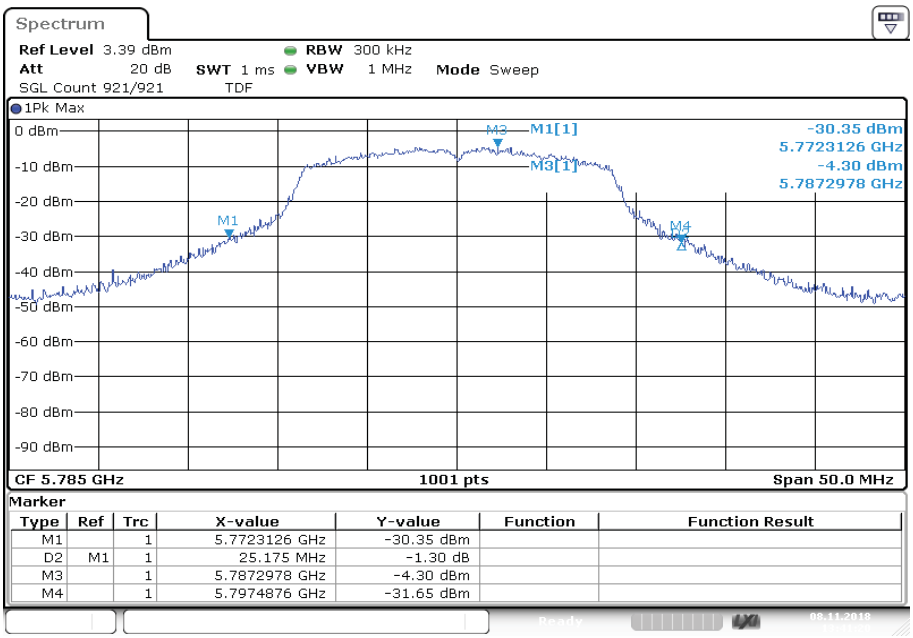
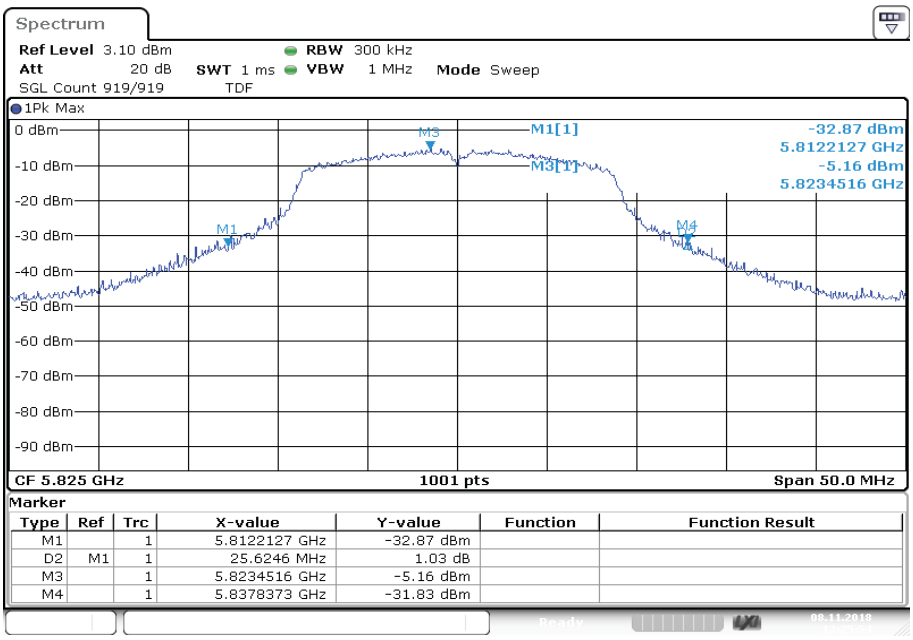
Plot 9: U-NII-3; middle channel



Date: 8.NOV.2018 13:41:20

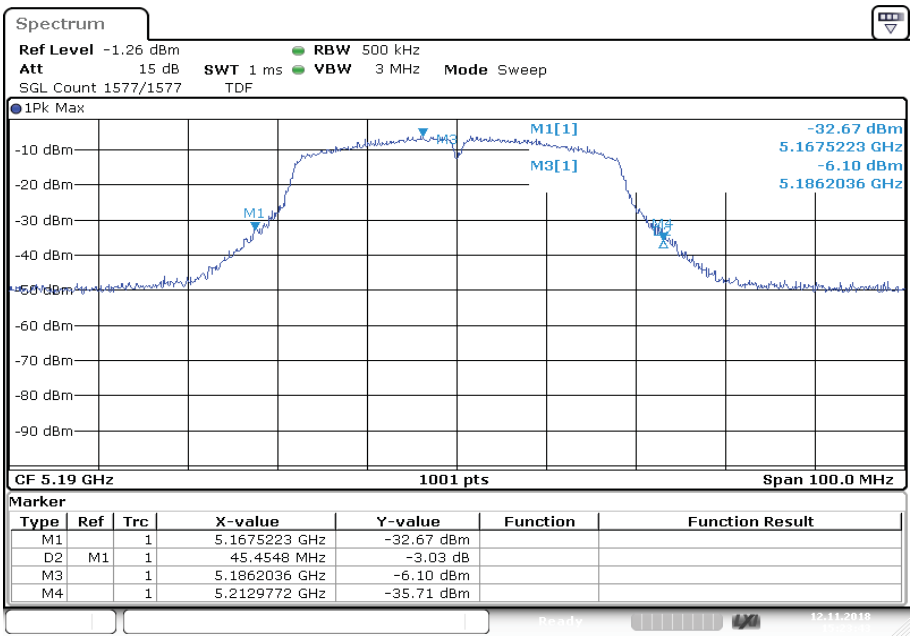
Plot 10: U-NII-3; highest channel



Date: 8.NOV.2018 13:25:55

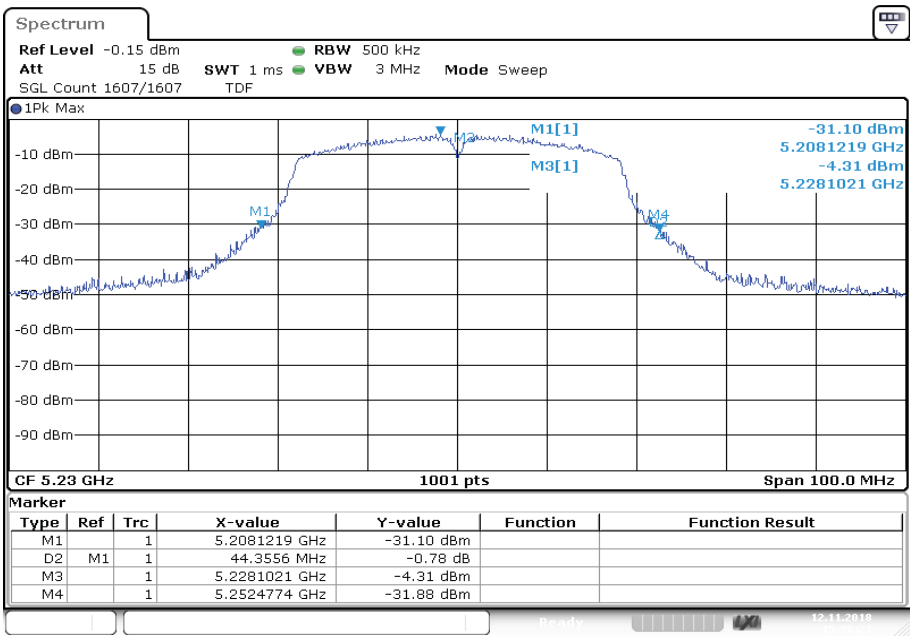
Plots: n/ac HT40 – mode

Plot 1: U-NII-1; lowest channel



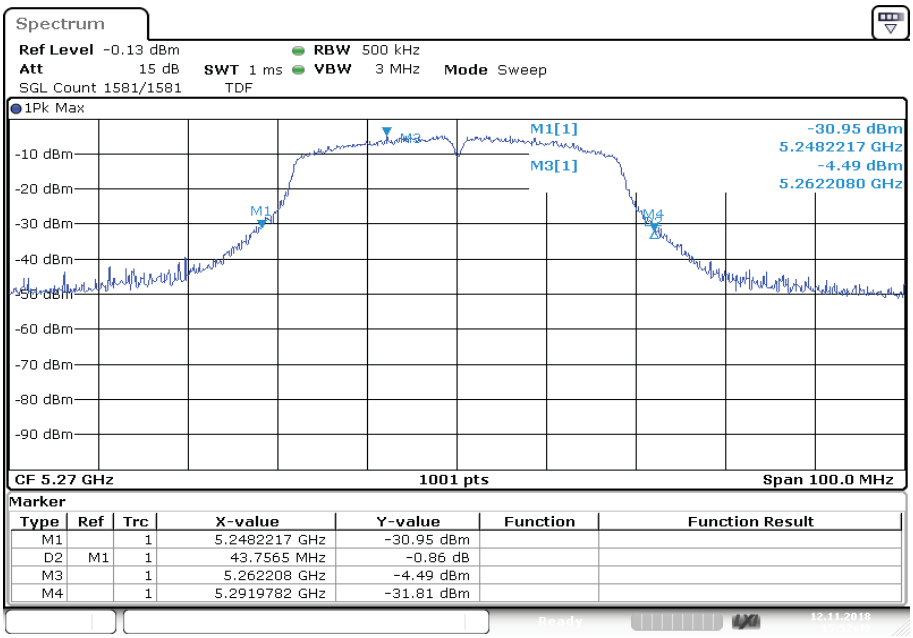
Date: 12.NOV.2018 15:23:43

Plot 2: U-NII-1; highest channel



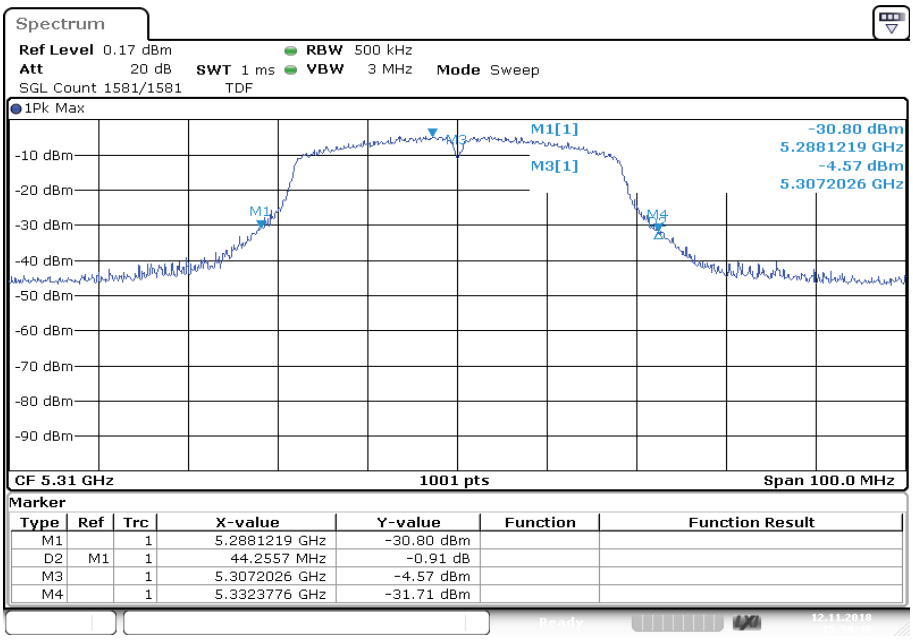
Date: 12.NOV.2018 15:36:23

Plot 3: U-NII-2A; lowest channel



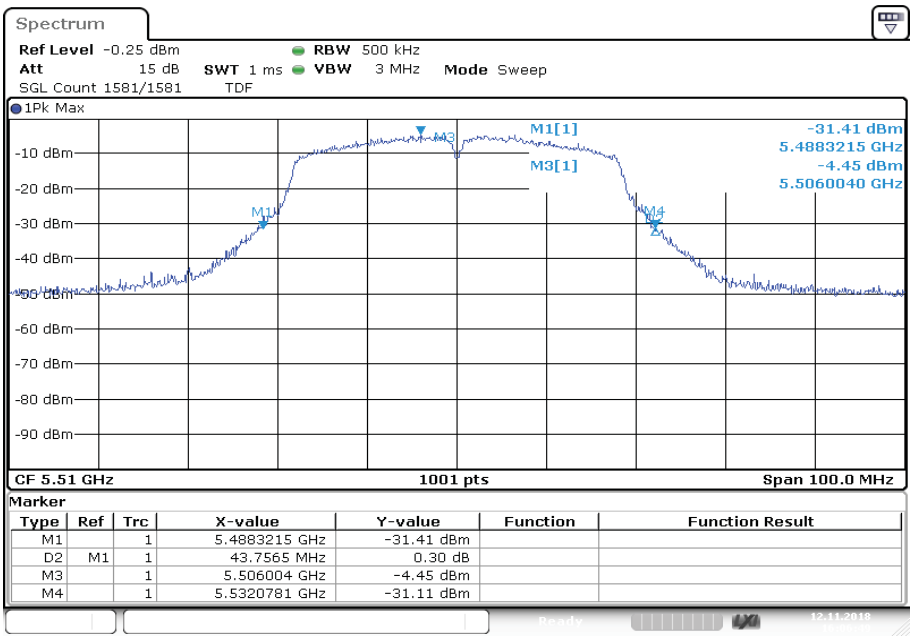
Date: 12.NOV.2018 15:52:50

Plot 4: U-NII-2A; highest channel



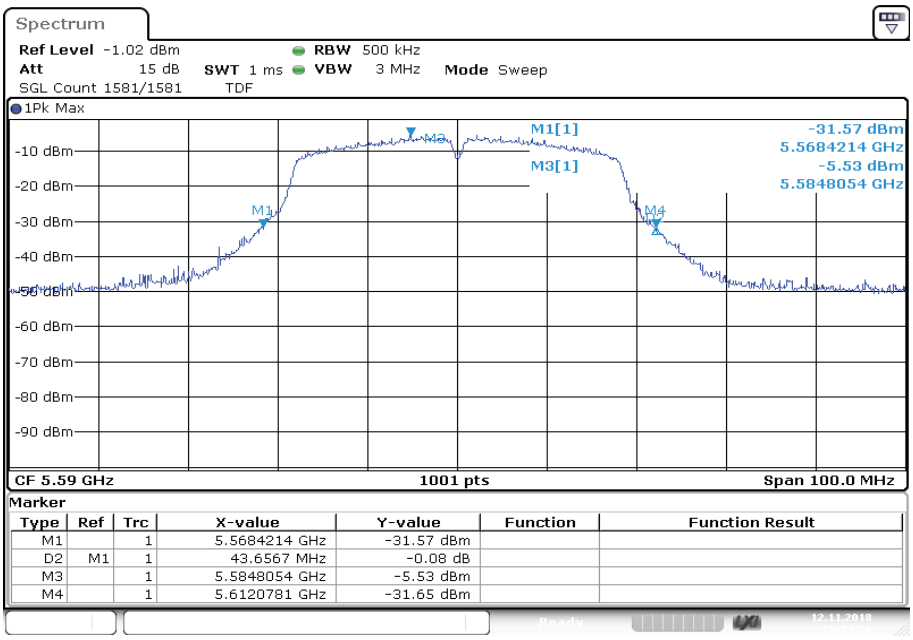
Date: 12.NOV.2018 15:59:50

Plot 5: U-NII-2C; lowest channel



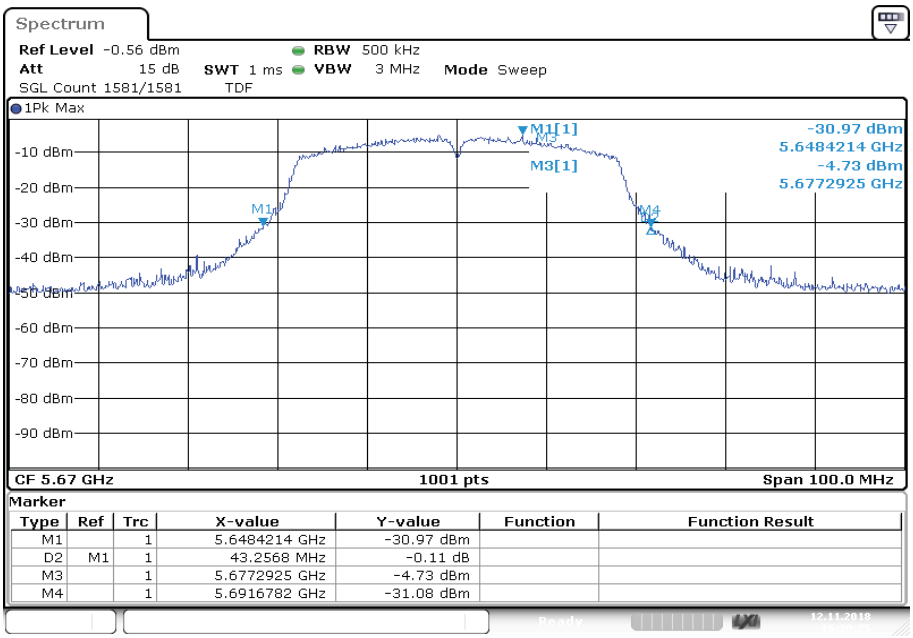
Date: 12.NOV.2018 16:06:50

Plot 6: U-NII-2C; middle channel



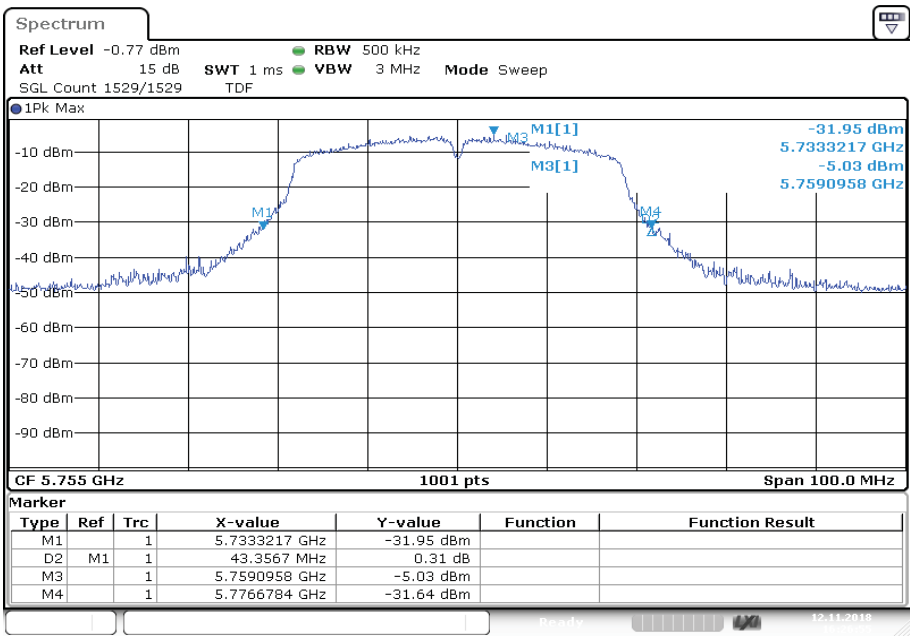
Date: 12.NOV.2018 16:13:26

Plot 7: U-NII-2C; highest channel



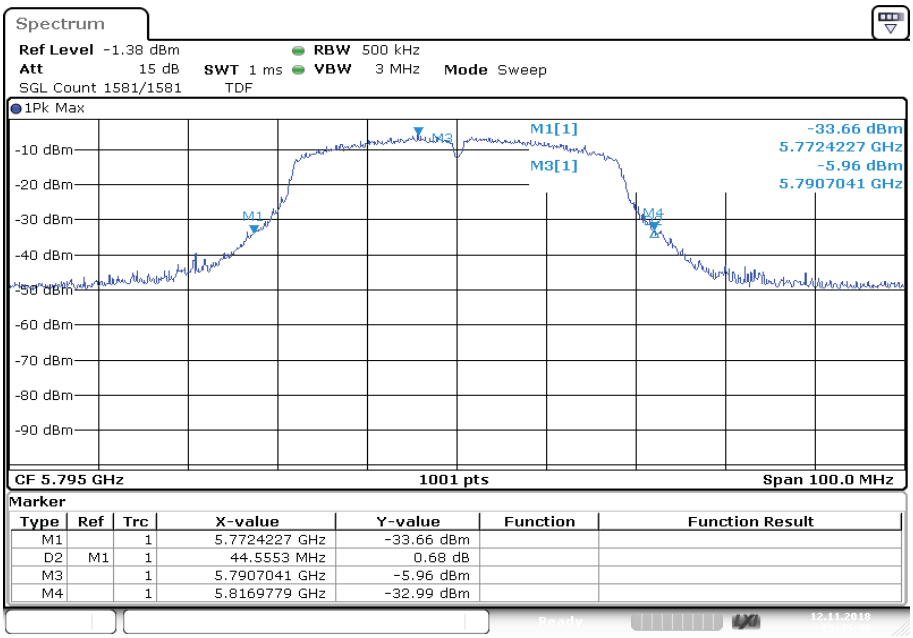
Date: 12.NOV.2018 16:20:26

Plot 8: U-NII-3; lowest channel



Date: 12.NOV.2018 16:26:56

Plot 9: U-NII-3; highest channel



11.8 Occupied bandwidth / 99% emission bandwidth

Description:

Measurement of the 99% bandwidth of the modulated signal acc. RSS-GEN.

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	300 kHz / 500 kHz
Video bandwidth:	1 MHz / 3 MHz
Span:	50 MHz / 100 MHz
Measurement procedure:	Measurement of the 99% bandwidth using the integration function of the analyzer
Trace mode:	Max hold (allow trace to stabilize)
Test setup:	See sub clause 6.4 - A
Measurement uncertainty:	See sub clause 8

Usage:

-/-	IC
OBW is necessary for Emission Designator	

Results:

	99% bandwidth (kHz)		
	U-NII-1 (5150 MHz to 5250 MHz)		
	Lowest channel	Middle channel	Highest channel
	16733	-/-	16783
	U-NII-2A (5250 MHz to 5350 MHz)		
	Lowest channel	Middle channel	Highest channel
a	16833	-/-	16783
	U-NII-2C (5470 MHz to 5725 MHz)		
	Lowest channel	Middle channel	Highest channel
	16733	16833	16833
	U-NII-3 (5725 MHz to 5850 MHz)		
	Lowest channel	Middle channel	Highest channel
	16783	16833	16833

Results:

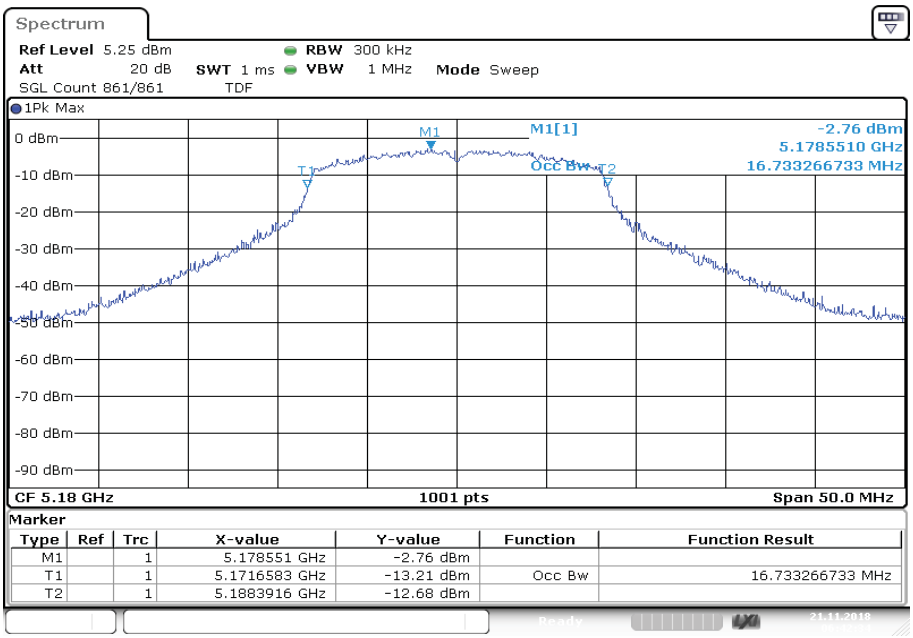
	99% bandwidth (kHz)		
	U-NII-1 (5150 MHz to 5250 MHz)		
	Lowest channel	Middle channel	Highest channel
	17782	-/-	17832
	U-NII-2A (5250 MHz to 5350 MHz)		
	Lowest channel	Middle channel	Highest channel
n/ac HT20	17932	-/-	17832
	U-NII-2C (5470 MHz to 5725 MHz)		
	Lowest channel	Middle channel	Highest channel
	17982	17882	17832
	U-NII-3 (5725 MHz to 5850 MHz)		
	Lowest channel	Middle channel	Highest channel
	17882	17882	17882

Results:

	99% bandwidth (kHz)		
	U-NII-1 (5150 MHz to 5250 MHz)		
	Lowest channel		Highest channel
	36064		36064
	U-NII-2A (5250 MHz to 5350 MHz)		
	Lowest channel		Highest channel
n/ac HT40	36164		36064
	U-NII-2C (5470 MHz to 5725 MHz)		
	Lowest channel	Middle channel	Highest channel
	36164	36064	36064
	U-NII-3 (5725 MHz to 5850 MHz)		
	Lowest channel		Highest channel
	36164		36164

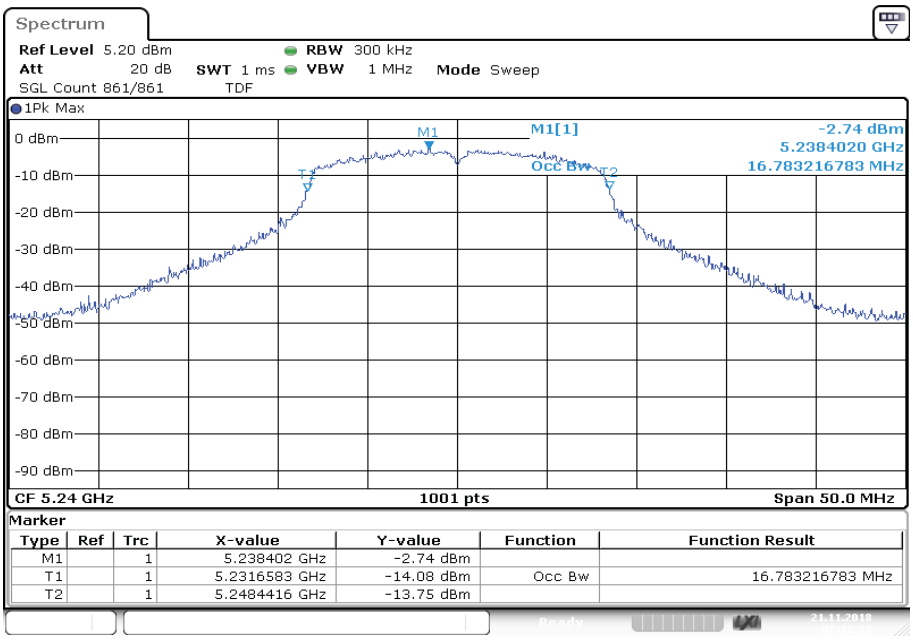
Plots: a – mode

Plot 1: U-NII-1; lowest channel



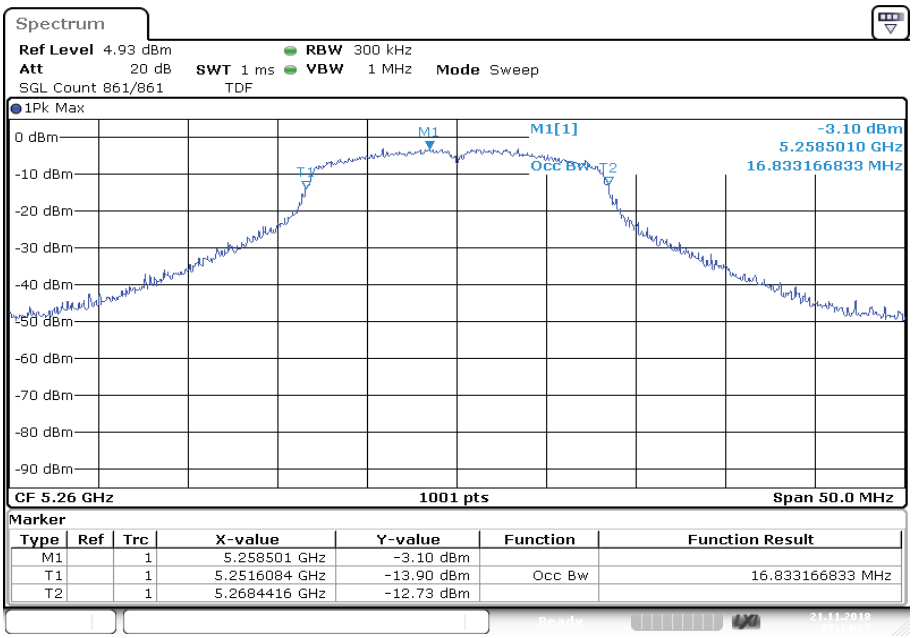
Date: 21.NOV.2018 06:42:35

Plot 2: U-NII-1; highest channel



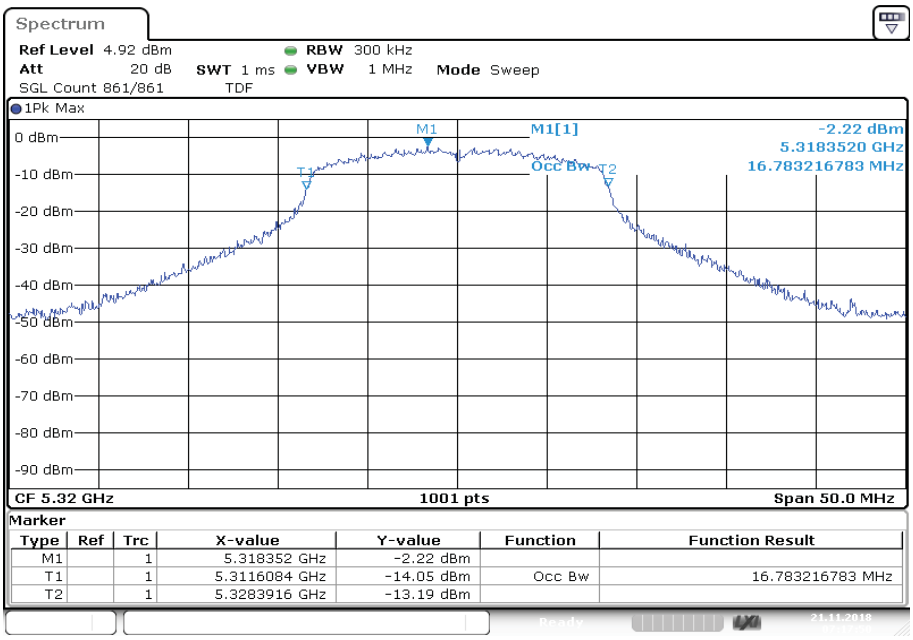
Date: 21.NOV.2018 07:12:23

Plot 3: U-NII-2A; lowest channel



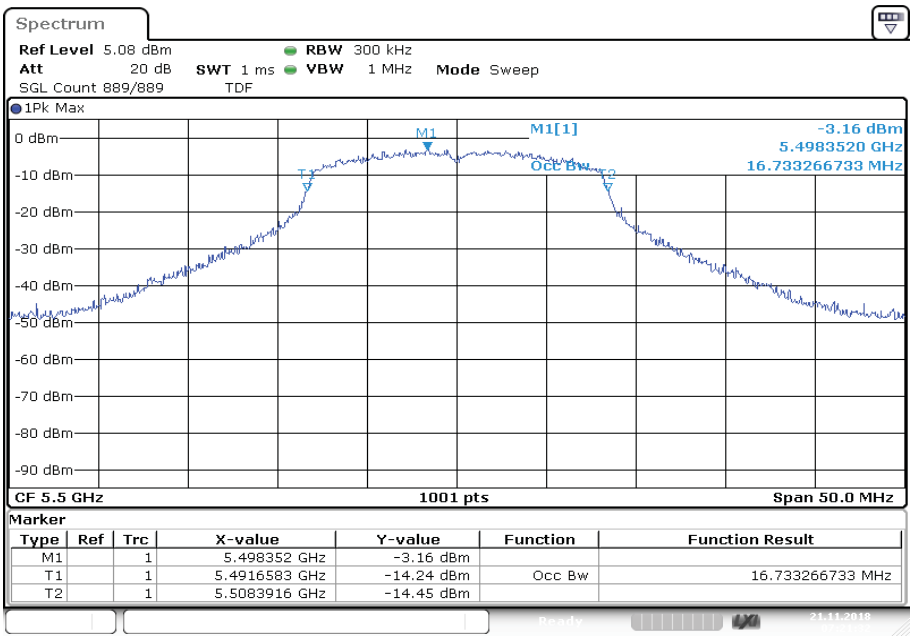
Date: 21.NOV.2018 07:14:26

Plot 4: U-NII-2A; highest channel



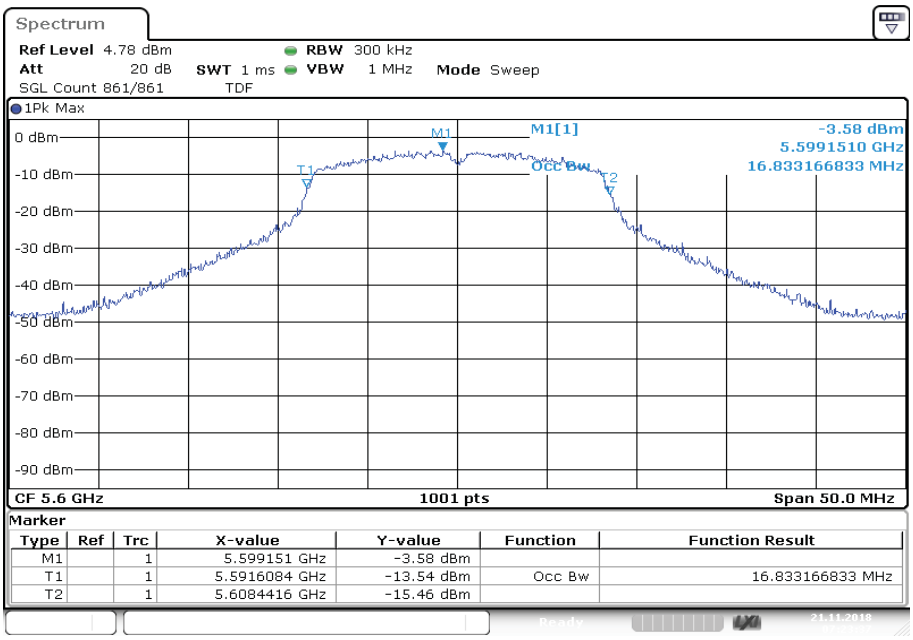
Date: 21.NOV.2018 07:17:51

Plot 5: U-NII-2C; lowest channel



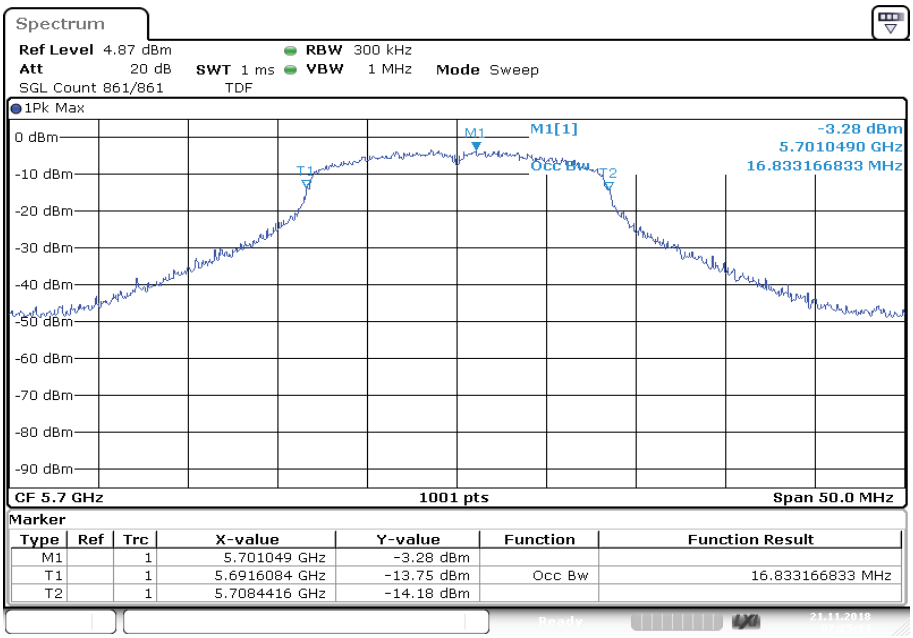
Date: 21.NOV.2018 07:21:33

Plot 6: U-NII-2C; middle channel



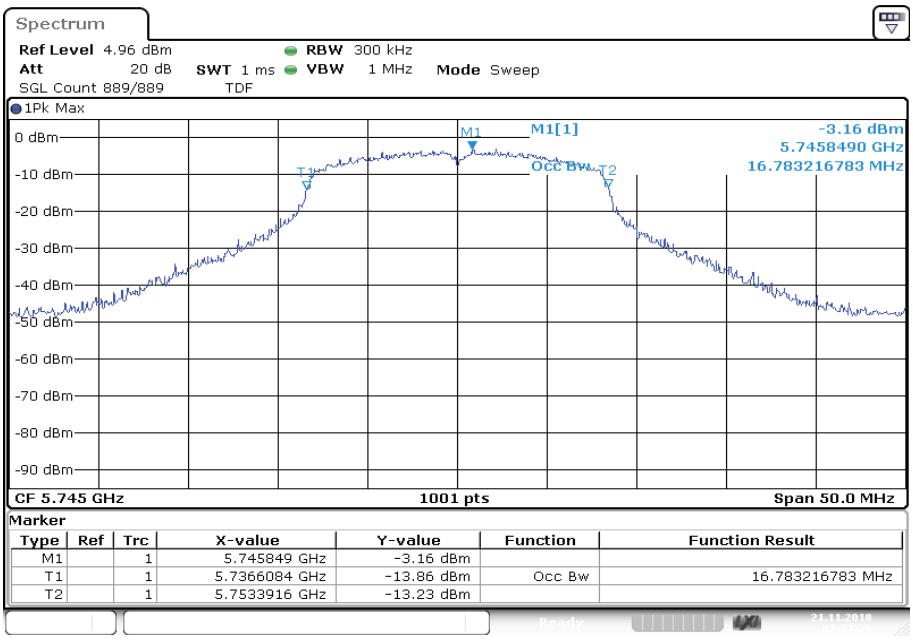
Date: 21.NOV.2018 07:23:38

Plot 7: U-NII-2C; highest channel



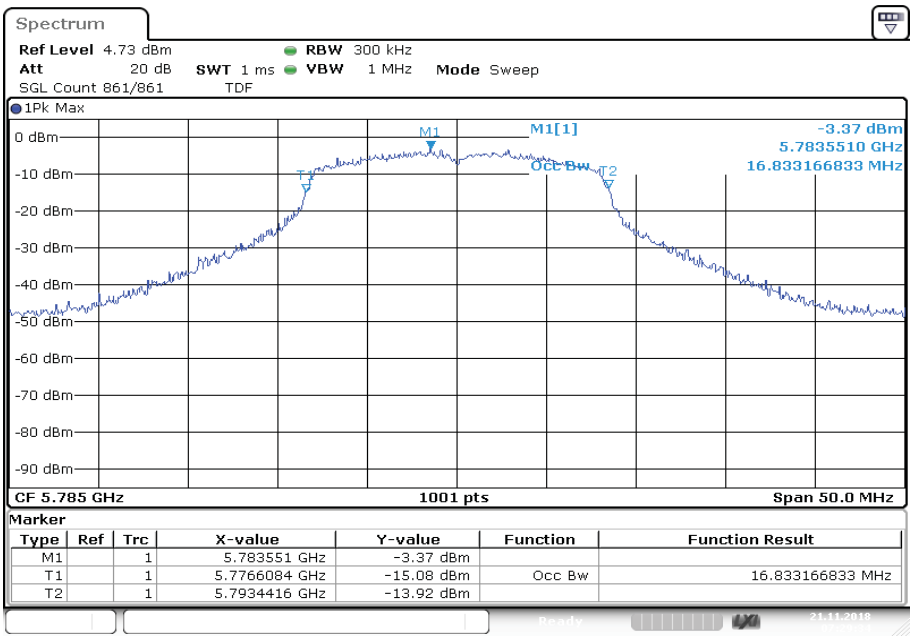
Date: 21.NOV.2018 07:25:34

Plot 8: U-NII-3; lowest channel

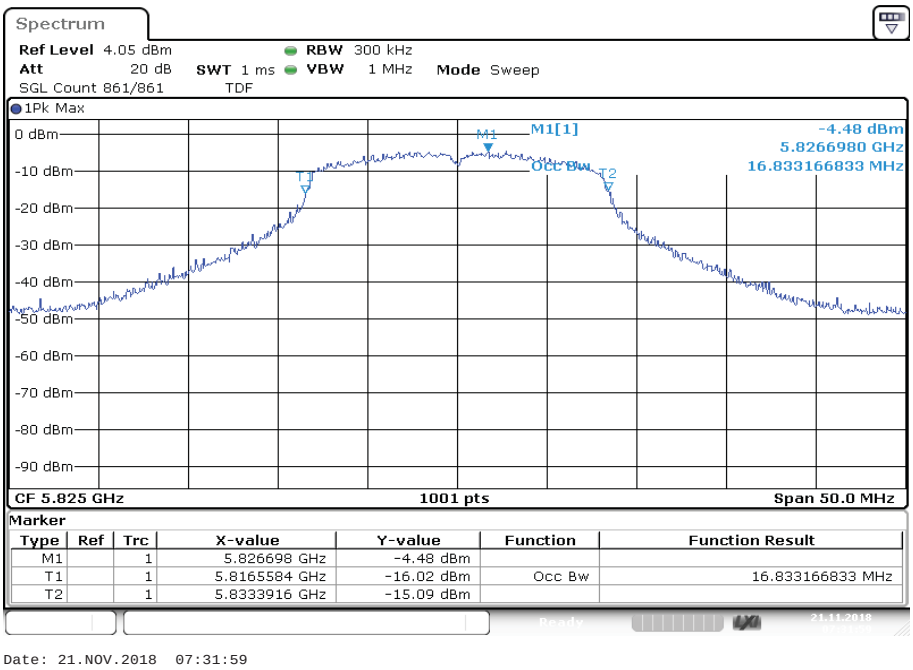


Date: 21.NOV.2018 07:27:25

Plot 9: U-NII-3; middle channel

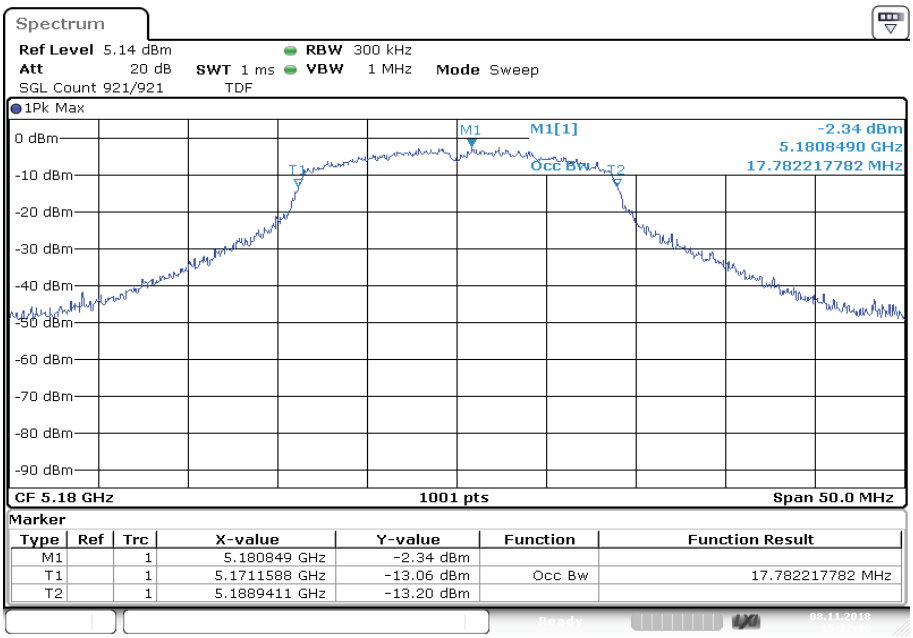


Plot 10: U-NII-3; highest channel



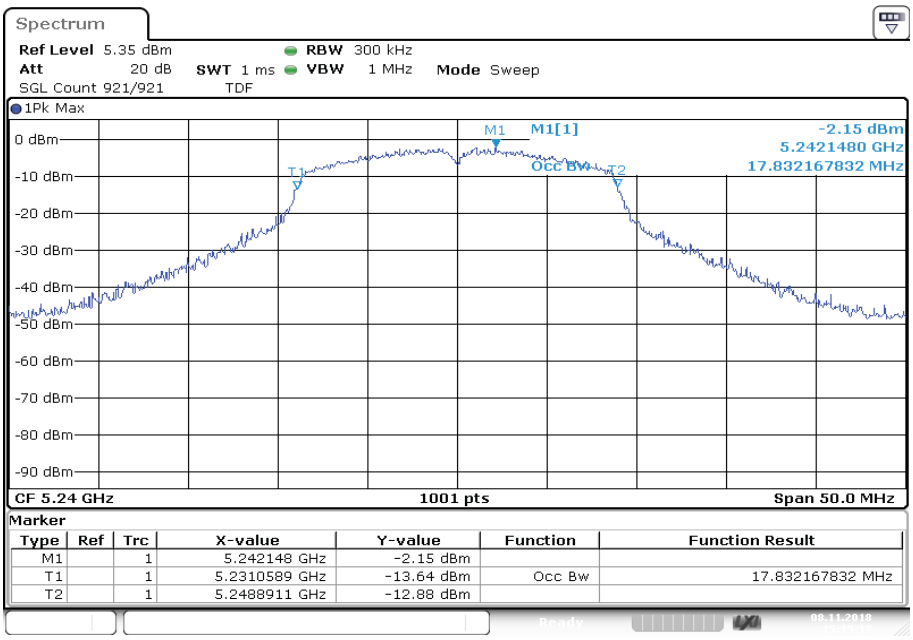
Plots: n/ac HT20 – mode

Plot 1: U-NII-1; lowest channel



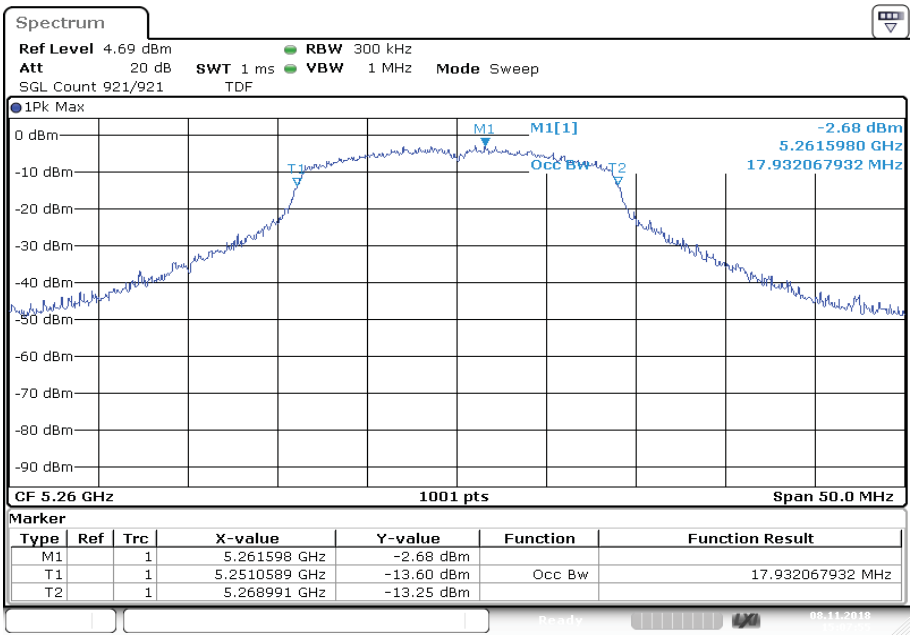
Date: 8.NOV.2018 15:22:11

Plot 2: U-NII-1; highest channel



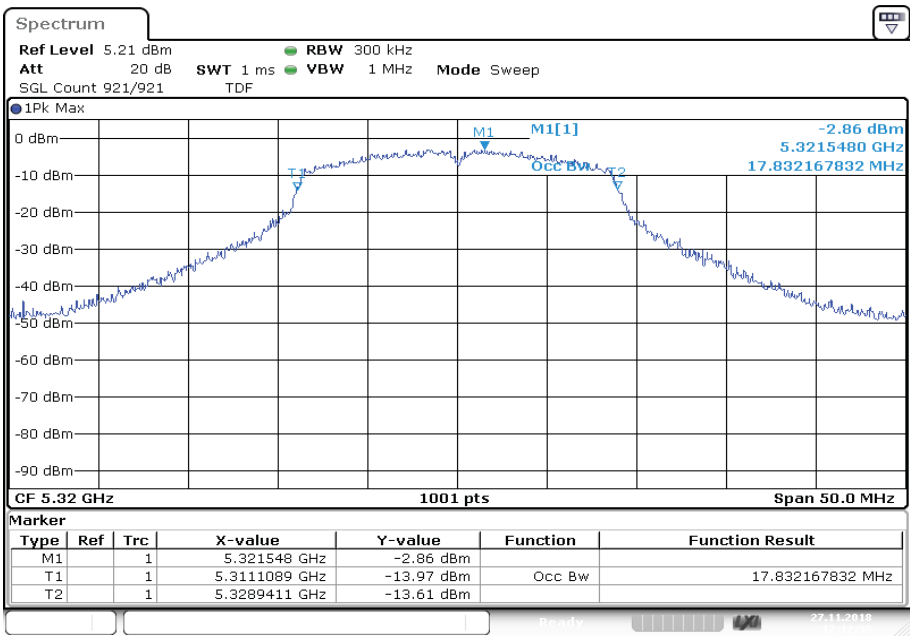
Date: 8.NOV.2018 15:15:18

Plot 3: U-NII-2A; lowest channel



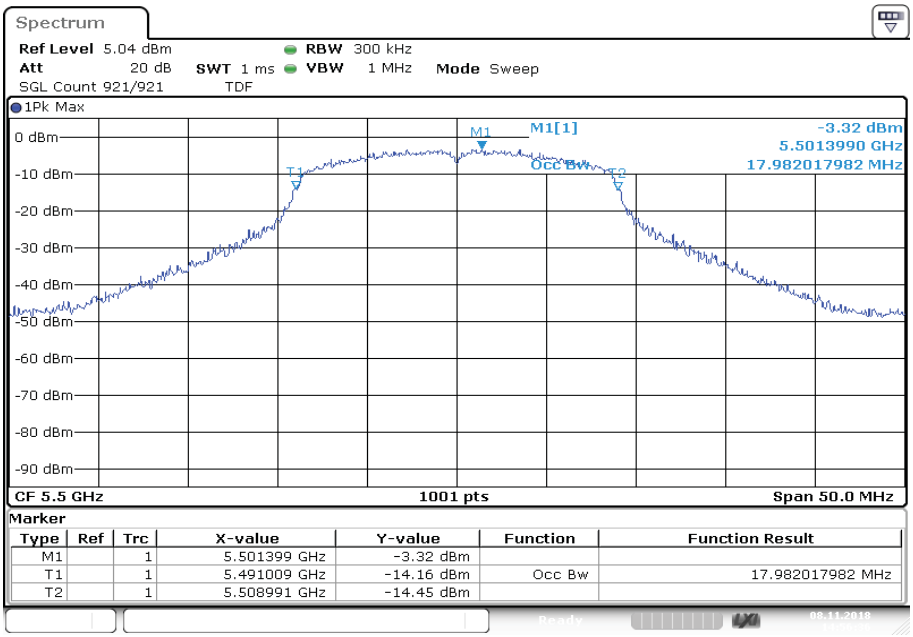
Date: 8.NOV.2018 15:07:55

Plot 4: U-NII-2A; highest channel



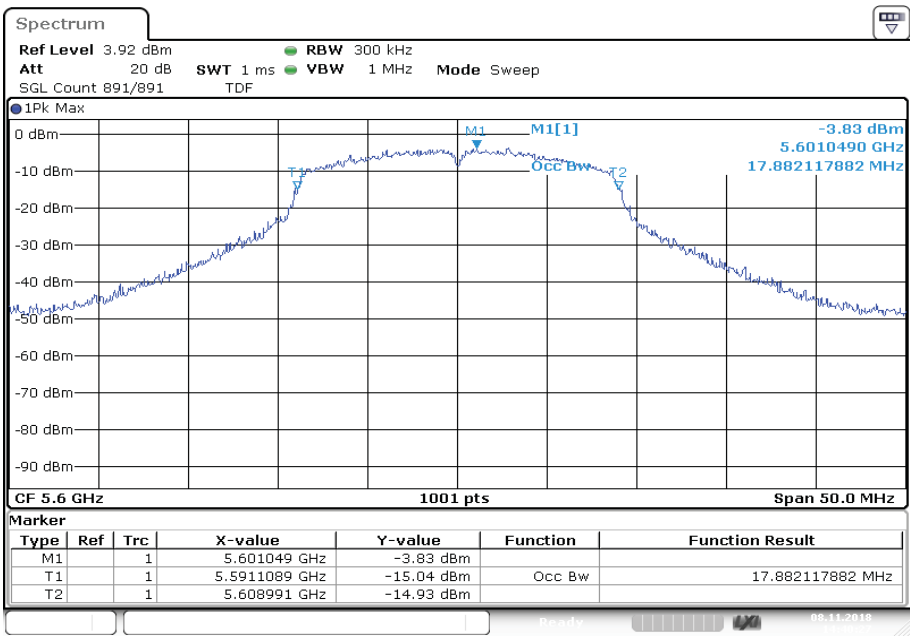
Date: 27.NOV.2018 17:12:35

Plot 5: U-NII-2C; lowest channel



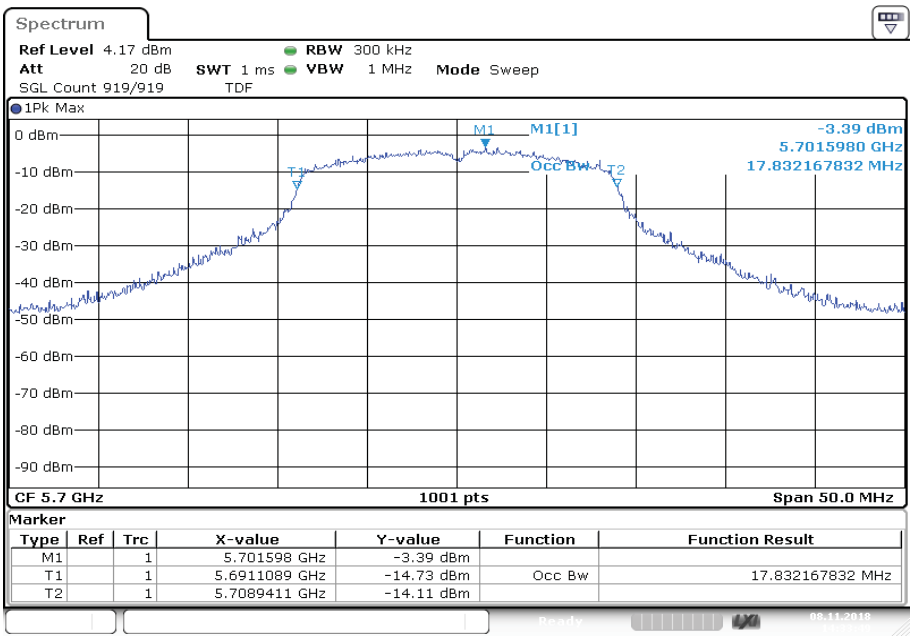
Date: 8.NOV.2018 14:56:36

Plot 6: U-NII-2C; middle channel



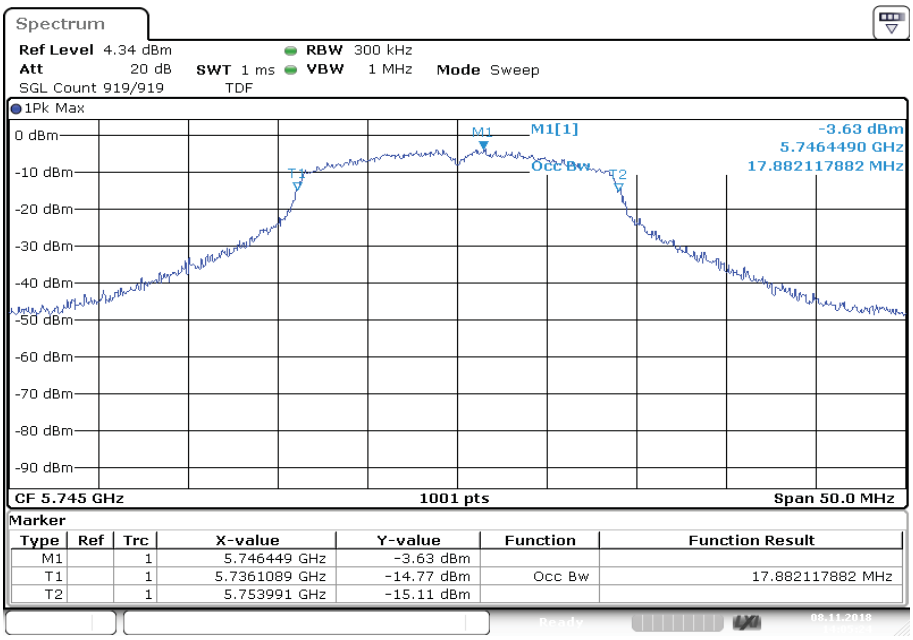
Date: 8.NOV.2018 14:40:27

Plot 7: U-NII-2C; highest channel



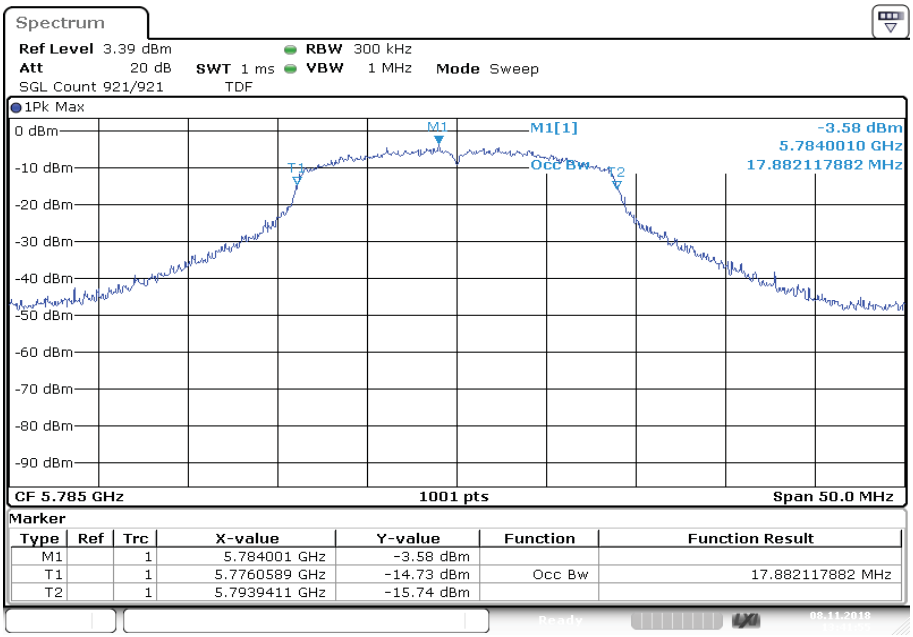
Date: 8.NOV.2018 14:33:49

Plot 8: U-NII-3; lowest channel



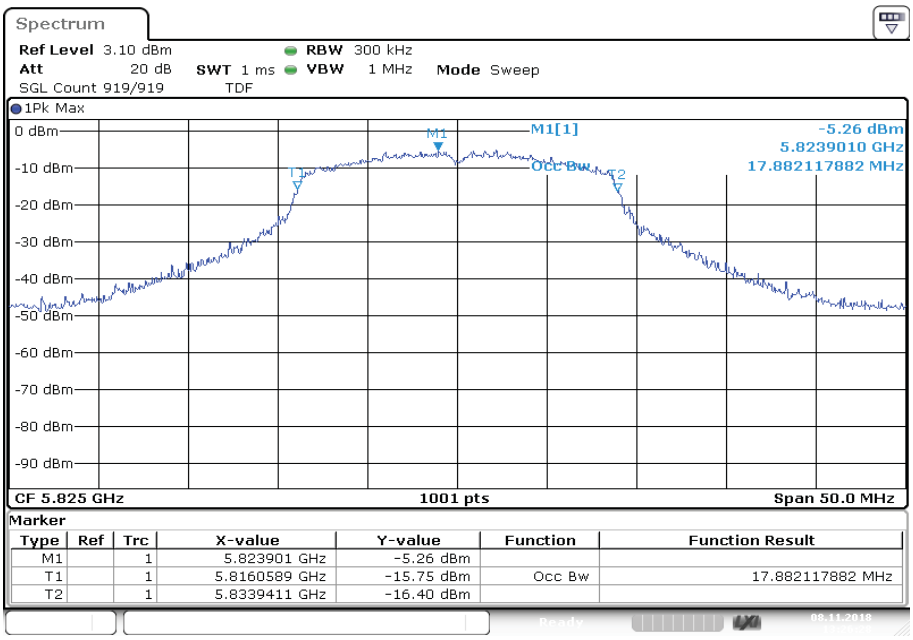
Date: 8.NOV.2018 14:05:24

Plot 9: U-NII-3; middle channel



Date: 8.NOV.2018 13:41:56

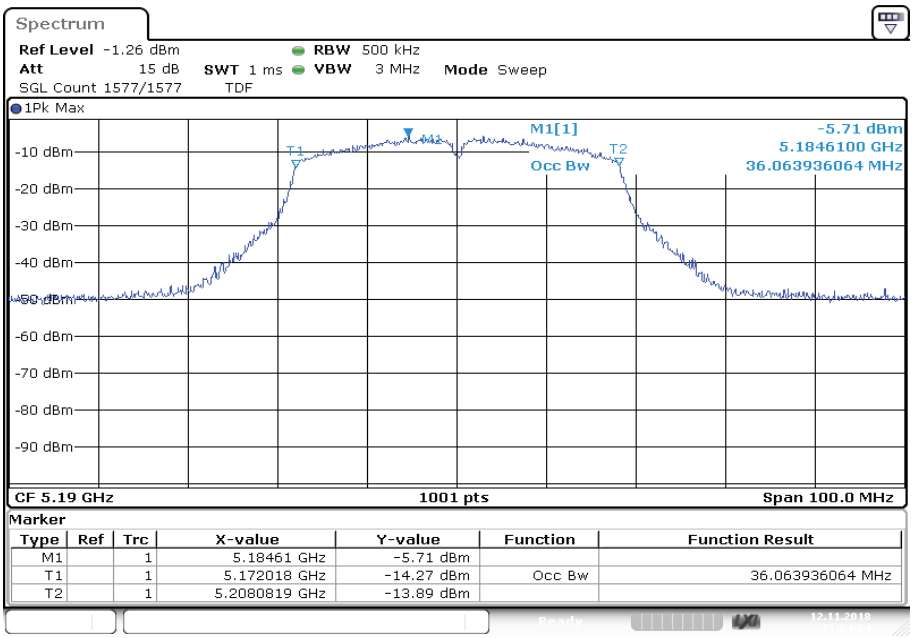
Plot 10: U-NII-3; highest channel



Date: 8.NOV.2018 13:26:28

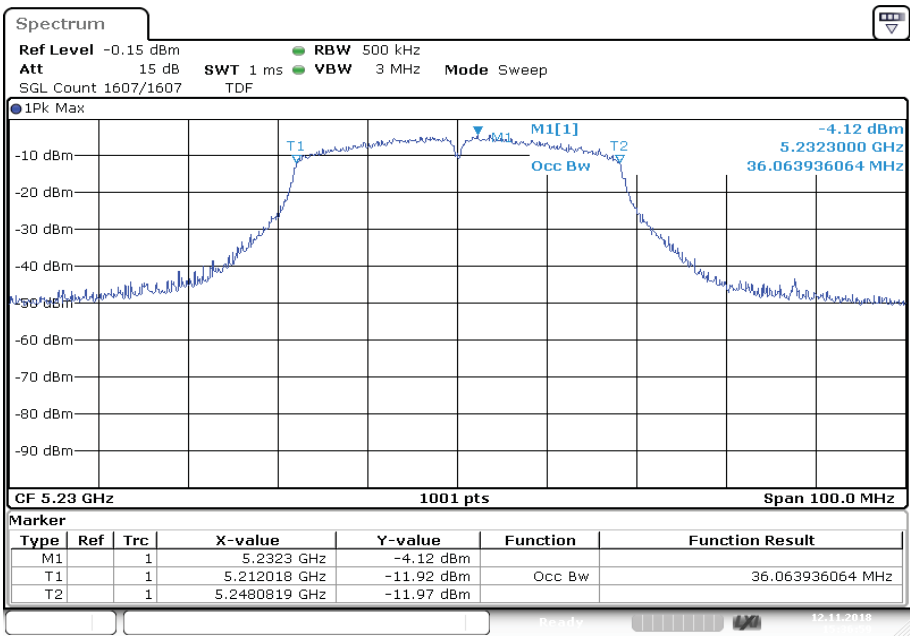
Plots: n/ac HT40 – mode

Plot 1: U-NII-1; lowest channel



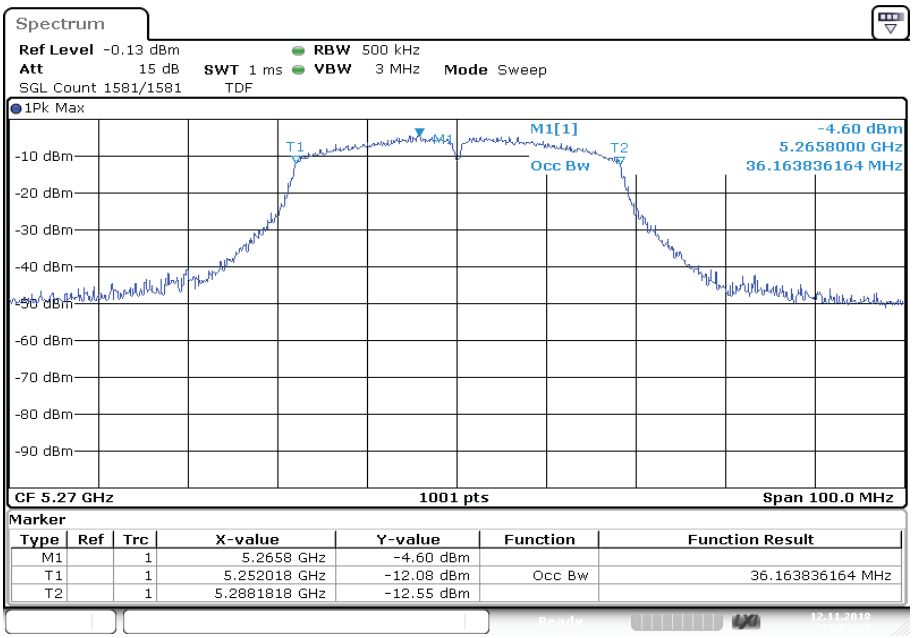
Date: 12.NOV.2018 15:24:25

Plot 2: U-NII-1; highest channel



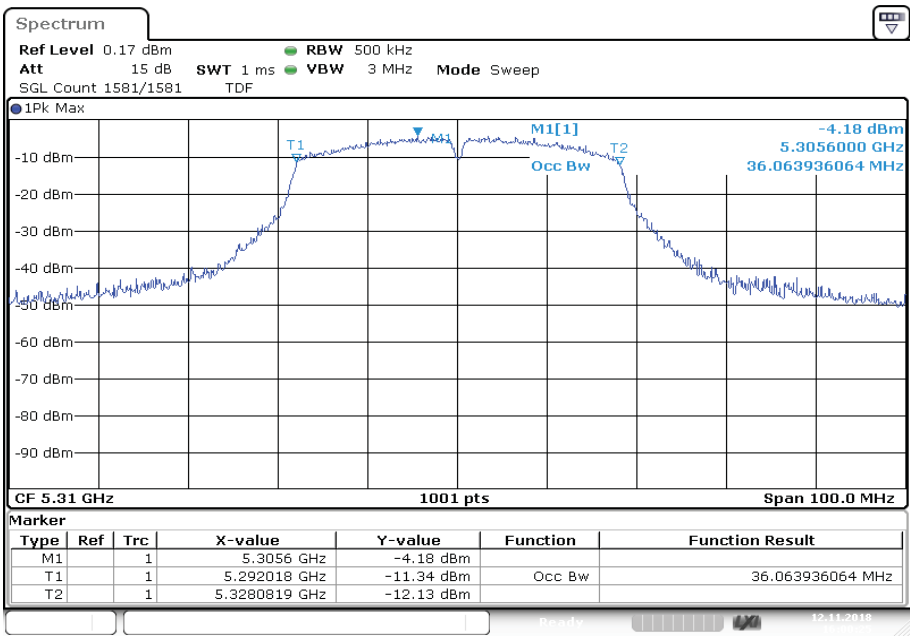
Date: 12.NOV.2018 15:37:00

Plot 3: U-NII-2A; lowest channel



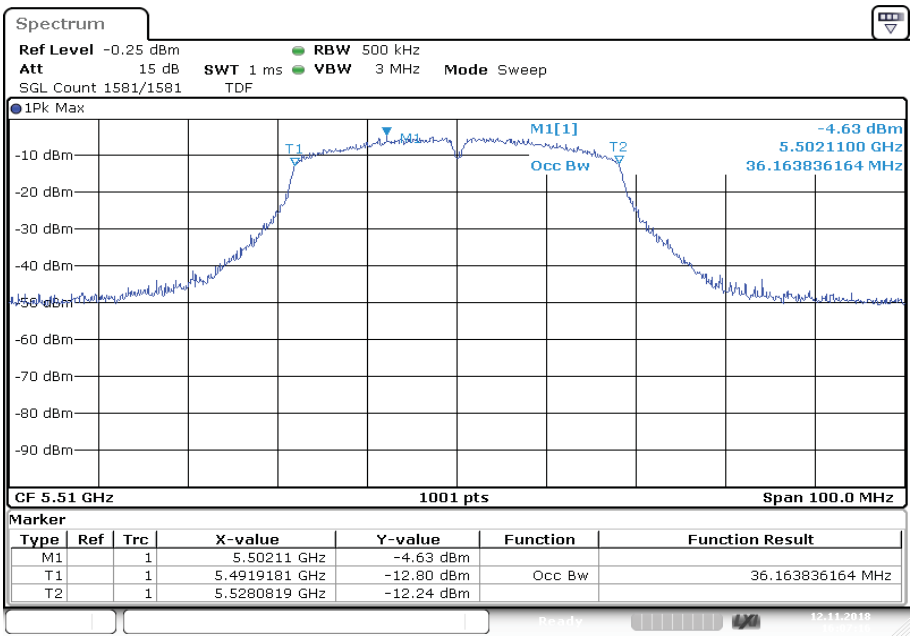
Date: 12.NOV.2018 15:53:26

Plot 4: U-NII-2A; highest channel



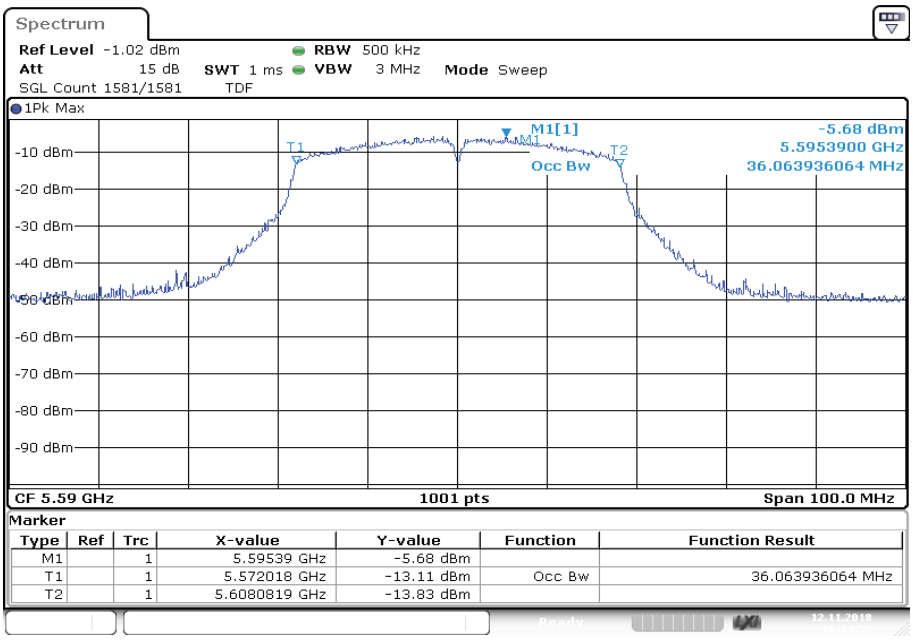
Date: 12.NOV.2018 16:00:25

Plot 5: U-NII-2C; lowest channel



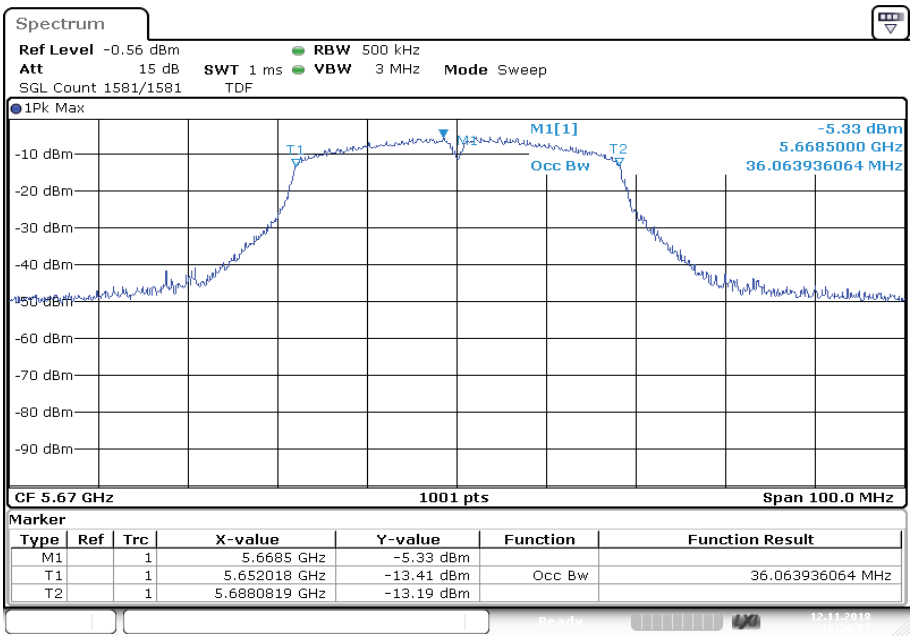
Date: 12.NOV.2018 16:07:17

Plot 6: U-NII-2C; middle channel



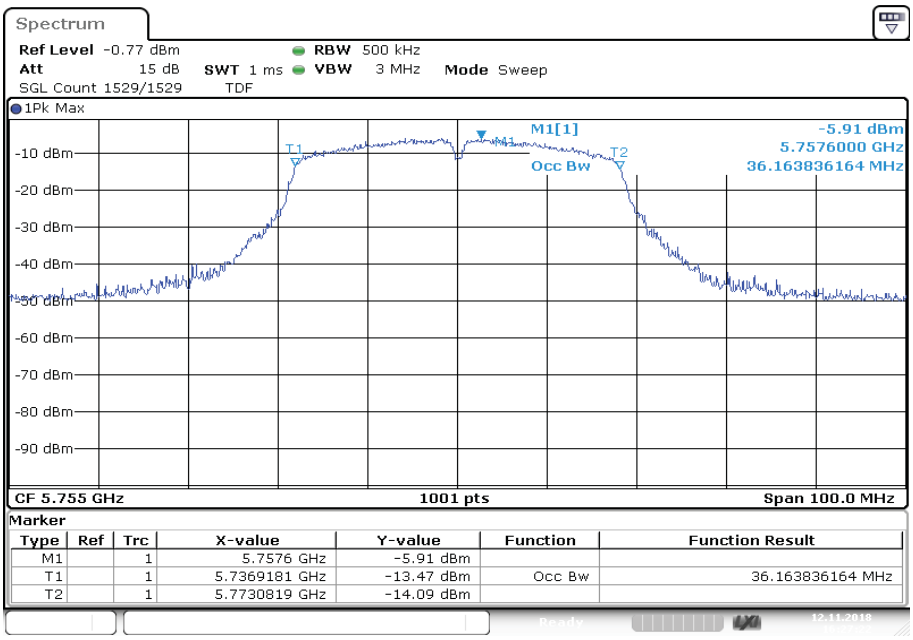
Date: 12.NOV.2018 16:13:54

Plot 7: U-NII-2C; highest channel



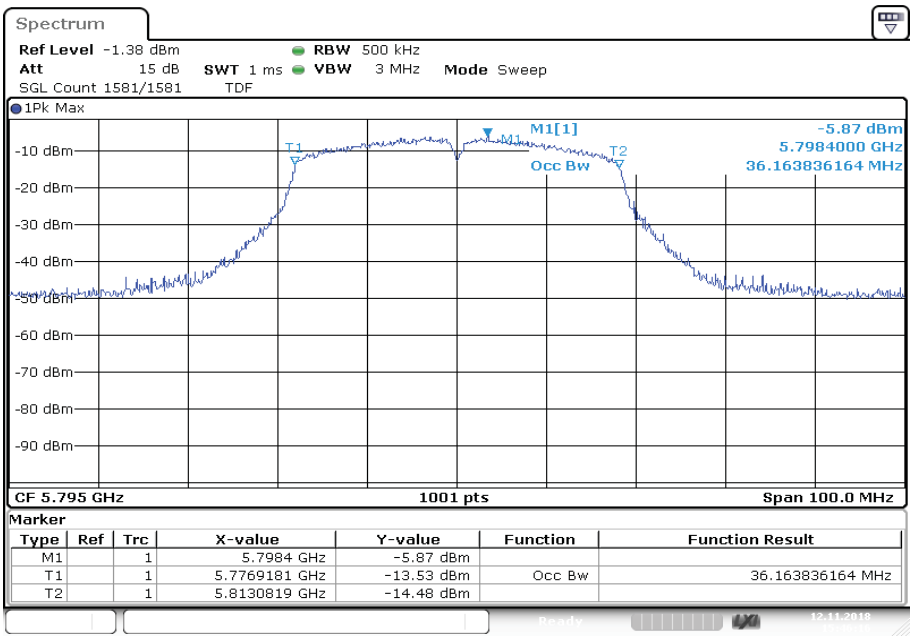
Date: 12.NOV.2018 16:20:54

Plot 8: U-NII-3; lowest channel



Date: 12.NOV.2018 16:27:22

Plot 9: U-NII-3; highest channel



Date: 12.NOV.2018 15:46:16

11.9 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 6.2 – A
Measurement uncertainty:	See sub clause 8

Limits:

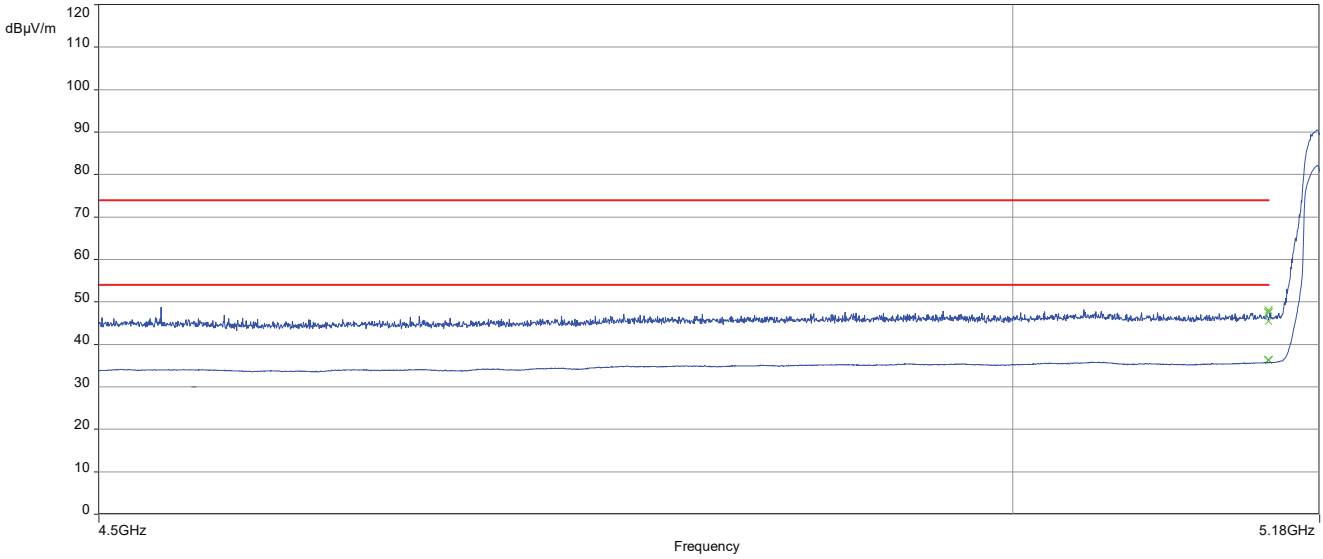
Band Edge Compliance Radiated
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within 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:

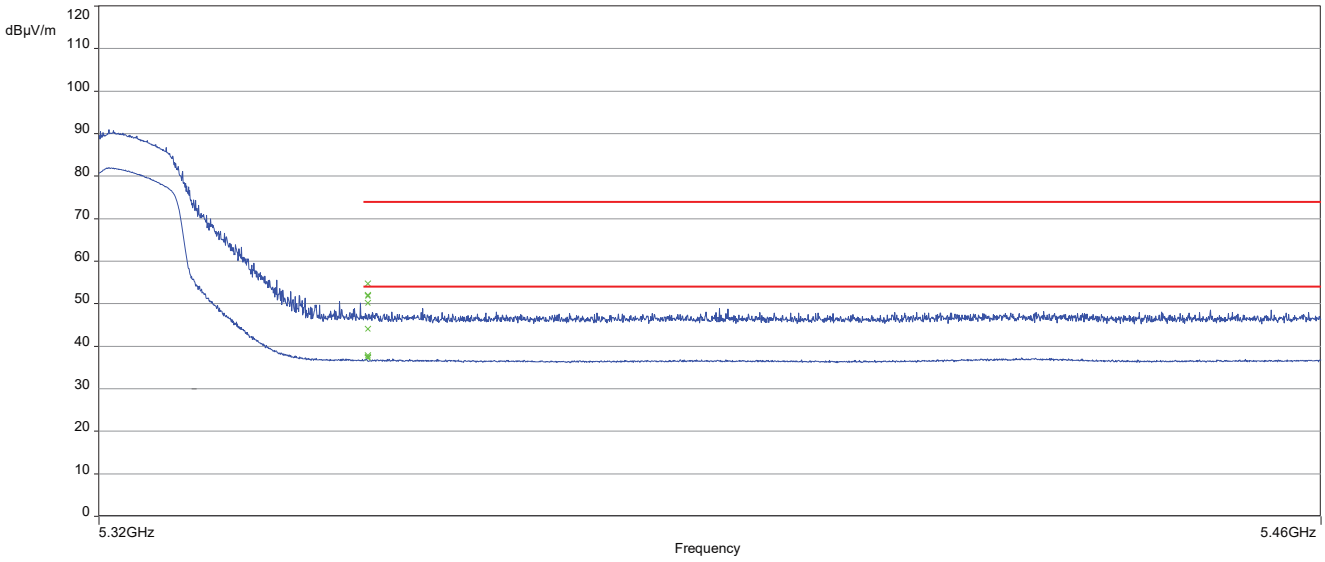
Scenario	Band Edge Compliance Radiated [dBµV/m]
band edge	< 74 dBµV/m (peak) < 54 dBµV/m (average)

Plots:

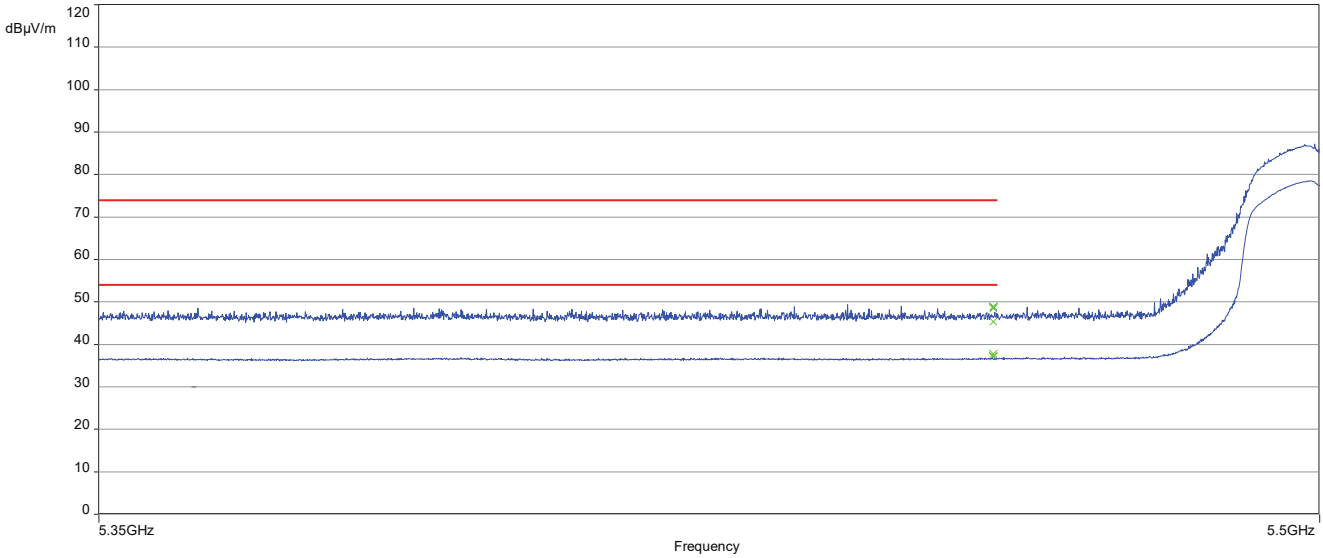
Plot 1: lower band edge; U-NII-1; lowest channel; 20 MHz channel bandwidth



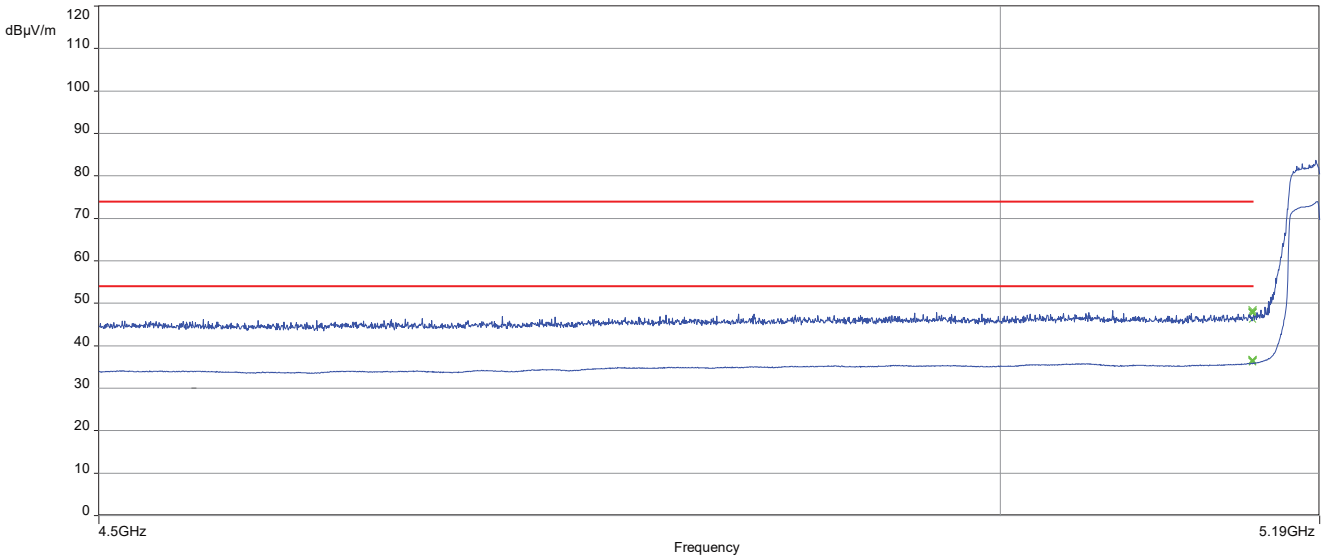
Plot 2: upper band edge; U-NII-2A; highest channel; 20 MHz channel bandwidth



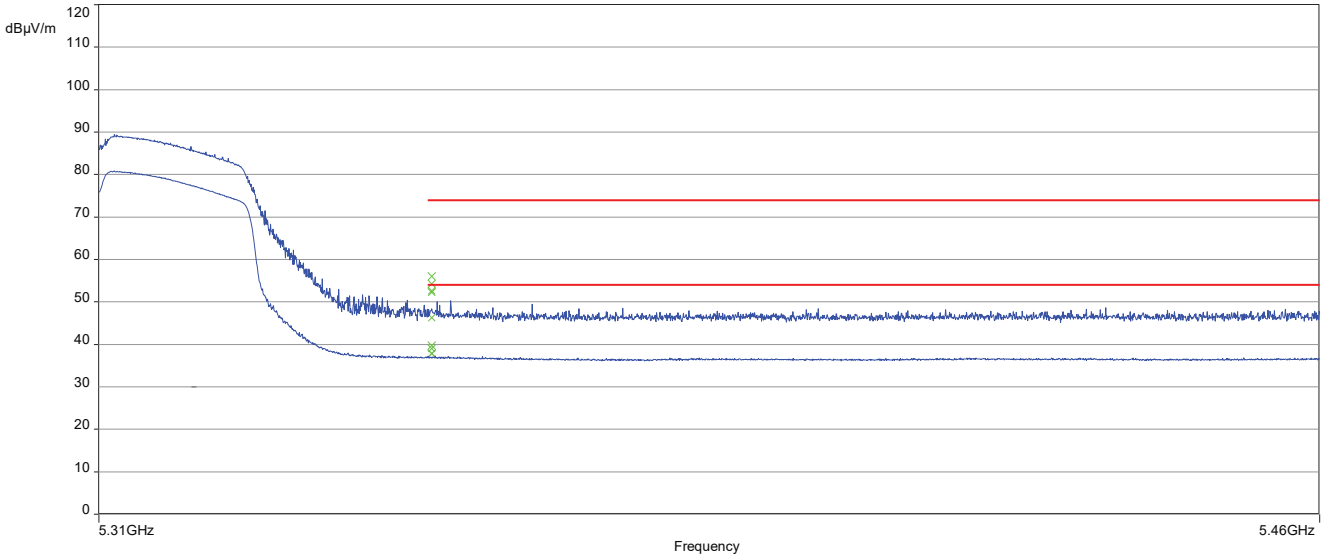
Plot 3: lower band edge; U-NII-2C; lowest channel; 20 MHz channel bandwidth



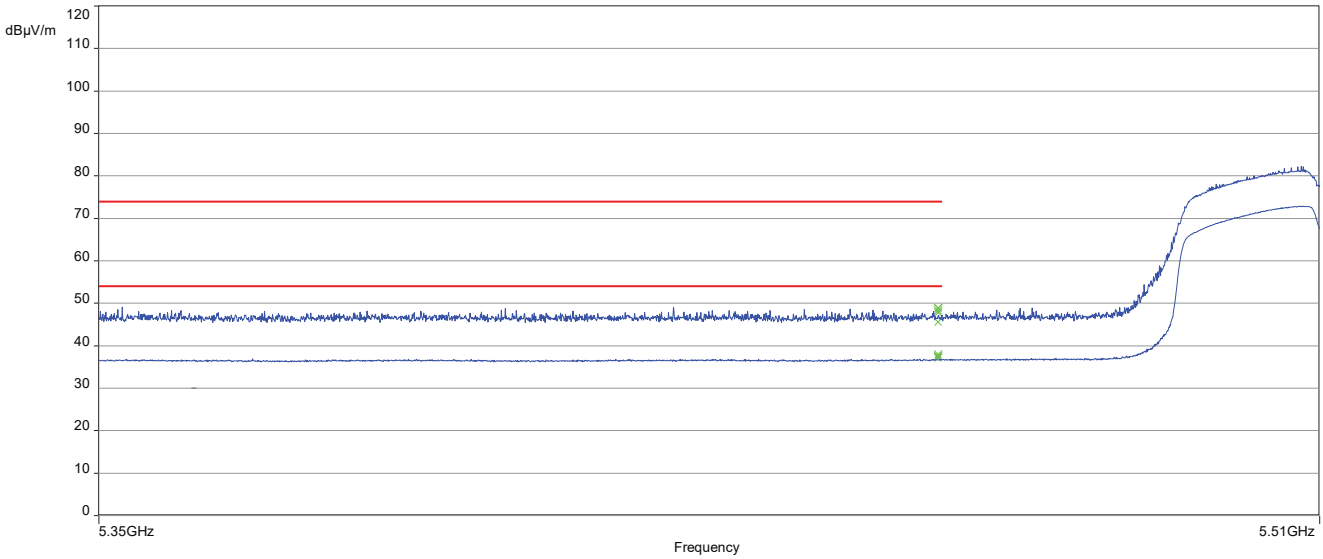
Plot 4: lower band edge; U-NII-1; lowest channel; 40 MHz channel bandwidth



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



11.10 Spurious emissions radiated < 30 MHz

Description:

Measurement of the radiated spurious emissions in transmit mode and receive mode below 30 MHz. The EUT is set first to middle channel. This measurement is representative for all channels and modes. If critical peaks are found the lowest channel and the highest channel will be measured too. Then the EUT is set to receive or idle mode. The limits are recalculated 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 6.2 – C
Measurement uncertainty:	See sub clause 8

Limits:

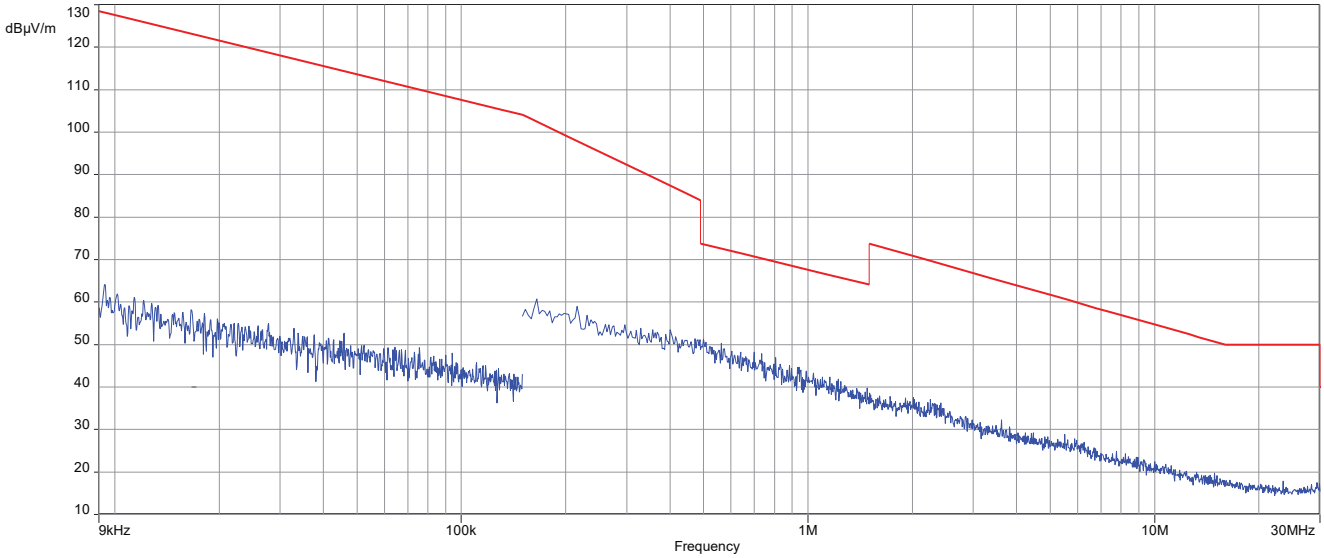
Spurious Emissions Radiated < 30 MHz		
Frequency (MHz)	Field Strength (dBµV/m)	Measurement distance
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30

Results:

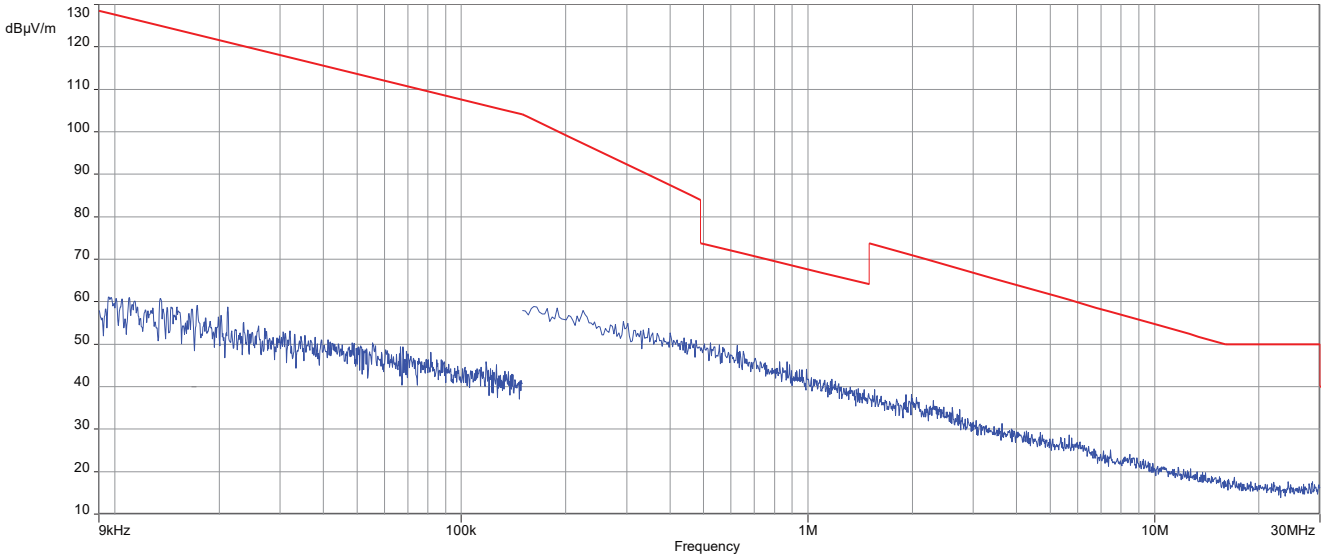
Spurious Emissions Radiated < 30 MHz [dBµV/m]		
F [MHz]	Detector	Level [dBµV/m]
All detected emissions are more than 20 dB below the limit.		

Plots: 20 MHz channel bandwidth

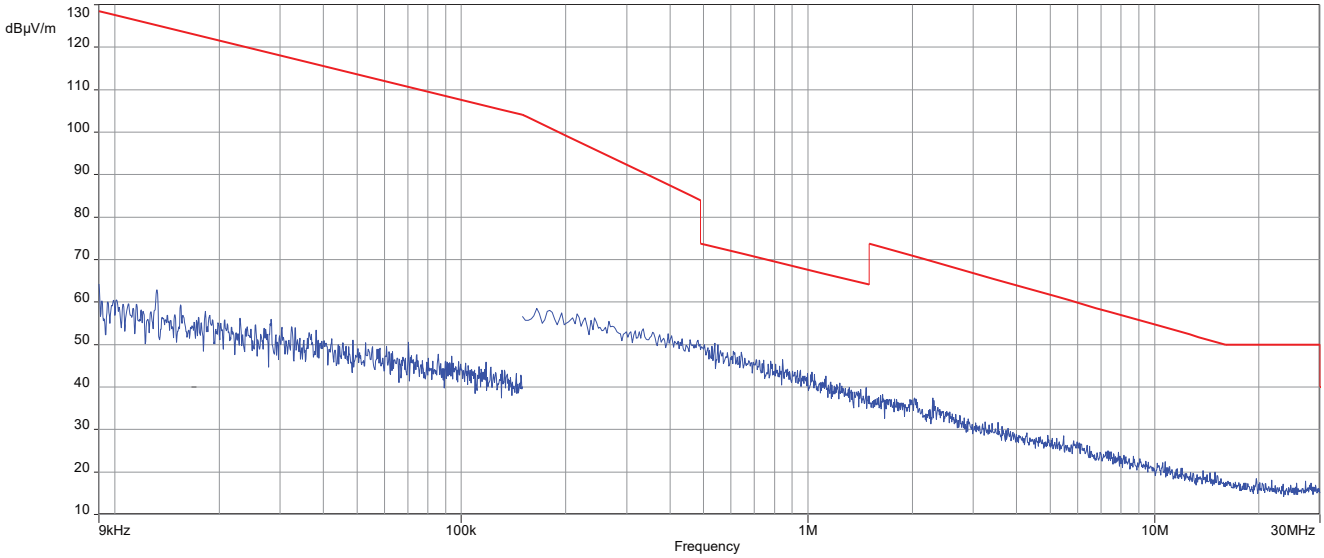
Plot 1: 9 kHz to 30 MHz, U-NII-1; lowest channel



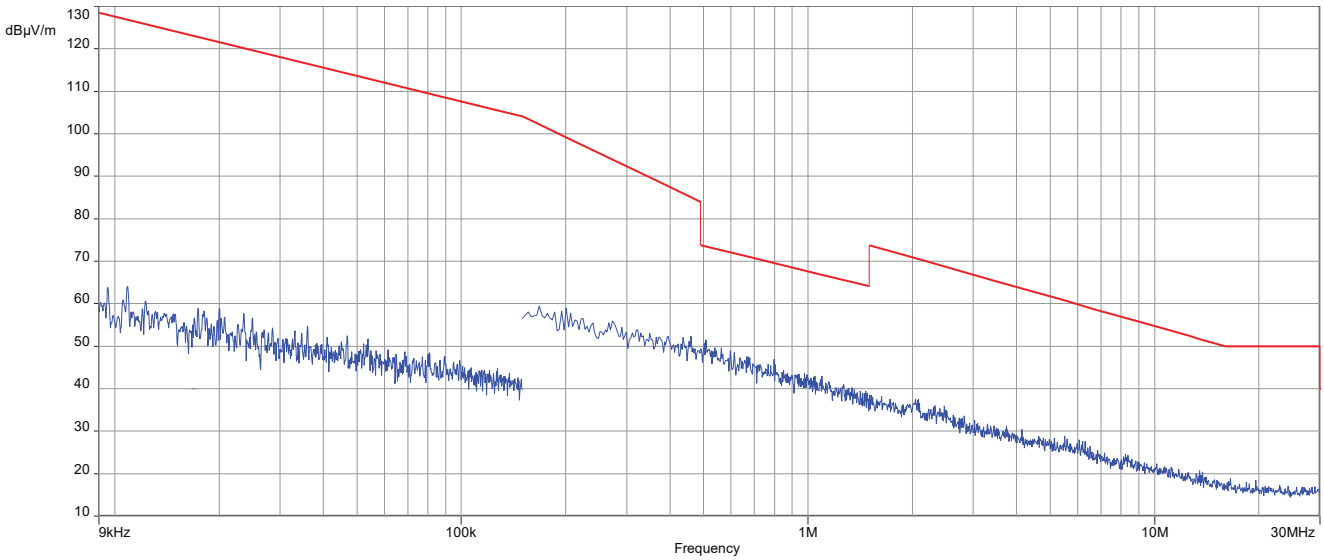
Plot 2: 9 kHz to 30 MHz, U-NII-1; highest channel



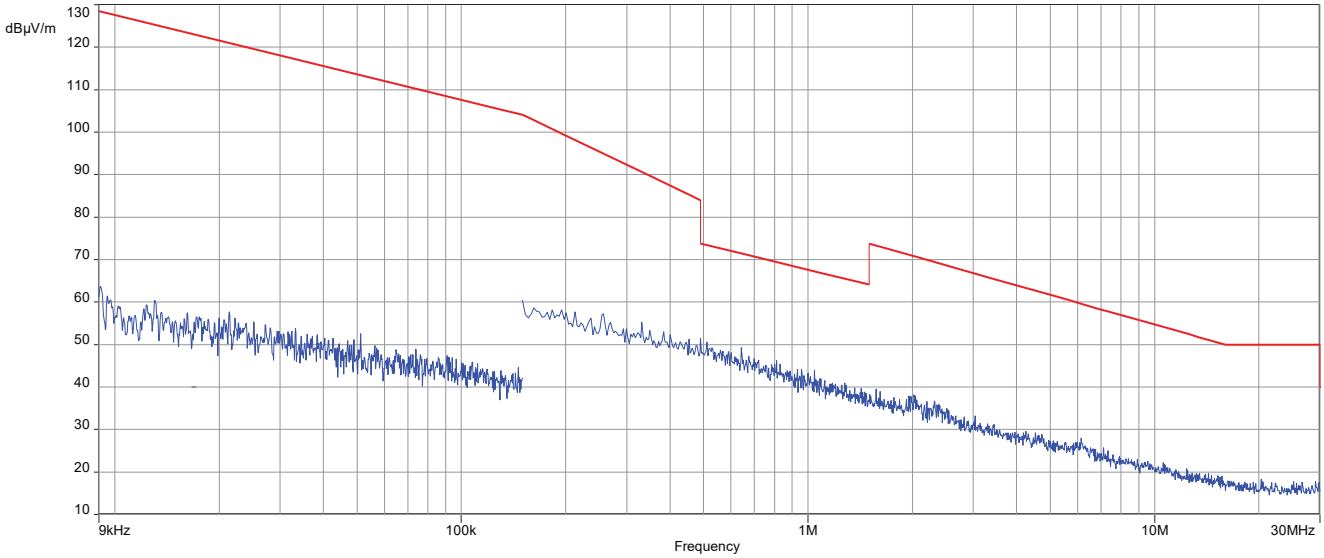
Plot 3: 9 kHz to 30 MHz, U-NII-2A; lowest channel



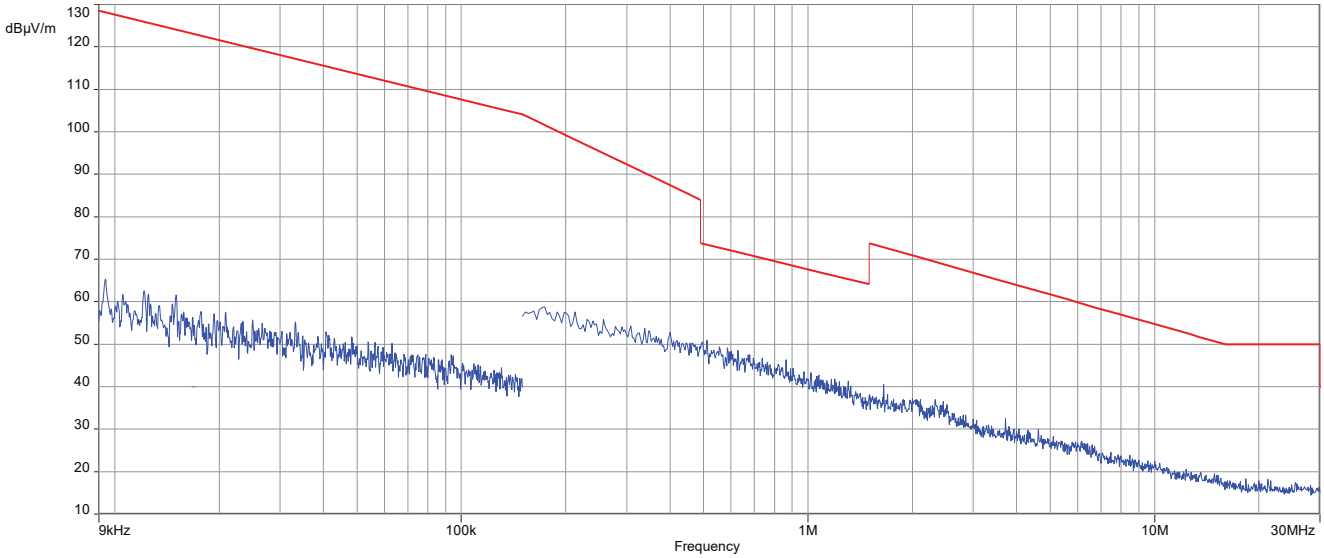
Plot 4: 9 kHz to 30 MHz, U-NII-2A; highest channel



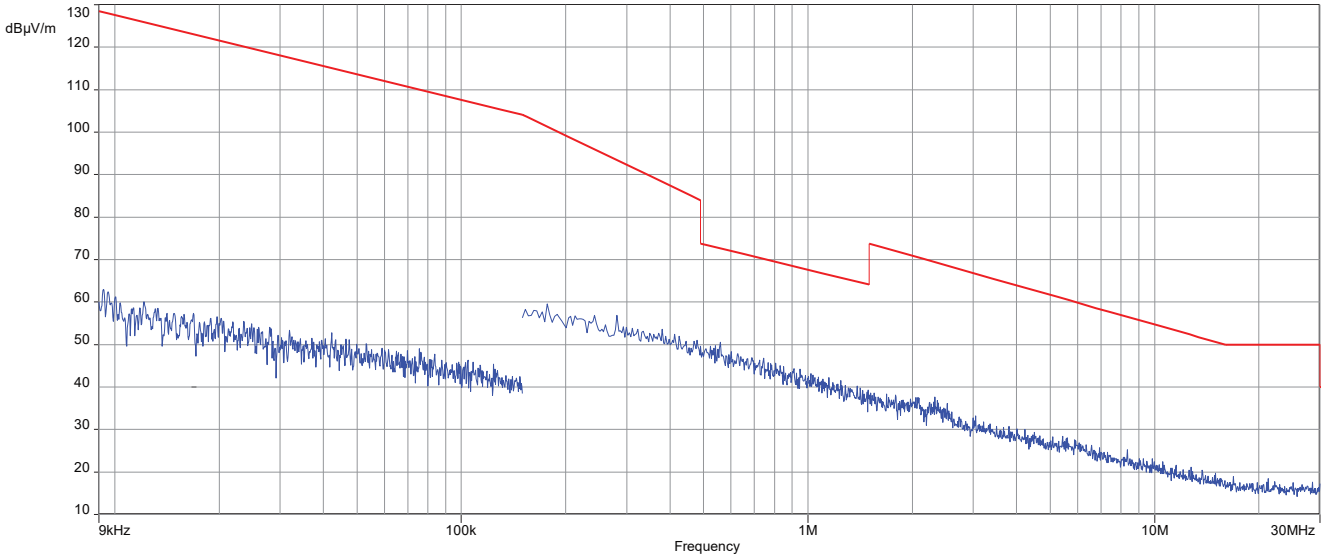
Plot 5: 9 kHz to 30 MHz, U-NII-2C; lowest channel



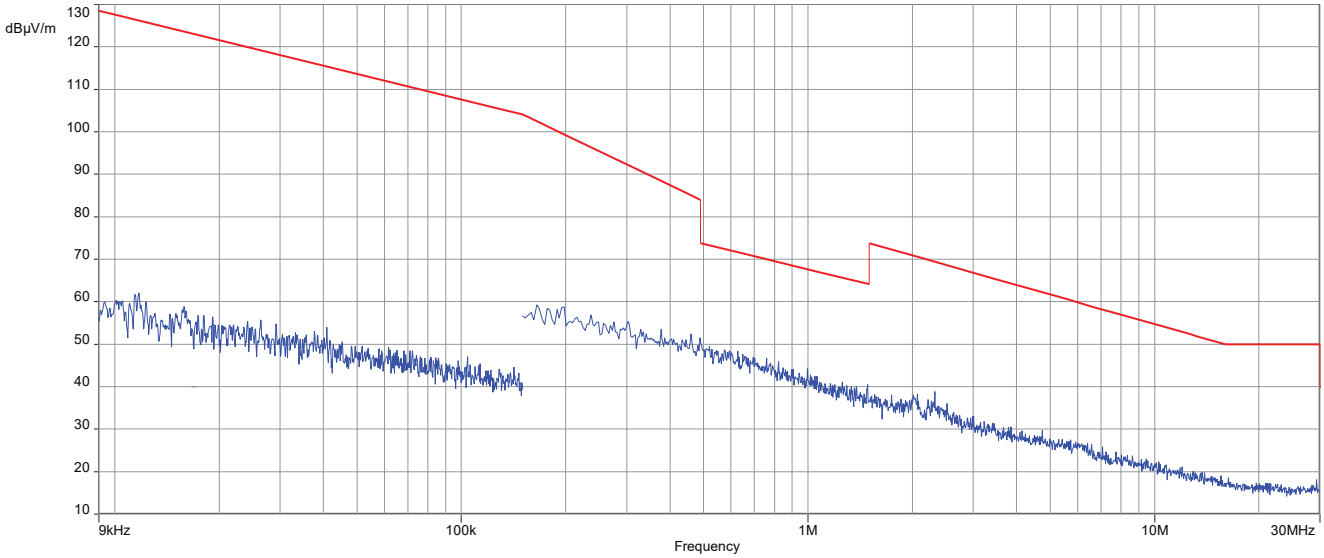
Plot 6: 9 kHz to 30 MHz, U-NII-2C; middle channel



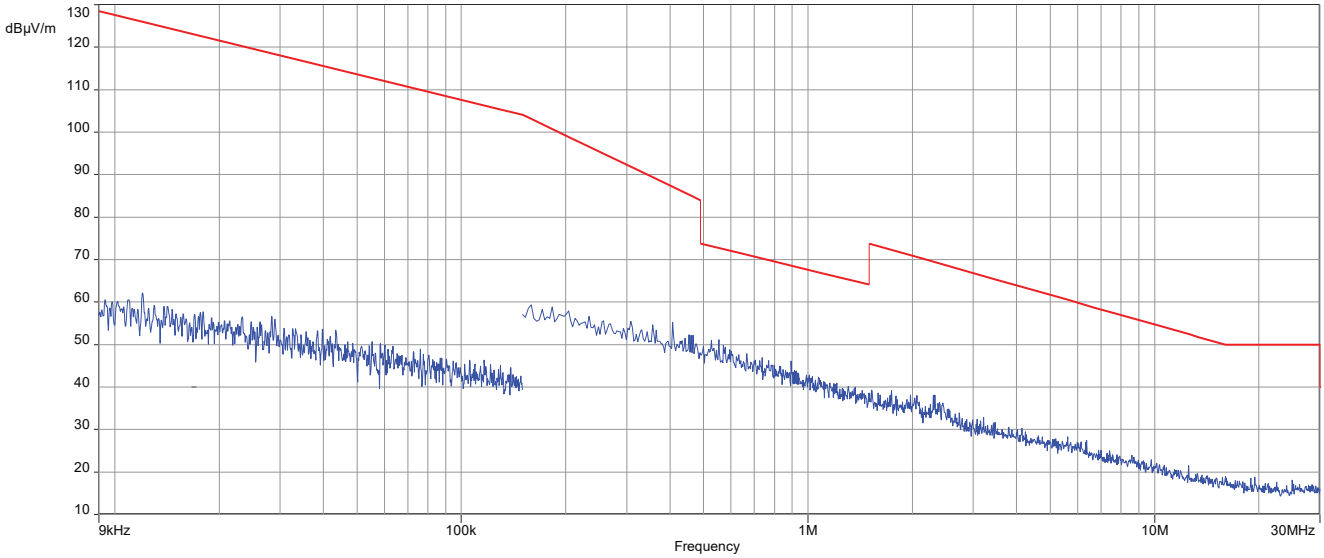
Plot 7: 9 kHz to 30 MHz, U-NII-2C; highest channel



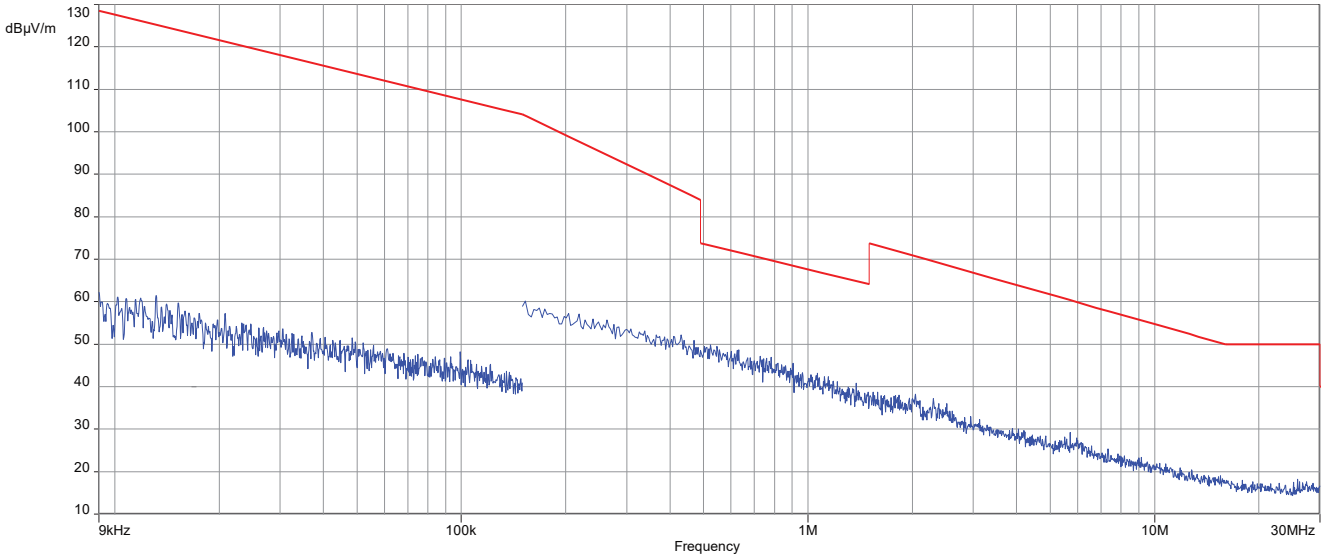
Plot 8: 9 kHz to 30 MHz, U-NII-3; lowest channel



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

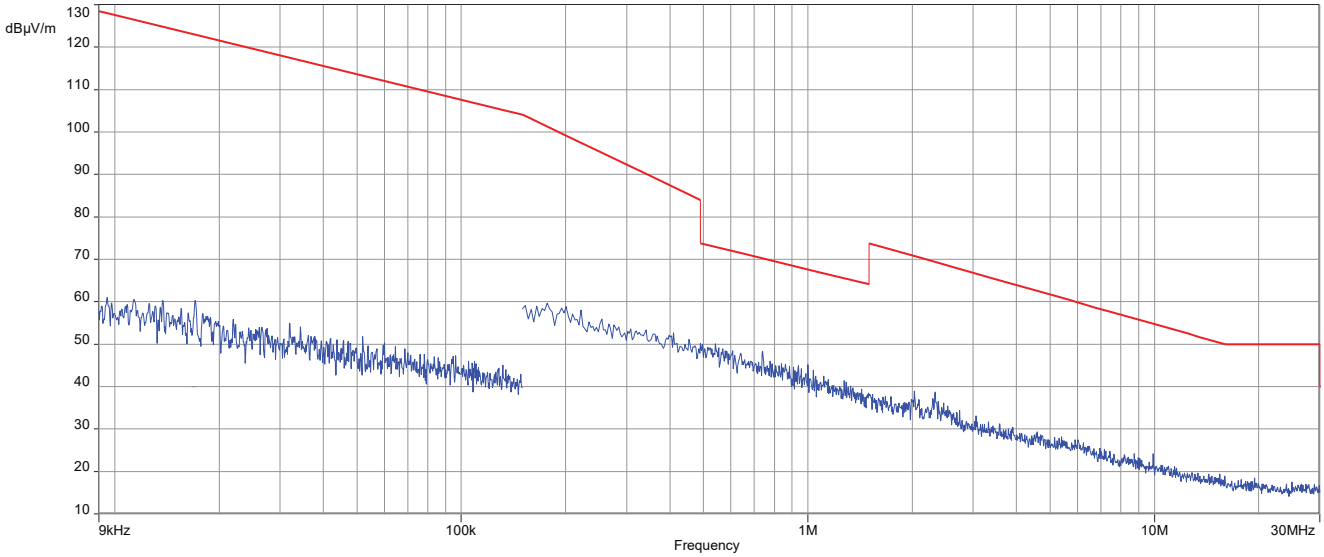


Plot 10: 9 kHz to 30 MHz, U-NII-3; highest channel

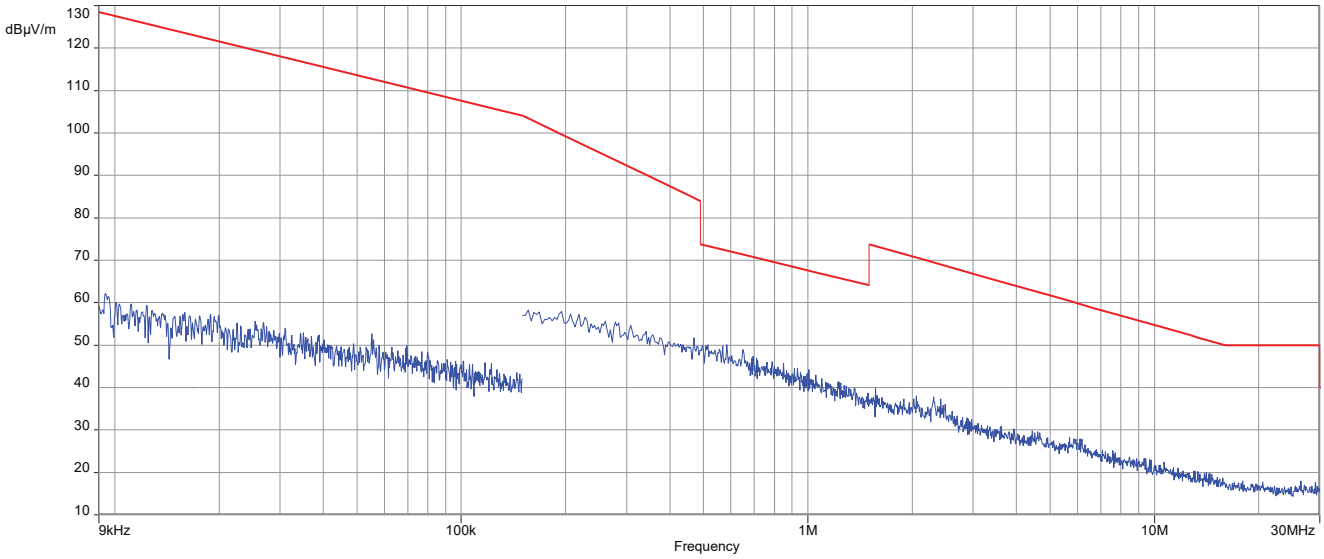


Plots: 40 MHz channel bandwidth

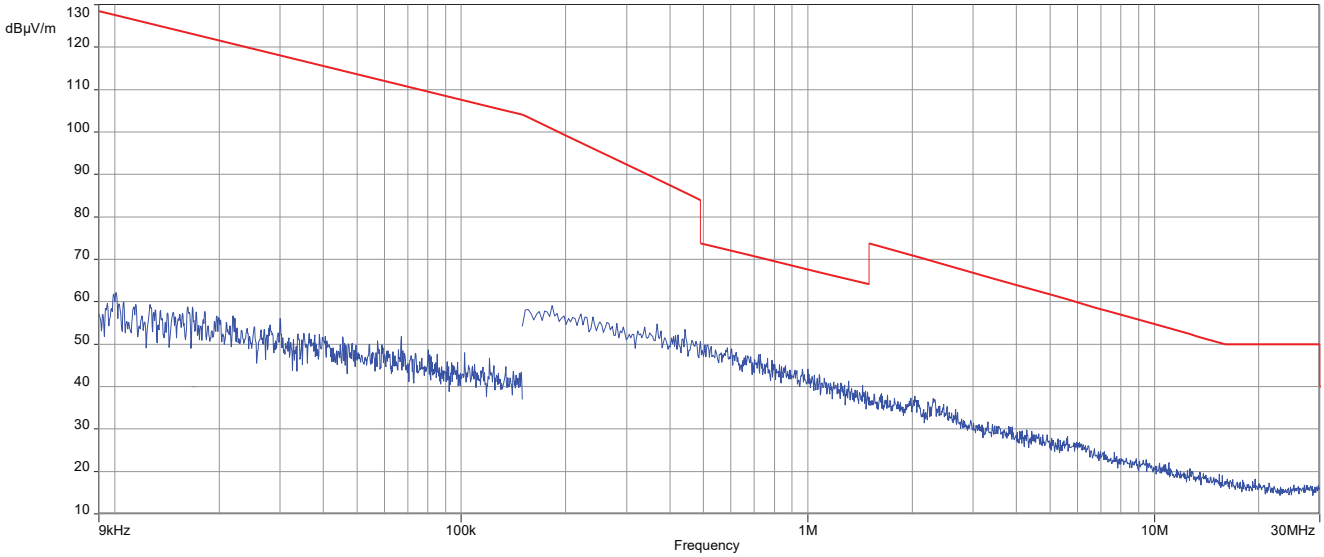
Plot 1: 9 kHz to 30 MHz, U-NII-1; lowest channel



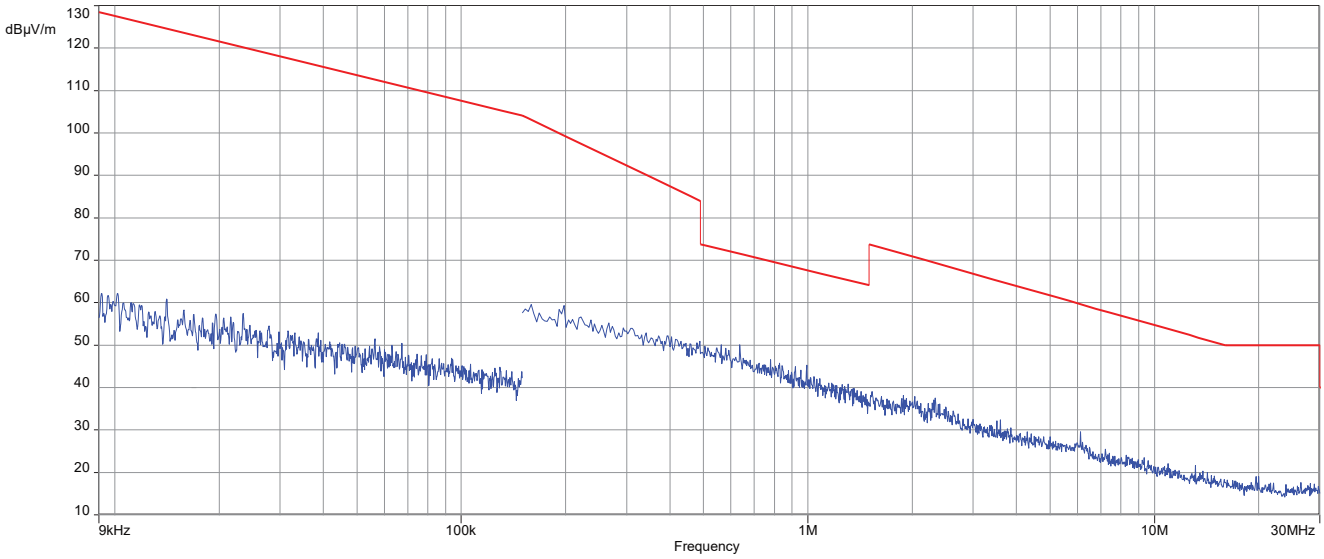
Plot 2: 9 kHz to 30 MHz, U-NII-1; highest channel



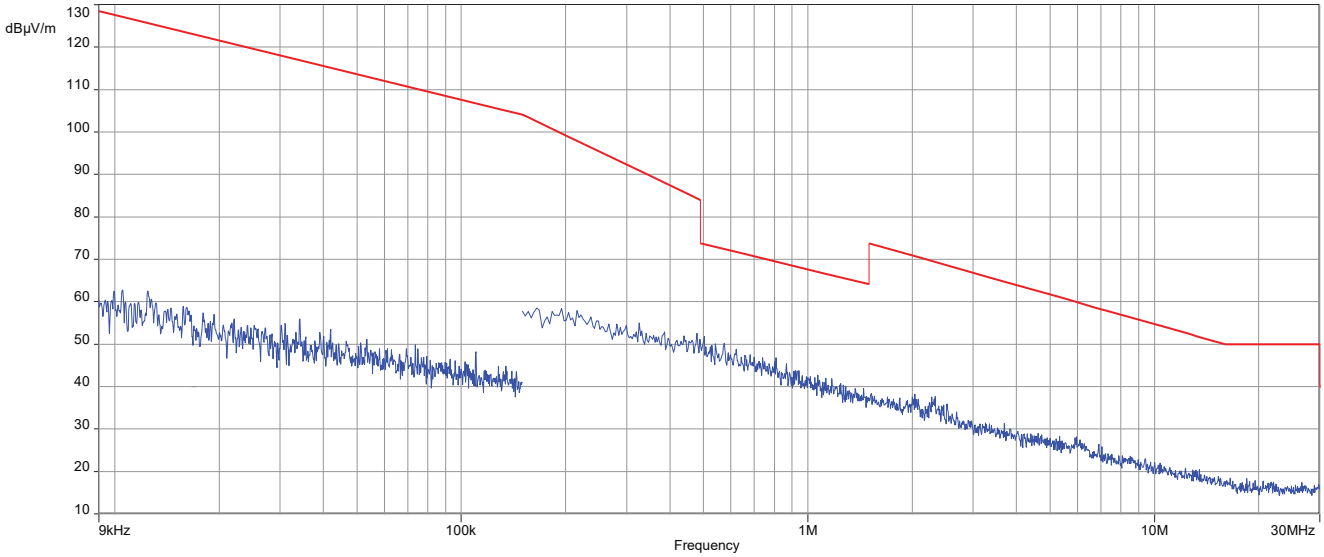
Plot 3: 9 kHz to 30 MHz, U-NII-2A; lowest channel



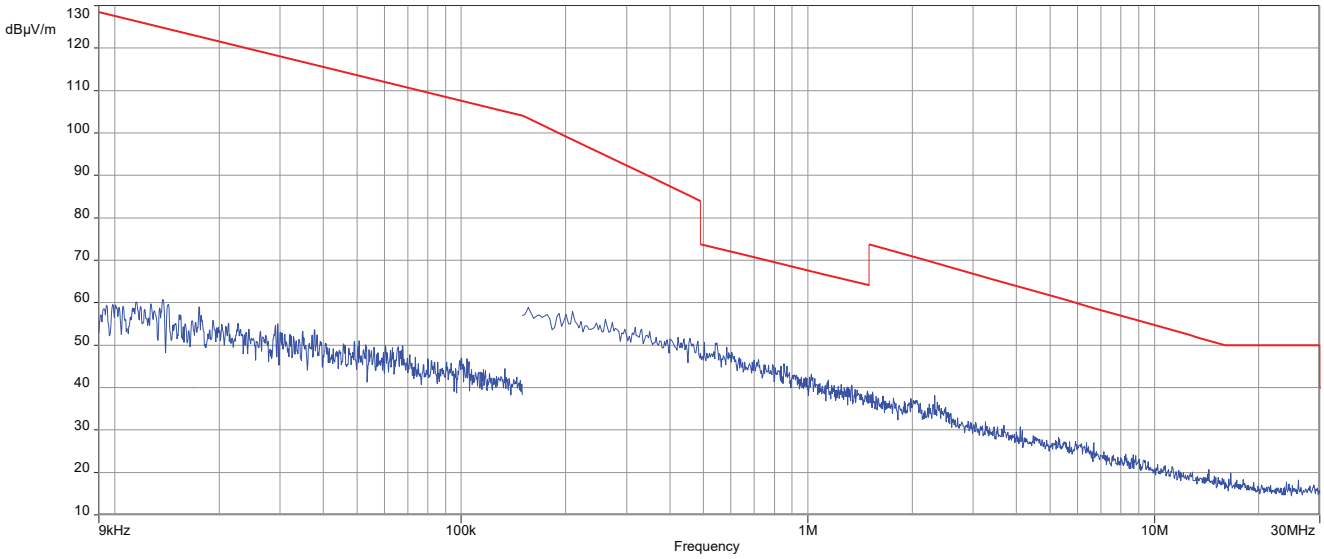
Plot 4: 9 kHz to 30 MHz, U-NII-2A; highest channel



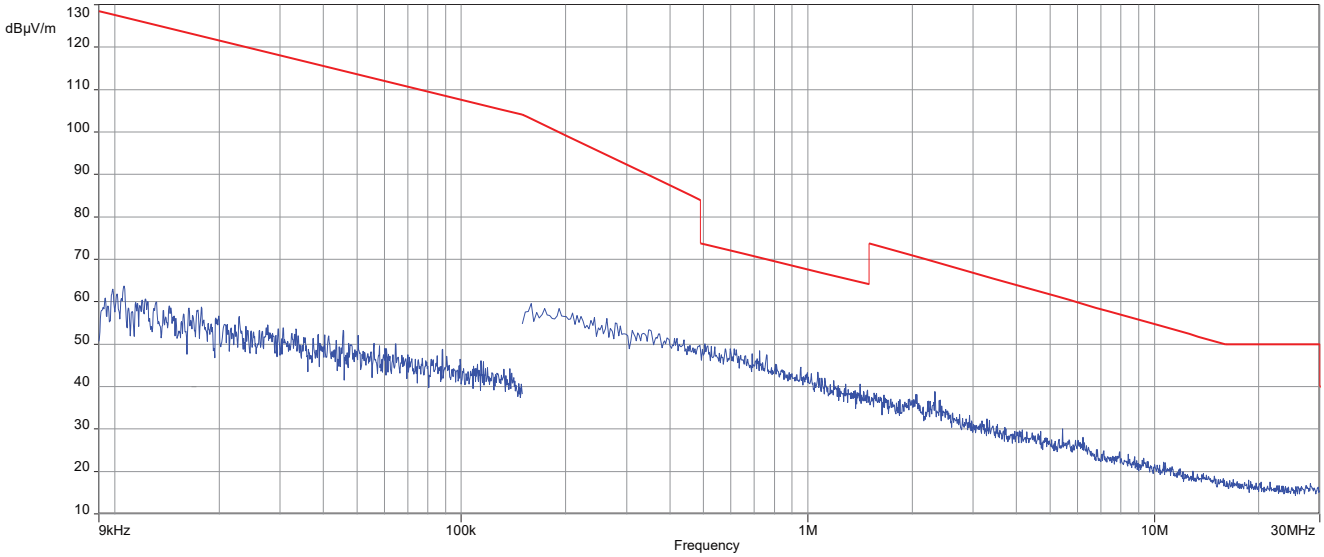
Plot 5: 9 kHz to 30 MHz, U-NII-2C; lowest channel



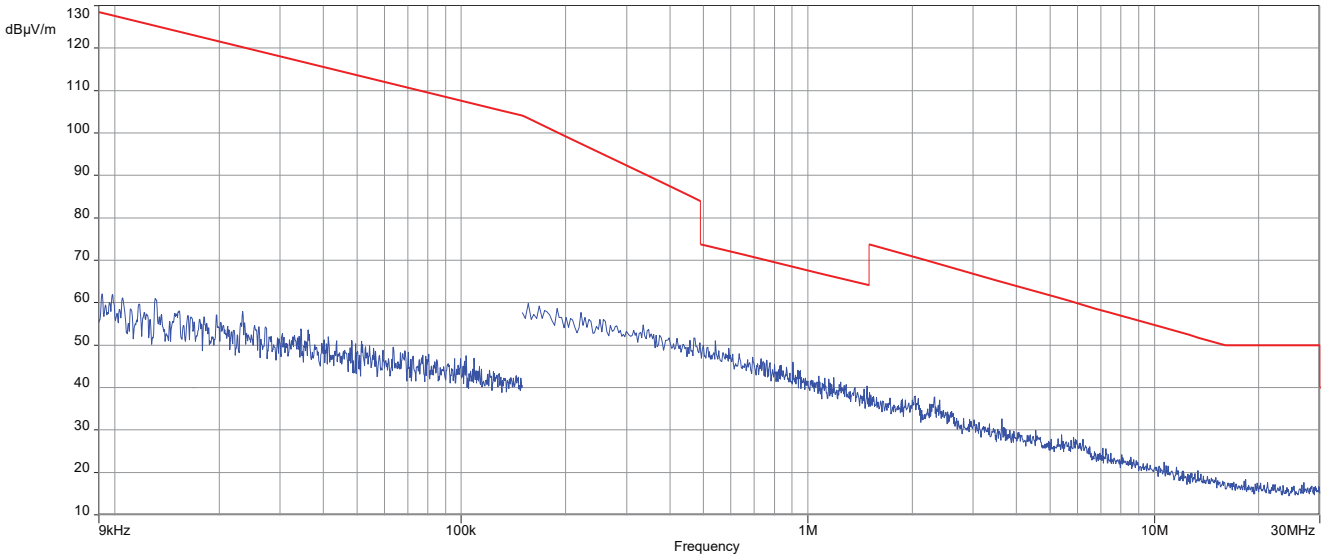
Plot 6: 9 kHz to 30 MHz, U-NII-2C; middle channel



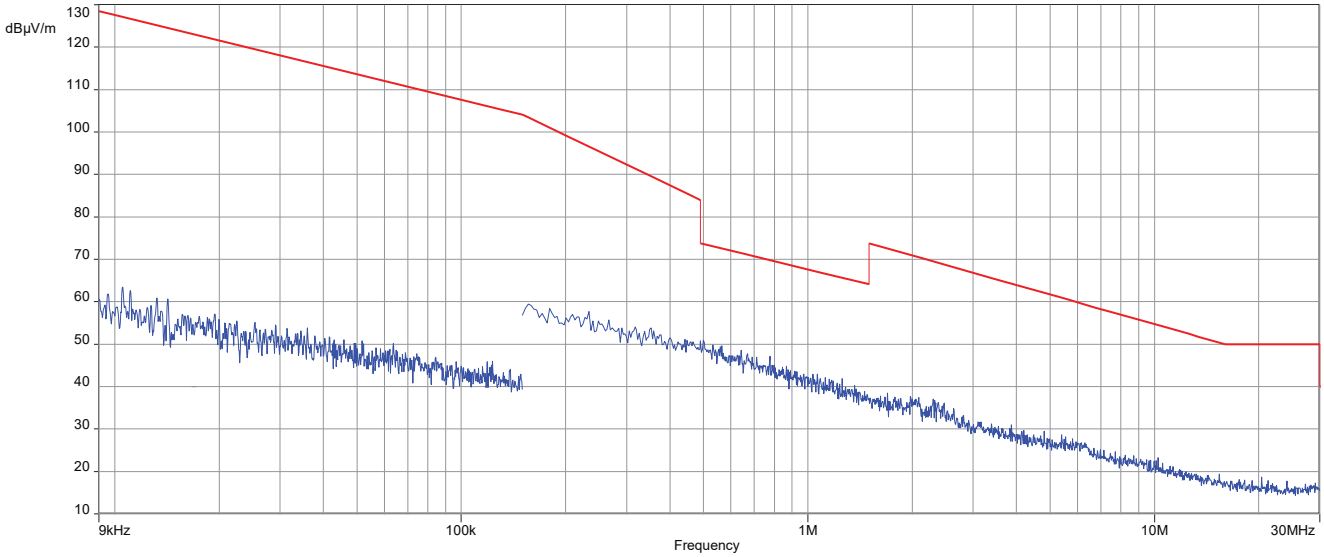
Plot 7: 9 kHz to 30 MHz, U-NII-2C; highest channel



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



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



11.11 TX spurious emissions radiated

Description:

Measurement of the radiated spurious emissions in transmit mode. The measurement is performed at lowest, middle and highest channel.

Measurement:

Measurement parameter	
Detector:	Quasi Peak below 1 GHz (alternative Peak) Peak above 1 GHz / Average
Sweep time:	Auto or depends on burst train
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Video bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: ≥ 3 MHz / 1 MHz
Span:	30 MHz 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 6.1 – A See sub clause 6.2 – A See sub clause 6.3 – A
Measurement uncertainty:	See sub clause 8

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	

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]
For emissions between 30 MHz to 1 GHz, see table below the plot.			-/-			For emissions between 30 MHz to 1 GHz, see table below the plot.		
10360	Peak	No RB -36.8 dBm				10480	Peak	No RB -37.4 dBm
	AVG						AVG	
-/-	Peak	-/-				-/-	Peak	-/-
	AVG	-/-					AVG	-/-
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]
For emissions between 30 MHz to 1 GHz, see table below the plot.			-/-			For emissions between 30 MHz to 1 GHz, see table below the plot.		
10520	Peak	No RB Peak below average limit.				10640	Peak	54.3
	AVG						AVG	47.8
-/-	Peak	-/-				-/-	Peak	-/-
	AVG	-/-					AVG	-/-
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]
For emissions between 30 MHz to 1 GHz, see table below the plot.			For emissions between 30 MHz to 1 GHz, see table below the plot.			For emissions between 30 MHz to 1 GHz, see table below the plot.		
7333	Peak	Peak below average limit.	7466	Peak	Peak below average limit.	7600	Peak	Peak below average limit.
	AVG			AVG			AVG	
11000	Peak	56.5	11200	Peak	54.3	11400	Peak	Peak below average limit.
	AVG	48.6		AVG	45.4		AVG	
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]
For emissions between 30 MHz to 1 GHz, see table below the plot.			For emissions between 30 MHz to 1 GHz, see table below the plot.			For emissions between 30 MHz to 1 GHz, see table below the plot.		
7660	Peak	Peak below average limit.	7713	Peak	Peak below average limit.	7767	Peak	Peak below average limit.
	AVG			AVG			AVG	
11490	Peak	Peak below average limit.	11570	Peak	Peak below average limit.	11650	Peak	Peak below average limit.
	AVG			AVG			AVG	
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			Middle channel			Highest channel		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
For emissions between 30 MHz to 1 GHz, see table below the plot.			-/-			For emissions between 30 MHz to 1 GHz, see table below the plot.		
10380	Peak	No RB -38.9 dBm				10460	Peak	No RB -39.7 dBm
	AVG						AVG	
-/-	Peak	-/-				-/-	Peak	-/-
	AVG	-/-					AVG	-/-
For emissions above 18 GHz please take look at the plots.						For emissions above 18 GHz please take look at the plots.		

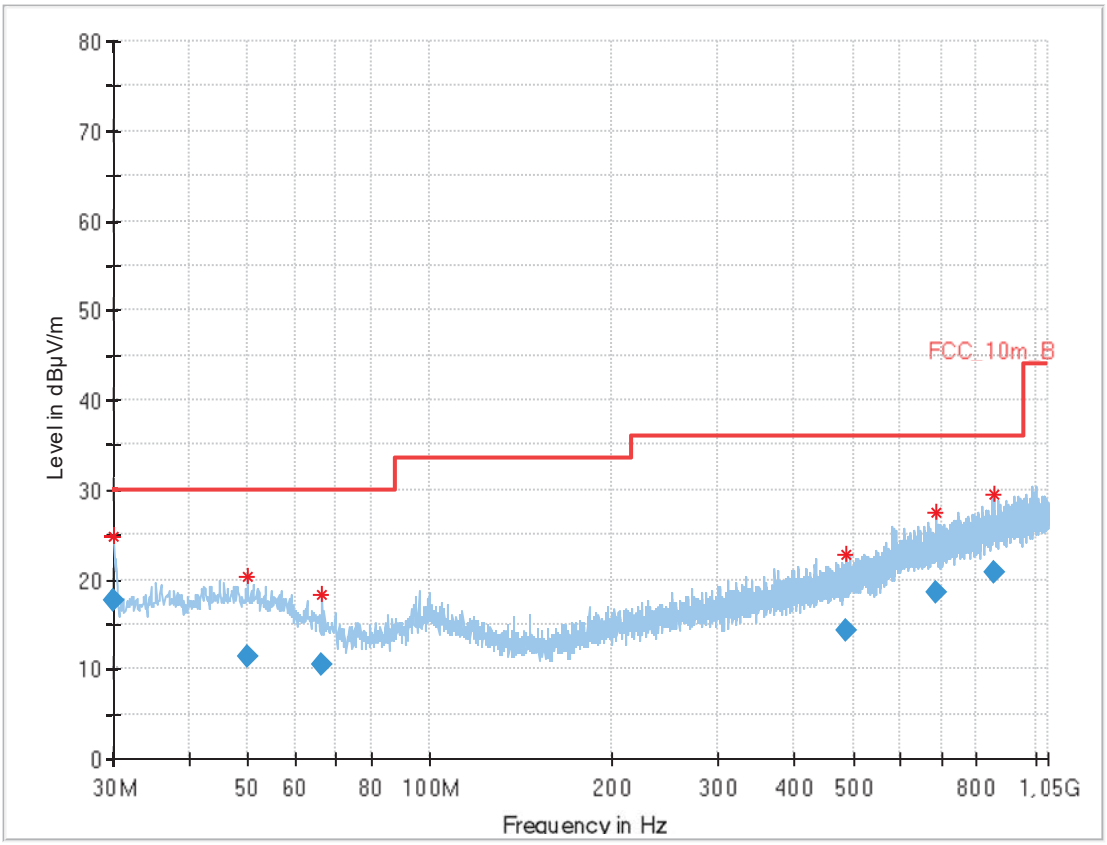
TX Spurious Emissions Radiated [dBµV/m] / dBm								
U-NII-2A (5250 MHz to 5350 MHz)								
Lowest channel			Middle channel			Highest channel		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
For emissions between 30 MHz to 1 GHz, see table below the plot.			-/-			For emissions between 30 MHz to 1 GHz, see table below the plot.		
10540	Peak	No RB -37.4 dBm				10620	Peak	55.5
	AVG						AVG	46.7
-/-	Peak	-/-				-/-	Peak	-/-
	AVG	-/-					AVG	-/-
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]
For emissions between 30 MHz to 1 GHz, see table below the plot.			For emissions between 30 MHz to 1 GHz, see table below the plot.			For emissions between 30 MHz to 1 GHz, see table below the plot.		
7347	Peak	Peak below average limit.	7453	Peak	Peak below average limit.	7560	Peak	Peak below average limit.
	AVG			AVG			AVG	
11020	Peak	54.8	11180	Peak	54.7	11340	Peak	Peak below average limit.
	AVG	45.9		AVG	47.4		AVG	
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]
For emissions between 30 MHz to 1 GHz, see table below the plot.			-/-			For emissions between 30 MHz to 1 GHz, see table below the plot.		
7673	Peak	Peak below average limit.				7727	Peak	Peak below average limit.
	AVG						AVG	
11510	Peak	Peak below average limit.				11590	Peak	Peak below average limit.
	AVG						AVG	
For emissions above 18 GHz please take look at the plots.						For emissions above 18 GHz please take look at the plots.		

Plots: 20 MHz channel bandwidth

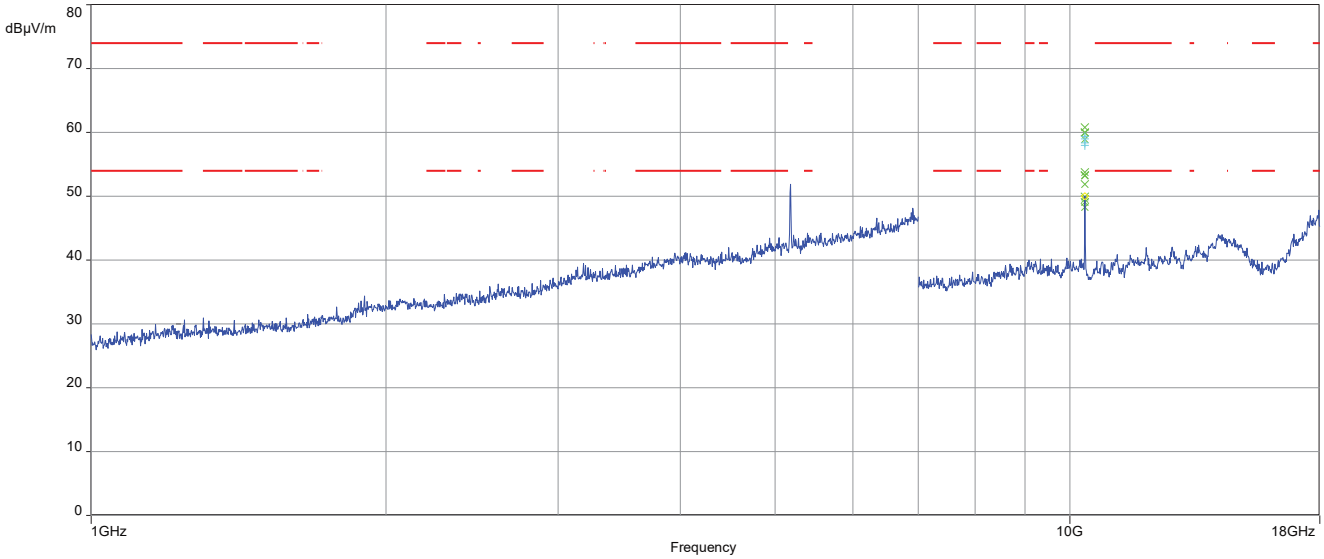
Plot 1: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-1; lowest channel



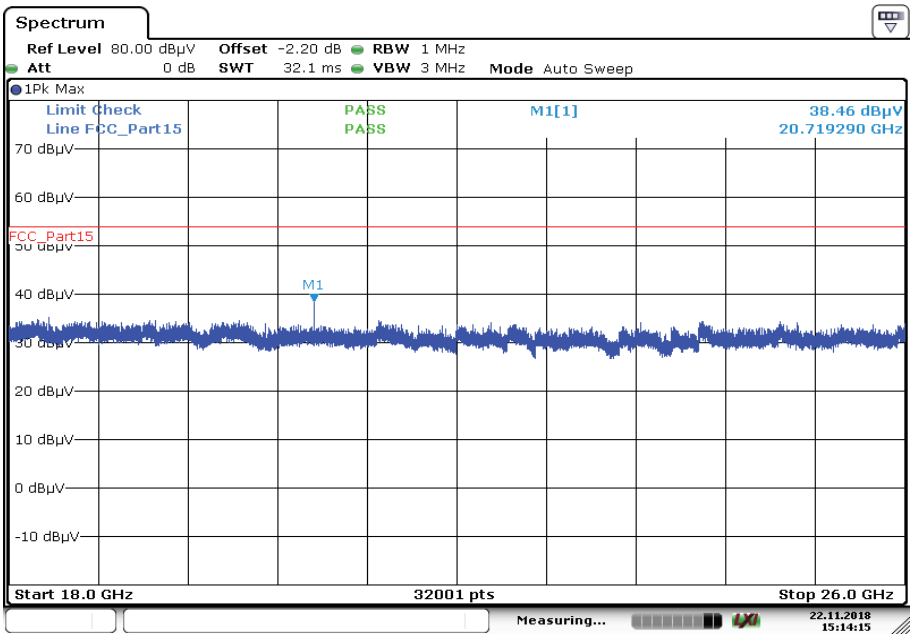
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.079	17.63	30.0	12.37	1000	120	170.0	H	0.0	13.0
50.079	11.39	30.0	18.61	1000	120	105.0	V	0.0	14.9
66.354	10.49	30.0	19.51	1000	120	101.0	V	90.0	11.6
488.216	14.33	36.0	21.67	1000	120	101.0	V	0.0	18.0
686.430	18.44	36.0	17.56	1000	120	170.0	H	180.0	21.0
856.953	20.74	36.0	15.26	1000	120	170.0	V	180.0	23.3

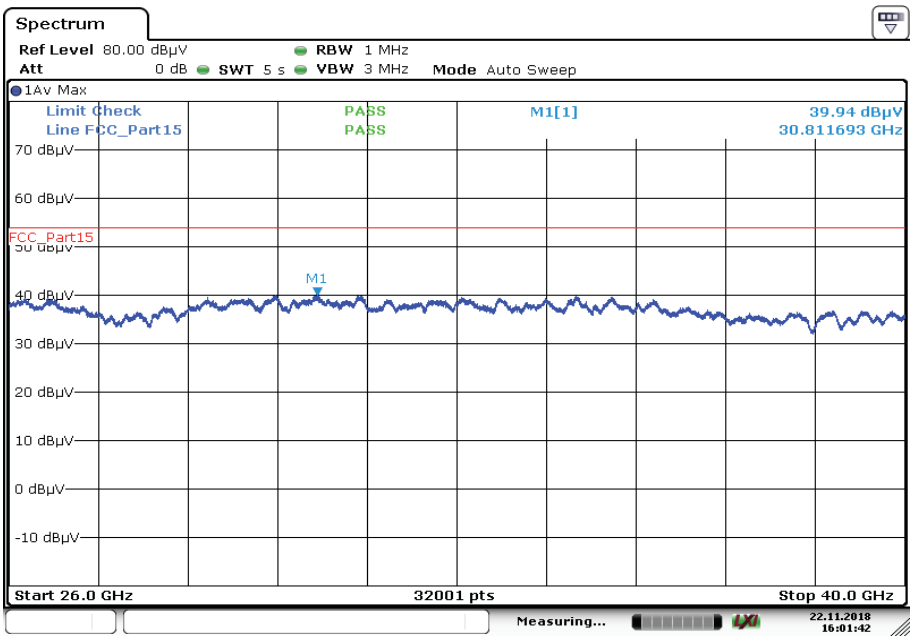
Plot 2: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-1; lowest channel



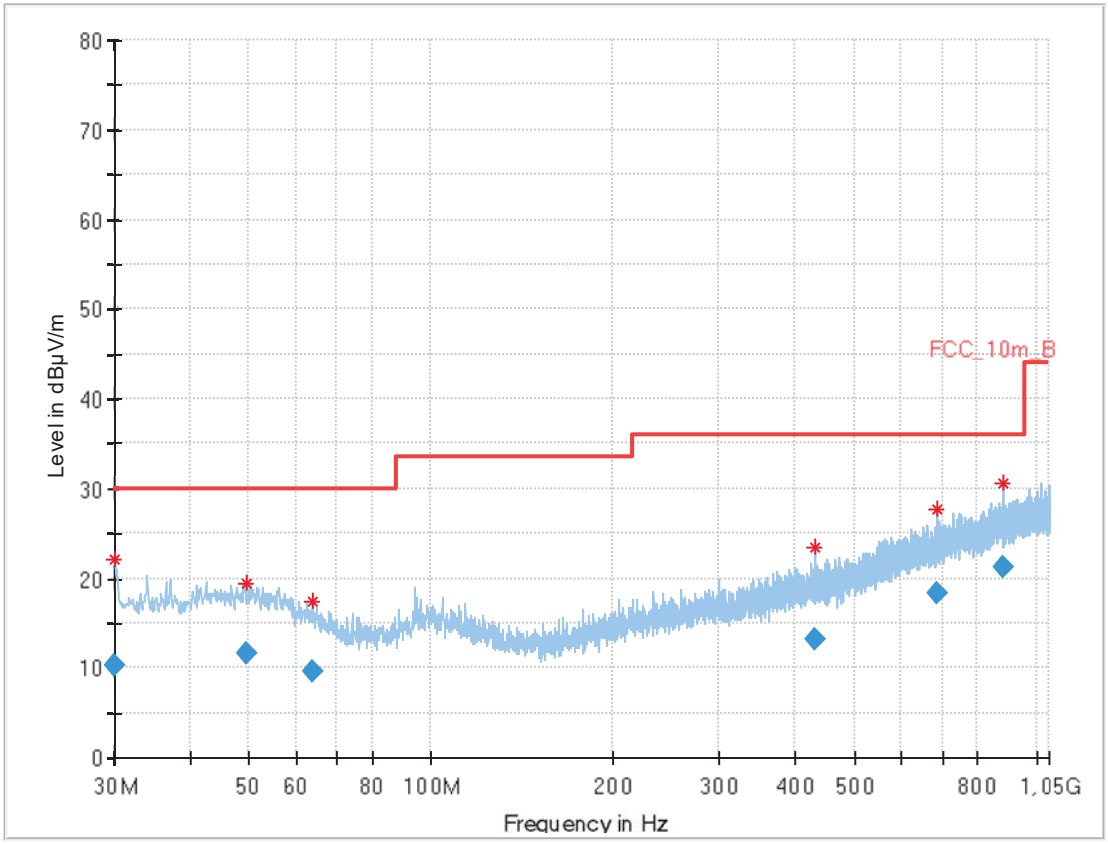
Plot 3: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-1; lowest channel



Plot 4: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-1; lowest channel



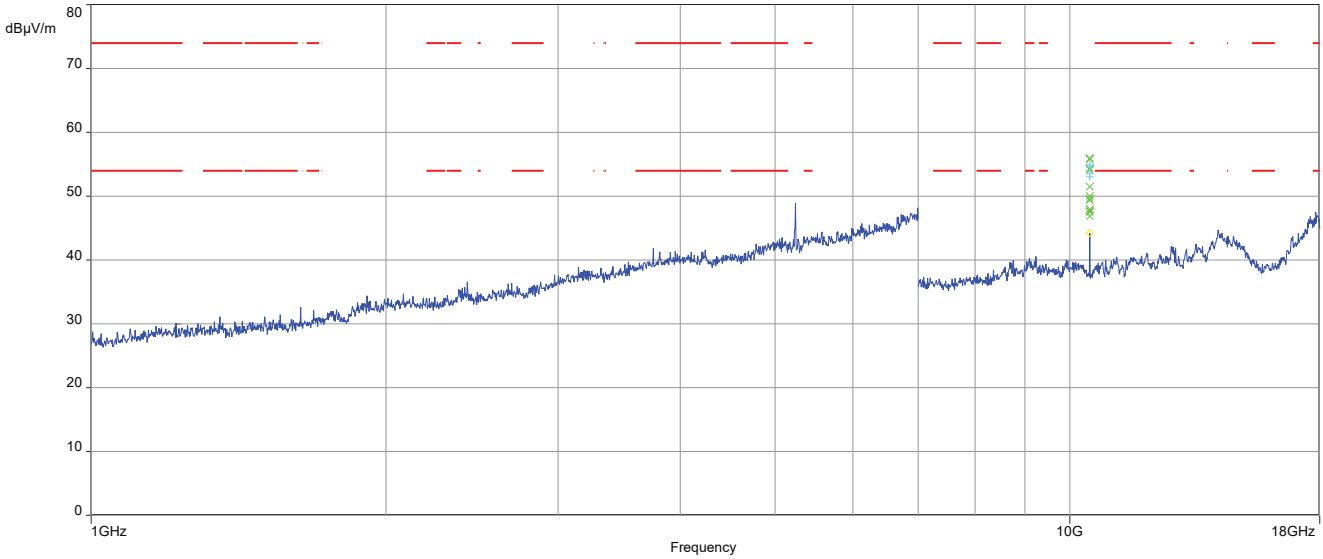
Plot 5: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-1; highest channel



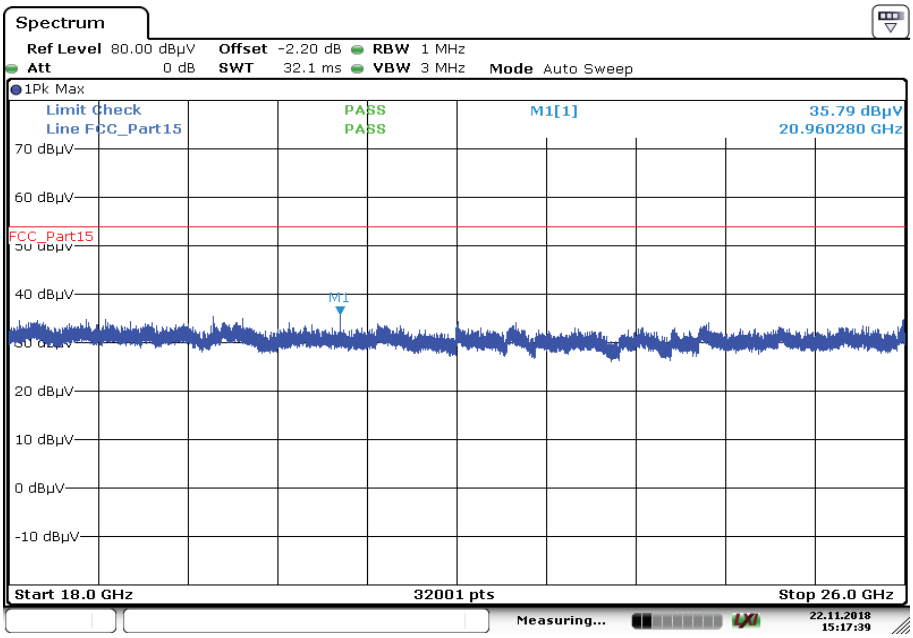
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.011	10.38	30.0	19.62	1000	120	101.0	H	0.0	13.0
49.487	11.69	30.0	18.31	1000	120	101.0	V	0.0	14.9
63.543	9.50	30.0	20.50	1000	120	170.0	H	180.0	12.2
430.472	13.18	36.0	22.82	1000	120	101.0	H	180.0	17.1
683.168	18.35	36.0	17.65	1000	120	101.0	V	180.0	21.0
883.063	21.13	36.0	14.87	1000	120	98.0	H	270.0	23.7

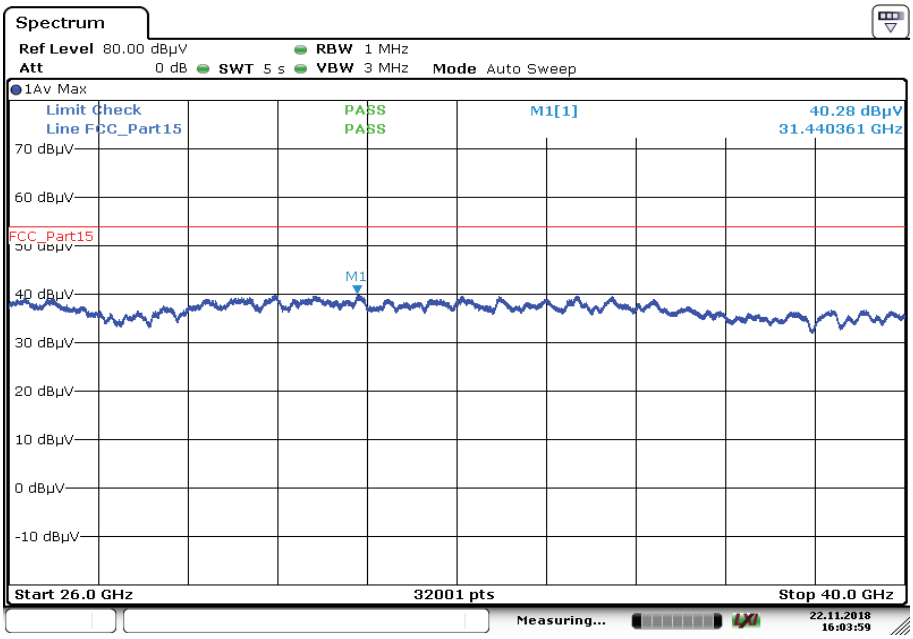
Plot 6: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-1; highest channel



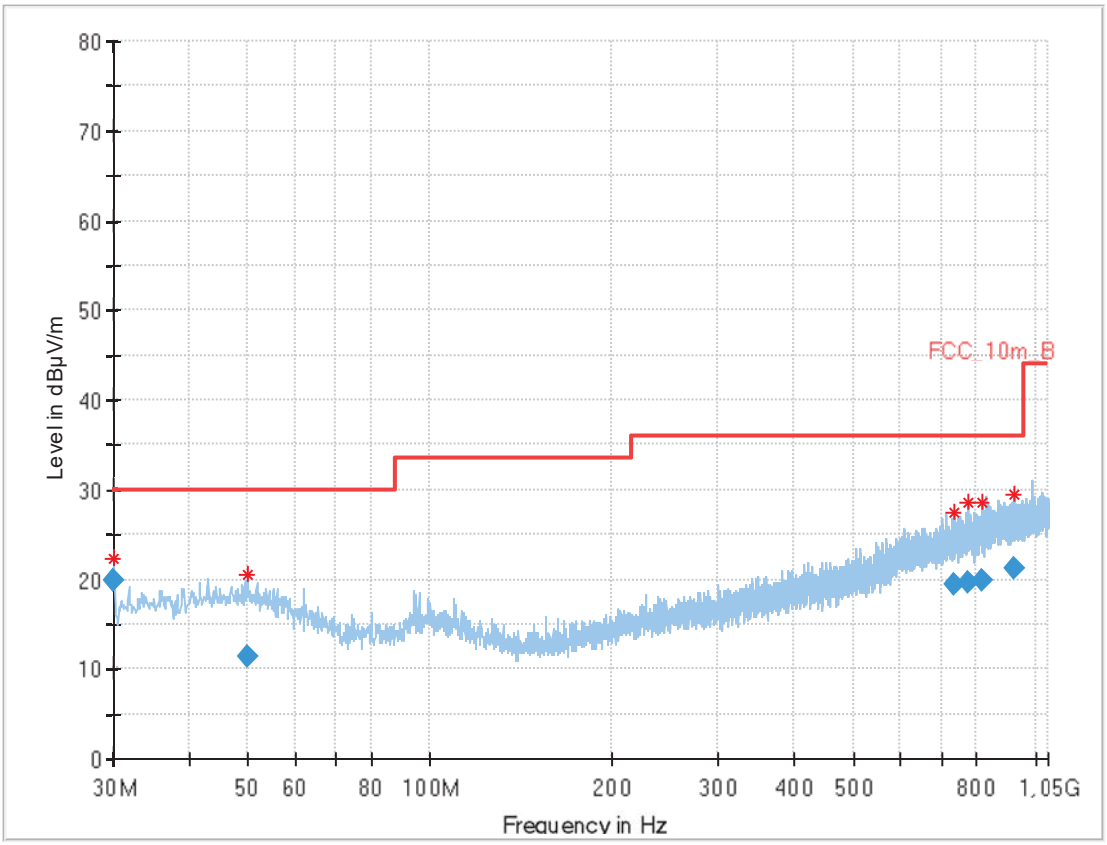
Plot 7: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-1; highest channel



Plot 8: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-1; highest channel



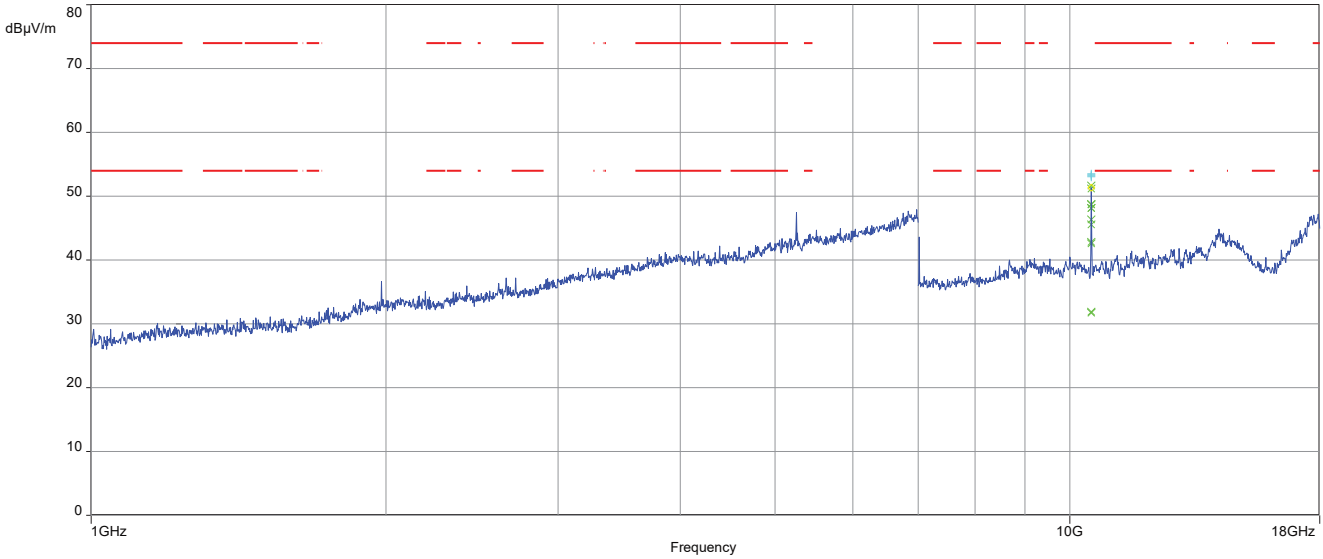
Plot 9: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2A; lowest channel



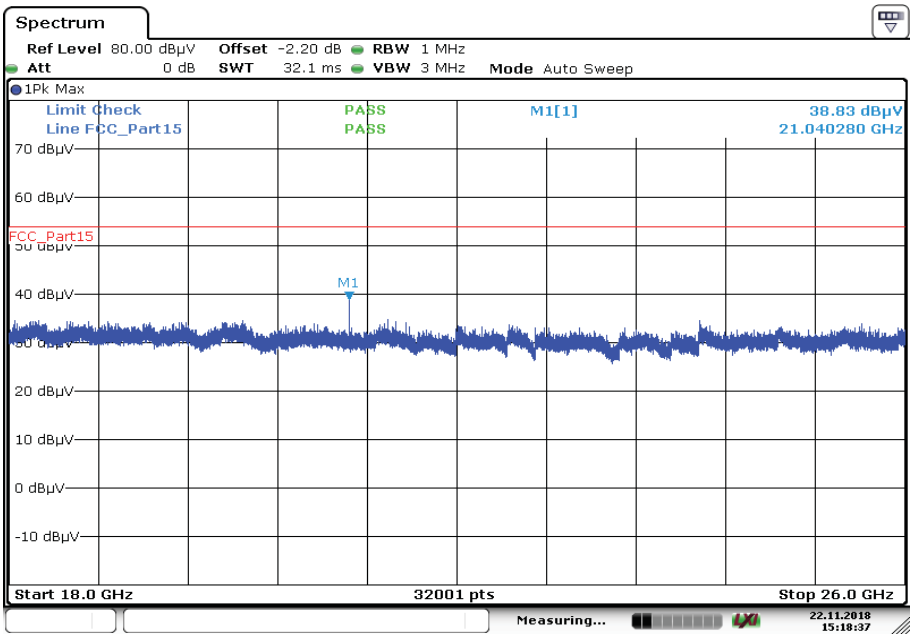
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.012	19.98	30.0	10.02	1000	120	100.0	V	0.0	13.0
49.947	11.37	30.0	18.63	1000	120	100.0	V	180.0	14.9
735.009	19.33	36.0	16.67	1000	120	105.0	H	270.0	22.0
776.317	19.58	36.0	16.42	1000	120	170.0	V	90.0	22.3
814.664	19.99	36.0	16.01	1000	120	170.0	H	90.0	22.6
924.974	21.15	36.0	14.85	1000	120	98.0	H	0.0	24.0

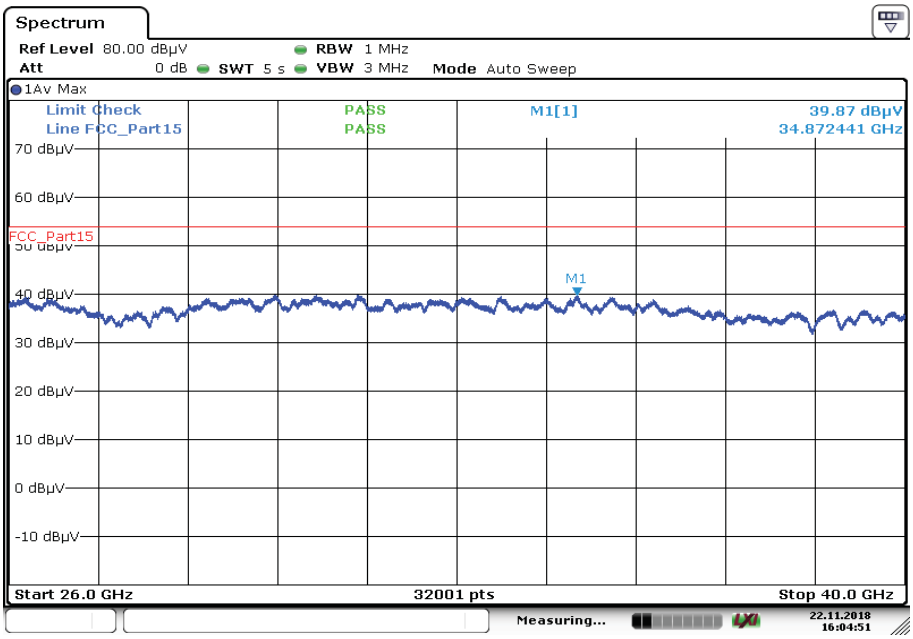
Plot 10: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2A; lowest channel



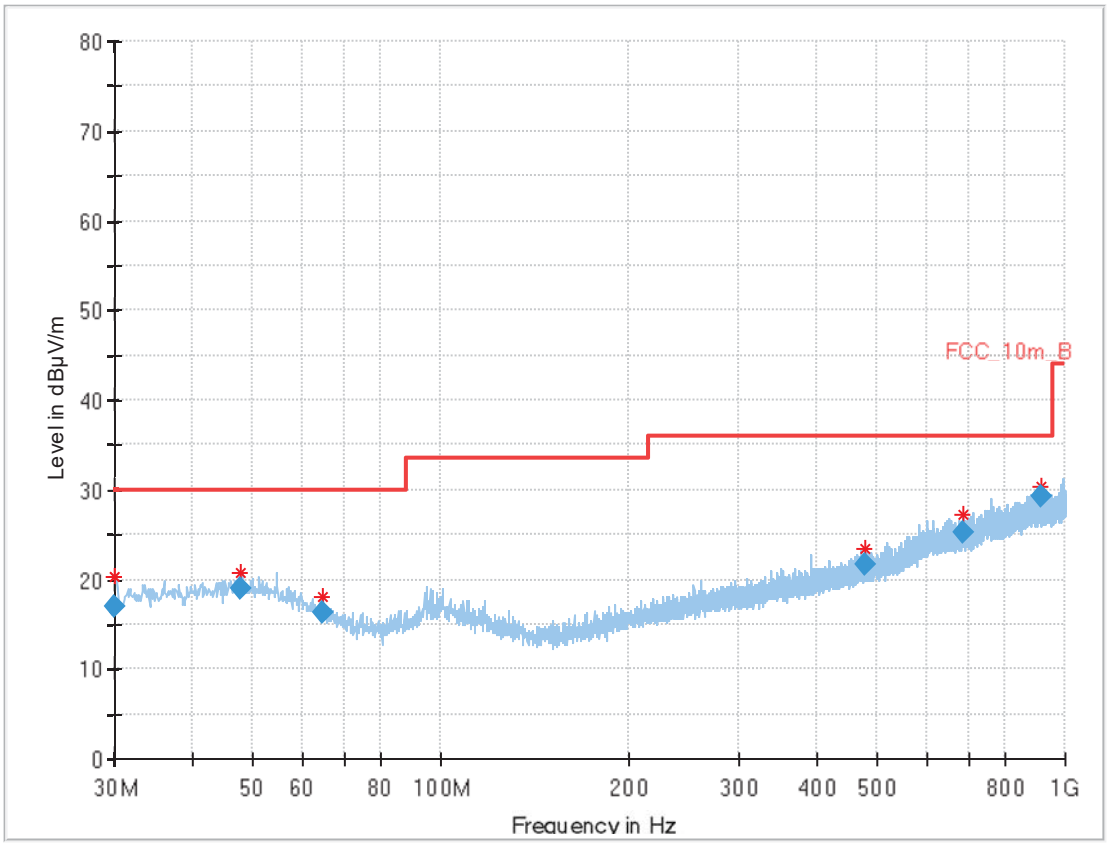
Plot 11: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2A; lowest channel



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



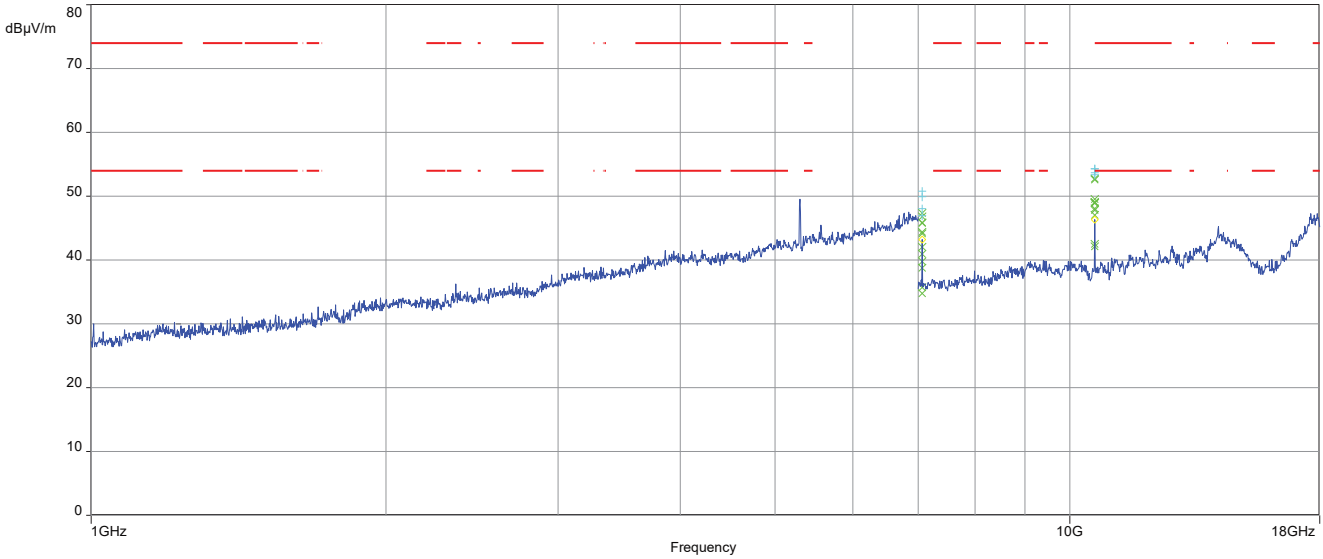
Plot 13: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2A; highest channel



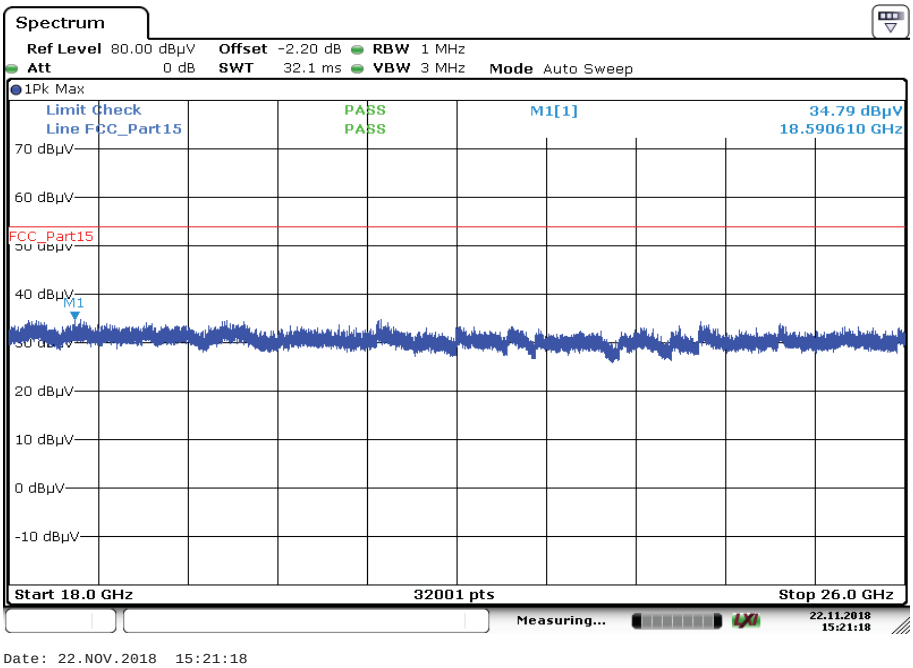
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.022	17.04	30.0	12.96	1000	120	101.0	H	350.0	13.0
47.811	18.93	30.0	11.07	1000	120	101.0	V	330.0	14.8
64.518	16.35	30.0	13.65	1000	120	101.0	V	241.0	12.0
478.214	21.59	36.0	14.41	1000	120	160.0	V	144.0	17.9
685.437	25.23	36.0	10.77	1000	120	160.0	H	45.0	21.0
918.473	29.27	36.0	6.73	1000	120	98.0	V	248.0	23.9

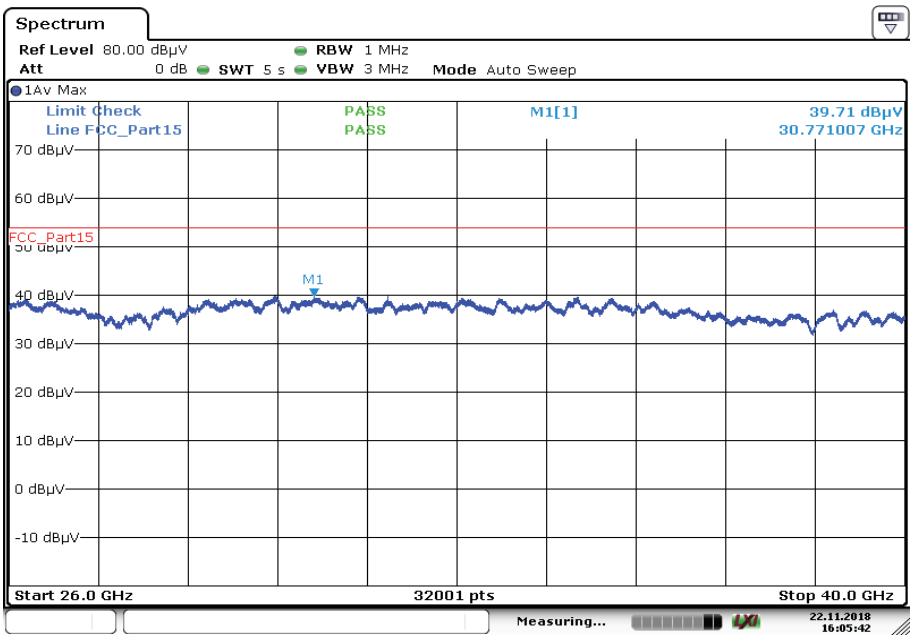
Plot 14: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2A; highest channel



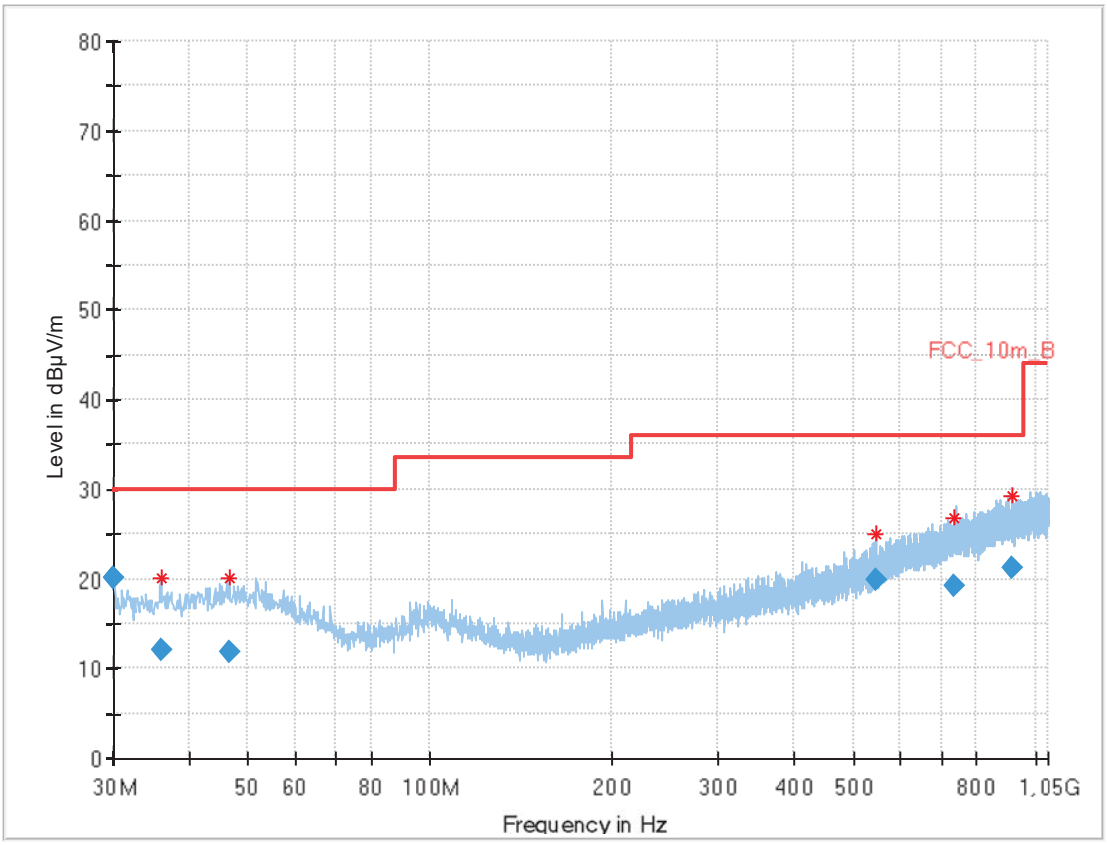
Plot 15: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2A; highest channel



Plot 16: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-2A; highest channel



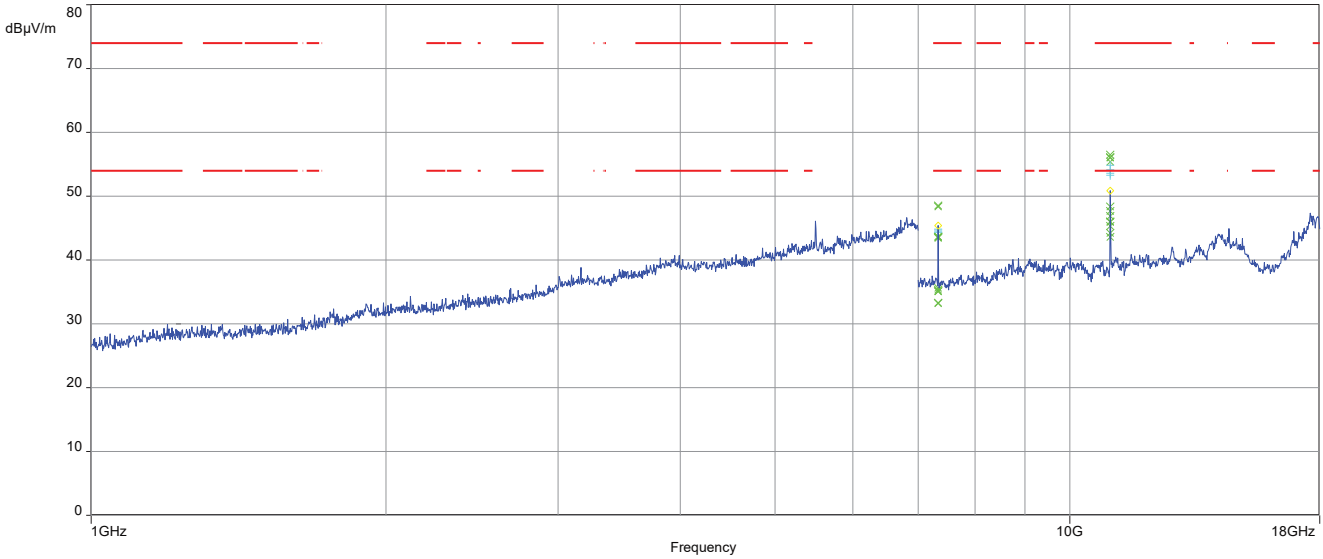
Plot 17: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2C; lowest channel



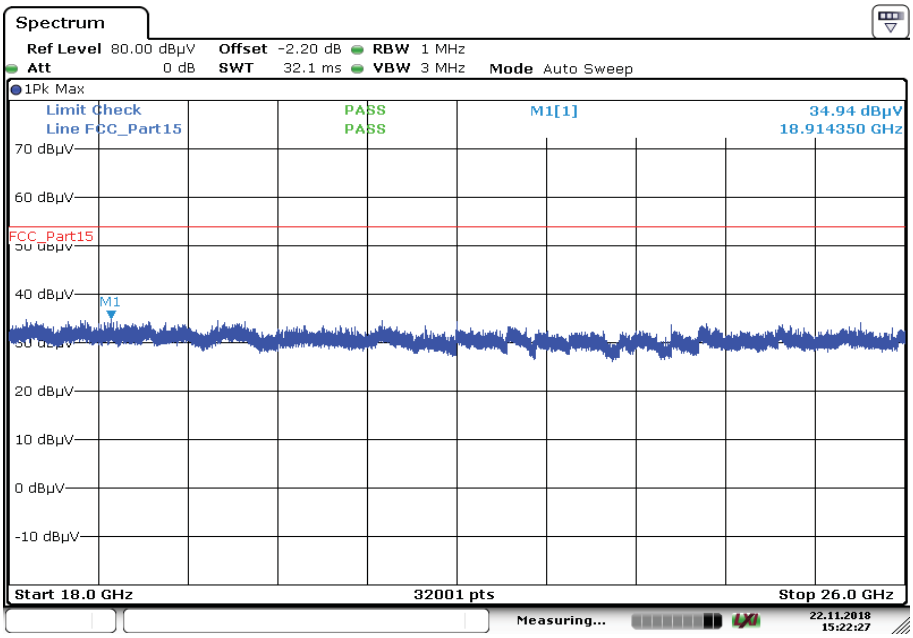
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.002	20.22	30.0	9.78	1000	120	98.0	V	90.0	13.0
36.015	11.99	30.0	18.01	1000	120	101.0	H	90.0	13.9
46.547	11.77	30.0	18.23	1000	120	170.0	V	180.0	14.8
544.015	19.98	36.0	16.02	1000	120	98.0	H	270.0	18.9
733.612	19.32	36.0	16.68	1000	120	170.0	H	90.0	21.9
916.295	21.16	36.0	14.84	1000	120	170.0	H	270.0	23.9

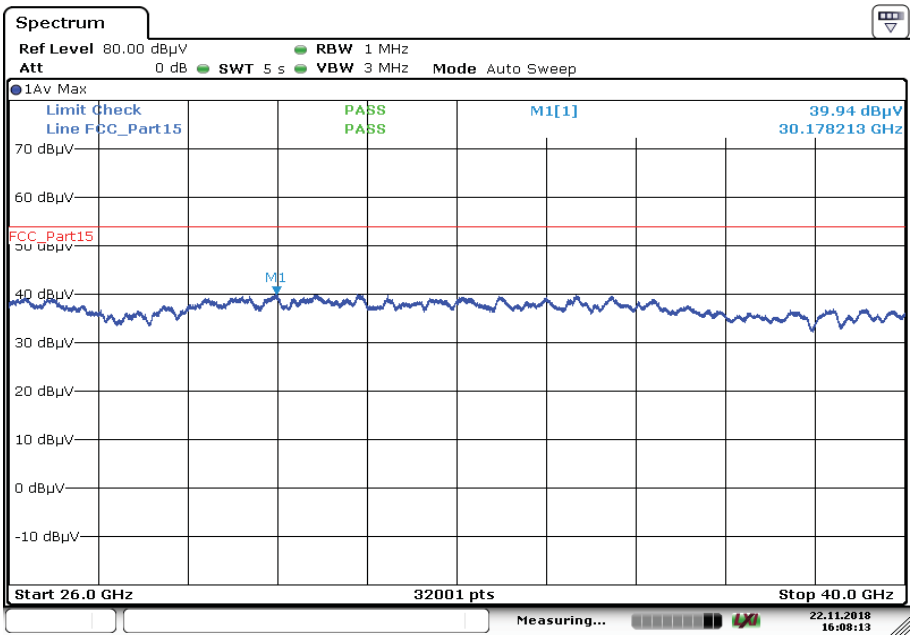
Plot 18: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2C; lowest channel



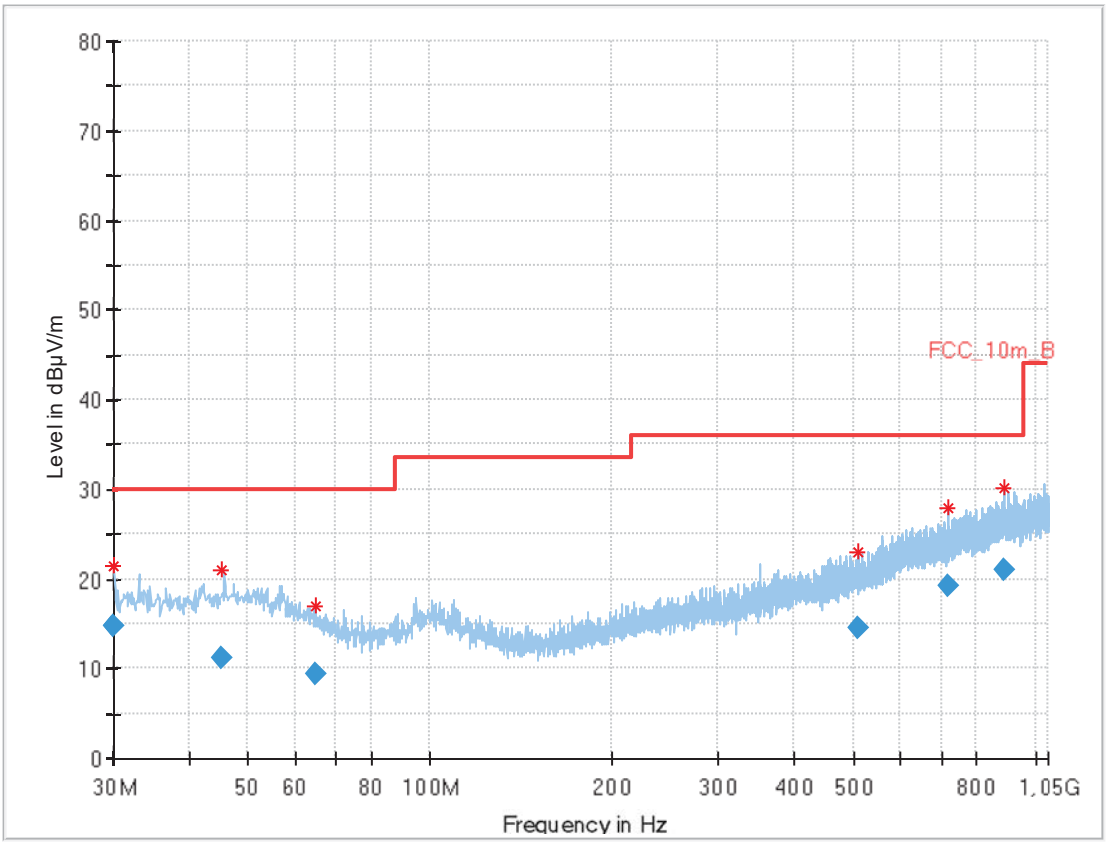
Plot 19: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2C; lowest channel



Plot 20: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-2C; lowest channel



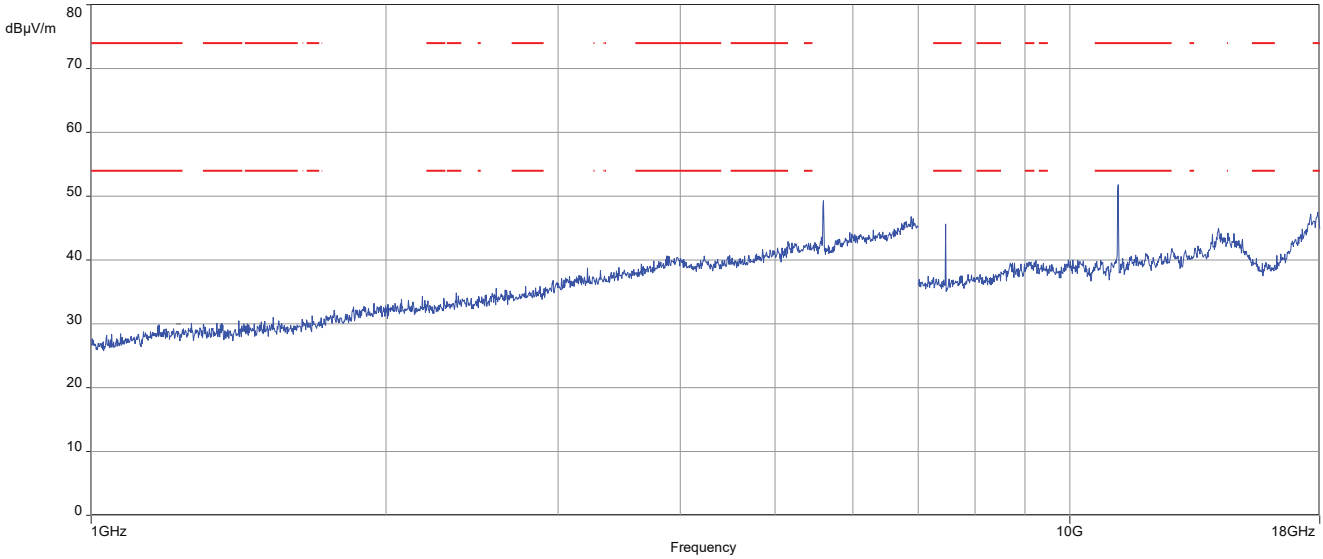
Plot 21: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2C; middle channel



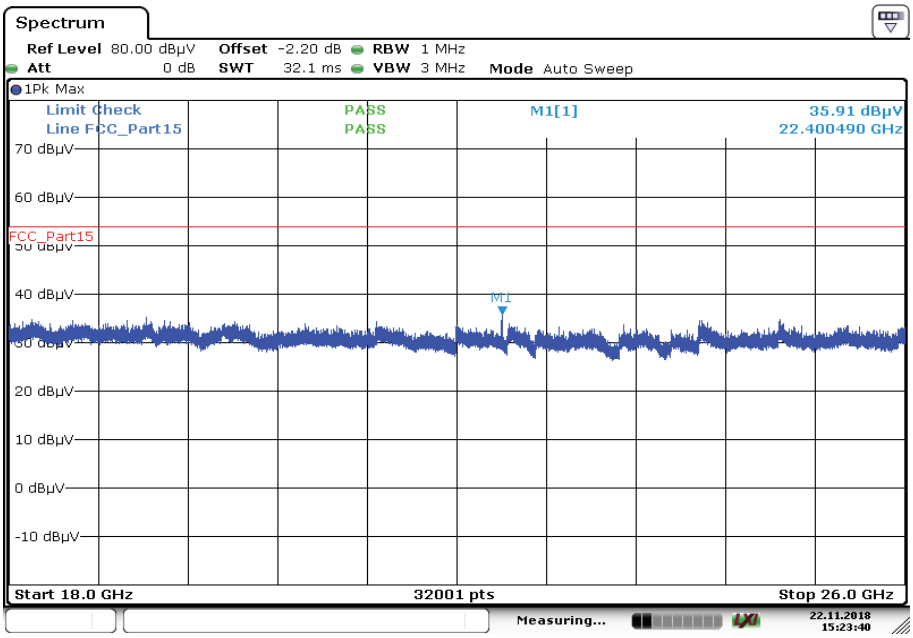
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.004	14.86	30.0	15.14	1000	120	101.0	H	90.0	13.0
45.374	11.19	30.0	18.81	1000	120	170.0	V	0.0	14.8
64.555	9.38	30.0	20.62	1000	120	101.0	V	180.0	12.0
509.714	14.54	36.0	21.46	1000	120	170.0	V	270.0	18.4
720.062	19.18	36.0	16.82	1000	120	170.0	H	180.0	21.6
889.016	21.09	36.0	14.91	1000	120	170.0	V	0.0	23.7

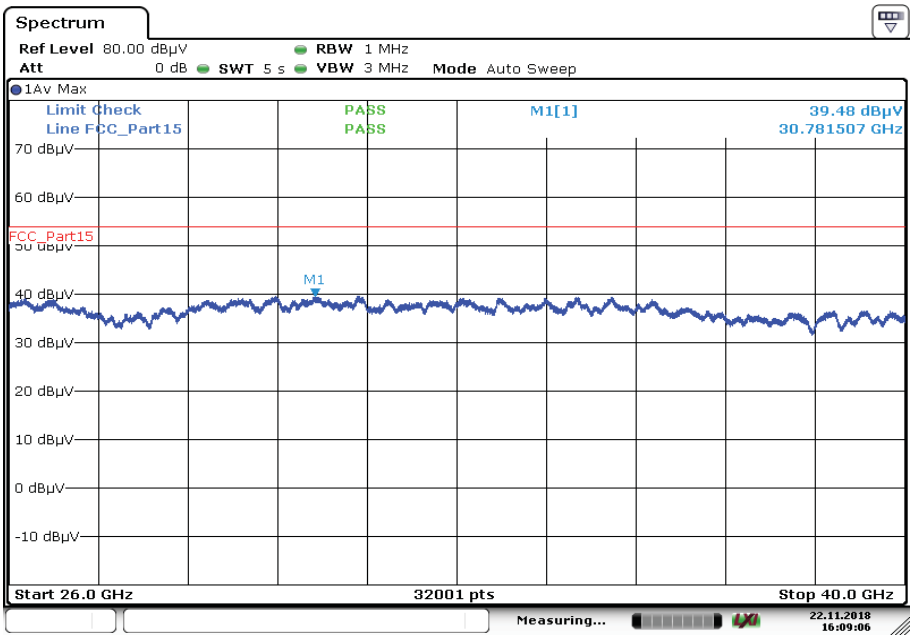
Plot 22: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2C; middle channel



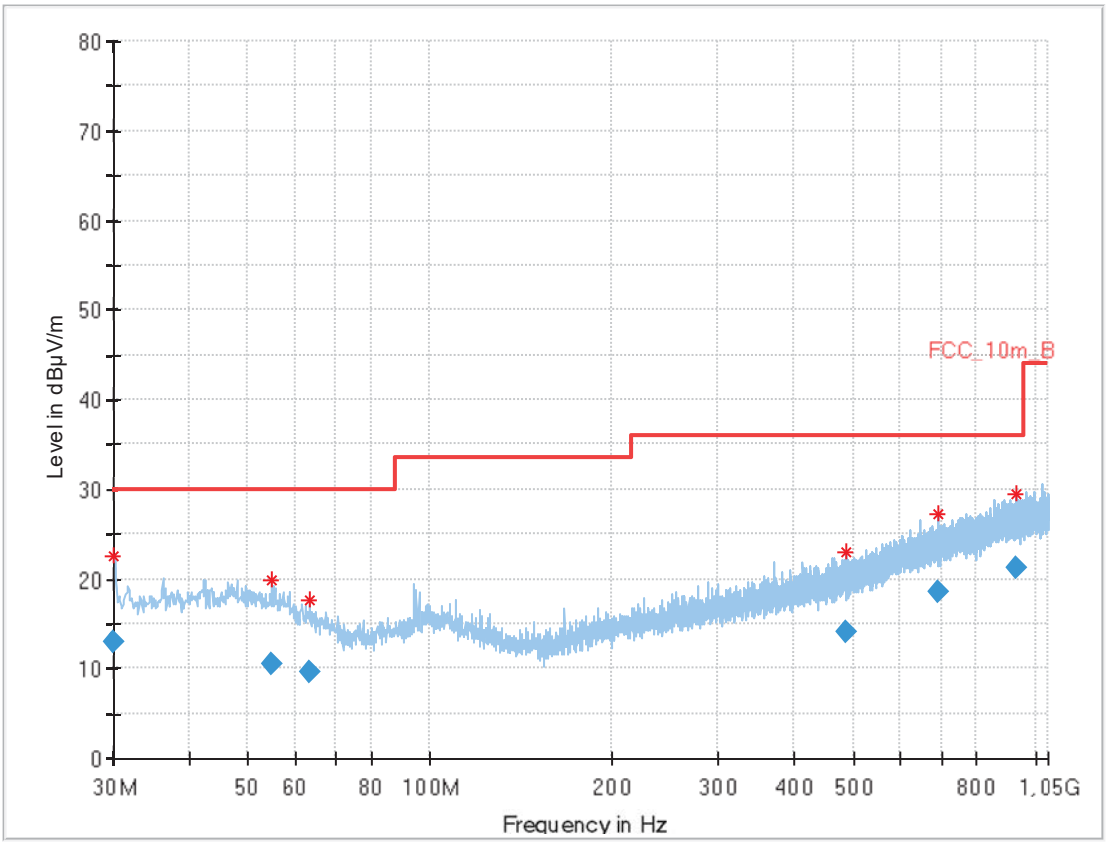
Plot 23: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2C; middle channel



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



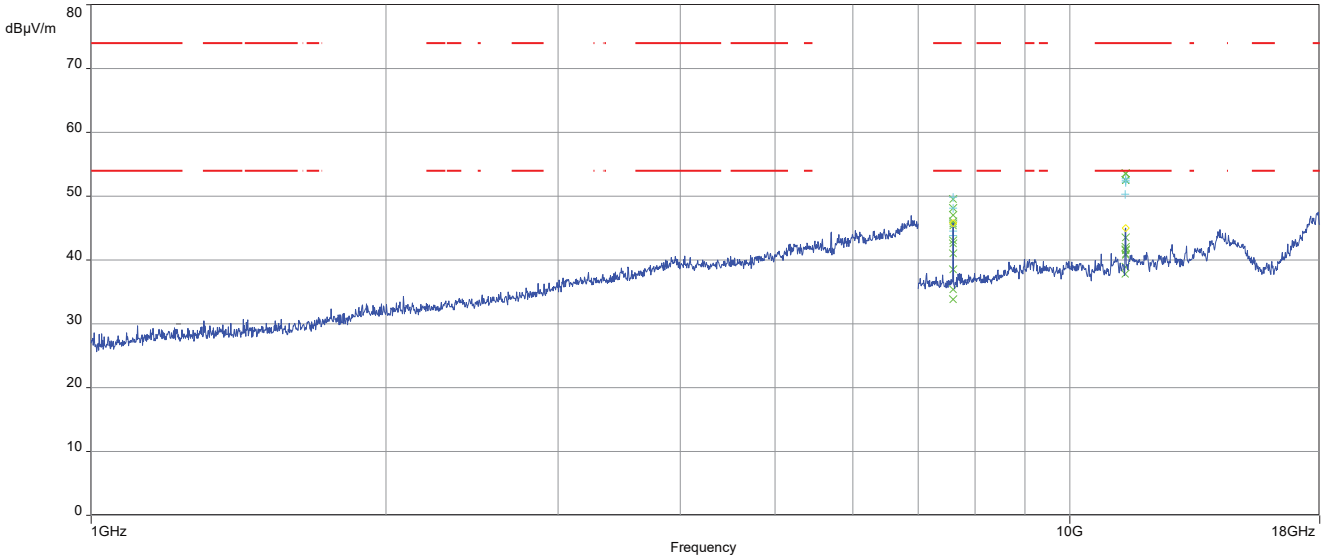
Plot 25: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2C; highest channel



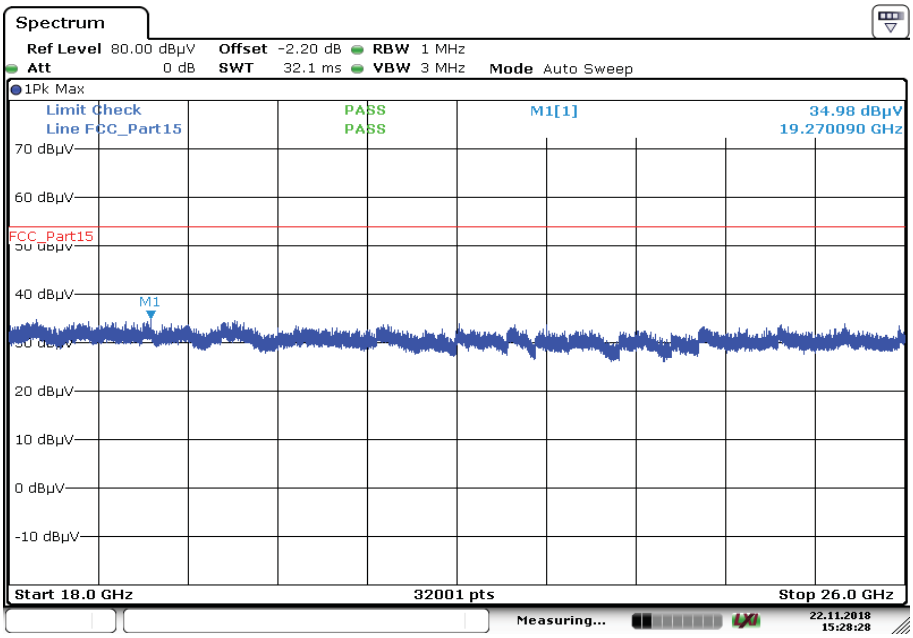
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.046	13.00	30.0	17.00	1000	120	101.0	H	180.0	13.0
54.681	10.43	30.0	19.57	1000	120	101.0	V	180.0	14.3
63.336	9.69	30.0	20.31	1000	120	100.0	H	180.0	12.2
485.432	14.14	36.0	21.86	1000	120	170.0	V	90.0	18.0
692.208	18.51	36.0	17.49	1000	120	170.0	H	90.0	21.1
932.644	21.23	36.0	14.77	1000	120	101.0	H	0.0	24.0

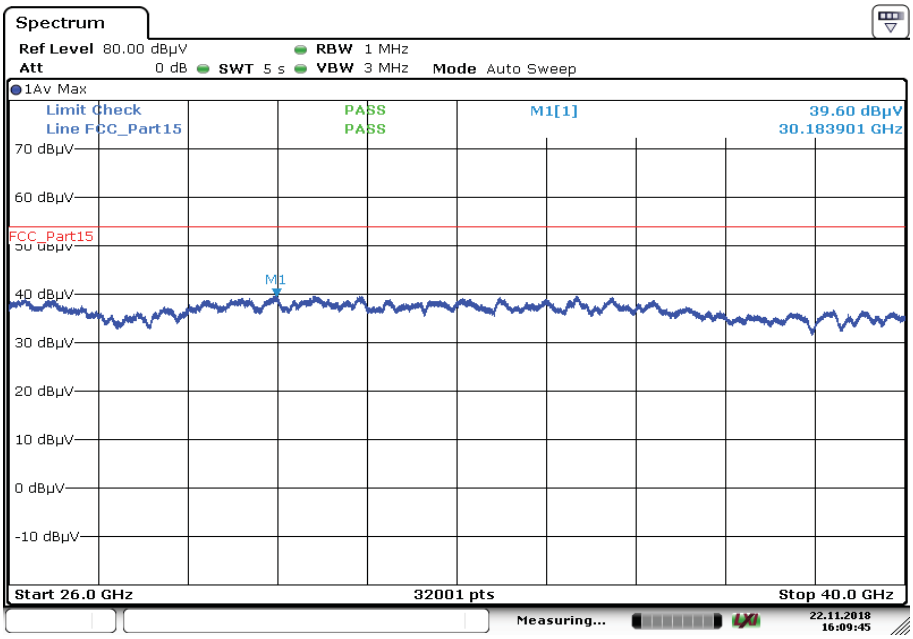
Plot 26: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2C; highest channel



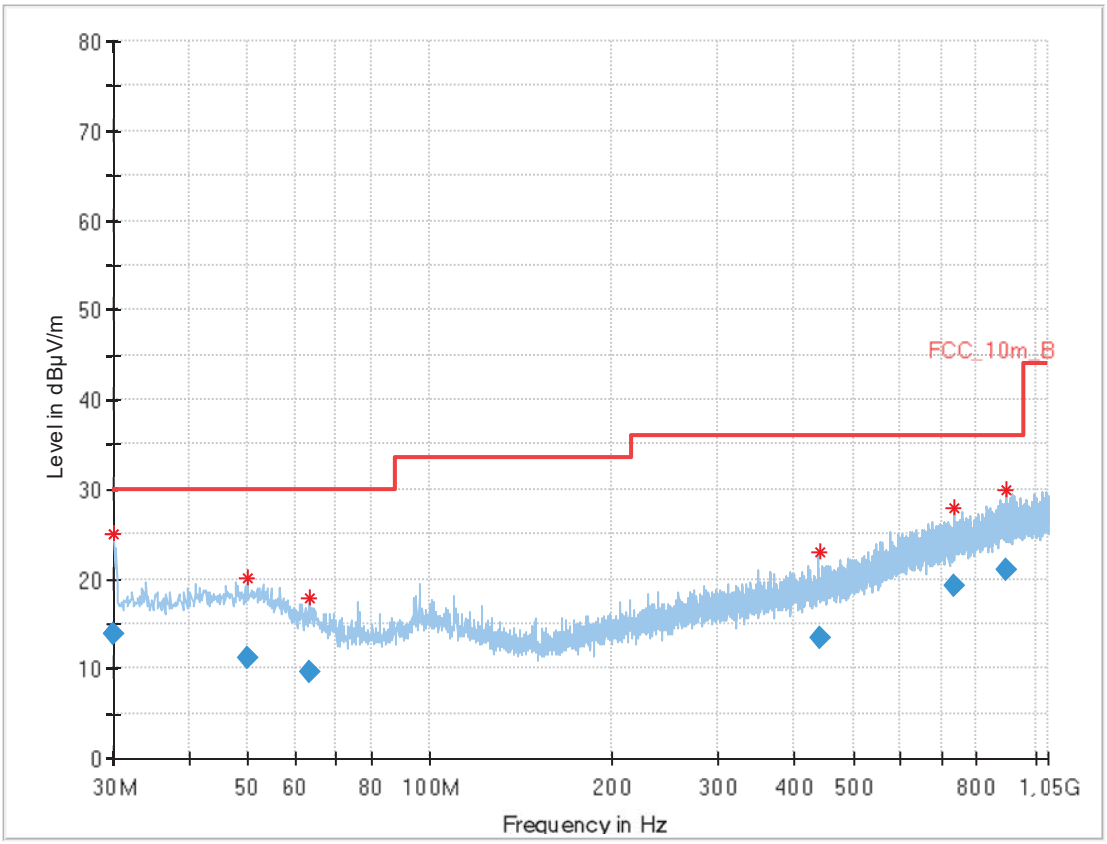
Plot 27: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2C; highest channel



Plot 28: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-2C; highest channel



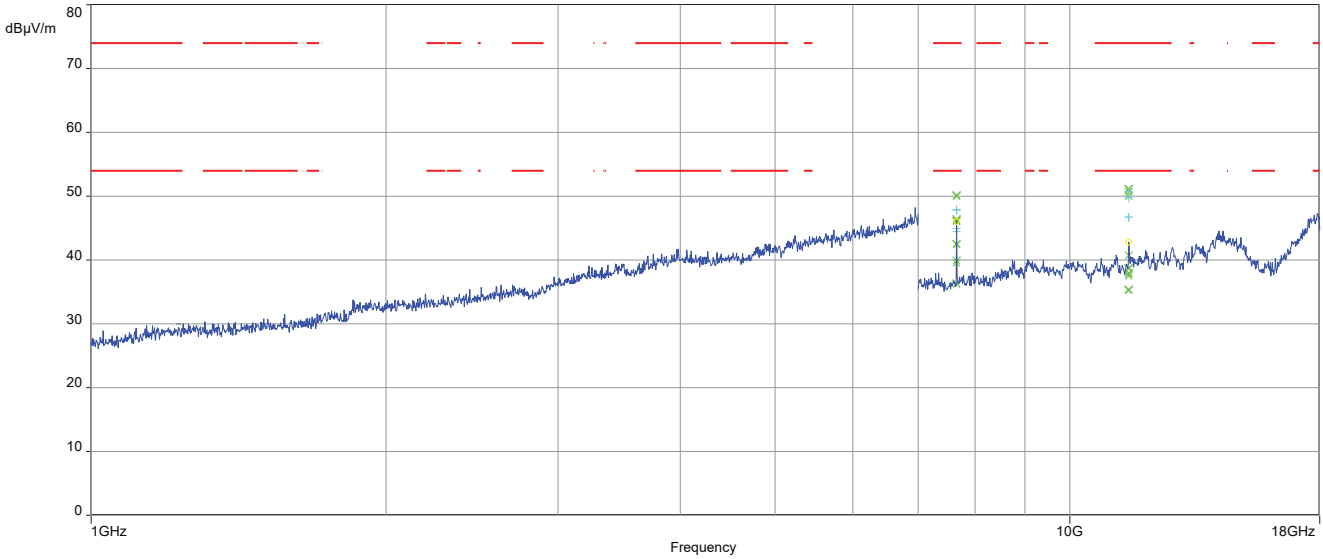
Plot 29: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-3; lowest channel



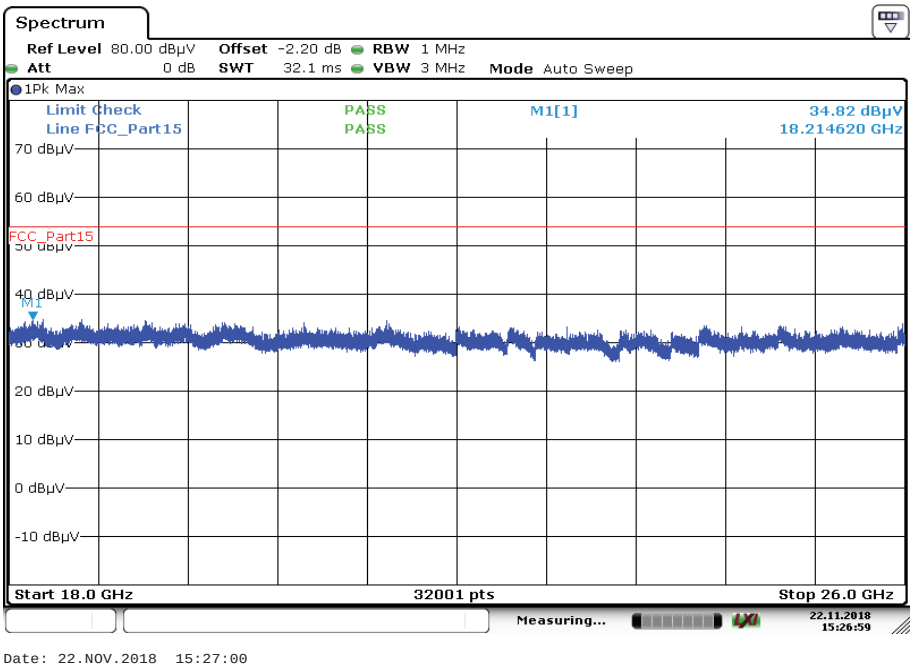
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.025	13.78	30.0	16.22	1000	120	101.0	H	270.0	13.0
49.890	11.23	30.0	18.77	1000	120	170.0	V	90.0	14.9
63.292	9.72	30.0	20.28	1000	120	101.0	H	270.0	12.3
439.476	13.41	36.0	22.59	1000	120	170.0	V	180.0	17.2
731.736	19.29	36.0	16.71	1000	120	98.0	V	0.0	21.9
894.875	21.06	36.0	14.94	1000	120	170.0	H	0.0	23.8

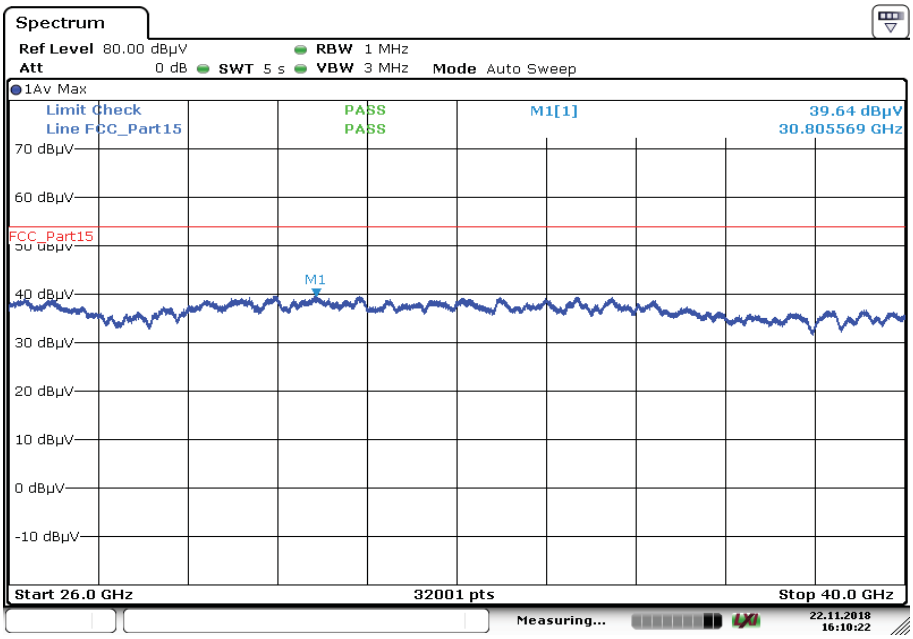
Plot 30: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-3; lowest channel



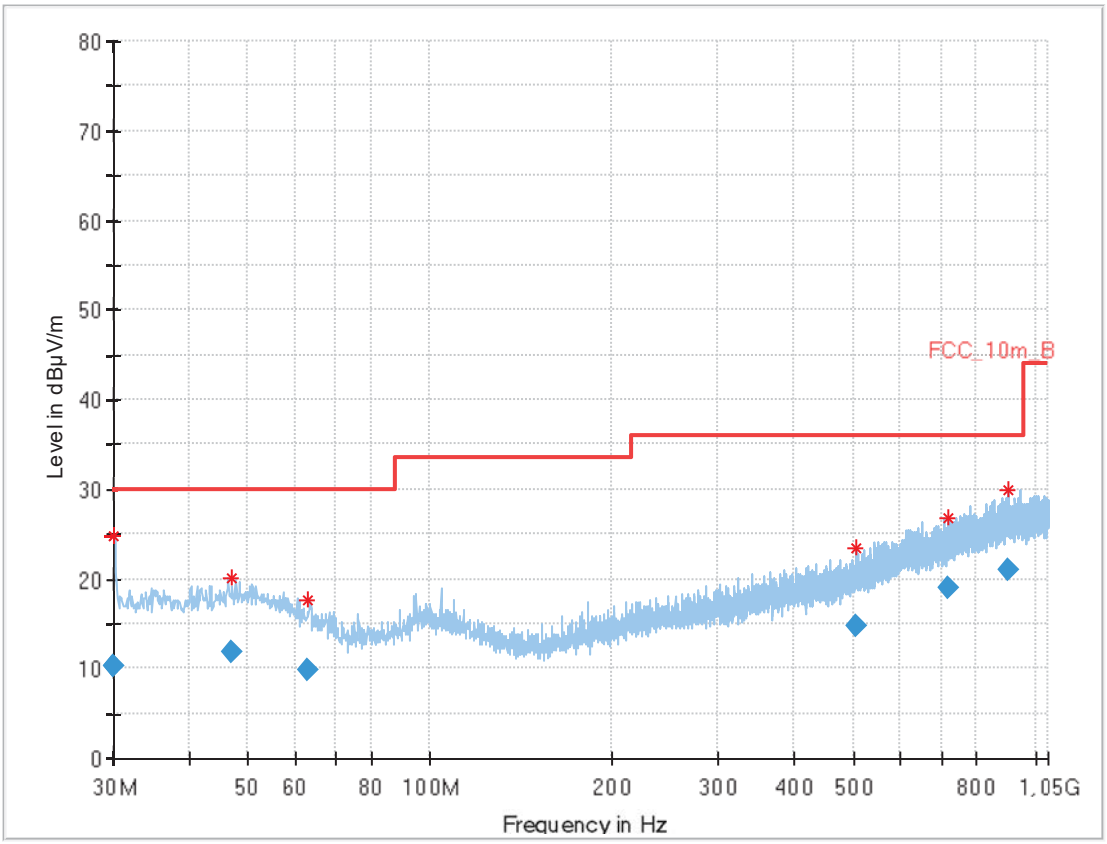
Plot 31: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-3; lowest channel



Plot 32: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-3; lowest channel



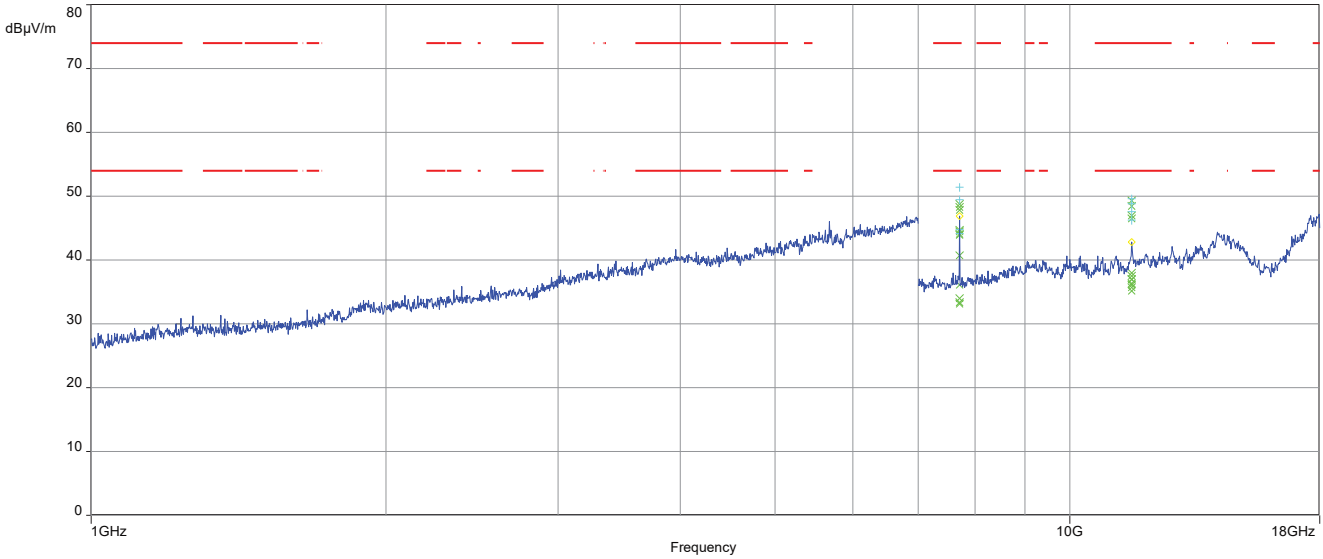
Plot 33: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-3; middle channel



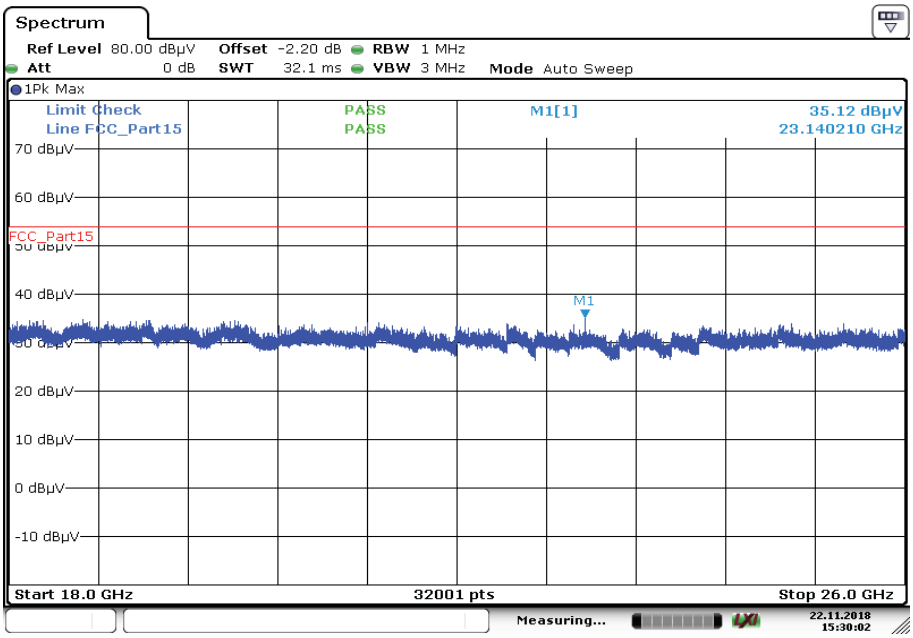
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.000	10.38	30.0	19.62	1000	120	101.0	H	0.0	13.0
47.044	11.92	30.0	18.08	1000	120	170.0	V	90.0	14.8
62.848	9.92	30.0	20.08	1000	120	100.0	V	180.0	12.4
505.752	14.74	36.0	21.26	1000	120	170.0	V	180.0	18.3
716.493	18.95	36.0	17.05	1000	120	170.0	H	0.0	21.5
901.505	21.09	36.0	14.91	1000	120	98.0	H	90.0	23.9

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



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



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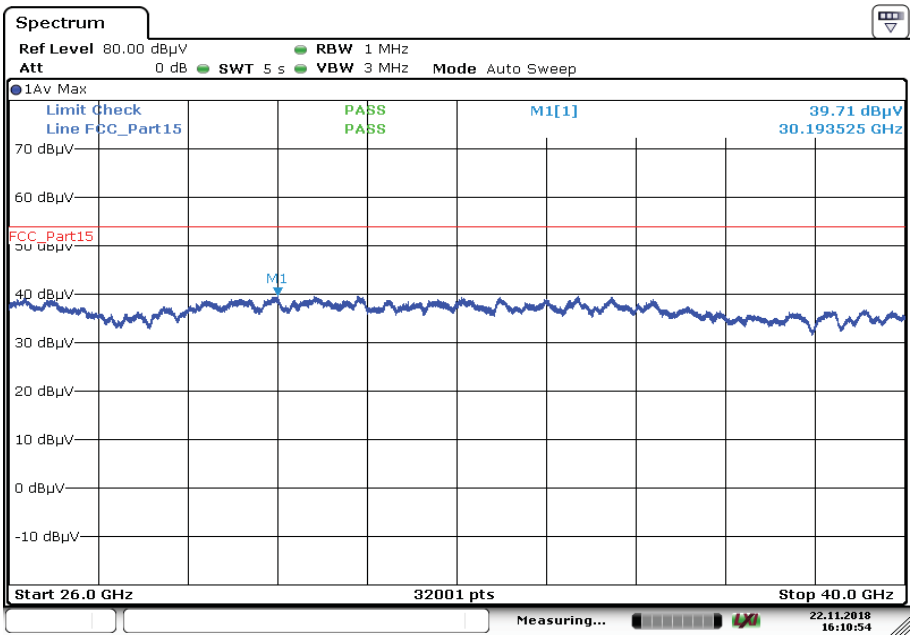
Plot 36: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-3; middle channel



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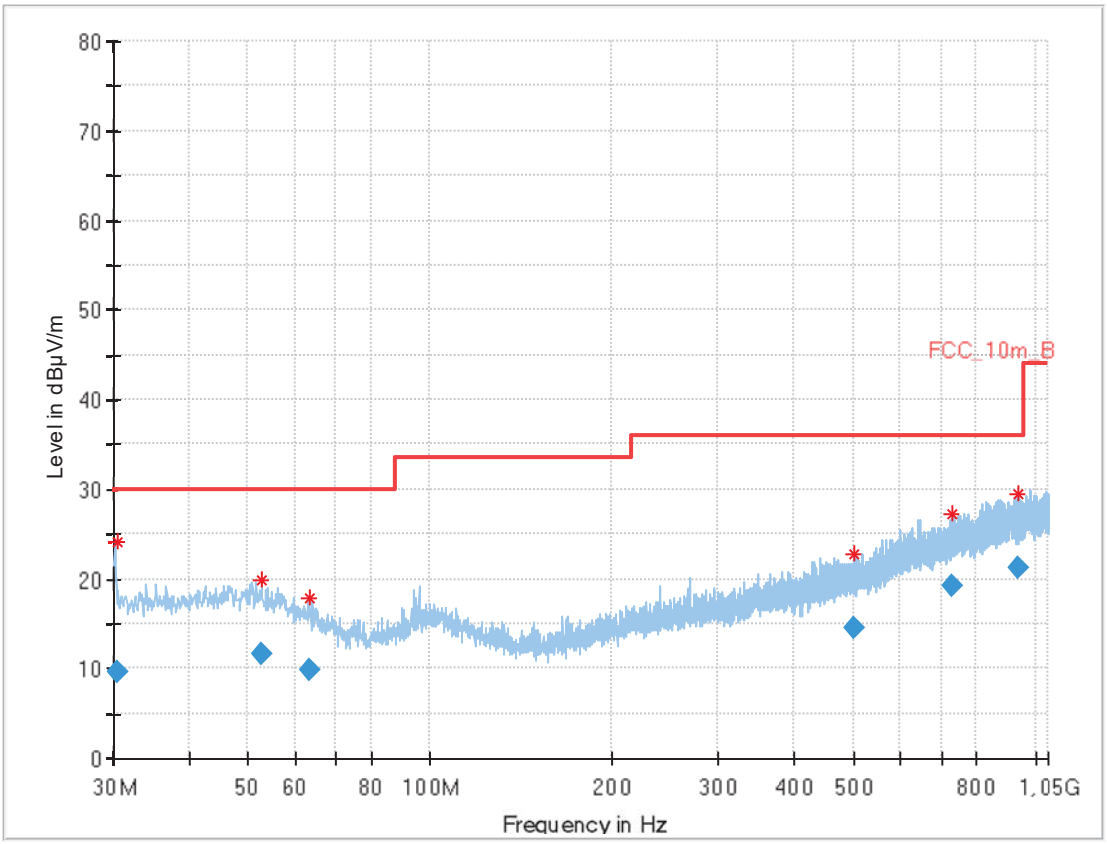
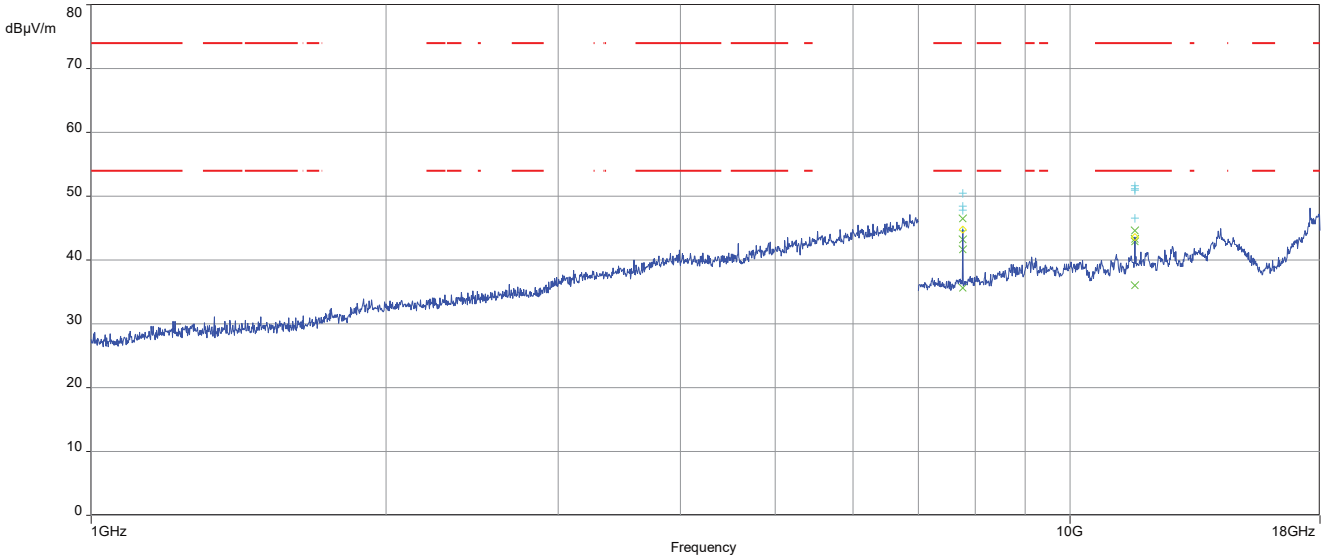
Plot 37: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-3; highest channel



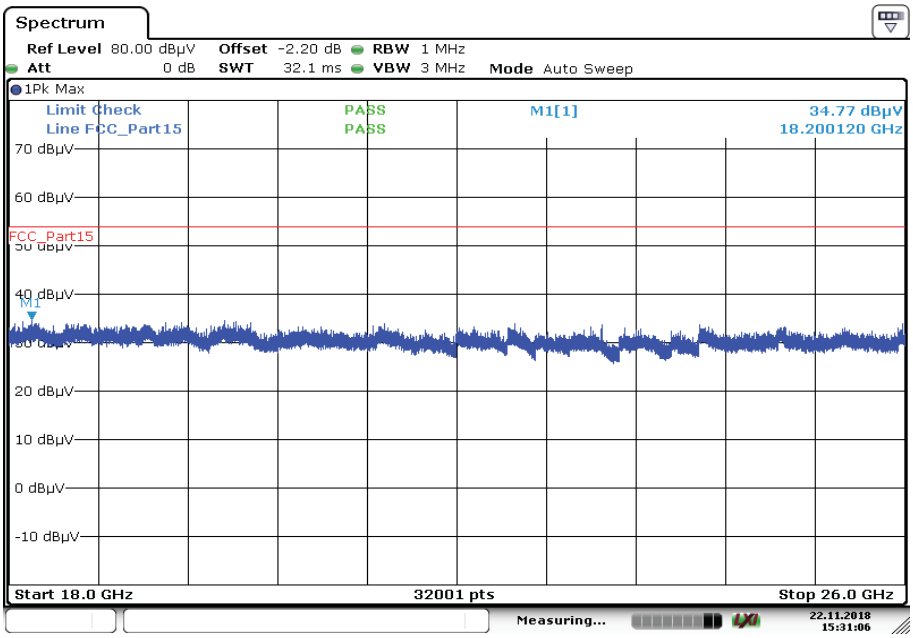
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.399	9.66	30.0	20.34	1000	120	105.0	H	90.0	13.0
52.601	11.51	30.0	18.49	1000	120	101.0	V	270.0	14.5
63.200	9.79	30.0	20.21	1000	120	170.0	H	0.0	12.3
501.954	14.53	36.0	21.47	1000	120	170.0	V	270.0	18.3
728.943	19.17	36.0	16.83	1000	120	170.0	V	180.0	21.8
939.813	21.31	36.0	14.69	1000	120	170.0	H	90.0	24.0

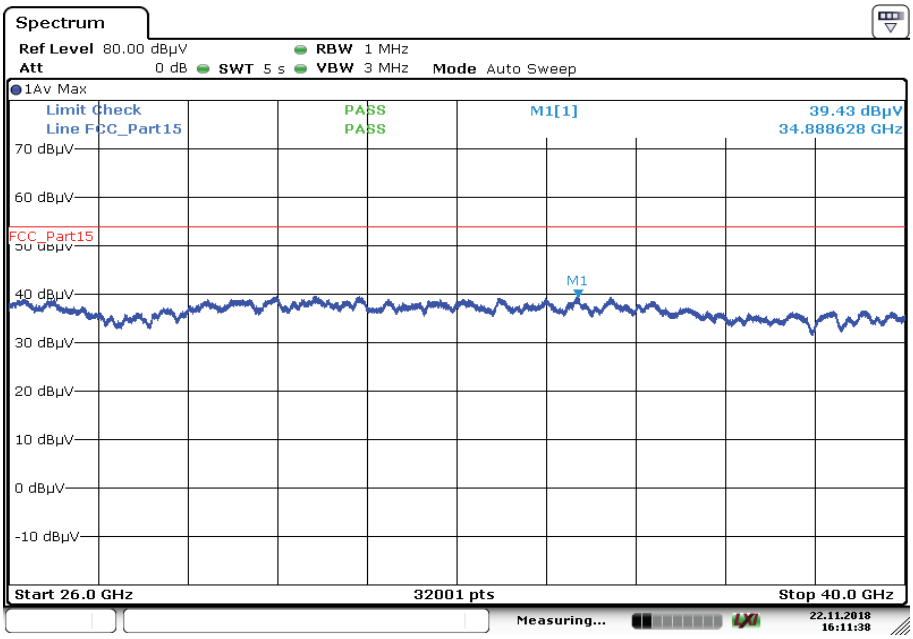
Plot 38: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-3; highest channel



Plot 39: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-3; highest channel

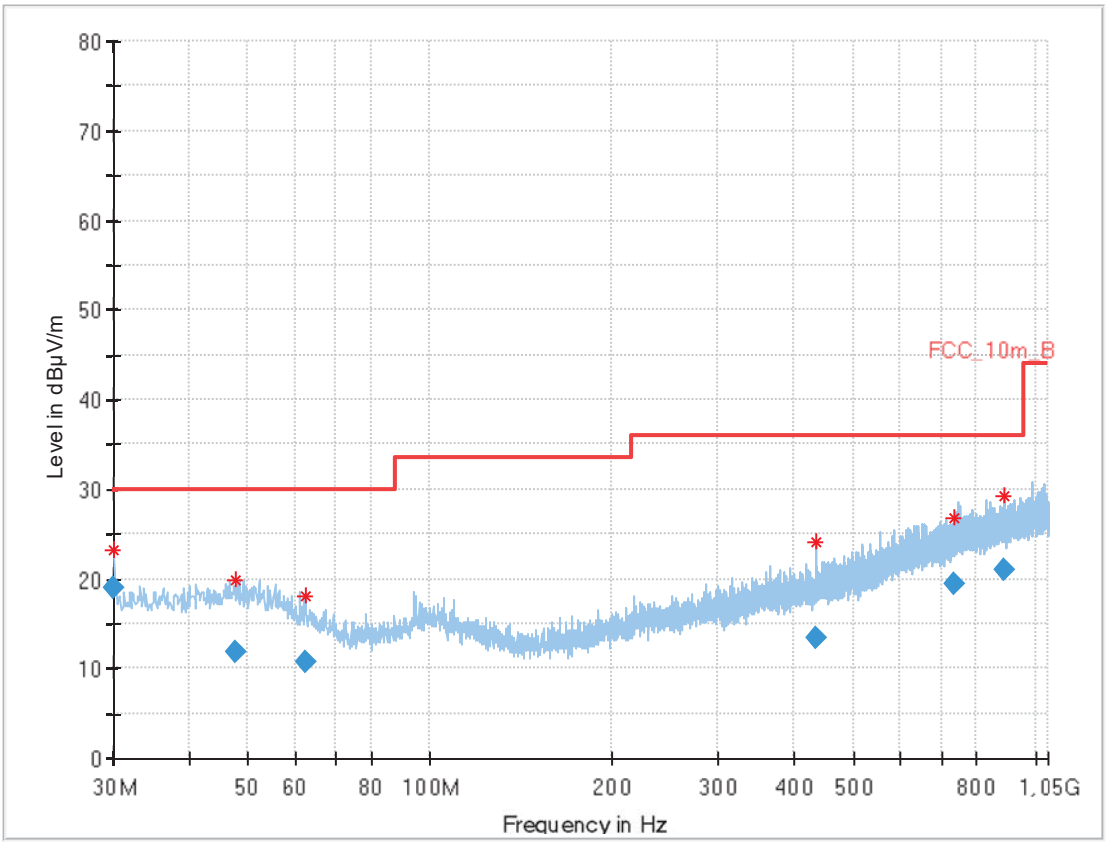


Plot 40: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-3; highest channel



Plots: 40 MHz channel bandwidth

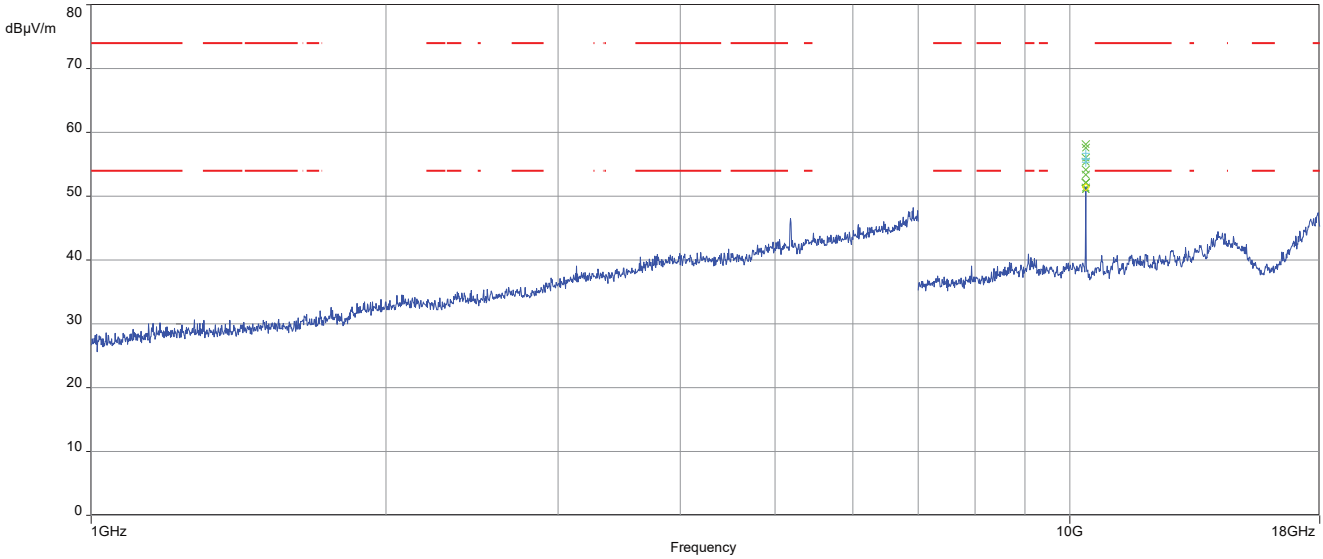
Plot 1: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-1; lowest channel



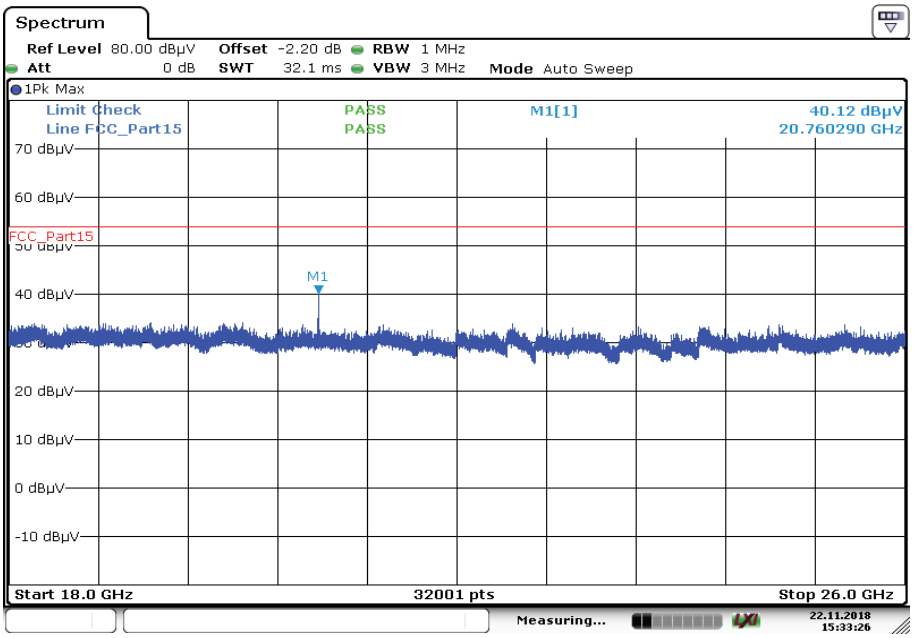
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.020	18.94	30.0	11.06	1000	120	170.0	H	270.0	13.0
47.912	11.77	30.0	18.23	1000	120	100.0	V	270.0	14.8
62.349	10.83	30.0	19.17	1000	120	101.0	H	180.0	12.5
433.956	13.33	36.0	22.67	1000	120	101.0	V	180.0	17.1
732.558	19.33	36.0	16.67	1000	120	101.0	H	0.0	21.9
890.496	21.00	36.0	15.00	1000	120	170.0	H	270.0	23.8

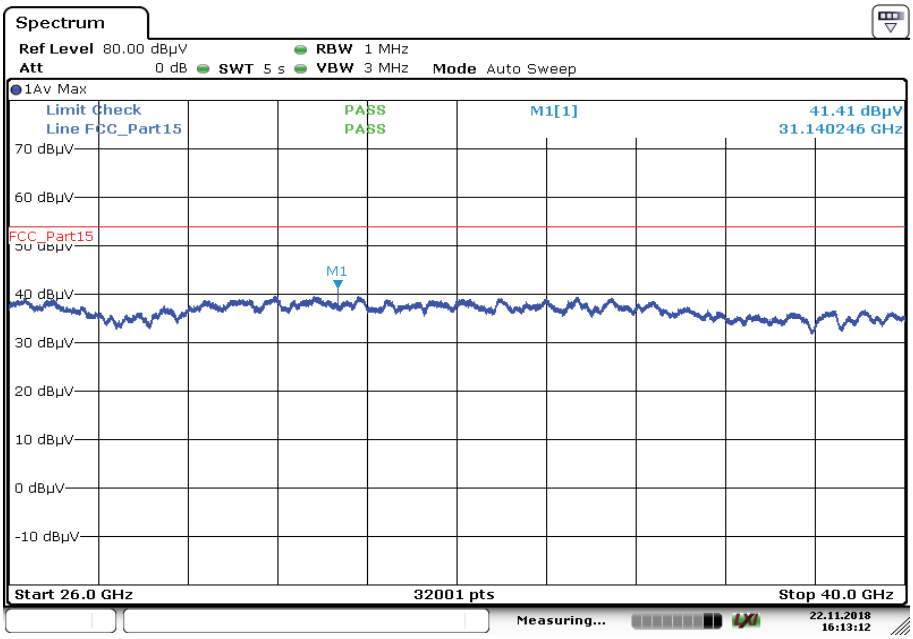
Plot 2: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-1; lowest channel



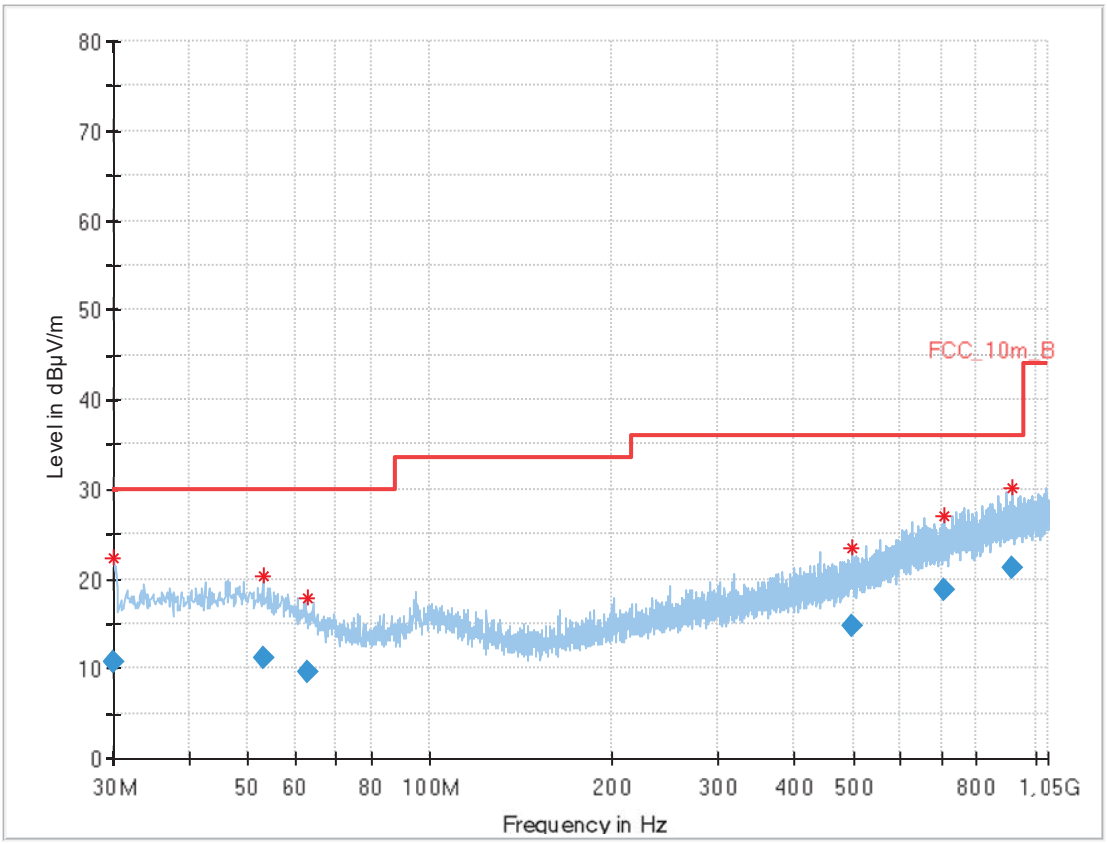
Plot 3: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-1; lowest channel



Plot 4: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-1; lowest channel



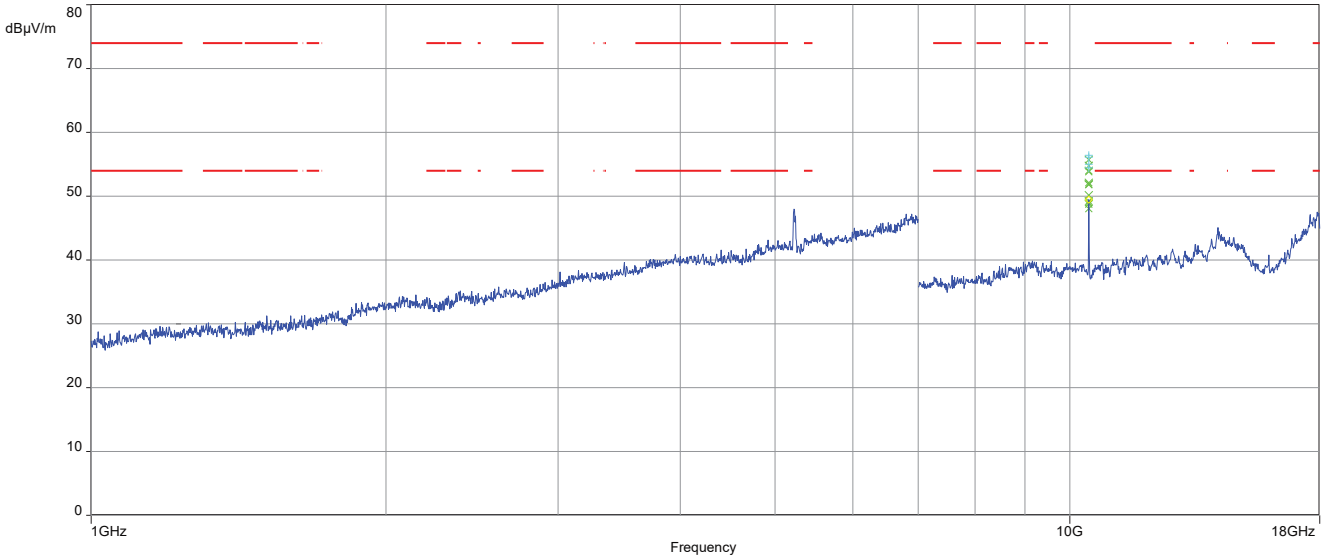
Plot 5: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-1; highest channel



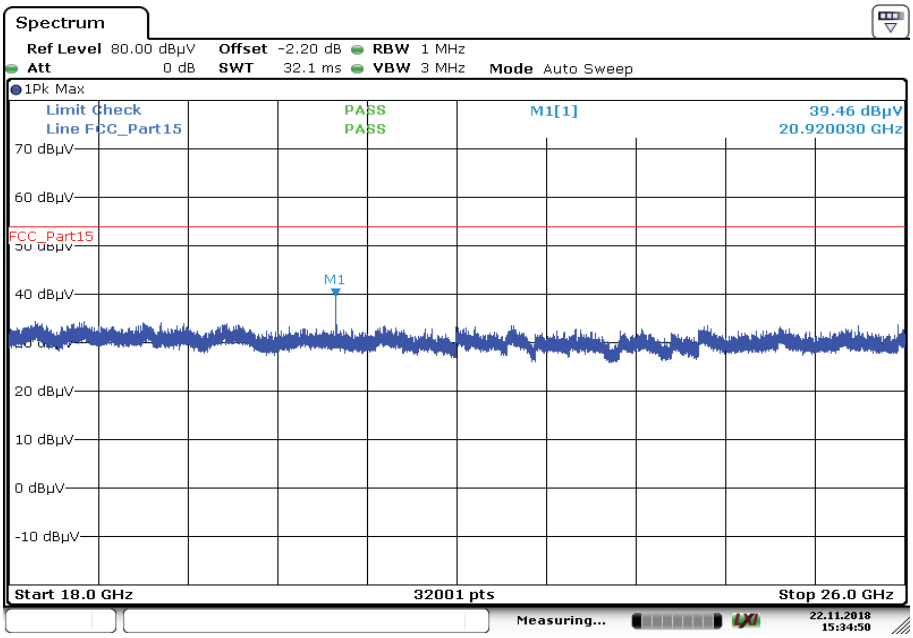
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.009	10.64	30.0	19.36	1000	120	101.0	H	270.0	13.0
53.119	11.22	30.0	18.78	1000	120	101.0	V	180.0	14.5
62.633	9.62	30.0	20.38	1000	120	101.0	V	0.0	12.4
498.787	14.83	36.0	21.17	1000	120	100.0	V	180.0	18.2
707.897	18.77	36.0	17.23	1000	120	170.0	H	90.0	21.3
914.637	21.14	36.0	14.86	1000	120	170.0	H	270.0	23.9

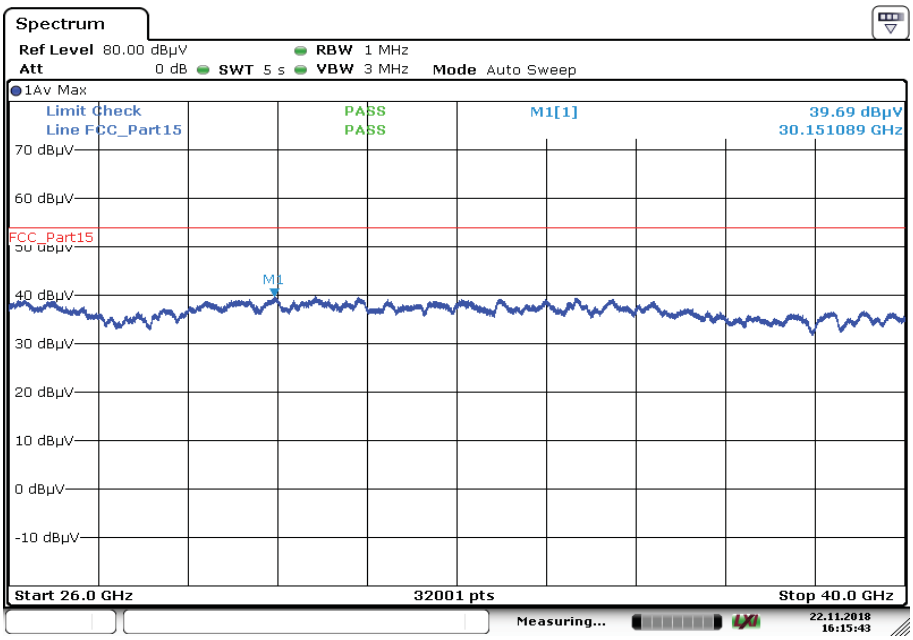
Plot 6: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-1; highest channel



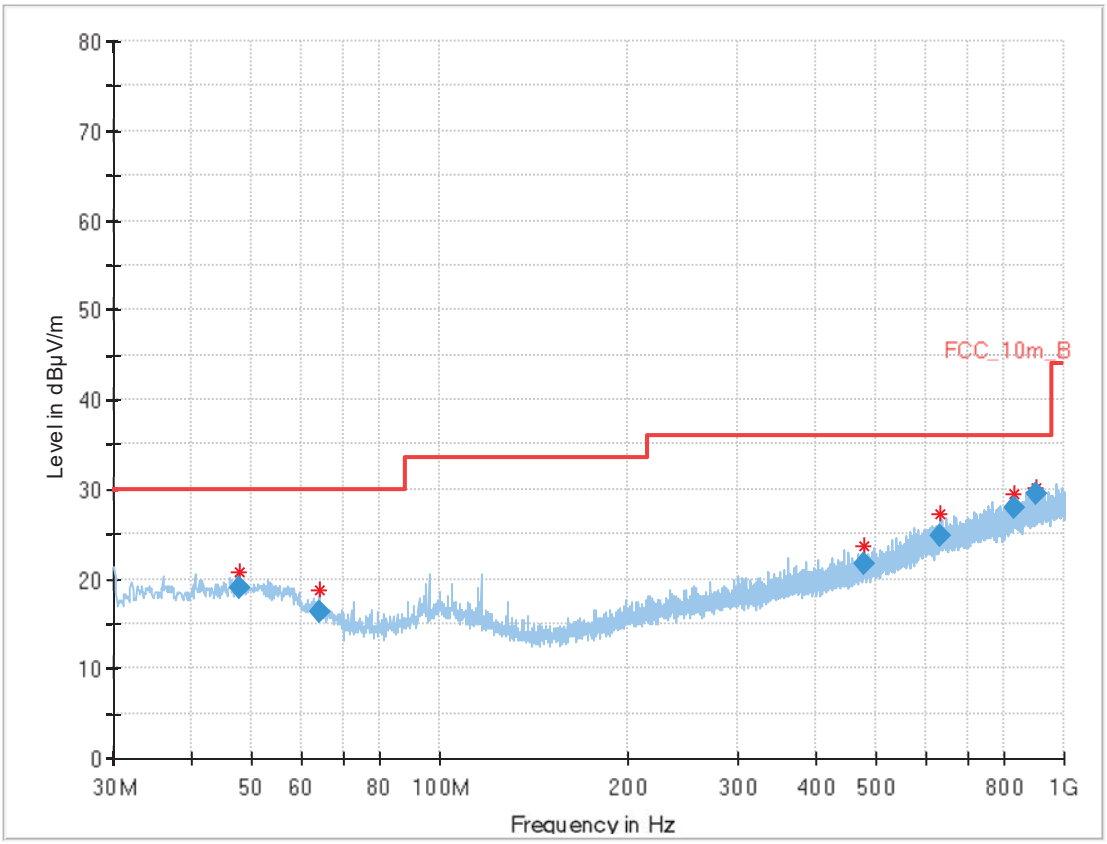
Plot 7: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-1; highest channel



Plot 8: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-1; highest channel



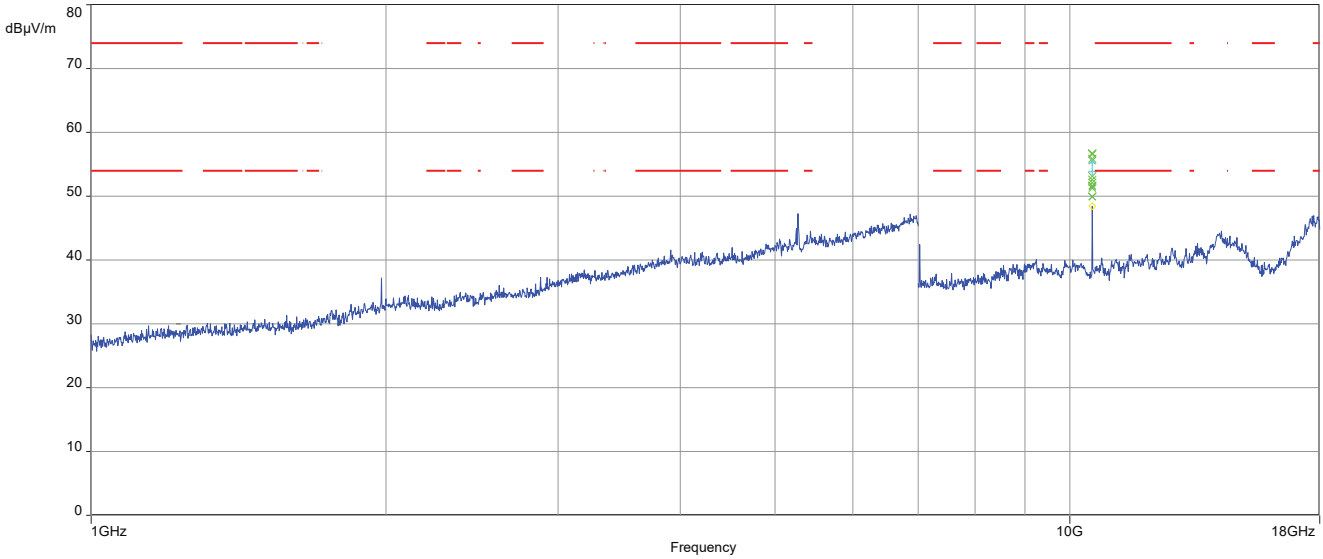
Plot 9: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2A; lowest channel



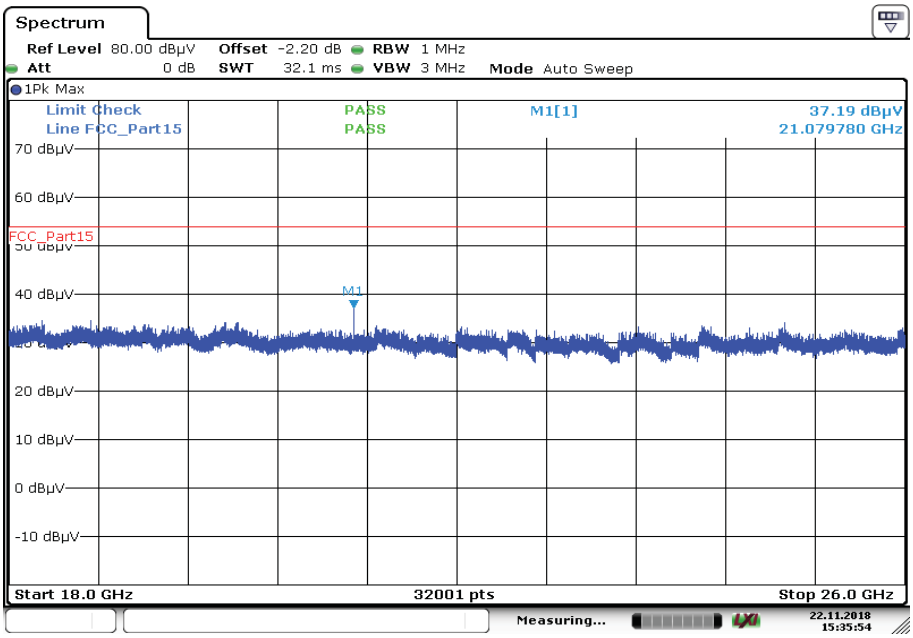
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.826	18.93	30.0	11.07	1000	120	160.0	H	333.0	14.8
64.333	16.31	30.0	13.69	1000	120	160.0	V	13.0	12.0
478.815	21.60	36.0	14.40	1000	120	160.0	V	50.0	17.9
633.968	24.73	36.0	11.27	1000	120	160.0	H	129.0	20.6
830.824	28.01	36.0	7.99	1000	120	160.0	H	1.0	22.9
898.980	29.45	36.0	6.55	1000	120	160.0	H	271.0	23.9

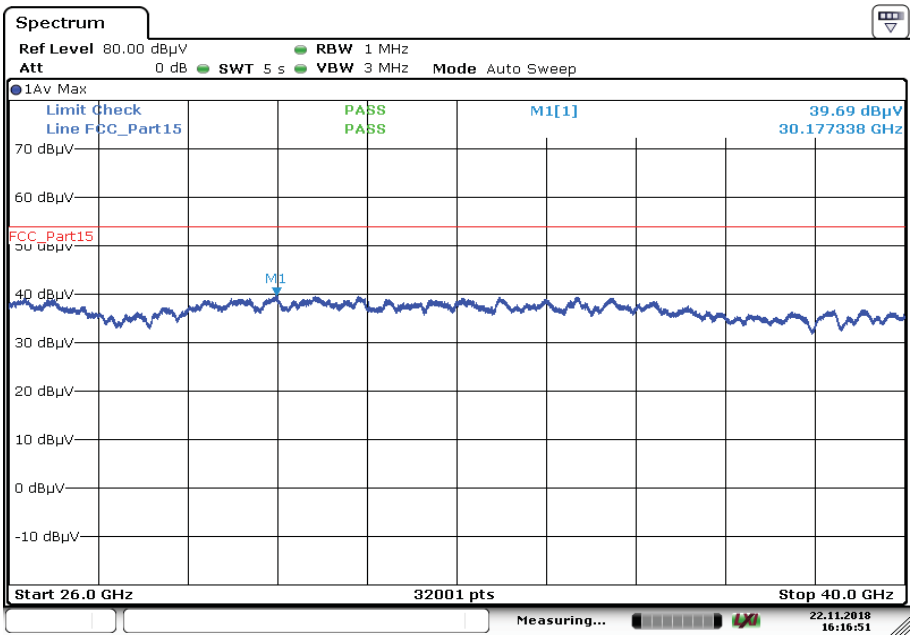
Plot 10: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2A; lowest channel



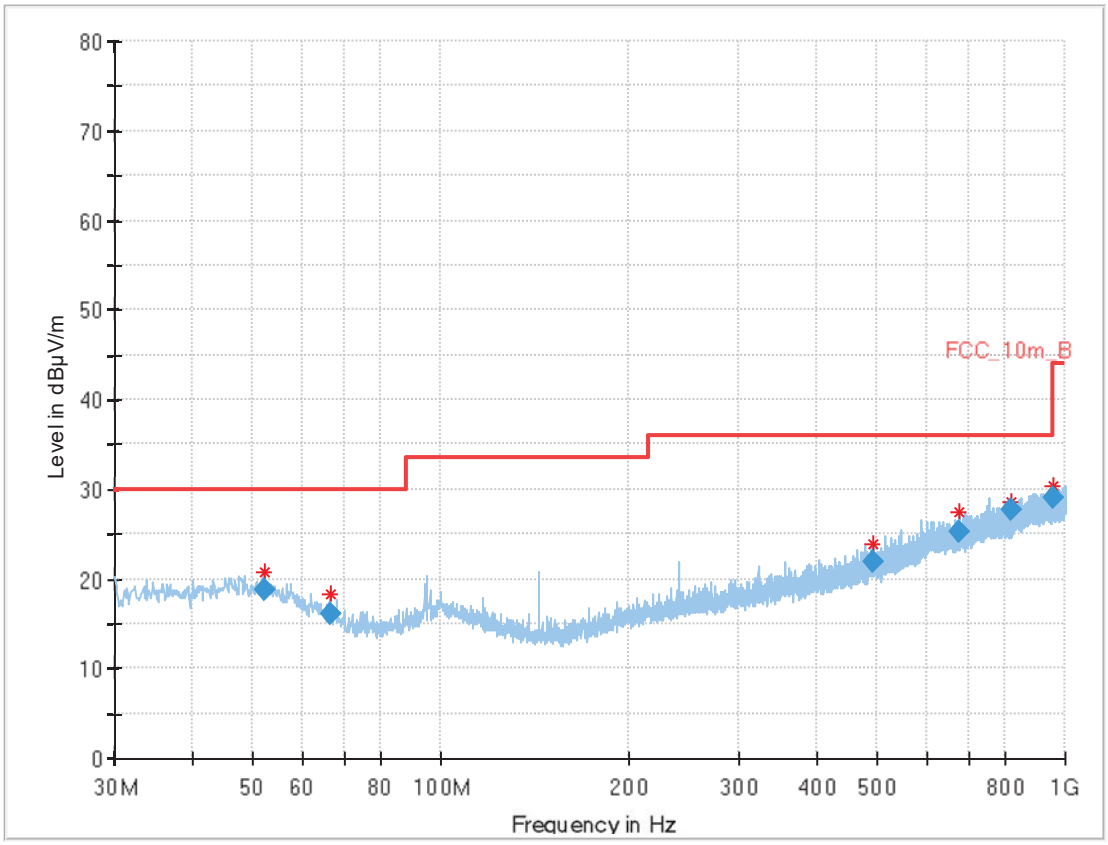
Plot 11: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2A; lowest channel



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



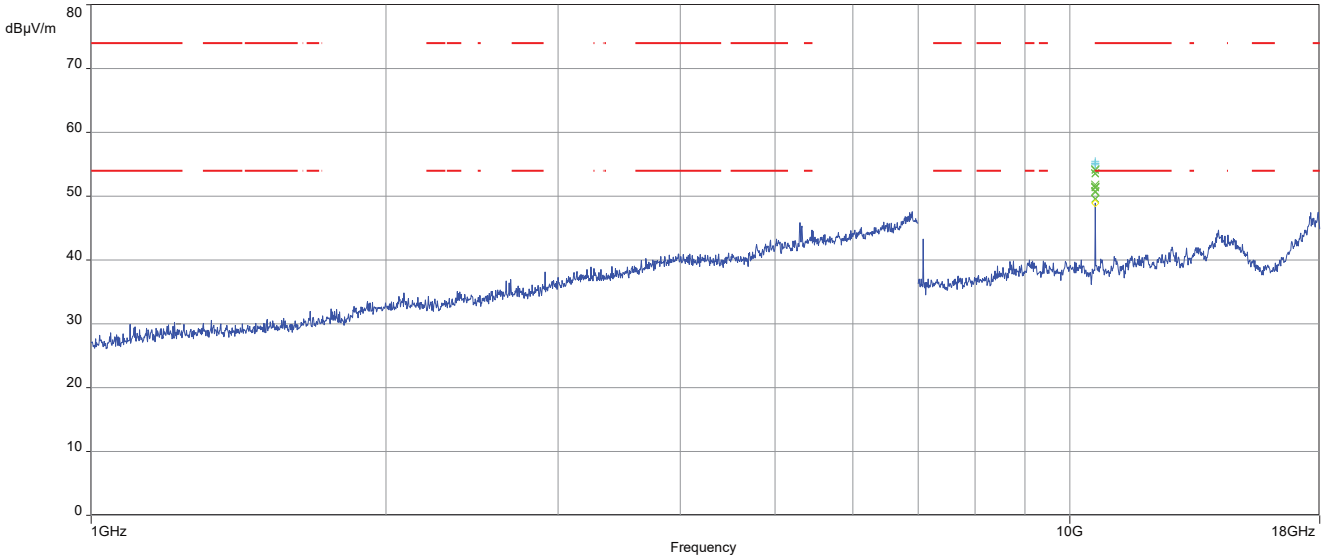
Plot 13: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2A; highest channel



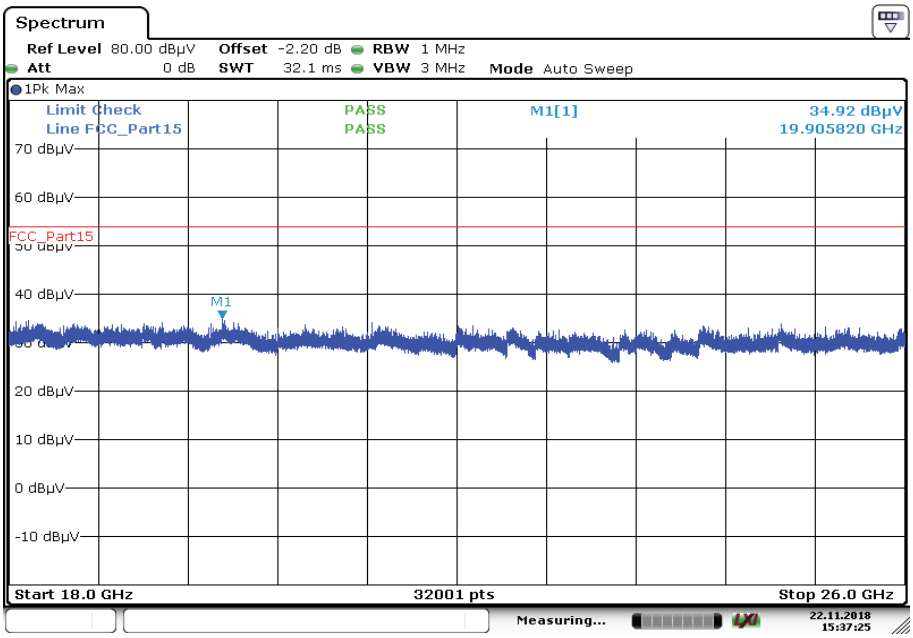
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
52.379	18.73	30.0	11.27	1000	120	101.0	H	159.0	14.6
66.564	16.03	30.0	13.97	1000	120	98.0	V	313.0	11.5
490.996	21.88	36.0	14.12	1000	120	98.0	V	97.0	18.1
675.525	25.16	36.0	10.84	1000	120	98.0	H	86.0	20.9
821.096	27.69	36.0	8.31	1000	120	160.0	H	339.0	22.7
955.239	29.09	36.0	6.91	1000	120	160.0	V	165.0	24.1

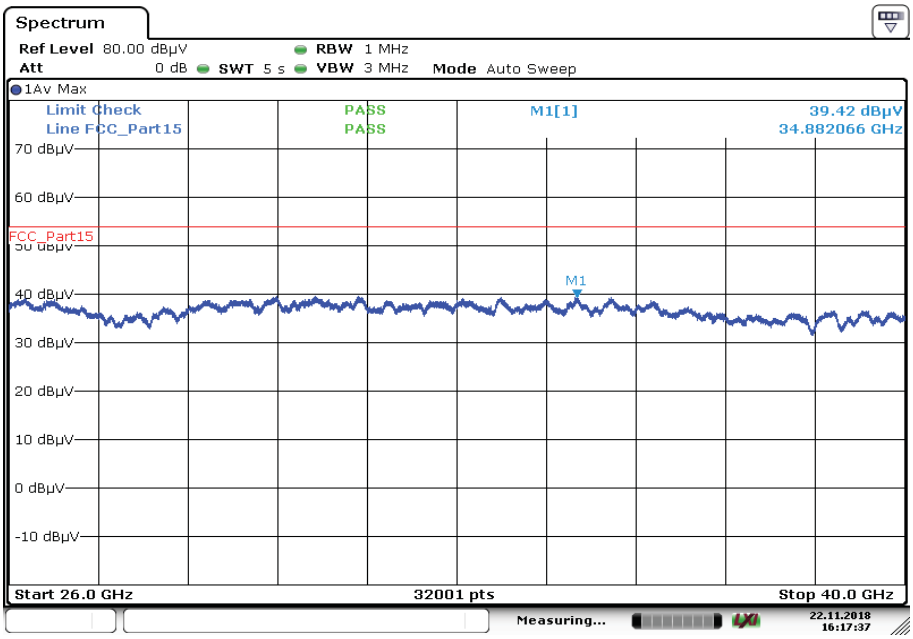
Plot 14: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2A; highest channel



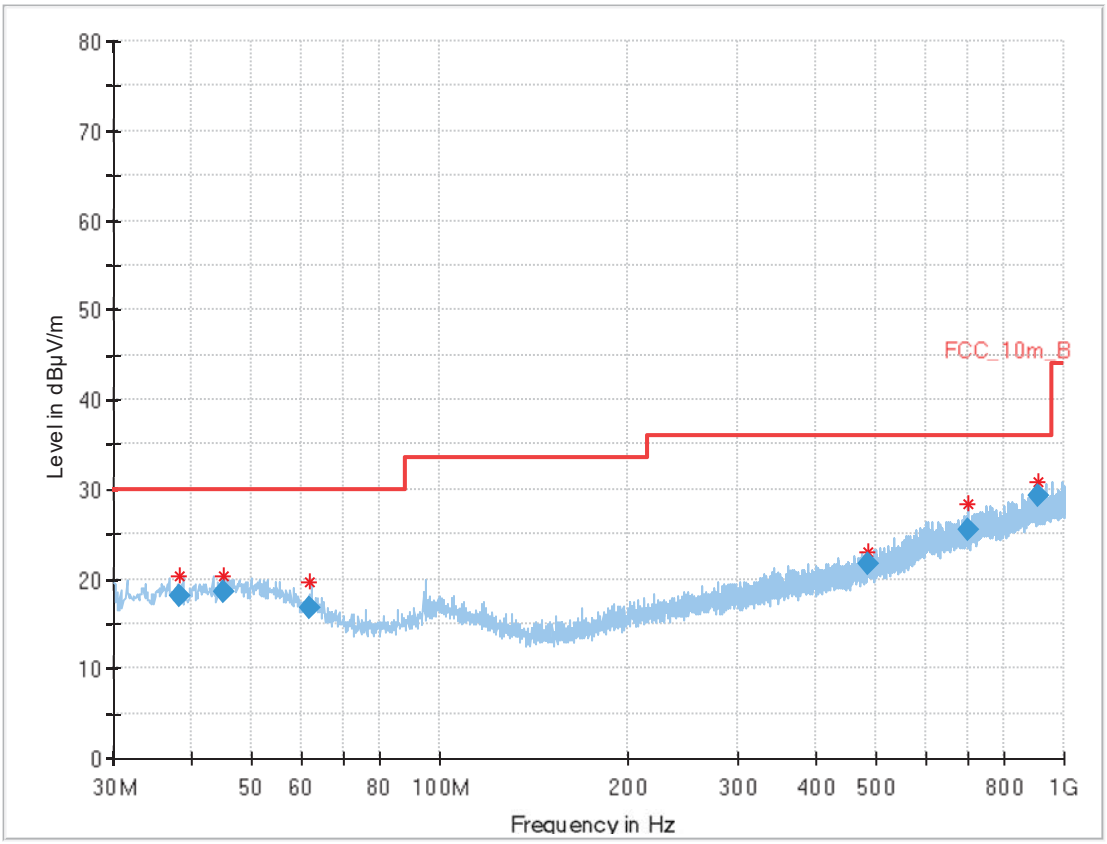
Plot 15: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2A; highest channel



Plot 16: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-2A; highest channel



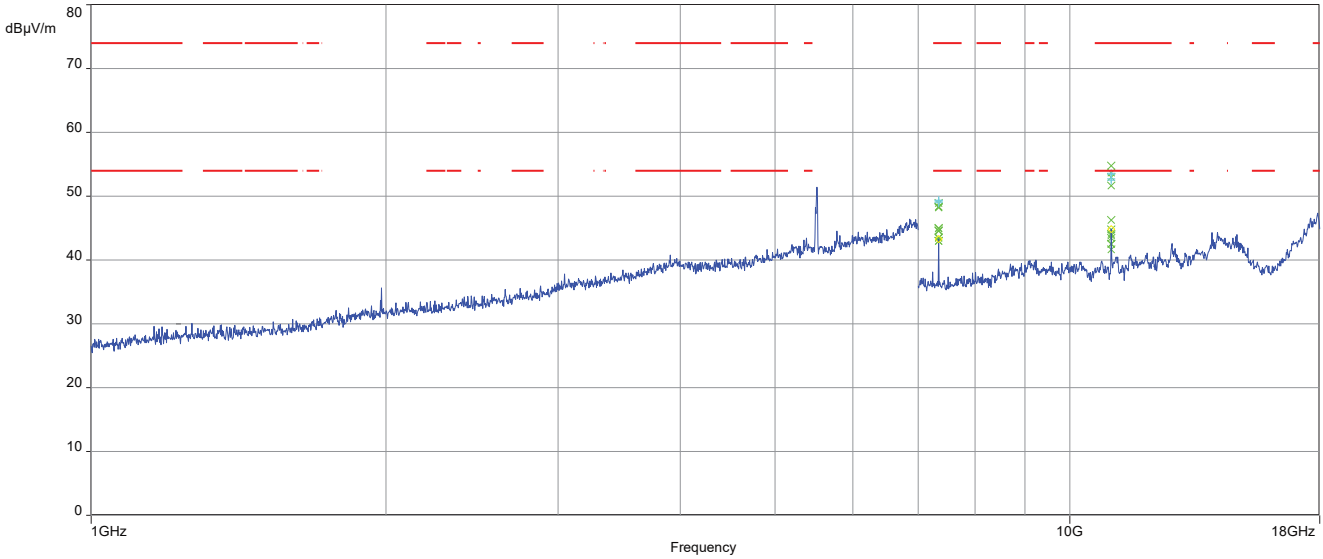
Plot 17: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2C; lowest channel



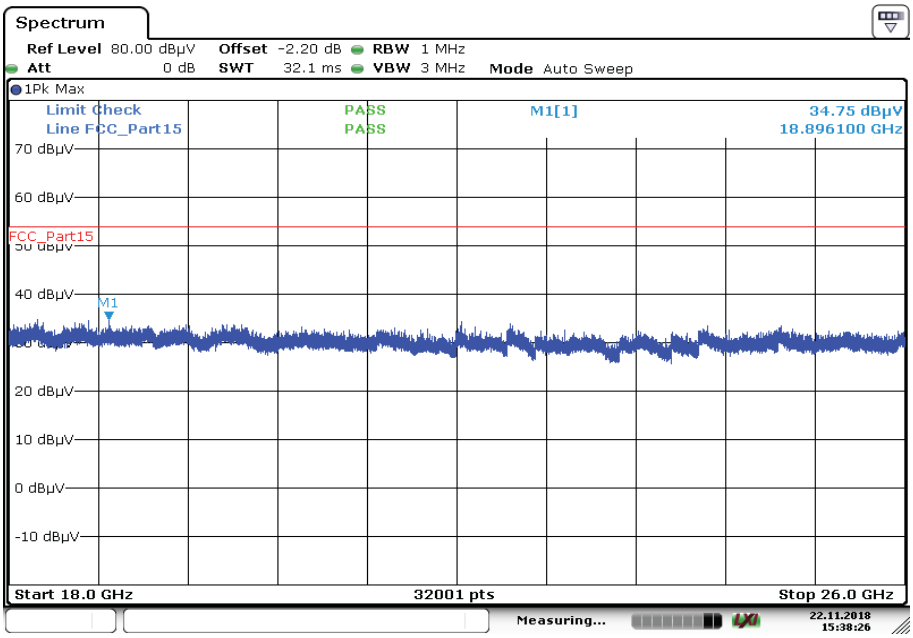
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
38.280	18.06	30.0	11.94	1000	120	101.0	H	0.0	14.2
45.100	18.60	30.0	11.40	1000	120	101.0	H	119.0	14.8
61.966	16.73	30.0	13.27	1000	120	101.0	H	0.0	12.5
485.164	21.73	36.0	14.27	1000	120	101.0	H	330.0	18.0
700.970	25.48	36.0	10.52	1000	120	101.0	V	347.0	21.2
911.376	29.37	36.0	6.63	1000	120	160.0	V	156.0	23.9

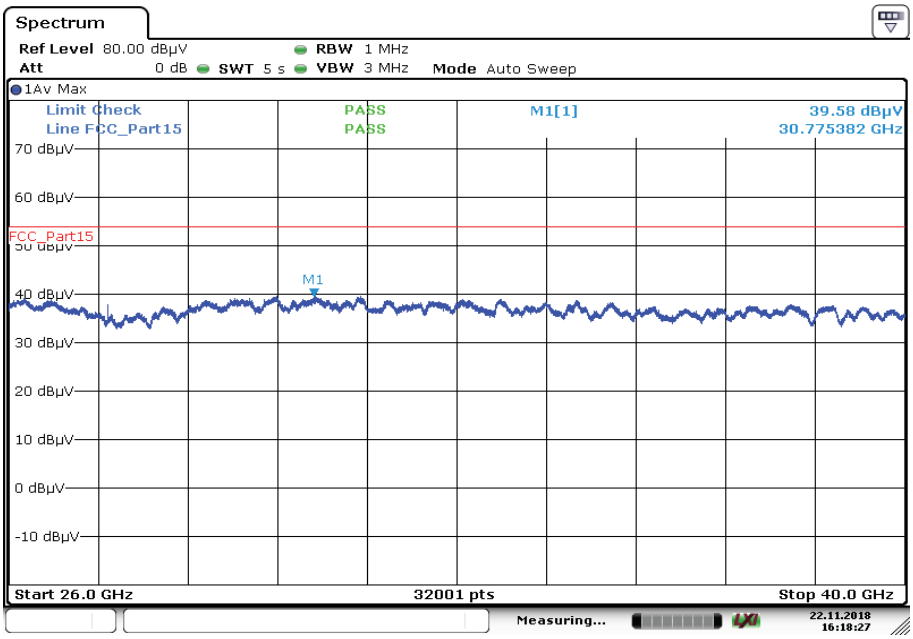
Plot 18: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2C; lowest channel



Plot 19: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2C; lowest channel

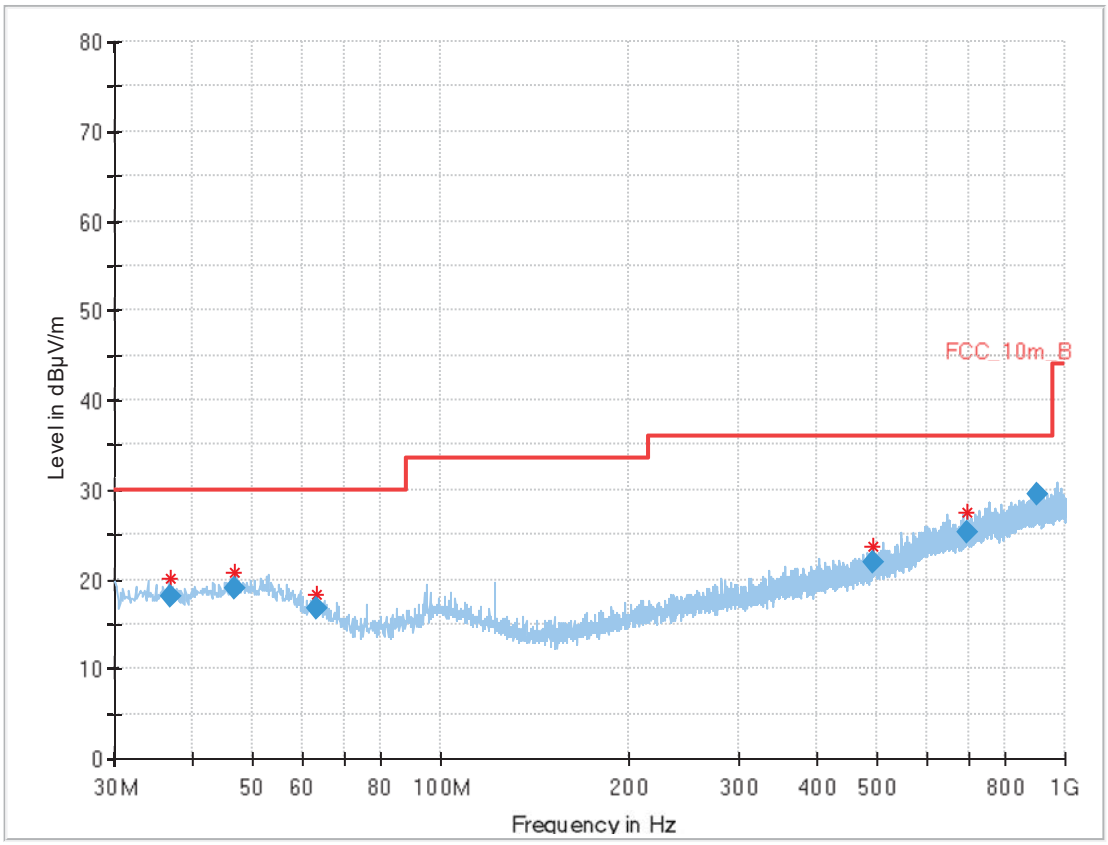


Plot 20: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-2C; lowest channel



Date: 22.NOV.2018 16:18:27

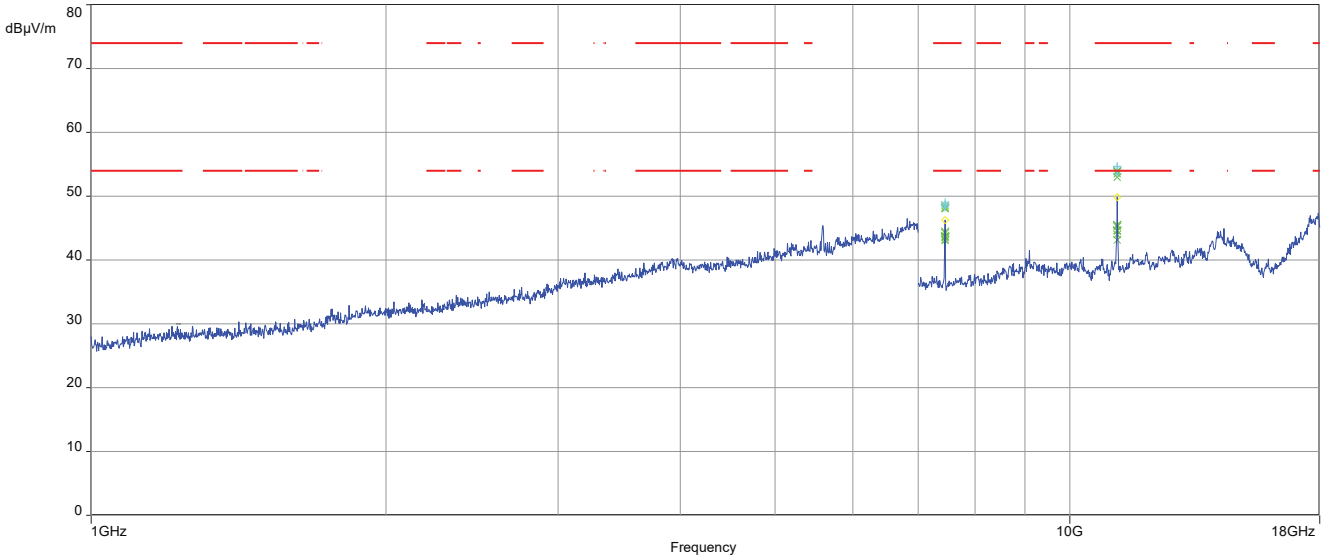
Plot 21: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2C; middle channel



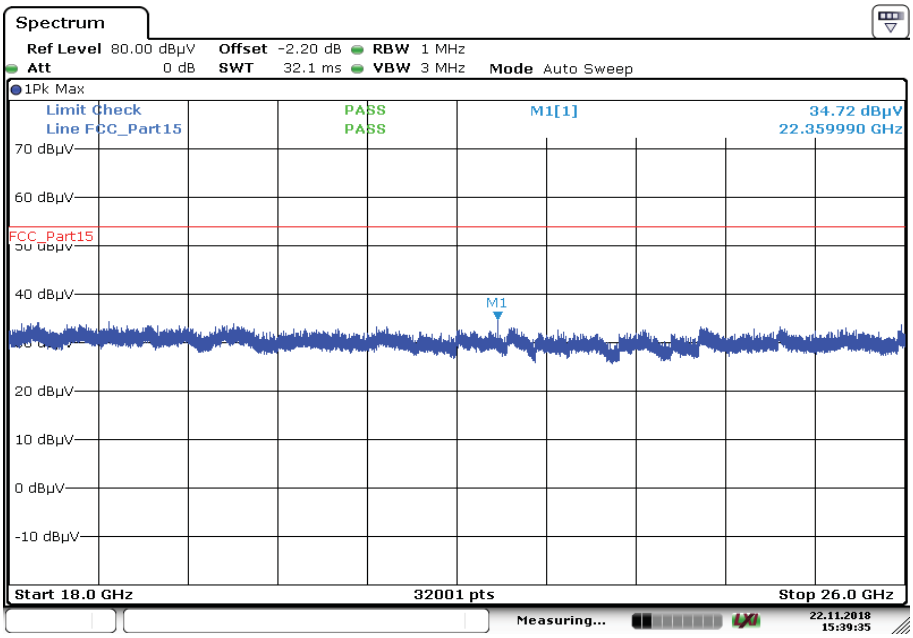
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
37.004	18.18	30.0	11.82	1000	120	101.0	H	160.0	14.0
46.572	18.89	30.0	11.11	1000	120	160.0	V	30.0	14.8
63.294	16.65	30.0	13.35	1000	120	101.0	V	90.0	12.3
493.223	21.85	36.0	14.15	1000	120	101.0	H	121.0	18.1
695.651	25.34	36.0	10.66	1000	120	160.0	H	8.0	21.1
900.021	29.39	36.0	6.61	1000	120	101.0	V	193.0	23.9

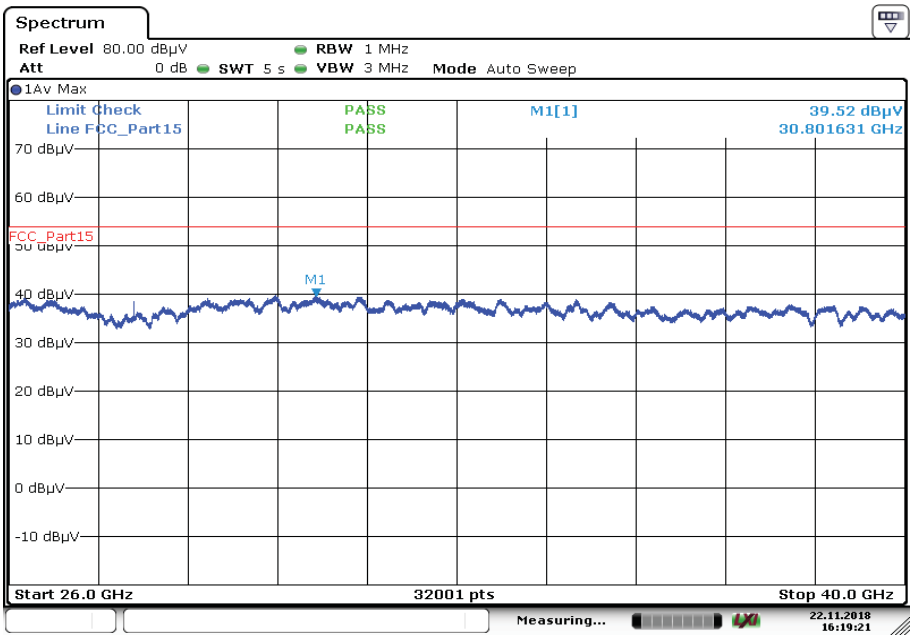
Plot 22: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2C; middle channel



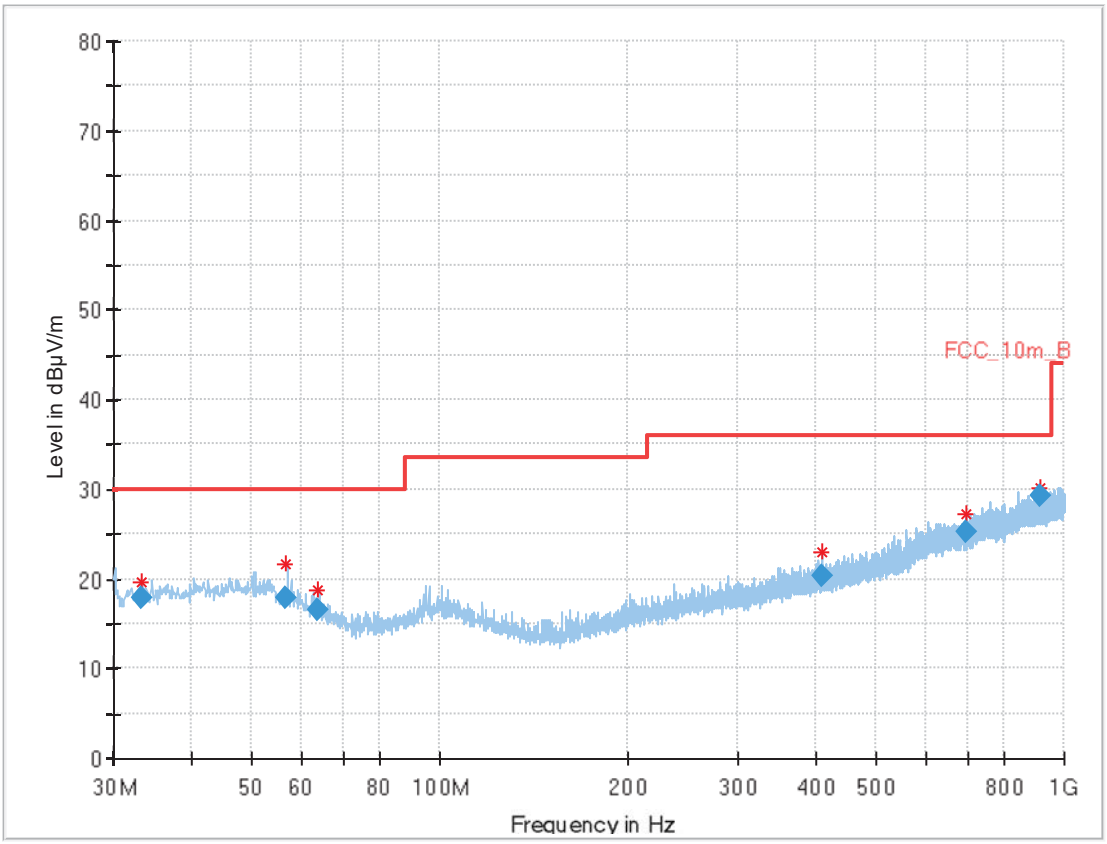
Plot 23: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2C; middle channel



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



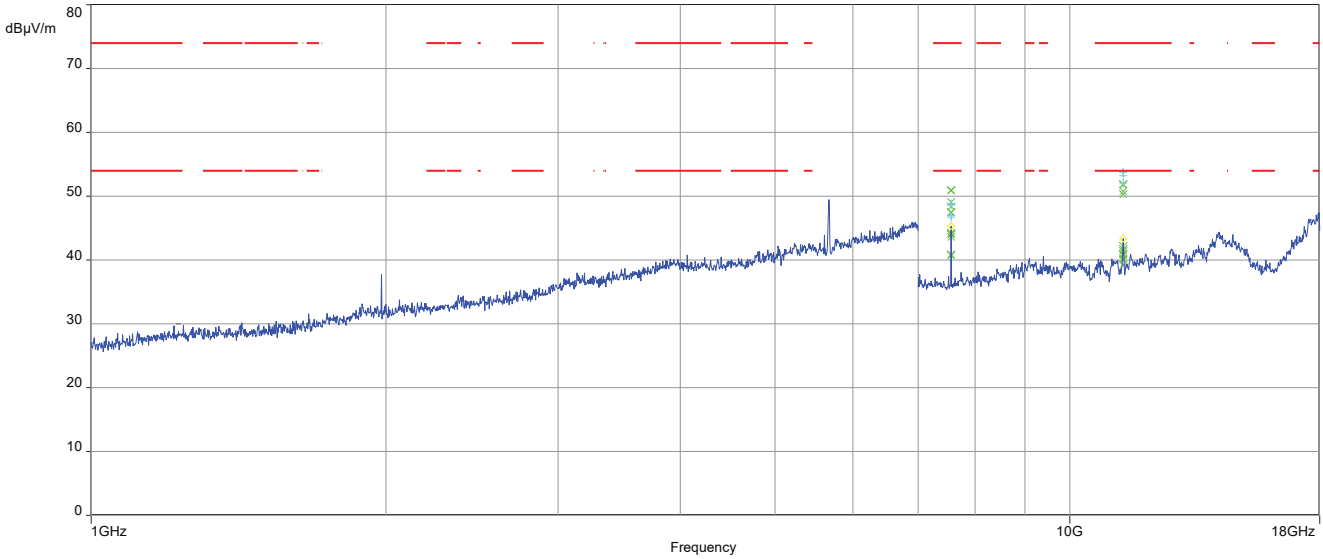
Plot 25: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-2C; highest channel



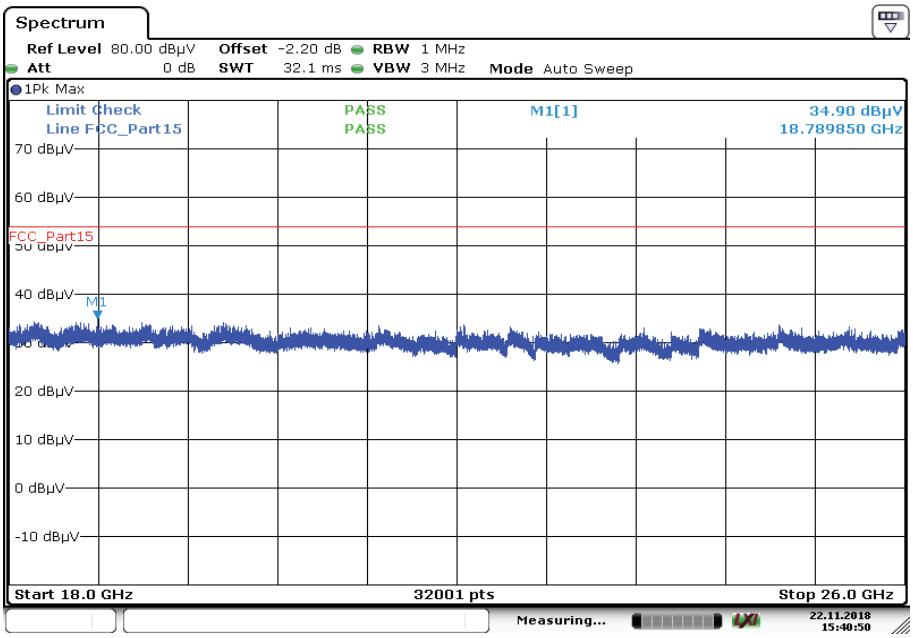
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
33.237	17.86	30.0	12.14	1000	120	100.0	V	0.0	13.5
56.610	17.95	30.0	12.05	1000	120	101.0	V	47.0	13.8
63.895	16.56	30.0	13.44	1000	120	101.0	V	181.0	12.1
408.973	20.29	36.0	15.71	1000	120	160.0	V	14.0	16.8
696.126	25.33	36.0	10.67	1000	120	160.0	H	95.0	21.1
917.795	29.24	36.0	6.76	1000	120	98.0	V	0.0	23.9

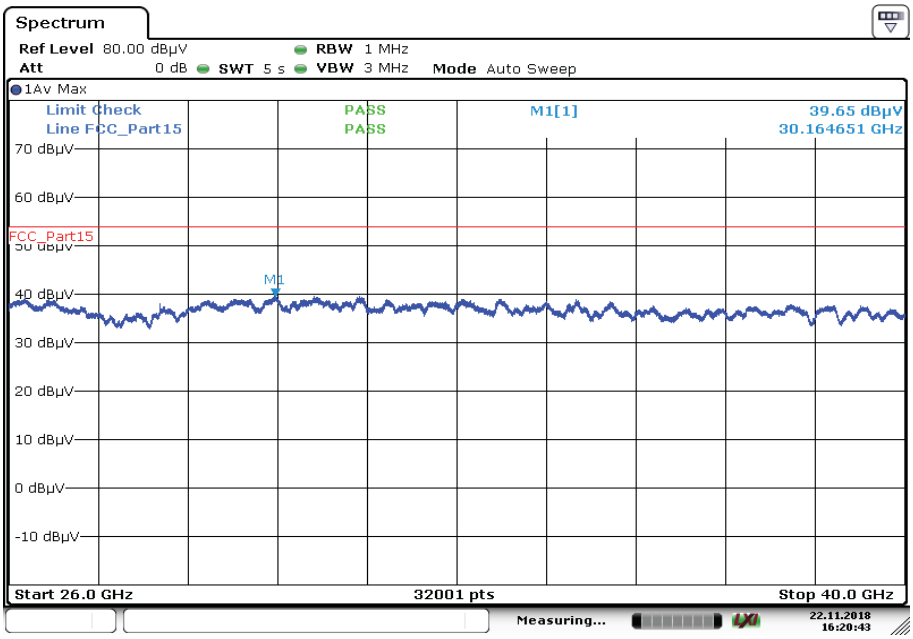
Plot 26: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-2C; highest channel



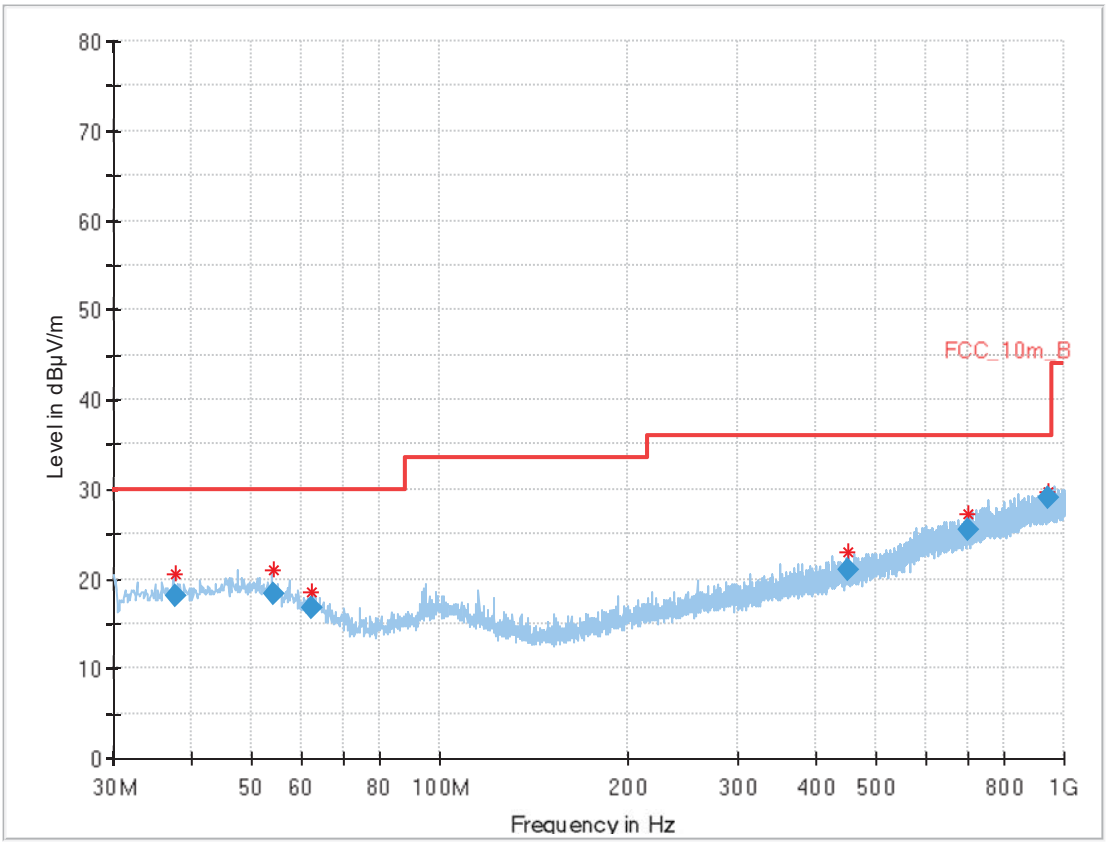
Plot 27: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-2C; highest channel



Plot 28: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-2C; highest channel



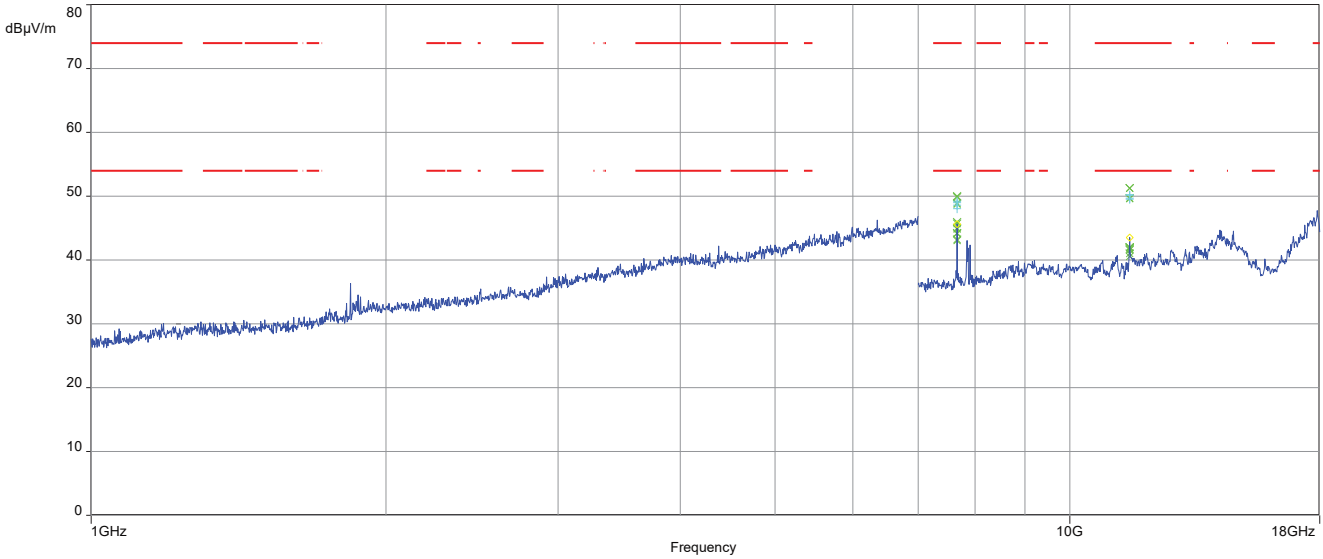
Plot 29: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-3; lowest channel



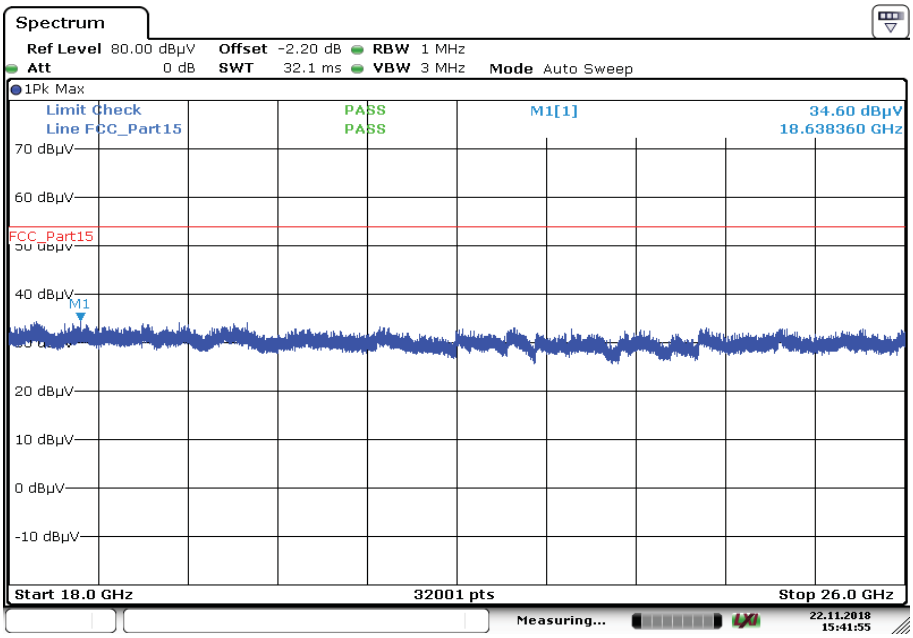
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
37.596	18.10	30.0	11.90	1000	120	160.0	H	55.0	14.1
54.190	18.39	30.0	11.61	1000	120	101.0	H	18.0	14.3
62.474	16.66	30.0	13.34	1000	120	160.0	H	64.0	12.4
450.471	20.96	36.0	15.04	1000	120	160.0	V	65.0	17.3
701.472	25.47	36.0	10.53	1000	120	160.0	V	180.0	21.2
944.215	29.14	36.0	6.86	1000	120	160.0	V	338.0	24.0

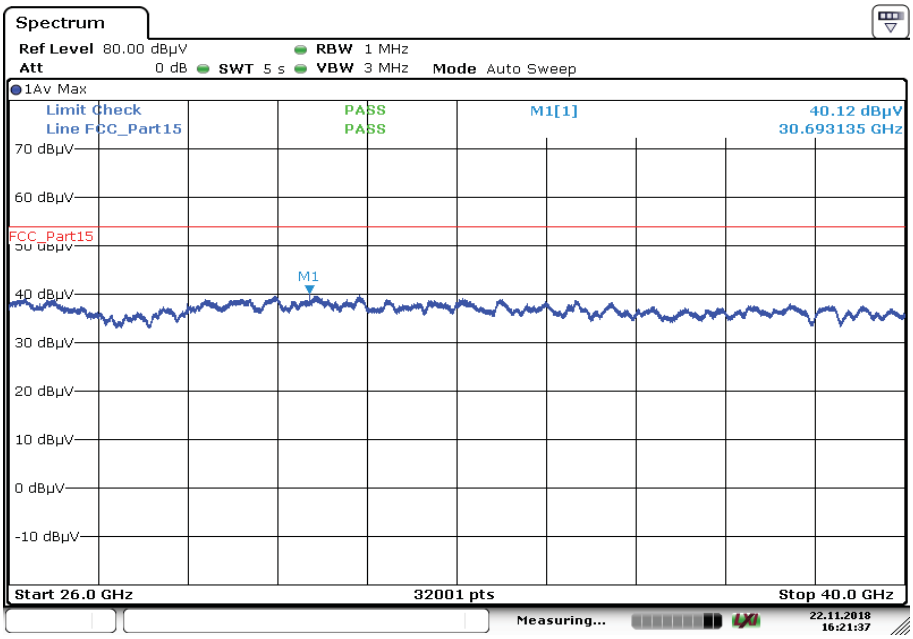
Plot 30: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-3; lowest channel



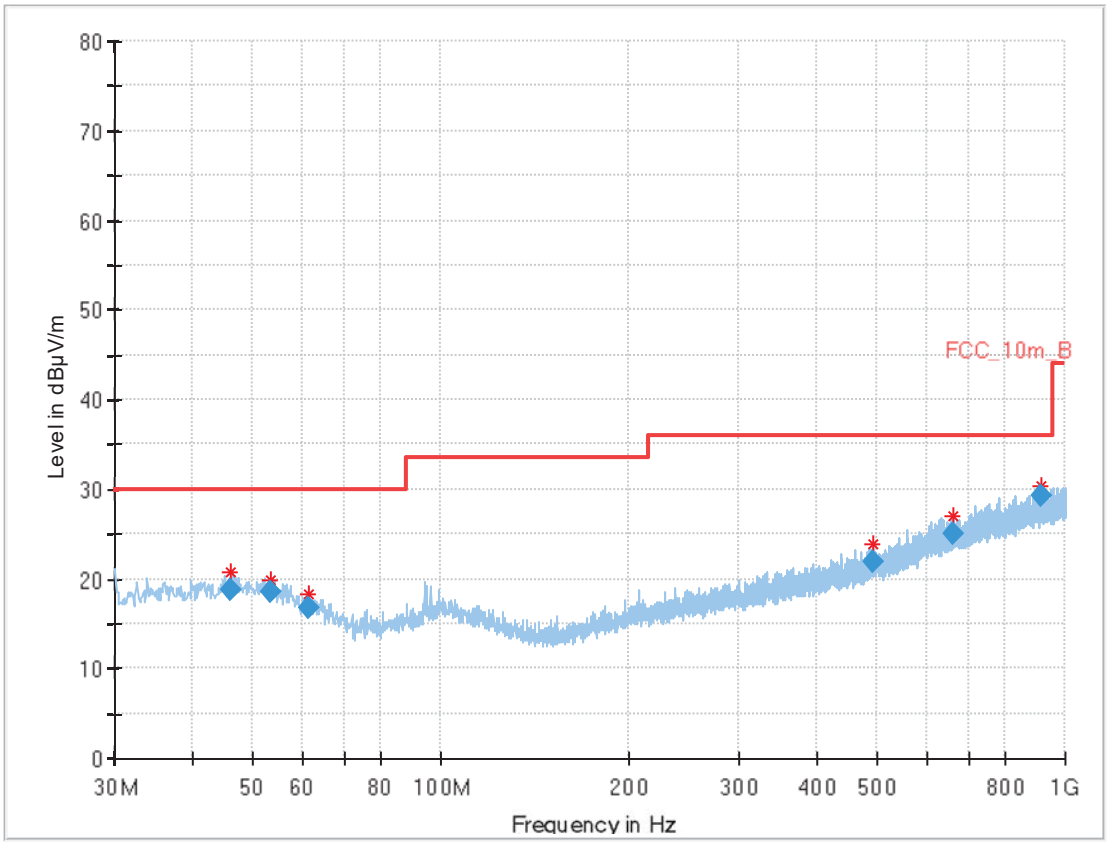
Plot 31: 18 GHz to 26 GHz; vertical & horizontal polarization; U-NII-3; lowest channel



Plot 32: 26 GHz to 40 GHz; vertical & horizontal polarization; U-NII-3; lowest channel



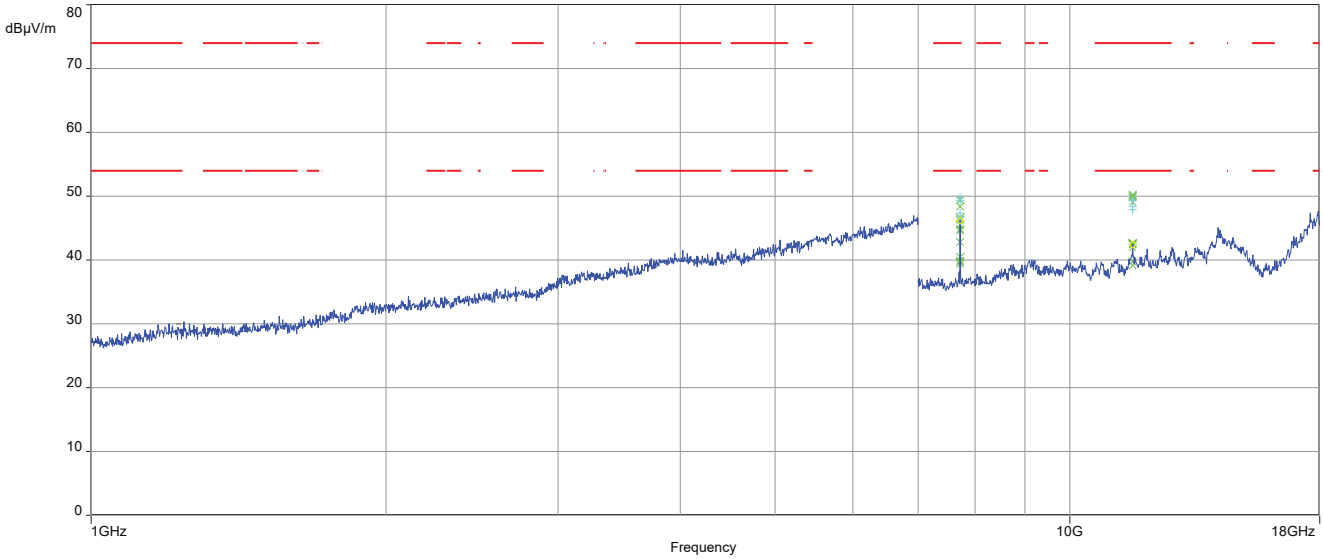
Plot 33: 30 MHz to 1 GHz; vertical & horizontal polarization; U-NII-3; highest channel



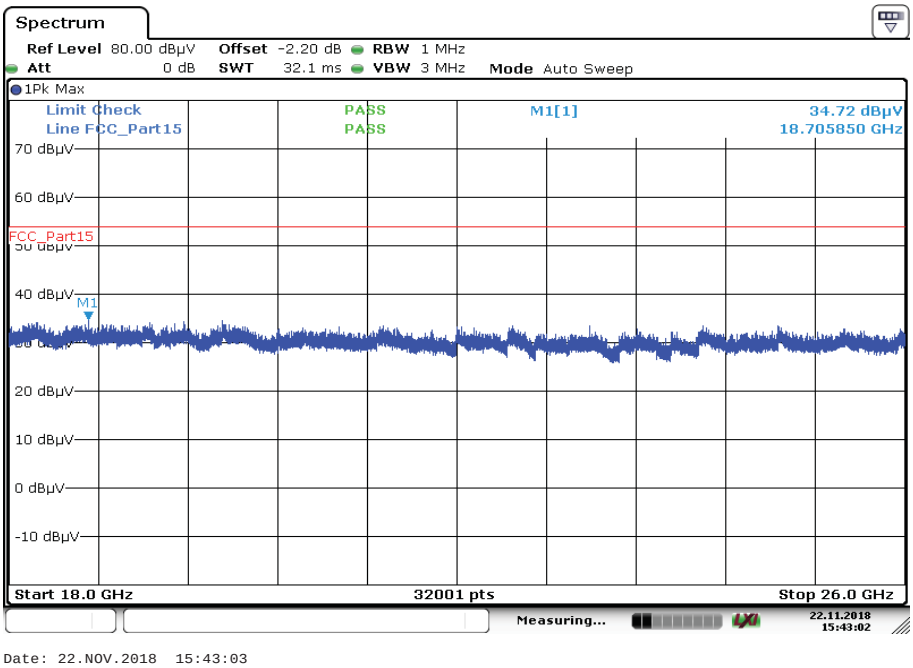
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
45.937	18.79	30.0	11.21	1000	120	160.0	V	340.0	14.8
53.444	18.60	30.0	11.40	1000	120	101.0	H	319.0	14.4
61.596	16.72	30.0	13.28	1000	120	101.0	H	334.0	12.6
493.542	21.89	36.0	14.11	1000	120	160.0	V	349.0	18.1
663.479	25.06	36.0	10.94	1000	120	160.0	H	256.0	20.9
916.216	29.31	36.0	6.69	1000	120	98.0	V	312.0	23.9

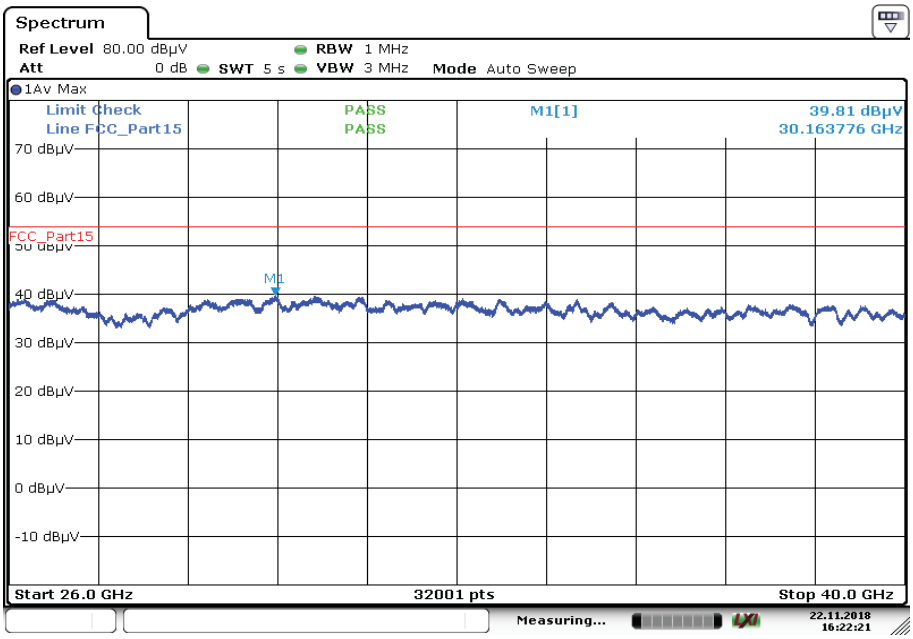
Plot 34: 1 GHz to 18 GHz; vertical & horizontal polarization; U-NII-3; highest channel



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



Date: 22.NOV.2018 16:22:22

11.12 RX spurious emissions radiated

Description:

Measurement of the radiated spurious emissions in idle/receive mode.

Measurement:

Measurement parameter	
Detector:	Quasi Peak below 1 GHz (alternative Peak) Peak above 1 GHz / RMS
Sweep time:	Auto
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Video bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: ≥ 3 MHz
Span:	30 MHz 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 6.2 – B
Measurement uncertainty:	See sub clause 8

Limits:

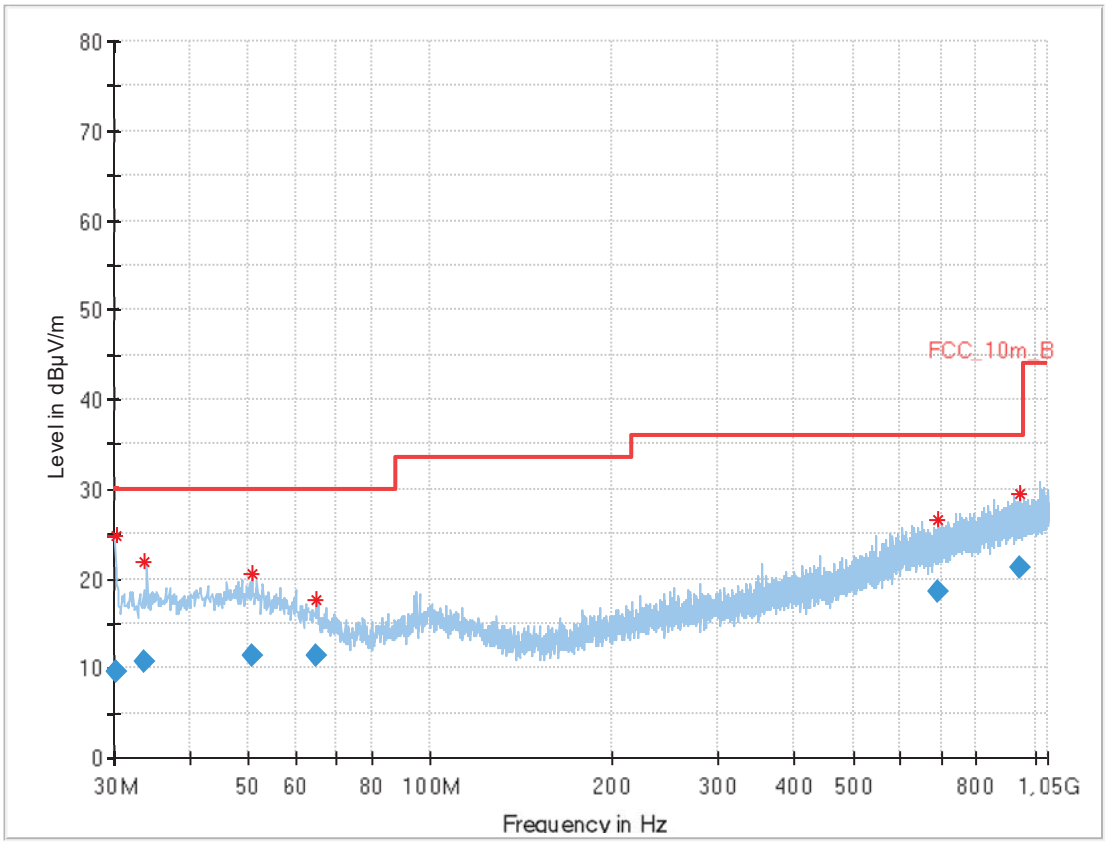
RX Spurious Emissions Radiated		
Frequency (MHz)	Field Strength (dBµV/m)	Measurement distance
30 - 88	30.0	10
88 – 216	33.5	10
216 – 960	36.0	10
Above 960	54.0	3

Results:

RX Spurious Emissions Radiated [dBµV/m]		
F [MHz]	Detector	Level [dBµV/m]

Plots:

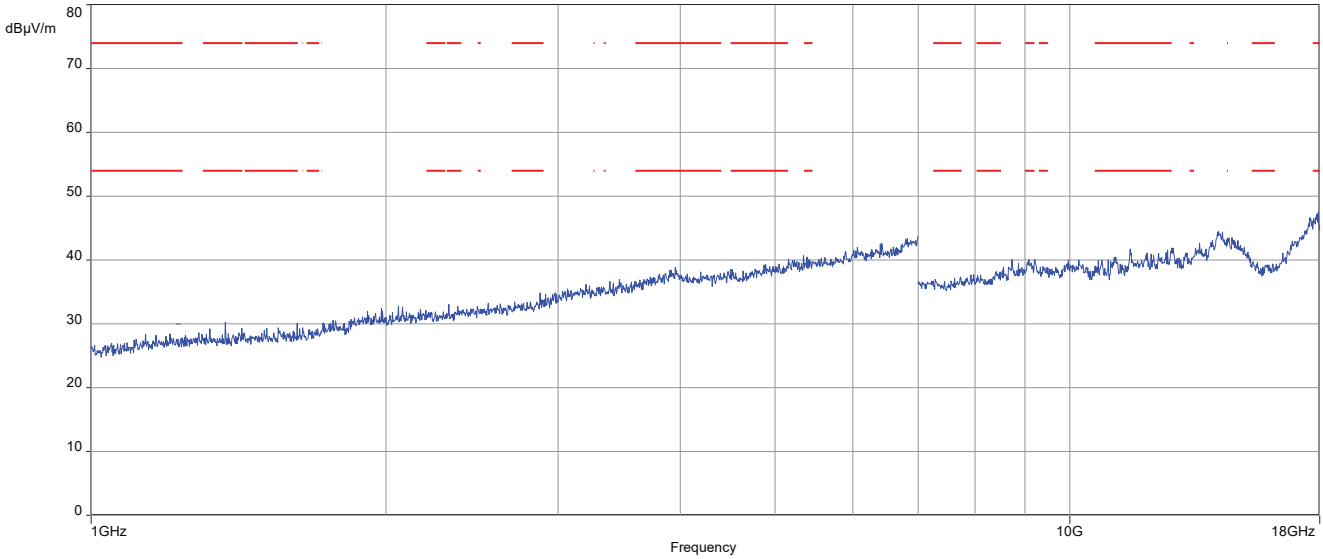
Plot 1: 30 MHz to 1 GHz, vertical & horizontal polarization



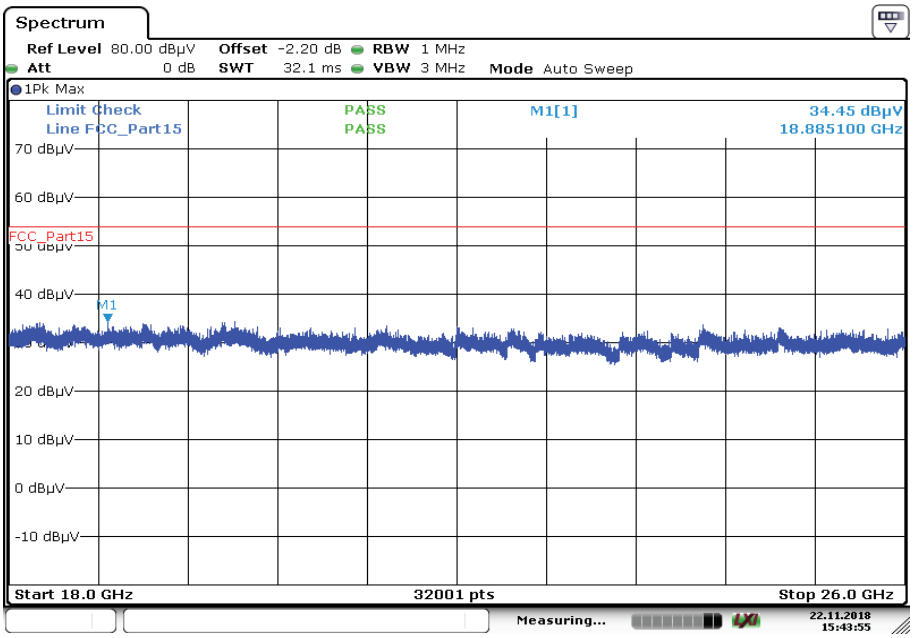
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.253	9.69	30.0	20.31	1000	120	101.0	H	180.0	13.0
33.721	10.75	30.0	19.25	1000	120	101.0	H	90.0	13.6
50.857	11.40	30.0	18.60	1000	120	98.0	H	180.0	14.8
64.796	11.38	30.0	18.62	1000	120	101.0	V	180.0	11.9
691.324	18.52	36.0	17.48	1000	120	100.0	V	0.0	21.1
944.504	21.29	36.0	14.71	1000	120	170.0	V	0.0	24.0

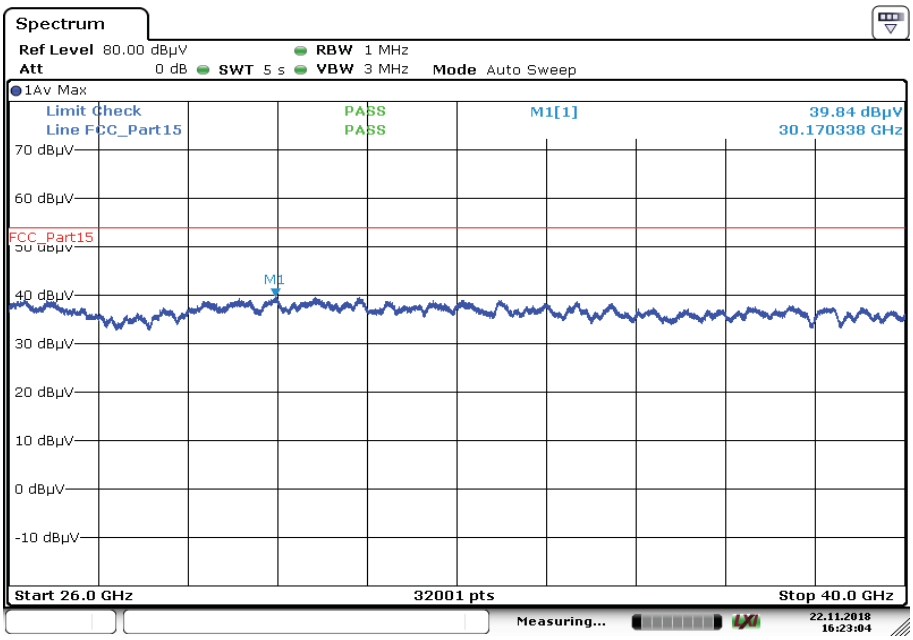
Plot 2: 1 GHz to 18 GHz, vertical & horizontal polarization



Plot 3: 18 GHz to 26 GHz, vertical & horizontal polarization



Plot 4: 26 GHz to 40 GHz, vertical & horizontal polarization



12 Observations

No observations except those reported with the single test cases have been made.

Annex A Glossary

EUT	Equipment under test
DUT	Device under test
UUT	Unit under test
GUE	GNSS User Equipment
ETSI	European Telecommunications Standards Institute
EN	European Standard
FCC	Federal Communications Commission
FCC ID	Company Identifier at FCC
IC	Industry Canada
PMN	Product marketing name
HMN	Host marketing name
HVIN	Hardware version identification number
FVIN	Firmware version identification number
EMC	Electromagnetic Compatibility
HW	Hardware
SW	Software
Inv. No.	Inventory number
S/N or SN	Serial number
C	Compliant
NC	Not compliant
NA	Not applicable
NP	Not performed
PP	Positive peak
QP	Quasi peak
AVG	Average
OC	Operating channel
OCW	Operating channel bandwidth
OBW	Occupied bandwidth
OOB	Out of band
DFS	Dynamic frequency selection
CAC	Channel availability check
OP	Occupancy period
NOP	Non occupancy period
DC	Duty cycle
PER	Packet error rate
CW	Clean wave
MC	Modulated carrier
WLAN	Wireless local area network
RLAN	Radio local area network
DSSS	Dynamic sequence spread spectrum
OFDM	Orthogonal frequency division multiplexing
FHSS	Frequency hopping spread spectrum
GNSS	Global Navigation Satellite System
C/N_0	Carrier to noise-density ratio, expressed in dB-Hz

Annex B Document history

Version	Applied changes	Date of release
-/-	Initial release	2018-12-12
A	PMN changed	2019-09-13

Annex C Accreditation Certificate

first page	last page
DAkkS Deutsche Akkreditierungsstelle Deutsche Akkreditierungsstelle GmbH **Entrusted according to Section 8 subsection 1 AkkStelleG in connection with Section 1 subsection 1 AkkStelleGBV** Signatory to the Multilateral Agreements of EA, ILAC and IAF for Mutual Recognition **Accreditation** The Deutsche Akkreditierungsstelle GmbH attests that the testing laboratory **CTC advanced GmbH** **Untertürkheimer Straße 6-10, 66117 Saarbrücken** is competent under the terms of DIN EN ISO/IEC 17025:2005 to carry out tests in the following fields: **Telecommunication** The accreditation certificate shall only apply in connection with the notice of accreditation of 02.06.2017 with the accreditation number D-PL-12076-01 and is valid until 21.04.2021. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 43 pages. Registration number of the certificate: **D-PL-12076-01-03** Frankfurt, 02.06.2017 Dipl.-Ing. (FH) Ralf Werner Head of Division See notes overleaf.	Deutsche Akkreditierungsstelle GmbH Office Berlin Spittelmarkt 10 10117 Berlin Office Frankfurt am Main Europa-Allee 52 60327 Frankfurt am Main Office Braunschweig Bundesallee 100 38116 Braunschweig The publication of extracts of the accreditation certificate is subject to the prior written approval by Deutsche Akkreditierungsstelle GmbH (DAkkS). Exempted is the unchanged form of separate disseminations of the cover sheet by the conformity assessment body mentioned overleaf. No impression shall be made that the accreditation also extends to fields beyond the scope of accreditation attested by DAkkS. The accreditation was granted pursuant to the Act on the Accreditation Body (AkkStelleG) of 31 July 2009 (Federal Law Gazette I p. 2625) and the Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products (Official Journal of the European Union L 218 of 9 July 2008, p. 30). DAkkS is a signatory to the Multilateral Agreements for Mutual Recognition of the European co-operation for Accreditation (EA), International Accreditation Forum (IAF) and International Laboratory Accreditation Cooperation (ILAC). The signatories to these agreements recognise each other's accreditations. The up-to-date state of membership can be retrieved from the following websites: EA: www.european-accreditation.org ILAC: www.ilac.org IAF: www.iaf.nu

Note: The current certificate annex is published on the website (link see below) of the Accreditation Body DAkkS or may be received by CTC advanced GmbH on request

https://www.dakks.de/as/ast/d/D-PL-12076-01-03e.pdf

################################### END OF TEST REPORT ###################################