

## Appendix B for 5GWIFI Test Data

Product Name: Vehicle carplay decoder

Test Model: ZTCP66-NBT

### Environmental Conditions

Temperature:	24.2℃
Relative Humidity:	53%
ATM Pressure:	101.0 kPa
Test Engineer:	Leon Li
Supervised by:	Baret Wu

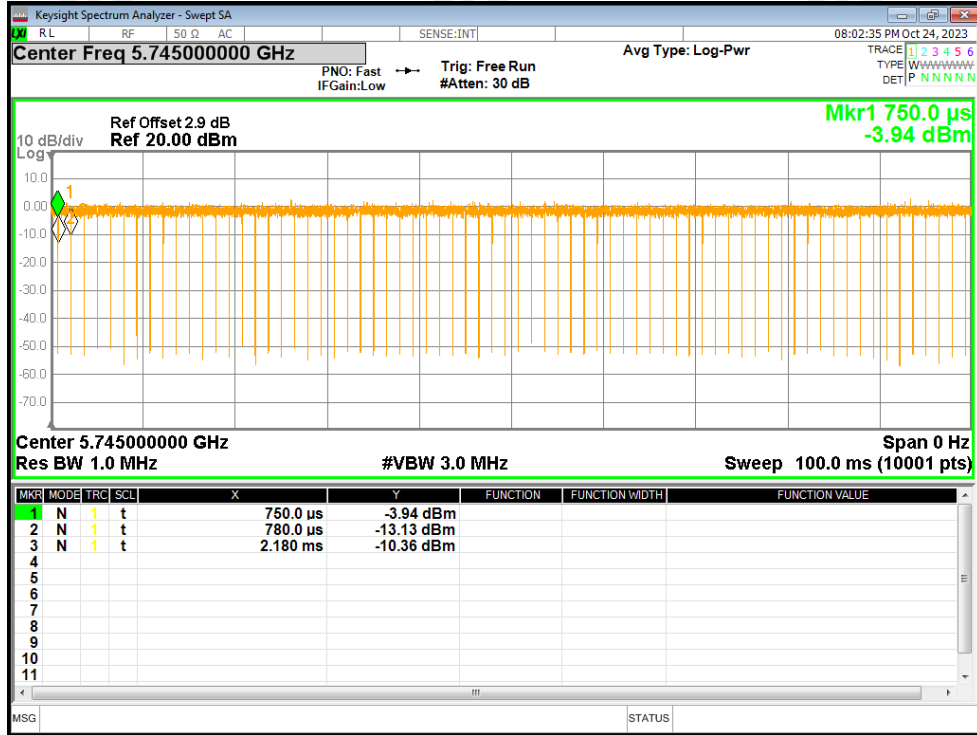


A.1Duty Cycle

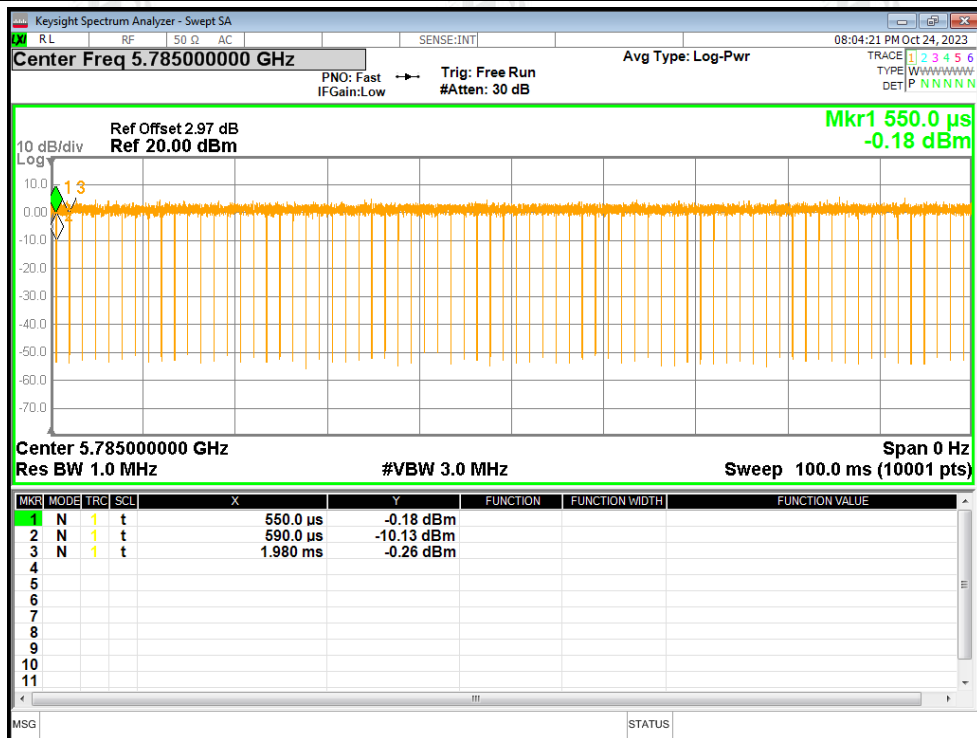
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)
NVNT	a	5745	Ant1	97.9	0.09
NVNT	a	5785	Ant1	97.2	0.12
NVNT	a	5825	Ant1	97.2	0.12
NVNT	n20	5745	Ant1	97.9	0.09
NVNT	n20	5785	Ant1	97.2	0.12
NVNT	n20	5825	Ant1	97.2	0.12
NVNT	n40	5755	Ant1	73.33	1.35
NVNT	n40	5795	Ant1	92.86	0.32
NVNT	ac20	5745	Ant1	96.99	0.13
NVNT	ac20	5785	Ant1	97.73	0.1
NVNT	ac20	5825	Ant1	97.73	0.1
NVNT	ac40	5755	Ant1	94.03	0.27
NVNT	ac40	5795	Ant1	94.12	0.26
NVNT	ac80	5775	Ant1	71.88	1.43

Test Graphs

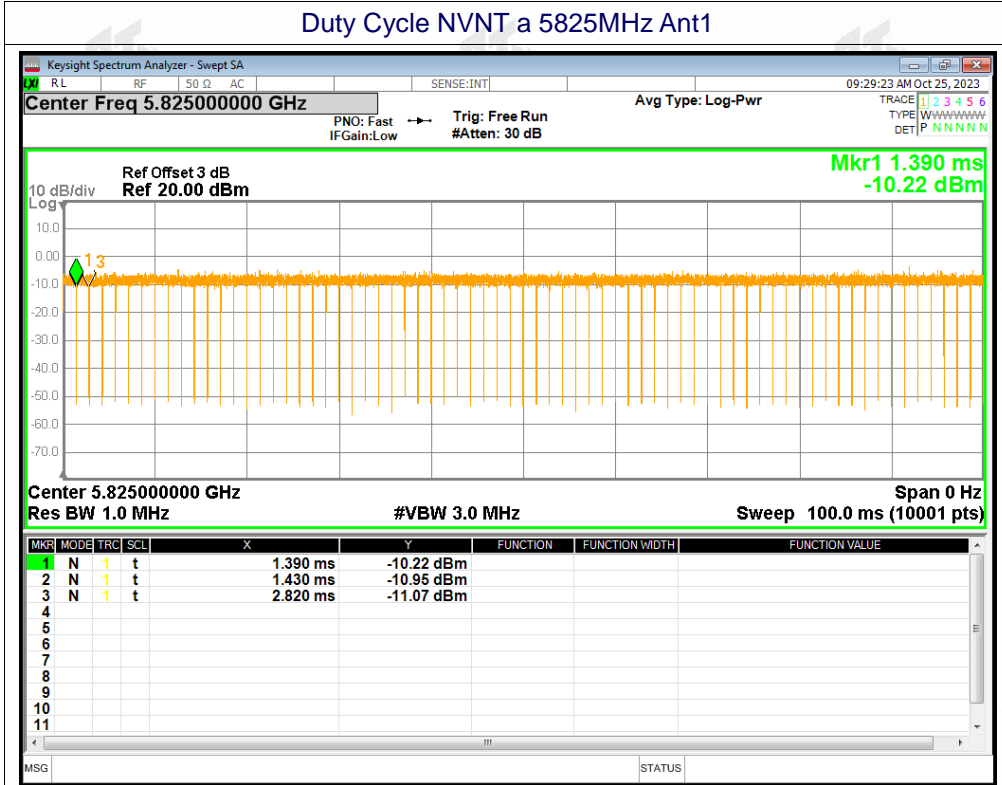
Duty Cycle NVNT a 5745MHz Ant1



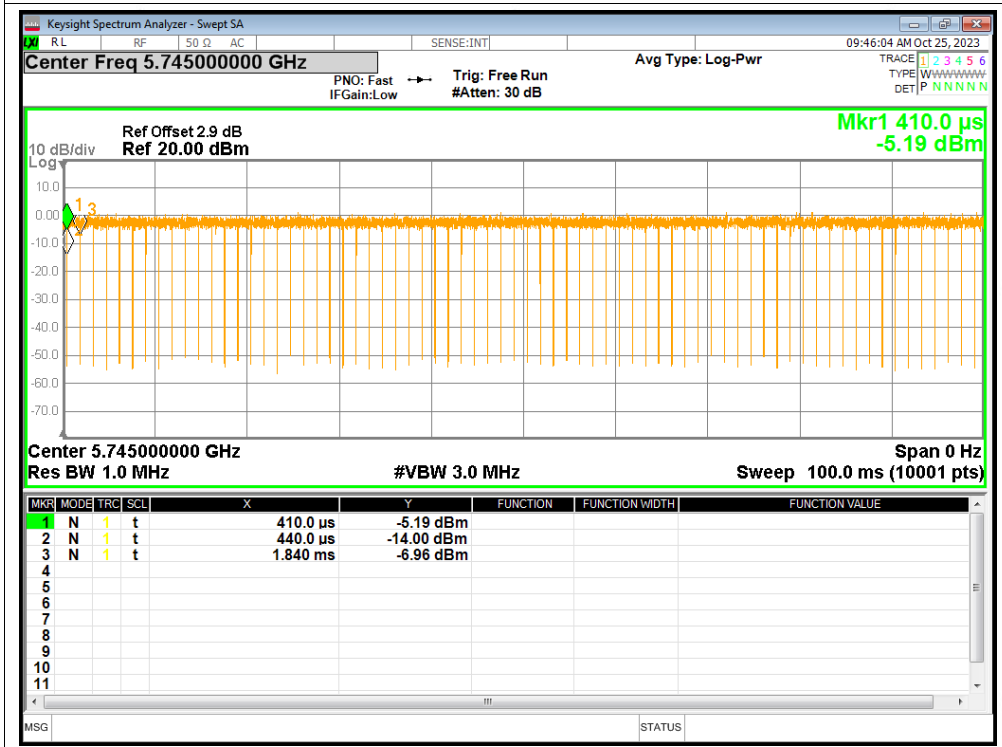
Duty Cycle NVNT a 5785MHz Ant1



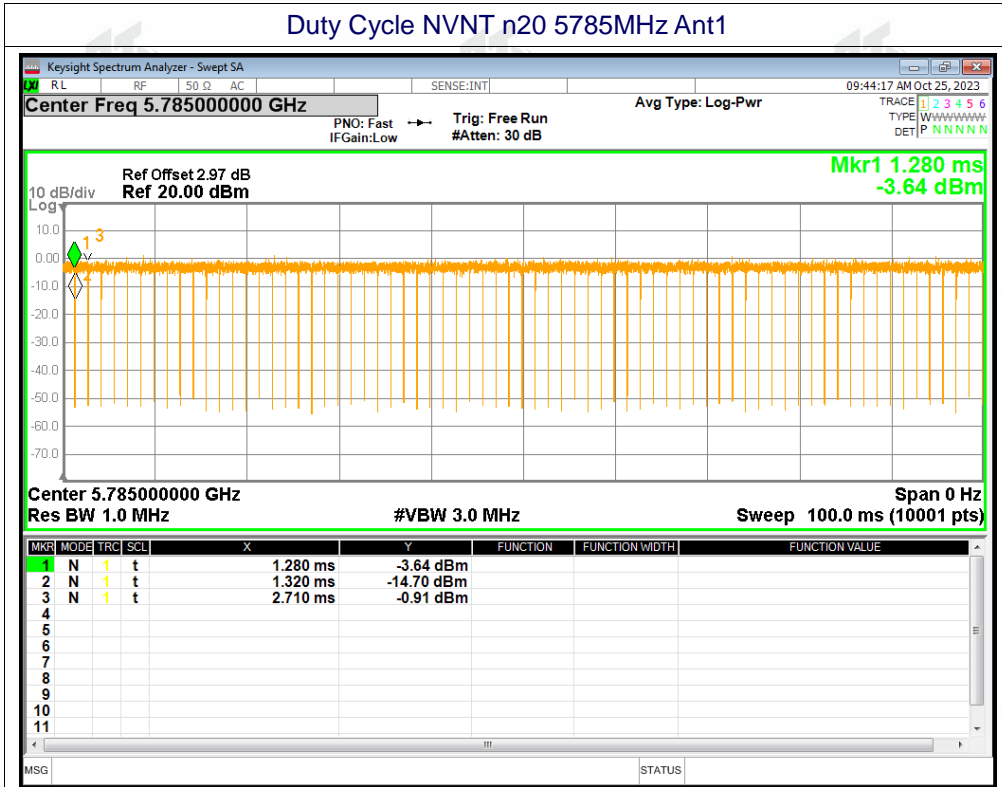
Duty Cycle NVNT a 5825MHz Ant1



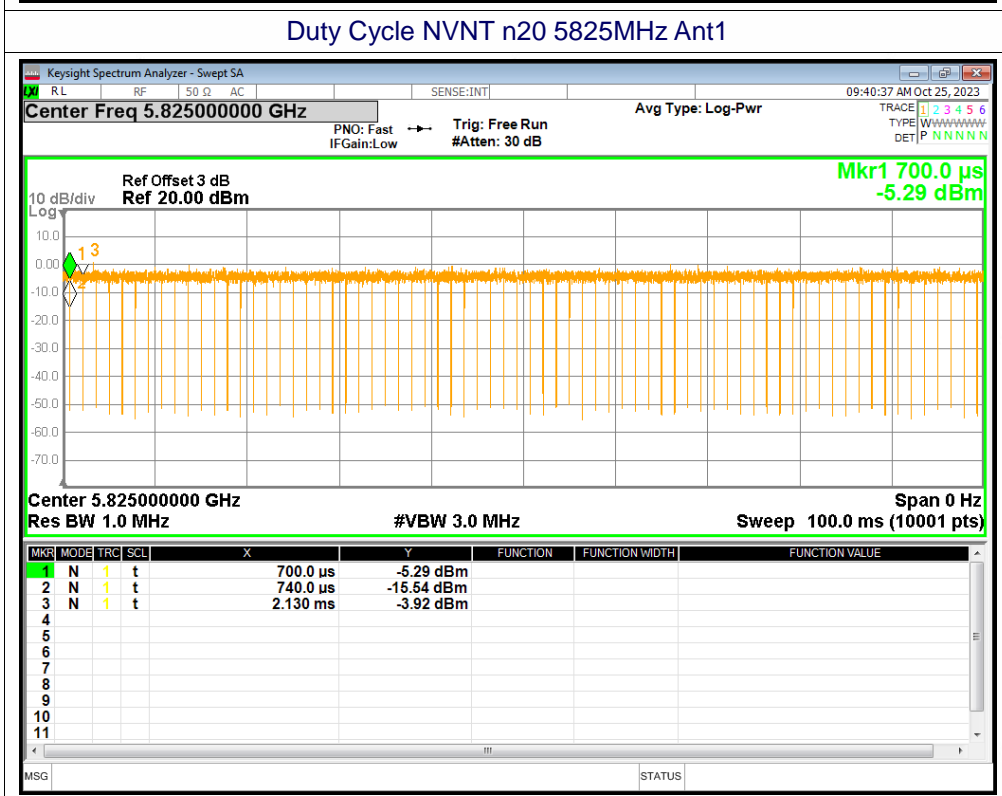
Duty Cycle NVNT n20 5745MHz Ant1



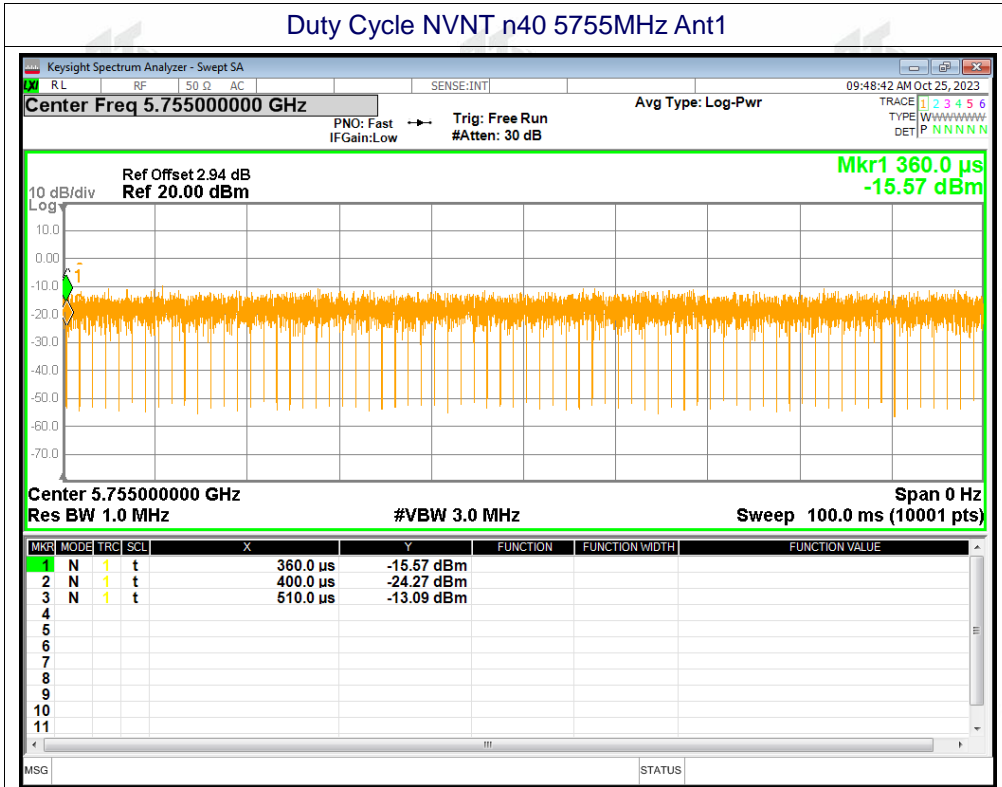
Duty Cycle NVNT n20 5785MHz Ant1



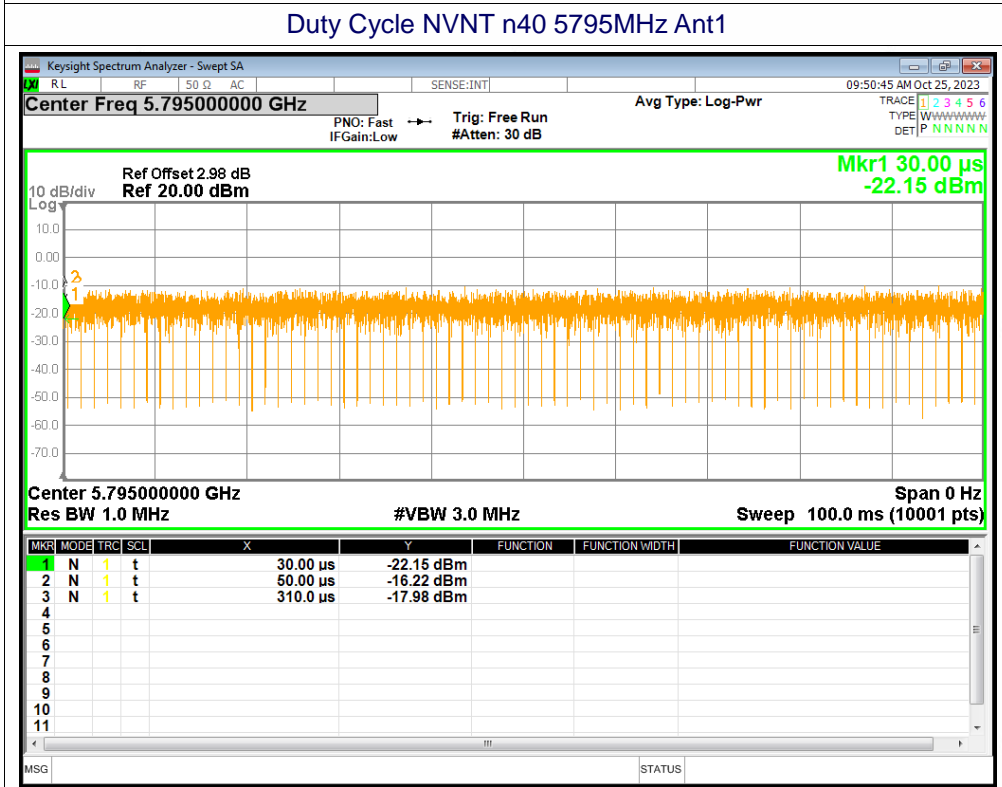
Duty Cycle NVNT n20 5825MHz Ant1



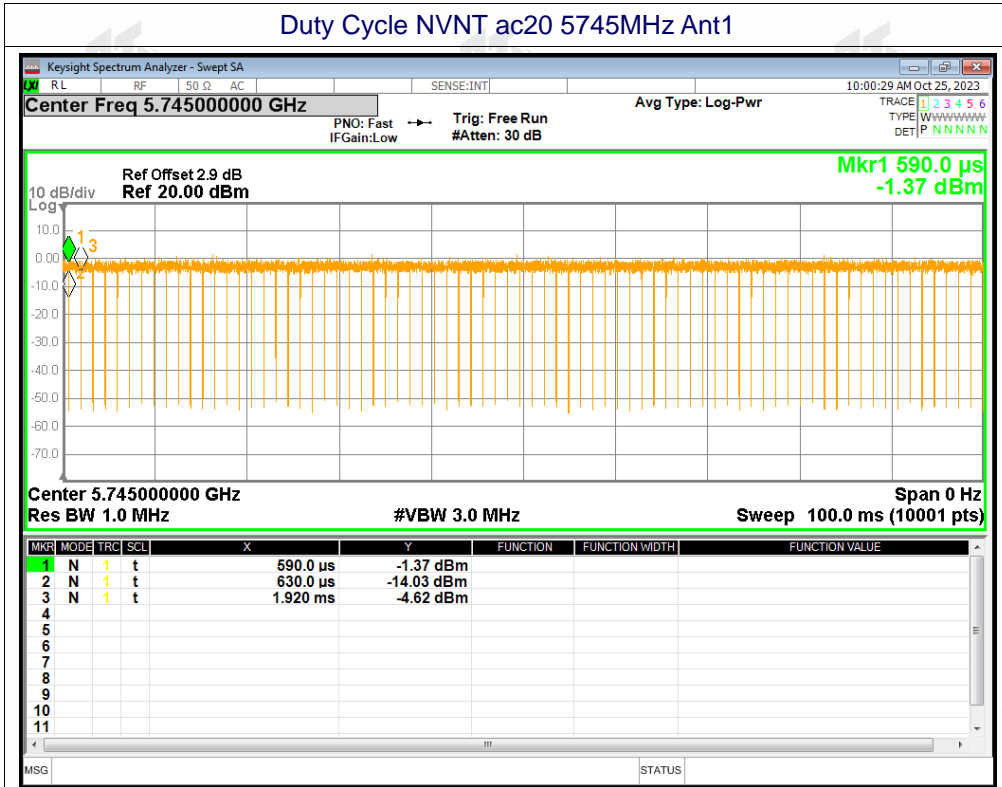
Duty Cycle NVNT n40 5755MHz Ant1



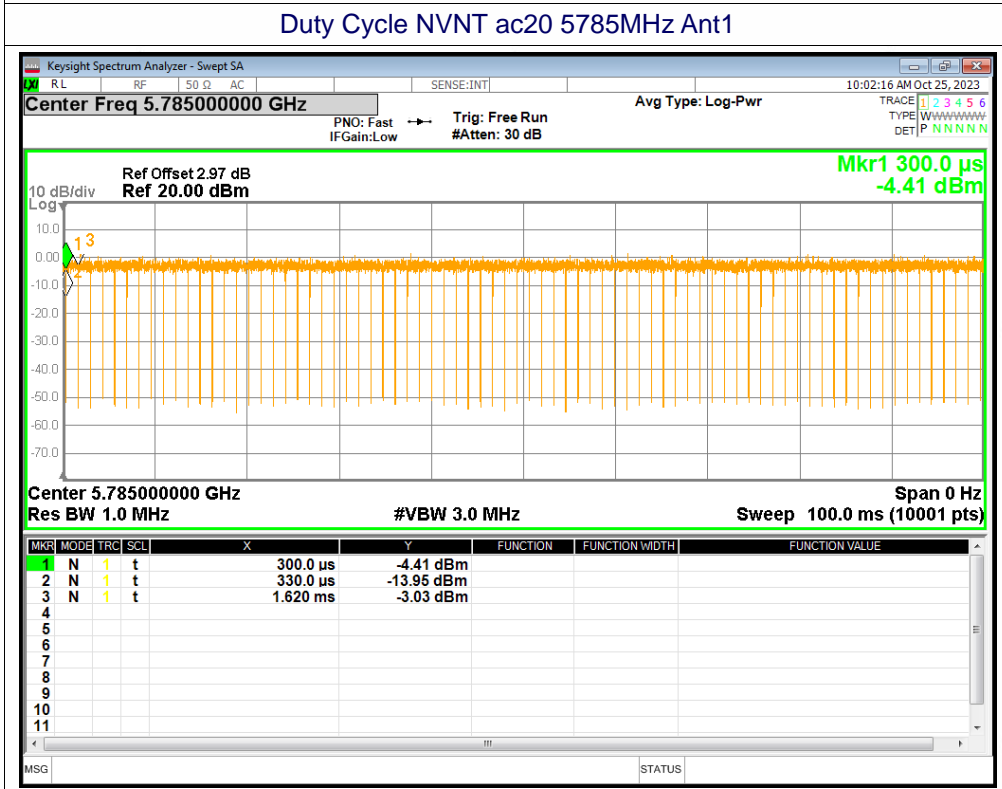
Duty Cycle NVNT n40 5795MHz Ant1



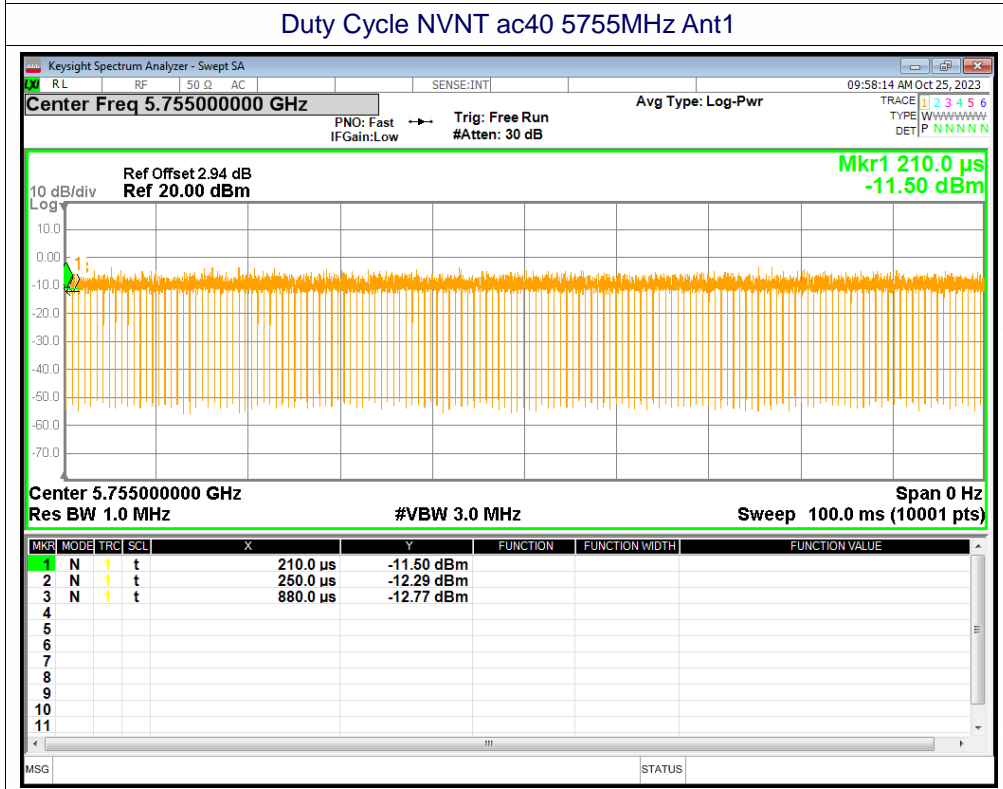
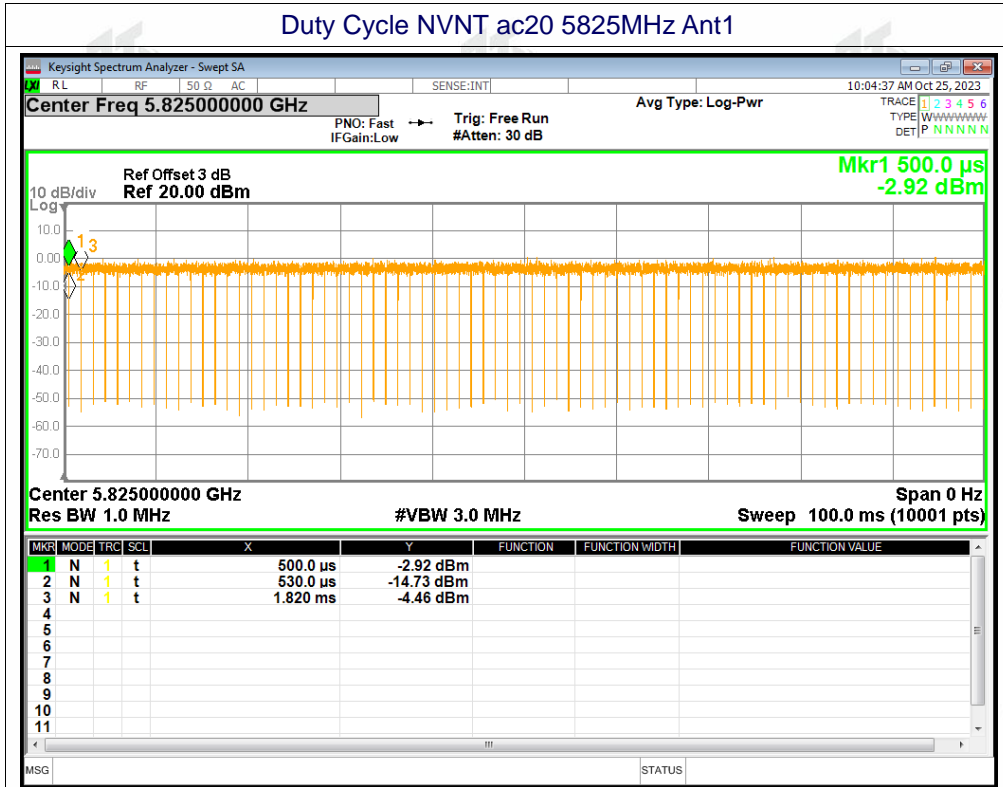
Duty Cycle NVNT ac20 5745MHz Ant1



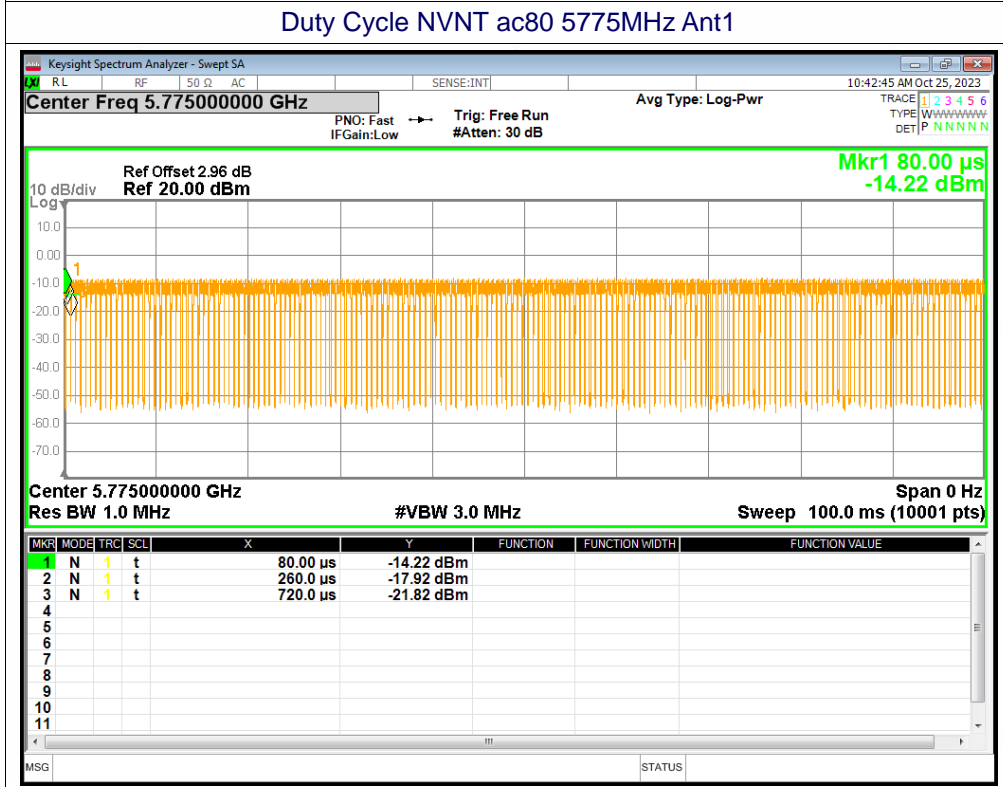
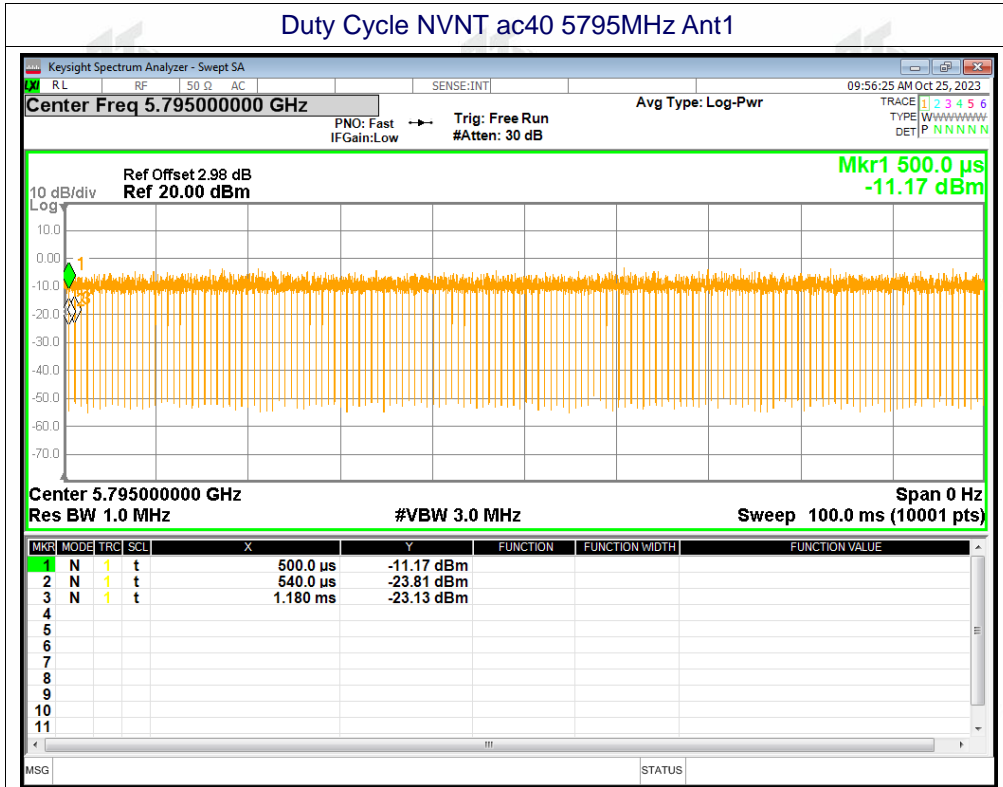
Duty Cycle NVNT ac20 5785MHz Ant1











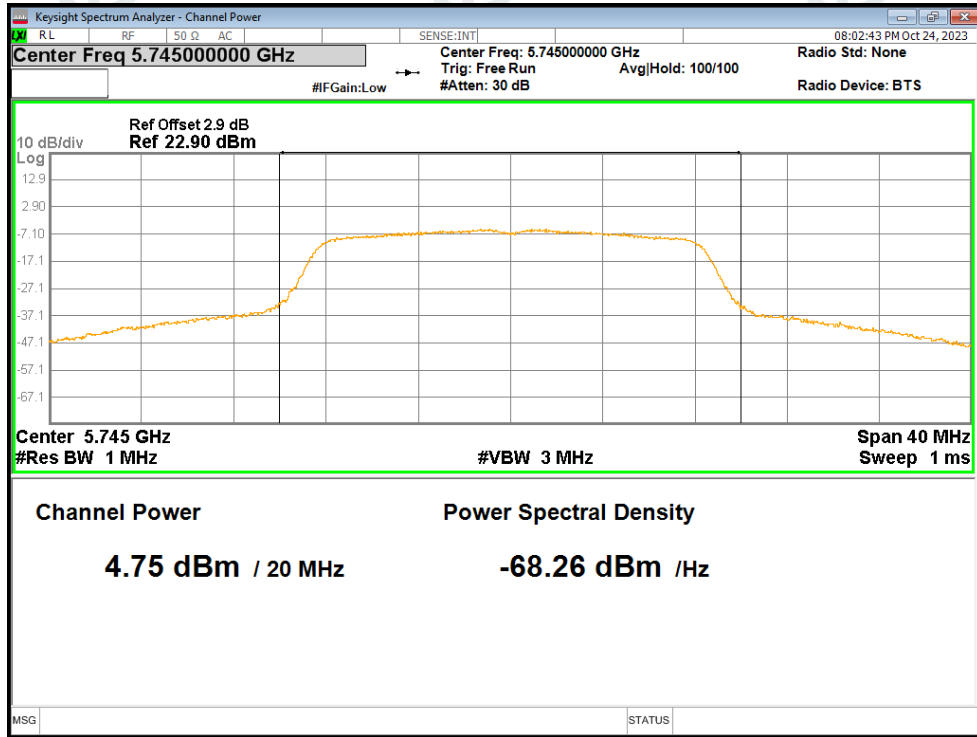


A.2 Maximum Conducted Output Power

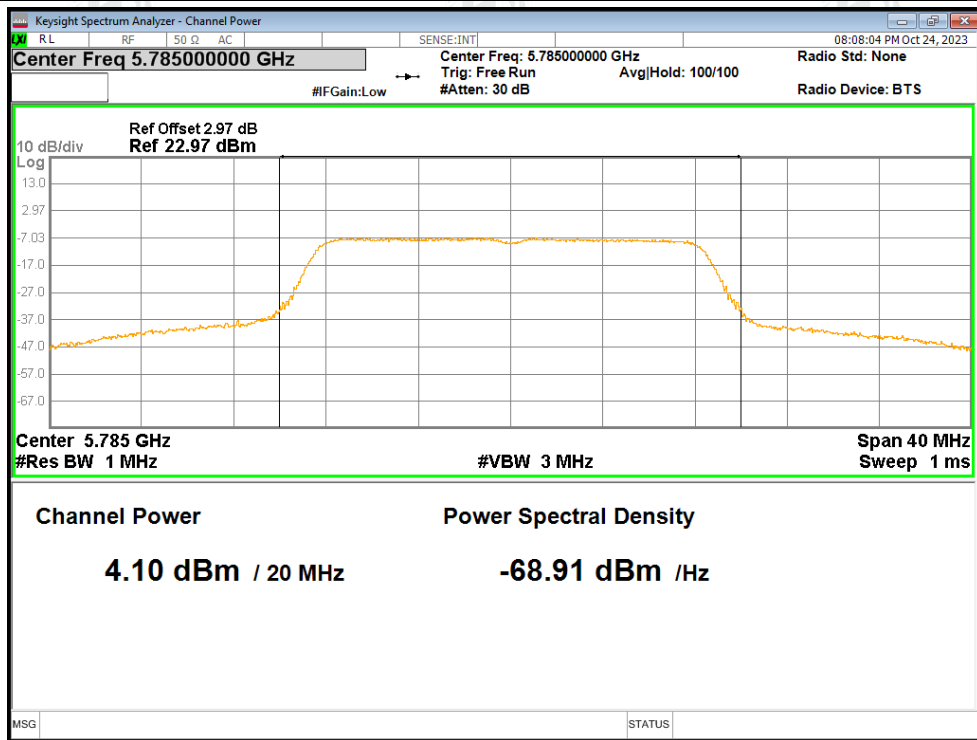
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5745	Ant1	4.75	0.09	4.84	30	Pass
NVNT	a	5785	Ant1	4.1	0.12	4.22	30	Pass
NVNT	a	5825	Ant1	-0.69	0.12	-0.57	30	Pass
NVNT	n20	5745	Ant1	5.06	0.09	5.15	30	Pass
NVNT	n20	5785	Ant1	4.69	0.12	4.81	30	Pass
NVNT	n20	5825	Ant1	3.5	0.12	3.62	30	Pass
NVNT	n40	5755	Ant1	4.95	1.35	6.3	30	Pass
NVNT	n40	5795	Ant1	5.05	0.32	5.37	30	Pass
NVNT	ac20	5745	Ant1	5.04	0.13	5.17	30	Pass
NVNT	ac20	5785	Ant1	5.1	0.1	5.2	30	Pass
NVNT	ac20	5825	Ant1	4.76	0.1	4.86	30	Pass
NVNT	ac40	5755	Ant1	5.11	0.27	5.38	30	Pass
NVNT	ac40	5795	Ant1	5.07	0.26	5.33	30	Pass
NVNT	ac80	5775	Ant1	4.18	1.43	5.61	30	Pass

Test Graphs

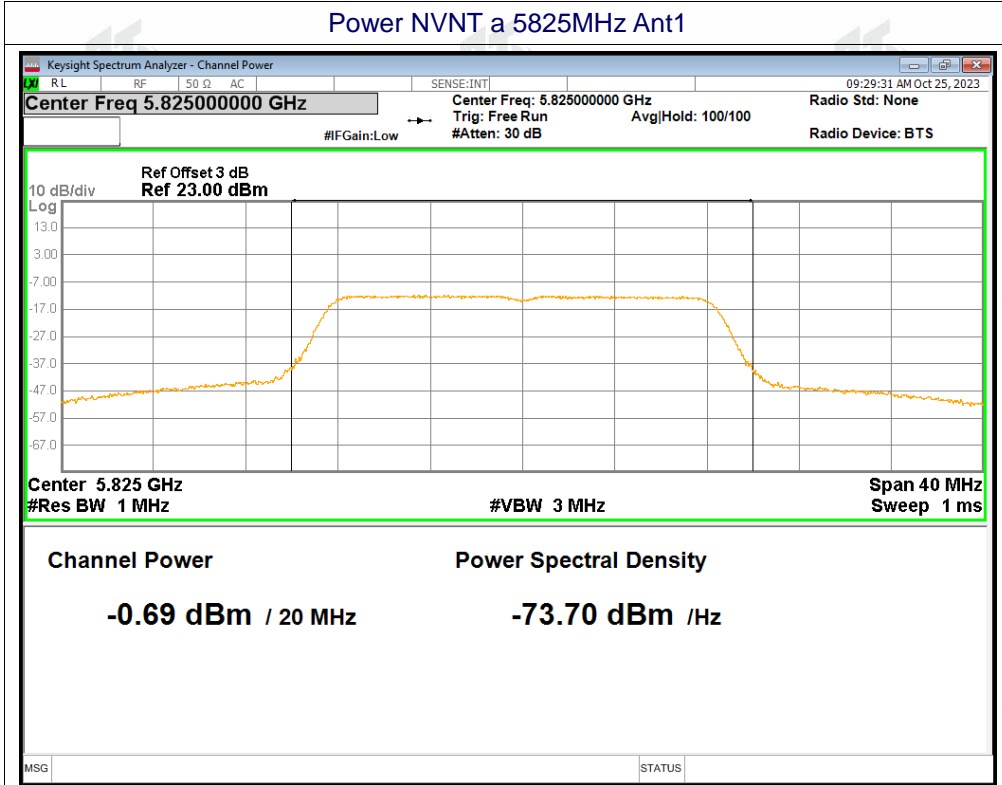
Power NVNT a 5745MHz Ant1



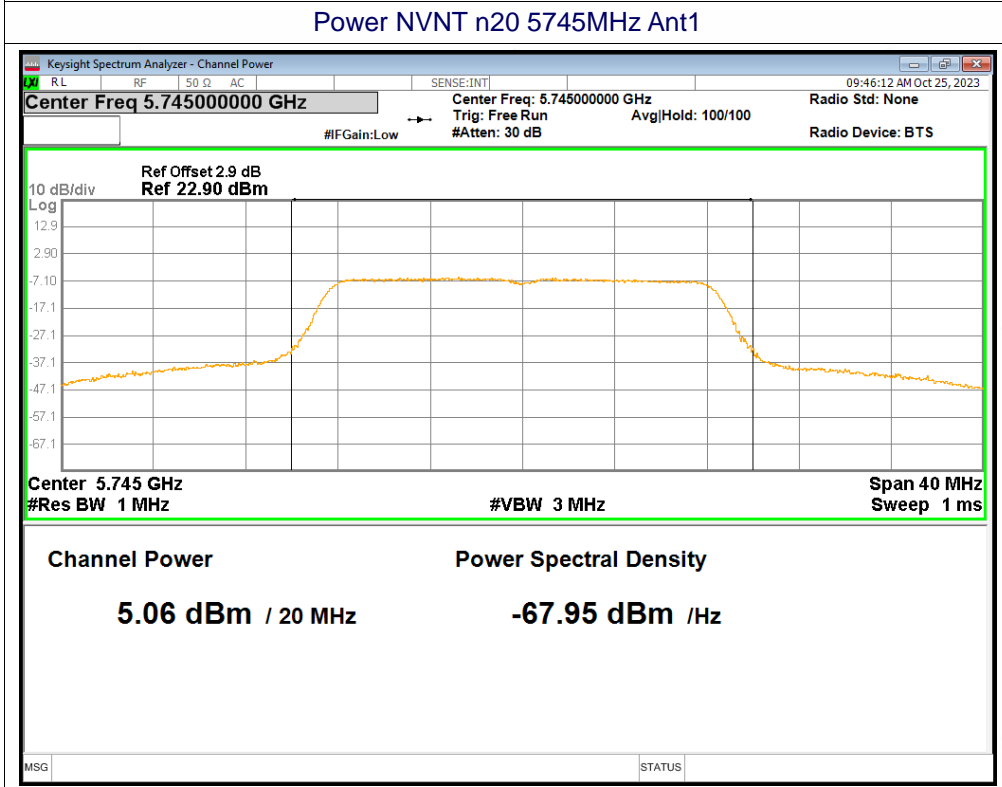
Power NVNT a 5785MHz Ant1



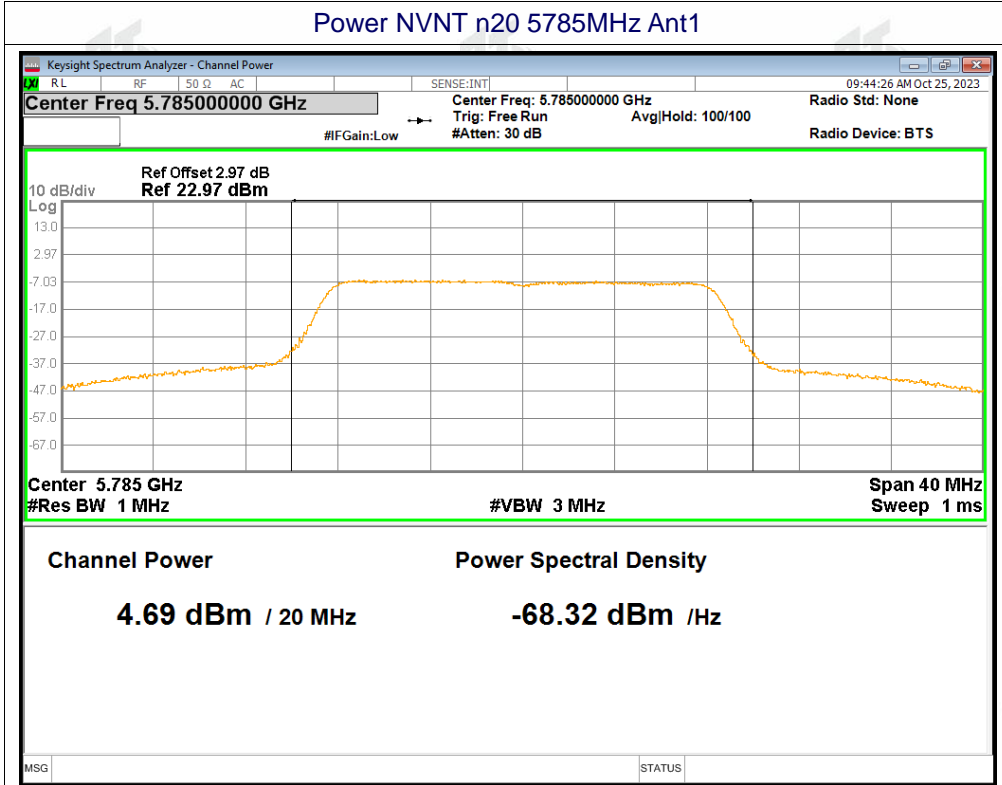
Power NVNT a 5825MHz Ant1



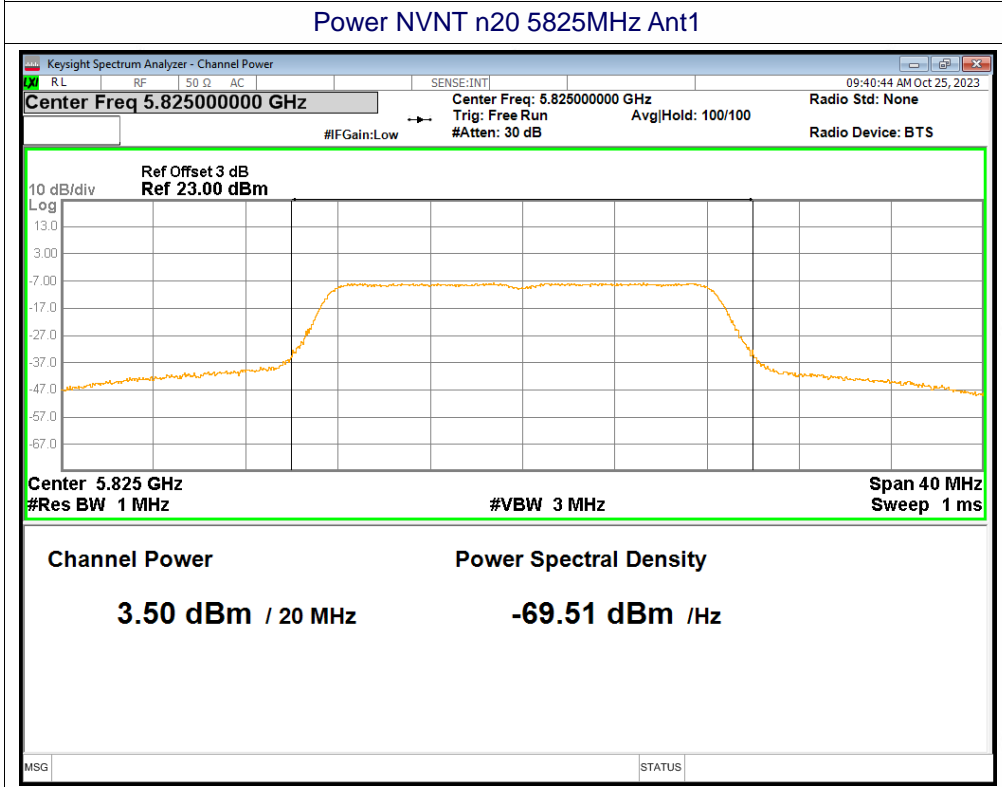
Power NVNT n20 5745MHz Ant1



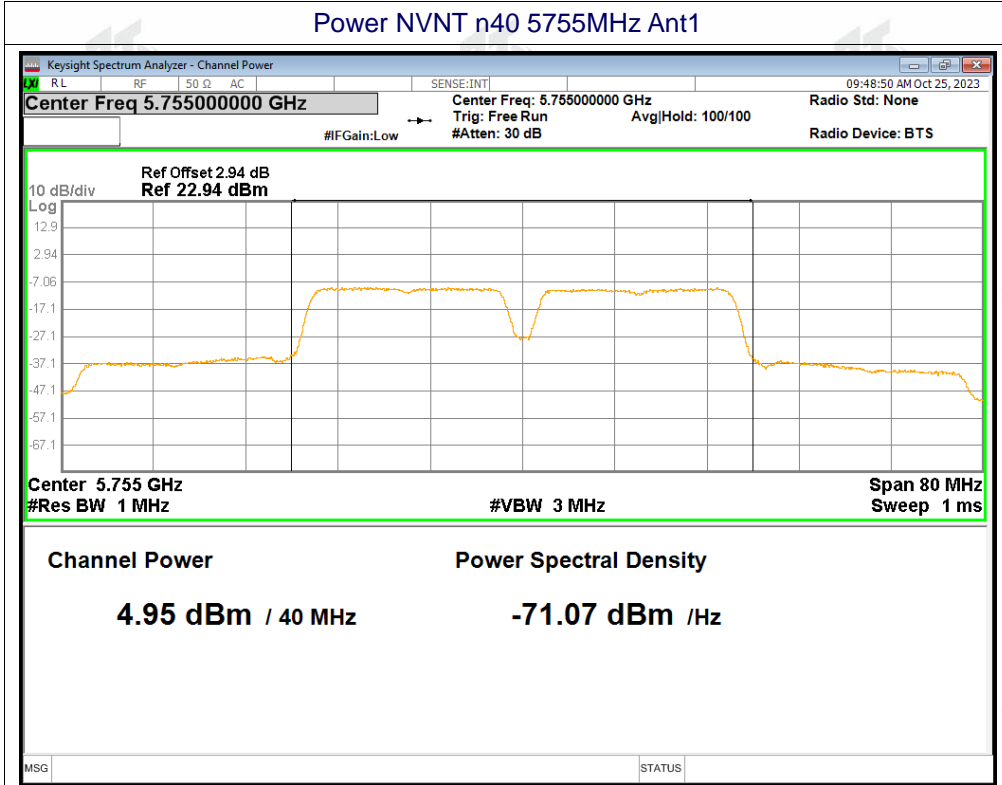
Power NVNT n20 5785MHz Ant1



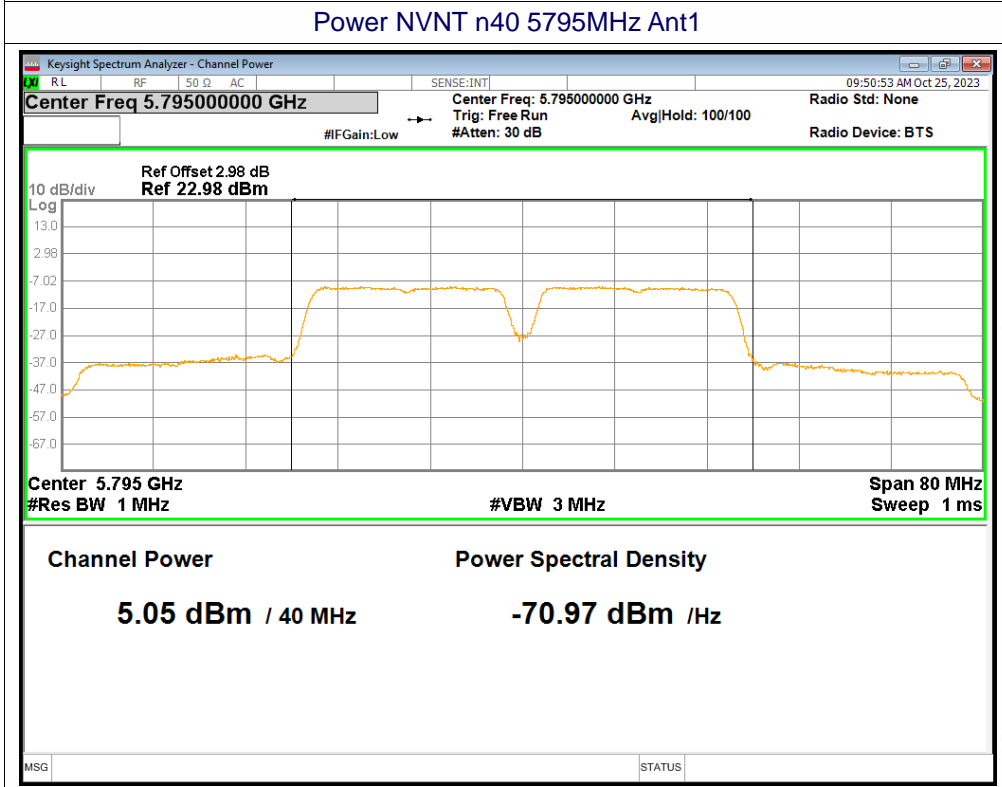
Power NVNT n20 5825MHz Ant1



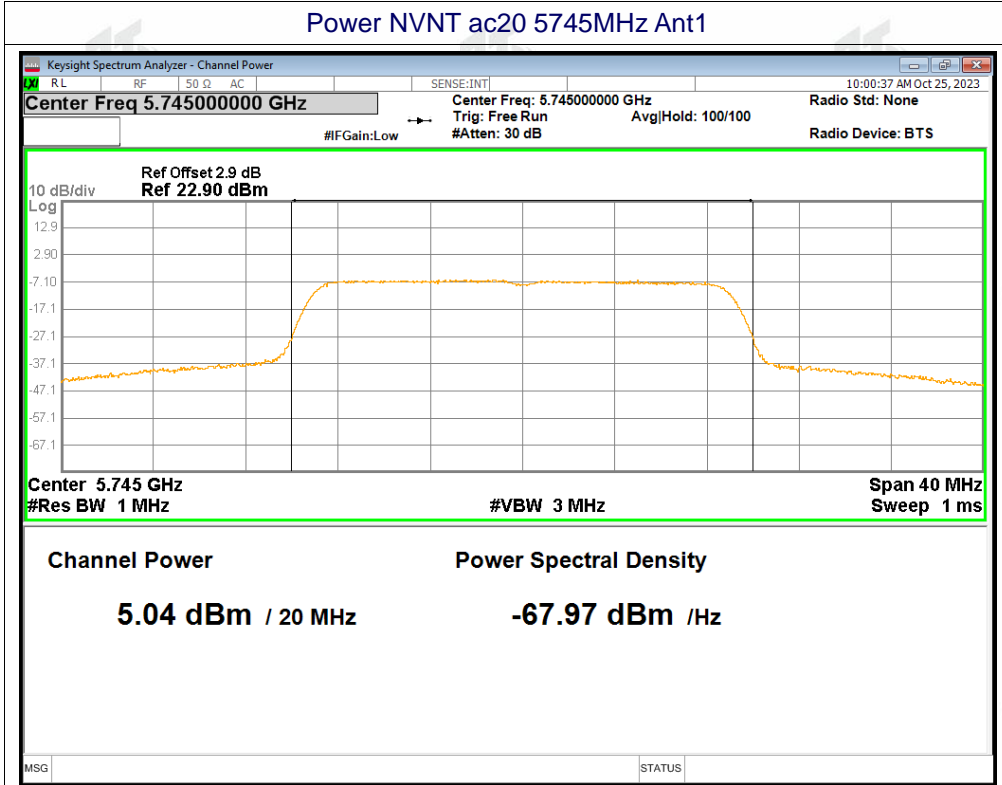
Power NVNT n40 5755MHz Ant1



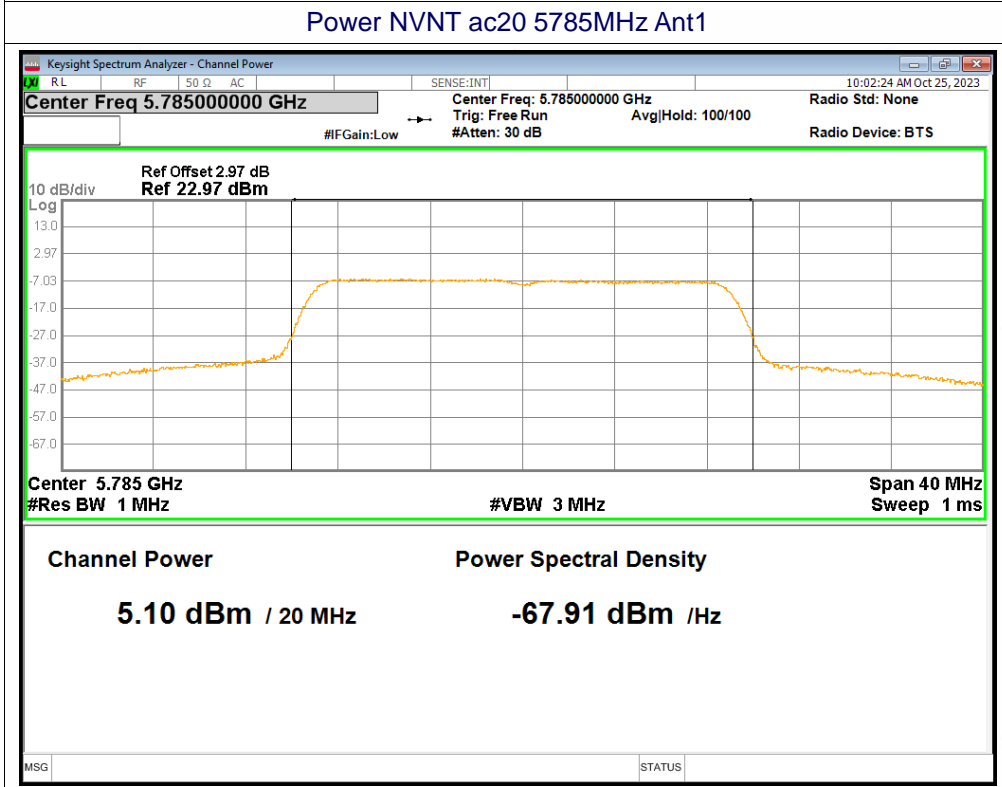
Power NVNT n40 5795MHz Ant1



Power NVNT ac20 5745MHz Ant1

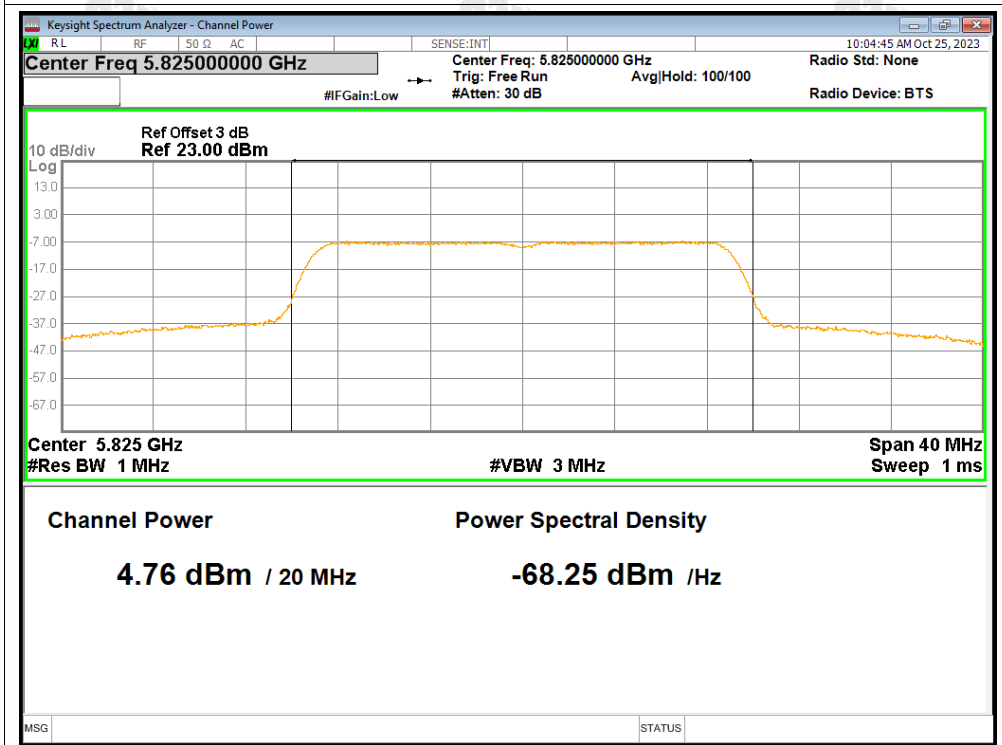


Power NVNT ac20 5785MHz Ant1

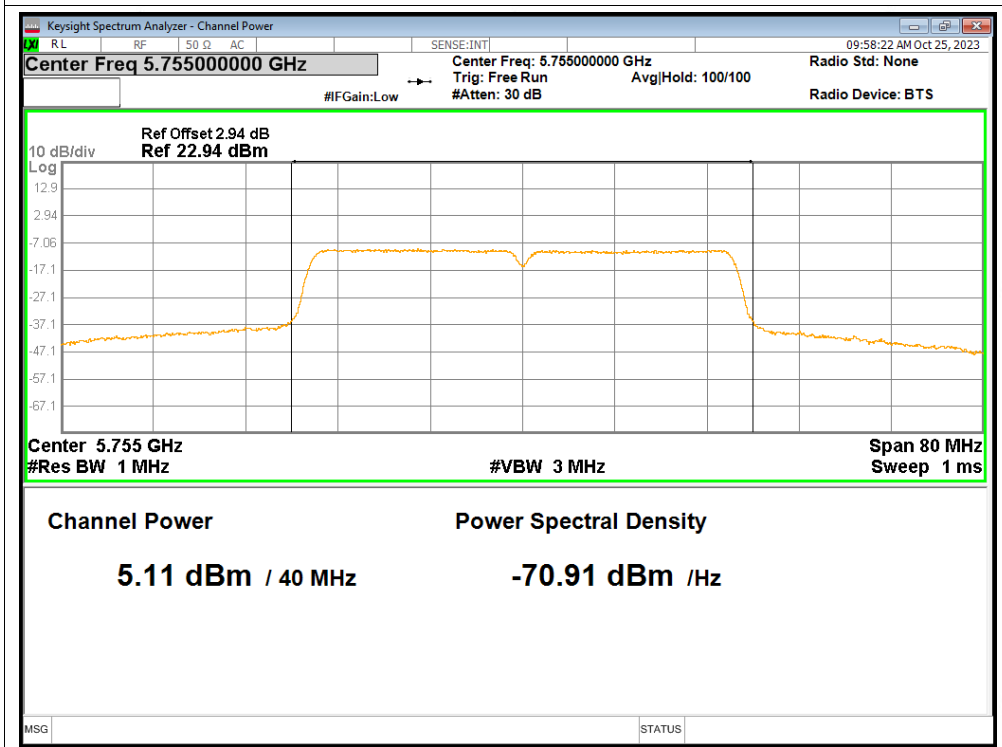




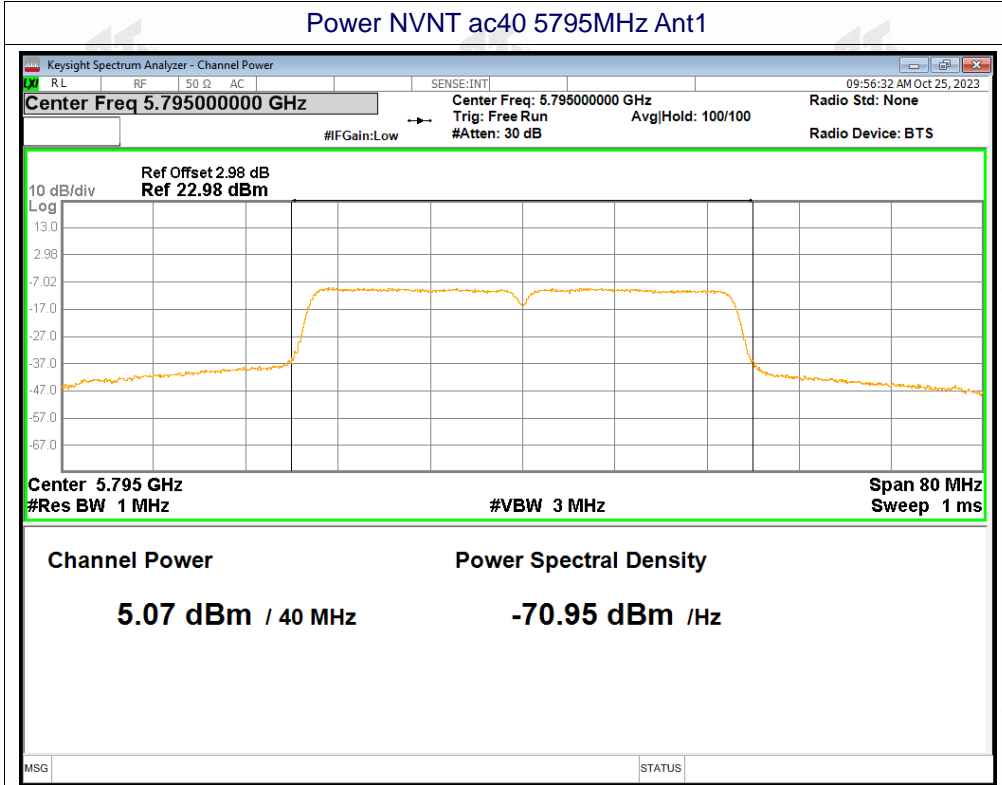
Power NVNT ac20 5825MHz Ant1



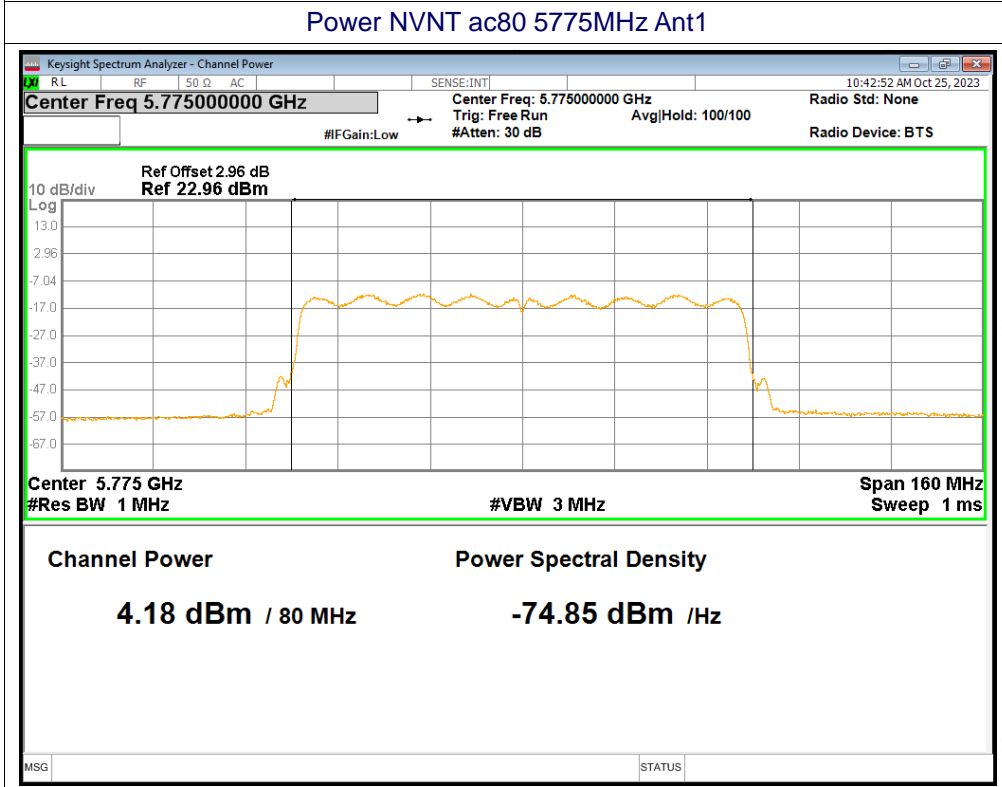
Power NVNT ac40 5755MHz Ant1



Power NVNT ac40 5795MHz Ant1



Power NVNT ac80 5775MHz Ant1



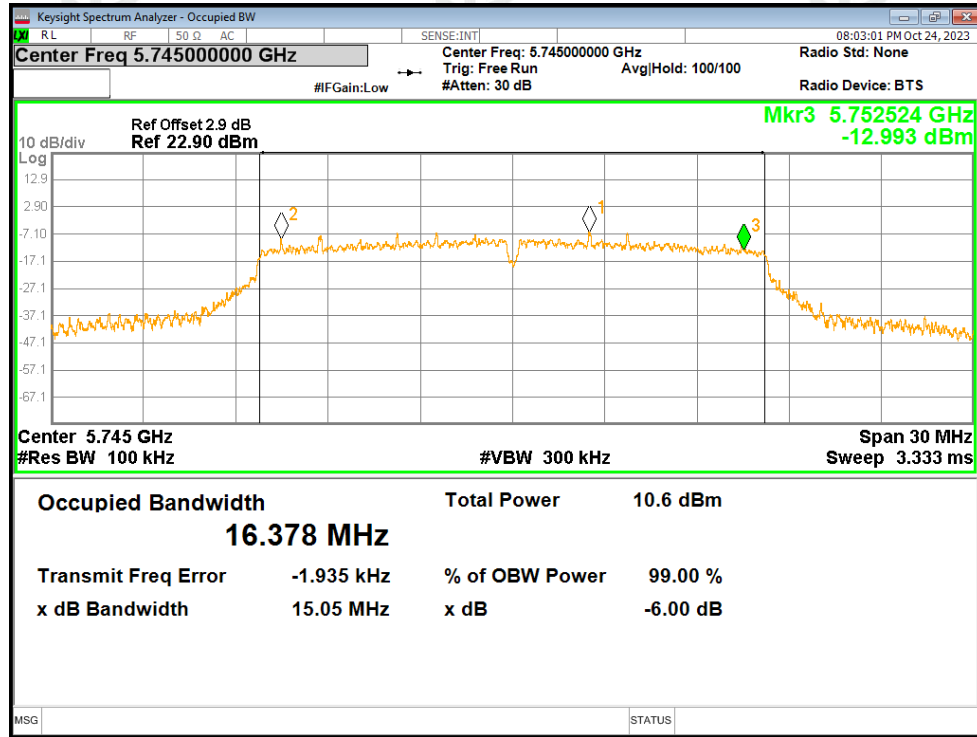


A.3 -6dB Bandwidth

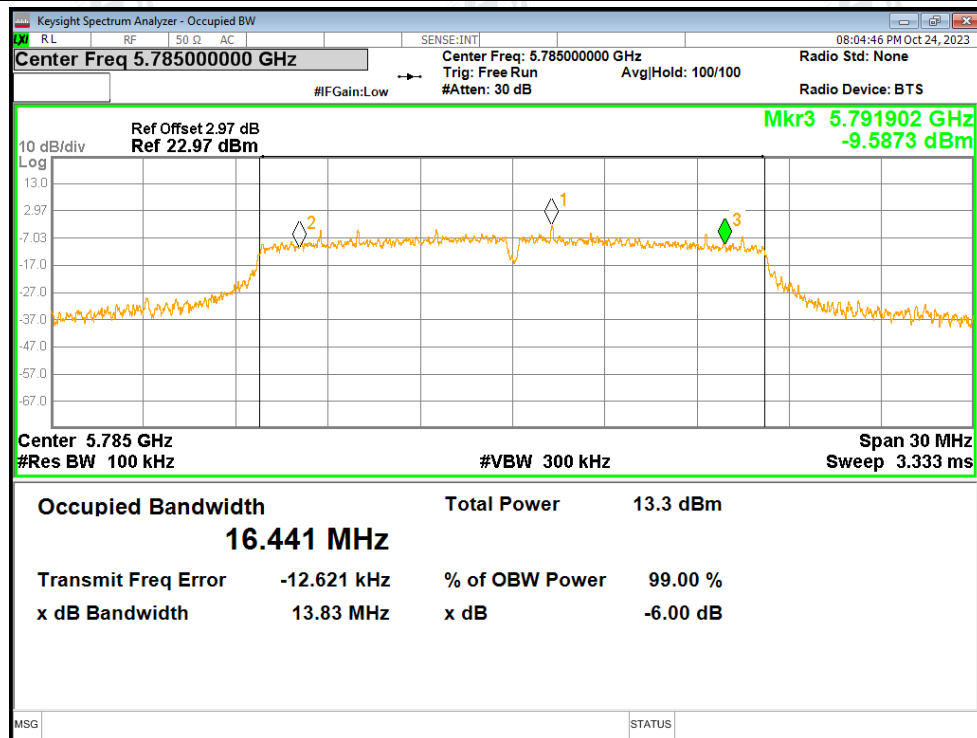
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	a	5745	Ant1	15.052	0.5	Pass
NVNT	a	5785	Ant1	13.829	0.5	Pass
NVNT	a	5825	Ant1	16.323	0.5	Pass
NVNT	n20	5745	Ant1	16.331	0.5	Pass
NVNT	n20	5785	Ant1	16.345	0.5	Pass
NVNT	n20	5825	Ant1	16.342	0.5	Pass
NVNT	n40	5755	Ant1	36.299	0.5	Pass
NVNT	n40	5795	Ant1	36.085	0.5	Pass
NVNT	ac20	5745	Ant1	17.557	0.5	Pass
NVNT	ac20	5785	Ant1	17.567	0.5	Pass
NVNT	ac20	5825	Ant1	17.584	0.5	Pass
NVNT	ac40	5755	Ant1	36.301	0.5	Pass
NVNT	ac40	5795	Ant1	36.073	0.5	Pass
NVNT	ac80	5775	Ant1	75.14	0.5	Pass

Test Graphs

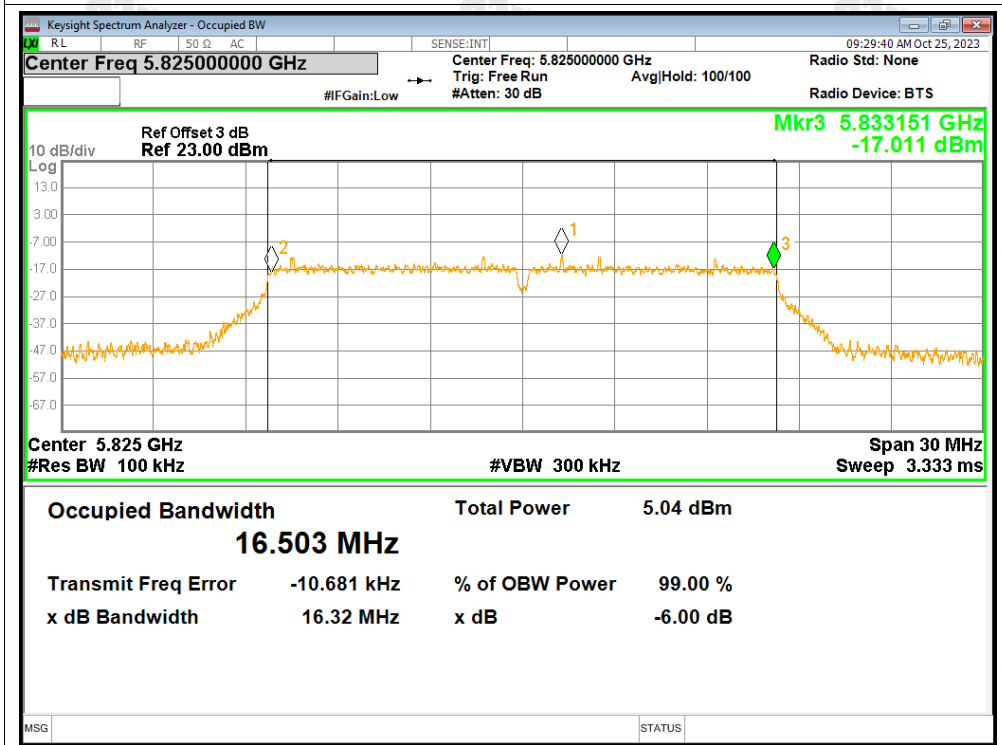
-6dB Bandwidth NVNT a 5745MHz Ant1



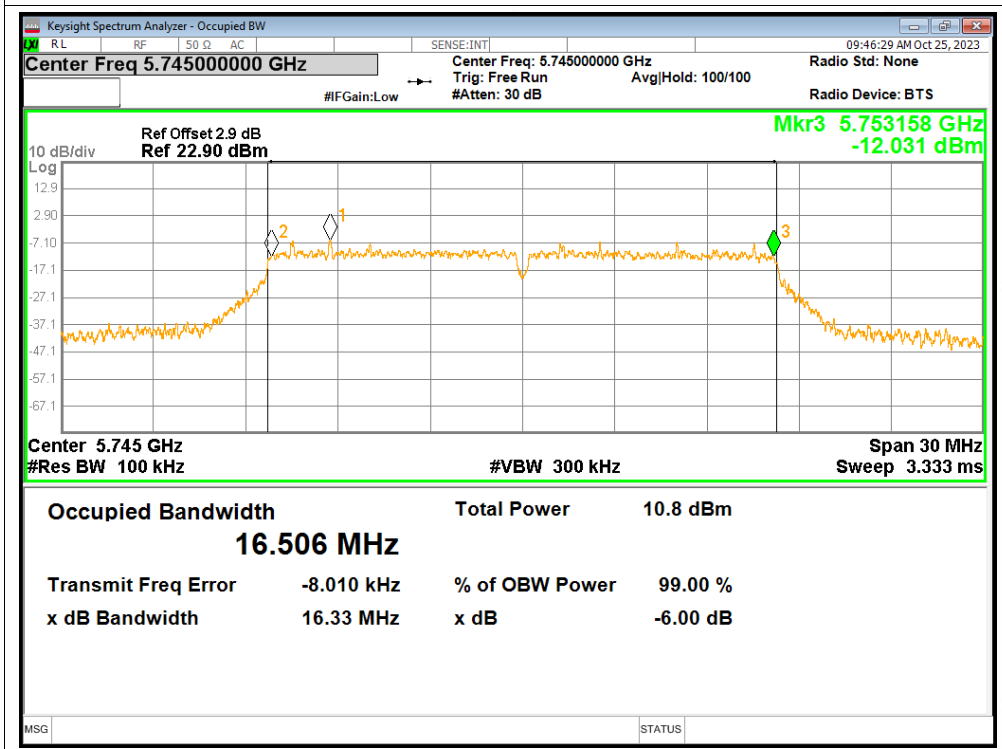
-6dB Bandwidth NVNT a 5785MHz Ant1



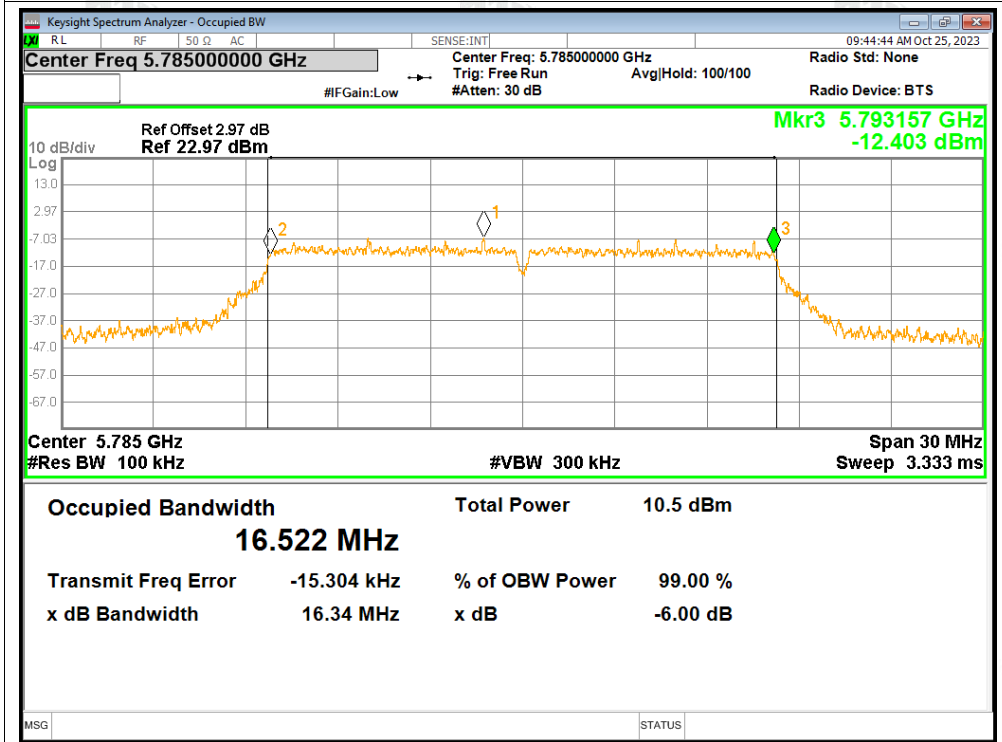
-6dB Bandwidth NVNT a 5825MHz Ant1



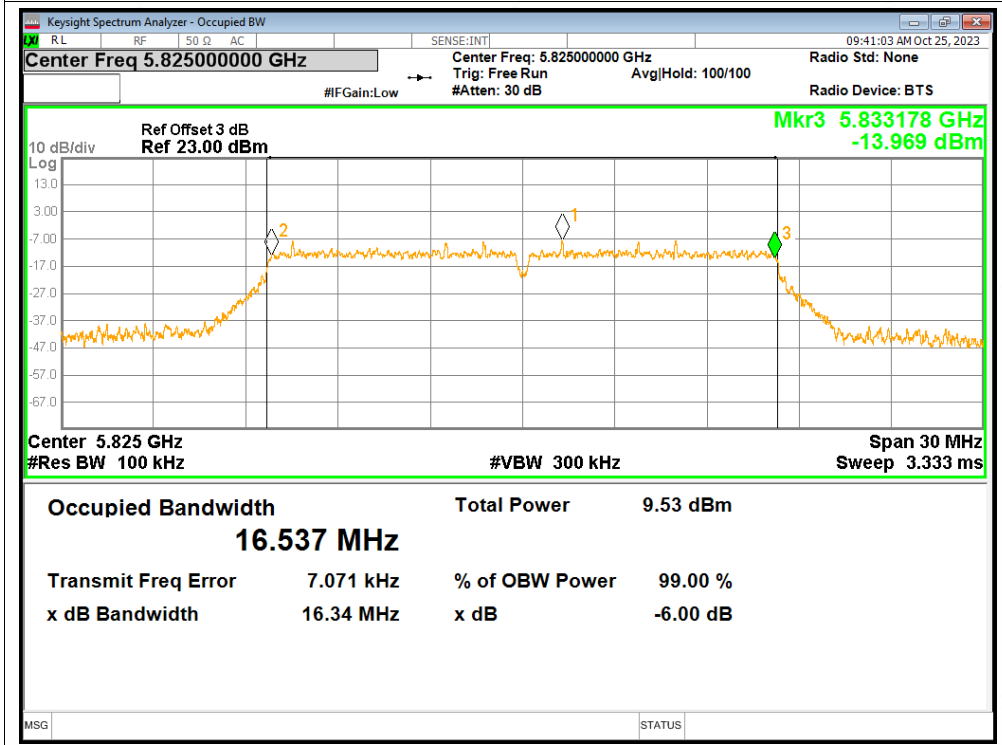
-6dB Bandwidth NVNT n20 5745MHz Ant1



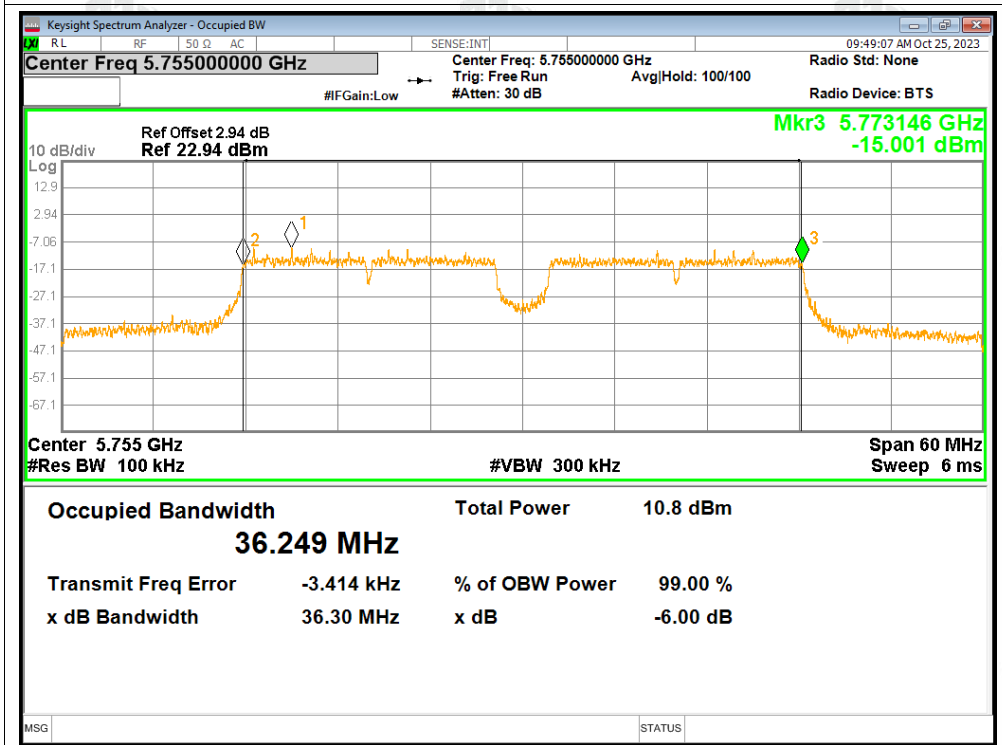
-6dB Bandwidth NVNT n20 5785MHz Ant1



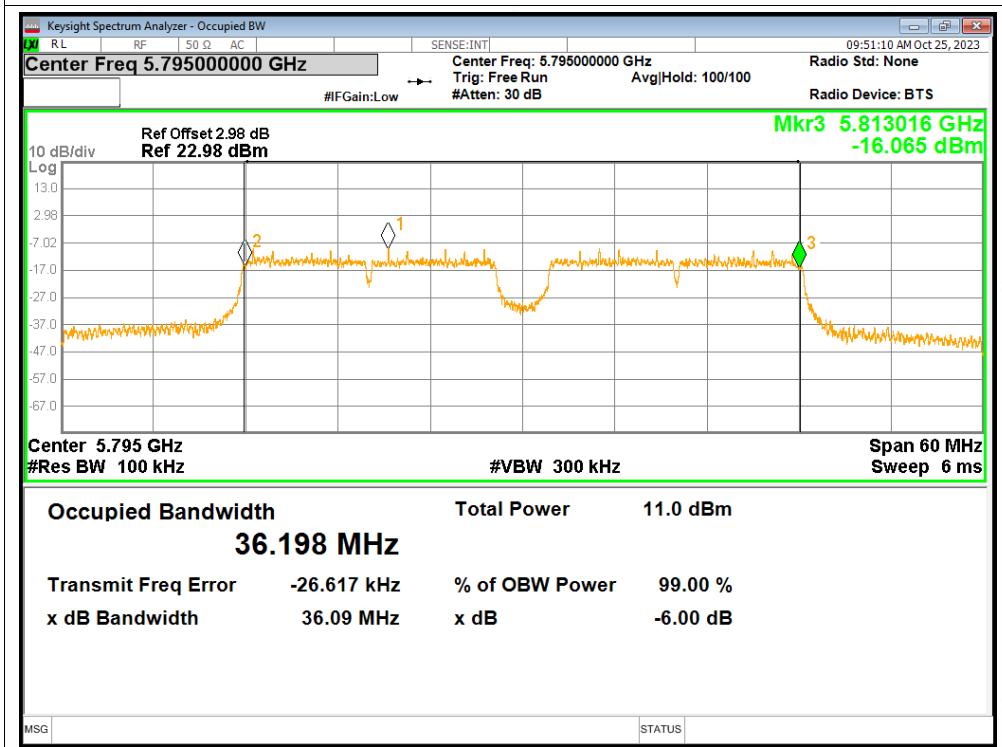
-6dB Bandwidth NVNT n20 5825MHz Ant1



-6dB Bandwidth NVNT n40 5755MHz Ant1

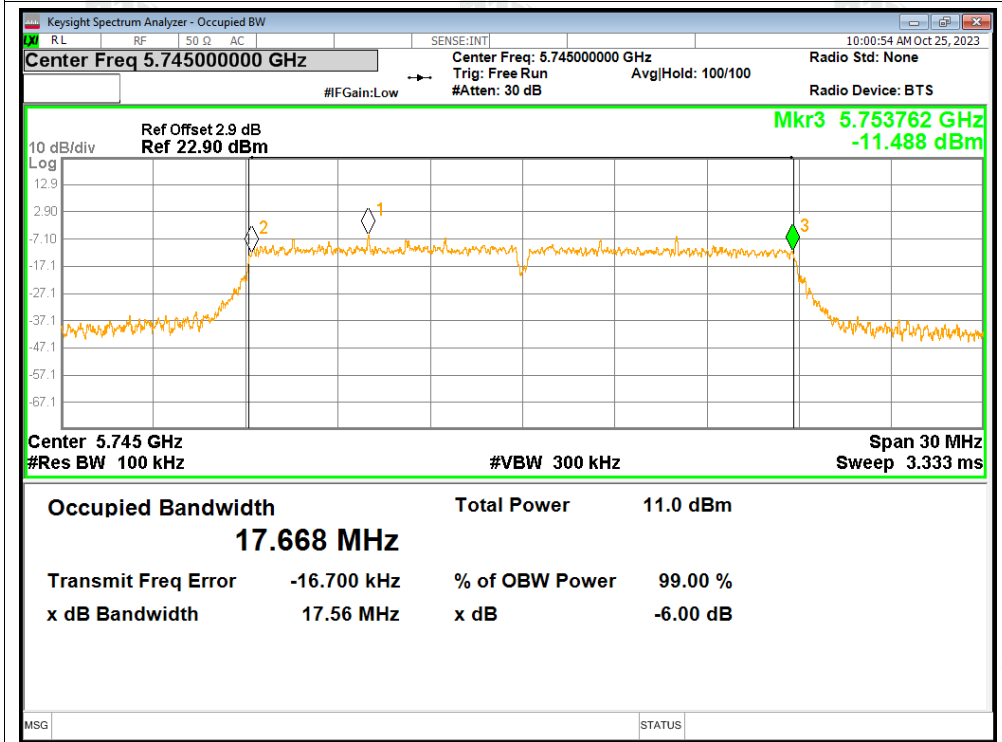


-6dB Bandwidth NVNT n40 5795MHz Ant1

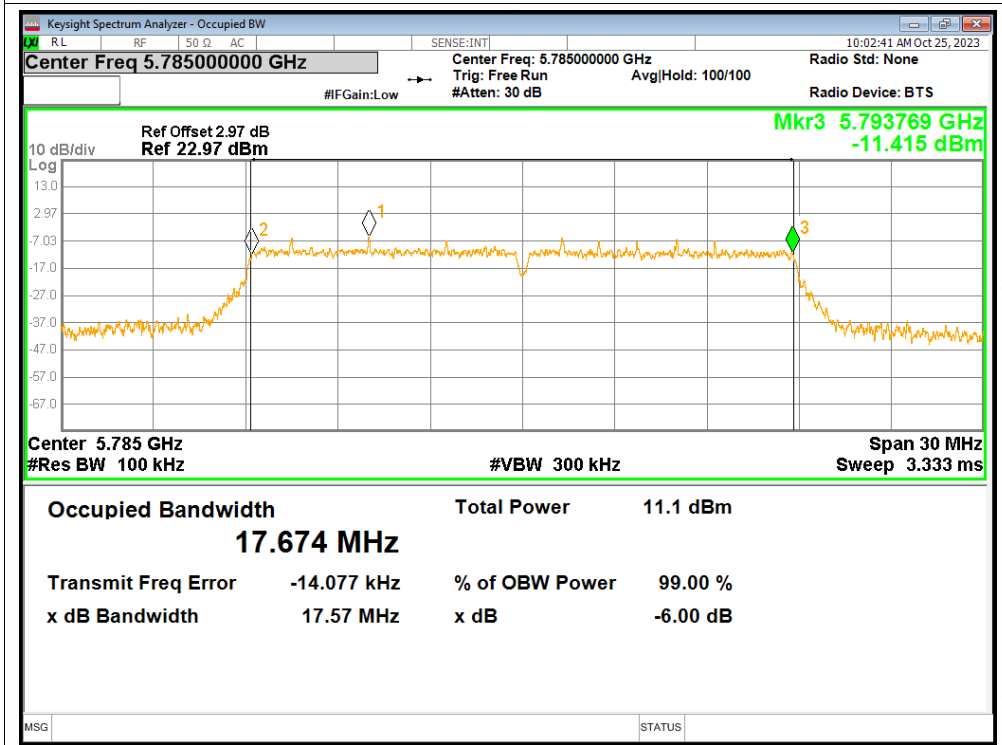




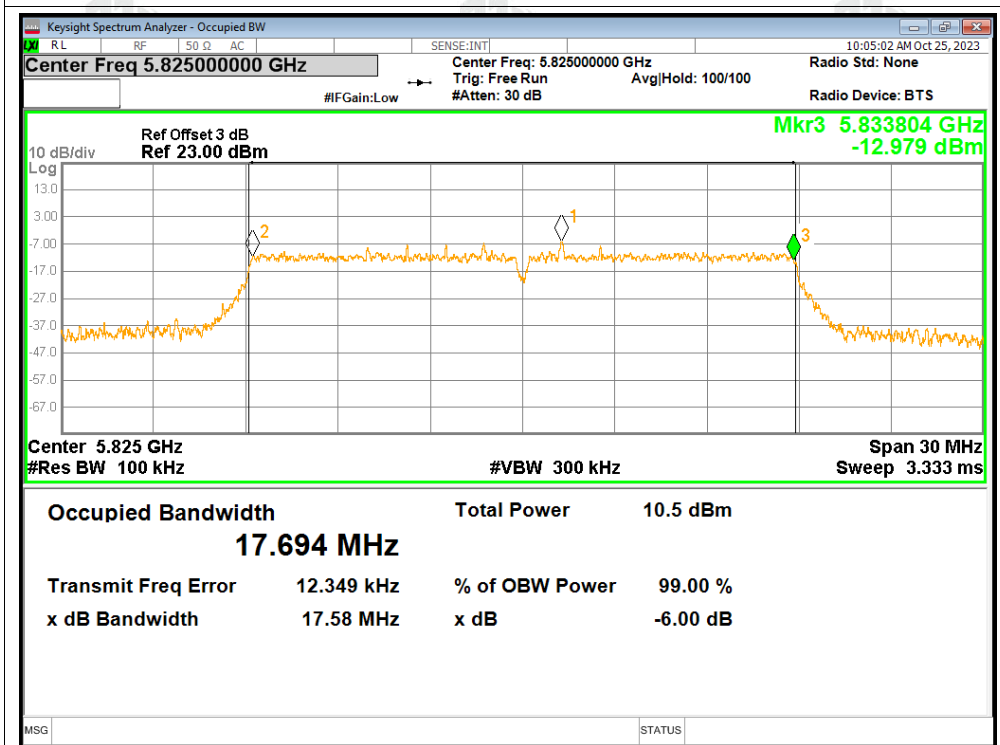
-6dB Bandwidth NVNT ac20 5745MHz Ant1



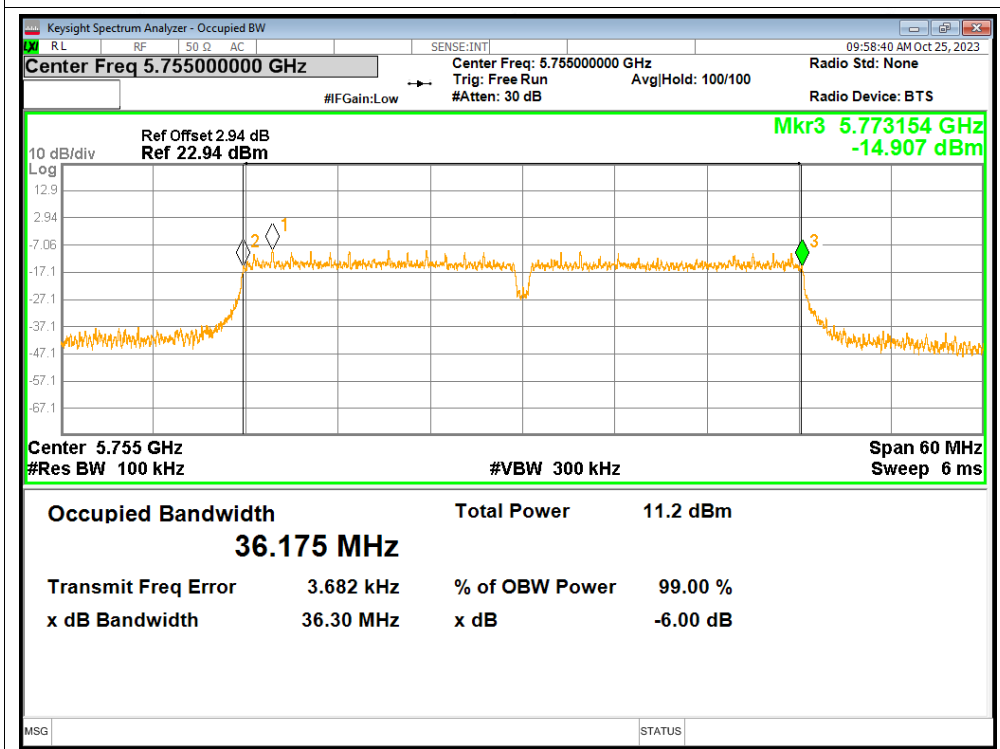
-6dB Bandwidth NVNT ac20 5785MHz Ant1



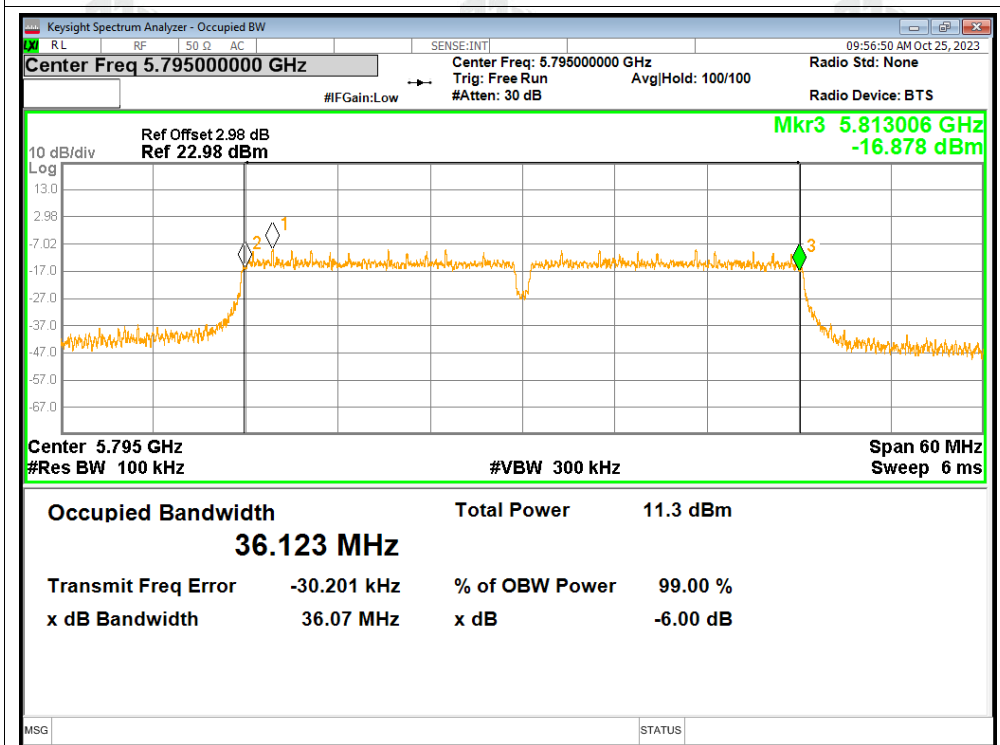
-6dB Bandwidth NVNT ac20 5825MHz Ant1



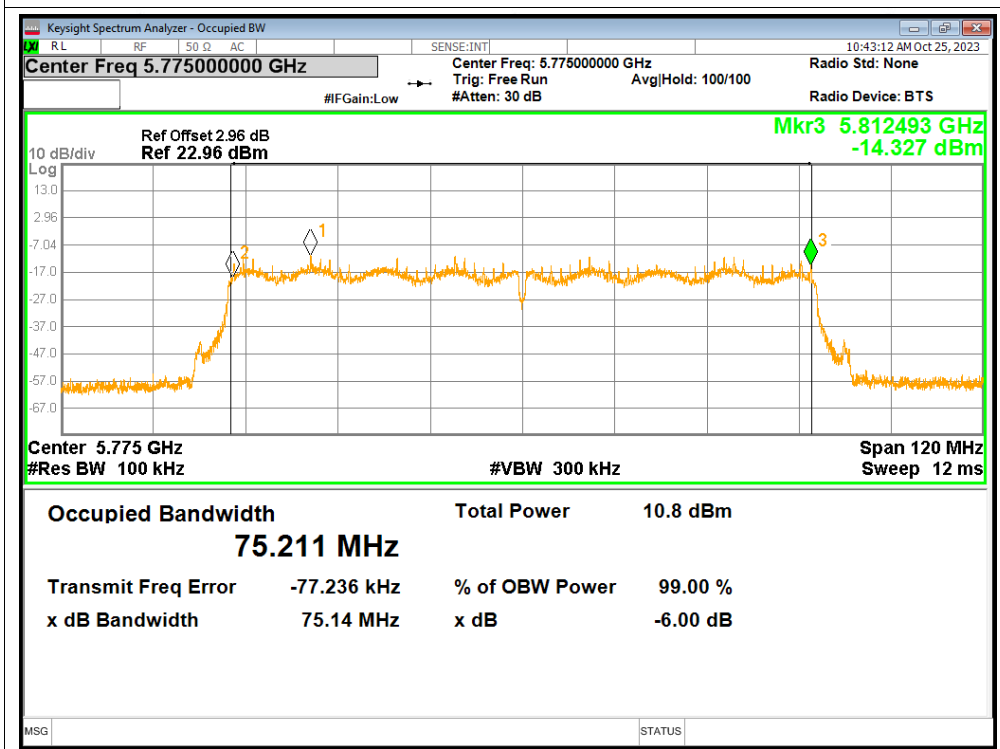
-6dB Bandwidth NVNT ac40 5755MHz Ant1



-6dB Bandwidth NVNT ac40 5795MHz Ant1



-6dB Bandwidth NVNT ac80 5775MHz Ant1



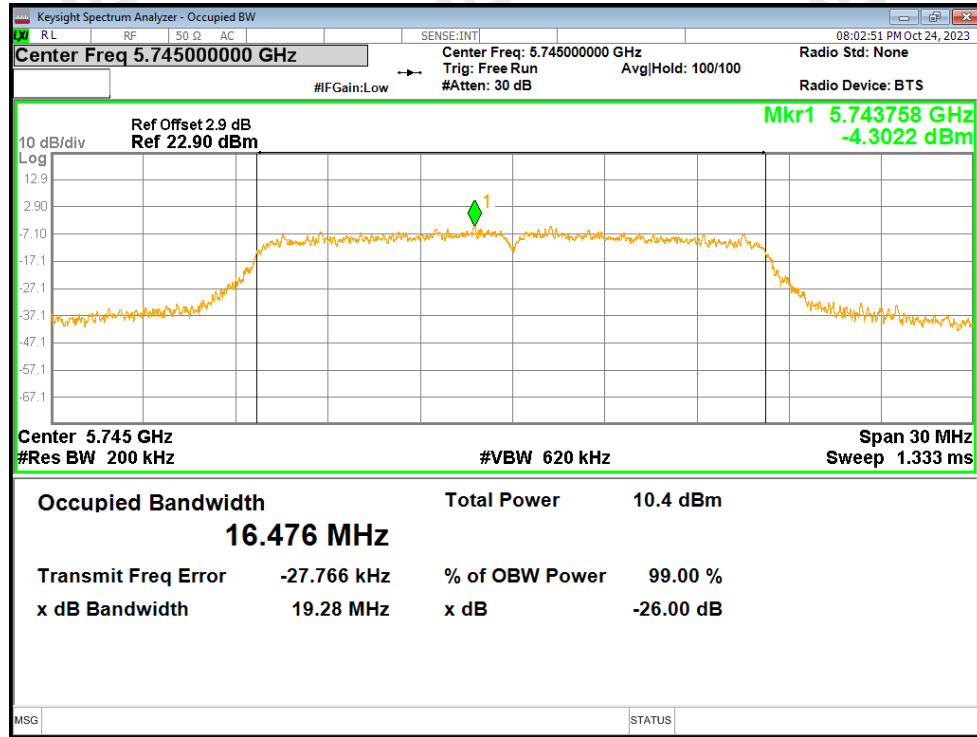


**A.4 Occupied Channel Bandwidth**

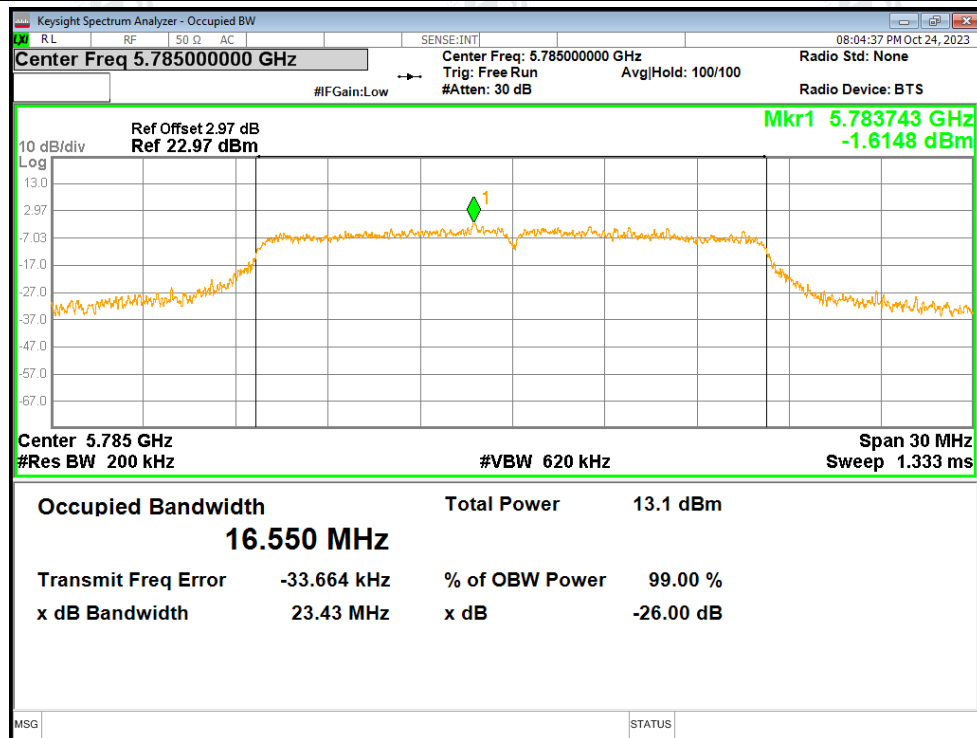
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	a	5745	Ant1	16.476
NVNT	a	5785	Ant1	16.55
NVNT	a	5825	Ant1	16.653
NVNT	n20	5745	Ant1	16.649
NVNT	n20	5785	Ant1	16.67
NVNT	n20	5825	Ant1	16.692
NVNT	n40	5755	Ant1	36.396
NVNT	n40	5795	Ant1	36.386
NVNT	ac20	5745	Ant1	17.707
NVNT	ac20	5785	Ant1	17.745
NVNT	ac20	5825	Ant1	17.775
NVNT	ac40	5755	Ant1	36.294
NVNT	ac40	5795	Ant1	36.235
NVNT	ac80	5775	Ant1	75.376

Test Graphs

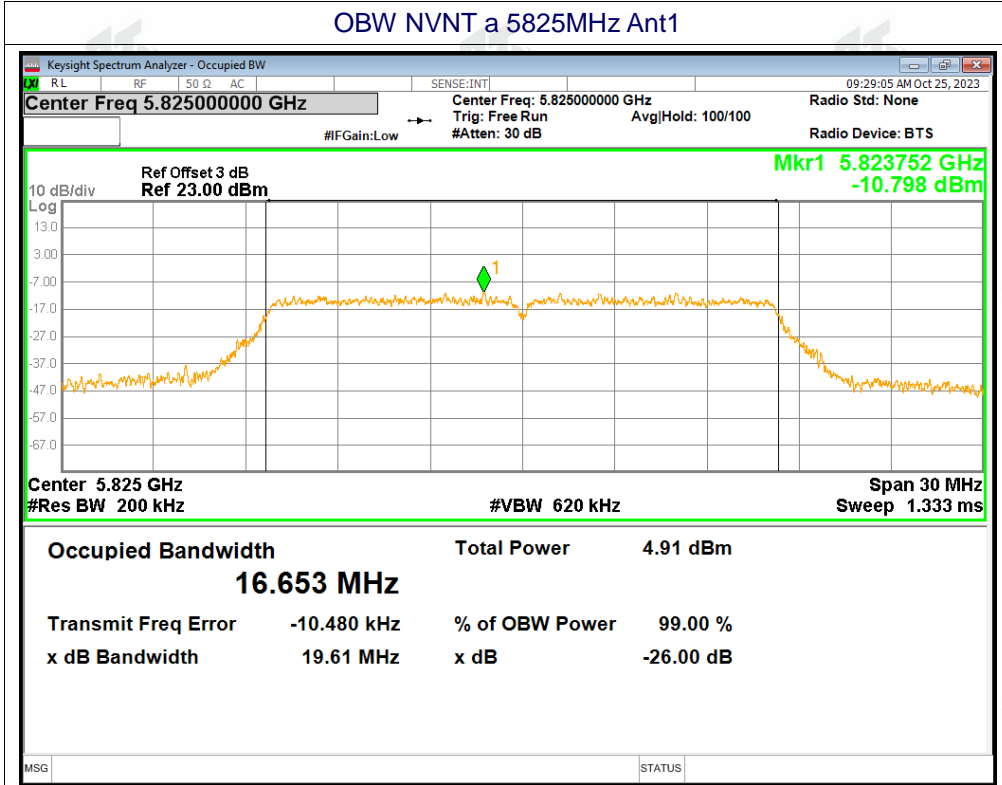
OBW NVNT a 5745MHz Ant1



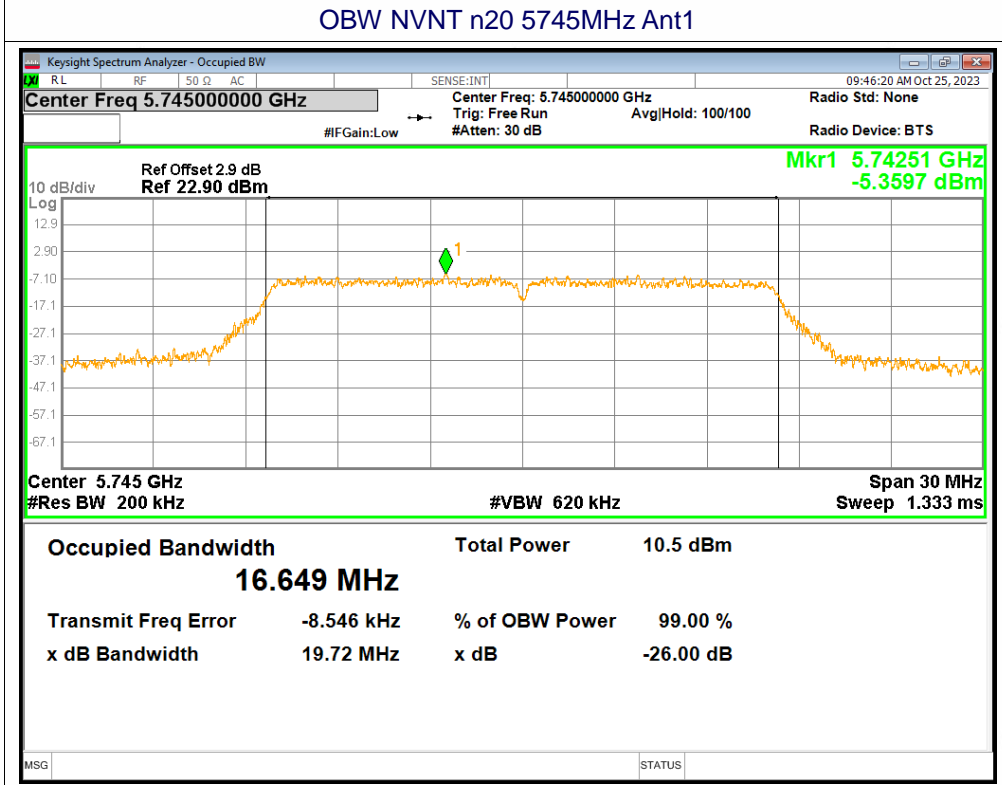
OBW NVNT a 5785MHz Ant1



OBW NVNT a 5825MHz Ant1



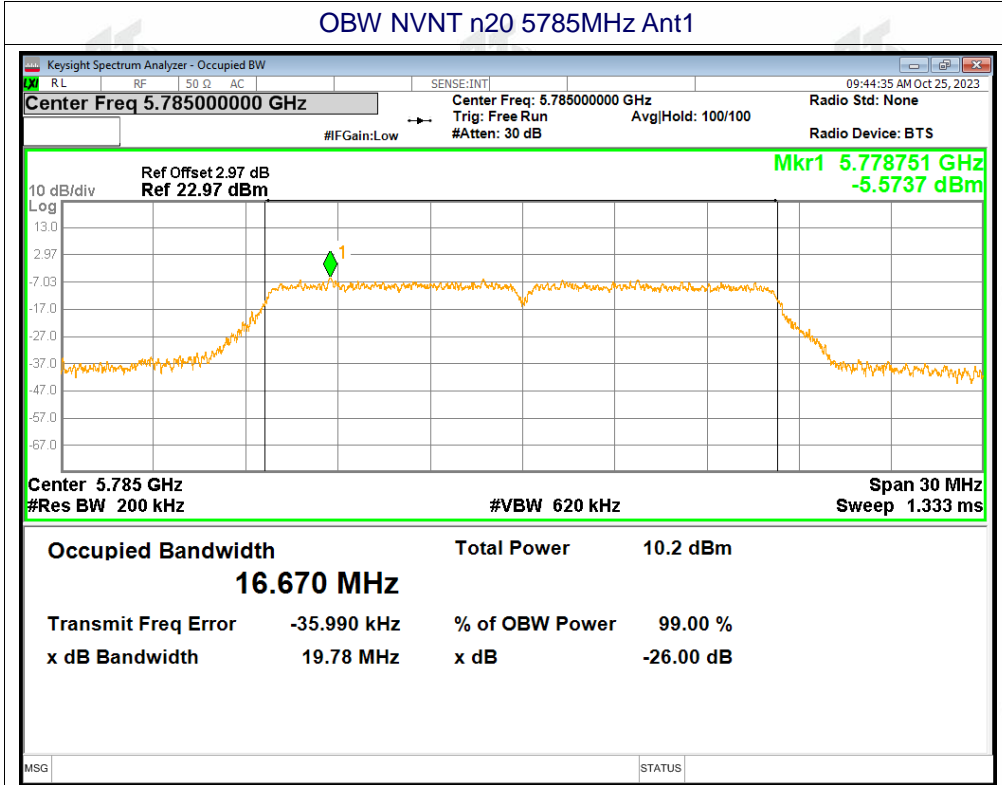
OBW NVNT n20 5745MHz Ant1



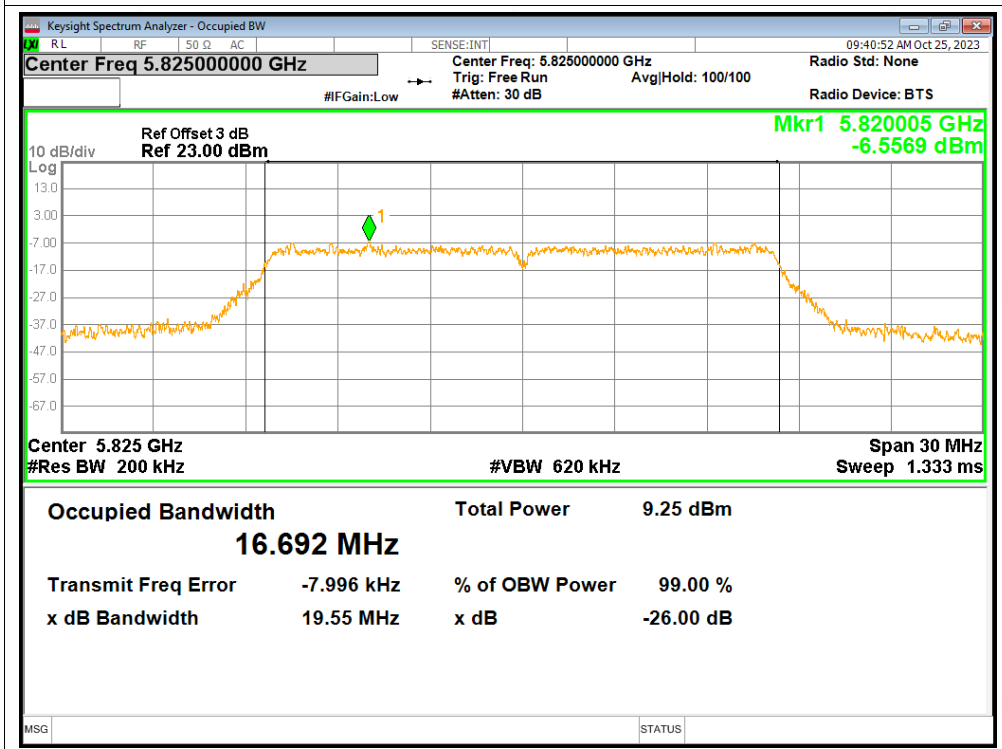


FCC ID:2BC6J-ZTCP66-NBT

OBW NVNT n20 5785MHz Ant1



OBW NVNT n20 5825MHz Ant1

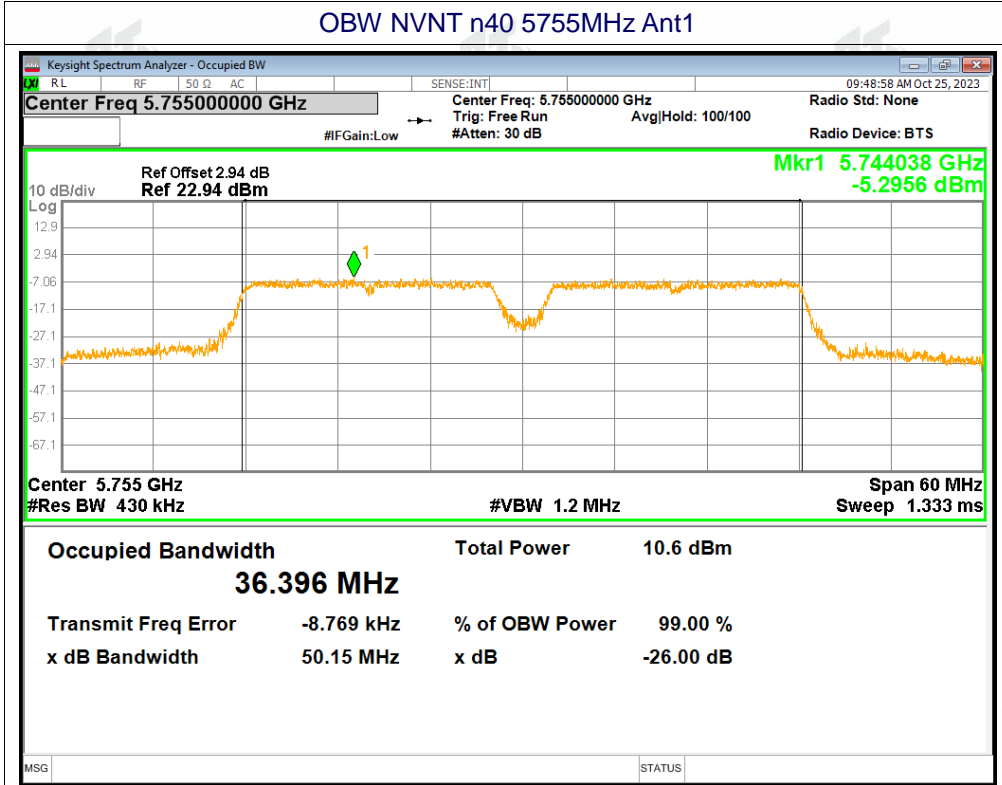




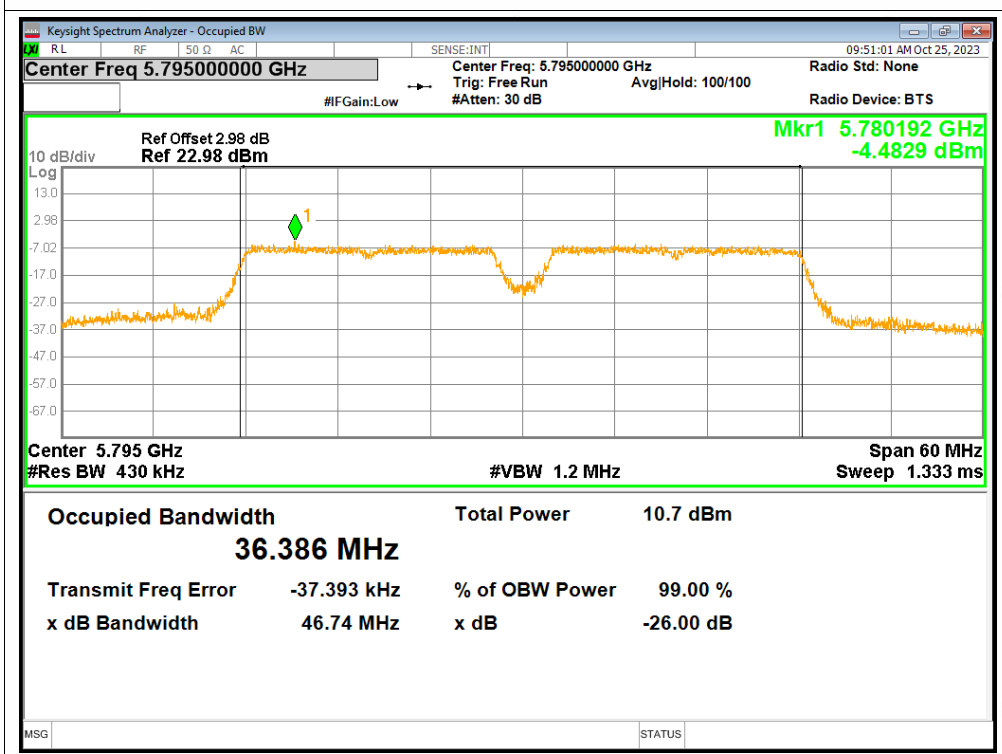


FCC ID:2BC6J-ZTCP66-NBT

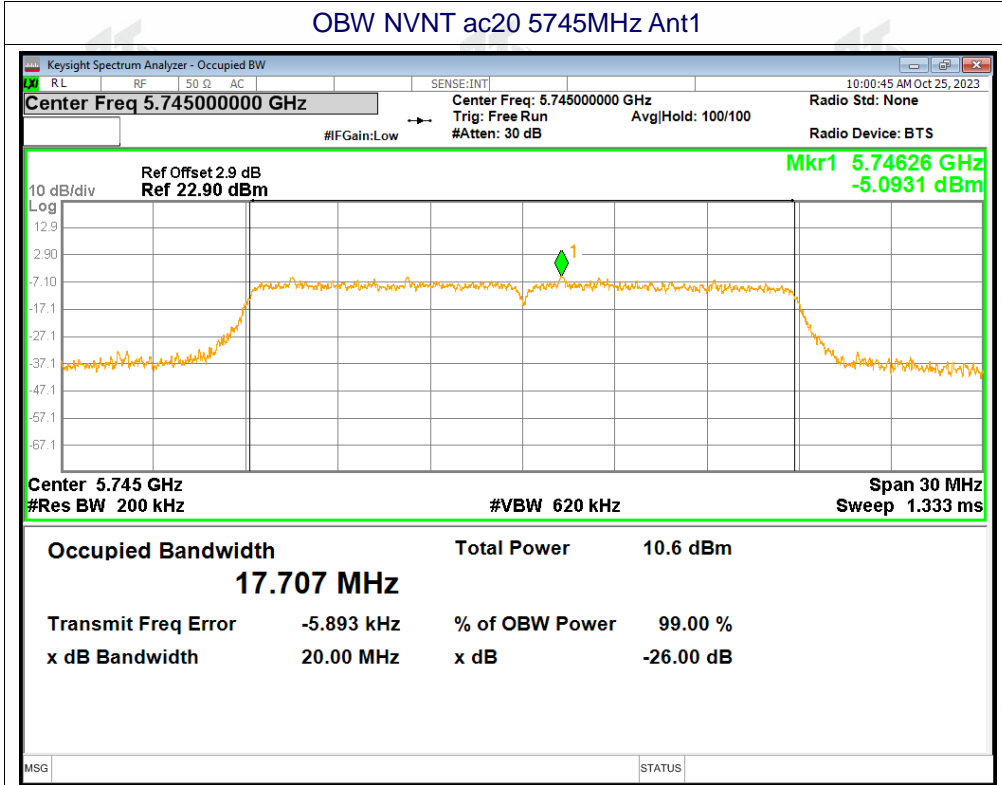
OBW NVNT n40 5755MHz Ant1



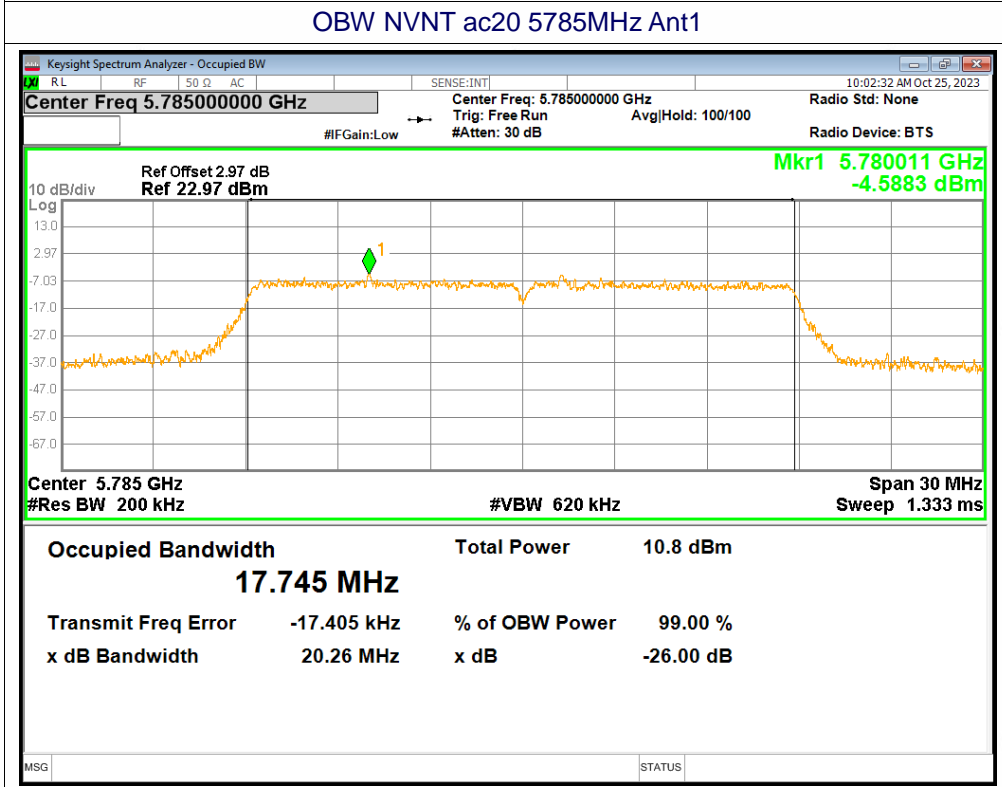
OBW NVNT n40 5795MHz Ant1



OBW NVNT ac20 5745MHz Ant1

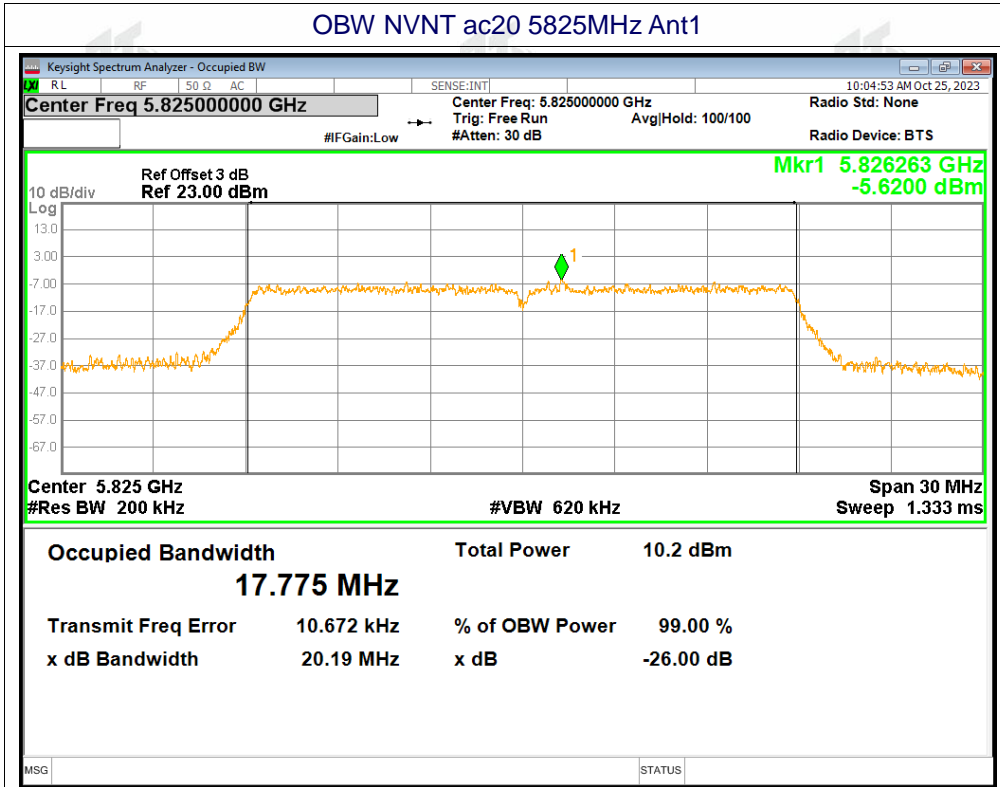


OBW NVNT ac20 5785MHz Ant1

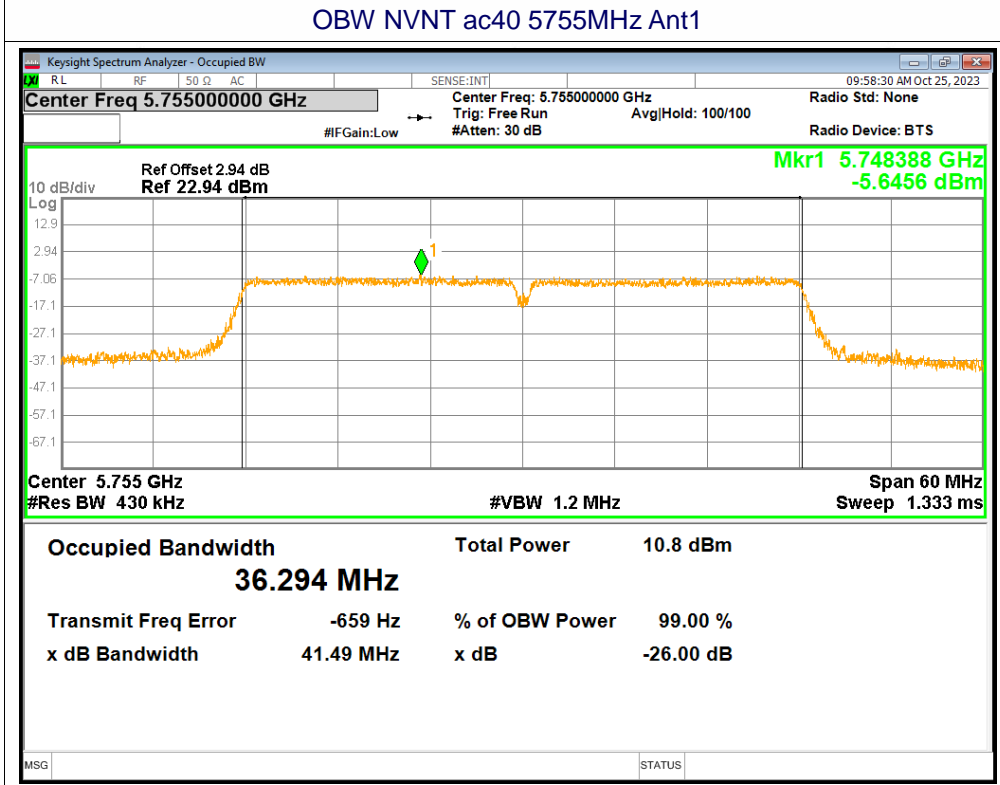


FCC ID:2BC6J-ZTCP66-NBT

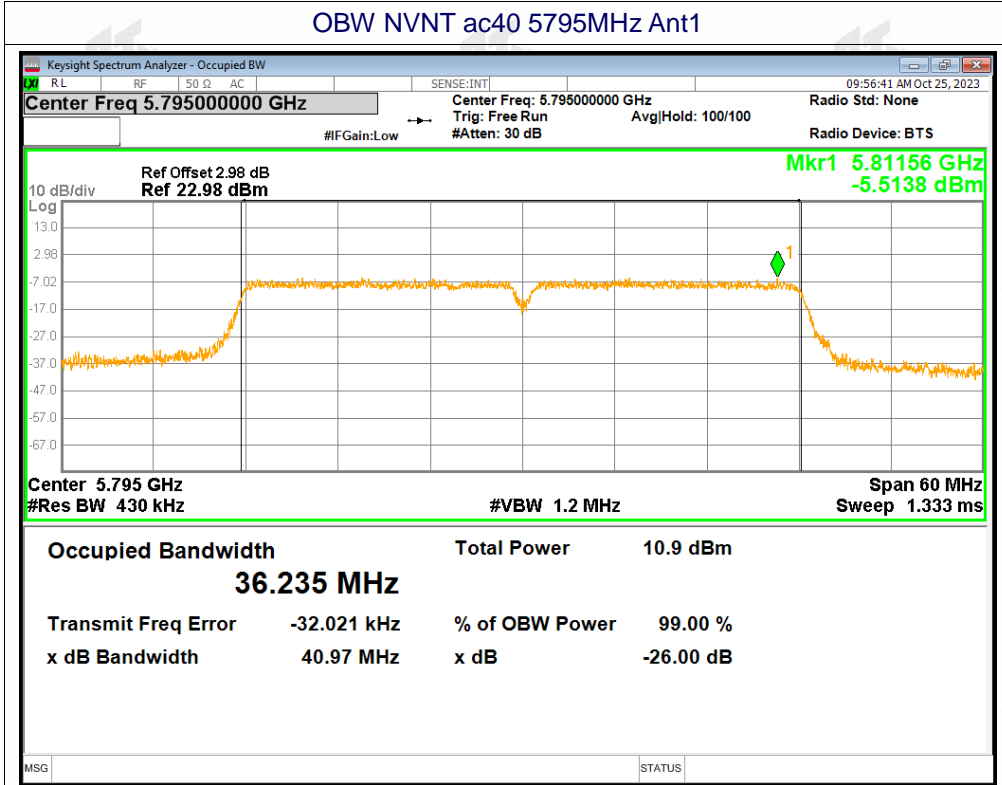
OBW NVNT ac20 5825MHz Ant1



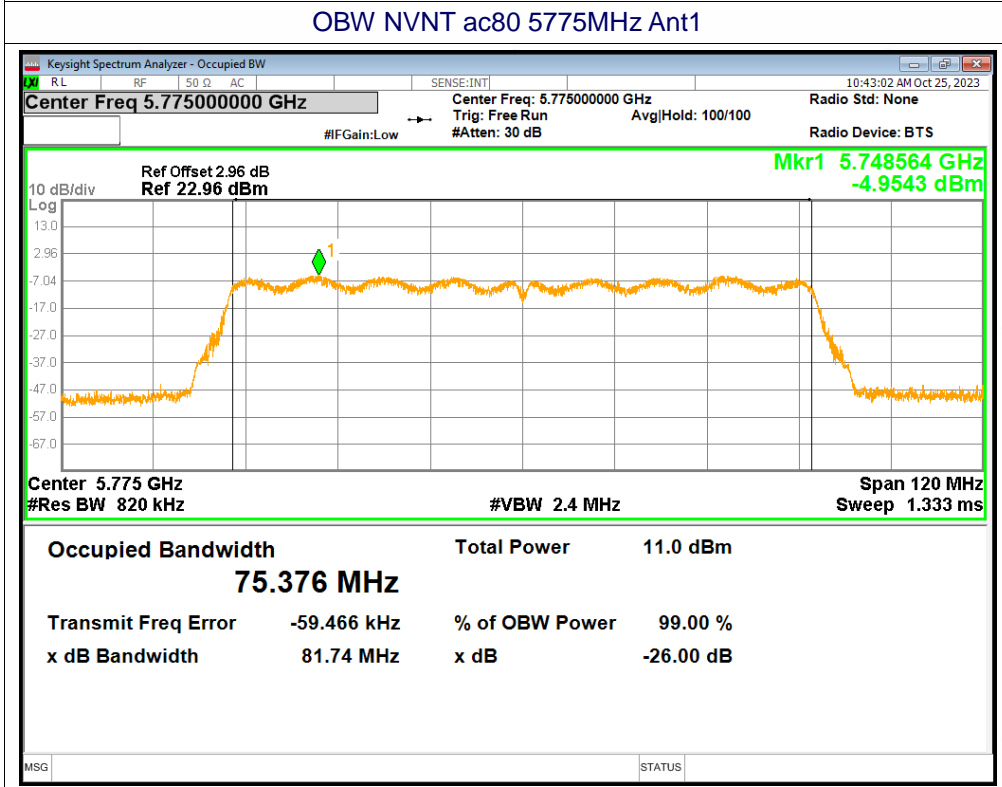
OBW NVNT ac40 5755MHz Ant1



OBW NVNT ac40 5795MHz Ant1



OBW NVNT ac80 5775MHz Ant1



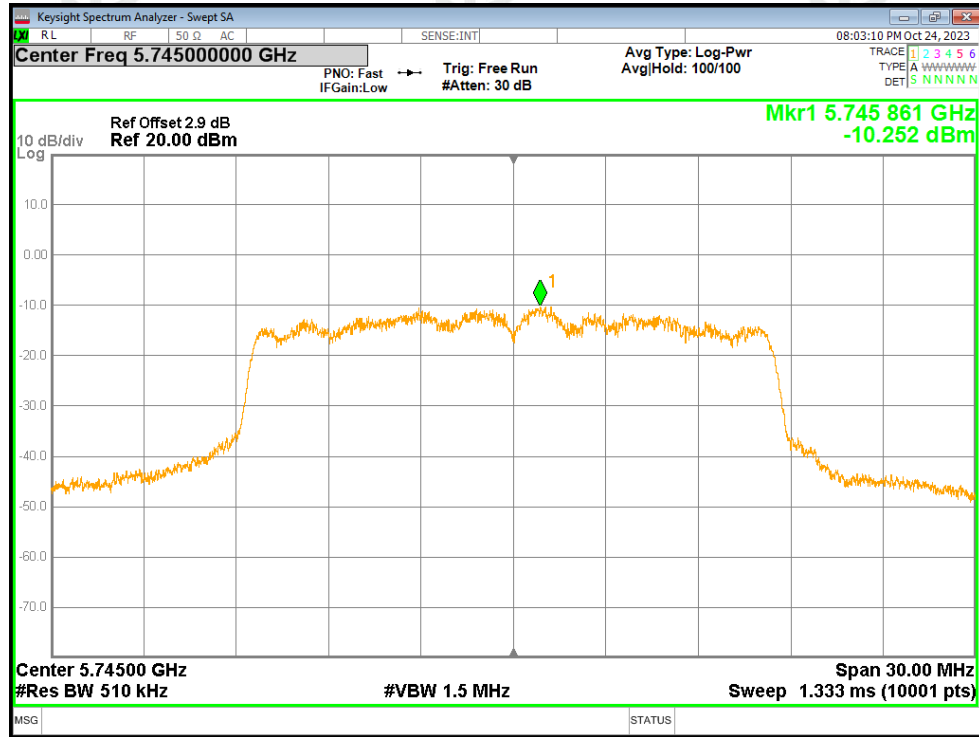


**A.5 Maximum Power Spectral Density Level**

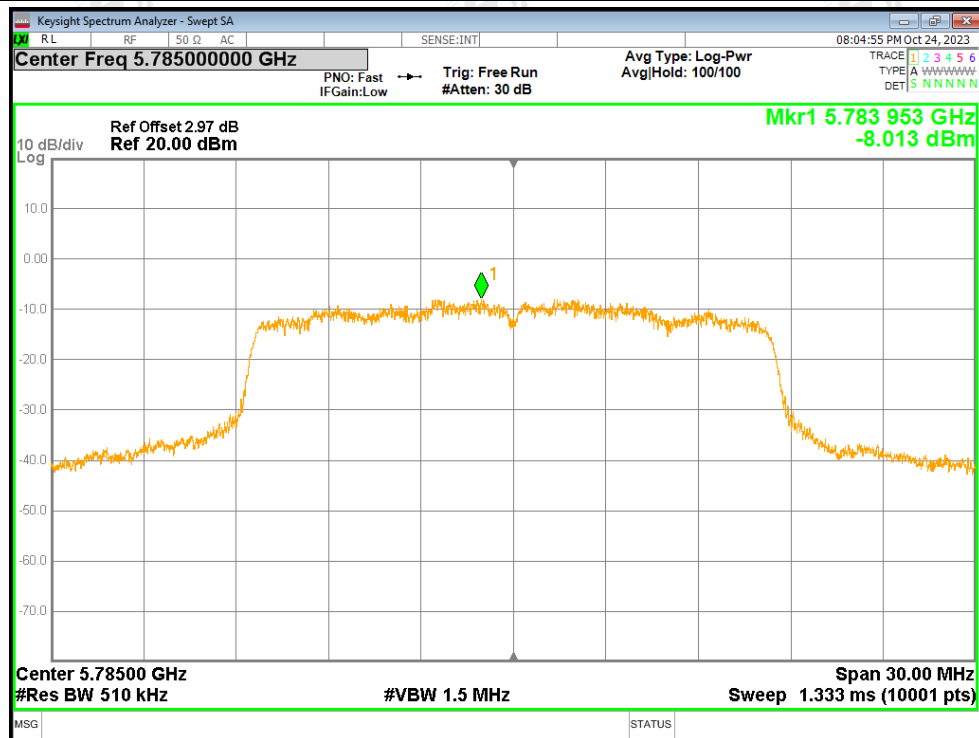
Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm)	Duty Factor (dB)	Total PSD (dBm)	Limit (dBm)	Verdict
NVNT	a	5745	Ant1	-10.25	0.09	-10.16	30	Pass
NVNT	a	5785	Ant1	-8.01	0.12	-7.89	30	Pass
NVNT	a	5825	Ant1	-16.72	0.12	-16.6	30	Pass
NVNT	n20	5745	Ant1	-10.57	0.09	-10.48	30	Pass
NVNT	n20	5785	Ant1	-11.01	0.12	-10.89	30	Pass
NVNT	n20	5825	Ant1	-12.37	0.12	-12.25	30	Pass
NVNT	n40	5755	Ant1	-13.56	1.35	-12.21	30	Pass
NVNT	n40	5795	Ant1	-13.62	0.32	-13.3	30	Pass
NVNT	ac20	5745	Ant1	-10.87	0.13	-10.74	30	Pass
NVNT	ac20	5785	Ant1	-10.67	0.1	-10.57	30	Pass
NVNT	ac20	5825	Ant1	-11.21	0.1	-11.11	30	Pass
NVNT	ac40	5755	Ant1	-15.05	0.27	-14.78	30	Pass
NVNT	ac40	5795	Ant1	-15.09	0.26	-14.83	30	Pass
NVNT	ac80	5775	Ant1	-22.13	1.43	-20.7	30	Pass

Test Graphs

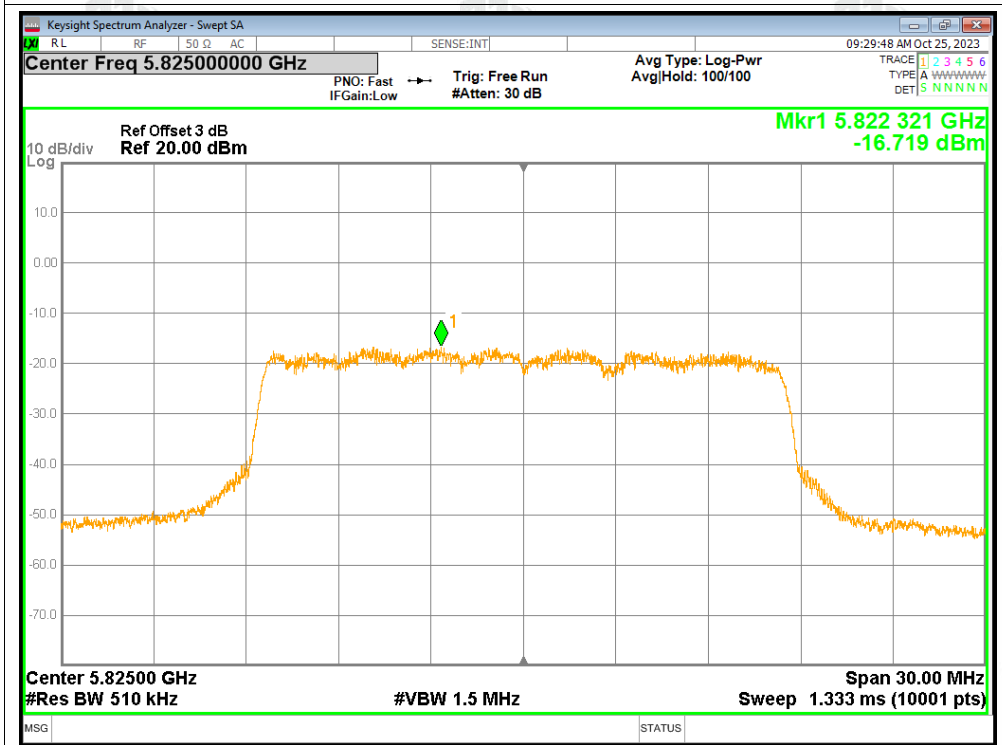
PSD NVNT a 5745MHz Ant1



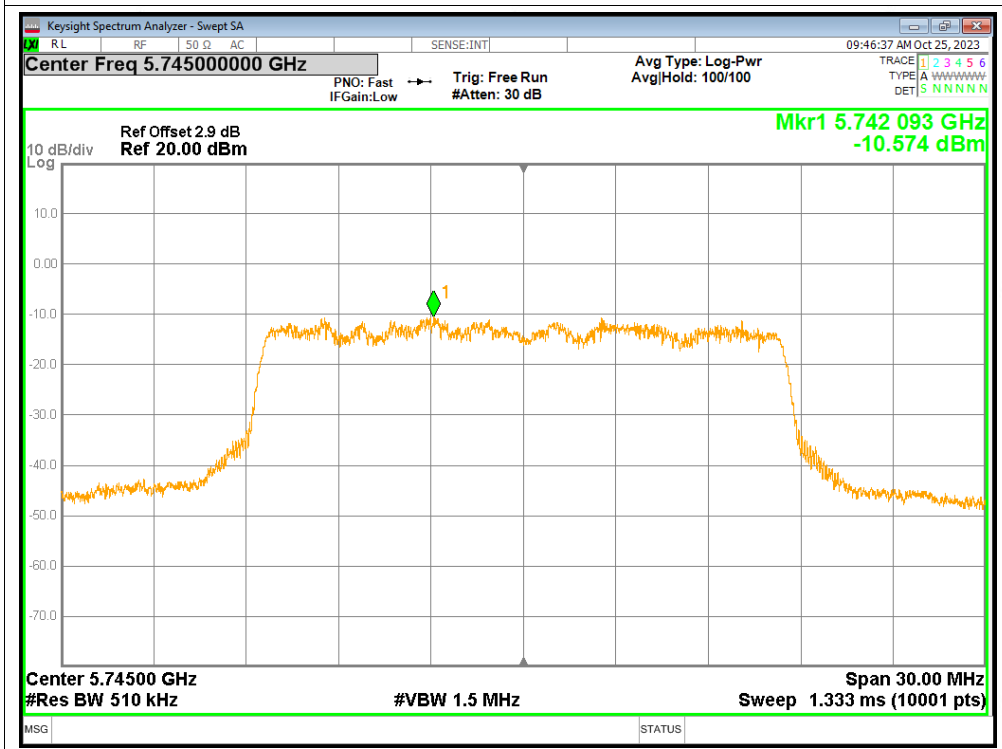
PSD NVNT a 5785MHz Ant1



PSD NVNT a 5825MHz Ant1



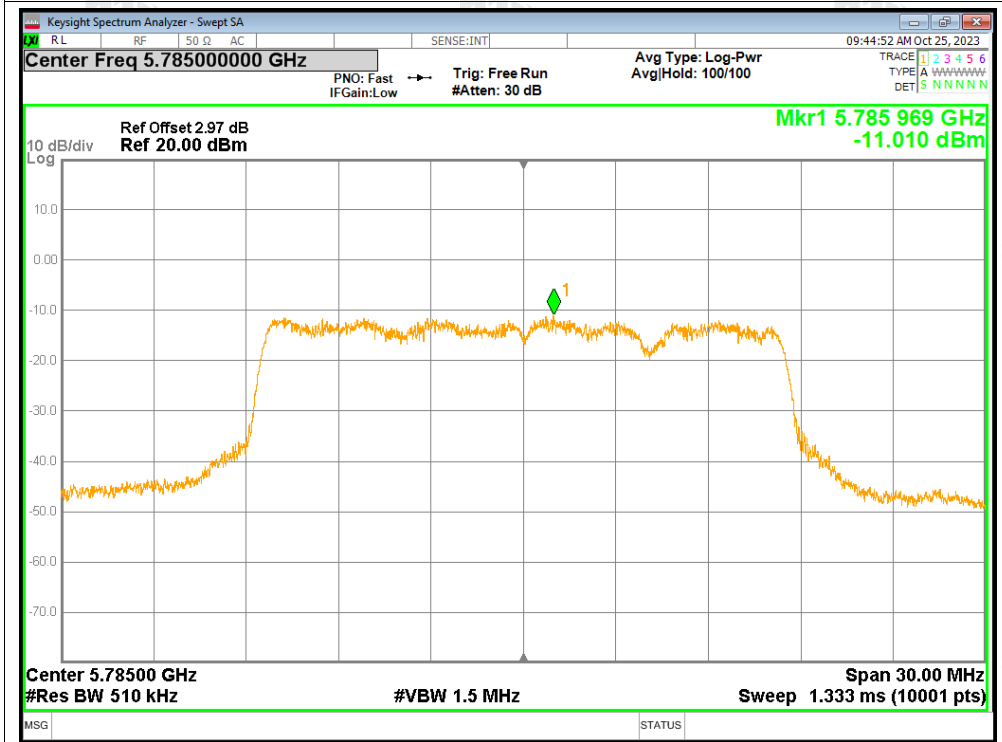
PSD NVNT n20 5745MHz Ant1



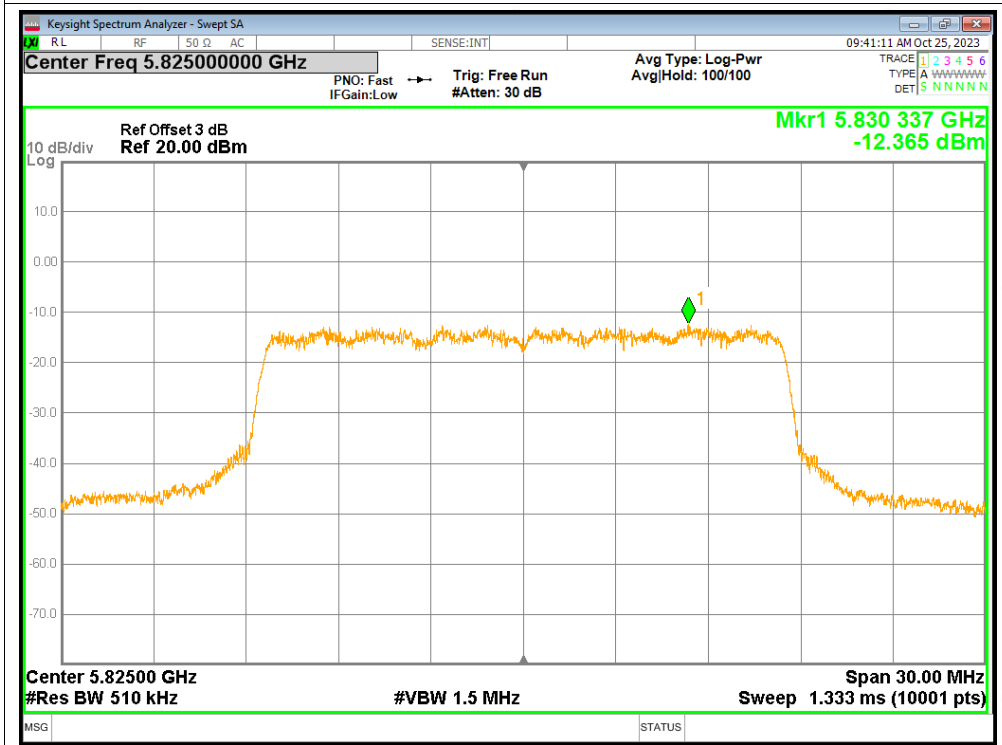


FCC ID:2BC6J-ZTCP66-NBT

PSD NVNT n20 5785MHz Ant1



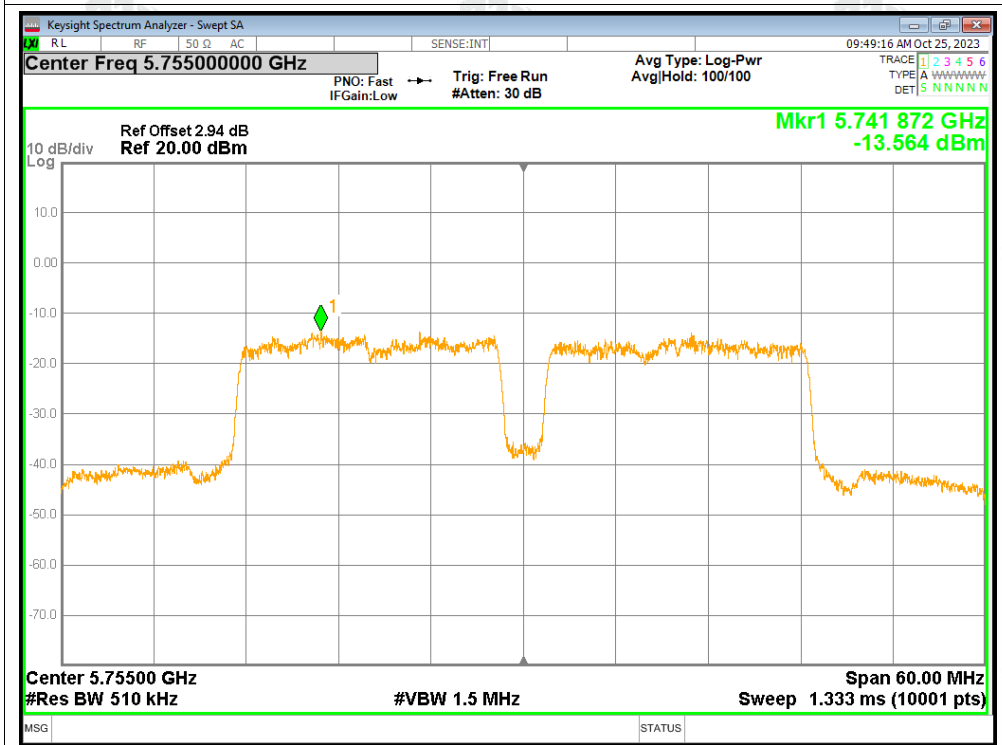
PSD NVNT n20 5825MHz Ant1



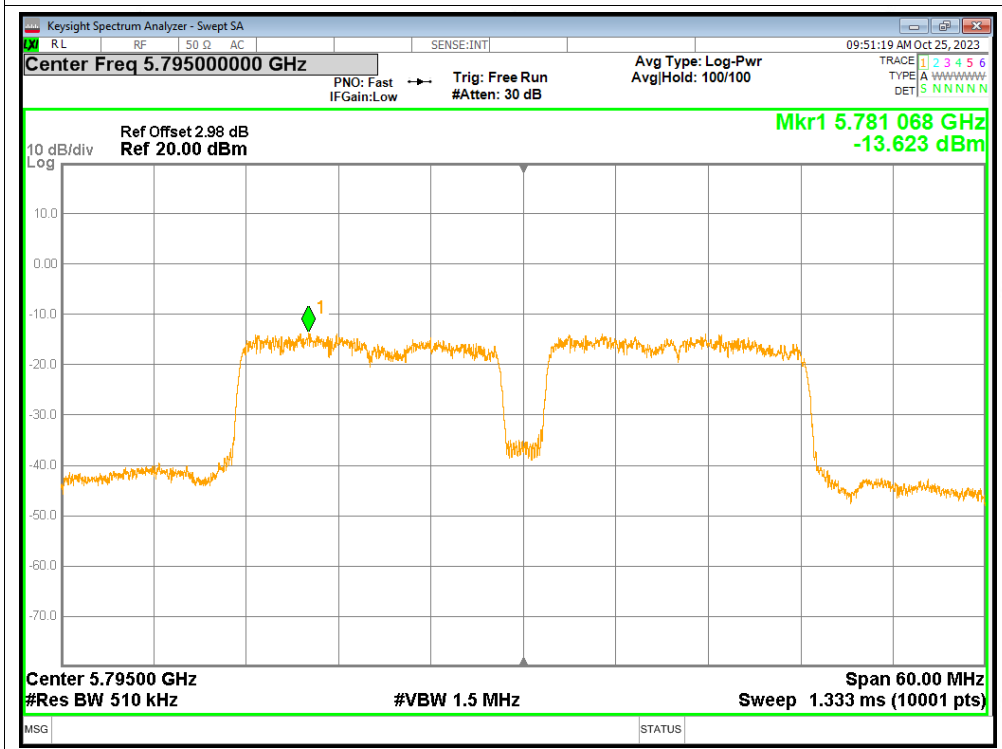


FCC ID:2BC6J-ZTCP66-NBT

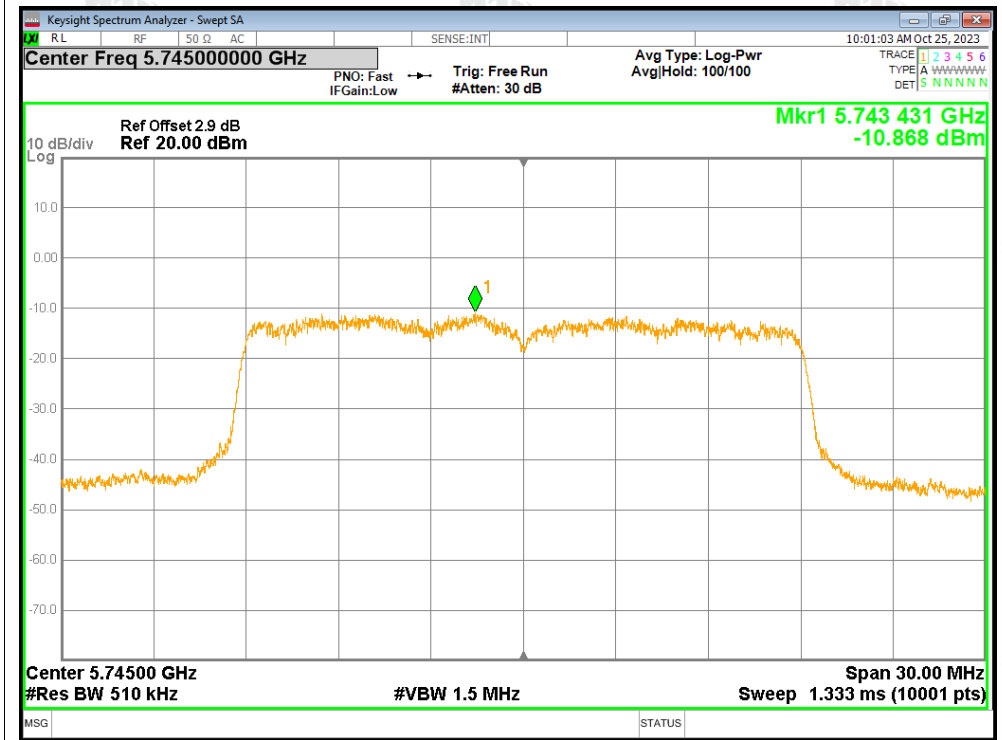
PSD NVNT n40 5755MHz Ant1



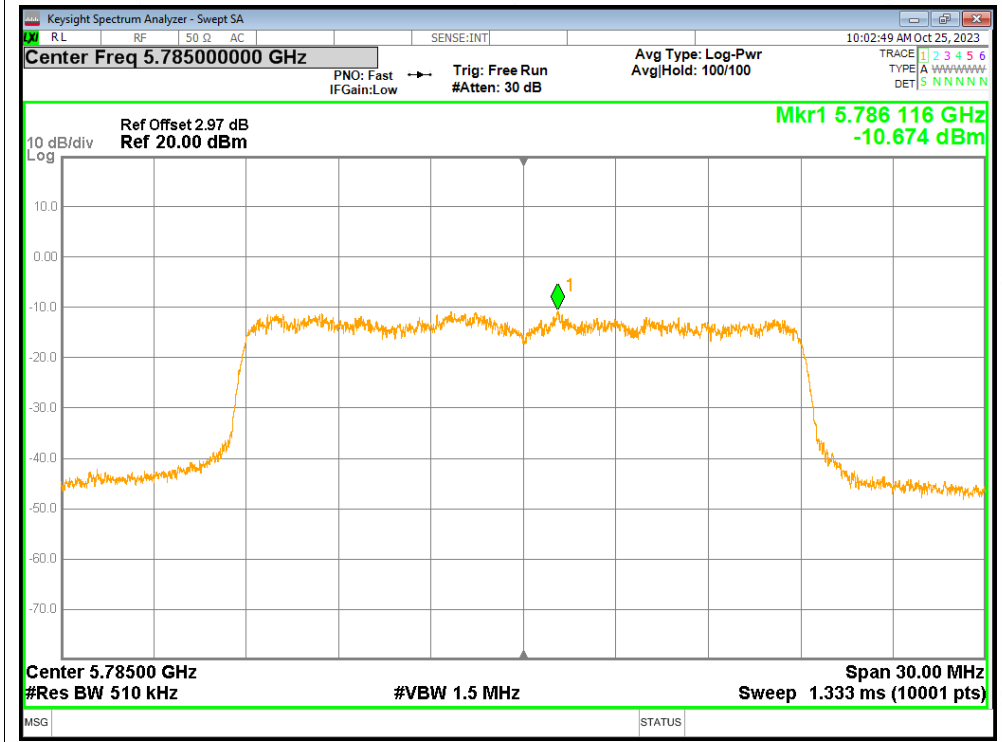
PSD NVNT n40 5795MHz Ant1



PSD NVNT ac20 5745MHz Ant1

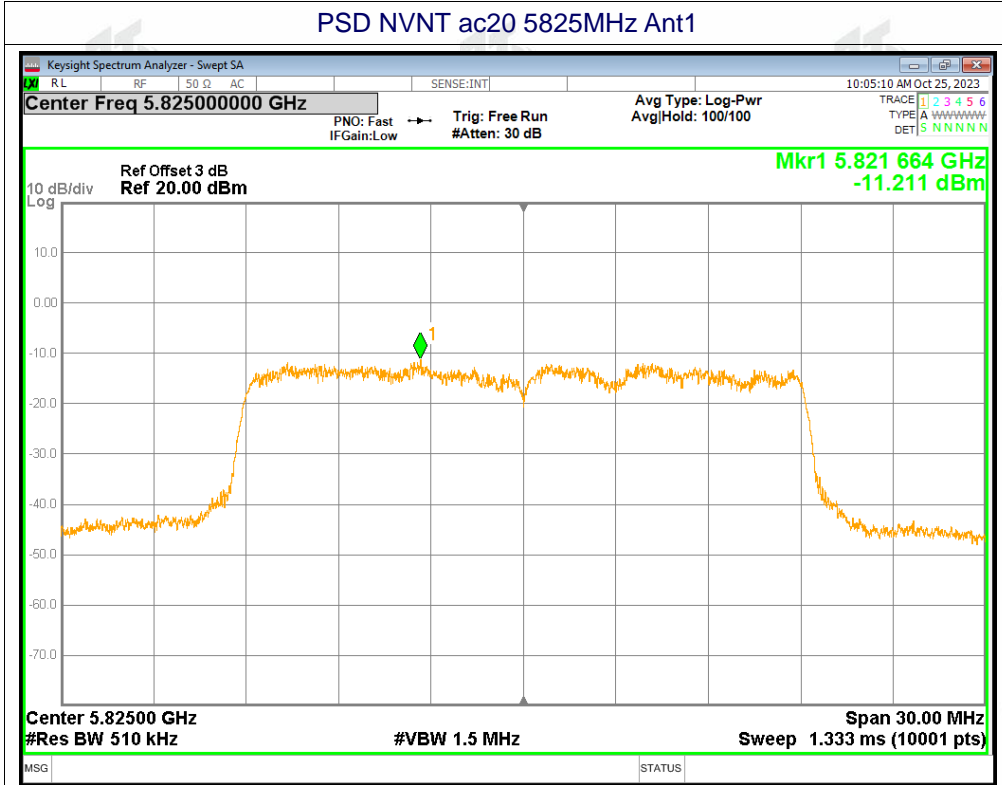


PSD NVNT ac20 5785MHz Ant1

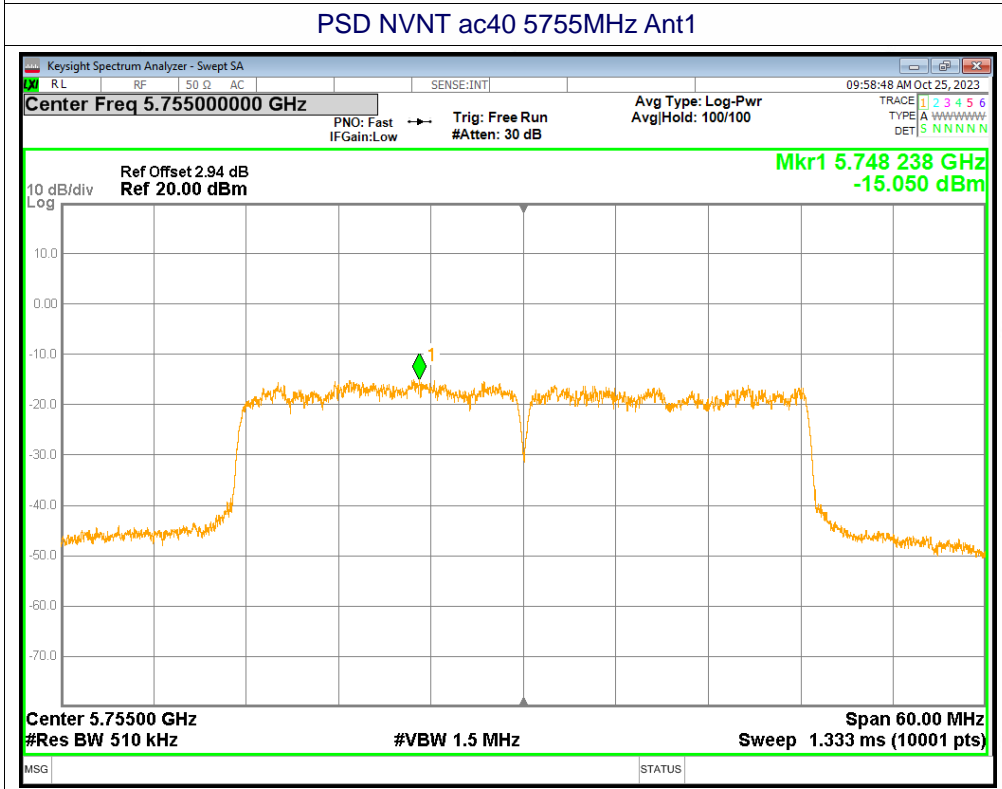


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PSD NVNT ac20 5825MHz Ant1

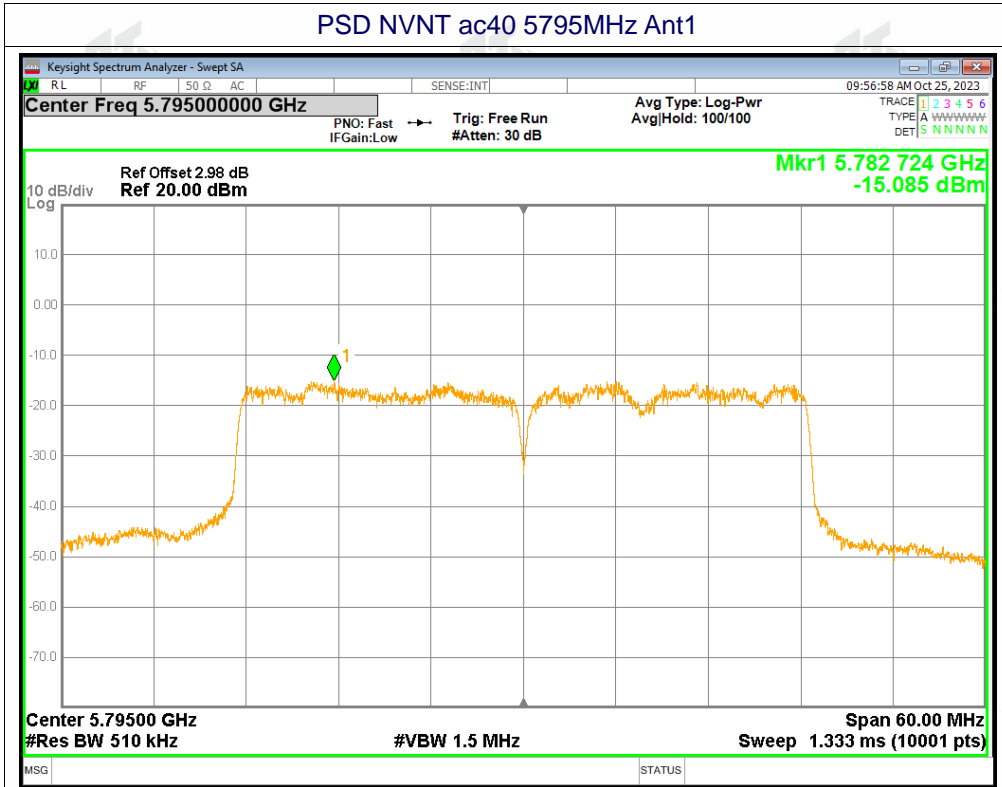


PSD NVNT ac40 5755MHz Ant1

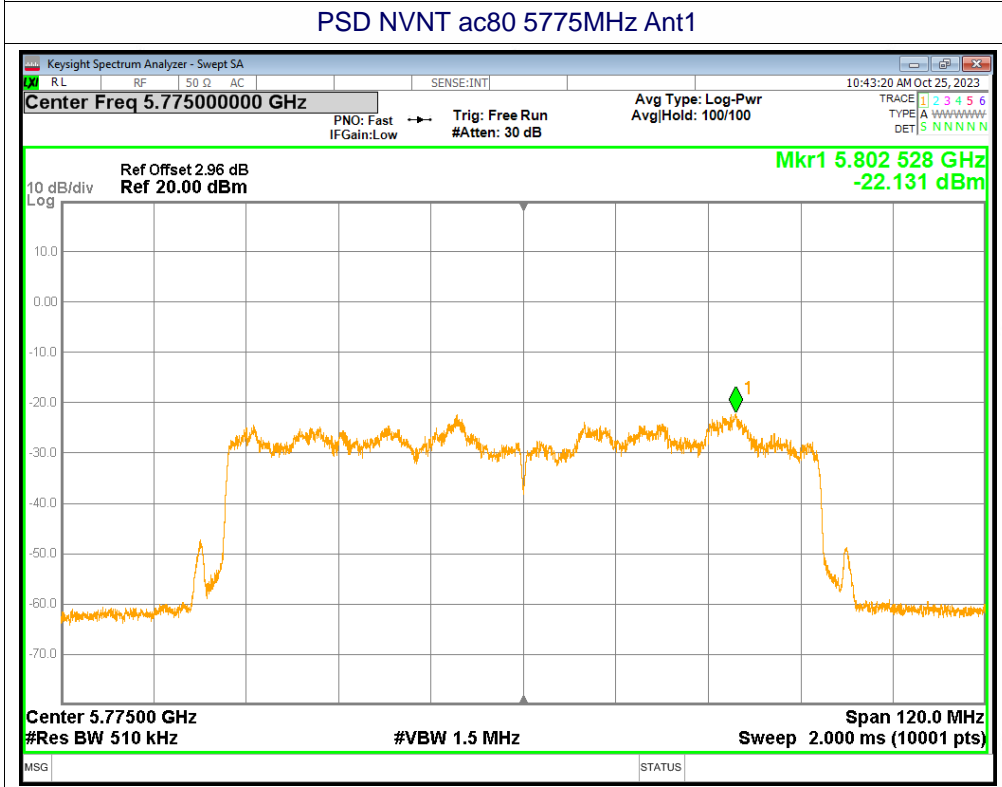


FCC ID:2BC6J-ZTCP66-NBT

PSD NVNT ac40 5795MHz Ant1



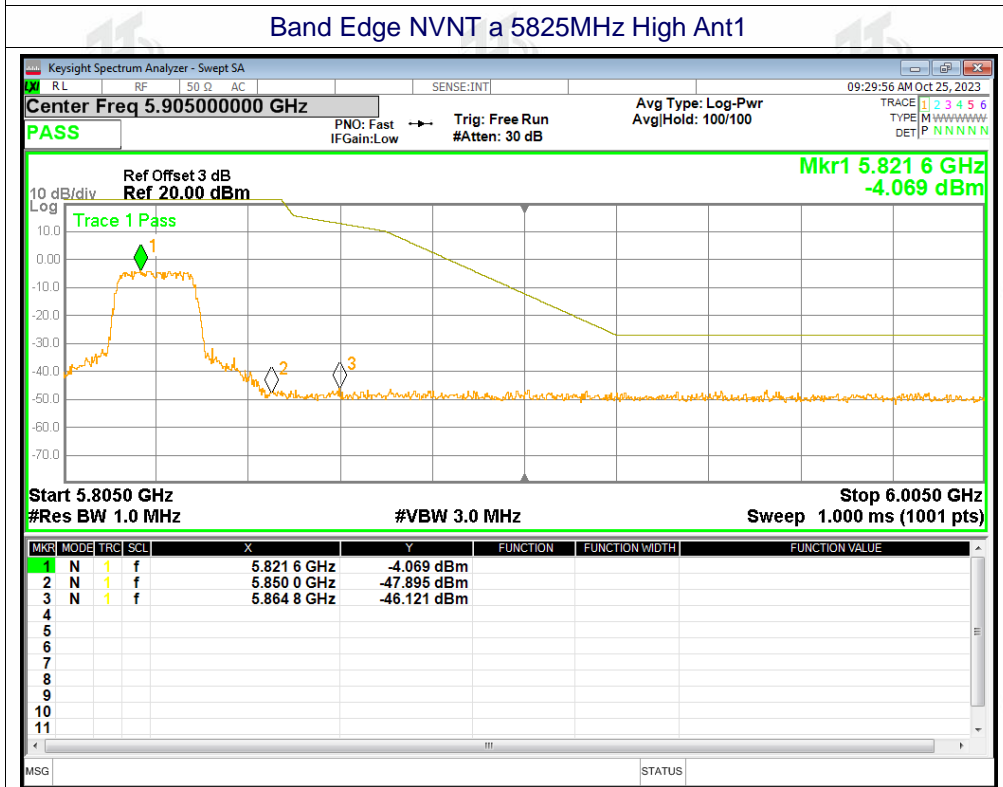
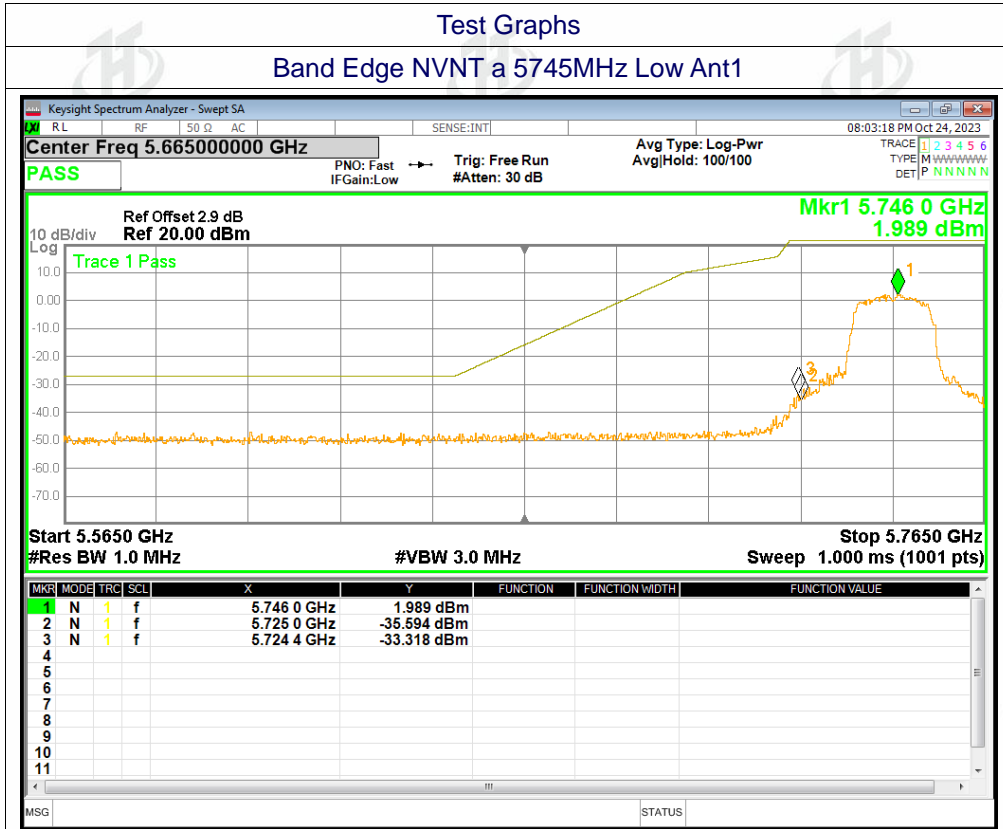
PSD NVNT ac80 5775MHz Ant1





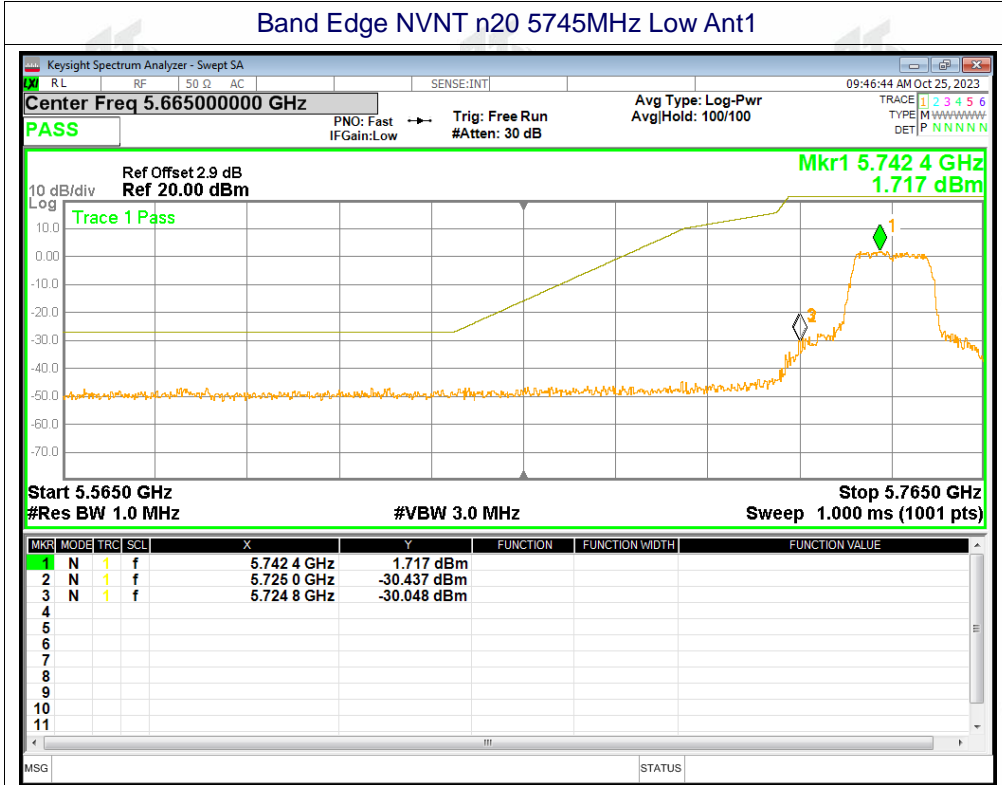
A.6 Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBm)	Limit (dBm)	Verdict
NVNT	a	5745	Ant1	-33.31		Pass
NVNT	a	5825	Ant1	-46.12		Pass
NVNT	n20	5745	Ant1	-30.04		Pass
NVNT	n20	5825	Ant1	-43.92		Pass
NVNT	n40	5755	Ant1	-25.63		Pass
NVNT	n40	5795	Ant1	-44.4		Pass
NVNT	ac20	5745	Ant1	-29.78		Pass
NVNT	ac20	5825	Ant1	-41.91		Pass
NVNT	ac40	5755	Ant1	-28.09		Pass
NVNT	ac40	5795	Ant1	-44.72		Pass

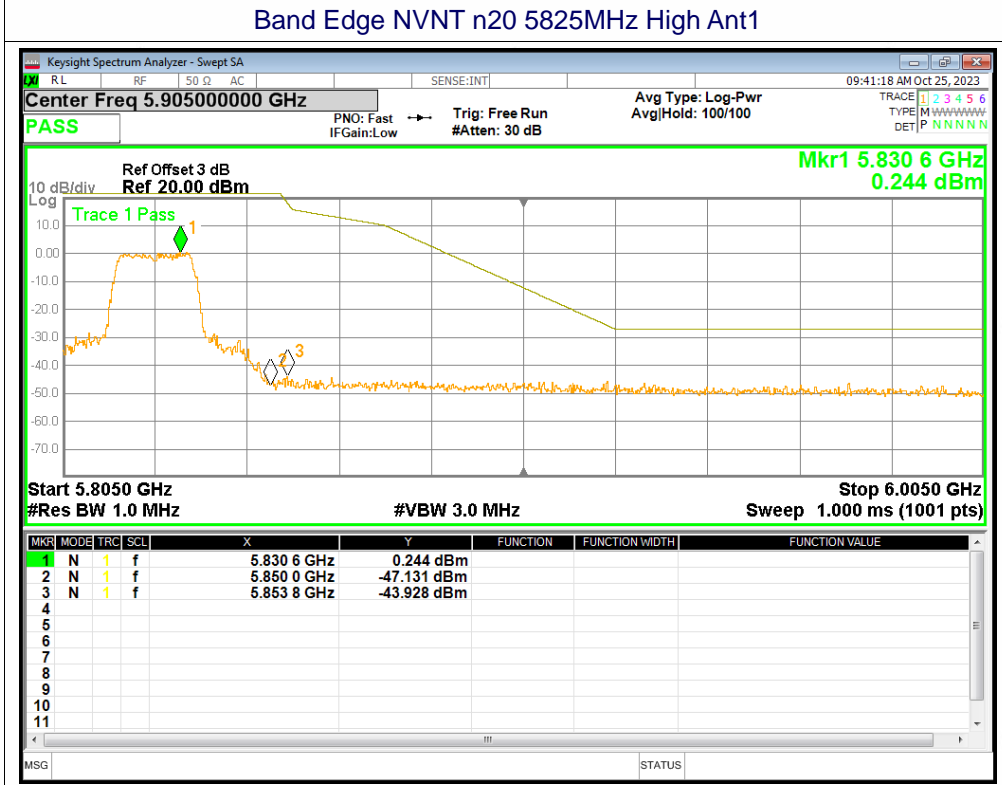




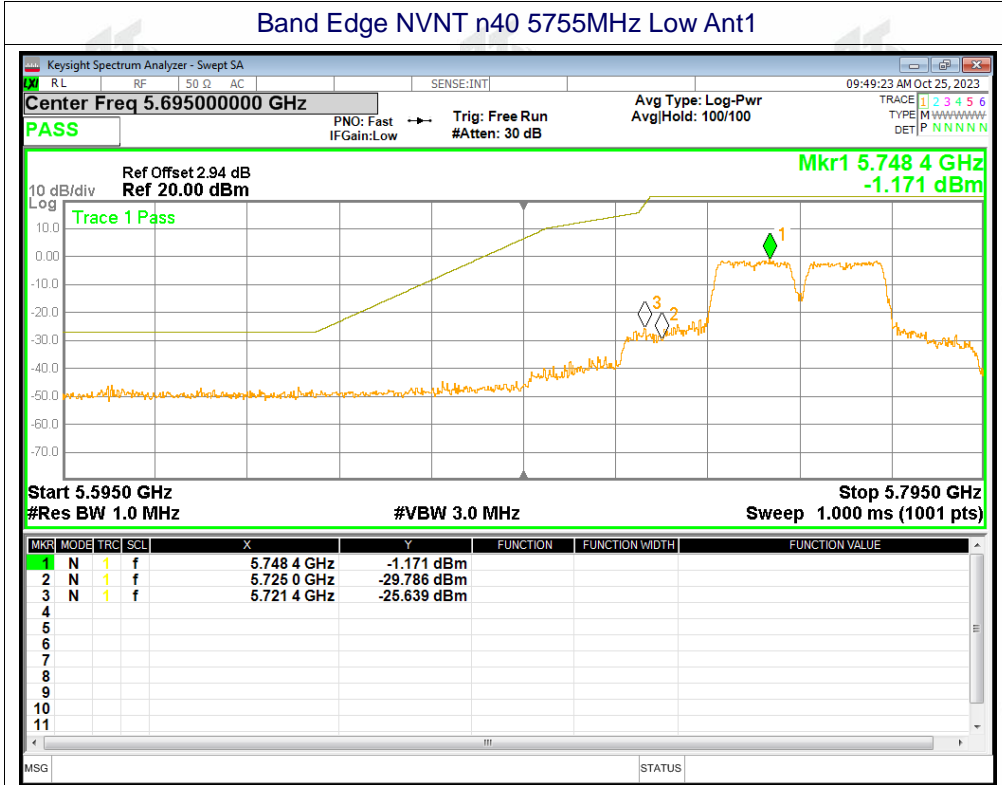
Band Edge NVNT n20 5745MHz Low Ant1



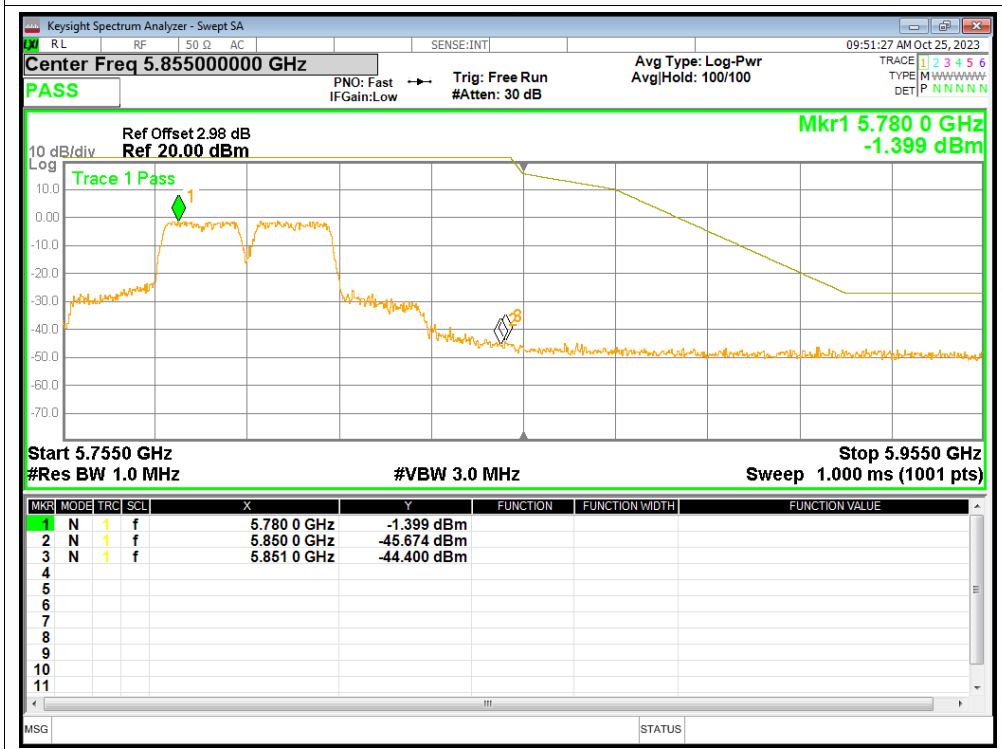
Band Edge NVNT n20 5825MHz High Ant1



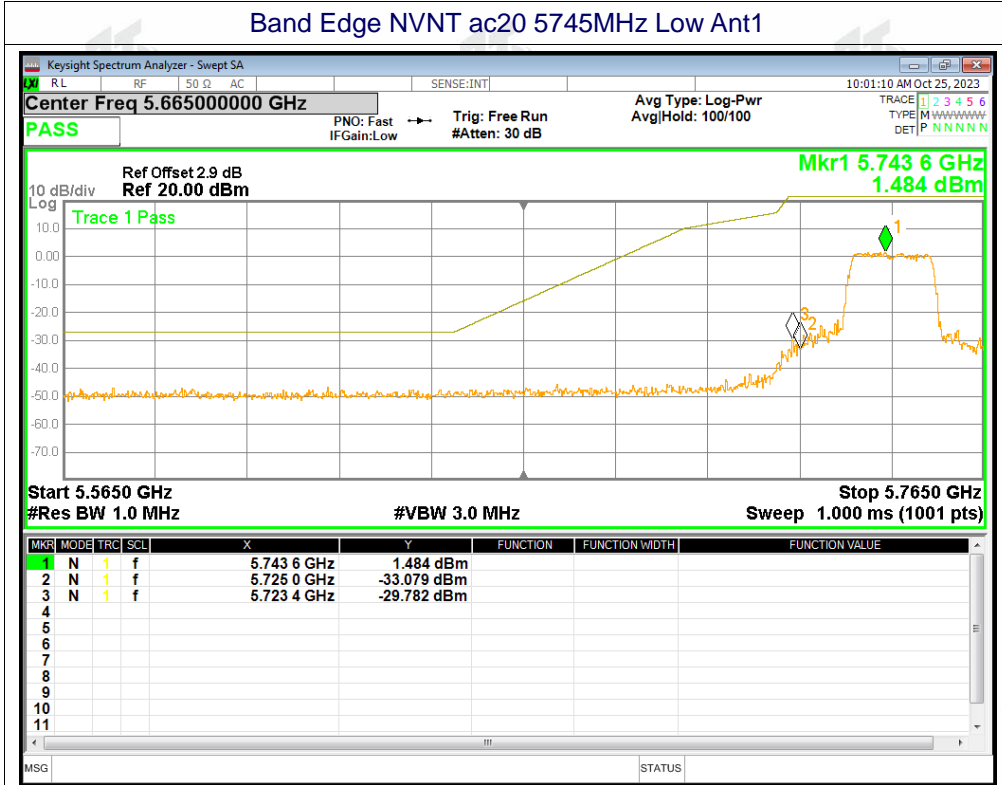
Band Edge NVNT n40 5755MHz Low Ant1



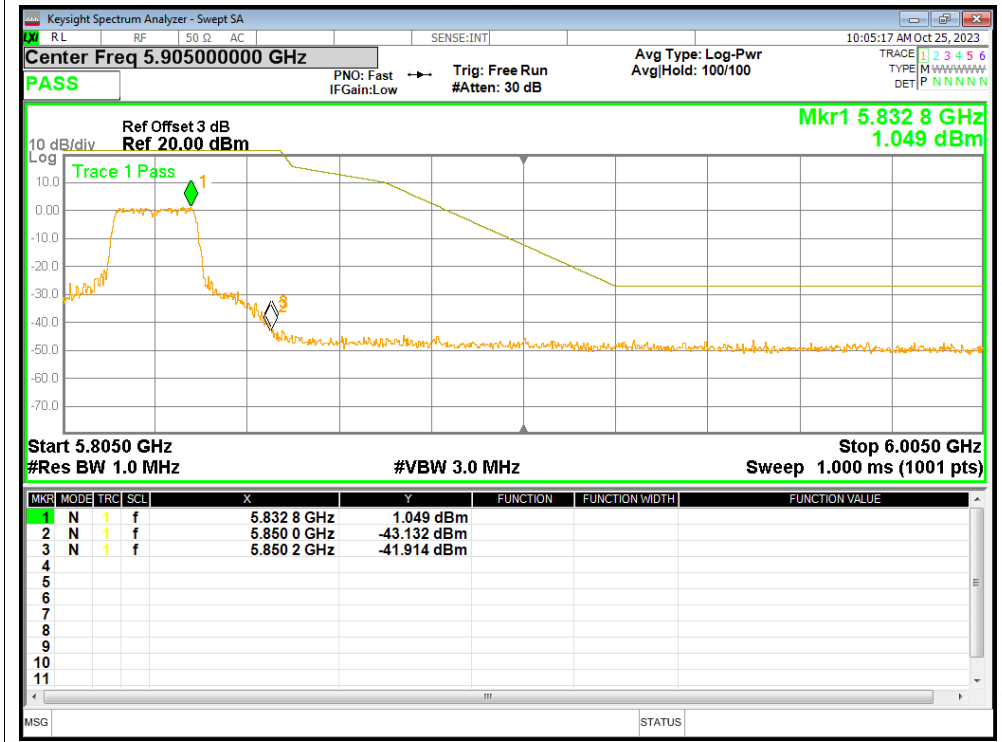
Band Edge NVNT n40 5795MHz High Ant1



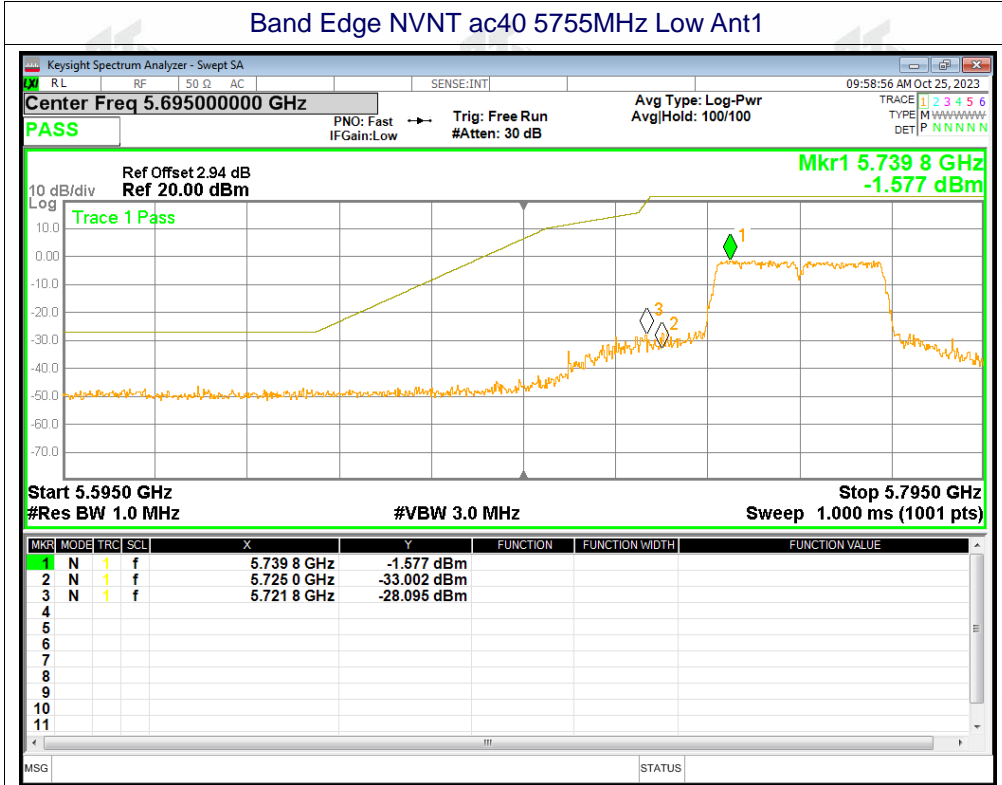
Band Edge NVNT ac20 5745MHz Low Ant1



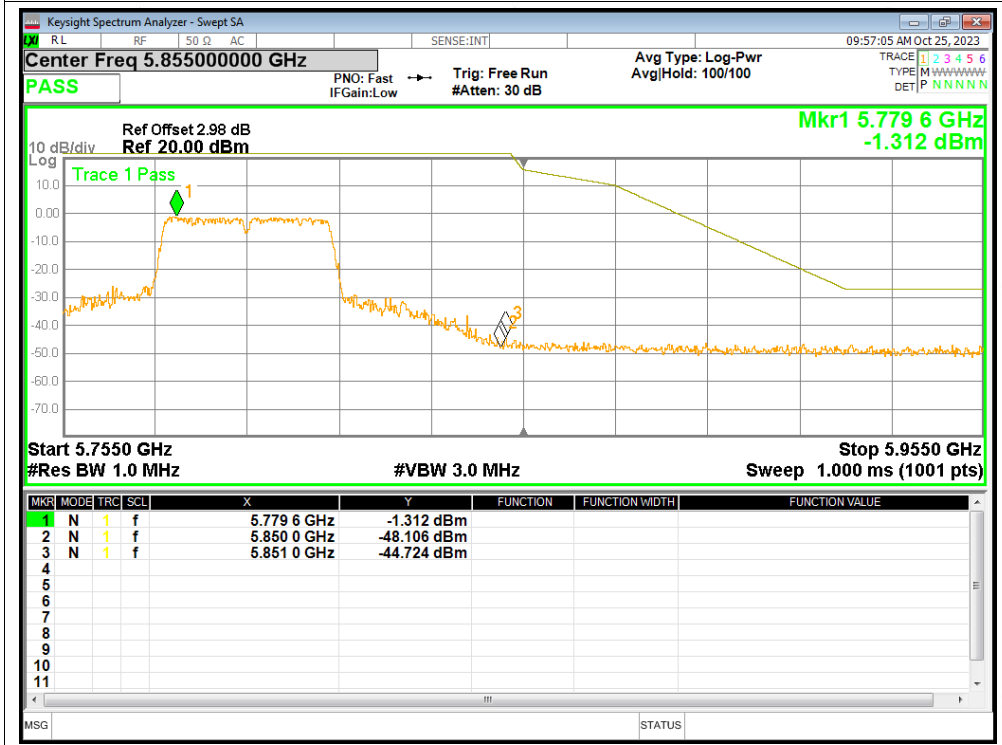
Band Edge NVNT ac20 5825MHz High Ant1



Band Edge NVNT ac40 5755MHz Low Ant1



Band Edge NVNT ac40 5795MHz High Ant1





A.6 Frequency Stability

Voltage							
TestMode	Channel	Voltage [Vdc]	Temperature (°C)	Frequency Error (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
a	5745	NV	NT	0	0	Within 5725-5850MHz	Pass
		LV	NT	0	0		
		HV	NT	0	0		
	5785	NV	NT	20000	3.46		
		LV	NT	20000	3.46		
		HV	NT	20000	3.46		
	5825	NV	NT	-20000	-3.43		
		LV	NT	-20000	-3.43		
		HV	NT	-20000	-3.43		
n20	5745	NV	NT	0	0		
		LV	NT	0	0		
		HV	NT	0	0		
	5785	NV	NT	0	0		
		LV	NT	0	0		
		HV	NT	0	0		
	5825	NV	NT	0	0		
		LV	NT	0	0		
		HV	NT	0	0		
ac20	5745	NV	NT	0	0		
		LV	NT	0	0		
		HV	NT	0	0		
	5785	NV	NT	0	0		
		LV	NT	0	0		
		HV	NT	0	0		
	5825	NV	NT	0	0		
		LV	NT	0	0		
		HV	NT	0	0		
n40	5755	NV	NT	0	0	Within 5725-5850MHz	Pass
		LV	NT	0	0		
		HV	NT	0	0		
	5795	NV	NT	0	0		
		LV	NT	0	0		



		HV	NT	0	0		
ac40	5755	NV	NT	40000	6.95		
		LV	NT	40000	6.95		
		HV	NT	40000	6.95		
		NV	NT	0	0		
	5795	LV	NT	0	0		
		HV	NT	0	0		
		NV	NT	0	0		
ac80	5775	NV	NT	0	0		
		LV	NT	0	0		
		HV	NT	0	0		





TestMode	Channel	Temperature				Limit (ppm)	Verdict
		Voltage [Vdc]	Temperature (°C)	Frequency Error (Hz)	Deviation (ppm)		
N20	5825	NV	-20	20000	3.46	Within 5725-5850MHz	Pass
		NV	-10	20000	3.46		
		NV	0	20000	3.46		
		NV	20	20000	3.46		
		NV	30	20000	3.46		
		NV	50	20000	3.46		
	5785	NV	-20	0	0		
		NV	-10	0	0		
		NV	0	0	0		
		NV	20	0	0		
		NV	30	0	0		
		NV	50	0	0		
	5825	NV	-20	-20000	-3.43		
		NV	-10	-20000	-3.43		
		NV	0	-20000	-3.43		
		NV	20	-20000	-3.43		
		NV	30	-20000	-3.43		
		NV	50	-20000	-3.43		
	5745	NV	-20	0	0		
		NV	-10	0	0		
		NV	0	0	0		
NV		20	0	0			
NV		30	0	0			
NV		50	0	0			
5785		NV	-20	0	0		
		NV	-10	0	0		
		NV	0	0	0		
		NV	20	0	0		
5825	NV	30	0	0			
	NV	50	0	0			
	NV	-20	0	0			
	NV	-10	0	0			
	NV	0	0	0			





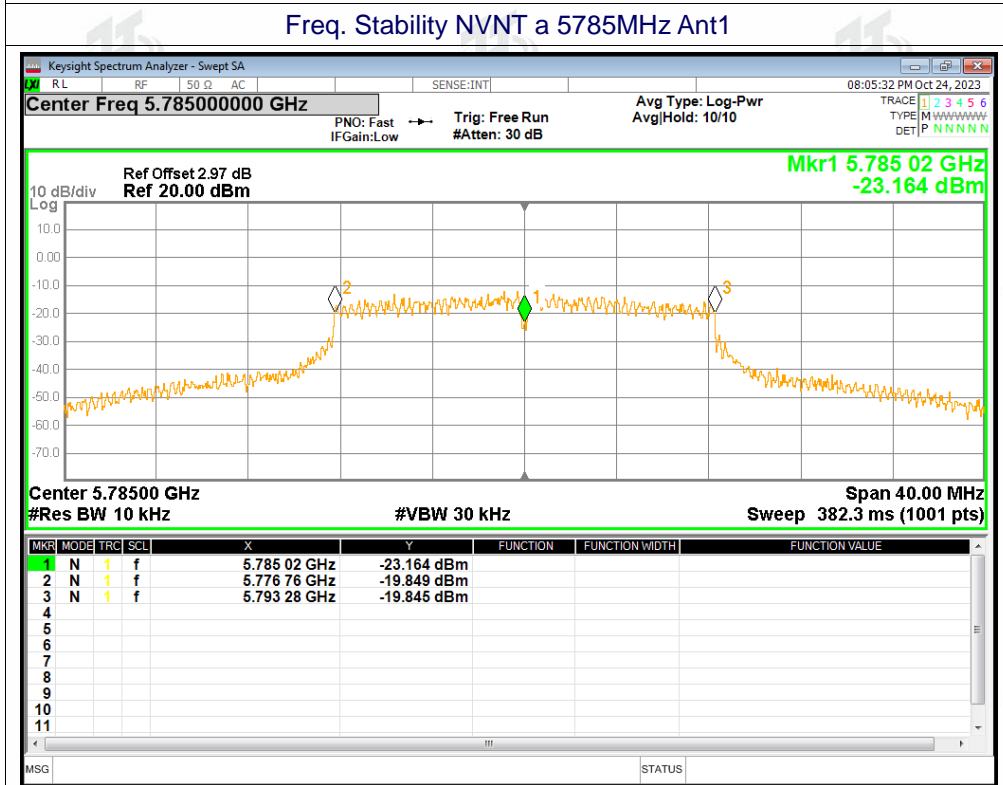
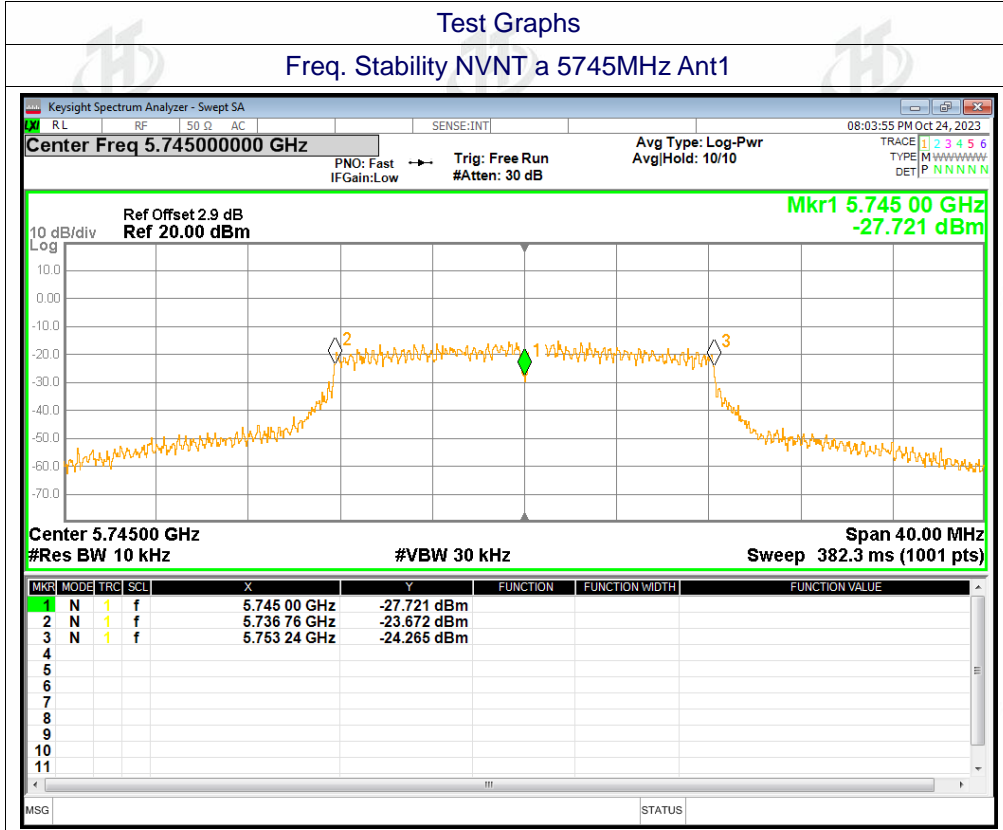
		NV	20	0	0		
		NV	30	0	0		
		NV	50	0	0		
ac20	5745	NV	-20	0	0		
		NV	-10	0	0		
		NV	0	0	0		
		NV	20	0	0		
		NV	30	0	0		
		NV	50	0	0		
	5785	NV	-20	0	0		
		NV	-10	0	0		
		NV	0	0	0		
		NV	20	0	0		
		NV	30	0	0		
		NV	50	0	0		
	5825	NV	-20	0	0		
		NV	-10	0	0		
		NV	0	0	0		
NV		20	0	0			
NV		30	0	0			
NV		50	0	0			
N40	5755	NV	-20	0	0		
		NV	-10	0	0		
		NV	0	0	0		
		NV	20	0	0		
		NV	30	0	0		
		NV	50	0	0		
N40	5795	NV	-20	0	0	Within 5725-5850MHz	Pass
		NV	-10	0	0		
		NV	0	0	0		
		NV	20	0	0		
		NV	30	0	0		
		NV	50	0	0		
ac40	5755	NV	-20	40000	6.95		
		NV	-10	40000	6.95		
		NV	0	40000	6.95		
		NV	20	40000	6.95		



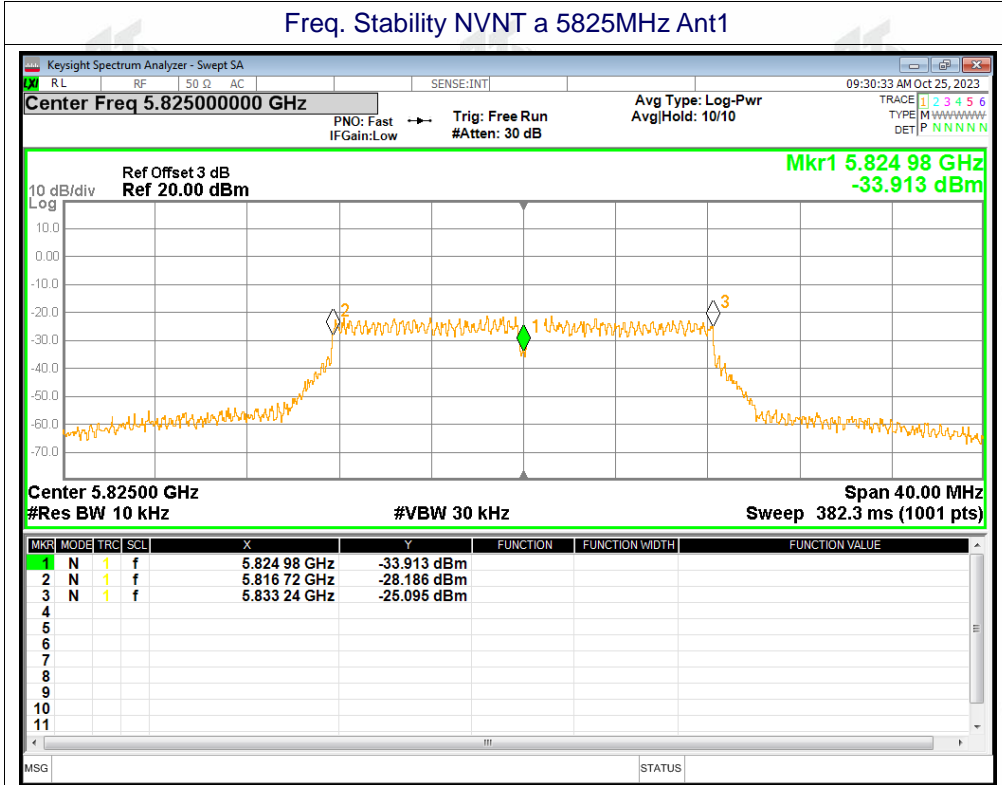
		NV	30	40000	6.95		
		NV	50	40000	6.95		
	5795	NV	-20	0	0		
		NV	-10	0	0		
		NV	0	0	0		
		NV	20	0	0		
		NV	30	0	0		
		NV	50	0	0		
ac80	5775	NV	-20	0	0		
		NV	-10	0	0		
		NV	0	0	0		
		NV	20	0	0		
		NV	30	0	0		
		NV	50	0	0		

Note: Test temperature:-20° to + 50°

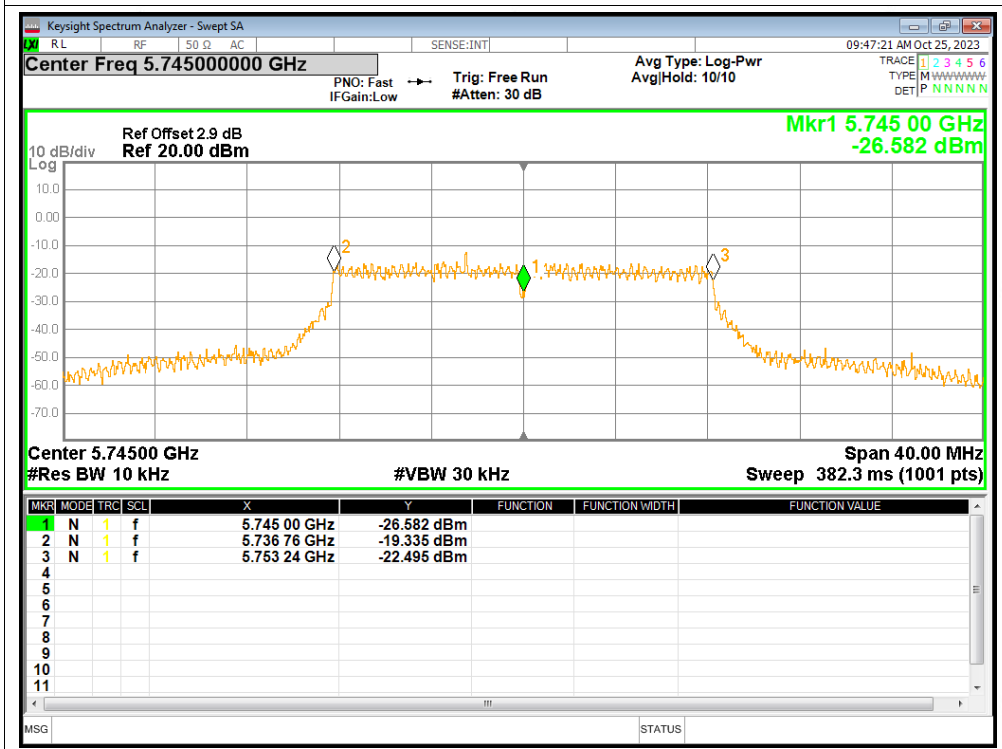
At room temperature, the test results are the worst, only reflecting the test results at room temperature.

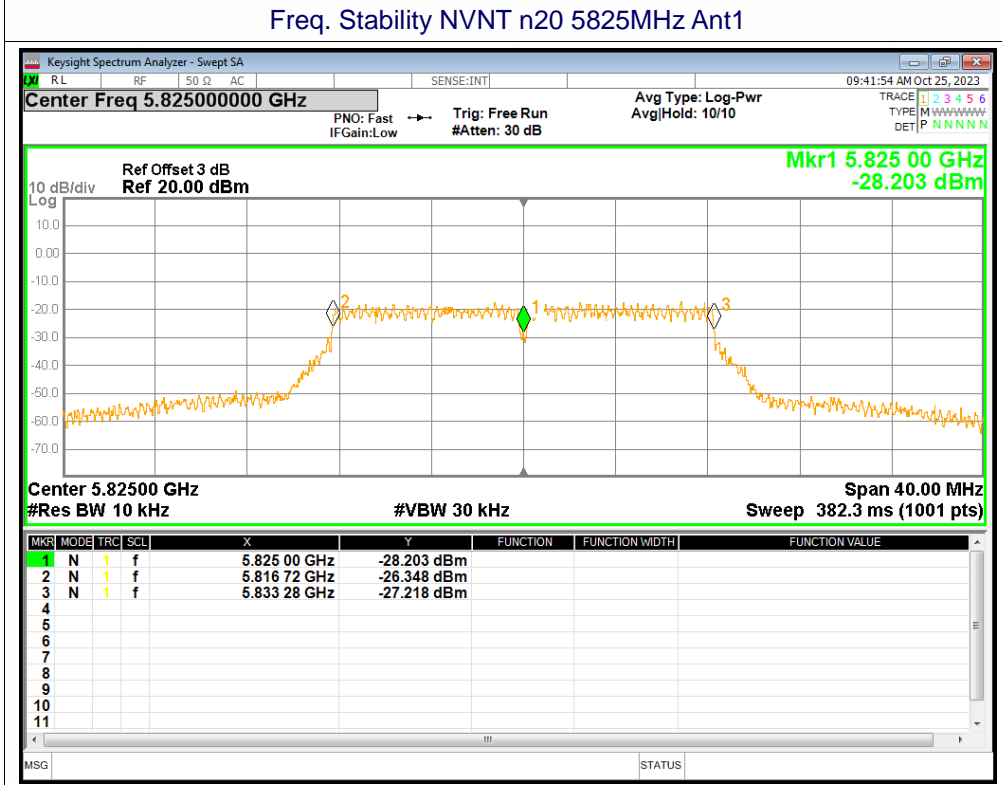
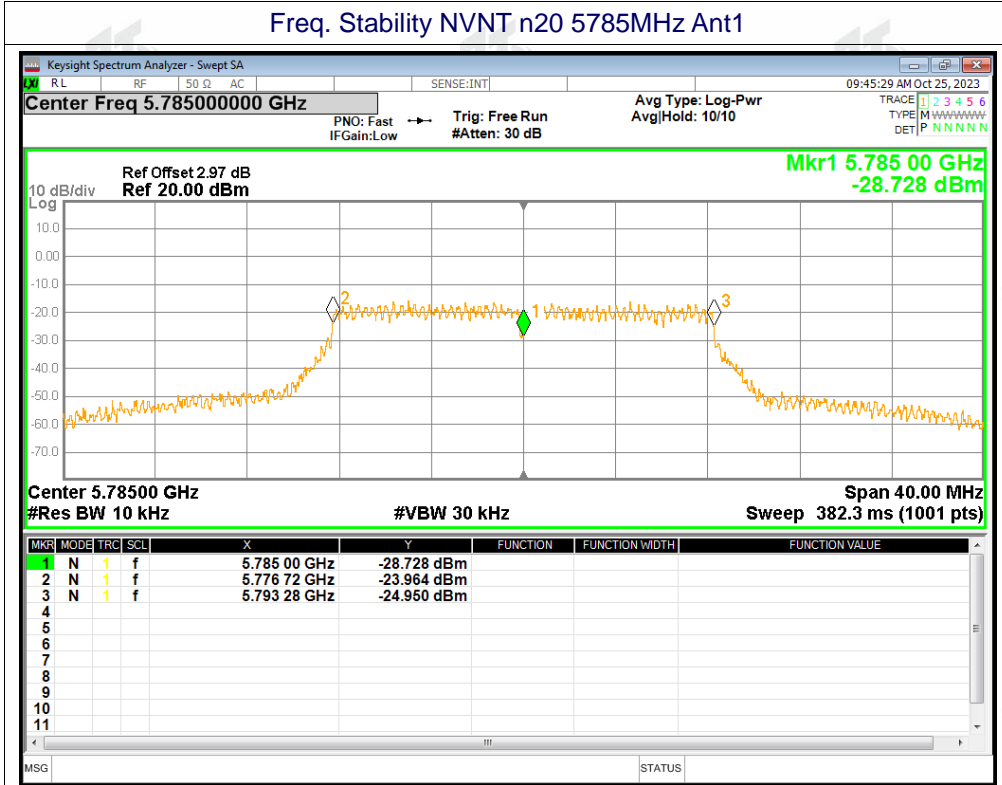


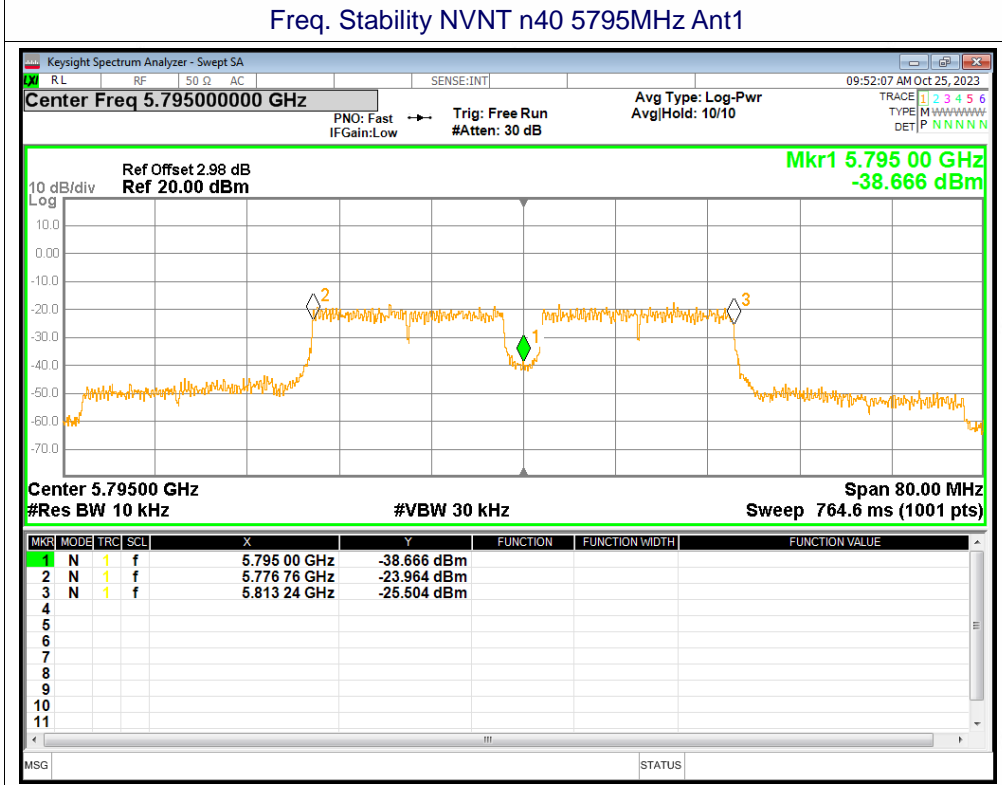
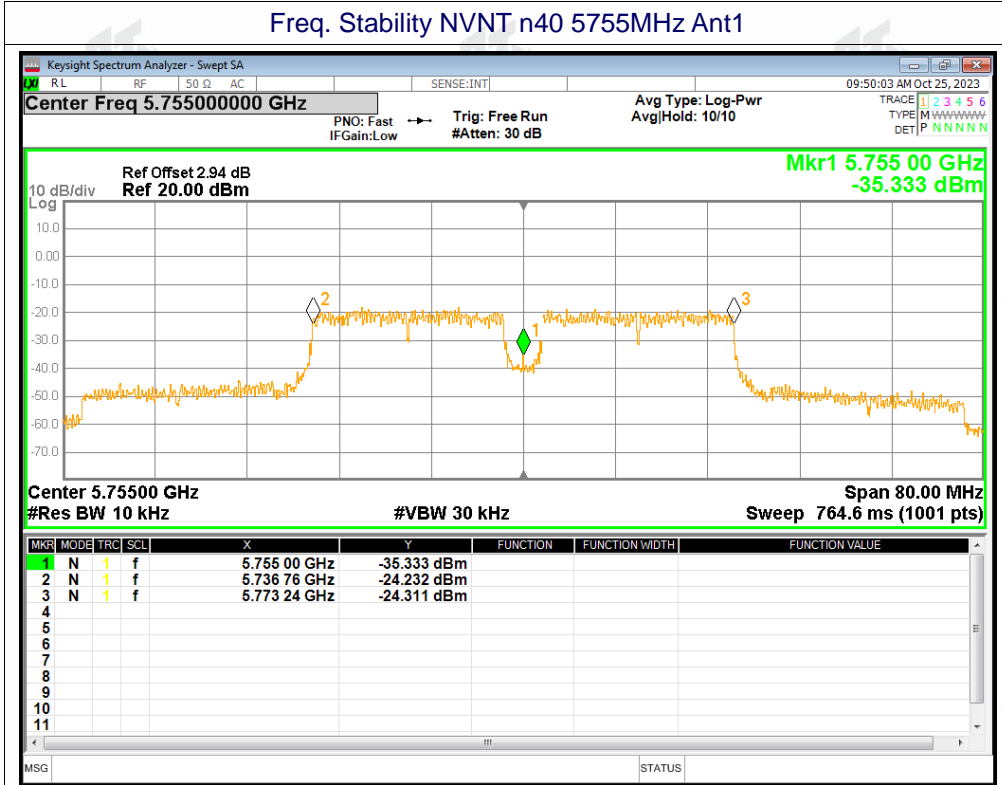
Freq. Stability NVNT a 5825MHz Ant1



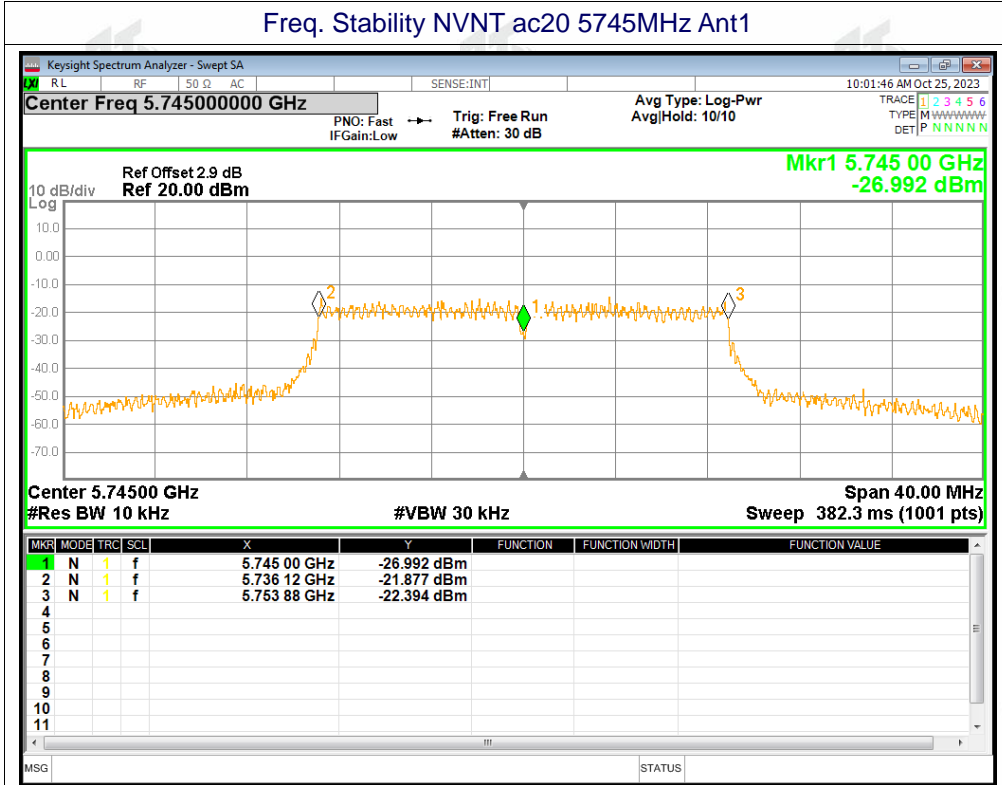
Freq. Stability NVNT n20 5745MHz Ant1



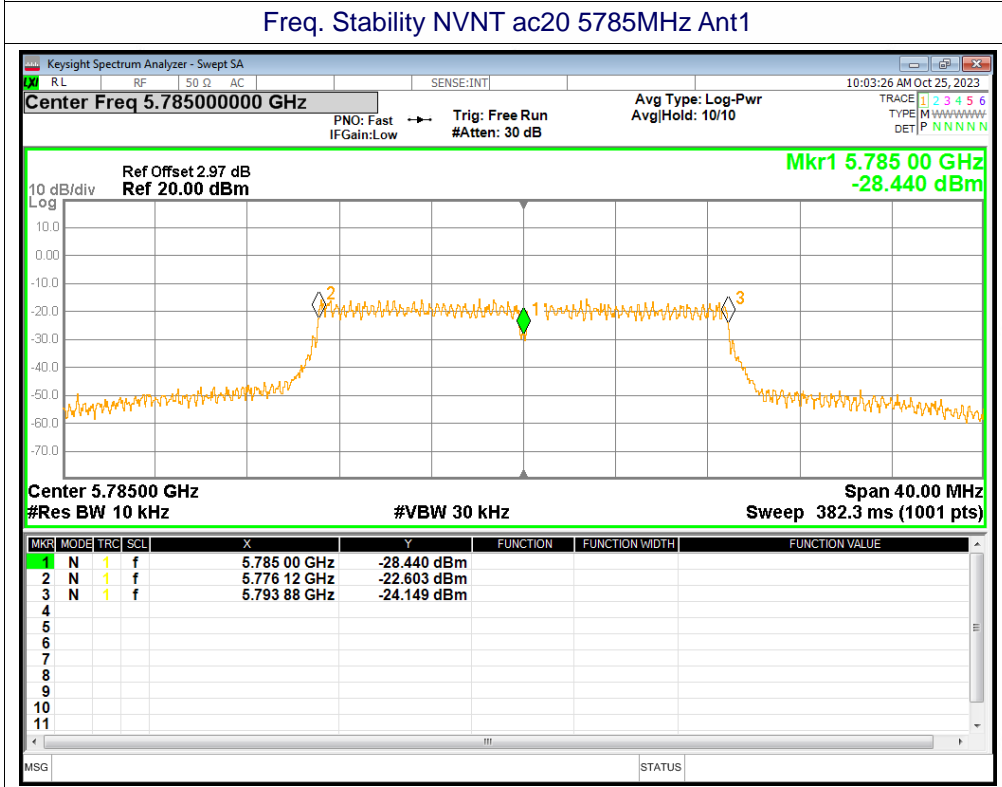




Freq. Stability NVNT ac20 5745MHz Ant1

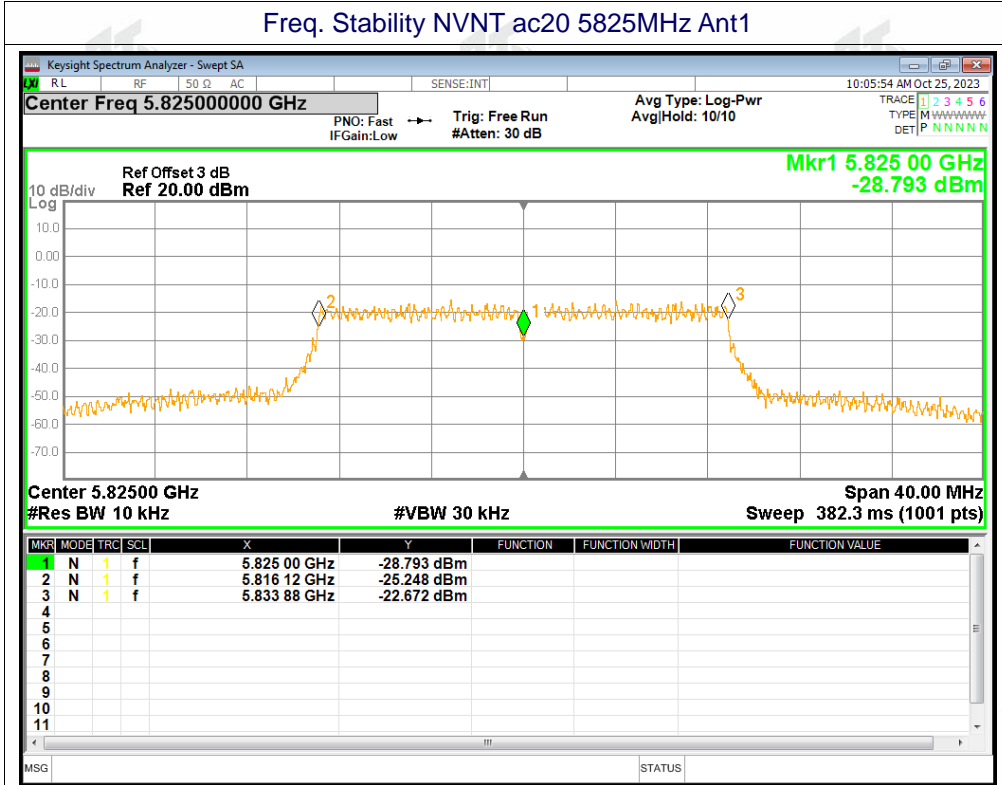


Freq. Stability NVNT ac20 5785MHz Ant1

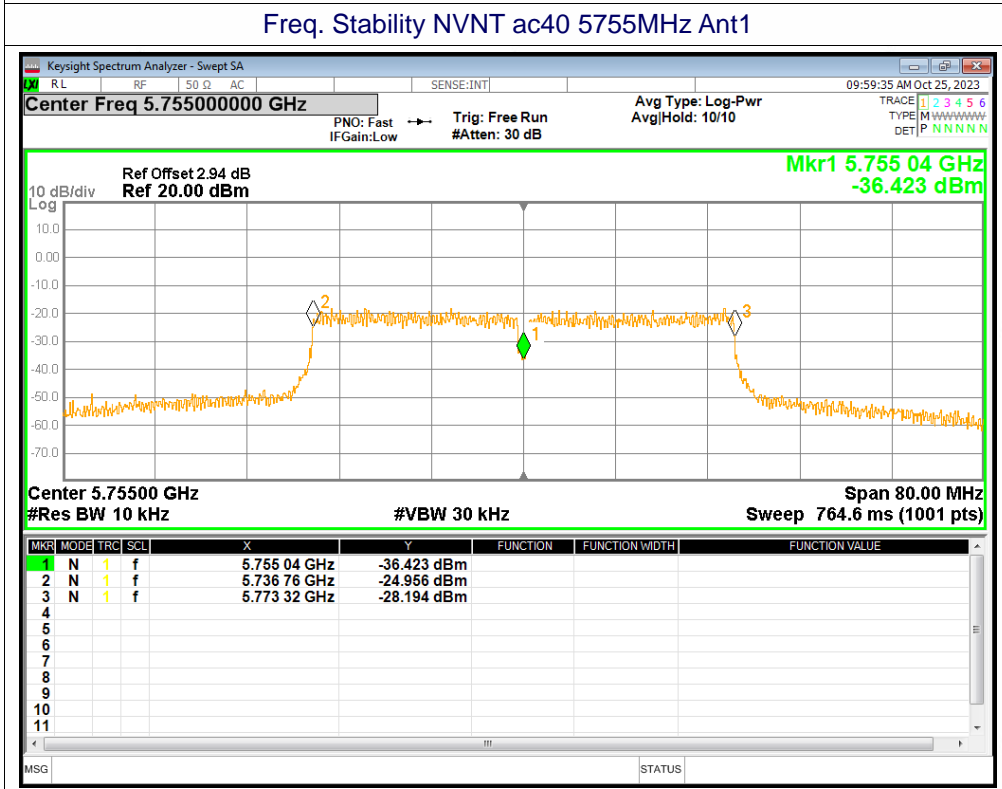


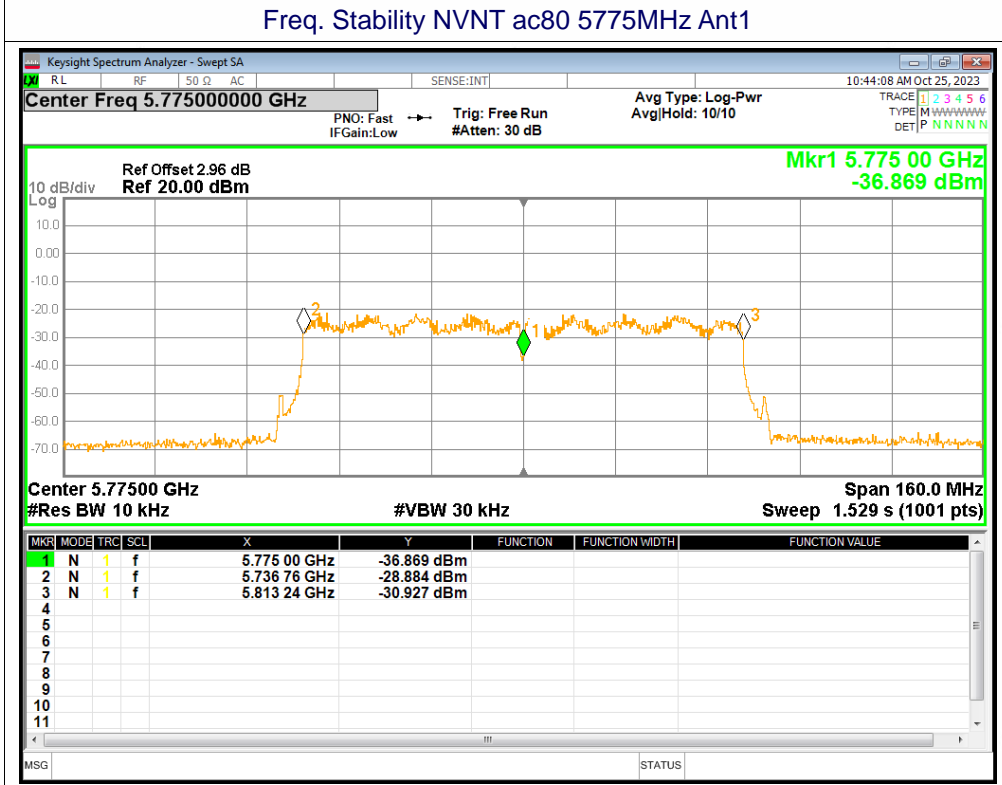
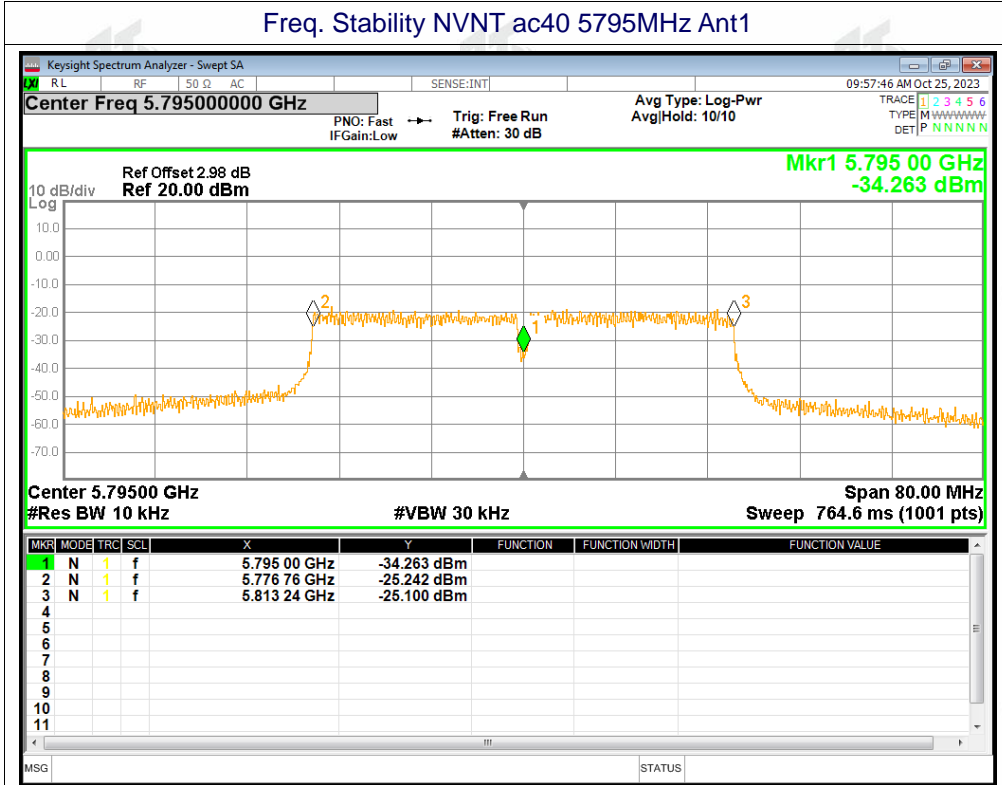


Freq. Stability NVNT ac20 5825MHz Ant1



Freq. Stability NVNT ac40 5755MHz Ant1







A.6 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Frequency (GHz)	Max Value (dBm)	Limit (dBm)	Verdict
NVNT	a	5745	0.3-1	-36.10	-27	pass
			1-5.575	-35.89	-27	pass
			5.575-5.625	-35.41	-27 to 10	pass
			5.625-5.645	-33.59	10 to 15.6	pass
			5.645-5.650	-30.68	15.6 to 27	pass
			5.850-5.855	-30.84	27 to15.6	pass
			5.855-5.875	-34.59	15.6 to 10	pass
			5.875-5.925	-34.49	10 to -27	pass
			5.925-27G	-36.66	-27	pass
			27-40G	-36.89	-27	pass
		5825	0.3-1	-36.71	-27	pass
			1-5.575	-35.82	-27	pass
			5.575-5.625	-34.42	-27 to 10	pass
			5.625-5.645	-34.53	10 to 15.6	pass
			5.645-5.650	-31.71	15.6 to 27	pass
			5.850-5.855	-31.29	27 to15.6	pass
			5.855-5.875	-34.71	15.6 to 10	pass
			5.875-5.925	-35.20	10 to -27	pass
			5.925-27G	-36.33	-27	pass
			27-40G	-36.58	-27	pass

NOTE: .All the modes had been tested, just worst case(802.11 a) recorded in the report.