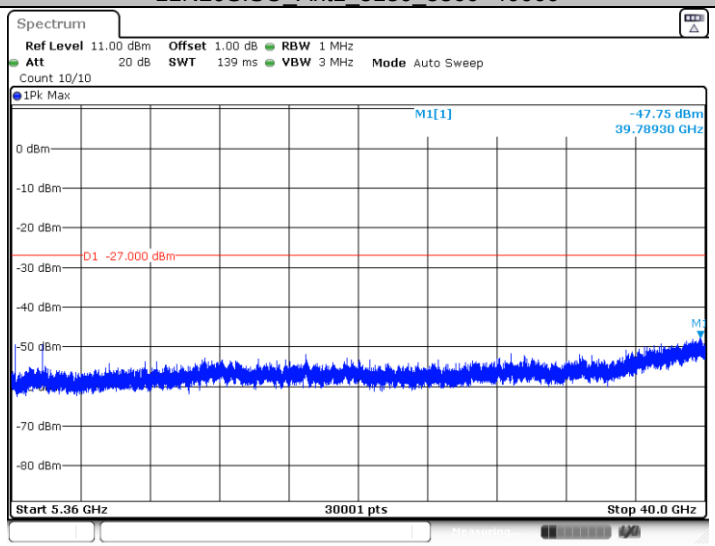
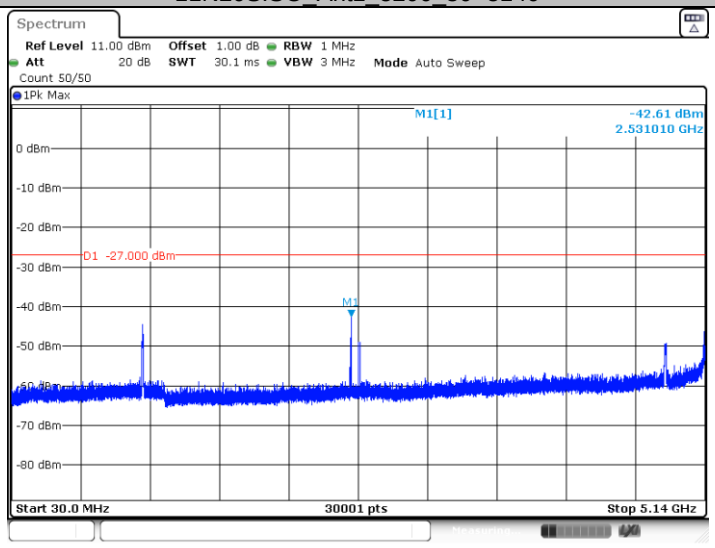
11N20SISO_Ant1_5180_5360~40000



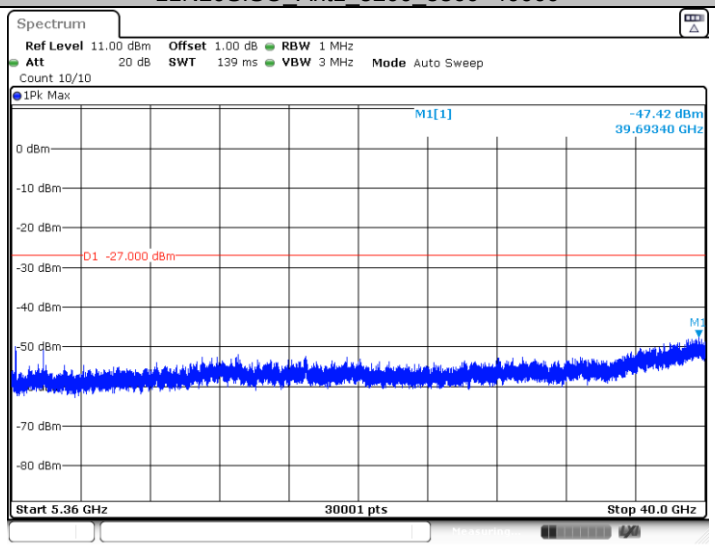
Date: 31.MAY.2022 22:53:36

11N20SISO_Ant1_5200_30~5140



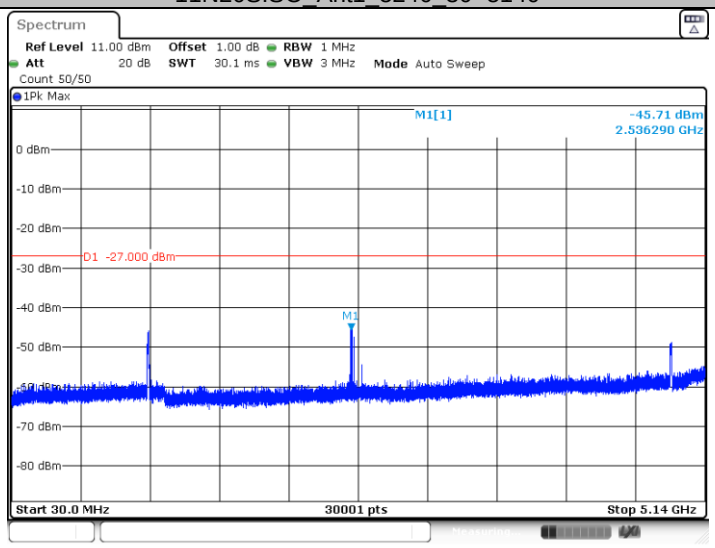
Date: 31.MAY.2022 22:55:37

11N20SISO_Ant1_5200_5360~40000



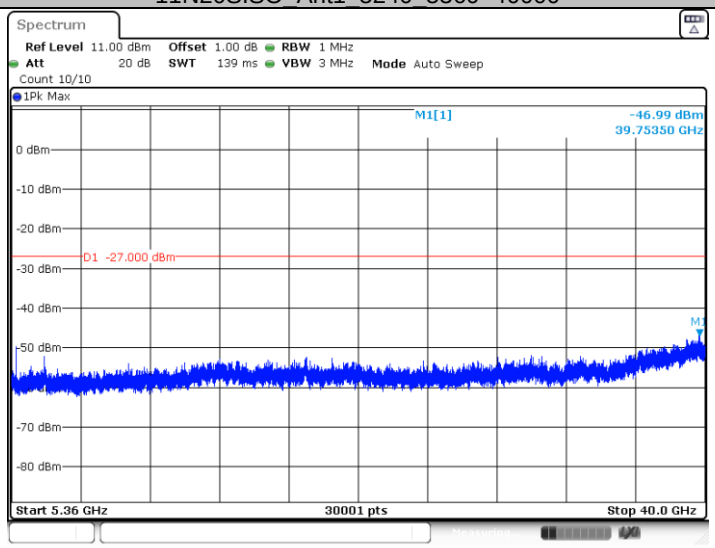
Date: 31.MAY.2022 22:55:42

11N20SISO_Ant1_5240_30~5140



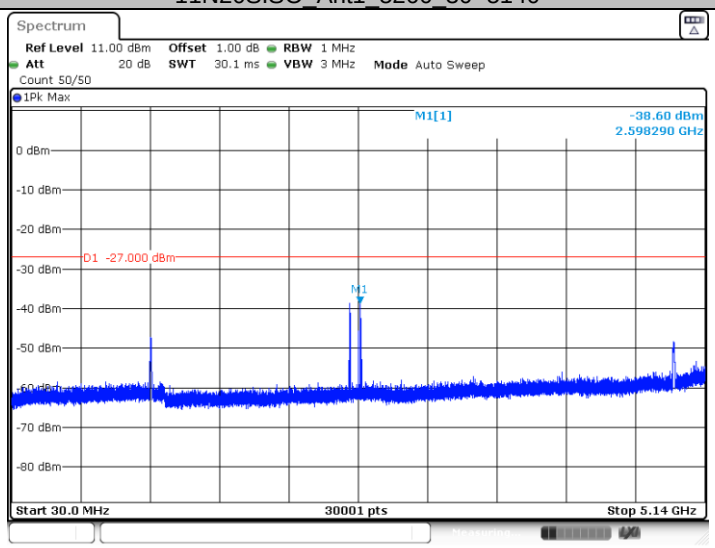
Date: 31.MAY.2022 22:58:00

11N20SISO_Ant1_5240_5360~40000



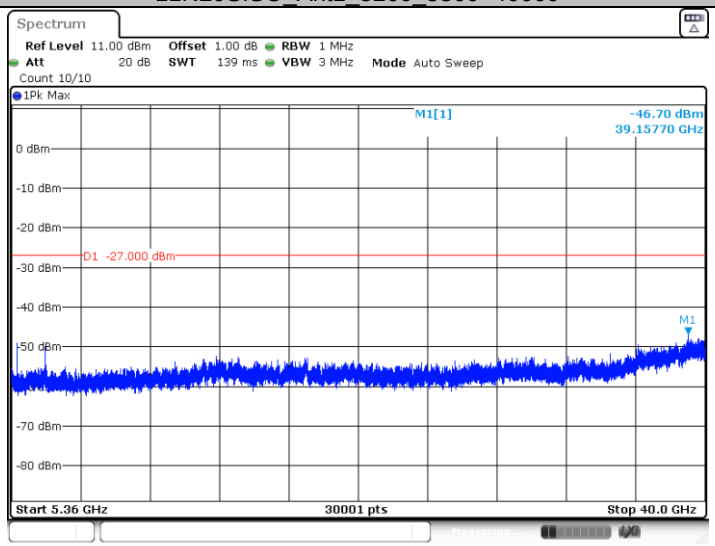
Date: 31.MAY.2022 22:58:05

11N20SISO_Ant1_5260_30~5140



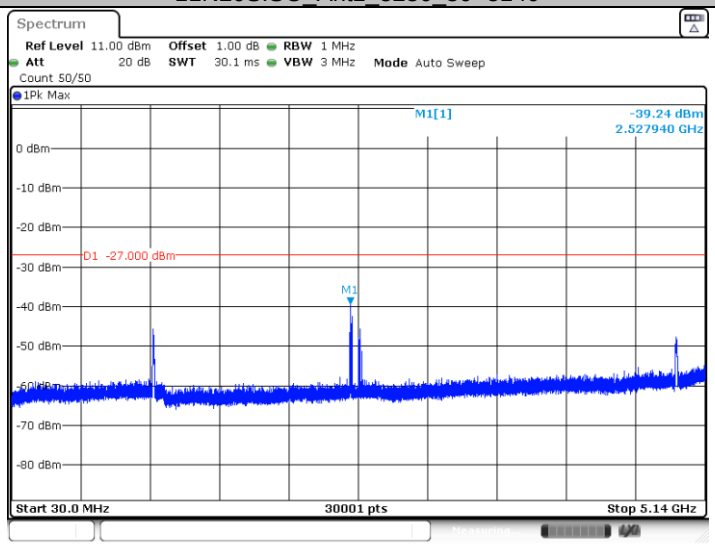
Date: 31.MAY.2022 22:59:41

11N20SISO_Ant1_5260_5360~40000



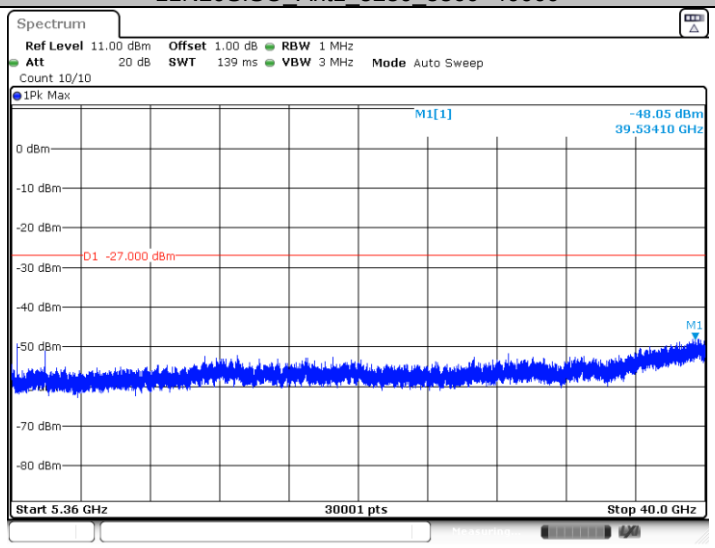
Date: 31.MAY.2022 22:59:47

11N20SISO_Ant1_5280_30~5140



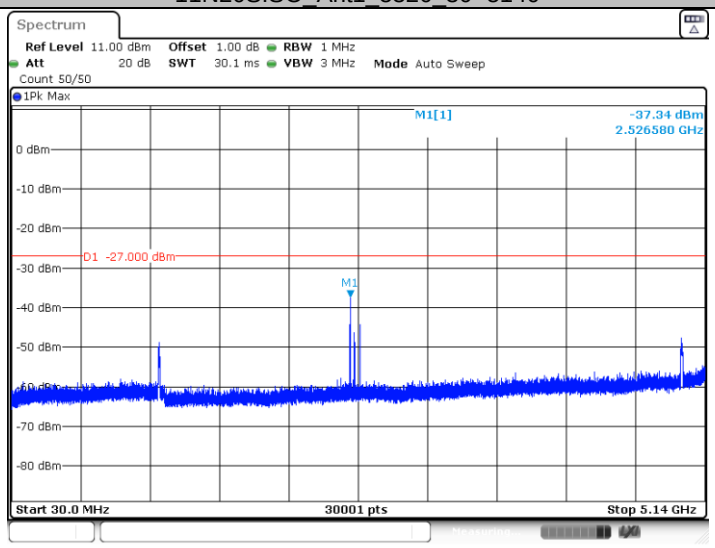
Date: 31.MAY.2022 23:01:45

11N20SISO_Ant1_5280_5360~40000



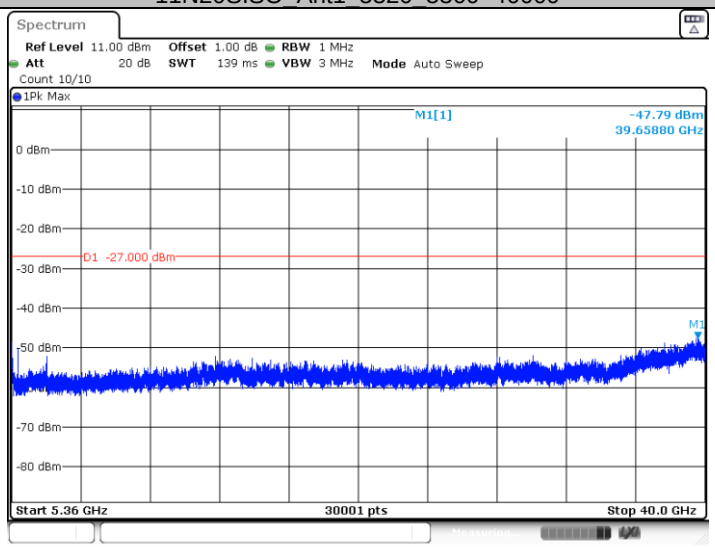
Date: 31.MAY.2022 23:01:50

11N20SISO_Ant1_5320_30~5140



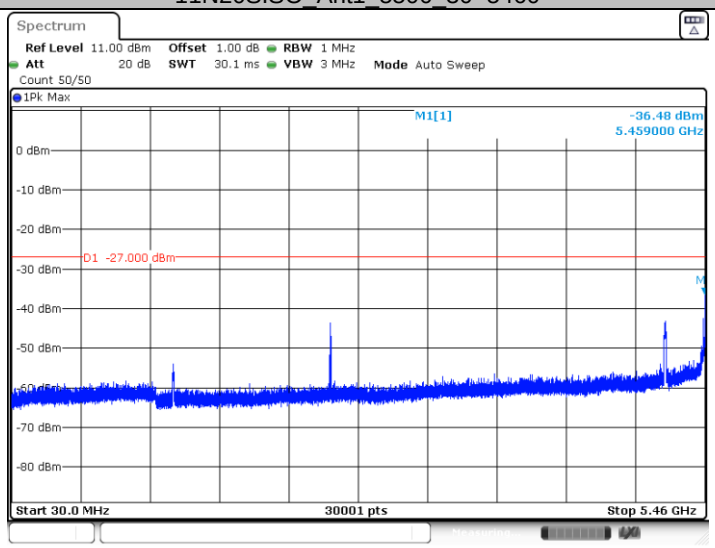
Date: 31.MAY.2022 23:03:33

11N20SISO_Ant1_5320_5360~40000



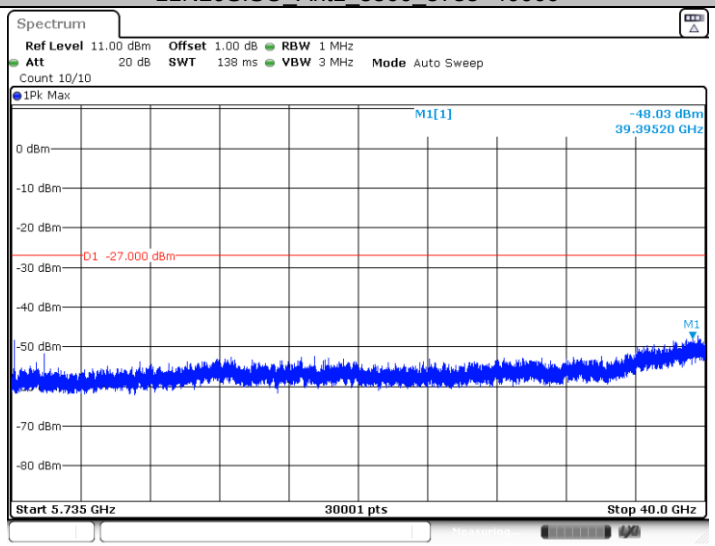
Date: 31.MAY.2022 23:03:39

11N20SISO_Ant1_5500_30~5460



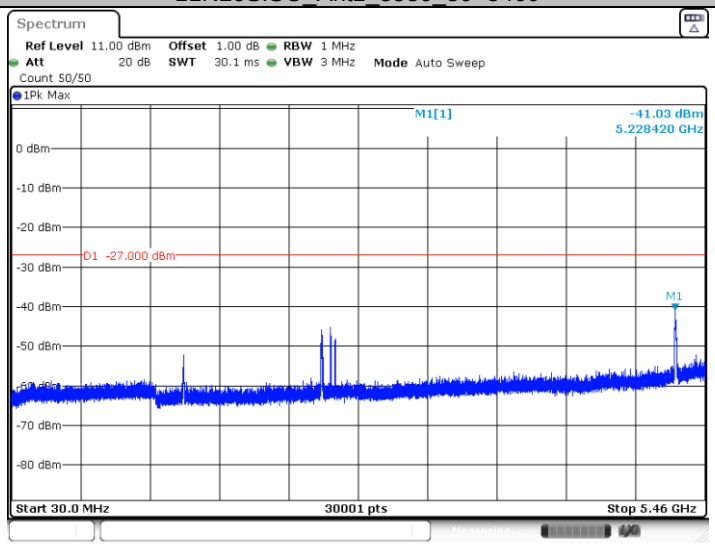
Date: 31.MAY.2022 23:06:26

11N20SISO_Ant1_5500_5735~40000



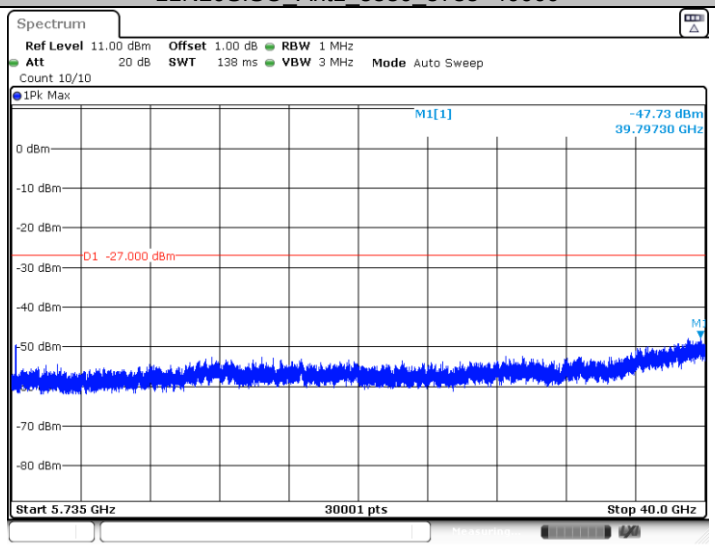
Date: 31.MAY.2022 23:06:31

11N20SISO_Ant1_5580_30~5460



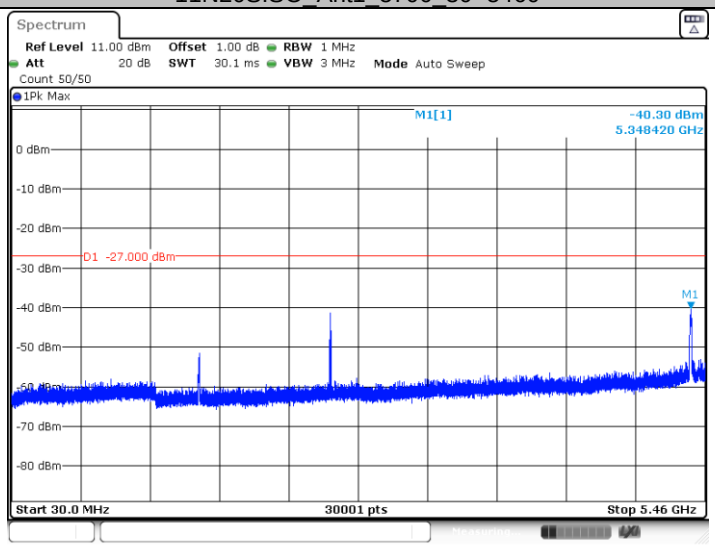
Date: 31.MAY.2022 23:08:26

11N20SISO_Ant1_5580_5735~40000



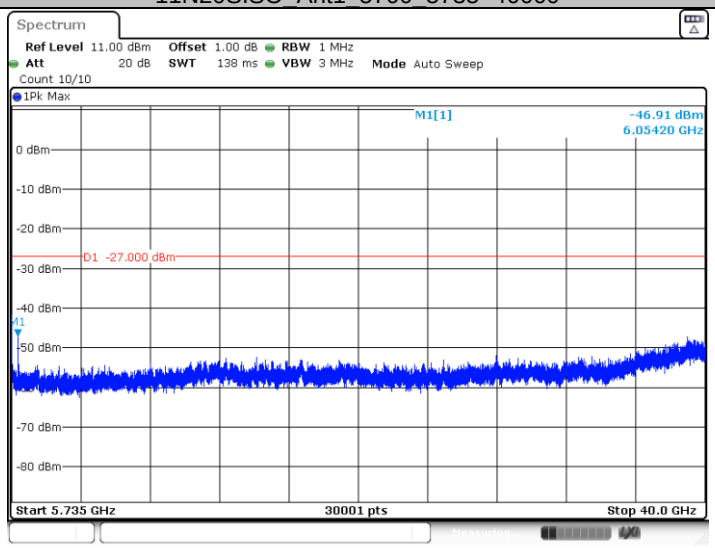
Date: 31.MAY.2022 23:08:31

11N20SISO_Ant1_5700_30~5460



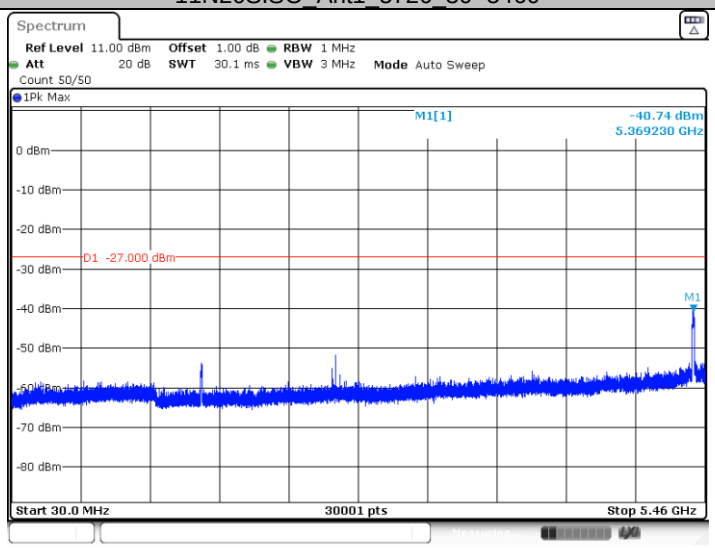
Date: 31.MAY.2022 23:10:19

11N20SISO_Ant1_5700_5735~40000



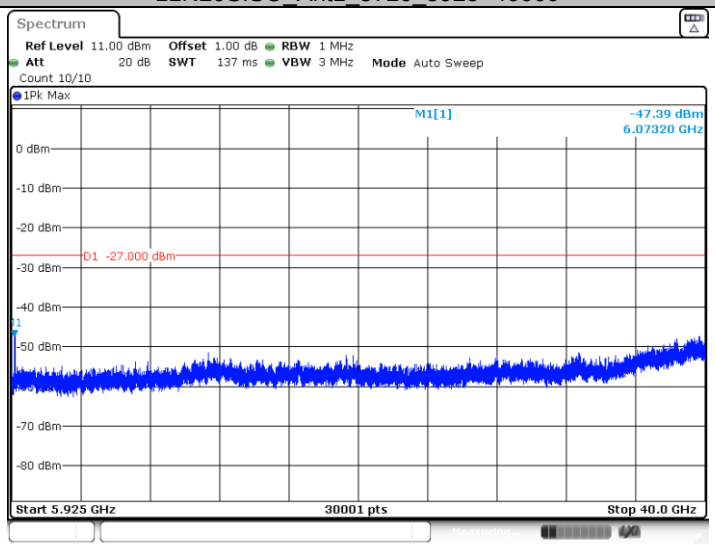
Date: 31.MAY.2022 23:10:24

11N20SISO_Ant1_5720_30~5460



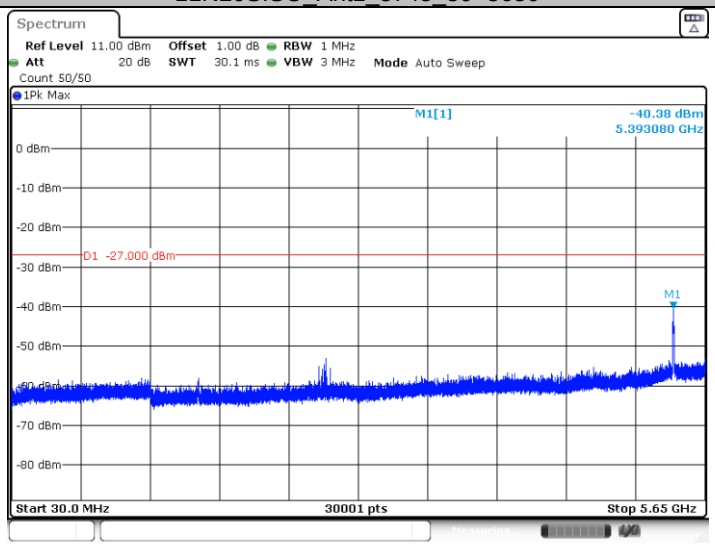
Date: 31.MAY.2022 23:12:39

11N20SISO_Ant1_5720_5925~40000



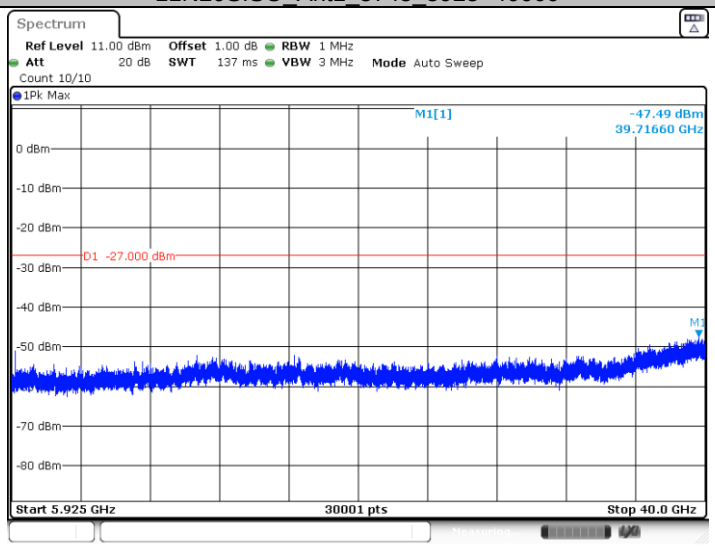
Date: 31.MAY.2022 23:12:44

11N20SISO_Ant1_5745_30~5650



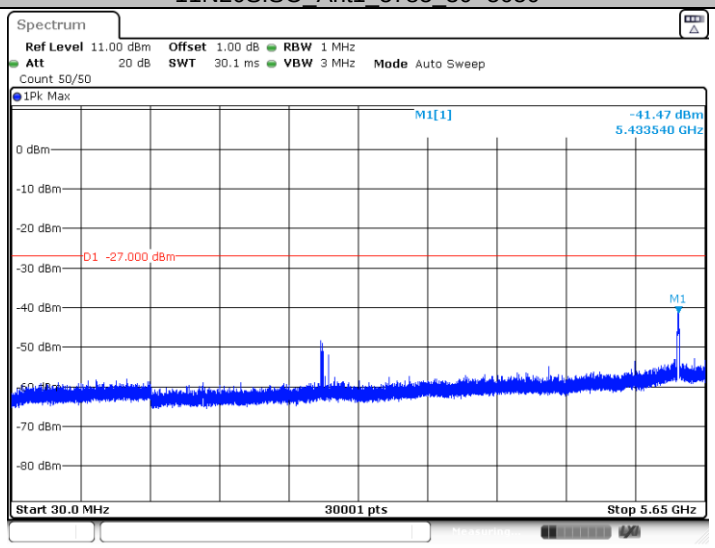
Date: 31.MAY.2022 23:14:56

11N20SISO_Ant1_5745_5925~40000



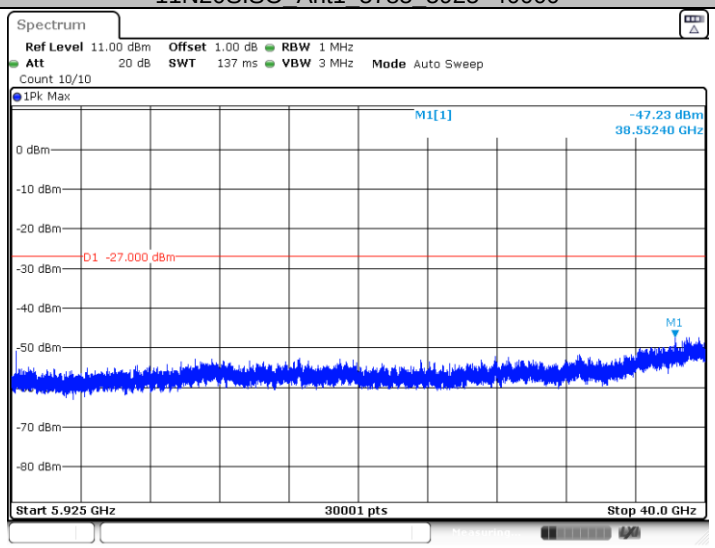
Date: 31.MAY.2022 23:15:01

11N20SISO_Ant1_5785_30~5650



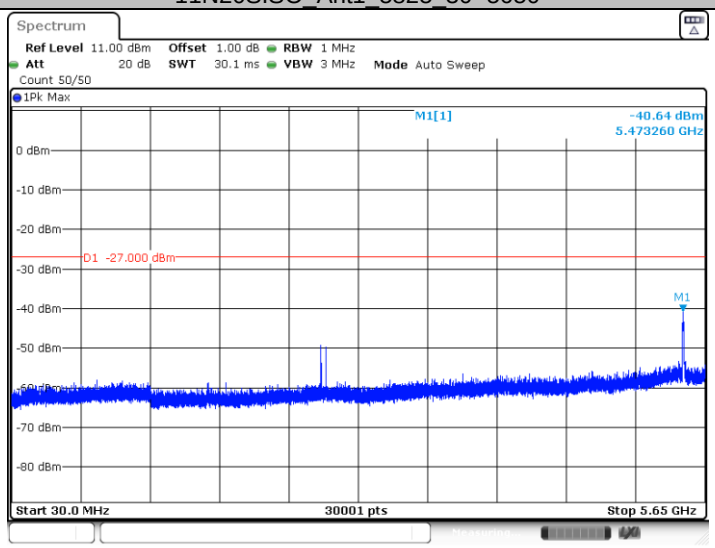
Date: 31.MAY.2022 23:17:42

11N20SISO_Ant1_5785_5925~40000



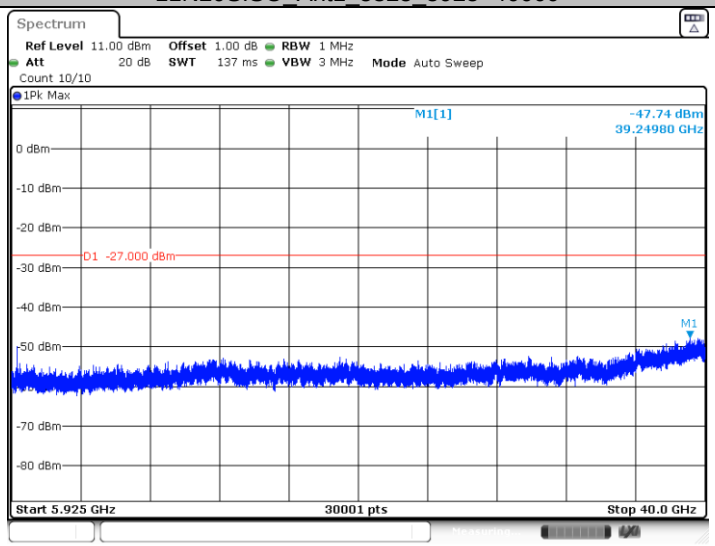
Date: 31.MAY.2022 23:17:47

11N20SISO_Ant1_5825_30~5650



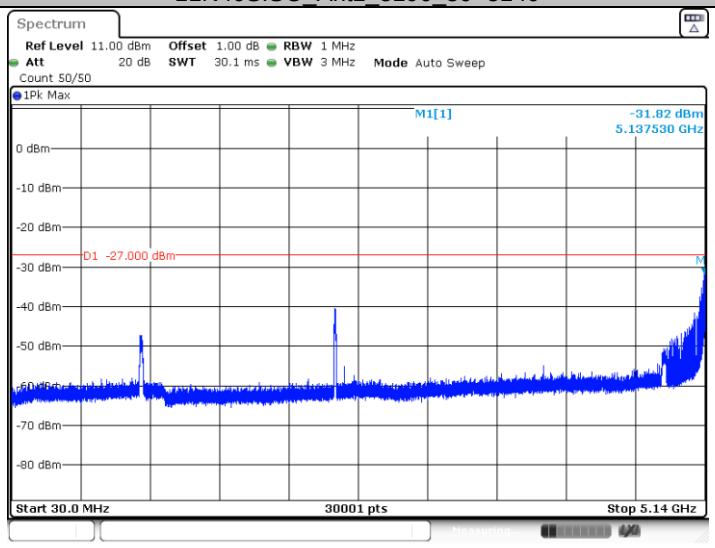
Date: 31.MAY.2022 23:20:07

11N20SISO_Ant1_5825_5925~40000



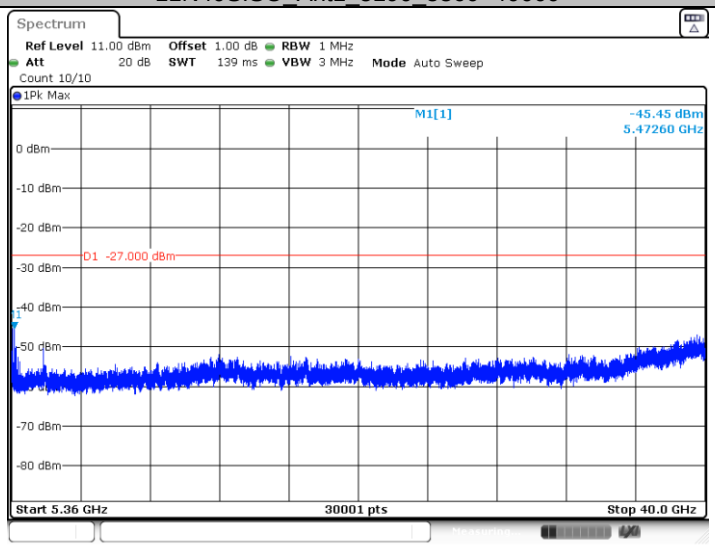
Date: 31.MAY.2022 23:20:12

11N40SISO_Ant1_5190_30~5140



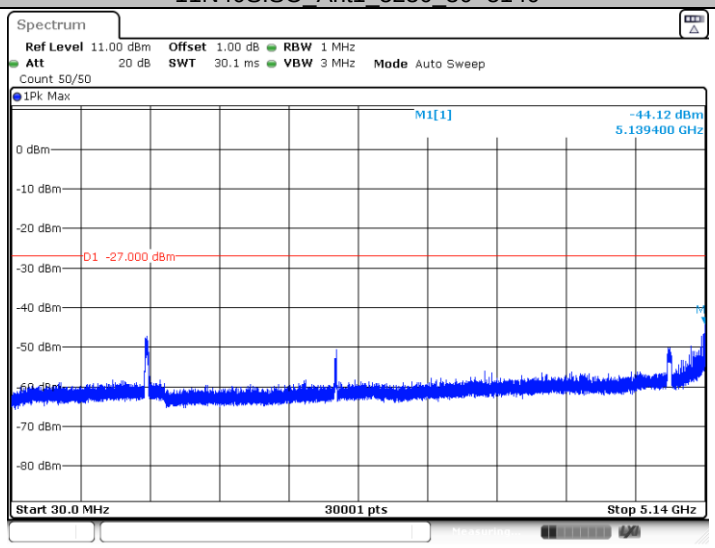
Date: 1.JUN.2022 10:13:46

11N40SISO_Ant1_5190_5360~40000



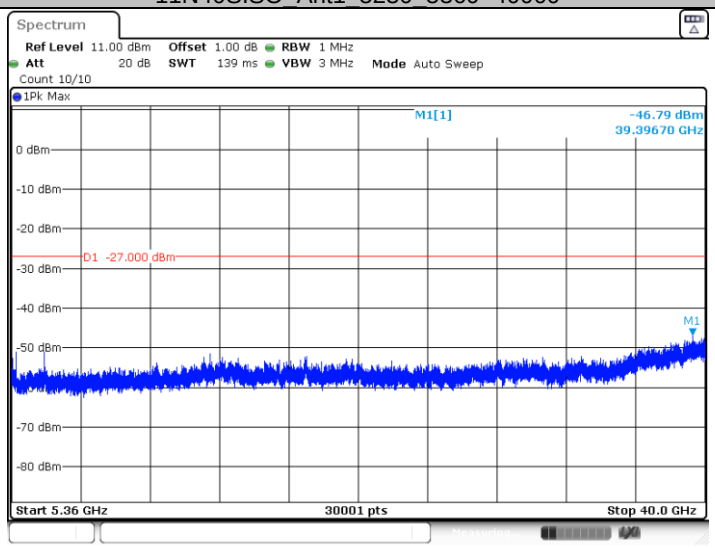
Date: 1.JUN.2022 10:13:51

11N40SISO_Ant1_5230_30~5140



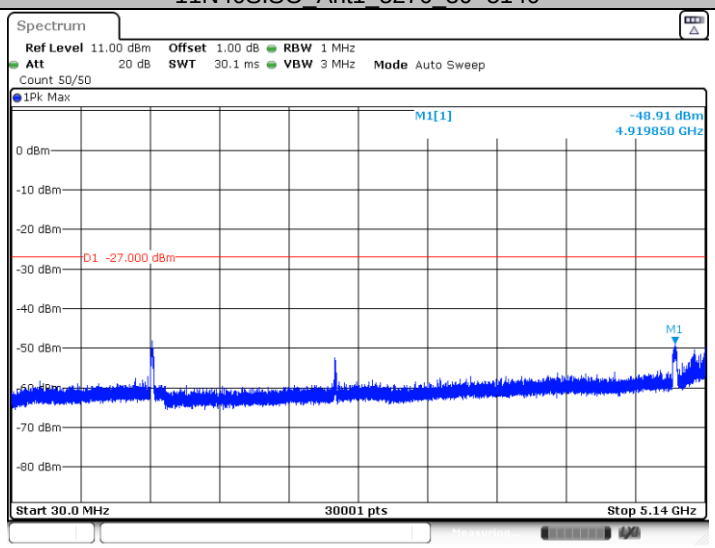
Date: 1.JUN.2022 10:16:17

11N40SISO_Ant1_5230_5360~40000



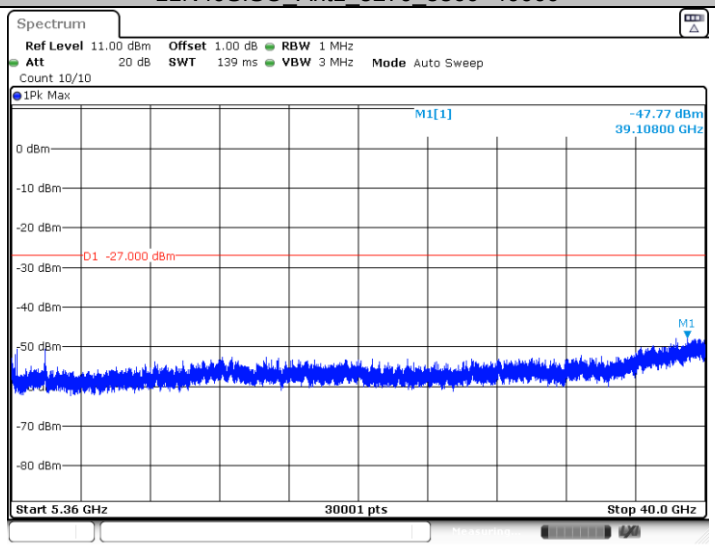
Date: 1.JUN.2022 10:16:22

11N40SISO_Ant1_5270_30~5140



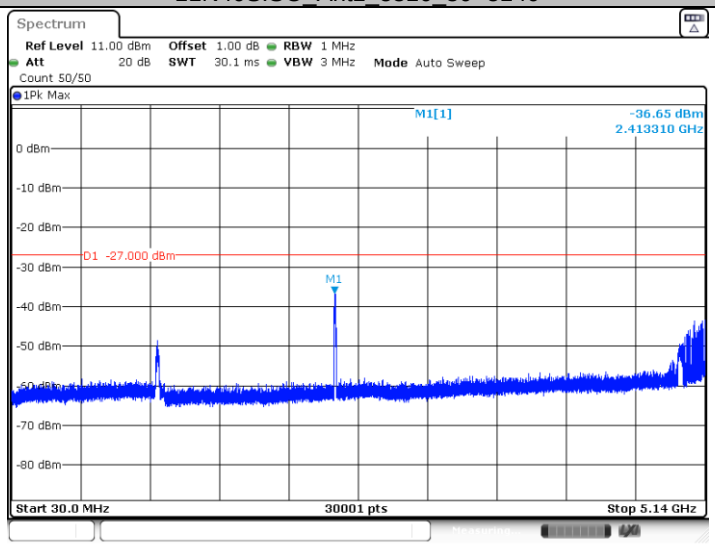
Date: 1.JUN.2022 10:18:18

11N40SISO_Ant1_5270_5360~40000



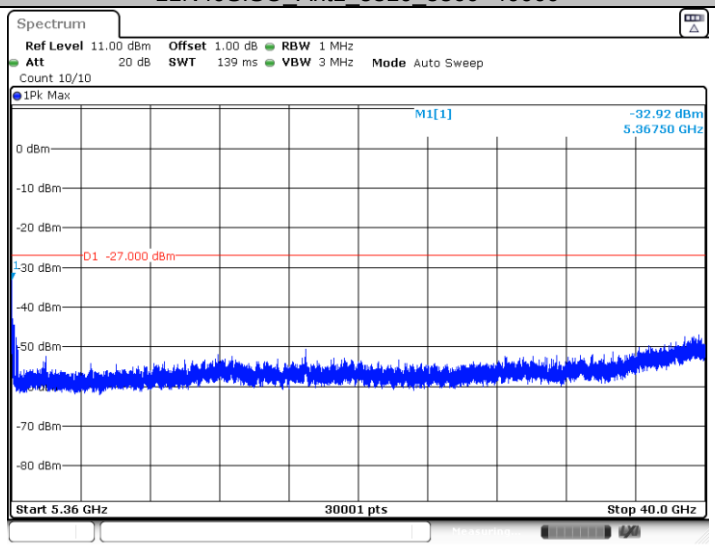
Date: 1.JUN.2022 10:18:23

11N40SISO_Ant1_5310_30~5140



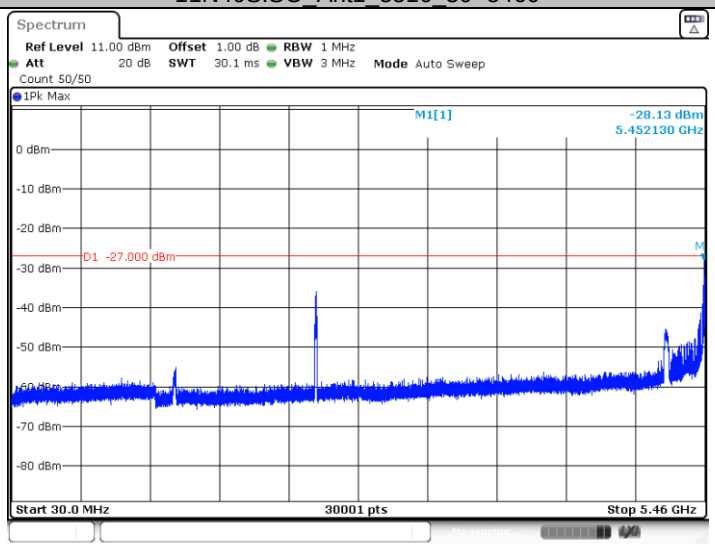
Date: 1.JUN.2022 10:20:09

11N40SISO_Ant1_5310_5360~40000



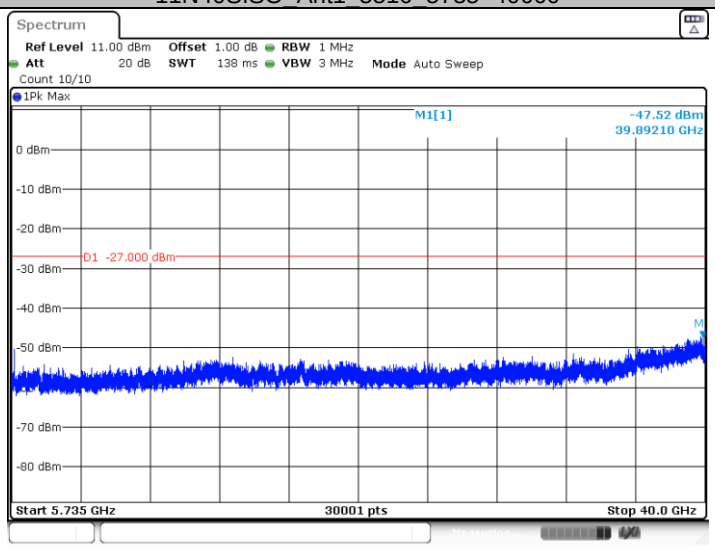
Date: 1.JUN.2022 10:20:14

11N40SISO_Ant1_5510_30~5460



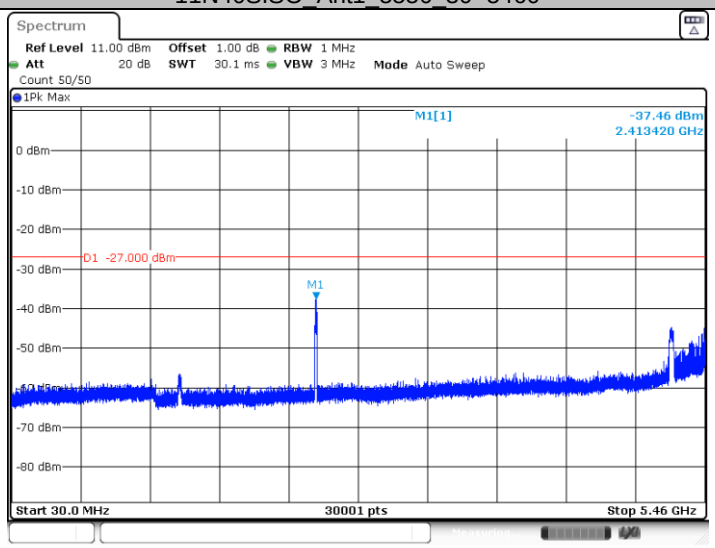
Date: 1.JUN.2022 10:23:29

11N40SISO_Ant1_5510_5735~40000



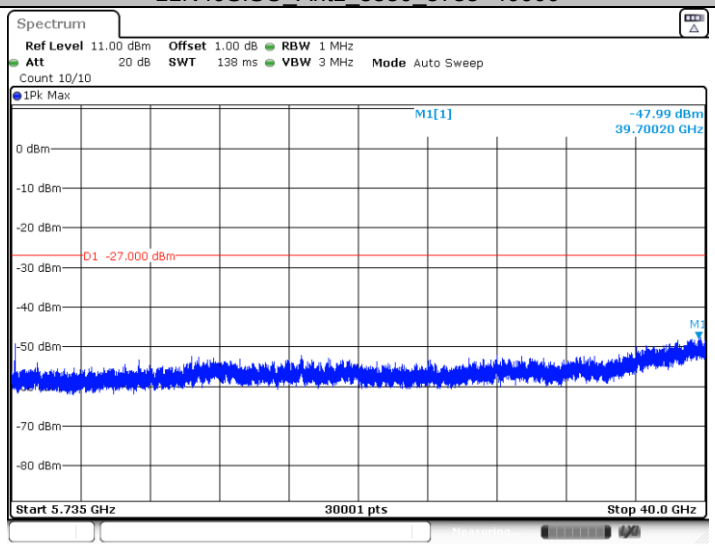
Date: 1.JUN.2022 10:23:34

11N40SISO_Ant1_5550_30~5460



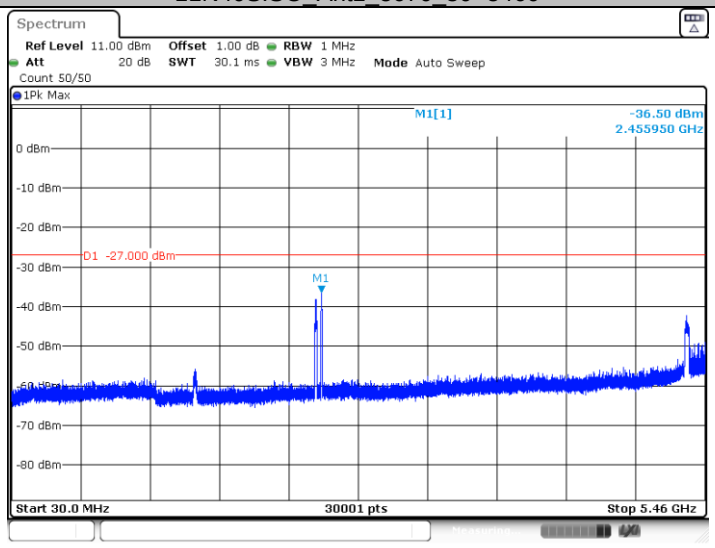
Date: 1.JUN.2022 10:25:26

11N40SISO_Ant1_5550_5735~40000



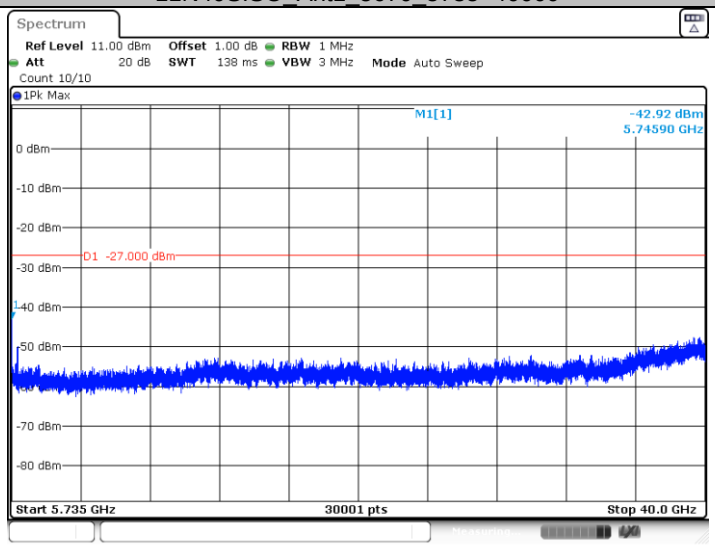
Date: 1.JUN.2022 10:25:31

11N40SISO_Ant1_5670_30~5460



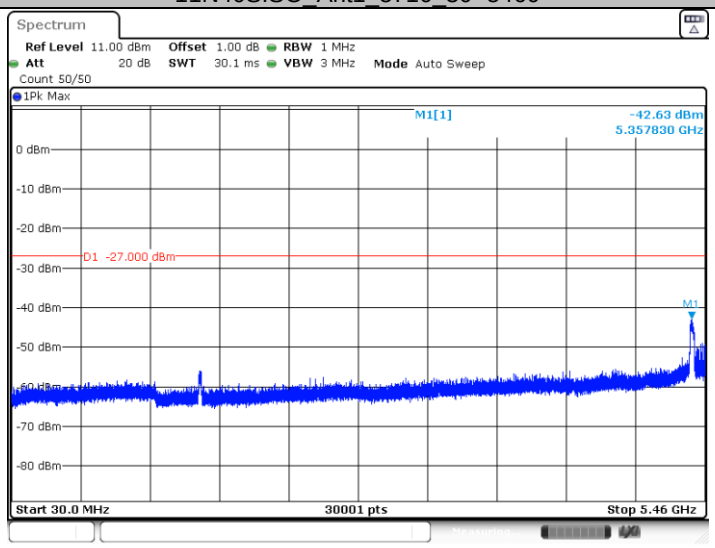
Date: 1.JUN.2022 10:27:50

11N40SISO_Ant1_5670_5735~40000



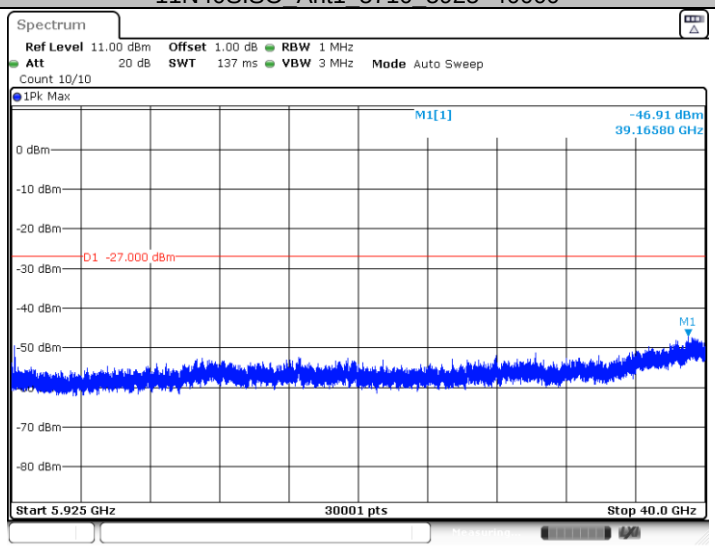
Date: 1.JUN.2022 10:27:55

11N40SISO_Ant1_5710_30~5460



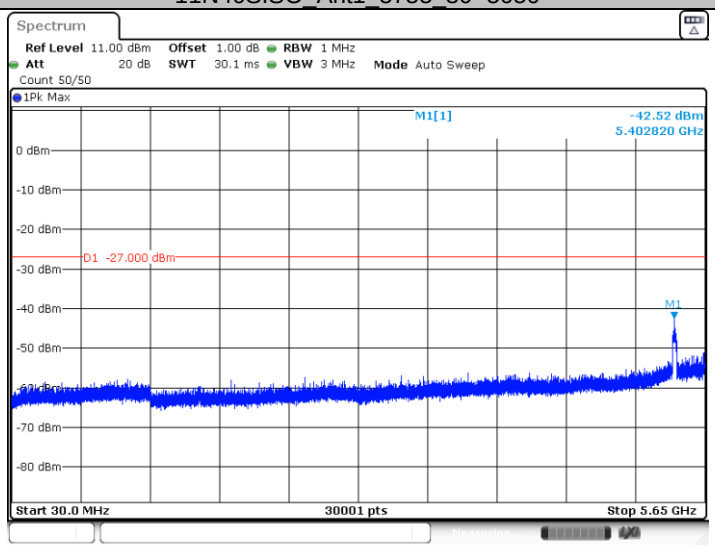
Date: 1.JUN.2022 10:30:36

11N40SISO_Ant1_5710_5925~40000



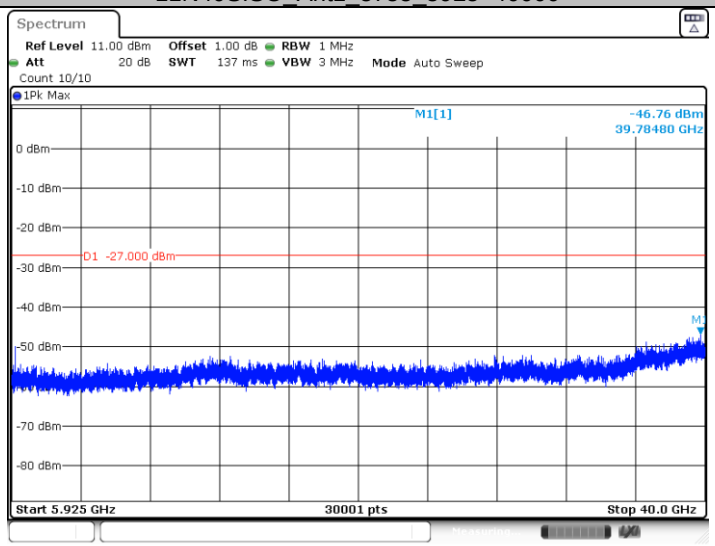
Date: 1.JUN.2022 10:30:41

11N40SISO_Ant1_5755_30~5650



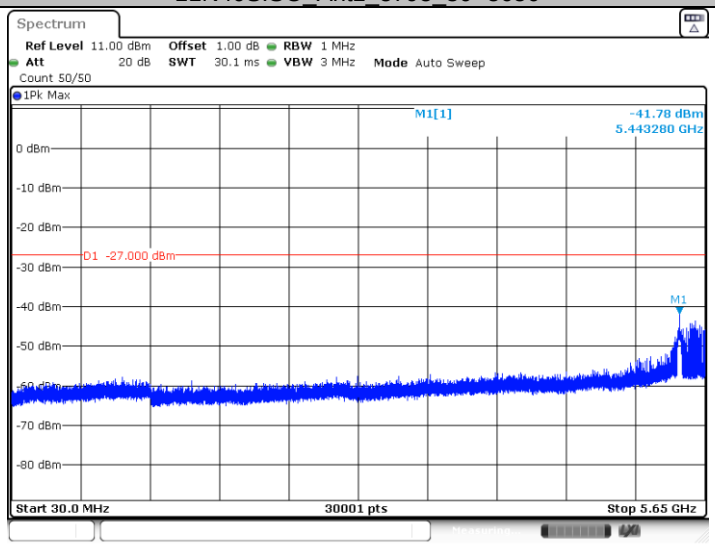
Date: 1.JUN.2022 10:32:38

11N40SISO_Ant1_5755_5925~40000



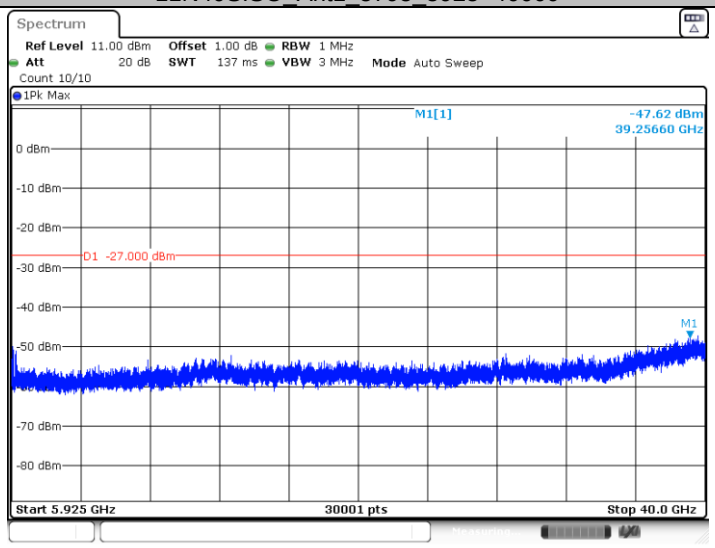
Date: 1.JUN.2022 10:32:43

11N40SISO_Ant1_5795_30~5650



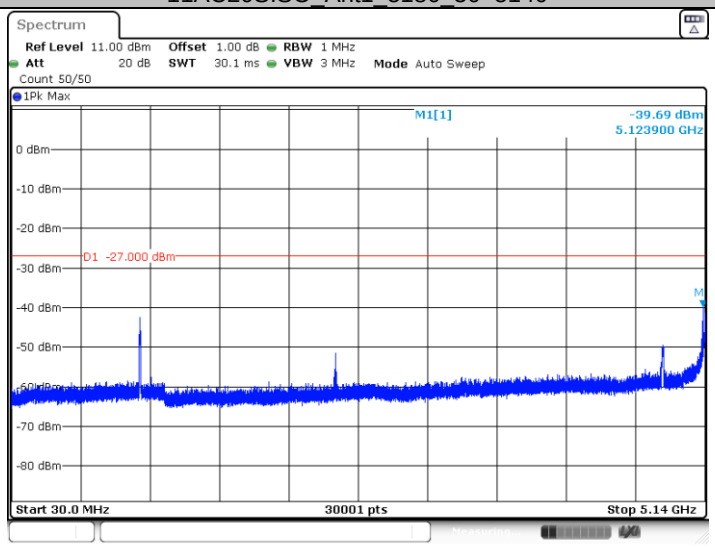
Date: 1.JUN.2022 10:34:47

11N40SISO_Ant1_5795_5925~40000



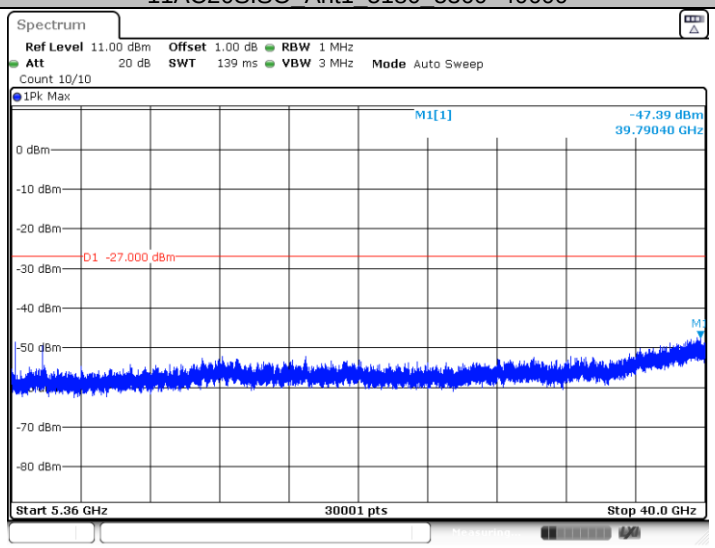
Date: 1.JUN.2022 10:34:52

11AC20SISO_Ant1_5180_30~5140



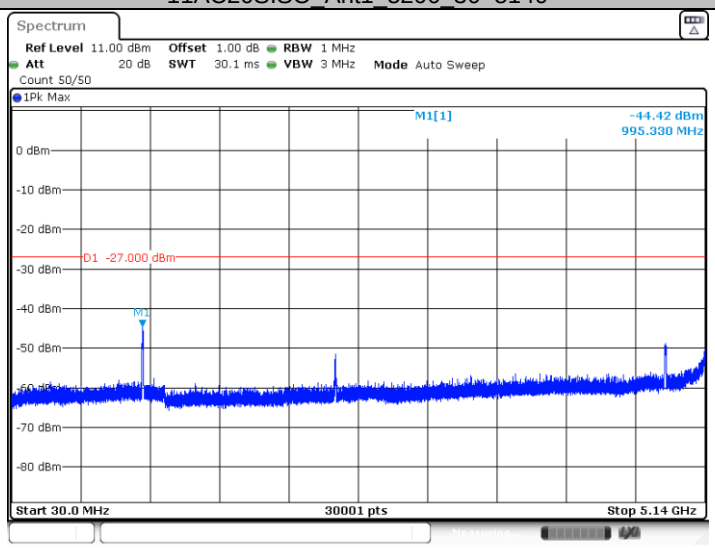
Date: 1.JUN.2022 10:38:03

11AC20SISO_Ant1_5180_5360~40000



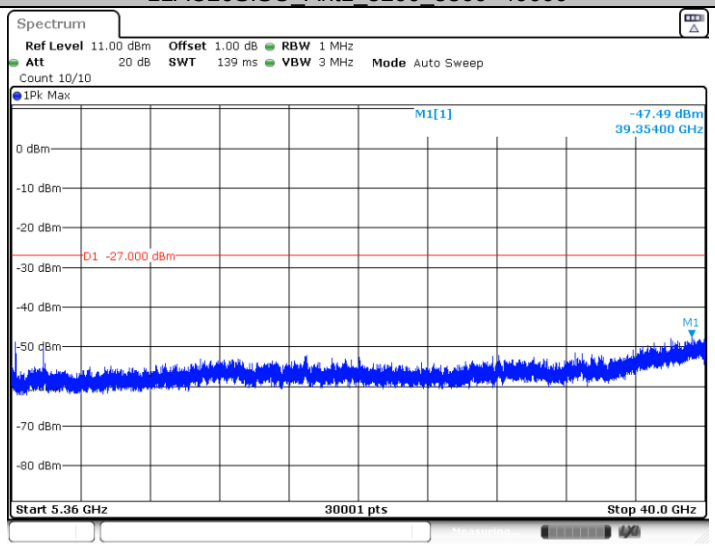
Date: 1.JUN.2022 10:38:08

11AC20SISO_Ant1_5200_30~5140



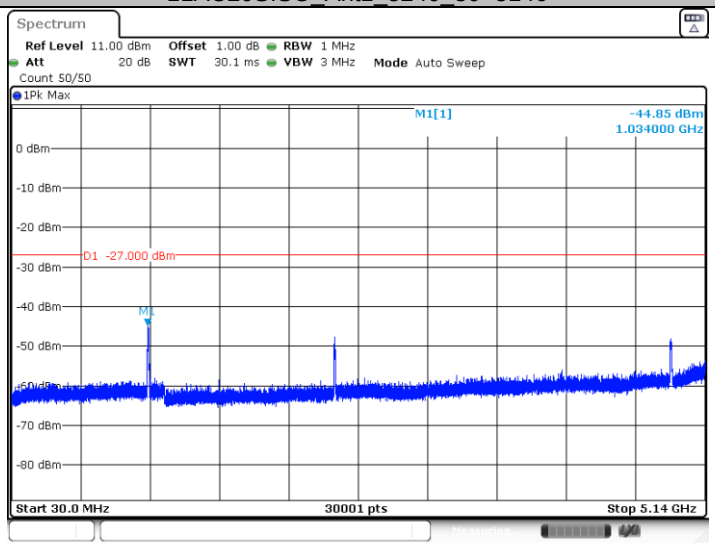
Date: 1.JUN.2022 10:40:15

11AC20SISO_Ant1_5200_5360~40000



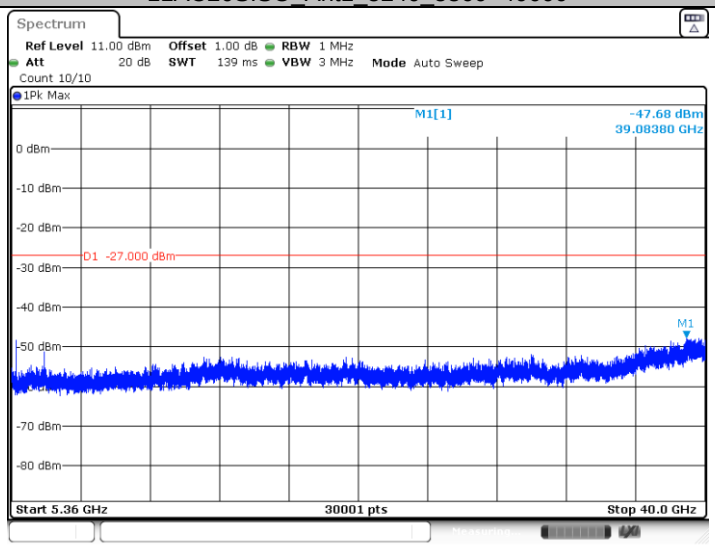
Date: 1.JUN.2022 10:40:20

11AC20SISO_Ant1_5240_30~5140



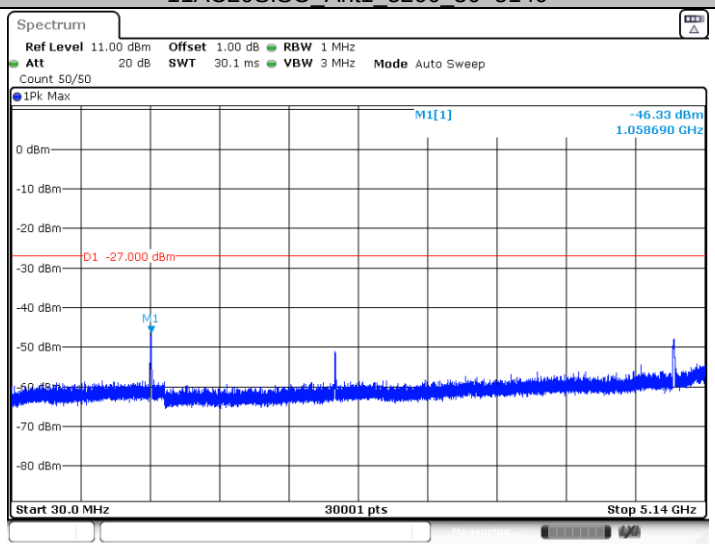
Date: 1.JUN.2022 10:41:56

11AC20SISO_Ant1_5240_5360~40000



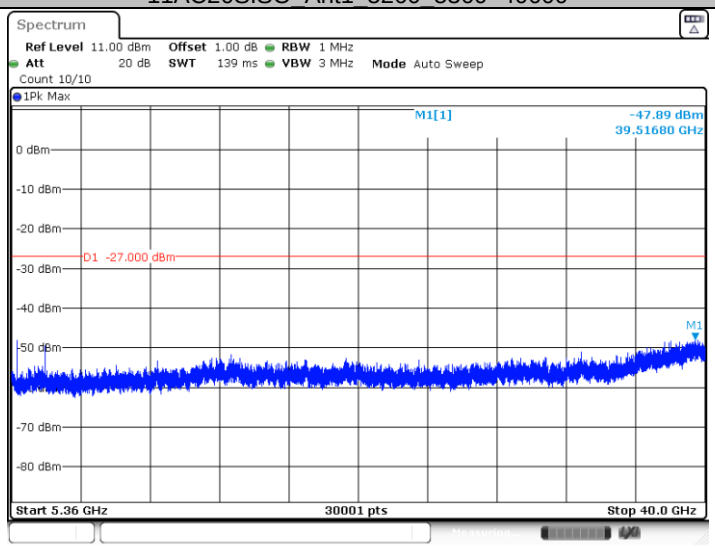
Date: 1.JUN.2022 10:42:01

11AC20SISO_Ant1_5260_30~5140



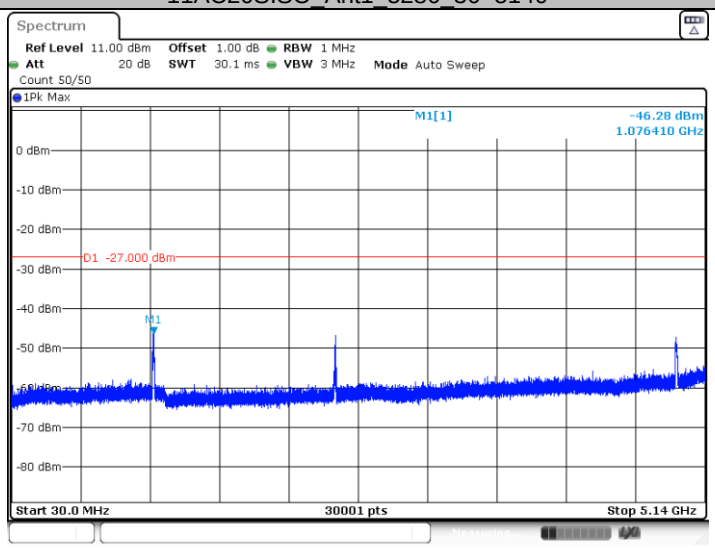
Date: 1.JUN.2022 10:43:32

11AC20SISO_Ant1_5260_5360~40000



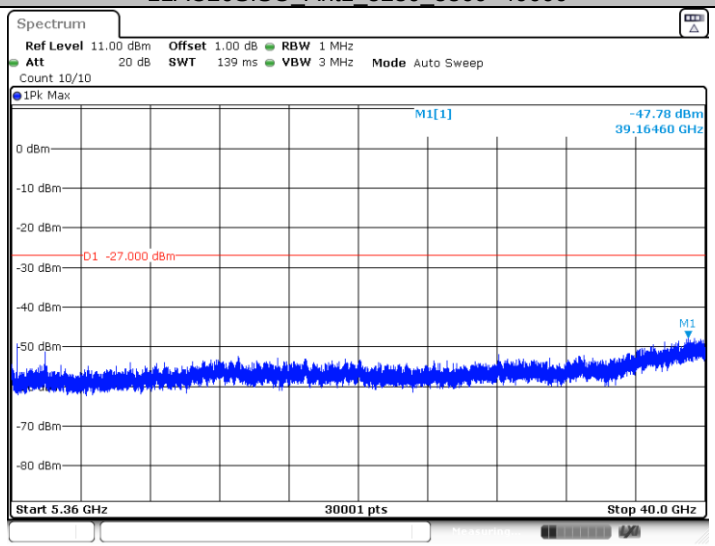
Date: 1.JUN.2022 10:43:37

11AC20SISO_Ant1_5280_30~5140



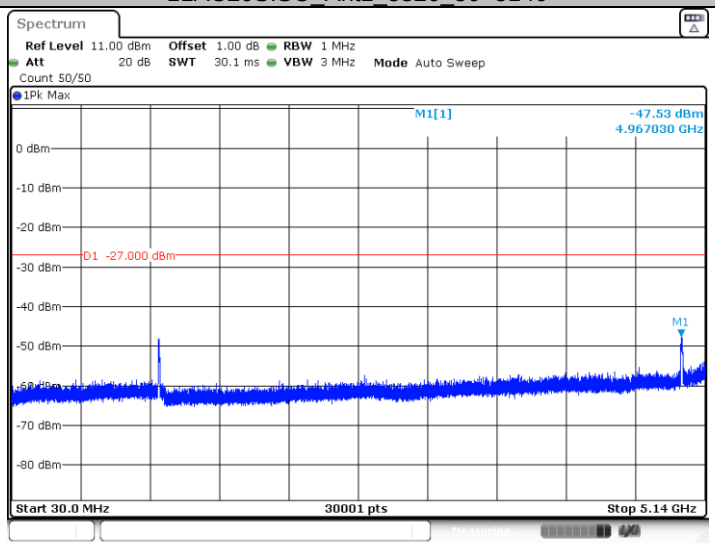
Date: 1.JUN.2022 10:45:10

11AC20SISO_Ant1_5280_5360~40000



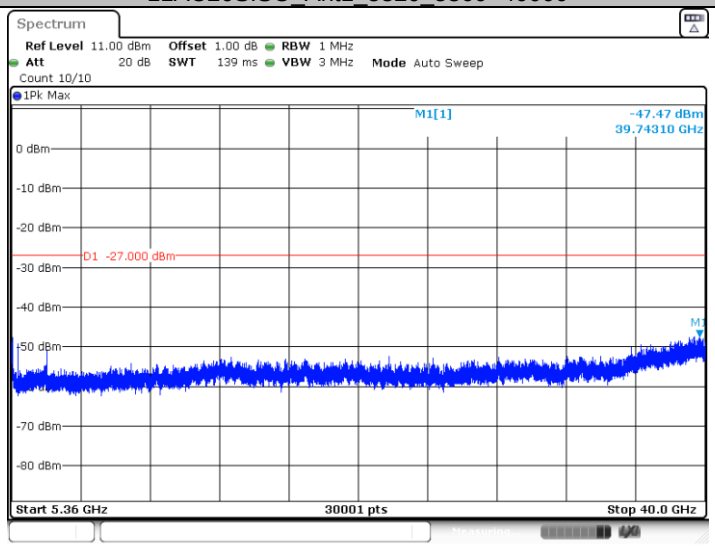
Date: 1.JUN.2022 10:45:15

11AC20SISO_Ant1_5320_30~5140



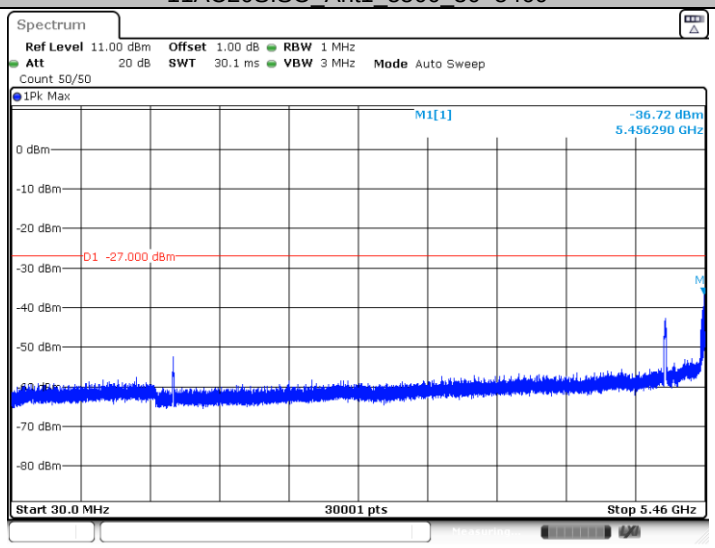
Date: 1.JUN.2022 10:47:12

11AC20SISO_Ant1_5320_5360~40000



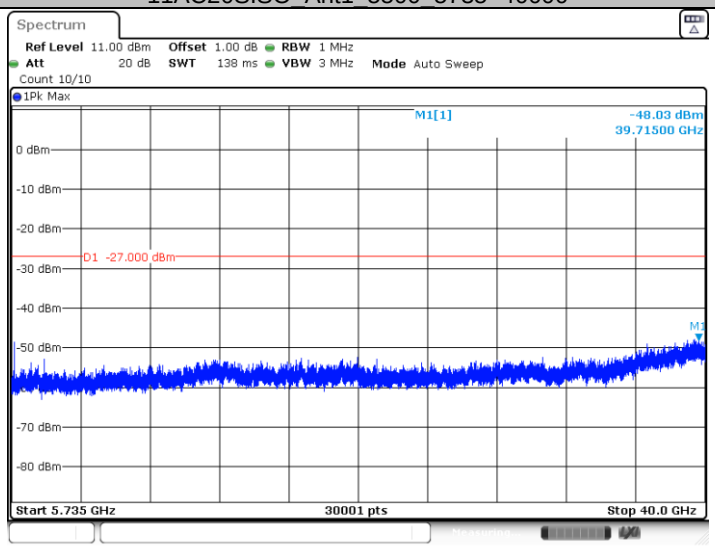
Date: 1.JUN.2022 10:47:17

11AC20SISO_Ant1_5500_30~5460



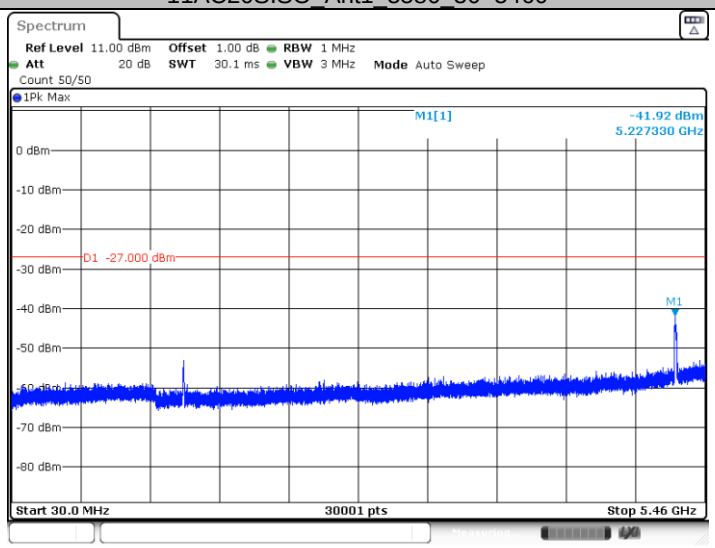
Date: 1.JUN.2022 10:49:12

11AC20SISO_Ant1_5500_5735~40000



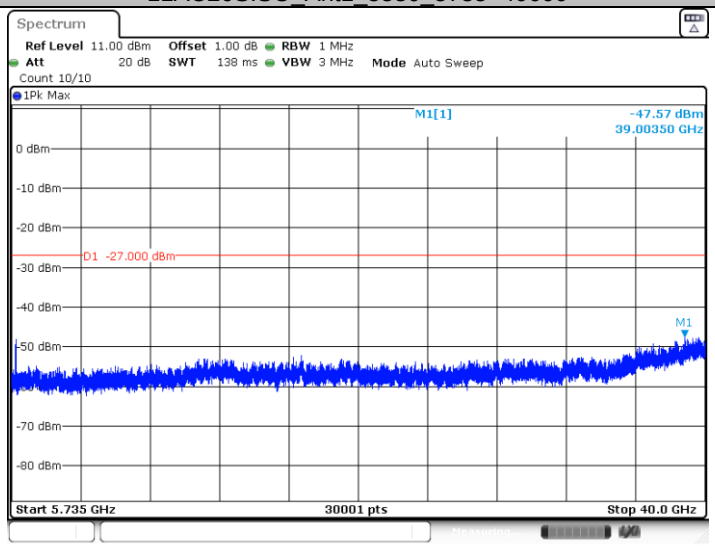
Date: 1.JUN.2022 10:49:17

11AC20SISO_Ant1_5580_30~5460



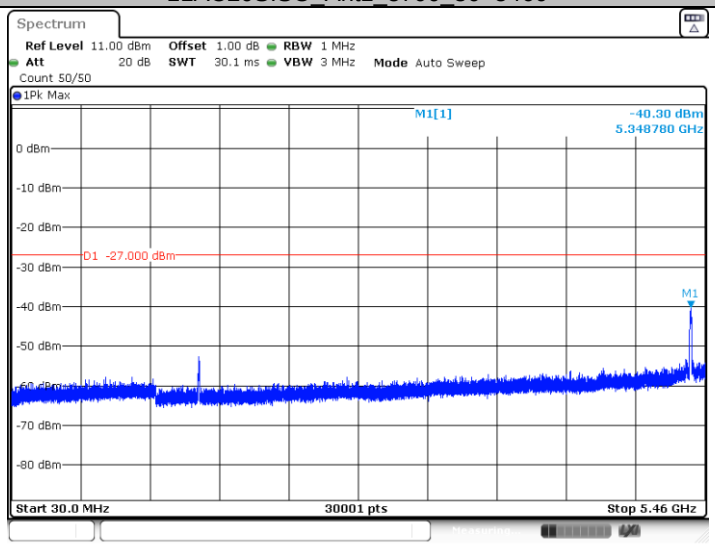
Date: 1.JUN.2022 10:50:52

11AC20SISO_Ant1_5580_5735~40000



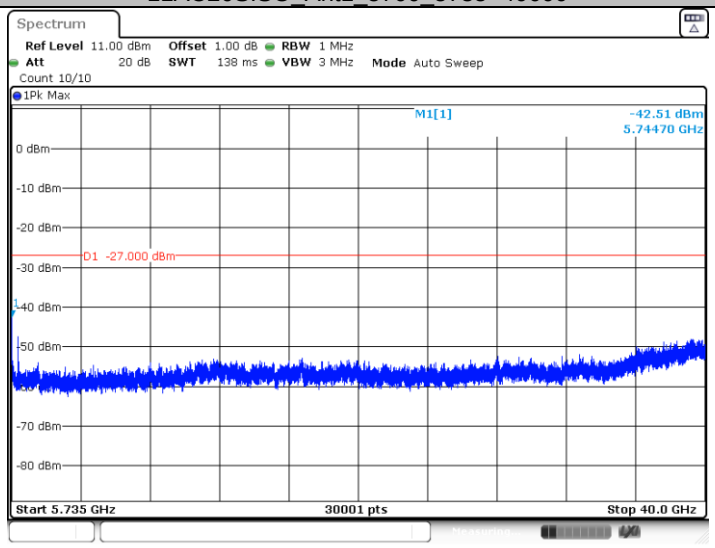
Date: 1.JUN.2022 10:50:57

11AC20SISO_Ant1_5700_30~5460



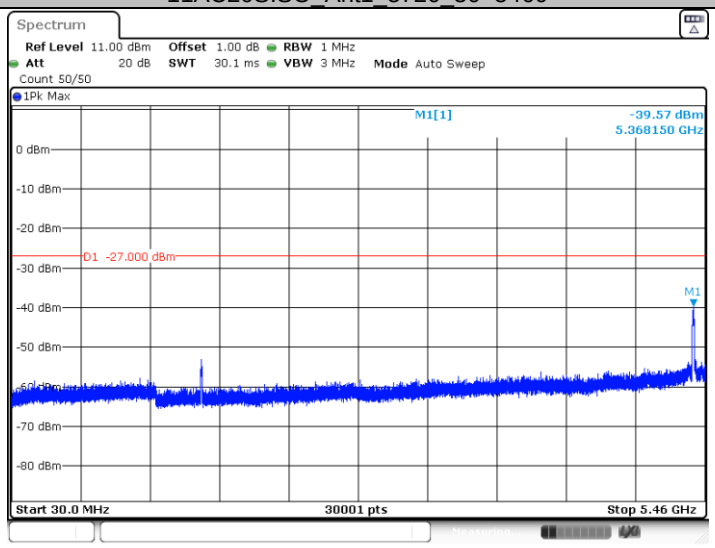
Date: 1.JUN.2022 10:52:55

11AC20SISO_Ant1_5700_5735~40000



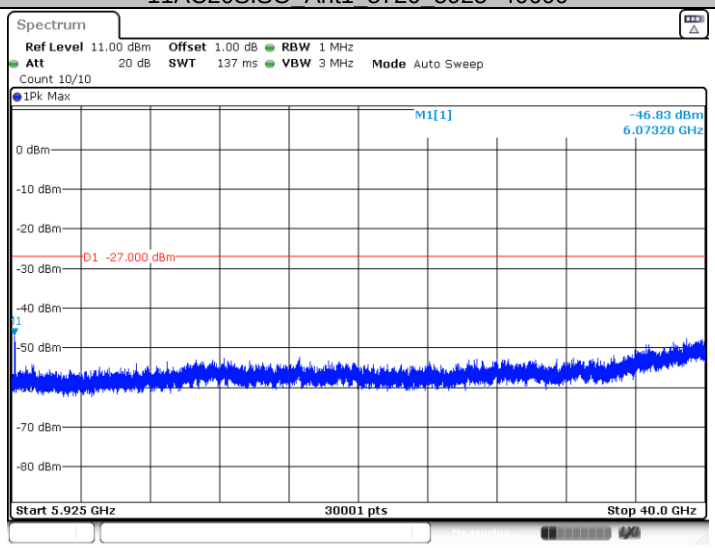
Date: 1.JUN.2022 10:53:00

11AC20SISO_Ant1_5720_30~5460



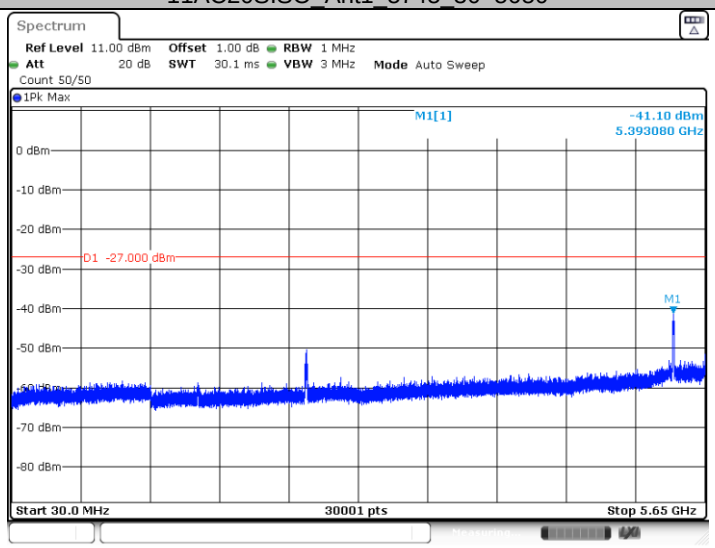
Date: 1.JUN.2022 10:55:25

11AC20SISO_Ant1_5720_5925~40000



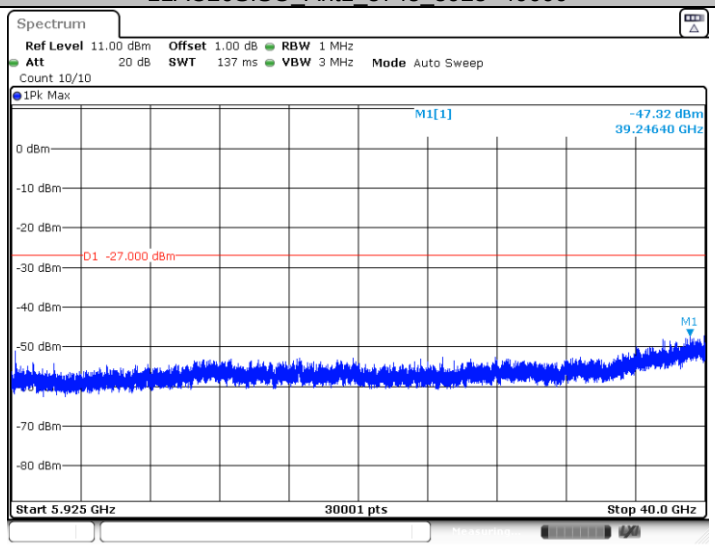
Date: 1.JUN.2022 10:55:30

11AC20SISO_Ant1_5745_30~5650



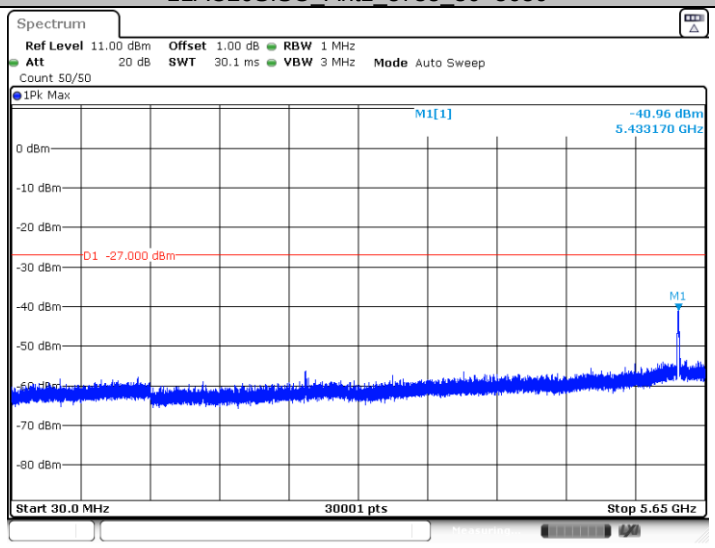
Date: 1.JUN.2022 10:58:12

11AC20SISO_Ant1_5745_5925~40000



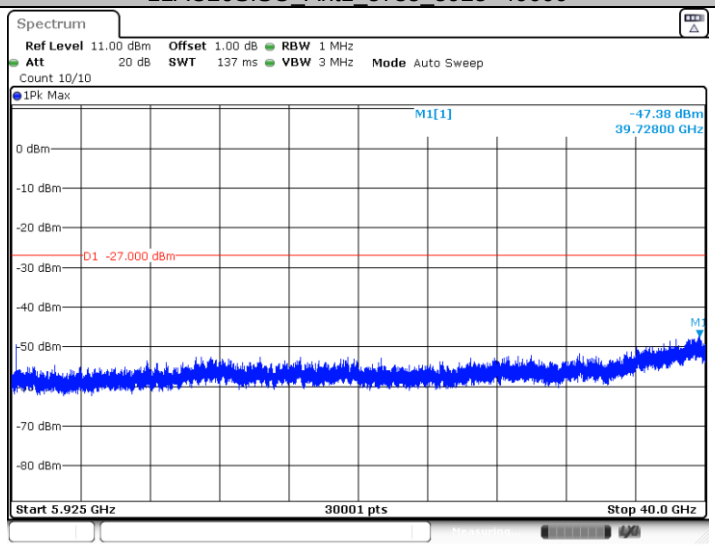
Date: 1.JUN.2022 10:58:17

11AC20SISO_Ant1_5785_30~5650



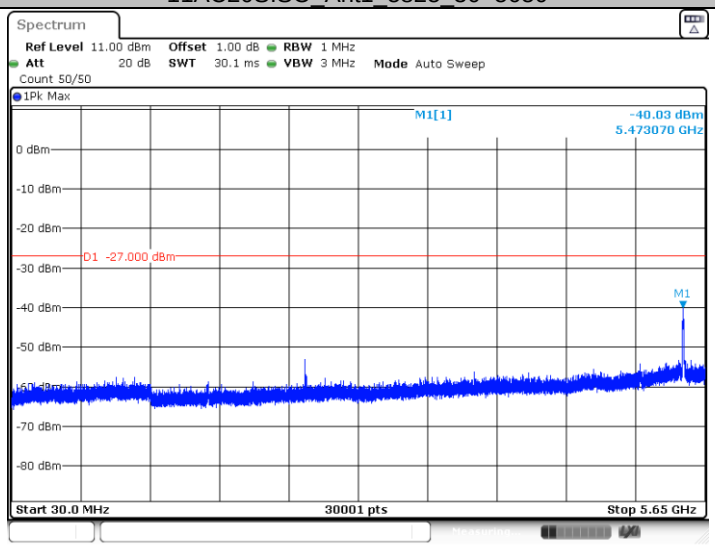
Date: 1.JUN.2022 11:00:35

11AC20SISO_Ant1_5785_5925~40000



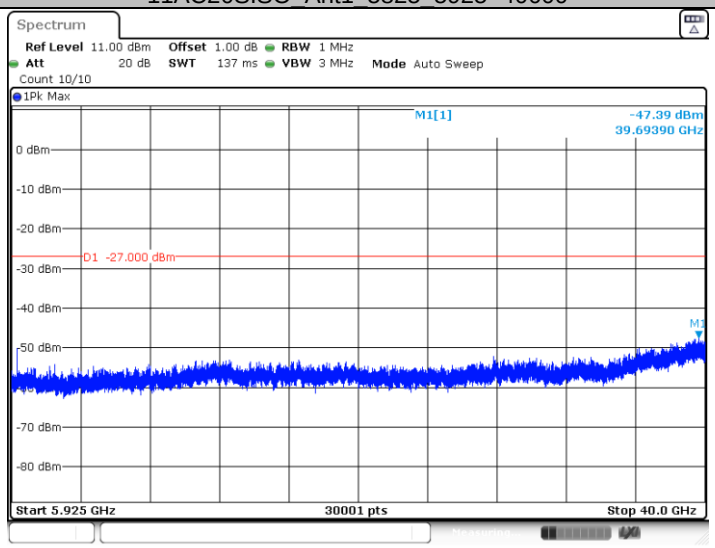
Date: 1.JUN.2022 11:00:41

11AC20SISO_Ant1_5825_30~5650



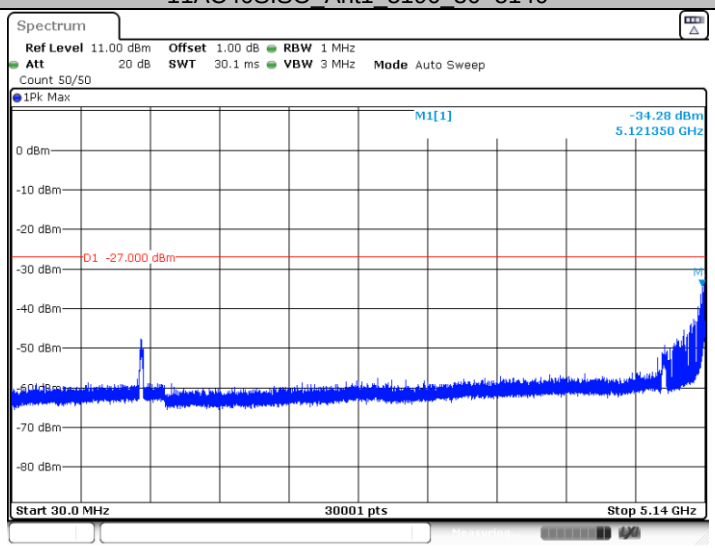
Date: 1.JUN.2022 11:02:47

11AC20SISO_Ant1_5825_5925~40000



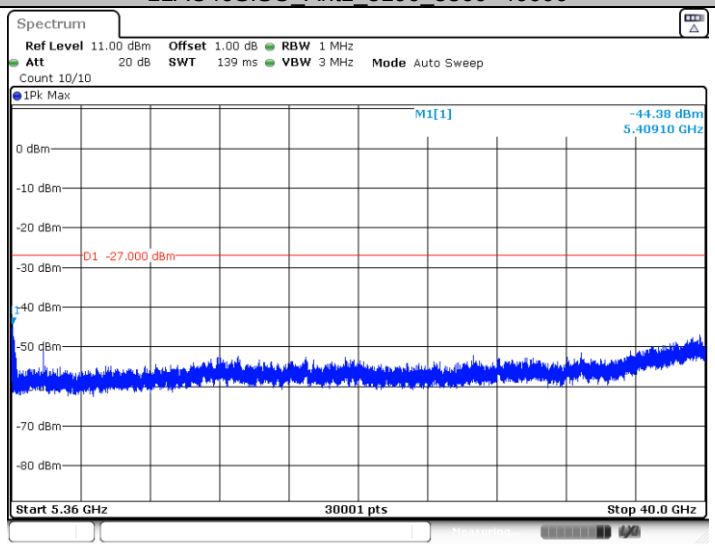
Date: 1.JUN.2022 11:02:52

11AC40SISO_Ant1_5190_30~5140



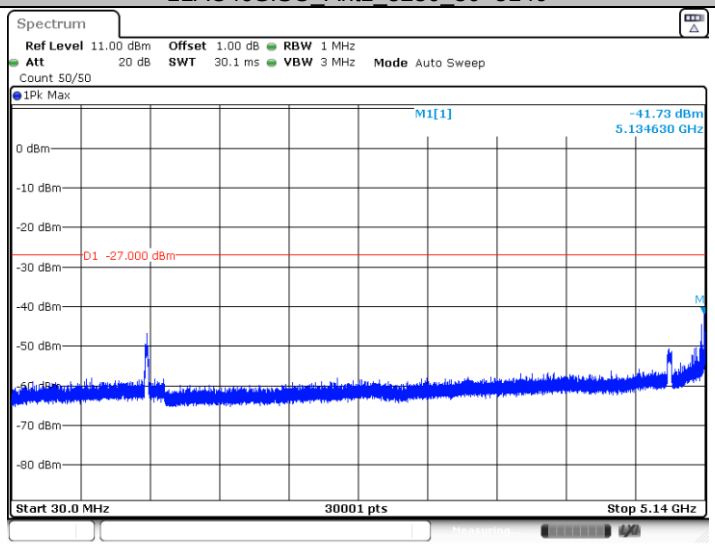
Date: 1.JUN.2022 11:05:28

11AC40SISO_Ant1_5190_5360~40000



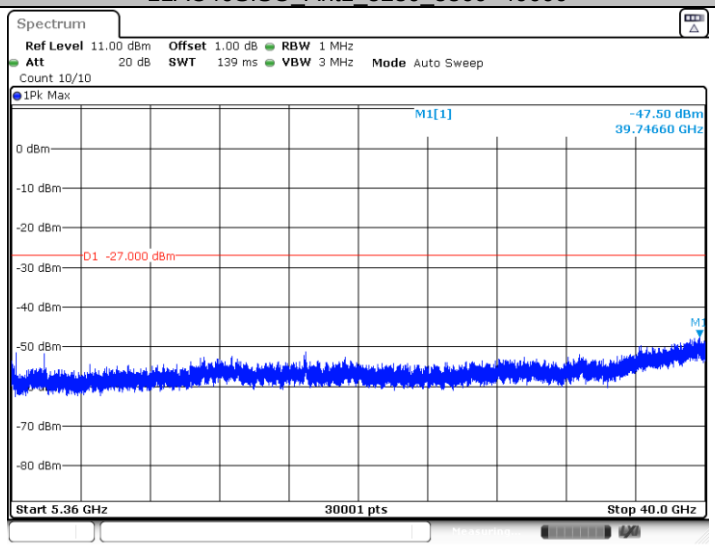
Date: 1.JUN.2022 11:05:33

11AC40SISO_Ant1_5230_30~5140



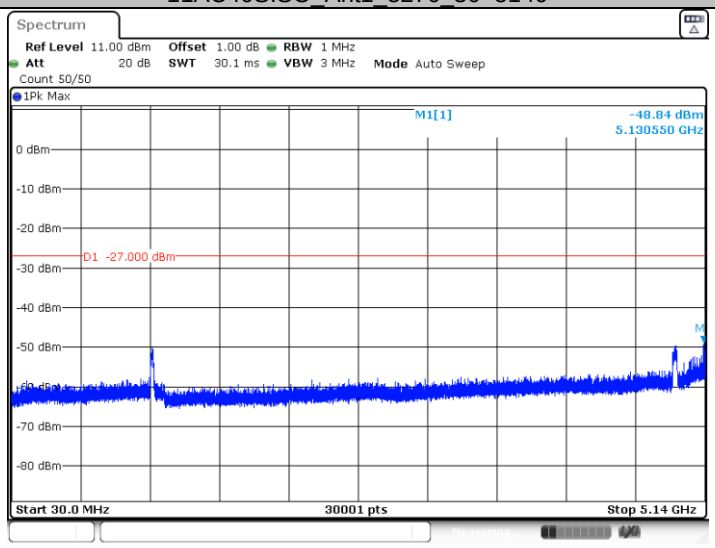
Date: 1.JUN.2022 11:08:10

11AC40SISO_Ant1_5230_5360~40000



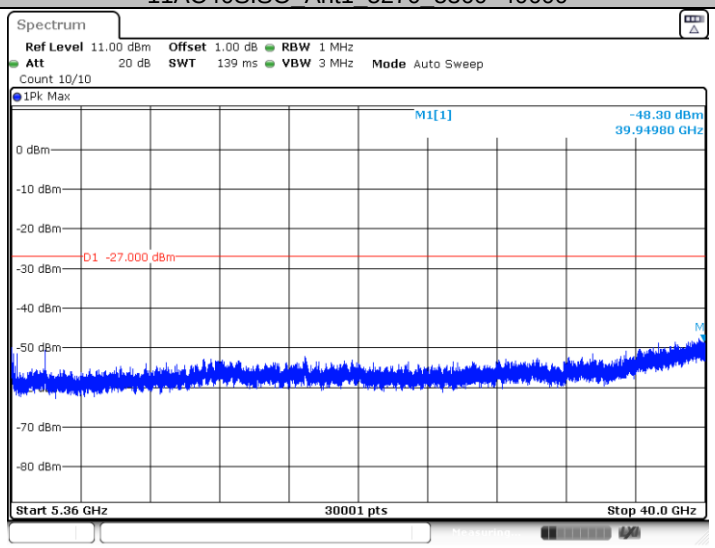
Date: 1.JUN.2022 11:08:16

11AC40SISO_Ant1_5270_30~5140



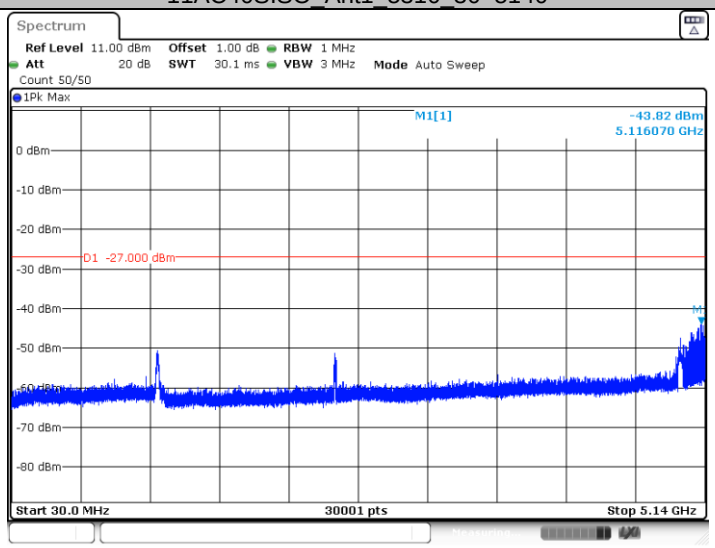
Date: 1.JUN.2022 11:13:28

11AC40SISO_Ant1_5270_5360~40000



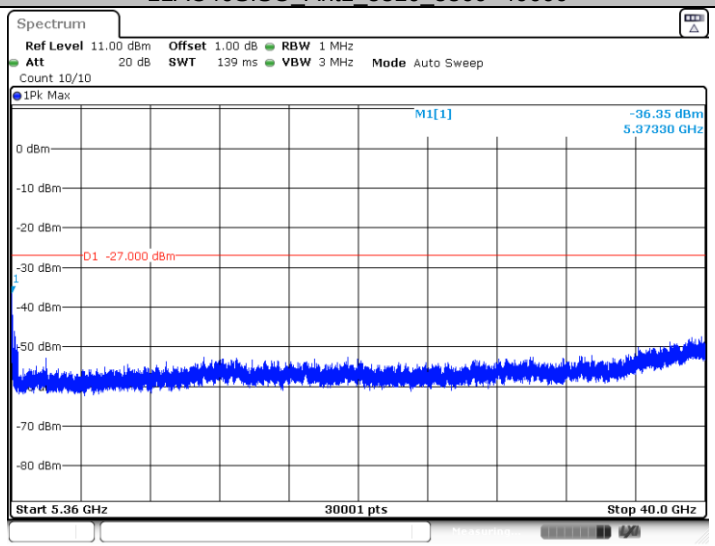
Date: 1.JUN.2022 11:13:33

11AC40SISO_Ant1_5310_30~5140



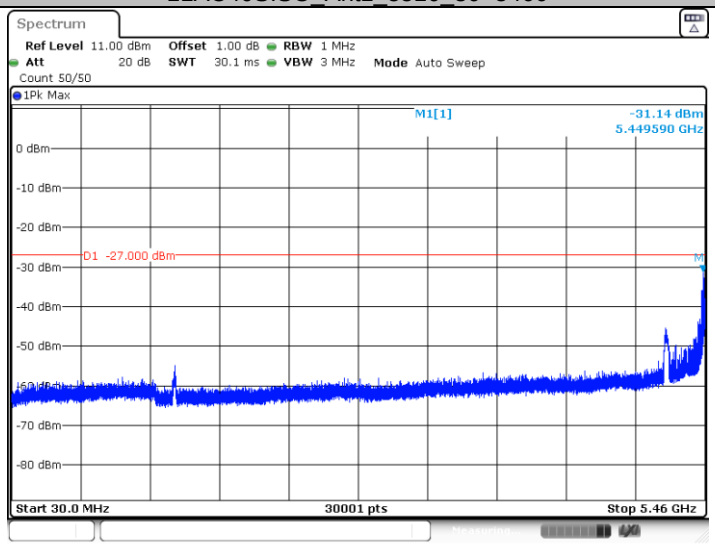
Date: 1.JUN.2022 11:15:24

11AC40SISO_Ant1_5310_5360~40000



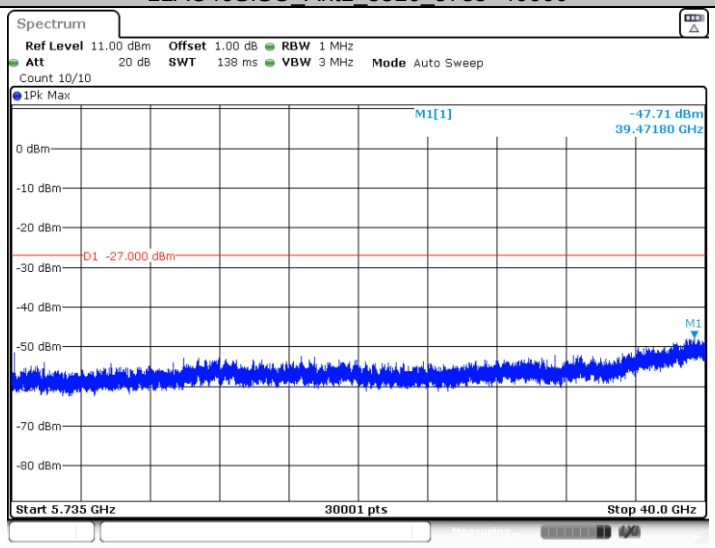
Date: 1.JUN.2022 11:15:29

11AC40SISO_Ant1_5510_30~5460



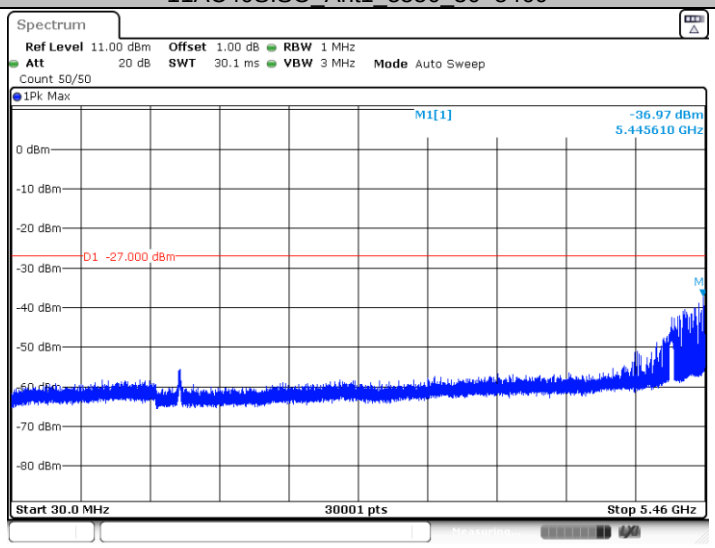
Date: 1.JUN.2022 11:18:52

11AC40SISO_Ant1_5510_5735~40000



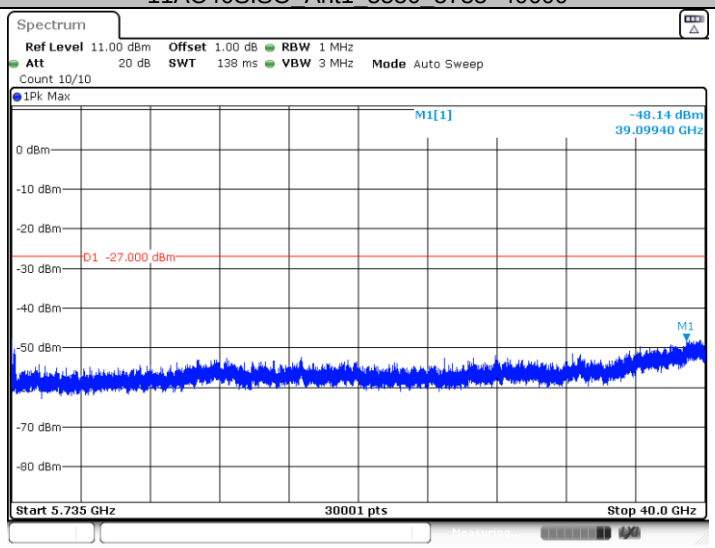
Date: 1.JUN.2022 11:18:57

11AC40SISO_Ant1_5550_30~5460



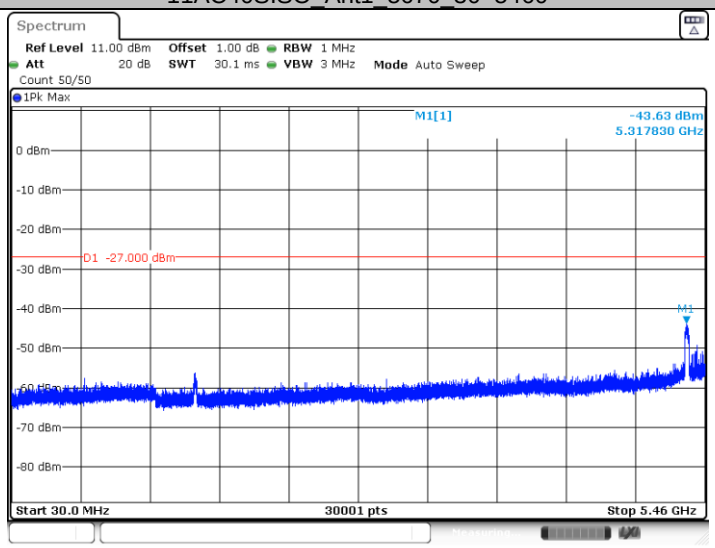
Date: 1.JUN.2022 11:20:55

11AC40SISO_Ant1_5550_5735~40000



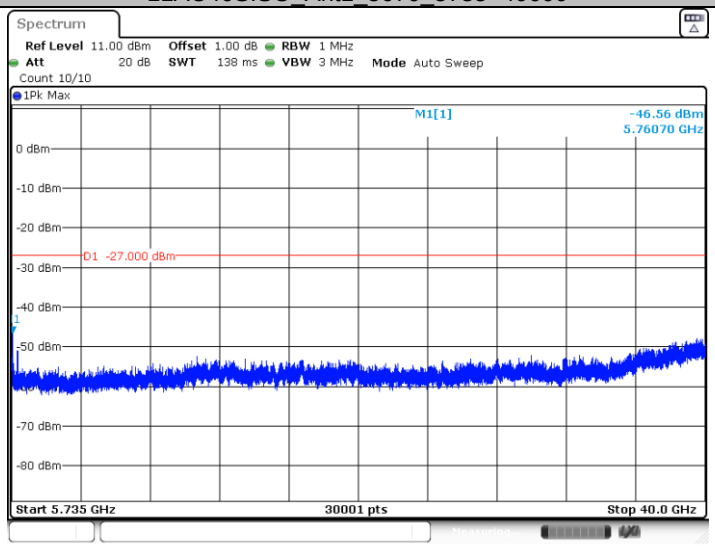
Date: 1.JUN.2022 11:21:00

11AC40SISO_Ant1_5670_30~5460



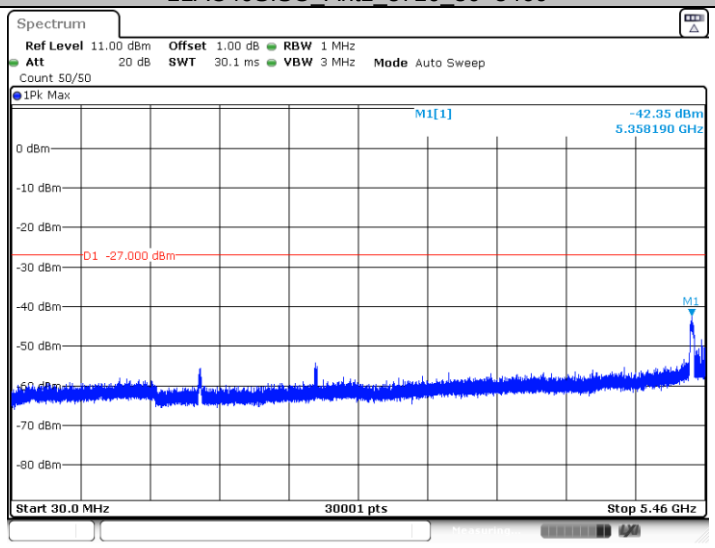
Date: 1.JUN.2022 11:24:32

11AC40SISO_Ant1_5670_5735~40000



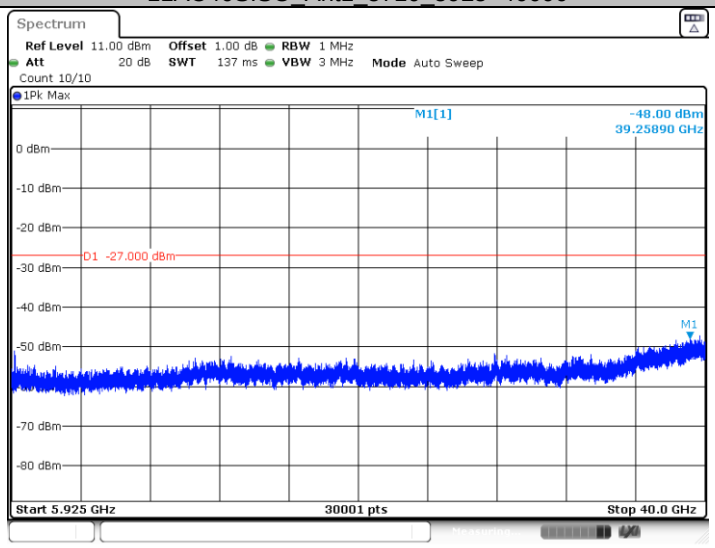
Date: 1.JUN.2022 11:24:37

11AC40SISO_Ant1_5710_30~5460



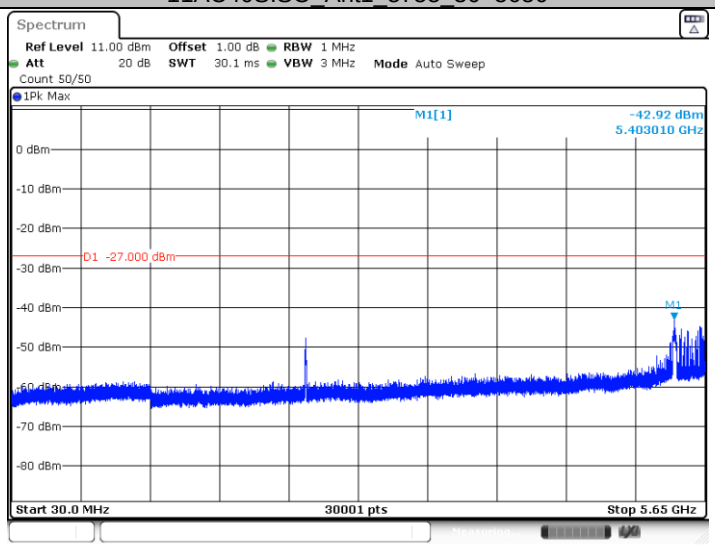
Date: 1.JUN.2022 11:26:58

11AC40SISO_Ant1_5710_5925~40000



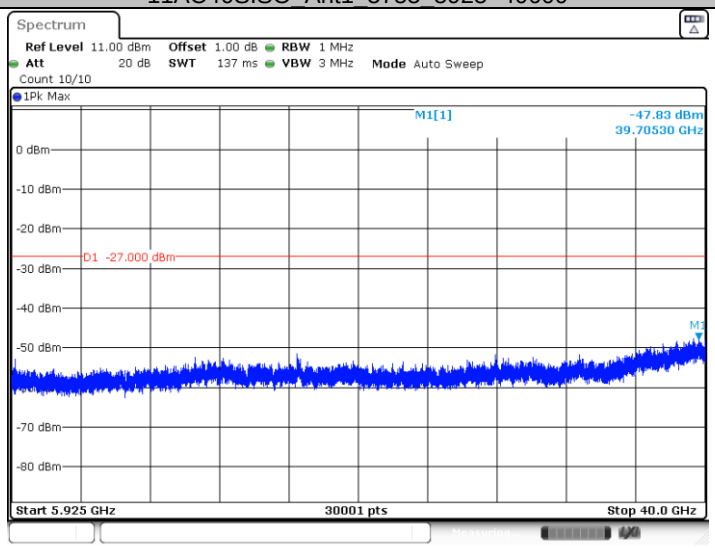
Date: 1.JUN.2022 11:27:03

11AC40SISO_Ant1_5755_30~5650



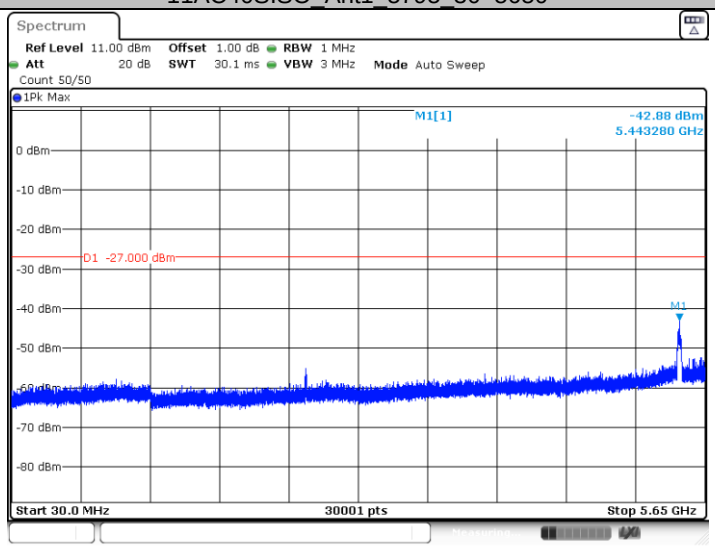
Date: 1.JUN.2022 11:29:30

11AC40SISO_Ant1_5755_5925~40000



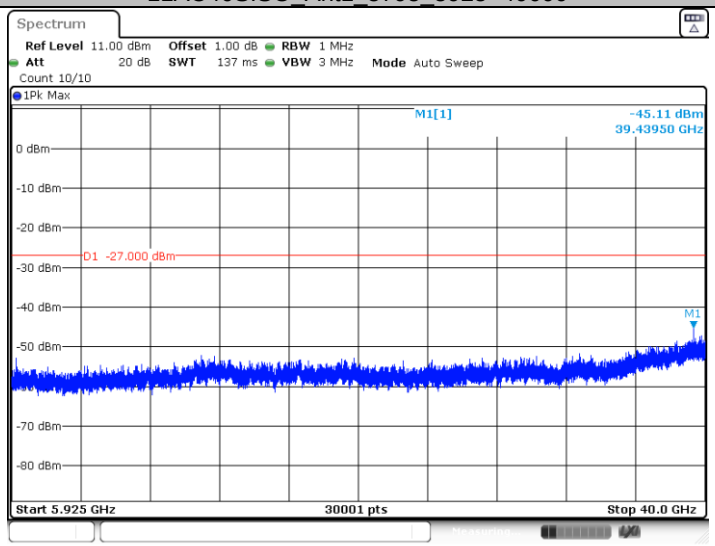
Date: 1.JUN.2022 11:29:35

11AC40SISO_Ant1_5795_30~5650



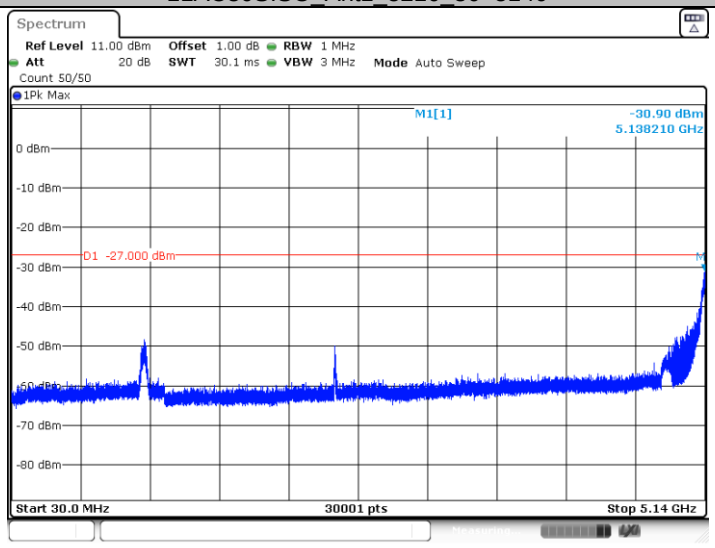
Date: 1.JUN.2022 11:32:01

11AC40SISO_Ant1_5795_5925~40000



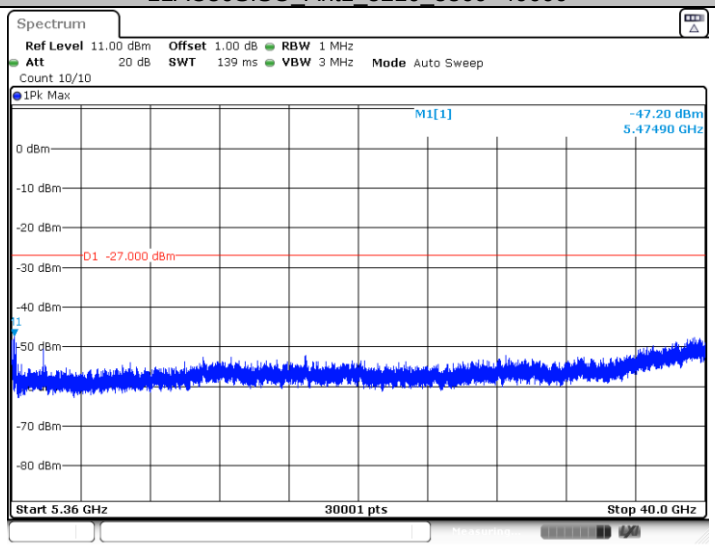
Date: 1.JUN.2022 11:32:06

11AC80SISO_Ant1_5210_30~5140



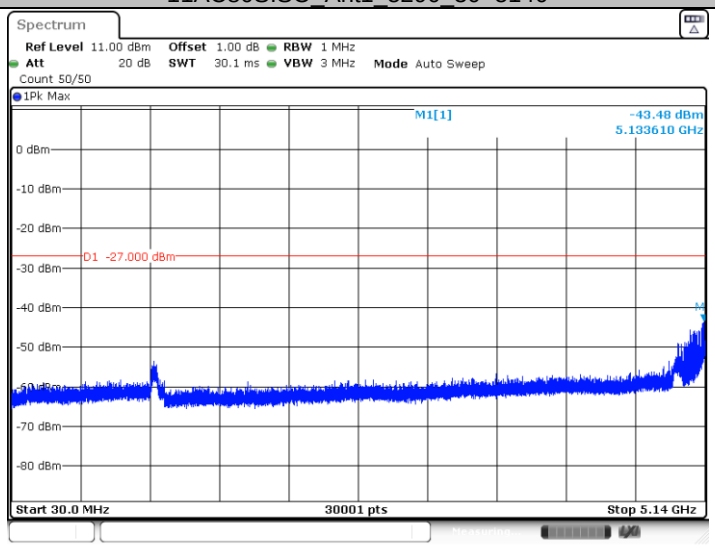
Date: 1.JUN.2022 11:39:05

11AC80SISO_Ant1_5210_5360~40000



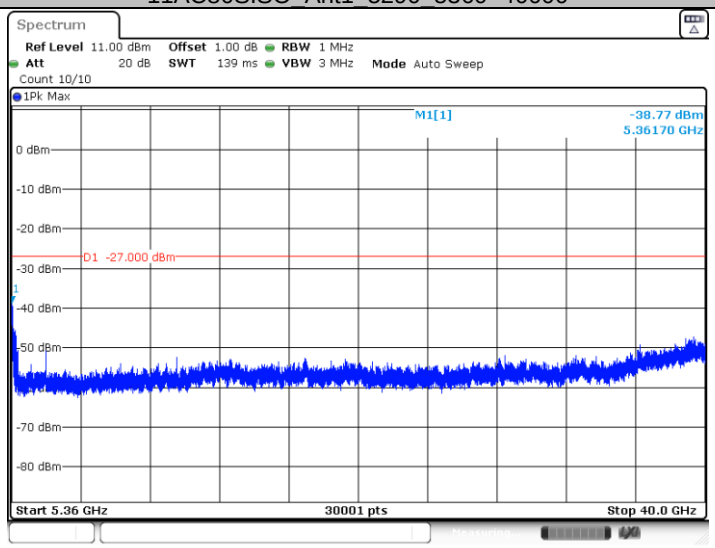
Date: 1.JUN.2022 11:39:11

11AC80SISO_Ant1_5290_30~5140



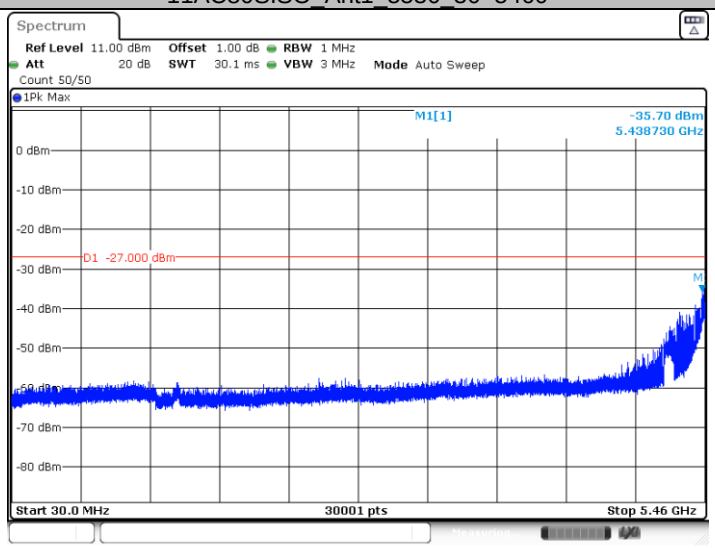
Date: 1.JUN.2022 11:41:49

11AC80SISO_Ant1_5290_5360~40000



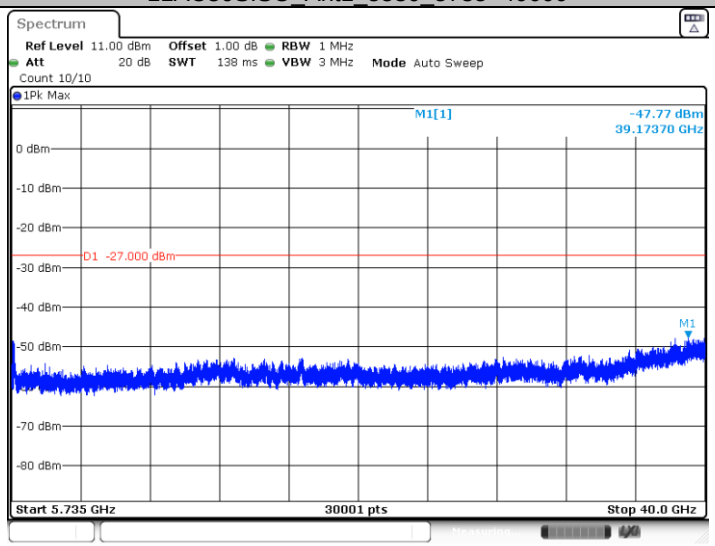
Date: 1.JUN.2022 11:41:54

11AC80SISO_Ant1_5530_30~5460



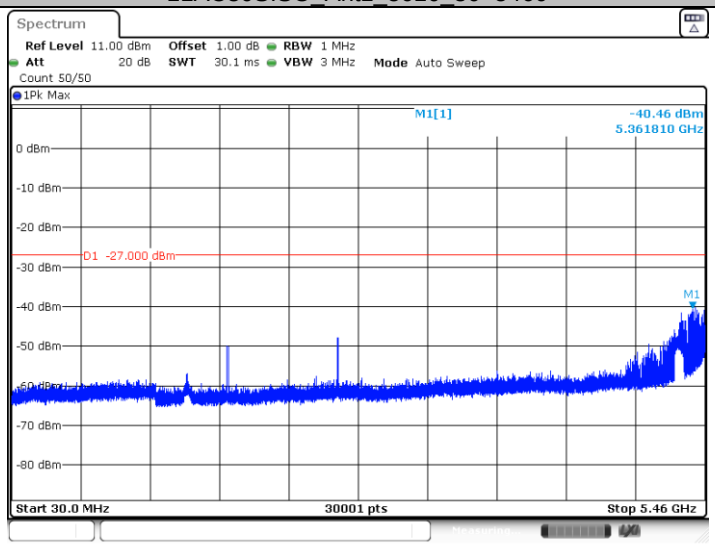
Date: 1.JUN.2022 11:43:38

11AC80SISO_Ant1_5530_5735~40000



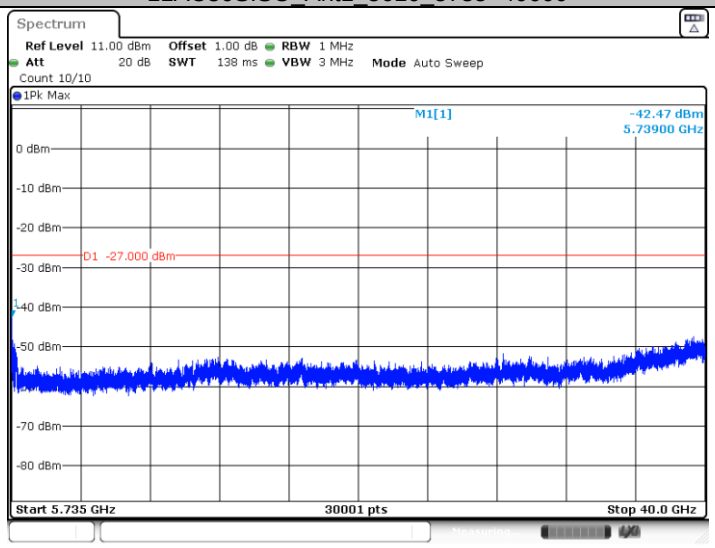
Date: 1.JUN.2022 11:43:43

11AC80SISO_Ant1_5610_30~5460



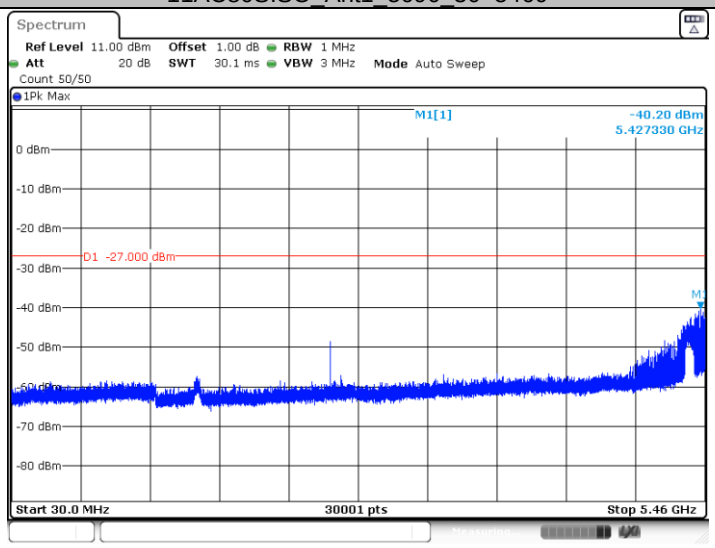
Date: 1.JUN.2022 11:48:48

11AC80SISO_Ant1_5610_5735~40000



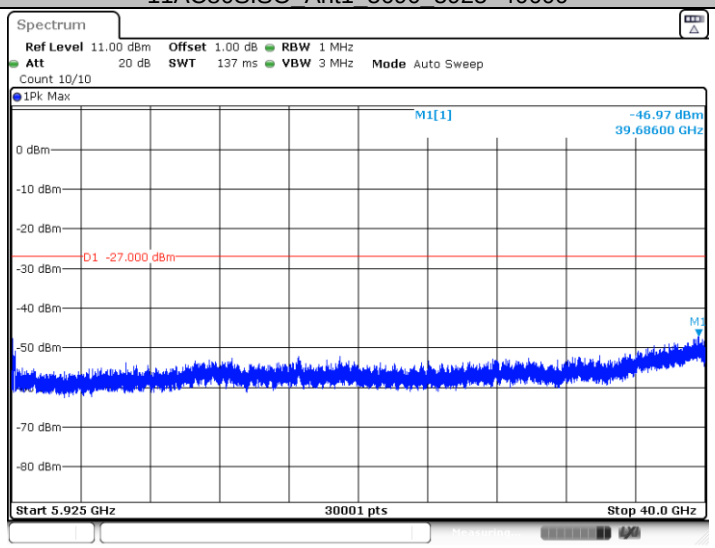
Date: 1.JUN.2022 11:48:53

11AC80SISO_Ant1_5690_30~5460



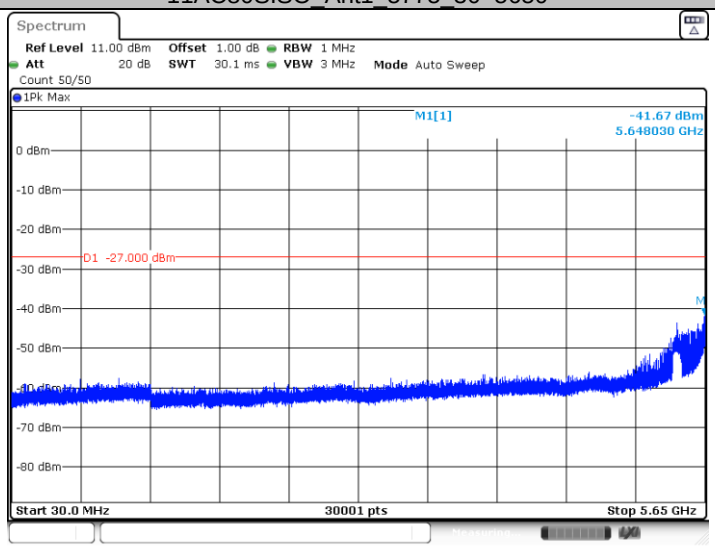
Date: 1.JUN.2022 11:52:18

11AC80SISO_Ant1_5690_5925~40000



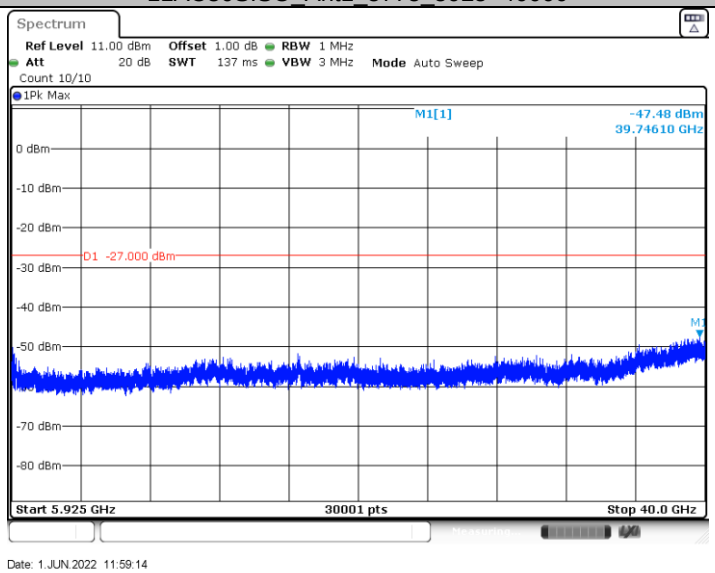
Date: 1.JUN.2022 11:52:23

11AC80SISO_Ant1_5775_30~5650



Date: 1.JUN.2022 11:59:09

11AC80SISO_Ant1_5775_5925~40000



TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou, Nanshan District,
Shenzhen, Guangdong 518052, China Tel. +86 755 8828 6998, Fax: +86 755 8828 5299

9.6 Frequencies Stability

Test Method

1. The EUT was placed on 0.8m height table, the RF output of EUT was connected to the test receiver by RF cable. The path loss was compensated to the results for each measurement.
2. Set Centre Frequency of the channel under test.
3. Set Detector PEAK
4. Set RBW: 10KHz, VBW: 3RBW
5. Set Span: Encompass the entire emissions bandwidth (EBW) of the signal.
6. Allow the trace to stabilize, find the peak value of the power envelope and record the frequency, then calculated the frequency drift.

The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.
User manual temperature is -10℃ to +30℃, normal Temperature is +25℃.

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

Test Results (All conditions and all modes were performed, only list Worst-Case in the report)

Remark: NV is normal Voltage: 3.85Vdc, HV is High Voltage: 4.43Vdc, LV is Low Voltage: 3.27Vdc, NT is normal Temperature: +25℃.

Voltage								
Test Mode	Antenna	Channel [MHz]	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11AC20SISO	Ant1	5180	NV	NT	-18000	-3.474903	20	PASS
			LV	NT	-18000	-3.474903	20	PASS
			HV	NT	-18000	-3.474903	20	PASS
		5200	NV	NT	-18000	-3.461538	20	PASS
			LV	NT	-17000	-3.269231	20	PASS
			HV	NT	-17000	-3.269231	20	PASS
		5240	NV	NT	-18000	-3.435115	20	PASS
			LV	NT	-17000	-3.244275	20	PASS
			HV	NT	-17000	-3.244275	20	PASS
		5260	NV	NT	-19000	-3.612167	20	PASS
			LV	NT	-18000	-3.422053	20	PASS
			HV	NT	-17000	-3.231939	20	PASS
		5280	NV	NT	-18000	-3.409091	20	PASS
			LV	NT	-17000	-3.219697	20	PASS
			HV	NT	-16000	-3.030303	20	PASS
		5320	NV	NT	-18000	-3.383459	20	PASS
			LV	NT	-17000	-3.195489	20	PASS
			HV	NT	-16000	-3.007519	20	PASS
		5500	NV	NT	-20000	-3.636364	20	PASS
			LV	NT	-18000	-3.272727	20	PASS
			HV	NT	-18000	-3.272727	20	PASS
		5580	NV	NT	-20000	-3.584229	20	PASS
			LV	NT	-19000	-3.405018	20	PASS
			HV	NT	-18000	-3.225806	20	PASS

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou, Nanshan District, Shenzhen, Guangdong 518052, China Tel. +86 755 8828 6998, Fax: +86 755 8828 5299

		5700	NV	NT	-20000	-3.508772	20	PASS
			LV	NT	-19000	-3.333333	20	PASS
			HV	NT	-19000	-3.333333	20	PASS
		5720	NV	NT	-20000	-3.496503	20	PASS
			LV	NT	-20000	-3.496503	20	PASS
			HV	NT	-19000	-3.321678	20	PASS
		5745	NV	NT	-20000	-3.481288	20	PASS
			LV	NT	-19000	-3.307224	20	PASS
			HV	NT	-19000	-3.307224	20	PASS
		5785	NV	NT	-20000	-3.457217	20	PASS
			LV	NT	-20000	-3.457217	20	PASS
			HV	NT	-20000	-3.457217	20	PASS
		5825	NV	NT	-21000	-3.60515	20	PASS
			LV	NT	-20000	-3.433476	20	PASS
			HV	NT	-20000	-3.433476	20	PASS
11AC40SISO	Ant1	5190	NV	NT	-17000	-3.27553	20	PASS
			LV	NT	-17000	-3.27553	20	PASS
			HV	NT	-17000	-3.27553	20	PASS
		5230	NV	NT	-18000	-3.441683	20	PASS
			LV	NT	-17000	-3.250478	20	PASS
			HV	NT	-17000	-3.250478	20	PASS
		5270	NV	NT	-18000	-3.41556	20	PASS
			LV	NT	-17000	-3.225806	20	PASS
			HV	NT	-17000	-3.225806	20	PASS
		5310	NV	NT	-18000	-3.389831	20	PASS
			LV	NT	-17000	-3.201507	20	PASS
			HV	NT	-17000	-3.201507	20	PASS
		5510	NV	NT	-19000	-3.448276	20	PASS
			LV	NT	-18000	-3.266788	20	PASS
			HV	NT	-18000	-3.266788	20	PASS
		5550	NV	NT	-19000	-3.423423	20	PASS
			LV	NT	-19000	-3.423423	20	PASS
			HV	NT	-18000	-3.243243	20	PASS
		5670	NV	NT	-20000	-3.527337	20	PASS
			LV	NT	-19000	-3.35097	20	PASS
			HV	NT	-19000	-3.35097	20	PASS
		5710	NV	NT	-20000	-3.502627	20	PASS
			LV	NT	-19000	-3.327496	20	PASS
			HV	NT	-19000	-3.327496	20	PASS
		5755	NV	NT	-19000	-3.301477	20	PASS
			LV	NT	-19000	-3.301477	20	PASS
			HV	NT	-19000	-3.301477	20	PASS
		5795	NV	NT	-20000	-3.451251	20	PASS
			LV	NT	-20000	-3.451251	20	PASS
			HV	NT	-20000	-3.451251	20	PASS
11AC80SISO	Ant1	5210	NV	NT	-18000	-3.454894	20	PASS
			LV	NT	-17000	-3.262956	20	PASS
			HV	NT	-17000	-3.262956	20	PASS
		5290	NV	NT	-17000	-3.213611	20	PASS
			LV	NT	-17000	-3.213611	20	PASS
			HV	NT	-17000	-3.213611	20	PASS
		5530	NV	NT	-19000	-3.435805	20	PASS
			LV	NT	-19000	-3.435805	20	PASS
			HV	NT	-18000	-3.254973	20	PASS
		5610	NV	NT	-20000	-3.565062	20	PASS
			LV	NT	-20000	-3.565062	20	PASS
			HV	NT	-19000	-3.386809	20	PASS
		5690	NV	NT	-20000	-3.514938	20	PASS

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou, Nanshan District,
Shenzhen, Guangdong 518052, China Tel. +86 755 8828 6998, Fax: +86 755 8828 5299

			LV	NT	-20000	-3.514938	20	PASS
			HV	NT	-19000	-3.339192	20	PASS
		5775	NV	NT	-20000	-3.463203	20	PASS
			LV	NT	-20000	-3.463203	20	PASS
			HV	NT	-19000	-3.290043	20	PASS

Temperature								
Test Mode	Antenna	Channel [MHz]	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11AC20SISO	Ant1	5180	NV	-10	-17000	-3.281853	20	PASS
			NV	0	-17000	-3.281853	20	PASS
			NV	10	-17000	-3.281853	20	PASS
			NV	20	-17000	-3.281853	20	PASS
			NV	35	-17000	-3.281853	20	PASS
		5200	NV	-10	-16000	-3.076923	20	PASS
			NV	0	-16000	-3.076923	20	PASS
			NV	10	-17000	-3.269231	20	PASS
			NV	20	-16000	-3.076923	20	PASS
			NV	35	-16000	-3.076923	20	PASS
		5240	NV	-10	-16000	-3.053435	20	PASS
			NV	0	-16000	-3.053435	20	PASS
			NV	10	-16000	-3.053435	20	PASS
			NV	20	-16000	-3.053435	20	PASS
			NV	35	-16000	-3.053435	20	PASS
		5260	NV	-10	-16000	-3.041825	20	PASS
			NV	0	-16000	-3.041825	20	PASS
			NV	10	-16000	-3.041825	20	PASS
			NV	20	-16000	-3.041825	20	PASS
			NV	30	-16000	-3.041825	20	PASS
		5280	NV	-10	-16000	-3.030303	20	PASS
			NV	0	-16000	-3.030303	20	PASS
			NV	10	-16000	-3.030303	20	PASS
			NV	20	-16000	-3.030303	20	PASS
			NV	35	-16000	-3.030303	20	PASS
		5320	NV	-10	-16000	-3.007519	20	PASS
			NV	0	-16000	-3.007519	20	PASS
			NV	10	-16000	-3.007519	20	PASS
			NV	20	-16000	-3.007519	20	PASS
			NV	35	-16000	-3.007519	20	PASS
		5500	NV	-10	-17000	-3.090909	20	PASS
			NV	0	-17000	-3.090909	20	PASS
			NV	10	-17000	-3.090909	20	PASS
			NV	20	-17000	-3.090909	20	PASS
			NV	35	-17000	-3.090909	20	PASS
		5580	NV	-10	-18000	-3.225806	20	PASS
			NV	0	-18000	-3.225806	20	PASS
			NV	10	-18000	-3.225806	20	PASS
			NV	20	-18000	-3.225806	20	PASS
			NV	35	-18000	-3.225806	20	PASS
		5700	NV	-10	-19000	-3.333333	20	PASS
			NV	0	-19000	-3.333333	20	PASS
			NV	10	-19000	-3.333333	20	PASS
			NV	20	-19000	-3.333333	20	PASS
			NV	35	-19000	-3.333333	20	PASS
		5720	NV	-10	-19000	-3.321678	20	PASS
			NV	0	-19000	-3.321678	20	PASS
			NV	10	-19000	-3.321678	20	PASS

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou, Nanshan District,
Shenzhen, Guangdong 518052, China Tel. +86 755 8828 6998, Fax: +86 755 8828 5299

			NV	20	-19000	-3.321678	20	PASS
			NV	35	-19000	-3.321678	20	PASS
		5745	NV	-10	-19000	-3.307224	20	PASS
			NV	0	-19000	-3.307224	20	PASS
			NV	10	-19000	-3.307224	20	PASS
			NV	20	-19000	-3.307224	20	PASS
			NV	35	-19000	-3.307224	20	PASS
		5785	NV	-10	-19000	-3.284356	20	PASS
			NV	0	-19000	-3.284356	20	PASS
			NV	10	-19000	-3.284356	20	PASS
			NV	20	-19000	-3.284356	20	PASS
			NV	35	-19000	-3.284356	20	PASS
		5825	NV	-10	-20000	-3.433476	20	PASS
			NV	0	-20000	-3.433476	20	PASS
			NV	10	-20000	-3.433476	20	PASS
			NV	20	-20000	-3.433476	20	PASS
			NV	35	-20000	-3.433476	20	PASS
11AC40SISO	Ant1	5190	NV	-10	-16000	-3.082852	20	PASS
			NV	0	-16000	-3.082852	20	PASS
			NV	10	-16000	-3.082852	20	PASS
			NV	20	-16000	-3.082852	20	PASS
			NV	35	-16000	-3.082852	20	PASS
		5230	NV	-10	-16000	-3.059273	20	PASS
			NV	0	-16000	-3.059273	20	PASS
			NV	10	-17000	-3.250478	20	PASS
			NV	20	-16000	-3.059273	20	PASS
			NV	35	-16000	-3.059273	20	PASS
		5270	NV	-10	-17000	-3.225806	20	PASS
			NV	0	-16000	-3.036053	20	PASS
			NV	10	-16000	-3.036053	20	PASS
			NV	20	-16000	-3.036053	20	PASS
			NV	35	-16000	-3.036053	20	PASS
		5310	NV	-10	-17000	-3.201507	20	PASS
			NV	0	-16000	-3.013183	20	PASS
			NV	10	-16000	-3.013183	20	PASS
			NV	20	-16000	-3.013183	20	PASS
			NV	35	-17000	-3.201507	20	PASS
		5510	NV	-10	-18000	-3.266788	20	PASS
			NV	0	-18000	-3.266788	20	PASS
			NV	10	-17000	-3.085299	20	PASS
			NV	20	-18000	-3.266788	20	PASS
			NV	35	-17000	-3.085299	20	PASS
		5550	NV	-10	-18000	-3.243243	20	PASS
			NV	0	-18000	-3.243243	20	PASS
			NV	10	-18000	-3.243243	20	PASS
			NV	20	-18000	-3.243243	20	PASS
			NV	35	-18000	-3.243243	20	PASS
		5670	NV	-10	-19000	-3.35097	20	PASS
			NV	0	-19000	-3.35097	20	PASS
			NV	10	-19000	-3.35097	20	PASS
			NV	20	-19000	-3.35097	20	PASS
			NV	35	-19000	-3.35097	20	PASS
		5710	NV	-10	-19000	-3.327496	20	PASS
			NV	0	-19000	-3.327496	20	PASS
			NV	10	-19000	-3.327496	20	PASS
			NV	20	-19000	-3.327496	20	PASS
			NV	35	-19000	-3.327496	20	PASS
		5755	NV	-10	-19000	-3.301477	20	PASS

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou, Nanshan District,
Shenzhen, Guangdong 518052, China Tel. +86 755 8828 6998, Fax: +86 755 8828 5299

			NV	0	-19000	-3.301477	20	PASS
			NV	10	-19000	-3.301477	20	PASS
			NV	20	-19000	-3.301477	20	PASS
			NV	35	-19000	-3.301477	20	PASS
		5795	NV	-10	-20000	-3.451251	20	PASS
			NV	0	-20000	-3.451251	20	PASS
			NV	10	-20000	-3.451251	20	PASS
			NV	20	-20000	-3.451251	20	PASS
			NV	35	-19000	-3.278689	20	PASS
11AC80SISO	Ant1	5210	NV	-10	-17000	-3.262956	20	PASS
			NV	0	-17000	-3.262956	20	PASS
			NV	10	-17000	-3.262956	20	PASS
			NV	20	-17000	-3.262956	20	PASS
			NV	35	-17000	-3.262956	20	PASS
		5290	NV	-10	-17000	-3.213611	20	PASS
			NV	0	-17000	-3.213611	20	PASS
			NV	10	-16000	-3.024575	20	PASS
			NV	20	-16000	-3.024575	20	PASS
			NV	35	-16000	-3.024575	20	PASS
		5530	NV	-10	-18000	-3.254973	20	PASS
			NV	0	-18000	-3.254973	20	PASS
			NV	10	-18000	-3.254973	20	PASS
			NV	20	-18000	-3.254973	20	PASS
			NV	35	-18000	-3.254973	20	PASS
		5610	NV	-10	-19000	-3.386809	20	PASS
			NV	0	-19000	-3.386809	20	PASS
			NV	10	-19000	-3.386809	20	PASS
			NV	20	-19000	-3.386809	20	PASS
			NV	35	-19000	-3.386809	20	PASS
		5690	NV	-10	-19000	-3.339192	20	PASS
			NV	0	-19000	-3.339192	20	PASS
			NV	10	-19000	-3.339192	20	PASS
			NV	20	-19000	-3.339192	20	PASS
			NV	35	-19000	-3.339192	20	PASS
		5775	NV	-10	-20000	-3.463203	20	PASS
			NV	0	-19000	-3.290043	20	PASS
			NV	10	-20000	-3.463203	20	PASS
			NV	20	-20000	-3.463203	20	PASS
			NV	35	-20000	-3.463203	20	PASS

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou, Nanshan District,
Shenzhen, Guangdong 518052, China Tel. +86 755 8828 6998, Fax: +86 755 8828 5299

9.7 Dynamic Frequency Selection (DFS)

General Test Condition

Parameteers of EUT	
Frequency	5250 – 5350 MHz & 5470 – 5725 MHz
Operational Mode	Slave
Modulation:	OFDM
Channel Bandwidth:	20 MHz , 40 MHz，80 MHz

Note: This device was functioned as a Slave device during the DFS

Test requirement

The manufacturer shall whether the EUT is capable of operating as a master and a client. Id the EUT is capable of operating in more than one operating mode then each operating mode shall be tested separately.

DFS Applicability

Requirement	Operational Mode		
	Master	Client Without Radar Detection	**Client With Radar Detection**
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
Uniform Spreading	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

DFS Applicability During Normal Operation

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Radar Detection
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Yes	Not required
Uniform Spreading	Yes	Yes	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou, Nanshan District,
Shenzhen, Guangdong 518052, China Tel. +86 755 8828 6998, Fax: +86 755 8828 5299

Test Limited

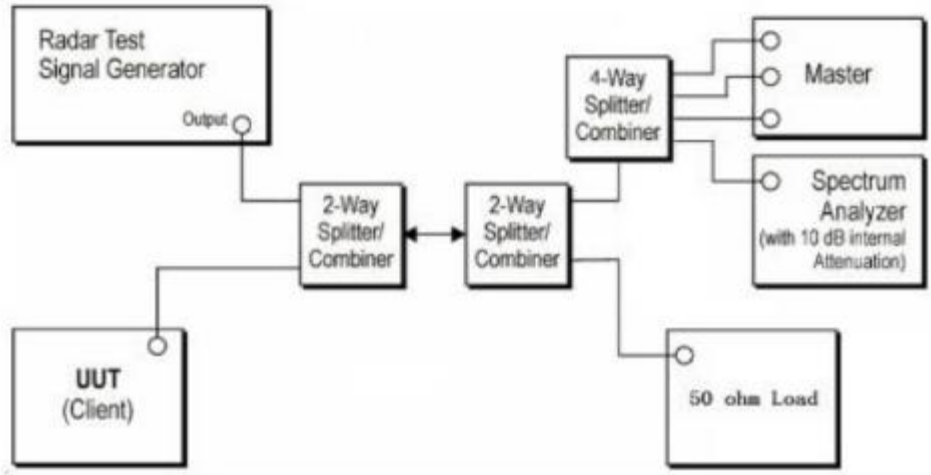
According to KDB 905462 D02 Table 4 DFS Response Requirement Values

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.
Note 1: *Channel Move Time* and the *Channel Closing Transmission Time* should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. **Note 2:** The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate a *Channel* move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions. **Note 3:** During the *U-NII Detection Bandwidth* detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.	

Calibration of Radar Waveform

(1) A 50ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to place of the master.
(2) The interference Radar Detection Threshold Level is -62dBm+3.7dB+1.5dB=-55.8dBm that had been taken into account the output power range and antenna gain.
(3) The following equipment setup was used to calibrate the conducted radar waveform. A vector signal generator was utilized to establish the test signal level for radar type 0. During this process there were no transmissions by either the master or client device. The spectrum analyzer was switched to the zero spans (time domain) at the frequency of the radar waveform generator. Peak detection was used. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3MHz. The spectrum analyzer had offset -1.5dB to compensate RF cable loss 1.5dB.
(4) The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was -62dBm+3.7dB+1.5dB=-55.8dBm. Capture the spectrum analyzer plots on short pulse radar waveform.

Conducted Calibration Setup:



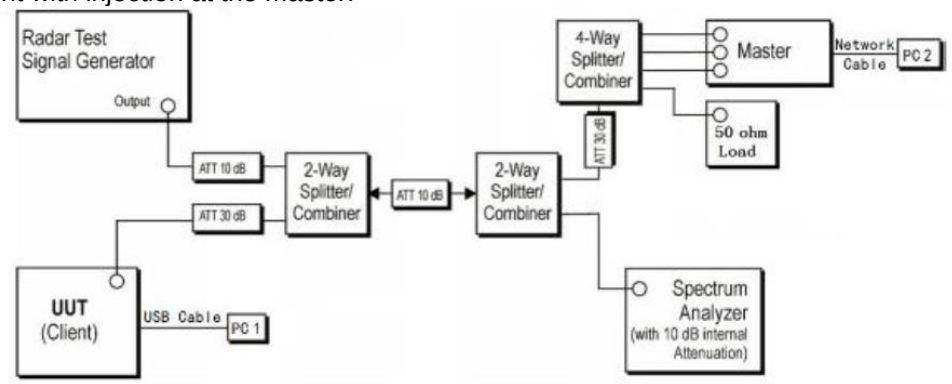
Radar Waveform Calibration result:

Channel Closing Transmission Time, Channel Move Time and Non-Occupancy Period.

Block Diagram of test setup test procedure.

(1) The Radar Pulse generator is setup to provide a pulse at frequency that the master and client are operating, A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.
(2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -55.8dBm at the antenna of the master device.
(3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
(4) EUT will associate with the master at channel. The file “iperf.exe” specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using test software in order to properly load the network for the entire period of the test.
(5) When radar burst with a Level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection threshold +1dB.
(6) Observer the transmissions of the EUT at the end of the radar Burst on the Operating channel. Measure and record the transmissions form the UUT during The observation time (channel move time). One 15 seconds plot is reported for the short pulse radar type 0. The plot for the short pulse radar burst. The channel move time will be calculated based on the zoom in 600ms plot of the short pulse radar type.
(7) Measurement of the aggregate duration of the channel closed transmission time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (3.0)=S(12000ms)/B(4000); where dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of channel closing transmission time is calculated by: C(ms)=N X Dwell (0.3ms); where C is the closing time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and dwell is the dwell time per bin.
(8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

Test Setup:
Setup for client with injection at the master.



Test Result

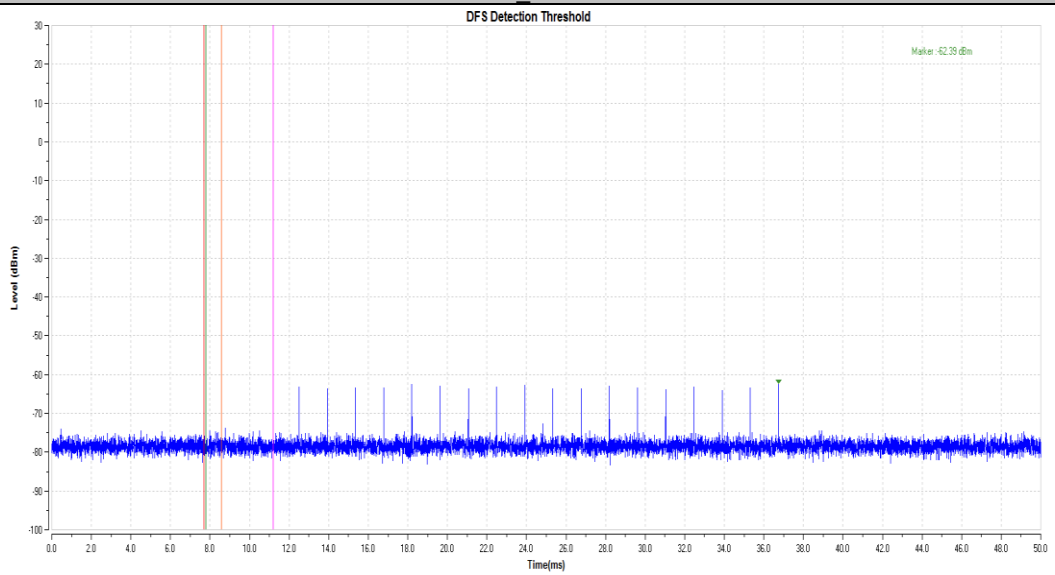
Clause	Test Parameter	Remarks	Pass/Fail
15.407	DFS Detection Threshold	Not Applicable	N/A
15.407	Channel Availability Check time	Not Applicable	N/A
15.407	Channel Move time	Applicable	Pass
15.407	Channel Closing Transmission time	Applicable	Pass
15.407	Non-occupancy Period	Not Applicable	N/A
15.407	Uniform Spreading	Not Applicable	N/A
15.407	U-NII Detection Bandwidth	Not Applicable	N/A

Test Mode	Channel [MHz]	CCT [ms]	Limit [ms]	CMT [ms]	Limit [ms]	Verdict
11A	5280	14.62	60	866.02	10000	PASS
	5500	24.51	60	814.85	10000	PASS
11N40SISO	5270	23.65	60	963.63	10000	PASS
	5510	11.61	60	807.97	10000	PASS
11AC80SISO	5290	17.63	60	772.71	10000	PASS
	5530	23.65	60	877.2	10000	PASS

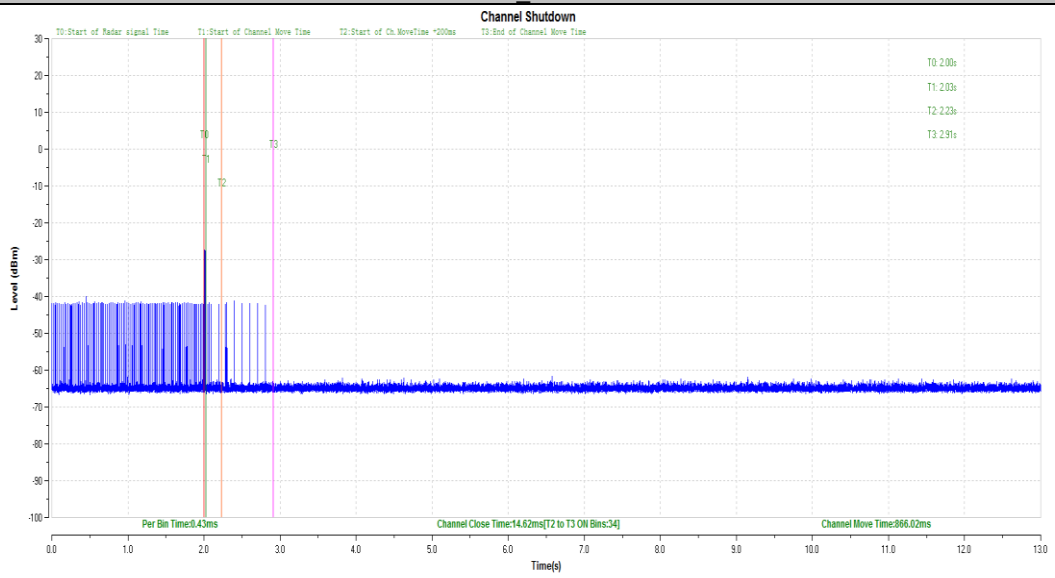
TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou, Nanshan District,
Shenzhen, Guangdong 518052, China Tel. +86 755 8828 6998, Fax: +86 755 8828 5299

Test Graphs

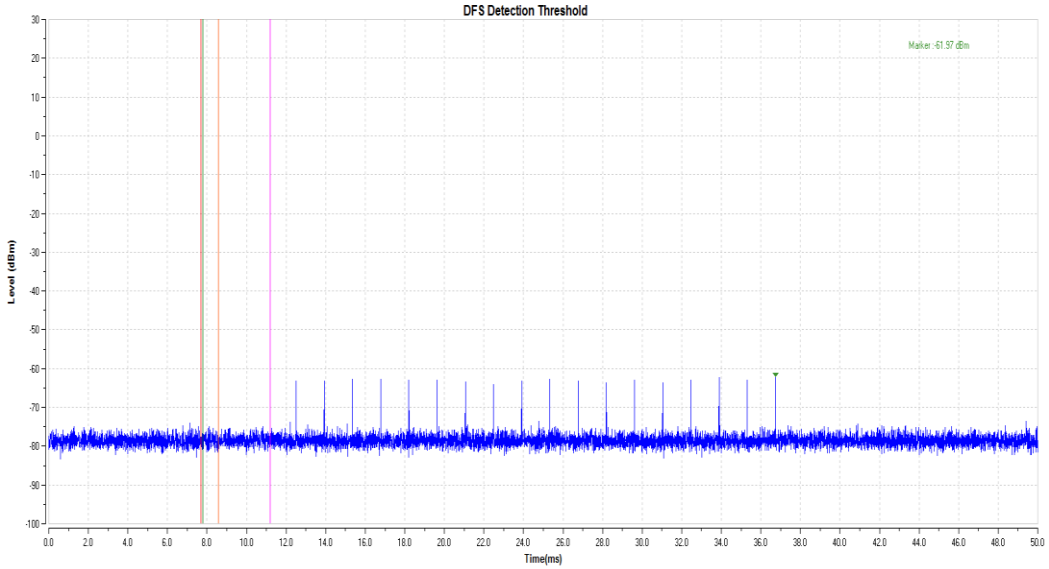
11A_5280



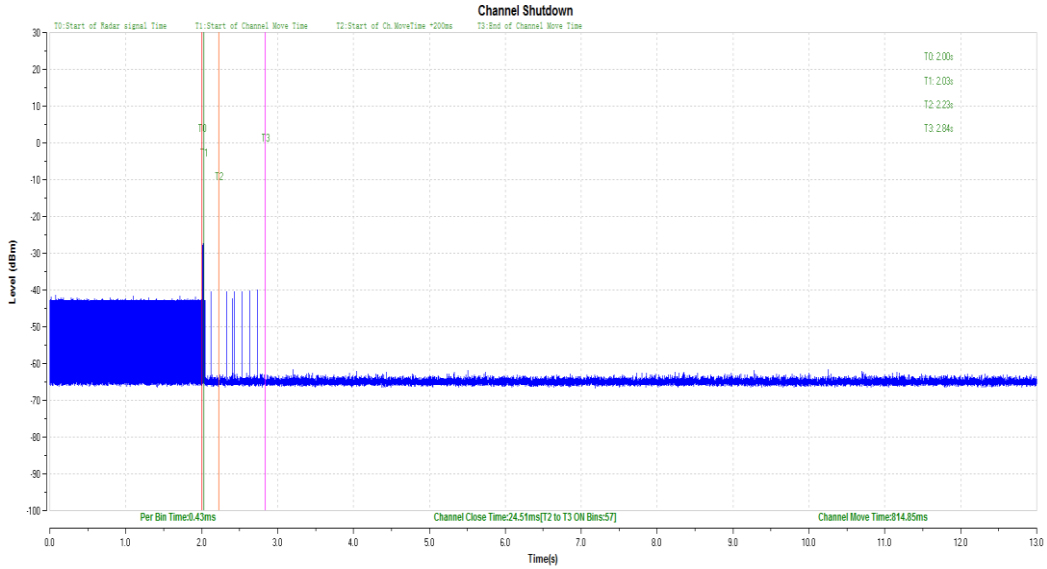
11A_5280



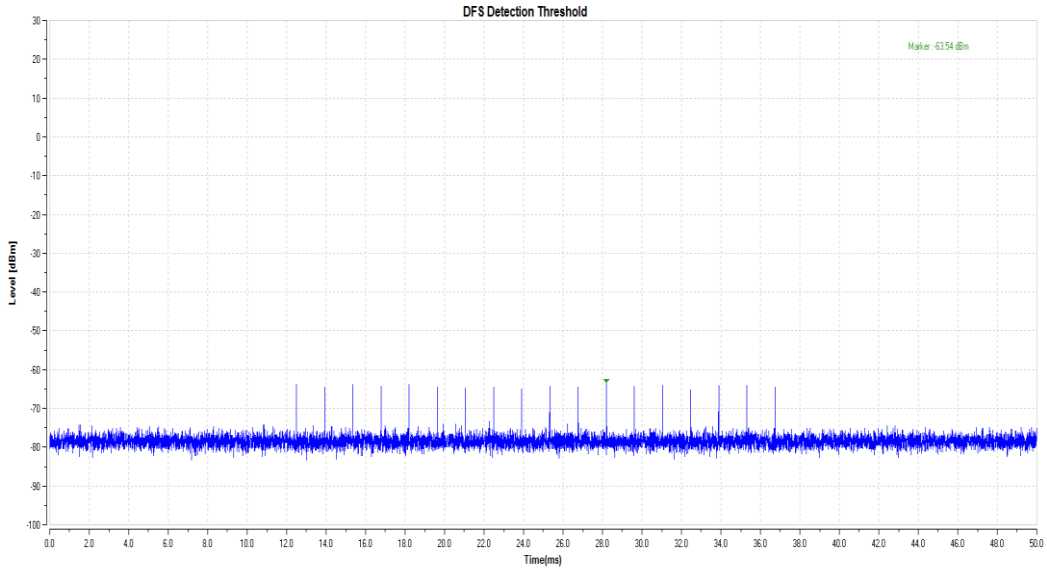
11A_5500



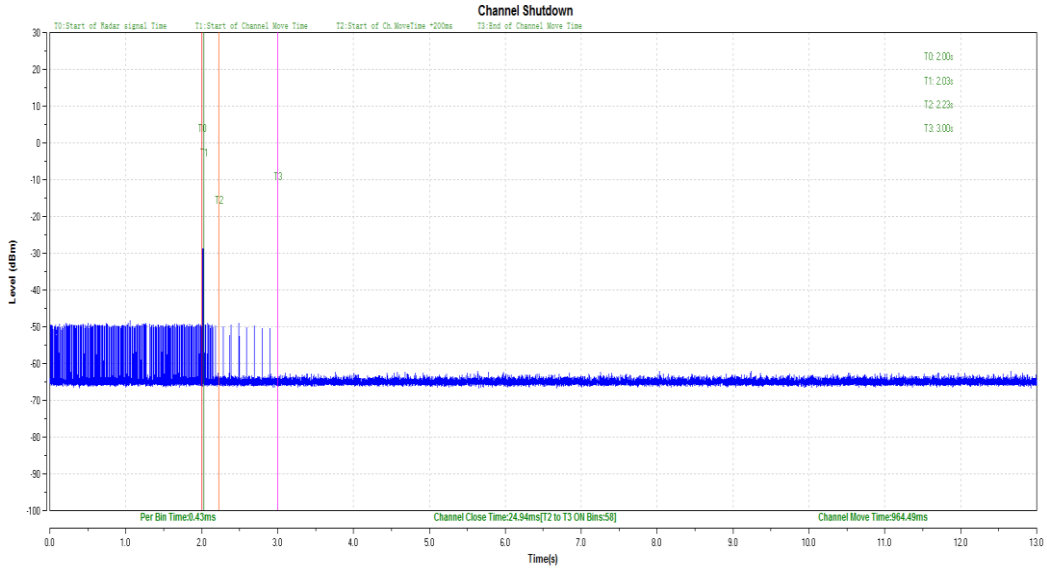
11A_5500



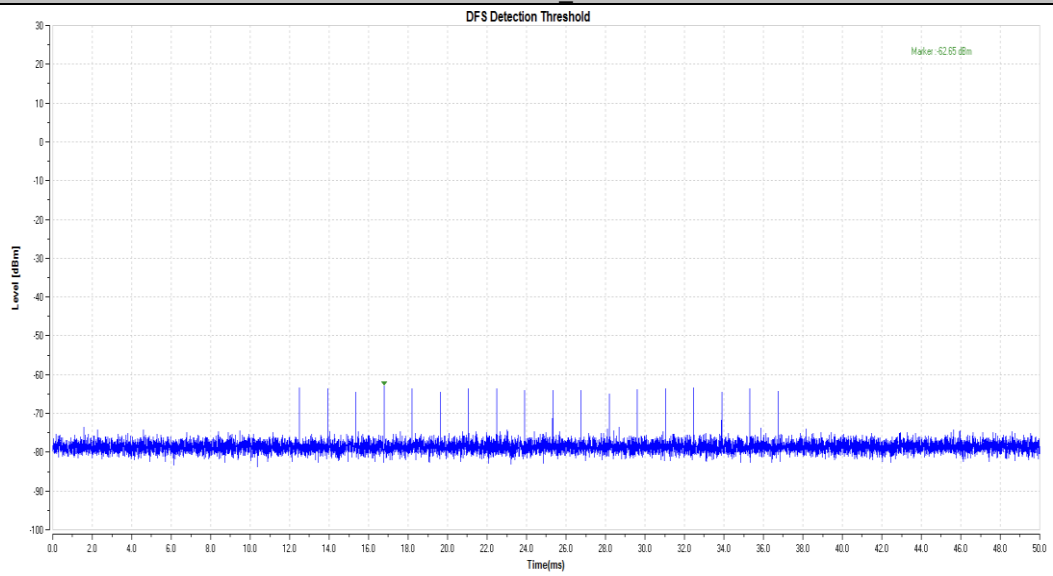
11N40SISO_5270



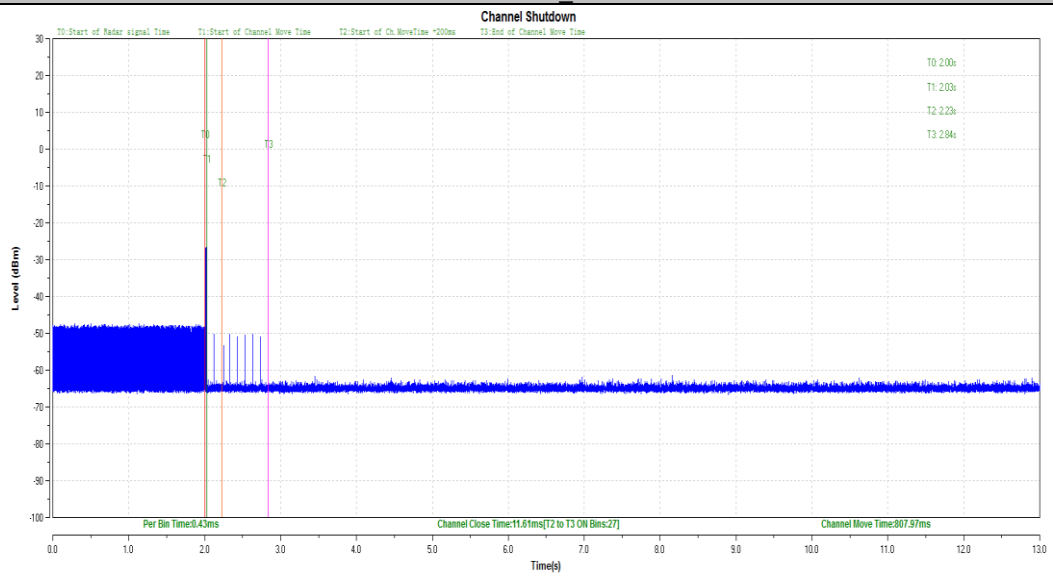
11N40SISO_5270



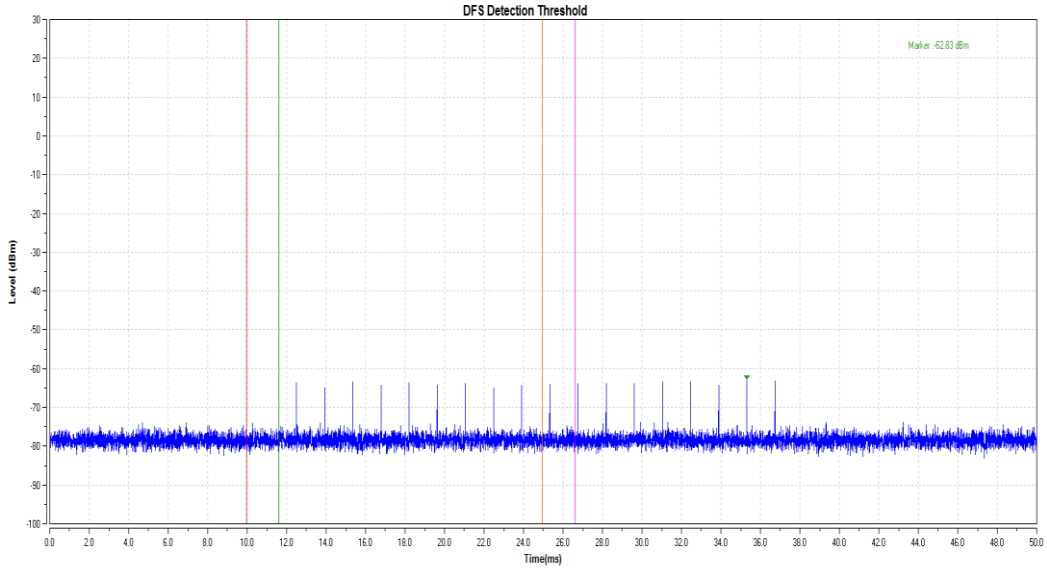
11N40SISO_5510



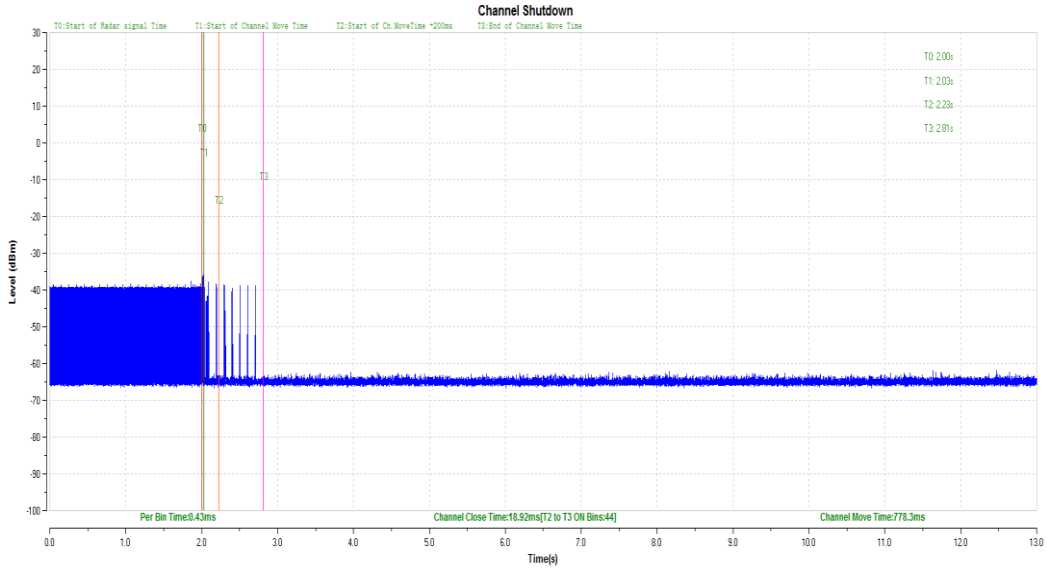
11N40SISO_5510



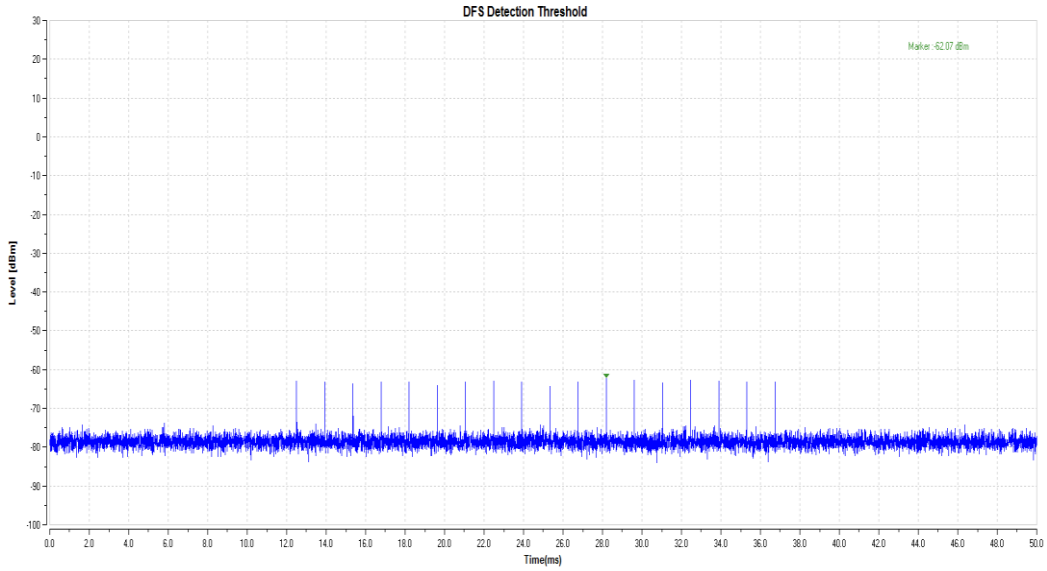
11AC80SISO_5290



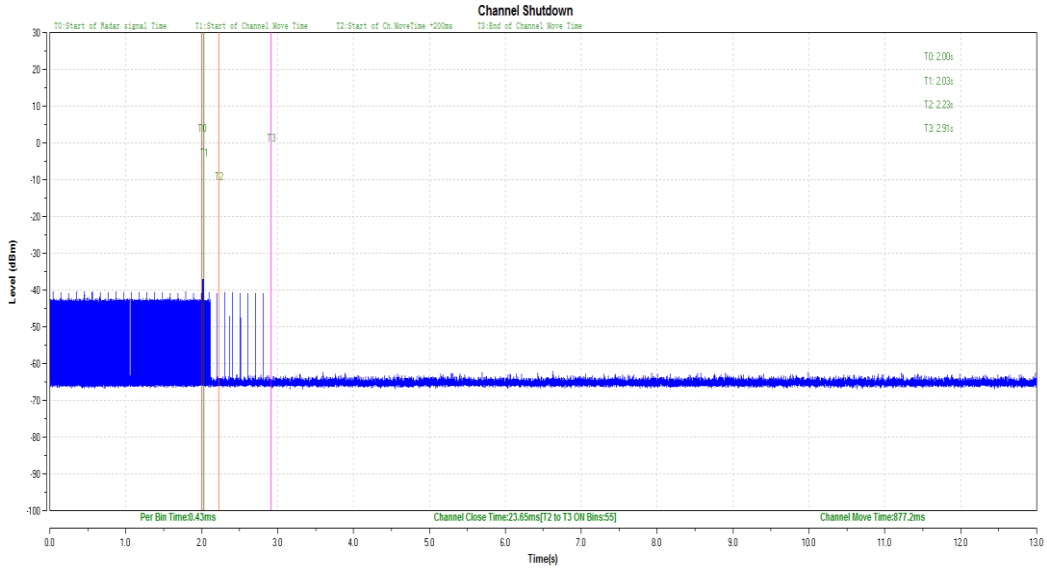
11AC80SISO_5290



11AC80SISO_5530



11AC80SISO_5530



10 Test Equipment List

Conducted Emission Test

Description	Manufacturer	Model no.	Equipment ID	Serial no.	Cal interval (year)	Cal. due date
EMI Test Receiver	Rohde & Schwarz	ESR 3	68-4-74-14-001	101782	1	2023-5-27
LISN	Rohde & Schwarz	ENV432	68-4-87-16-001	101318	1	2023-5-27
Attenuator	Shanghai Huaxiang	TS2-26-3	68-4-81-16-003	080928189	1	2023-5-27
Test software	Rohde & Schwarz	EMC32	68-4-90-14-003-A10	Version 9.15.00	N/A	N/A
Shielding Room	TDK	CSR #1	68-4-90-19-004	----	1	2022-11-07

Radiated Emission Test 1#

Description	Manufacturer	Model no.	Equipment ID	Serial no.	Cal interval (year)	Cal. due date
EMI Test Receiver	Rohde & Schwarz	ESR 7	68-4-74-19-001	102176	1	2023-5-27
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	68-4-80-14-002	707	1	2022-7-23
Pre-amplifier	Rohde & Schwarz	SCU 18	68-4-29-14-001	102230	1	2023-5-28
Attenuator	Mini-circuits	UNAT-6+	68-4-81-21-001	15542	1	2023-5-27
3m Semi-anechoic chamber	TDK	SAC-3 #1	68-4-90-14-001	----	2	2023-5-28
Test software	Rohde & Schwarz	EMC32	68-4-90-14-001-A10	Version 10.35.02	N/A	N/A

Radiated Emission Test 2#

Description	Manufacturer	Model no.	Equipment ID	Serial no.	Cal interval (year)	Cal. due date
EMI Test Receiver	Rohde & Schwarz	ESR 26	68-4-74-14-002	101269	1	2023-5-28
Wave Guide Antenna	ETS	3117	68-4-80-19-001	00218954	1	2023-5-9
Pre-amplifier	Rohde & Schwarz	SCU 18F	68-4-29-19-001	100745	1	2023-5-28
Pre-amplifier	Rohde & Schwarz	SCU 18F	68-4-29-19-002	100746	1	2023-5-28
Sideband Horn Antenna	Q-PAR	QWH-SL-18-40-K-SG	68-4-80-14-008	12827	1	2022-7-21
Pre-amplifier	Rohde & Schwarz	SCU 40A	68-4-29-14-002	100432	1	2022-7-27
Attenuator	Mini-circuits	UNAT-6+	68-4-81-21-002	15542	1	2023-5-27
3m Semi-anechoic chamber	TDK	SAC-3 #2	68-4-90-19-006	----	2	2023-5-28
Test software	Rohde & Schwarz	EMC32	68-4-90-19-006-A01	Version 10.35.02	N/A	N/A

RF Conducted Test

Description	Manufacturer	Model no.	Equipment ID	Serial no.	Cal interval (year)	Cal. due date
Signal Analyzer	Rohde & Schwarz	FSV40	68-4-74-14-004	101030	1	2023-5-27

11 System Measurement Uncertainly

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty	
Test Items	Extended Uncertainty
Uncertainty for Conducted Emission 150kHz-30MHz (for test using AMN ENV432)	3.71dB
Uncertainty for Radiated Emission in 3m chamber (68-4-90-14-001)30MHz-1000MHz	Horizontal: 4.68dB; Vertical: 4.65dB;
Uncertainty for Radiated Emission in new 3m chamber (68-4-90-19-006) 1000MHz-18000MHz	Horizontal: 4.76dB; Vertical: 4.75dB;
Uncertainty for Radiated Emission 18000MHz-40000MHz	Horizontal: 4.51dB; Vertical: 4.50dB
Uncertainty for Conducted RF test with TS 8997	RF Power Conducted: 1.27dB Frequency test involved: 0.6×10^{-7} or 1%

Measurement Uncertainty Decision Rule

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2007, clause 4.4.3 and 4.5.1.

---THE END OF REPORT---

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou, Nanshan District,
Shenzhen, Guangdong 518052, China Tel. +86 755 8828 6998, Fax: +86 755 8828 5299