



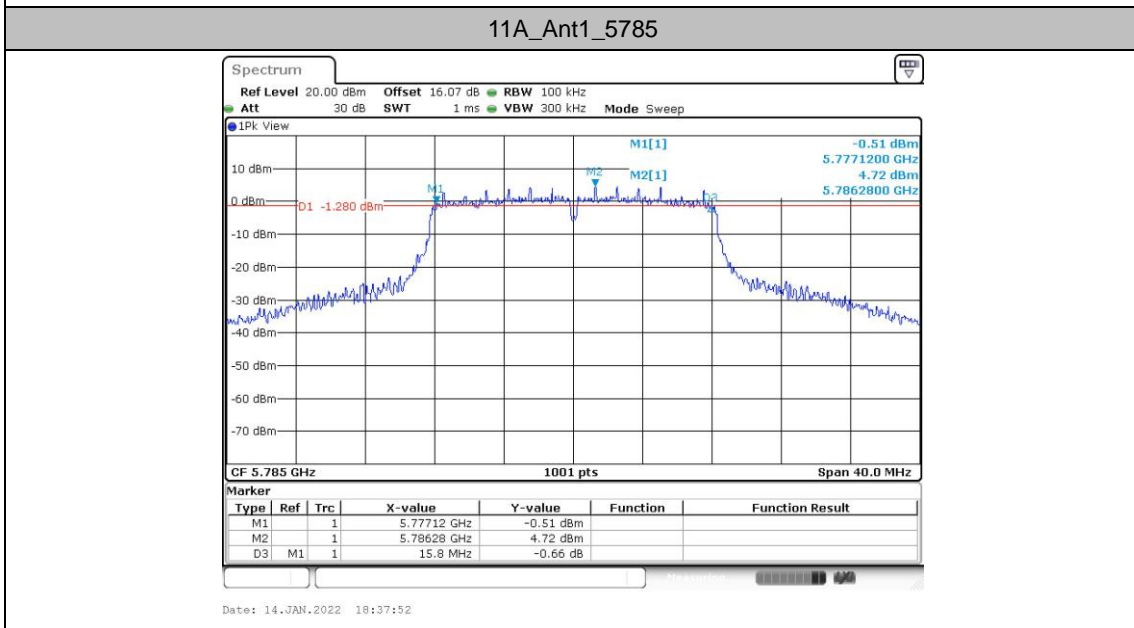
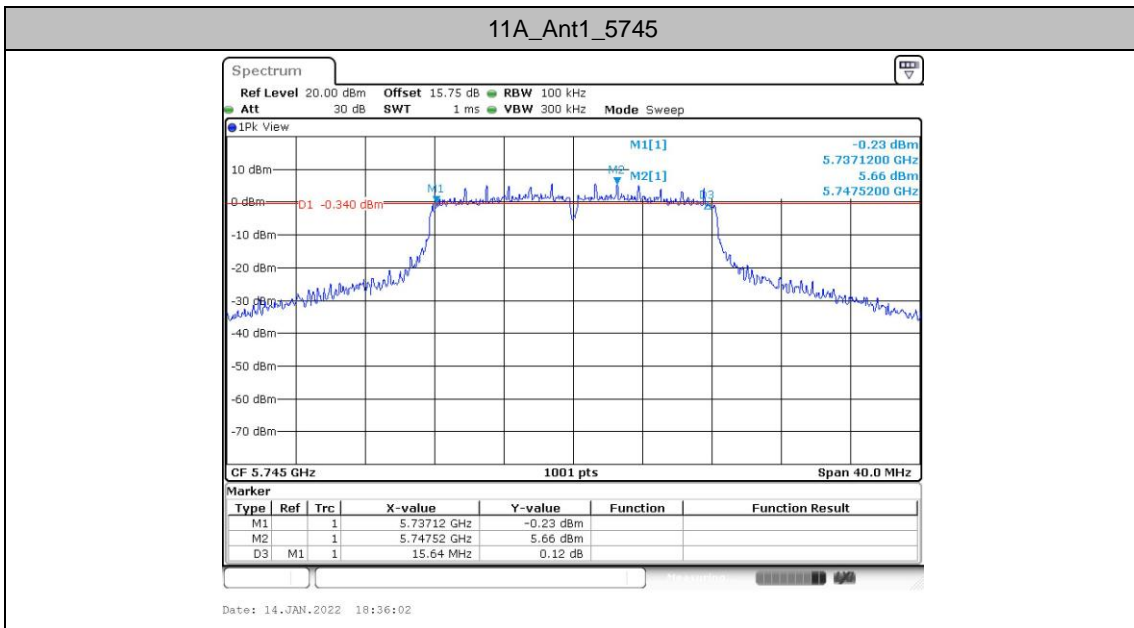
Min emission bandwidth

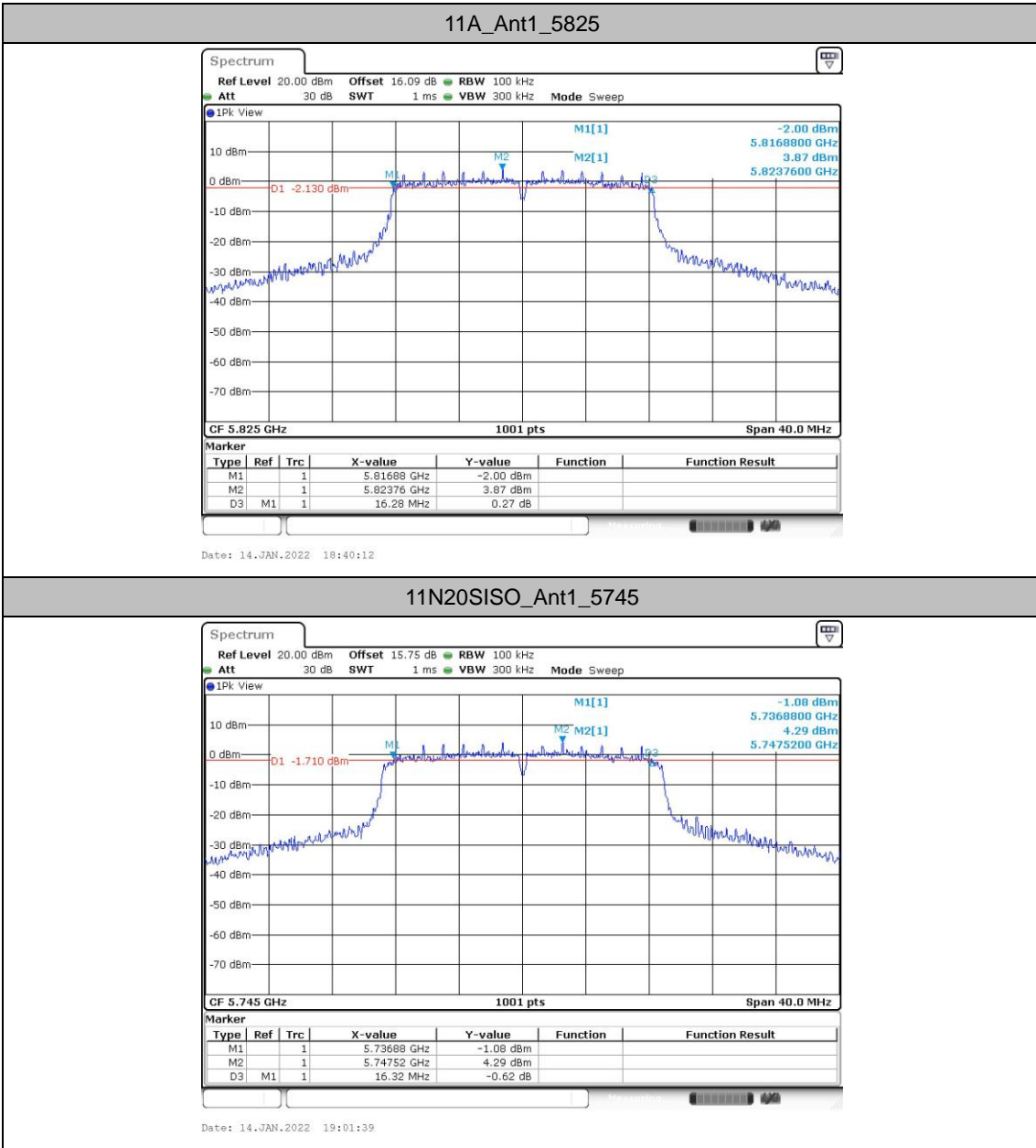
Test Result B4

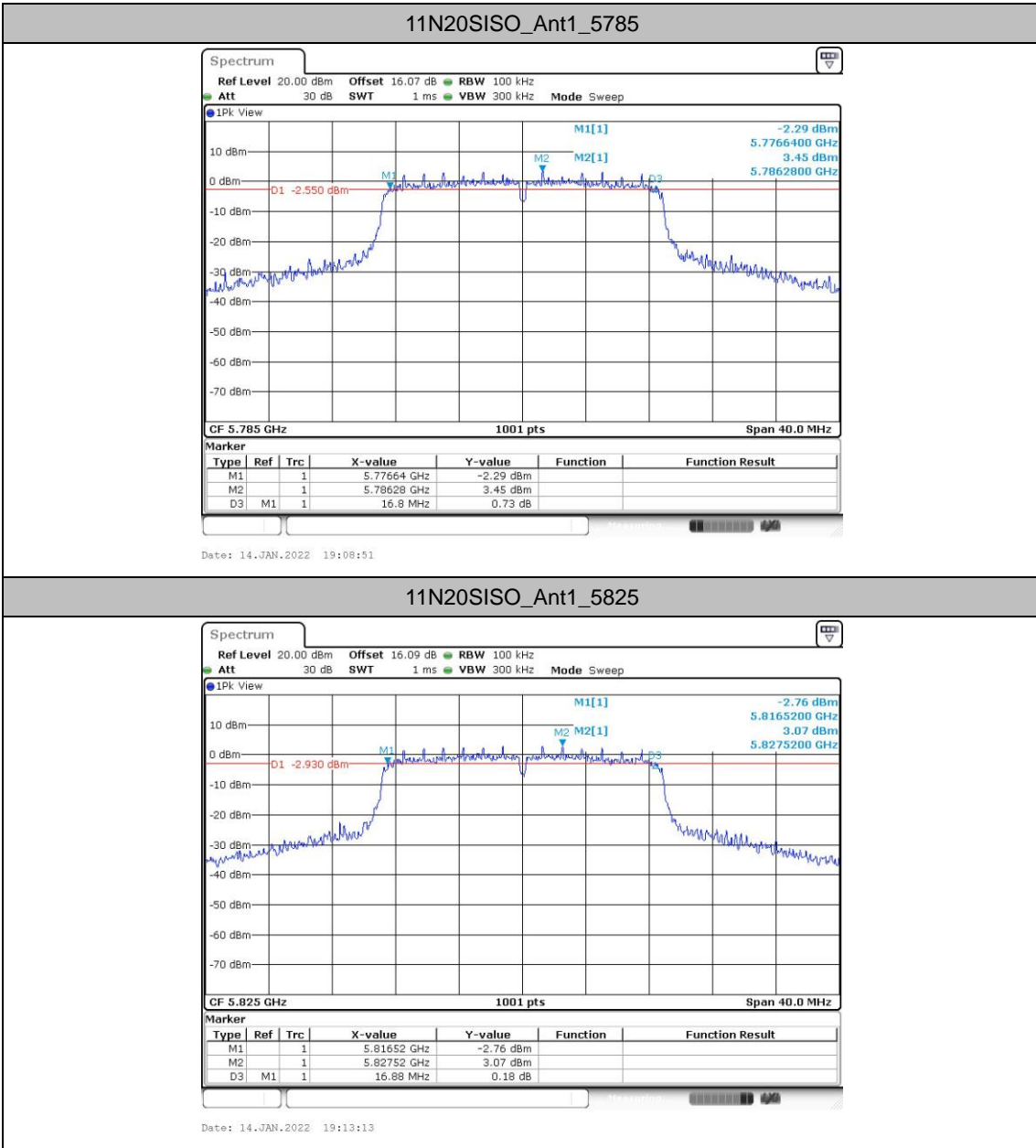
TestMode	Antenna	Frequency[MHz]	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	15.64	5737.12	5752.76	0.5	PASS
		5785	15.80	5777.12	5792.92	0.5	PASS
		5825	16.28	5816.88	5833.16	0.5	PASS
11N20SISO	Ant1	5745	16.32	5736.88	5753.20	0.5	PASS
		5785	16.80	5776.64	5793.44	0.5	PASS
		5825	16.88	5816.52	5833.40	0.5	PASS
11N40SISO	Ant1	5755	31.28	5738.76	5770.04	0.5	PASS
		5795	32.56	5778.76	5811.32	0.5	PASS
11AC80SISO	Ant1	5775	52.64	5747.48	5800.12	0.5	PASS

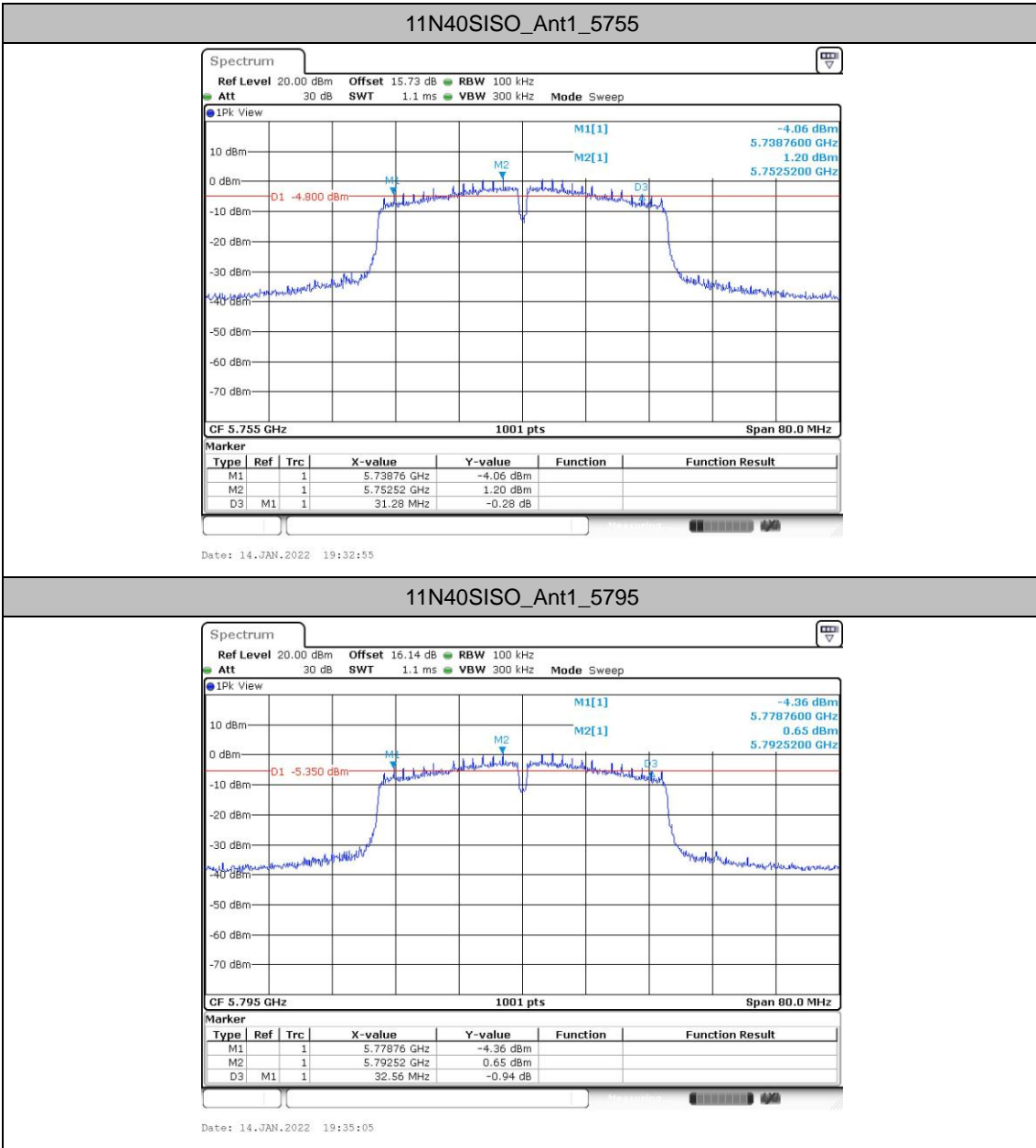


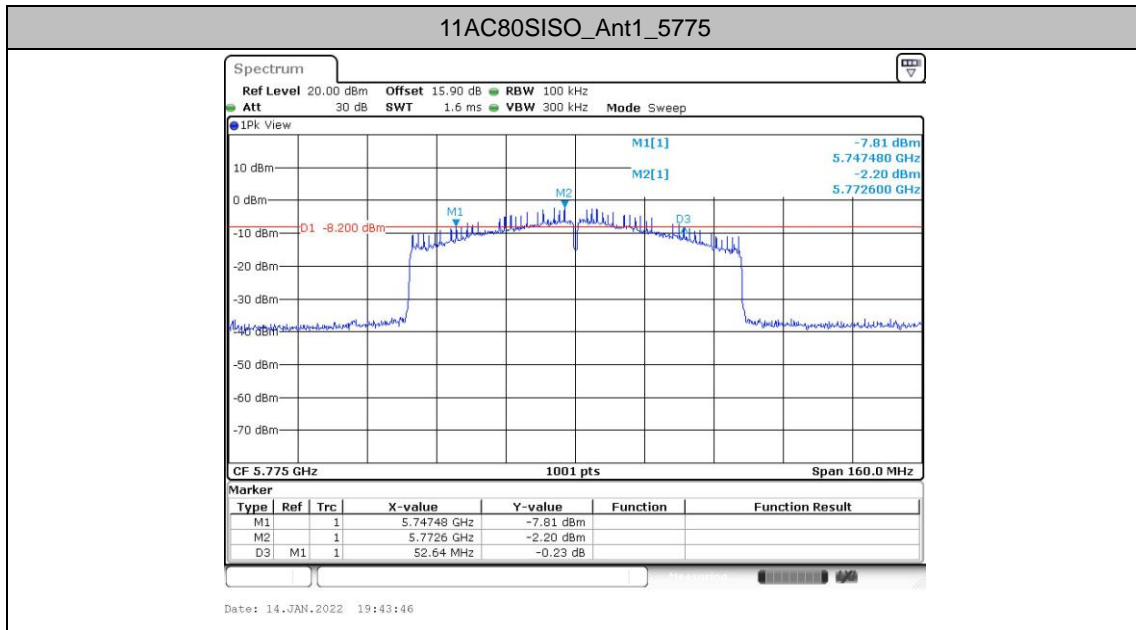
Test Graphs B4













Maximum power spectral density

Test Result

TestMode	Antenna	Frequency[MHz]	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	-0.15	≤11.00	PASS
		5220	4.28	≤11.00	PASS
		5240	4.94	≤11.00	PASS
		5260	4.67	≤11.00	PASS
		5300	4.71	≤11.00	PASS
		5320	2.44	≤11.00	PASS
		5500	5.1	≤11.00	PASS
		5580	4.79	≤11.00	PASS
		5700	4.1	≤11.00	PASS
		5720_UNII-2C	4.45	≤11.00	PASS
		5720_UNII-3	0.5	≤11.00	PASS
		5745	2.3	≤30.00	PASS
		5785	1.69	≤30.00	PASS
		5825	1.13	≤30.00	PASS
11N20SISO	Ant1	5180	0.27	≤11.00	PASS
		5220	3.37	≤11.00	PASS
		5240	4.1	≤11.00	PASS
		5260	3.72	≤11.00	PASS
		5300	3.91	≤11.00	PASS
		5320	1.67	≤11.00	PASS
		5500	4.25	≤11.00	PASS
		5580	4.05	≤11.00	PASS
		5700	3.36	≤11.00	PASS
		5720_UNII-2C	3.32	≤11.00	PASS
		5720_UNII-3	-0.54	≤11.00	PASS
		5745	1.58	≤30.00	PASS
		5785	0.55	≤30.00	PASS
		5825	-0.1	≤30.00	PASS

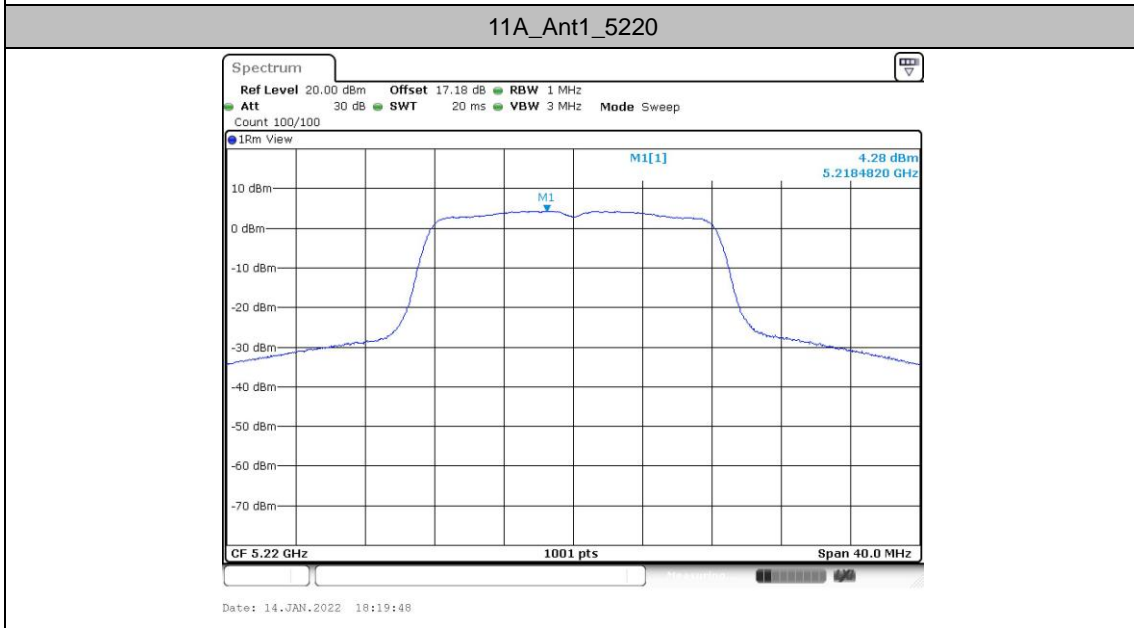
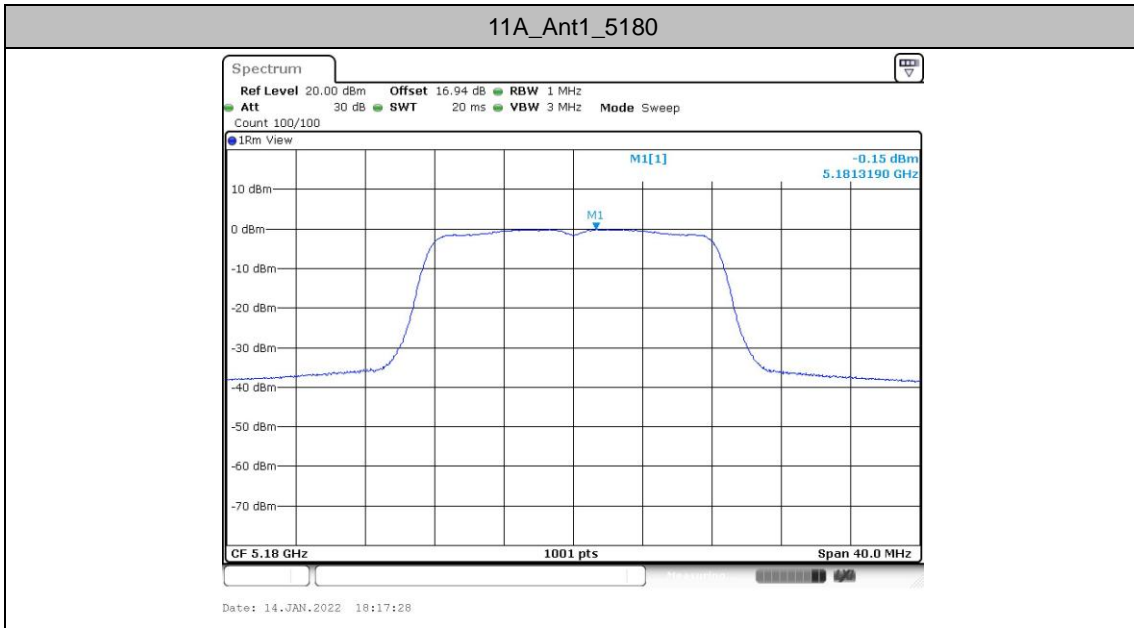


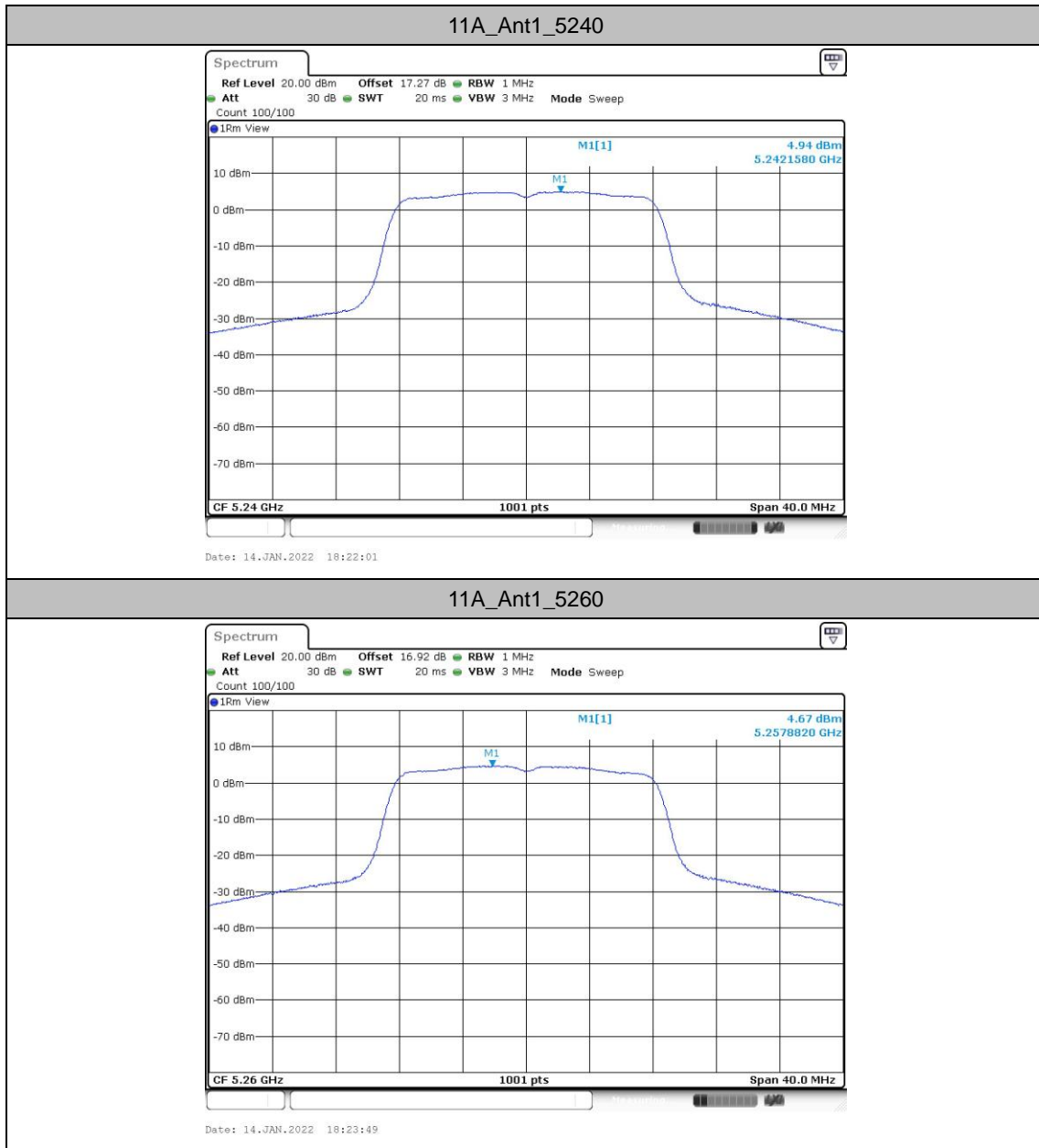
11N40SISO	Ant1	5190	-4.13	≤11.00	PASS
		5230	0.21	≤11.00	PASS
		5270	-0.23	≤11.00	PASS
		5310	-2.47	≤11.00	PASS
		5510	0.75	≤11.00	PASS
		5550	0.75	≤11.00	PASS
		5670	0.59	≤11.00	PASS
		5710_UNII-2C	0.07	≤11.00	PASS
		5710_UNII-3	-7.74	≤11.00	PASS
		5755	-2.16	≤30.00	PASS
		5795	-2.52	≤30.00	PASS
11AC80SISO	Ant1	5210	-2.73	≤11.00	PASS
		5290	-2.65	≤11.00	PASS
		5530	-2.67	≤11.00	PASS
		5610	-2.78	≤11.00	PASS
		5690_UNII-2C	-3.34	≤11.00	PASS
		5690_UNII-3	-15.3	≤11.00	PASS
		5775	-6.26	≤30.00	PASS

Note: 1. The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.
2. The Duty Cycle Factor and RBW Factor is compensated in the graph.



Test Graphs

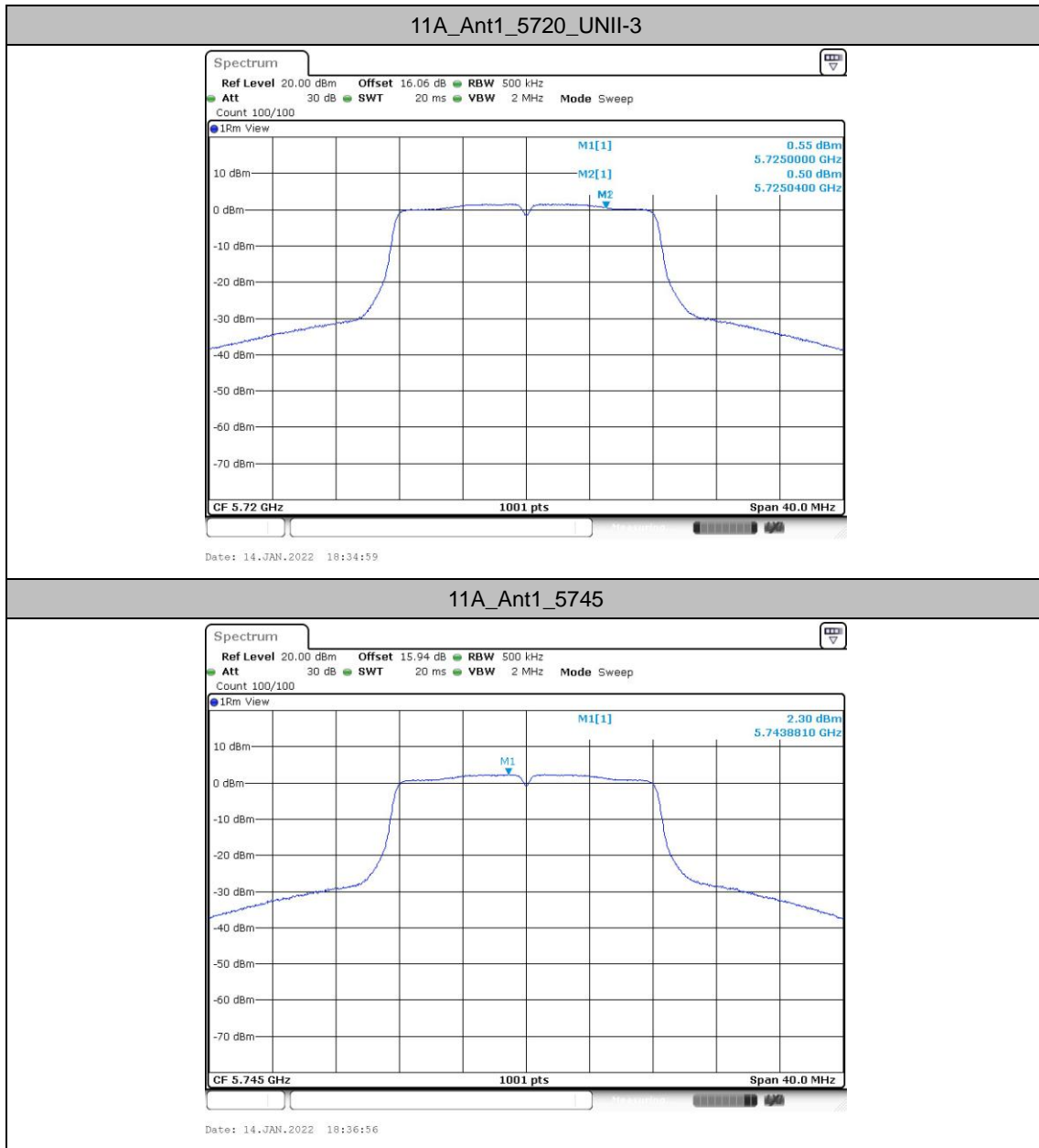


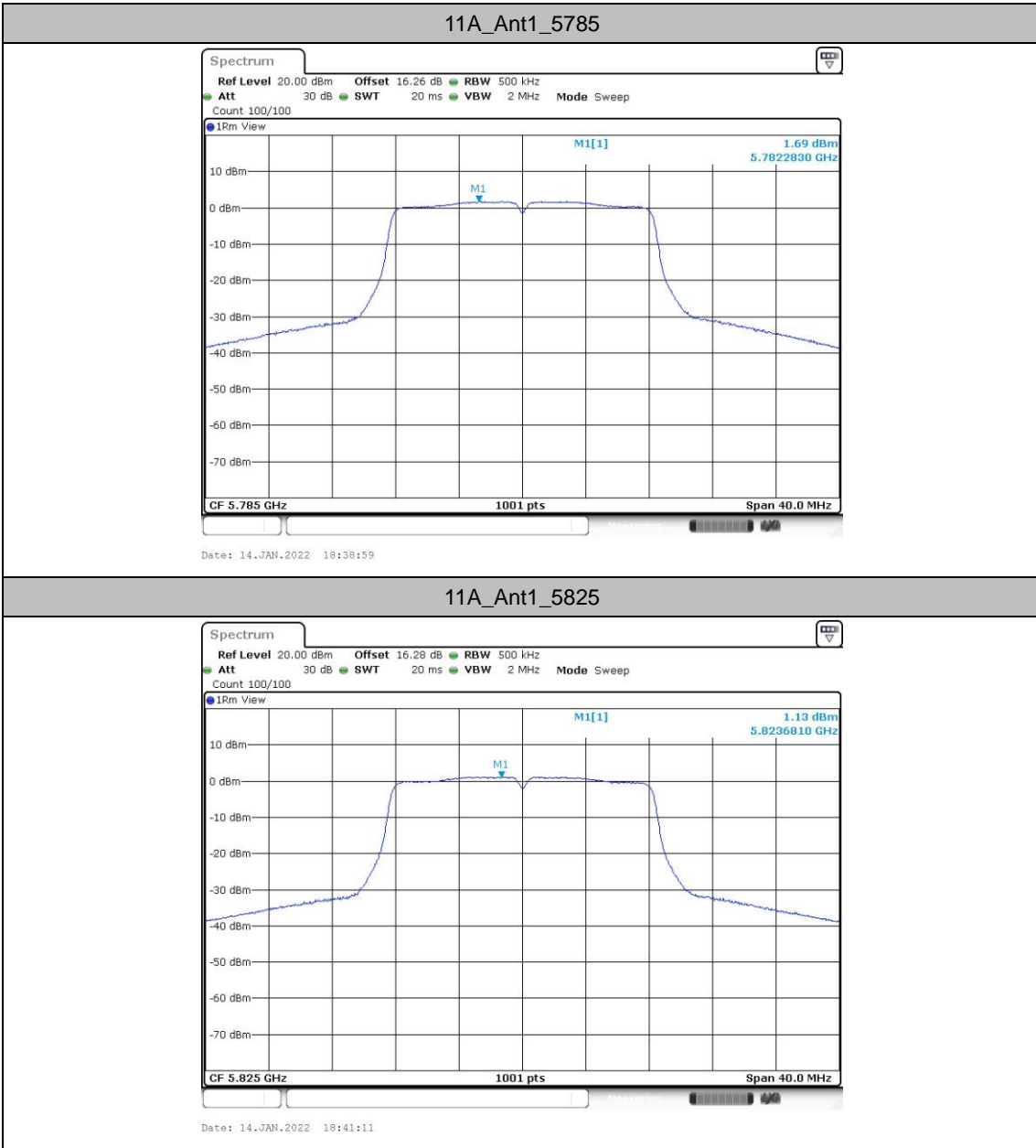




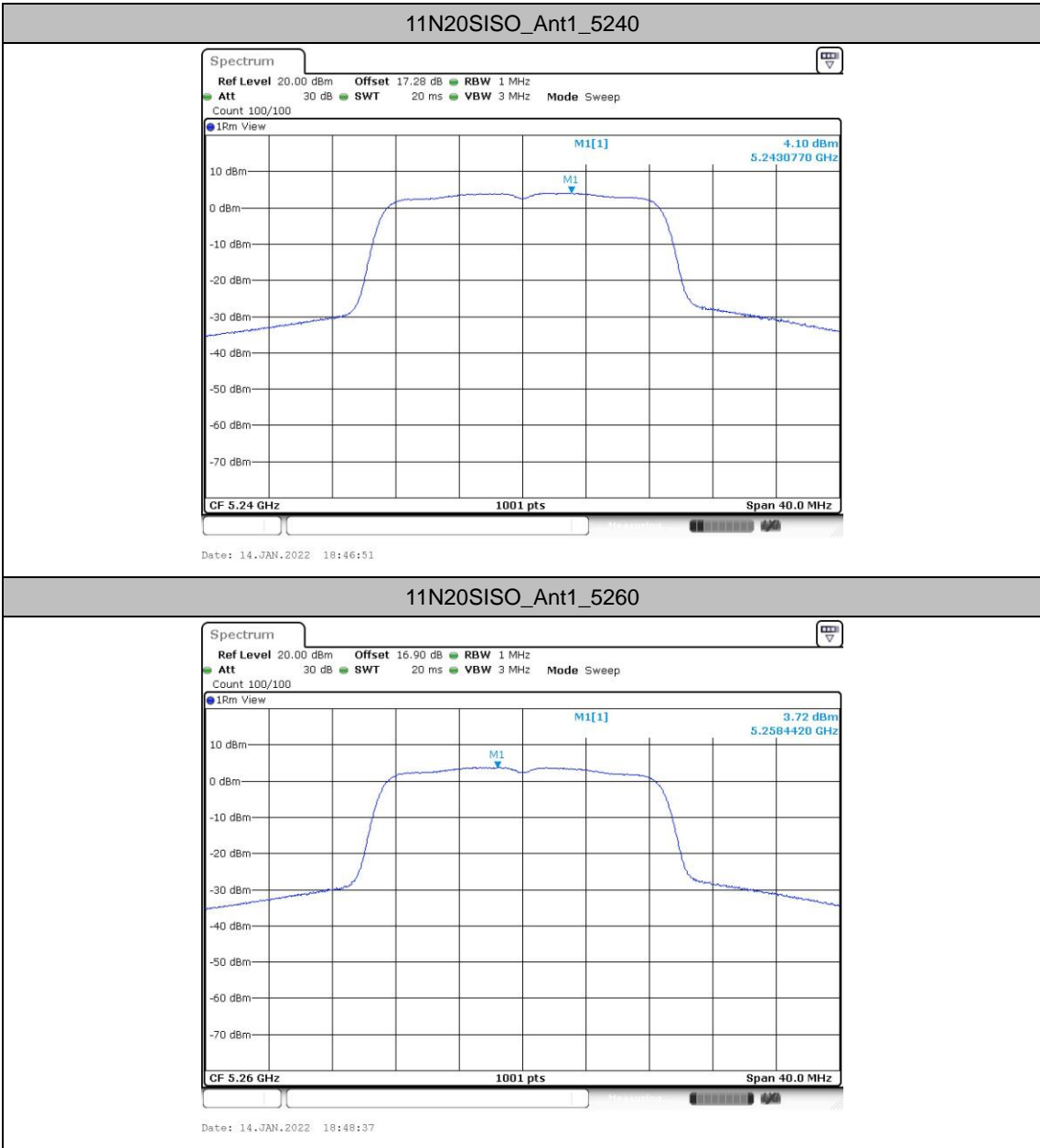


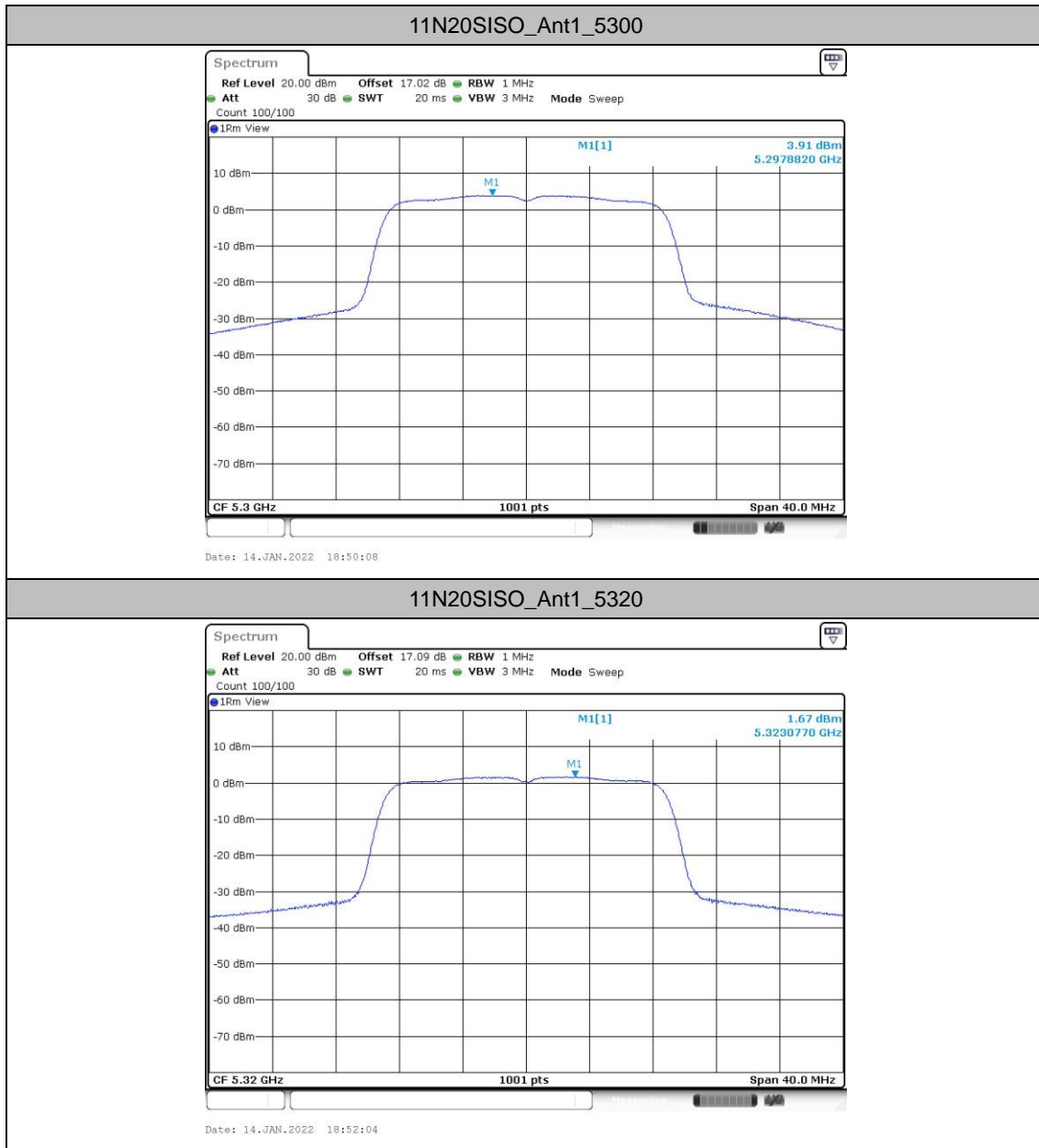


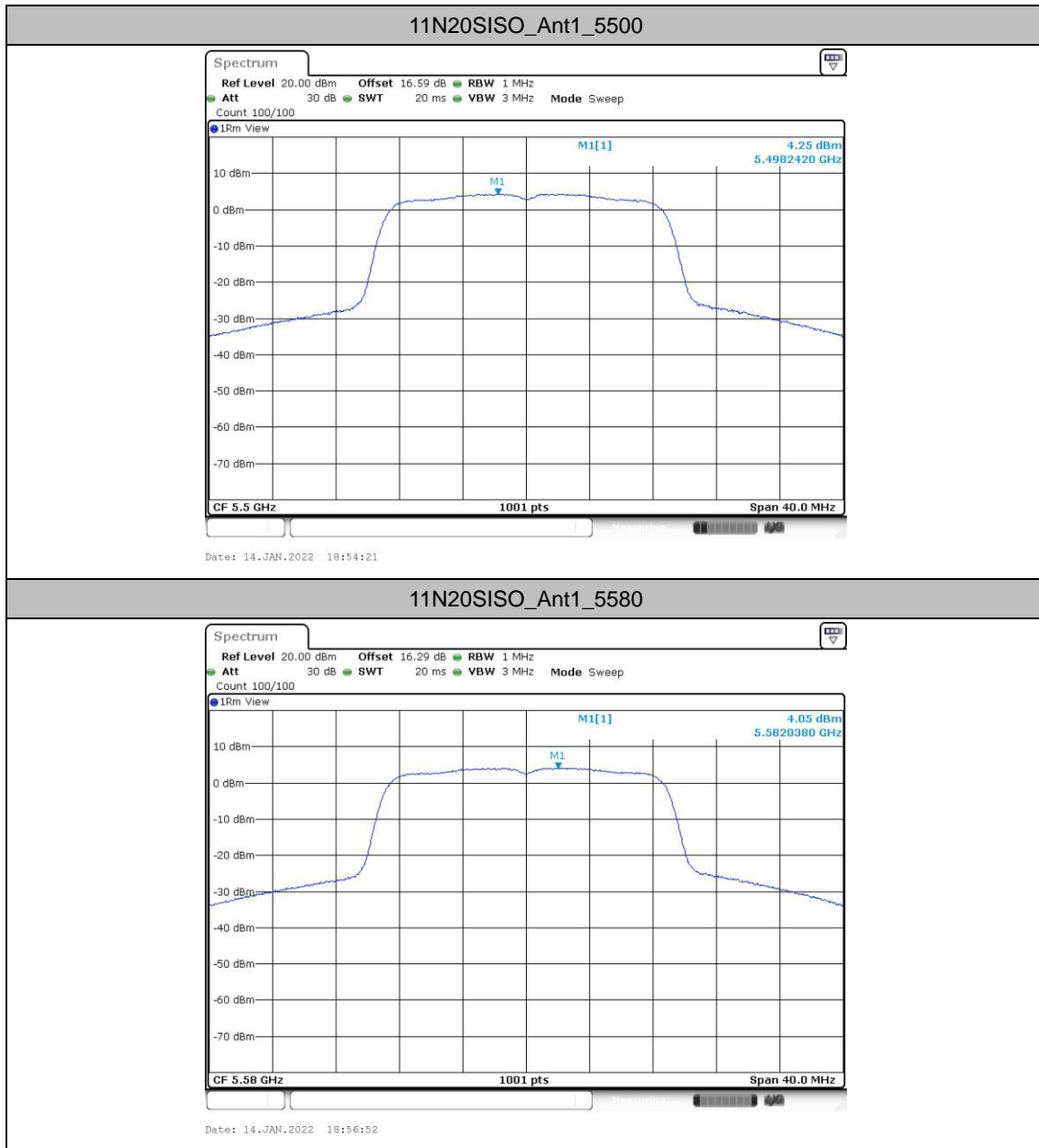


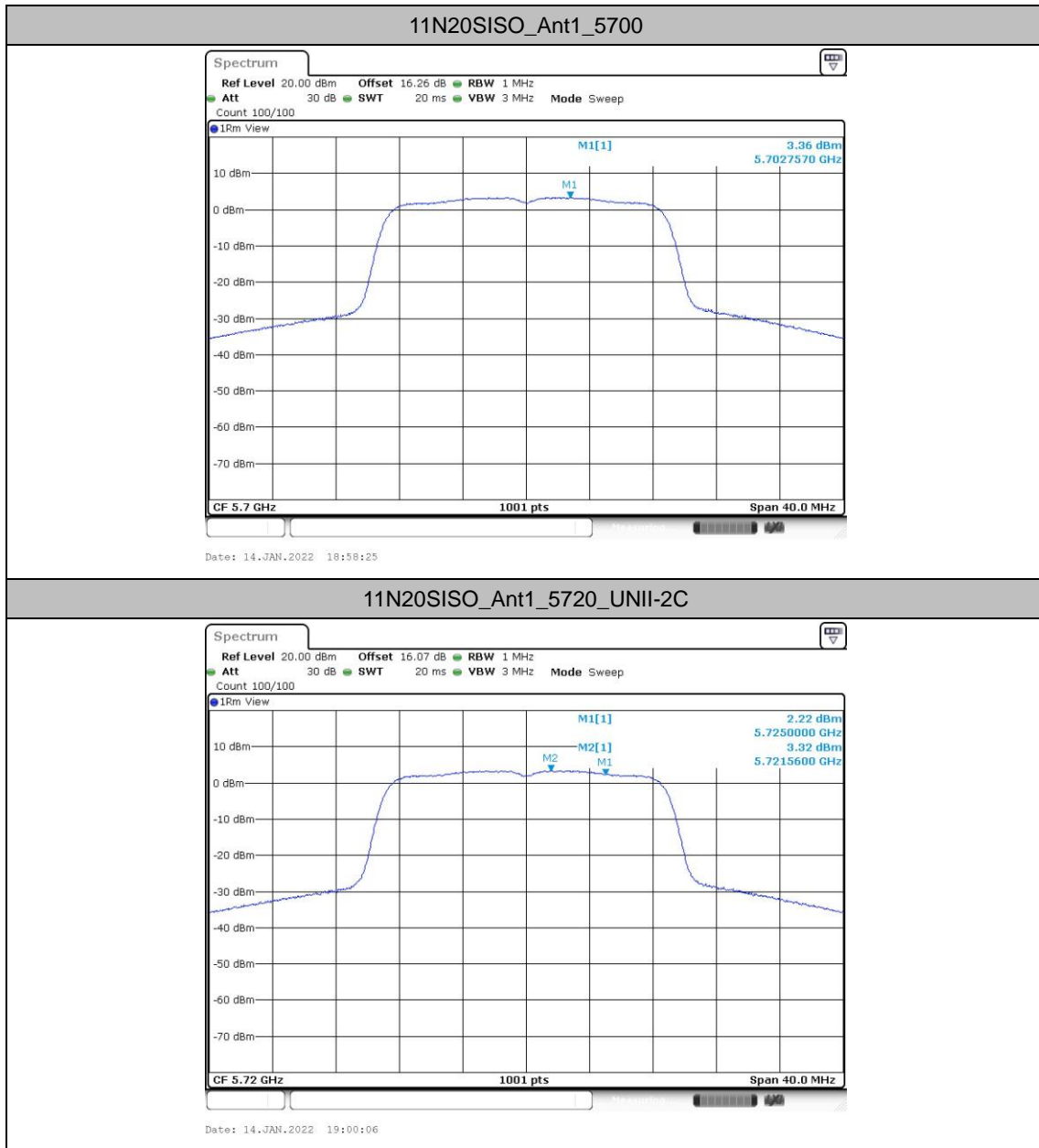




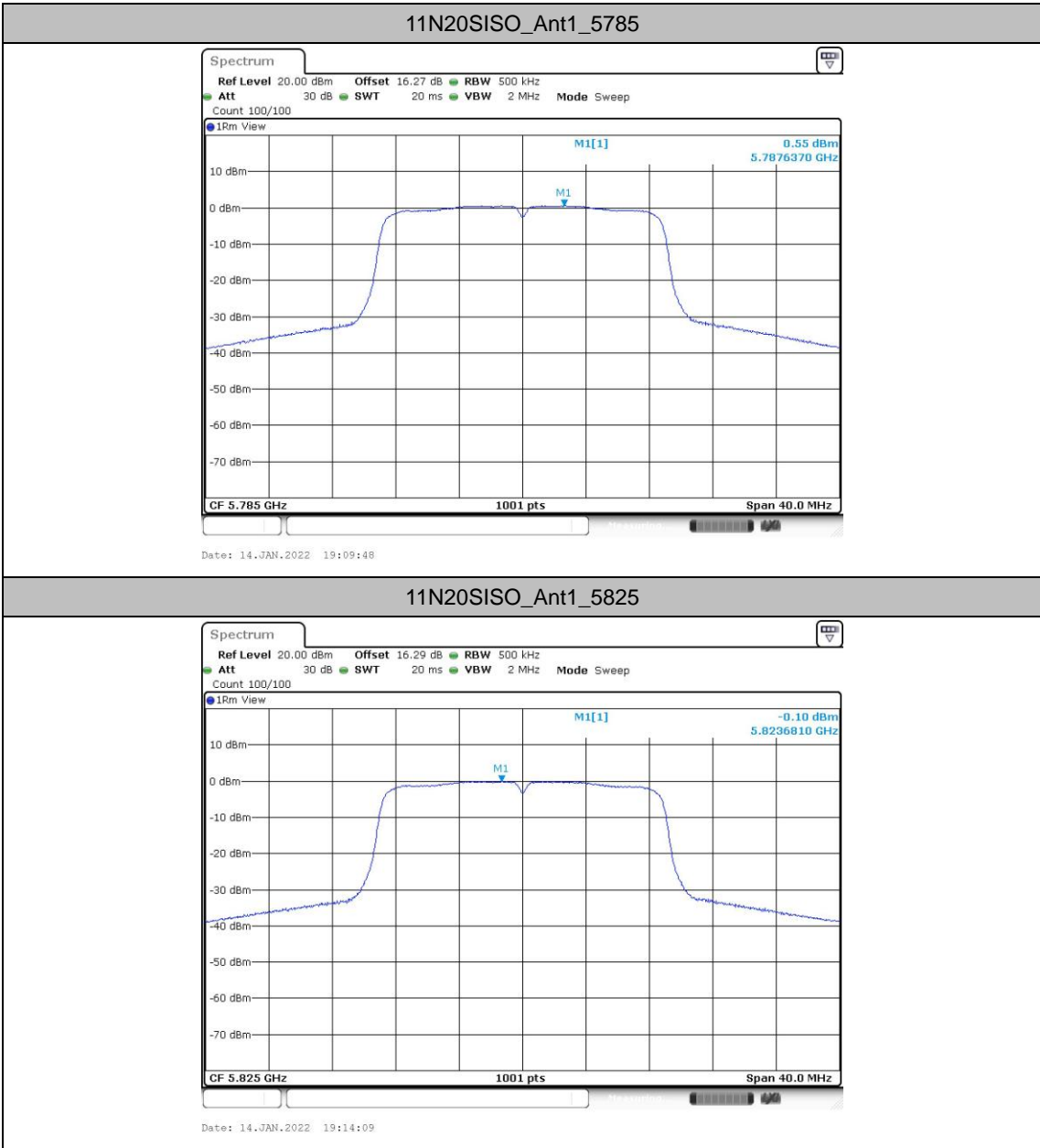


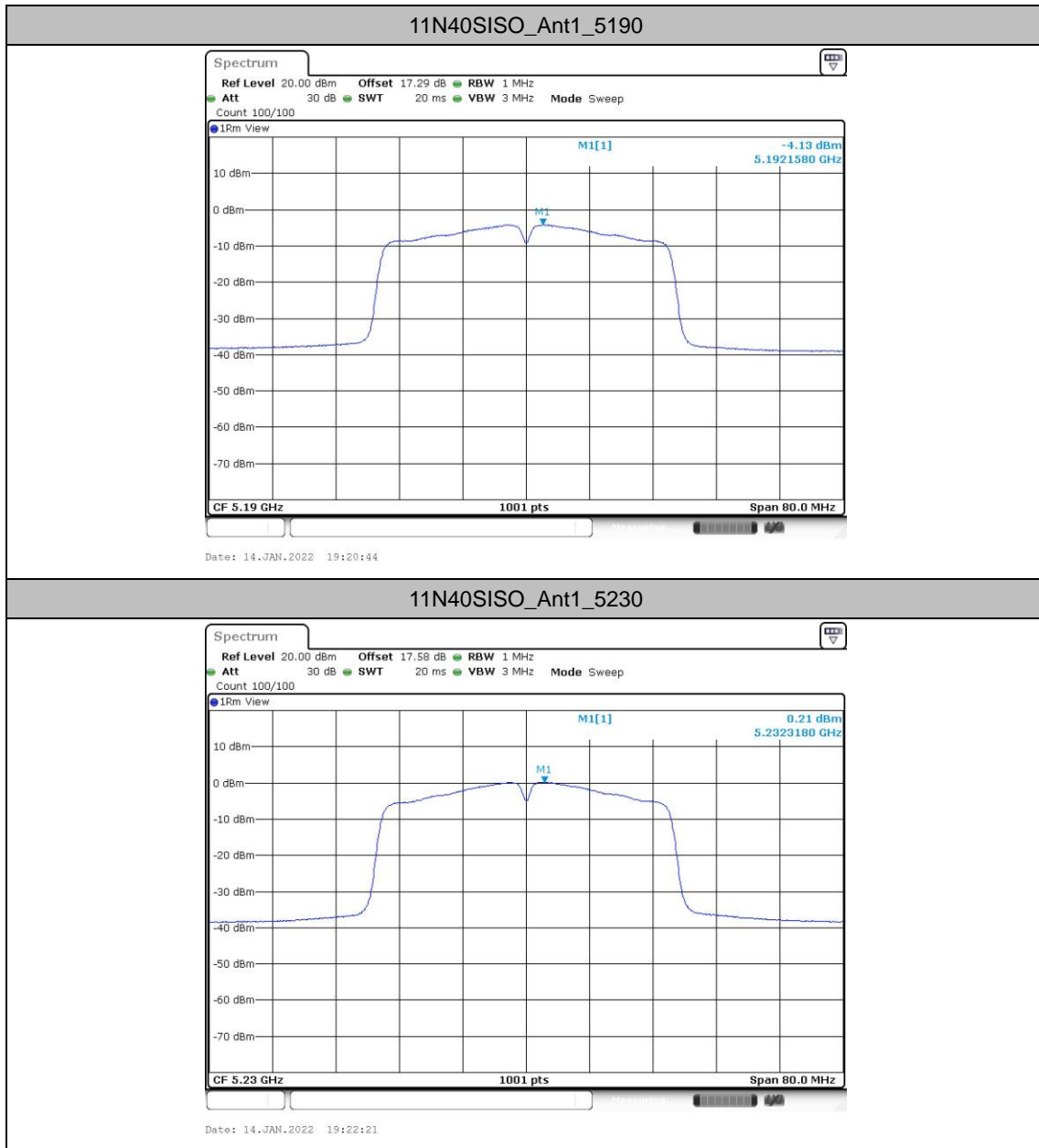


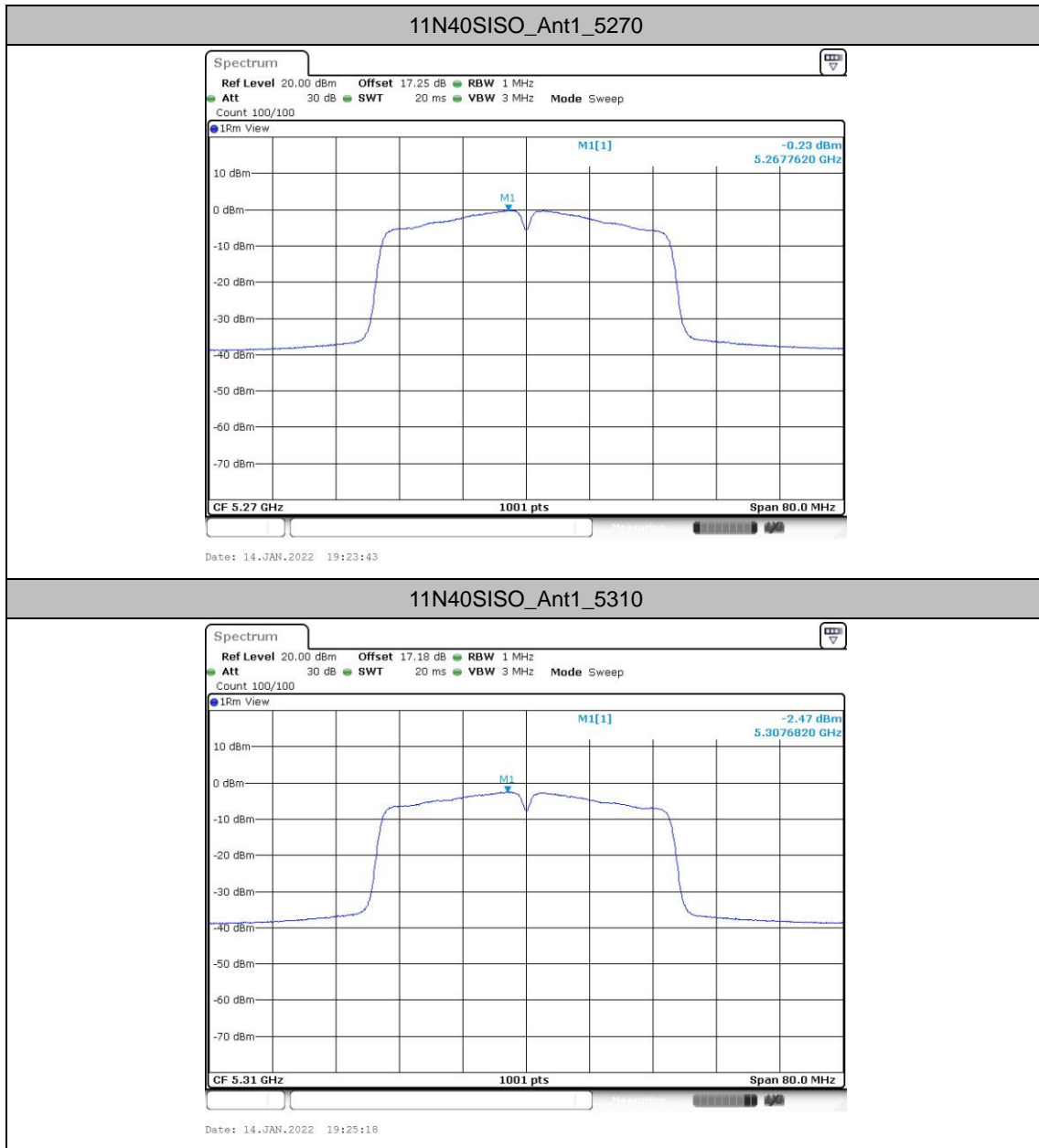


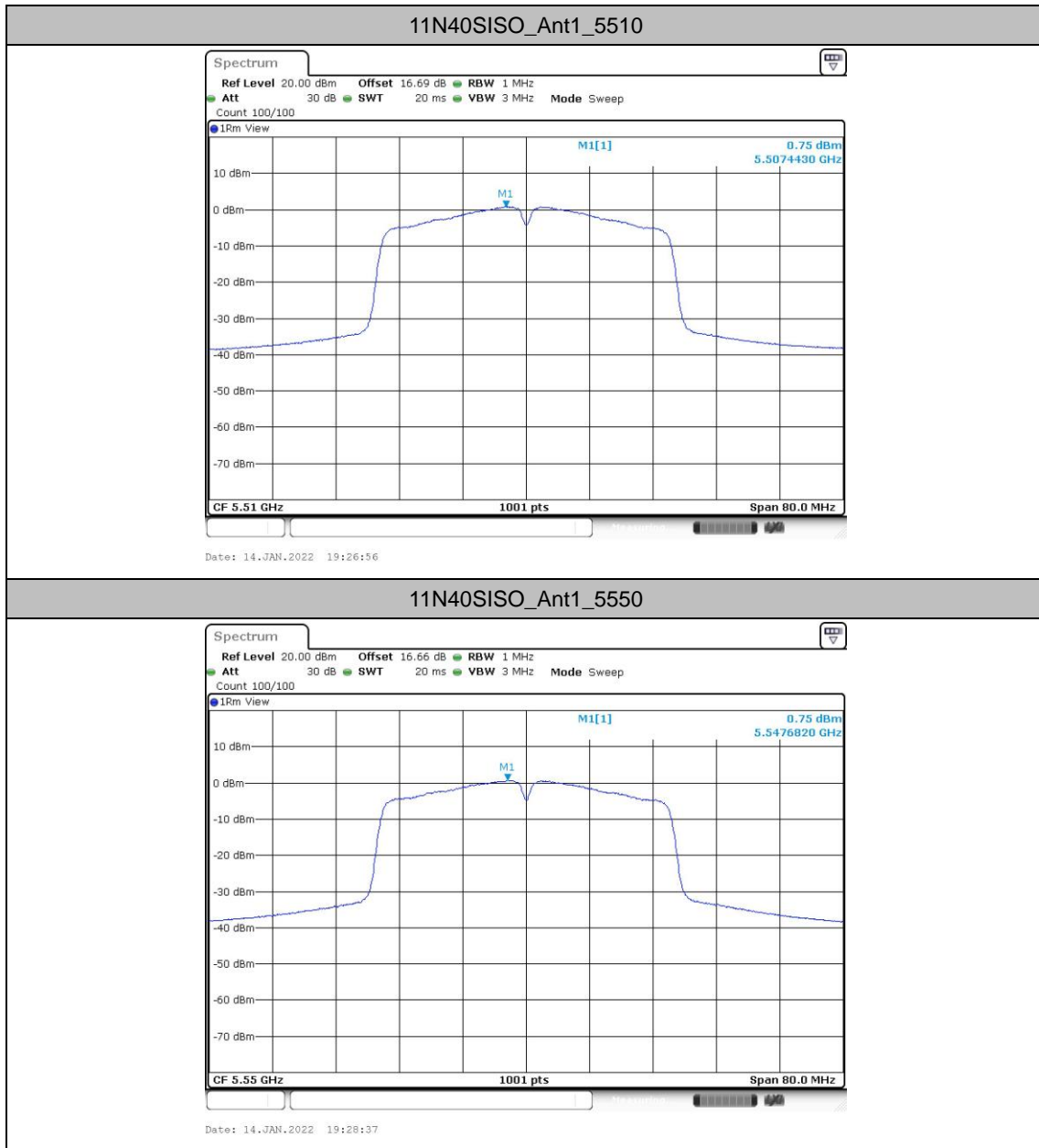


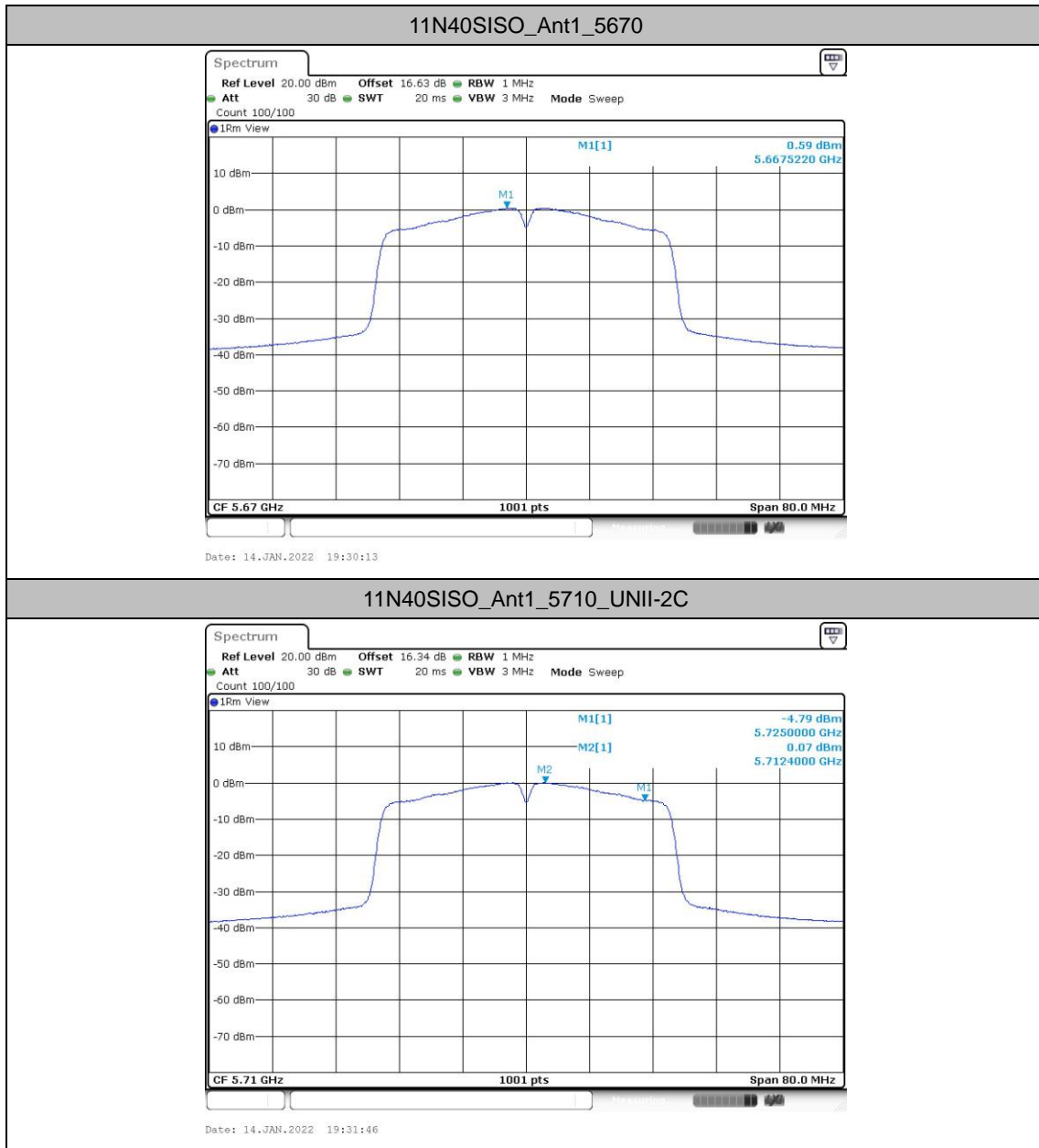


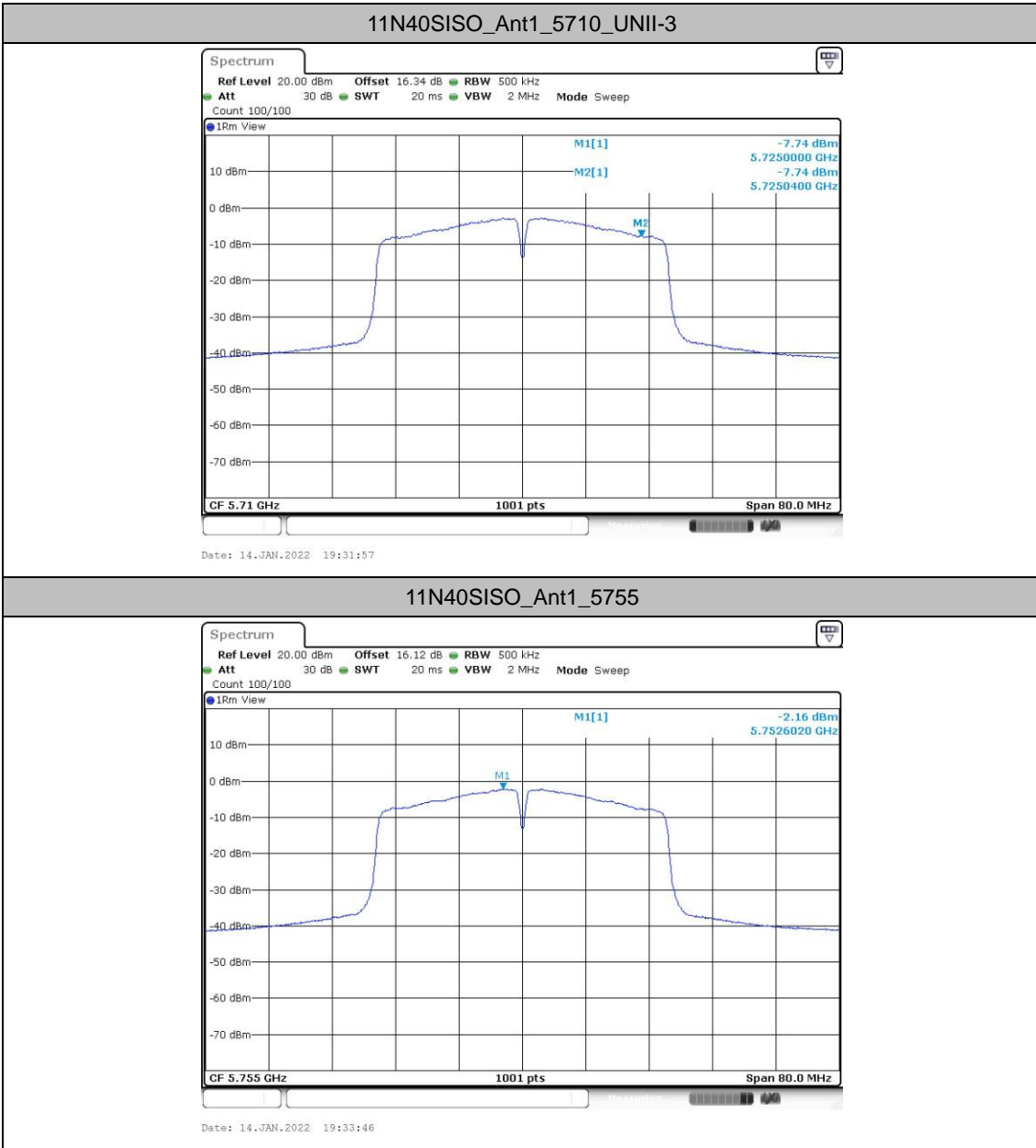


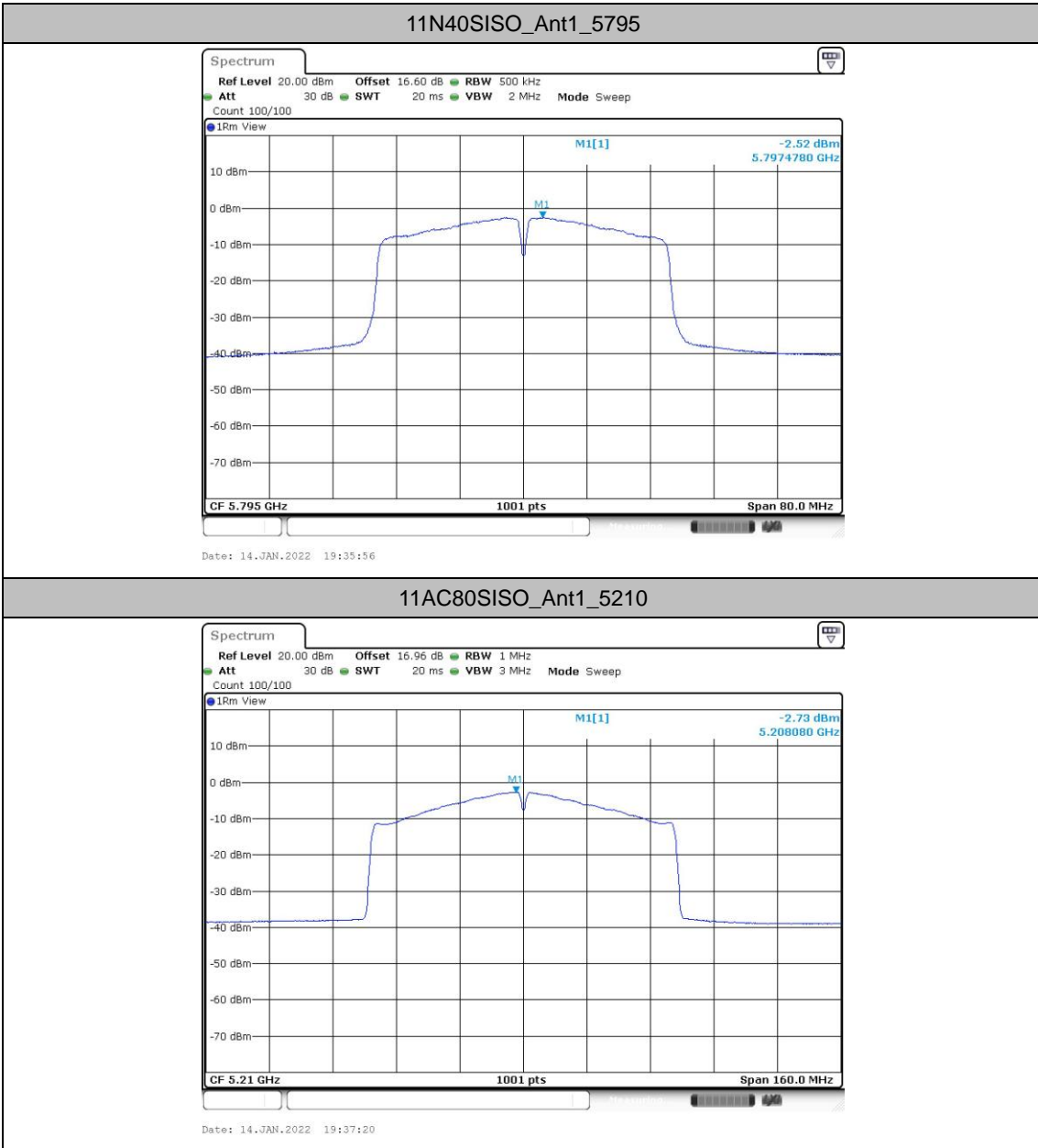




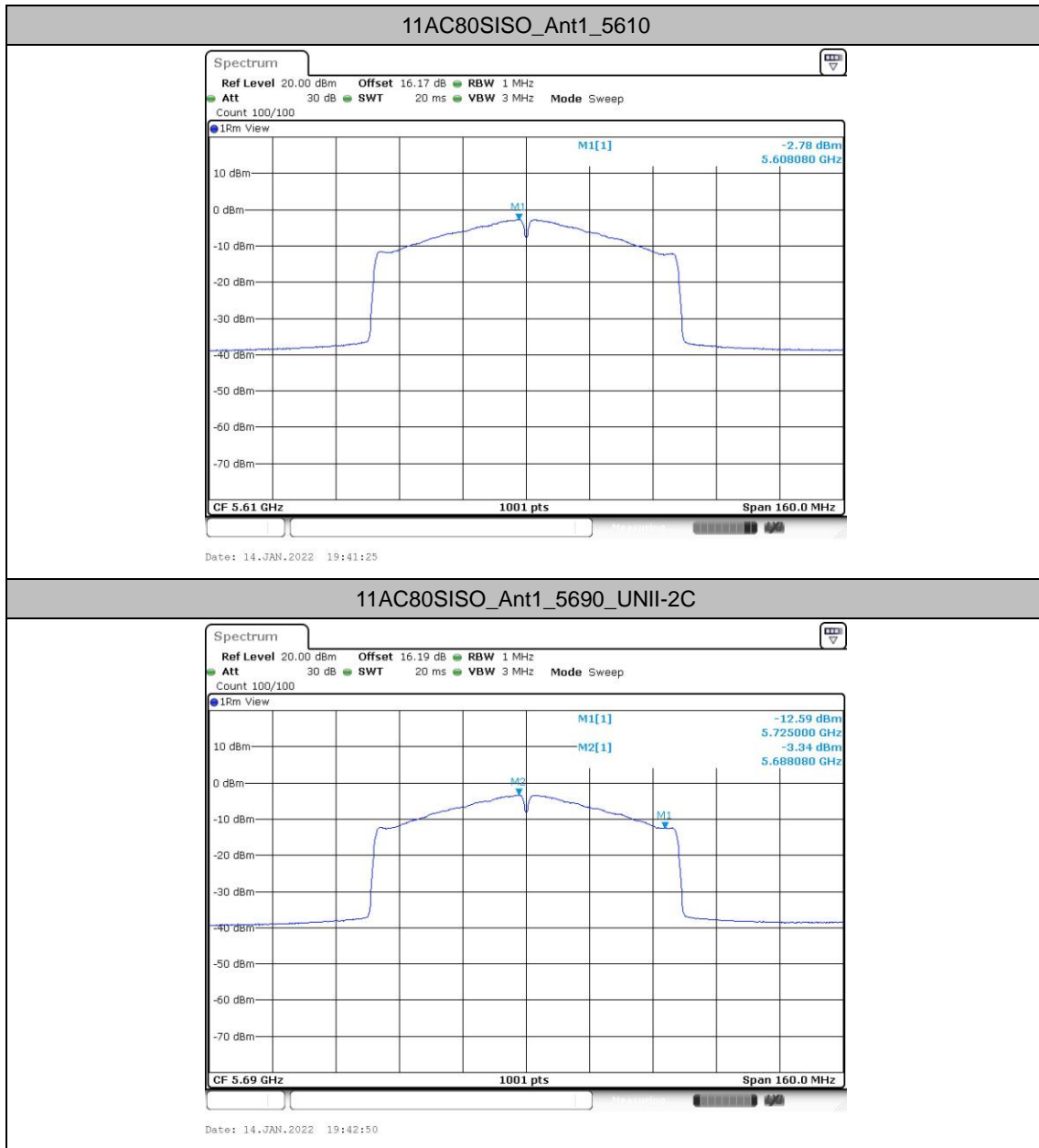


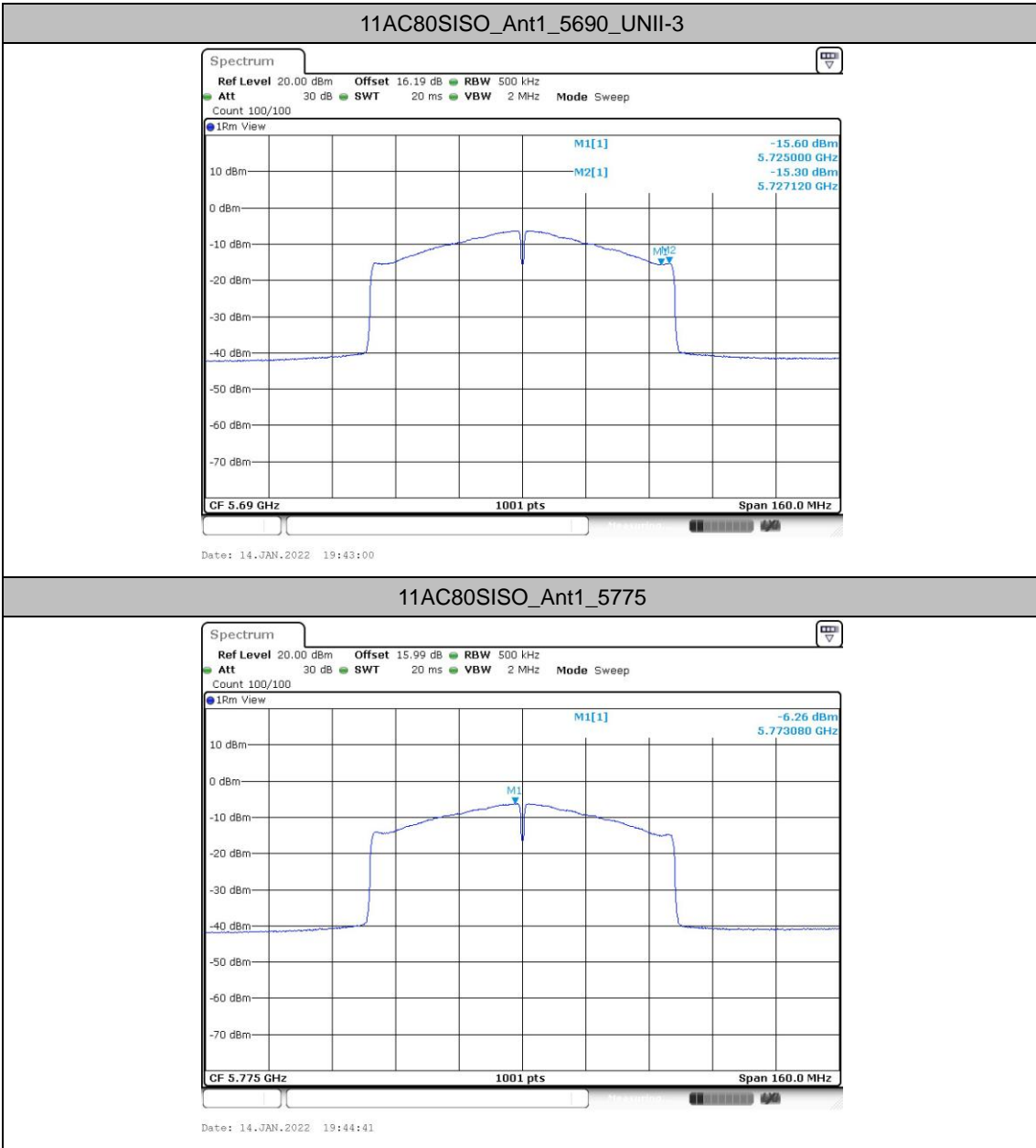








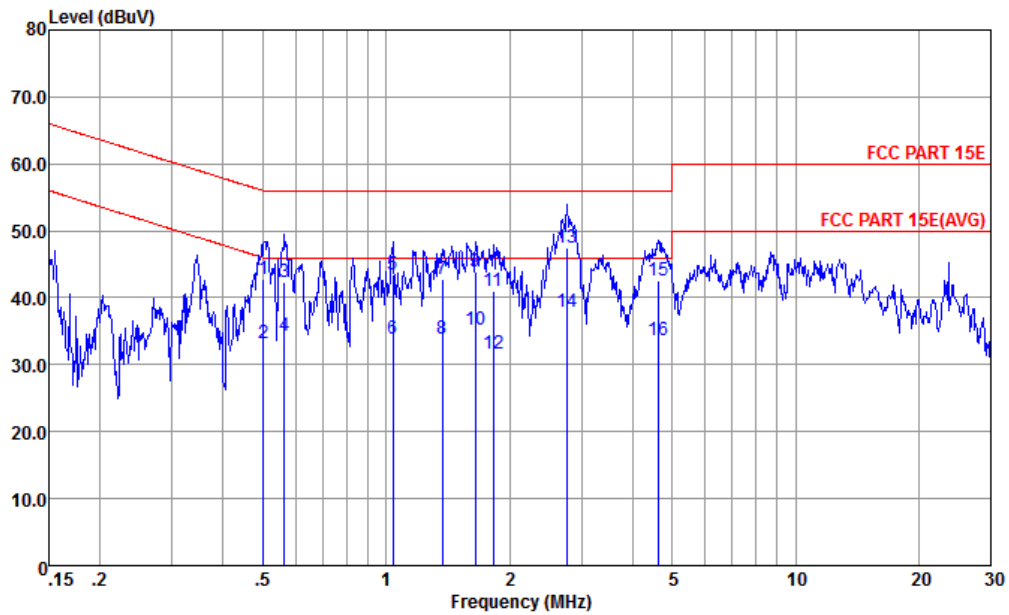






Appendix B. AC Conducted Emission Test Results

Test Engineer :	Amos Zhang	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

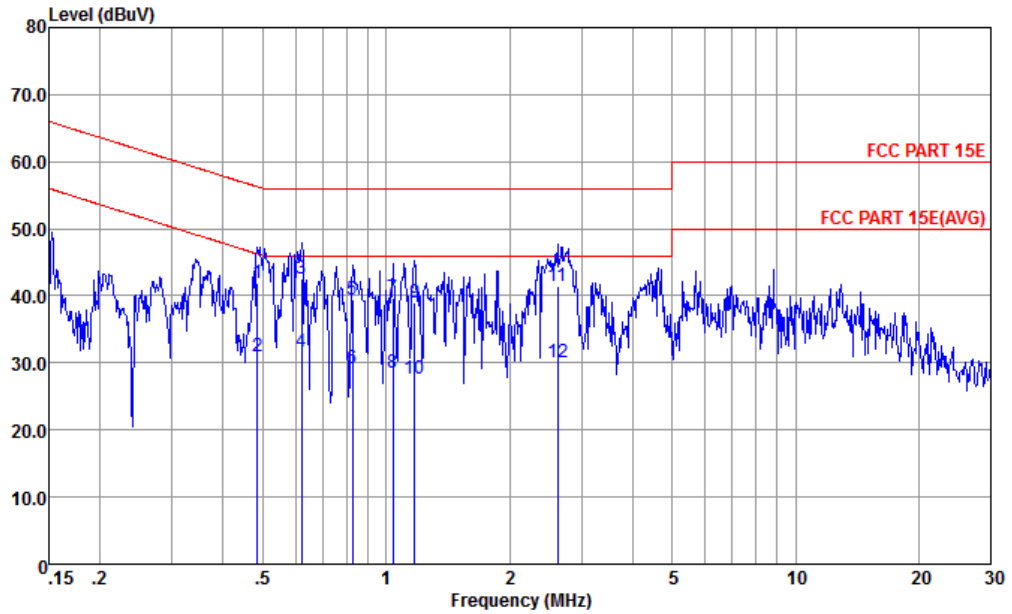


Site : CO01-KS
Condition : FCC PART 15E LISN-060105-L LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.502	42.84	-13.16	56.00	32.50	0.10	10.24	QP
2	0.502	33.24	-12.76	46.00	22.90	0.10	10.24	Average
3	0.564	42.24	-13.76	56.00	31.90	0.10	10.24	QP
4	0.564	34.24	-11.76	46.00	23.90	0.10	10.24	Average
5	1.037	43.56	-12.44	56.00	33.20	0.13	10.23	QP
6	1.037	33.86	-12.14	46.00	23.50	0.13	10.23	Average
7	1.374	42.87	-13.13	56.00	32.51	0.13	10.23	QP
8	1.374	33.87	-12.13	46.00	23.51	0.13	10.23	Average
9	1.654	43.87	-12.13	56.00	33.50	0.14	10.23	QP
10	1.654	35.17	-10.83	46.00	24.80	0.14	10.23	Average
11	1.829	40.97	-15.03	56.00	30.60	0.14	10.23	QP
12	1.829	31.57	-14.43	46.00	21.20	0.14	10.23	Average
13	2.765	47.49	-8.51	56.00	37.10	0.15	10.24	QP
14 *	2.765	37.99	-8.01	46.00	27.60	0.15	10.24	Average
15	4.622	42.54	-13.46	56.00	32.10	0.18	10.26	QP
16	4.622	33.64	-12.36	46.00	23.20	0.18	10.26	Average



Test Engineer :	Amos Zhang	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-KS
 Condition : FCC PART 15E LISN-060105-N NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.484	41.95	-14.32	56.27	31.60	0.11	10.24	QP
2	0.484	30.95	-15.32	46.27	20.60	0.11	10.24	Average
3 *	0.621	42.65	-13.35	56.00	32.30	0.11	10.24	QP
4	0.621	31.65	-14.35	46.00	21.30	0.11	10.24	Average
5	0.826	39.55	-16.45	56.00	29.20	0.11	10.24	QP
6	0.826	29.15	-16.85	46.00	18.80	0.11	10.24	Average
7	1.037	39.55	-16.45	56.00	29.20	0.12	10.23	QP
8	1.037	28.55	-17.45	46.00	18.20	0.12	10.23	Average
9	1.172	38.96	-17.04	56.00	28.61	0.12	10.23	QP
10	1.172	27.66	-18.34	46.00	17.31	0.12	10.23	Average
11	2.622	41.48	-14.52	56.00	31.09	0.15	10.24	QP
12	2.622	29.98	-16.02	46.00	19.59	0.15	10.24	Average

Note:

- Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
- Over Limit(dB) = Level(dBμV) – Limit Line(dBμV)



Appendix C. Radiated Spurious Emission

Band 1 - 5150~5250MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT40 CH 38 5190MHz		5147.52	58.36	-15.64	74	44.49	35.03	10.65	31.81	174	76	P	H
		5149.98	49.71	-4.29	54	35.84	35.03	10.65	31.81	174	76	A	H
		5188	100.7	-----	-----	86.77	35.06	10.69	31.82	174	76	P	H
		5188	93.28	-----	-----	79.35	35.06	10.69	31.82	174	76	A	H
		5367.24	54.33	-19.67	74	40.23	35.24	10.79	31.93	174	76	P	H
		5374.08	45.4	-8.6	54	31.32	35.24	10.79	31.95	174	76	A	H
		5147.04	60.64	-13.36	74	46.77	35.03	10.65	31.81	272	360	P	V
		5149.28	50.99	-3.01	54	37.12	35.03	10.65	31.81	272	360	A	V
		5194	102.45	-----	-----	88.5	35.06	10.71	31.82	272	360	P	V
		5194	94.97	-----	-----	81.02	35.06	10.71	31.82	272	360	A	V
		5386.14	54.64	-19.36	74	40.53	35.26	10.8	31.95	272	360	P	V
	5356.8	45.38	-8.62	54	31.31	35.22	10.78	31.93	272	360	A	V	
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT40 CH 38 5190MHz		10380	45.86	-22.44	68.3	52.81	38.33	15.39	60.67	300	0	P	H
		10380	46.28	-22.02	68.3	53.23	38.33	15.39	60.67	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 2 - 5250~5350MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 64 5320MHz		5351.5	61.37	-12.63	74	47.3	35.22	10.78	31.93	127	67	P	H
		5350	50.15	-3.85	54	36.08	35.22	10.78	31.93	127	67	A	H
		5320	108.3	-----	-----	94.24	35.19	10.77	31.9	127	67	P	H
		5320	100.94	-----	-----	86.88	35.19	10.77	31.9	127	67	A	H
		5352.6	61.25	-12.75	74	47.18	35.22	10.78	31.93	276	355	P	V
		5350.1	49.92	-4.08	54	35.85	35.22	10.78	31.93	276	355	A	V
		5314	109.29	-----	-----	95.23	35.19	10.77	31.9	276	355	P	V
		5314	101.42	-----	-----	87.36	35.19	10.77	31.9	276	355	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 2 5250~5350MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 64 5320MHz		10640	45.85	-28.15	74	52.49	38.41	15.57	60.62	300	0	P	H
		10640	45.99	-28.01	74	52.63	38.41	15.57	60.62	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 3 - 5470~5725MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 140 5700MHz		5725.56	62.17	-6.13	68.3	47.34	35.62	11.25	32.04	100	65	P	H
		5698	108.14	-----	-----	93.4	35.58	11.22	32.06	100	65	P	H
		5698	100.97	-----	-----	86.23	35.58	11.22	32.06	100	65	A	H
		5727.4	61.9	-6.4	68.3	47.07	35.62	11.25	32.04	266	353	P	V
		5704	106.94	-----	-----	92.19	35.58	11.23	32.06	266	353	P	V
		5704	99.78	-----	-----	85.03	35.58	11.23	32.06	266	353	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 3 - 5470~5725MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 140 5700MHz		11400	46.97	-27.03	74	52.53	38.67	16.22	60.45	300	0	P	H
												P	V
		11400	47.54	-26.46	74	53.1	38.67	16.22	60.45	100	0		
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz
WIFI 802.11n HT40 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT40 LF		30.97	21.64	-18.36	40	28.26	24.04	0.59	31.25	-	-	P	H
		155.13	17.93	-25.57	43.5	30.99	16.25	2.01	31.32	-	-	P	H
		186.17	21.36	-22.14	43.5	35.36	15.12	2.21	31.33	-	-	P	H
		289.96	25.2	-20.8	46	34.68	19.35	2.76	31.59	-	-	P	H
		762.35	28.39	-17.61	46	29.31	25.73	4.49	31.14	-	-	P	H
		899.12	28.73	-17.27	46	28.3	26.69	4.89	31.15	-	-	P	H
		30	27.7	-12.3	40	33.75	24.6	0.58	31.23	-	-	P	V
		53.28	20.82	-19.18	40	37.62	13.62	0.93	31.35	-	-	P	V
		281.23	20.49	-25.51	46	29.93	19.39	2.71	31.54	-	-	P	V
		485.9	24	-22	46	28.55	23.17	3.58	31.3	-	-	P	V
		765.26	29.14	-16.86	46	30.06	25.73	4.5	31.15	-	-	P	V
	953.44	30.53	-15.47	46	28.89	26.94	5.03	30.33	-	-	P	V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 165 5825MHz		5850	59.6	-62.7	122.3	44.37	35.8	11.36	31.93	263	360	P	H
		5858.8	58.08	-51.75	109.83	42.85	35.8	11.38	31.95	263	360	P	H
		5901.6	56.13	-29.45	85.58	40.91	35.78	11.41	31.97	263	360	P	H
		5965.2	56.96	-11.34	68.3	41.76	35.76	11.47	32.03	263	360	P	H
		5824	109.61	-----	-----	94.46	35.75	11.35	31.95	263	360	P	H
		5824	101.62	-----	-----	86.47	35.75	11.35	31.95	263	360	A	H
		5850	56.65	-65.65	122.3	41.42	35.8	11.36	31.93	253	360	P	V
		5858.4	56.4	-53.55	109.95	41.17	35.8	11.38	31.95	253	360	P	V
		5914	56.41	-20	76.41	41.19	35.78	11.43	31.99	253	360	P	V
		5987.2	56.88	-11.42	68.3	41.7	35.75	11.48	32.05	253	360	P	V
		5824	105.8	-----	-----	90.65	35.75	11.35	31.95	253	360	P	V
		5824	98.01	-----	-----	82.86	35.75	11.35	31.95	253	360	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 4 5725~5850MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a CH 165 5825MHz		11653	47.02	-26.98	74	52.14	38.73	16.47	60.32	300	0	P	H
		11653	48.63	-25.37	74	53.75	38.73	16.47	60.32	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

WIFI 802.11a (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11a LF		30	22.75	-17.25	40	28.8	24.6	0.58	31.23	-	-	P	H
		159.98	18.15	-25.35	43.5	31.44	16	2.03	31.32	-	-	P	H
		185.2	22.99	-20.51	43.5	36.97	15.15	2.2	31.33	-	-	P	H
		288.99	25.75	-20.25	46	35.23	19.35	2.75	31.58	-	-	P	H
		310.33	26.6	-19.4	46	35.88	19.51	2.85	31.64	-	-	P	H
		864.2	28.79	-17.21	46	28.78	26.49	4.79	31.27	-	-	P	H
		30.97	25.59	-14.41	40	32.21	24.04	0.59	31.25	-	-	P	V
		186.17	16.79	-26.71	43.5	30.79	15.12	2.21	31.33	-	-	P	V
		284.14	20	-26	46	29.44	19.38	2.73	31.55	-	-	P	V
		463.59	21.99	-24.01	46	26.95	22.82	3.5	31.28	-	-	P	V
		564.47	25.28	-20.72	46	28.05	24.91	3.86	31.54	-	-	P	V
		757.5	28.41	-17.59	46	29.34	25.72	4.48	31.13	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	Peak or Average
H/V	Horizontal or Vertical



A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
3. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)
= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)
= 55.45 (dBμV/m)
2. Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)
= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)
= 43.54 (dBμV/m)
2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)
= 43.54(dBμV/m) – 54(dBμV/m)
= -10.46(dB)

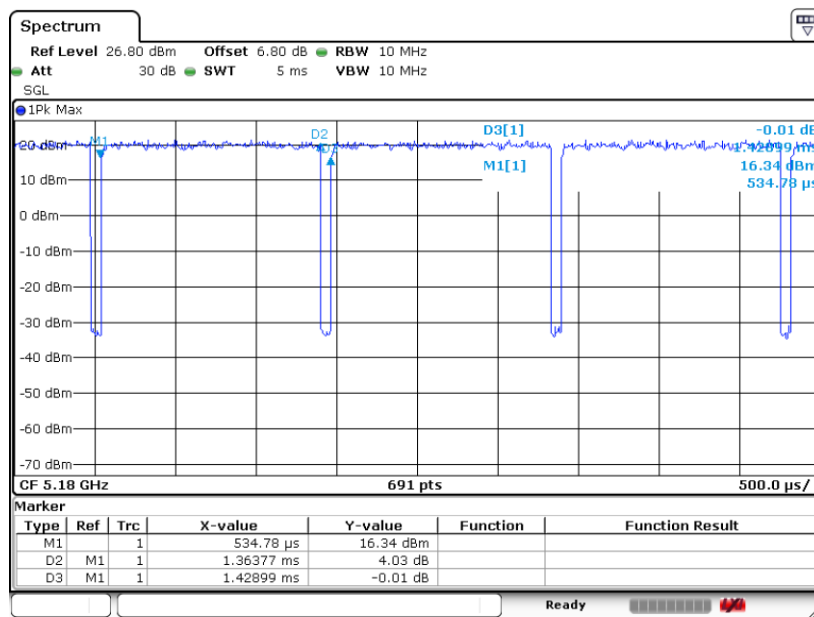
Both peak and average measured complies with the limit line, so test result is “PASS”.



Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	95.44	1.364	0.733	0.75KHz
802.11n HT20	95.14	1.277	0.783	0.82KHz
802.11n HT40	90.70	0.636	1.572	1.6KHz
802.11ac VHT80	97.69	3.371	0.297	0.3KHz

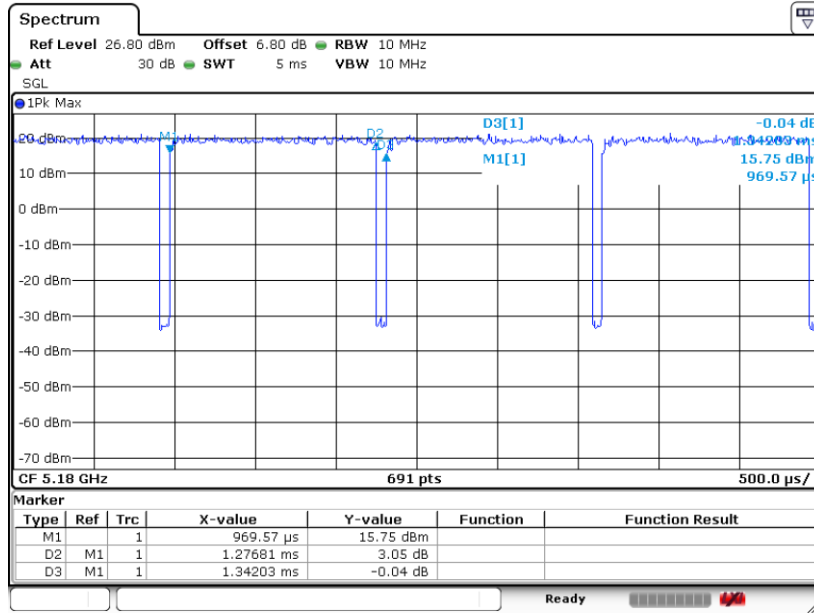
802.11a



Date: 6.JAN.2022 21:42:36

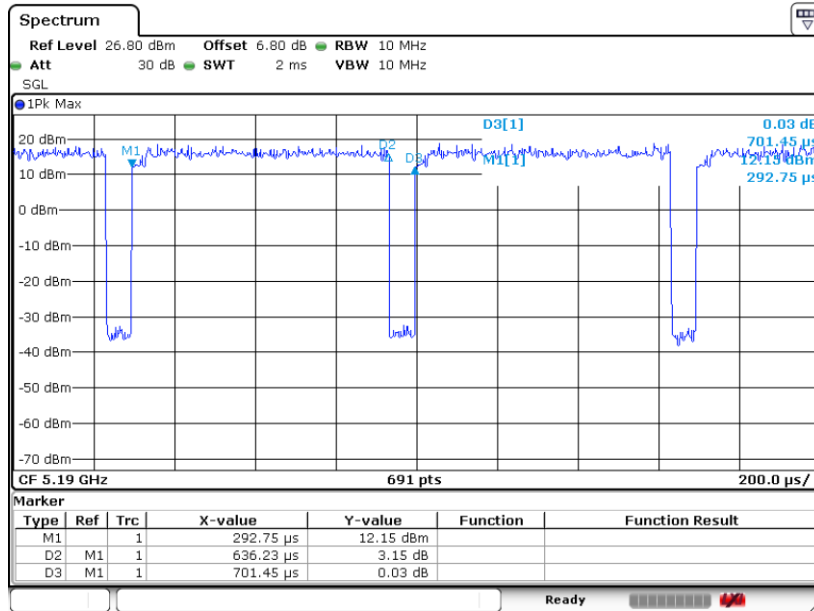


802.11n HT20



Date: 6.JAN.2022 22:04:56

802.11n HT40



Date: 6.JAN.2022 22:35:08