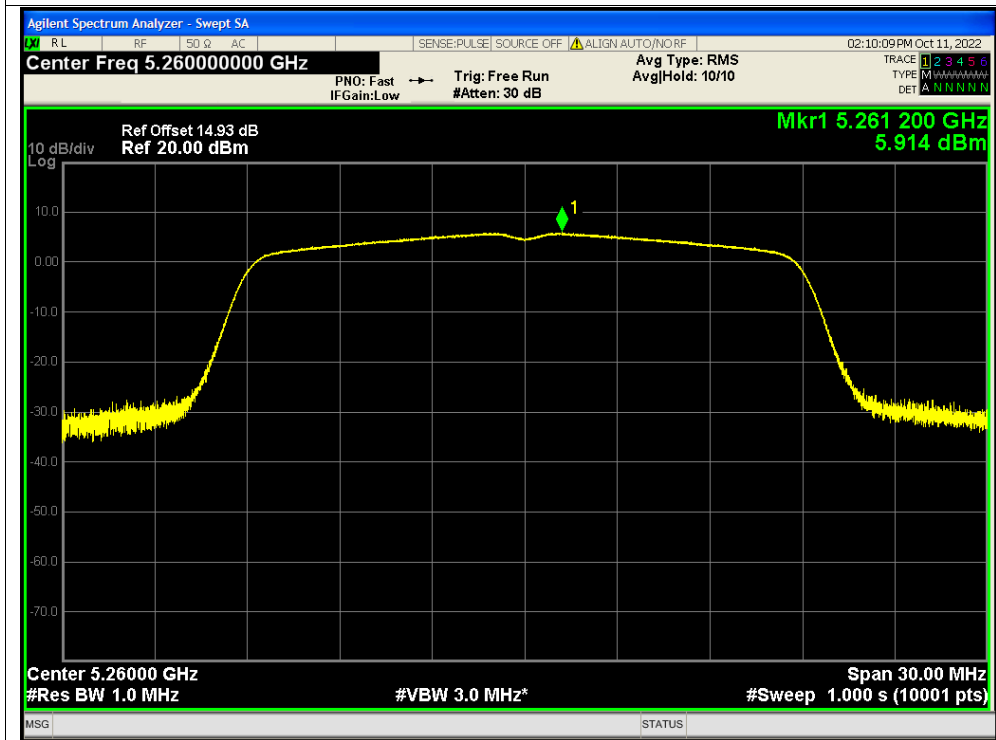
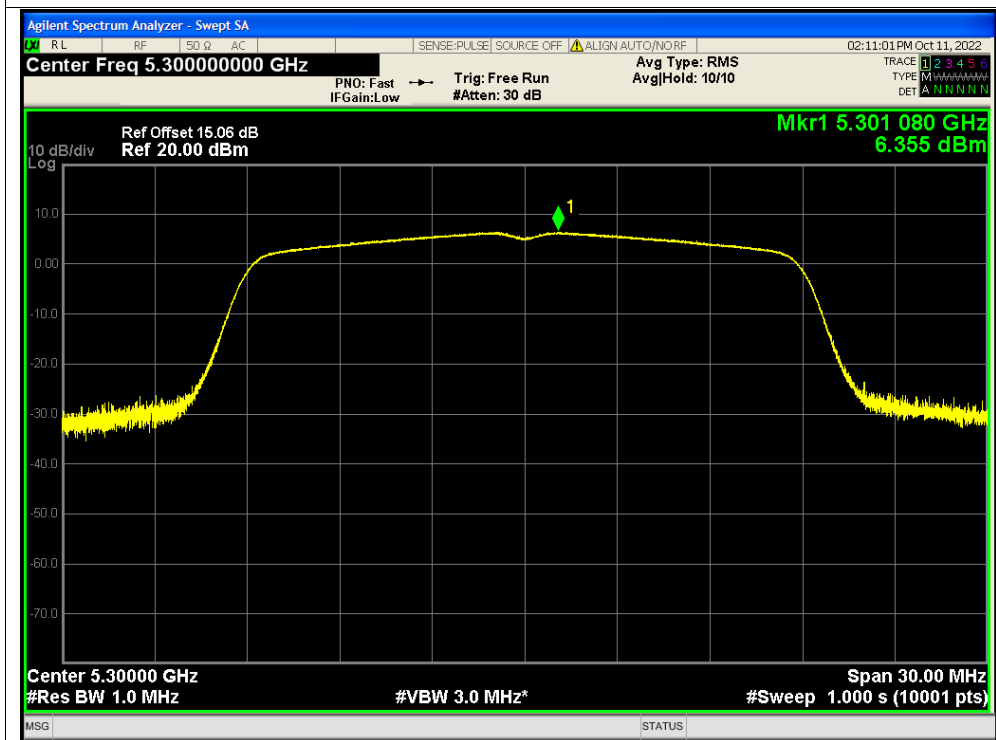




PSD NVNT n20 5260MHz Ant1

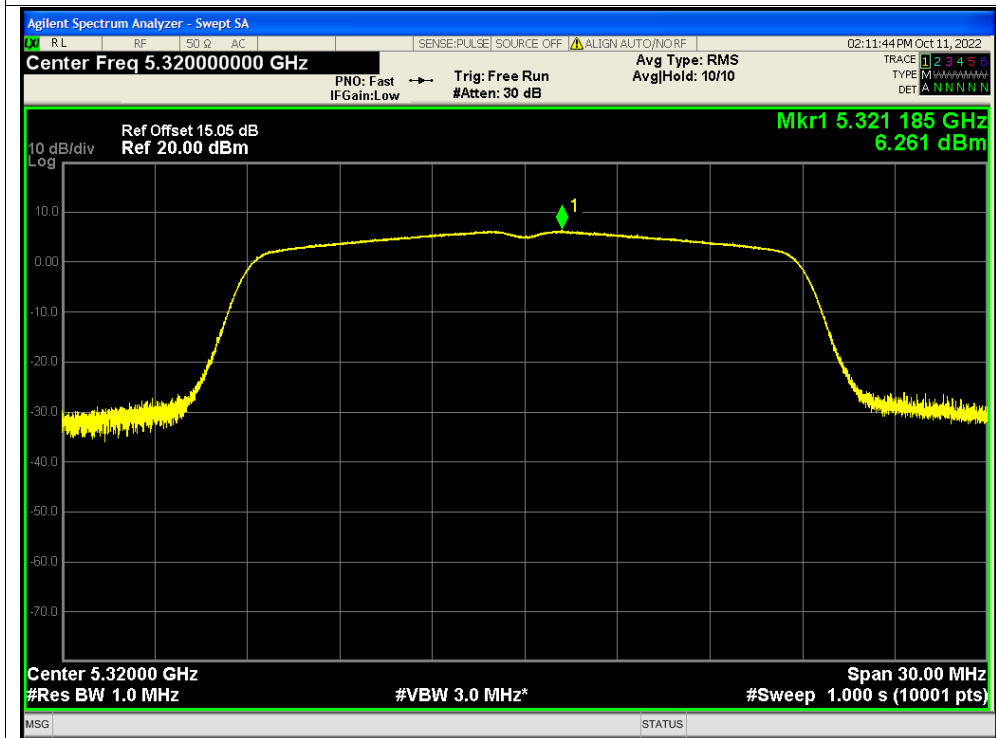


PSD NVNT n20 5300MHz Ant1

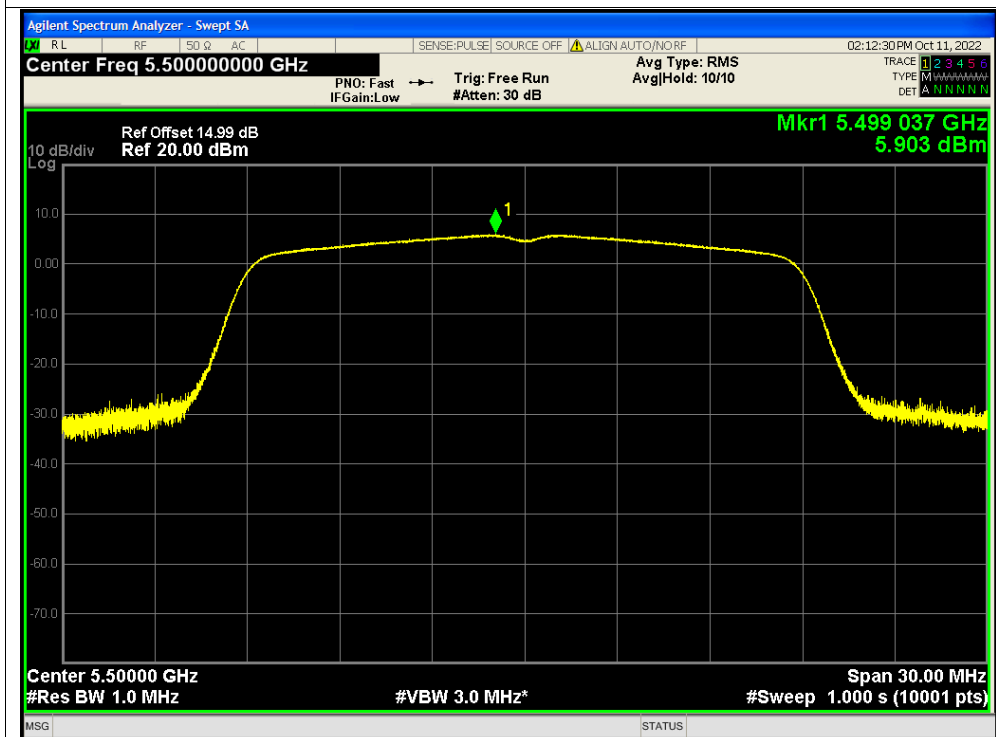




PSD NVNT n20 5320MHz Ant1

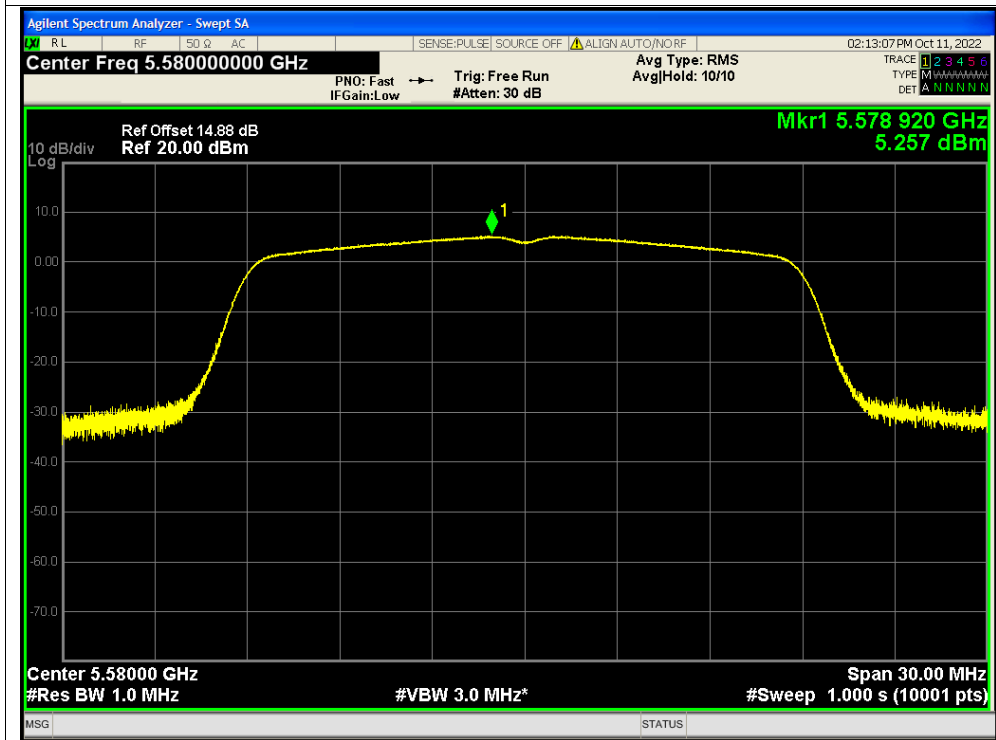


PSD NVNT n20 5500MHz Ant1

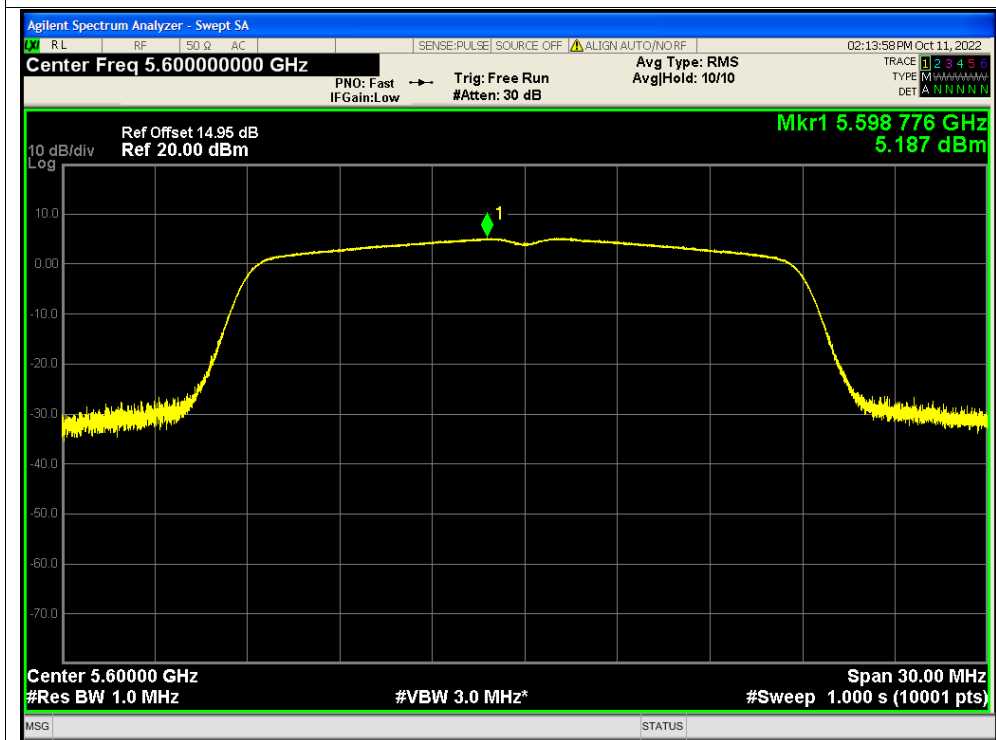




PSD NVNT n20 5580MHz Ant1

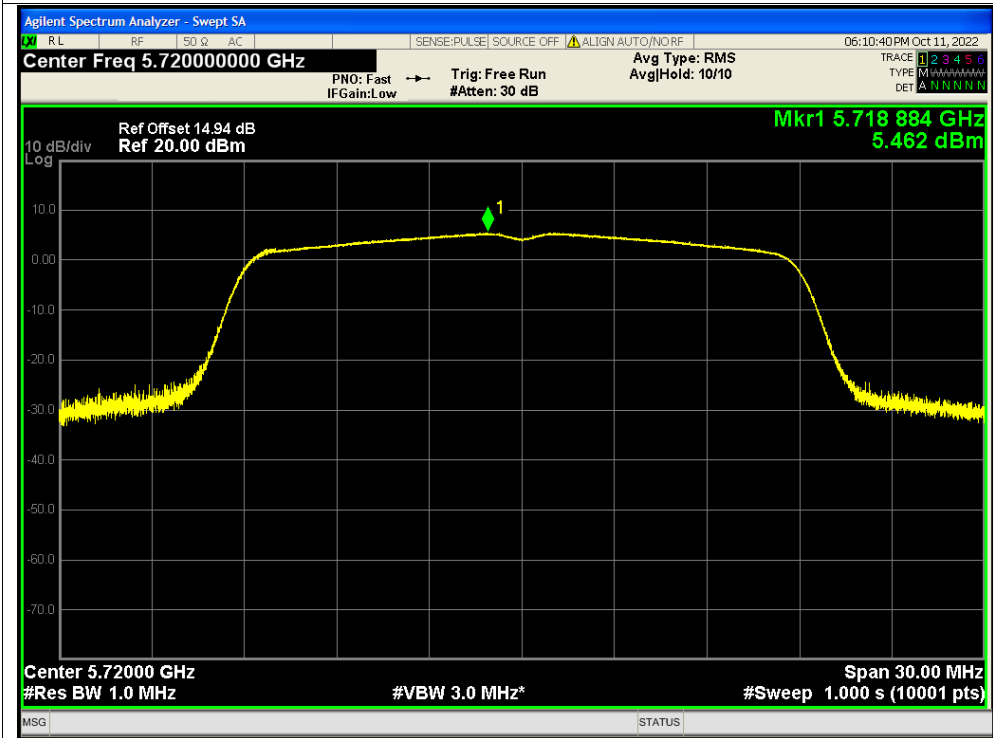


PSD NVNT n20 5600MHz Ant1

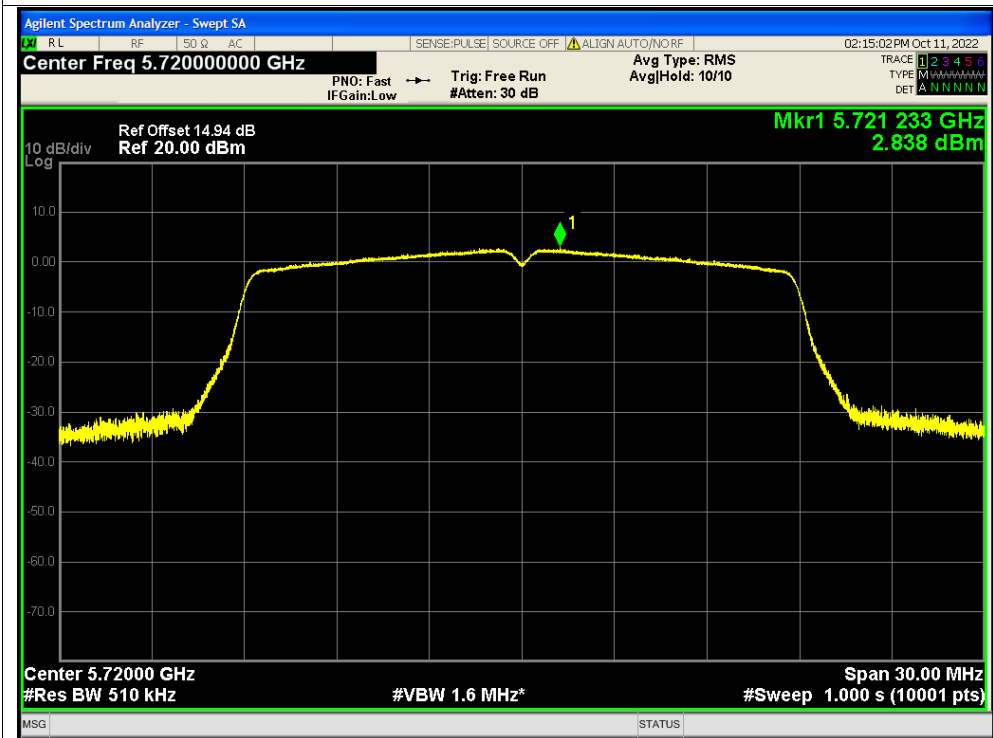




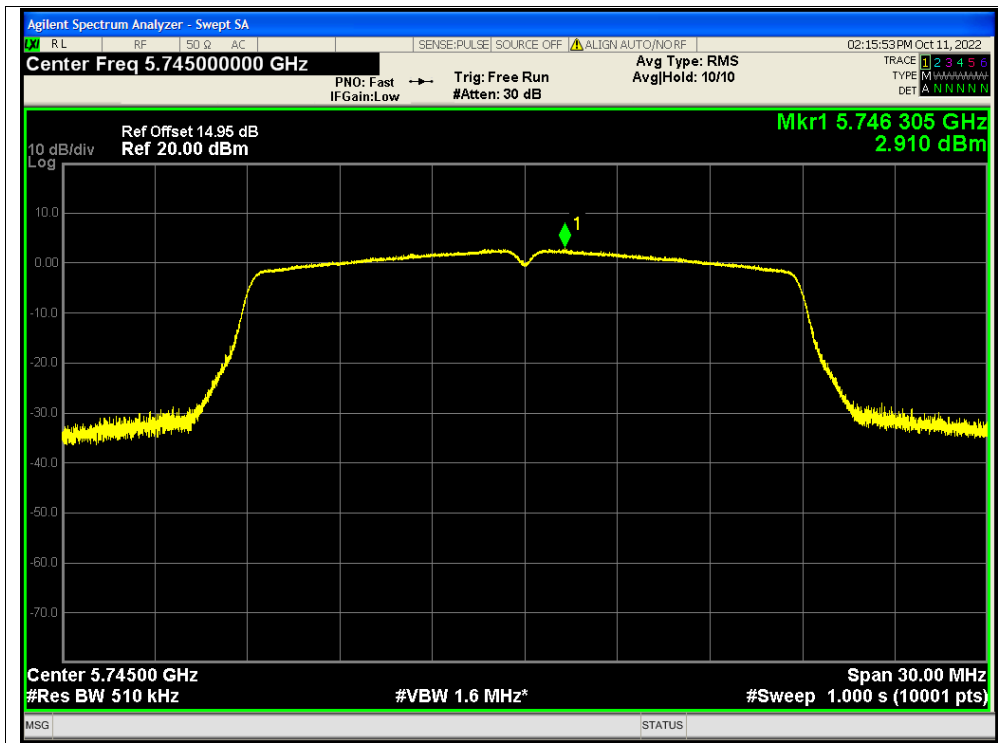
Band3-PSD NVNT n20 5720MHz Ant1



Band4-PSD NVNT n20 5720MHz Ant1

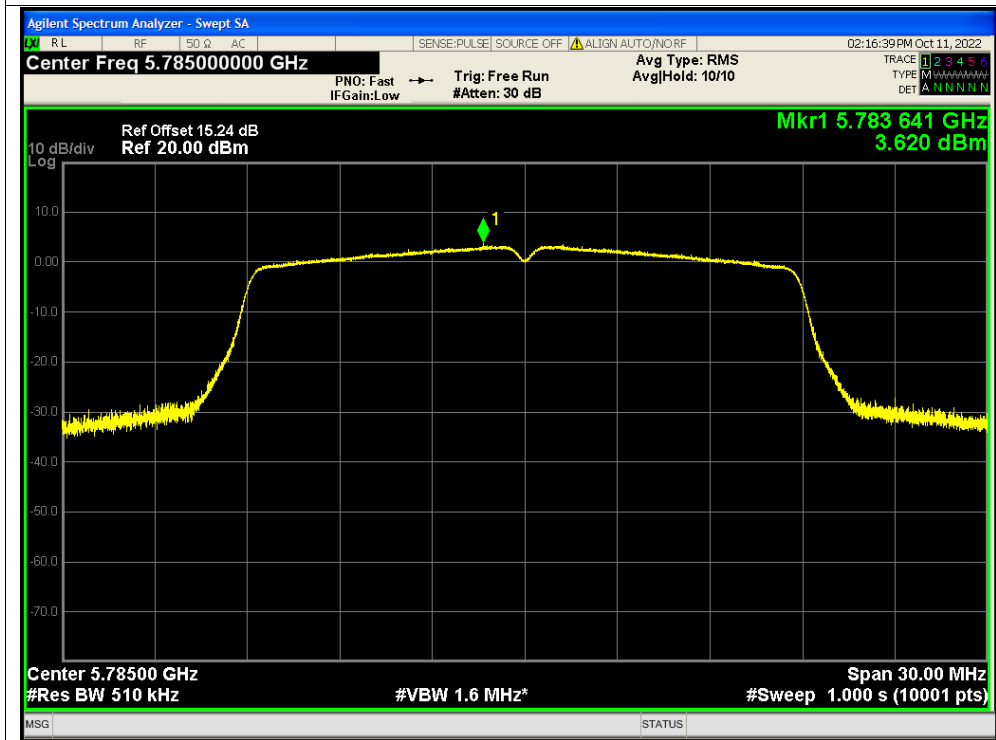


PSD NVNT n20 5745MHz Ant1

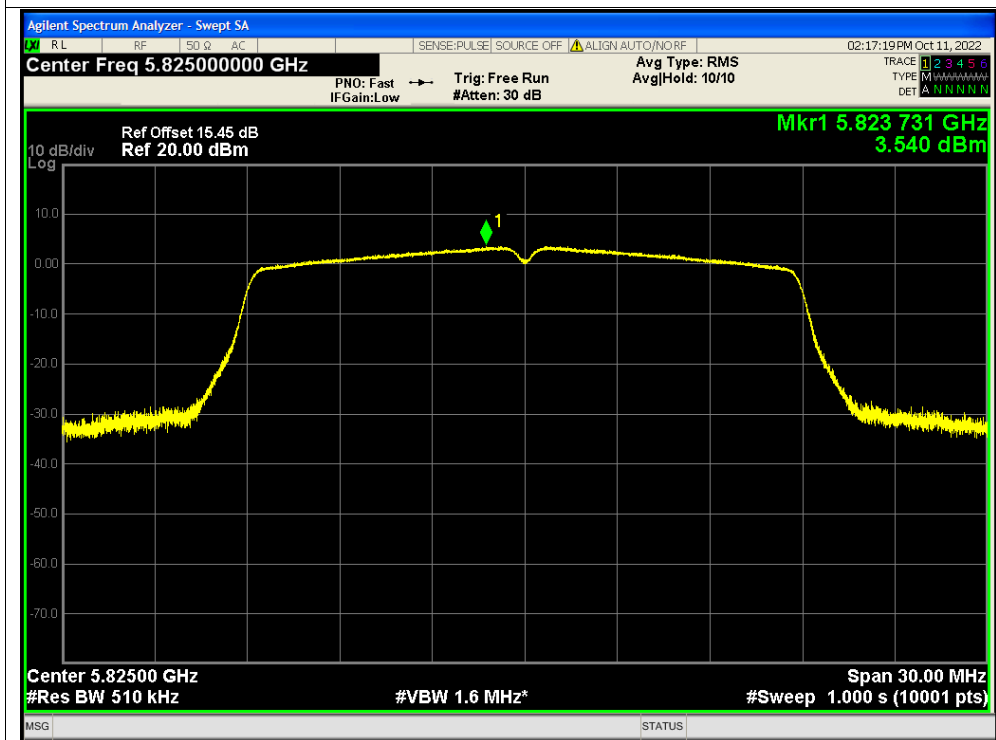




PSD NVNT n20 5785MHz Ant1

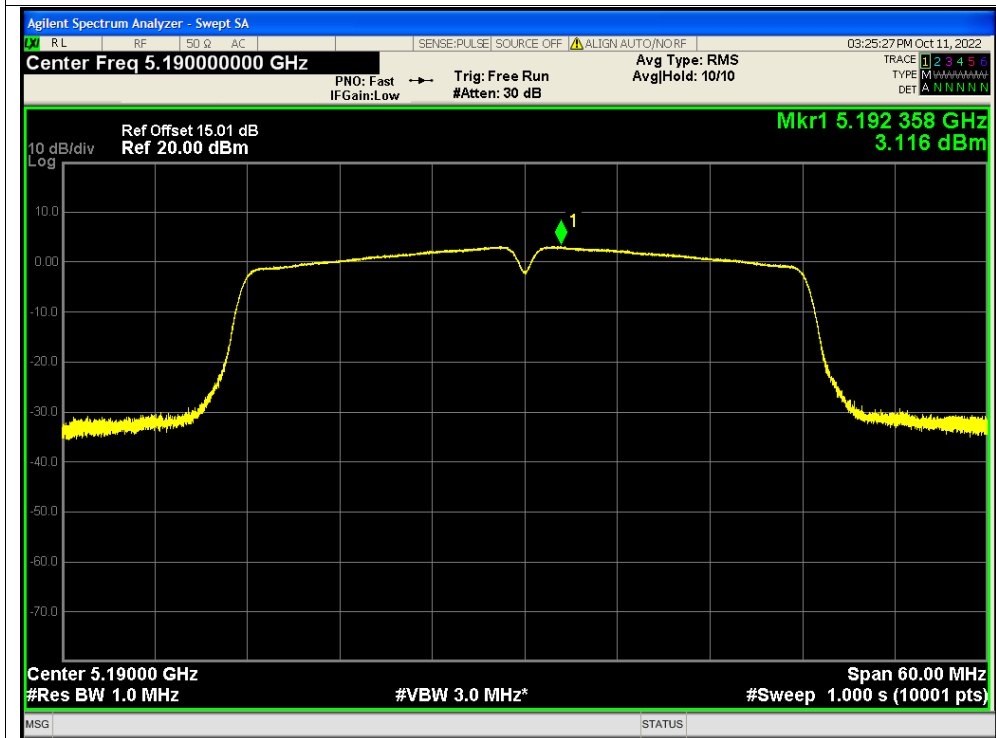


PSD NVNT n20 5825MHz Ant1

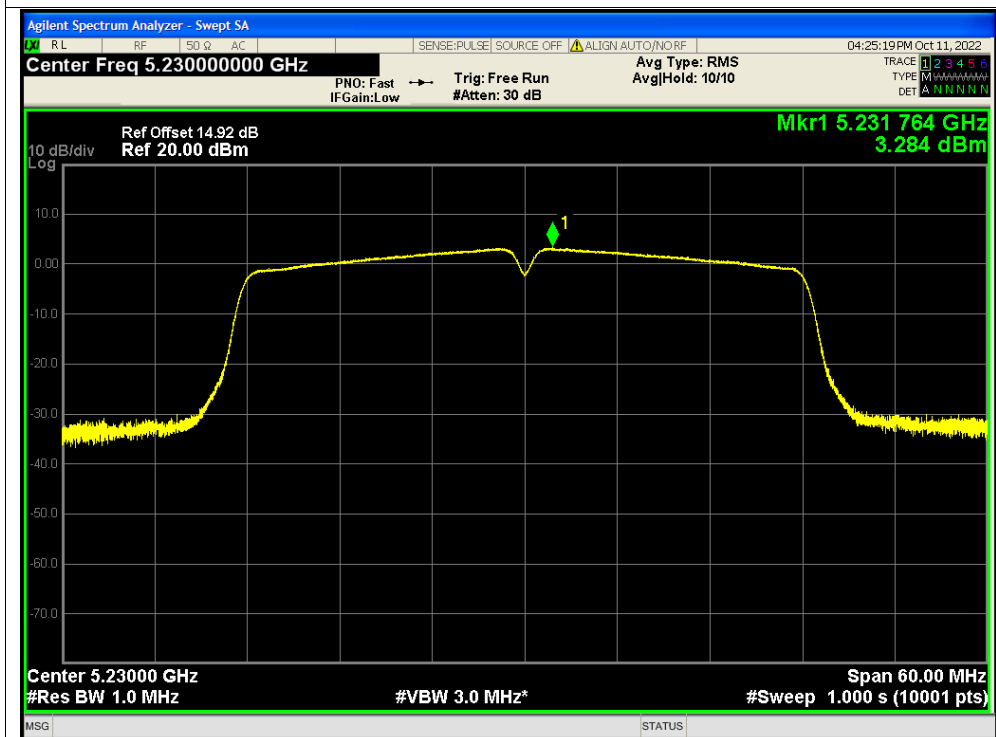




PSD NVNT n40 5190MHz Ant1

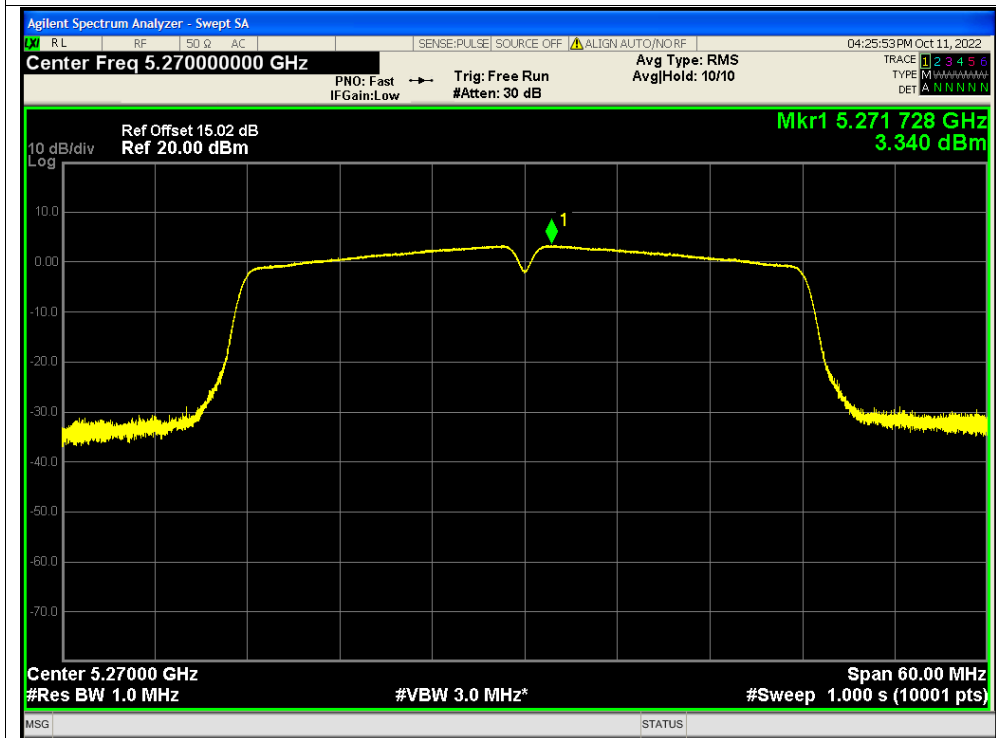


PSD NVNT n40 5230MHz Ant1

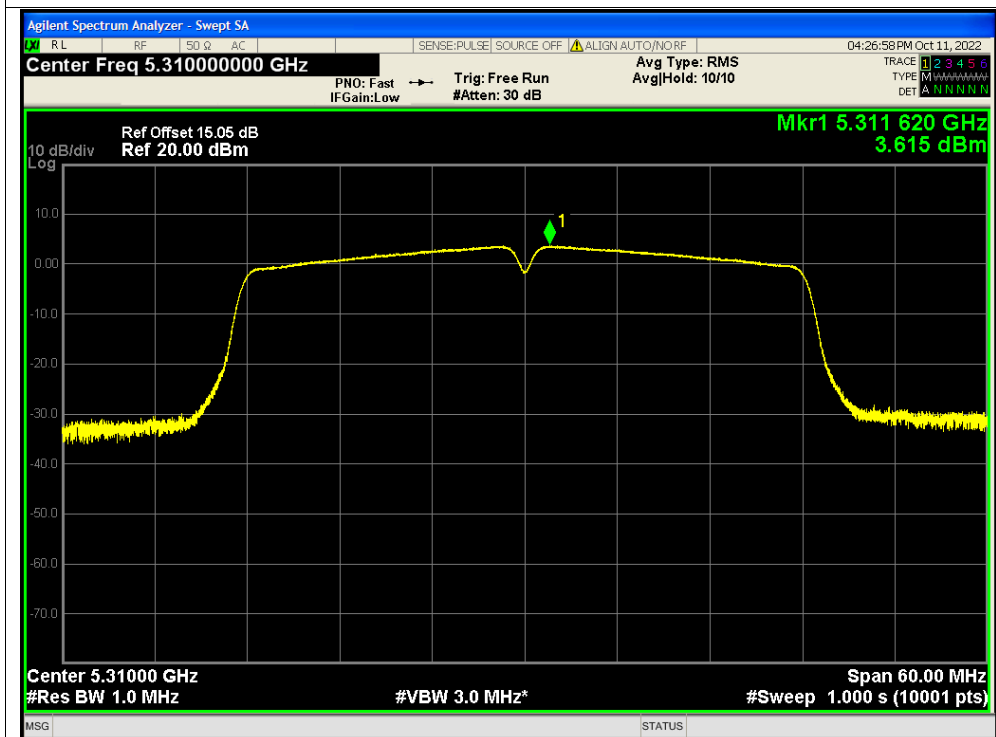




PSD NVNT n40 5270MHz Ant1

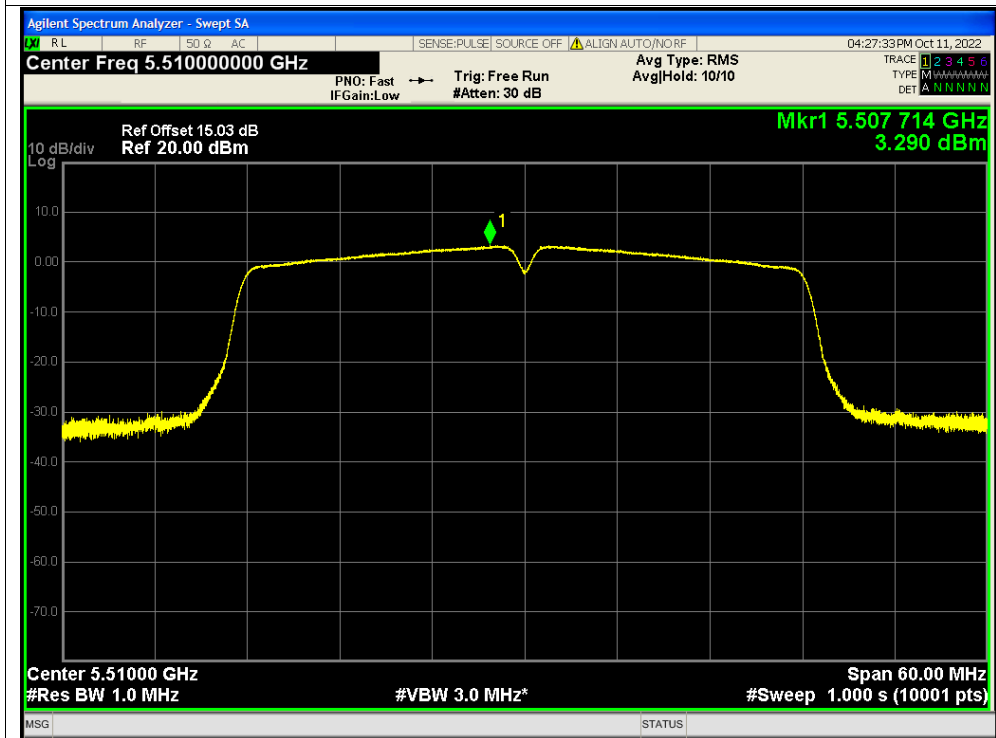


PSD NVNT n40 5310MHz Ant1

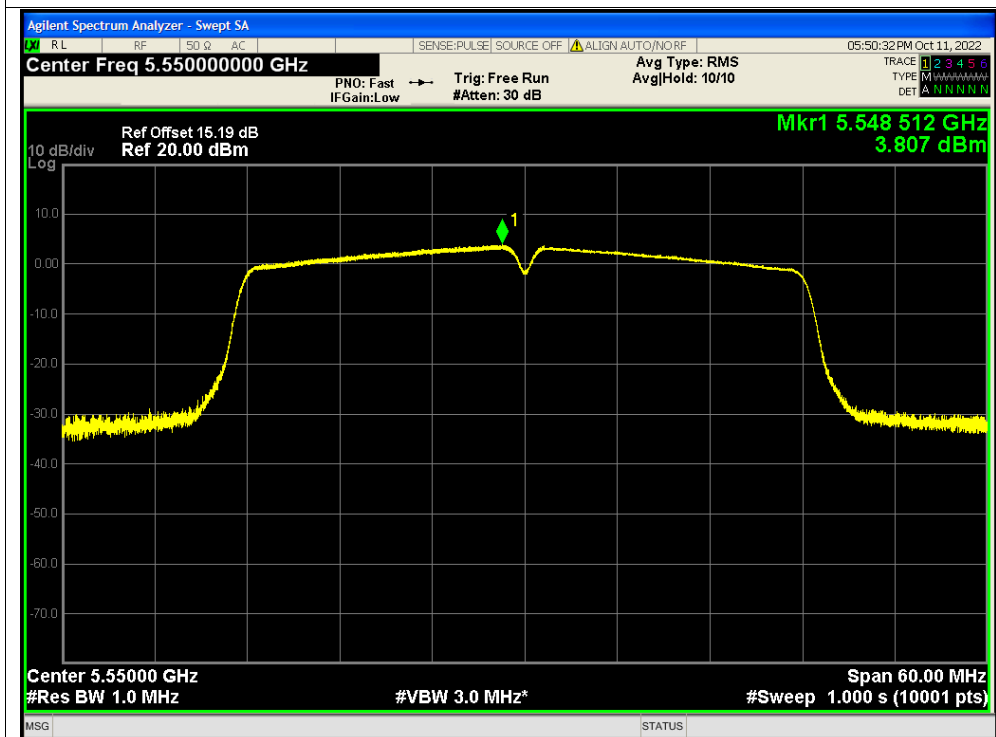




PSD NVNT n40 5510MHz Ant1

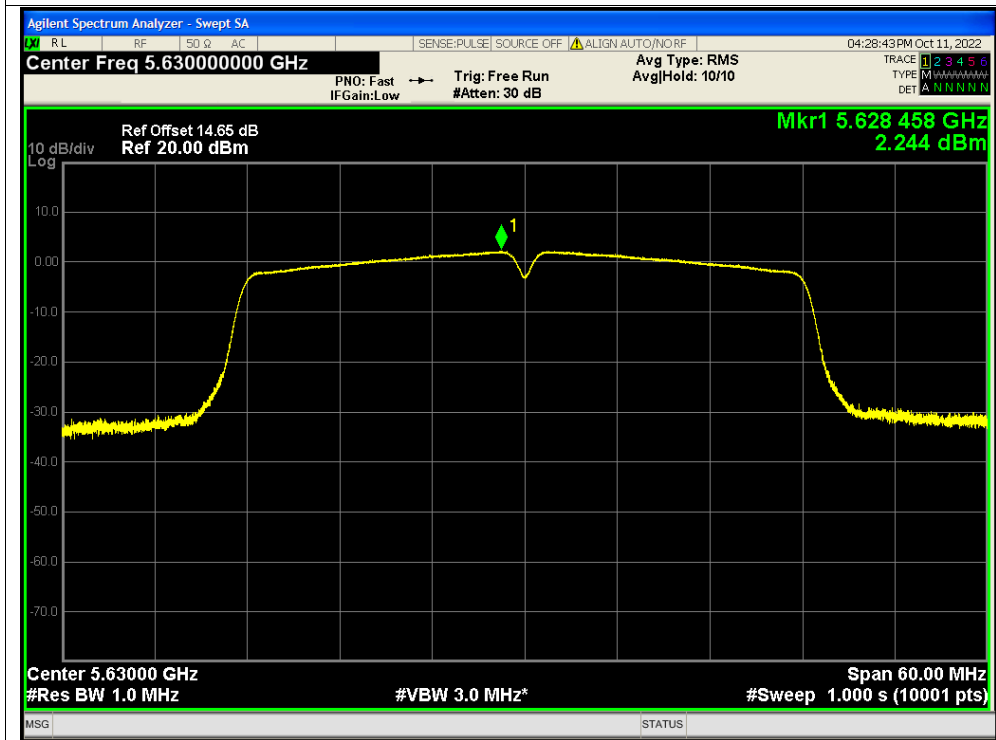


PSD NVNT n40 5550MHz Ant1

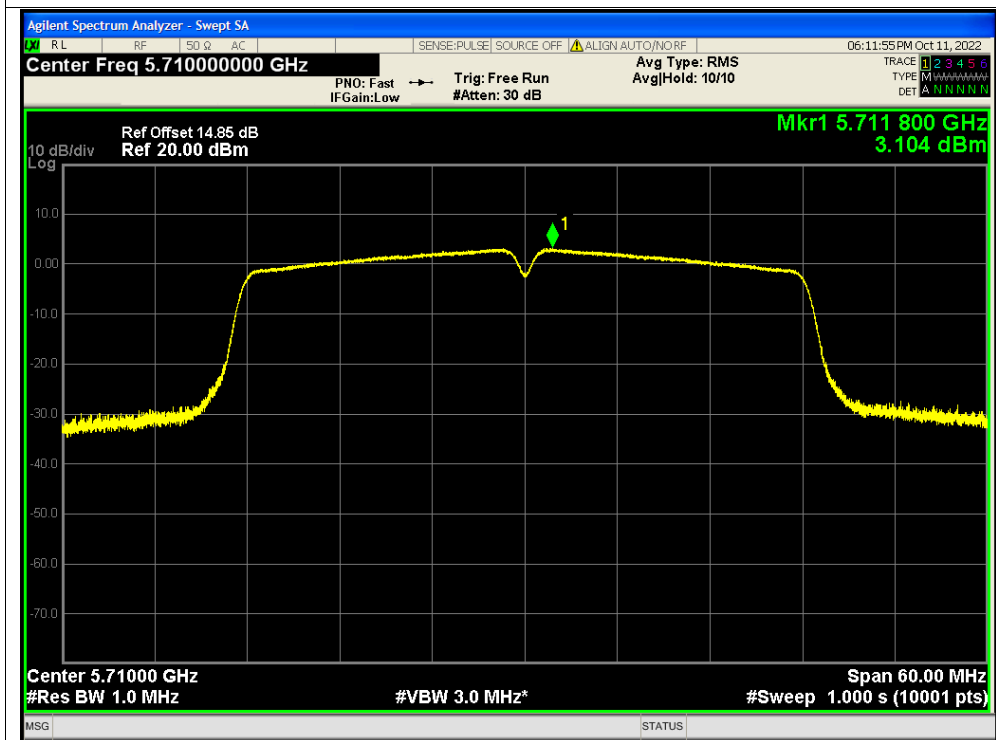




PSD NVNT n40 5630MHz Ant1

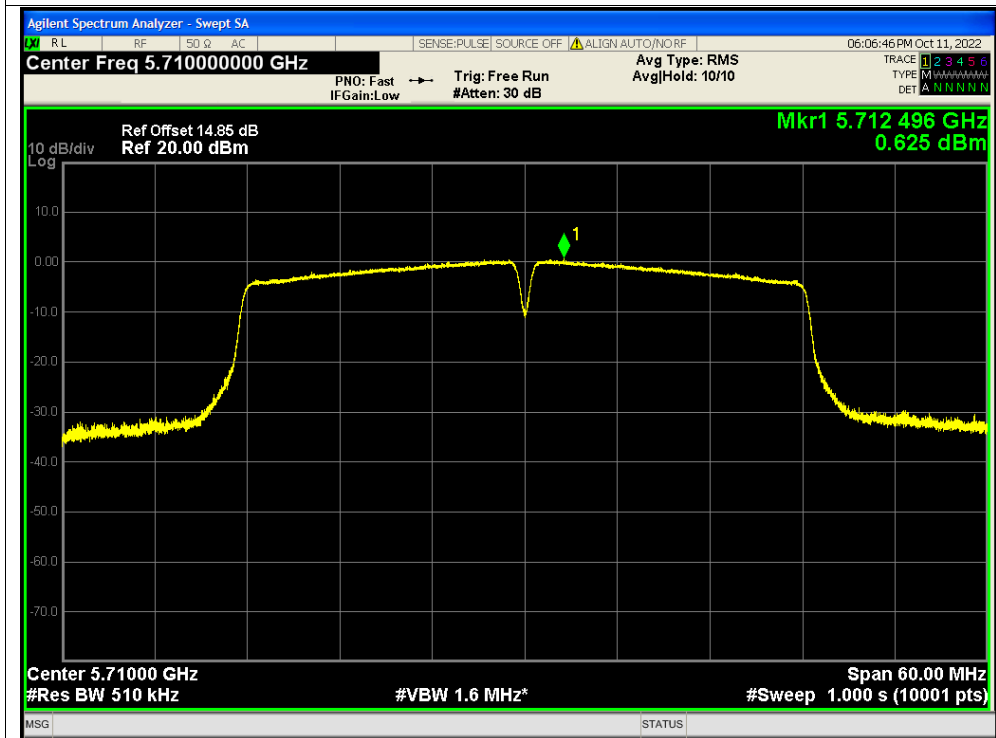


Band3-PSD NVNT n40 5710MHz Ant1

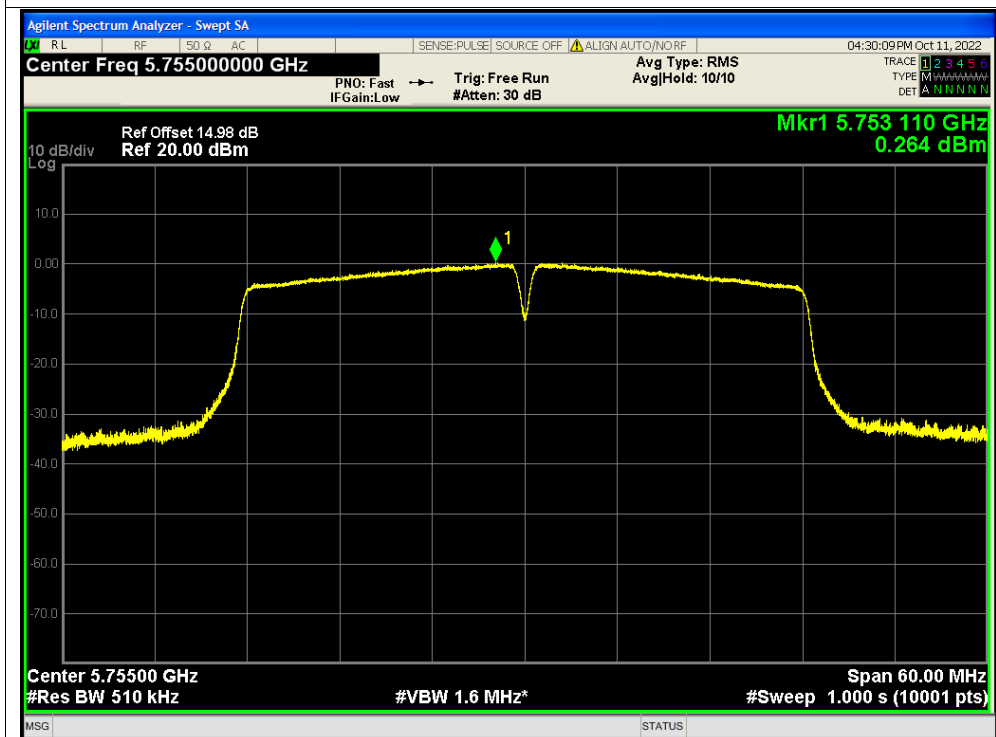




Band4-PSD NVNT n40 5710MHz Ant1

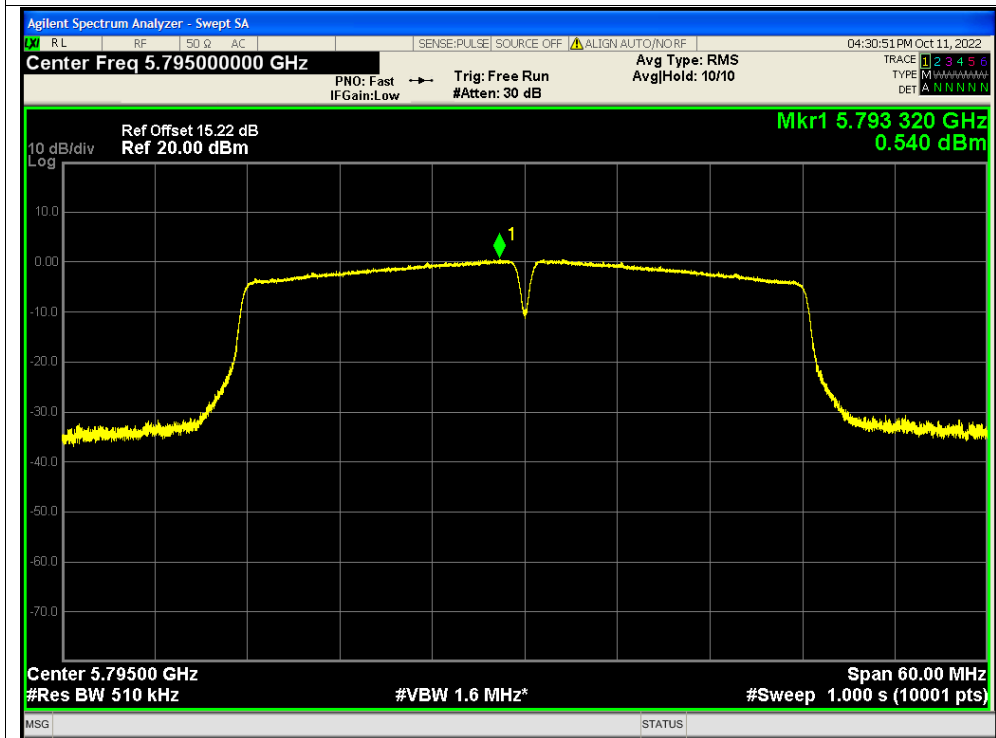


PSD NVNT n40 5755MHz Ant1

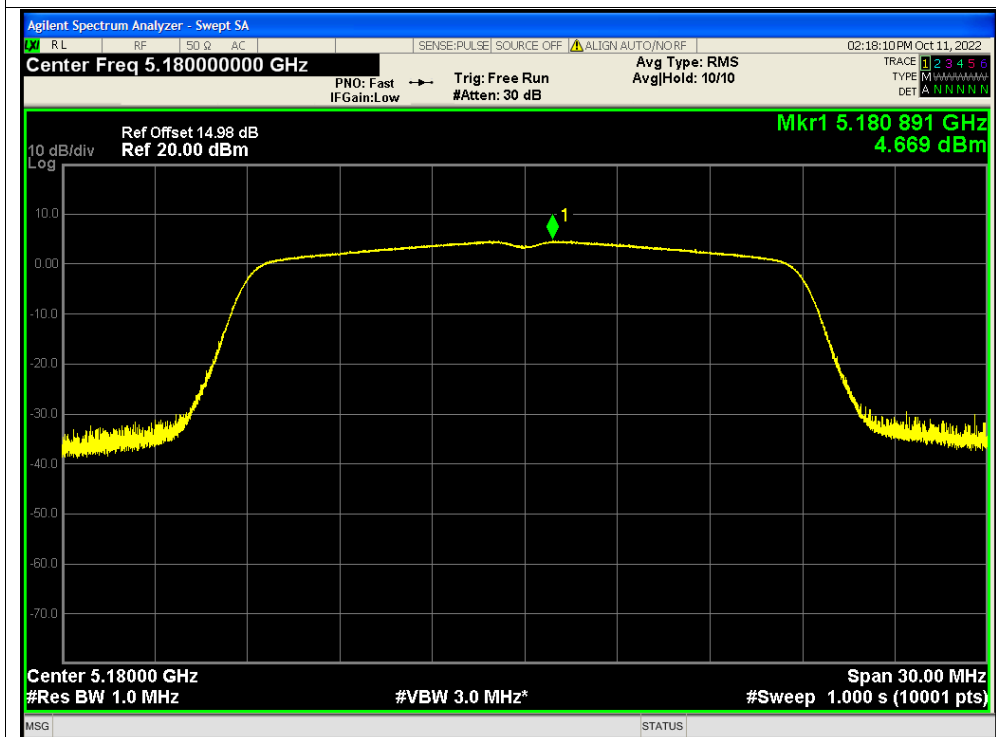




PSD NVNT n40 5795MHz Ant1

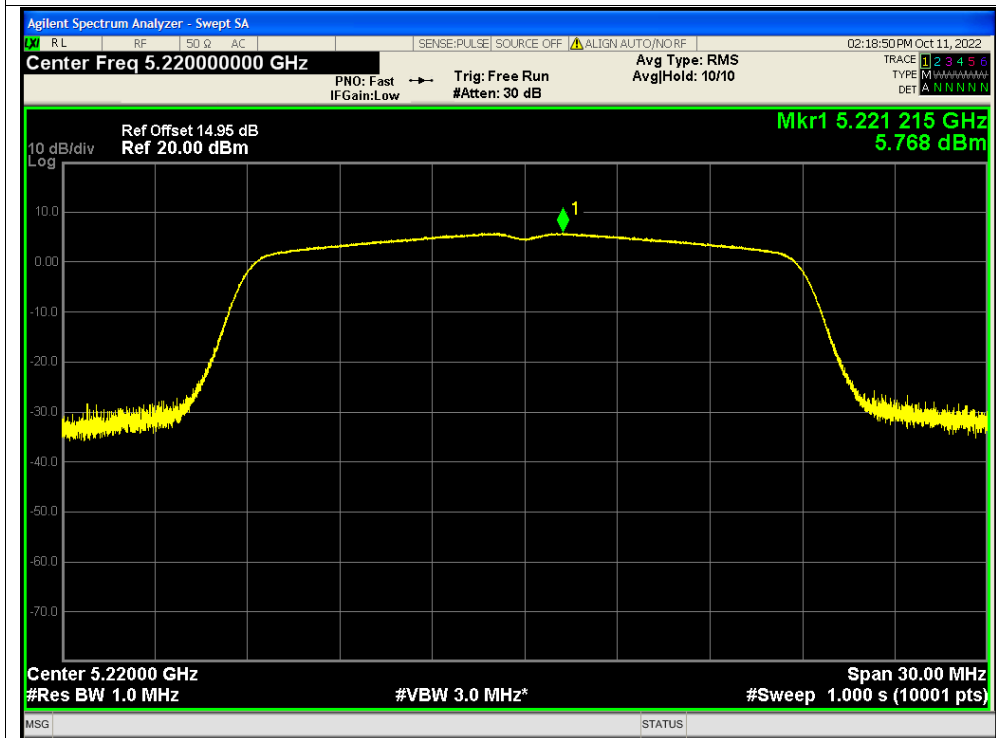


PSD NVNT ac20 5180MHz Ant1

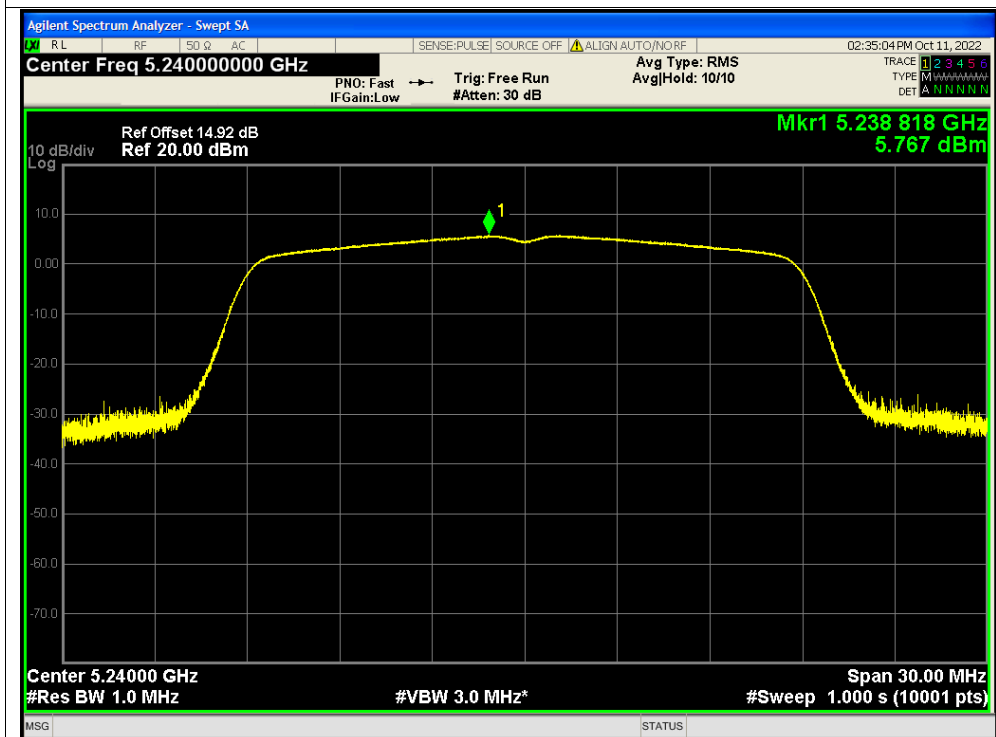




PSD NVNT ac20 5220MHz Ant1

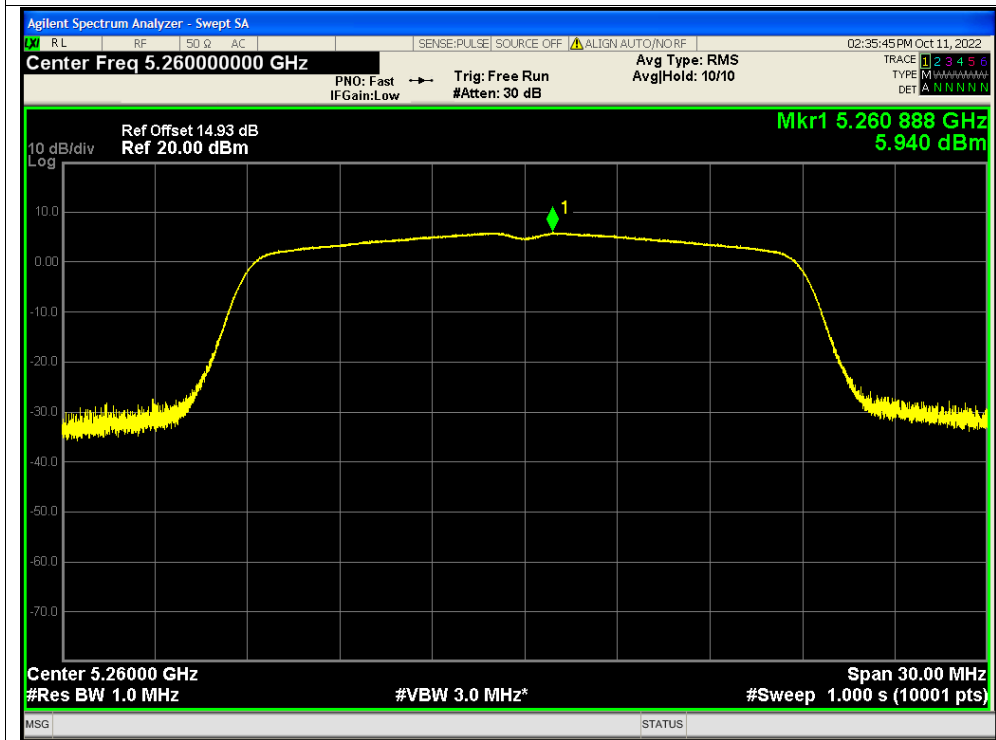


PSD NVNT ac20 5240MHz Ant1

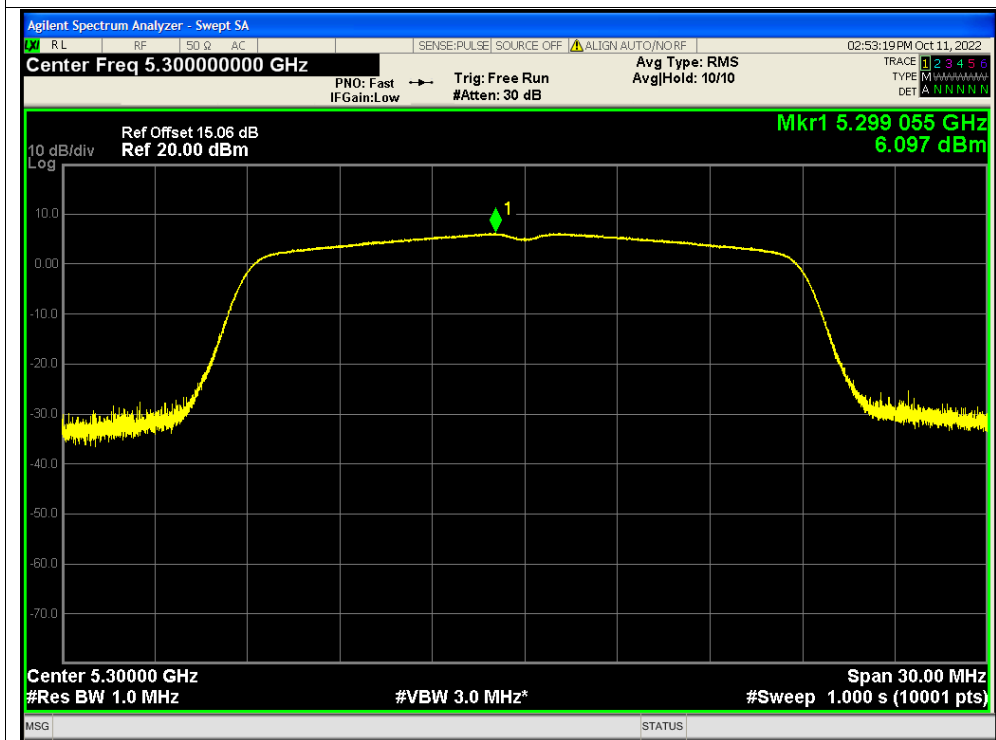




PSD NVNT ac20 5260MHz Ant1

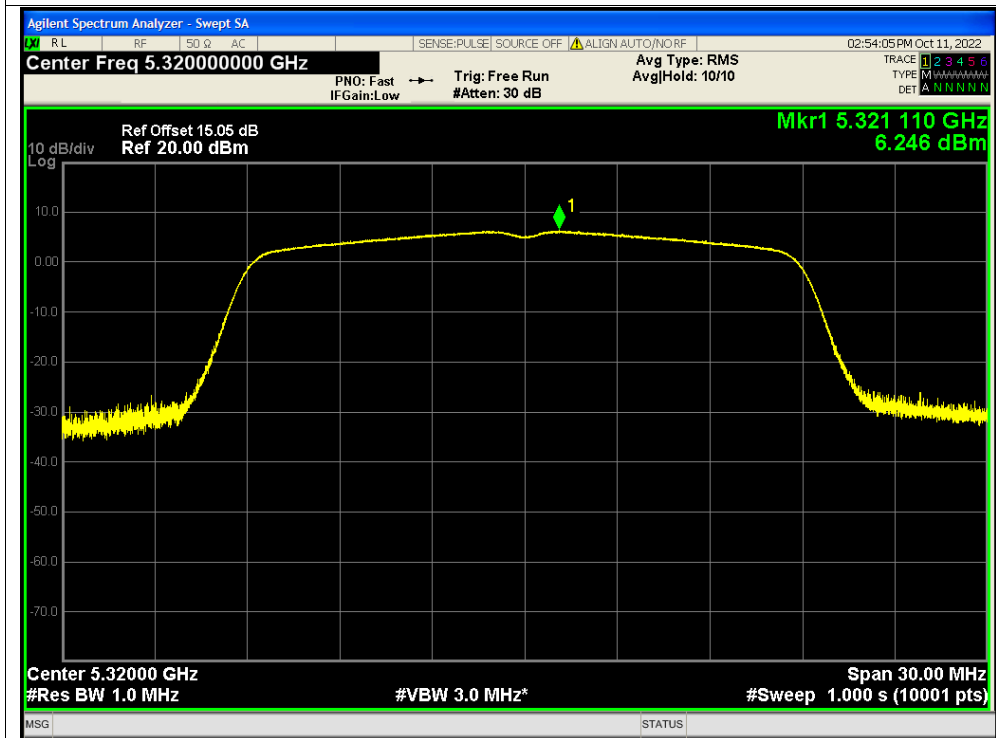


PSD NVNT ac20 5300MHz Ant1

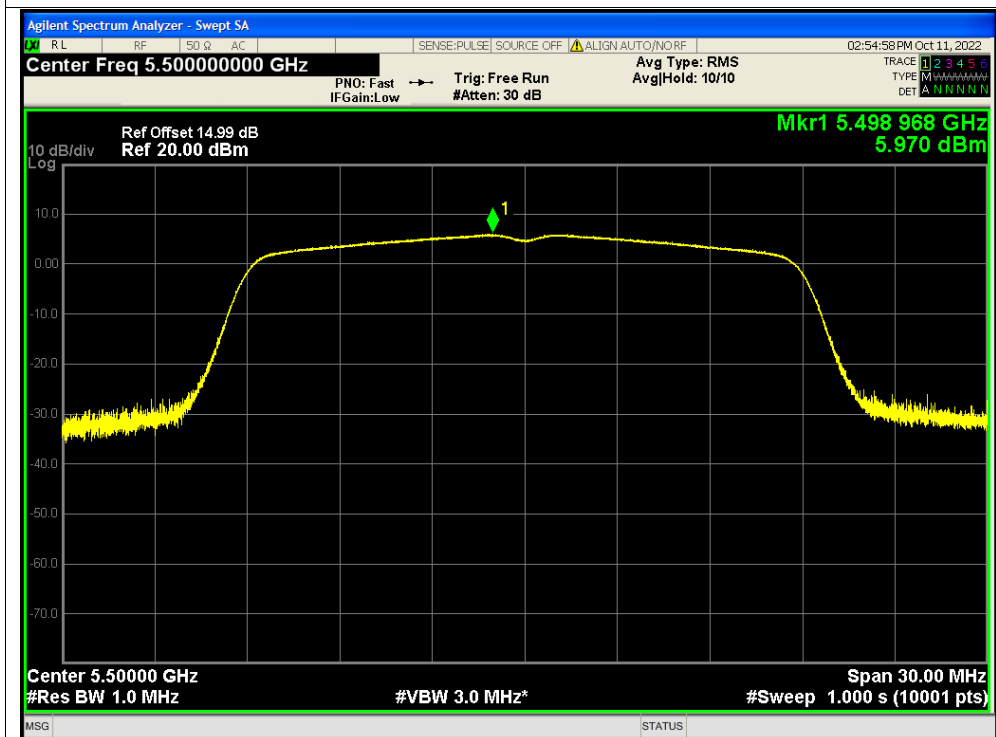




PSD NVNT ac20 5320MHz Ant1

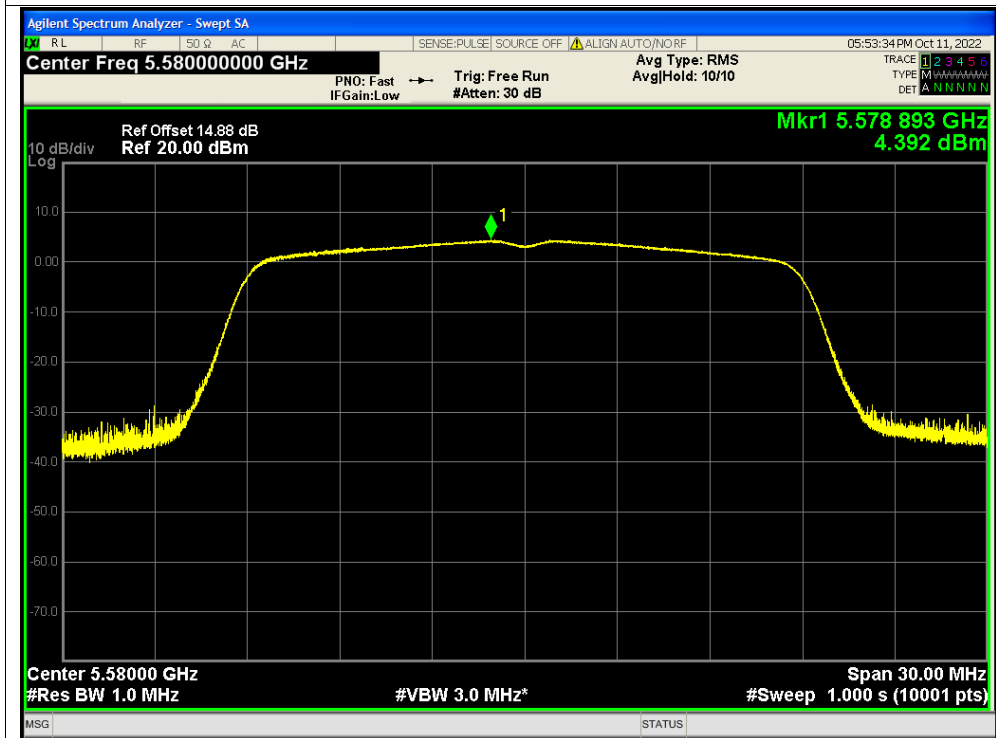


PSD NVNT ac20 5500MHz Ant1

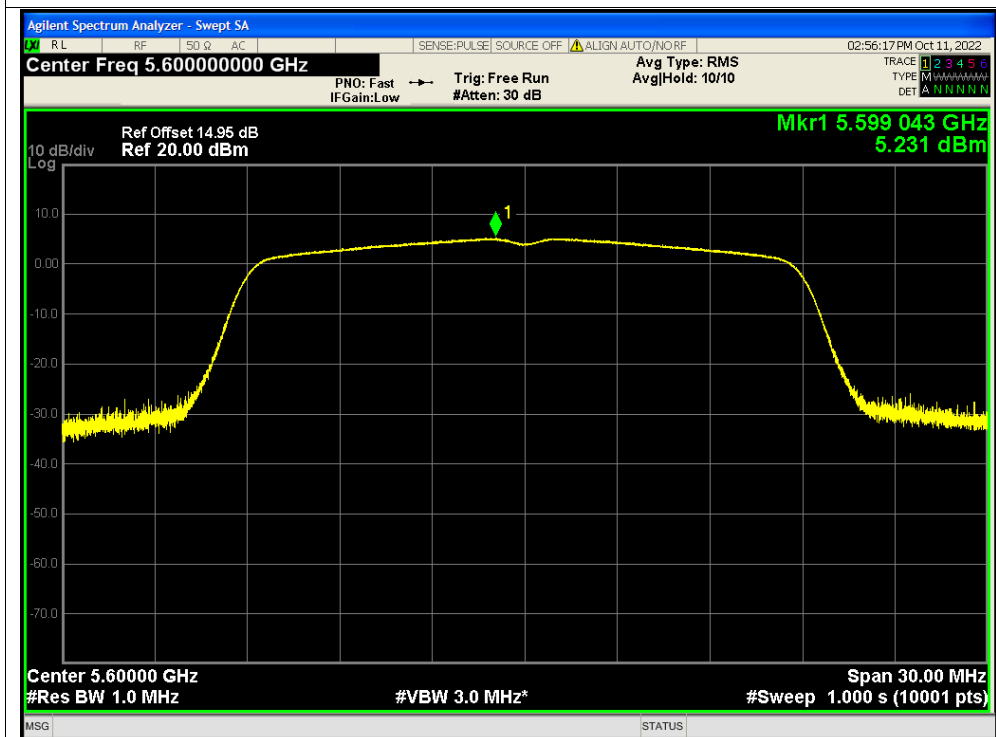




PSD NVNT ac20 5580MHz Ant1

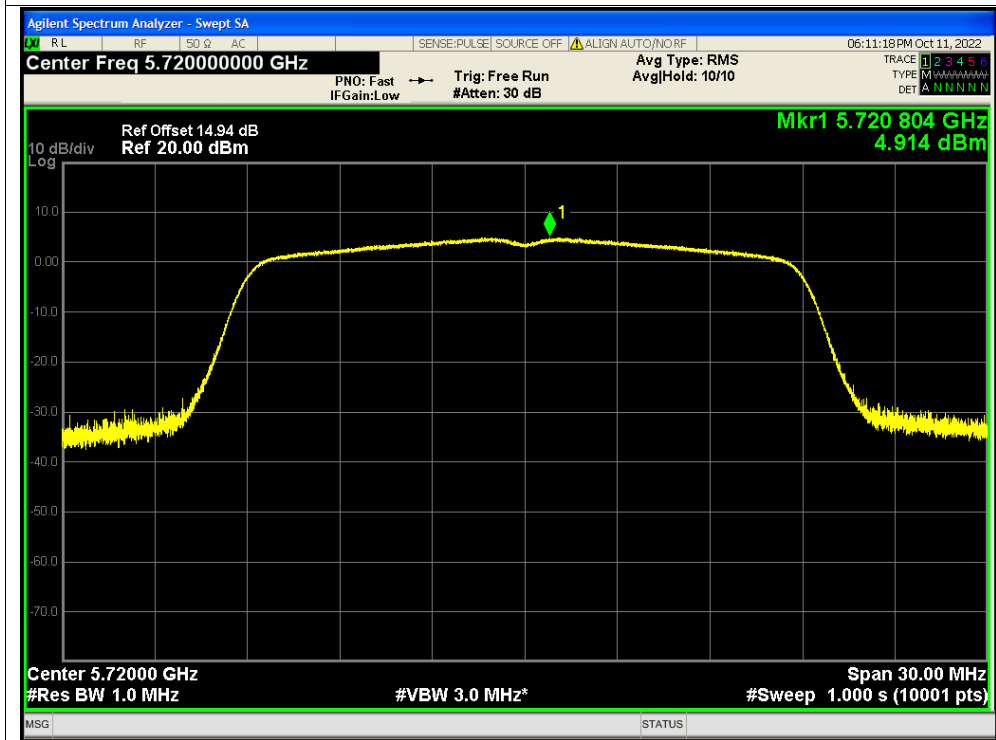


PSD NVNT ac20 5600MHz Ant1

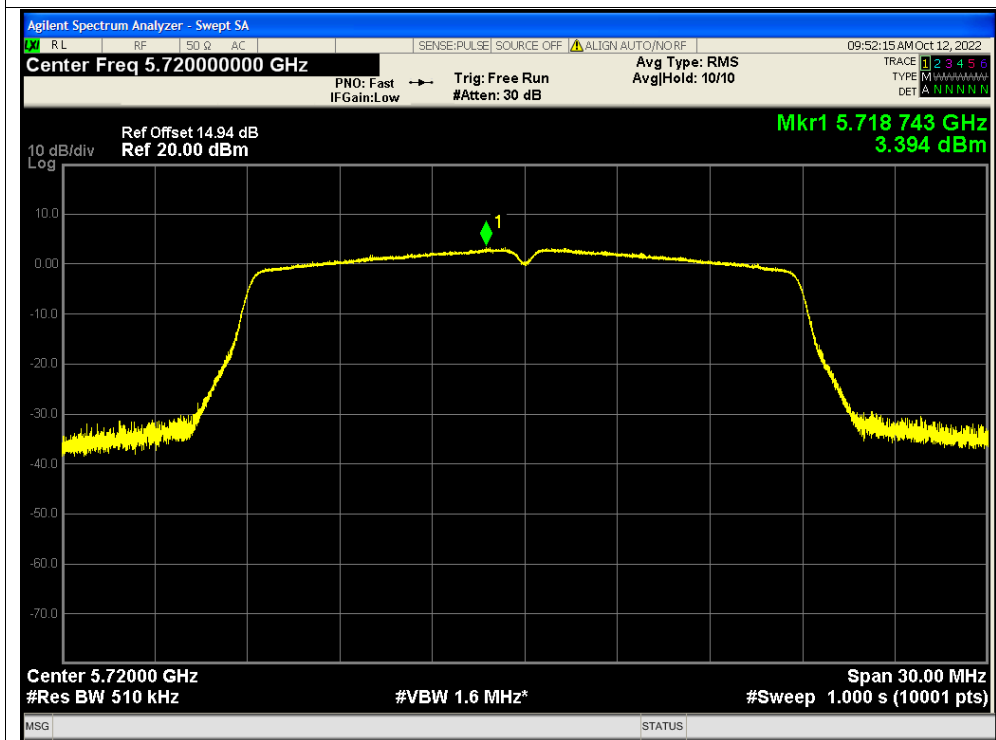




Band3-PSD NVNT ac20 5720MHz Ant1

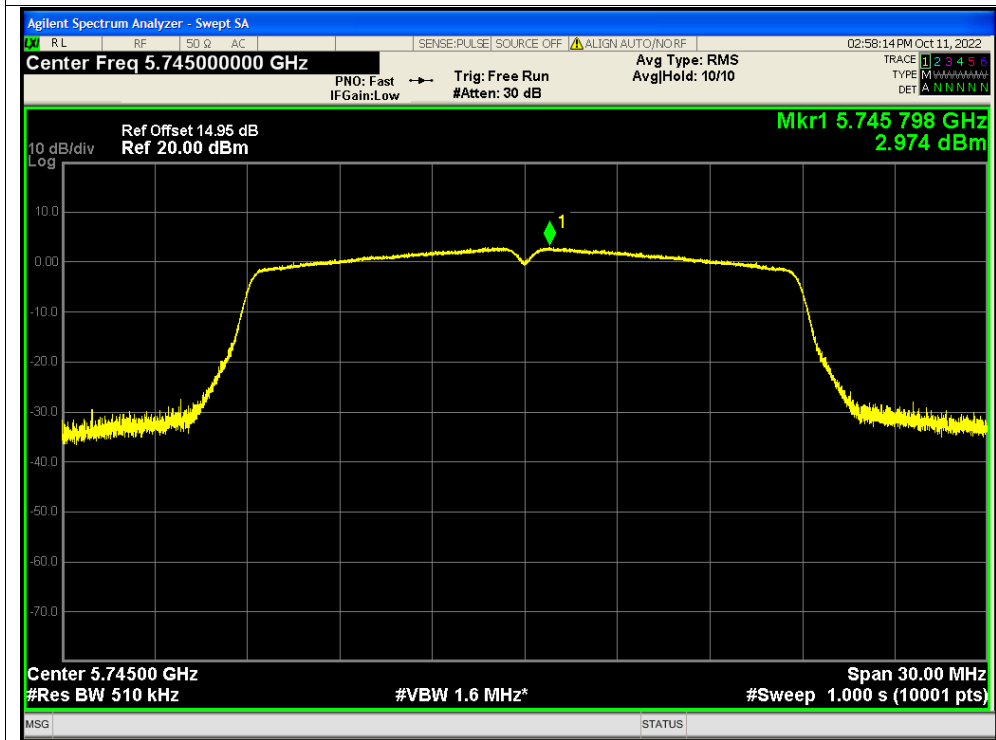


Band4-PSD NVNT ac20 5720MHz Ant1

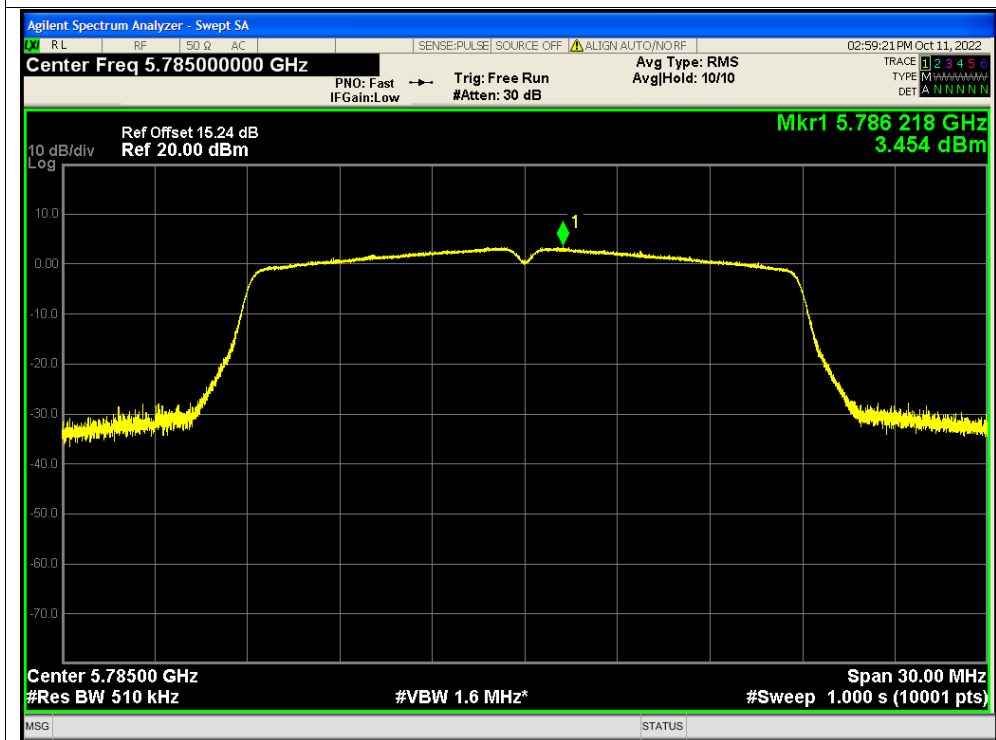




PSD NVNT ac20 5745MHz Ant1

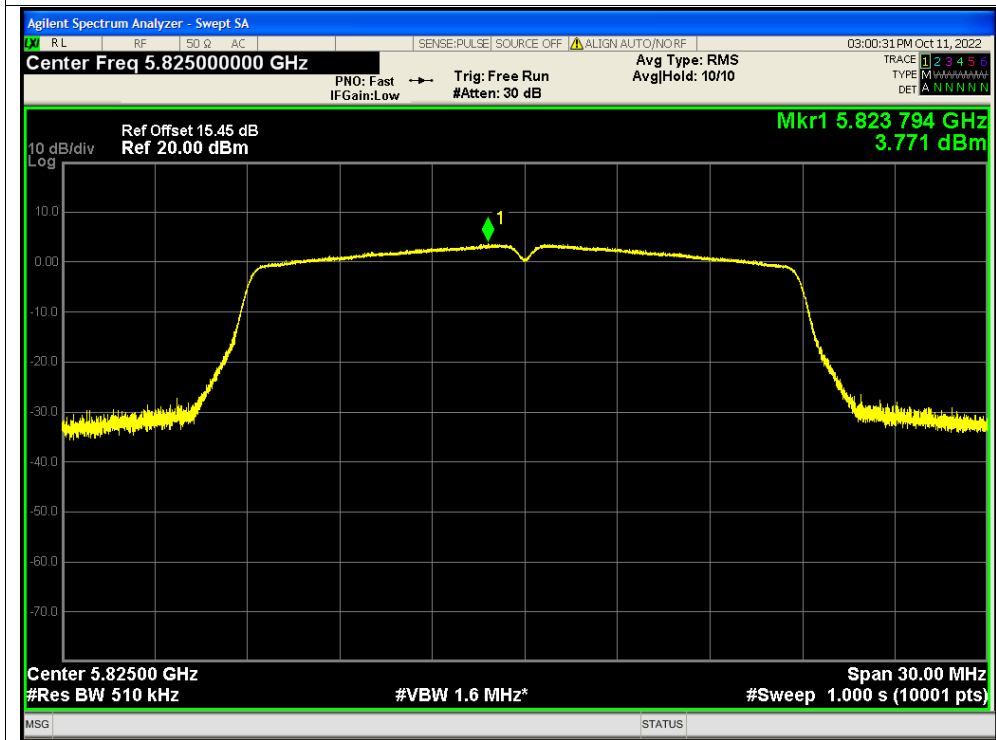


PSD NVNT ac20 5785MHz Ant1

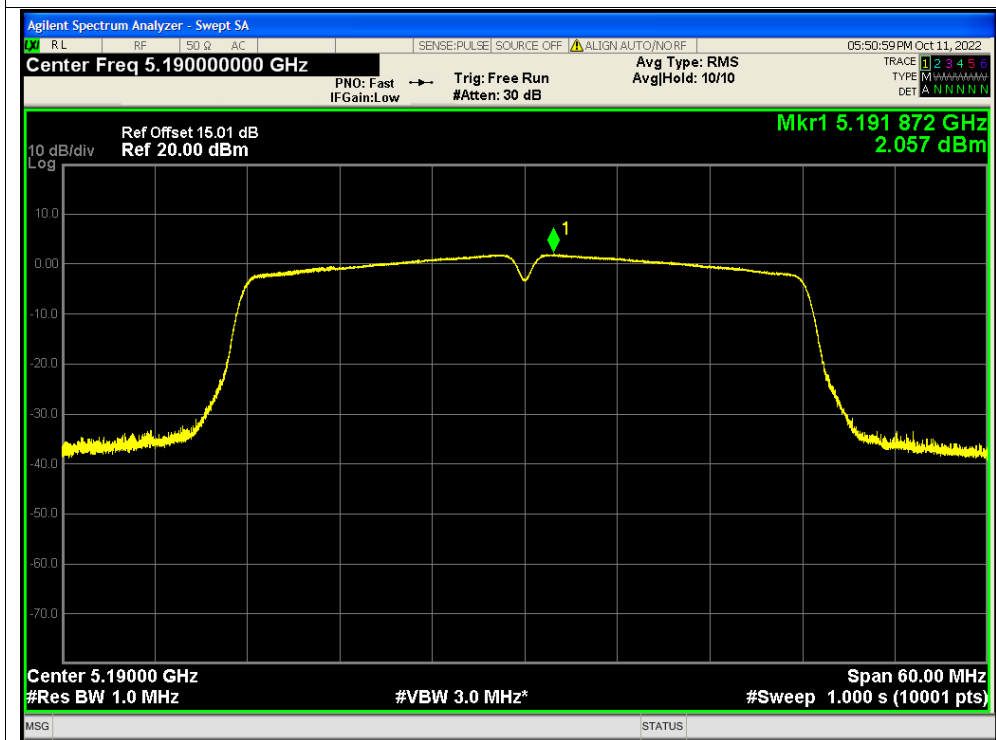




PSD NVNT ac20 5825MHz Ant1

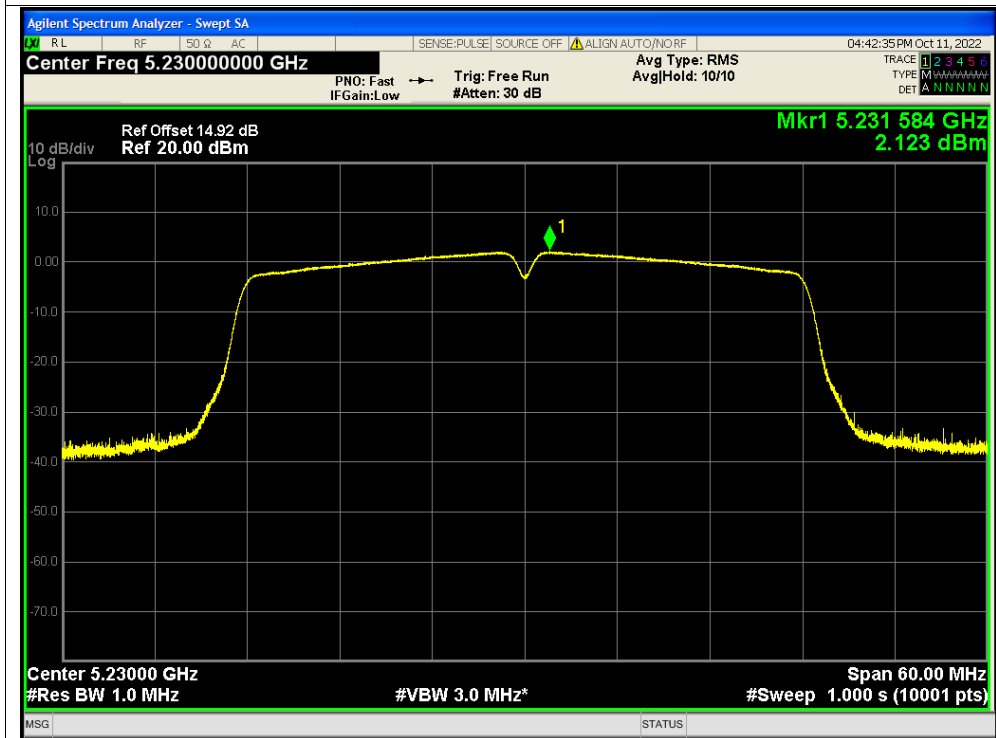


PSD NVNT ac40 5190MHz Ant1

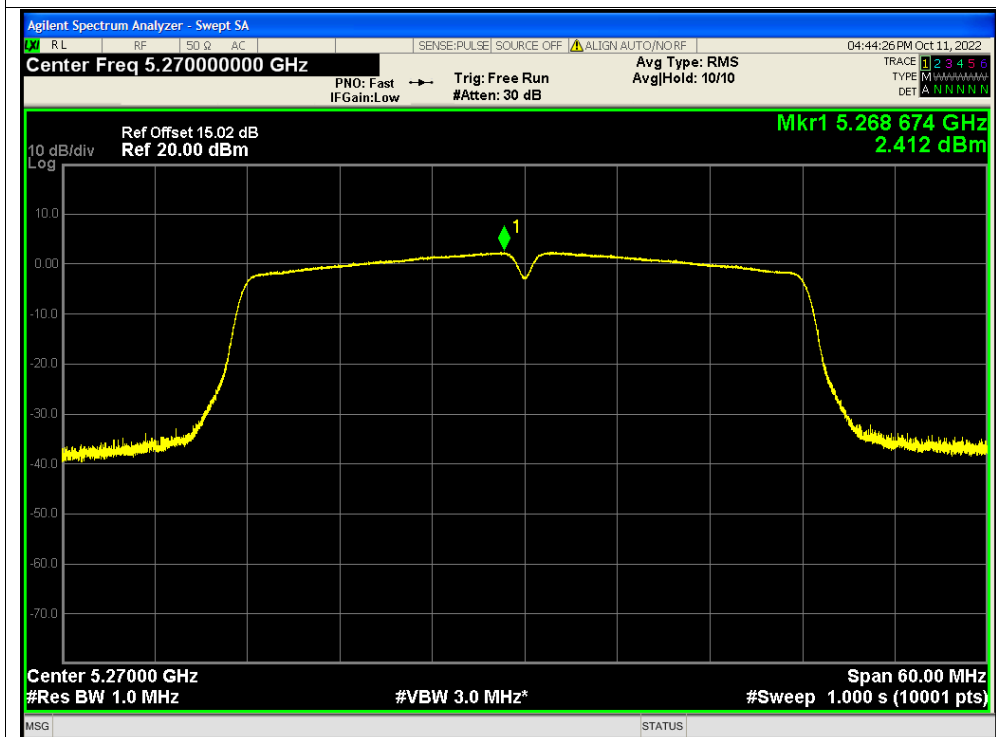




PSD NVNT ac40 5230MHz Ant1

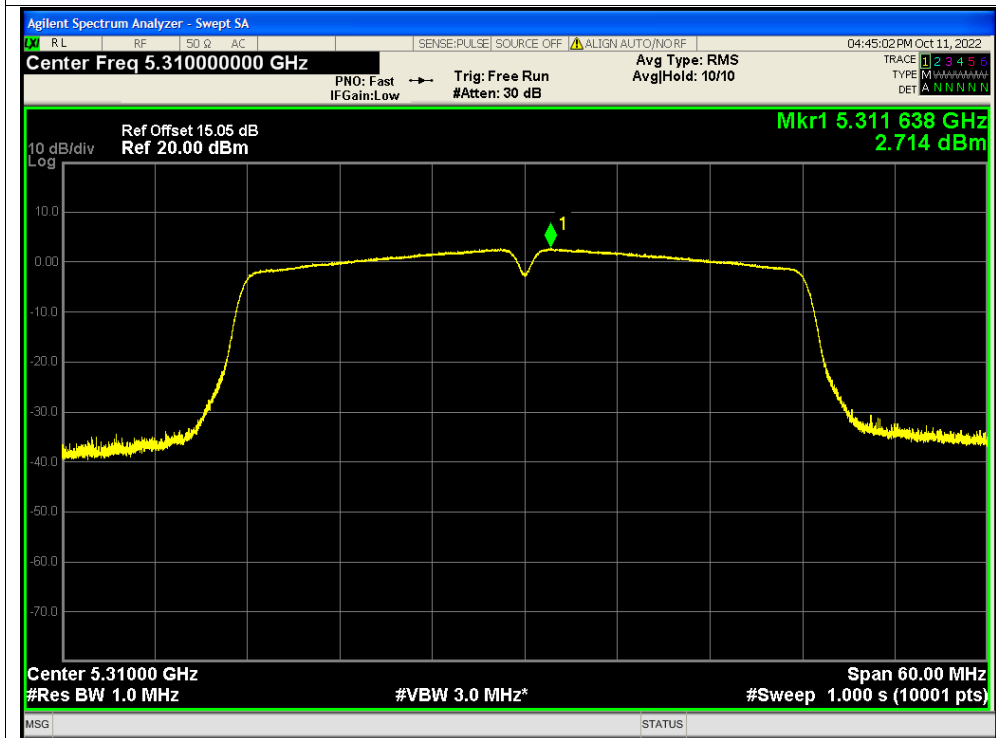


PSD NVNT ac40 5270MHz Ant1

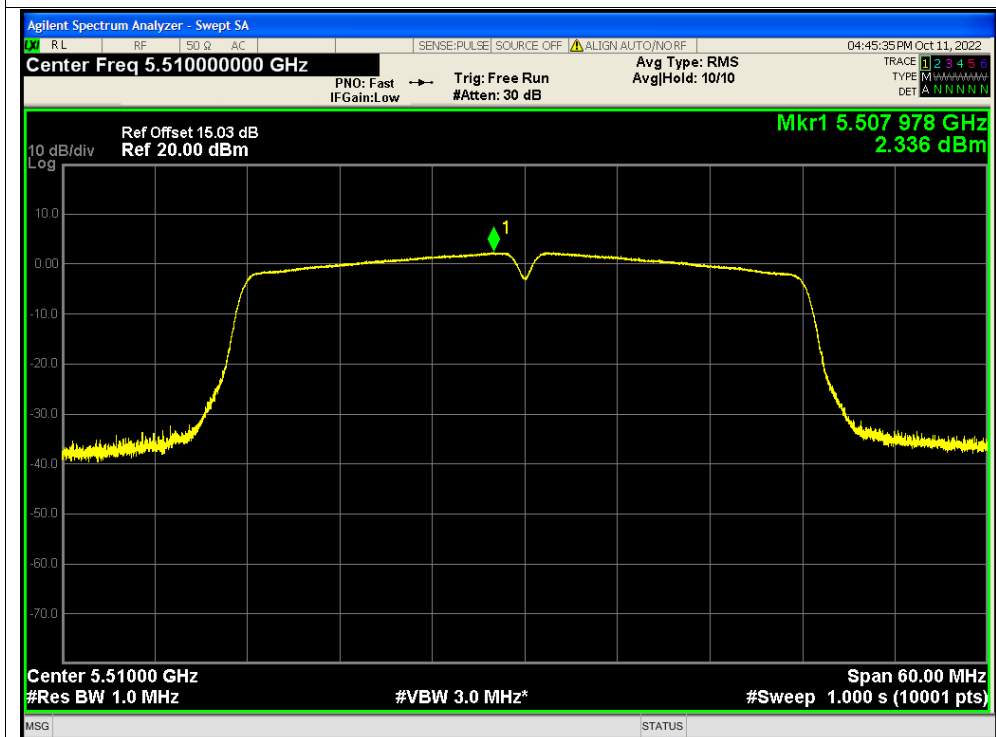




PSD NVNT ac40 5310MHz Ant1

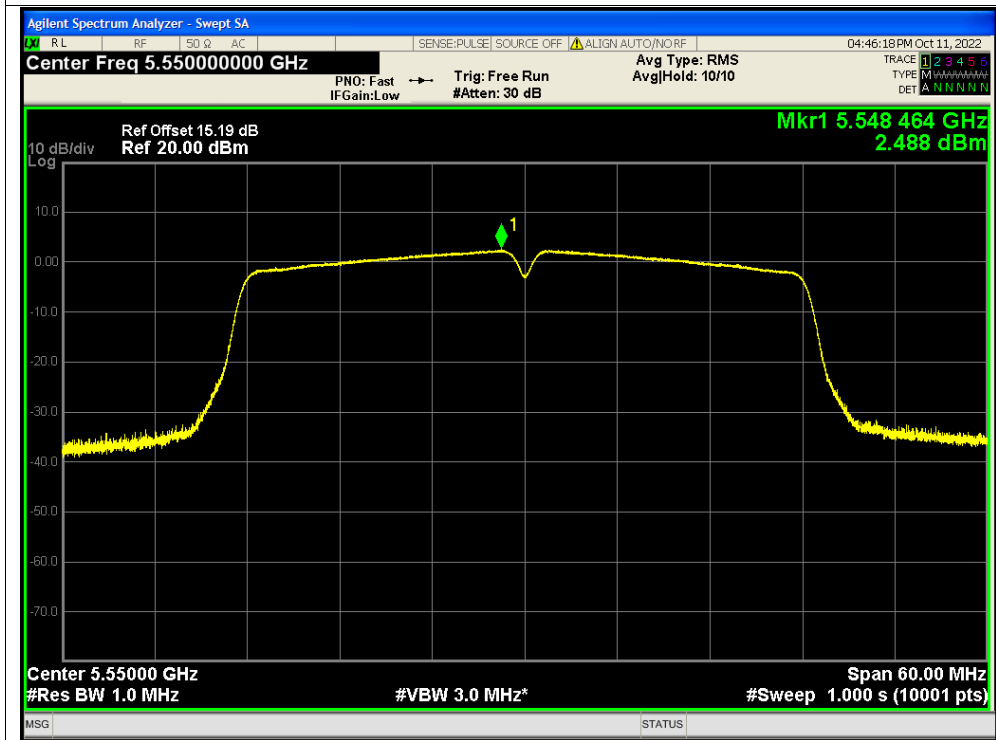


PSD NVNT ac40 5510MHz Ant1

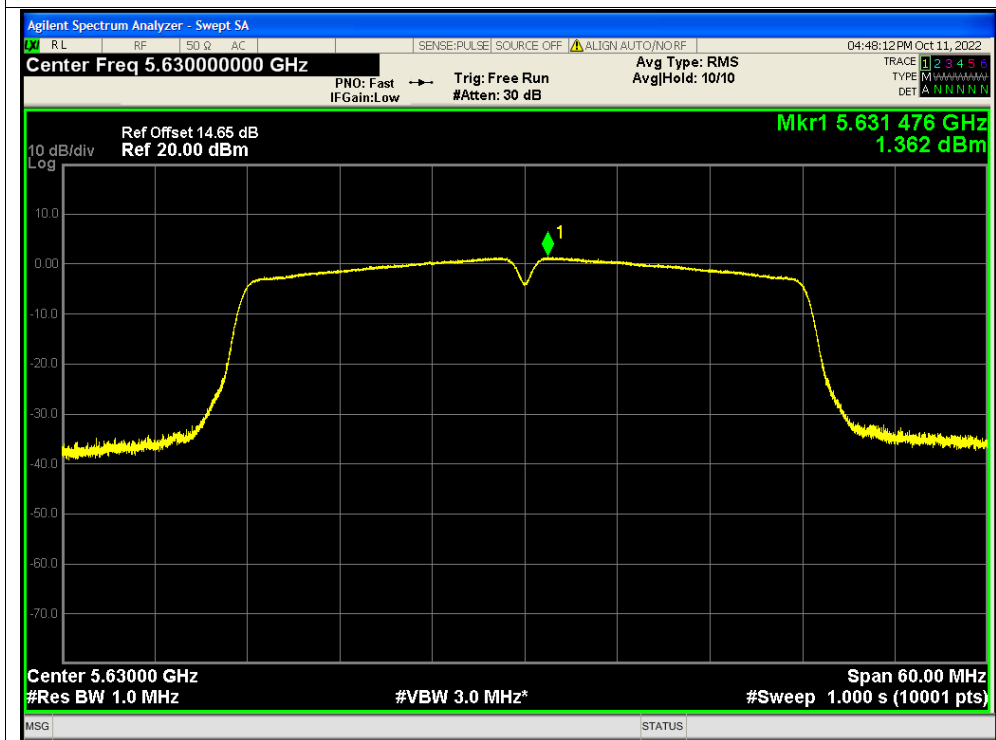




PSD NVNT ac40 5550MHz Ant1

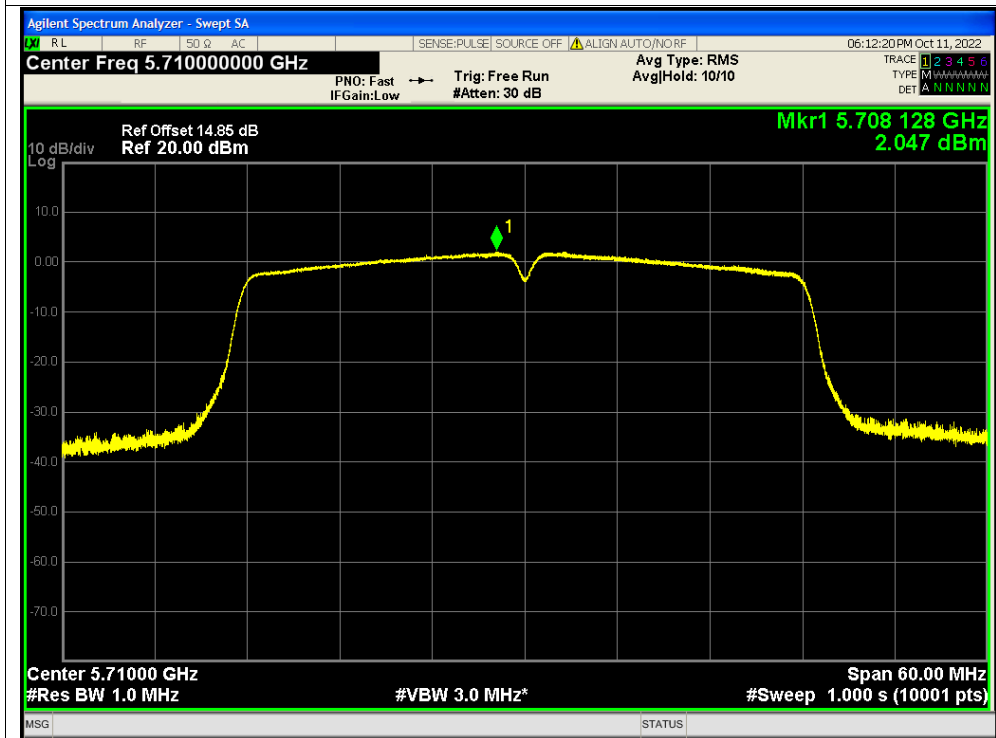


PSD NVNT ac40 5630MHz Ant1

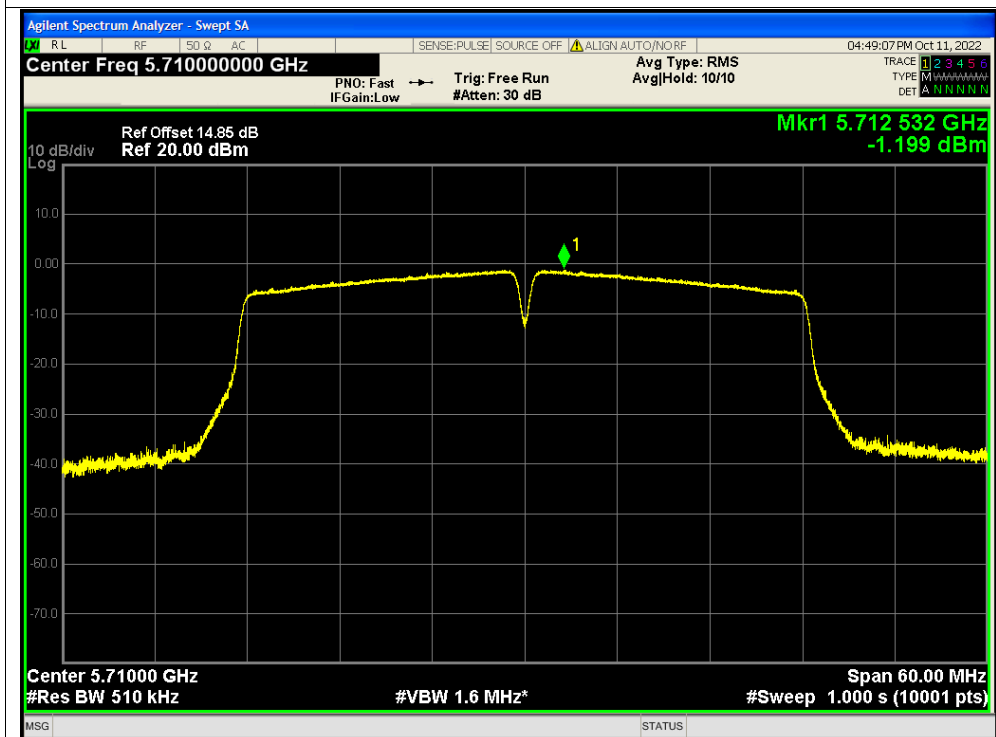




Band3-PSD NVNT ac40 5710MHz Ant1

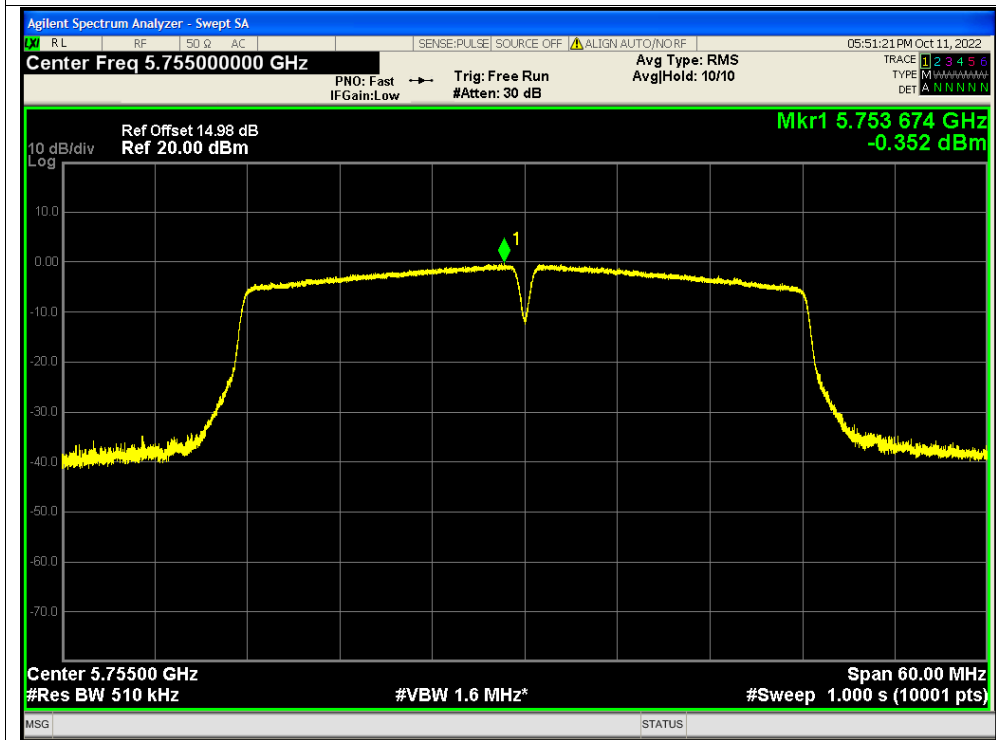


Band4-PSD NVNT ac40 5710MHz Ant1

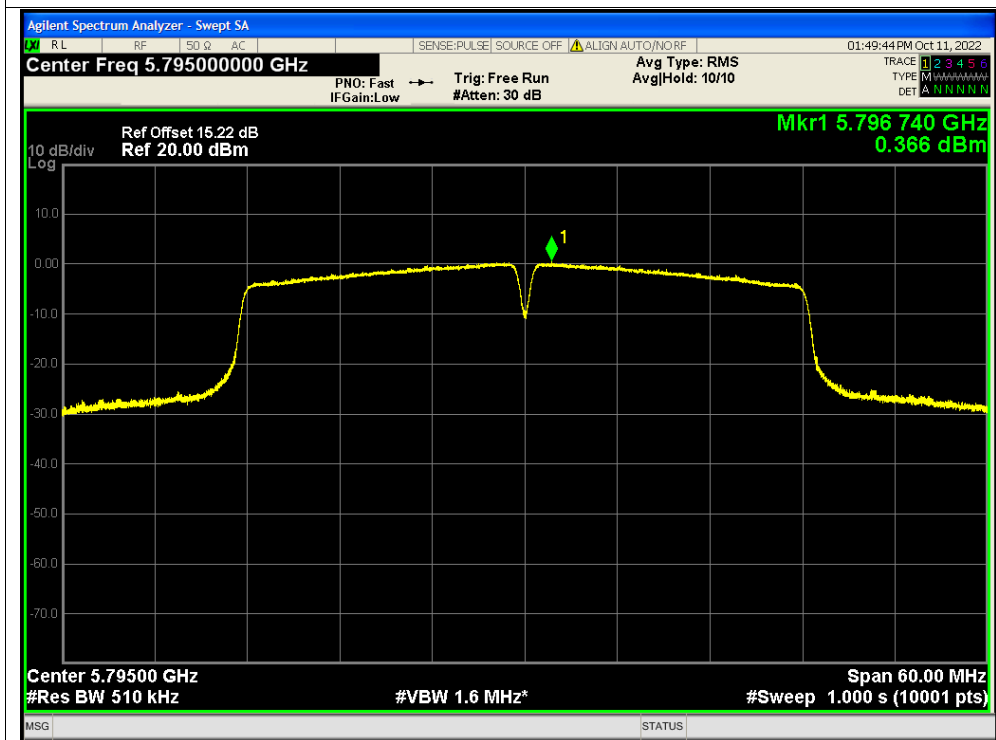




PSD NVNT ac40 5755MHz Ant1

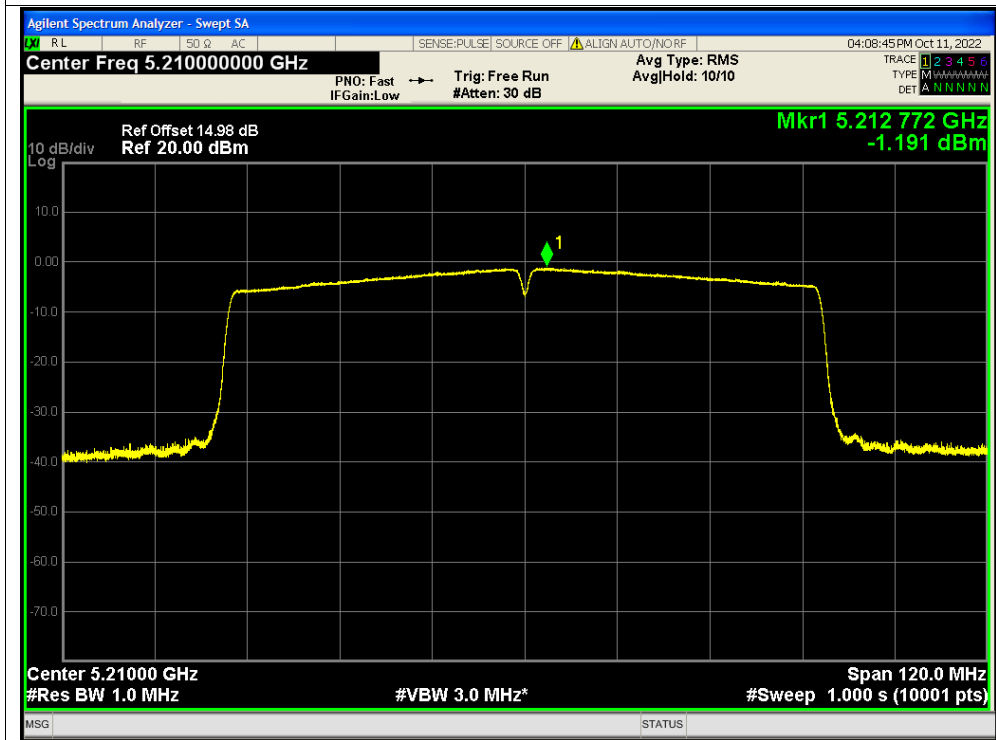


PSD NVNT ac40 5795MHz Ant1





PSD NVNT ac80 5210MHz Ant1

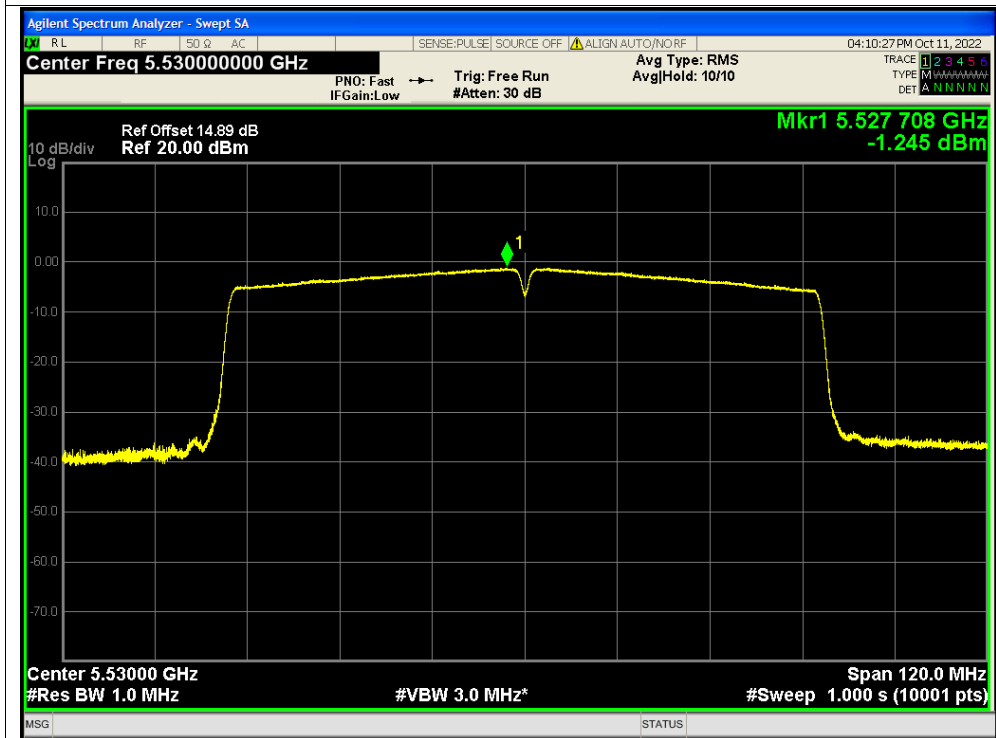


PSD NVNT ac80 5290MHz Ant1



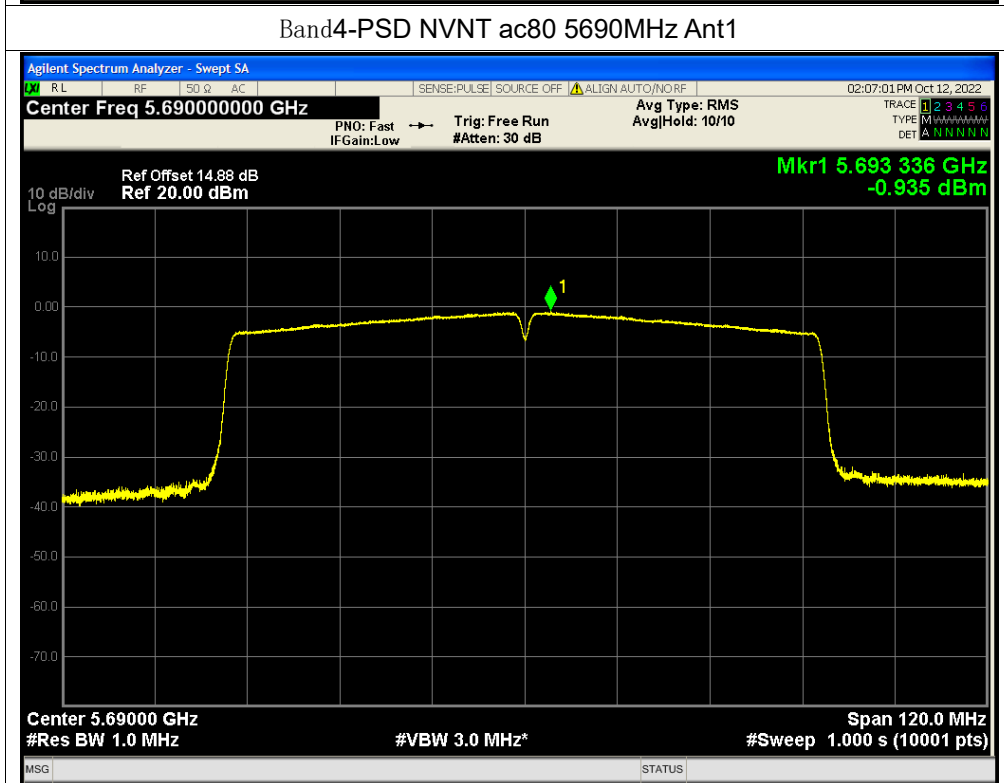
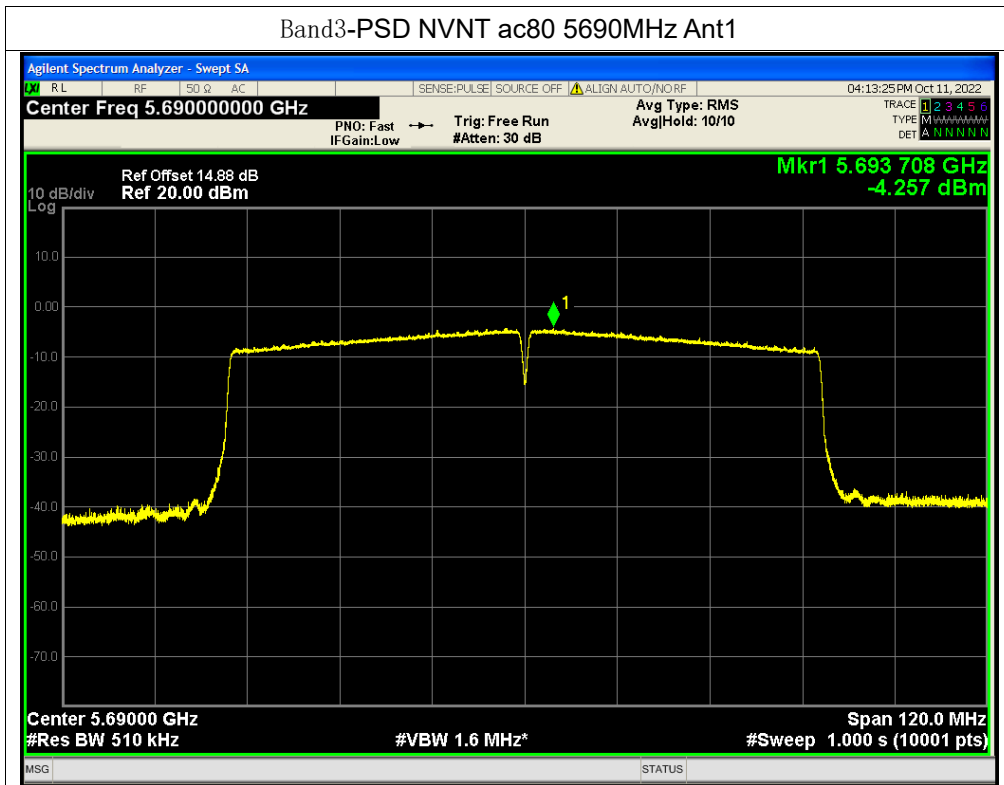


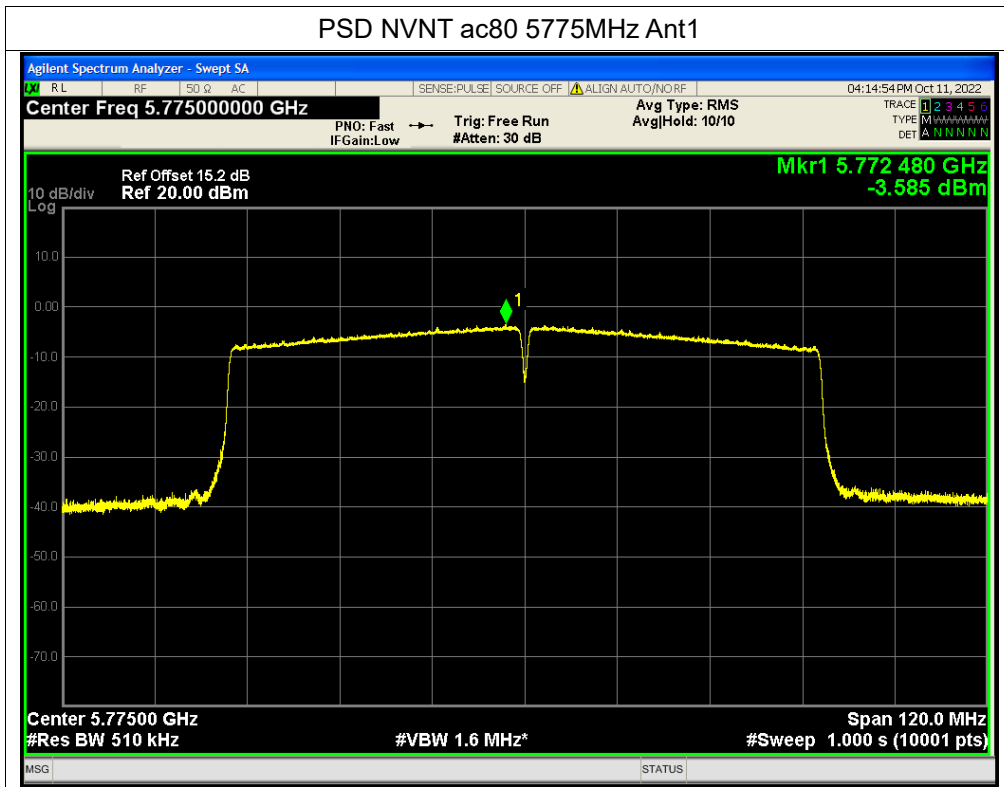
PSD NVNT ac80 5530MHz Ant1



PSD NVNT ac80 5610MHz Ant1









A.5. Frequency Stability

U-NII-1 (Ch. 36)				
5180MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	3.80	+20(Ref)	23	4.440
100%		-30	24	4.633
100%		-20	29	5.598
100%		-10	29	5.598
100%		0	25	4.826
100%		+10	22	4.247
100%		+20	21	4.054
100%		+30	23	4.440
100%		+40	26	5.019
100%		+50	24	4.633
115%		4.35	+20	28
85%	3.45	+20	26	5.019

U-NII-2A (Ch. 52)				
5260MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	3.80	+20(Ref)	18	3.422
100%		-30	22	4.183
100%		-20	25	4.753
100%		-10	27	5.133
100%		0	19	3.612
100%		+10	19	3.612
100%		+20	21	3.992
100%		+30	26	4.943
100%		+40	25	4.753
100%		+50	25	4.753
115%		4.35	+20	22
85%	3.45	+20	23	4.373



U-NII-2C (Ch. 100)				
5500MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	3.80	+20(Ref)	21	3.818
100%		-30	25	4.545
100%		-20	28	5.091
100%		-10	29	5.273
100%		0	22	4.000
100%		+10	26	4.727
100%		+20	23	4.182
100%		+30	32	5.818
100%		+40	30	5.455
100%		+50	25	4.545
115%	4.35	+20	27	4.909
85%	3.45	+20	26	4.727

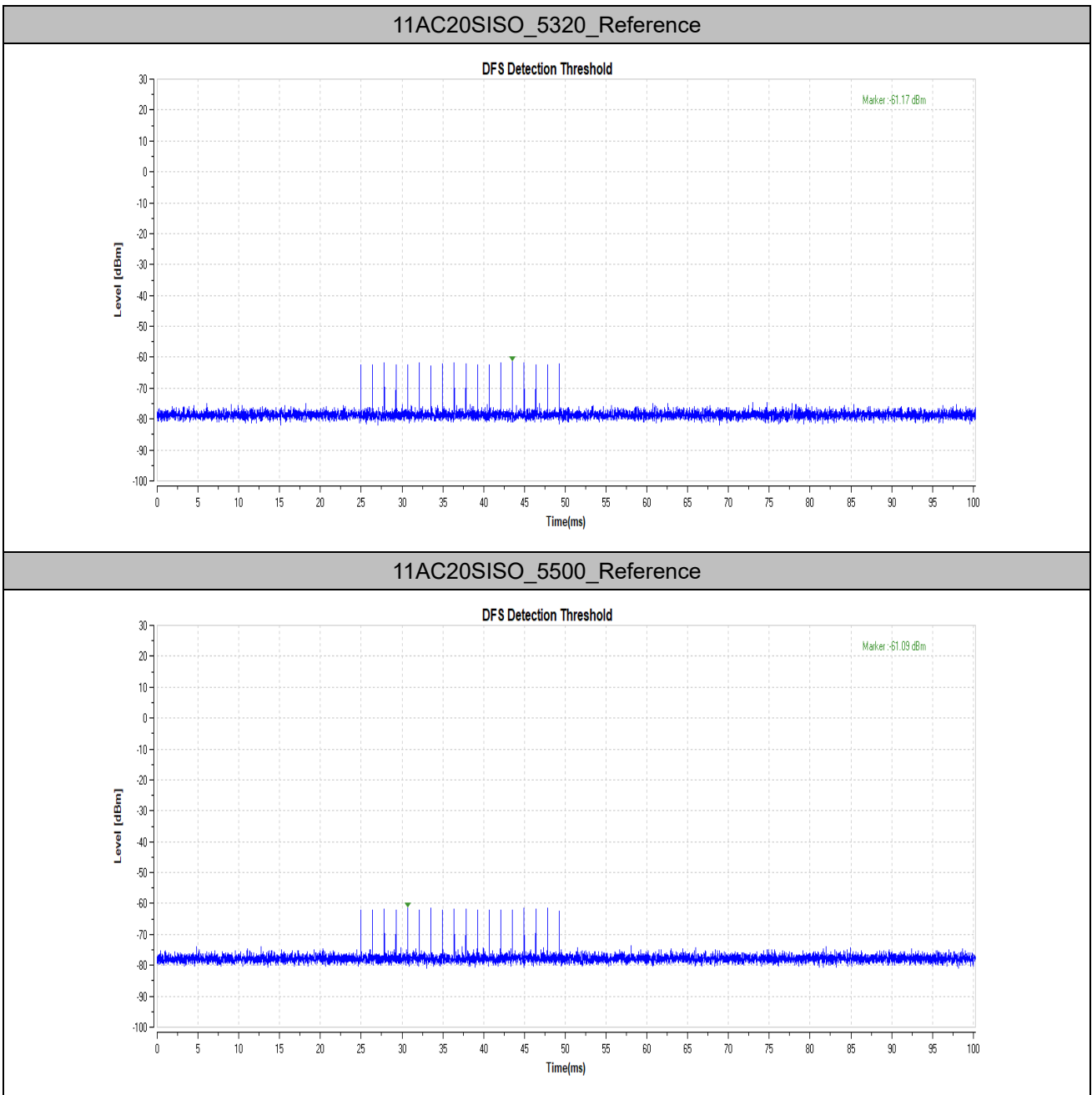
U-NII-3 (Ch. 149)				
5745MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	3.80	+20(Ref)	22	3.829
100%		-30	26	4.526
100%		-20	27	4.700
100%		-10	21	3.655
100%		0	27	4.700
100%		+10	25	4.352
100%		+20	26	4.526
100%		+30	26	4.526
100%		+40	27	4.700
100%		+50	28	4.874
115%	4.35	+20	31	5.396
85%	3.45	+20	29	5.048



A.6. Dynamic Frequency Selection

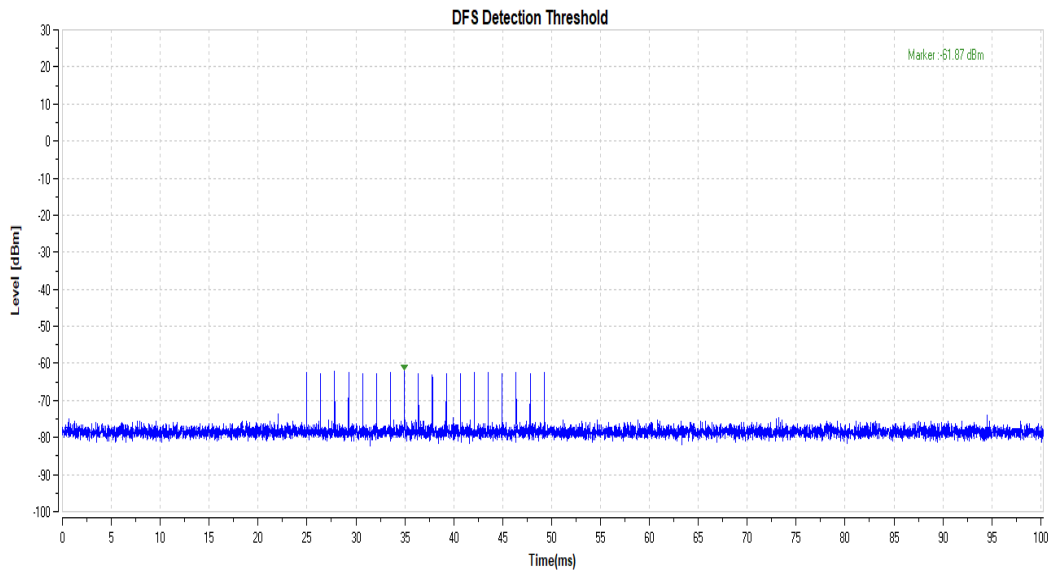
Detection Thresholds

TestMode	Channel	Radar Type	Result	Limit[dbm]	Verdict
11AC20SISO	5320	Reference	-61.17	-59.00	PASS
	5500	Reference	-61.09	-59.00	PASS
11AC80SISO	5290	Reference	-61.87	-59.00	PASS
	5530	Reference	-61.94	-59.00	PASS

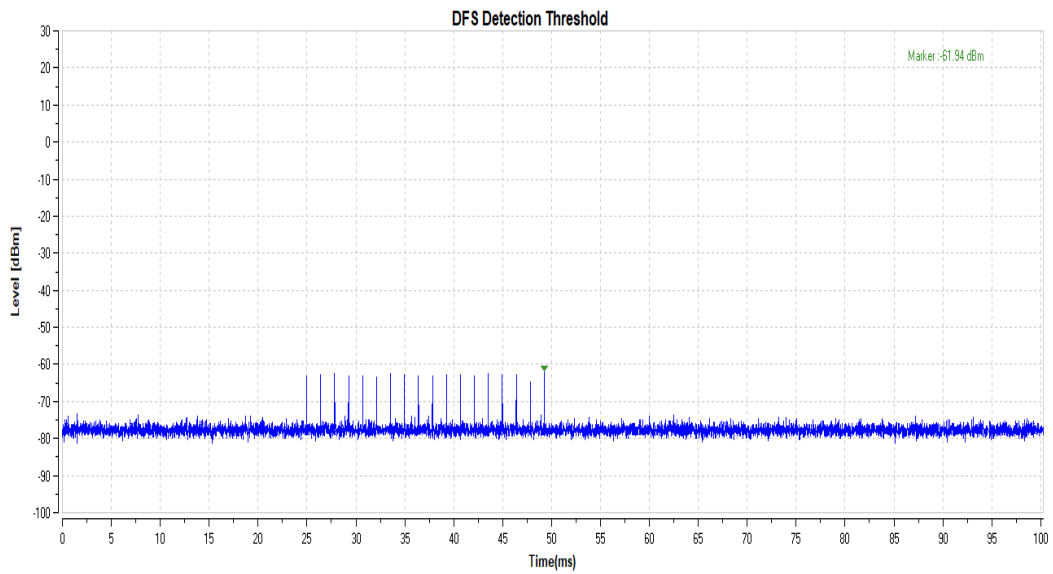




11AC80SISO_5290_Reference



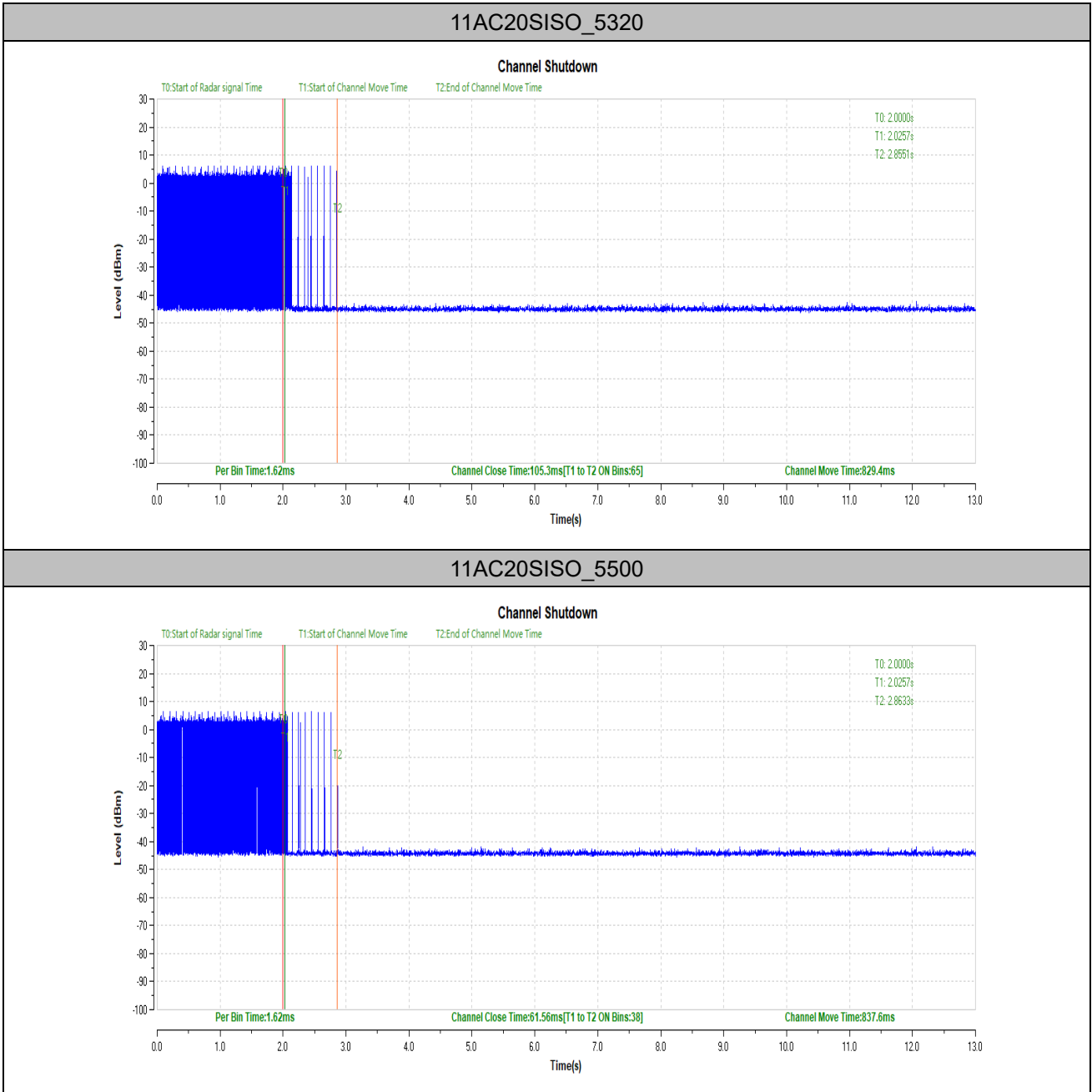
11AC80SISO_5530_Reference





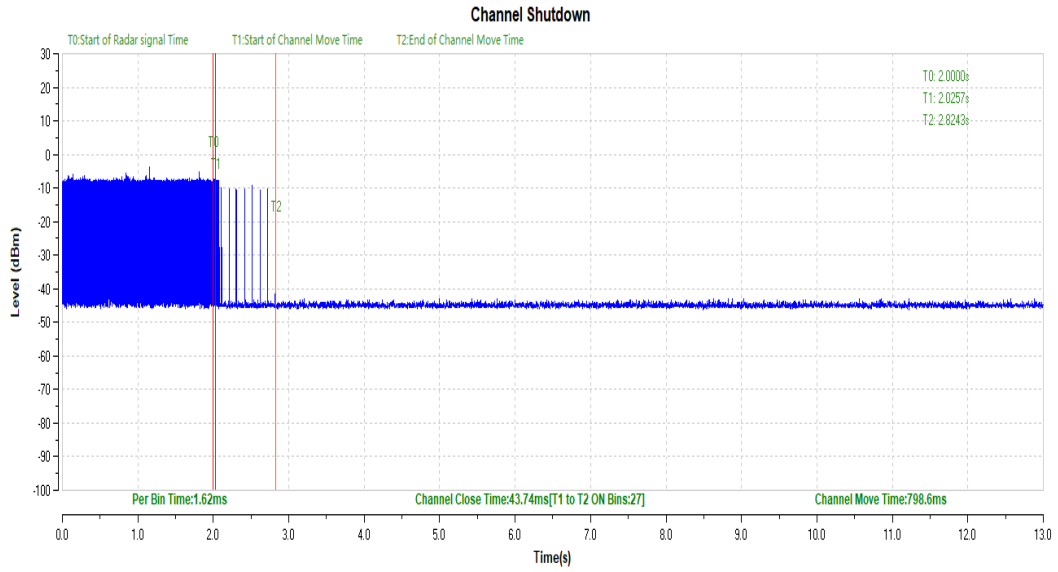
Channel Move Time and Channel Closing Transmission Time

TestMode	Channel	CCT[ms]	Limit[ms]	CMT[ms]	Limit[ms]	Verdict
11AC20SISO	5320	105.3	260	829.4	10000	PASS
	5500	61.56	260	837.6	10000	PASS
11AC80SISO	5290	43.74	260	798.6	10000	PASS
	5530	108.54	260	884.7	10000	PASS

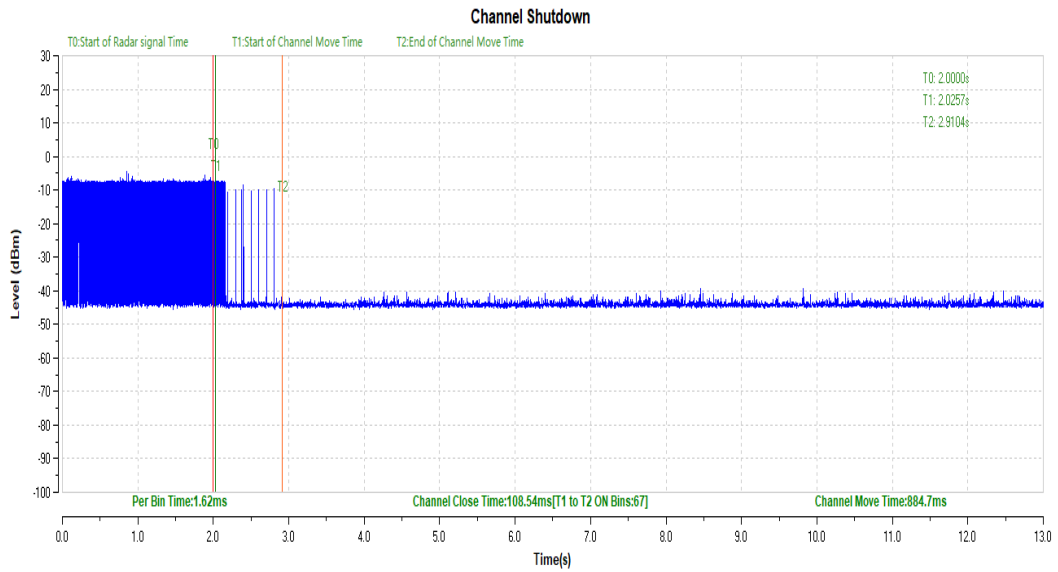




11AC80SISO_5290



11AC80SISO_5530

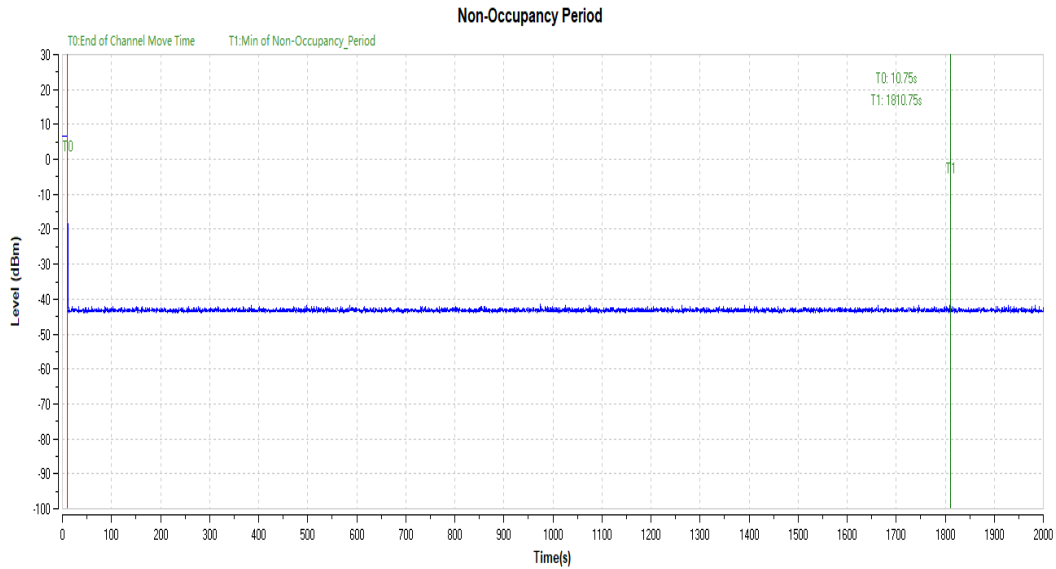




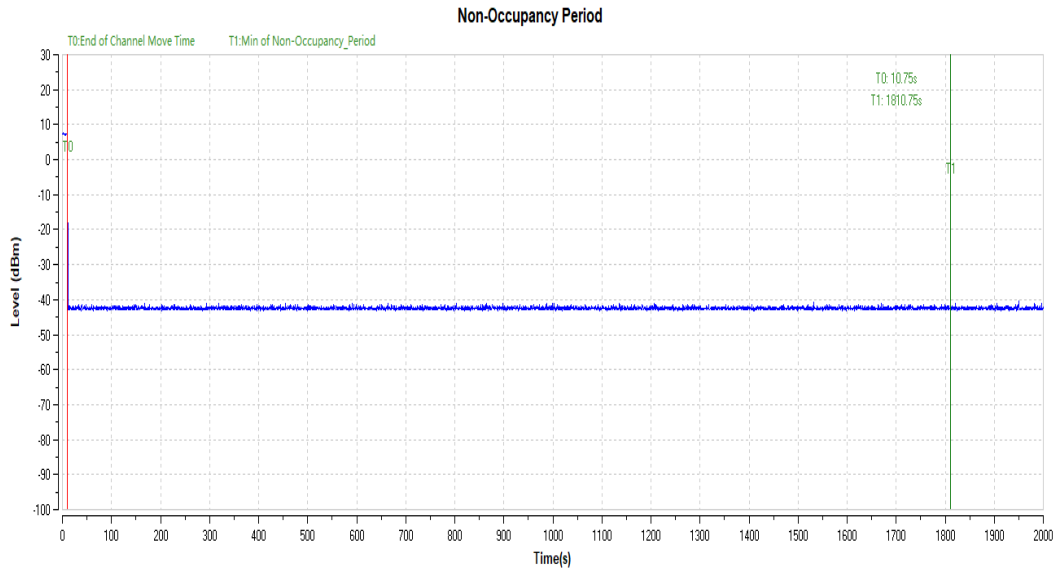
Non-Occupancy Period

TestMode	Channel	Result	Limit[s]	Verdict
11AC20SISO	5320	see test graph	≥1800	PASS
	5500	see test graph	≥1800	PASS

11AC20SISO_5320



11AC20SISO_5500





A.7. Conducted Emission

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Set RBW=9kHz, VBW=30kHz. Refer to recorded points and plots below.

Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

A. Test Setup:

Test Mode: EUT + Adapter + Earphone +WIFI TX

Test voltage: AC 120V/60Hz

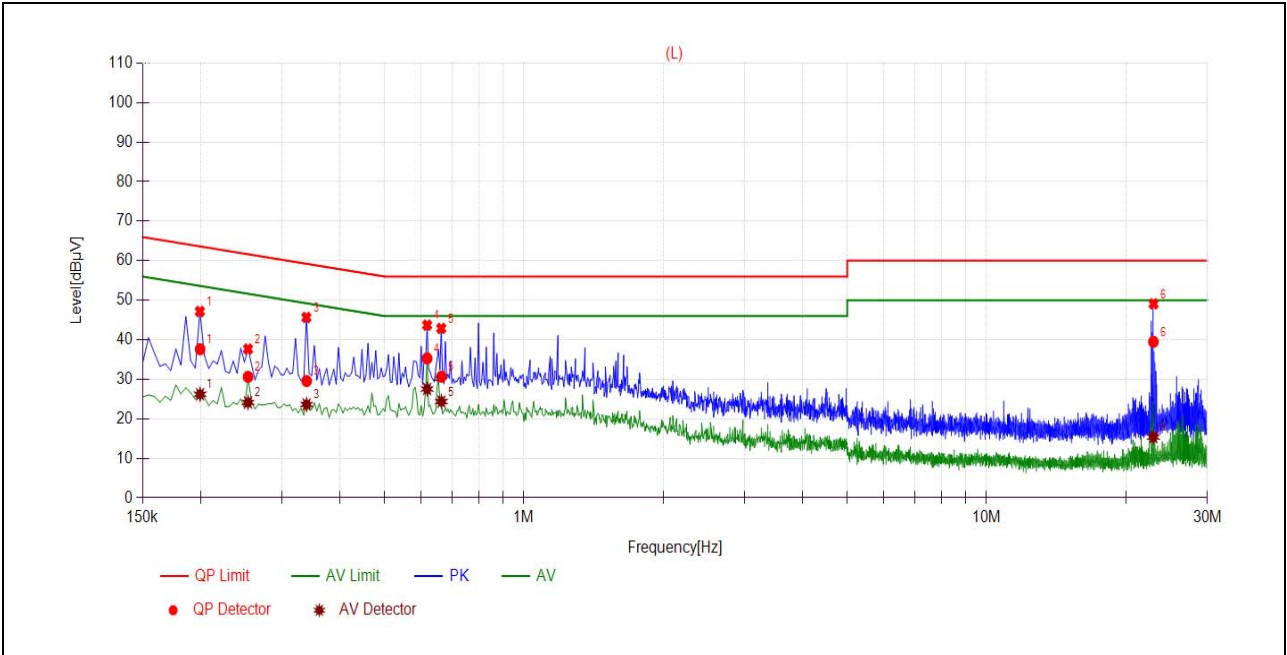
The measurement results are obtained as below:

$$E \text{ [dB}\mu\text{V]} = U_R + L_{\text{Cable loss}} \text{ [dB]} + A_{\text{Factor}}$$

U_R : Receiver Reading

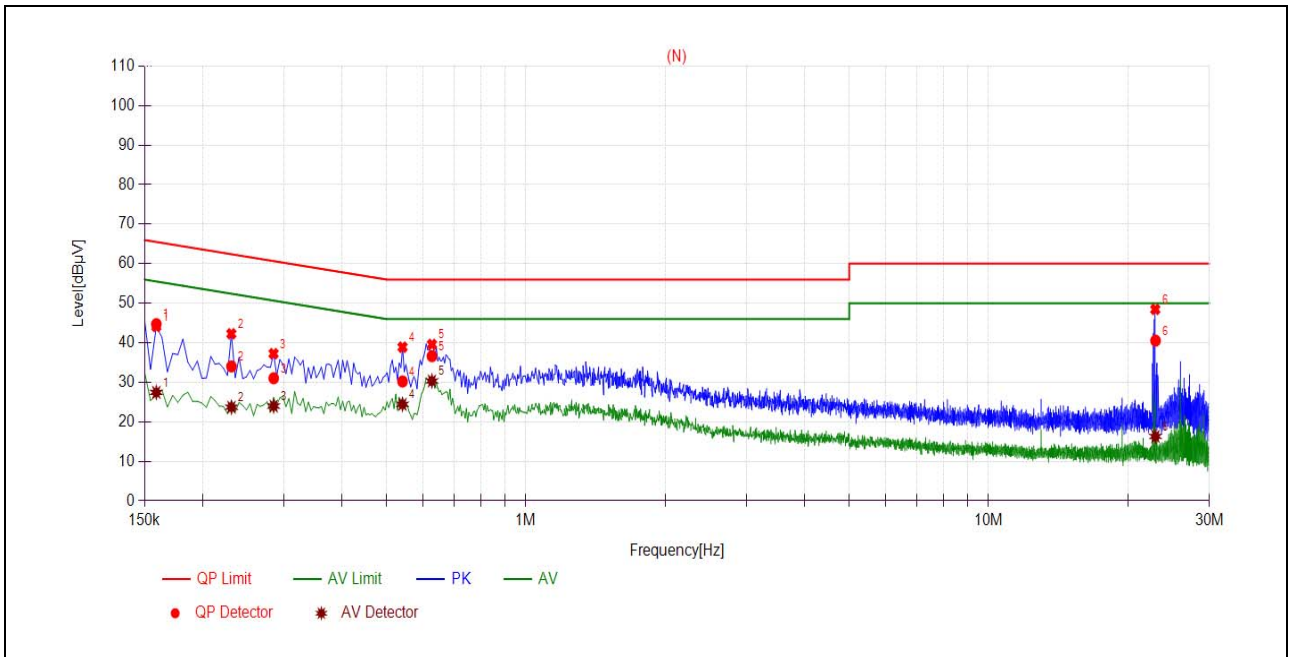
A_{Factor} : Voltage division factor of LISN

B. Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1997	37.62	26.21	63.62	53.62	Line	PASS
2	0.2535	30.62	24.13	61.64	51.64		PASS
3	0.3393	29.56	23.61	59.22	49.22		PASS
4	0.6181	35.30	27.54	56.00	46.00		PASS
5	0.6635	30.67	24.36	56.00	46.00		PASS
6	22.9350	39.49	15.38	60.00	50.00		PASS



(N Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1590	44.72	27.44	65.51	55.51	Neutral	PASS
2	0.2311	34.01	23.68	62.41	52.41		PASS
3	0.2851	31.02	23.97	60.67	50.67		PASS
4	0.5413	30.21	24.41	56.00	46.00		PASS
5	0.6267	36.62	30.33	56.00	46.00		PASS
6	22.9473	40.54	16.30	60.00	50.00		PASS

**A.8. Restricted Frequency Bands**

The lowest and highest channels are tested to verify the Restricted Frequency Bands.

The measurement results are obtained as below:

$$E \text{ [dB}\mu\text{V/m]} = U_R + A_T + A_{\text{Factor}} \text{ [dB]}; A_T = L_{\text{Cable loss}} \text{ [dB]} - G_{\text{preamp}} \text{ [dB]}$$

A_T : Total correction Factor except Antenna

U_R : Receiver Reading

G_{preamp} : Preamplifier Gain

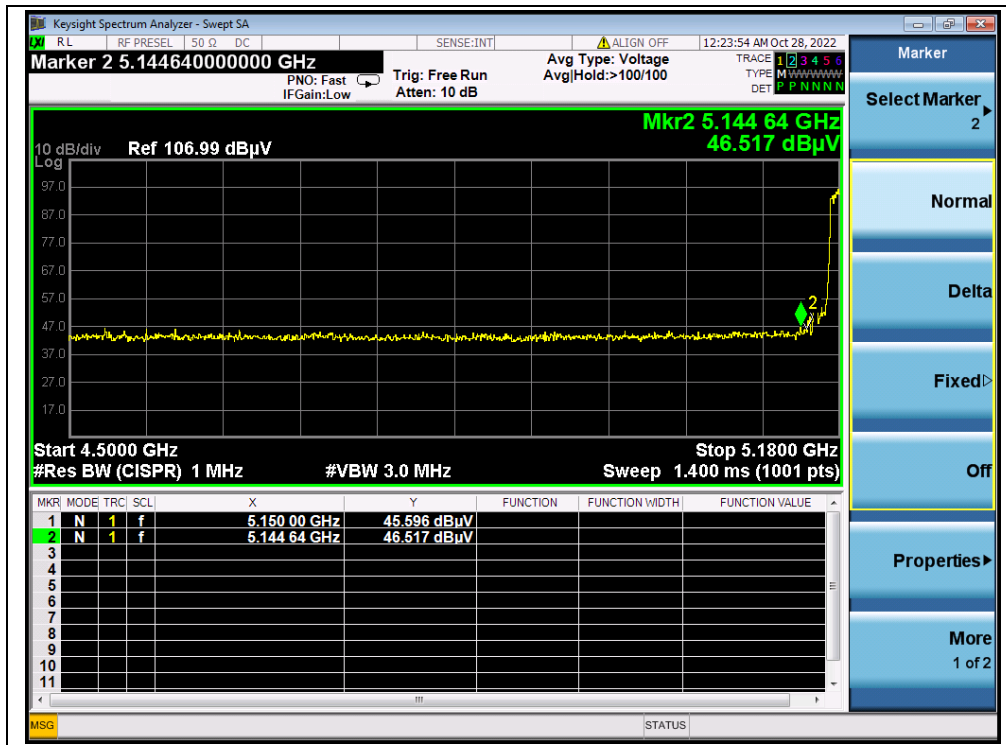
A_{Factor} : Antenna Factor at 3m

Note 1: Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (vertical) was recorded in this test report.

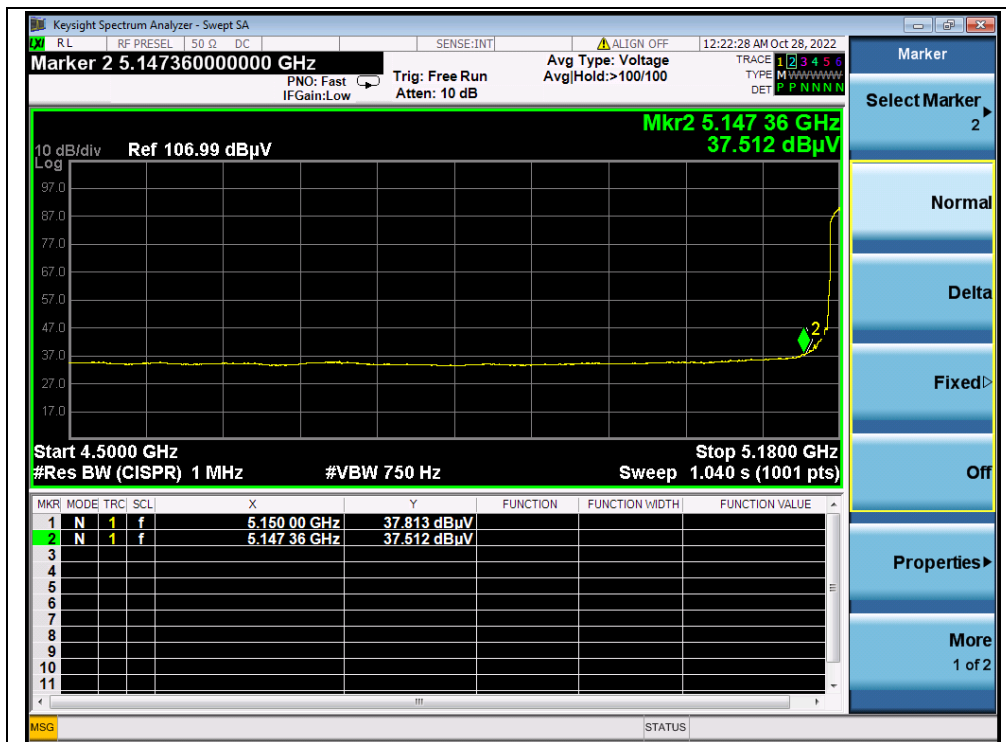
Note 2 All test modes and bandwidth were considered and evaluated respectively by performing full test, only the worst data were recorded for each bandwidth.

802.11a Mode

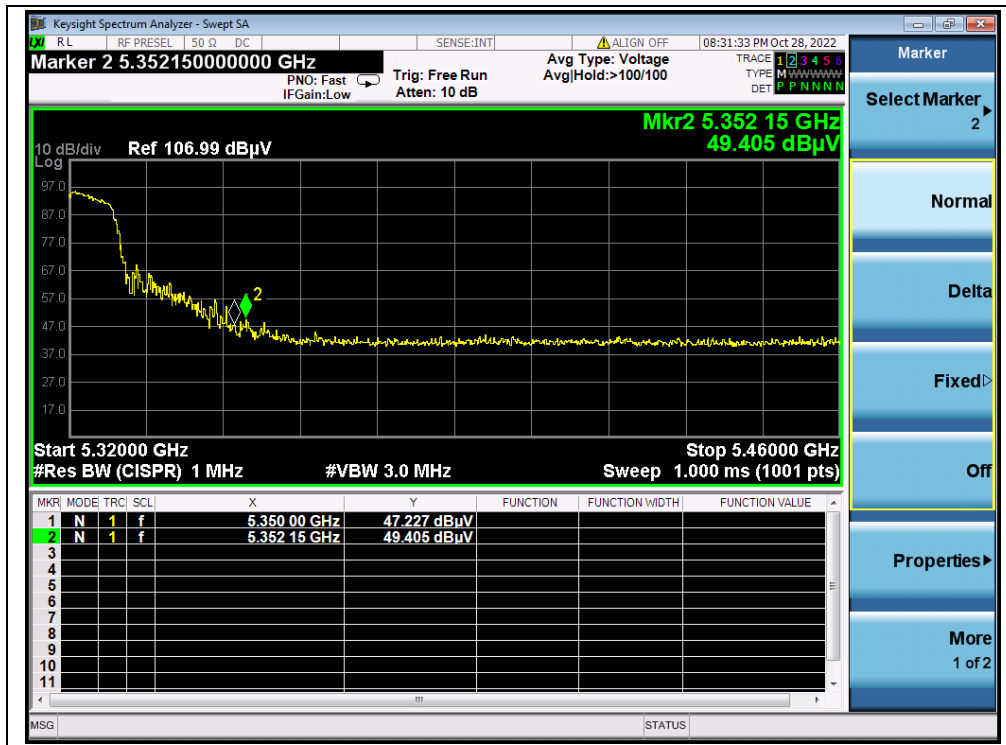
Channel	Frequency (MHz)	Detector	Receiver Reading	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dB μ V/m)	Limit (dB μ V/m)	Verdict
		PK/ AV	U_R (dB μ V)					
36	5144.64	PK	46.52	-19.54	32.20	59.18	74	PASS
36	5150.00	AV	37.81	-19.54	32.20	50.47	54	PASS
64	5352.15	PK	49.41	-18.80	32.20	62.81	74	PASS
64	5350.00	AV	36.88	-18.80	32.20	50.28	54	PASS
100	5465.12	PK	49.49	-19.20	32.20	62.49	68.23	PASS
100	5457.47	AV	35.34	-19.20	32.20	48.34	54	PASS
144	5725.00	PK	51.90	-19.20	32.20	64.90	68.23	PASS
149	5725.00	PK	57.23	-19.01	32.20	70.42	122.23	PASS
165	5850.00	PK	49.68	-19.01	32.20	62.87	122.23	PASS



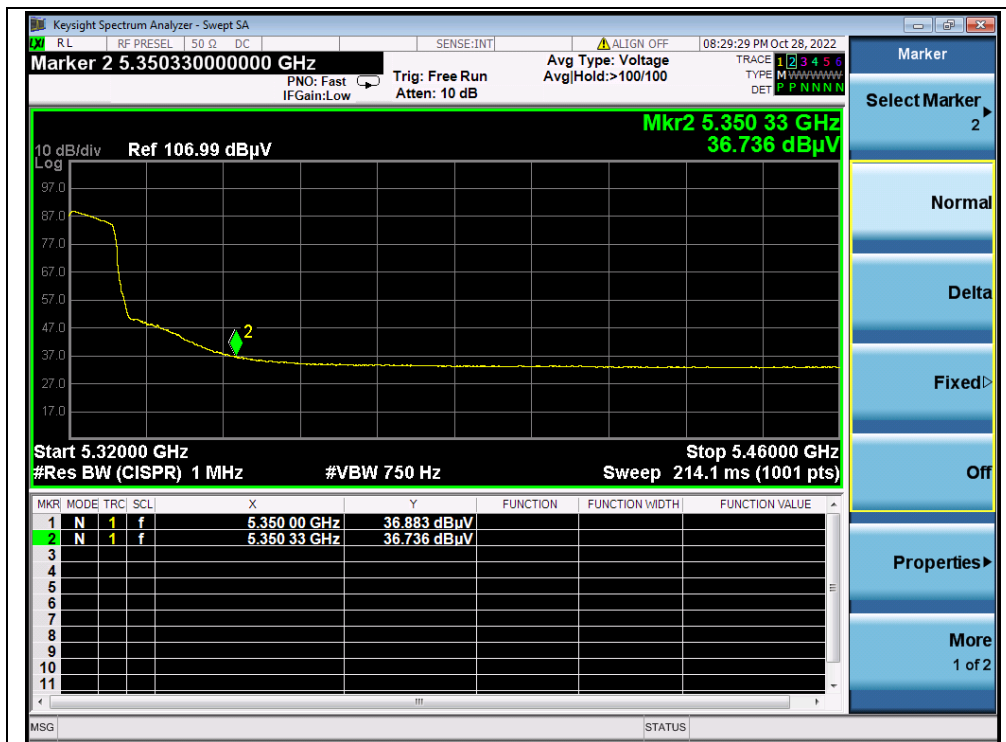
(PEAK, Channel 36, 802.11a)



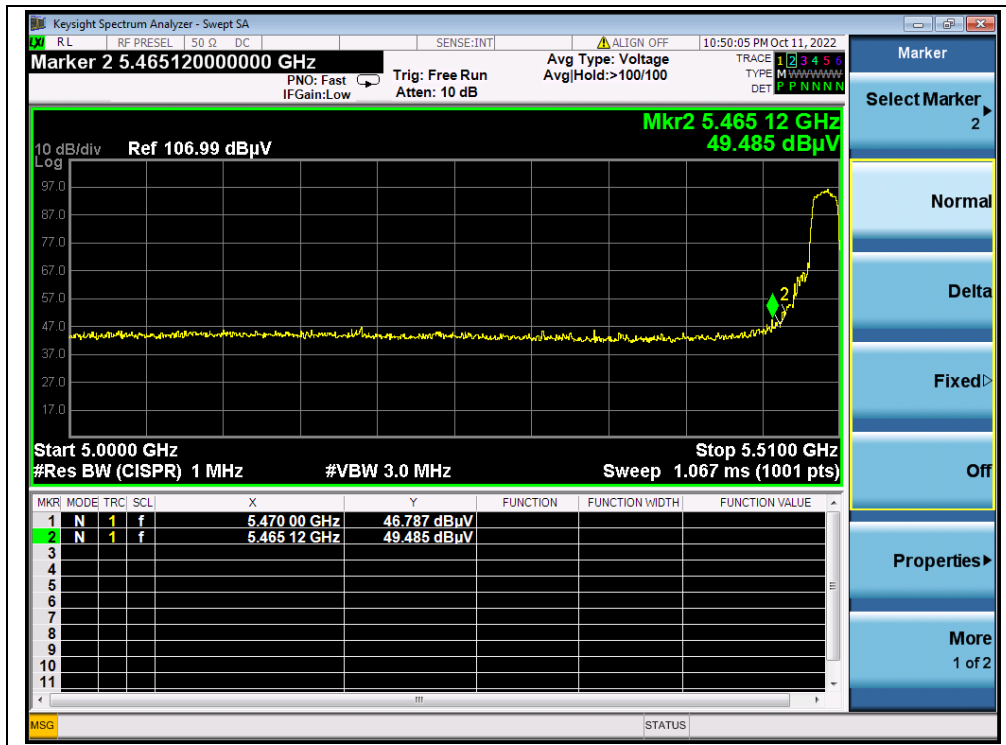
(AVERAGE, Channel 36, 802.11a)



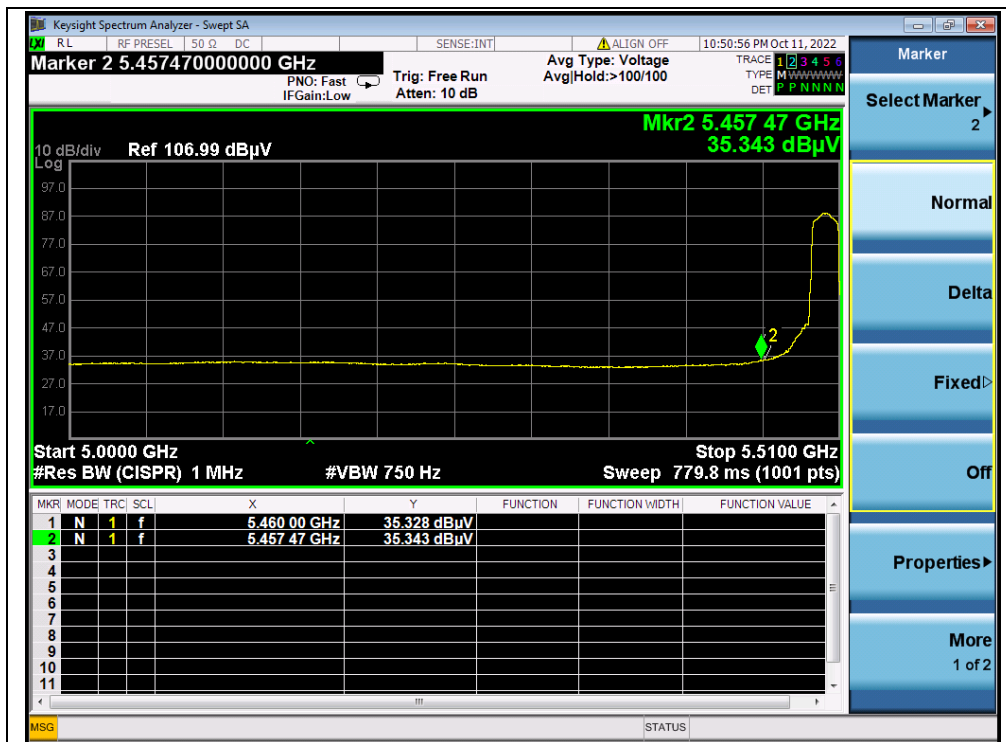
(PEAK, Channel 64, 802.11a)



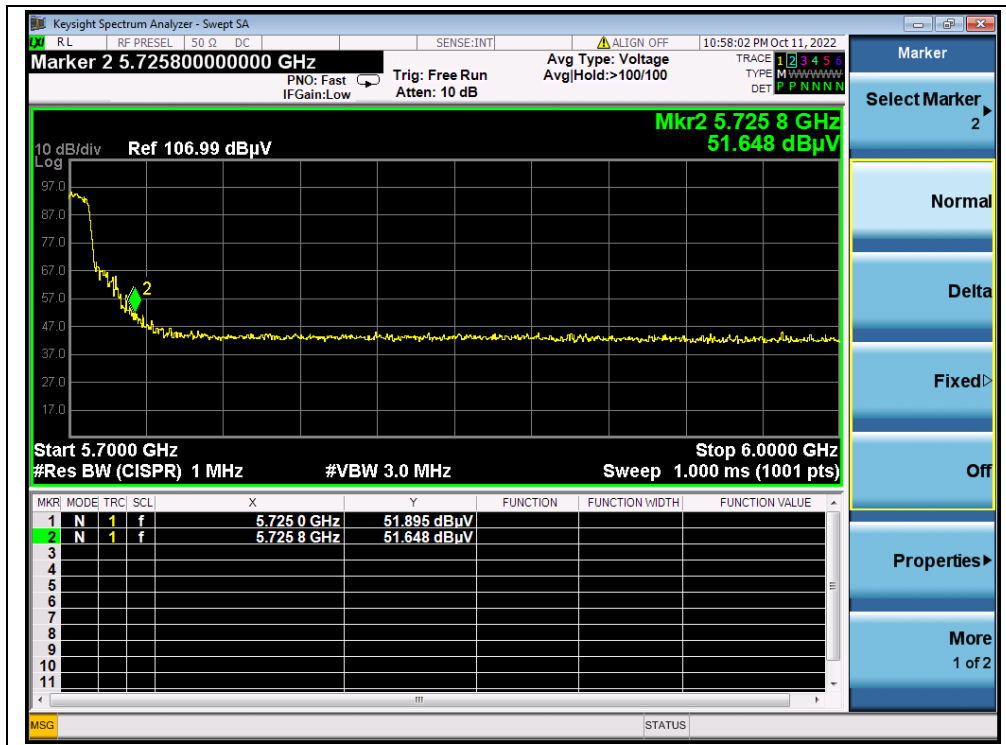
(AVERAGE, Channel 64, 802.11a)



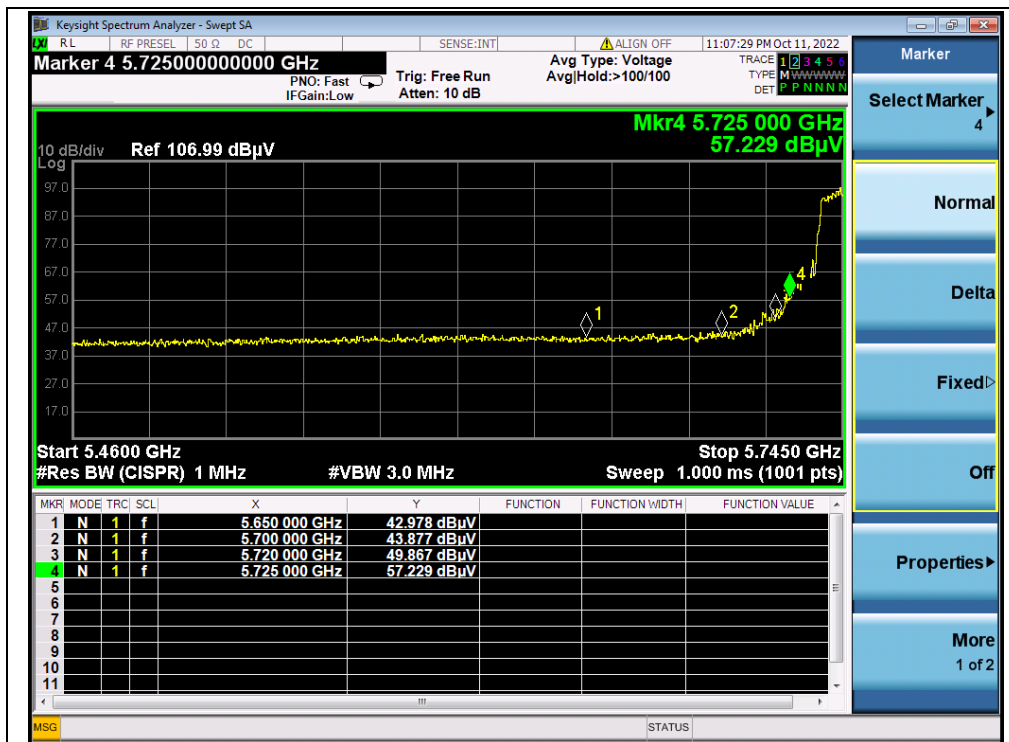
(PEAK, Channel 100, 802.11a)



(AVERAGE, Channel 100, 802.11a)



(PEAK, Channel 144, 802.11a)



(PEAK, Channel 149, 802.11a)

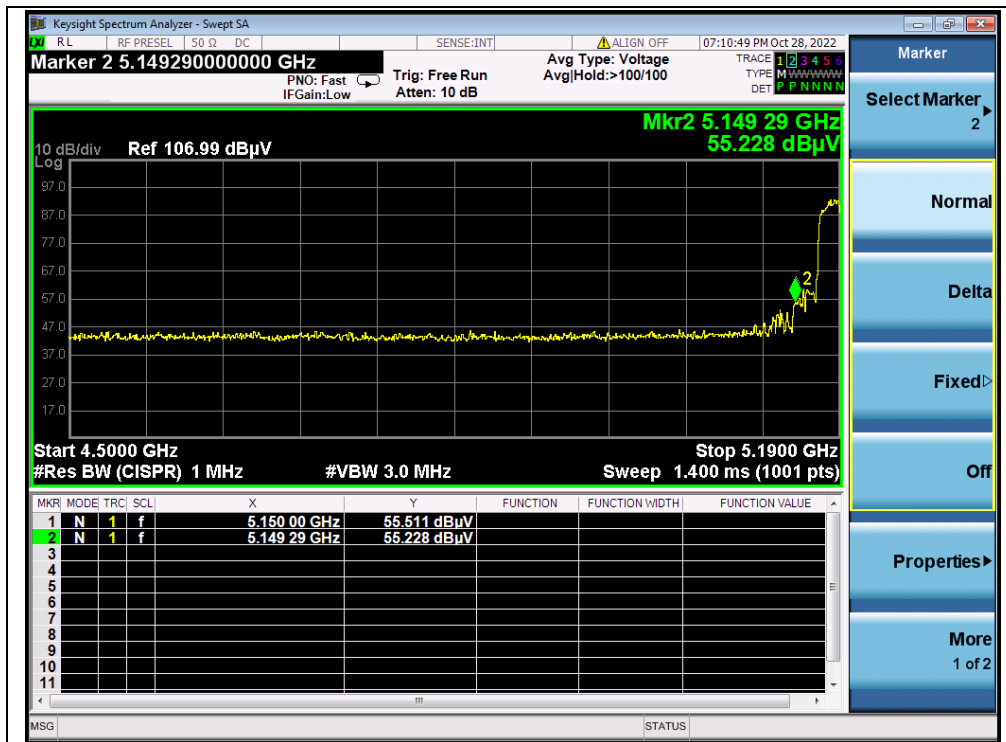


(PEAK, Channel 165, 802.11a)

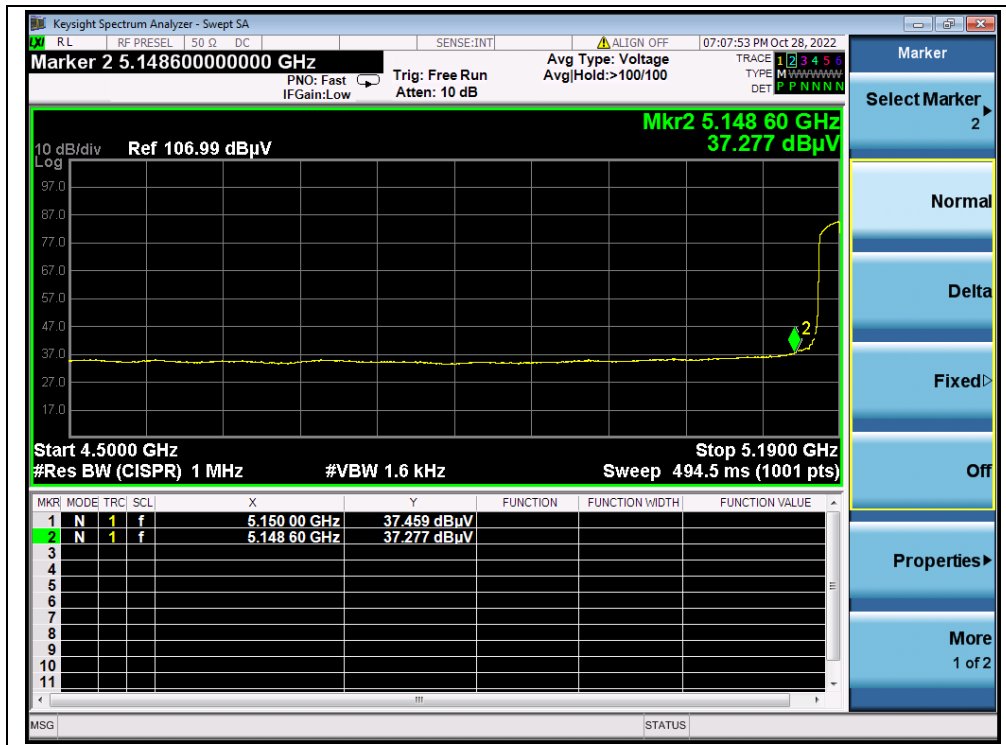


802.11n (HT40) Mode

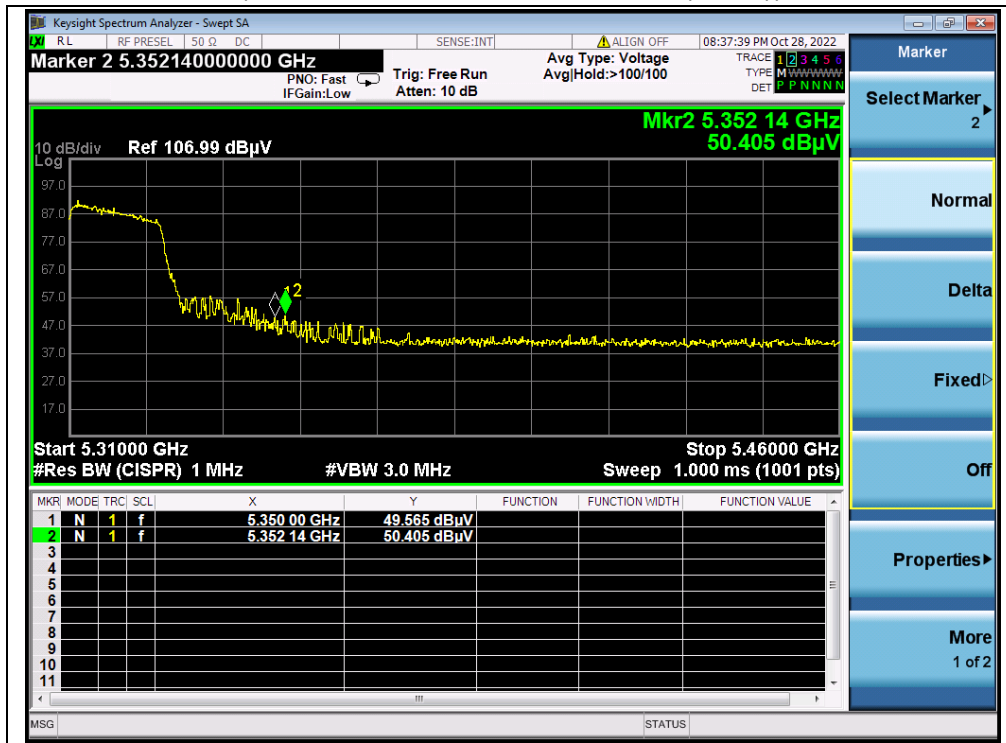
Channel	Frequency (MHz)	Detector	Receiver Reading	A _T	A _{Factor}	Max. Emission E	Limit (dBμV/m)	Verdict
		PK/ AV	U _R (dBμV)	(dB)	(dB@3m)	(dBμV/m)		
38	5150.00	PK	55.51	-19.54	32.20	68.17	74	PASS
38	5150.00	AV	37.46	-19.54	32.20	50.12	54	PASS
62	5352.14	PK	50.41	-18.80	32.20	63.81	74	PASS
62	5350.00	AV	37.29	-18.80	32.20	50.69	54	PASS
102	5469.14	PK	53.46	-19.20	32.20	66.46	68.23	PASS
102	5460.00	AV	37.45	-19.20	32.20	50.45	54	PASS
142	5726.76	PK	54.28	-19.20	32.20	67.28	68.23	PASS
151	5725.00	PK	62.15	-19.01	32.20	75.34	122.23	PASS
159	5850.00	PK	50.18	-19.01	32.20	63.37	122.23	PASS



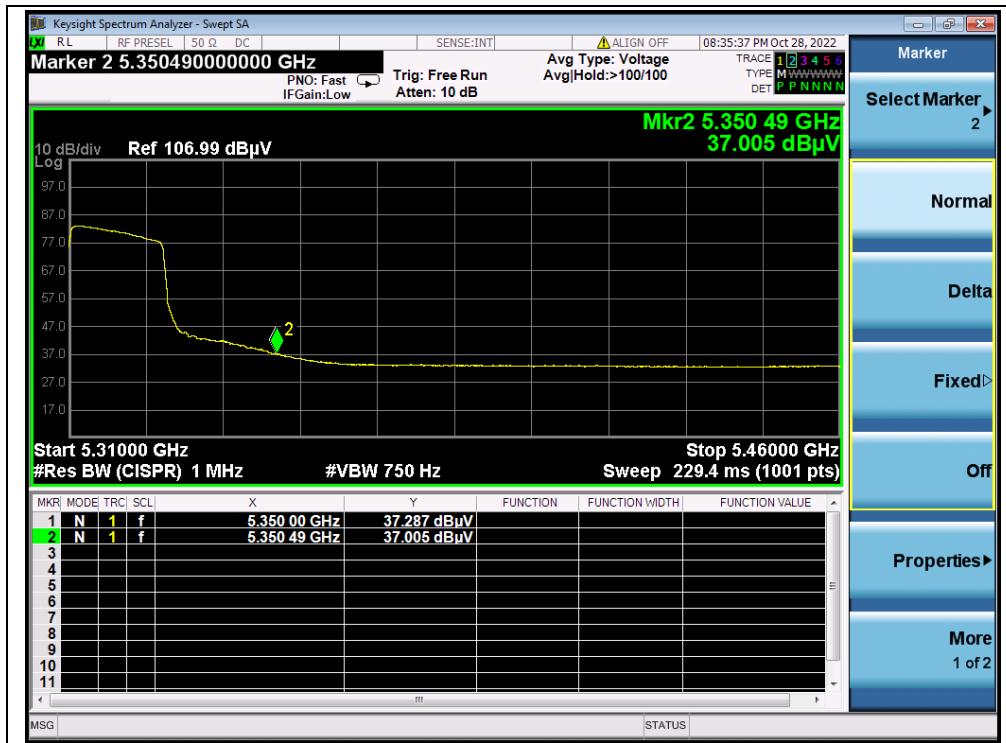
(PEAK, Channel 38, 802.11n (HT40))



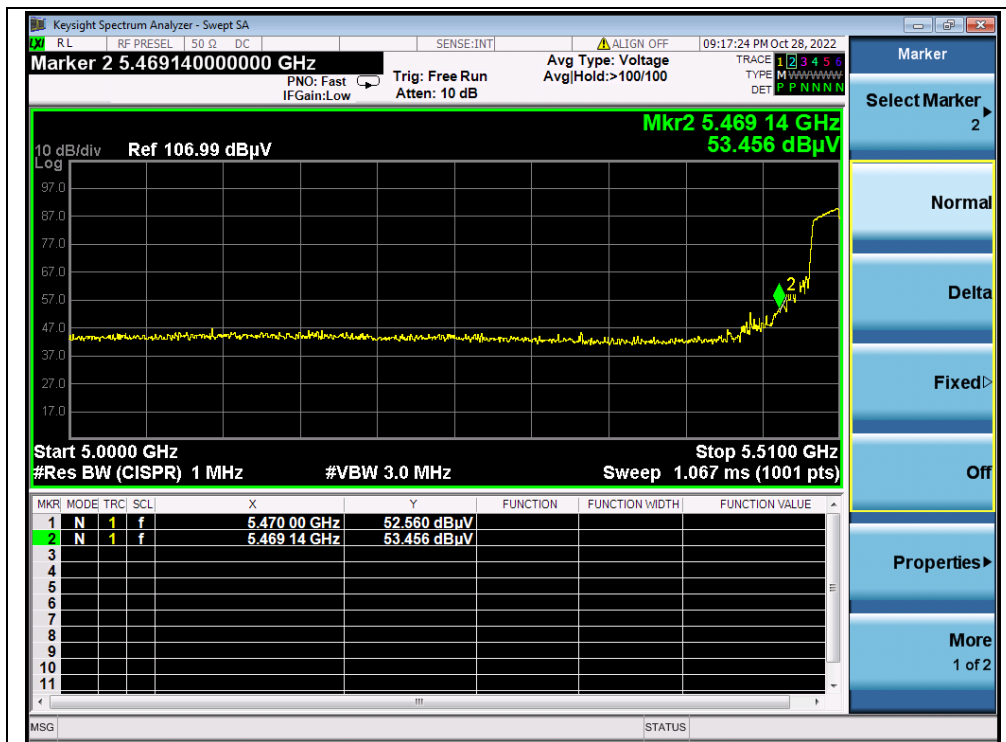
(AVERAGE, Channel 38, 802.11n (HT40))



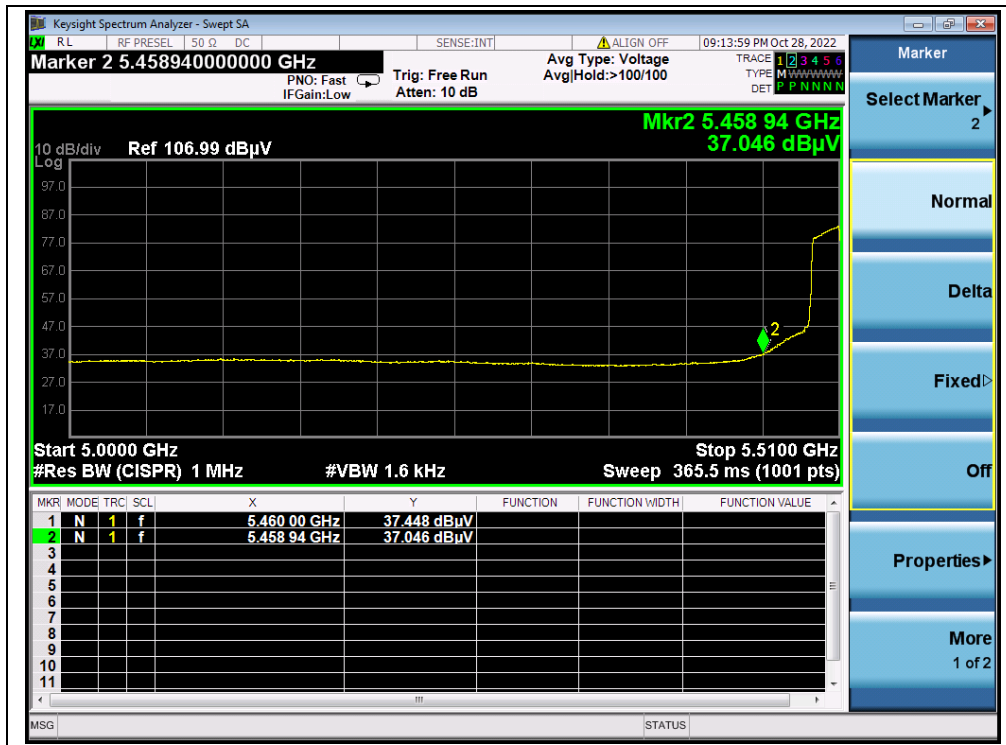
(PEAK, Channel 62, 802.11n (HT40))



(AVERAGE, Channel 62, 802.11n (HT40))



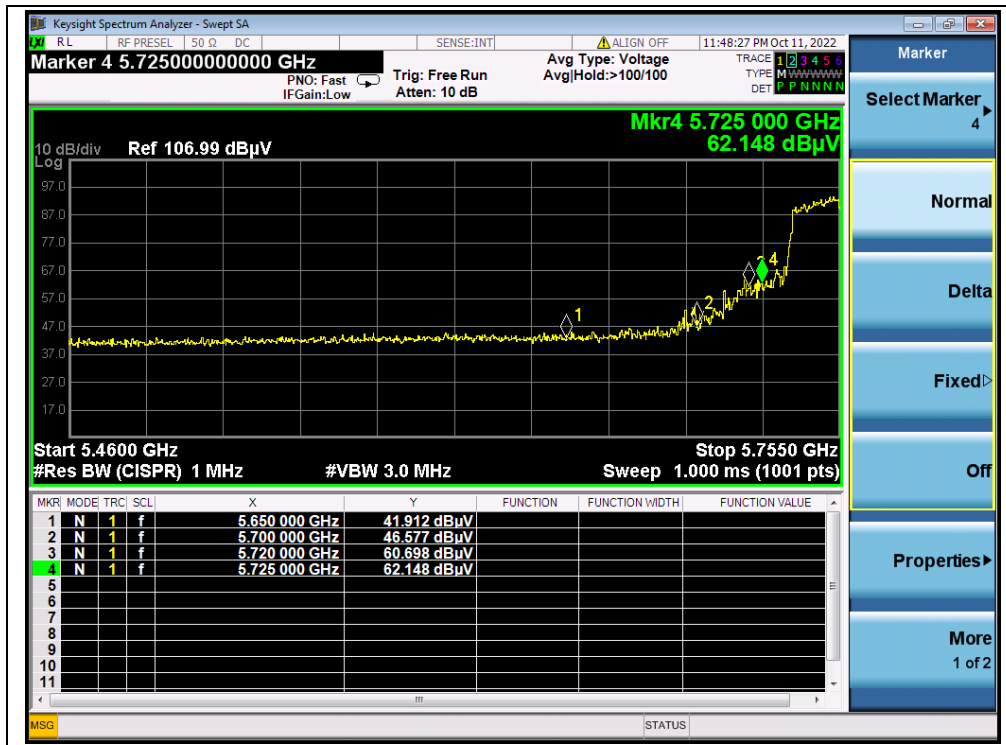
(PEAK, Channel 102, 802.11n (HT40))



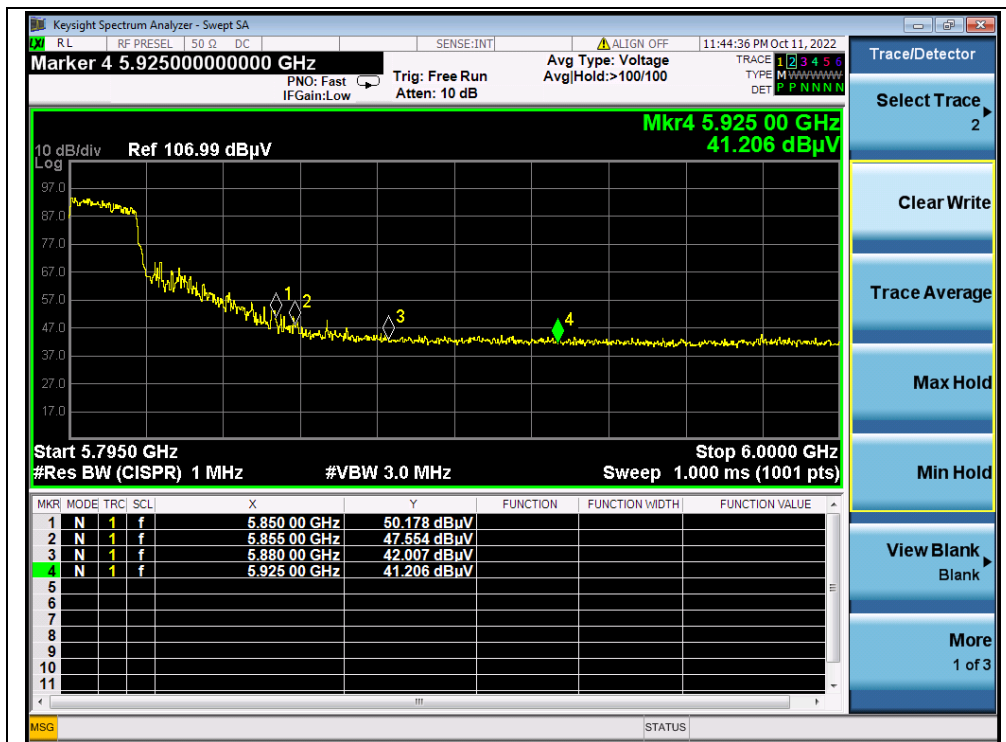
(AVERAGE, Channel 102, 802.11n (HT40))



(PEAK, Channel 142, 802.11n (HT40))



(PEAK, Channel 151, 802.11n (HT40))

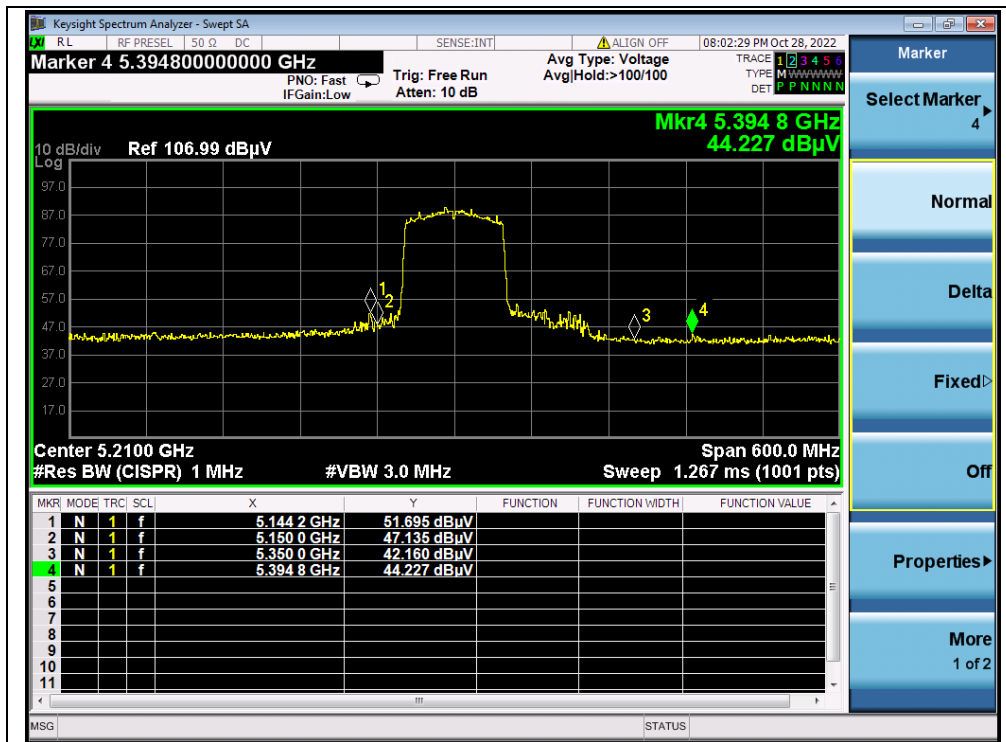


(PEAK, Channel 159, 802.11n (HT40))

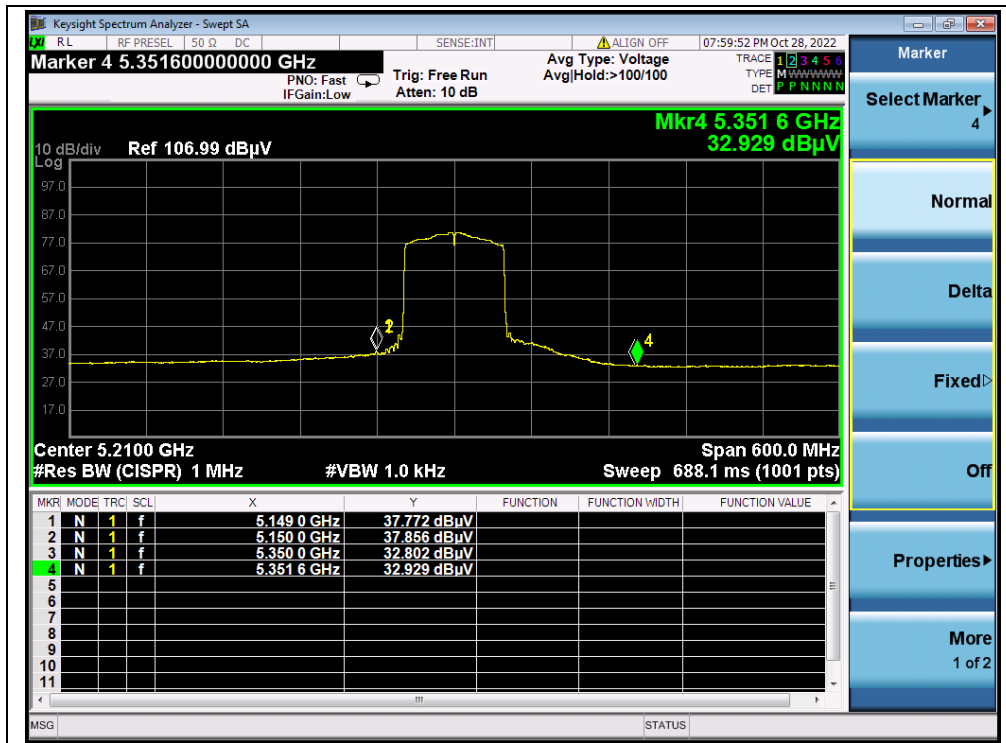


802.11ac (VHT80) Mode

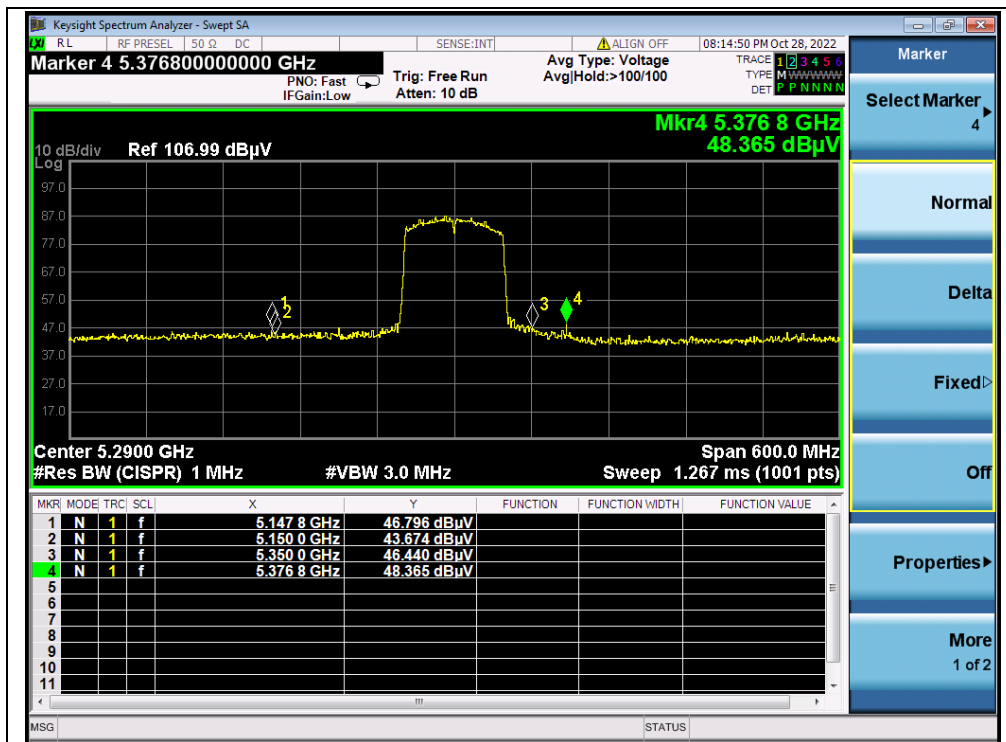
Channel	Frequency (MHz)	Detector	Receiver Reading U _R (dBμV)	A _T (dB)	A _{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
		PK/ AV						
42	5144.20	PK	51.70	-19.54	32.20	64.36	74	PASS
42	5150.00	AV	37.87	-19.54	32.20	50.53	54	PASS
58	5376.80	PK	48.37	-18.80	32.20	61.77	74	PASS
58	5350.00	AV	37.37	-18.80	32.20	50.77	54	PASS
106	5466.46	PK	52.44	-19.20	32.20	65.44	68.23	PASS
106	5458.51	AV	37.87	-19.20	32.20	50.87	54	PASS
138	5727.00	PK	50.17	-19.20	32.20	63.17	68.23	PASS
155	5720.00	PK	61.45	-19.01	32.20	74.64	110.83	PASS
155	5850.00	PK	58.54	-19.01	32.20	71.73	122.23	PASS



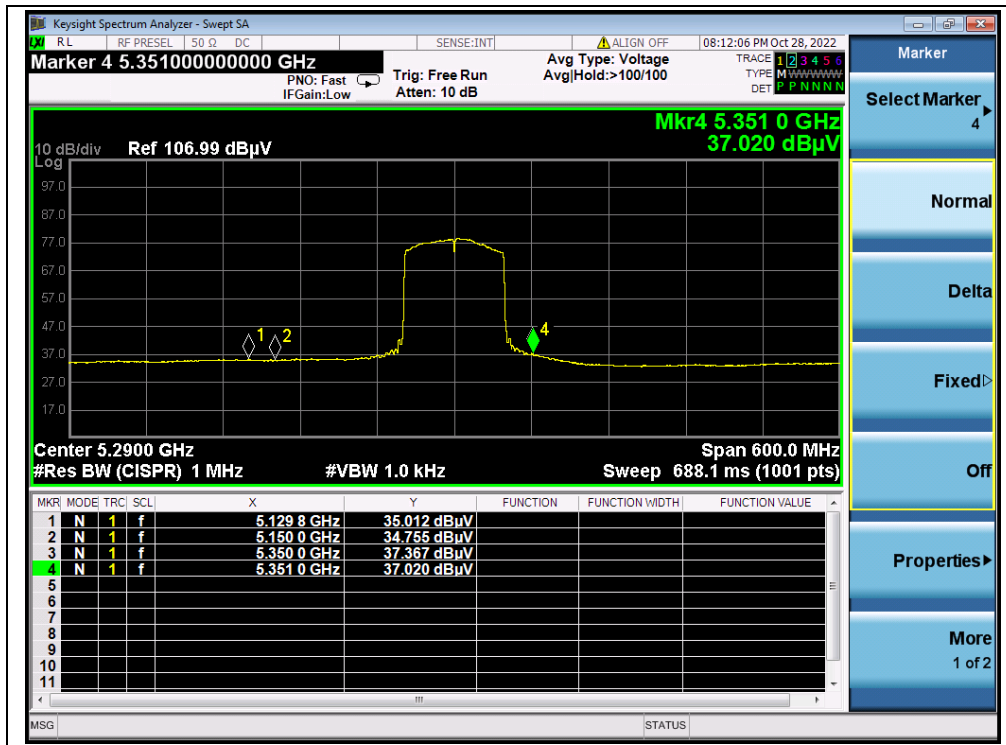
(PEAK, Channel 42, 802.11ac (VHT80))



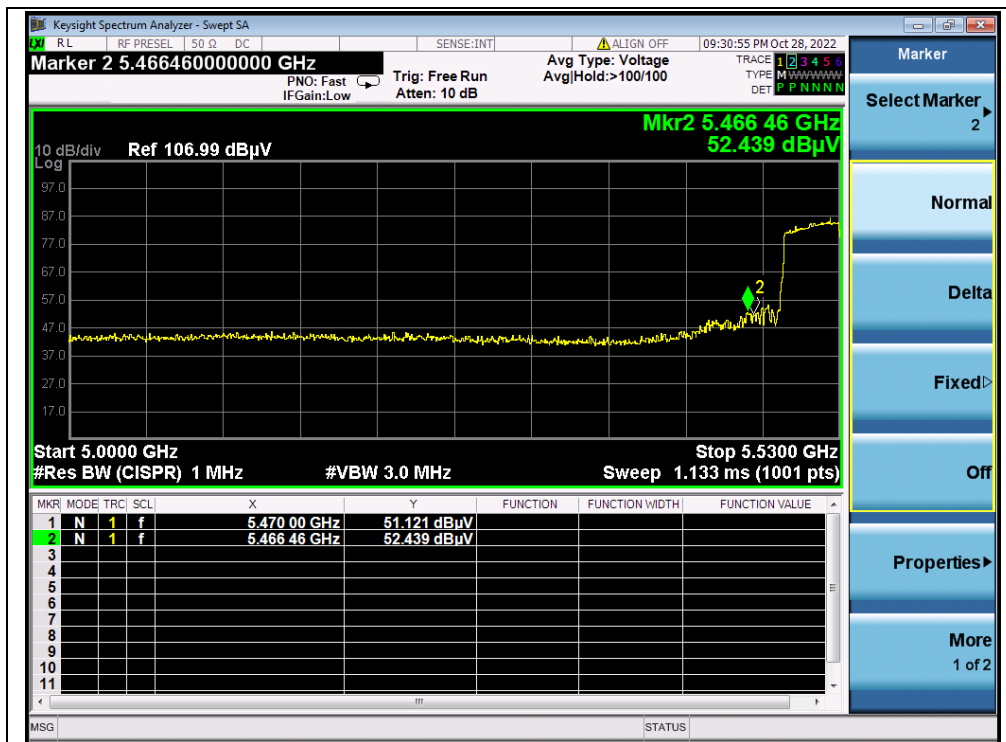
(AVERAGE, Channel 42, 802.11ac (VHT80))



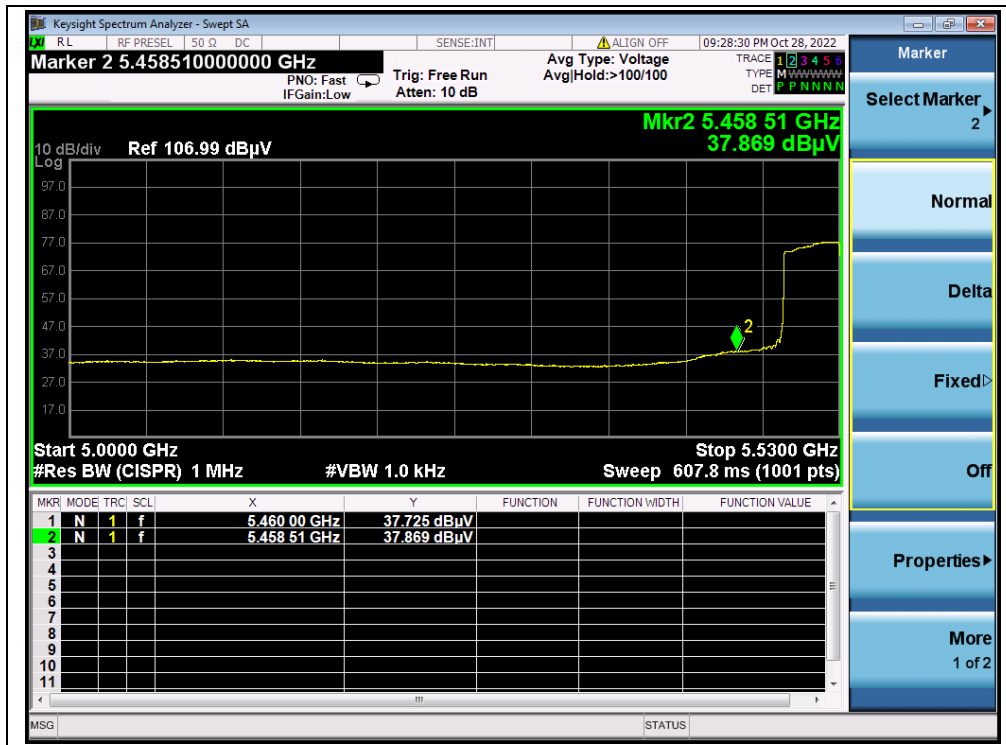
(PEAK, Channel 58, 802.11ac (VHT80))



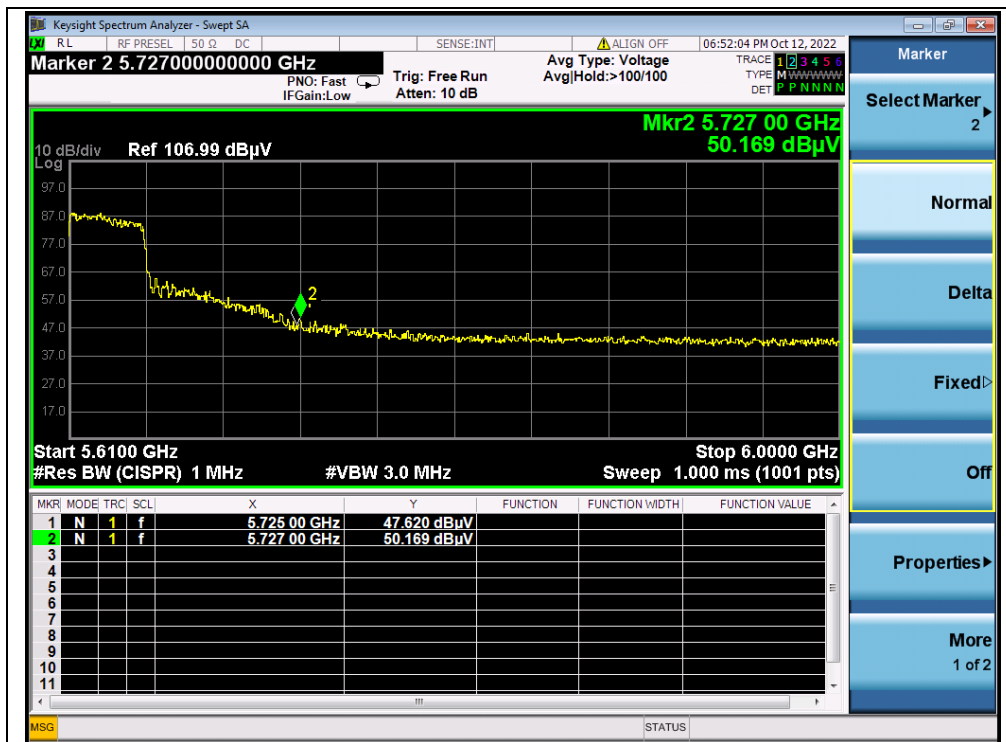
(AVERAGE, Channel 58, 802.11ac (VHT80))



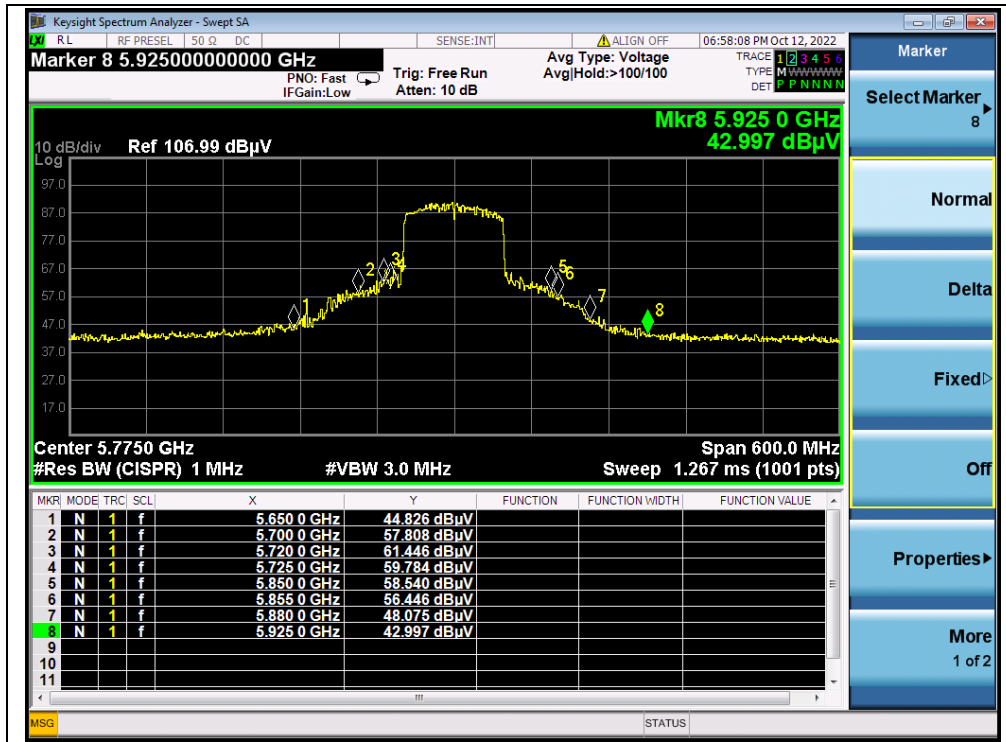
(PEAK, Channel 106, 802.11ac (VHT80))



(AVERAGE, Channel 106, 802.11ac (VHT80))



(PEAK, Channel 138, 802.11ac (VHT80))



(PEAK, Channel 155, 802.11ac (VHT80))



A.9. Radiated Emission

According to ANSI C63.10, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak (or average) limit, it is unnecessary to perform an quasi-peak measurement (or average).

The measurement results are obtained as below:

$$E [\text{dB}\mu\text{V}/\text{m}] = U_R + A_T + A_{\text{Factor}} [\text{dB}]; A_T = L_{\text{Cable loss}} [\text{dB}] - G_{\text{preamp}} [\text{dB}]$$

A_T : Total correction Factor except Antenna

U_R : Receiver Reading

G_{preamp} : Preamplifier Gain

A_{Factor} : Antenna Factor at 3m

During the test, the total correction Factor A_T and A_{Factor} were built in test software.

Note1: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Note2: For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

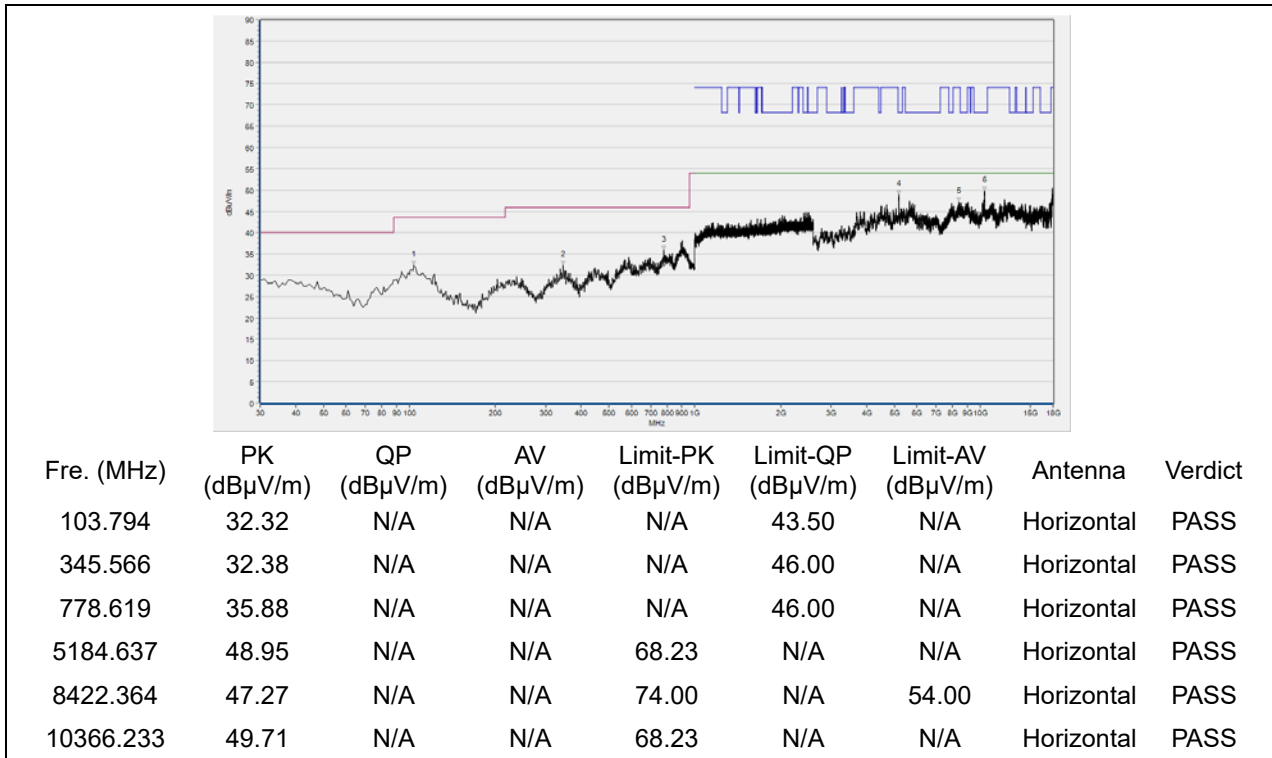
Note3: For the frequency, which started from 18GHz to 10th harmonic of the highest frequency, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note 4: All test modes and bandwidth were considered and evaluated respectively by performing full test, only the worst data were recorded for each bandwidth.

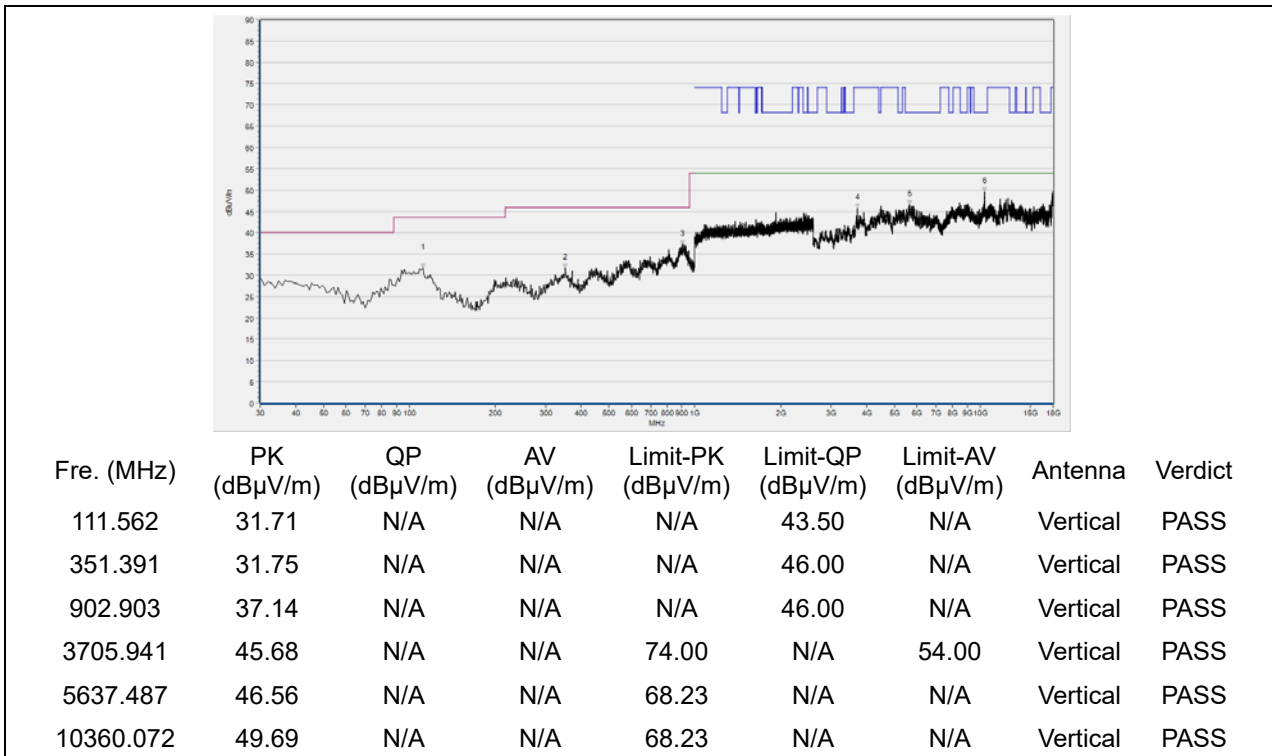


802.11a Mode

Plot for Channel 36

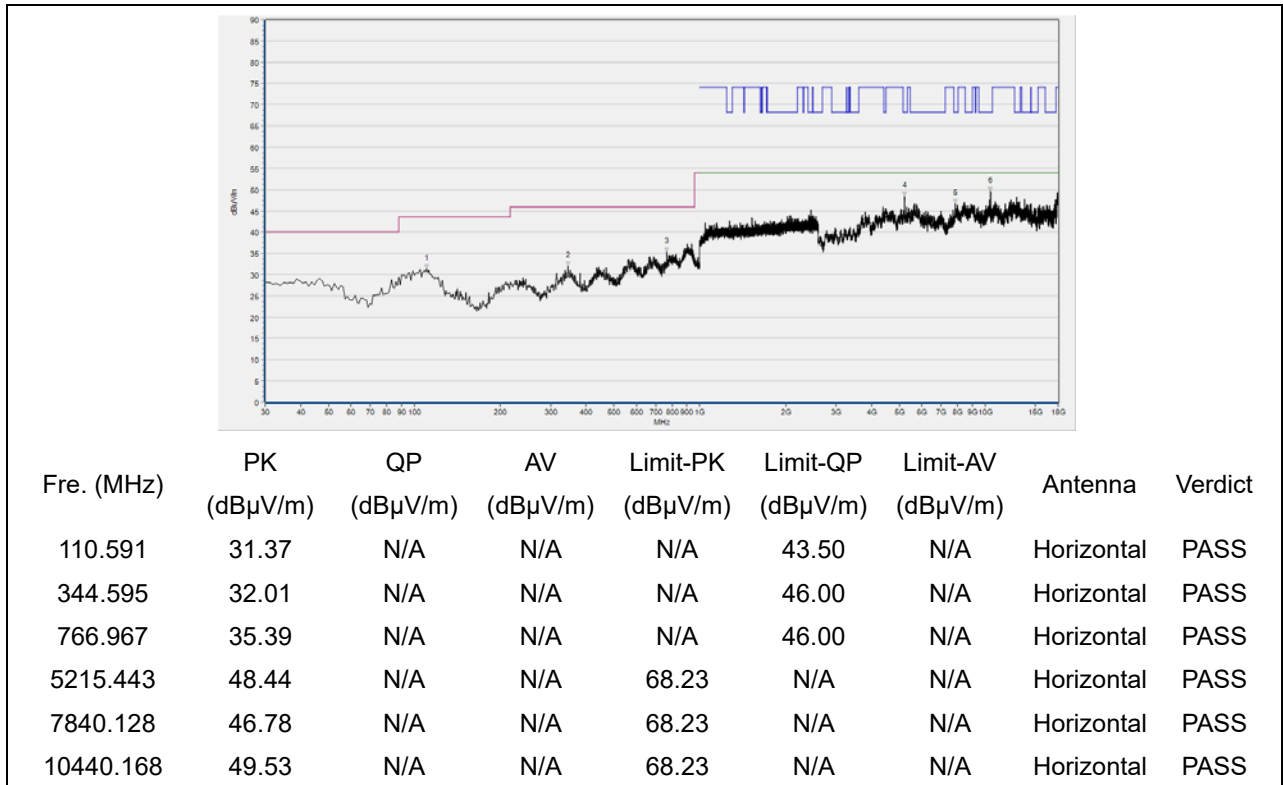


(Antenna Horizontal, 30MHz to 18GHz)

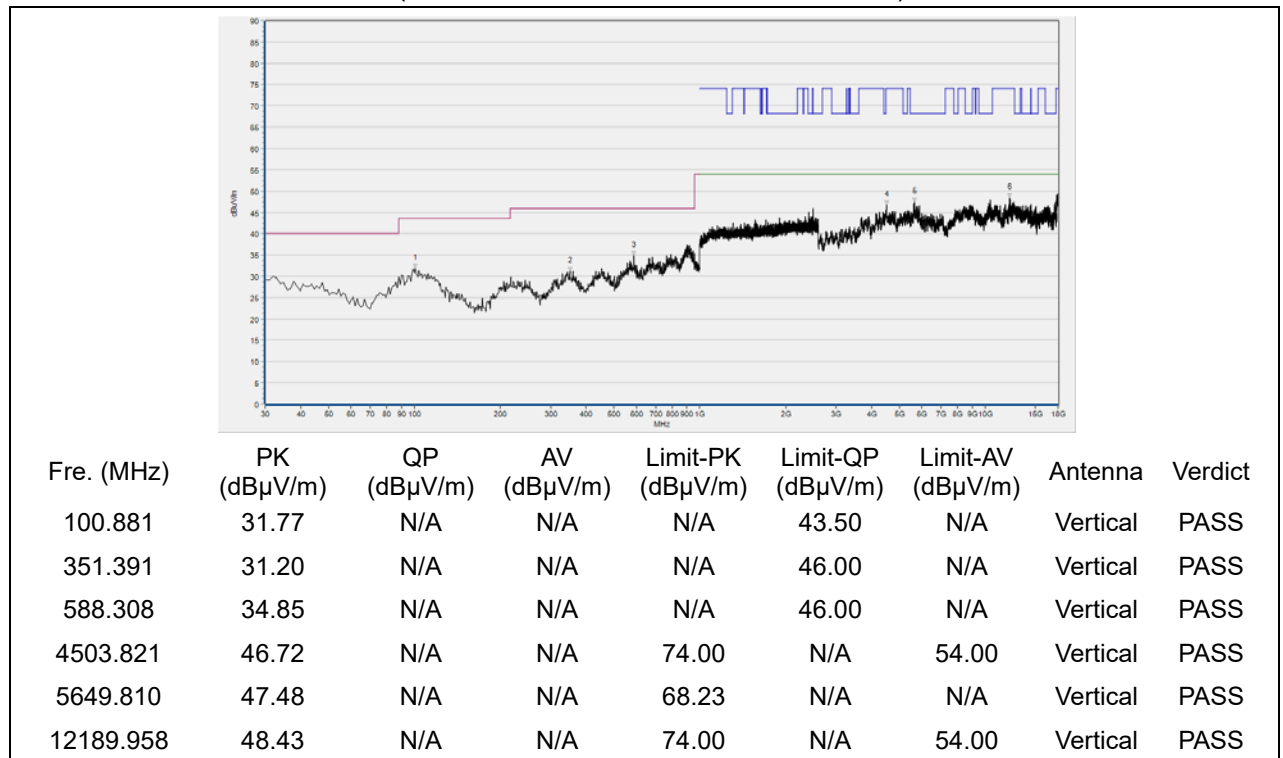


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 44

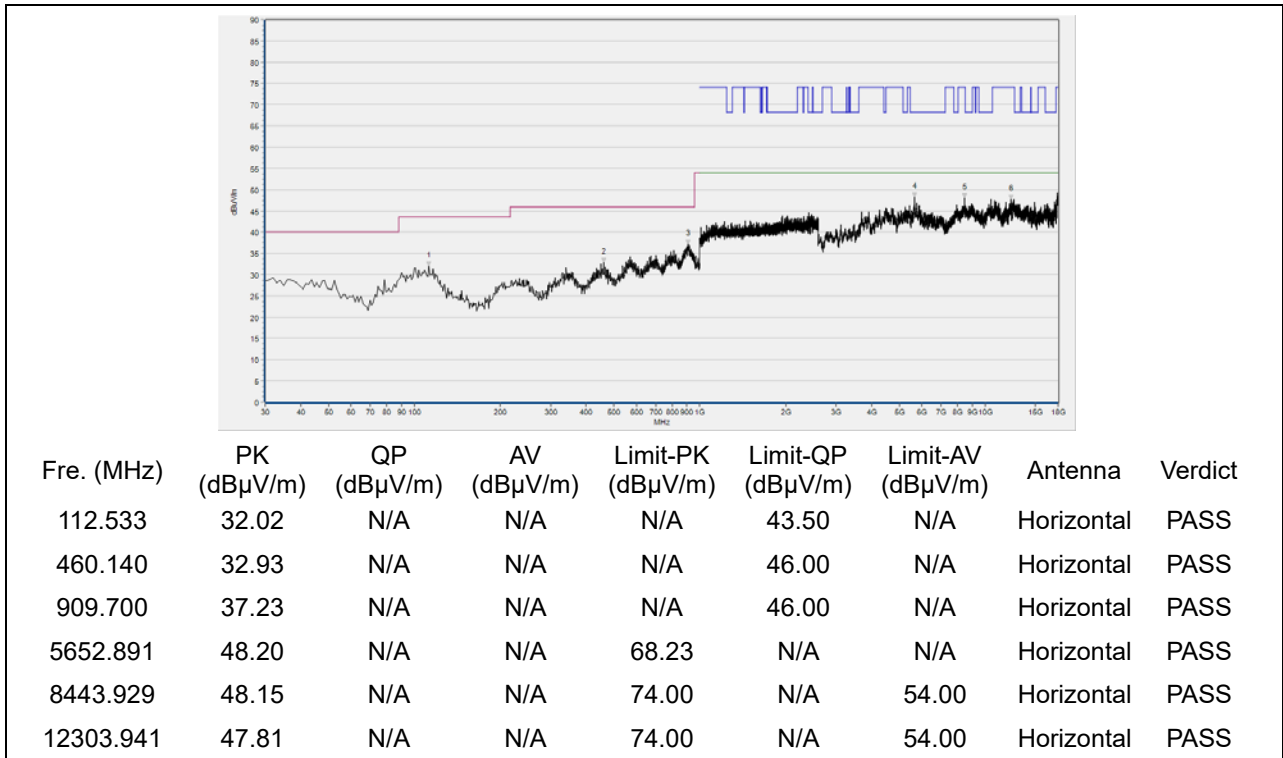


(Antenna Horizontal, 30MHz to 18GHz)

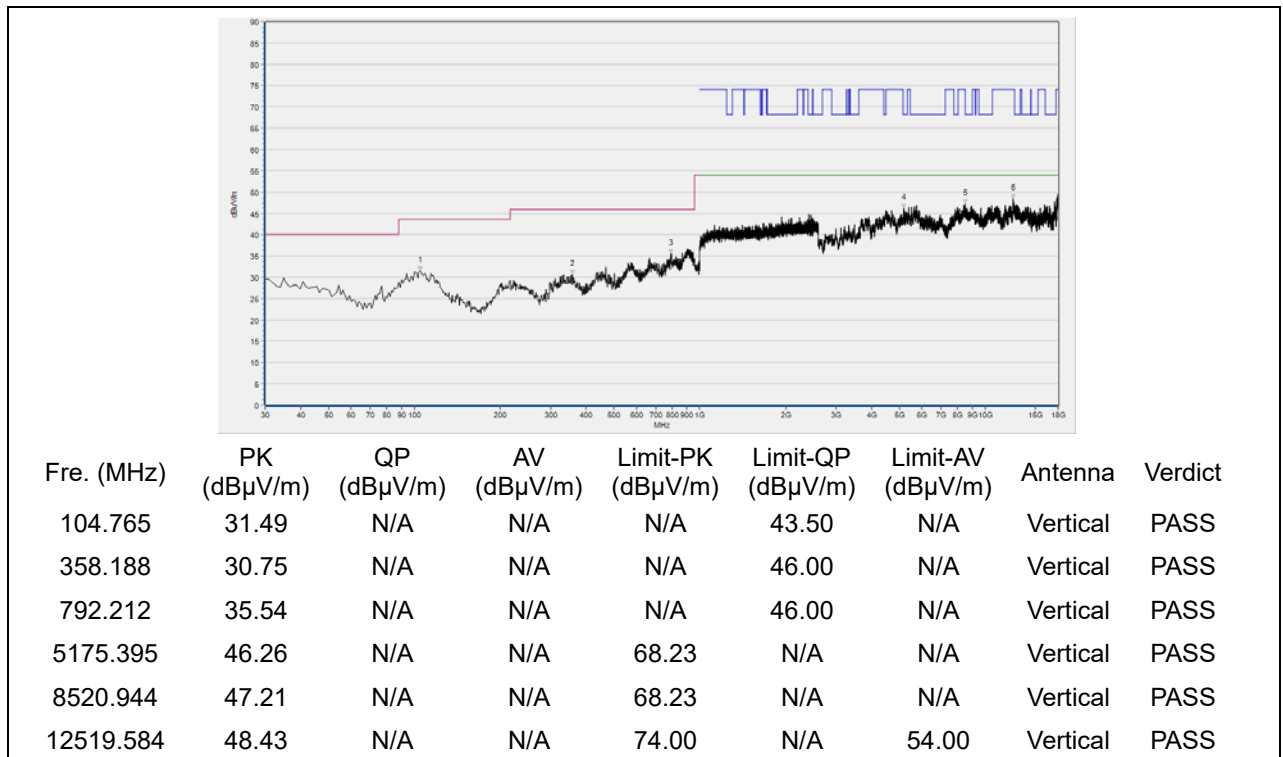


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 48

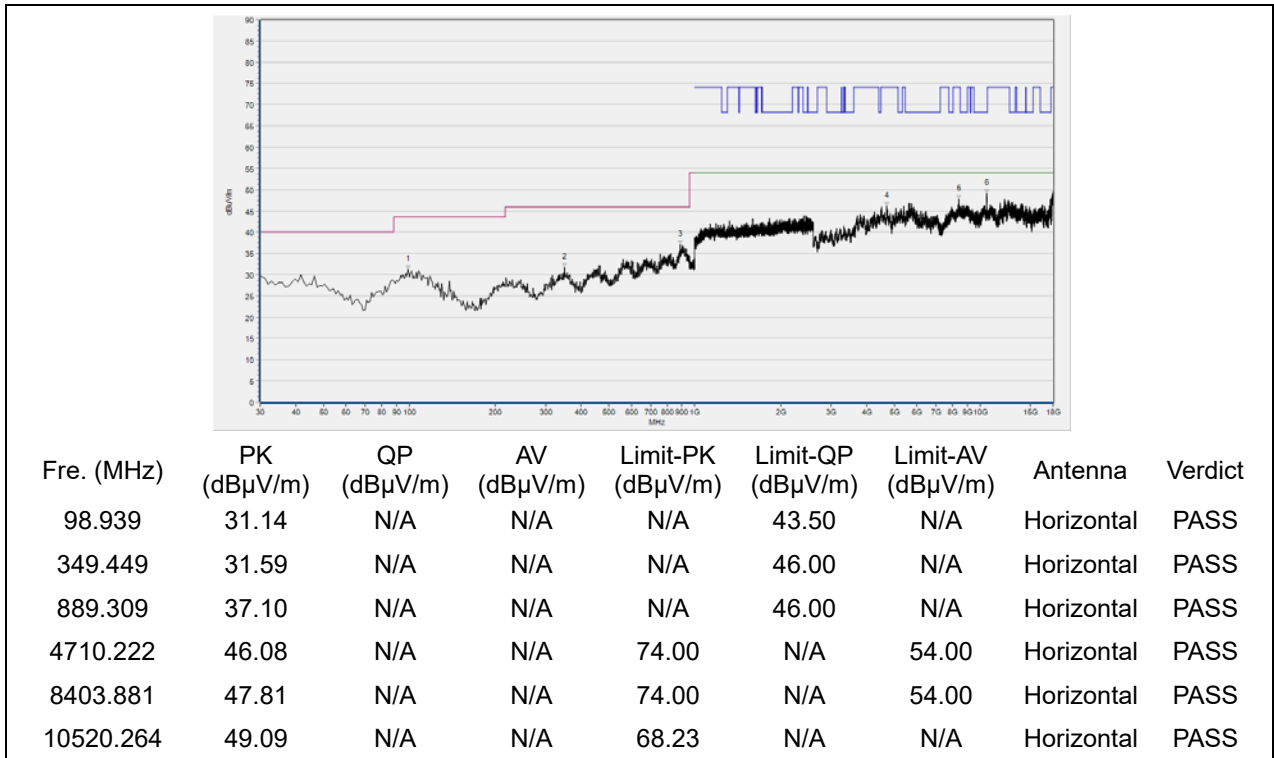


(Antenna Horizontal, 30MHz to 18GHz)

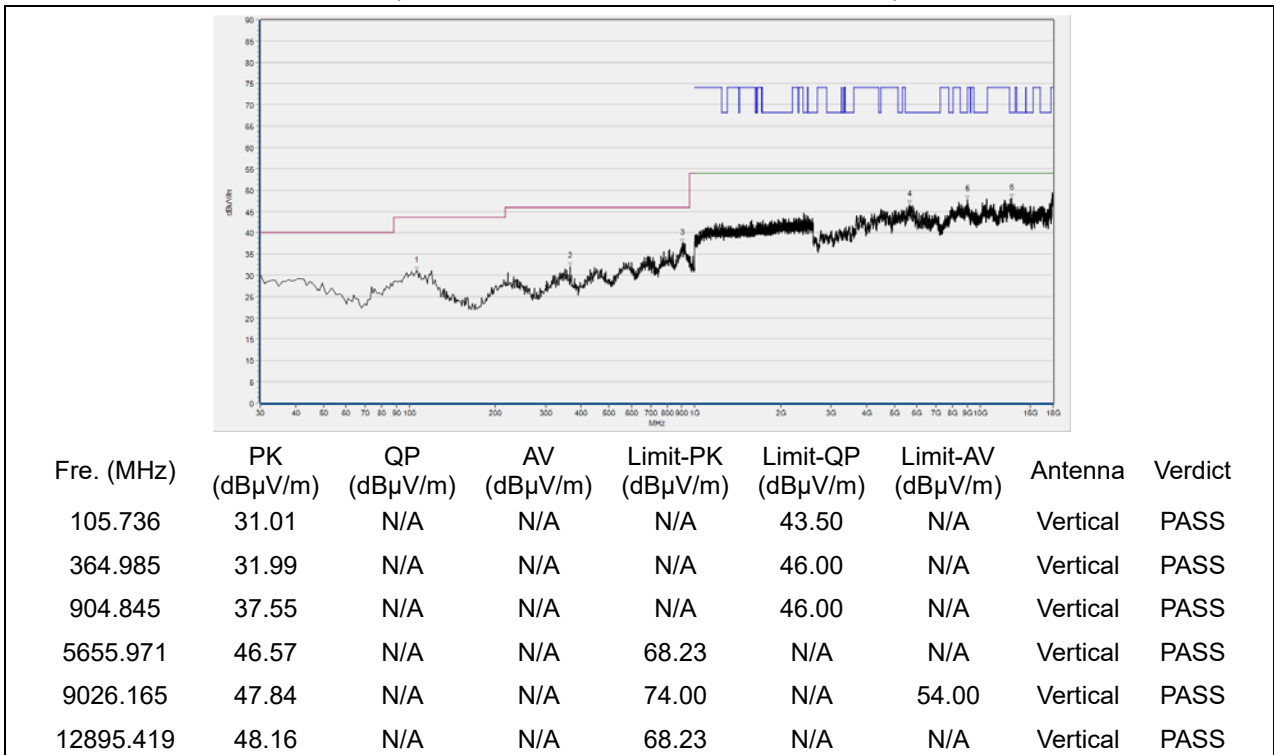


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 52

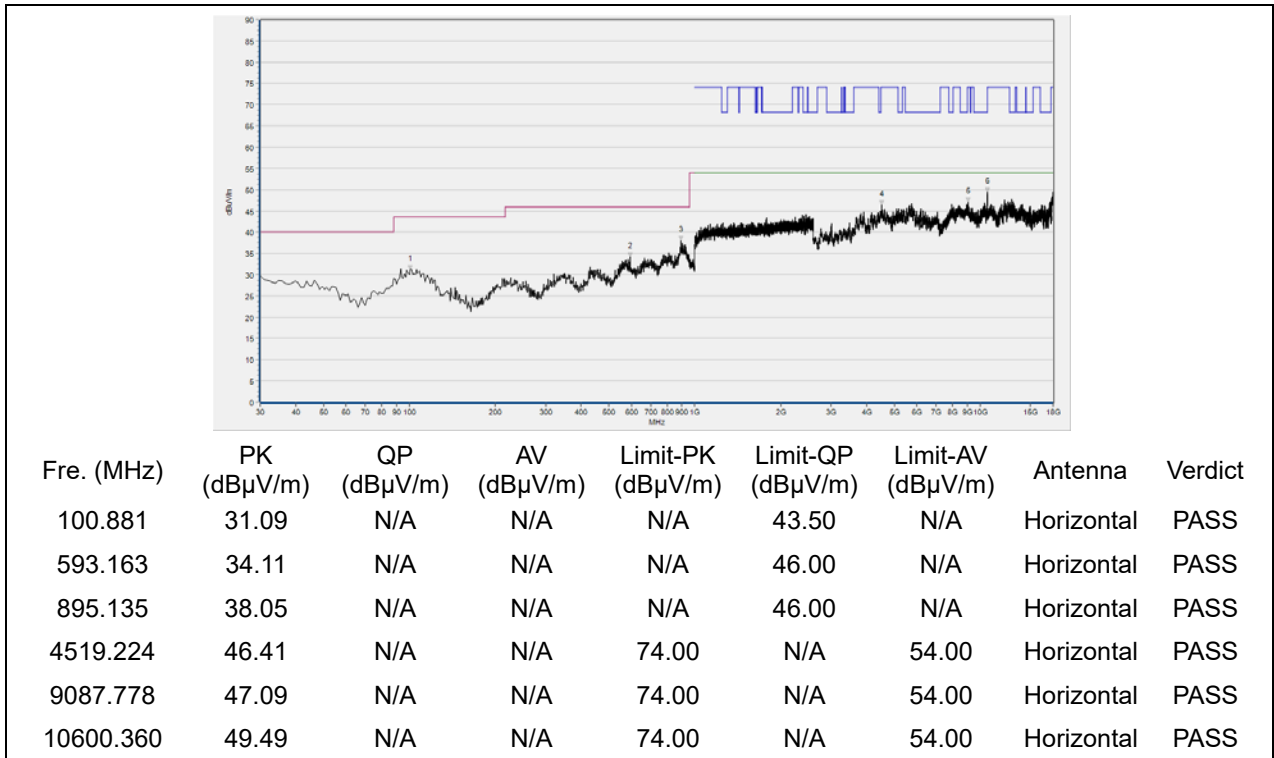


(Antenna Horizontal, 30MHz to 18GHz)

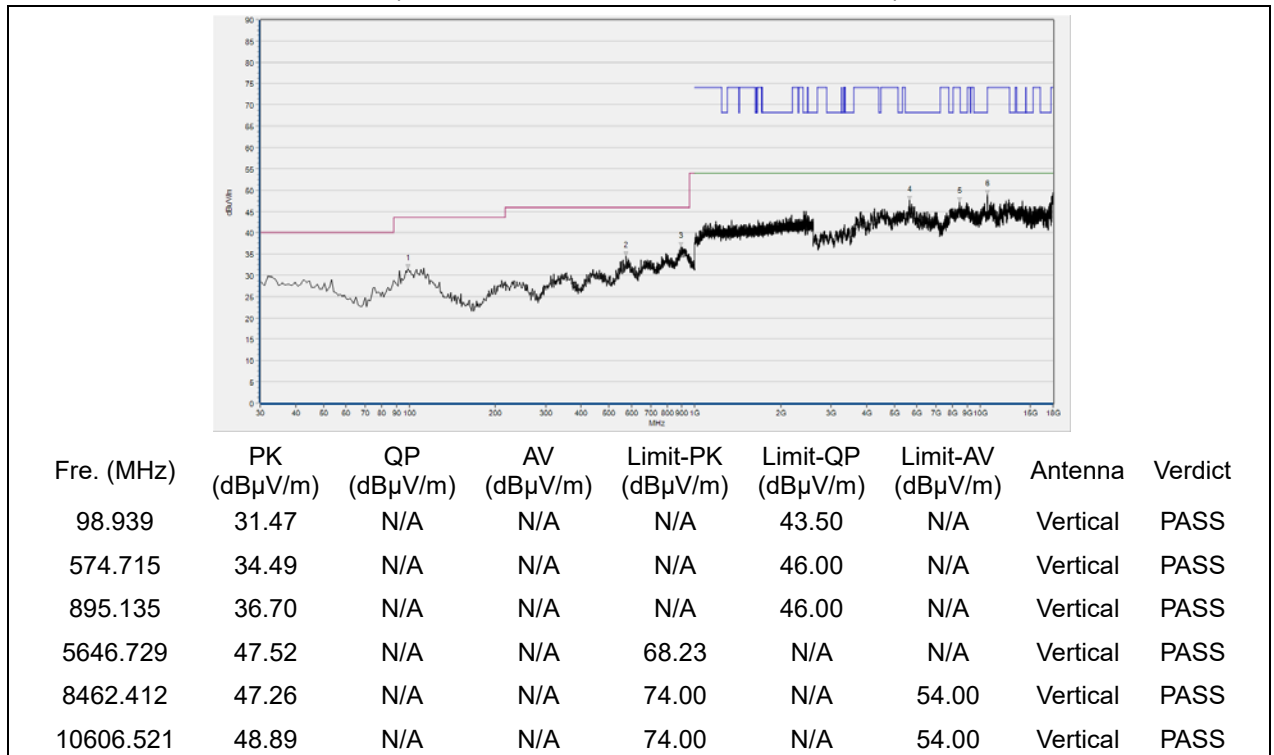


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 60

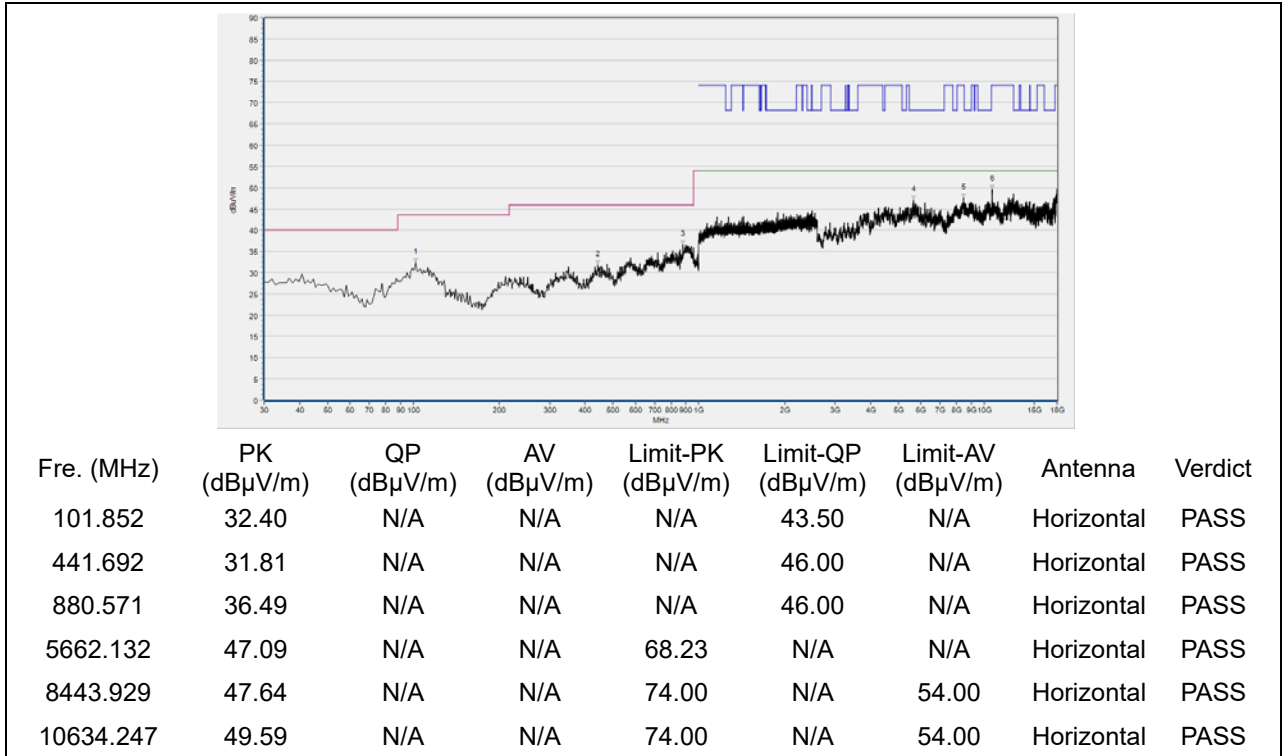


(Antenna Horizontal, 30MHz to 18GHz)

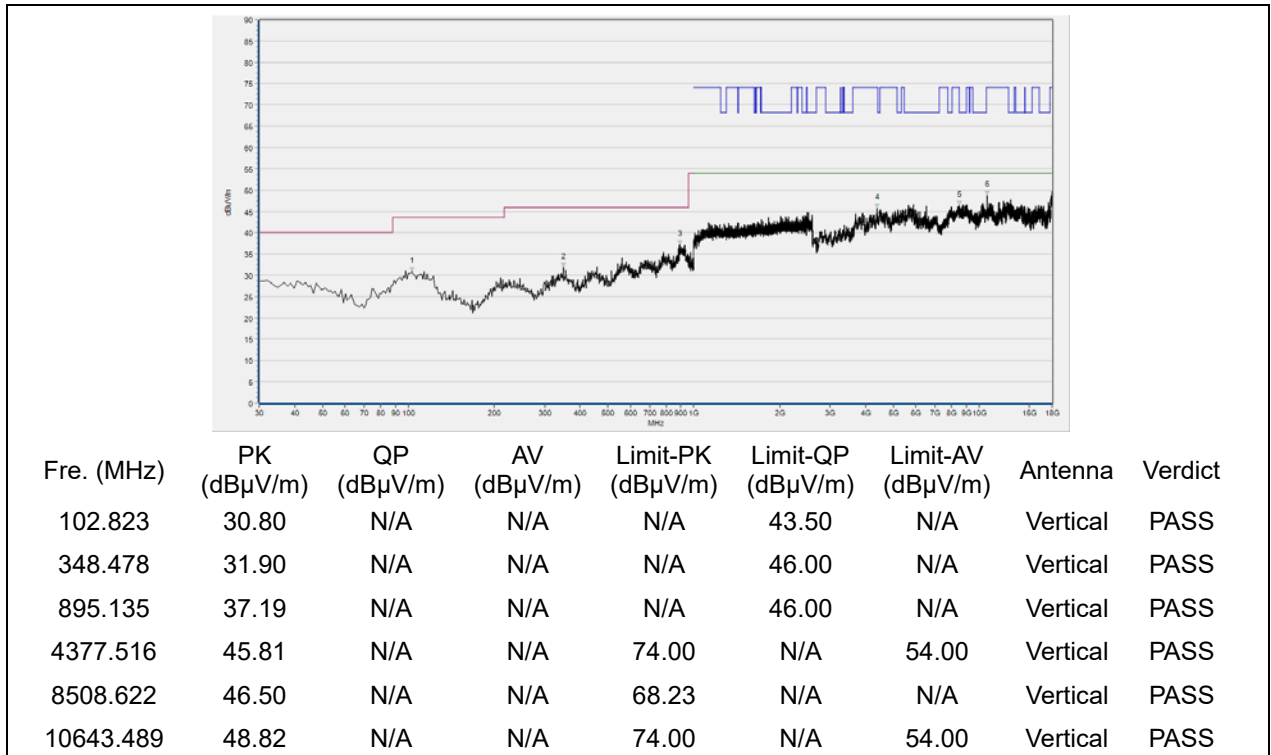


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 64

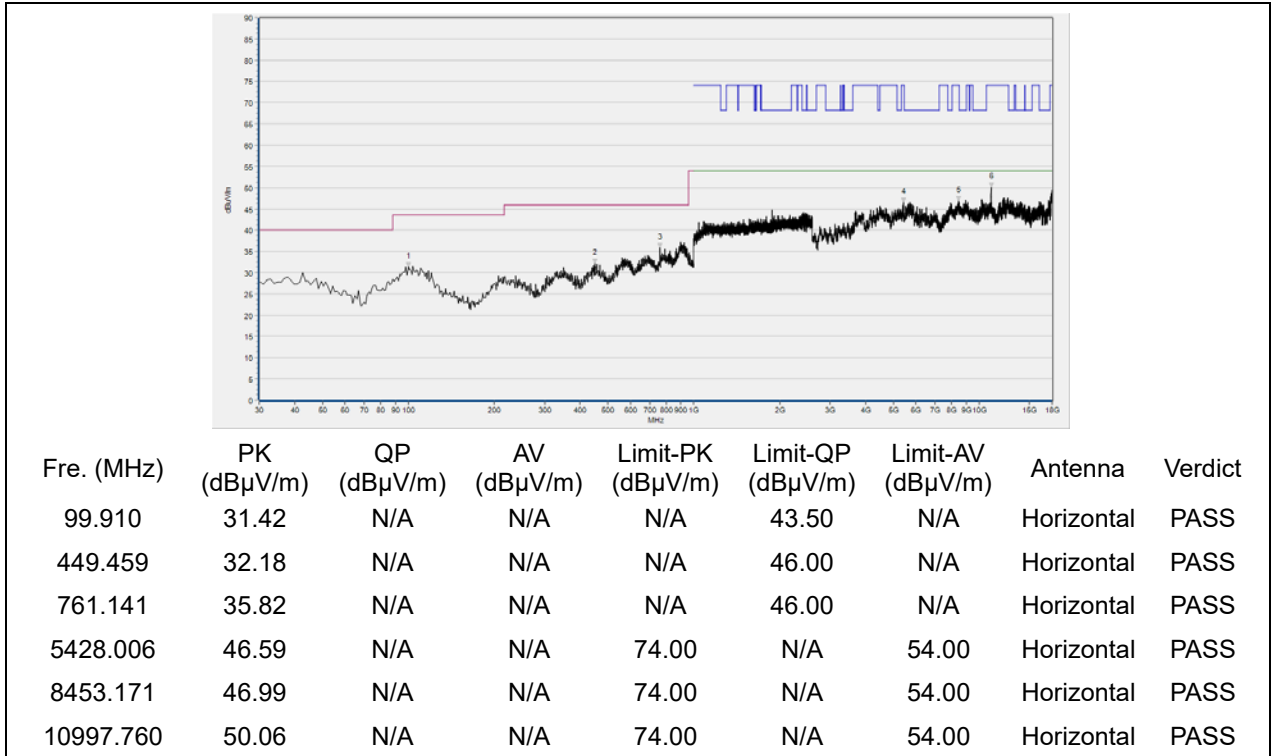


(Antenna Horizontal, 30MHz to 18GHz)

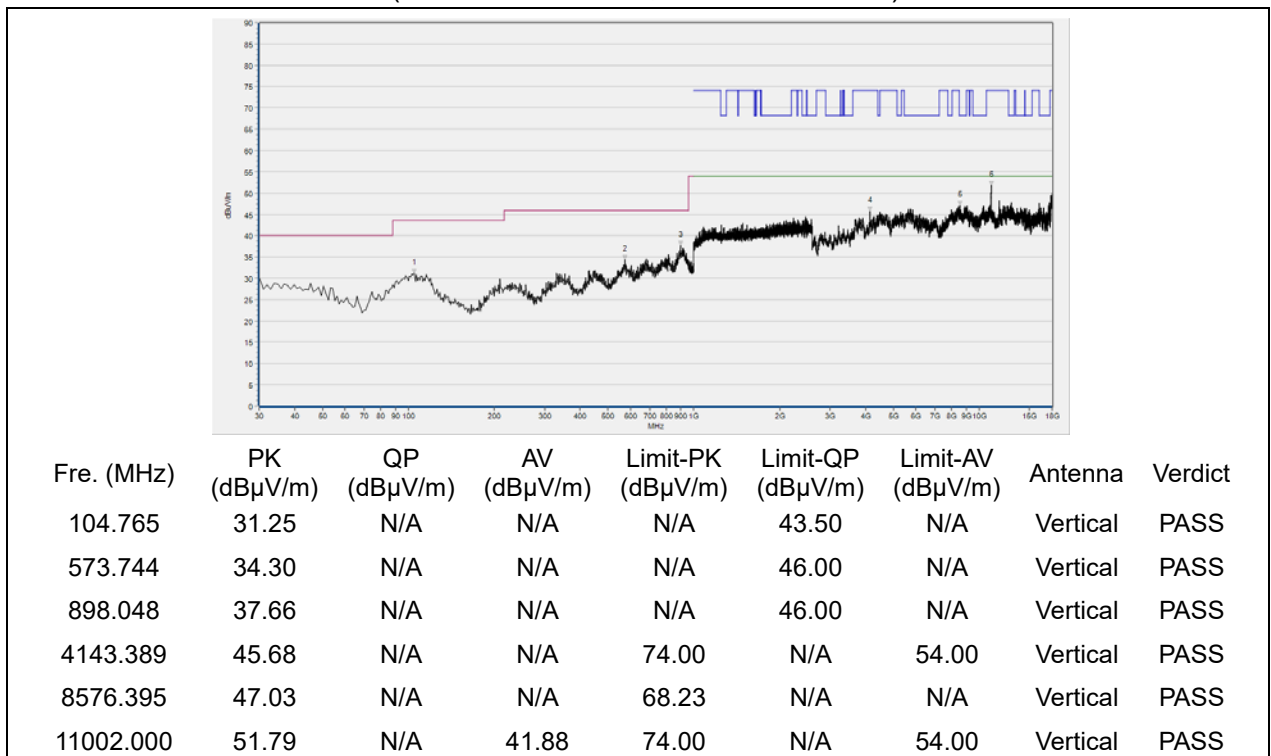


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 100

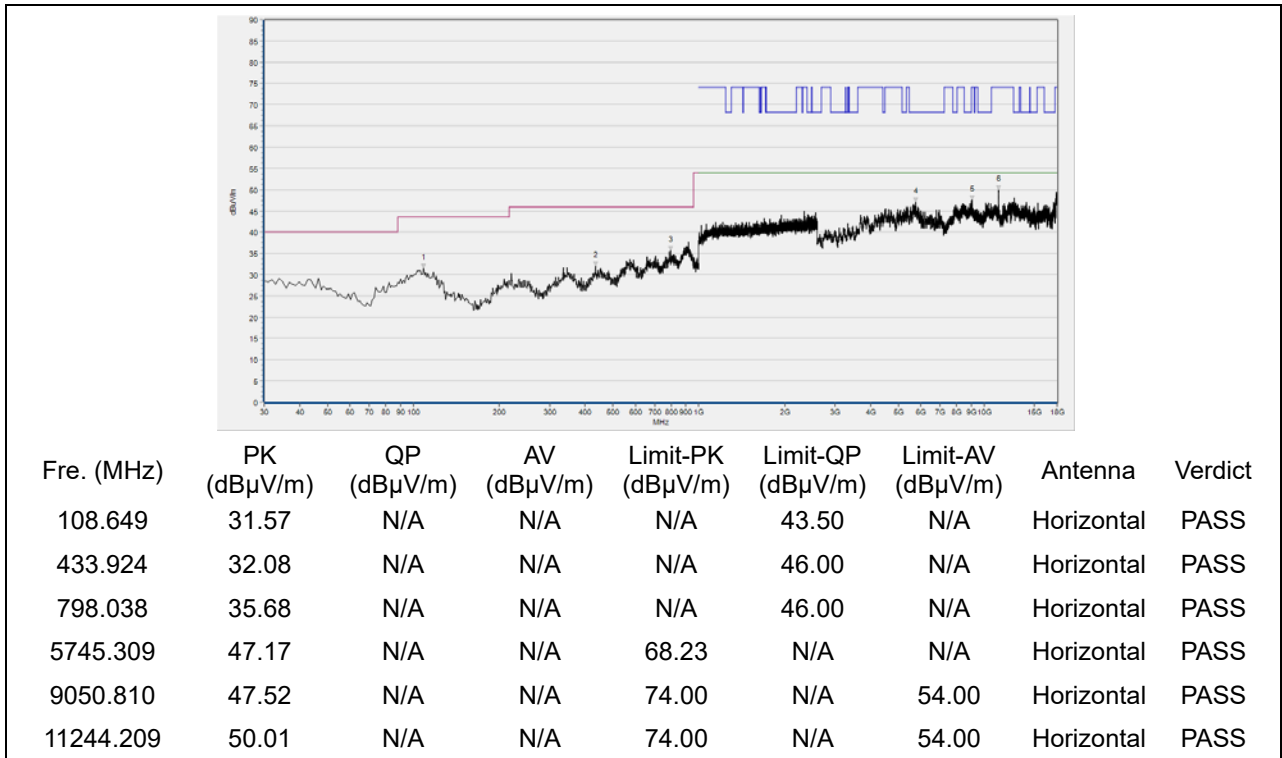


(Antenna Horizontal, 30MHz to 18GHz)

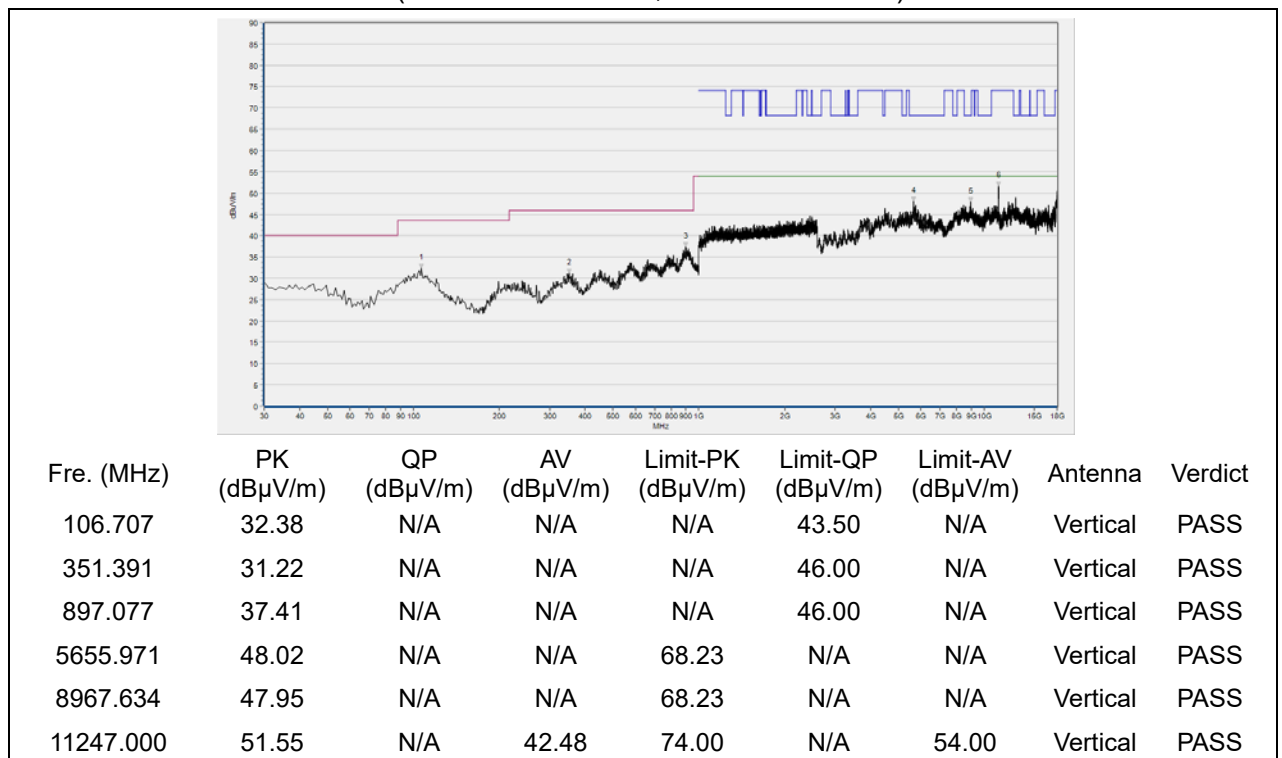


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 120

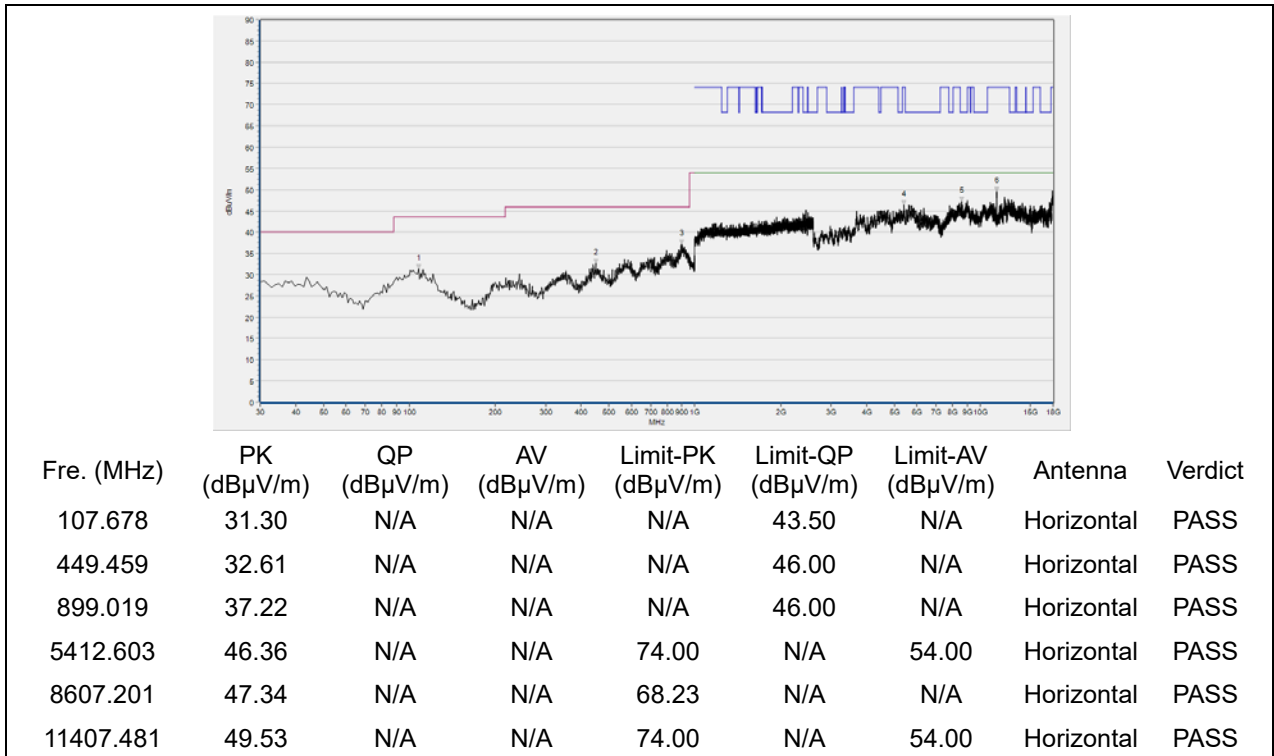


(Antenna Horizontal, 30MHz to 18GHz)

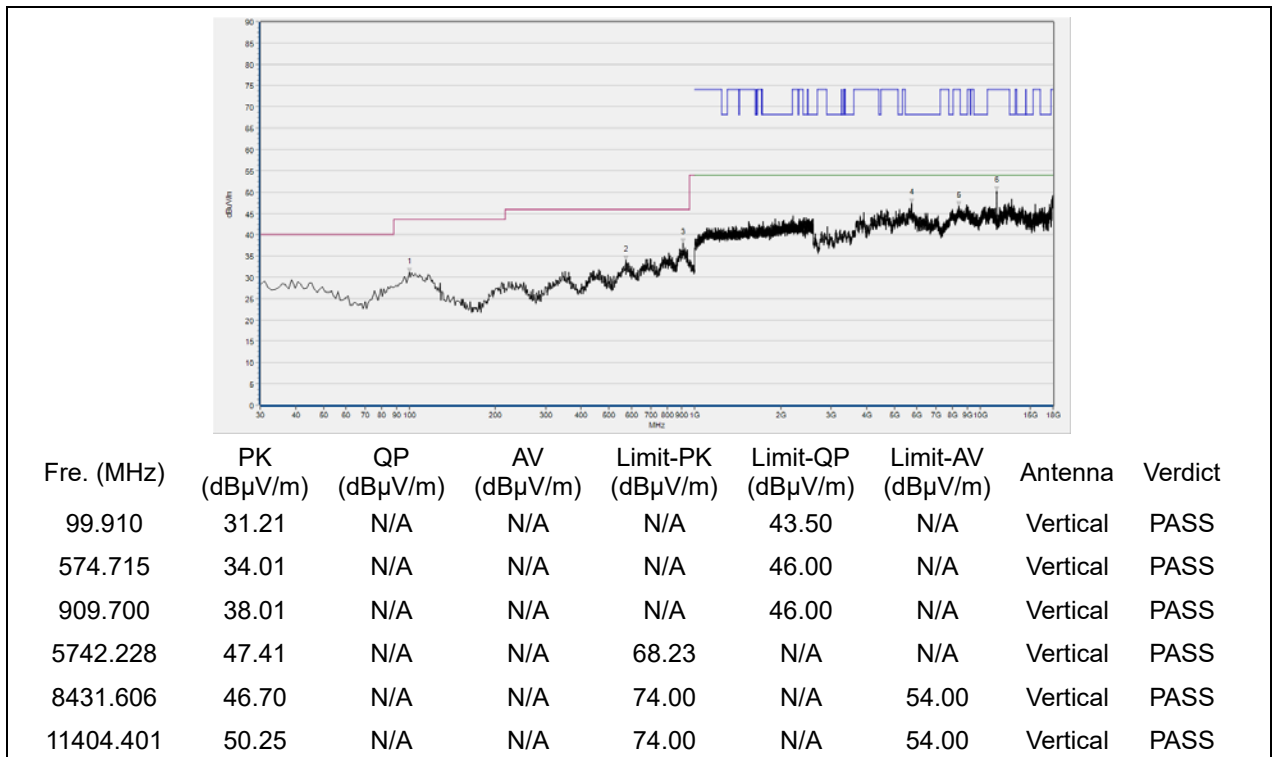


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 144

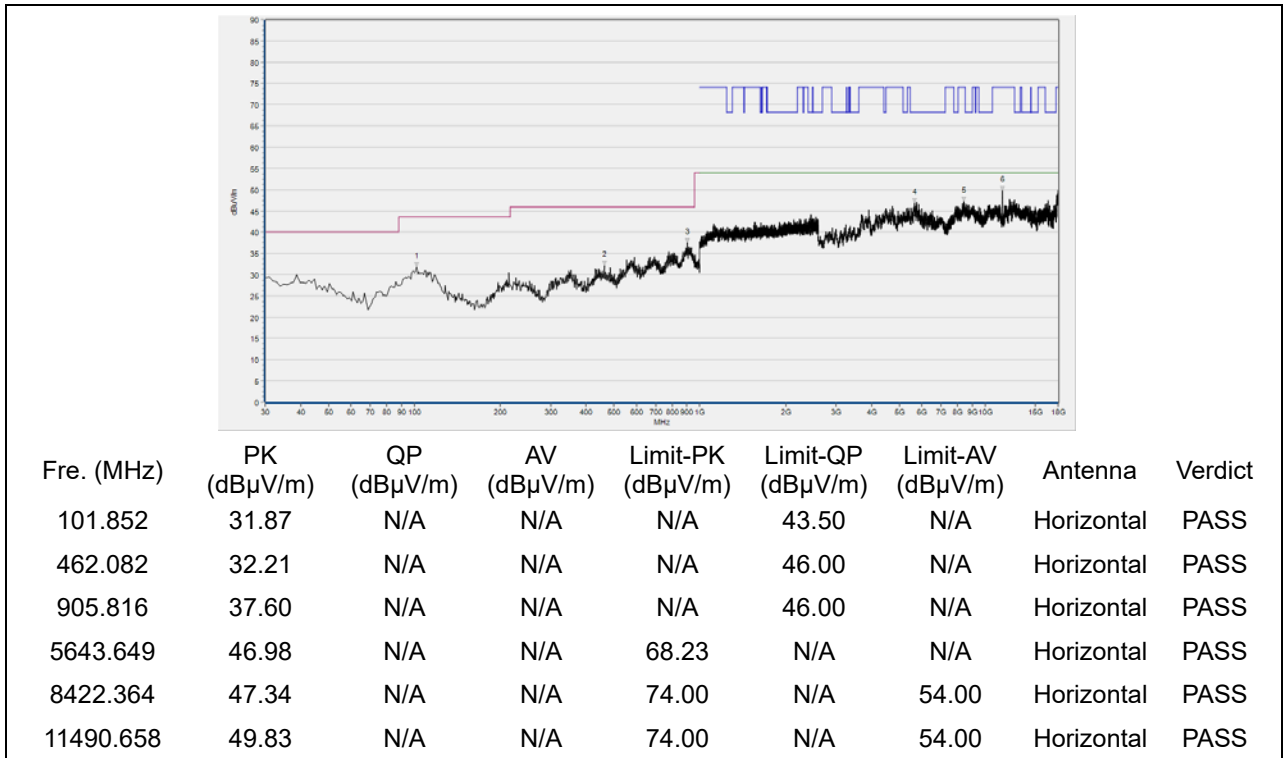


(Antenna Horizontal, 30MHz to 18GHz)

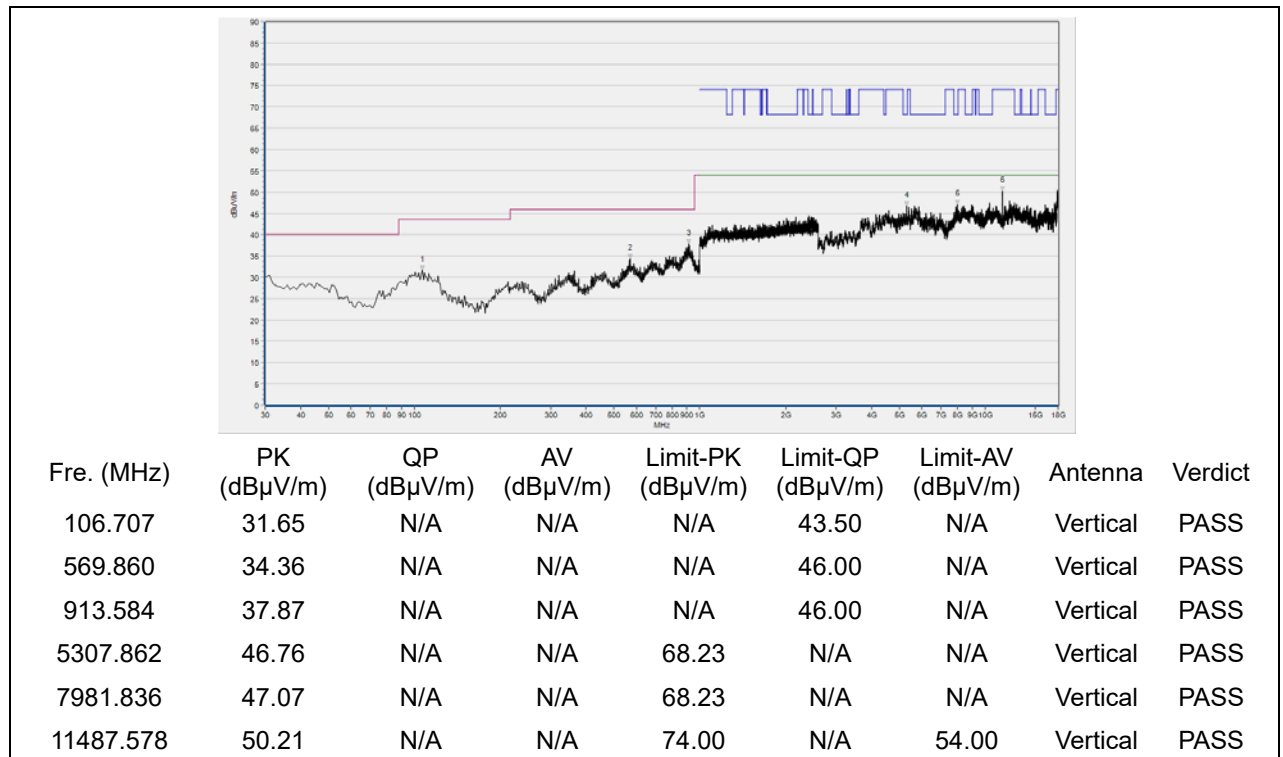


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 149

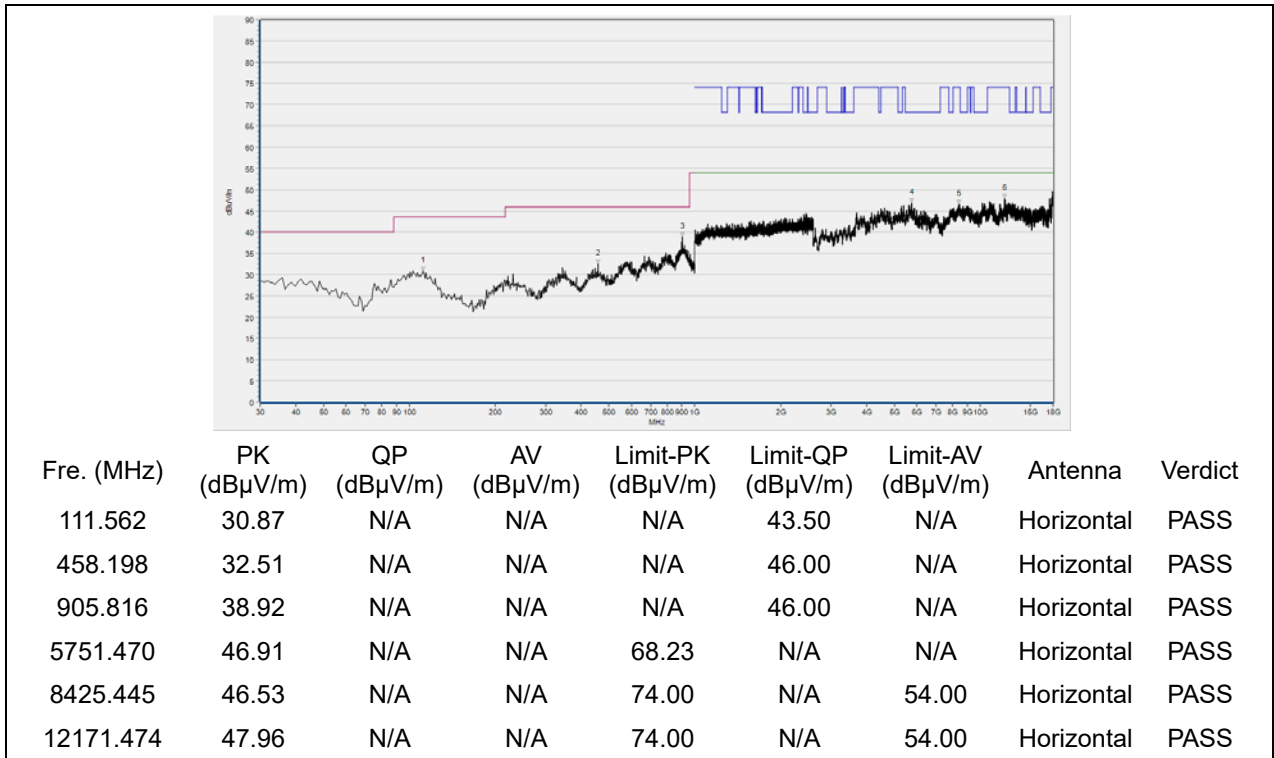


(Antenna Horizontal, 30MHz to 18GHz)

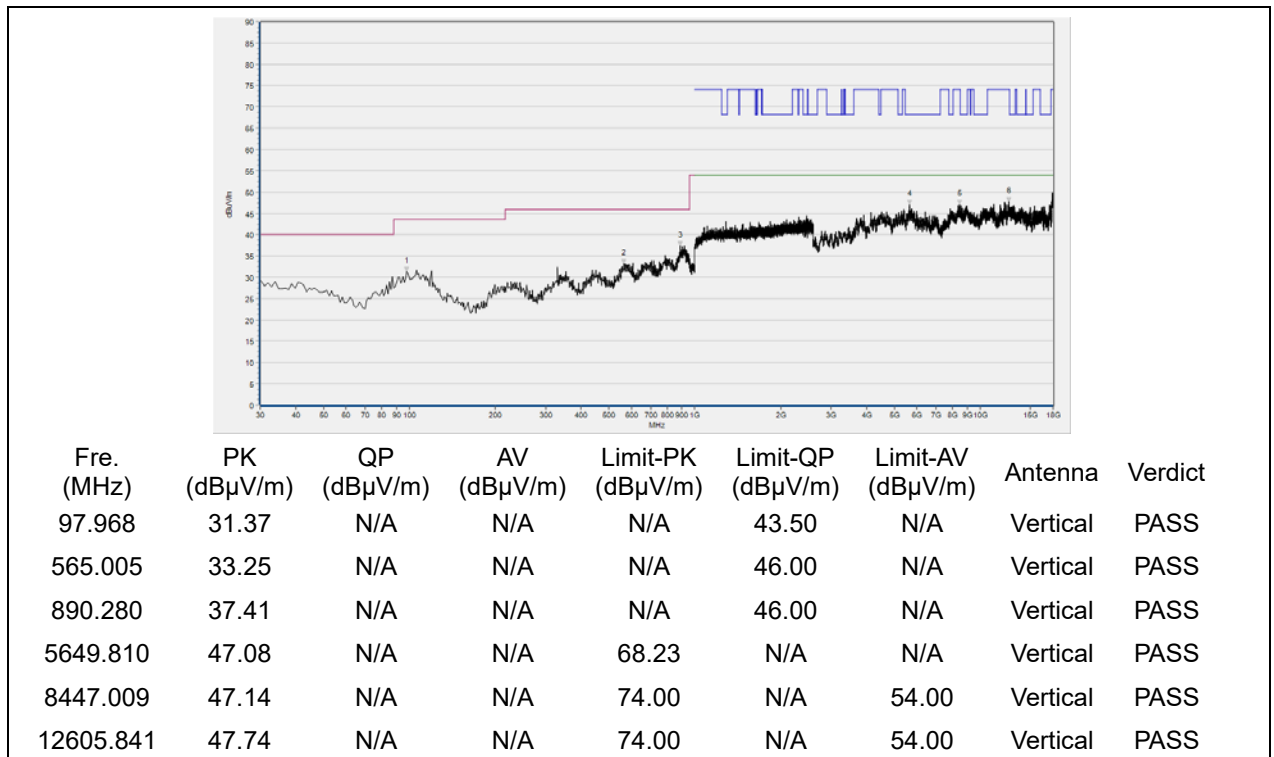


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 157

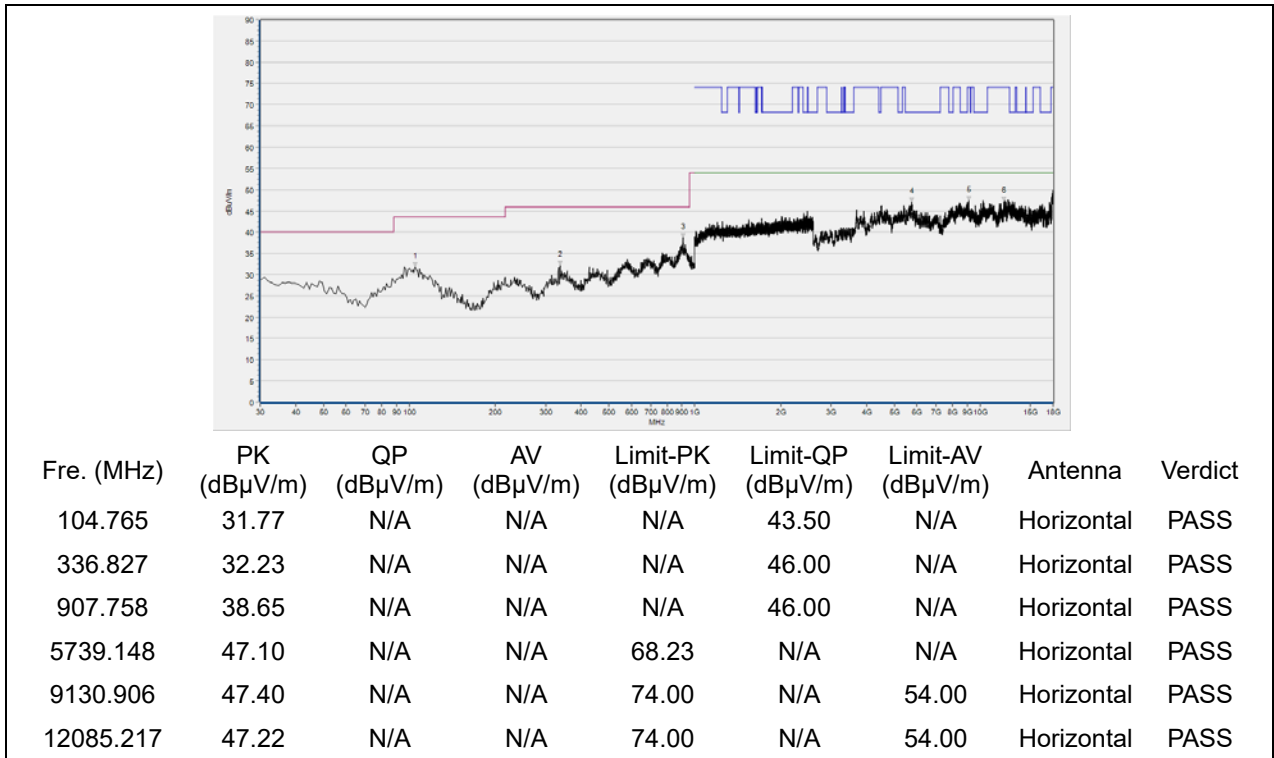


(Antenna Horizontal, 30MHz to 18GHz)

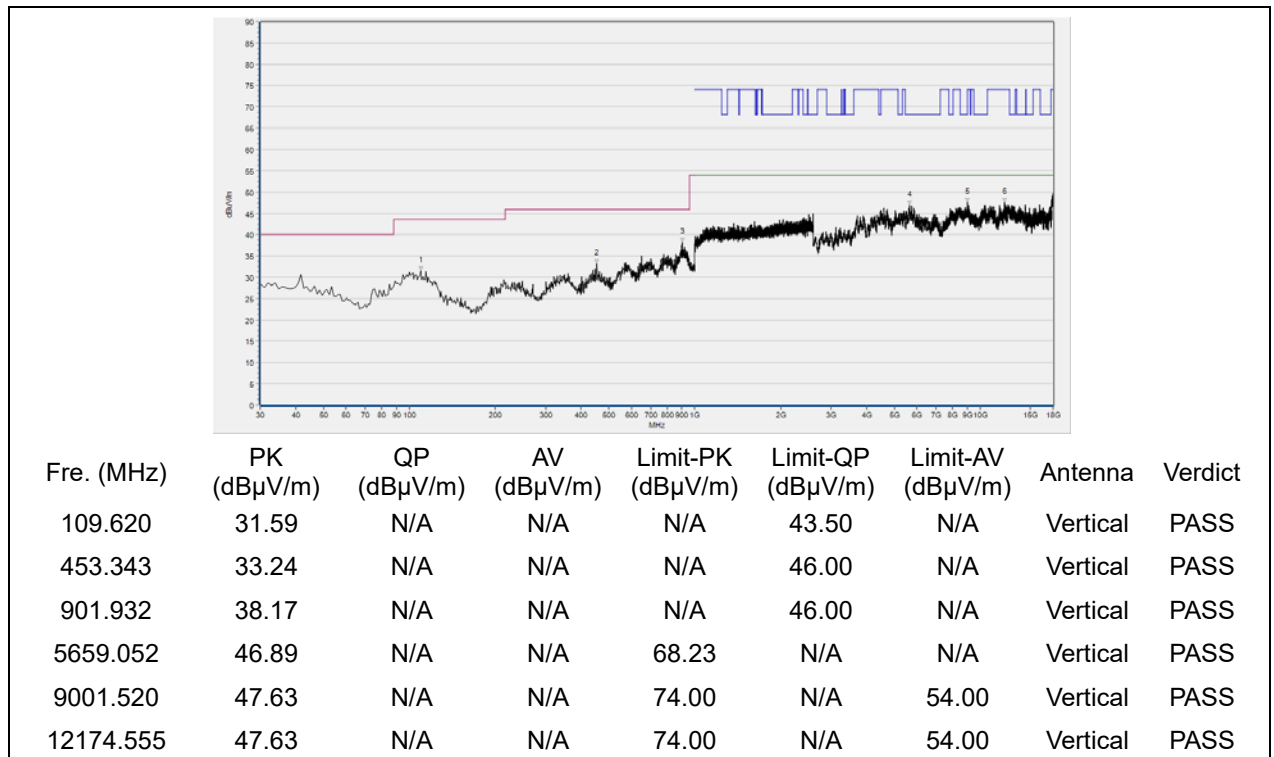


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 165



(Antenna Horizontal, 30MHz to 18GHz)

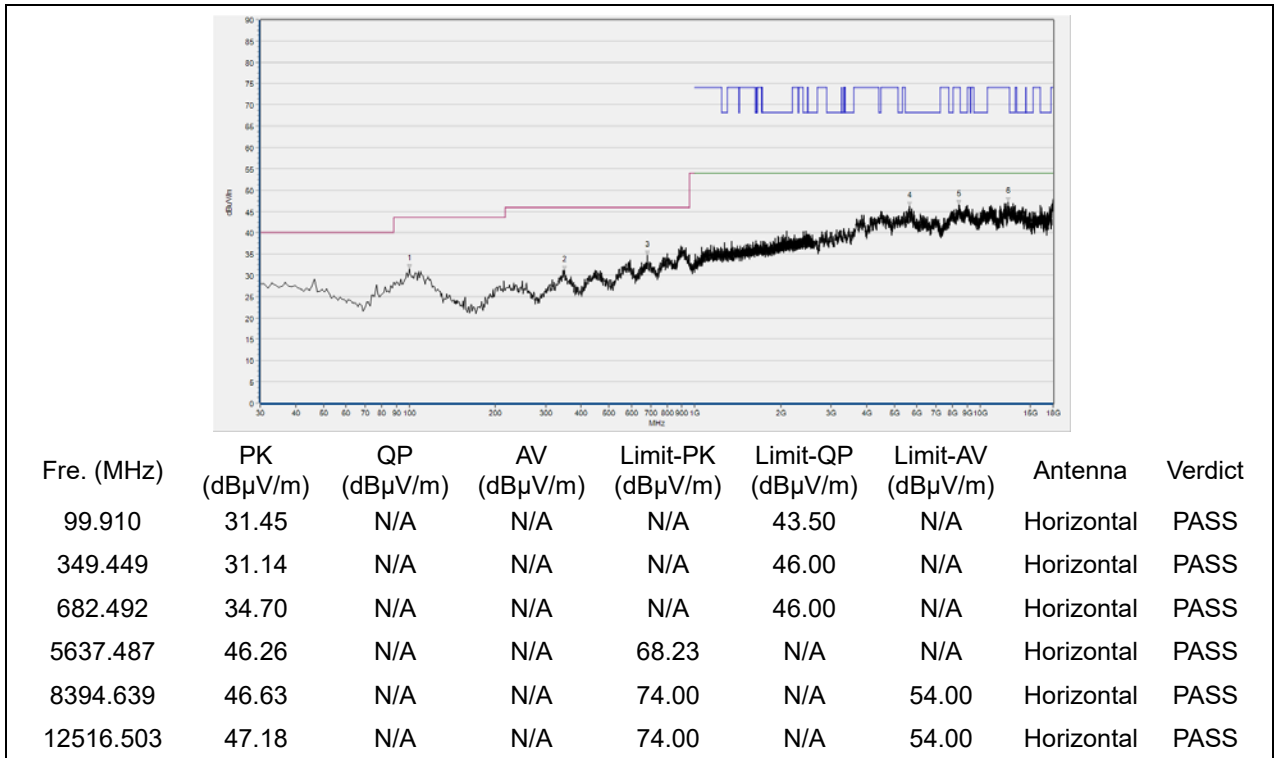


(Antenna Vertical, 30MHz to 18GHz)

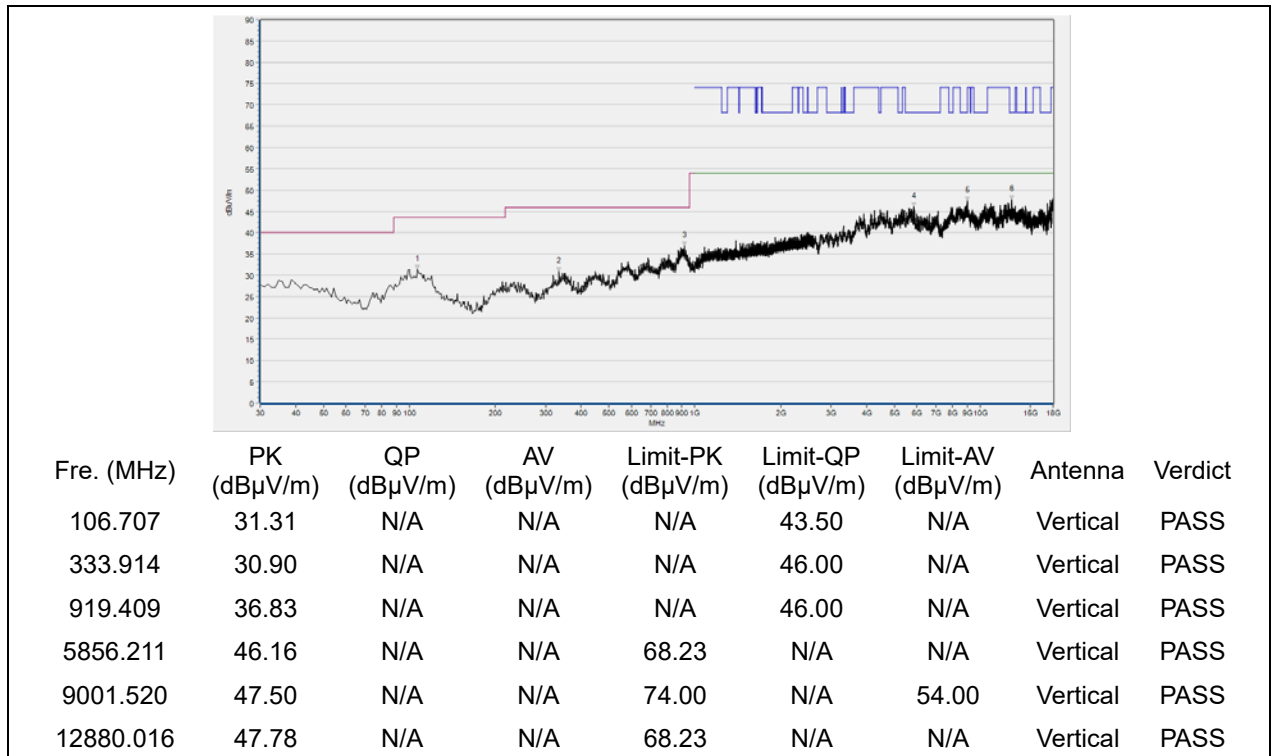


802.11n (HT40) mode

Plot for Channel 38

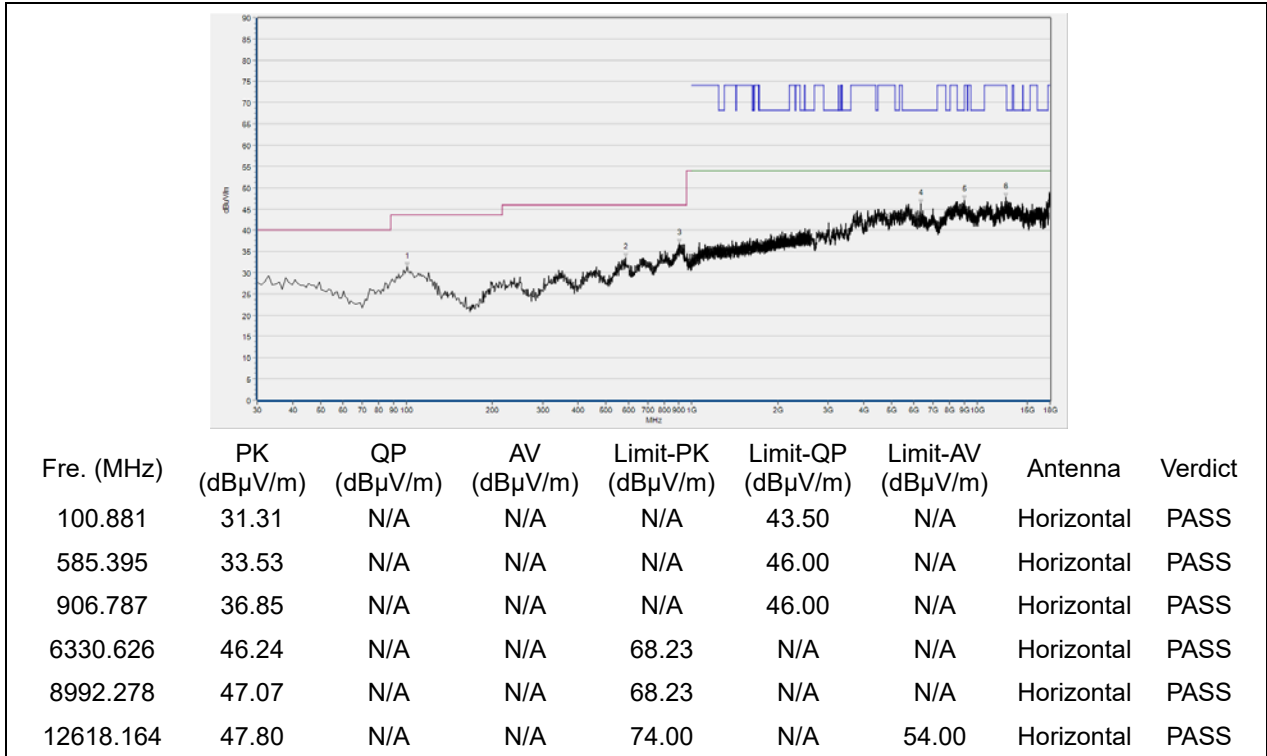


(Antenna Horizontal, 30MHz to 18GHz)

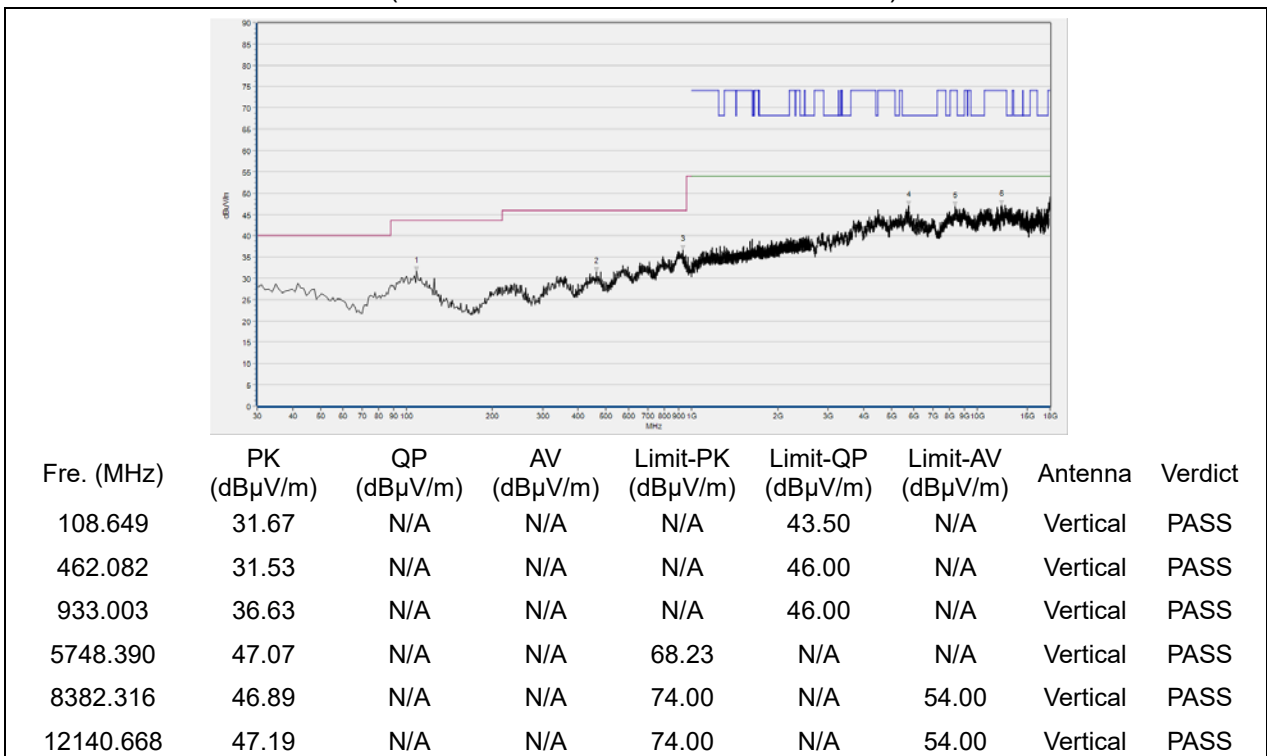


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 46

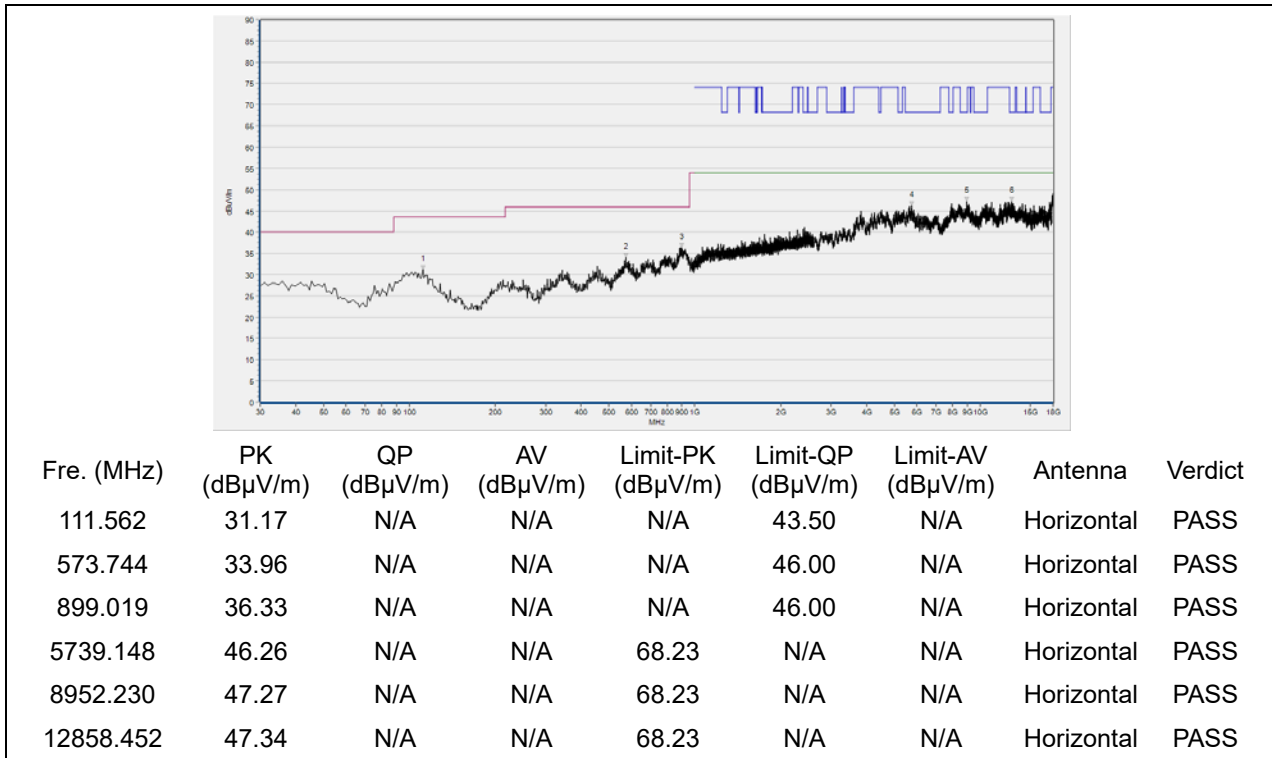


(Antenna Horizontal, 30MHz to 18GHz)

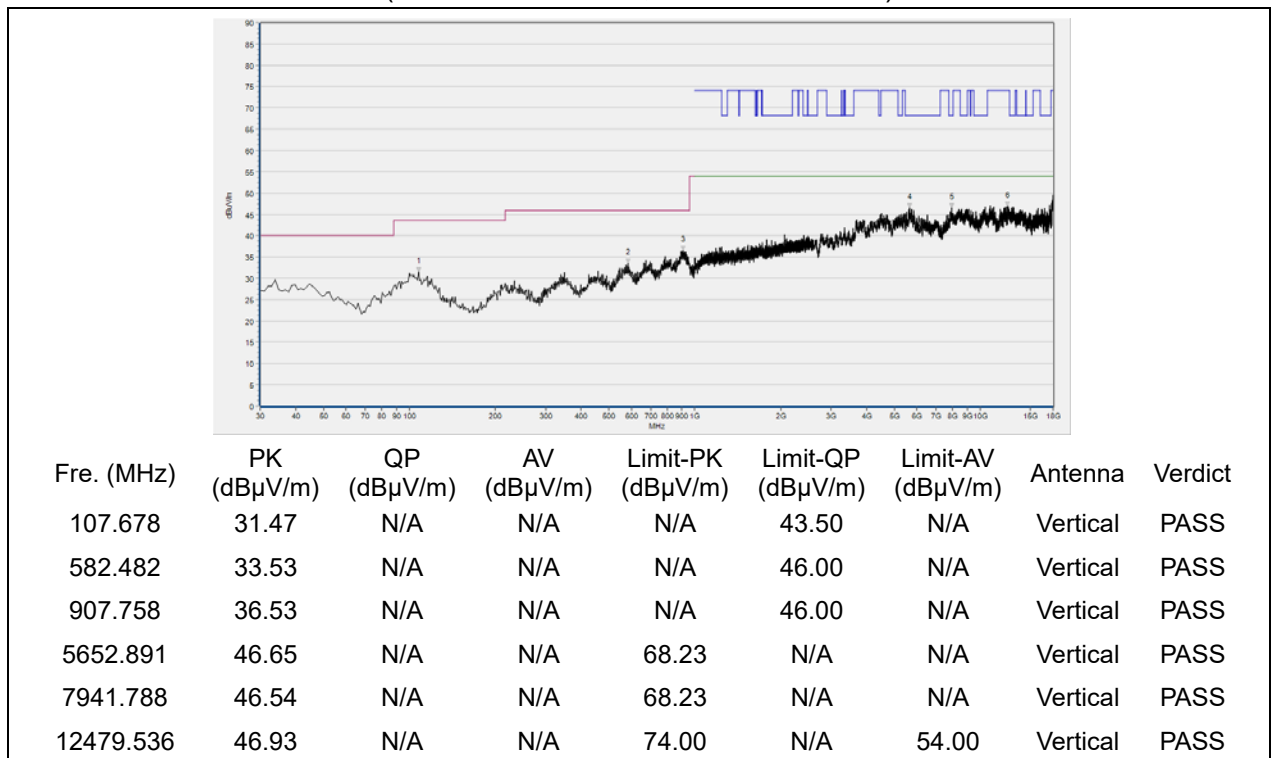


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 54

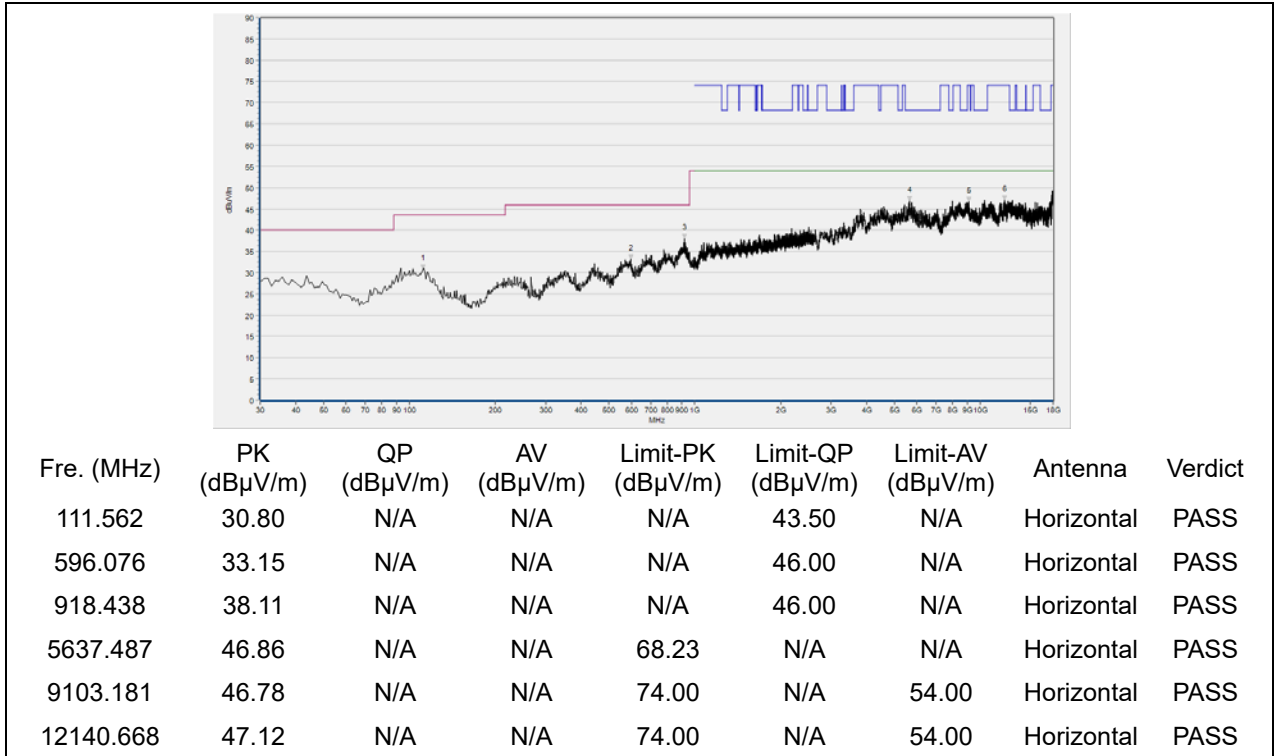


(Antenna Horizontal, 30MHz to 18GHz)

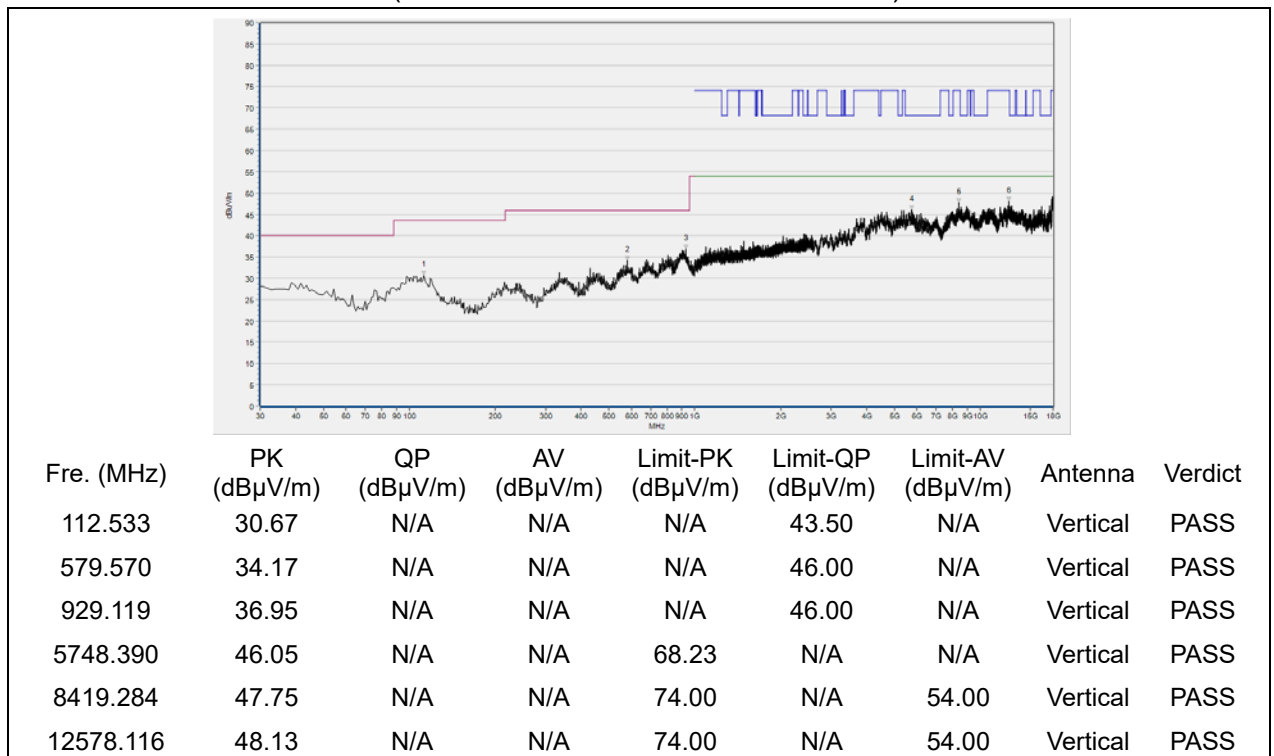


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 62

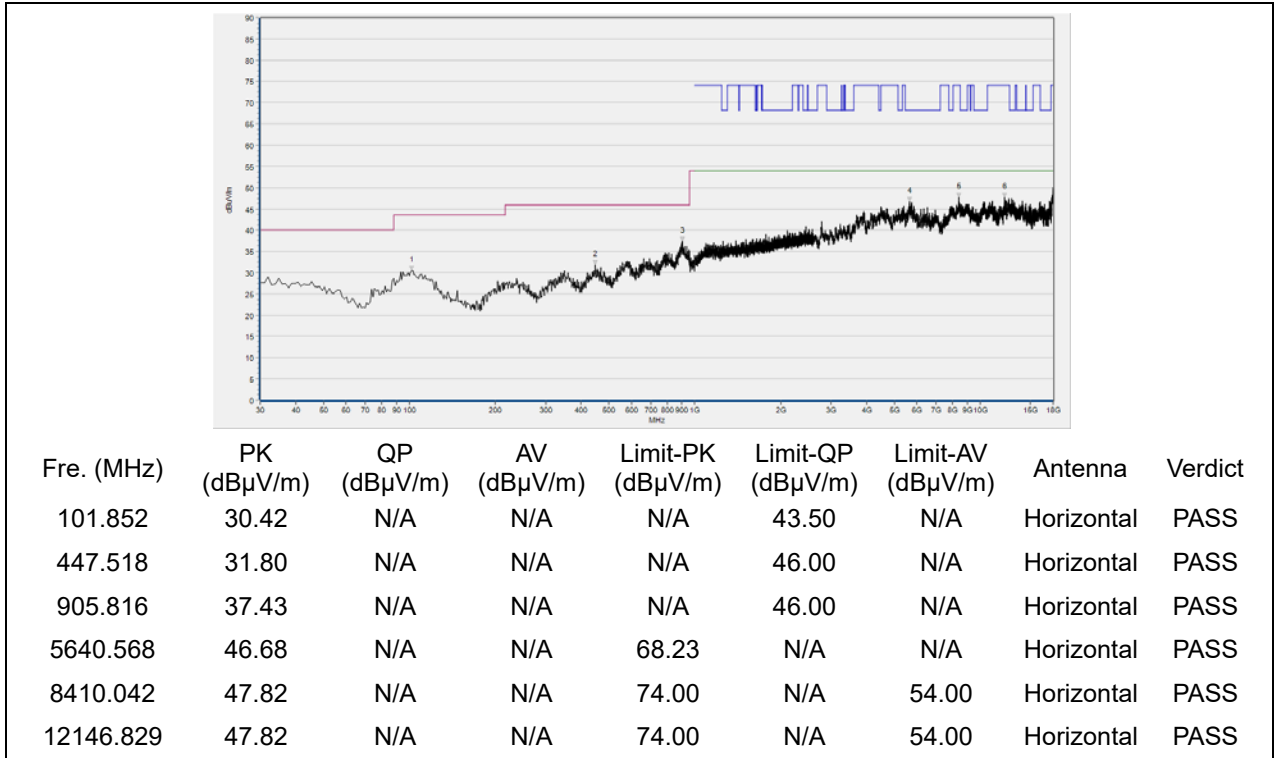


(Antenna Horizontal, 30MHz to 18GHz)

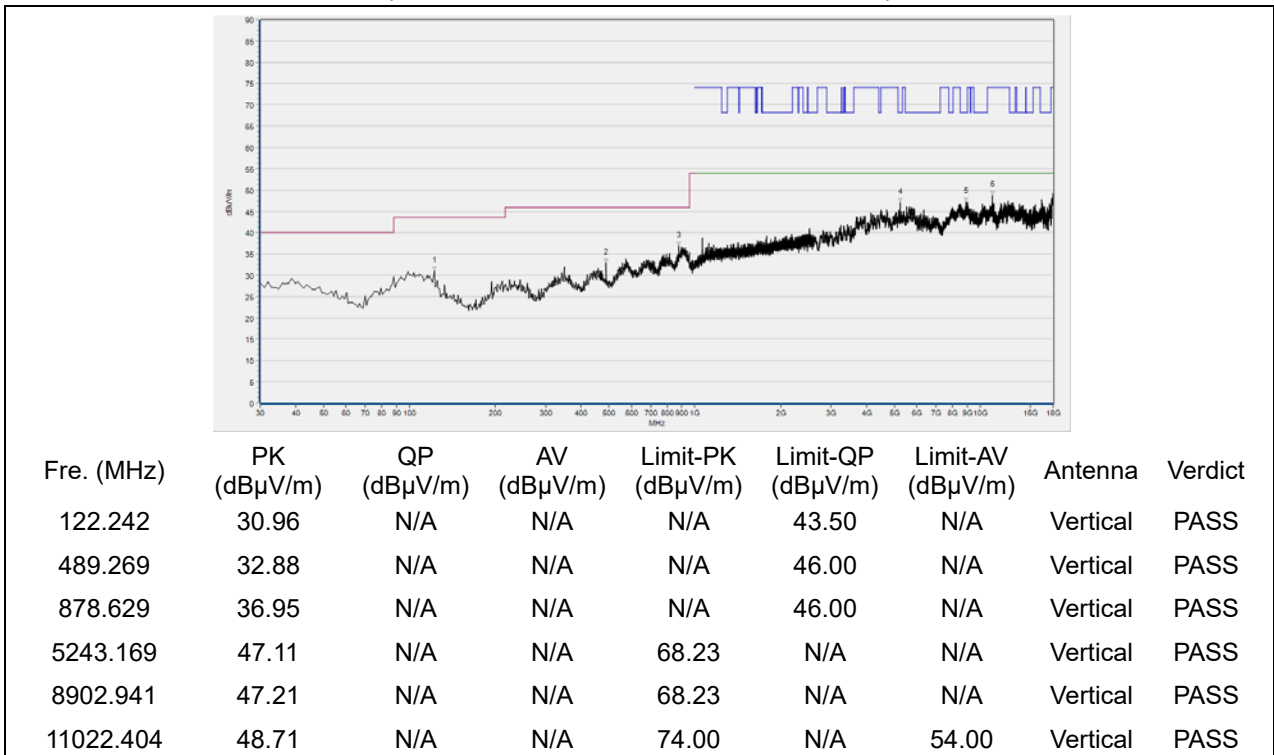


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 102

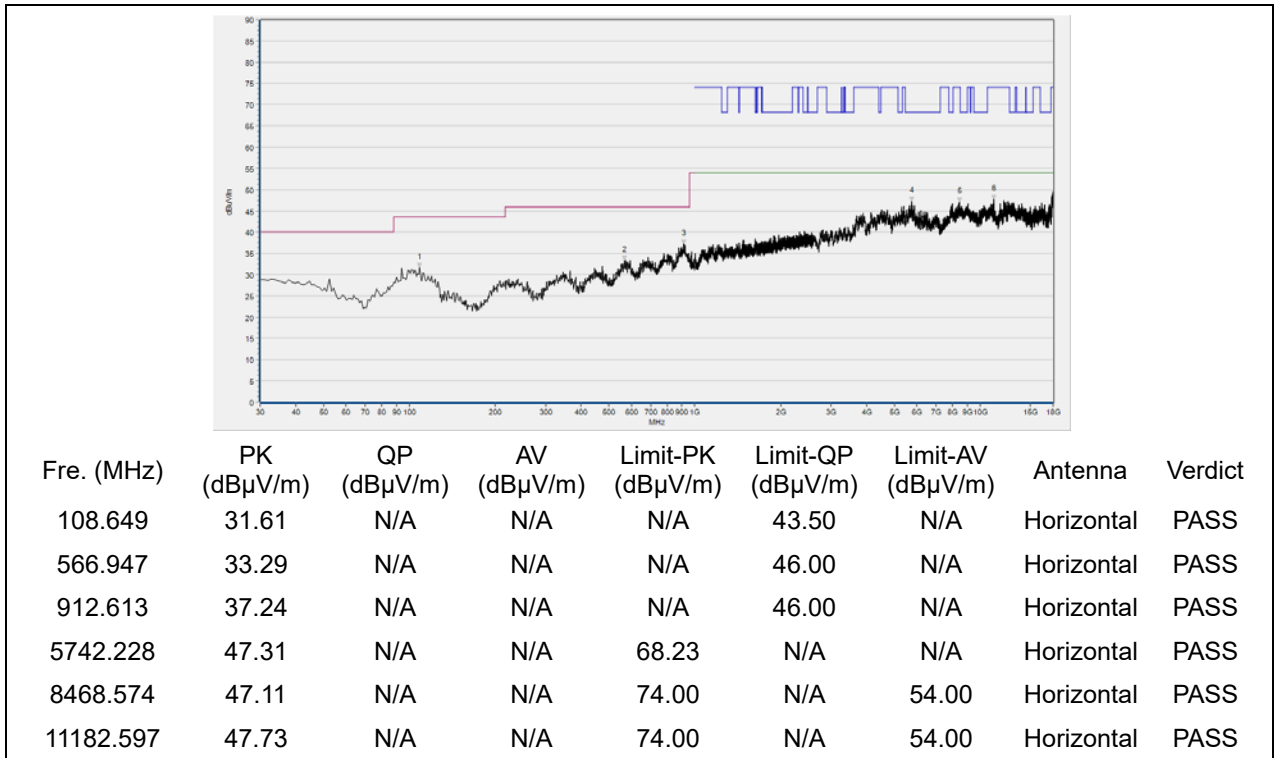


(Antenna Horizontal, 30MHz to 18GHz)

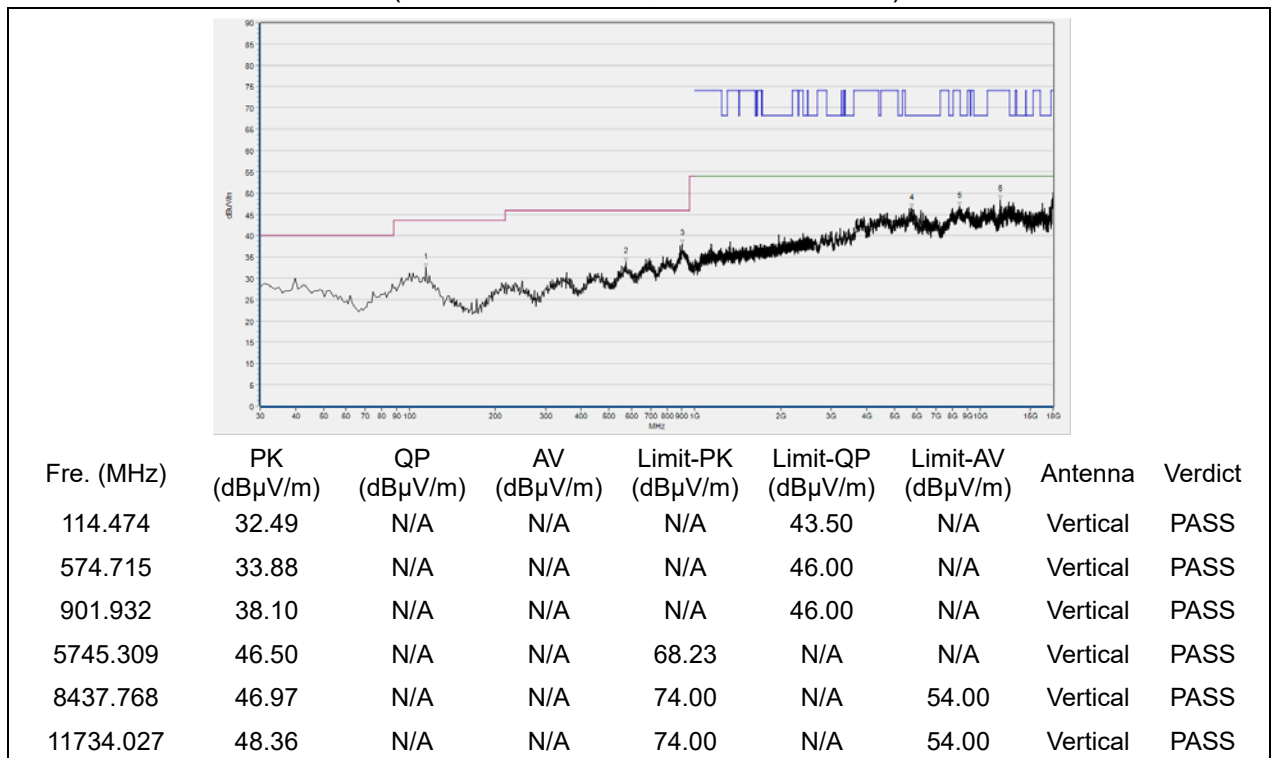


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 126

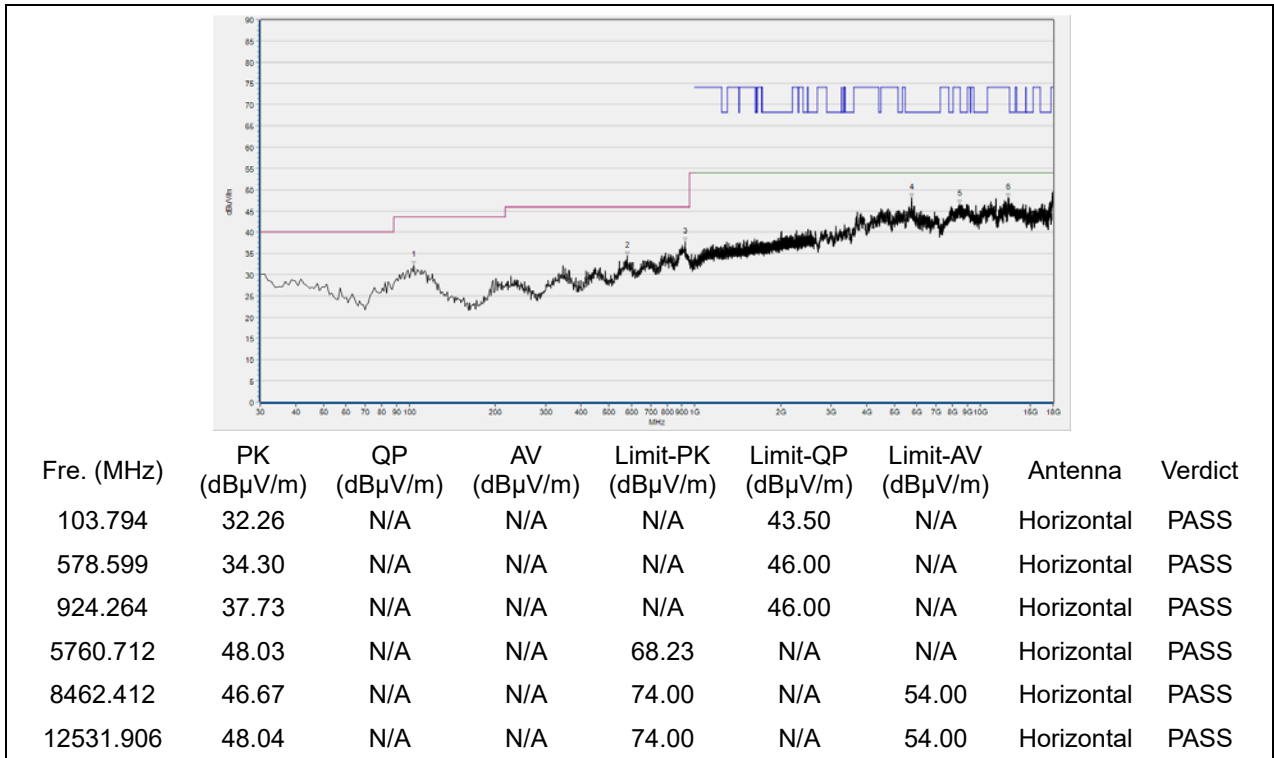


(Antenna Horizontal, 30MHz to 18GHz)

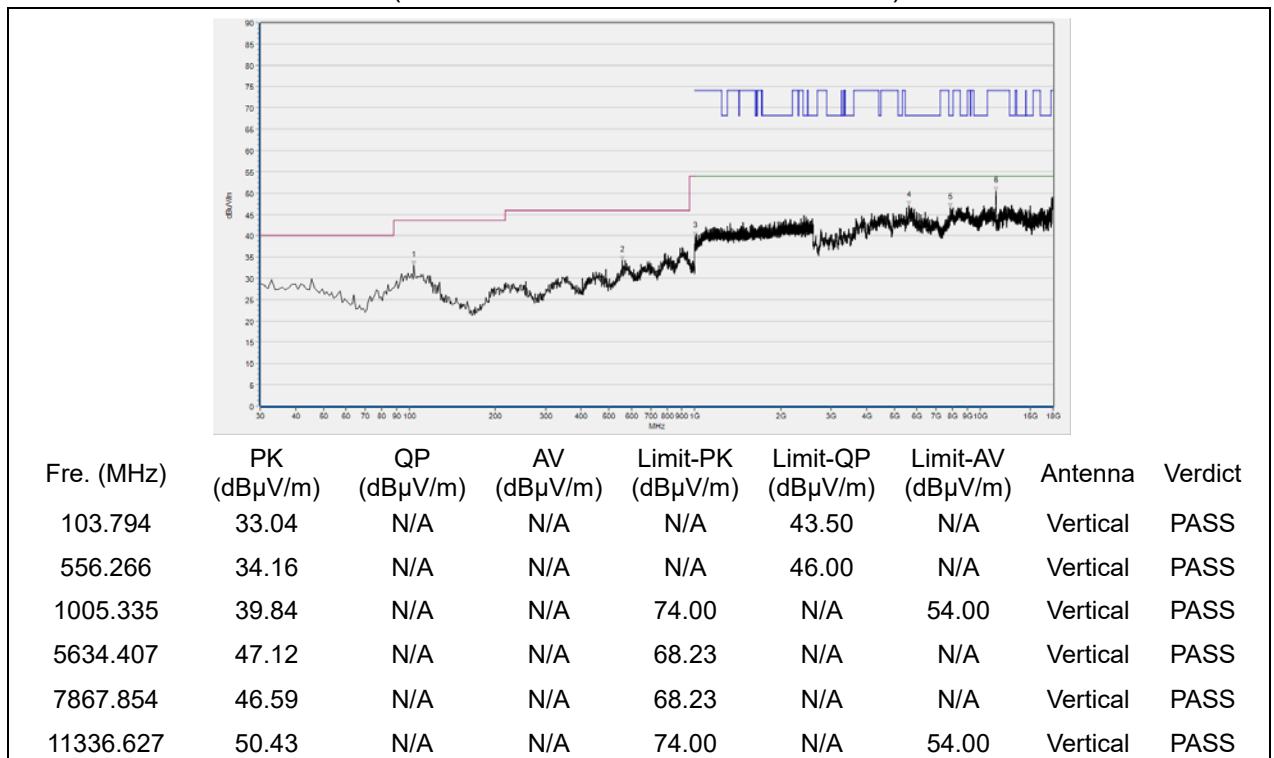


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 142

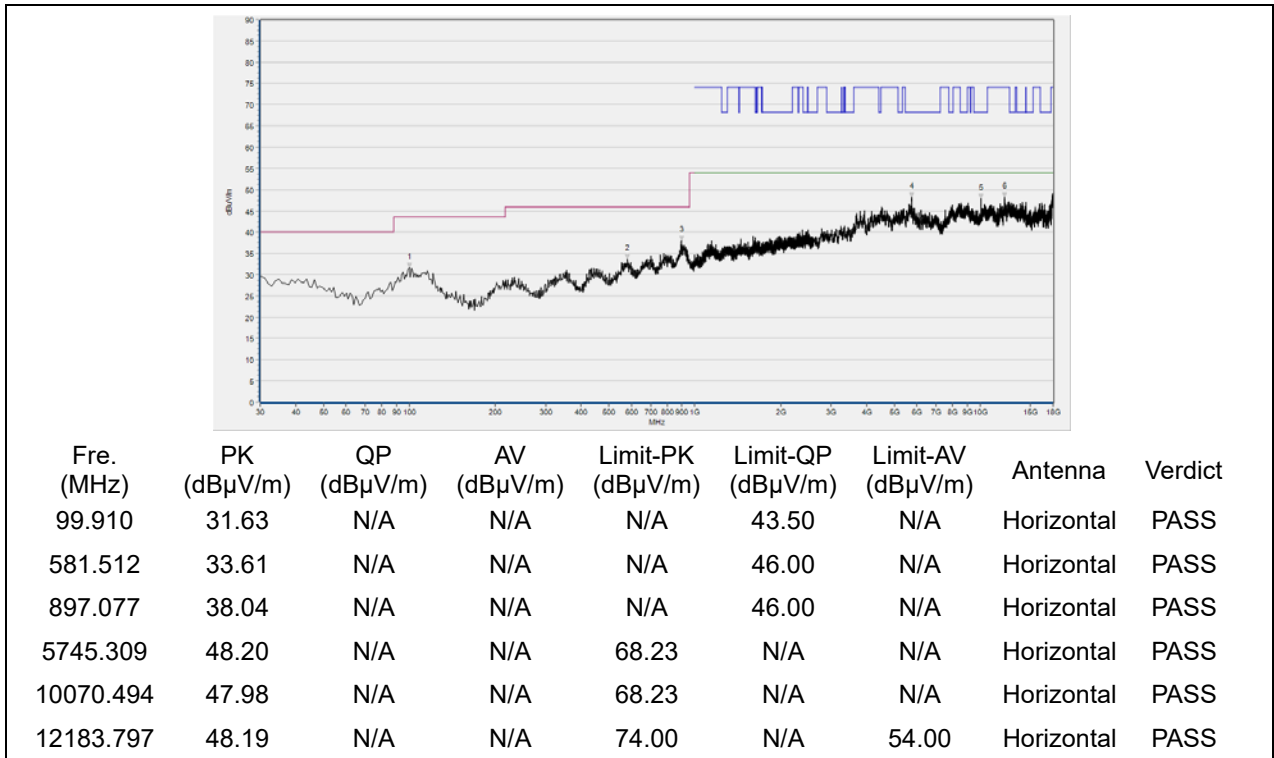


(Antenna Horizontal, 30MHz to 18GHz)

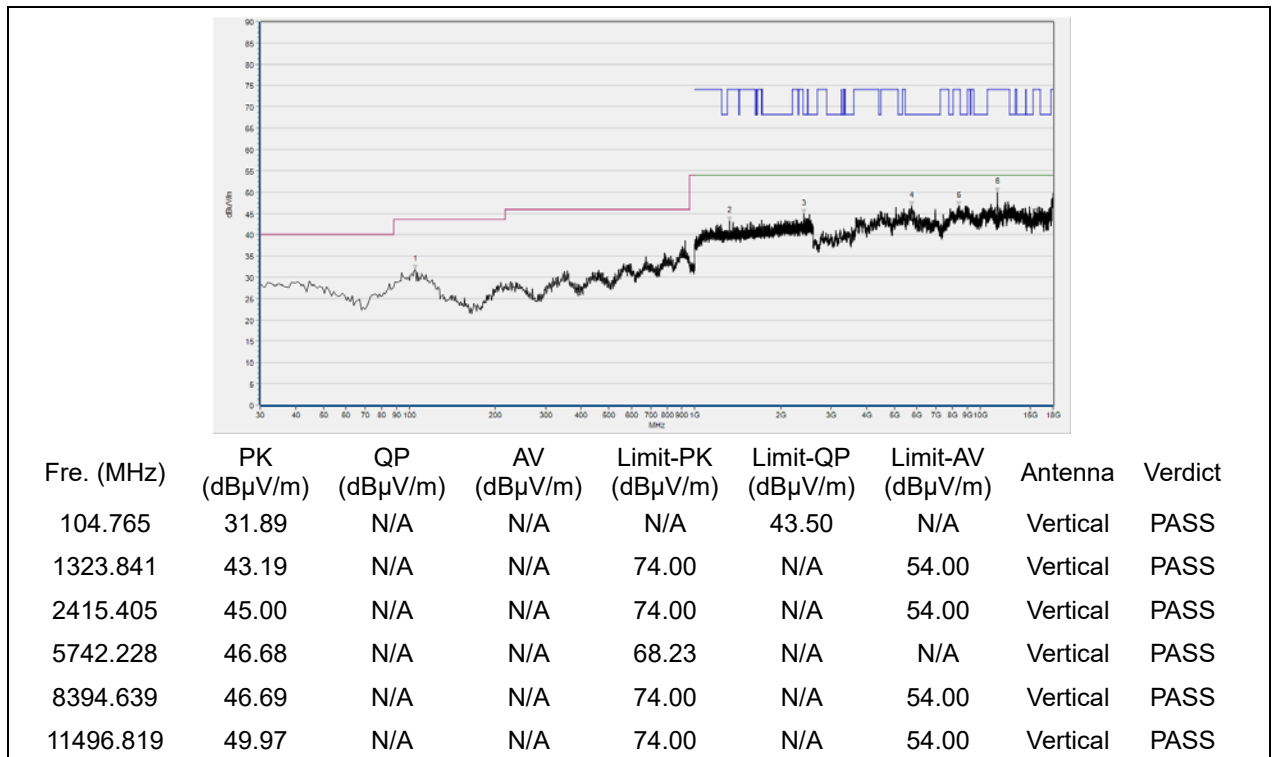


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 151

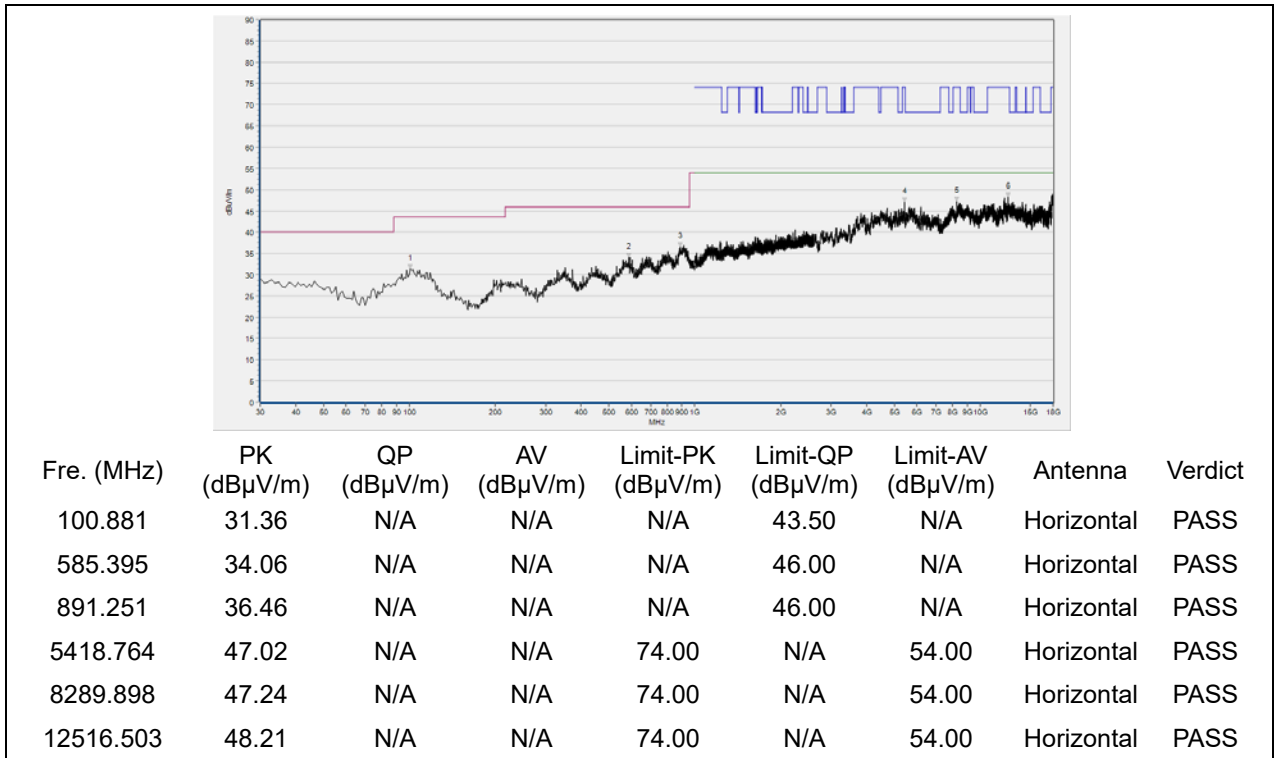


(Antenna Horizontal, 30MHz to 18GHz)

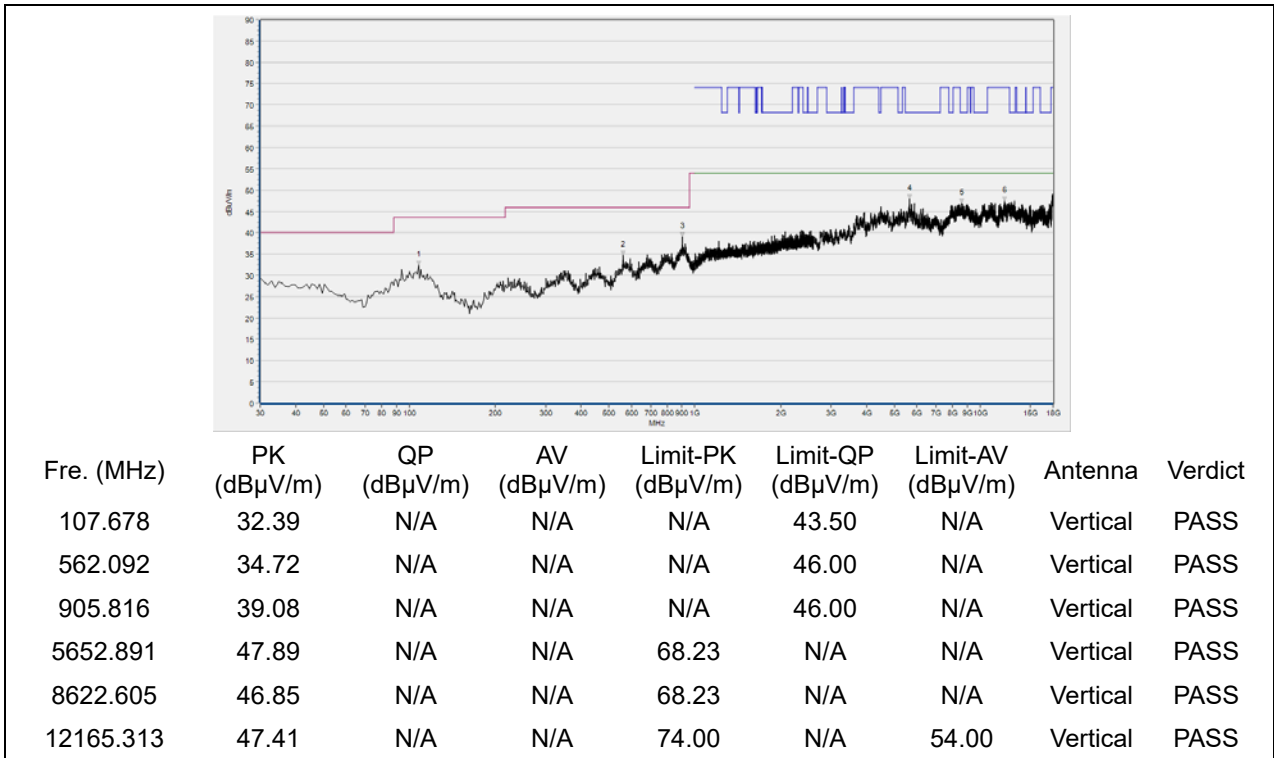


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 159



(Antenna Horizontal, 30MHz to 18GHz)

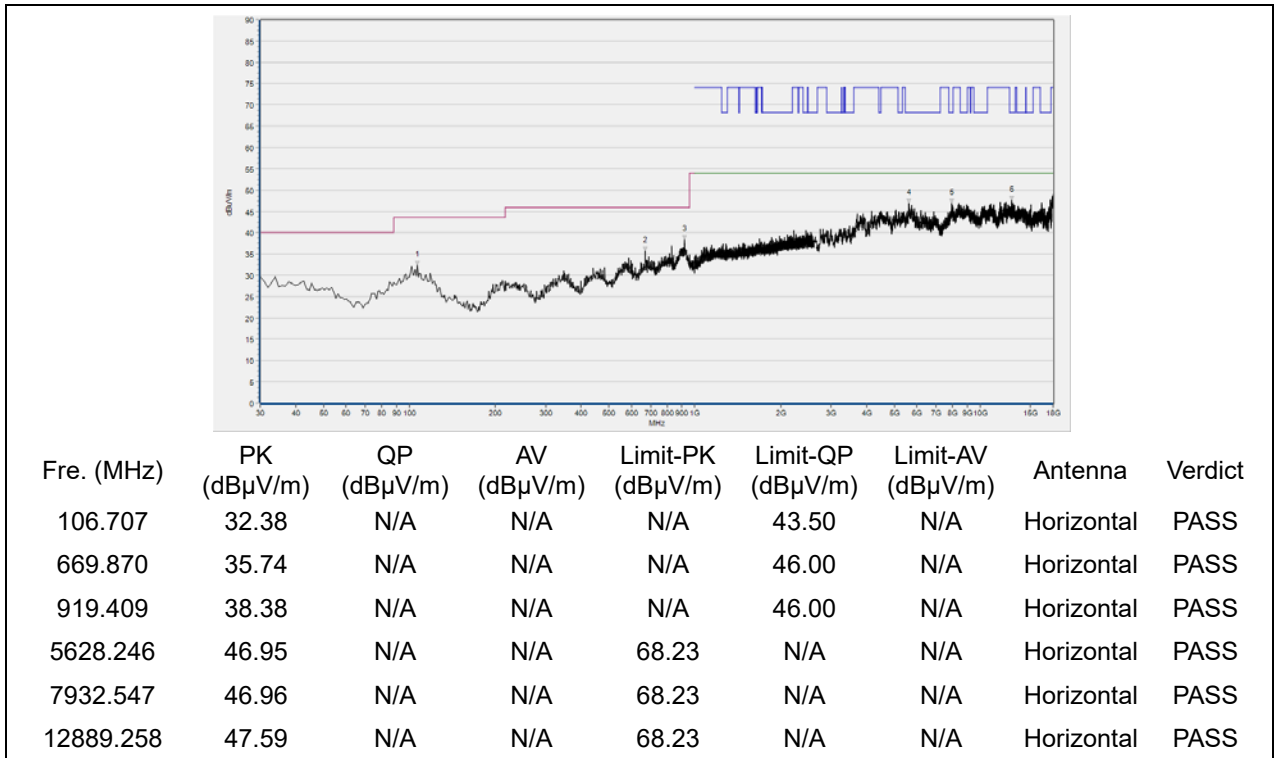


(Antenna Vertical, 30MHz to 18GHz)

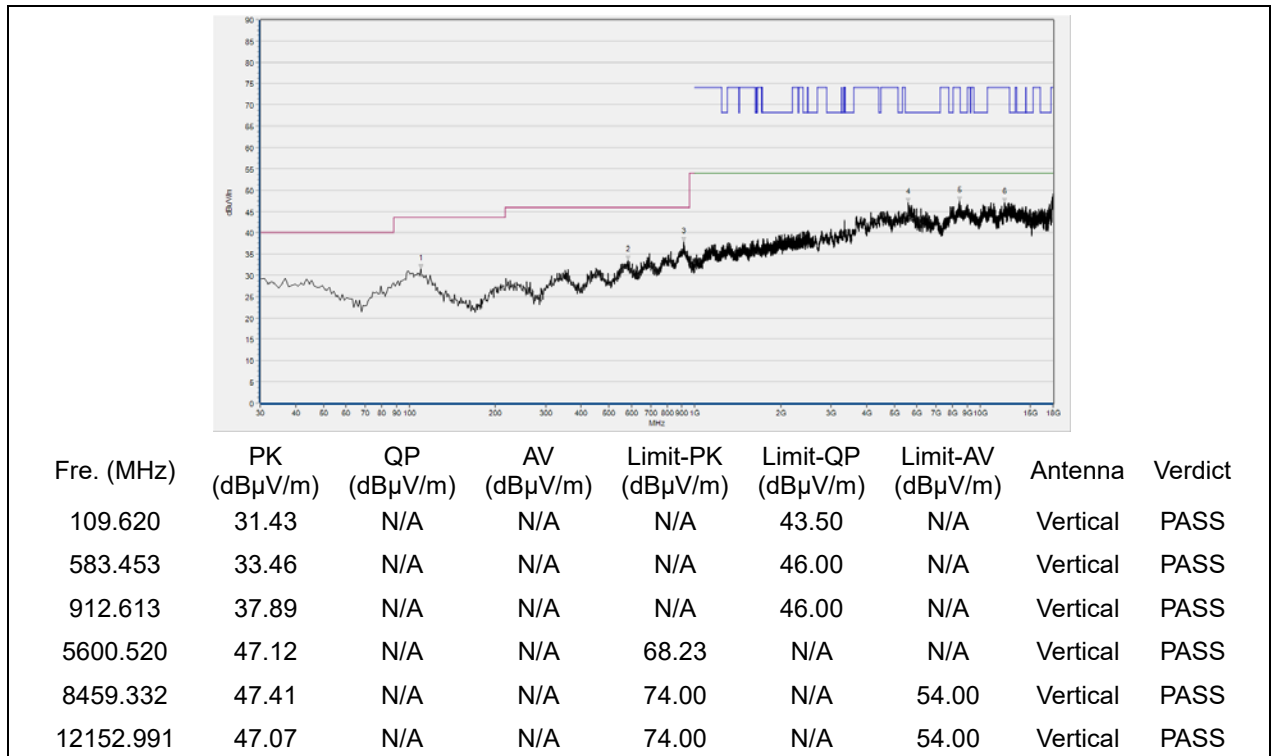


802.11ac (VHT80) Mode

Plot for Channel 42

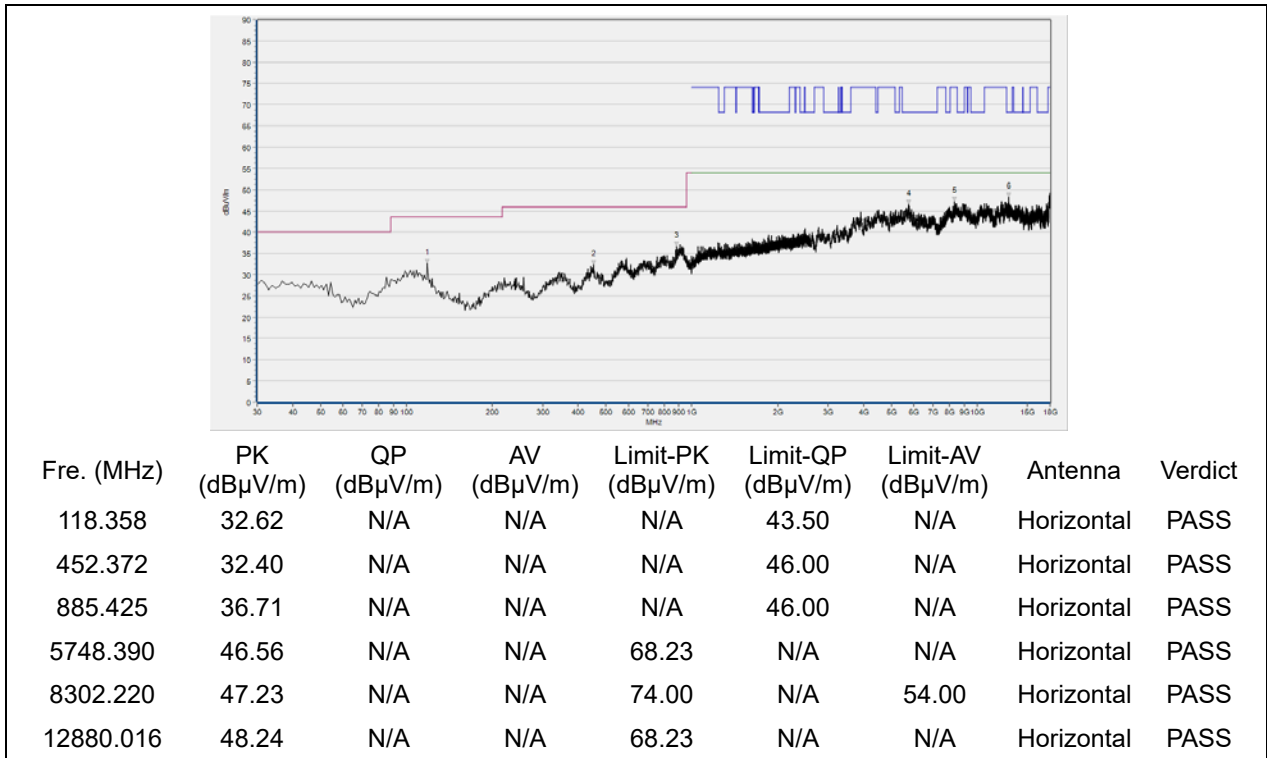


(Antenna Horizontal, 30MHz to 18GHz)

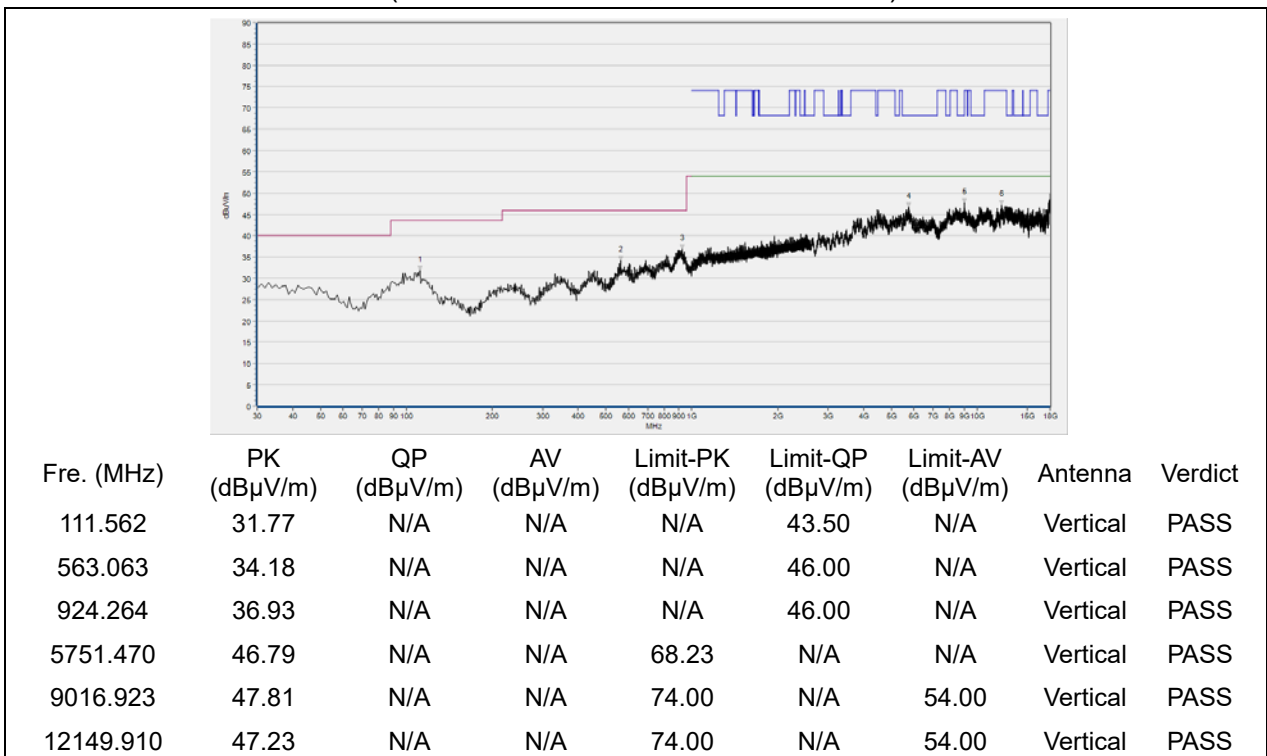


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 58

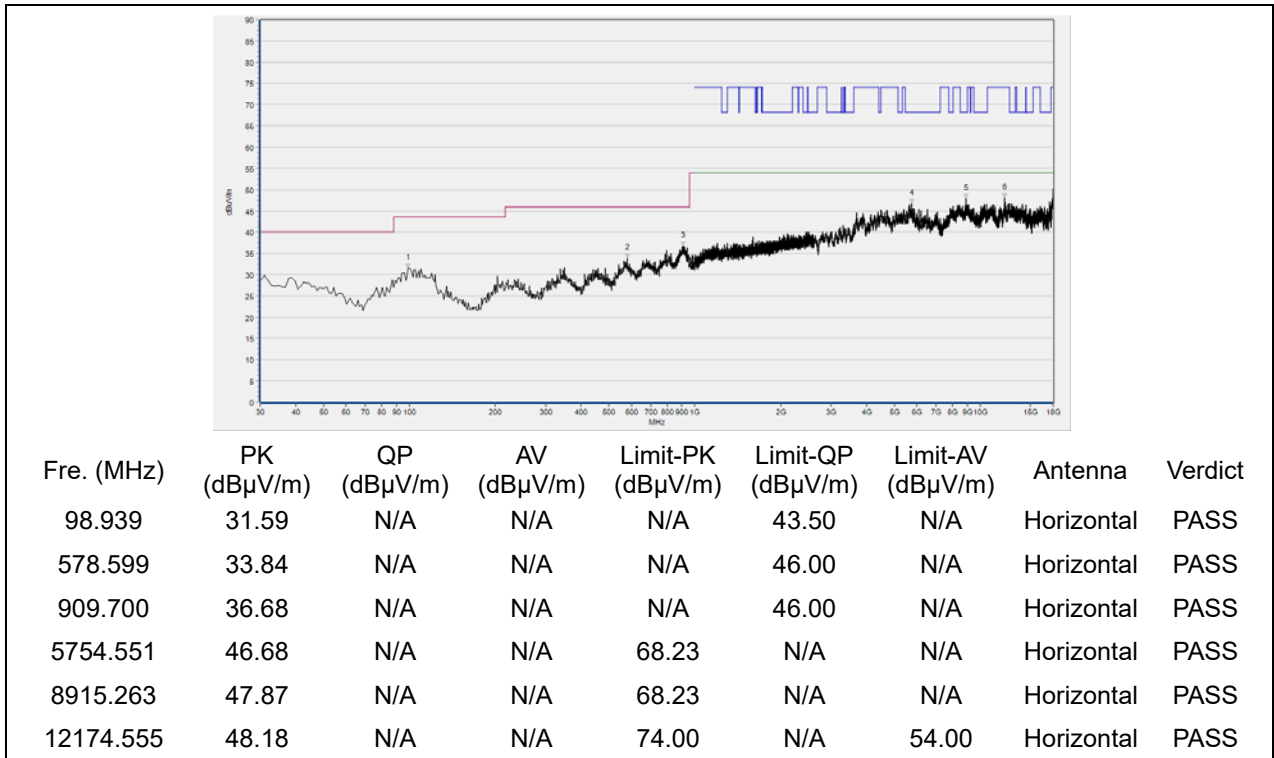


(Antenna Horizontal, 30MHz to 18GHz)

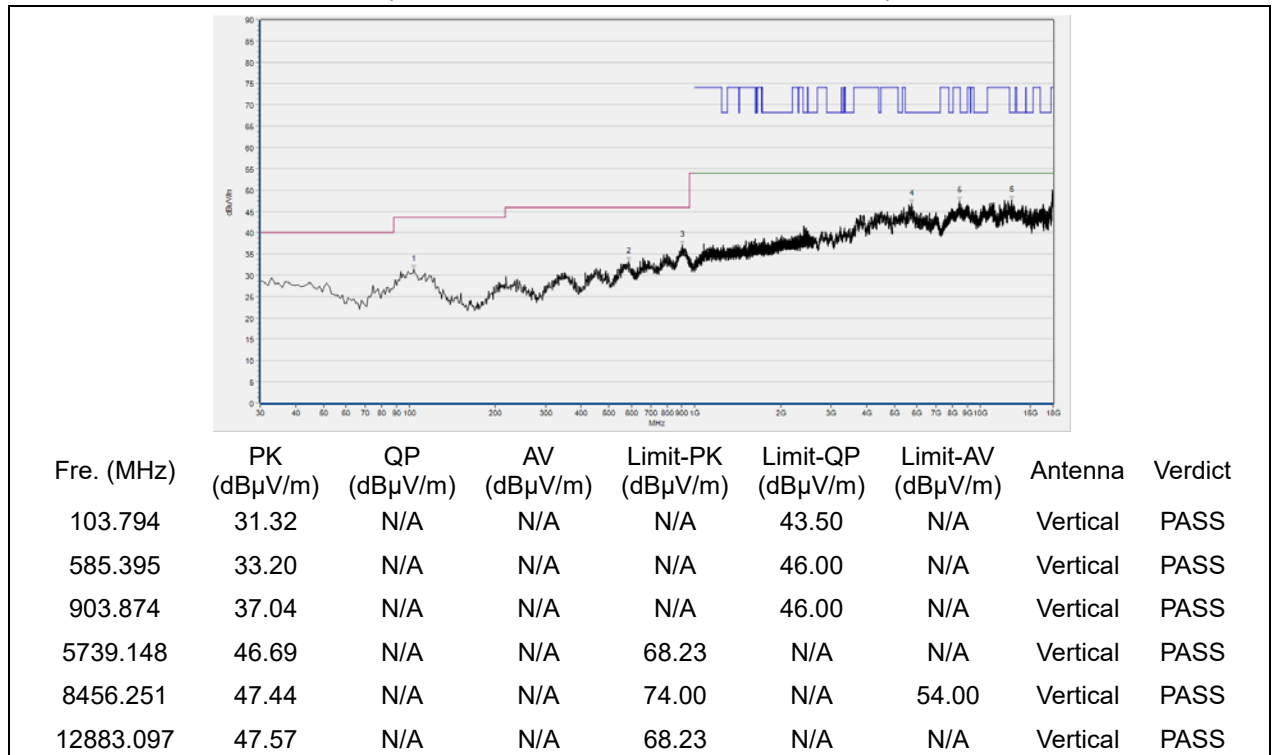


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 106

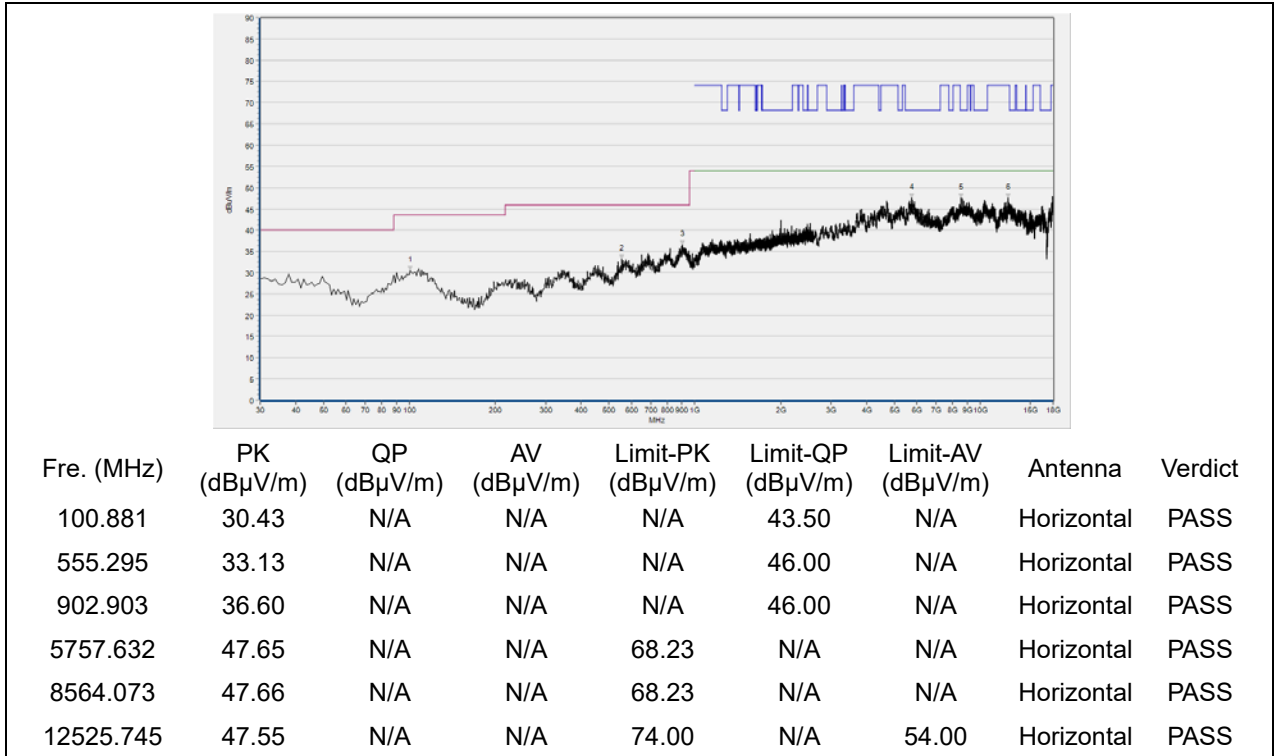


(Antenna Horizontal, 30MHz to 18GHz)

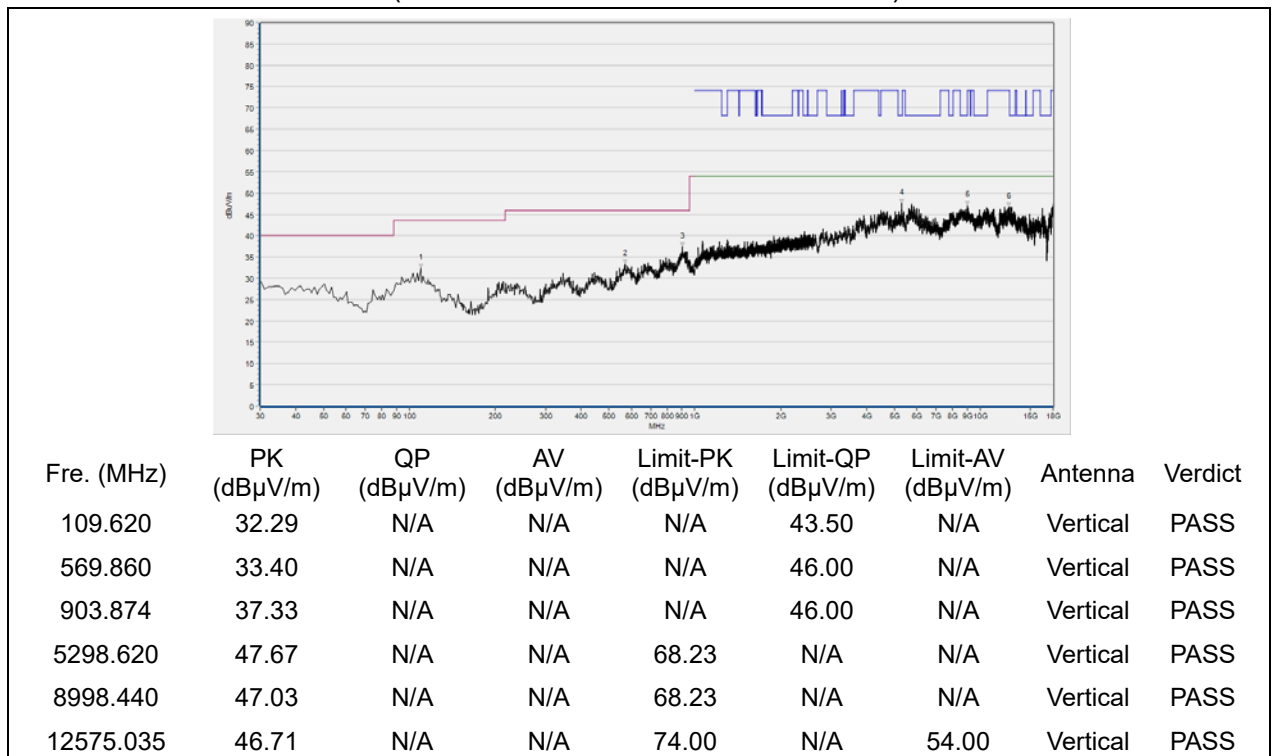


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 122

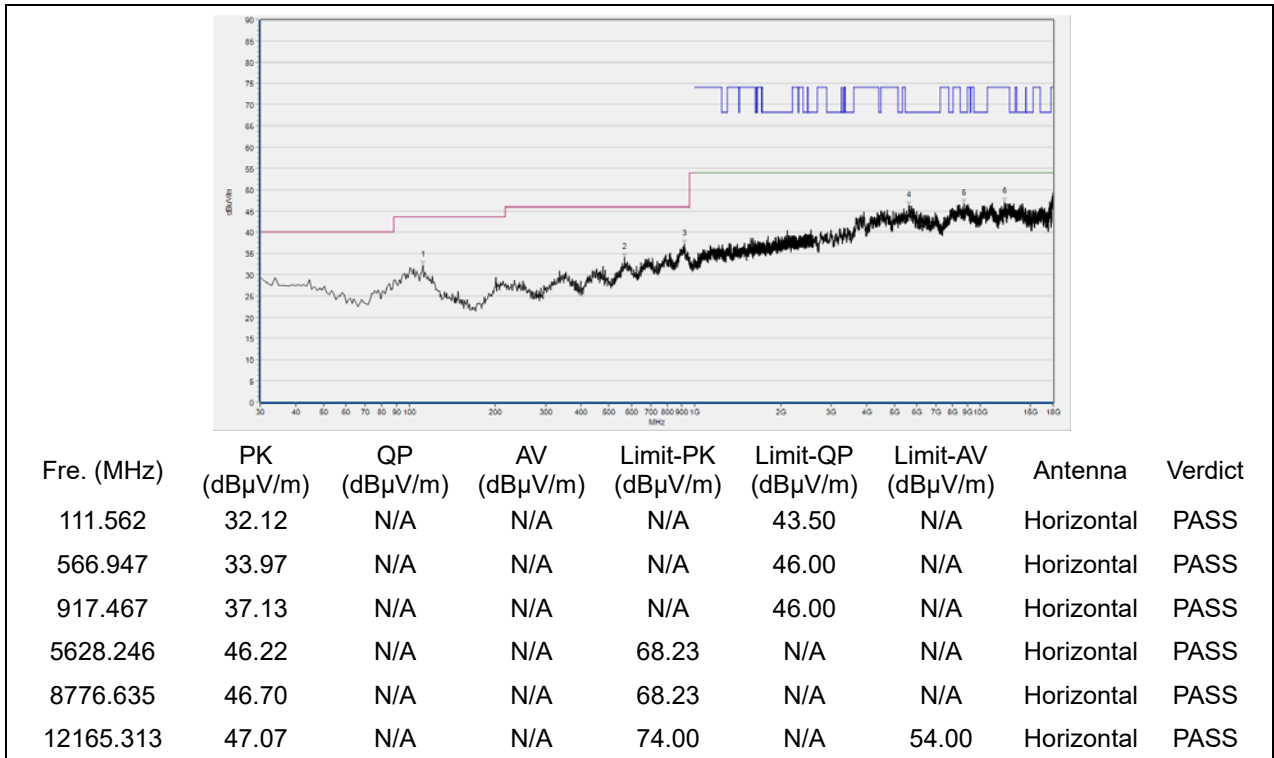


(Antenna Horizontal, 30MHz to 18GHz)

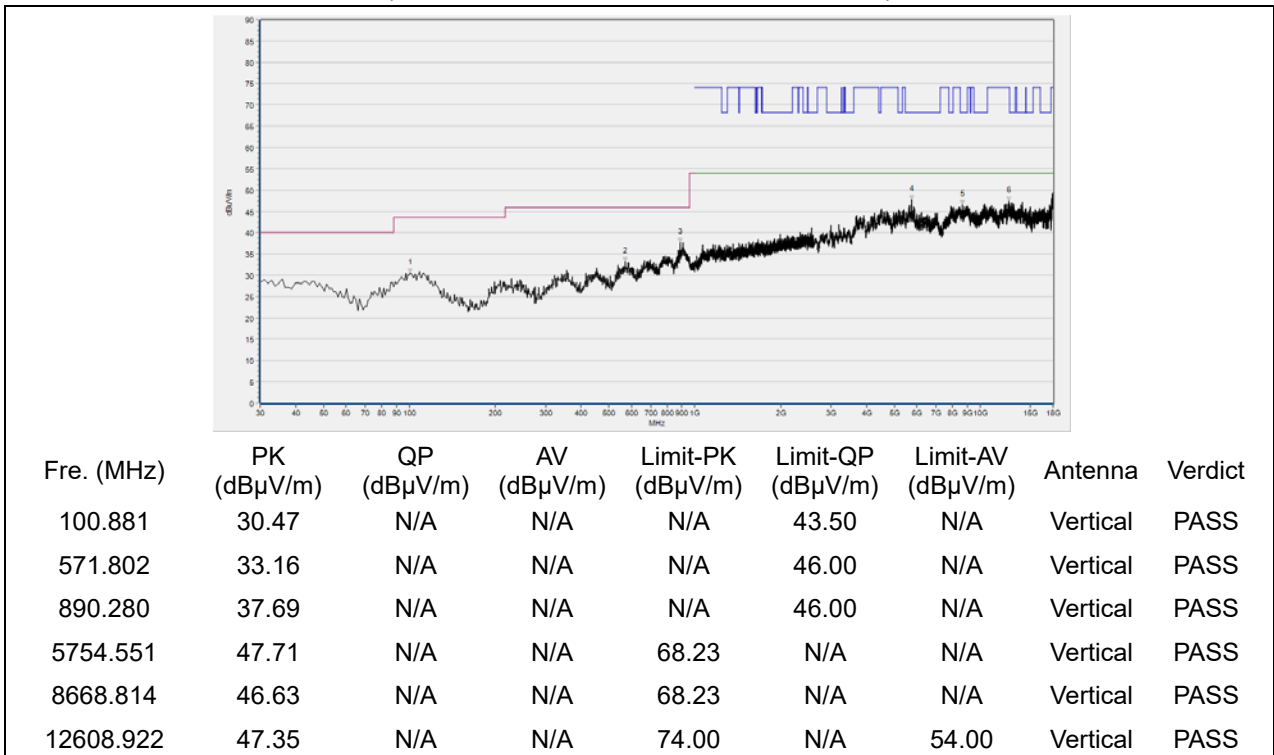


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 138



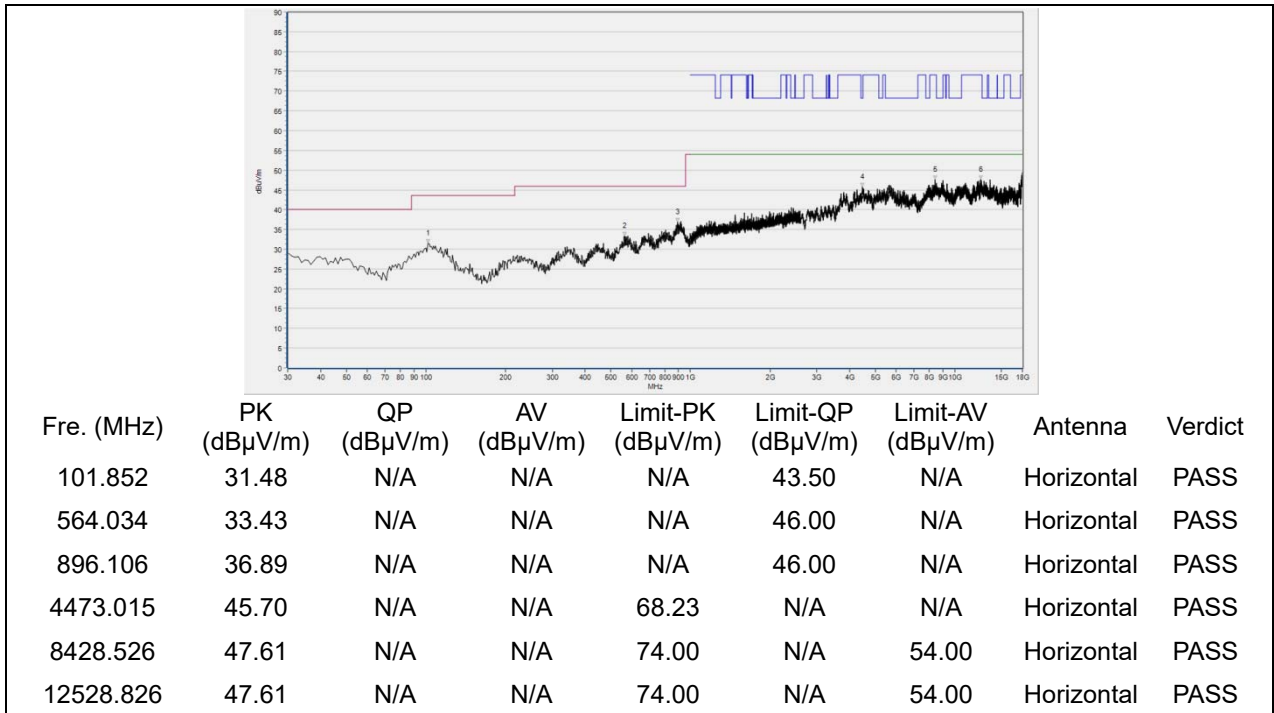
(Antenna Horizontal, 30MHz to 18GHz)



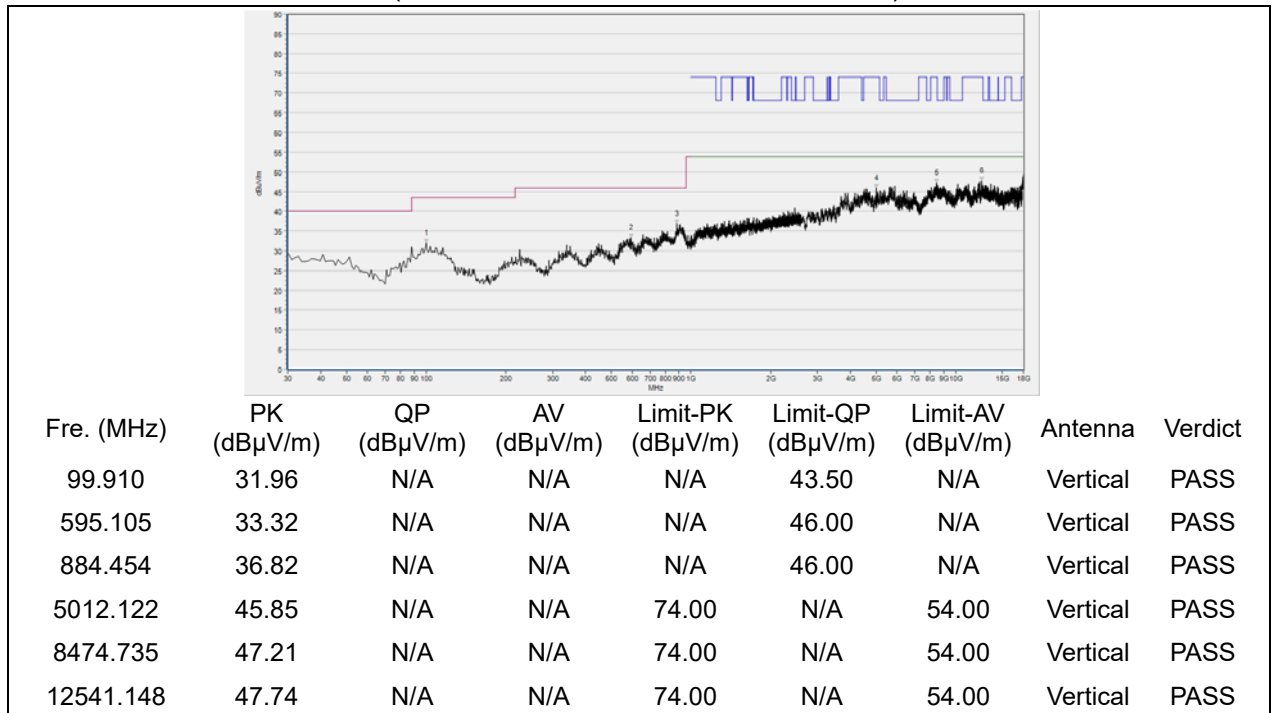
(Antenna Vertical, 30MHz to 18GHz)



Plot for Channel 155



(Antenna Horizontal, 30MHz to 18GHz)



(Antenna Vertical, 30MHz to 18GHz)

END OF REPORT