3.3 MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

3.3.1 LIMITS OF MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

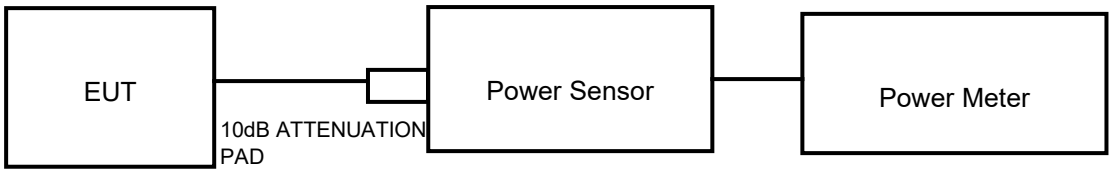
Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
	B	Indoor Access Point	1 Watt (30 dBm)
	√	Client devices	250mW (24 dBm)
U-NII-2A	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√		1 Watt (30 dBm)

NOTE: Where B is the 26dB emission bandwidth in MHz.

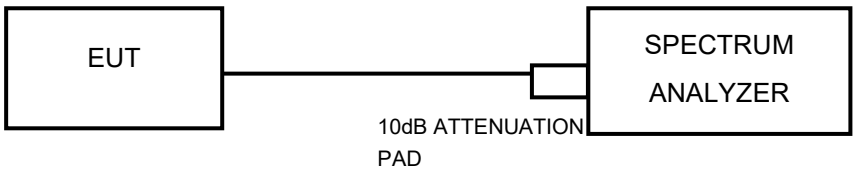
3.3.2 TEST SETUP

FOR POWER OUTPUT MEASUREMENT

802.11a, 802.11n/ac/ax (20MHz), 802.11 n/ac/ax (40MHz) ,802.11 ac/ax (160MHz) TEST CONFIGURATION



FOR 26dB BANDWIDTH



3.3.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	R&S	ESW 44	101973	Mar.28,24	Mar.27,26
Open Switch and Control Unit	R&S	OSP-B157W8	100836	N/A	N/A
Vector Signal Generator	R&S	SMBV100B	102176	Mar.29,24	Mar.28,26
Signal Generator	R&S	SMB100A03	182185	Mar.29,24	Mar.28,26
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.19,24	Jun.18,26
Hygrothermograph	DELI	20210528	SZ015	Mar.18,25	Mar.17,27
PC	LENOVO	E14	HRSW0024	N/A	N/A
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Apr.26,25	Apr.25,26
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Apr.26,25	Apr.25,26
Test Software	EMC32	EMC32	N/A	N/A	N/A
Temperature Chamber	votsch	VT4002	58566078100050	May.30,24	May.29,26
Power Meter	R&S	NRX	102380	Mar.28,24	Mar.27,26
Power Meter probe	R&S	NRP6A	102942	Mar.28,24	Mar.27,26

NOTE:

1. The calibration interval of the above test instruments is 12 /24months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in RF Oven room.

3.3.4 TEST PROCEDURE

FOR POWER MEASUREMENT

For 802.11a, 802.11n/ac/ax (20MHz), 802.11 n/ac/ax (40MHz) ,802.11 ac/ax (160MHz)

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

FOR 99 PERCENT OCCUPIED BANDWIDTH

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW ≥ 3 · RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

FOR 26dB BANDWIDTH

1) Set RBW = shall be in the range of 1% to 5% of the emission bandwidth.
2) Set the VBW > RBW.
3) Detector = Peak.
4) Trace mode = max hold.
5) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is in the range of 1% to 5%.

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

3.3.5 DEVIATION FROM TEST STANDARD

No deviation.

3.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

3.3.7 TEST RESULTS

Please Refer to Appendix of this test report.

3.4 MAXIMUM POWER SPECTRAL DENSITY MEASUREMENT

3.4.1 LIMITS OF MAXIMUM POWER SPECTRAL DENSITY MEASUREMENT

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
	√	Client devices	11dBm/ MHz
U-NII-2A	√		11dBm/ MHz
U-NII-2C	√		11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

3.4.2 TEST SETUP

3.4.3 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.4.4 TEST PROCEDURES

Using method SA-2(Band1/2/3)

1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
3) Set Channel power measure = 1MHz
4) Sweep time = auto, trigger set to “free run”.
5) Trace average at least 100 traces in power averaging mode.
6) Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission).
7) Record the max value

Using method SA-2 (Band4)

1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS
3) Set Channel power measure = 1MHz
4) Sweep time = auto, trigger set to “free run”.
5) Trace average at least 100 traces in power averaging mode.
6) Add 10 log(500kHz/RBW) to the test result. 10 log(500kHz/300KHZ) = 2.22dBm
7) Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission).
8) Record the max value

3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

3.4.6 EUT OPERATING CONDITIONS

Same as 3.1.7.

3.4.7 TEST RESULTS

Please Refer to Appendix of this test report.

3.5 AUTOMATICALLY DISCONTINUE TRANSMISSION

3.5.1 LIMIT OF AUTOMATICALLY DISCONTINUE TRANSMISSION

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information, or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

3.5.2 TEST INSTRUMENTS

Refer to section 3.3.3 to get information of above instrument.

3.5.3 TEST RESULT

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving。 The EUT can detect the controlling of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

3.6 ANTENNA REQUIREMENTS

3.6.1 STANDARD APPLICABLE

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmits power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.6.2 ANTENNA CONNECTED CONSTRUCTION

An embedded-in antenna design is used.

3.6.3 ANTENNA GAIN

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit and PSD limit.

4. PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).

5. MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

6. Appendix

RLAN

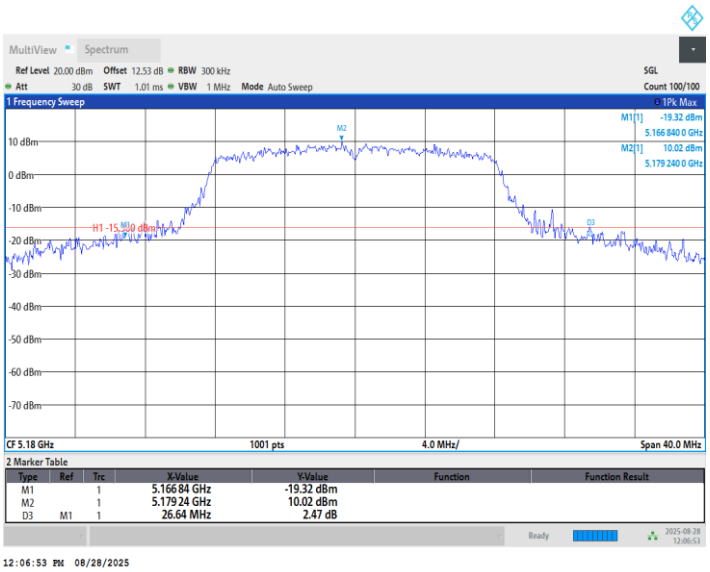
EMISSION BANDWIDTH

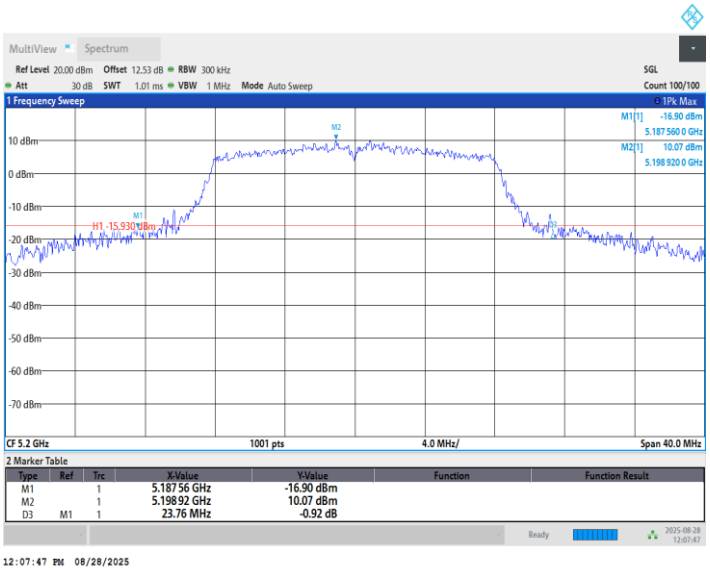
TEST RESULT

TestMode	Antenna	Freq(MHz)	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant3	5180	26.64	5166.84	5193.48	---	---
		5200	23.76	5187.56	5211.32	---	---
		5240	25.00	5228.44	5253.44	---	---
		5260	23.92	5247.68	5271.60	---	---
		5300	28.24	5284.96	5313.20	---	---
		5320	28.36	5307.36	5335.72	---	---
		5500	28.00	5485.60	5513.60	---	---
		5580	22.84	5567.80	5590.64	---	---
		5700	27.12	5686.20	5713.32	---	---
		5720	28.48	5706.16	5734.64	---	---
		5720_UNII-2C	18.84	5706.16	5725	---	---
		5720_UNII-3	9.64	5725	5734.64	---	---
11N20SISO	Ant3	5180	23.96	5167.40	5191.36	---	---
		5200	24.72	5188.44	5213.16	---	---
		5240	23.00	5228.28	5251.28	---	---
		5260	23.64	5247.48	5271.12	---	---
		5300	24.76	5287.52	5312.28	---	---
		5320	26.16	5306.04	5332.20	---	---
		5500	25.24	5486.12	5511.36	---	---
		5580	26.24	5567.12	5593.36	---	---
		5700	27.04	5686.52	5713.56	---	---
		5720	24.80	5706.12	5730.92	---	---
		5720_UNII-2C	18.88	5706.12	5725	---	---
		5720_UNII-3	5.92	5725	5730.92	---	---
11N40SISO	Ant3	5190	62.32	5160.64	5222.96	---	---
		5230	65.04	5197.84	5262.88	---	---
		5270	64.40	5238.00	5302.40	---	---
		5310	63.44	5277.84	5341.28	---	---
		5510	63.12	5479.60	5542.72	---	---
		5550	58.88	5521.12	5580.00	---	---

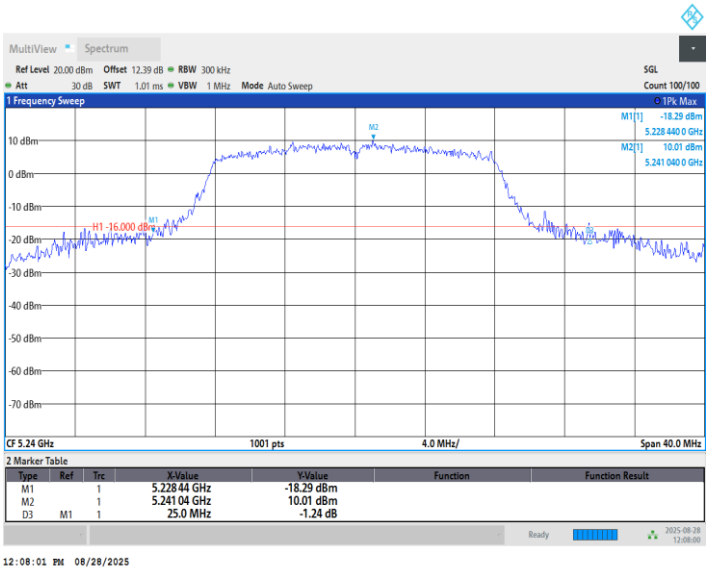
		5670	64.08	5638.80	5702.88	---	---
		5710	64.80	5678.00	5742.80	---	---
		5710_UNII-2C	47	5678.00	5725	---	---
		5710_UNII-3	17.8	5725	5742.80	---	---
11AC80SISO	Ant3	5210	80.80	5169.68	5250.48	---	---
		5290	80.96	5249.52	5330.48	---	---
		5530	80.80	5489.36	5570.16	---	---
		5610	80.96	5569.68	5650.64	---	---
		5690	109.60	5621.04	5730.64	---	---
		5690_UNII-2C	103.96	5621.04	5725	---	---
		5690_UNII-3	5.64	5725	5730.64	---	---

TEST GRAPHS

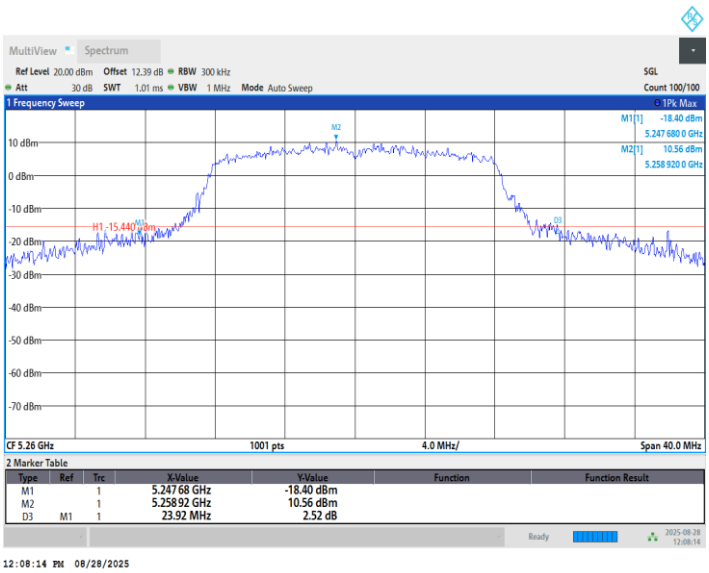
11A_Ant3_5180


11A_Ant3_5200


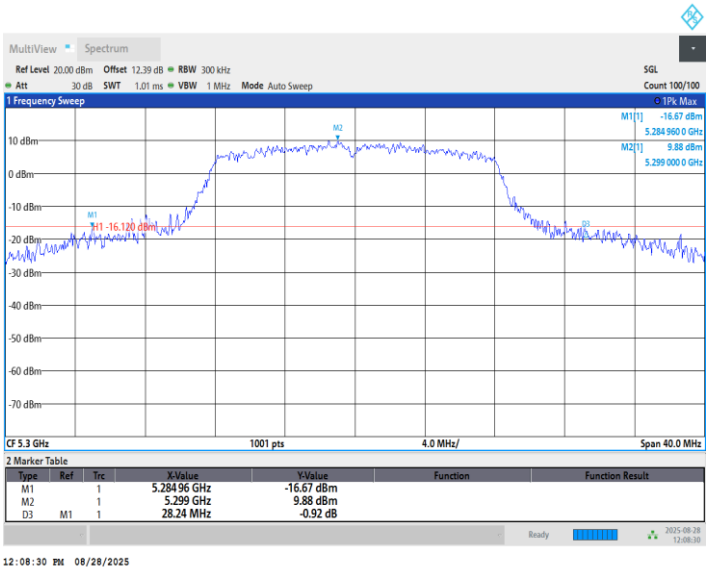
11A_Ant3_5240



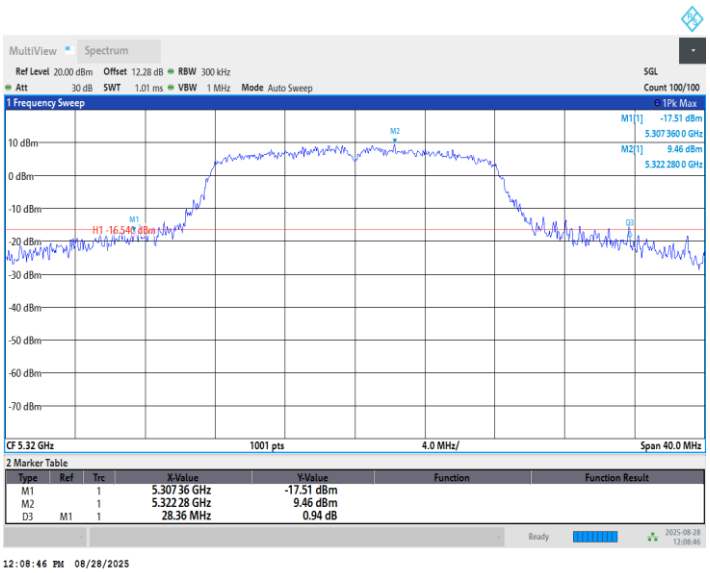
11A_Ant3_5260



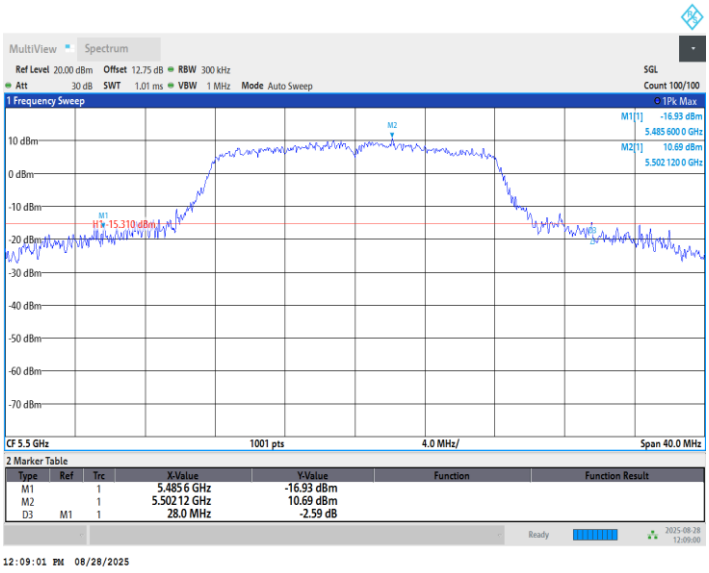
11A_Ant3_5300



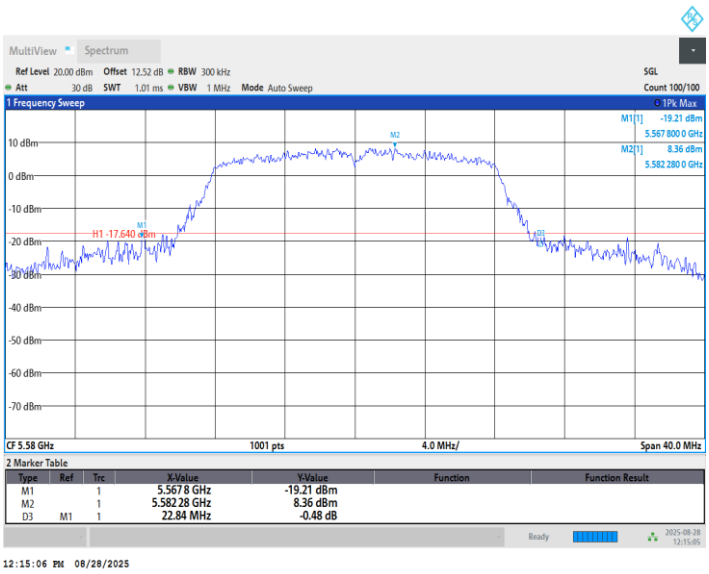
11A_Ant3_5320



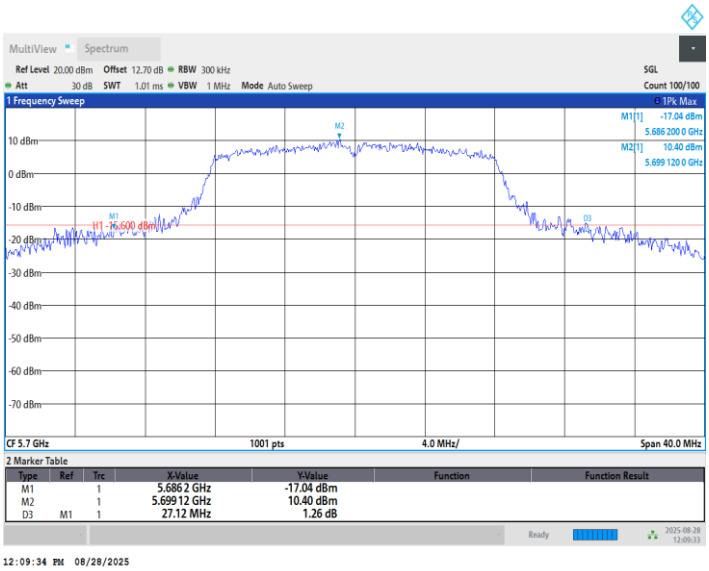
11A_Ant3_5500



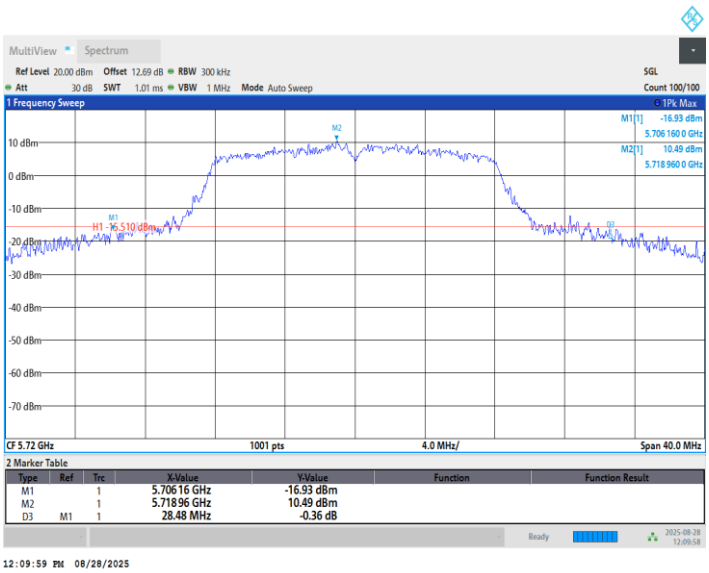
11A_Ant3_5580



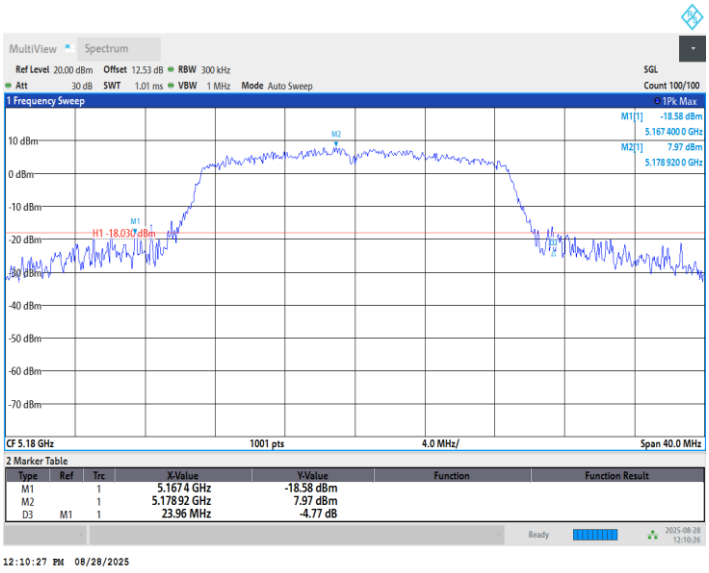
11A_Ant3_5700



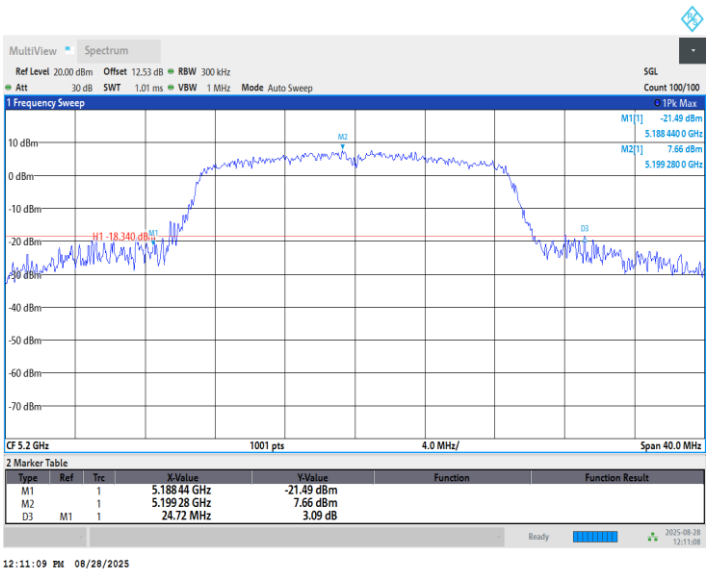
11A_Ant3_5720



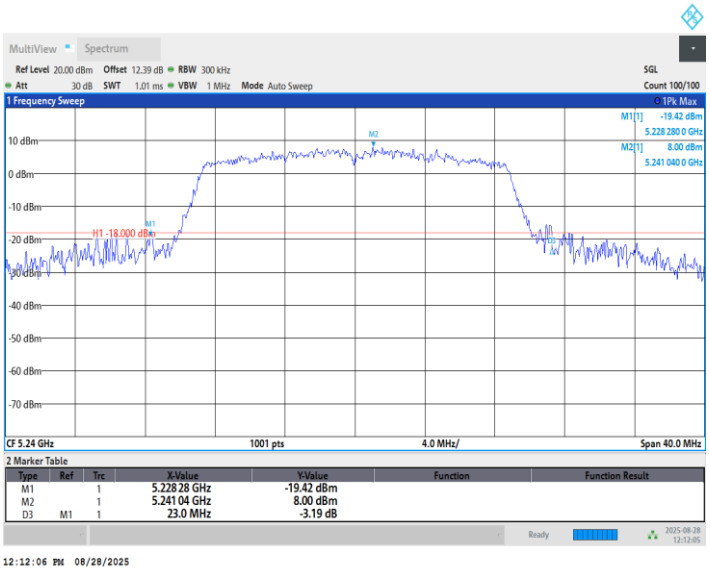
11N20SISO_Ant3_5180



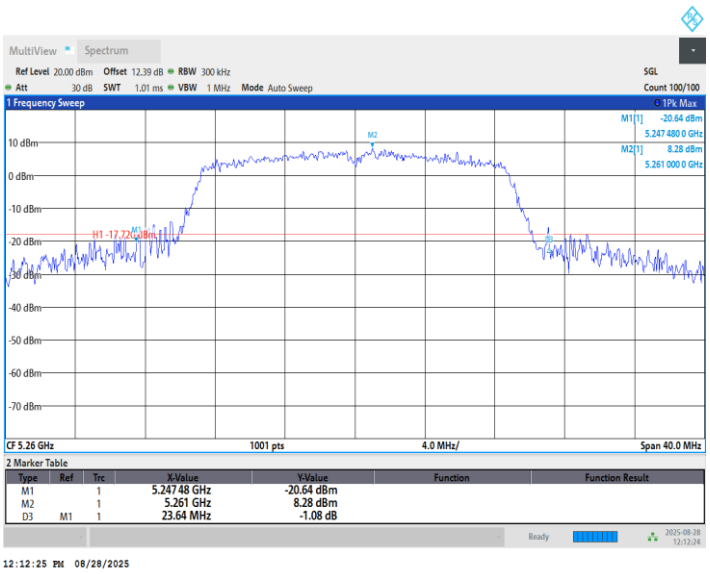
11N20SISO_Ant3_5200



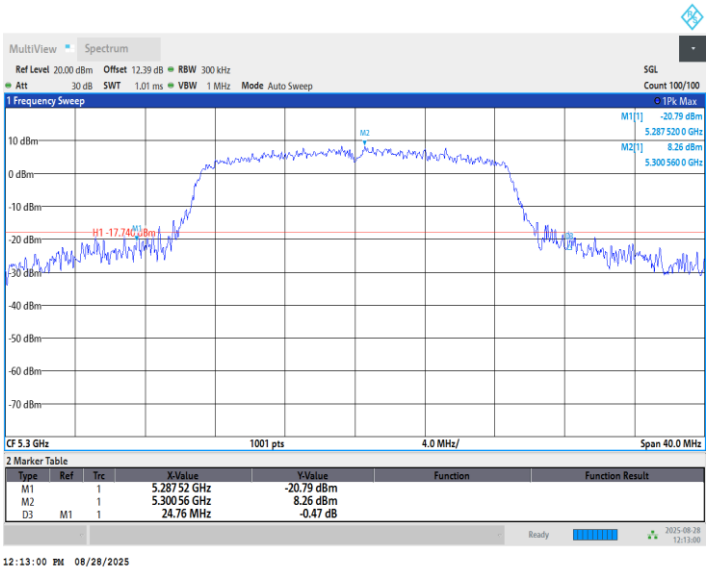
11N20SISO_Ant3_5240



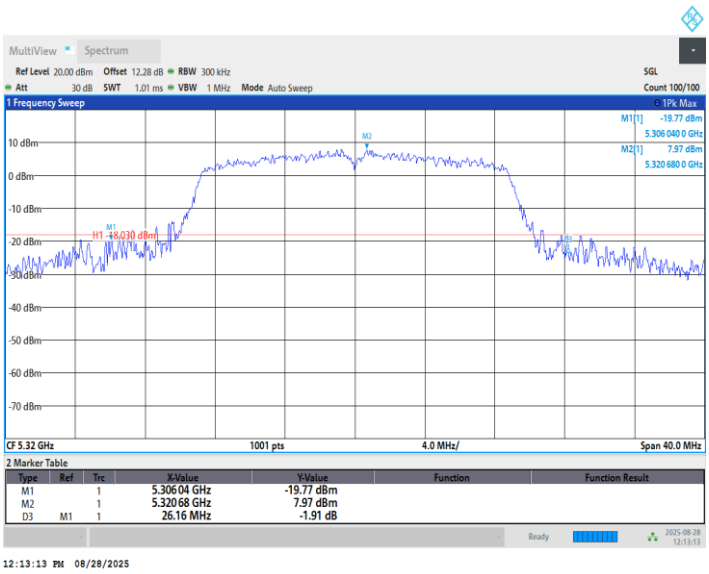
11N20SISO_Ant3_5260



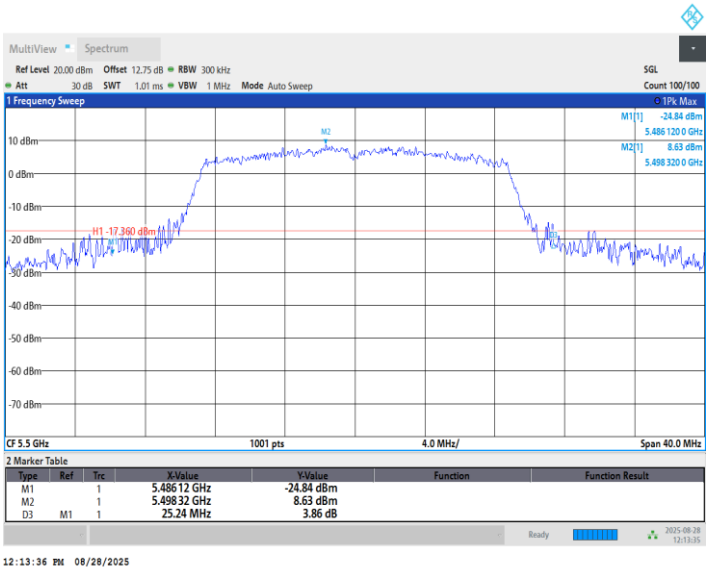
11N20SISO_Ant3_5300



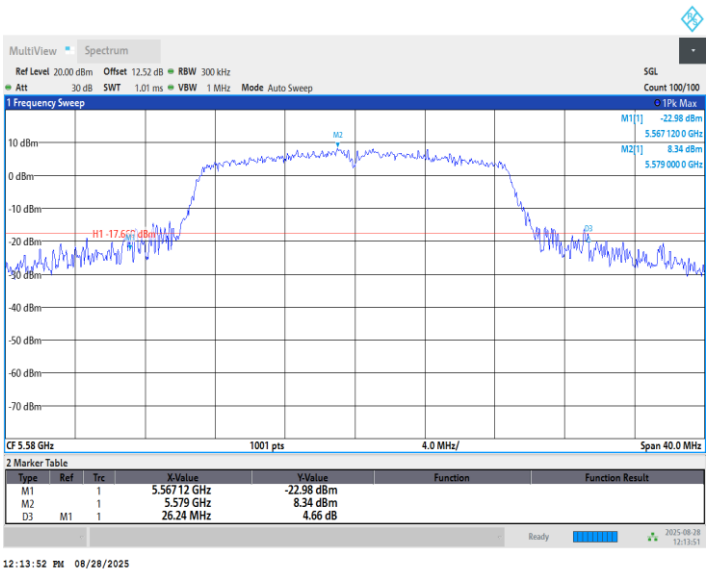
11N20SISO_Ant3_5320



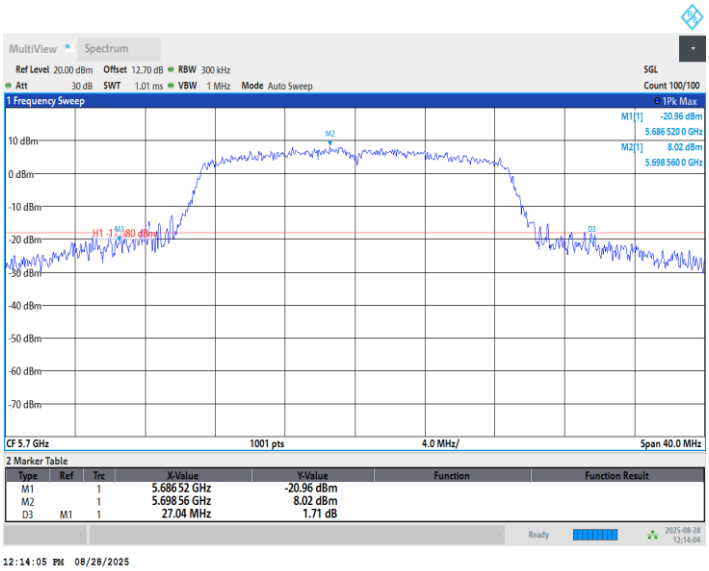
11N20SISO_Ant3_5500



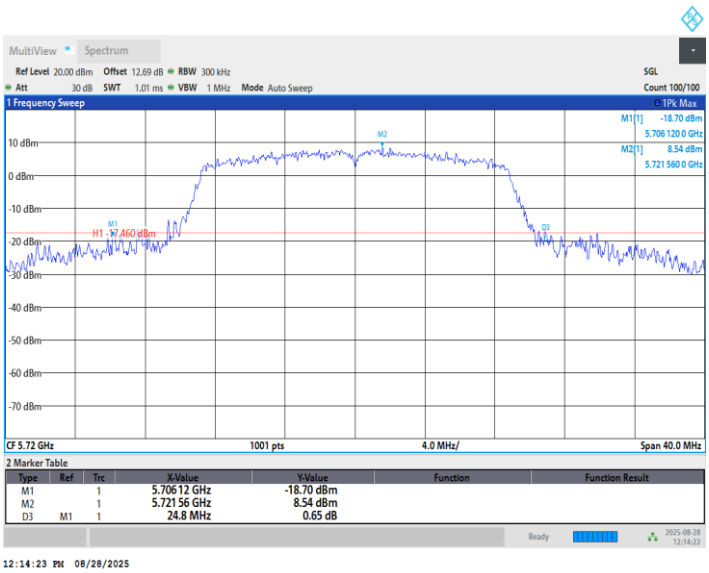
11N20SISO_Ant3_5580



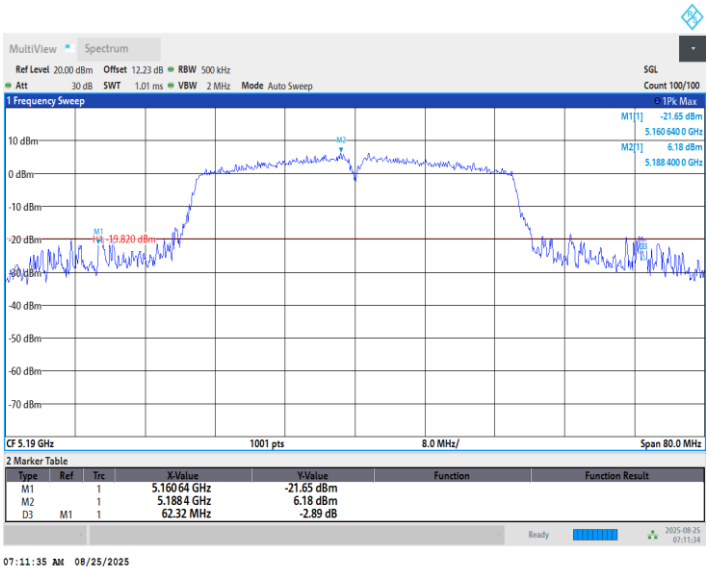
11N20SISO_Ant3_5700



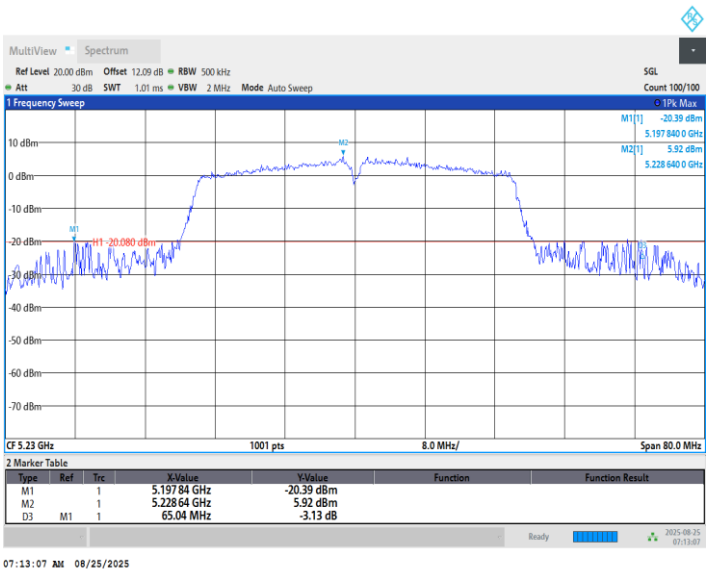
11N20SISO_Ant3_5720



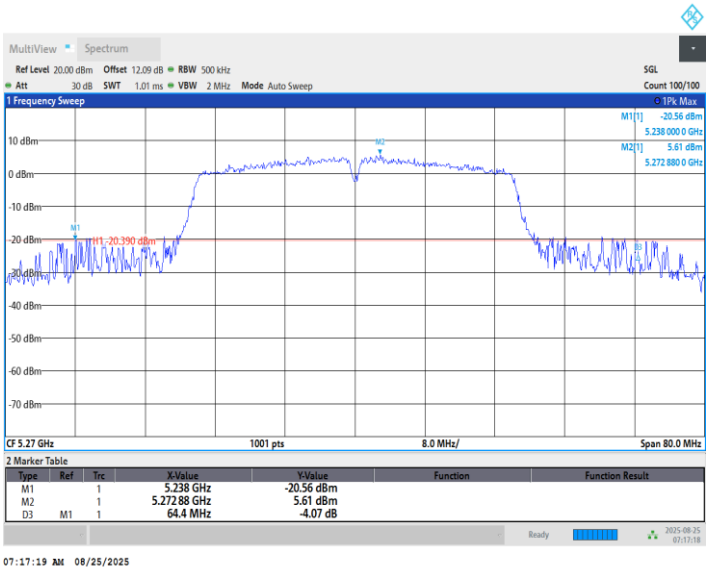
11N40SISO_Ant3_5190



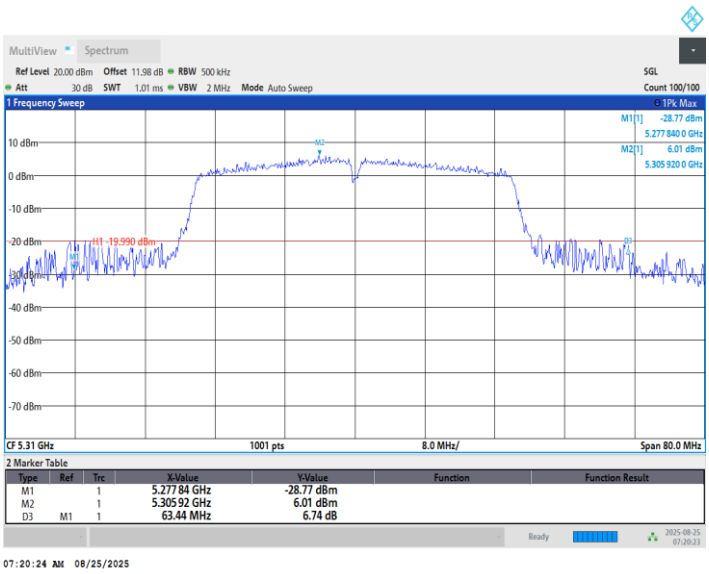
11N40SISO_Ant3_5230



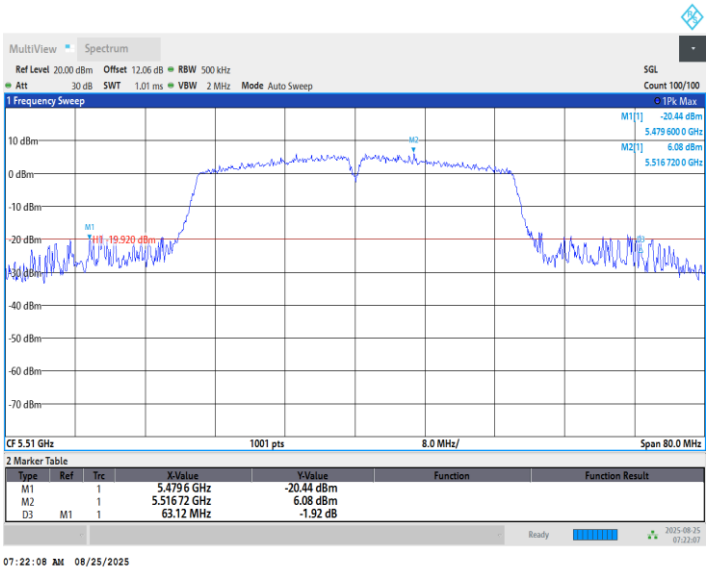
11N40SISO_Ant3_5270



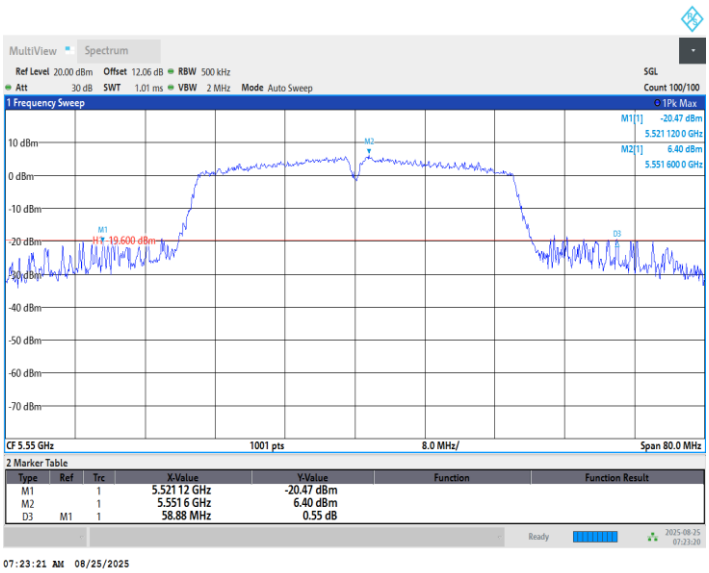
11N40SISO_Ant3_5310



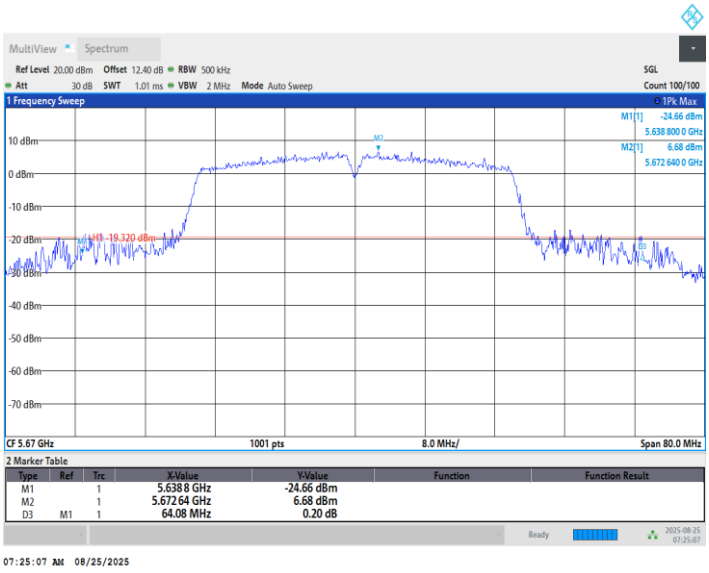
11N40SISO_Ant3_5510



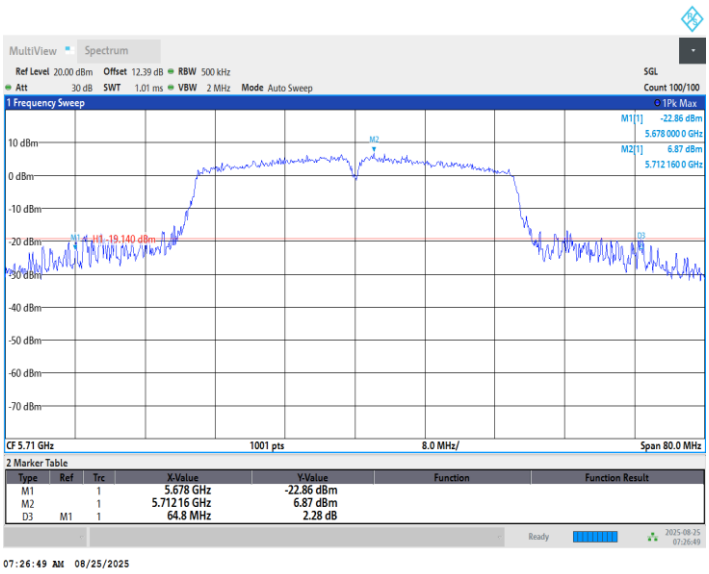
11N40SISO_Ant3_5550



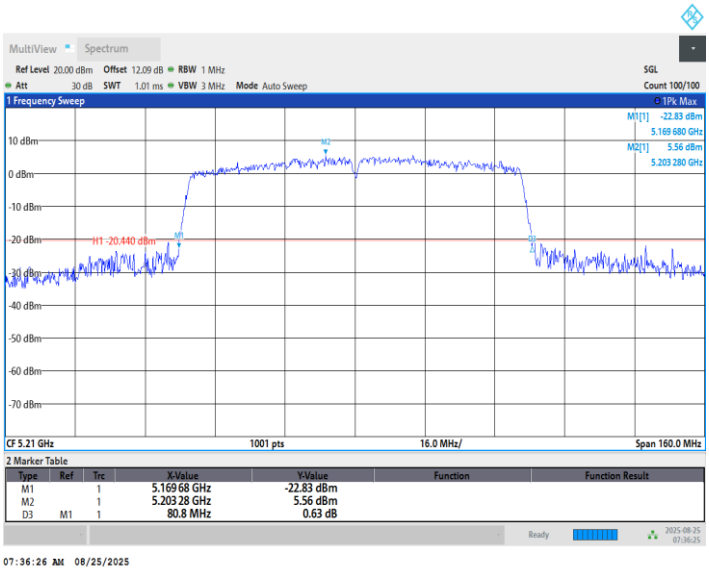
11N40SISO_Ant3_5670



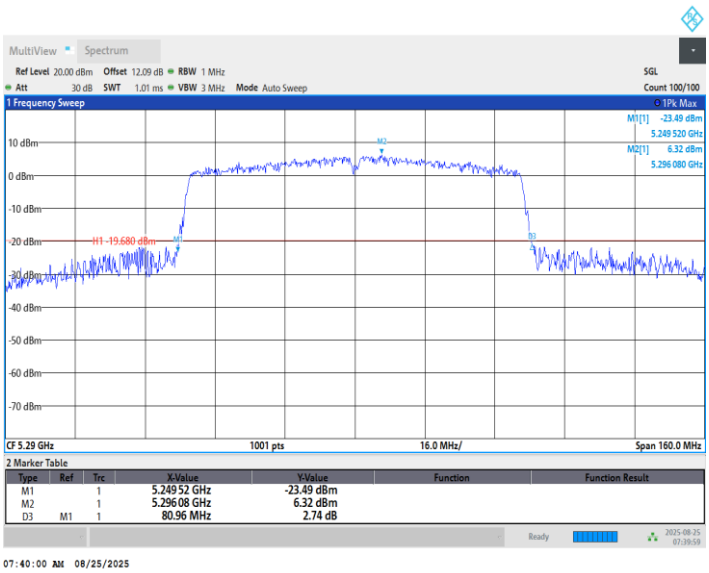
11N40SISO_Ant3_5710



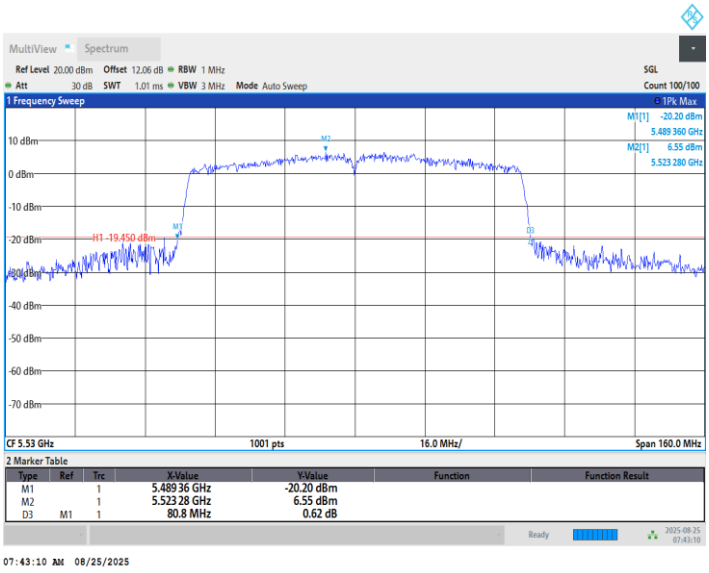
11AC80SISO_Ant3_5210



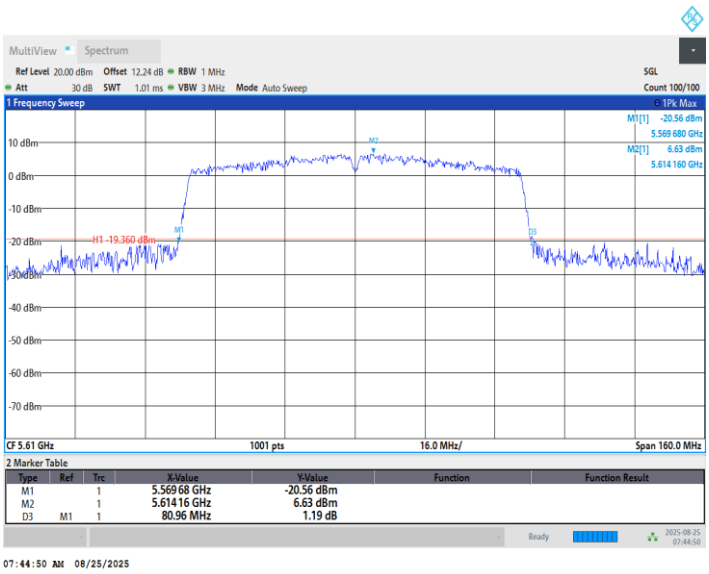
11AC80SISO_Ant3_5290



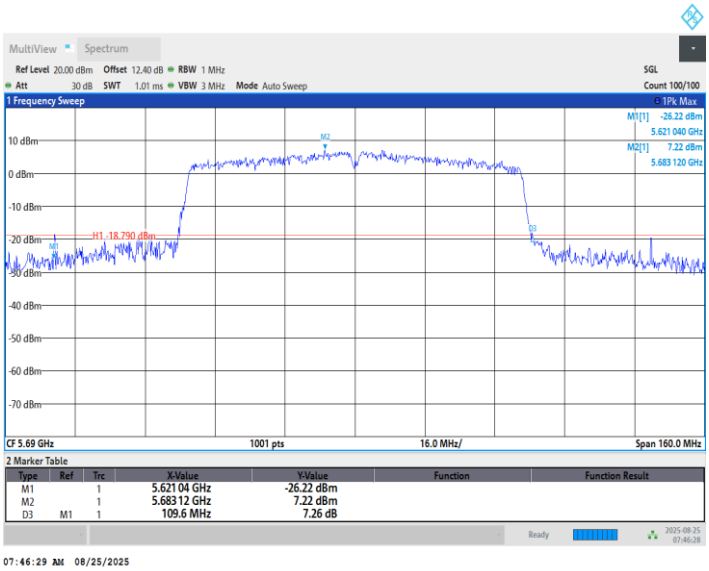
11AC80SISO_Ant3_5530



11AC80SISO_Ant3_5610



11AC80SISO_Ant3_5690


MultiView
Spectrum
Ref Level 20.00 dBm Offset 12.40 dB RBW 1 MHz
Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep
SGL
Count 100/100
1 Frequency Sweep
1Pk Max
M1[1] -26.22 dBm
5.621 040 GHz
M2[1] 7.22 dBm
5.683 120 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
H1 -18.790 dBm
CF 5.69 GHz
1001 pts
16.0 MHz/
Span 160.0 MHz
2 Marker Table
Type Ref Trc X-Value Y-Value Function Function Result
M1 1 5.621 04 GHz -26.22 dBm
M2 1 5.683 12 GHz 7.22 dBm
D3 M1 1 109.6 MHz 7.26 dB
Ready
07:46:29 AM 08/25/2025

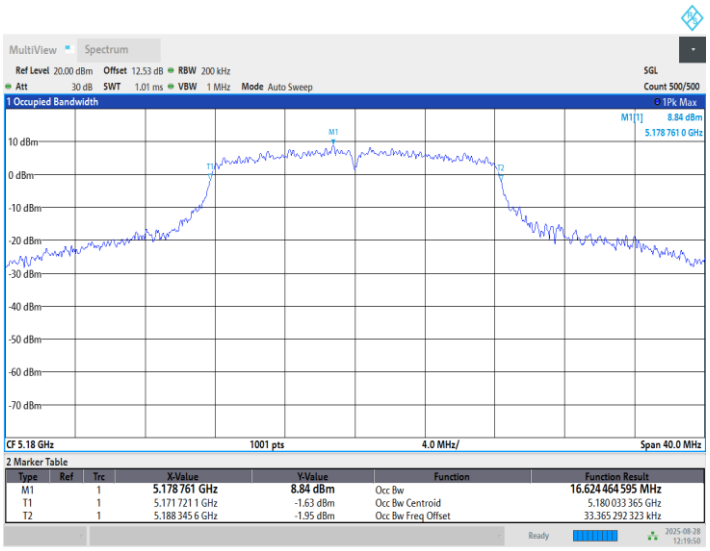
OCCUPIED CHANNEL BANDWIDTH

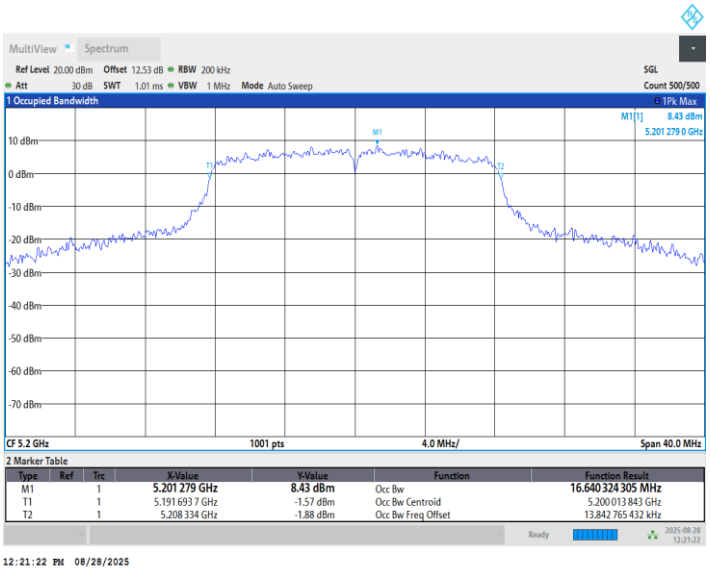
TEST RESULT

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant3	5180	16.624	5171.7211	5188.3456	---	---
		5200	16.640	5191.6937	5208.3340	---	---
		5240	16.633	5231.7107	5248.3437	---	---
		5260	16.639	5251.6914	5268.3304	---	---
		5300	16.595	5291.7129	5308.3083	---	---
		5320	16.615	5311.6994	5328.3144	---	---
		5500	16.670	5491.6738	5508.3437	---	---
		5580	16.669	5571.6776	5588.3468	---	---
		5700	16.699	5691.6480	5708.3474	---	---
		5720	16.722	5711.6595	5728.3815	---	---
		5720_UNII-2C	13.341	5711.6595	5725	---	---
		5720_UNII-3	3.382	5725	5728.3815	---	---
		5745	16.743	5736.6498	5753.3927	---	---
		5785	16.736	5776.6469	5793.3831	---	---
		5825	16.731	5816.6474	5833.3783	---	---
11N20SISO	Ant3	5180	17.612	5171.2066	5188.8182	---	---
		5200	17.650	5191.1685	5208.8190	---	---
		5240	17.627	5231.1969	5248.8242	---	---
		5260	17.628	5251.1769	5268.8047	---	---
		5300	17.628	5291.1941	5308.8218	---	---
		5320	17.634	5311.1856	5328.8201	---	---
		5500	17.623	5491.1933	5508.8168	---	---
		5580	17.638	5571.2020	5588.8402	---	---
		5700	17.657	5691.1619	5708.8186	---	---
		5720	17.640	5711.1879	5728.8275	---	---
		5720_UNII-2C	13.812	5711.1879	5725	---	---
		5720_UNII-3	3.828	5725	5728.8275	---	---
		5745	17.660	5736.1723	5753.8318	---	---
		5785	17.682	5776.1559	5793.8379	---	---

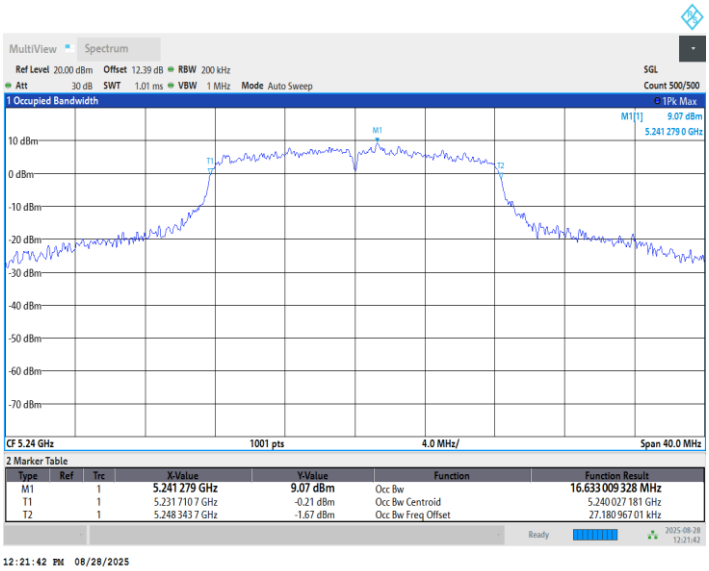
		5825	17.653	5816.1919	5833.8450	---	---
11N40SISO	Ant3	5190	36.843	5171.6445	5208.4873	---	---
		5230	36.692	5211.8277	5248.5198	---	---
		5270	36.969	5251.5548	5288.5236	---	---
		5310	36.743	5291.6472	5328.3904	---	---
		5510	36.841	5491.6267	5528.4672	---	---
		5550	36.782	5531.6664	5568.4484	---	---
		5670	36.830	5651.6257	5688.4552	---	---
		5710	36.918	5691.4810	5728.3991	---	---
		5710_UNII-2C	33.519	5691.4810	5725	---	---
		5710_UNII-3	3.399	5725	5728.3991	---	---
		5755	36.888	5736.5468	5773.4350	---	---
		5795	36.959	5776.5467	5813.5056	---	---
11AC80SISO	Ant3	5210	75.305	5172.5096	5247.8147	---	---
		5290	75.235	5252.4778	5327.7124	---	---
		5530	75.205	5492.4746	5567.6795	---	---
		5610	75.297	5572.4077	5647.7042	---	---
		5690	75.353	5652.3227	5727.6753	---	---
		5690_UNII-2C	72.677	5652.3227	5725	---	---
		5690_UNII-3	2.675	5725	5727.6753	---	---
		5775	75.391	5737.3007	5812.6915	---	---

TEST GRAPHS

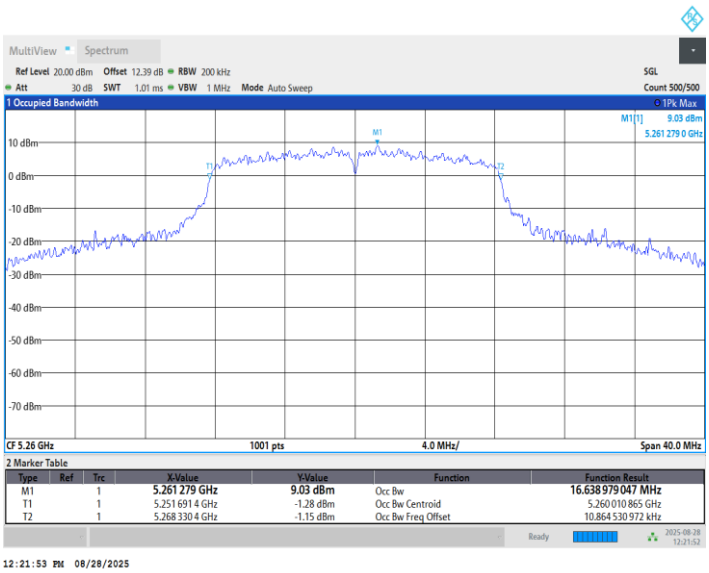
11A_Ant3_5180


11A_Ant3_5200


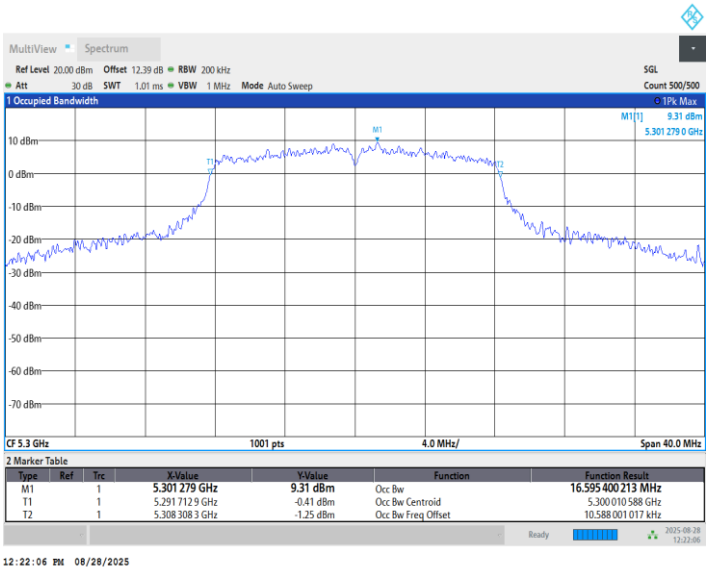
11A_Ant3_5240



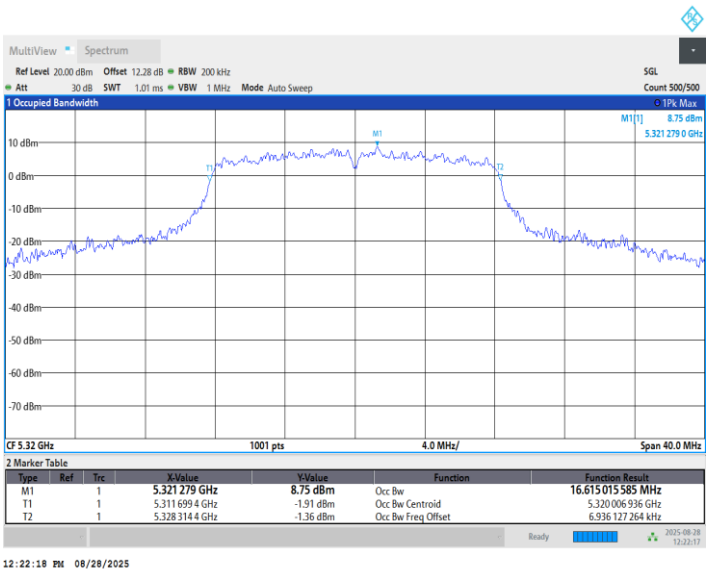
11A_Ant3_5260



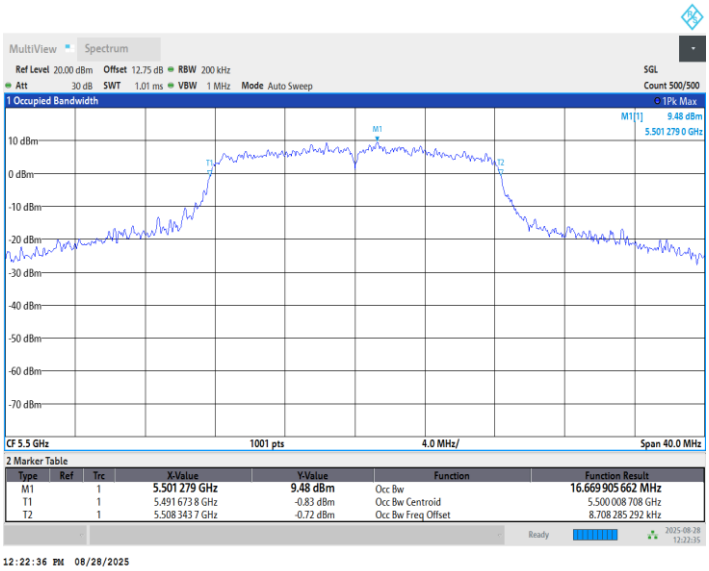
11A_Ant3_5300



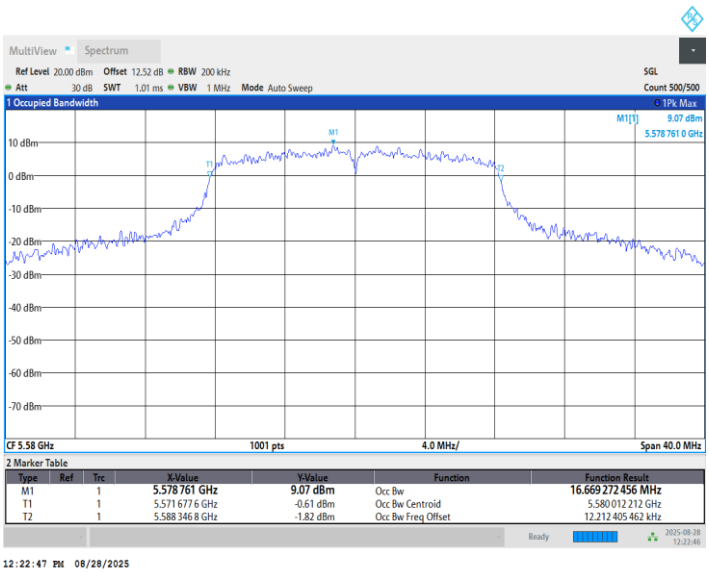
11A_Ant3_5320



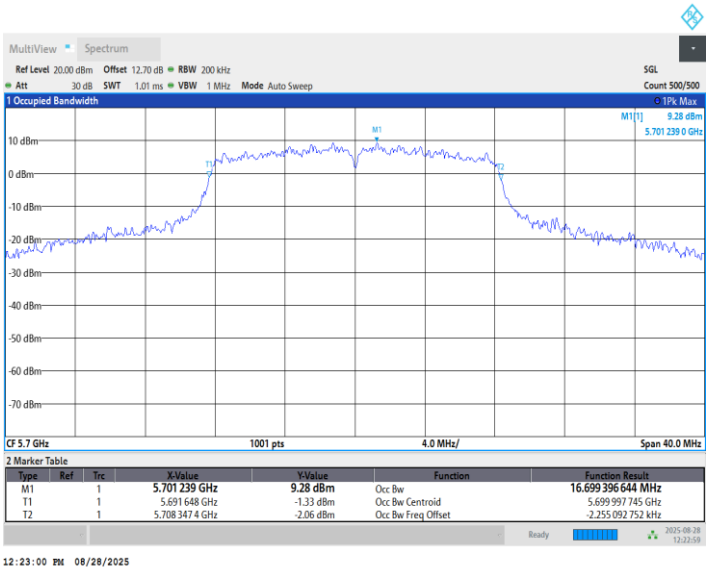
11A_Ant3_5500



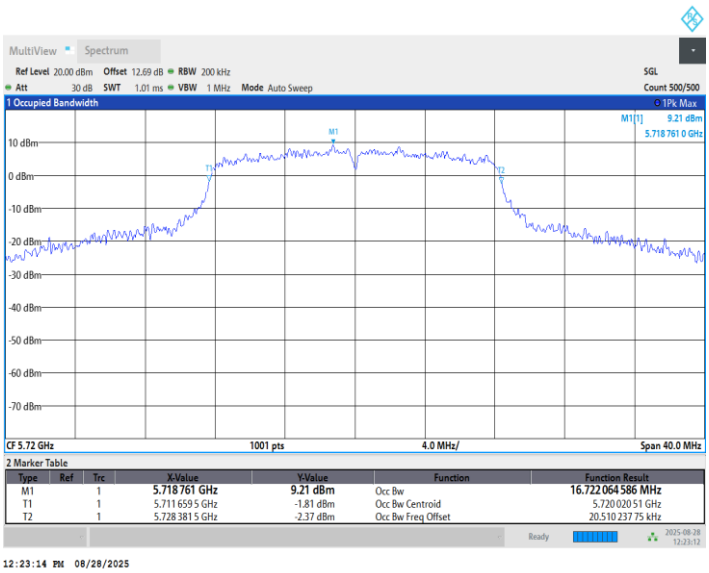
11A_Ant3_5580



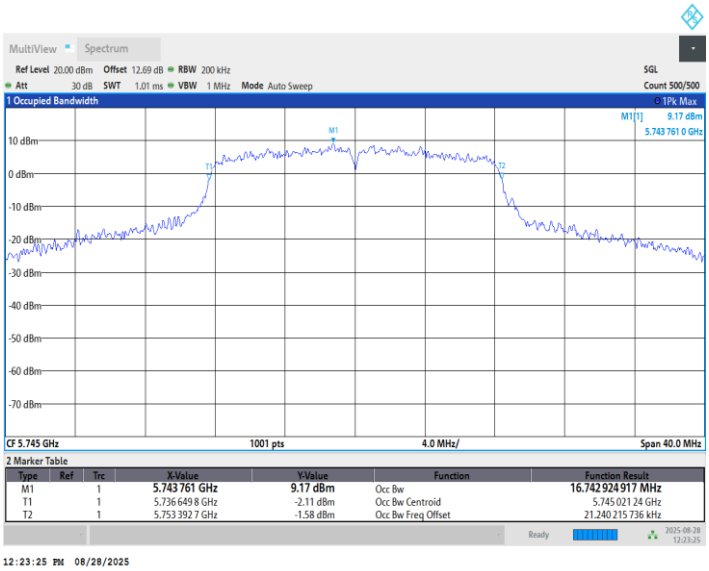
11A_Ant3_5700



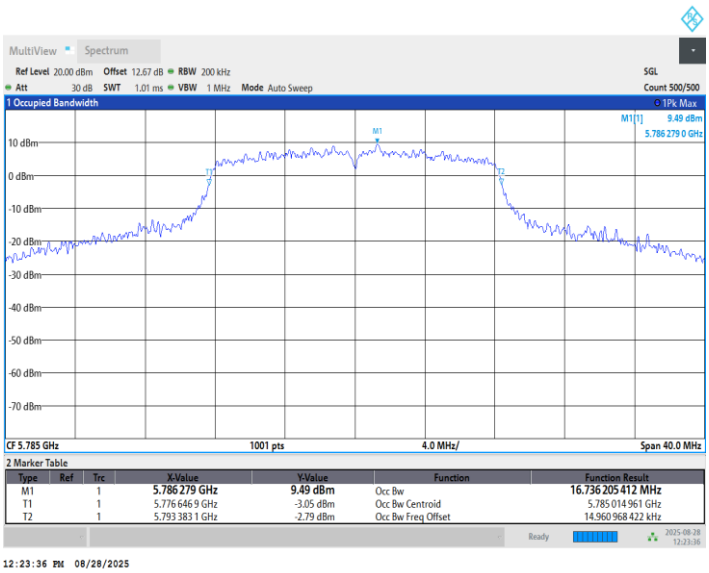
11A_Ant3_5720



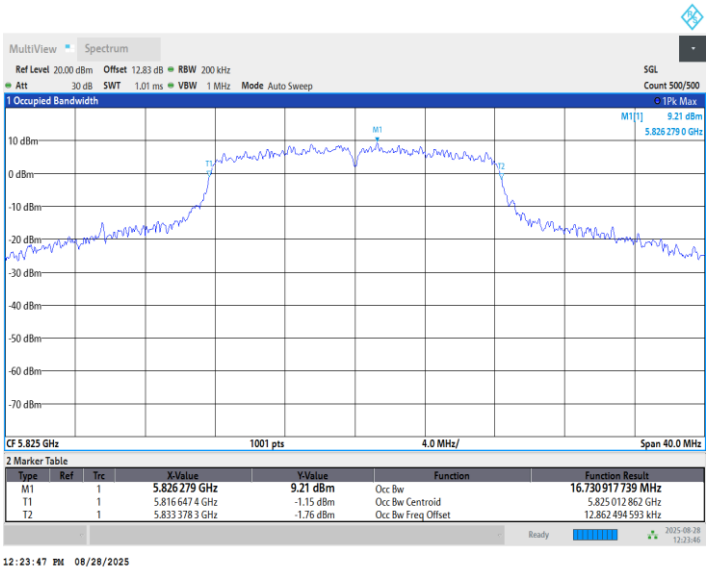
11A_Ant3_5745



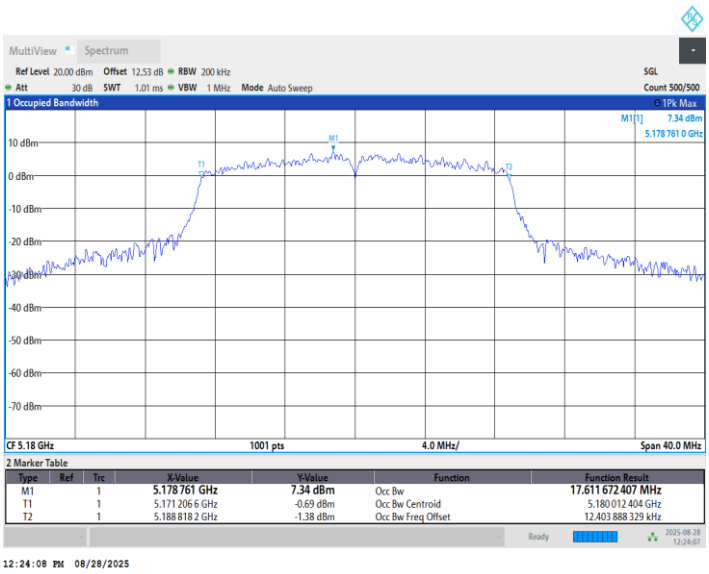
11A_Ant3_5785



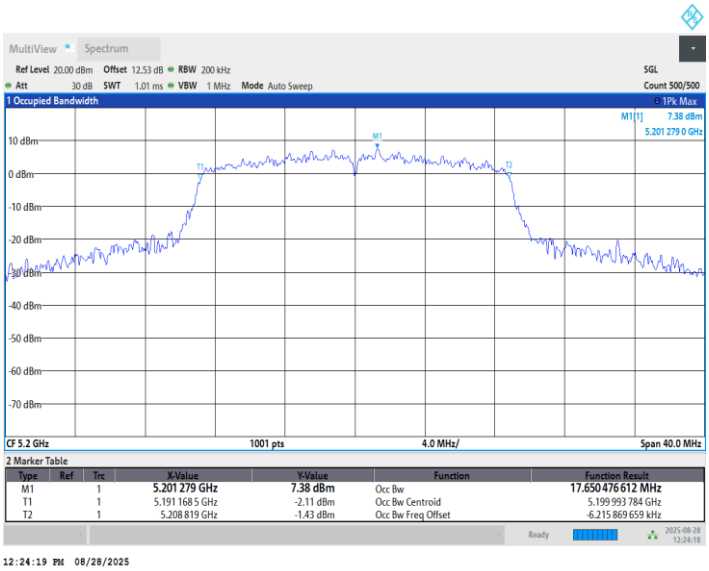
11A_Ant3_5825



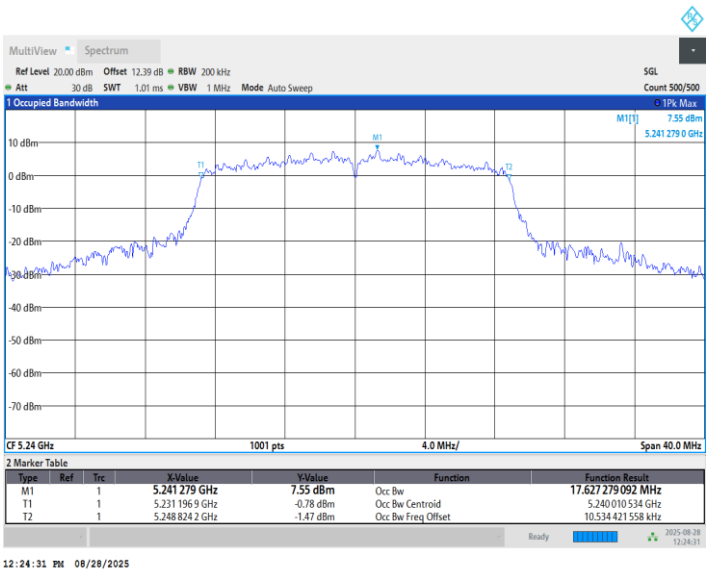
11N20SISO_Ant3_5180



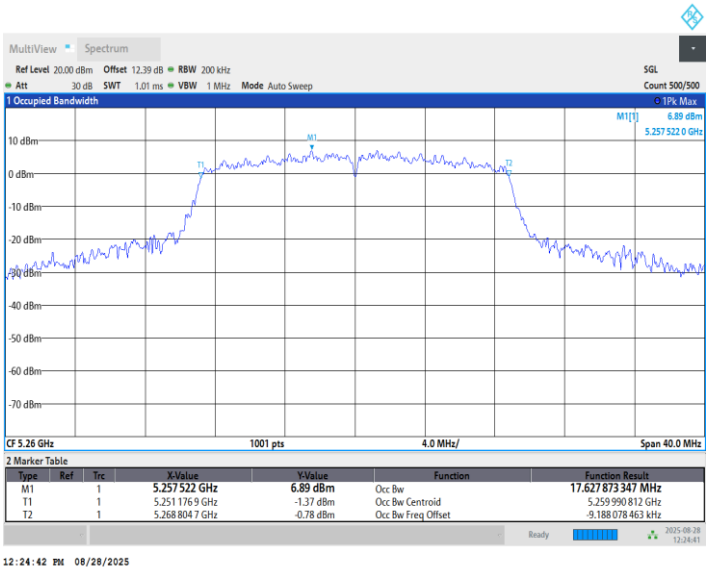
11N20SISO_Ant3_5200



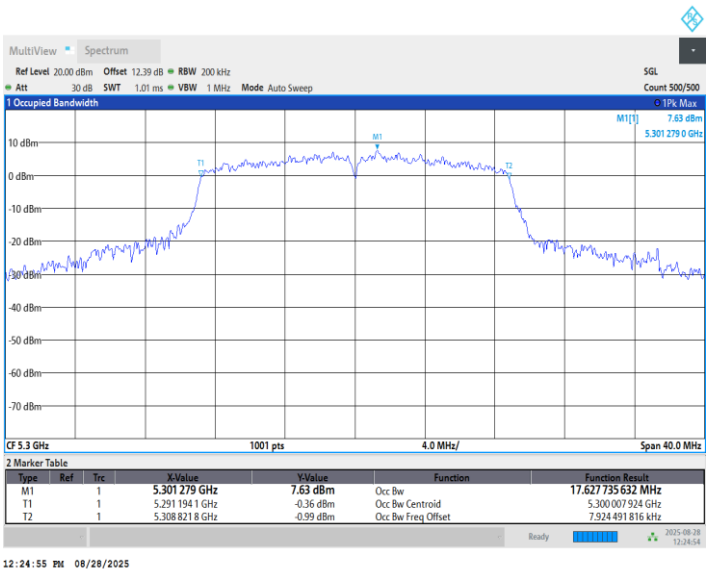
11N20SISO_Ant3_5240



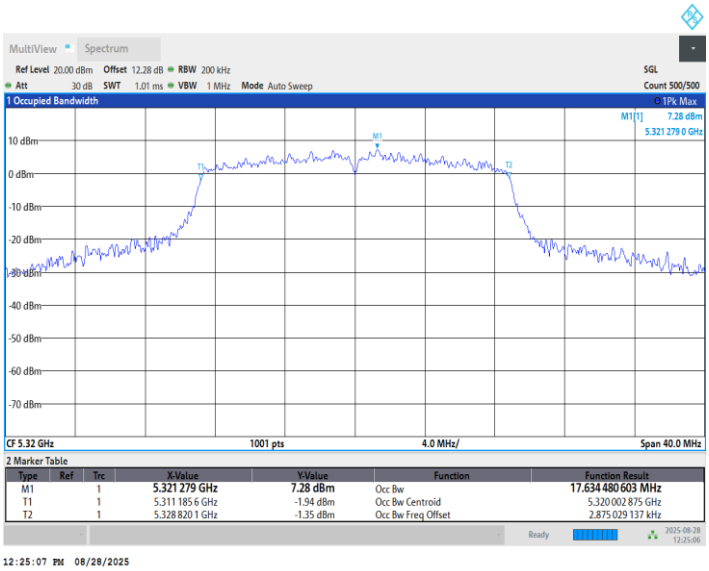
11N20SISO_Ant3_5260



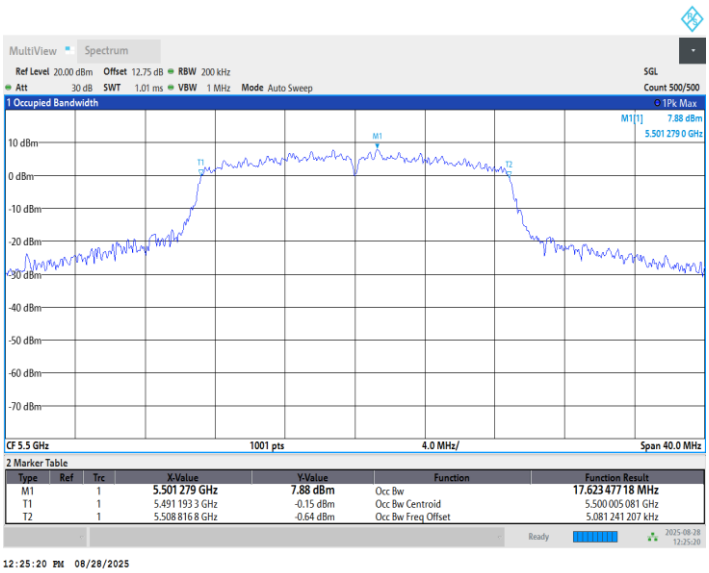
11N20SISO_Ant3_5300



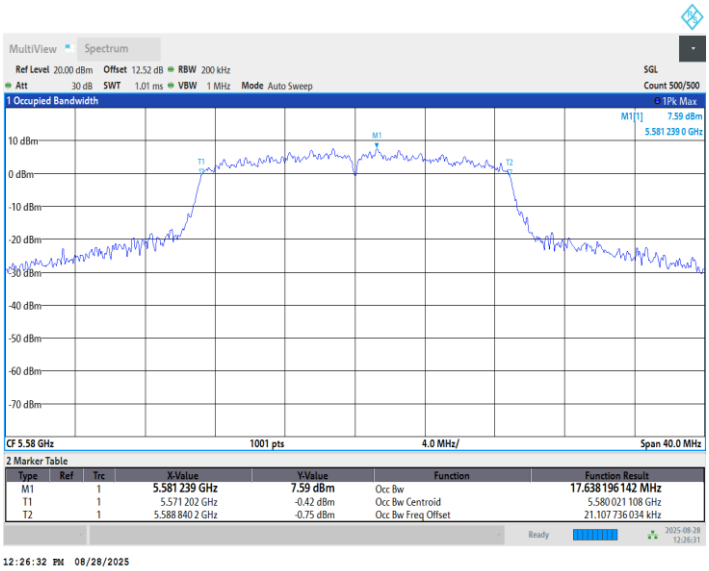
11N20SISO_Ant3_5320



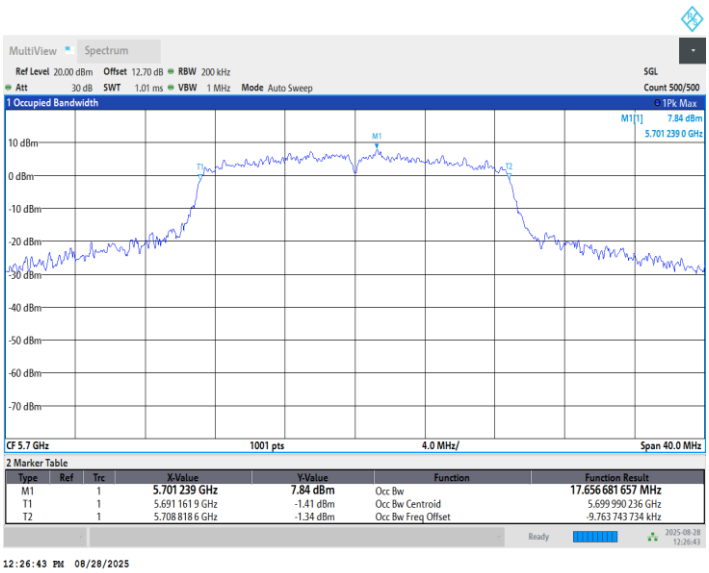
11N20SISO_Ant3_5500



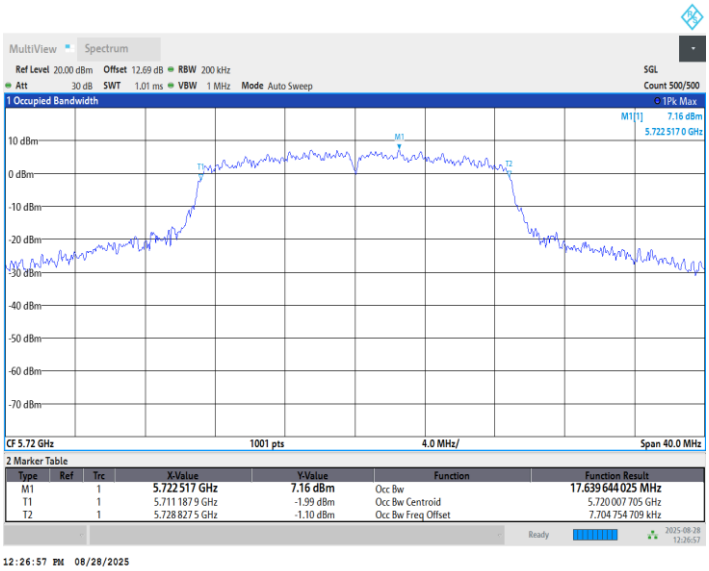
11N20SISO_Ant3_5580



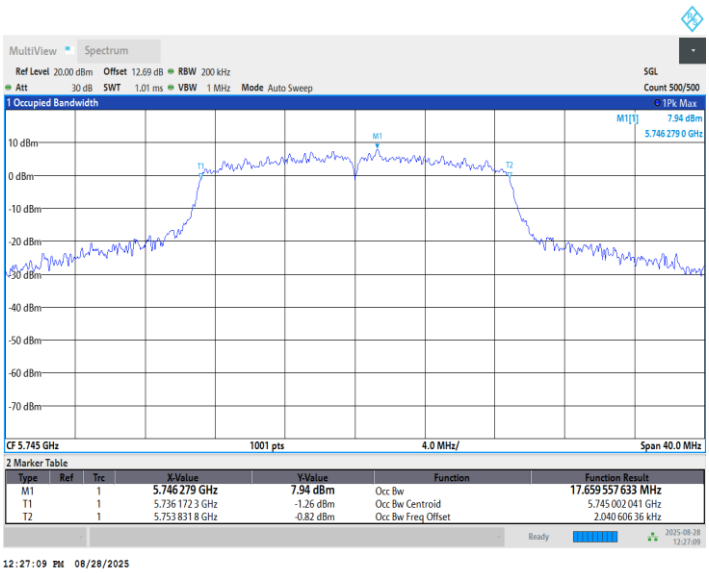
11N20SISO_Ant3_5700



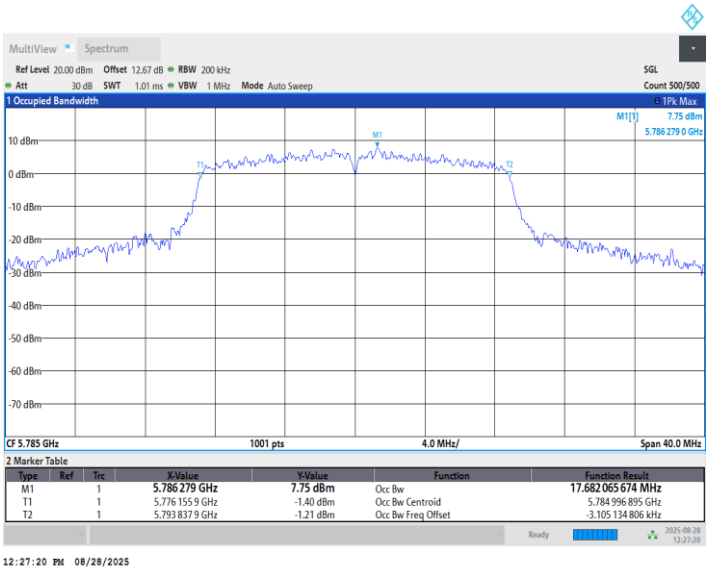
11N20SISO_Ant3_5720



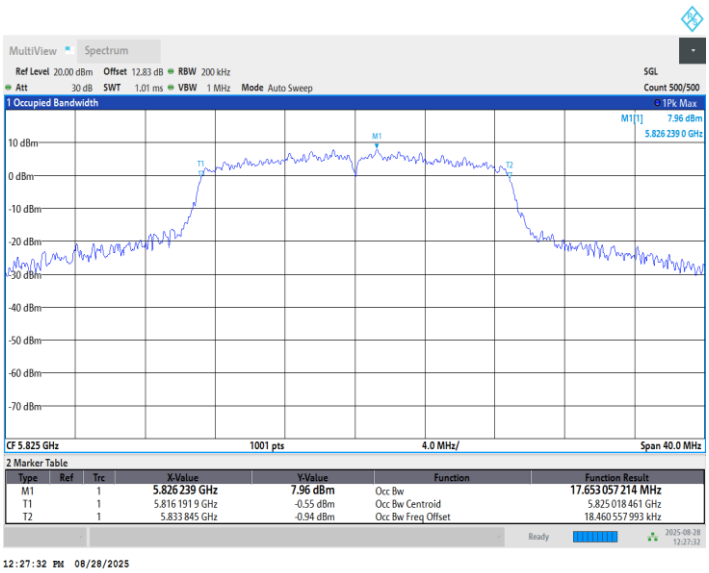
11N20SISO_Ant3_5745



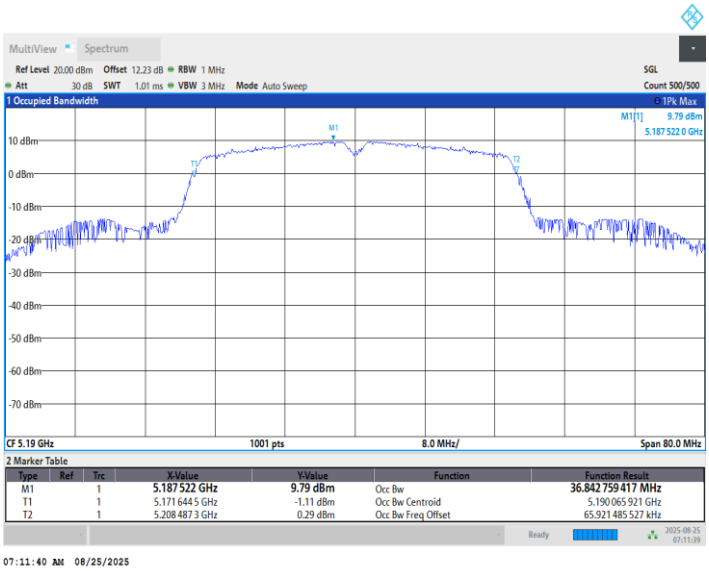
11N20SISO_Ant3_5785



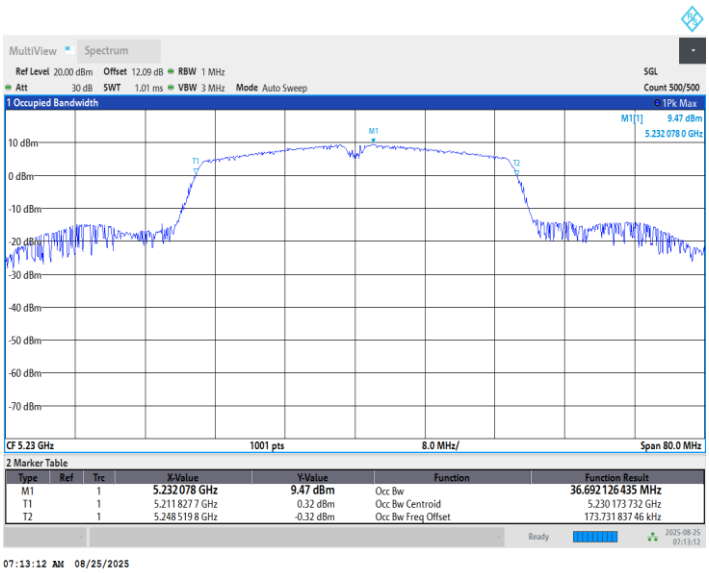
11N20SISO_Ant3_5825



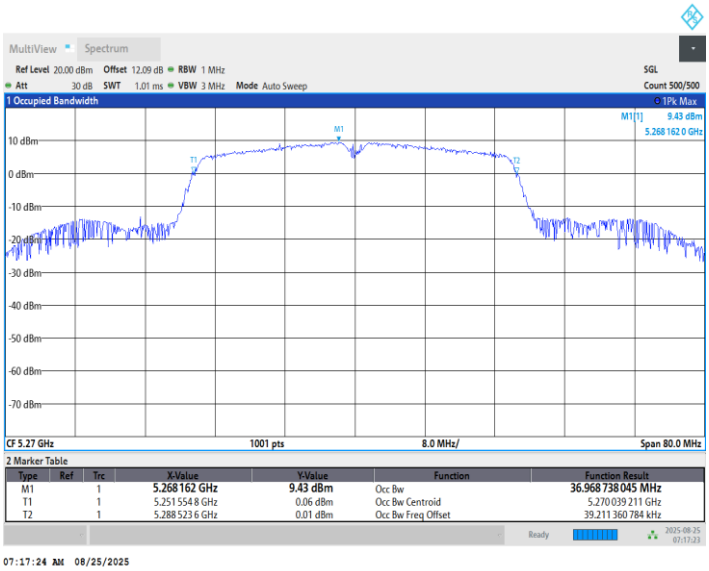
11N40SISO_Ant3_5190



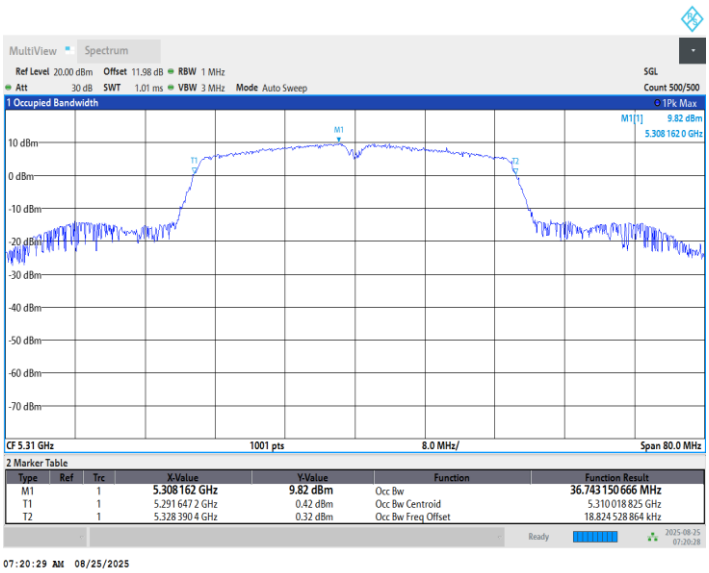
11N40SISO_Ant3_5230



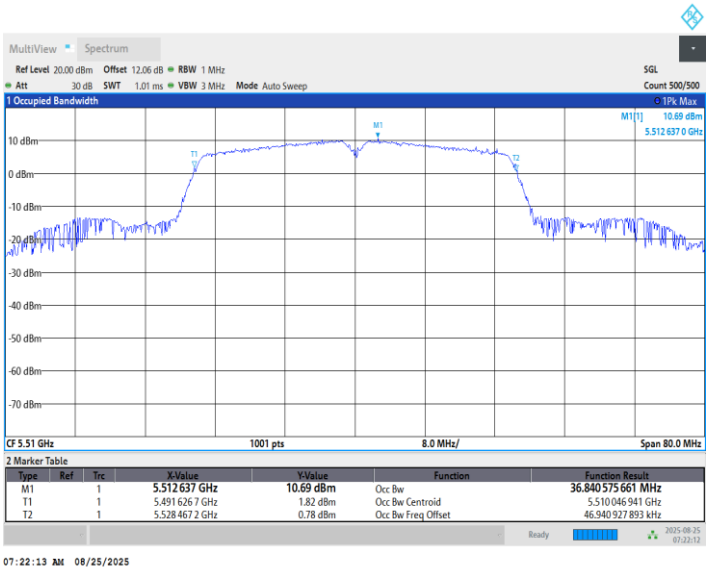
11N40SISO_Ant3_5270



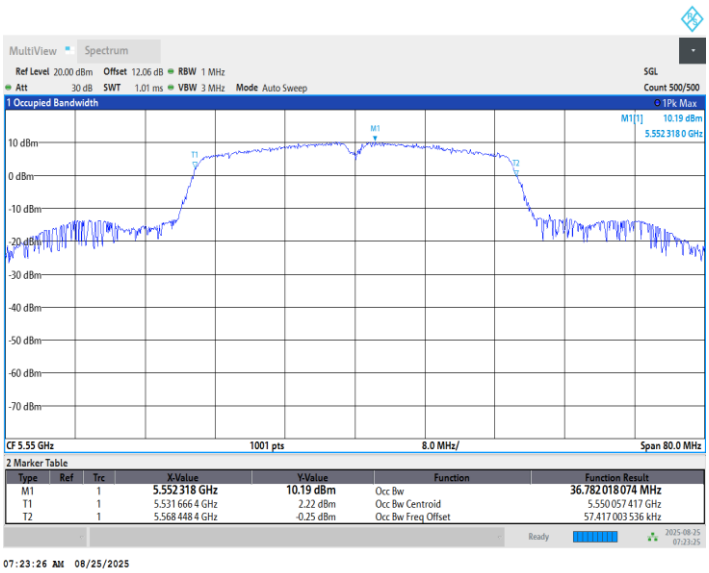
11N40SISO_Ant3_5310



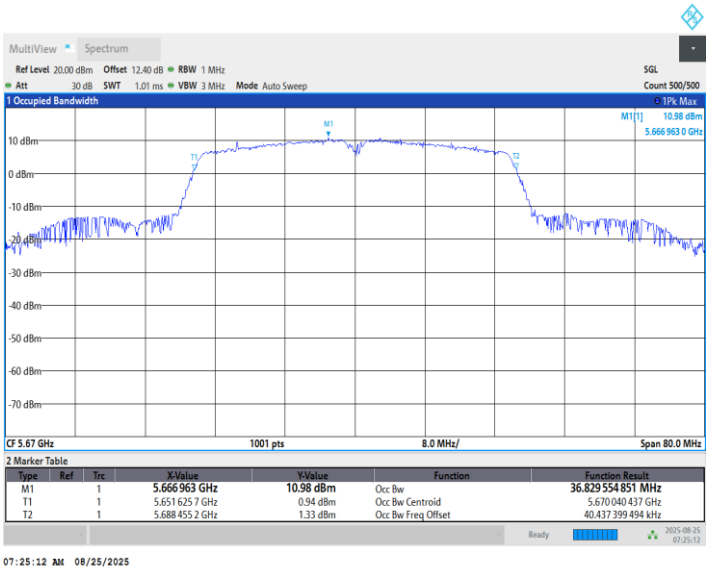
11N40SISO_Ant3_5510



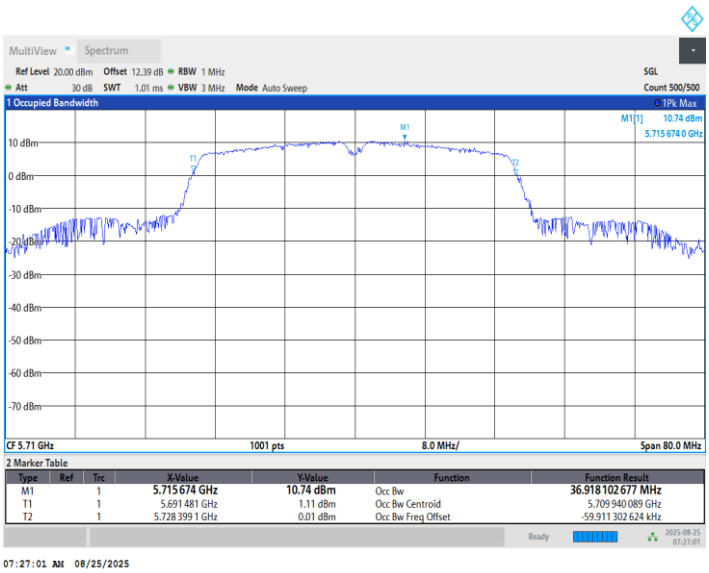
11N40SISO_Ant3_5550



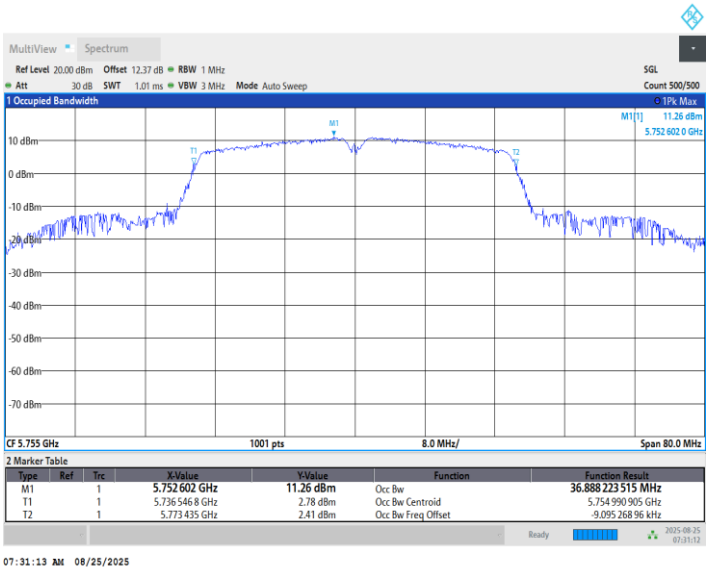
11N40SISO_Ant3_5670



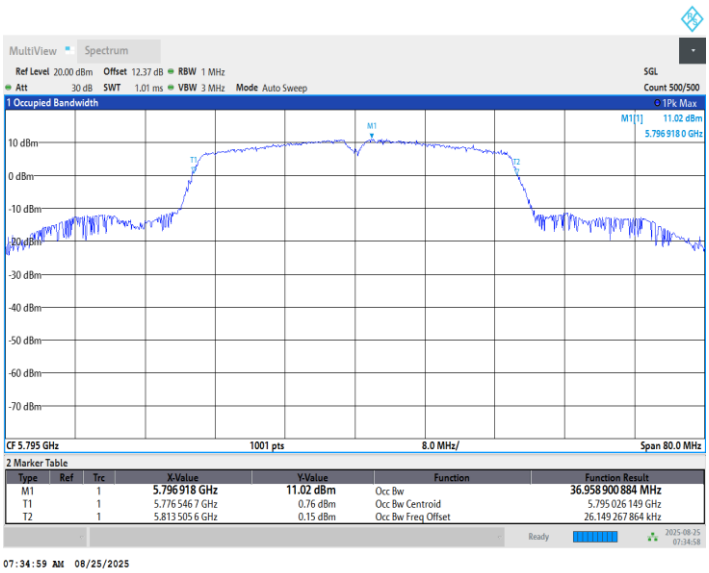
11N40SISO_Ant3_5710



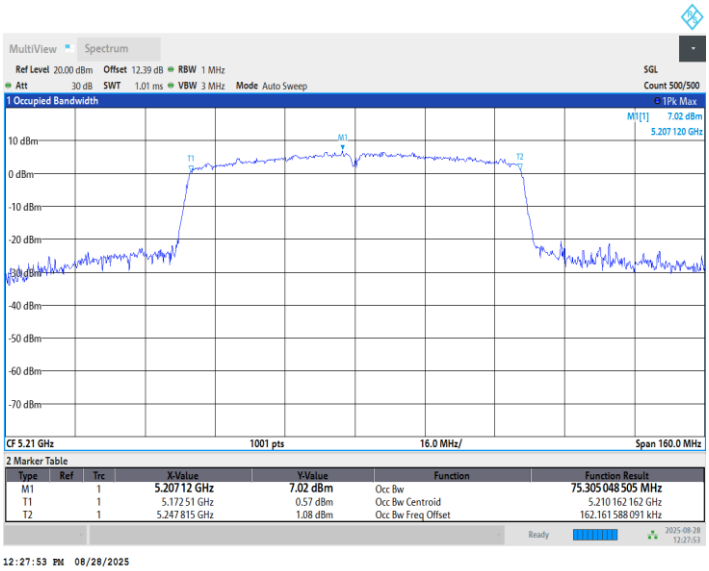
11N40SISO_Ant3_5755



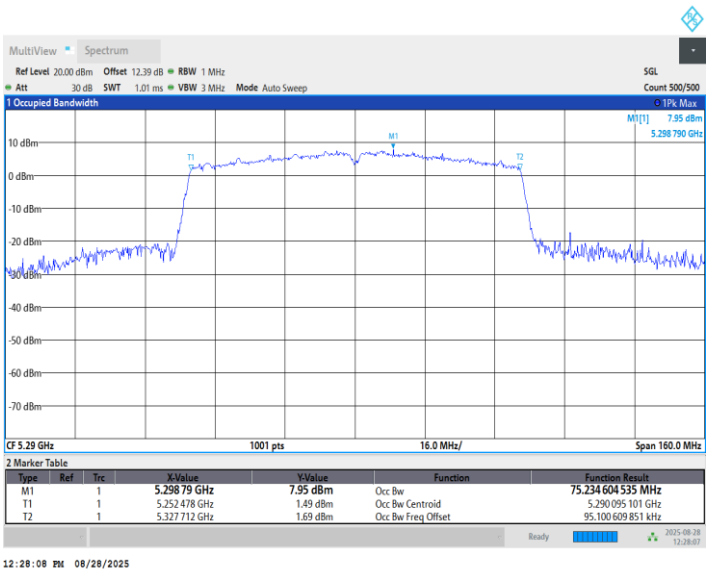
11N40SISO_Ant3_5795



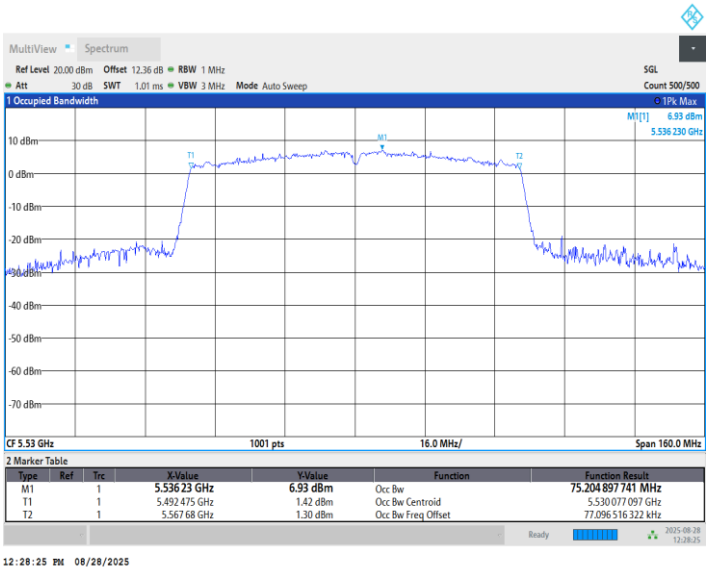
11AC80SISO_Ant3_5210



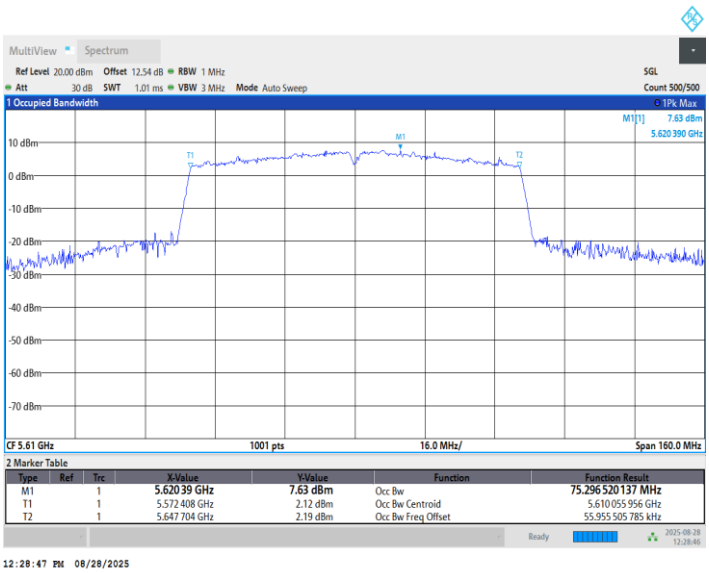
11AC80SISO_Ant3_5290



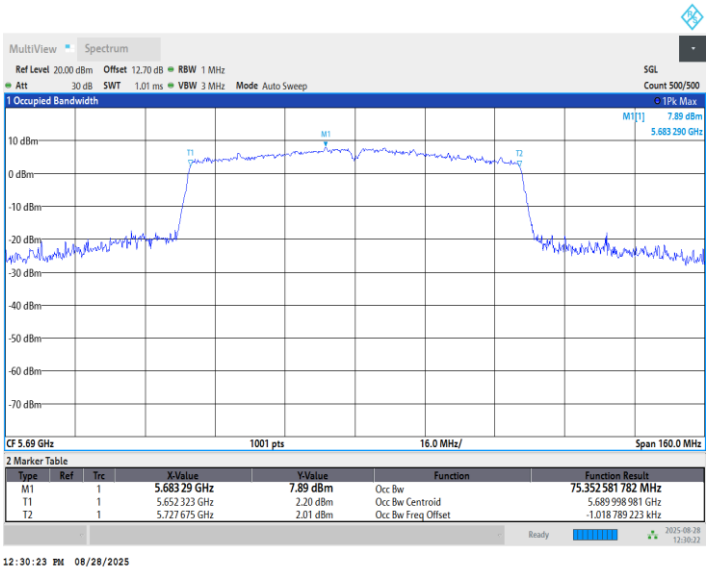
11AC80SISO_Ant3_5530



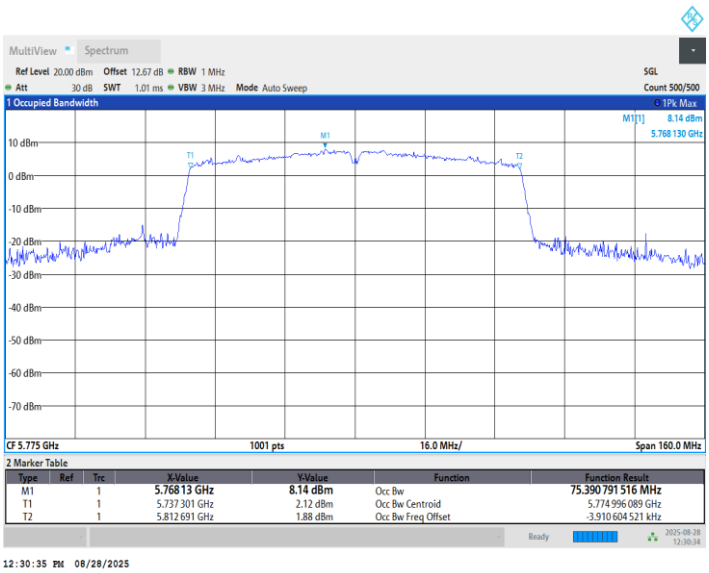
11AC80SISO_Ant3_5610



11AC80SISO_Ant3_5690



11AC80SISO_Ant3_5775

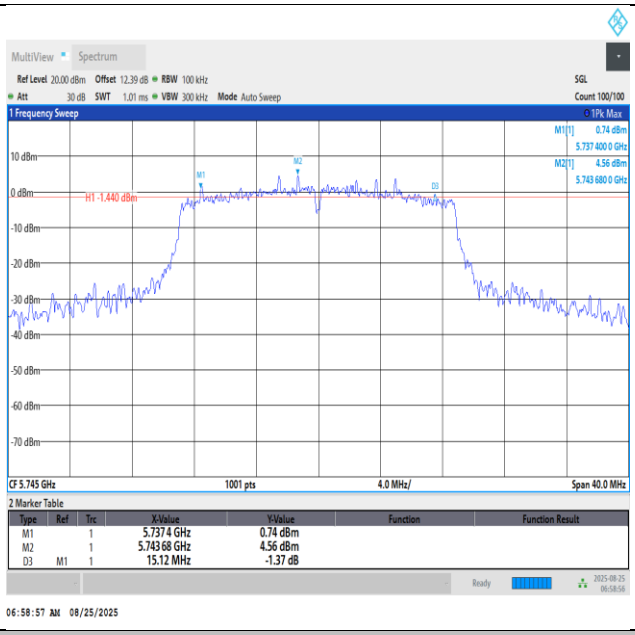


MIN EMISSION BANDWIDTH

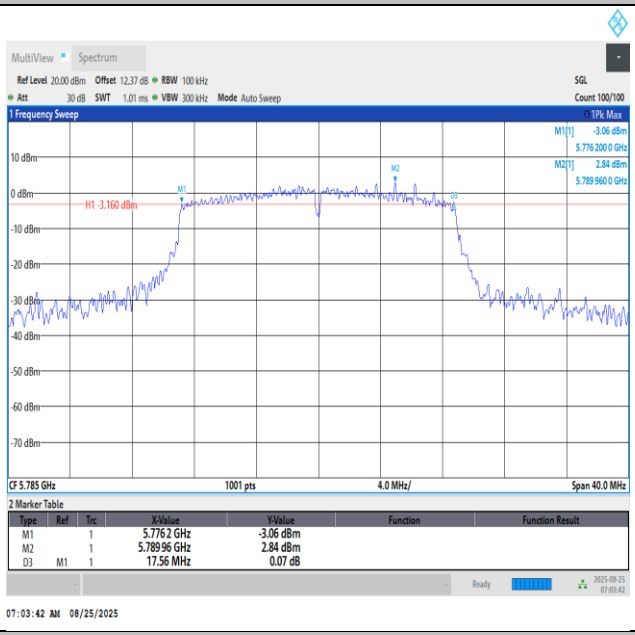
TEST RESULT B4

TestMode	Antenna	Frequency[MHz]	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant3	5745	15.04	5737.44	5752.48	0.5	PASS
11A	Ant3	5785	14.48	5778.04	5792.52	0.5	PASS
11A	Ant3	5825	14.16	5818.08	5832.24	0.5	PASS
11N20SISO	Ant3	5745	15.12	5737.40	5752.52	0.5	PASS
11N20SISO	Ant3	5785	17.56	5776.20	5793.76	0.5	PASS
11N20SISO	Ant3	5825	15.12	5817.40	5832.52	0.5	PASS
11N40SISO	Ant3	5755	32.64	5739.96	5772.60	0.5	PASS
11N40SISO	Ant3	5795	35.12	5777.48	5812.60	0.5	PASS
11AC80SISO	Ant3	5775	73.92	5737.40	5811.32	0.5	PASS

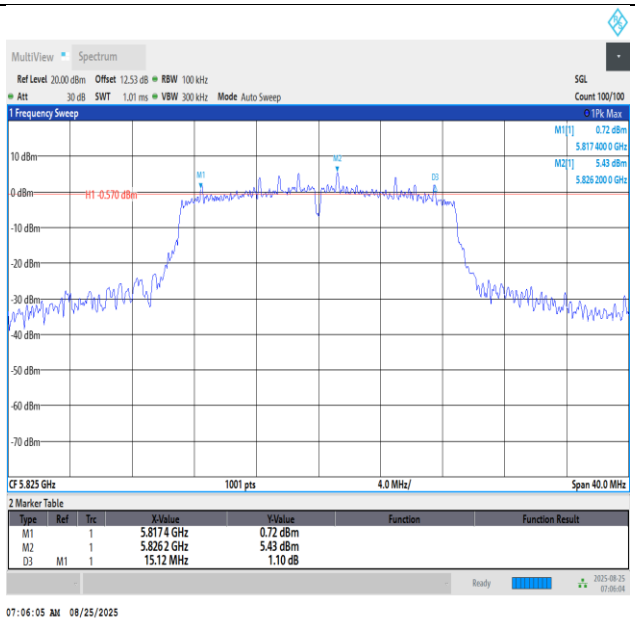
TEST GRAPHS B4



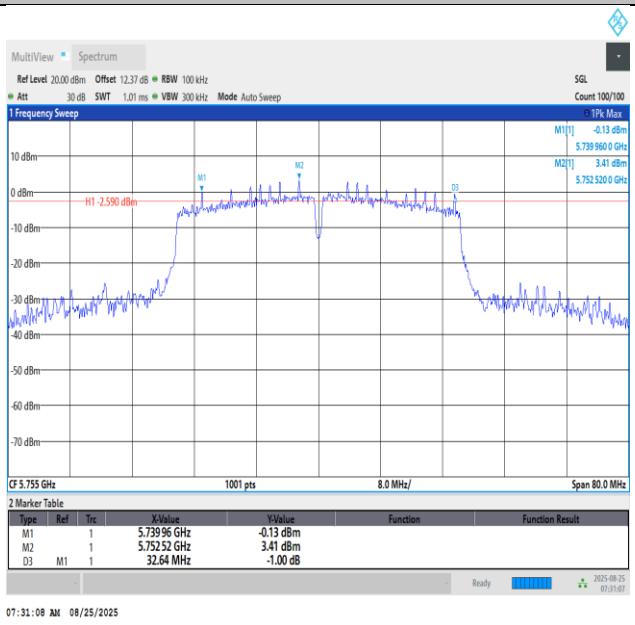
11N20SISO-Ant3-5745-PASS



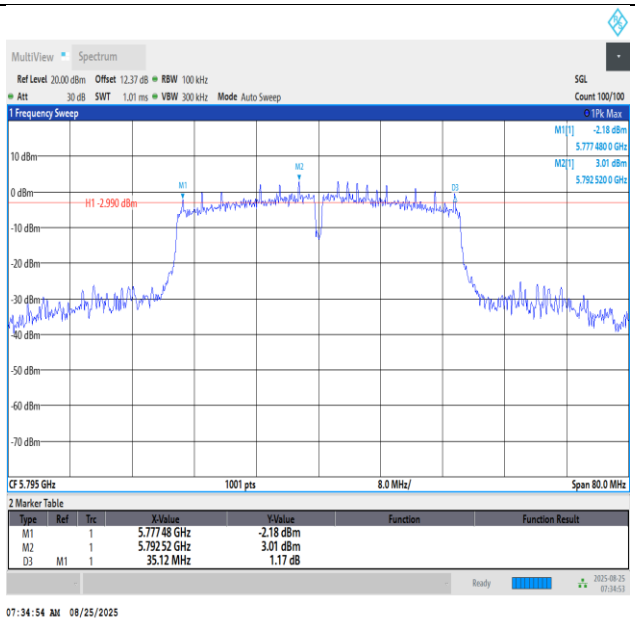
11N20SISO-Ant3-5785-PASS



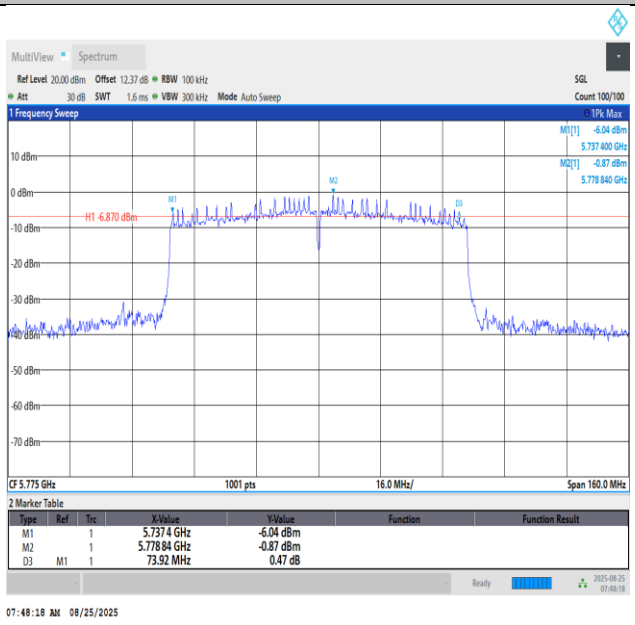
11N20SISO-Ant3-5825-PASS



11N40SISO-Ant3-5755-PASS



11N40SISO-Ant3-5795-PASS



11AC80SISO-Ant3-5775-PASS

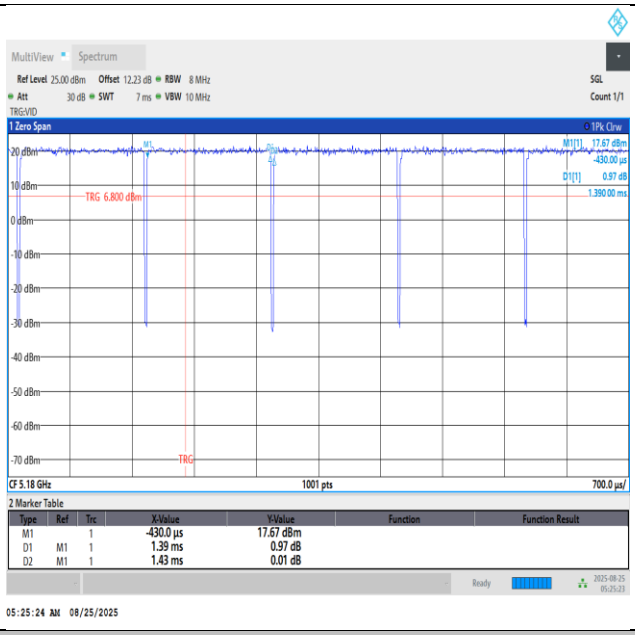
DUTY CYCLE

TEST RESULT

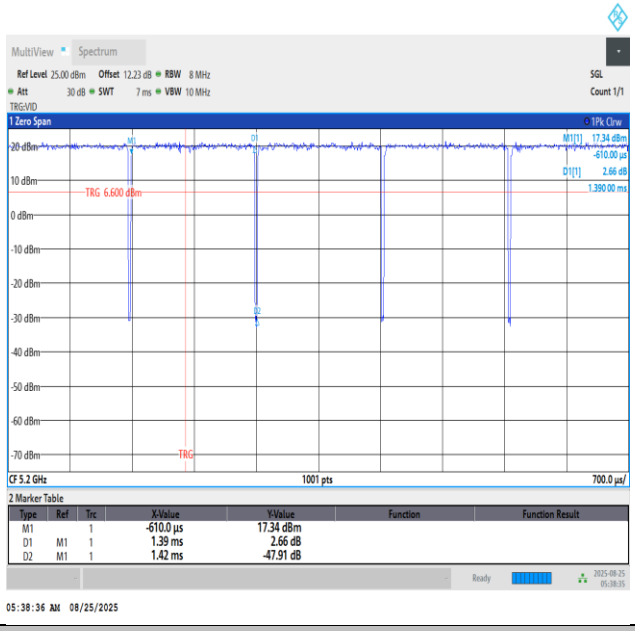
TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Dc Factor [%]	1/T
11A	Ant3	5180	1.39	1.43	97.20	0.12	0.72
11A	Ant3	5200	1.39	1.42	97.89	0.09	0.72
11A	Ant3	5240	1.40	1.44	97.22	0.12	0.71
11A	Ant3	5260	1.39	1.43	97.20	0.12	0.72
11A	Ant3	5300	1.39	1.43	97.20	0.12	0.72
11A	Ant3	5320	1.39	1.43	97.20	0.12	0.72
11A	Ant3	5500	1.40	1.44	97.22	0.12	0.71
11A	Ant3	5580	1.39	1.43	97.20	0.12	0.72
11A	Ant3	5700	1.39	1.43	97.20	0.12	0.72
11A	Ant3	5720	1.39	1.44	96.53	0.15	0.72
11A	Ant3	5745	1.39	1.44	96.53	0.15	0.72
11A	Ant3	5785	1.39	1.44	96.53	0.15	0.72
11A	Ant3	5825	1.40	1.44	97.22	0.12	0.71
11N20SISO	Ant3	5180	1.30	1.34	97.01	0.13	0.77
11N20SISO	Ant3	5200	1.30	1.33	97.74	0.10	0.77
11N20SISO	Ant3	5240	1.29	1.34	96.27	0.17	0.78
11N20SISO	Ant3	5260	1.31	1.34	97.76	0.10	0.76
11N20SISO	Ant3	5300	1.29	1.34	96.27	0.17	0.78
11N20SISO	Ant3	5320	1.30	1.34	97.01	0.13	0.77
11N20SISO	Ant3	5500	1.30	1.34	97.01	0.13	0.77
11N20SISO	Ant3	5580	1.31	1.34	97.76	0.10	0.76
11N20SISO	Ant3	5700	1.31	1.34	97.76	0.10	0.76
11N20SISO	Ant3	5720	1.31	1.34	97.76	0.10	0.76
11N20SISO	Ant3	5745	1.30	1.34	97.01	0.13	0.77
11N20SISO	Ant3	5785	1.30	1.33	97.74	0.10	0.77
11N20SISO	Ant3	5825	1.30	1.34	97.01	0.13	0.77
11N40SISO	Ant3	5190	0.64	0.68	94.12	0.26	1.56
11N40SISO	Ant3	5230	0.64	0.68	94.12	0.26	1.56
11N40SISO	Ant3	5270	0.65	0.68	95.59	0.20	1.54
11N40SISO	Ant3	5310	0.64	0.68	94.12	0.26	1.56
11N40SISO	Ant3	5510	0.64	0.68	94.12	0.26	1.56

11N40SISO	Ant3	5550	0.64	0.68	94.12	0.26	1.56
11N40SISO	Ant3	5670	0.64	0.68	94.12	0.26	1.56
11N40SISO	Ant3	5710	0.65	0.68	95.59	0.20	1.54
11N40SISO	Ant3	5755	0.65	0.68	95.59	0.20	1.54
11N40SISO	Ant3	5795	0.65	0.68	95.59	0.20	1.54
11AC20SISO	Ant3	5180	1.32	1.35	97.78	0.10	0.76
11AC20SISO	Ant3	5745	1.32	1.35	97.78	0.10	0.76
11AC40SISO	Ant3	5190	0.65	0.69	94.20	0.26	1.54
11AC40SISO	Ant3	5755	0.65	0.69	94.20	0.26	1.54
11AC80SISO	Ant3	5210	0.32	0.35	91.43	0.39	3.13
11AC80SISO	Ant3	5290	0.32	0.36	88.89	0.51	3.13
11AC80SISO	Ant3	5530	0.32	0.36	88.89	0.51	3.13
11AC80SISO	Ant3	5610	0.33	0.36	91.67	0.38	3.03
11AC80SISO	Ant3	5690	0.33	0.36	91.67	0.38	3.03
11AC80SISO	Ant3	5775	0.33	0.38	86.84	0.61	3.03

TEST GRAPHS



NTNV-11A-Ant3-5180



NTNV-11A-Ant3-5200