

11.10 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 / 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 / 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 C 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 [m]
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: (External antennas)

For the results of the spurious emission tests radiated of all external antennas see “Appendix_to_1-2846/16-02-05-B”

Results: OFDM (20 MHz bandwidth)

TX Spurious Emissions Radiated [dBµV/m] / dBm								
Lowest channel 5180 MHz			-/-			Highest channel 5240 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
For emissions below 1 GHz, please look at the table below the plots.			-/-			For emissions below 1 GHz, please look at the table below the plots.		
-/-	Peak	-/-	-/-	-/-	-/-	-/-	Peak	-/-
	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								
Lowest channel 5260 MHz			-/-			Highest channel 5320 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
For emissions below 1 GHz, please look at the table below the plots.			-/-			For emissions below 1 GHz, please look at the table below the plots.		
-/-	Peak	-/-	-/-	-/-	-/-	10640	Peak	62.5
	AVG	-/-		-/-	-/-		AVG	50.1
-/-	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								
Lowest 5500 MHz			Middle 5600 MHz			Highest 5700 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
For emissions below 1 GHz, please look at the table below the plots.			For emissions below 1 GHz, please look at the table below the plots.			For emissions below 1 GHz, please look at the table below the plots.		
10999	Peak	63.4	11198	Peak	63.3	11400	Peak	61.7
	AVG	50.4		AVG	50.2		AVG	49.8
-/-	Peak	-/-	-/-	Peak	-/-	-/-	Peak	-/-
	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.		

TX Spurious Emissions Radiated [dBµV/m] / dBm								
Lowest 5745 MHz			Middle 5785 MHz			Highest 5825 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
For emissions below 1 GHz, please look at the table below the plots.			For emissions below 1 GHz, please look at the table below the plots.			For emissions below 1 GHz, please look at the table below the plots.		
11492	Peak	61.4	11568	Peak	63.3	11651	Peak	63.4
	AVG	48.8		AVG	50.2		AVG	50.5
-/-	Peak	-/-	-/-	Peak	-/-	-/-	Peak	-/-
	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: OFDM (40 MHz bandwidth)

TX Spurious Emissions Radiated [dBµV/m] / dBm								
Lowest channel 5190 MHz			-/-			Highest channel 5230 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
For emissions below 1 GHz, please look at the table below the plots.			-/-			For emissions below 1 GHz, please look at the table below the plots.		
-/-	Peak	-/-	-/-	-/-	-/-	-/-	Peak	-/-
	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.		

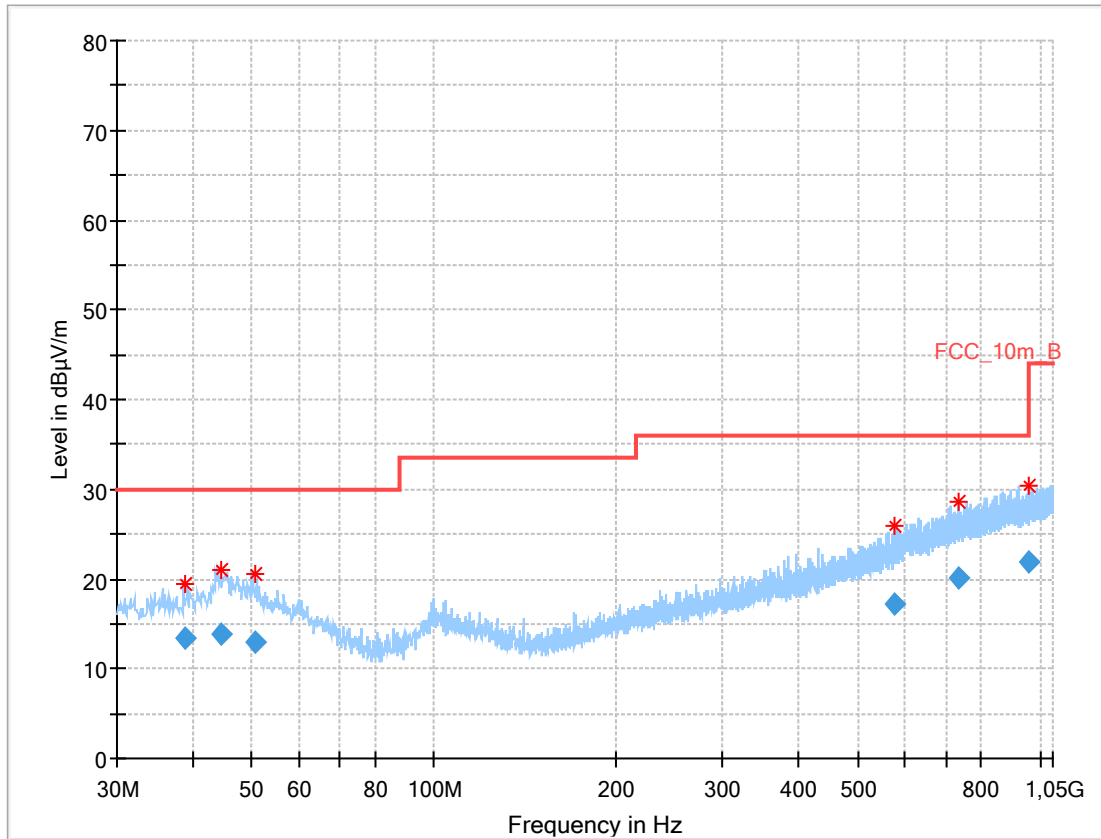
TX Spurious Emissions Radiated [dBµV/m] / dBm								
Lowest channel 5270 MHz			-/-			Highest channel 5310 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
For emissions below 1 GHz, please look at the table below the plots.			-/-			For emissions below 1 GHz, please look at the table below the plots.		
-/-	Peak	-/-	-/-	-/-	-/-	-/-	Peak	-/-
	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								
Lowest 5510 MHz			Middle 5590 MHz			Highest 5670 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
For emissions below 1 GHz, please look at the table below the plots.			For emissions below 1 GHz, please look at the table below the plots.			For emissions below 1 GHz, please look at the table below the plots.		
11020	Peak	58.4	11181	Peak	59.5	11341	Peak	60.0
	AVG	46.5		AVG	47.1		AVG	47.4
-/-	Peak	-/-	-/-	Peak	-/-	-/-	Peak	-/-
	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.		

TX Spurious Emissions Radiated [dBµV/m] / dBm								
Lowest 5755 MHz			-/-			Highest 5795 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
For emissions below 1 GHz, please look at the table below the plots.			-/-			For emissions below 1 GHz, please look at the table below the plots.		
-/-	Peak	-/-	-/-	-/-	-/-	-/-	Peak	-/-
	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.		

Plots: OFDM / 20 MHz bandwidth

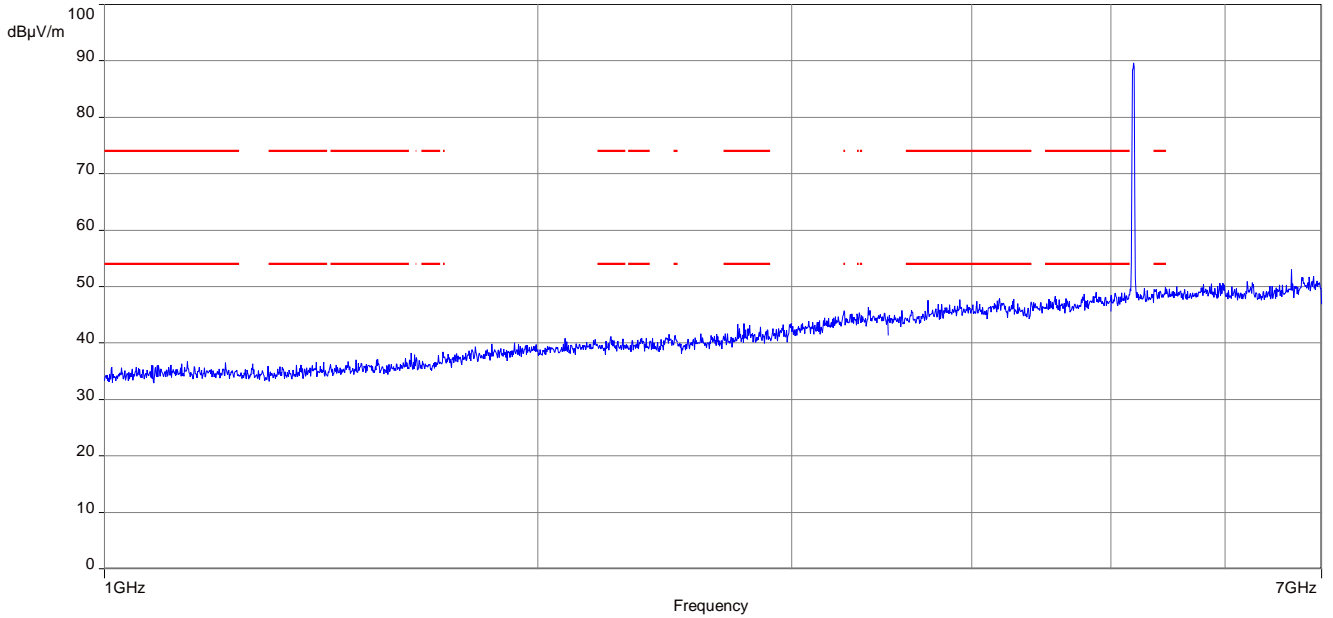
Plot 1: 30 MHz to 1 GHz, 5180 MHz, vertical & horizontal polarization



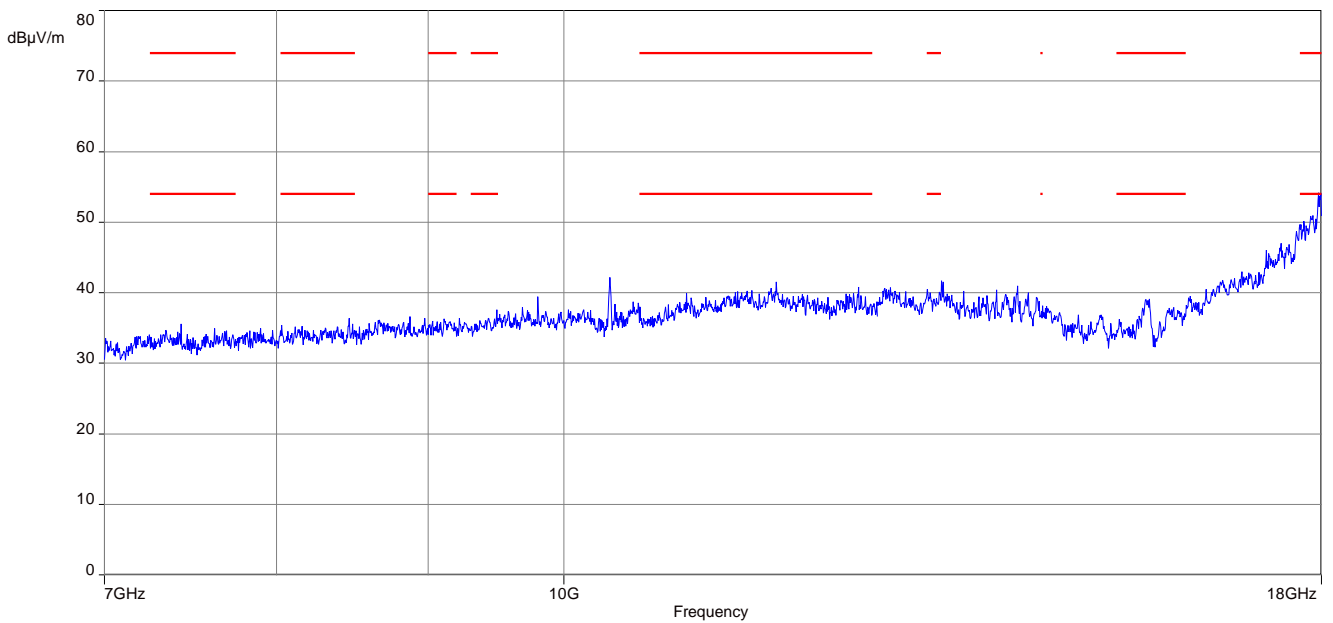
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
38.730450	13.43	30.00	16.57	1000.0	120.000	98.0	V	280.0	13.1
44.534550	13.95	30.00	16.05	1000.0	120.000	185.0	V	353.0	13.6
50.790150	12.93	30.00	17.07	1000.0	120.000	98.0	V	237.0	13.6
576.432900	17.25	36.00	18.75	1000.0	120.000	178.0	H	280.0	20.1
733.131900	20.08	36.00	15.92	1000.0	120.000	185.0	V	100.0	22.3
955.722000	22.00	36.00	14.00	1000.0	120.000	98.0	V	345.0	24.4

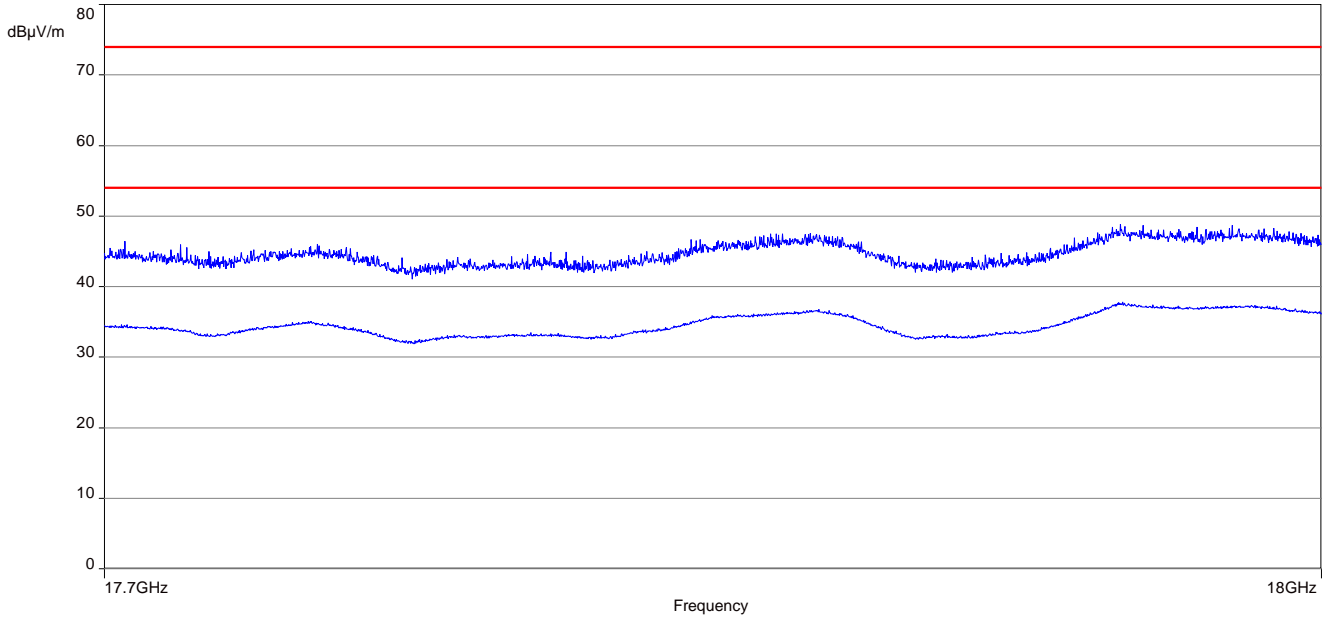
Plot 2: 1 GHz to 7 GHz, 5180 MHz, vertical & horizontal polarization



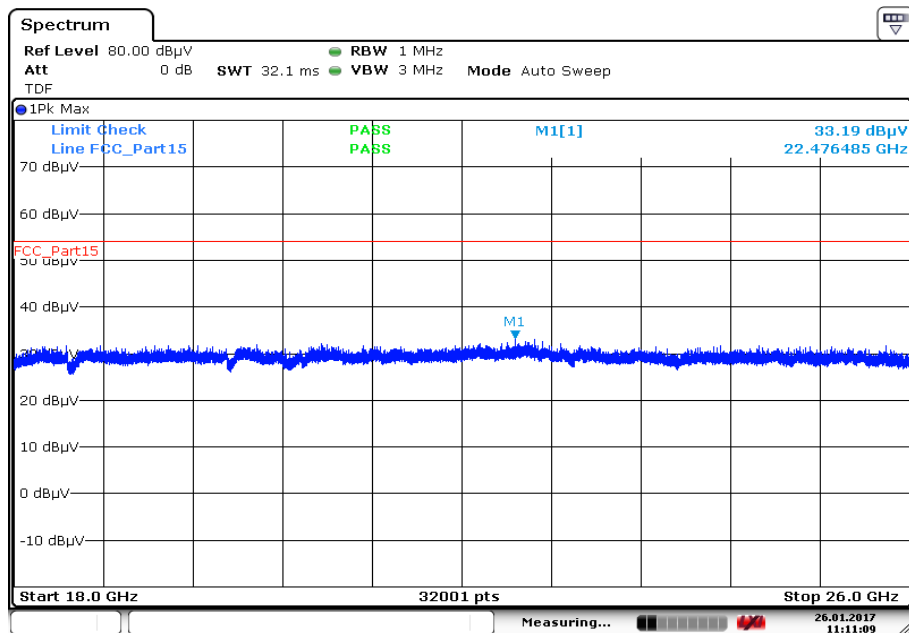
Plot 3: 7 GHz to 18 GHz, 5180 MHz, vertical & horizontal polarization



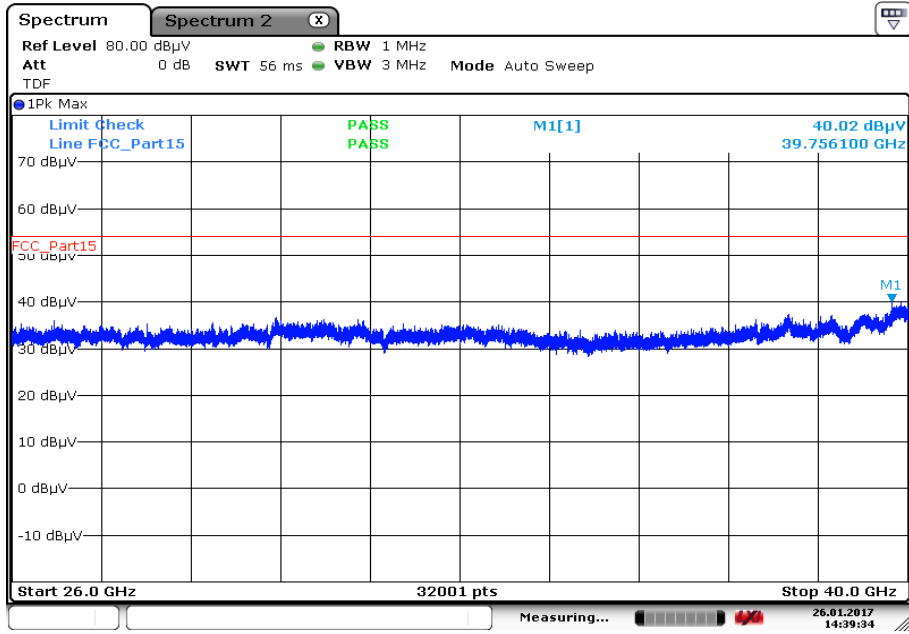
Plot 4: 17.7 GHz to 18 GHz, 5180 MHz, vertical & horizontal polarization



Plot 5: 18 GHz to 26 GHz, 5180 MHz, vertical & horizontal polarization

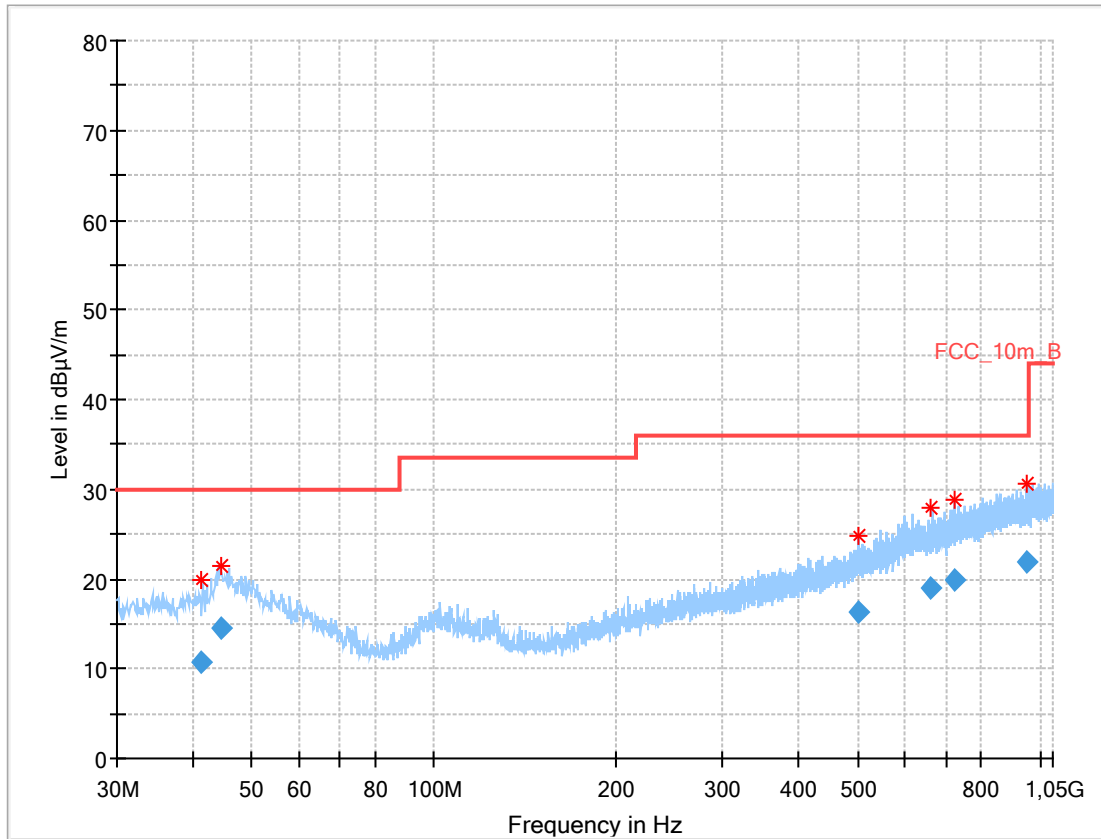


Plot 6: 26 GHz to 40 GHz, 5180 MHz, vertical & horizontal polarization



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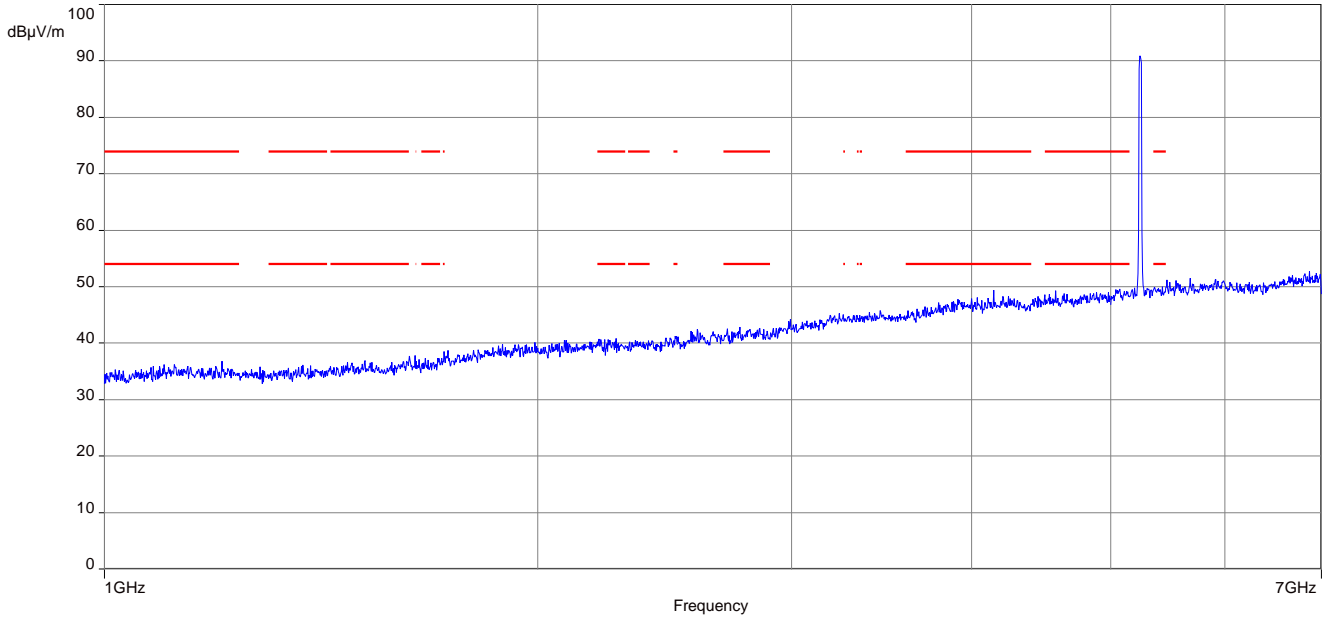
Plot 7: 30 MHz to 1 GHz, 5240 MHz, vertical & horizontal polarization



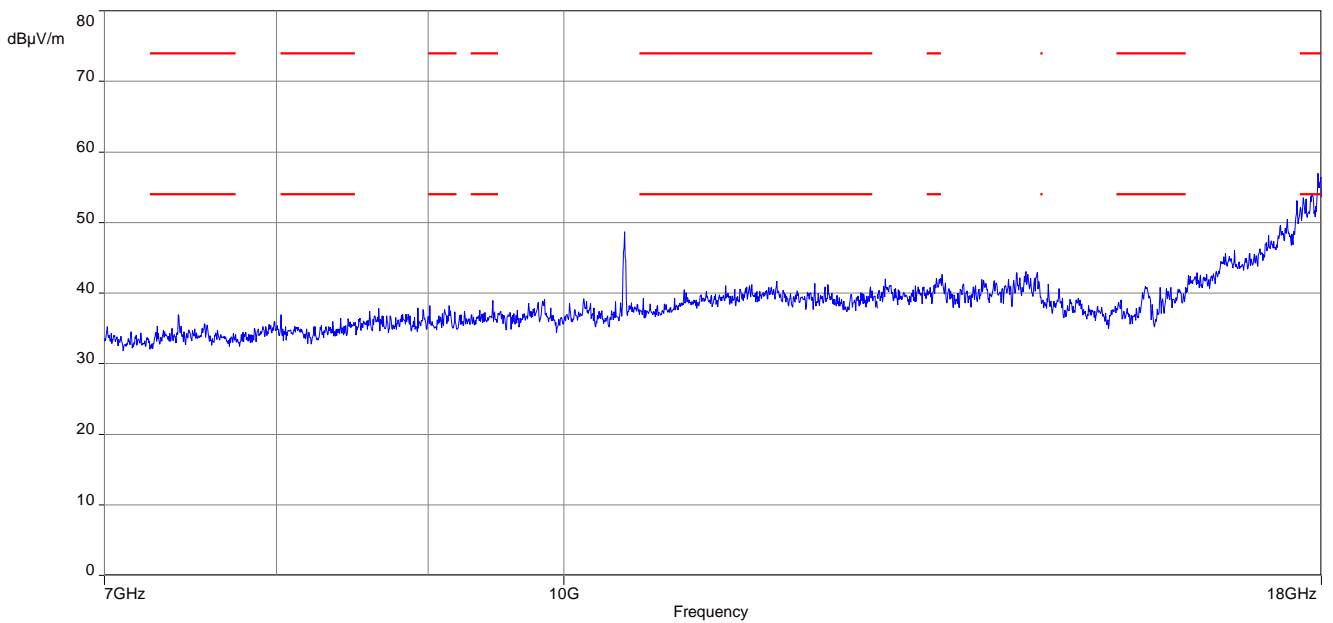
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
41.244000	10.73	30.00	19.27	1000.0	120.000	178.0	H	353.0	13.3
44.738100	14.54	30.00	15.46	1000.0	120.000	185.0	V	46.0	13.6
501.061650	16.35	36.00	19.65	1000.0	120.000	98.0	V	341.0	18.7
662.061300	18.91	36.00	17.09	1000.0	120.000	98.0	H	67.0	21.2
724.499100	19.93	36.00	16.07	1000.0	120.000	185.0	V	192.0	22.1
949.481250	21.99	36.00	14.01	1000.0	120.000	101.0	H	274.0	24.3

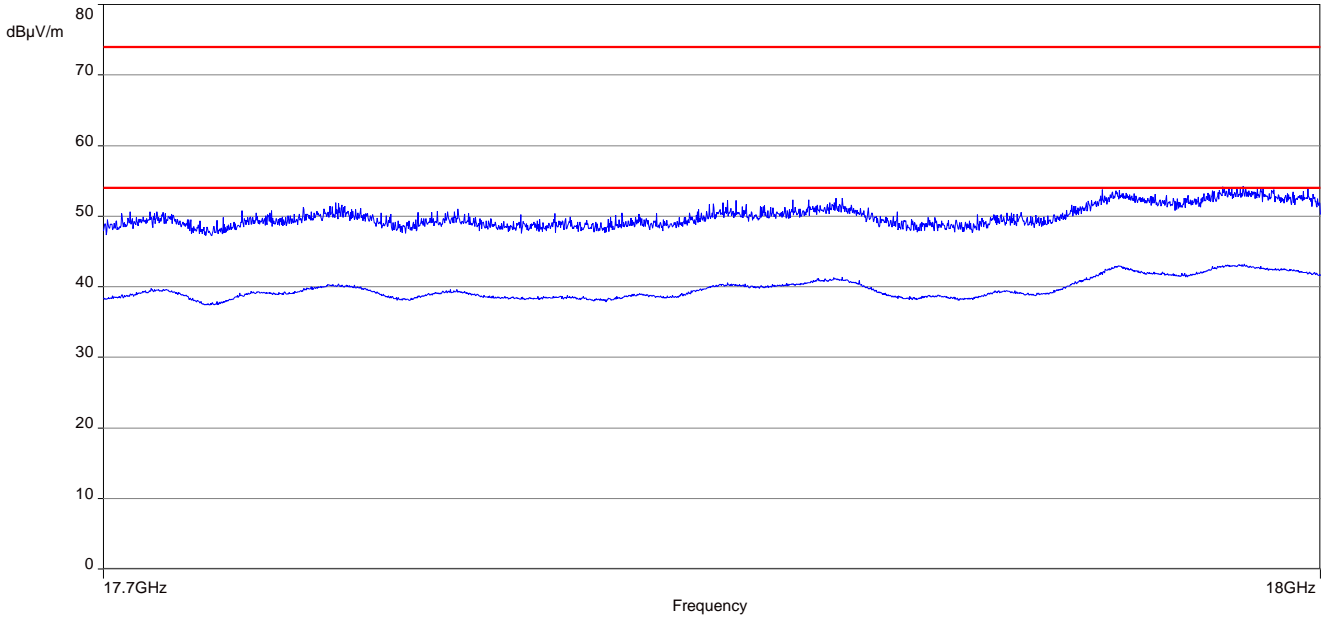
Plot 8: 1 GHz to 7 GHz, 5240 MHz, vertical & horizontal polarization



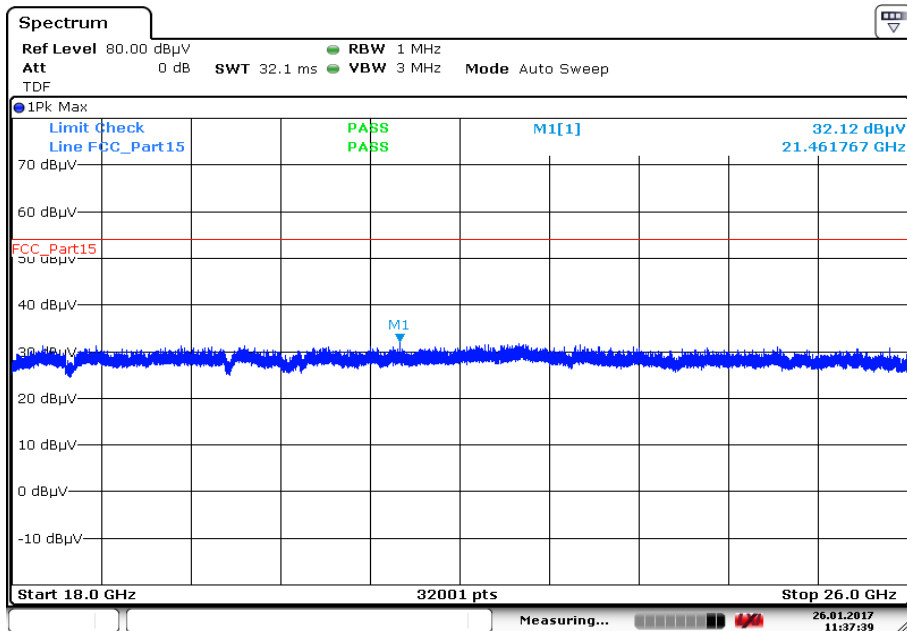
Plot 9: 7 GHz to 18 GHz, 5240 MHz, vertical & horizontal polarization



Plot 10: 17.7 GHz to 18 GHz, 5240 MHz, vertical & horizontal polarization

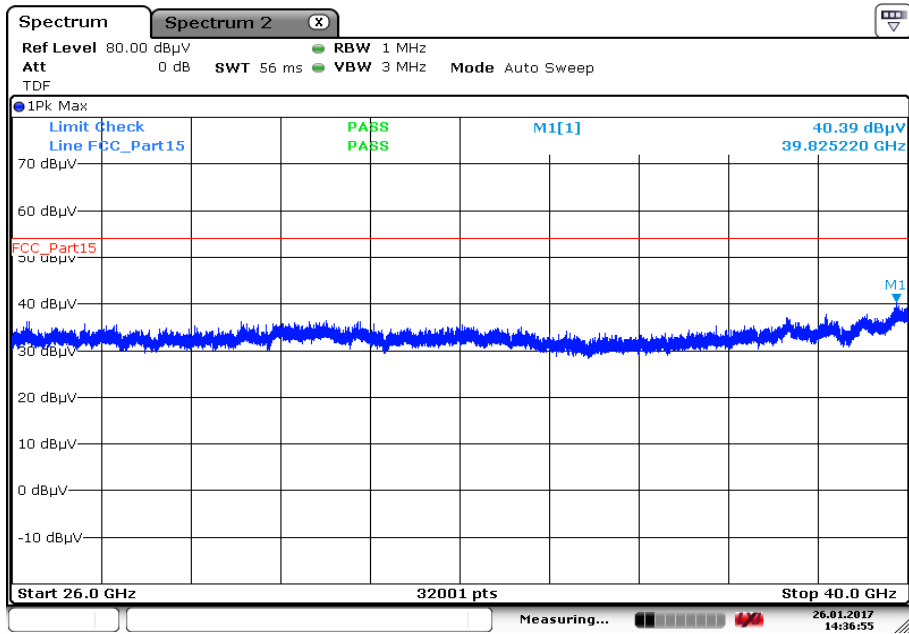


Plot 11: 18 GHz to 26 GHz, 5240 MHz, vertical & horizontal polarization



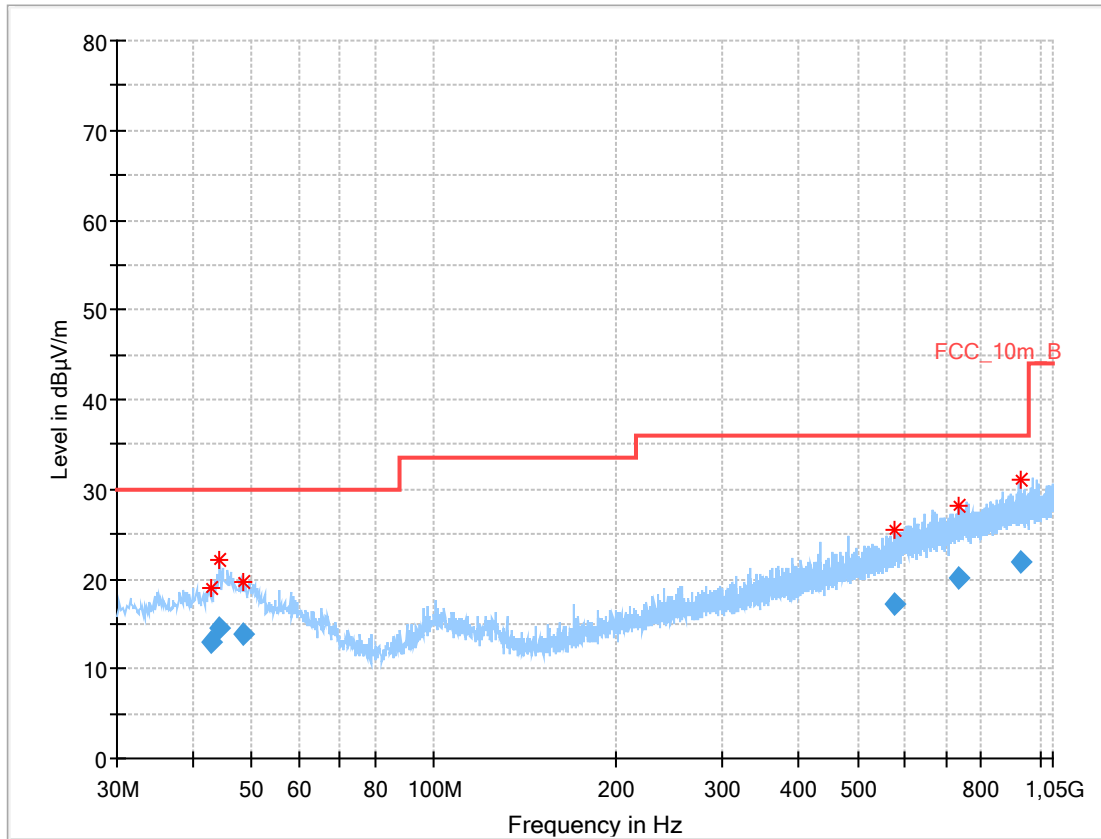
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Plot 12: 26 GHz to 40 GHz, 5240 MHz, vertical & horizontal polarization



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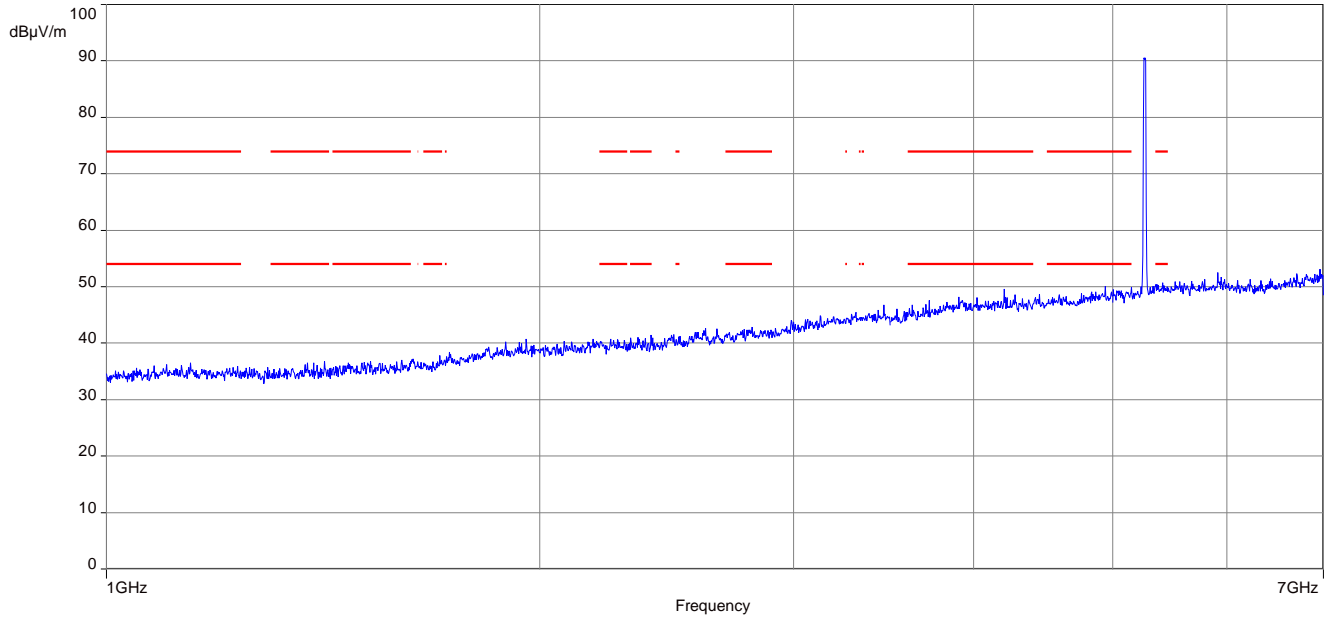
Plot 13: 30 MHz to 1 GHz, 5260 MHz, vertical & horizontal polarization



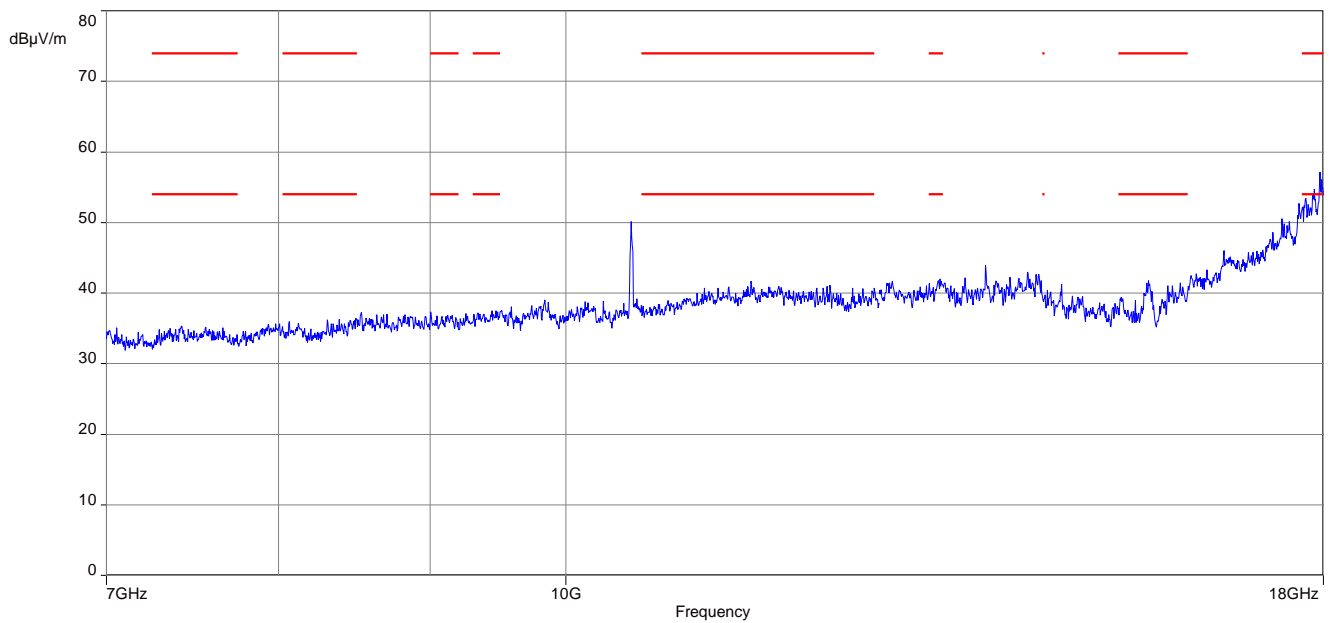
Final_Result.

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
43.000350	12.90	30.00	17.10	1000.0	120.000	185.0	V	85.0	13.5
44.320950	14.47	30.00	15.53	1000.0	120.000	178.0	V	311.0	13.6
48.379050	13.95	30.00	16.05	1000.0	120.000	101.0	V	241.0	13.7
573.582300	17.17	36.00	18.83	1000.0	120.000	179.0	H	129.0	20.0
732.203400	20.06	36.00	15.94	1000.0	120.000	101.0	V	327.0	22.3
932.769900	21.88	36.00	14.12	1000.0	120.000	185.0	H	38.0	24.3

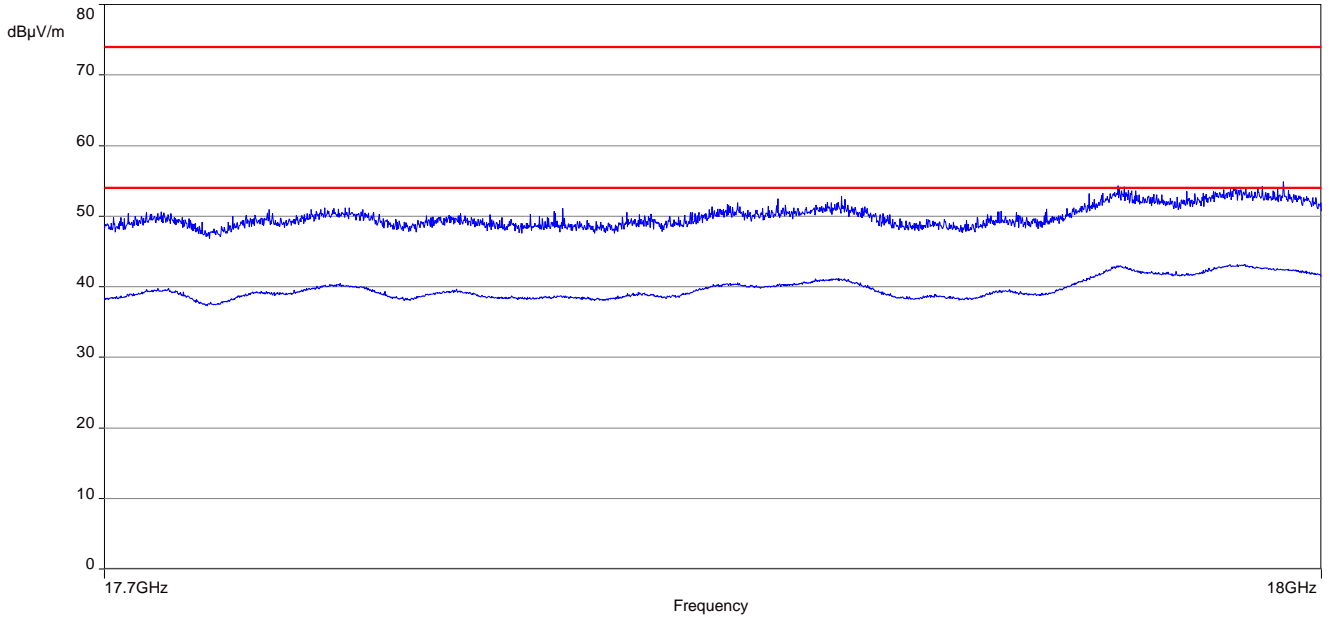
Plot 14: 1 GHz to 7 GHz, 5260 MHz, vertical & horizontal polarization



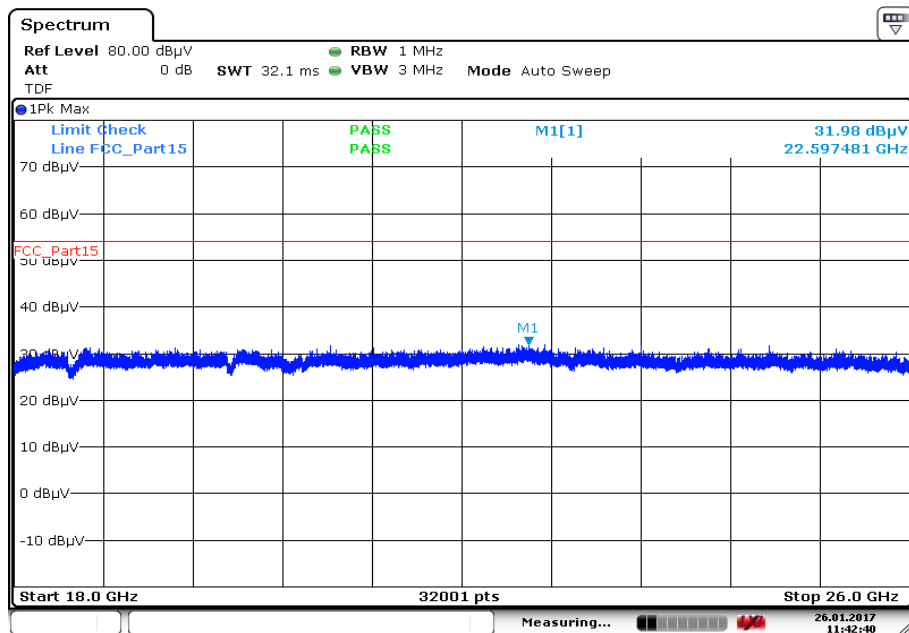
Plot 15: 7 GHz to 18 GHz, 5260 MHz, vertical & horizontal polarization



Plot 16: 17.7 GHz to 18 GHz, 5260 MHz, vertical & horizontal polarization

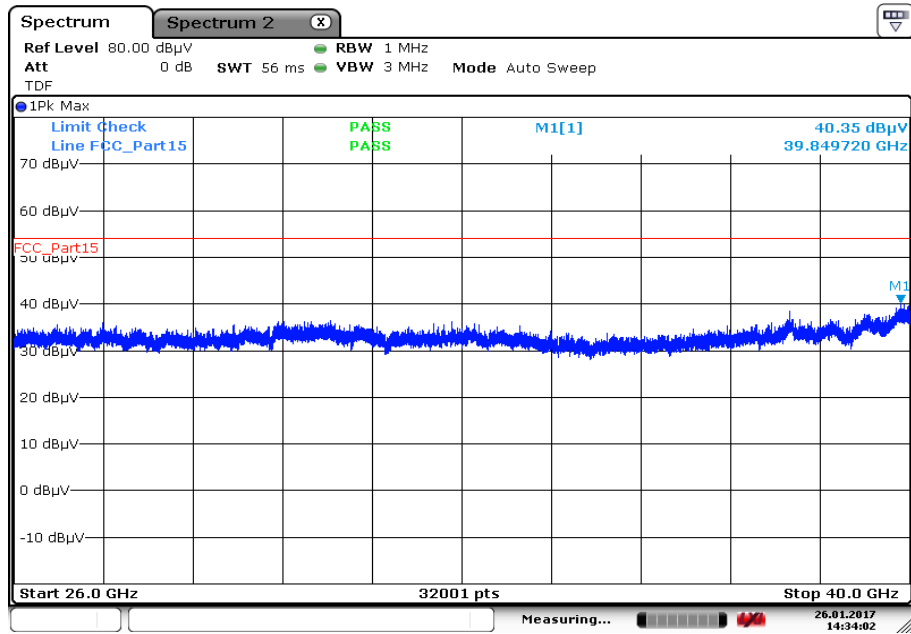


Plot 17: 18 GHz to 26 GHz, 5260 MHz, vertical & horizontal polarization



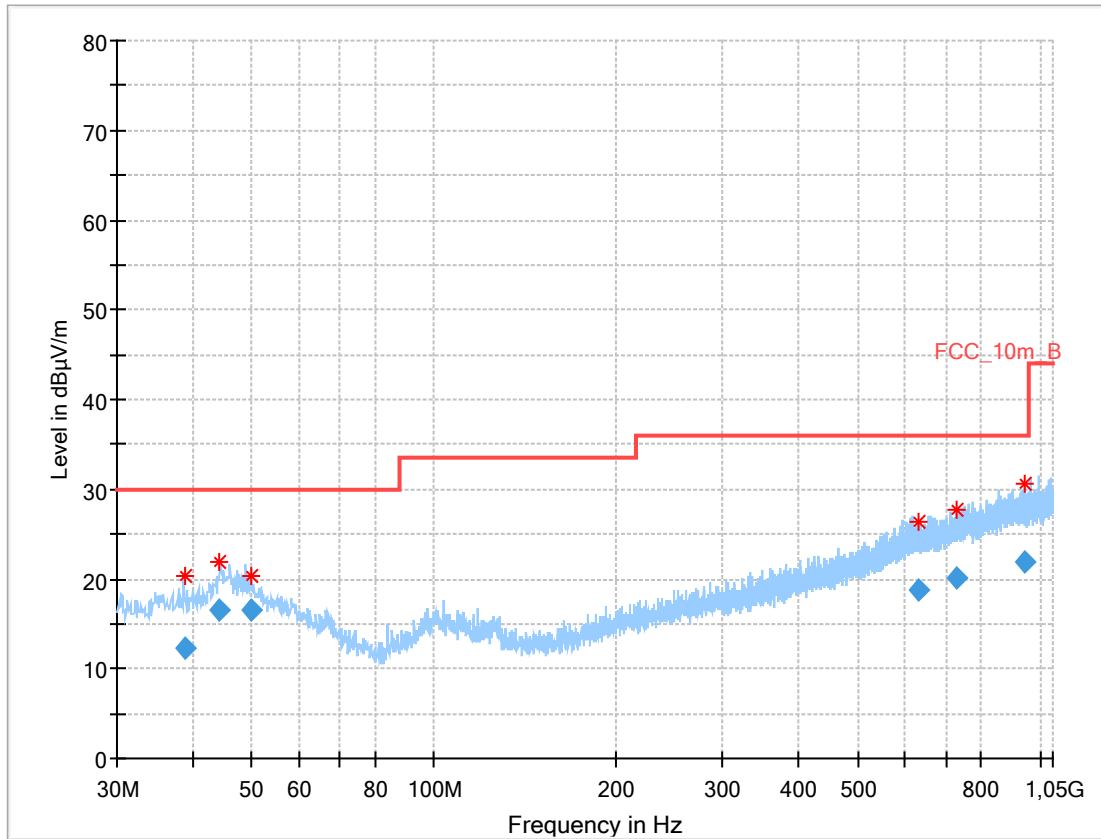
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Plot 18: 26 GHz to 40 GHz, 5260 MHz, vertical & horizontal polarization



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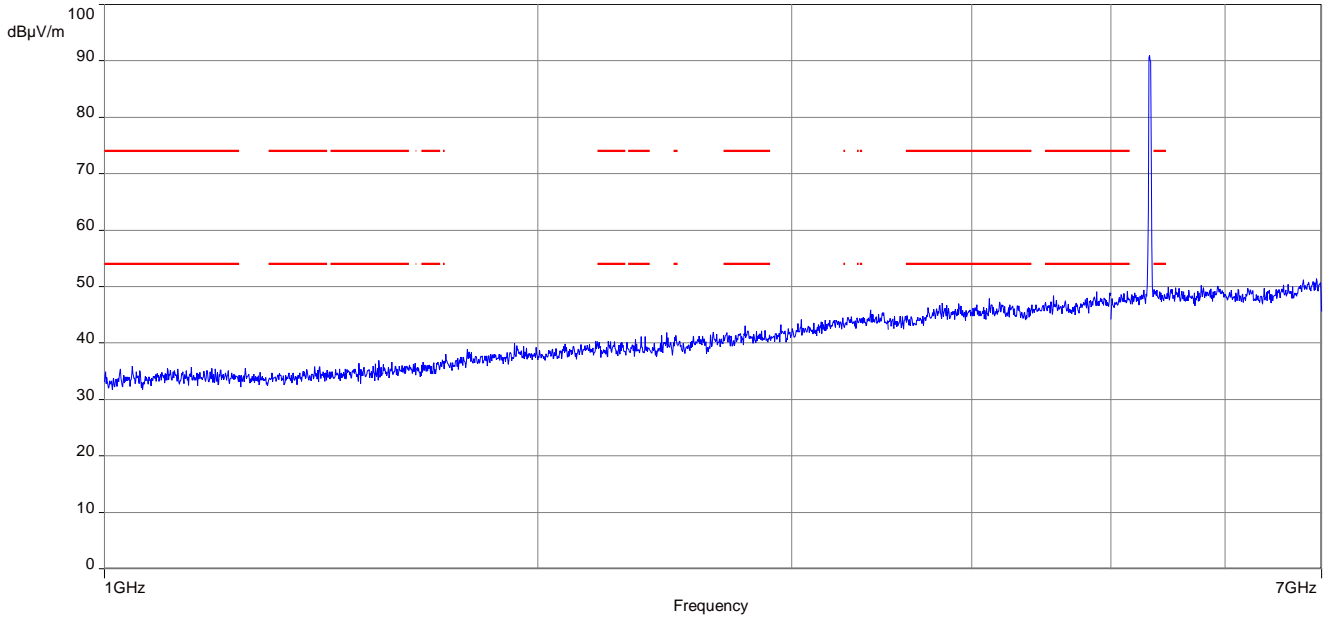
Plot 19: 30 MHz to 1 GHz, 5320 MHz, vertical & horizontal polarization



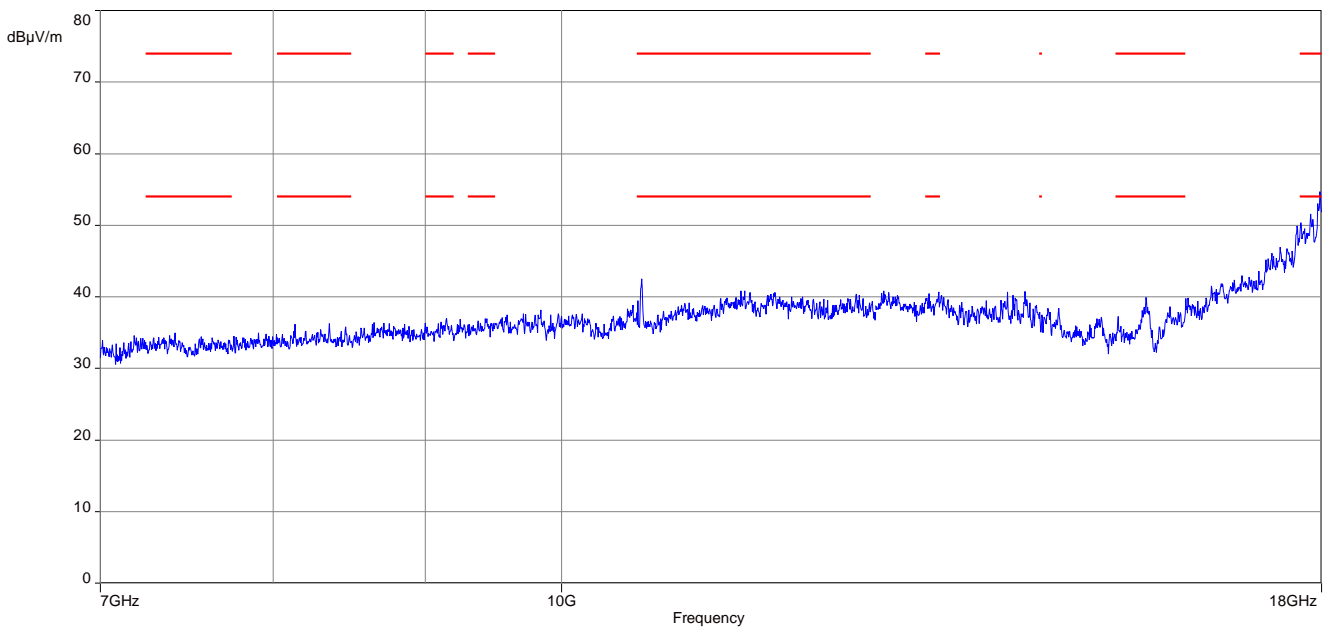
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
38.758200	12.23	30.00	17.77	1000.0	120.000	98.0	V	342.0	13.1
44.281350	16.54	30.00	13.46	1000.0	120.000	98.0	V	125.0	13.6
49.974600	16.52	30.00	13.48	1000.0	120.000	185.0	V	111.0	13.7
631.375500	18.77	36.00	17.23	1000.0	120.000	185.0	V	159.0	21.0
729.846600	20.07	36.00	15.93	1000.0	120.000	178.0	V	146.0	22.3
945.407700	21.84	36.00	14.16	1000.0	120.000	98.0	V	132.0	24.3

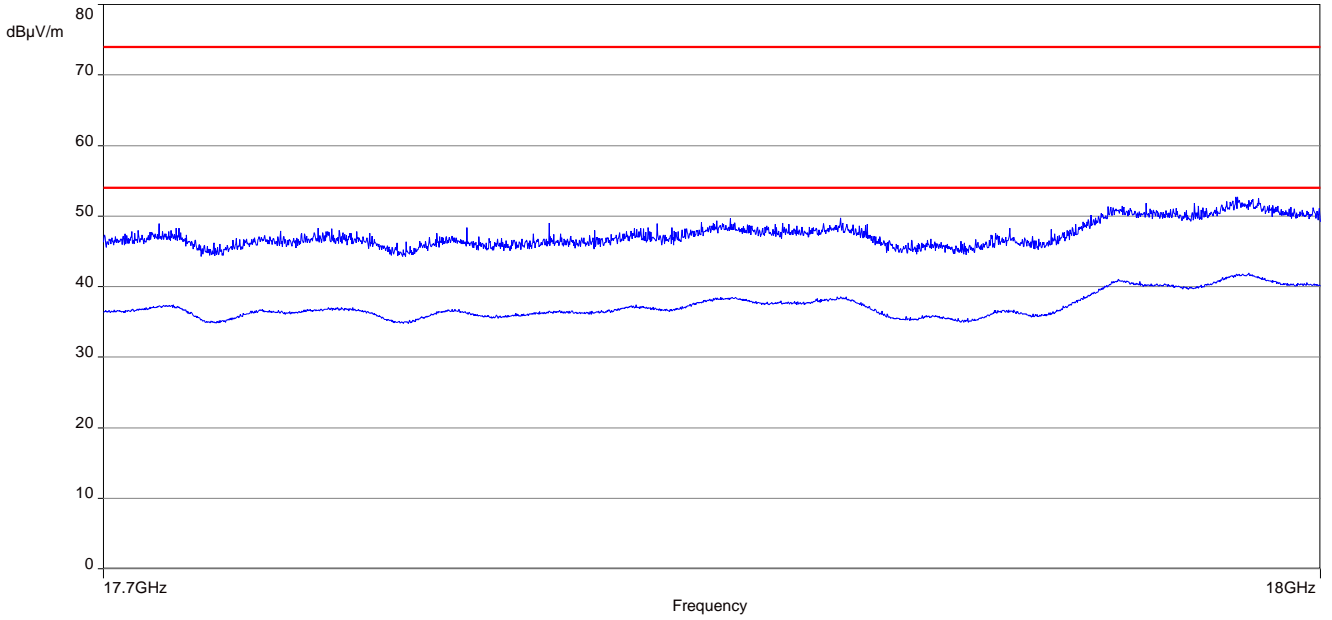
Plot 20: 1 GHz to 7 GHz, 5320 MHz, vertical & horizontal polarization



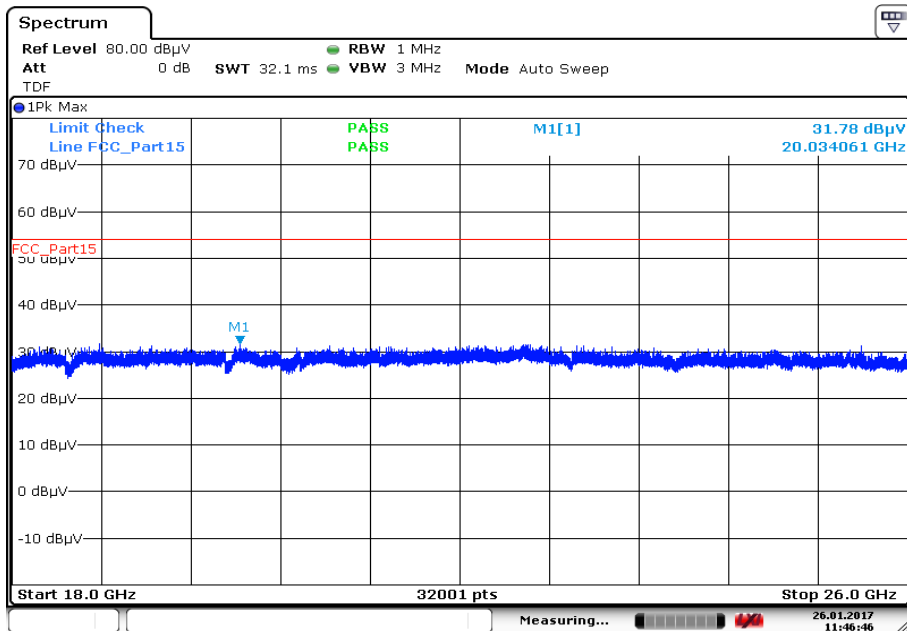
Plot 21: 7 GHz to 18 GHz, 5320 MHz, vertical & horizontal polarization



Plot 22: 17.7 GHz to 18 GHz, 5320 MHz, vertical & horizontal polarization

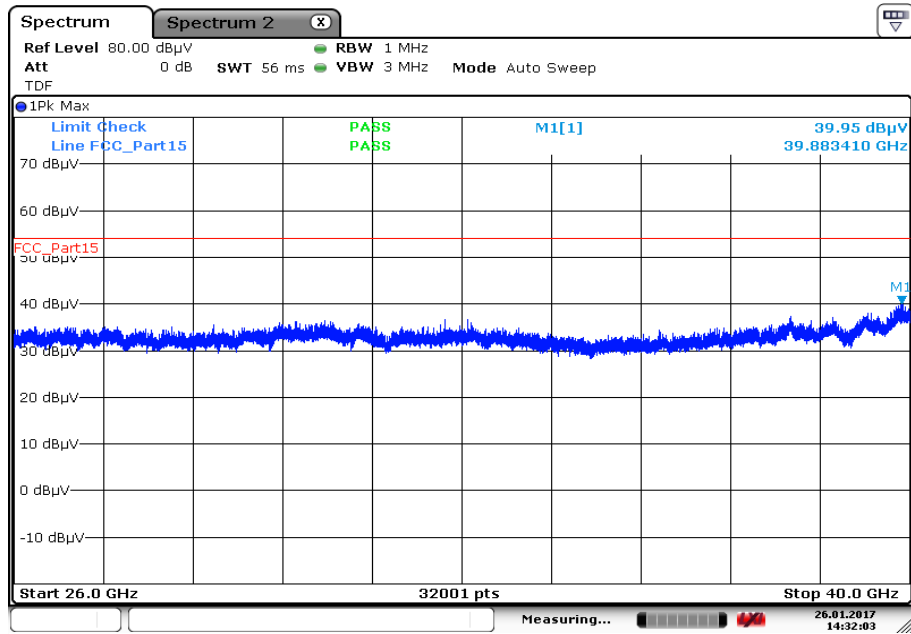


Plot 23: 18 GHz to 26 GHz, 5320 MHz, vertical & horizontal polarization



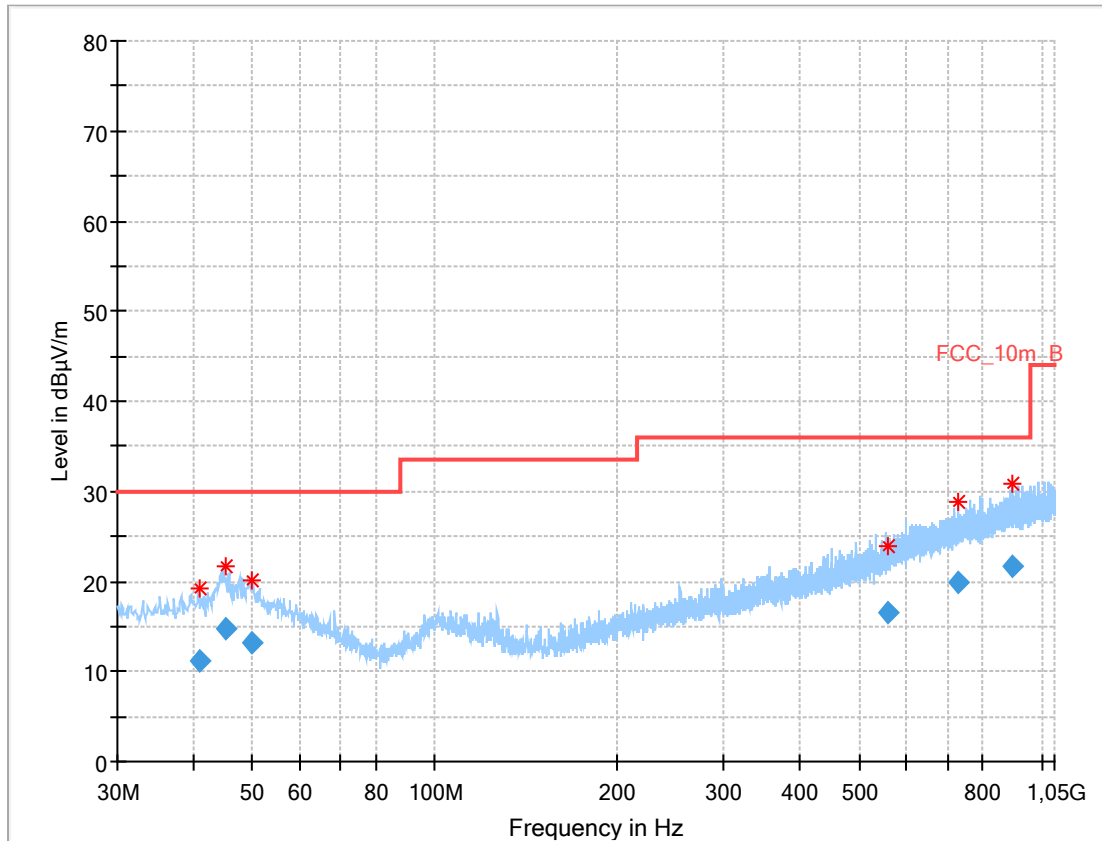
Date: 26.JAN.2017 11:46:46

Plot 24: 26 GHz to 40 GHz, 5320 MHz, vertical & horizontal polarization



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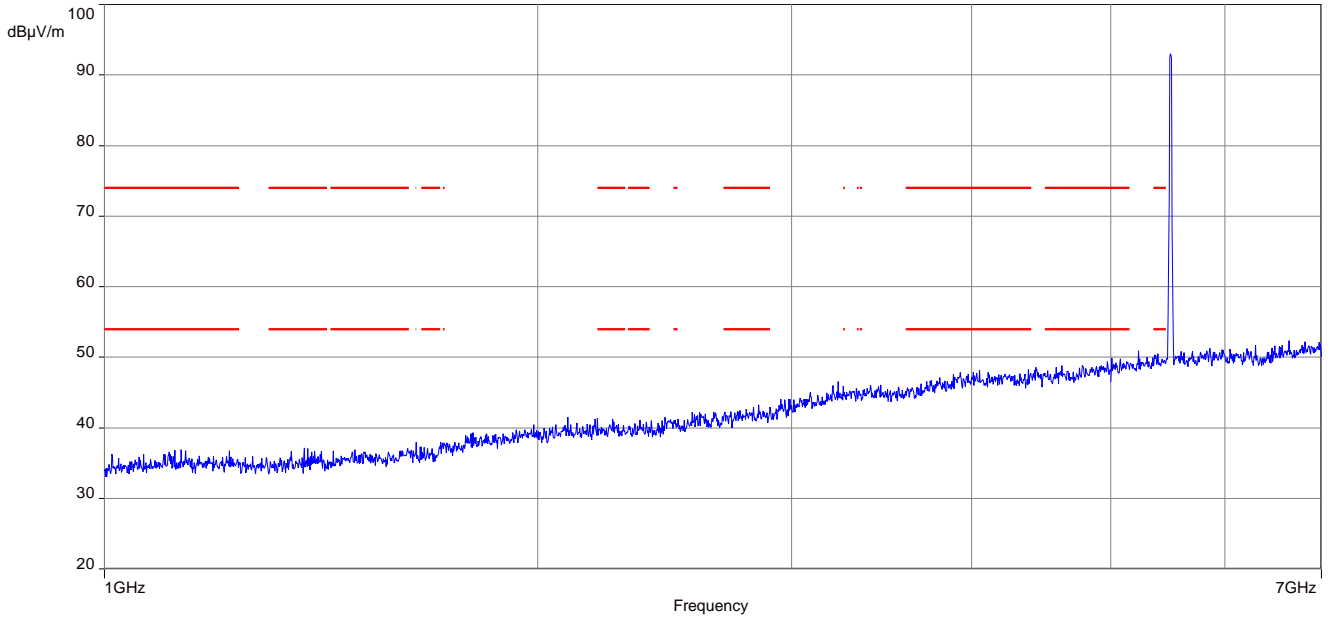
Plot 25: 30 MHz to 1 GHz, 5500 MHz, vertical & horizontal polarization



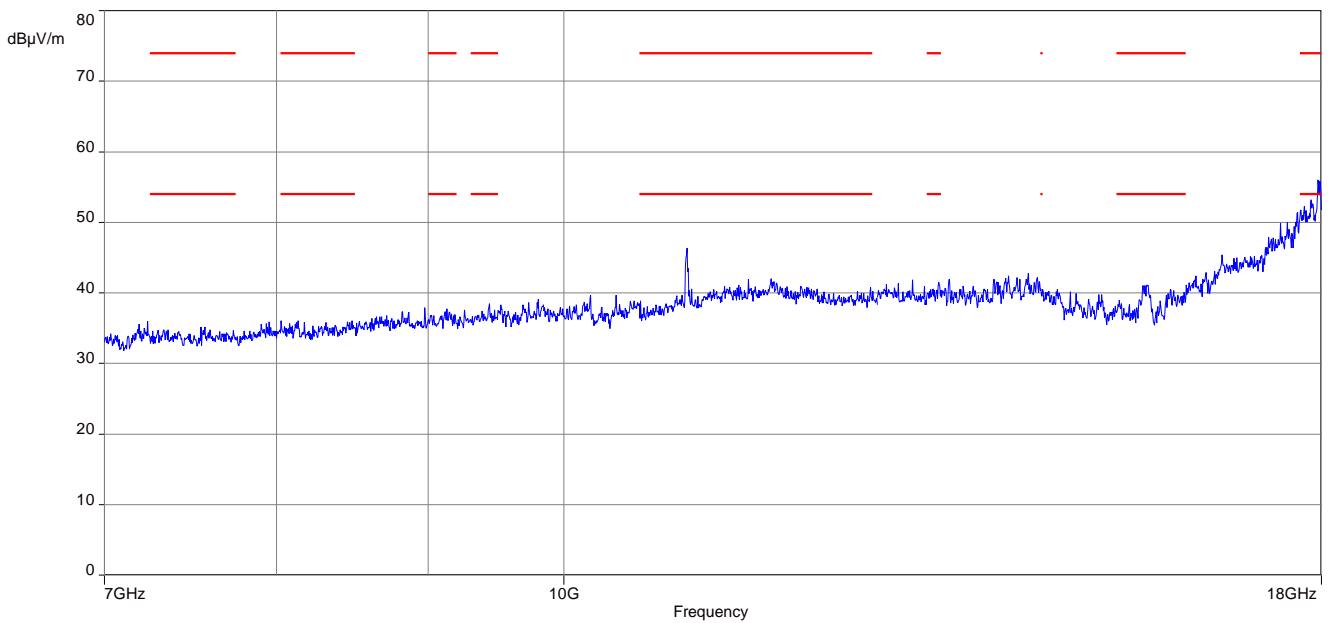
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
40.910550	11.27	30.00	18.73	1000.0	120.000	101.0	V	79.0	13.3
45.236700	14.75	30.00	15.25	1000.0	120.000	101.0	V	8.0	13.6
49.872450	13.23	30.00	16.77	1000.0	120.000	101.0	V	350.0	13.7
556.368450	16.50	36.00	19.50	1000.0	120.000	98.0	H	216.0	19.5
727.269150	19.91	36.00	16.09	1000.0	120.000	101.0	V	350.0	22.2
894.946800	21.72	36.00	14.28	1000.0	120.000	178.0	H	229.0	24.1

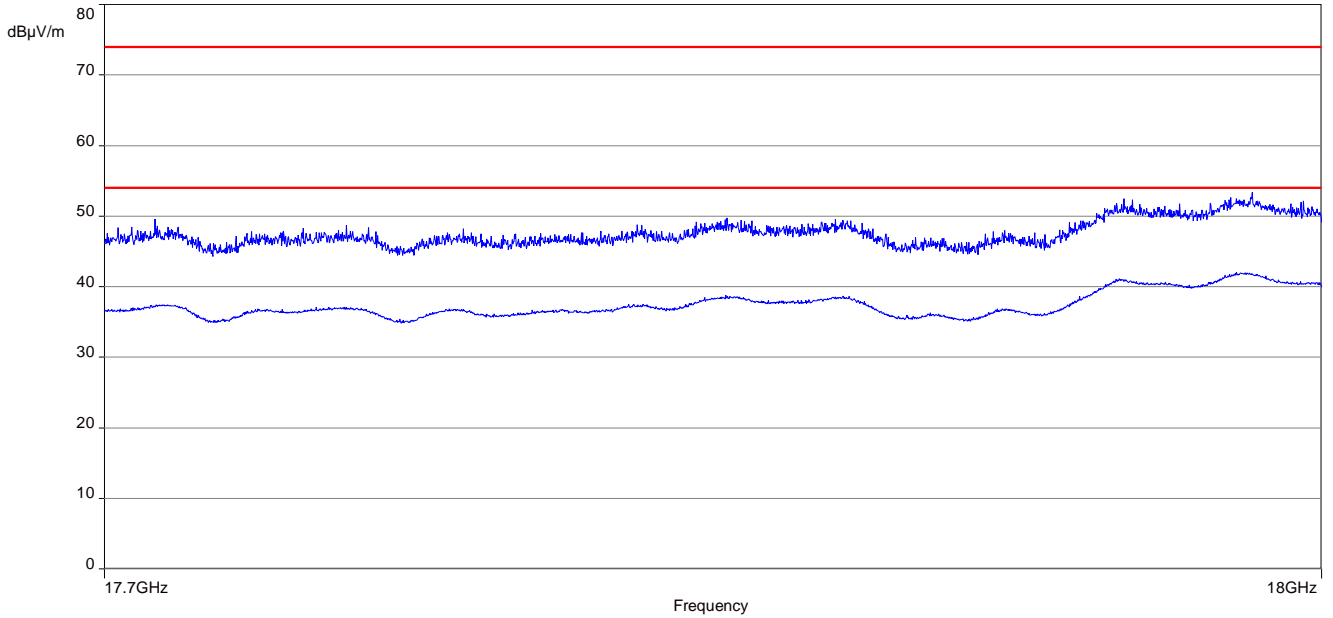
Plot 26: 1 GHz to 7 GHz, 5500 MHz, vertical & horizontal polarization



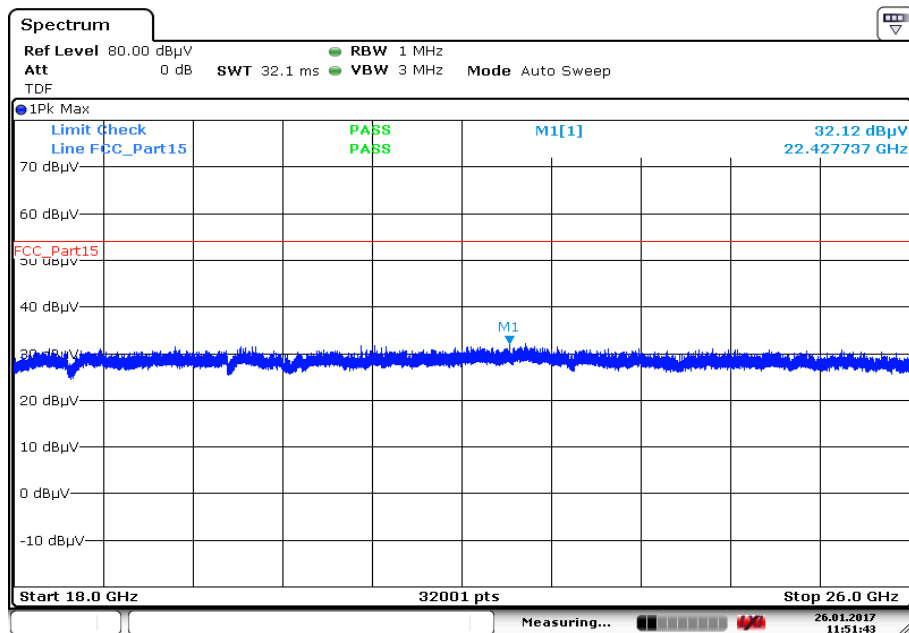
Plot 27: 7 GHz to 18 GHz, 5500 MHz, vertical & horizontal polarization



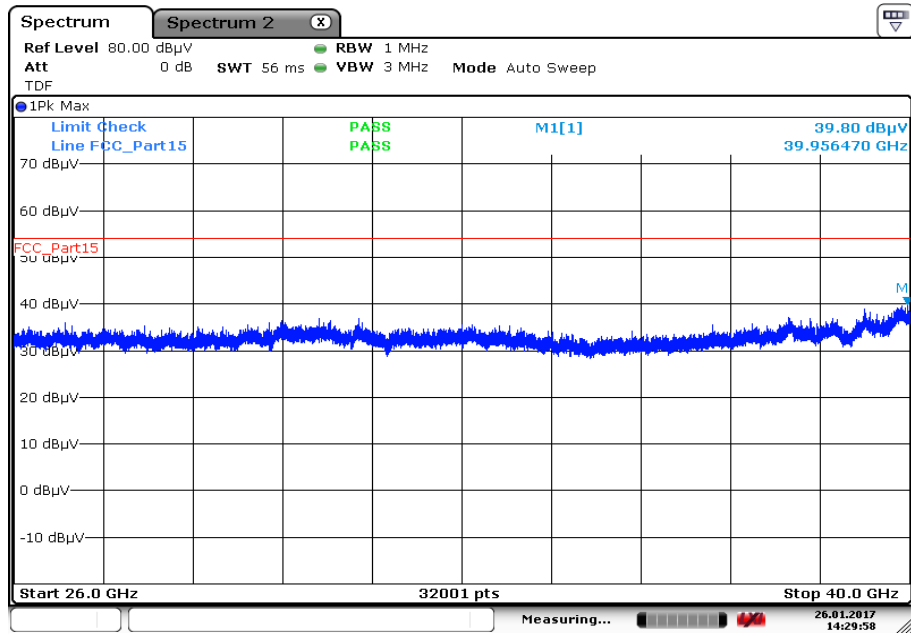
Plot 28: 17.7 GHz to 18 GHz, 5500 MHz, vertical & horizontal polarization



Plot 29: 18 GHz to 26 GHz, 5500 MHz, vertical & horizontal polarization

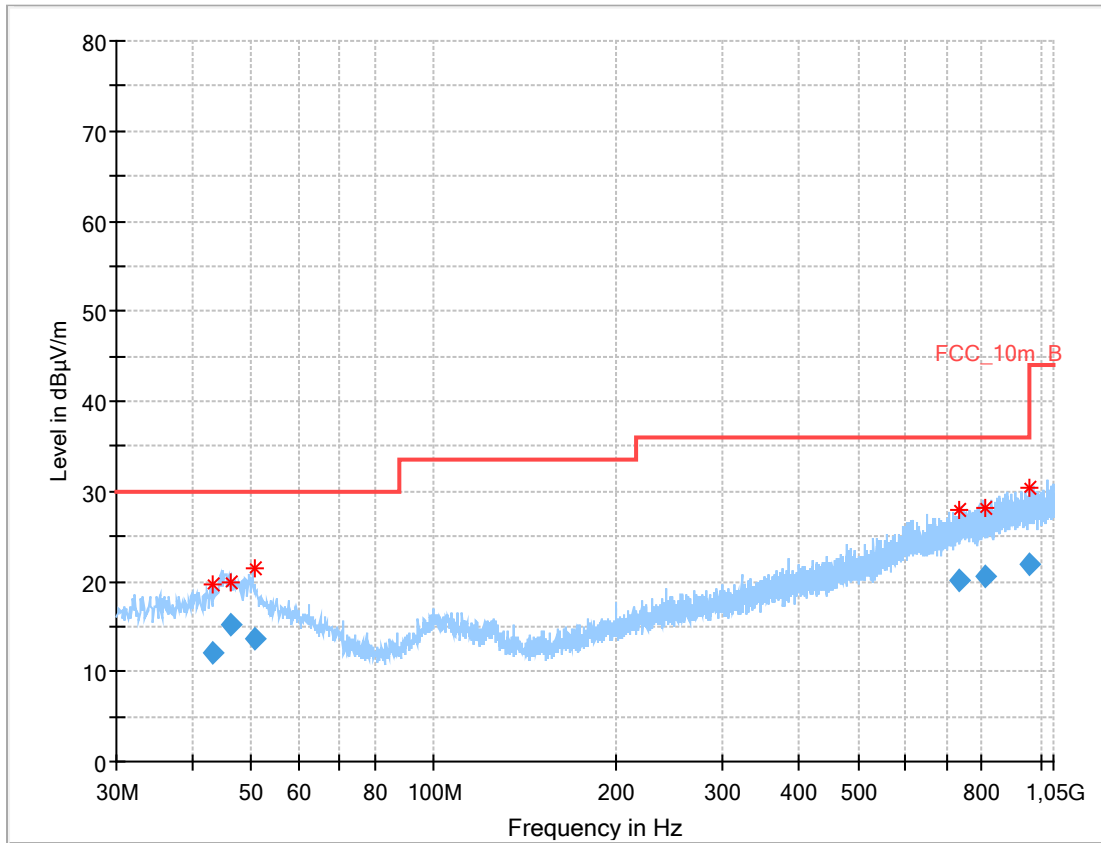


Plot 30: 26 GHz to 40 GHz, 5500 MHz, vertical & horizontal polarization



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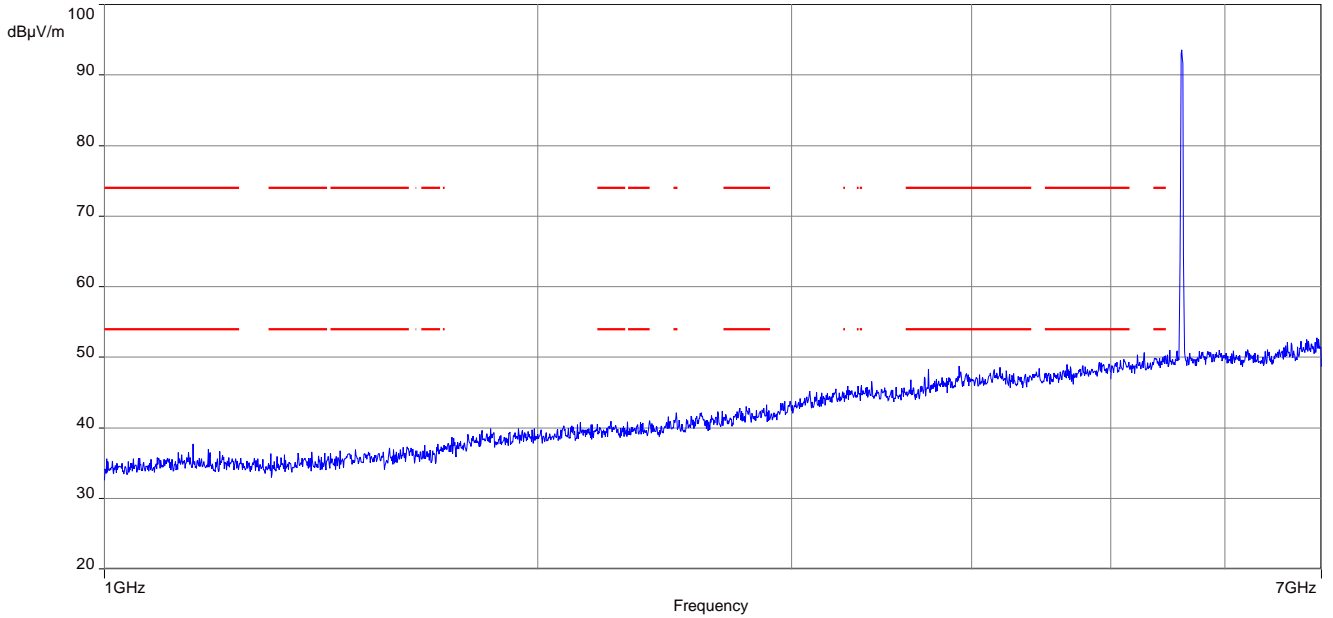
Plot 31: 30 MHz to 1 GHz, 5600 MHz, vertical & horizontal polarization



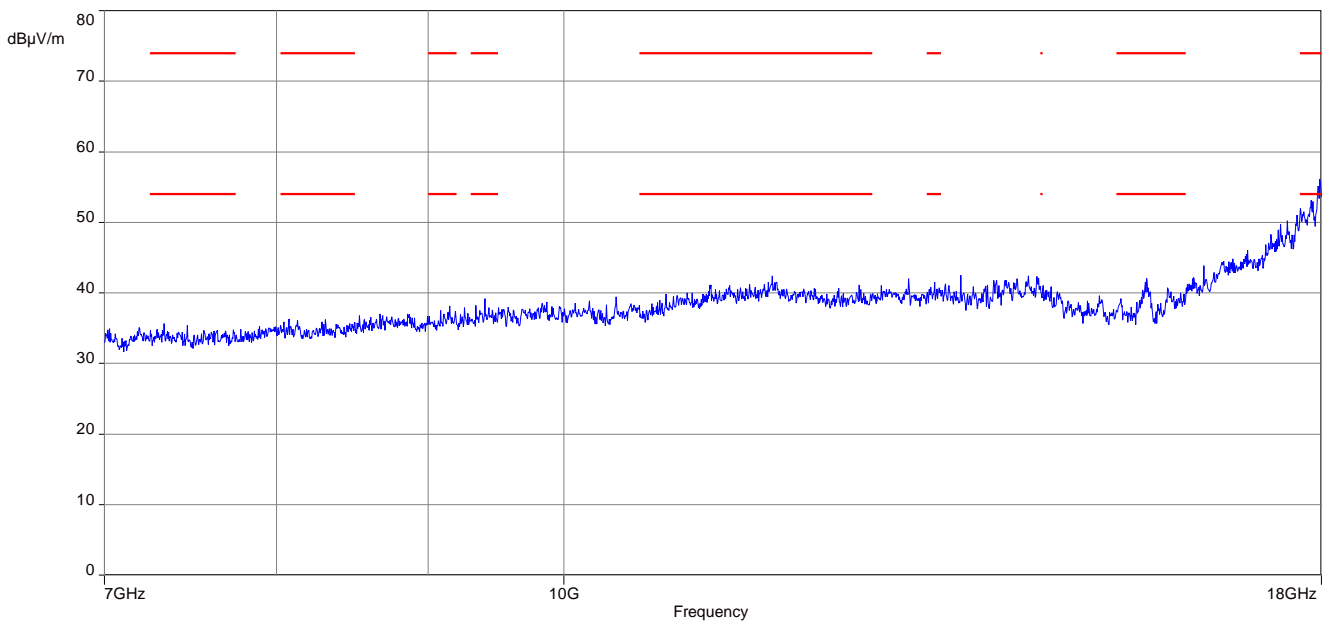
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
43.225500	12.15	30.00	17.85	1000.0	120.000	98.0	V	197.0	13.5
46.296300	15.19	30.00	14.81	1000.0	120.000	101.0	V	108.0	13.7
50.892900	13.67	30.00	16.33	1000.0	120.000	98.0	V	42.0	13.6
733.540800	20.05	36.00	15.95	1000.0	120.000	98.0	H	318.0	22.3
813.178500	20.67	36.00	15.33	1000.0	120.000	185.0	H	263.0	23.0
955.527150	21.97	36.00	14.03	1000.0	120.000	177.0	H	215.0	24.4

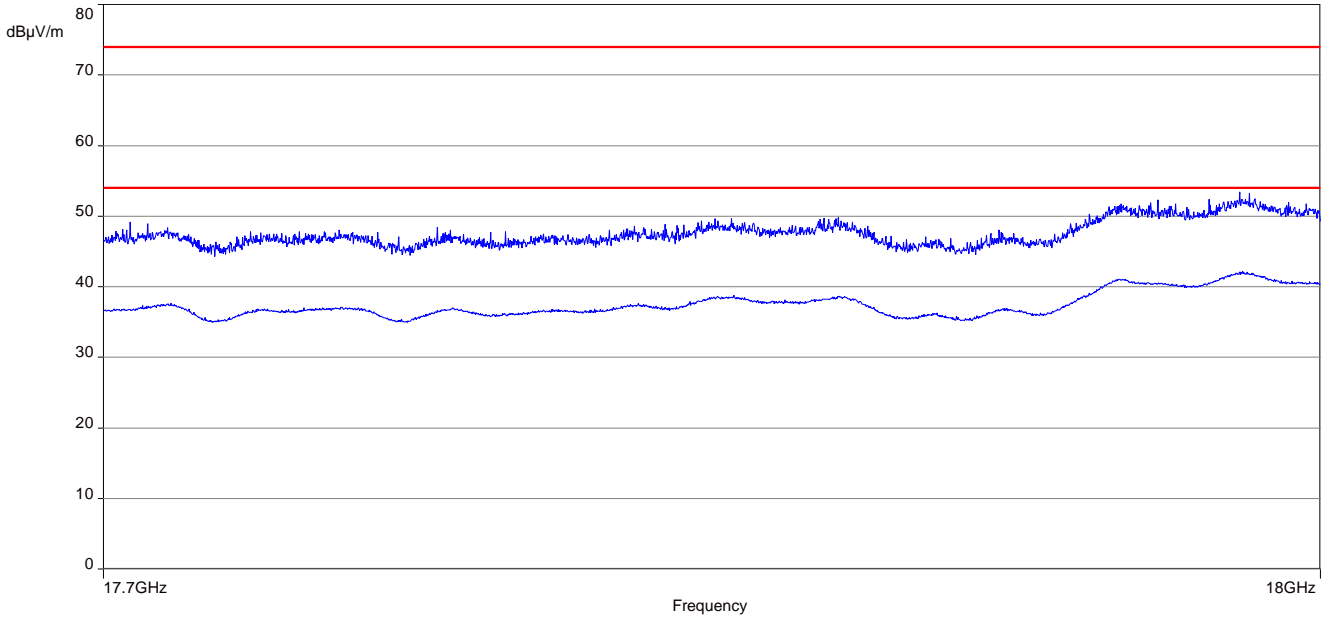
Plot 32: 1 GHz to 7 GHz, 5600 MHz, vertical & horizontal polarization



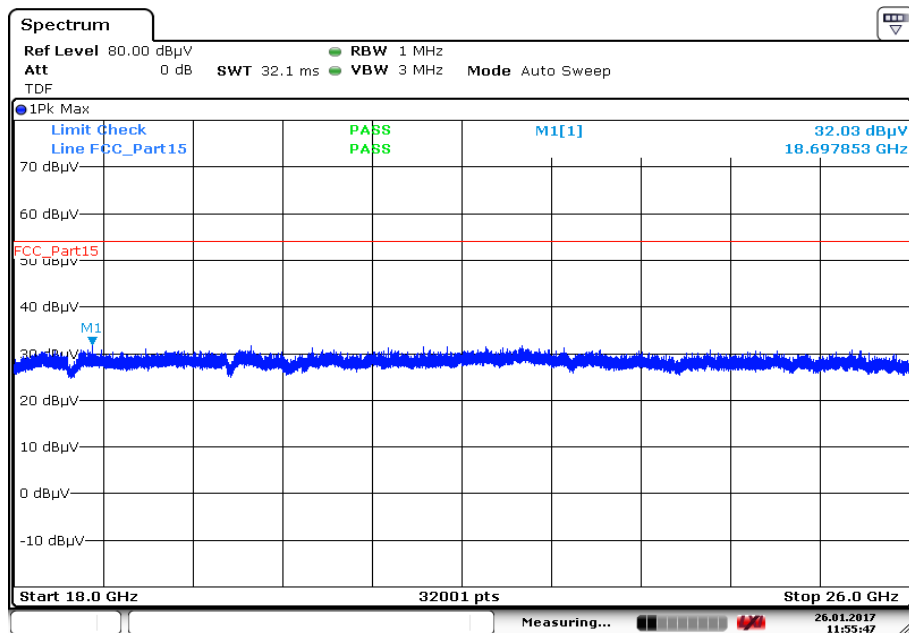
Plot 33: 7 GHz to 18 GHz, 5600 MHz, vertical & horizontal polarization



Plot 34: 17.7 GHz to 18 GHz, 5600 MHz, vertical & horizontal polarization

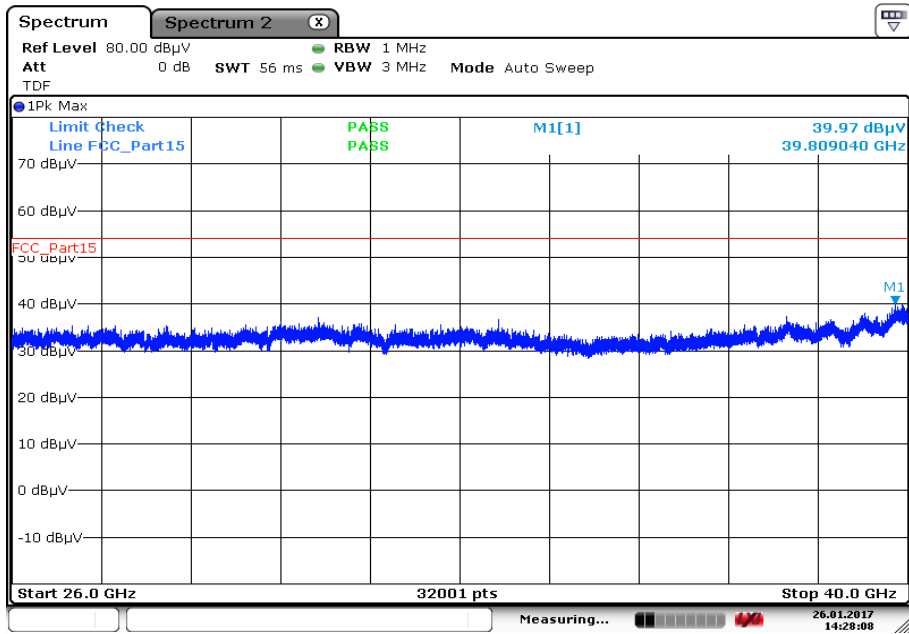


Plot 35: 18 GHz to 26 GHz, 5600 MHz, vertical & horizontal polarization



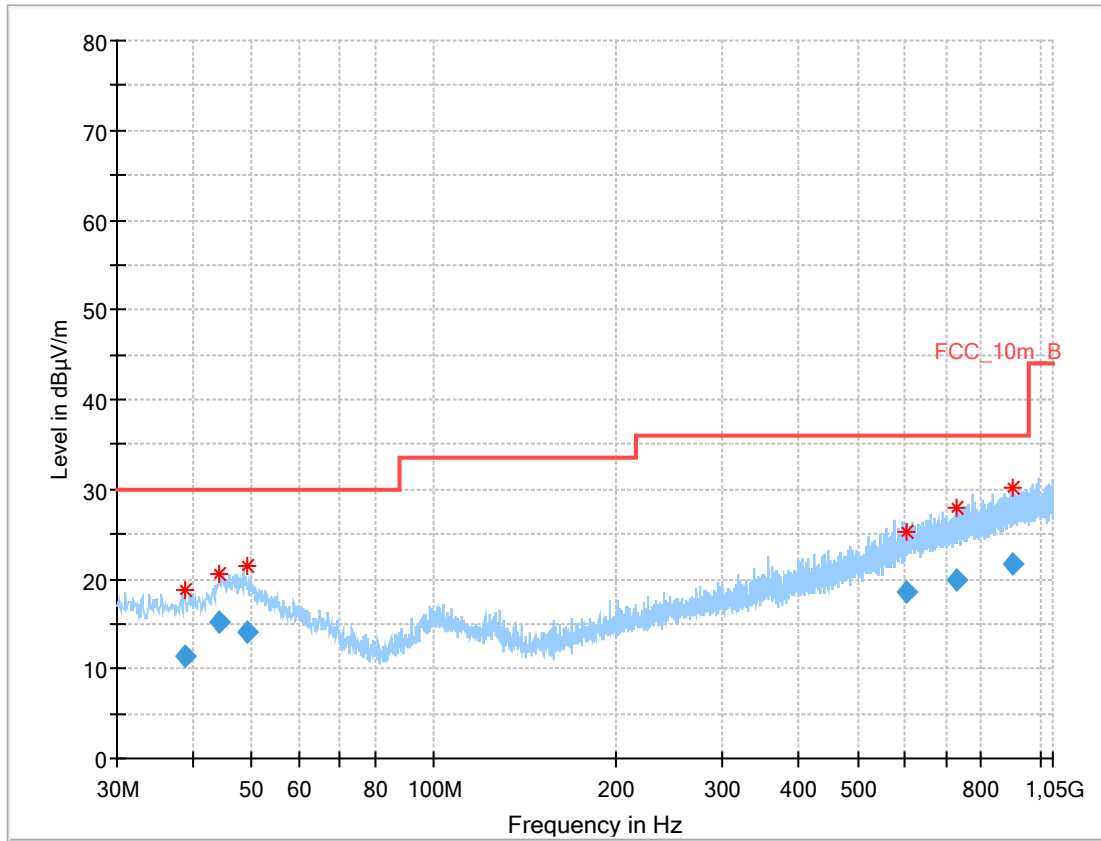
Date: 26.JAN.2017 11:55:47

Plot 36: 26 GHz to 40 GHz, 5600 MHz, vertical & horizontal polarization



Date: 26.JAN.2017 14:28:08

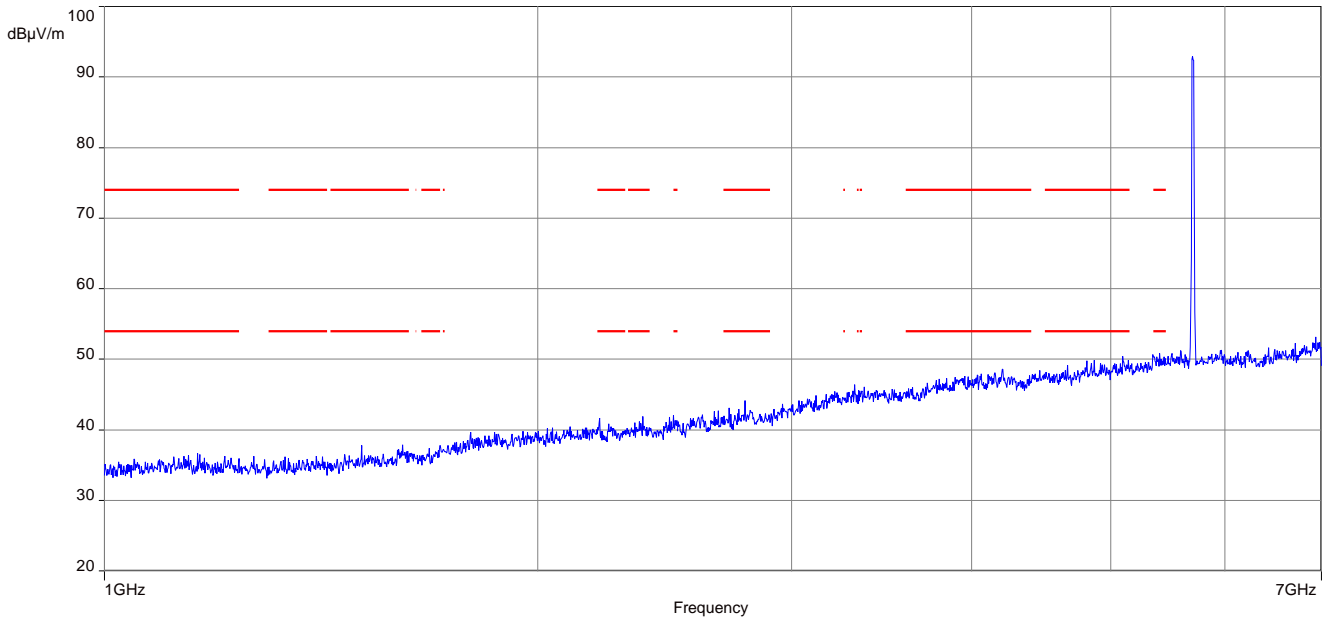
Plot 37: 30 MHz to 1 GHz, 5700 MHz, vertical & horizontal polarization



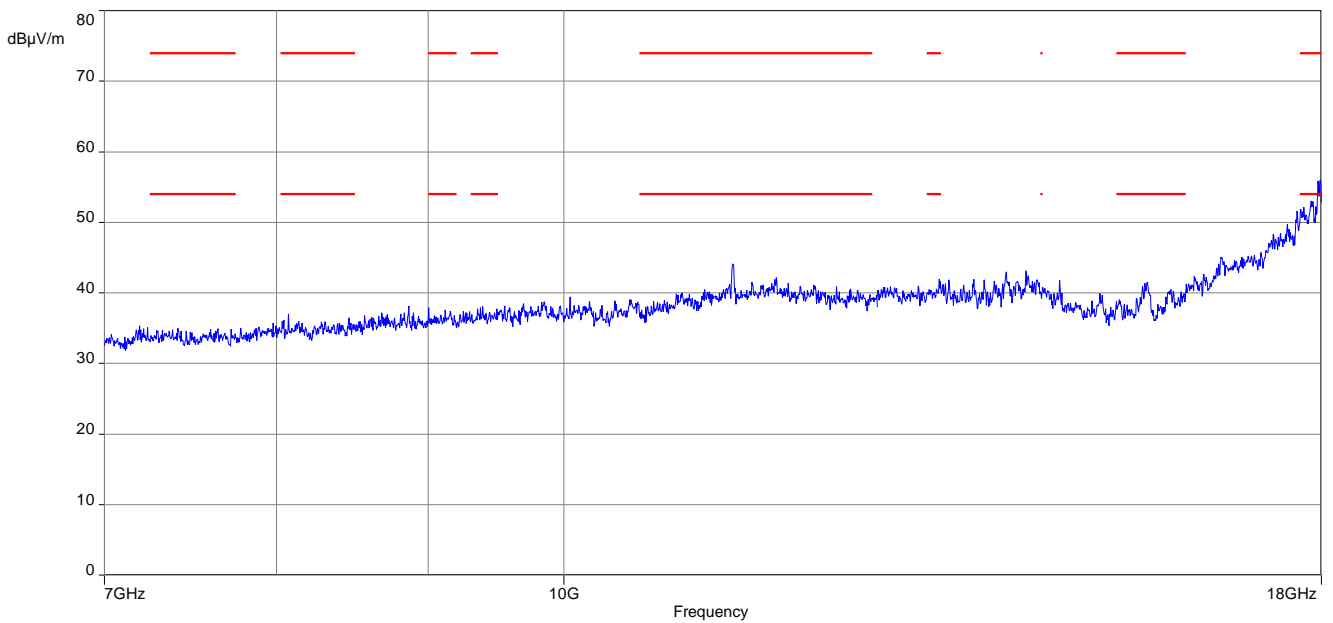
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
38.766900	11.35	30.00	18.65	1000.0	120.000	98.0	V	235.0	13.1
44.321850	15.29	30.00	14.71	1000.0	120.000	101.0	V	111.0	13.6
49.028850	14.07	30.00	15.93	1000.0	120.000	178.0	V	248.0	13.7
602.367000	18.60	36.00	17.40	1000.0	120.000	179.0	V	193.0	20.7
728.650650	20.00	36.00	16.00	1000.0	120.000	179.0	H	86.0	22.2
903.983550	21.73	36.00	14.27	1000.0	120.000	101.0	H	53.0	24.2

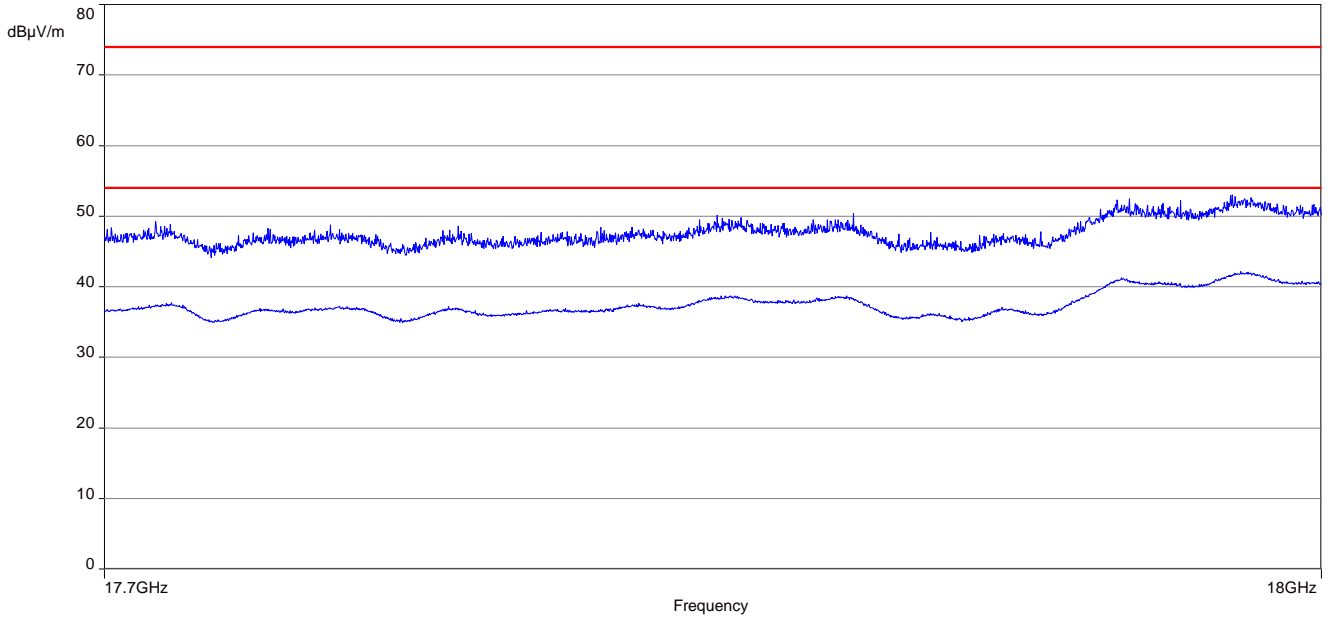
Plot 38: 1 GHz to 7 GHz, 5700 MHz, vertical & horizontal polarization



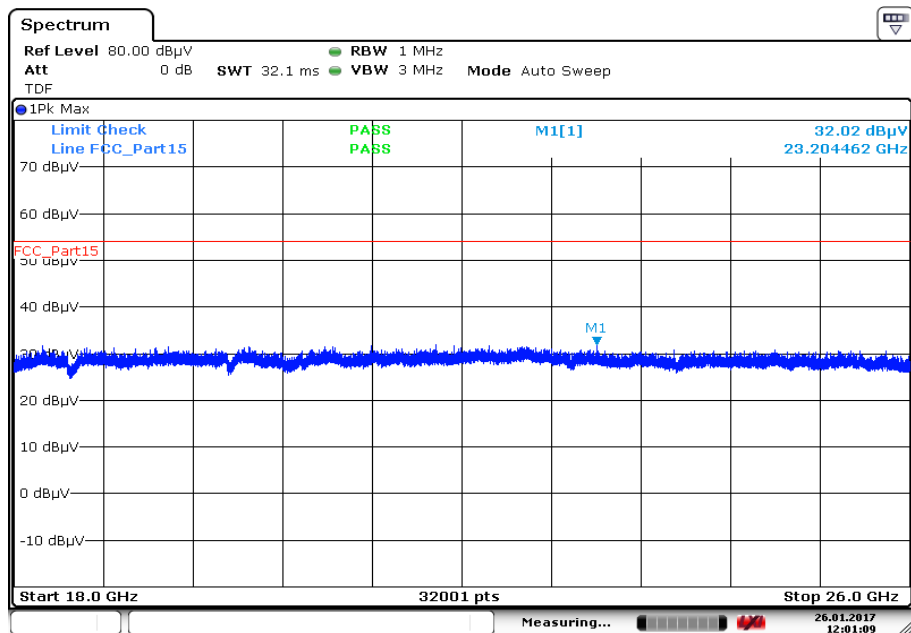
Plot 39: 7 GHz to 18 GHz, 5700 MHz, vertical & horizontal polarization



Plot 40: 17.7 GHz to 18 GHz, 5700 MHz, vertical & horizontal polarization

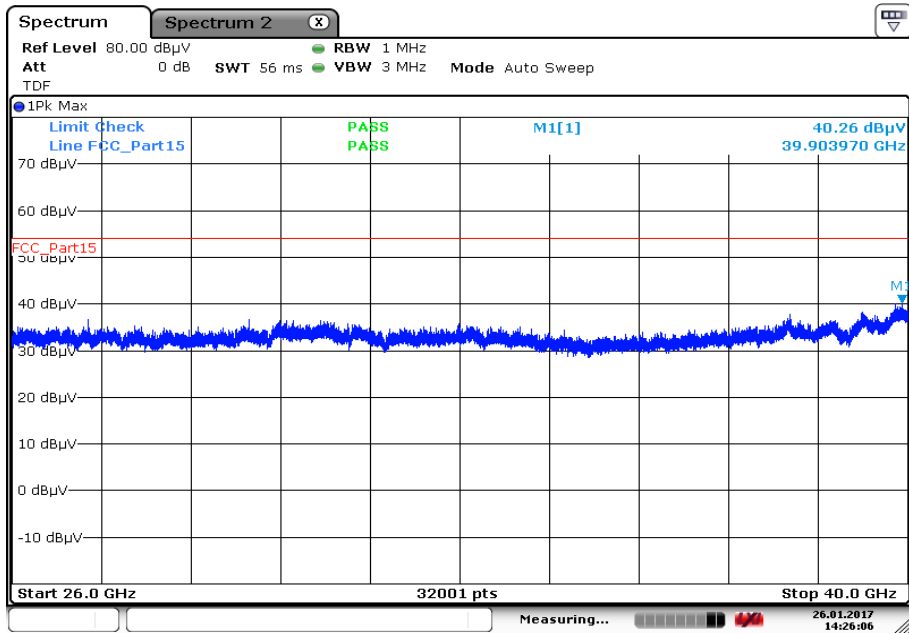


Plot 41: 18 GHz to 26 GHz, 5700 MHz, vertical & horizontal polarization



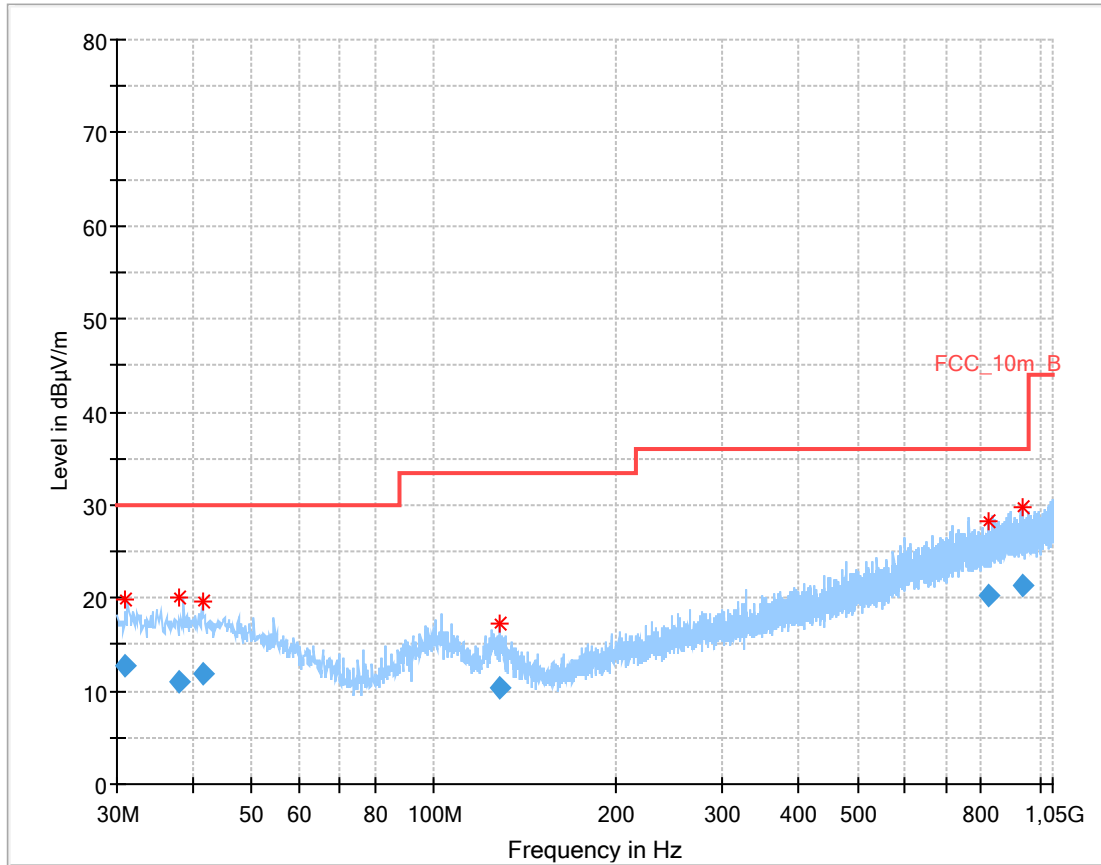
Date: 26.JAN.2017 12:01:08

Plot 42: 26 GHz to 40 GHz, 5700 MHz, vertical & horizontal polarization



Date: 26.JAN.2017 14:26:06

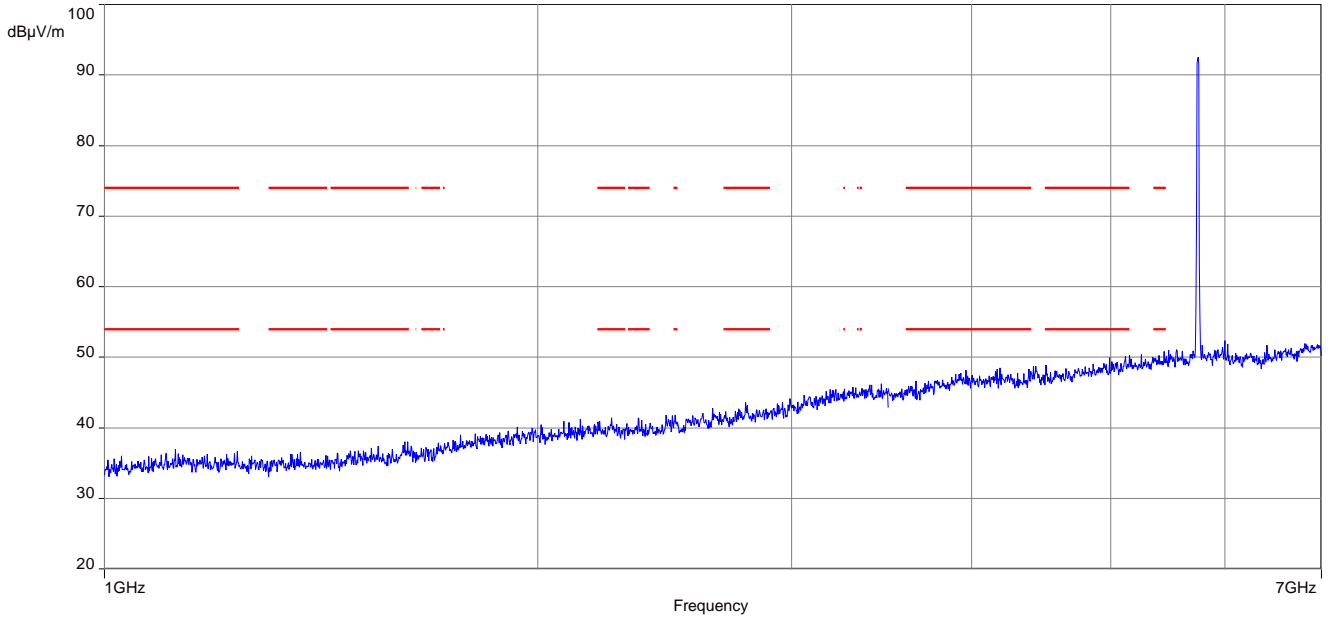
Plot 43: 30 MHz to 1 GHz, 5745 MHz, vertical & horizontal polarization



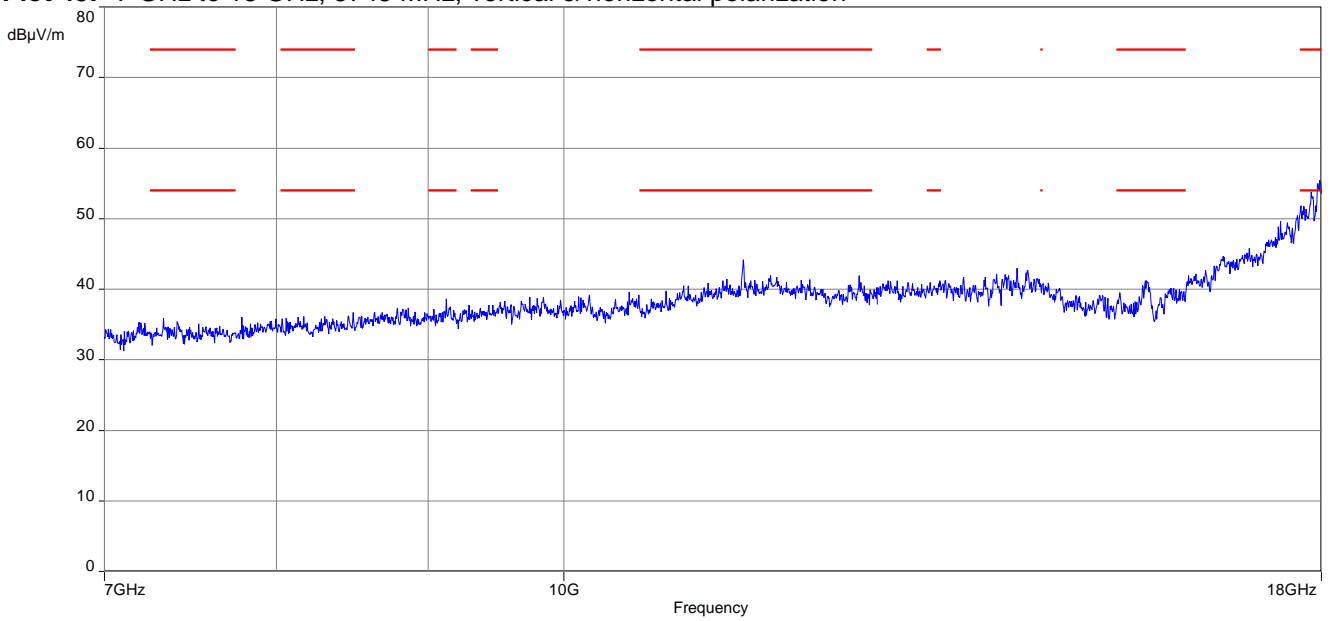
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.860550	12.64	30.00	17.36	1000.0	120.000	98.0	V	100.0	13.4
38.090100	11.06	30.00	18.94	1000.0	120.000	170.0	V	190.0	14.0
41.775900	11.84	30.00	18.16	1000.0	120.000	98.0	V	100.0	14.0
128.138250	10.42	33.50	23.08	1000.0	120.000	170.0	V	280.0	9.5
823.251300	20.31	36.00	15.69	1000.0	120.000	101.0	H	261.0	23.1
937.208250	21.30	36.00	14.70	1000.0	120.000	170.0	V	190.0	24.2

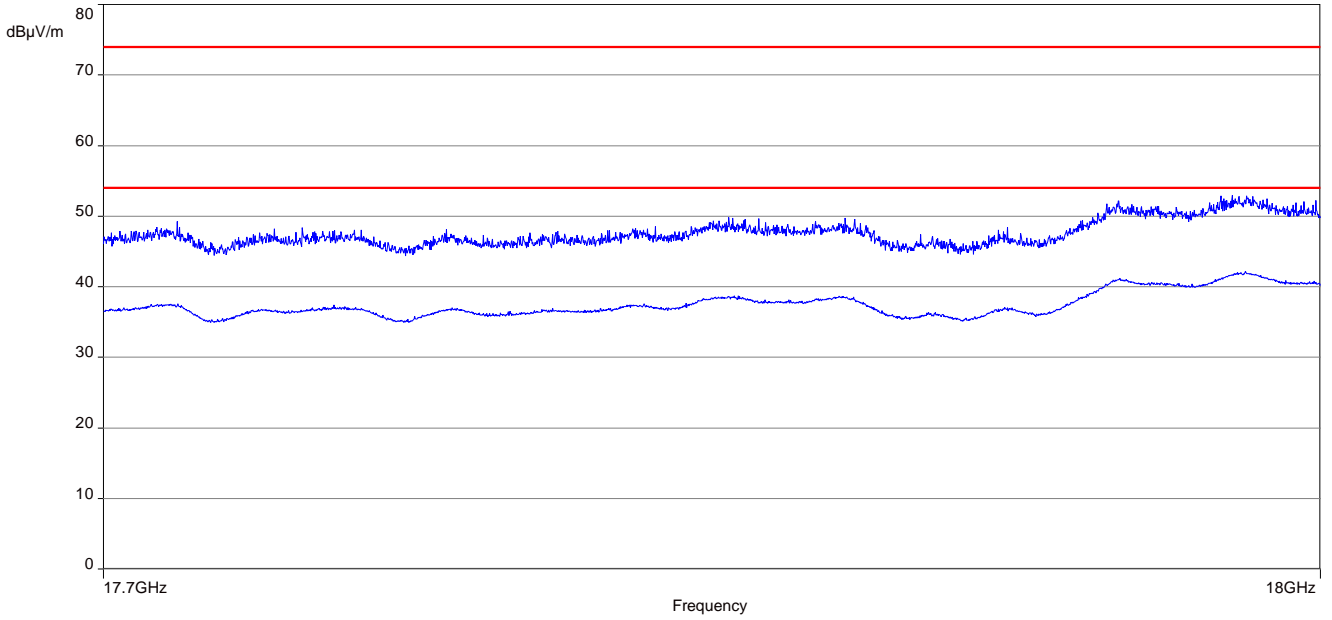
Plot 44: 1 GHz to 7 GHz, 5745 MHz, vertical & horizontal polarization



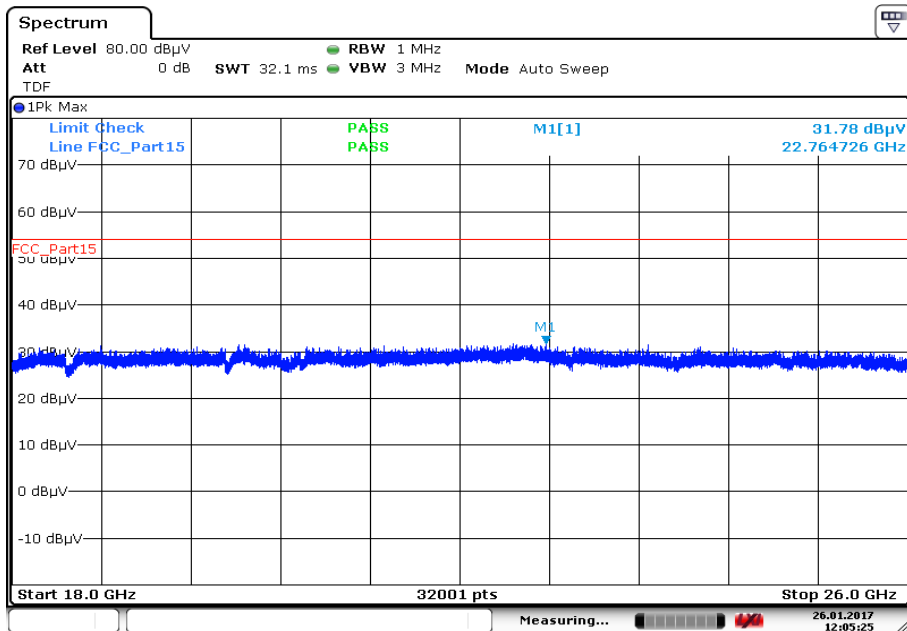
Plot 45: 7 GHz to 18 GHz, 5745 MHz, vertical & horizontal polarization



Plot 46: 17.7 GHz to 18 GHz, 5745 MHz, vertical & horizontal polarization

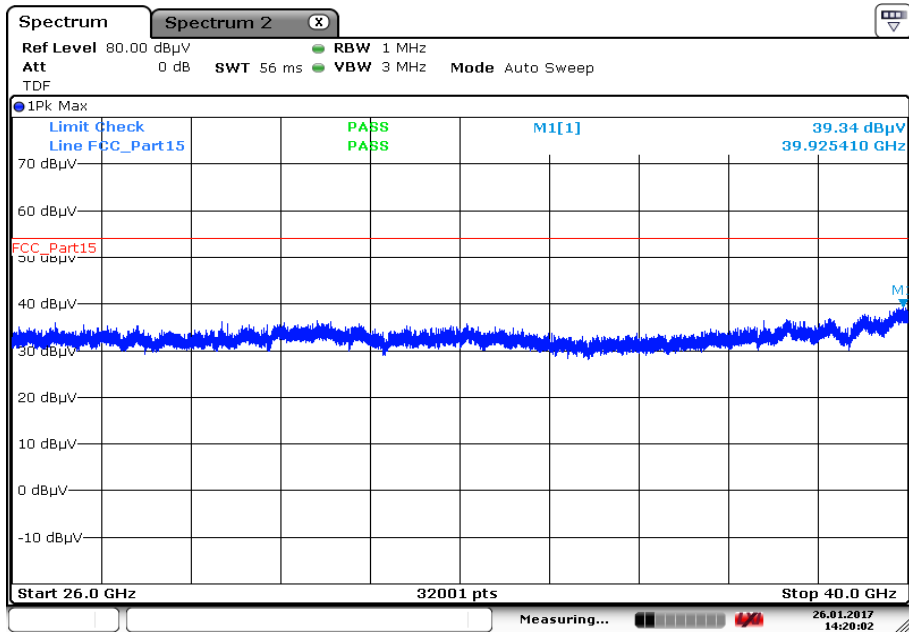


Plot 47: 18 GHz to 26 GHz, 5745 MHz, vertical & horizontal polarization



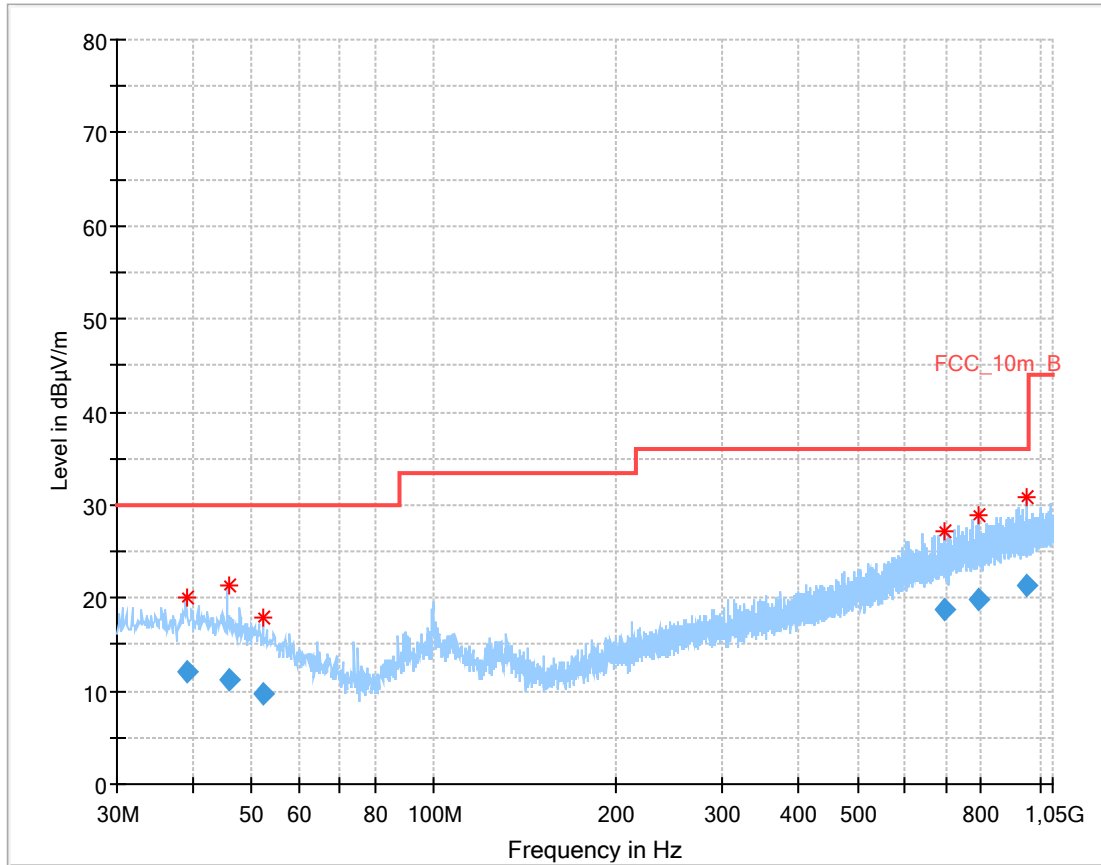
Date: 26.JAN.2017 12:05:25

Plot 48: 26 GHz to 40 GHz, 5745 MHz, vertical & horizontal polarization



Date: 26.JAN.2017 14:20:02

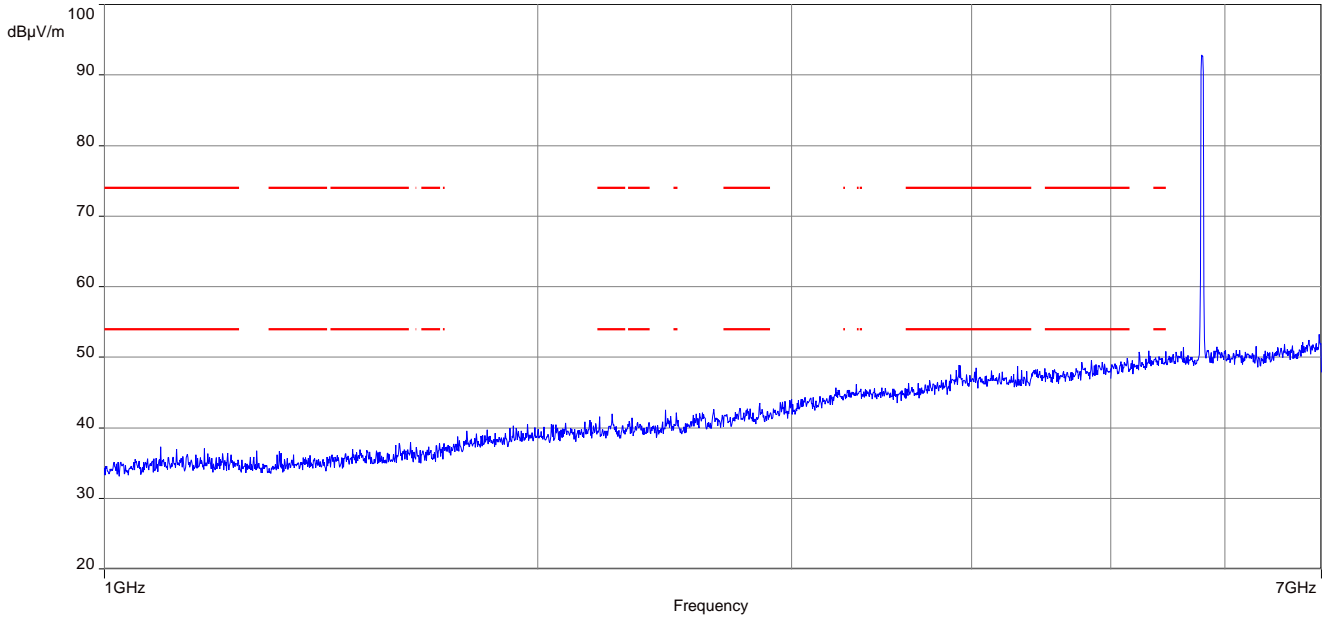
Plot 49: 30 MHz to 1 GHz, 5785 MHz, vertical & horizontal polarization



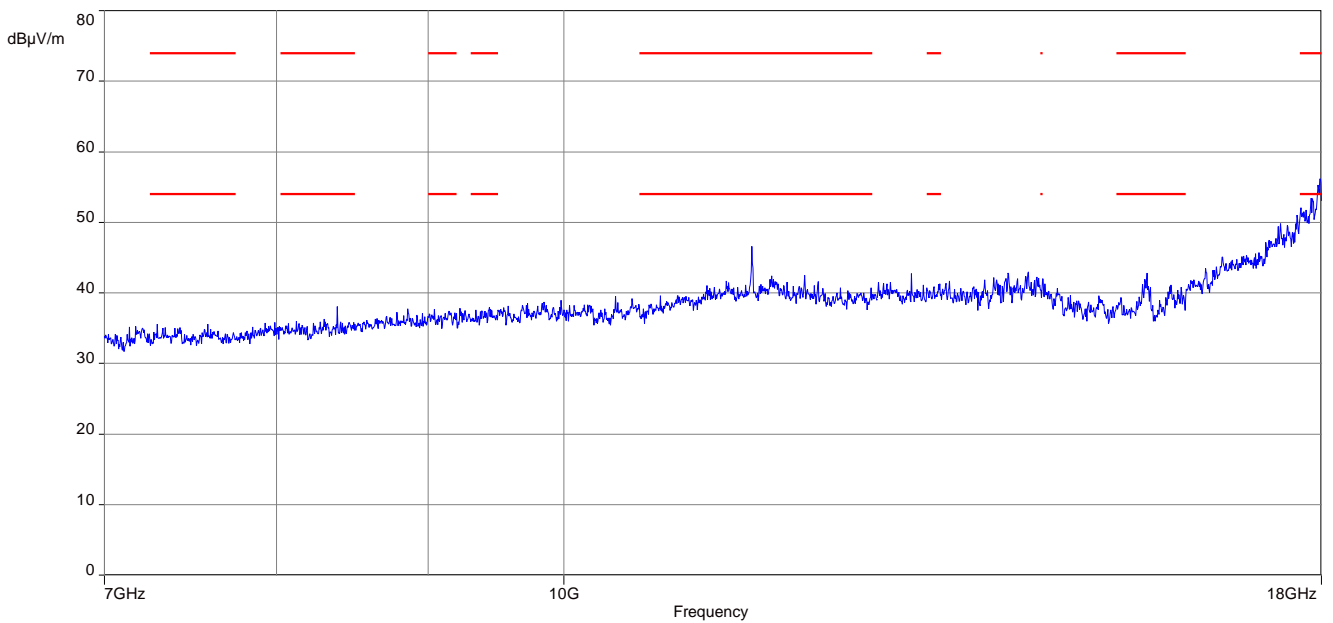
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
39.064050	12.06	30.00	17.94	1000.0	120.000	98.0	V	260.0	14.0
45.832500	11.27	30.00	18.73	1000.0	120.000	170.0	V	171.0	13.6
52.268400	9.68	30.00	20.32	1000.0	120.000	98.0	V	170.0	12.3
695.362800	18.74	36.00	17.26	1000.0	120.000	170.0	V	100.0	21.5
793.170000	19.79	36.00	16.21	1000.0	120.000	170.0	H	100.0	22.7
952.760700	21.37	36.00	14.63	1000.0	120.000	98.0	V	190.0	24.3

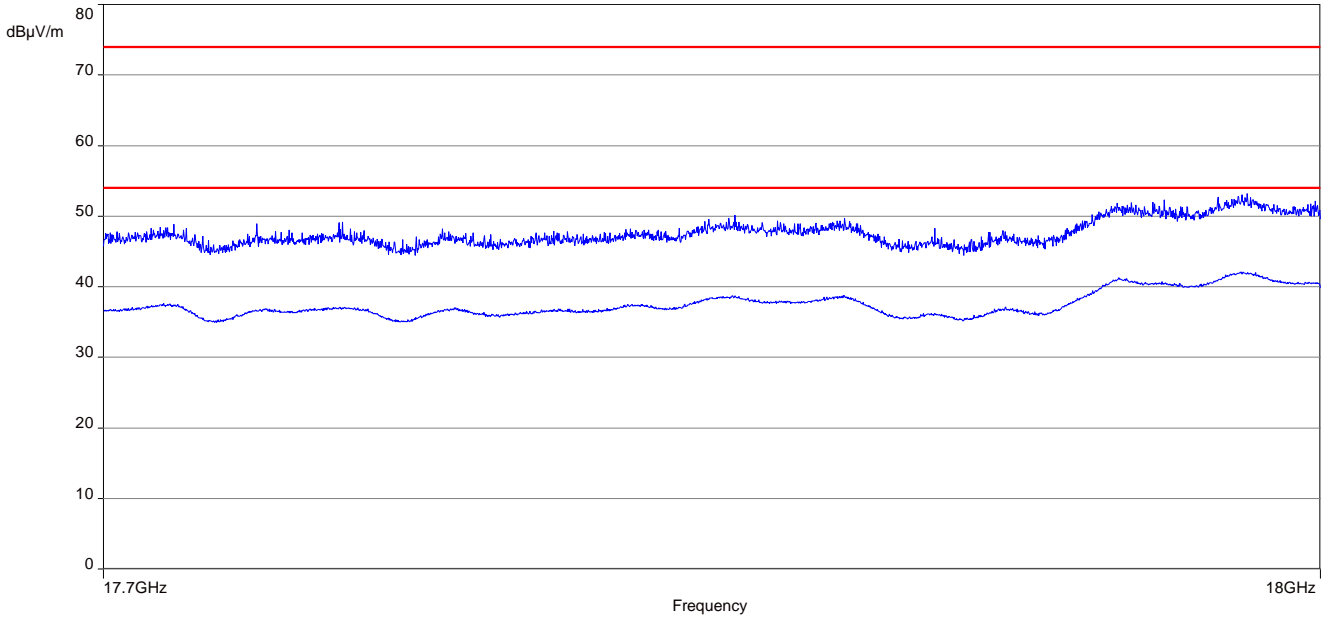
Plot 50: 1 GHz to 7 GHz, 5785 MHz, vertical & horizontal polarization



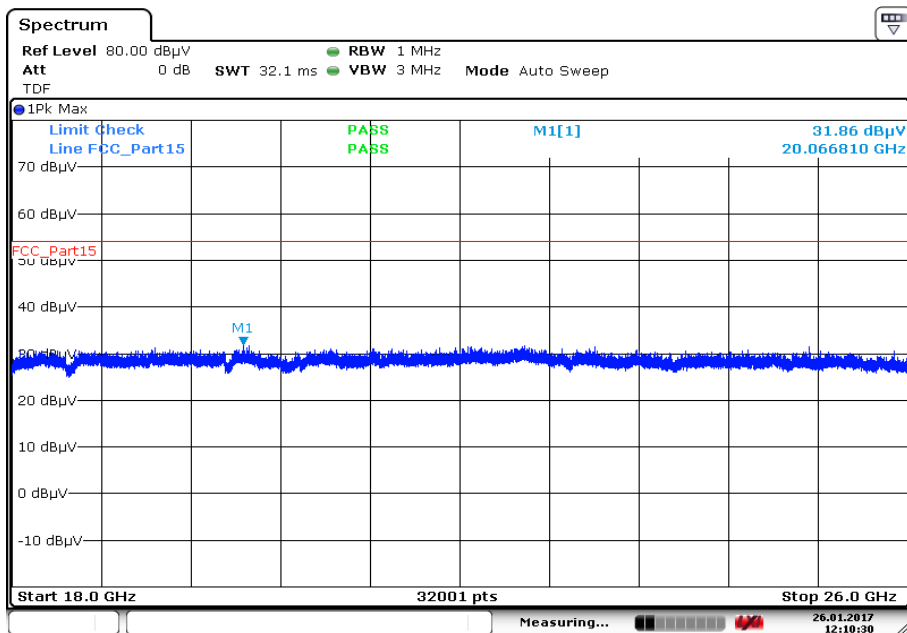
Plot 51: 7 GHz to 18 GHz, 5785 MHz, vertical & horizontal polarization



Plot 52: 17.7 GHz to 18 GHz, 5785 MHz, vertical & horizontal polarization

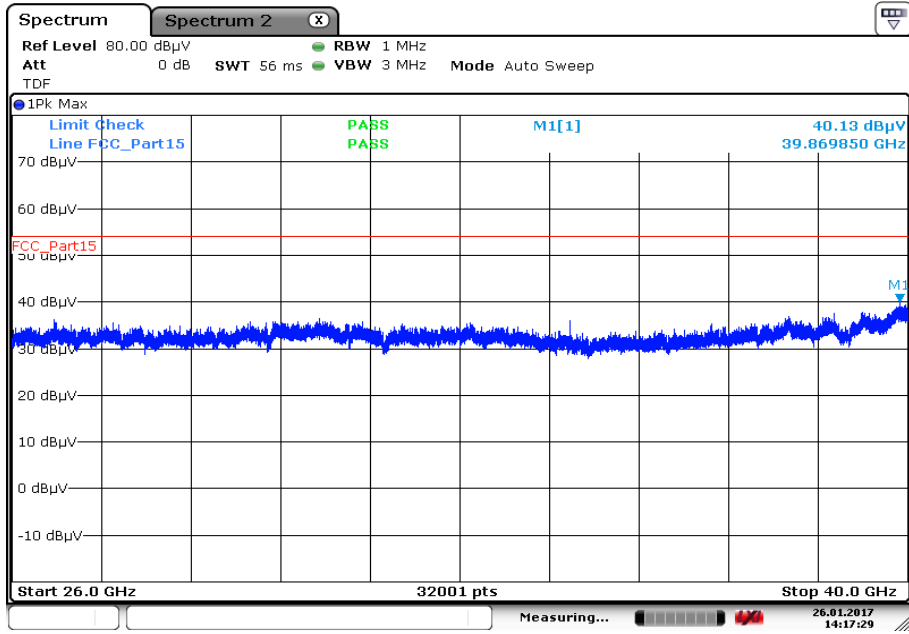


Plot 53: 18 GHz to 26 GHz, 5785 MHz, vertical & horizontal polarization



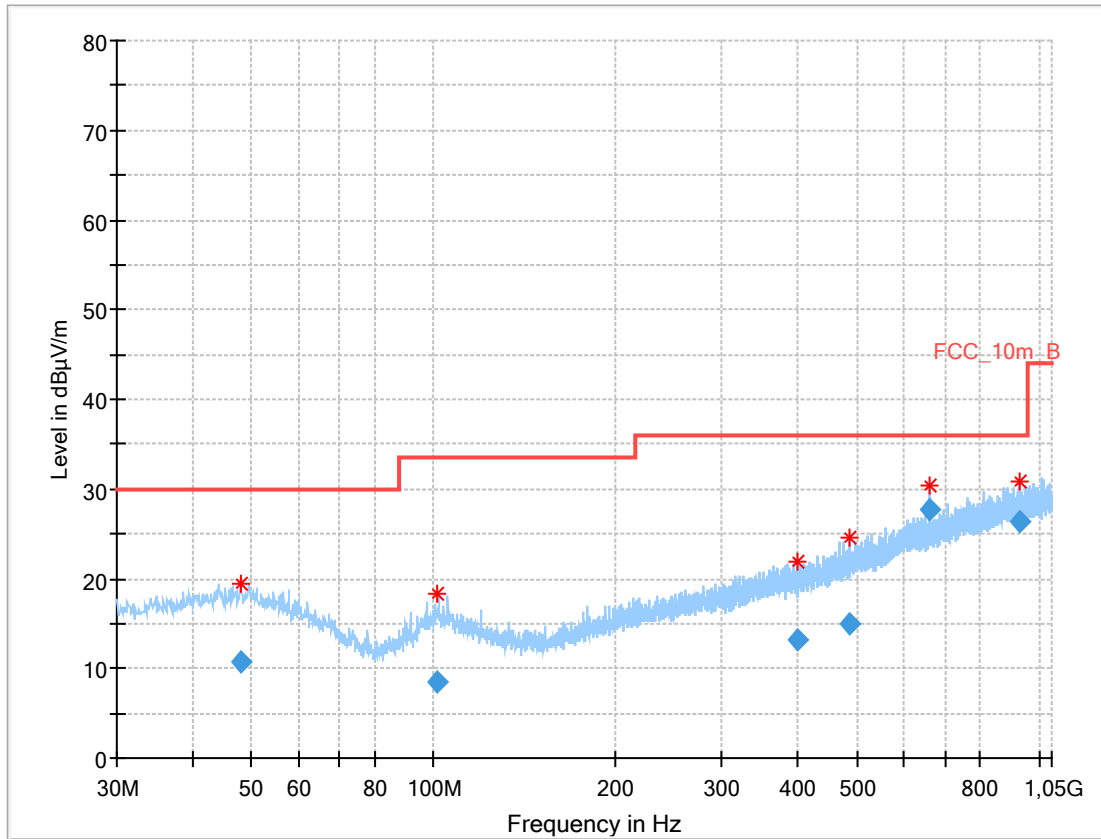
Date: 26.JAN.2017 12:10:30

Plot 54: 26 GHz to 40 GHz, 5785 MHz, vertical & horizontal polarization



Date: 26.JAN.2017 14:17:29

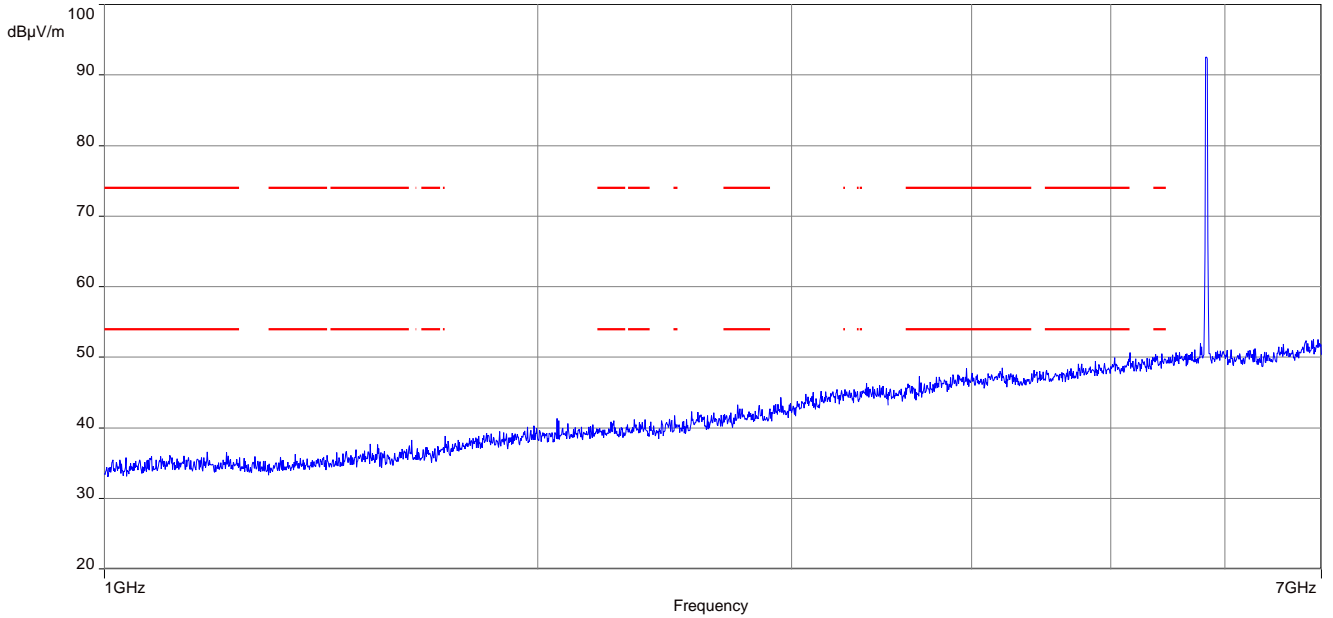
Plot 55: 30 MHz to 1 GHz, 5825 MHz, vertical & horizontal polarization



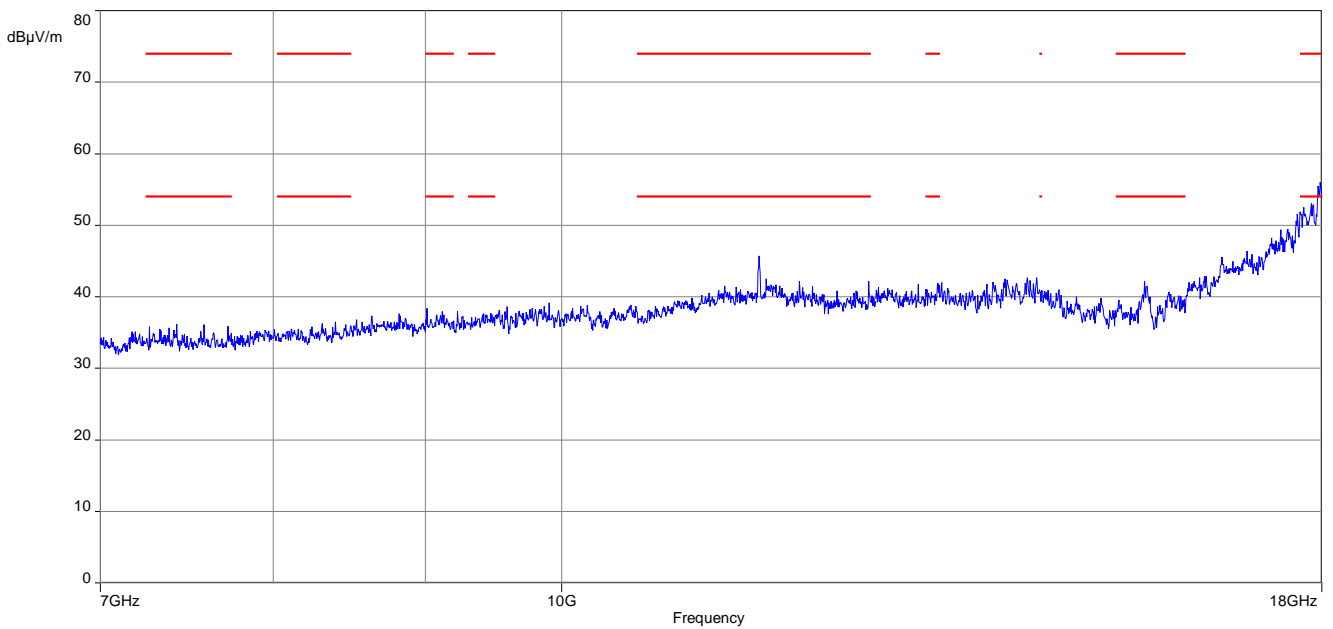
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.935200	10.65	30.00	19.35	1000.0	120.000	185.0	V	353.0	13.7
101.537100	8.57	33.50	24.93	1000.0	120.000	101.0	H	151.0	12.0
399.270000	13.29	36.00	22.71	1000.0	120.000	185.0	H	105.0	16.9
486.394500	14.87	36.00	21.13	1000.0	120.000	101.0	V	89.0	18.4
661.722150	27.67	36.00	8.33	1000.0	120.000	101.0	H	128.0	21.2
927.367350	26.26	36.00	9.74	1000.0	120.000	98.0	V	7.0	24.3

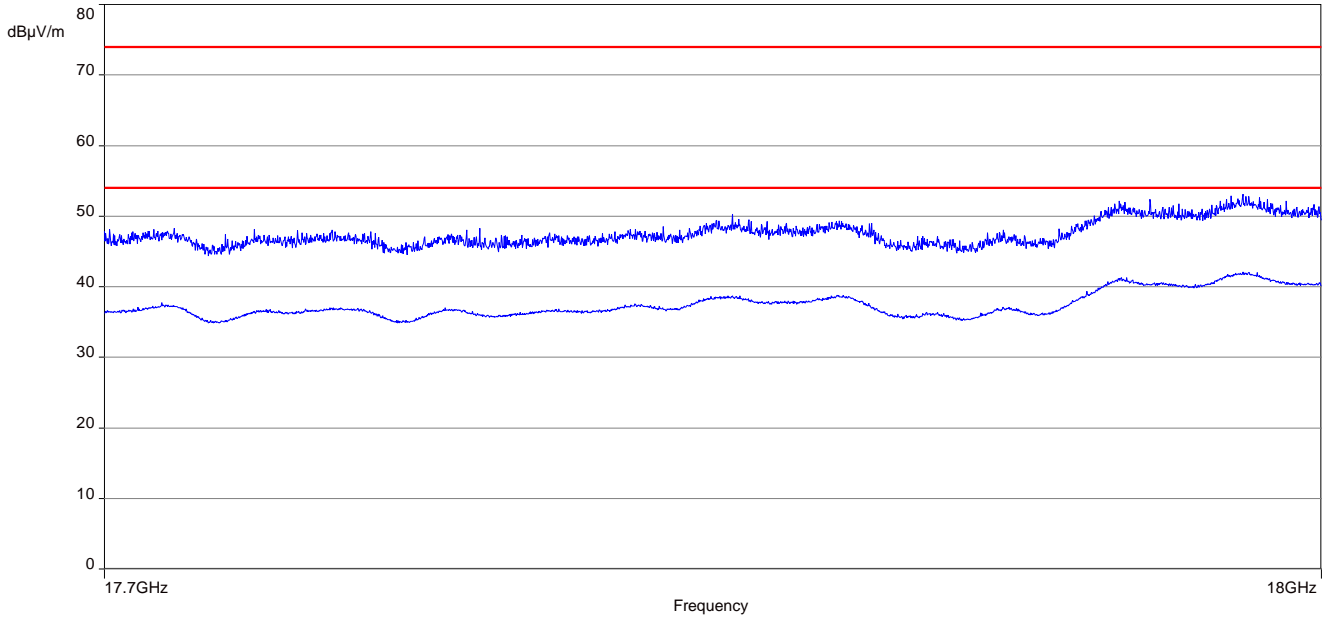
Plot 56: 1 GHz to 7 GHz, 5825 MHz, vertical & horizontal polarization



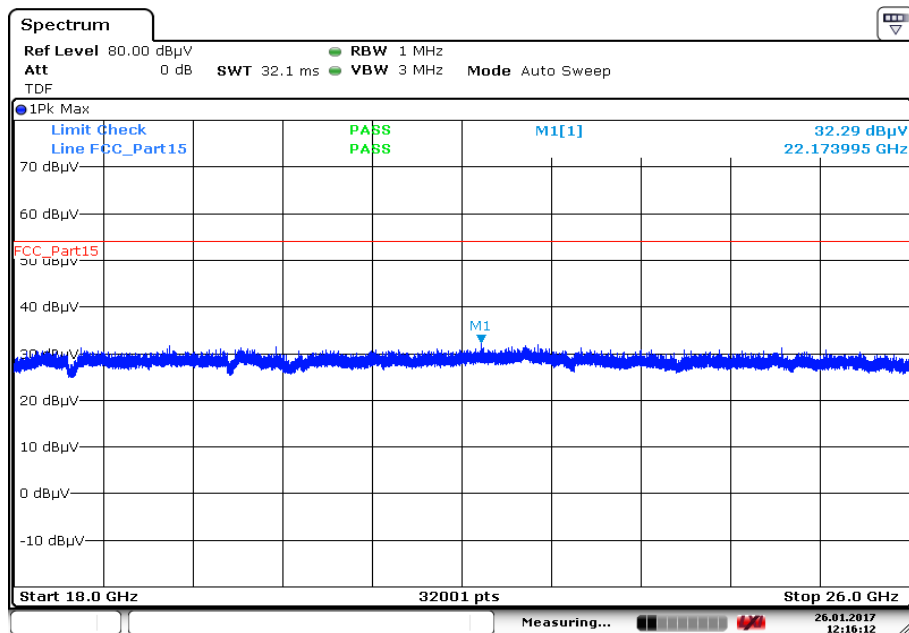
Plot 57: 7 GHz to 18 GHz, 5825 MHz, vertical & horizontal polarization



Plot 58: 17.7 GHz to 18 GHz, 5825 MHz, vertical & horizontal polarization

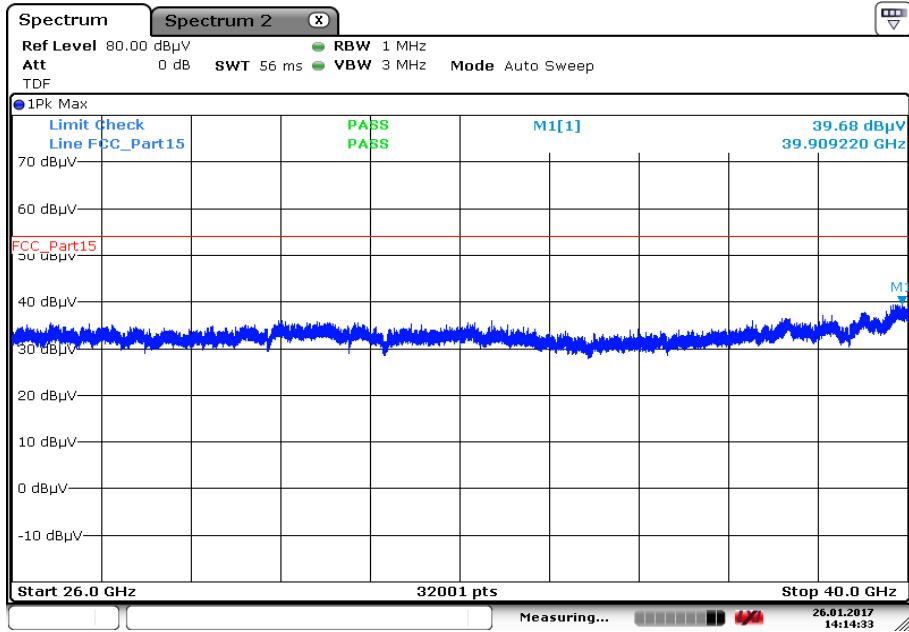


Plot 59: 18 GHz to 26 GHz, 5825 MHz, vertical & horizontal polarization



Date: 26.JAN.2017 12:16:12

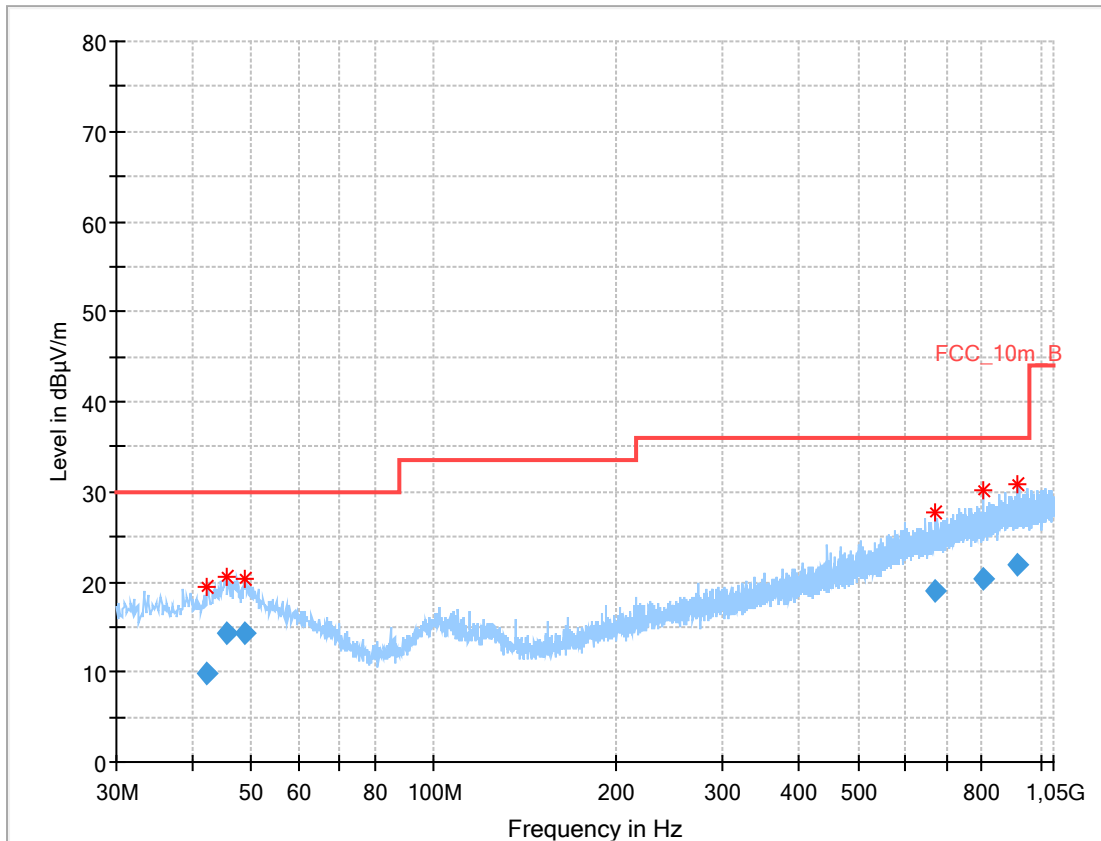
Plot 60: 26 GHz to 40 GHz, 5825 MHz, vertical & horizontal polarization



Date: 26.JAN.2017 14:14:33

Plots: OFDM / n/ac HT40 – mode

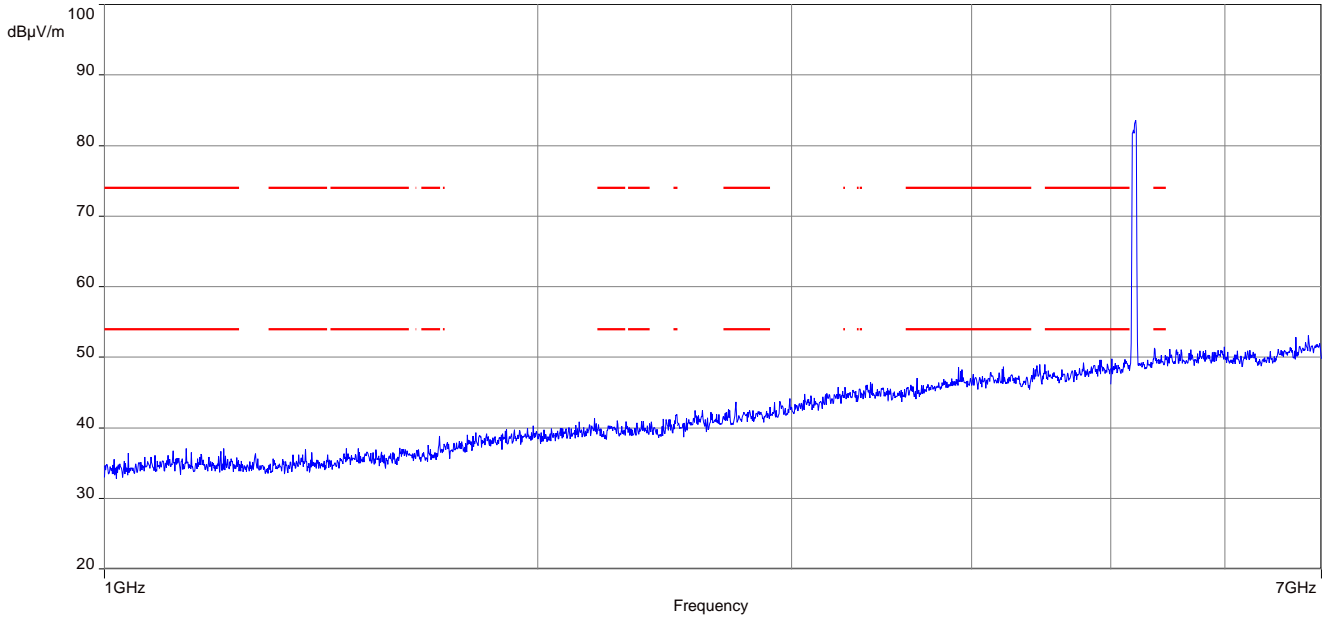
Plot 1: 30 MHz to 1 GHz, 5190 MHz, vertical & horizontal polarization



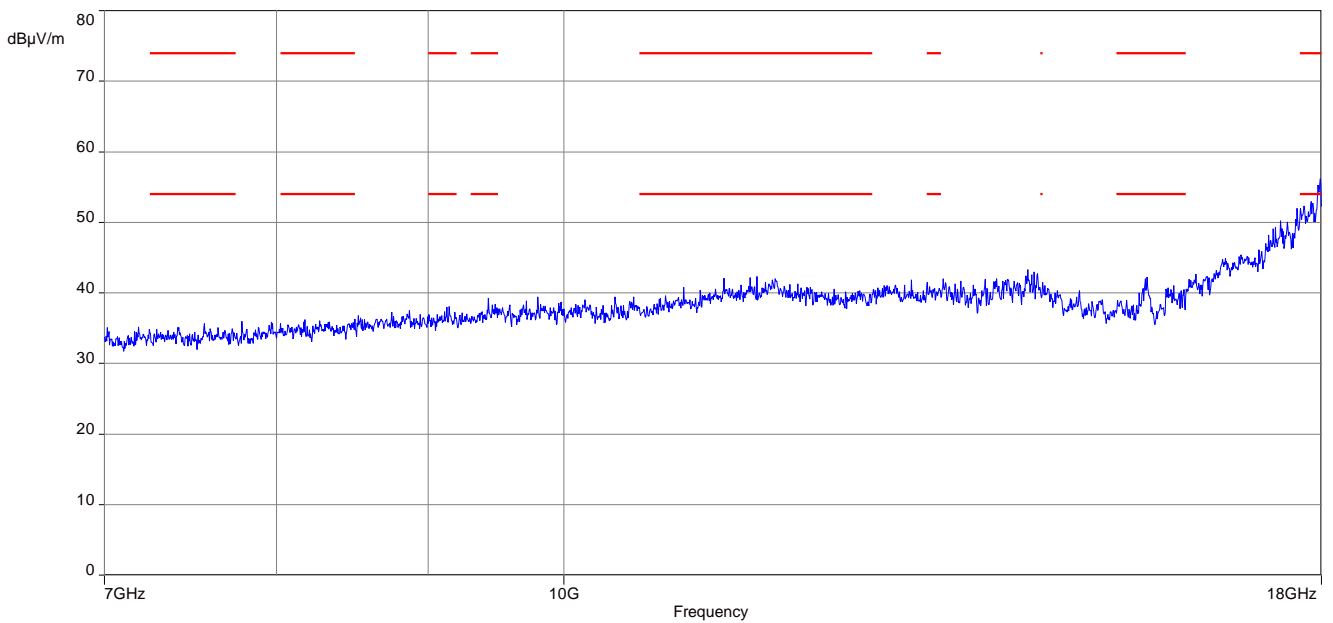
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
42.151500	9.86	30.00	20.14	1000.0	120.000	101.0	H	73.0	13.4
45.728250	14.26	30.00	15.74	1000.0	120.000	178.0	V	336.0	13.6
49.000650	14.19	30.00	15.81	1000.0	120.000	98.0	V	316.0	13.7
672.226350	19.07	36.00	16.93	1000.0	120.000	178.0	V	251.0	21.3
801.986400	20.39	36.00	15.61	1000.0	120.000	185.0	H	56.0	22.8
913.800600	21.80	36.00	14.20	1000.0	120.000	101.0	V	39.0	24.2

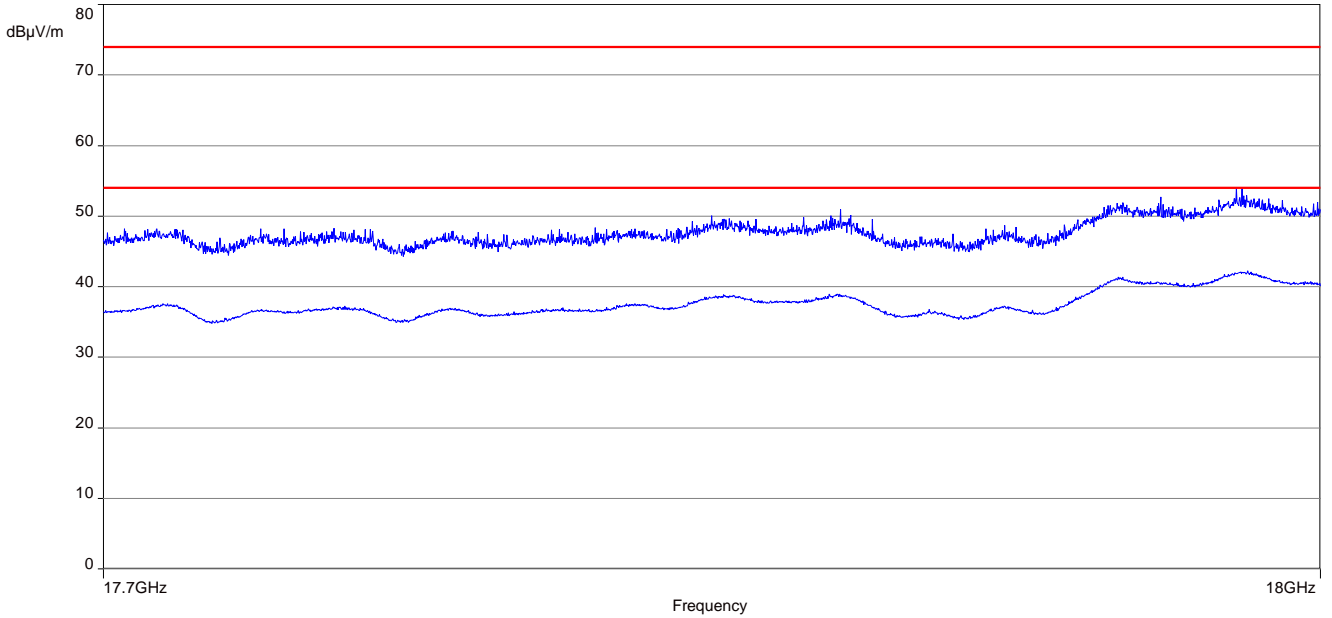
Plot 2: 1 GHz to 7 GHz, 5190 MHz, vertical & horizontal polarization



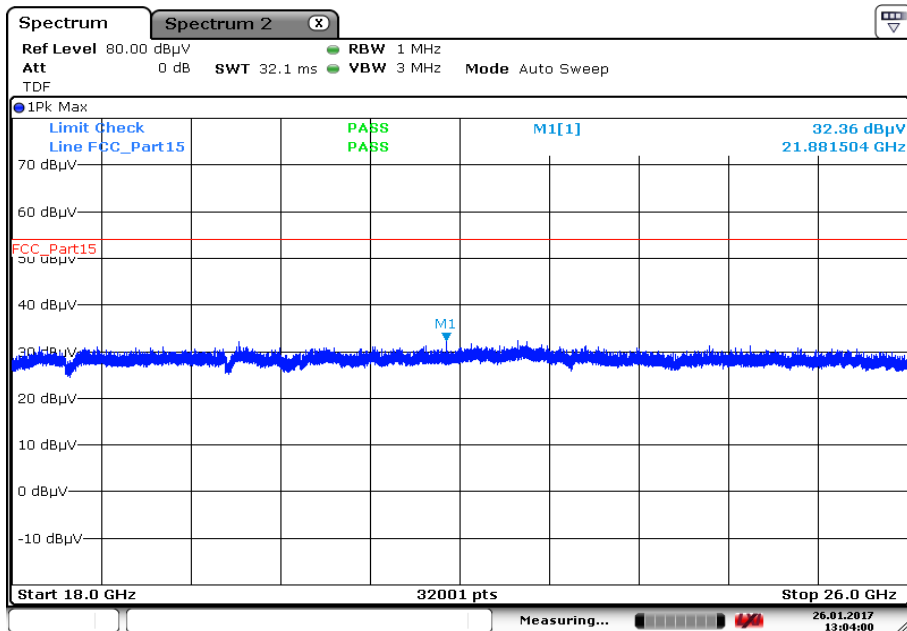
Plot 3: 7 GHz to 18 GHz, 5190 MHz, vertical & horizontal polarization



Plot 4: 17.7 GHz to 18 GHz, 5190 MHz, vertical & horizontal polarization

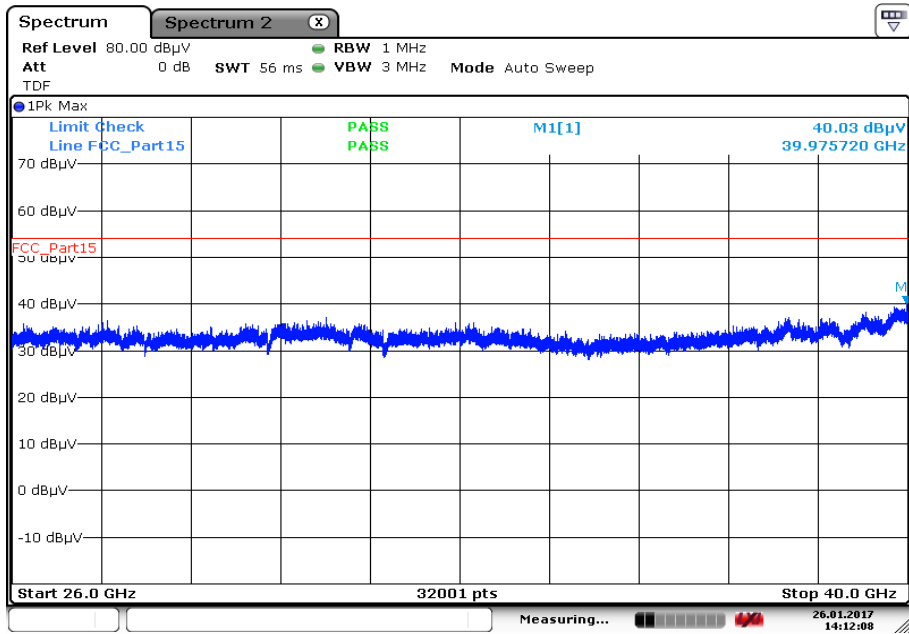


Plot 5: 18 GHz to 26 GHz, 5190 MHz, vertical & horizontal polarization



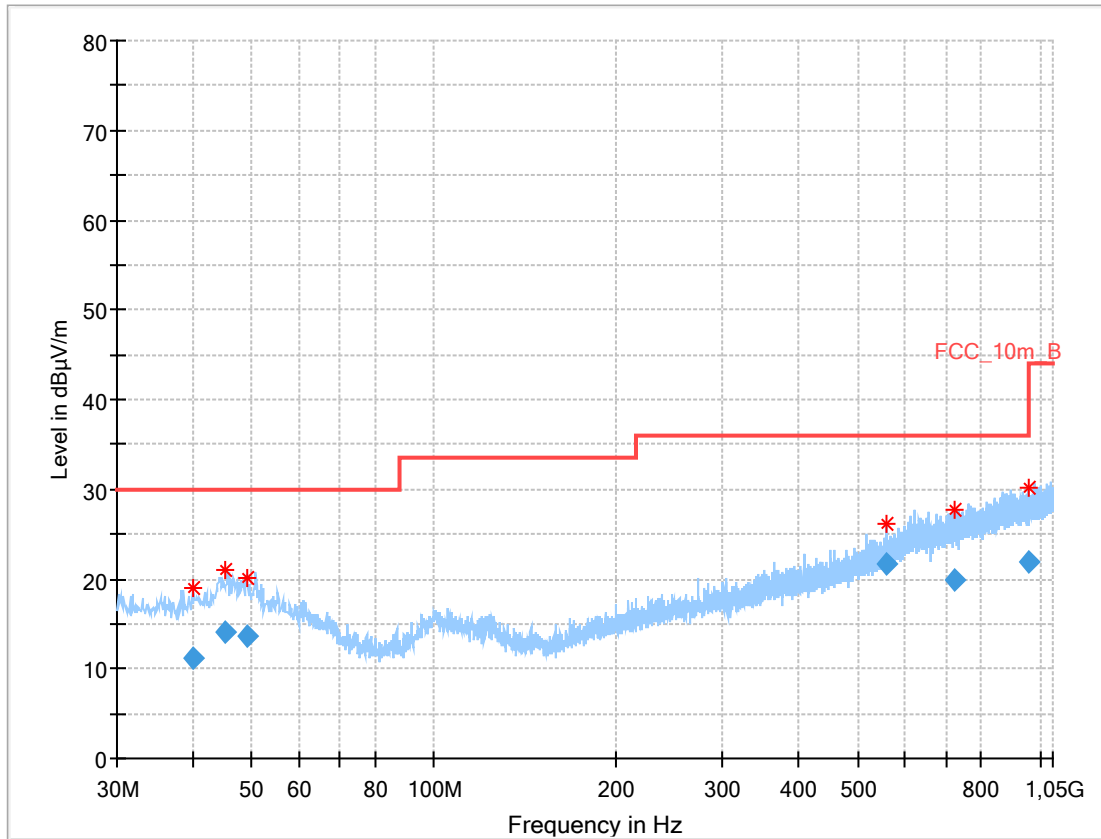
Date: 26.JAN.2017 13:04:00

Plot 6: 26 GHz to 40 GHz, 5190 MHz, vertical & horizontal polarization



Date: 26.JAN.2017 14:12:08

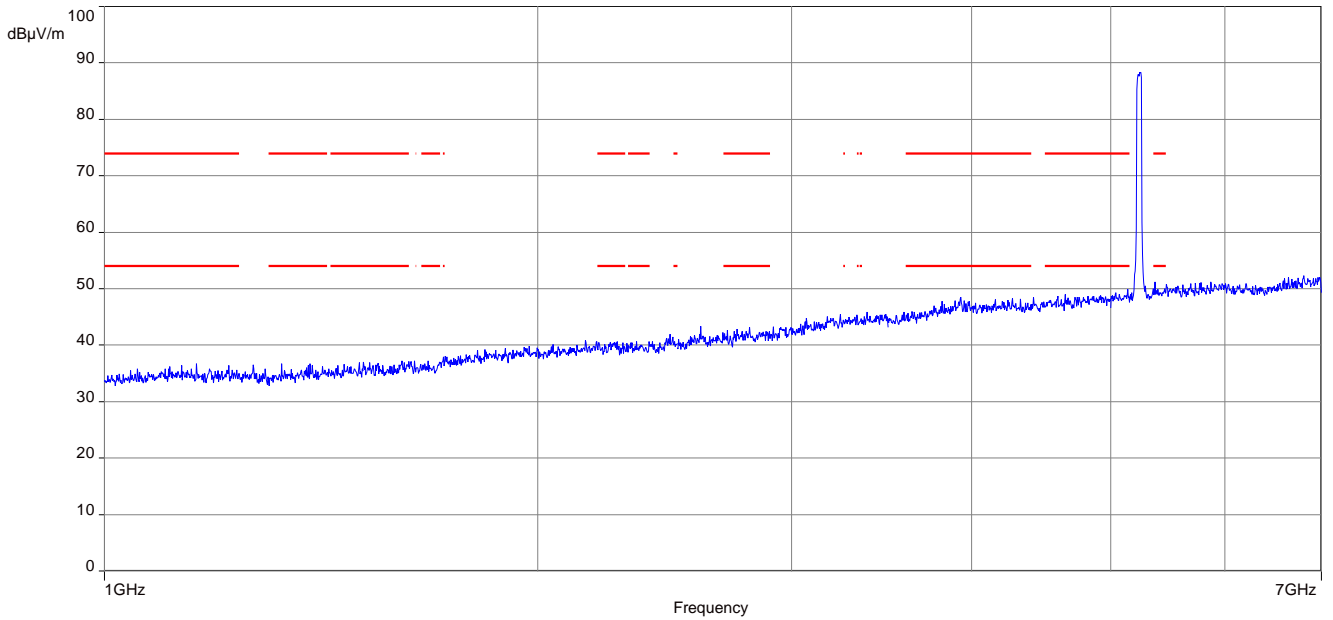
Plot 7: 30 MHz to 1 GHz, 5230 MHz, vertical & horizontal polarization



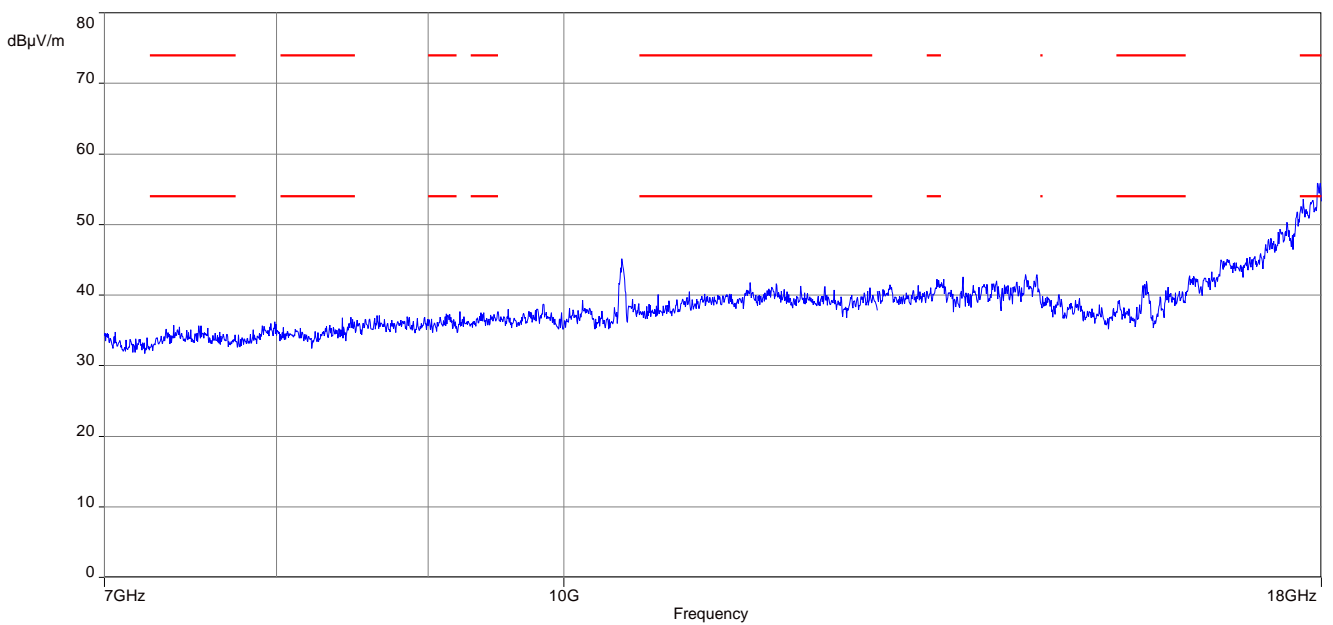
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
39.928500	11.26	30.00	18.74	1000.0	120.000	101.0	V	32.0	13.2
45.180750	14.16	30.00	15.84	1000.0	120.000	185.0	V	169.0	13.6
49.094250	13.58	30.00	16.42	1000.0	120.000	101.0	V	169.0	13.7
559.978200	21.66	36.00	14.34	1000.0	120.000	98.0	V	169.0	19.6
721.557150	19.88	36.00	16.12	1000.0	120.000	185.0	H	227.0	22.1
956.286600	21.97	36.00	14.03	1000.0	120.000	98.0	H	353.0	24.4

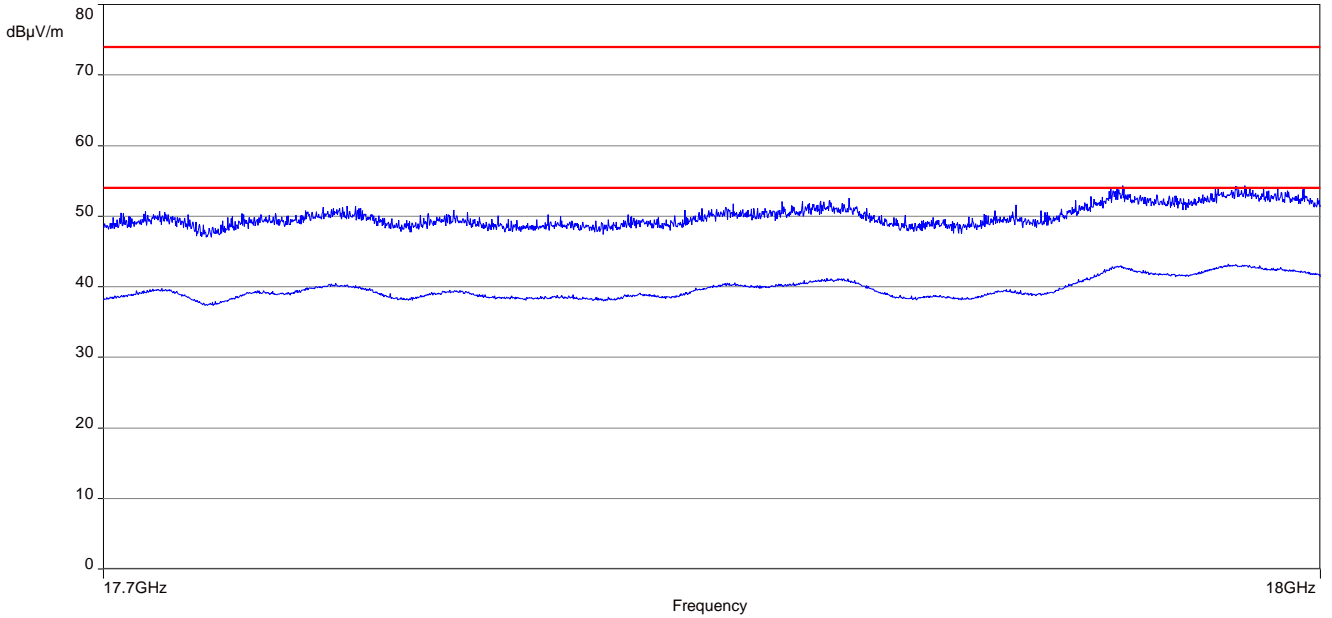
Plot 8: 1 GHz to 7 GHz, 5230 MHz, vertical & horizontal polarization



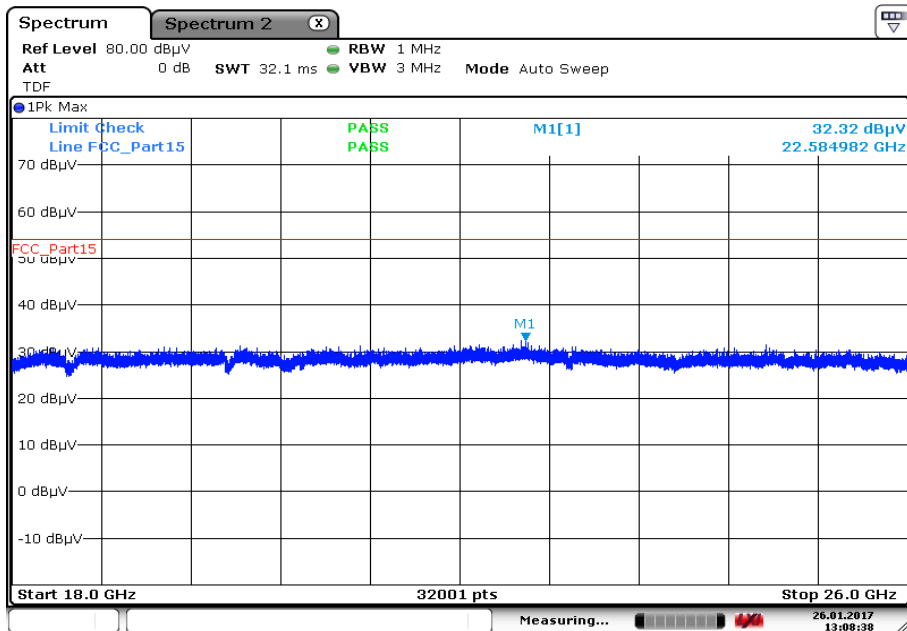
Plot 9: 7 GHz to 18 GHz, 5230 MHz, vertical & horizontal polarization



Plot 10: 17.7 GHz to 18 GHz, 5230 MHz, vertical & horizontal polarization

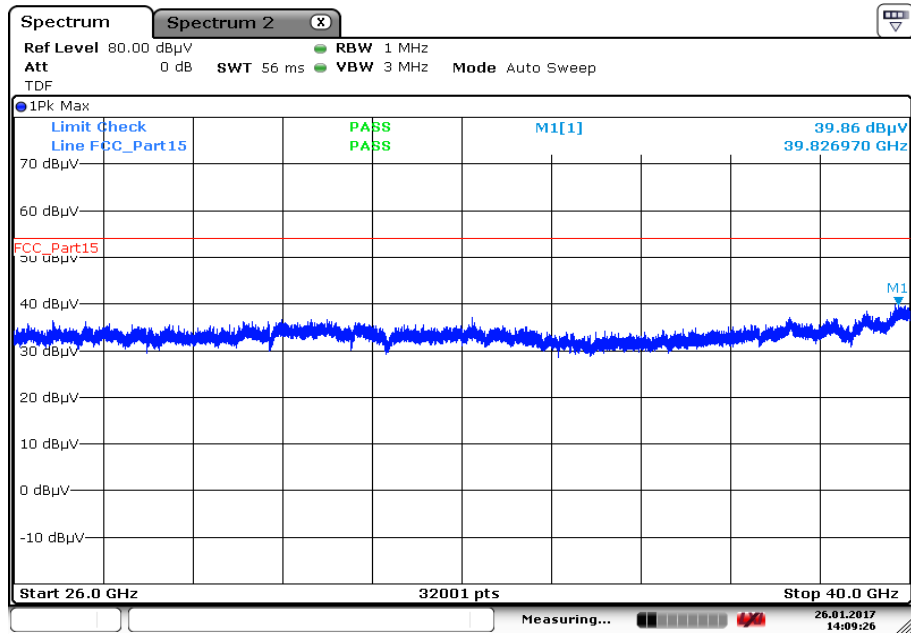


Plot 11: 18 GHz to 26 GHz, 5230 MHz, vertical & horizontal polarization



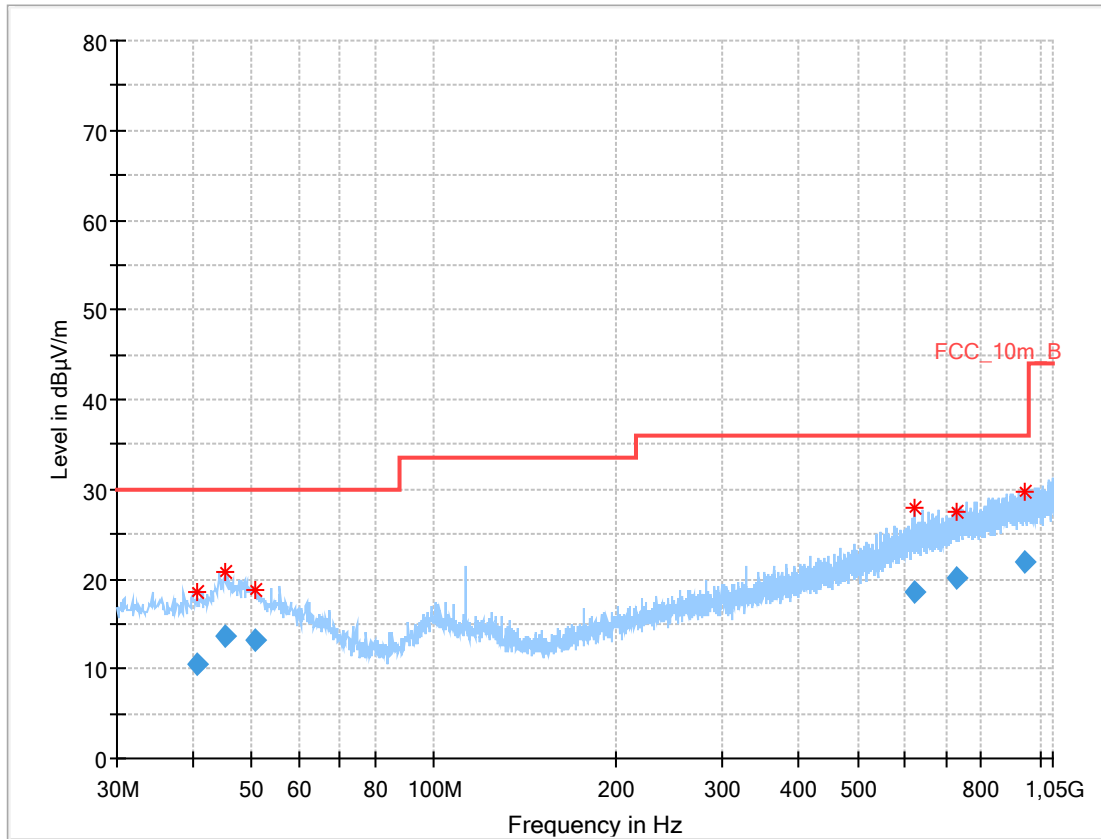
Date: 26.JAN.2017 13:08:37

Plot 12: 26 GHz to 40 GHz, 5230 MHz, vertical & horizontal polarization



Date: 26.JAN.2017 14:09:25

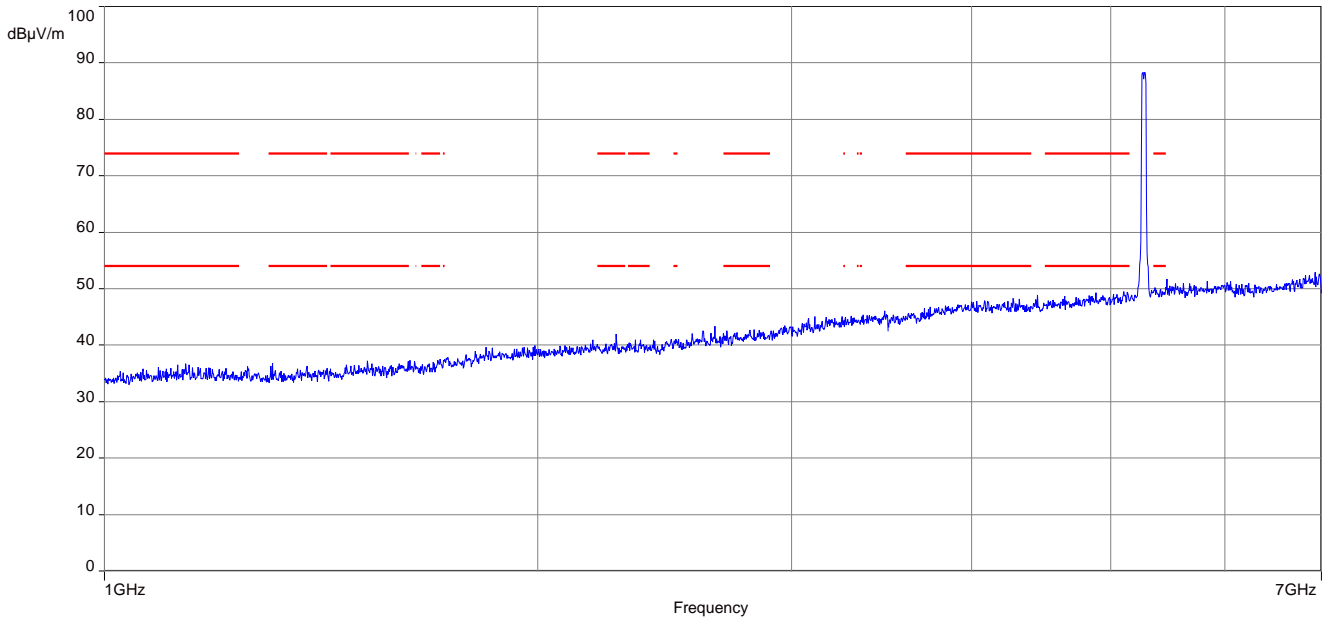
Plot 13: 30 MHz to 1 GHz, 5270 MHz, vertical & horizontal polarization



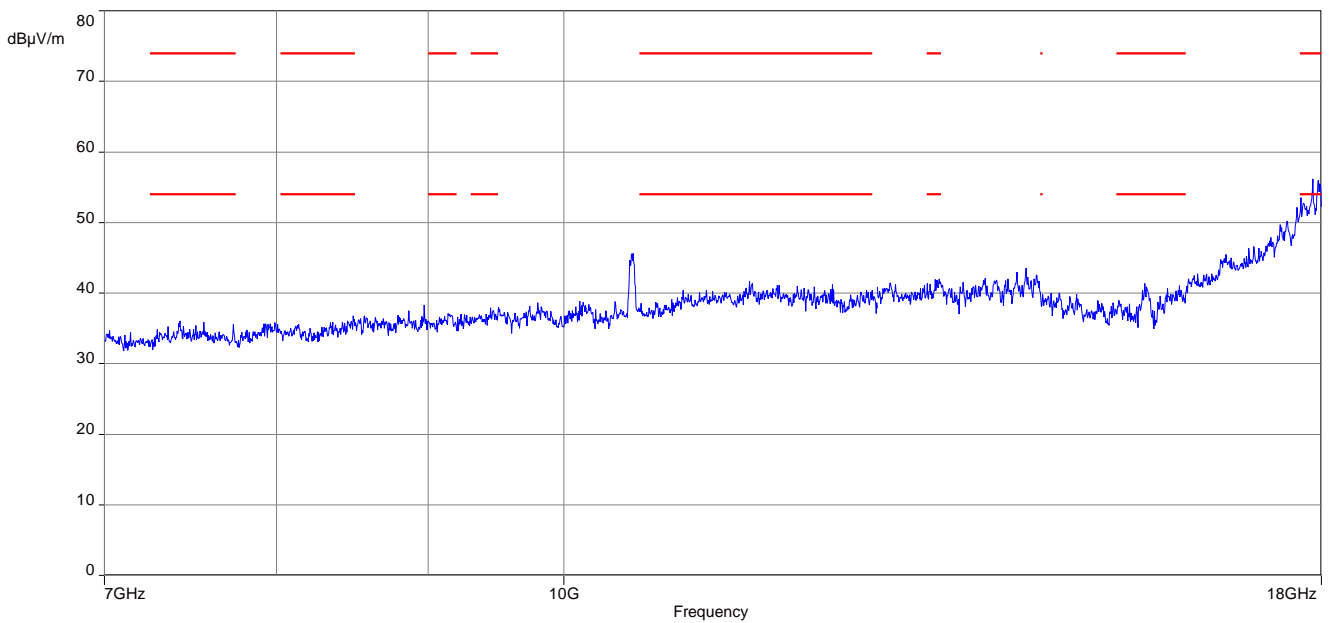
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
40.778550	10.49	30.00	19.51	1000.0	120.000	98.0	H	127.0	13.3
45.138900	13.73	30.00	16.27	1000.0	120.000	185.0	V	323.0	13.6
50.815800	13.26	30.00	16.74	1000.0	120.000	98.0	V	6.0	13.6
621.027750	18.65	36.00	17.35	1000.0	120.000	185.0	V	171.0	20.9
730.579500	20.05	36.00	15.95	1000.0	120.000	179.0	V	157.0	22.3
941.447400	21.91	36.00	14.09	1000.0	120.000	185.0	V	80.0	24.3

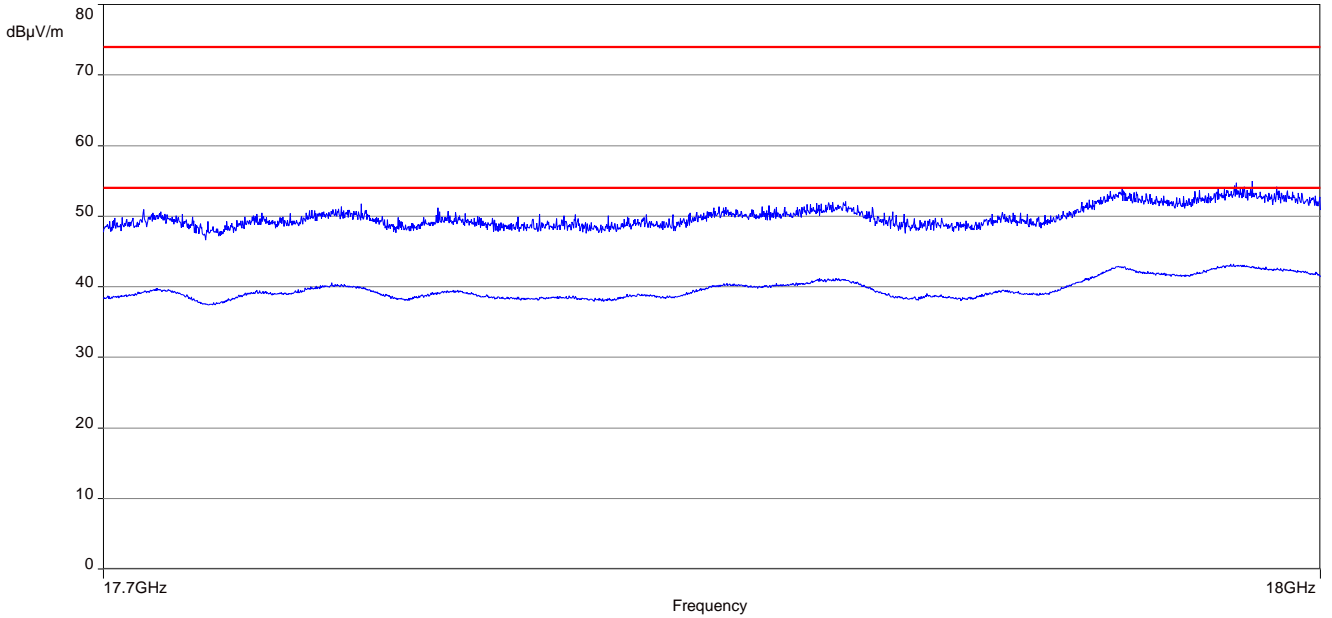
Plot 14: 1 GHz to 7 GHz, 5270 MHz, vertical & horizontal polarization



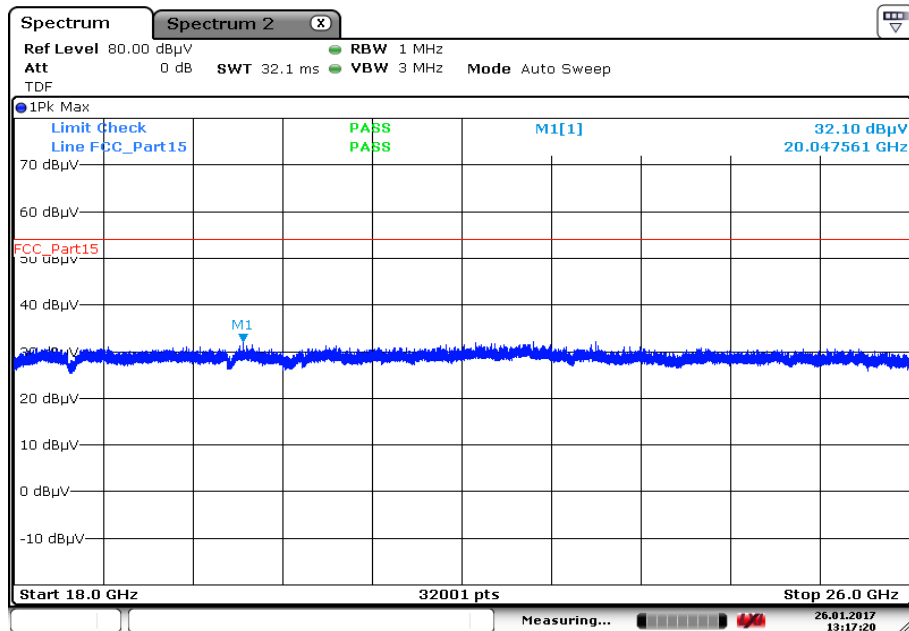
Plot 15: 7 GHz to 18 GHz, 5270 MHz, vertical & horizontal polarization



Plot 16: 17.7 GHz to 18 GHz, 5270 MHz, vertical & horizontal polarization

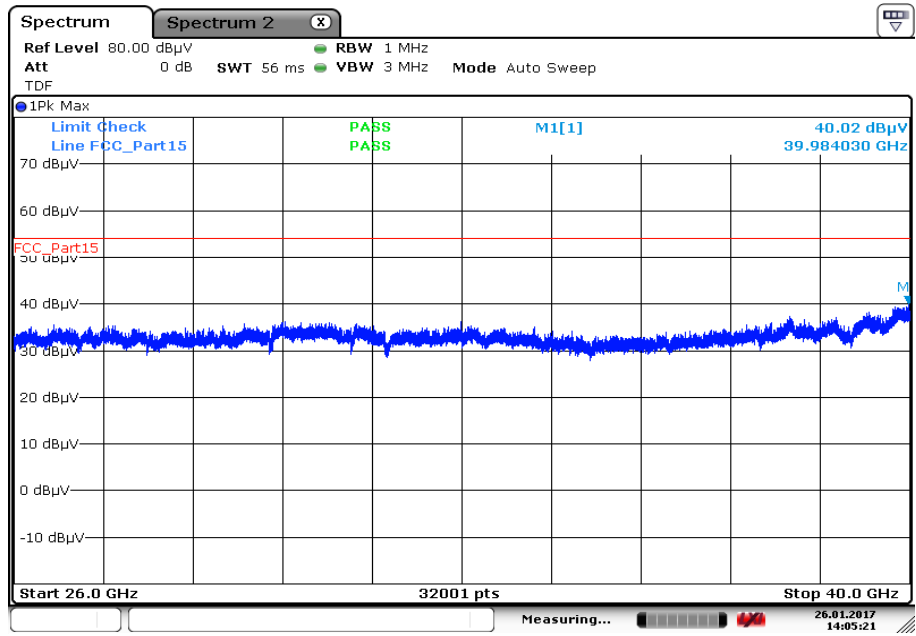


Plot 17: 18 GHz to 26 GHz, 5270 MHz, vertical & horizontal polarization



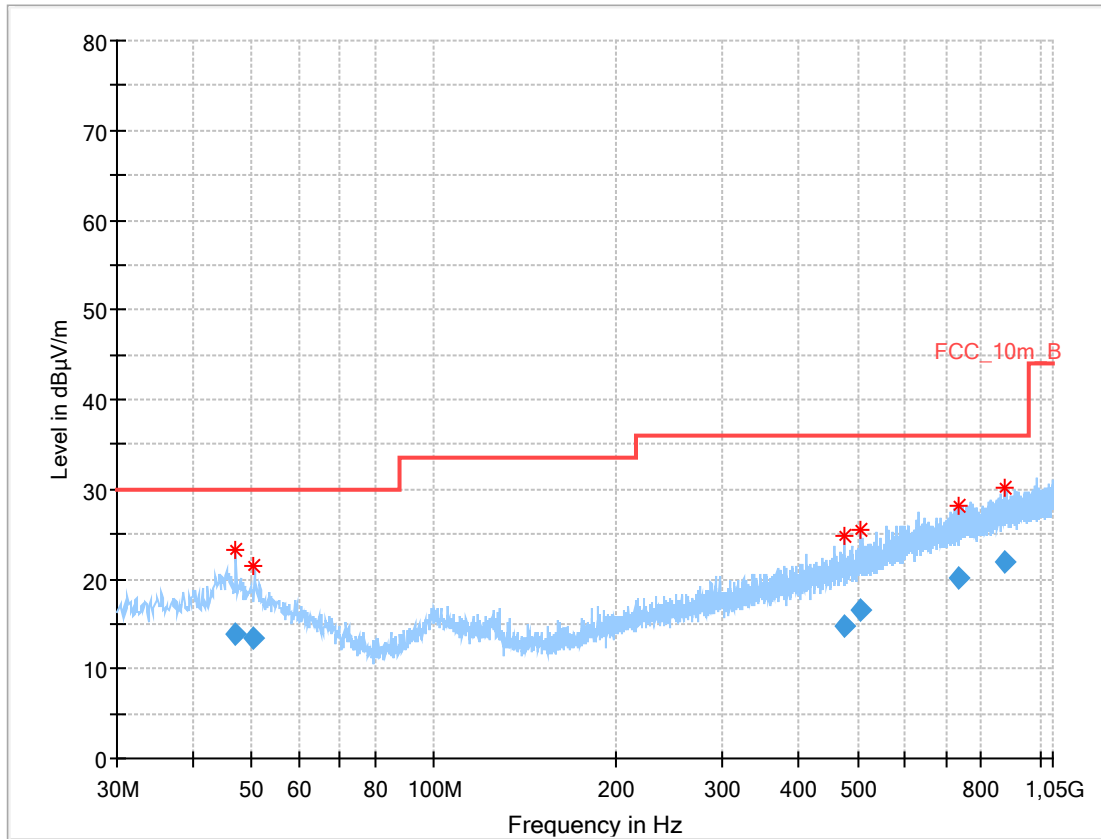
Date: 26.JAN.2017 13:17:20

Plot 18: 26 GHz to 40 GHz, 5270 MHz, vertical & horizontal polarization



Date: 26.JAN.2017 14:05:20

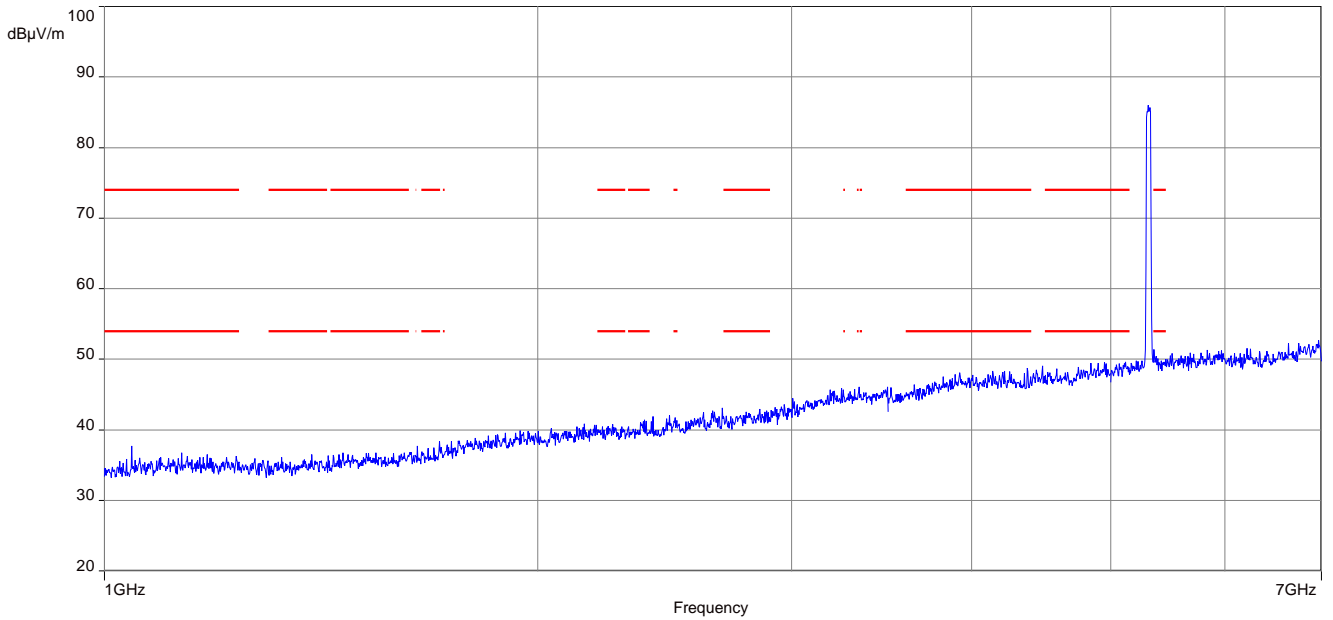
Plot 19: 30 MHz to 1 GHz, 5310 MHz, vertical & horizontal polarization



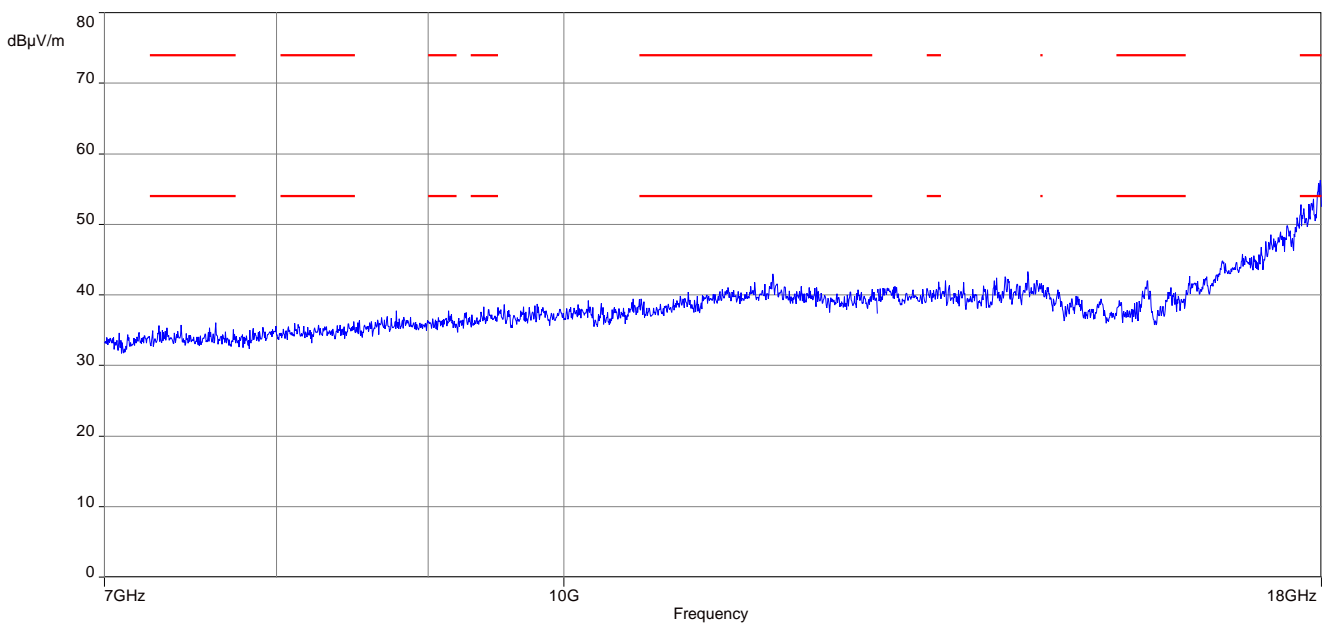
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.048550	13.79	30.00	16.21	1000.0	120.000	101.0	V	305.0	13.7
50.317200	13.37	30.00	16.63	1000.0	120.000	98.0	V	292.0	13.7
475.123650	14.76	36.00	21.24	1000.0	120.000	178.0	V	317.0	18.2
506.427450	16.51	36.00	19.49	1000.0	120.000	98.0	H	26.0	18.8
733.583250	20.09	36.00	15.91	1000.0	120.000	178.0	V	60.0	22.3
875.781300	21.85	36.00	14.15	1000.0	120.000	185.0	H	4.0	23.9

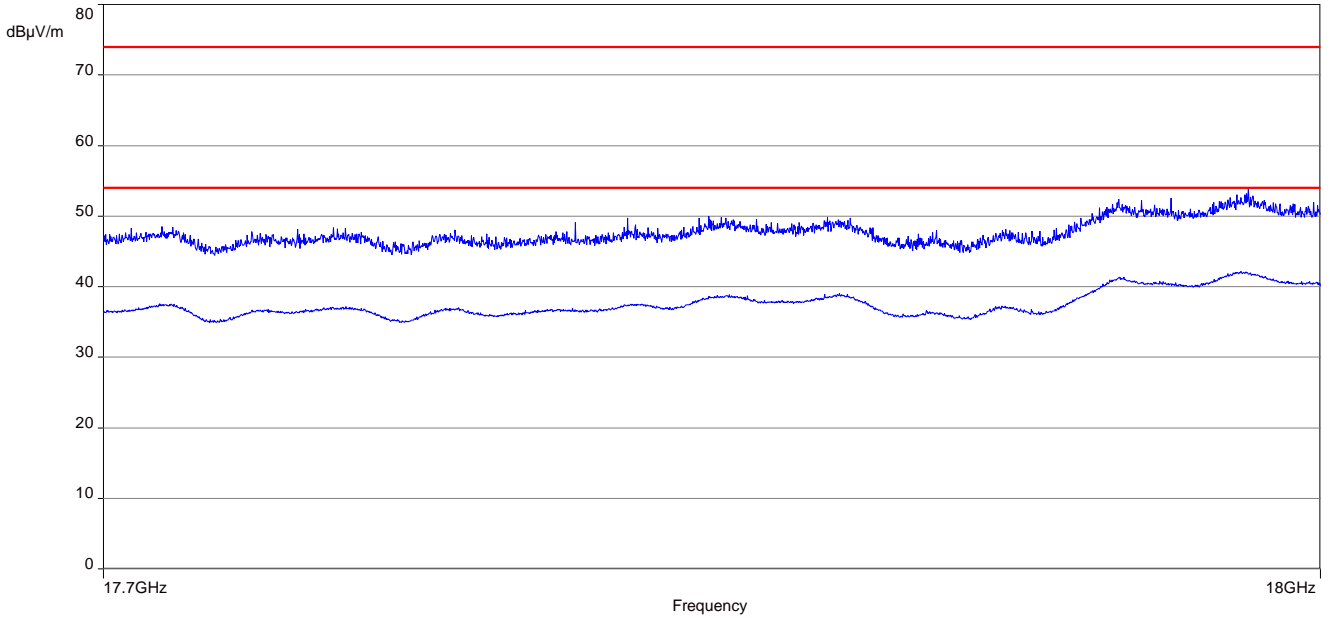
Plot 20: 1 GHz to 7 GHz, 5310 MHz, vertical & horizontal polarization



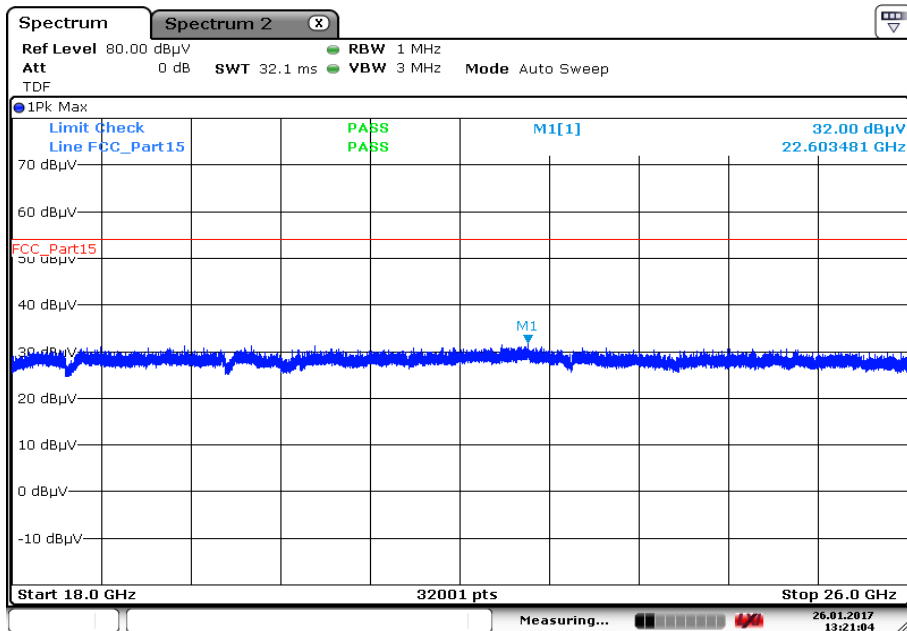
Plot 21: 7 GHz to 18 GHz, 5310 MHz, vertical & horizontal polarization



Plot 22: 17.7 GHz to 18 GHz, 5310 MHz, vertical & horizontal polarization

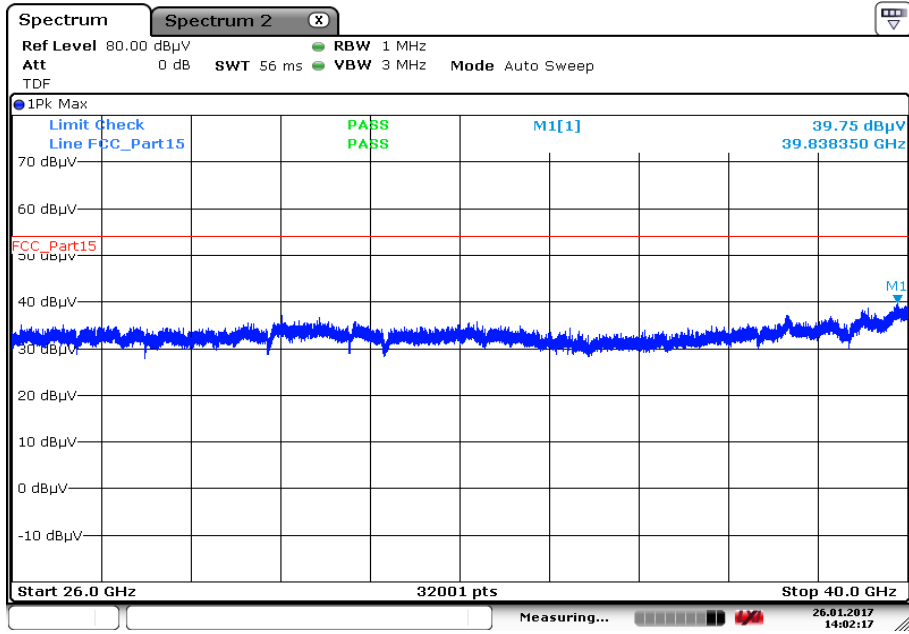


Plot 23: 18 GHz to 26 GHz, 5310 MHz, vertical & horizontal polarization



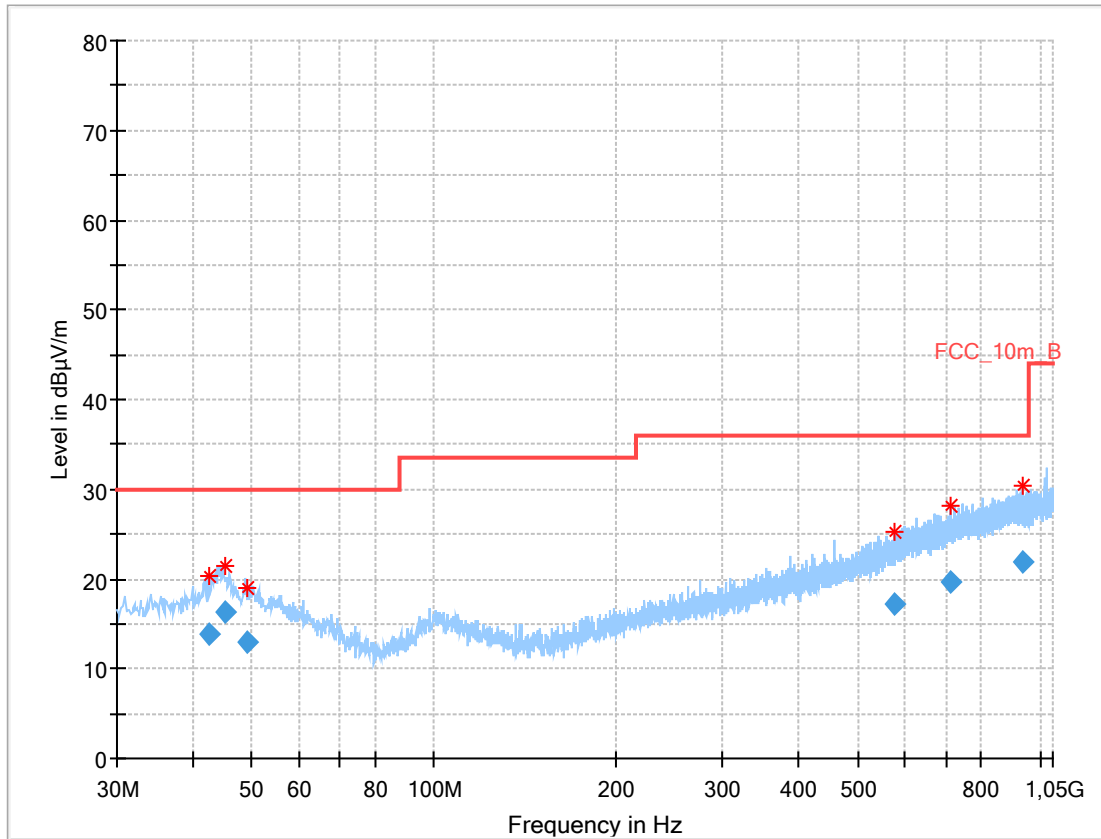
Date: 26.JAN.2017 13:21:04

Plot 24: 26 GHz to 40 GHz, 5310 MHz, vertical & horizontal polarization



Date: 26.JAN.2017 14:02:17

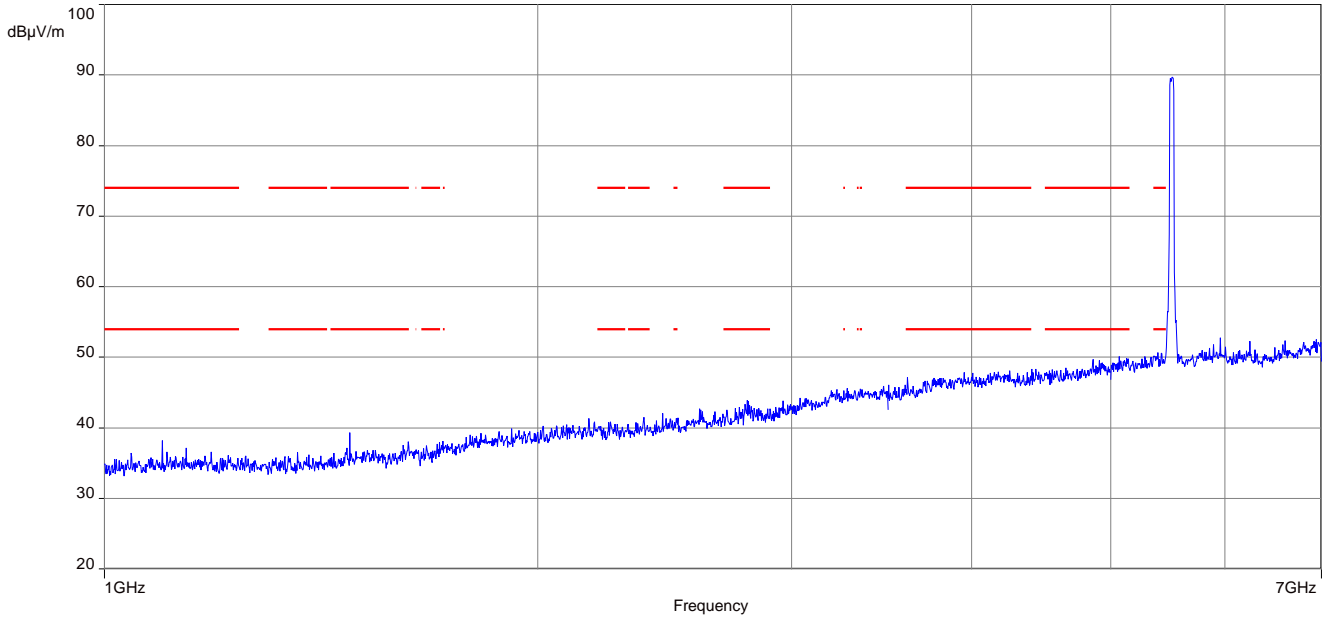
Plot 25: 30 MHz to 1 GHz, 5510 MHz, vertical & horizontal polarization



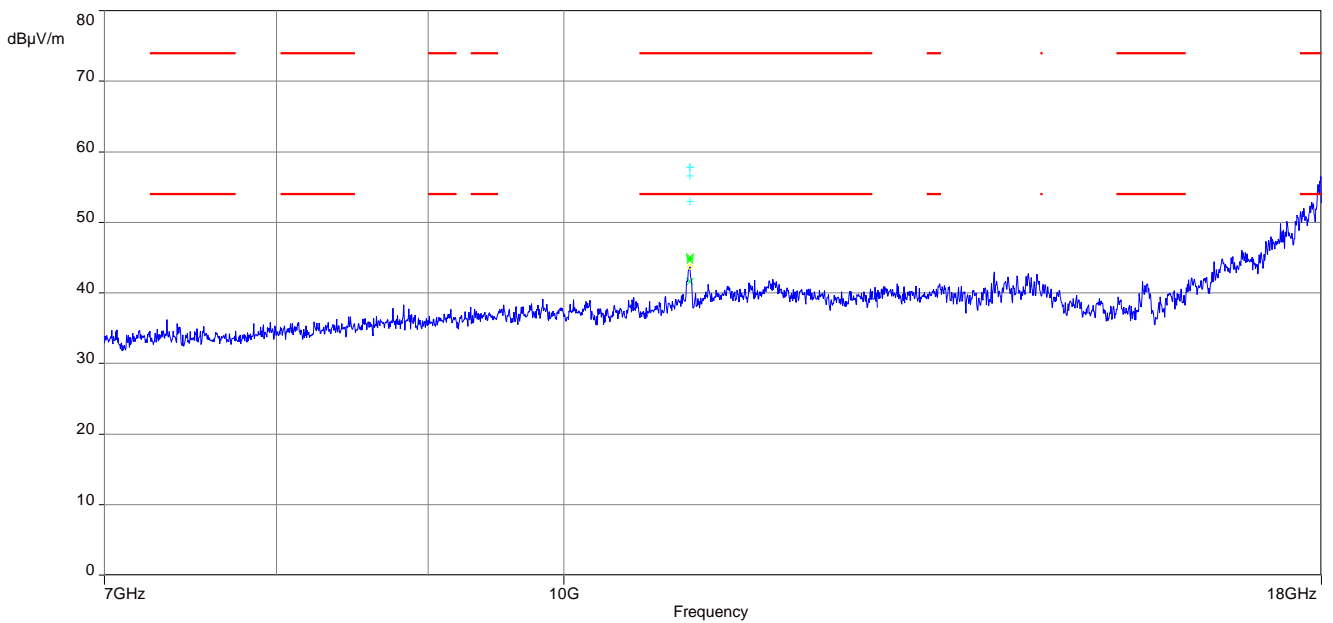
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
42.687000	13.96	30.00	16.04	1000.0	120.000	98.0	V	259.0	13.4
45.161550	16.27	30.00	13.73	1000.0	120.000	98.0	V	206.0	13.6
49.028250	12.91	30.00	17.09	1000.0	120.000	101.0	V	286.0	13.7
574.039500	17.15	36.00	18.85	1000.0	120.000	101.0	H	340.0	20.0
714.624450	19.71	36.00	16.29	1000.0	120.000	185.0	V	220.0	21.9
939.917100	21.85	36.00	14.15	1000.0	120.000	185.0	H	0.0	24.3

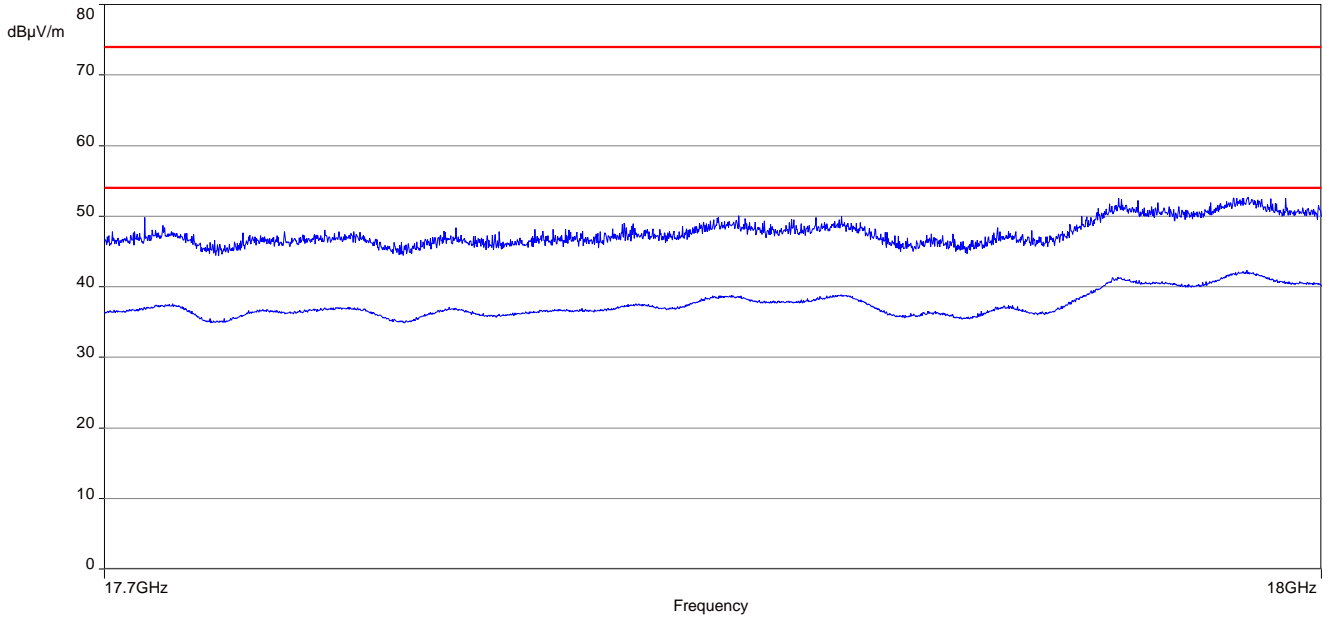
Plot 26: 1 GHz to 7 GHz, 5510 MHz, vertical & horizontal polarization



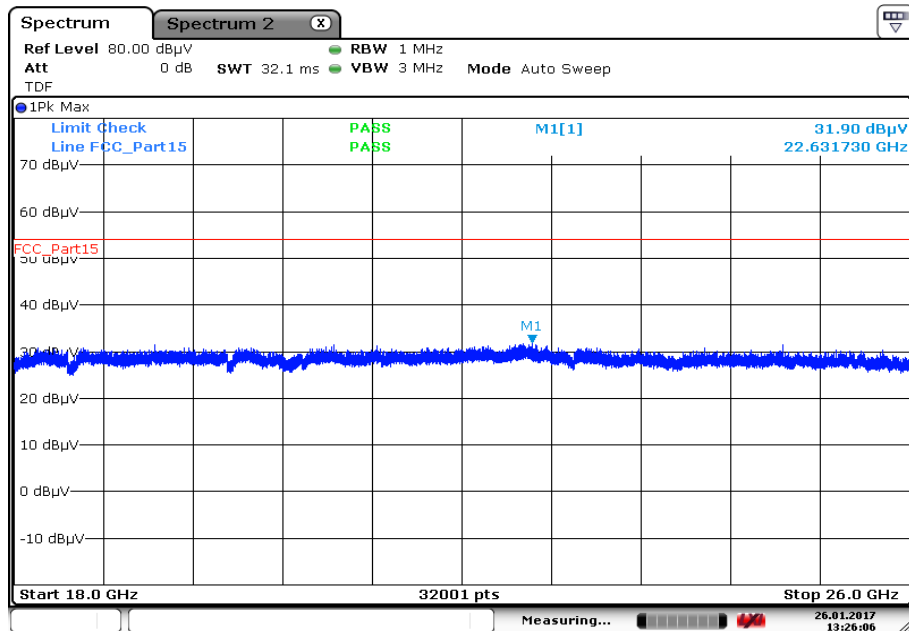
Plot 27: 7 GHz to 18 GHz, 5510 MHz, vertical & horizontal polarization



Plot 28: 17.7 GHz to 18 GHz, 5510 MHz, vertical & horizontal polarization

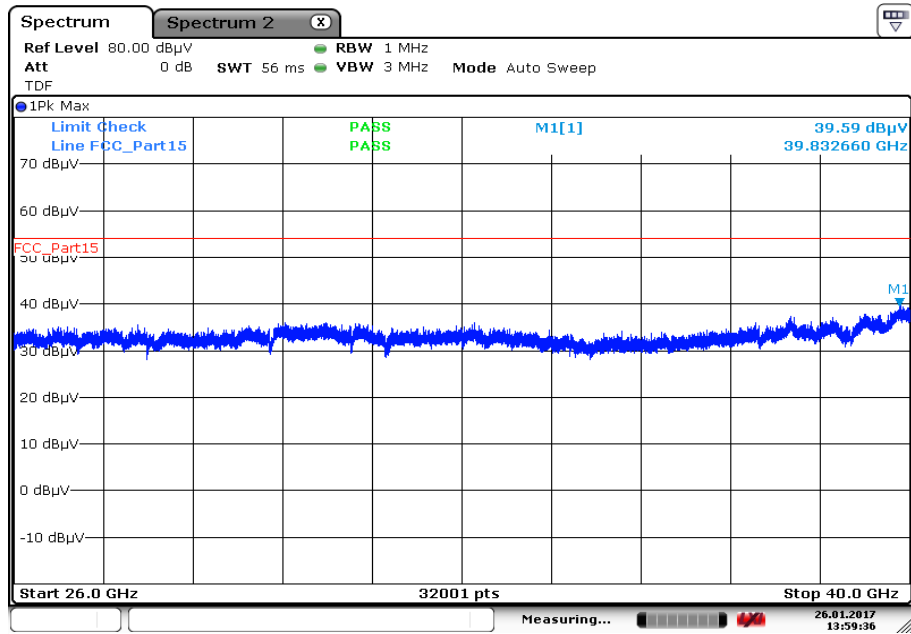


Plot 29: 18 GHz to 26 GHz, 5510 MHz, vertical & horizontal polarization



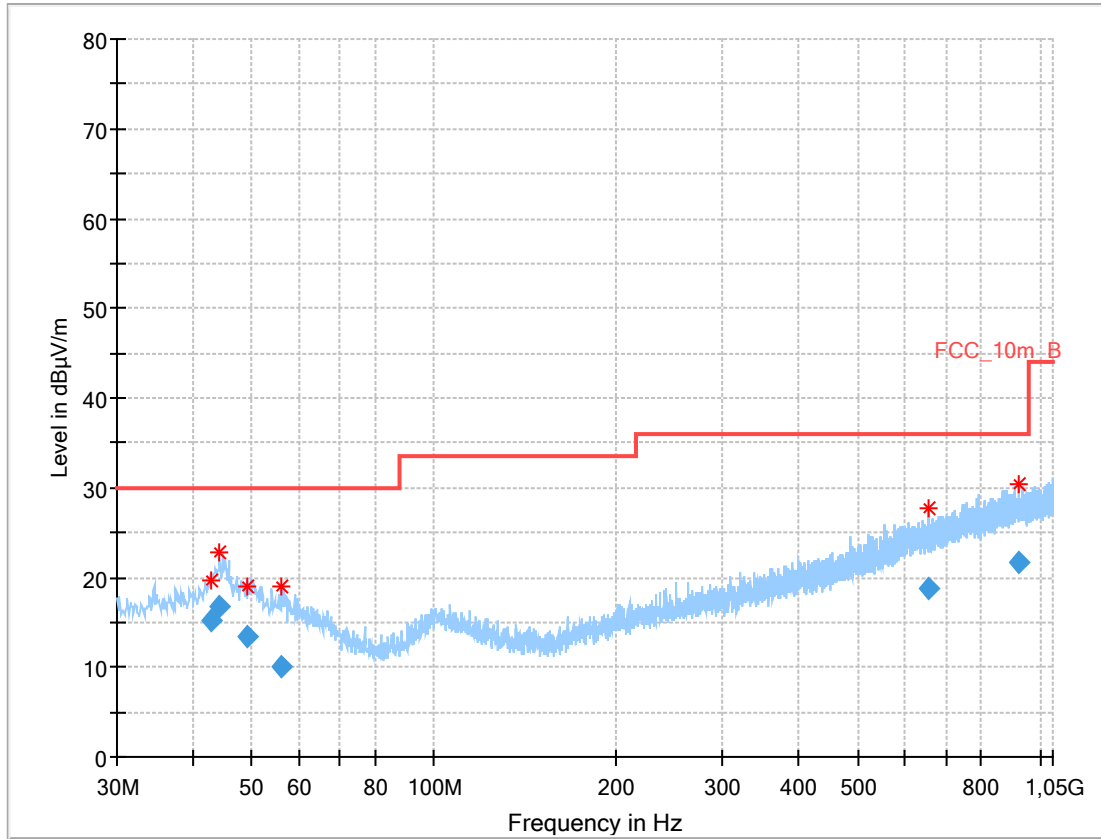
Date: 26.JAN.2017 13:26:05

Plot 30: 26 GHz to 40 GHz, 5510 MHz, vertical & horizontal polarization



Date: 26.JAN.2017 13:59:35

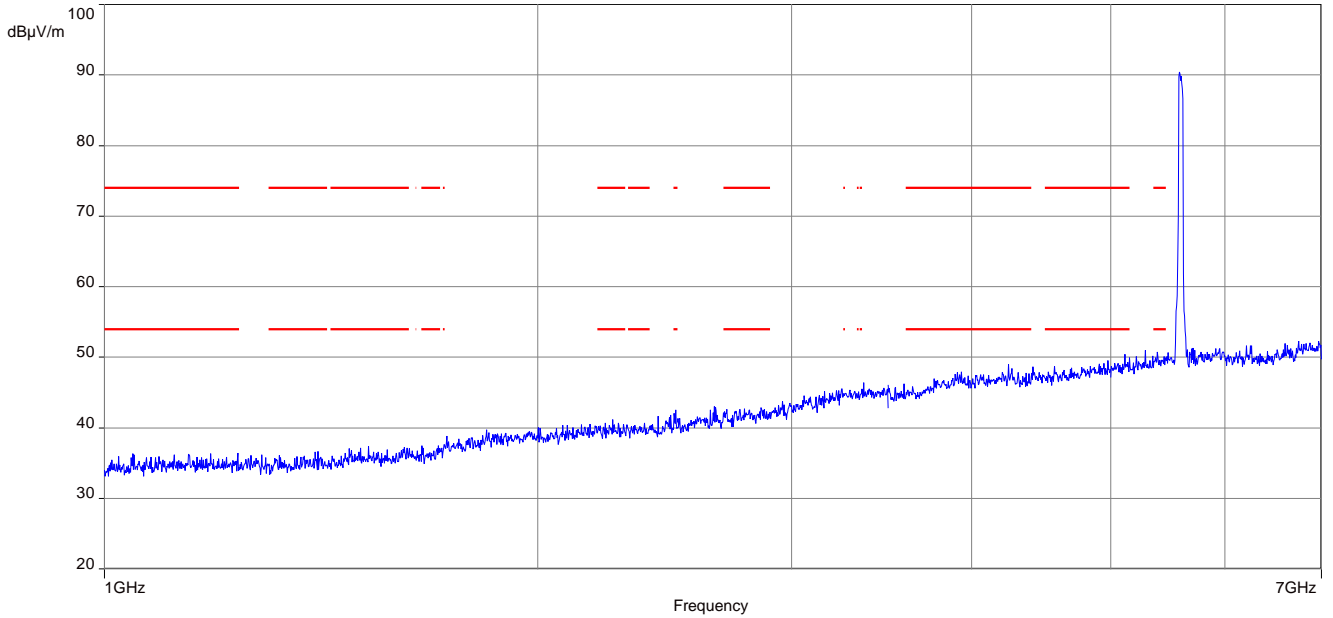
Plot 31: 30 MHz to 1 GHz, 5590 MHz, vertical & horizontal polarization



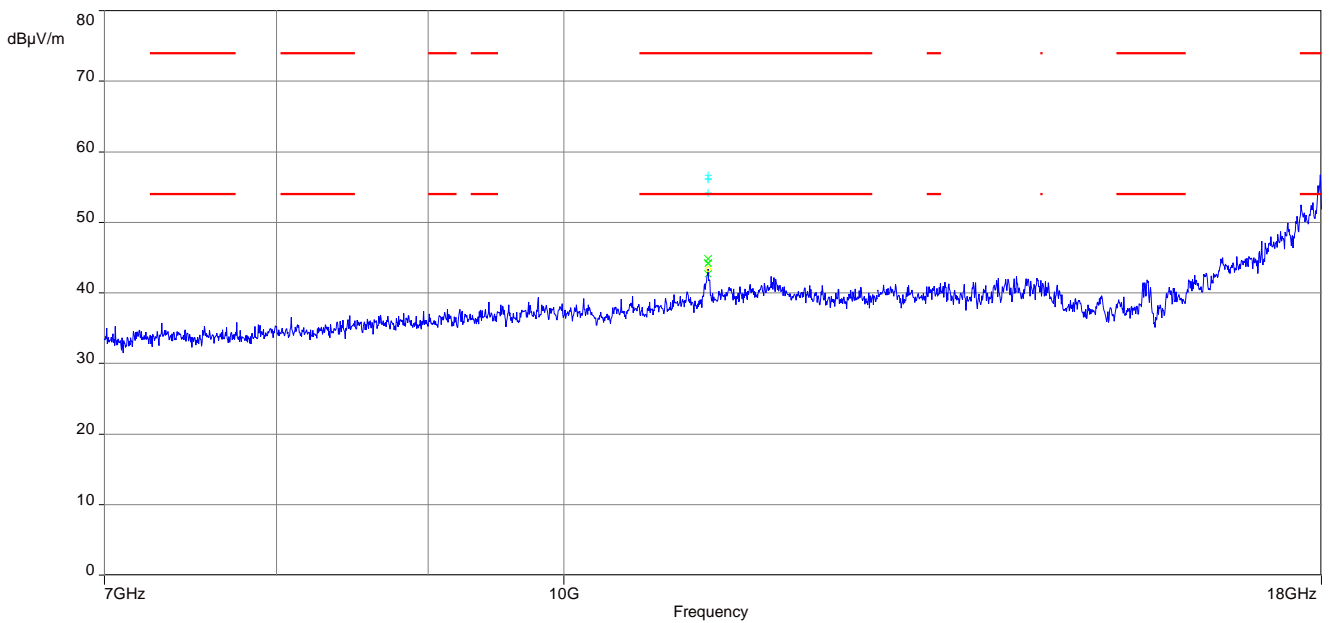
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
42.960450	15.22	30.00	14.78	1000.0	120.000	101.0	V	254.0	13.5
44.277300	16.81	30.00	6.19	1000.0	120.000	98.0	V	87.0	13.6
49.024950	13.30	30.00	16.70	1000.0	120.000	98.0	V	353.0	13.7
55.796550	10.09	30.00	19.91	1000.0	120.000	98.0	V	132.0	12.9
655.787700	18.78	36.00	17.22	1000.0	120.000	185.0	V	340.0	21.2
924.372600	21.76	36.00	14.24	1000.0	120.000	185.0	V	327.0	24.3

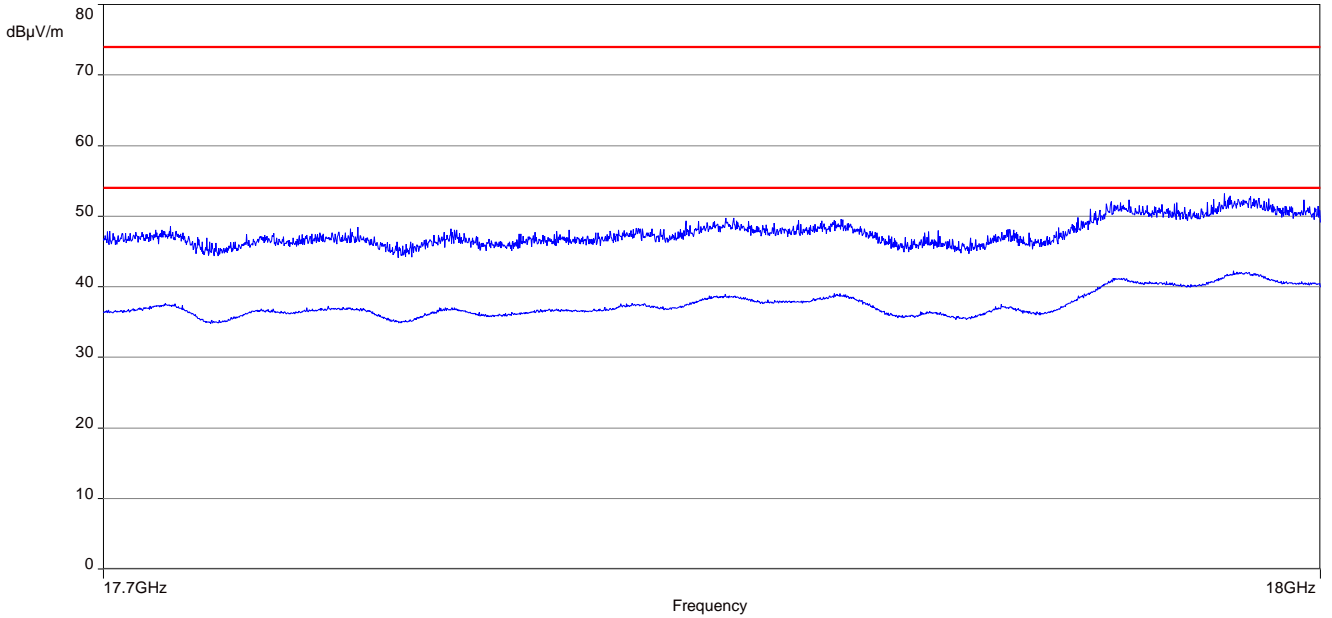
Plot 32: 1 GHz to 7 GHz, 5590 MHz, vertical & horizontal polarization



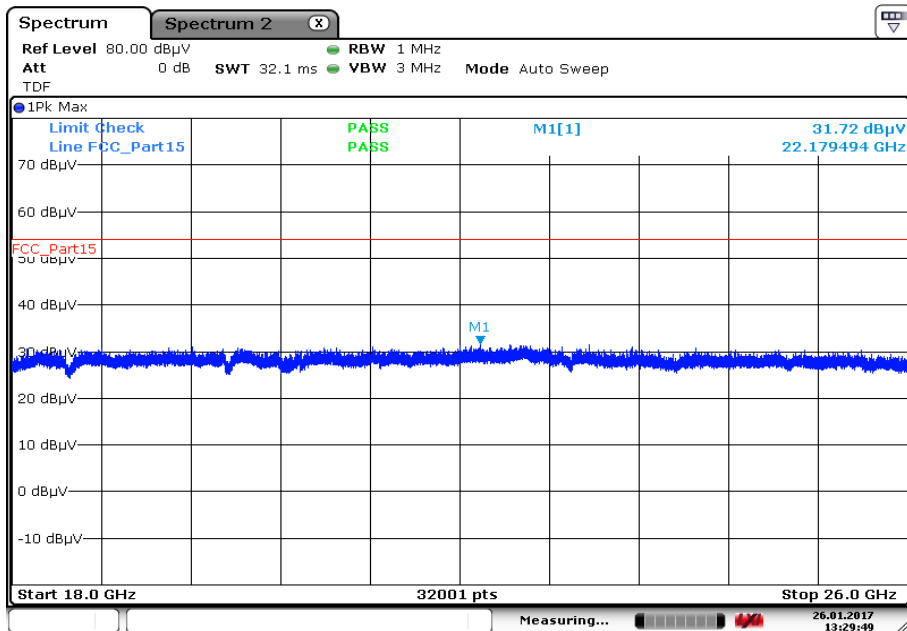
Plot 33: 7 GHz to 18 GHz, 5590 MHz, vertical & horizontal polarization



Plot 34: 17.7 GHz to 18 GHz, 5590 MHz, vertical & horizontal polarization

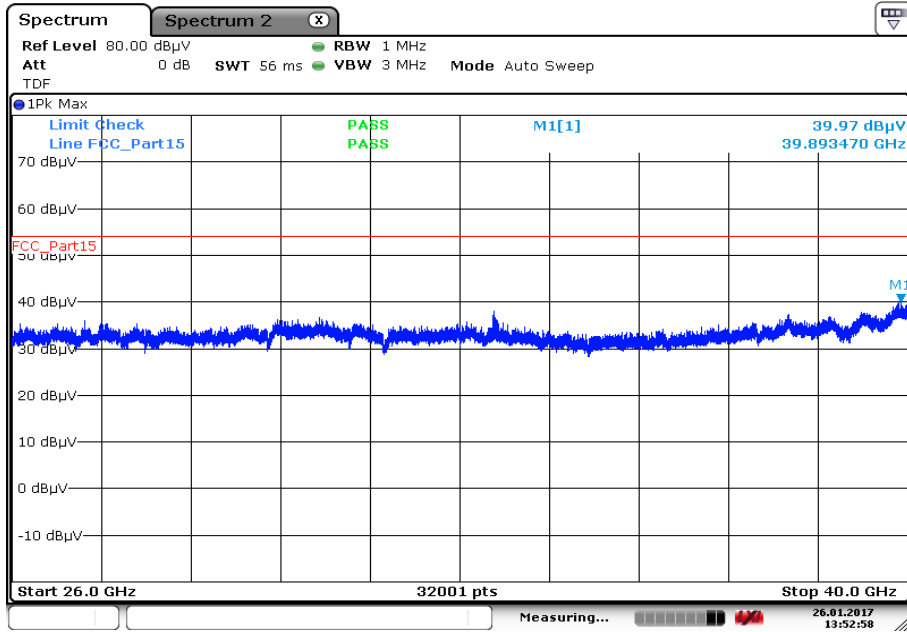


Plot 35: 18 GHz to 26 GHz, 5590 MHz, vertical & horizontal polarization



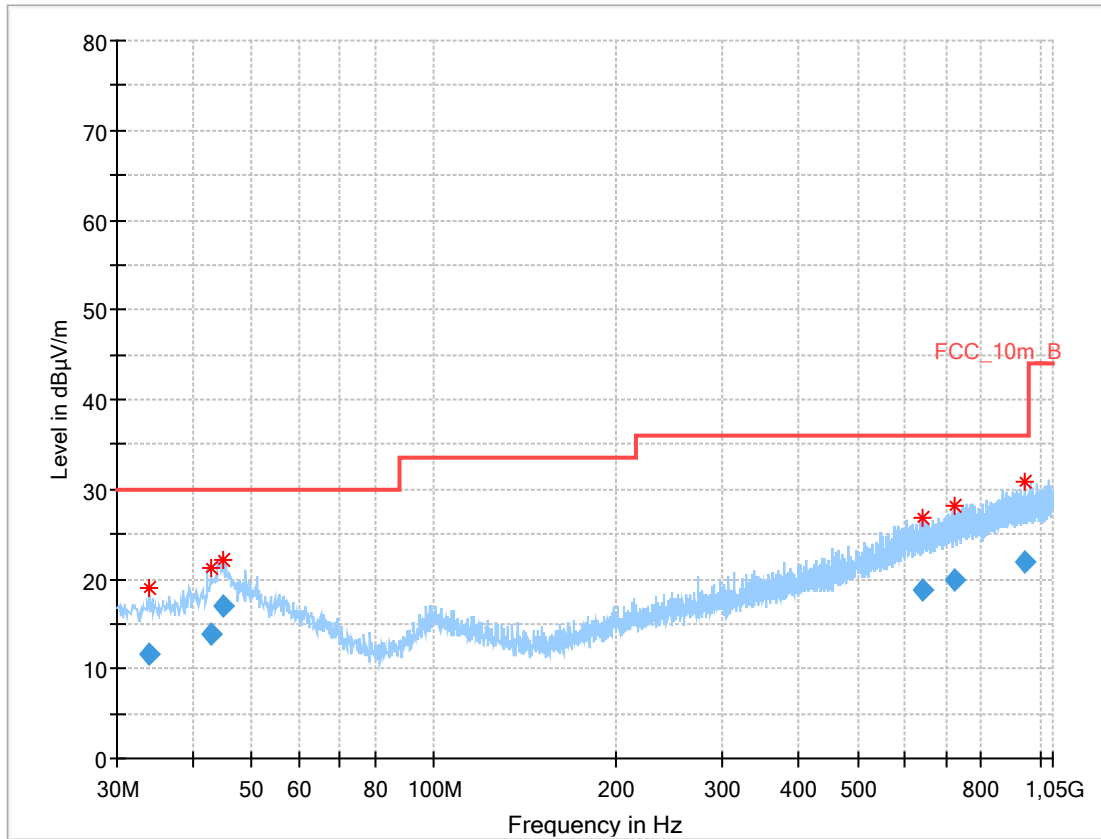
Date: 26.JAN.2017 13:29:49

Plot 36: 26 GHz to 40 GHz, 5590 MHz, vertical & horizontal polarization



Date: 26.JAN.2017 13:52:58

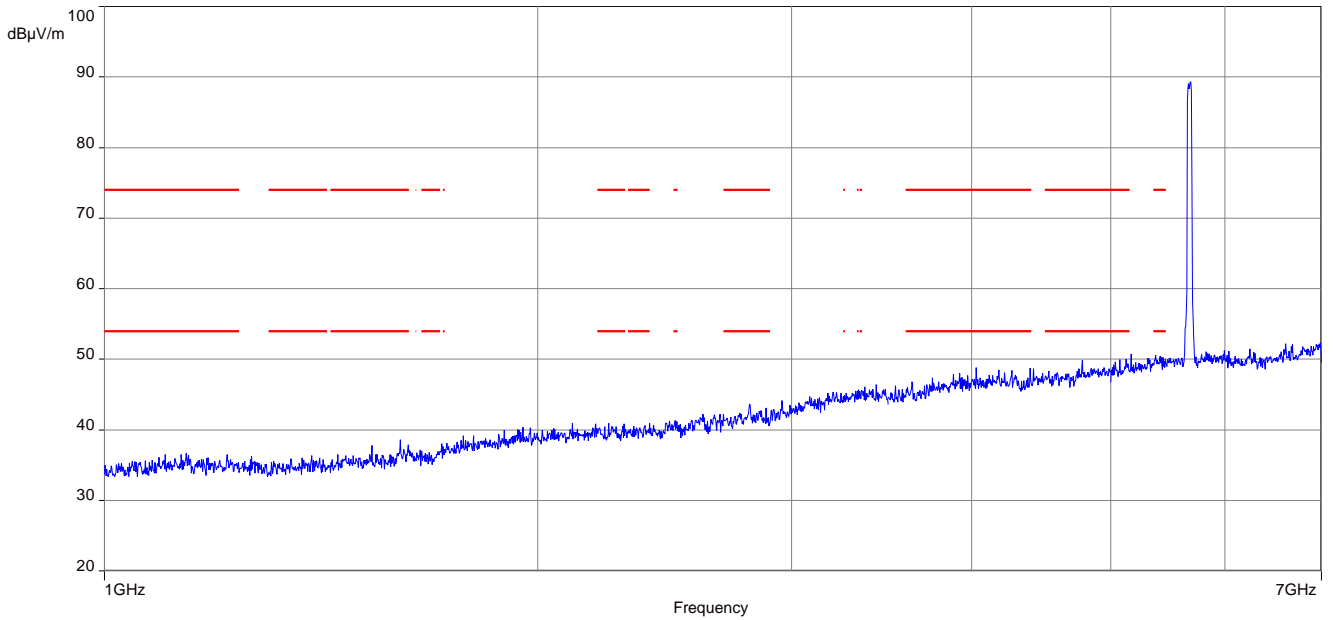
Plot 37: 30 MHz to 1 GHz, 5670 MHz, vertical & horizontal polarization



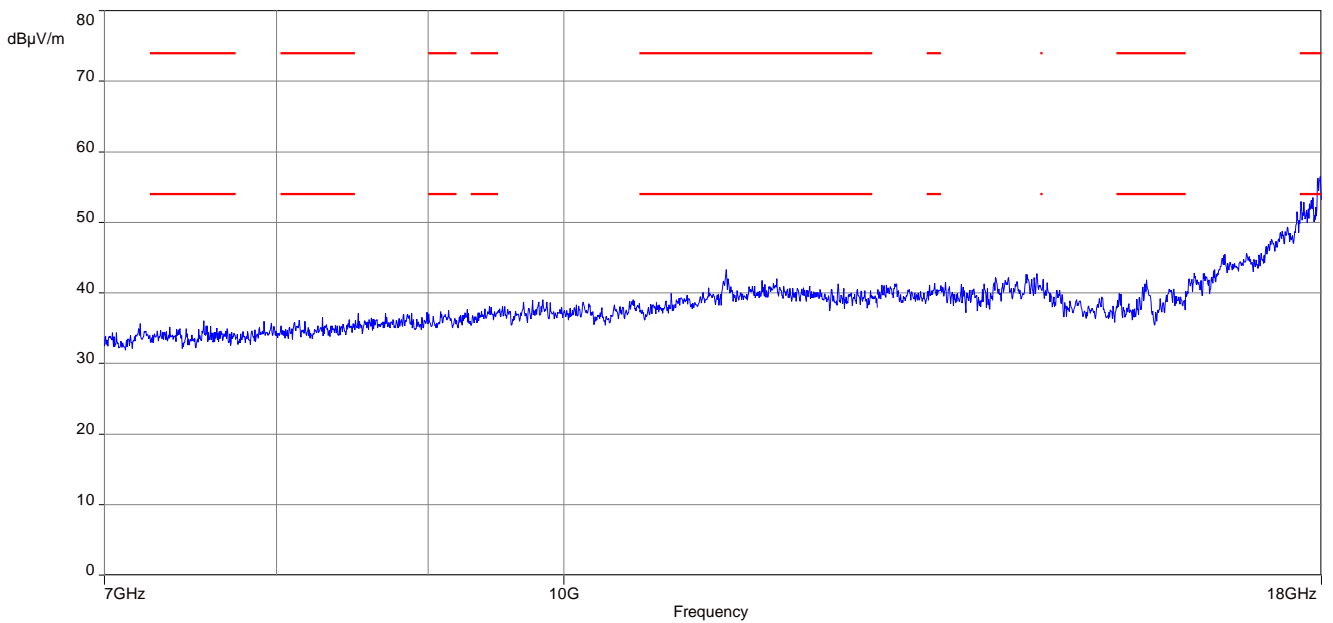
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
33.972450	11.69	30.00	18.31	1000.0	120.000	101.0	V	117.0	12.5
42.810450	13.95	30.00	16.05	1000.0	120.000	98.0	V	124.0	13.5
44.865750	16.92	30.00	13.08	1000.0	120.000	101.0	V	178.0	13.6
640.161150	18.72	36.00	17.28	1000.0	120.000	185.0	V	6.0	21.0
723.925950	19.93	36.00	16.07	1000.0	120.000	185.0	H	229.0	22.1
945.636150	21.81	36.00	14.19	1000.0	120.000	98.0	H	340.0	24.3

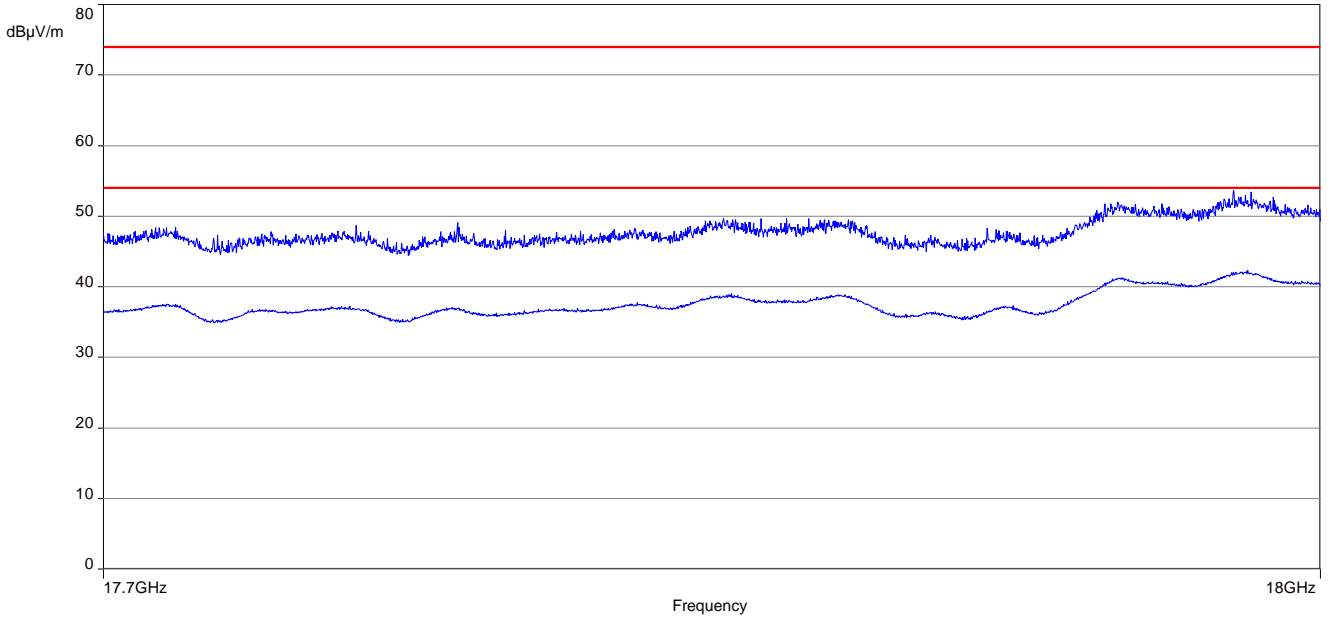
Plot 38: 1 GHz to 7 GHz, 5670 MHz, vertical & horizontal polarization



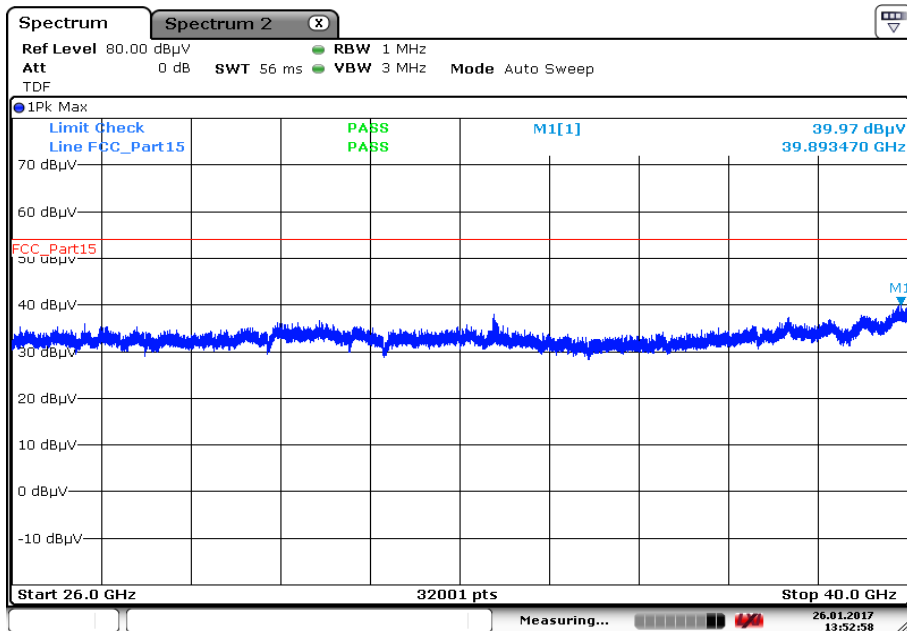
Plot 39: 7 GHz to 18 GHz, 5670 MHz, vertical & horizontal polarization



Plot 40: 17.7 GHz to 18 GHz, 5670 MHz, vertical & horizontal polarization

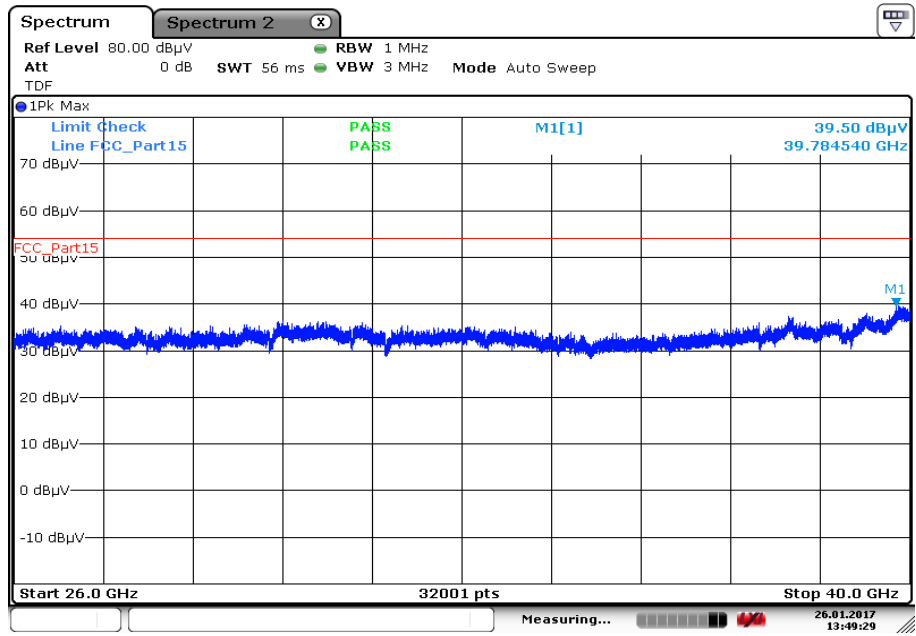


Plot 41: 18 GHz to 26 GHz, 5670 MHz, vertical & horizontal polarization



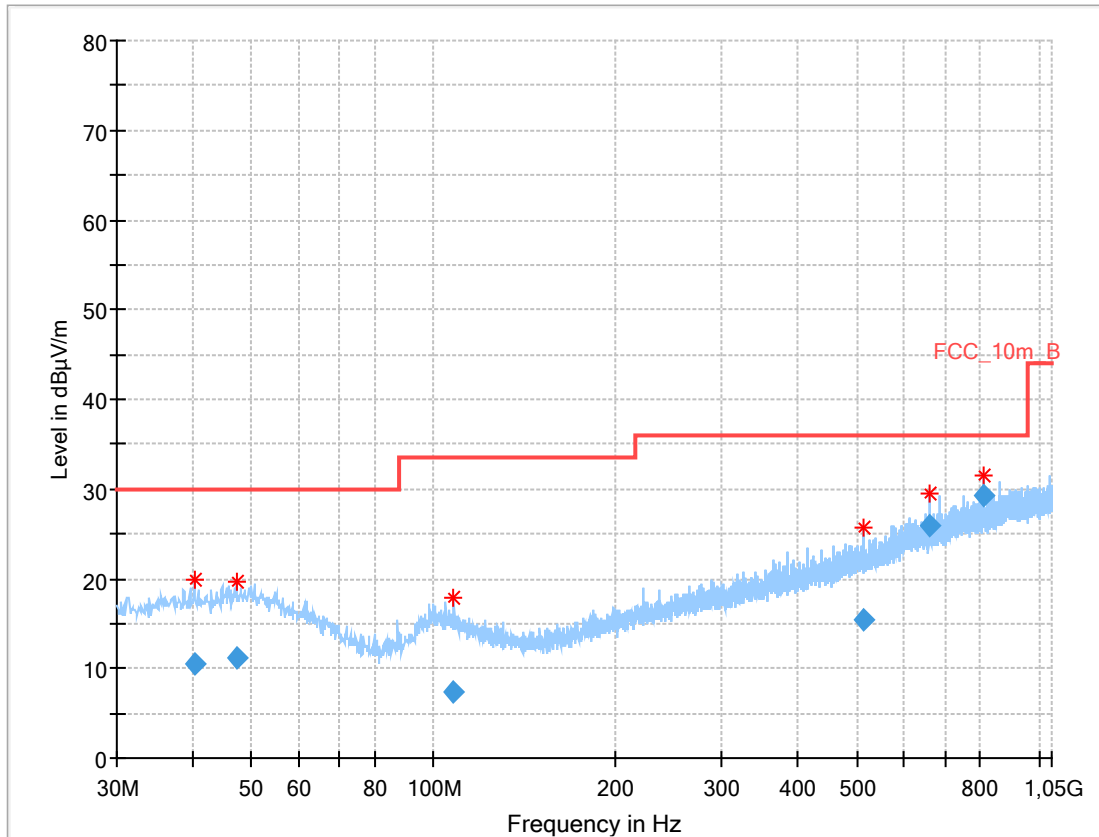
Date: 26.JAN.2017 13:52:58

Plot 42: 26 GHz to 40 GHz, 5670 MHz, vertical & horizontal polarization



Date: 26.JAN.2017 13:49:29

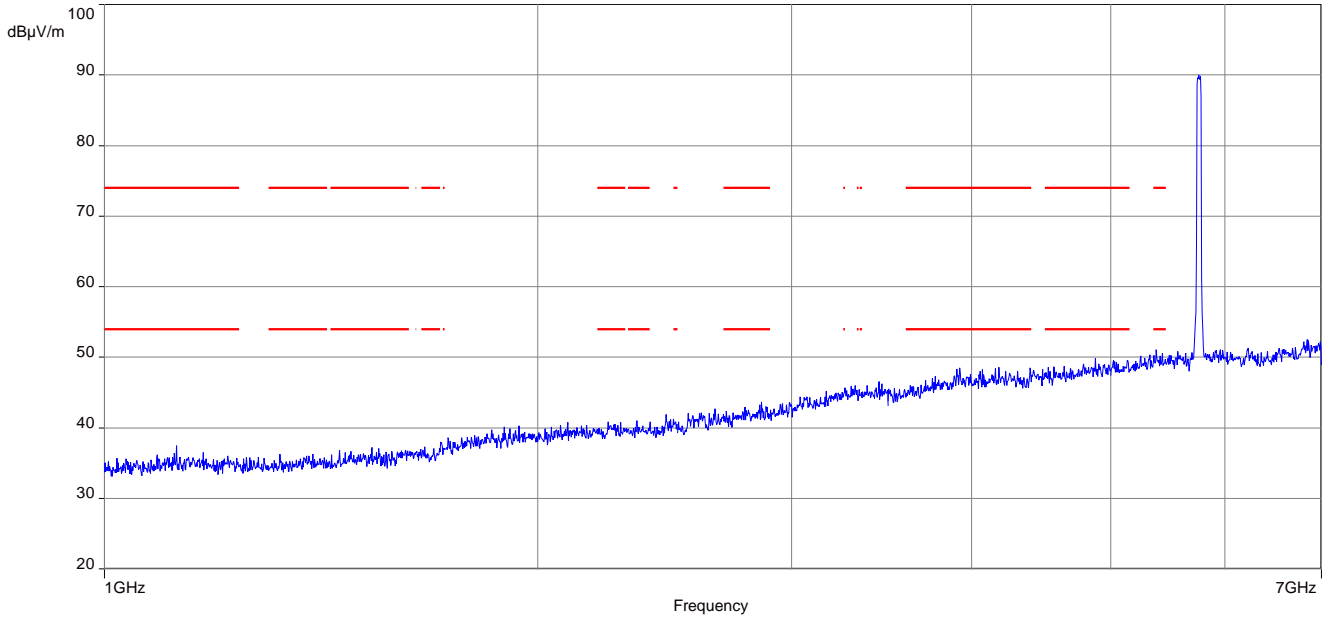
Plot 43: 30 MHz to 1 GHz, 5755 MHz, vertical & horizontal polarization



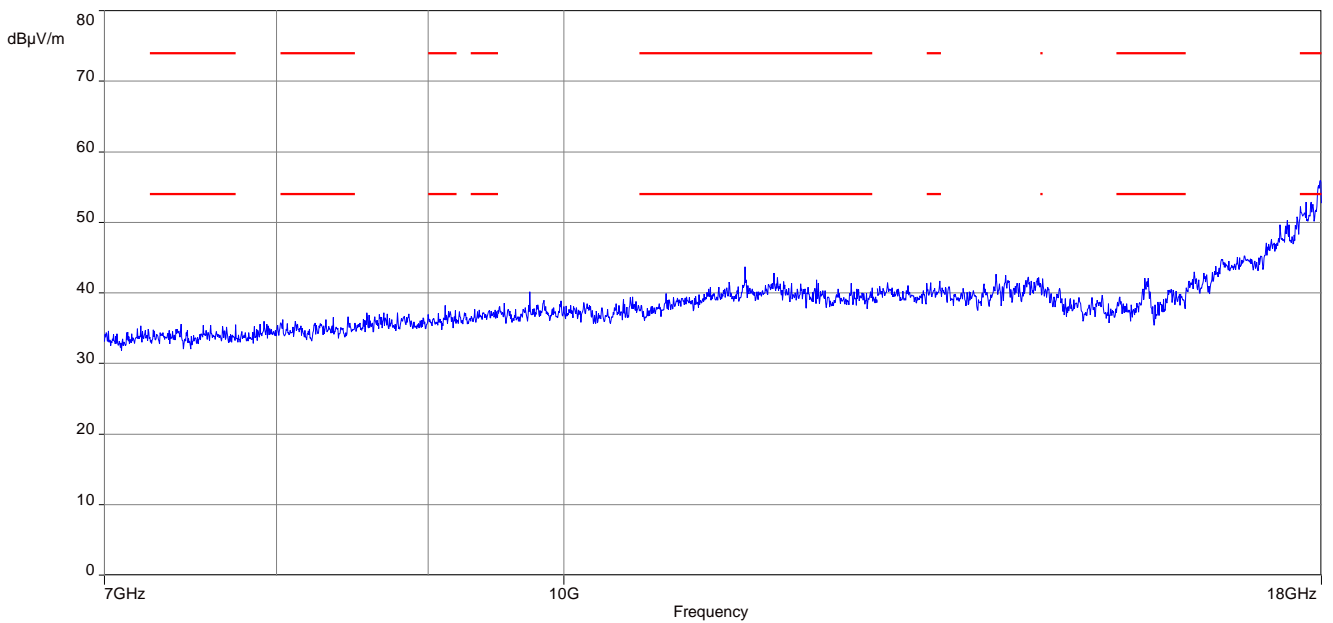
Final Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
40.272000	10.42	30.00	19.58	1000.0	120.000	101.0	V	167.0	13.2
47.478750	11.21	30.00	18.79	1000.0	120.000	98.0	V	350.0	13.7
108.126150	7.46	33.50	26.04	1000.0	120.000	185.0	V	231.0	11.3
515.088300	15.37	36.00	20.63	1000.0	120.000	179.0	H	139.0	18.9
661.722750	26.01	36.00	9.99	1000.0	120.000	101.0	H	344.0	21.2
808.773150	29.38	36.00	6.62	1000.0	120.000	98.0	H	116.0	22.9

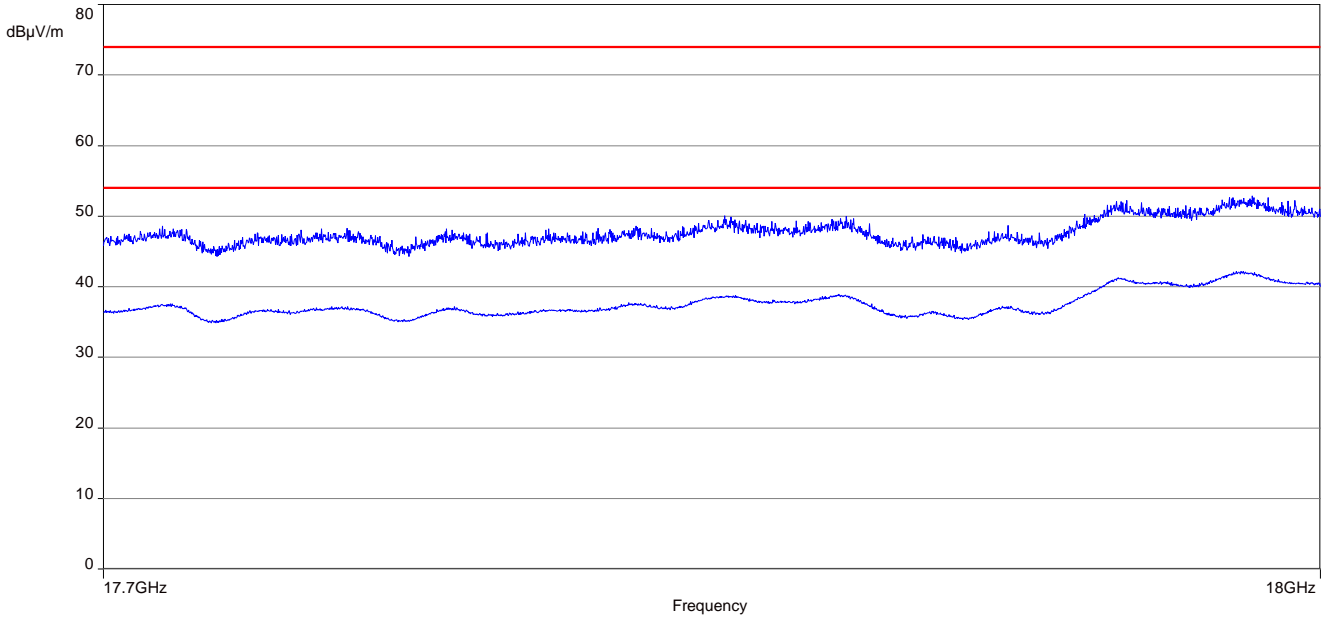
Plot 44: 1 GHz to 7 GHz, 5755 MHz, vertical & horizontal polarization



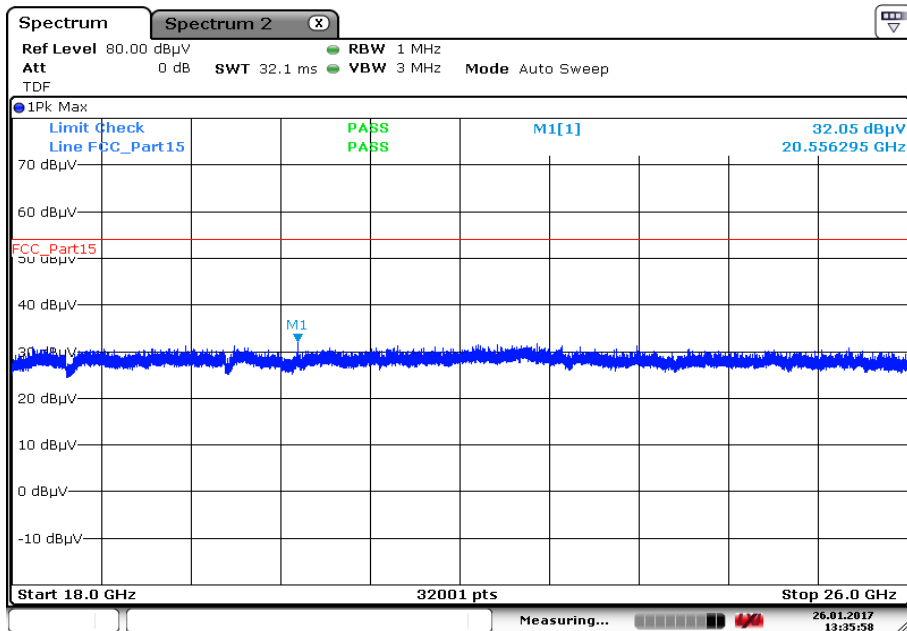
Plot 45: 7 GHz to 18 GHz, 5755 MHz, vertical & horizontal polarization



Plot 46: 17.7 GHz to 18 GHz, 5755 MHz, vertical & horizontal polarization

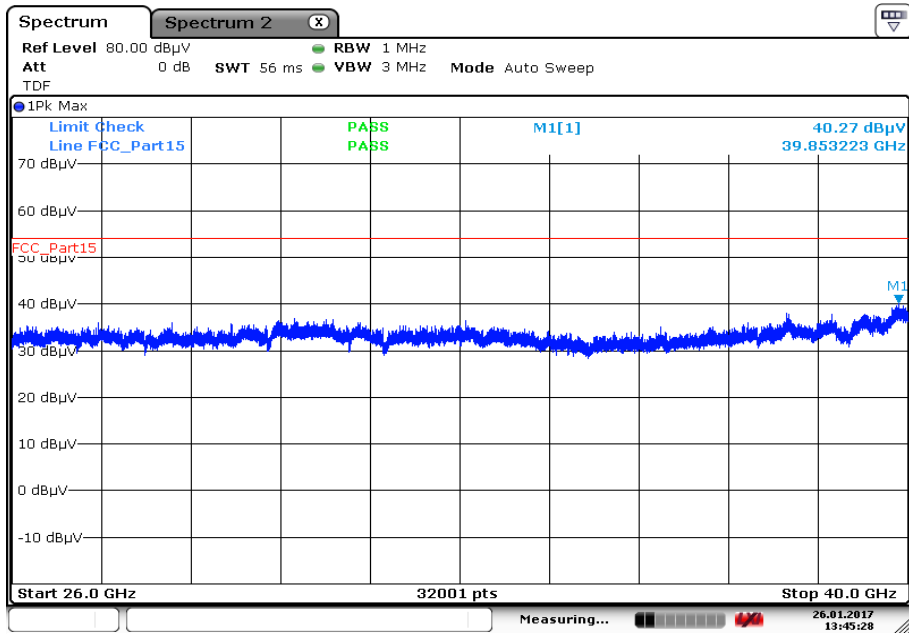


Plot 47: 18 GHz to 26 GHz, 5755 MHz, vertical & horizontal polarization



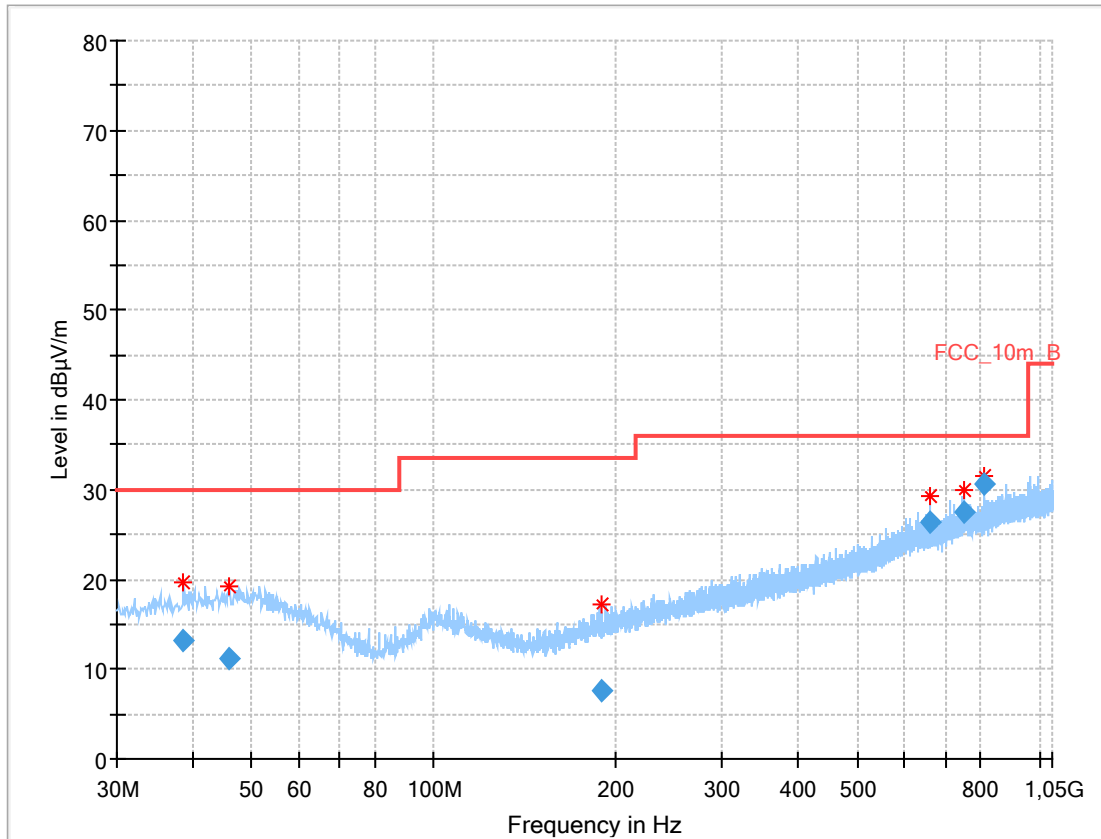
Date: 26.JAN.2017 13:35:58

Plot 48: 26 GHz to 40 GHz, 5755 MHz, vertical & horizontal polarization



Date: 26.JAN.2017 13:45:28

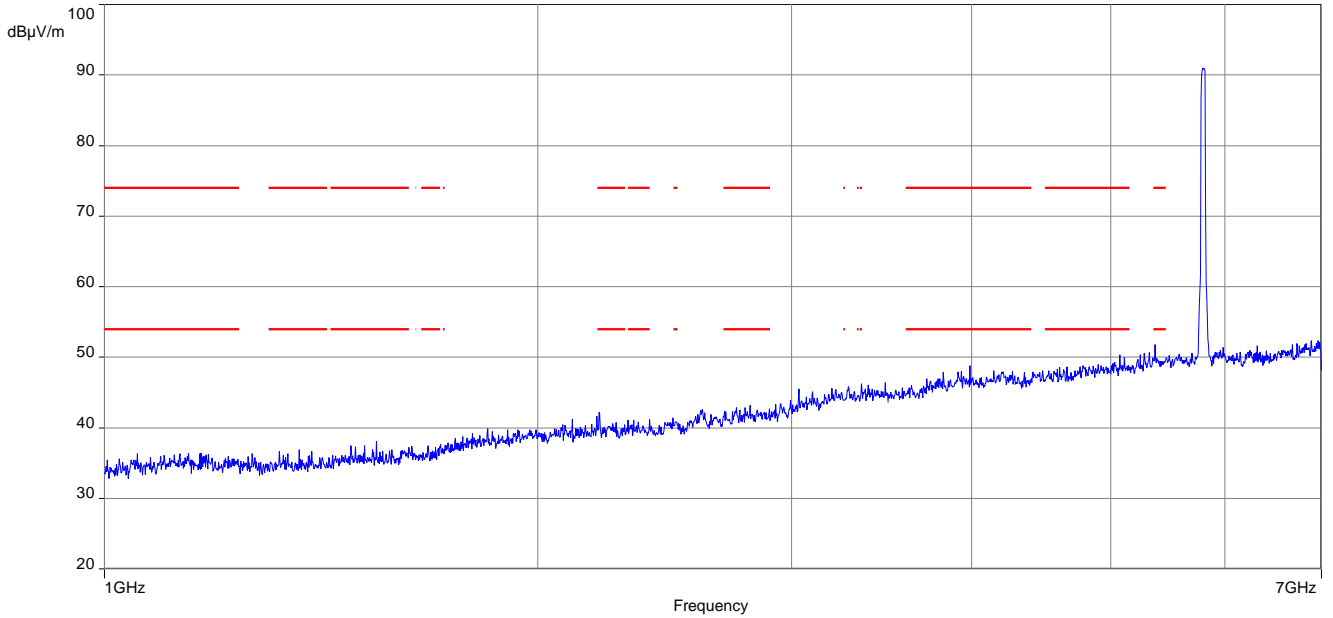
Plot 49: 30 MHz to 1 GHz, 5795 MHz, vertical & horizontal polarization



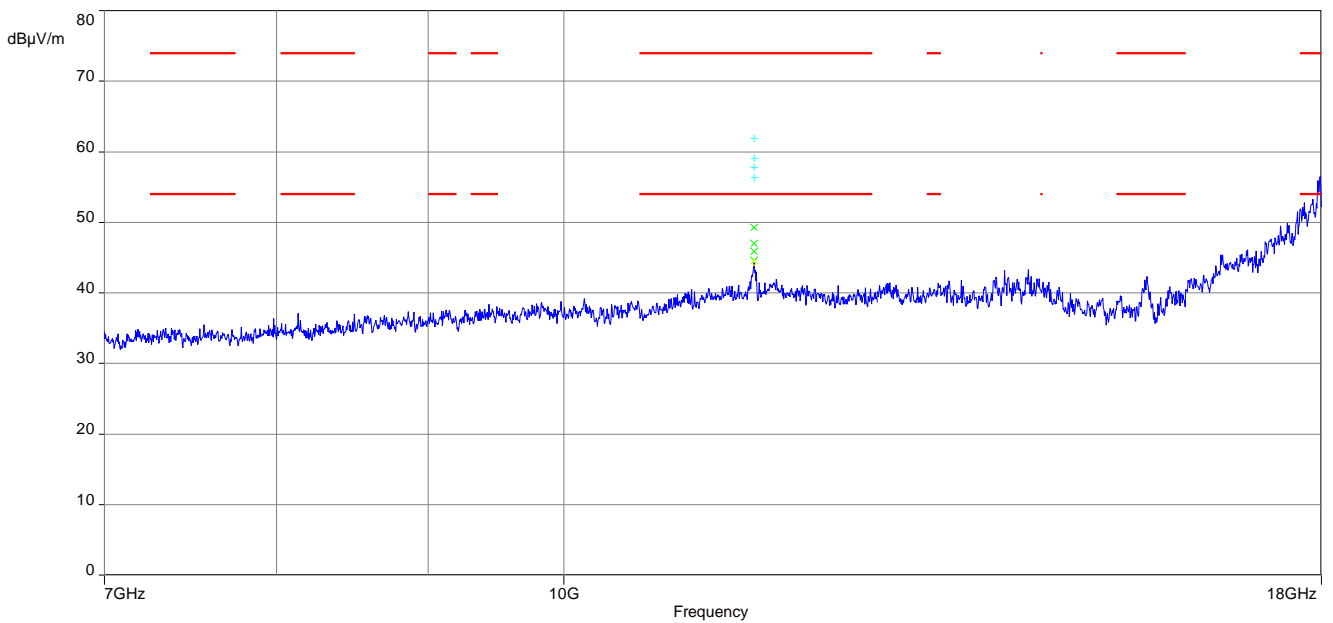
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
38.689050	13.12	30.00	16.88	1000.0	120.000	101.0	V	142.0	13.1
46.042950	11.15	30.00	18.85	1000.0	120.000	101.0	V	135.0	13.7
188.839050	7.65	33.50	25.85	1000.0	120.000	101.0	H	74.0	11.3
661.719900	26.45	36.00	9.55	1000.0	120.000	98.0	H	124.0	21.2
749.992350	27.50	36.00	8.50	1000.0	120.000	101.0	H	196.0	22.7
808.759800	30.58	36.00	5.42	1000.0	120.000	98.0	H	105.0	22.9

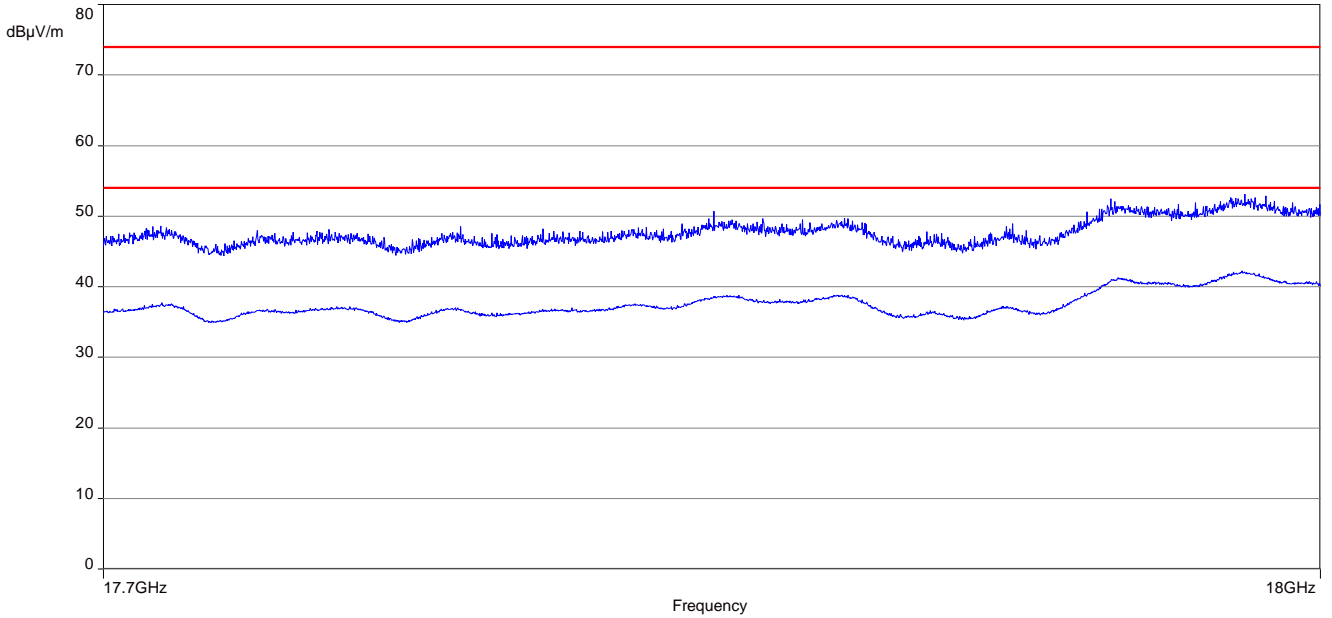
Plot 50: 1 GHz to 7 GHz, 5795 MHz, vertical & horizontal polarization



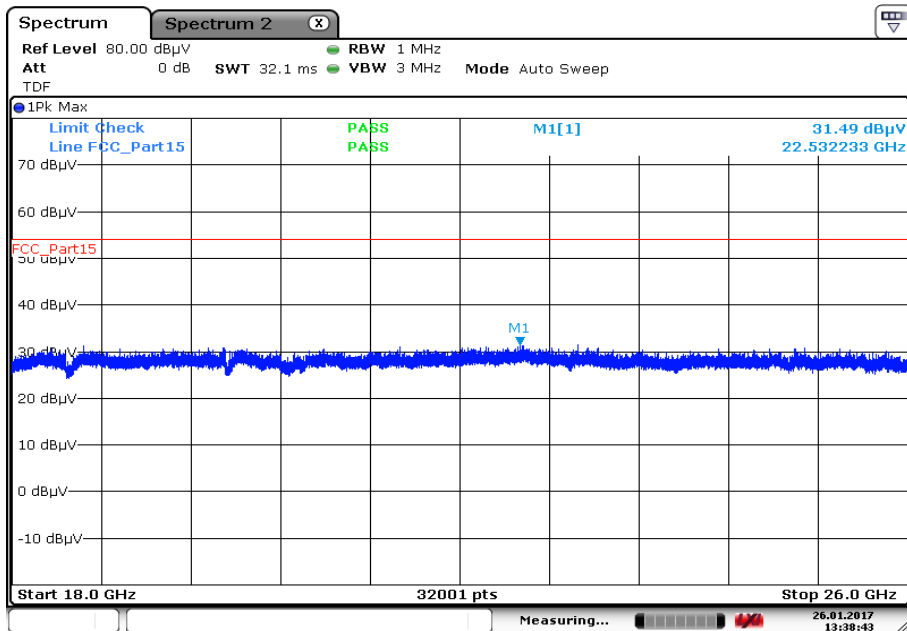
Plot 51: 7 GHz to 18 GHz, 5795 MHz, vertical & horizontal polarization



Plot 52: 17.7 GHz to 18 GHz, 5795 MHz, vertical & horizontal polarization

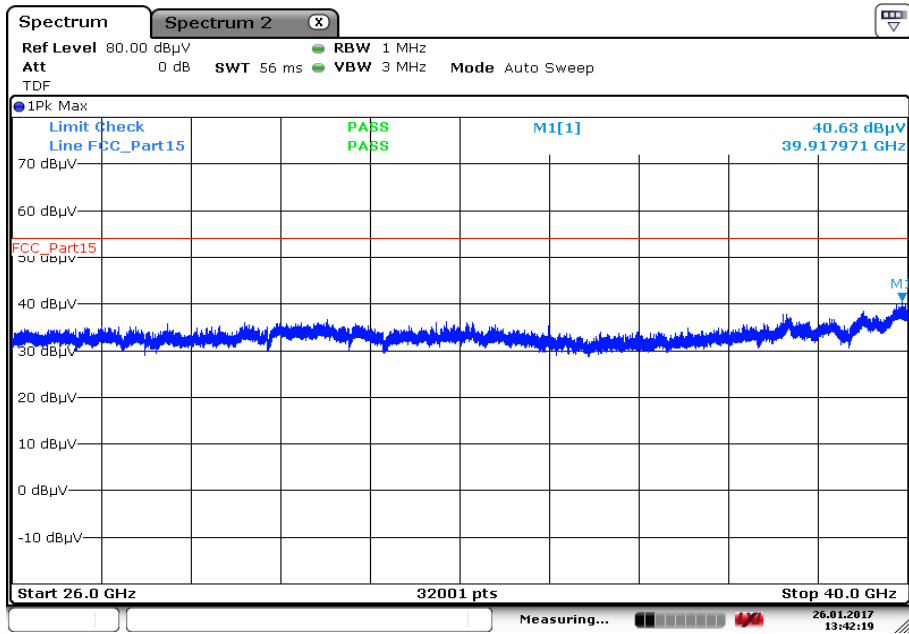


Plot 53: 18 GHz to 26 GHz, 5795 MHz, vertical & horizontal polarization



Date: 26.JAN.2017 13:38:42

Plot 54: 26 GHz to 40 GHz, 5795 MHz, vertical & horizontal polarization



Date: 26.JAN.2017 13:42:19

11.11 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 6.1 – A See sub clause 6.2 – C See sub clause 6.3 – A
Measurement uncertainty:	See sub clause 8

Limits:

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

Results: (External antennas)

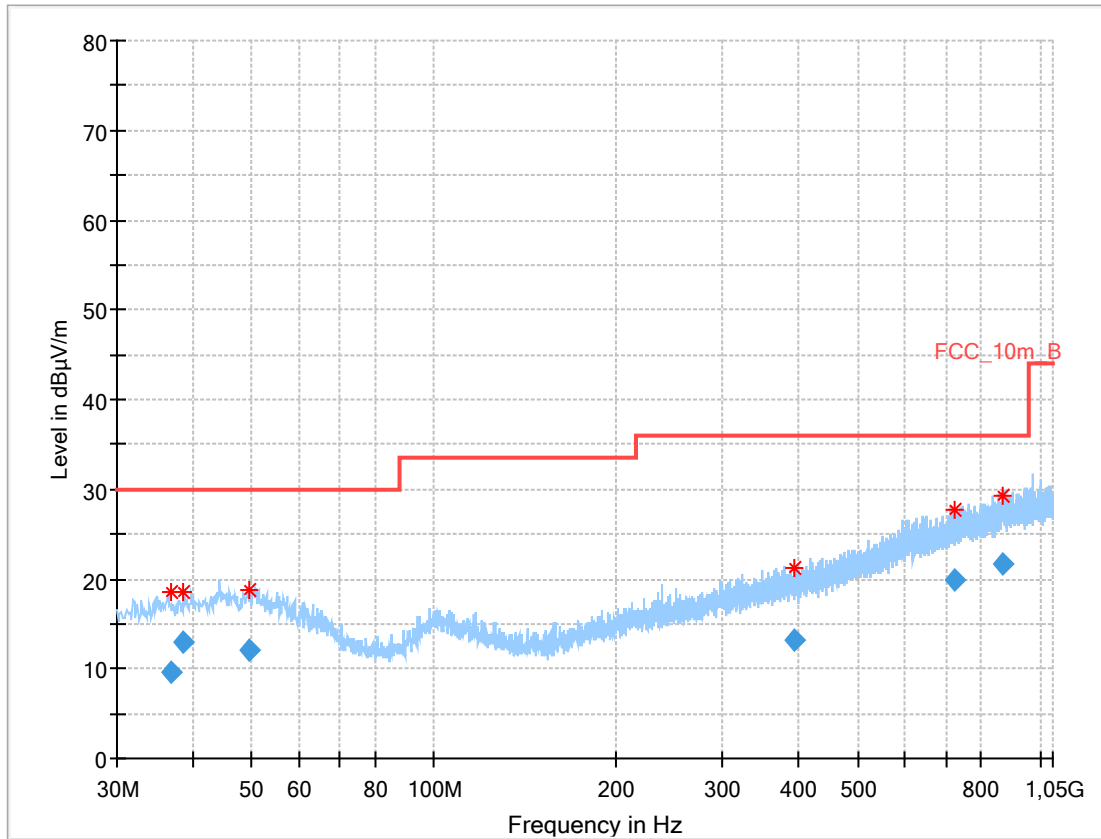
For the results of the RX spurious emission tests radiated of all external antennas see “Appendix_to_1-2846/16-02-05-B”

Results:

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

Plots:

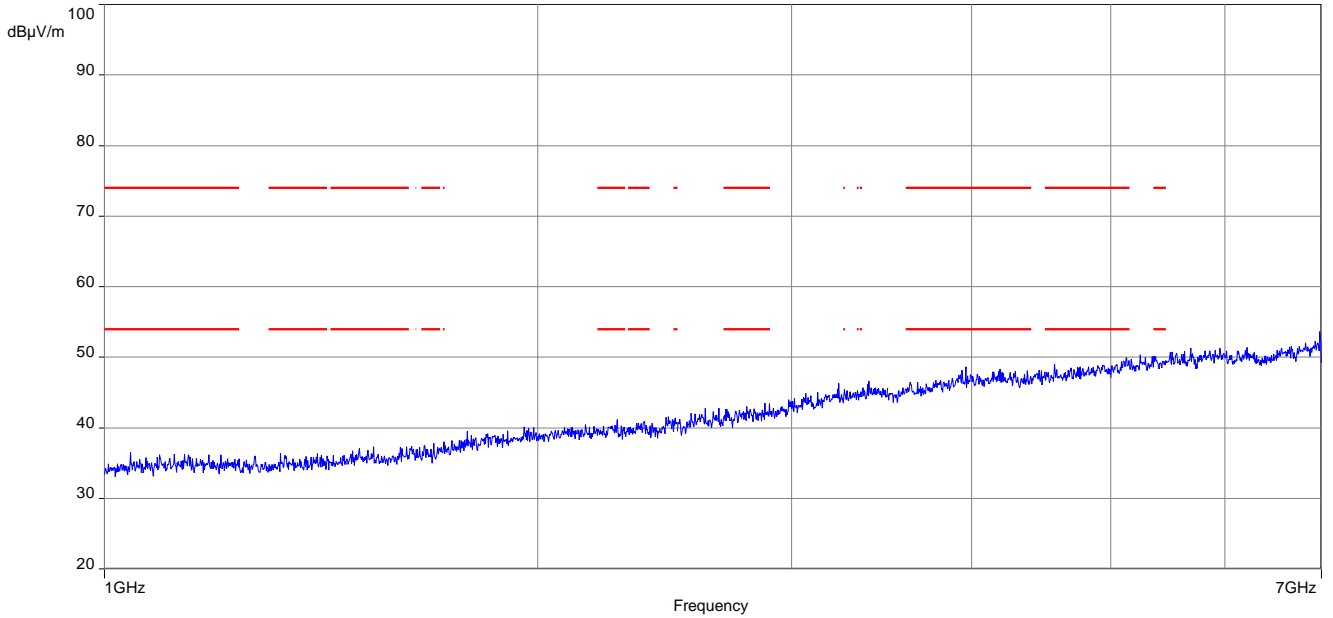
Plot 1: 30 MHz to 1 GHz, vertical & horizontal polarization



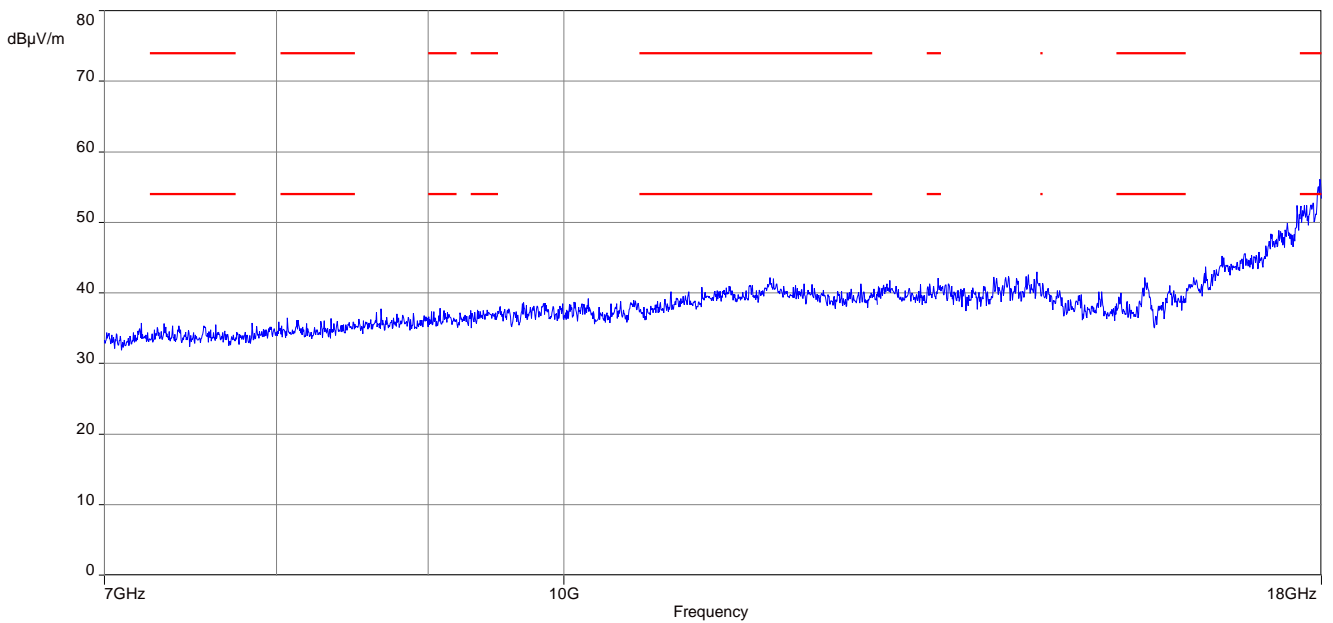
Final_Result:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
36.767850	9.70	30.00	20.30	1000.0	120.000	179.0	H	91.0	12.9
38.676750	12.96	30.00	17.04	1000.0	120.000	98.0	V	152.0	13.1
49.659150	12.04	30.00	17.96	1000.0	120.000	101.0	V	52.0	13.7
393.416250	13.17	36.00	22.83	1000.0	120.000	178.0	V	258.0	16.8
724.377450	19.93	36.00	16.07	1000.0	120.000	101.0	H	346.0	22.1
870.203550	21.76	36.00	14.24	1000.0	120.000	185.0	V	52.0	23.8

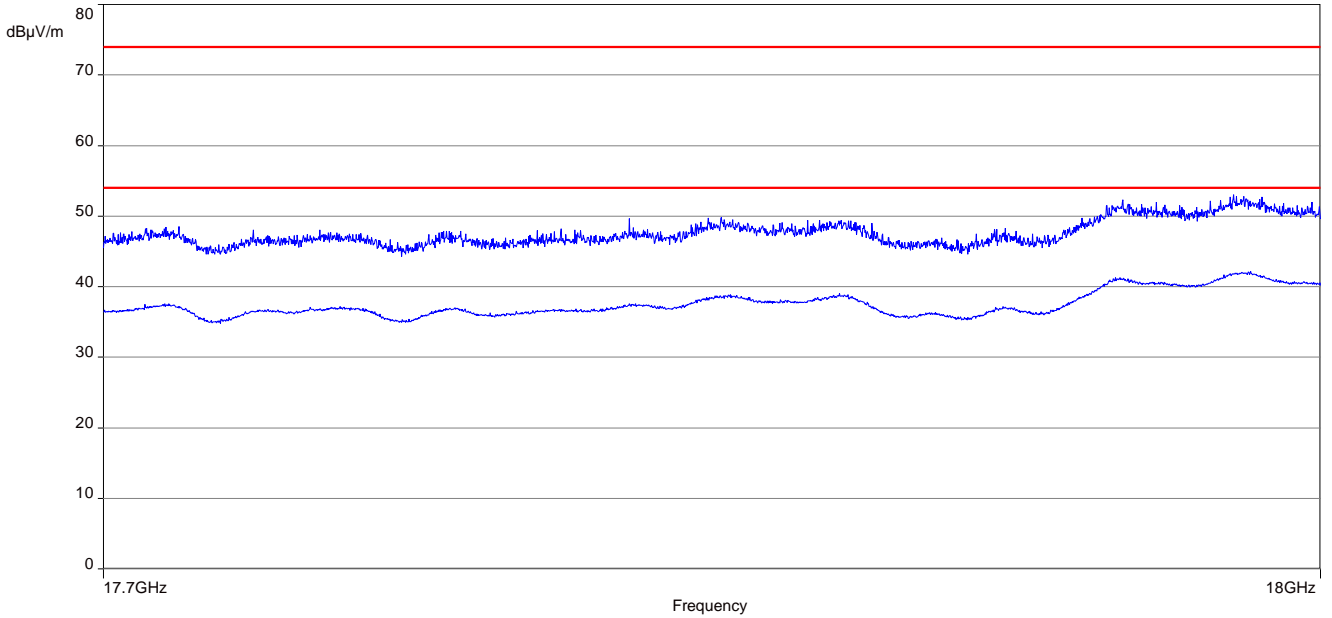
Plot 2: 1 GHz to 7 GHz, vertical & horizontal polarization



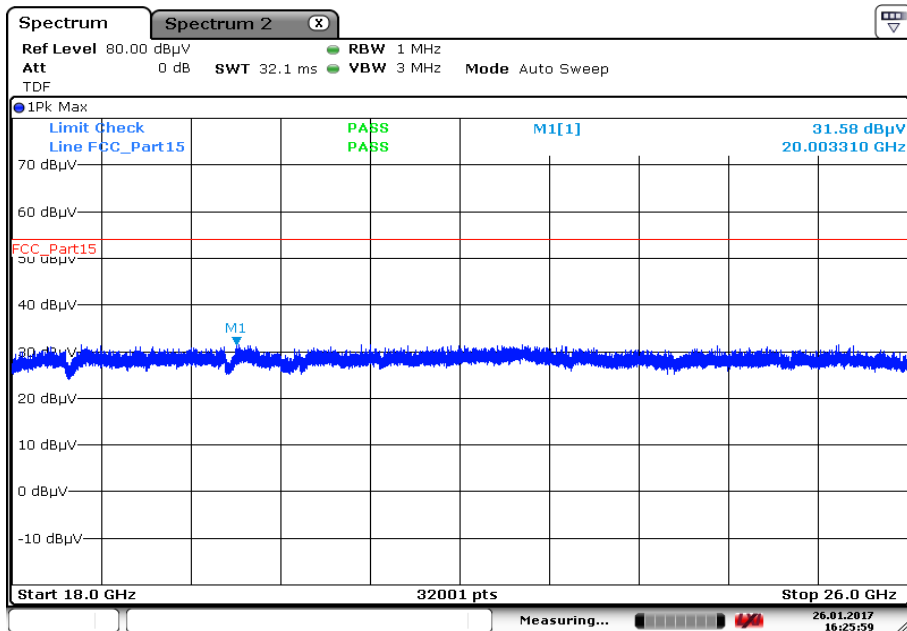
Plot 3: 7 GHz to 18 GHz, vertical & horizontal polarization



Plot 4: 17.7 GHz to 18 GHz, vertical & horizontal polarization

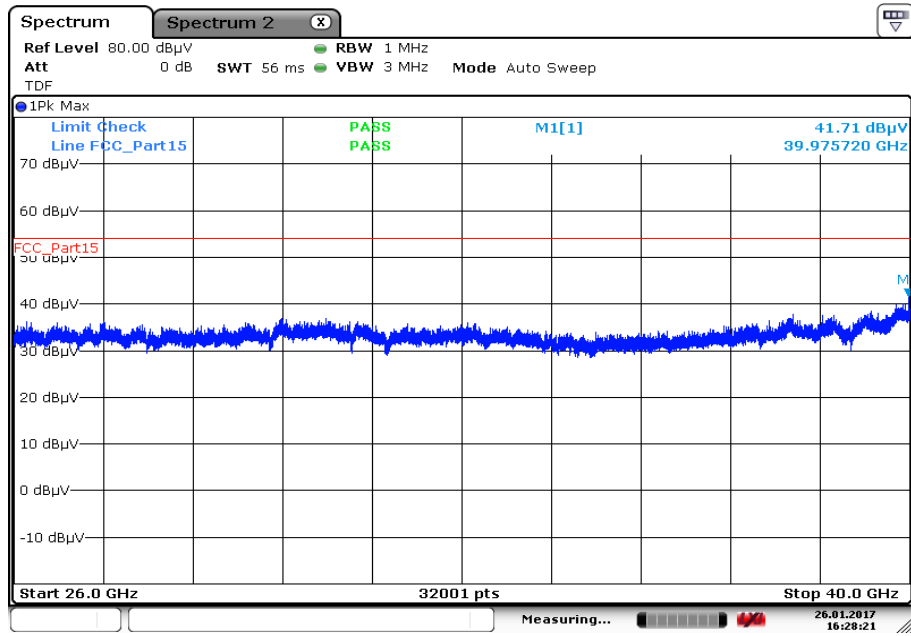


Plot 5: 18 GHz to 26 GHz, vertical & horizontal polarization



Date: 26.JAN.2017 16:25:59

Plot 6: 26 GHz to 40 GHz, vertical & horizontal polarization



Date: 26.JAN.2017 16:28:21

11.12 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 [m]
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30

Results: (External antennas)

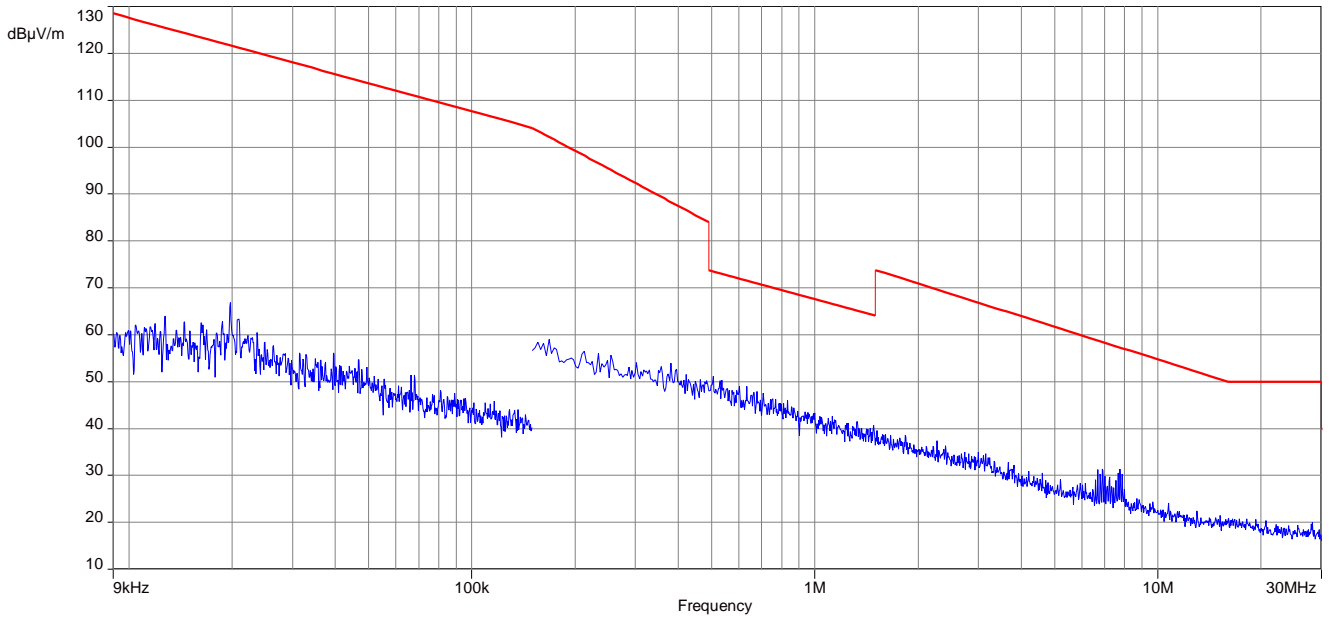
For the results of the spurious emission tests radiated of all external antennas see “Appendix_to_1-2846/16-02-05-B”

Results:

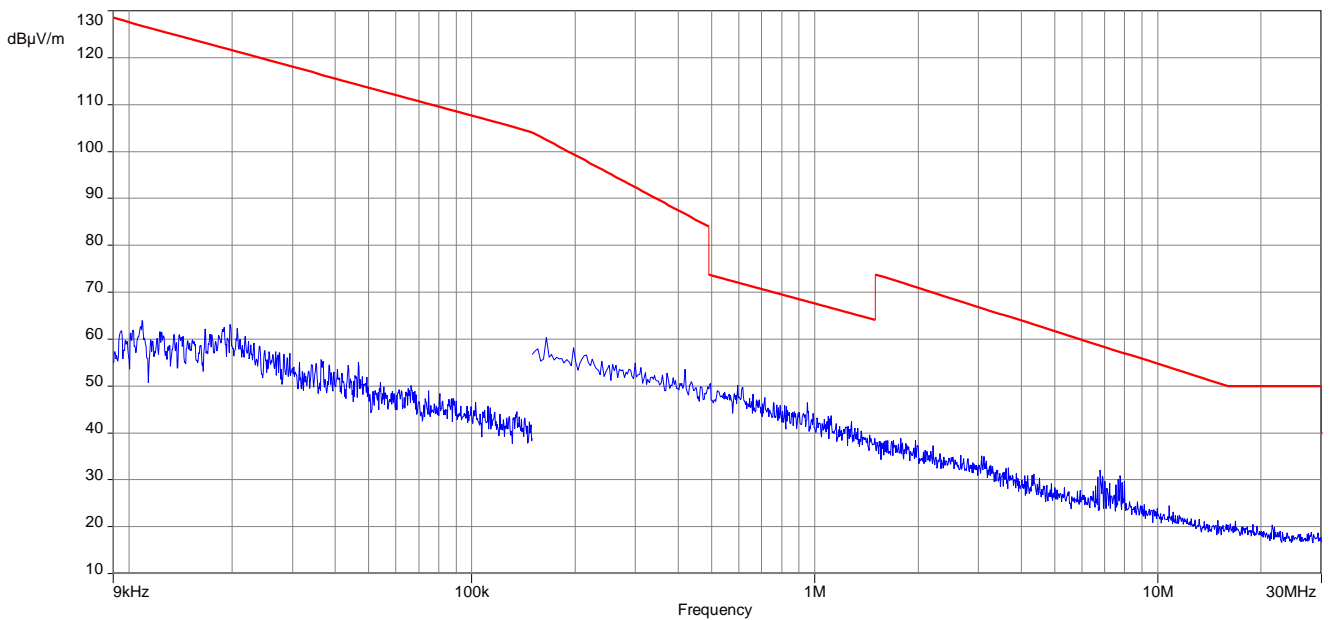
Spurious Emissions Radiated < 30 MHz [dBµV/m]		
F [MHz]	Detector	Level [dBµV/m]
All detected emissions are more than 20 dB below the limit.		

Plots:

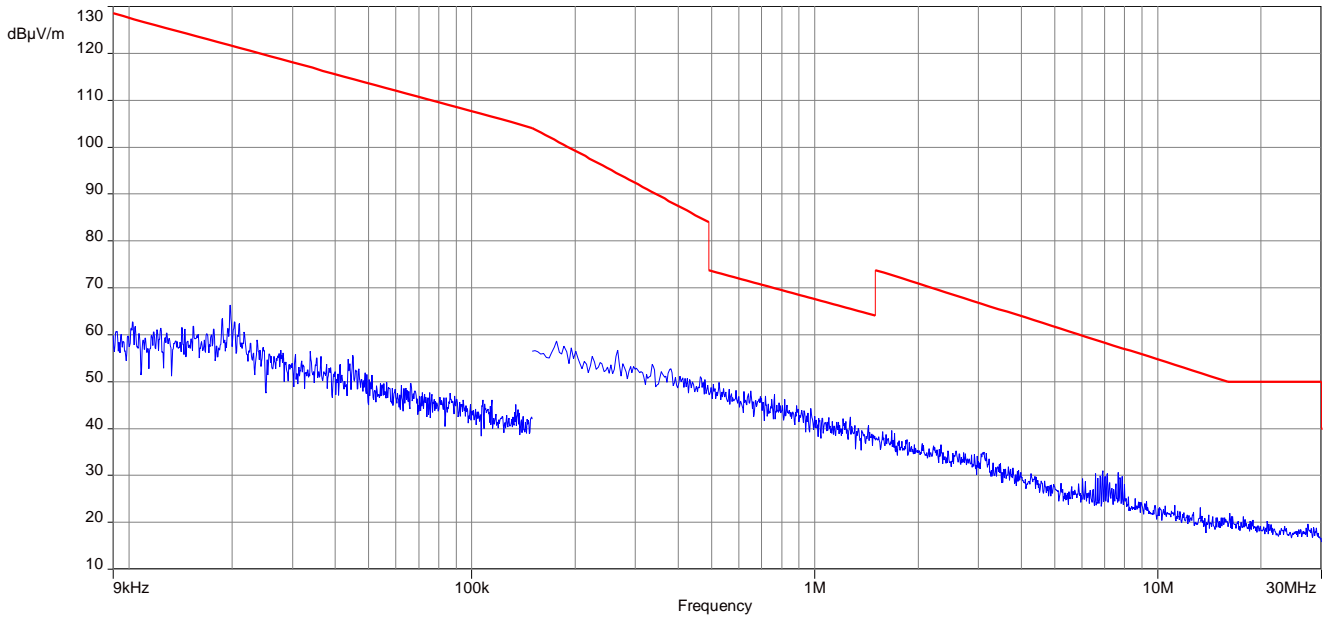
Plot 1: 9 kHz to 30 MHz, OFDM 20 MHz, 5180 MHz



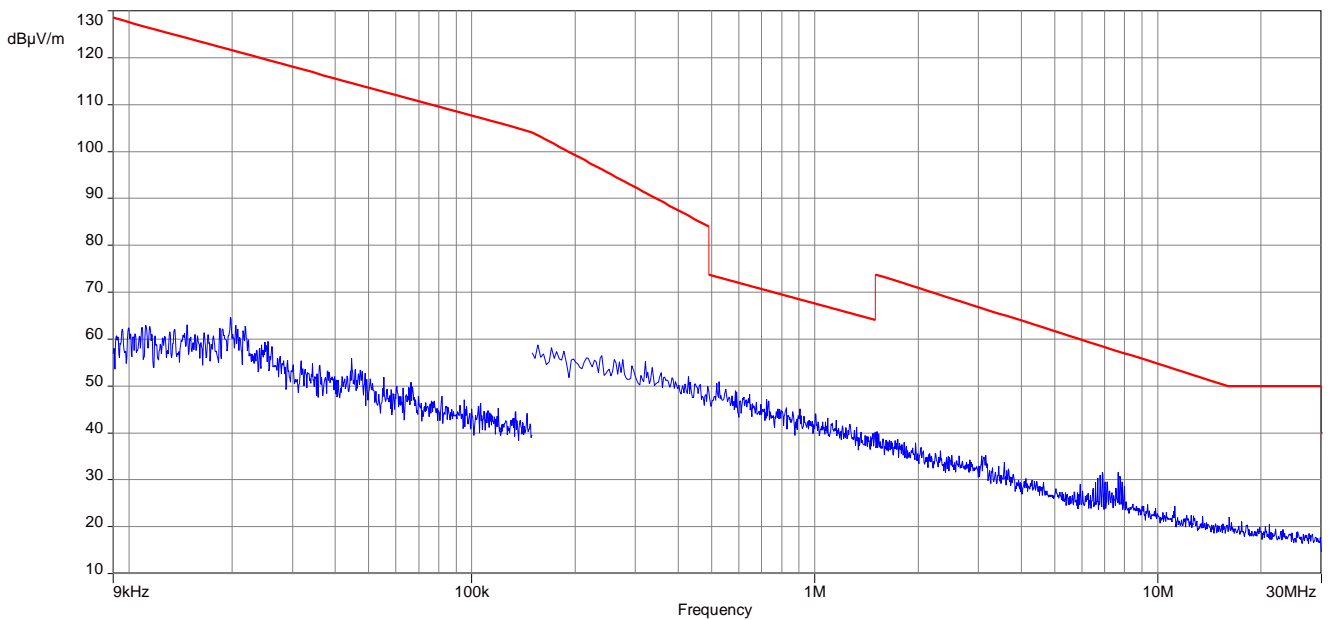
Plot 2: 9 kHz to 30 MHz, OFDM 20 MHz, 5240 MHz



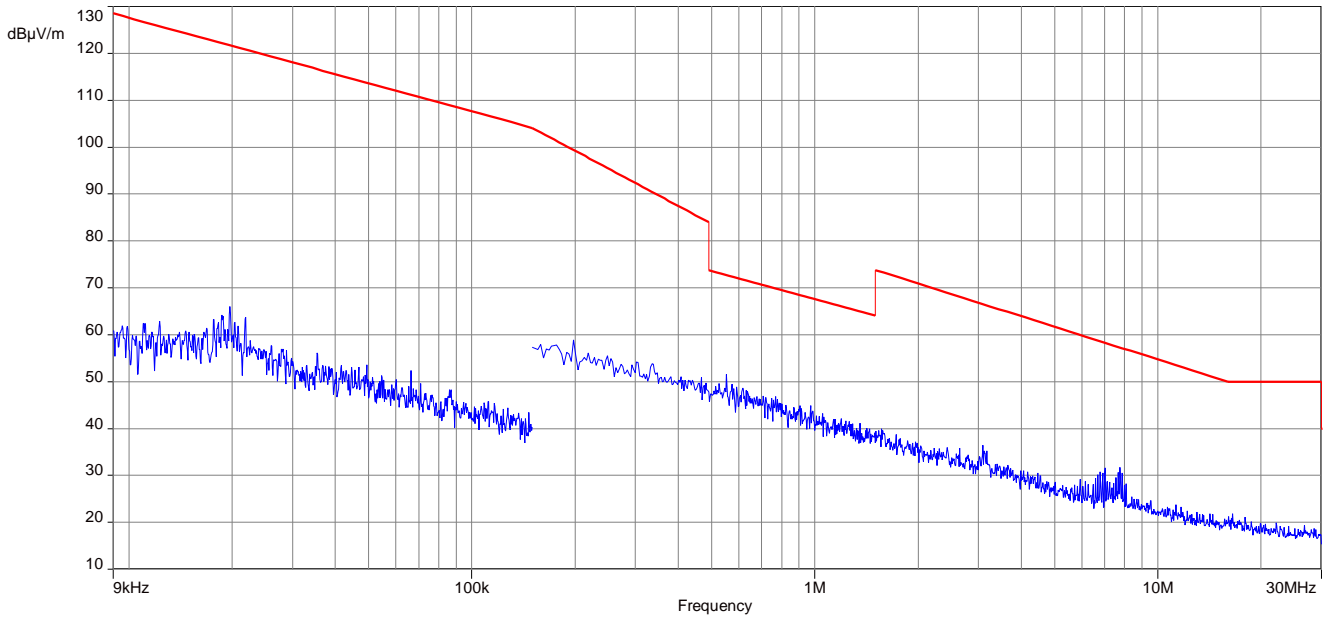
Plot 3: 9 kHz to 30 MHz, OFDM 20 MHz, 5260 MHz



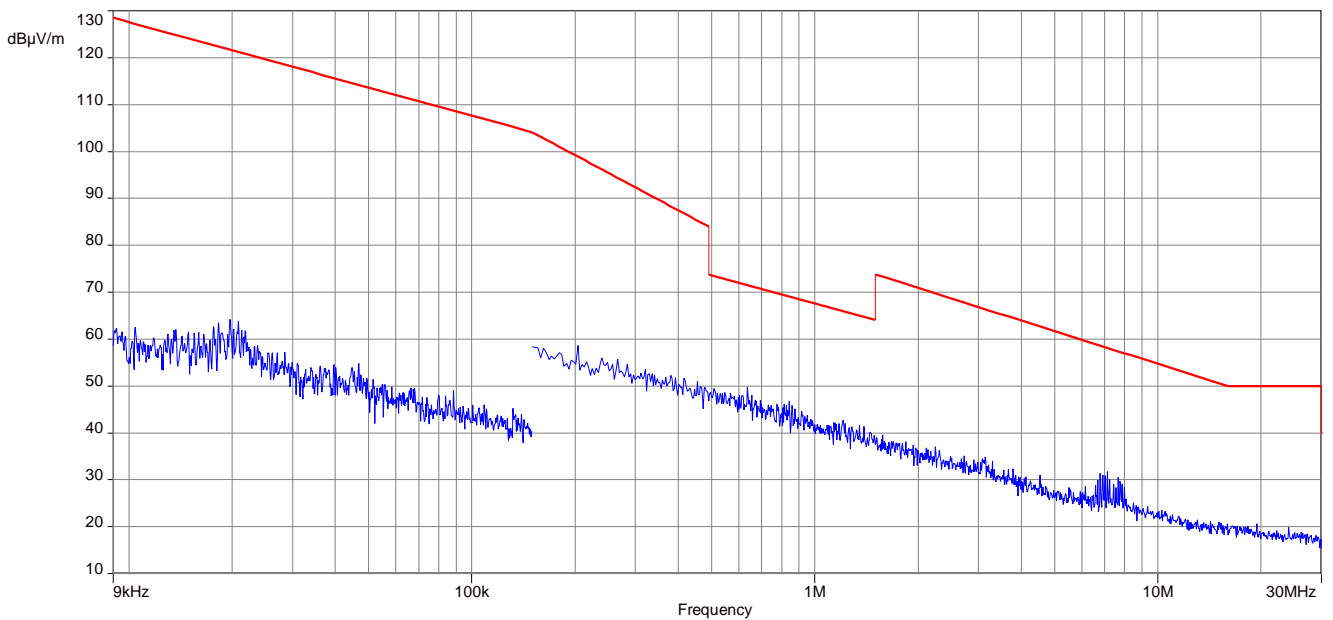
Plot 4: 9 kHz to 30 MHz, OFDM 20 MHz, 5320 MHz



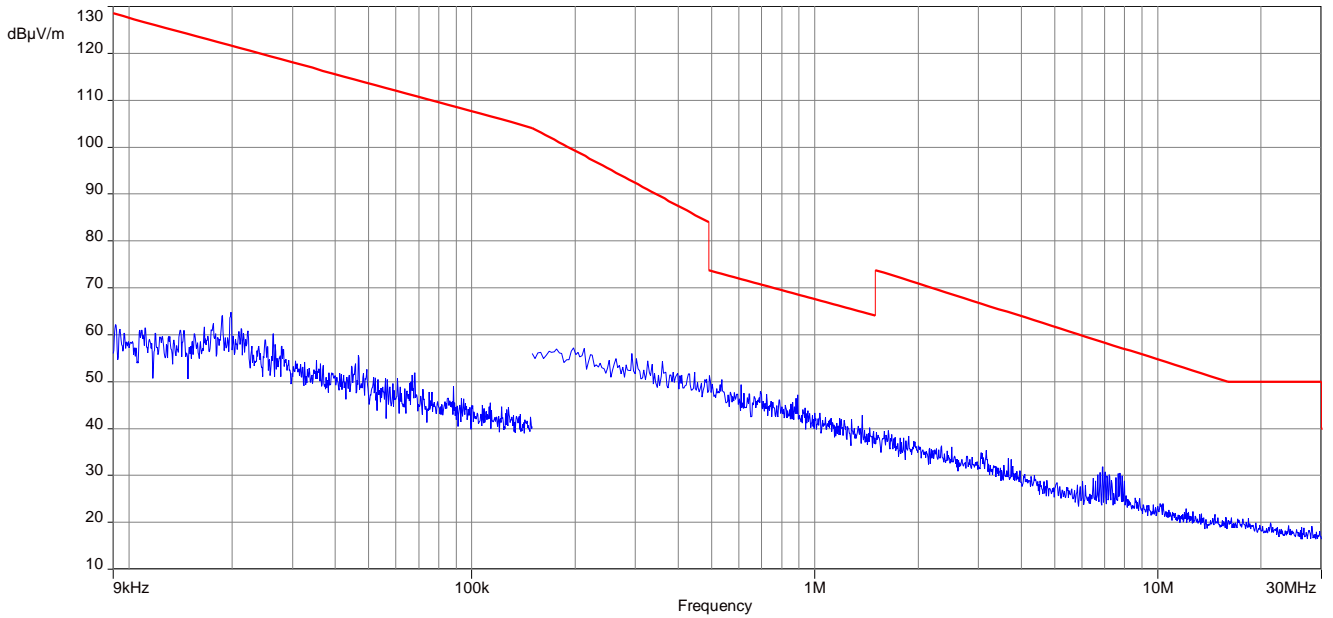
Plot 5: 9 kHz to 30 MHz, OFDM 20 MHz, 5500 MHz



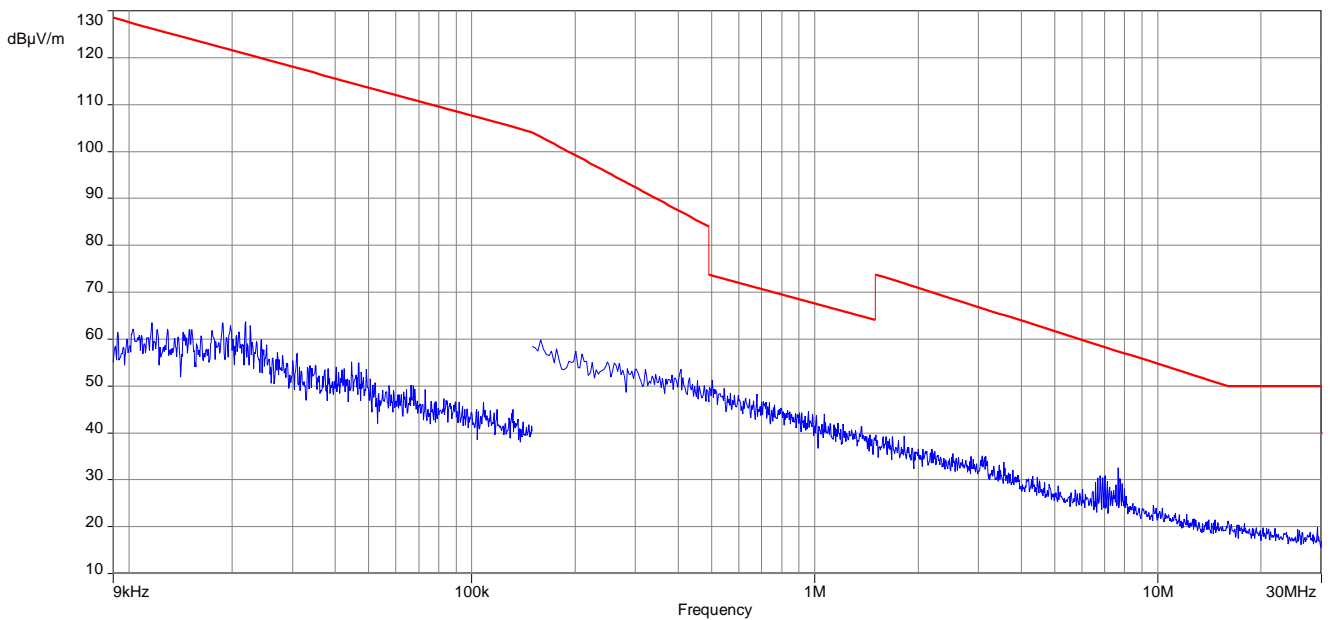
Plot 6: 9 kHz to 30 MHz, OFDM 20 MHz, 5600 MHz



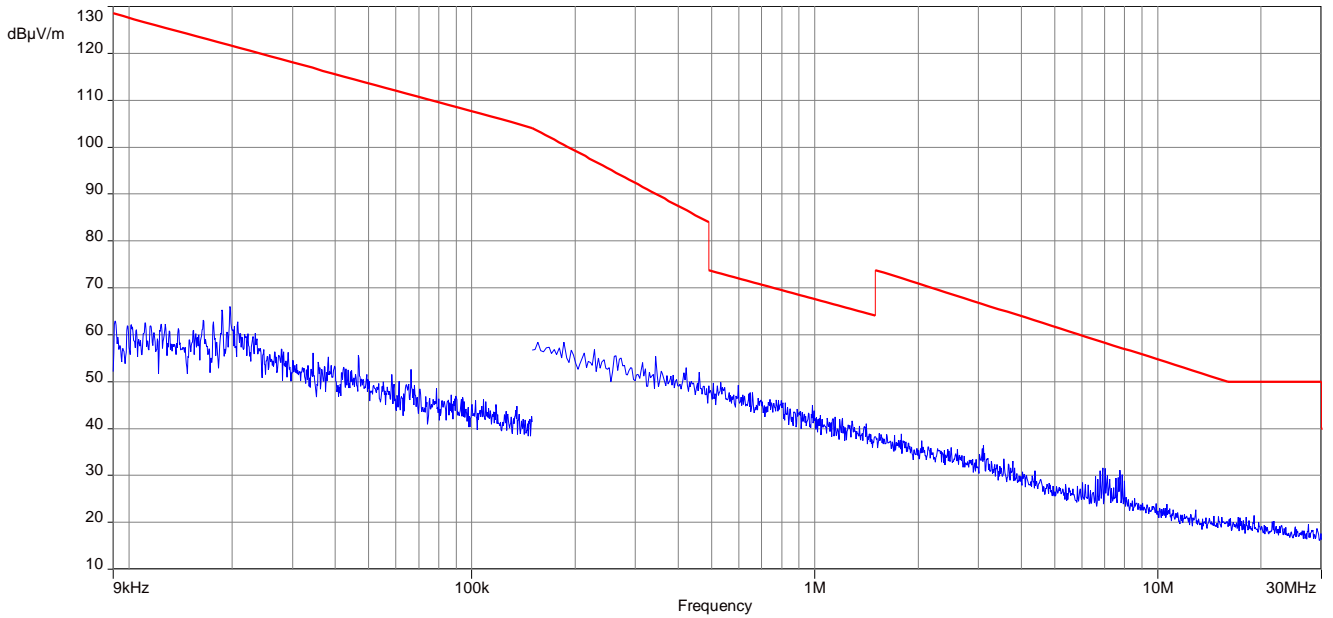
Plot 7: 9 kHz to 30 MHz, OFDM 20 MHz, 5700 MHz



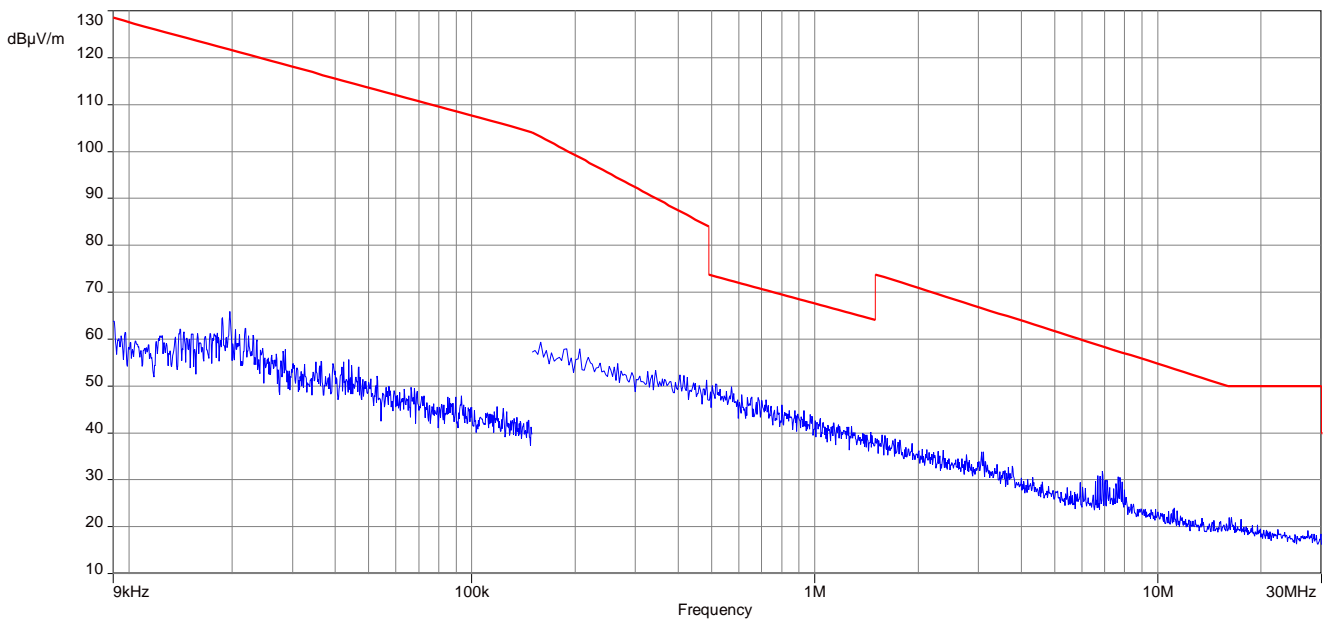
Plot 8: 9 kHz to 30 MHz, OFDM 20 MHz, 5745 MHz



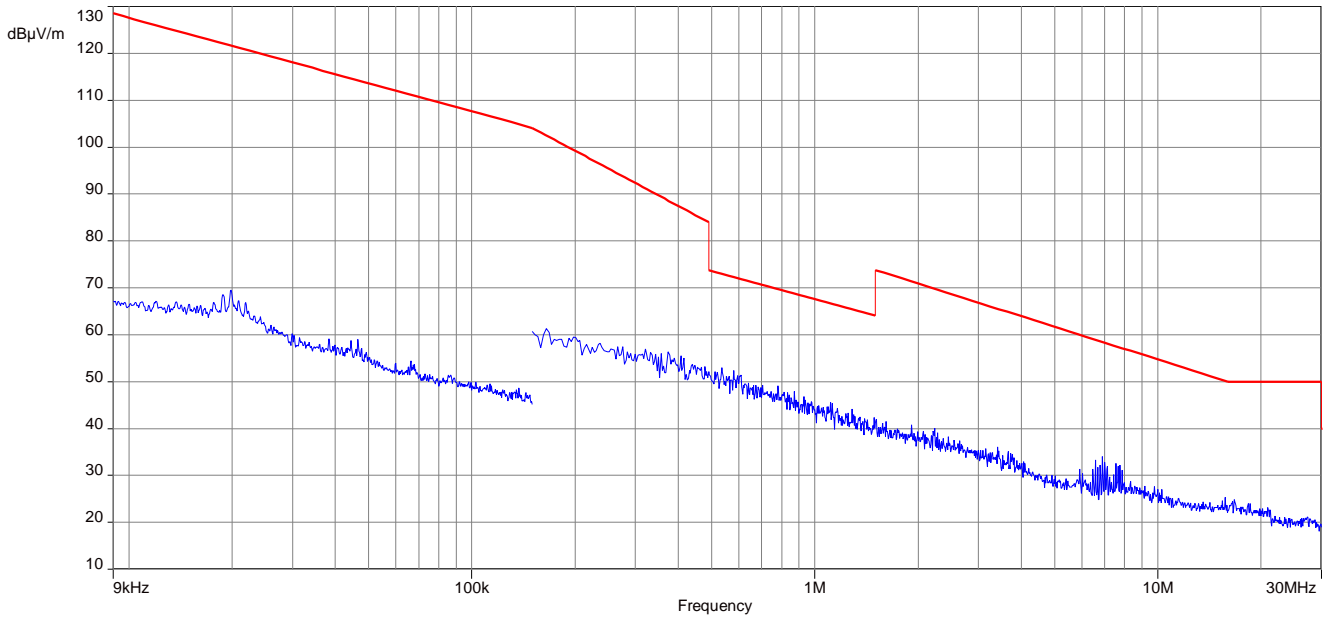
Plot 9: 9 kHz to 30 MHz, OFDM 20 MHz, 5785 MHz



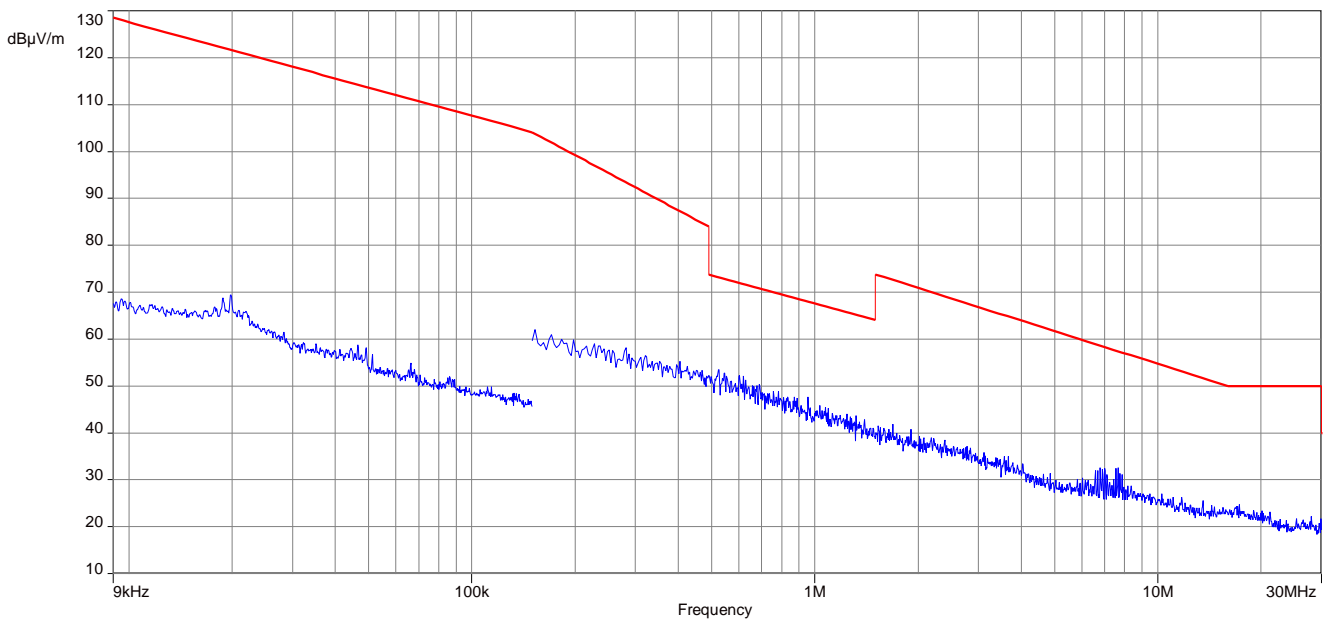
Plot 10: 9 kHz to 30 MHz, OFDM 20 MHz, 5825 MHz



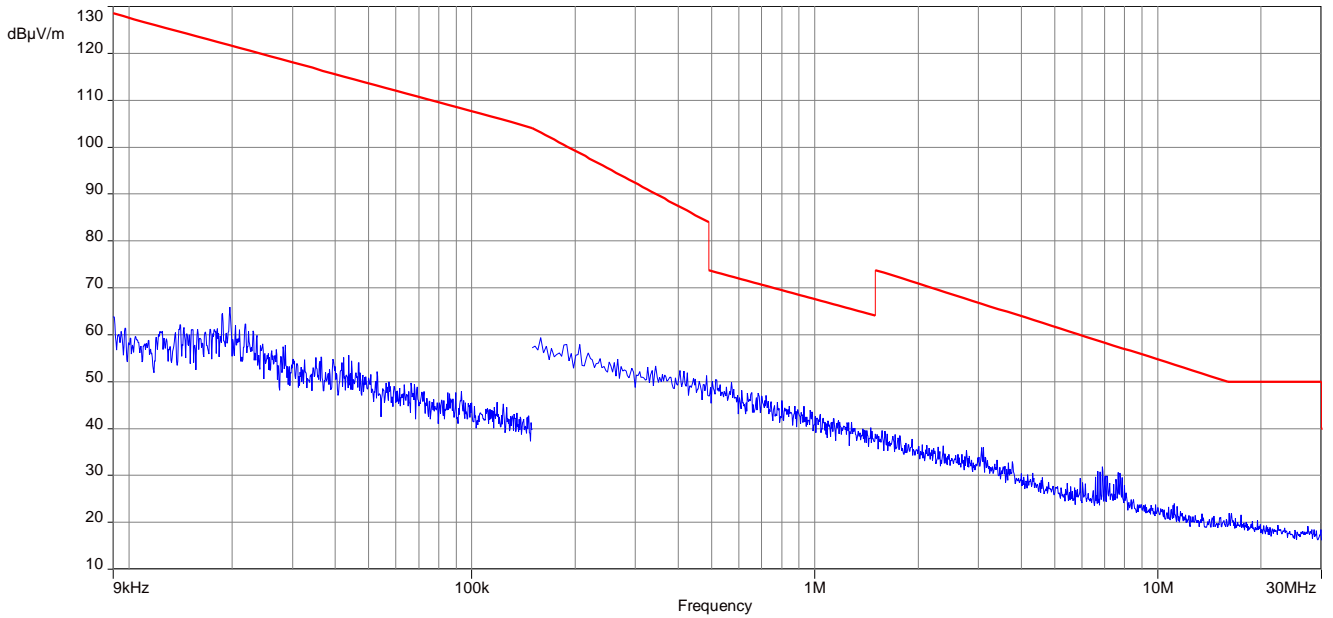
Plot 11: 9 kHz to 30 MHz, OFDM 40 MHz, 5190 MHz



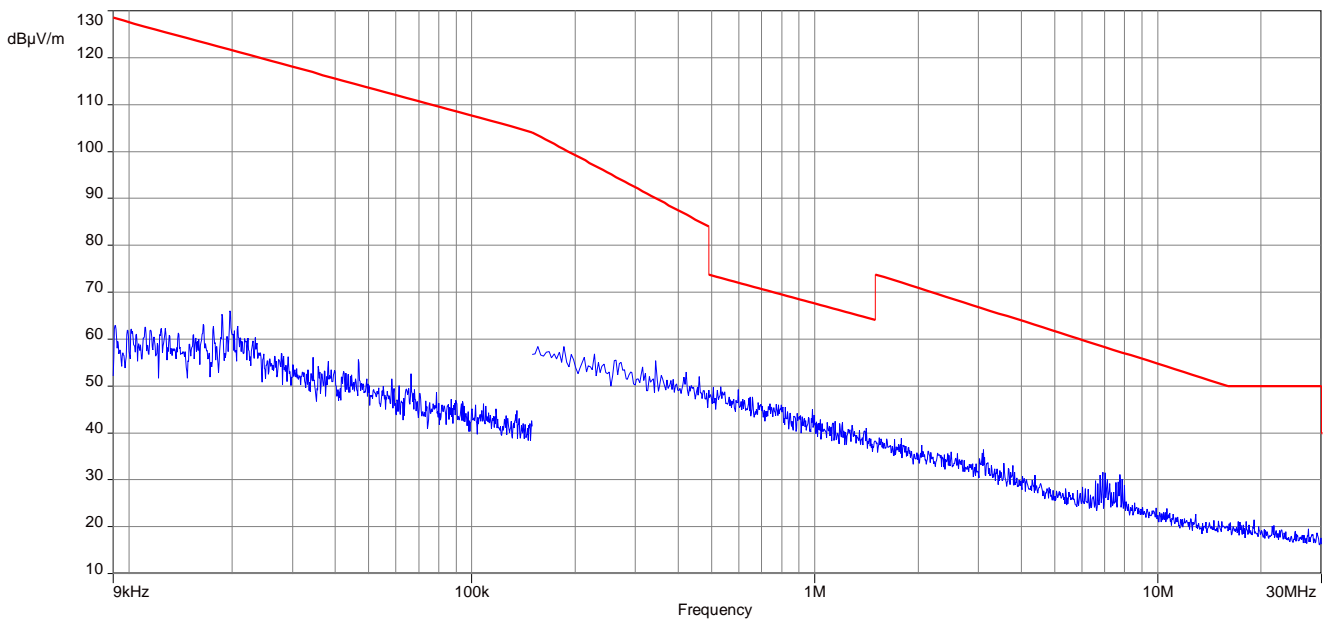
Plot 12: 9 kHz to 30 MHz, OFDM 40 MHz, 5230 MHz



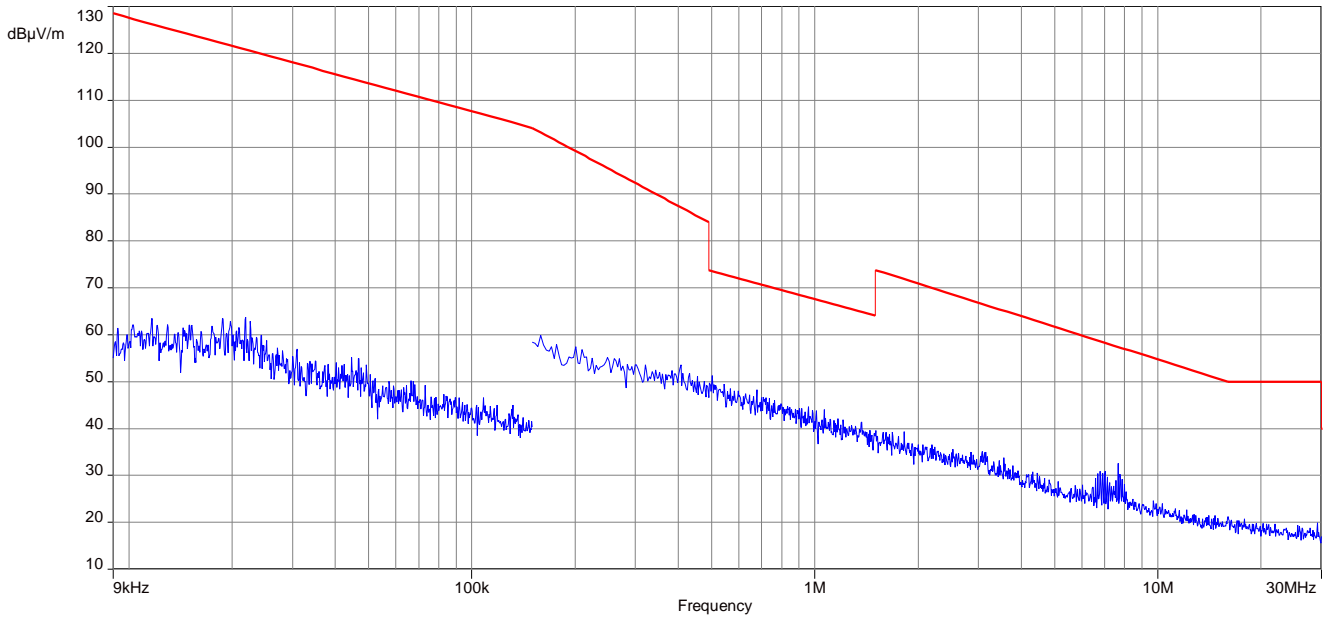
Plot 13: 9 kHz to 30 MHz, OFDM 40 MHz, 5270 MHz



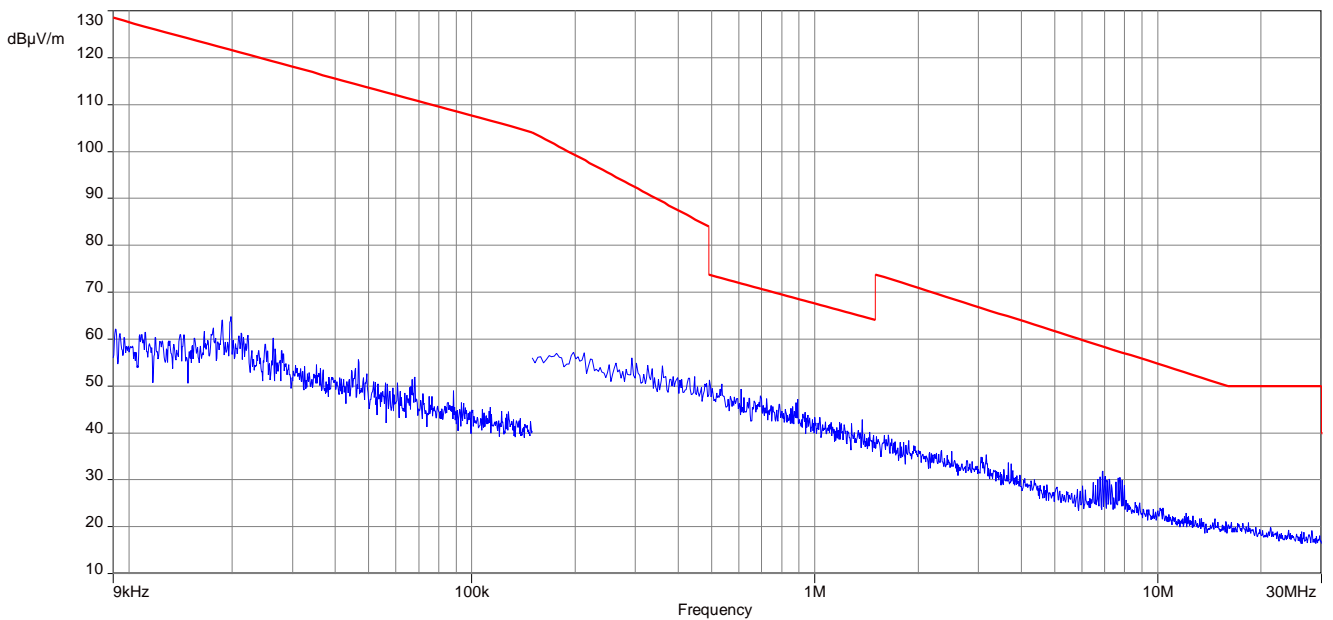
Plot 14: 9 kHz to 30 MHz, OFDM 40 MHz, 5310 MHz



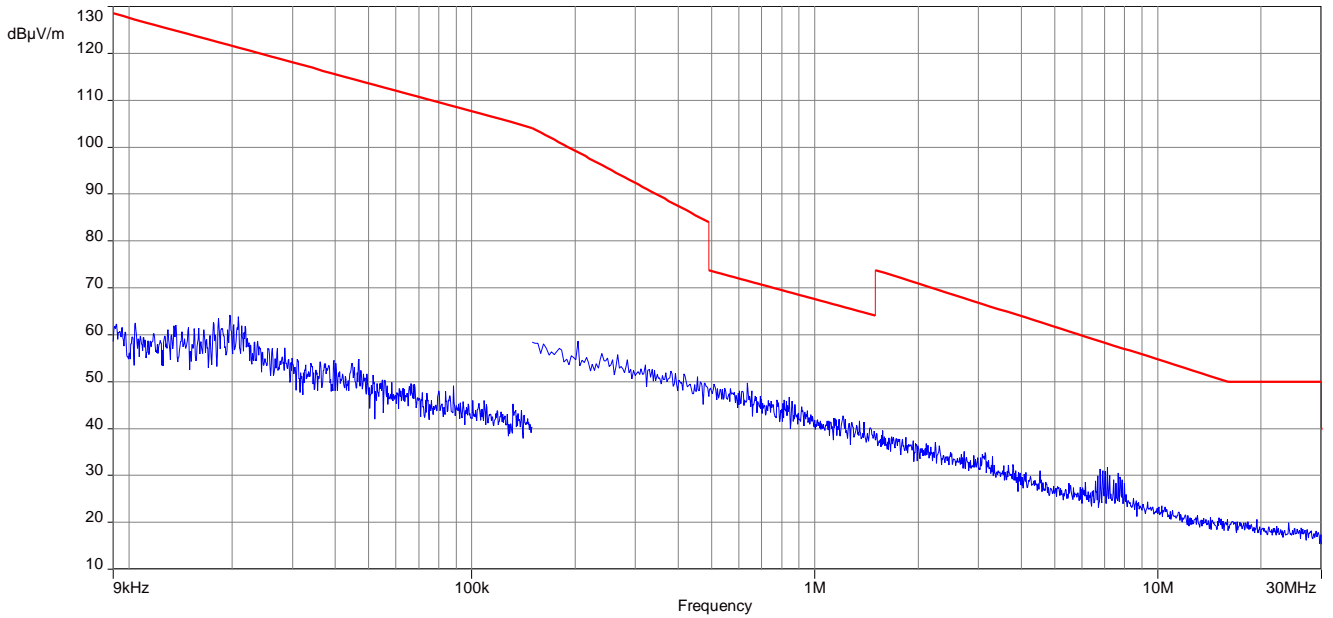
Plot 15: 9 kHz to 30 MHz, OFDM 40 MHz, 5510 MHz



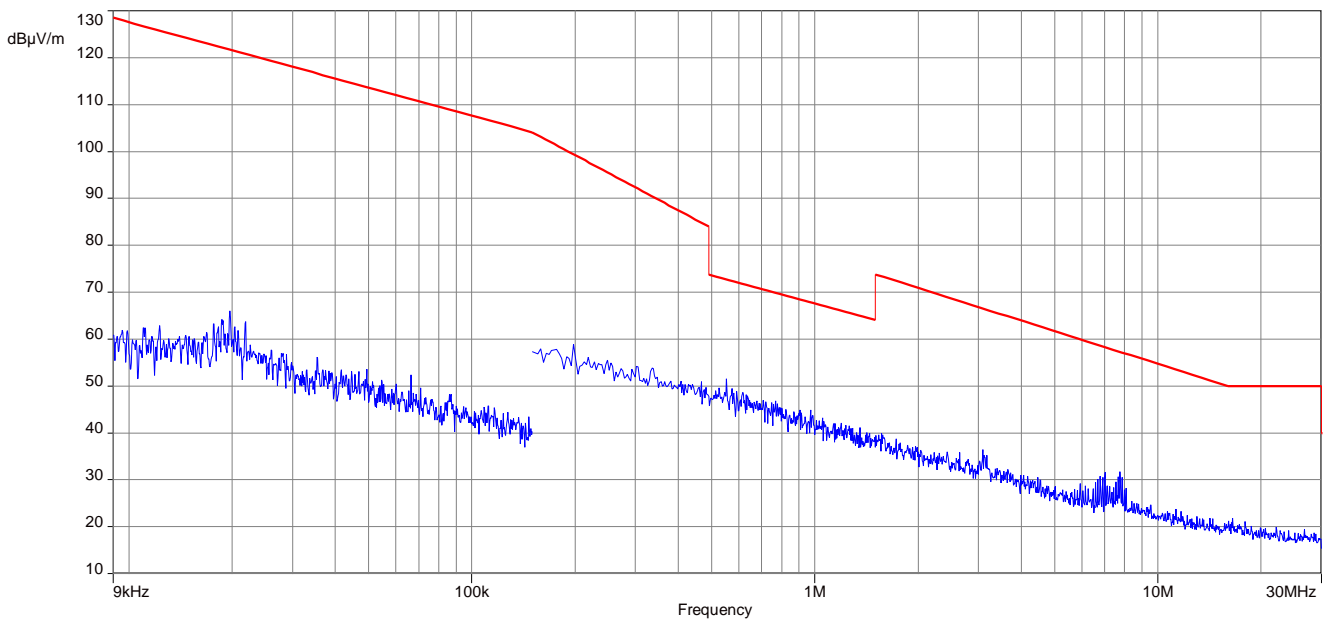
Plot 16: 9 kHz to 30 MHz, OFDM 40 MHz, 5590 MHz



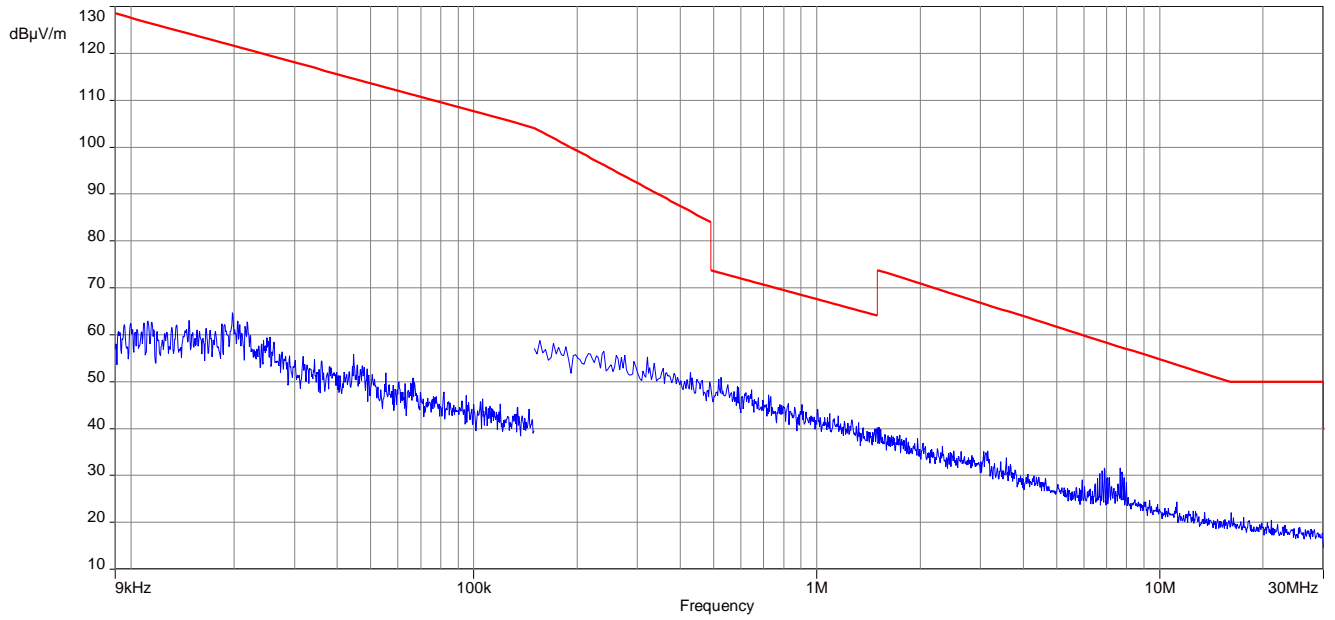
Plot 17: 9 kHz to 30 MHz, OFDM 40 MHz, 5670 MHz



Plot 18: 9 kHz to 30 MHz, OFDM 40 MHz, 5755 MHz



Plot 19: 9 kHz to 30 MHz, OFDM 40 MHz, 5795 MHz



12 Observations

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

Annex A Document history

Version	Applied changes	Date of release
	Initial release	2017-02-22
A	Editorial Changes	2017-04-05
B	External antennas added	2017-04-18
C	EIRP values for U-NII-1 band added Frequency range corrected Antenna names changed	2017-05-10

Annex B Further information

Glossary

AVG	-	Average
DUT	-	Device under test
EMC	-	Electromagnetic Compatibility
EN	-	European Standard
EUT	-	Equipment under test
ETSI	-	European Telecommunications Standard Institute
FCC	-	Federal Communication Commission
FCC ID	-	Company Identifier at FCC
HW	-	Hardware
IC	-	Industry Canada
Inv. No.	-	Inventory number
N/A	-	Not applicable
PP	-	Positive peak
QP	-	Quasi peak
S/N	-	Serial number
SW	-	Software
PMN	-	Product marketing name
HMN	-	Host marketing name
HVIN	-	Hardware version identification number
FVIN	-	Firmware version identification number
OBW		Occupied Bandwidth
OC		Operating Channel
OCW		Operating Channel Bandwidth
OOB		Out Of Band

Annex C Accreditation Certificate

first page

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Deutsche Akkreditierungsstelle GmbH

Bellehene gemäß § 8 Absatz 1 AkkStelleG i.V.m. § 1 Absatz 1 AkkStelleGBV
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