

FCC TEST REPORT

For

EMV Android Validator

**Model Number: FX925SF-ING-VWDC-PRE, 011P;
FX925SF-ING-VPDC-PRE, 011P; FX925SF-ING-VWDC-PRE, 010P;
FX925SF-ING-VPDC-PRE, 010P**

FCC ID: 2AGQIFX925F

Report Number : WT218003687

Test Laboratory : Shenzhen Academy of Metrology and Quality
Inspection
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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 : EMV Android Validator
Model No : FX925SF-ING-VWDC-PRE, 011P;
FX925SF-ING-VPDC-PRE, 011P;
FX925SF-ING-VWDC-PRE, 010P;
FX925SF-ING-VPDC-PRE, 010P
Trade mark : Famoco
Serial Number : /
FCC ID : 2AGQIFX925F

Test Standards:

FCC Part 15 Subpart C 15.247 (2020)

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 report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

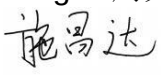
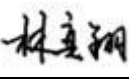
Project Engineer:	 (Zhou Fangai 周芳媛)	Date:	<u>Jan.12, 2022</u>
Checked by:	 (Shi Changda 施昌达)	Date:	<u>Jan.12, 2022</u>
Approved by:	 (Lin Yixiang 林奕翔)	Date:	<u>Jan.12, 2022</u>

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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 (e)	Pass
Conducted Bandedge and Spurious	15.247 (d)	Pass
Radiated Bandedge and Spurious	15.247 (d) 15.209 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.

The lab will not be liable for any loss or damage resulting for false, inaccurate, inappropriate or incomplete product information provided by the applicant/manufacturer.

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~150 kHz U=3.7dB k=2

150 kHz~30MHz U=3.3dB k=2

Radiated Emission

30MHz~1000MHz U=4.3dB k=2

1GHz~6GHz U=4.6 dB k=2

6GHz~40GHz U=5.1dB k=2

3. PRODUCT DESCRIPTION

NOTE: The extreme test conditions for temperature and antenna gain were declared by the manufacturer.

3.1. EUT Description

Description : EMV Android Validator
Manufacturer : FAMOCO SAS
Model Number : FX925SF-ING-VWDC-PRE, 011P;
FX925SF-ING-VPDC-PRE, 011P;
FX925SF-ING-VWDC-PRE, 010P;
FX925SF-ING-VPDC-PRE, 010P
Operate : 2.412GHz~2.462GHz
Frequency
Antenna : PIFA ANTENNA +1.3dBi
Designation
Operating voltage : 10.8V (Low)/12V (Nominal)/ 13.2V (Max)
Software Version : MOLY.LR12A.R2.MP.V44.1.P1
Hardware Version : FX925F-P

Remark: This is test report is for application of FCC ID: 2AGQIFX925F, which consists of reuse data of FCC ID: 2AGQIFX205. This report updates the standard FCC Part 15 15.209, 15.247(2018) to FCC Part 15 Subpart C 15.247 (2020). See the APPENDIX I Product Equality Declaration for the differences between the new model (FX925SF-ING-VWDC-PRE, 011P; FX925SF-ING-VPDC-PRE, 011P; FX925SF-ING-VWDC-PRE, 010P; FX925SF-ING-VPDC-PRE, 010P) and the original model (FX925F PM, FX925F WM).

Considering above changes, in this test report, only the worst case of Conducted emission, Radiated Bandedge and Radiated spurious emission was re-tested, the other test data were reused the original test report No.: WT198005841.

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)

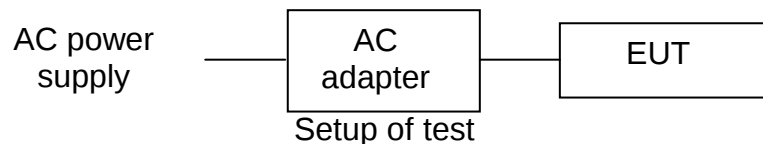
Channel	Frequency	Channel	Frequency
---------	-----------	---------	-----------

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: **2AGQIFX925F** filing to comply with Section 15.209, 15.247 of the FCC Part 15, Subpart C Rules.

3.3. Block Diagram of EUT Configuration



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
Adapter for EUT	LST-S72U12-A	---	ShenZhen GoldLister Power Source Co.,Ltd
Rechargeable Li-ion Polymer Battery for EUT	FX205 Series	---	Zhuhai Greaton Electronic Technology.Co., Ltd
DC Battery	---	---	---
Keyboard	SK-2015	---	HP
Mouse	MSU1465	---	HP

3.7. Test Conditions

Date of re-test : Dec.29, 2021- Dec.30, 2021

Date of EUT Receive : Dec.10, 2021

Temperature: 20℃

Relative Humidity: 46%-52%

Date of test : Oct.15, 2019 - Nov.07, 2019

Date of EUT Receive : Oct.15, 2019

Temperature: 21 ~ 25 °C

Relative Humidity: 42-53%

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.24,2021	1 Year
SB4357	AMN	R&S	ENN216	Aug.25,2021	1 Year
SB9549	Shielded Room	Albatross	SR	Sep.24,2021	1 Year
SB15044/01	Test Receiver	R&S	ESW8	Sep.14,2021	1 Year
SB12944	Broadband Antenna	R&S	VULB9163	Jan.08,2021	1 Year
SB18844	Semi Anechoic Chamber	Albatross	9×6×6(m)	Mar.23,2021	1 Year
SB8501/09	Test Receiver	R&S	ESU40	Feb.05,2021	1 Year
SB3435	Horn Antenna	R&S	HF906	Dec.16,2020	1 Year
SB9058/03	Pre-Amplifier	R&S	SCU 18	Feb.05,2021	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
SB8501/14	Pre-Amplifier	R&S	SCU-03	Feb.05,2021	1 Year
SB8501/15	Pre-Amplifier	R&S	SCU-03	Feb.05,2021	1 Year
SB8501/16	Pre-Amplifier	R&S	SCU 26	Feb.05,2021	1 Year
SB8501/17	Pre-Amplifier	R&S	SCU-18	Feb.05,2021	1 Year
SB9059	Preamplifier	R&S	SCU-40	Aug.25,2021	1 Year
SB9555/02	Fully Anechoic Chamber	Albatross	10.0×5.2×5.4(m)	Aug.25,2021	1 Year
SB12943	Test Receiver	R&S	ESR7	Dec.06,2018	1 Year
SB5472/02	Broadband Antenna	Schwarzbeck	VULB9163	May.31,2019	1 Year
SB8501/09	Test Receiver	R&S	ESU40	Mar.11,2019	1 Year
SB3435	Horn Antenna	R&S	HF906	Jan.01,2019	1 Year
SB9058/03	Pre-Amplifier	R&S	SCU 18	Feb.18,2019	1 Year
SB8501/10	Horn Antenna	R&S	3160-09	Mar.21,2017	3 Years
SB8501/11	Horn Antenna	R&S	3160-09	Mar.21,2017	3 Years
SB8501/12	Horn Antenna	R&S	3160-10	Mar.21,2017	3 Years
SB8501/13	Horn Antenna	R&S	3160-10	Mar.21,2017	3 Years
SB3345	Loop Antenna	Schwarzbeck	FMZB1516-113	Feb.20,2019	1 Year
SB8501/14	Pre-Amplifier	R&S	SCU-03	Feb.20,2019	1 Year
SB8501/15	Pre-Amplifier	R&S	SCU-03	Feb.20,2019	1 Year
SB8501/16	Pre-Amplifier	R&S	SCU 26	Feb.18,2019	1 Year
SB8501/17	Pre-Amplifier	R&S	SCU-18	Feb.20,2019	1 Year
SB9059	Preamplifier	R&S	SCU-40	Aug.27,2019	1 Year
SB7941/02	Signal Analyzer	R&S	FSU26	May.29,2019	1 Year

Table 6 Test software

Name	Manufacturer	Version
Bluetooth and WiFi Test System	Shenzhen JS tonscond co.,ltd	2.6.88.0330

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

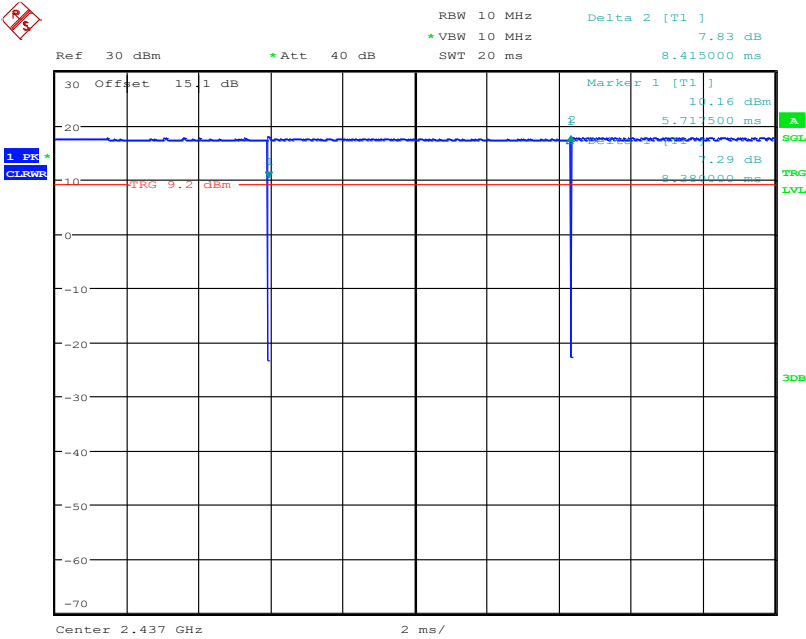


5.4.TEST DATA

Table 7 Duty Cycle Test Data

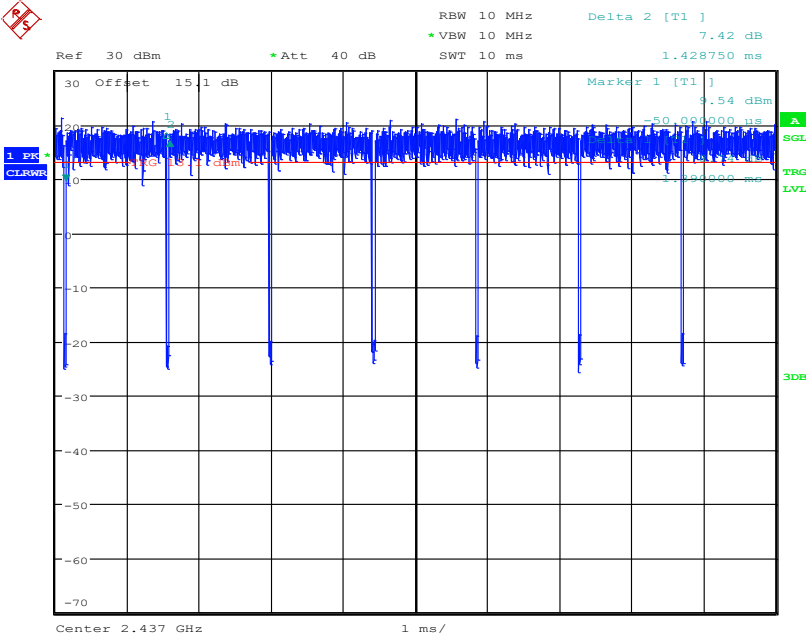
Mode	On Time (ms)	Duty Cycle(%)	Duty Factor	1/T Minimum VBW (kHz)
802.11b	8.38	99.6	0.02	0.01
802.11g	1.39	97.3	0.1	1
802.11n HT20	1.30	97.2	0.1	1
802.11N HT40	0.65	94.7	0.24	1

802.11b



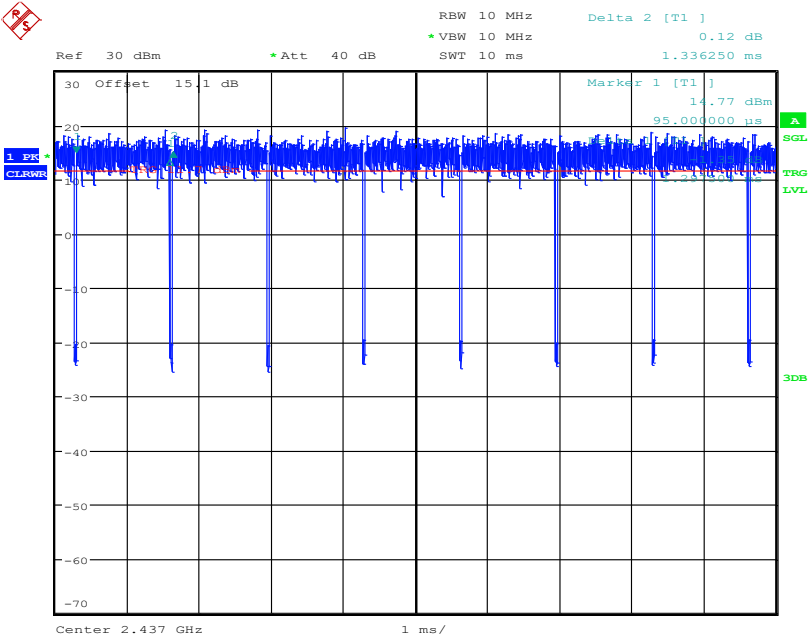
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802.11g



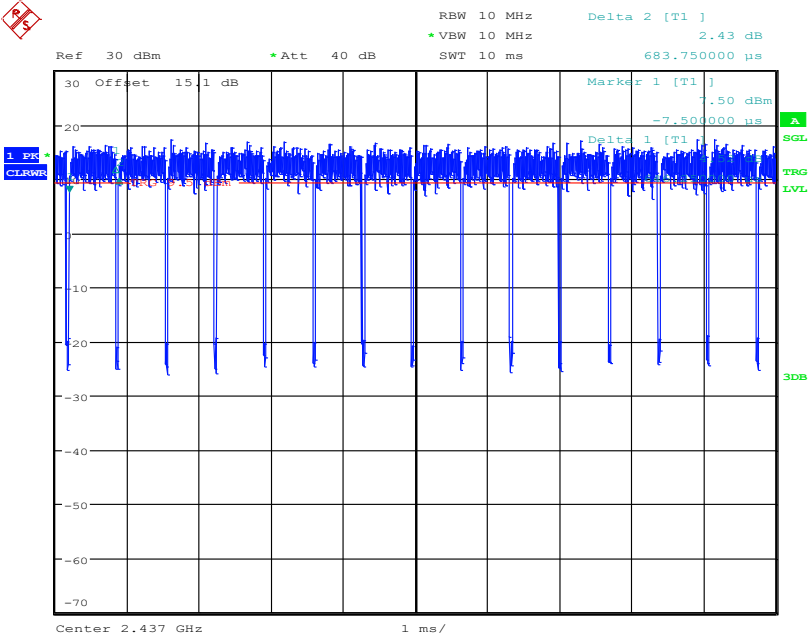
Date: 4.NOV.2019 10:13:06

802.11n HT20



Date: 4.NOV.2019 10:20:00

802.11n HT40



Date: 4.NOV.2019 10:24:51

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 $\geq [3 \times \text{RBW}]$.
- 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

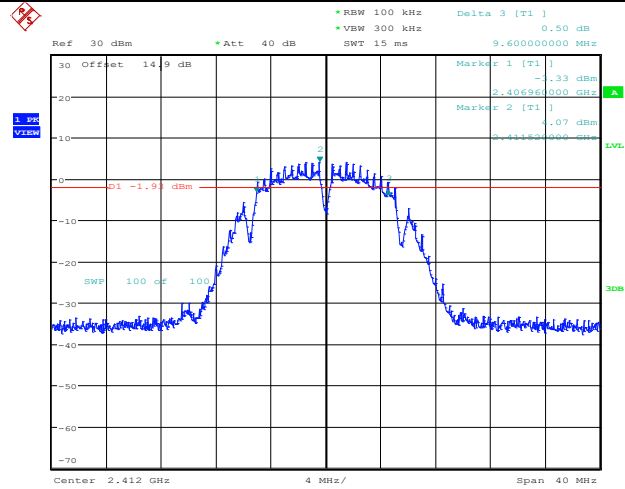


6.4. Test Data

Table 8 6dB Bandwidth Test Data

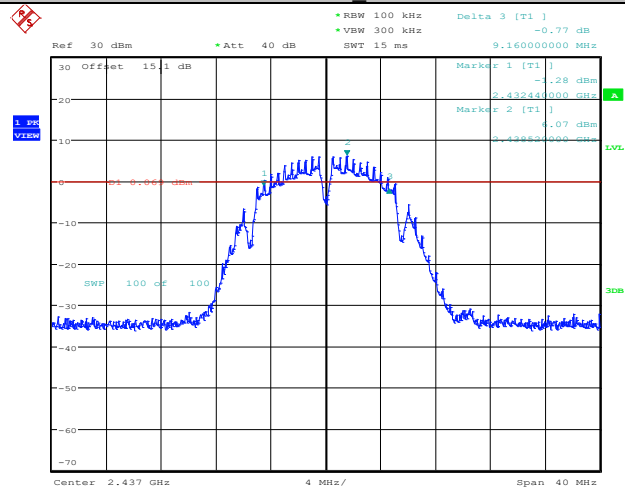
Test Mode	Channel	6dB Bandwidth [MHz]	Verdict
802.11b	2412	9.600	PASS
	2437	9.160	PASS
	2462	9.600	PASS
802.11g	2412	15.800	PASS
	2437	15.160	PASS
	2462	16.080	PASS
802.11n HT20	2412	17.240	PASS
	2437	15.160	PASS
	2462	16.400	PASS
802.11n HT40	2422	35.600	PASS
	2437	27.760	PASS
	2452	35.360	PASS

11B_2412



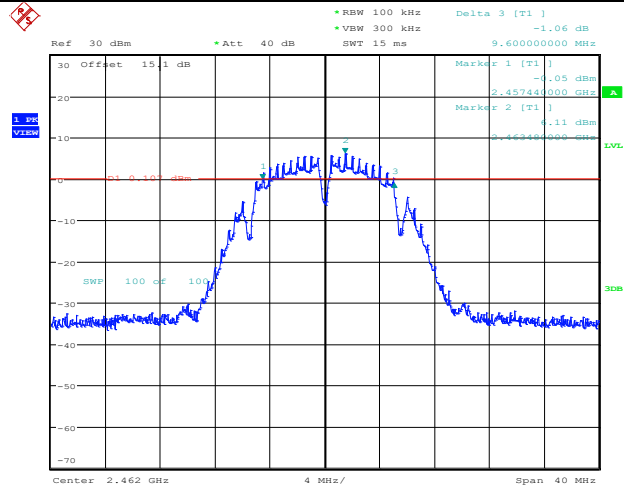
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11B_2437



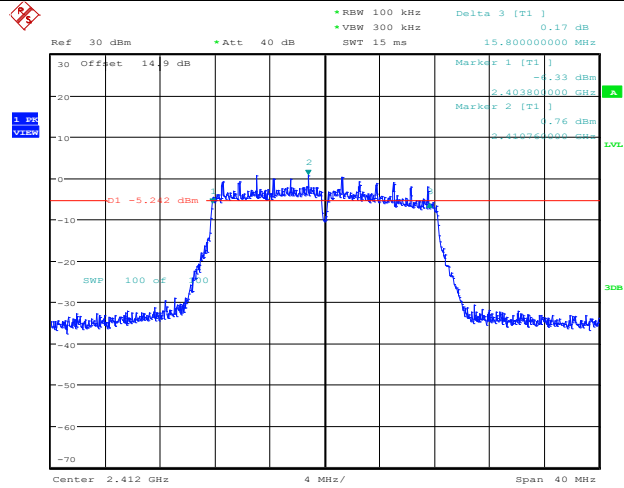
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11B_2462

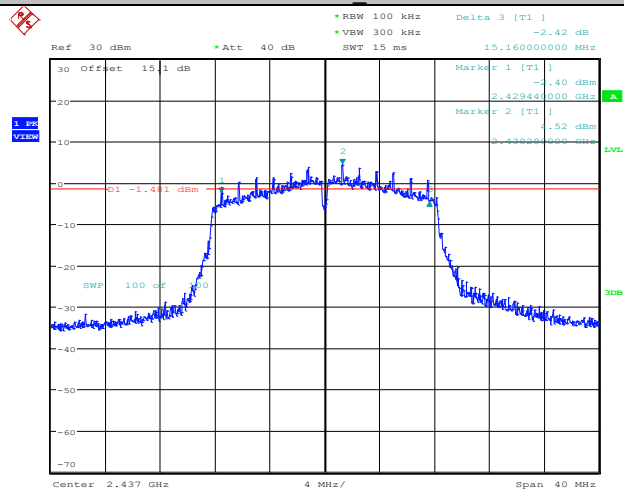


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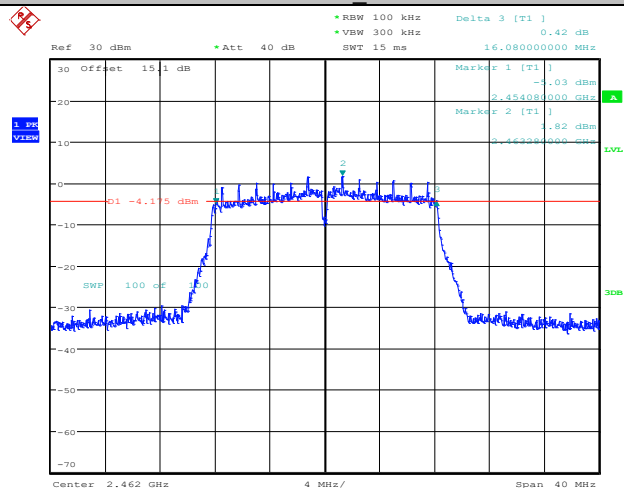
11G_2412



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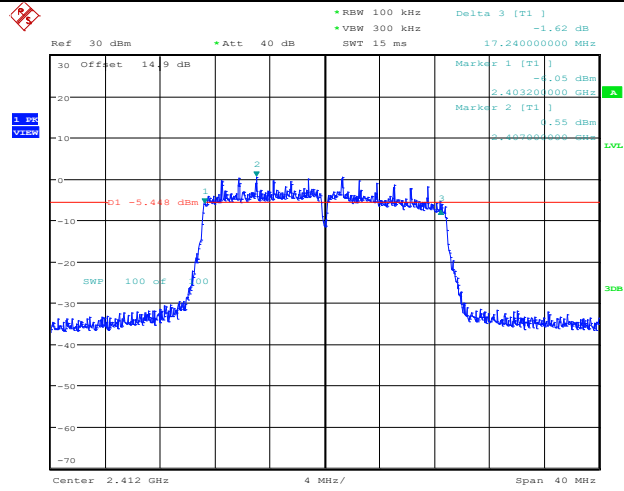


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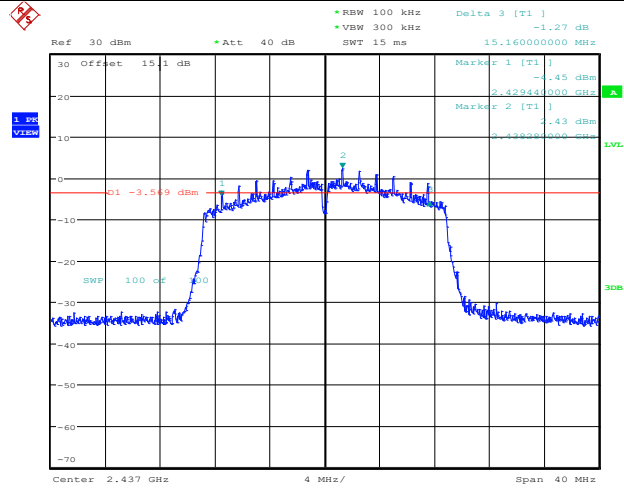
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11N20_2412



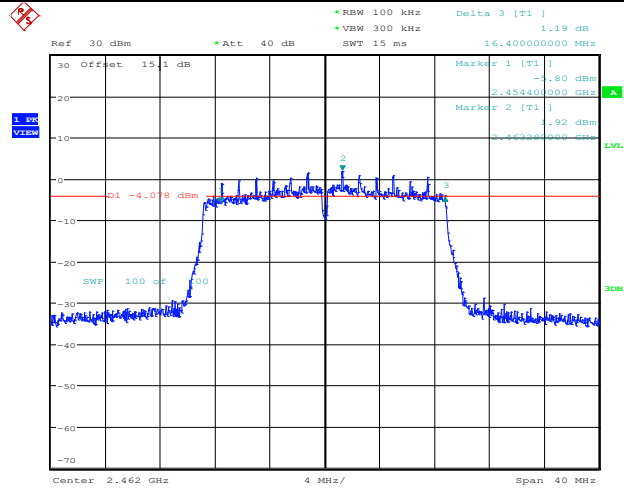
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11N20_2437



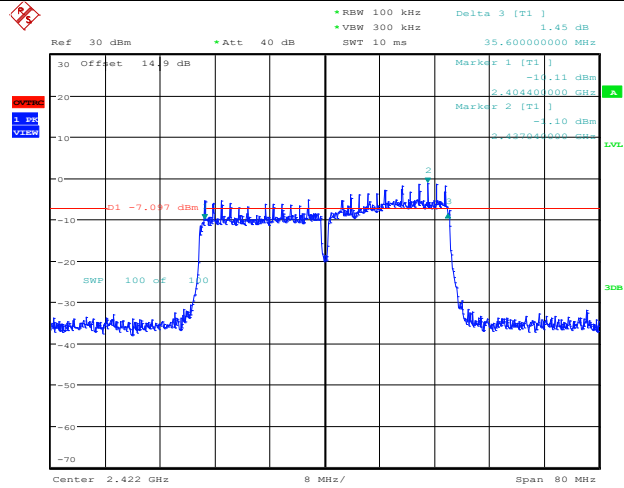
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11N20_2462



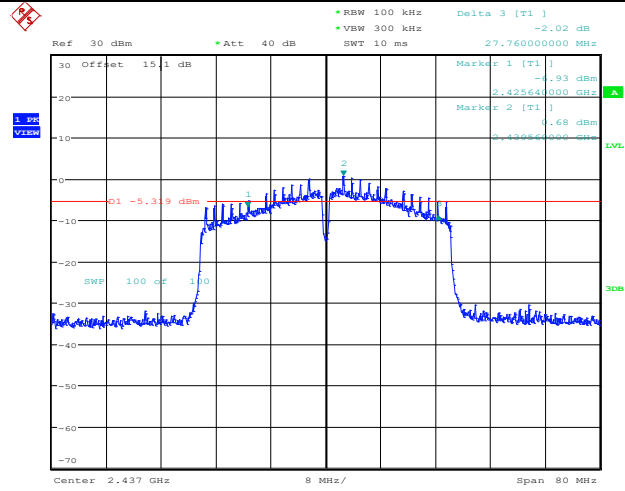
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11N40_2422



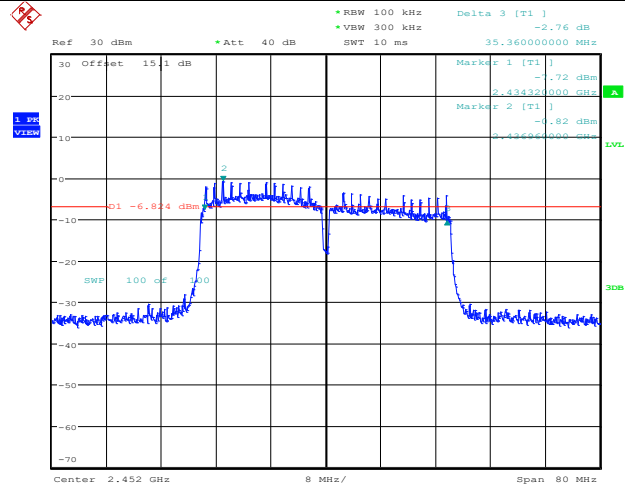
Date: 4.NOV.2019 10:23:05

11N40_2437



Date: 4.NOV.2019 10:25:12

11N40_2452



Date: 4.NOV.2019 10:26:33

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 $\geq [3 \times \text{RBW}]$.
- c) Set the span $\geq [1.5 \times \text{DTS bandwidth}]$.
- 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

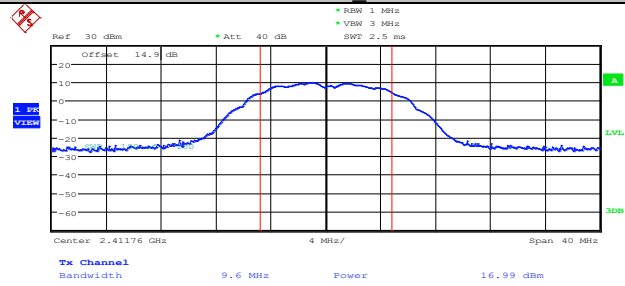


7.4. TEST DATA

Table 9 Maximum Conducted Output Power

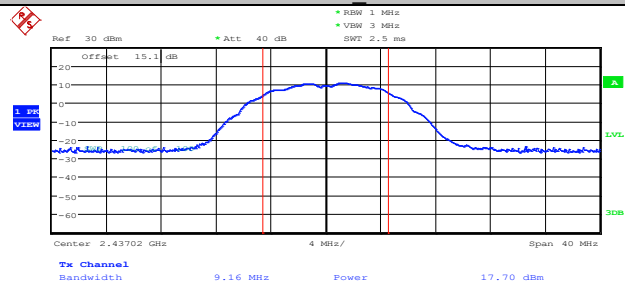
Test Mode	Channel	Meas.Level [dBm]	Limit [dBm]	Verdict
802.11b	2412	16.99	30	PASS
	2437	17.70	30	PASS
	2462	17.94	30	PASS
802.11g	2412	17.64	30	PASS
	2437	20.08	30	PASS
	2462	20.15	30	PASS
802.11n HT20	2412	17.84	30	PASS
	2437	19.91	30	PASS
	2462	20.19	30	PASS
802.11n HT40	2422	19.04	30	PASS
	2437	20.31	30	PASS
	2452	20.23	30	PASS

11B_2412



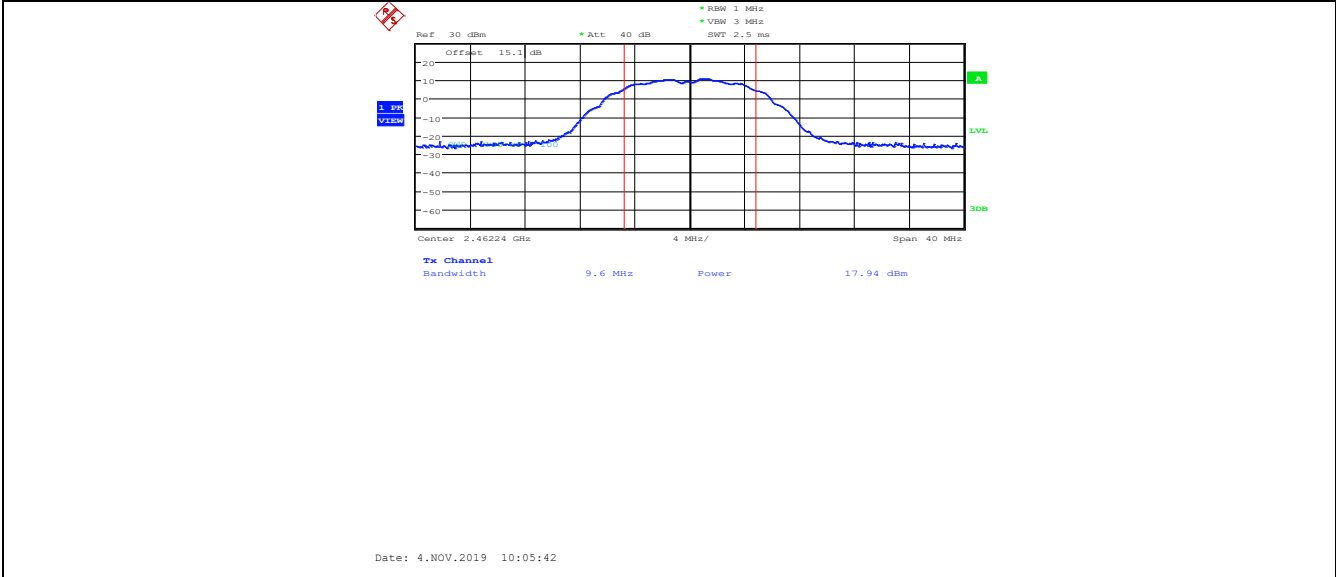
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11B_2437



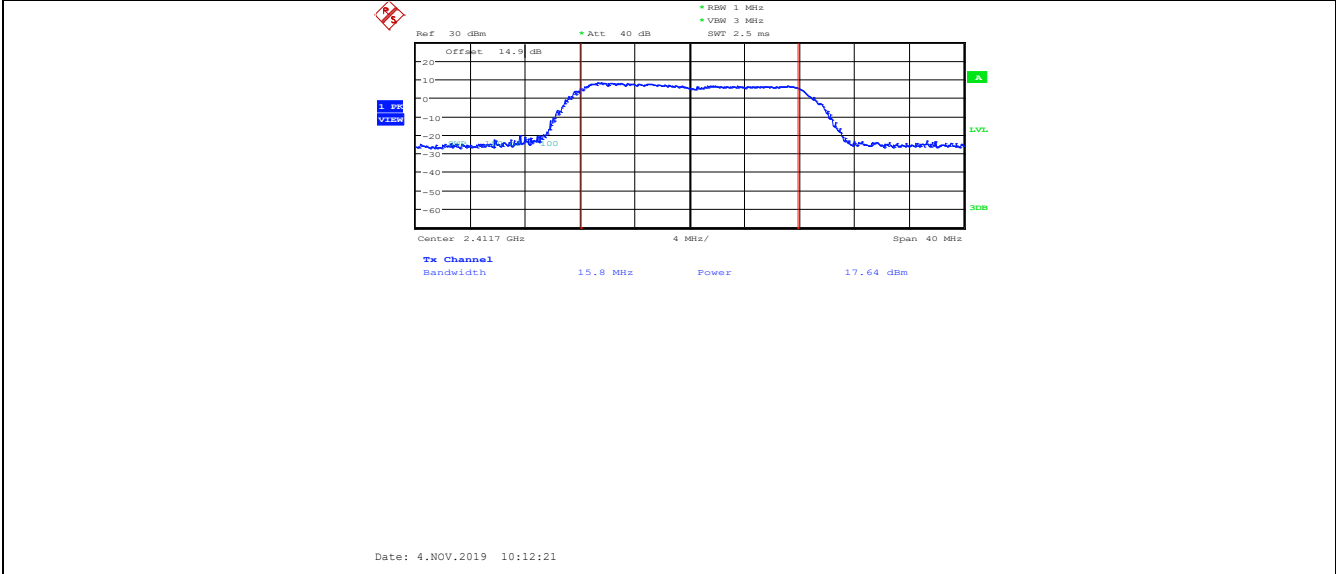
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11B 2462

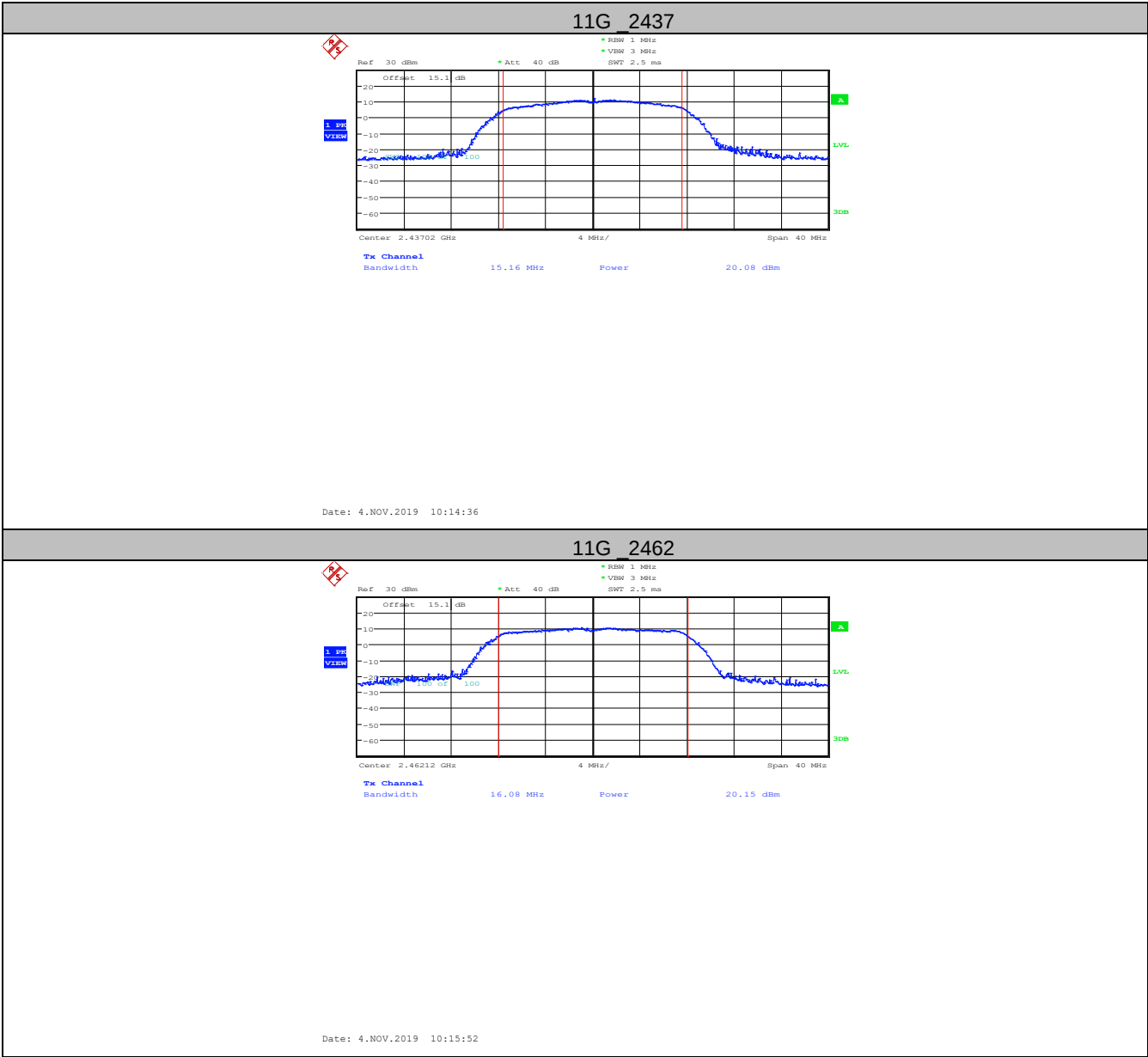


11G_2412

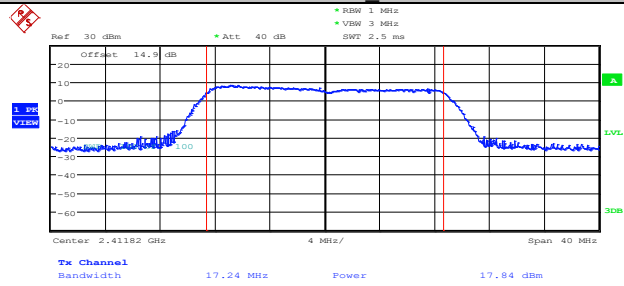
11G_2412



Date: 4.NOV.2019 10:12:21

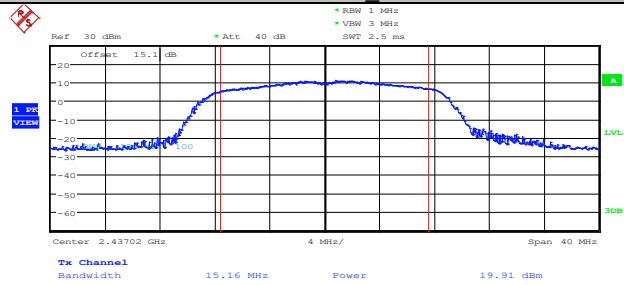


11N20_2412



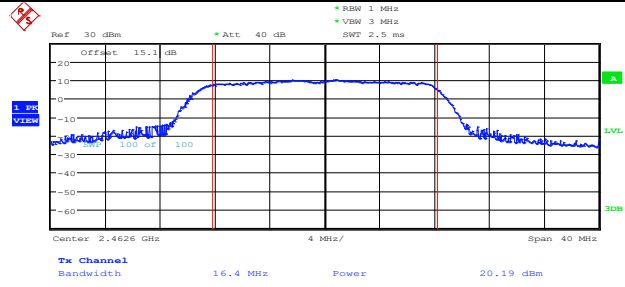
Date: 4.NOV.2019 10:19:28

11N20_2437



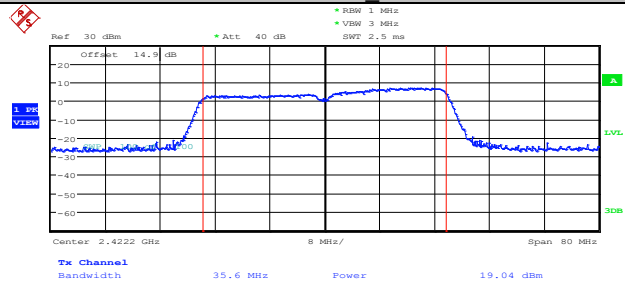
Date: 4.NOV.2019 10:20:39

11N20 2462



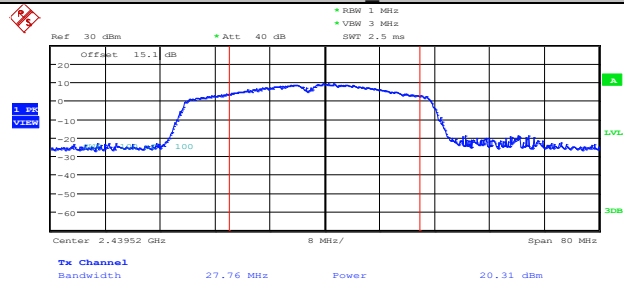
Date: 4.NOV.2019 10:22:04

11N40_2422



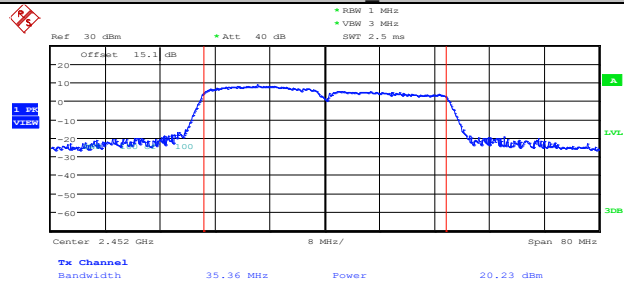
Date: 4.NOV.2019 10:23:23

11N40_2437



Date: 4.NOV.2019 10:25:30

11N40_2452



Date: 4.NOV.2019 10:26:51

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.

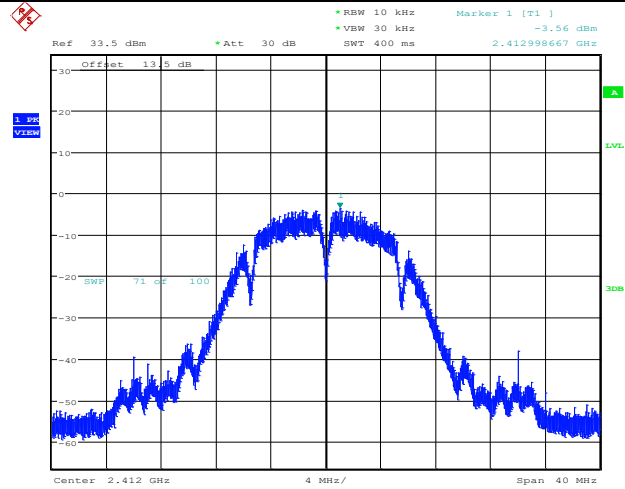
- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to 1.5 times the DTS bandwidth.
- c) Set RBW to: $3\text{kHz} \leq \text{RBW} \leq 100\text{ kHz}$.
- d) Set VBW $\geq 3 \times \text{RBW}$.
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max 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 10 Maximum Power Spectral Density Level

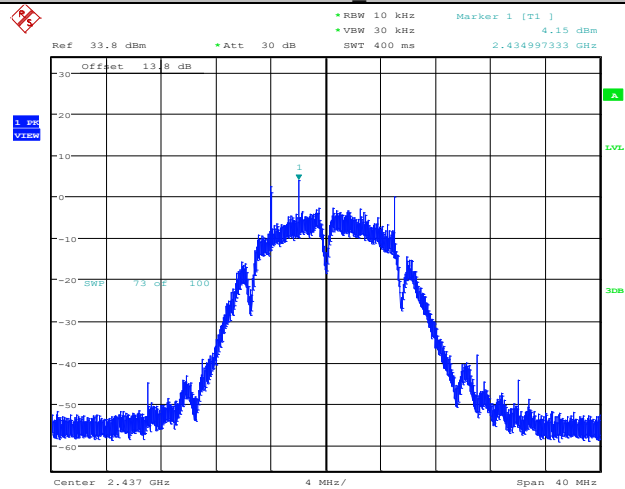
Test Mode	Channel	Maximum Power Spectral Density Level [dBm]	Limit [dBm]	Verdict
802.11b	2412	-3.56	8	PASS
	2437	4.15	8	PASS
	2462	-3.19	8	PASS
802.11g	2412	-7.66	8	PASS
	2437	-5.99	8	PASS
	2462	-6.51	8	PASS
802.11n HT20	2412	-8.91	8	PASS
	2437	-3.86	8	PASS
	2462	-6.5	8	PASS
802.11n HT40	2422	-7.96	8	PASS
	2437	-7.43	8	PASS
	2452	-8.56	8	PASS

11B_2412



Date: 1.JUL.2019 14:47:36

11B_2437



Date: 1.JUL.2019 13:04:53



LV

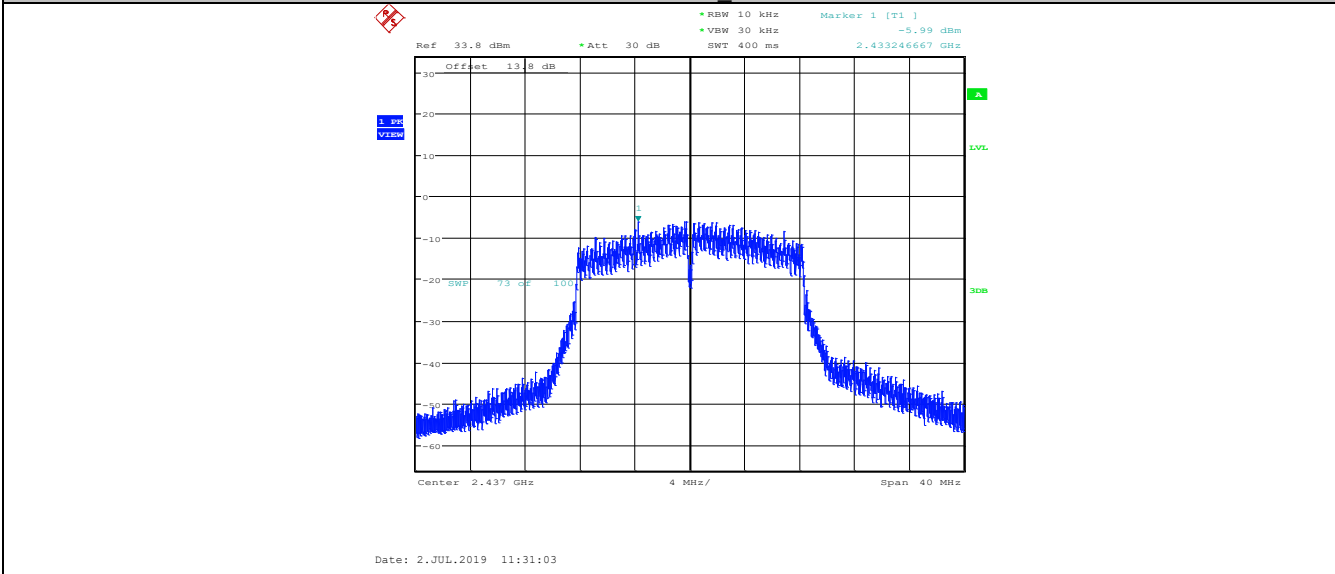
3D



LV

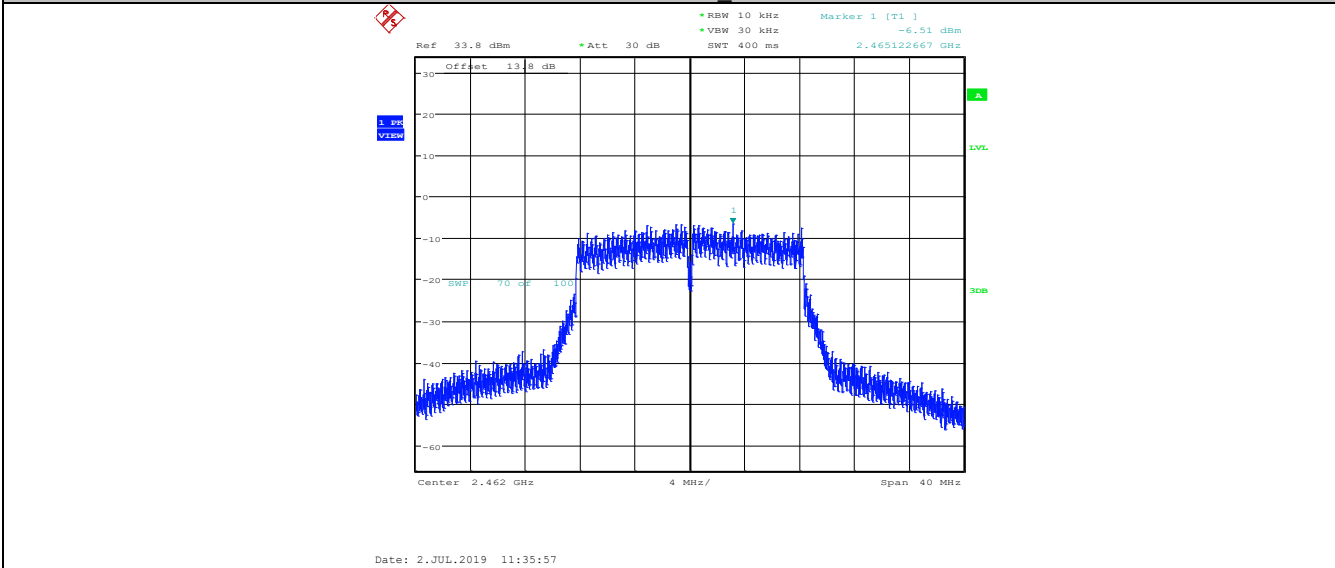
3D

11G_2437

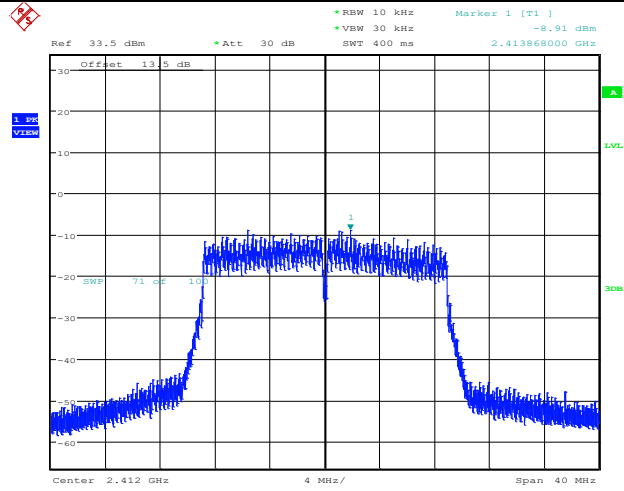


11G_2462

11G_2462

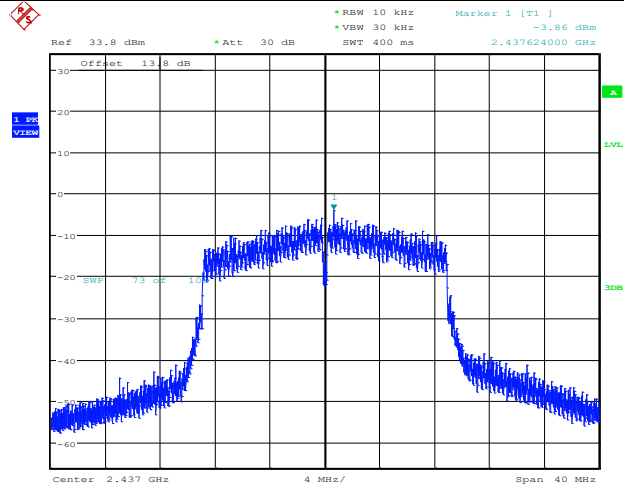


11N20_2412



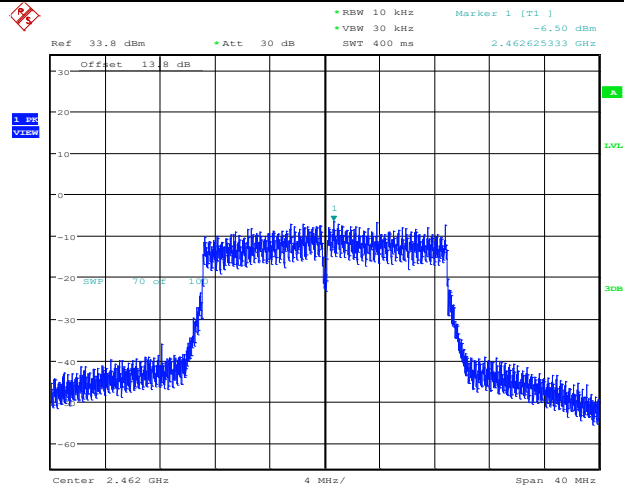
Date: 2.JUL.2019 11:49:45

11N20_2437



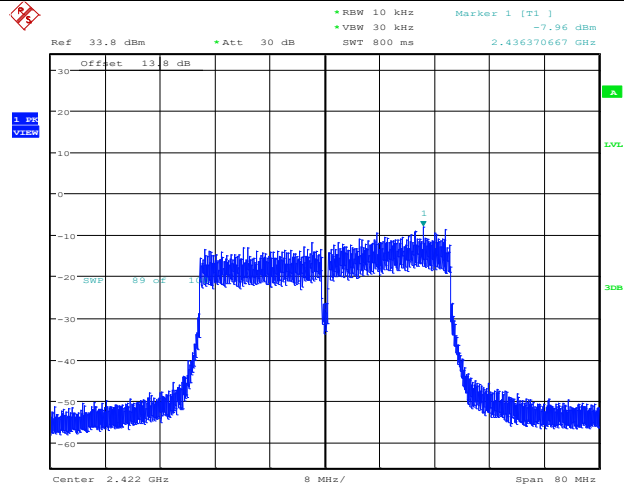
Date: 2.JUL.2019 11:56:59

11N20_2462



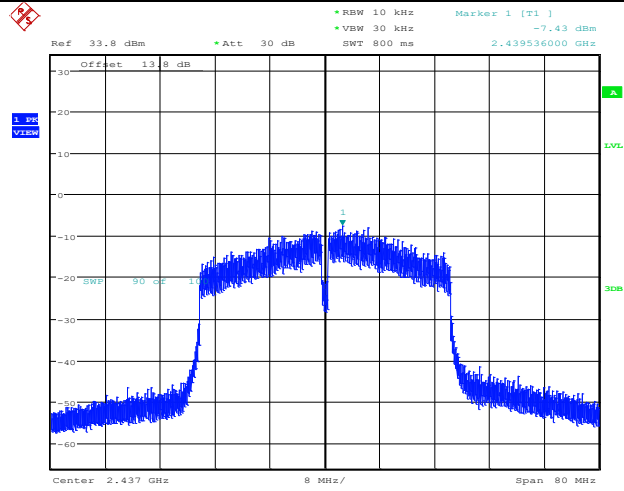
Date: 2.JUL.2019 12:03:03

11N40_2422



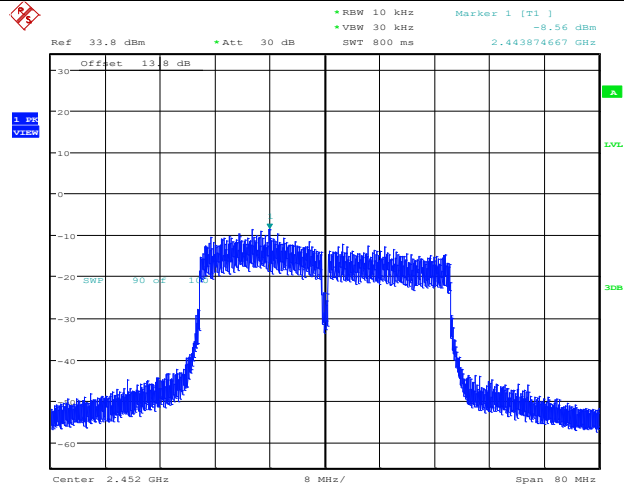
Date: 2.JUL.2019 12:17:25

11N40_2437



Date: 2.JUL.2019 12:30:54

11N40_2452



Date: 2.JUL.2019 12:37:29

9. CONDUCTED BANDEGE 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 $\geq 3 \times$ 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 $\geq 3 \times$ RBW.

d)Detector = peak.

e)Sweep time = auto couple.

f)Trace mode = max hold.

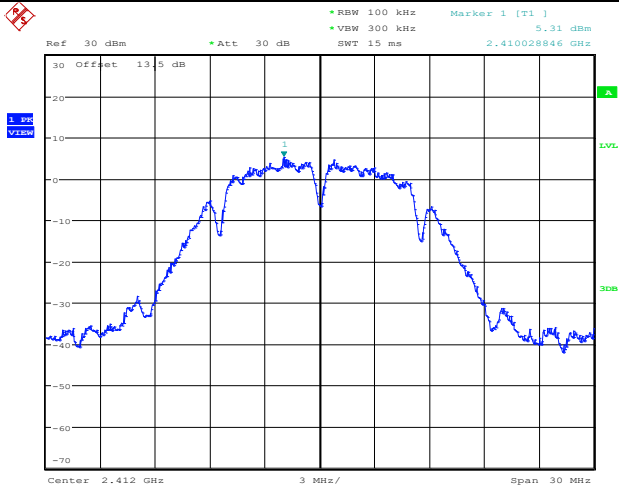
g)Allow trace to fully stabilize.

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.

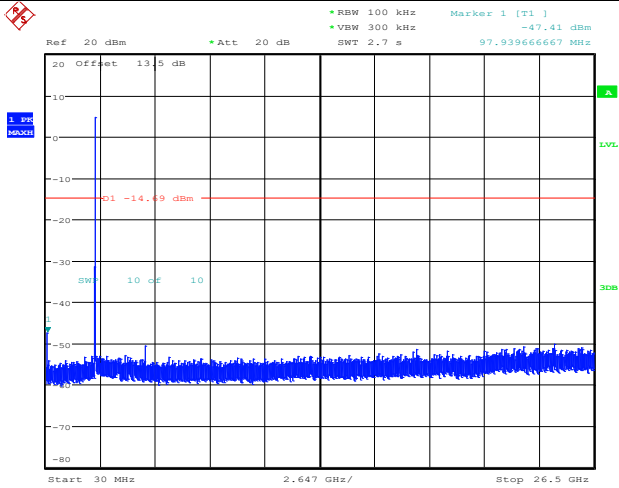
9.3.TEST DATA

11B_2412_Reference



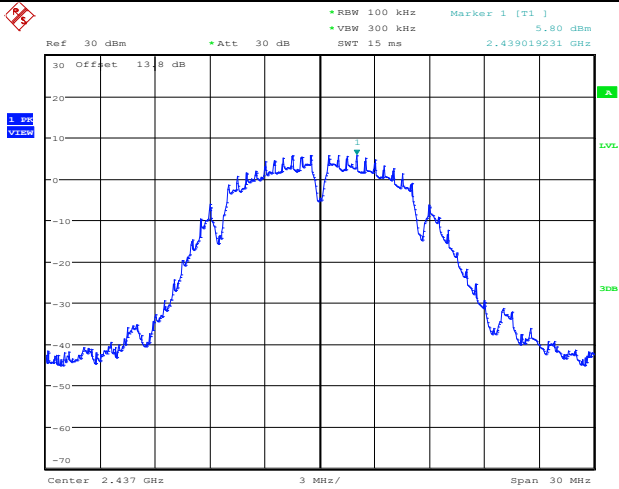
Date: 1.JUL.2019 12:51:27

11B_2412_30-26500



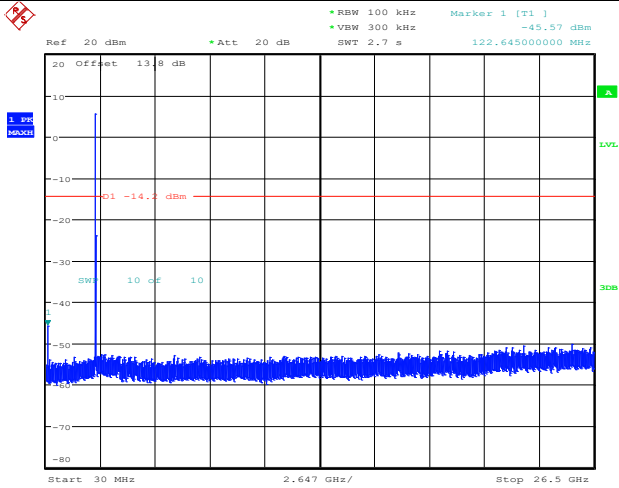
Date: 1.JUL.2019 12:52:11

11B_2437 Reference



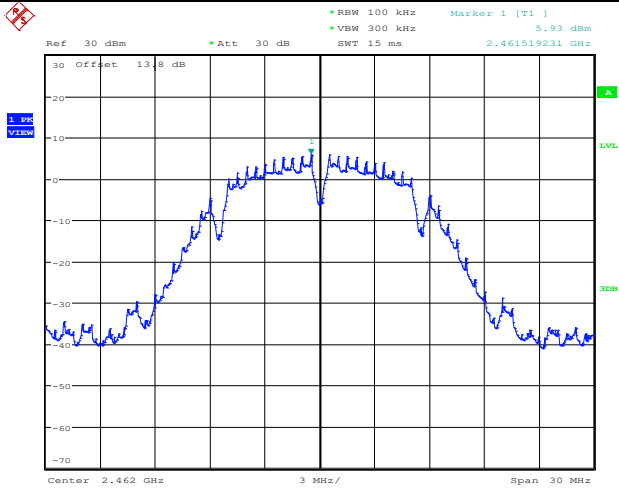
Date: 1.JUL.2019 13:06:18

11B_2437 30-26500



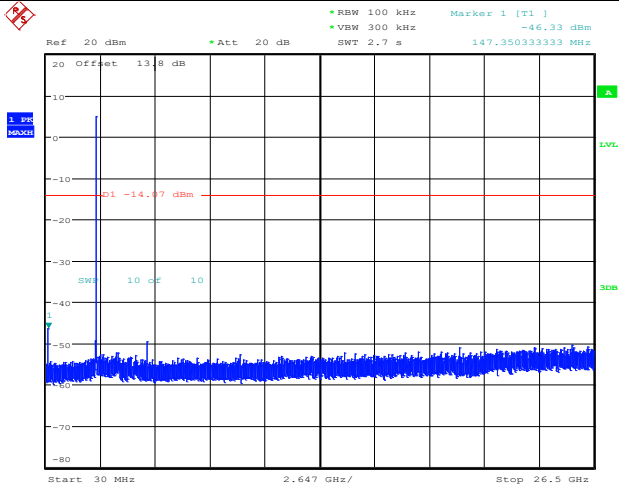
Date: 1.JUL.2019 13:07:02

11B_2462_Reference



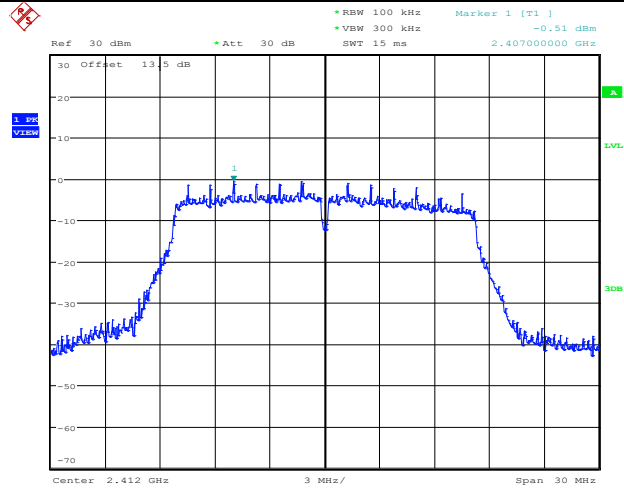
Date: 1.JUL.2019 14:52:20

11B_2462_30-26500



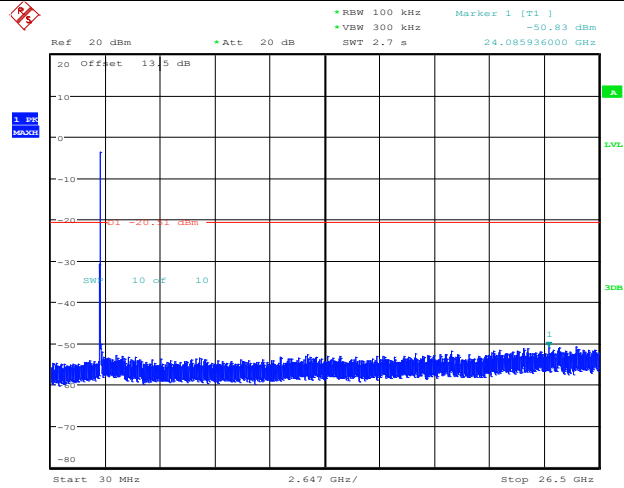
Date: 1.JUL.2019 14:53:04

11G_2412_0~Reference



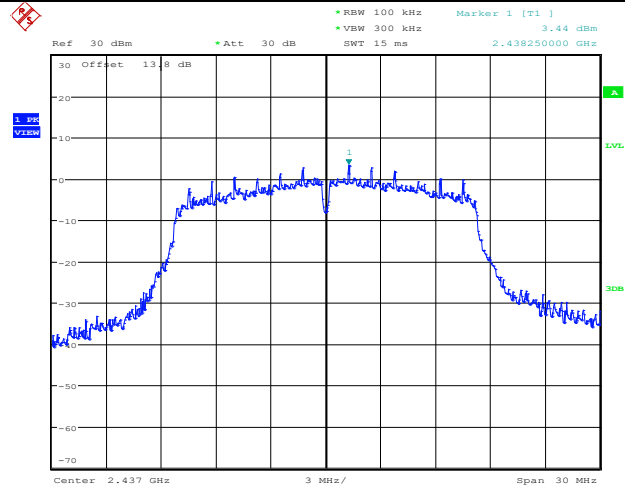
Date: 2.JUL.2019 11:20:59

11G_2412_30~26500



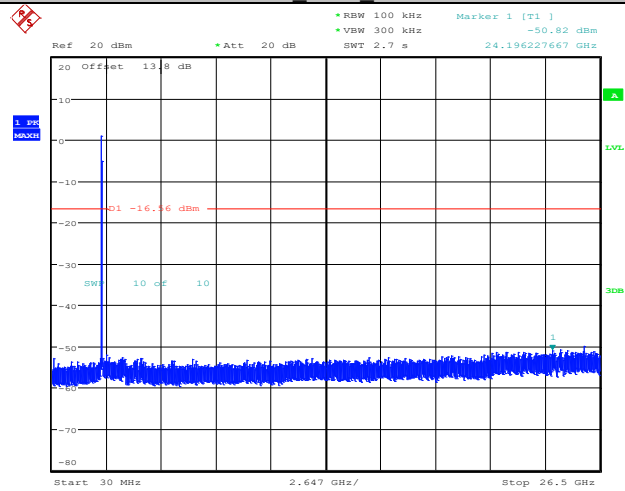
Date: 2.JUL.2019 11:21:43

11G_2437 Reference



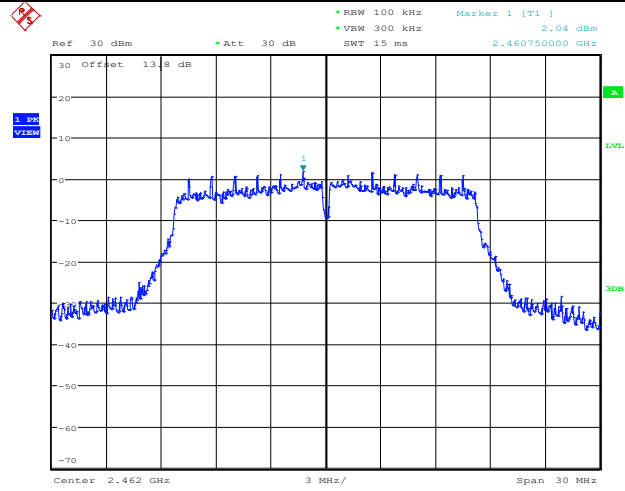
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11G_2437 30~26500



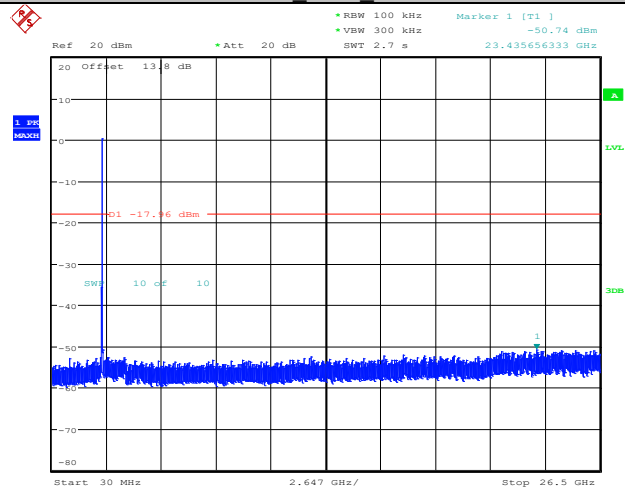
Date: 2.JUL.2019 11:33:20

11G_2462_Reference



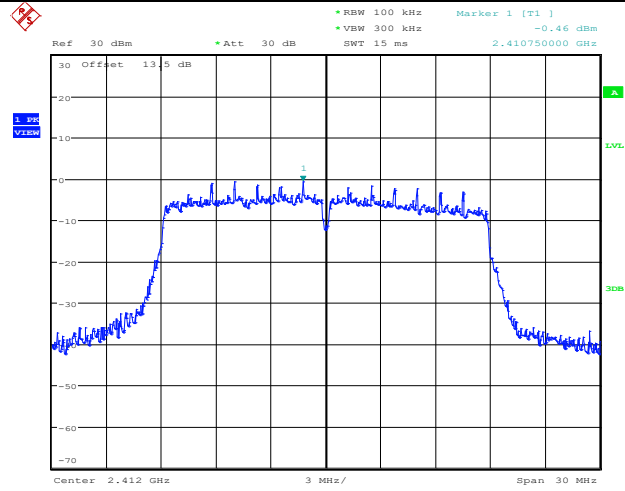
Date: 2.JUL.2019 11:37:27

11G_2462_30~26500



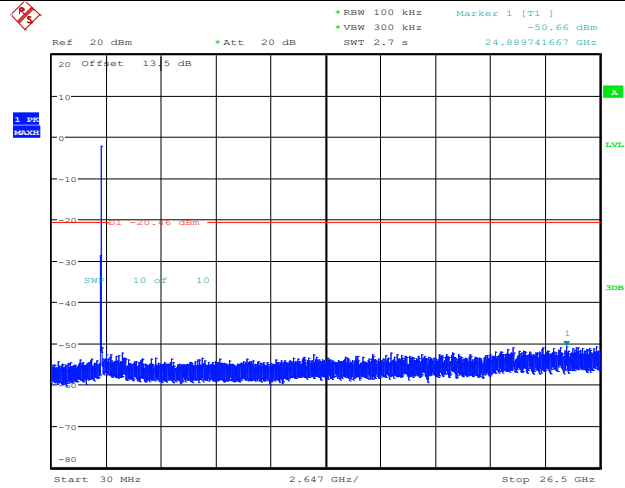
Date: 2.JUL.2019 11:38:11

11N20_2412_Reference



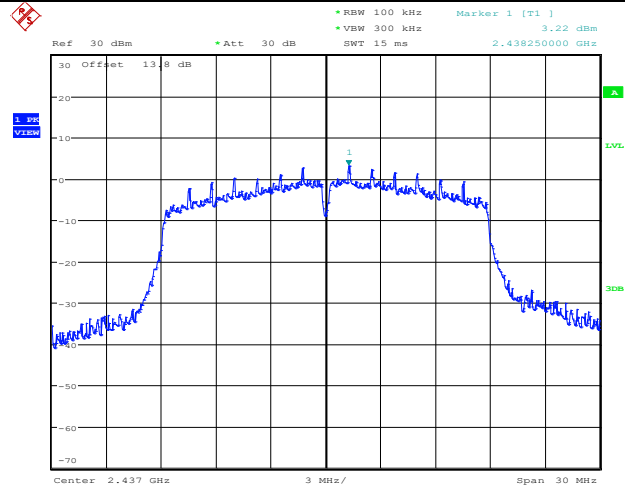
Date: 2.JUL.2019 11:53:17

11N20_2412_30~26500



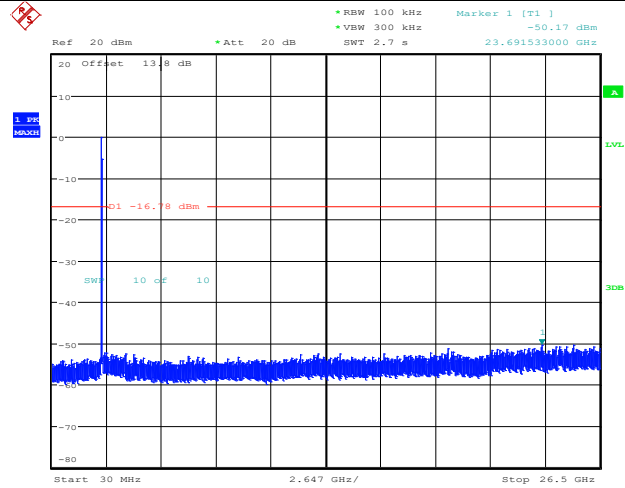
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11N20_2437_Reference



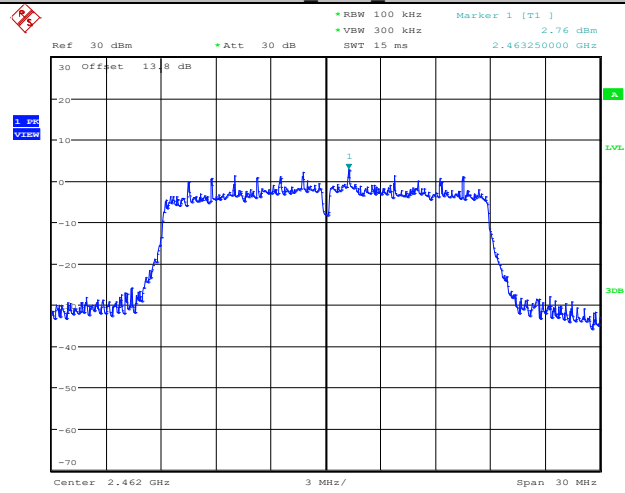
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11N20_2437_30~26500



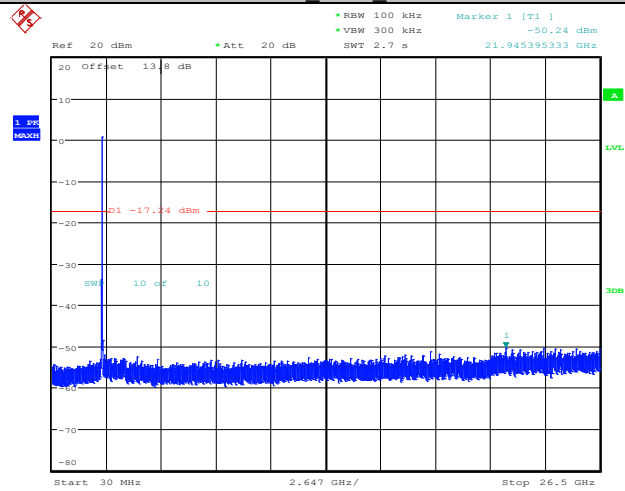
Date: 2.JUL.2019 12:00:07

11N20_2462_Reference



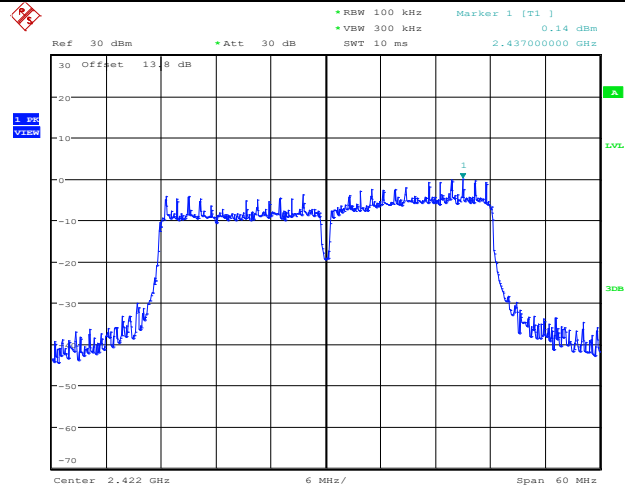
Date: 2.JUL.2019 12:04:33

11N20_2462_30-26500



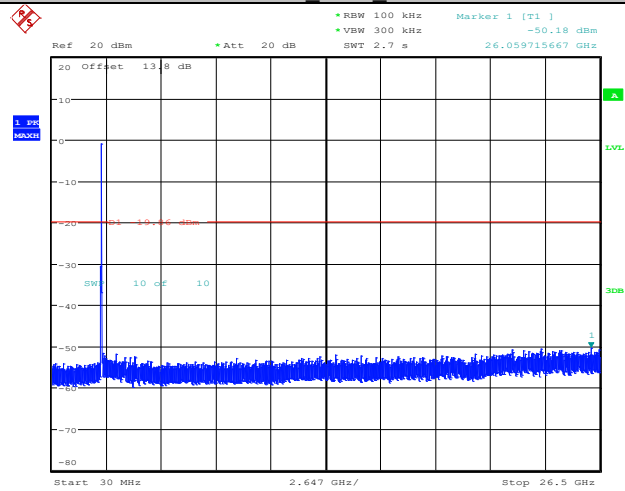
Date: 2.JUL.2019 12:05:17

11N40_2422_Reference



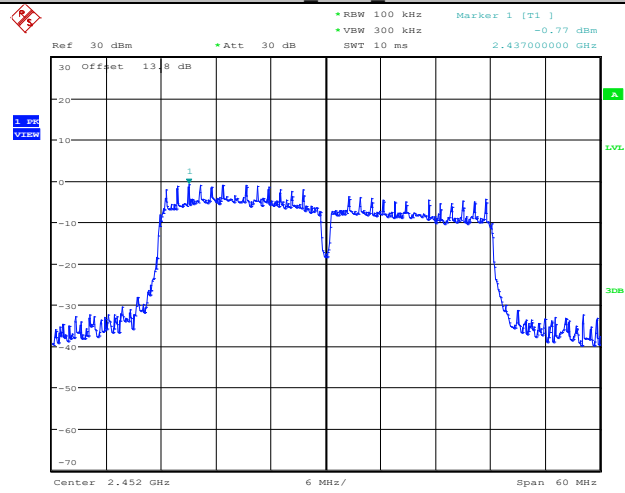
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11N40_2422_30~26500



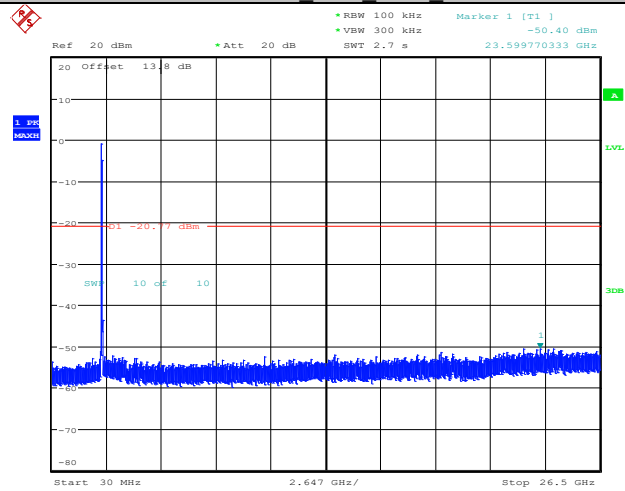
Date: 2.JUL.2019 12:24:46

11N40_2452_Reference



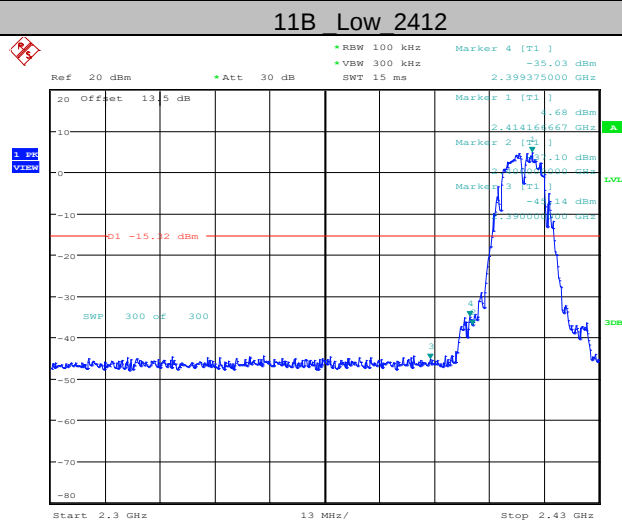
Date: 2.JUL.2019 12:40:25

11N40SISO_Ant1_2452_30~26500



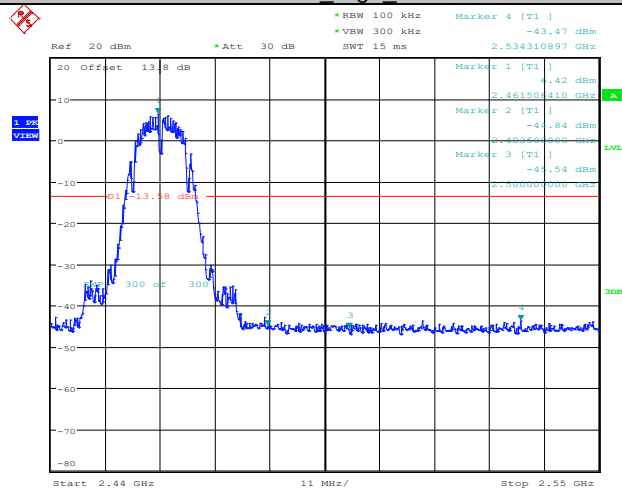
Date: 2.JUL.2019 12:41:09

Band-edge for RF Conducted Emissions



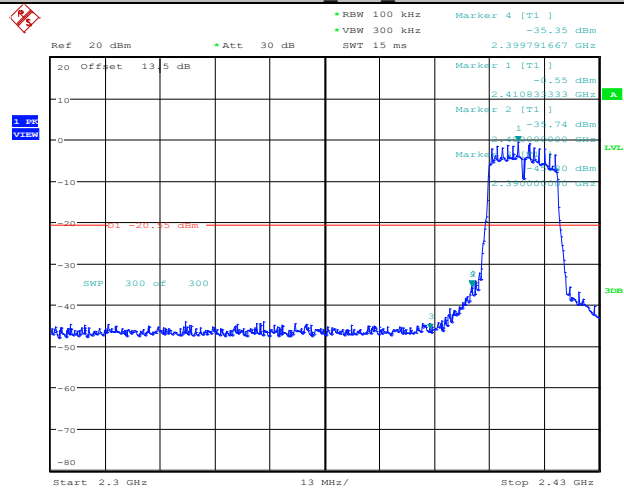
Date: 1.JUL.2019 12:50:16

11B_High_2462



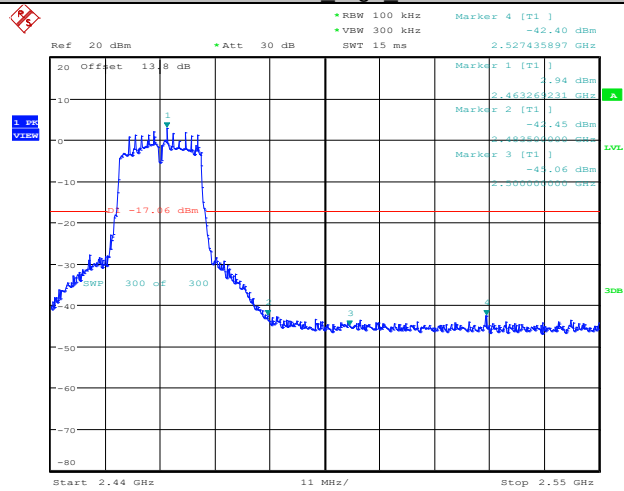
Date: 1.JUL.2019 14:51:10

11G_Low_2412



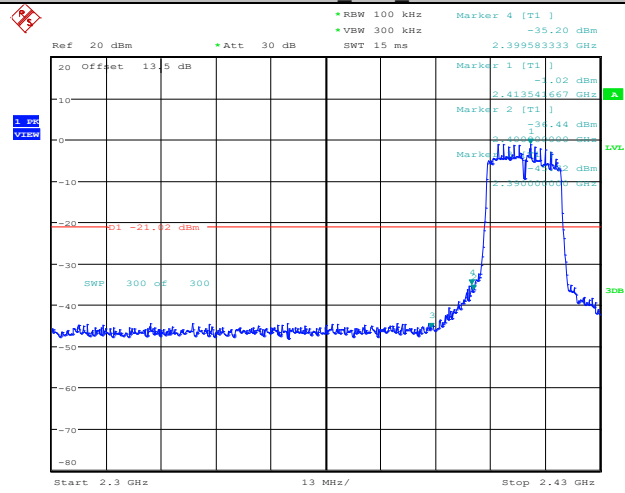
Date: 2.JUL.2019 11:19:42

11G_High_2462



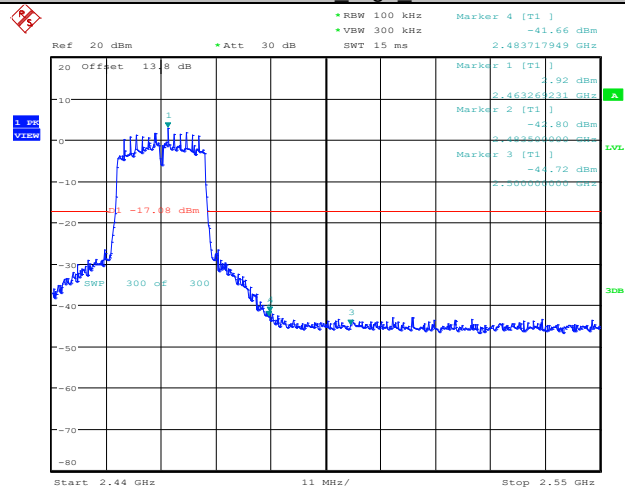
Date: 2.JUL.2019 11:36:12

11N20 Low 2412



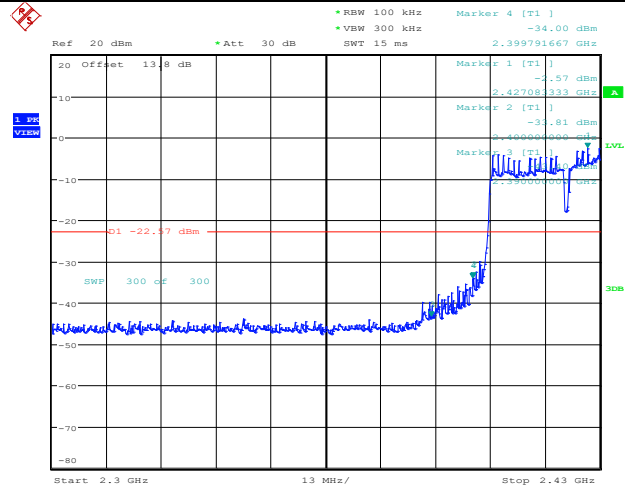
Date: 2.JUL.2019 11:50:01

11N20 High 2462



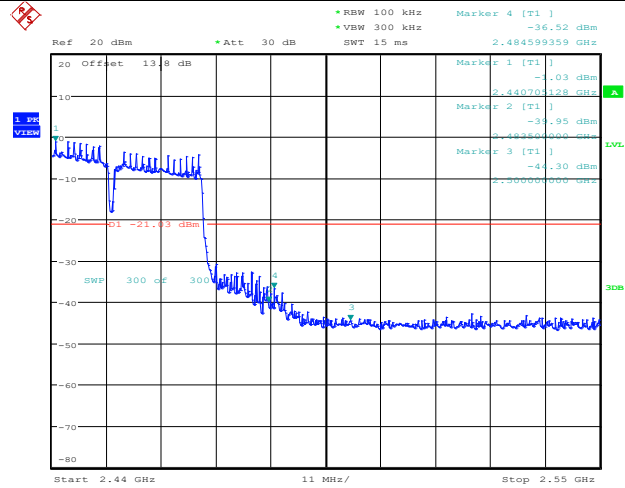
Date: 2.JUL.2019 12:03:19

11N40 Low 2422



Date: 2.JUL.2019 12:17:41

11N40 High 2452



Date: 2.JUL.2019 12:37:44

10. RADIATED BANDEDGE AND SPURIOUS MEASUREMENT

10.1. LIMITS OF Radiated Bandedge and Spurious Measurement

Table 11 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 12 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 $\geq$ 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 VBW= 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 13 Radiated Emission Test Data 9k Hz-30MHz

Frequency (MHz)	Cable Loss +preamp (dB)	Antenna Factor (dB)	Readings (dB μ V/m)	Level (dB μ V/m)	Polarity (H/V)	Limits (dB μ V/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 14 Radiated Emission Test Data 30MHz-1GHz

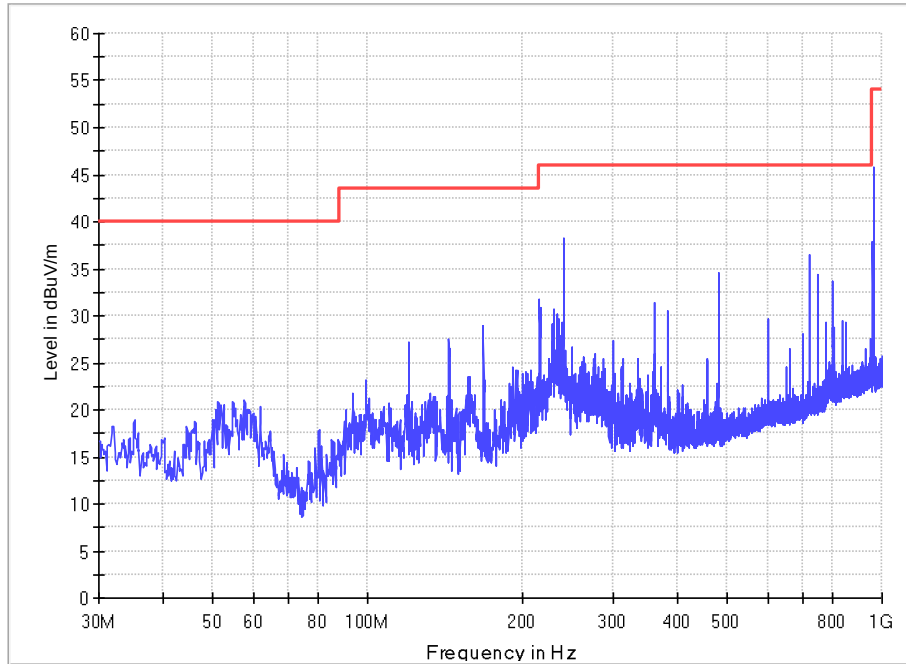
Frequency (MHz)	Cable Loss +preamp (dB)	Antenna Factor (dB)	Readings (dB μ V/m)	Level (dB μ V/m)	Polarity (H/V)	Limits (dB μ V/m)	Margin (dB)	Note
34.627	0.6	12.3	8.3	21.2	Vertical	40	18.8	QP
240.101	1.9	12.1	16.2	30.2	Vertical	46	15.8	QP
384.056	2.4	14.6	7.9	24.9	Vertical	46	21.1	QP
479.958	2.6	15.6	11.4	29.6	Vertical	46	16.4	QP
804.063	3.6	20.1	10.0	33.7	Vertical	46	12.3	QP
960.397	3.9	21.1	18.6	43.6	Vertical	54	10.4	QP
215.997	1.7	10.6	18.7	31.0	Horizontal	43.5	12.5	QP
240.126	1.9	12.1	22.0	36.0	Horizontal	46	10.0	QP
480.201	2.6	16.1	15.5	34.2	Horizontal	46	11.8	QP
720.397	3.4	18.8	-0.2	22.0	Horizontal	46	24.0	QP
749.982	3.5	18.8	11.0	33.3	Horizontal	46	12.7	QP
960.398	3.9	21.1	18.3	43.3	Horizontal	54	10.7	QP

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

30MHz-1GHz

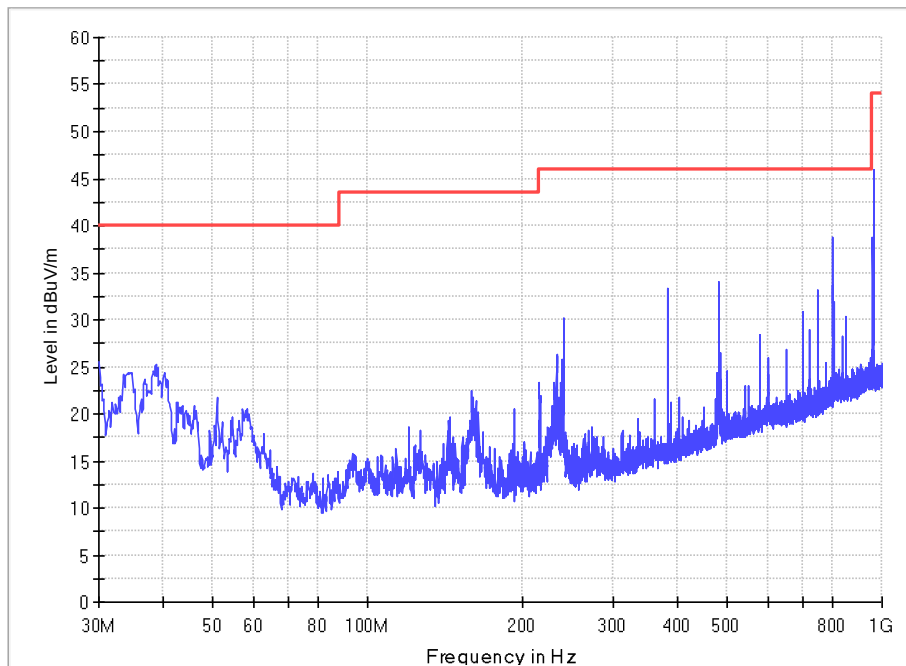
Horizontal

ESW8 Field strength 30M-1GHz



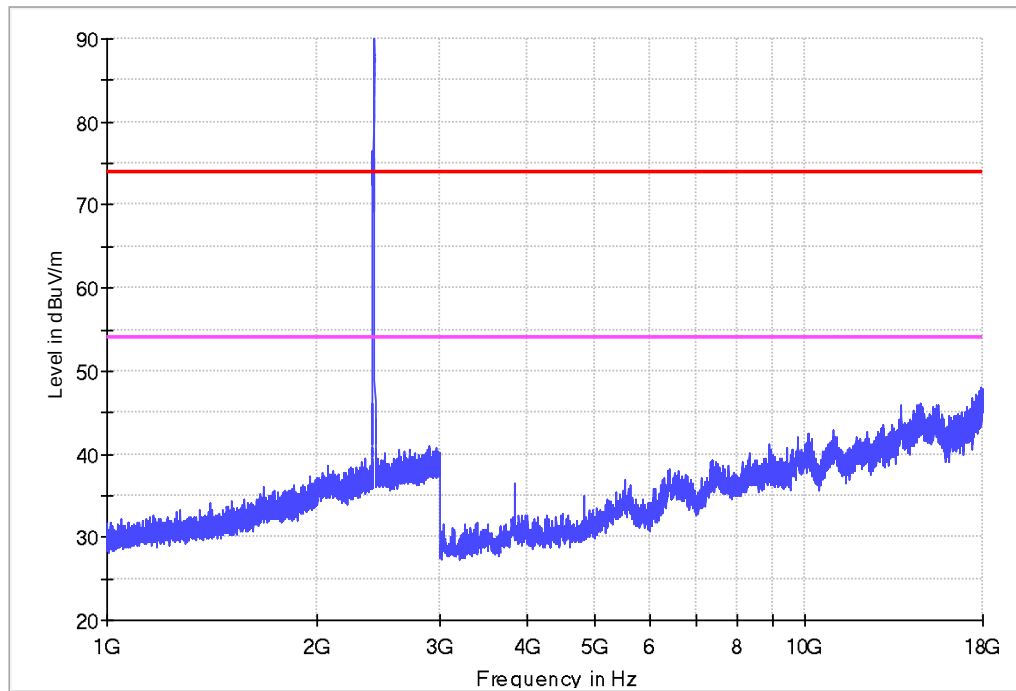
Vertical

ESW8 Field strength 30M-1GHz

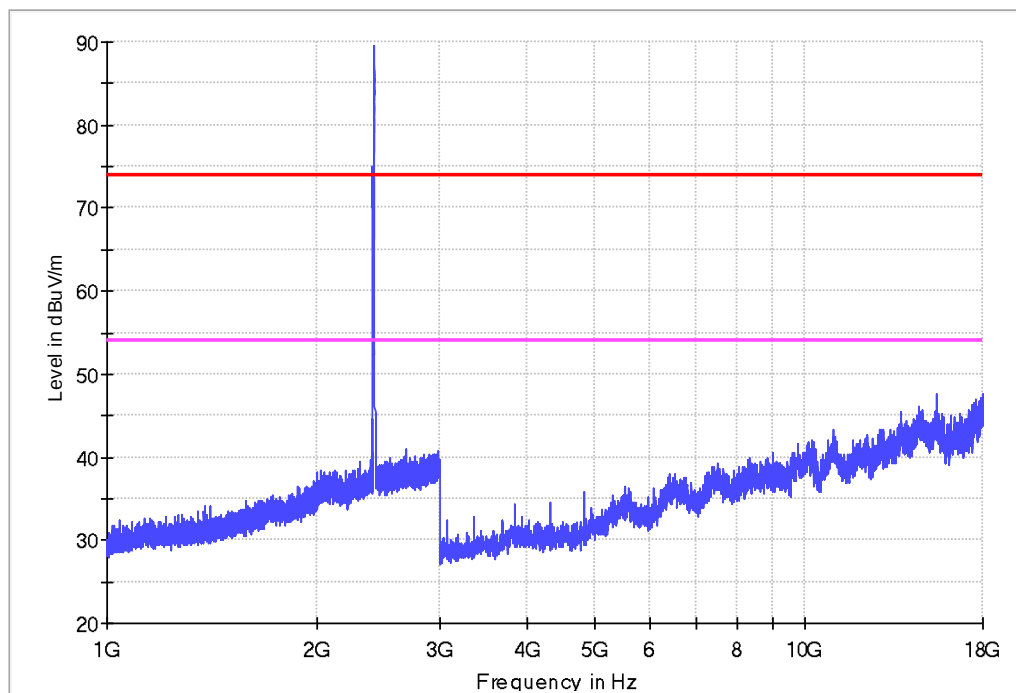


1-18G
11b
Ch1

Horizontal



Vertical

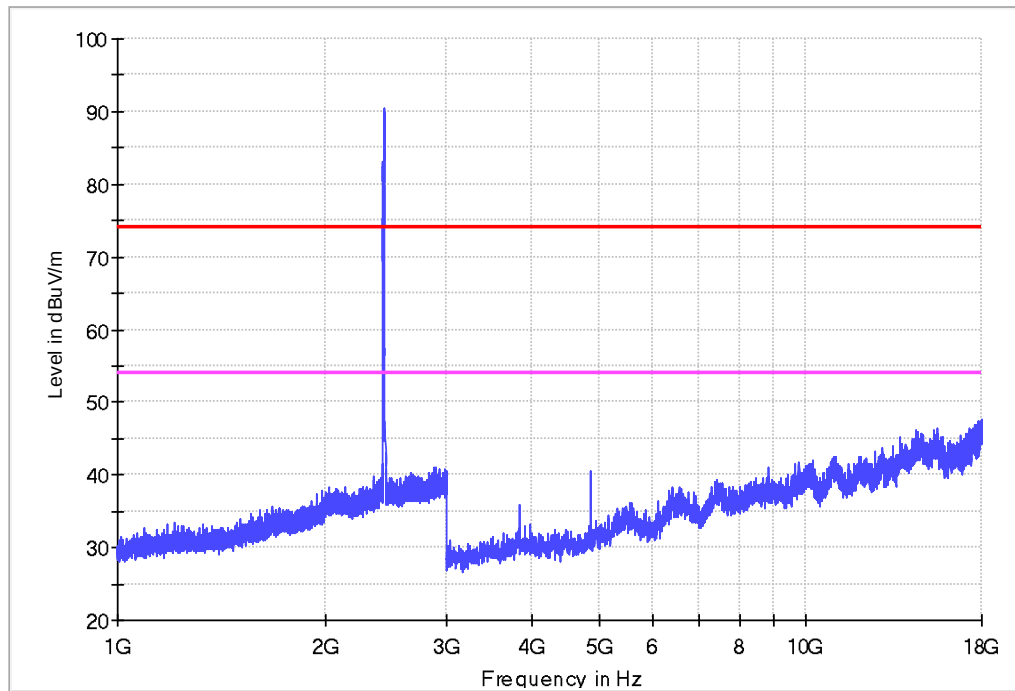


1-18G

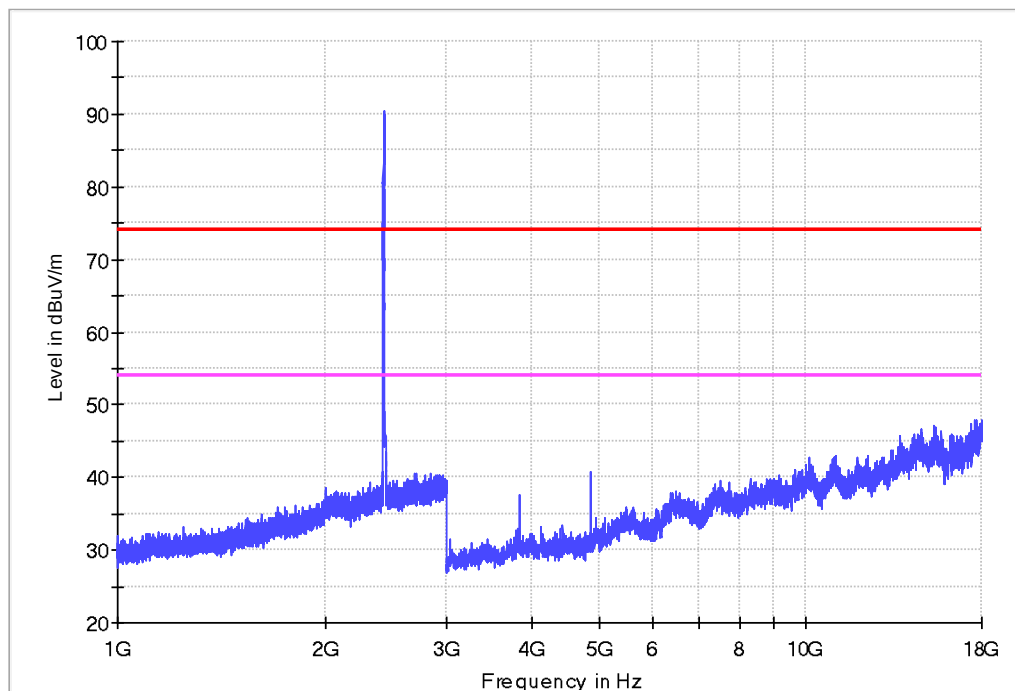
11b

Ch6

Horizontal

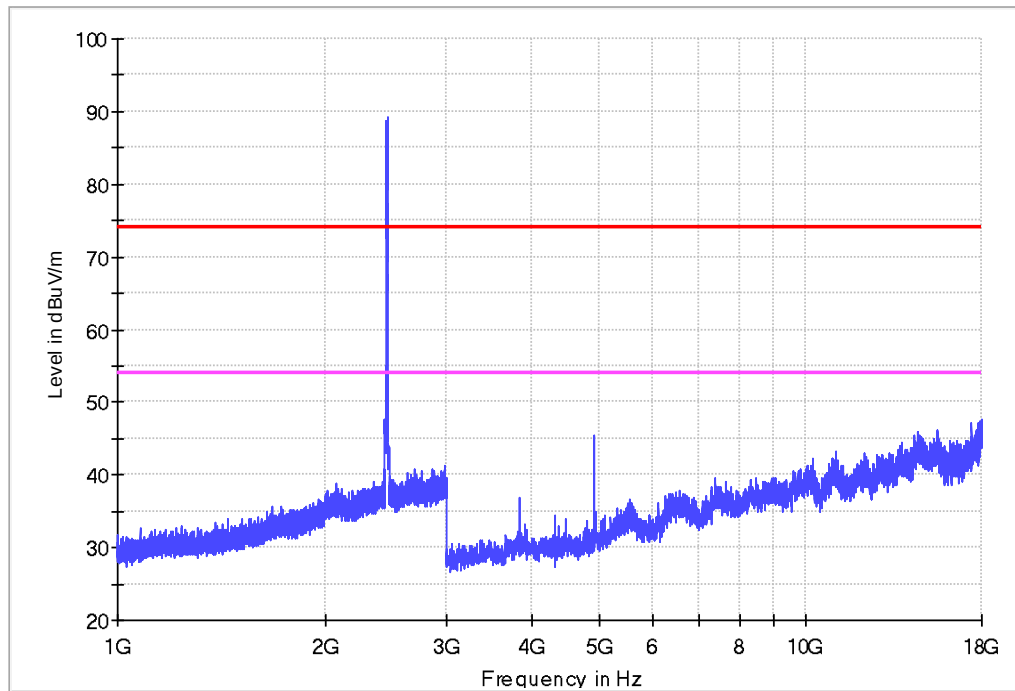


Vertical

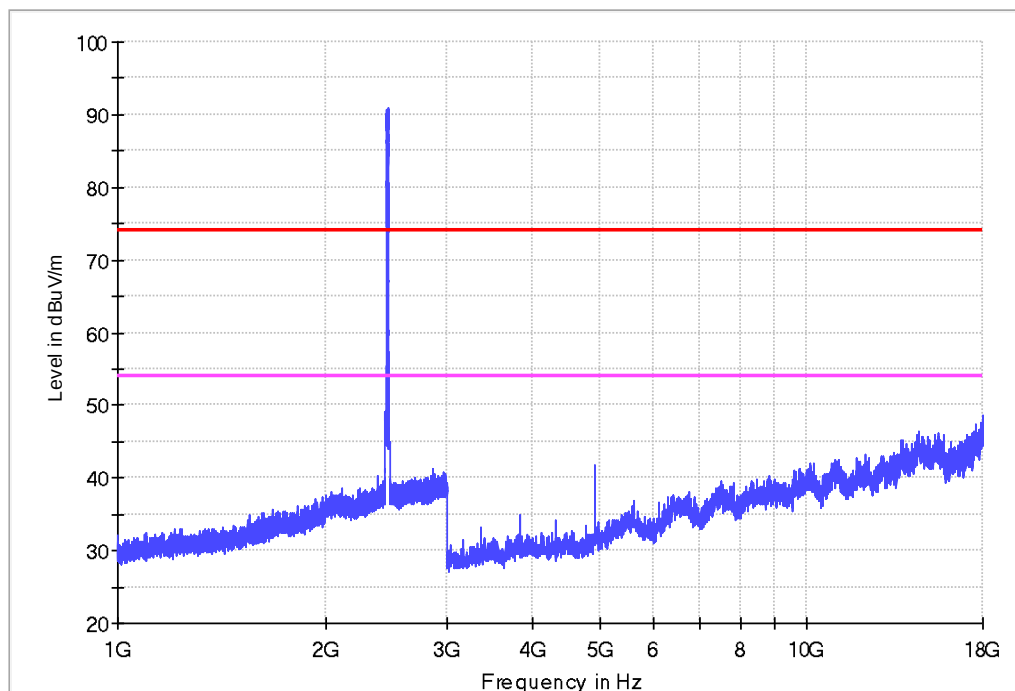


1-18G
11b
Ch11

Horizontal

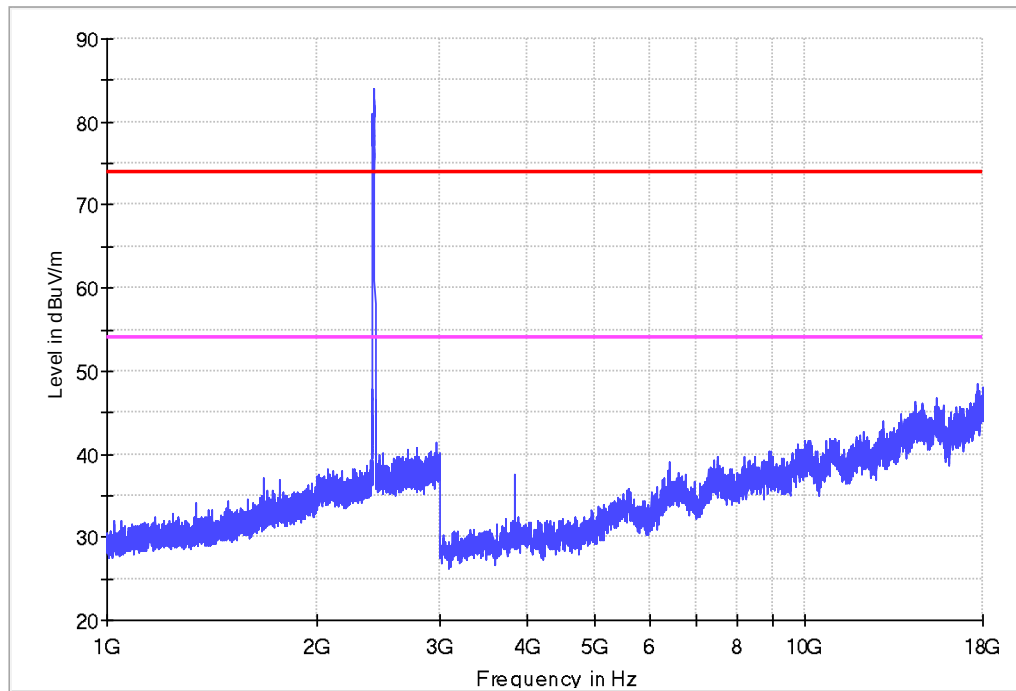


Vertical

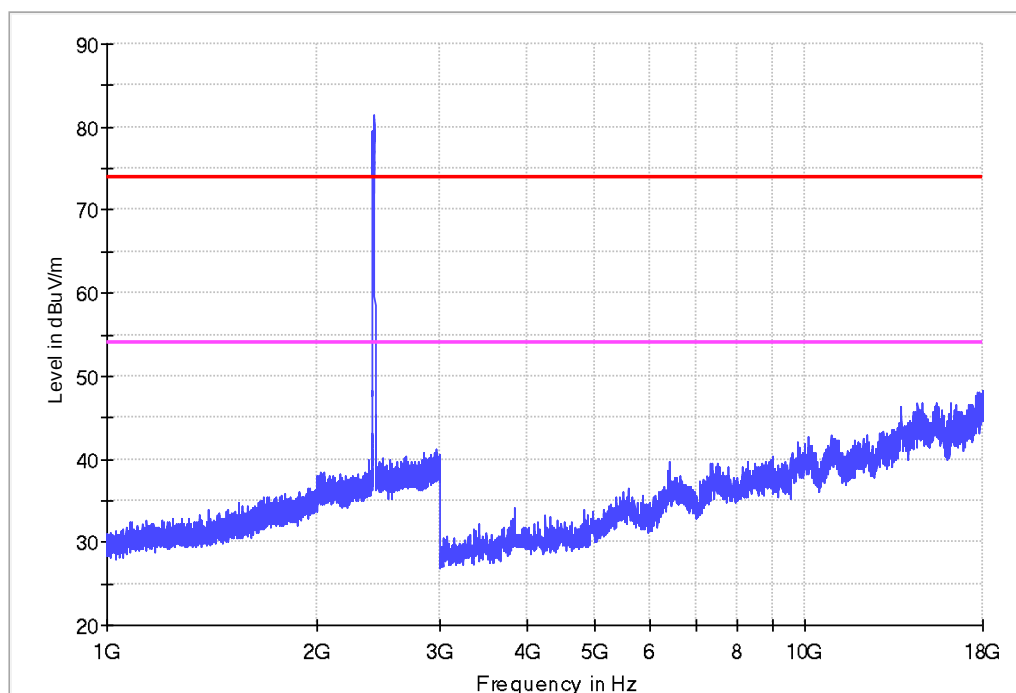


1-18G
11g
Ch1

Horizontal



Vertical

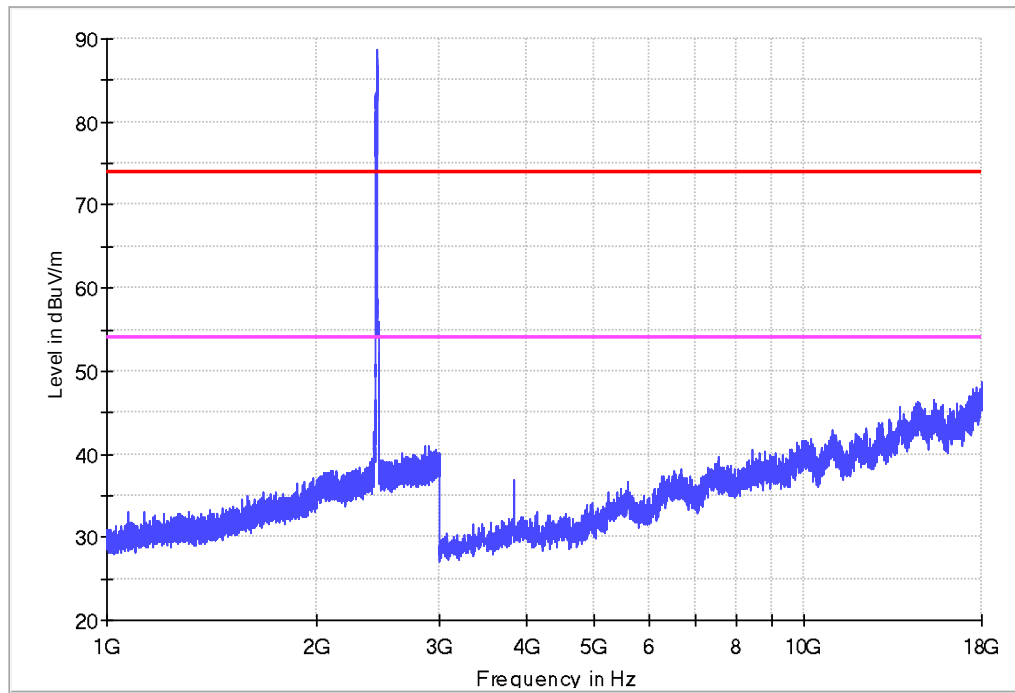


1-18G

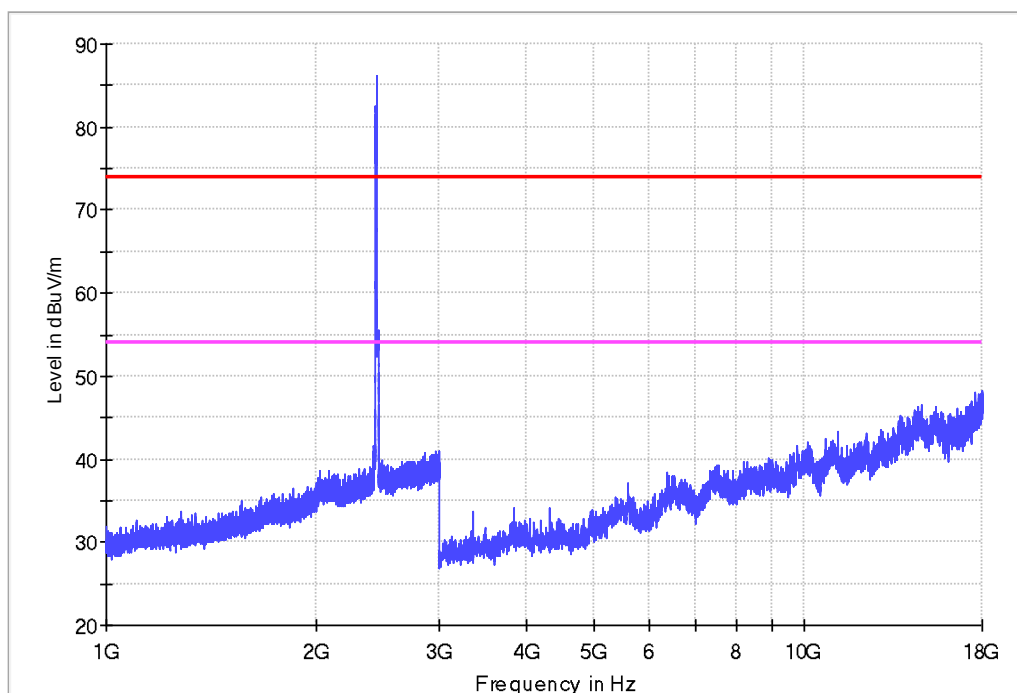
11g

Ch6

Horizontal

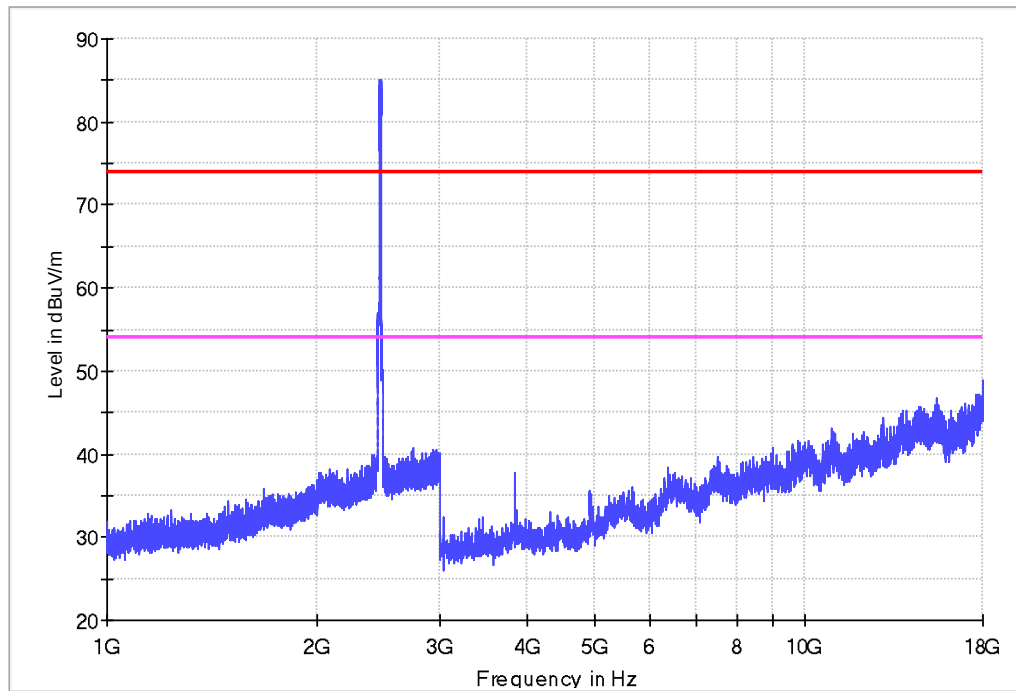


Vertical

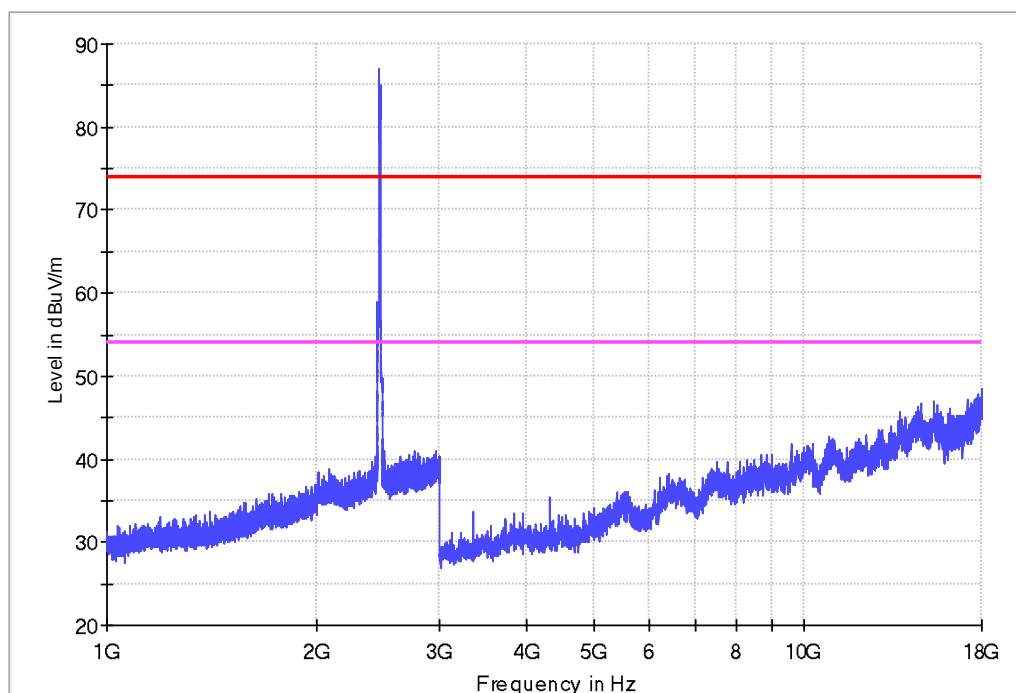


1-18G

11g
Ch11
Horizontal



Vertical

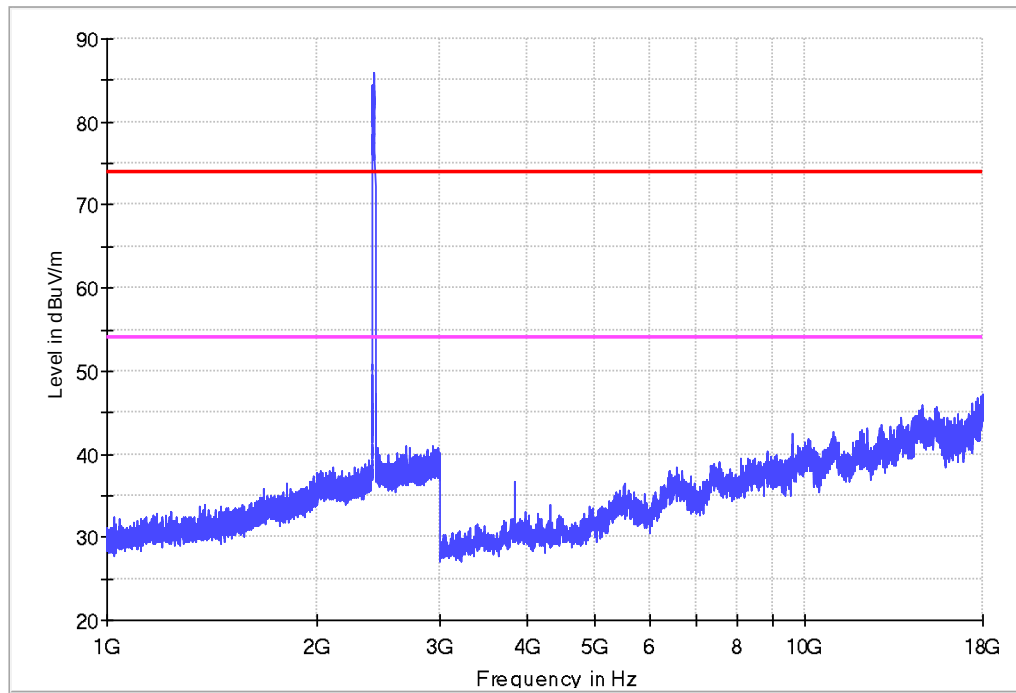


1-18G

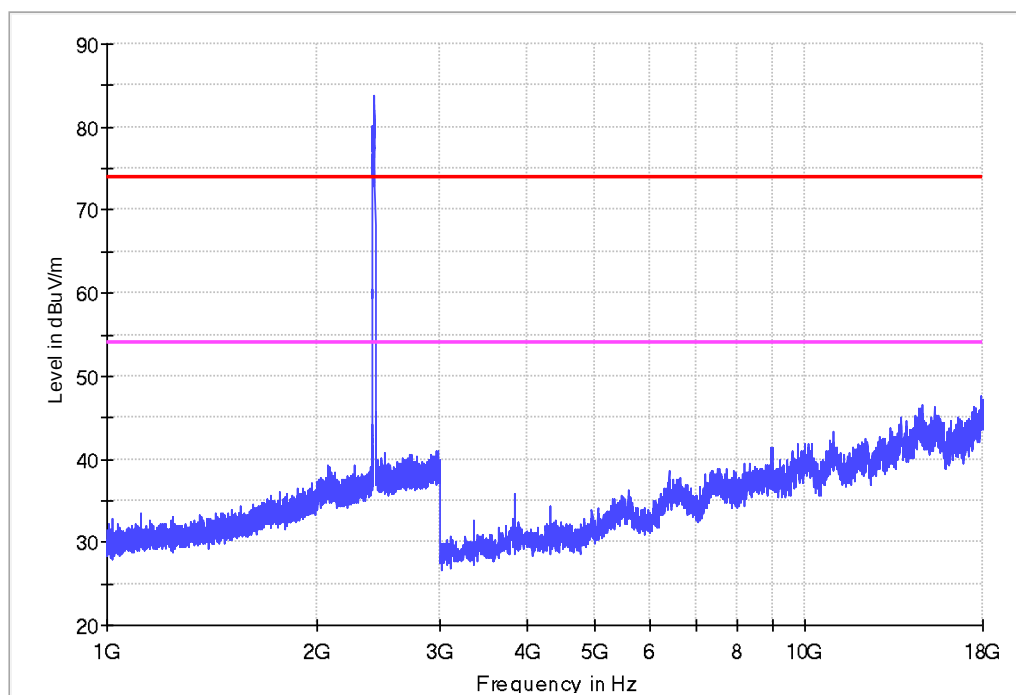
11n HT20

Ch1

Horizontal



Vertical

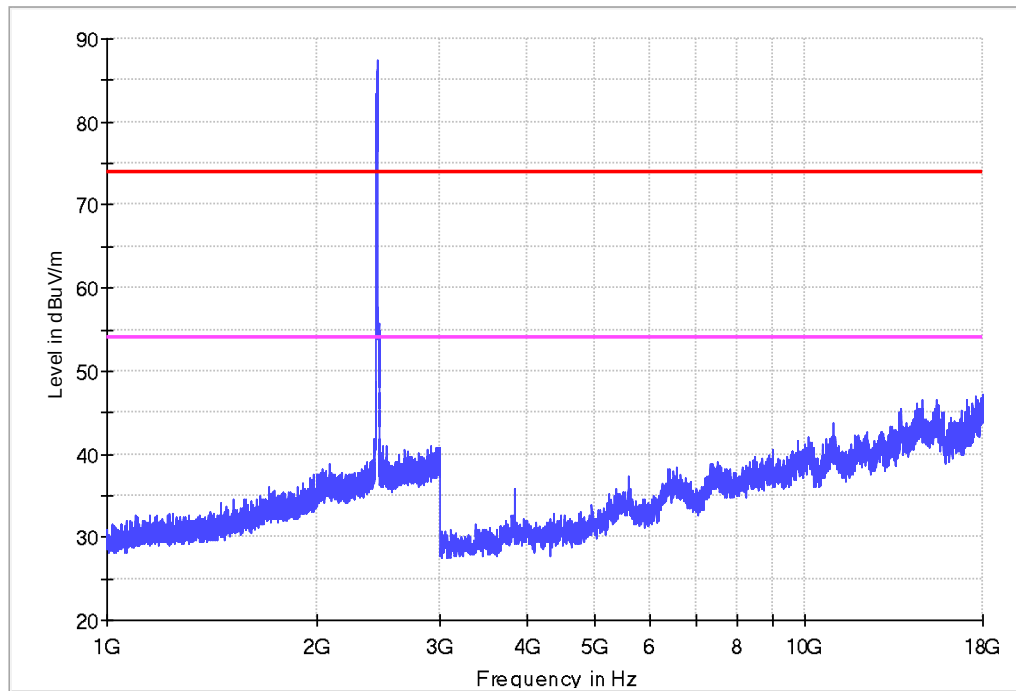


1-18G

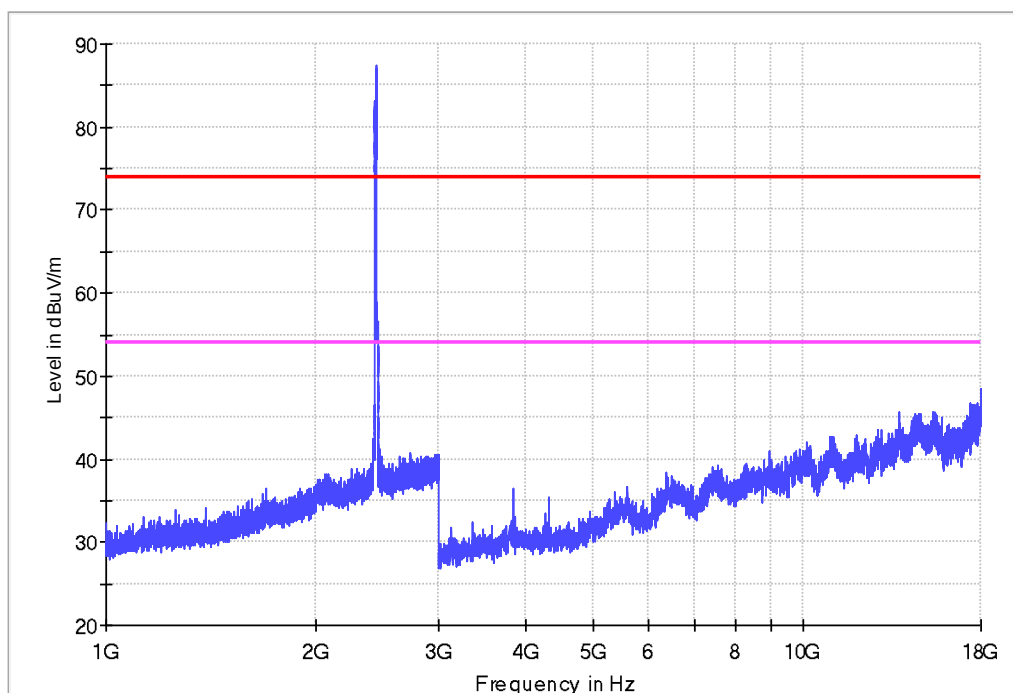
11n HT20

Ch6

Horizontal



Vertical

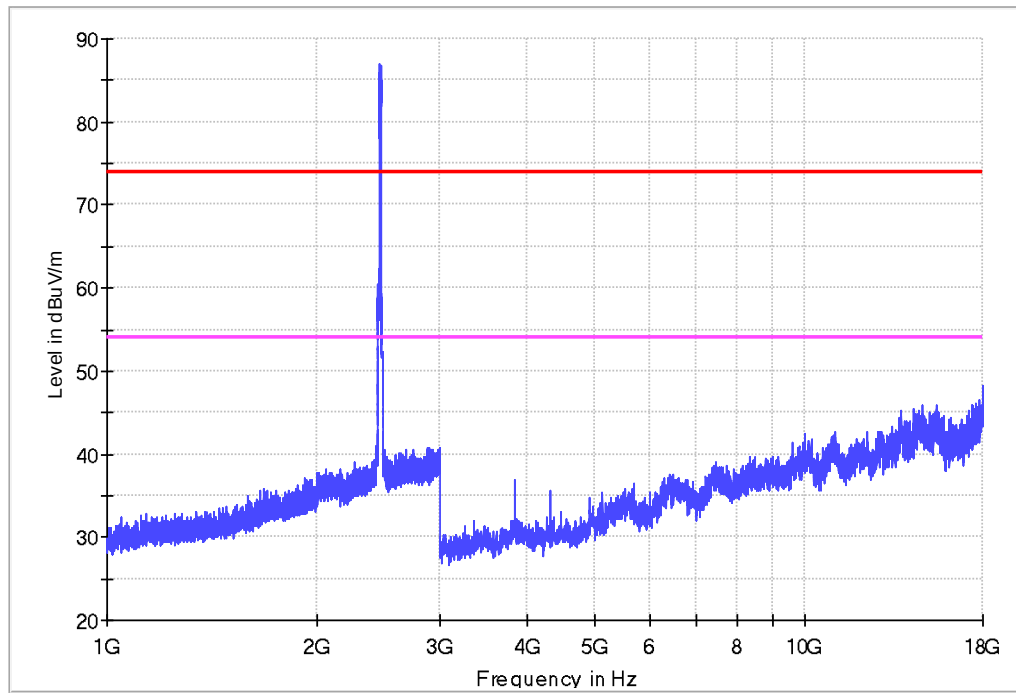


1-18G

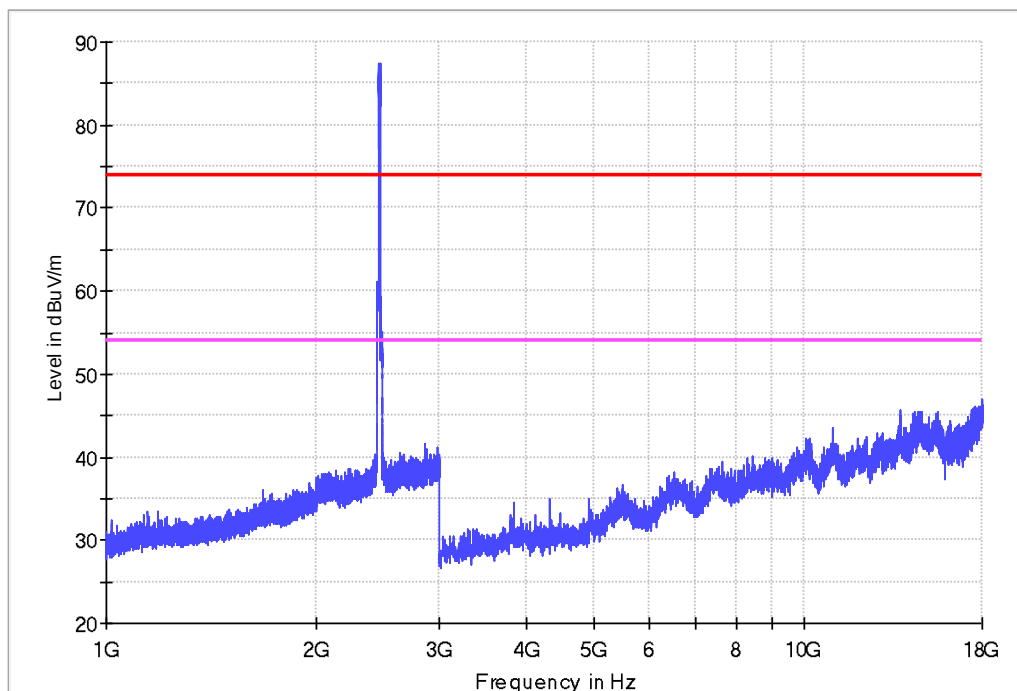
11n HT20

Ch11

Horizontal



Vertical

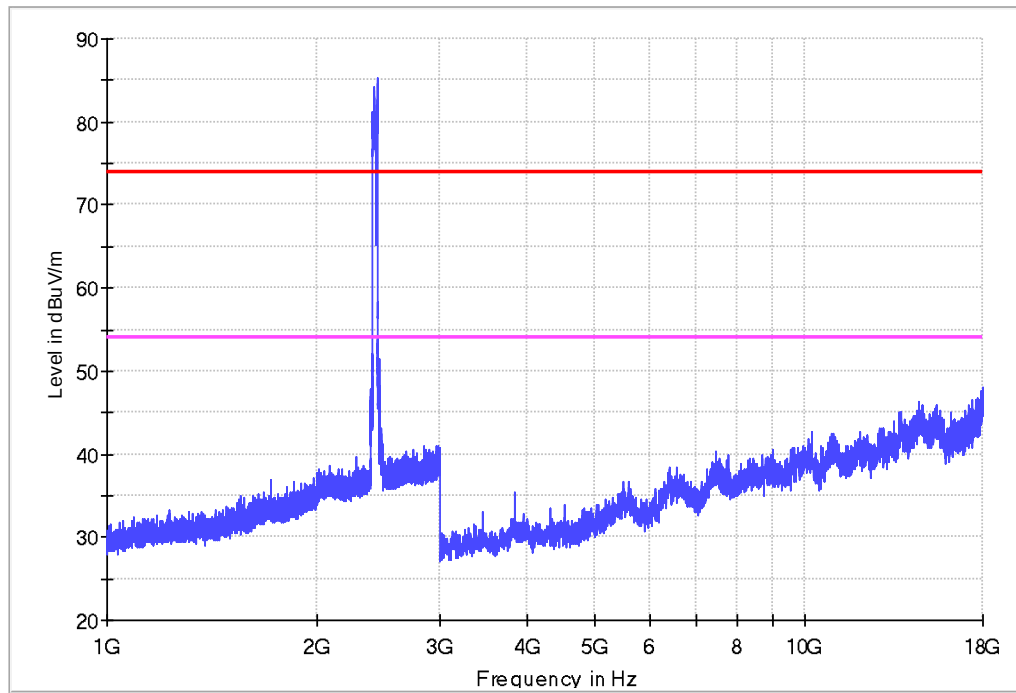


1-18G

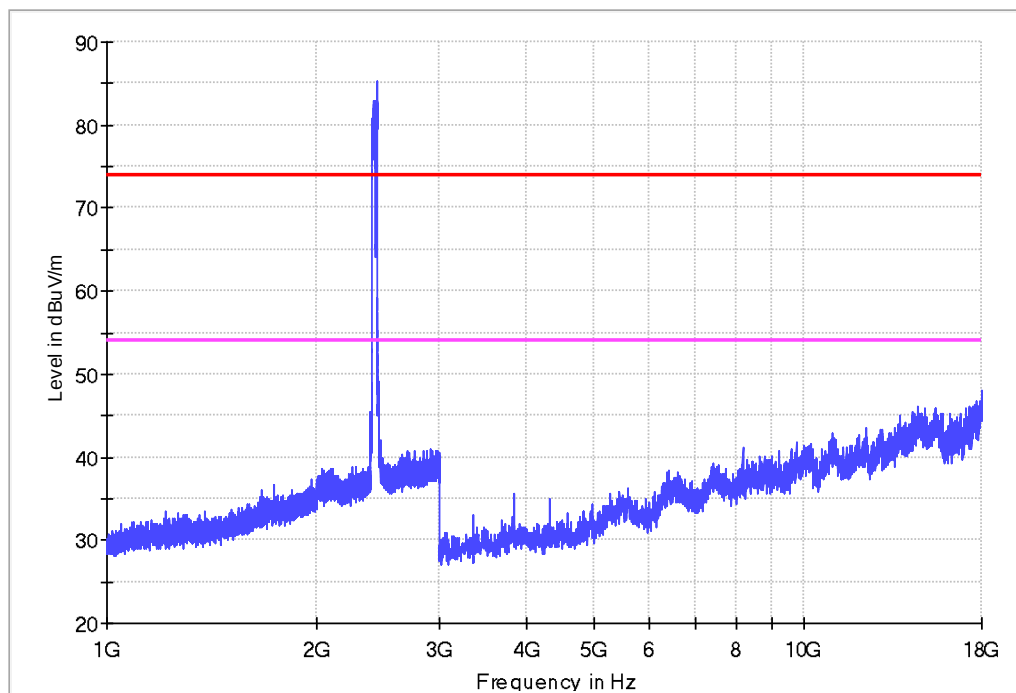
11n HT40

Ch3

Horizontal



Vertical

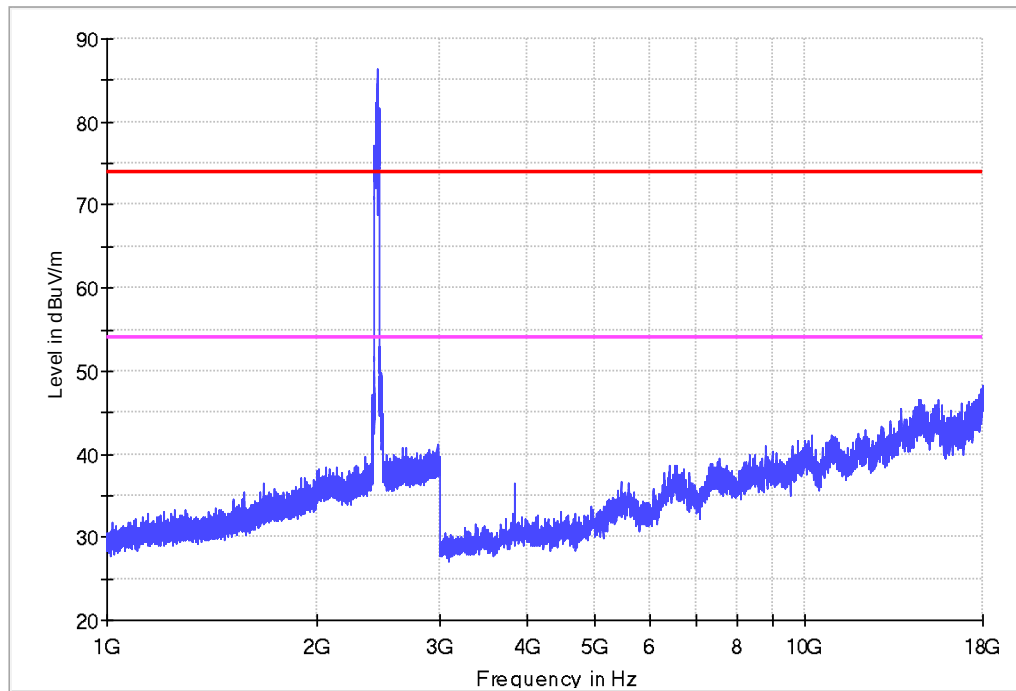


1-18G

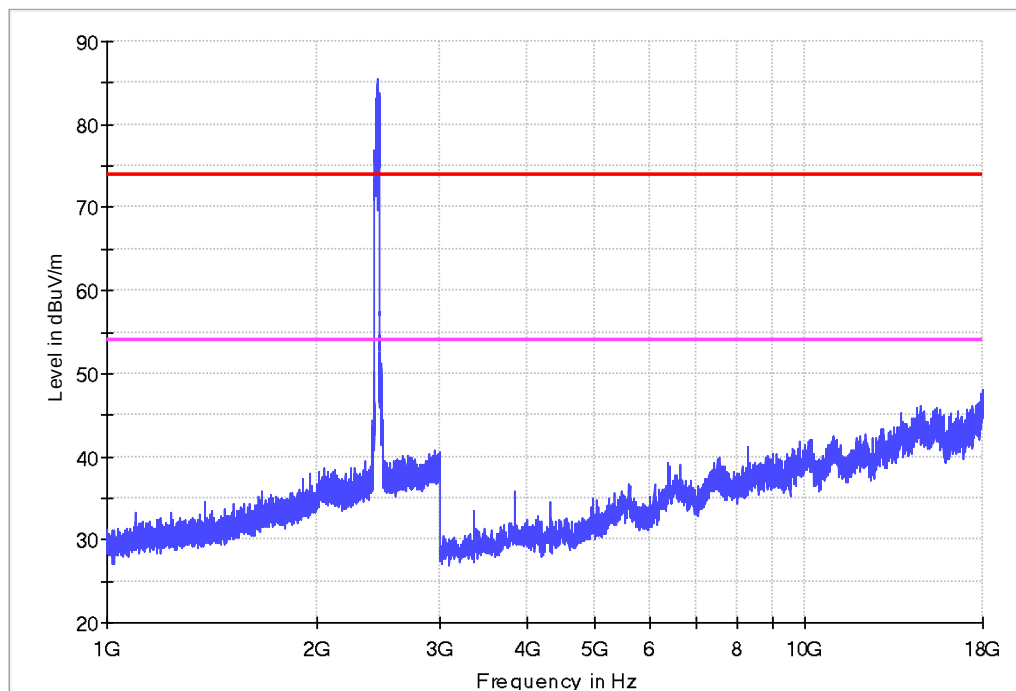
11n HT40

Ch6

Horizontal



Vertical

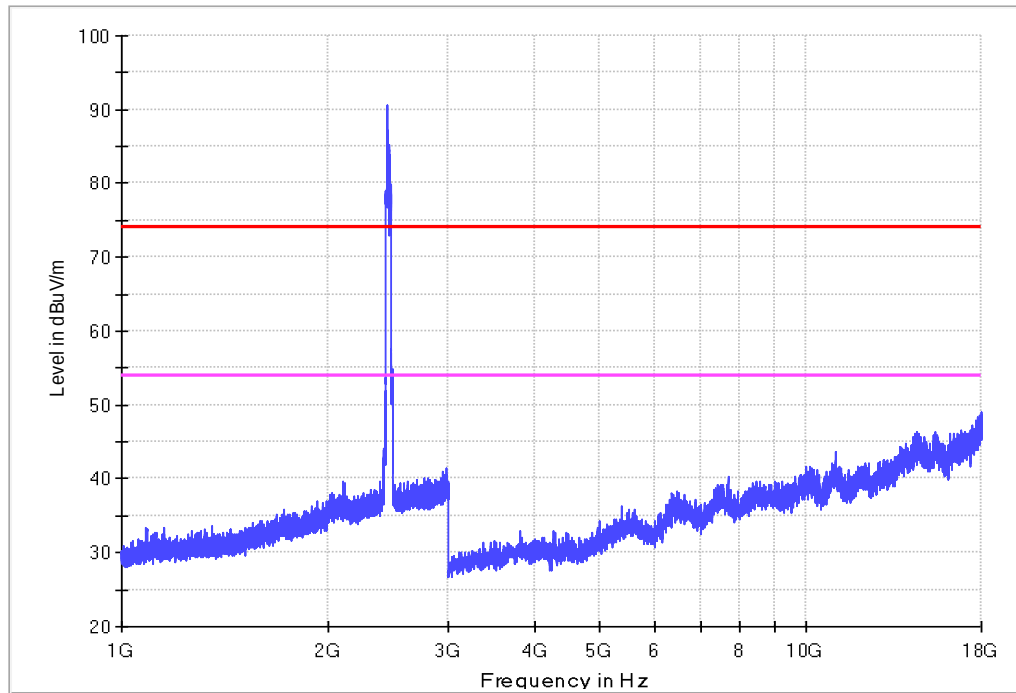


1-18G

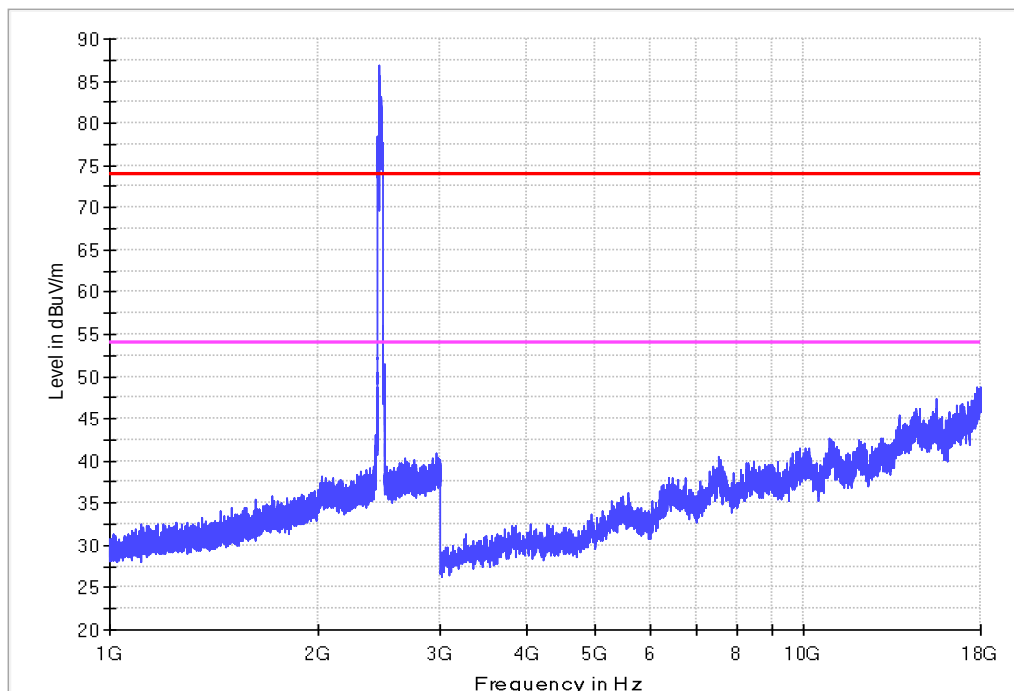
11n HT40

Ch9

Horizontal

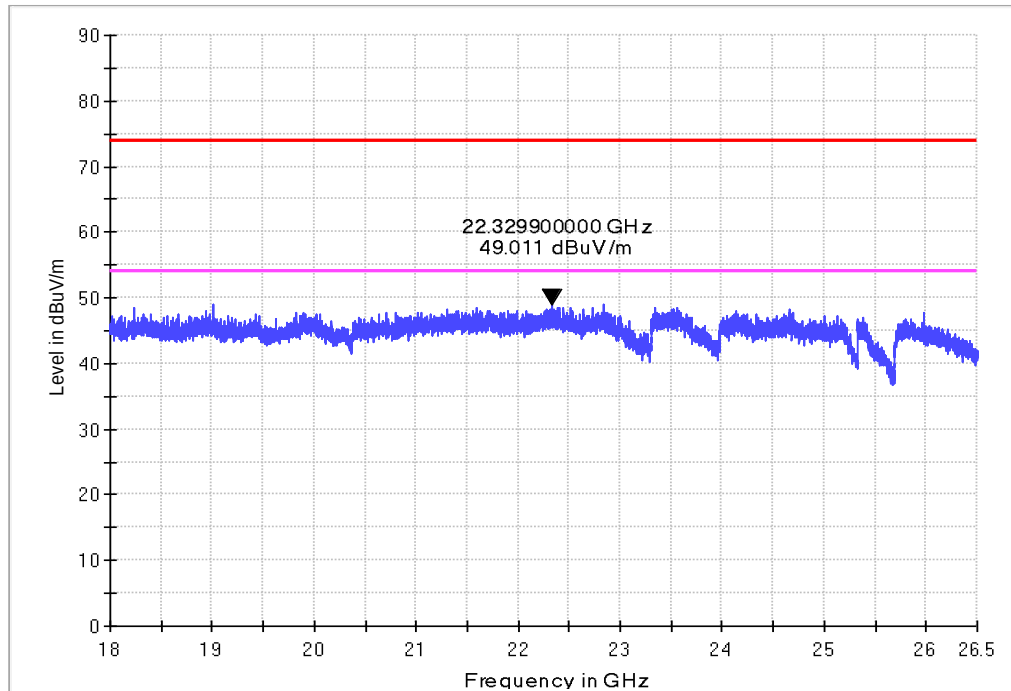


Vertical

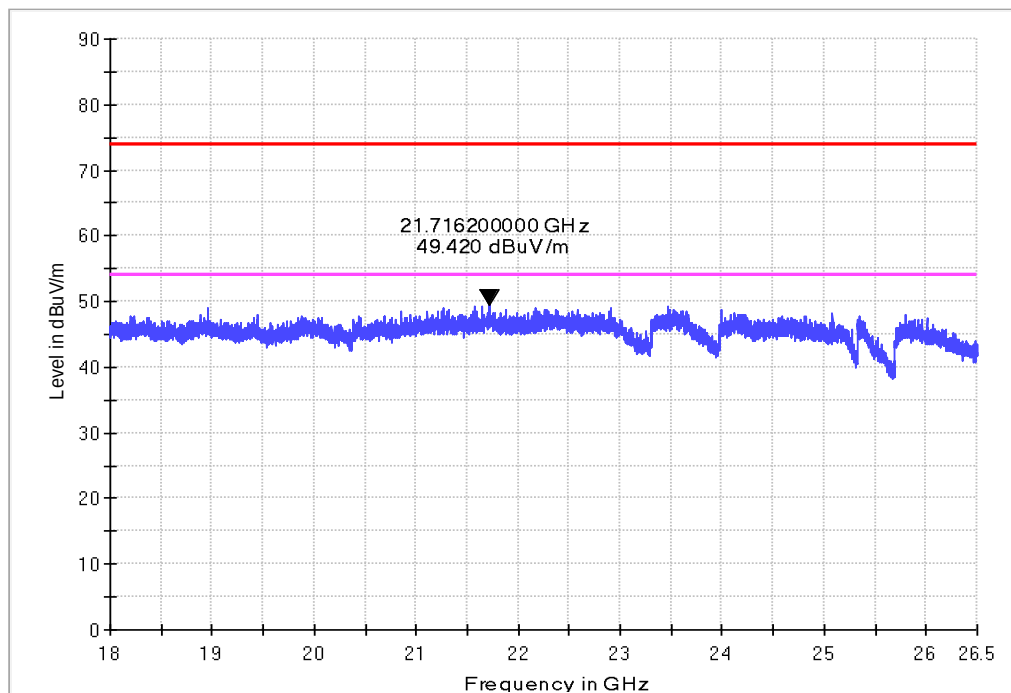


18-26.5G
Worst Case

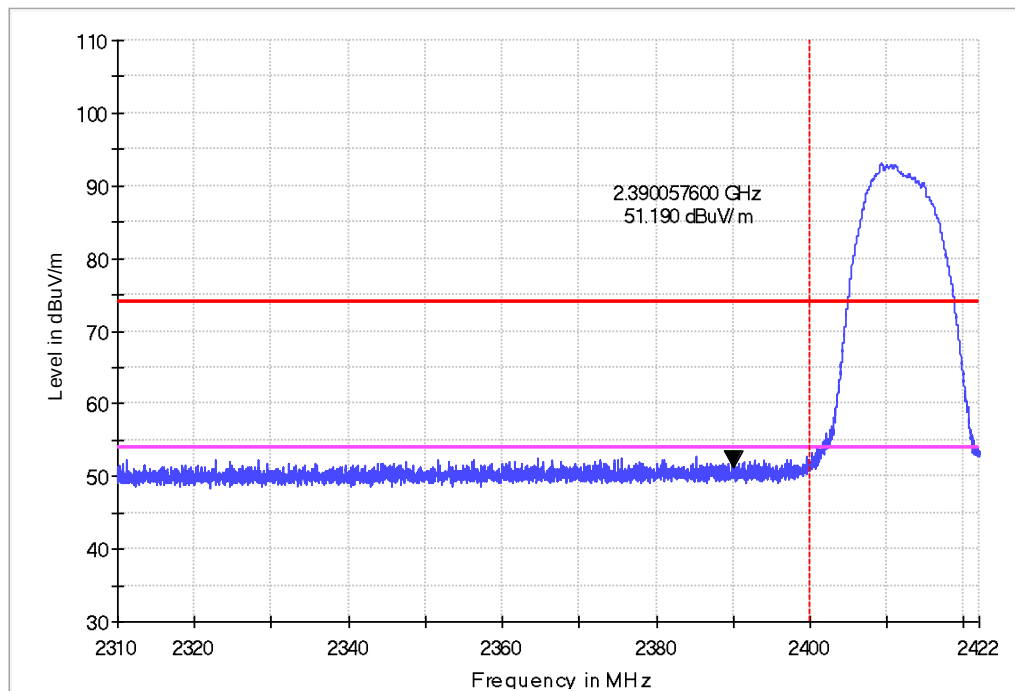
Horizontal



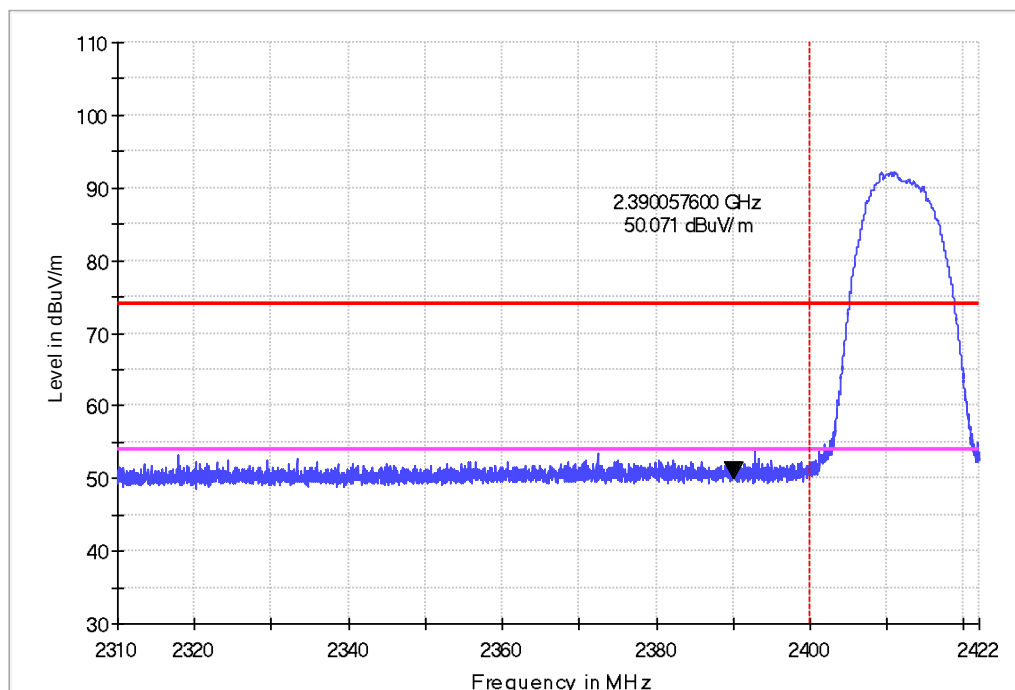
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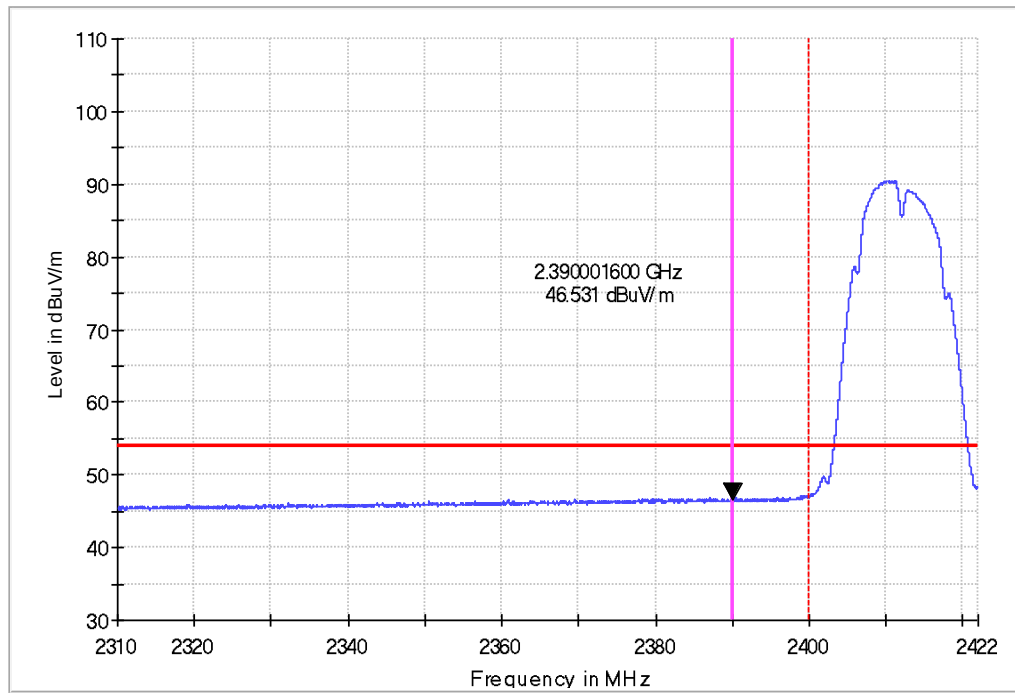
Band edge
11b
CH1
PK
Horizontal



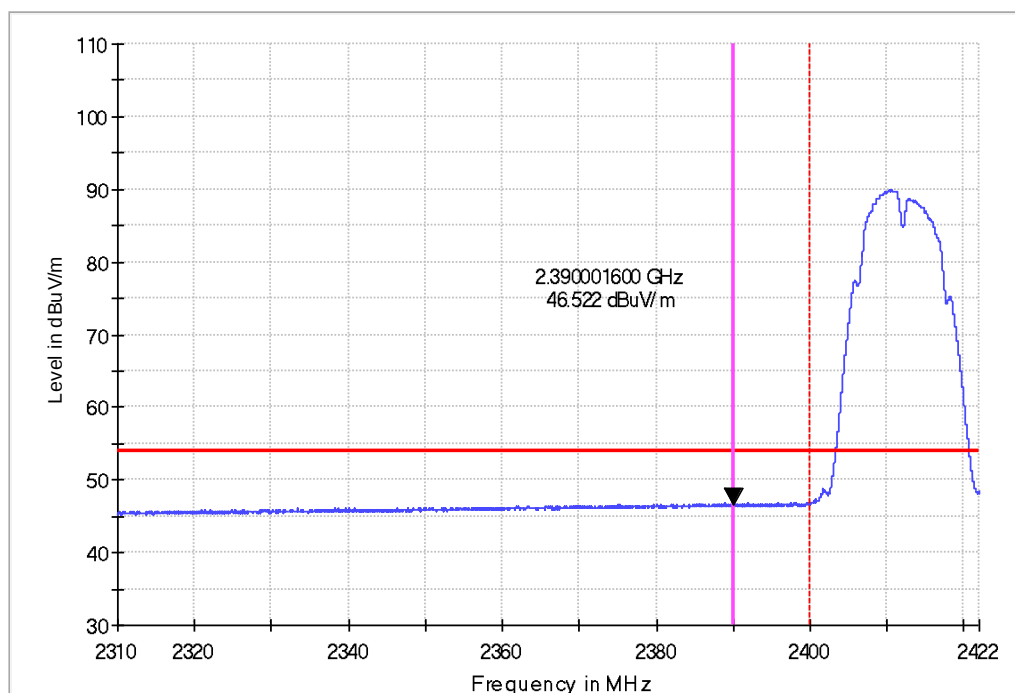
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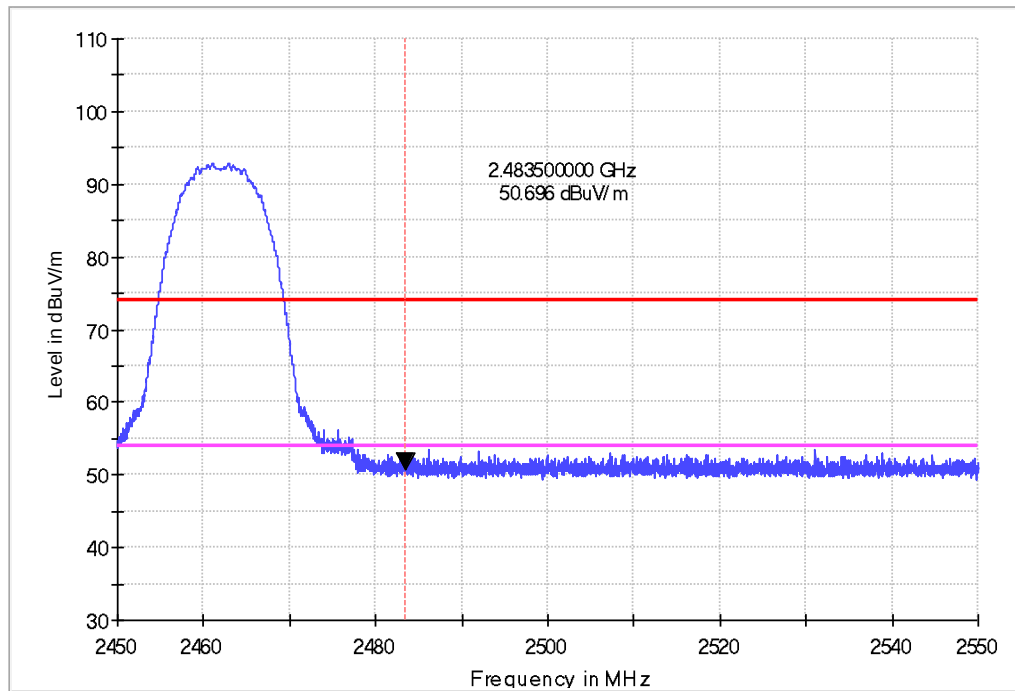
Band edge
11b
CH1
AV
Horizontal



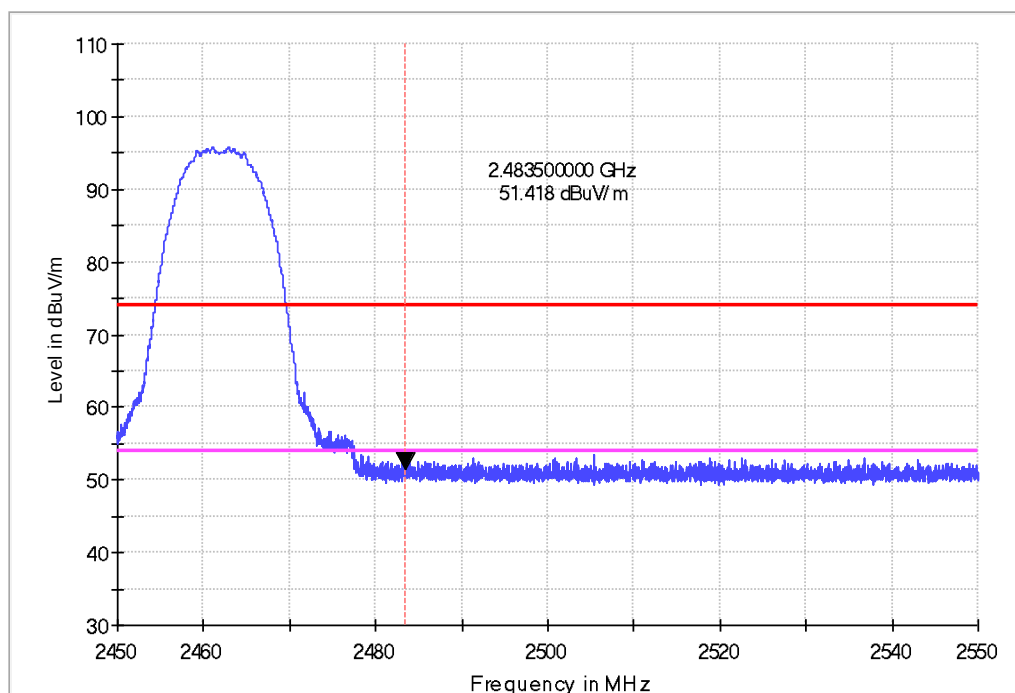
Vertical



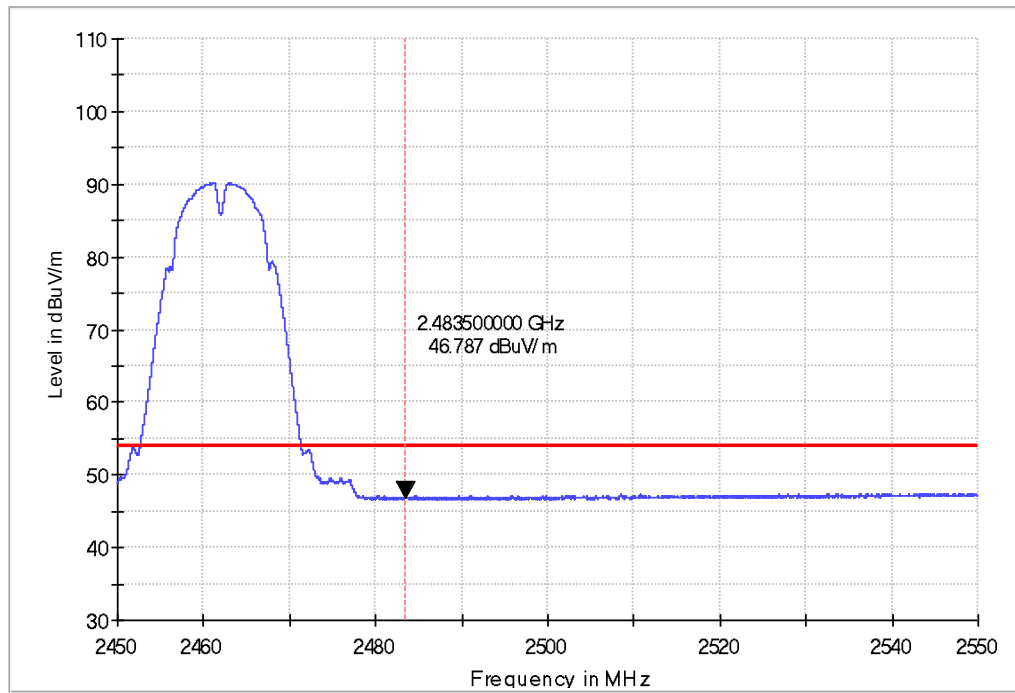
Band edge
11b
CH11
PK
Horizontal



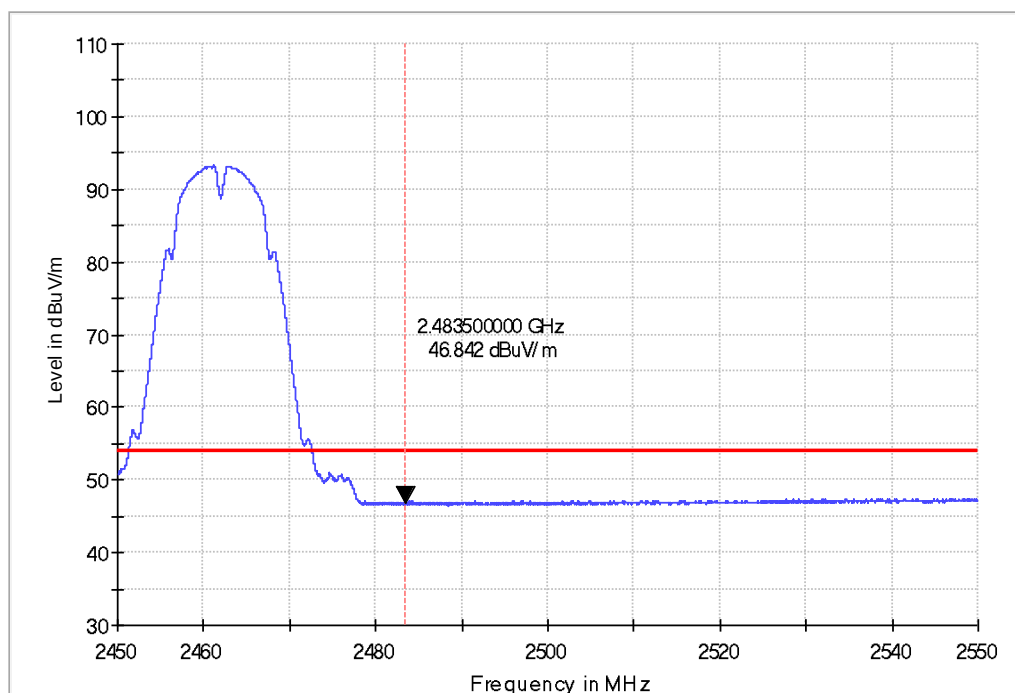
Vertical



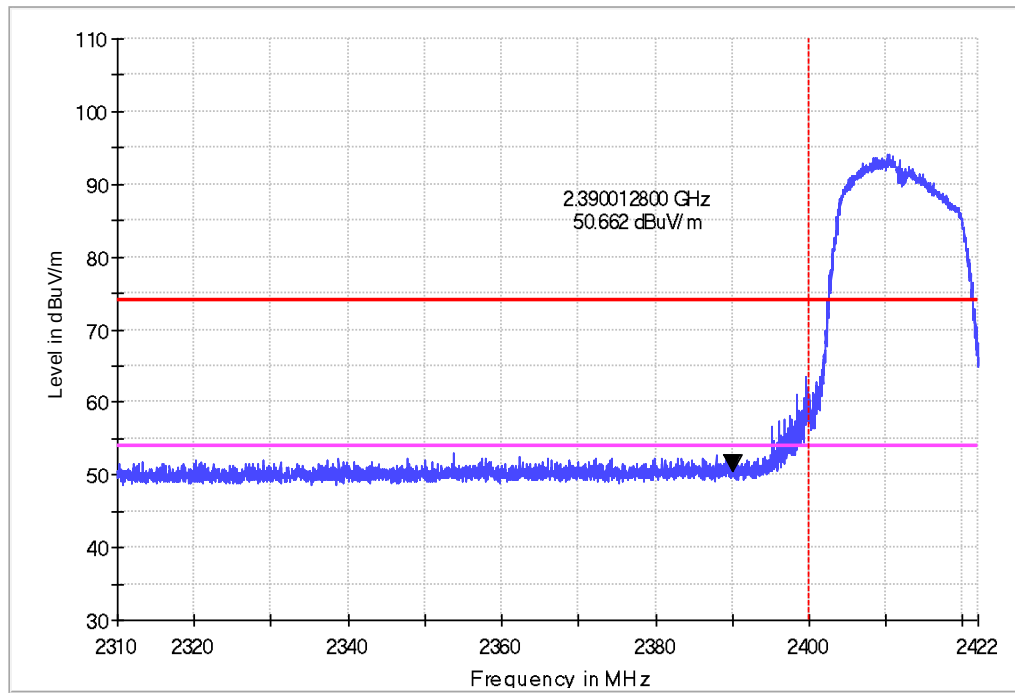
Band edge
11b
CH11
AV
Horizontal



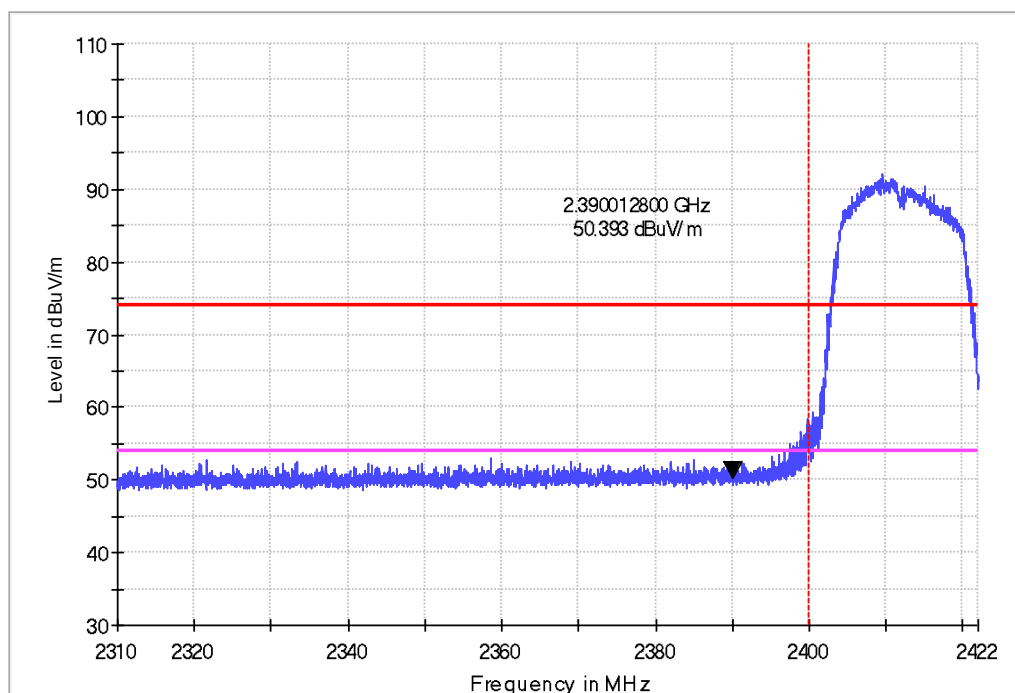
Vertical



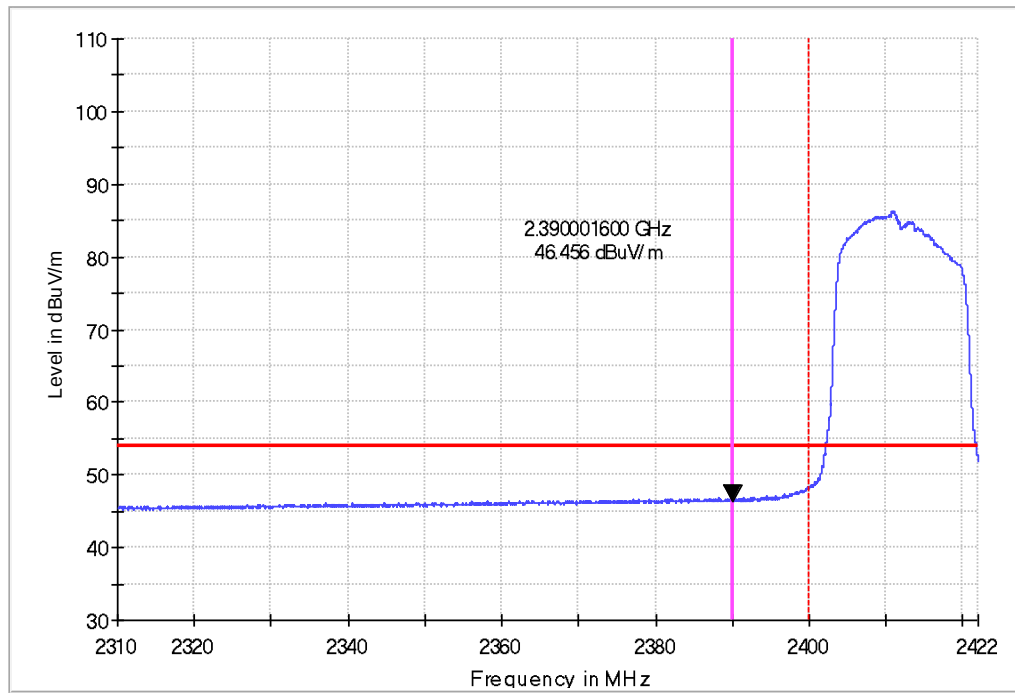
Band edge
11g
CH1
PK
Horizontal



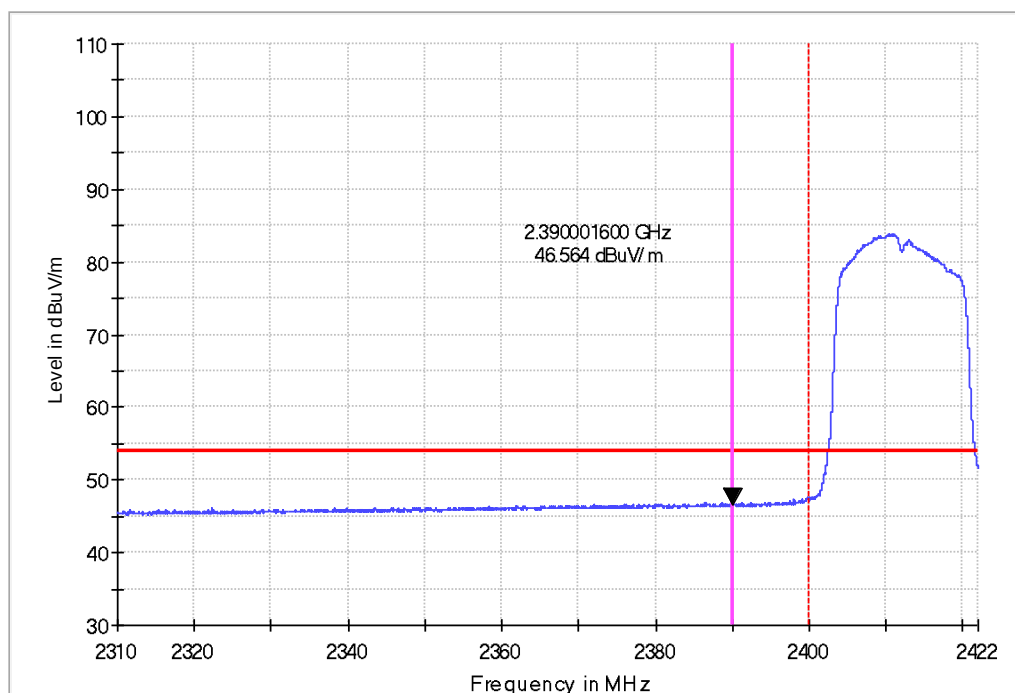
Vertical



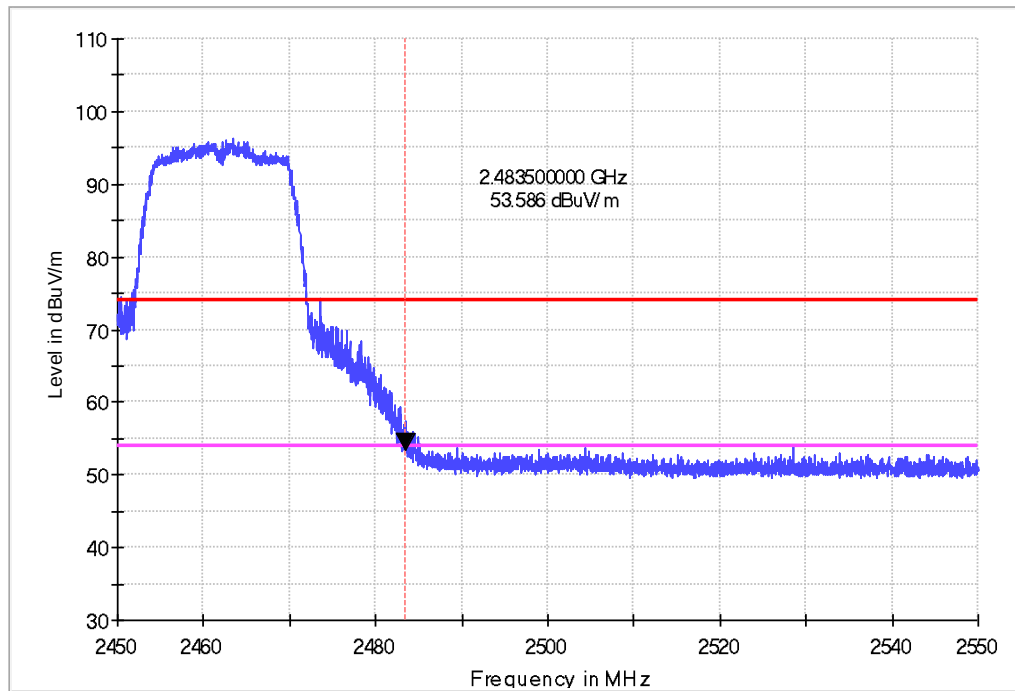
Band edge
11g
CH1
AV
Horizontal



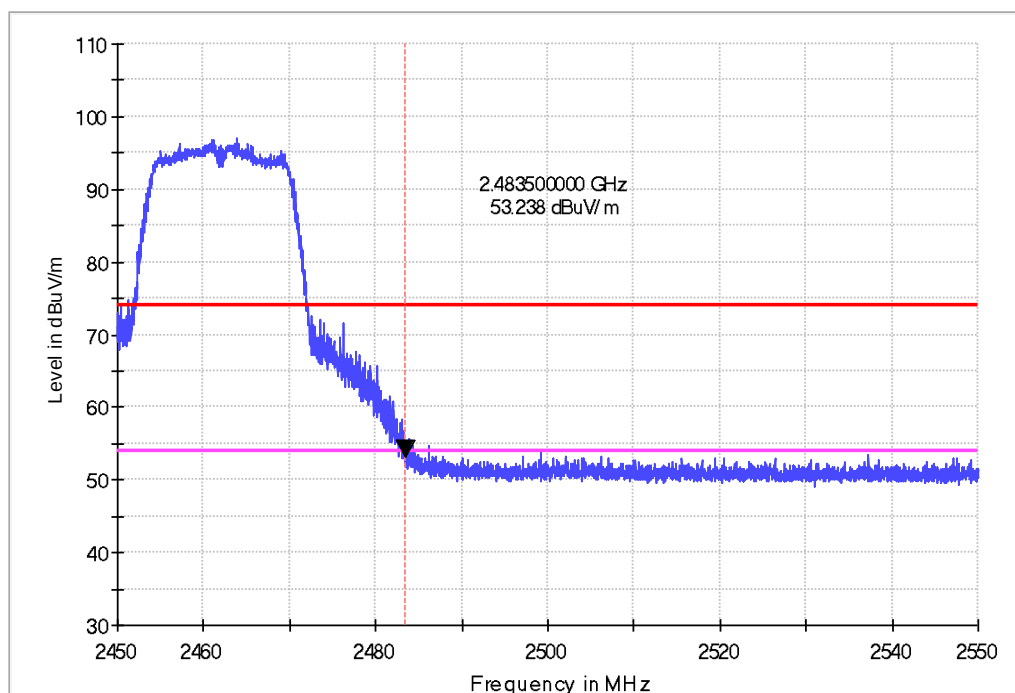
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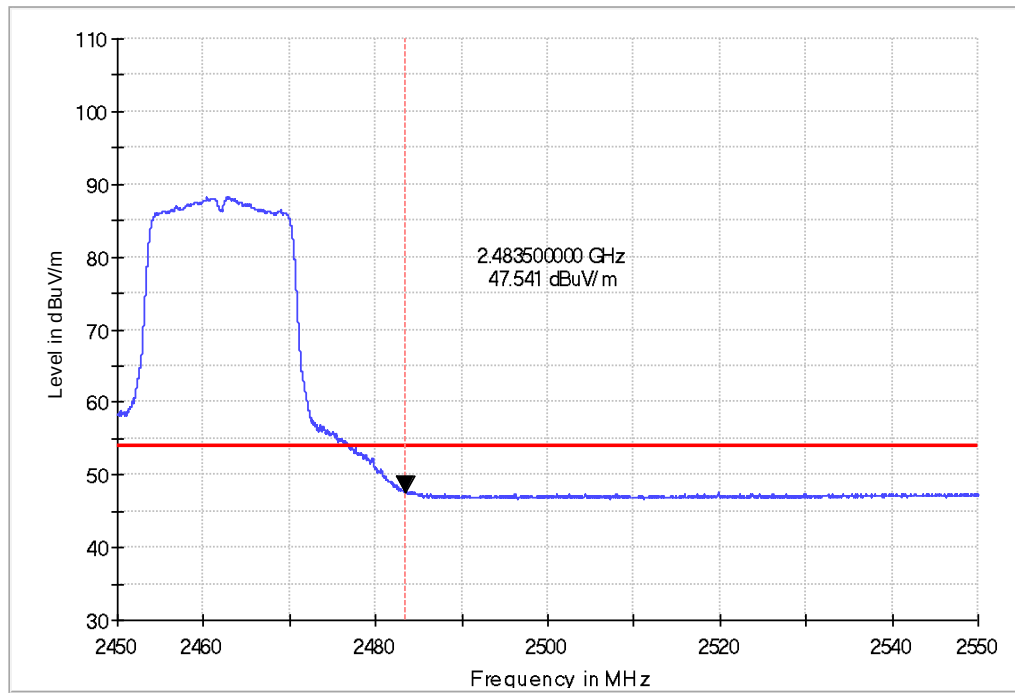
Band edge
11g
CH11
PK
Horizontal



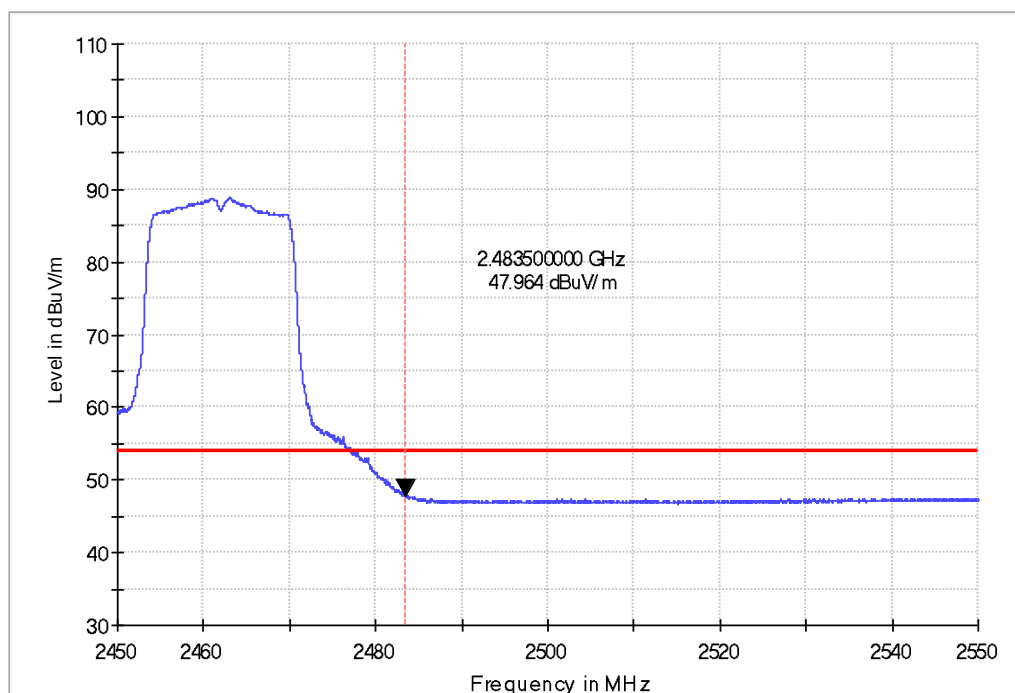
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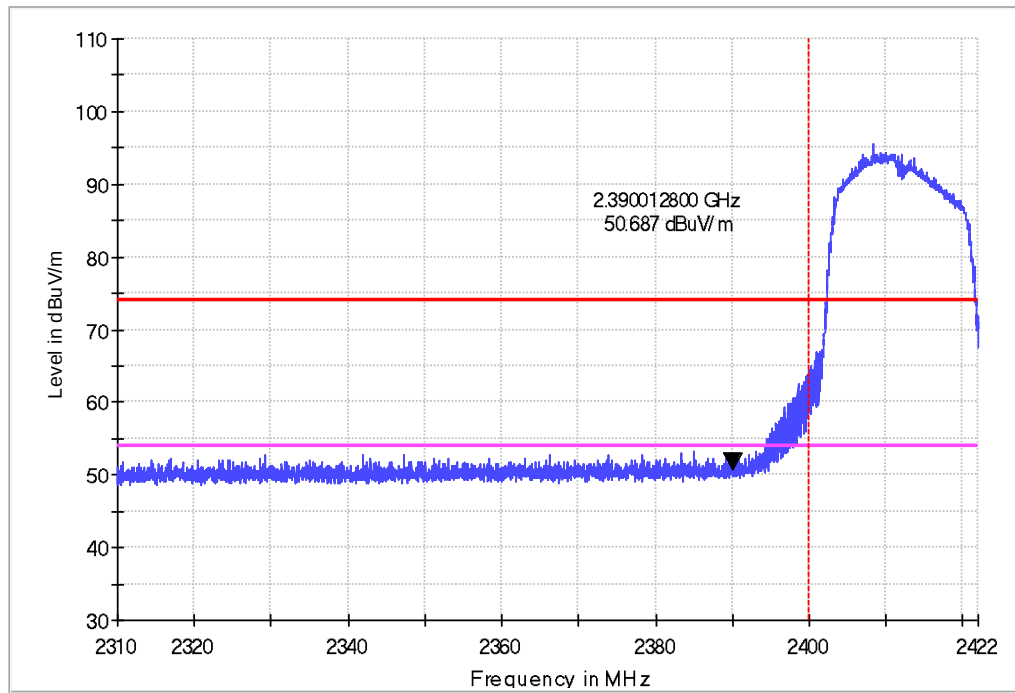
Band edge
11g
CH11
AV
Horizontal



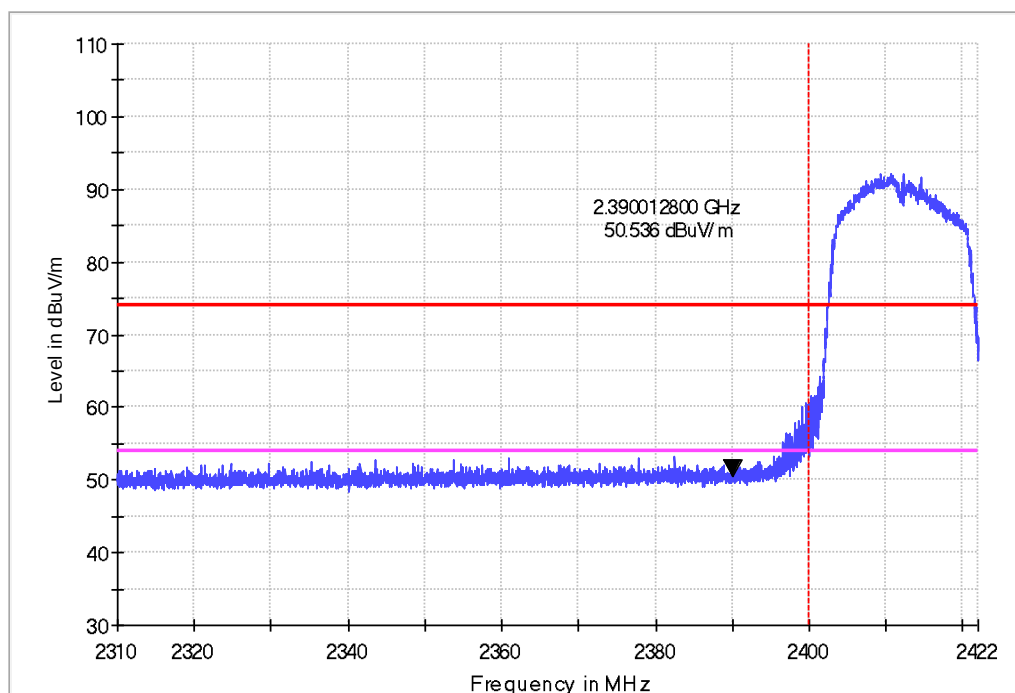
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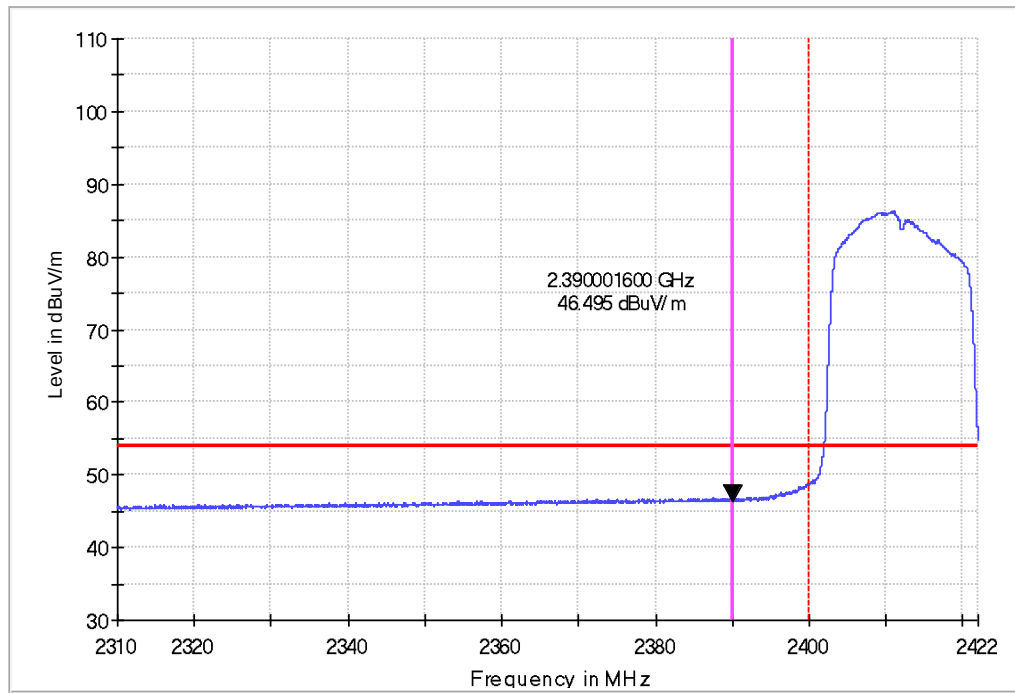
Band edge
11n HT20
CH1
PK
Horizontal



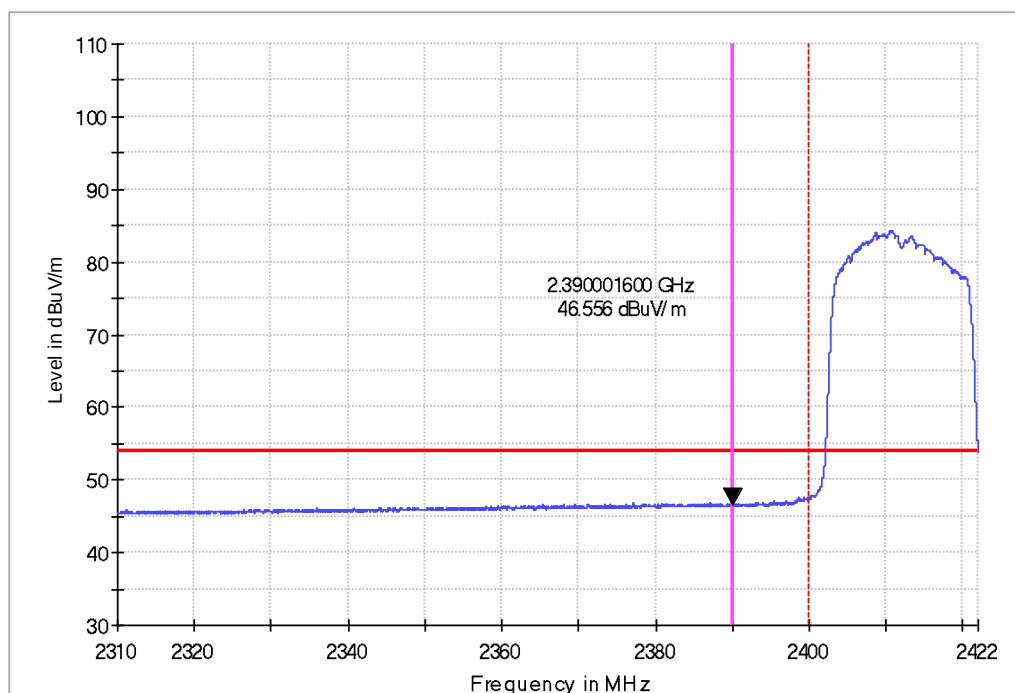
Vertical



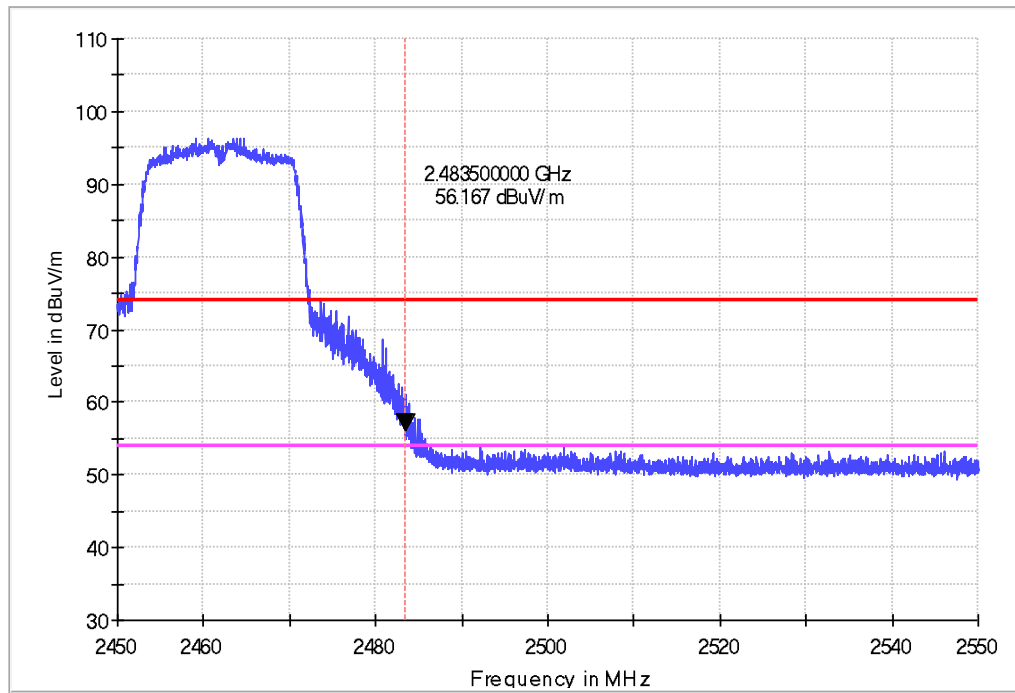
Band edge
11n HT20
CH1
AV
Horizontal



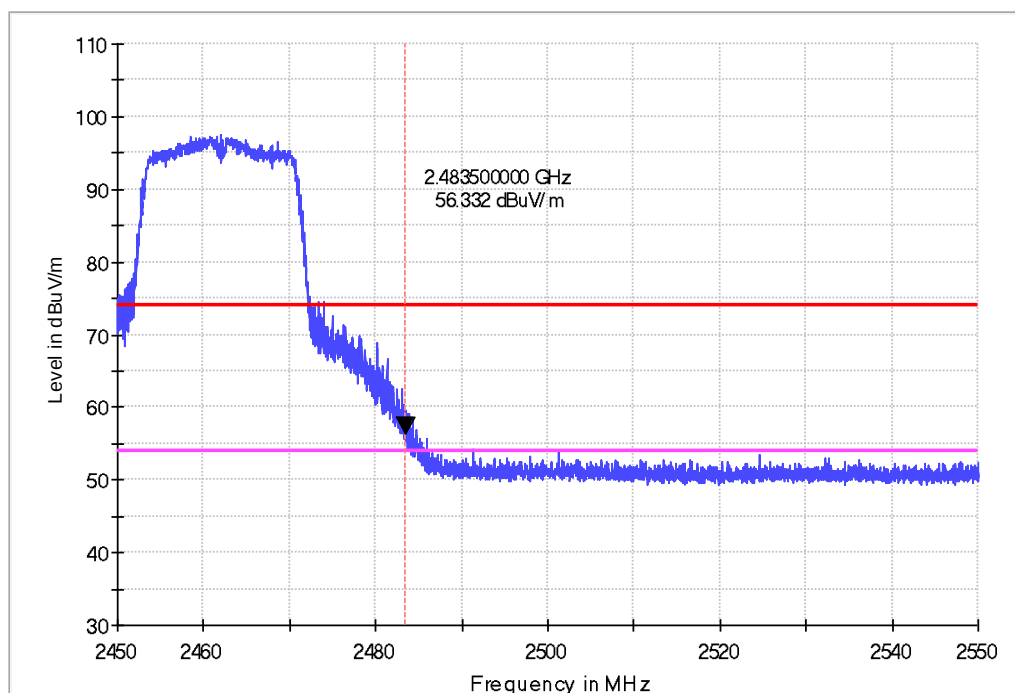
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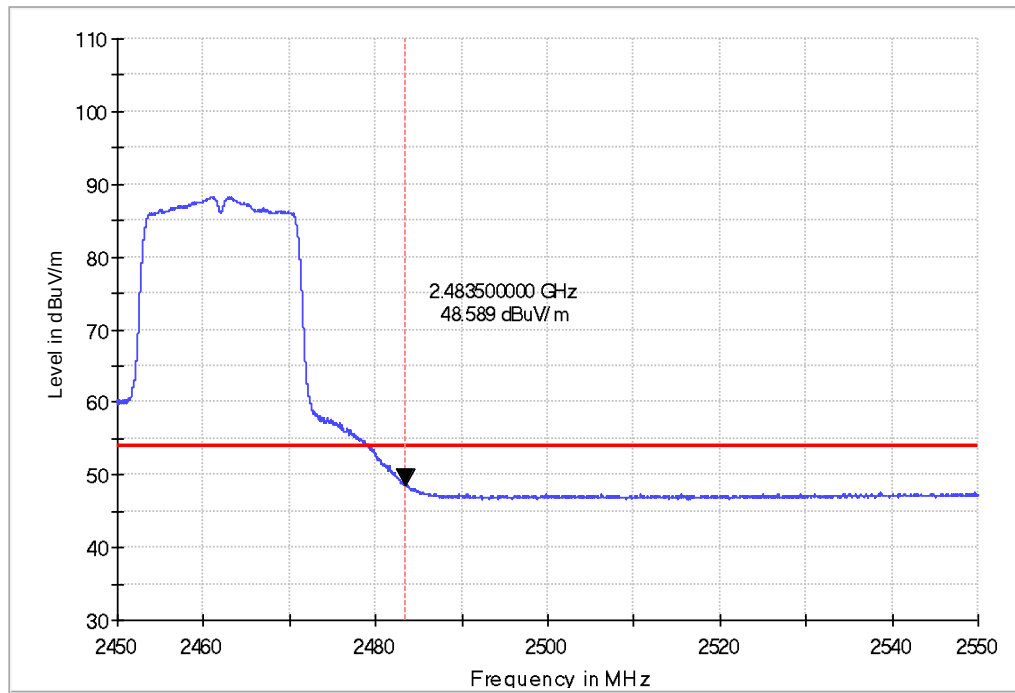
Band edge
11n HT20
CH11
PK
Horizontal



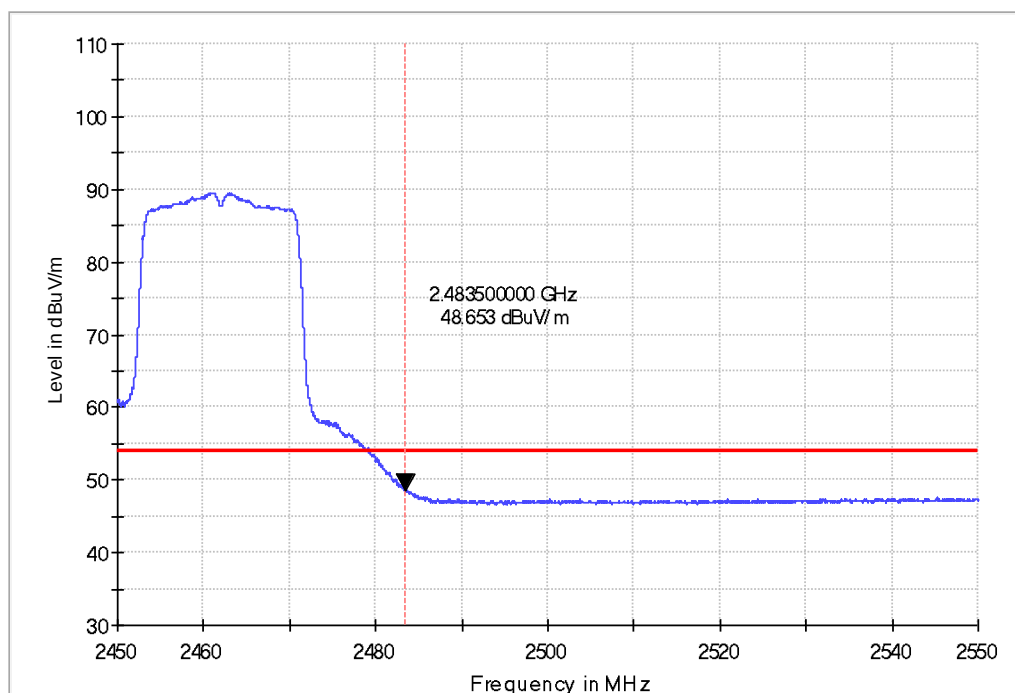
Vertical



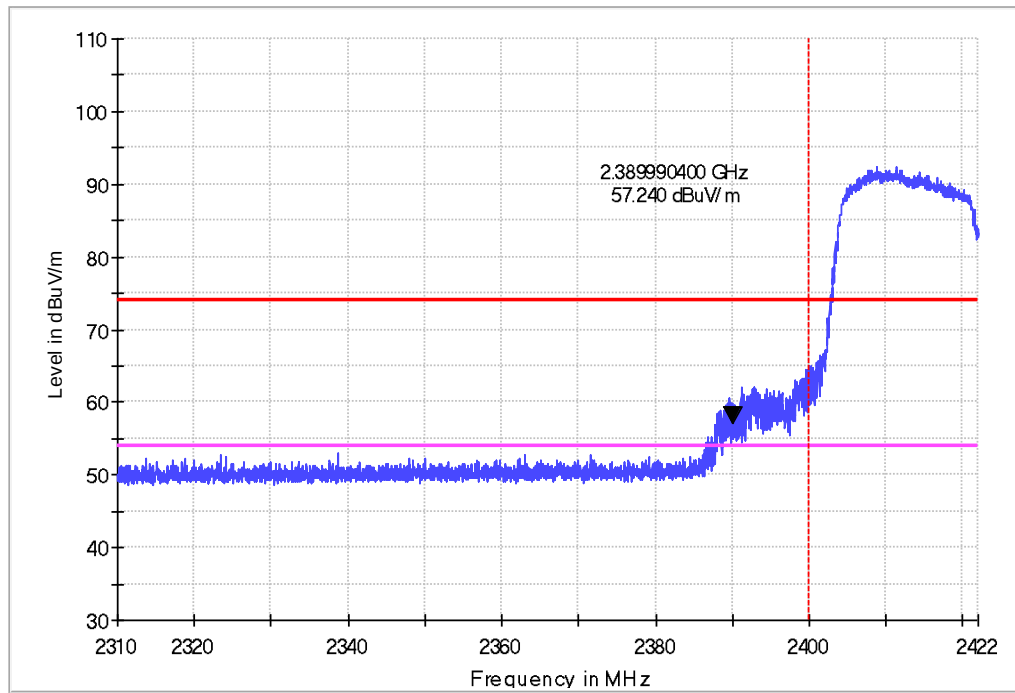
Band edge
11n HT20
CH11
AV
Horizontal



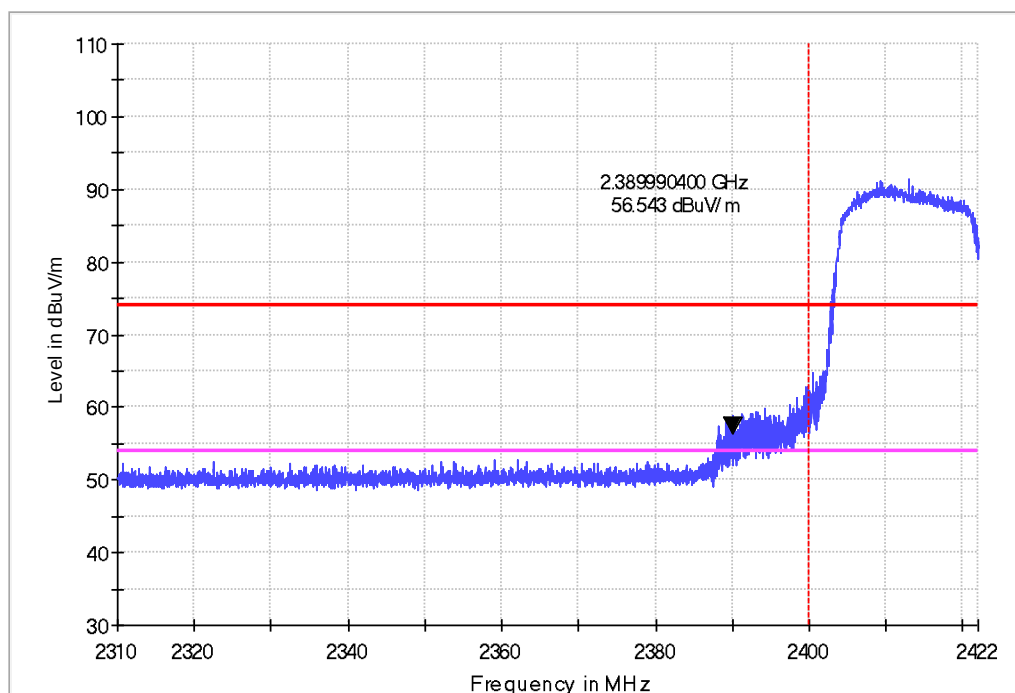
Vertical



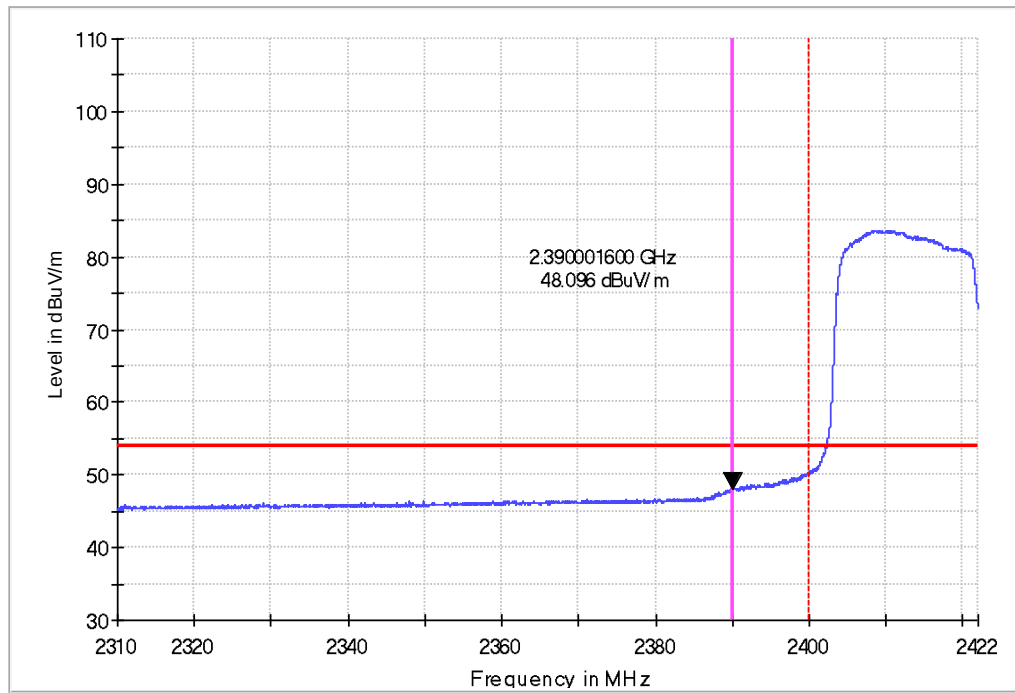
Band edge
11n HT40
CH3
PK
Horizontal



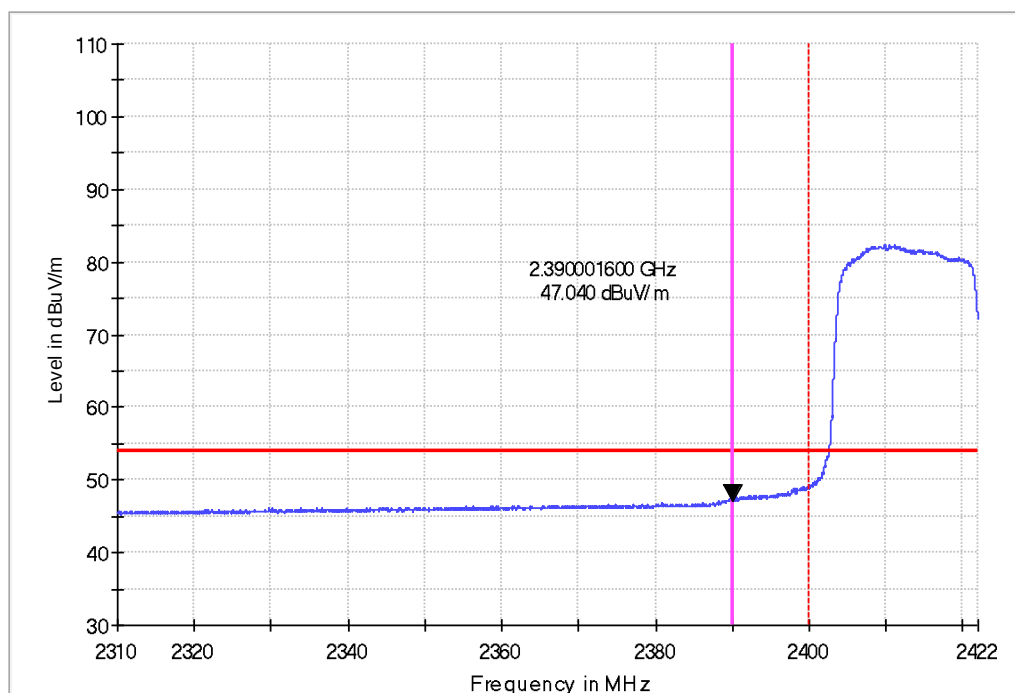
Vertical



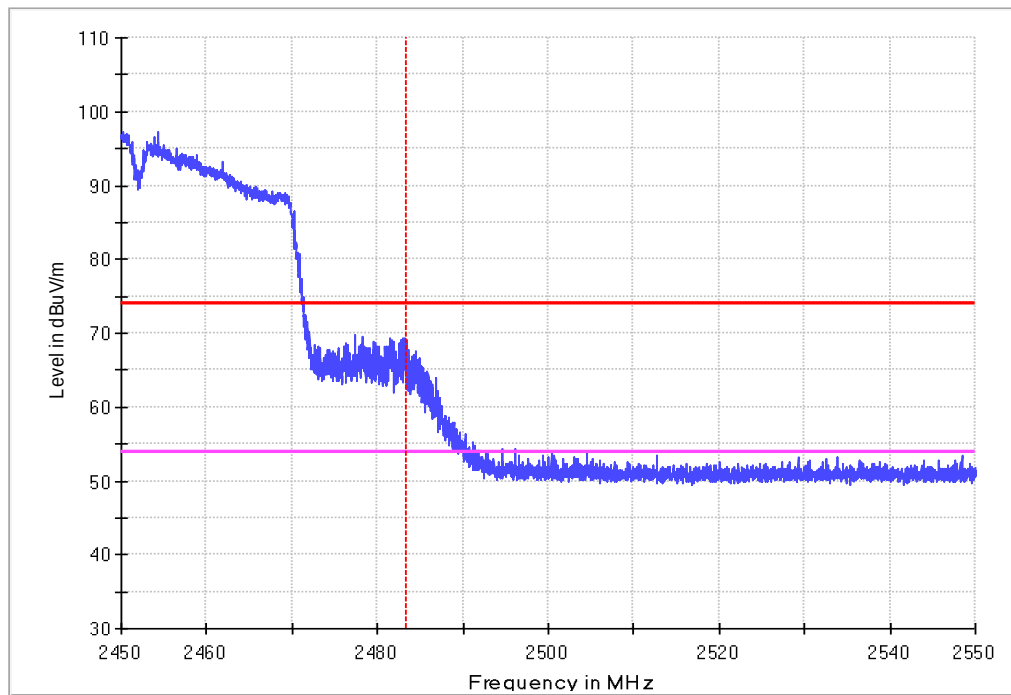
Band edge
11n HT40
CH3
AV
Horizontal



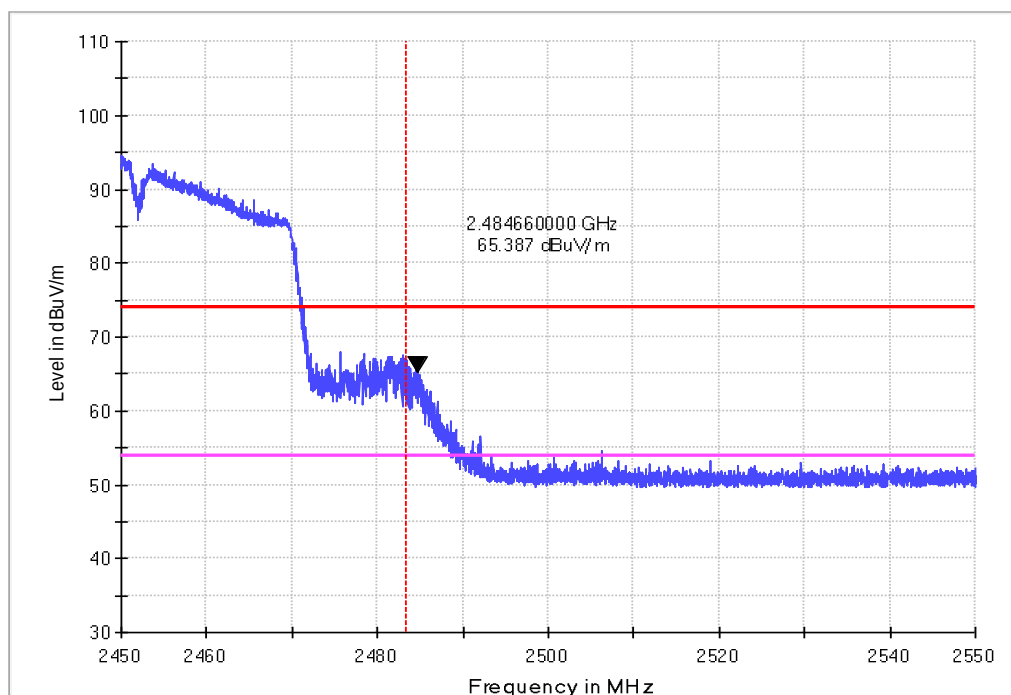
Vertical



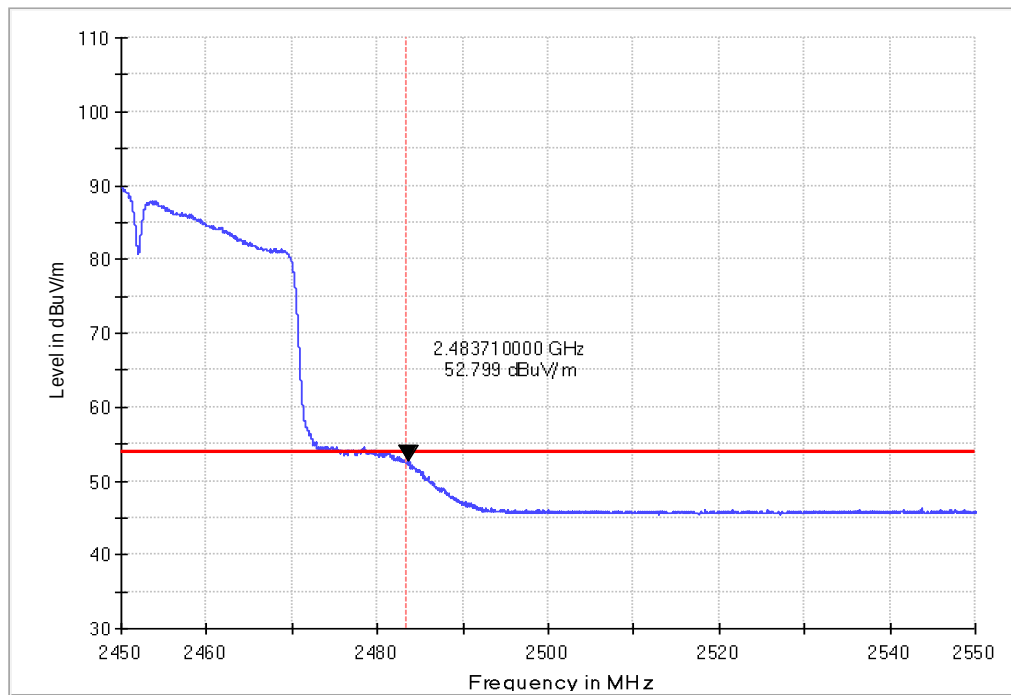
Band edge
11n HT40
CH9
PK
Horizontal



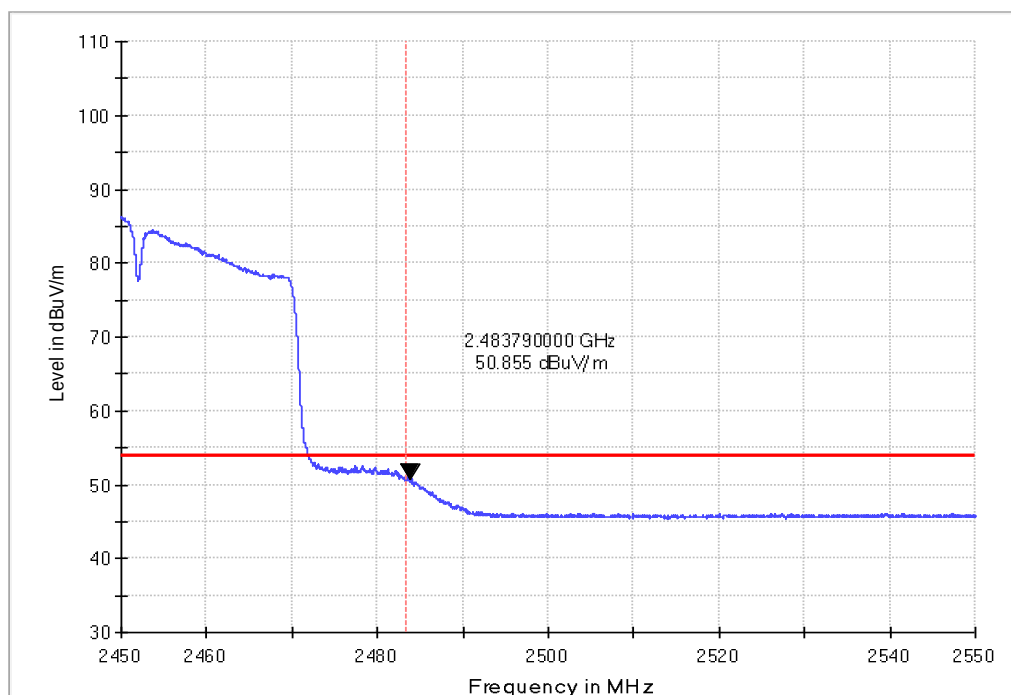
Vertical



Band edge
11n HT40
CH9
AV
Horizontal



Vertical



11. CONDUCTED EMISSION TEST

11.1. Test Standard and Limit

11.1.1. Test Standard

FCC Part 15 15.207

11.1.2. Test Limit

Table 15 Conducted Emission Test Limit

Frequency	Maximum RF Line Voltage (dB μ V)	
	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 is used to test the emissions from both sides of AC line. According to the requirements of ANSI C63.10-2020. 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 9 kHz.

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

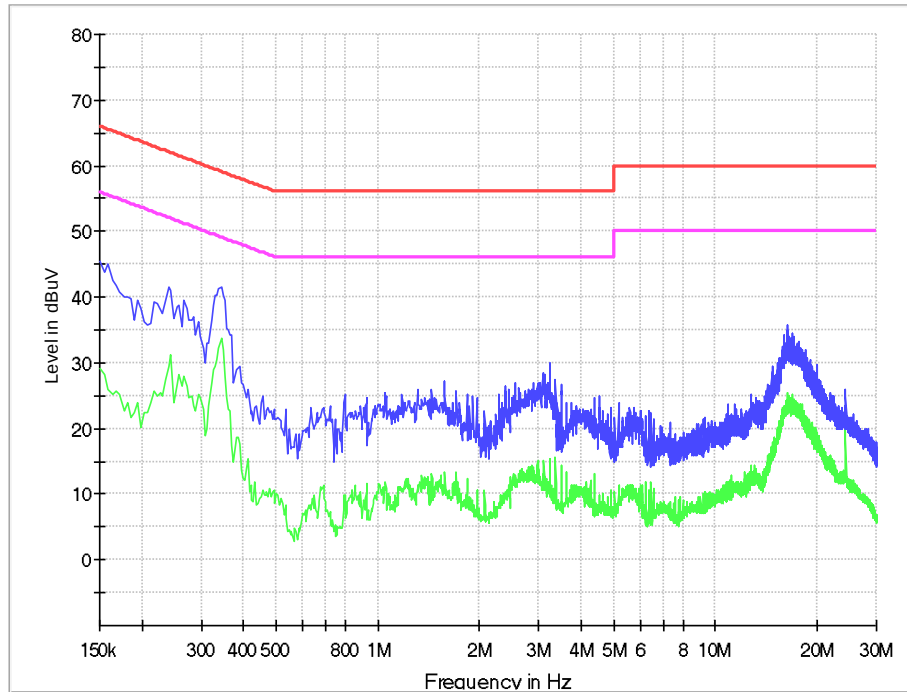
The emissions don't show in below are too low against the limits. Refer to the test curves.

Table 16 Conducted Emission Test Data

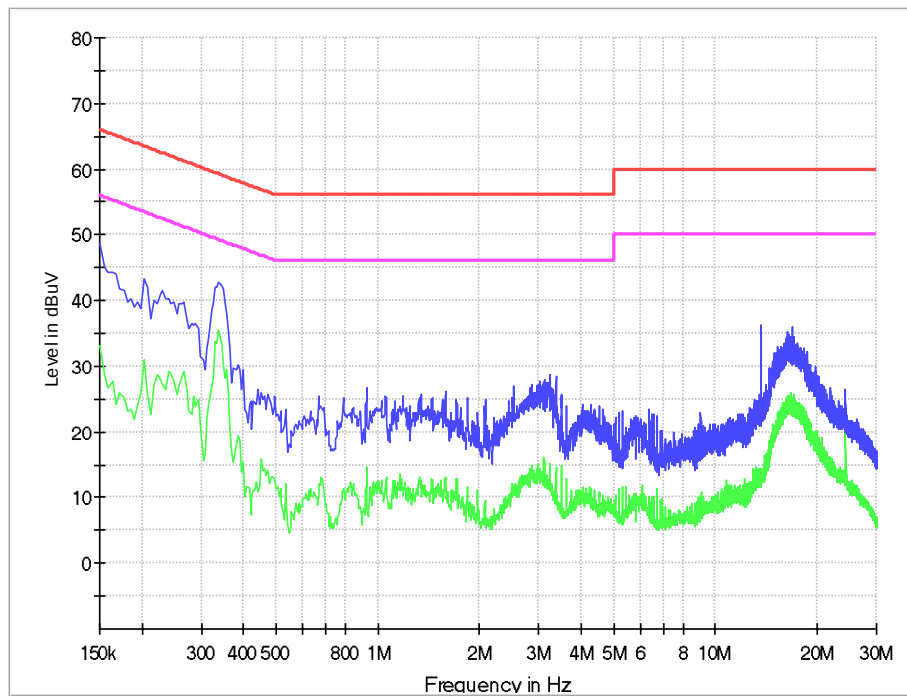
Test mode: Charging and Transmitting								
	Frequency (MHz)	Correction Factor (dB)	Quasi-Peak			Average		
			Reading (dB μ V)	Emission Level (dB μ V)	Limit (dB μ V)	Reading (dB μ V)	Emission Level (dB μ V)	Limit (dB μ V)
Line	0.150	9.7	33.9	43.6	66	18.1	27.8	56
	0.244	9.7	26.4	36.1	62.0	16.5	26.2	52.0
	0.343	9.7	29.7	39.4	59.1	23.2	32.9	49.1
	1.572	9.8	10.3	20.1	56	1.5	11.3	46
	3.228	9.9	12.1	22.0	56	1.0	10.9	46
	16.395	9.9	18.7	28.6	60	13.3	23.2	50
Neutral	0.150	9.7	34.3	44.0	66	18.4	28.1	56
	0.204	9.7	28.1	37.8	63.4	15.3	25.0	53.4
	0.262	9.7	26.4	36.1	61.4	17.4	27.1	51.4
	0.339	9.7	31.1	40.8	59.2	23.7	33.4	49.2
	2.980	9.9	11.8	21.7	56	3.1	13.0	46
	16.660	9.9	19.0	28.9	60	13.6	23.5	50

REMARKS: 1. Emission level (dB μ V) =Read Value (dB μ V) + 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.

Line



Neutral



12. ANTENNA REQUIREMENTS

15.203 requirements:

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 use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirements:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

12.1. Antenna Connector

Antenna Connector is on the PCB within enclosure and not accessible to user.

12.2. Antenna Gain

The antenna gain of EUT is less than 6 dBi.

13. APPENDIX I PRODUCT EQUALITY DECLARATION

Product Equality Declaration

We: FAMOCO SAS, declare on our sole responsibility the differences between the hardware revision of **NFC Android Validator** products.

The new models of **NFC Android Validator** are:

- FX925SF-ING-VWDC-PRE,011P
- FX925SF-ING-VPDC-PRE,011P
- FX925SF-ING-VWDC-PRE,010P
- FX925SF-ING-VPDC-PRE,010P

All parts of hardware revision: FX925F-P.

NFC Android Validator models are made of two parts, a Front Casing, and a Back Casing. The composition of each model is described below.

Models	Front Casing Models	Back Casing Models
FX925SF-ING-VWDC-PRE,011P	FC-FX925SF-ING-PRE,0112	BC-VWDC-P366C,4
FX925SF-ING-VPDC-PRE,011P	FC-FX925SF-ING-PRE,0112	BC-VPDC-P366C,4
FX925SF-ING-VWDC-PRE,010P	FC-FX925SF-ING-PRE,0102	BC-VWDC-P366C,4
FX925SF-ING-VPDC-PRE,010P	FC-FX925SF-ING-PRE,0102	BC-VPDC-P366C,4

The original models of **NFC Android Validator** are:

- FX925F PM
- FX925F WM

All parts of hardware revision: FX925F,1

They are also made of two parts, a Front Casing and a Back Casing. The composition of each model is described below.

Models	Front Casing Models	Back Casing Models
FX925F WM	FC-FX925SF-ING-PRE,0112	BC-VWDC-P366C,2
FX925F PM	FC-FX925SF-ING-PRE,0112	BC-VPDC-P366C,2

Differences between **NFC Android Validator** hardware revisions FX925F,1 and FX925F-P are listed below.

To identify product pieces described below products exploded views are at the end of this document.

*Table 1: List of differences between the two Front Casing versions of NFC Android Validators
FC-FX925SF-ING-PRE,0112 and FC-FX925SF-ING-PRE,0102:*

#	Differences	FC-FX925SF-ING-PRE,0112	FC-FX925SF-ING-PRE,0102
#1	Battery	• 1 Smartphone battery	• No smartphone battery

*Table 2: List of differences between the two Back Casing versions of NFC Android Validators
BC-VWDC-P447C,4 and BC-VPDC-P447C,4:*

#	Differences	BC-VWDC-P366C,4	BC-VPDC-P366C,4
#1	Mechanical parts	• Wall mount	• Pole mount

Table 3: List of differences between the NFC Android Validator Back Casings Wall BC-VWDC-P366C,2 and BC-VWDC-P366C,4:

#	Differences	NFC Android Validator BC-VWDC-P366C,2	NFC Android Validator BC-VWDC-P366C,4
#1	PCBA POWER	• PCBA PWR V18 with ferrites on cables	• PCBA PWR V07

Table 4: List of differences between the NFC Android Validator Back Casing Pole BC-VPDC-P366C,4 and BC-VPDC-P366C,4:

#	Differences	NFC Android Validator BC-VPDC-P366C,2	NFC Android Validator BC-VPDC-P366C,4
#1	PCBA PWR	• PCBA PWR V18 with ferrites on cables	• PCBA PWR V07

*Table 5: List of differences between the FX925SF-ING-VWDC-PRE,011P,FX925SF-ING-VWDC-PRE,010P
FX925SF-ING-VPDC-PRE,011P,FX925SF-ING-VPDC-PRE,010P, and FX925F WM,FX925F PM*

Models	Software version
FX925SF-ING-VWDC-PRE,011P,FX925SF-ING-VWDC-PRE,010P FX925SF-ING-VPDC-PRE,011P,FX925SF-ING-VPDC-PRE,010P	MOLY.LR12A.R2.MP.V44.1.P1
FX925F WM,FX925F PM	MOLY.LR12A.R2.MP.V44.1

-----End of Report-----