



Appendix D

RF Test Data for 5.2GWIFI (Conducted Measurement)

Product Name: Smart Phone

Test Model: HPPL63A

Environmental Conditions

Temperature:	23.8° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Paddi Chen
Supervised by:	Nick Peng





D.1 -26dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-26 dB Bandwidth (MHz)	Limit -26 dB Bandwidth (MHz)	Verdict
NVNT	a	5180	Ant1	22.251	---	Pass
NVNT	a	5200	Ant1	23.819	---	Pass
NVNT	a	5240	Ant1	22.492	---	Pass
NVNT	n20	5180	Ant1	25.185	---	Pass
NVNT	n20	5200	Ant1	25.833	---	Pass
NVNT	n20	5240	Ant1	23.459	---	Pass
NVNT	n40	5190	Ant1	39.61	---	Pass
NVNT	n40	5230	Ant1	42.712	---	Pass
NVNT	ac20	5180	Ant1	26.719	---	Pass
NVNT	ac20	5200	Ant1	25.384	---	Pass
NVNT	ac20	5240	Ant1	26.61	---	Pass
NVNT	ac40	5190	Ant1	44.675	---	Pass
NVNT	ac40	5230	Ant1	40.904	---	Pass

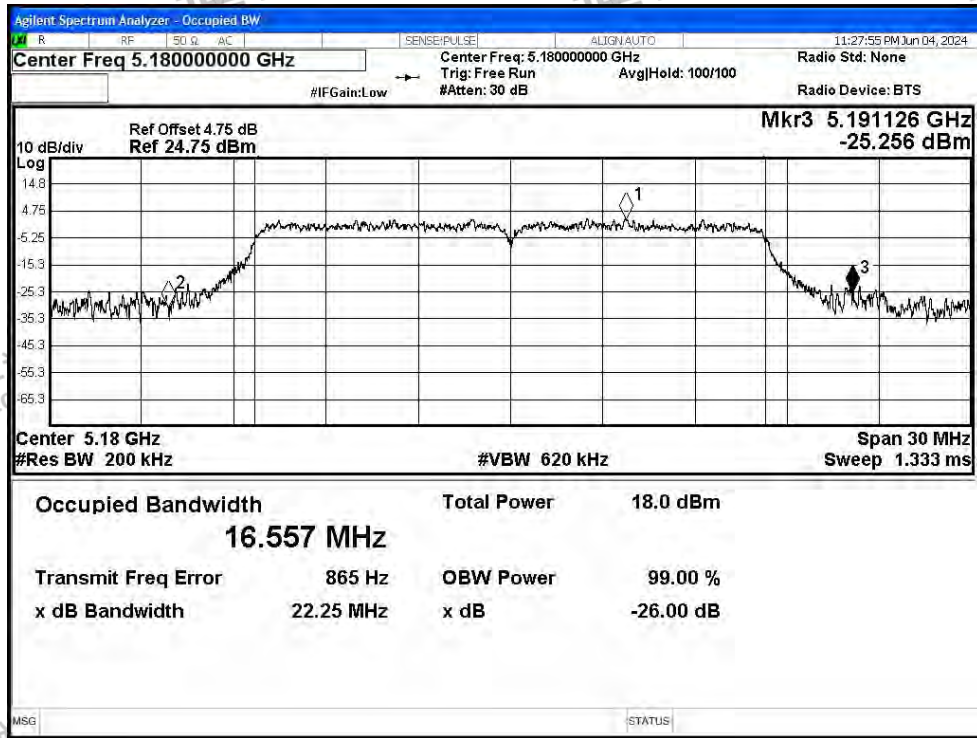


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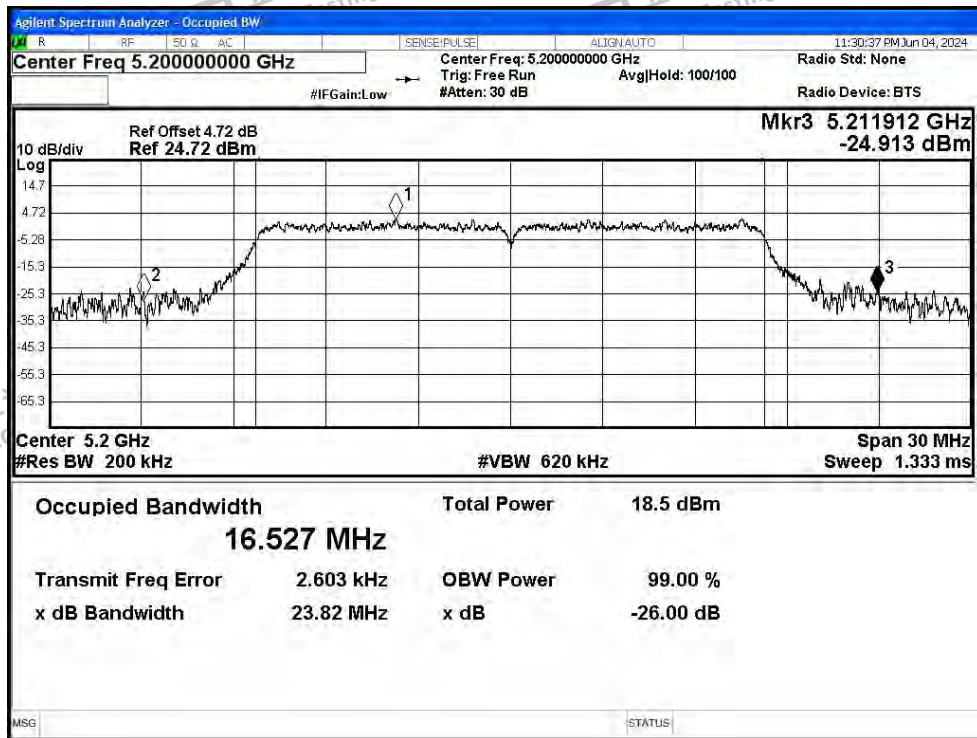


Test Graphs

-26dB Bandwidth NVNT a 5180MHz Ant1

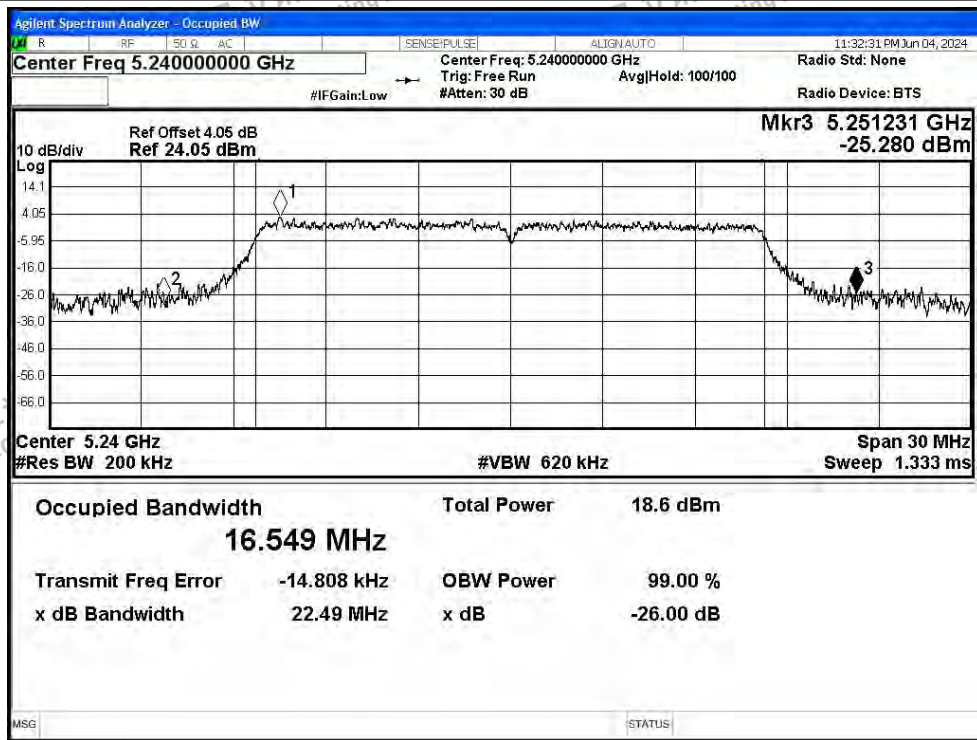


-26dB Bandwidth NVNT a 5200MHz Ant1

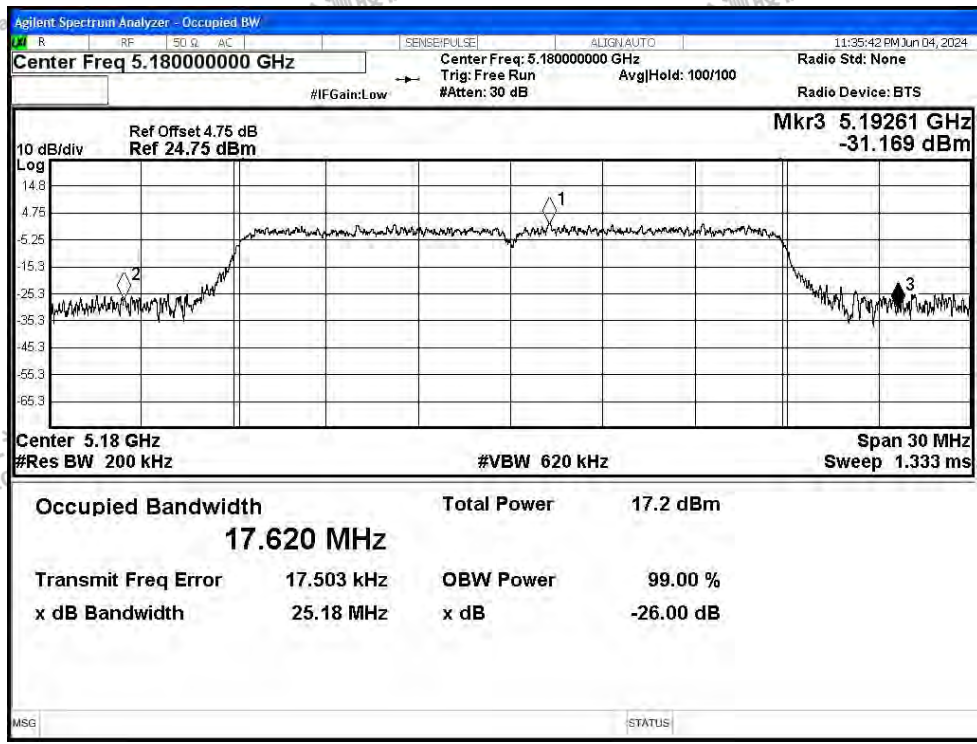




-26dB Bandwidth NVNT a 5240MHz Ant1

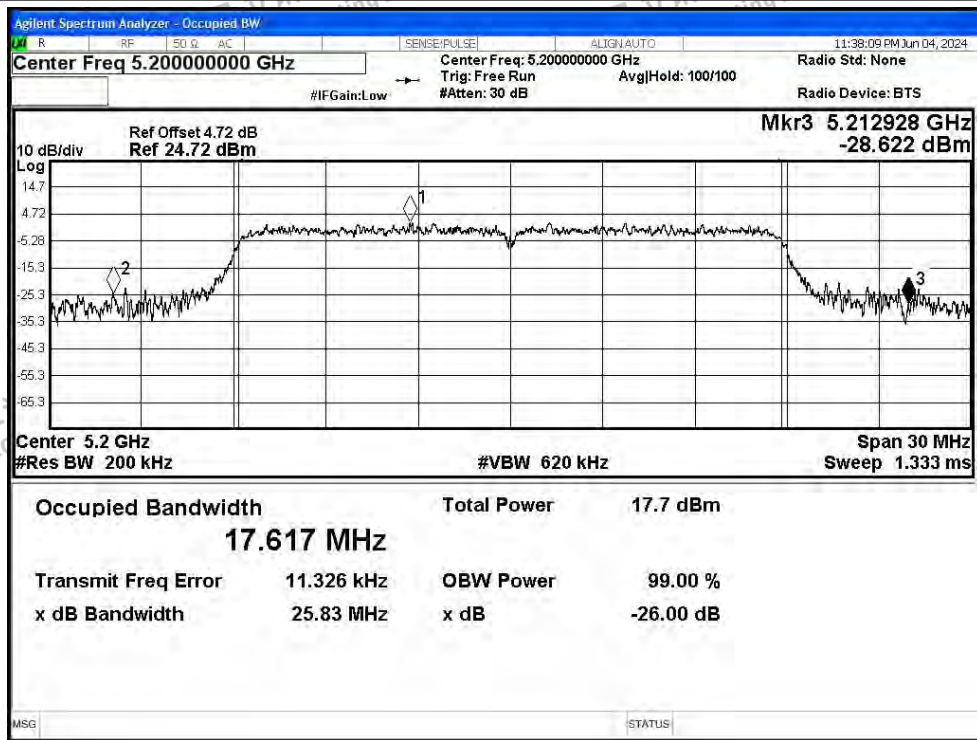


-26dB Bandwidth NVNT n20 5180MHz Ant1

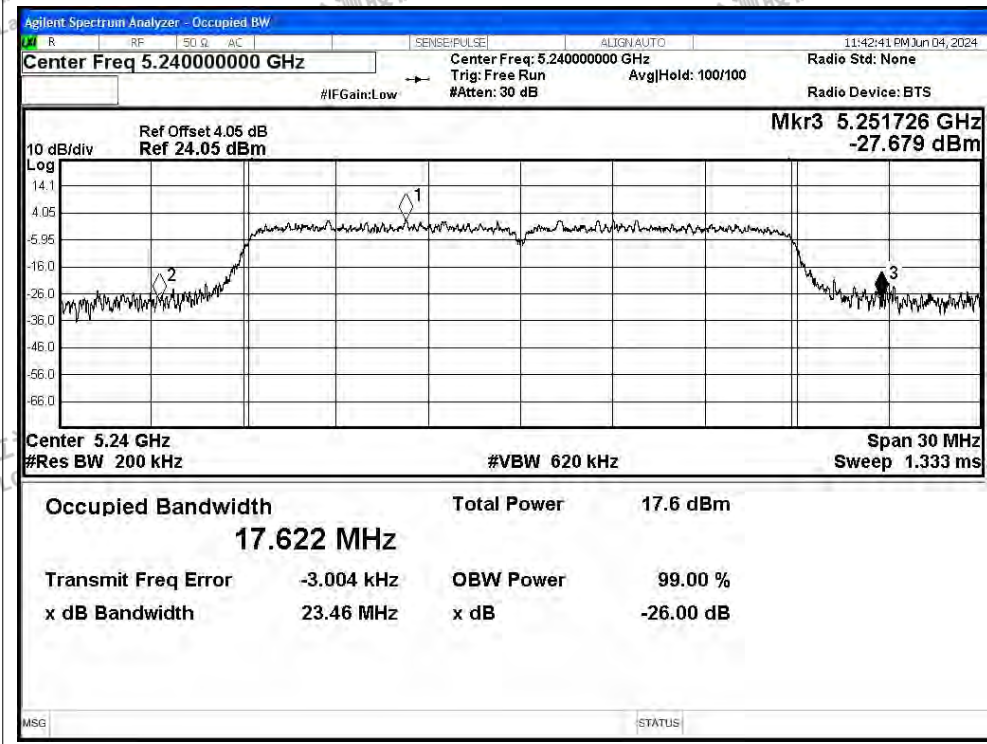




-26dB Bandwidth NVNT n20 5200MHz Ant1

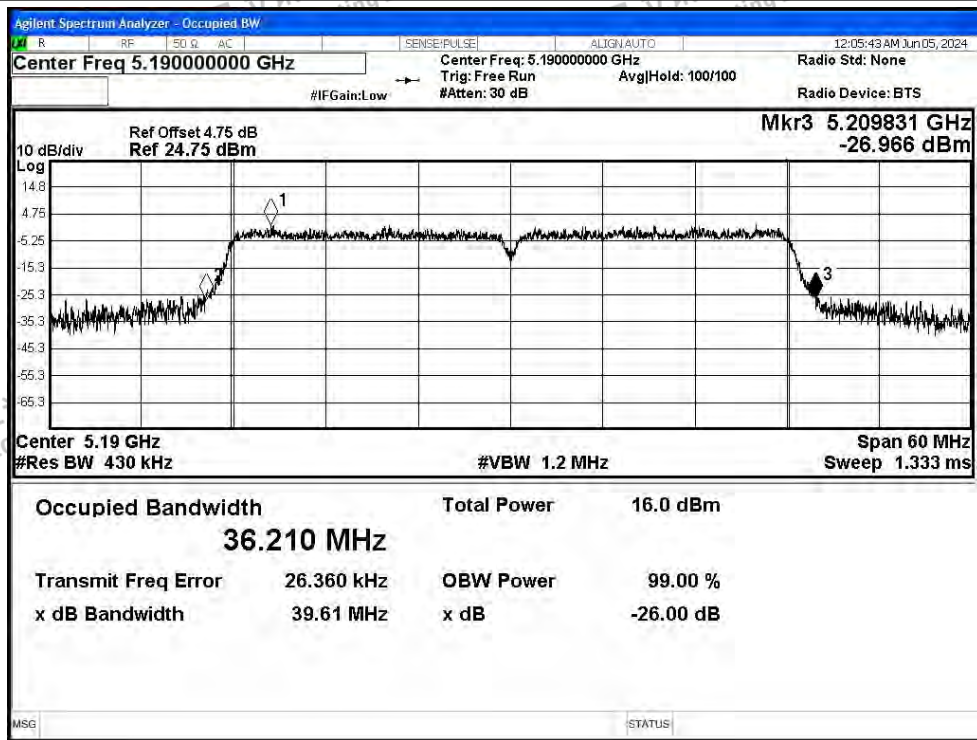


-26dB Bandwidth NVNT n20 5240MHz Ant1

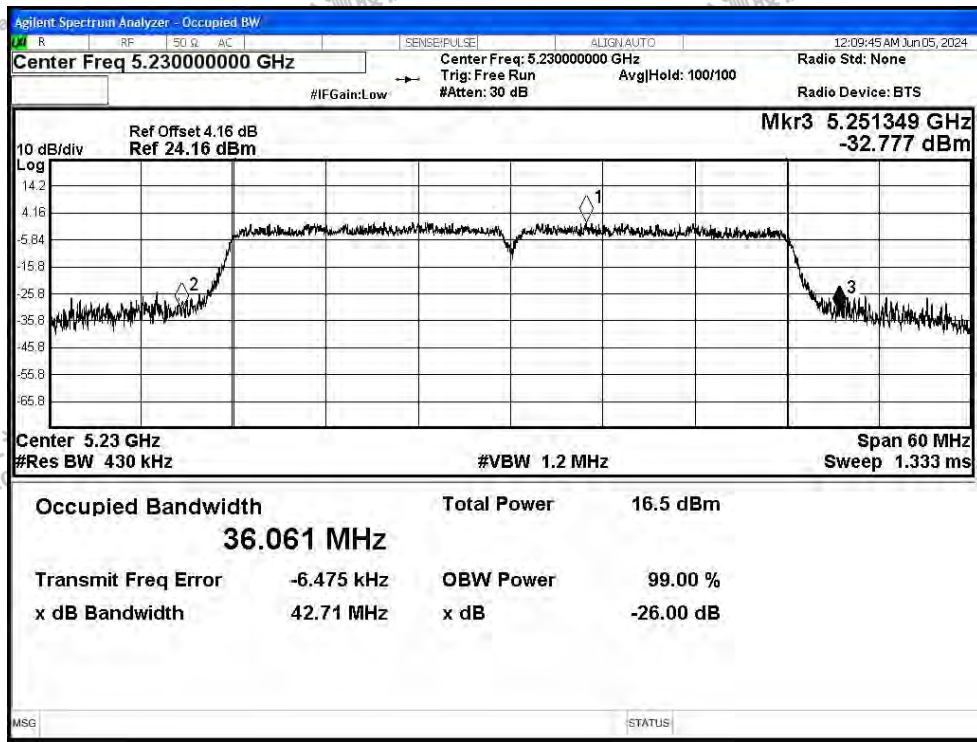




-26dB Bandwidth NVNT n40 5190MHz Ant1

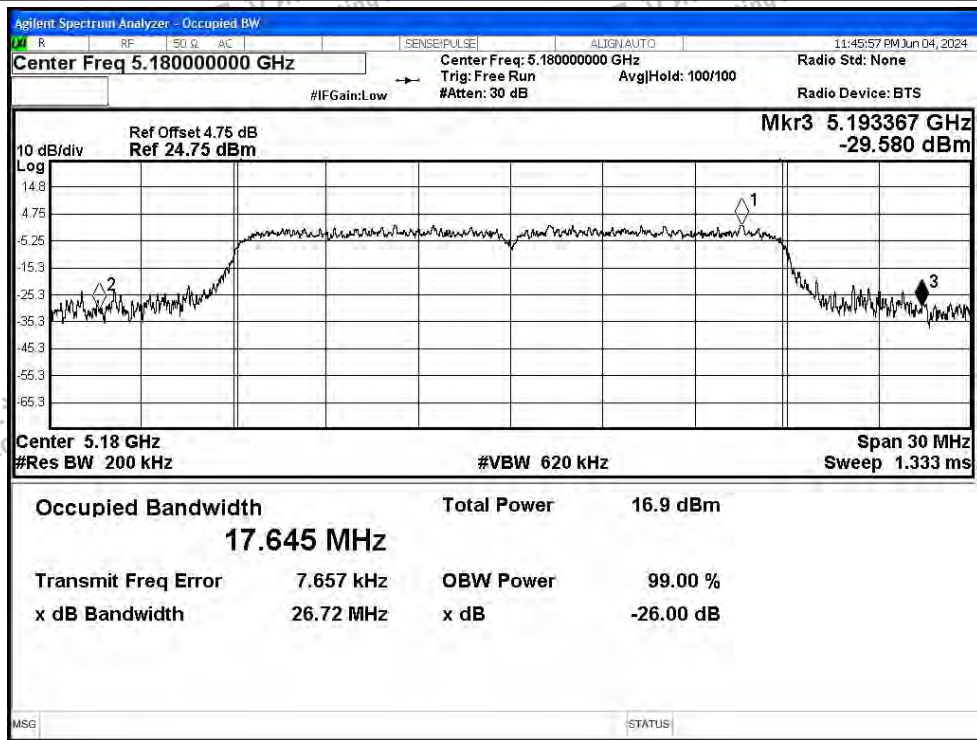


-26dB Bandwidth NVNT n40 5230MHz Ant1

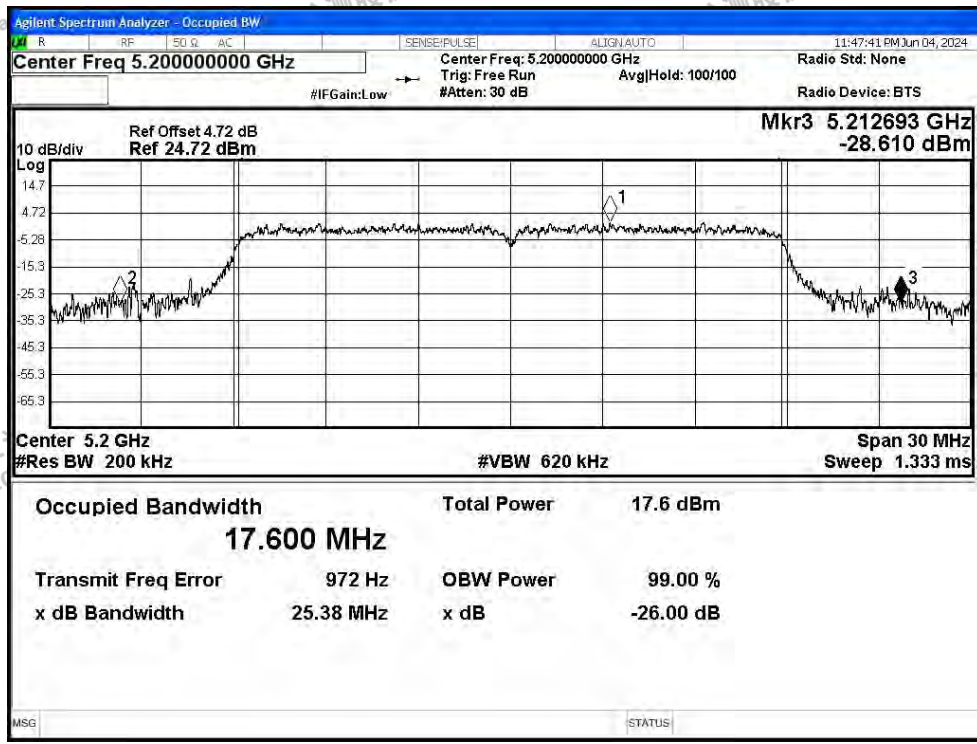




-26dB Bandwidth NVNT ac20 5180MHz Ant1

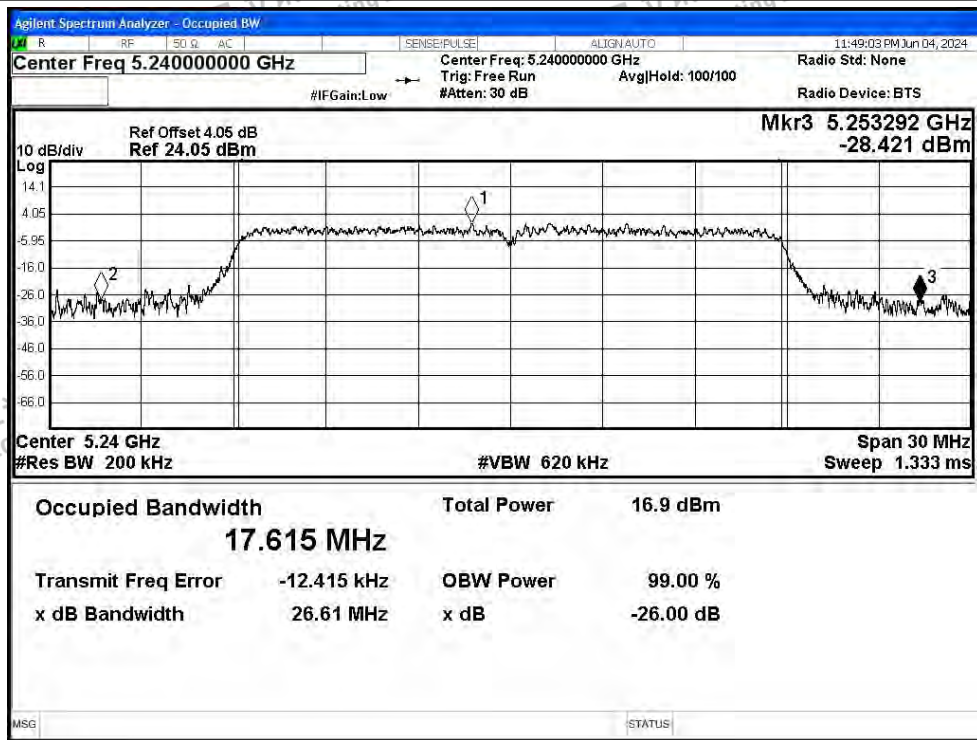


-26dB Bandwidth NVNT ac20 5200MHz Ant1

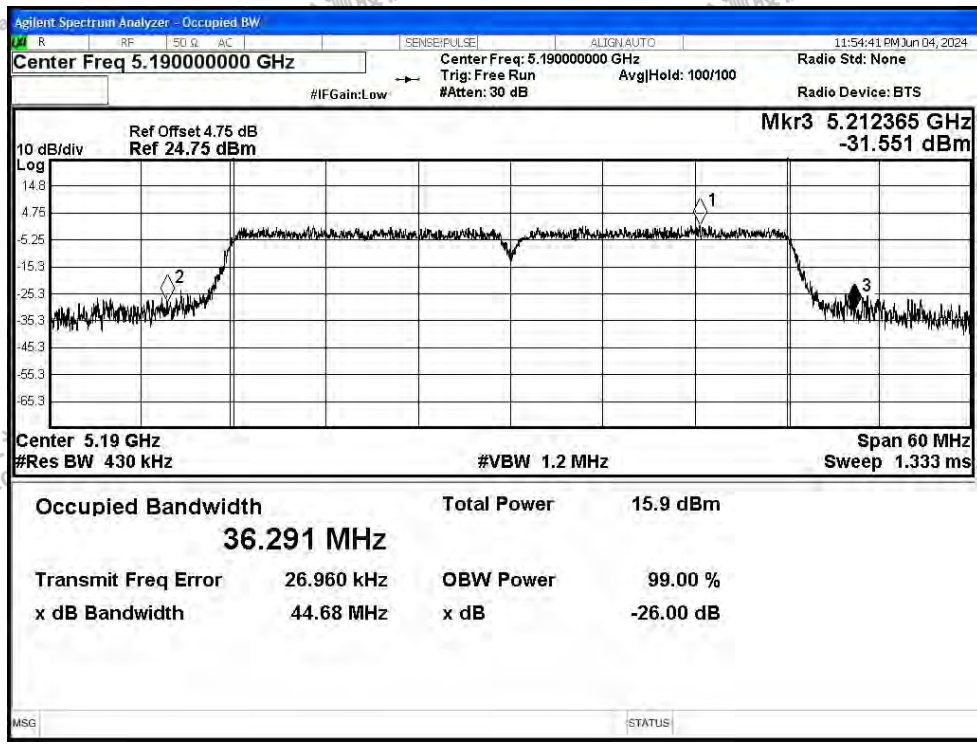




-26dB Bandwidth NVNT ac20 5240MHz Ant1

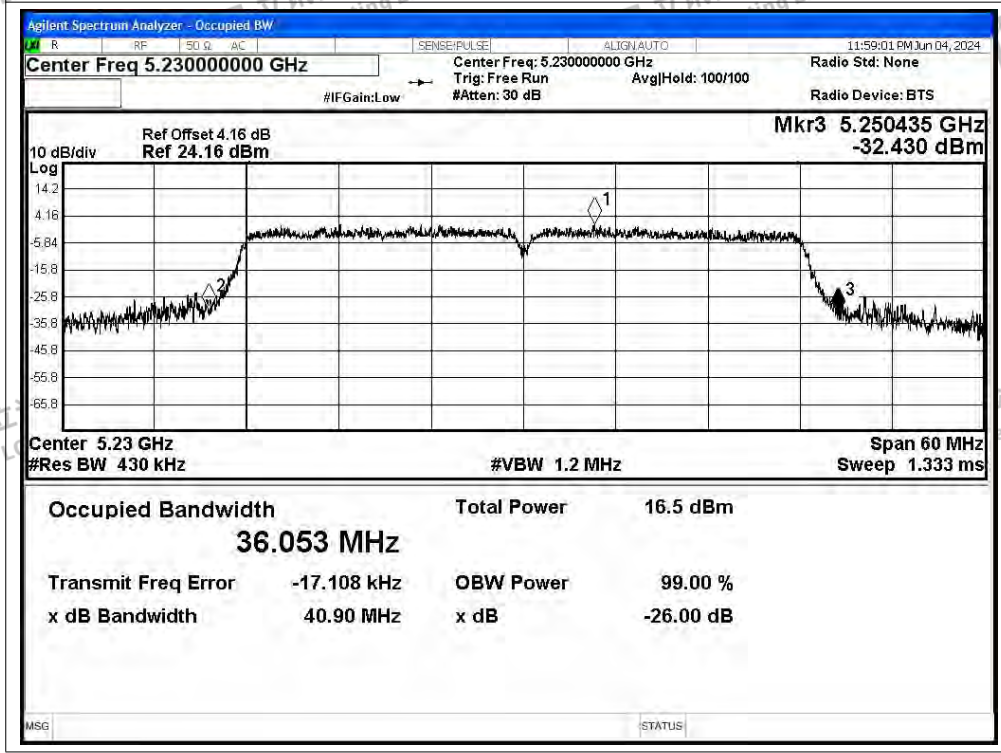


-26dB Bandwidth NVNT ac40 5190MHz Ant1





-26dB Bandwidth NVNT ac40 5230MHz Ant1



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D.2 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	12.16	0.24	12.4	24	Pass
NVNT	a	5200	Ant1	12.78	0.24	13.02	24	Pass
NVNT	a	5240	Ant1	12.83	0.24	13.07	24	Pass
NVNT	n20	5180	Ant1	11.4	0.28	11.68	24	Pass
NVNT	n20	5200	Ant1	11.92	0.28	12.2	24	Pass
NVNT	n20	5240	Ant1	11.87	0.28	12.15	24	Pass
NVNT	n40	5190	Ant1	10.19	0.12	10.31	24	Pass
NVNT	n40	5230	Ant1	10.39	0.12	10.51	24	Pass
NVNT	ac20	5180	Ant1	11.14	0.28	11.42	24	Pass
NVNT	ac20	5200	Ant1	11.87	0.28	12.15	24	Pass
NVNT	ac20	5240	Ant1	11.17	0.28	11.45	24	Pass
NVNT	ac40	5190	Ant1	10.13	0.12	10.25	24	Pass
NVNT	ac40	5230	Ant1	10.58	0.12	10.7	24	Pass



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D.3 Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/MHz)	Duty Factor (dB)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
NVNT	a	5180	Ant1	1.48	0.24	1.72	11	Pass
NVNT	a	5200	Ant1	2.18	0.24	2.42	11	Pass
NVNT	a	5240	Ant1	2.67	0.24	2.91	11	Pass
NVNT	n20	5180	Ant1	0.61	0.28	0.89	11	Pass
NVNT	n20	5200	Ant1	1.47	0.28	1.75	11	Pass
NVNT	n20	5240	Ant1	1.3	0.28	1.58	11	Pass
NVNT	n40	5190	Ant1	-3.67	0.12	-3.55	11	Pass
NVNT	n40	5230	Ant1	-3.28	0.12	-3.16	11	Pass
NVNT	ac20	5180	Ant1	0.29	0.28	0.57	11	Pass
NVNT	ac20	5200	Ant1	1.49	0.28	1.77	11	Pass
NVNT	ac20	5240	Ant1	0.54	0.28	0.82	11	Pass
NVNT	ac40	5190	Ant1	-3.85	0.12	-3.73	11	Pass
NVNT	ac40	5230	Ant1	-3.08	0.12	-2.96	11	Pass

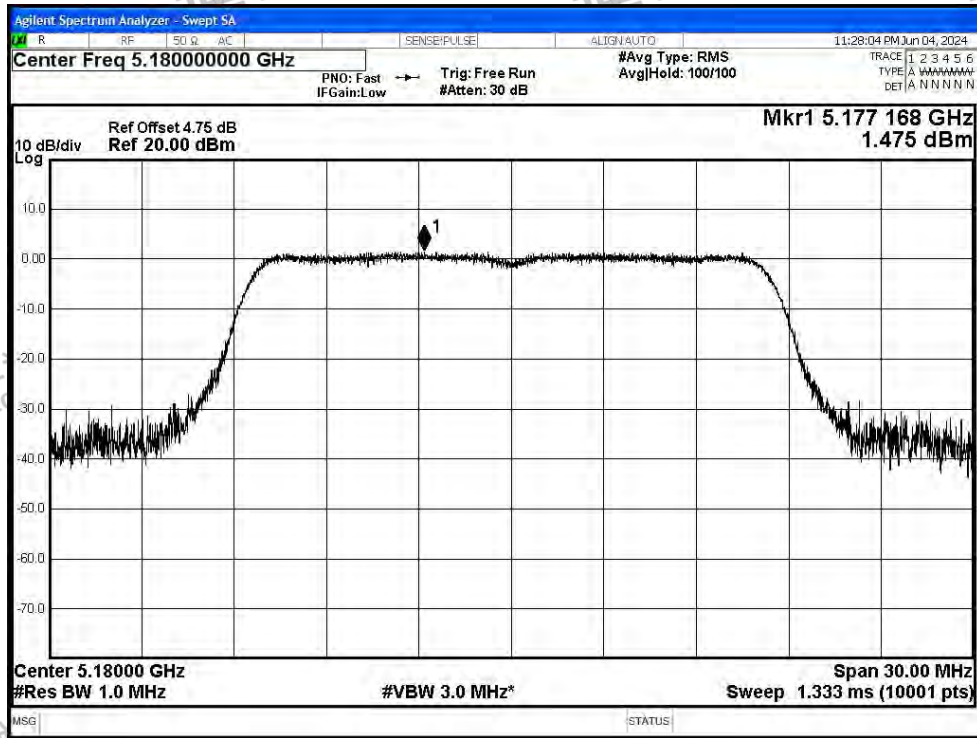


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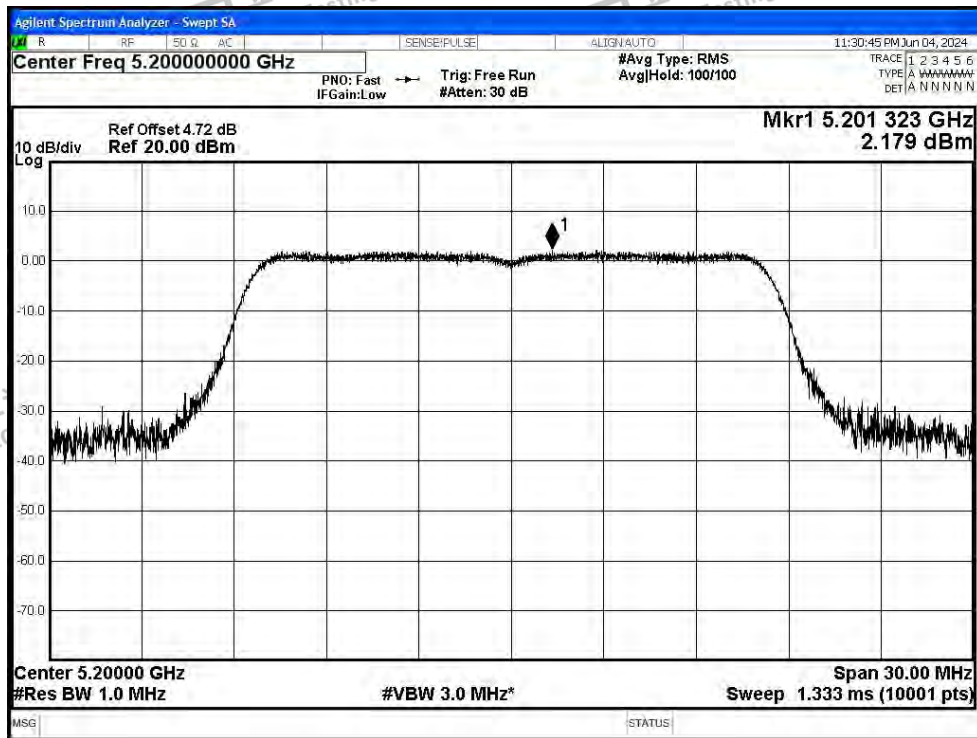


Test Graphs

PSD NVNT a 5180MHz Ant1

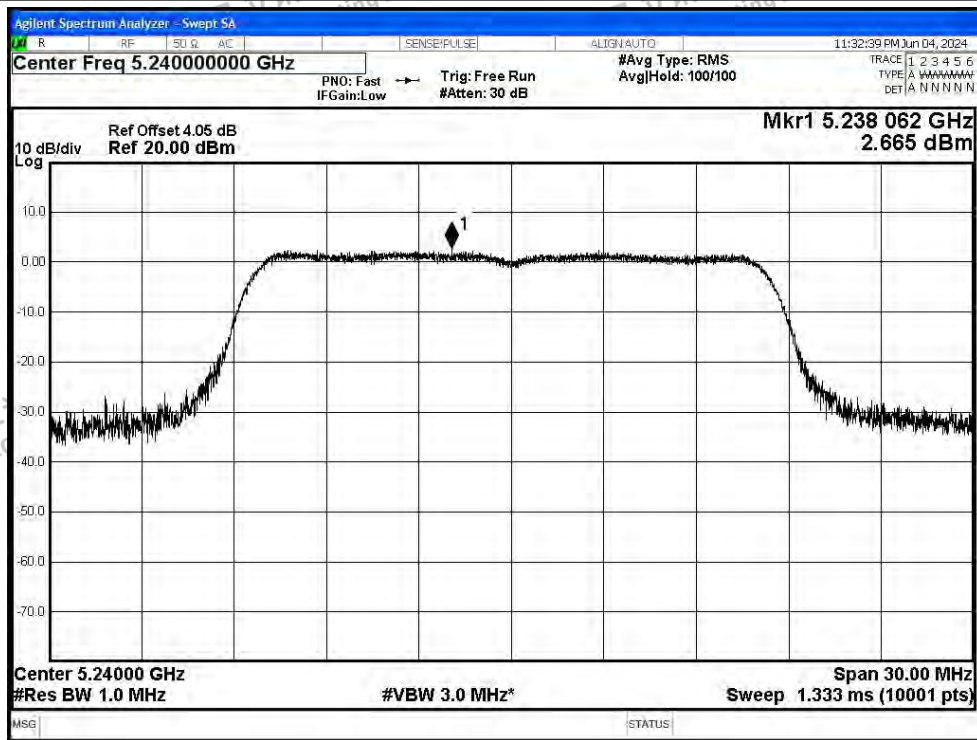


PSD NVNT a 5200MHz Ant1

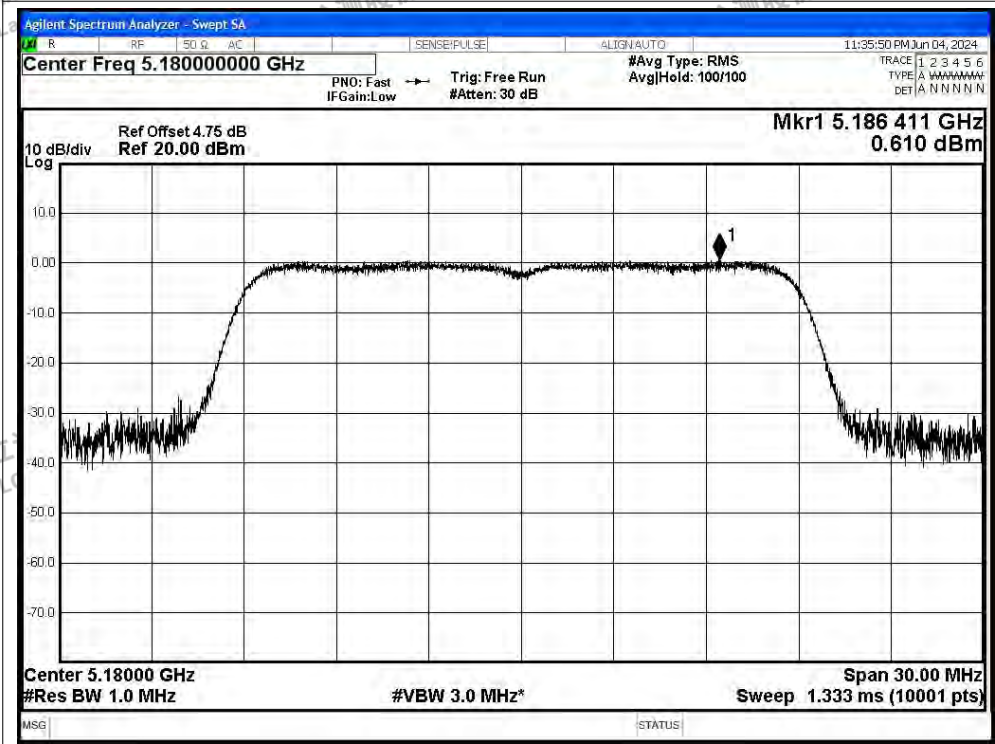




PSD NVNT a 5240MHz Ant1

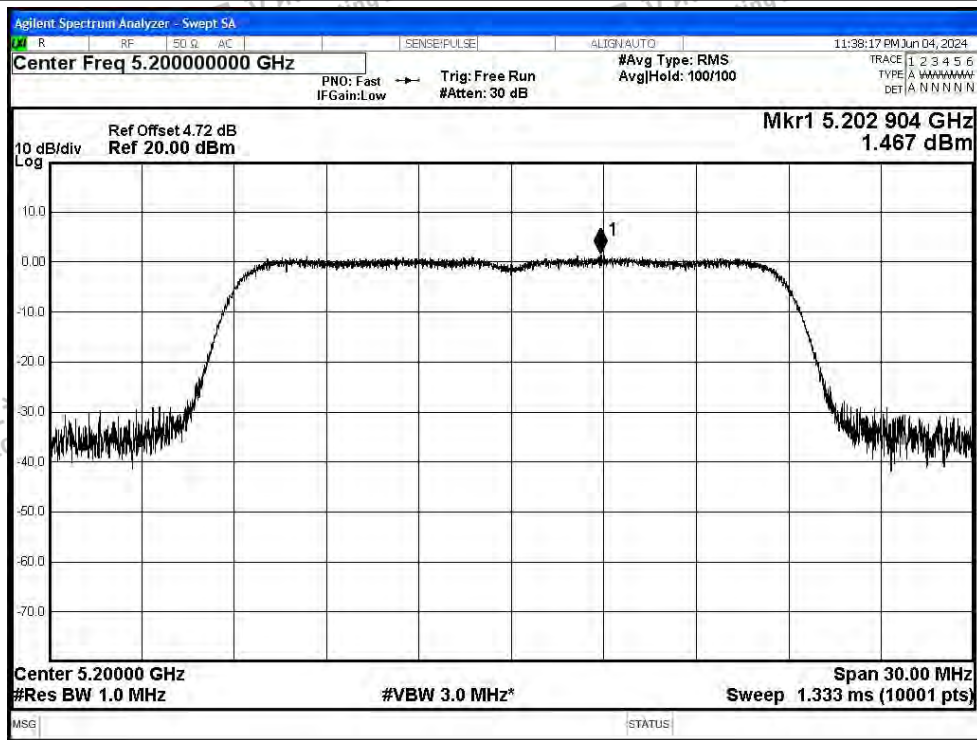


PSD NVNT n20 5180MHz Ant1

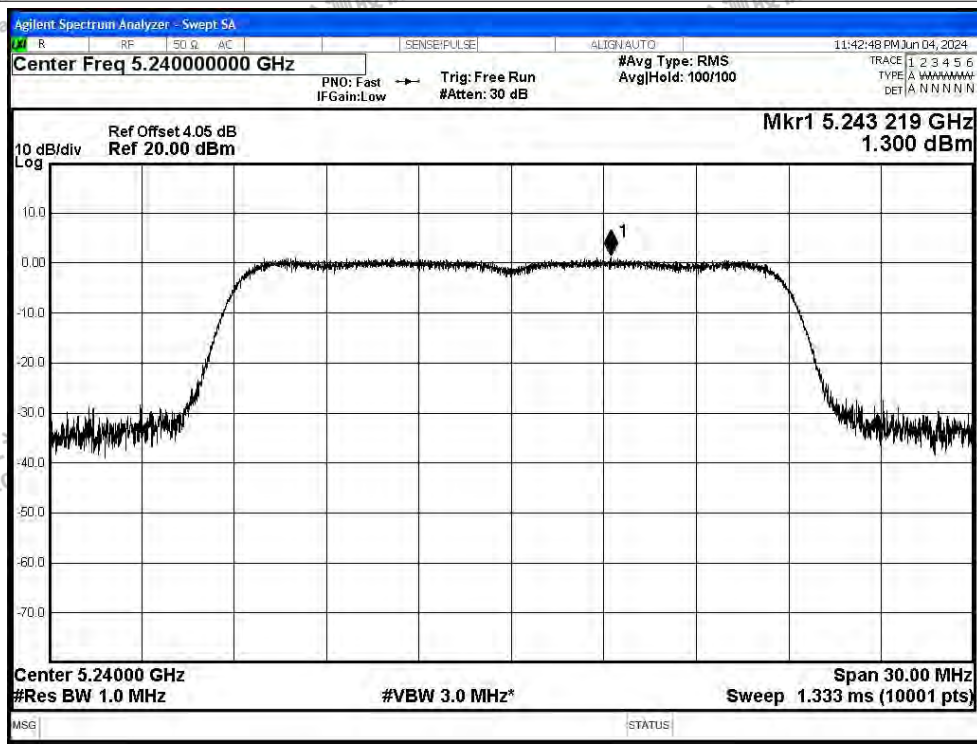




PSD NVNT n20 5200MHz Ant1

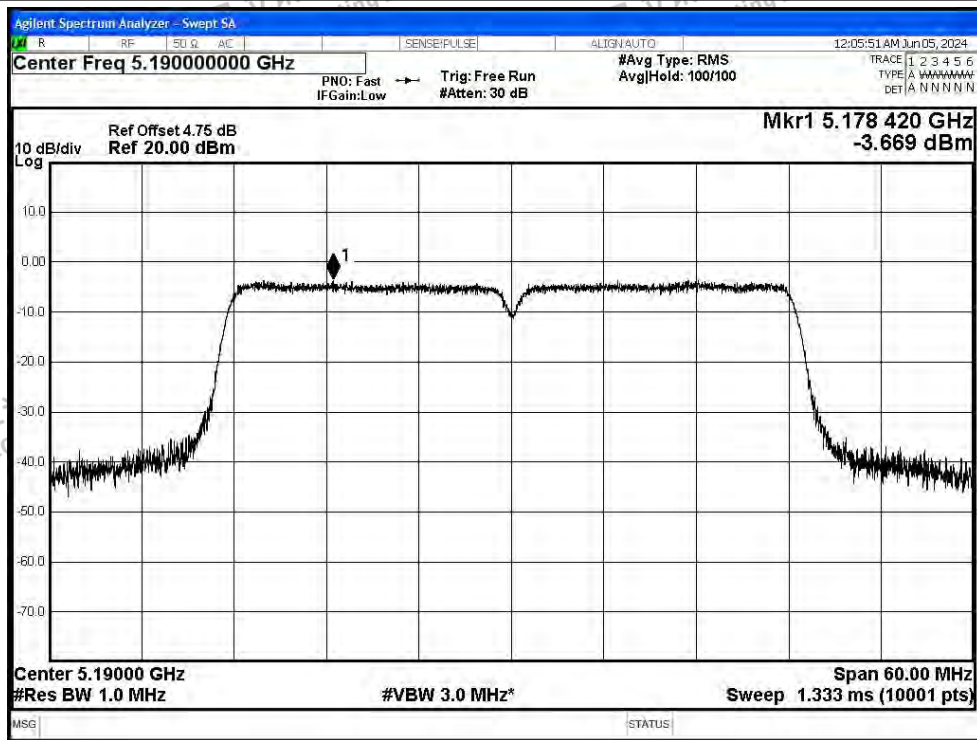


PSD NVNT n20 5240MHz Ant1

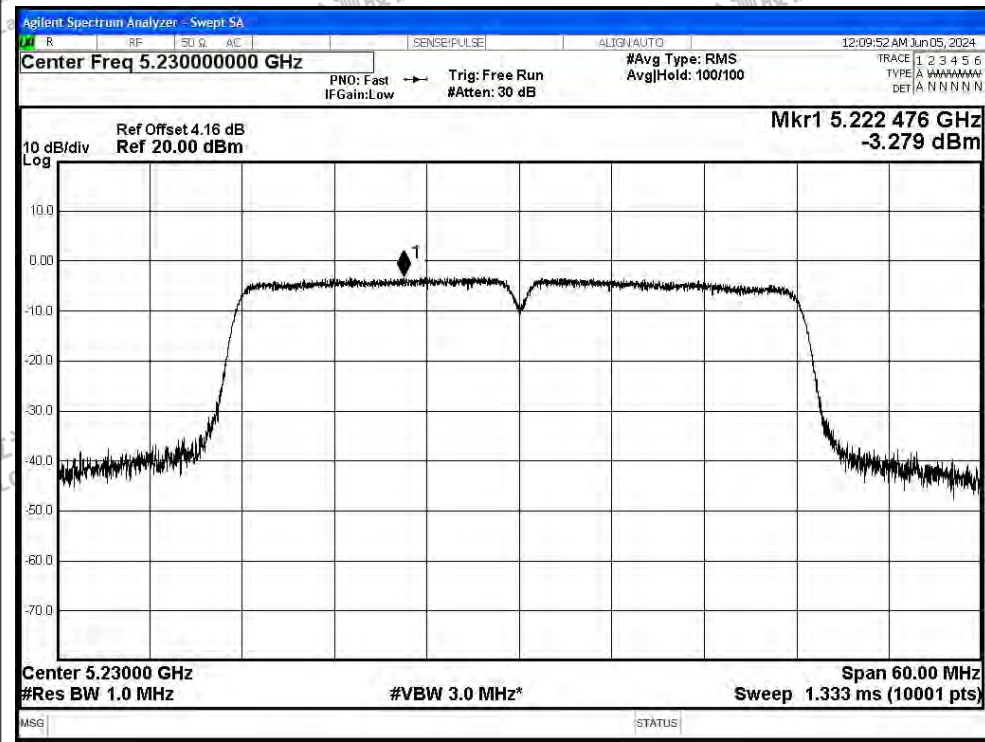




PSD NVNT n40 5190MHz Ant1

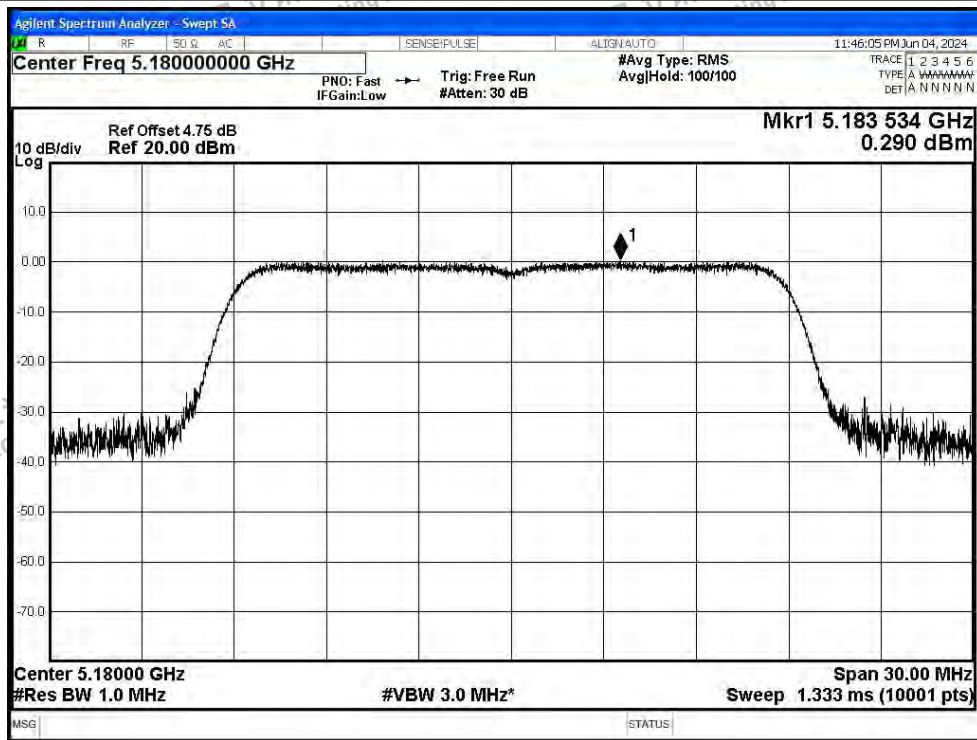


PSD NVNT n40 5230MHz Ant1

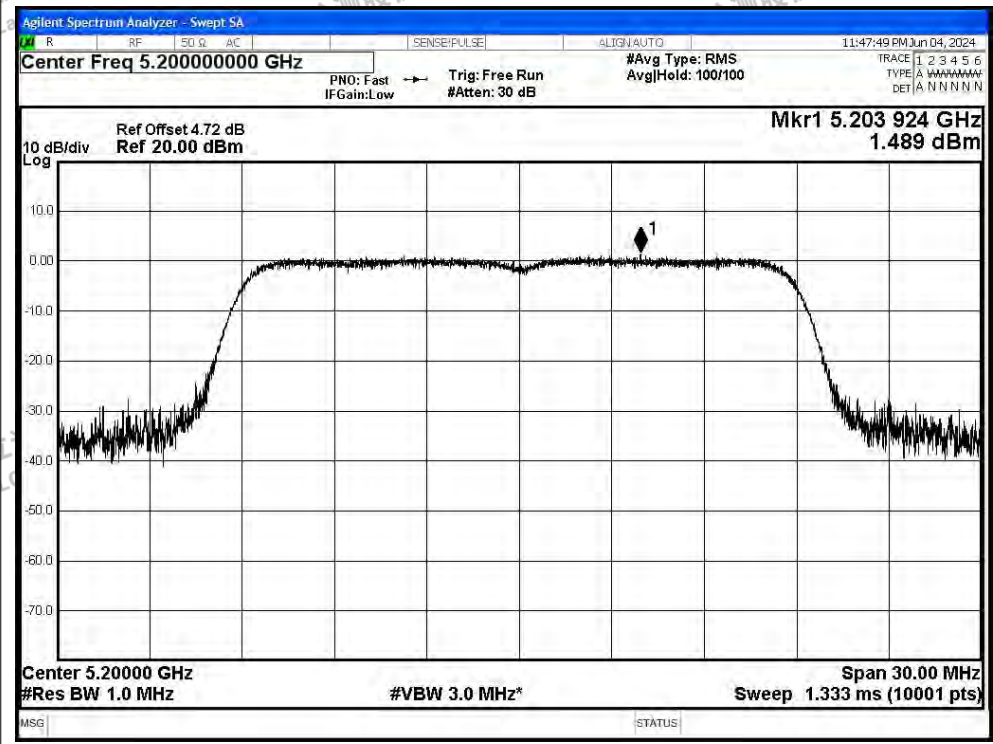




PSD NVNT ac20 5180MHz Ant1

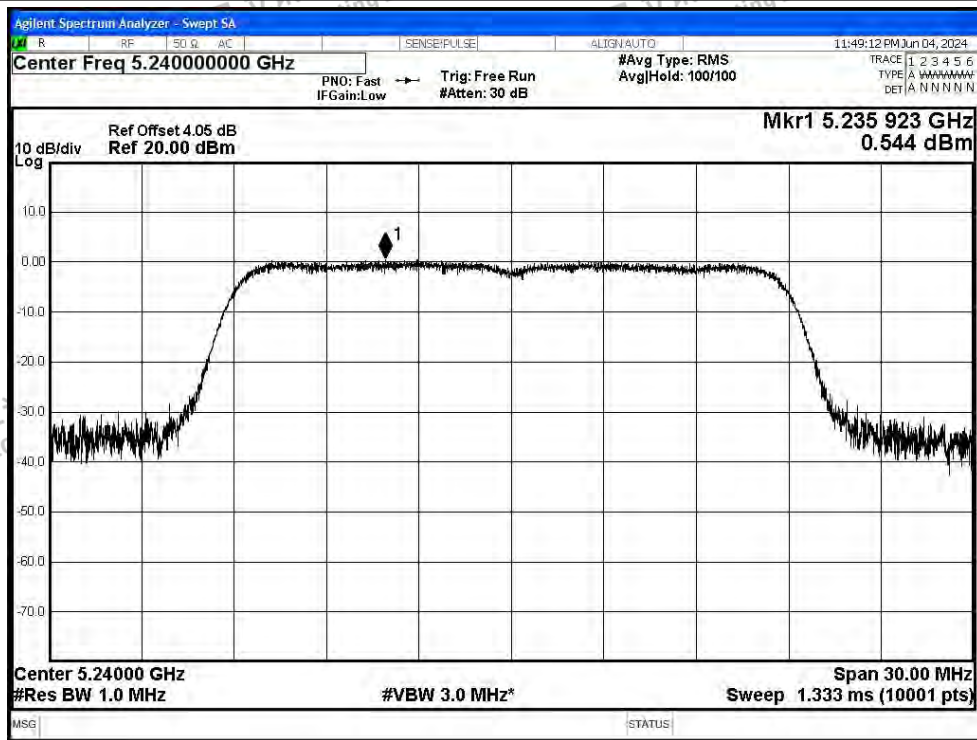


PSD NVNT ac20 5200MHz Ant1

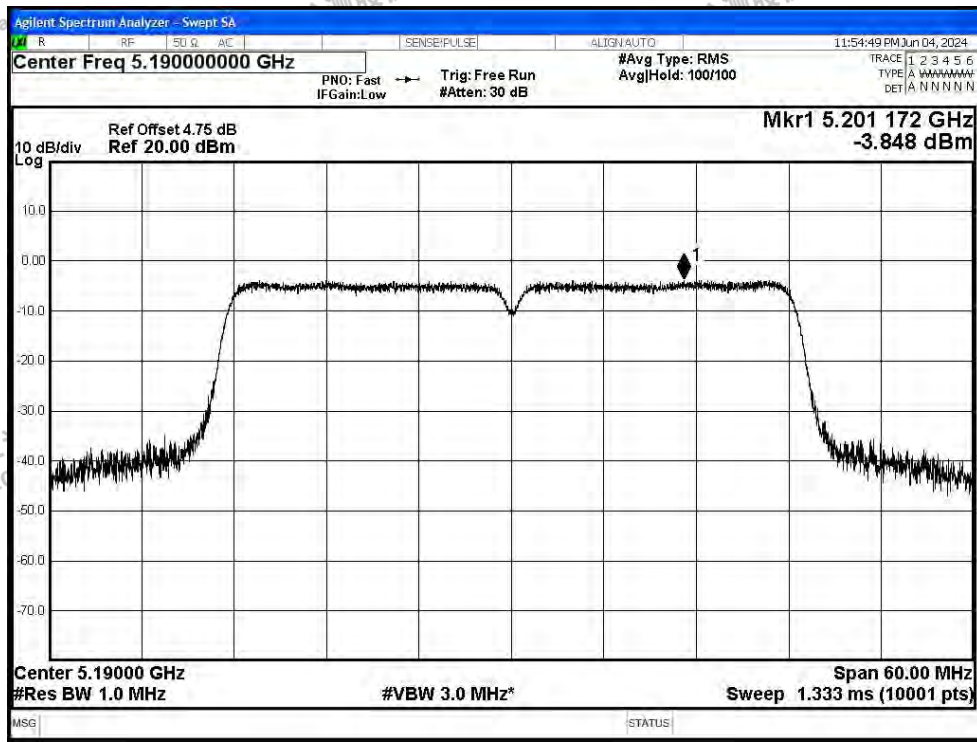




PSD NVNT ac20 5240MHz Ant1

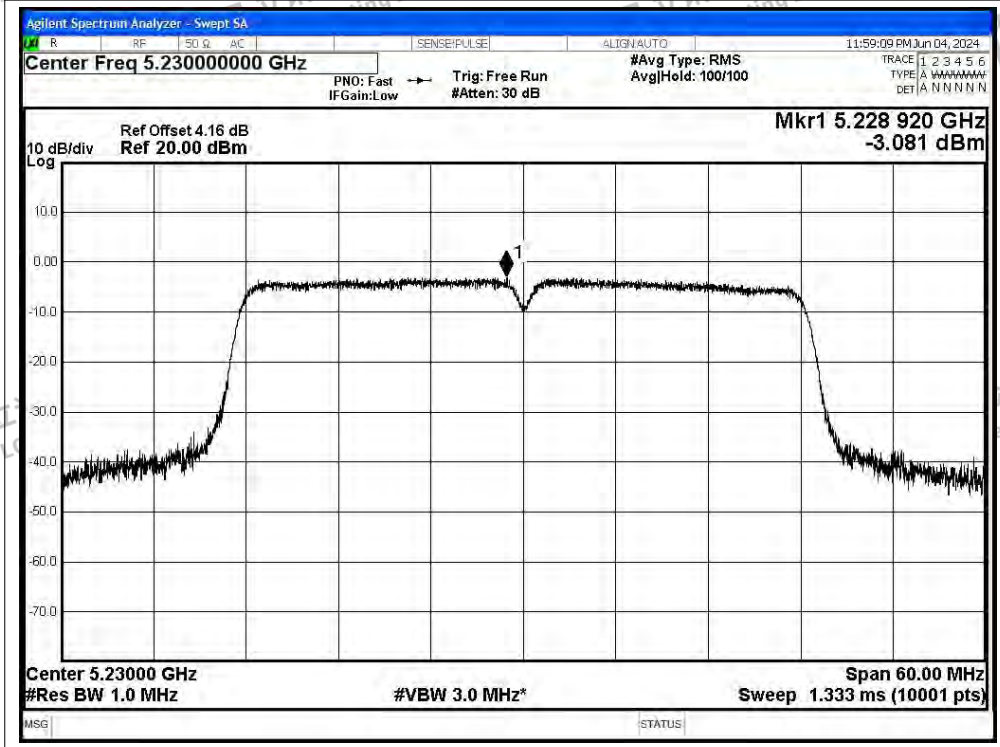


PSD NVNT ac40 5190MHz Ant1





PSD NVNT ac40 5230MHz Ant1





D.4 Restrict Band

Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBUV/m)	Detector	Limit (dBUV/m)	Verdict
NVNT	a	5180	Ant1	4500	-49.38	2.5	-	48.35	Peak	68.2	Pass
NVNT	a	5180	Ant1	4500	-57.01	2.5	0.24	40.96	Average	54	Pass
NVNT	a	5180	Ant1	5149.6	-40.01	2.5	-	57.72	Peak	68.2	Pass
NVNT	a	5180	Ant1	5149.6	-53.69	2.5	0.24	44.28	Average	54	Pass
NVNT	a	5180	Ant1	5150	-41.85	2.5	-	55.88	Peak	68.2	Pass
NVNT	a	5180	Ant1	5150	-53.2	2.5	0.24	44.77	Average	54	Pass
NVNT	a	5240	Ant1	5350	-47.21	2.5	-	50.52	Peak	68.2	Pass
NVNT	a	5240	Ant1	5350	-56.11	2.5	0.24	41.86	Average	54	Pass
NVNT	a	5240	Ant1	5351.04	-45.27	2.5	-	52.46	Peak	68.2	Pass
NVNT	a	5240	Ant1	5351.28	-55.64	2.5	0.24	42.33	Average	54	Pass
NVNT	a	5240	Ant1	5460	-48.45	2.5	-	49.28	Peak	68.2	Pass
NVNT	a	5240	Ant1	5460	-57.3	2.5	0.24	40.67	Average	54	Pass
NVNT	n20	5180	Ant1	4500	-49.14	2.5	-	48.59	Peak	68.2	Pass
NVNT	n20	5180	Ant1	4500	-57.57	2.5	0.28	40.44	Average	54	Pass
NVNT	n20	5180	Ant1	5149.6	-43.04	2.5	-	54.69	Peak	68.2	Pass
NVNT	n20	5180	Ant1	5149.6	-52.83	2.5	0.28	45.18	Average	54	Pass
NVNT	n20	5180	Ant1	5150	-40.92	2.5	-	56.81	Peak	68.2	Pass
NVNT	n20	5180	Ant1	5150	-51.65	2.5	0.28	46.36	Average	54	Pass
NVNT	n20	5240	Ant1	5350	-47.56	2.5	-	50.17	Peak	68.2	Pass
NVNT	n20	5240	Ant1	5350	-56.03	2.5	0.28	41.98	Average	54	Pass
NVNT	n20	5240	Ant1	5352.48	-45.53	2.5	-	52.2	Peak	68.2	Pass
NVNT	n20	5240	Ant1	5350.8	-55.52	2.5	0.28	42.49	Average	54	Pass
NVNT	n20	5240	Ant1	5460	-49.34	2.5	-	48.39	Peak	68.2	Pass
NVNT	n20	5240	Ant1	5460	-56.79	2.5	0.28	41.22	Average	54	Pass
NVNT	n40	5190	Ant1	4500	-49.04	2.5	-	48.69	Peak	68.2	Pass
NVNT	n40	5190	Ant1	4500	-57.24	2.5	0.12	40.61	Average	54	Pass
NVNT	n40	5190	Ant1	5149.7	-40.83	2.5	-	56.9	Peak	68.2	Pass
NVNT	n40	5190	Ant1	5148.97	-53.17	2.5	0.12	44.68	Average	54	Pass
NVNT	n40	5190	Ant1	5150	-40.83	2.5	-	56.9	Peak	68.2	Pass
NVNT	n40	5190	Ant1	5150	-53.38	2.5	0.12	44.47	Average	54	Pass
NVNT	n40	5230	Ant1	5350	-47.89	2.5	-	49.84	Peak	68.2	Pass
NVNT	n40	5230	Ant1	5350	-56.99	2.5	0.12	40.86	Average	54	Pass
NVNT	n40	5230	Ant1	5405.73	-45.38	2.5	-	52.35	Peak	68.2	Pass
NVNT	n40	5230	Ant1	5376.57	-56.15	2.5	0.12	41.7	Average	54	Pass
NVNT	n40	5230	Ant1	5460	-49.86	2.5	-	47.87	Peak	68.2	Pass
NVNT	n40	5230	Ant1	5460	-57.48	2.5	0.12	40.37	Average	54	Pass



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NVNT	ac20	5180	Ant1	4500	-49.86	2.5	-	47.87	Peak	68.2	Pass
NVNT	ac20	5180	Ant1	4500	-57.01	2.5	0.28	41	Average	54	Pass
NVNT	ac20	5180	Ant1	5148.9	-39.53	2.5	-	58.2	Peak	68.2	Pass
NVNT	ac20	5180	Ant1	5148.9	-50.75	2.5	0.28	47.26	Average	54	Pass
NVNT	ac20	5180	Ant1	5150	-41.56	2.5	-	56.17	Peak	68.2	Pass
NVNT	ac20	5180	Ant1	5150	-50.5	2.5	0.28	47.51	Average	54	Pass
NVNT	ac20	5240	Ant1	5350	-47.48	2.5	-	50.25	Peak	68.2	Pass
NVNT	ac20	5240	Ant1	5350	-56.01	2.5	0.28	42	Average	54	Pass
NVNT	ac20	5240	Ant1	5372.4	-46.31	2.5	-	51.42	Peak	68.2	Pass
NVNT	ac20	5240	Ant1	5350.56	-55.84	2.5	0.28	42.17	Average	54	Pass
NVNT	ac20	5240	Ant1	5460	-48.44	2.5	-	49.29	Peak	68.2	Pass
NVNT	ac20	5240	Ant1	5460	-57.06	2.5	0.28	40.95	Average	54	Pass
NVNT	ac40	5190	Ant1	4500	-48.99	2.5	-	48.74	Peak	68.2	Pass
NVNT	ac40	5190	Ant1	4500	-57.15	2.5	0.12	40.7	Average	54	Pass
NVNT	ac40	5190	Ant1	5147.51	-41.5	2.5	-	56.23	Peak	68.2	Pass
NVNT	ac40	5190	Ant1	5149.7	-52.08	2.5	0.12	45.77	Average	54	Pass
NVNT	ac40	5190	Ant1	5150	-42.8	2.5	-	54.93	Peak	68.2	Pass
NVNT	ac40	5190	Ant1	5150	-52.08	2.5	0.12	45.77	Average	54	Pass
NVNT	ac40	5230	Ant1	5350	-49.72	2.5	-	48.01	Peak	68.2	Pass
NVNT	ac40	5230	Ant1	5350	-56.95	2.5	0.12	40.9	Average	54	Pass
NVNT	ac40	5230	Ant1	5383.86	-45.61	2.5	-	52.12	Peak	68.2	Pass
NVNT	ac40	5230	Ant1	5391.15	-55.89	2.5	0.12	41.96	Average	54	Pass
NVNT	ac40	5230	Ant1	5460	-48.42	2.5	-	49.31	Peak	68.2	Pass
NVNT	ac40	5230	Ant1	5460	-57.17	2.5	0.12	40.68	Average	54	Pass

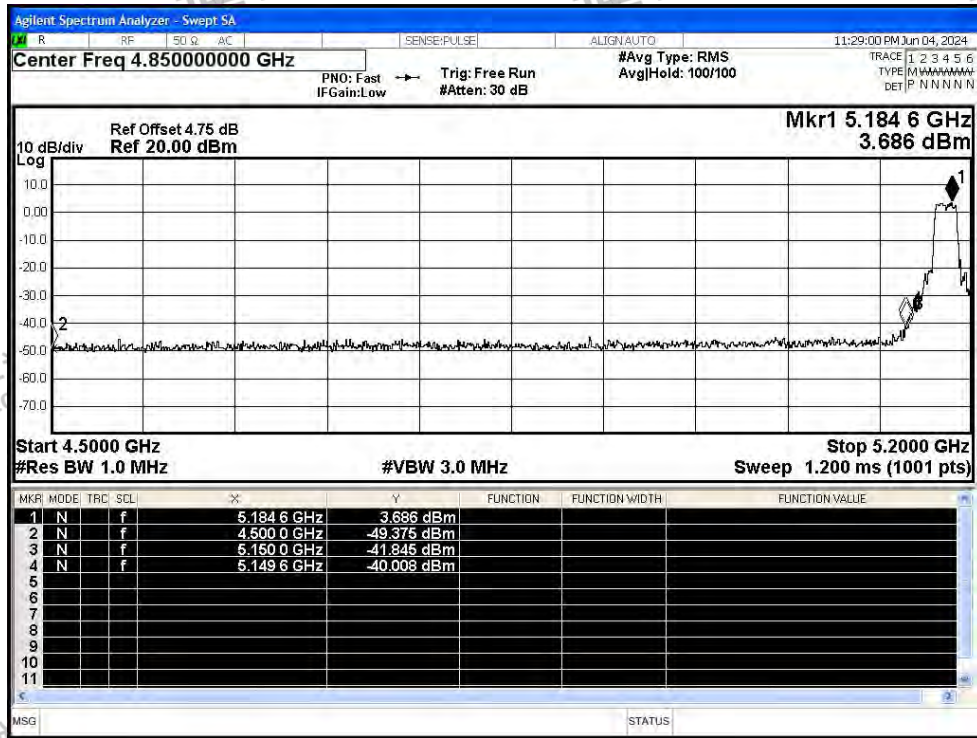


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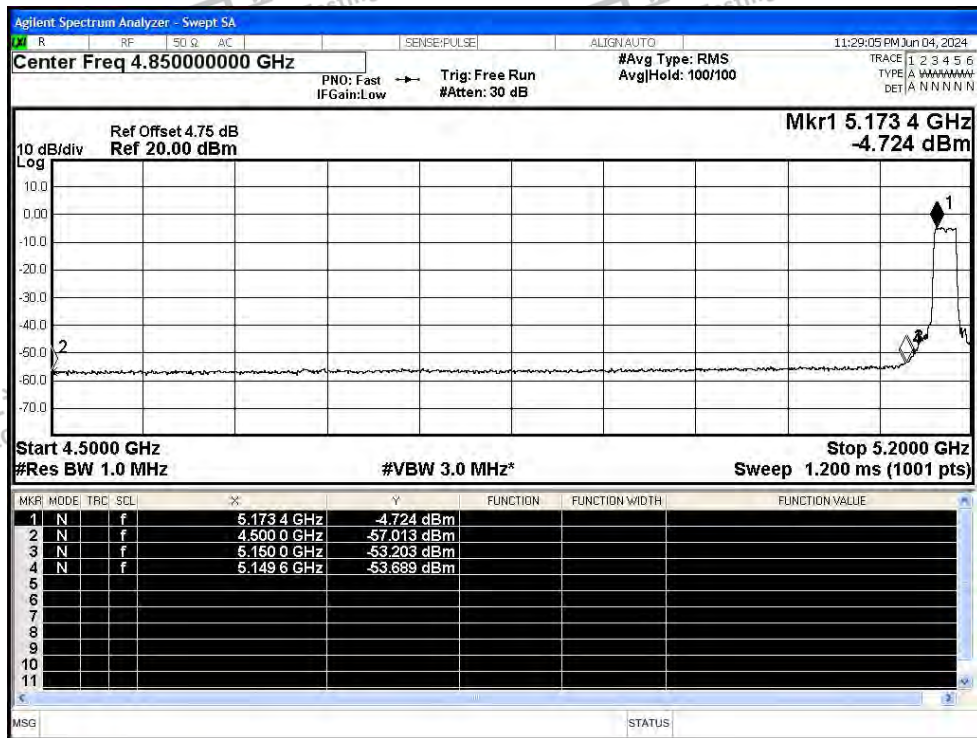


Test Graphs

Restrict Band NVNT a 5180MHz Ant1 Peak

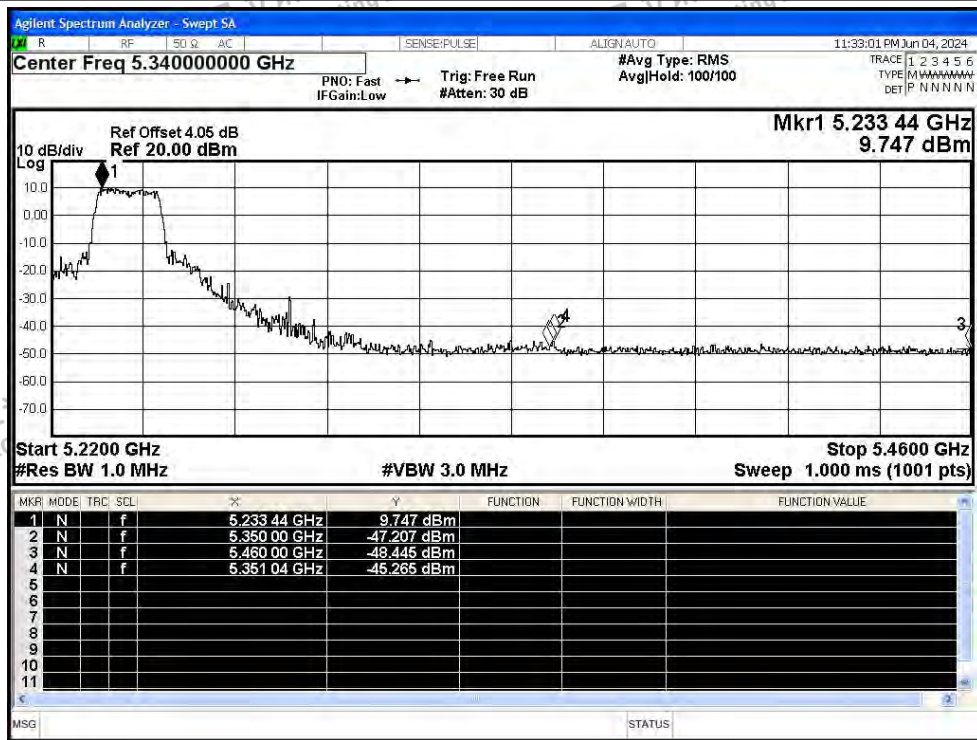


Restrict Band NVNT a 5180MHz Ant1 Average

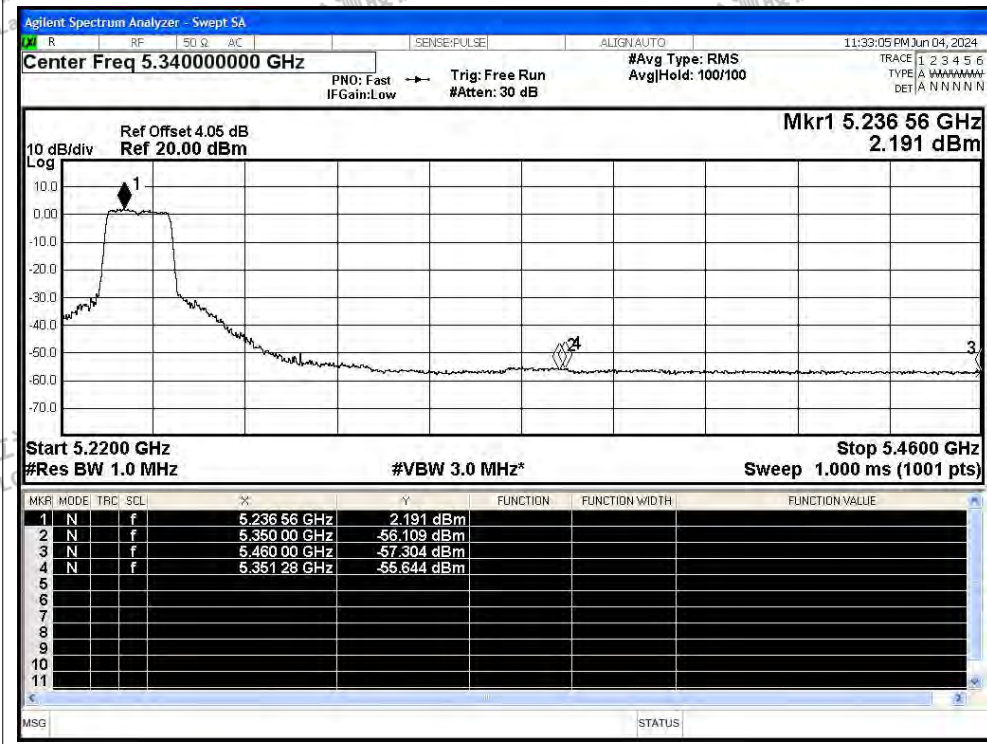




Restrict Band NVNT a 5240MHz Ant1 Peak

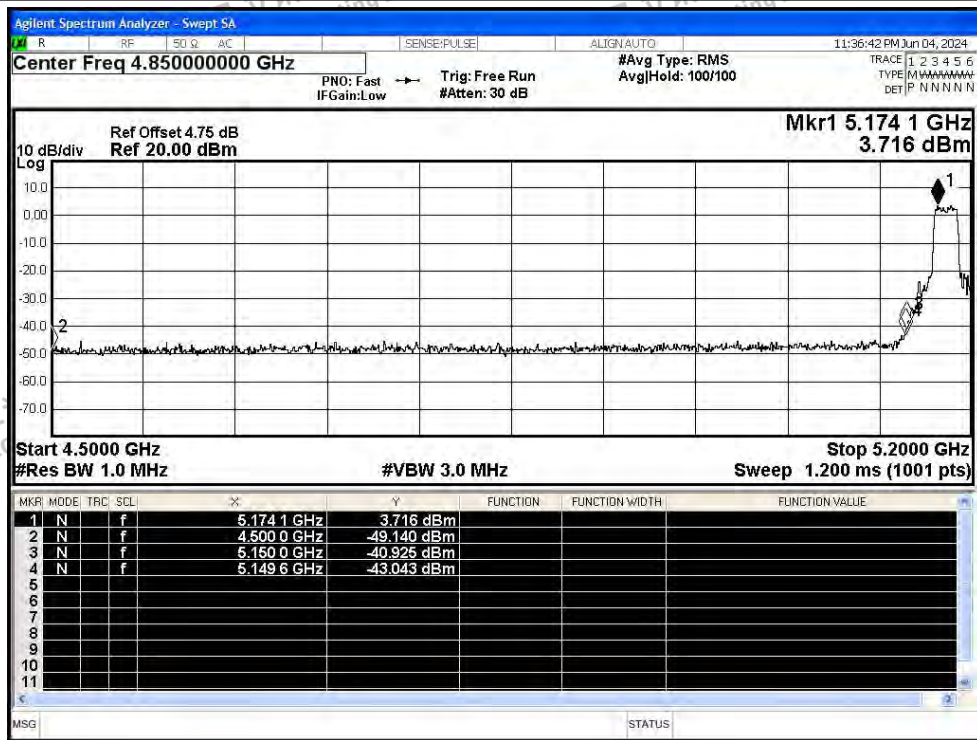


Restrict Band NVNT a 5240MHz Ant1 Average

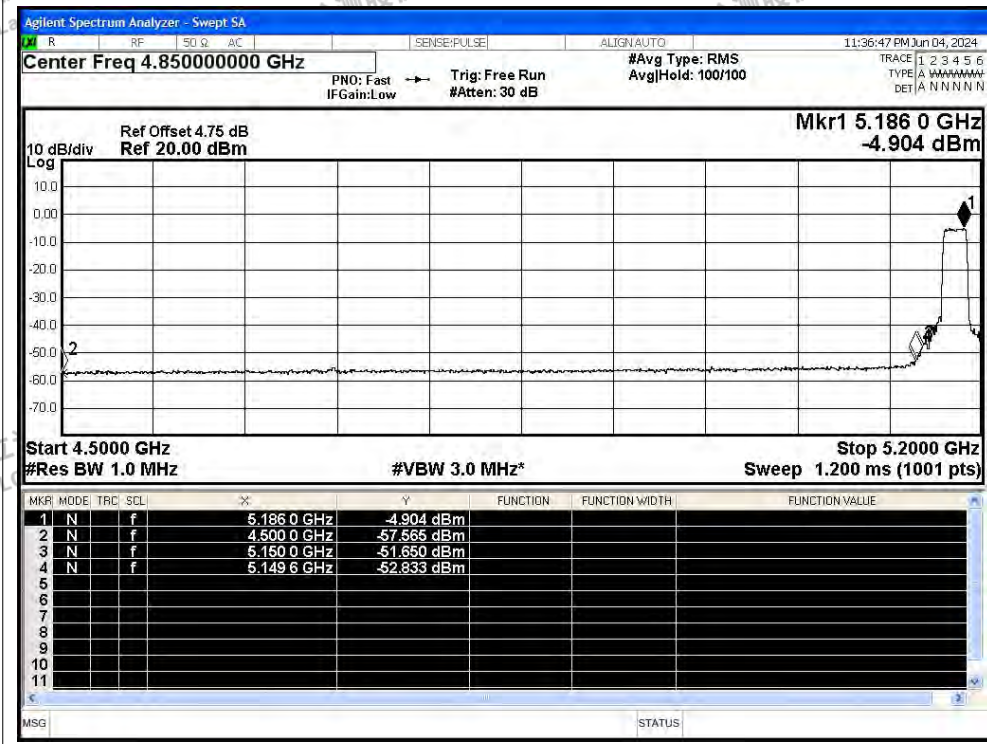




Restrict Band NVNT n20 5180MHz Ant1 Peak

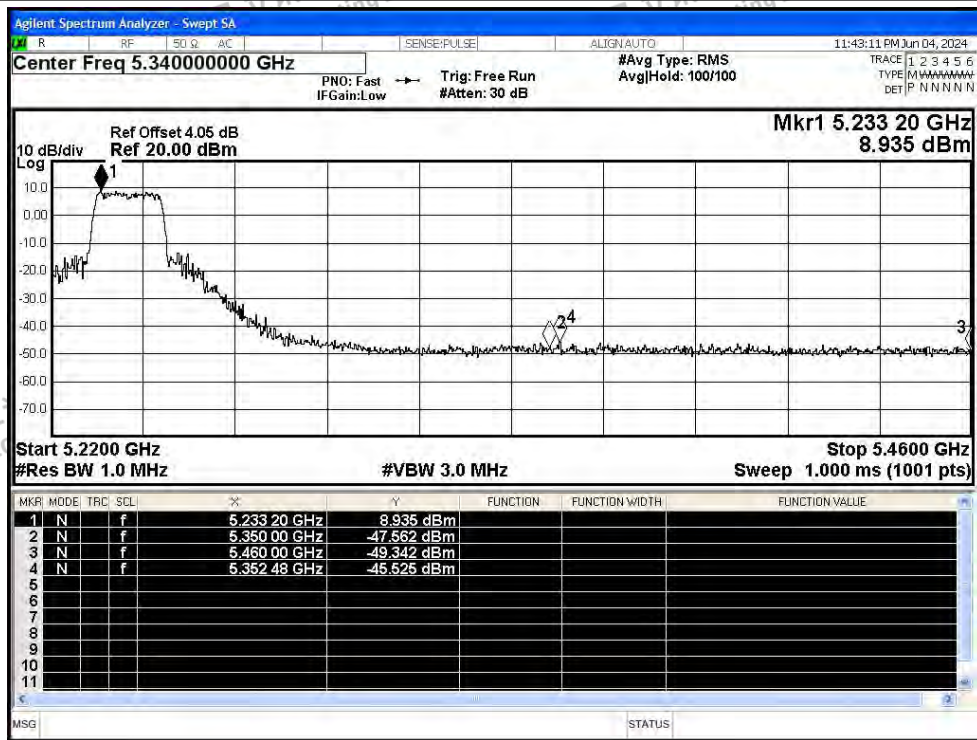


Restrict Band NVNT n20 5180MHz Ant1 Average

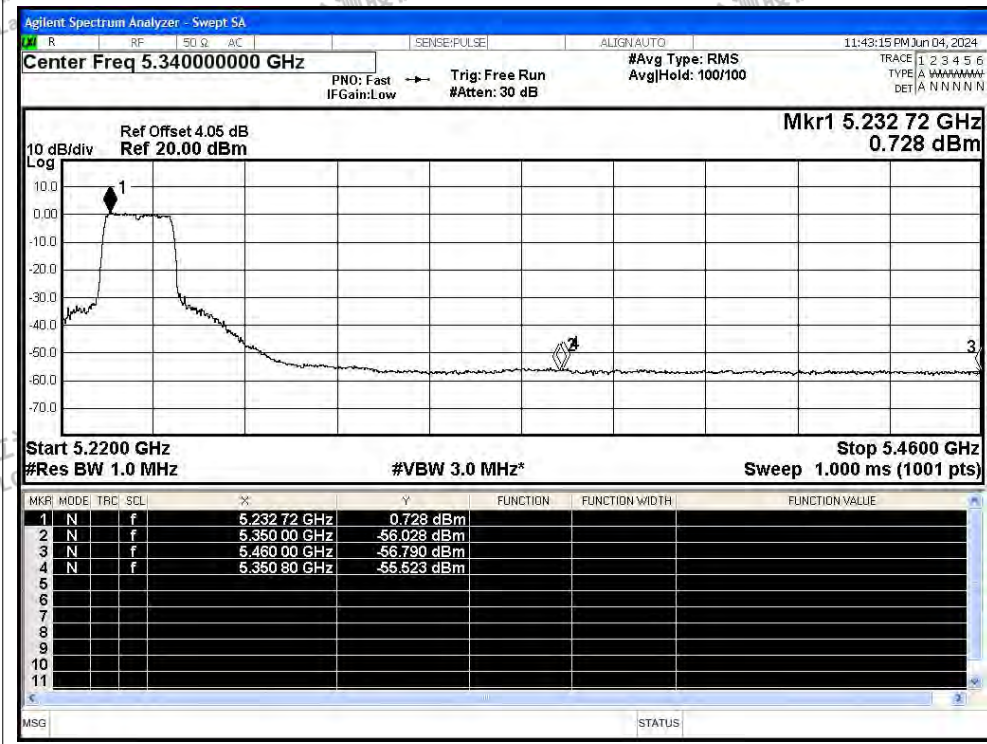




Restrict Band NVNT n20 5240MHz Ant1 Peak

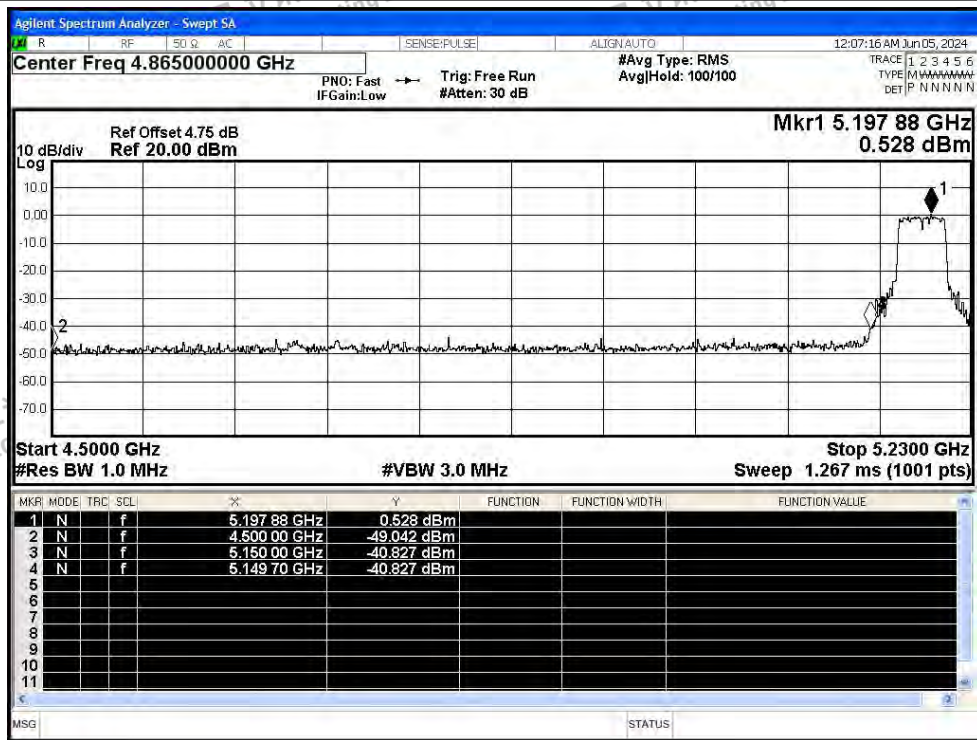


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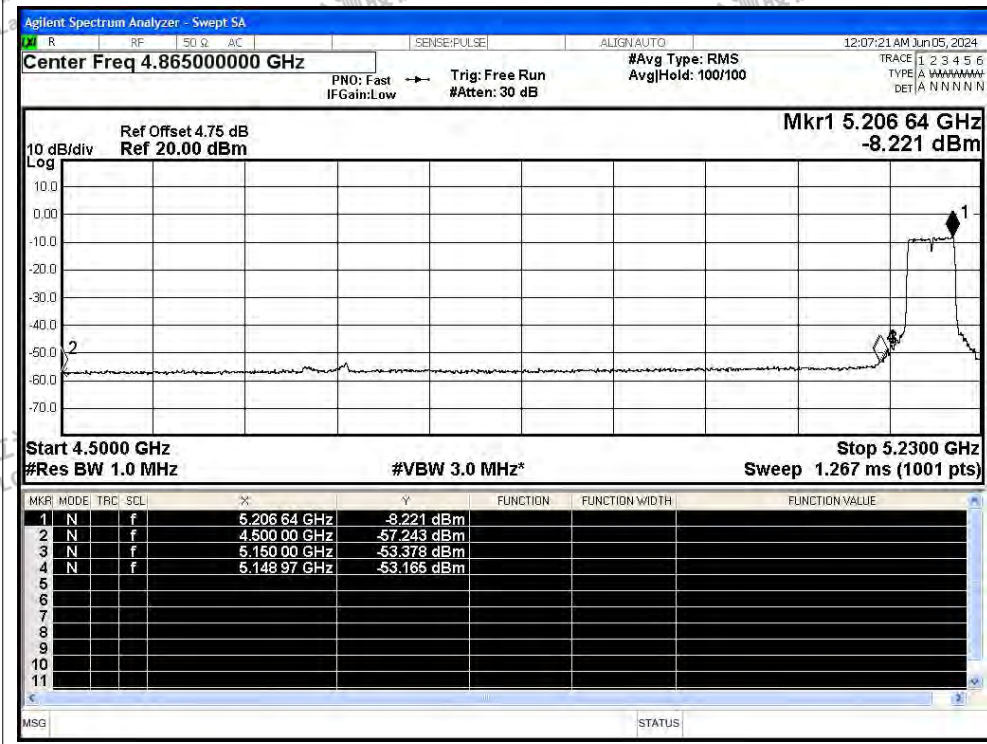




Restrict Band NVNT n40 5190MHz Ant1 Peak

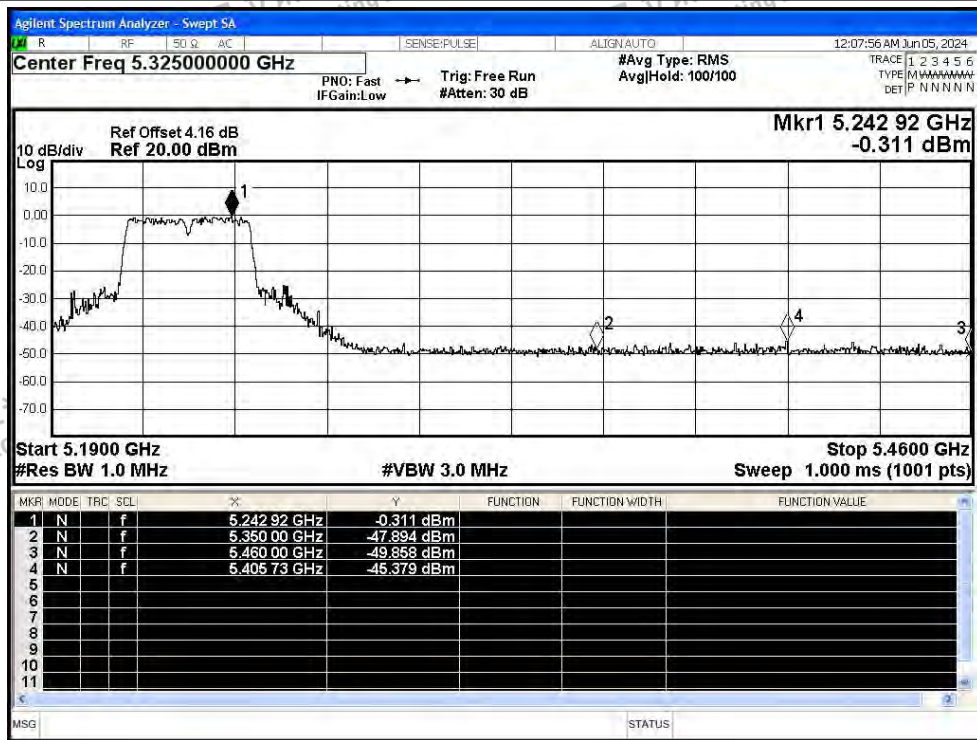


Restrict Band NVNT n40 5190MHz Ant1 Average

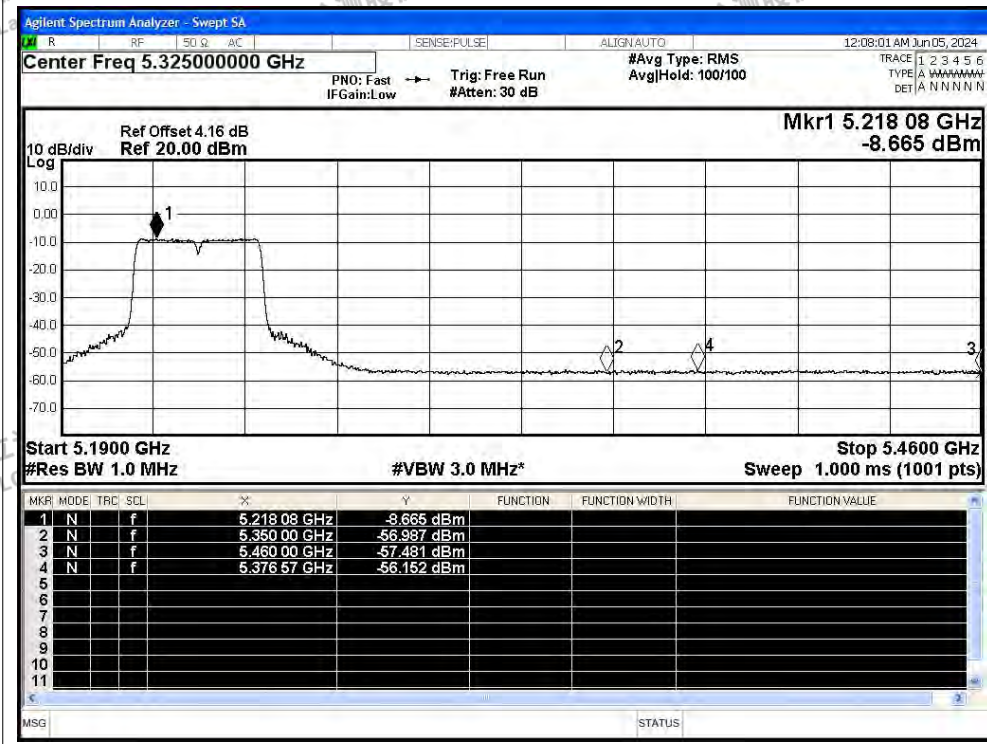




Restrict Band NVNT n40 5230MHz Ant1 Peak

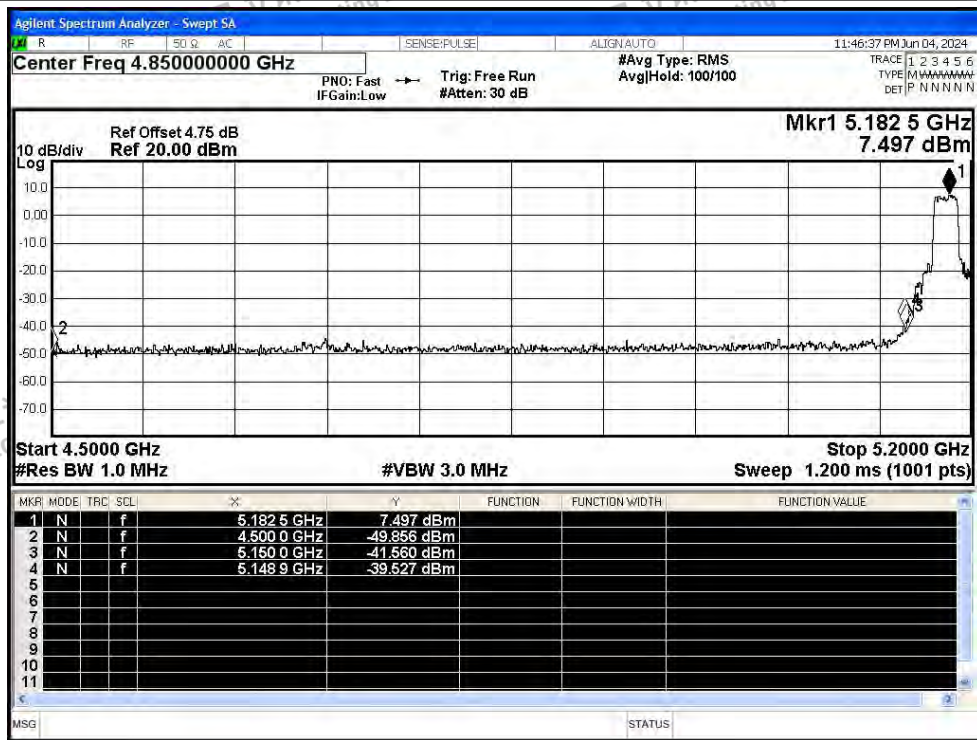


Restrict Band NVNT n40 5230MHz Ant1 Average

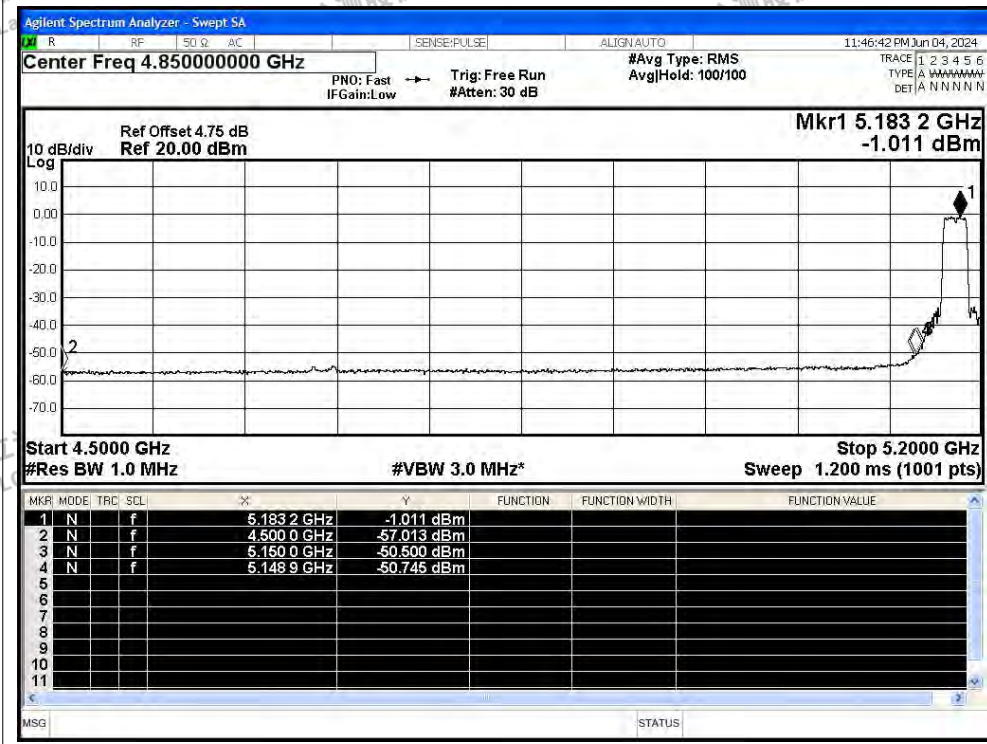




Restrict Band NVNT ac20 5180MHz Ant1 Peak

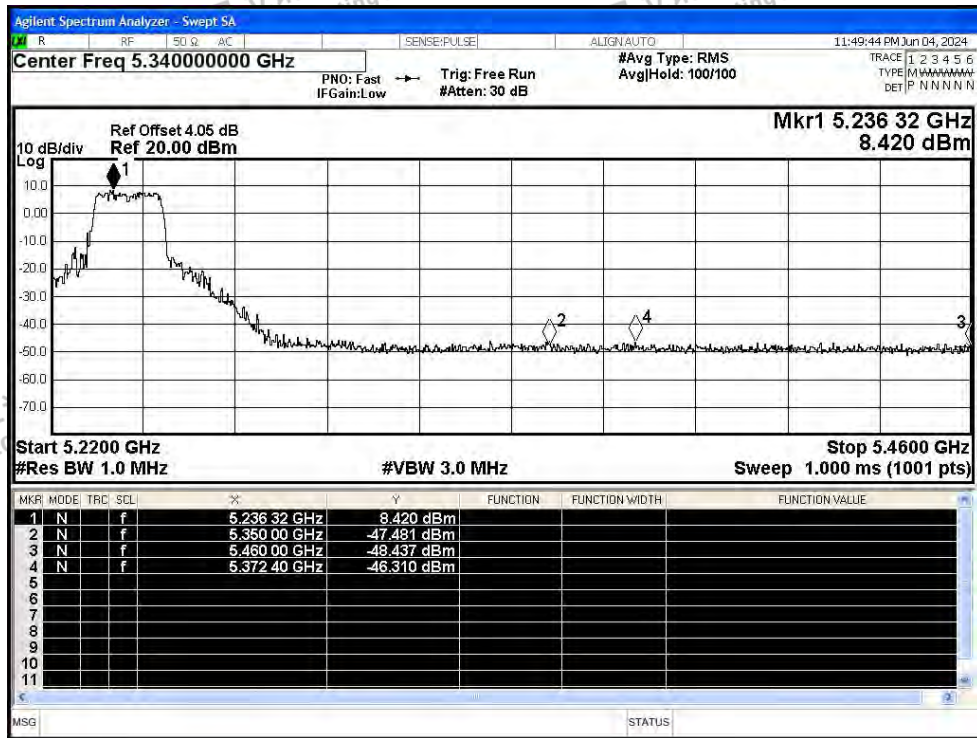


Restrict Band NVNT ac20 5180MHz Ant1 Average

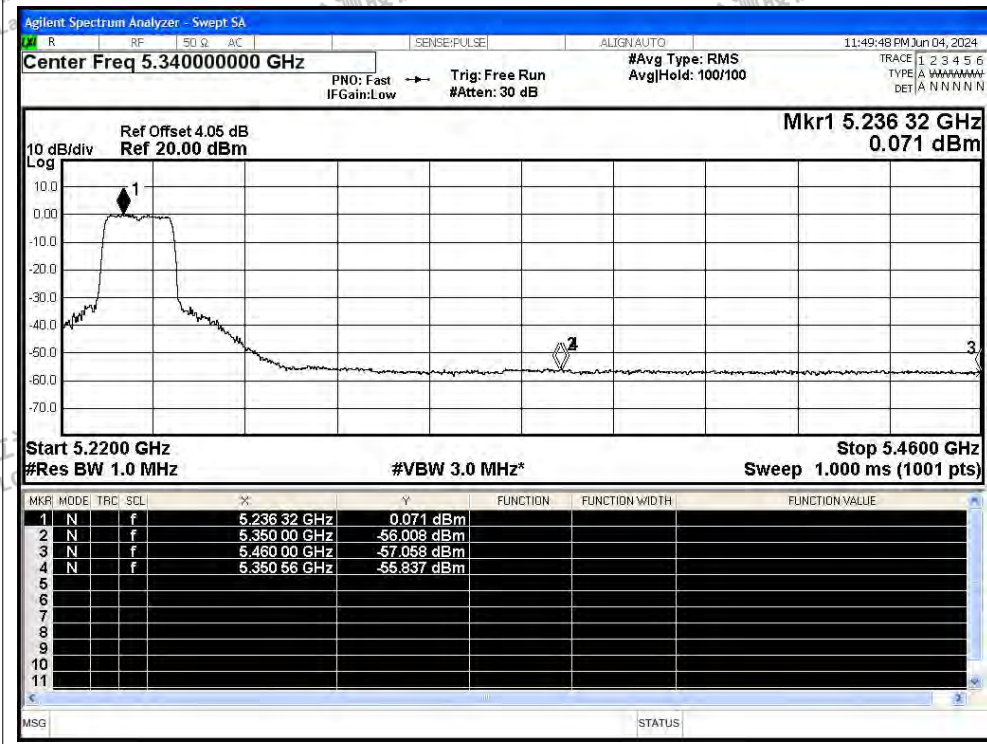




Restrict Band NVNT ac20 5240MHz Ant1 Peak

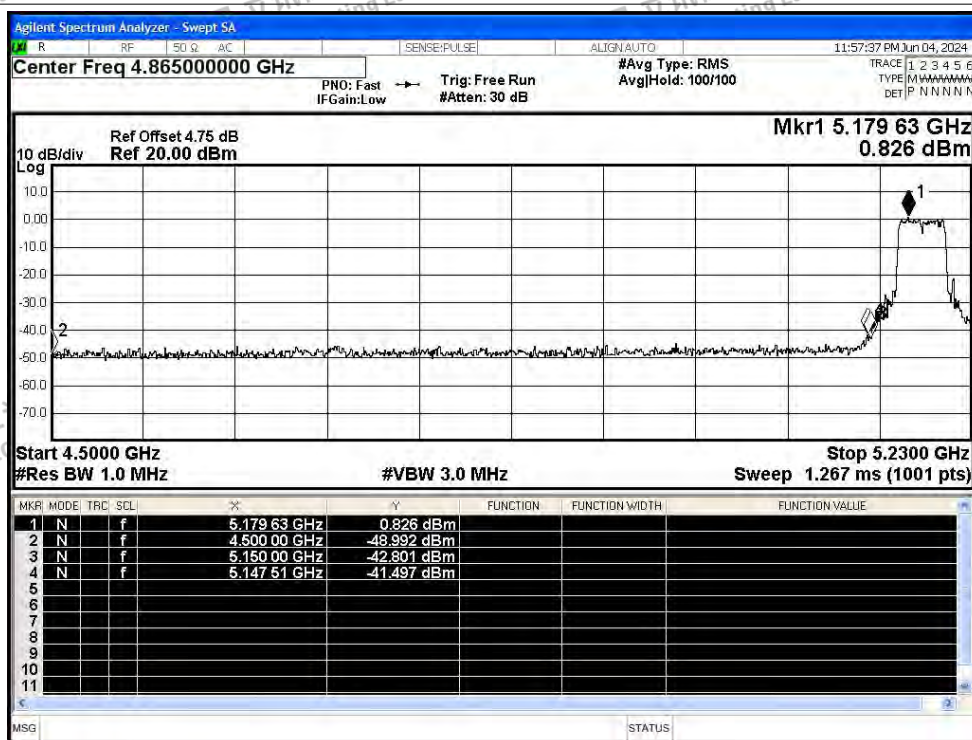


Restrict Band NVNT ac20 5240MHz Ant1 Average

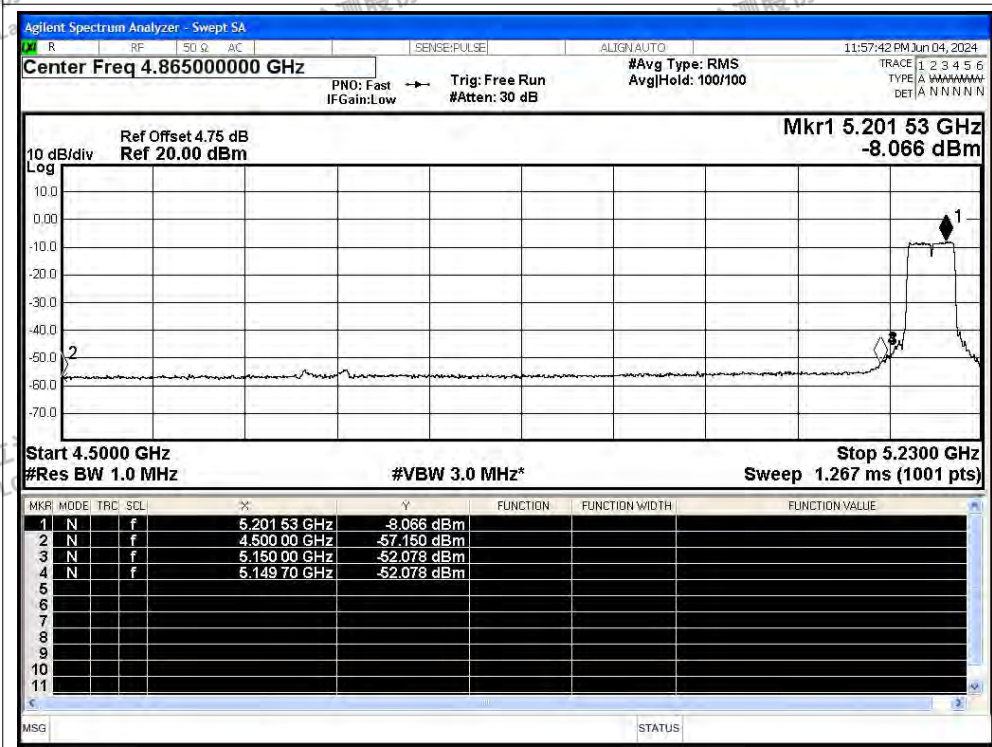




Restrict Band NVNT ac40 5190MHz Ant1 Peak

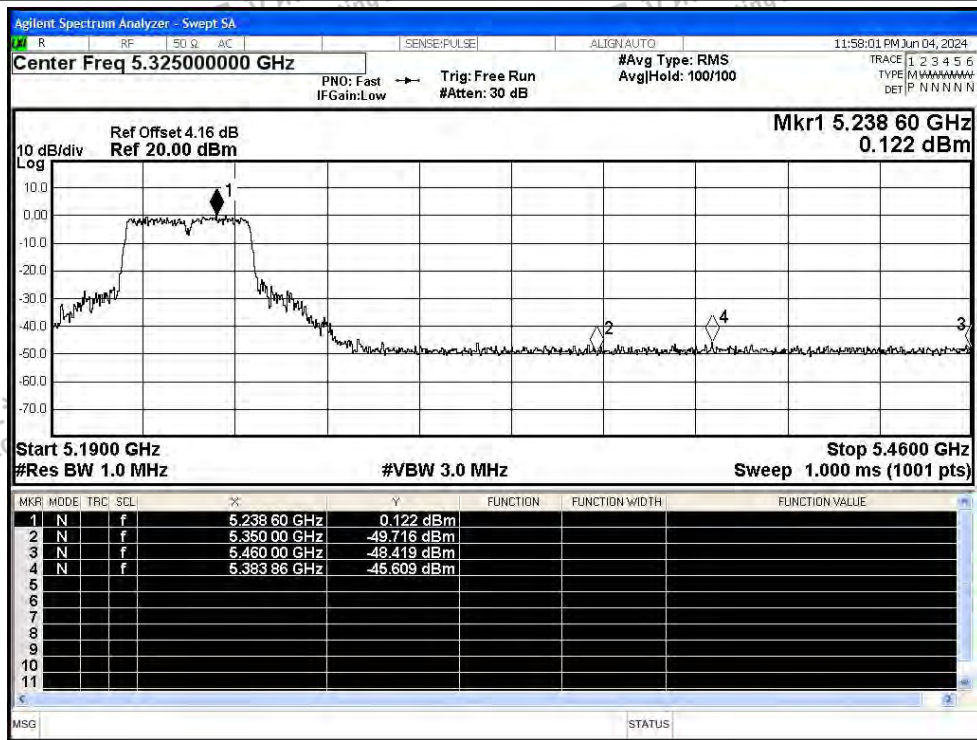


Restrict Band NVNT ac40 5190MHz Ant1 Average

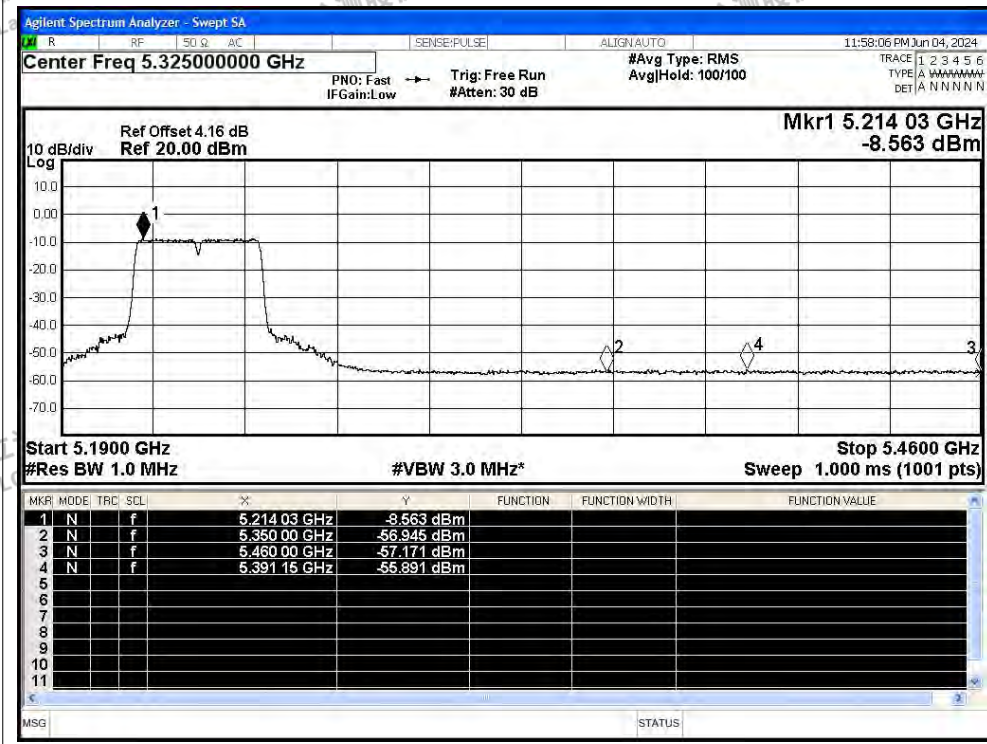




Restrict Band NVNT ac40 5230MHz Ant1 Peak



Restrict Band NVNT ac40 5230MHz Ant1 Average





D.5 Duty Cycle

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5180	Ant1	94.65	0.24	0.91
NVNT	a	5200	Ant1	94.56	0.24	0.91
NVNT	a	5240	Ant1	94.56	0.24	0.91
NVNT	n20	5180	Ant1	93.77	0.28	1.07
NVNT	n20	5200	Ant1	93.77	0.28	1.07
NVNT	n20	5240	Ant1	93.77	0.28	1.07
NVNT	n40	5190	Ant1	97.23	0.12	0.46
NVNT	n40	5230	Ant1	97.23	0.12	0.46
NVNT	ac20	5180	Ant1	93.83	0.28	1.06
NVNT	ac20	5200	Ant1	93.72	0.28	1.06
NVNT	ac20	5240	Ant1	93.72	0.28	1.06
NVNT	ac40	5190	Ant1	97.19	0.12	0.46
NVNT	ac40	5230	Ant1	97.19	0.12	0.46

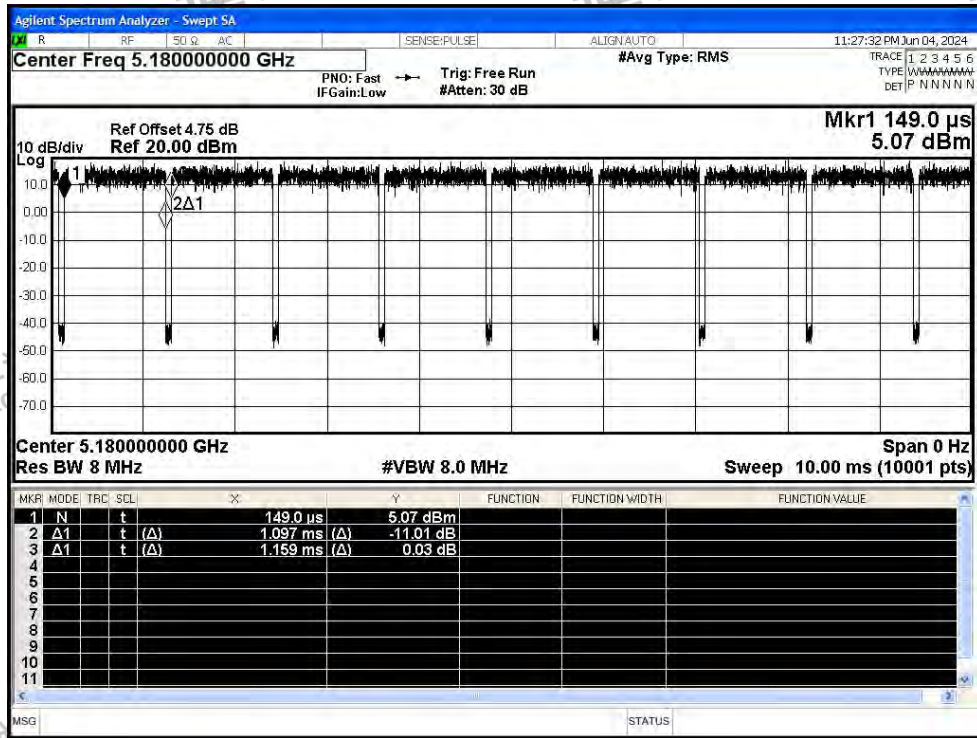


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 Scan code to check authenticity

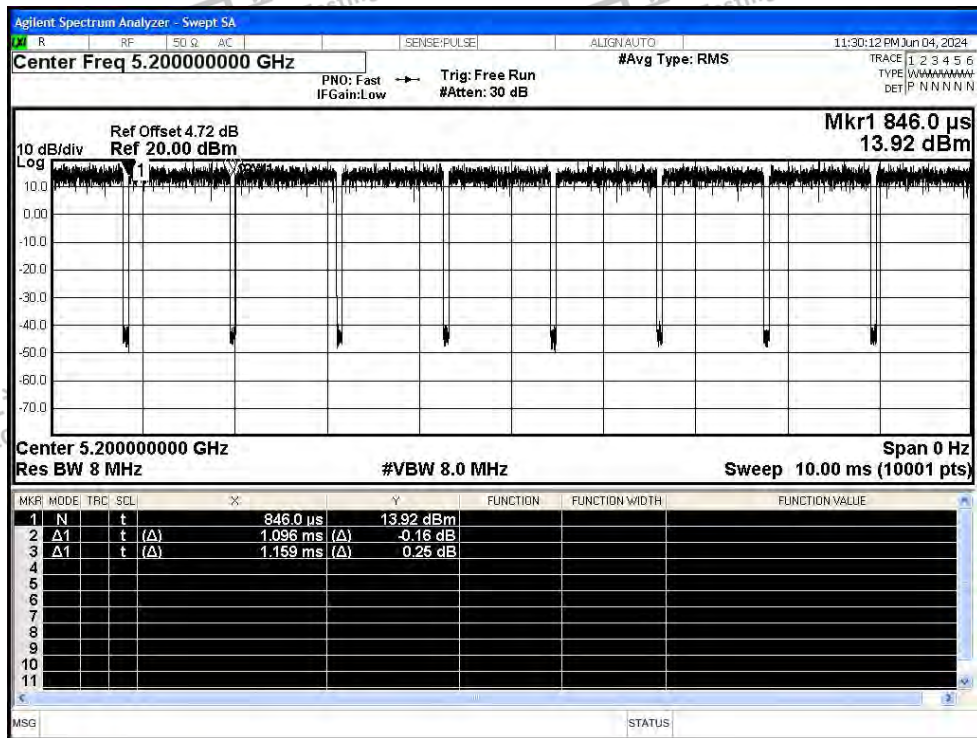


Test Graphs

Duty Cycle NVNT a 5180MHz Ant1

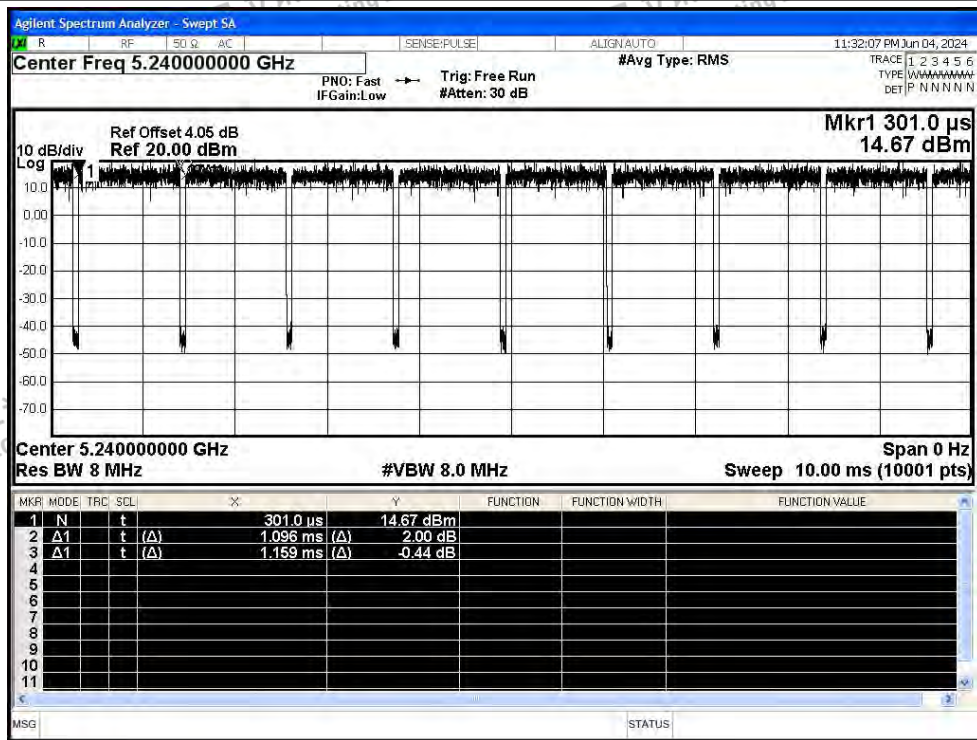


Duty Cycle NVNT a 5200MHz Ant1

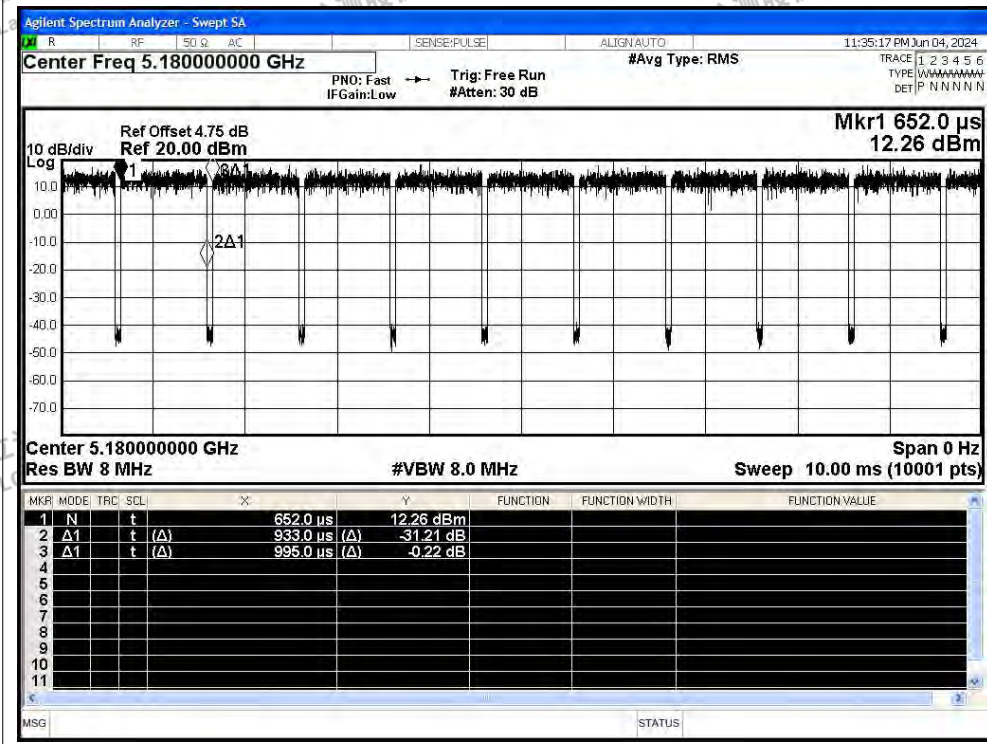




Duty Cycle NVNT a 5240MHz Ant1

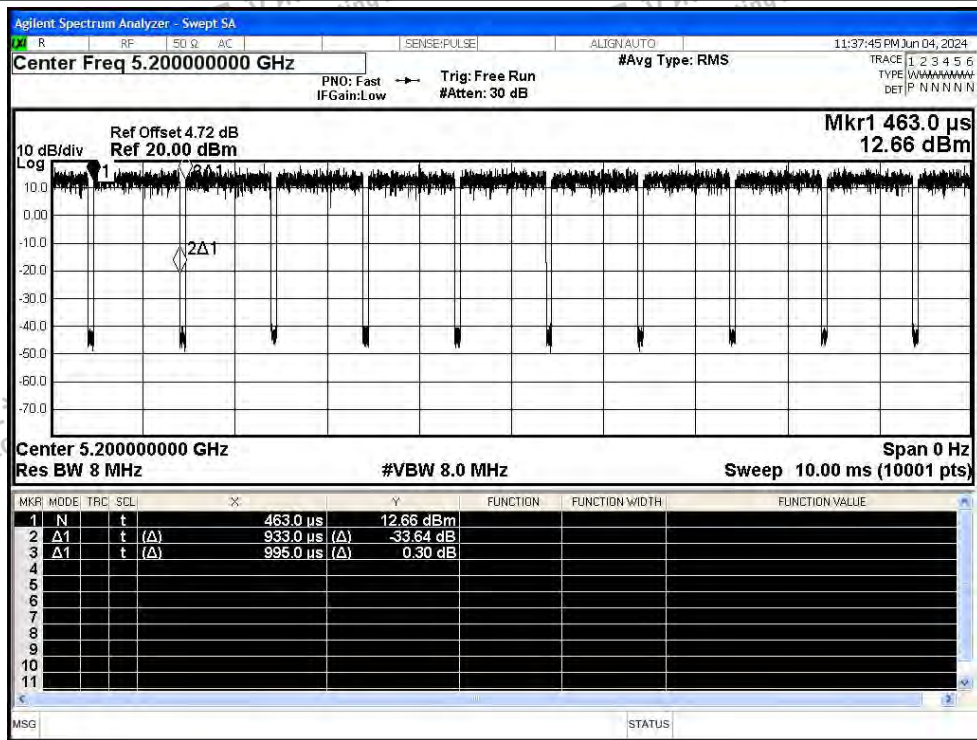


Duty Cycle NVNT n20 5180MHz Ant1

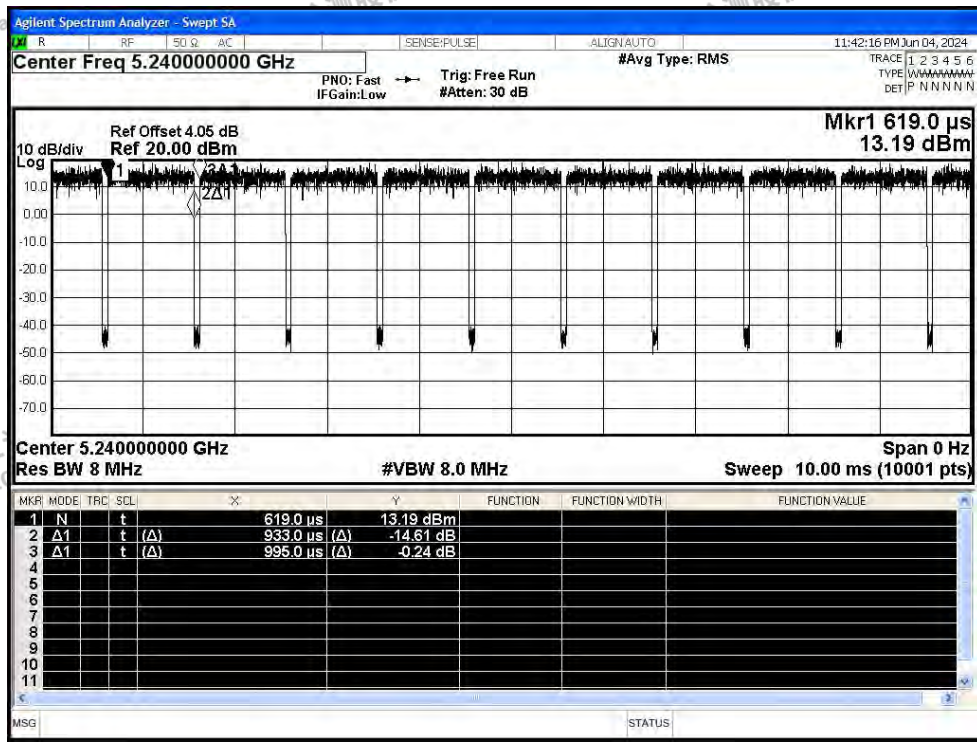




Duty Cycle NVNT n20 5200MHz Ant1

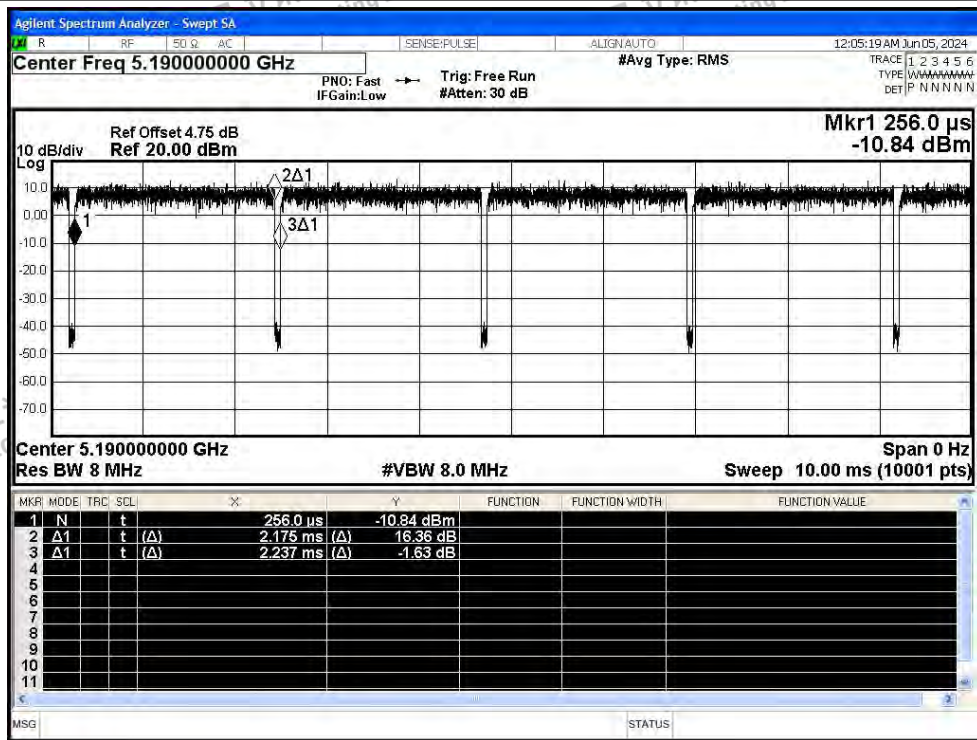


Duty Cycle NVNT n20 5240MHz Ant1

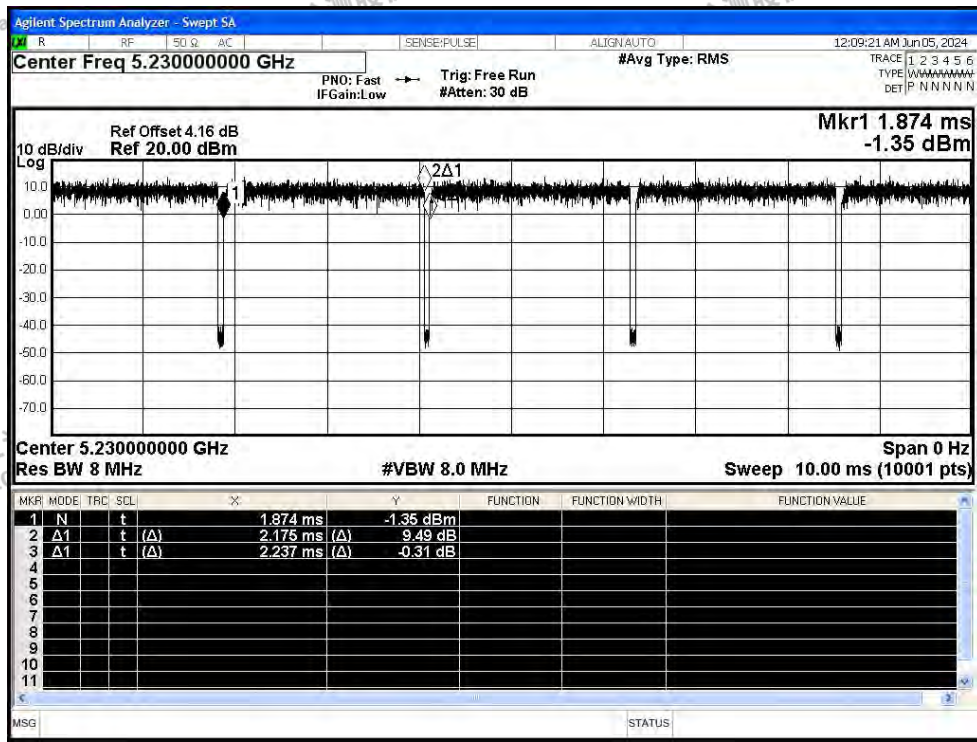




Duty Cycle NVNT n40 5190MHz Ant1

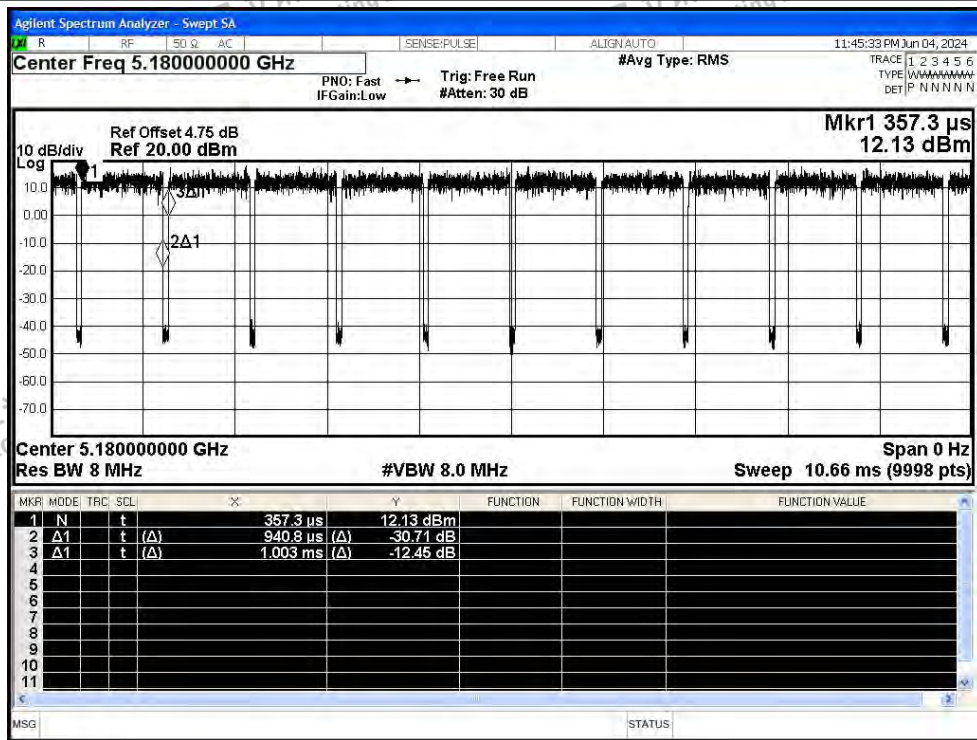


Duty Cycle NVNT n40 5230MHz Ant1

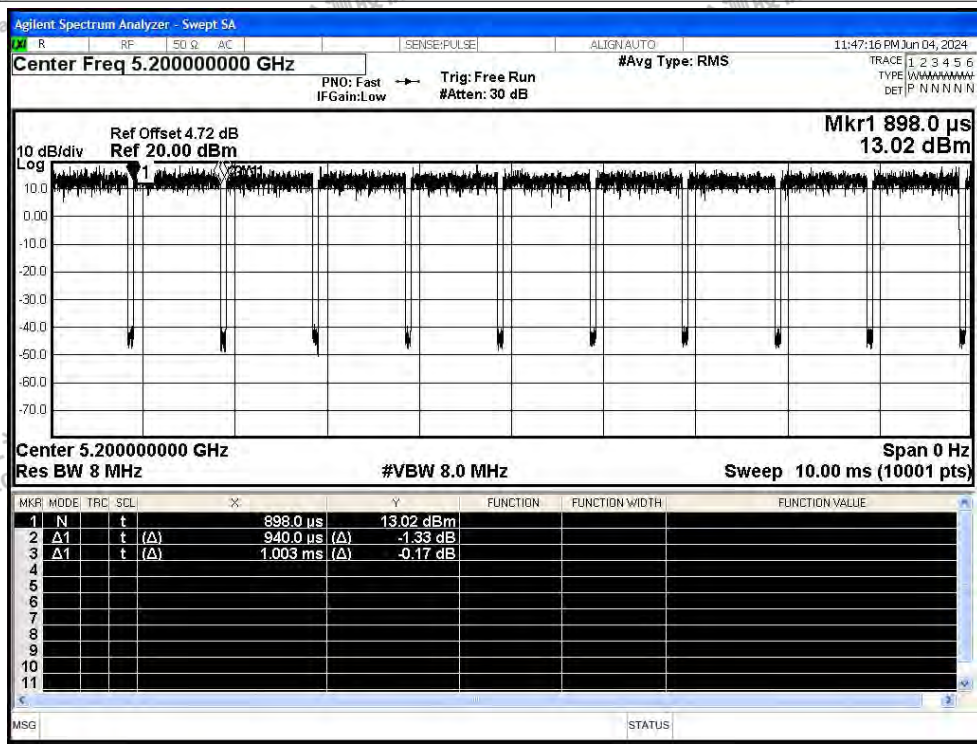




Duty Cycle NVNT ac20 5180MHz Ant1

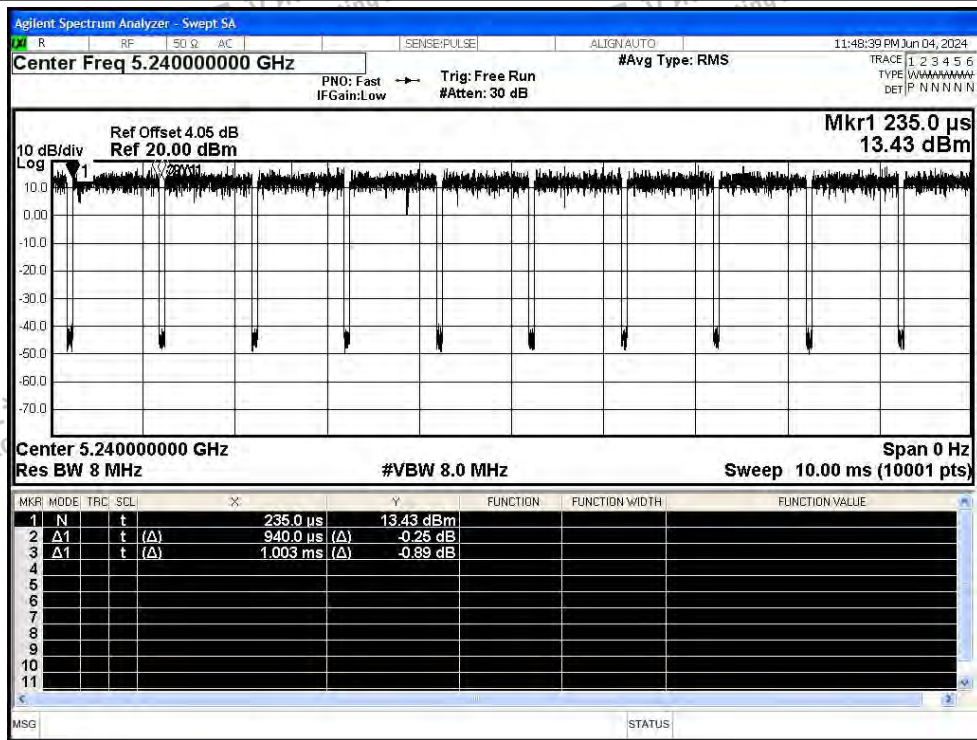


Duty Cycle NVNT ac20 5200MHz Ant1

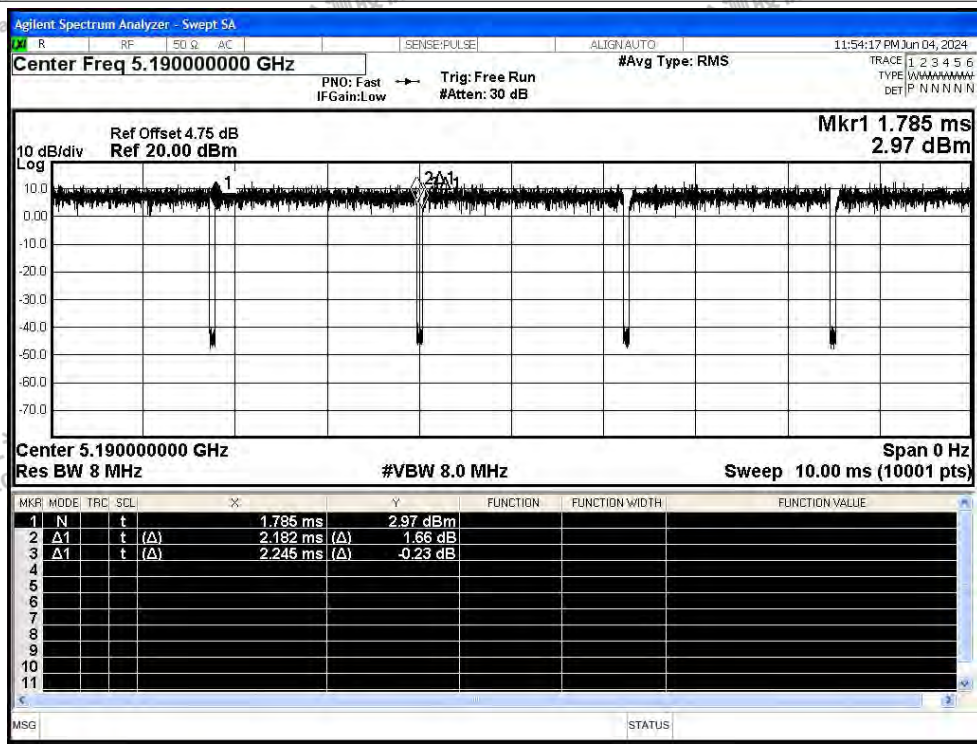




Duty Cycle NVNT ac20 5240MHz Ant1

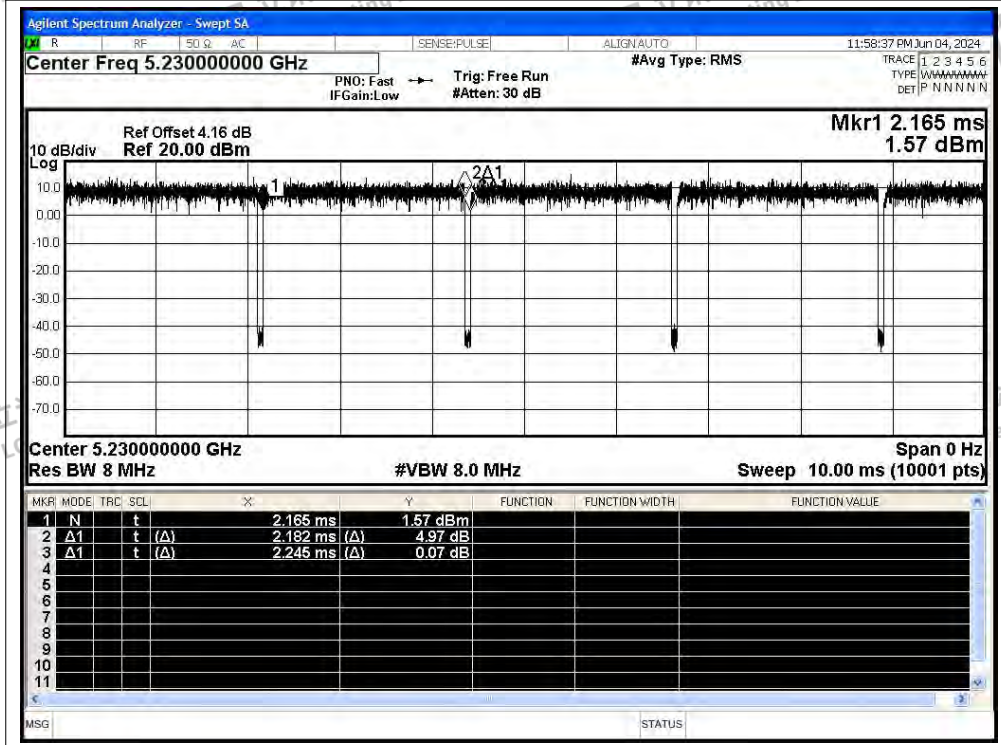


Duty Cycle NVNT ac40 5190MHz Ant1





Duty Cycle NVNT ac40 5230MHz Ant1





D.6 Frequency Stability

Condition	Mode	Frequency (MHz)	Antenna	Measured Frequency (MHz)	Frequency Error (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
NVNT	ac20	5180	Ant1	5179.98	-20000	-3.86	25	Pass
NVNT	ac20	5200	Ant1	5199.98	-20000	-3.85	25	Pass
NVNT	ac20	5240	Ant1	5239.96	-40000	-7.63	25	Pass
NVNT	ac40	5190	Ant1	5190	0	0	25	Pass
NVNT	ac40	5230	Ant1	5230	0	0	25	Pass

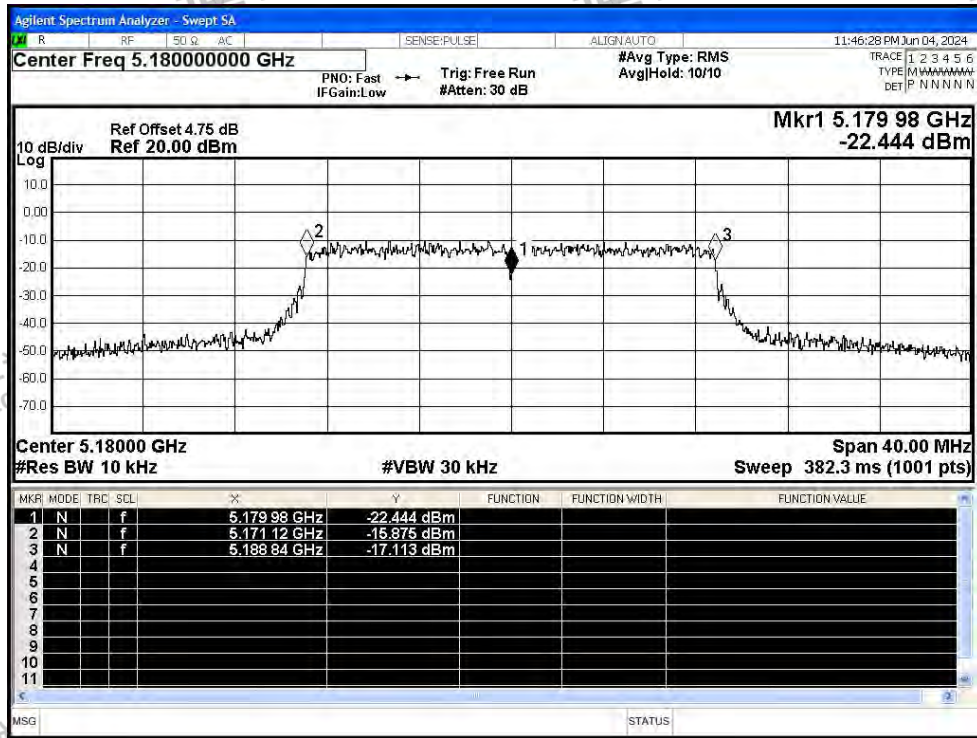


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 Scan code to check authenticity

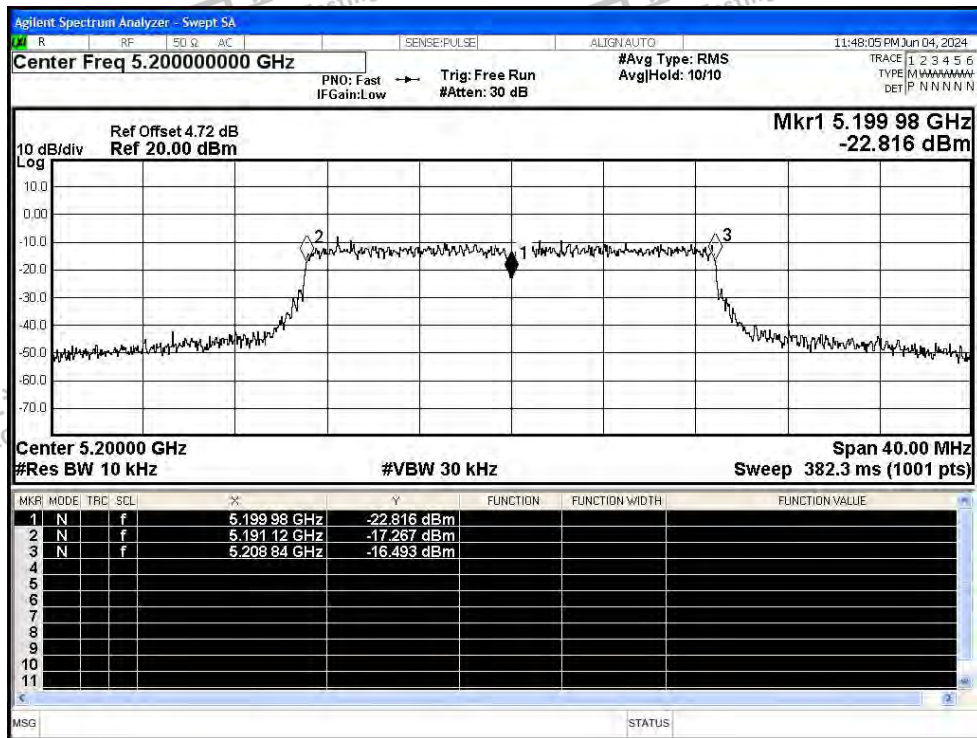


Test Graphs

Freq. Stability NVNT ac20 5180MHz Ant1

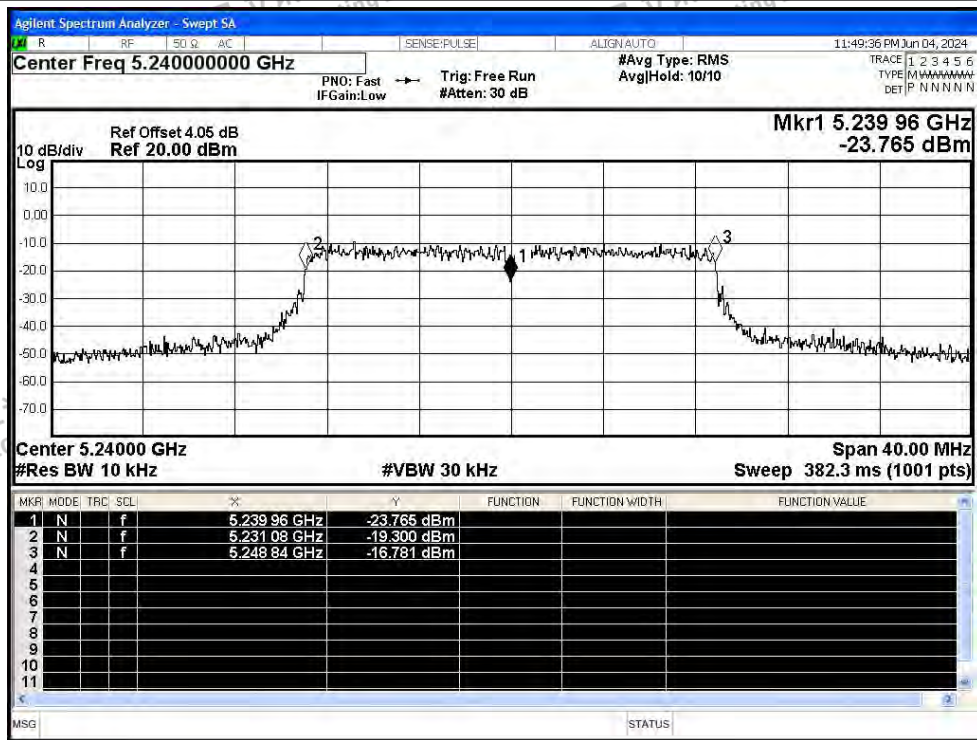


Freq. Stability NVNT ac20 5200MHz Ant1

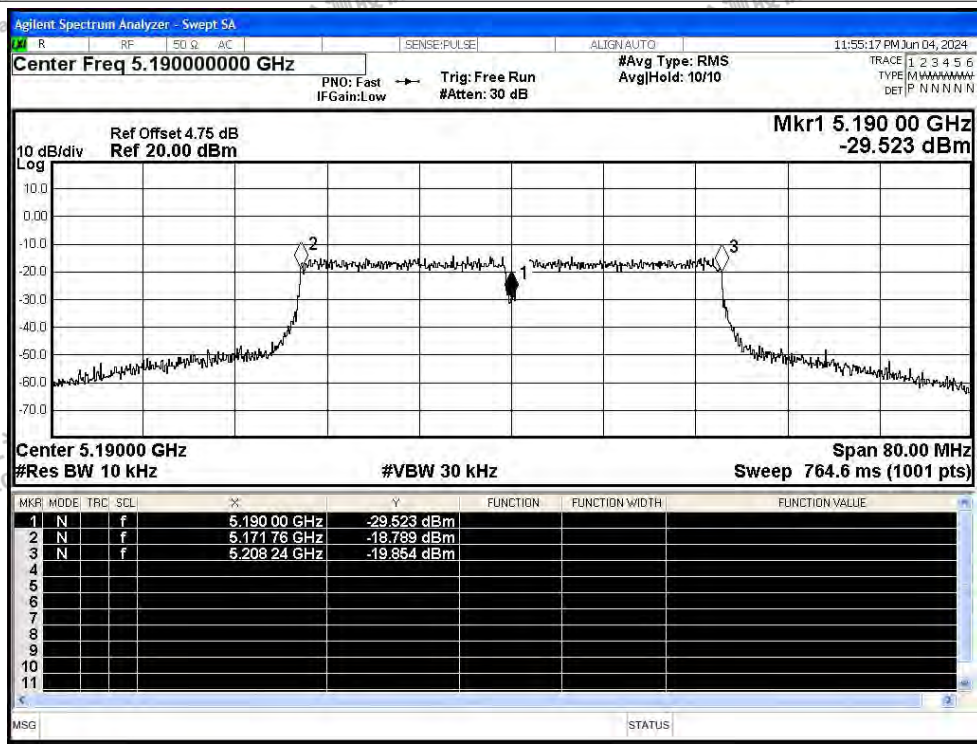




Freq. Stability NVNT ac20 5240MHz Ant1



Freq. Stability NVNT ac40 5190MHz Ant1





Freq. Stability NVNT ac40 5230MHz Ant1

