# FCC TEST REPORT

For

**NFC Android Reader**

**Model Number: FX105F**

**FCC ID: 2AGQIFX105F**

**Report Number : WT208000769**


| | | |
|---|---|---|
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# TEST REPORT DECLARATION

| | | |
|---|---|---|
| Applicant | : | FAMOCO SAS |
| Address | : | 59 avenue Victor Hugo,Paris,France |
| Manufacturer | : | FAMOCO SAS |
| Address | : | 59 avenue Victor Hugo,Paris,France |
| EUT Description | : | NFC Android Reader |
| Model No | : | FX105F |
| Trade mark | : | Famoco |
| Serial Number | : | / |
| FCC ID | : | 2AGQIFX105F |

Test Standards:

**FCC Part 15 15.207, 15.209, 15.247 (2019)**

The EUT described above is tested by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory to determine the maximum emissions from the EUT. Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory is assumed full responsibility for the accuracy of the test results. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with FCC Rules Part 15.207, 15.209, 15.247.
The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

| | | | |
|---|---|---|---|
| Project Engineer: | (Zhou Fangai 周芳媛) | Date: | Jun.03, 2020 |
| Checked by: | (Lin Yixiang 林奕翔) | Date: | Jun.03, 2020 |
| Approved by: | (Lin Bin 林斌) | Date: | Jun.03, 2020 |

# TABLE OF CONTENTS


**TEST REPORT DECLARATION ..... 2**

**1. TEST RESULTS SUMMARY ..... 5**

**2. GENERAL INFORMATION ..... 6**

2.1. Report information ..... 6
2.2. Laboratory Accreditation and Relationship to Customer ..... 6
2.3. Measurement Uncertainty ..... 7

**3. PRODUCT DESCRIPTION ..... 8**

3.1. EUT Description ..... 8
3.2. Related Submittal(s) / Grant (s) ..... 9
3.3. Block Diagram of EUT Configuration ..... 9
3.4. Operating Condition of EUT ..... 9
3.5. Directional Antenna Gain ..... 9
3.6. Support Equipment List ..... 10
3.7. Test Conditions ..... 10
3.8. Special Accessories ..... 10
3.9. Equipment Modifications ..... 10

**4. TEST EQUIPMENT USED ..... 11**

**5. DUTY CYCLE ..... 12**

5.1. LIMITS OF DUTY CYCLE ..... 12
5.2. TEST PROCEDURE ..... 12
5.3. TEST SETUP ..... 12
5.4. TEST DATA ..... 12

**6. 6DB BANDWIDTH MEASUREMENT ..... 15**

6.1. LIMITS OF 6dB BANDWIDTH MEASUREMENT ..... 15
6.2. TEST PROCEDURE ..... 15
6.3. TEST SETUP ..... 15
6.4. Test Data ..... 16

**7. MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT ..... 21**

7.1. LIMITS OF Maximum Conducted Output Power Measurement ..... 21
7.2. TEST PROCEDURE ..... 21
7.3. TEST SETUP ..... 21
7.4. TEST DATA ..... 21

**8. MAXIMUM POWER SPECTRAL DENSITY LEVEL MEASUREMENT ..... 27**

8.1. LIMITS OF Maximum Power Spectral Density Level Measurement ..... 27
8.2. TEST PROCEDURE ..... 27
8.3. TEST DATA ..... 27

**9. CONDUCTED BANDEDGE AND SPURIOUS MEASURMENT ..... 33**

9.1. LIMITS OF Conducted Bandedge and Spurious Measurement ..... 33
9.2. TEST PROCEDURE ..... 33
9.3. TEST DATA ..... 34

**10. RADIATED BANDEDGE AND SPURIOUS MEASUREMENT ..... 42**

10.1. LIMITS OF Radiated Bandedge and Spurious Measurement ..... 45

10.2. TEST PROCEDURE ..... 45
10.3. TEST DATA ..... 46
**11. CONDUCTED EMISSION TEST FOR AC POWER PORT MEASUREMENT ..... 89**
11.1. Test Standard and Limit ..... 89
11.2. Test Procedure ..... 89
11.3. Test Arrangement ..... 89
11.4. Test Data ..... 89
**12. ANTENNA REQUIREMENTS ..... 93**

# 1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

| Test Items | FCC Rules | Test Results |
|---|---|---|
| 6dB DTS bandwidth measurement | 15.247 (a) (2) | Pass |
| Maximum Peak Conducted Power | 15.247 (b) (3) | Pass |
| Maximum Power Spectral Density Level | 15.247 (3) | Pass |
| Conducted Bandedge and Spurious | 15.247 (d) | Pass |
| Radiated Bandedge and Spurious | 15.247 (d)<br>15.209<br>15.205 | Pass |
| Conducted emission test for AC power port | 15.207 | Pass |
| Antenna Requirement | 15.203 | Pass |

Remark: “N/A” means “Not applicable.”

# 2. GENERAL INFORMATION

## 2.1. Report information

This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that SMQ approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that SMQ in any way guarantees the later performance of the product/equipment.

The sample/s mentioned in this report is/are supplied by Applicant, SMQ therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through SMQ, unless the applicant has authorized SMQ in writing to do so.

## 2.2. Laboratory Accreditation and Relationship to Customer

The testing report were performed by the Shenzhen Academy of Metrology and quality Inspection EMC Laboratory (Guangdong EMC compliance testing center), in their facilities located at NETC Building, No.4 Tongfa Rd., Xili, Nanshan, Shenzhen, China. At the time of testing, Laboratory is accredited by the following organizations:

China National Accreditation Service for Conformity Assessment (CNAS) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is CNAS L0579.

The Laboratory is Accredited Testing Laboratory of FCC with Designation number CN1165 and Site registration number 582918.

The Laboratory is registered to perform emission tests with Innovation, Science and Economic Development (ISED), and the registration number is 11177A.

The Laboratory is registered to perform emission tests with VCCI, and the registration number are C-20048, G20076, R-20077, R-20078 and T-20047.

The Laboratory is Accredited Testing Laboratory of American Association for Laboratory Accreditation (A2LA) and certificate number is 3292.01.

## 2.3. Measurement Uncertainty

Conducted Emission
9 kHz~30MHz 2.9dB

Radiated Emission
30MHz~1000MHz 5.1dB
1GHz~6GHz 5.04dB
6GHz~18GHz 5.54dB
18GHz~26.5GHz 5.54dB

# 3. PRODUCT DESCRIPTION

## 3.1. EUT Description

| | | |
|---|---|---|
| Description | : | NFC Android Reader |
| Manufacturer | : | FAMOCO SAS |
| Model Number | : | FX105F |
| Operate Frequency | : | 2.412GHz~2.462GHz |
| Antenna Designation | : | PIFA antenna |

Remark: EUT, adaptor, Docking Station and USB Cable all come in two colors, white and black.

WLAN:

Table 2 Working Frequency List (802.11b, 802.11g, 802.11n HT20)

| Channel | Frequency | Channel | Frequency |
|---|---|---|---|
| 1 | 2412MHz | 8 | 2447MHz |
| 2 | 2417MHz | 9 | 2452MHz |
| 3 | 2422MHz | 10 | 2457MHz |
| 4 | 2427MHz | 11 | 2462MHz |
| 5 | 2432MHz | --- | --- |
| 6 | 2437MHz | --- | --- |
| 7 | 2442MHz | --- | --- |

Table 3 Working Frequency List (802.11n HT40)

| Channel | Frequency | Channel | Frequency |
|---|---|---|---|
| 3 | 2422MHz | 8 | 2447MHz |
| 4 | 2427MHz | 9 | 2452MHz |
| 5 | 2432MHz | --- | --- |
| 6 | 2437MHz | --- | --- |
| 7 | 2442MHz | --- | --- |

## 3.2. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **2AGQIFX105F** filing to comply with Section 15.207，15.209，15.247 of the FCC Part 15, Subpart C Rules.

## 3.3. Block Diagram of EUT Configuration


Figure 1 EUT setup

## 3.4. Operating Condition of EUT

The Radiated spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission (X plane).
Worst-case mode and channel used for 30-1000 MHz radiated and power line conducted emissions was the mode and channel with the highest output power.
Worst-case data rates as provided by the client were:
802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11n HT20 mode: MCS0
802.11n HT40 mode: MCS0
802.11b and 802.11g operates in SISO mode. For SISO conducted measurements, the modes tested in this report will be considered as a worst case mode.
802.11n operate in SISO mode. For SISO conducted measurements, the modes tested in this report will be considered as a worst case mode.

## 3.5. Directional Antenna Gain

Directional gain need NOT to be considered.

## 3.6. Support Equipment List

Table 4 Support Equipment List

| Name | Model No | S/N | Manufacturer |
|---|---|---|---|
| Adaptor for EUT | HJ-0501000E1-US | -- | Shenzhen HuaJin Electronics CO.,LTD |
| Battery for EUT | FX105 series | -- | Shen Zhen JiaYuan TongDa Technoligy Co.,Ltd |
| USB for EUT | -- | -- | -- |

## 3.7. Test Conditions

Date of test：May.13, 2020- May.28, 2020
Date of EUT Receive：Apr.26, 2020
Temperature: 22℃-26 ℃
Relative Humidity: 41%-53%

## 3.8. Special Accessories

Not available for this EUT intended for grant.

## 3.9. Equipment Modifications

Not available for this EUT intended for grant.

# 4. TEST EQUIPMENT USED

Table 5 Test Equipment

| No. | Equipment | Manufacturer | Model No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|
| SB9058/05 | Test Receiver | R&S | ESCI 3 | Sep.27,2019 | 1 Year |
| SB4357 | AMN | R&S | ENN216 | Aug.27,2019 | 1 Year |
| SB3436 | Test Receiver | R&S | ESI26 | Nov.07,2019 | 1 Year |
| SB3955 | Broadband Antenna | Schwarzbeck | VULB 9163 | Jan.10,2020 | 1 Year |
| SB8501/09 | Test Receiver | R&S | ESU40 | Feb.14,2020 | 1 Year |
| SB3435 | Horn Antenna | R&S | HF906 | Dec.17,2019 | 1 Year |
| SB5472/02 | Broadband Antenna | Schwarzbeck | VULB 9163 | Jan.10,2020 | 1 Year |
| SB9058/03 | Pre-Amplifier | R&S | SCU 18 | Feb.14,2020 | 1 Year |
| SB8501/10 | Horn Antenna | R&S | 3160-09 | Mar.10,2020 | 3 Years |
| SB8501/11 | Horn Antenna | R&S | 3160-09 | Mar.09,2020 | 3 Years |
| SB8501/12 | Horn Antenna | R&S | 3160-10 | Mar.17,2020 | 3 Years |
| SB8501/13 | Horn Antenna | R&S | 3160-10 | Mar.10,2020 | 3 Years |
| SB3345 | Loop Antenna | Schwarzbeck | FMZB1516-113 | Feb.14,2020 | 1 Year |
| SB8501/14 | Pre-Amplifier | R&S | SCU-03 | Feb.14,2020 | 1 Year |
| SB8501/15 | Pre-Amplifier | R&S | SCU-03 | Feb.14,2020 | 1 Year |
| SB8501/16 | Pre-Amplifier | R&S | SCU 26 | Feb.14,2020 | 1 Year |
| SB8501/17 | Pre-Amplifier | R&S | SCU-18 | Feb.14,2020 | 1 Year |
| SB9060 | Signal Analyzer | R&S | FSQ40 | May.18, 2020 | 1 Year |
| SB11873/01 | Power Sensor | R&S | OSP120+OSP-B157 | May.18, 2020 | 1 Year |
| -- | Radiated Test Software | R&S | EMC 32 8.50.0 | -- | -- |
| -- | AC Line Conducted Test Software | R&S | ES-K1 V1.71 | -- | -- |

# 5. DUTY CYCLE

## 5.1. LIMITS OF DUTY CYCLE

None; for reporting purposes only

## 5.2. TEST PROCEDURE

1. Set span = Zero
2. RBW = 10MHz
3. VBW = 10MHz,
4. Detector = Peak

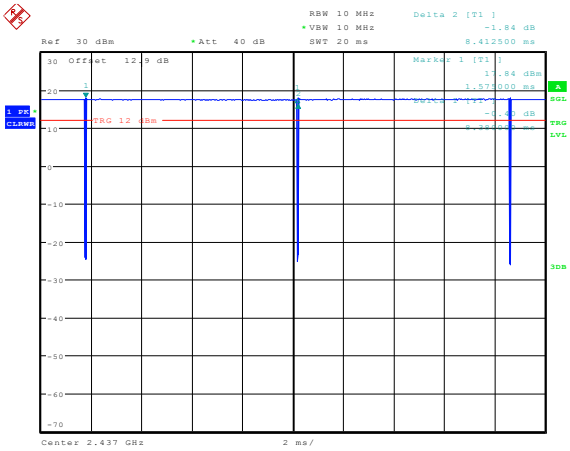
## 5.3. TEST SETUP


## 5.4. TEST DATA

Table 6 Duty Cycle Test Data

| Mode | On Time (ms) | Duty Cycle (%) | Duty Factor | 1/T Minimum VBW (kHz) |
|---|---|---|---|---|
| 802.11b | 8.38 | 99.6 | 0.04 | 0.1 |
| 802.11g | 1.39 | 97.3 | 0.13 | 1 |
| 802.11n HT20 | 1.30 | 97.2 | 0.13 | 1 |
| 802.11N HT40 | 0.65 | 94.7 | 0.26 | 1.5 |

## 802.11b

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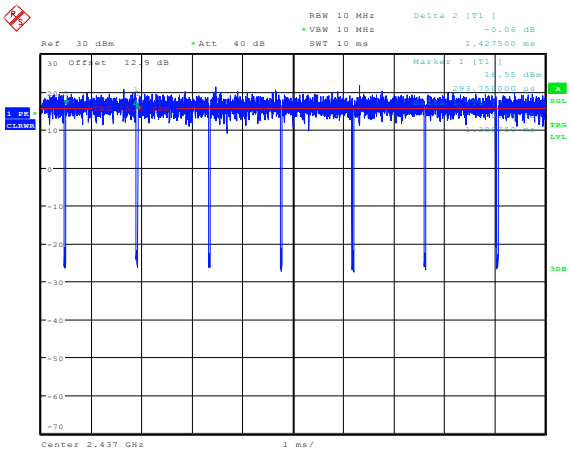
## 802.11g

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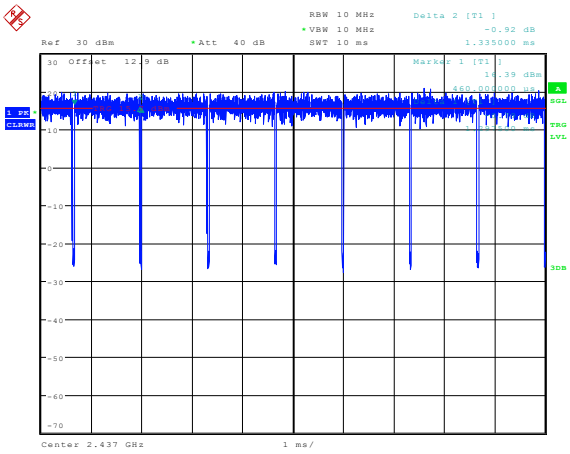
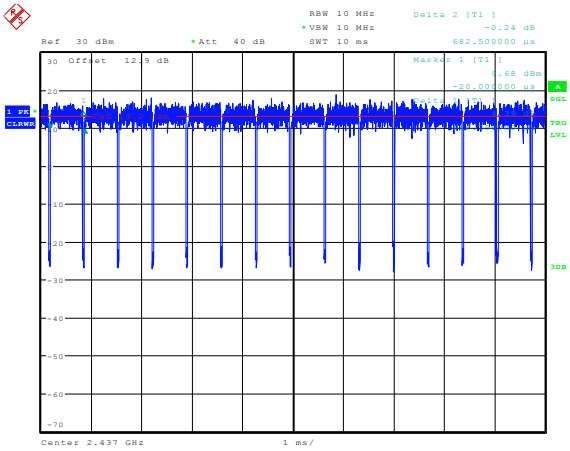
## 802.11n HT20




Date: 1.JAN.2003 02:54:17

## 802.11n HT40




Date: 1.JAN.2003 04:49:45

# 6. 6DB BANDWIDTH MEASUREMENT

## 6.1. LIMITS OF 6dB BANDWIDTH MEASUREMENT

CFR 47 (FCC) part 15.247 (a) (2)

## 6.2. TEST PROCEDURE

ANSI C63.10-2013 Clause 11.8
The transmitter output was connected to the spectrum analyzer.
a) Set RBW = 100 kHz.
b) Set the VBW ≥ [3 × RBW].
c)Detector = Peak.
d)Trace mode = max hold.
e)Sweep = auto couple.
f)Allow the trace to stabilize.
g)Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

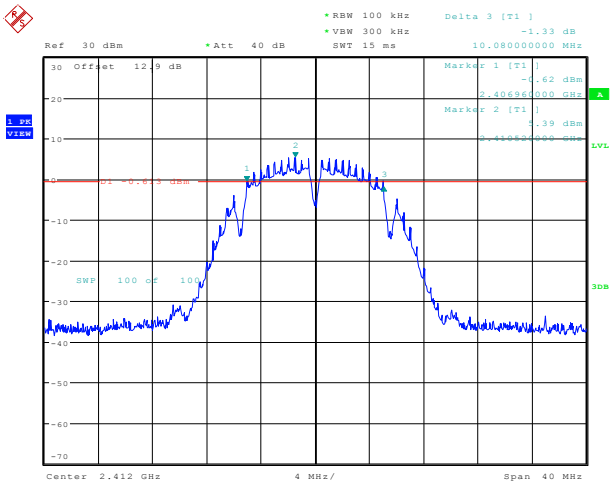
## 6.3. TEST SETUP

## 6.4. Test Data

Table 7 6dB Bandwidth Test Data

| Test Mode | Channel | 6dB Bandwidth [MHz] | Verdict |
|---|---|---|---|
| 802.11b | 2412 | 10.080 | PASS |
| | 2437 | 9.160 | PASS |
| | 2462 | 9.160 | PASS |
| 802.11g | 2412 | 16.000 | PASS |
| | 2437 | 15.160 | PASS |
| | 2462 | 15.800 | PASS |
| 802.11n HT20 | 2412 | 17.200 | PASS |
| | 2437 | 15.200 | PASS |
| | 2462 | 16.120 | PASS |
| 802.11n HT40 | 2422 | 35.280 | PASS |
| | 2437 | 30.240 | PASS |
| | 2452 | 35.680 | PASS |

## 11B__2412

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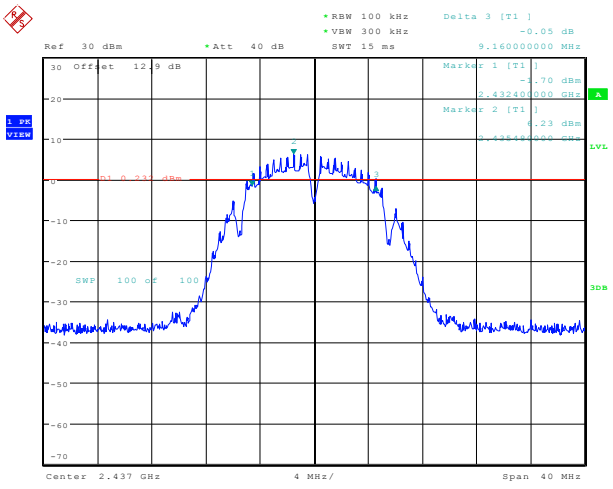
## 11B__2437

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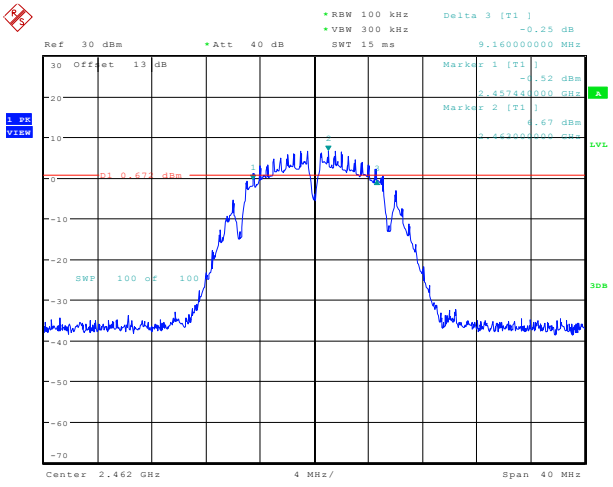


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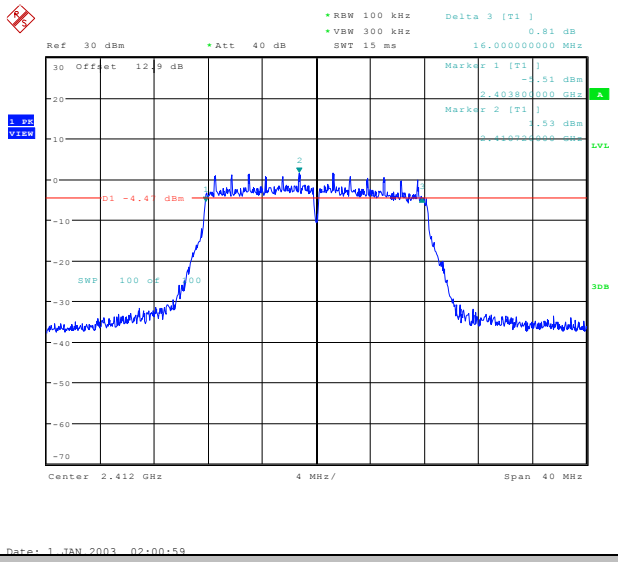


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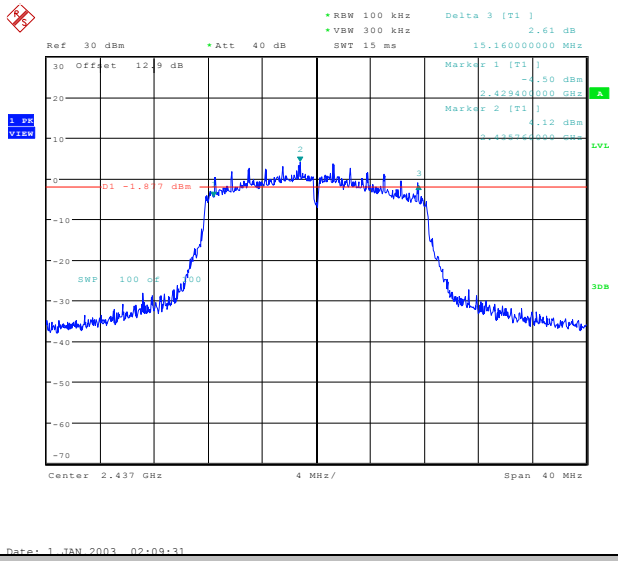


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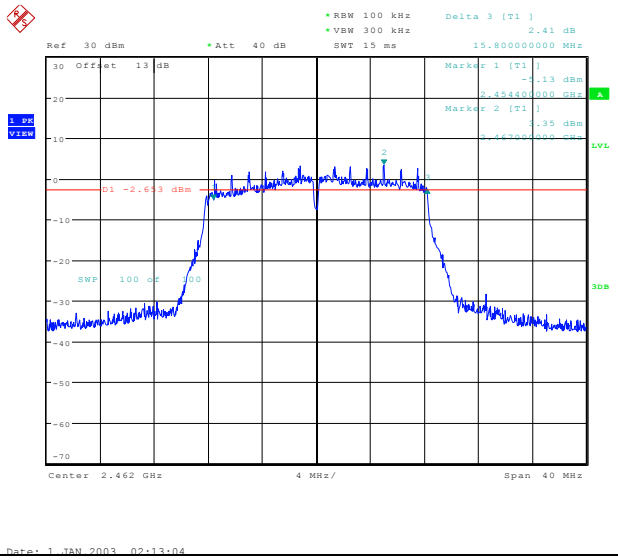


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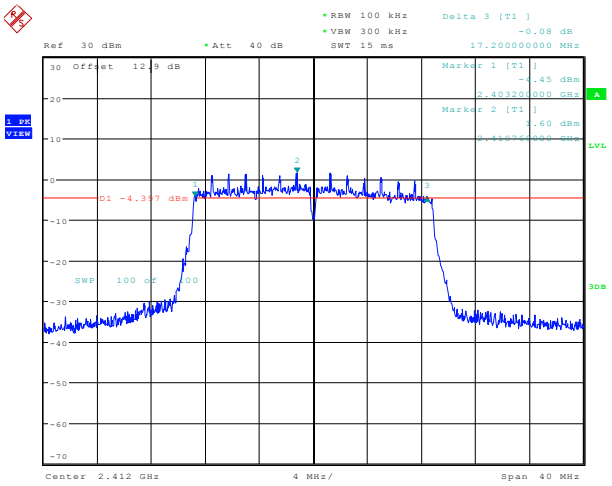
|  |



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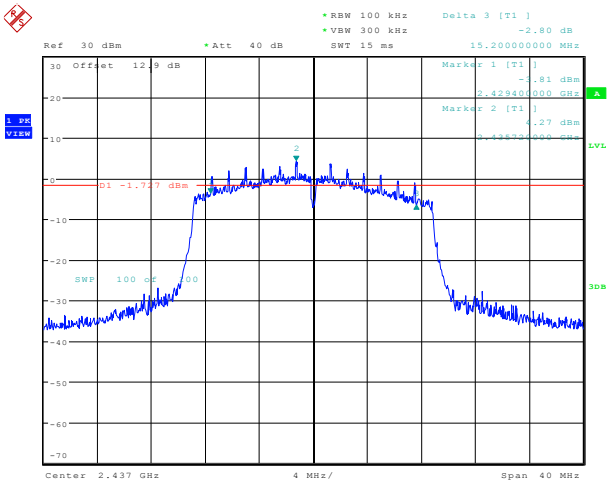
|  |



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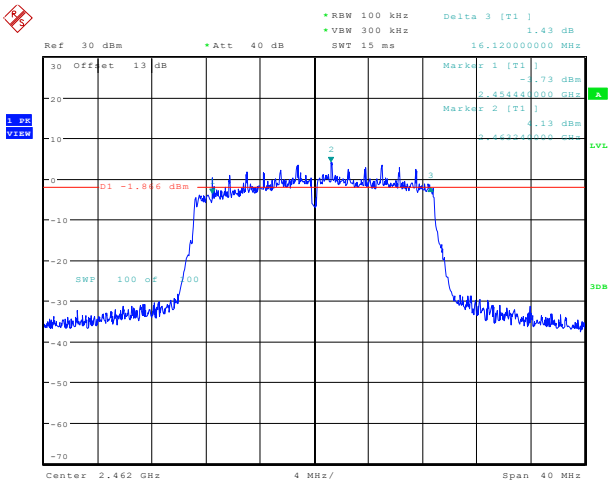
|  |

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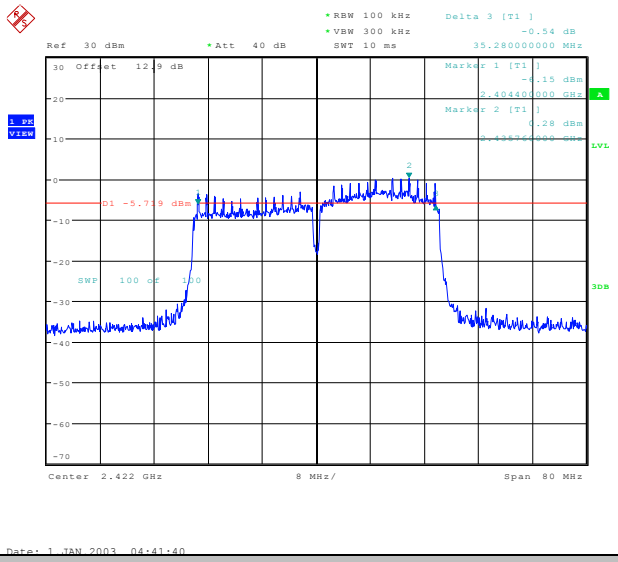
|  |



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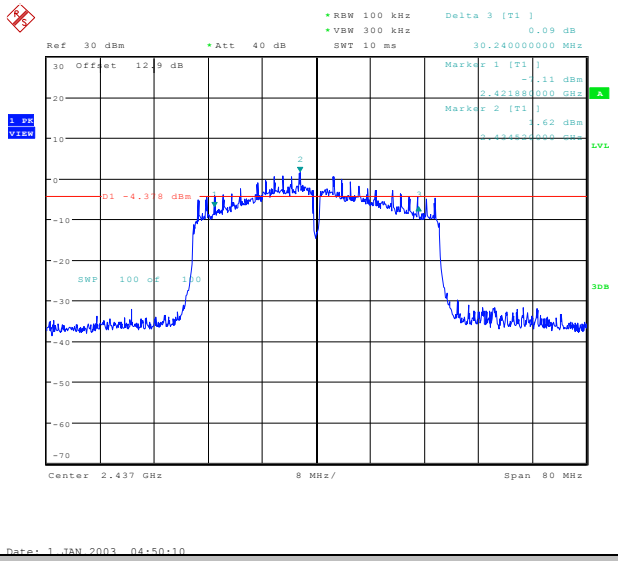
|  |



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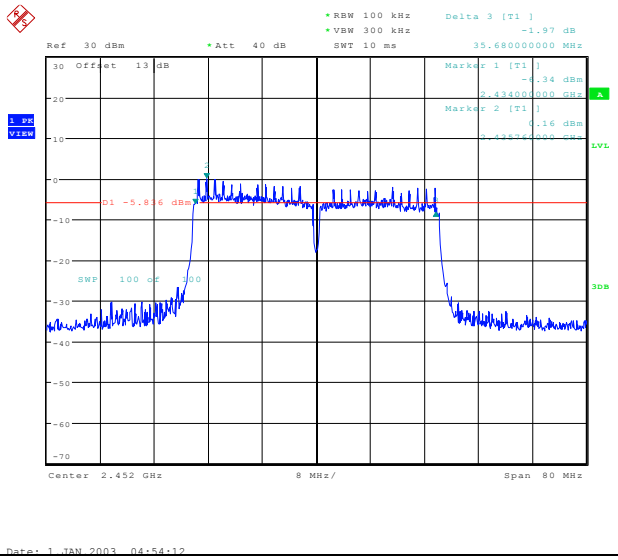
|  |



Date: 1.JAN.2003 04:54:12

# 7. MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

## 7.1. LIMITS OF Maximum Conducted Output Power Measurement

CFR 47 (FCC) part 15.247 (b) (3)

## 7.2. TEST PROCEDURE

ANSI C63.10-2013 Clause 11.9
The following procedure can be used when the maximum available RBW of the instrument is less than the
DTS bandwidth:
a) Set the RBW = 1 MHz.

b) Set the VBW ≥ [3 × RBW].

c) Set the span ≥ [1.5 × DTS bandwidth].

d) Detector = peak.
e) Sweep time = auto couple.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select the peak detector). If the instrument does not have a band power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS channel bandwidth.

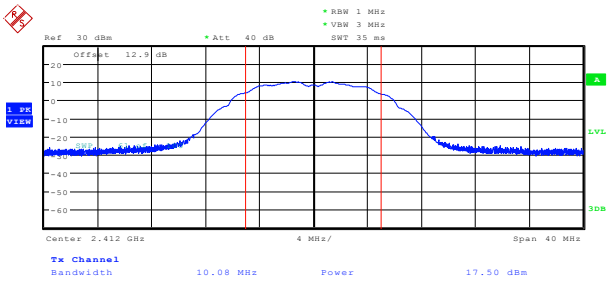
## 7.3. TEST SETUP


## 7.4. TEST DATA

Table 8 Maximum Conducted Output Power

| Test Mode | Channel | Meas.Level [dBm] | Limit [dBm] | Verdict |
|---|---|---|---|---|
| 802.11b | 2412 | 17.50 | 30 | PASS |
| | 2437 | 17.67 | 30 | PASS |
| | 2462 | 18.20 | 30 | PASS |
| 802.11g | 2412 | 19.93 | 30 | PASS |
| | 2437 | 21.24 | 30 | PASS |
| | 2462 | 21.76 | 30 | PASS |
| 802.11n HT20 | 2412 | 20.14 | 30 | PASS |
| | 2437 | 21.10 | 30 | PASS |
| | 2462 | 21.85 | 30 | PASS |
| 802.11n HT40 | 2422 | 20.32 | 30 | PASS |
| | 2437 | 20.73 | 30 | PASS |
| | 2452 | 20.79 | 30 | PASS |

## 11B__2412

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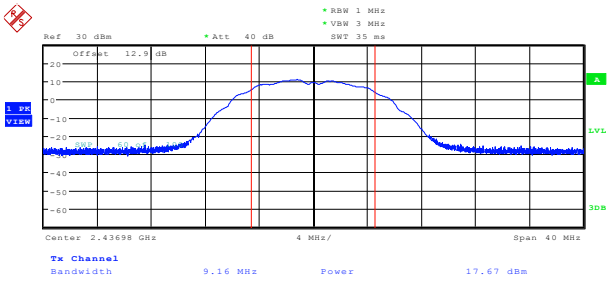
## 11B__2437

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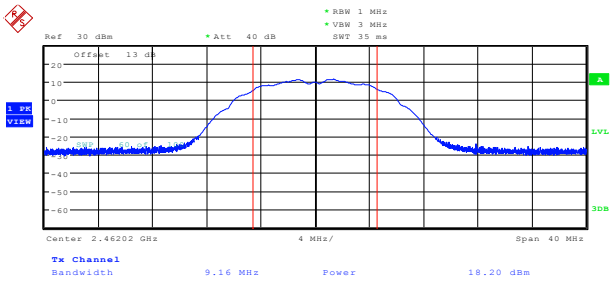


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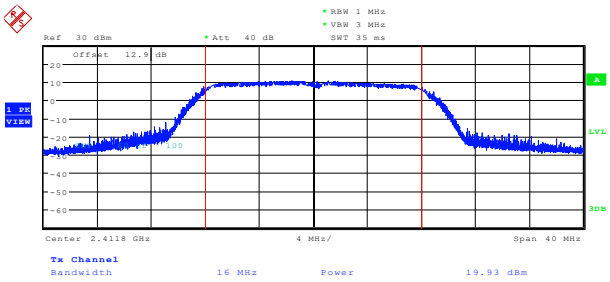


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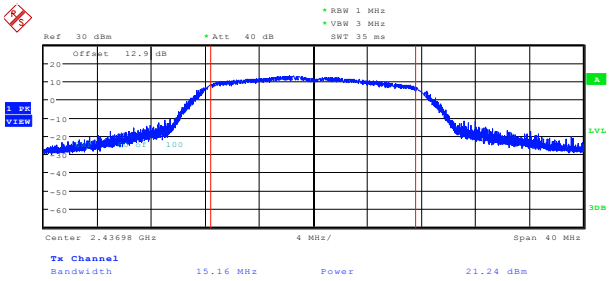
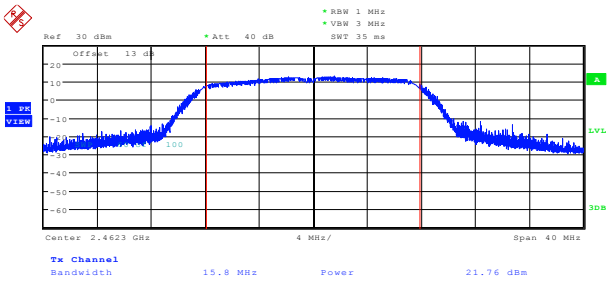



Date: 1.JAN.2003 02:10:00

## 11G__2462




Date: 1.JAN.2003 02:13:33

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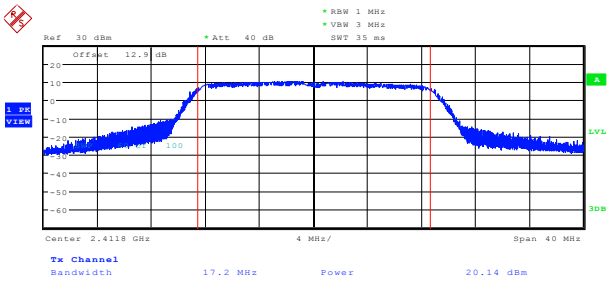
|  <br>Date: 1.JAN.2003 02:50:05 |

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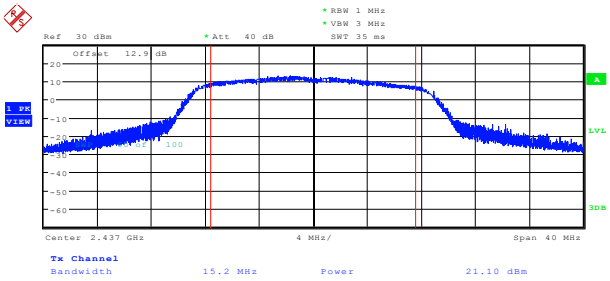
|  <br>Date: 1.JAN.2003 02:55:12 |

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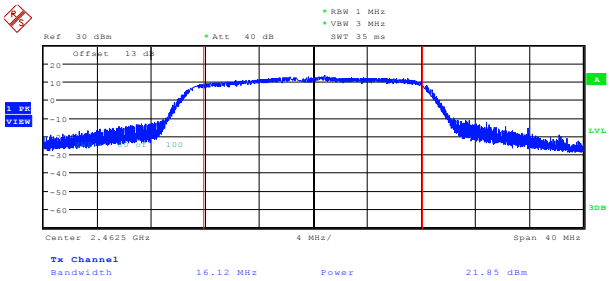
|  <br>Date: 1.JAN.2003 02:58:34 |

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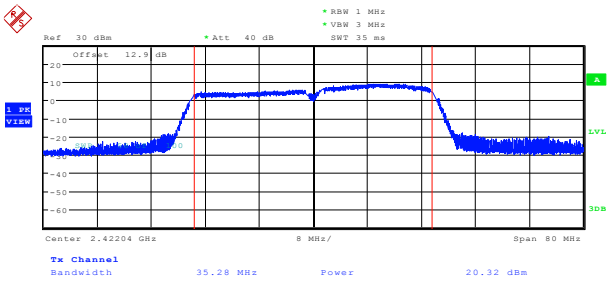
|  <br>Date: 1.JAN.2003 04:42:09 |

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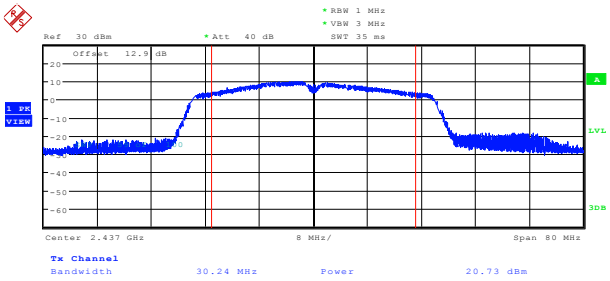
|  <br>Date: 1.JAN.2003 04:50:39 |

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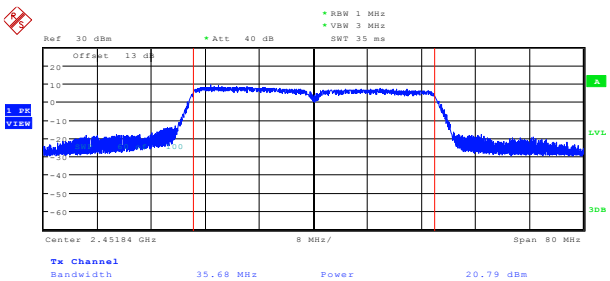
|  <br>Date: 1.JAN.2003 04:54:41 |

# 8. MAXIMUM POWER SPECTRAL DENSITY LEVEL MEASUREMENT

## 8.1. LIMITS OF Maximum Power Spectral Density Level Measurement

CFR 47 (FCC) part 15.247 (e)

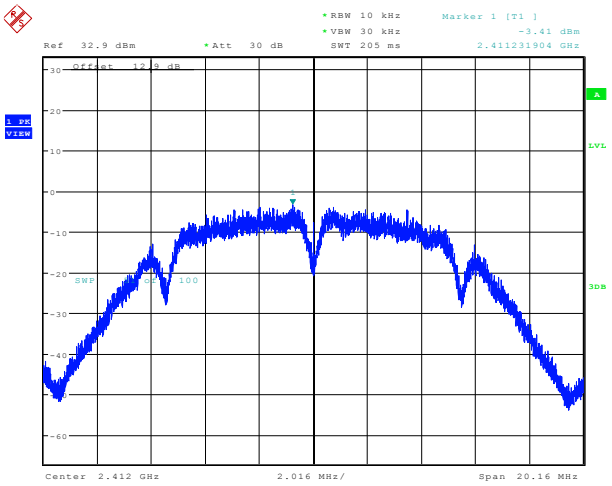
## 8.2. TEST PROCEDURE

ANSI C63.10-2013 Clause 11.10
The transmitter output was connected to the spectrum analyzer.
a)Set analyzer center frequency to DTS channel center frequency.
b) Set the span to 1.5 times the DTS bandwidth.
c) Set RBW to：3kHz≤RBW≤100 kHz.
d) Set VBW ≥ 3 x RBW.
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h)Allow trace to fully stabilize.
i)Use the peak marker function to determine the maximum amplitude level within the RBW.
j)If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

## 8.3. TEST DATA

Table 9 Maximum Power Spectral Density Level

| TestMode | Channel | Maximum Power Spectral Density Level [dBm] | Limit [dBm] | Verdict |
|---|---|---|---|---|
| 802.11b | 2412 | -3.41 | 8 | PASS |
| | 2437 | 2.14 | 8 | PASS |
| | 2462 | -1.65 | 8 | PASS |
| 802.11g | 2412 | -6.39 | 8 | PASS |
| | 2437 | -4.87 | 8 | PASS |
| | 2462 | -4.66 | 8 | PASS |
| 802.11n HT20 | 2412 | -6.79 | 8 | PASS |
| | 2437 | -5.35 | 8 | PASS |
| | 2462 | -4.27 | 8 | PASS |
| 802.11n HT40 | 2422 | -7.59 | 8 | PASS |
| | 2437 | -7.35 | 8 | PASS |
| | 2452 | -9.44 | 8 | PASS |

| 11B__2412 |
| --- |
|  <br>Date: 1.JAN.2003 01:47:47 |
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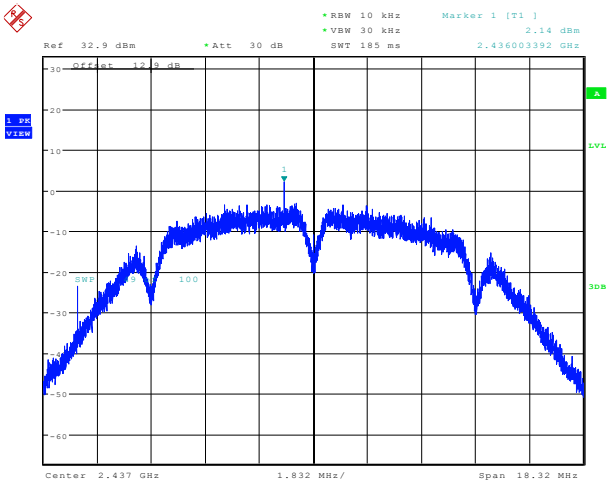
|  <br>Date: 1.JAN.2003 01:52:54 |
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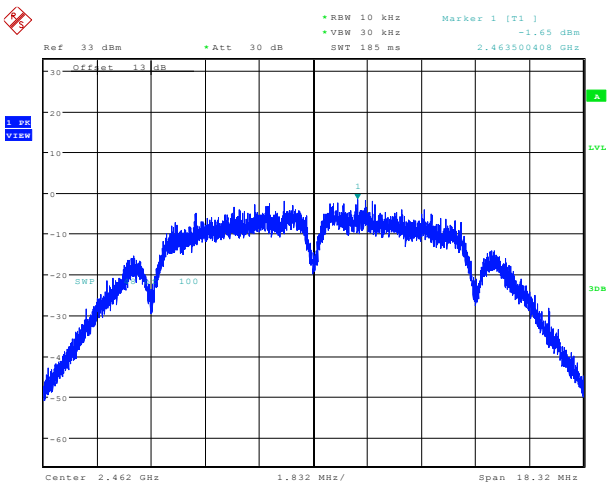
|  <br>Date: 1.JAN.2003 01:56:07 |

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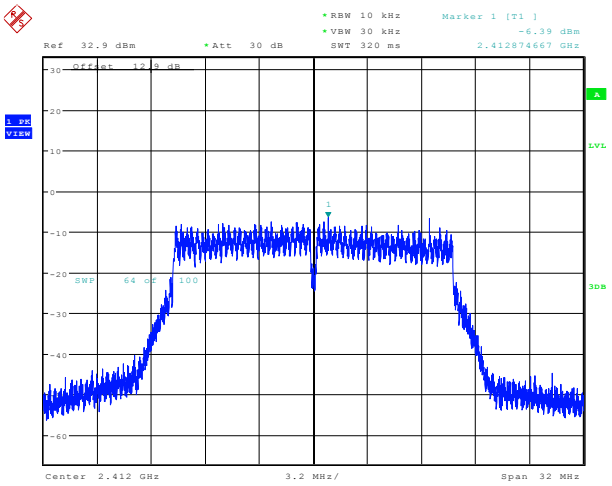
|  |

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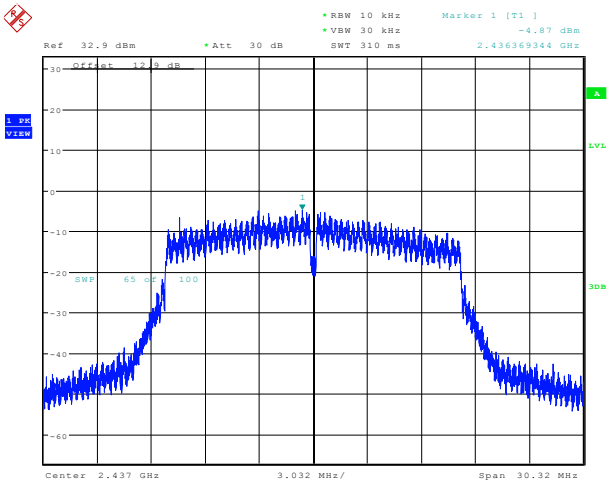
|  |

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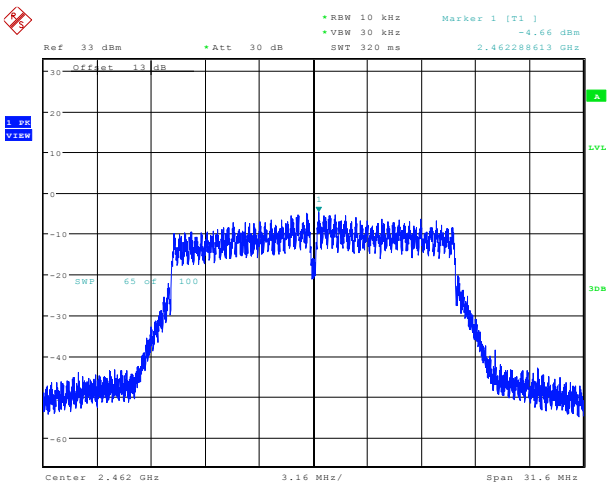
|  |

| 11N20__2412 |
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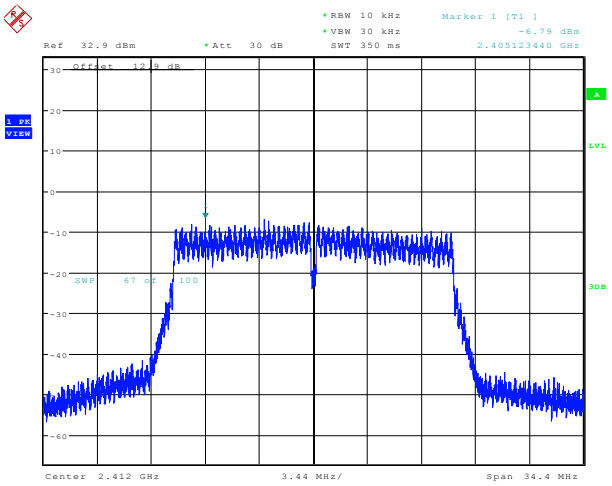
|  <br>Date: 1.JAN.2003 02:50:59 |
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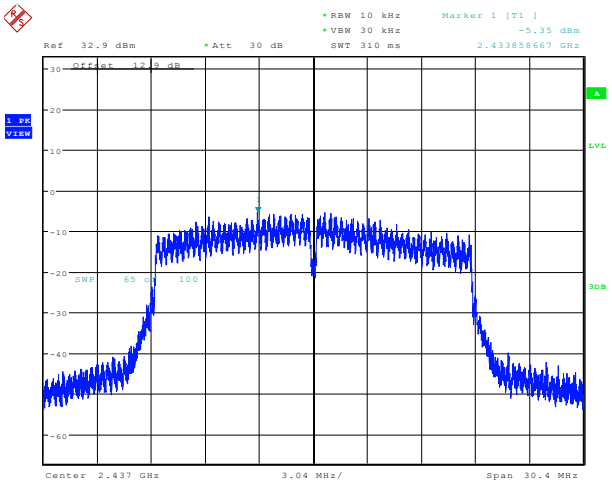
|  <br>Date: 1.JAN.2003 02:56:01 |
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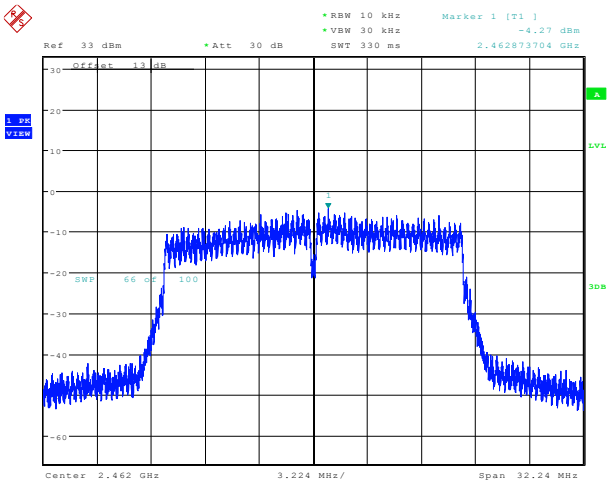
|  <br>Date: 1.JAN.2003 02:59:26 |

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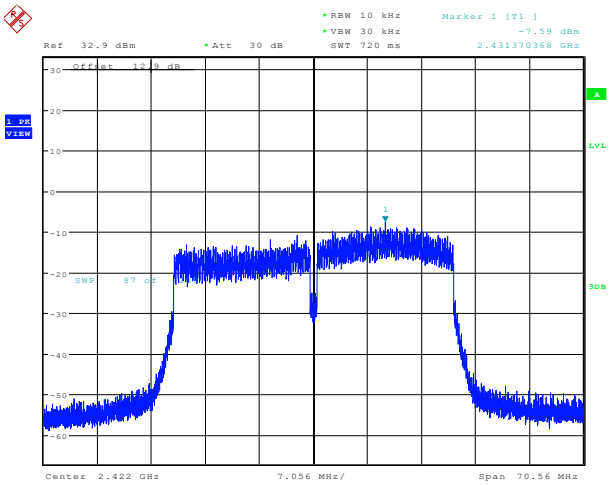
|  <br>Date: 1.JAN.2003 04:43:51 |

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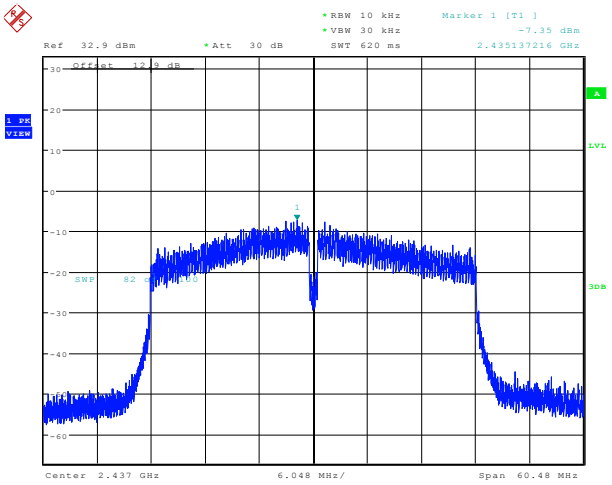
|  <br>Date: 1.JAN.2003 04:52:08 |

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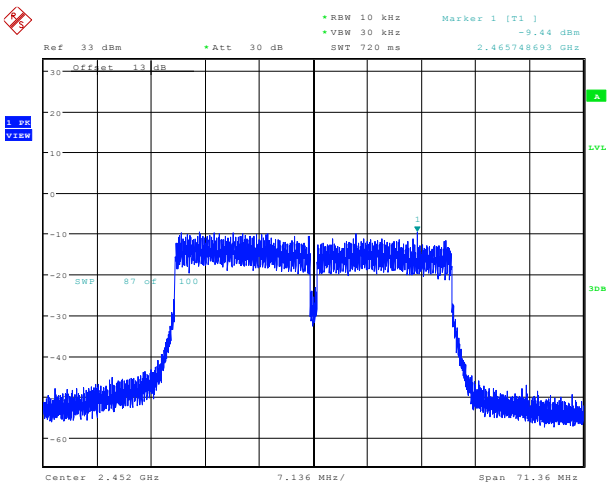
|  <br>Date: 1.JAN.2003 04:56:23 |

# 9. CONDUCTED BANDEDGE AND SPURIOUS MEASURMENT

## 9.1. LIMITS OF Conducted Bandedge and Spurious Measurement

CFR 47 (FCC) part 15.247 (d)

## 9.2. TEST PROCEDURE

ANSI C63.10-2013 Clause 11.11
The transmitter output was connected to the spectrum analyzer.
Establish a reference level by using the following procedure:
a)Set instrument center frequency to DTS channel center frequency.
b)Set the span to ≥ 1.5 times the DTS bandwidth.
c)Set the RBW = 100 kHz.
d)Set the VBW ≥ 3 x RBW.
e)Detector = peak.
f)Sweep time = auto couple.
g)Trace mode = max hold.
h)Allow trace to fully stabilize.
i)Use the peak marker function to determine the maximum PSD level.
Emission level measurement
a)Set the center frequency and span to encompass frequency range to be measured.
b)Set the RBW = 100 kHz.
c)Set the VBW ≥ 3 x RBW.
d)Detector = peak.
e)Sweep time = auto couple.
f)Trace mode = max hold.
g)Allow trace to fully stabilize.
h)Use the peak marker function to determine the maximum amplitude level. **Test Result ： ALL emission outside of 2400-2483.5 are lower at least 20dB than fundamental frequency.**

## 9.3.TEST DATA

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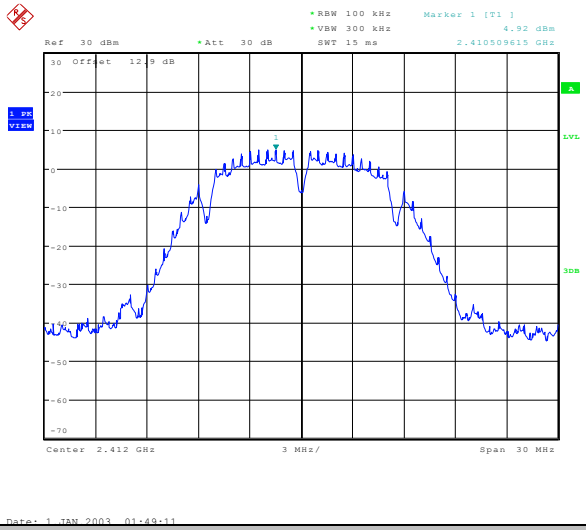
|  |
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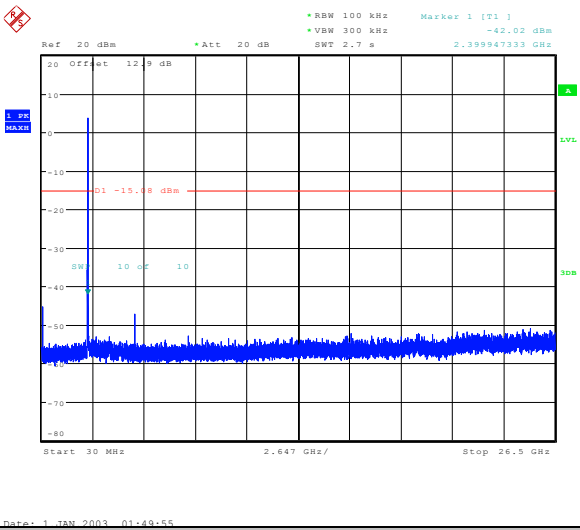
|  |
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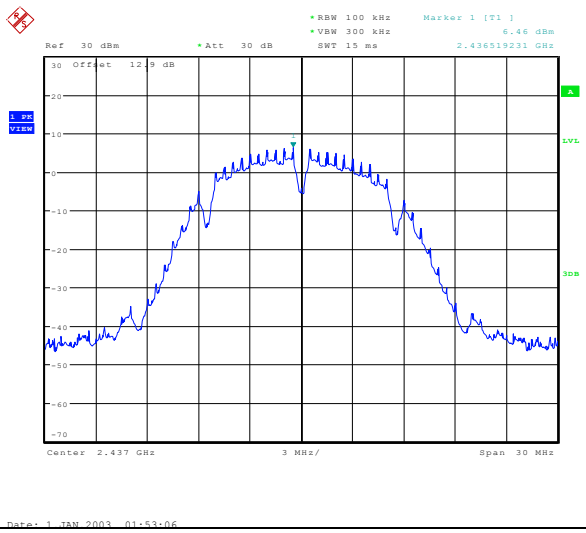
|  |

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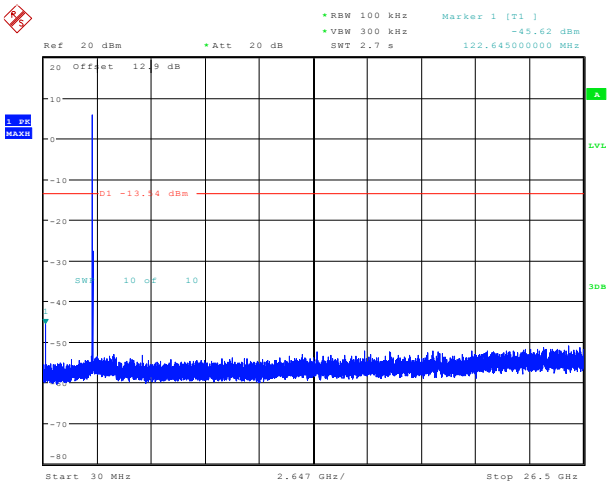


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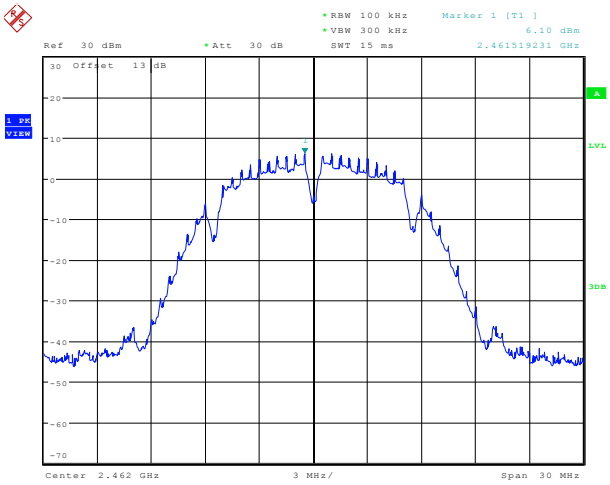


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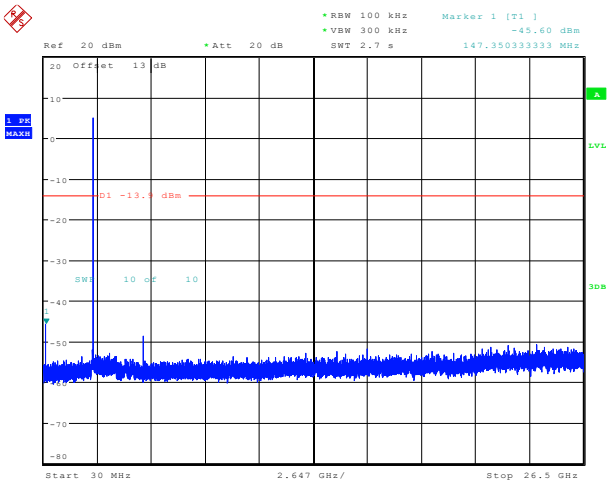
11B__2462_30~26500




Date: 1.JAN.2003 01:58:15

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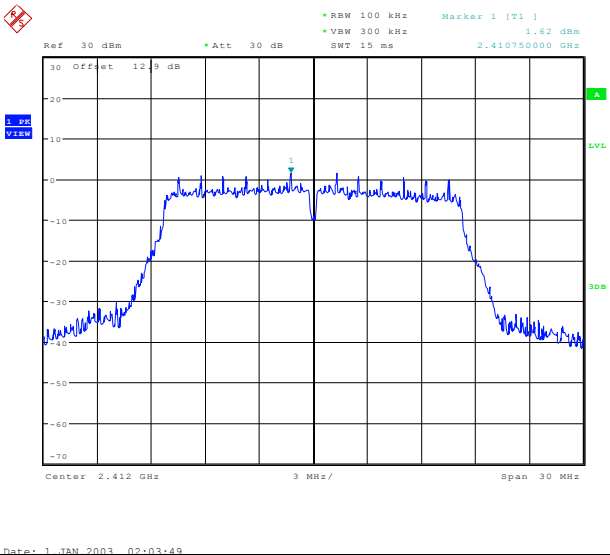


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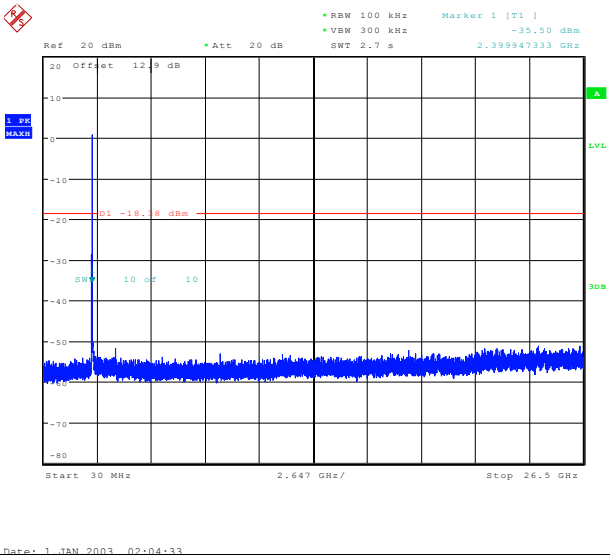


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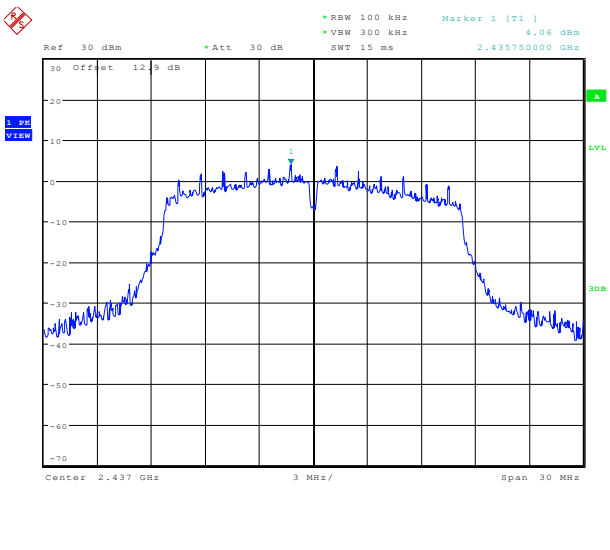

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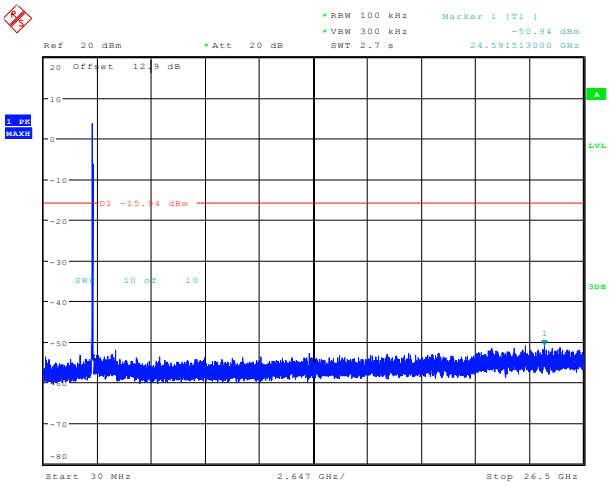


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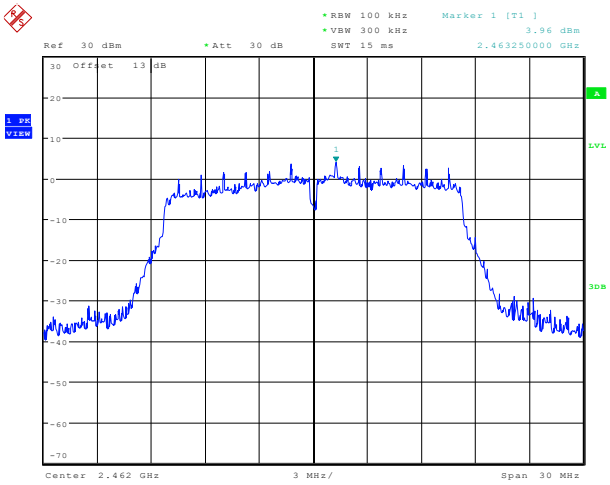


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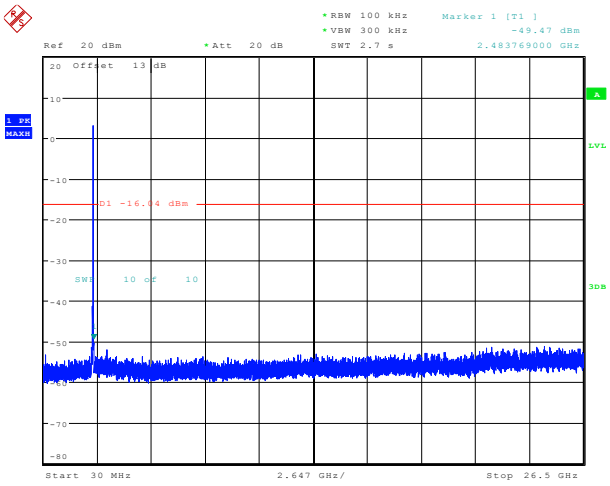


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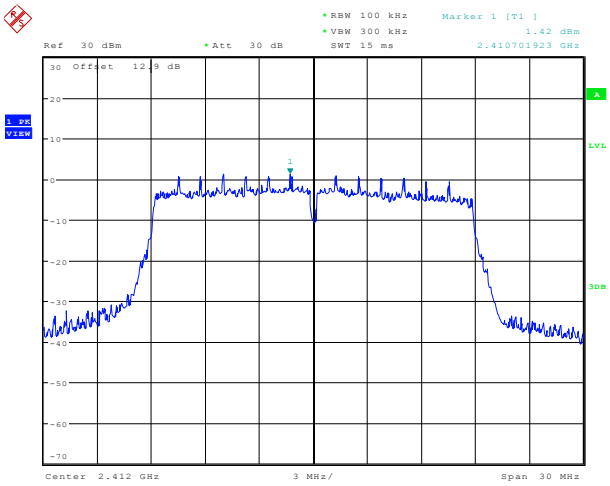


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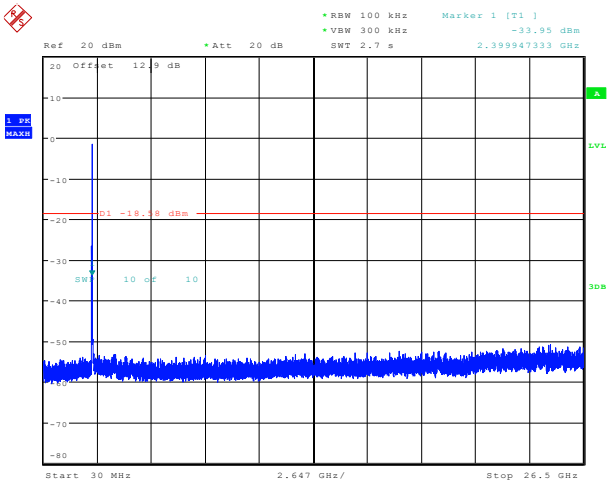


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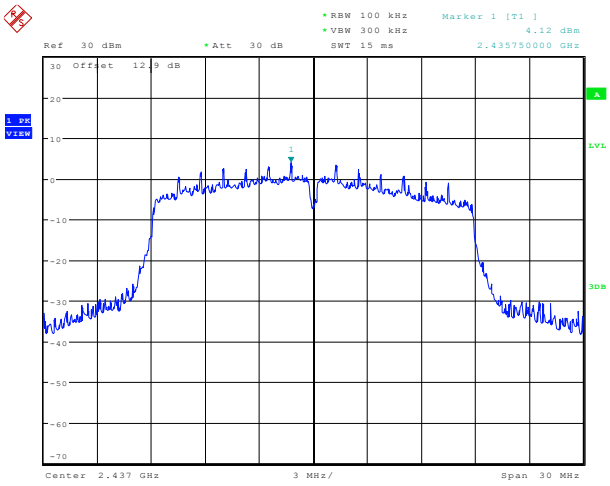

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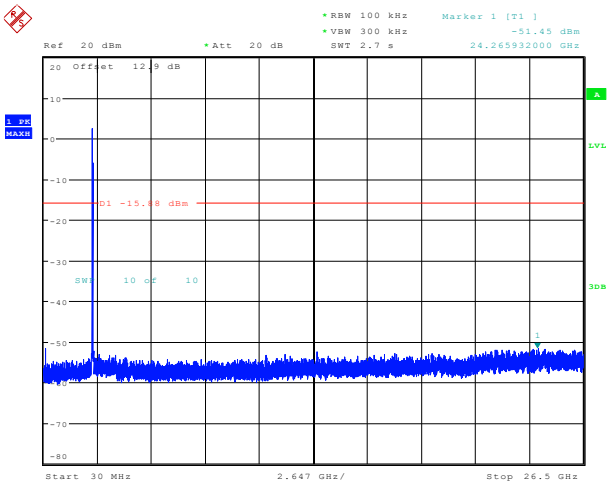


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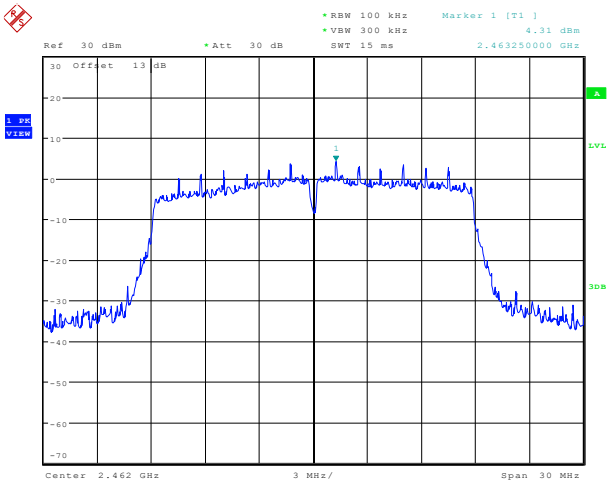


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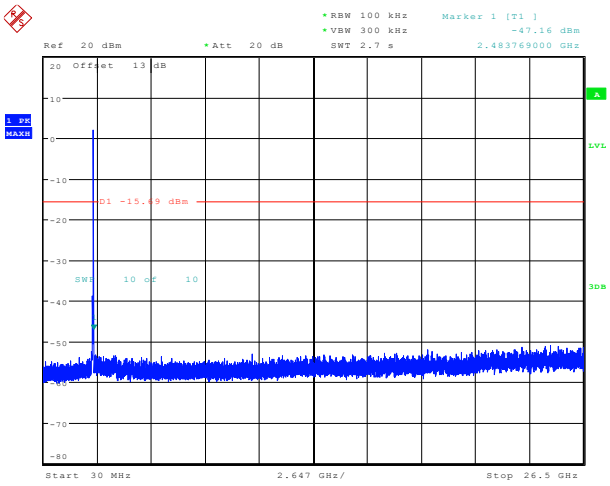
11N20__2462_30~26500

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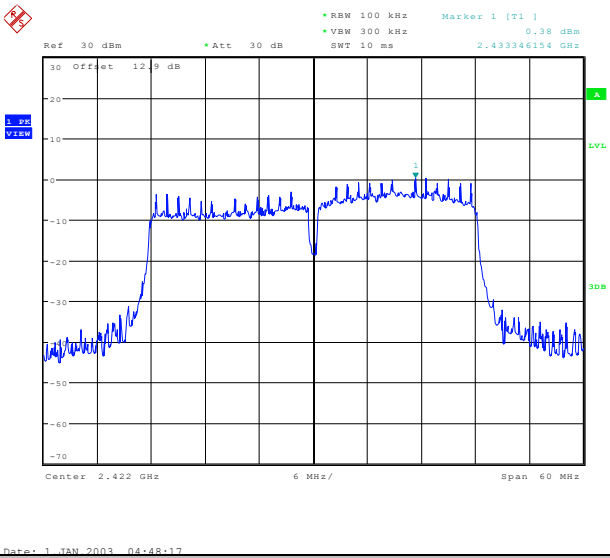
|  |



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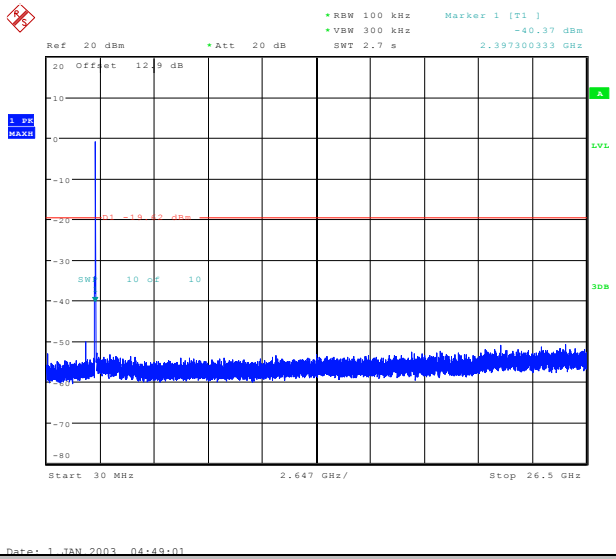
|  |



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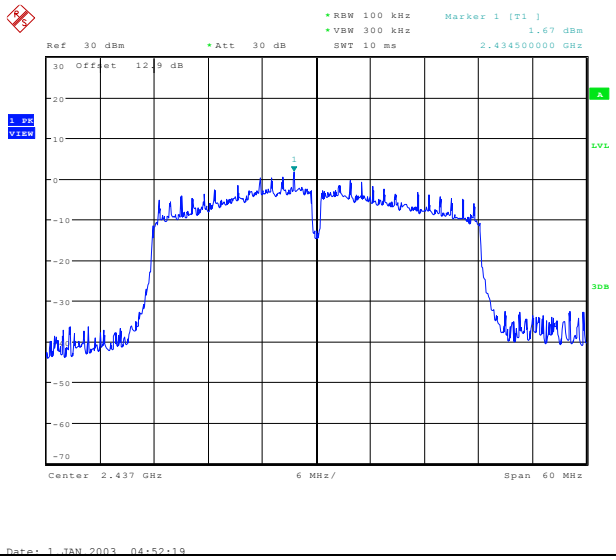
|  |

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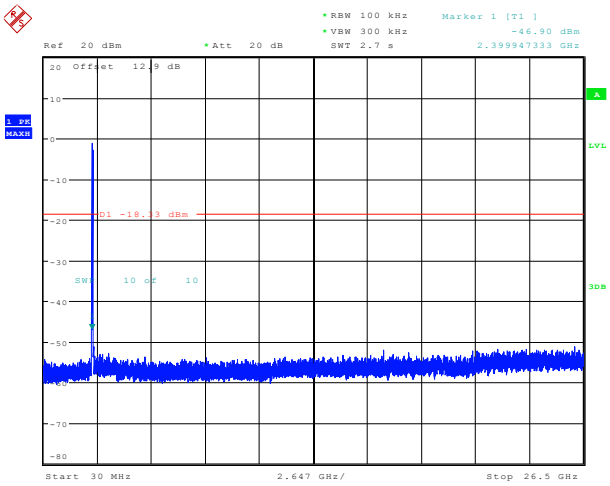


Date: 1.JAN.2003 04:53:03

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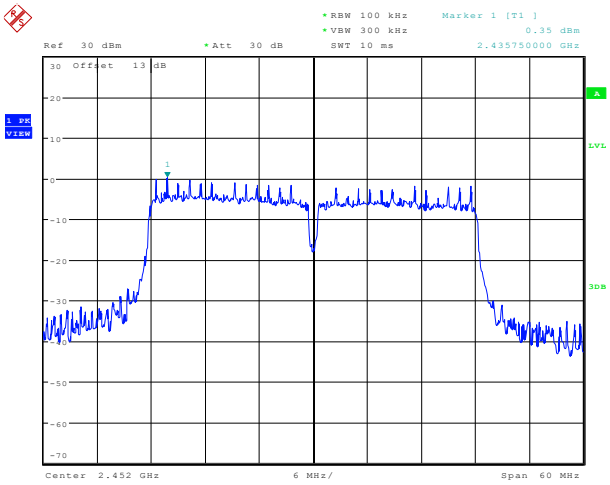
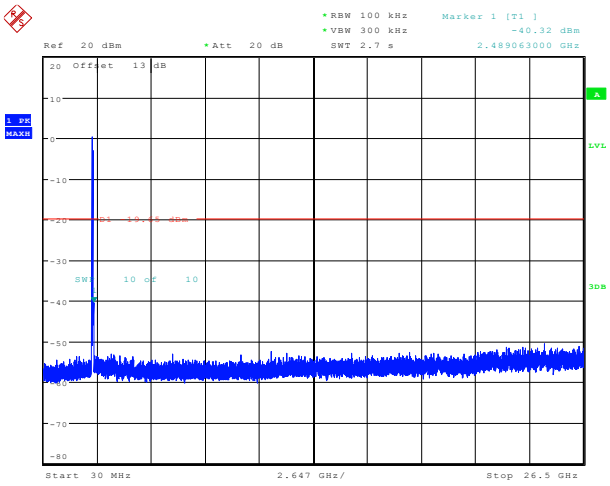



Date: 1.JAN.2003 04:57:47

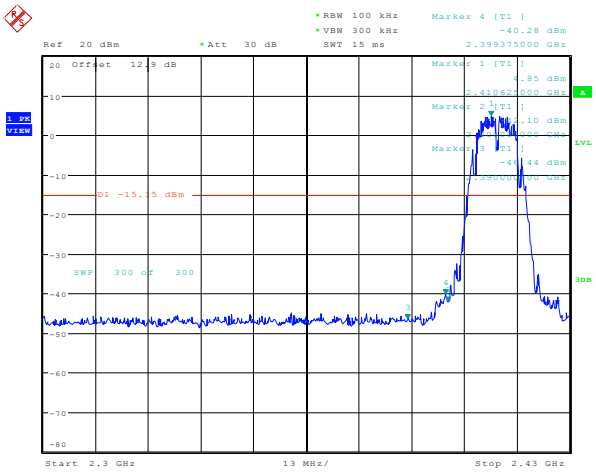
## 11N40__2452_30~26500




Date: 1.JAN.2003 04:58:31

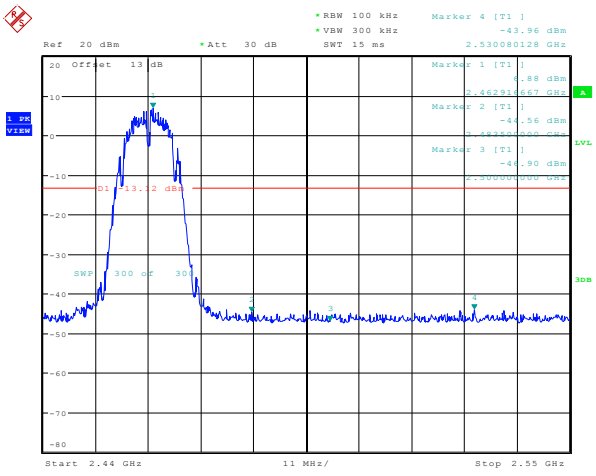
Band-edge for RF Conducted Emissions

11B _Low_2412




Date: 1.JAN.2003 01:48:02

11B _High_2462

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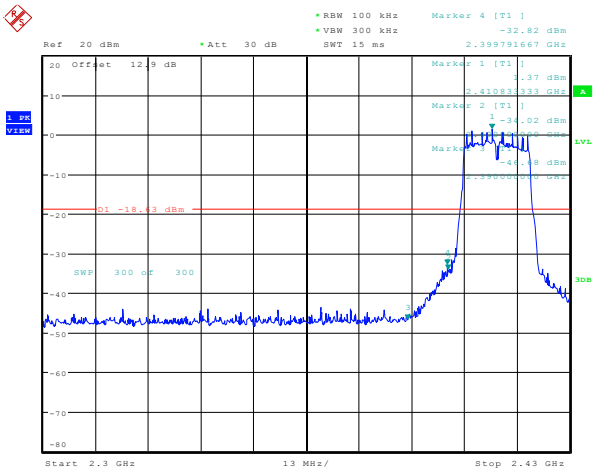
11G _Low_2412




Date: 1.JAN.2003 02:02:33

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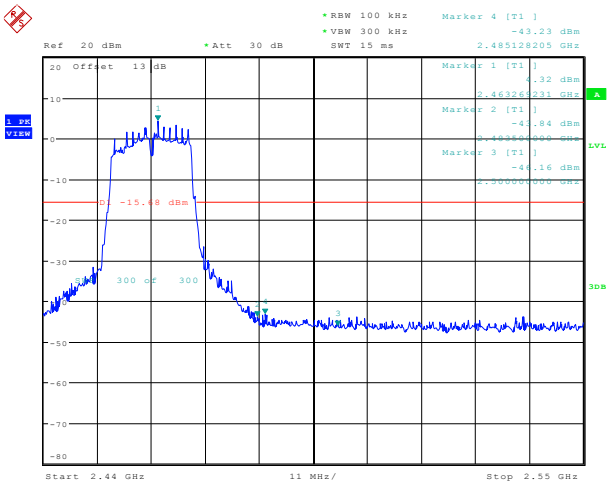


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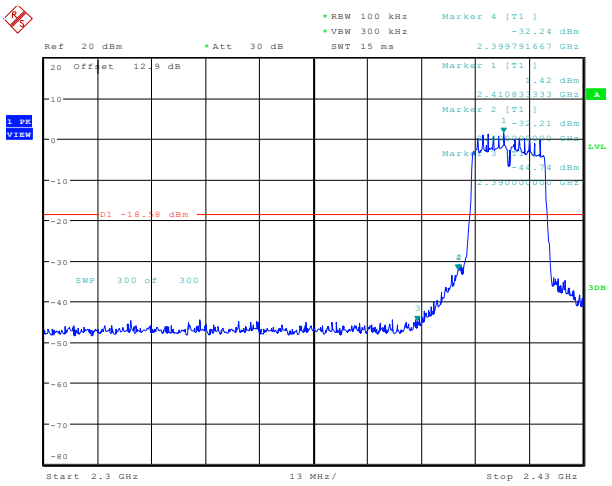
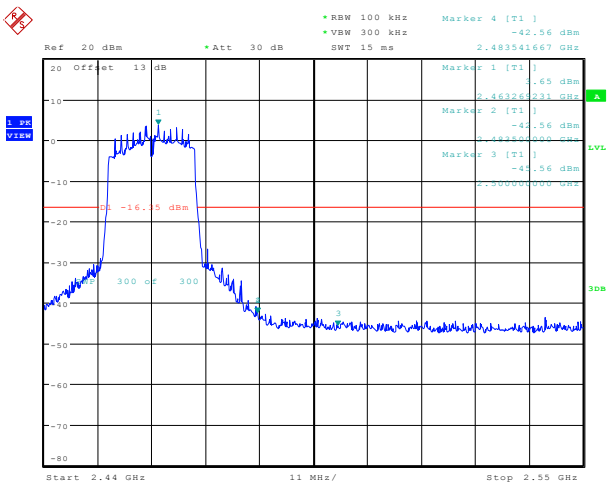
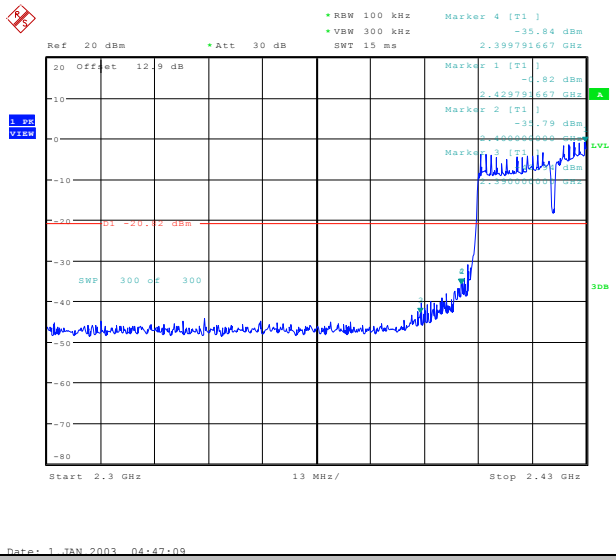
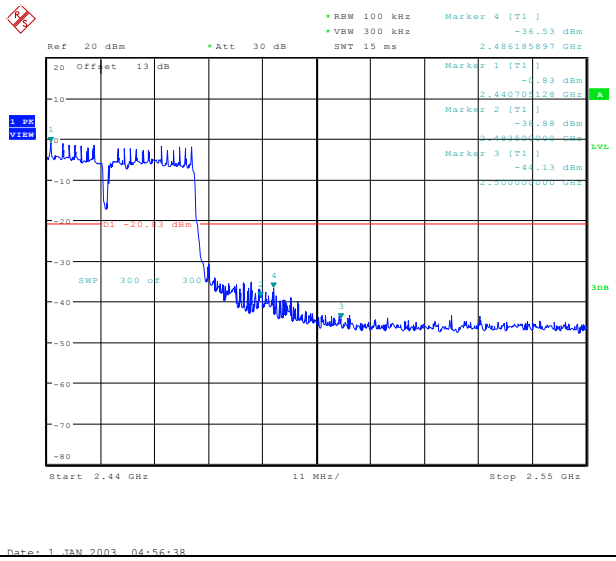



## 11N20 _High_2462



| 11N40 _Low_2422 |
| --- |
|  |



| 11N40 _High_2452 |
| --- |
|  |

# 10. RADIATED BANDEDGE AND SPURIOUS MEASUREMENT

## 10.1. LIMITS OF Radiated Bandedge and Spurious Measurement

Table 10 Radiation Emission Test Limit for FCC (9KHz-1GHz)

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 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 |
| 960~1000 | 500 | 3 |

Table 11 Radiation Emission Test Limit for FCC (Above 1G)

| Frequency (MHz) | (dBuV/m) (at 3 meters) | |
|---|---|---|
| | PEAK | AVERAGE |
| Above 1000 | 74 | 54 |

* The lower limit shall apply at the transition frequency.
* The test distance is 3m.

## 10.2. TEST PROCEDURE

ANSI C63.10-2013 Clause 11.12
1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. For measurement below 1GHz, the EUT was placed on a turntable with 0.8 meter,above ground. For measurement above 1 GHz, test at FAR, the EUT is placed on a non-conductive table, which is 1.5 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
(1) Span shall wide enough to fully capture the emission being measured;
(2) Set RBW=100 kHz for f < 1 GHz; VBW >= RBW; Sweep = auto; Detector

function = peak; Trace = max hold;
(3) Set RBW = 1 MHz, VBW= 3MHz for f > 1 GHz for peak measurement.
Set RBW = 1 MHz, and 1/T (on time) for average measurement.

## 10.3.TEST DATA

9 kHz-30MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

Table 12 Radiated Emission Test Data 9k Hz-30MHz

| Frequency (MHz) | Cable Loss +preamp (dB) | Antenna Factor (dB) | Reading (dBμV/m) | Level (dBμV/m) | Polarity (H/V) | Limit (dBμV/m) | Margin (dB) | Note |
|---|---|---|---|---|---|---|---|---|
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |

30MHz-1GHz

Worst case is shown below for 30MHz-1GHz only.

The emissions don't show in following result tables are more than 20dB below the limits.

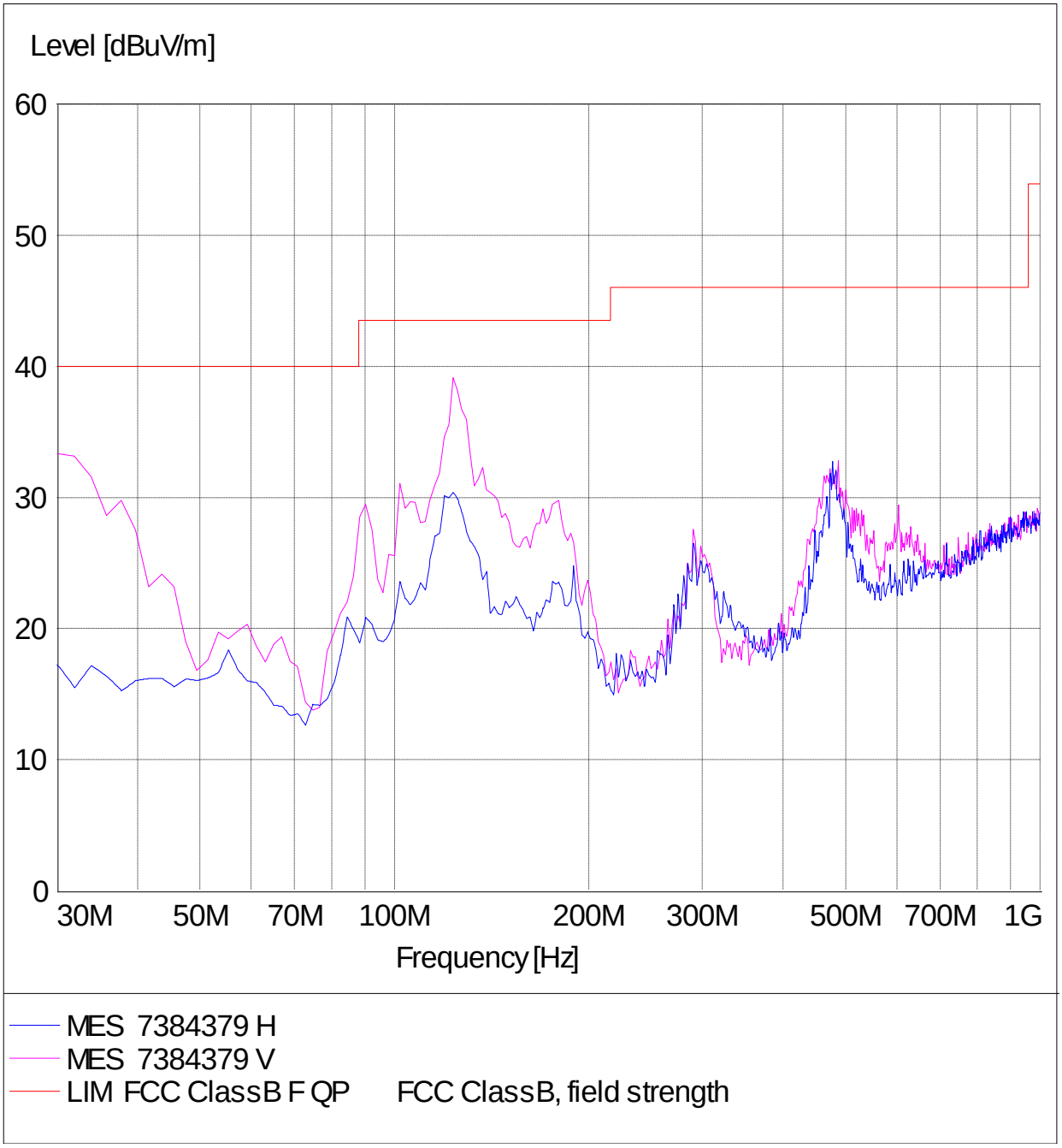
Table 13 Radiated Emission Test Data 30MHz-1GHz

| Frequency (MHz) | Cable Loss +preamp (dB) | Antenna Factor (dB) | Reading (dBμV/m) | Level (dBμV/m) | Polarity (H/V) | Limit (dBμV/m) | Margin (dB) | Note |
|---|---|---|---|---|---|---|---|---|
| 30.125 | 0.6 | 12.3 | 17.5 | 30.4 | V | 40 | 9.6 | QP |
| 38.021 | 0.7 | 12.3 | 13.8 | 26.8 | V | 40 | 13.2 | QP |
| 101.923 | 1.1 | 13.2 | 14.9 | 29.2 | V | 43.5 | 14.3 | QP |
| 123.306 | 1.2 | 10.5 | 25.4 | 37.1 | V | 43.5 | 6.4 | QP |
| 136.913 | 1.4 | 10.5 | 18.2 | 30.1 | V | 43.5 | 13.4 | QP |
| 482.531 | 2.6 | 16.1 | 11.1 | 29.8 | V | 46 | 16.2 | QP |
| 119.418 | 1.3 | 12.3 | 14.8 | 28.4 | H | 43.5 | 15.1 | QP |
| 123.306 | 1.2 | 10.5 | 16.3 | 28.0 | H | 43.5 | 15.5 | QP |
| 189.485 | 1.6 | 9.7 | 10.6 | 21.9 | H | 43.5 | 21.6 | QP |
| 295.312 | 2.0 | 12.7 | 8.5 | 23.2 | H | 46 | 22.8 | QP |
| 479.298 | 2.6 | 15.6 | 11.9 | 30.1 | H | 46 | 15.9 | QP |

Remark: Emission level (dBuV)=Read Value(dBuV/m) + Antenna Factor(dB)+ Cable Loss +preamp(dB)

**Radiated Emission**

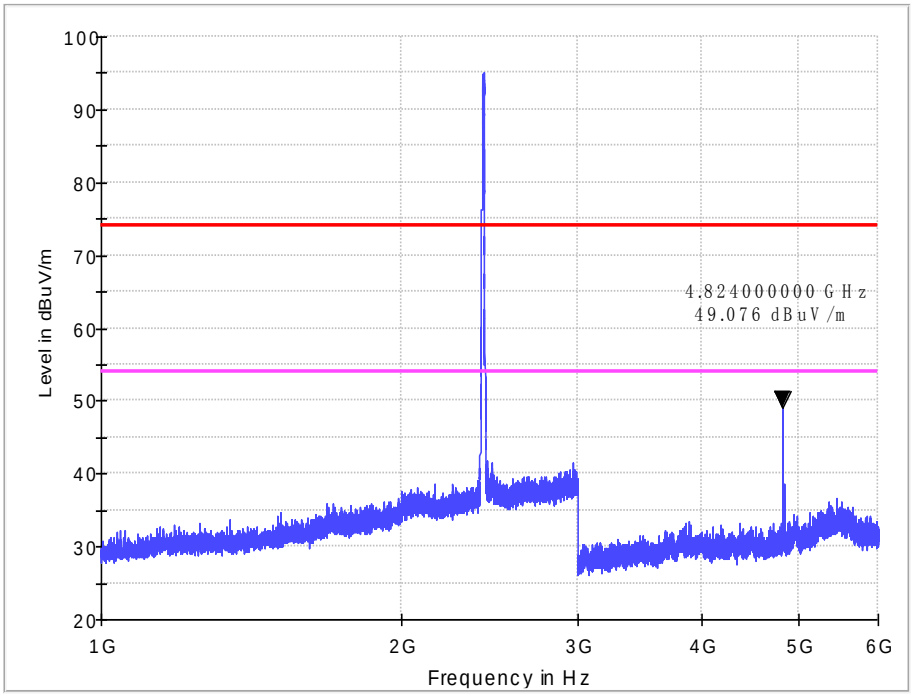
EUT Name: FX105F
Operating Condition: Charging and Transmitting
Test site: SMQ NETC EMC Lab.
Antenna Position: Vertical & Horizontal
Test Voltage: AC 120V/60Hz

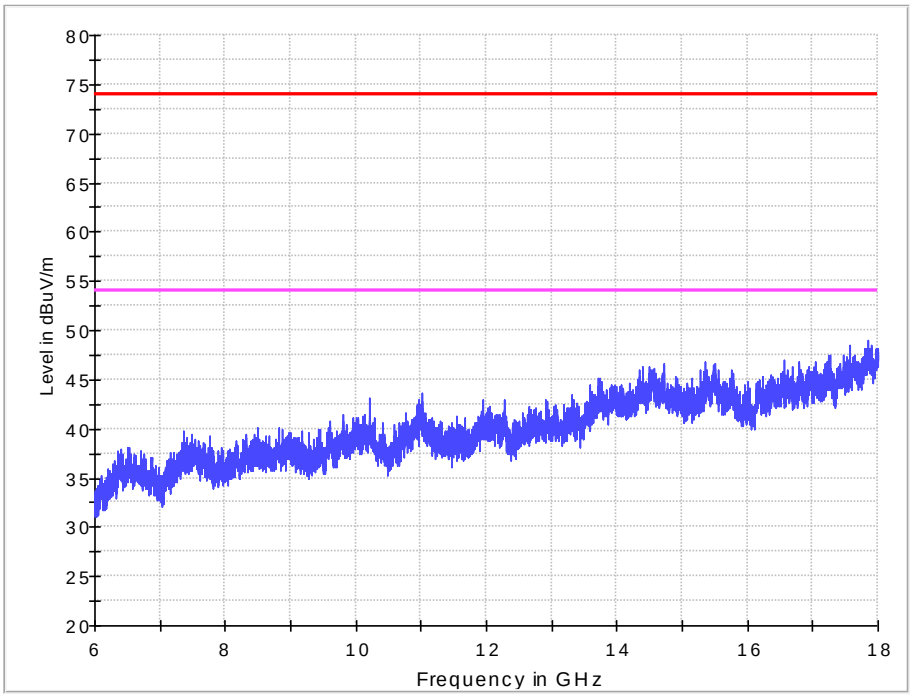


1-18G

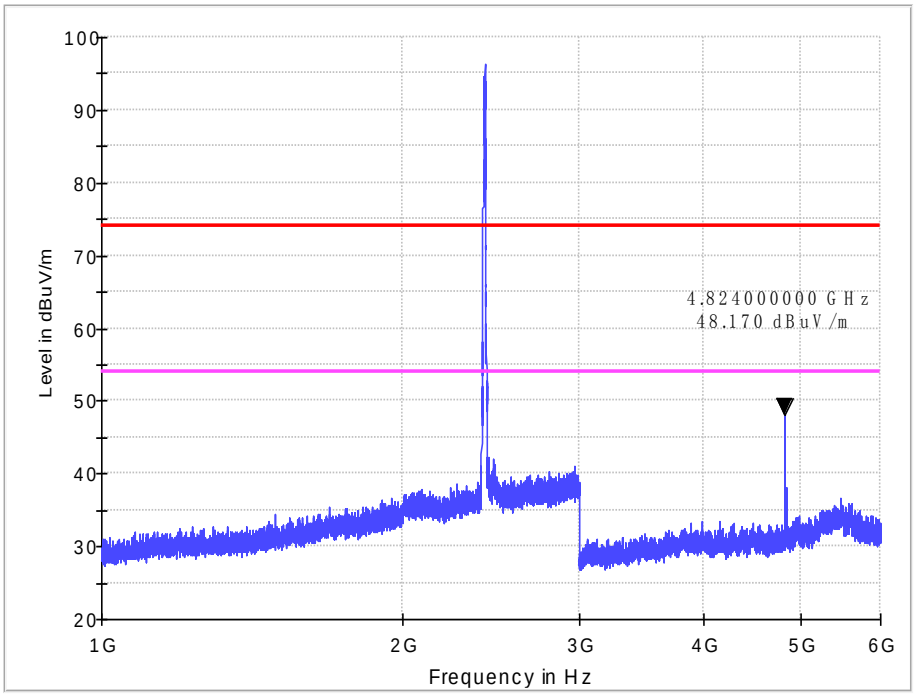
802.11b CH1

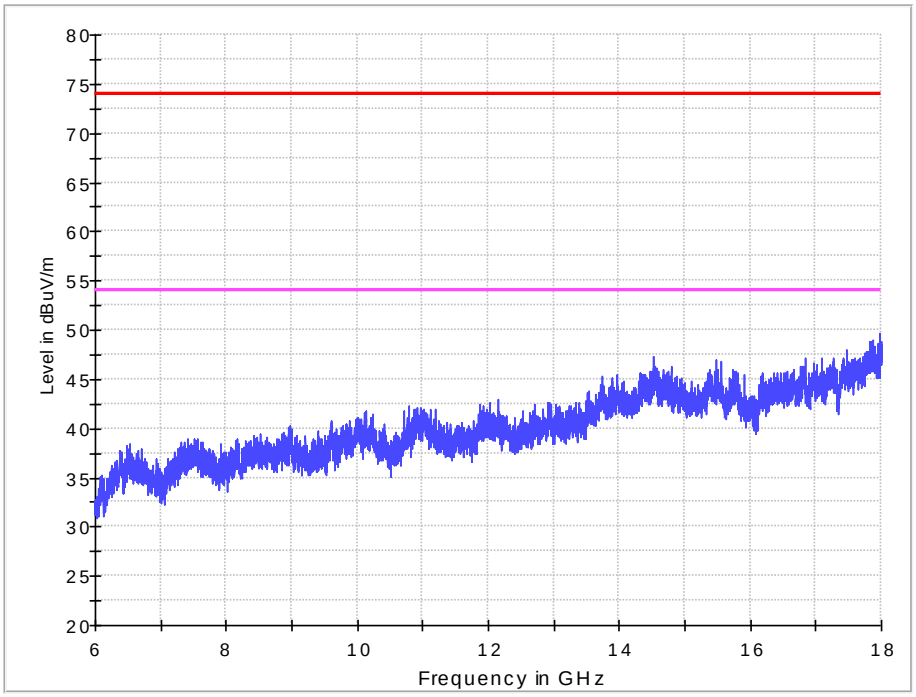
Horizontal



Vertical

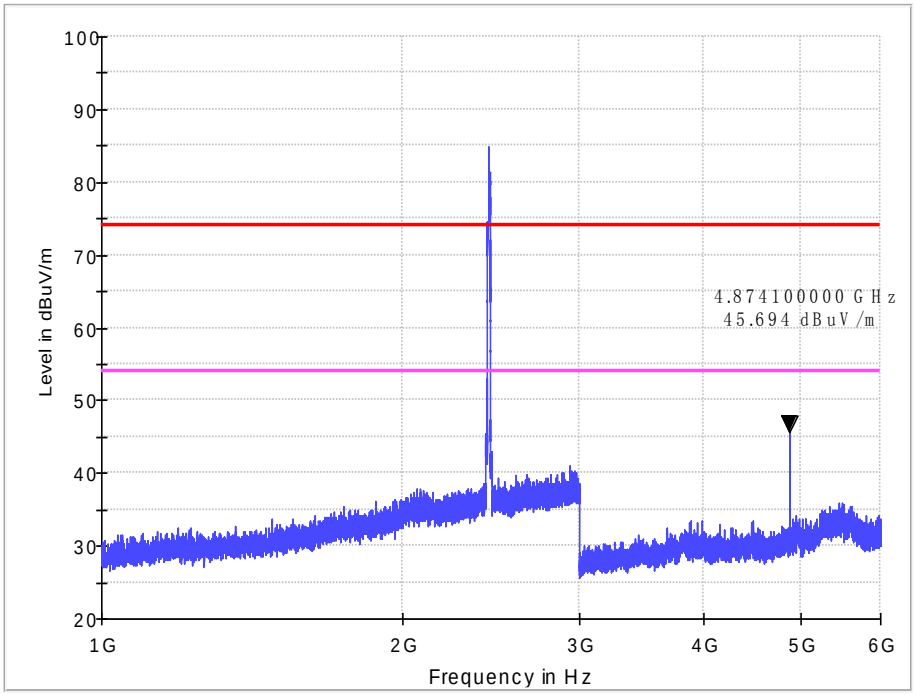

100
90
80
70
60
50
40
30
20
Level in dBuV/m
4.824000000 GHz
48.170 dBuV/m
1G
2G
3G
4G
5G
6G
Frequency in Hz

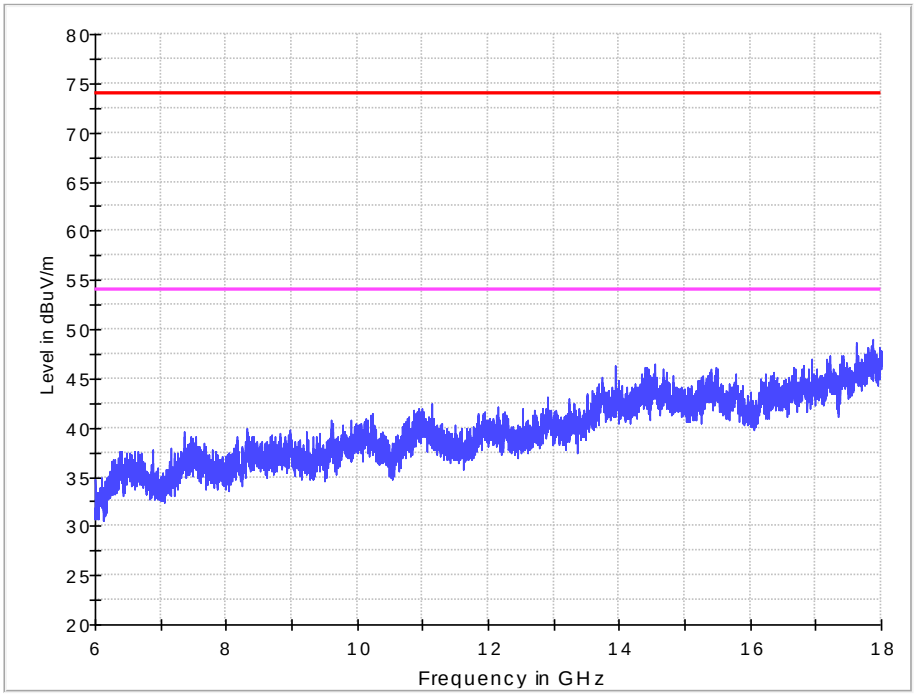

80
75
70
65
60
55
50
45
40
35
30
25
20
Level in dBuV/m
6
8
10
12
14
16
18
Frequency in GHz

1-18G

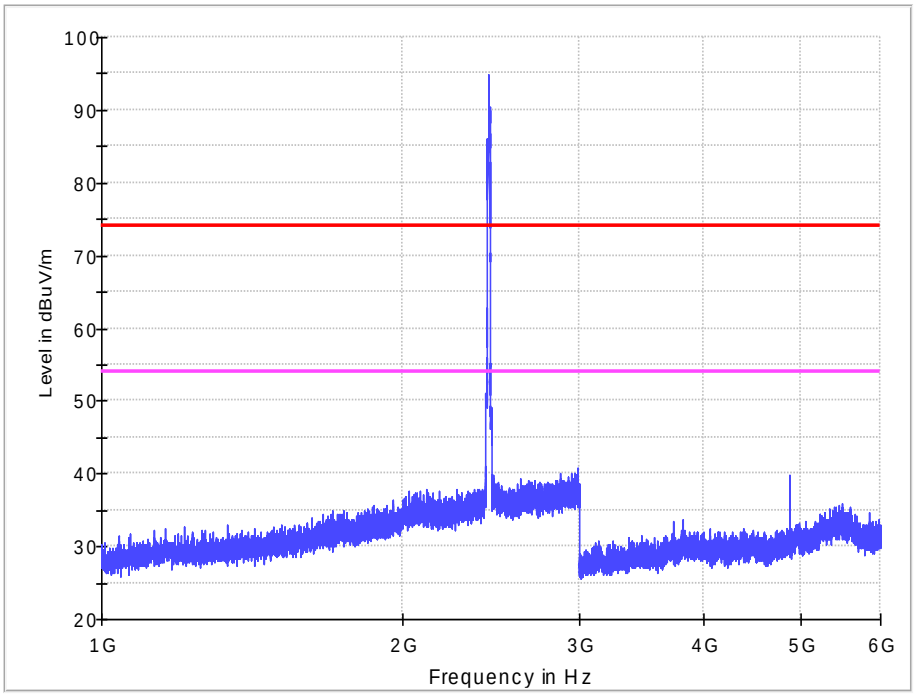
802.11b CH6

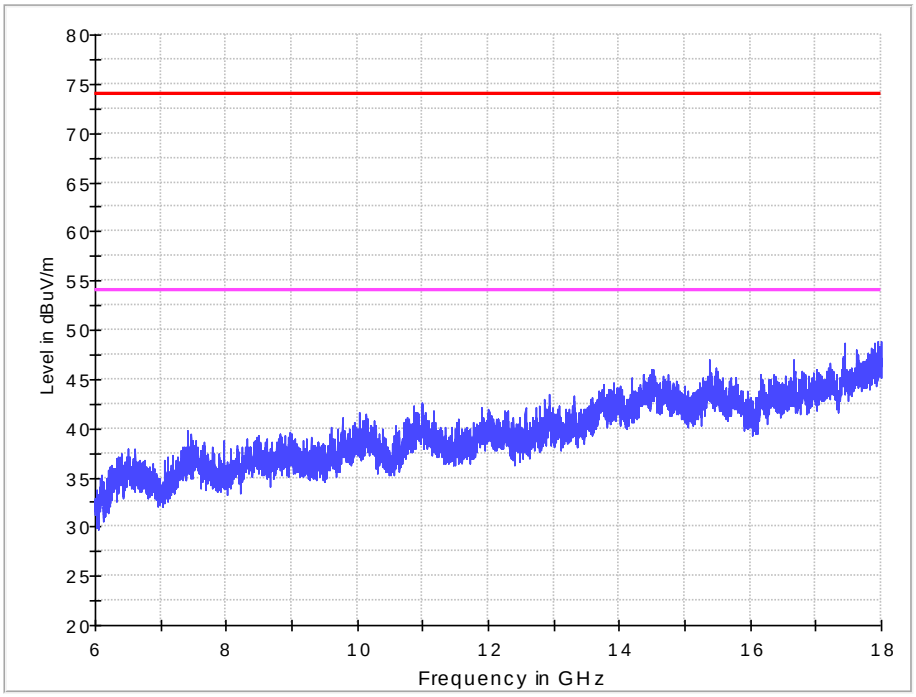
Horizontal



Vertical

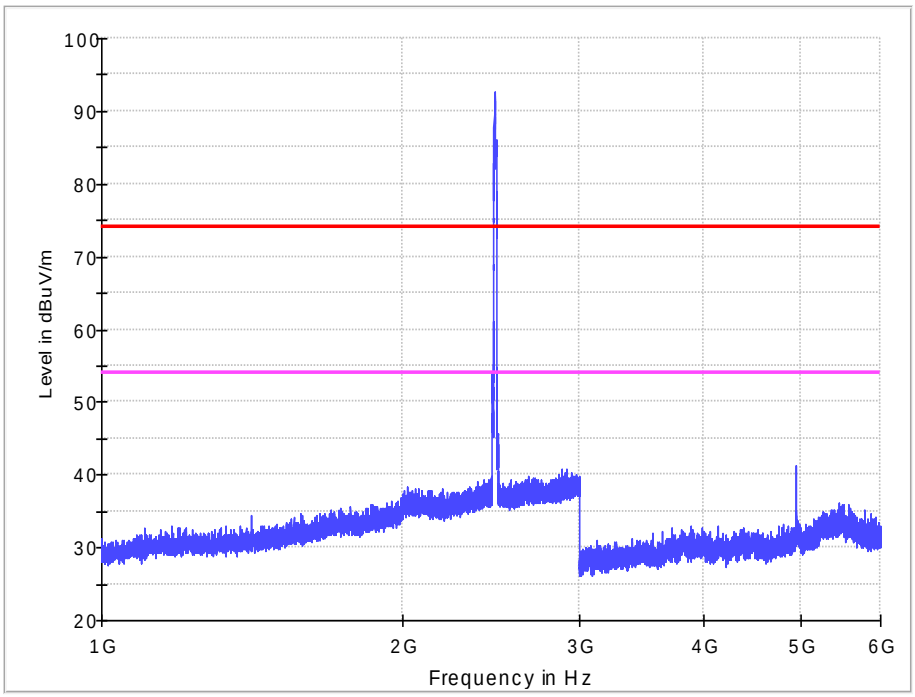

100
90
80
70
60
50
40
30
20
Level in dBuV/m
1G
2G
3G
4G
5G
6G
Frequency in Hz

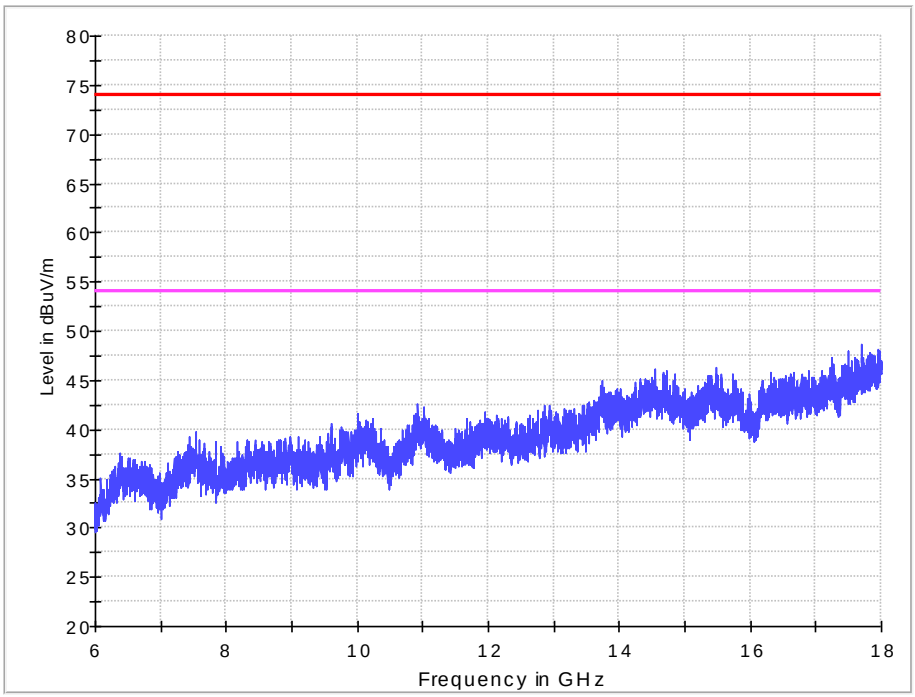

80
75
70
65
60
55
50
45
40
35
30
25
20
Level in dBuV/m
6
8
10
12
14
16
18
Frequency in GHz

1-18G

802.11b CH11

Horizontal



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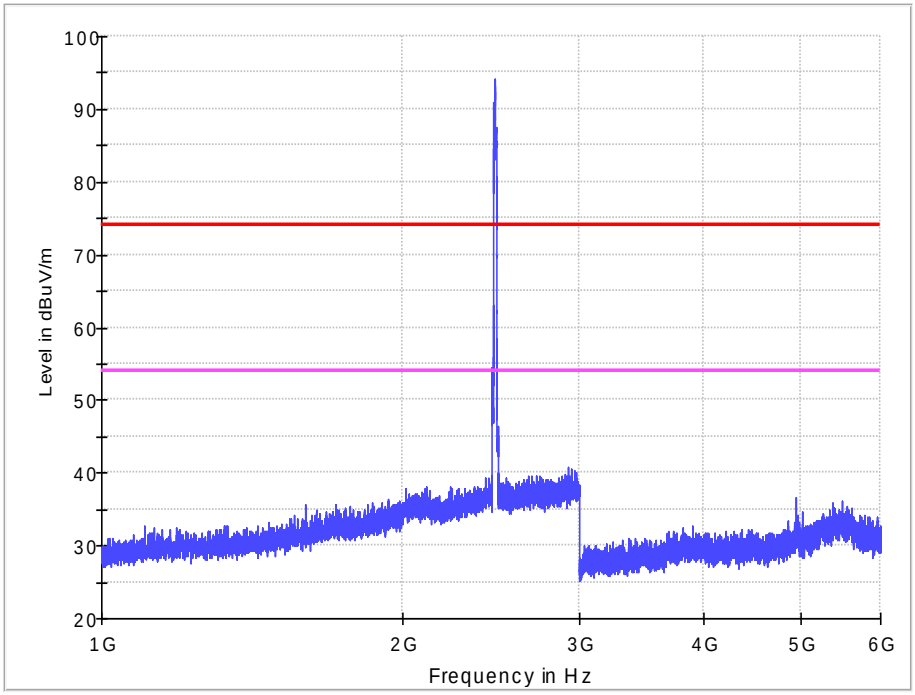
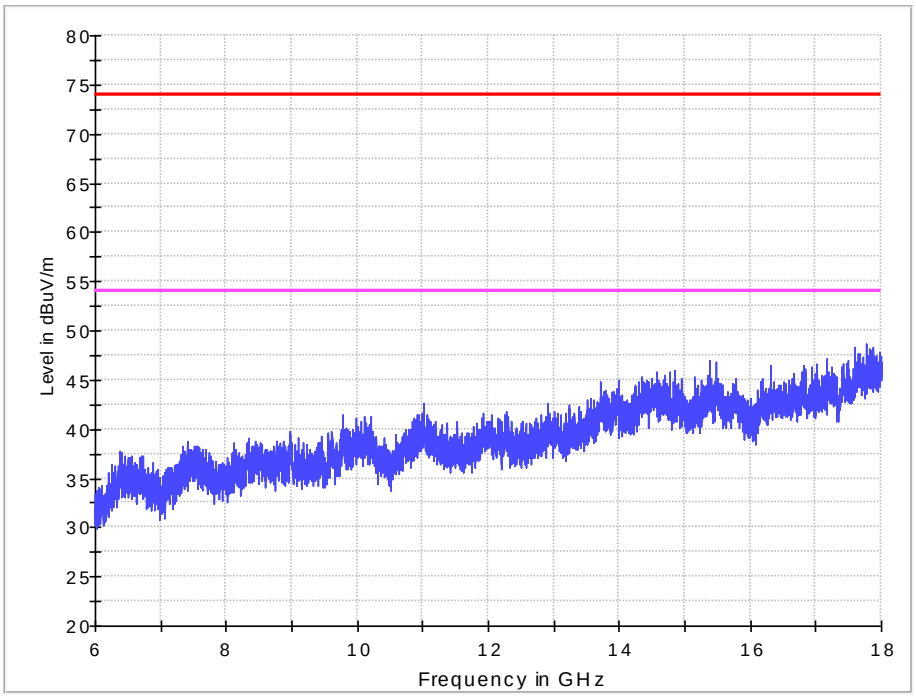

100
90
80
70
60
50
40
30
20
Level in dBuV/m
1G
2G
3G
4G
5G
6G
Frequency in Hz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20
Level in dBuV/m
6
8
10
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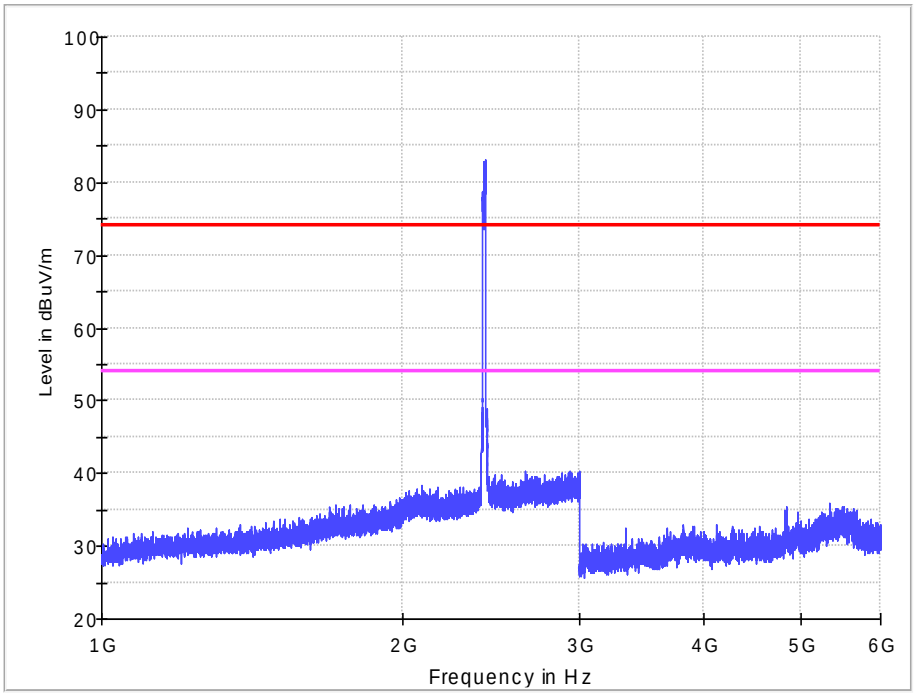
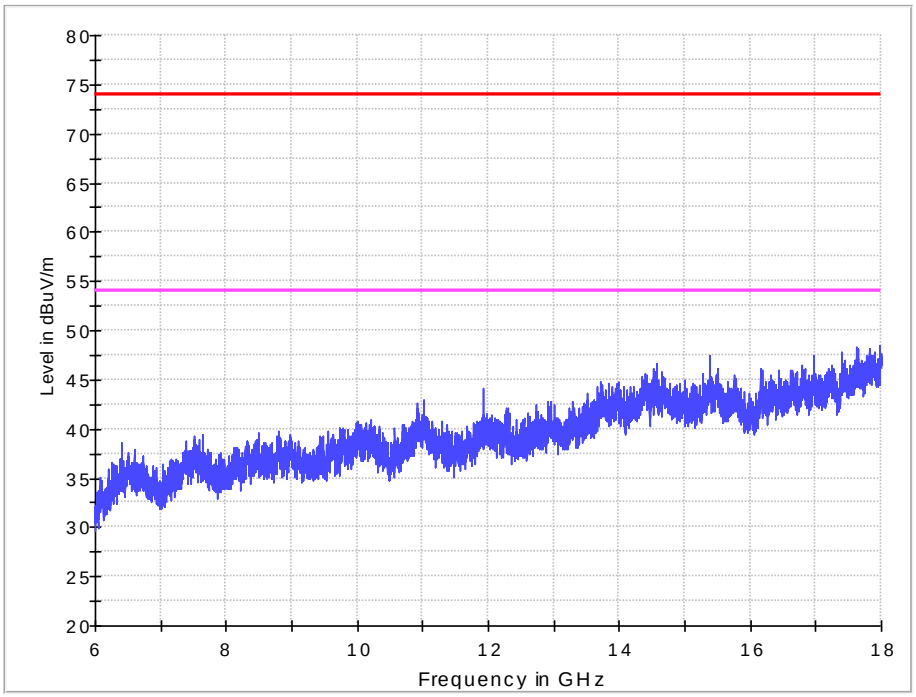
16
18
Frequency in GHz

1-18G

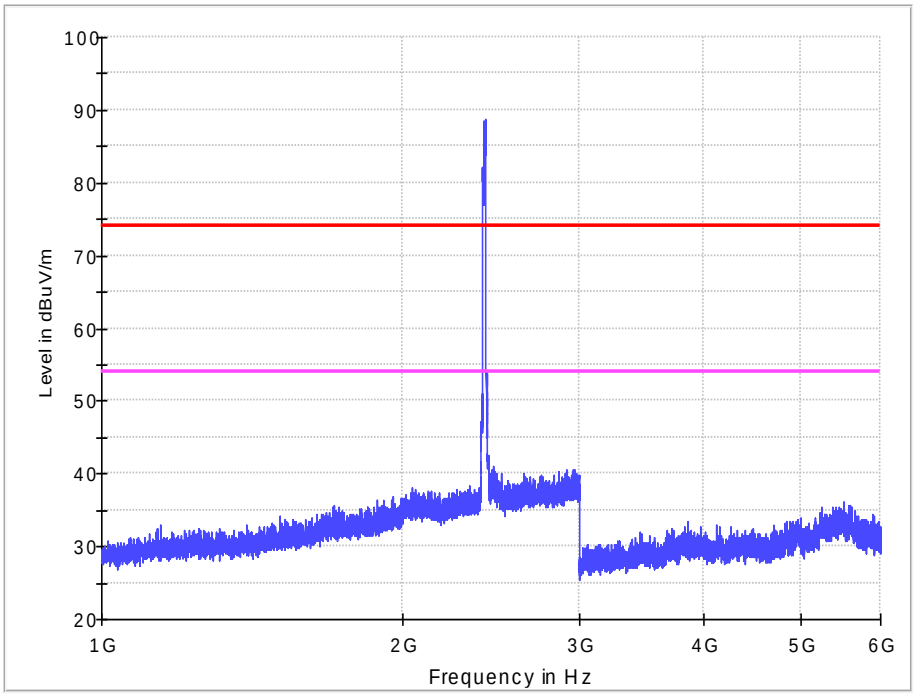
802.11g CH1

Horizontal



Vertical


100
90
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40
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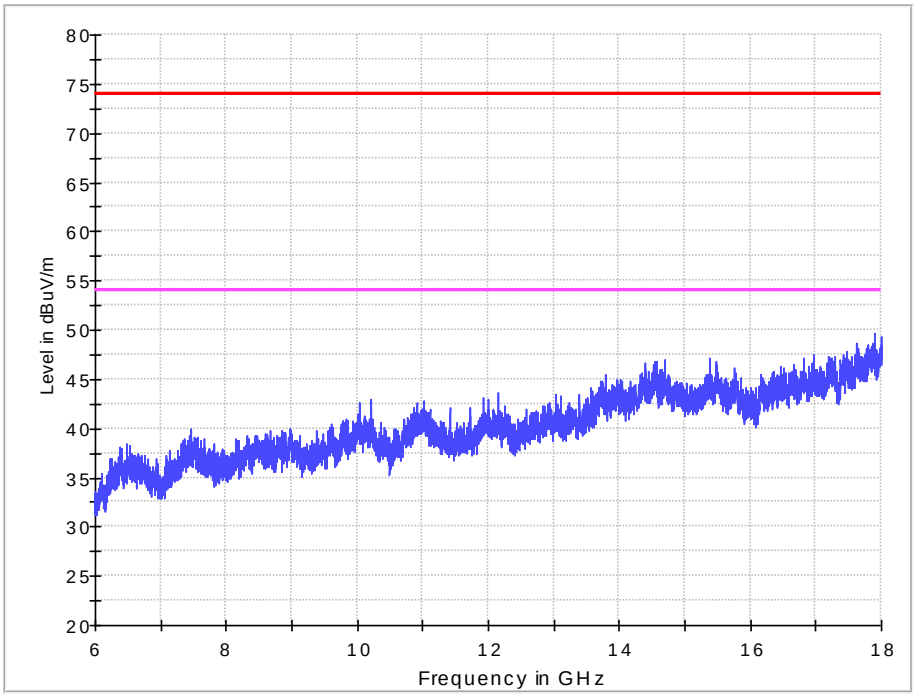
Level in dBuV/m
1G
2G
3G
4G
5G
6G
Frequency in Hz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Level in dBuV/m
6
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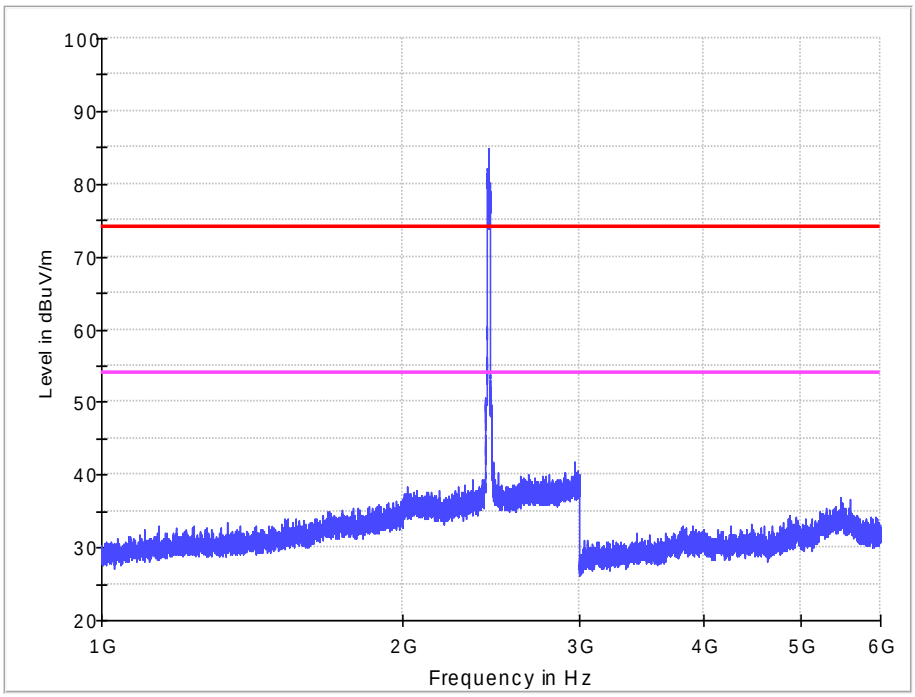
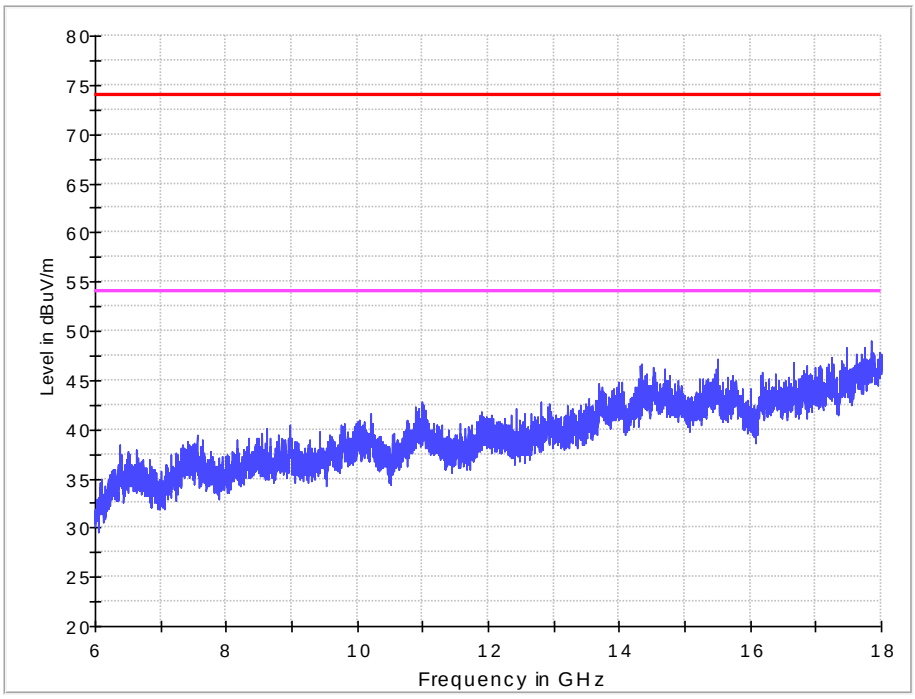
16
18
Frequency in GHz

1-18G

802.11g CH6

Horizontal



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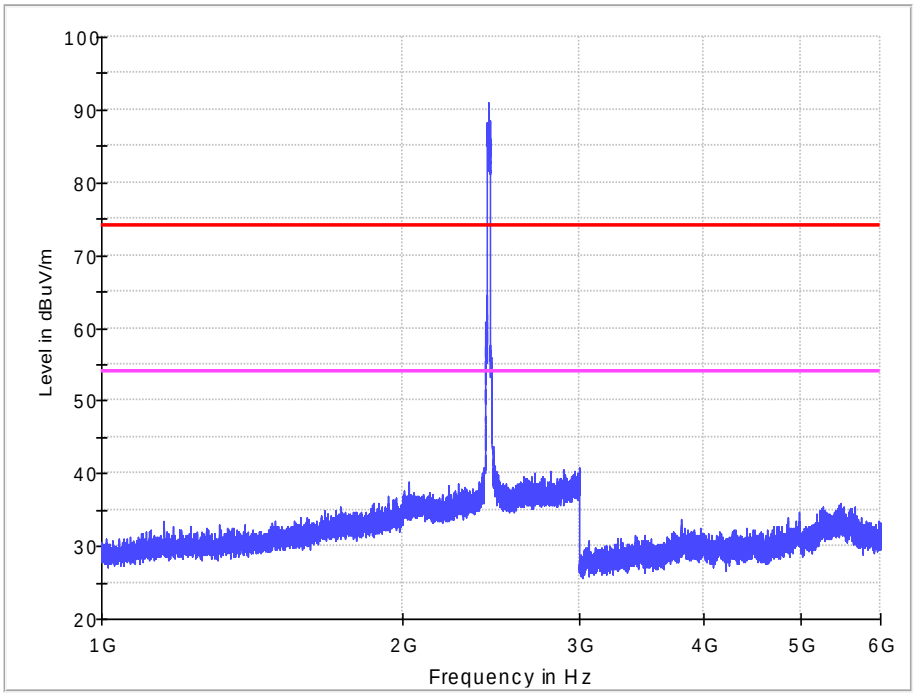
100
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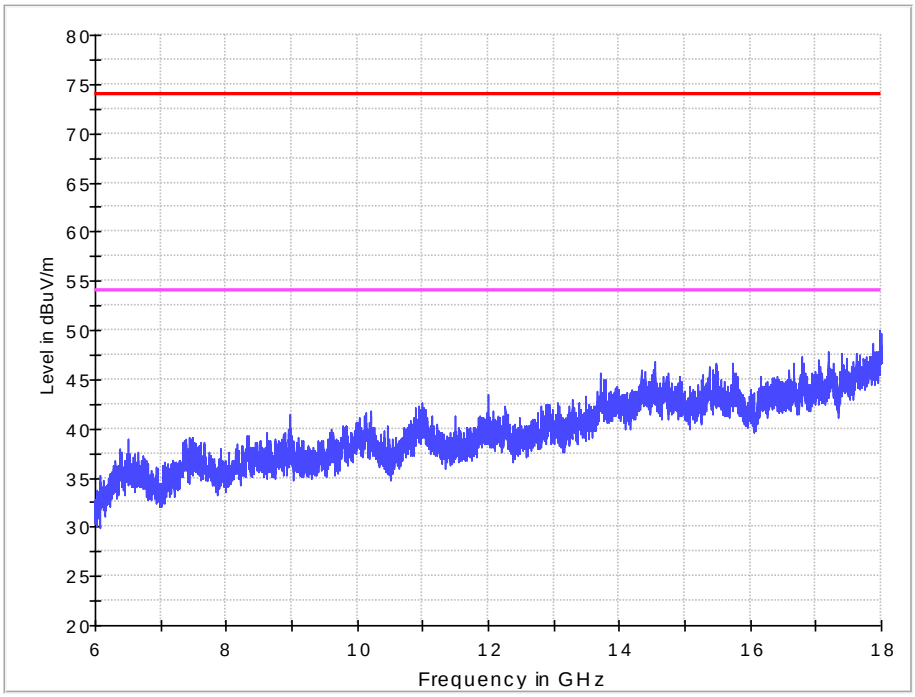
Level in dBuV/m
1G
2G
3G
4G
5G
6G
Frequency in Hz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Level in dBuV/m
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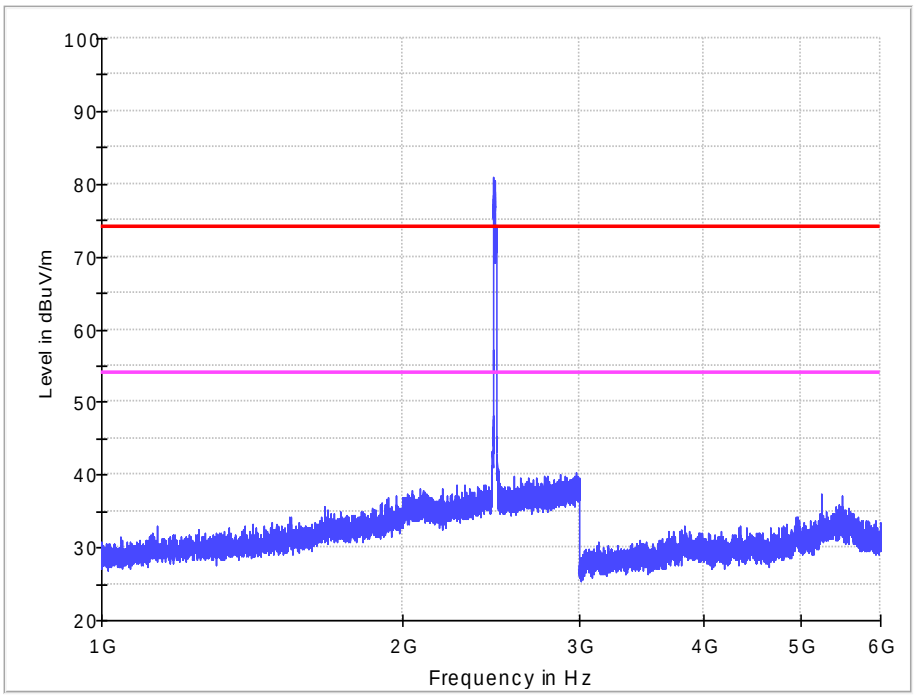
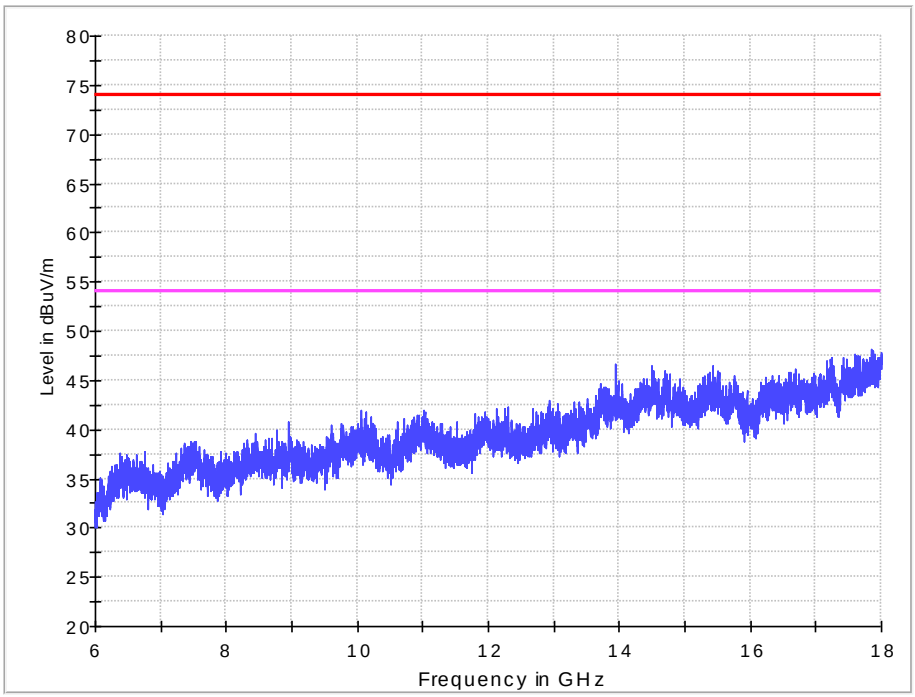
16
18
Frequency in GHz

1-18G

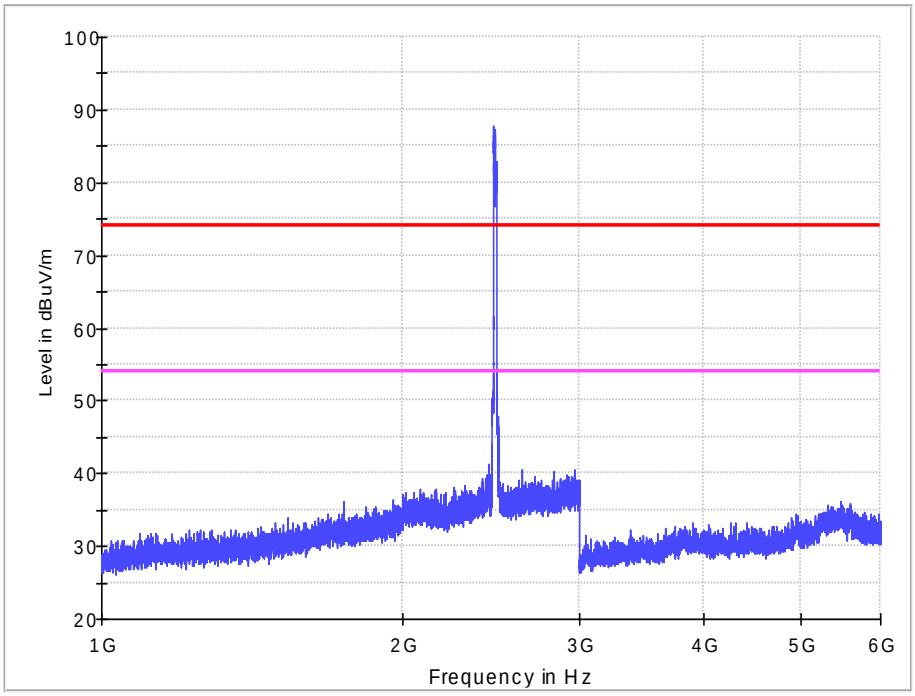
802.11g CH11

Horizontal



Vertical


100
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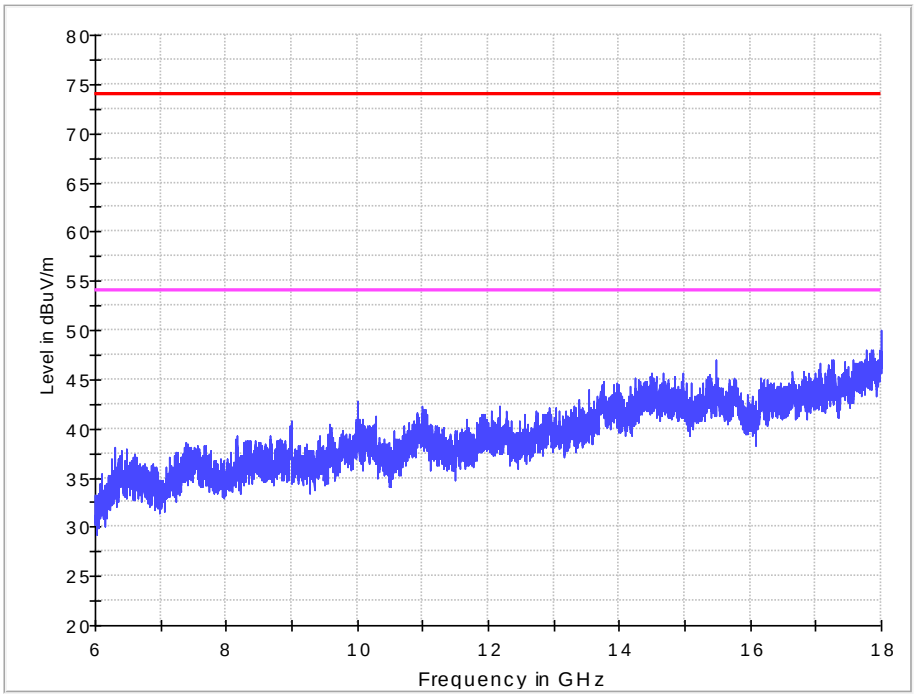
Level in dBuV/m
1G
2G
3G
4G
5G
6G
Frequency in Hz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Level in dBuV/m
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8
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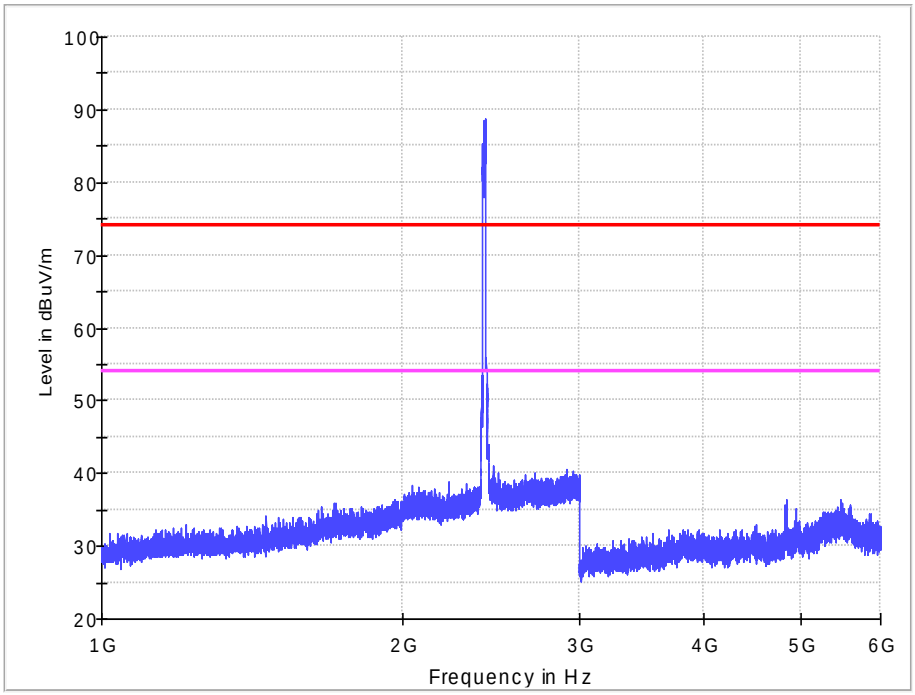
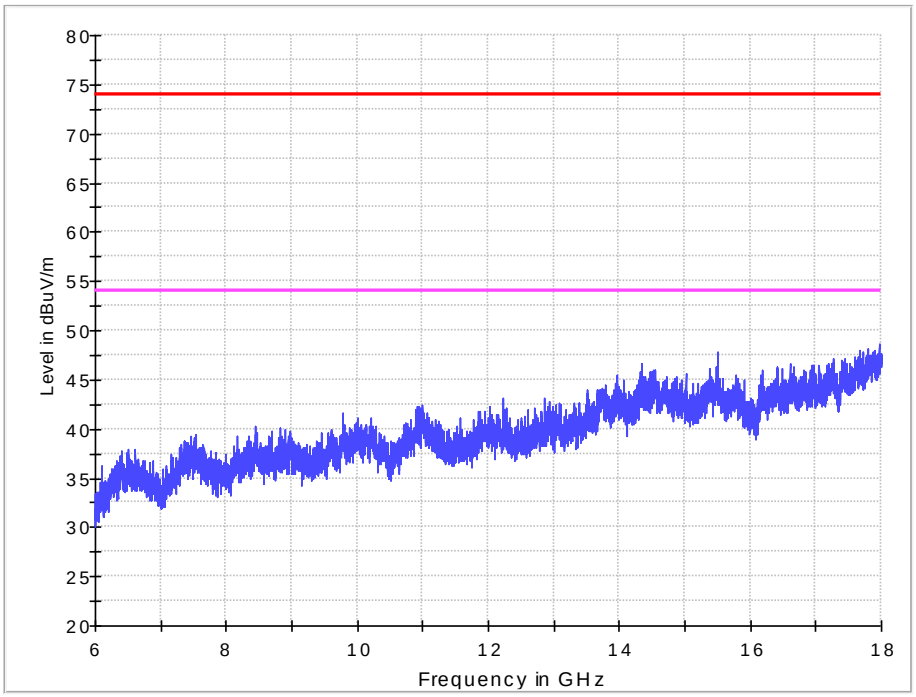
12
14
16
18
Frequency in GHz

1-18G

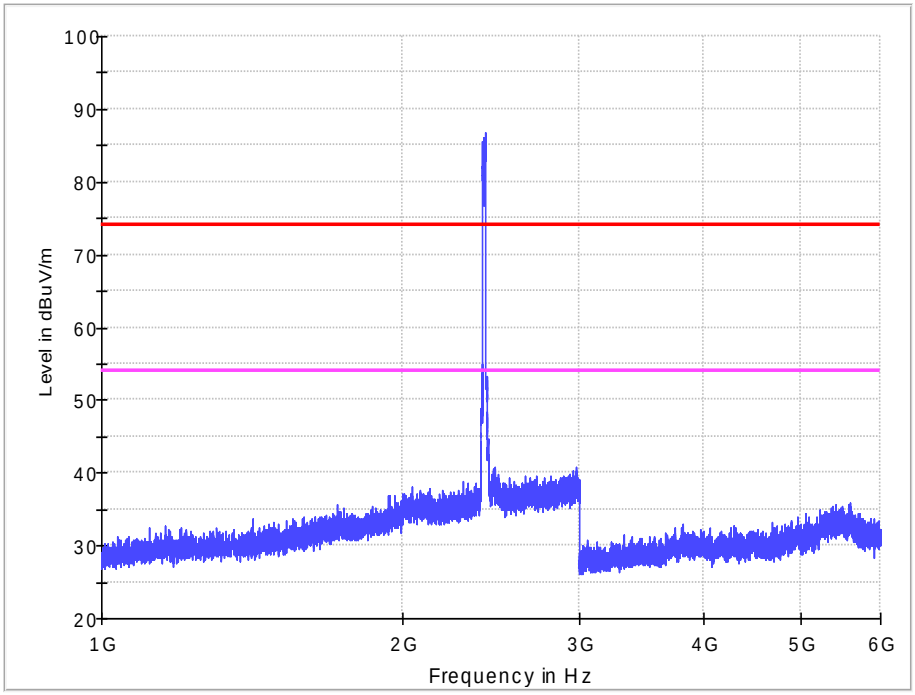
802.11n-HT20 CH1

Horizontal



Vertical


100
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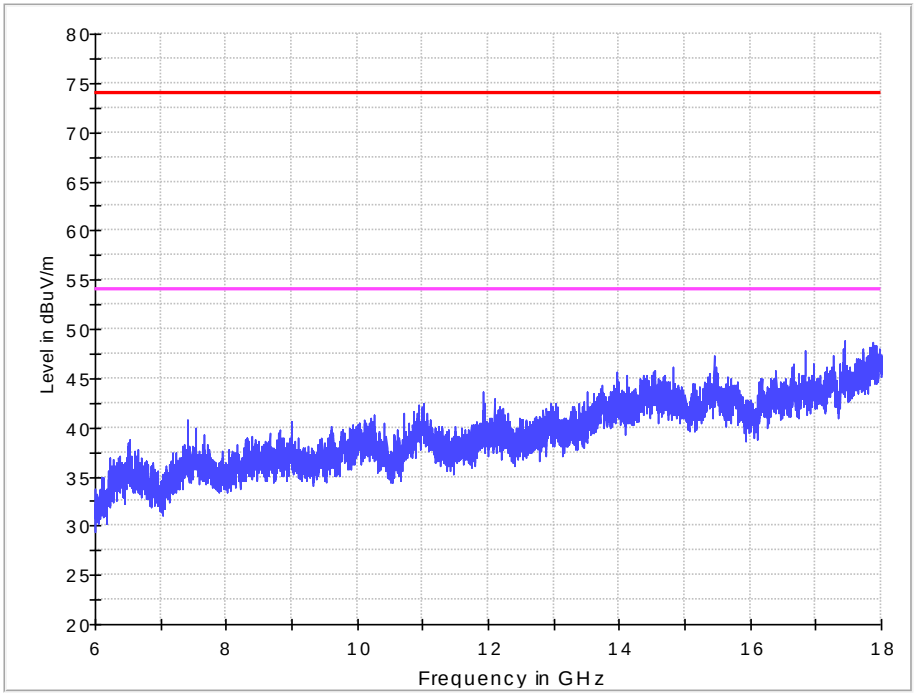
40
30
20
Level in dBuV/m
1G
2G
3G
4G
5G
6G
Frequency in Hz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35
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Level in dBuV/m
6
8
10
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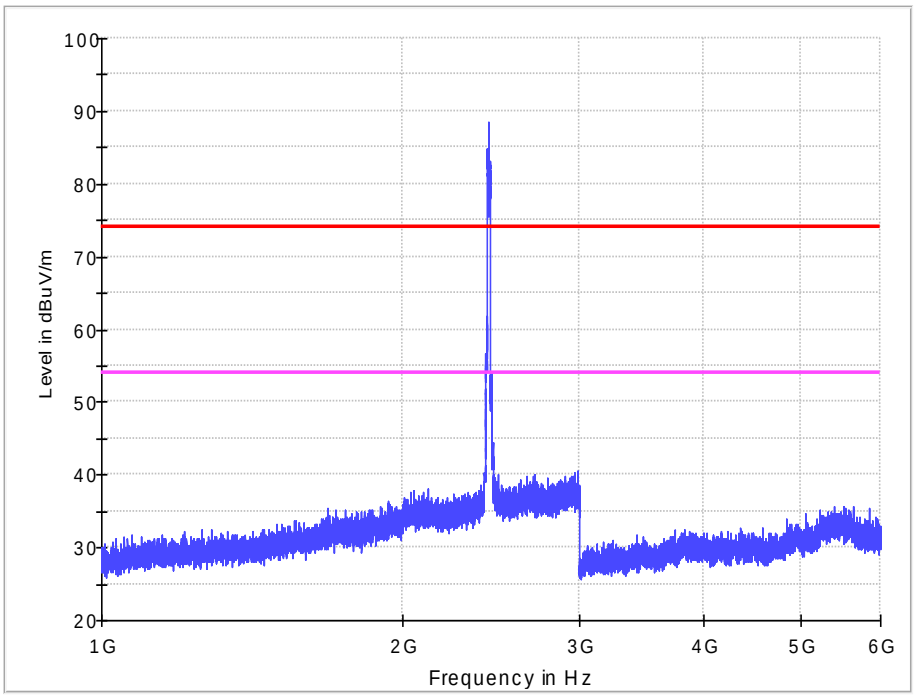
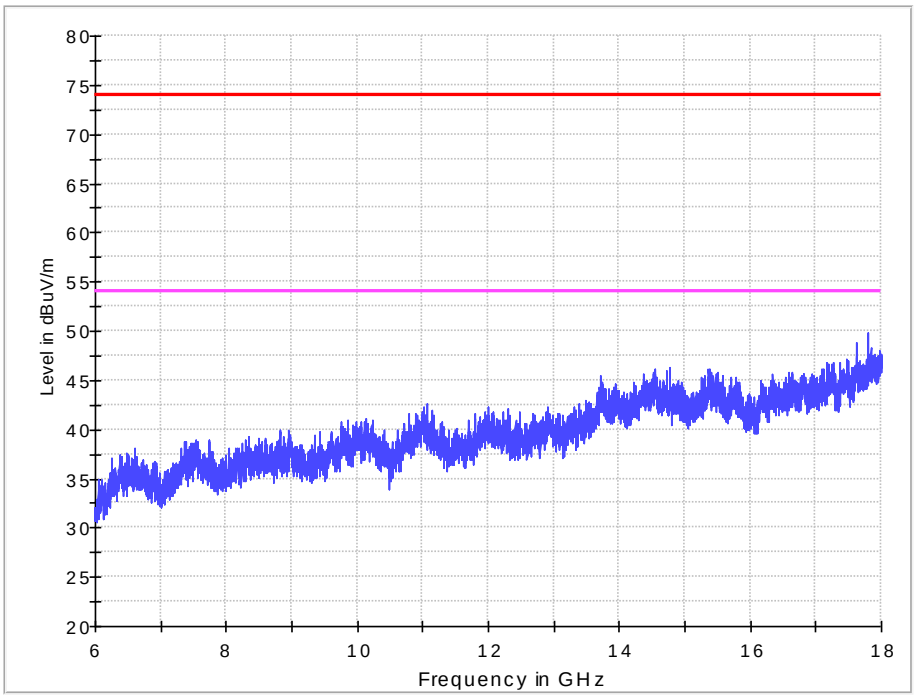
16
18
Frequency in GHz

1-18G

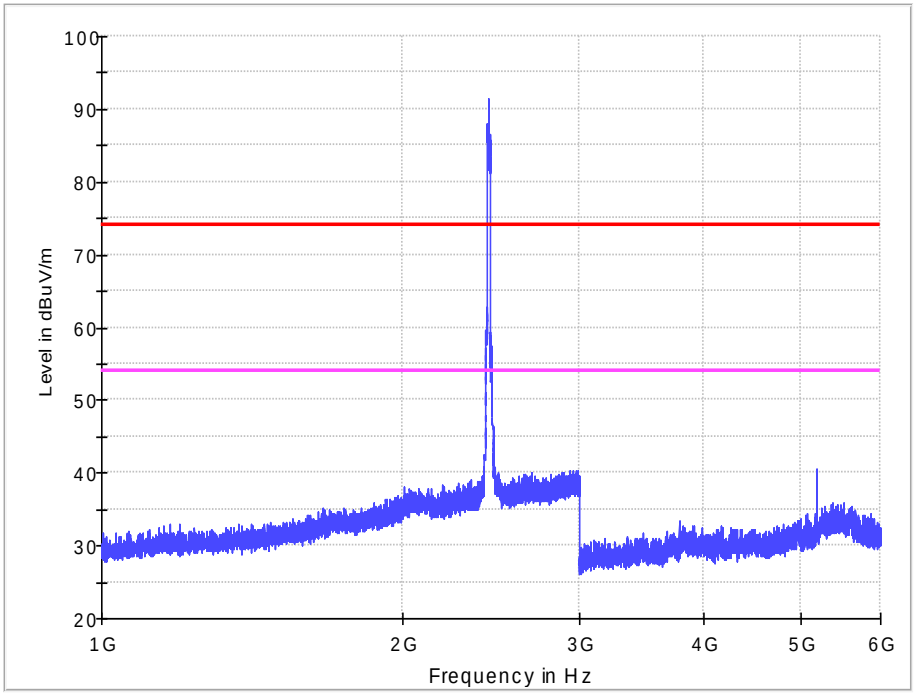
802.11n-HT20 CH6

Horizontal



Vertical


100
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80
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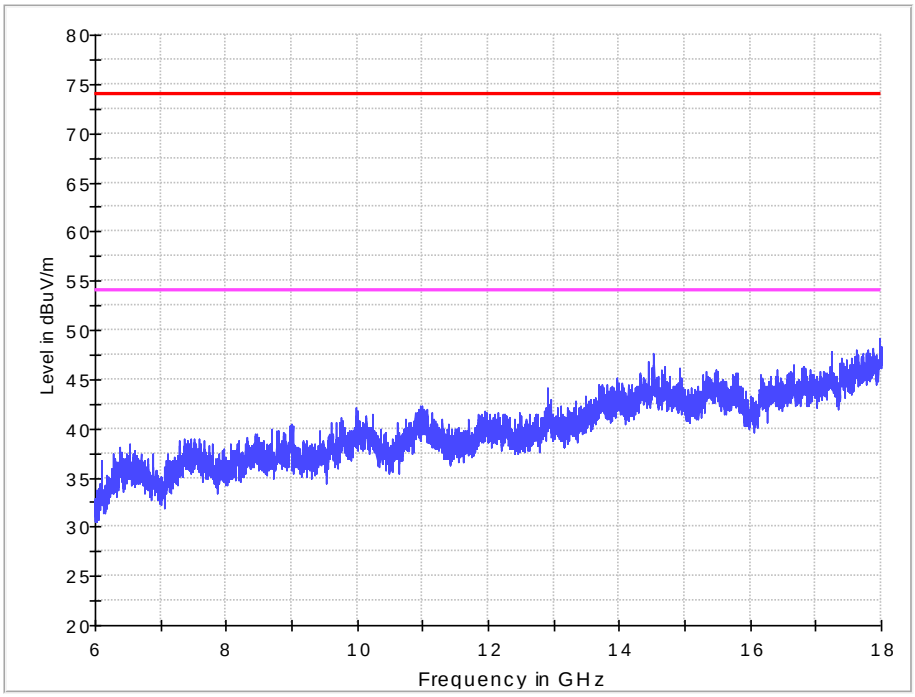
60
50
40
30
20
Level in dBuV/m
1G
2G
3G
4G
5G
6G
Frequency in Hz


80
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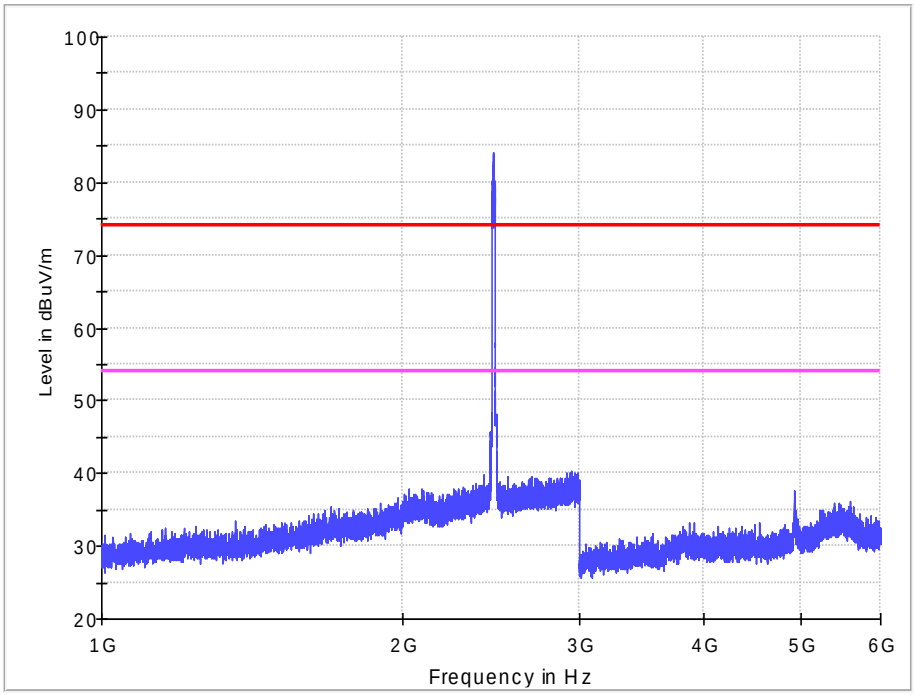
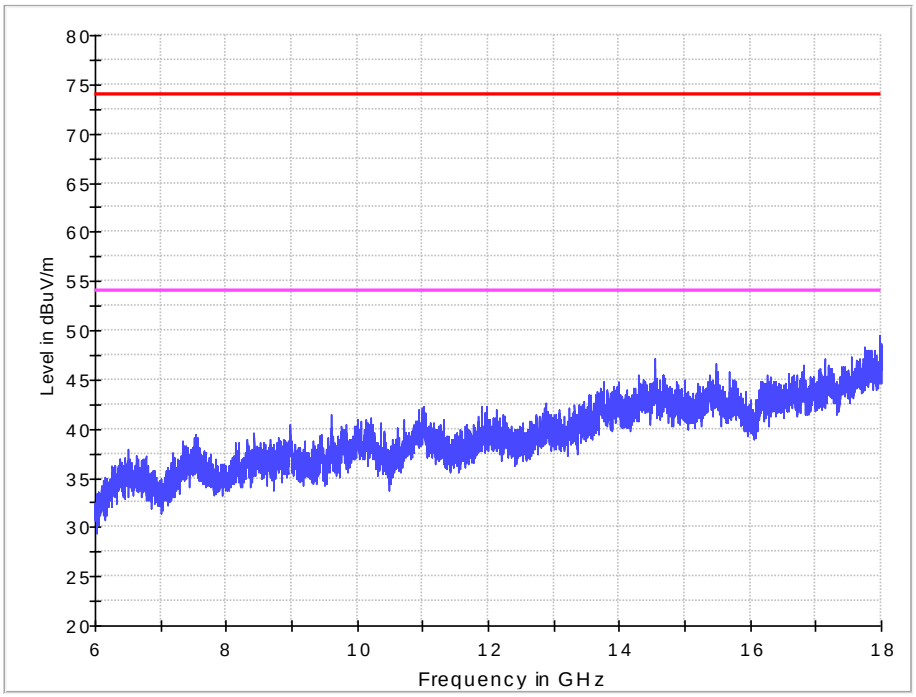
40
35
30
25
20
Level in dBuV/m
6
8
10
12
14
16
18
Frequency in GHz

1-18G

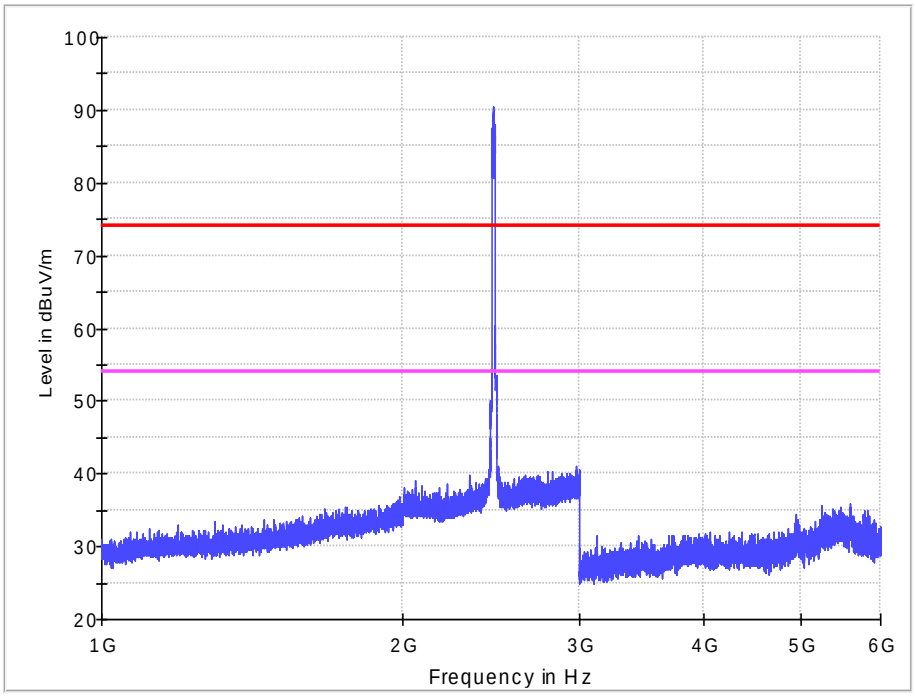
802.11n-HT20 CH11

Horizontal



Vertical


100
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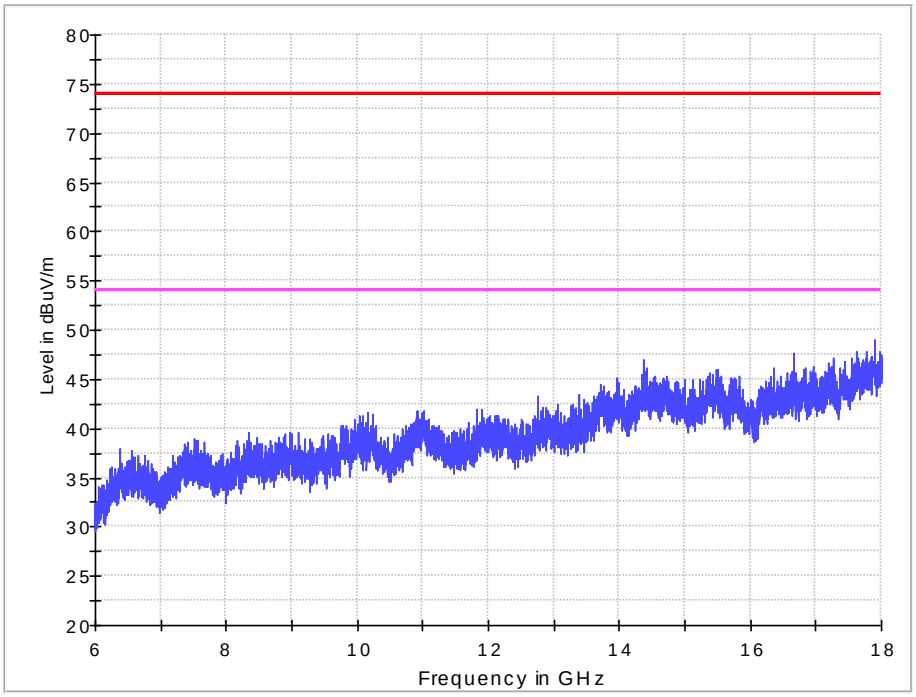
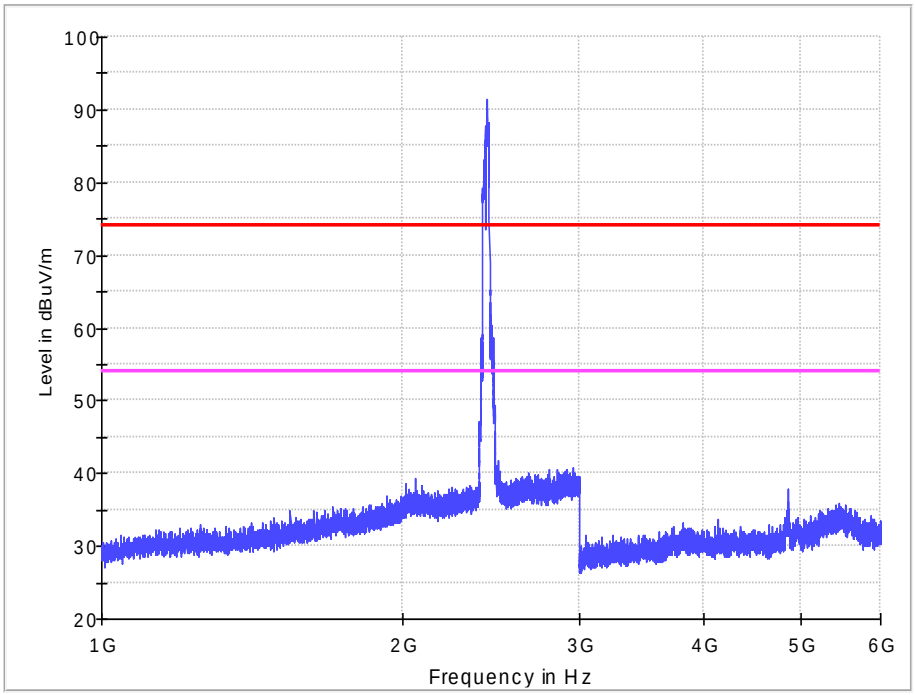
80
70
60
50
40
30
20
Level in dBuV/m
1G
2G
3G
4G
5G
6G
Frequency in Hz

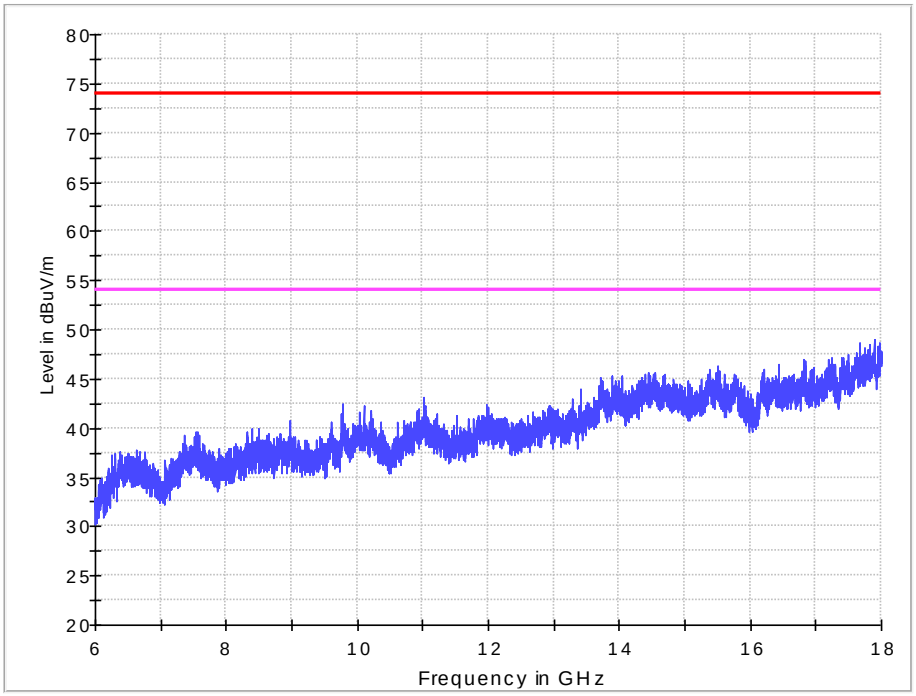

80
75
70
65
60
55
50
45
40
35
30
25
20
Level in dBuV/m
6
8
10
12
14
16
18
Frequency in GHz

1-18G

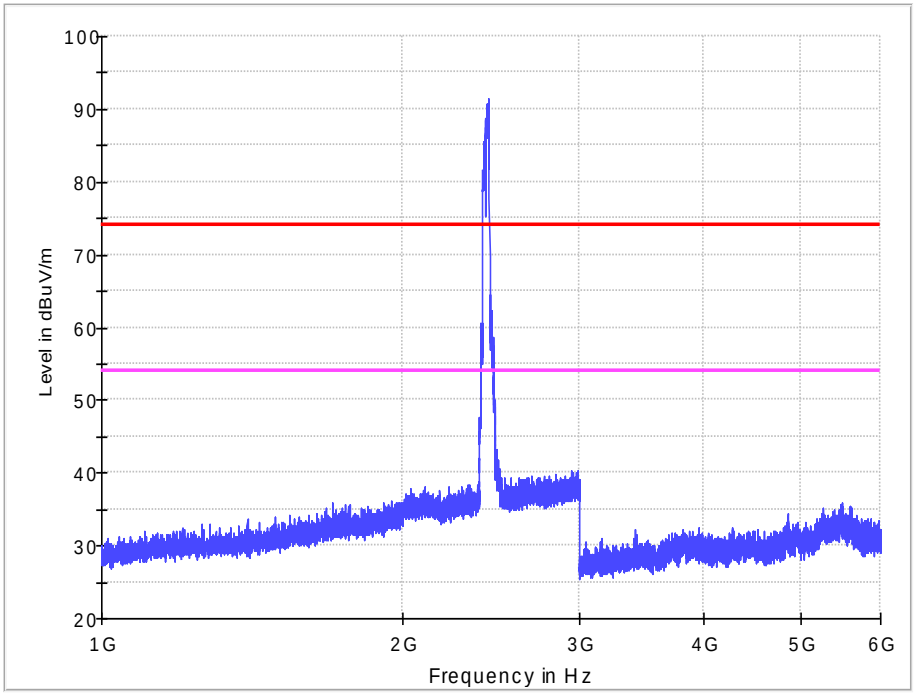
802.11n-HT40 CH3

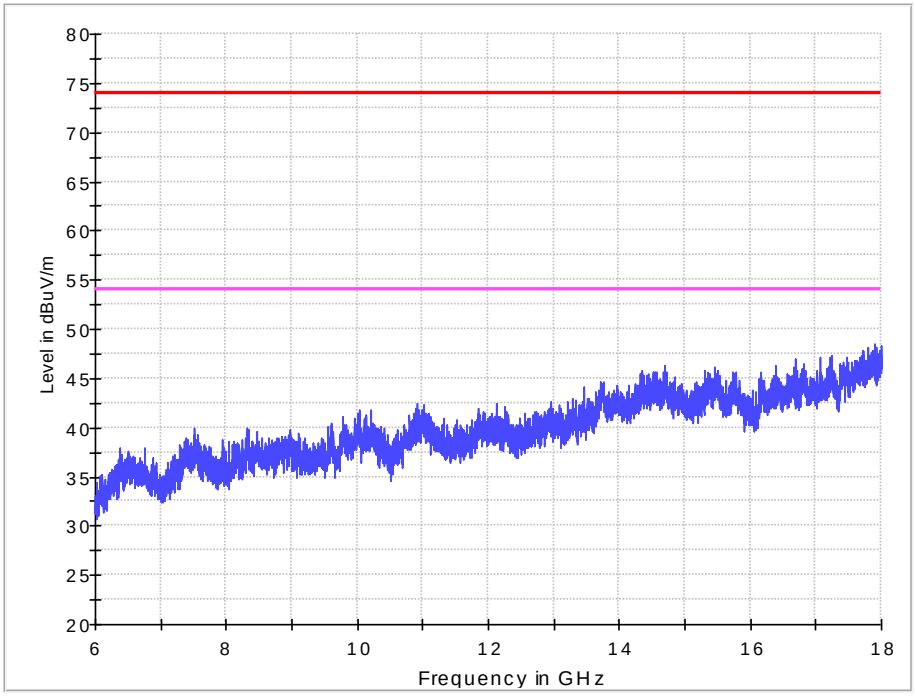
Horizontal



Vertical

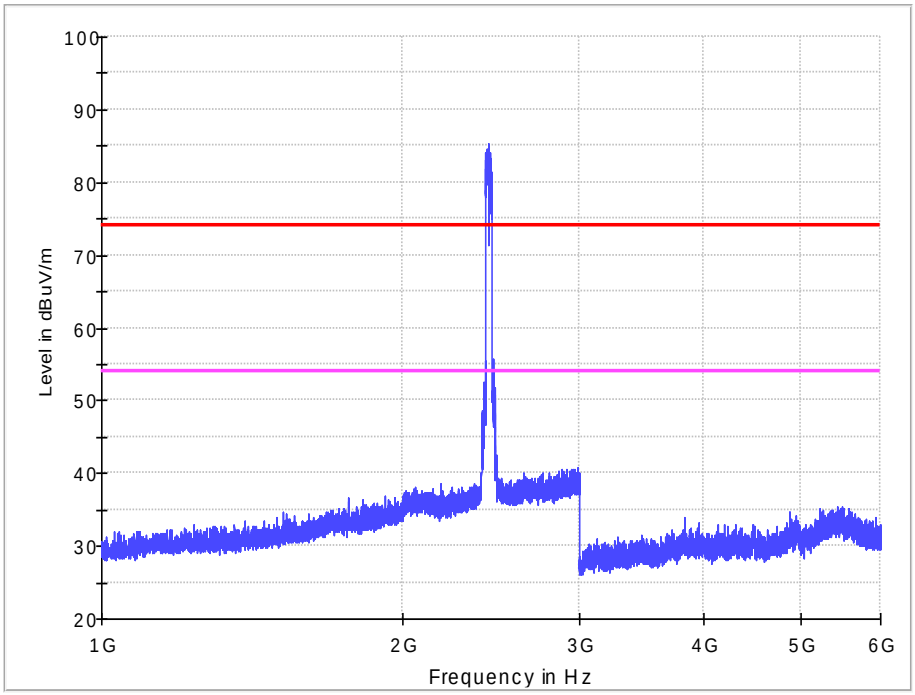

100
90
80
70
60
50
40
30
20
Level in dBuV/m
1G
2G
3G
4G
5G
6G
Frequency in Hz

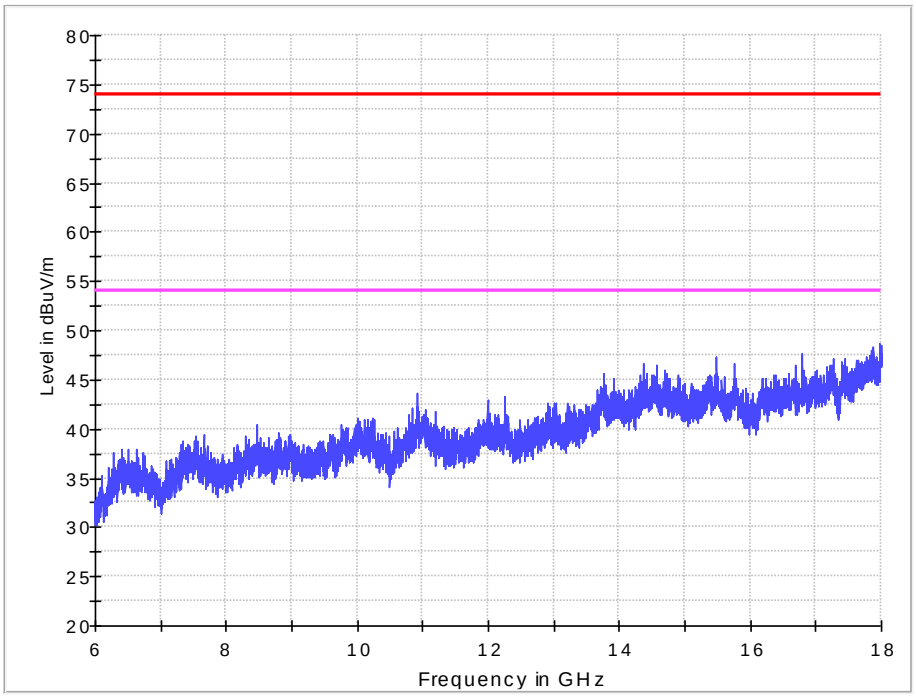

80
75
70
65
60
55
50
45
40
35
30
25
20
Level in dBuV/m
6
8
10
12
14
16
18
Frequency in GHz

1-18G

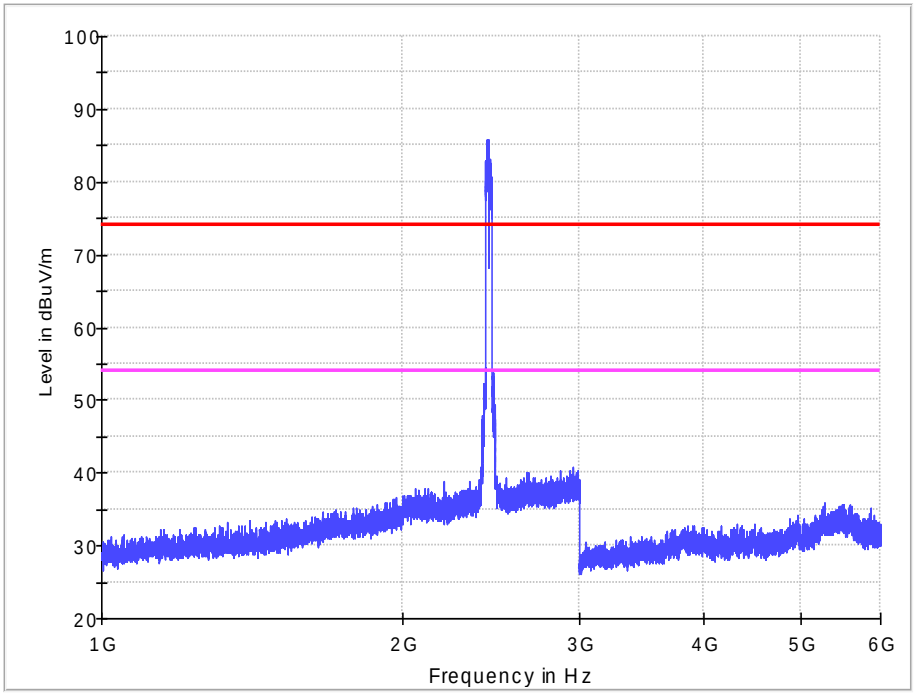
802.11n-HT40 CH6

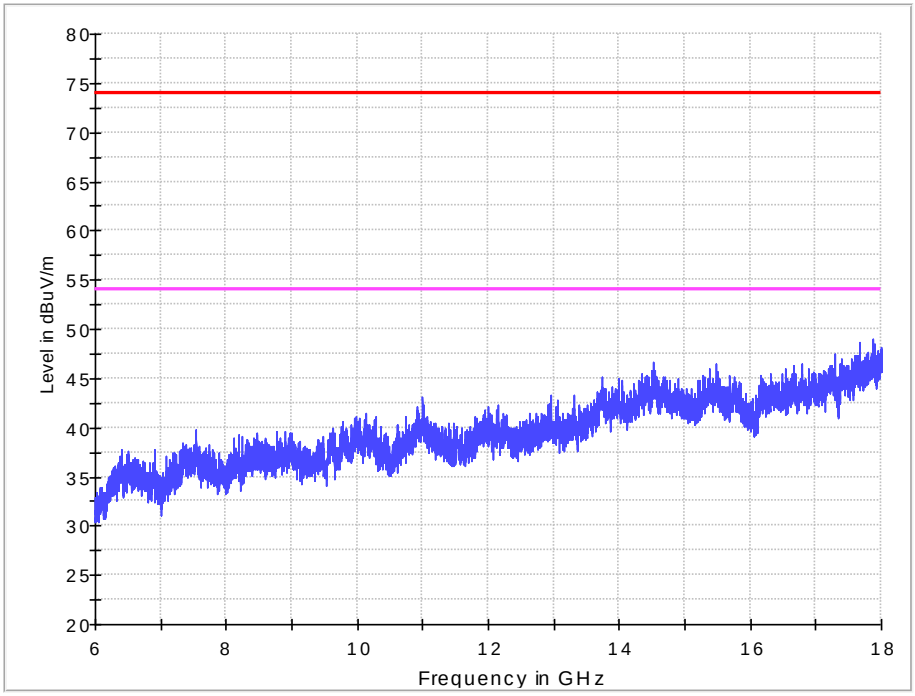
Horizontal



Vertical

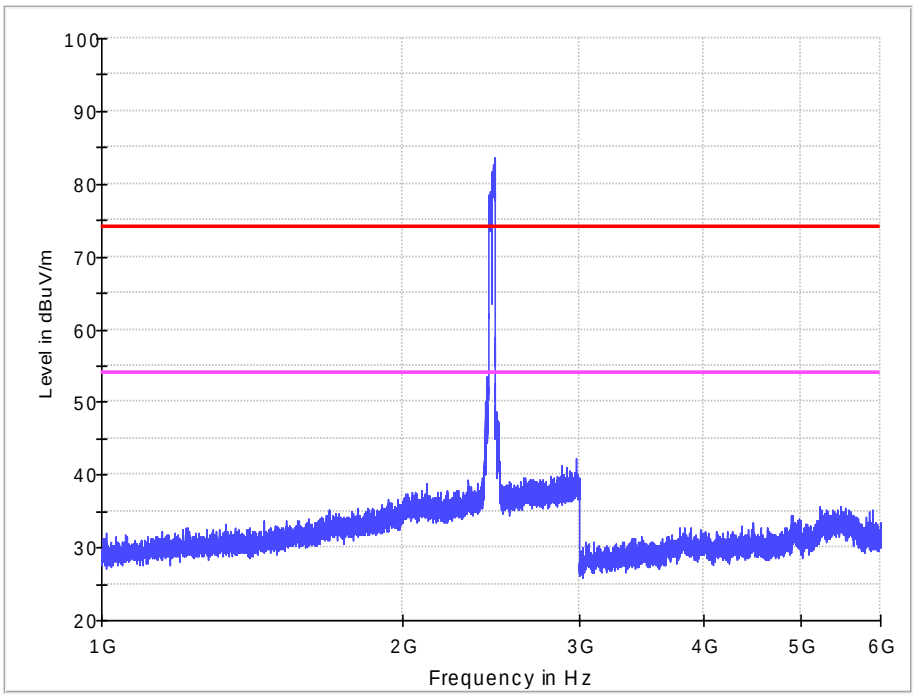

100
90
80
70
60
50
40
30
20
Level in dBuV/m
1G
2G
3G
4G
5G
6G
Frequency in Hz

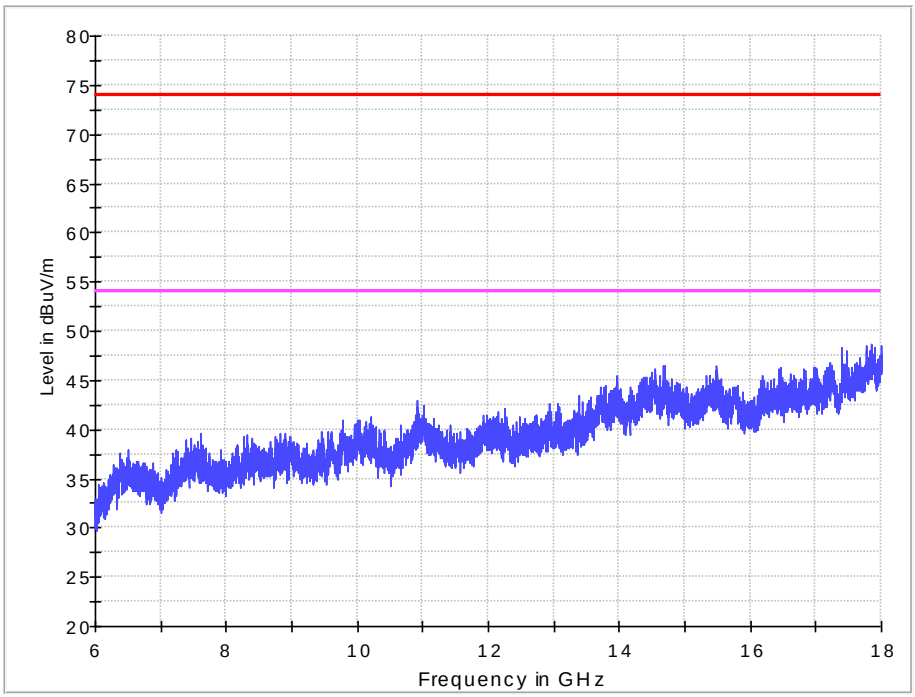

80
75
70
65
60
55
50
45
40
35
30
25
20
Level in dBuV/m
6
8
10
12
14
16
18
Frequency in GHz

1-18G

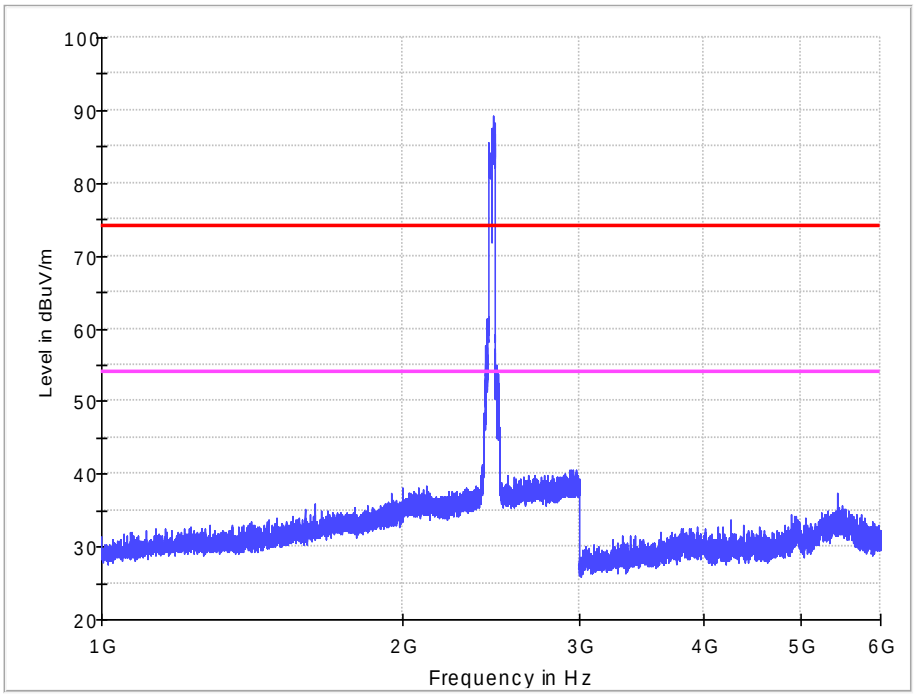
802.11n-HT40 CH9

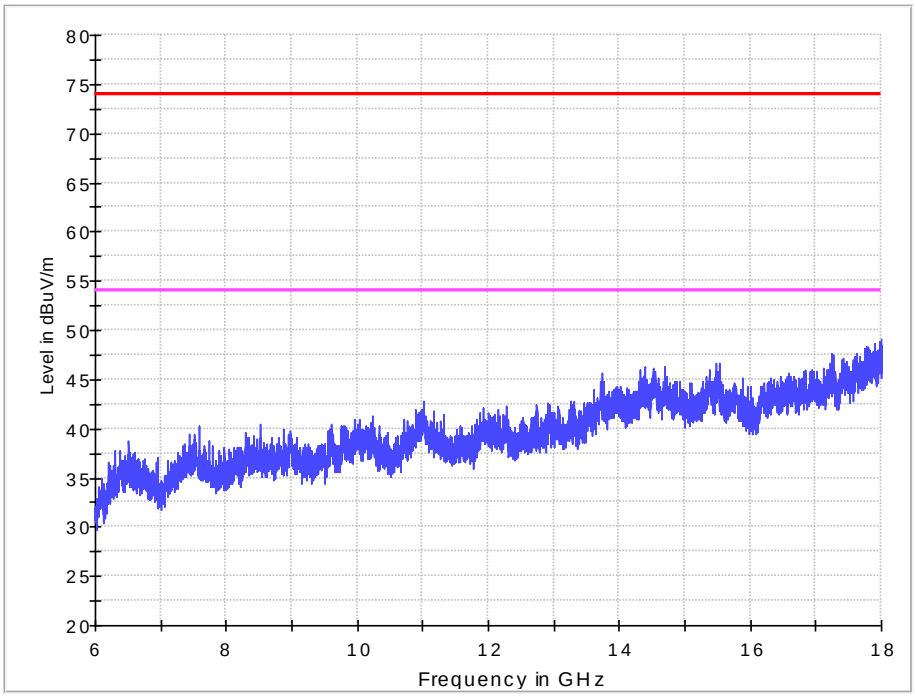
Horizontal



Vertical

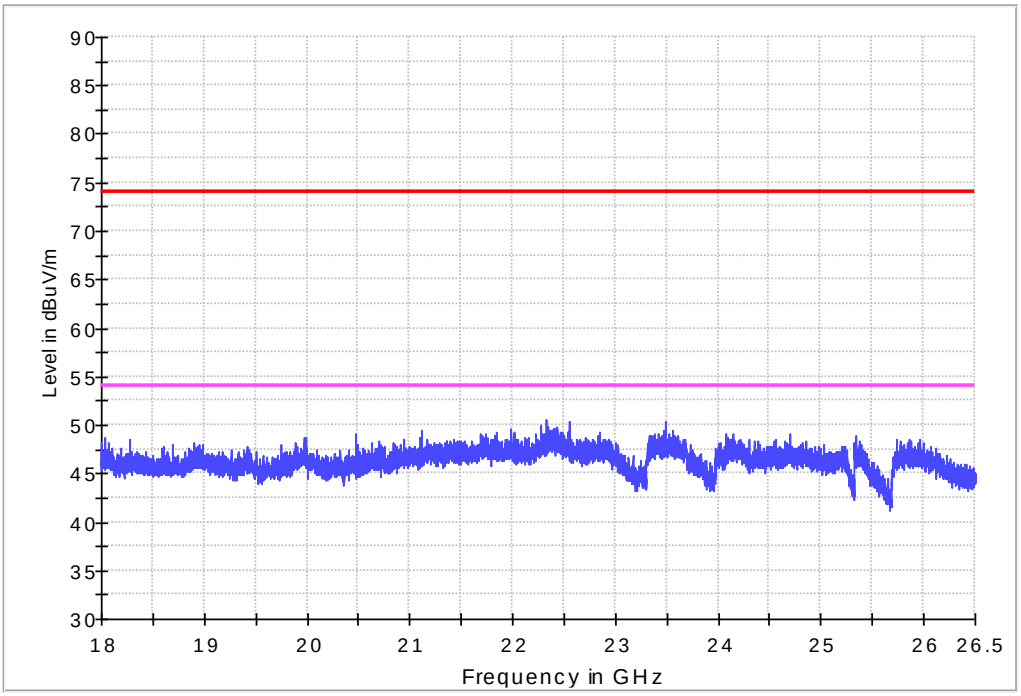

100
90
80
70
60
50
40
30
20
Level in dBuV/m
1G
2G
3G
4G
5G
6G
Frequency in Hz


80
75
70
65
60
55
50
45
40
35
30
25
20
Level in dBuV/m
6
8
10
12
14
16
18
Frequency in GHz

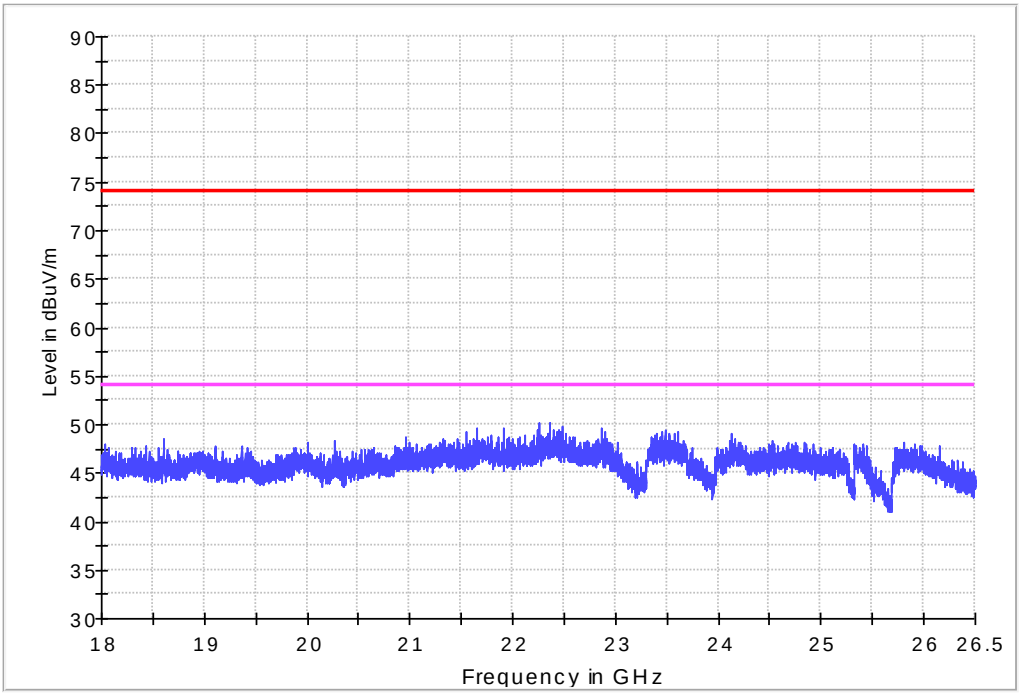
18-26.5G

(Worst Case at 802.11b CH6)

Horizontal




Vertical

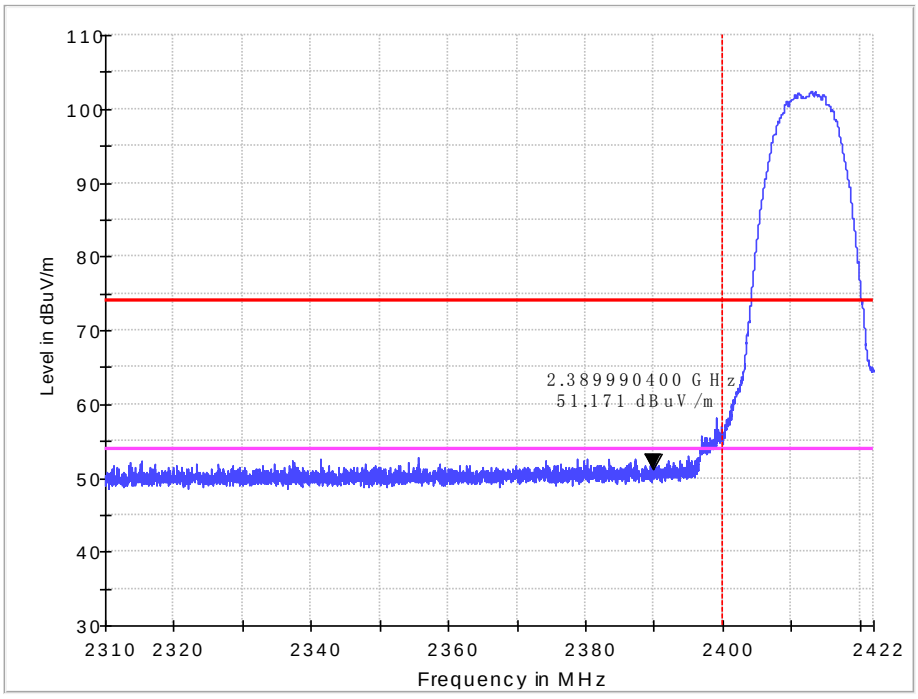


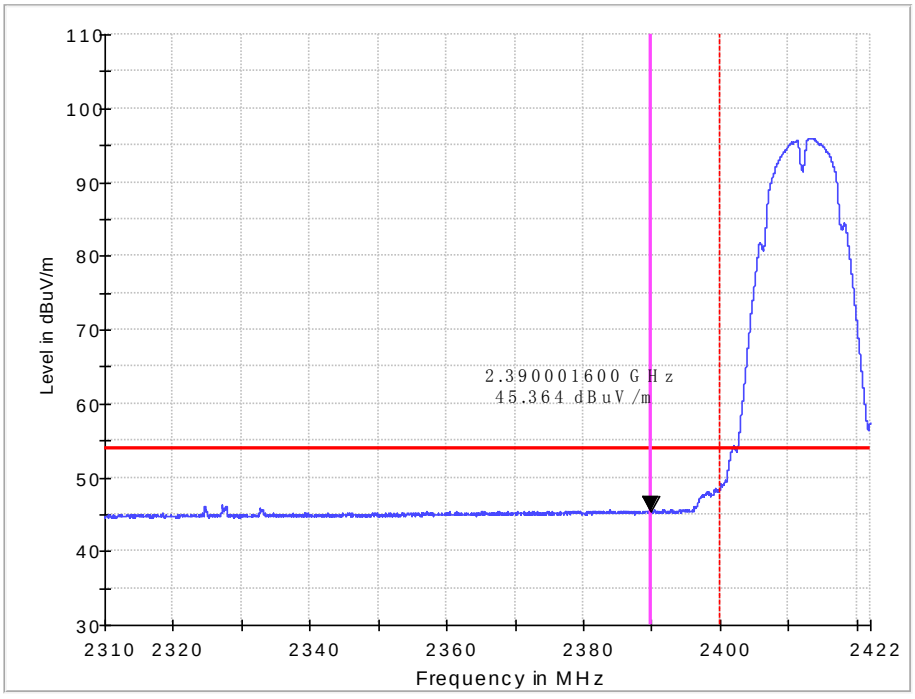
Band edge

11b

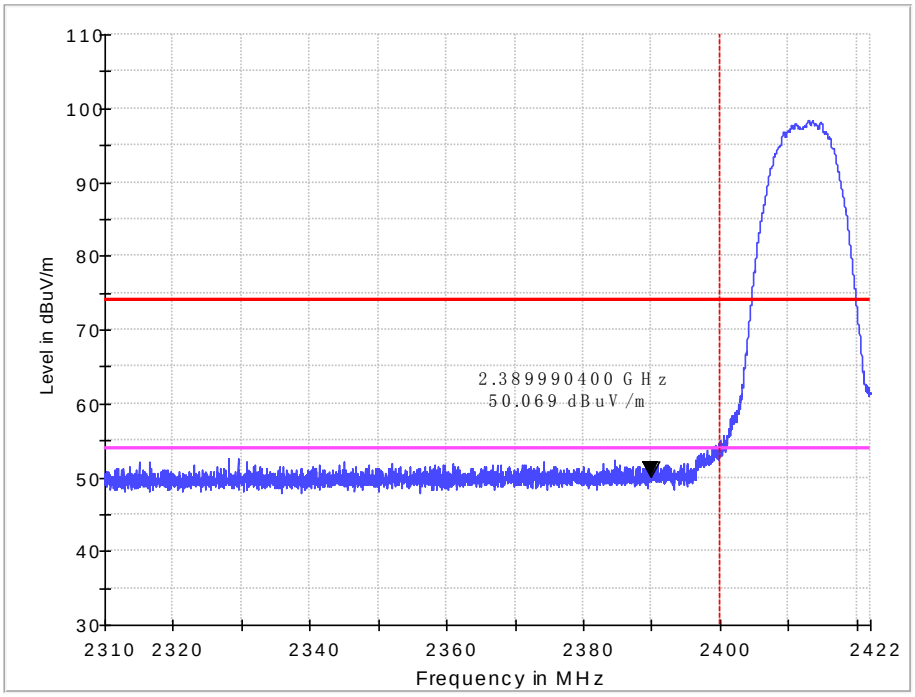
CH1

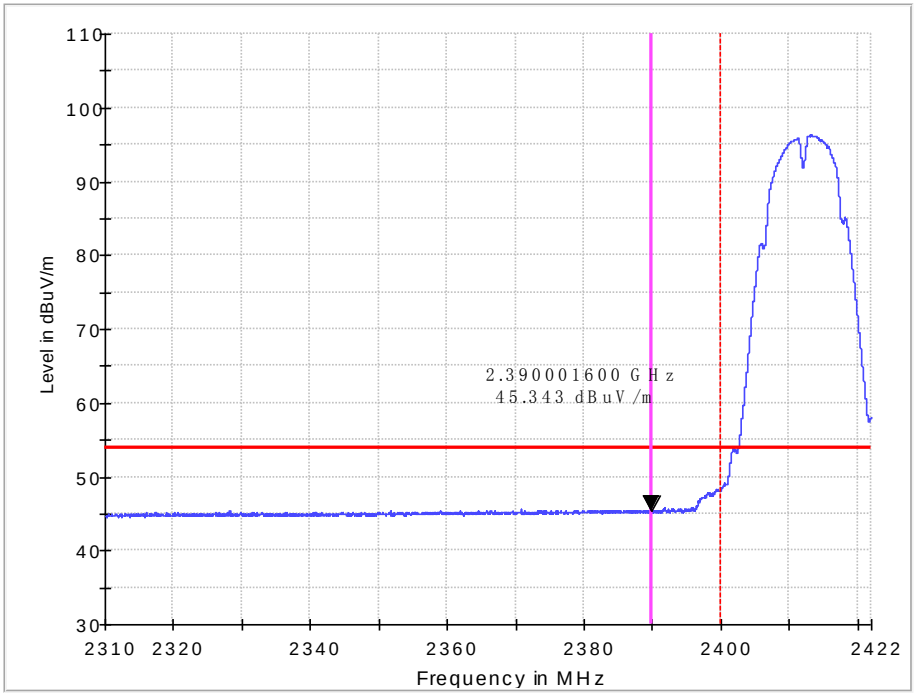
Horizontal



Vertical


110
100
90
80
70
60
50
40
30
Level in dBuV/m
2.389990400 GHz
50.069 dBuV/m
2310 2320 2340 2360 2380 2400 2422
Frequency in MHz

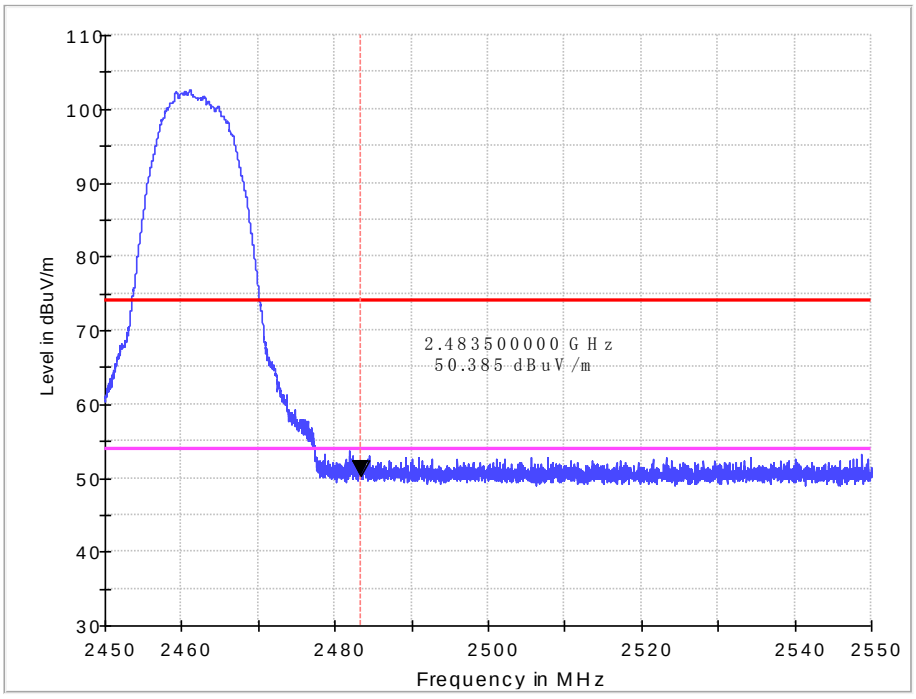

110
100
90
80
70
60
50
40
30
Level in dBuV/m
2.390001600 GHz
45.343 dBuV/m
2310 2320 2340 2360 2380 2400 2422
Frequency in MHz

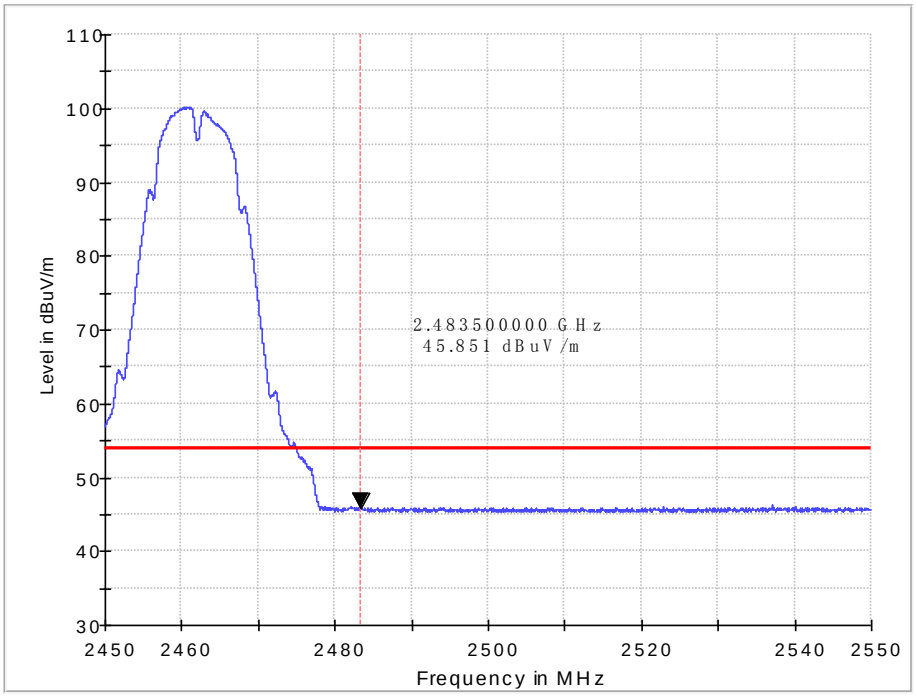
Band edge

11b

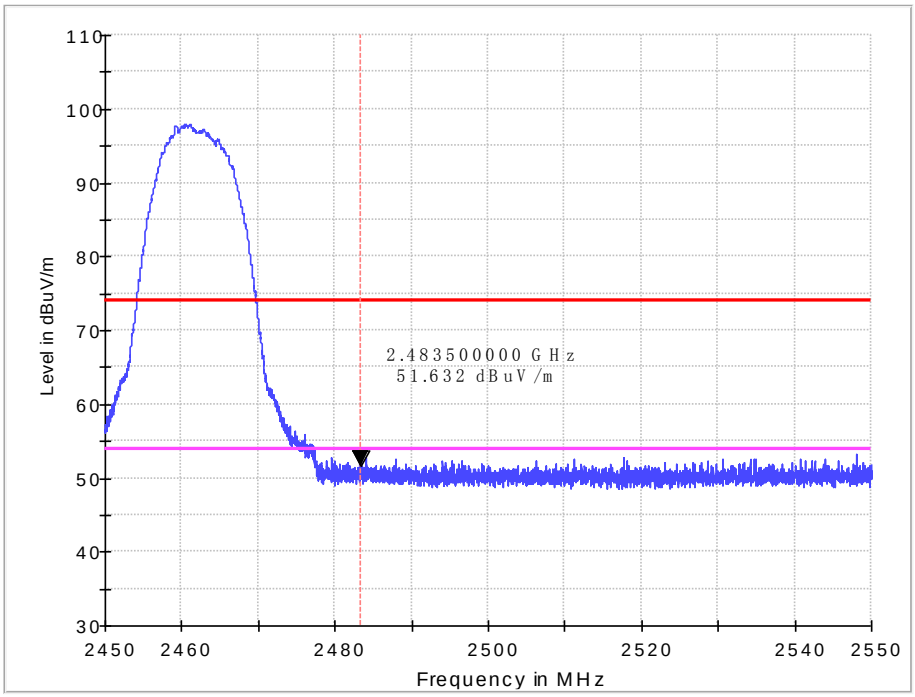
CH1

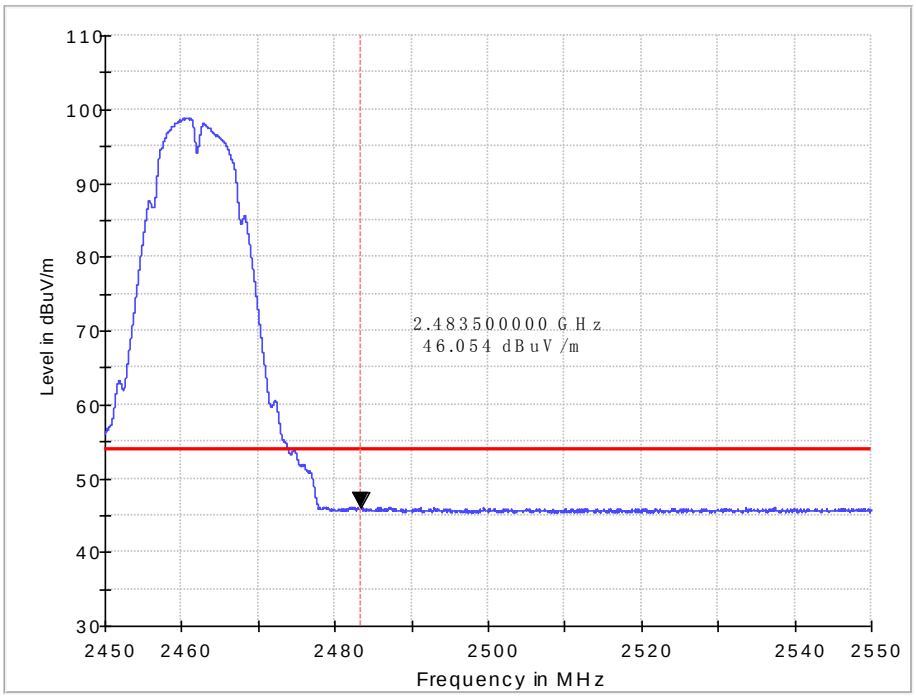
Horizontal



Vertical


110
100
90
80
70
60
50
40
30
Level in dBuV/m
2.483500000 GHz
51.632 dBuV/m
2450
2460
2480
2500
2520
2540
2550
Frequency in MHz

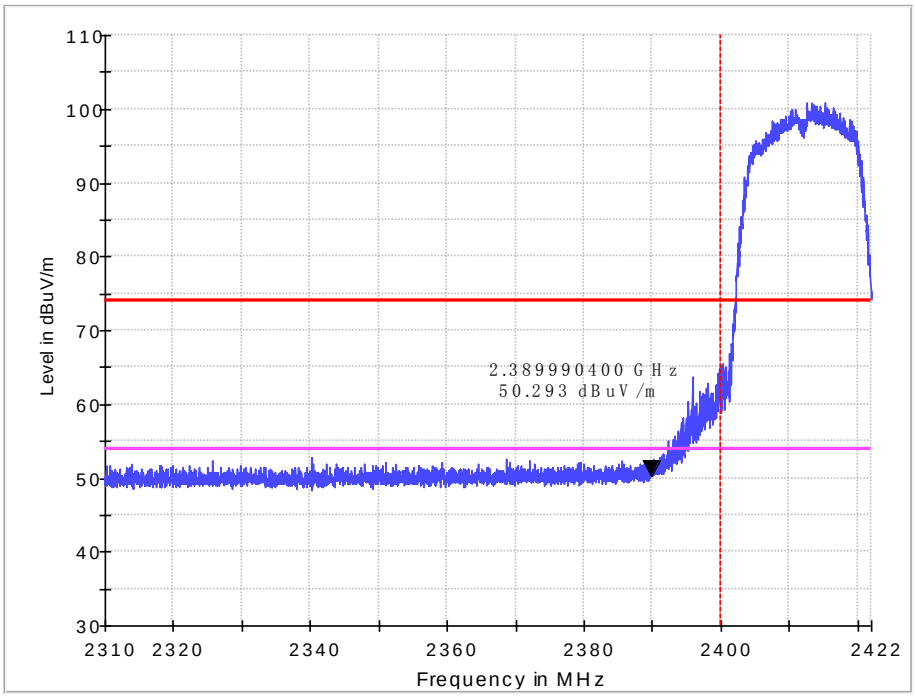

110
100
90
80
70
60
50
40
30
Level in dBuV/m
2.483500000 GHz
46.054 dBuV/m
2450
2460
2480
2500
2520
2540
2550
Frequency in MHz

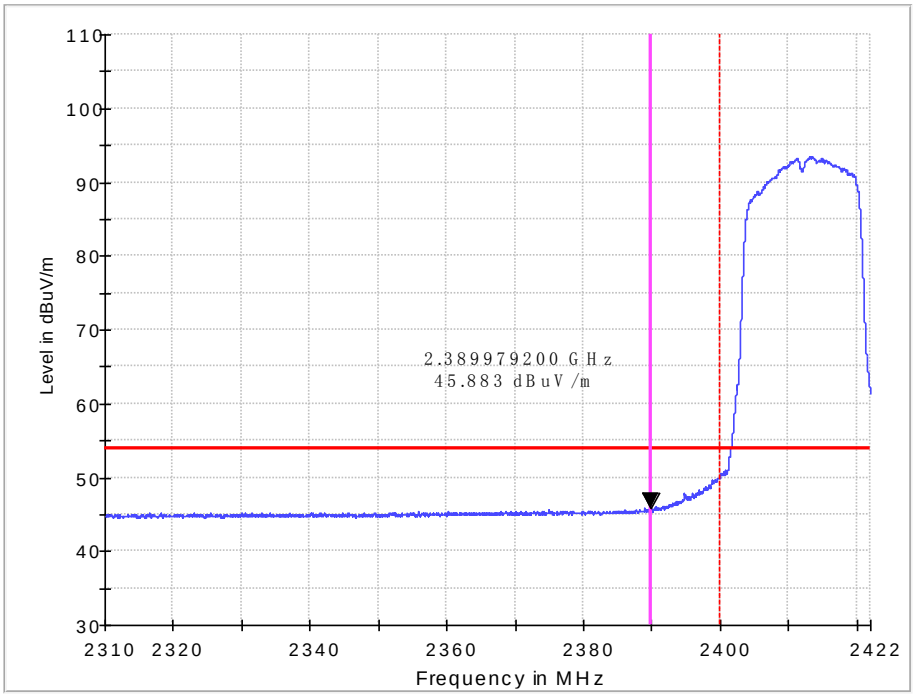
Band edge

11g

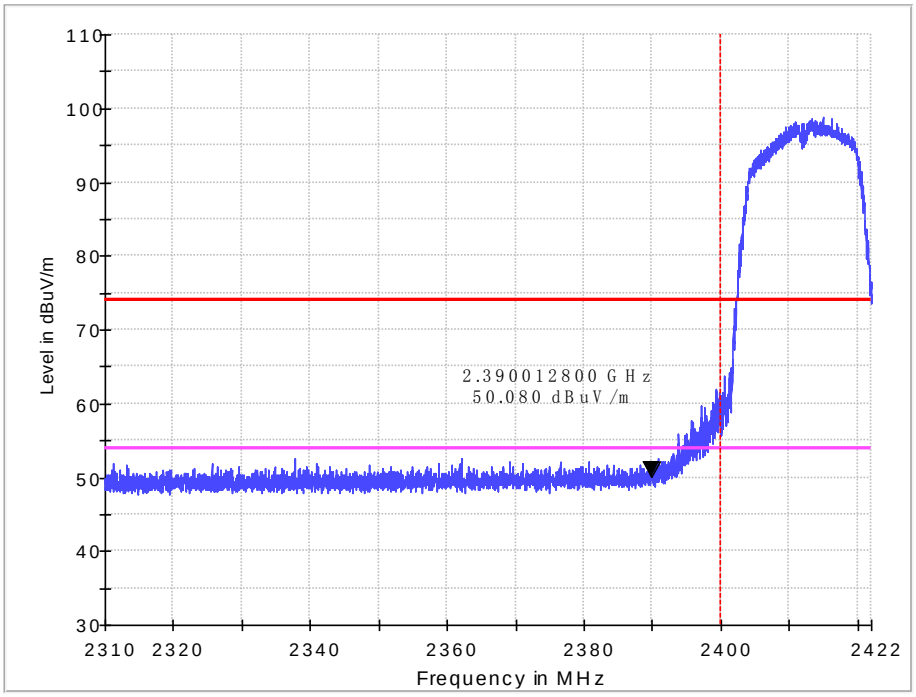
CH11

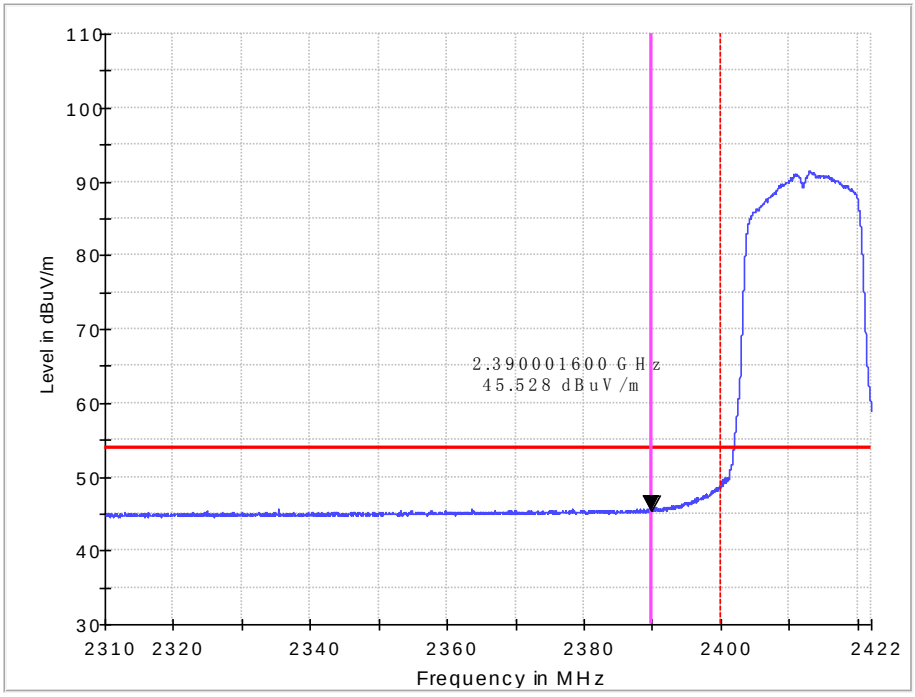
Horizontal



Vertical


110
100
90
80
70
60
50
40
30
Level in dBuV/m
2.390012800 GHz
50.080 dBuV/m
2310 2320 2340 2360 2380 2400 2422
Frequency in MHz

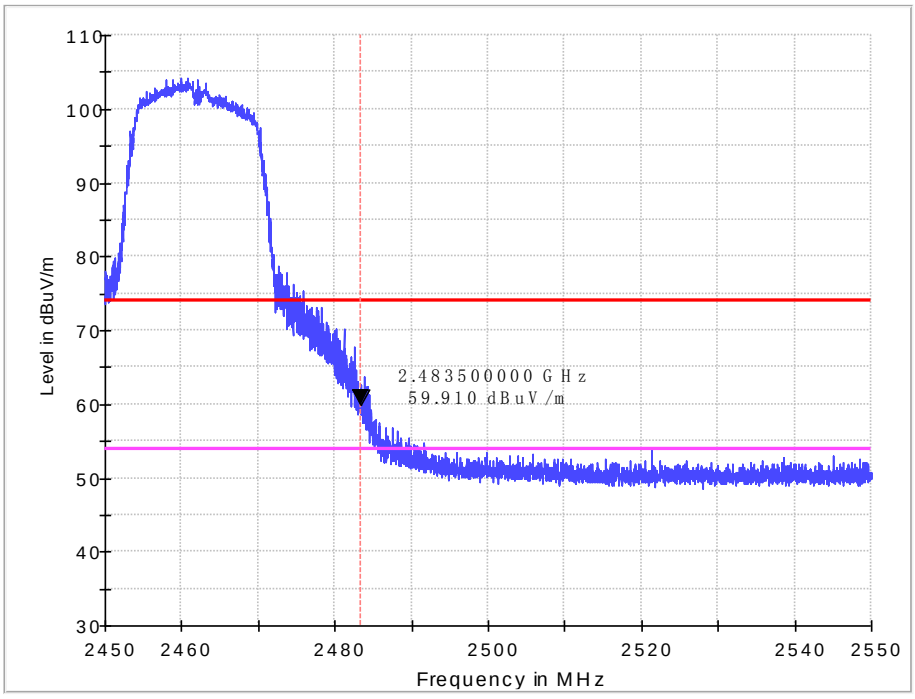

110
100
90
80
70
60
50
40
30
Level in dBuV/m
2.390001600 GHz
45.528 dBuV/m
2310 2320 2340 2360 2380 2400 2422
Frequency in MHz

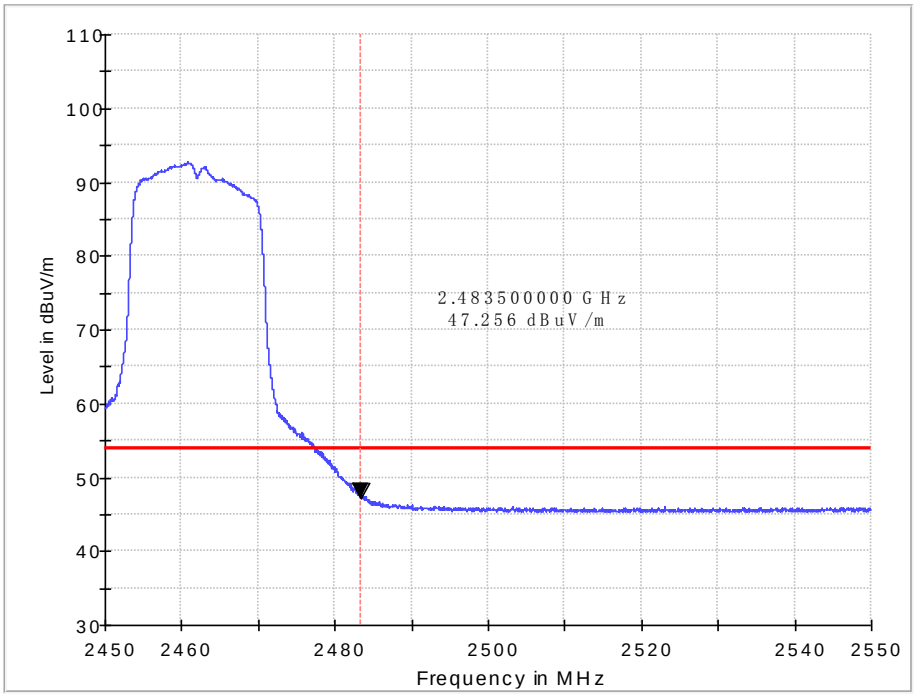
Band edge

11g

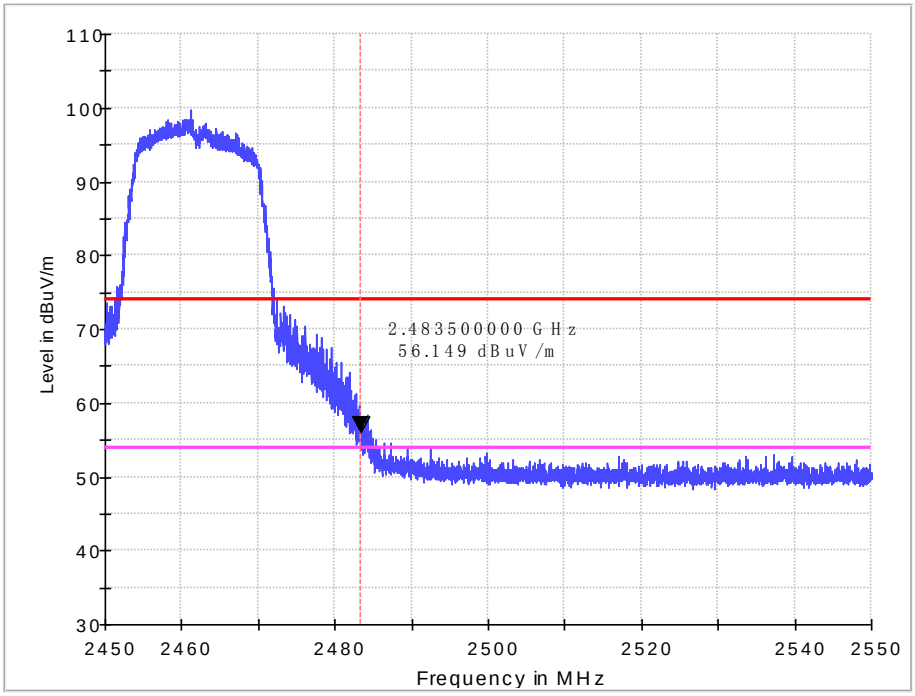
CH11

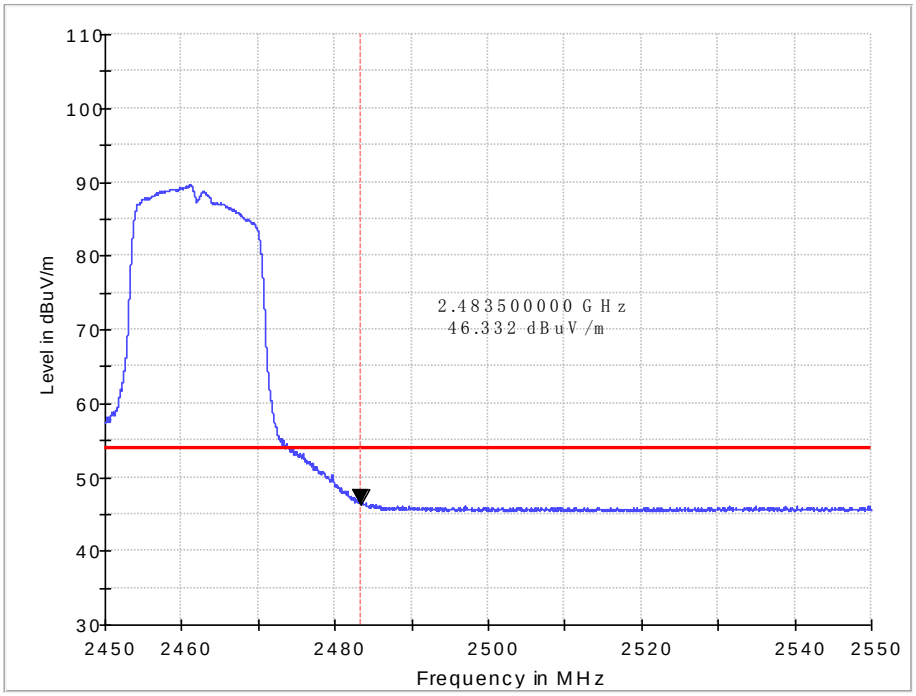
Horizontal



Vertical


110
100
90
80
70
60
50
40
30
Level in dBuV/m
2.483500000 GHz
56.149 dBuV/m
2450
2460
2480
2500
2520
2540
2550
Frequency in MHz

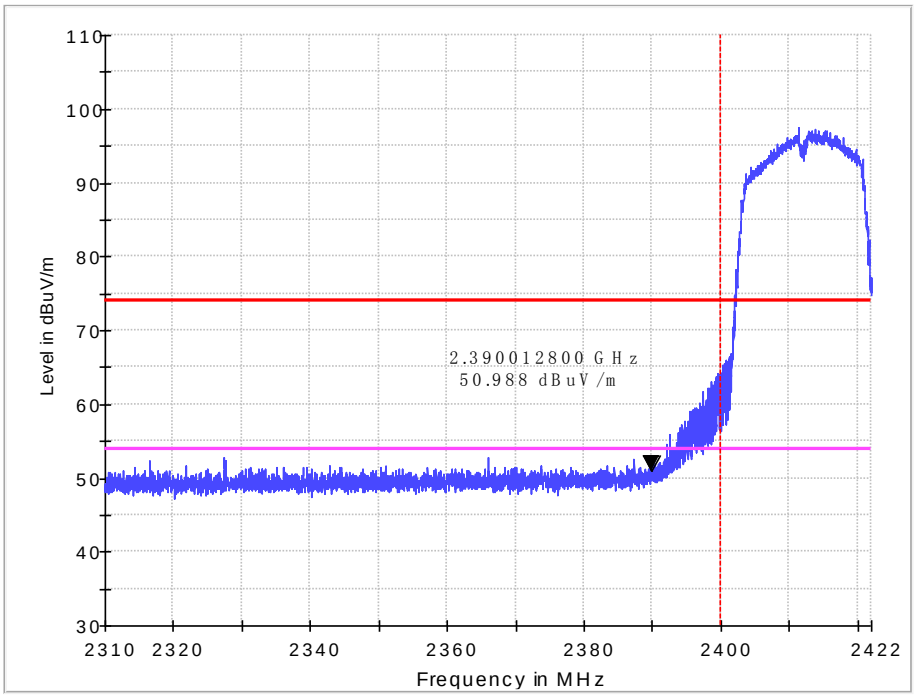

110
100
90
80
70
60
50
40
30
Level in dBuV/m
2.483500000 GHz
46.332 dBuV/m
2450
2460
2480
2500
2520
2540
2550
Frequency in MHz

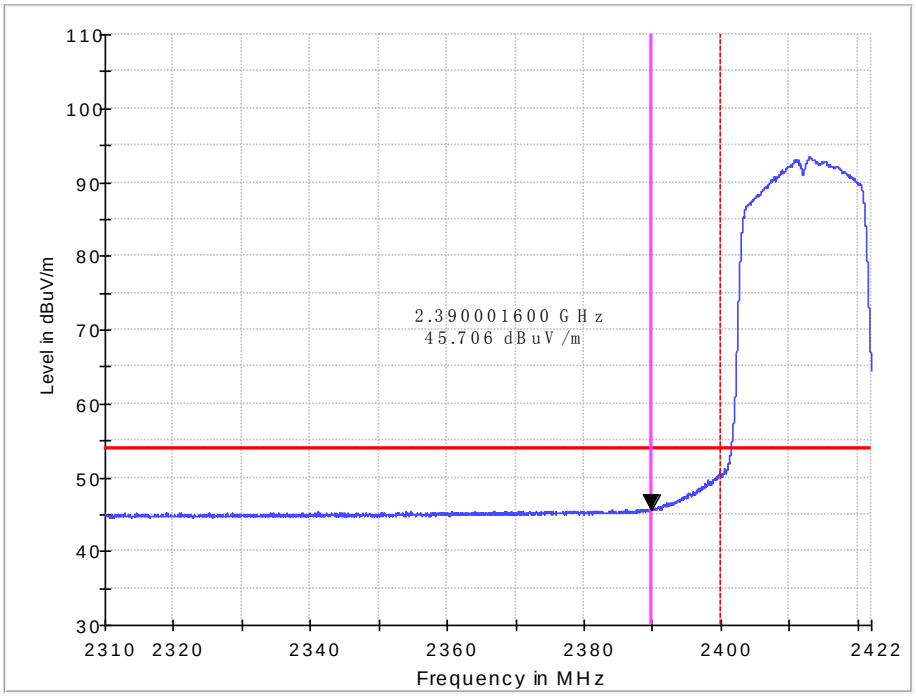
Band edge

11n-HT20

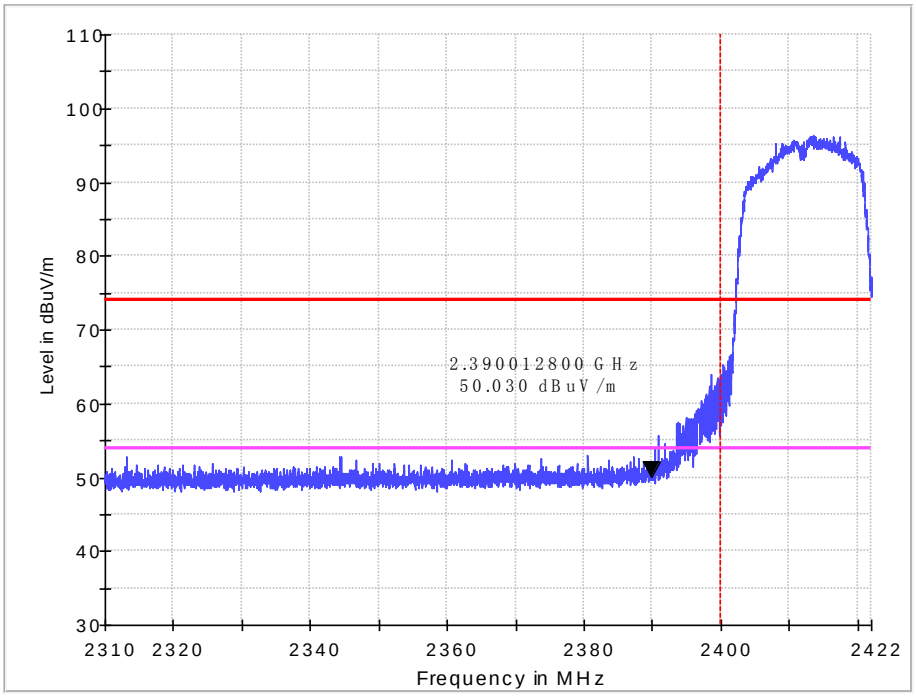
CH1

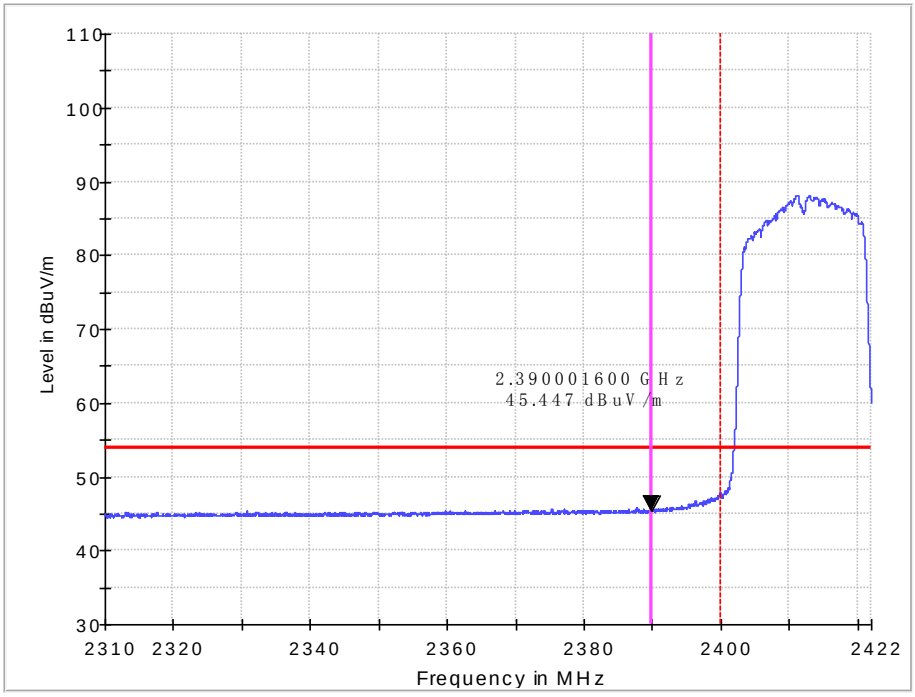
Horizontal



Vertical


110
100
90
80
70
60
50
40
30
Level in dBuV/m
2.390012800 GHz
50.030 dBuV/m
2310 2320 2340 2360 2380 2400 2422
Frequency in MHz

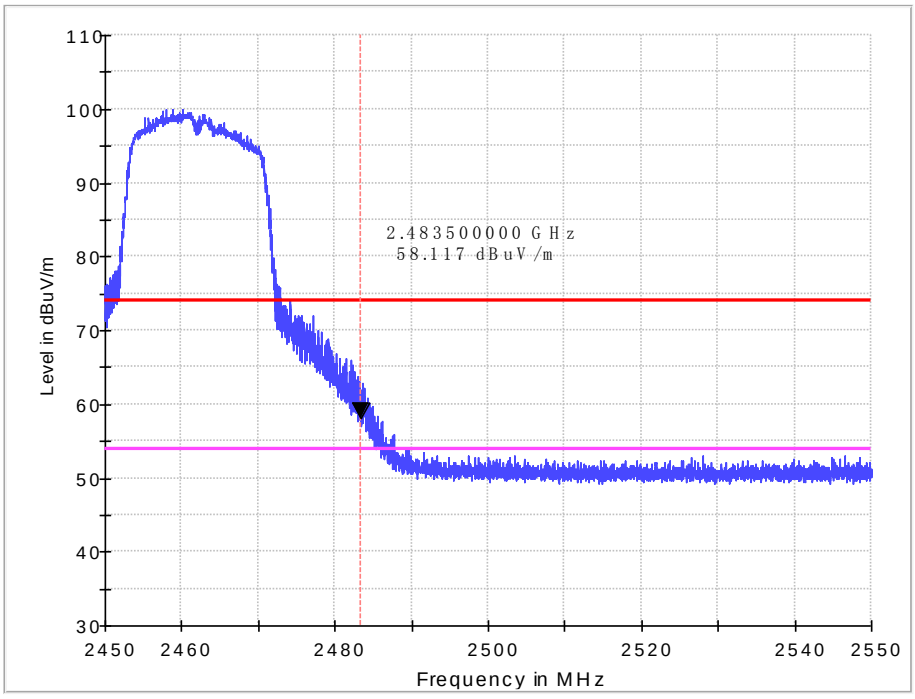

110
100
90
80
70
60
50
40
30
Level in dBuV/m
2.390001600 GHz
45.447 dBuV/m
2310 2320 2340 2360 2380 2400 2422
Frequency in MHz

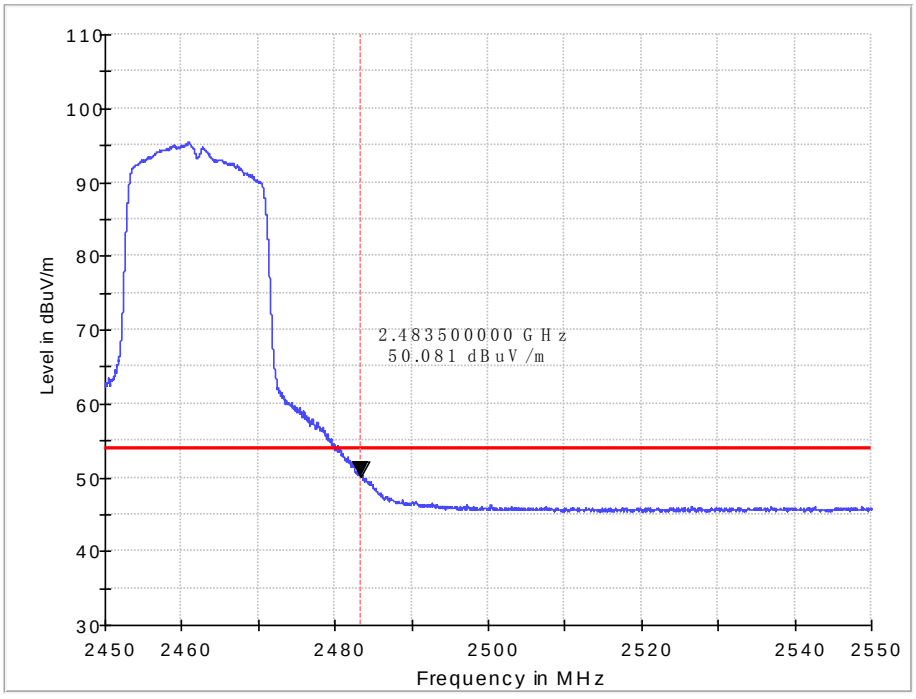
Band edge

11n-HT20

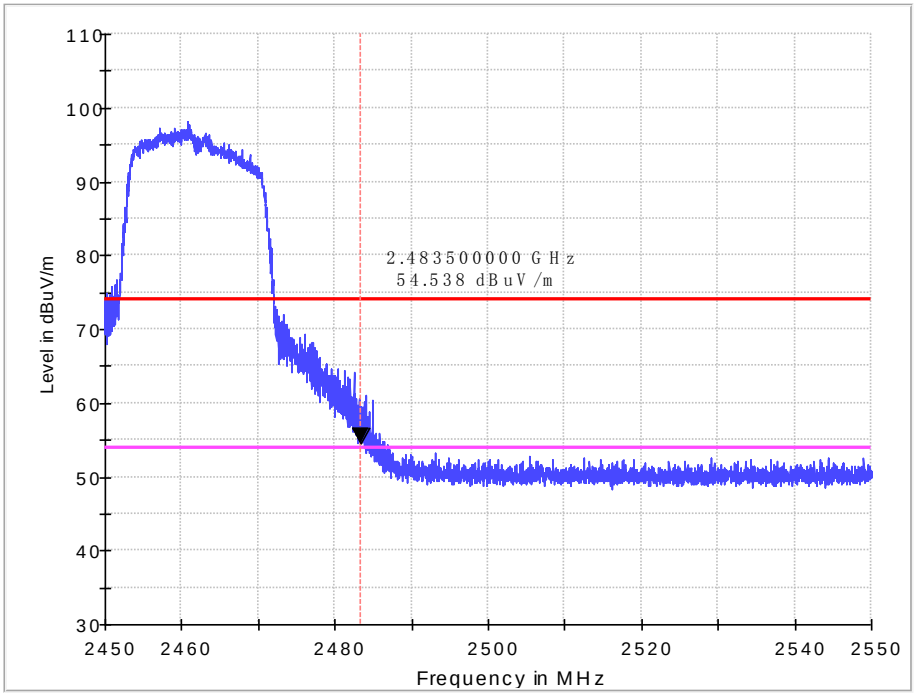
CH11

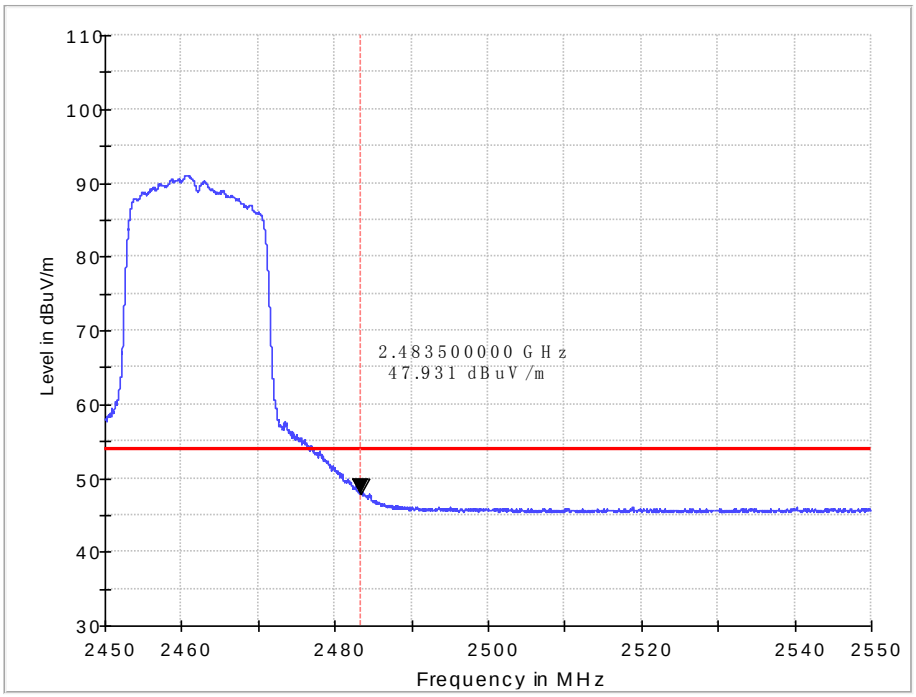
Horizontal



Vertical


110
100
90
80
70
60
50
40
30
Level in dBuV/m
2.483500000 GHz
54.538 dBuV/m
2450
2460
2480
2500
2520
2540
2550
Frequency in MHz

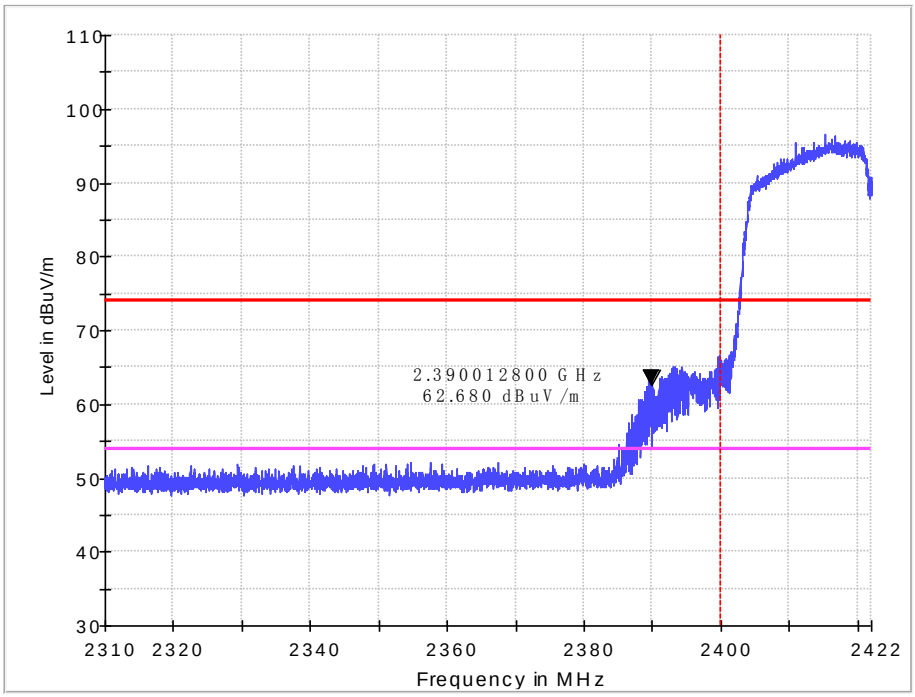

110
100
90
80
70
60
50
40
30
Level in dBuV/m
2.483500000 GHz
47.931 dBuV/m
2450
2460
2480
2500
2520
2540
2550
Frequency in MHz

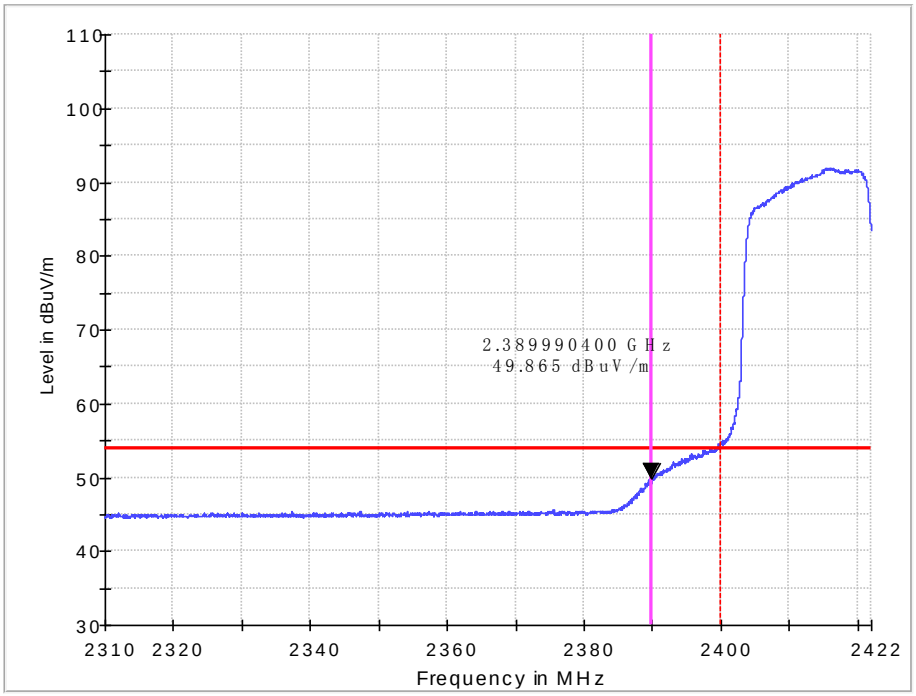
Band edge

11n-HT40

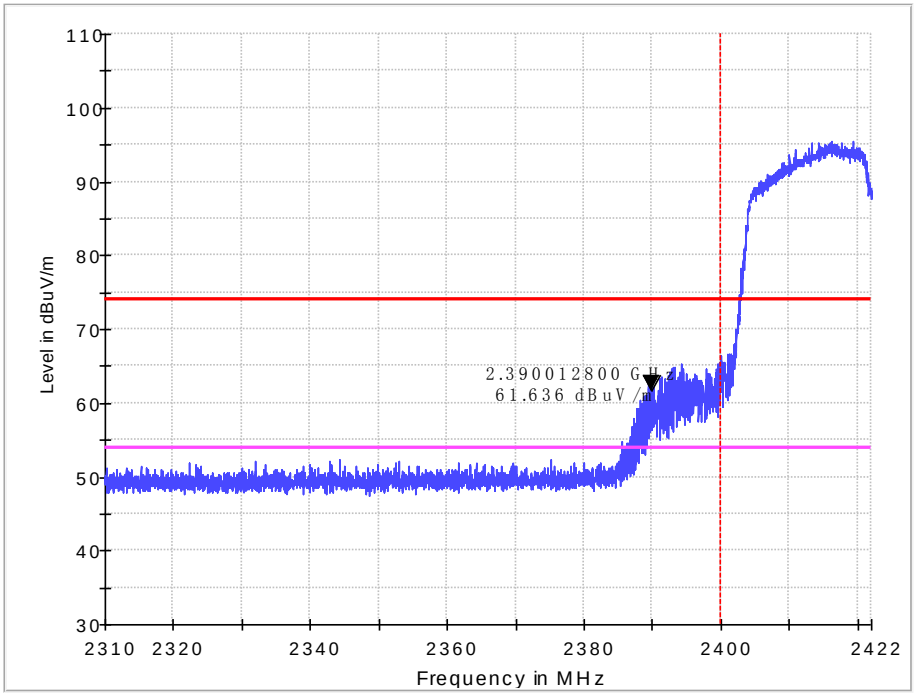
CH3

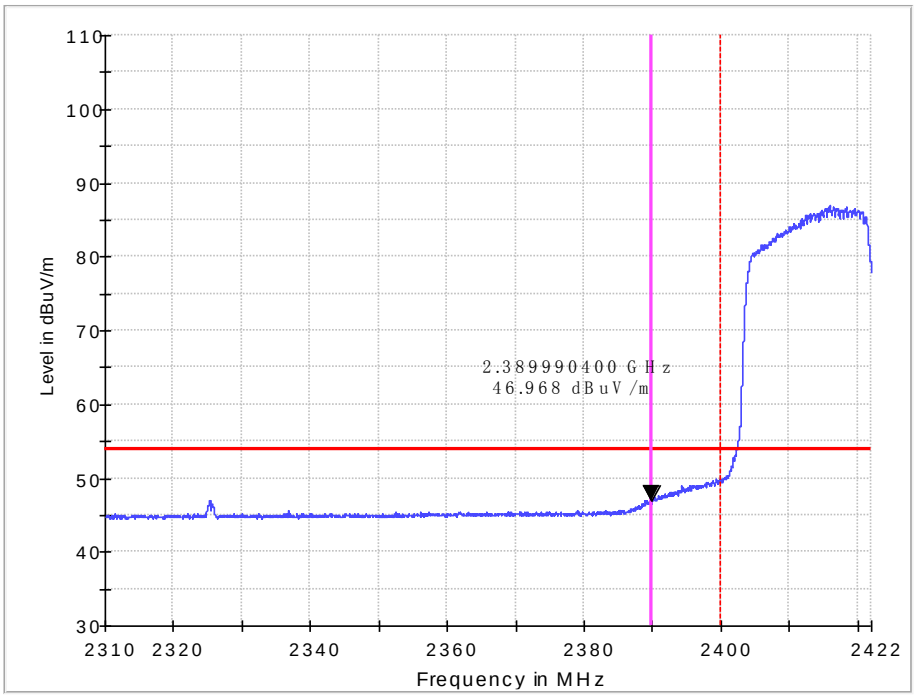
Horizontal



Vertical


110
100
90
80
70
60
50
40
30
Level in dBuV/m
2.390012800 GHz
61.636 dBuV/m
2310
2320
2340
2360
2380
2400
2422
Frequency in MHz

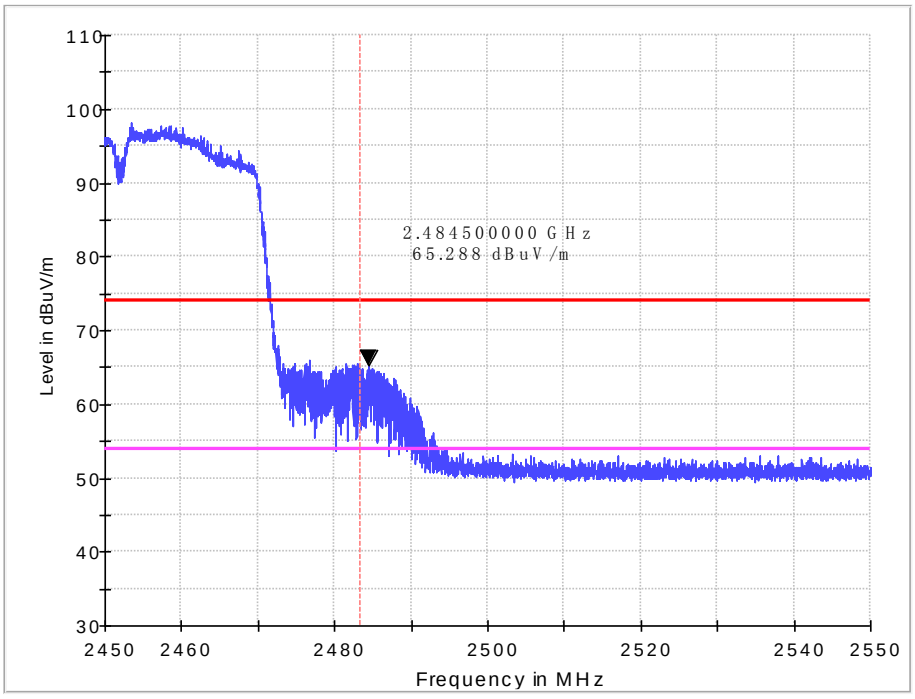

110
100
90
80
70
60
50
40
30
Level in dBuV/m
2.389990400 GHz
46.968 dBuV/m
2310
2320
2340
2360
2380
2400
2422
Frequency in MHz

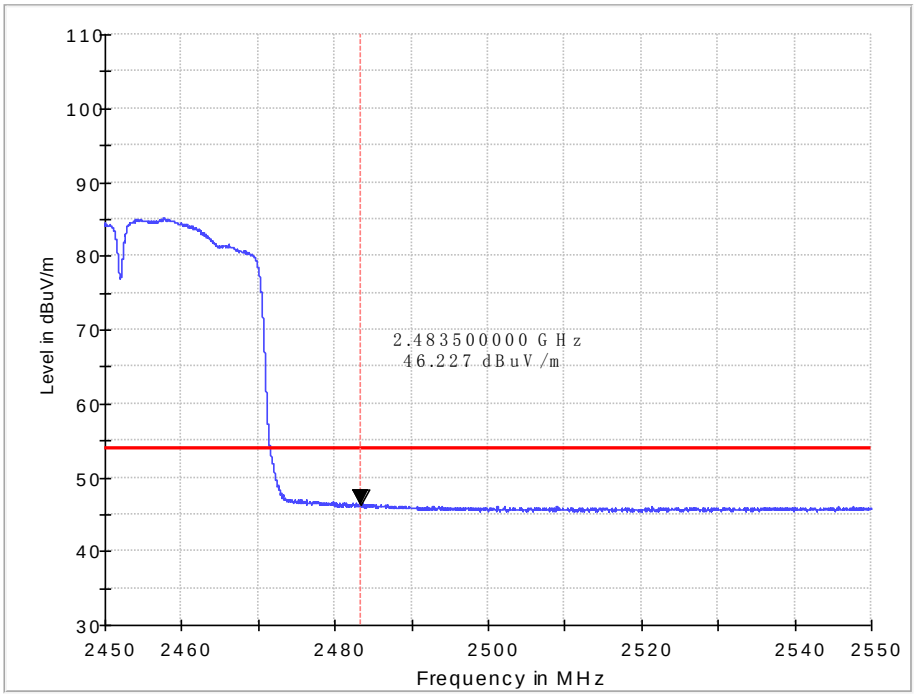
Band edge

11n-HT40

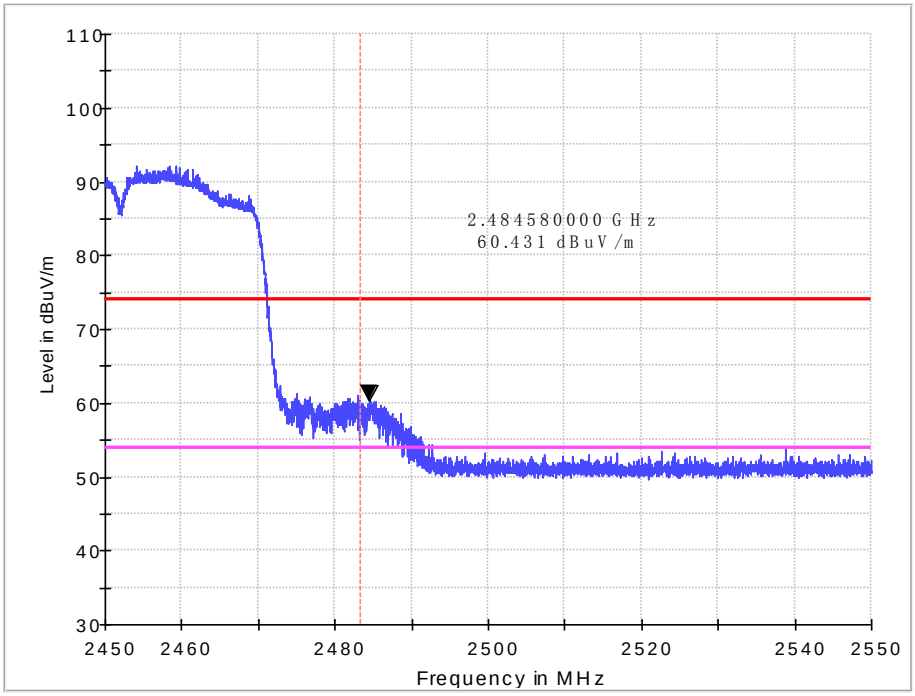
CH9

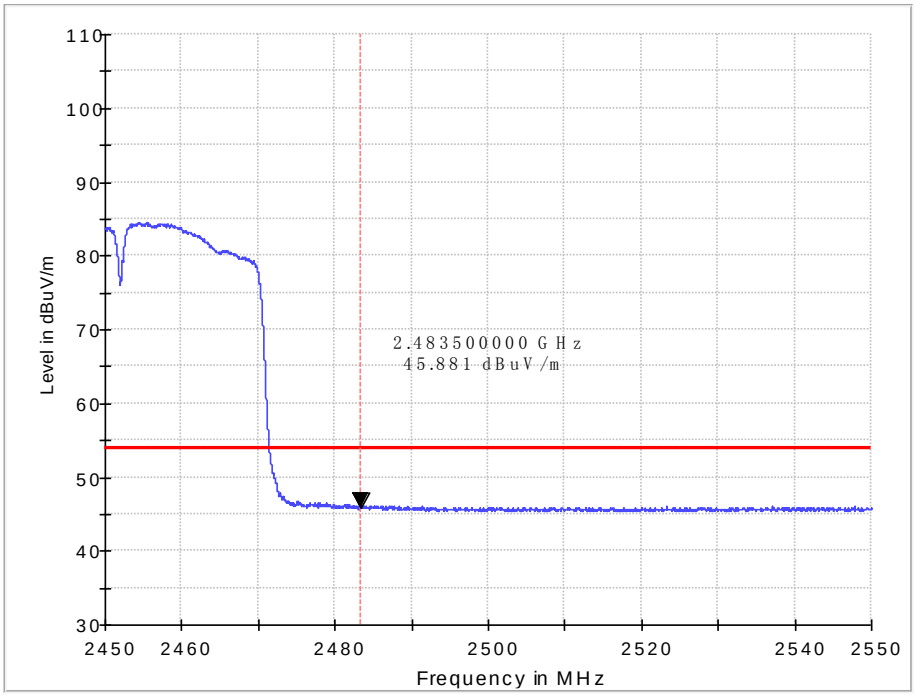
Horizontal



Vertical


2.484580000 GHz
60.431 dBuV/m
Level in dBuV/m
Frequency in MHz
110
100
90
80
70
60
50
40
30
2450
2460
2480
2500
2520
2540
2550


2.483500000 GHz
45.881 dBuV/m
Level in dBuV/m
Frequency in MHz
110
100
90
80
70
60
50
40
30
2450
2460
2480
2500
2520
2540
2550

# 11. CONDUCTED EMISSION TEST FOR AC POWER PORT MEASUREMENT

## 11.1. Test Standard and Limit

### 11.1.1. Test Standard

FCC Part 15 15.207

### 11.1.2. Test Limit

Table 14 Conducted Disturbance Test Limit

| Frequency | Maximum RF Line Voltage (dBμV) | |
|---|---|---|
| | Quasi-peak Level | Average Level |
| 150kHz~500kHz | 66 ~ 56 * | 56 ~ 46 * |
| 500kHz~5MHz | 56 | 46 |
| 5MHz~30MHz | 60 | 50 |

* Decreasing linearly with logarithm of the frequency
* The lower limit shall apply at the transition frequency.

## 11.2. Test Procedure

The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI test receiver (R&S Test Receiver ESCS30) is used to test the emissions from both sides of AC line. According to the requirements of ANSI C63.10-2013.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.
The bandwidth of EMI test receiver is set at 9kHz.

## 11.3. Test Arrangement

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

## 11.4. Test Data

The emissions don’t show in below are too low against the limits. Refer to the test curves.

Table 15 Conducted Emission Test Data

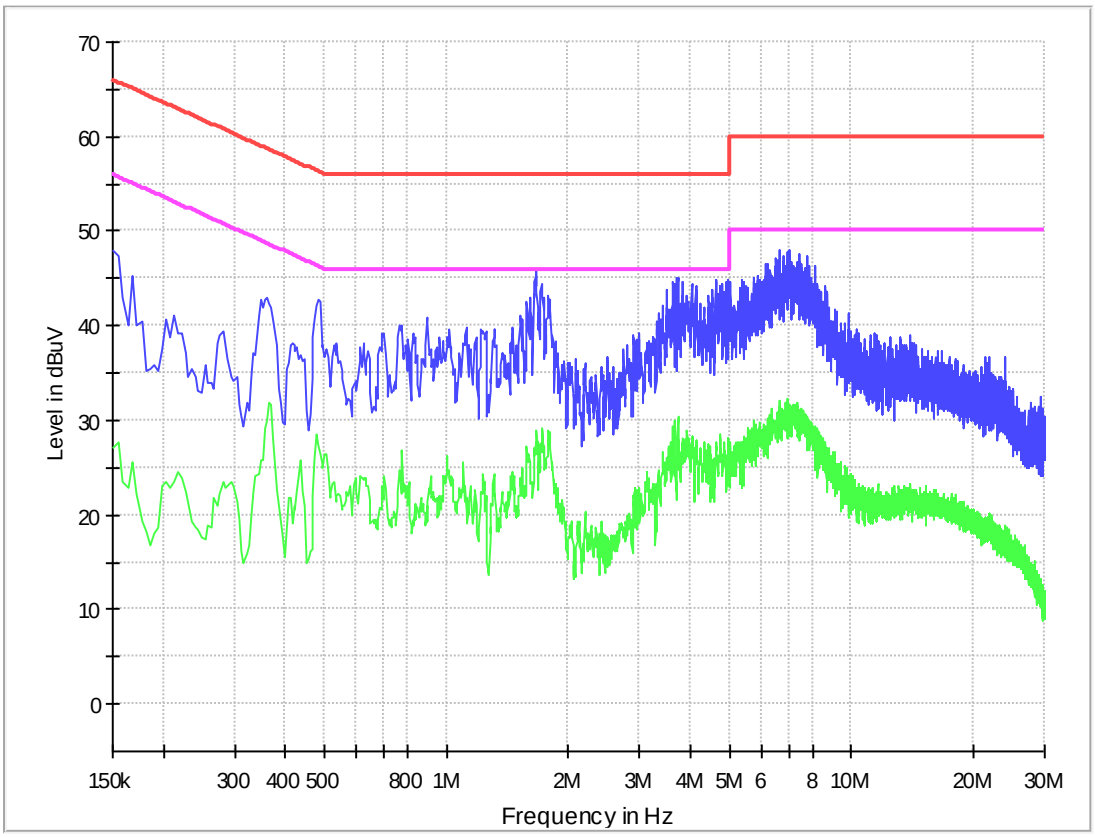
| Model No.: FX105F<br>Test mode: Charging and Transmitting | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Frequency (MHz) | Correction Factor (dB) | Quasi-Peak | | | Average | | |
| | | | Reading (dBμV) | Emission Level (dBμV) | Limits (dBμV) | Reading (dBμV) | Emission Level (dBμV) | Limits (dBμV) |
| Line | 0.483 | 9.7 | 30.8 | 40.5 | 56.3 | 17.0 | 26.7 | 46.3 |
| | 1.666 | 9.8 | 31.3 | 41.1 | 56 | 18.3 | 28.1 | 46 |
| | 3.714 | 9.9 | 29.8 | 39.7 | 56 | 18.2 | 28.1 | 46 |
| | 4.632 | 9.9 | 27.7 | 37.6 | 56 | 16.6 | 26.5 | 46 |
| | 6.616 | 10.0 | 31.3 | 41.3 | 60 | 20.7 | 30.7 | 50 |
| | 7.026 | 10.0 | 31.7 | 41.7 | 60 | 21.7 | 31.7 | 50 |
| Neutral | 1.666 | 9.8 | 28.0 | 37.8 | 56 | 15.8 | 25.6 | 46 |
| | 3.637 | 9.9 | 25.7 | 35.6 | 56 | 15.8 | 25.7 | 46 |
| | 4.227 | 9.9 | 26.2 | 36.1 | 56 | 15.0 | 24.9 | 46 |
| | 4.974 | 9.9 | 27.0 | 36.9 | 56 | 16.3 | 26.2 | 46 |
| | 6.625 | 10.0 | 29.6 | 39.6 | 60 | 19.6 | 29.6 | 50 |
| | 7.422 | 10.0 | 27.6 | 37.6 | 60 | 18.6 | 28.6 | 50 |

REMARKS: 1. Emission level (dBuV) =Read Value (dBuV) + Correction Factor (dB)

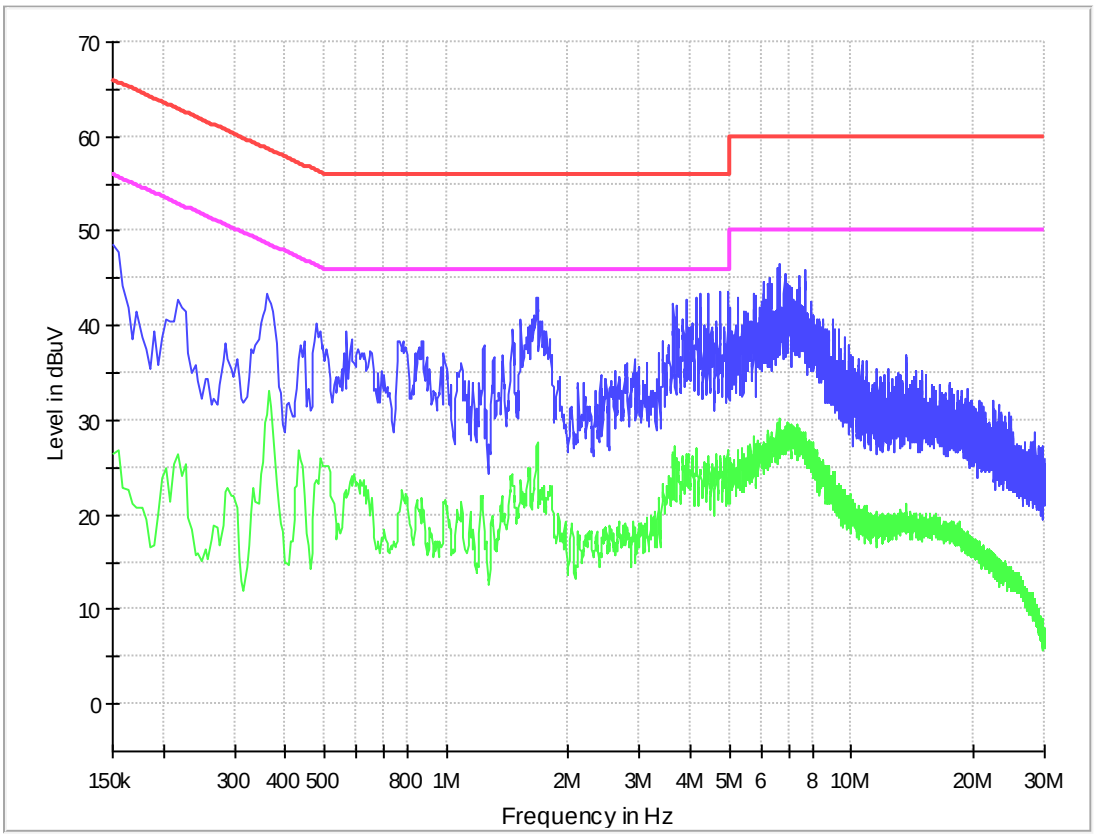
2. Correction Factor (dB) =LISN Factor (dB) + Cable Factor (dB) +Limiter Factor (dB)

3. The other emission levels were very low against the limit.

EUT: FX105F
Operating Condition: Charging and Transmitting
Test Specification: L
Test Voltage: AC 120V/60Hz



EUT: FX105F
Operating Condition: Charging and Transmitting
Test Specification: N
Test Voltage: AC 120V/60Hz



# 12. ANTENNA REQUIREMENTS

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
The EUT has a built in antenna which is integrated inside the enclosure, this is permanently attached antenna and meets the requirements of this section.

END OF REPORT