FCC TEST REPORT

For

EMV Android Validator

Model Number: FX925F PM, FX925F WM

FCC ID: 2AGQIFX925F

Report Number : WT198005842

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	:	FX925F PM, FX925F WM
Trade mark	:	FAMOCO
Serial Number	:	/
FCC ID	:	2AGQIFX925F

Test Standards:

FCC Part 15 15.209, 15.407(2018)

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 15.209 and 15.407.

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: _____ Date: Nov.08, 2019
(Chen Silin 陈司林)

Checked by: _____ Date: Nov.08, 2019
(Lin Yixiang 林奕翔)

Approved by: _____ Date: Nov.08, 2019
(Lin Bin 林斌)

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1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

Test Items	FCC Rules	Test Results
26dB Bandwidth	FCC §15.407 (a)	Pass
Maximum Conducted Output Power	FCC §15.407 (a)	Pass
Maximum Power Spectral Density Level	FCC §15.407 (a)	Pass
Radiated Bandedge and Spurious	FCC §15.407 (b) FCC §15.209 FCC §15.205	Pass
Automatic Discontinue Transmission	FCC §15.407 (c)	Pass
Frequency stability	FCC §15.407 (g)	Pass
Occupied Bandwidth	--	Pass
Antenna Requirment	FCC §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.

2.3. Measurement Uncertainty

Conducted Emission
9kHz~30MHz 3.5dB

Radiated Emission
30MHz~1000MHz 4.5dB
1GHz~40GHz 4.6dB

3. PRODUCT DESCRIPTION

3.1. EUT Description

Description	:	EMV Android Validator
Manufacturer	:	FAMOCO SAS
Model Number	:	FX925F PM, FX925F WM
Operate Frequency	:	U-NII 1(5150~5250MHz)
Antenna Designation	:	PIFA Antenna 1.3dBi

Remark: FX925F PM compared with FX925F WM, only have different model number and appearance. All of the models' circuit theory, electrical design and the Critical Components are the same. The differences do not affect the RF performance. Unless otherwise specified, the model FX925F PM was chosen as representative model to perform all the tests.
This is test report is for application of FCC ID: 2AGQIFX925F, which consists of reuse data of FCC ID: 2AGQIFX205. The FX925F PM adds scanner and USB HUB function, changes NFC operation on hardware and software.
The WWAN, WLAN and Bluetooth's circuit theory, electrical design and the critical components are the same. Considering above changes, in this test report, only conducted power, 26dB bandwidth measurement, Radiated Bandedge and Spurious was re-tested, test data from Test Report: WT198003467 are reused in this report to cover other test items.

Table 2 Working Frequency List U-NII 1 (802.11a, 802.11n HT20)

Channel	Frequency	Channel	Frequency
36	5180MHz	44	5220MHz
40	5200MHz	48	5240MHz

Table 3 Working Frequency List U-NII 1,(802.11n HT40)

Channel	Frequency	Channel	Frequency
38	5190MHz	46	5230MHz

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

This submittal(s) (test report) is intended for FCC ID: **2AGQIFX925F** filing to comply with Section 15.209，15.407 of the FCC Part 15, Subpart E .

3.3. Block Diagram of EUT Configuration

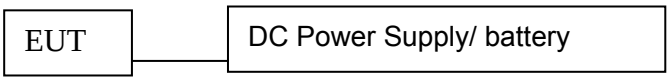


Figure 1 EUT setup

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:
802.11a mode: 6 Mbps
802.11n HT20 mode: MCS0
802.11n HT40 mode: MCS0
802.11a 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.
802.11ac 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

The EUT does NOT support a WIFI MIMO function.
Directional gain need NOT to be considered.

3.6. Support Equipment List

Table 4 Support Equipment List

Name	Model No	S/N	Manufacturer
Mouse	MS111-L	--	DELL Inc

3.7. Test Conditions

Date of test：Oct.15, 2019 - Nov.07, 2019
Date of EUT Receive：Oct.15, 2019
Temperature: 21 ~ 25 ℃
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
SB9054/04	EMI Test Receiver	Rohde & Schwarz	ESU8	Sep.03, 2018	1 Year
SB8501/09	EMI Test Receiver	Rohde & Schwarz	ESU40	Mar.11, 2019	1 Year
SB8501/04	Bilog Antenna	Schwarzbeck	VULB9163	Jun.01, 2019	1 Year
SB5472/02	Bilog Antenna	Schwarzbeck	VULB9163	Jun.01, 2019	1 Year
SB3435	Horn Antenna	Rohde & Schwarz	HF906	Jan.01, 2018	1 Year
SB8501/11	Horn Antenna	ETS-Lindgren	3160-09	Jan.21,2017	3 Years
SB8501/12	Horn Antenna	ETS-Lindgren	3160-10	Jan.21,2017	3 Years
SB3345	Loop Antenna	Schwarzbeck	FMZB1516	Feb.20, 2019	1 Year
SB8501/17	Preamplifier	Rohde & Schwarz	SCU-18	Feb.20, 2019	1 Year
SB8501/16	Preamplifier	Rohde & Schwarz	SCU-26	Feb.18, 2019	1 Year
SB9059	Preamplifier	Rohde & Schwarz	SCU-40	Aug.29, 2018	1 Year
SB8501/14	Preamplifier	Rohde & Schwarz	SCU-03	Feb.20, 2019	1 Year
SB11873/01	Power Sensor	Rohde & Schwarz	OSP120+OSP -B157	Feb.21, 2019	1 Year
SB9060	Signal Analyzer	Rohde & Schwarz	FSQ40	Feb.21, 2019	1 Year
SB9721/07	DC Power Supply	Agilent	66319D	---	---
--	Radiated Test Software	Rohde & Schwarz	EMC 32 8.50.0	--	--

5. DUTY CYCLE

5.1. LIMITS OF DUTY CYCLE

None; for reporting purposes only

5.2. TEST PROCEDURE

1. Set span = Zero
2. RBW = 20MHz
3. VBW = 30MHz,
4. Detector = Peak

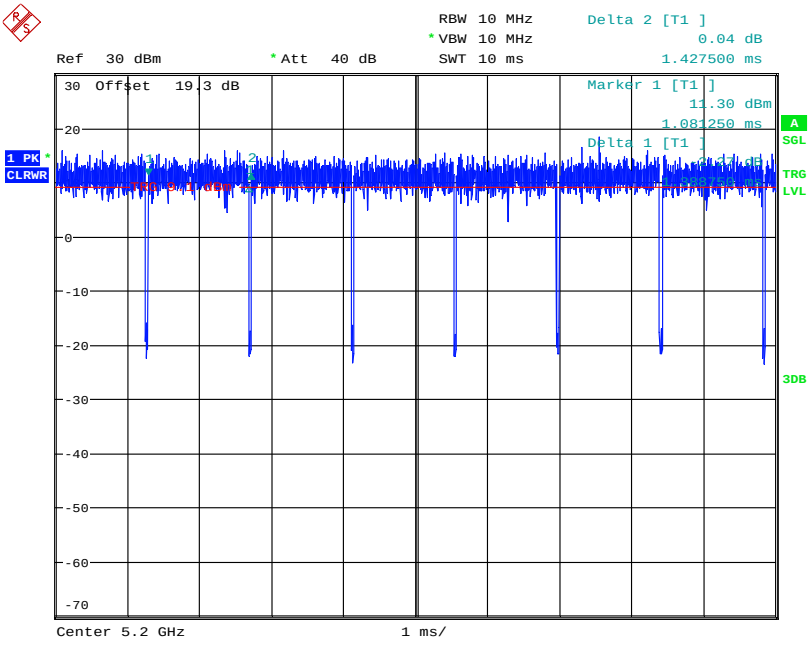
5.3. TEST SETUP

5.4. TEST DATA

Table 6 Duty Cycle Test Data

Test Mode	On Time (ms)	Duty Cycle(%)	Duty Factor	1/T Minimum VBW (kHz)
802.11a	1.39	97.29	0.12	1
802.11n HT20	1.30	97.19	0.12	1
802.11n HT40	0.65	94.51	0.25	1.5

802.11a



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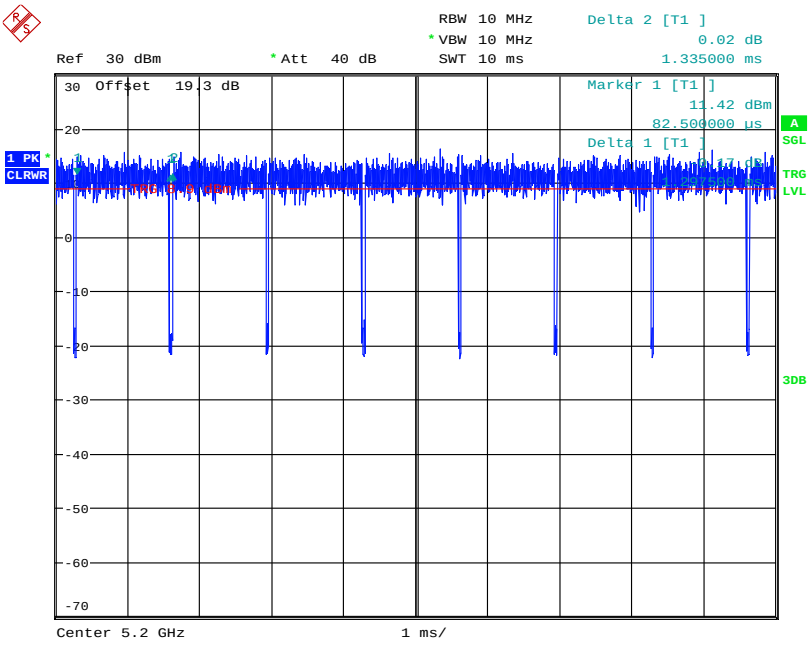
802.11n HT20



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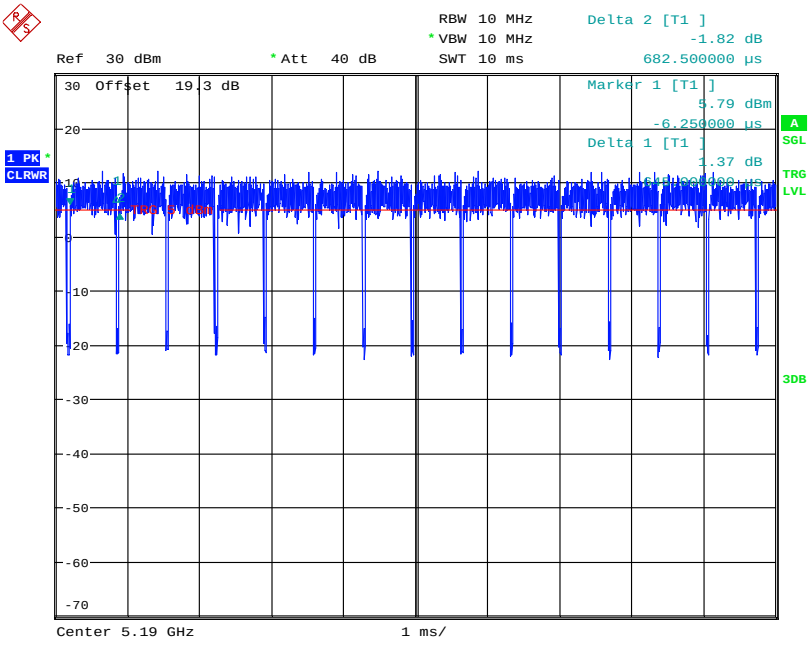
802.11n HT40



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6. 26DB BANDWIDTH MEASUREMENT

6.1. LIMITS OF 26dB BANDWIDTH MEASUREMENT

None; for reporting purposes only..

6.2. TEST PROCEDURE

ANSI C63.10-2013 Clause 12.4
a) Set RBW = approximately 1% of the emission bandwidth.
b) Set the VBW > RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

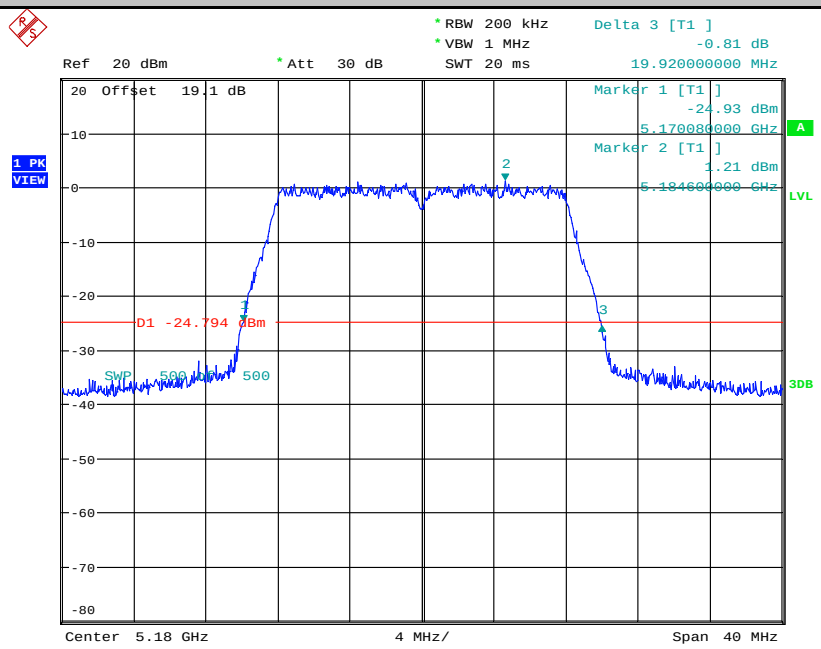
6.3. TEST SETUP

6.4. Test Data

Table 7 26dB Bandwidth Test Data

Test Mode	Test Channel	26dB Bandwidth [MHz]	Limit[MHz]	Verdict
802.11a	5180	19.920	---	PASS
802.11a	5200	20.000	---	PASS
802.11a	5240	19.960	---	PASS
802.11n HT20	5180	20.280	---	PASS
802.11n HT20	5200	20.240	---	PASS
802.11n HT20	5240	20.160	---	PASS
802.11n HT40	5190	40.800	---	PASS
802.11n HT40	5230	40.560	---	PASS

26dB Bandwidth Measurement_11A_5180



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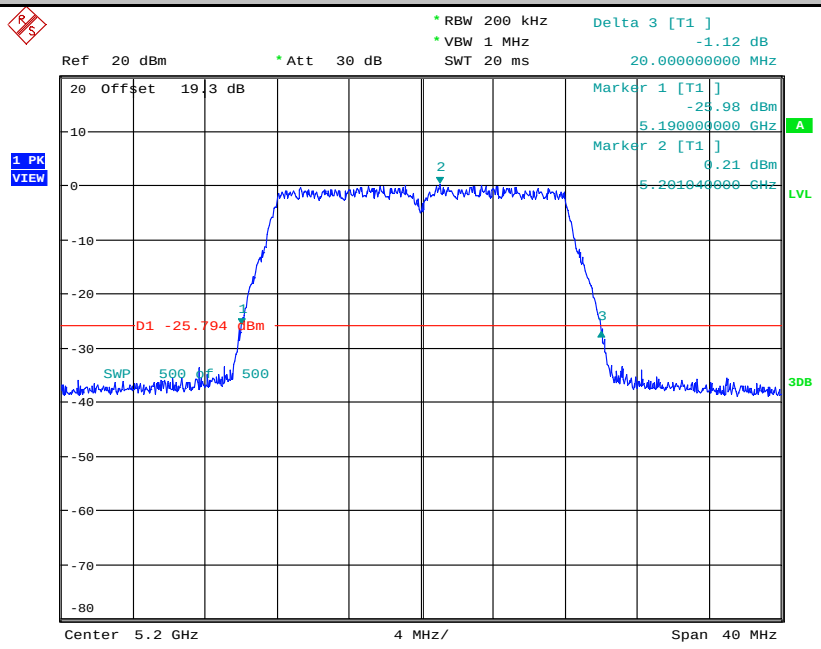
26dB Bandwidth Measurement_11A_5200



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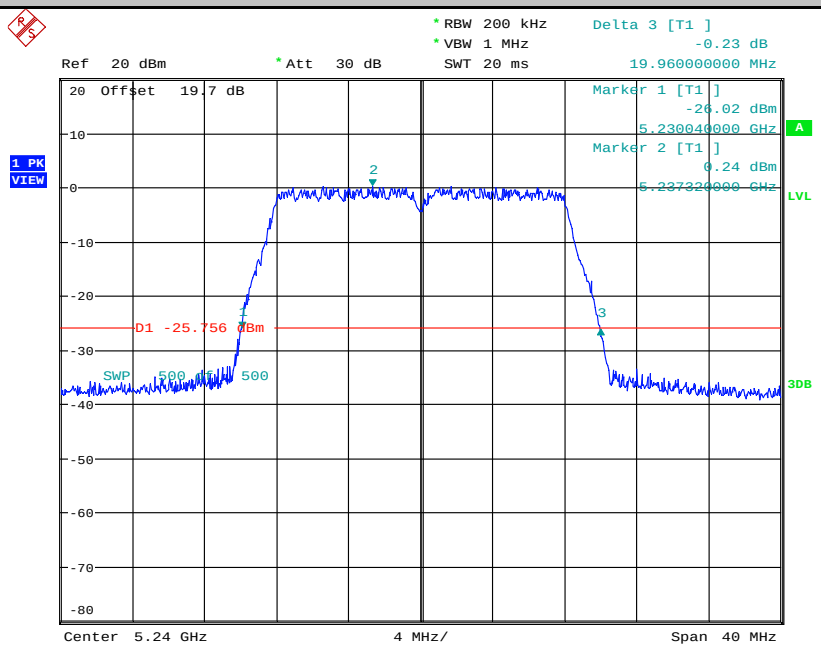
26dB Bandwidth Measurement_11A_5240



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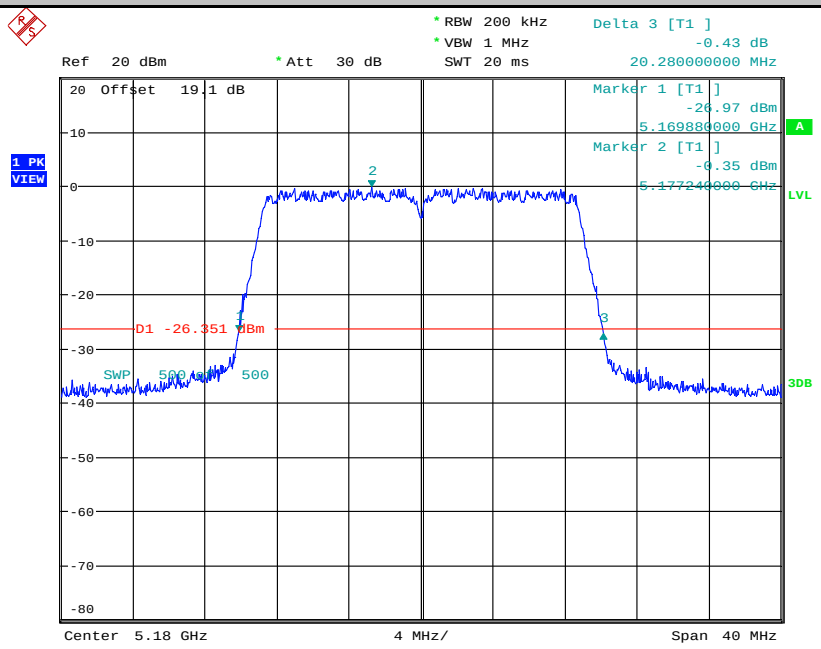
26dB Bandwidth Measurement_11N20_5180



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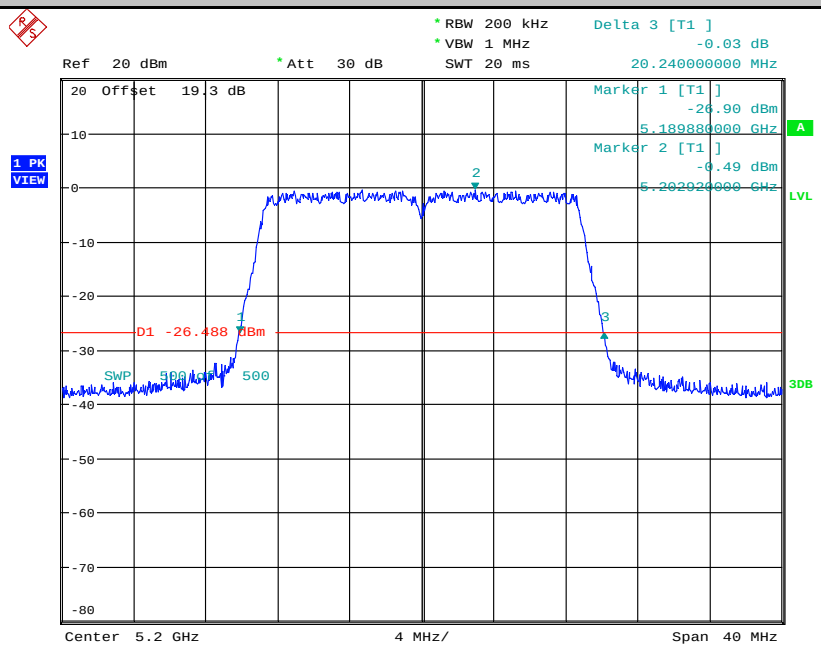
26dB Bandwidth Measurement_11N20_5200



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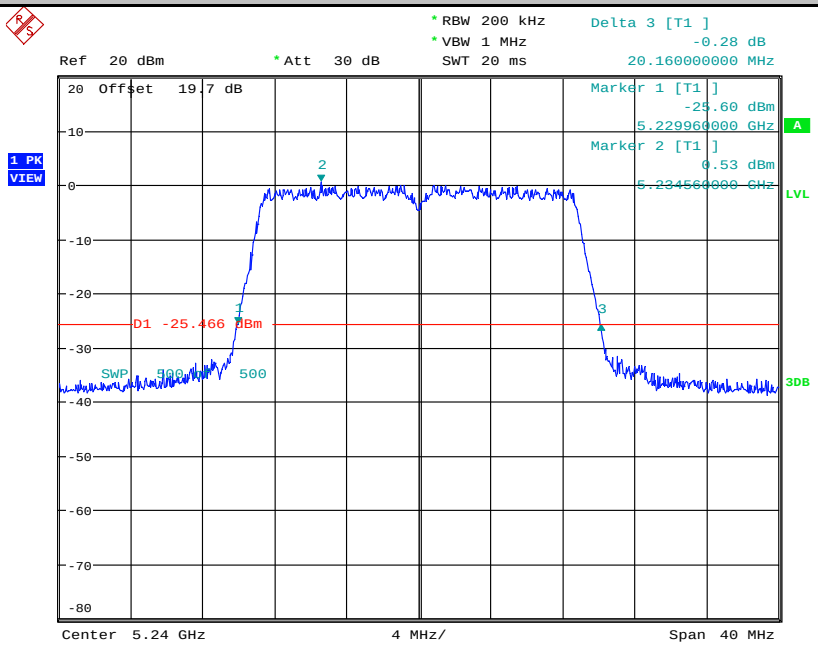
26dB Bandwidth Measurement_11N20_5240



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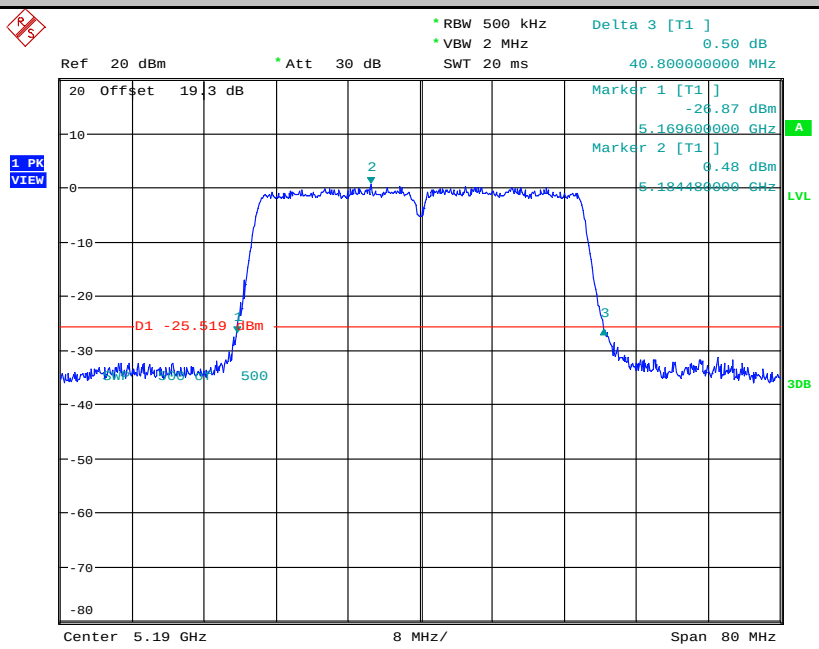
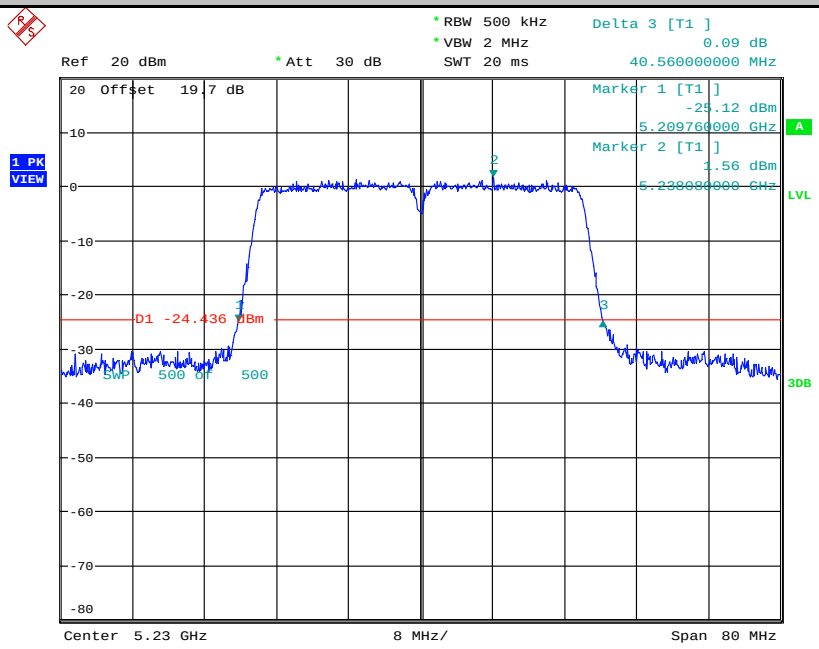
26dB Bandwidth Measurement_11N40SISO_5190



Date: 4.NOV.2019 11:18:26

26dB Bandwidth Measurement_11N40SISO_5230



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7. MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

7.1. LIMITS OF Maximum Conducted Output Power Measurement

CFR 47 (FCC) part 15.2407 (a)
For the band 5.15–5.25 GHz.
For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the max-imum antenna gain does not exceed 6 dBi.

7.2. TEST PROCEDURE

ANSI C63.10-2013 Clause 12.3
a) Measure the duty cycle D
b) Set span to encompass the entire 26 dB EBW or 99% OBW of the signal.
c) Set RBW = 1 MHz.
d) Set VBW $\geqslant$ 3 MHz.
e) Number of points in sweep $\geqslant$ [2 $\times$ span / RBW]. (This gives bin-to-bin spacing $\leqslant$ RBW / 2, so that narrowband signals are not lost between frequency bins.)
f) Manually set sweep time $\geqslant$ [10 $\times$ (number of points in sweep) $\times$ (total ON / OFF period of the transmitted signal)].
g) Set detector = RMS (power averaging).
h) Perform a single sweep.
i) Compute power by integrating the spectrum across the 26 dB EBW or 99% OBW of the signal using the instrument's band power measurement function with band limits set equal to the EBW or OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in power units) at 1 MHz intervals extending across the 26 dB EBW of the spectrum.
j) Add [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times (because the measurement represents an average over both the ON and OFF times of the transmission). For example, add [10 log (1 / 0.25)] = 6 dB if the duty cycle is 25%..

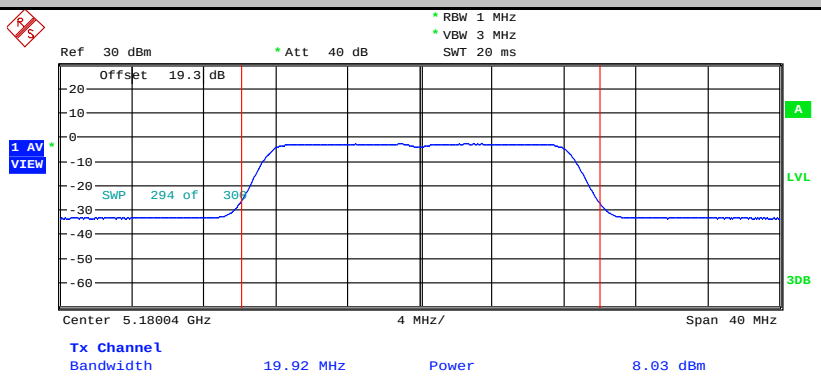
7.3. TEST SETUP

7.4. TEST DATA

Table 8 Maximum Conducted Output Power Test Data

Test Mode	Test Channel	Level [dBm]	10log(1/x) Factor [dB]	Power [dBm]	Limit [dBm]	Verdict
802.11a	5180	8.03	0.12	8.15	23.98	PASS
802.11a	5200	8.44	0.12	8.56	23.98	PASS
802.11a	5240	7.69	0.12	7.81	23.98	PASS
802.11n HT20	5180	8.40	0.12	8.52	23.98	PASS
802.11n HT20	5200	8.31	0.12	8.43	23.98	PASS
802.11n HT20	5240	8.57	0.12	8.69	23.98	PASS
802.11n HT40	5190	8.11	0.25	8.36	23.98	PASS
802.11n HT40	5230	8.16	0.25	8.41	23.98	PASS

Maximum Conduct Output Power_11A_5180



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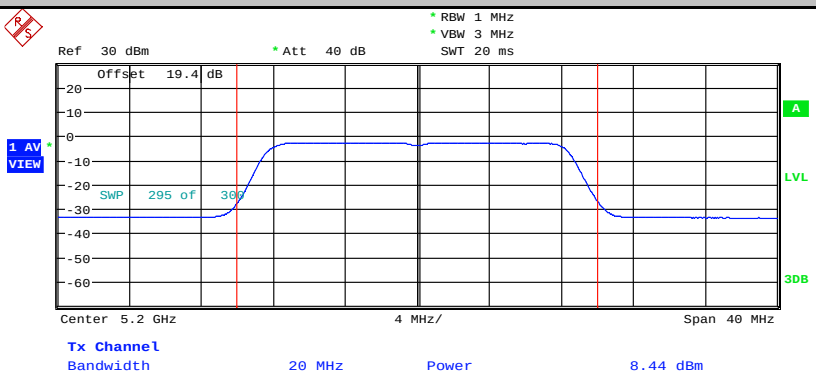
Maximum Conduct Output Power_11A_5200



Tx Channel

Bandwidth	20 MHz	Power	8.44 dBm

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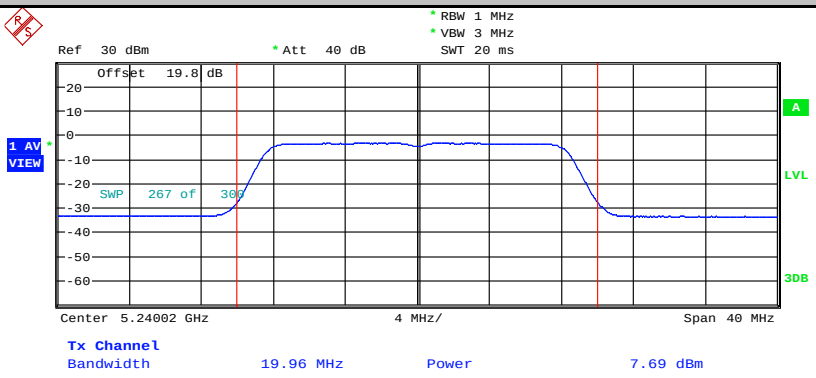
Maximum Conduct Output Power_11A_5240



Tx Channel

Bandwidth	19.96 MHz	Power	7.69 dBm

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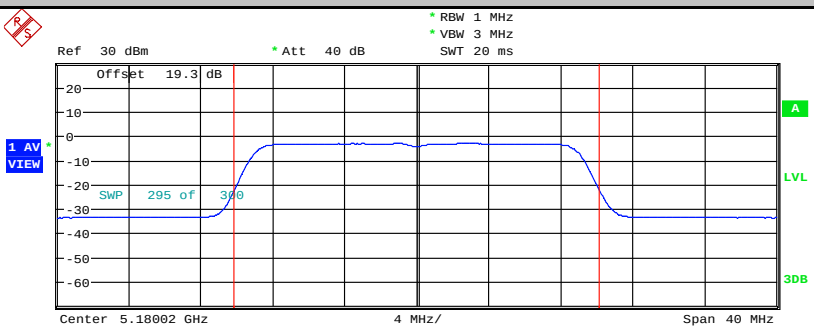
Maximum Conduct Output Power_11N20_5180



Tx Channel

Bandwidth	20.28 MHz	Power	8.40 dBm

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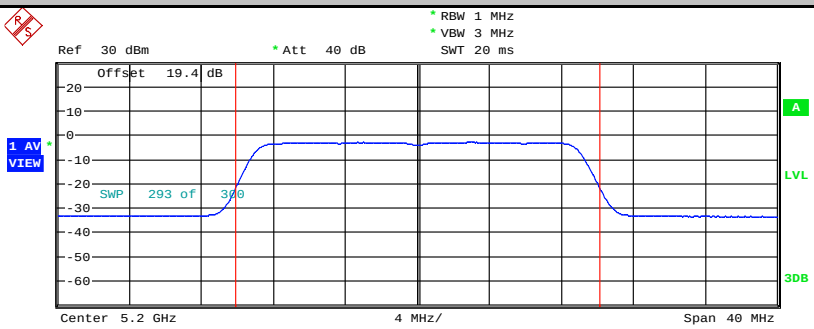
Maximum Conduct Output Power_11N20_5200



Tx Channel

Bandwidth	20.24 MHz	Power	8.31 dBm

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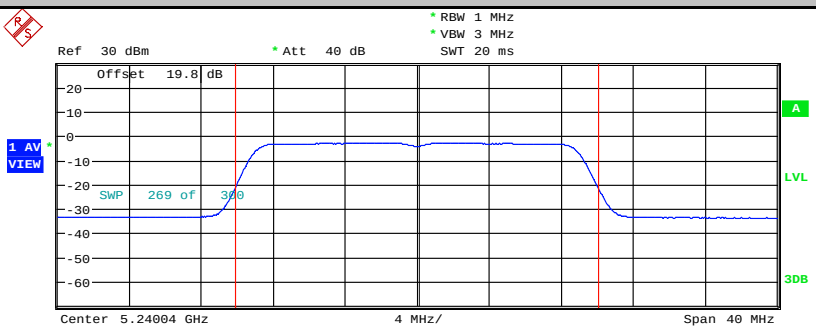
Maximum Conduct Output Power_11N20_5240



Tx Channel

Bandwidth 20.16 MHz Power 8.57 dBm

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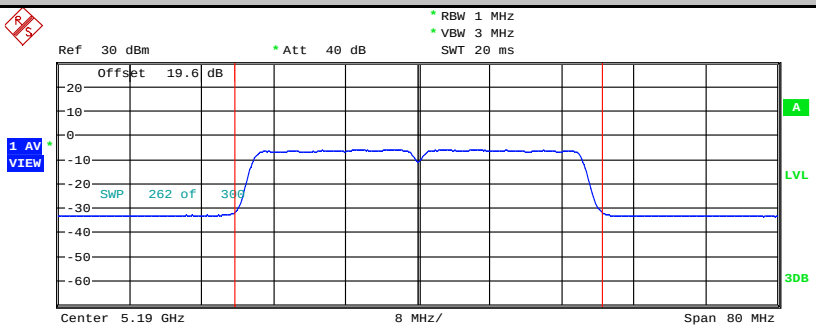
Maximum Conduct Output Power_11N40_5190

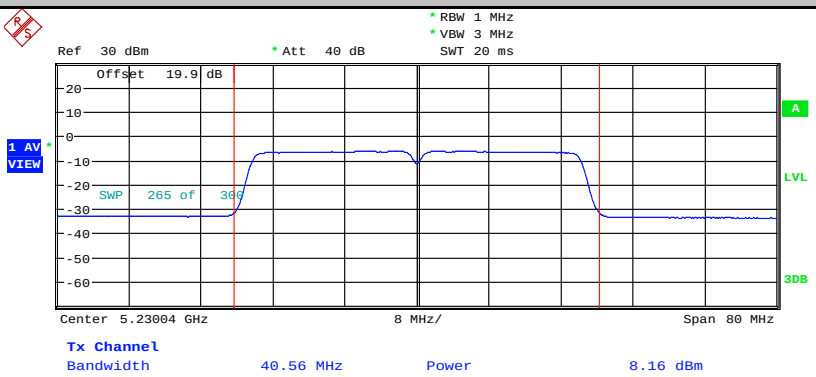


Tx Channel

Bandwidth 40.8 MHz Power 8.11 dBm

Date: 4.NOV.2019 11:19:13

Maximum Conduct Output Power_11N40_5230



Tx Channel

Bandwidth	40.56 MHz	Power	8.16 dBm

Date: 4.NOV.2019 11:26:16

8. MAXIMUM POWER SPECTRAL DENSITY LEVEL MEASUREMENT

8.1. LIMITS OF Maximum Power Spectral Density Level Measurement

CFR 47 (FCC) part 15.407 (a)
For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both
the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi

8.2. TEST PROCEDURE

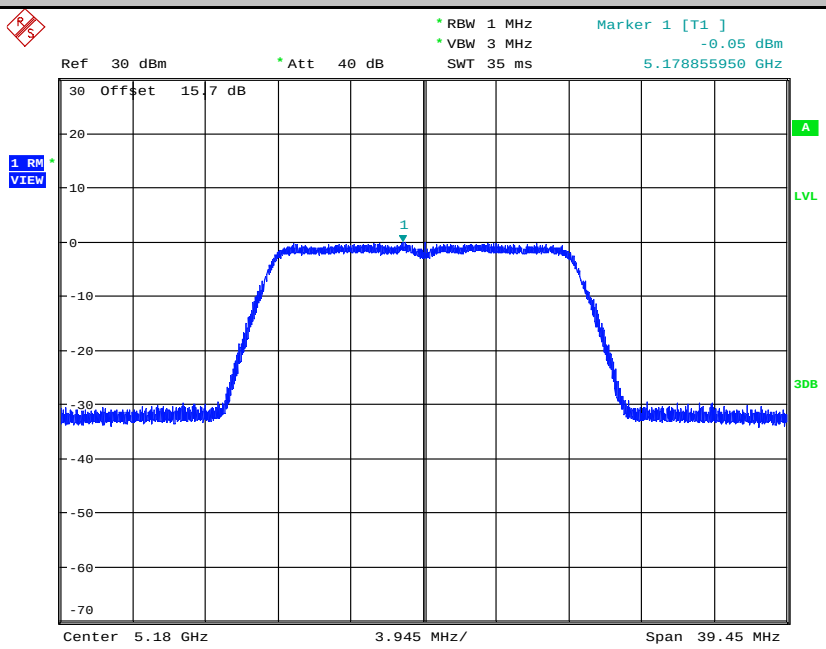
1.Create an average power spectrum for the EUT operating mode being tested by following the instructions in section II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, “Compute power….” (This procedure is required even if the maximum conducted output power measurement was performed
using a power meter, method PM.)
2. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
3. Make the following adjustments to the peak value of the spectrum, if applicable:
a) If Method SA-2 or SA-2 Alternative was used, add 10 log (1/x), where x is the duty cycle, to the peak of the spectrum.
b) If Method SA-3 Alternative was used and the linear mode was used in step II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
4. The result is the Maximum PSD over 1 MHz reference bandwidth.
5. For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)

8.3. TEST DATA

Table 9 Maximum Power Spectral Density Level Test Data

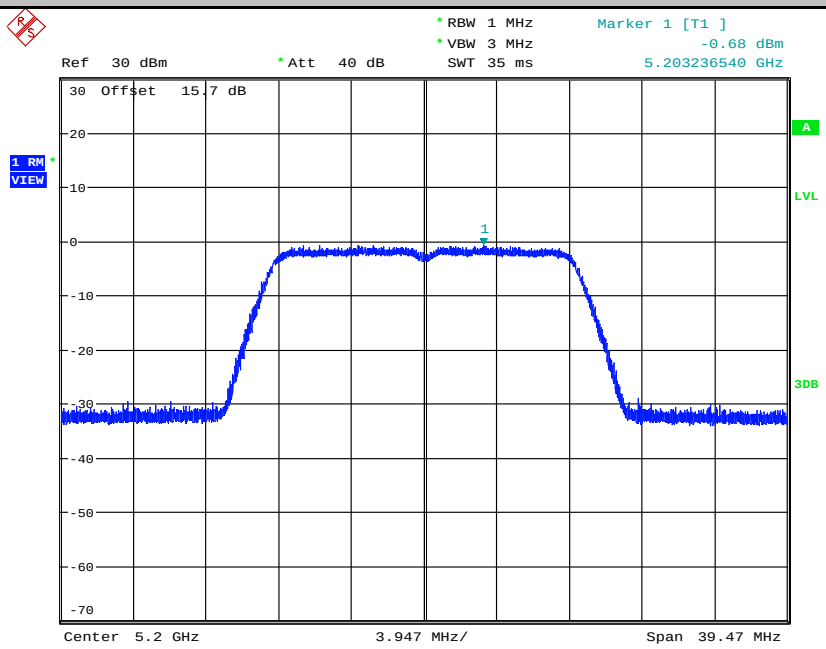
Test Mode	Test Channel	Level [dBm/MHz]	10log(1/x) Factor [dB]	PSD [dBm/MHz]	Limit [dBm/MHz]	Verdict
802.11a	5180	-0.05	0.13	0.08	11.00	PASS
802.11a	5200	-0.68	0.13	-0.55	11.00	PASS
802.11a	5240	-0.75	0.13	-0.62	11.00	PASS
802.11n HT20	5180	-0.48	0.13	-0.35	11.00	PASS
802.11n HT20	5200	-0.90	0.13	-0.77	11.00	PASS
802.11n HT20	5240	-1.24	0.13	-1.11	11.00	PASS
802.11n HT40	5190	-3.37	0.26	-3.11	11.00	PASS
802.11n HT40	5230	-3.64	0.26	-3.38	11.00	PASS

Maximum Power Spectral Density_11A_5180



Date: 5.JUL.2019 16:19:46

Maximum Power Spectral Density_ 11A_5200



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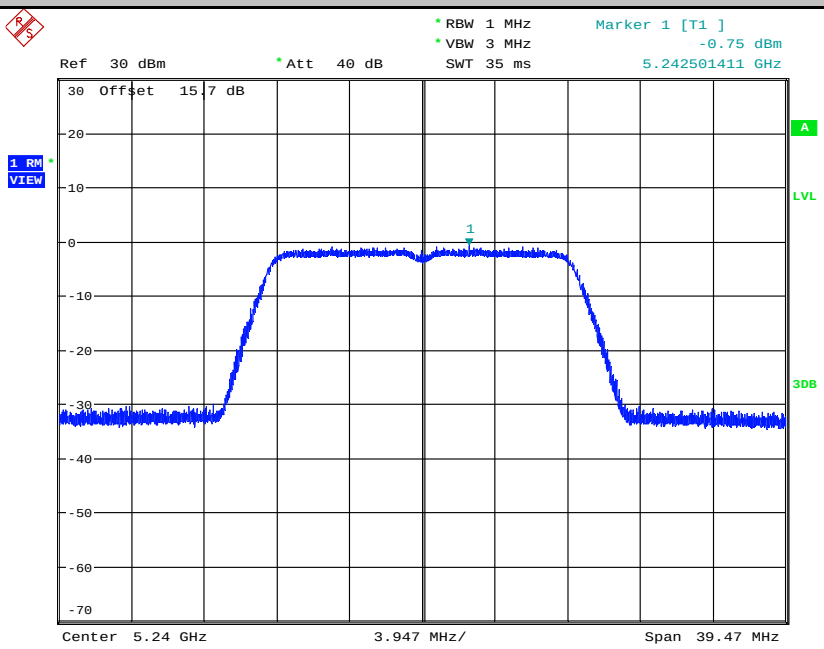

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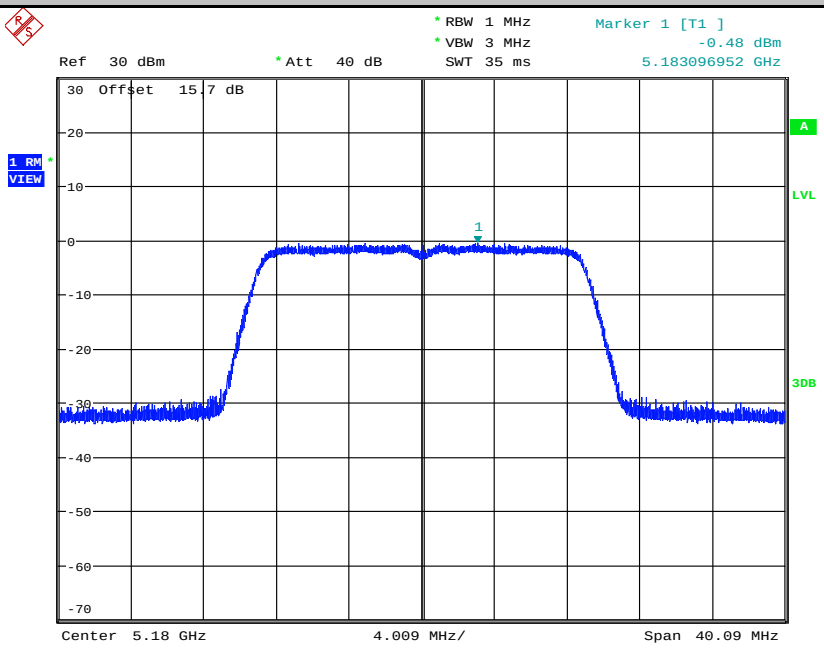

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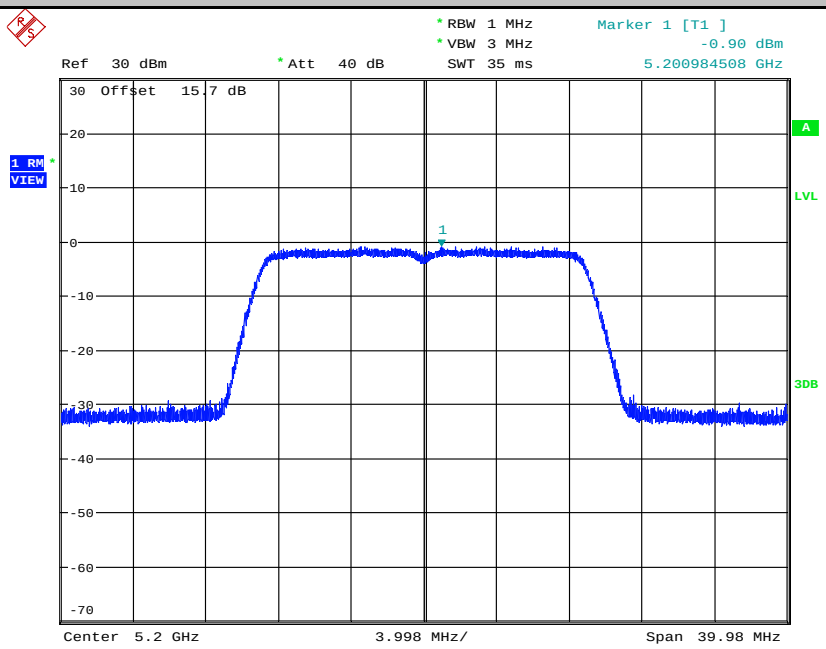

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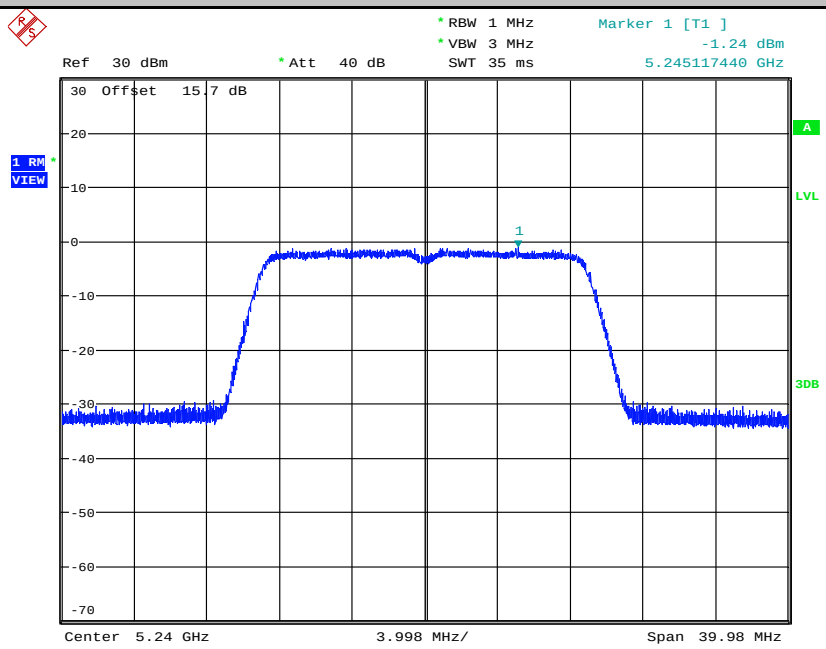

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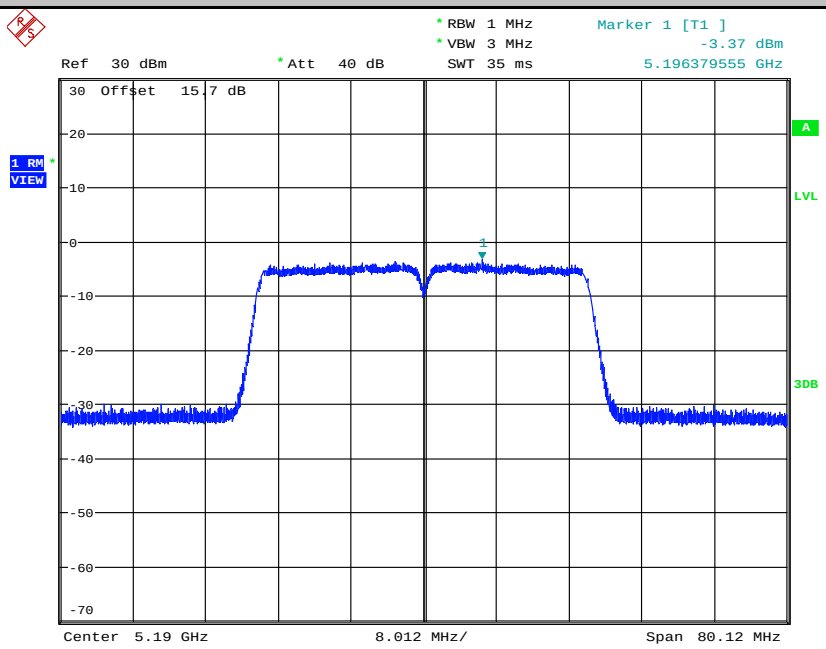
Maximum Power Spectral Density _11N40_5190



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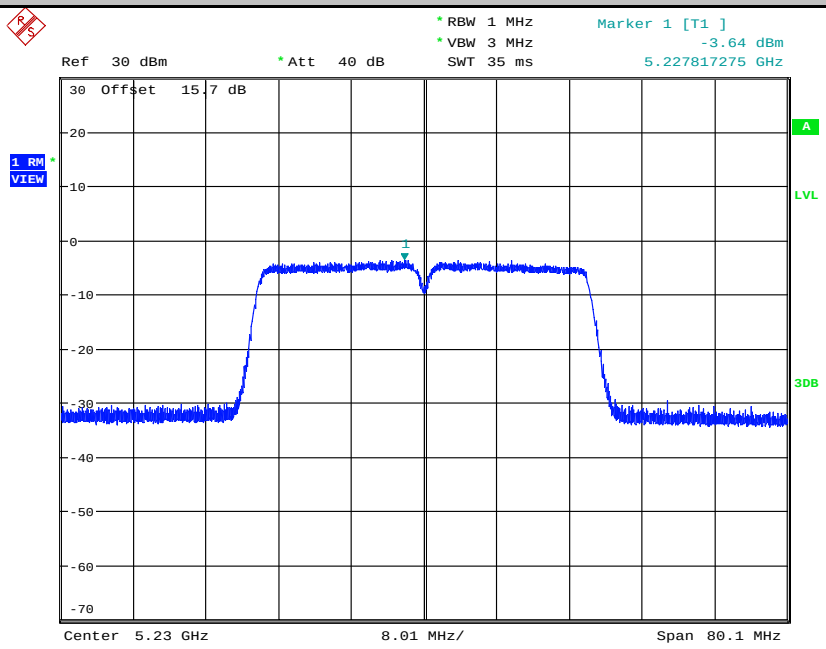
Maximum Power Spectral Density _11N40_5230



Date: 5.JUL.2019 17:01:35

9. RADIATED BANDEDGE AND SPURIOUS MEASUREMENT

9.1. LIMITS OF Radiated Bandedge and Spurious Measurement

FCC Part 15.205 and 15.209

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.

FCC Part 15.407(b)

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

9.2. TEST PROCEDURE

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.

9.3. TEST DATA

9kHz-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(dB)	Antenna Factor(dB)	Readings(dBμV/m)	Level(dBμV/m)	Polarity(H/V)	Turntable Angle(deg)	Antenna Height(m)	Limits(dBμV/m)	Margin(dB)
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--

30MHz-1GHz

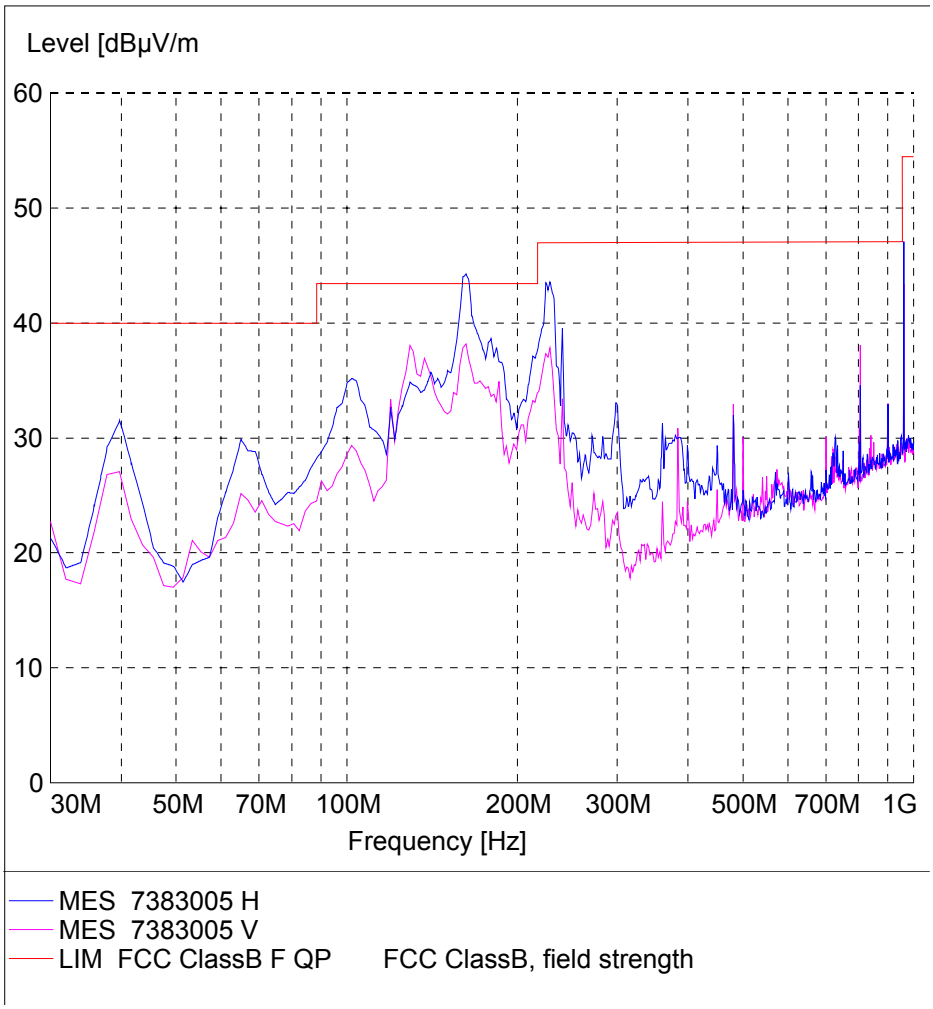
Worst case is shown below for 30MHz-1GHz only.

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)	Readings (dBμV/m)	Level (dBμV/m)	Polarity (H/V)	Limits (dBμV/m)	Margin (dB)	Height (cm)	Azimuth (Degs)
39.384	0.6	12.3	10.6	23.5	V	40	16.5	100	140
104.299	1.3	13.2	11.6	26.1	V	43.5	17.4	100	51
131.099	1.3	8.9	26.4	36.6	V	43.5	6.9	100	129
162.426	1.5	8.7	25.0	35.2	V	43.5	8.3	100	242
227.063	1.7	11.2	22.2	35.1	V	46	10.9	100	260
960.424	3.9	21.1	17.6	42.6	V	54	11.3	100	291
39.636	0.6	12.3	13.0	25.9	H	40	14.1	300	243
63.263	0.9	12.7	10.5	24.1	H	40	15.9	300	190
102.937	1.2	13.2	19.7	34.1	H	43.5	9.4	200	119
162.967	1.5	8.7	32.4	42.6	H	43.5	0.9	200	310
227.634	1.7	11.2	27.5	40.4	H	46	5.6	100	240
960.404	3.9	21.1	22.7	47.7	H	54	6.2	100	96

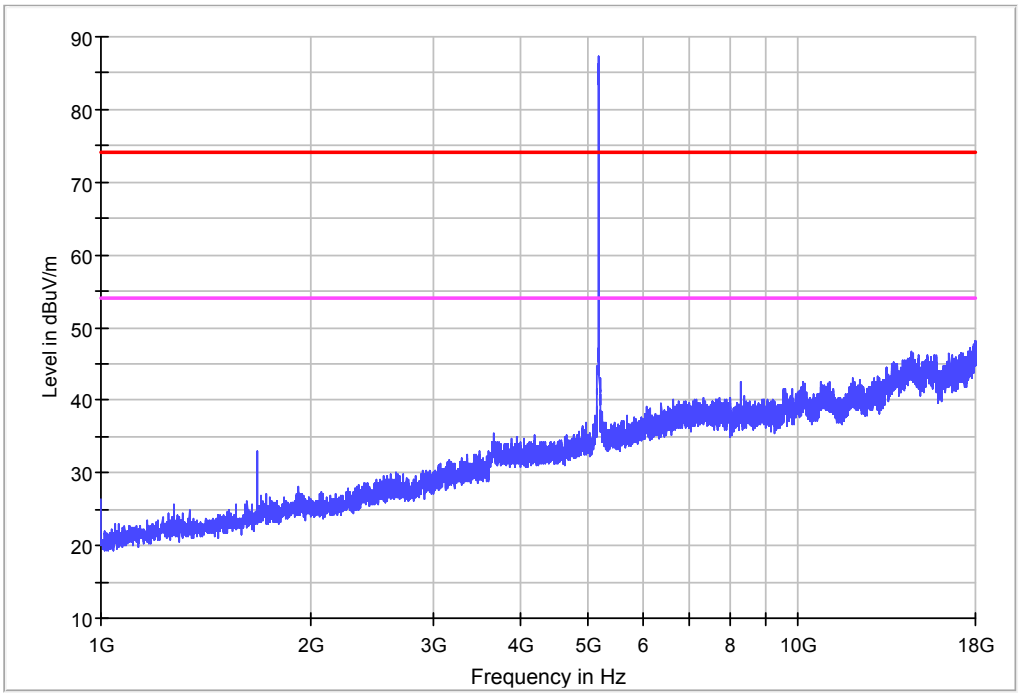
30MHz-1GHz


Level [dBµV/m
60
50
40
30
20
10
0
30M
50M
70M
100M
200M
300M
500M
700M
1G
Frequency [Hz]
MES 7383005 H
MES 7383005 V
LIM FCC ClassB F QP
FCC ClassB, field strength

1-18G

11a IN THE 5.2GHz BAND

Ch36



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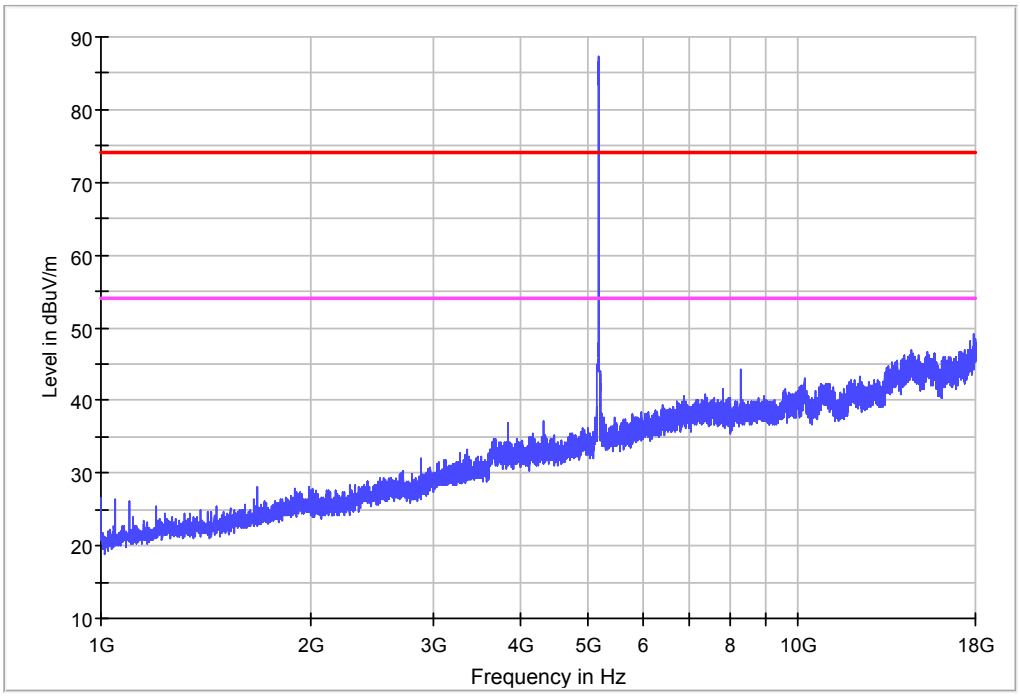
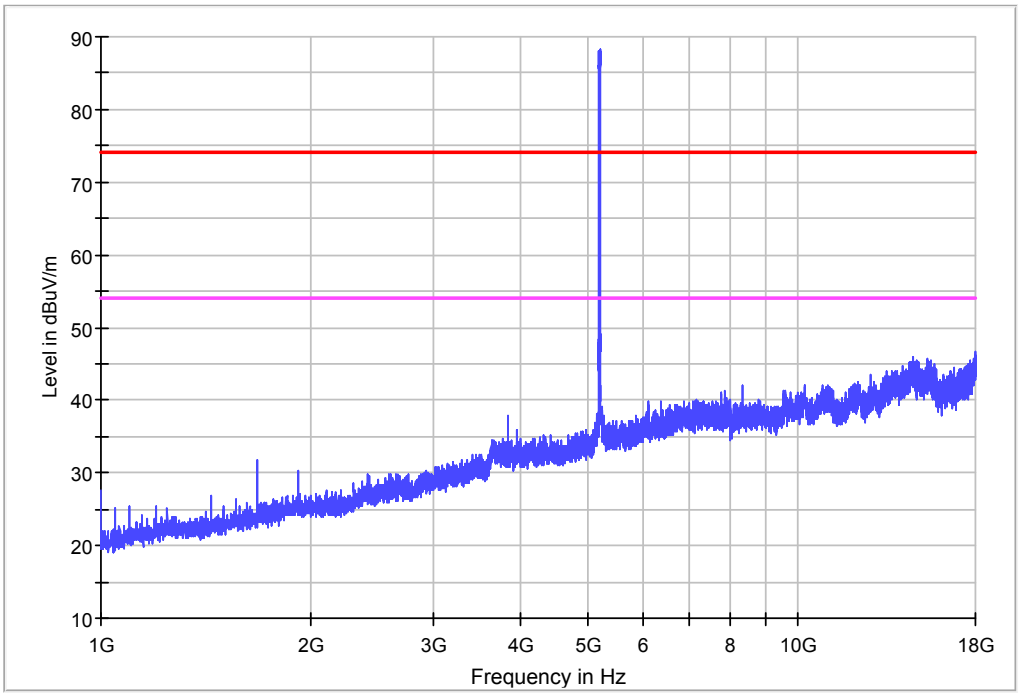


Vertical

1-18G

11a IN THE 5.2GHz BAND

CH40



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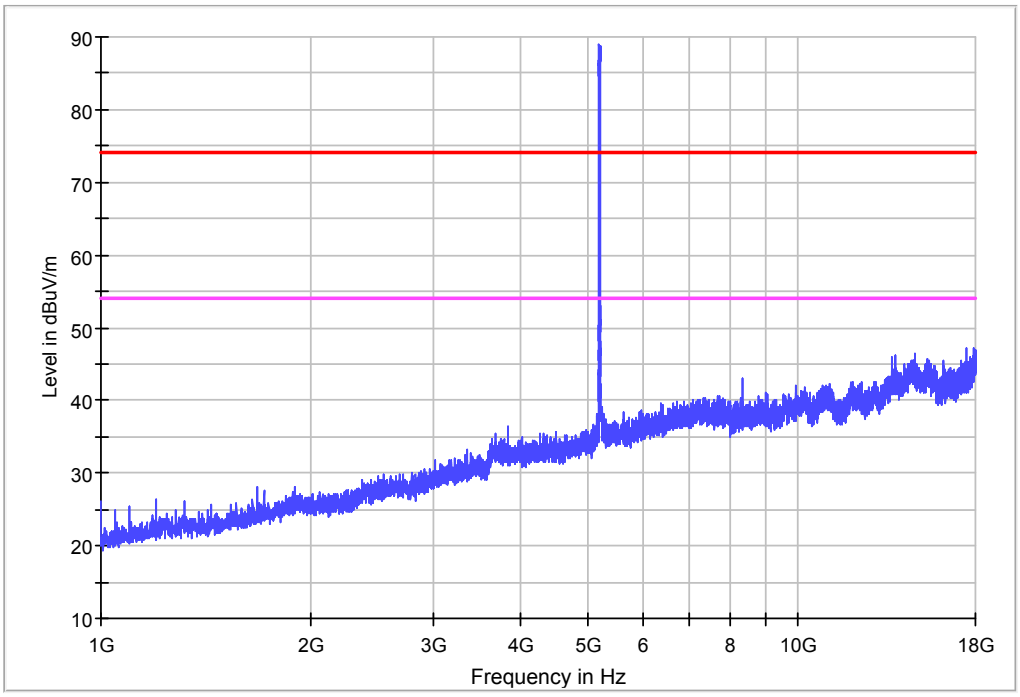
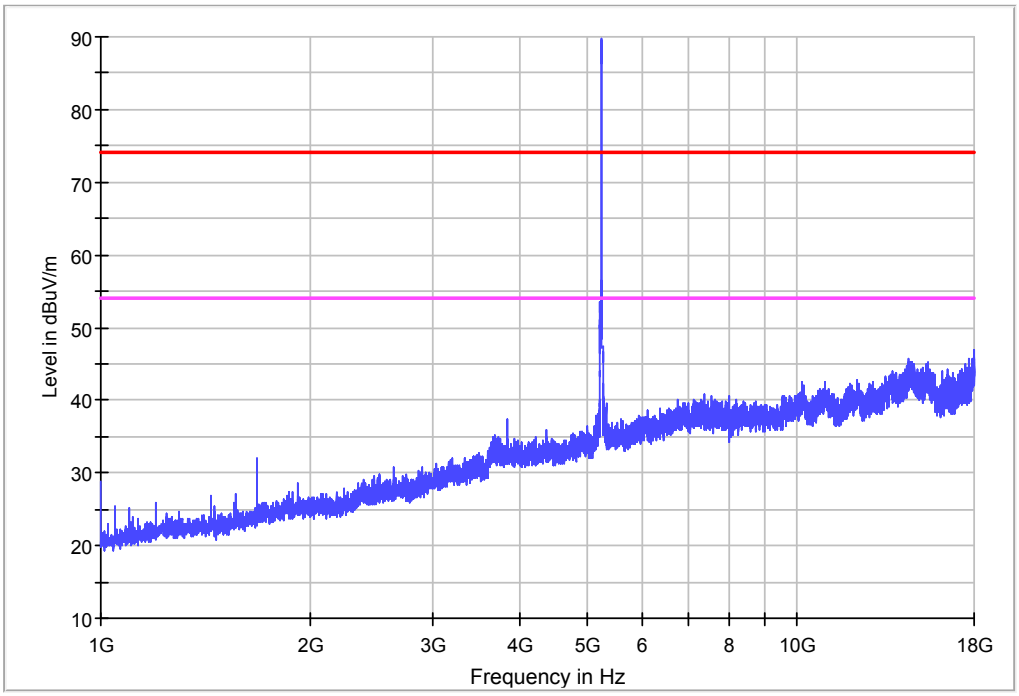


Vertical

1-18G

11a IN THE 5.2GHz BAND

CH48



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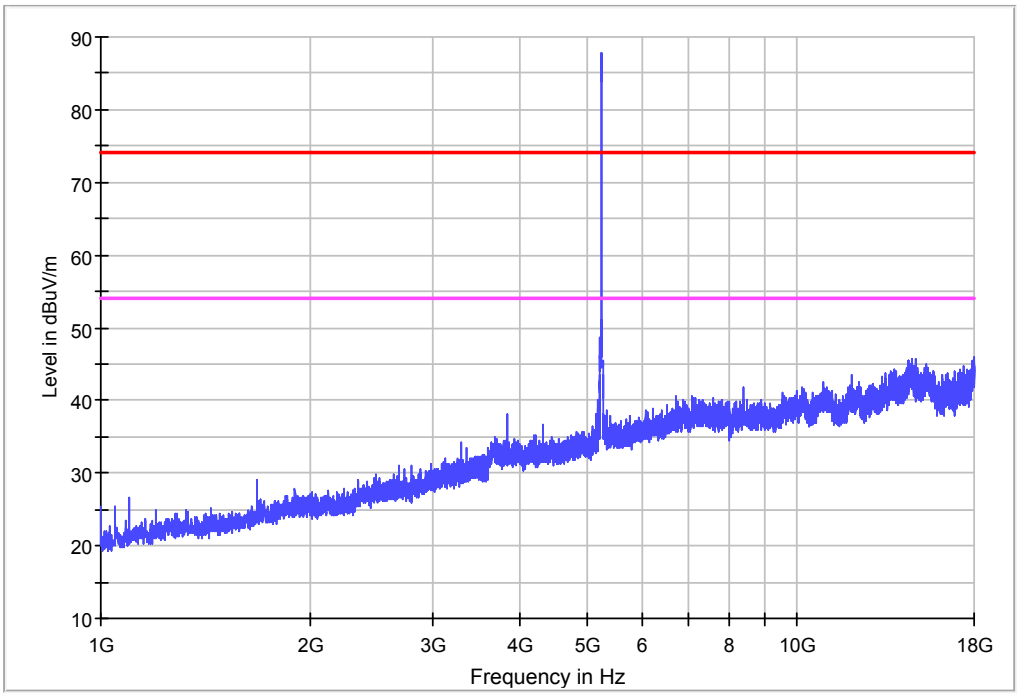
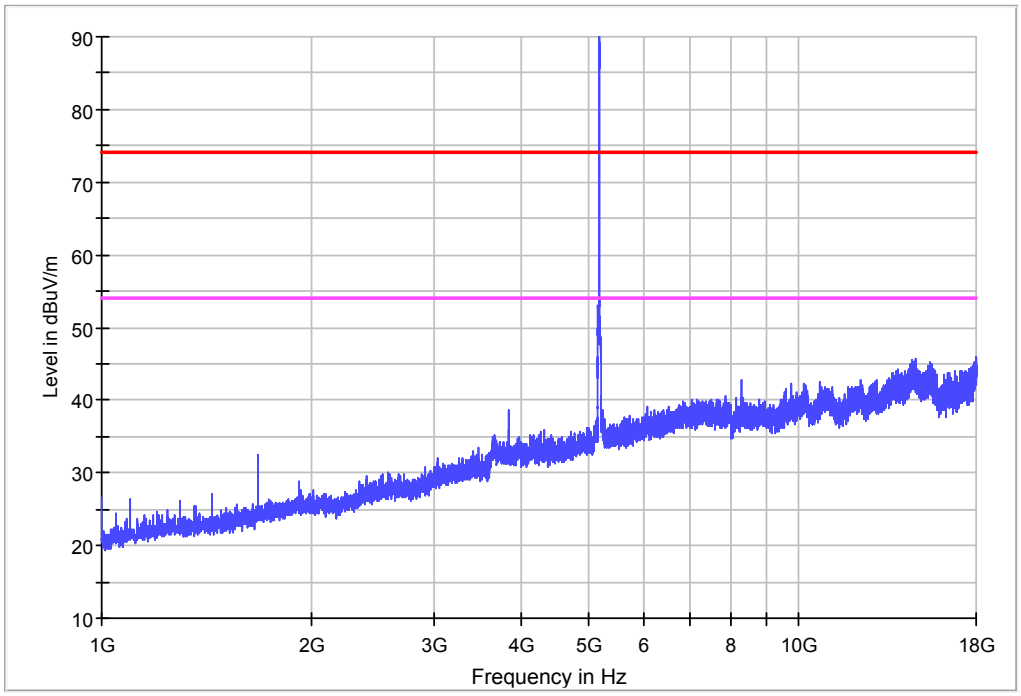


Vertical

1-18G

11n HT20 IN THE 5.2GHz BAND

CH36



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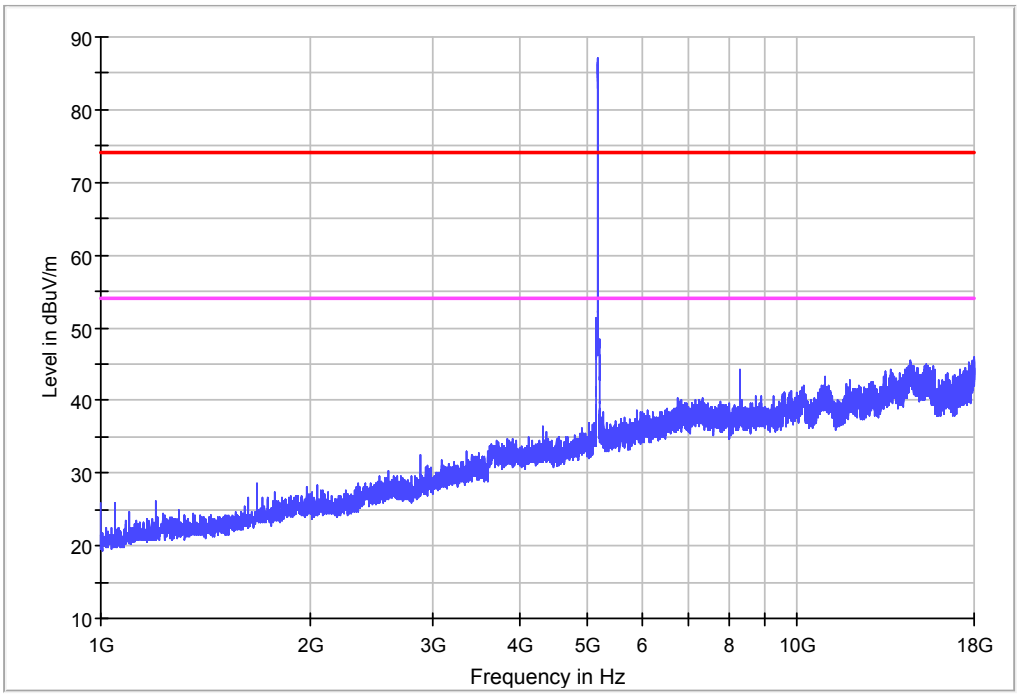
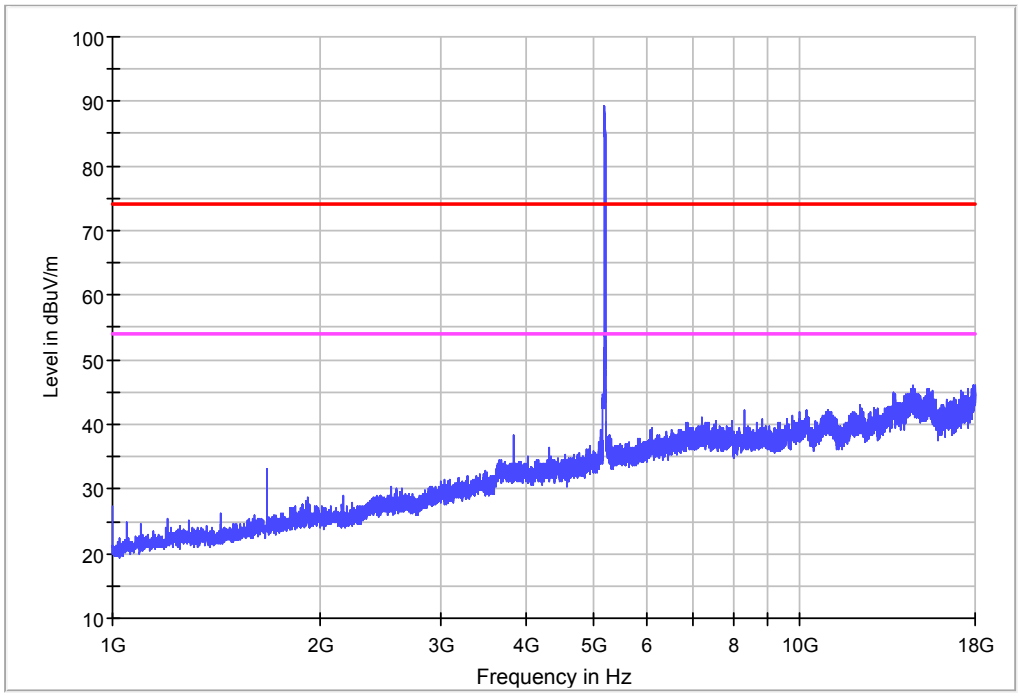


Vertical

1-18G

11n HT20 IN THE 5.2GHz BAND

CH40



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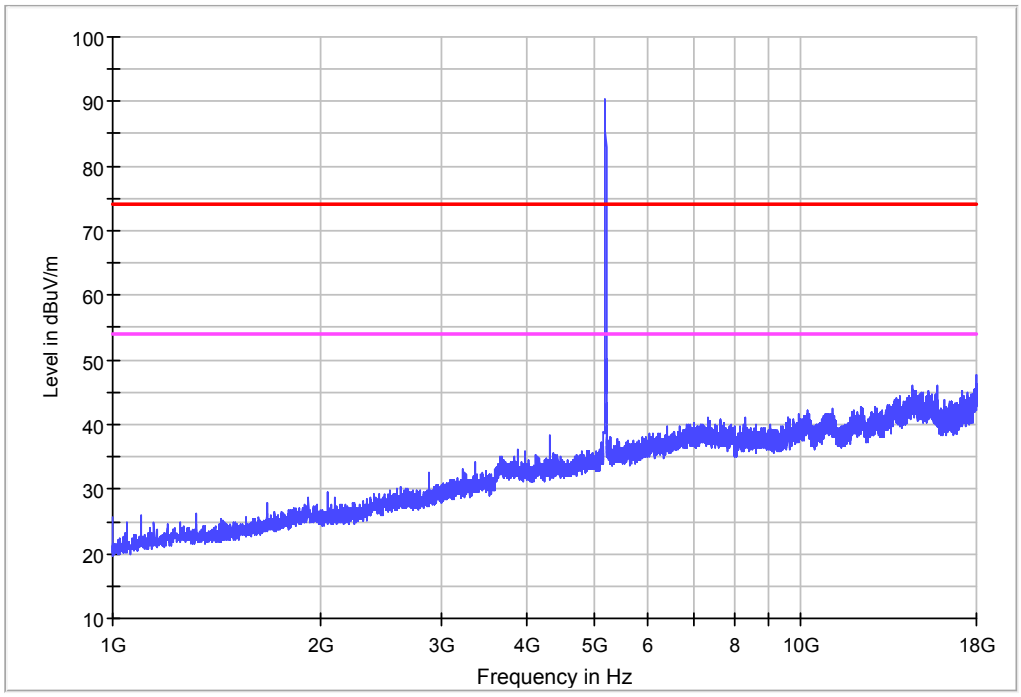
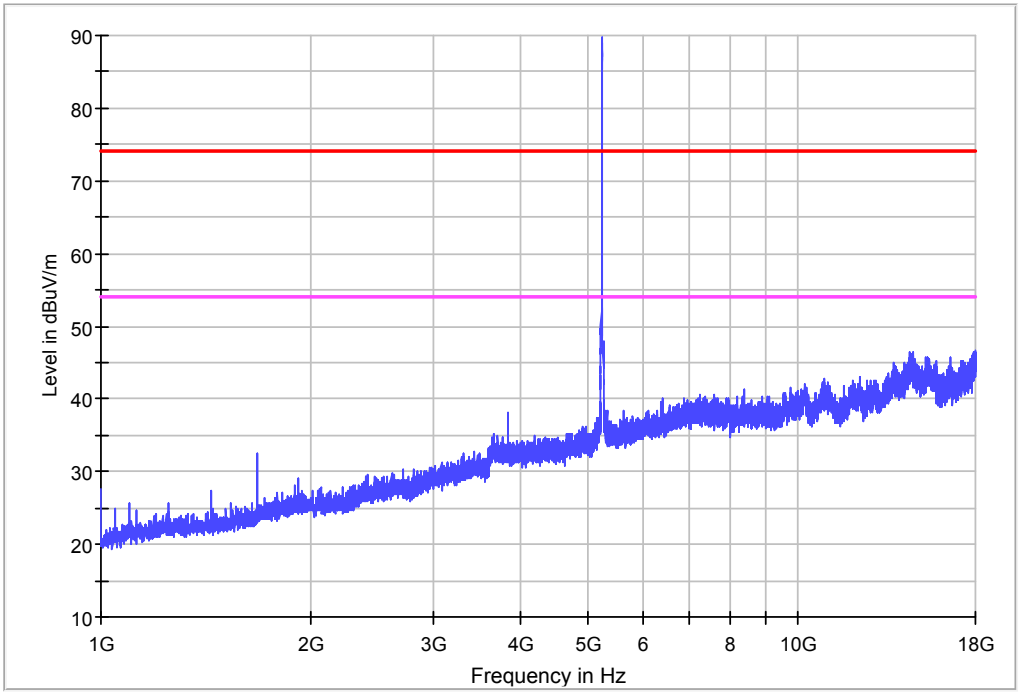


Vertical

1-18G

11n HT20 IN THE 5.2GHz BAND

CH48



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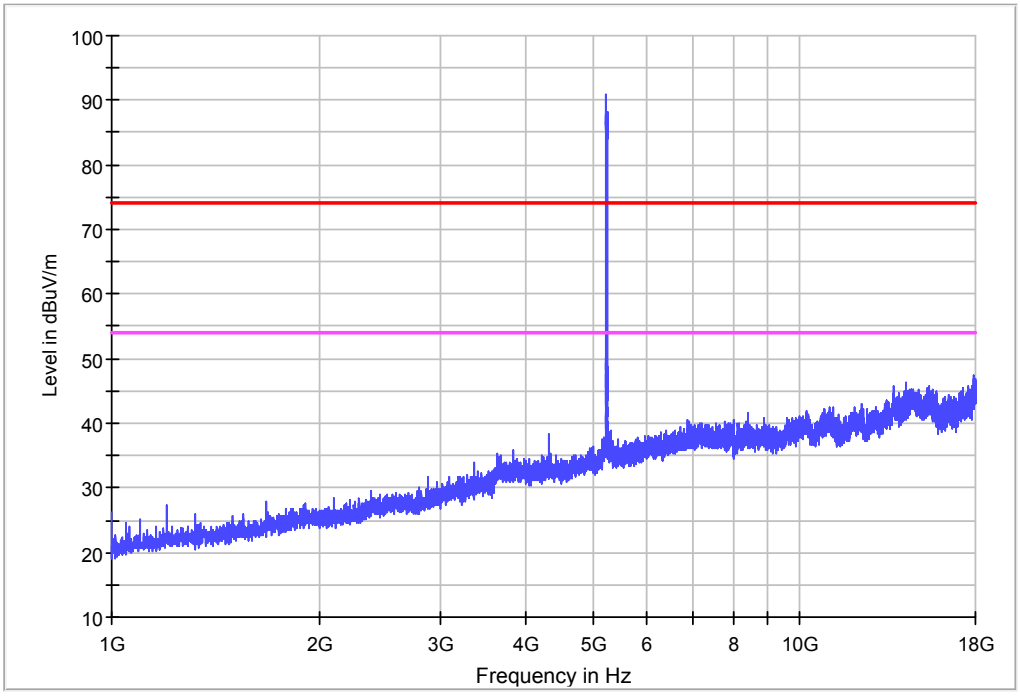
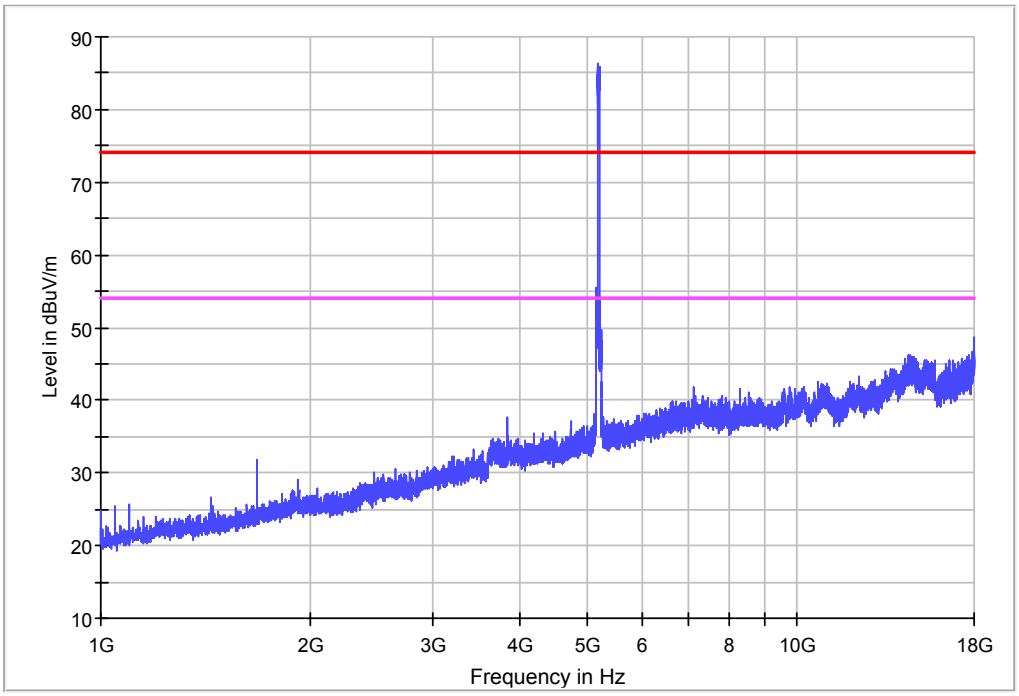


Vertical

1-18G

11n HT40 IN THE 5.2GHz BAND

CH38



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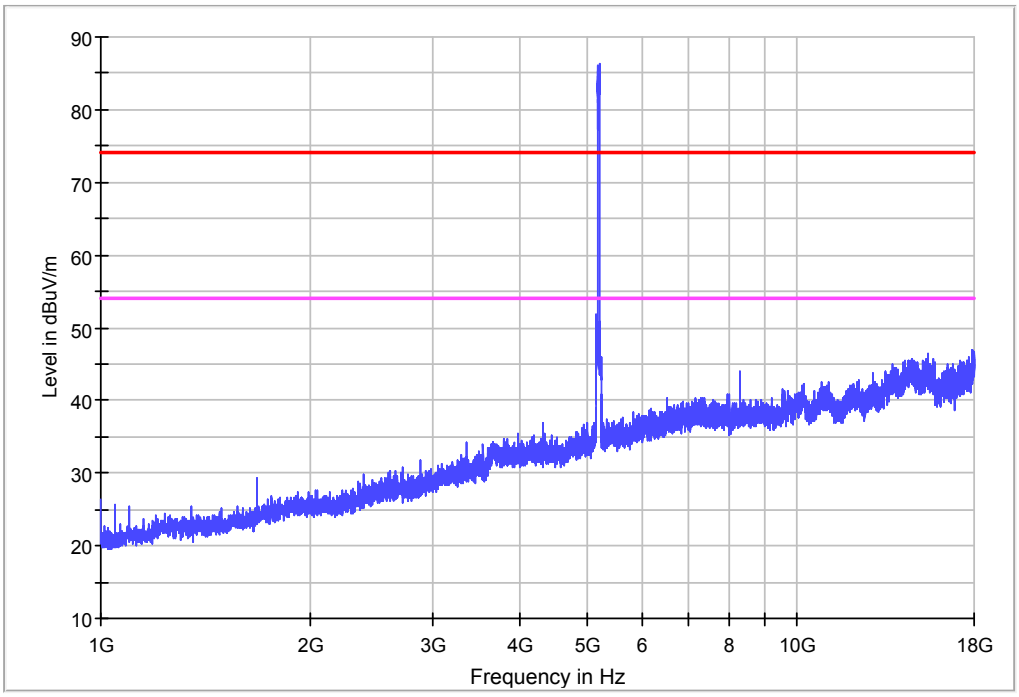
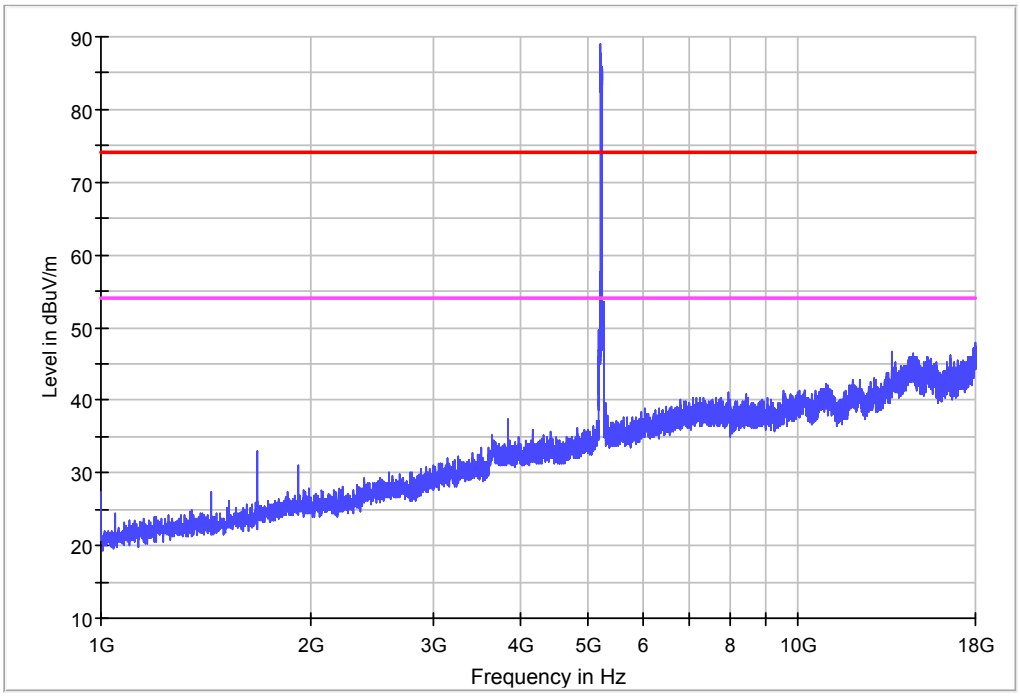


Vertical

1-18G

11n HT40 IN THE 5.2GHz BAND

CH46



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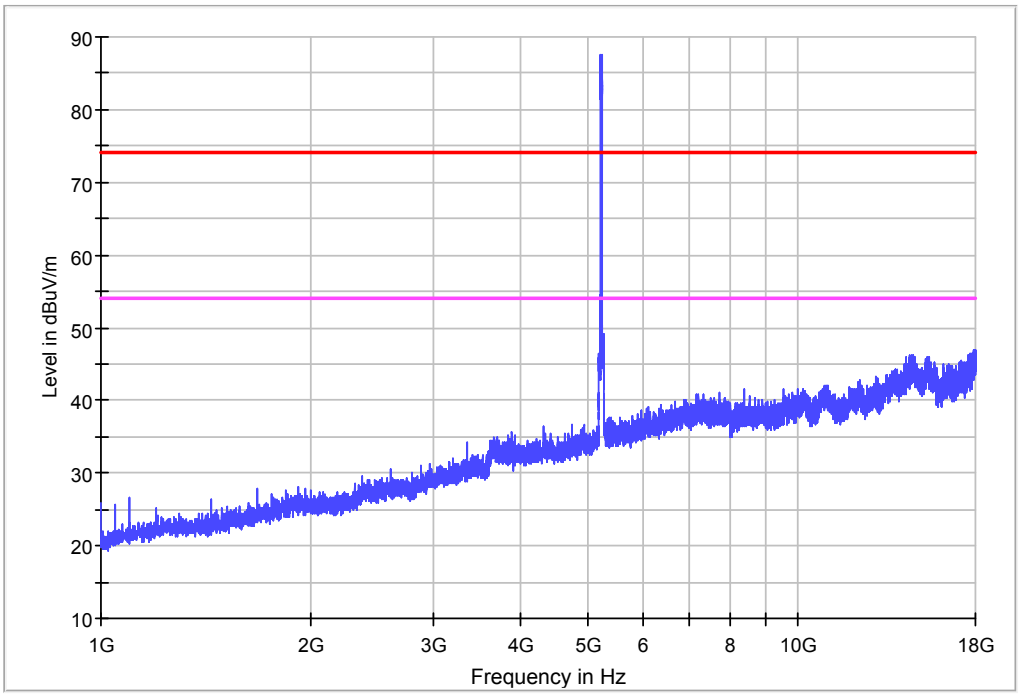
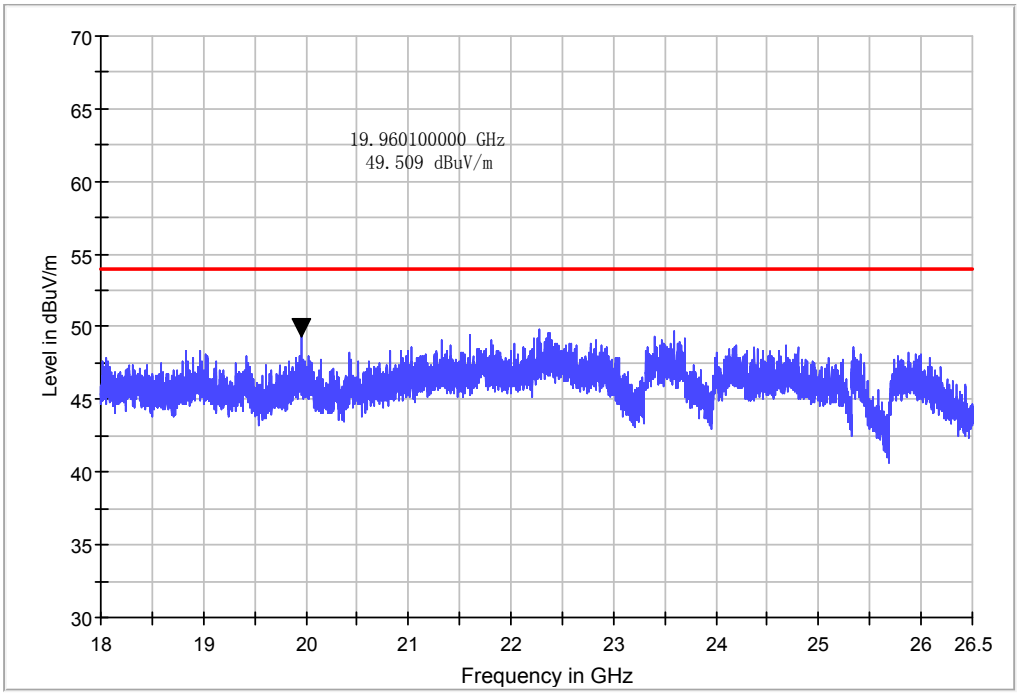


Vertical

18-26.5G

No Peak found in pre-scan, only worst case result is listed in this report.



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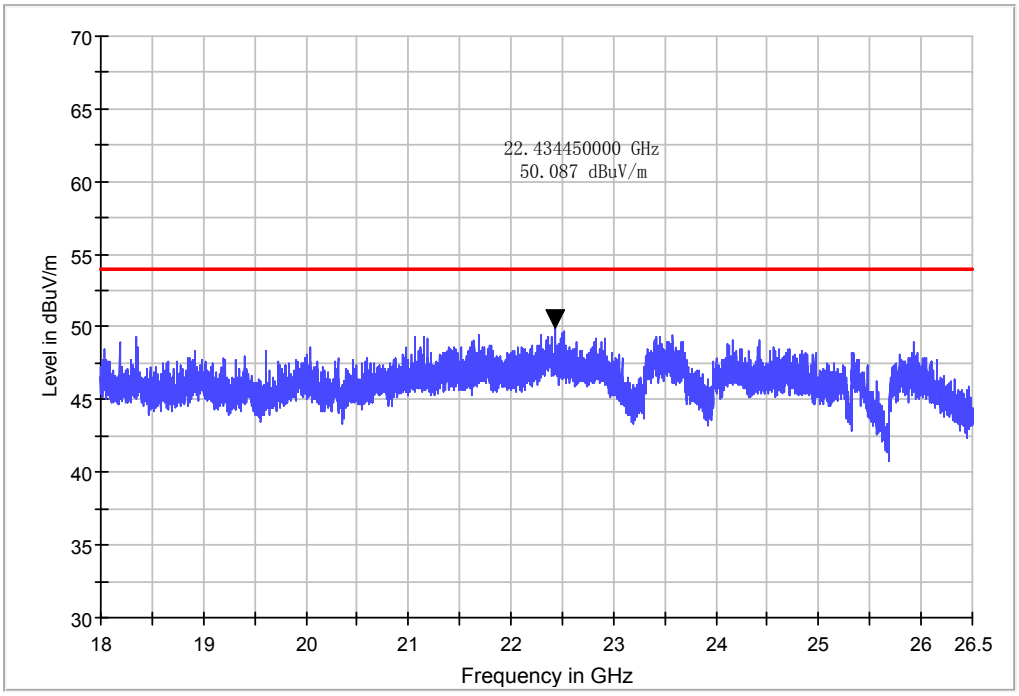
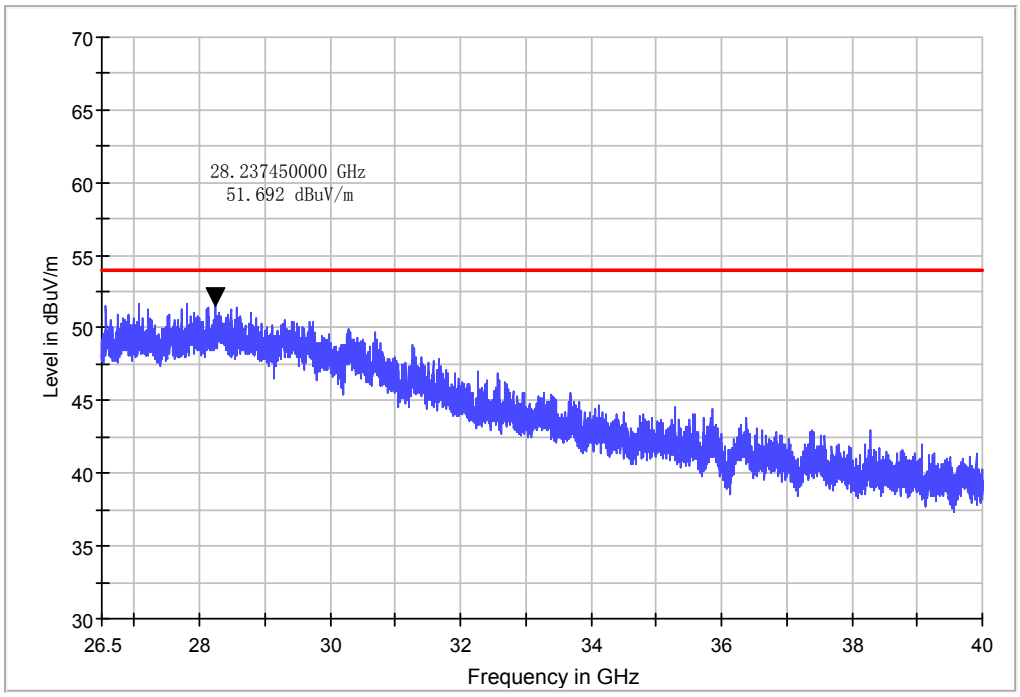


Vertical

26.5-40G

No Peak found in pre-scan, only worst case result is listed in this report.



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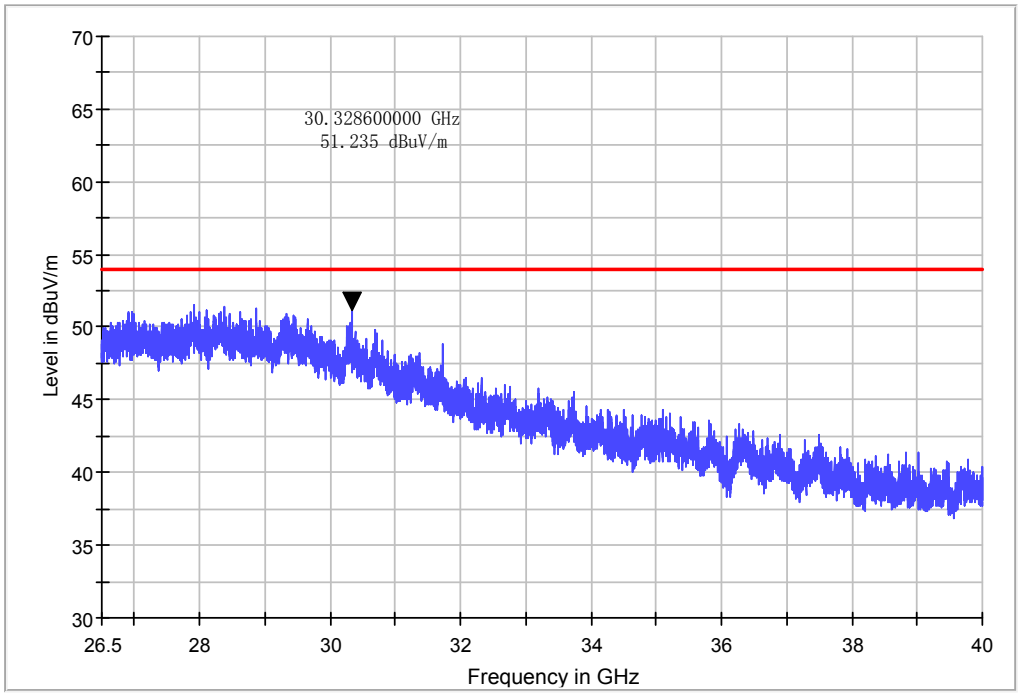


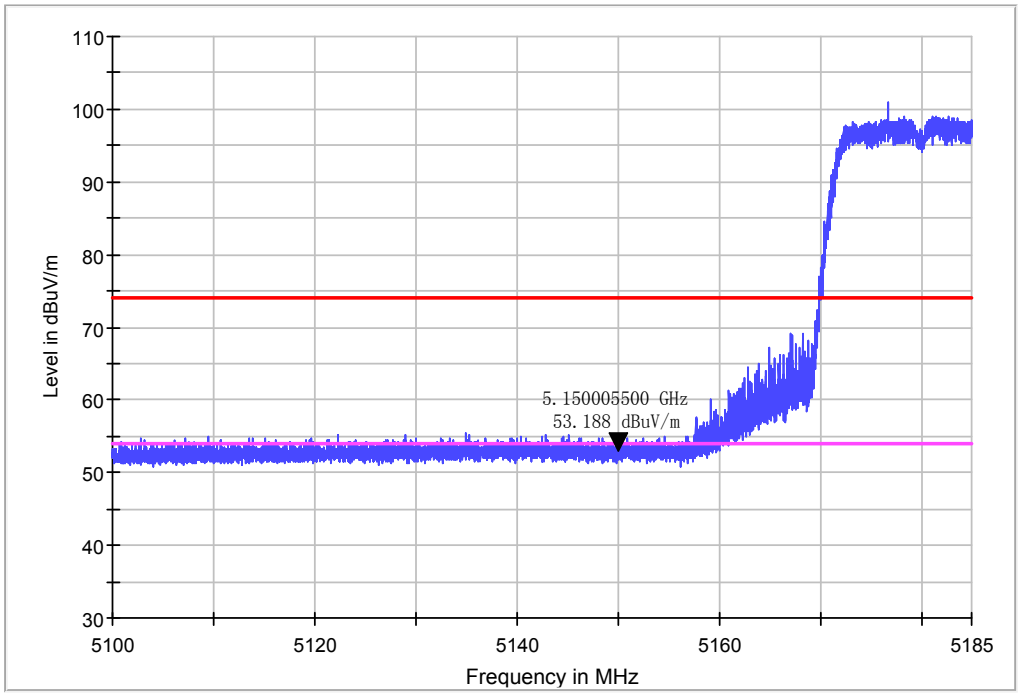
Vertical

Band edge

11a IN THE 5.2GHz BAND

CH36

PK



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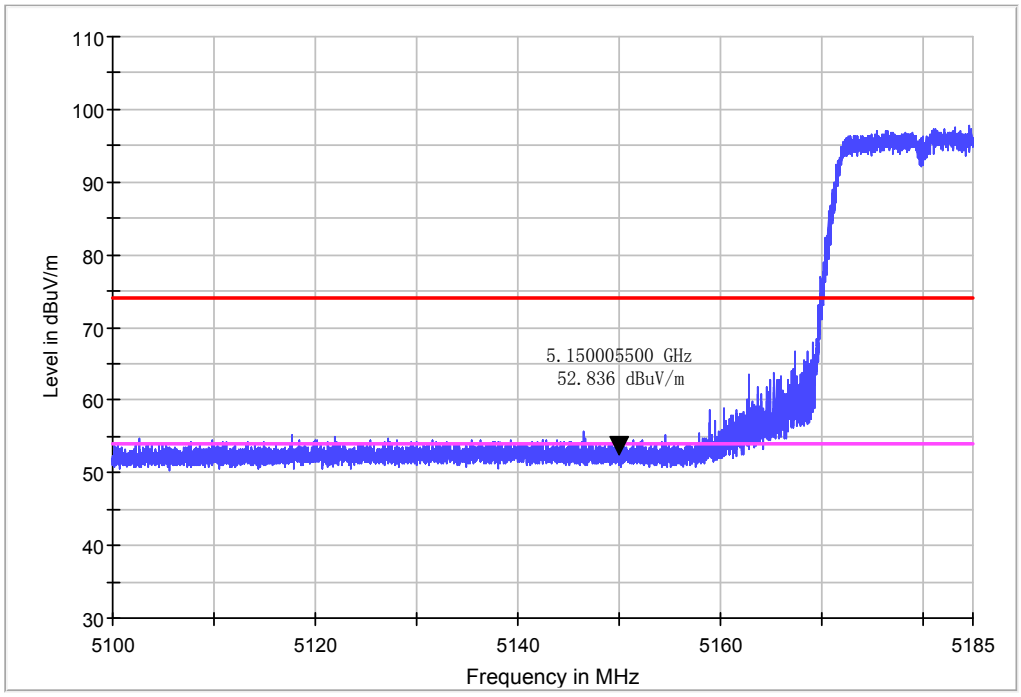


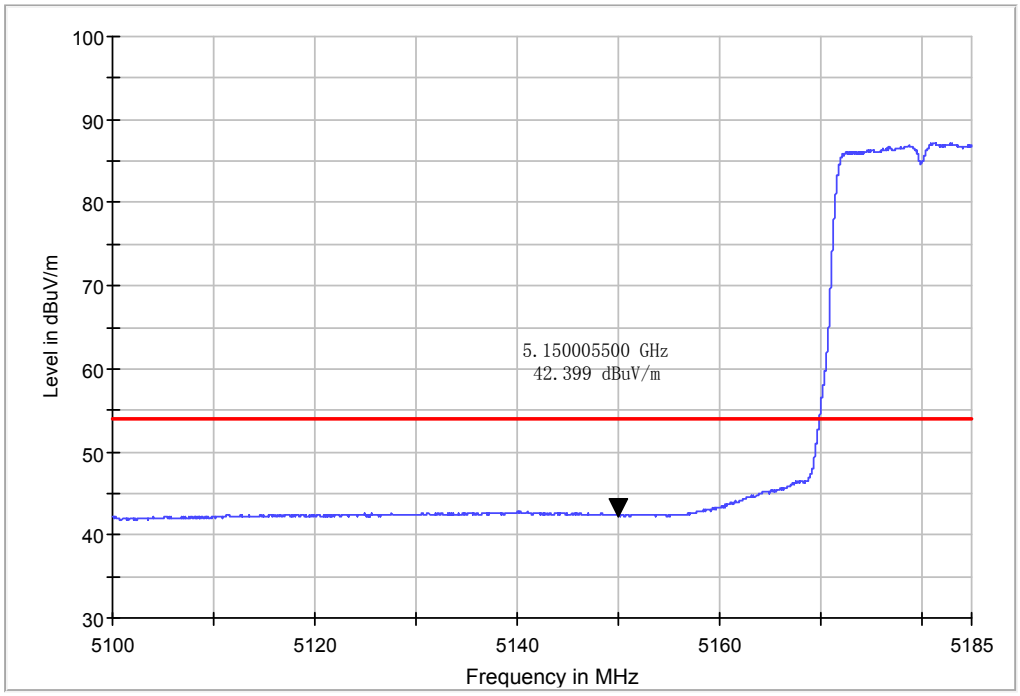
Vertical

Band edge

11a IN THE 5.2GHz BAND

CH36

AV



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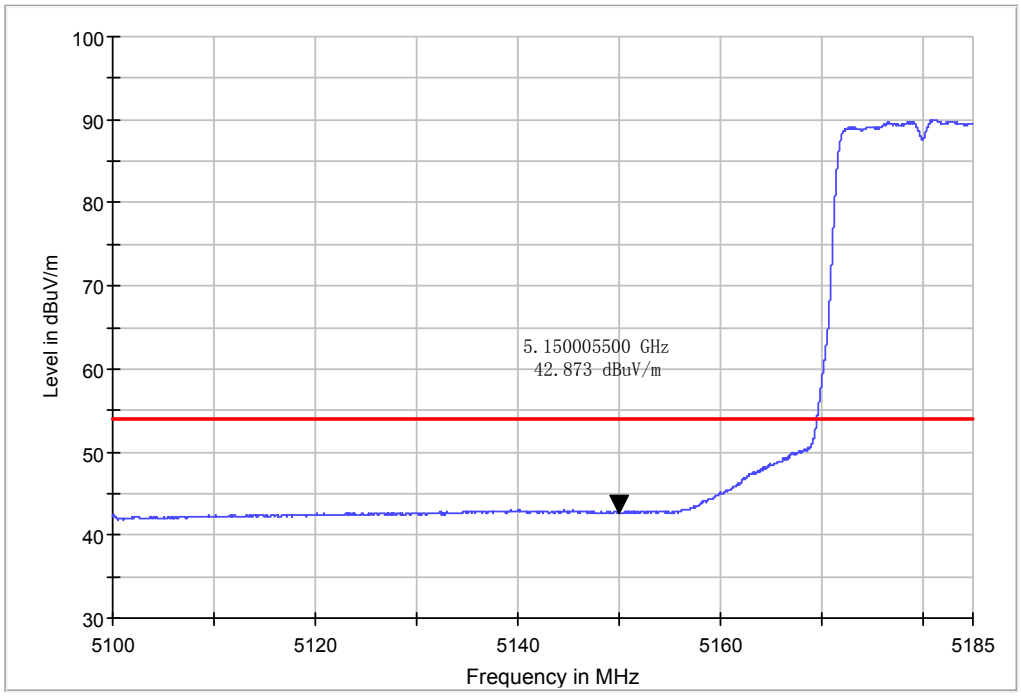


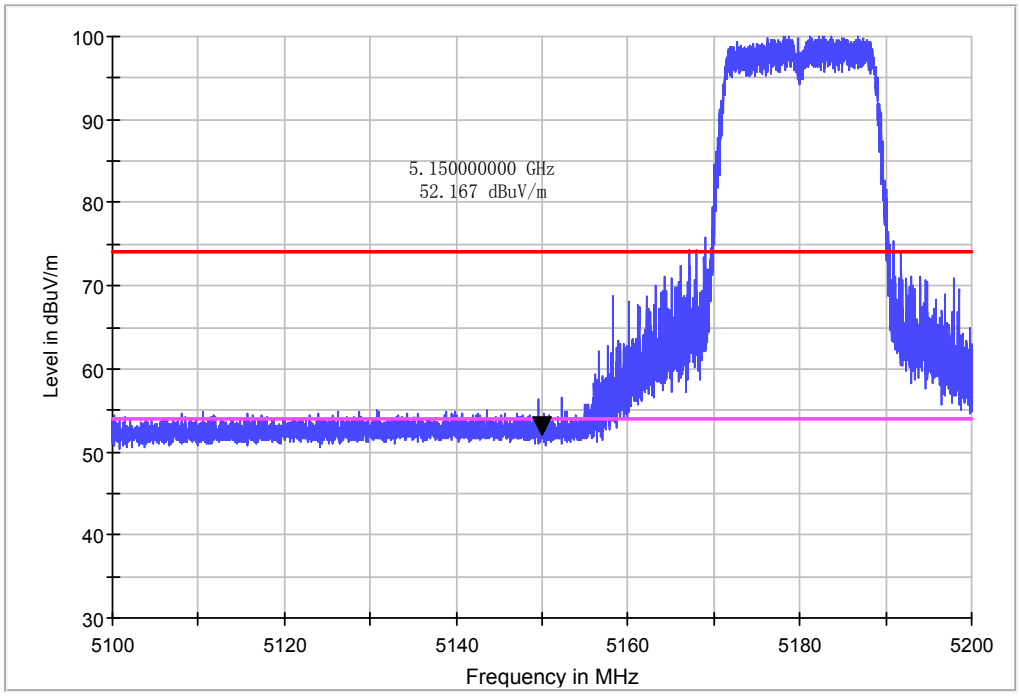
Vertical

Band edge

11n HT20 IN THE 5.2GHz BAND

CH36

PK



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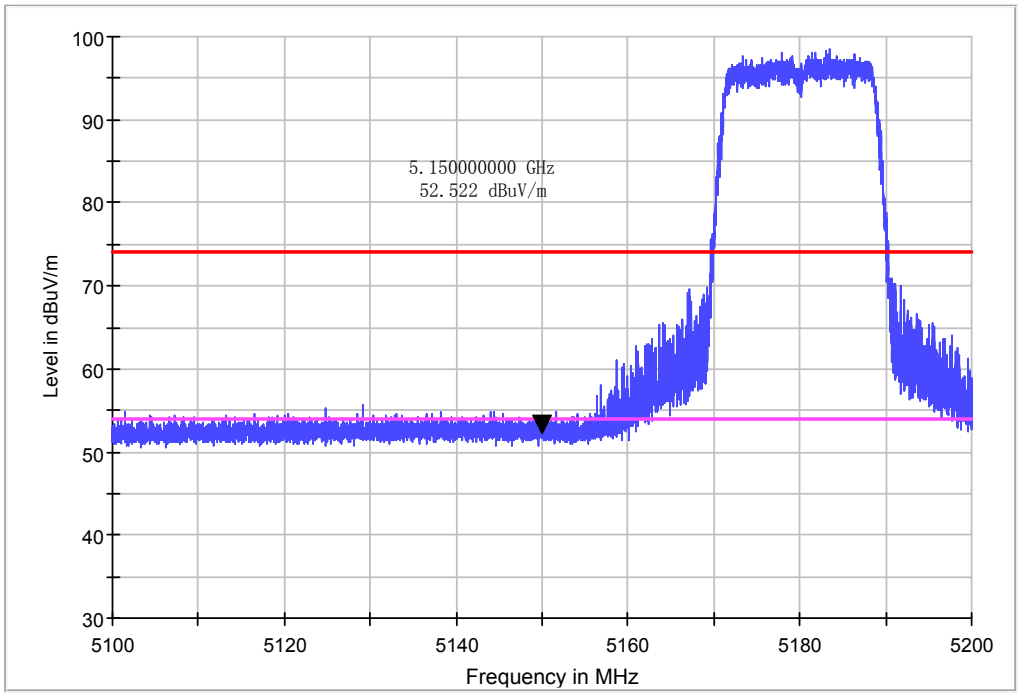


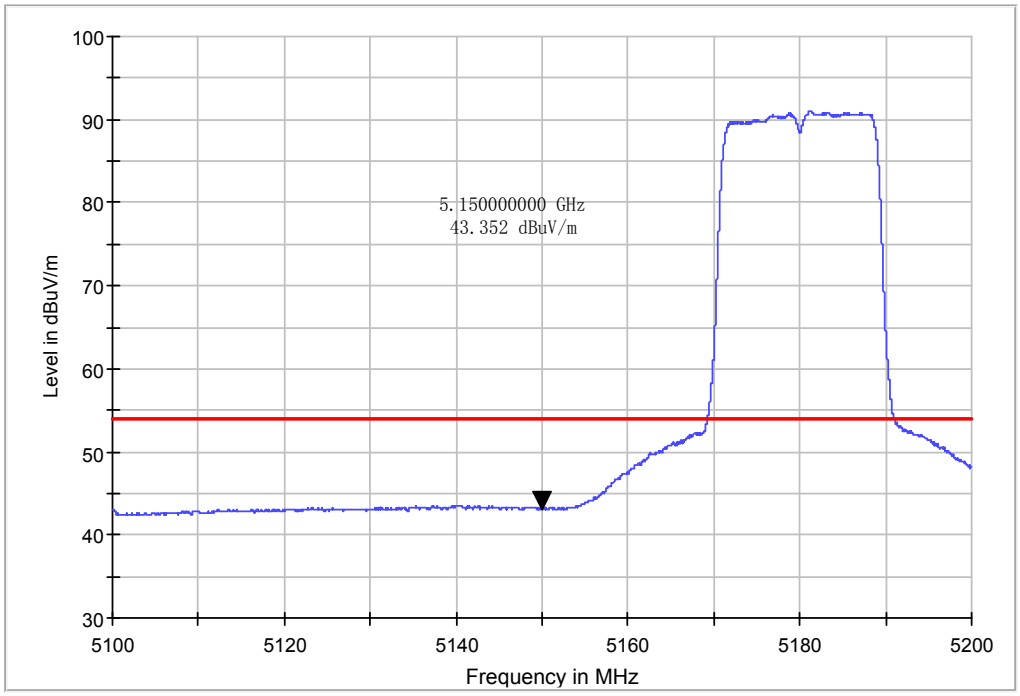
Vertical

Band edge

11n HT20 IN THE 5.2GHz BAND

CH36

AV



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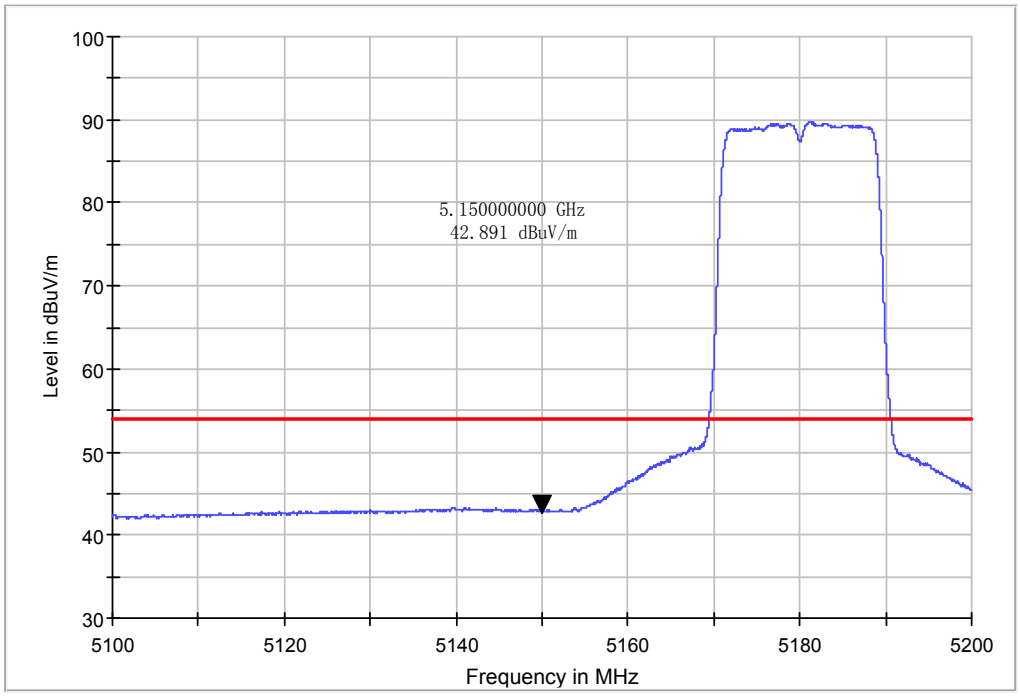


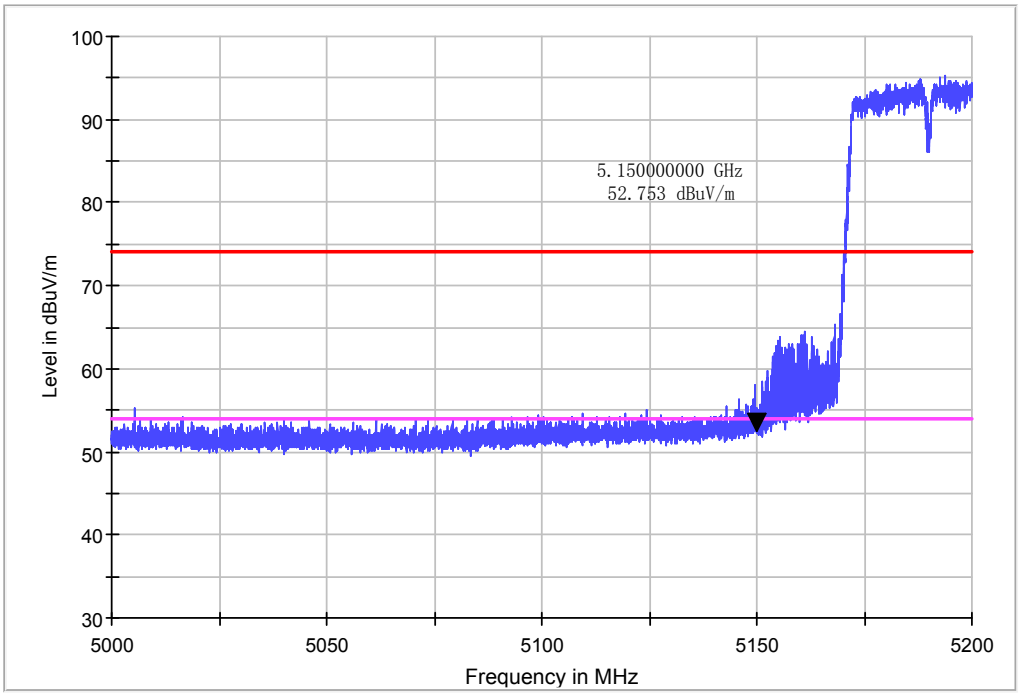
Vertical

Band edge

11n HT40 IN THE 5.2GHz BAND

CH38

PK



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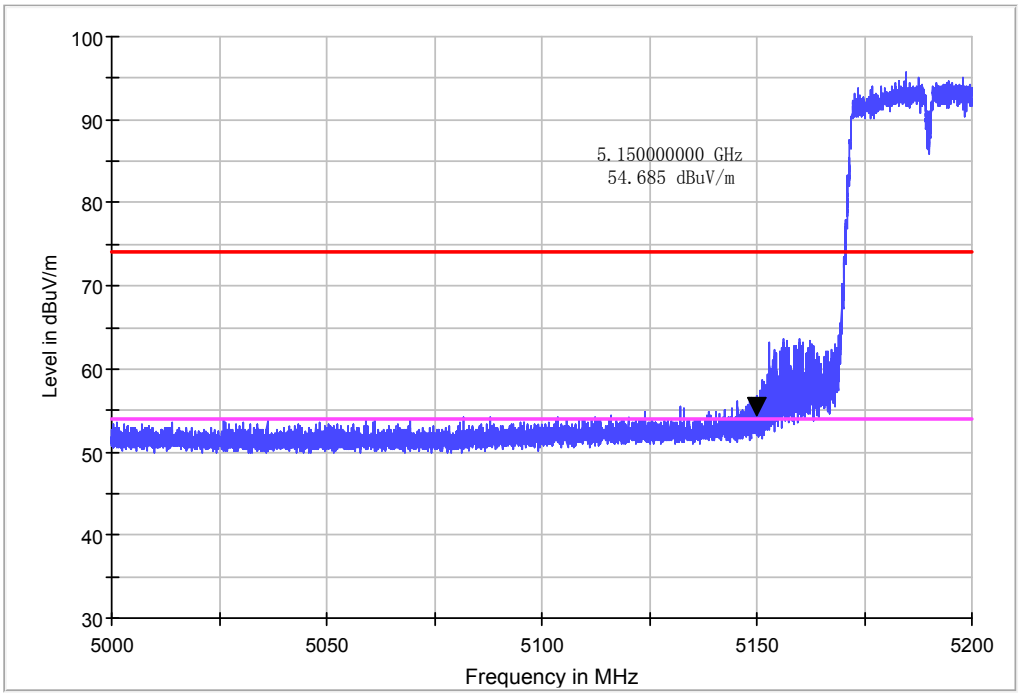


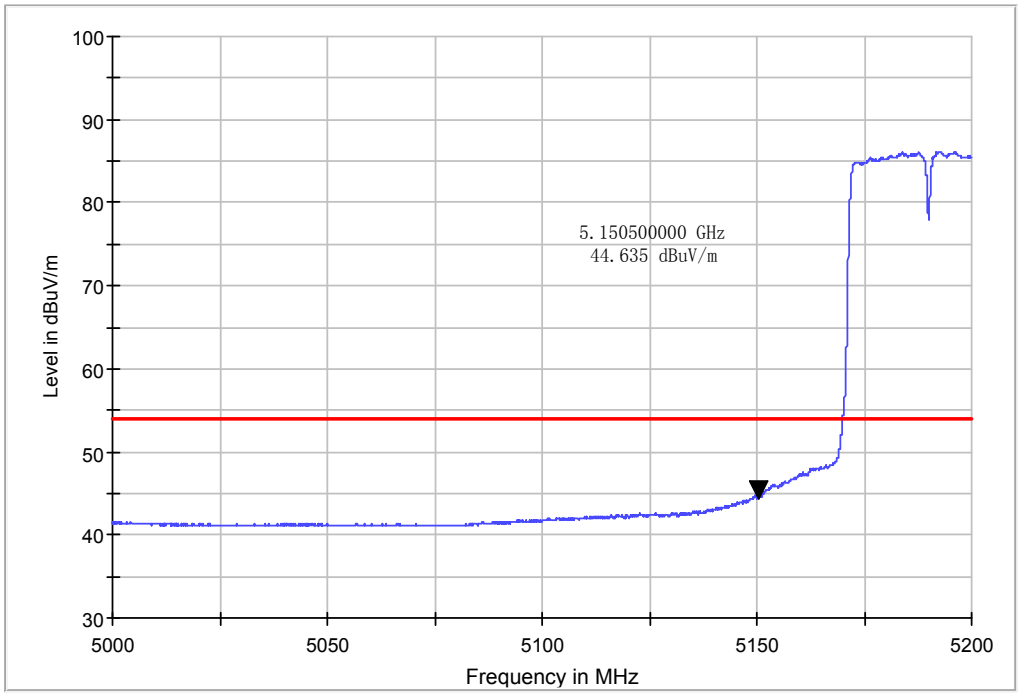
Vertical

Band edge

11n HT40 IN THE 5.2GHz BAND

CH38

AV



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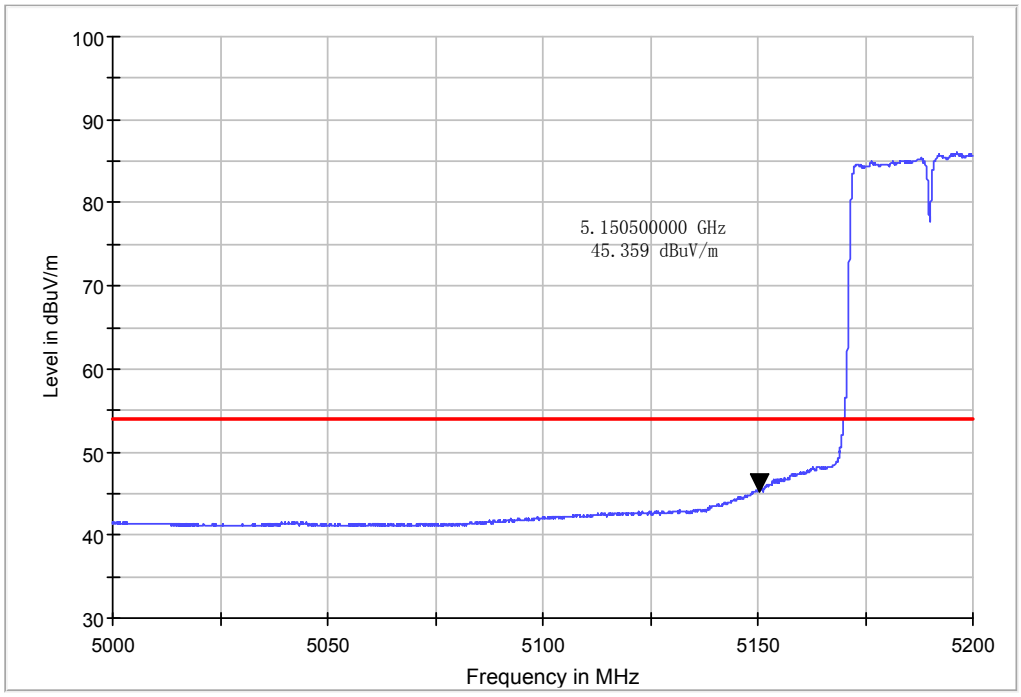


Vertical

10. AUTOMATIC DISCONTINUE TRANSMISSION

10.1. Test Standard

FCC Part 15.407
(c) The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signalling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

10.2. Test Data

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting for remote device and verify whether it shall resend or discontinue transmission.

11. FREQUENCY STABILITY

11.1. LIMITS OF Frequency Stability

FCC Part 15.407

（g）Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

11.2. TEST PROCEDURE

The EUT was placed inside of an environmental chamber as the temperrature in chamber was varied between -30℃ and +50℃.The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transimitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

11.3. TEST DATA

Measurement Results vs. Variation of Temperature－UNII Band1 (CH 36)

Voltage	Temperature	Frequency (Hz)	Deviation [ppm]
DC 3.8V	-30 °C	5179.97	-5.79151
	-20 °C	5180.03	5.79151
	-10 °C	5180.00	0.00000
	0 °C	5179.99	-2.89575
	+10 °C	5180.00	0.00000
	+20 °C	5180.00	0.00000
	+30 °C	5180.00	0.00000
	+40 °C	5180.02	2.88462
	+50 °C	5180.00	0.00000
DC 3.5V	+20 °C	5180.00	0.00000
DC 4.35V	+20 °C	5180.02	2.89575

12. OCCUPIED BANDWIDTH

12.1.LIMITS OF Occupied Bandwidth

For reporting purposes only

12.2.TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer.
The transmitter output is connected to a spectrum analyzer.
The RBW is set to ⩾ 1% to 5% of the actual occupied.
The VBW is set to ⩾ 3RBW. The sweep time is coupled

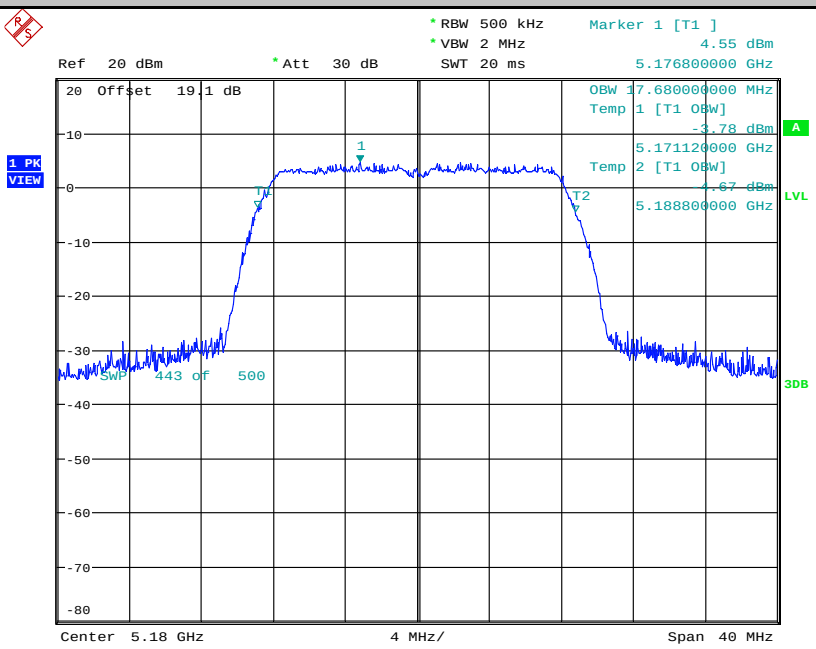
12.3.TEST SETUP

12.4.TEST DATA

Table 14 99% Bandwidth Test Data

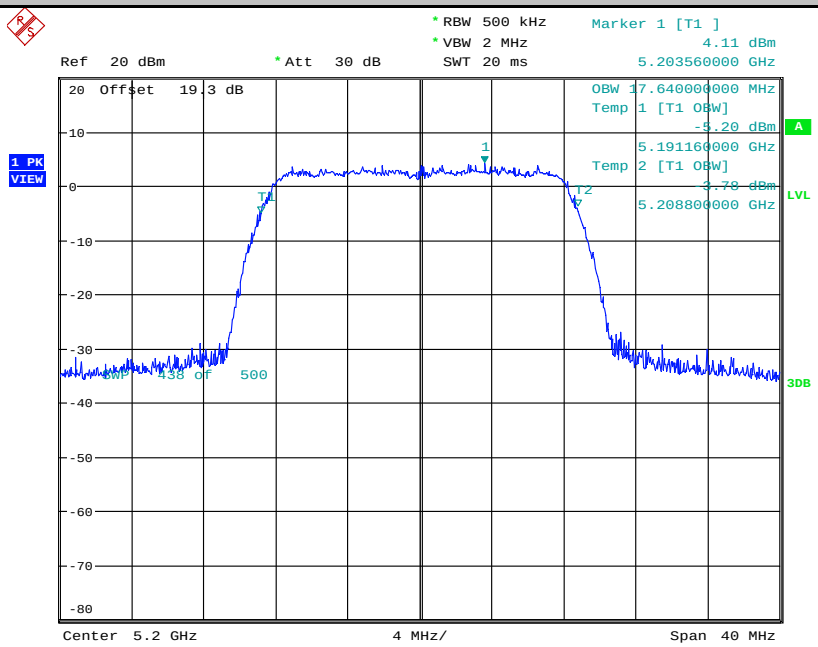
Test Mode	Test Channel	OBW[MHz]	Limit[MHz]	Verdict
11A	5180	17.68	---	PASS
11A	5200	17.64	---	PASS
11A	5240	17.6	---	PASS
11N20	5180	18.32	---	PASS
11N20	5200	18.32	---	PASS
11N20	5240	18.32	---	PASS
11N40	5190	36.88	---	PASS
11N40	5230	36.8	---	PASS

Occupied Bandwidth Measurement_11A_5180



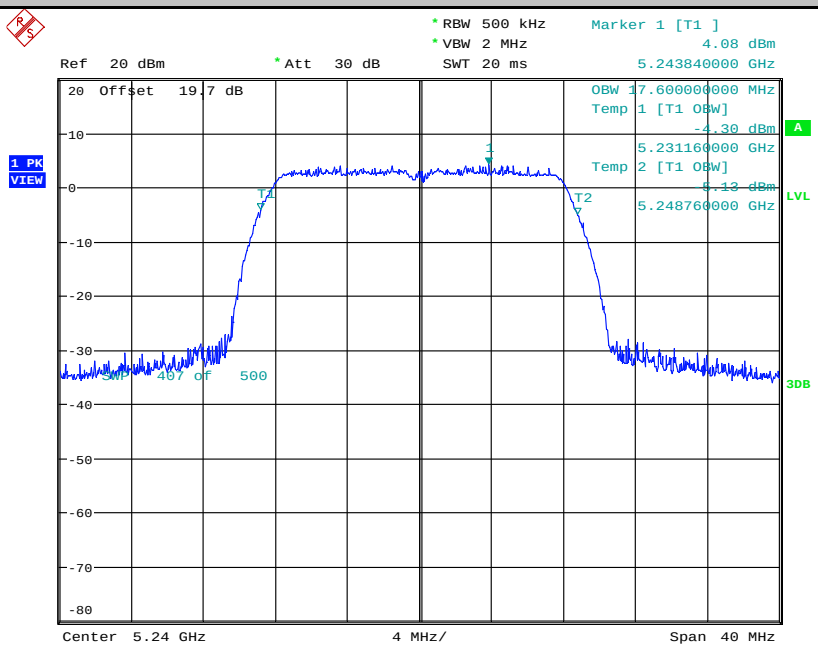
Date: 4.NOV.2019 10:34:43

Occupied Bandwidth Measurement_11A_5200



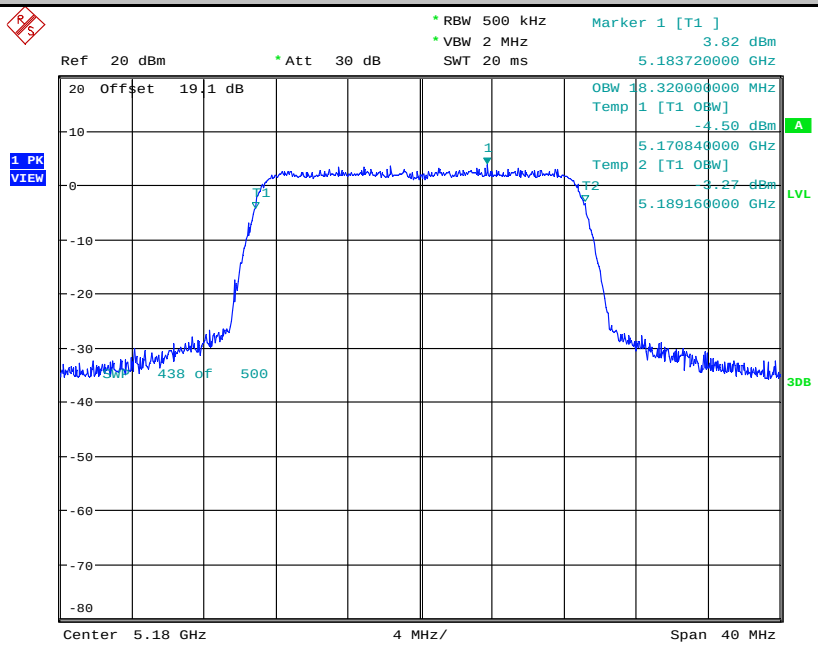
Date: 4.NOV.2019 10:46:32

Occupied Bandwidth Measurement_11A_5240



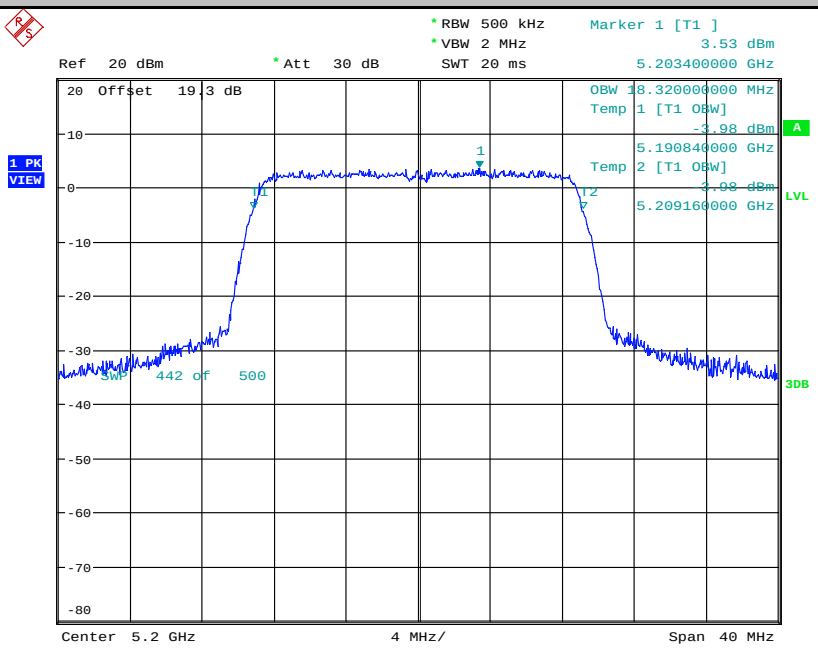
Date: 4.NOV.2019 10:52:13

Occupied Bandwidth Measurement_11N20_5180



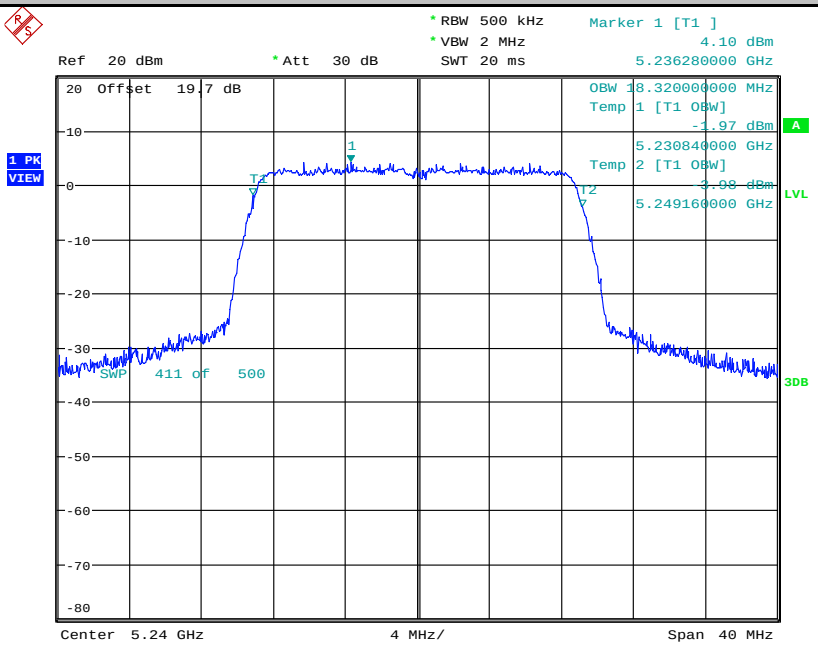
Date: 4.NOV.2019 10:58:52

Occupied Bandwidth Measurement_11N20_5200



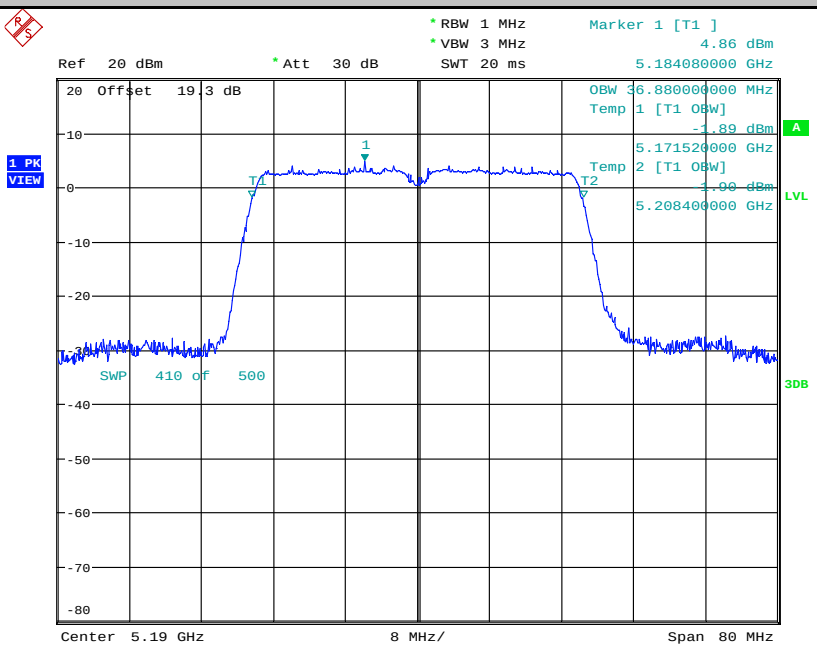
Date: 4.NOV.2019 11:04:28

Occupied Bandwidth Measurement_11N20_5240



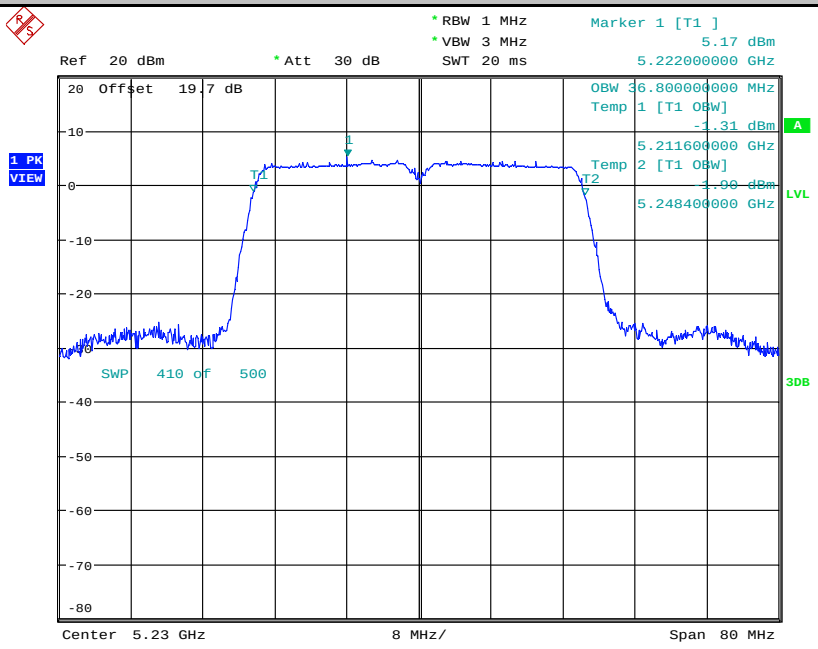
Date: 4.NOV.2019 11:11:10

Occupied Bandwidth Measurement_11N40_5190_Ant1



Date: 4.NOV.2019 11:18:47

Occupied Bandwidth Measurement_11N40_5230_Ant1



Date: 4.NOV.2019 11:23:43

13. 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