

8. Maximum power spectral density

11.1 Applicable Standard

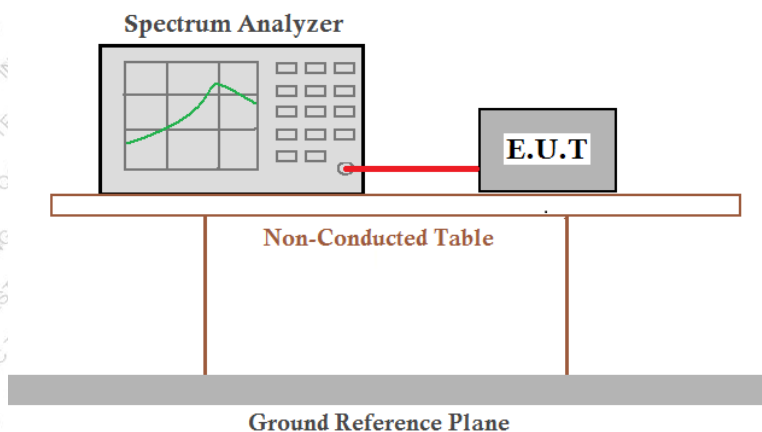
FCC Part15 E Section 15.407(a)(3)

11.2 Limit

The maximum power spectral density shall not exceed 11dBm for the 5.15-5.25GHz, 5.255-5.35GHz, 5.47-5.725 GHz Band in any 1 megahertz band.

For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500kHz band.

11.3 Test setup



11.4 Test Procedure

- Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power..."
- Use the peak search function on the instrument to find the peak of the spectrum.
- Make the following adjustments to the peak value of the spectrum, if applicable:
 - If Method SA-2 or SA-2 Alternative was used, add $10 \log(1/x)$, where x is the duty cycle, to the peak of the spectrum.
 - If Method SA-3 Alternative was used and the linear mode was used in step E)2)g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
- The result is the PSD.

11.5 Test Data

Temperature	23 °C	Humidity	52%
ATM Pressure	101.1kPa	Antenna Gain	Ant1: 0.67dBi Ant2: 0.67dBi
Test by	LBi Li	Test result	PASS



Test Result

Mode	Frequency (MHz)	Maximum PSD (dBm/MHz)	Maximum PSD (dBm/MHz)	Maximum PSD (dBm/MHz)			Maximum PSD Limit (dBm/MHz)	Verdict
		Ant1	Ant2	Ant1	Ant2	Total		
802.11a	5180	5.88	4.92	/	/	/	≤11	Pass
	5200	5.91	5.07	/	/	/	≤11	Pass
	5240	5.56	4.8	/	/	/	≤11	Pass
	5260	5.94	5.46	/	/	/	≤11	Pass
	5300	6.25	4.93	/	/	/	≤11	Pass
	5320	5.24	3.79	/	/	/	≤11	Pass
	5500	5.09	3.93	/	/	/	≤11	Pass
	5580	5.04	3.45	/	/	/	≤11	Pass
	5700	5.28	3.3	/	/	/	≤11	Pass
	5720	5.36	3.48	/	/	/	≤11	Pass
802.11n (HT20)	5180	5.79	4.86	3.53	2.62	6.11	≤11	Pass
	5200	5.68	5.1	3.44	2.96	6.22	≤11	Pass
	5240	5.17	4.82	3.11	2.29	5.73	≤11	Pass
	5260	6.05	5.34	3.49	2.72	6.13	≤11	Pass
	5300	6.11	4.69	3.57	2.45	6.06	≤11	Pass
	5320	5.07	3.68	2.49	1.25	4.92	≤11	Pass
	5500	4.8	3.67	2.5	1.11	4.87	≤11	Pass
	5580	4.99	3.5	2.6	1.18	4.96	≤11	Pass
	5700	5.34	3.06	2.67	0.69	4.8	≤11	Pass
	5720	5.42	3.1	2.68	0.89	4.89	≤11	Pass
802.11n (HT40)	5190	2.62	1.82	0.11	-1.24	2.5	≤11	Pass
	5230	2.14	1.97	-0.79	-0.34	2.45	≤11	Pass
	5270	2.38	1.69	-0.48	-0.48	2.53	≤11	Pass
	5310	2.23	1.28	-0.3	-1.78	2.03	≤11	Pass
	5510	1.14	0.7	-1.12	-2.31	1.34	≤11	Pass
	5550	1.25	0.81	-0.99	-2.35	1.39	≤11	Pass
	5670	1.55	0.08	-0.67	-2.32	1.59	≤11	Pass
	5710	1.57	-0.09	-0.6	-2.25	1.66	≤11	Pass
802.11ac (VHT20)	5180	5.79	4.85	3.21	2.7	5.97	≤11	Pass
	5200	5.51	4.93	3.7	3.11	6.43	≤11	Pass
	5240	5.3	5.02	2.86	2.38	5.64	≤11	Pass
	5260	5.79	5.19	3.25	2.78	6.03	≤11	Pass
	5300	5.84	4.83	3.93	2.44	6.26	≤11	Pass
	5320	5.31	3.81	2.38	1.32	4.89	≤11	Pass
	5500	5.17	3.76	2.29	1.06	4.73	≤11	Pass
	5580	5.09	3.79	2.72	0.86	4.9	≤11	Pass
	5700	5.35	3.15	2.53	0.87	4.79	≤11	Pass
	5720	5.01	3.05	2.82	0.89	4.97	≤11	Pass



802.11ac (VHT40)	5190	2.95	1.64	-0.33	-1.28	2.23	≤11	Pass
	5230	2.01	1.53	-0.87	-0.3	2.43	≤11	Pass
	5270	1.31	2.28	0.89	-1.38	2.91	≤11	Pass
	5310	1.41	1.7	-0.89	-1.11	2.01	≤11	Pass
	5510	0.88	0.78	-0.81	-1.93	1.68	≤11	Pass
	5550	1.17	0.7	-0.91	-2.07	1.56	≤11	Pass
	5670	1.72	0.01	-0.77	-2.07	1.64	≤11	Pass
	5710	1.26	0.03	-0.16	-2.93	1.68	≤11	Pass
802.11ac (VHT80)	5210	0.34	-0.6	-2.18	-4.33	-0.11	≤11	Pass
	5290	-0.72	-0.55	-3.08	-4.49	-0.72	≤11	Pass
	5530	-1.56	-1.93	-3.65	-4.64	-1.11	≤11	Pass
	5610	-1.02	-3.03	-3.14	-4.84	-0.9	≤11	Pass
	5690	-0.89	-2.94	-3.07	-4.68	-0.79	≤11	Pass
802.11ac (VHT160)	5250	-4.04	-4.59	-5.02	-7.2	-2.96	≤11	Pass
	5570	-3.35	-4.98	-5.79	-7.67	-3.62	≤11	Pass
802.11ax (HEW20)	5180	6.1	5.18	3.21	2.9	6.07	≤11	Pass
	5200	5.35	4.9	3.05	2.42	5.76	≤11	Pass
	5240	5.23	5.13	2.26	2.29	5.29	≤11	Pass
	5260	6.1	5.23	3.11	2.51	5.83	≤11	Pass
	5300	6.06	3.94	3.09	2	5.59	≤11	Pass
	5320	5.5	3.6	2.21	1.29	4.78	≤11	Pass
	5500	4.85	3.53	2.22	0.64	4.51	≤11	Pass
	5580	4.34	3.56	2.4	0.87	4.71	≤11	Pass
	5700	5.71	3.5	2.61	0.68	4.76	≤11	Pass
	5720	5	3.06	2.75	0.71	4.86	≤11	Pass
802.11ax (HEW40)	5190	2.65	1.37	-0.4	-1.38	2.15	≤11	Pass
	5230	1.88	1.45	0.61	-1.83	2.57	≤11	Pass
	5270	1.31	0.57	-0.87	-0.82	2.17	≤11	Pass
	5310	0.97	0.69	-1.28	-1.54	1.6	≤11	Pass
	5510	1.68	0.29	-0.85	-2.12	1.57	≤11	Pass
	5550	0.54	0.1	-1.1	-2.31	1.35	≤11	Pass
	5670	1.85	-0.31	-0.52	-2.35	1.67	≤11	Pass
	5710	1.56	-0.44	-0.32	-2.72	1.65	≤11	Pass
802.11ax (HEW80)	5210	-1.5	-1.27	-2.32	-4.48	-0.26	≤11	Pass
	5290	-0.85	-1.62	-3.16	-4.03	-0.56	≤11	Pass
	5530	-1.89	-2.68	-4.07	-5.16	-1.57	≤11	Pass
	5610	-0.72	-3.25	-2.96	-5.73	-1.12	≤11	Pass
	5690	-1.11	-3.16	-2.89	-5.13	-0.86	≤11	Pass
802.11ax (HEW160)	5250	-4.15	-4.66	-5.58	-6.87	-3.17	≤11	Pass
	5570	-3.87	-5.34	-5.88	-7.08	-3.43	≤11	Pass

Remark:1. $PSD_{SUM} = 10 \cdot \log(10^{PSD_{ANT1/10}} + 10^{PSD_{ANT2/10}})$

2. Maximum PSD=Measured PSD+Duty Factor



3. Line loss and duty factor have been added to the map
4. For MIMO devices refer to KDB Publication 662911 D01.

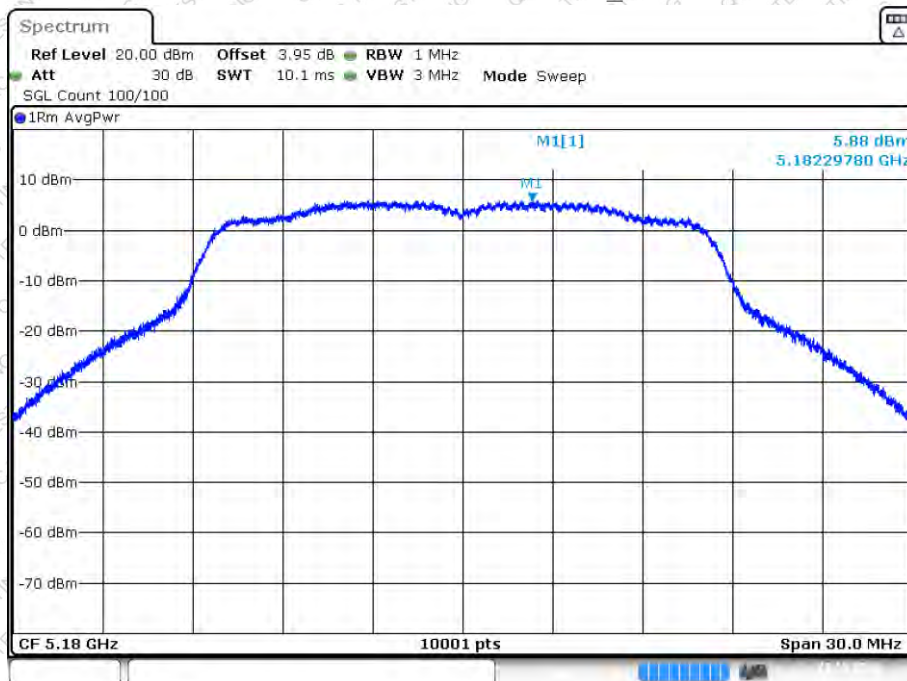
Mode	Frequency (MHz)	Maximum PSD (dBm/500kHz)	Maximum PSD (dBm/500kHz)	Maximum PSD (dBm/500kHz)			Maximum PSD Limit (dBm/500kHz)	Verdict
		Ant1	Ant2	Ant1	Ant2	Total		
802.11a	5745	3.44	2.93	/	/	/	≤30	Pass
	5785	3.32	3.49	/	/	/	≤30	Pass
	5825	3.48	3.49	/	/	/	≤30	Pass
802.11n (HT20)	5745	2.43	2.34	-0.14	-1.01	2.46	≤30	Pass
	5785	3.26	3.67	0.41	-0.81	2.85	≤30	Pass
	5825	3.74	3.09	0.52	-0.78	2.93	≤30	Pass
802.11n (HT40)	5755	-0.41	-0.75	-3.41	-4.44	-0.88	≤30	Pass
	5795	-0.83	-1.2	-3.46	-3.96	-0.69	≤30	Pass
802.11ac (VHT20)	5745	3.17	2.22	-0.03	-0.73	2.64	≤30	Pass
	5785	2.96	3.13	0.27	-0.89	2.74	≤30	Pass
	5825	3.59	3.04	0.33	-1.17	2.65	≤30	Pass
802.11ac (VHT40)	5755	-0.67	-0.79	-3.46	-4.38	-0.89	≤30	Pass
	5795	-0.72	-1.19	-3.31	-3.86	-0.57	≤30	Pass
802.11ac (VHT80)	5775	-3.65	-3.33	-6.65	-7.17	-3.89	≤30	Pass
802.11ax (VHT20)	5745	2.73	2.6	-0.22	-1.26	2.3	≤30	Pass
	5785	2.9	3.21	0.13	-1.15	2.55	≤30	Pass
	5825	3.04	2.92	0.47	-1.06	2.78	≤30	Pass
802.11ax (VHT40)	5755	-1.38	-1.48	-3.68	-4.9	-1.24	≤30	Pass
	5795	-1.2	-1.35	-3.7	-4.38	-1.02	≤30	Pass
802.11ax (VHT80)	5775	-3.58	-4.22	-6.74	-7.32	-4.01	≤30	Pass

Remark:

1. $PSD_{SUM} = 10 \cdot \log(10^{(PSD_{ANT1}/10)} + 10^{(PSD_{ANT2}/10)})$
2. Maximum PSD=Measured PSD+Duty Factor
3. Line loss and duty factor have been added to the map
4. For MIMO devices refer to KDB Publication 662911 D01.

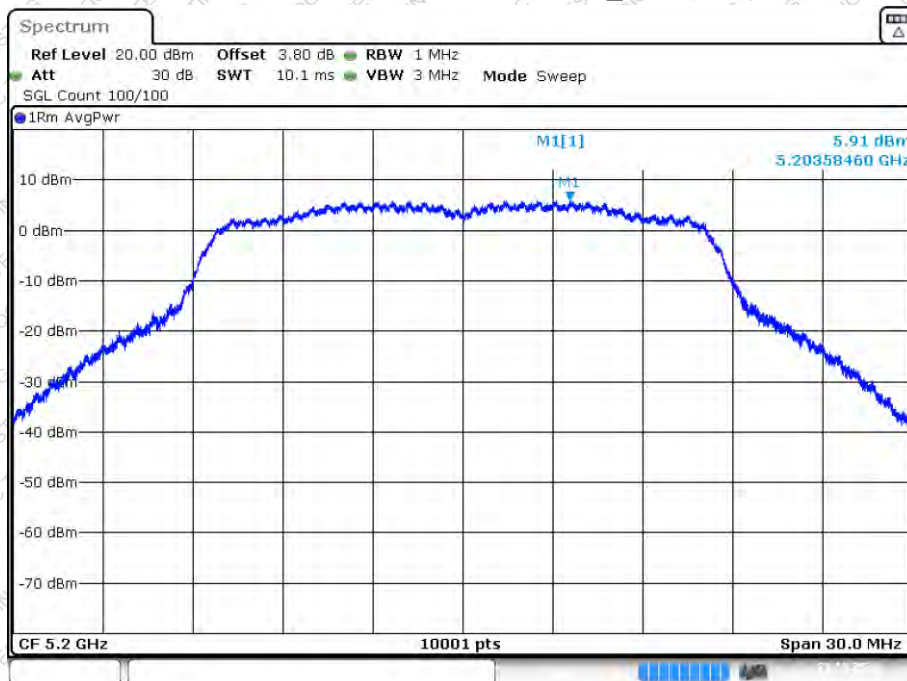


PSD NVNT a 5180MHz Ant1_SISO



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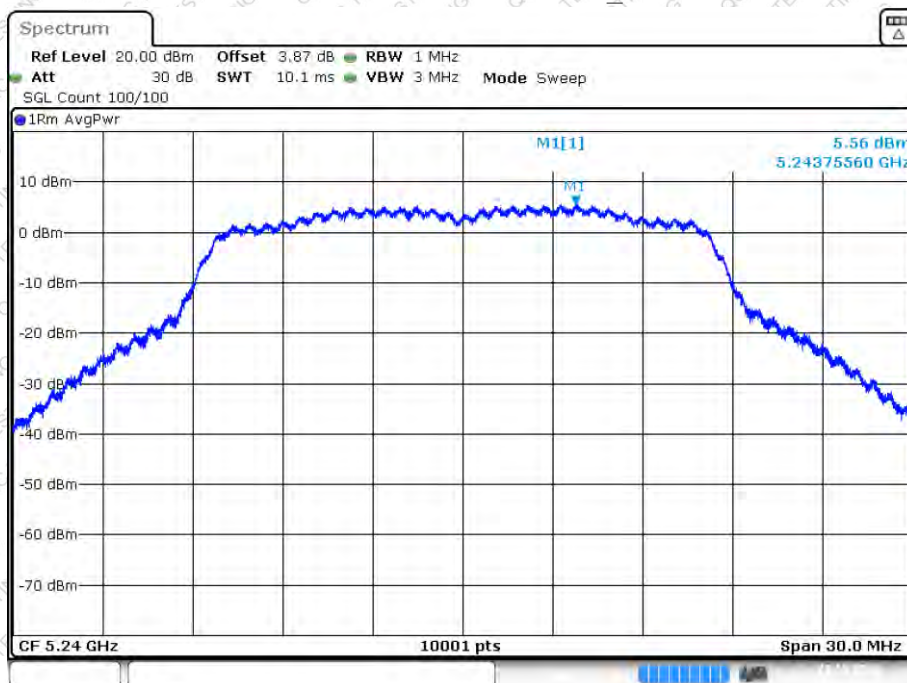
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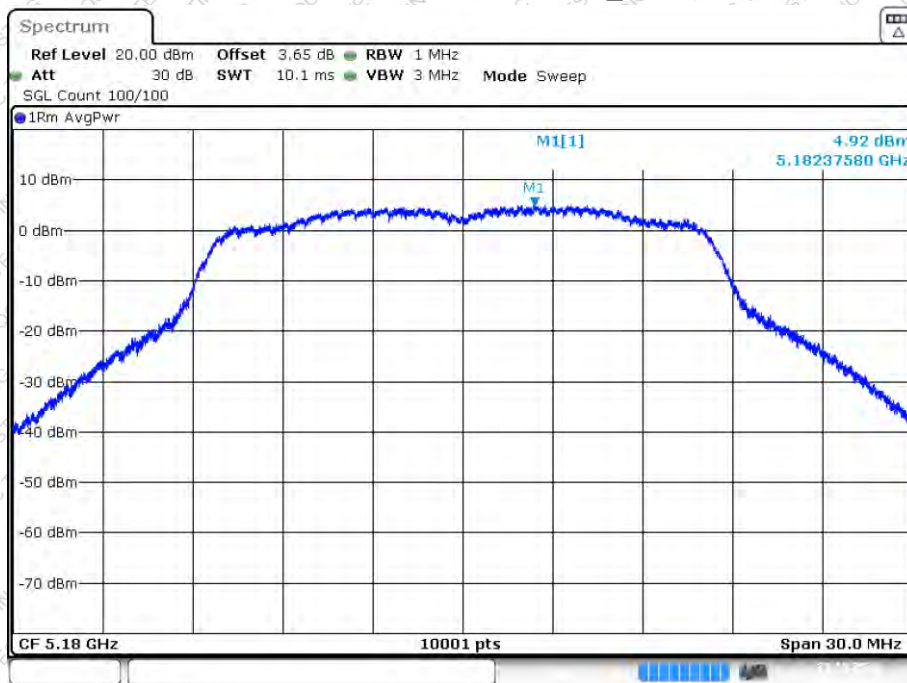


PSD NVNT a 5240MHz Ant1_SISO



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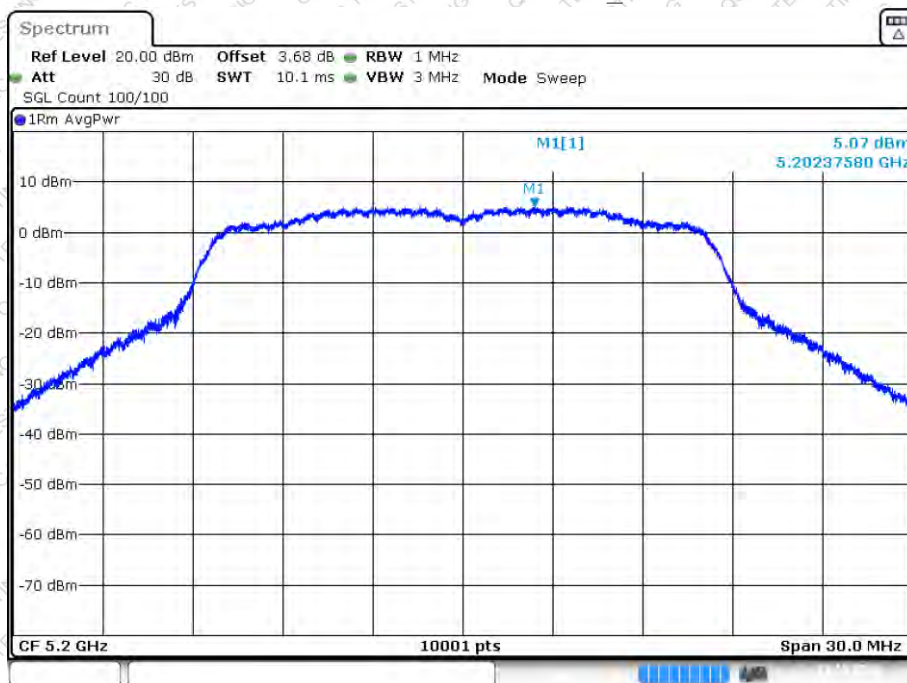
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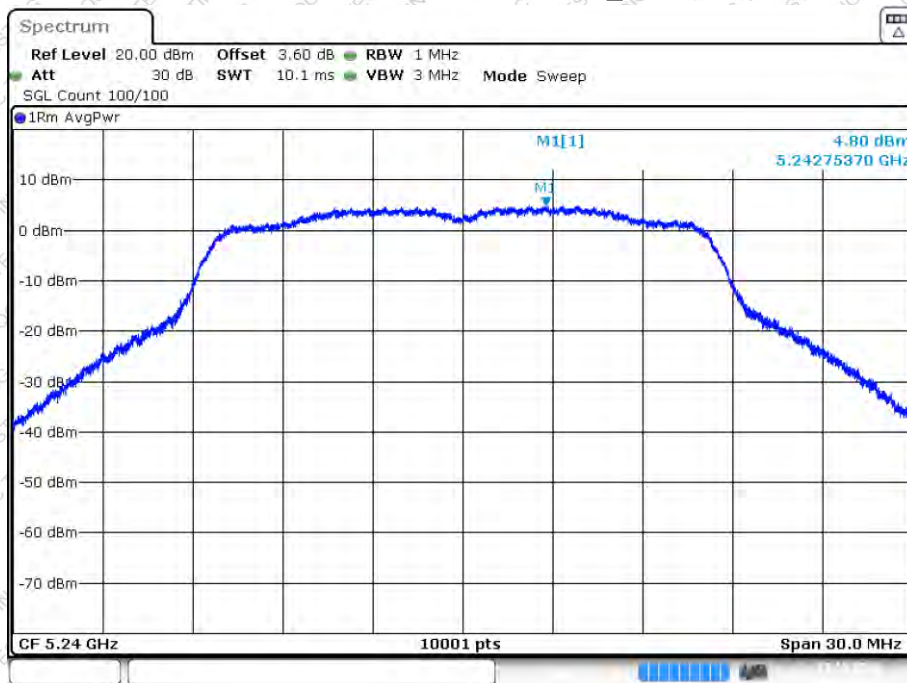


PSD NVNT a 5200MHz Ant2_SISO



Date: 23.OCT 2024 17:35:37

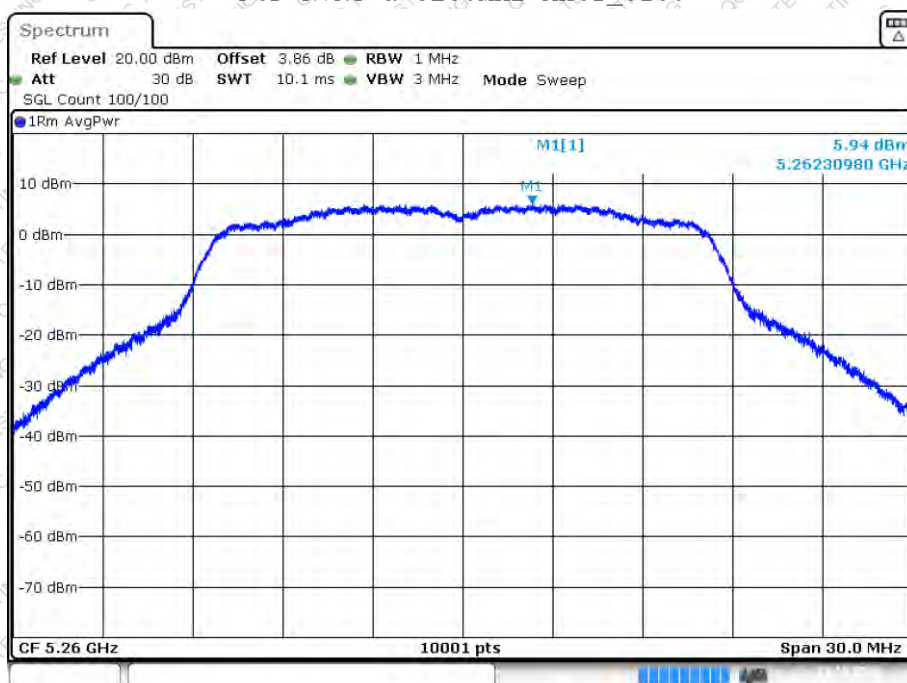
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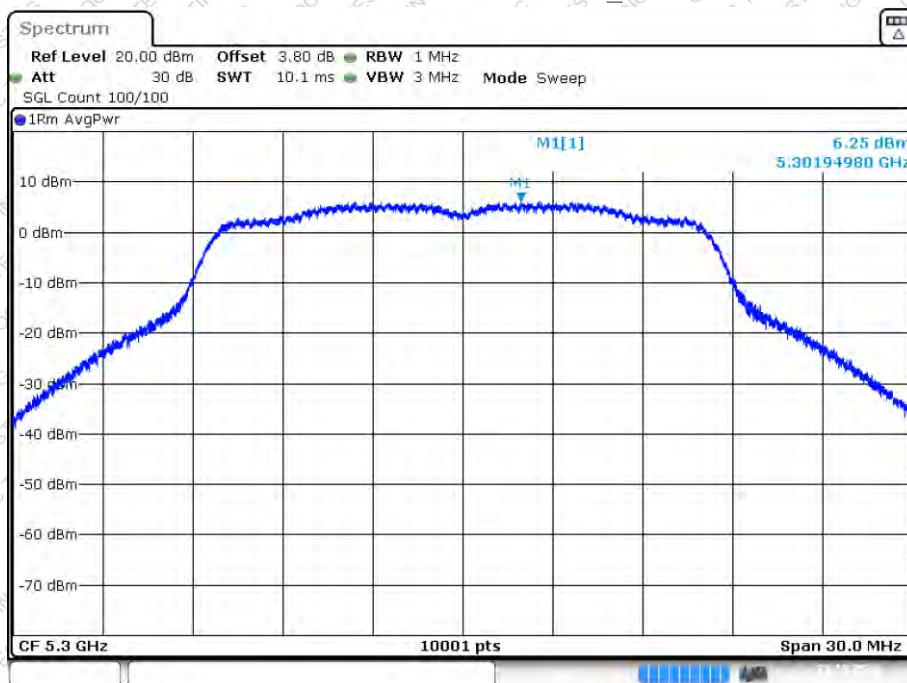


PSD NVNT a 5260MHz Ant1_SISO



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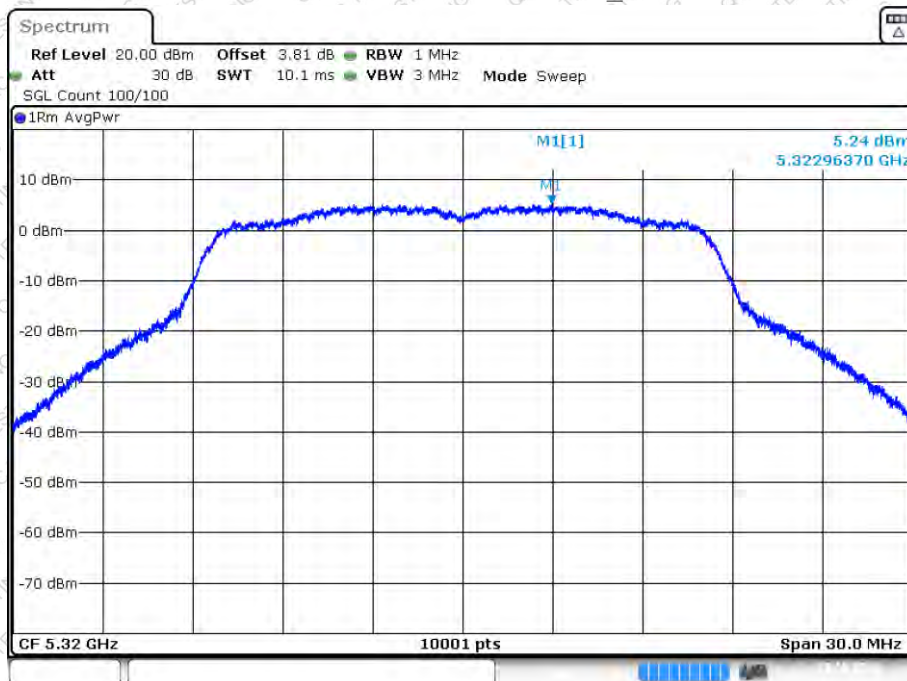
PSD NVNT a 5300MHz Ant1_SISO



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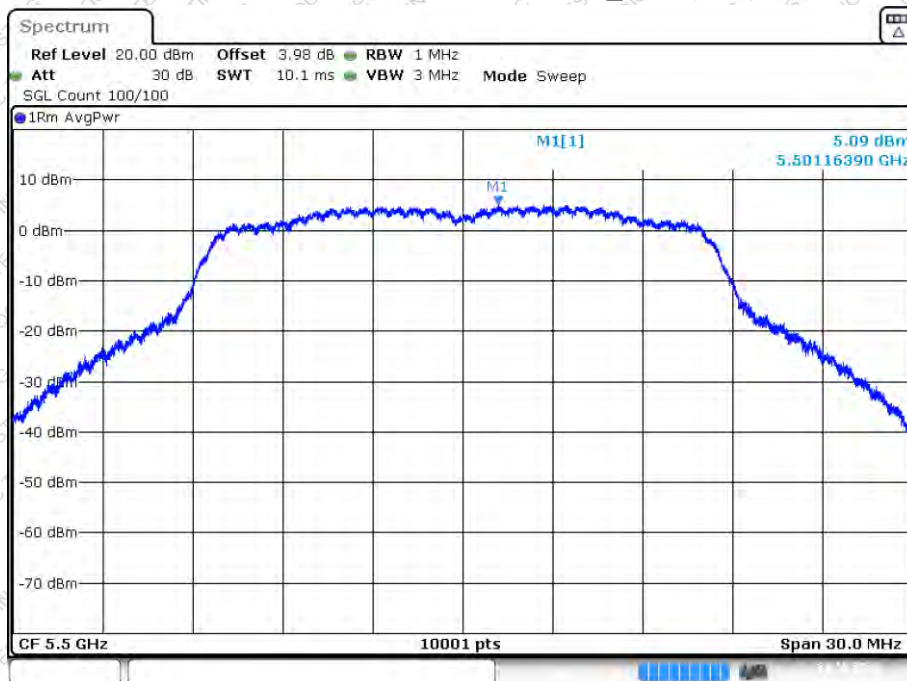


PSD NVNT a 5320MHz Ant1_SISO



Date: 28.OCT.2024 07:55:12

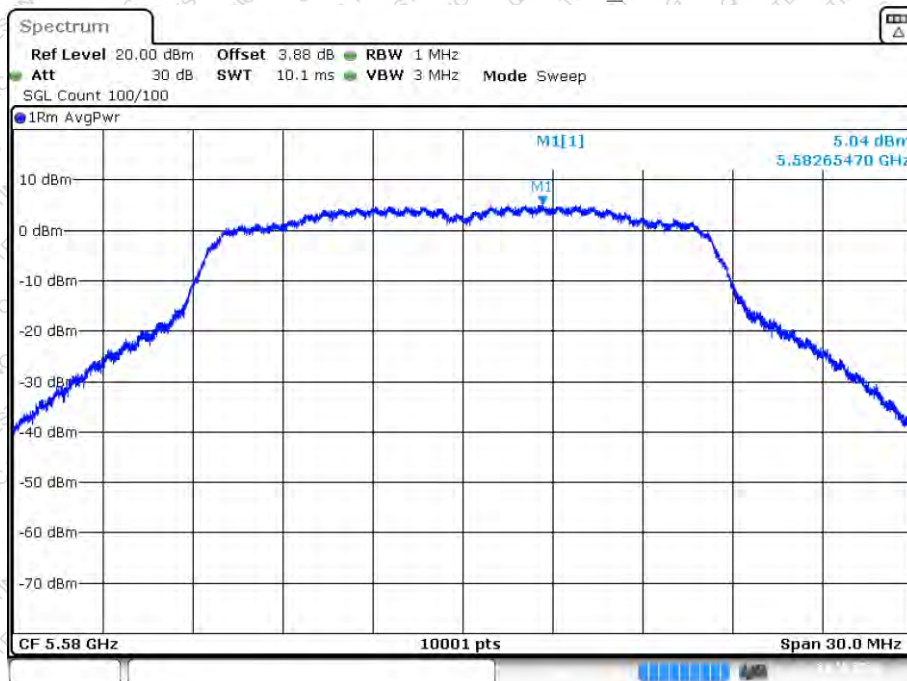
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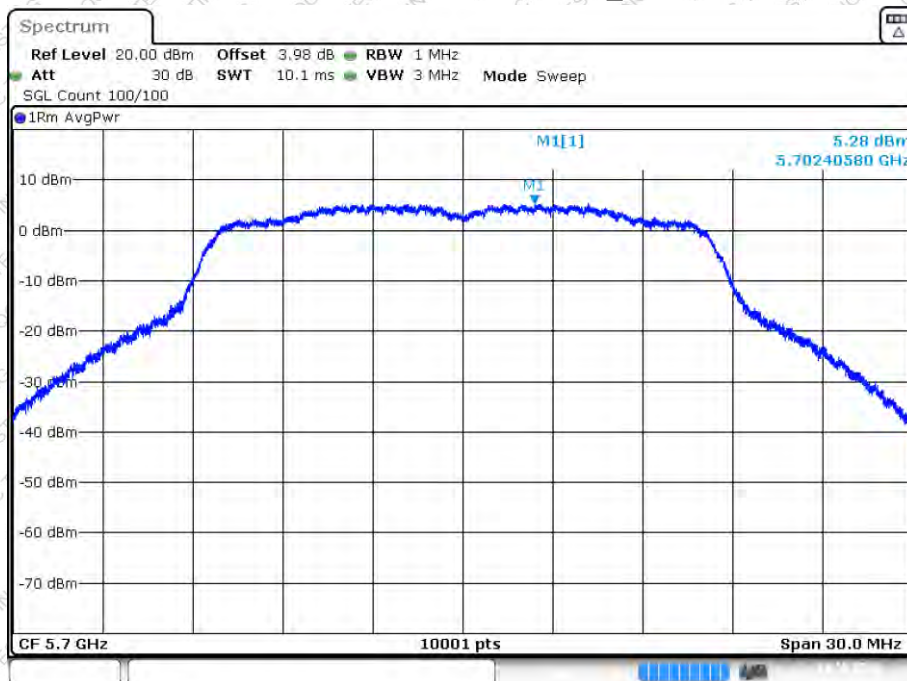


PSD NVNT a 5580MHz Ant1_SISO



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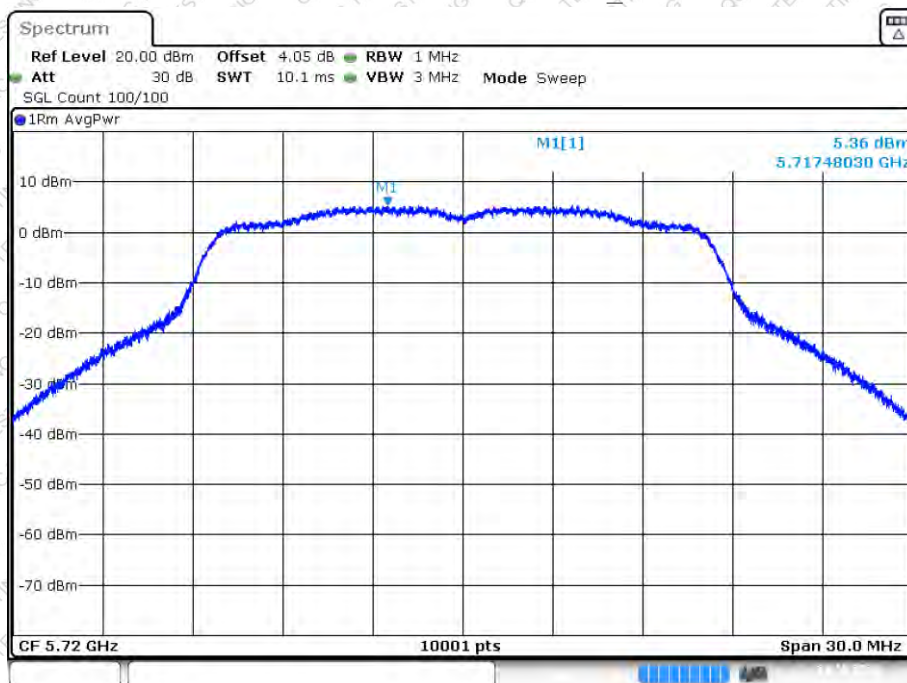
PSD NVNT a 5700MHz Ant1_SISO



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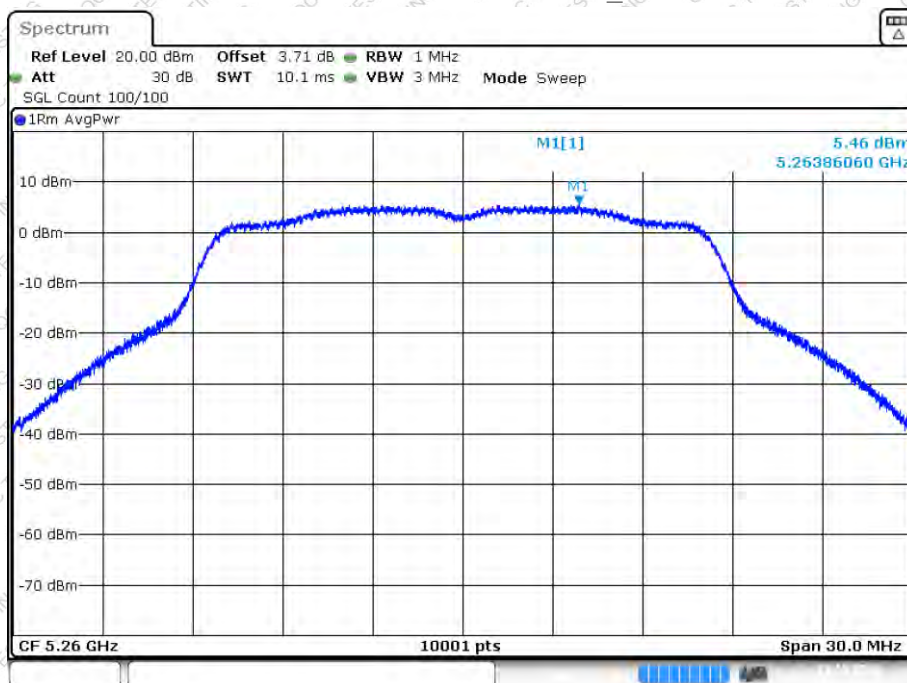


PSD NVNT a 5720MHz Ant1_SISO



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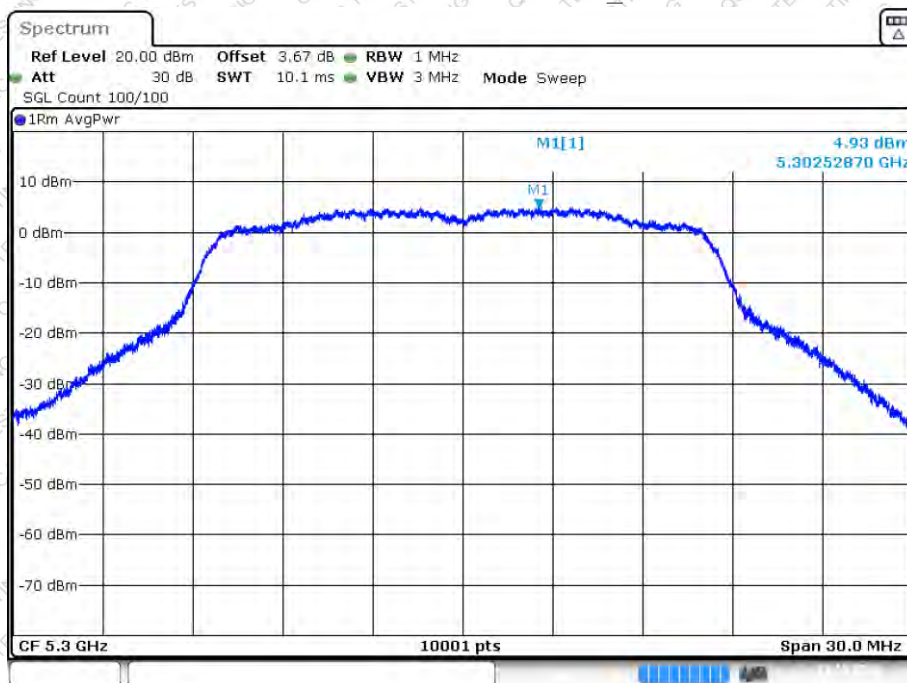
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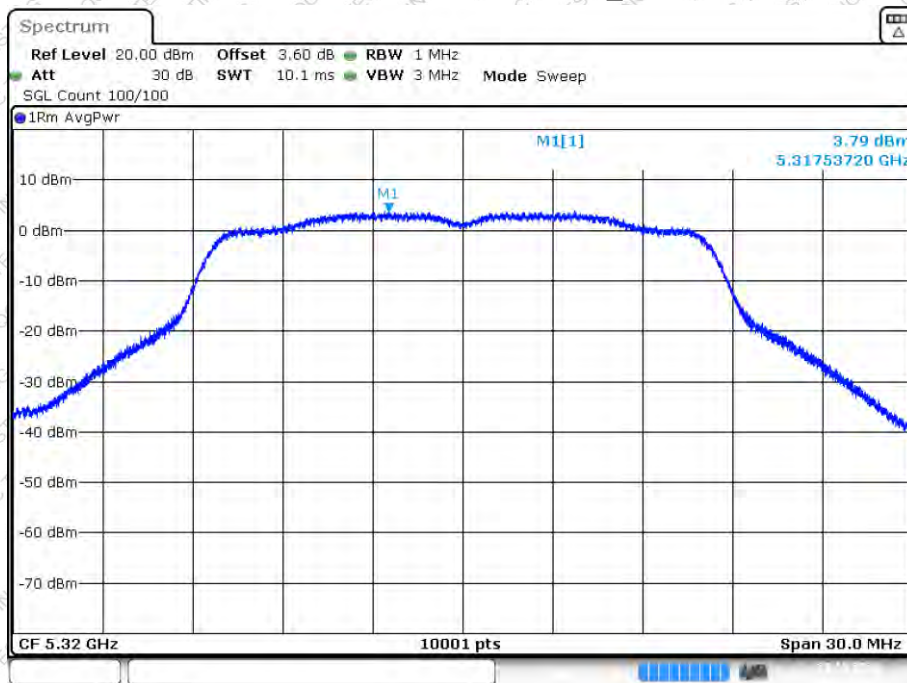


PSD NVNT a 5300MHz Ant2_SISO



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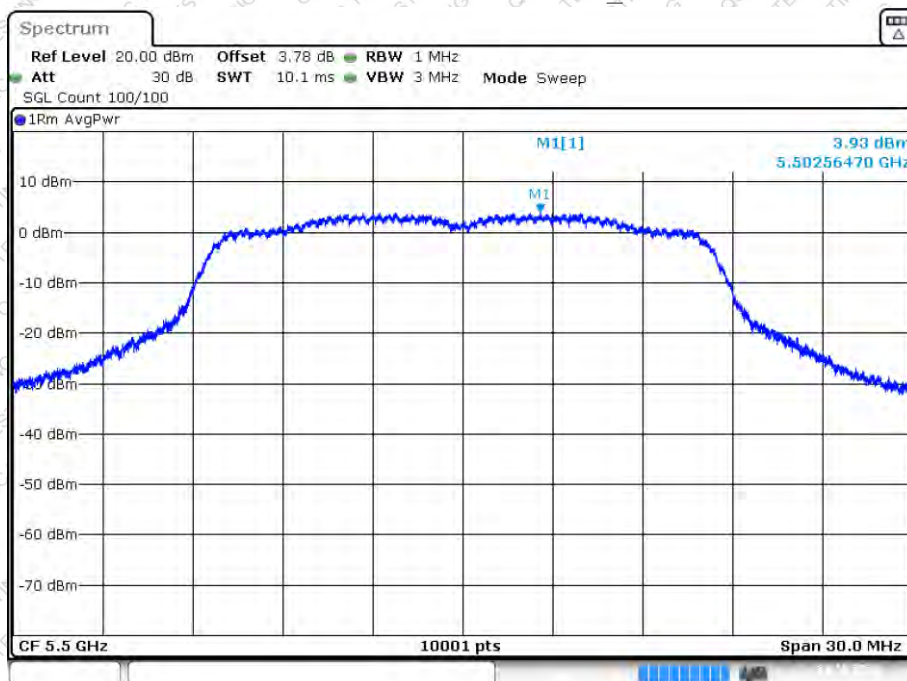
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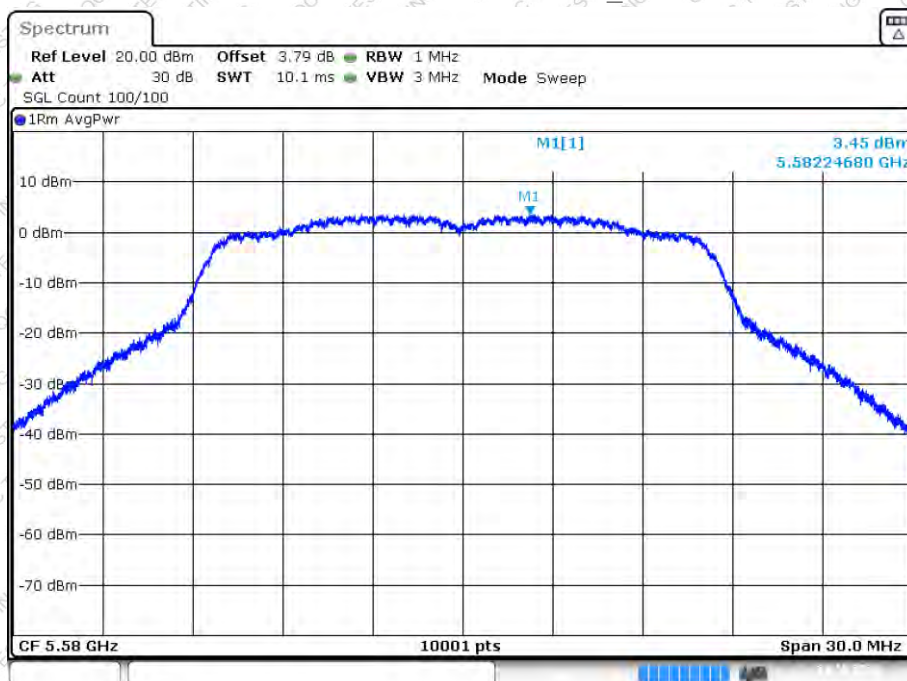


PSD NVNT a 5500MHz Ant2_SISO



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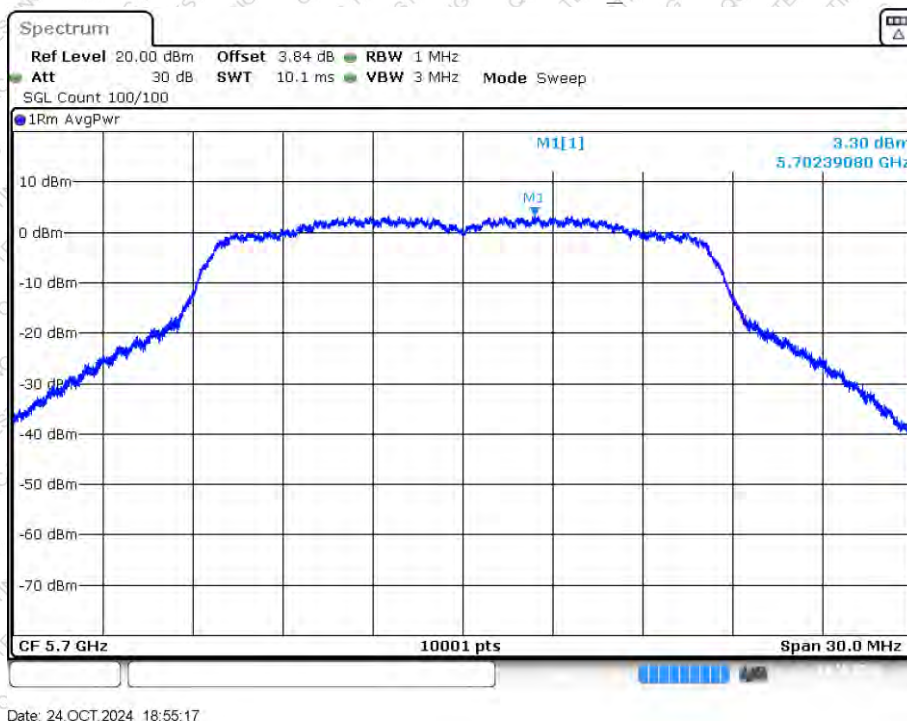
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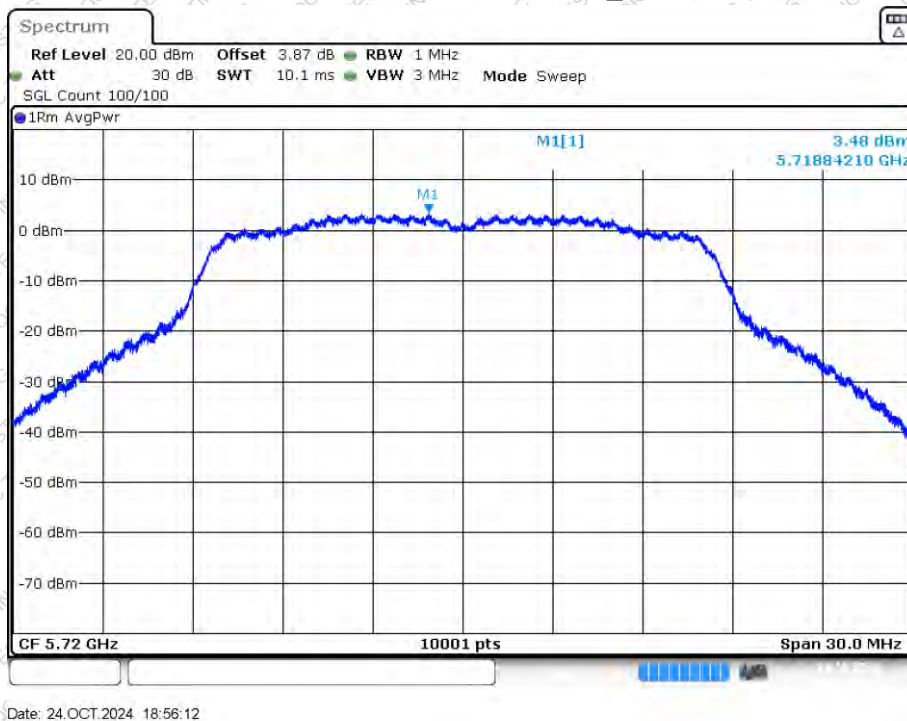
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PSD NVNT a 5700MHz Ant2_SISO

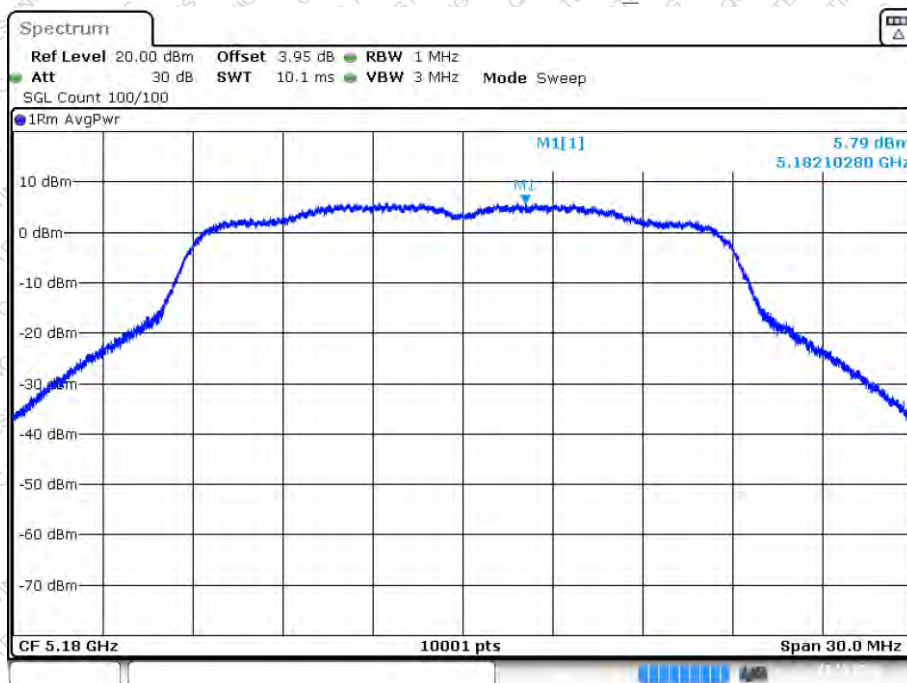


PSD NVNT a 5720MHz Ant2_SISO



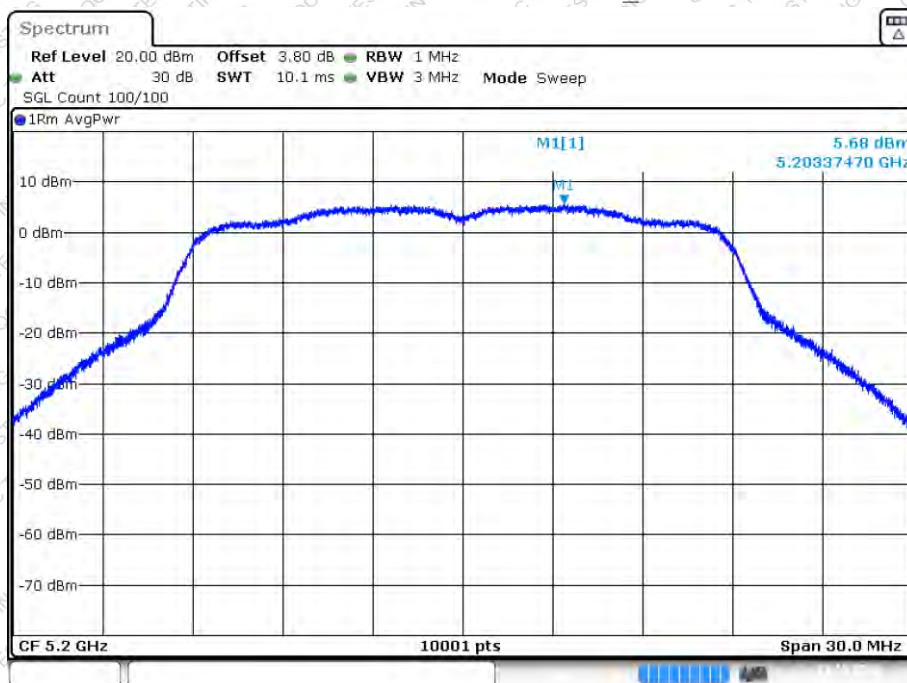


PSD NVNT n20 5180MHz Ant1_SISO



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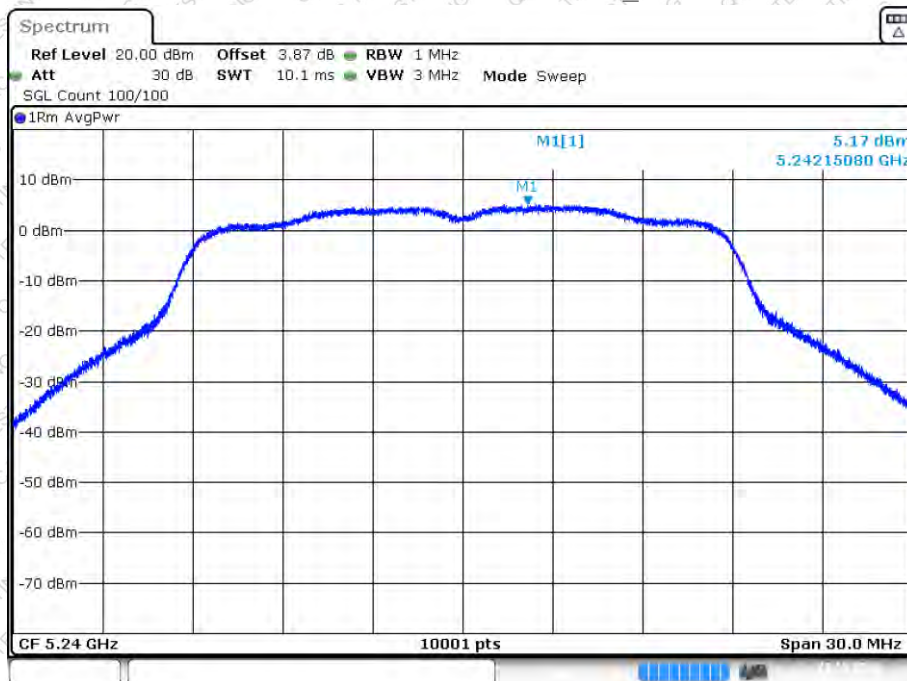
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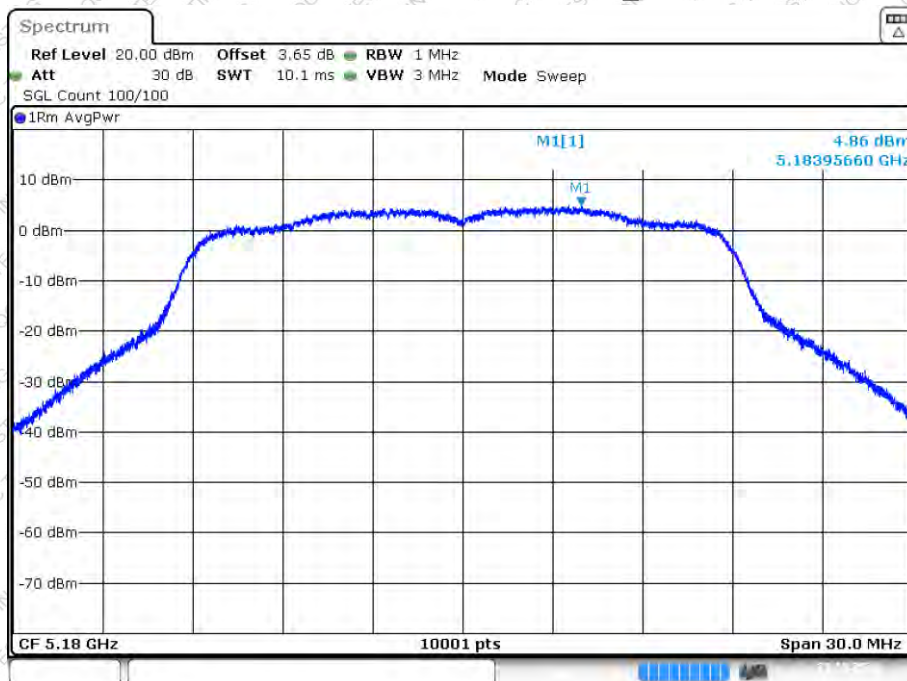


PSD NVNT n20 5240MHz Ant1_SISO



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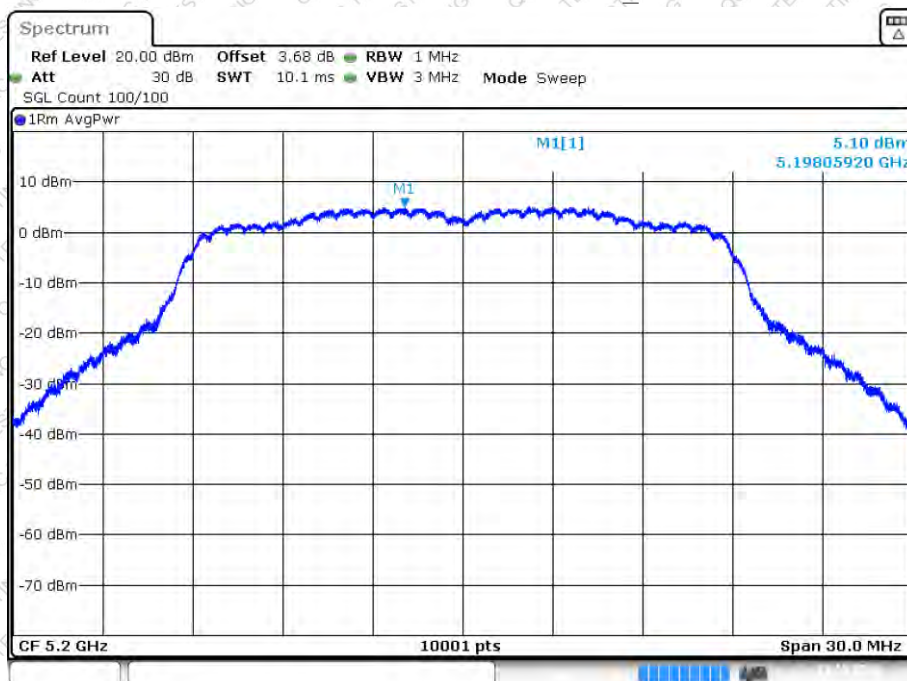
PSD NVNT n20 5180MHz Ant2_SISO



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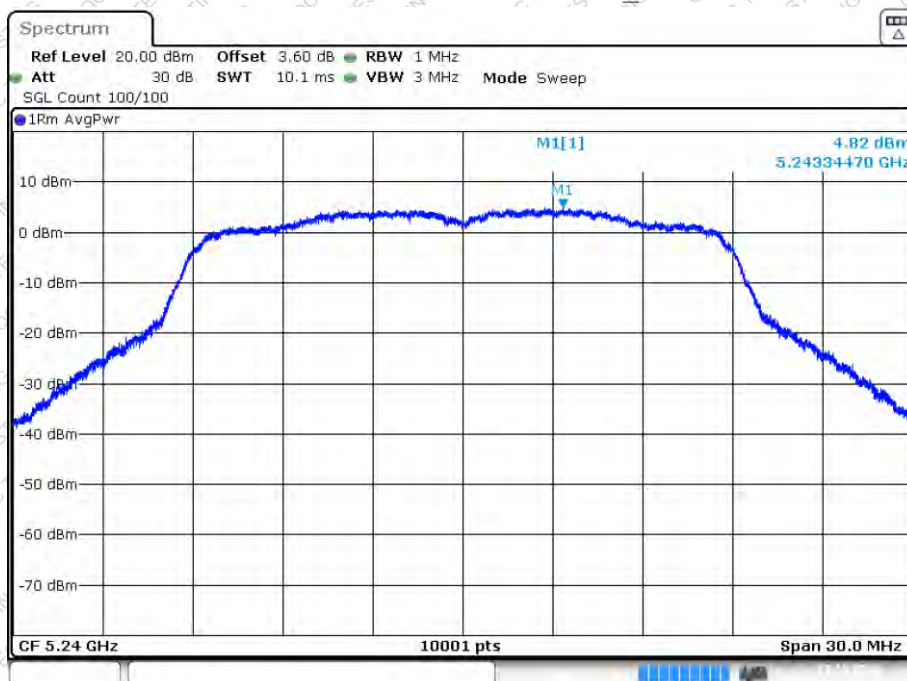


PSD NVNT n20 5200MHz Ant2_SISO



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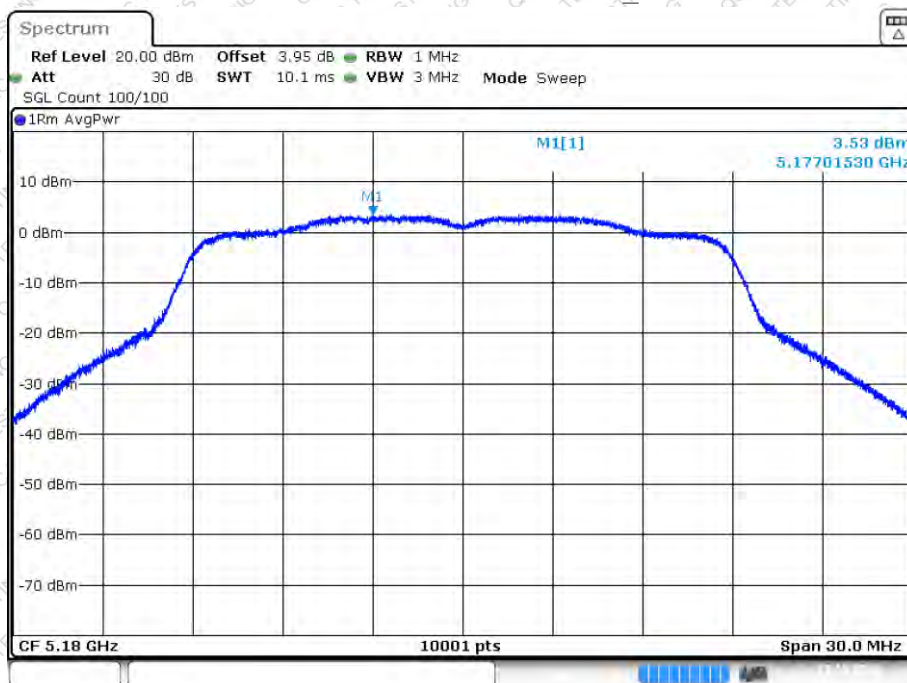
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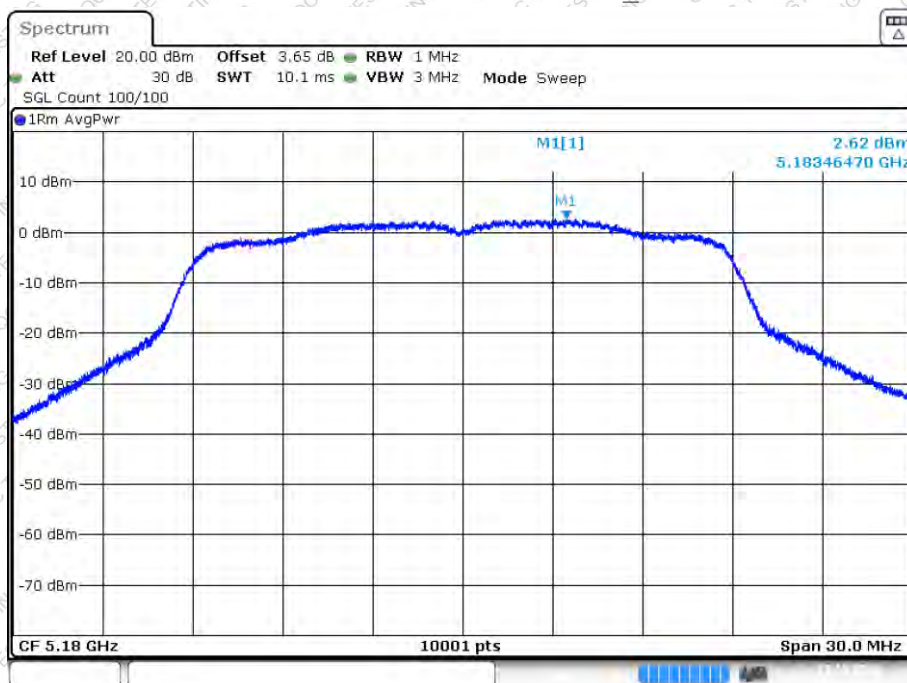


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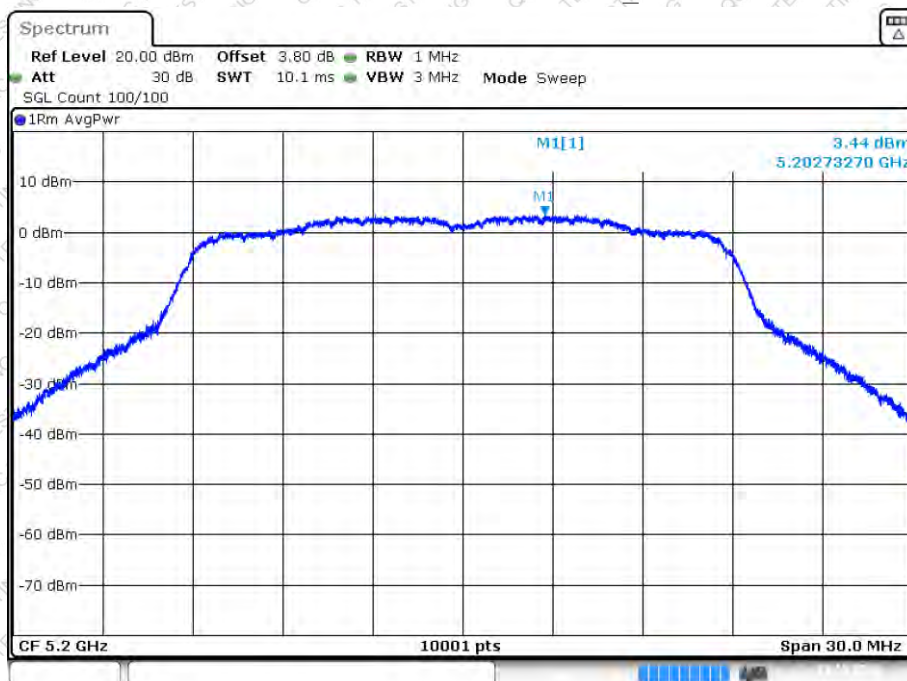
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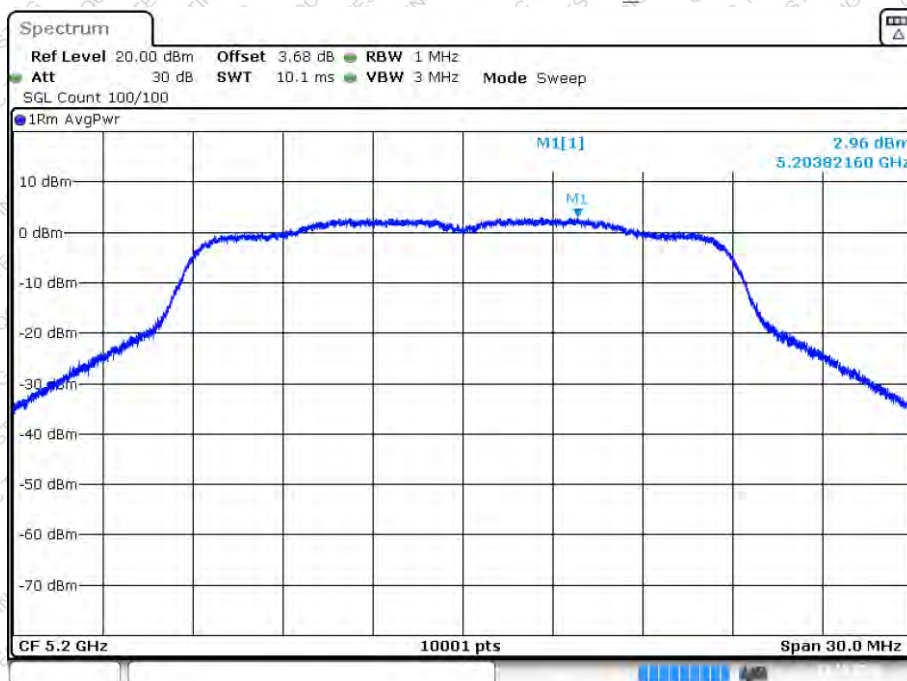


PSD NVNT n20 5200MHz Ant1_MIMO



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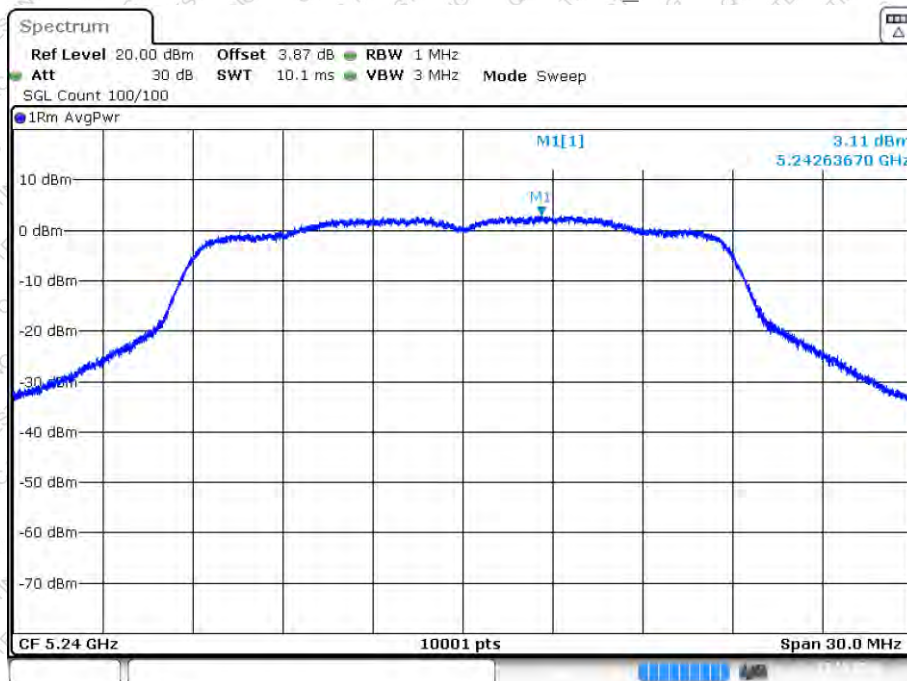
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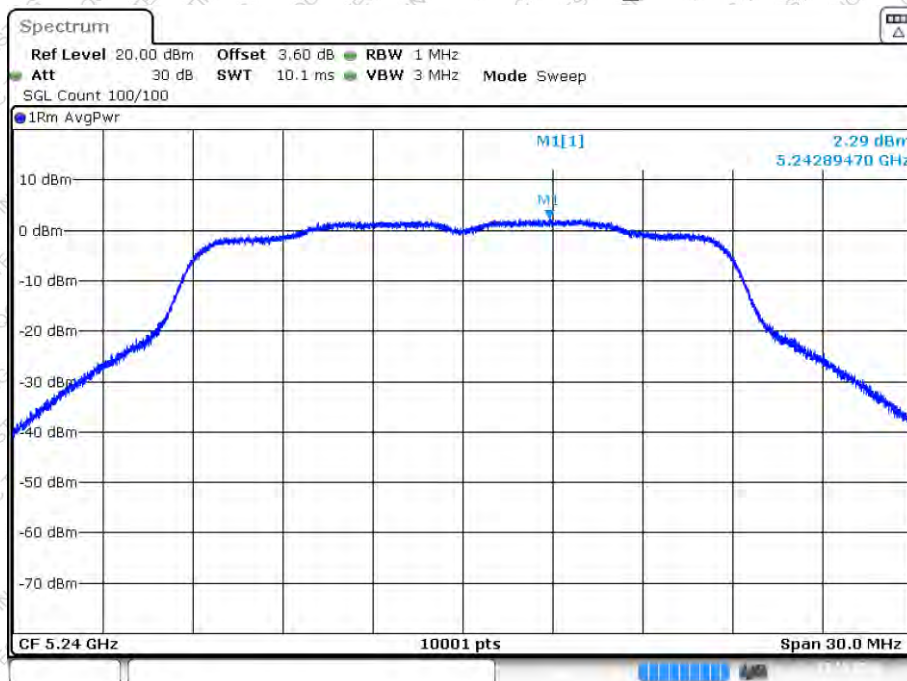


PSD NVNT n20 5240MHz Ant1_MIMO



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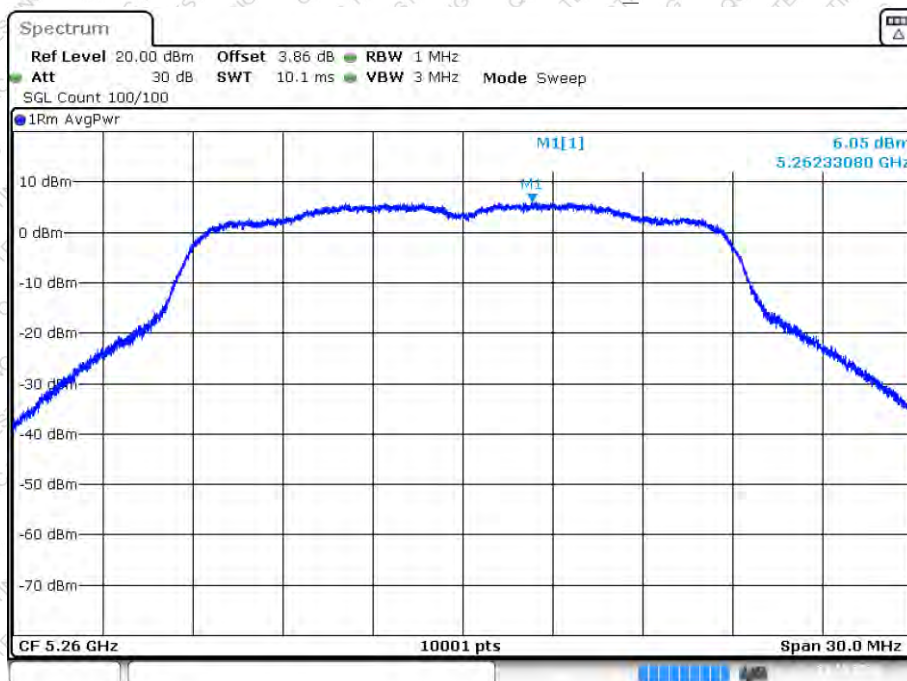
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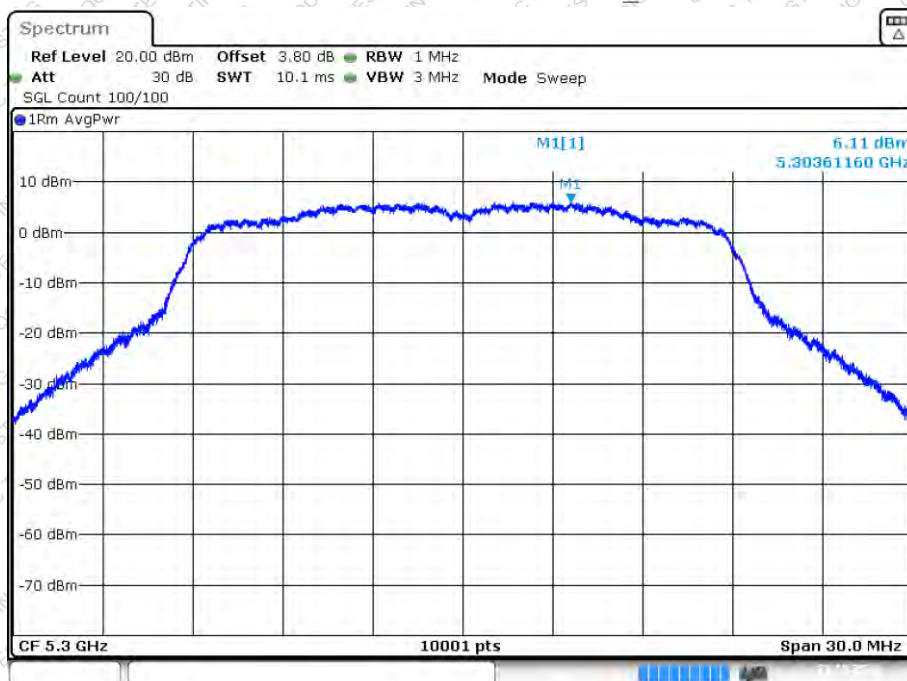


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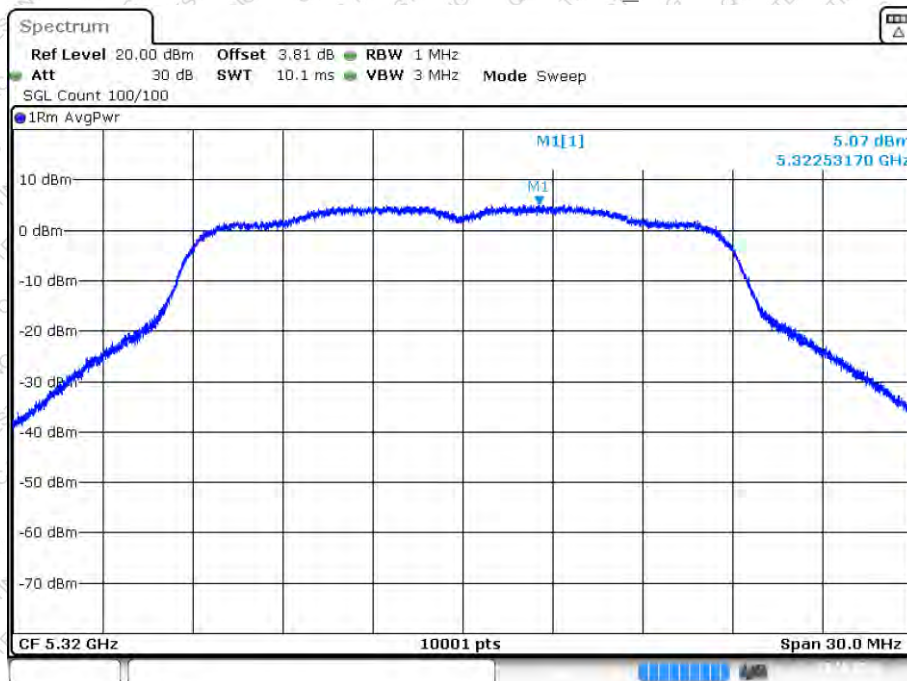
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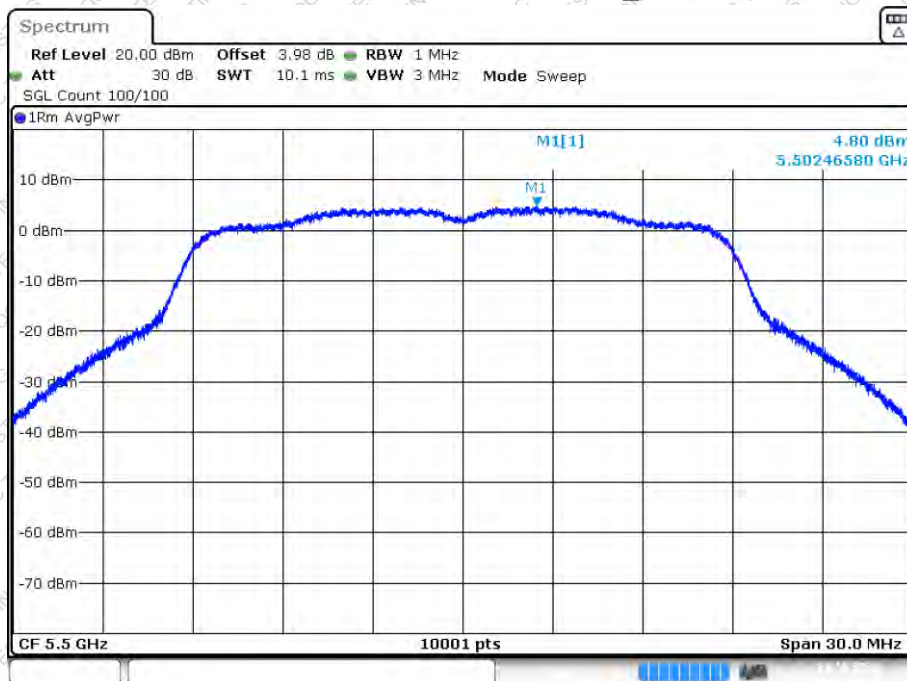


PSD NVNT n20 5320MHz Ant1_SISO



Date: 28.OCT.2024 07:58:19

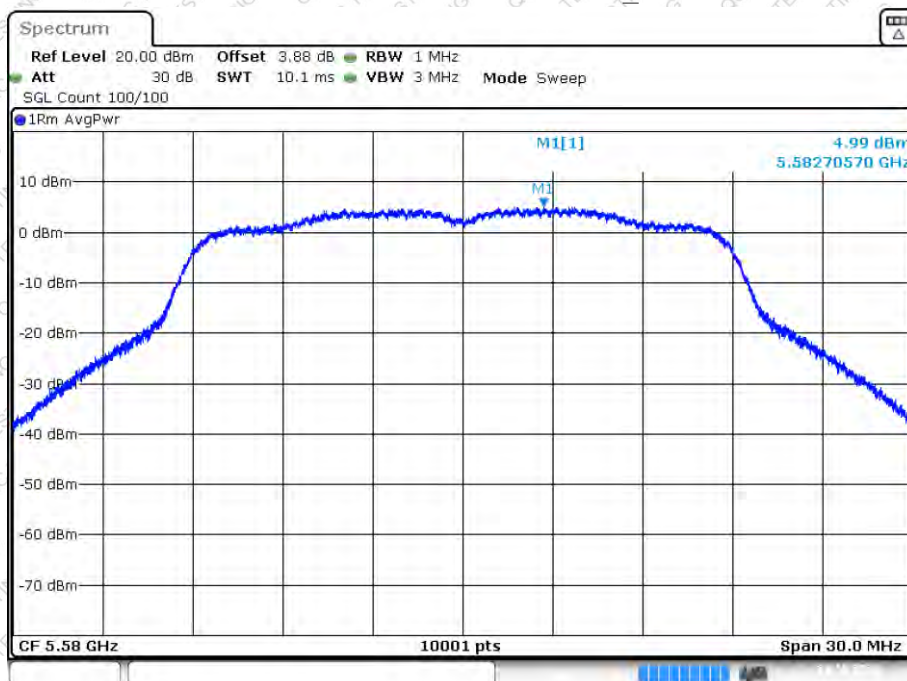
PSD NVNT n20 5500MHz Ant1_SISO



Date: 24.OCT.2024 16:53:52

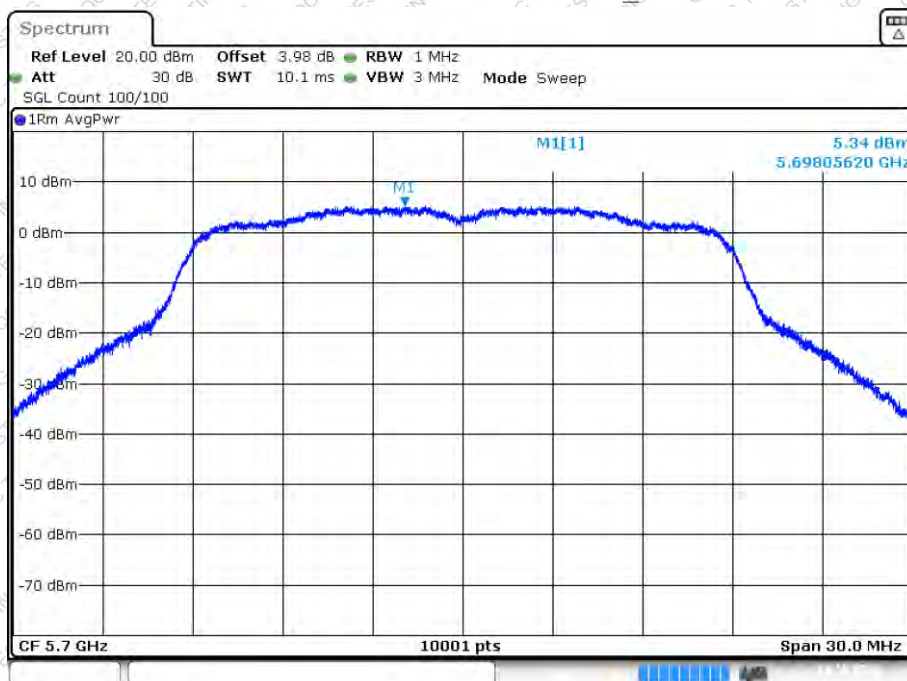


PSD NVNT n20 5580MHz Ant1_SISO



Date: 24.OCT.2024 16:55:22

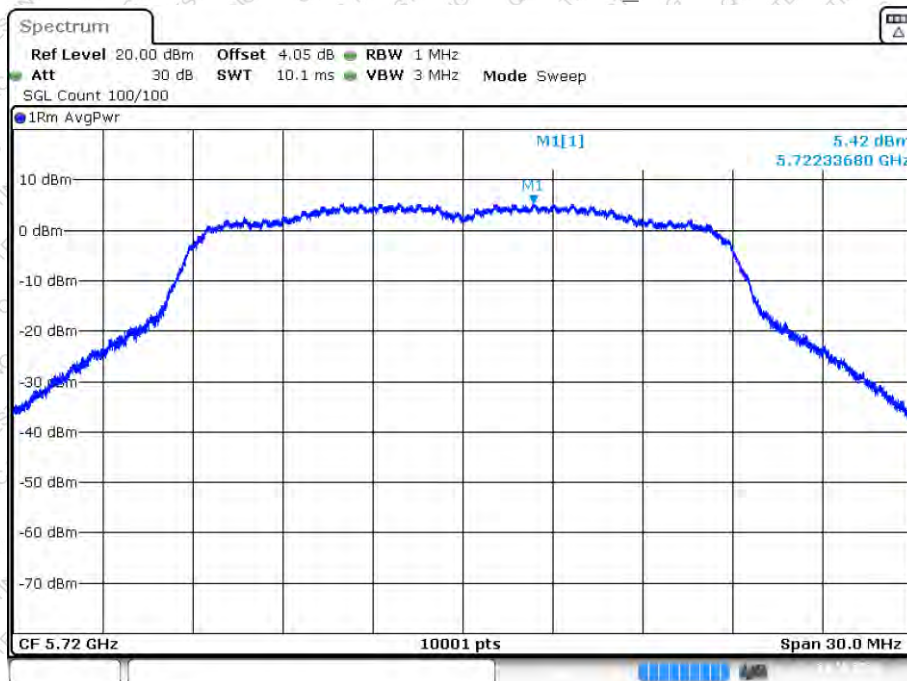
PSD NVNT n20 5700MHz Ant1_SISO



Date: 24.OCT.2024 16:57:23

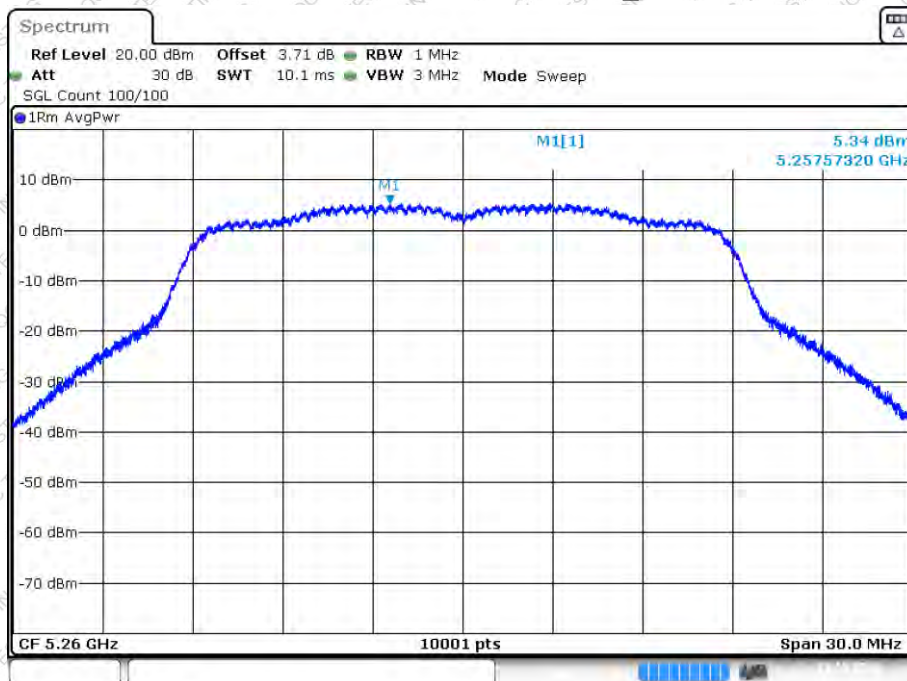


PSD NVNT n20 5720MHz Ant1_SISO



Date: 24.OCT.2024 16:58:51

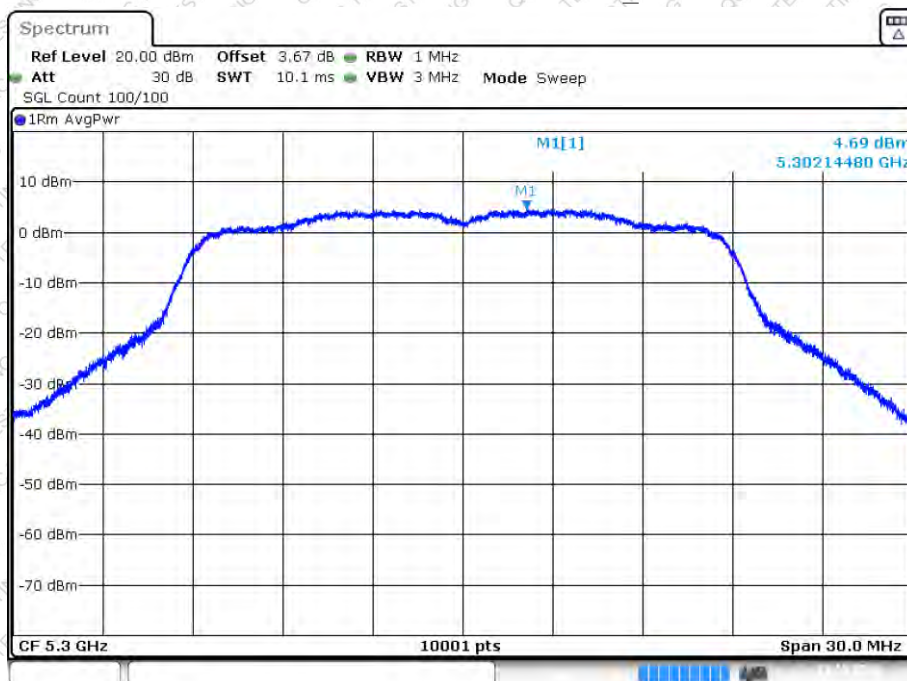
PSD NVNT n20 5260MHz Ant2_SISO



Date: 23.OCT.2024 17:42:28

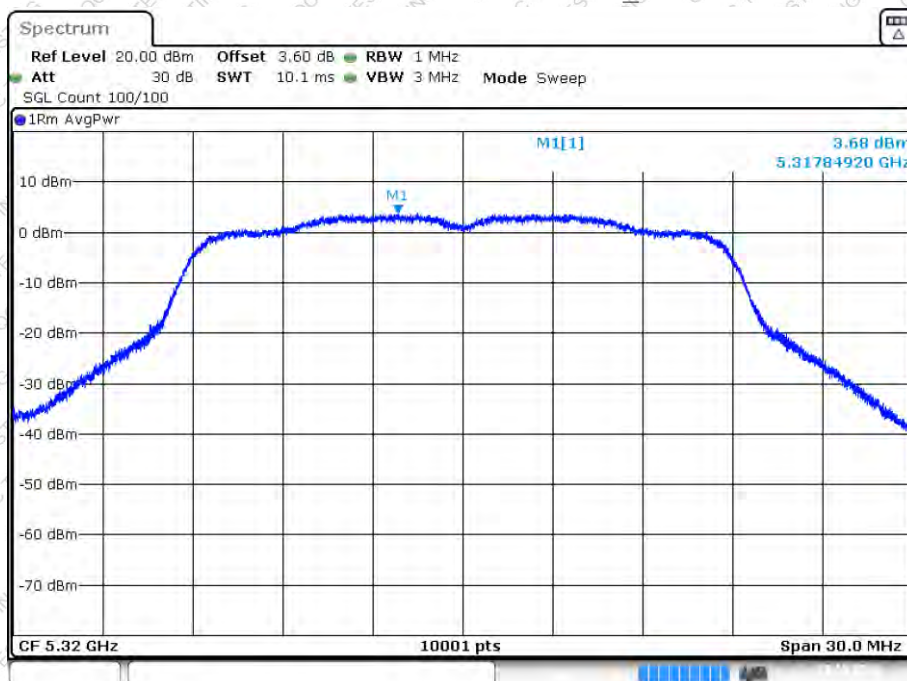


PSD NVNT n20 5300MHz Ant2_SISO



Date: 23.OCT 2024 17:43:30

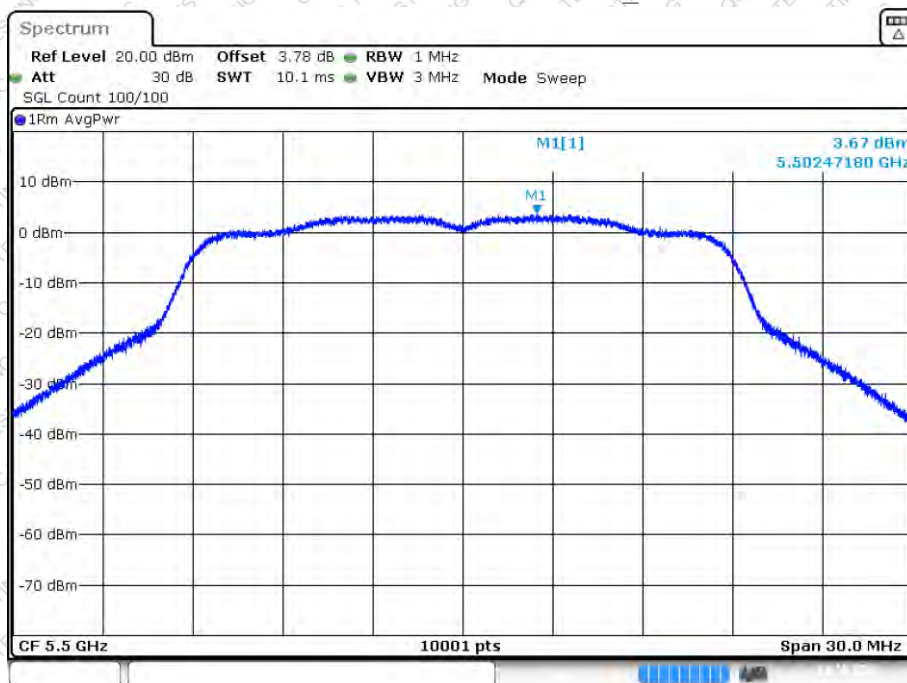
PSD NVNT n20 5320MHz Ant2_SISO



Date: 28.OCT 2024 08:04:43

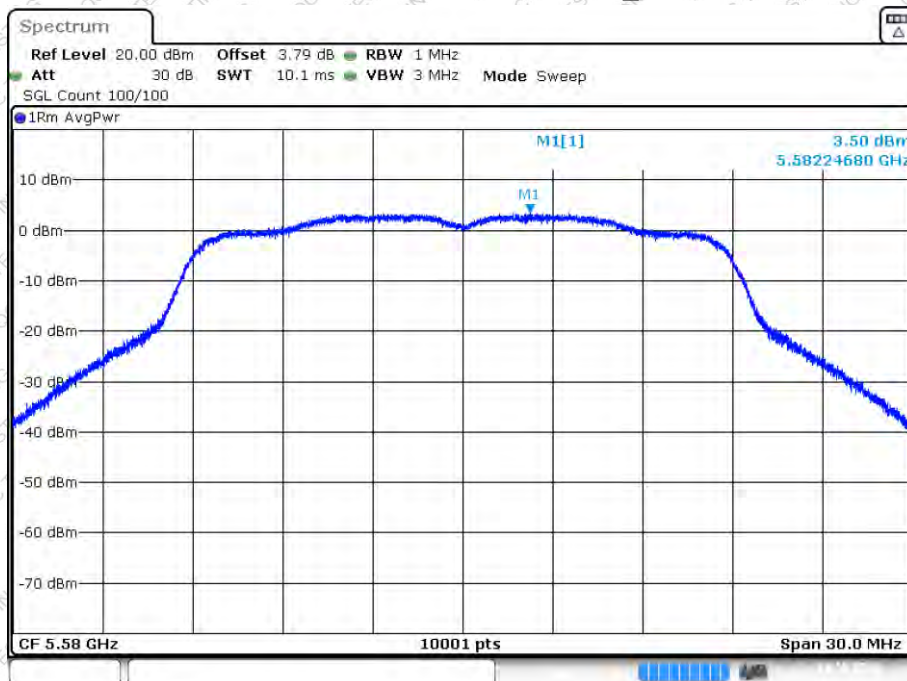


PSD NVNT n20 5500MHz Ant2_SISO



Date: 24.OCT.2024 18:57:56

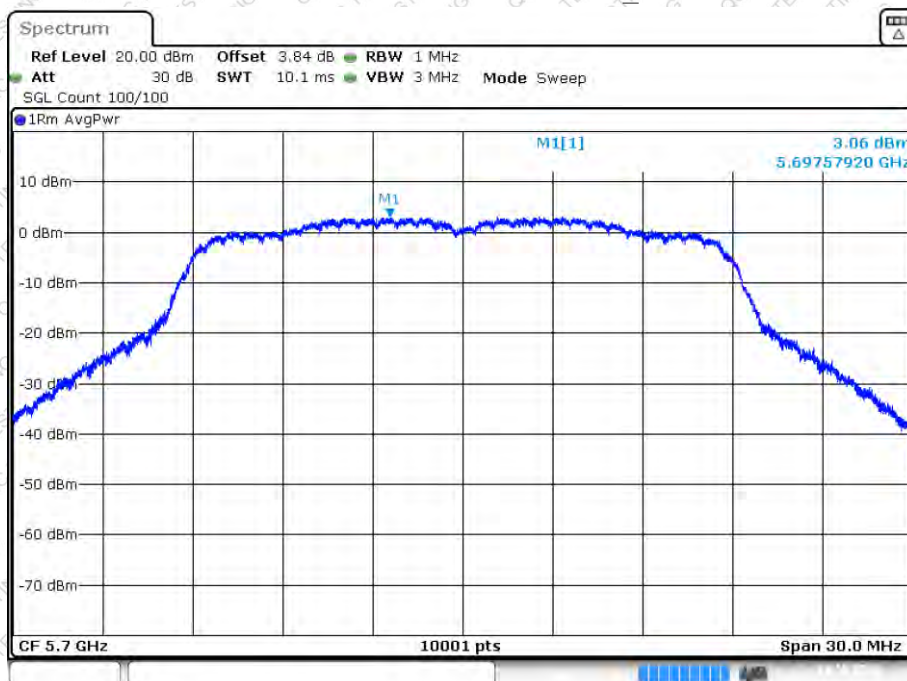
PSD NVNT n20 5580MHz Ant2_SISO



Date: 24.OCT.2024 18:59:01

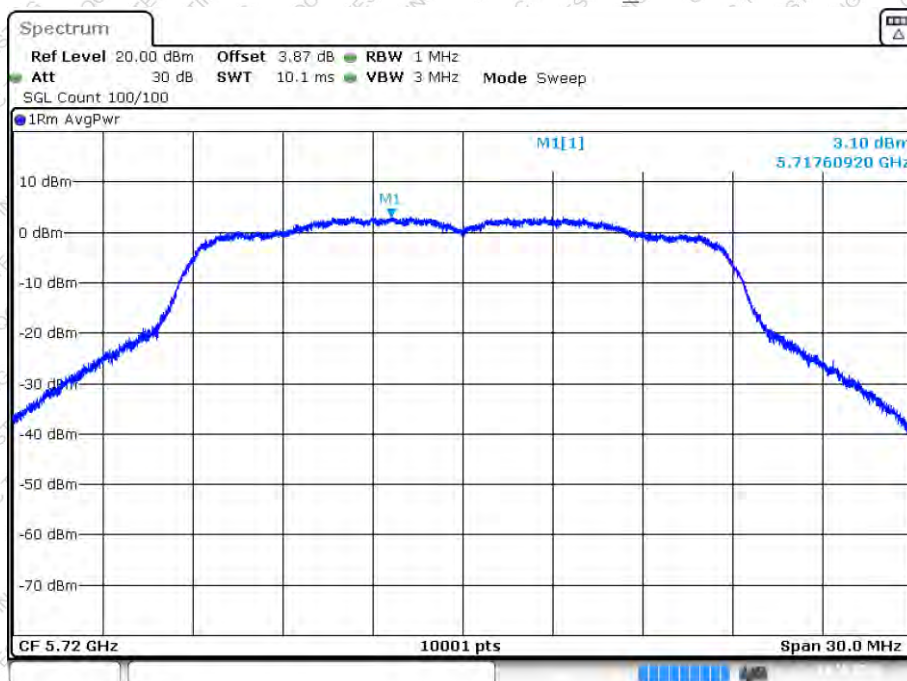


PSD NVNT n20 5700MHz Ant2_SISO



Date: 24.OCT.2024 19:01:15

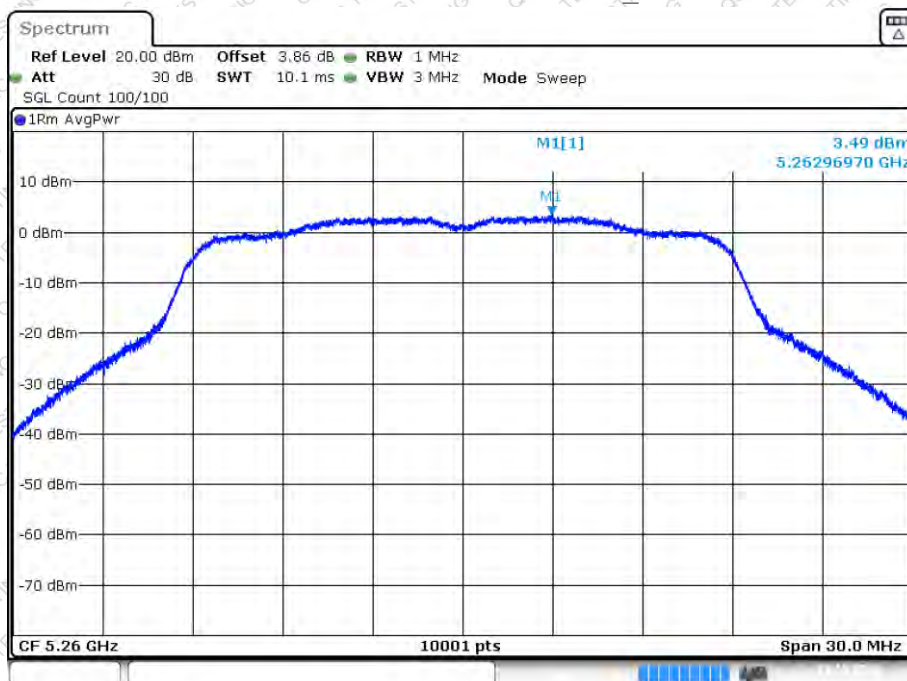
PSD NVNT n20 5720MHz Ant2_SISO



Date: 24.OCT.2024 19:02:47

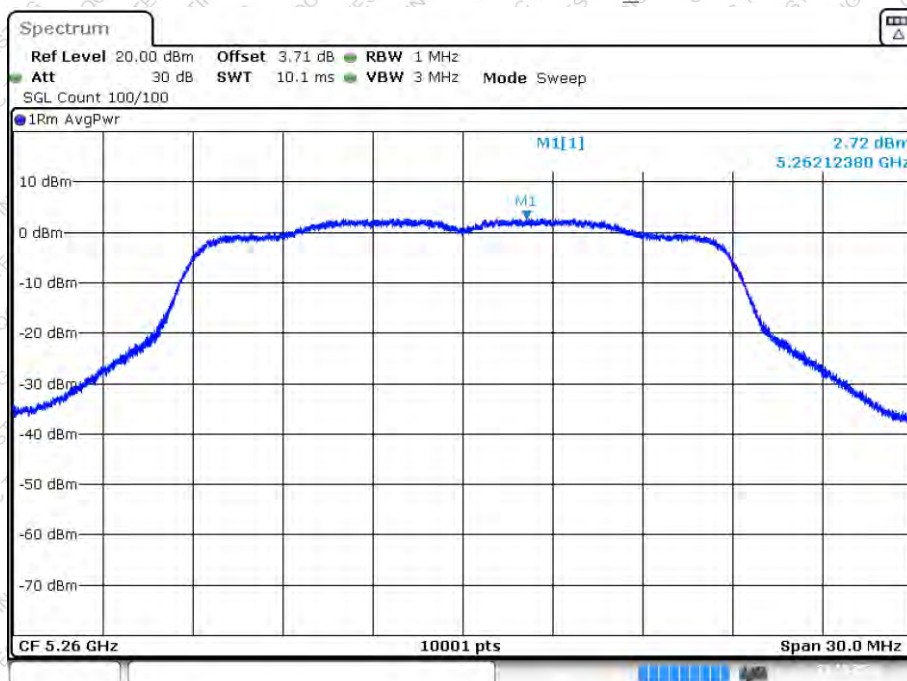


PSD NVNT n20 5260MHz Ant1_MIMO



Date: 23.OCT.2024 19:35:10

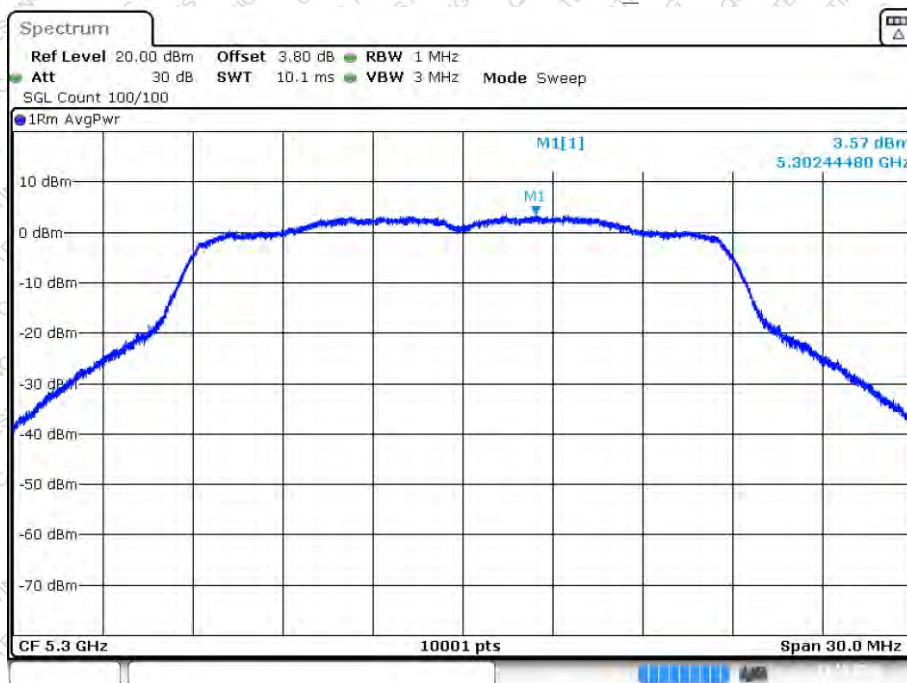
PSD NVNT n20 5260MHz Ant2_MIMO



Date: 23.OCT.2024 19:35:14

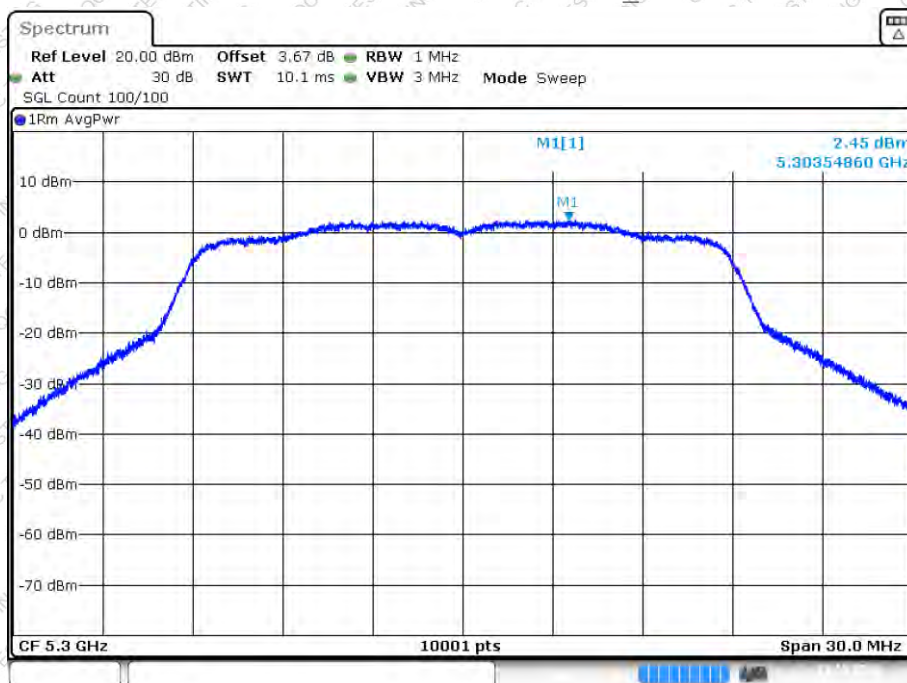


PSD NVNT n20 5300MHz Ant1_MIMO



Date: 23.OCT 2024 19:37:01

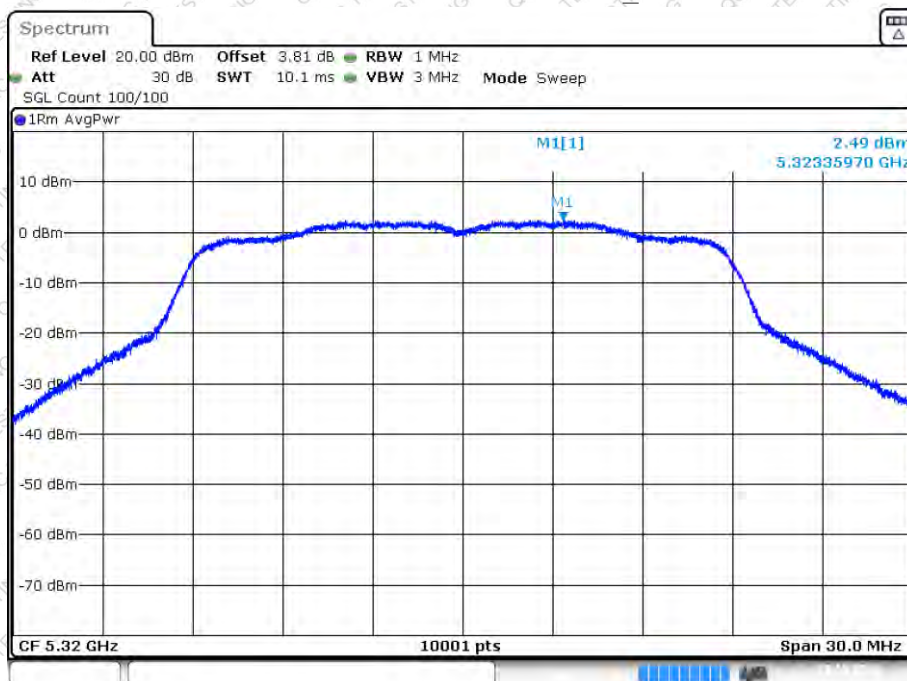
PSD NVNT n20 5300MHz Ant2_MIMO



Date: 23.OCT 2024 19:37:04

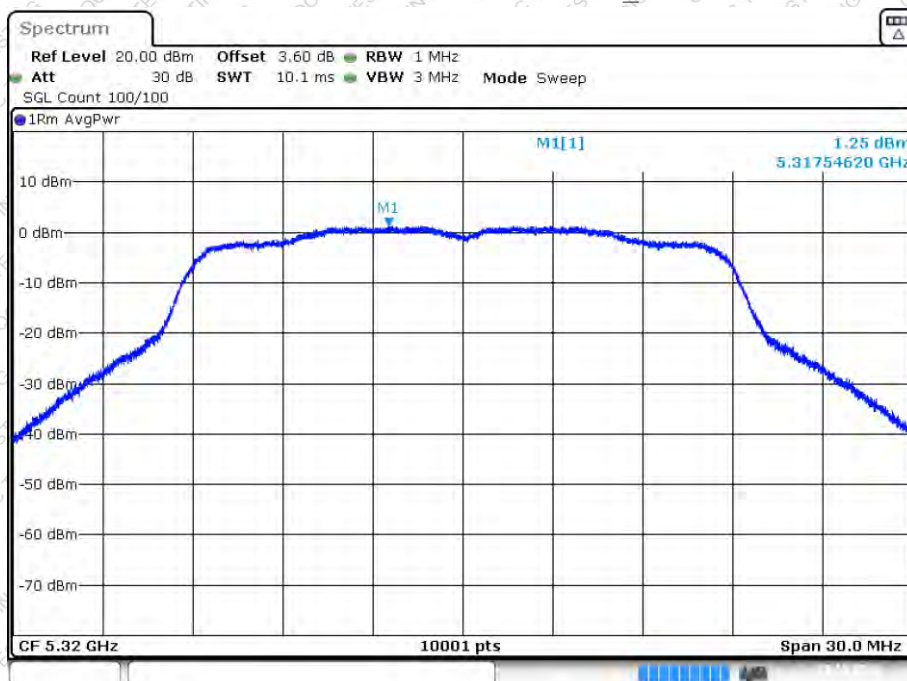


PSD NVNT n20 5320MHz Ant1_MIMO



Date: 28.OCT.2024 08:26:35

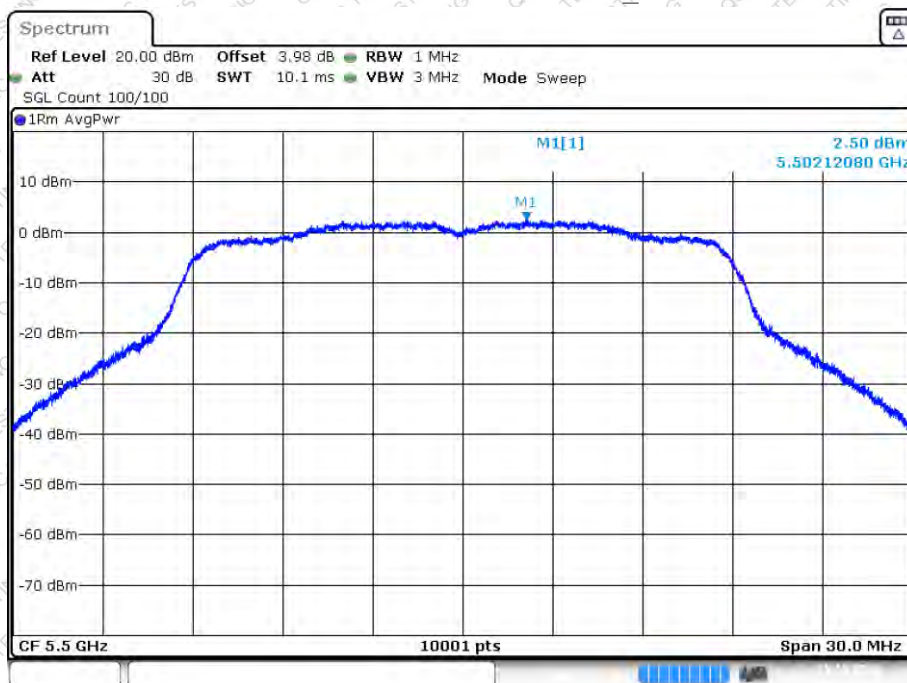
PSD NVNT n20 5320MHz Ant2_MIMO



Date: 28.OCT.2024 08:26:39

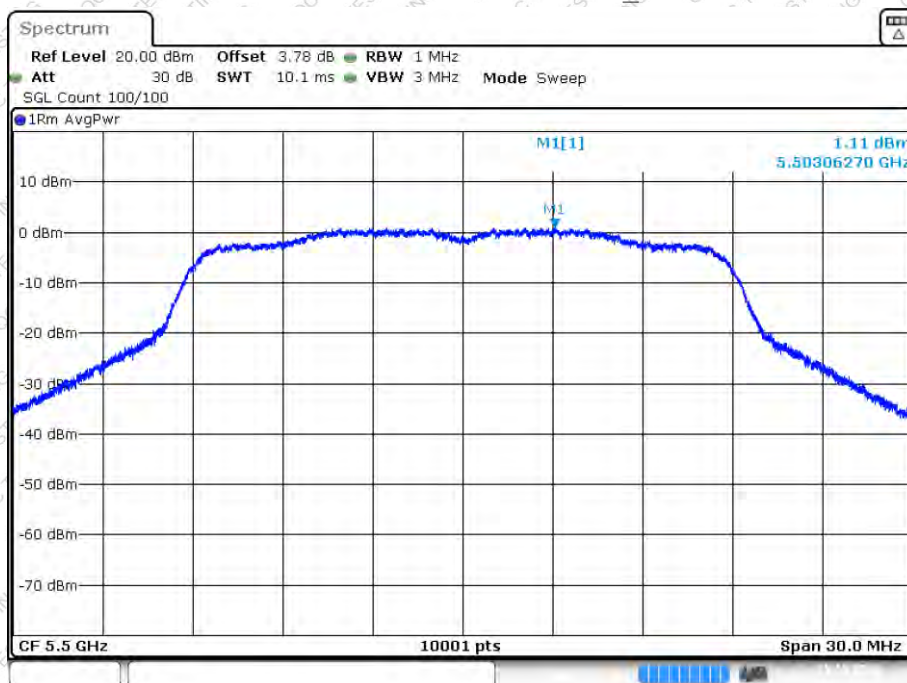


PSD NVNT n20 5500MHz Ant1_MIMO



Date: 25.OCT.2024 09:23:42

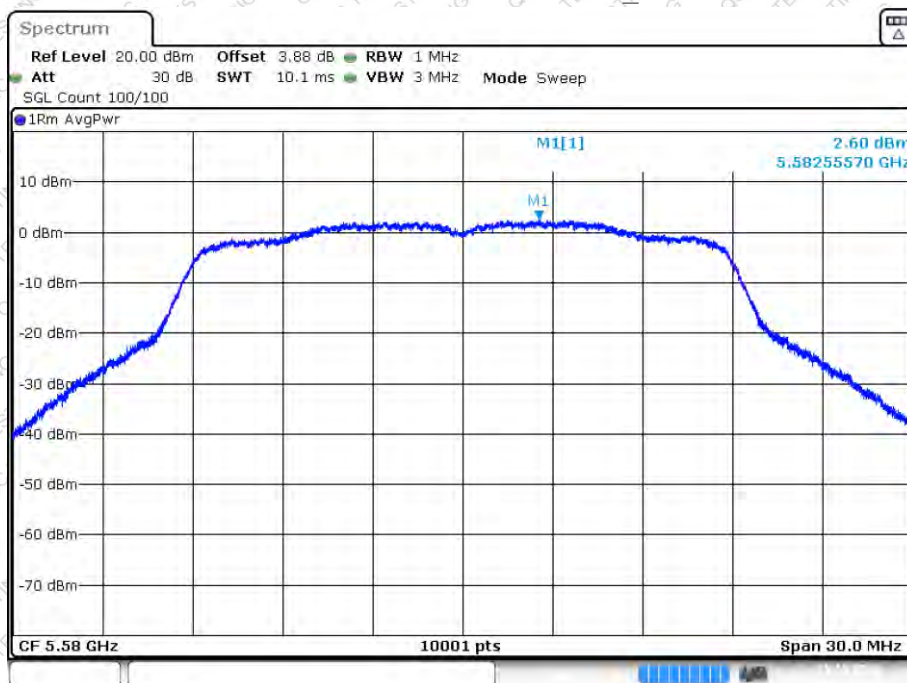
PSD NVNT n20 5500MHz Ant2_MIMO



Date: 25.OCT.2024 09:23:46

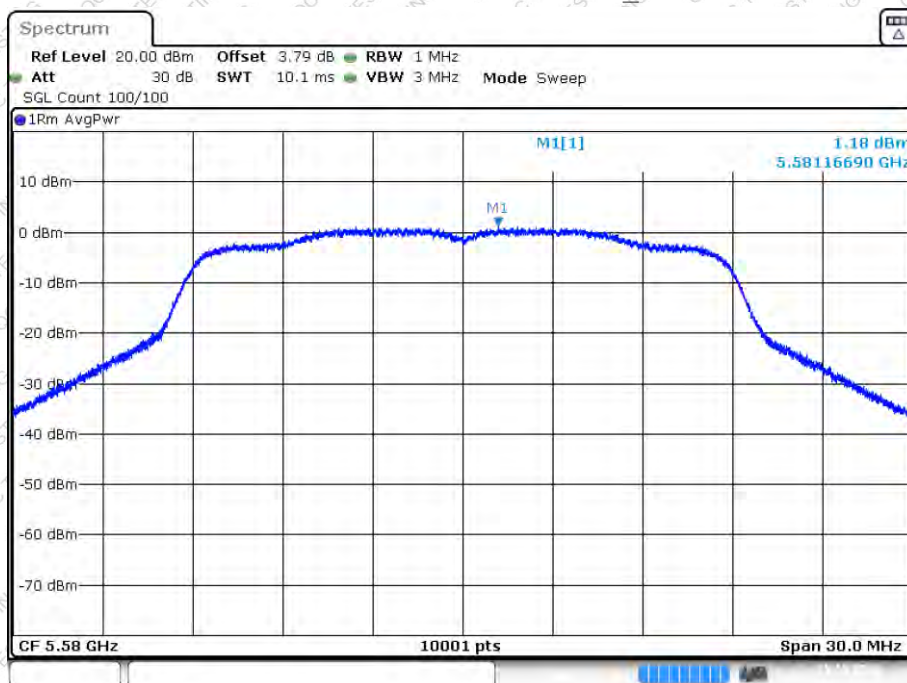


PSD NVNT n20 5580MHz Ant1_MIMO



Date: 25.OCT.2024 09:25:01

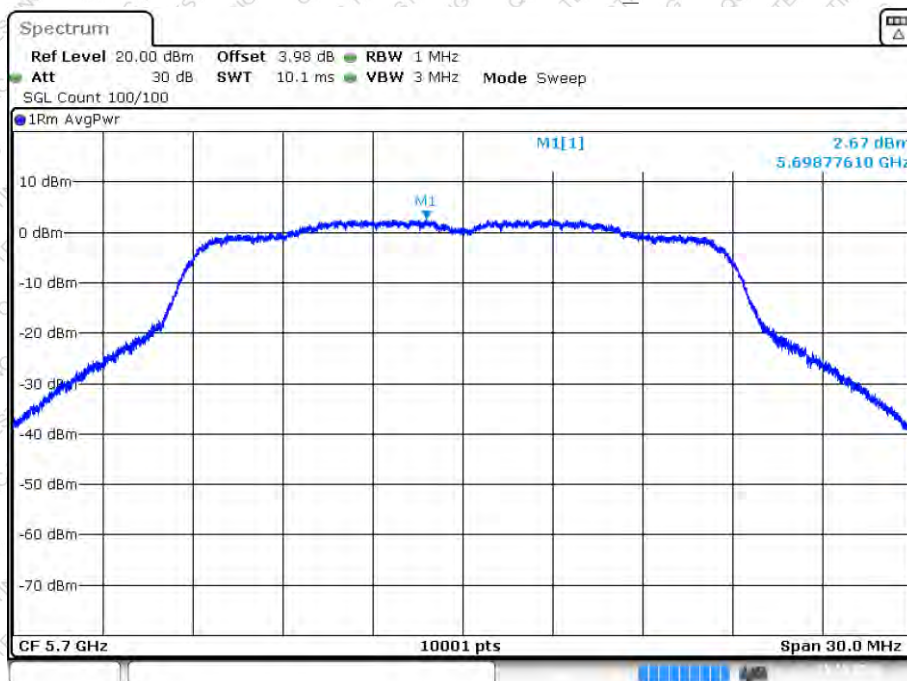
PSD NVNT n20 5580MHz Ant2_MIMO



Date: 25.OCT.2024 09:25:04

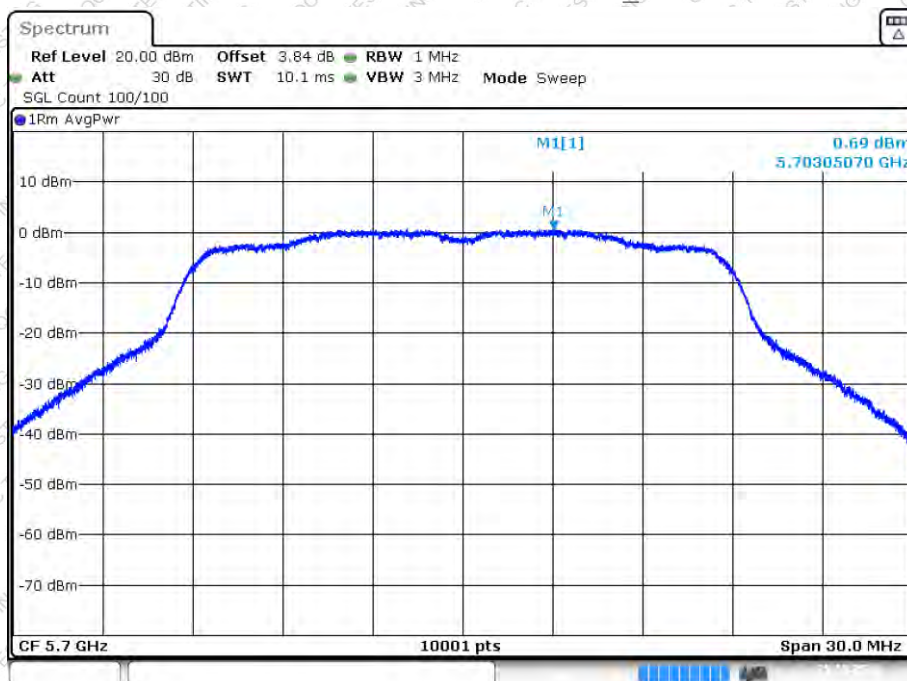


PSD NVNT n20 5700MHz Ant1_MIMO



Date: 25.OCT 2024 09:26:23

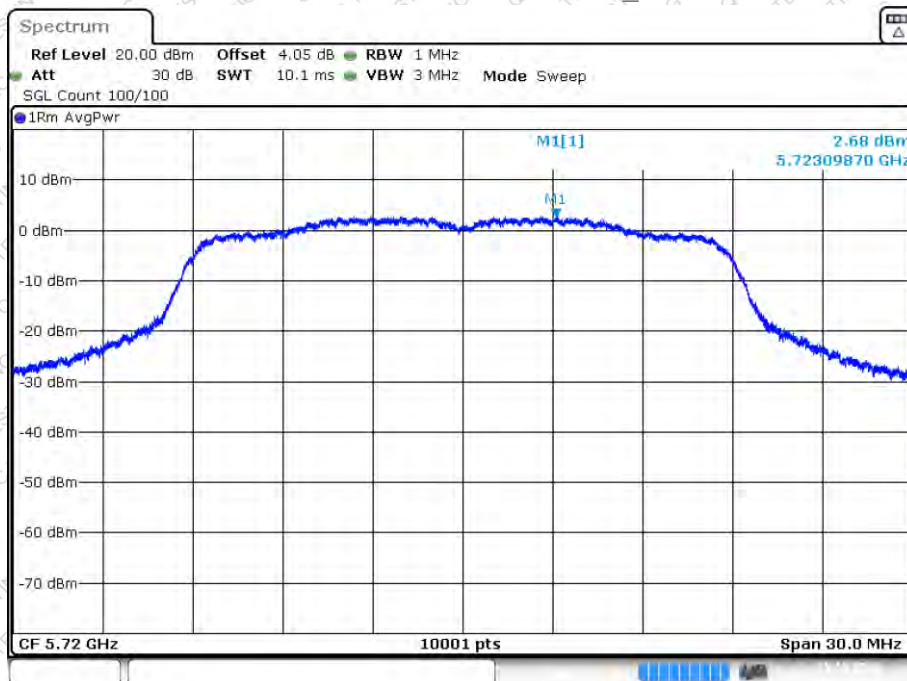
PSD NVNT n20 5700MHz Ant2_MIMO



Date: 25.OCT 2024 09:26:27

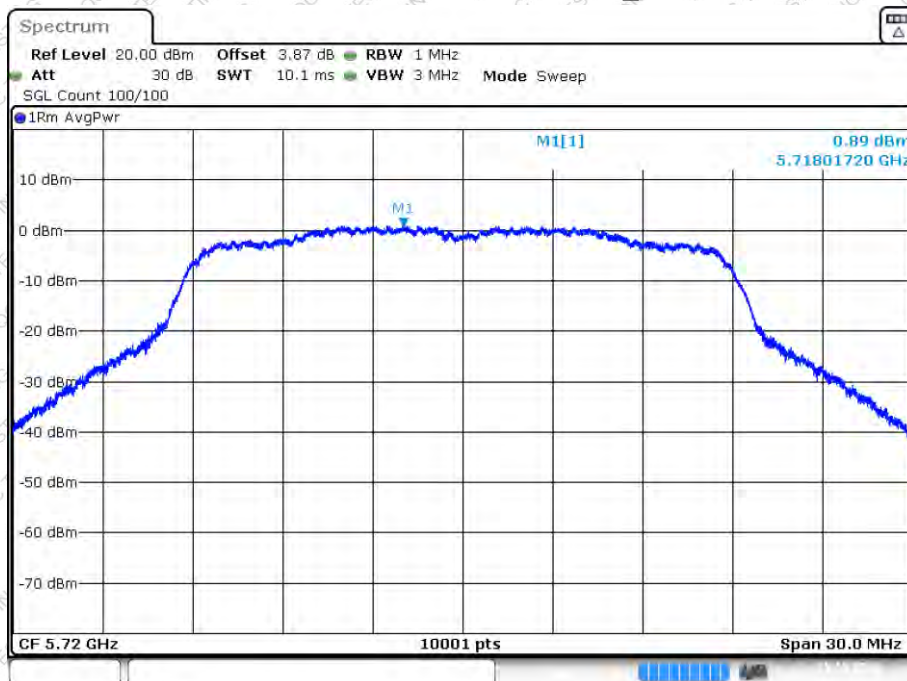


PSD NVNT n20 5720MHz Ant1_MIMO



Date: 25.OCT.2024 09:28:35

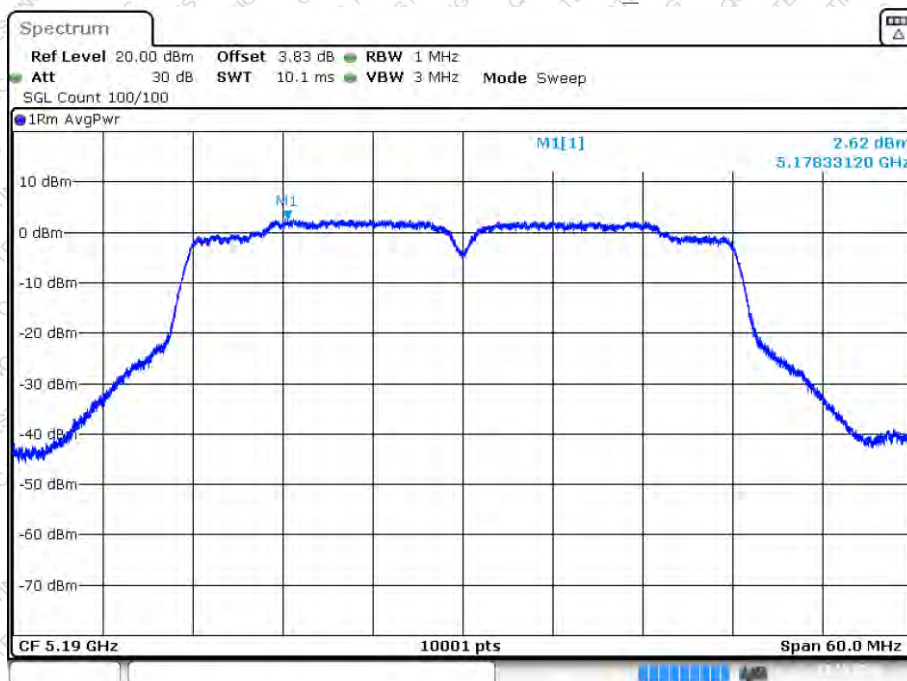
PSD NVNT n20 5720MHz Ant2_MIMO



Date: 25.OCT.2024 09:28:39

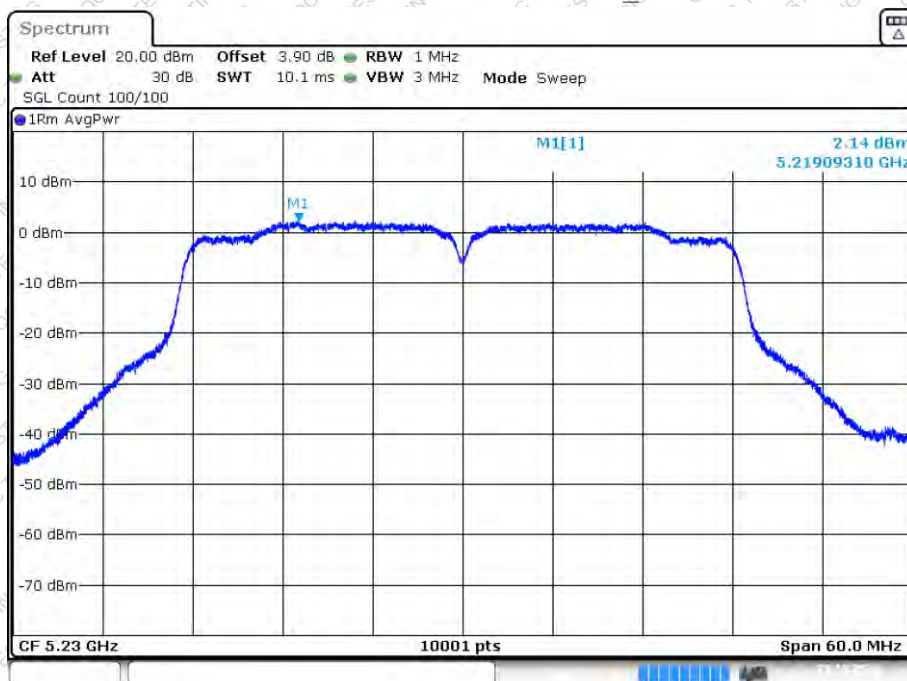


PSD NVNT n40 5190MHz Ant1_SISO



Date: 22.OCT.2024 11:12:37

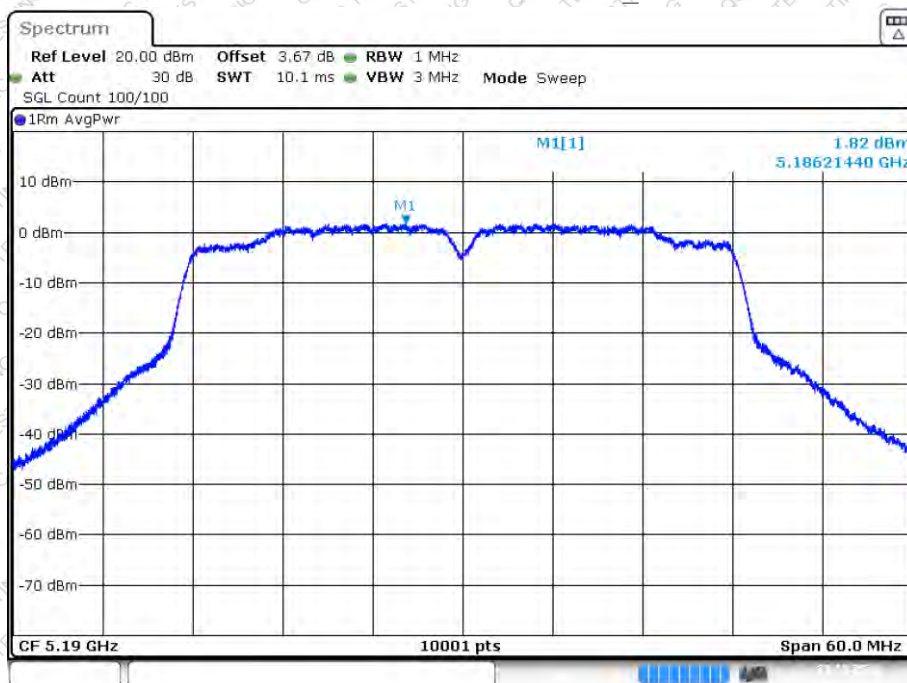
PSD NVNT n40 5230MHz Ant1_SISO



Date: 22.OCT.2024 11:14:43

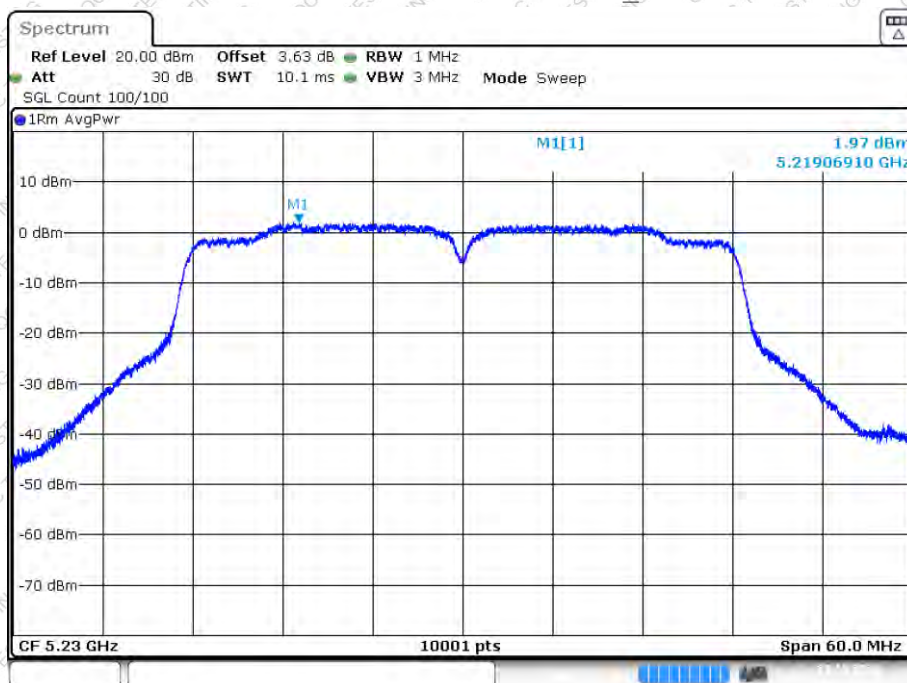


PSD NVNT n40 5190MHz Ant2_SISO



Date: 22.OCT.2024 18:50:53

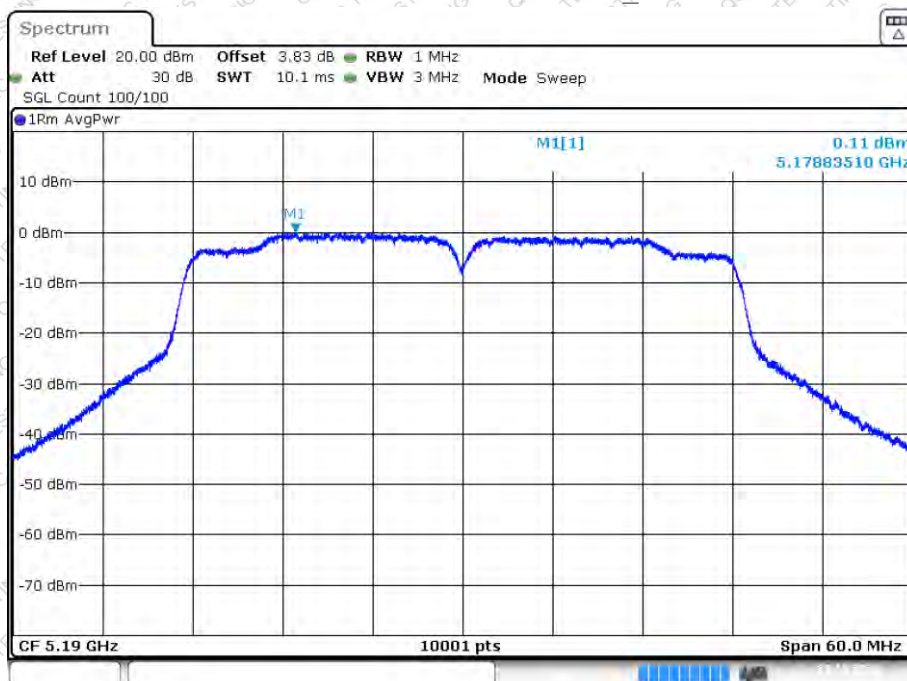
PSD NVNT n40 5230MHz Ant2_SISO



Date: 22.OCT.2024 18:53:35

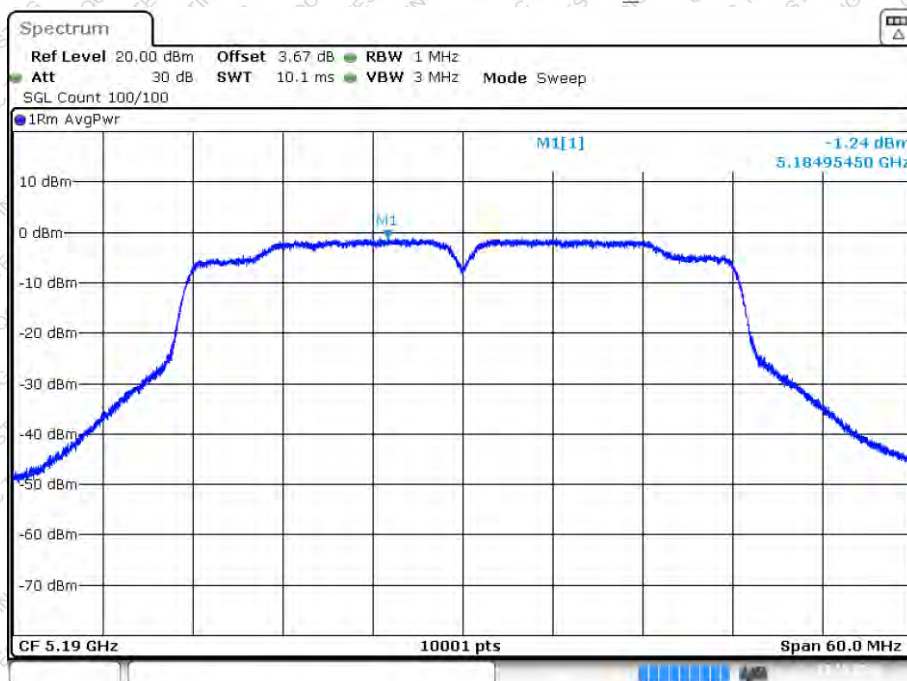


PSD NVNT n40 5190MHz Ant1_MIMO



Date: 22.OCT.2024 19:49:29

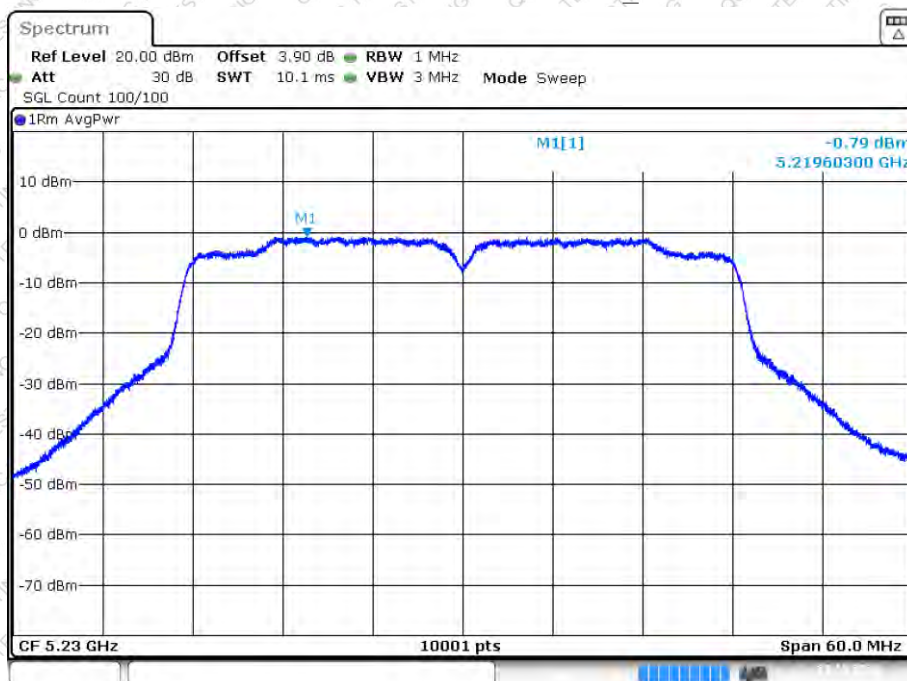
PSD NVNT n40 5190MHz Ant2_MIMO



Date: 22.OCT.2024 19:49:33

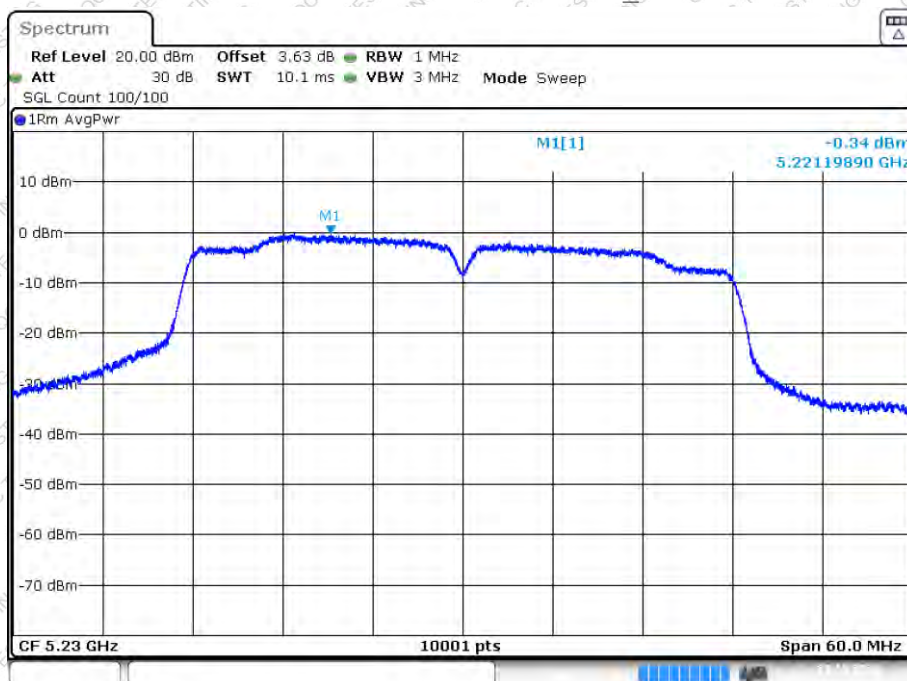


PSD NVNT n40 5230MHz Ant1_MIMO



Date: 22.OCT.2024 19:51:12

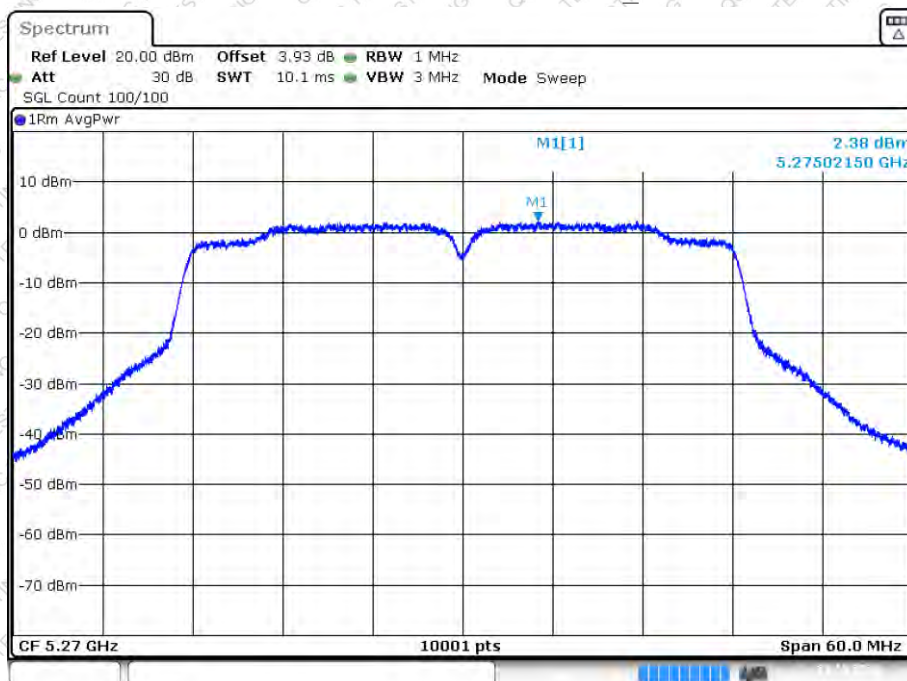
PSD NVNT n40 5230MHz Ant2_MIMO



Date: 22.OCT.2024 19:51:16

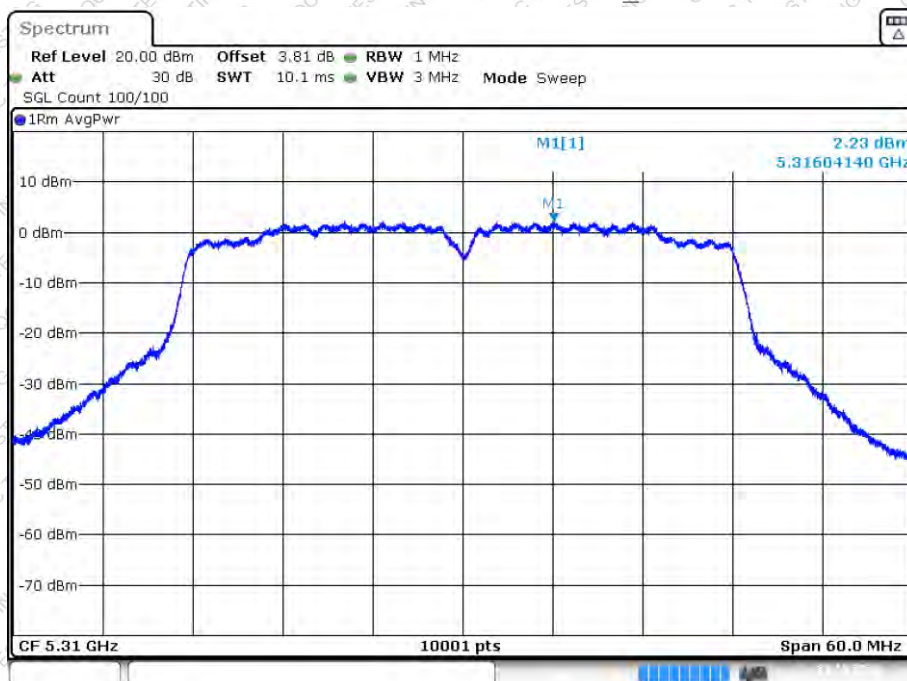


PSD NVNT n40 5270MHz Ant1_SISO



Date: 23.OCT.2024 16:47:58

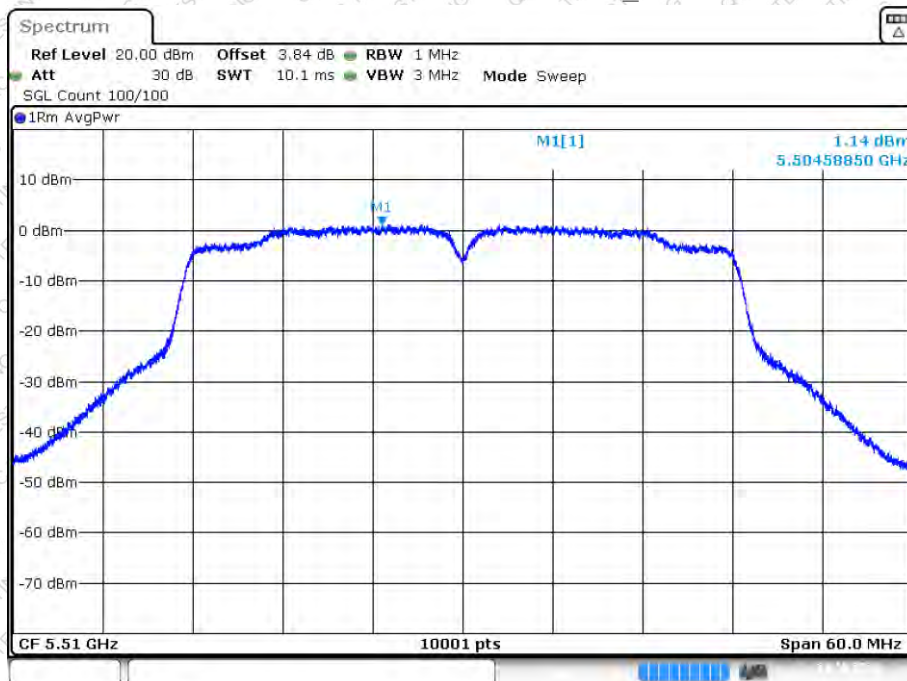
PSD NVNT n40 5310MHz Ant1_SISO



Date: 23.OCT.2024 17:00:24

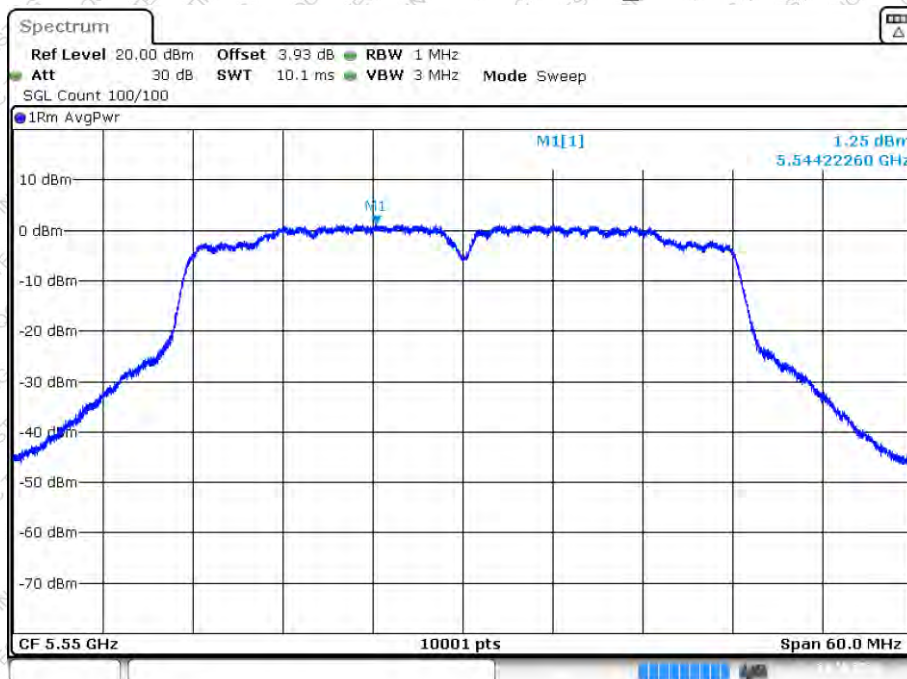


PSD NVNT n40 5510MHz Ant1_SISO



Date: 24.OCT.2024 17:26:56

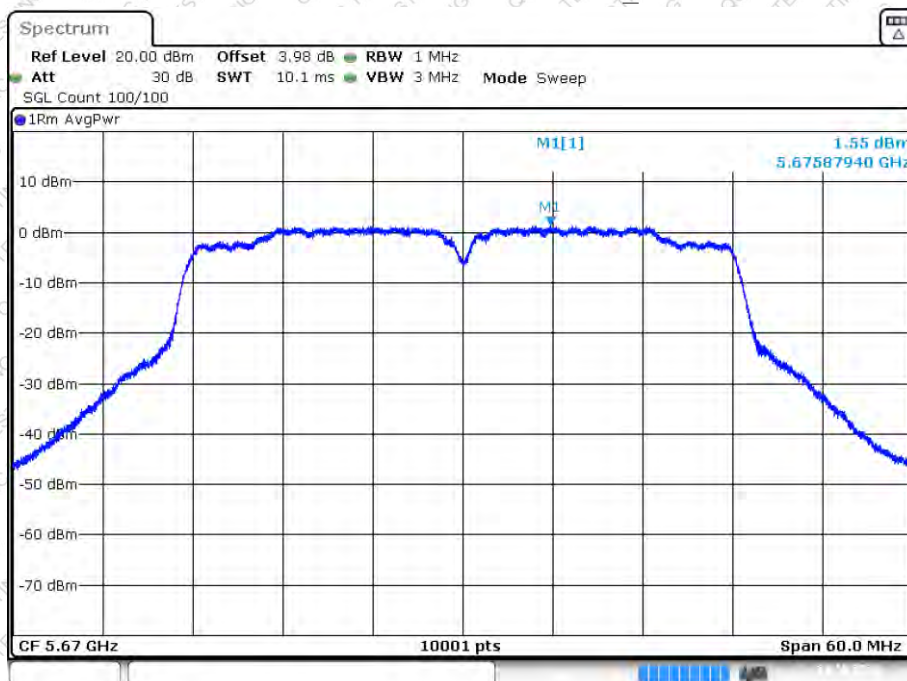
PSD NVNT n40 5550MHz Ant1_SISO



Date: 24.OCT.2024 17:28:18

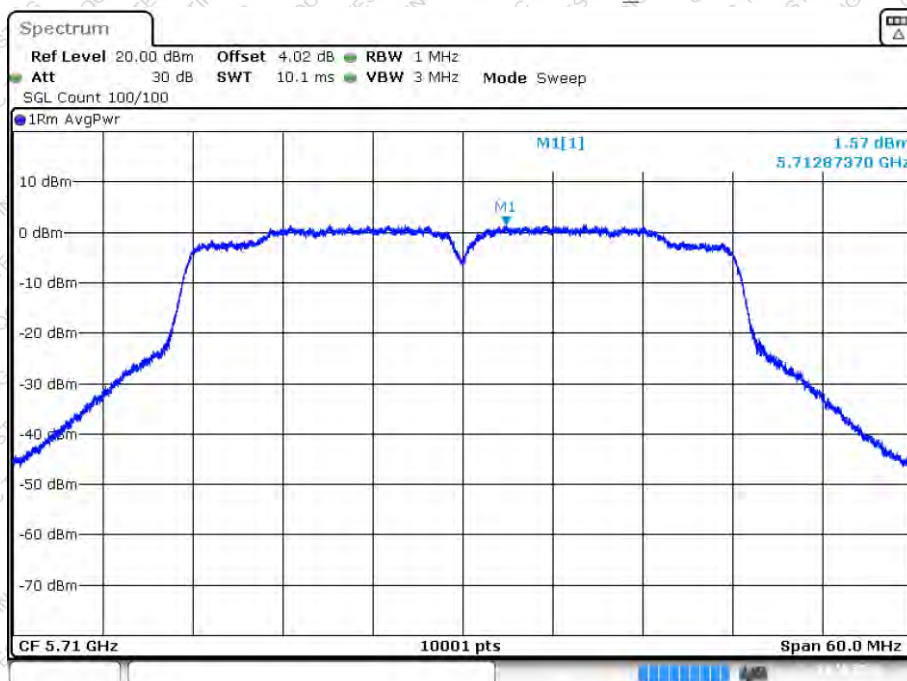


PSD NVNT n40 5670MHz Ant1_SISO



Date: 24.OCT.2024 17:30:43

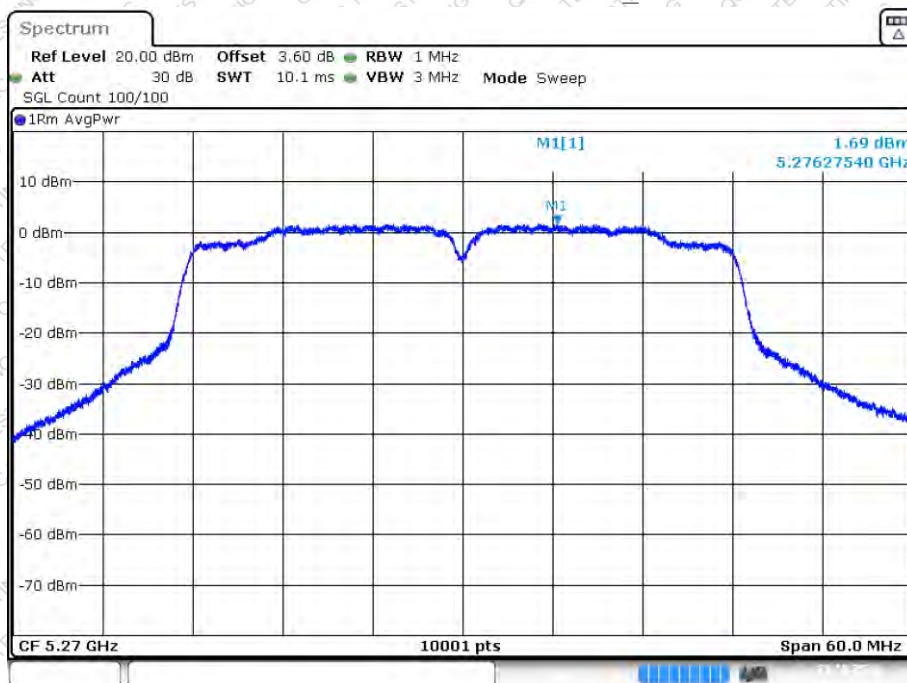
PSD NVNT n40 5710MHz Ant1_SISO



Date: 24.OCT.2024 17:31:52

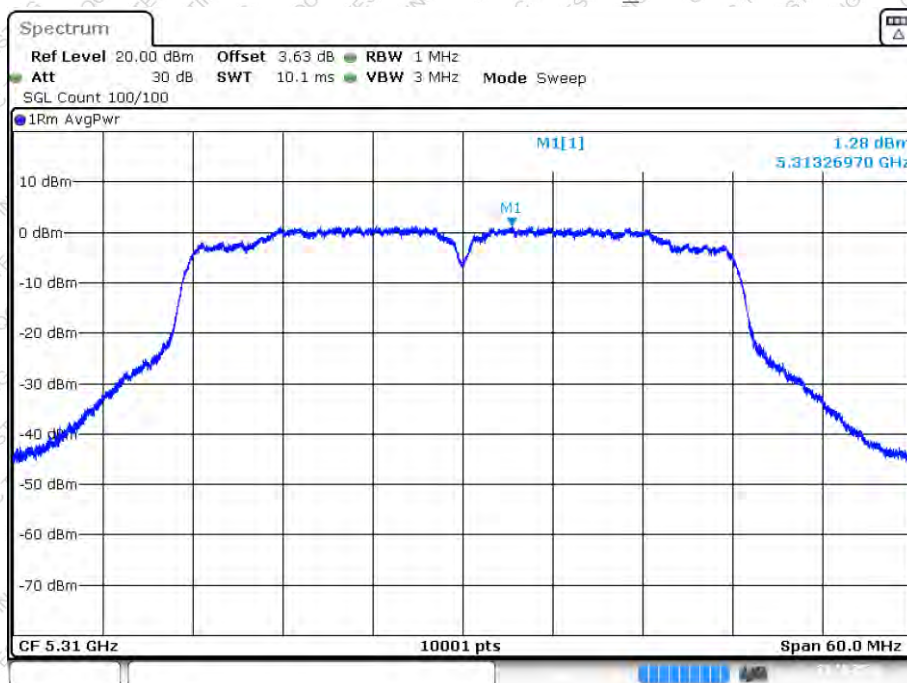


PSD NVNT n40 5270MHz Ant2_SISO



Date: 23.OCT.2024 17:58:35

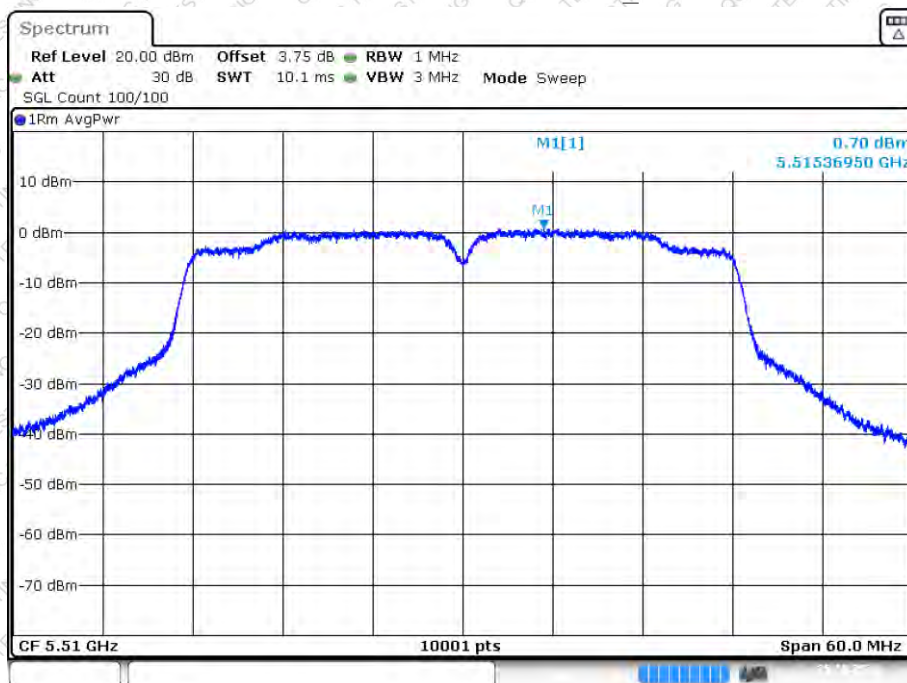
PSD NVNT n40 5310MHz Ant2_SISO



Date: 23.OCT.2024 18:51:29

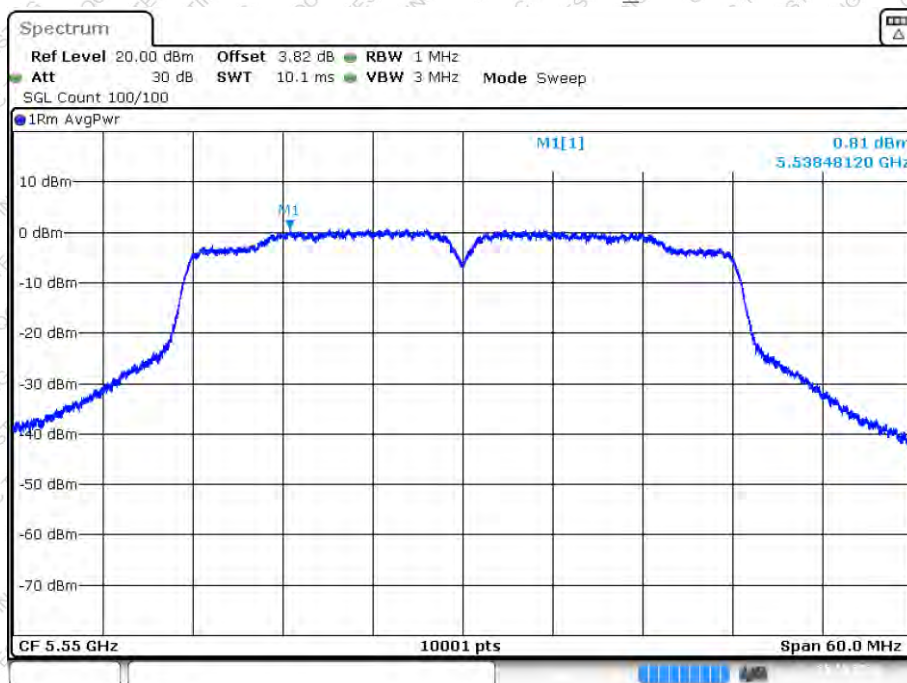


PSD NVNT n40 5510MHz Ant2_SISO



Date: 25.OCT.2024 08:59:39

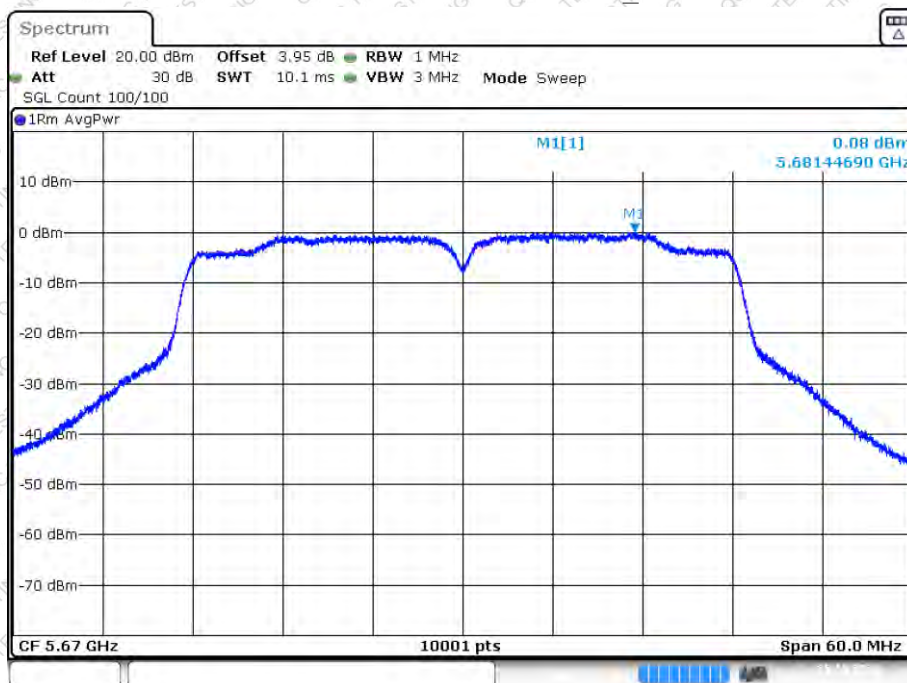
PSD NVNT n40 5550MHz Ant2_SISO



Date: 25.OCT.2024 09:00:51

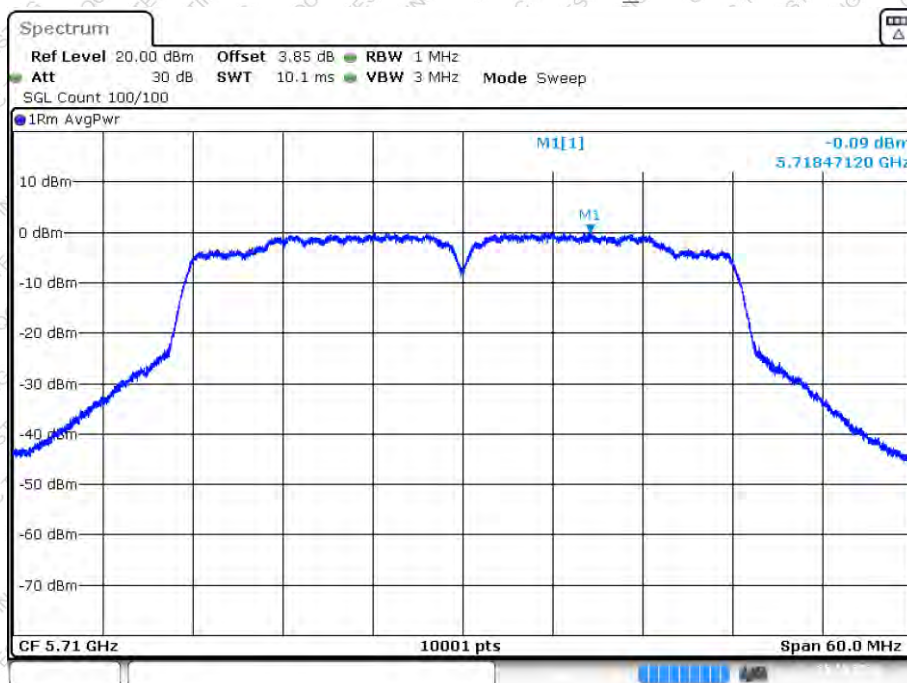


PSD NVNT n40 5670MHz Ant2_SISO



Date: 25.OCT.2024 09:02:37

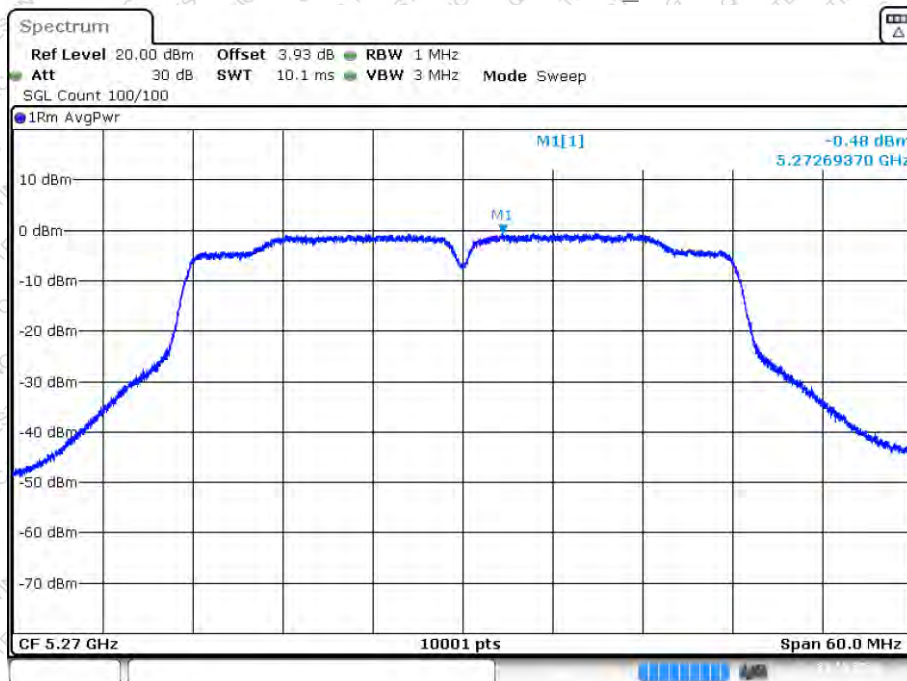
PSD NVNT n40 5710MHz Ant2_SISO



Date: 25.OCT.2024 09:03:34



PSD NVNT n40 5270MHz Ant1_MIMO



Date: 23.OCT.2024 20:13:20

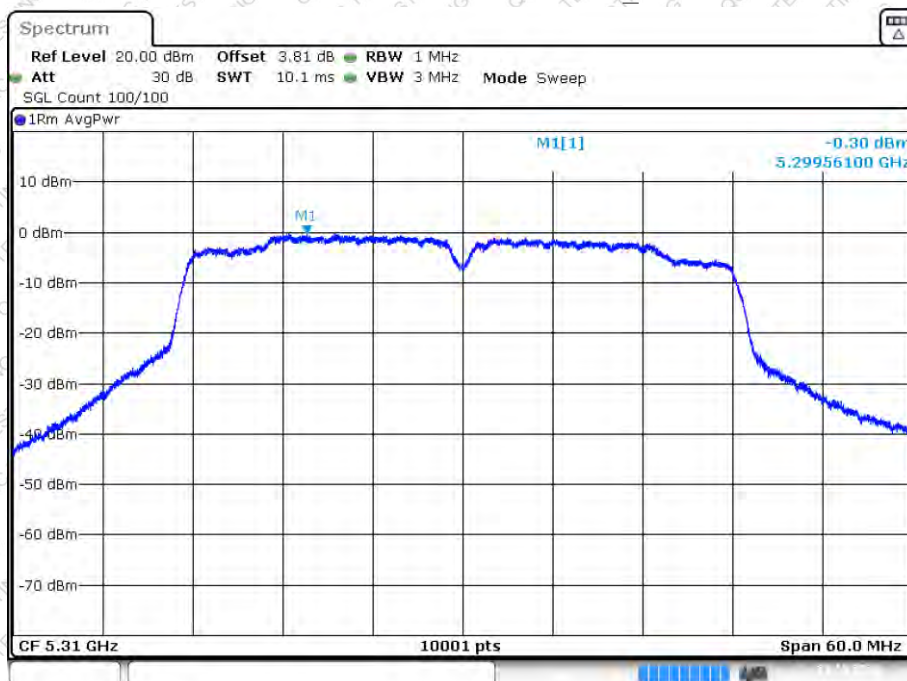
PSD NVNT n40 5270MHz Ant2_MIMO



Date: 23.OCT.2024 20:13:24

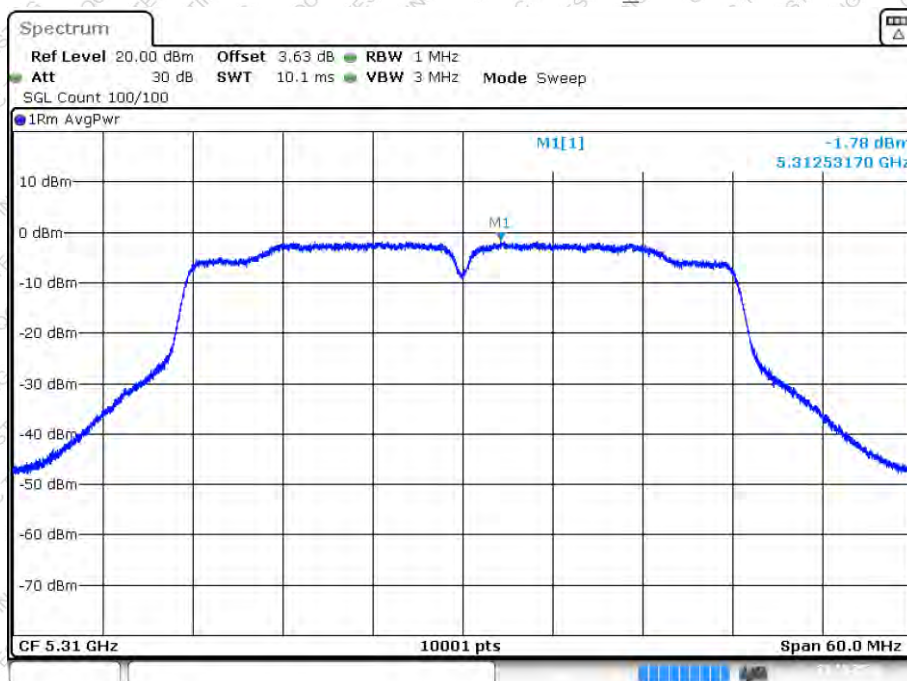


PSD NVNT n40 5310MHz Ant1_MIMO



Date: 23.OCT.2024 20:11:50

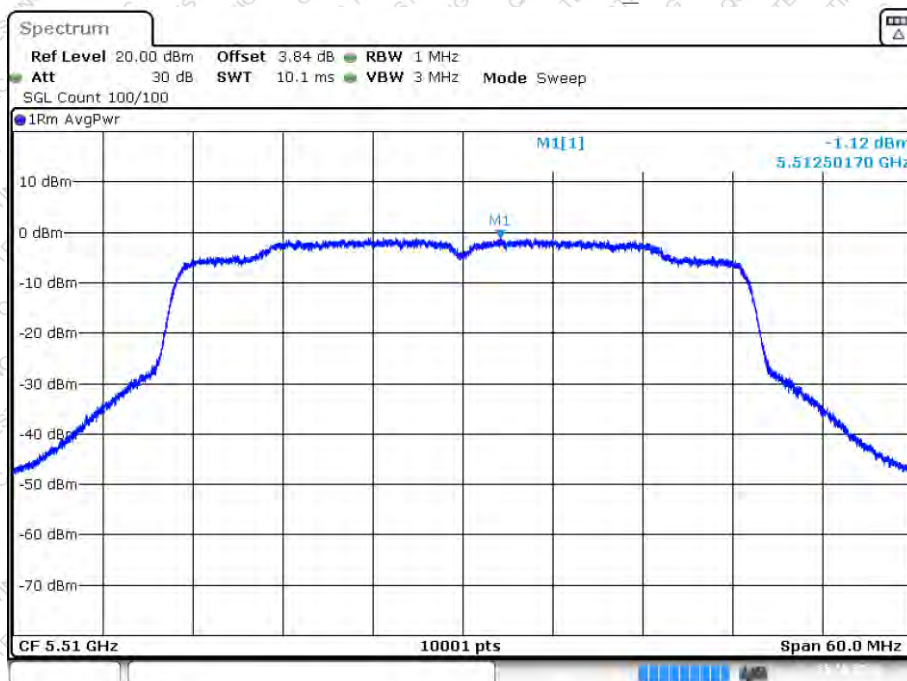
PSD NVNT n40 5310MHz Ant2_MIMO



Date: 23.OCT.2024 20:11:54

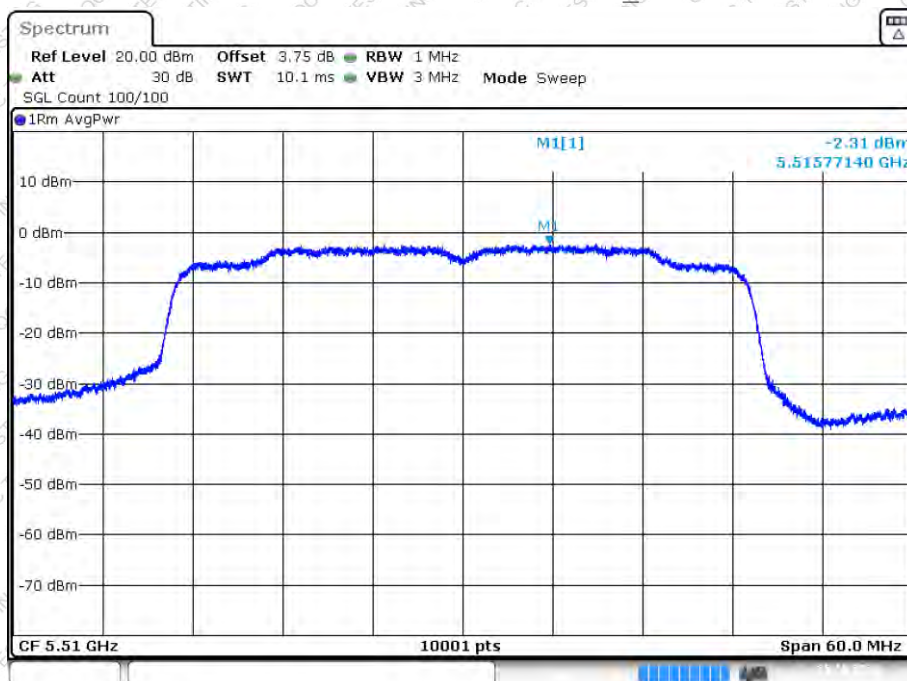


PSD NVNT n40 5510MHz Ant1_MIMO



Date: 25.OCT.2024 09:54:31

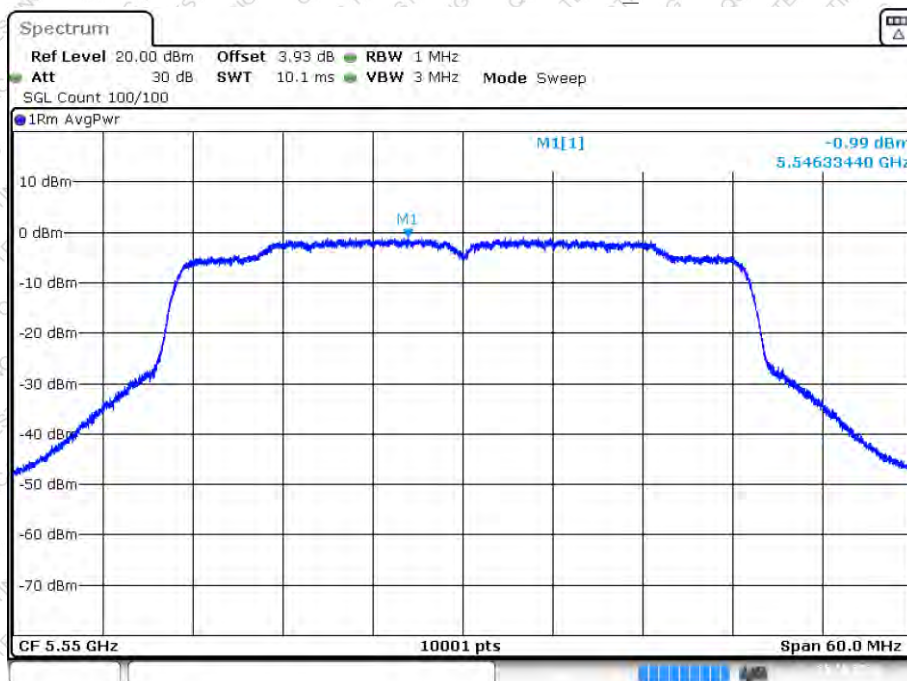
PSD NVNT n40 5510MHz Ant2_MIMO



Date: 25.OCT.2024 09:54:35

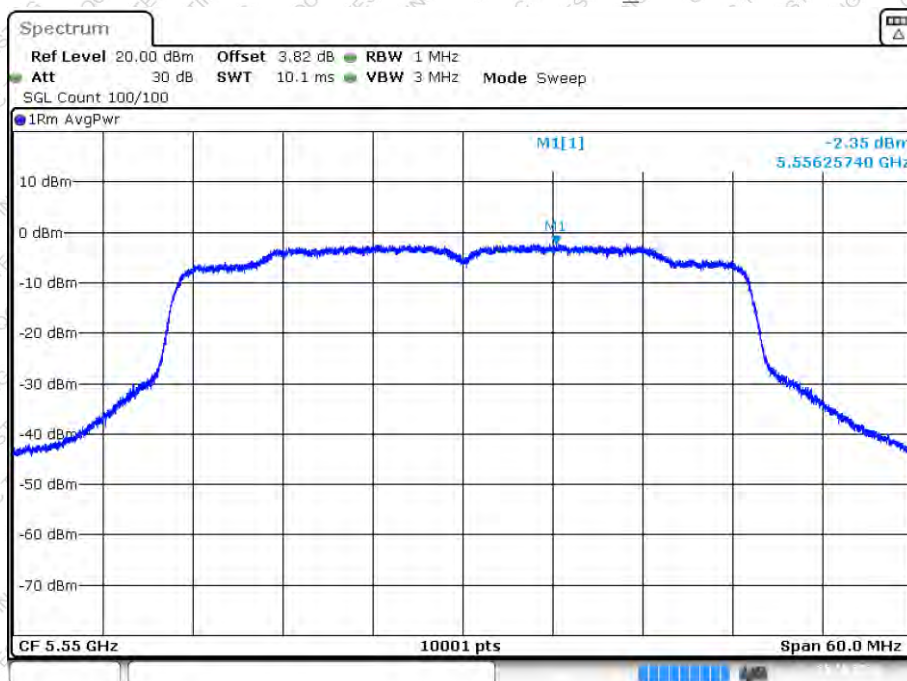


PSD NVNT n40 5550MHz Ant1_MIMO



Date: 25.OCT.2024 09:55:54

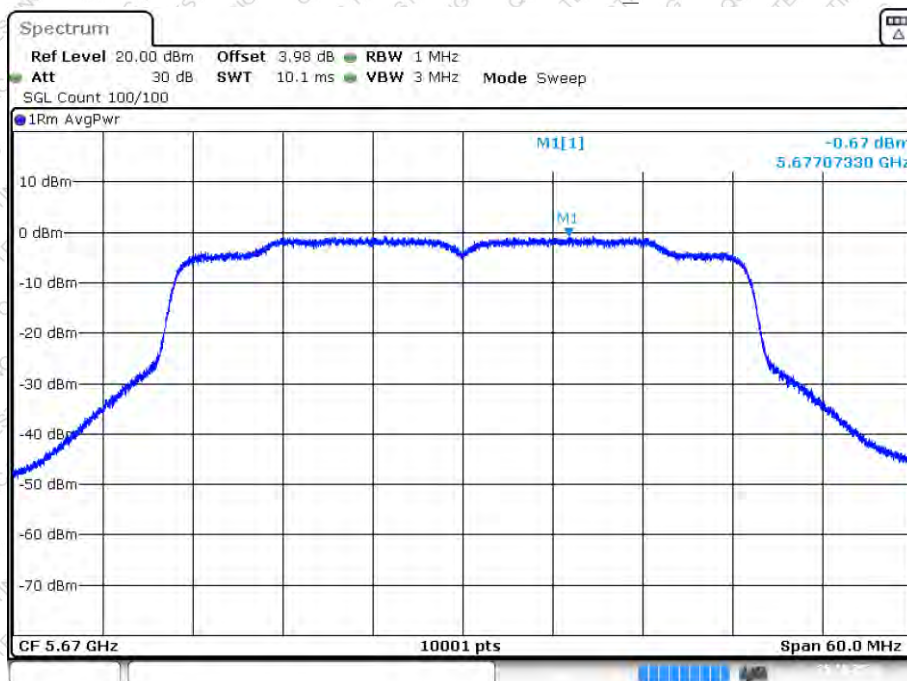
PSD NVNT n40 5550MHz Ant2_MIMO



Date: 25.OCT.2024 09:55:58

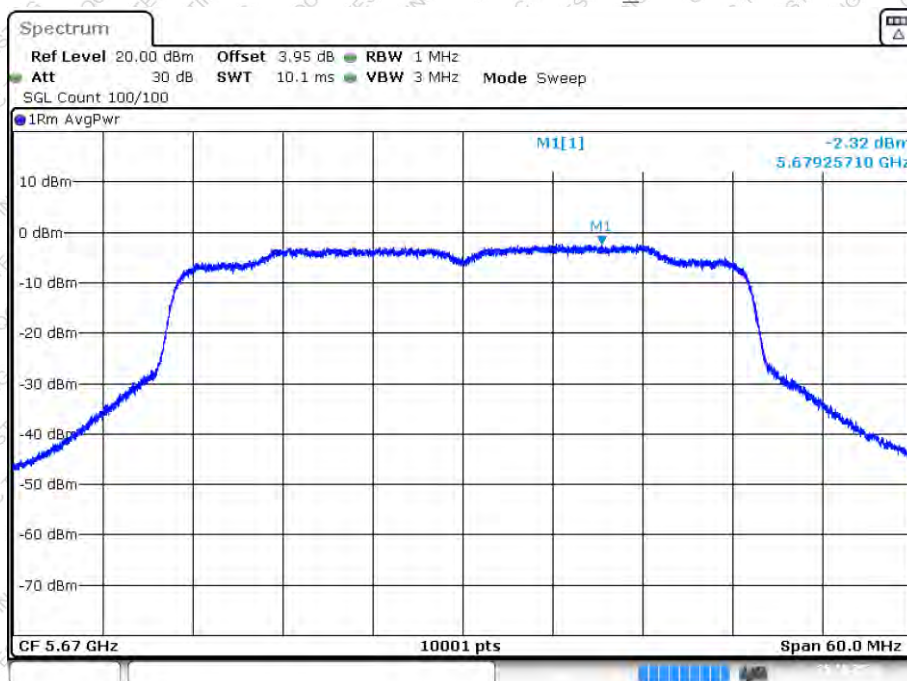


PSD NVNT n40 5670MHz Ant1_MIMO



Date: 25.OCT.2024 09:57:24

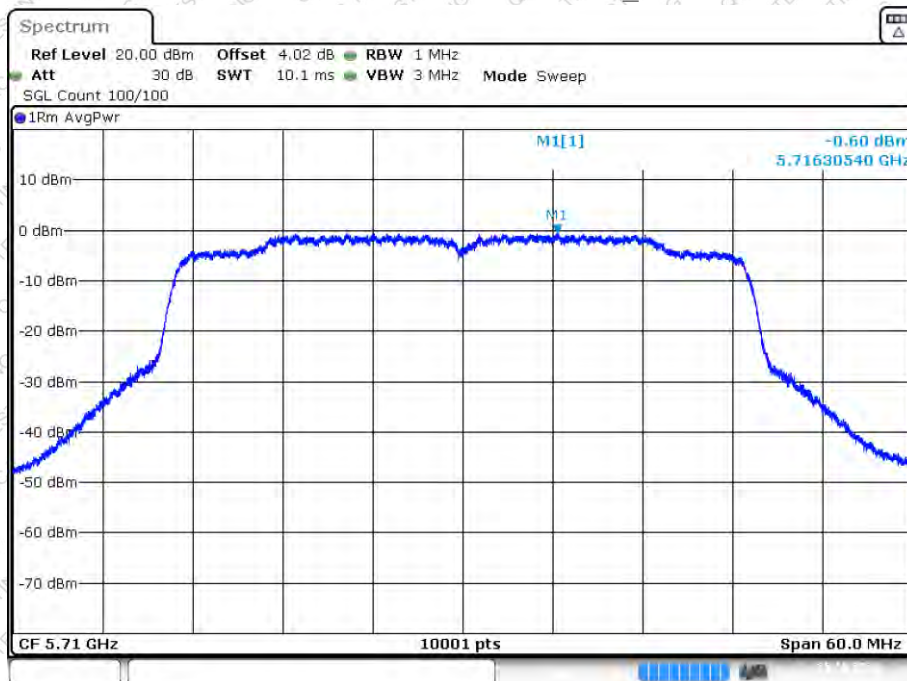
PSD NVNT n40 5670MHz Ant2_MIMO



Date: 25.OCT.2024 09:57:27

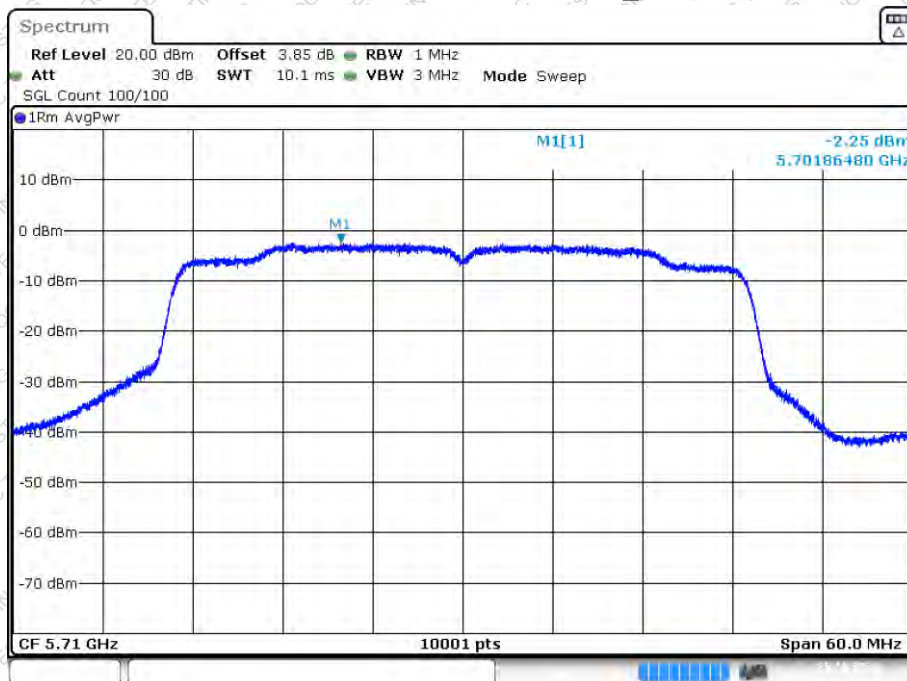


PSD NVNT n40 5710MHz Ant1_MIMO



Date: 25.OCT.2024 09:58:51

PSD NVNT n40 5710MHz Ant2_MIMO



Date: 25.OCT.2024 09:58:54