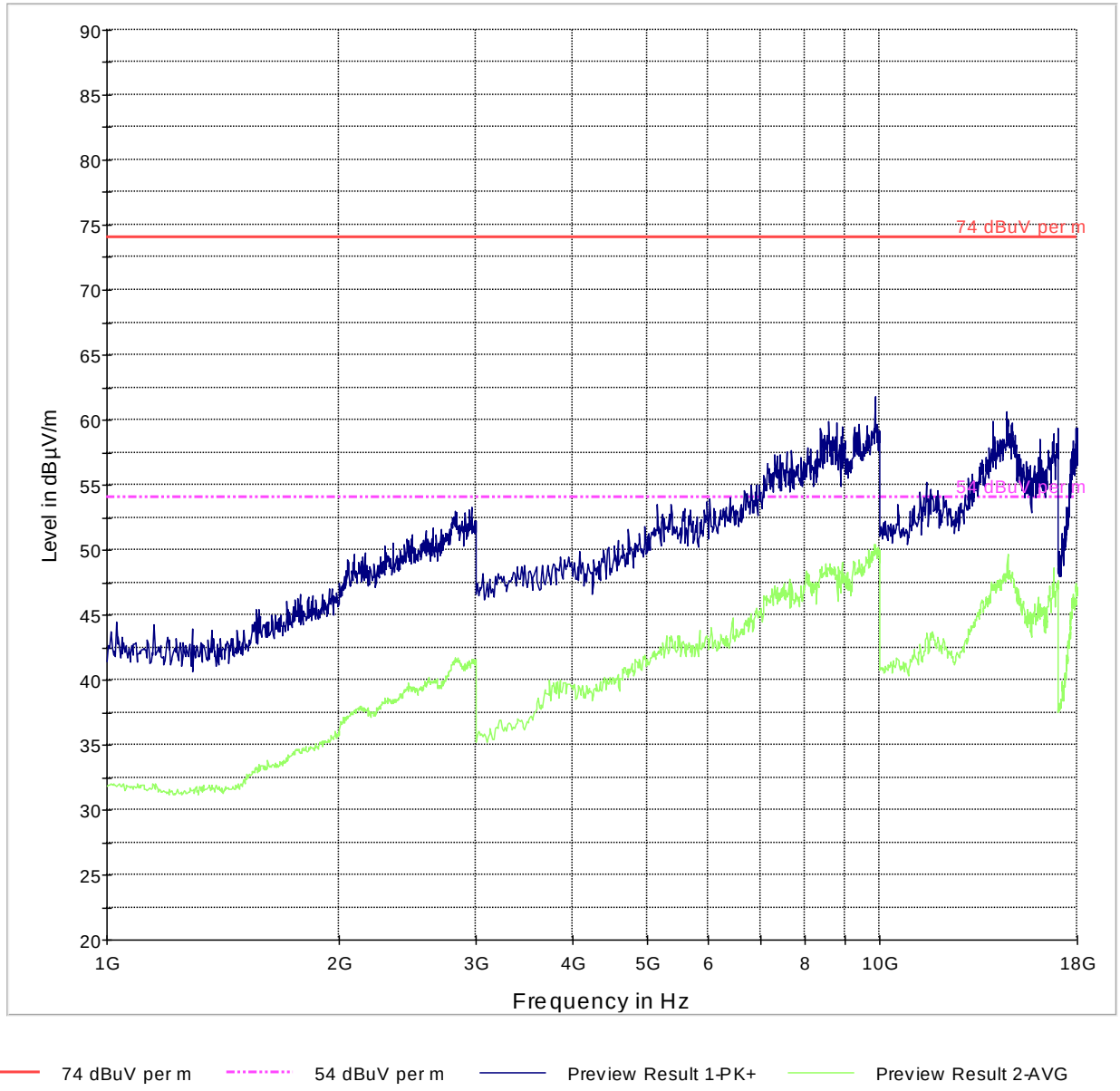
6.6.6.1 RX Emissions: 9kHz – 30MHz; EUT + AC Adapter Mode



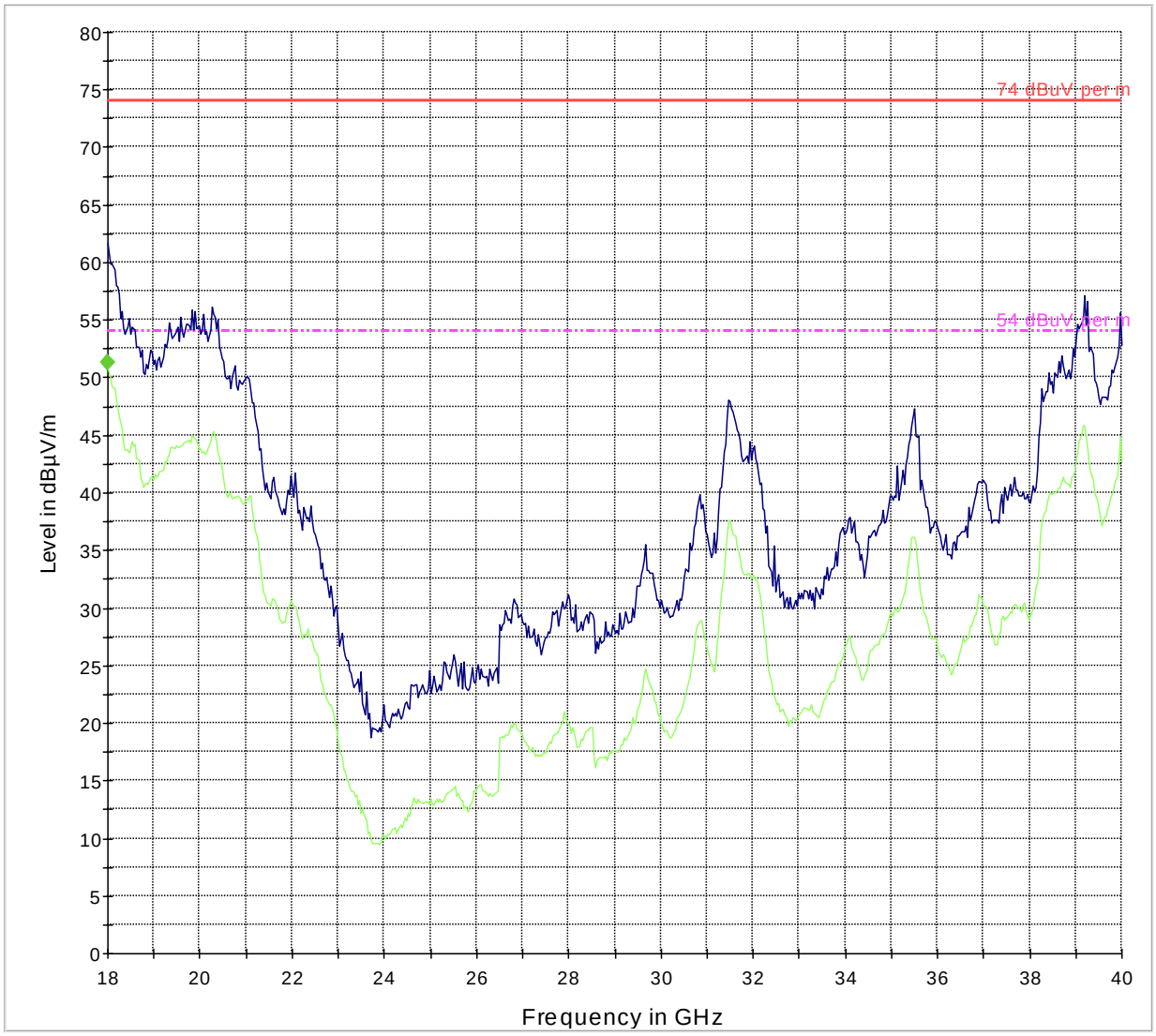
6.6.6.2 RX Emissions: 30MHz – 1GHz; EUT + AC Adapter Mode



6.6.6.3 RX Emissions: 1GHz – 18GHz; EUT + AC Adapter Mode



6.6.6.4 RX Emissions: 18GHz – 40GHz; EUT + AC Adapter Mode



7 Setup Pictures

See
TestSetupPhotos_FCC_Part15.doc

8 Test Equipment and ancillaries used for tests

No.	Equipment Name	Manufacturer	Type/model	Serial No.	Cal Date	Cal Interval
3m Semi- Anechoic Chamber:						
	Turn table	EMCO	2075	N/A	N/A	N/A
	MAPS Position Controller	ETS Lindgren	2092	0004-1510	N/A	N/A
	Antenna Mast	EMCO	2075	N/A	N/A	N/A
	Relay Switch Unit	Rohde&Schwarz	RSU	338964/001	N/A	N/A
	EMI Receiver/Analyzer(*)	Rohde&Schwarz	ESU 40	100365	Feb 2013	1 Year
	1500MHz HP Filter	Filtek	HP12/1700	14c48	N/A	N/A
	2800 MHz HP Filter	Filtek	HP12/2800	14C47	N/A	N/A
	Pre-Amplifier	Miteq	JS40010260	340125	N/A	N/A
	Binconilog Antenna	EMCO	3141	0005-1186	Apr 2012	3 Years
	Binconilog Antenna	ETS	3149	J000123908	Feb 2012	3 years
	Horn Antenna	EMCO	3115	35114	Mar 2012	3 Years
	LISN	FCC	50-25-2-08	08014	Jul 2012	2 Year
Ancillary equipment						
	Multimeter	Klein Tools	MM200	001	Apr 2011	3 Years
	Humidity Temperature Logger	Dickson	TM320	03280063	Apr 2013	1 Year
	Digital Barometer	VWR	35519-055	91119547	Nov 2011	3 Years
	DC Power Supply	HP	E3610A	KR83023316	N/A	N/A
	DC Power Supply	Protek	3003B	H012771	N/A	N/A
	Communication Antenna	IBP5-900/1940	Kathrein	N/A	N/A	N/A

Calibration details valid at the time of testing.
Equipment used meets the measurement uncertainty requirements as required per applicable standards for 95% confidence levels.
Calibration due dates, unless defined specifically, falls on the last day of the month.
Items indicated “N/A” for cal status either do not specifically require calibration or is internally characterized before use.

9 Revision History

Version	Date	By	Status / changes
01	1/22/14	Franz Engert	Official Version