
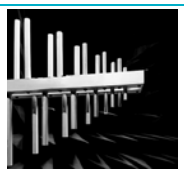
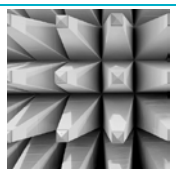

CTC advanced
member of RWTÜV group

Bundesnetzagentur

BNetzA-CAB-02/21-102

TEST REPORT

Test report no.: 1-6371/18-02-09

Testing laboratory

CTC advanced GmbH
Untertuerkheimer Strasse 6 – 10
66117 Saarbruecken / Germany
Phone: + 49 681 5 98 - 0
Fax: + 49 681 5 98 - 9075
Internet: https://www.ctcadvanced.com
e-mail: mail@ctcadvanced.com

Accredited Testing Laboratory:
The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2018-03) by the Deutsche Akkreditierungsstelle GmbH (DAkkS)
The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate starting with the registration number: D-PL-12076-01.

Applicant

Roche Diagnostics GmbH
Sandhofer Str. 116
68305 Mannheim / GERMANY
Phone: +49 621 759-3409
Contact: Christian Kratz
e-mail: christian.kratz@roche.com
Phone: +49 621 759 76928

Manufacturer

Roche Diagnostics GmbH
Sandhofer Str. 116
68305 Mannheim / GERMANY

Test standard/s

FCC - Title 47 CFR Part 15	FCC - Title 47 of the Code of Federal Regulations; Chapter I; Part 15 - Radio frequency devices
RSS - 247 Issue 2	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence - Exempt Local Area Network (LE-LAN) Devices

For further applied test standards please refer to section 3 of this test report.

Test Item

Kind of test item:	**Laboratory Equipment (IVD medical device)**
Model name:	**Cobas pulse**
FCC ID:	**VO9-COBASPULSE**
IC:	**3100B-COBASPULSE**
Frequency:	**UNII bands 5150 MHz – 5850 MHz**
Technology tested:	WLAN
Antenna:	Integrated antenna
Power supply:	3.6 V DC by Li-Ion battery
Temperature range:	12°C to 40°C

This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Test report authorized:

p.o. A. Luckenbill
cn=Andreas Luckenbill, o=CTC advanced GmbH, ou=LUC-180217, email=andreas.luckenbill@ctcadvanced.com, c=DE
2021.12.17 13:46:08 +01'00'

René Oelmann
Lab Manager
Radio Communications

Test performed:

p.o. Dorongovski
cn=Michael Dorongovski, o=CTC advanced GmbH, ou=DOR-210422, email=Michael.Dorongovski@ctcadvanced.com, c=DE
2021.12.17 13:40:14 +01'00'

Andreas Kurzkurt
Testing Manager
Radio Communications

1 Table of contents

2 General information

2.1 Notes and disclaimer

The test results of this test report relate exclusively to the test item specified in this test report. CTC advanced GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item.
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This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

2.2 Application details

Date of receipt of order:	2020-01-20
Date of receipt of test item:	2020-08-10
Start of test:	2020-08-27
End of test:	2020-10-07
Person(s) present during the test:	-/-

2.3 Test laboratories sub-contracted

None

3 Test standard/s, references and accreditations

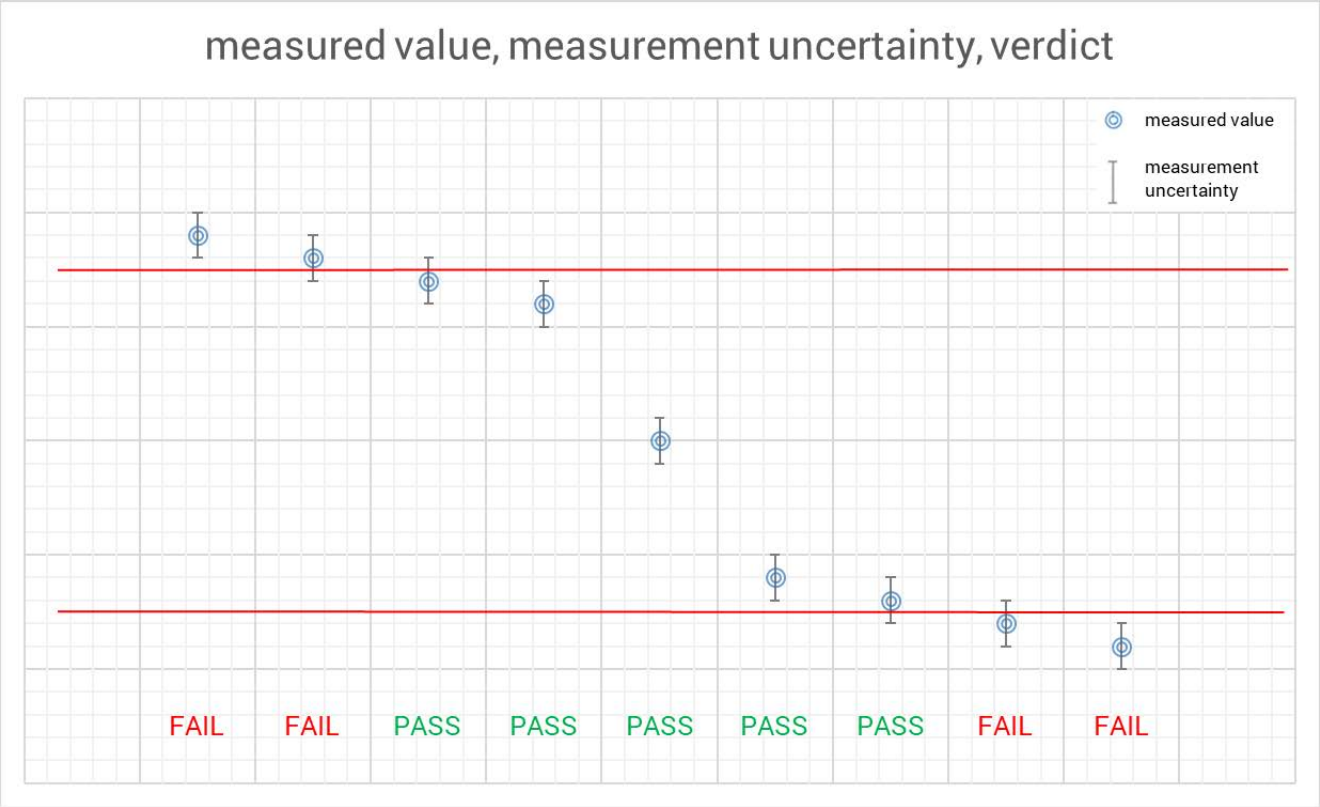
Test standard	Date	Description
FCC - Title 47 CFR Part 15		FCC - Title 47 of the Code of Federal Regulations; Chapter I; Part 15 - Radio frequency devices
RSS - 247 Issue 2	February 2017	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence - Exempt Local Area Network (LE-LAN) Devices

Guidance	Version	Description
KDB 789033 D02	v02r01	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E
ANSI C63.4-2014	-/-	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI C63.10-2013	-/-	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

Accreditation	Description
D-PL-12076-01-04	Telecommunication and EMC Canada https://www.dakks.de/as/ast/d/D-PL-12076-01-04e.pdf
D-PL-12076-01-05	Telecommunication FCC requirements https://www.dakks.de/as/ast/d/D-PL-12076-01-05e.pdf

4 Reporting statements of conformity – decision rule

Only the measured values related to their corresponding limits will be used to decide whether the equipment under test meets the requirements of the test standards listed in chapter 3.
The measurement uncertainty is mentioned in this test report, see chapter 9 but is not taken into account - neither to the limits nor to the measurement results. Measurement results with a smaller margin to the corresponding limits than the measurement uncertainty have a potential risk of more than 5% that the decision might be wrong."



5 Test environment

Temperature	:	T_{nom} T_{max} T_{min}	23 °C during room temperature tests No tests under extreme temperature conditions required. No tests under extreme temperature conditions required.
Relative humidity content	:		47 %
Barometric pressure	:		Not relevant for this kind of testing
Power supply	:	V_{nom} V_{max} V_{min}	3.6 V DC by Li-Ion battery No tests under extreme voltage conditions required. No tests under extreme voltage conditions required.

6 Test item

6.1 General description

Kind of test item	:	Laboratory Equipment (IVD medical device)
Model name	:	Cobas pulse
HMN	:	n/a
PMN	:	cobas pulse
HVIN	:	PID 4.2
FVIN	:	n/a
S/N serial number	:	Rad. A100012200 Cond. A100012201
Hardware status	:	PT3
Software status	:	01.02.00-fc1
Firmware status	:	RAPP: v01.01.00-rc2
Frequency band	:	UNII bands 5150 MHz – 5850 MHz
Type of radio transmission Use of frequency spectrum	: :	OFDM
Type of modulation	:	BPSK, QPSK, 16 – QAM, 64 – QAM
Number of channels	:	24 with 20 MHz channel bandwidth 11 with 40 MHz channel bandwidth 5 with 80 MHz channel bandwidth
Antenna	:	Integrated antenna (Johanson chip antenna) Antenna gain as declared by manufacturer: 4 dBi
Power supply	:	3.6 V DC by Li-Ion battery
Temperature range	:	12°C to 40°C

6.2 Additional information

The content of the following annexes is defined in the QA. It may be that not all of the listed annexes are necessary for this report, thus some values in between may be missing.

Test setup- and EUT-photos are included in test report: 1-6371/18-02-01_AnnexA
1-6371/18-02-01_AnnexB
1-6371/18-02-01_AnnexD

7 Description of the test setup

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, RF generating and signaling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

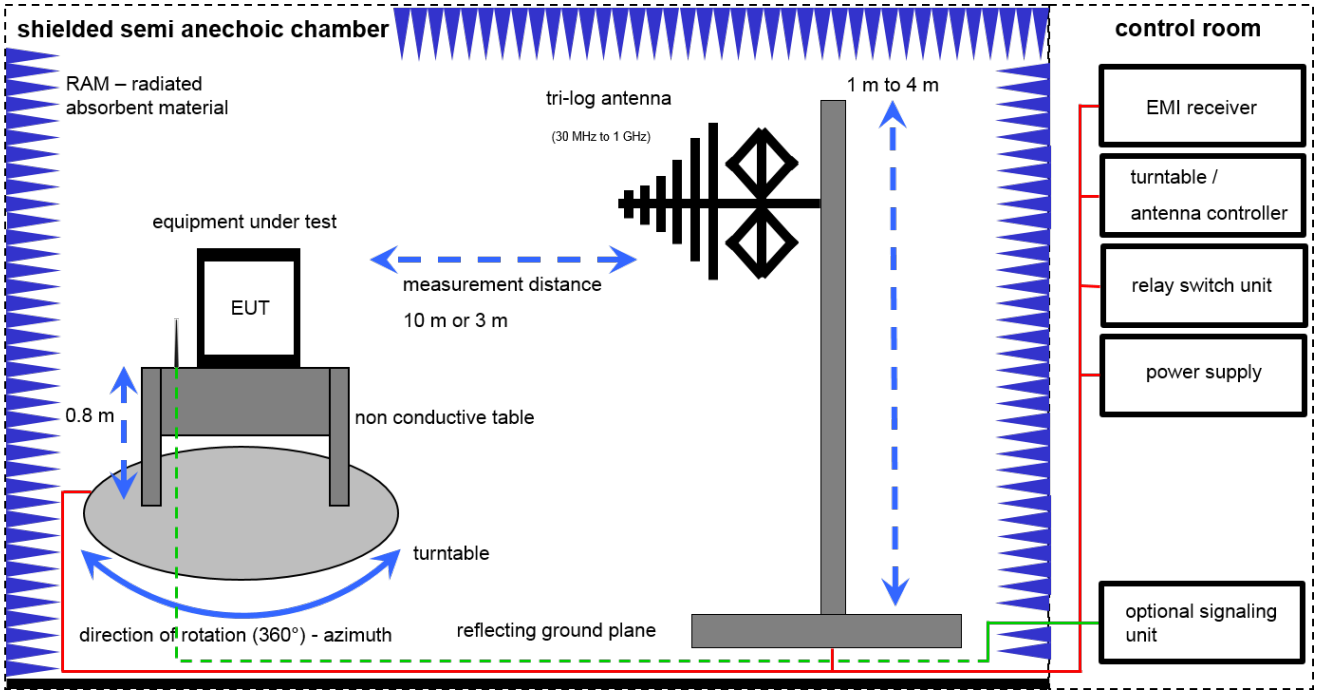
In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Lab/Item).

Agenda: Kind of Calibration

k	calibration / calibrated	EK	limited calibration
ne	not required (k, ev, izw, zw not required)	zw	cyclical maintenance (external cyclical maintenance)
ev	periodic self verification	izw	internal cyclical maintenance
Ve	long-term stability recognized	g	blocked for accredited testing
vlkl!	Attention: extended calibration interval		
NK!	Attention: not calibrated	*)	next calibration ordered / currently in progress

7.1 Radiated measurements chamber F

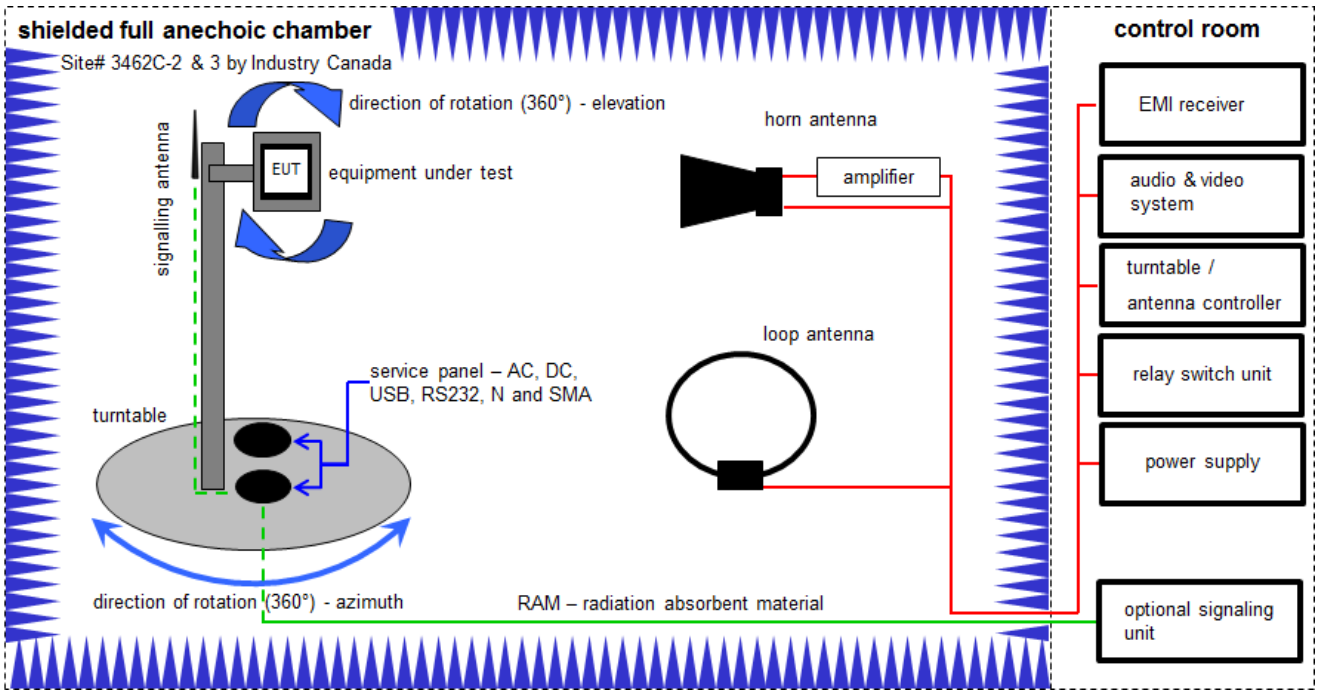
The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 1 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are confirmed with specifications ANSI C63. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received. The wanted and unwanted emissions are received by spectrum analyzers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63.



Equipment table:

No.	Lab / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	A	Switch-Unit	3488A	HP	2719A14505	300000368	ev	-/-	-/-
2	A	Meßkabine 1	HF-Absorberhalle	MWB AG 300023	-/-	300000551	ne	-/-	-/-
3	A	Antenna Tower	Model 2175	ETS-Lindgren	64762	300003745	izw	-/-	-/-
4	A	Positioning Controller	Model 2090	ETS-Lindgren	64672	300003746	izw	-/-	-/-
5	A	Turntable Interface-Box	Model 105637	ETS-Lindgren	44583	300003747	izw	-/-	-/-
6	A	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck Mess - Elektronik	295	300003787	vlKl!	19.02.2019	18.02.2021
7	A	EMI Test Receiver	ESR3	Rohde & Schwarz	102587	300005771	k	21.05.2019	20.11.2020

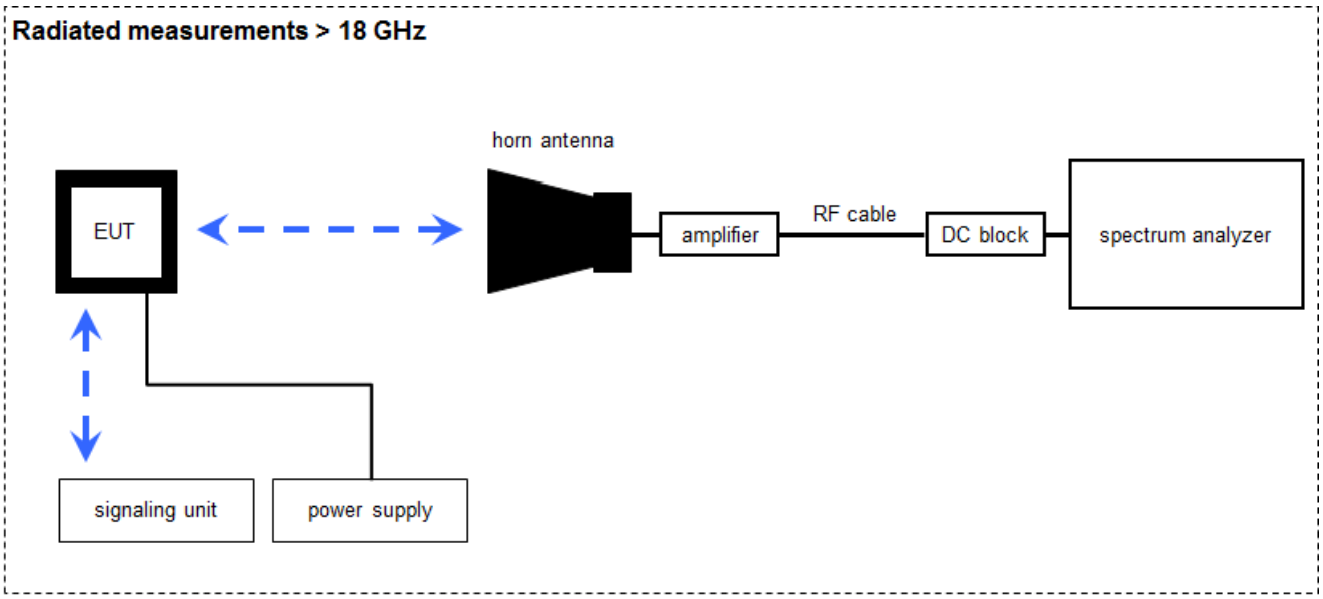
7.2 Radiated measurements chamber C



Equipment table:

No.	Lab / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	A, B	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev	-/-	-/-
2	A	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	9107-3697	300001605	vIKI!	27.02.2019	26.02.2021
3	B	Active Loop Antenna 9 kHz to 30 MHz	6502	EMCO	2210	300001015	vIKI!	13.06.2019	12.06.2021
4	A, B	Switch / Control Unit	3488A	HP	*	300000199	ne	-/-	-/-
5	A, B	EMI Test Receiver 20Hz- 26,5GHz	ESU26	R&S	100037	300003555	k	11.12.2019	10.12.2020
6	A	Highpass Filter	WHK1.1/15G-10SS	Wainwright	3	300003255	ev	-/-	-/-
7	A	Highpass Filter	WHKX7.0/18G-8SS	Wainwright	19	300003790	ne	-/-	-/-
8	A	Broadband Amplifier 0.5-18 GHz	CBLU5184540	CERNEX	22049	300004481	ev	-/-	-/-
9	A, B	4U RF Switch Platform	L4491A	Agilent Technologies	MY50000037	300004509	ne	-/-	-/-
10	A, B	NEXIO EMV-Software	BAT EMC V3.19.1.21	EMCO		300004682	ne	-/-	-/-
11	A, B	PC	ExOne	F+W		300004703	ne	-/-	-/-
12	A	RF-Amplifier	AMF-6F06001800-30-10P-R	NARDA-MITEQ Inc	2011572	300005241	ev	-/-	-/-

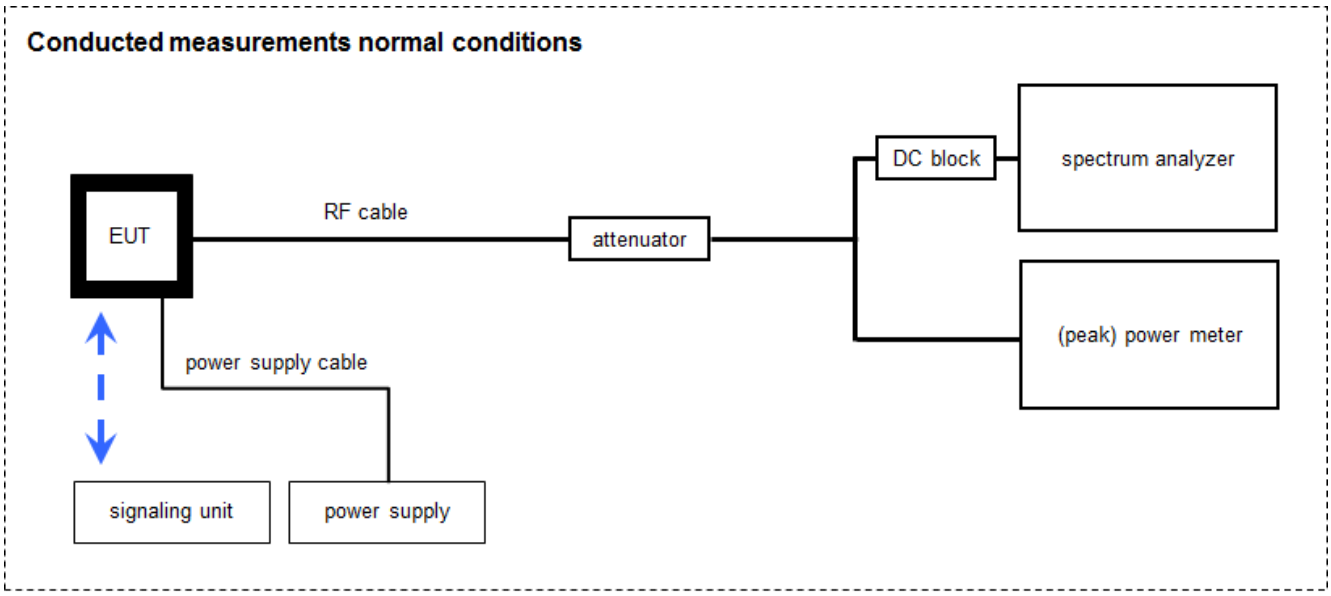
7.3 Radiated measurements > 18 GHz



Equipment table:

No.	Lab / Item	Equipment	Type	Manufacturer	Serial No.	INV. No.	Kind of Calibration	Last Calibration	Next Calibration
1	A	Microwave System Amplifier, 0.5-26.5 GHz	83017A	HP	00419	300002268	ev	-/-	-/-
2	A	Std. Gain Horn Antenna 18.0-26.5 GHz	638	Narda	01096	300000486	vlKl!	21.01.2020	20.01.2022
3	B	Std. Gain Horn Antenna 26.5-40.0 GHz	V637	Narda	82-16	300000510	vlKl!	23.01.2020	22.01.2022
4	B	Broadband Low Noise Amplifier 18-50 GHz	CBL18503070-XX	CERNEX	19338	300004273	ev	-/-	-/-
5	A+B	Signal Analyzer 40 GHz	FSV40	R&S	101042	300004517	k	17.12.2019	16.12.2020
6	A+B	RF-Cable	ST18/SMAm/SMAm /48	Huber & Suhner	Batch no. 600918	400001182	ev	-/-	-/-
7	A+B	DC-Blocker 0.1-40 GHz	8141A	Inmet	-/-	400001185	ev	-/-	-/-

7.4 Conducted measurements with peak power meter & spectrum analyzer



OP = AV + CA
(OP-output power; AV-analyzer value; CA-loss signal path)

Example calculation:
OP [dBm] = 6.0 [dBm] + 11.7 [dB] = 17.7 [dBm] (58.88 mW)

Equipment table:

No.	Lab / Item	Equipment	Type	Manufacturer	Serial No.	INV. No.	Kind of Calibration	Last Calibration	Next Calibration
1	A	DC-Blocker 0.1-40 GHz	8141A	Inmet		400001185	ev	-/-	-/-
2	A	PC Tester R005	Intel Core i3 3220/3,3 GHz, Prozessor	-/-	2V2403033A4523	300004589	ne	-/-	-/-
3	A	USB Wideband Power Sensor (50MHz - 18GHz)	U2021XA	Keysight	MY591900010	300005802	k	11.12.2019	10.12.2020
4	A	RF-Cable	ST18/SMAm/SMAm/60	Huber & Suhner	Batch no. 606844	400001181	ev	-/-	-/-
5	A	Coax Attenuator 10 dB 2W 0-40 GHz	MCL BW-K10-2W44+	Mini Circuits	-/-	400001186	ev	-/-	-/-
6	A	Synchron Power Meter	SPM-4	CTC	1	300005580	ev	-/-	-/-
7	A	Tester Software RadioStar (C.BER2 for BT Conformance)	Version 1.0.0.X	CTC advanced GmbH	0001	400001380	ne	-/-	-/-

8 Sequence of testing

8.1 Sequence of testing radiated spurious 9 kHz to 30 MHz

Setup

- The equipment is set up to simulate normal operation mode as described in the user manual or defined by the manufacturer.
- If the EUT is a tabletop system, it is placed on a table with 0.8 m height.
- If the EUT is a floor standing device, it is placed directly on the turn table.
- Auxiliary equipment and cables are positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- Measurement distance is 3 m (see ANSI C 63.4) – see test details.
- EUT is set into operation.

Premeasurement*

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna height is 1 m.
- At each turntable position the analyzer sweeps with positive-peak detector to find the maximum of all emissions.

Final measurement

- Identified emissions during the pre-measurement are maximized by the software by rotating the turntable from 0° to 360°.
- Loop antenna is rotated about its vertical axis for maximum response at each azimuth about the EUT. (For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT)
- The final measurement is done in the position (turntable and elevation) causing the highest emissions with quasi-peak (as described in ANSI C 63.4).
- Final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. A plot with the graph of the premeasurement and the limit is stored.

*)Note: The sequence will be repeated three times with different EUT orientations.

8.2 Sequence of testing radiated spurious 30 MHz to 1 GHz

Setup

- The equipment is set up to simulate normal operation mode as described in the user manual or defined by the manufacturer.
- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables are positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- Measurement distance is 10 m or 3 m (see ANSI C 63.4) – see test details.
- EUT is set into operation.

Premeasurement

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height changes from 1 m to 3 m.
- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement

- The final measurement is performed for at least six highest peaks according to the requirements of the ANSI C63.4.
- Based on antenna and turntable positions at which the peak values are measured the software maximize the peaks by changing turntable position ± 45° and antenna height between 1 and 4 m.
- The final measurement is done with quasi-peak detector (as described in ANSI C 63.4).
- Final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit are recorded. A plot with the graph of the premeasurement with marked maximum final results and the limit is stored.

8.3 Sequence of testing radiated spurious 1 GHz to 18 GHz

Setup

- The equipment is set up to simulate normal operation mode as described in the user manual or defined by the manufacturer.
- If the EUT is a tabletop system, a 2-axis positioner with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed directly on the turn table.
- Auxiliary equipment and cables are positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- Measurement distance is 3 m (see ANSI C 63.4) – see test details.
- EUT is set into operation.

Premeasurement

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height is 1.5 m.
- At each turntable position and antenna polarization the analyzer sweeps with positive peak detector to find the maximum of all emissions.

Final measurement

- The final measurement is performed for at least six highest peaks according to the requirements of the ANSI C63.4.
- Based on antenna and turntable positions at which the peak values are measured the software maximizes the peaks by rotating the turntable from 0° to 360°. This measurement is repeated for different EUT-table positions (0° to 150° in 30°-steps) and for both antenna polarizations.
- The final measurement is done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and RMS detector (as described in ANSI C 63.4).
- Final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit are recorded. A plot with the graph of the premeasurement with marked maximum final results and the limit is stored.

8.4 Sequence of testing radiated spurious above 18 GHz

Setup

- The equipment is set up to simulate normal operation mode as described in the user manual or defined by the manufacturer.
- Auxiliary equipment and cables are positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet.
- The measurement distance is as appropriate (e.g. 0.5 m).
- The EUT is set into operation.

Premeasurement

- The test antenna is handheld and moved carefully over the EUT to cover the EUT's whole sphere and different polarizations of the antenna.

Final measurement

- The final measurement is performed at the position and antenna orientation causing the highest emissions with Peak and RMS detector (as described in ANSI C 63.4).
- Final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit are recorded. A plot with the graph of the premeasurement and the limit is stored.

9 Measurement uncertainty

Measurement uncertainty		
Test case	Uncertainty	
Antenna gain	± 3 dB	
Power spectral density	± 1.15 dB	
Spectrum bandwidth	± 100 kHz (depends on the used RBW)	
Occupied bandwidth	± 100 kHz (depends on the used RBW)	
Maximum output power	± 1.15 dB conducted ± 3 dB radiated	
Minimum emissions bandwidth	± 100 kHz (depends on the used RBW)	
Band edge compliance radiated	± 3 dB	
Spurious emissions conducted	> 3.6 GHz	± 1.15 dB
	> 7 GHz	± 1.15 dB
	> 18 GHz	± 1.89 dB
	≥ 40 GHz	± 3.12 dB
Spurious emissions radiated below 30 MHz	± 3 dB	
Spurious emissions radiated 30 MHz to 1 GHz	± 3 dB	
Spurious emissions radiated 1 GHz to 12.75 GHz	± 3.7 dB	
Spurious emissions radiated above 12.75 GHz	± 4.5 dB	
Spurious emissions conducted below 30 MHz (AC conducted)	± 2.6 dB	

10 Summary of measurement results

☐	No deviations from the technical specifications were ascertained
☐	There were deviations from the technical specifications ascertained
☒	This test report is only a partial test report. The content and verdict of the performed test cases are listed below.

TC Identifier	Description	Verdict	Date	Remark
RF-Testing	CFR Title 47 Part 15 RSS 247, Issue 2	See table	2021-12-17	Delta tests according customer demand!

Test specification clause	Test case	C	NC	NA	NP	Remark
-/-	Output power verification (cond.)	-/-				Declared
-/-	Antenna gain	-/-				Declared
U-NII Part 15	Duty cycle	-/-				-/-
§15.407(a) RSS - 247 (6.2.x.1)	Maximum output power (conducted & radiated)	☒	☐	☐	☐	-/-
§15.407(a) RSS - 247 (6.2.x.1)	Power spectral density	☐	☐	☐	☒	-/-
RSS - 247 (6.2.4.1)	Spectrum bandwidth 6dB bandwidth	☐	☐	☐	☒	-/-
§15.407(a) RSS - 247 (6.2.x.2)	Spectrum bandwidth 26dB bandwidth	☐	☐	☐	☒	-/-
RSS Gen clause 6.6	Spectrum bandwidth 99% bandwidth	-/-				-/-
§15.205 RSS - 247 (6.2.x.2)	Band edge compliance radiated	☒	☐	☐	☐	-/-
§15.407(b) RSS - 247 (6.2.x.2)	TX spurious emissions radiated	☒	☐	☐	☐	-/-
§15.109 RSS-Gen	RX spurious emissions radiated	☐	☐	☐	☒	-/-
§15.209(a) RSS-Gen	Spurious emissions radiated < 30 MHz	☒	☐	☐	☐	-/-
§15.107(a) §15.207	Spurious emissions conducted emissions< 30 MHz	☐	☐	☐	☒	-/-
§15.407 RSS - 247 (6.3)	DFS	-/-				-/-

Notes:

C:	Compliant	NC:	Not compliant	NA:	Not applicable	NP:	Not performed

11 Additional comments

Reference documents: Datasheet Laird Sterling-LWB5.pdf

Special test descriptions: For measurements in continuous transmit or receive mode the DUT was configured via build in GUI of the DUT.

Configuration descriptions: Operating mode vs. data rate vs. power setting:

Test mode:	Data rate:	Power setting:
a-mode (SISO)	6	Max
nHT20-mode (SISO)	MCS0	Max
nHT40-mode (SISO)	MCS0	Max
ac80-mode (SISO)	MCS0	Max

EUT selection: ☒ Only one device available

☐ Devices selected by the customer

☐ Devices selected by the laboratory (Randomly)

Provided channels:

Channels with 20 MHz channel bandwidth:

U-NII-1 & U-NII-2A (5150 MHz to 5250 MHz & 5250 MHz to 5350 MHz) channel number & center frequency								
channel	**36**	40	44	**48**	**52**	56	60	**64**
f_c / MHz	**5180**	5200	5220	**5240**	**5260**	5280	5300	**5320**

U-NII-2C (5470 MHz to 5725 MHz) channel number & center frequency											
channel	**100**	104	108	112	116	**120**	124	128	132	136	**140**
f_c / MHz	**5500**	5520	5540	5560	5580	**5600**	5620	5640	5660	5680	**5700**

U-NII-3 (5725 MHz to 5850 MHz) channel number & center frequency					
channel	**149**	153	**157**	161	**165**
f_c / MHz	**5745**	5765	**5785**	5805	**5825**

Channels with 40 MHz channel bandwidth:

U-NII-1 & U-NII-2A (5150 MHz to 5250 MHz & 5250 MHz to 5350 MHz) channel number & center frequency				
channel	**38**	**46**	**54**	**62**
f_c / MHz	**5190**	**5230**	**5270**	**5310**

U-NII-2C (5470 MHz to 5725 MHz) channel number & center frequency					
channel	**102**	110	**118**	126	**134**
f_c / MHz	**5510**	5550	**5590**	5630	**5670**

U-NII-3 (5725 MHz to 5850 MHz) channel number & center frequency		
channel	**151**	**159**
f_c / MHz	**5755**	**5795**

Channels with 80 MHz channel bandwidth:

U-NII-1 & U-NII-2A (5150 MHz to 5250 MHz & 5250 MHz to 5350 MHz) channel number & center frequency		
channel	**42**	**58**
f_c / MHz	**5210**	**5290**

U-NII-2C (5470 MHz to 5725 MHz) channel number & center frequency		
channel	**106**	**122**
f_c / MHz	**5530**	**5610**

U-NII-3 (5725 MHz to 5850 MHz) channel number & center frequency	
channel	**155**
f_c / MHz	**5775**

Note: The channels used for the tests are marked in bold in the list.

Test mode:

☐ No test mode available.
Iperf is used to transmit data to a companion device

☒ Special software is used.
EUT is transmitting pseudo random data by itself

Antennas and transmit operating modes:

☒ Operating mode 1 (single antenna)
- Equipment with 1 antenna,
- Equipment with 2 diversity antennas operating in switched diversity mode by which at any moment in time only 1 antenna is used,
- Smart antenna system with 2 or more transmit/receive chains, but operating in a mode where only 1 transmit/receive chain is used)

☐ Operating mode 2 (multiple antennas, no beamforming)
- Equipment operating in this mode contains a smart antenna system using two or more transmit/receive chains simultaneously but without beamforming.

☐ Operating mode 3 (multiple antennas, with beamforming)
- Equipment operating in this mode contains a smart antenna system using two or more transmit/receive chains simultaneously with beamforming.
  In addition to the antenna assembly gain (G), the beamforming gain (Y) may have to be taken into account when performing the measurements.

12 Measurement results

12.1 Antenna gain

Antenna gain declared by manufacturer (see section 6.1).

12.2 Identify worst case data rate

Worst-case modulations declared by the manufacturer (see section 11)

12.3 Maximum output power

12.3.1 Maximum output power according to FCC requirements

Description:

Measurement of the maximum output power conducted

Measurement:

Measurement parameter	
According to: KDB789033 D02, E.2.e.	
Used test setup:	See chapter 7.4 – A
Measurement uncertainty:	See chapter 9

Limits:

Radiated output power	Conducted output power for mobile equipment
Conducted power + 6 dBi antenna gain	250mW 5.150-5.250 GHz The lesser one of 250mW or 11 dBm + 10 log Bandwidth 5.250-5.350 GHz 250mW or 11 dBm + 10 log Bandwidth 5.470-5.725 GHz (where Bandwidth is the 26dB Bandwidth [MHz]) 1W 5.725-5.85 GHz

Results:

a	Maximum output power conducted [dBm]		
	U-NII-1 (5150 MHz to 5250 MHz)		
	Lowest channel	Middle channel	Highest channel
	15.4	-/-	14.8
	U-NII-2A (5250 MHz to 5350 MHz)		
	Lowest channel	Middle channel	Highest channel
	14.9	-/-	14.0
	U-NII-2C (5470 MHz to 5725 MHz)		
	Lowest channel	Middle channel	Highest channel
	14.4	14.5	14.8
	U-NII-3 (5725 MHz to 5850 MHz)		
	Lowest channel	Middle channel	Highest channel
	14.6	15.1	14.4

Results:

n/ac HT20	Maximum output power conducted [dBm]		
	U-NII-1 (5150 MHz to 5250 MHz)		
	Lowest channel	Middle channel	Highest channel
	12.4	-/-	12.0
	U-NII-2A (5250 MHz to 5350 MHz)		
	Lowest channel	Middle channel	Highest channel
	12.4	-/-	12.7
	U-NII-2C (5470 MHz to 5725 MHz)		
	Lowest channel	Middle channel	Highest channel
	13.1	12.2	12.4
	U-NII-3 (5725 MHz to 5850 MHz)		
	Lowest channel	Middle channel	Highest channel
	12.2	12.8	11.9

Results:

n/ac HT40	Maximum output power conducted [dBm]		
	U-NII-1 (5150 MHz to 5250 MHz)		
	Lowest channel		Highest channel
	8.9		8.7
	U-NII-2A (5250 MHz to 5350 MHz)		
	Lowest channel		Highest channel
	8.8		8.8
	U-NII-2C (5470 MHz to 5725 MHz)		
	Lowest channel	Middle channel	Highest channel
	8.7	8.0	8.8
	U-NII-3 (5725 MHz to 5850 MHz)		
	Lowest channel		Highest channel
	8.1		8.6

Results:

ac VHT80	Maximum output power conducted [dBm]
	U-NII-1 (5150 MHz to 5250 MHz)
	Middle channel
	8.7
	U-NII-2A (5250 MHz to 5350 MHz)
	Middle channel
	8.7
	U-NII-2C (5470 MHz to 5725 MHz)
	Lowest channel / Highest channel
	8.7 / 8.9
	U-NII-3 (5725 MHz to 5850 MHz)
	Middle channel
	8.5

12.3.2 Maximum output power according to IC requirements

Description:

Measurement of the maximum output power conduced + radiated

Measurement:

Measurement parameter	
Used test setup:	See chapter 7.4 – A
Measurement uncertainty:	See chapter 9

Limits:

Radiated output power	Conducted output power for mobile equipment
The lesser one of 200 mW or 10 dBm + 10 log Bandwidth 5.150-5.250 GHz 1 W or 17 dBm + 10 log Bandwidth 5.250-5.350 GHz 1 W or 17 dBm + 10 log Bandwidth 5.470-5.725 GHz (where Bandwidth is the 99% Bandwidth [MHz]) Conducted power + 6dBi antenna gain 5.725-5.825 GHz	The lesser one of 250mW or 11 dBm + 10 log Bandwidth 5.250-5.350 GHz 250mW or 11 dBm + 10 log Bandwidth 5.470-5.725 GHz (where Bandwidth is the 99% Bandwidth [MHz]) 1W 5.725-5.825 GHz

Results:

a	Maximum output power [dBm]		
	U-NII-1 (5150 MHz to 5250 MHz)		
	Lowest channel	Middle channel	Highest channel
	Conducted		
	15.1	-/-	14.5
	Radiated (calculated – see chapter antenna gain)		
	19.1	-/-	18.5
	U-NII-2A (5250 MHz to 5350 MHz)		
	Lowest channel	Middle channel	Highest channel
	Conducted		
	14.7	-/-	13.8
	Radiated (calculated – see chapter antenna gain)		
	18.7	-/-	17.8
	U-NII-2C (5470 MHz to 5725 MHz)		
	Lowest channel	Middle channel	Highest channel
	Conducted		
	14.5	14.4	14.6
	Radiated (calculated – see chapter antenna gain)		
	18.5	18.4	18.6
	U-NII-3 (5725 MHz to 5850 MHz)		
	Lowest channel	Middle channel	Highest channel
	Conducted		
	14.5	15.0	14.3
	Radiated (calculated – see chapter antenna gain)		
	18.5	19.0	18.3

Results:

n/ac HT20	Maximum output power [dBm]		
	U-NII-1 (5150 MHz to 5250 MHz)		
	Lowest channel	Middle channel	Highest channel
	Conducted		
	12.4	-/-	12.1
	Radiated (calculated – see chapter antenna gain)		
	16.4	-/-	16.1
	U-NII-2A (5250 MHz to 5350 MHz)		
	Lowest channel	Middle channel	Highest channel
	Conducted		
	12.4	-/-	12.4
	Radiated (calculated – see chapter antenna gain)		
	16.4	-/--	16.4
	U-NII-2C (5470 MHz to 5725 MHz)		
	Lowest channel	Middle channel	Highest channel
	Conducted		
	13.1	12.1	12.4
	Radiated (calculated – see chapter antenna gain)		
	17.1	16.1	16.4
	U-NII-3 (5725 MHz to 5850 MHz)		
	Lowest channel	Middle channel	Highest channel
	Conducted		
	12.3	12.7	12.0
	Radiated (calculated – see chapter antenna gain)		
	16.3	16.7	16.0

Results:

n/ac HT40	Maximum output power [dBm]		
	U-NII-1 (5150 MHz to 5250 MHz)		
	Lowest channel	Highest channel	
	Conducted		
	8.8	8.6	
	Radiated (calculated – see chapter antenna gain)		
	12.8	12.6	
	U-NII-2A (5250 MHz to 5350 MHz)		
	Lowest channel	Highest channel	
	Conducted		
	8.7	8.6	
	Radiated (calculated – see chapter antenna gain)		
	12.7	12.6	
	U-NII-2C (5470 MHz to 5725 MHz)		
	Lowest channel	Middle channel	Highest channel
	Conducted		
	8.7	8.0	8.7
	Radiated (calculated – see chapter antenna gain)		
	12.7	12.0	12.8
	U-NII-3 (5725 MHz to 5850 MHz)		
	Lowest channel	Highest channel	
	Conducted		
	8.2	8.6	
	Radiated (calculated – see chapter antenna gain)		
	12.2	12.6	

Results:

ac VHT80	Maximum output power [dBm]	
	U-NII-1 (5150 MHz to 5250 MHz)	
	Middle channel	
	Conducted	
	8.7	
	Radiated (calculated – see chapter antenna gain)	
	12.7	
	U-NII-2A (5250 MHz to 5350 MHz)	
	Middle channel	
	Conducted	
	8.6	
	Radiated (calculated – see chapter antenna gain)	
	12.6	
	U-NII-2C (5470 MHz to 5725 MHz)	
	Lowest channel	Highest channel
	Conducted	
	8.6	8.9
	Radiated (calculated – see chapter antenna gain)	
	12.6	12.9
	U-NII-3 (5725 MHz to 5850 MHz)	
	Middle channel	
	Conducted	
	8.4	
	Radiated (calculated – see chapter antenna gain)	
	12.4	

12.4 Band edge compliance radiated

Description:

Measurement of the radiated band edge compliance. The EUT is turned in the position that results in the maximum level at the band edge. Then a sweep over the corresponding restricted band is performed. The EUT is set to the lowest channel for the lower restricted band and to the highest channel for the upper restricted band. Measurement distance is 3m.

Measurement:

Measurement parameter	
Detector:	Peak / RMS
Sweep time:	Auto
Resolution bandwidth:	1 MHz
Video bandwidth:	≥ 3 x RBW
Span:	See plots!
Trace mode:	Max Hold
Test setup:	See sub clause 7.2 – A
Measurement uncertainty:	See chapter 9

Limits:

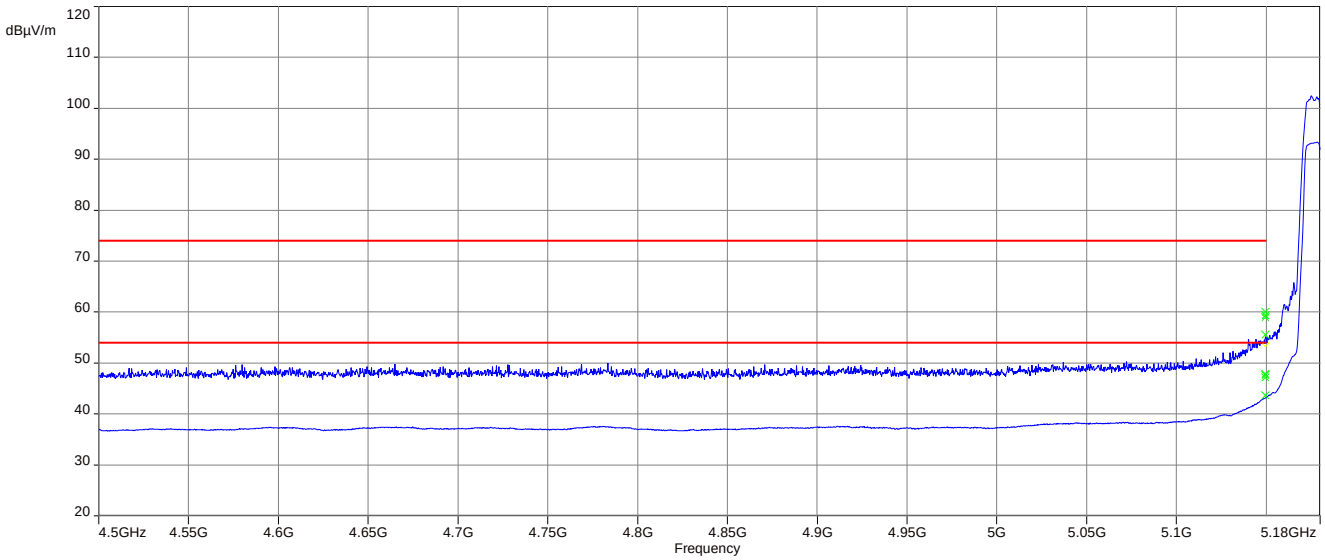
Band Edge Compliance Radiated
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 5.205(c)).
74 dBµV/m (peak) 54 dBµV/m (average)

Result:

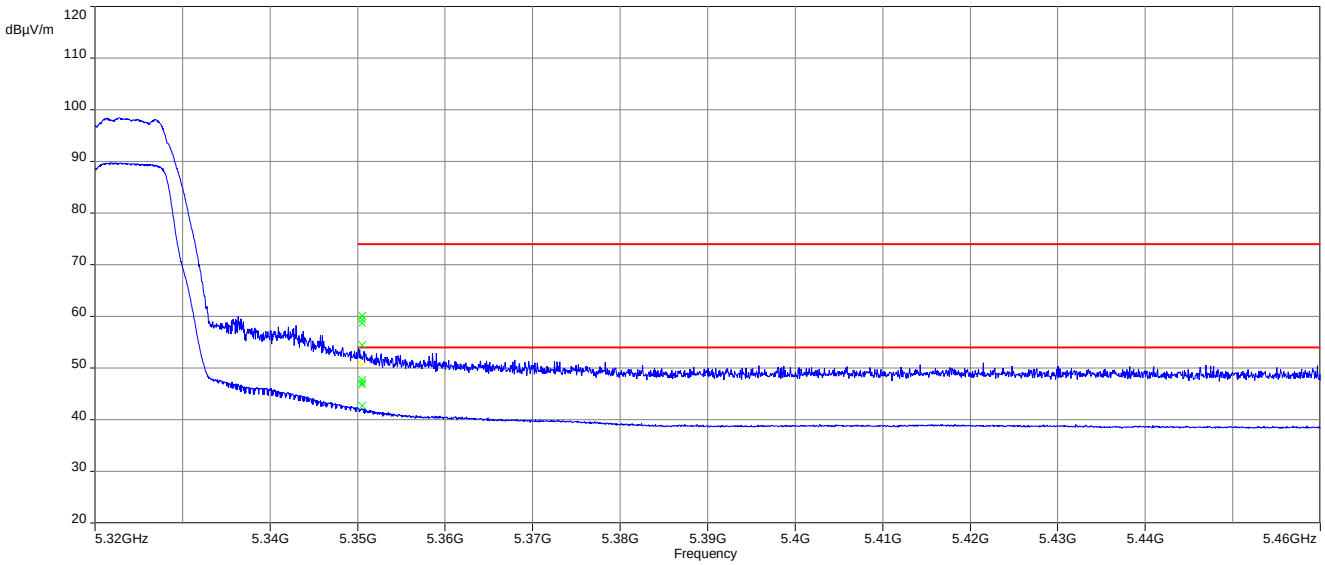
Scenario	Band Edge Compliance Radiated [dBµV/m]
band edge	< 74 dBµV/m (peak) < 54 dBµV/m (average)

Plots:

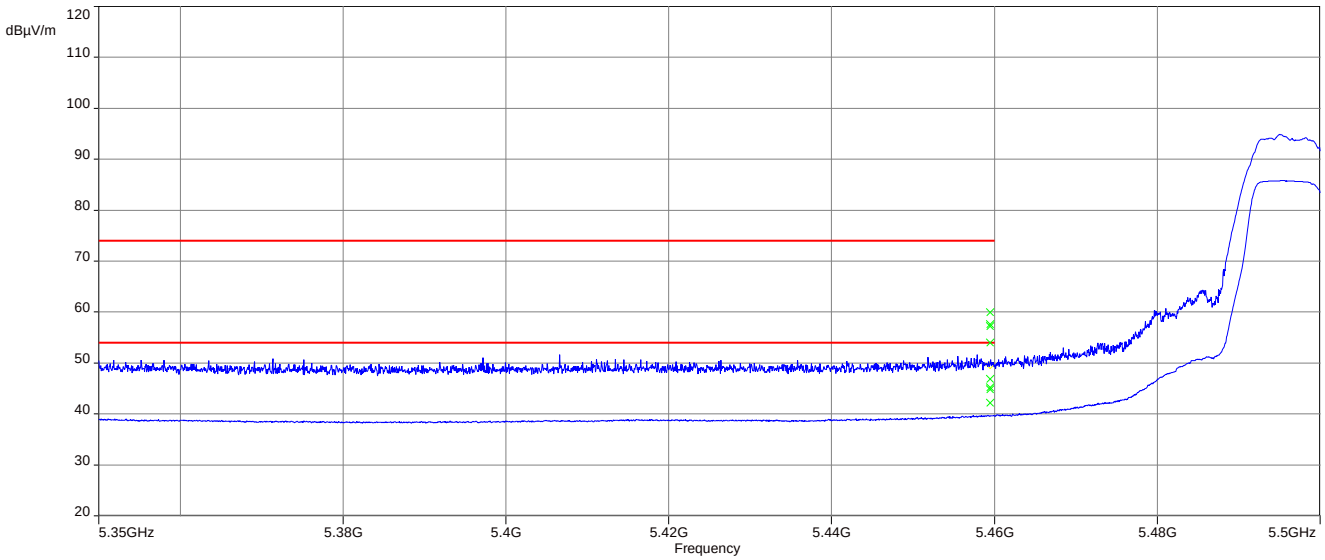
Plot 1: lower band edge; U-NII-1; lowest channel; 20 MHz channel bandwidth



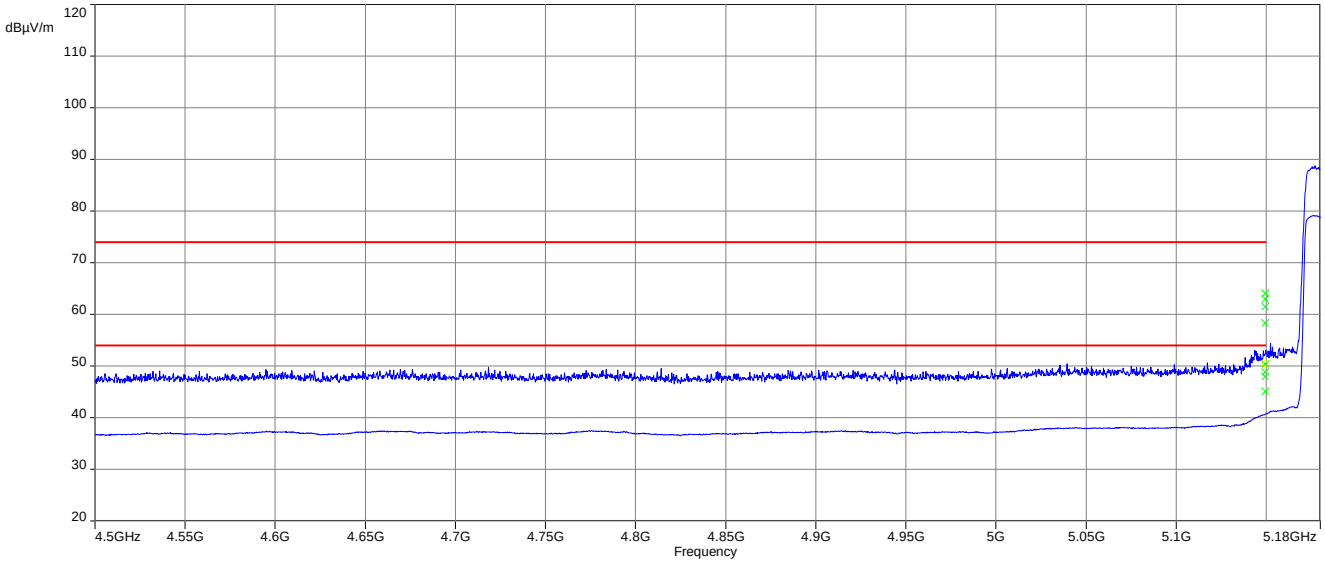
Plot 2: upper band edge; U-NII-2A; highest channel; 20 MHz channel bandwidth



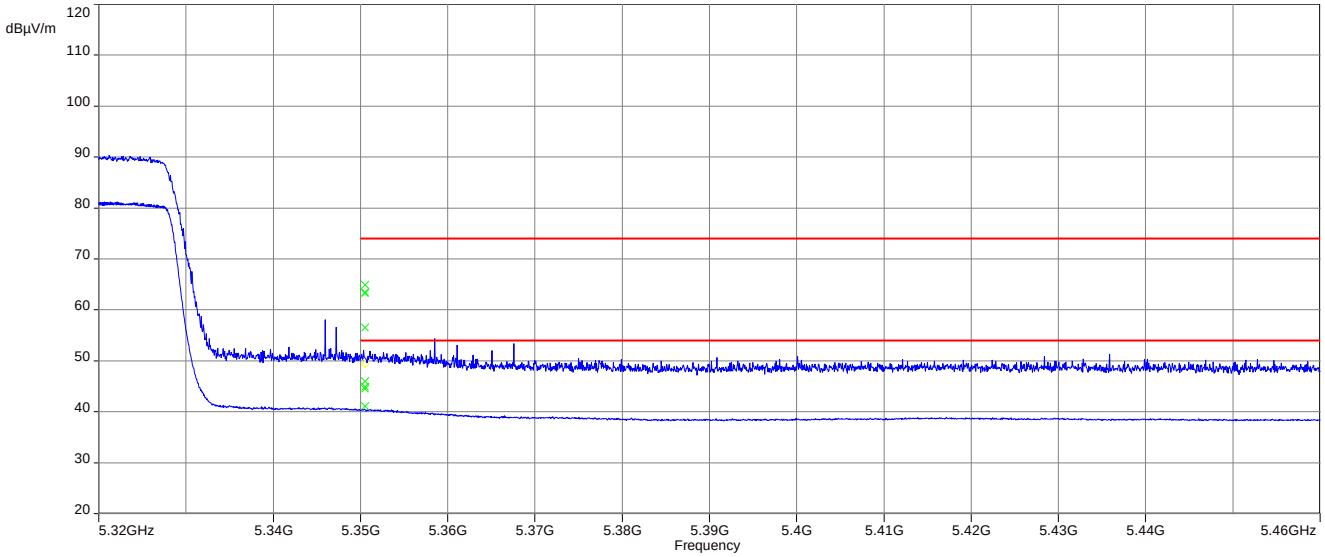
Plot 3: lower band edge; U-NII-2C; lowest channel; 20 MHz channel bandwidth



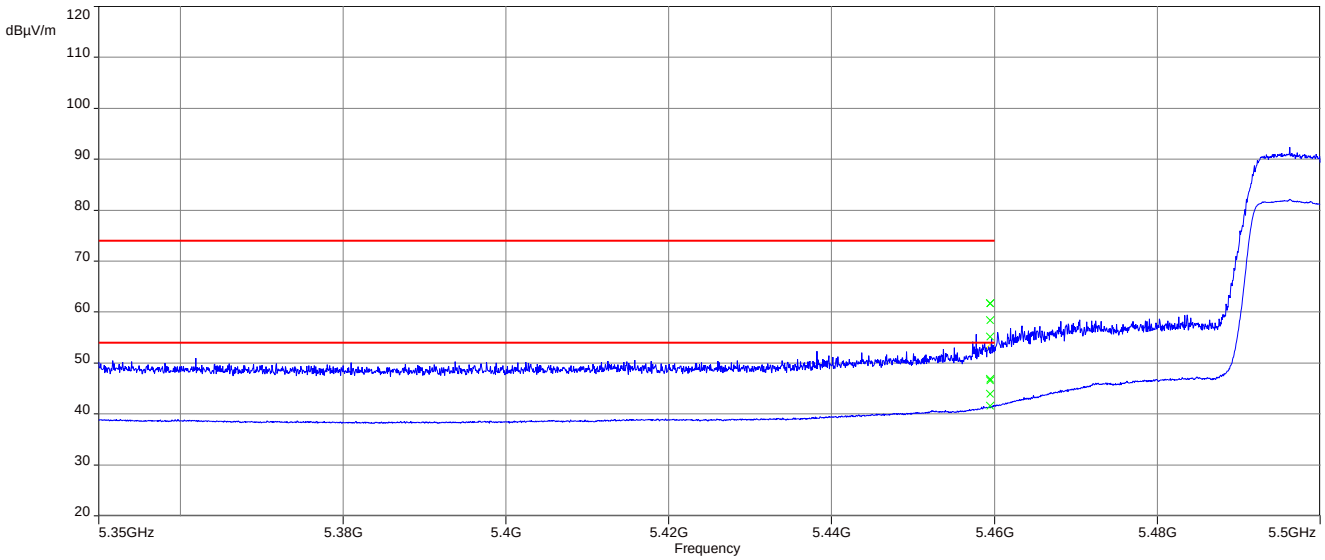
Plot 4: lower band edge; U-NII-1; lowest channel; 40 MHz channel bandwidth



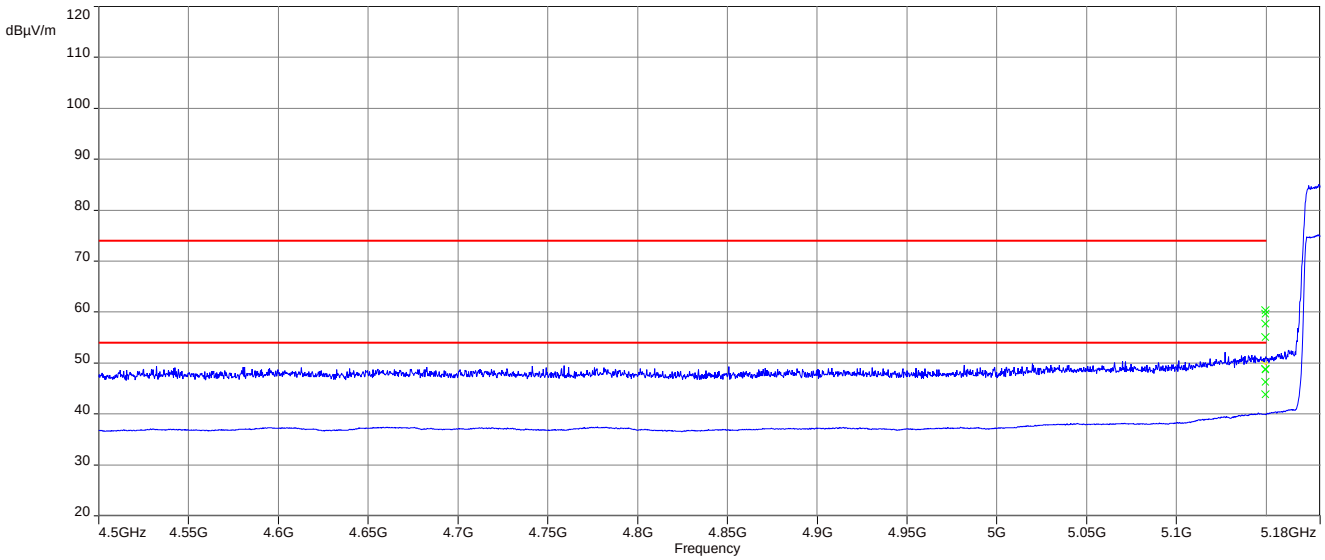
Plot 5: upper band edge; U-NII-2A; highest channel; 40 MHz channel bandwidth



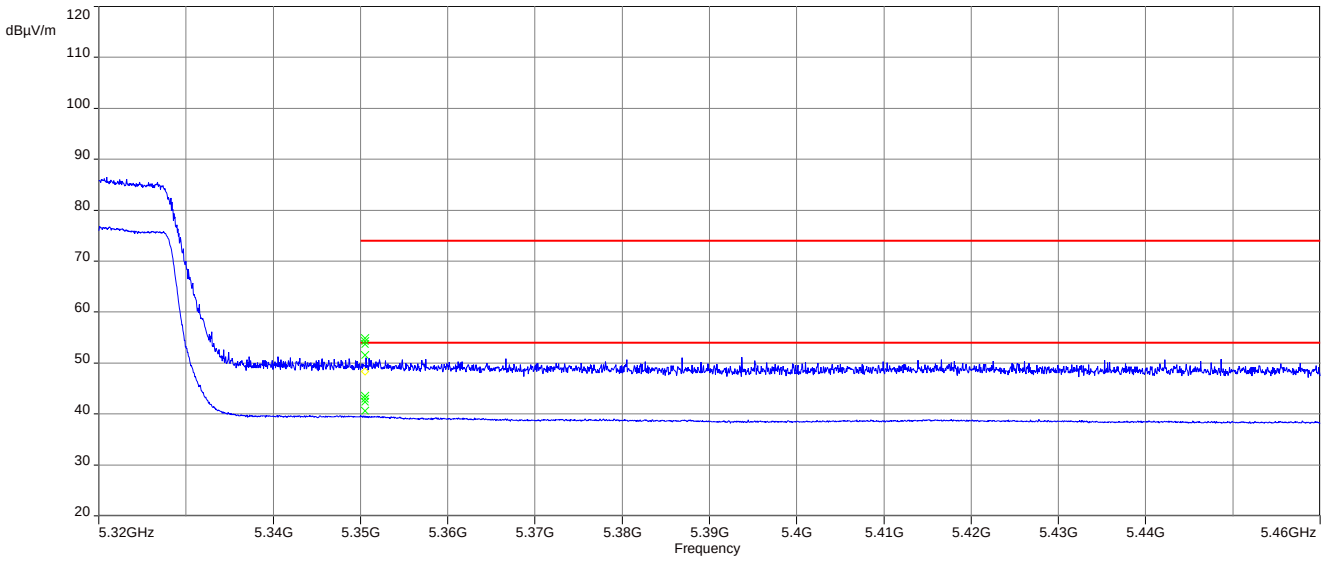
Plot 6: lower band edge; U-NII-2C; lowest channel; 40 MHz channel bandwidth



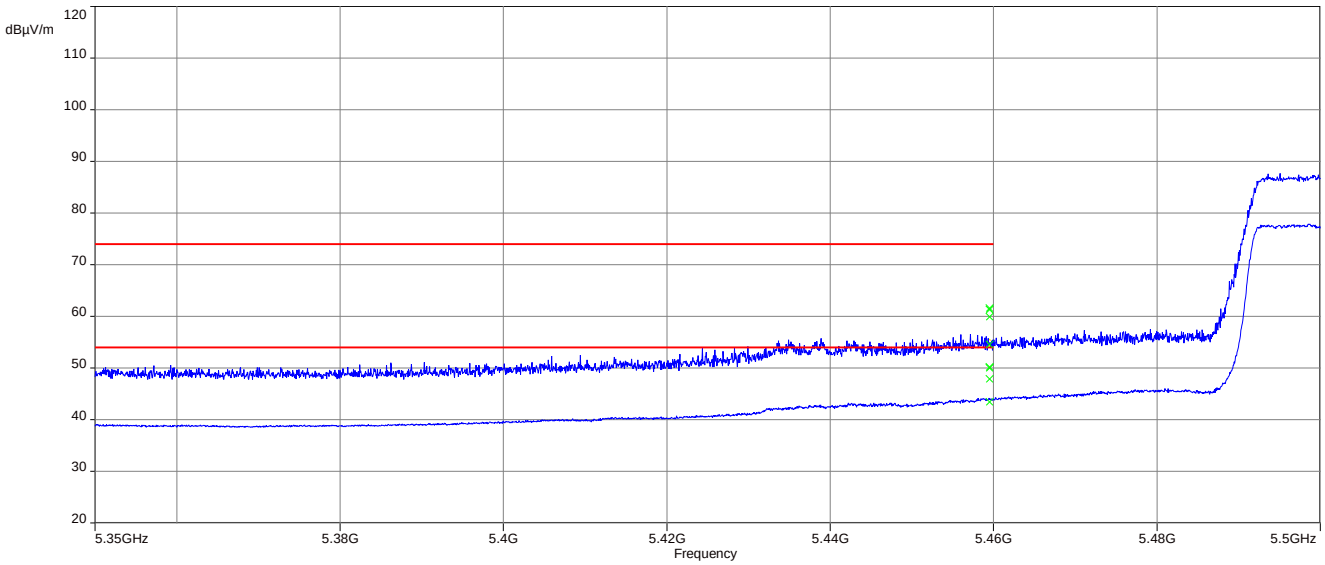
Plot 7: lower band edge; U-NII-1; middle channel; 80 MHz channel bandwidth



Plot 8: upper band edge; U-NII-2A; middle channel; 80 MHz channel bandwidth



Plot 9: lower band edge; U-NII-2C; lowest channel; 80 MHz channel bandwidth



12.5 Spurious emissions radiated below 30 MHz

Description:

Measurement of the radiated spurious emissions in transmit mode below 30 MHz. The limits are re-calculated to a measurement distance of 3 m with 40 dB/decade according CFR Part 2.

Measurement:

Measurement parameter	
Detector:	Peak / Quasi Peak
Sweep time:	Auto
Video bandwidth:	F < 150 kHz: 200 Hz F > 150 kHz: 9 kHz
Resolution bandwidth:	F < 150 kHz: 1 kHz F > 150 kHz: 100 kHz
Span:	9 kHz to 30 MHz
Trace mode:	Max Hold
Test setup:	See sub clause 7.2 – B
Measurement uncertainty:	See chapter 9

Limits:

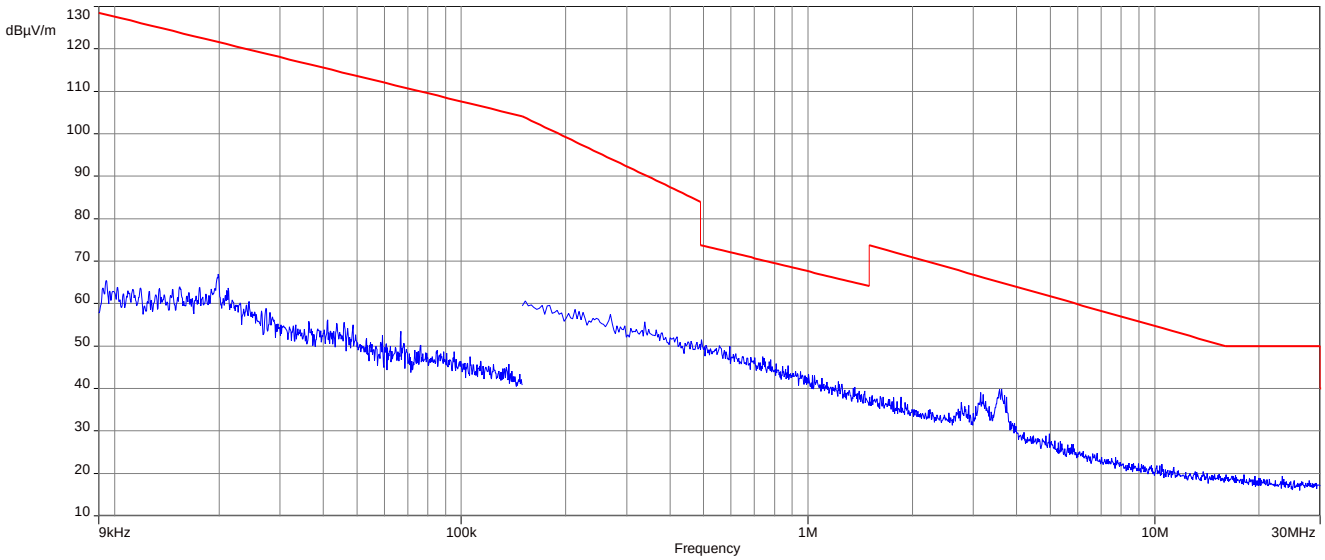
Spurious Emissions Radiated < 30 MHz		
Frequency (MHz)	Field Strength (dBµV/m)	Measurement distance
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30

Results:

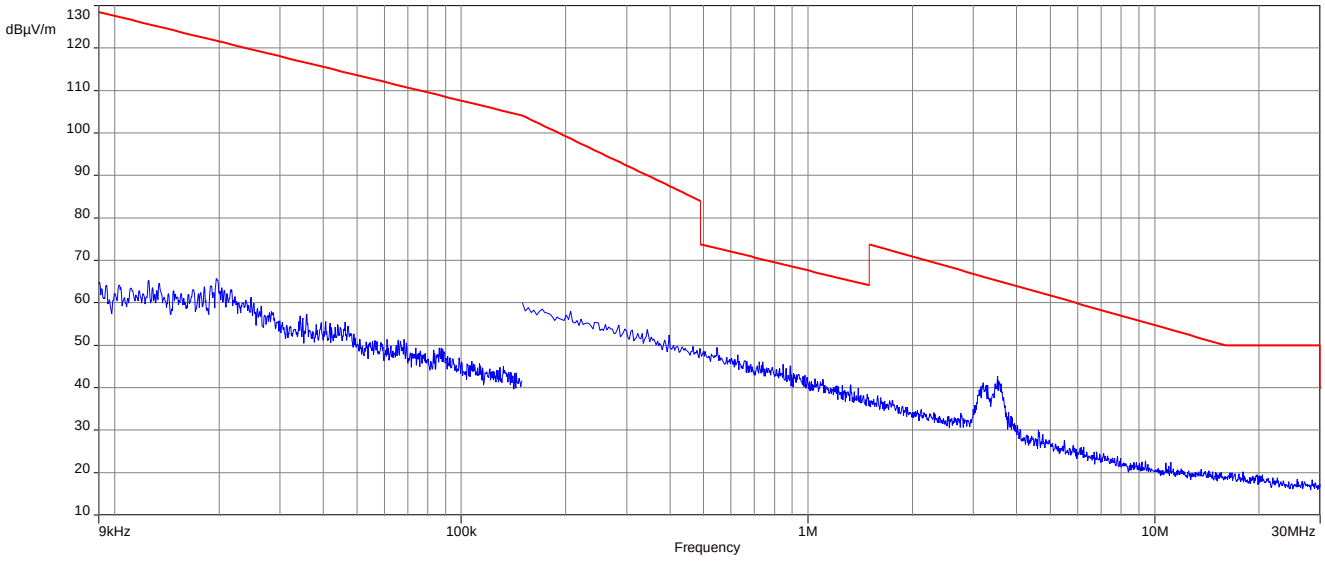
Spurious Emissions Radiated < 30 MHz [dBµV/m]		
F [MHz]	Detector	Level [dBµV/m]
All detected emissions are more than 20 dB below the limit.		

Plots: 20 MHz channel bandwidth

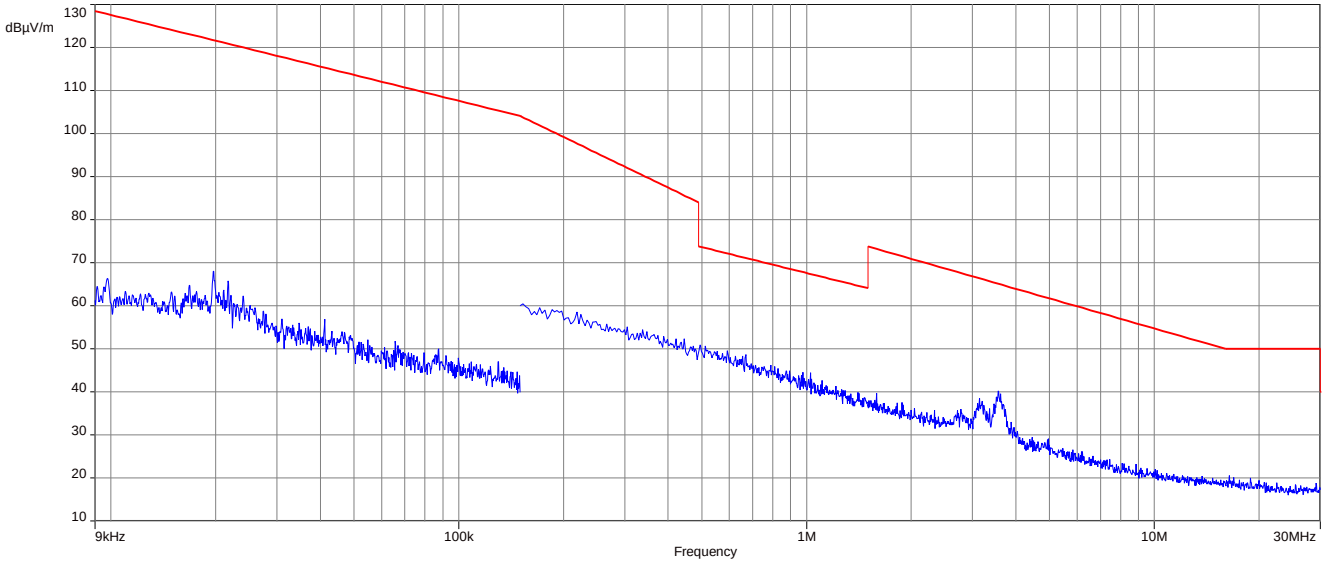
Plot 1: 9 kHz to 30 MHz, U-NII-1; lowest channel



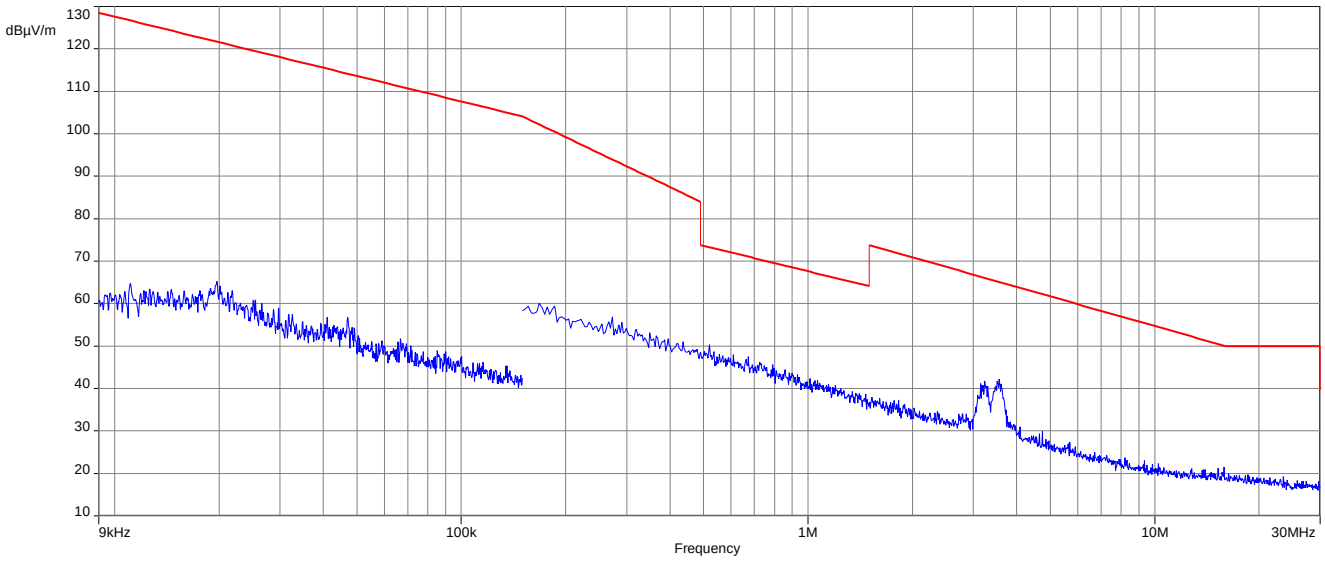
Plot 2: 9 kHz to 30 MHz, U-NII-1; middle channel



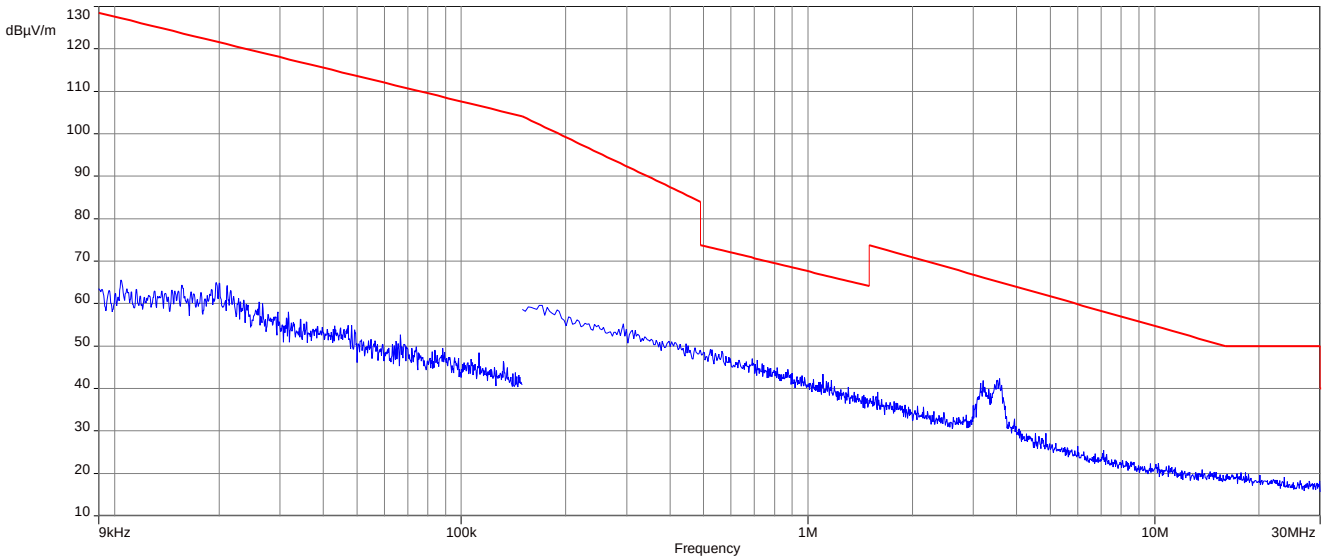
Plot 3: 9 kHz to 30 MHz, U-NII-1; highest channel



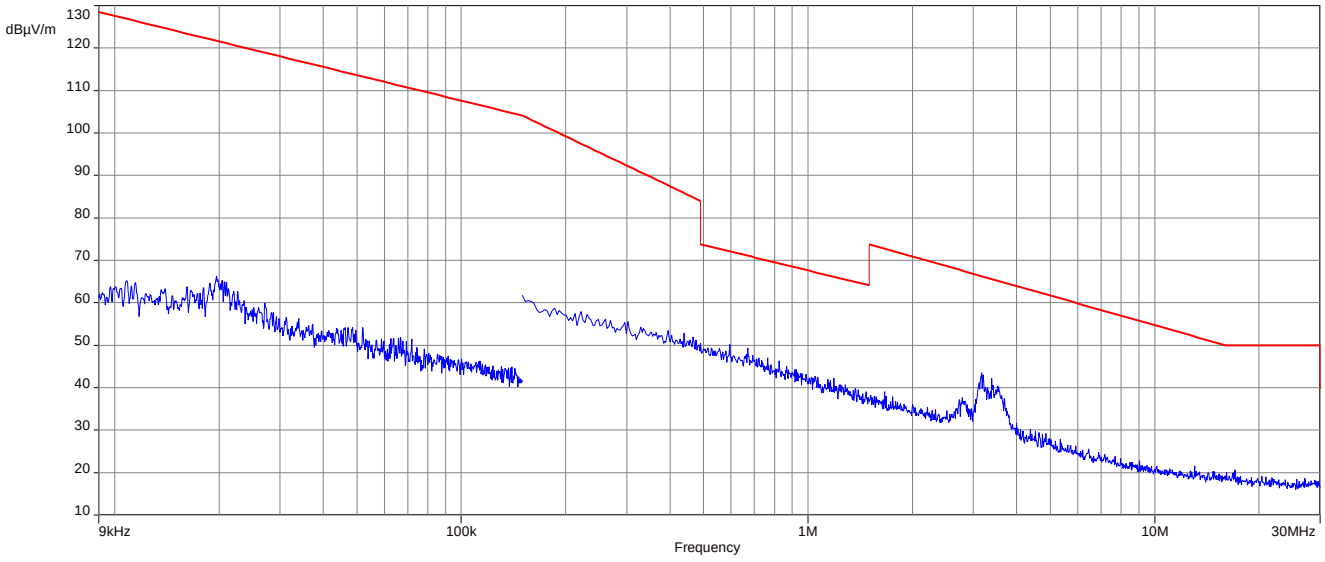
Plot 4: 9 kHz to 30 MHz, U-NII-2A; lowest channel



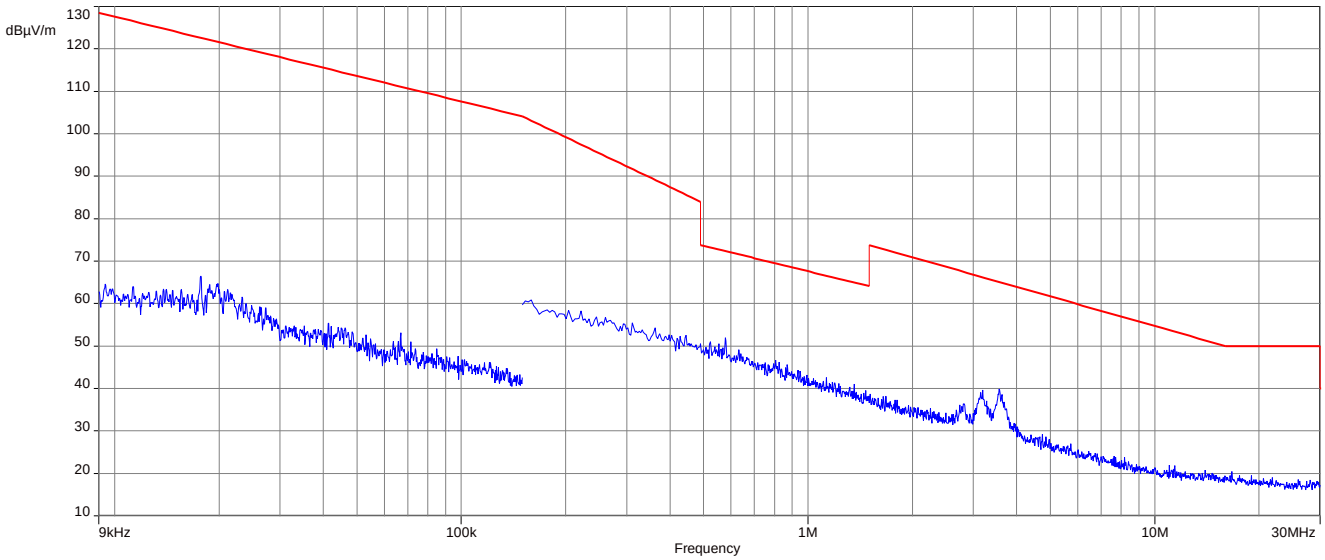
Plot 5: 9 kHz to 30 MHz, U-NII-2A; middle channel



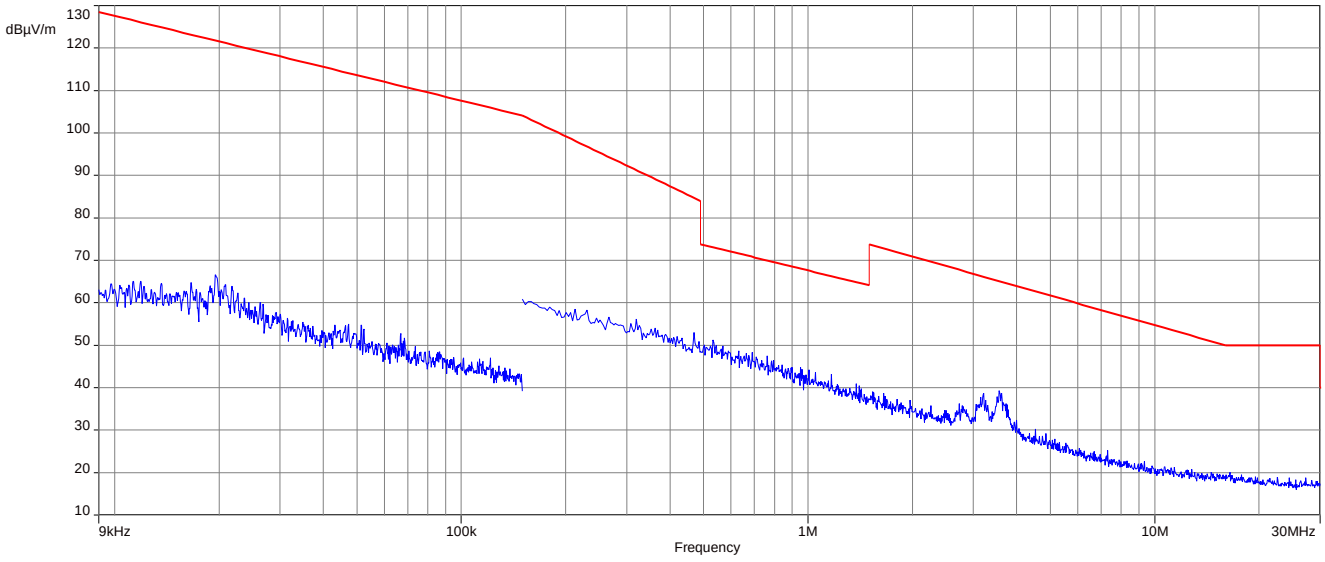
Plot 6: 9 kHz to 30 MHz, U-NII-2A; highest channel



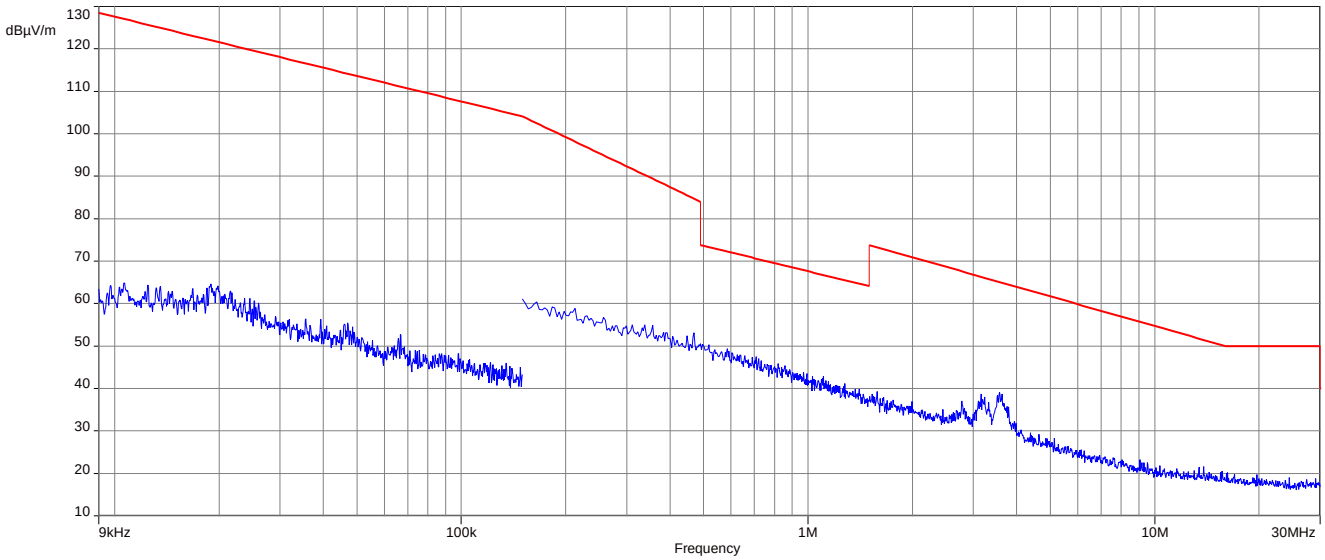
Plot 7: 9 kHz to 30 MHz, U-NII-2C; lowest channel



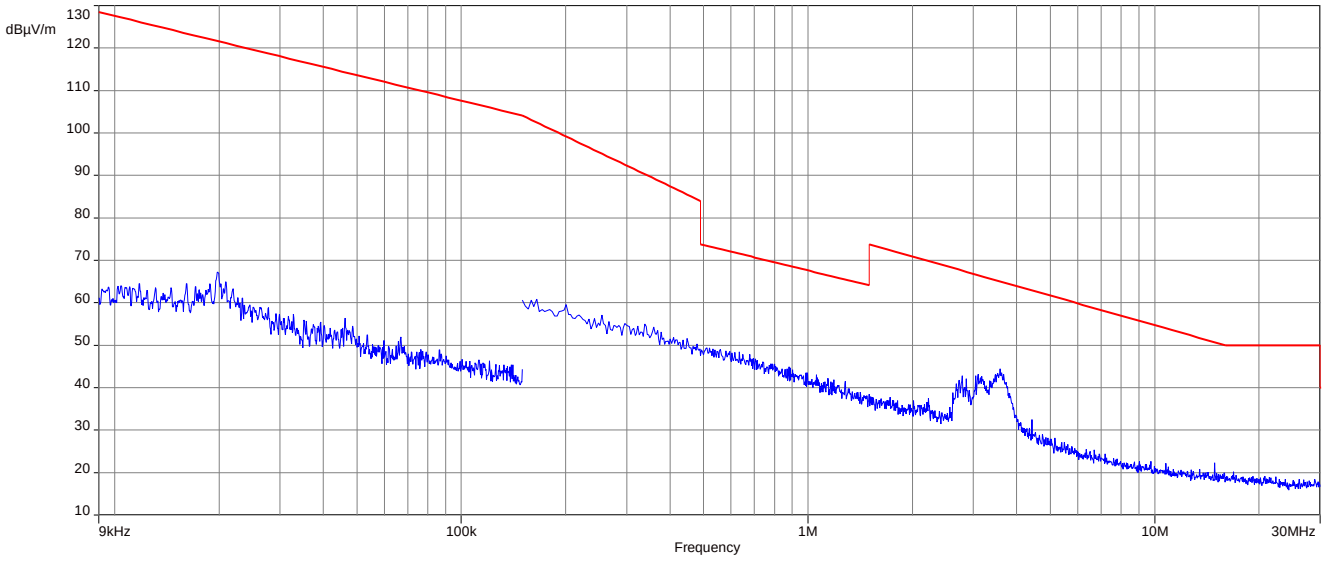
Plot 8: 9 kHz to 30 MHz, U-NII-2C; middle channel



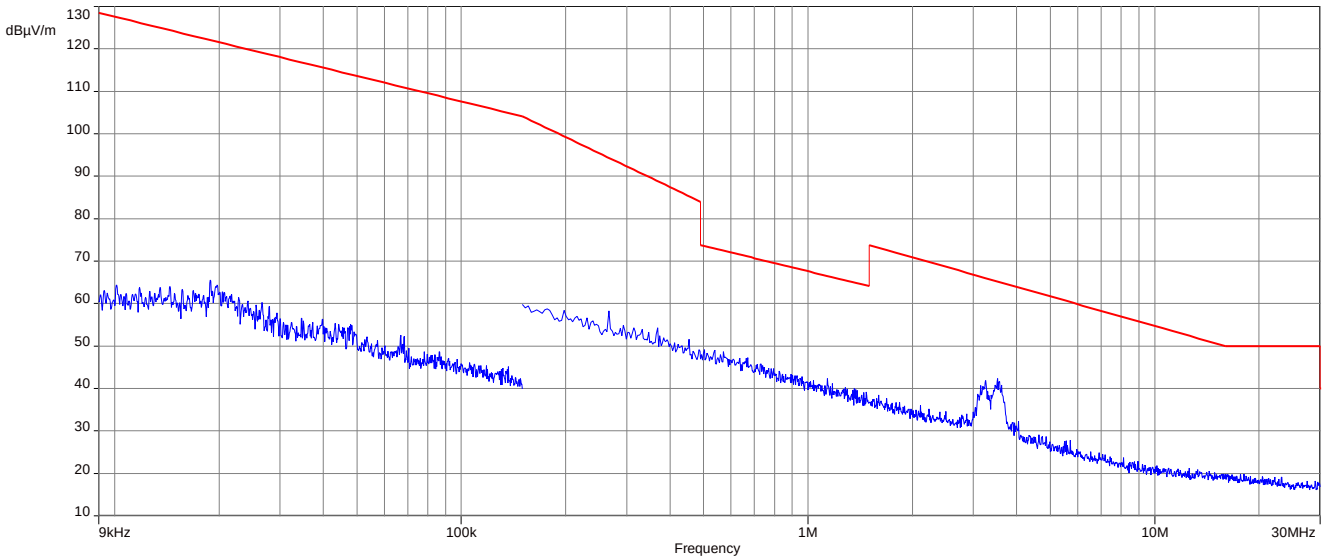
Plot 9: 9 kHz to 30 MHz, U-NII-2C; highest channel



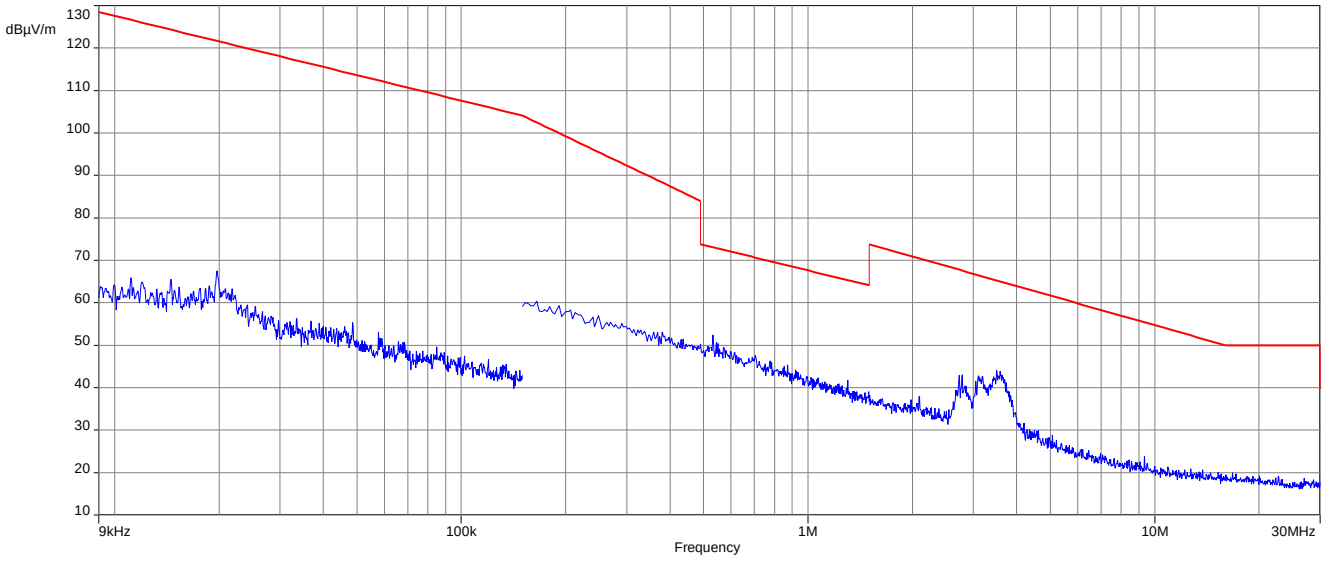
Plot 10: 9 kHz to 30 MHz, U-NII-3; lowest channel



Plot 11: 9 kHz to 30 MHz, U-NII-3; middle channel

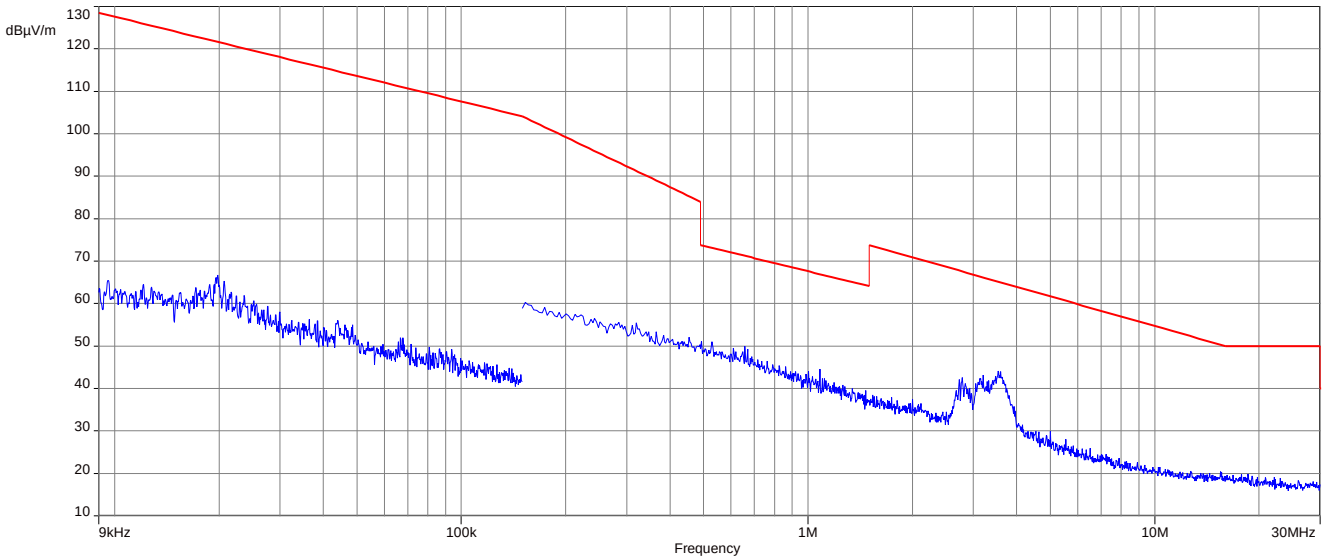


Plot 12: 9 kHz to 30 MHz, U-NII-3; highest channel

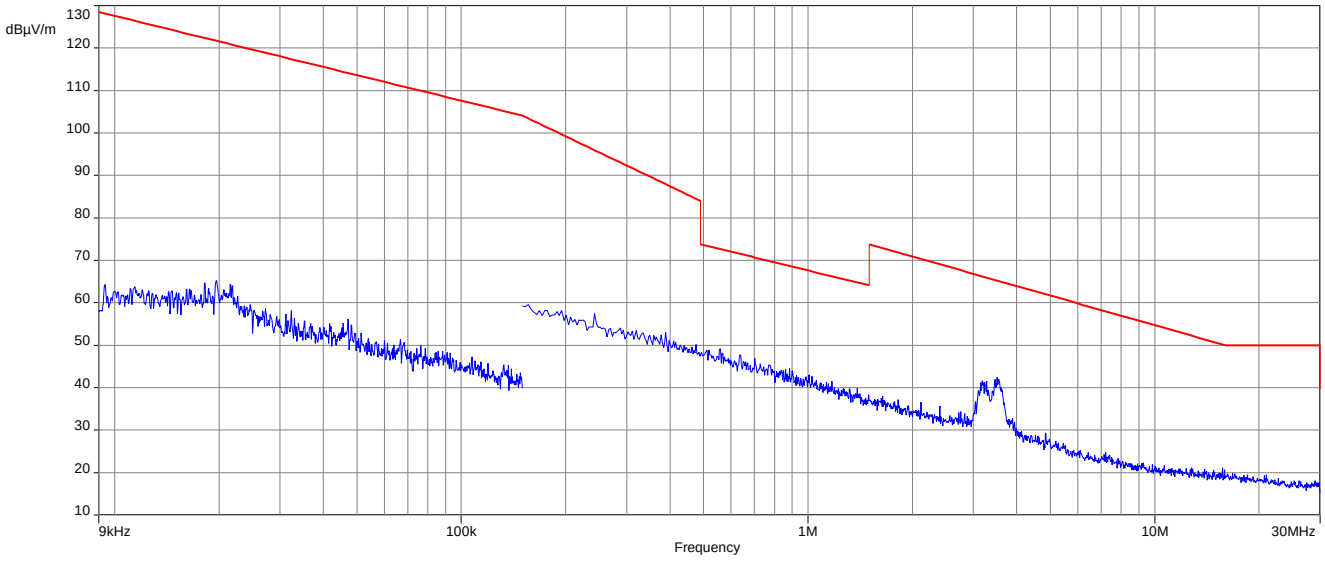


Plots: 40 MHz channel bandwidth

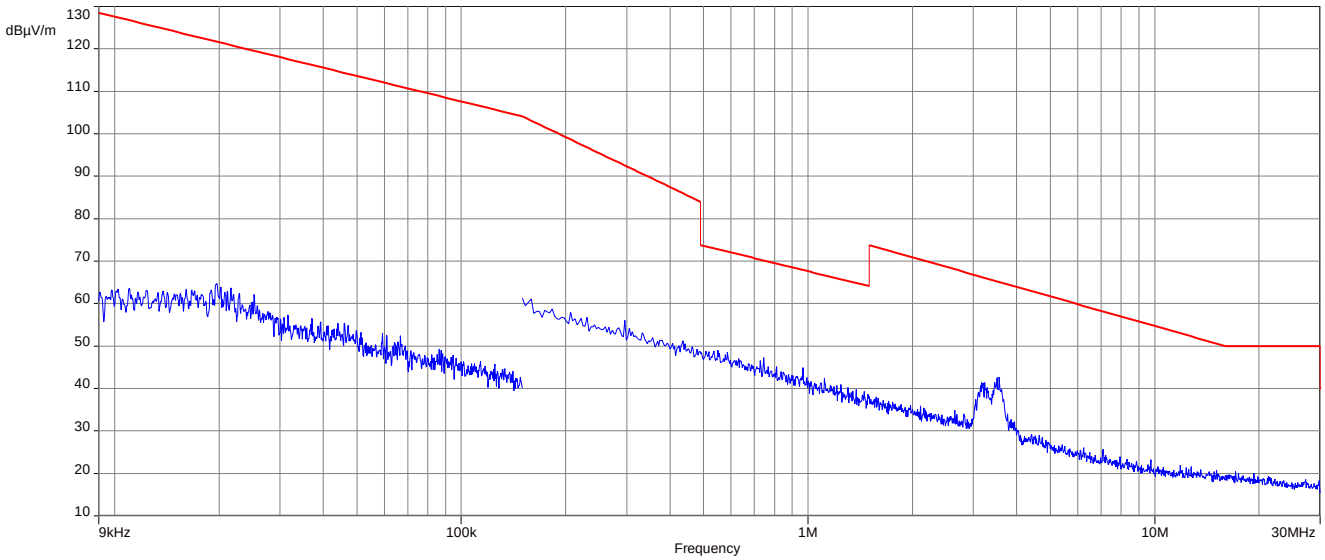
Plot 1: 9 kHz to 30 MHz, U-NII-1; lowest channel



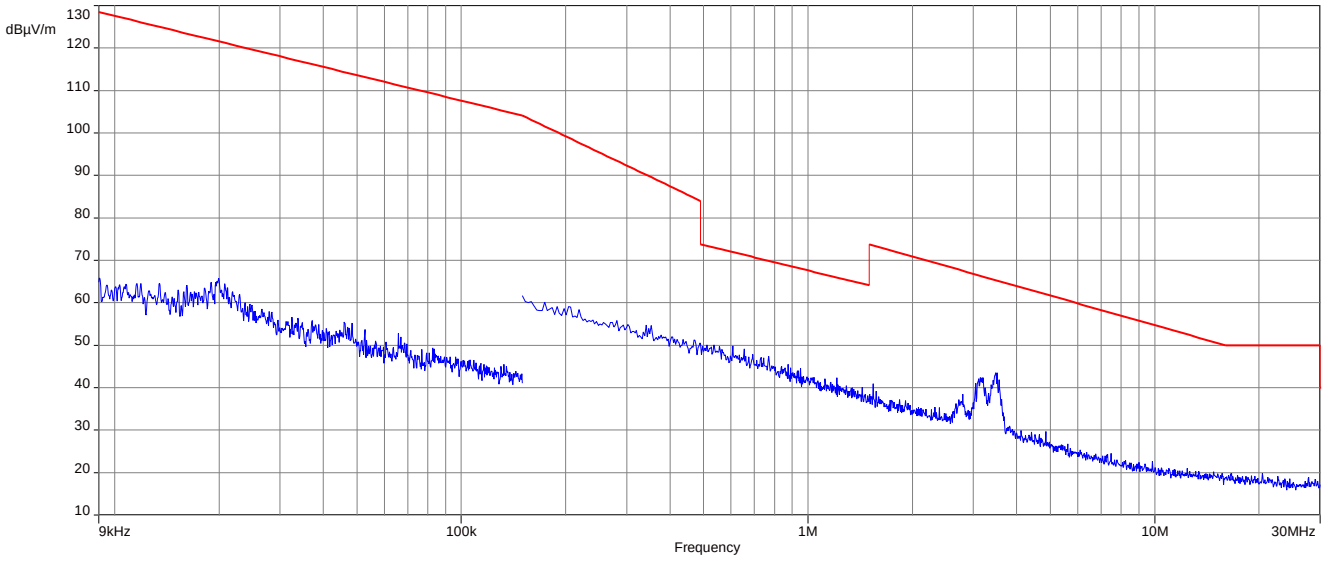
Plot 2: 9 kHz to 30 MHz, U-NII-1; highest channel



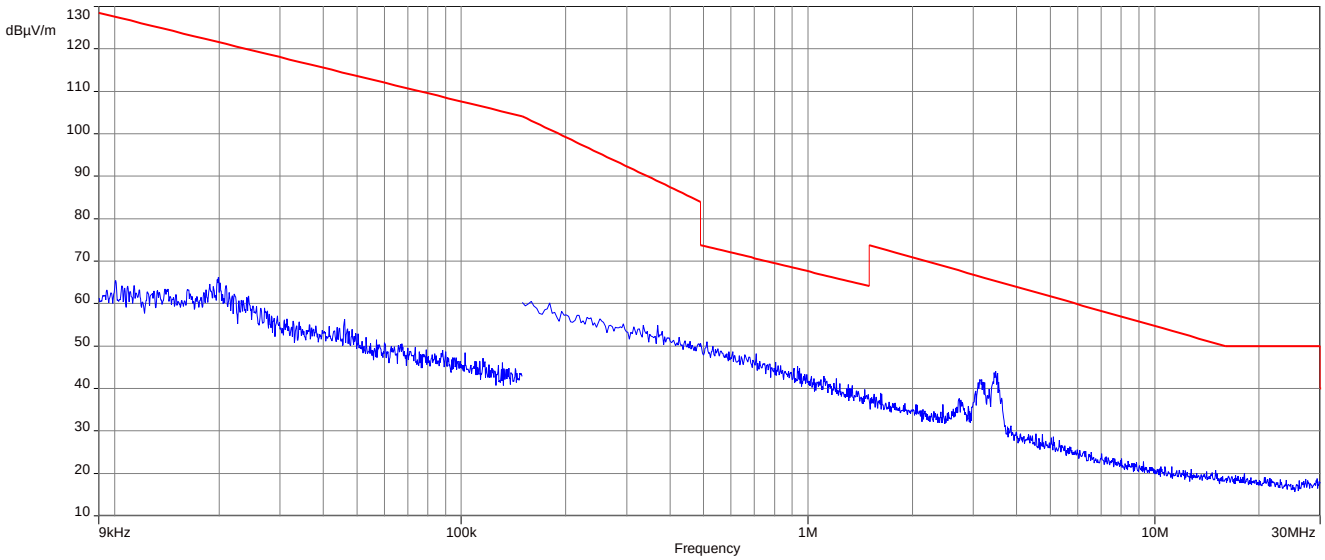
Plot 3: 9 kHz to 30 MHz, U-NII-2A; lowest channel



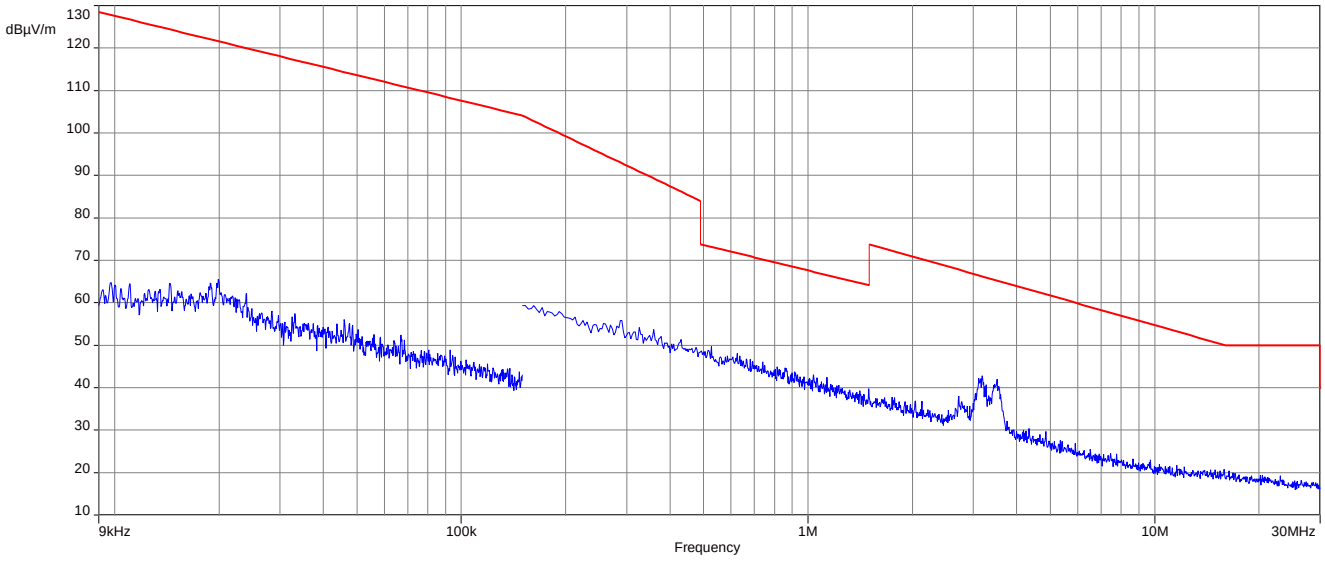
Plot 4: 9 kHz to 30 MHz, U-NII-2A; highest channel



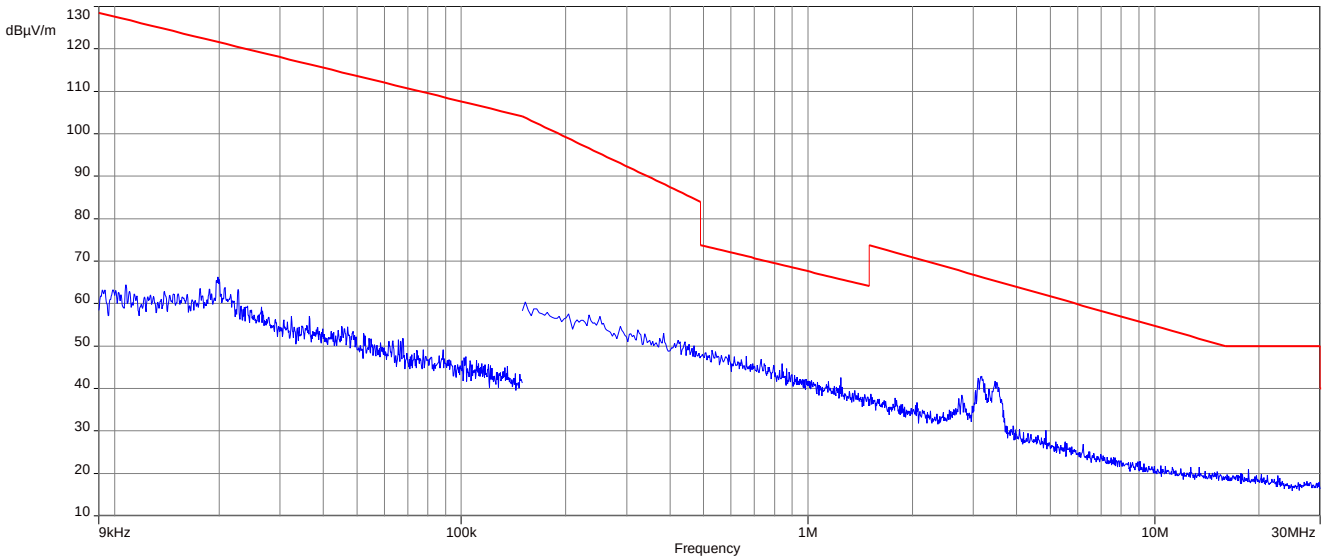
Plot 5: 9 kHz to 30 MHz, U-NII-2C; lowest channel



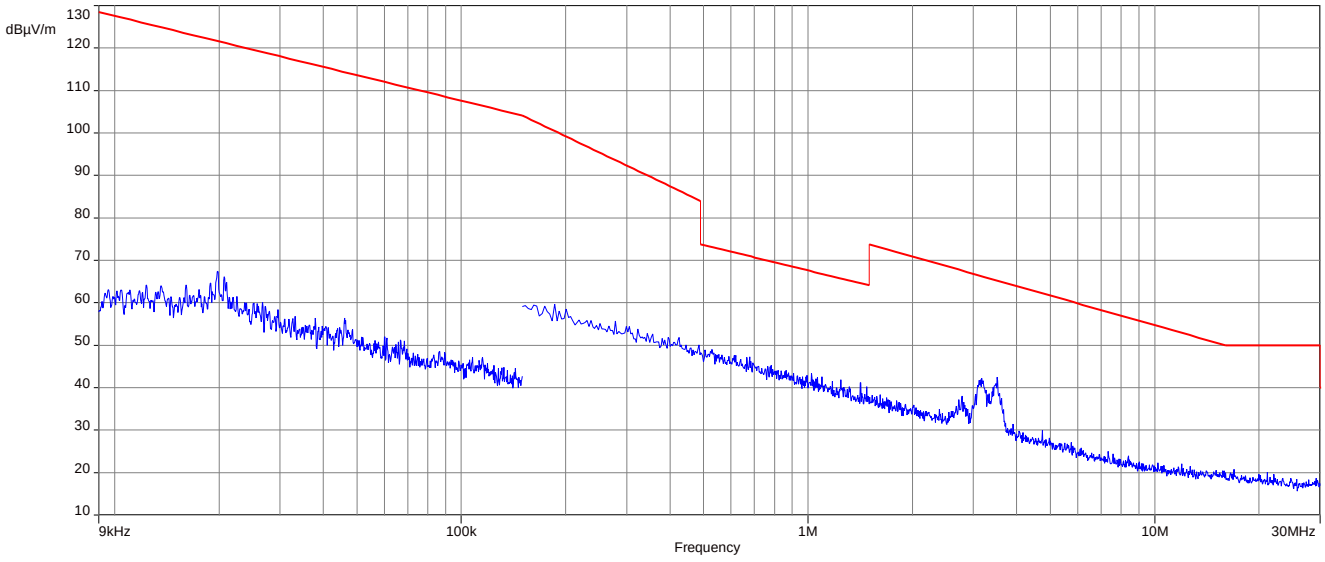
Plot 6: 9 kHz to 30 MHz, U-NII-2C; middle channel



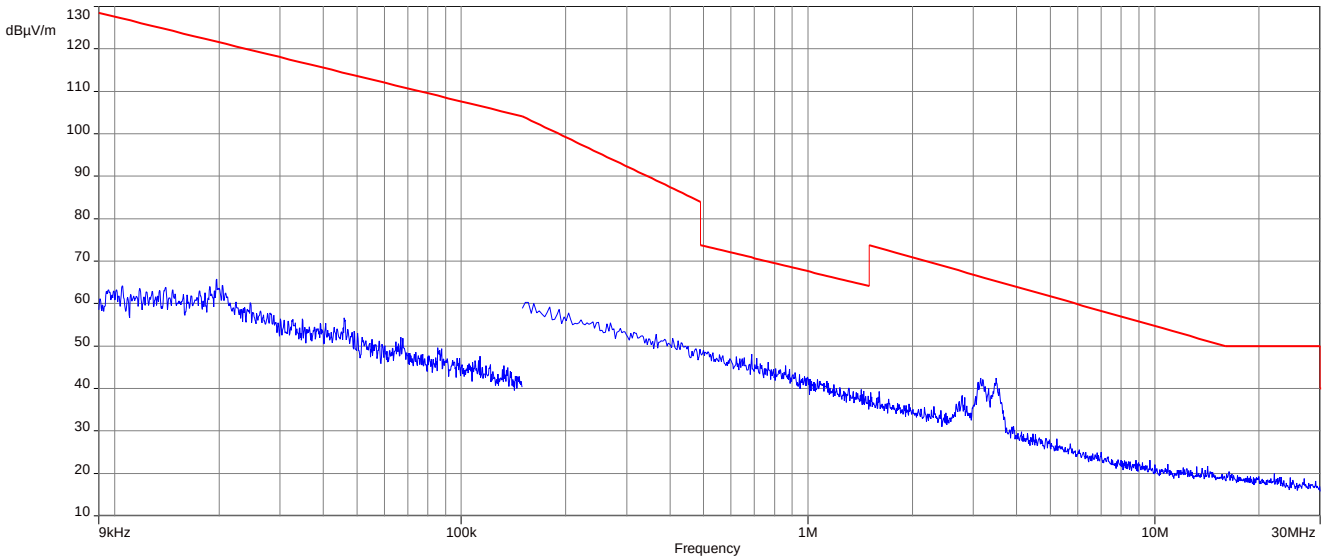
Plot 7: 9 kHz to 30 MHz, U-NII-2C; highest channel



Plot 8: 9 kHz to 30 MHz, U-NII-3; lowest channel

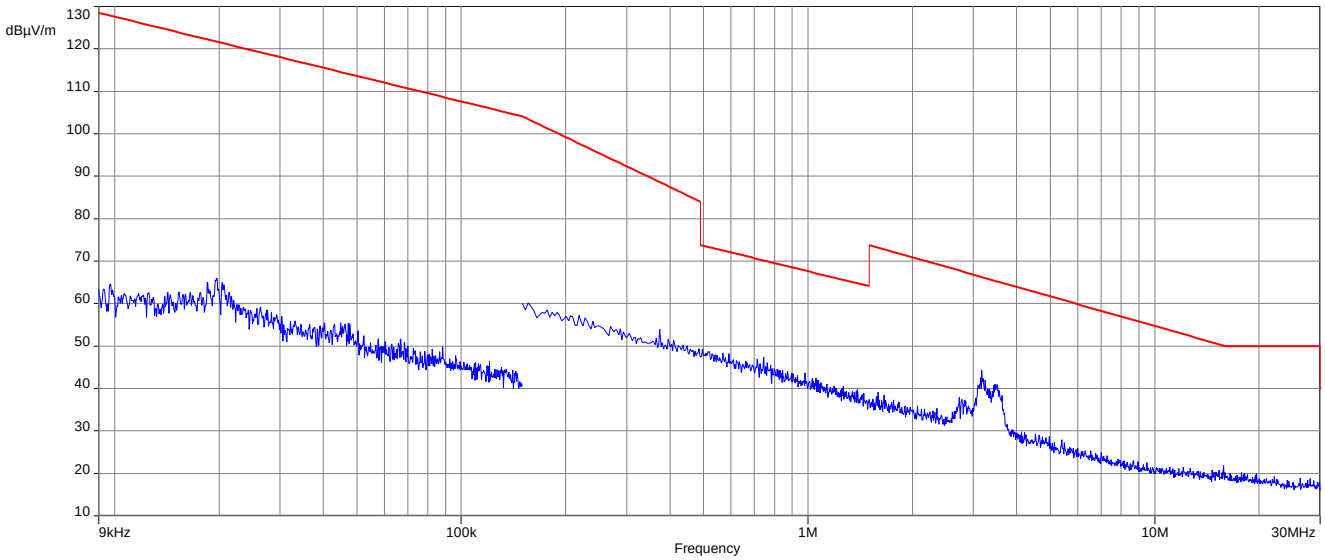


Plot 9: 9 kHz to 30 MHz, U-NII-3; highest channel

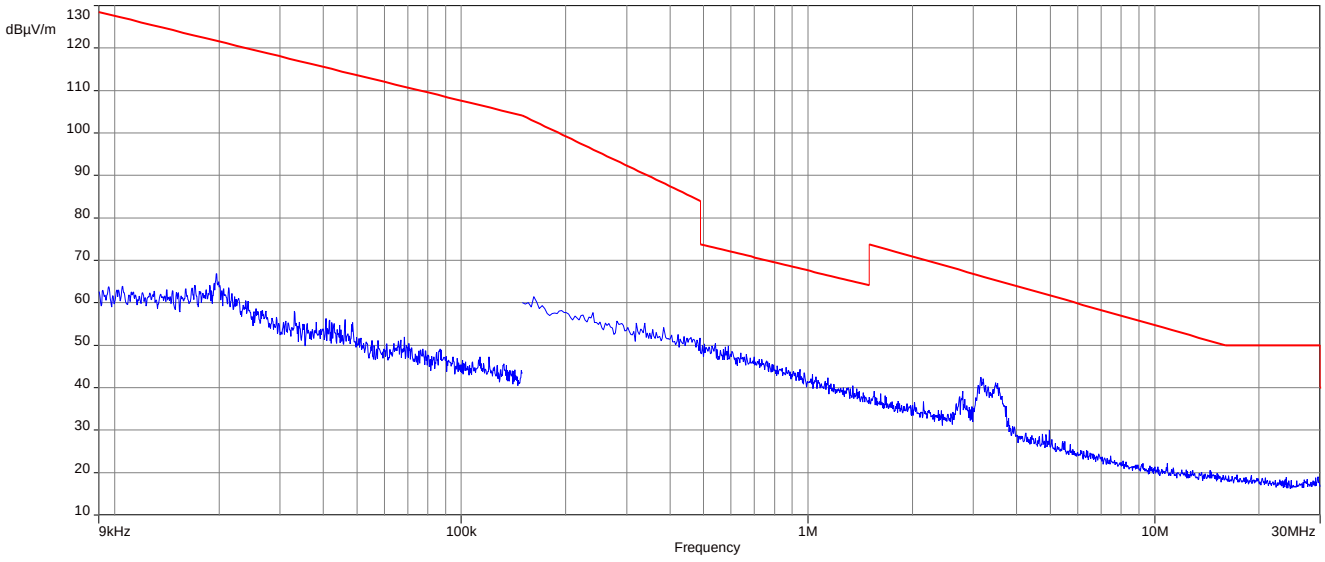


Plots: 80 MHz channel bandwidth

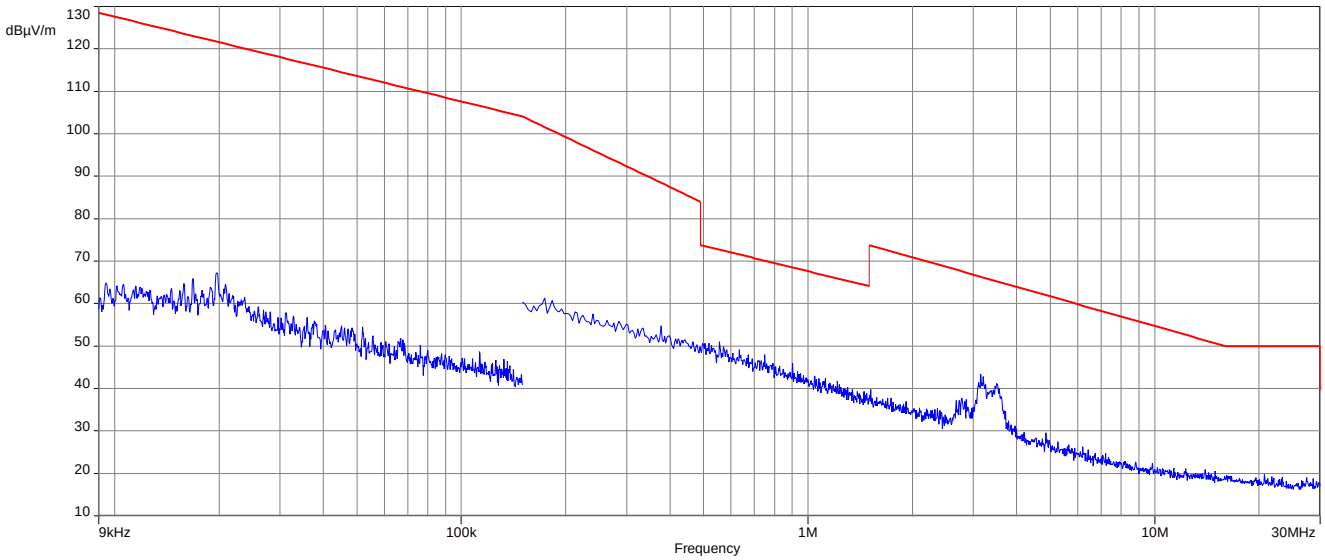
Plot 1: 9 kHz to 30 MHz, U-NII-1; middle channel



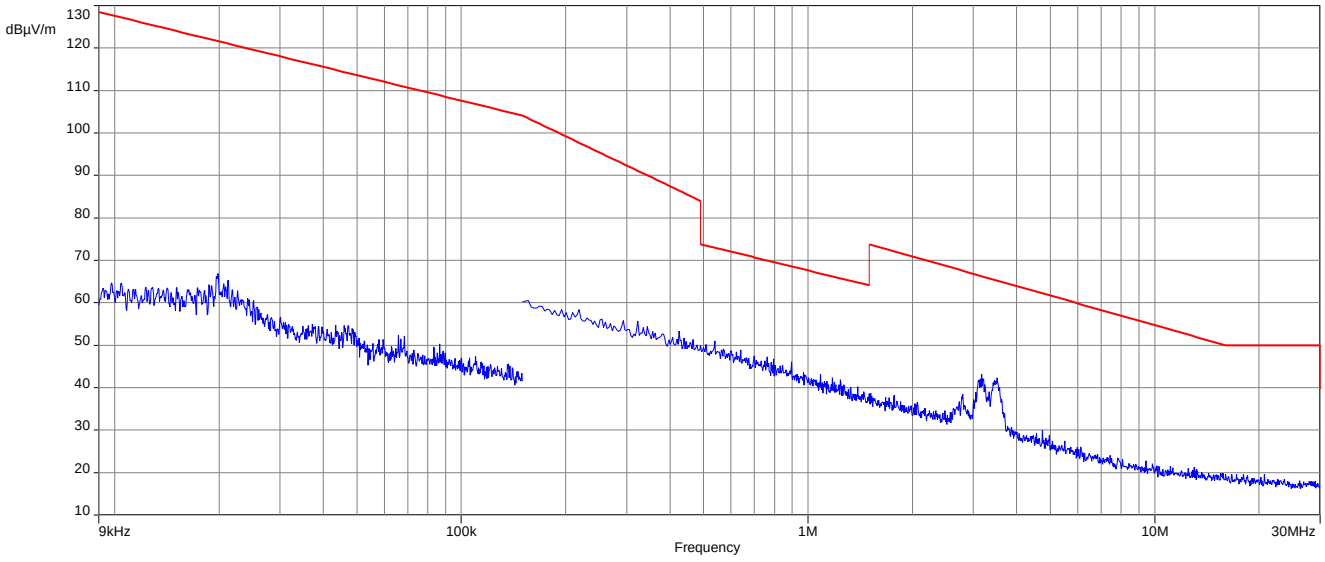
Plot 2: 9 kHz to 30 MHz, U-NII-2A; middle channel



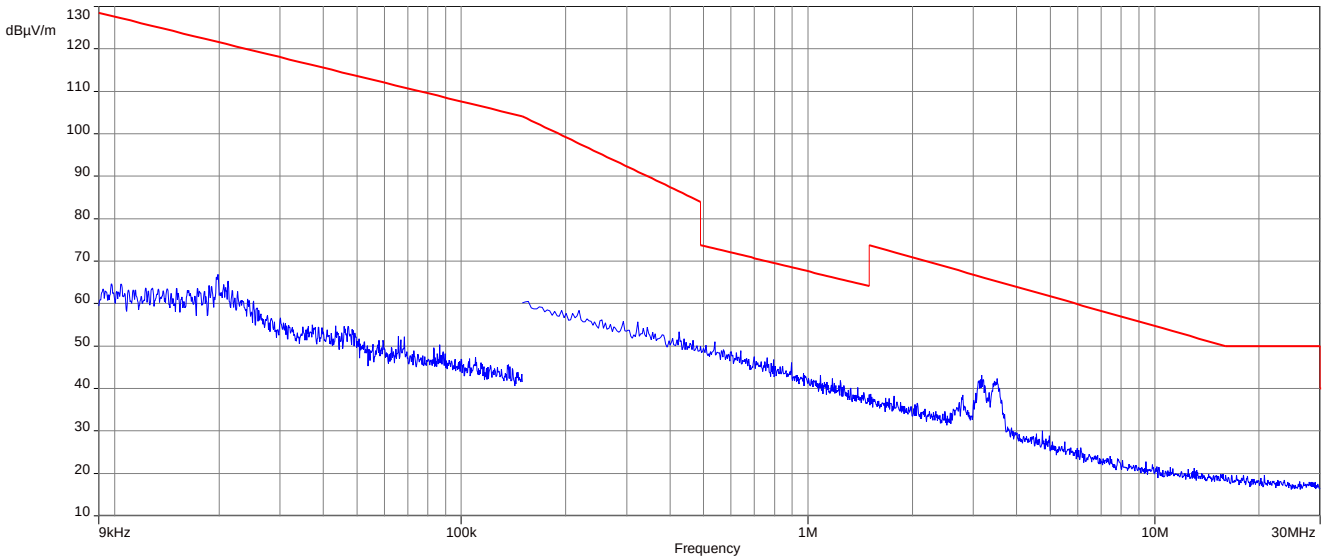
Plot 3: 9 kHz to 30 MHz, U-NII-2C; lowest channel



Plot 4: 9 kHz to 30 MHz, U-NII-2C; highest channel



Plot 5: 9 kHz to 30 MHz, U-NII-3; middle channel



12.6 Spurious emissions radiated 30 MHz to 1 GHz

Description:

Measurement of the radiated spurious emissions and cabinet radiations below 1 GHz.

Measurement:

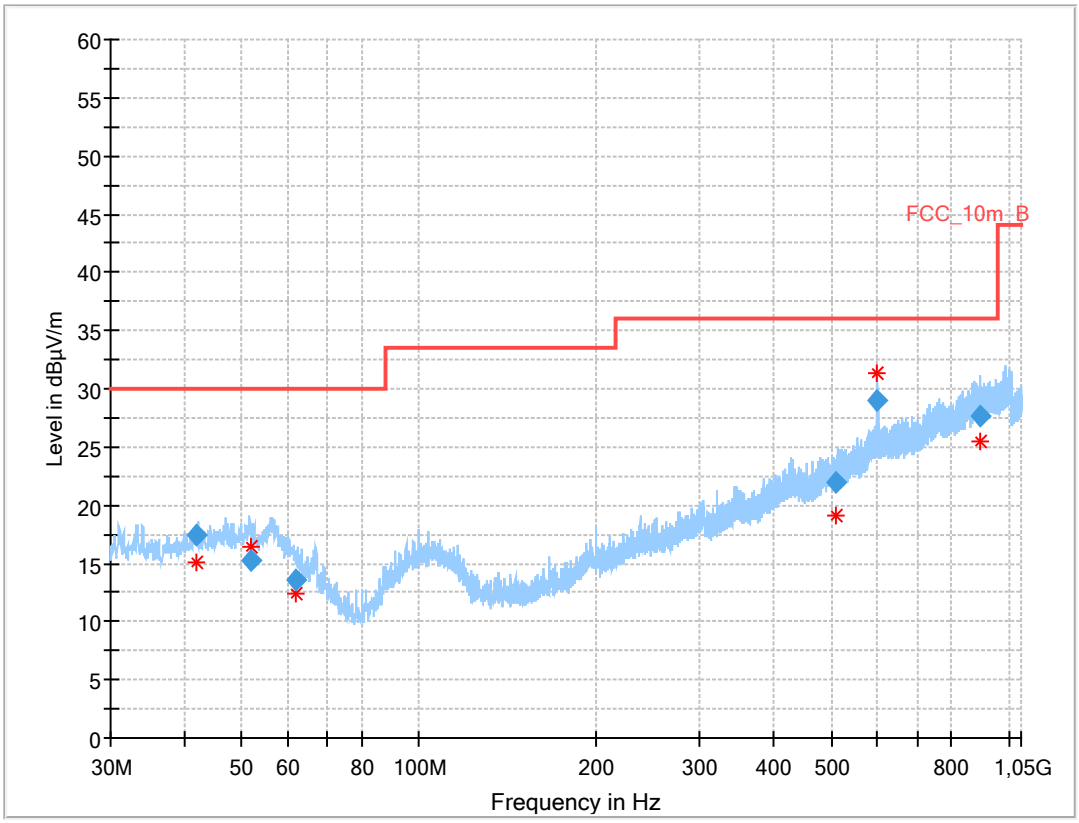
Measurement parameter	
Detector:	Quasi Peak
Sweep time:	Auto
Resolution bandwidth:	120 kHz
Video bandwidth:	500 kHz
Span:	30 MHz to 1 GHz
Test setup:	See sub clause 7.1 – A
Measurement uncertainty:	See chapter 9

Limits:

TX Spurious Emissions Radiated		
§15.209		
Frequency (MHz)	Field Strength (dBµV/m)	Measurement distance
30 - 88	30.0	10
88 – 216	33.5	10
216 – 960	36.0	10
Above 960	54.0	3
§15.407		
Outside the restricted bands!	-27 dBm / MHz	

Plots: 20 MHz channel bandwidth

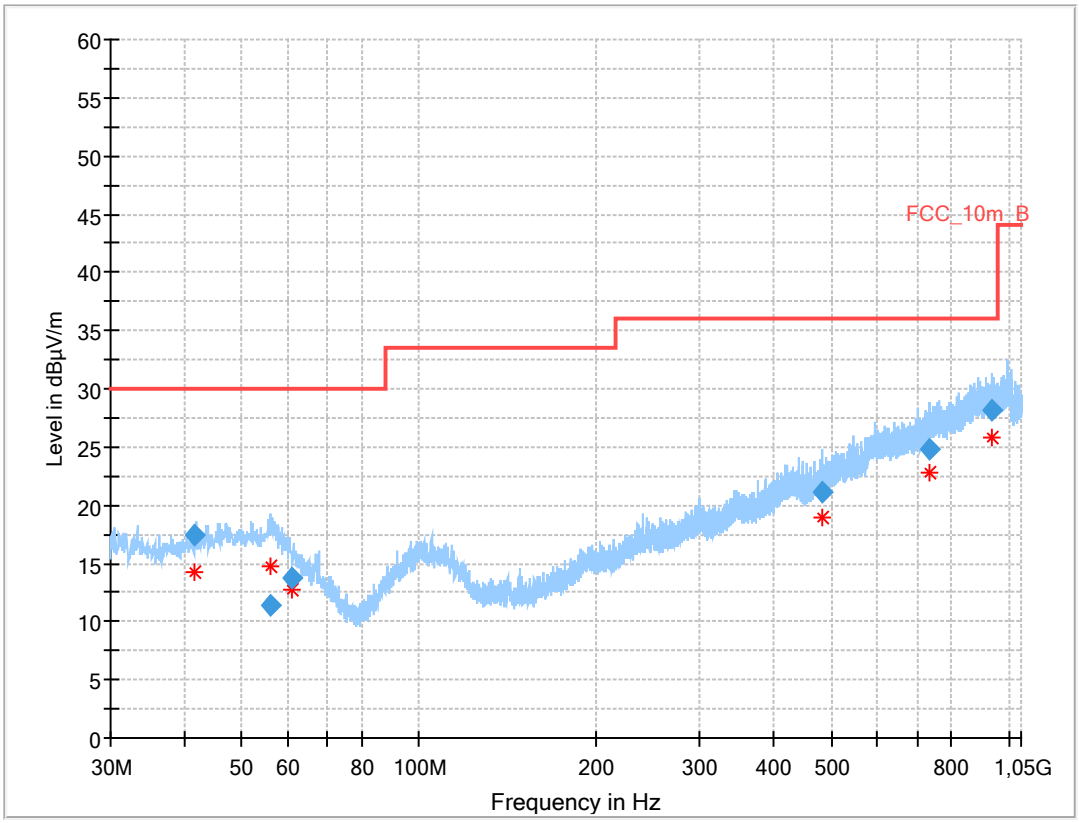
Plot 1: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-1; lowest channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
42.038	17.51	30.0	12.5	1000	120.0	155.0	V	260	14
51.892	15.32	30.0	14.7	1000	120.0	162.0	H	278	14
61.889	13.58	30.0	16.4	1000	120.0	170.0	V	-22	12
511.191	21.89	36.0	14.1	1000	120.0	170.0	V	247	19
599.967	28.94	36.0	7.1	1000	120.0	101.0	V	112	20
893.992	27.61	36.0	8.4	1000	120.0	127.0	H	10	24

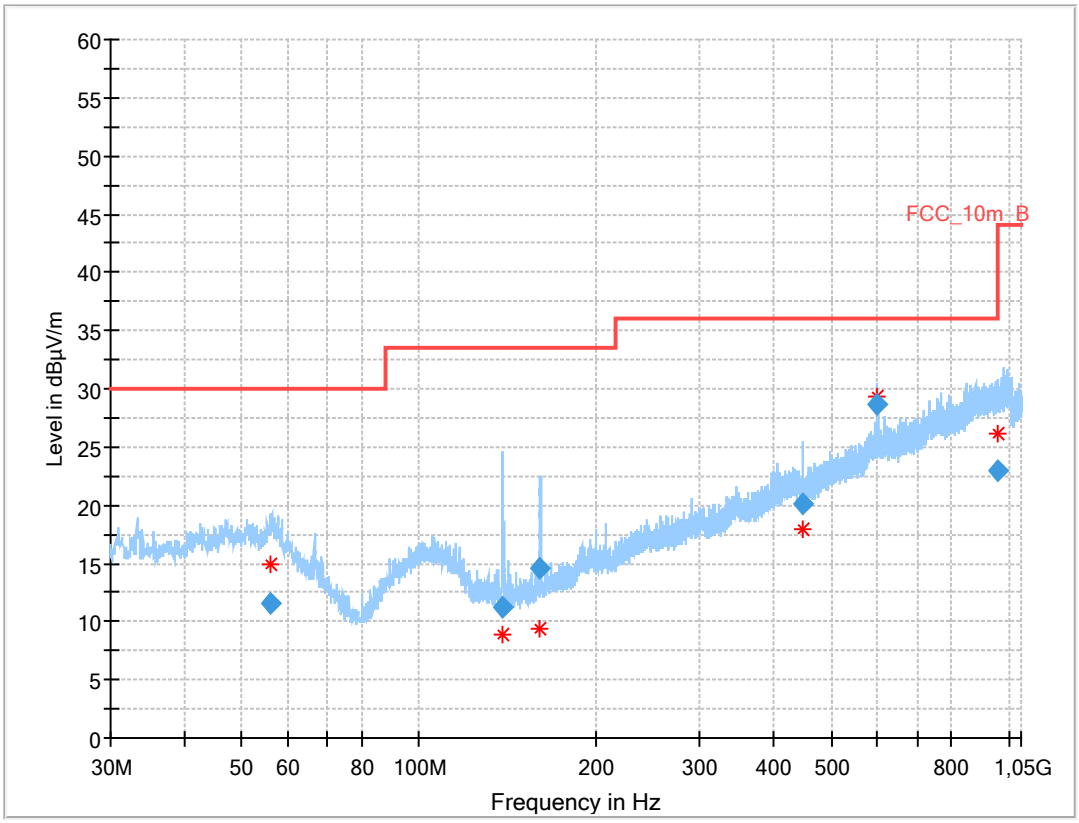
30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-1; middle channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
41.563	17.49	30.0	12.5	1000	120.0	170.0	H	22	14
56.169	11.45	30.0	18.6	1000	120.0	170.0	V	67	15
61.100	13.79	30.0	16.2	1000	120.0	170.0	H	191	13
484.262	21.10	36.0	14.9	1000	120.0	170.0	V	67	18
735.296	24.79	36.0	11.2	1000	120.0	170.0	H	-22	22
938.475	28.14	36.0	7.9	1000	120.0	114.0	V	112	24

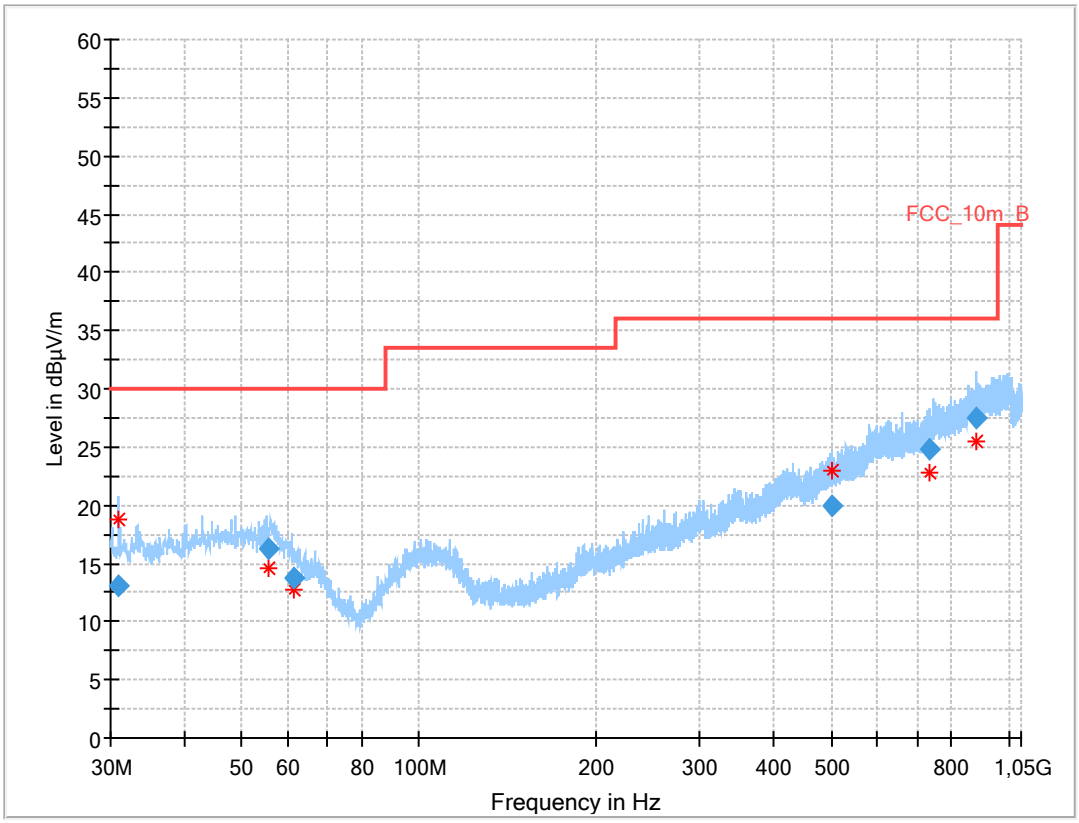
Plot 2: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-1; highest channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
56.000	11.51	30.0	18.5	1000	120.0	170.0	V	-22	15
138.384	11.21	33.5	22.3	1000	120.0	170.0	H	-2	9
160.335	14.56	33.5	18.9	1000	120.0	170.0	H	69	9
446.393	20.04	36.0	16.0	1000	120.0	170.0	V	247	17
599.990	28.70	36.0	7.3	1000	120.0	121.0	H	247	20
958.652	22.99	36.0	13.0	1000	120.0	170.0	V	67	24

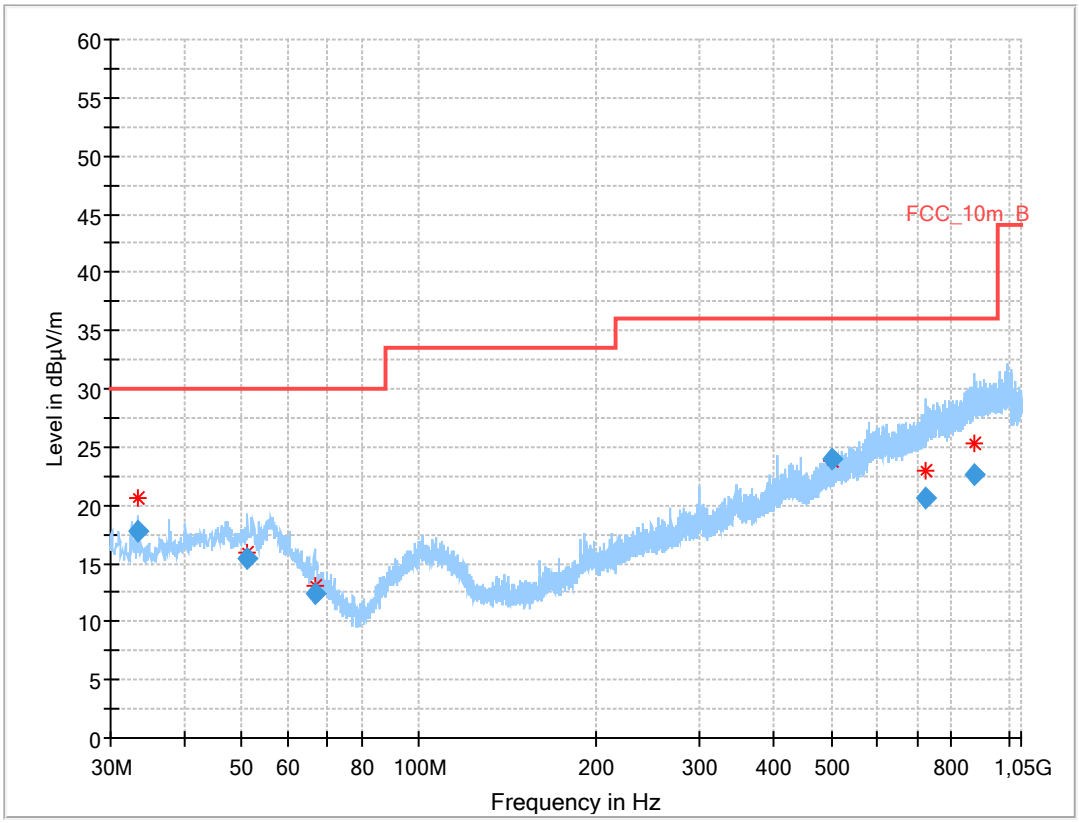
Plot 3: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2A; lowest channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.947	13.01	30.0	17.0	1000	120.0	98.0	V	-17	12
55.782	16.26	30.0	13.7	1000	120.0	170.0	H	67	15
61.223	13.73	30.0	16.3	1000	120.0	107.0	H	247	13
499.999	19.90	36.0	16.1	1000	120.0	104.0	V	247	18
735.821	24.86	36.0	11.1	1000	120.0	170.0	V	67	22
878.604	27.50	36.0	8.5	1000	120.0	102.0	V	67	23

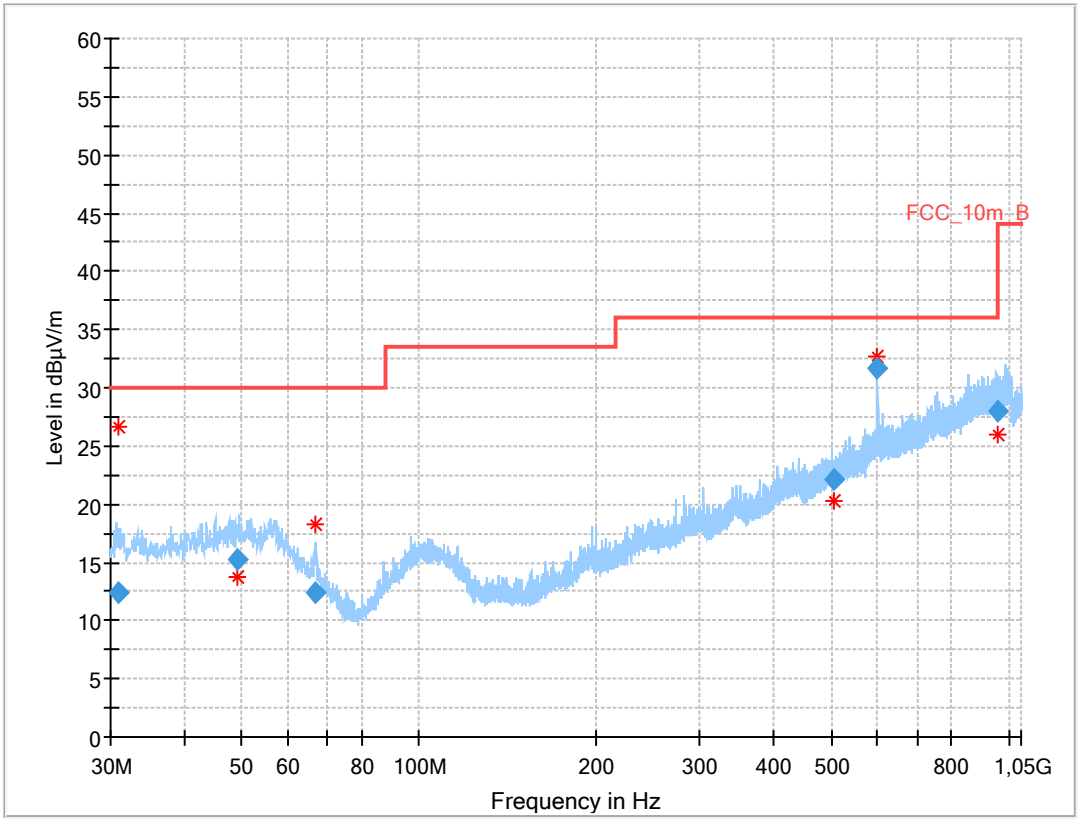
Plot 4: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2A; middle channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
33.305	17.83	30.0	12.2	1000	120.0	102.0	V	-15	12
50.996	15.41	30.0	14.6	1000	120.0	101.0	V	22	14
66.782	12.45	30.0	17.6	1000	120.0	160.0	H	247	11
499.991	23.90	36.0	12.1	1000	120.0	104.0	V	-22	18
722.009	20.56	36.0	15.4	1000	120.0	98.0	H	285	21
877.768	22.63	36.0	13.4	1000	120.0	170.0	V	247	23

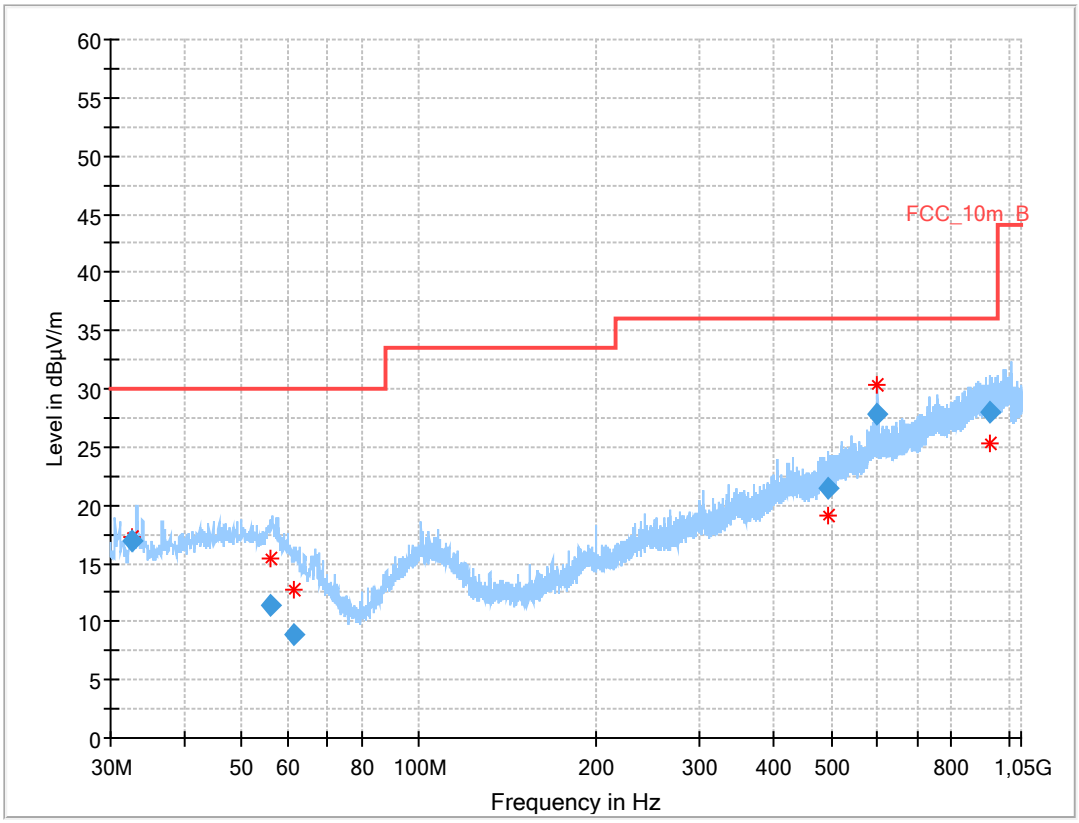
Plot 5: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2A; highest channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.946	12.45	30.0	17.6	1000	120.0	134.0	V	-12	12
49.332	15.25	30.0	14.8	1000	120.0	170.0	H	-20	14
66.890	12.34	30.0	17.7	1000	120.0	113.0	V	157	11
503.789	22.05	36.0	14.0	1000	120.0	102.0	V	292	18
599.995	31.69	36.0	4.3	1000	120.0	98.0	V	157	20
954.817	27.94	36.0	8.1	1000	120.0	170.0	H	22	24

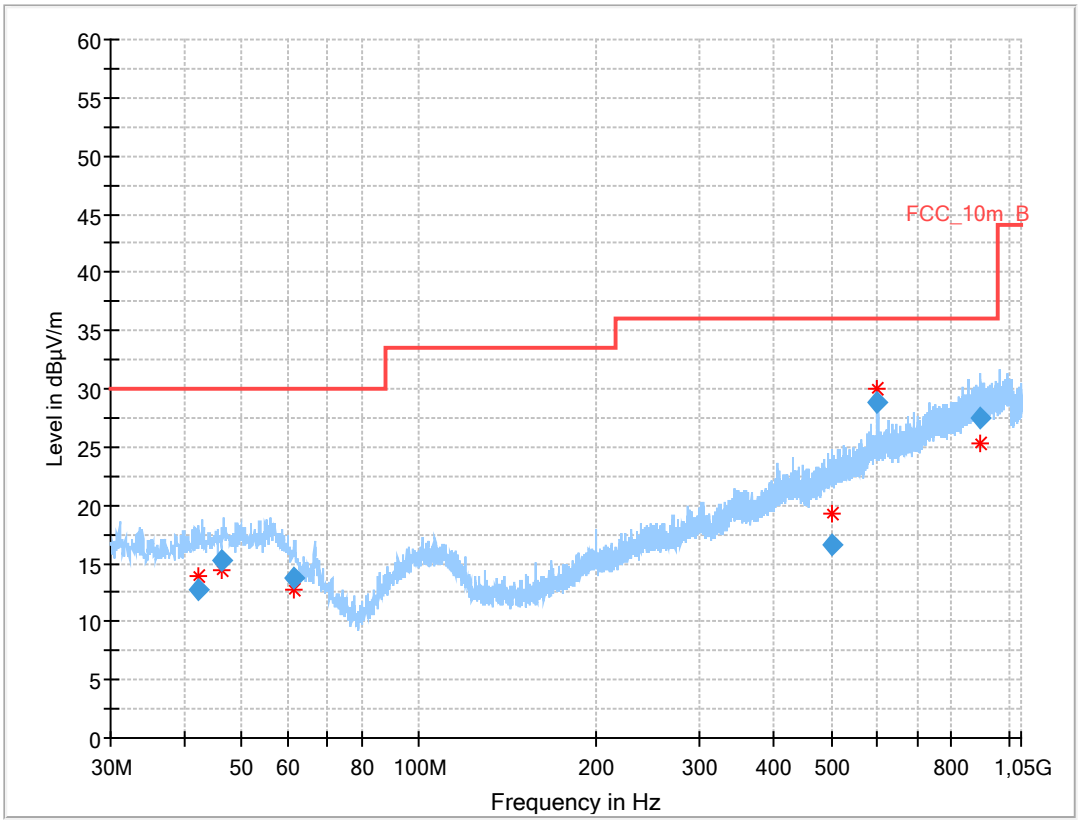
Plot 6: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2C; lowest channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
32.704	16.85	30.0	13.2	1000	120.0	102.0	V	157	12
56.084	11.37	30.0	18.6	1000	120.0	170.0	H	157	15
61.298	8.96	30.0	21.0	1000	120.0	105.0	H	88	12
492.752	21.51	36.0	14.5	1000	120.0	137.0	V	202	18
599.995	27.85	36.0	8.2	1000	120.0	170.0	H	81	20
928.574	27.96	36.0	8.0	1000	120.0	170.0	H	157	24

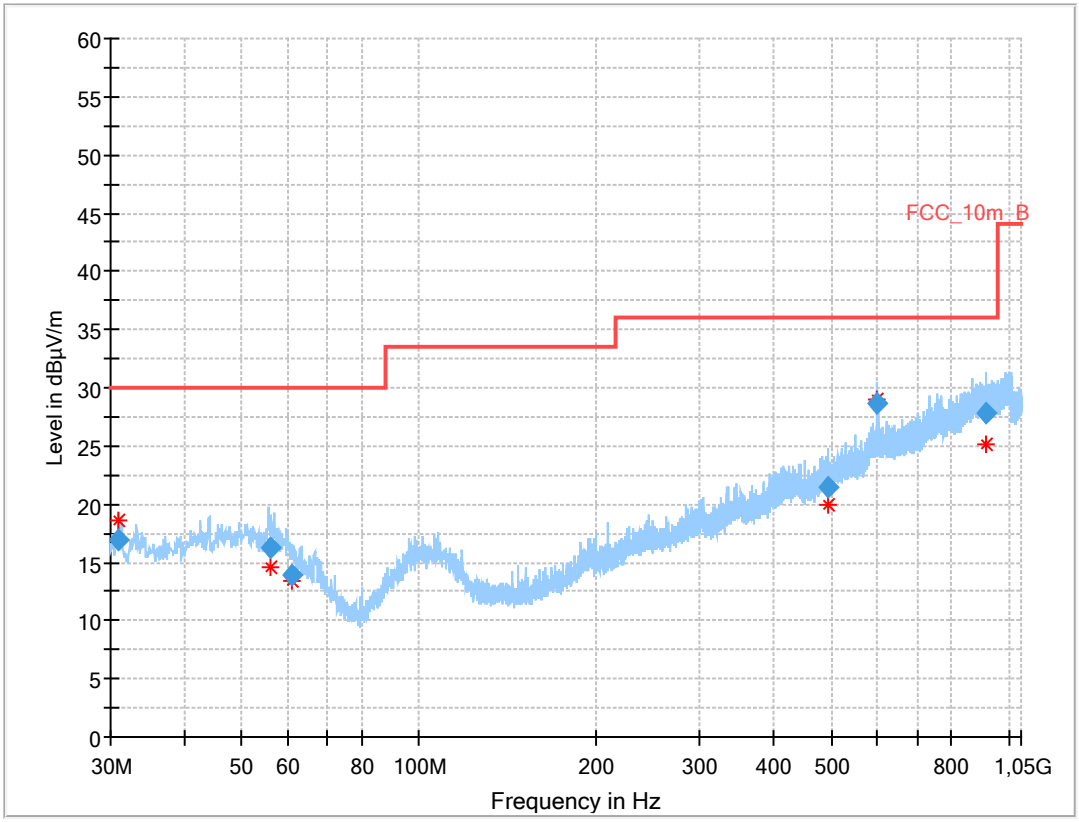
Plot 7: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2C; middle channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
42.248	12.70	30.0	17.3	1000	120.0	112.0	V	67	14
46.328	15.24	30.0	14.8	1000	120.0	170.0	V	103	14
61.229	13.80	30.0	16.2	1000	120.0	170.0	V	157	13
502.312	16.63	36.0	19.4	1000	120.0	170.0	H	157	18
599.987	28.90	36.0	7.1	1000	120.0	170.0	H	78	20
892.800	27.50	36.0	8.5	1000	120.0	170.0	V	157	24

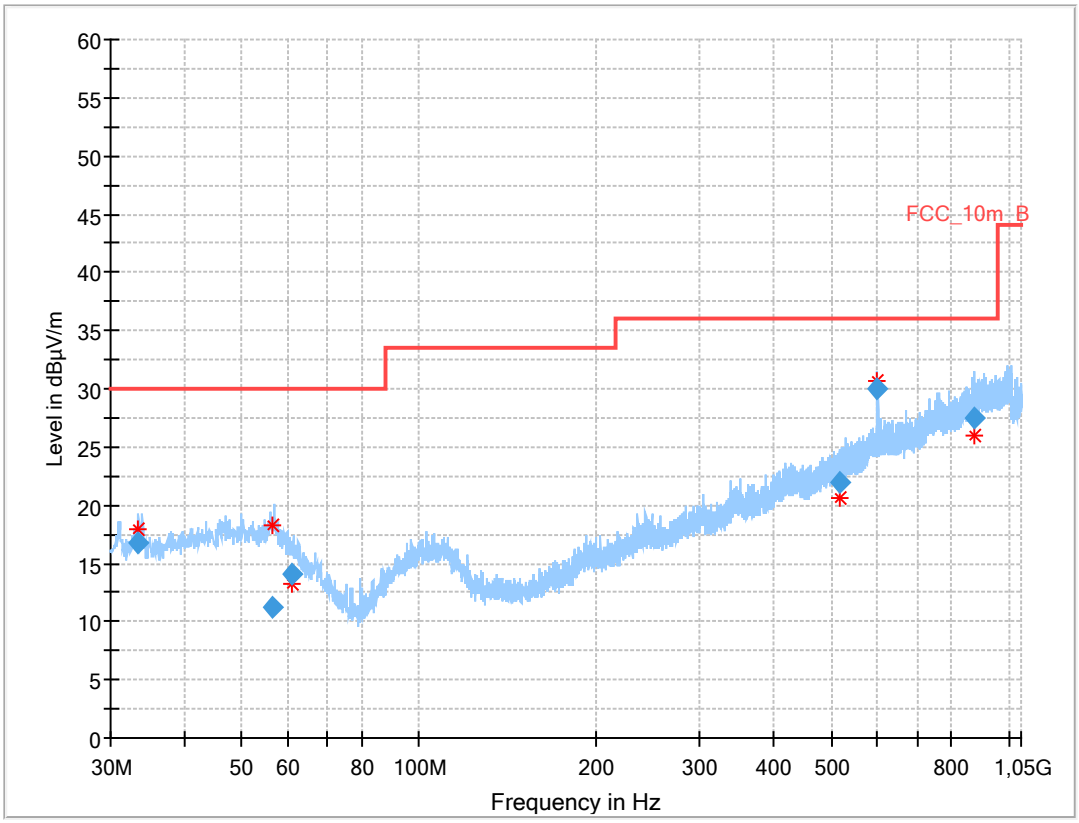
Plot 8: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2C; highest channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.926	16.85	30.0	13.2	1000	120.0	104.0	V	-19	12
56.038	16.23	30.0	13.8	1000	120.0	170.0	H	86	15
60.961	13.99	30.0	16.0	1000	120.0	170.0	V	247	13
494.820	21.41	36.0	14.6	1000	120.0	148.0	H	112	18
599.989	28.61	36.0	7.4	1000	120.0	117.0	H	247	20
917.000	27.80	36.0	8.2	1000	120.0	170.0	V	14	24

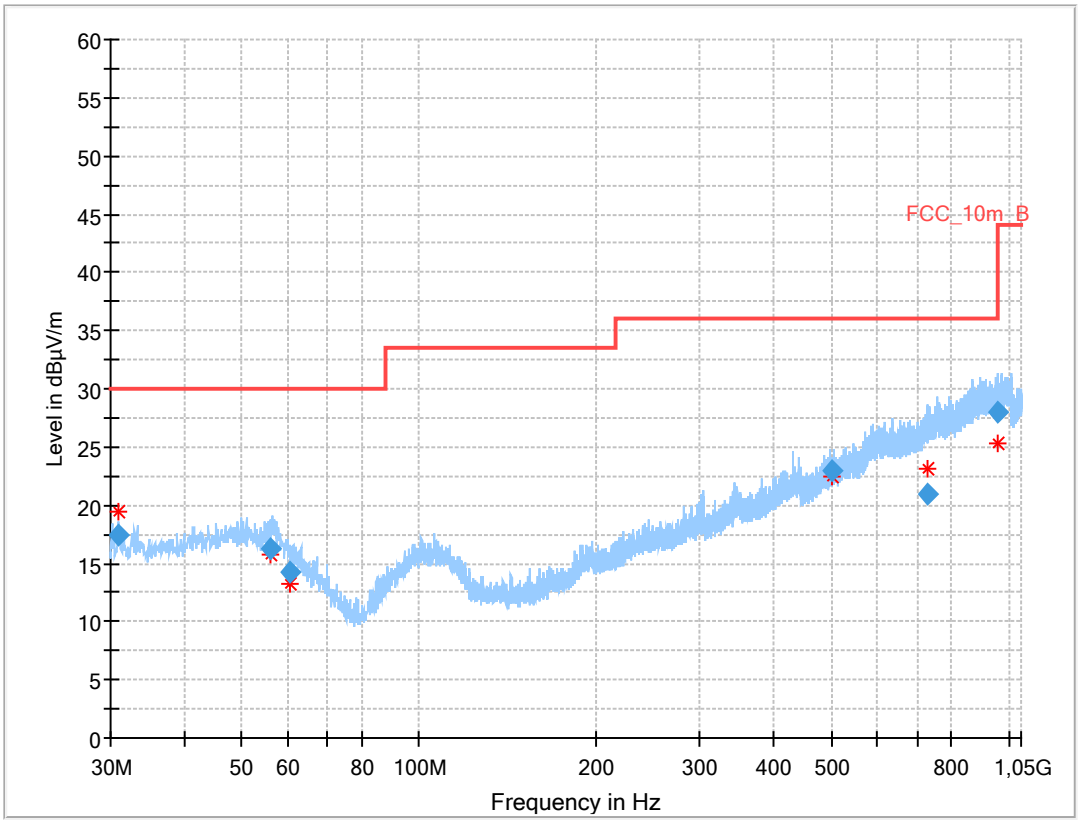
Plot 9: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-3; lowest channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
33.425	16.71	30.0	13.3	1000	120.0	132.0	V	281	12
56.381	11.31	30.0	18.7	1000	120.0	114.0	V	6	15
60.783	14.03	30.0	16.0	1000	120.0	170.0	V	67	13
515.545	21.95	36.0	14.1	1000	120.0	170.0	V	16	19
599.991	30.02	36.0	6.0	1000	120.0	118.0	H	292	20
873.722	27.56	36.0	8.4	1000	120.0	170.0	V	157	23

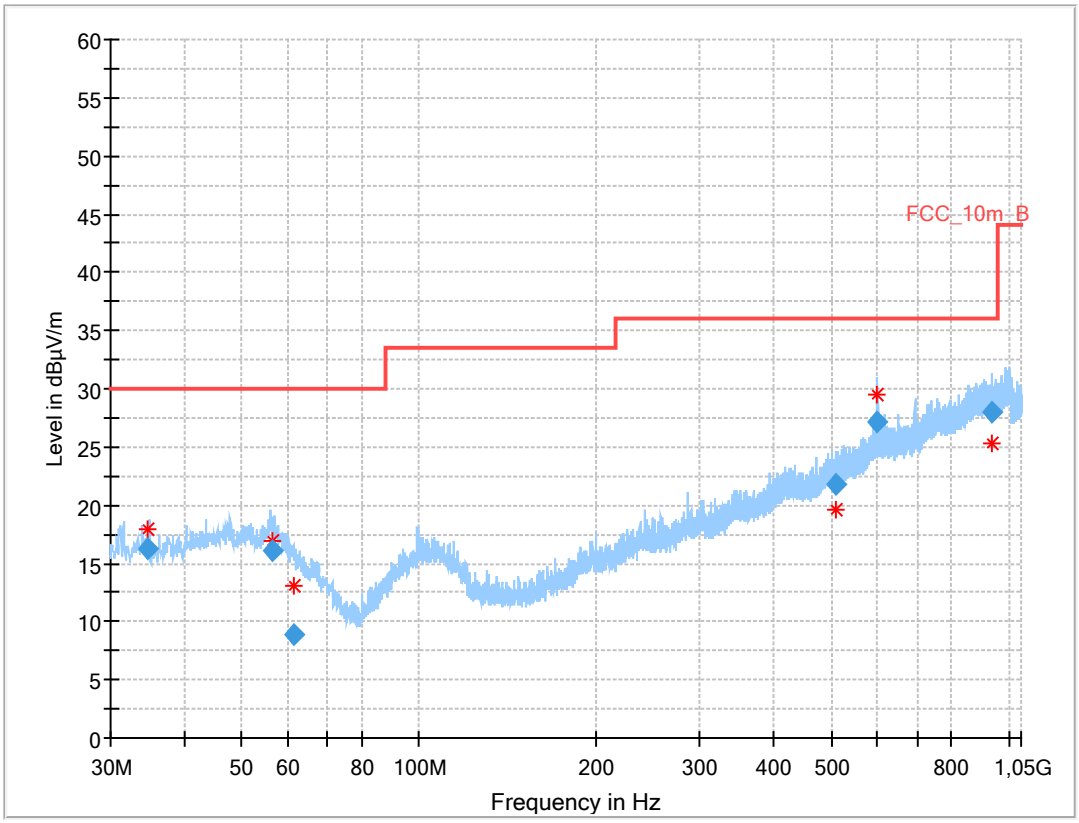
30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-3; middle channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
31.007	17.42	30.0	12.6	1000	120.0	107.0	V	194	12
56.013	16.27	30.0	13.7	1000	120.0	98.0	H	159	15
60.632	14.19	30.0	15.8	1000	120.0	170.0	V	22	13
500.022	22.89	36.0	13.1	1000	120.0	107.0	V	68	18
728.053	20.88	36.0	15.1	1000	120.0	170.0	H	67	21
955.534	27.97	36.0	8.0	1000	120.0	170.0	H	284	24

Plot 10: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-3; highest channel

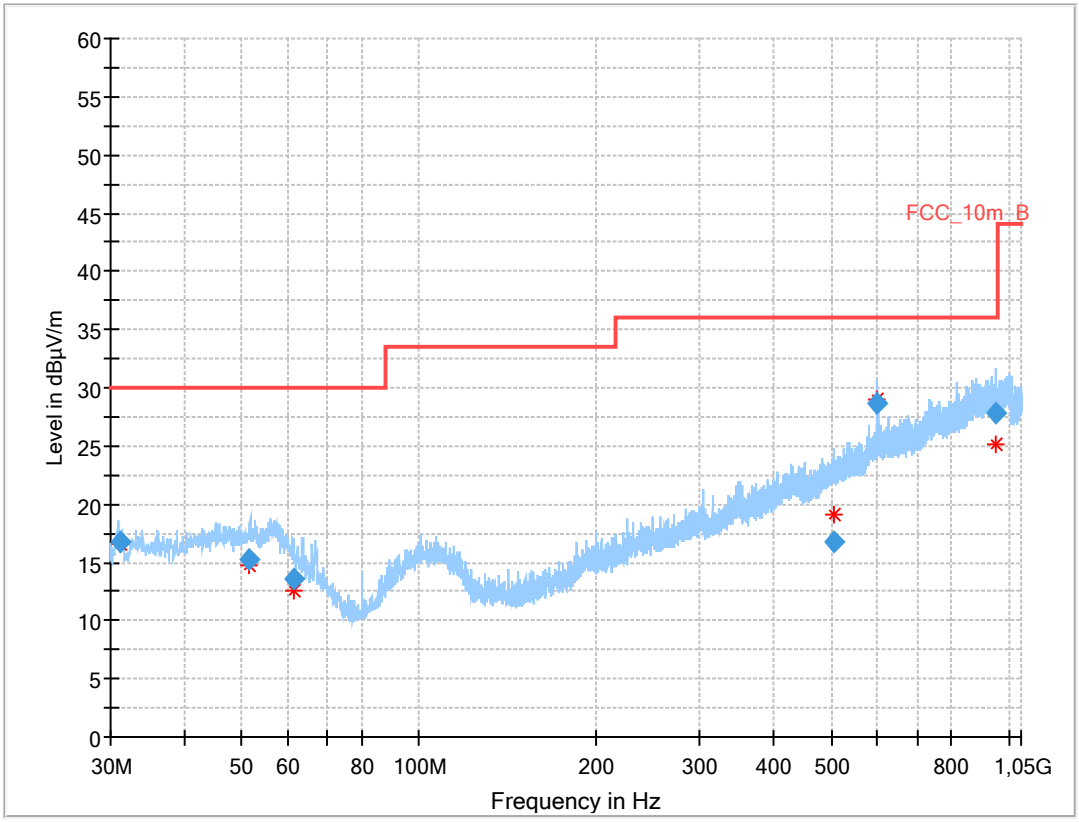


Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
34.569	16.31	30.0	13.7	1000	120.0	148.0	H	-4	12
56.540	16.07	30.0	13.9	1000	120.0	107.0	V	-22	15
61.307	8.93	30.0	21.1	1000	120.0	115.0	H	247	12
509.117	21.86	36.0	14.1	1000	120.0	170.0	H	-22	18
599.983	27.12	36.0	8.9	1000	120.0	117.0	H	247	20
937.872	28.02	36.0	8.0	1000	120.0	170.0	H	202	24

Plots: 40 MHz channel bandwidth

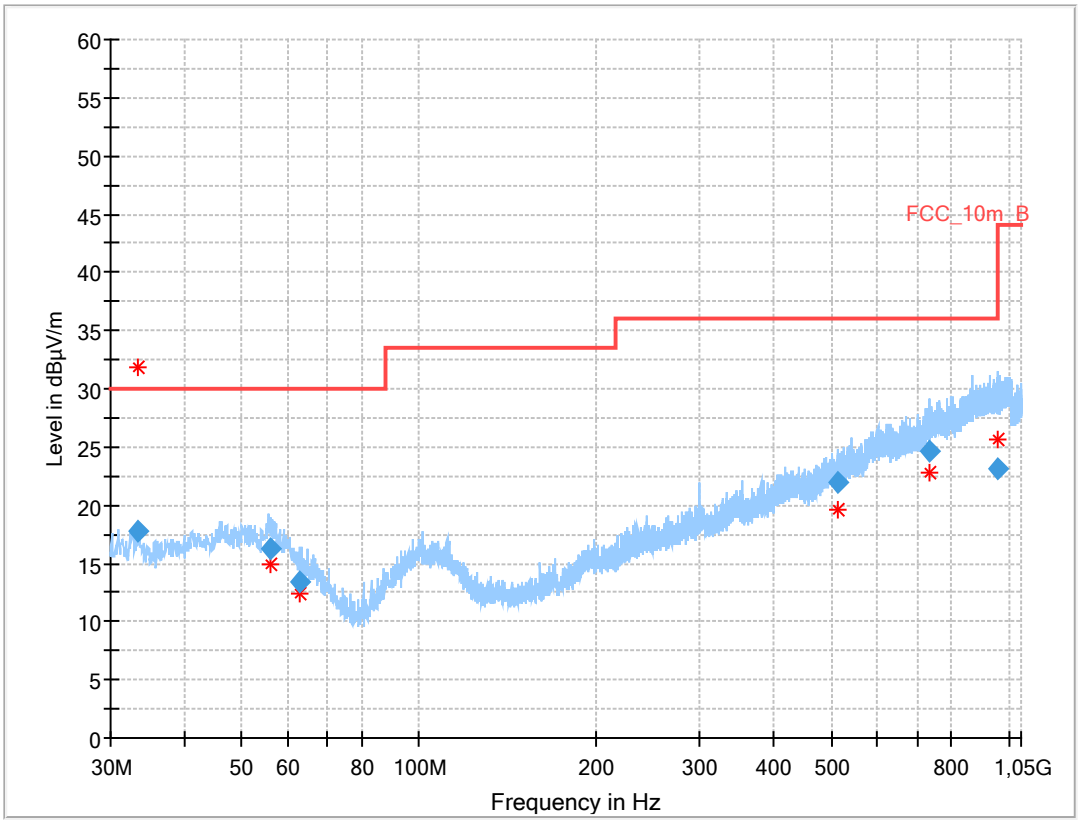
Plot 1: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-1; lowest channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
31.170	16.81	30.0	13.2	1000	120.0	104.0	V	-15	12
51.627	15.33	30.0	14.7	1000	120.0	121.0	V	-22	14
61.450	13.64	30.0	16.4	1000	120.0	106.0	H	247	12
504.151	16.74	36.0	19.3	1000	120.0	101.0	V	247	18
599.994	28.70	36.0	7.3	1000	120.0	124.0	H	247	20
954.024	27.89	36.0	8.1	1000	120.0	170.0	V	281	24

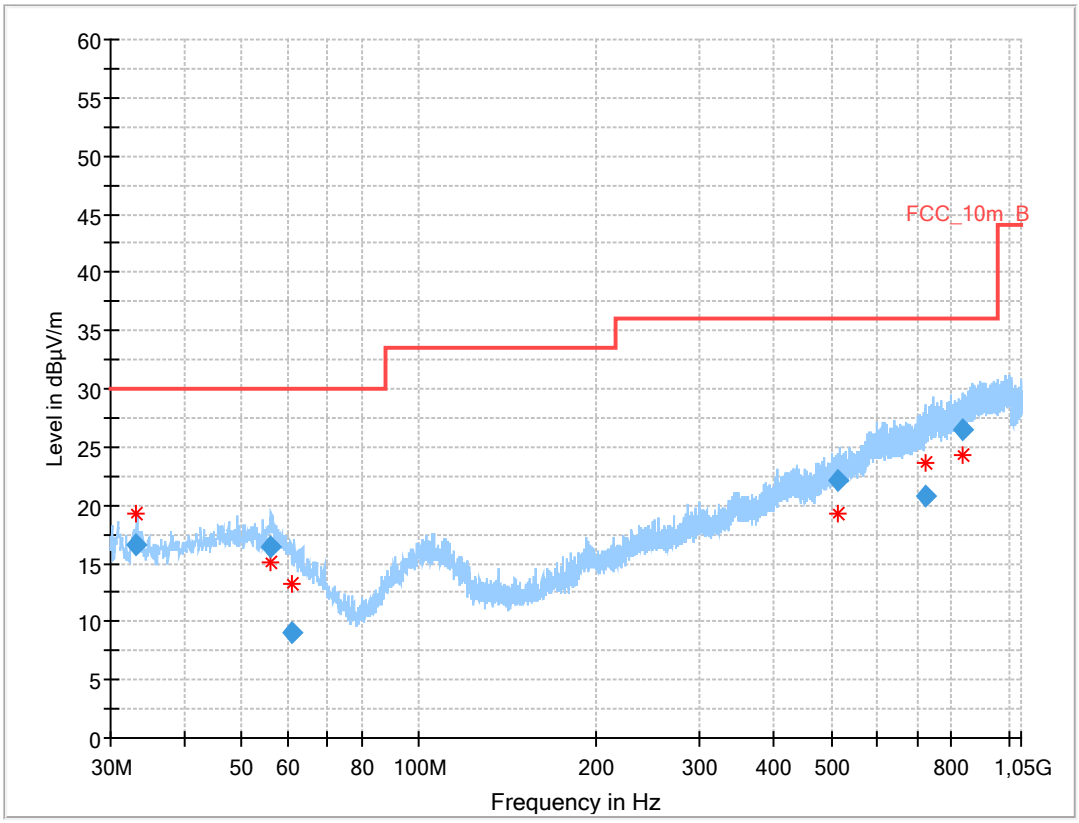
Plot 2: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-1; highest channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
33.333	17.78	30.0	12.2	1000	120.0	102.0	V	266	12
55.900	16.34	30.0	13.7	1000	120.0	170.0	V	-1	15
63.001	13.47	30.0	16.5	1000	120.0	105.0	H	247	12
512.020	21.92	36.0	14.1	1000	120.0	154.0	H	22	19
732.999	24.57	36.0	11.4	1000	120.0	150.0	V	157	22
956.264	23.06	36.0	12.9	1000	120.0	170.0	H	-22	24

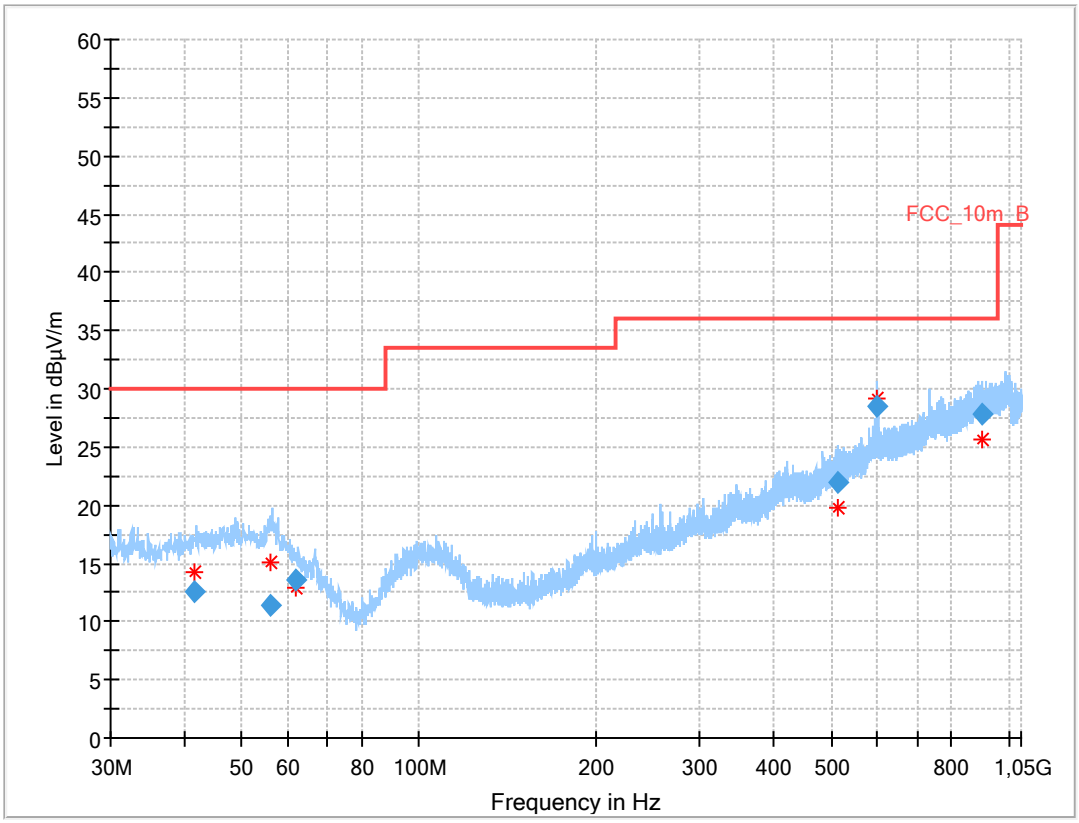
Plot 3: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2A; lowest channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
33.098	16.62	30.0	13.4	1000	120.0	129.0	V	169	12
55.962	16.36	30.0	13.6	1000	120.0	111.0	V	-4	15
61.052	8.99	30.0	21.0	1000	120.0	102.0	H	158	13
515.059	22.15	36.0	13.9	1000	120.0	102.0	H	112	19
723.427	20.70	36.0	15.3	1000	120.0	170.0	H	67	21
834.034	26.51	36.0	9.5	1000	120.0	158.0	V	-22	23

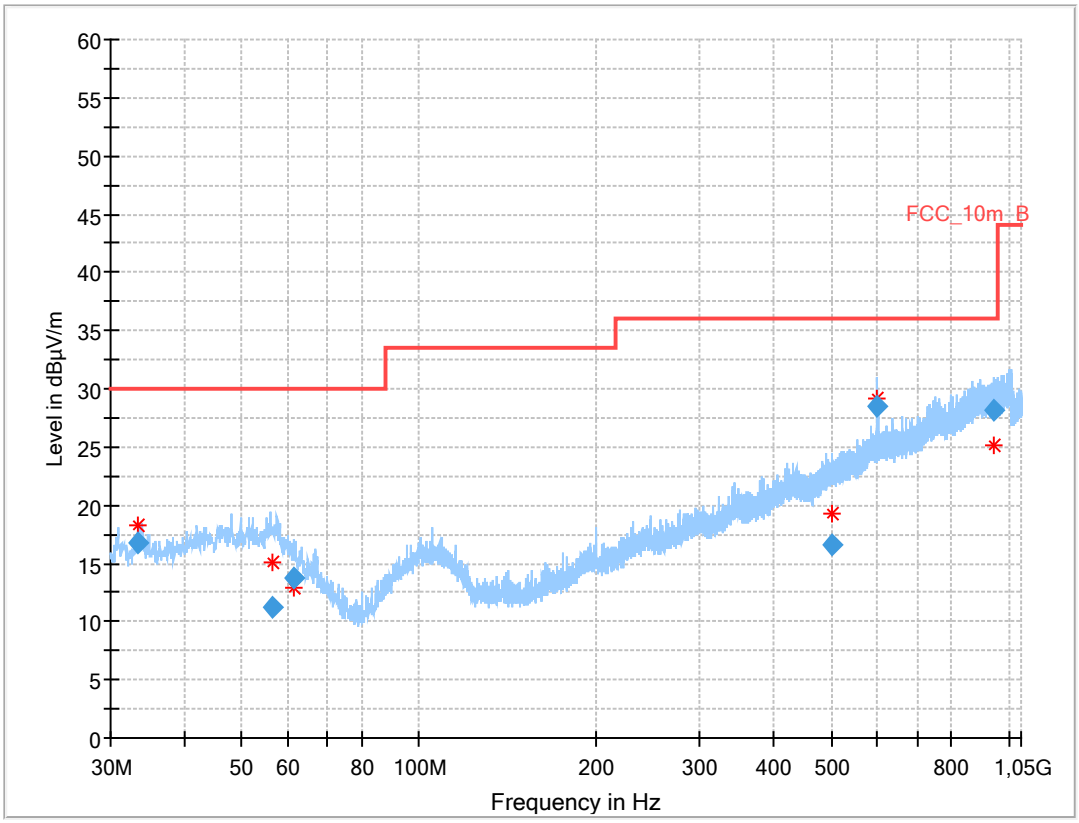
Plot 4: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2A; highest channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
41.547	12.55	30.0	17.5	1000	120.0	170.0	H	188	14
56.062	11.35	30.0	18.7	1000	120.0	157.0	H	247	15
61.973	13.60	30.0	16.4	1000	120.0	170.0	V	247	12
514.699	21.92	36.0	14.1	1000	120.0	113.0	V	-21	19
599.985	28.50	36.0	7.5	1000	120.0	117.0	H	247	20
904.592	27.76	36.0	8.2	1000	120.0	139.0	V	157	24

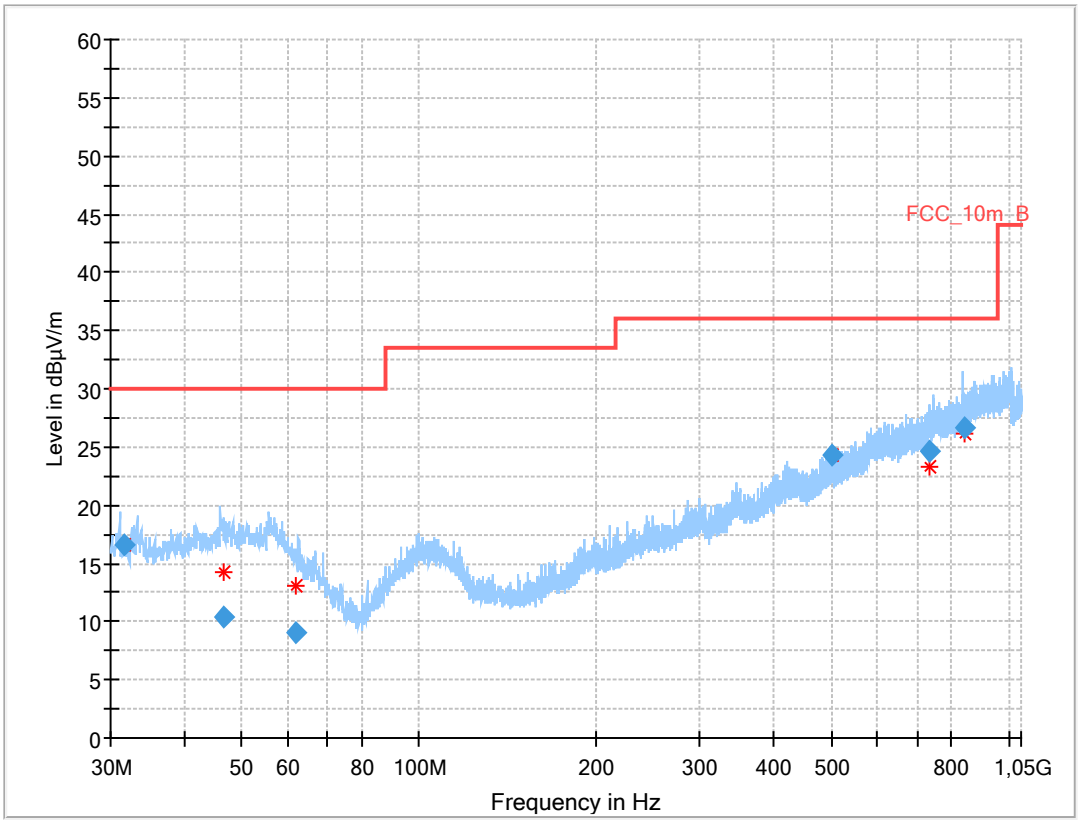
Plot 5: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2C; lowest channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
33.466	16.71	30.0	13.3	1000	120.0	112.0	V	186	12
56.509	11.26	30.0	18.7	1000	120.0	170.0	V	84	15
61.418	13.75	30.0	16.3	1000	120.0	170.0	H	247	12
500.808	16.62	36.0	19.4	1000	120.0	150.0	V	278	18
599.980	28.46	36.0	7.5	1000	120.0	125.0	H	247	20
940.484	28.18	36.0	7.8	1000	120.0	170.0	V	157	24

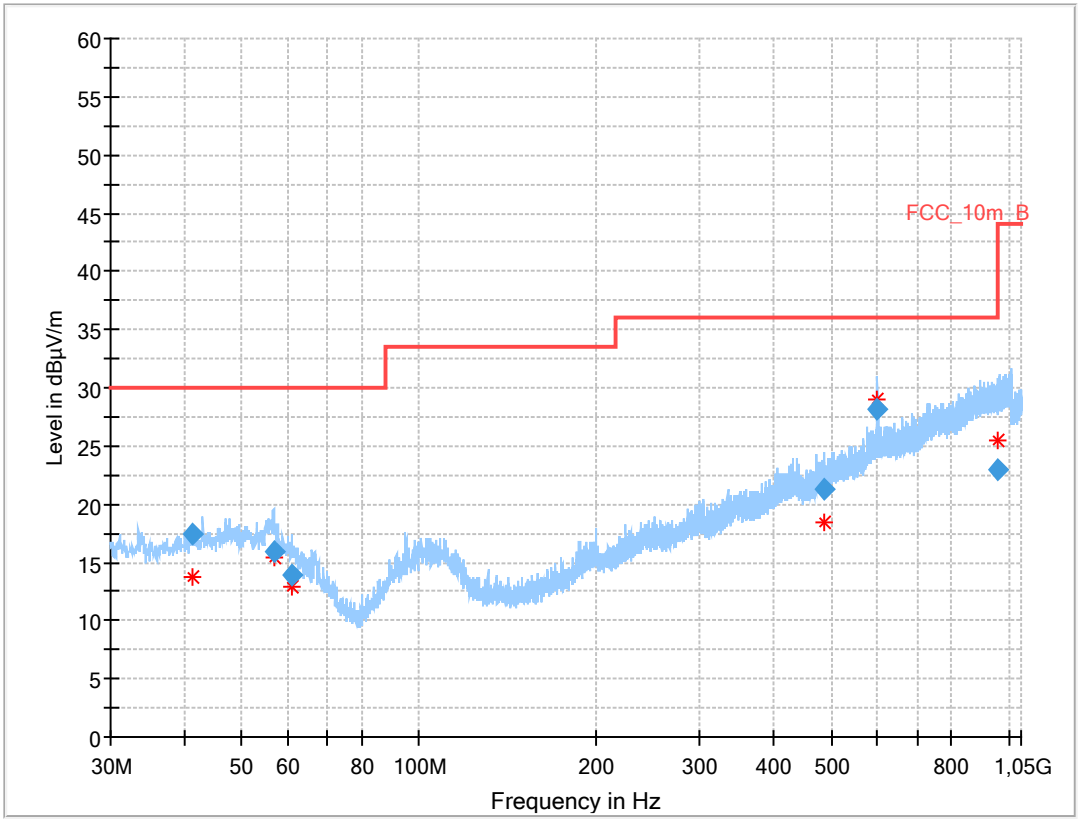
Plot 6: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2C; middle channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
31.675	16.51	30.0	13.5	1000	120.0	102.0	V	67	12
46.489	10.40	30.0	19.6	1000	120.0	170.0	V	67	14
62.034	9.00	30.0	21.0	1000	120.0	170.0	H	-5	12
500.002	24.36	36.0	11.6	1000	120.0	98.0	V	-22	18
732.740	24.70	36.0	11.3	1000	120.0	170.0	H	-22	22
840.821	26.62	36.0	9.4	1000	120.0	170.0	V	67	23

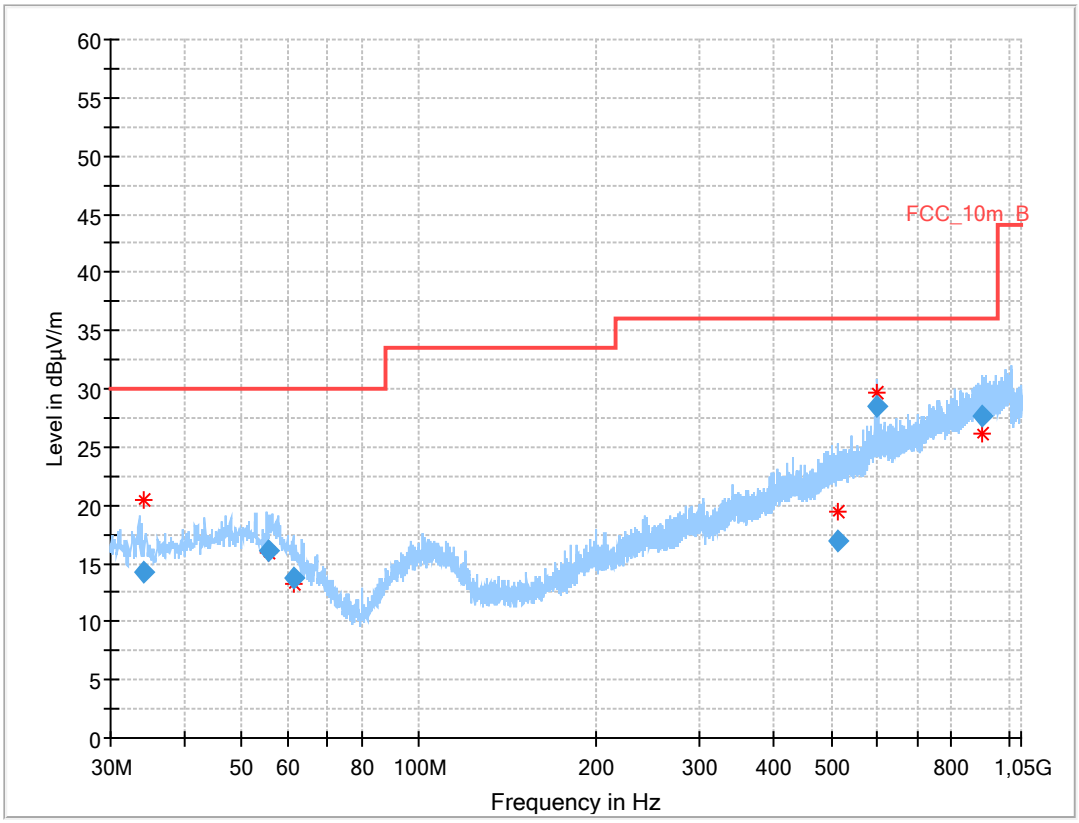
Plot 7: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2C; highest channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
41.263	17.46	30.0	12.5	1000	120.0	170.0	H	292	14
56.918	15.88	30.0	14.1	1000	120.0	170.0	V	247	15
60.977	13.93	30.0	16.1	1000	120.0	104.0	V	247	13
485.320	21.36	36.0	14.6	1000	120.0	102.0	V	112	18
600.012	28.19	36.0	7.8	1000	120.0	119.0	H	247	20
960.073	22.96	44.0	21.0	1000	120.0	147.0	V	247	24

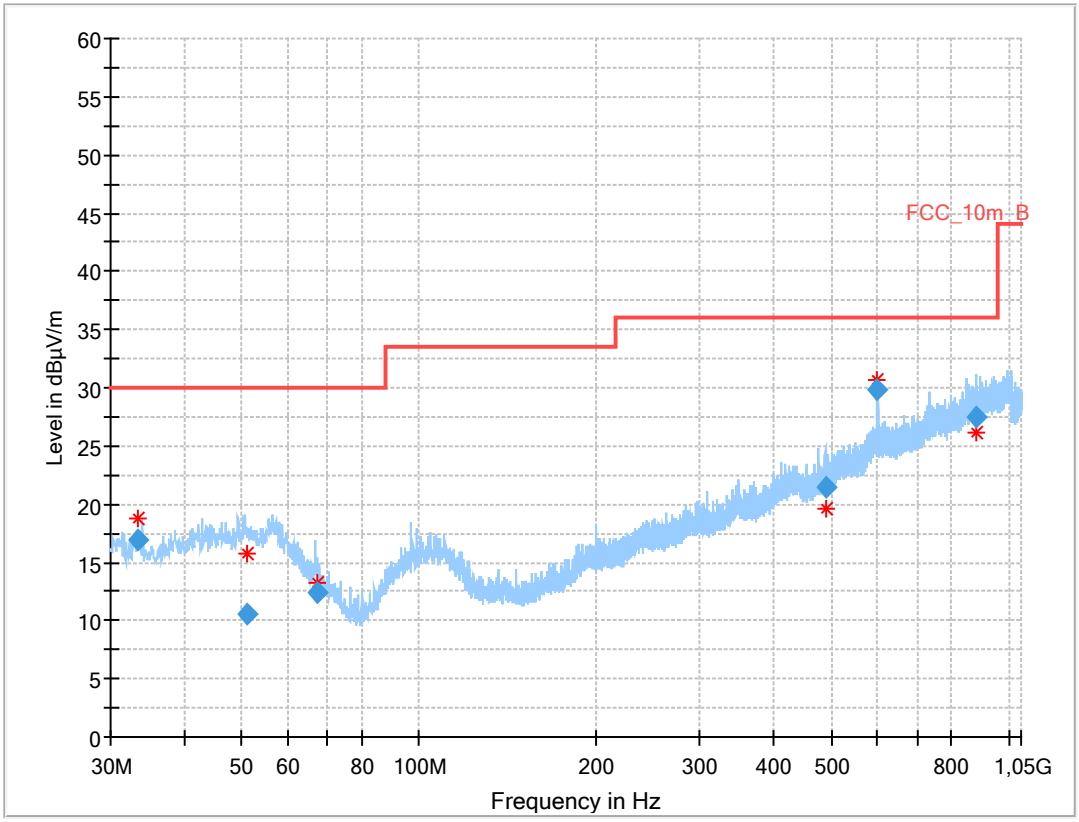
Plot 8: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-3; lowest channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
34.020	14.22	30.0	15.8	1000	120.0	100.0	V	275	12
55.739	16.11	30.0	13.9	1000	120.0	148.0	V	101	15
61.363	13.67	30.0	16.3	1000	120.0	170.0	H	247	12
512.360	17.01	36.0	19.0	1000	120.0	170.0	V	157	19
600.005	28.48	36.0	7.5	1000	120.0	121.0	H	247	20
900.520	27.71	36.0	8.3	1000	120.0	170.0	H	247	24

Plot 9: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-3; highest channel

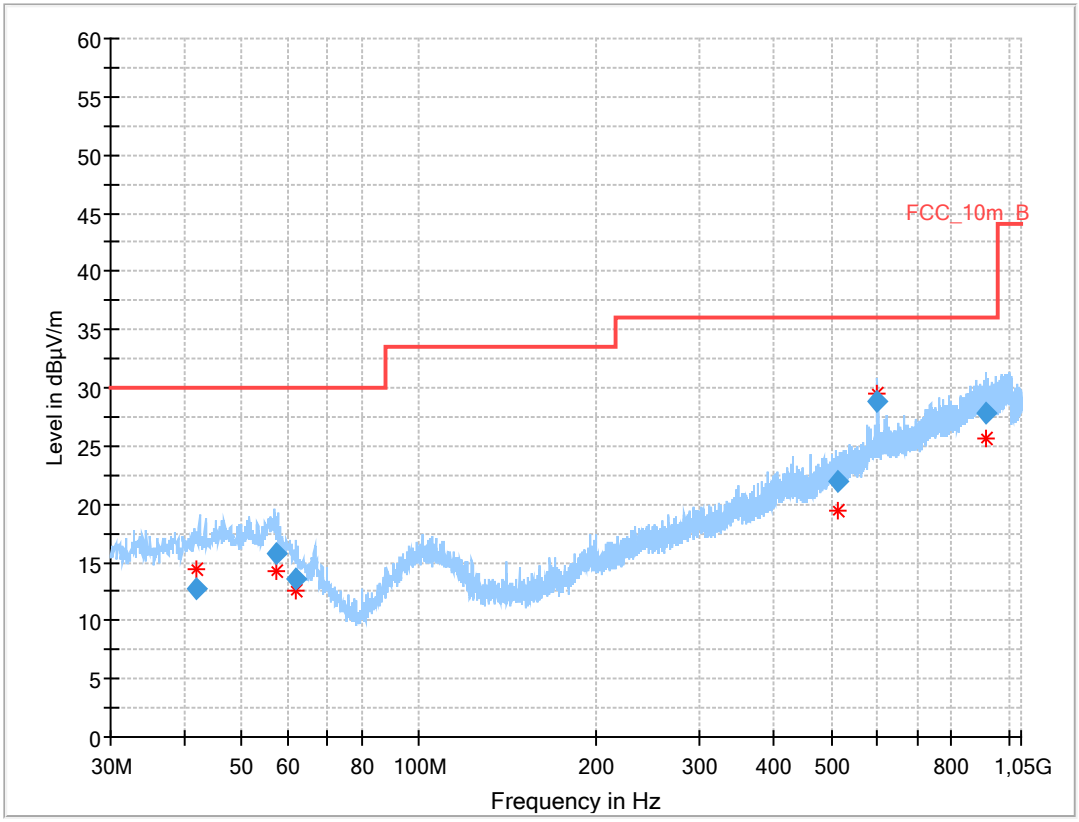


Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
33.429	16.91	30.0	13.1	1000	120.0	104.0	V	-9	12
50.986	10.63	30.0	19.4	1000	120.0	170.0	V	262	14
67.184	12.33	30.0	17.7	1000	120.0	170.0	H	5	11
488.567	21.43	36.0	14.6	1000	120.0	170.0	V	247	18
599.999	29.78	36.0	6.2	1000	120.0	113.0	H	292	20
882.284	27.49	36.0	8.5	1000	120.0	170.0	H	157	23

Plots: 80 MHz channel bandwidth

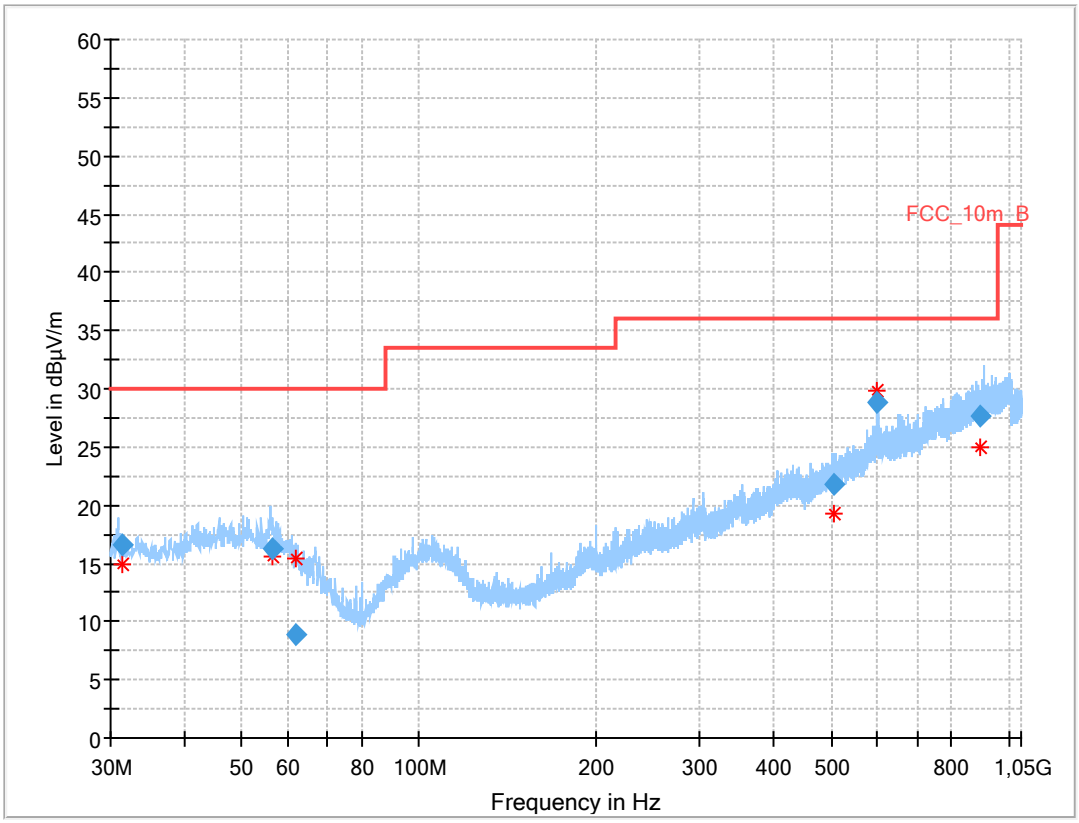
Plot 1: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-1; middle channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
42.027	12.66	30.0	17.3	1000	120.0	110.0	H	157	14
57.298	15.74	30.0	14.3	1000	120.0	134.0	H	67	15
62.010	13.57	30.0	16.4	1000	120.0	170.0	V	157	12
511.729	21.89	36.0	14.1	1000	120.0	135.0	H	16	19
599.987	28.78	36.0	7.2	1000	120.0	127.0	H	247	20
914.302	27.85	36.0	8.2	1000	120.0	170.0	V	-8	24

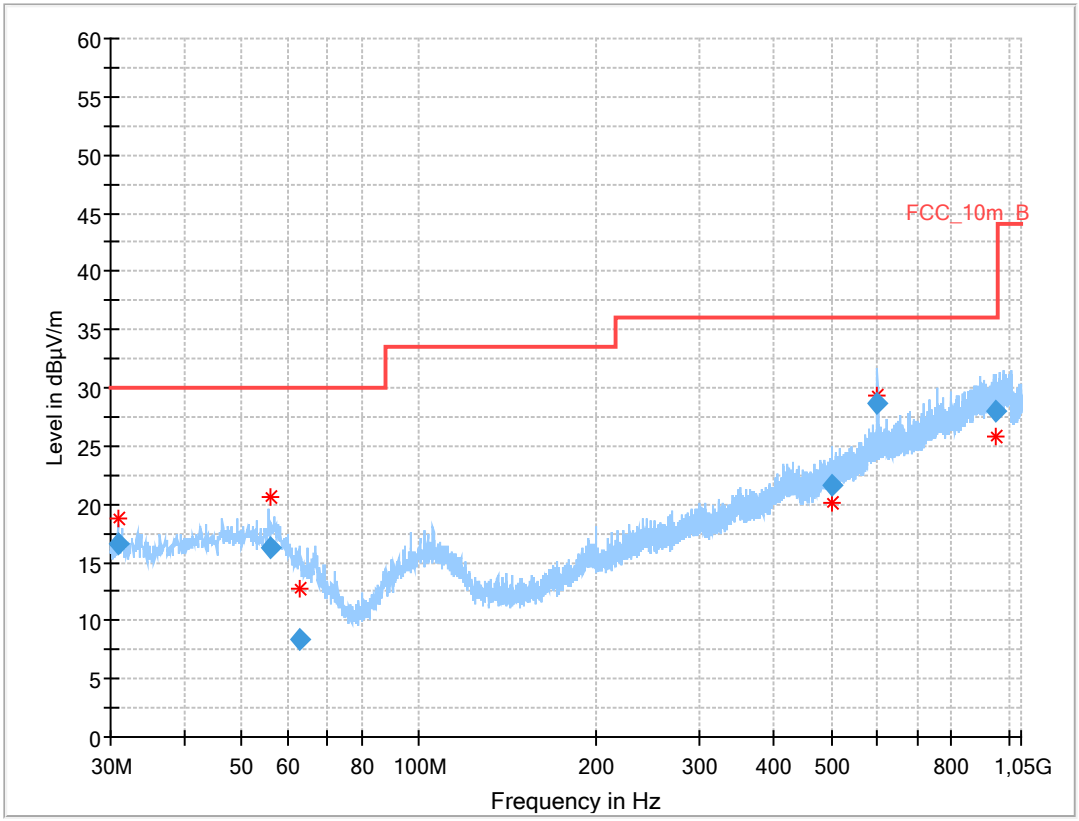
Plot 2: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2A; middle channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
31.345	16.63	30.0	13.4	1000	120.0	102.0	V	67	12
56.313	16.21	30.0	13.8	1000	120.0	170.0	H	263	15
61.916	8.80	30.0	21.2	1000	120.0	121.0	V	292	12
503.990	21.78	36.0	14.2	1000	120.0	153.0	H	70	18
600.003	28.90	36.0	7.1	1000	120.0	170.0	H	94	20
897.316	27.63	36.0	8.4	1000	120.0	170.0	V	67	24

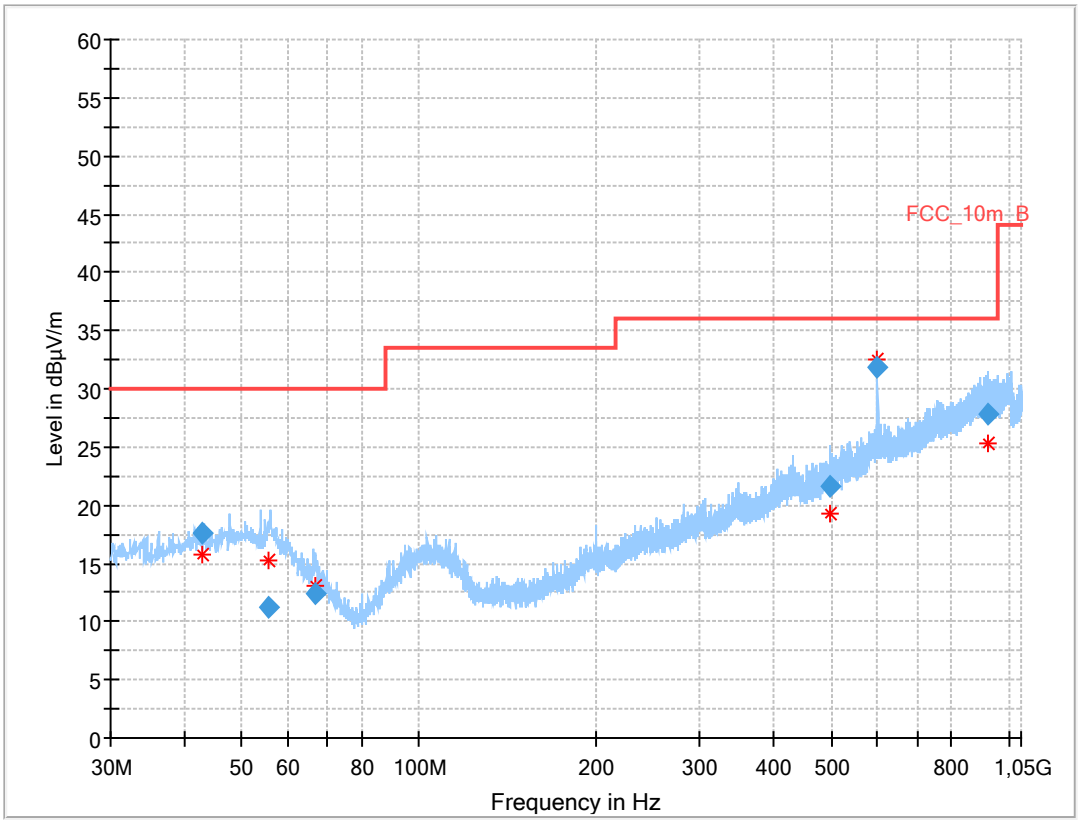
Plot 3: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2C; lowest channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.933	16.65	30.0	13.4	1000	120.0	142.0	V	67	12
55.807	16.21	30.0	13.8	1000	120.0	119.0	V	157	15
62.967	8.46	30.0	21.5	1000	120.0	152.0	H	247	12
502.851	21.69	36.0	14.3	1000	120.0	170.0	V	11	18
599.996	28.64	36.0	7.4	1000	120.0	111.0	H	247	20
950.480	28.01	36.0	8.0	1000	120.0	170.0	V	257	24

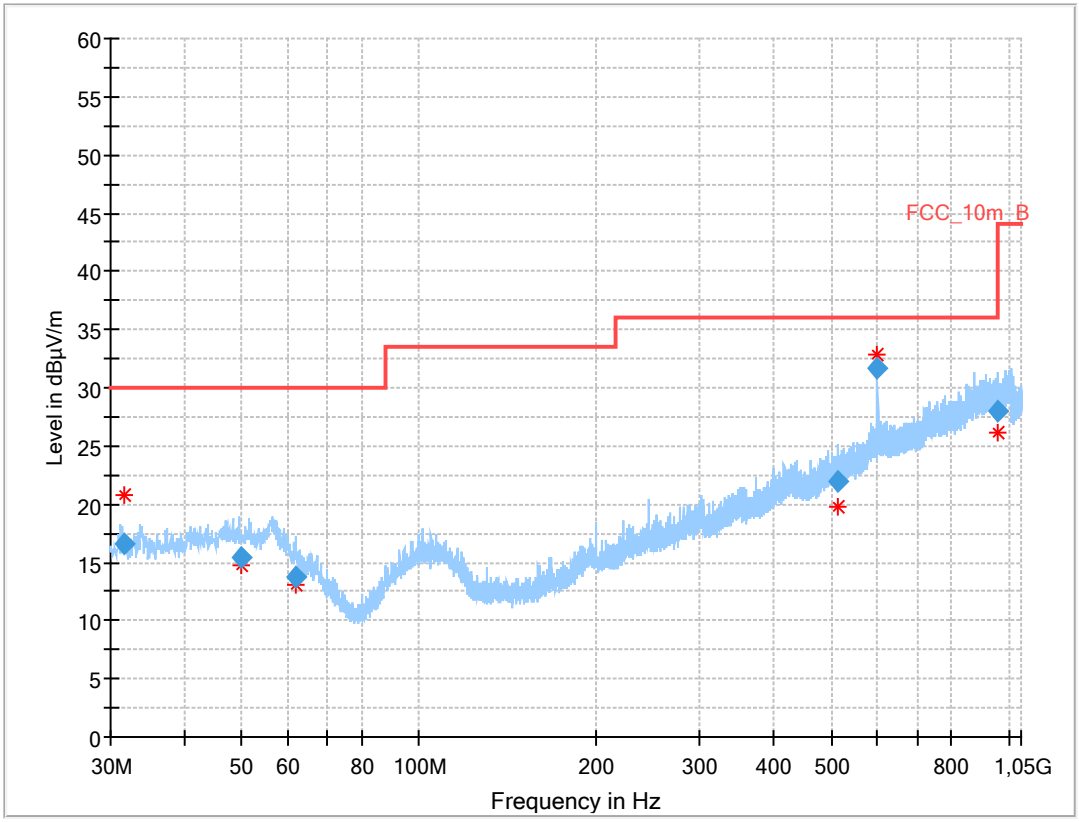
Plot 4: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2C; highest channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
42.881	17.53	30.0	12.5	1000	120.0	159.0	V	255	14
55.722	11.15	30.0	18.9	1000	120.0	170.0	V	292	15
66.555	12.41	30.0	17.6	1000	120.0	147.0	H	174	11
498.605	21.57	36.0	14.4	1000	120.0	170.0	V	157	18
599.987	31.79	36.0	4.2	1000	120.0	98.0	V	157	20
923.580	27.84	36.0	8.2	1000	120.0	170.0	V	196	24

Plot 5: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-3; middle channel



Results:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
31.749	16.57	30.0	13.4	1000	120.0	143.0	V	157	12
49.972	15.36	30.0	14.6	1000	120.0	117.0	V	247	14
61.950	13.75	30.0	16.3	1000	120.0	170.0	H	22	12
511.992	21.90	36.0	14.1	1000	120.0	123.0	H	-13	19
600.000	31.71	36.0	4.3	1000	120.0	101.0	V	-22	20
960.012	28.02	44.0	16.0	1000	120.0	170.0	V	157	24

12.7 Spurious emissions radiated 1 GHz to 40 GHz

Description:

Measurement of the radiated spurious emissions and cabinet radiations from 1 GHz to 40 GHz.

Measurement:

Measurement parameter	
Detector:	Quasi Peak below 1 GHz (alternative Peak) Peak above 1 GHz / RMS
Sweep time:	Auto
Resolution bandwidth:	1 MHz
Video bandwidth:	3 MHz
Span:	1 GHz to 40 GHz
Trace mode:	Max Hold / Average with 100 counts + 20 log (1 / X) for duty cycle lower than 100 %
Test setup:	See sub clause 7.2 – A See sub clause 7.3 – A See sub clause 7.3 – B
Measurement uncertainty:	See chapter 9

Limits:

TX Spurious Emissions Radiated		
§15.209		
Frequency (MHz)	Field Strength (dBµV/m)	Measurement distance
Above 960	54.0	3
§15.407		
Outside the restricted bands!	-27 dBm / MHz	

Results: 20 MHz channel bandwidth

TX Spurious Emissions Radiated [dBµV/m] / dBm								
U-NII-1 (5150 MHz to 5250 MHz)								
Lowest channel			Middle channel			Highest channel		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
15534.0	RMS	48.1	All peak emissions > 6dB below limit.			All peak emissions > 6dB below limit.		
	Peak	60.4						
For emissions above 18 GHz please take look at the plots.			For emissions above 18 GHz please take look at the plots.			For emissions above 18 GHz please take look at the plots.		

TX Spurious Emissions Radiated [dBµV/m] / dBm								
U-NII-2A (5250 MHz to 5350 MHz)								
Lowest channel			Middle channel			Highest channel		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
All peak emissions > 6dB below limit.			All peak emissions > 6dB below limit.			15963.2	RMS	45.9
							Peak	59.4
For emissions above 18 GHz please take look at the plots.			For emissions above 18 GHz please take look at the plots.			For emissions above 18 GHz please take look at the plots.		

TX Spurious Emissions Radiated [dBµV/m] / dBm								
U-NII-2C (5470 MHz to 5725 MHz)								
Lowest channel			Middle channel			Highest channel		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
3666.6	RMS	41.5	All peak emissions > 6dB below limit.			7599.9	Peak	52.4
	Peak	48.0					RMS	47.8
7333.3	RMS	47.0	-/-			-/-		
	Peak	52.0						
For emissions above 18 GHz please take look at the plots.			For emissions above 18 GHz please take look at the plots.			For emissions above 18 GHz please take look at the plots.		

TX Spurious Emissions Radiated [dBµV/m] / dBm								
U-NII-3 (5725 MHz to 5850 MHz)								
Lowest channel			Middle channel			Highest channel		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
7660	Peak	51.9	All peak emissions > 6dB below limit.			All peak emissions > 6dB below limit.		
	AVG	47.3						
For emissions above 18 GHz please take look at the plots.			For emissions above 18 GHz please take look at the plots.			For emissions above 18 GHz please take look at the plots.		

Results: 40 MHz channel bandwidth

TX Spurious Emissions Radiated [dBµV/m] / dBm								
U-NII-1 (5150 MHz to 5250 MHz)								
Lowest channel						Highest channel		
F [MHz]	Detector	Level [dBµV/m]				F [MHz]	Detector	Level [dBµV/m]
All peak emissions > 6dB below limit.						All peak emissions > 6dB below limit.		
For emissions above 18 GHz please take look at the plots.						For emissions above 18 GHz please take look at the plots.		

TX Spurious Emissions Radiated [dBµV/m] / dBm								
U-NII-2A (5250 MHz to 5350 MHz)								
Lowest channel						Highest channel		
F [MHz]	Detector	Level [dBµV/m]				F [MHz]	Detector	Level [dBµV/m]
All peak emissions > 6dB below limit.						All peak emissions > 6dB below limit.		
For emissions above 18 GHz please take look at the plots.						For emissions above 18 GHz please take look at the plots.		

TX Spurious Emissions Radiated [dBµV/m] / dBm								
U-NII-2C (5470 MHz to 5725 MHz)								
Lowest channel			Middle channel			Highest channel		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
All peak emissions > 6dB below limit.			7453.2	Peak	53.3	7613.2	Peak	51.8
				AVG	49.7		AVG	47.5
For emissions above 18 GHz please take look at the plots.			For emissions above 18 GHz please take look at the plots.			For emissions above 18 GHz please take look at the plots.		

TX Spurious Emissions Radiated [dBµV/m] / dBm								
U-NII-3 (5725 MHz to 5850 MHz)								
Lowest channel			Middle channel			Highest channel		
F [MHz]	Detector	Level [dBµV/m]				F [MHz]	Detector	Level [dBµV/m]
7673.2	Peak	51.6				7726.6	Peak	52.1
	AVG	46.6					AVG	46.9
For emissions above 18 GHz please take look at the plots.						For emissions above 18 GHz please take look at the plots.		

Results: 80 MHz channel bandwidth

TX Spurious Emissions Radiated [dBµV/m] / dBm		
U-NII-1 (5150 MHz to 5250 MHz)		
Middle channel		
F [MHz]	Detector	Level [dBµV/m]
All peak emissions > 6dB below limit.		
For emissions above 18 GHz please take look at the plots.		

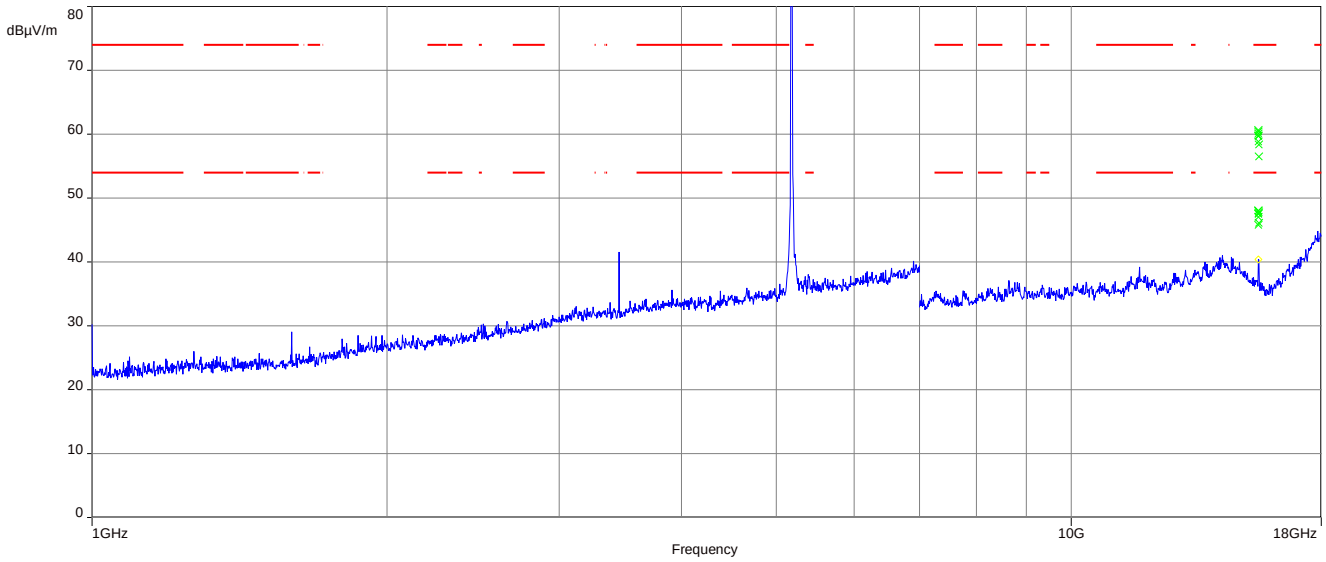
TX Spurious Emissions Radiated [dBµV/m] / dBm		
U-NII-2A (5250 MHz to 5350 MHz)		
Middle channel		
F [MHz]	Detector	Level [dBµV/m]
All peak emissions > 6dB below limit.		
For emissions above 18 GHz please take look at the plots.		

TX Spurious Emissions Radiated [dBµV/m] / dBm			
U-NII-2C (5470 MHz to 5725 MHz)			
Lowest channel	Highest channel		
All peak emissions > 6dB below limit.	7480.0	Peak	52.5
		AVG	48.6
For emissions above 18 GHz please take look at the plots.	For emissions above 18 GHz please take look at the plots.		

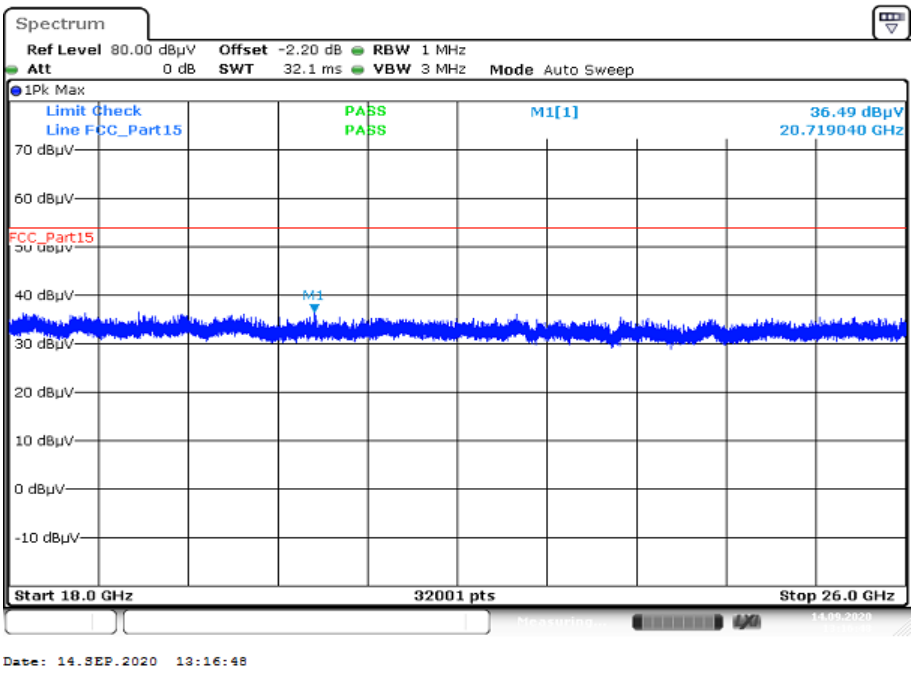
TX Spurious Emissions Radiated [dBµV/m] / dBm		
U-NII-3 (5725 MHz to 5850 MHz)		
Middle channel		
F [MHz]	Detector	Level [dBµV/m]
7700.0	Peak	52.2
	AVG	47.9
For emissions above 18 GHz please take look at the plots.		

Plots: 20 MHz channel bandwidth

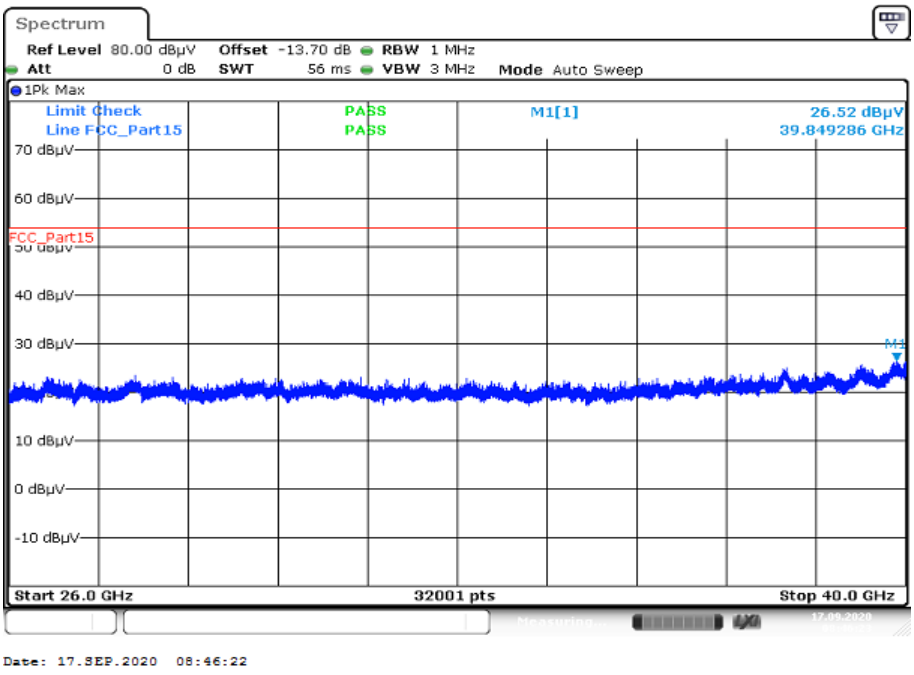
Plot 1: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-1; lowest channel



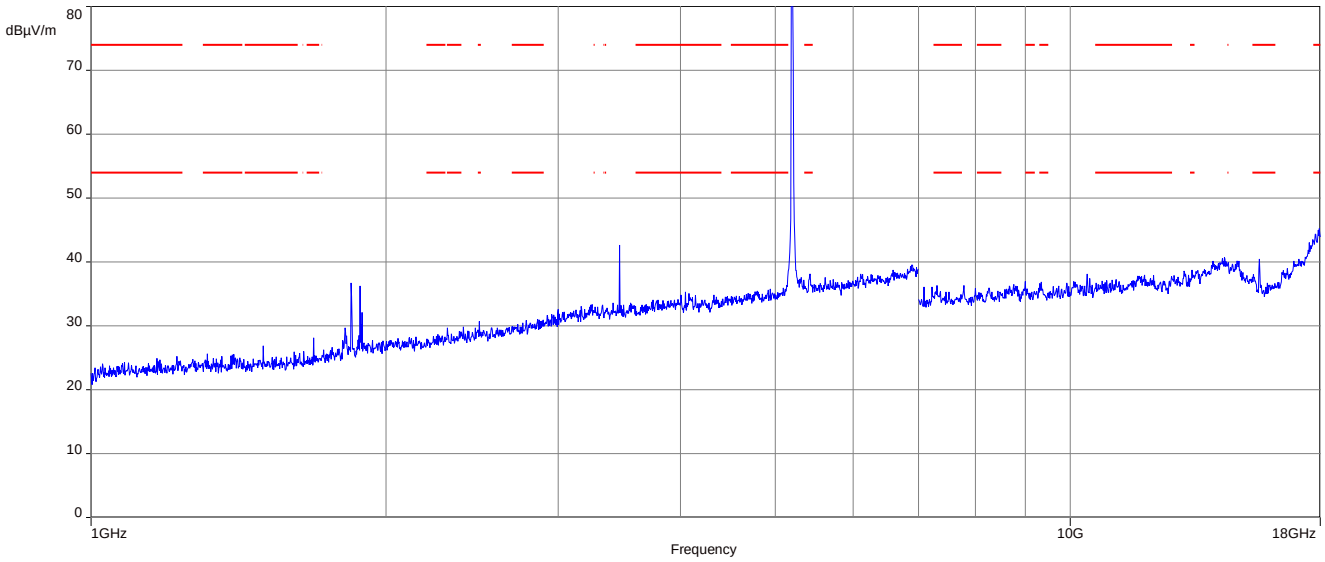
Plot 2: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-1; lowest channel



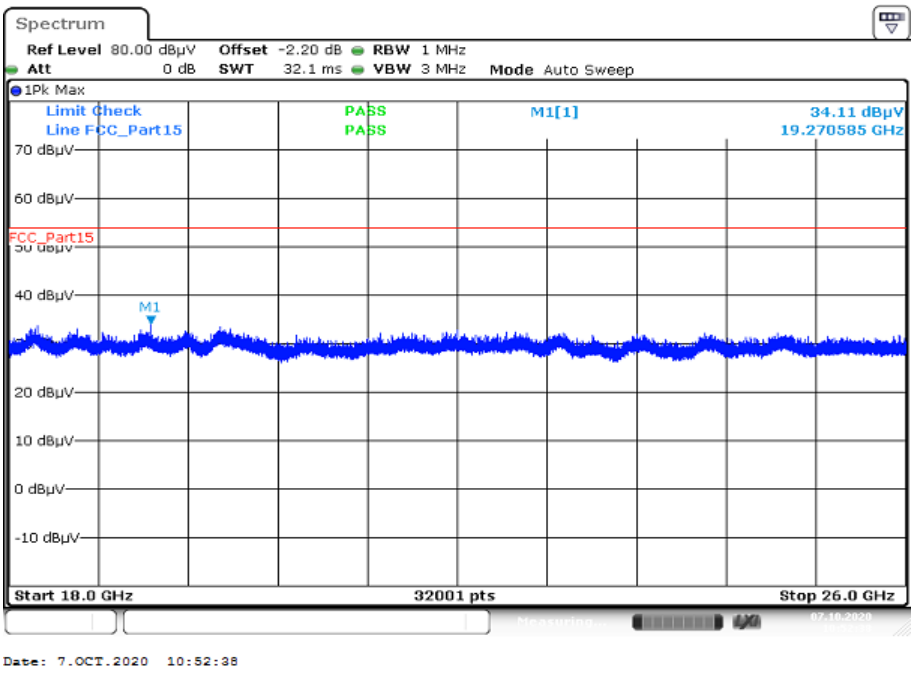
Plot 3: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-1; lowest channel



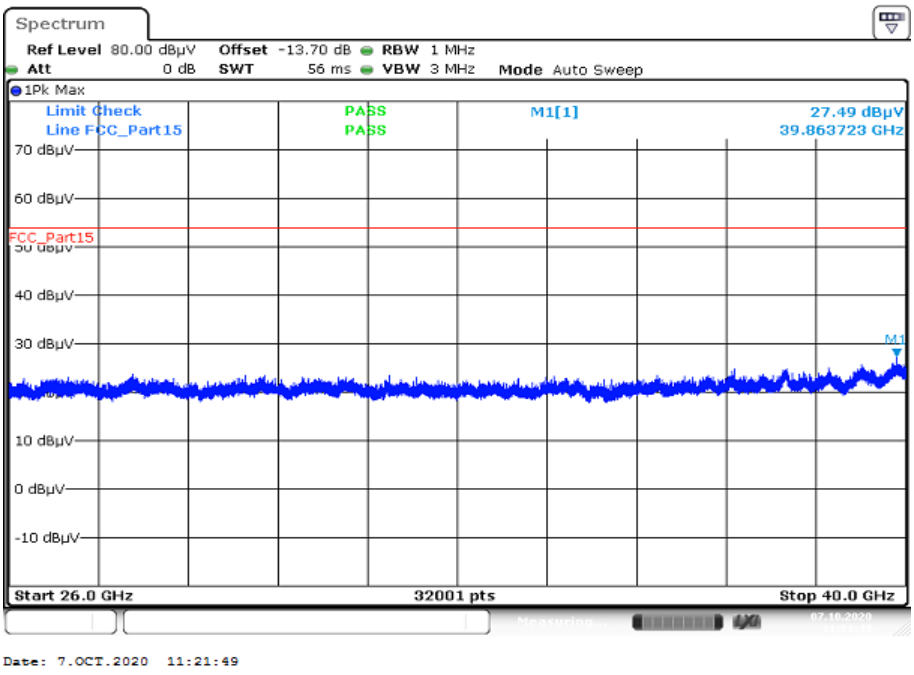
Plot 4: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-1; middle channel



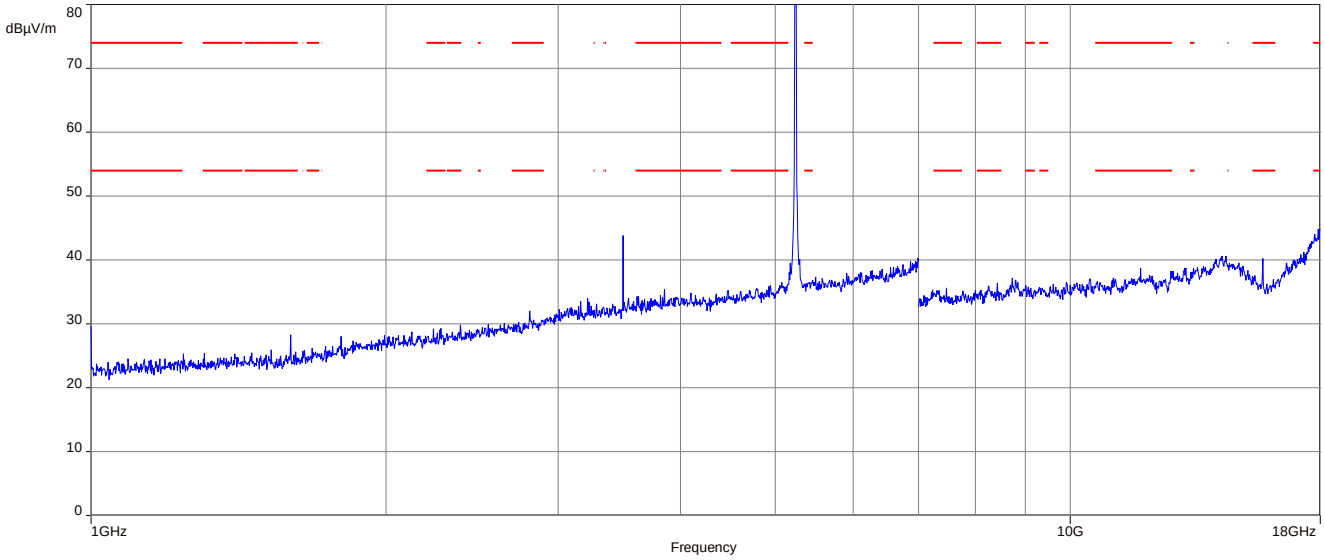
Plot 5: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-1; middle channel



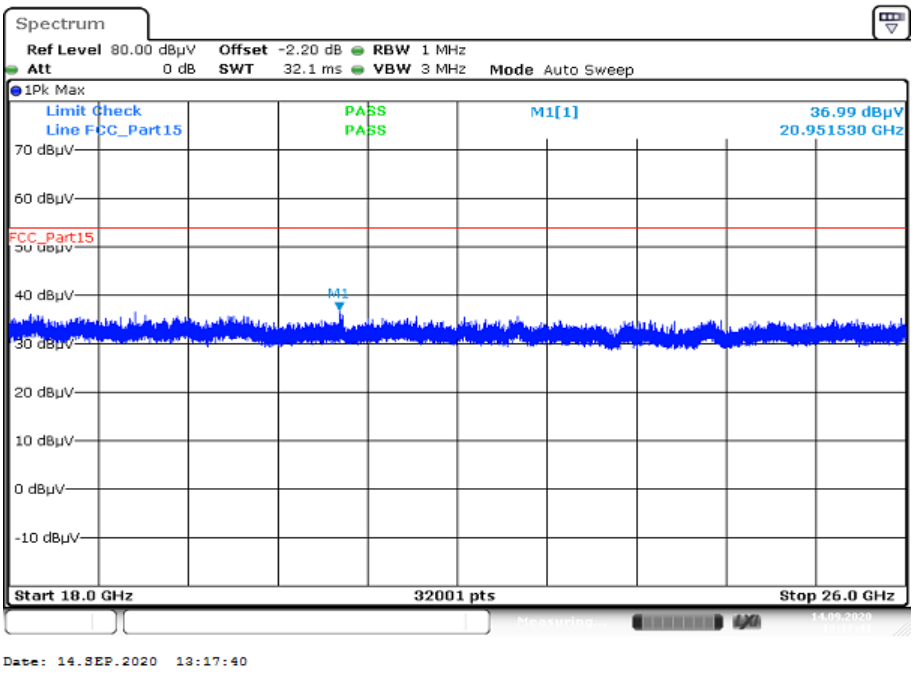
Plot 6: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-1; middle channel



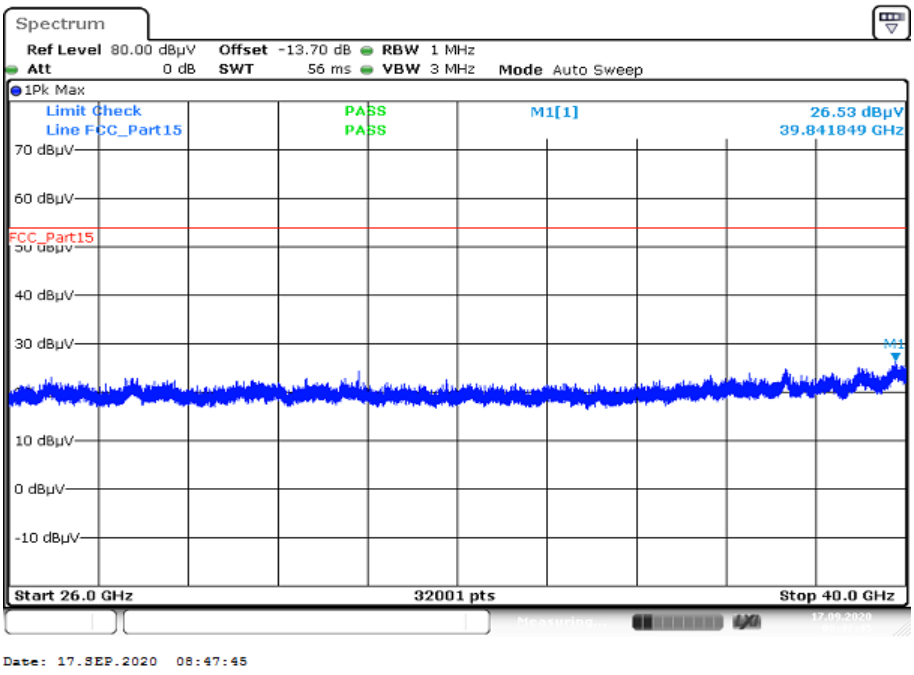
Plot 7: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-1; highest channel



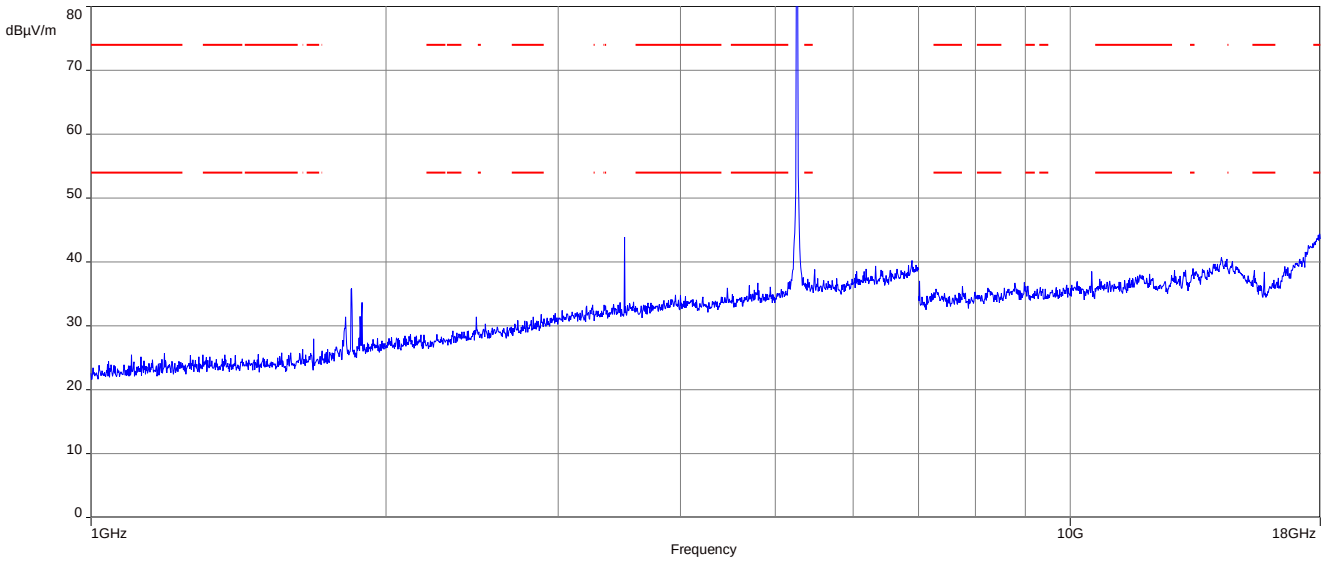
Plot 8: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-1; highest channel



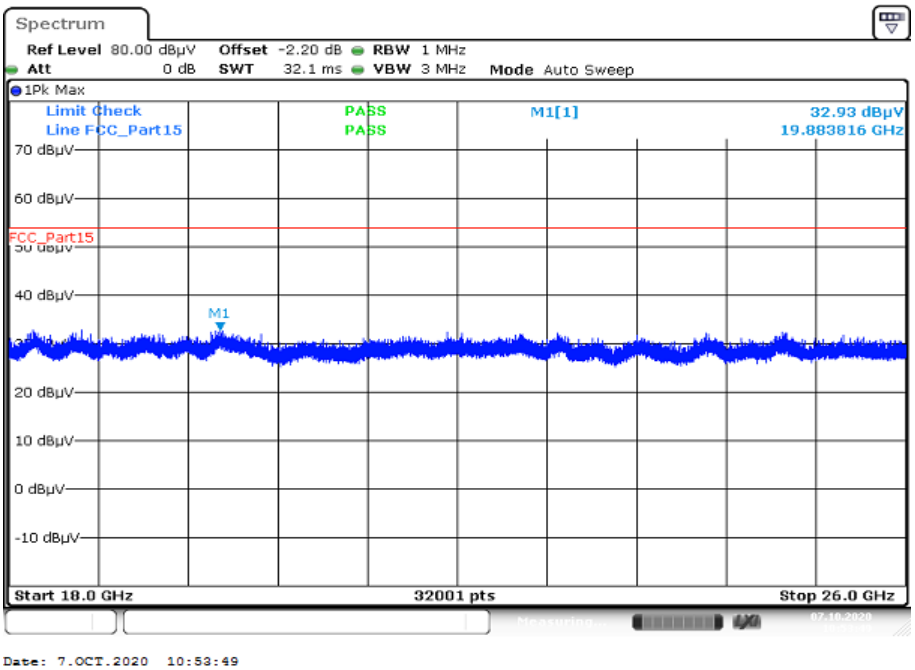
Plot 9: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-1; highest channel



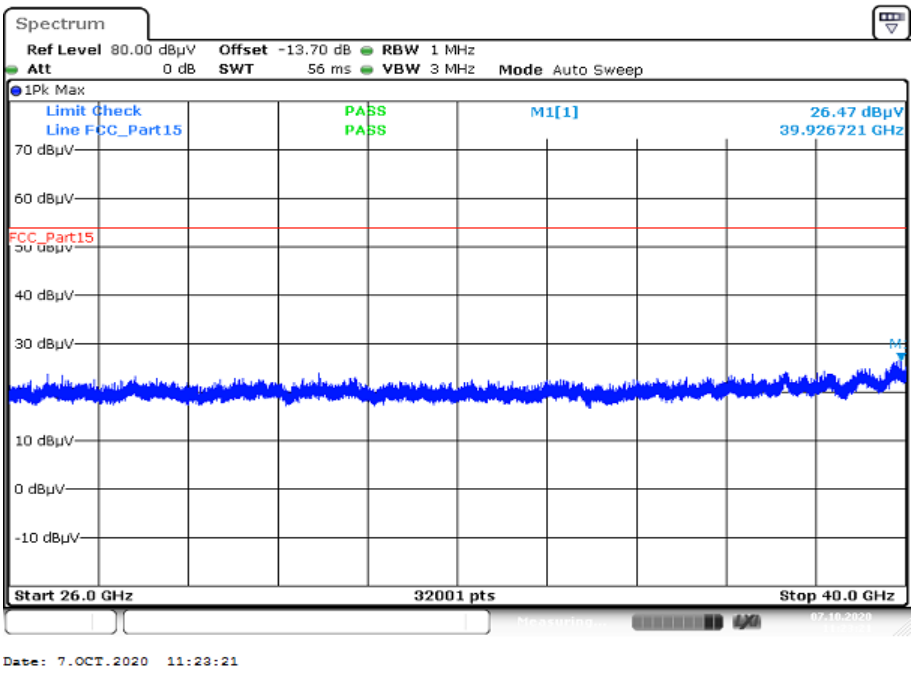
Plot 10: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2A; lowest channel



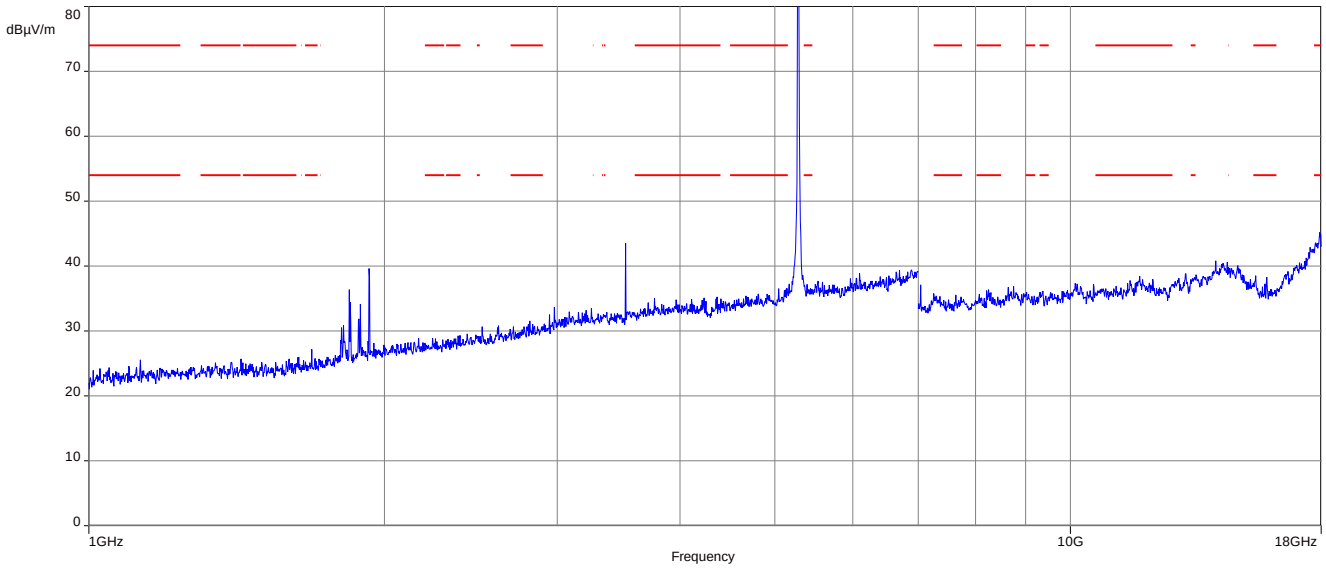
Plot 11: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2A; lowest channel



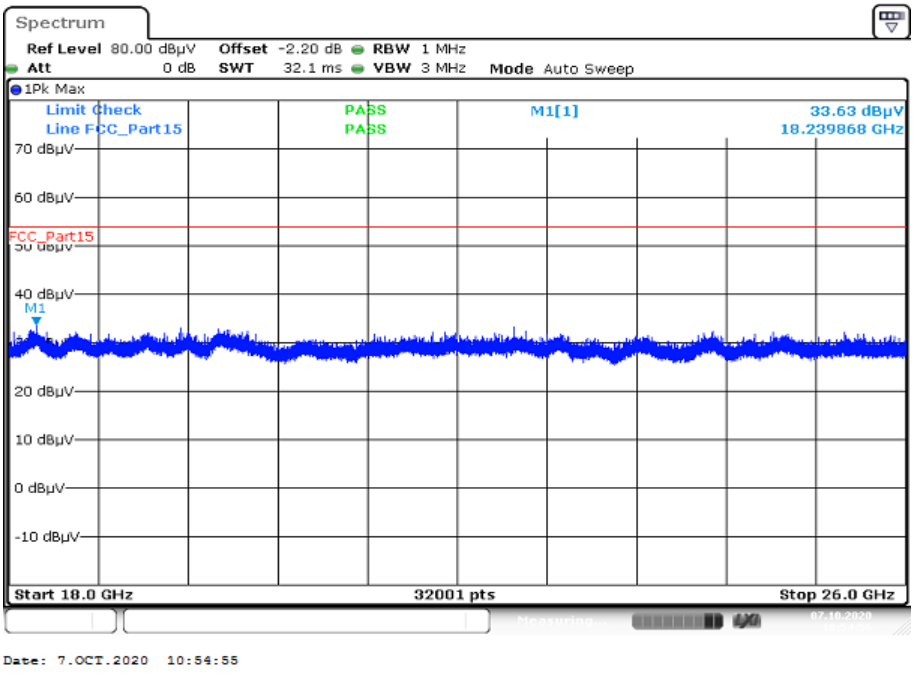
Plot 12: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-2A; lowest channel



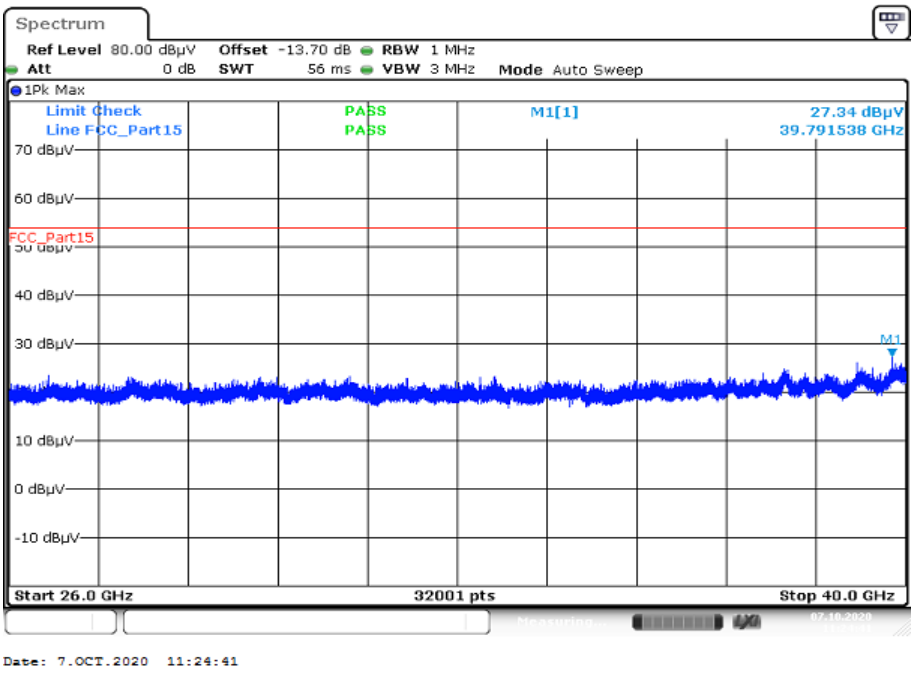
Plot 13: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2A; middle channel



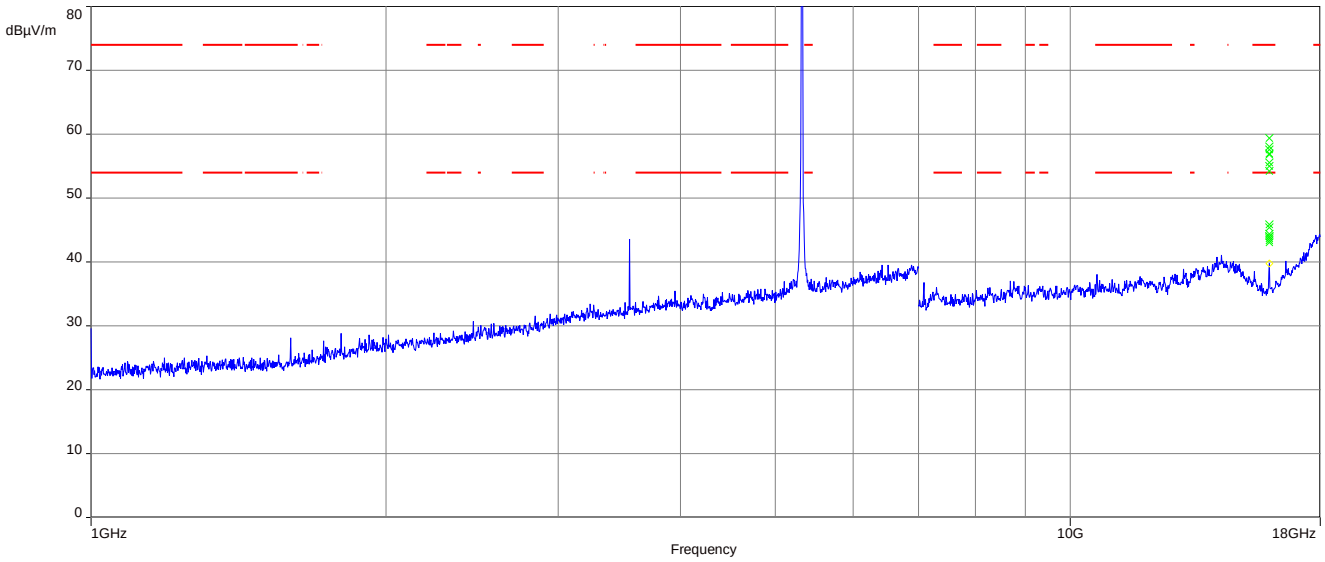
Plot 14: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2A; middle channel



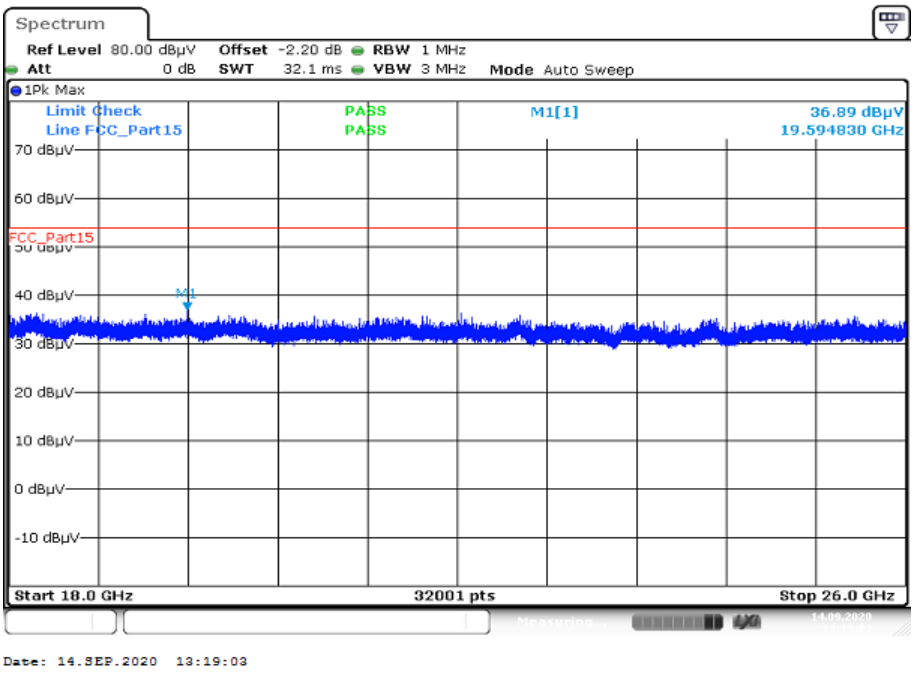
Plot 15: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-2A; middle channel



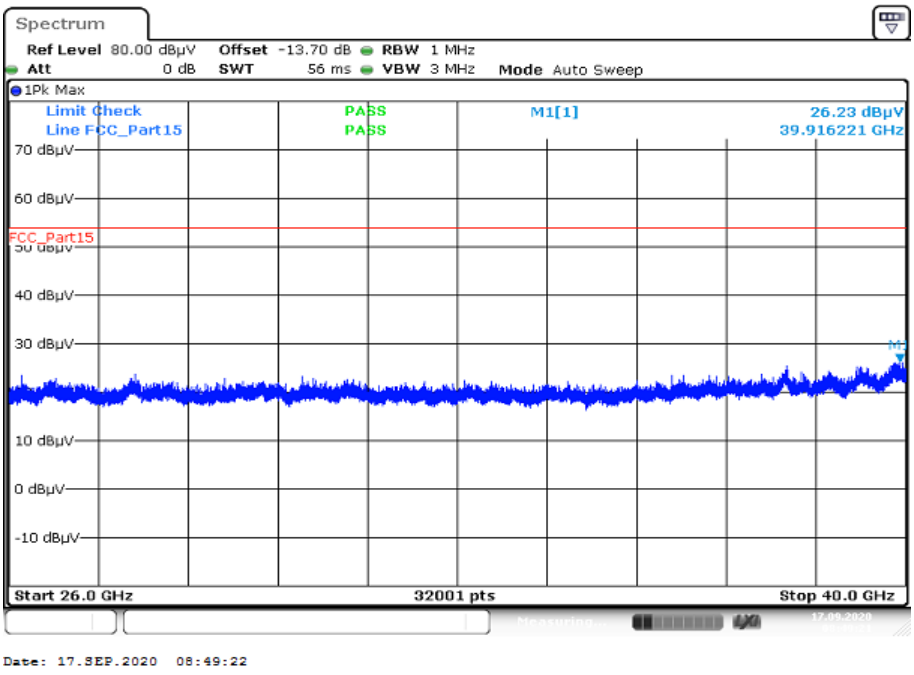
Plot 16: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2A; highest channel



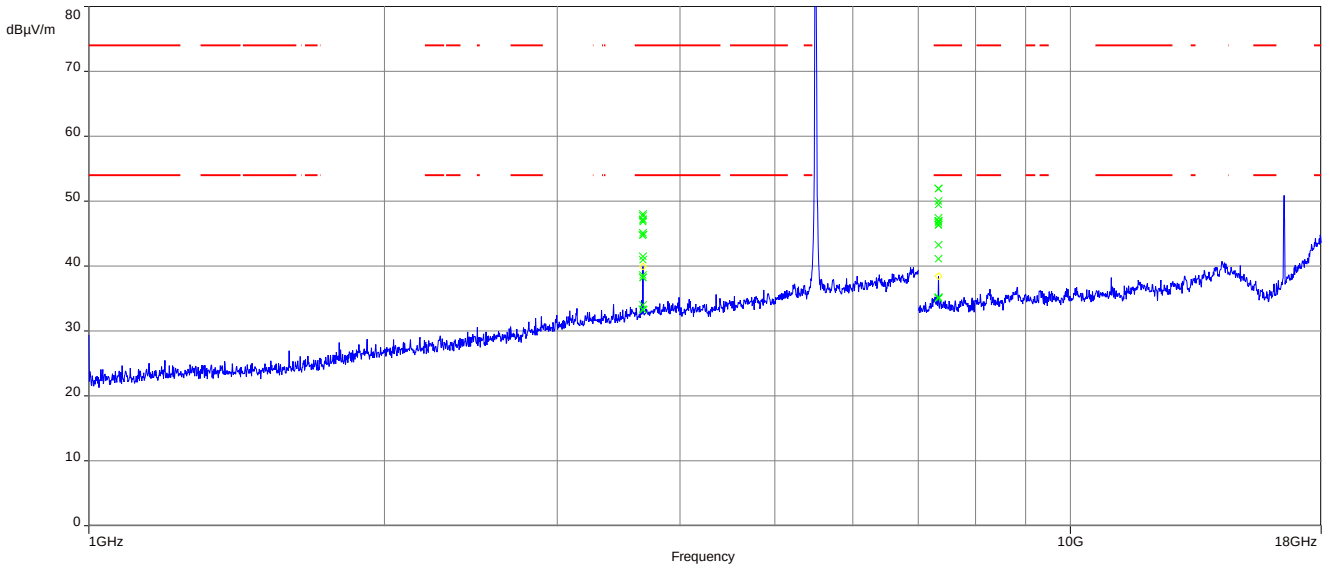
Plot 17: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2A; highest channel



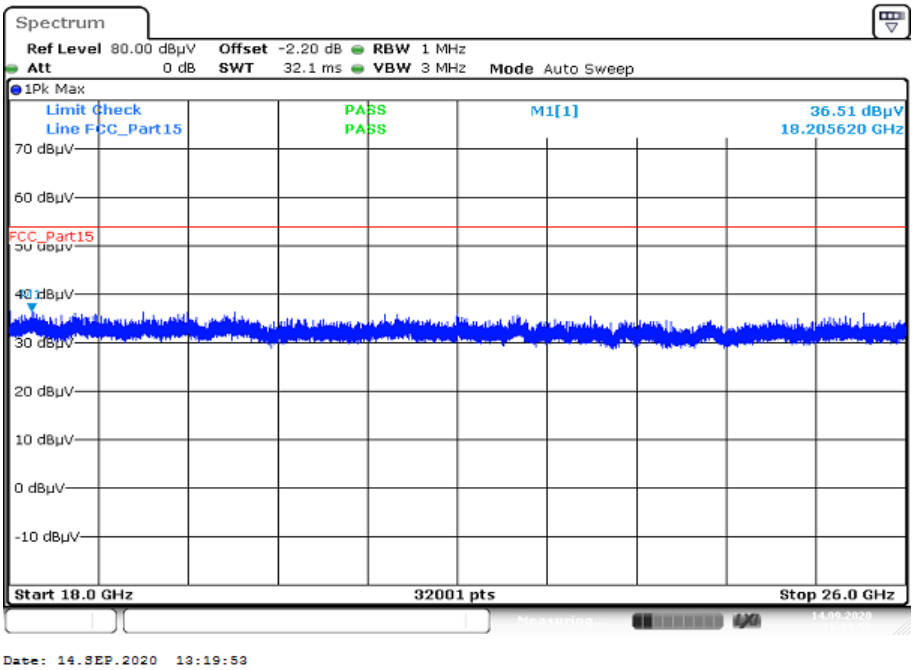
Plot 18: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-2A; highest channel



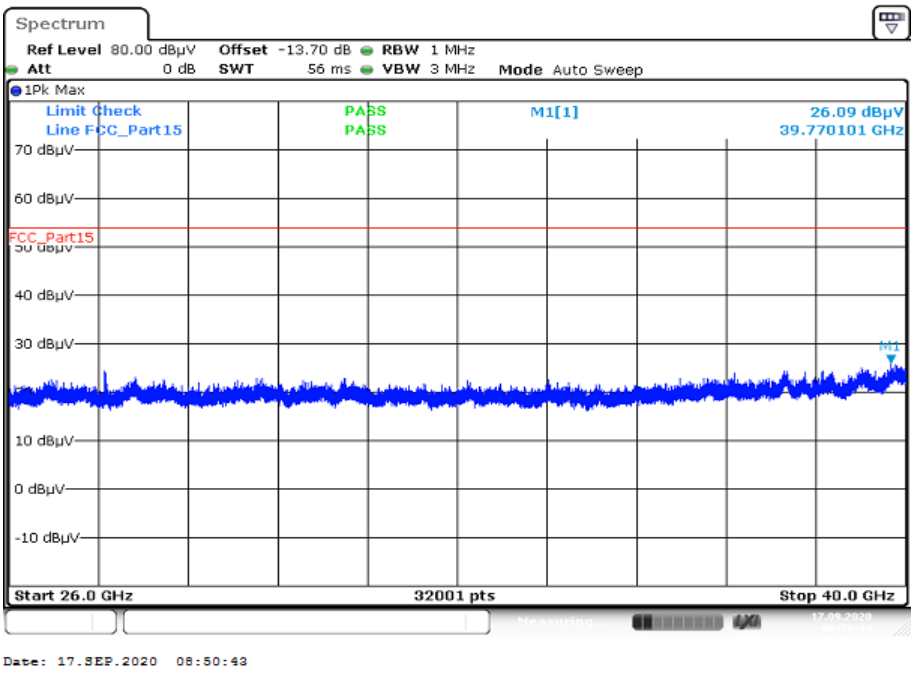
Plot 19: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2C; lowest channel



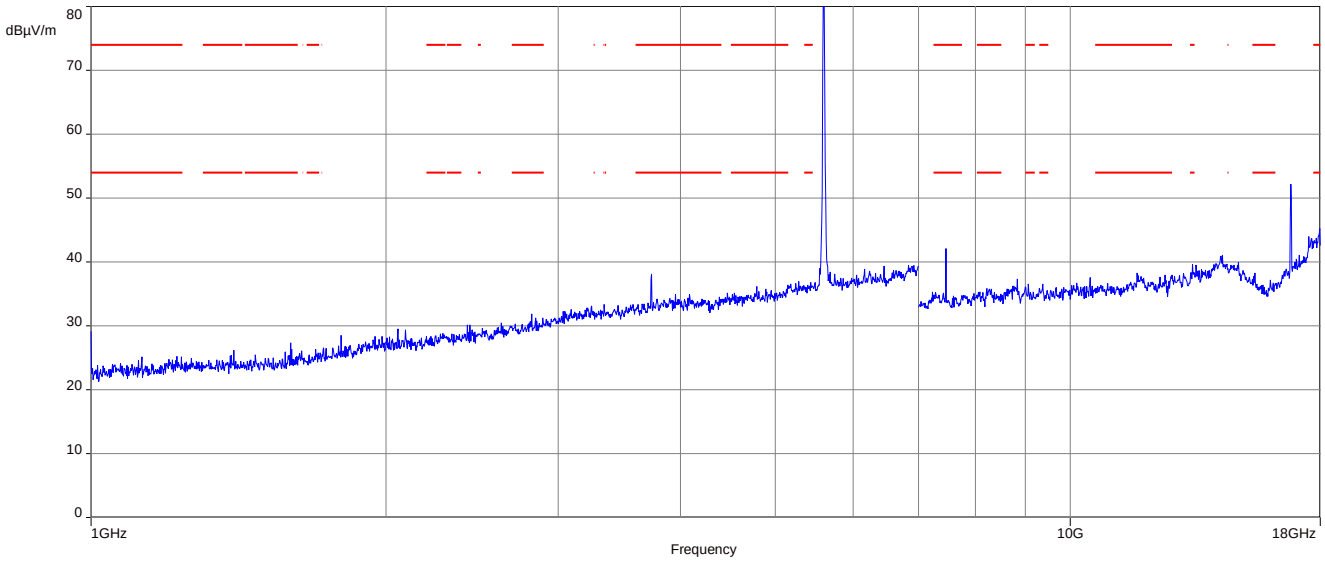
Plot 20: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2C; lowest channel



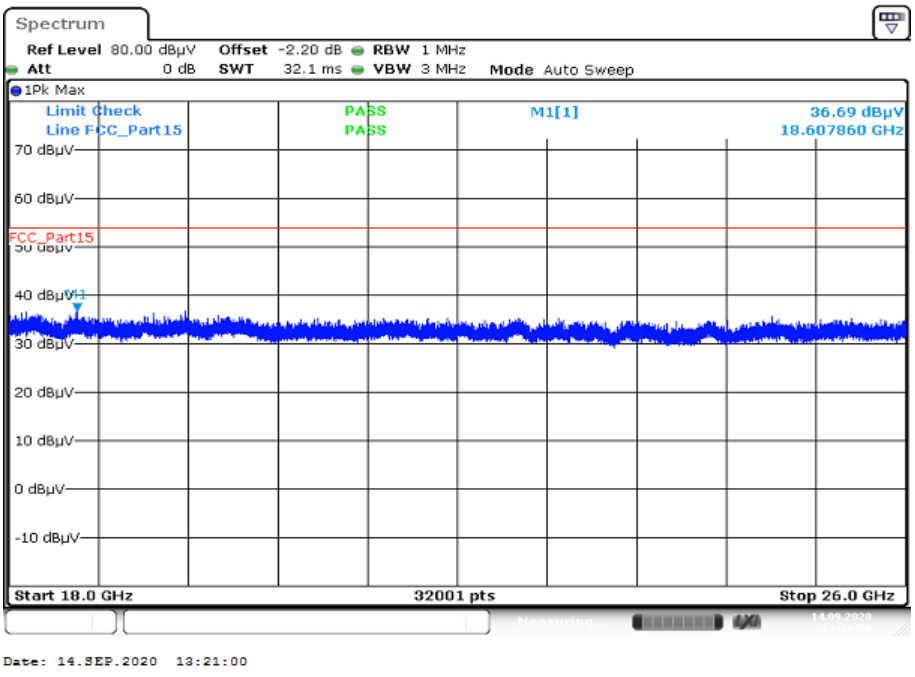
Plot 21: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-2C; lowest channel



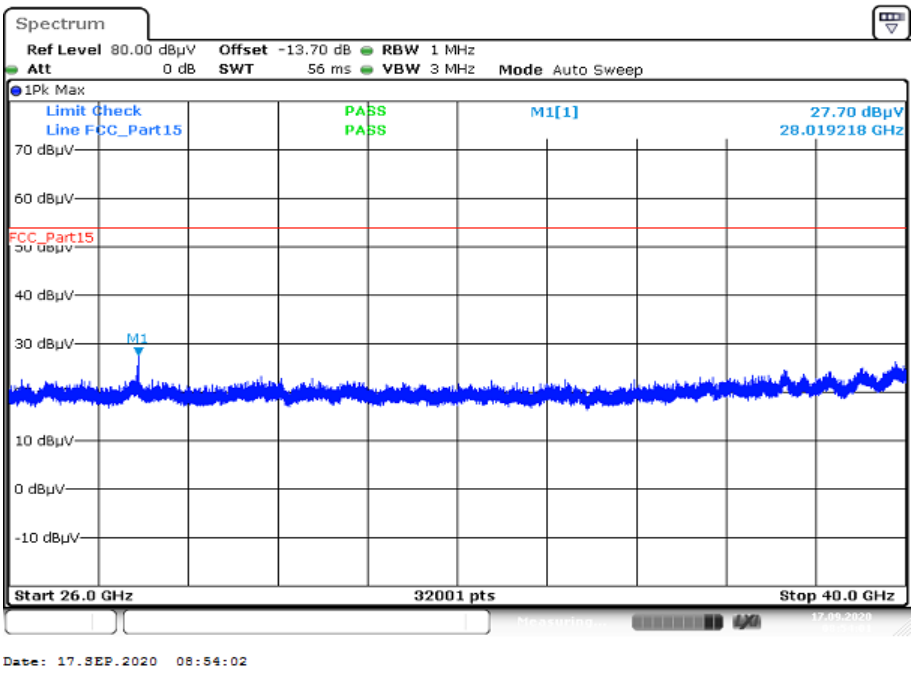
Plot 22: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2C; middle channel



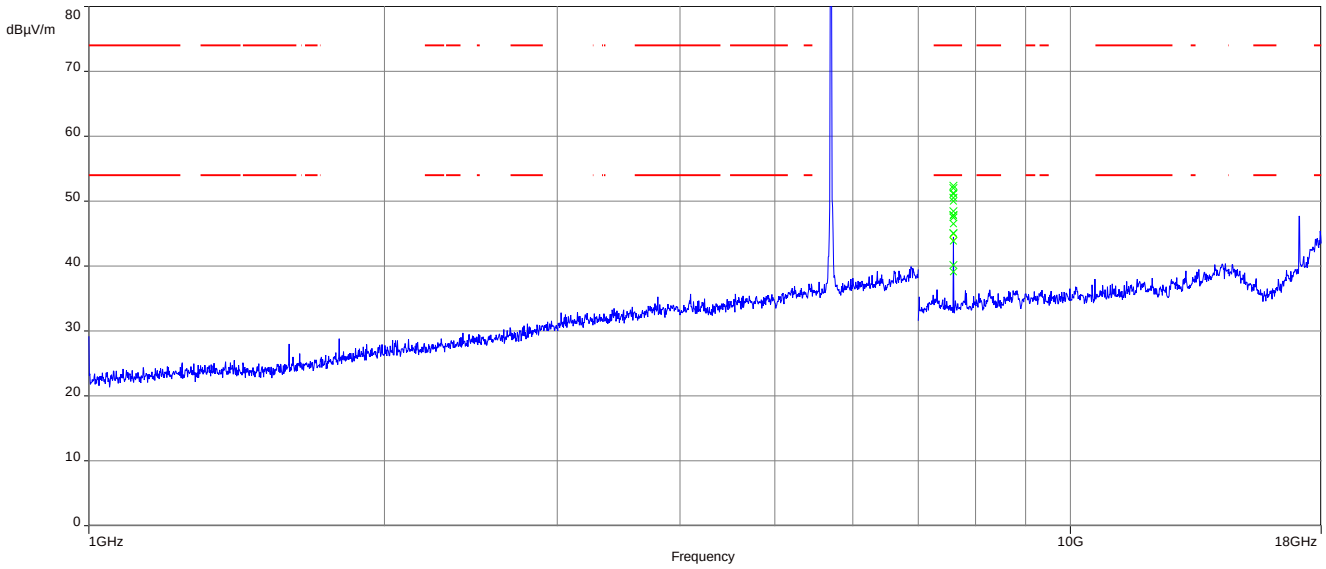
Plot 23: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2C; middle channel



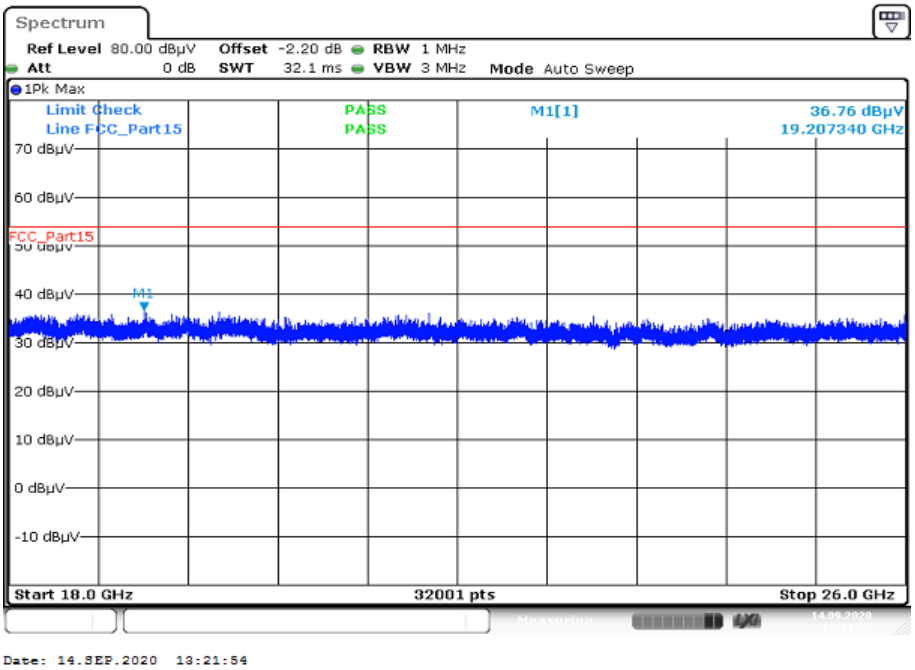
Plot 24: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-2C; middle channel



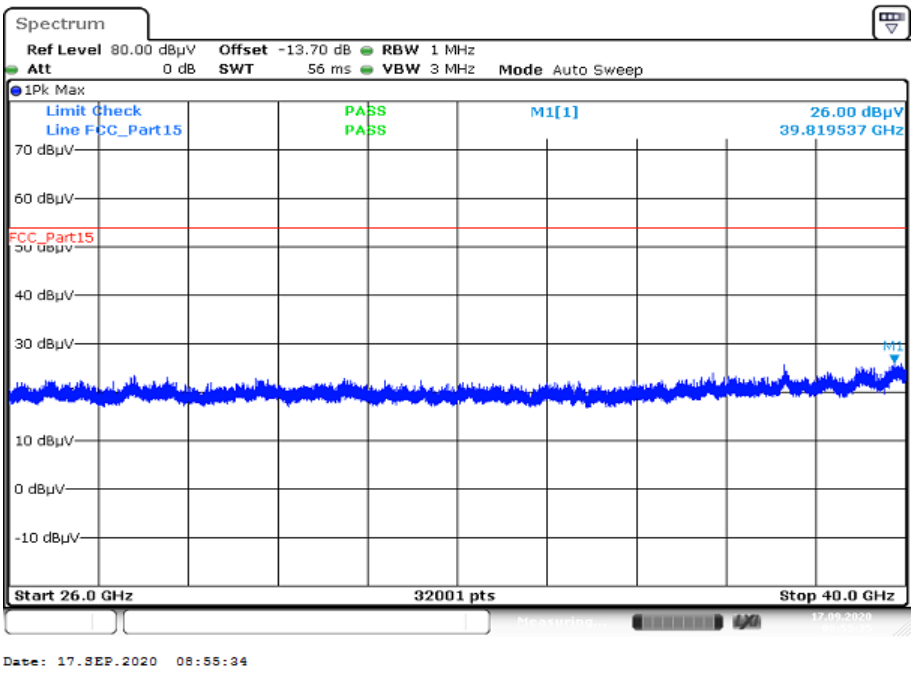
Plot 25: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2C; highest channel



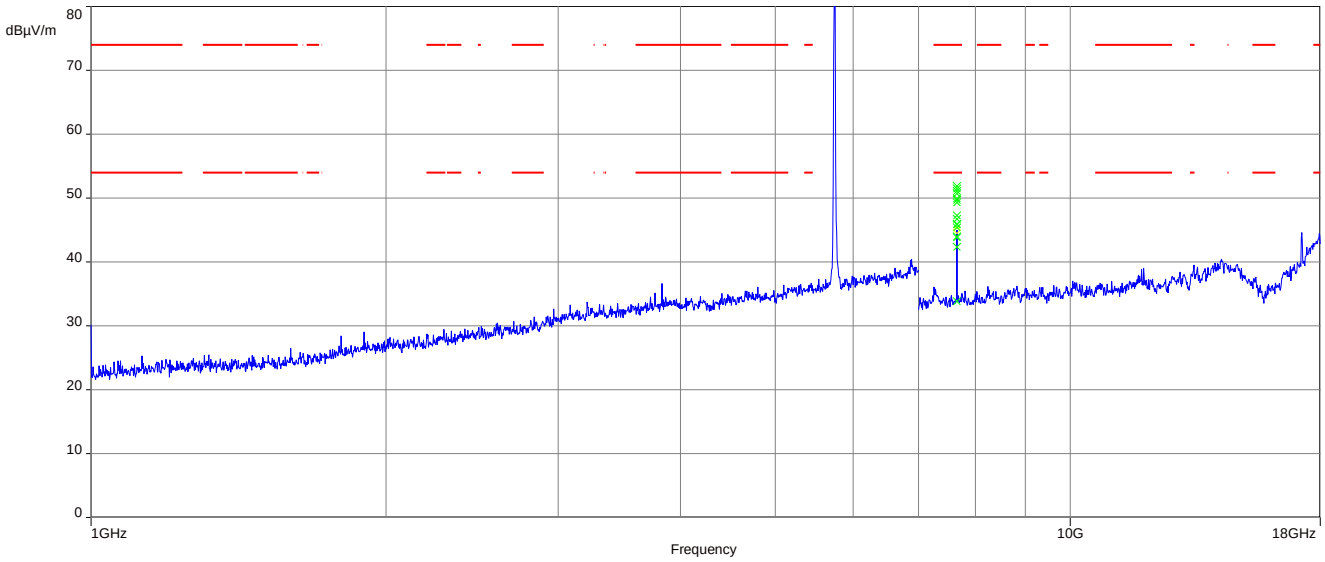
Plot 26: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2C; highest channel



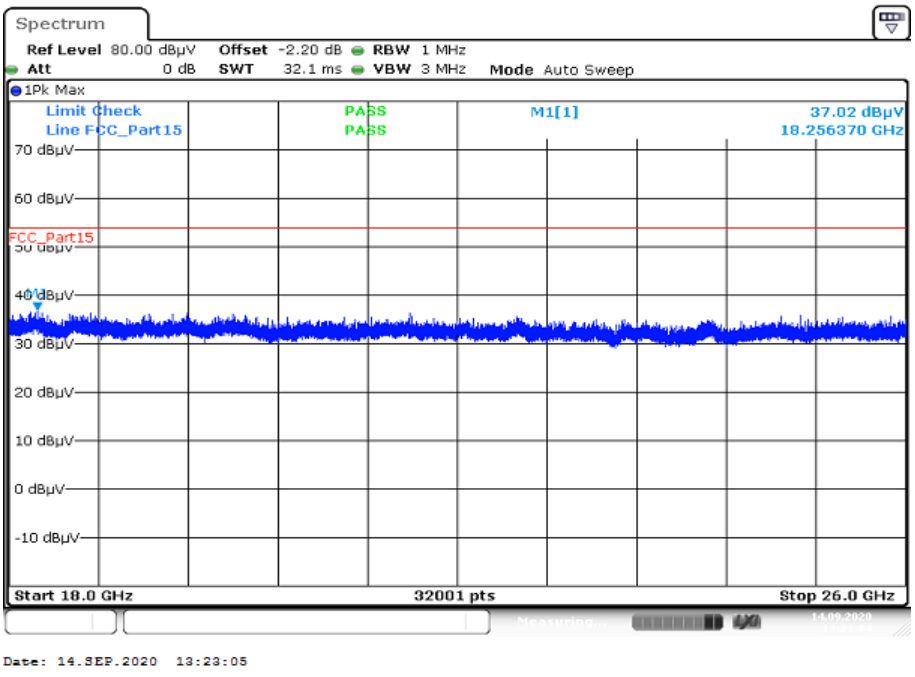
Plot 27: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-2C; highest channel



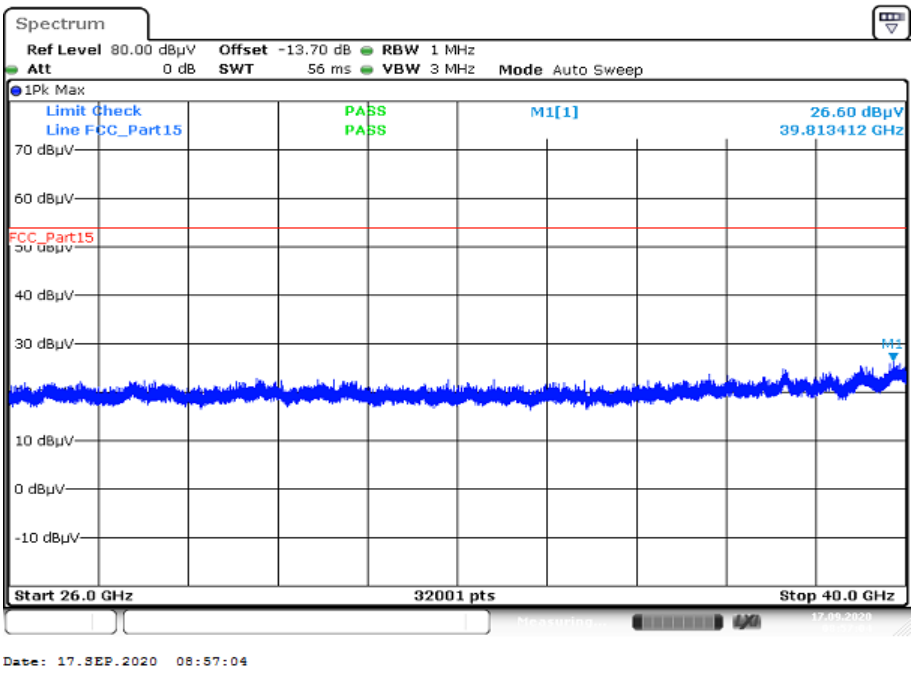
Plot 28: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-3; lowest channel



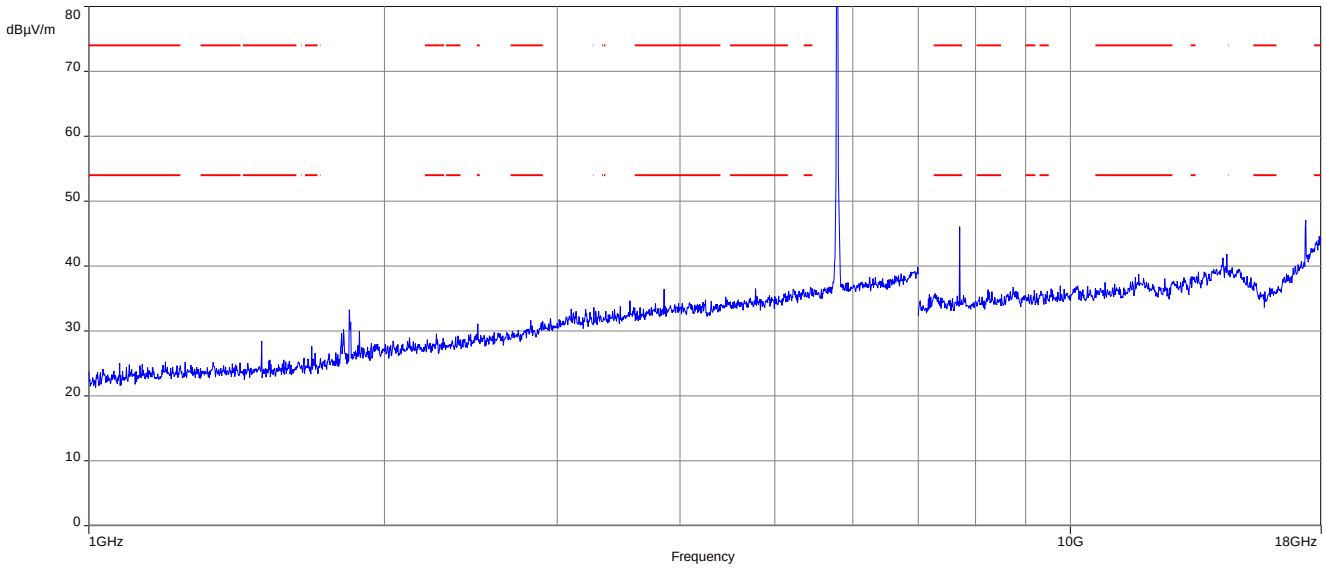
Plot 29: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-3; lowest channel



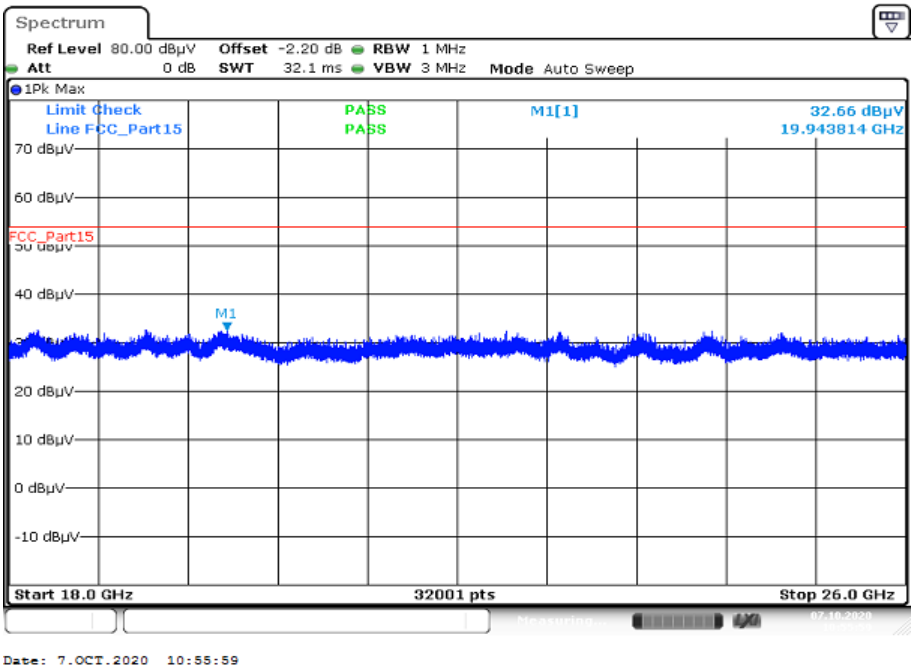
Plot 30: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-3; lowest channel



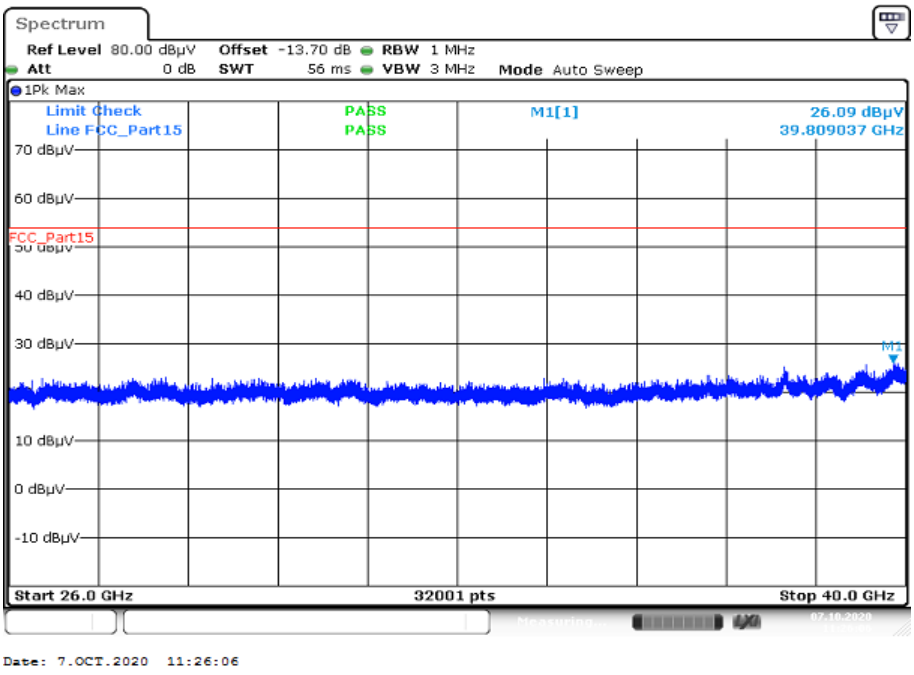
Plot 31: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-3; middle channel



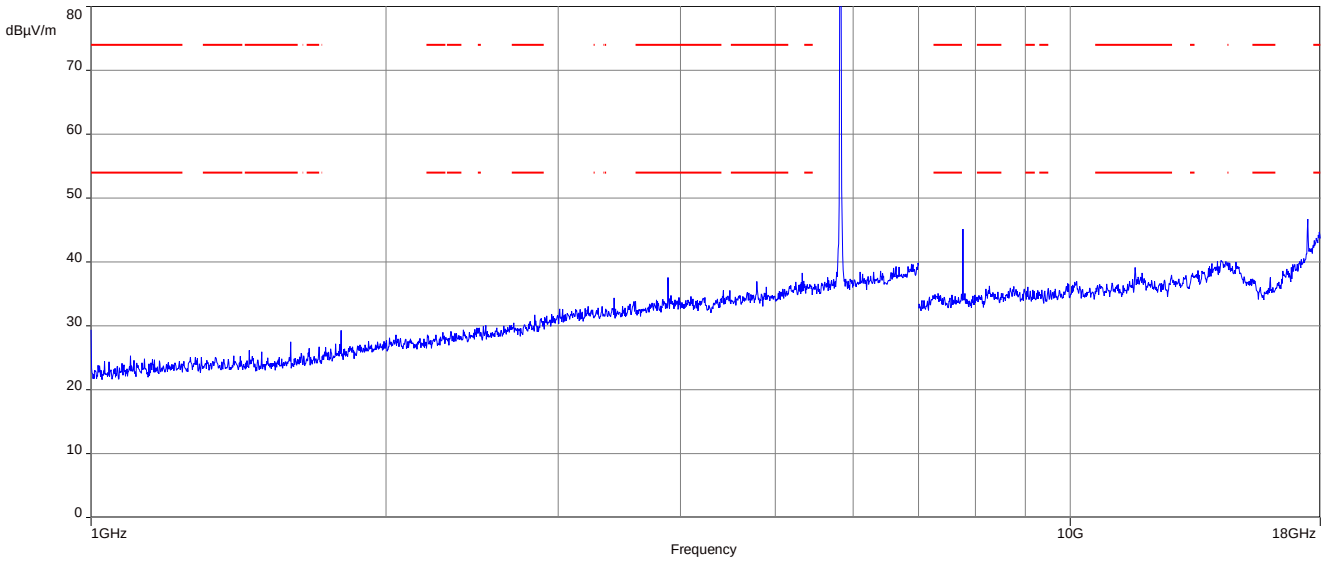
Plot 32: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-3; middle channel



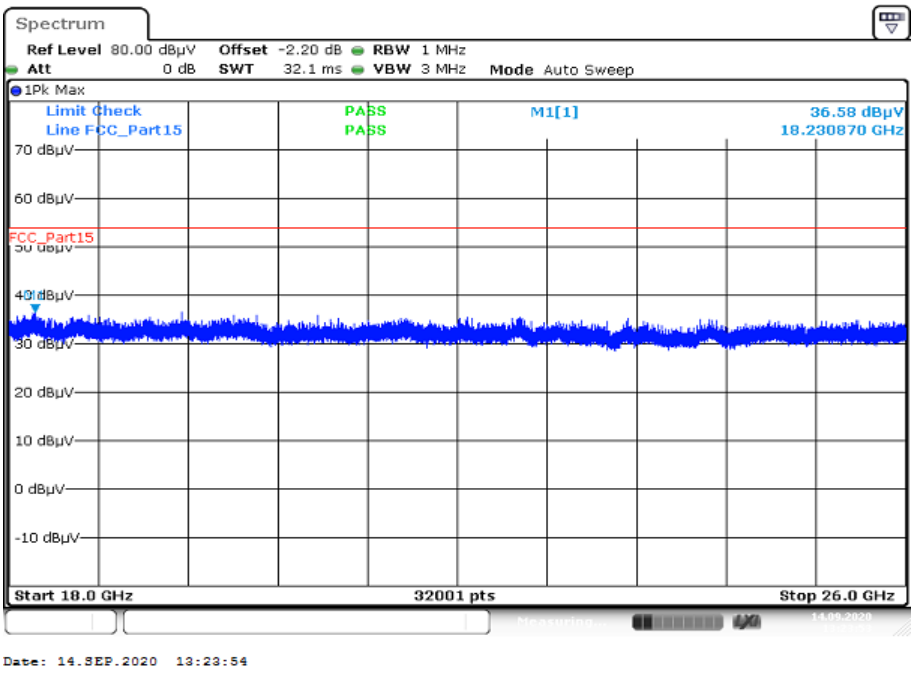
Plot 33: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-3; middle channel



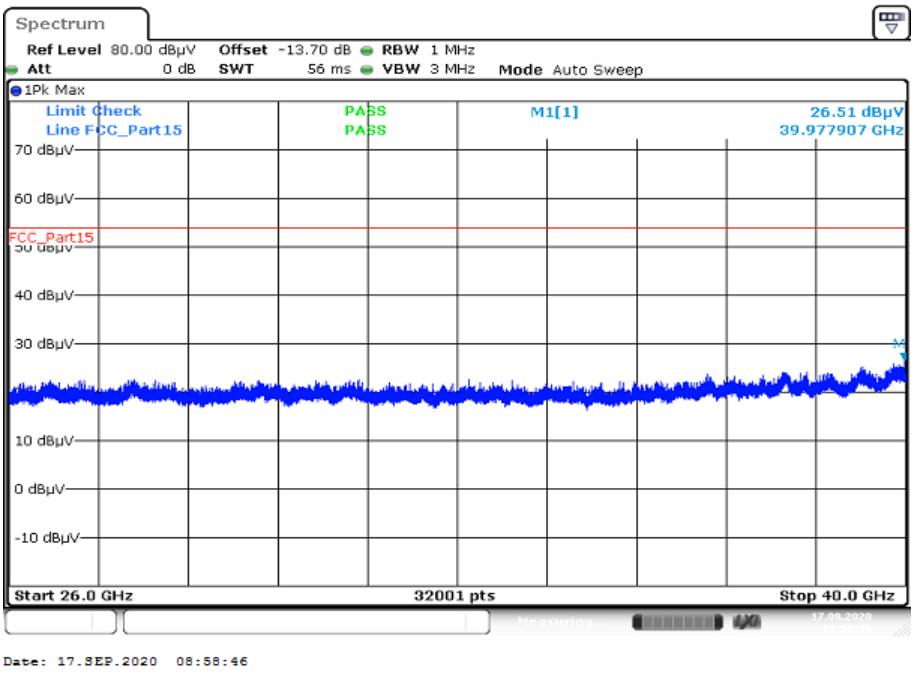
Plot 34: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-3; highest channel



Plot 35: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-3; highest channel

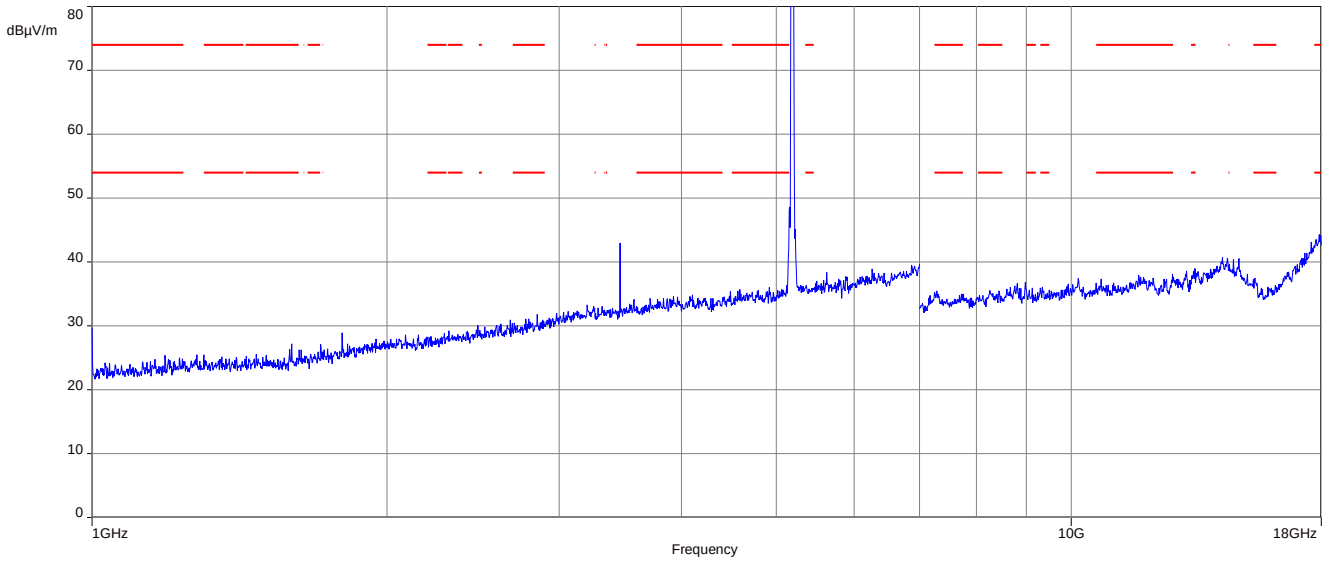


Plot 36: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-3; highest channel

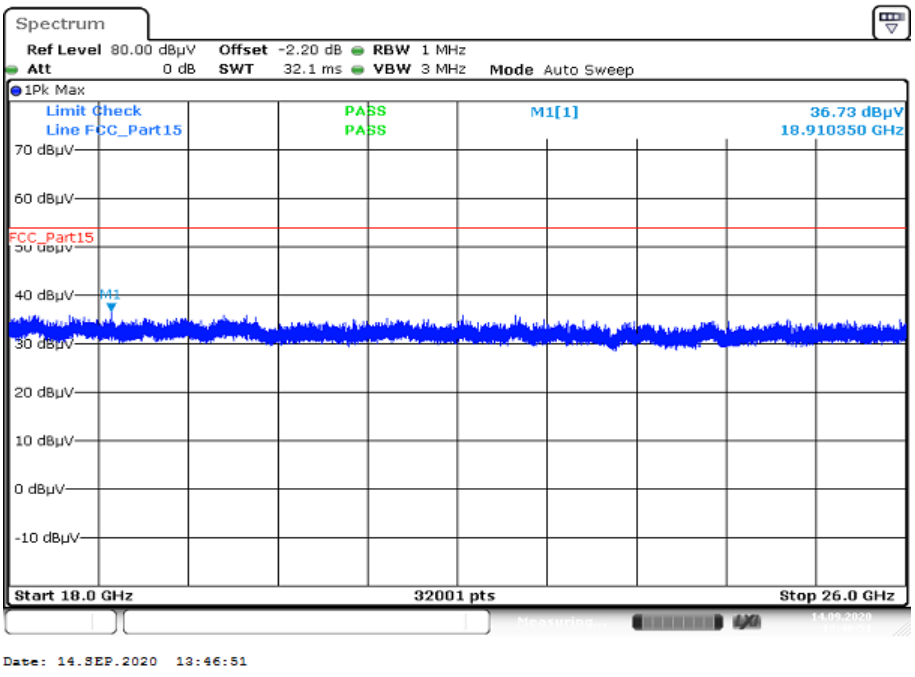


Plots: 40 MHz channel bandwidth

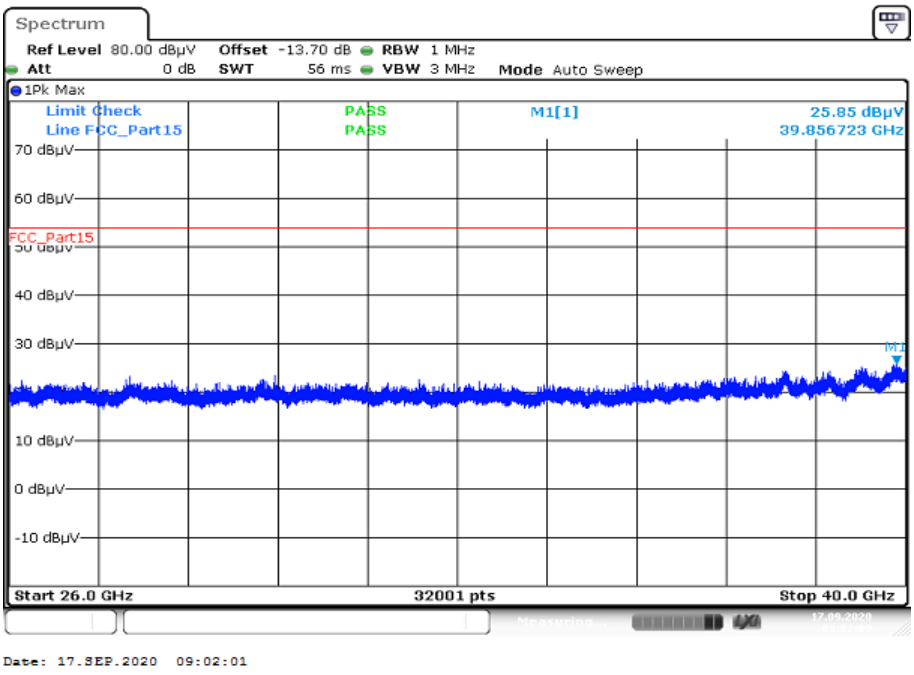
Plot 1: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-1; lowest channel



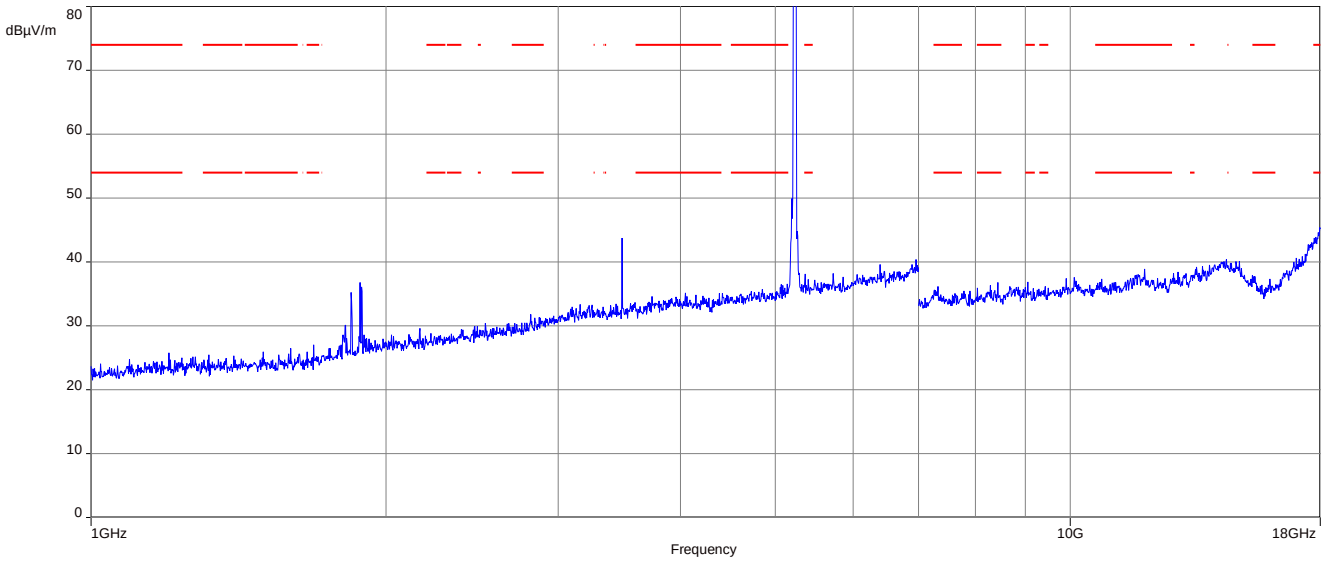
Plot 2: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-1; lowest channel



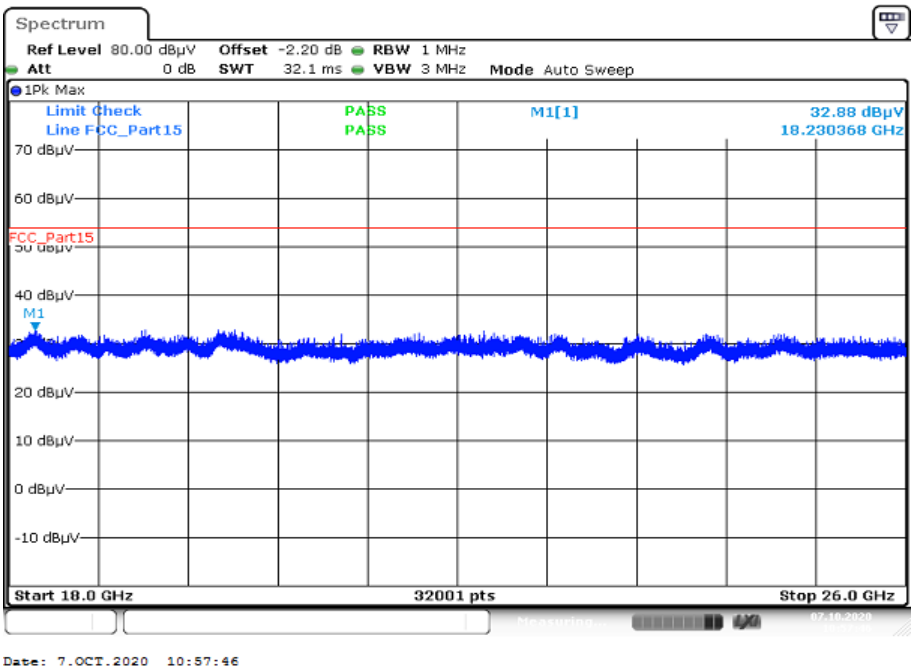
Plot 3: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-1; lowest channel



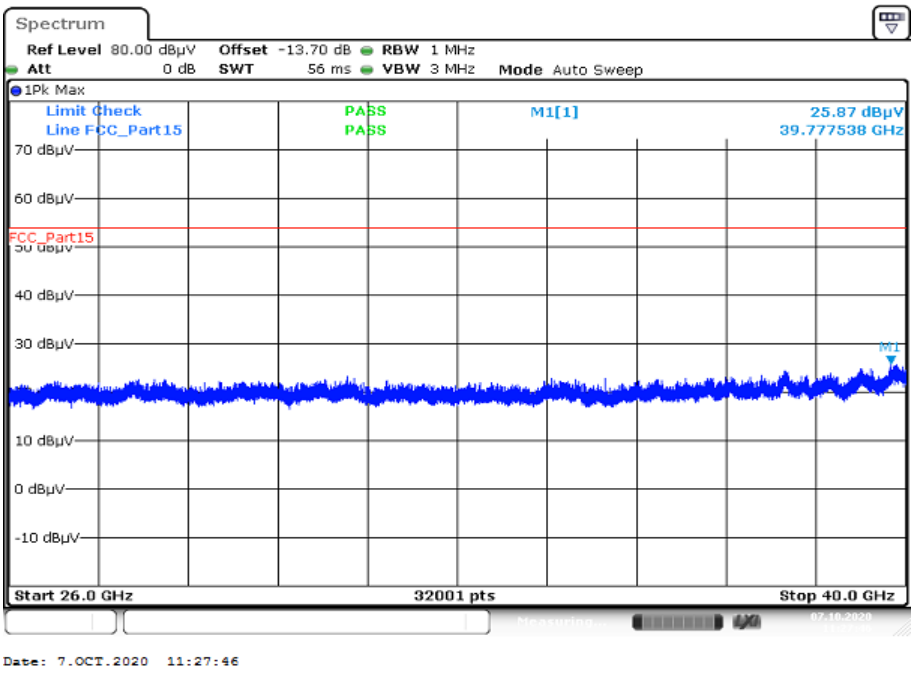
Plot 37: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-1; highest channel



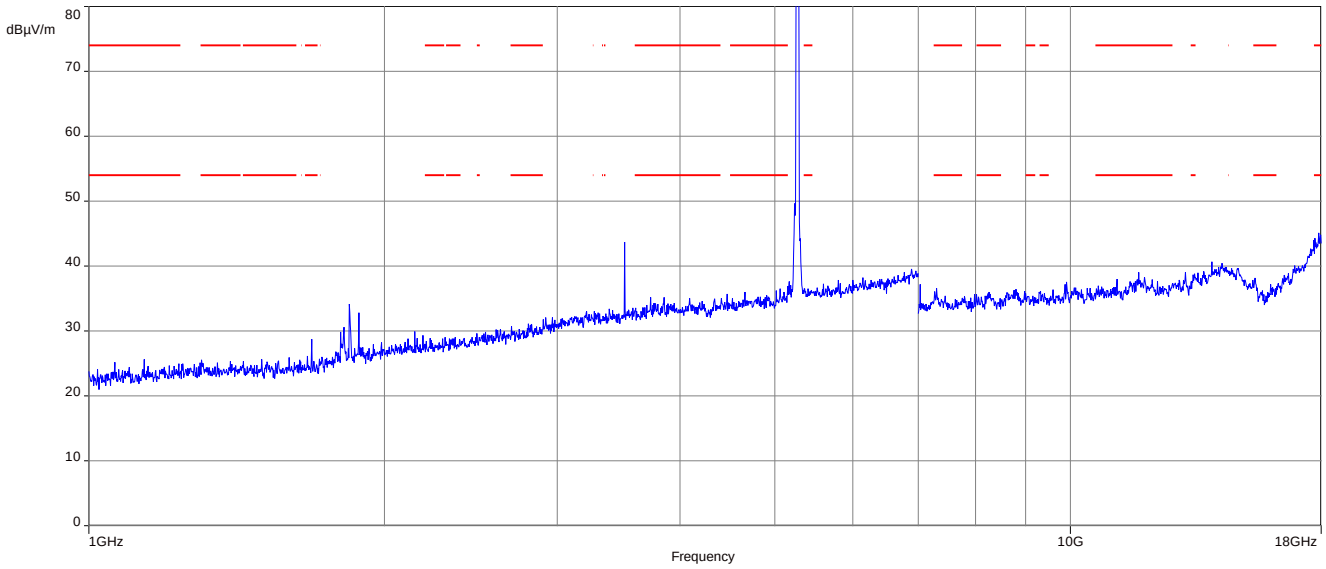
Plot 38: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-1; highest channel



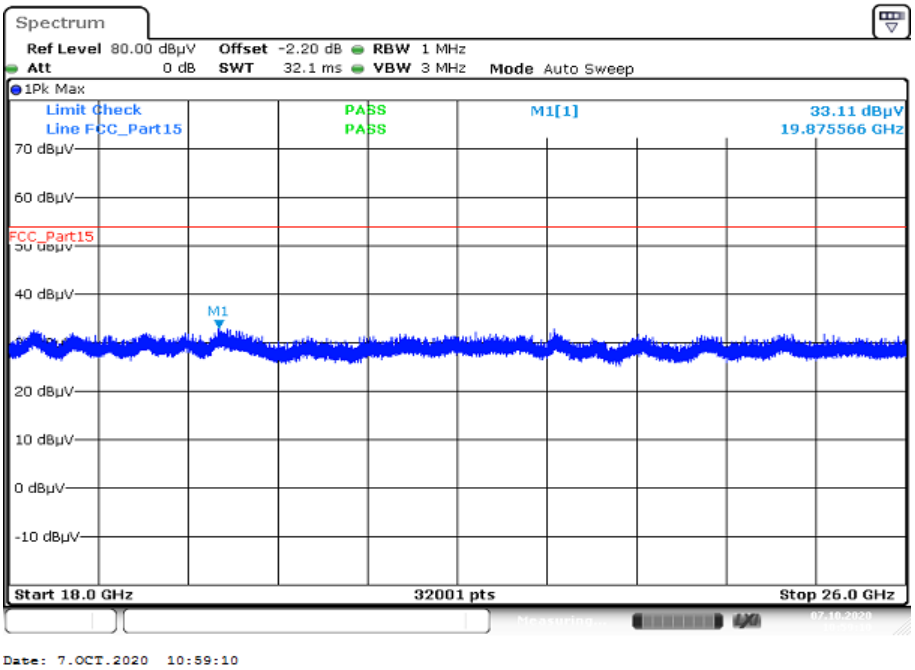
Plot 39: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-1; highest channel



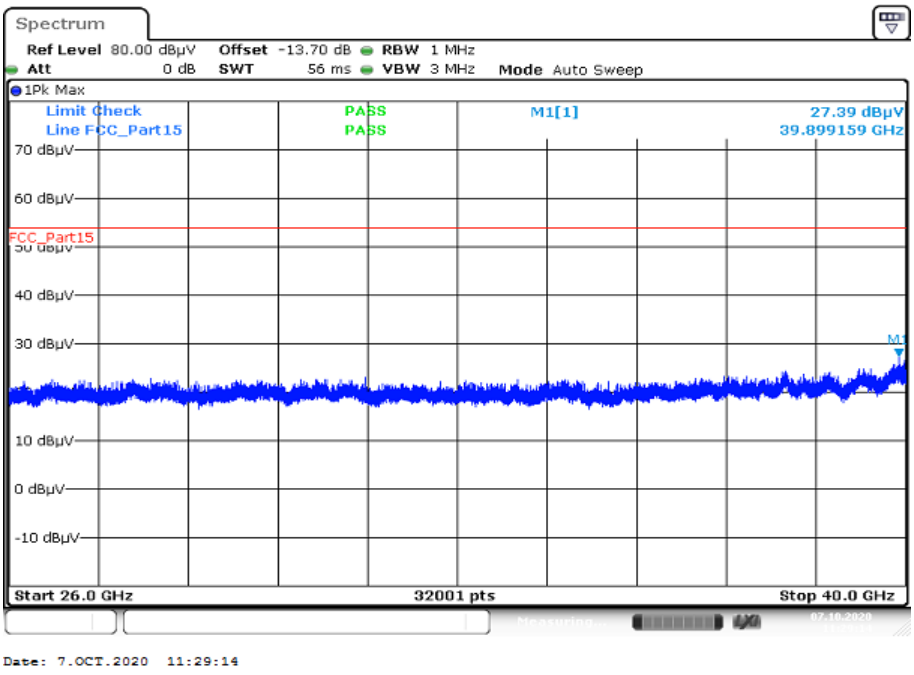
Plot 40: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2A; lowest channel



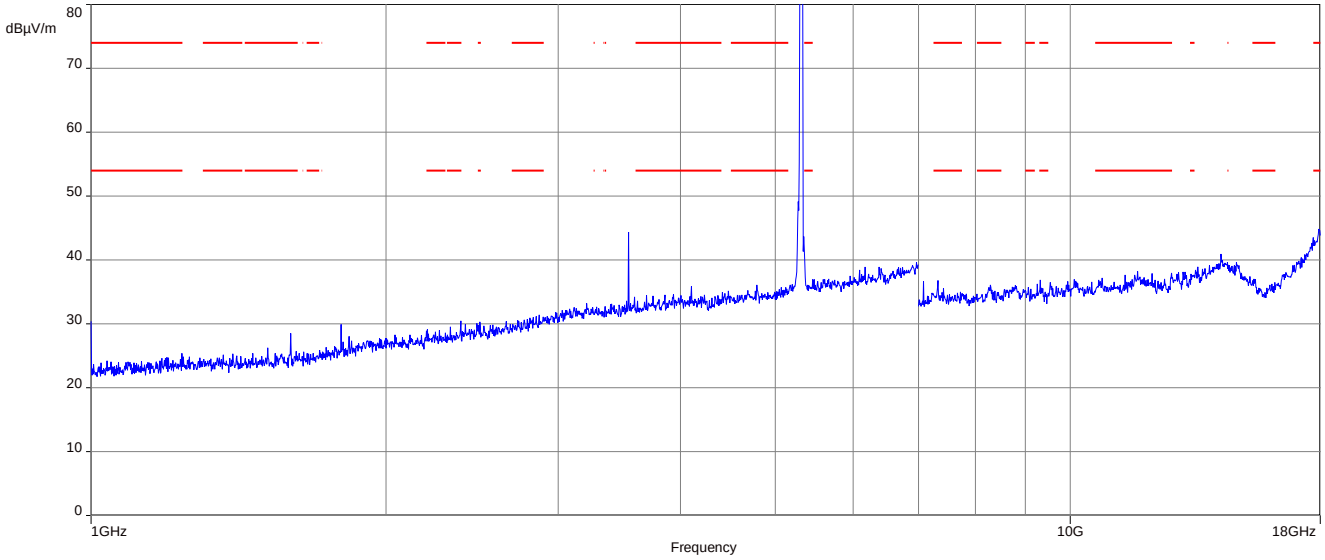
Plot 41: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2A; lowest channel



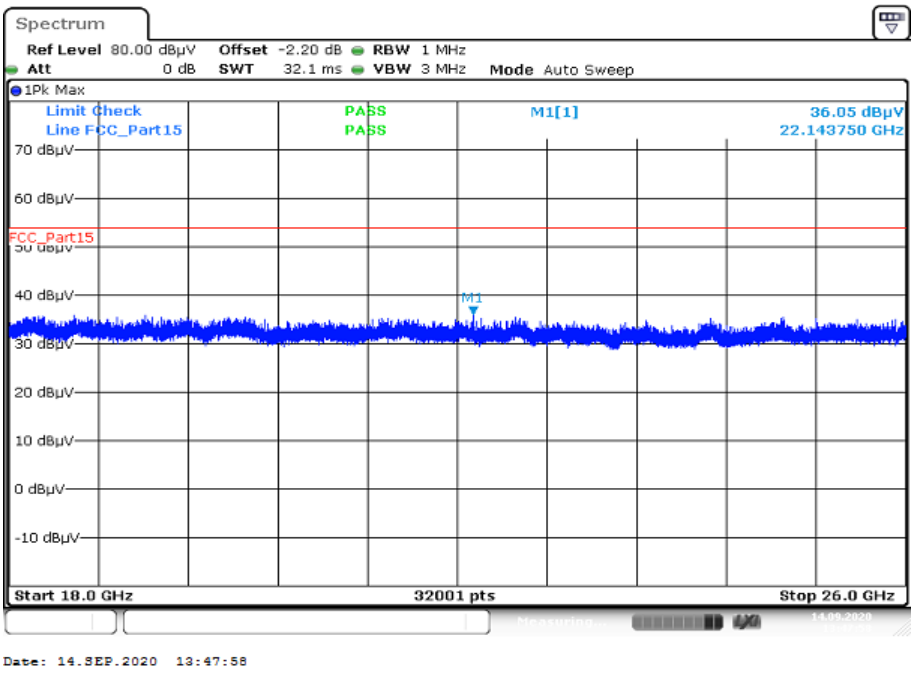
Plot 42: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-2A; lowest channel



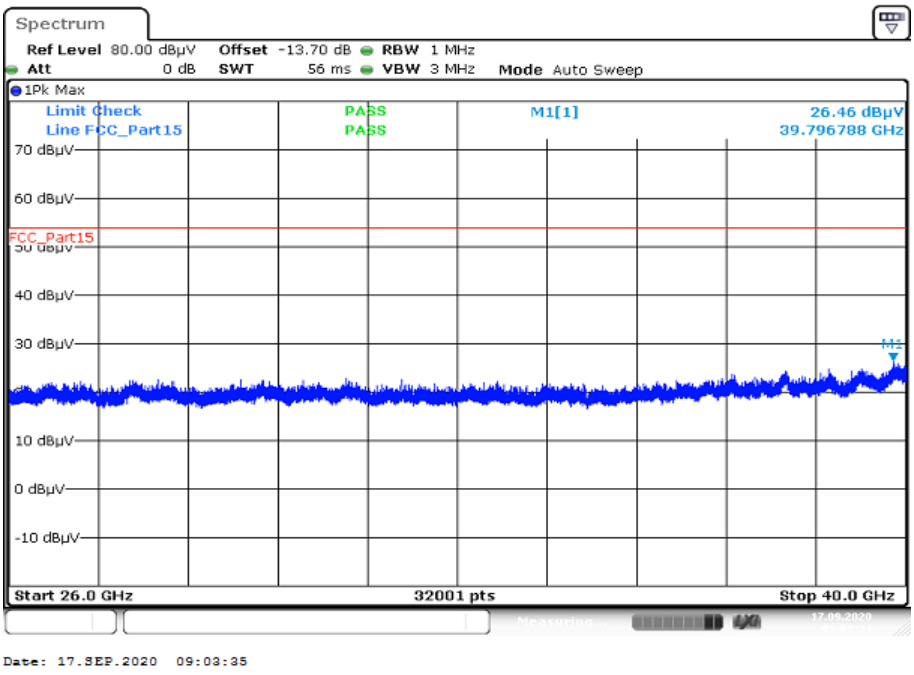
Plot 4: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2A; highest channel



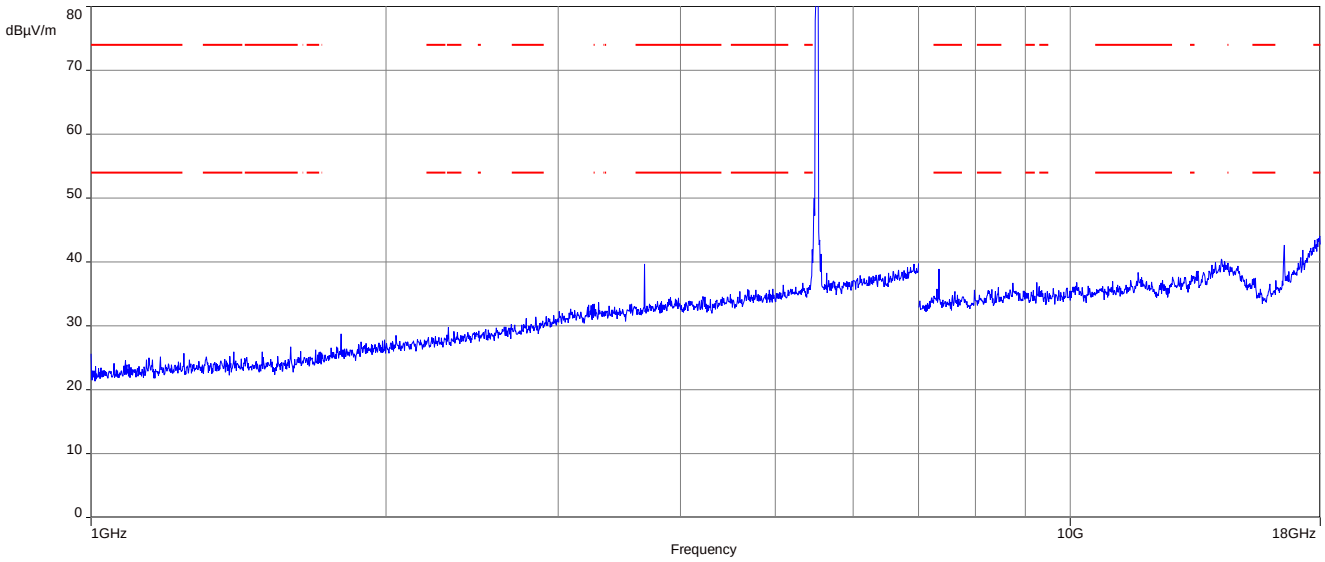
Plot 5: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2A; highest channel



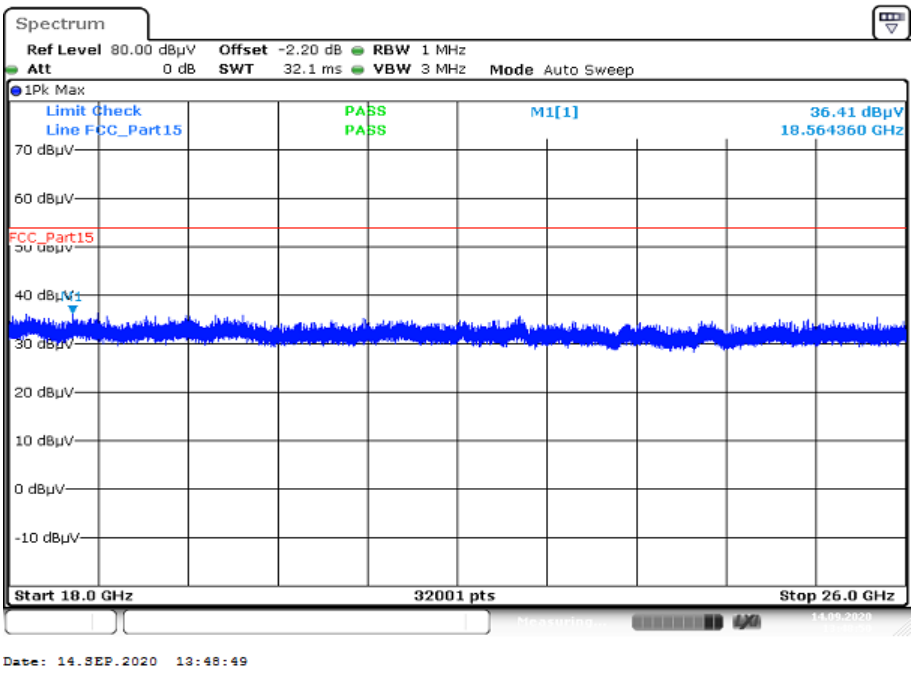
Plot 6: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-2A; highest channel



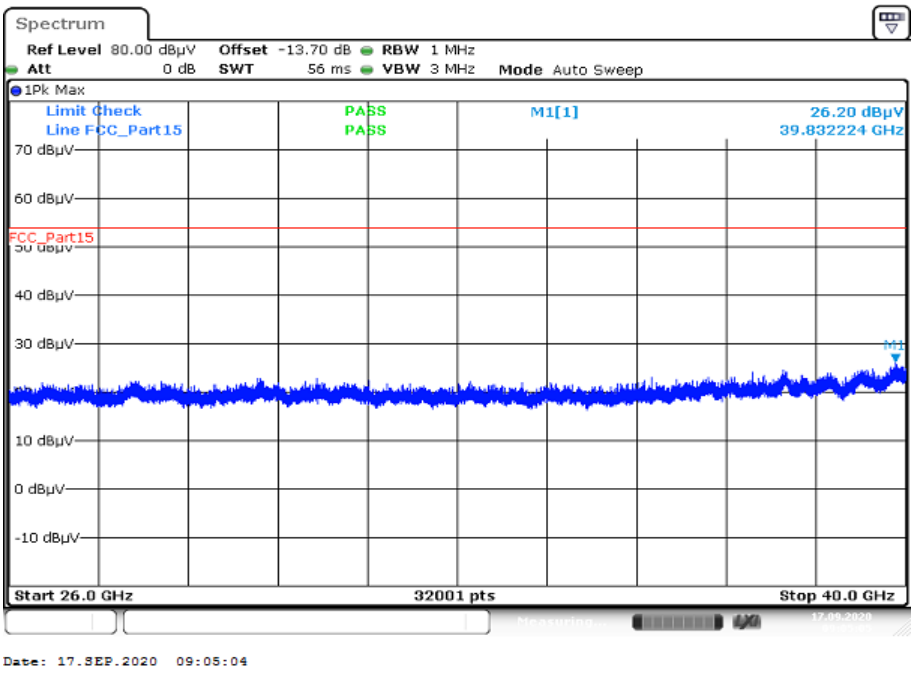
Plot 7: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2C; lowest channel



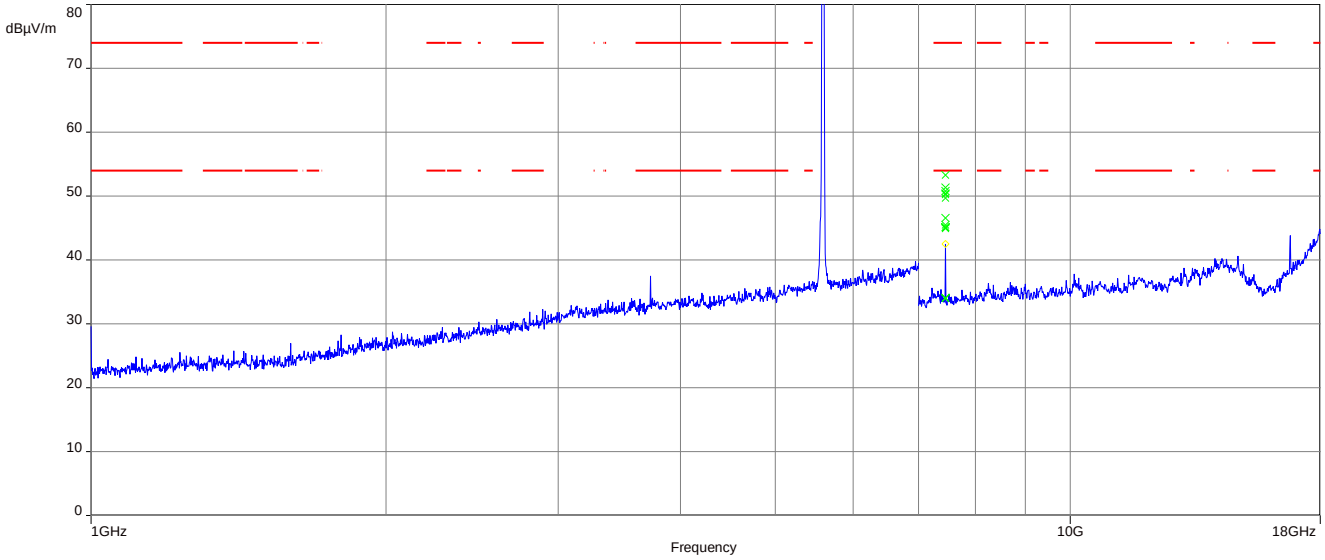
Plot 8: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2C; lowest channel



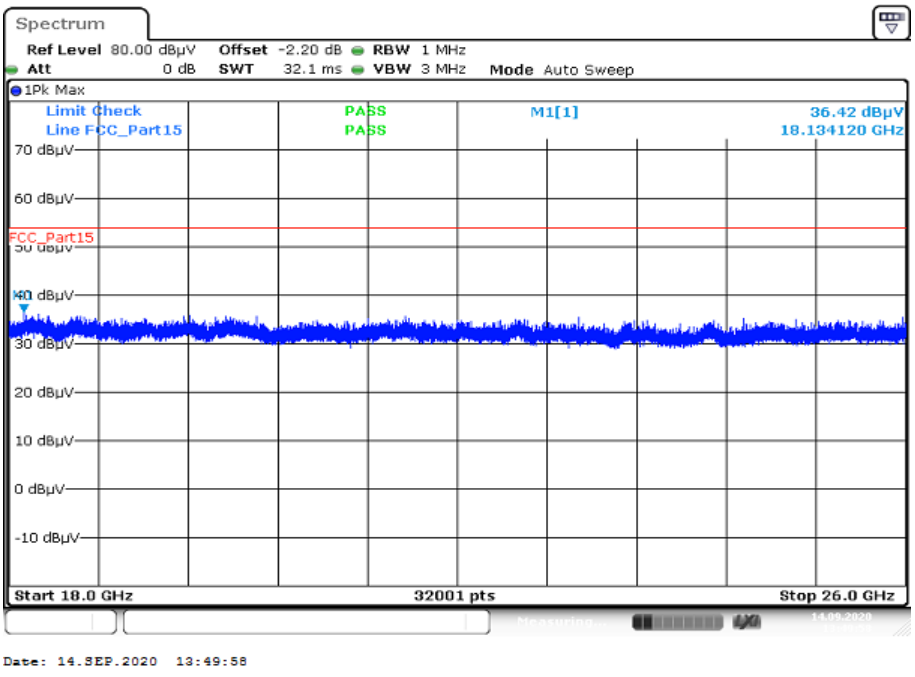
Plot 9: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-2C; lowest channel



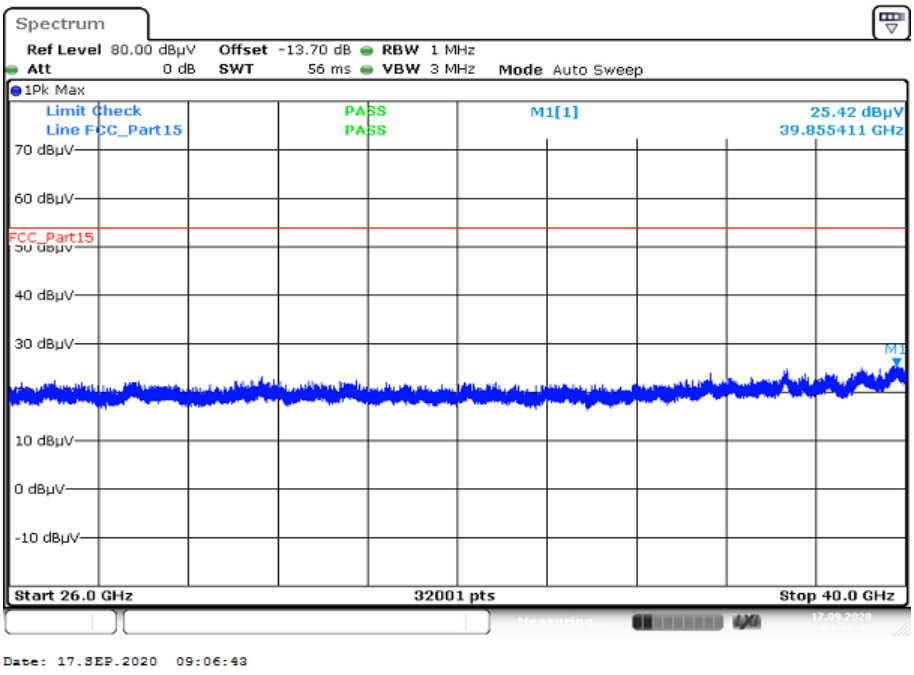
Plot 10: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2C; middle channel



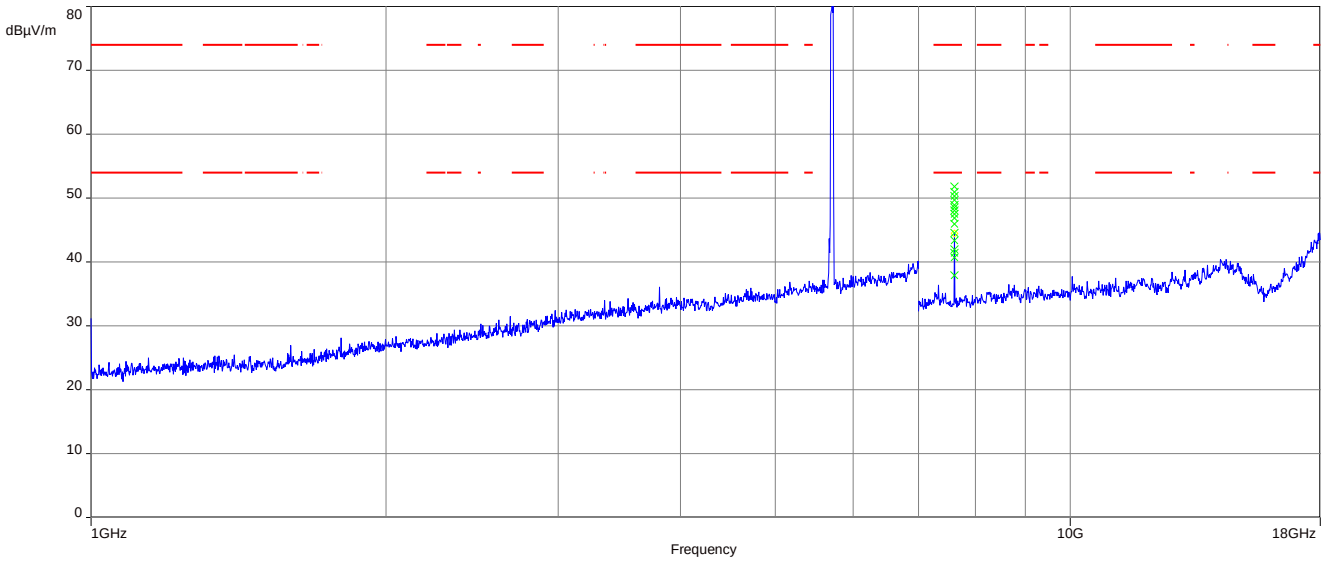
Plot 11: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2C; middle channel



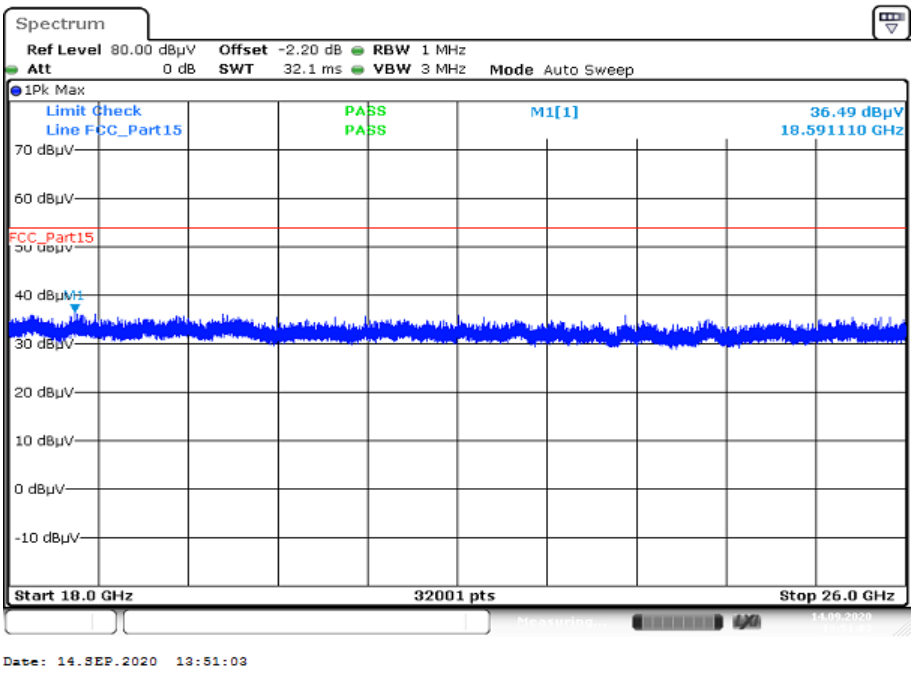
Plot 12: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-2C; middle channel



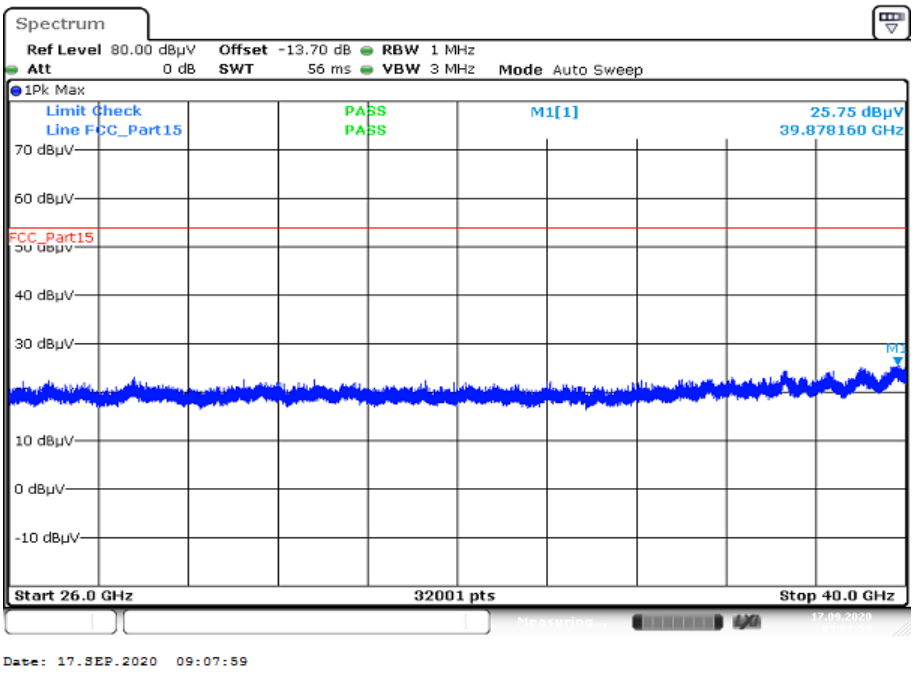
Plot 13: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2C; highest channel



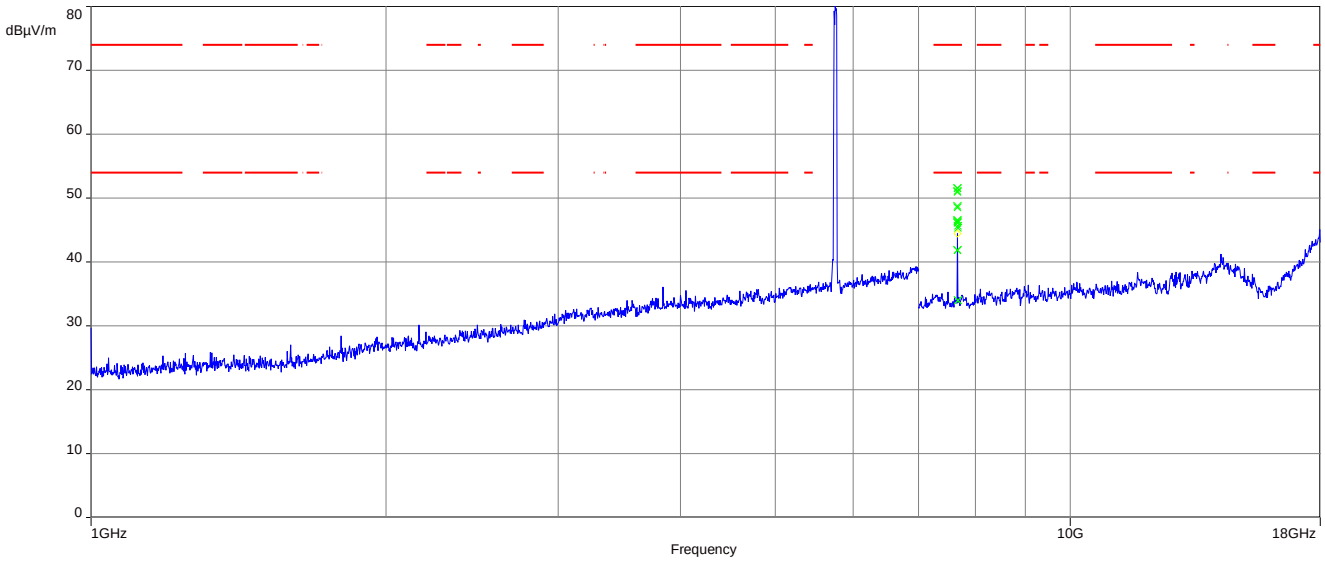
Plot 14: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2C; highest channel



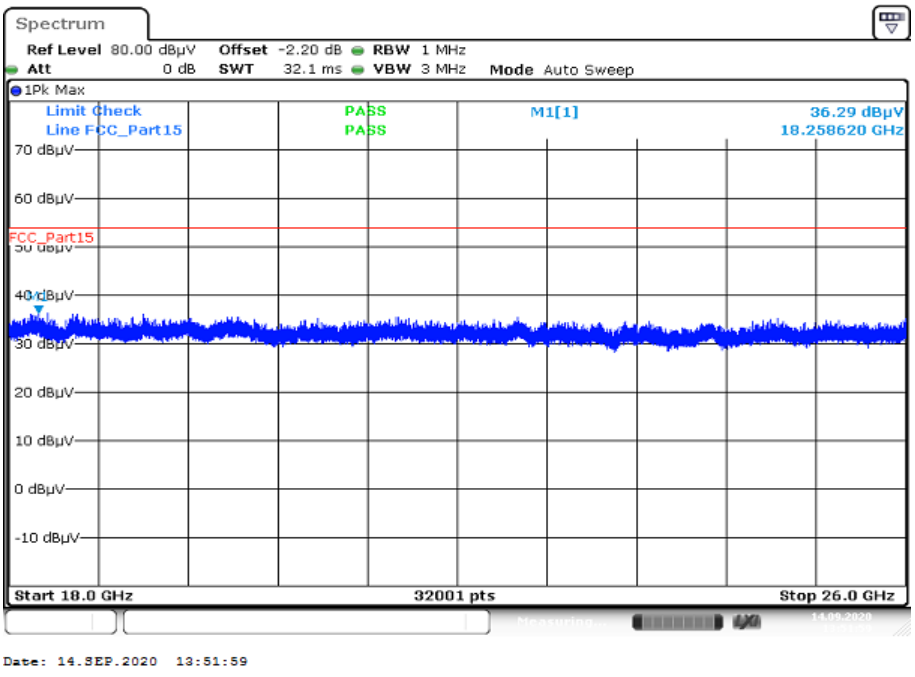
Plot 15: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-2C; highest channel



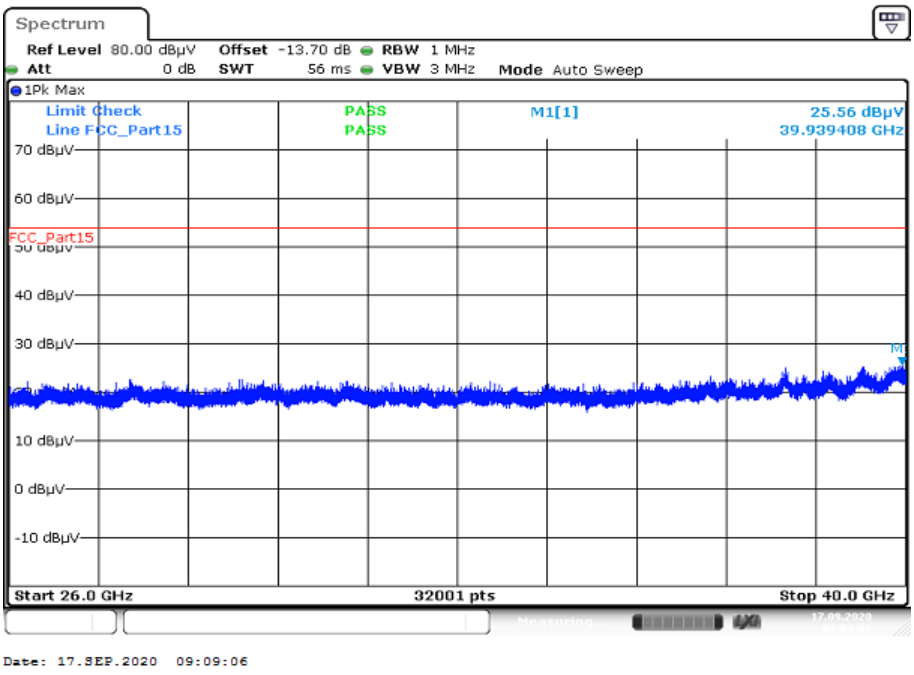
Plot 16: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-3; lowest channel



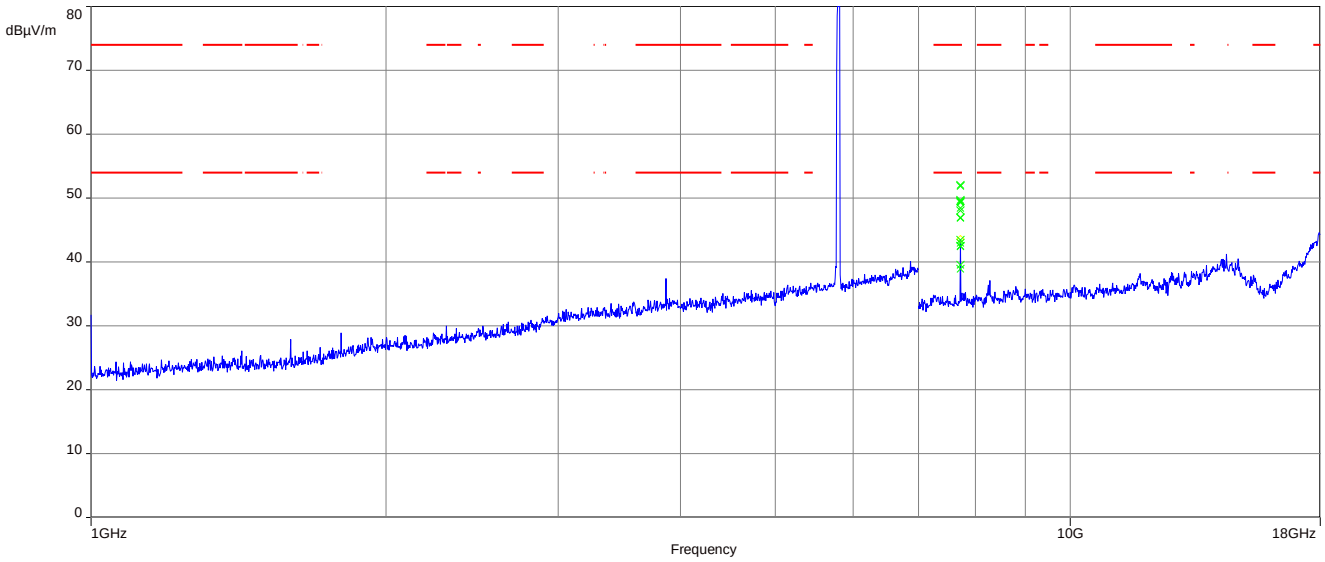
Plot 17: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-3; lowest channel



Plot 18: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-3; lowest channel



Plot 19: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-3; highest channel



Plot 20: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-3; highest channel