

RF Test Data for 5G Wi-Fi (Conducted Measurements)

General Description of EUT	
Product Name:	Heltec Indoor Hotspot
Test Model:	HT-M2808
Sample ID:	20210603-15-2#
Environmental Conditions	
Temperature:	24.3℃
Relative Humidity:	52%
Test Voltage:	DC 12V
Test Engineer:	Huang jianping
Note: For a more detailed features description, please refer to the report TB-RF183070.	

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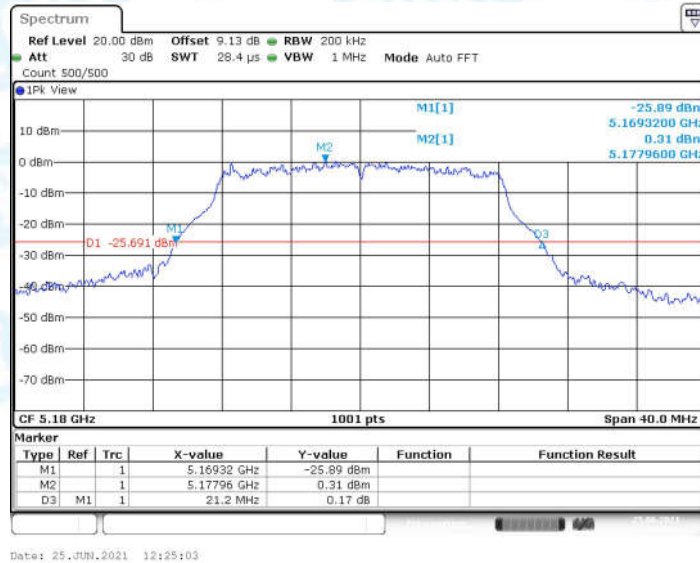
1. Emission Bandwidth

1.1. Test Result

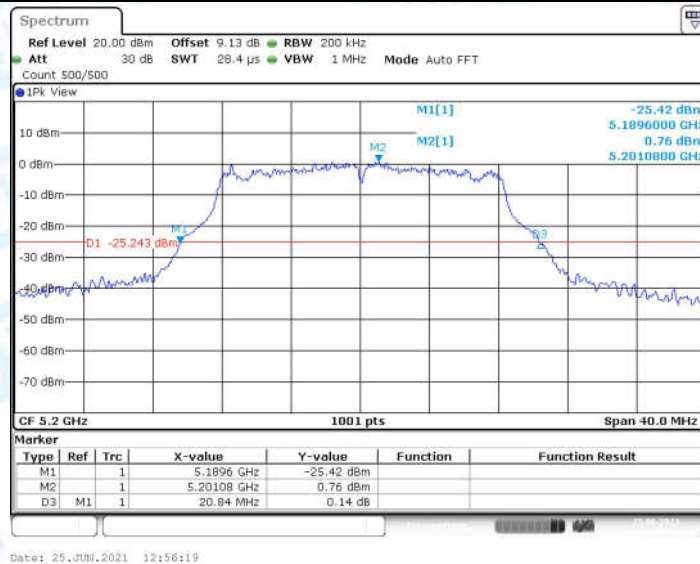
TestMode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	21.200	5169.320	5190.520	---	PASS
		5200	20.840	5189.600	5210.440	---	PASS
		5240	21.080	5229.440	5250.520	---	PASS
11N20SISO	Ant1	5180	21.280	5169.400	5190.680	---	PASS
		5200	21.360	5189.320	5210.680	---	PASS
		5240	21.480	5229.360	5250.840	---	PASS
11N40SISO	Ant1	5190	39.840	5170.160	5210.000	---	PASS
		5230	39.680	5210.400	5250.080	---	PASS
11AC20SISO	Ant1	5180	21.200	5169.400	5190.600	---	PASS
		5200	21.480	5189.360	5210.840	---	PASS
		5240	21.400	5229.320	5250.720	---	PASS
11AC40SISO	Ant1	5190	39.760	5170.240	5210.000	---	PASS
		5230	39.680	5210.160	5249.840	---	PASS
11AC80SISO	Ant1	5210	79.840	5170.320	5250.160	---	PASS

1.2. Test Graphs

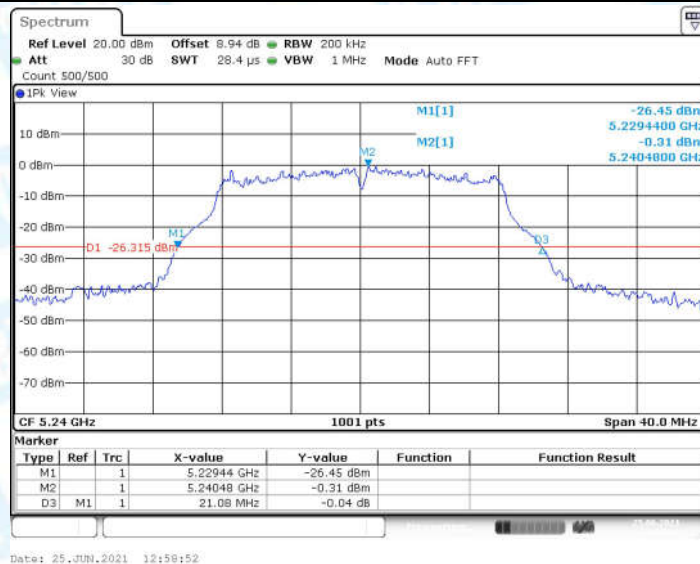
11A_Ant1_5180



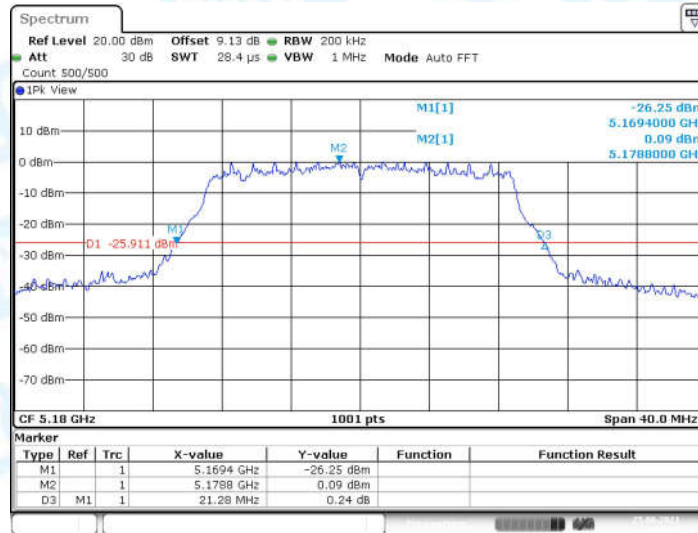
11A_Ant1_5200



11A_Ant1_5240

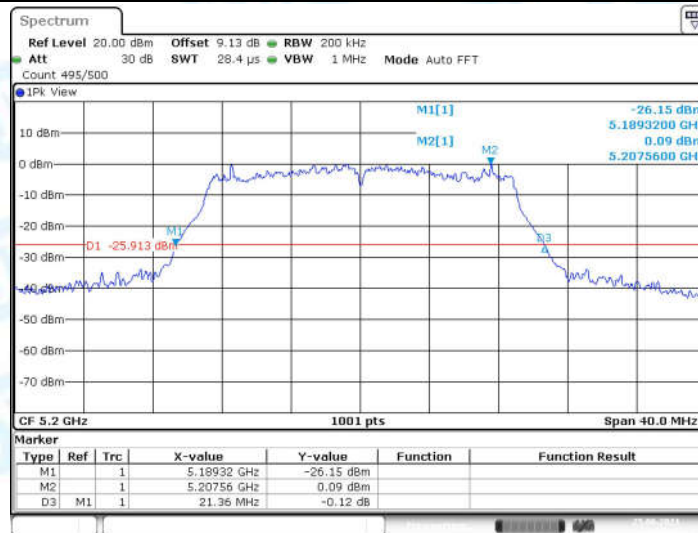


11N20SISO_Ant1_5180



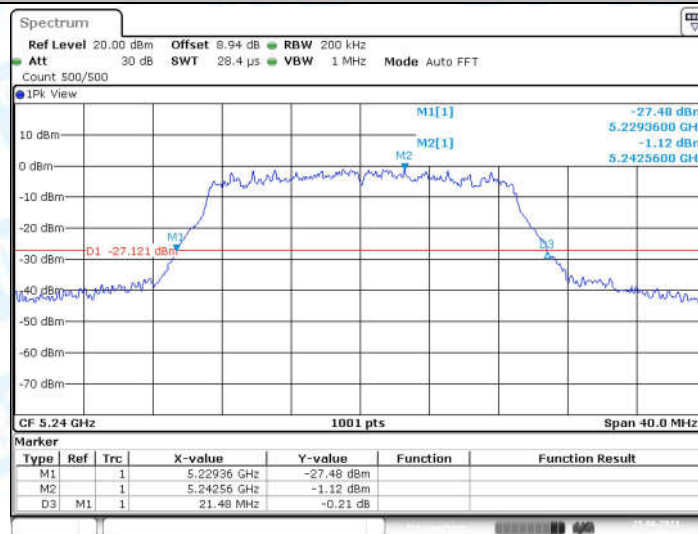
Date: 25 JUN 2021 13:01:36

11N20SISO_Ant1_5200



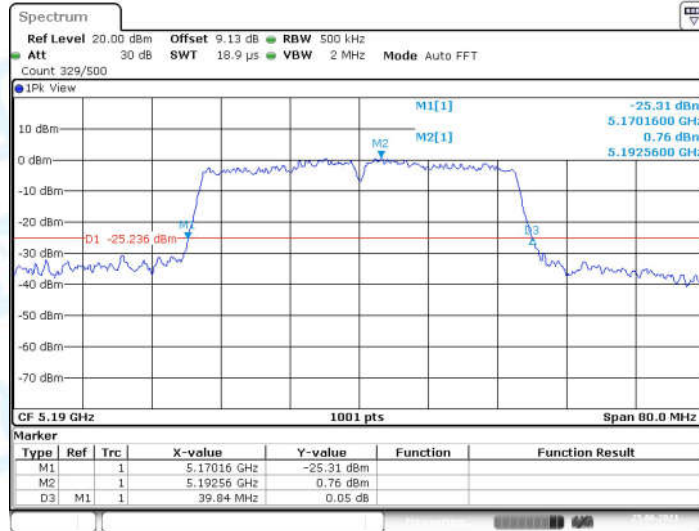
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11N20SISO_Ant1_5240



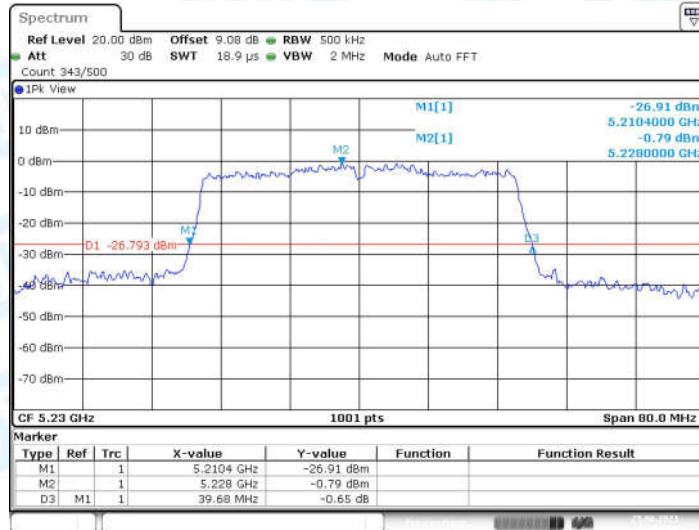
Date: 25 JUN 2021 13:07:41

11N40SISO_Ant1_5190



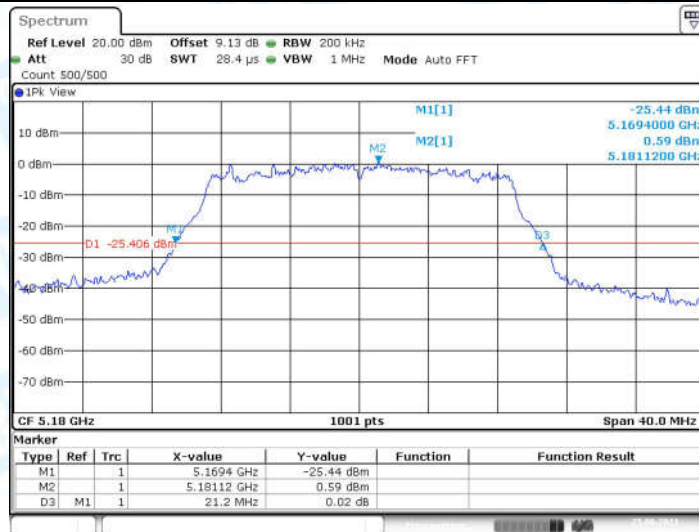
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11N40SISO_Ant1_5230



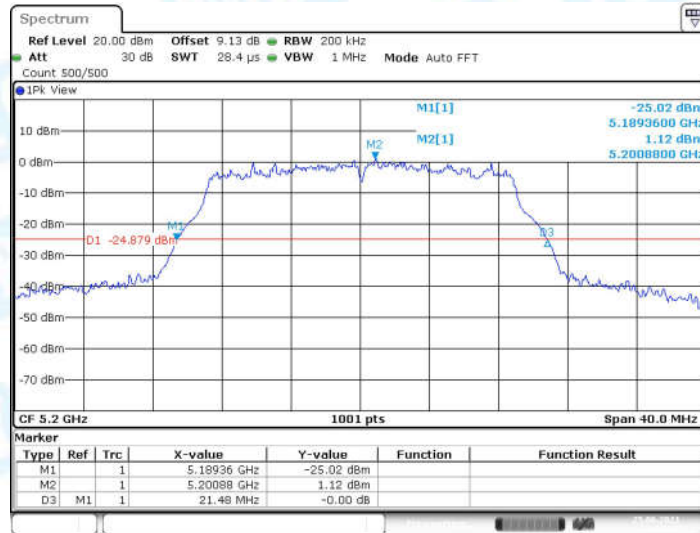
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11AC20SISO_Ant1_5180



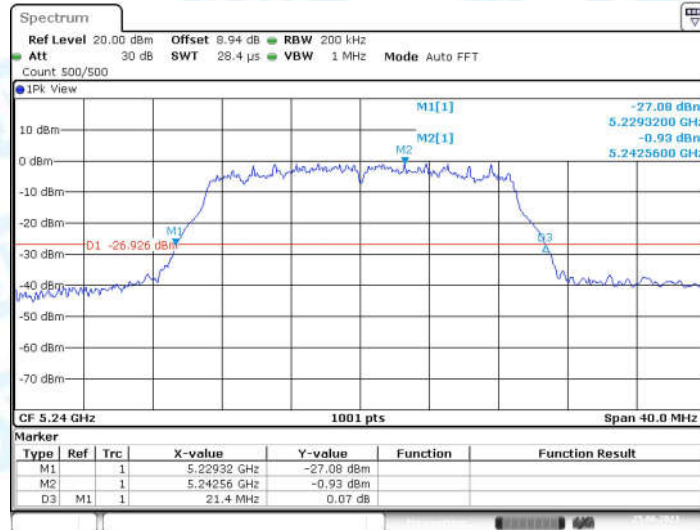
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11AC20SISO_Ant1_5200



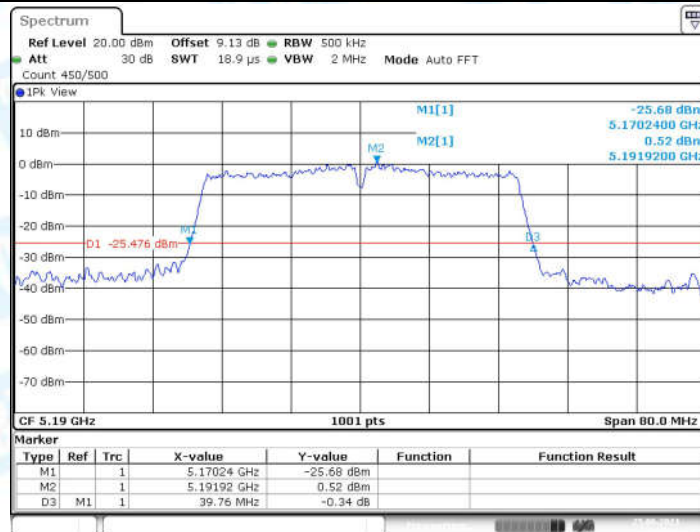
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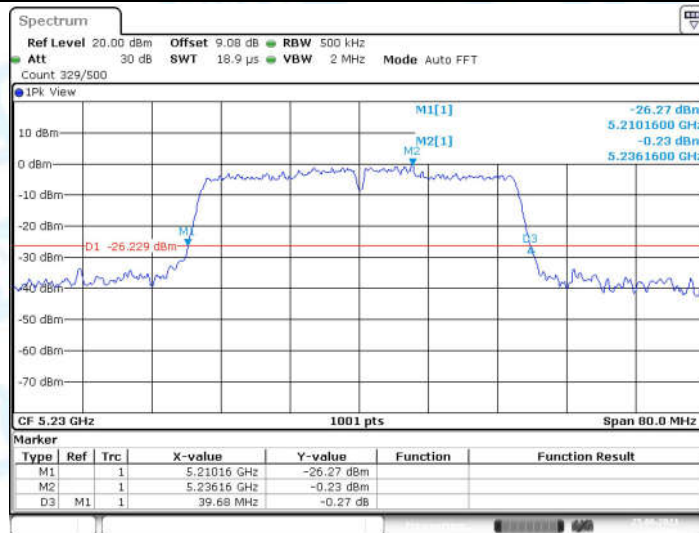
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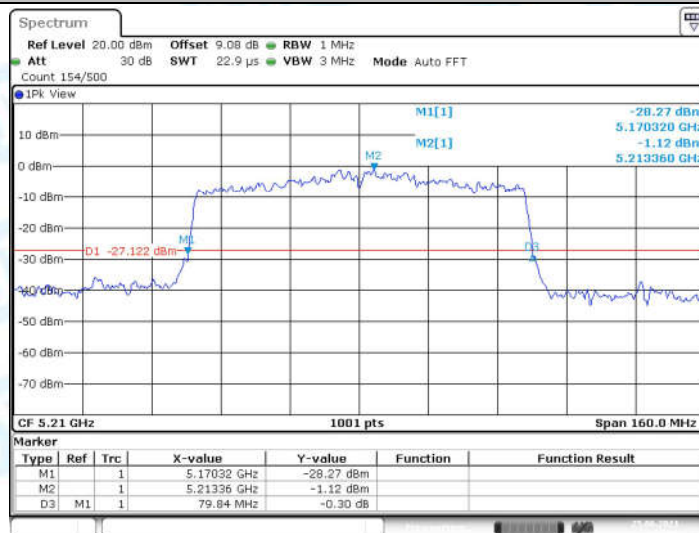
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11AC40SISO_Ant1_5230



Date: 25 JUN 2021 14:19:39

11AC80SISO_Ant1_5210



Date: 25 JUN 2021 14:35:01

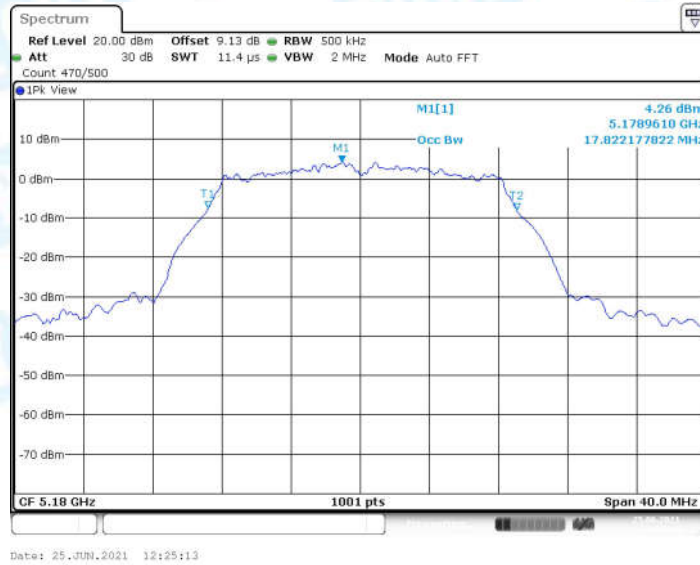
2. Occupied channel bandwidth

2.1. Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	17.822	5171.209	5189.031	---	PASS
		5200	17.303	5191.409	5208.711	---	PASS
		5240	17.383	5231.369	5248.751	---	PASS
11N20SISO	Ant1	5180	18.422	5170.769	5189.191	---	PASS
		5200	18.262	5191.009	5209.271	---	PASS
		5240	18.462	5230.849	5249.311	---	PASS
11N40SISO	Ant1	5190	36.523	5171.778	5208.302	---	PASS
		5230	36.284	5211.938	5248.222	---	PASS
11AC20SISO	Ant1	5180	18.342	5170.809	5189.151	---	PASS
		5200	18.222	5190.929	5209.151	---	PASS
		5240	18.222	5231.049	5249.271	---	PASS
11AC40SISO	Ant1	5190	36.204	5171.938	5208.142	---	PASS
		5230	36.204	5211.938	5248.142	---	PASS
11AC80SISO	Ant1	5210	75.604	5172.278	5247.882	---	PASS

2.2. Test Graphs

11A_Ant1_5180



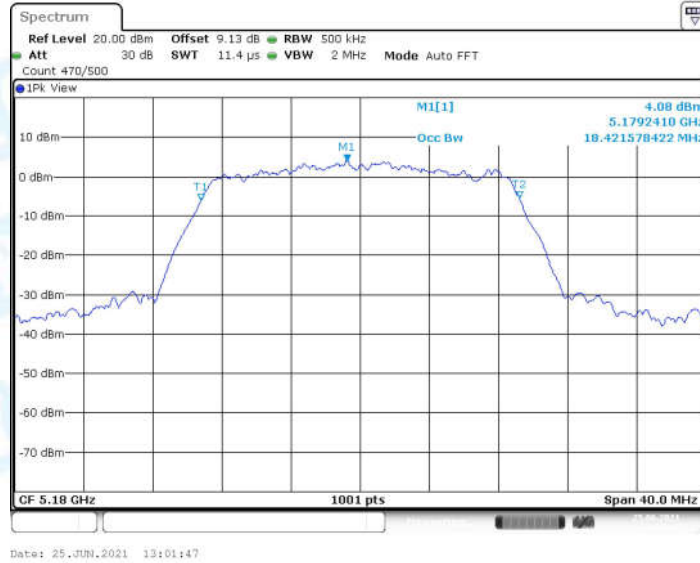
11A_Ant1_5200



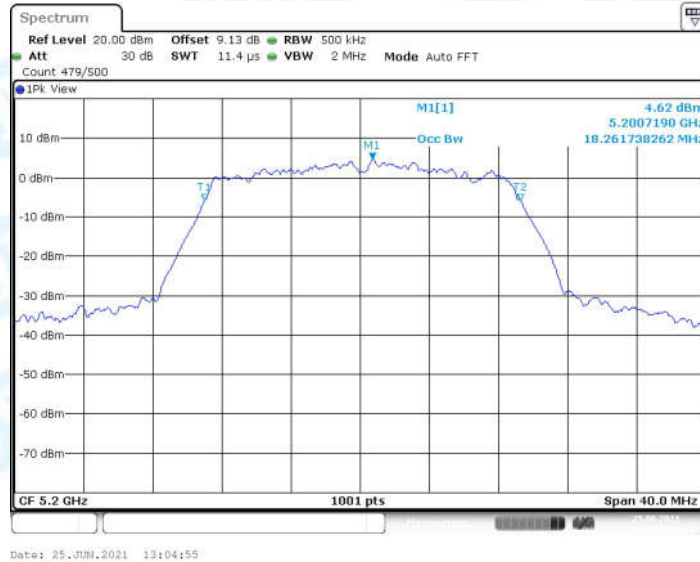
11A_Ant1_5240



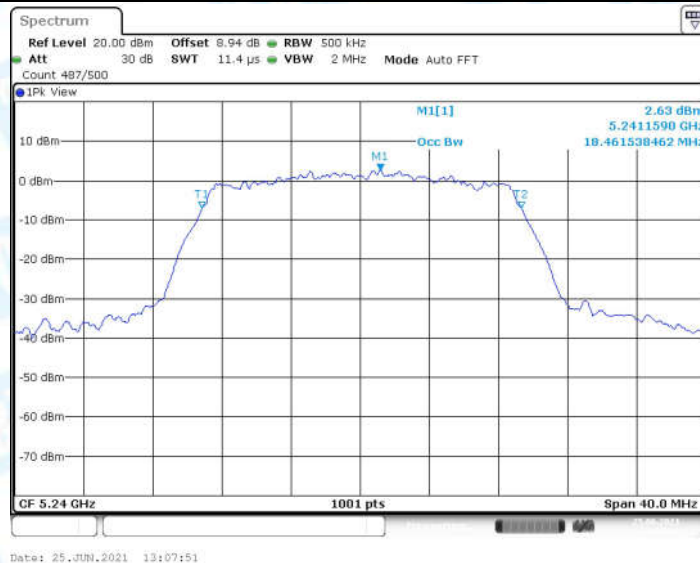
11N20SISO_Ant1_5180



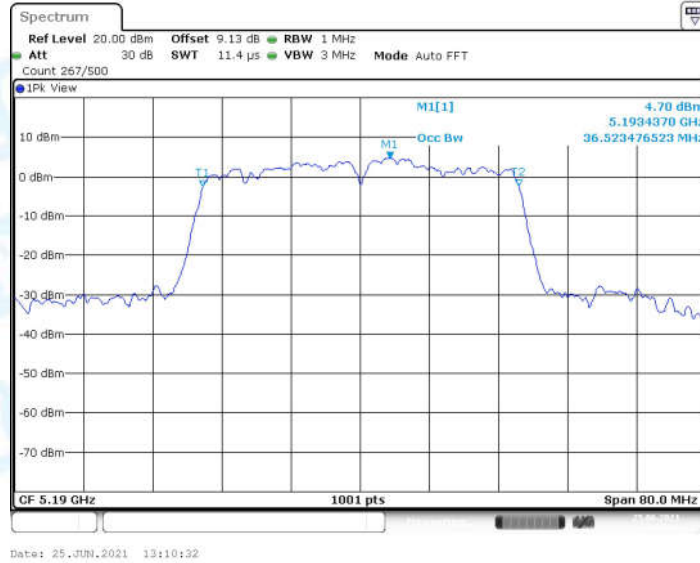
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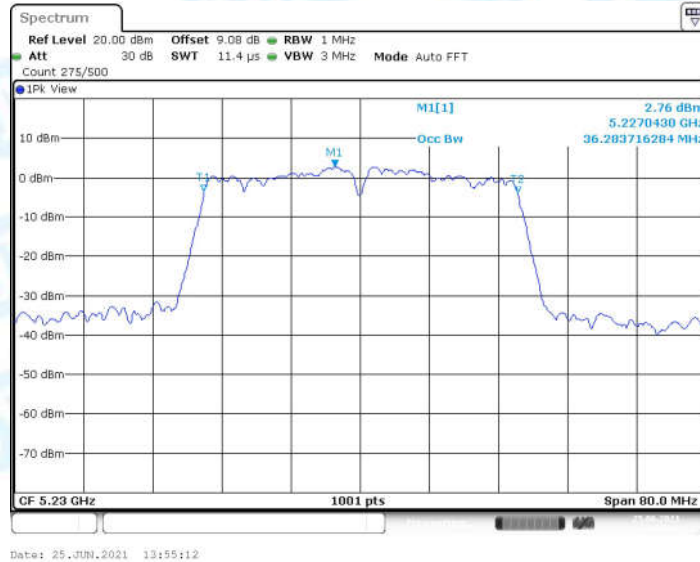
11N20SISO_Ant1_5240



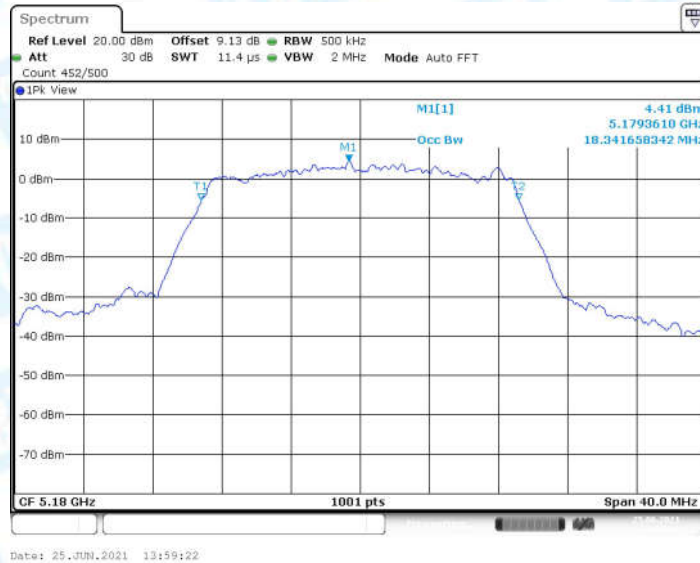
11N40SISO_Ant1_5190



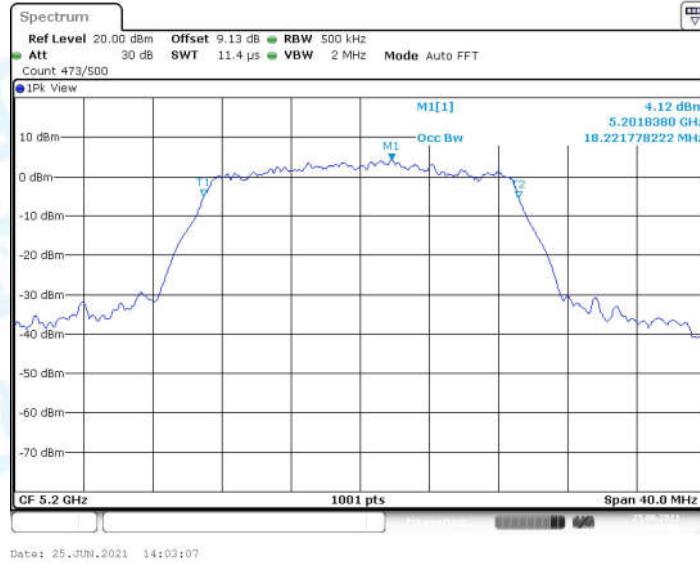
11N40SISO_Ant1_5230



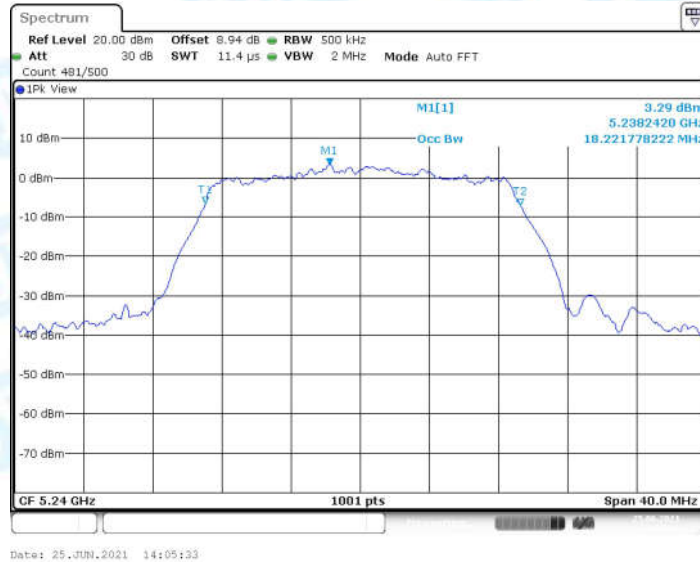
11AC20SISO_Ant1_5180



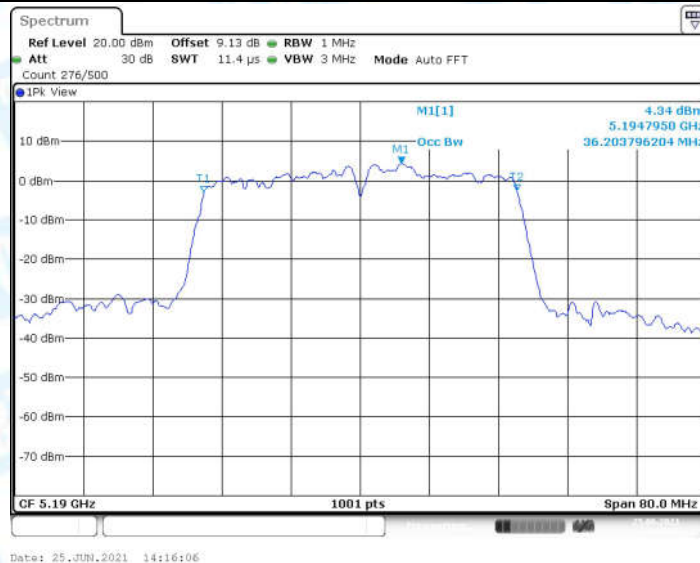
11AC20SISO_Ant1_5200



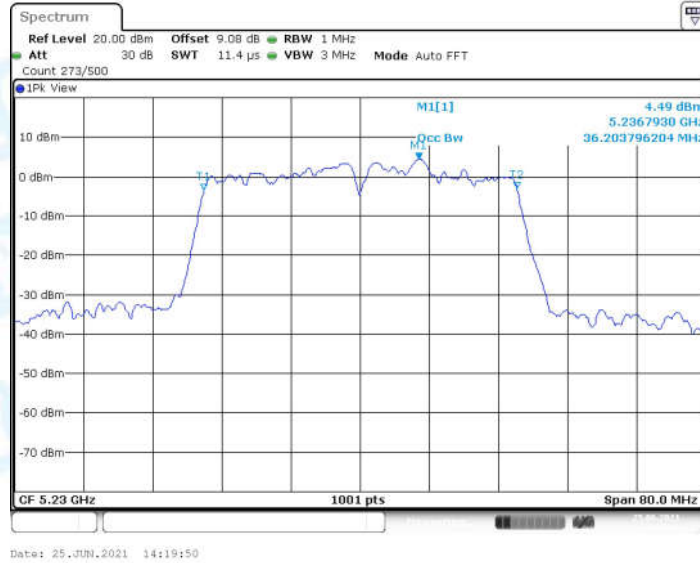
11AC20SISO_Ant1_5240



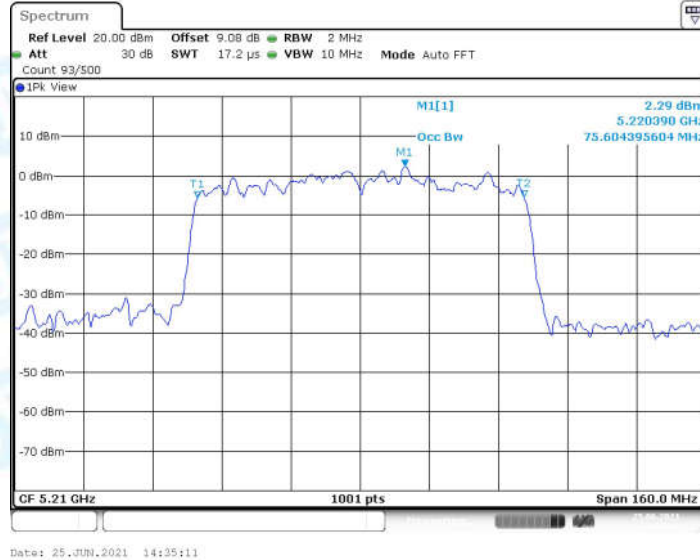
11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230



11AC80SISO_Ant1_5210



3. Maximum conducted output power

3.1. Test Result

TestMode	Antenna	Channel	Conducted power [dBm]	Limit [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
11A	Ant1	5180	10.95	<=23.98	15.95	<=22.51	PASS
		5200	10.97	<=23.98	15.97	<=22.38	PASS
		5240	9.87	<=23.98	14.87	<=22.40	PASS
11N20SISO	Ant1	5180	10.66	<=23.98	15.66	<=22.65	PASS
		5200	10.70	<=23.98	15.70	<=22.62	PASS
		5240	9.38	<=23.98	14.38	<=22.66	PASS
11N40SISO	Ant1	5190	9.55	<=23.98	14.55	<=23	PASS
		5230	8.92	<=23.98	13.92	<=23	PASS
11AC20SISO	Ant1	5180	10.74	<=23.98	15.74	<=22.63	PASS
		5200	10.74	<=23.98	15.74	<=22.61	PASS
		5240	9.60	<=23.98	14.60	<=22.61	PASS
11AC40SISO	Ant1	5190	9.88	<=23.98	14.88	<=23	PASS
		5230	9.13	<=23.98	14.13	<=23	PASS
11AC80SISO	Ant1	5210	7.54	<=23.98	12.54	<=23	PASS

Note: The Duty Cycle Factor is compensated in the graph.

4. Maximum power spectral density

4.1. Test Result

TestMode	Antenna	Channel	Power [dBm/MHz]	Limit [dBm/MHz]	EIRP [dBm/MHz]	Limit [dBm/MHz]	Verdict
11A	Ant1	5180	0.58	<=11	5.58	<=10	PASS
		5200	0.67	<=11	5.67	<=10	PASS
		5240	-0.46	<=11	4.54	<=10	PASS
11N20SISO	Ant1	5180	-0.1	<=11	4.90	<=10	PASS
		5200	0.41	<=11	5.41	<=10	PASS
		5240	-1.31	<=11	3.69	<=10	PASS
11N40SISO	Ant1	5190	-4.03	<=11	0.97	<=10	PASS
		5230	-4.68	<=11	0.32	<=10	PASS
11AC20SISO	Ant1	5180	0.25	<=11	5.25	<=10	PASS
		5200	0.26	<=11	5.26	<=10	PASS
		5240	-1.04	<=11	3.96	<=10	PASS
11AC40SISO	Ant1	5190	-3.28	<=11	1.72	<=10	PASS
		5230	-4.36	<=11	0.64	<=10	PASS
11AC80SISO	Ant1	5210	-7.69	<=11	-2.69	<=10	PASS

Note: 1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.

2.The Duty Cycle Factor and RBW Factor is compensated in the graph.

11A Ant1 5180



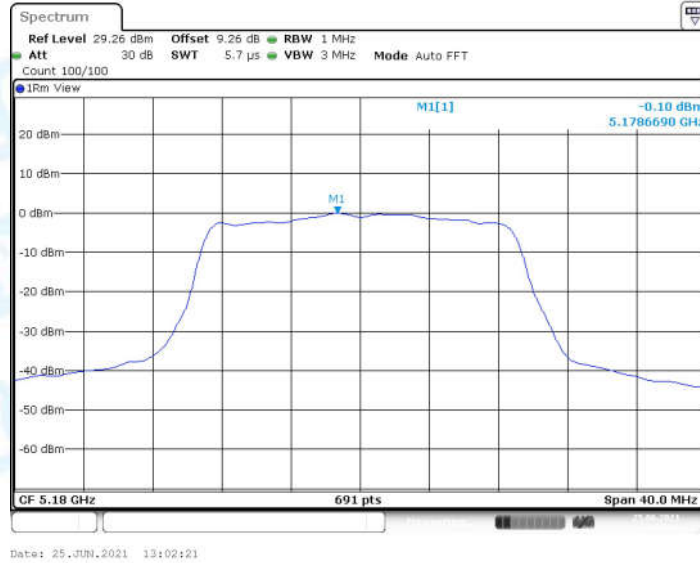
11A_Ant1_5200



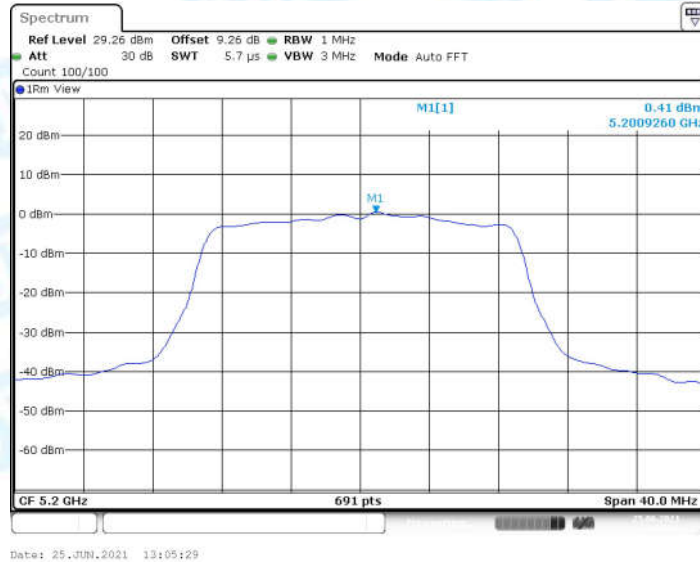
11A Ant1 5240



11N20SISO_Ant1_5180



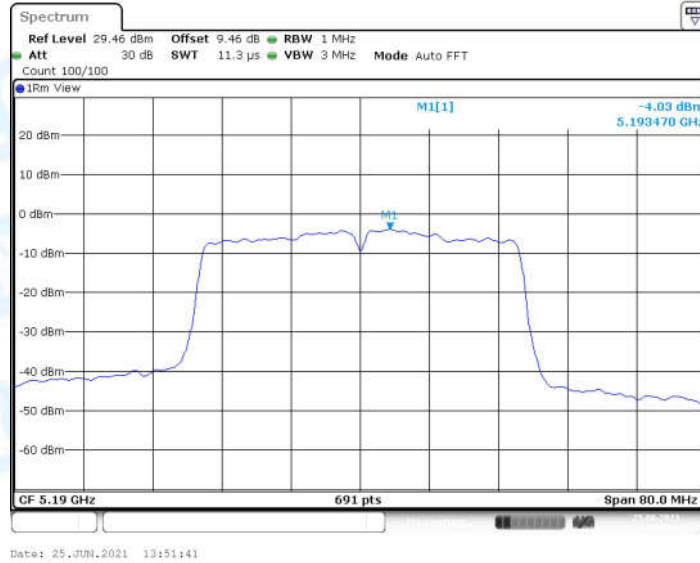
11N20SISO_Ant1_5200



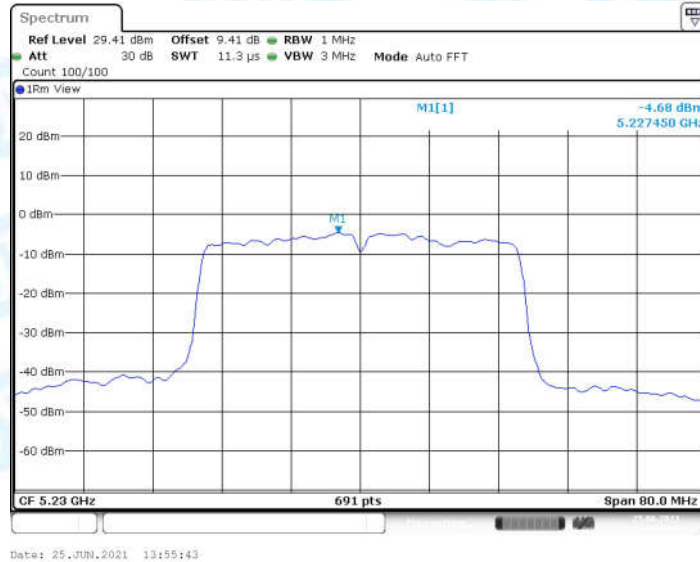
11N20SISO_Ant1_5240



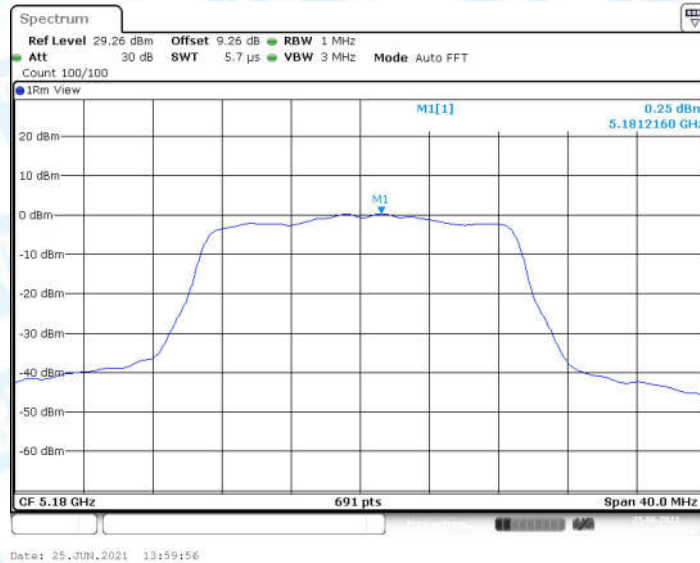
11N40SISO_Ant1_5190



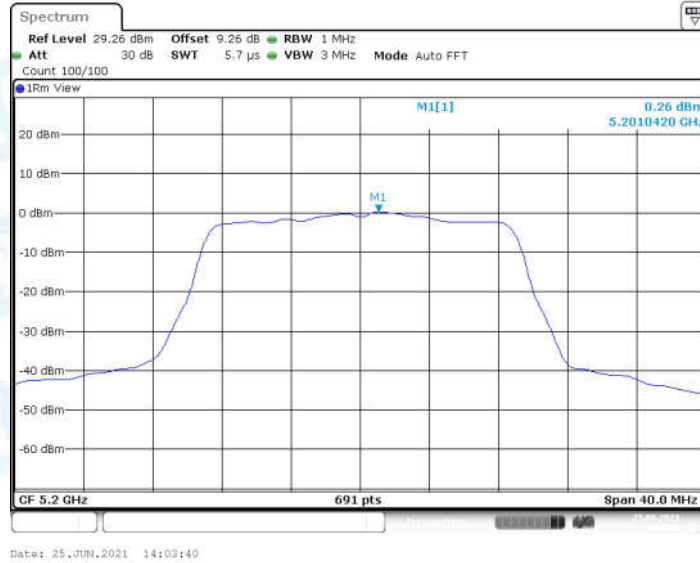
11N40SISO_Ant1_5230



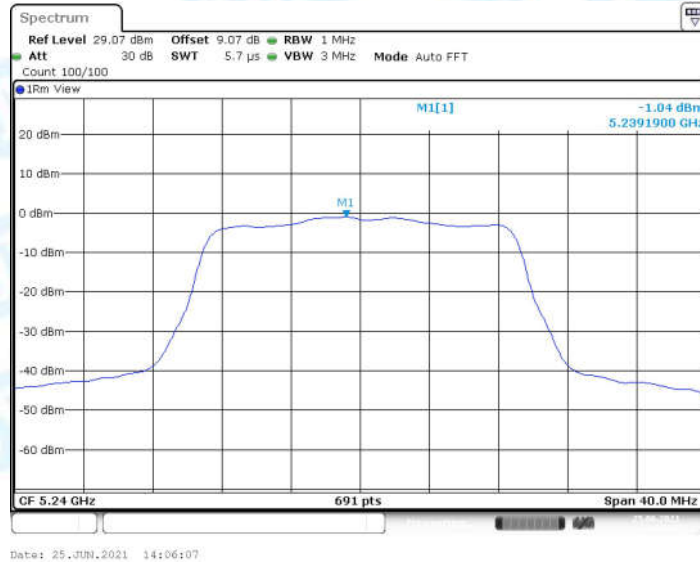
11AC20SISO_Ant1_5180



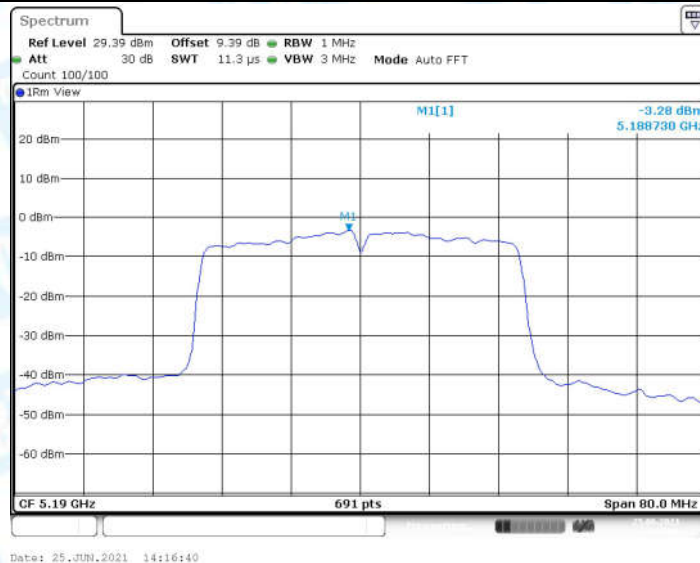
11AC20SISO_Ant1_5200



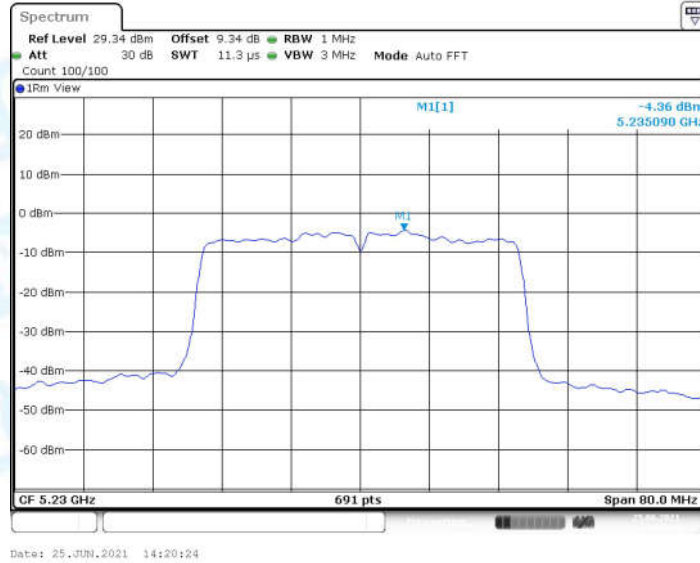
11AC20SISO_Ant1_5240



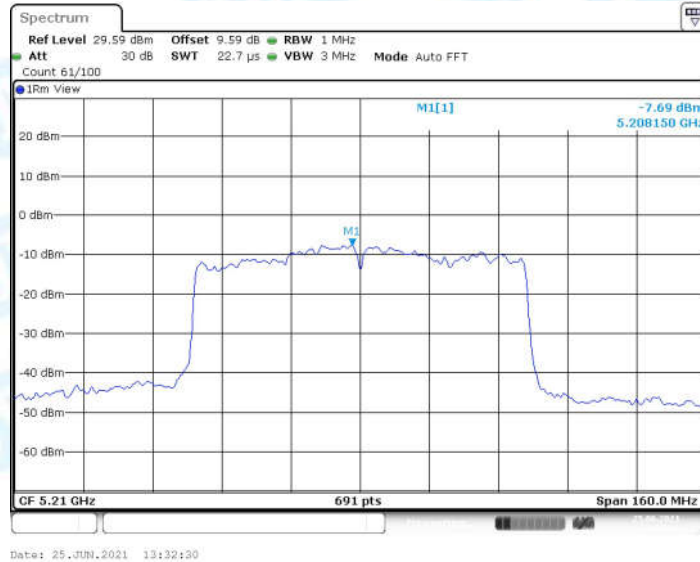
11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230



11AC80SISO_Ant1_5210



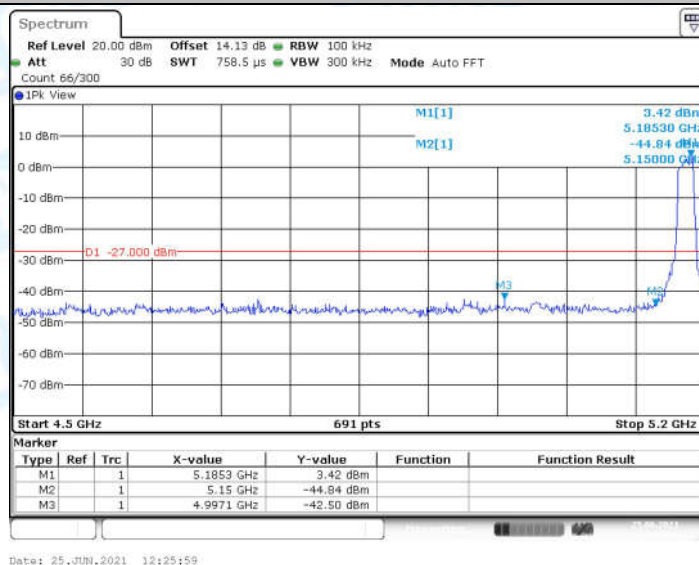
5. Band edge measurements

5.1. Test Result

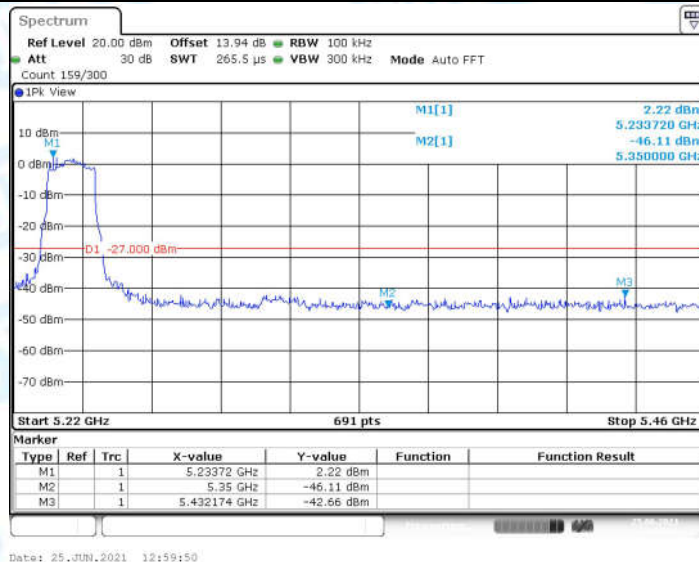
TestMode	Antenna	ChName	Channel	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	Low	5180	-42.5	<=-27	PASS
		High	5240	-42.66	<=-27	PASS
11N20SISO	Ant1	Low	5180	-42.46	<=-27	PASS
		High	5240	-43.08	<=-27	PASS
11N40SISO	Ant1	Low	5190	-38.55	<=-27	PASS
		High	5230	-42.06	<=-27	PASS
11AC20SISO	Ant1	Low	5180	-42.42	<=-27	PASS
		High	5240	-42.04	<=-27	PASS
11AC40SISO	Ant1	Low	5190	-39.83	<=-27	PASS
		High	5230	-42.31	<=-27	PASS
11AC80SISO	Ant1	Low	5210	-37.26	<=-27	PASS
		High	5210	-43.01	<=-27	PASS

5.2. Test Graphs

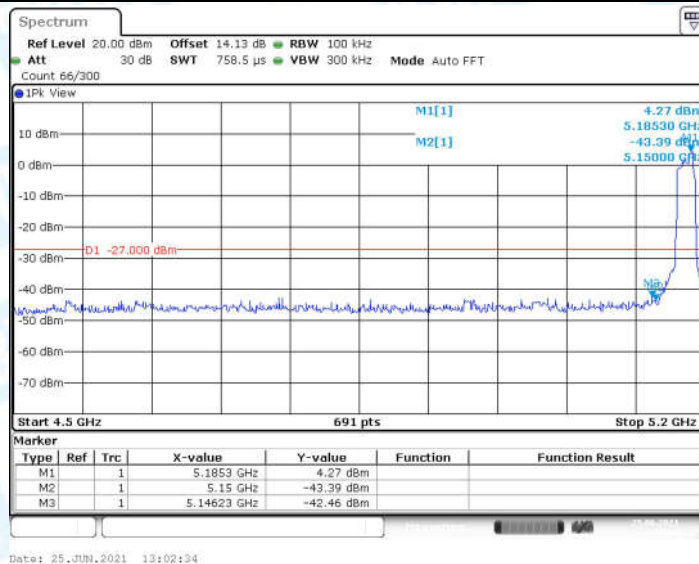
11A_Ant1_Low_5180



11A_Ant1_High_5240



11N20SISO_Ant1_Low_5180

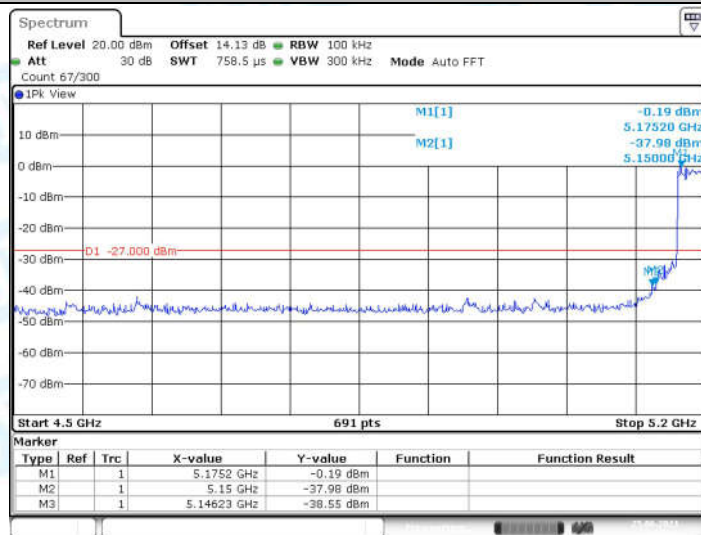


11N20SISO_Ant1_High_5240



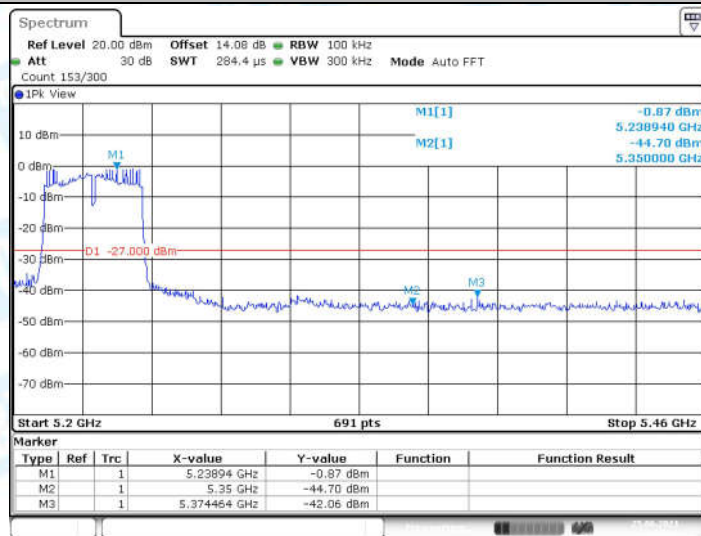
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11N40SISO_Ant1_Low_5190



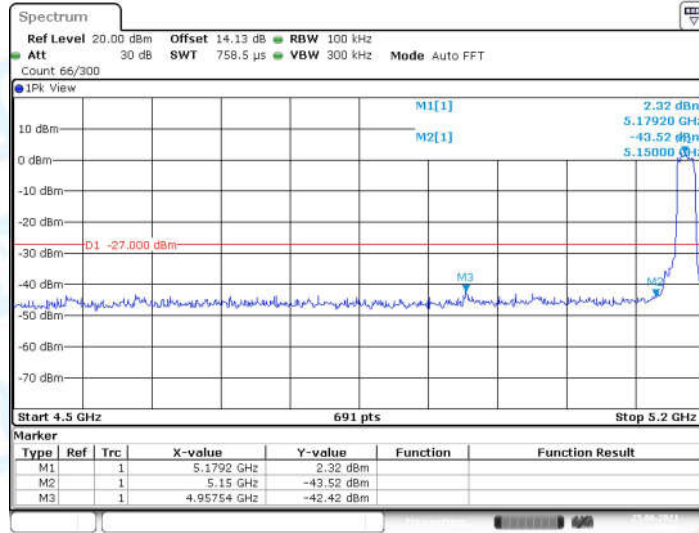
Date: 25 JUN 2021 13:11:19

11N40SISO_Ant1_High_5230



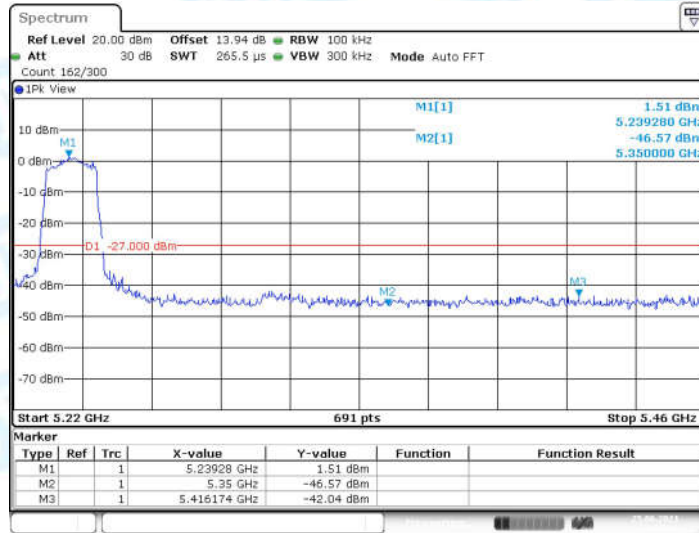
Date: 25 JUN 2021 13:55:56

11AC20SISO_Ant1_Low_5180



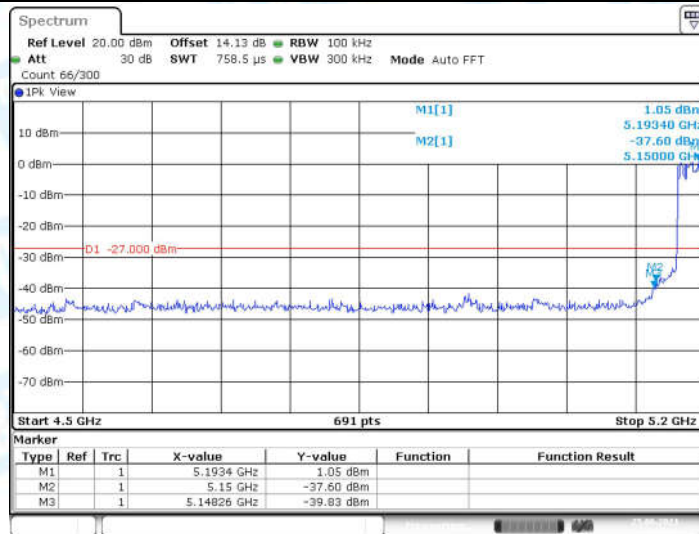
Date: 25 JUN 2021 14:00:09

11AC20SISO_Ant1_High_5240



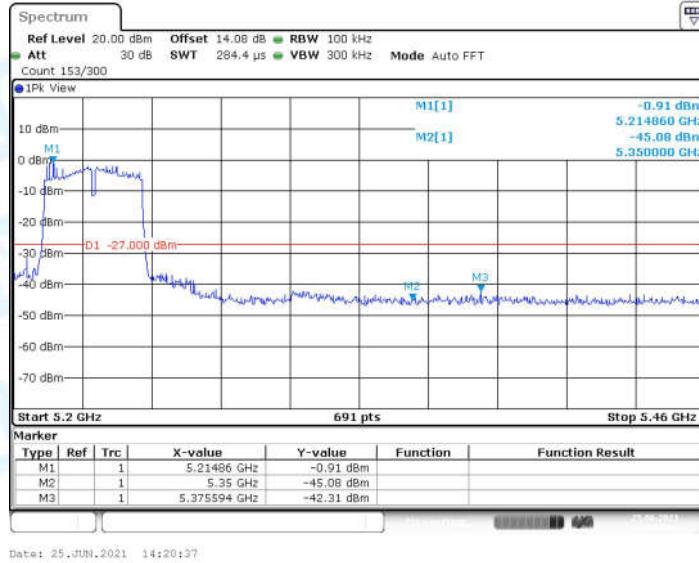
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11AC40SISO_Ant1_Low_5190

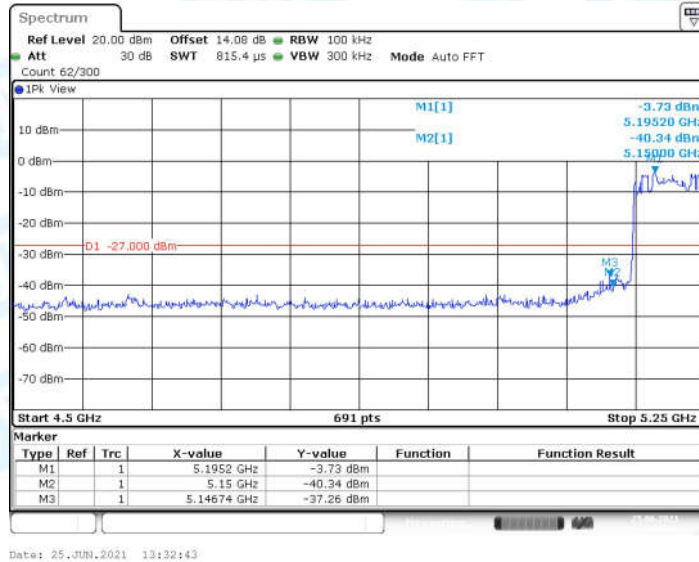


Date: 25 JUN 2021 14:16:53

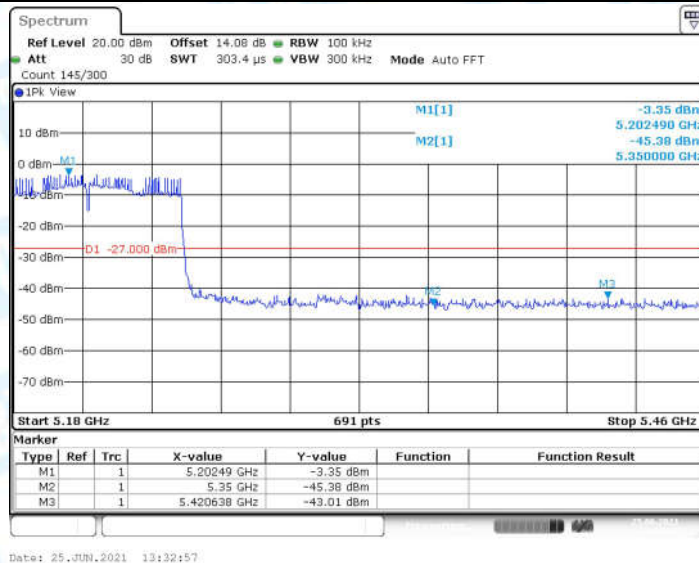
11AC40SISO_Ant1_High_5230



11AC80SISO_Ant1_Low_5210



11AC80SISO_Ant1_High_5210



7. Emissions in Restricted Bands

7.1. Test Result

TestMode	Antenna	ChName	Channel	Detector	Freq [MHz]	EIRP [dBm]	Limit [dBm]	Verdict
11A	Ant1	Low	5180	AV	4500.000	-47.51	<=-41.20	PASS
				AV	5032.609	-44.07	<=-41.20	PASS
				AV	5150.000	-44.82	<=-41.20	PASS
				Peak	4500.000	-34.68	<=-21.20	PASS
				Peak	5144.203	-28.95	<=-21.20	PASS
				Peak	5150.000	-28.53	<=-21.20	PASS
		High	5240	AV	5350.000	-45.63	<=-41.20	PASS
				AV	5446.783	-43.74	<=-41.20	PASS
				AV	5460.000	-45.67	<=-41.20	PASS
				Peak	5350.000	-34.03	<=-21.20	PASS
				Peak	5447.826	-32.4	<=-21.20	PASS
				Peak	5460.000	-34.94	<=-21.20	PASS
11N20SISO	Ant1	Low	5180	AV	4500.000	-47.45	<=-41.20	PASS
				AV	5032.609	-43.89	<=-41.20	PASS
				AV	5150.000	-44.31	<=-41.20	PASS
				Peak	4500.000	-36.5	<=-21.20	PASS
				Peak	5145.217	-30.02	<=-21.20	PASS
				Peak	5150.000	-29.41	<=-21.20	PASS
		High	5240	AV	5350.000	-45.7	<=-41.20	PASS
				AV	5446.783	-43.88	<=-41.20	PASS
				AV	5460.000	-45.58	<=-41.20	PASS
				Peak	5350.000	-36.27	<=-21.20	PASS
				Peak	5449.217	-32.2	<=-21.20	PASS
				Peak	5460.000	-35.27	<=-21.20	PASS
11N40SISO	Ant1	Low	5190	AV	4500.000	-46.86	<=-41.20	PASS
				AV	5149.275	-42.2	<=-41.20	PASS
				AV	5150.000	-41.4	<=-41.20	PASS
				Peak	4500.000	-35.91	<=-21.20	PASS
				Peak	5144.203	-27.25	<=-21.20	PASS
				Peak	5150.000	-28.48	<=-21.20	PASS
		High	5230	AV	5350.000	-45.11	<=-41.20	PASS
				AV	5447.188	-43.28	<=-41.20	PASS
				AV	5460.000	-45.16	<=-41.20	PASS
				Peak	5350.000	-35.27	<=-21.20	PASS
				Peak	5450.580	-32.92	<=-21.20	PASS
				Peak	5460.000	-34.91	<=-21.20	PASS
11AC20SISO	Ant1	Low	5180	AV	4500.000	-47.37	<=-41.20	PASS
				AV	5032.609	-44.12	<=-41.20	PASS
				AV	5150.000	-44.71	<=-41.20	PASS
				Peak	4500.000	-35.85	<=-21.20	PASS
				Peak	5148.261	-30.53	<=-21.20	PASS

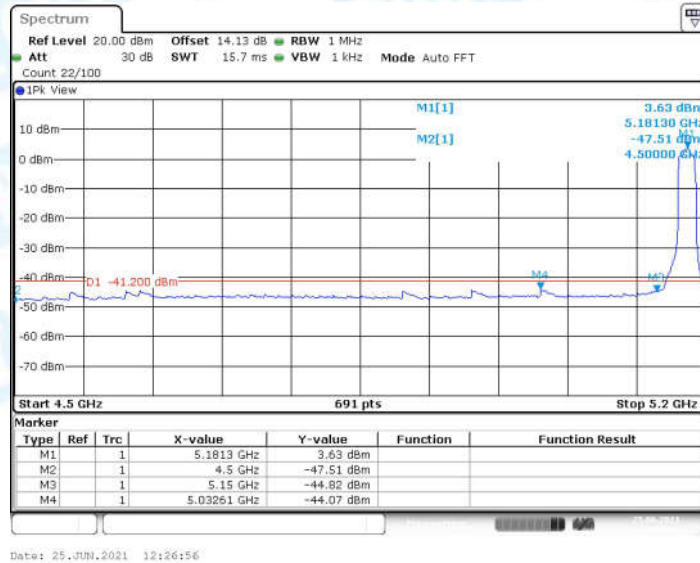
		High	5240	Peak	5150.000	-26.35	<=-21.20	PASS
				AV	5350.000	-45.69	<=-41.20	PASS
				AV	5447.478	-43.95	<=-41.20	PASS
				AV	5460.000	-45.46	<=-41.20	PASS
				Peak	5350.000	-35.6	<=-21.20	PASS
				Peak	5449.217	-32.86	<=-21.20	PASS
				Peak	5460.000	-34.89	<=-21.20	PASS
11AC40SISO	Ant1	Low	5190	AV	4500.000	-47.02	<=-41.20	PASS
				AV	5149.275	-41.92	<=-41.20	PASS
				AV	5150.000	-41.96	<=-41.20	PASS
				Peak	4500.000	-36.1	<=-21.20	PASS
				Peak	5141.159	-27.29	<=-21.20	PASS
				Peak	5150.000	-26.65	<=-21.20	PASS
		High	5230	AV	5350.000	-45.32	<=-41.20	PASS
				AV	5447.565	-43.35	<=-41.20	PASS
				AV	5460.000	-45.18	<=-41.20	PASS
				Peak	5350.000	-36.28	<=-21.20	PASS
				Peak	5447.565	-31.56	<=-21.20	PASS
				Peak	5460.000	-33.25	<=-21.20	PASS
11AC80SISO	Ant1	Low	5210	AV	4500.000	-46.53	<=-41.20	PASS
				AV	5146.739	-42.38	<=-41.20	PASS
				AV	5150.000	-42.62	<=-41.20	PASS
				Peak	4500.000	-35.55	<=-21.20	PASS
				Peak	5136.957	-30.35	<=-21.20	PASS
				Peak	5150.000	-31.69	<=-21.20	PASS
		High	5210	AV	5350.000	-44.33	<=-41.20	PASS
				AV	5448.232	-42.7	<=-41.20	PASS
				AV	5460.000	-44.81	<=-41.20	PASS
				Peak	5350.000	-35.17	<=-21.20	PASS
				Peak	5449.855	-32.26	<=-21.20	PASS
				Peak	5460.000	-35.43	<=-21.20	PASS

Note:

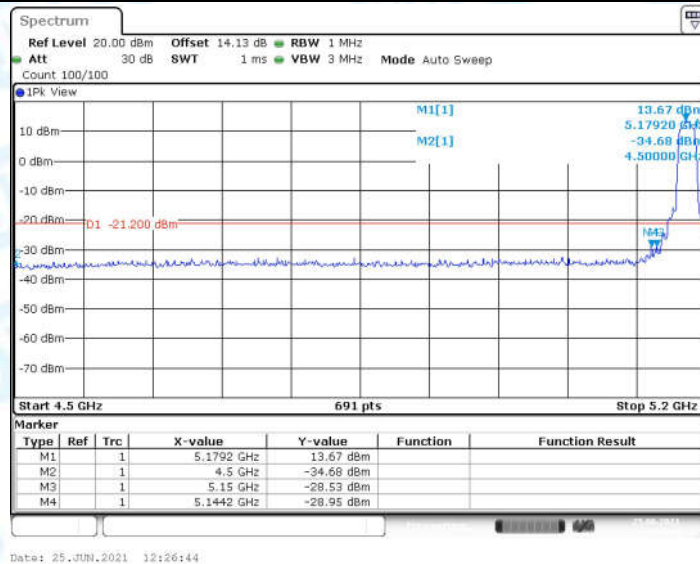
1. The Antenna Gain is compensated in the graph.
2. For transmitters operating in 5150-5350 GHz band and 5470-5725 GHz band: The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a) or RSS-Gen 8.10. The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

7.2.Test Graphs

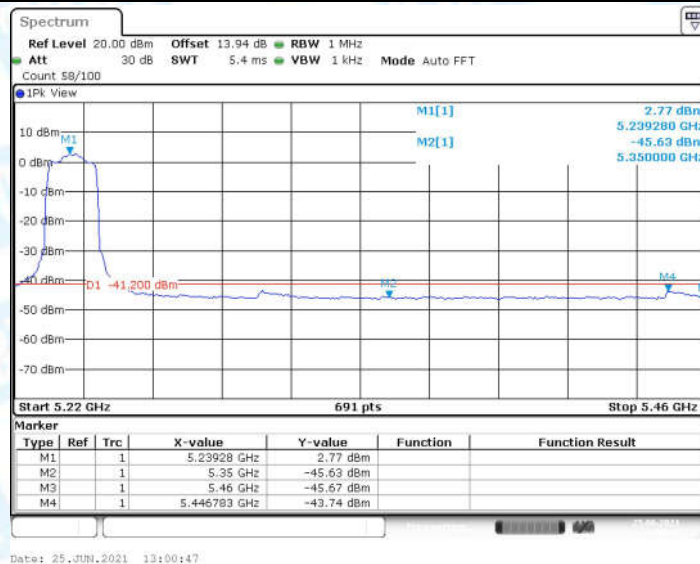
11A_Ant1_Low_5180_AV



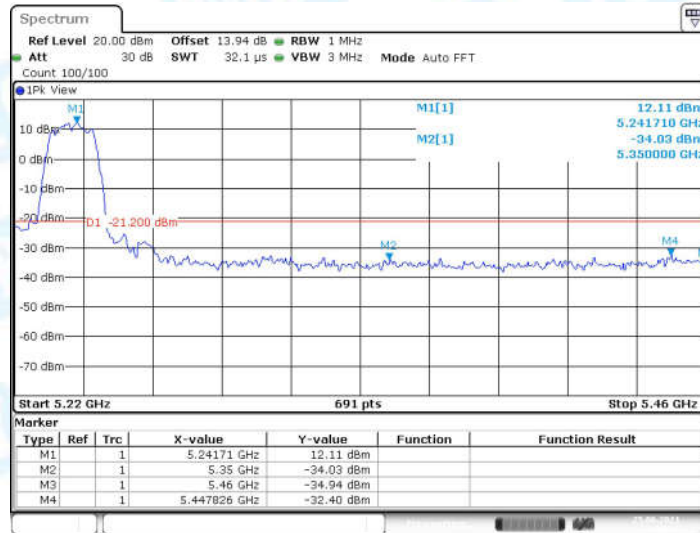
11A_Ant1_Low_5180_Peak



11A_Ant1_High_5240_AV

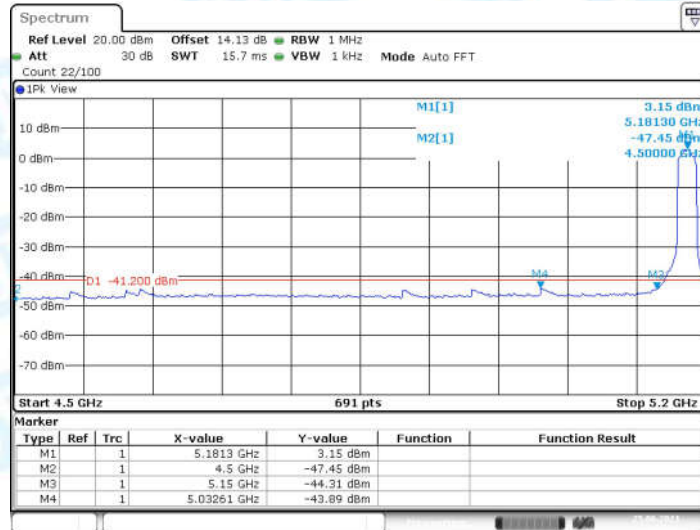


11A_Ant1_High_5240_Peak



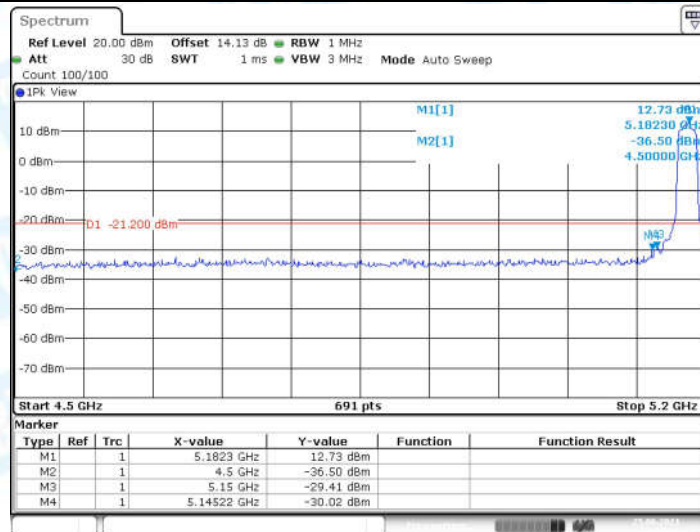
Date: 25 JUN 2021 13:00:35

11N20SISO_Ant1_Low_5180_AV



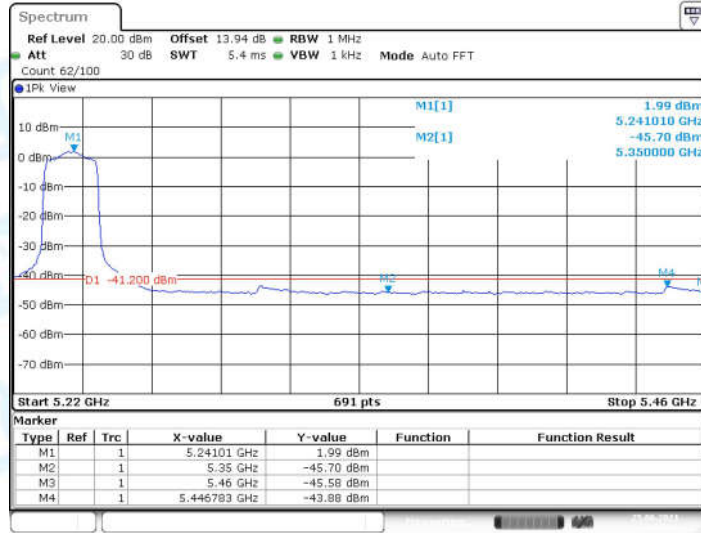
Date: 25 JUN 2021 13:03:31

11N20SISO_Ant1_Low_5180_Peak



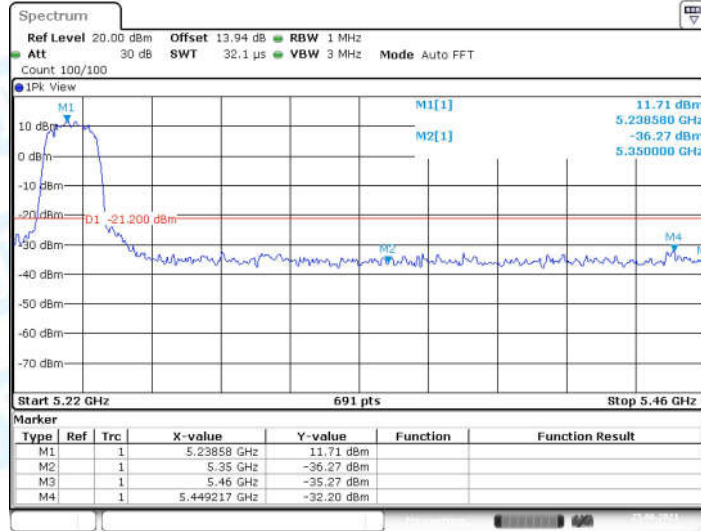
Date: 25 JUN 2021 13:03:19

11N20SISO_Ant1_High_5240_AV



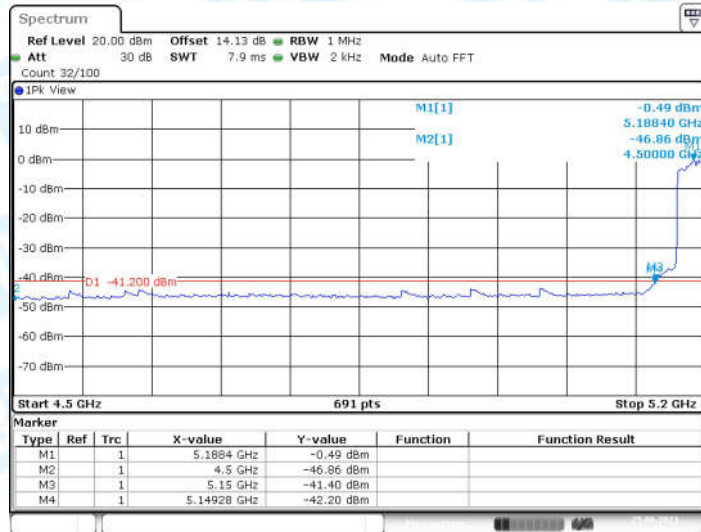
Date: 25 JUN, 2021 13:09:35

11N20SISO_Ant1_High_5240_Peak



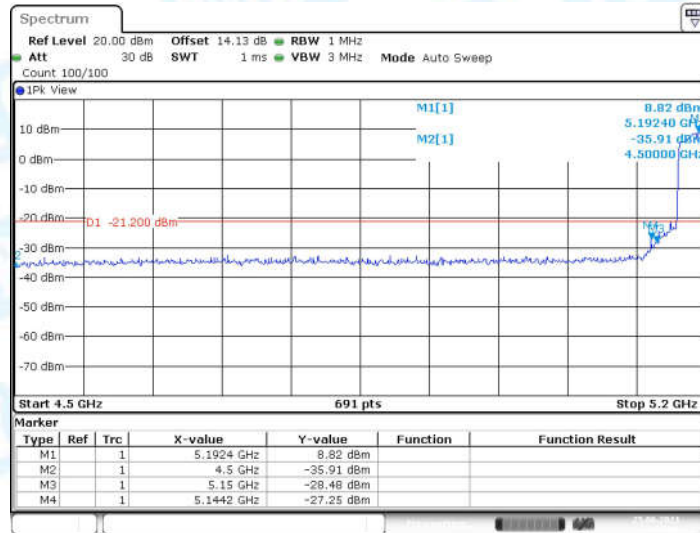
Date: 25 JUN, 2021 13:09:23

11N40SISO_Ant1_Low_5190_AV



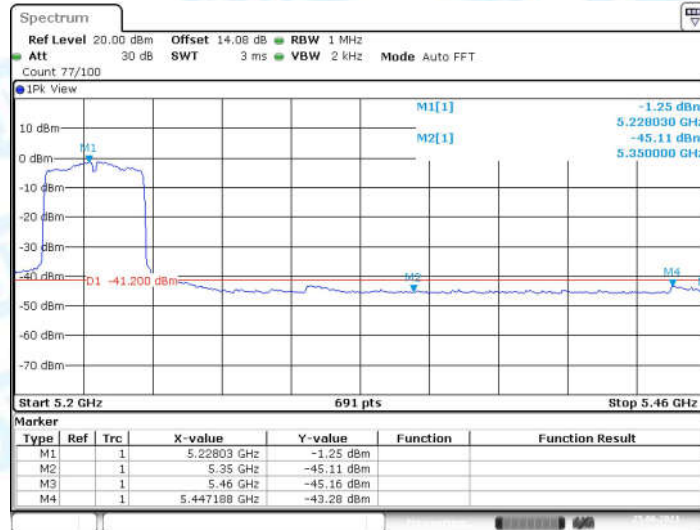
Date: 25 JUN, 2021 13:50:57

11N40SISO_Ant1_Low_5190_Peak



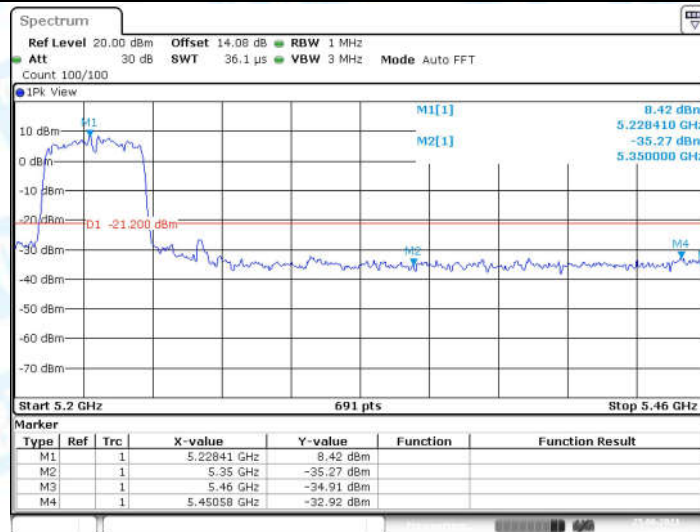
Date: 25 JUN 2021 13:50:46

11N40SISO_Ant1_High_5230_AV



Date: 25 JUN 2021 13:56:53

11N40SISO_Ant1_High_5230_Peak



Date: 25 JUN 2021 13:56:41