



Appendix B

RF Test Data for 5.2GWIFI (Conducted Measurement)

Product Name: Wi-Fi 11n Module

Test Model: DLM200

Environmental Conditions

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



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B.1 -26dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-26 dB Bandwidth (MHz)	Limit -26 dB Bandwidth (MHz)	Verdict
NVNT	a	5180	Ant0	23.866	---	Pass
NVNT	a	5200	Ant0	25.33	---	Pass
NVNT	a	5240	Ant0	23.253	---	Pass
NVNT	n20	5180	Ant0	25.643	---	Pass
NVNT	n20	5200	Ant0	23.137	---	Pass
NVNT	n20	5240	Ant0	22.876	---	Pass
NVNT	n40	5190	Ant0	45.173	---	Pass
NVNT	n40	5230	Ant0	49.096	---	Pass

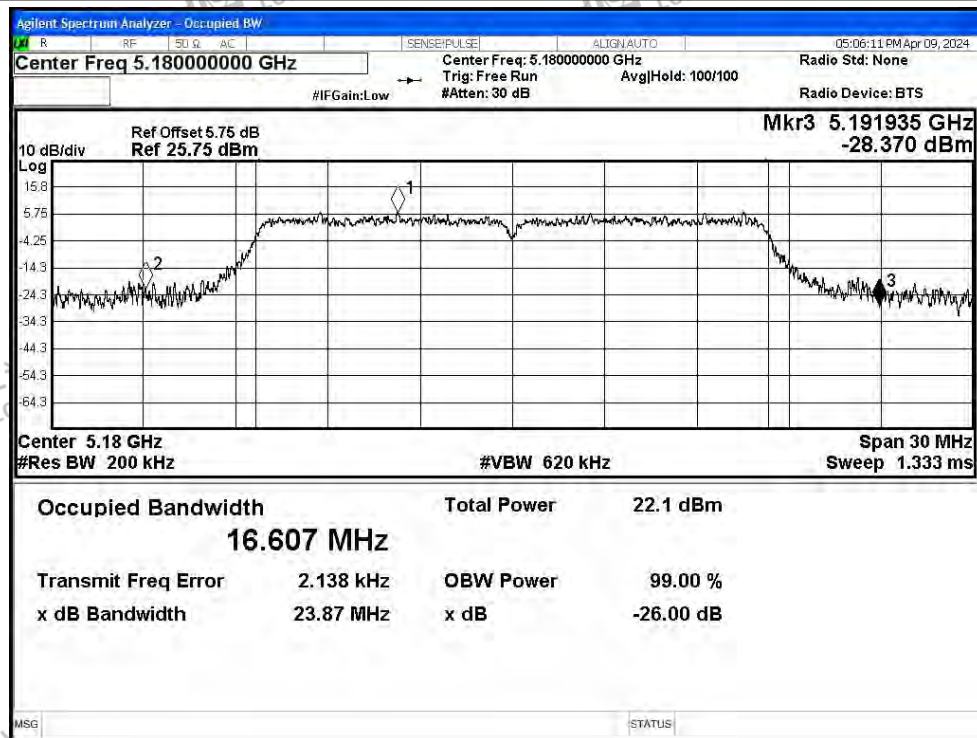


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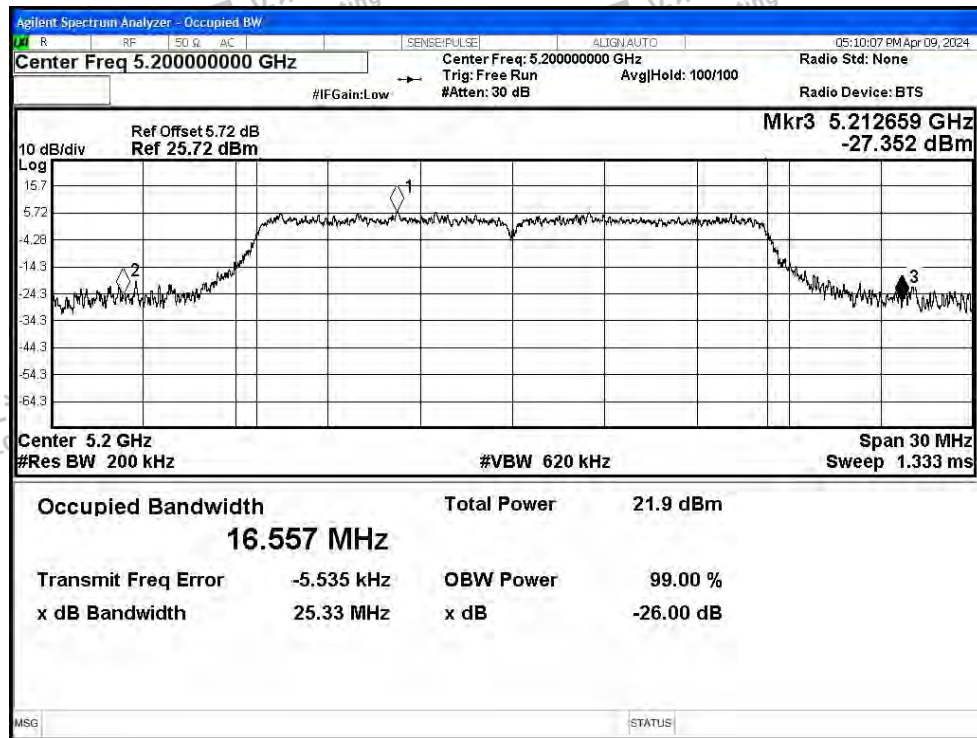


Test Graphs

-26dB Bandwidth NVNT a 5180MHz Ant0



-26dB Bandwidth NVNT a 5200MHz Ant0



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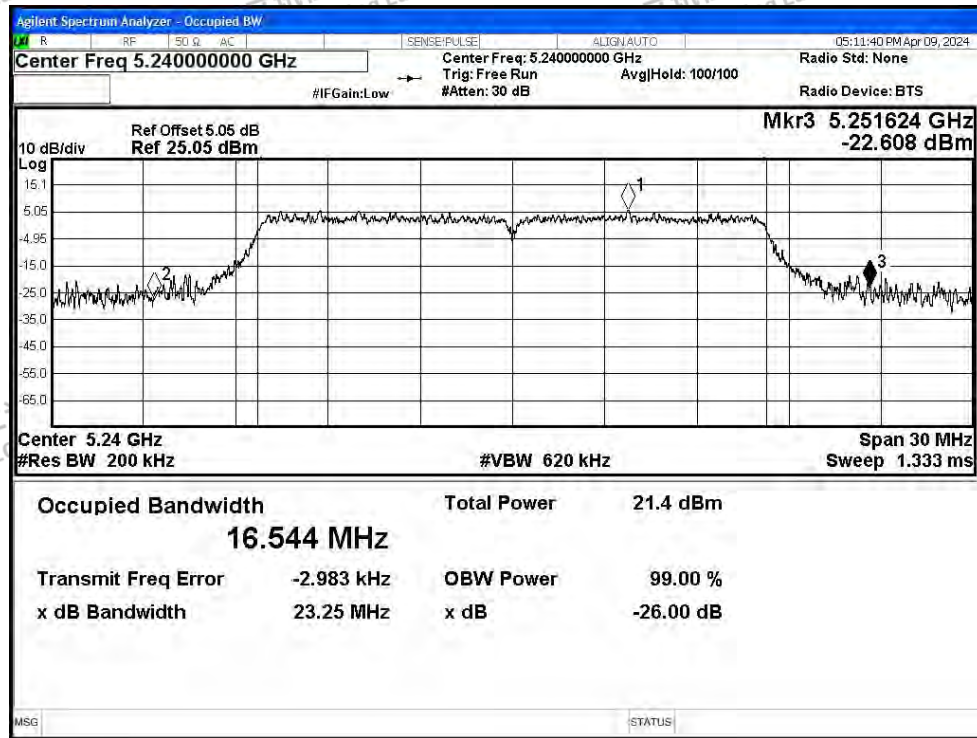
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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-26dB Bandwidth NVNT a 5240MHz Ant0

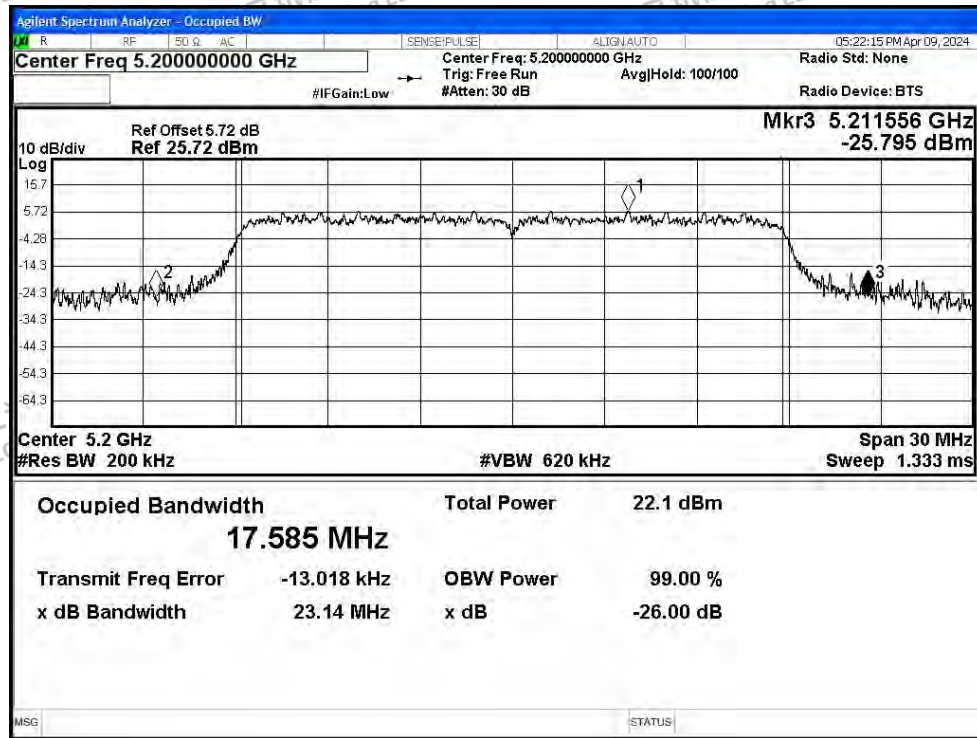


-26dB Bandwidth NVNT n20 5180MHz Ant0

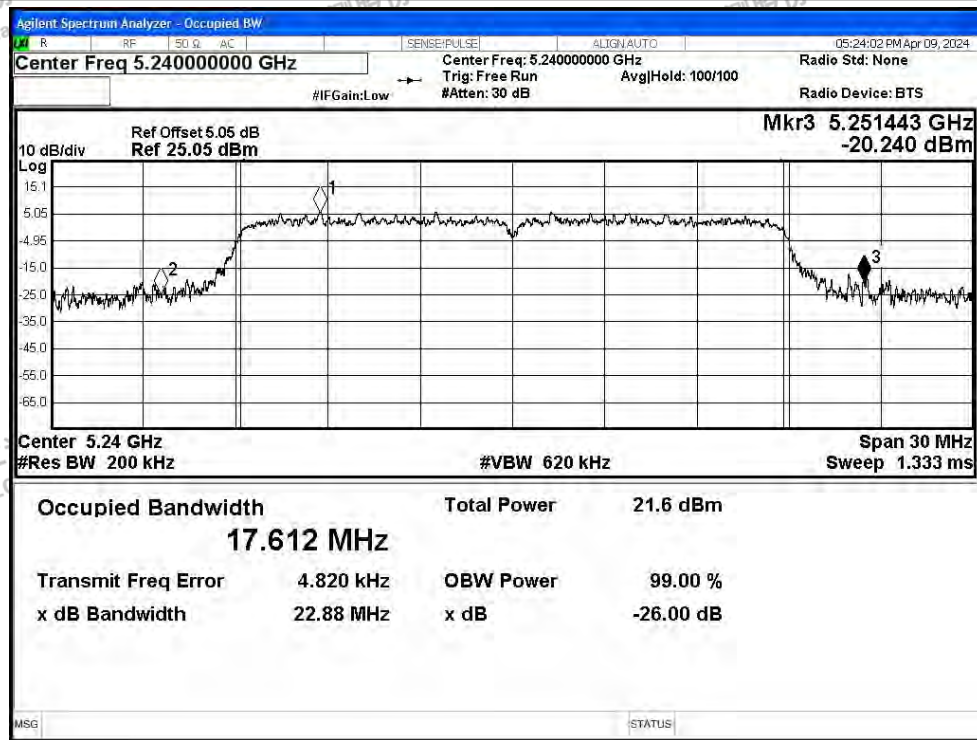




-26dB Bandwidth NVNT n20 5200MHz Ant0

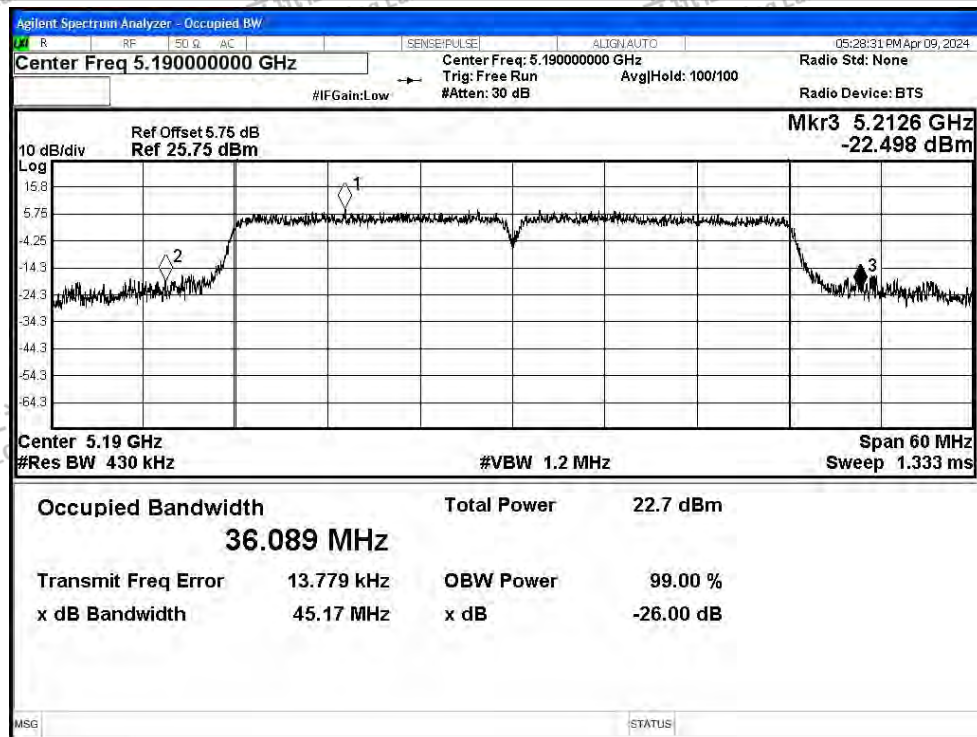


-26dB Bandwidth NVNT n20 5240MHz Ant0

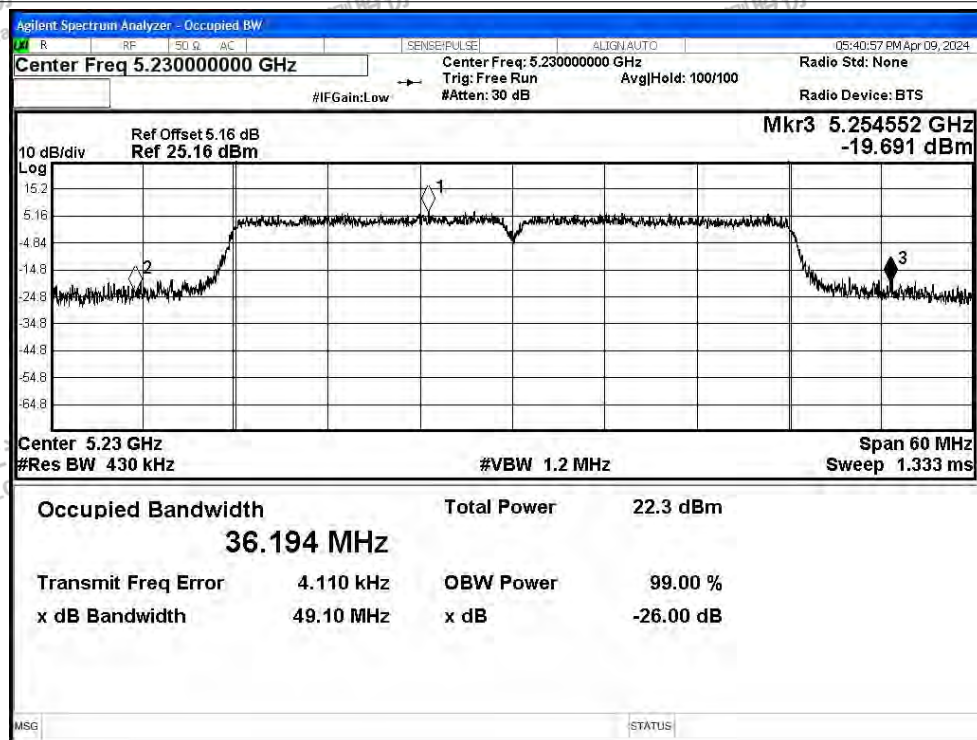




-26dB Bandwidth NVNT n40 5190MHz Ant0



-26dB Bandwidth NVNT n40 5230MHz Ant0





Condition	Mode	Frequency (MHz)	Antenna	-26 dB Bandwidth (MHz)	Limit -26 dB Bandwidth (MHz)	Verdict
NVNT	a	5180	Ant1	25.771	---	Pass
NVNT	a	5200	Ant1	21.929	---	Pass
NVNT	a	5240	Ant1	22.257	---	Pass
NVNT	n20	5180	Ant1	23.18	---	Pass
NVNT	n20	5200	Ant1	25.135	---	Pass
NVNT	n20	5240	Ant1	24.268	---	Pass
NVNT	n40	5190	Ant1	50.097	---	Pass
NVNT	n40	5230	Ant1	51.741	---	Pass



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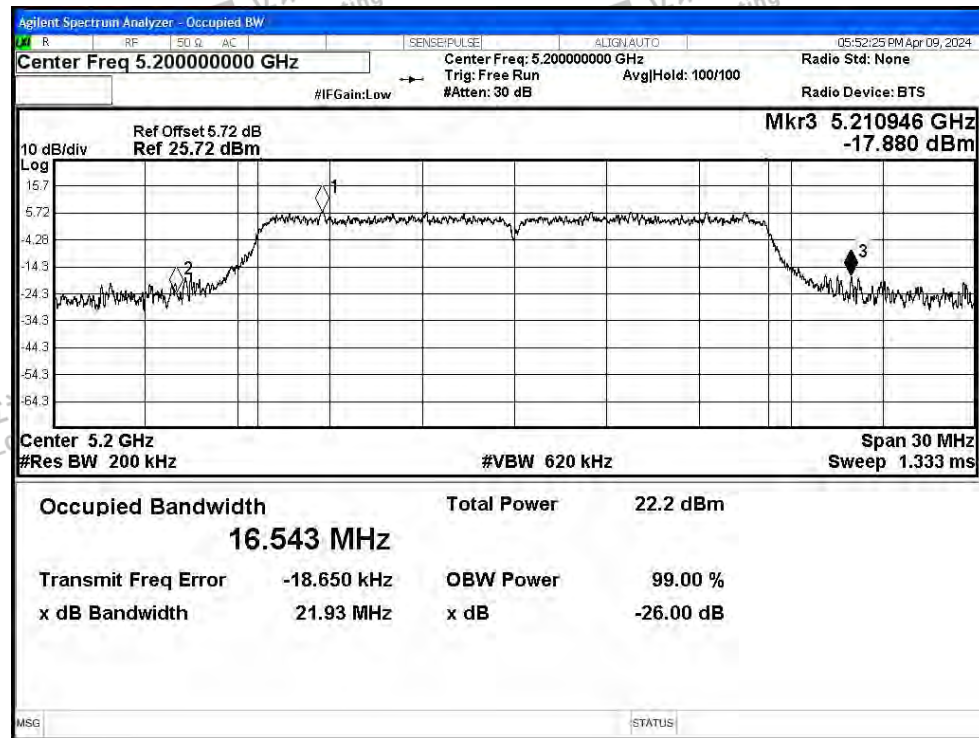


Test Graphs

-26dB Bandwidth NVNT a 5180MHz Ant1



-26dB Bandwidth NVNT a 5200MHz Ant1



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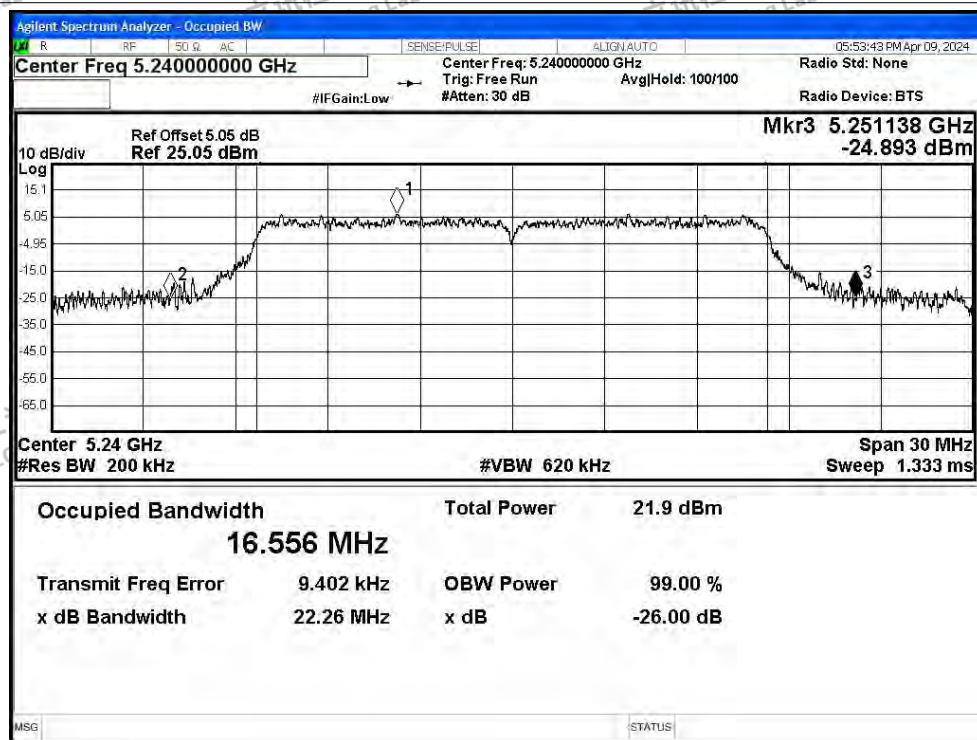
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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-26dB Bandwidth NVNT a 5240MHz Ant1



-26dB Bandwidth NVNT n20 5180MHz Ant1



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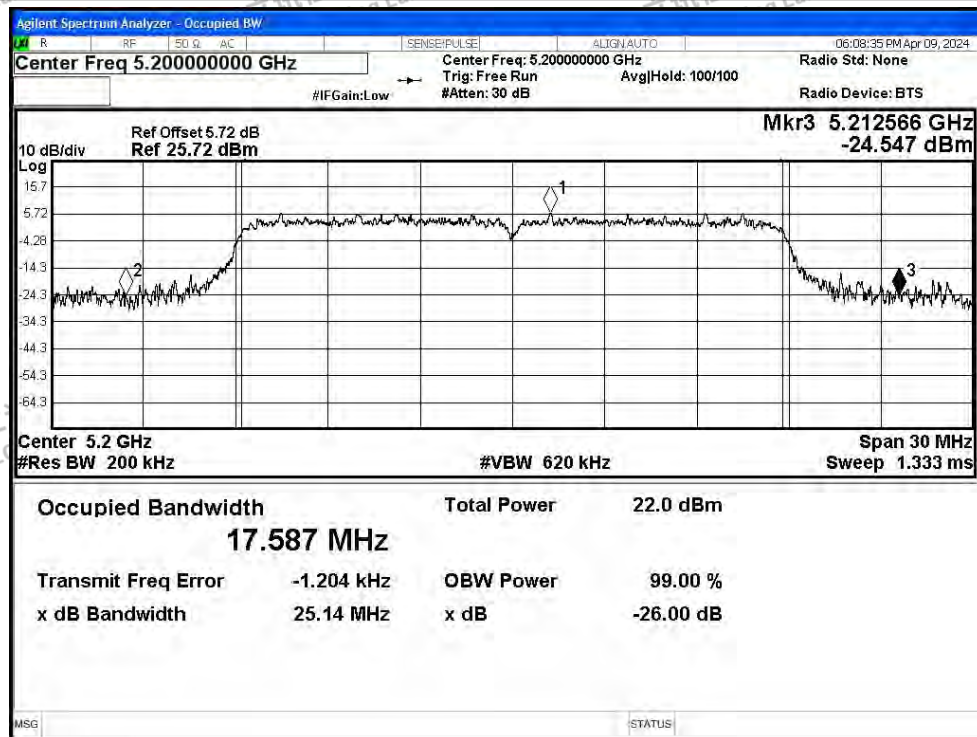
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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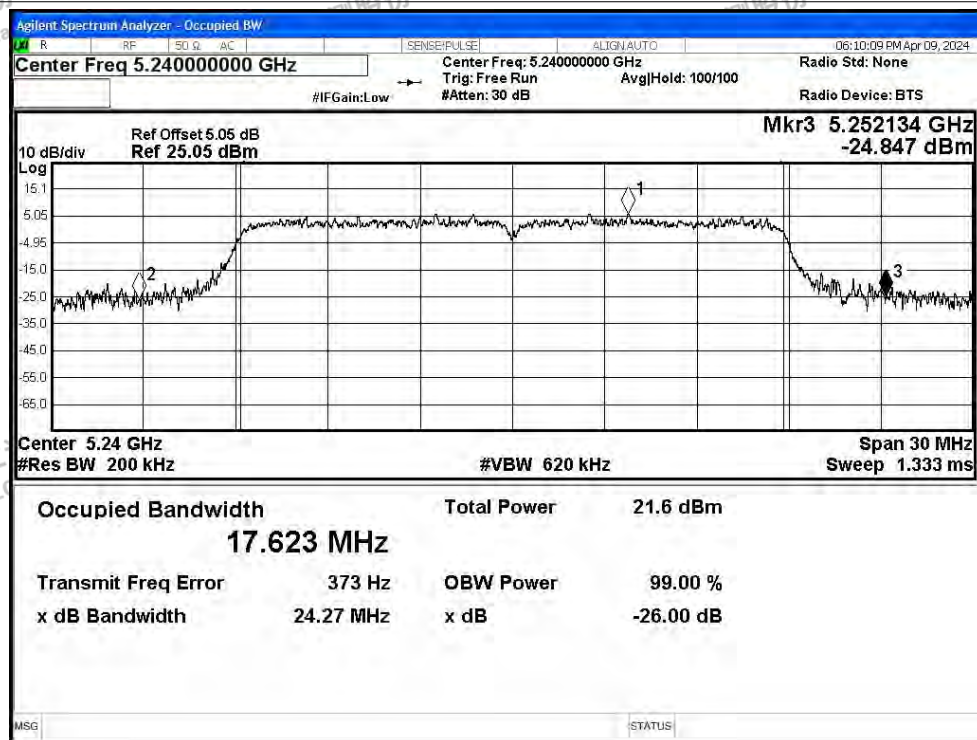
Scan code to check authenticity



-26dB Bandwidth NVNT n20 5200MHz Ant1

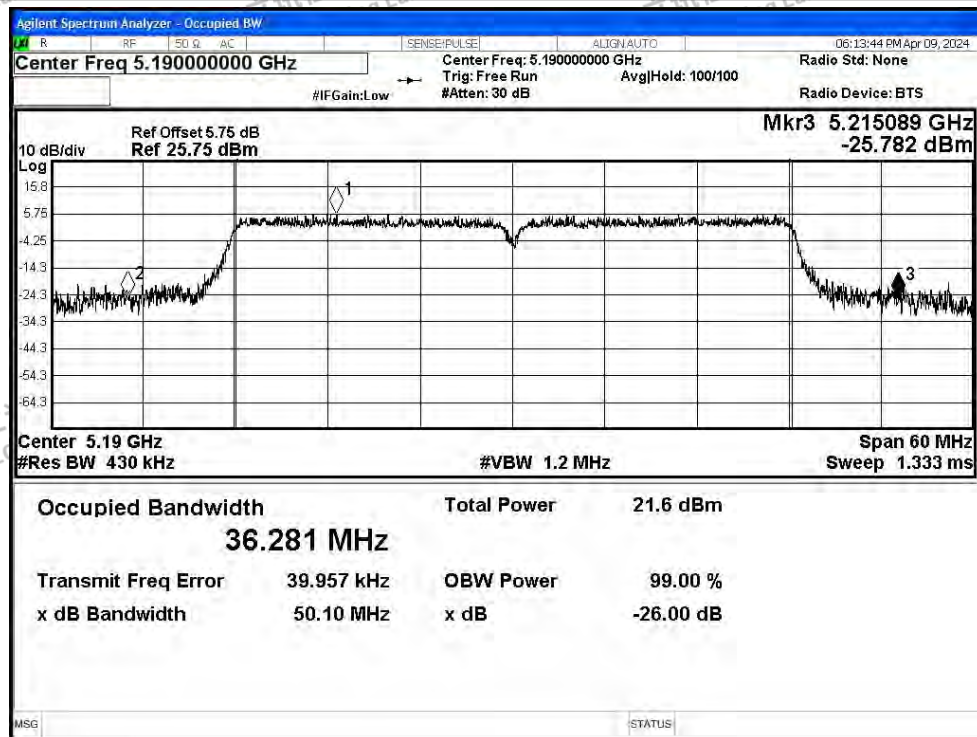


-26dB Bandwidth NVNT n20 5240MHz Ant1

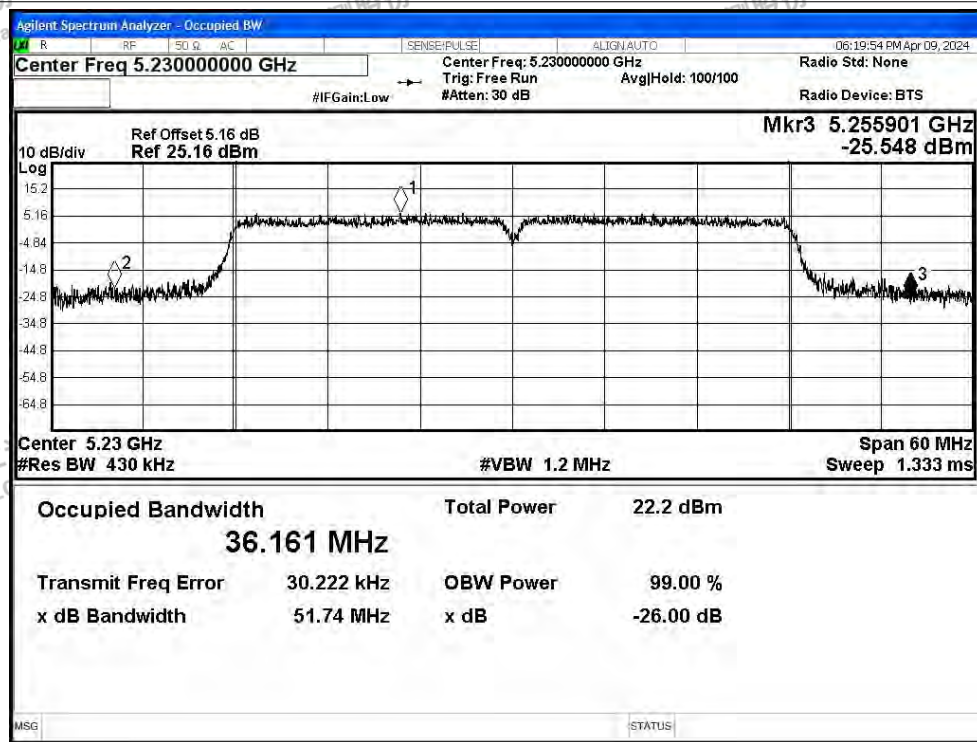




-26dB Bandwidth NVNT n40 5190MHz Ant1



-26dB Bandwidth NVNT n40 5230MHz Ant1





B.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	Ant0	15.86	0.77	16.63	24	Pass
NVNT	a	5200	Ant0	15.64	0.77	16.41	24	Pass
NVNT	a	5240	Ant0	15.24	0.72	15.96	24	Pass
NVNT	n20	5180	Ant0	15.85	0.88	16.73	24	Pass
NVNT	n20	5200	Ant0	15.57	1.05	16.62	24	Pass
NVNT	n20	5240	Ant0	15.31	0.88	16.19	24	Pass
NVNT	n40	5190	Ant0	15.55	1.01	16.56	24	Pass
NVNT	n40	5230	Ant0	15.35	1.01	16.36	24	Pass

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	a	5180	Ant1	15.77	0.77	16.54	24	Pass
NVNT	a	5200	Ant1	15.5	0.77	16.27	24	Pass
NVNT	a	5240	Ant1	15.52	0.73	16.25	24	Pass
NVNT	n20	5180	Ant1	15.11	1.35	16.46	24	Pass
NVNT	n20	5200	Ant1	15.78	0.83	16.61	24	Pass
NVNT	n20	5240	Ant1	15.36	0.88	16.24	24	Pass
NVNT	n40	5190	Ant1	15.18	1.35	16.53	24	Pass
NVNT	n40	5230	Ant1	15.62	1.05	16.67	24	Pass

MIMO

Condition	Mode	Frequency (MHz)	Total Power (dBm)			Limit (dBm)	Verdict
			Ant0	Ant1	Ant0+Ant1		
NVNT	n20	5180	16.73	16.46	19.61	24	Pass
NVNT	n20	5200	16.62	16.61	19.63	24	Pass
NVNT	n20	5240	16.19	16.24	19.23	24	Pass
NVNT	n40	5190	16.56	16.53	19.56	24	Pass
NVNT	n40	5230	16.36	16.67	19.53	24	Pass





B.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	Ant0	5.43	0.77	6.2	11	Pass
NVNT	a	5200	Ant0	5.27	0.77	6.04	11	Pass
NVNT	a	5240	Ant0	4.77	0.72	5.49	11	Pass
NVNT	n20	5180	Ant0	1.46	0.88	2.34	11	Pass
NVNT	n20	5200	Ant0	1.52	1.05	2.57	11	Pass
NVNT	n20	5240	Ant0	2.1	0.88	2.98	11	Pass
NVNT	n40	5190	Ant0	2.26	1.01	3.27	11	Pass
NVNT	n40	5230	Ant0	2.35	1.01	3.36	11	Pass

Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/MHz)	Duty Factor (dB)	Total PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
NVNT	a	5180	Ant1	5.73	0.77	6.5	11	Pass
NVNT	a	5200	Ant1	5.35	0.77	6.12	11	Pass
NVNT	a	5240	Ant1	4.93	0.73	5.66	11	Pass
NVNT	n20	5180	Ant1	2.51	1.35	3.86	11	Pass
NVNT	n20	5200	Ant1	1.69	0.83	2.52	11	Pass
NVNT	n20	5240	Ant1	1.42	0.88	2.3	11	Pass
NVNT	n40	5190	Ant1	1.6	1.35	2.95	11	Pass
NVNT	n40	5230	Ant1	2.19	1.05	3.24	11	Pass

MIMO

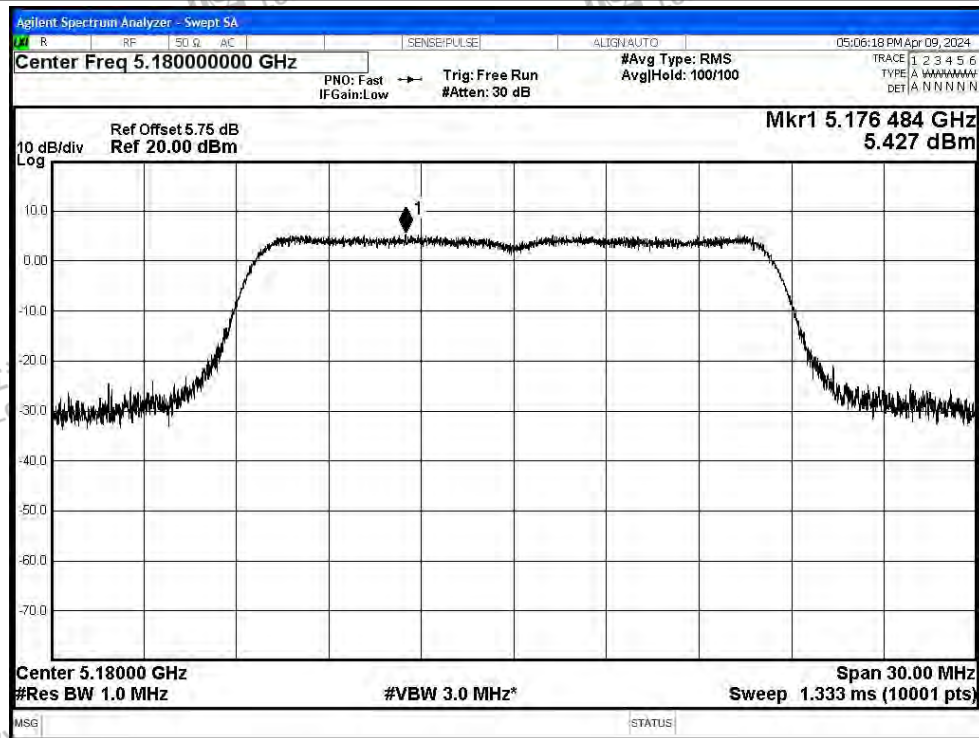
Condition	Mode	Frequency (MHz)	Total PSD (dBm/MHz)			Limit (dBm/MHz)	Verdict
			Ant0	Ant1	Ant0+Ant1		
NVNT	n20	5180	2.34	3.86	6.18	11	Pass
NVNT	n20	5200	2.57	2.52	5.56	11	Pass
NVNT	n20	5240	2.98	2.3	5.66	11	Pass
NVNT	n40	5190	3.27	2.95	6.12	11	Pass
NVNT	n40	5230	3.36	3.24	6.31	11	Pass



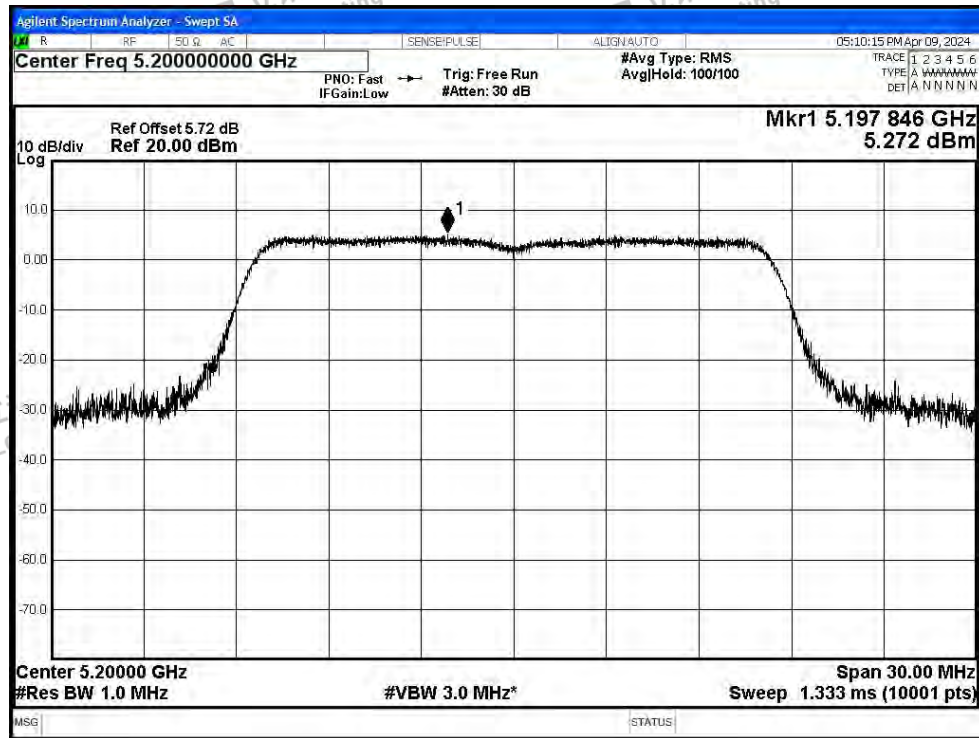


Test Graphs

PSD NVNT a 5180MHz Ant0

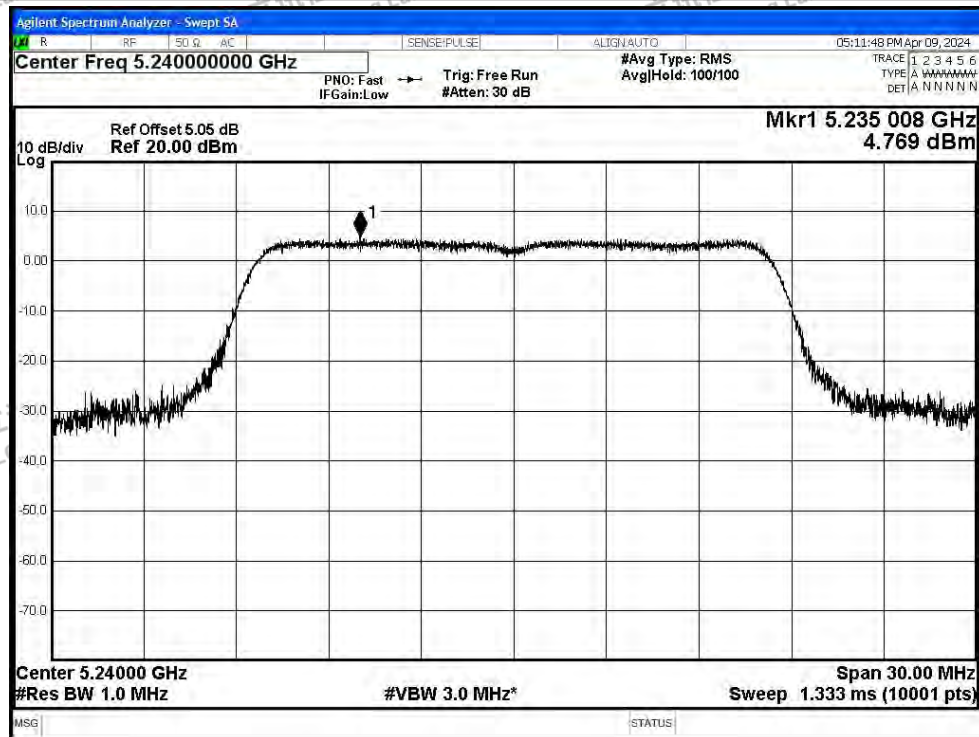


PSD NVNT a 5200MHz Ant0

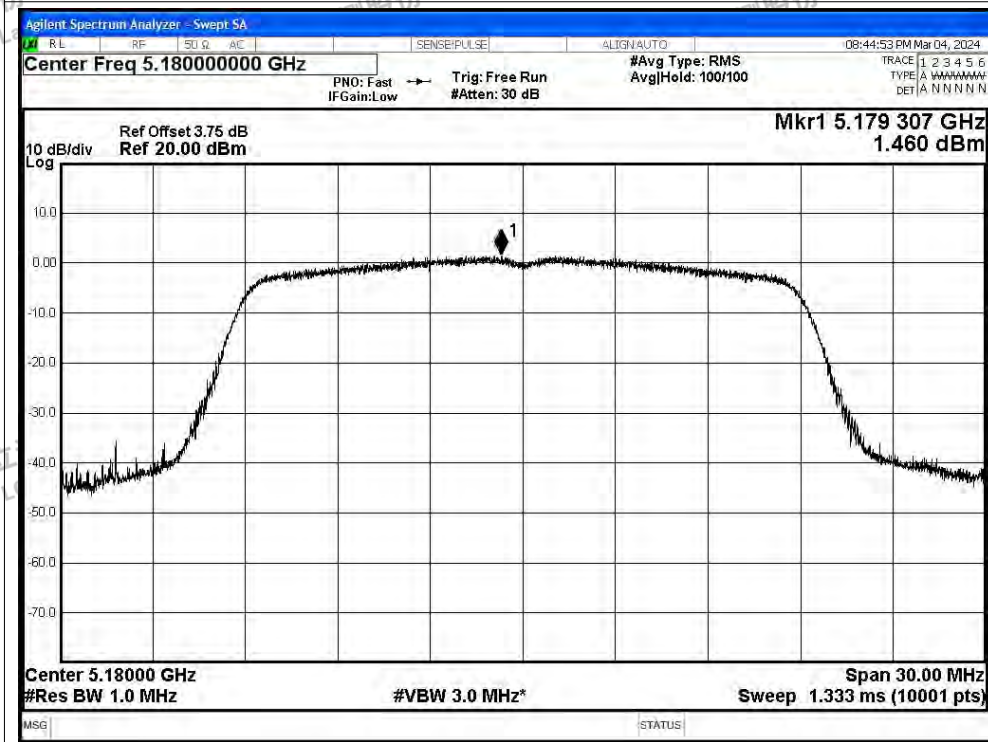




PSD NVNT a 5240MHz Ant0

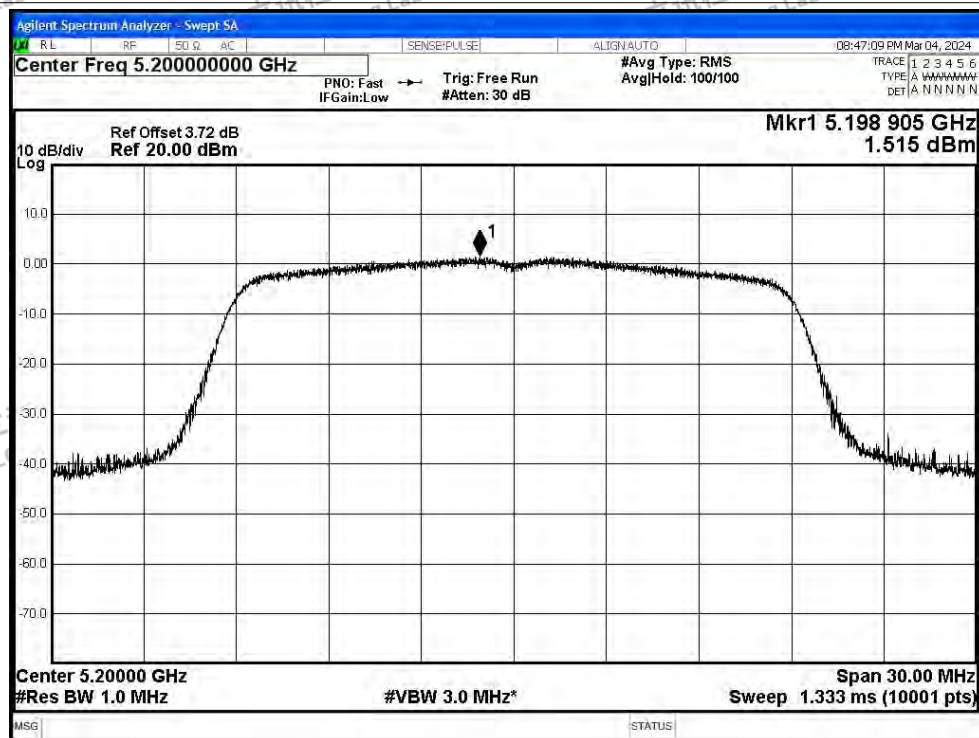


PSD NVNT n20 5180MHz Ant0

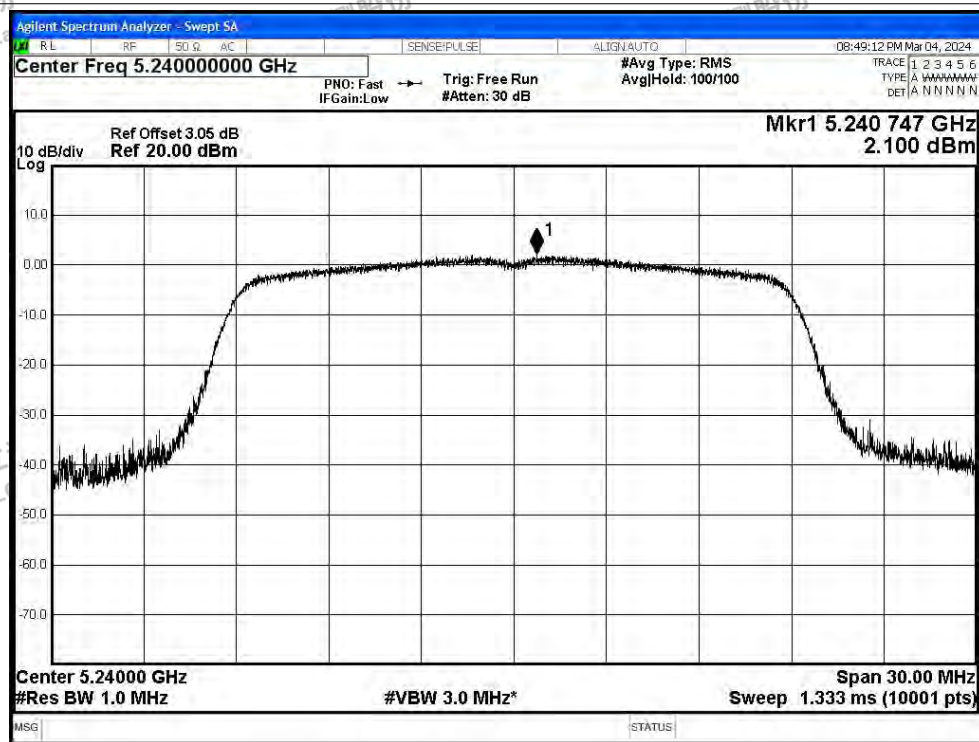




PSD NVNT n20 5200MHz Ant0

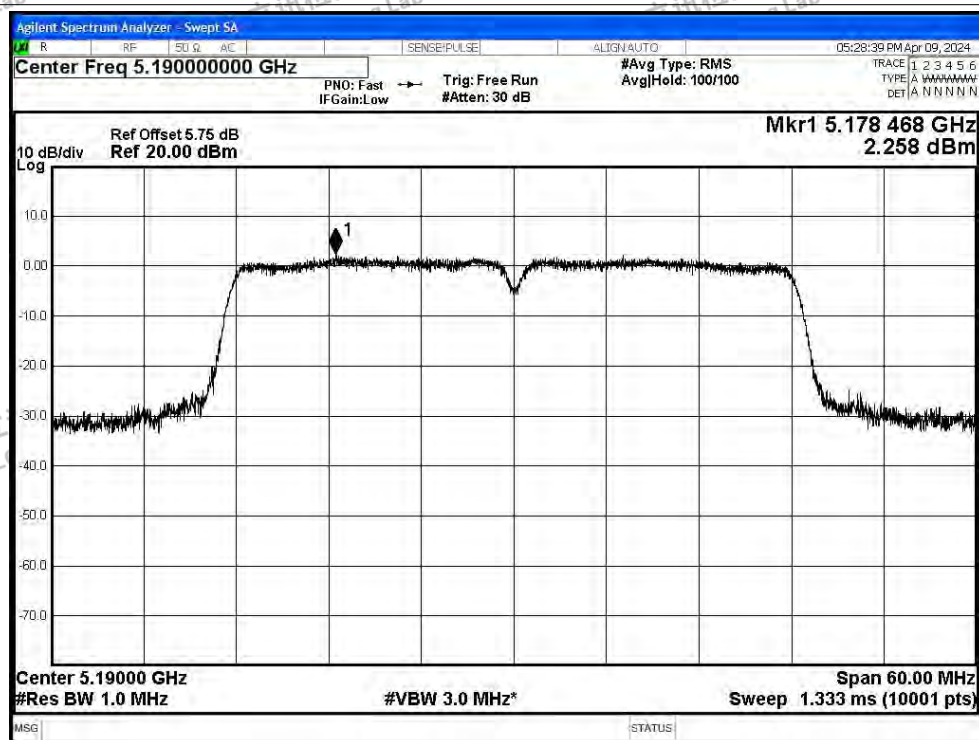


PSD NVNT n20 5240MHz Ant0

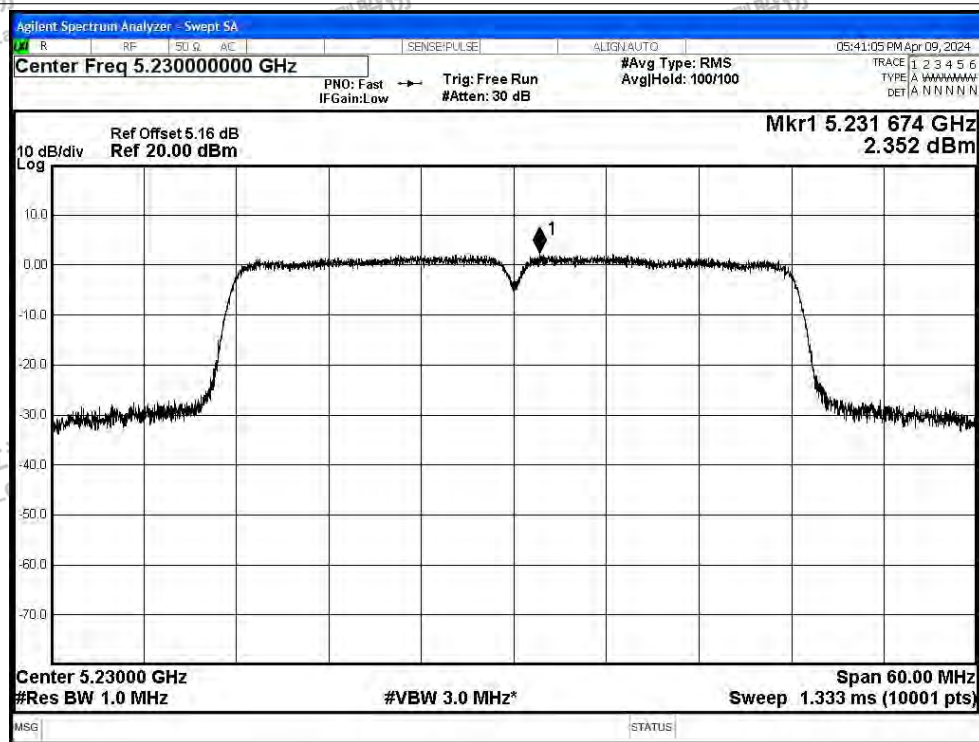




PSD NVNT n40 5190MHz Ant0



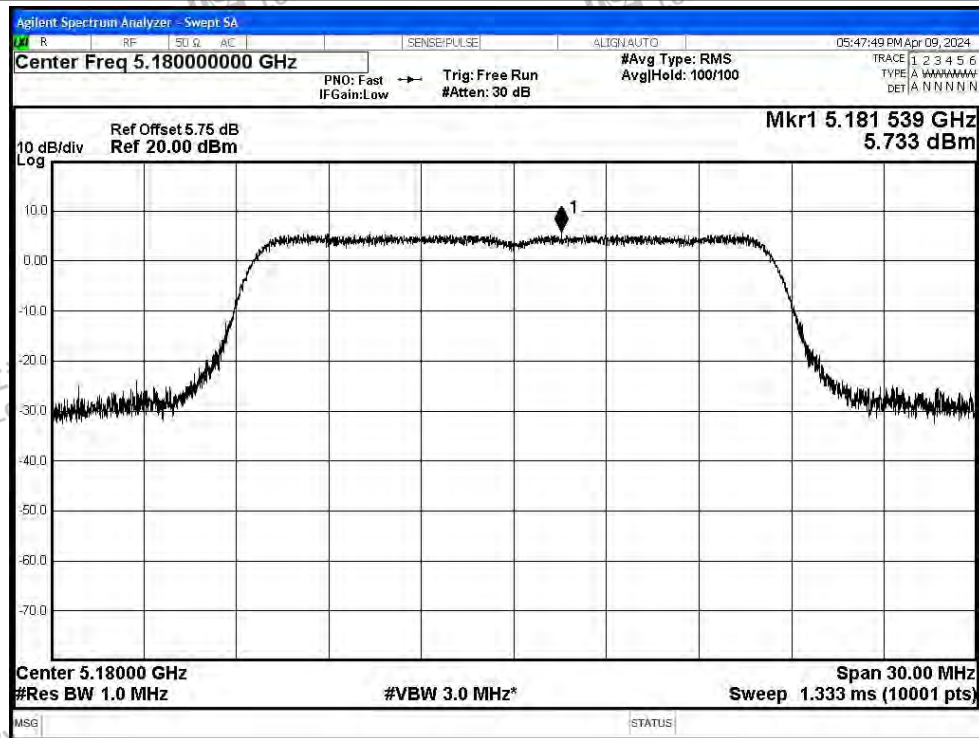
PSD NVNT n40 5230MHz Ant0



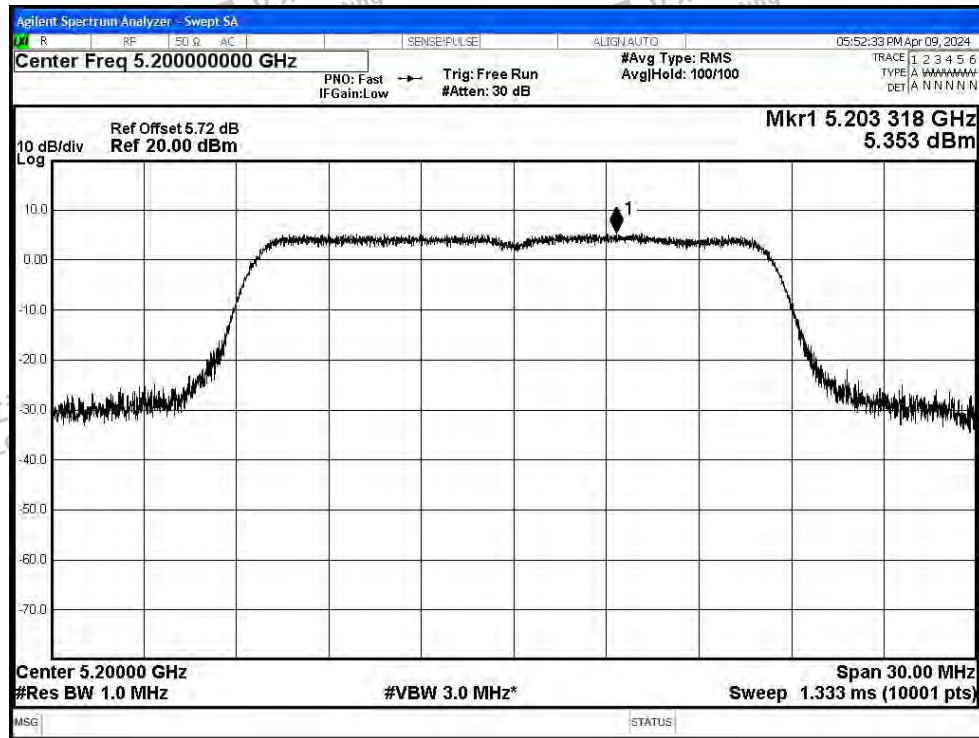


Test Graphs

PSD NVNT a 5180MHz Ant1

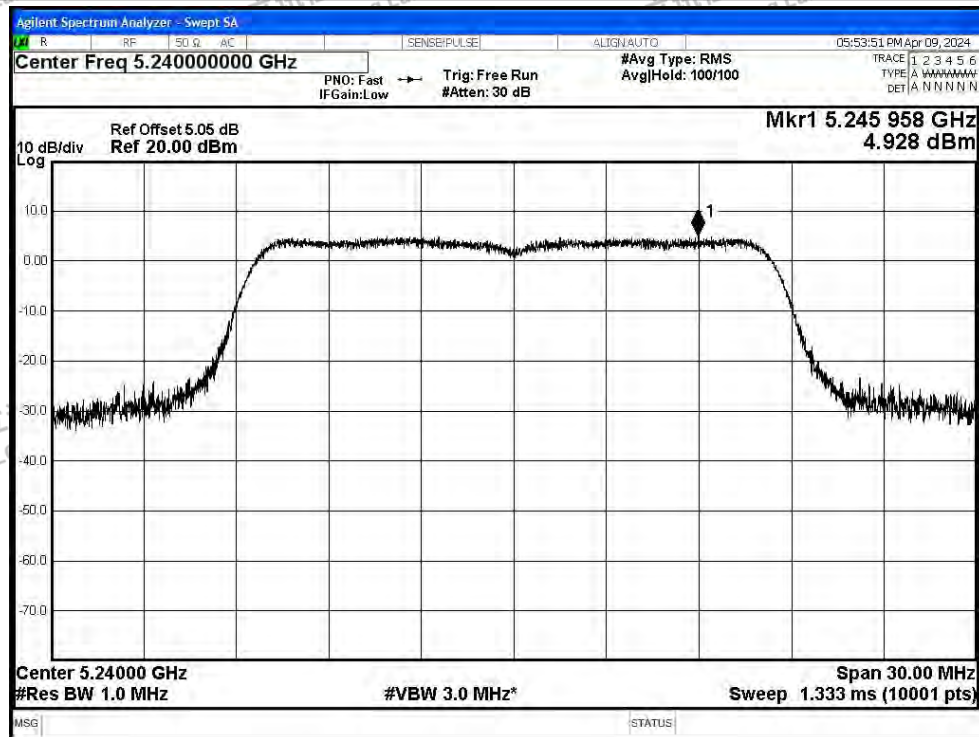


PSD NVNT a 5200MHz Ant1

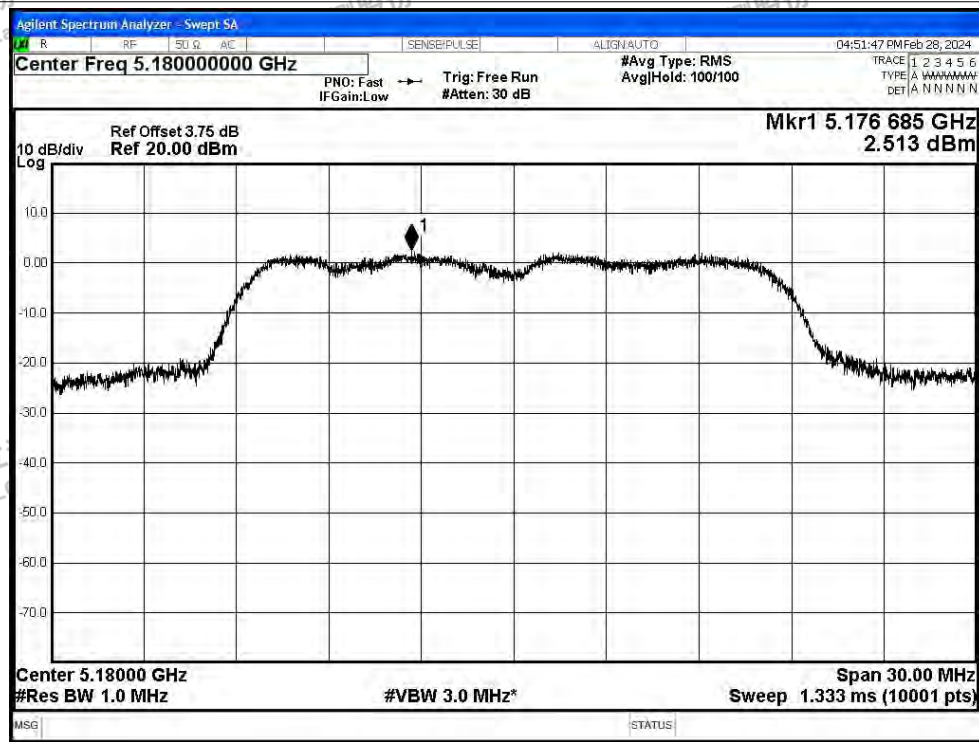




PSD NVNT a 5240MHz Ant1

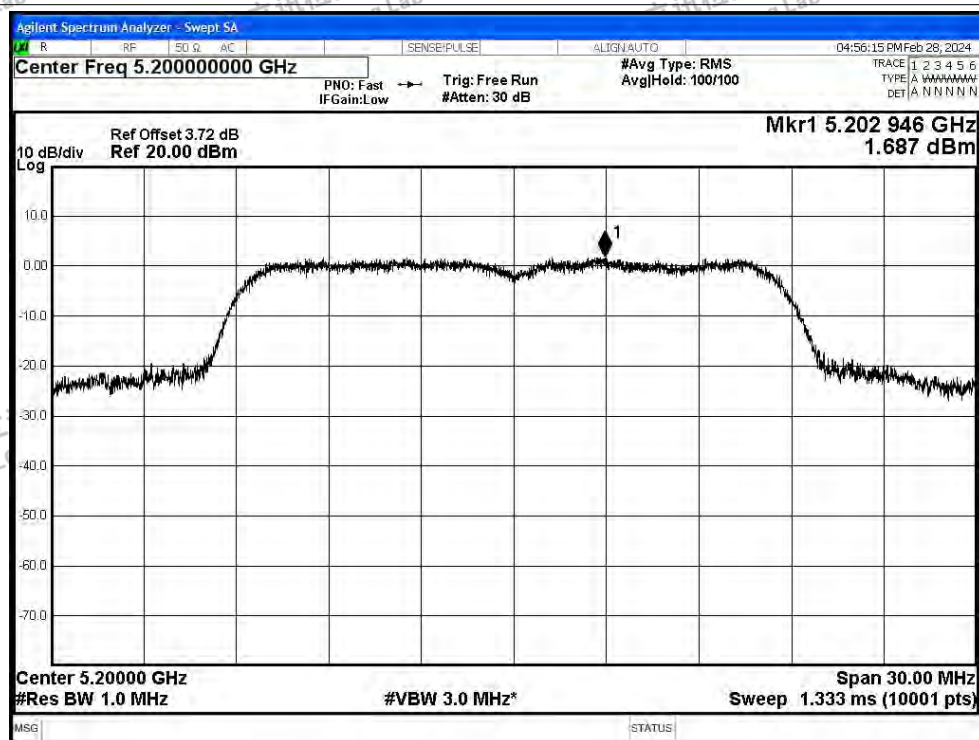


PSD NVNT n20 5180MHz Ant1

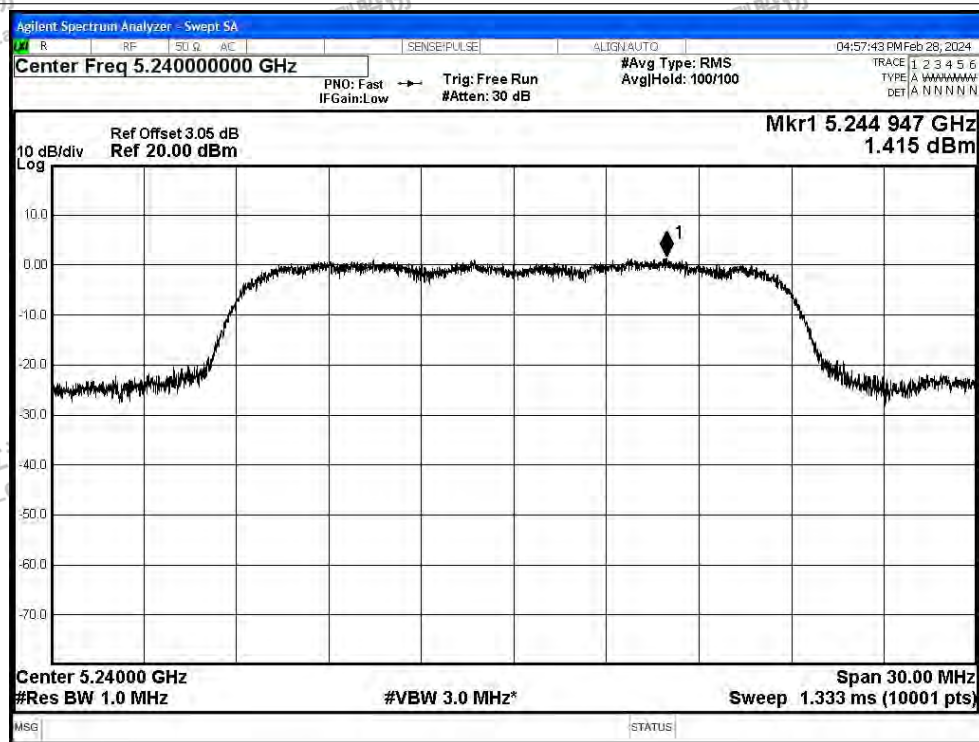


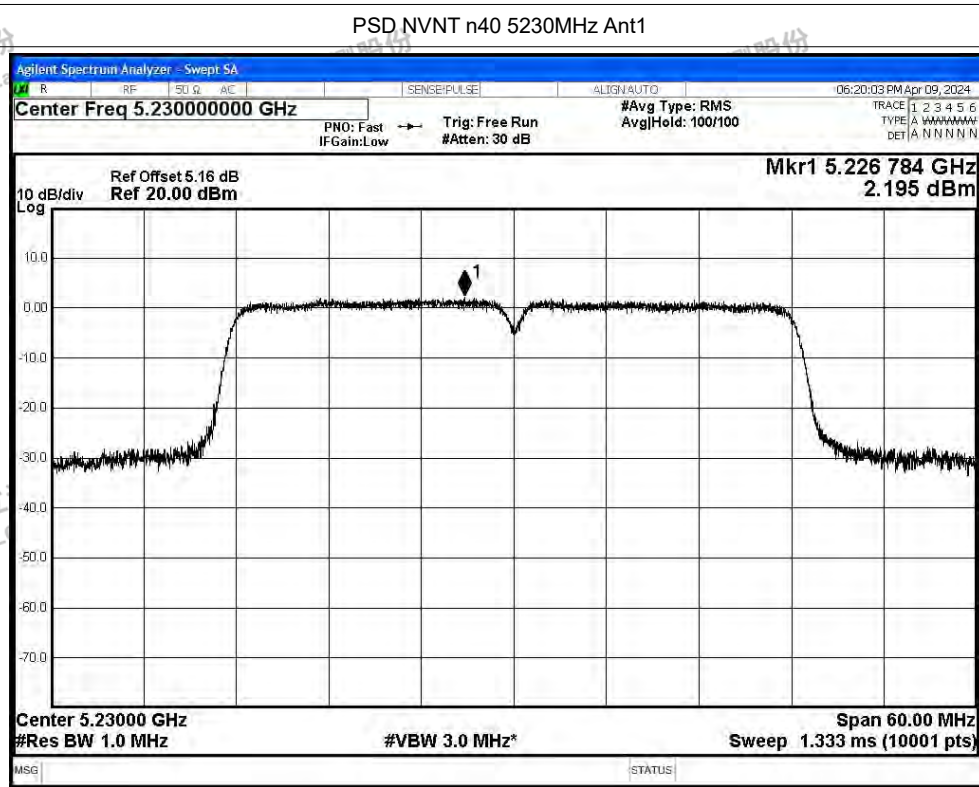
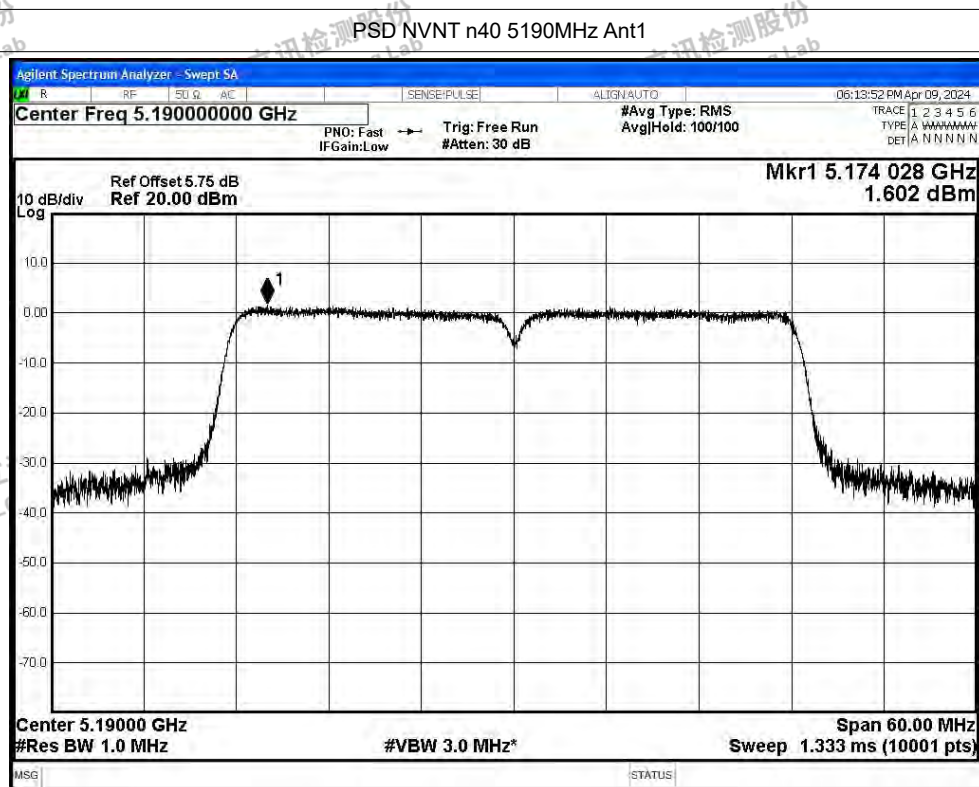


PSD NVNT n20 5200MHz Ant1



PSD NVNT n20 5240MHz Ant1







B.4 Restrict Band

Condition	Mode	Frequency (MHz)	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	a	5180	4500	-48.92	2.4	-	48.71	Peak	68.2	Pass
NVNT	a	5180	4500	-56.89	2.4	0.77	40.74	Average	54	Pass
NVNT	a	5180	5148.2	-37.95	2.4	-	59.68	Peak	68.2	Pass
NVNT	a	5180	5148.9	-49.68	2.4	0.77	47.95	Average	54	Pass
NVNT	a	5180	5150	-37.9	2.4	-	59.73	Peak	68.2	Pass
NVNT	a	5180	5150	-49.57	2.4	0.77	48.06	Average	54	Pass
NVNT	a	5240	5350	-48.13	2.4	-	49.50	Peak	68.2	Pass
NVNT	a	5240	5350	-55.87	2.4	0.72	41.76	Average	54	Pass
NVNT	a	5240	5371.68	-45.19	2.4	-	52.44	Peak	68.2	Pass
NVNT	a	5240	5397.6	-54.99	2.4	0.72	42.64	Average	54	Pass
NVNT	a	5240	5460	-48.45	2.4	-	49.18	Peak	68.2	Pass
NVNT	a	5240	5460	-56.2	2.4	0.72	41.43	Average	54	Pass
NVNT	n20mimo	5180	4500	-47.3	5.41	-	53.34	Peak	68.2	Pass
NVNT	n20mimo	5180	4500	-56.09	5.41	0.88	44.55	Average	54	Pass
NVNT	n20mimo	5180	5149.6	-35.28	5.41	-	65.36	Peak	68.2	Pass
NVNT	n20mimo	5180	5149.6	-49.17	5.41	0.88	51.47	Average	54	Pass
NVNT	n20mimo	5180	5150	-36.5	5.41	-	64.14	Peak	68.2	Pass
NVNT	n20mimo	5180	5150	-49.92	5.41	0.88	50.72	Average	54	Pass
NVNT	n20mimo	5240	5350	-45.25	5.41	-	55.39	Peak	68.2	Pass
NVNT	n20mimo	5240	5350	-55.54	5.41	0.88	45.10	Average	54	Pass
NVNT	n20mimo	5240	5374.08	-45	5.41	-	55.64	Peak	68.2	Pass
NVNT	n20mimo	5240	5375.04	-54.74	5.41	0.88	45.90	Average	54	Pass
NVNT	n20mimo	5240	5460	-48.96	5.41	-	51.68	Peak	68.2	Pass
NVNT	n20mimo	5240	5460	-56.25	5.41	0.88	44.39	Average	54	Pass
NVNT	n40mimo	5190	4500	-47.99	5.41	-	52.65	Peak	68.2	Pass
NVNT	n40mimo	5190	4500	-55.65	5.41	1.01	44.99	Average	54	Pass
NVNT	n40mimo	5190	5148.97	-34.43	5.41	-	66.21	Peak	68.2	Pass
NVNT	n40mimo	5190	5148.97	-51.14	5.41	1.01	49.50	Average	54	Pass
NVNT	n40mimo	5190	5150	-37.36	5.41	-	63.28	Peak	68.2	Pass
NVNT	n40mimo	5190	5150	-51.26	5.41	1.01	49.38	Average	54	Pass
NVNT	n40mimo	5230	5350	-45.46	5.41	-	55.18	Peak	68.2	Pass
NVNT	n40mimo	5230	5350	-54.26	5.41	1.01	46.38	Average	54	Pass
NVNT	n40mimo	5230	5350.65	-44.76	5.41	-	55.88	Peak	68.2	Pass
NVNT	n40mimo	5230	5353.08	-53.83	5.41	1.01	46.81	Average	54	Pass
NVNT	n40mimo	5230	5460	-48.64	5.41	-	52.00	Peak	68.2	Pass
NVNT	n40mimo	5230	5460	-55.82	5.41	1.01	41.81	Average	54	Pass

Note: 802.11a mode, only show the worst set of antenna 0 data.

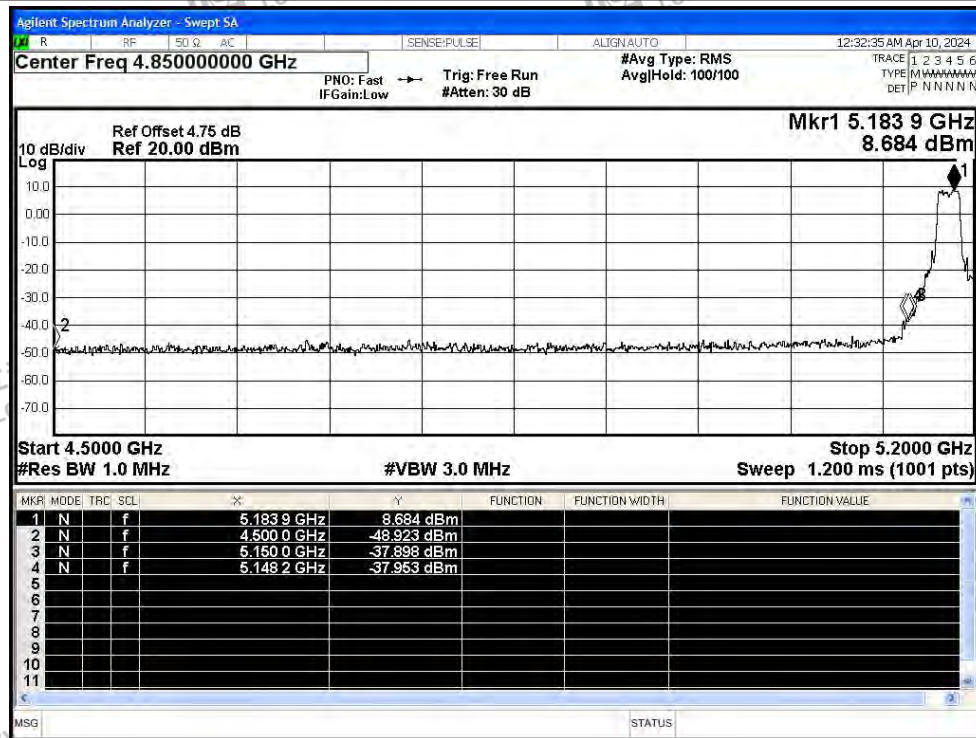


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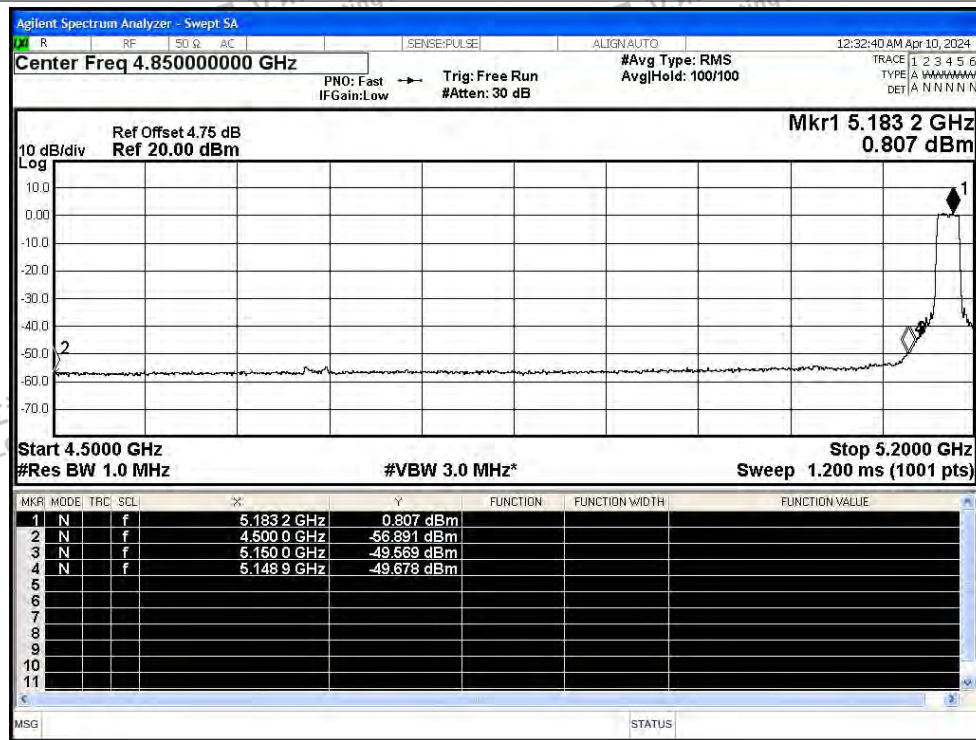


Test Graphs

Restrict Band NVNT a 5180MHz Peak

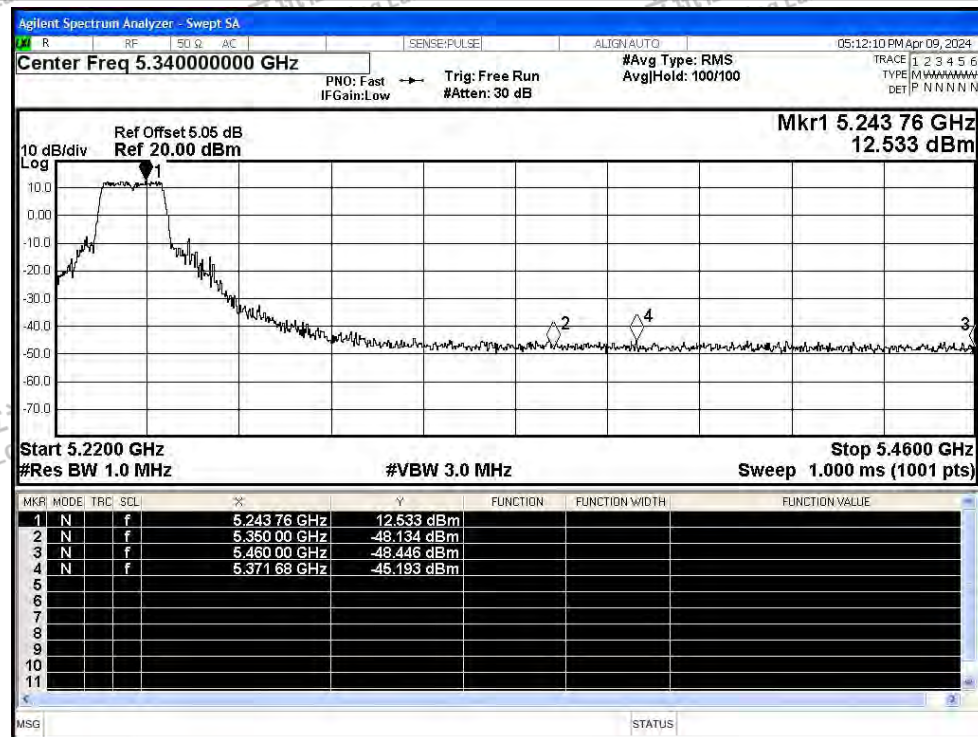


Restrict Band NVNT a 5180MHz Average

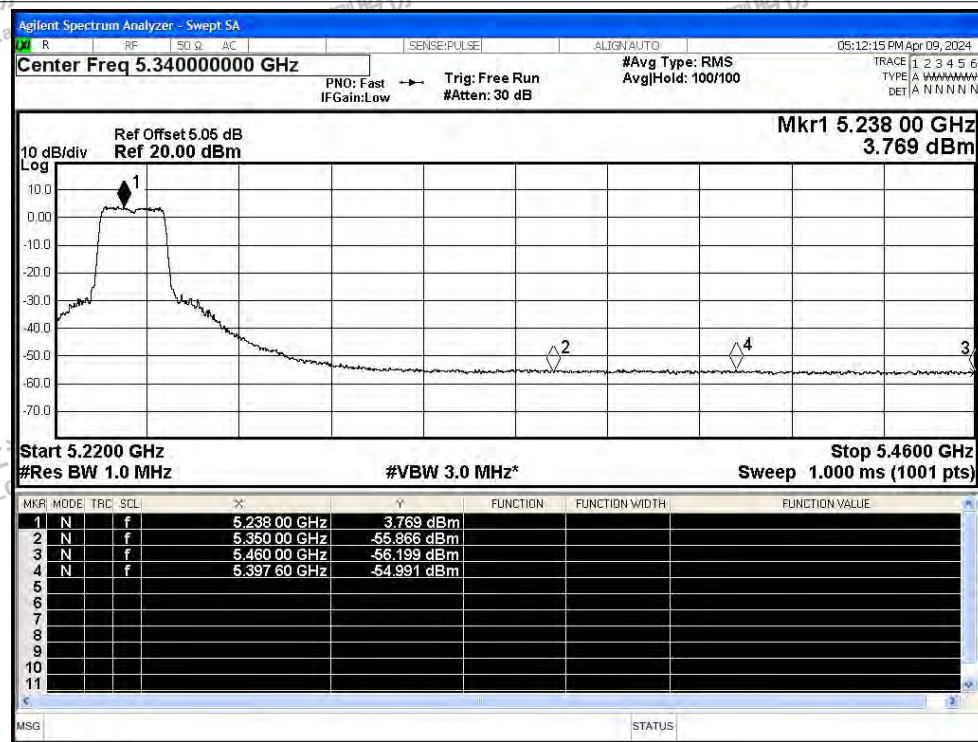




Restrict Band NVNT a 5240MHz Peak

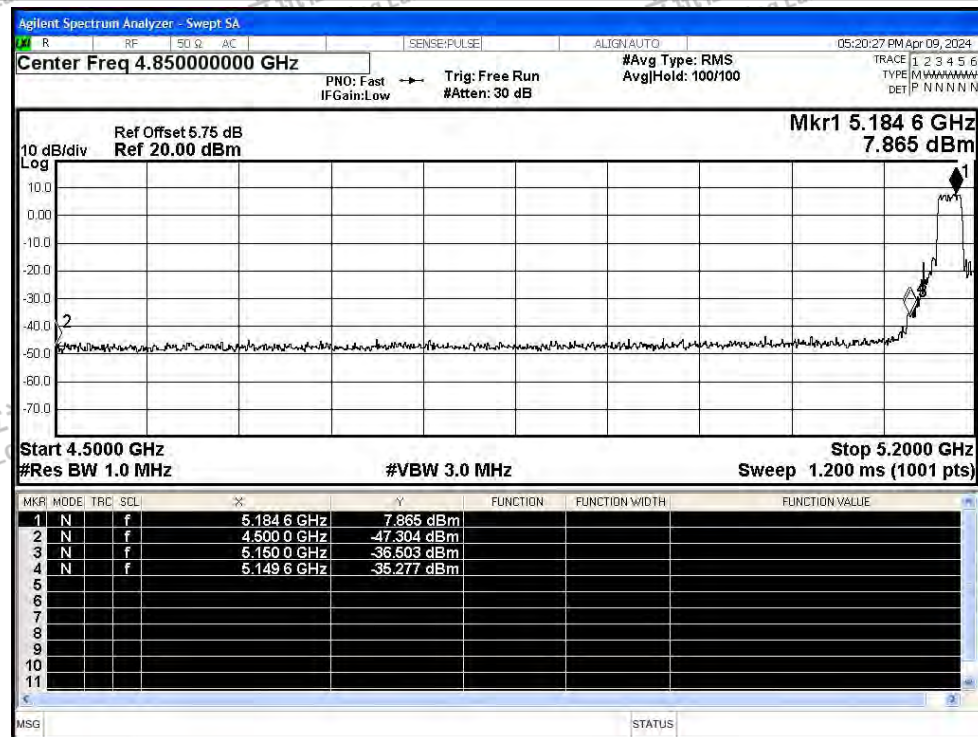


Restrict Band NVNT a 5240MHz Average

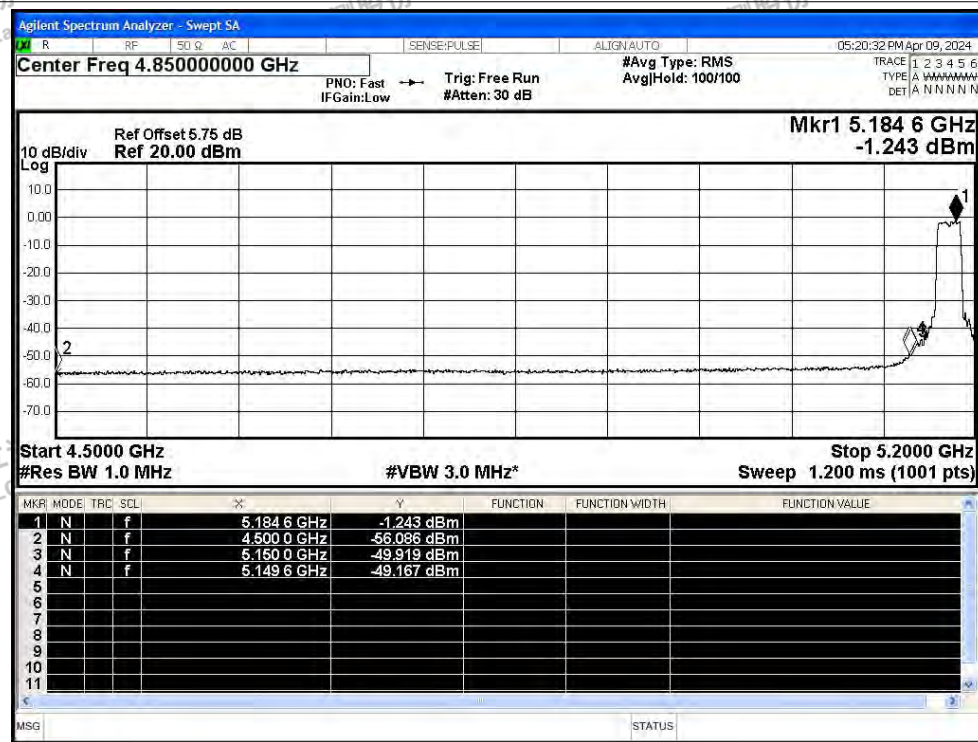




Restrict Band NVNT n20 5180MHz Peak

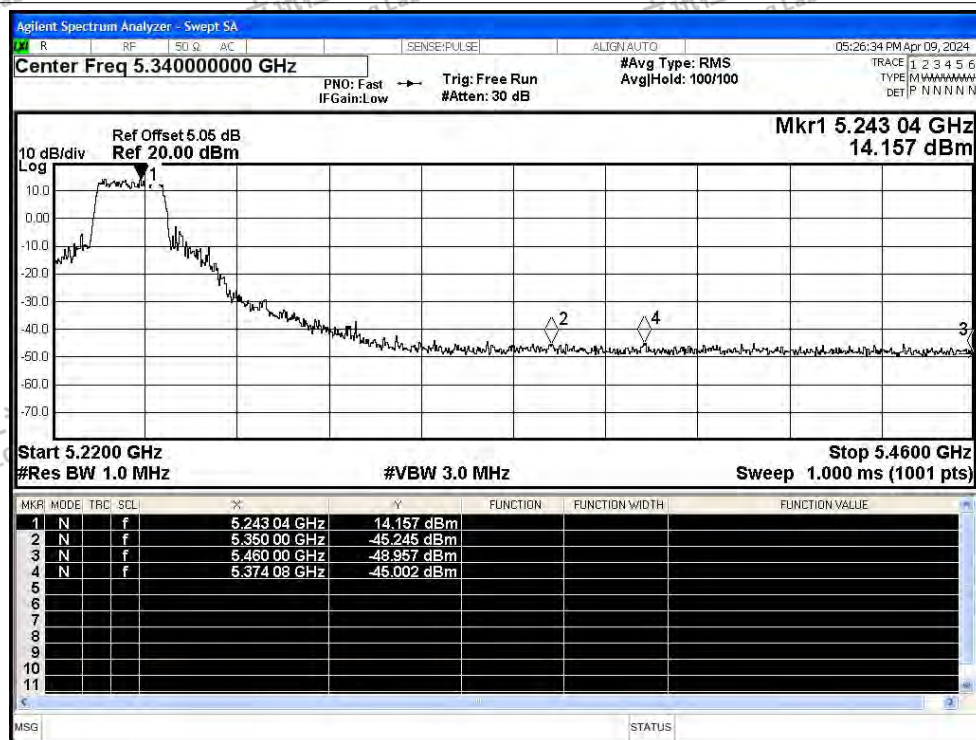


Restrict Band NVNT n20 5180MHz Average

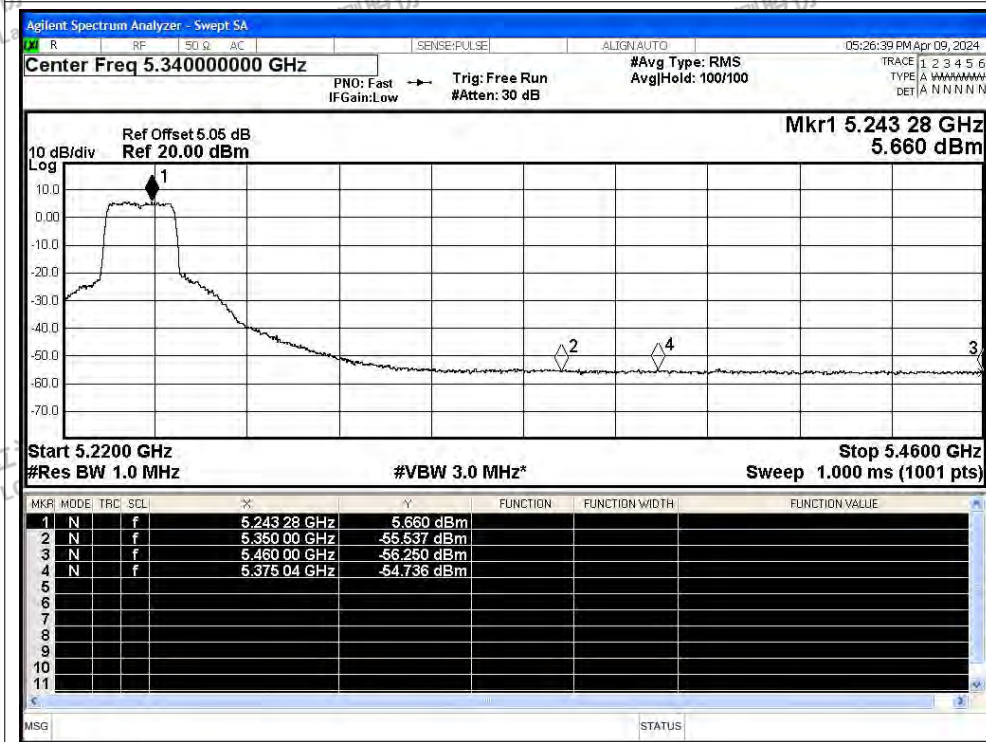




Restrict Band NVNT n20 5240MHz Peak

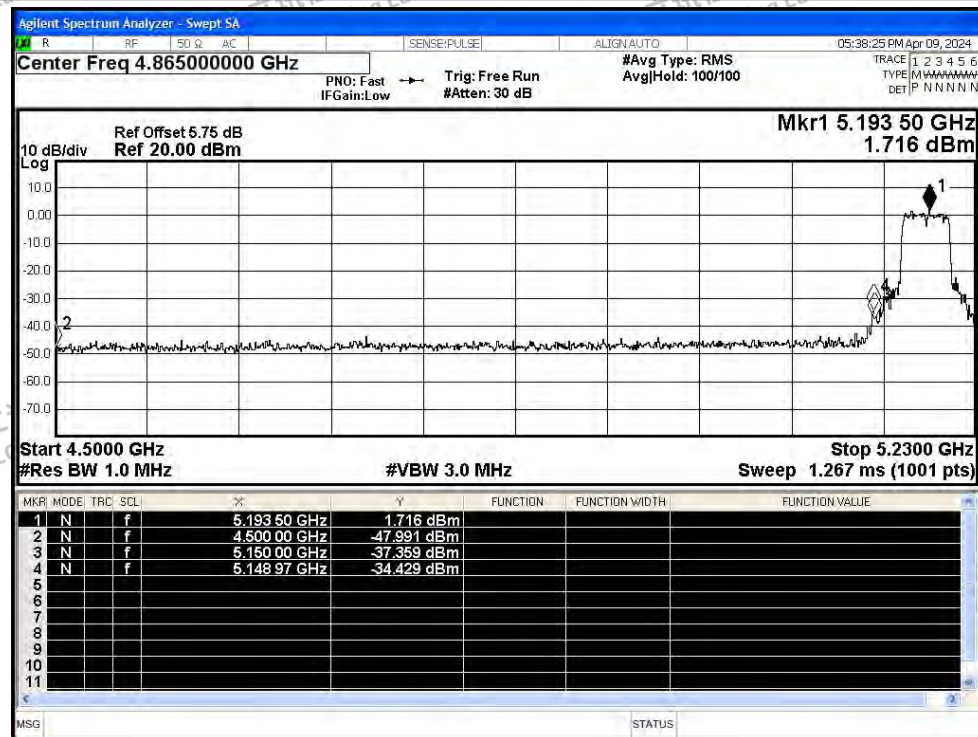


Restrict Band NVNT n20 5240MHz Average

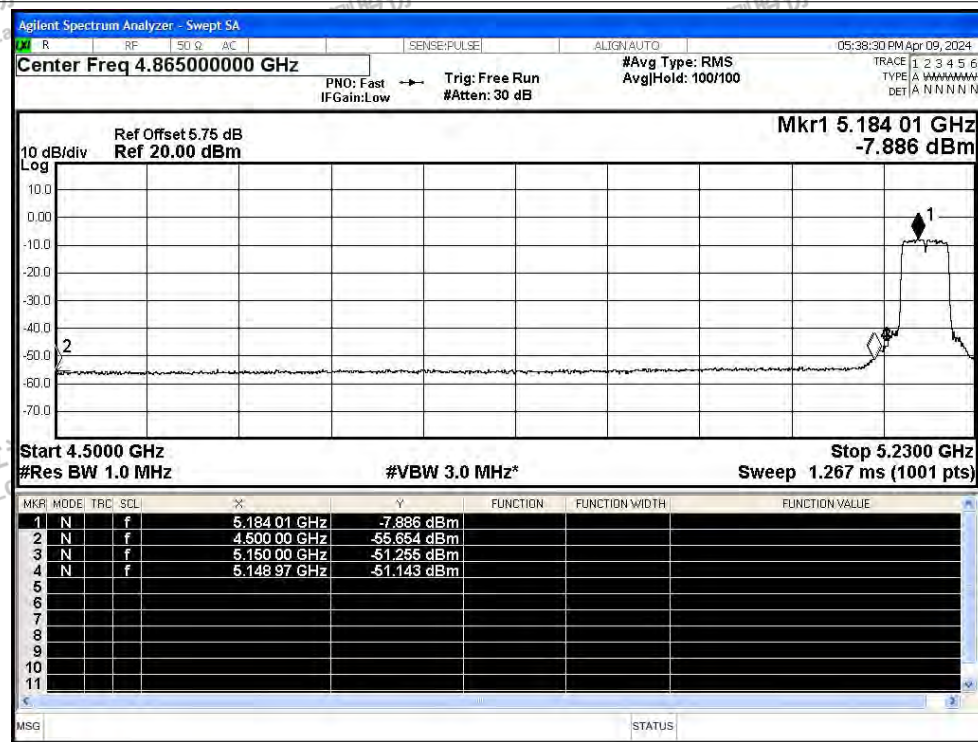




Restrict Band NVNT n40 5190MHz Peak

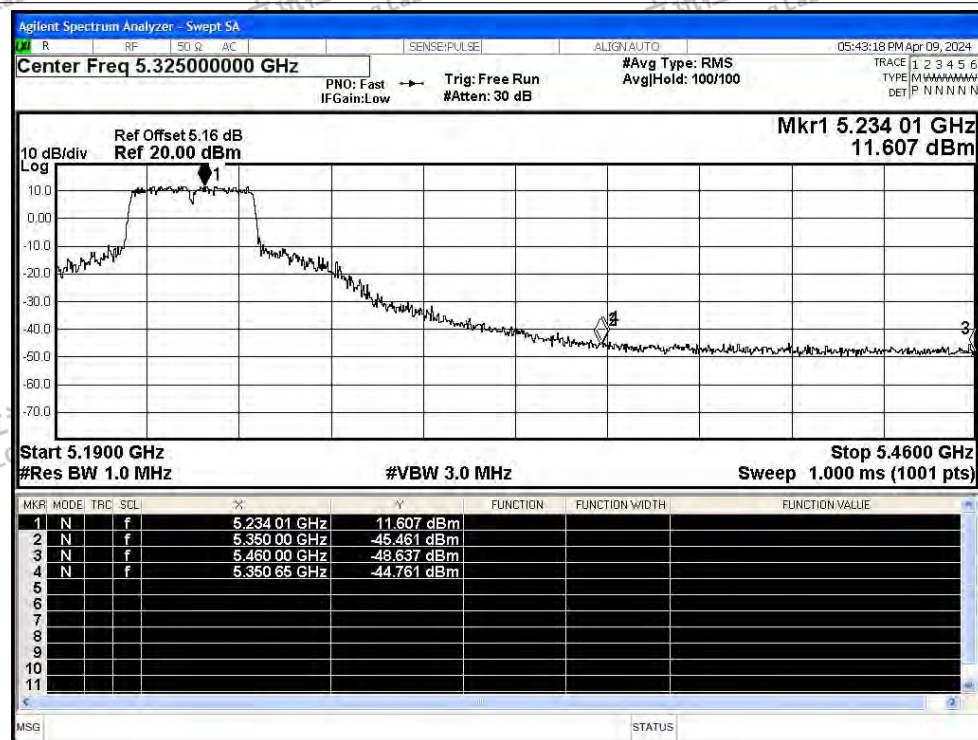


Restrict Band NVNT n40 5190MHz Average

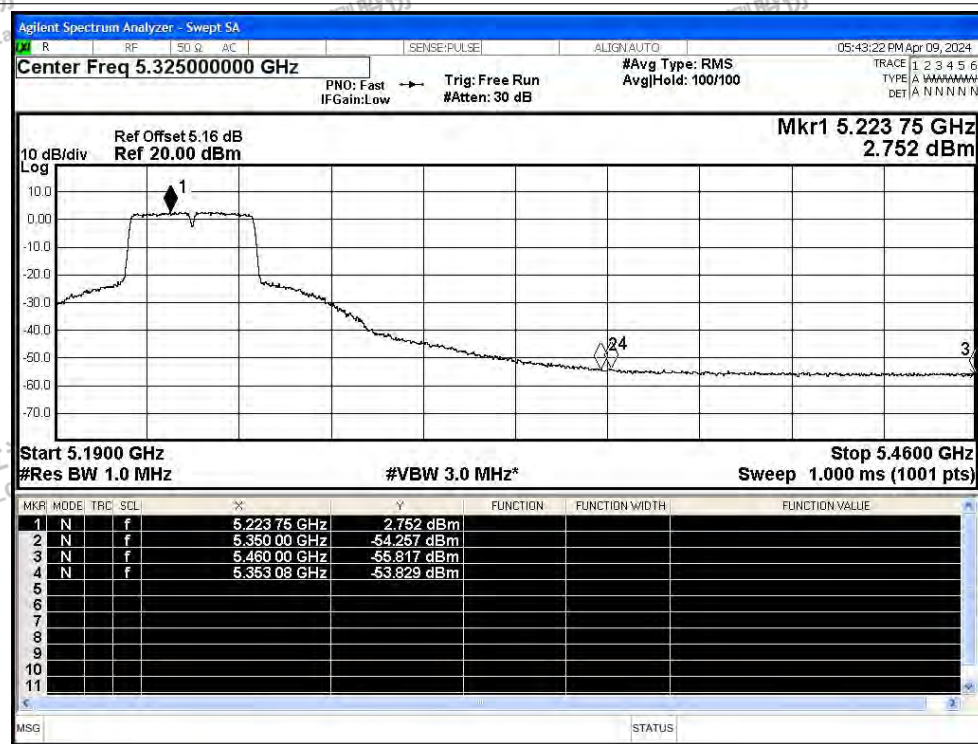




Restrict Band NVNT n40 5230MHz Peak



Restrict Band NVNT n40 5230MHz Average



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B.5 Frequency Stability

Condition	Mode	Frequency (MHz)	Antenna	Measured Frequency (MHz)	Frequency Error (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
NVNT	n20	5180	Ant0	5179.96	-40000	-7.72	25	Pass
NVNT	n20	5200	Ant0	5199.98	-20000	-3.85	25	Pass
NVNT	n20	5240	Ant0	5240	0	0	25	Pass
NVNT	n40	5190	Ant0	5190	0	0	25	Pass
NVNT	n40	5230	Ant0	5230	0	0	25	Pass

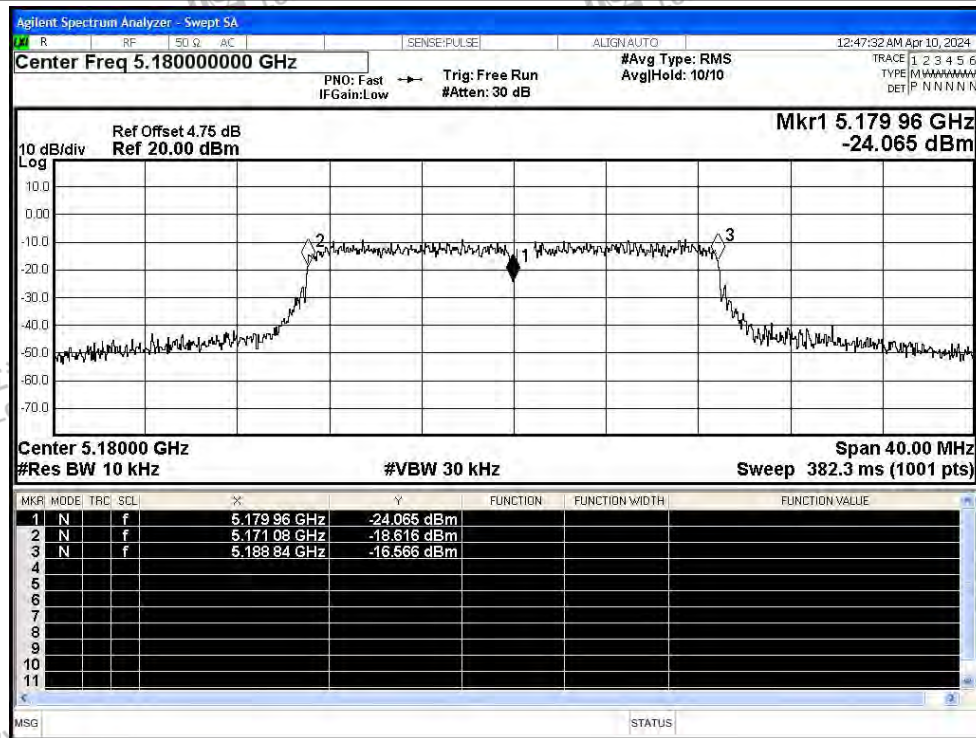


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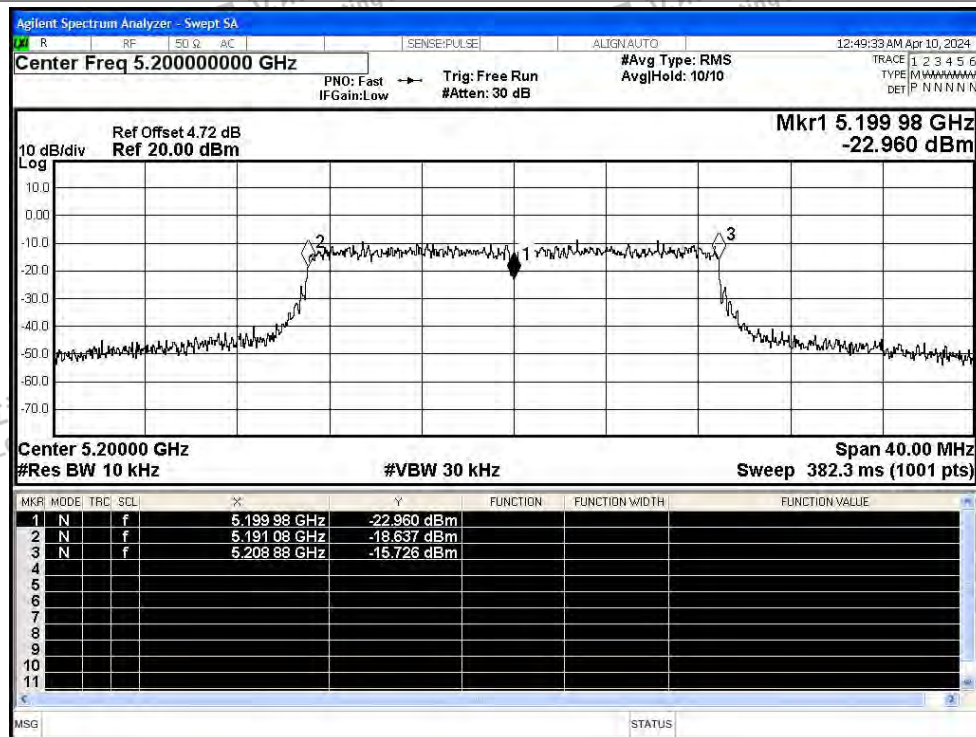


Test Graphs

Freq: Stability NVNT n20 5180MHz Ant0

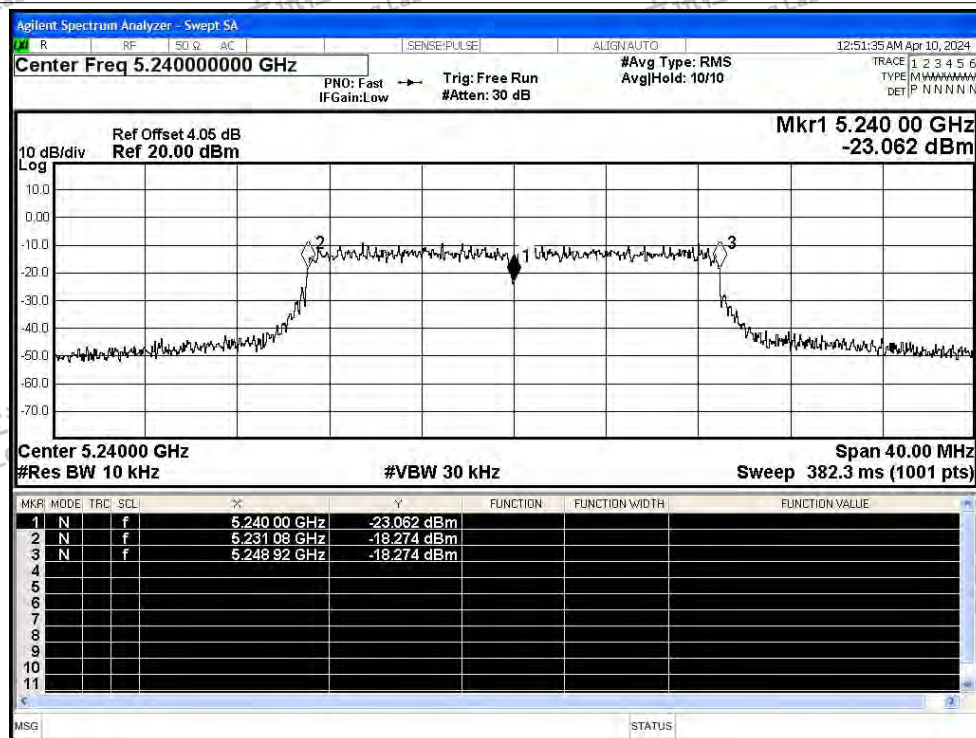


Freq: Stability NVNT n20 5200MHz Ant0

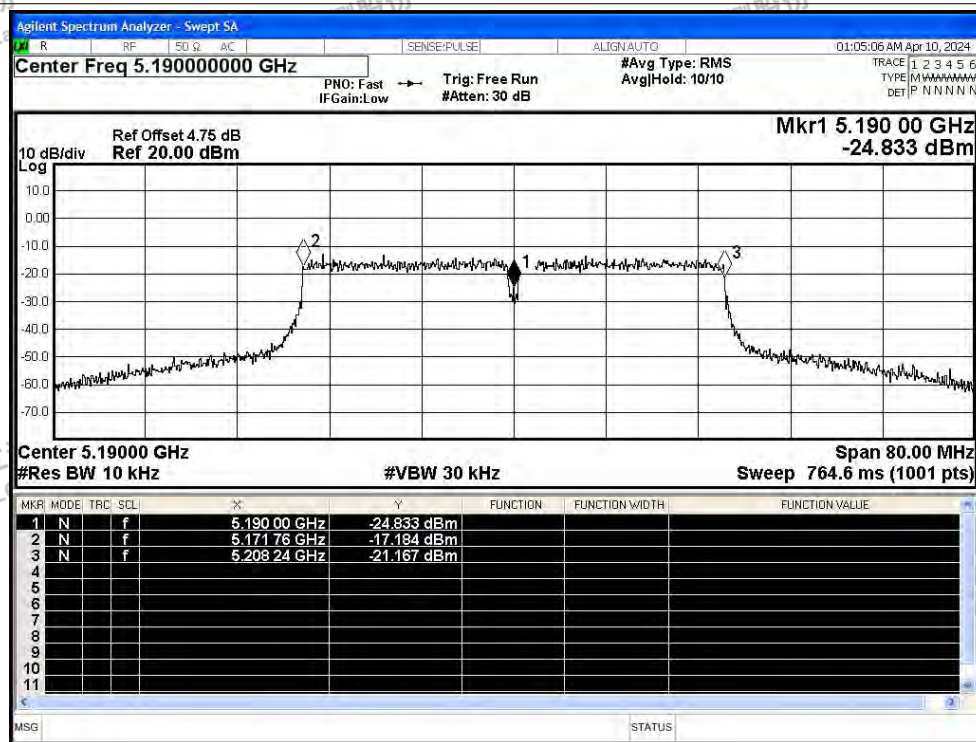




Freq. Stability NVNT n20 5240MHz Ant0

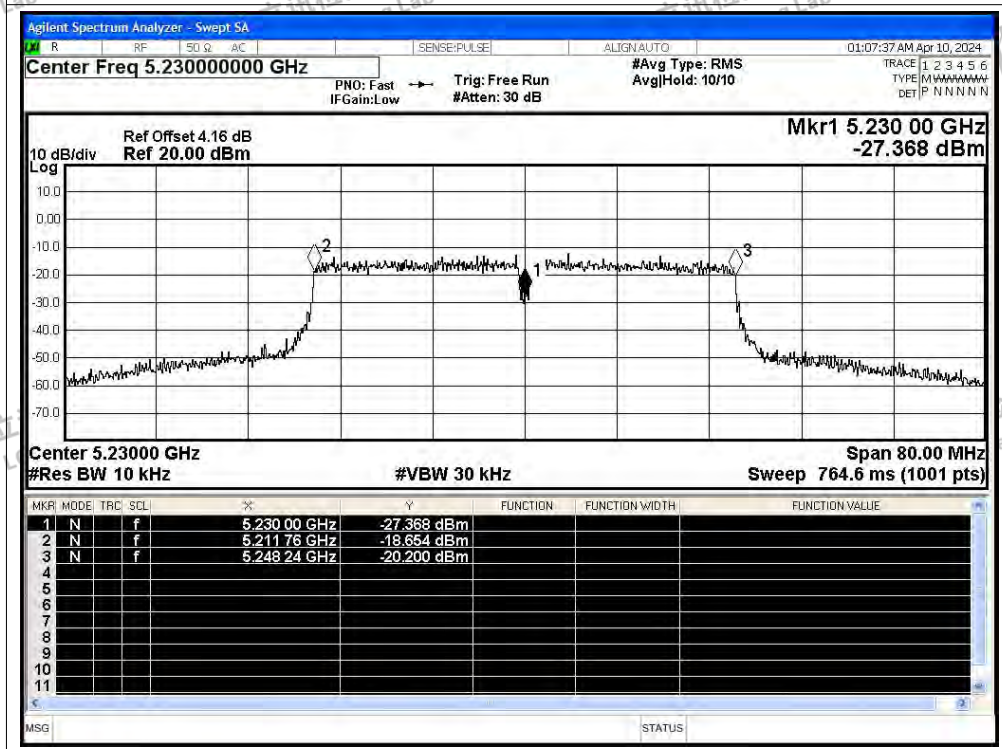


Freq. Stability NVNT n40 5190MHz Ant0





Freq. Stability NVNT n40 5230MHz Ant0



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Condition	Mode	Frequency (MHz)	Antenna	Measured Frequency (MHz)	Frequency Error (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
NVNT	n20	5180	Ant1	5180	0	0	25	Pass
NVNT	n20	5200	Ant1	5199.98	-20000	-3.85	25	Pass
NVNT	n20	5240	Ant1	5240.02	20000	3.82	25	Pass
NVNT	n40	5190	Ant1	5189.96	-40000	-7.71	25	Pass
NVNT	n40	5230	Ant1	5230	0	0	25	Pass

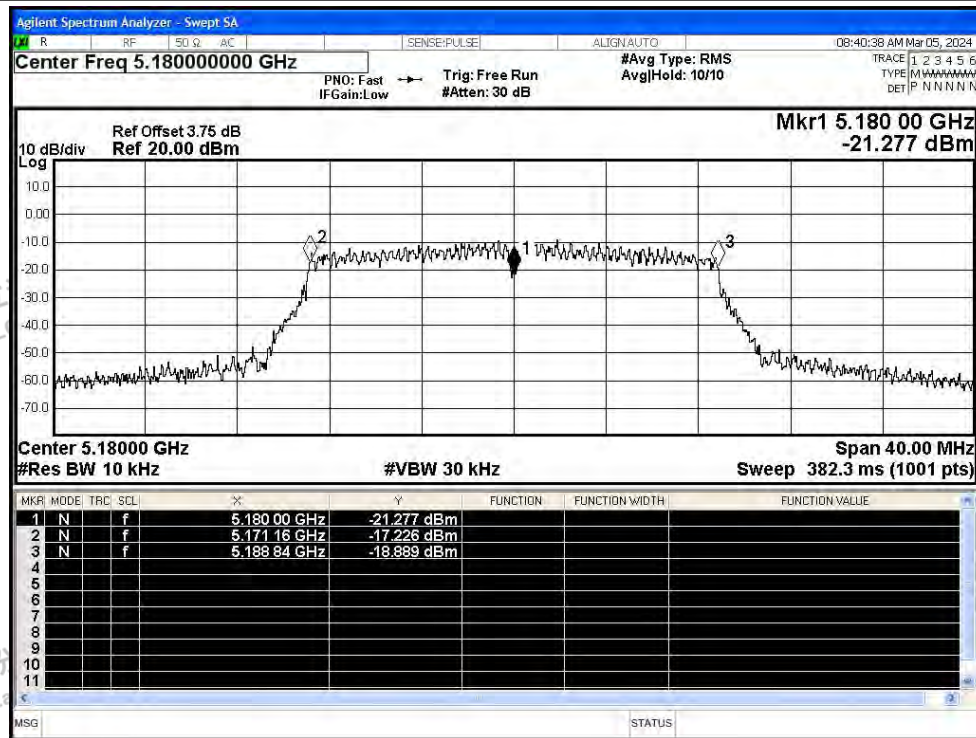


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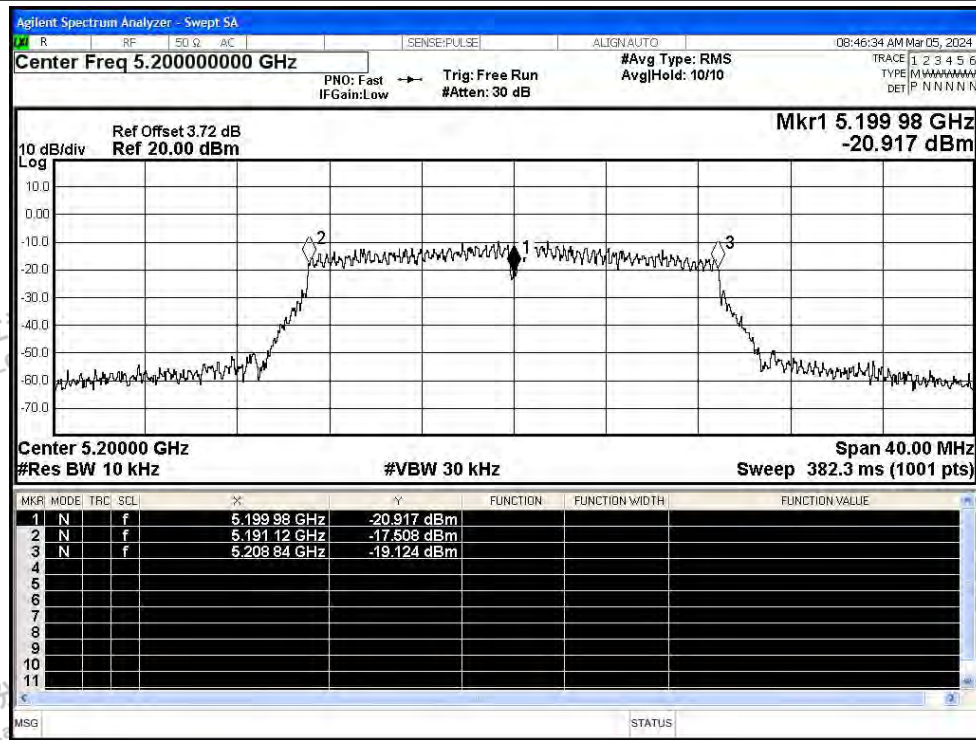


Test Graphs

Freq. Stability NVNT n20 5180MHz Ant1

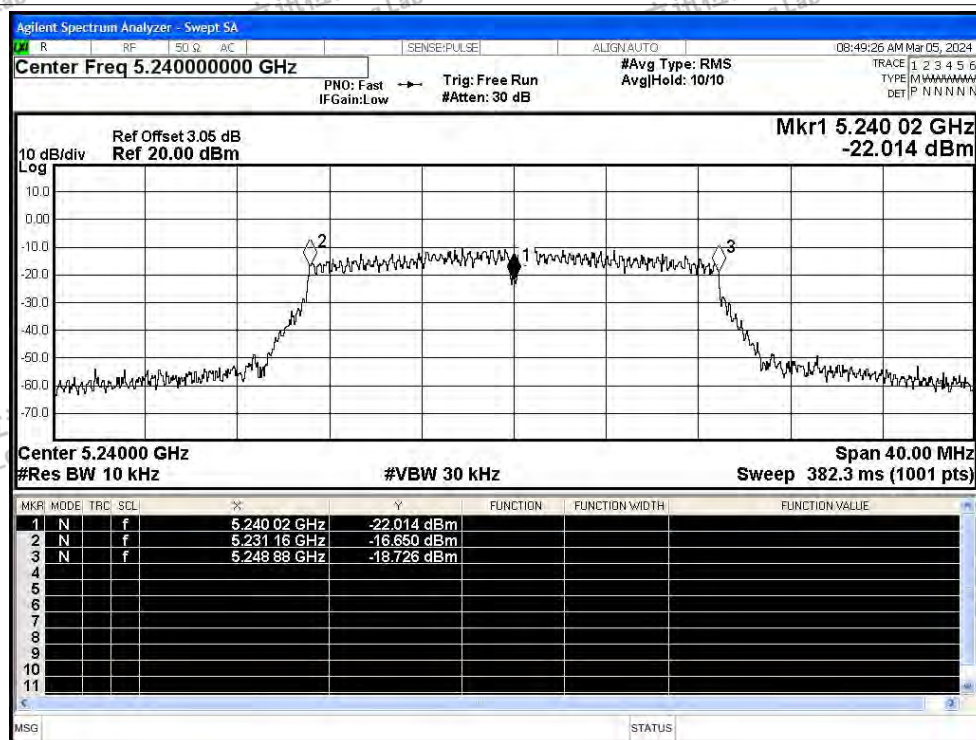


Freq. Stability NVNT n20 5200MHz Ant1

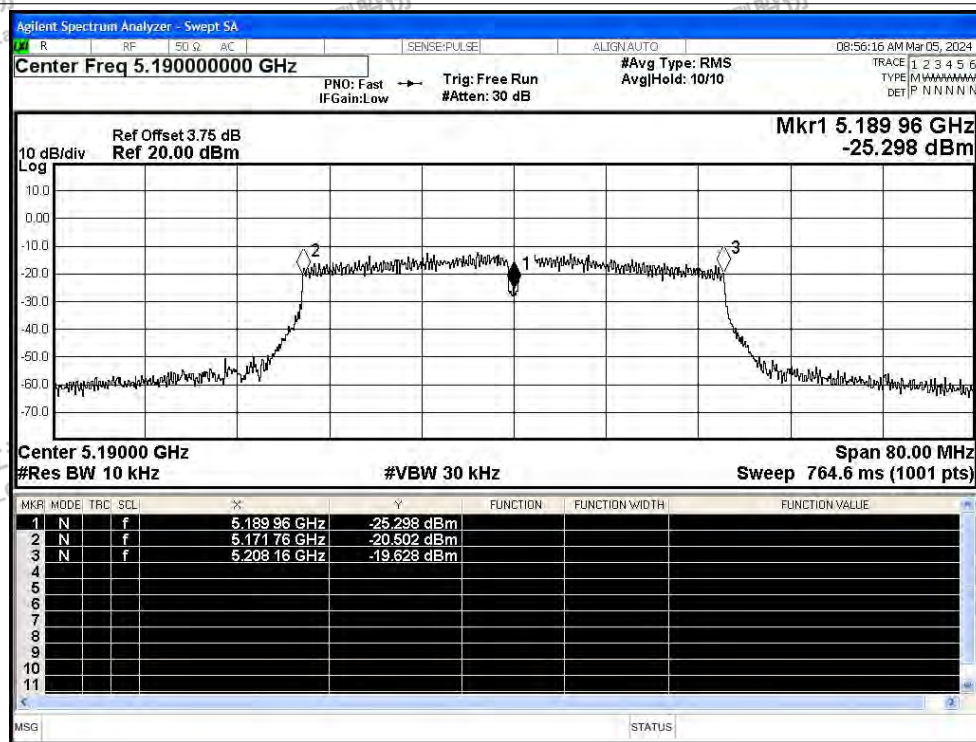




Freq. Stability NVNT n20 5240MHz Ant1

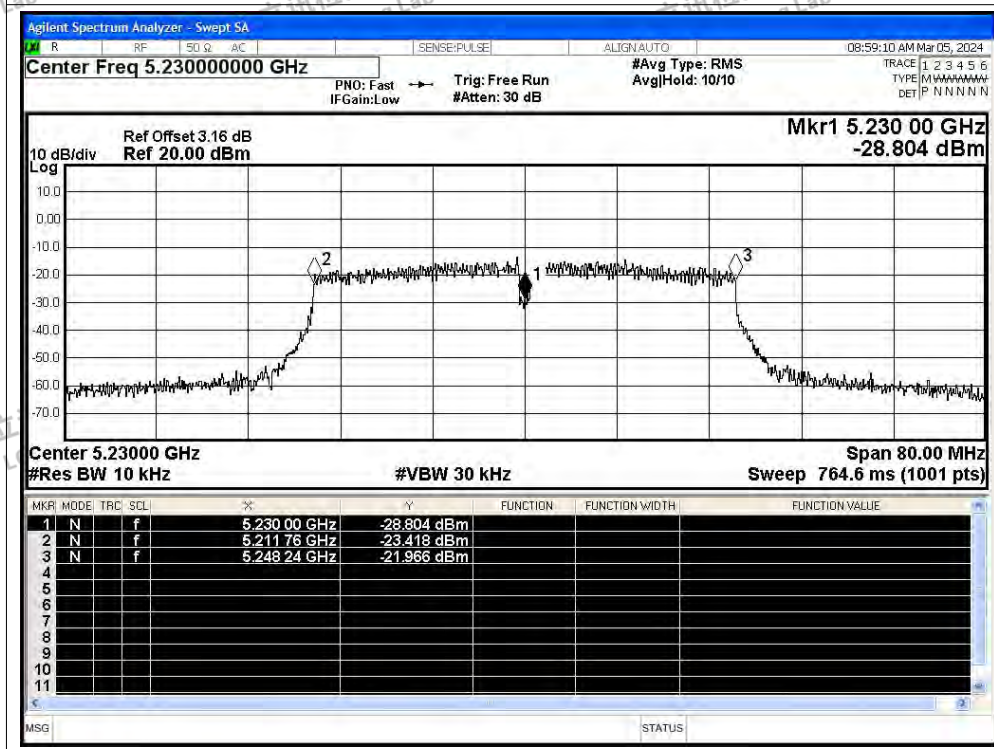


Freq. Stability NVNT n40 5190MHz Ant1





Freq. Stability NVNT n40 5230MHz Ant1



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B.6 Duty Cycle

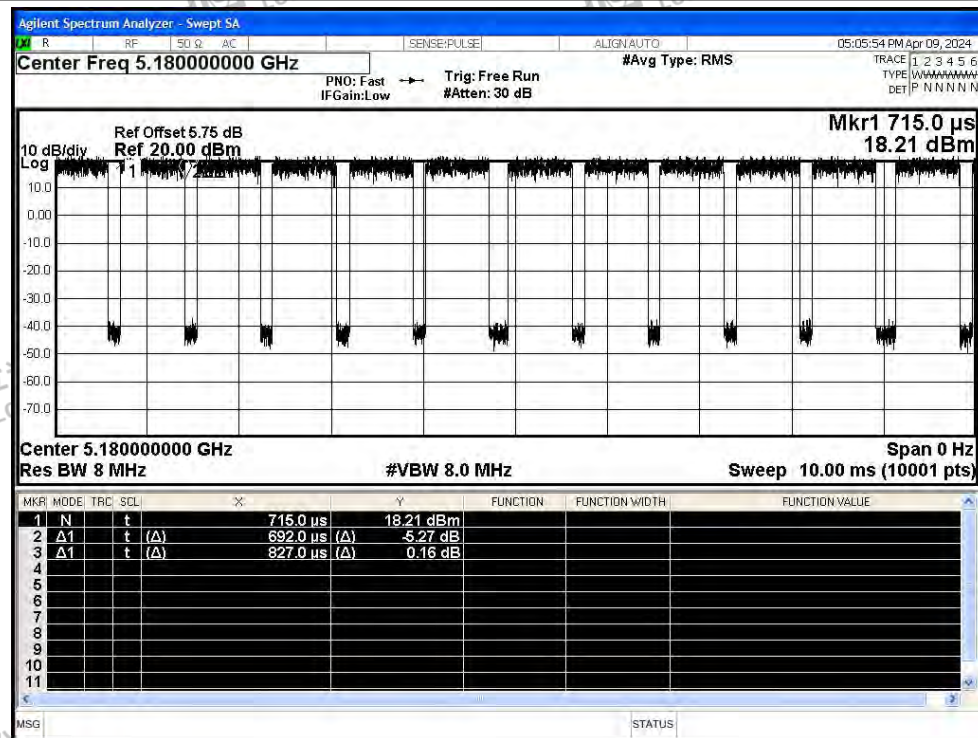
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5180	Ant0	83.68	0.77	1.45
NVNT	a	5200	Ant0	83.68	0.77	1.45
NVNT	a	5240	Ant0	84.72	0.72	1.44
NVNT	n20	5180	Ant0	81.62	0.88	1.68
NVNT	n20	5200	Ant0	78.57	1.05	1.68
NVNT	n20	5240	Ant0	81.62	0.88	1.68
NVNT	n40	5190	Ant0	79.21	1.01	1.27
NVNT	n40	5230	Ant0	79.21	1.01	1.27



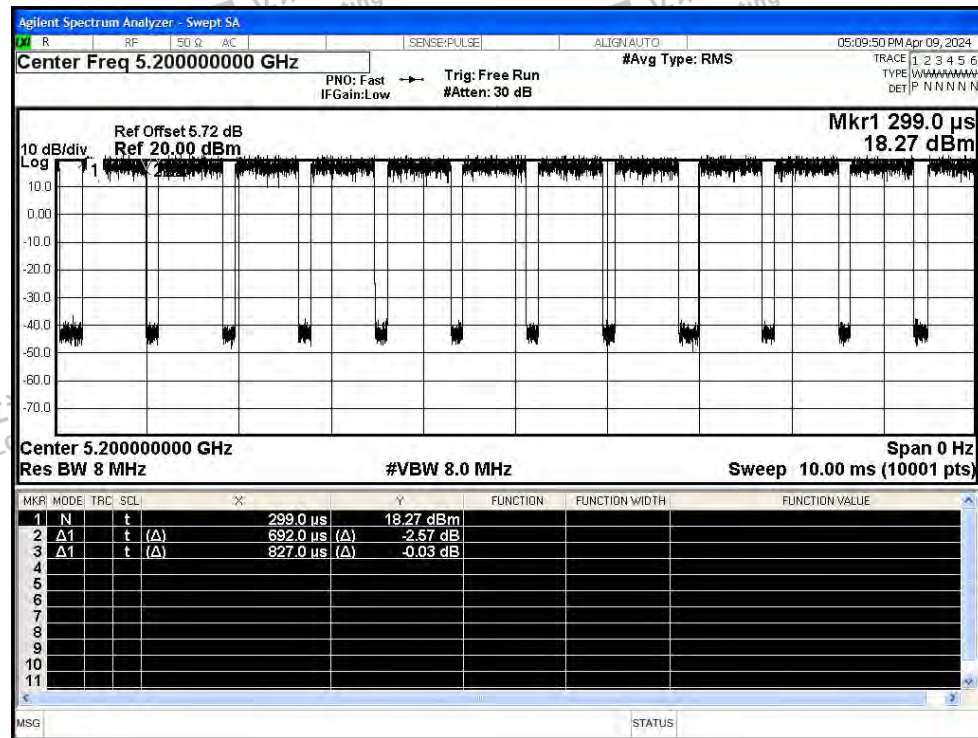


Test Graphs

Duty Cycle NVNT a 5180MHz Ant0

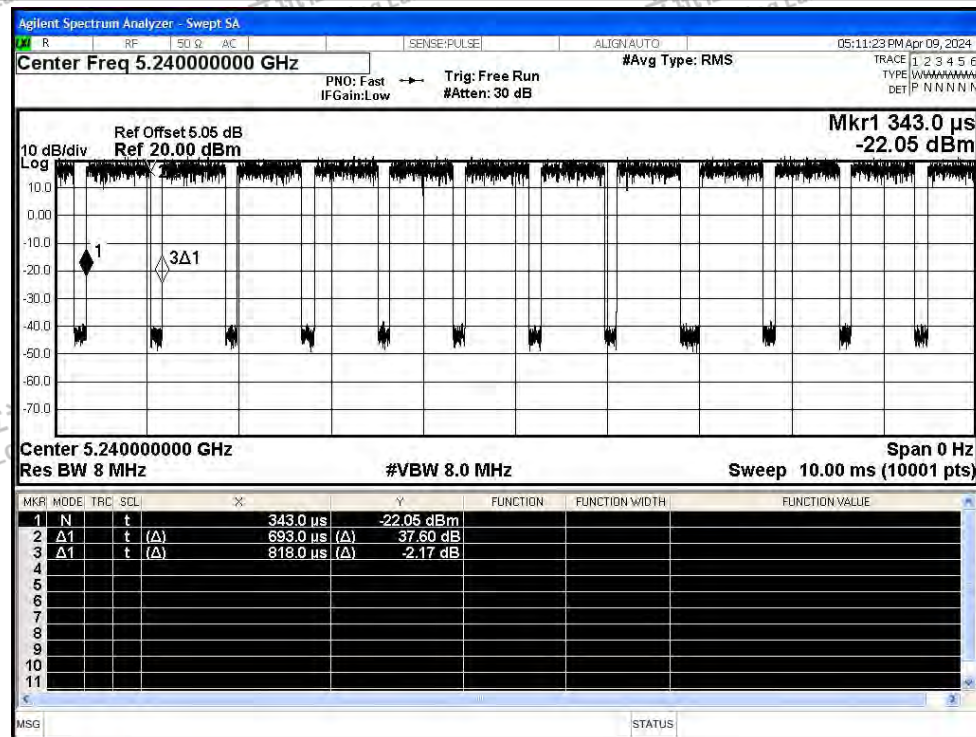


Duty Cycle NVNT a 5200MHz Ant0

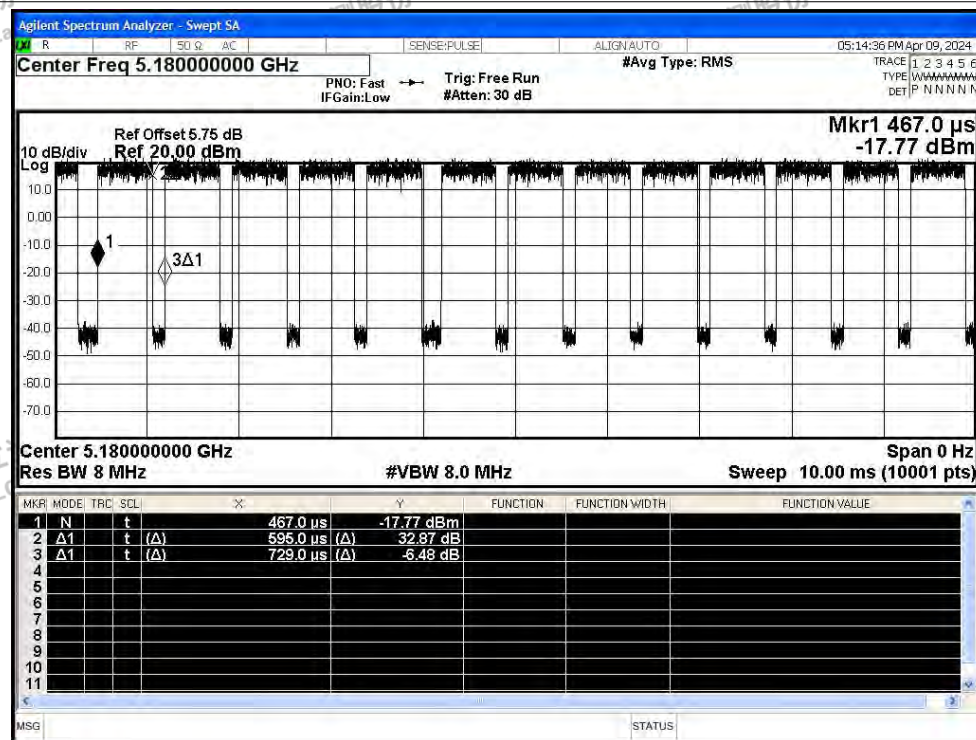




Duty Cycle NVNT a 5240MHz Ant0

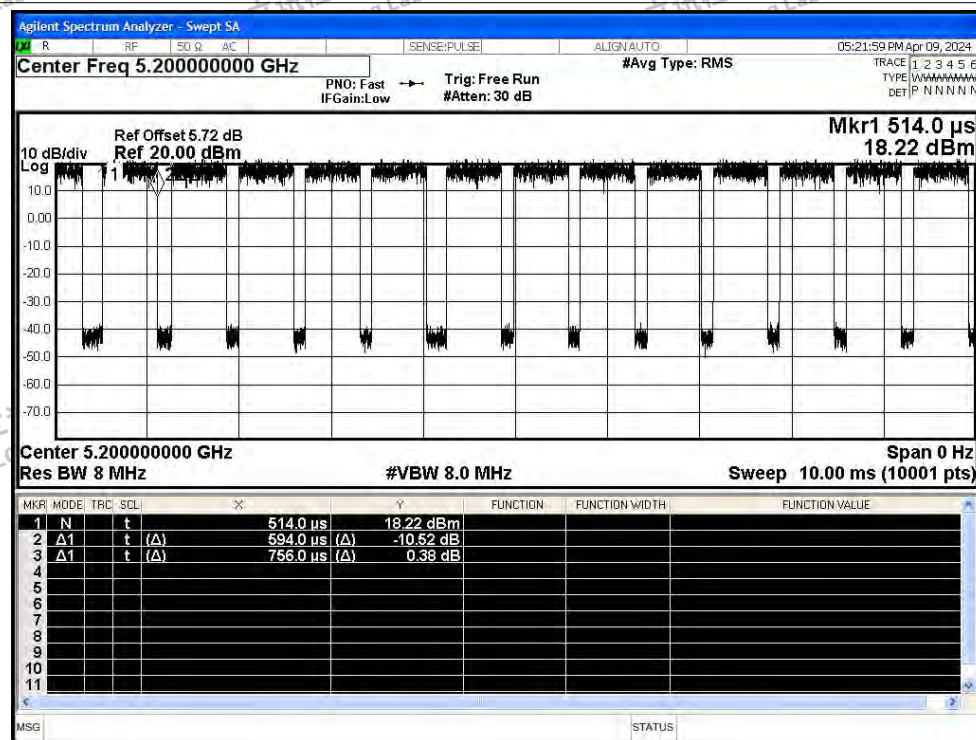


Duty Cycle NVNT n20 5180MHz Ant0

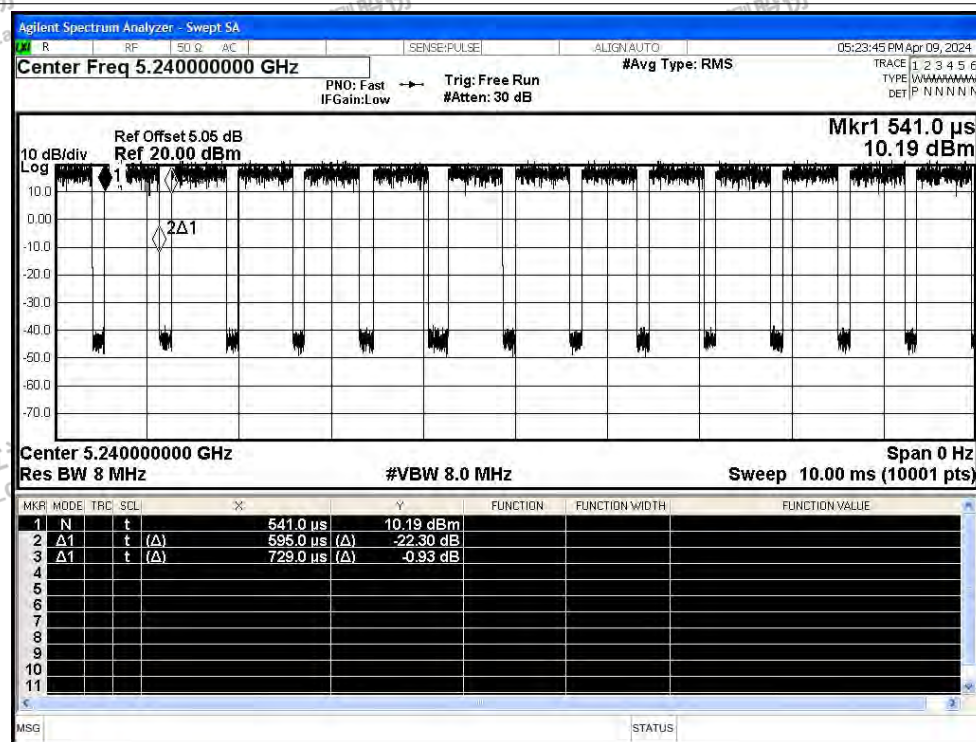




Duty Cycle NVNT n20 5200MHz Ant0

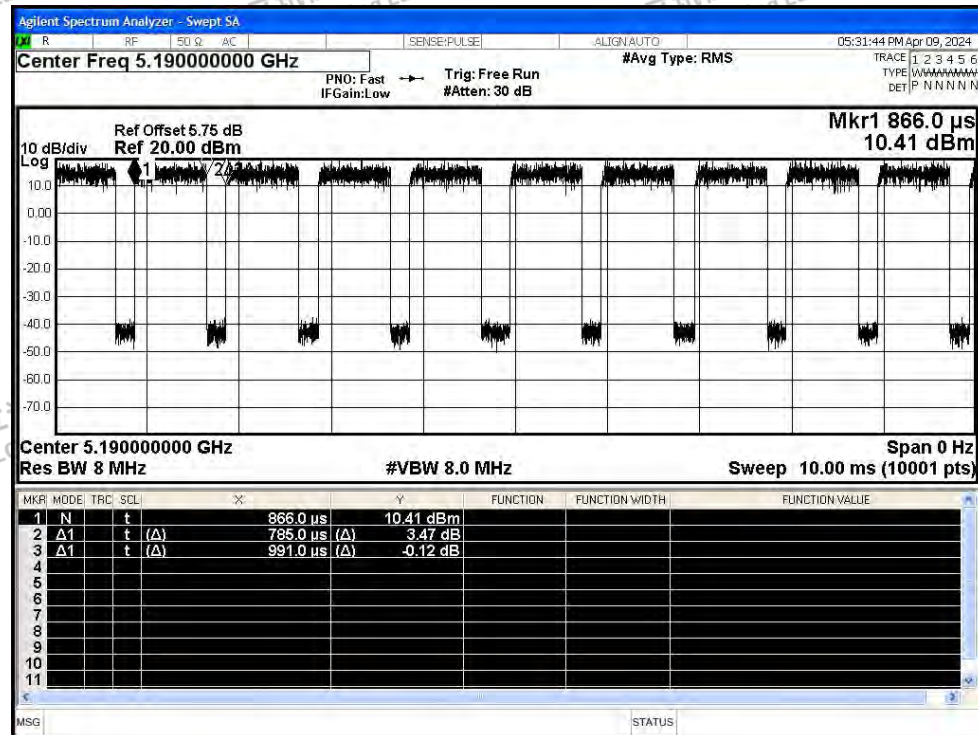


Duty Cycle NVNT n20 5240MHz Ant0

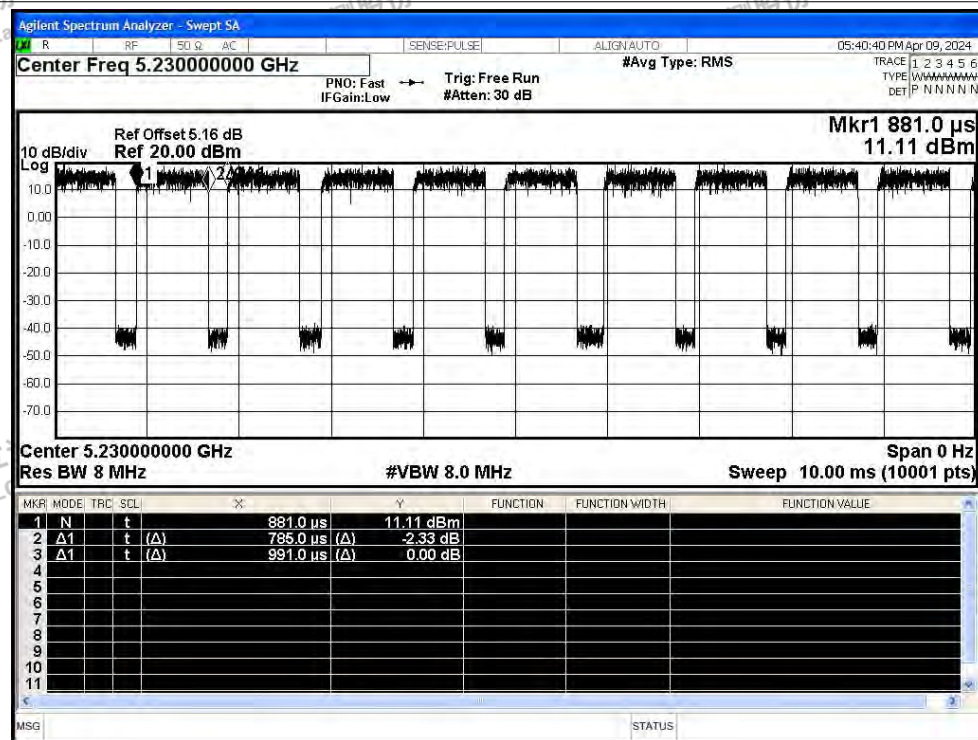




Duty Cycle NVNT n40 5190MHz Ant0



Duty Cycle NVNT n40 5230MHz Ant0





Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	a	5180	Ant1	83.8	0.77	1.44
NVNT	a	5200	Ant1	83.68	0.77	1.45
NVNT	a	5240	Ant1	84.6	0.73	1.45
NVNT	n20	5180	Ant1	73.33	1.35	1.68
NVNT	n20	5200	Ant1	82.64	0.83	1.68
NVNT	n20	5240	Ant1	81.62	0.88	1.68
NVNT	n40	5190	Ant1	73.32	1.35	1.27
NVNT	n40	5230	Ant1	78.5	1.05	1.27

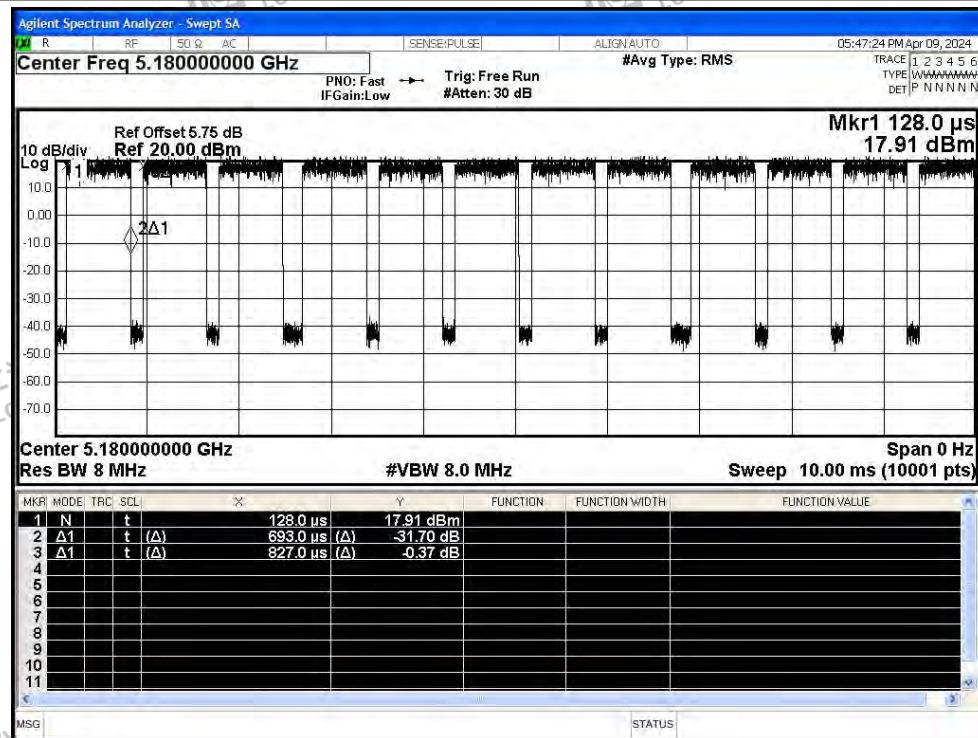


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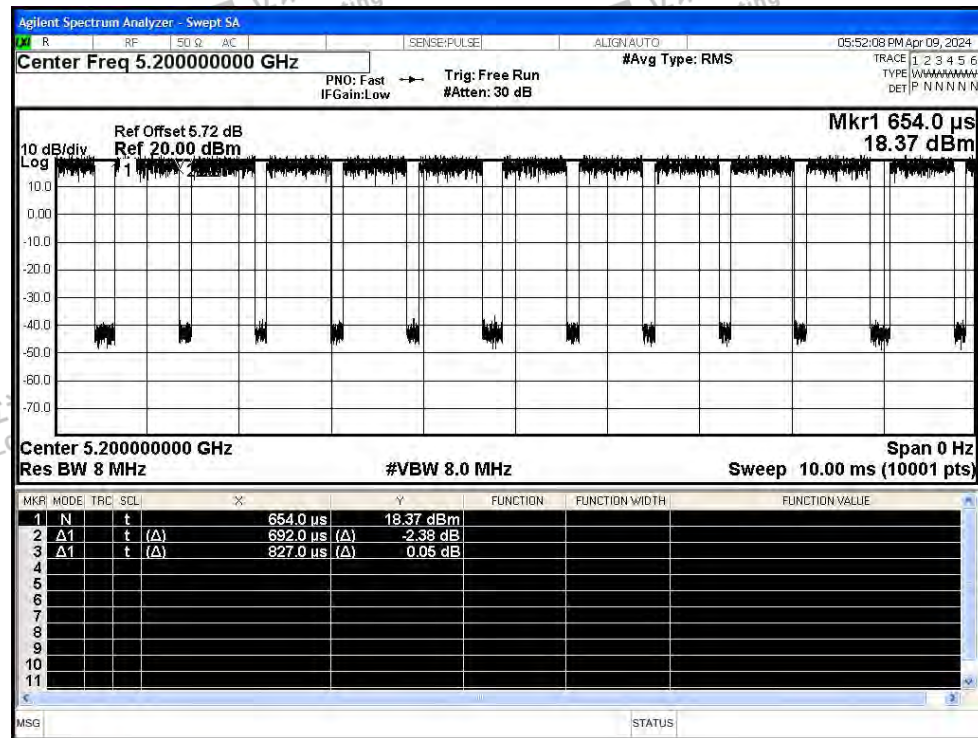


Test Graphs

Duty Cycle NVNT a 5180MHz Ant1



Duty Cycle NVNT a 5200MHz Ant1



Shenzhen LCS Compliance Testing Laboratory Ltd.

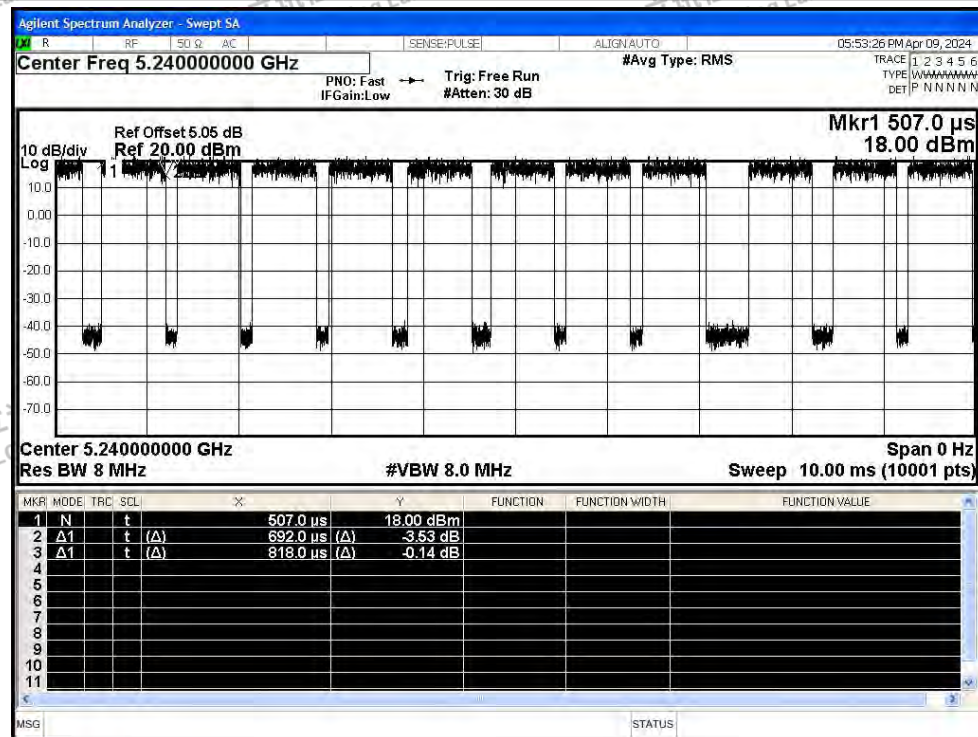
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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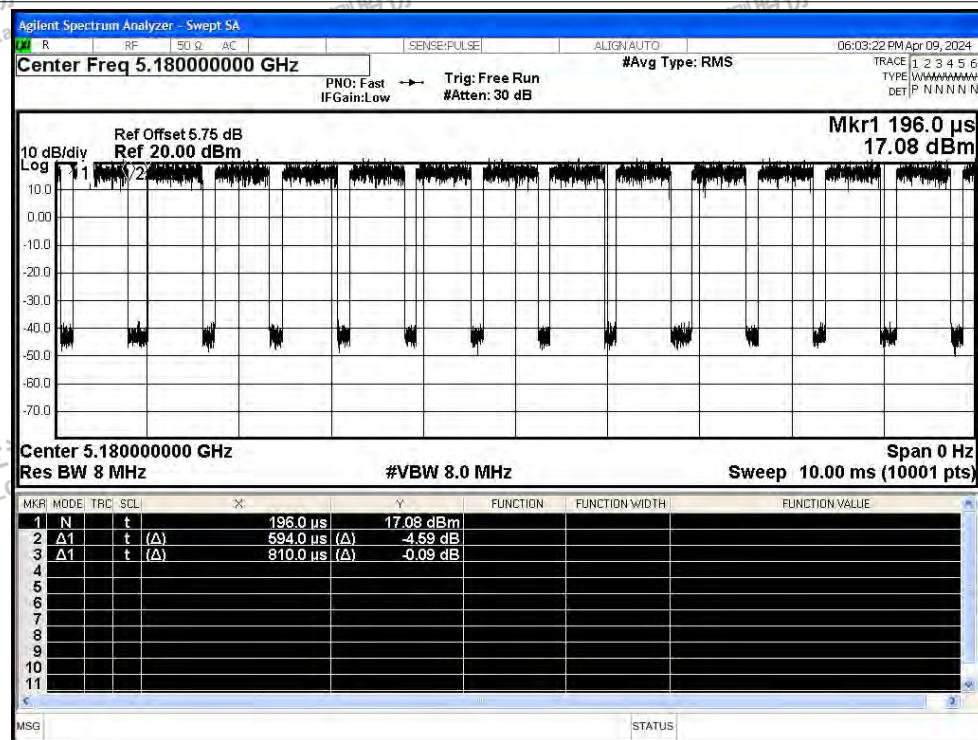
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Duty Cycle NVNT a 5240MHz Ant1

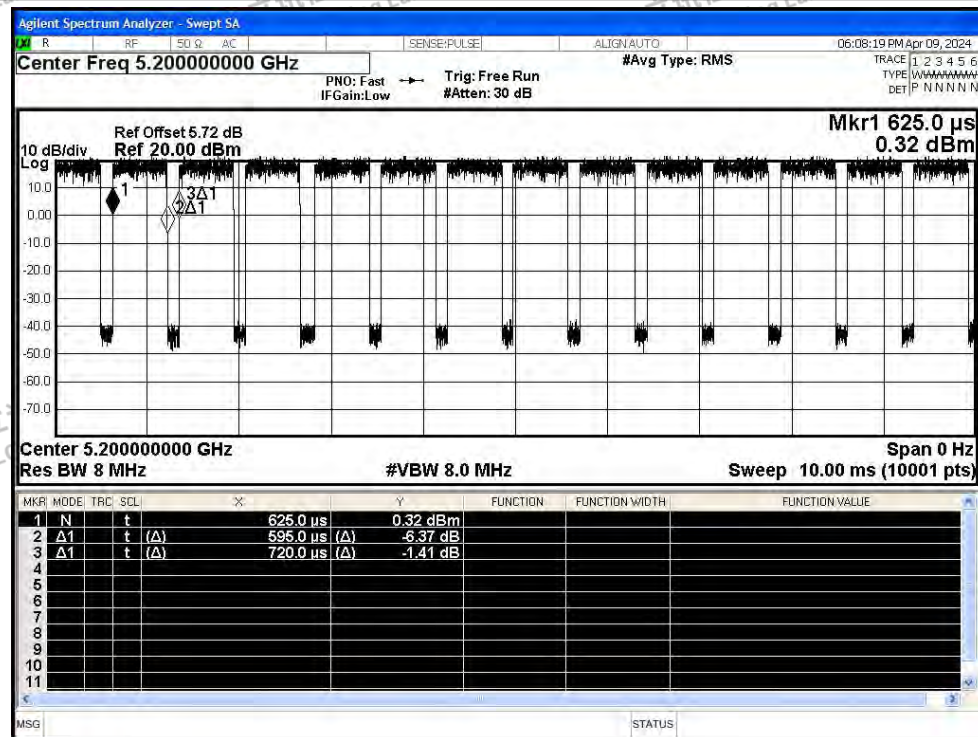


Duty Cycle NVNT n20 5180MHz Ant1

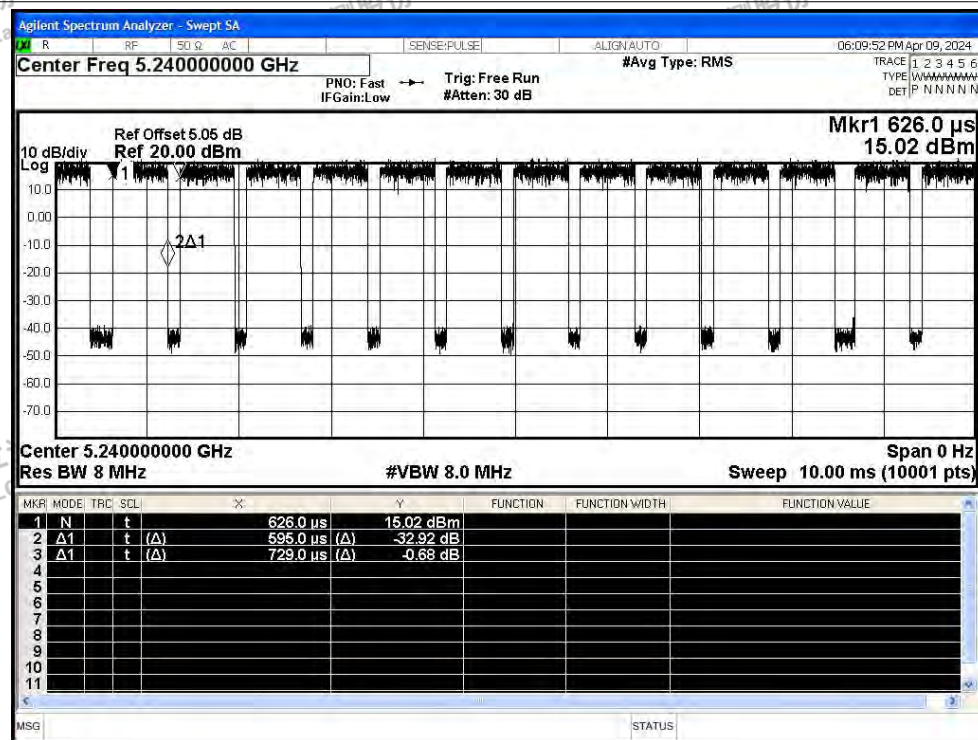




Duty Cycle NVNT n20 5200MHz Ant1

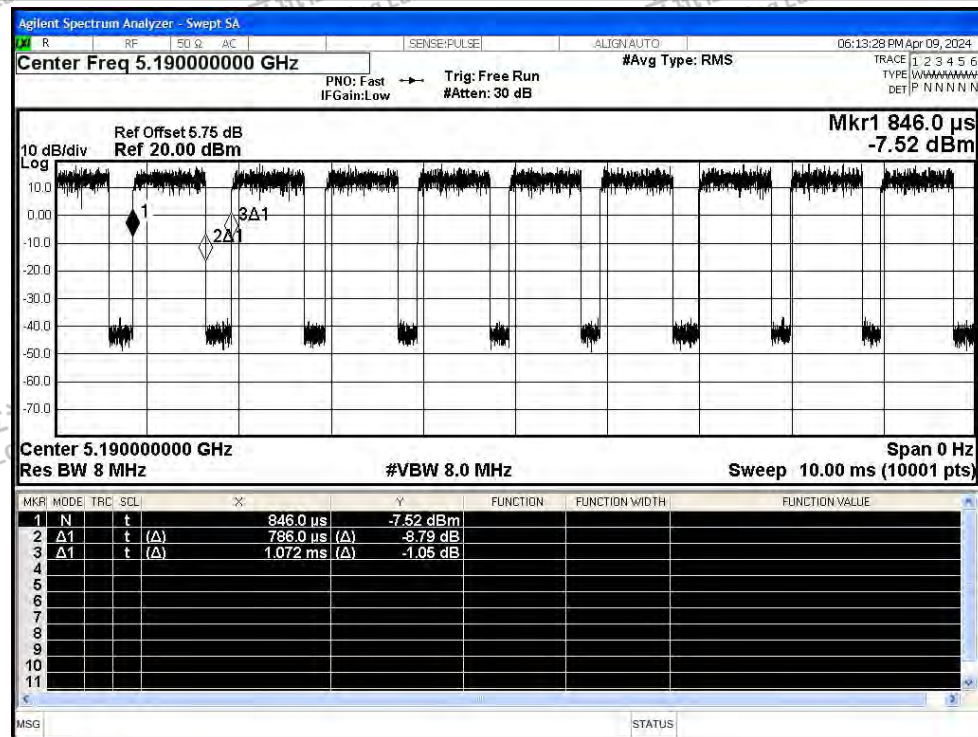


Duty Cycle NVNT n20 5240MHz Ant1





Duty Cycle NVNT n40 5190MHz Ant1



Duty Cycle NVNT n40 5230MHz Ant1

