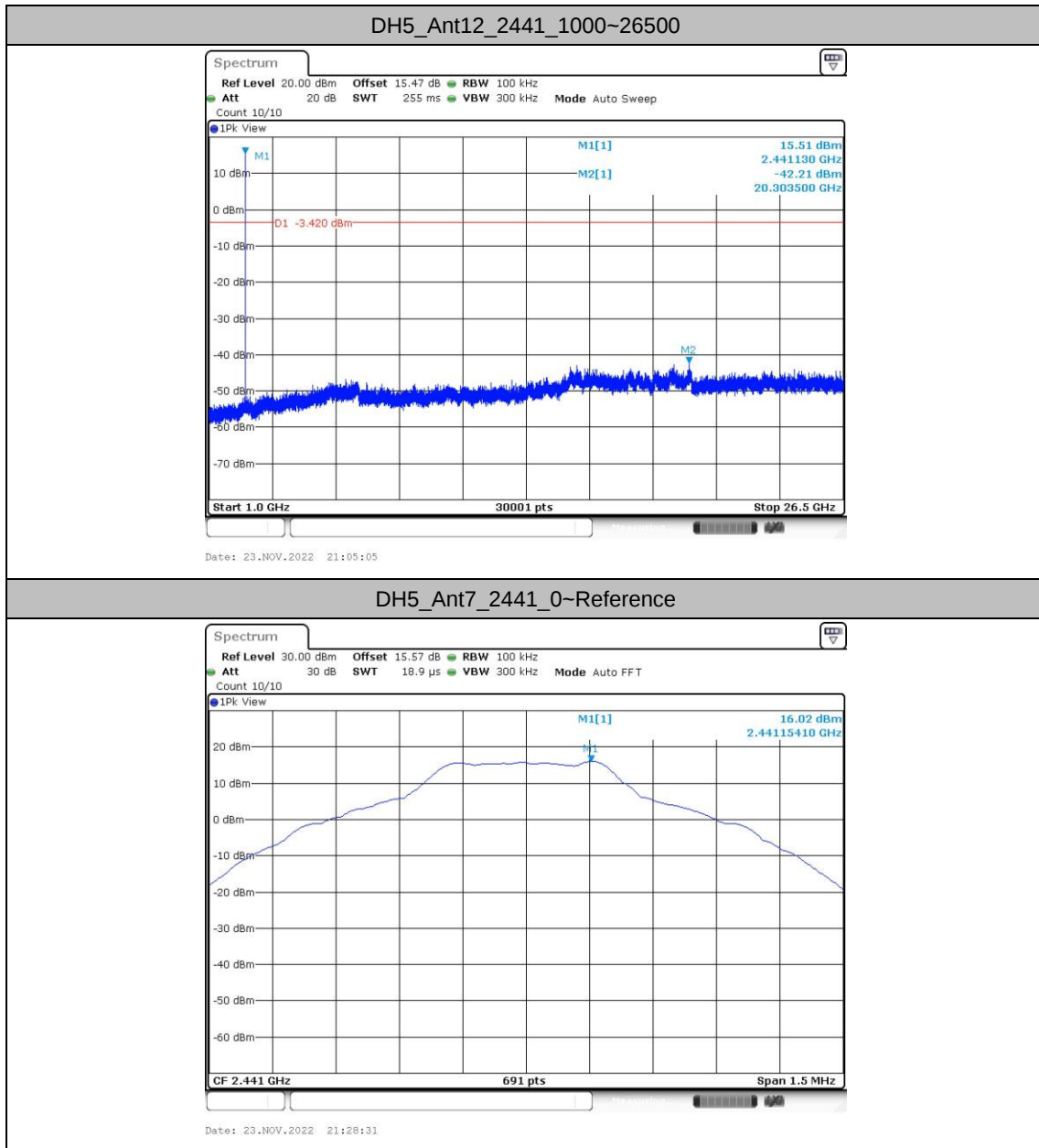
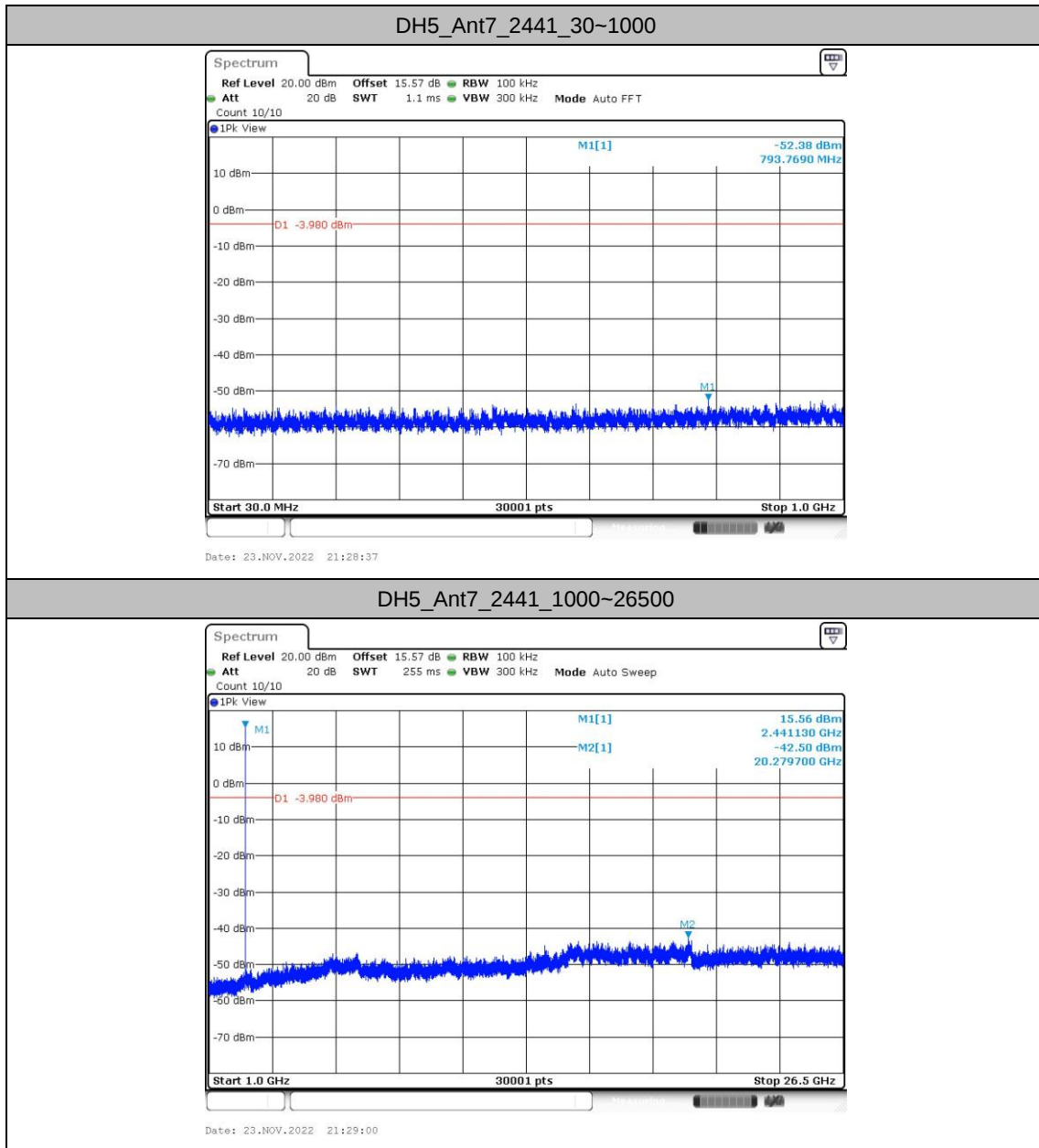
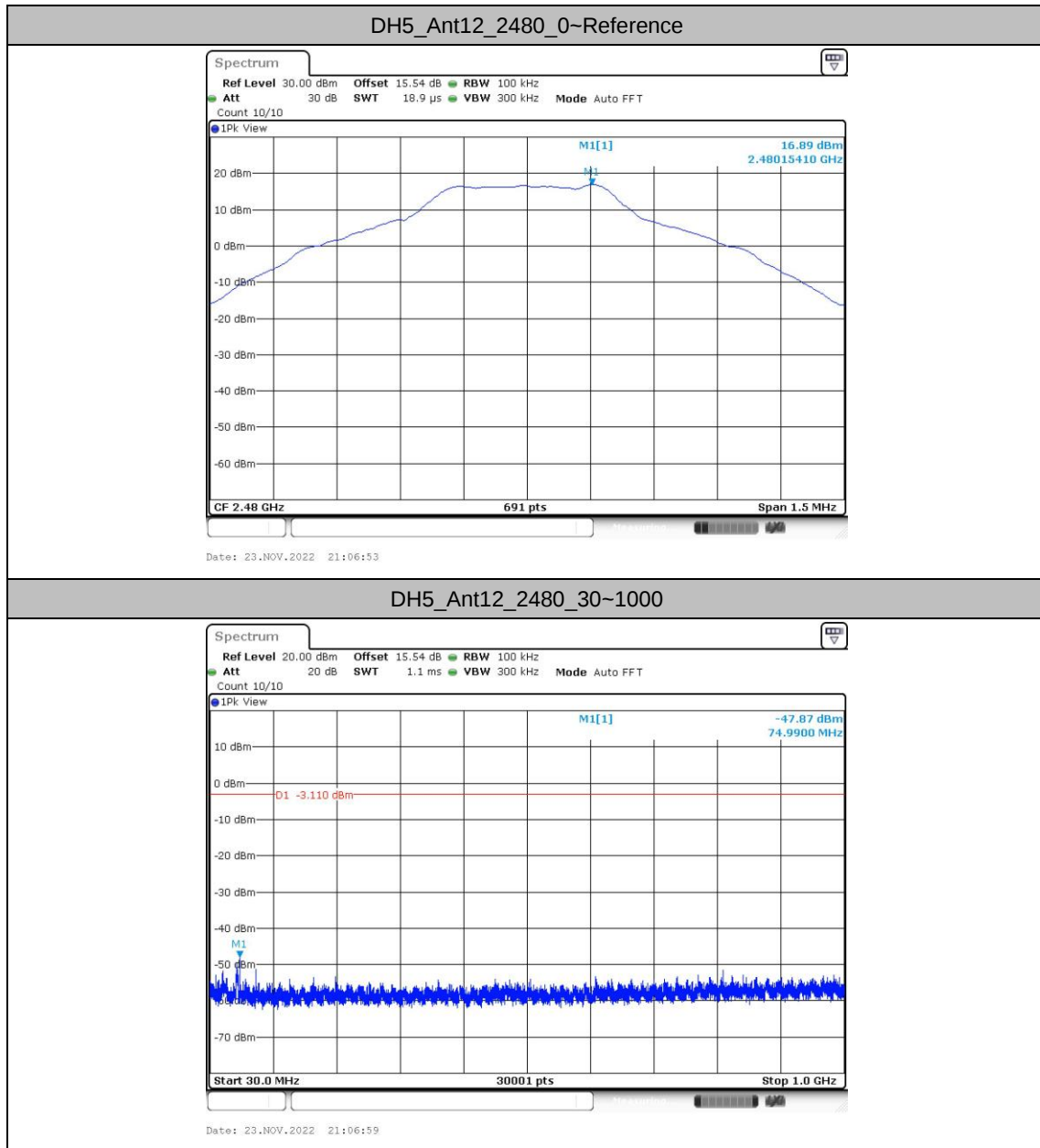
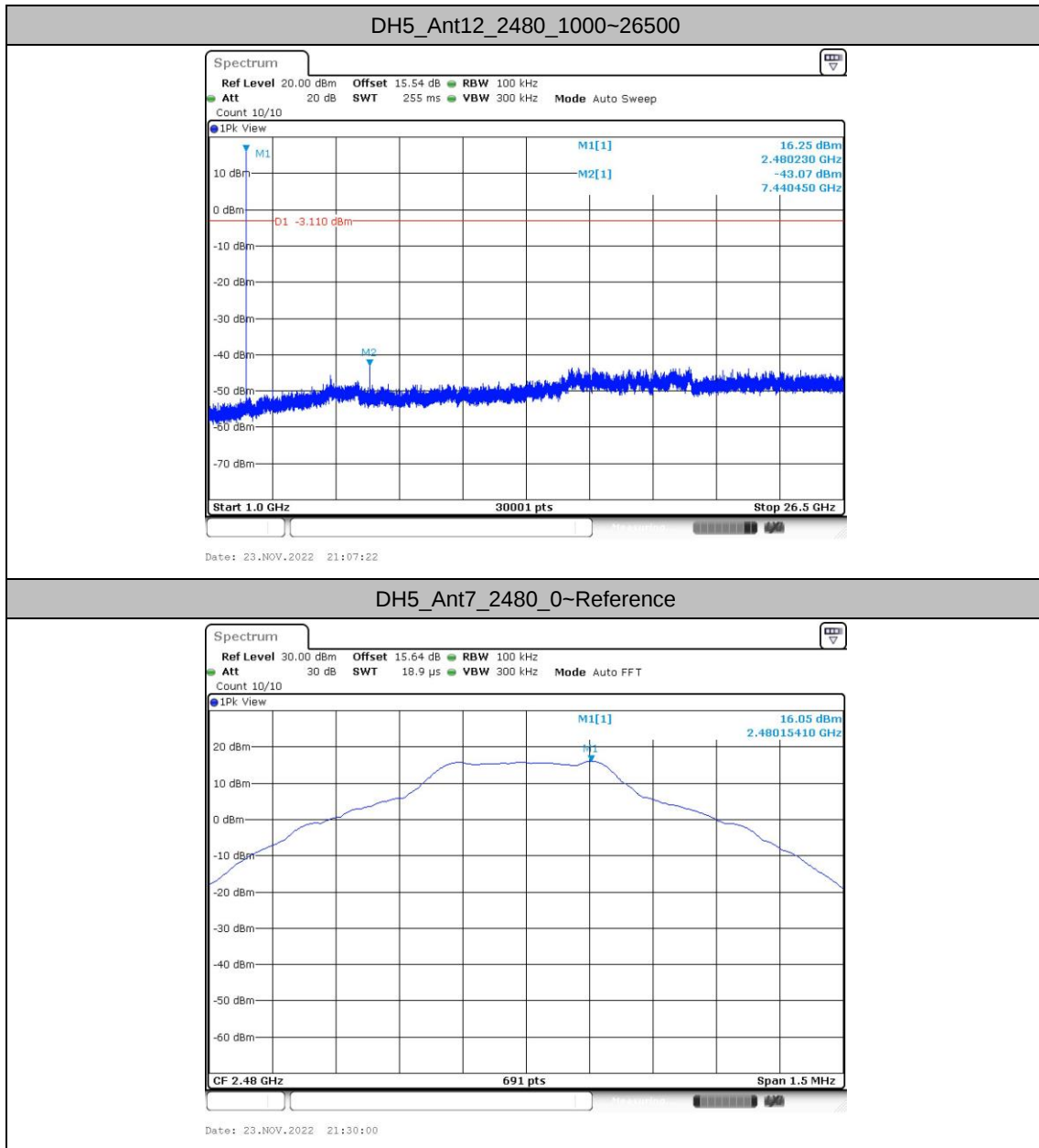
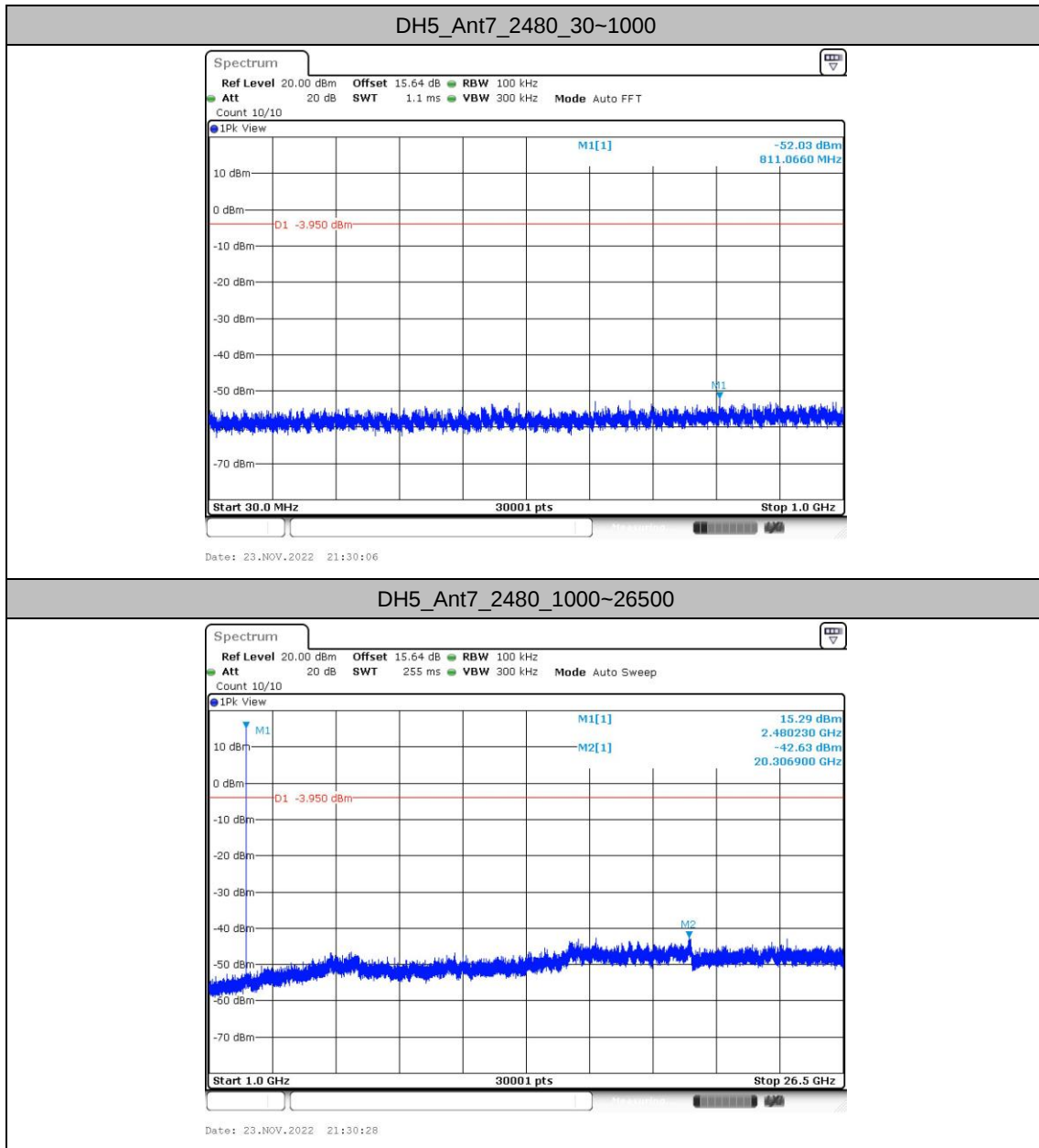


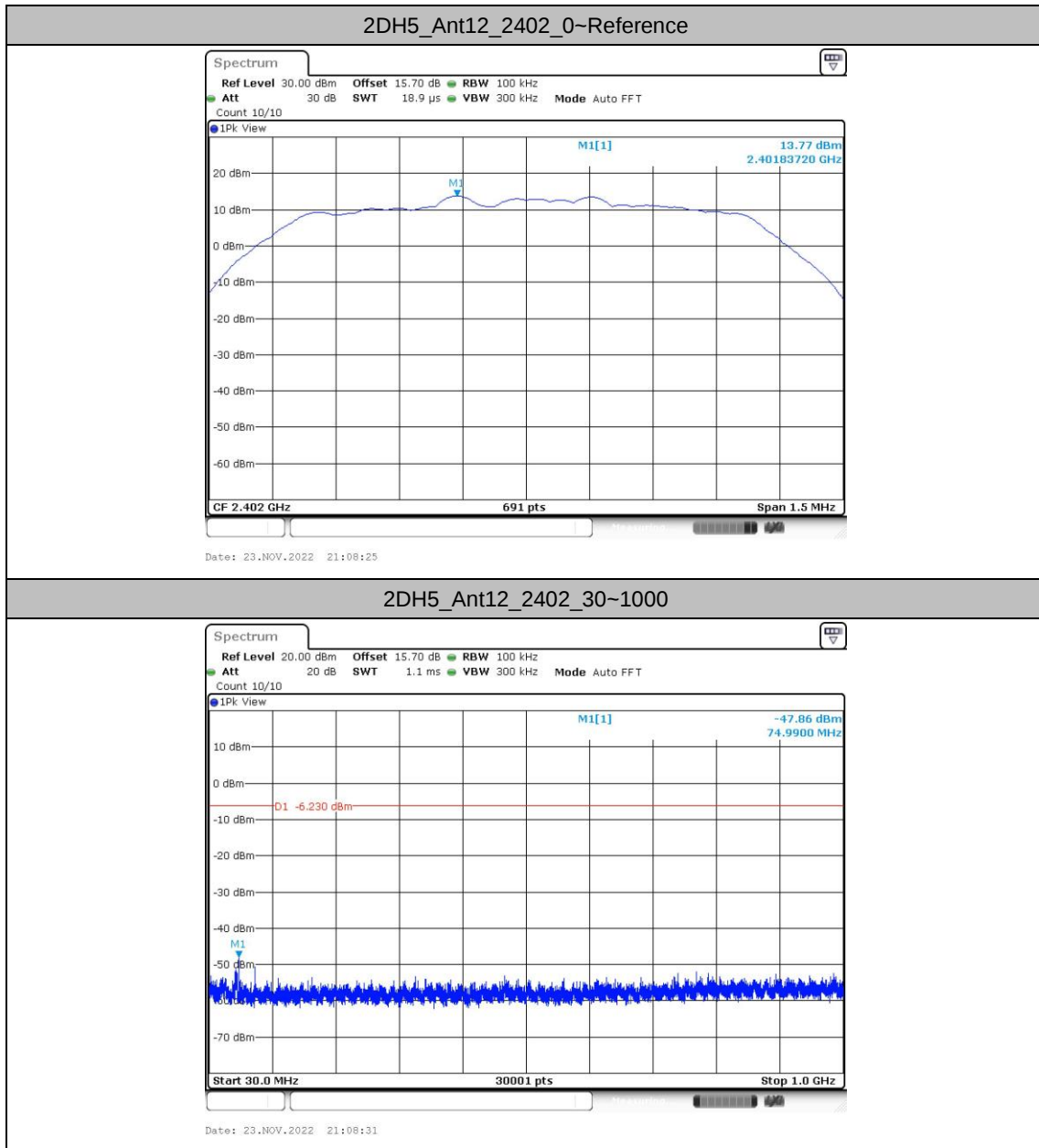


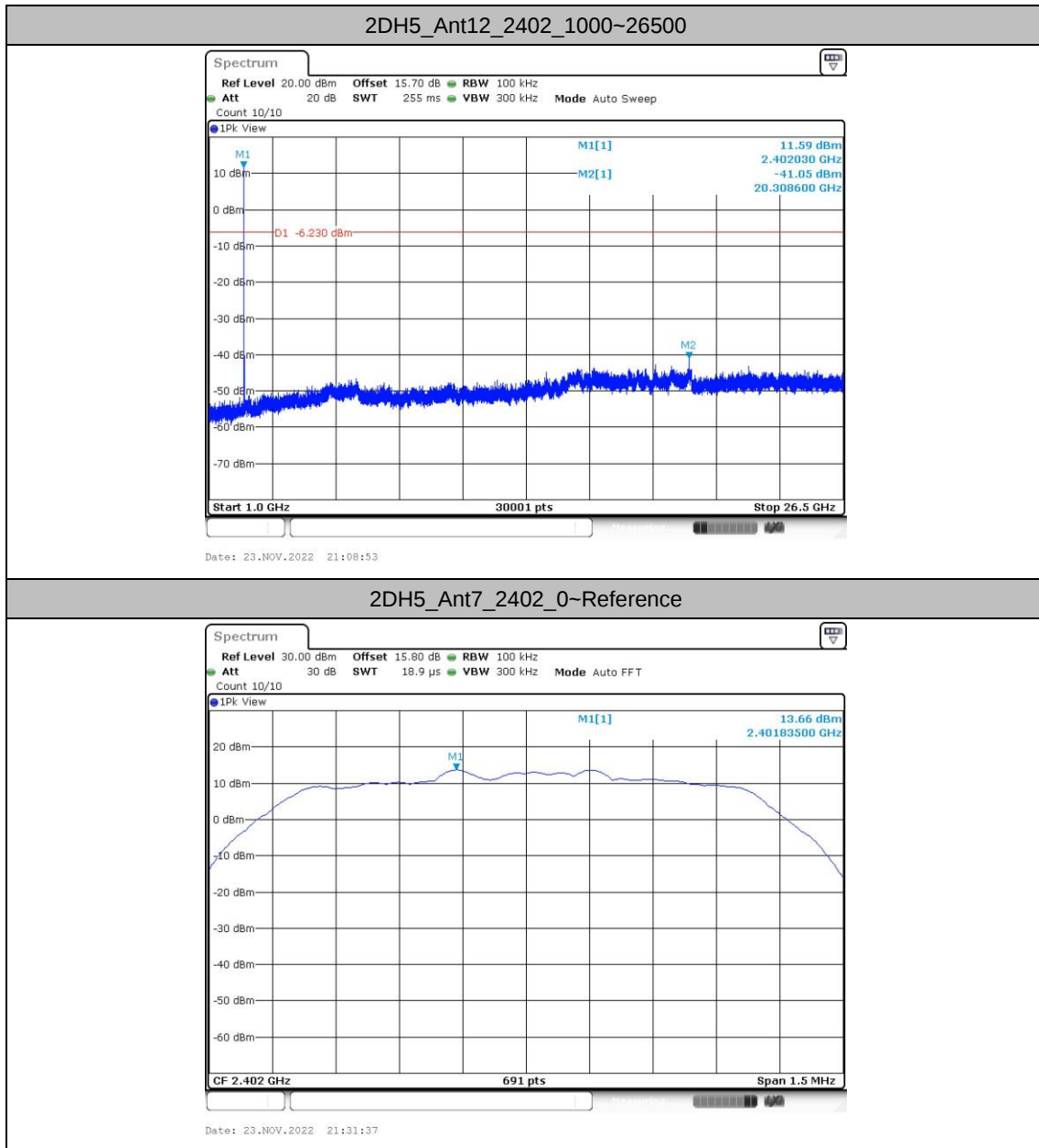


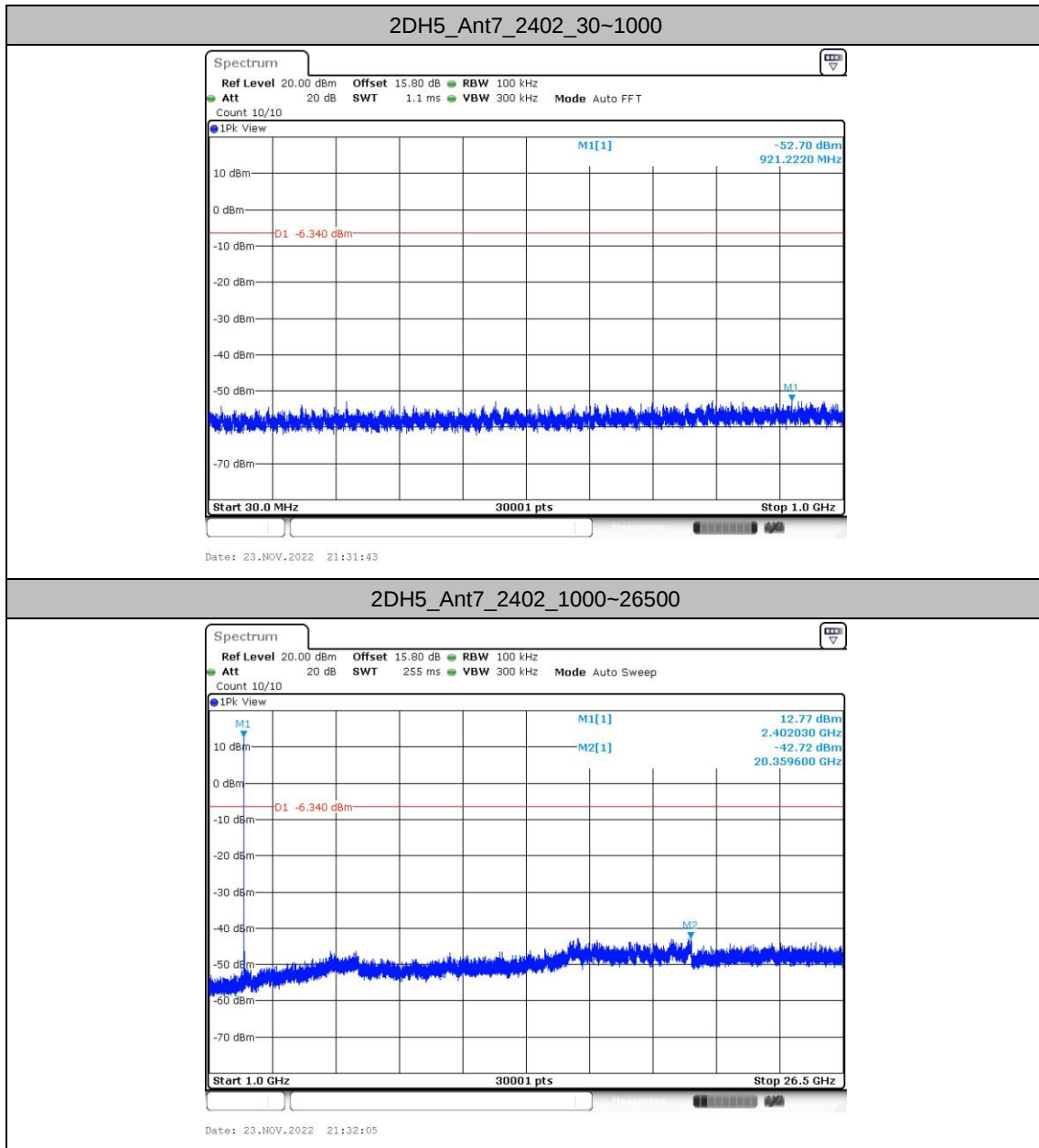


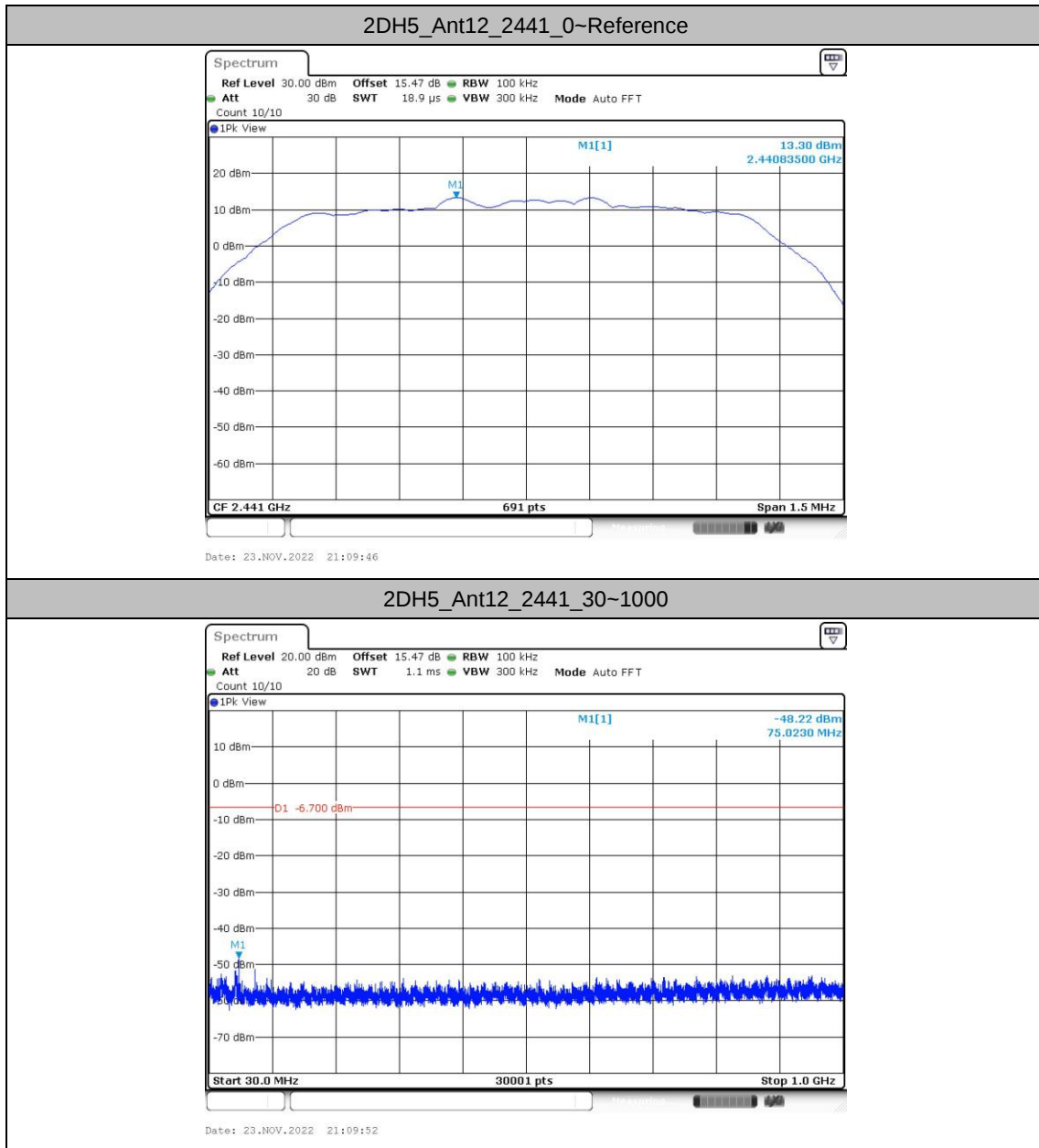


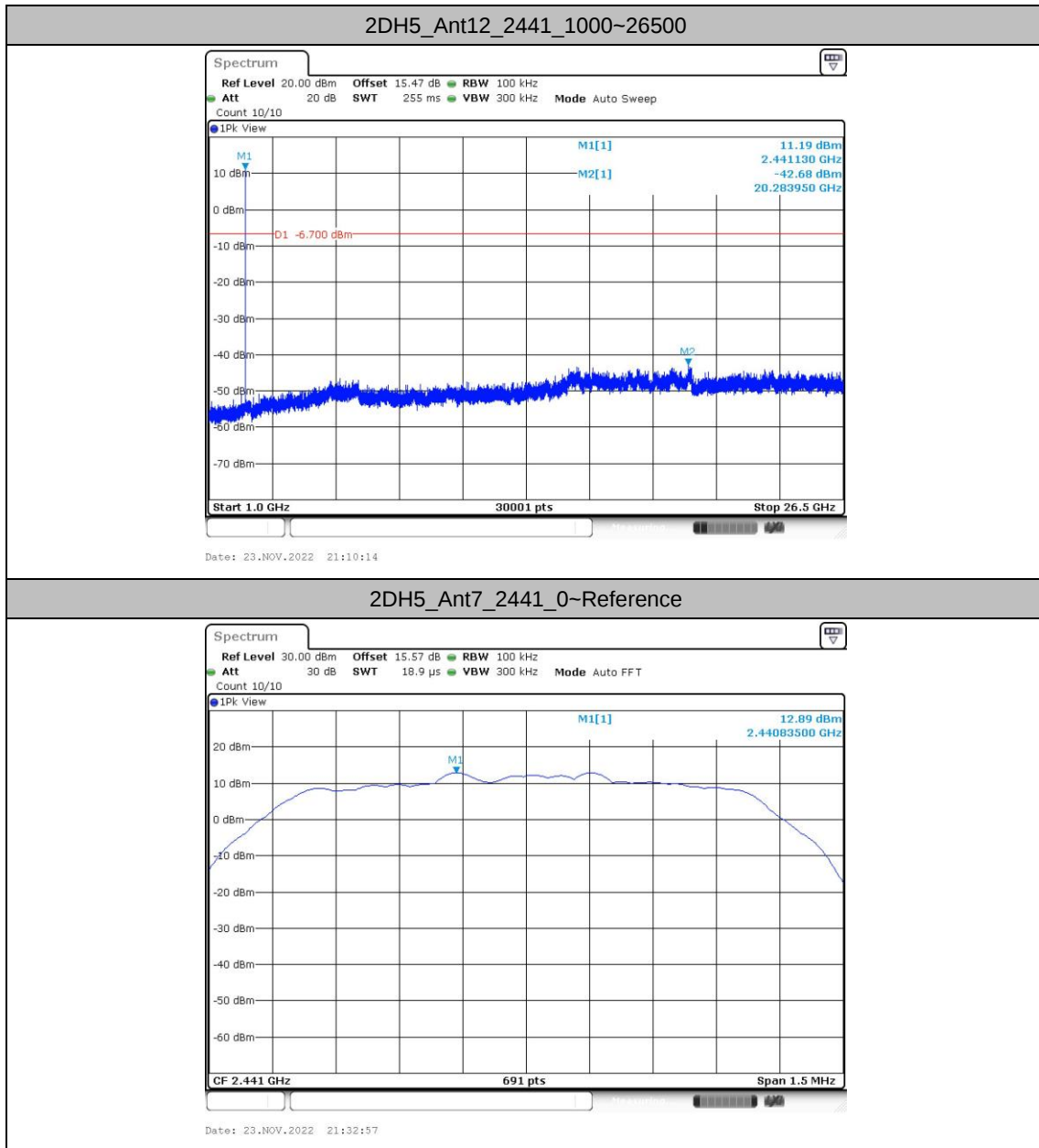


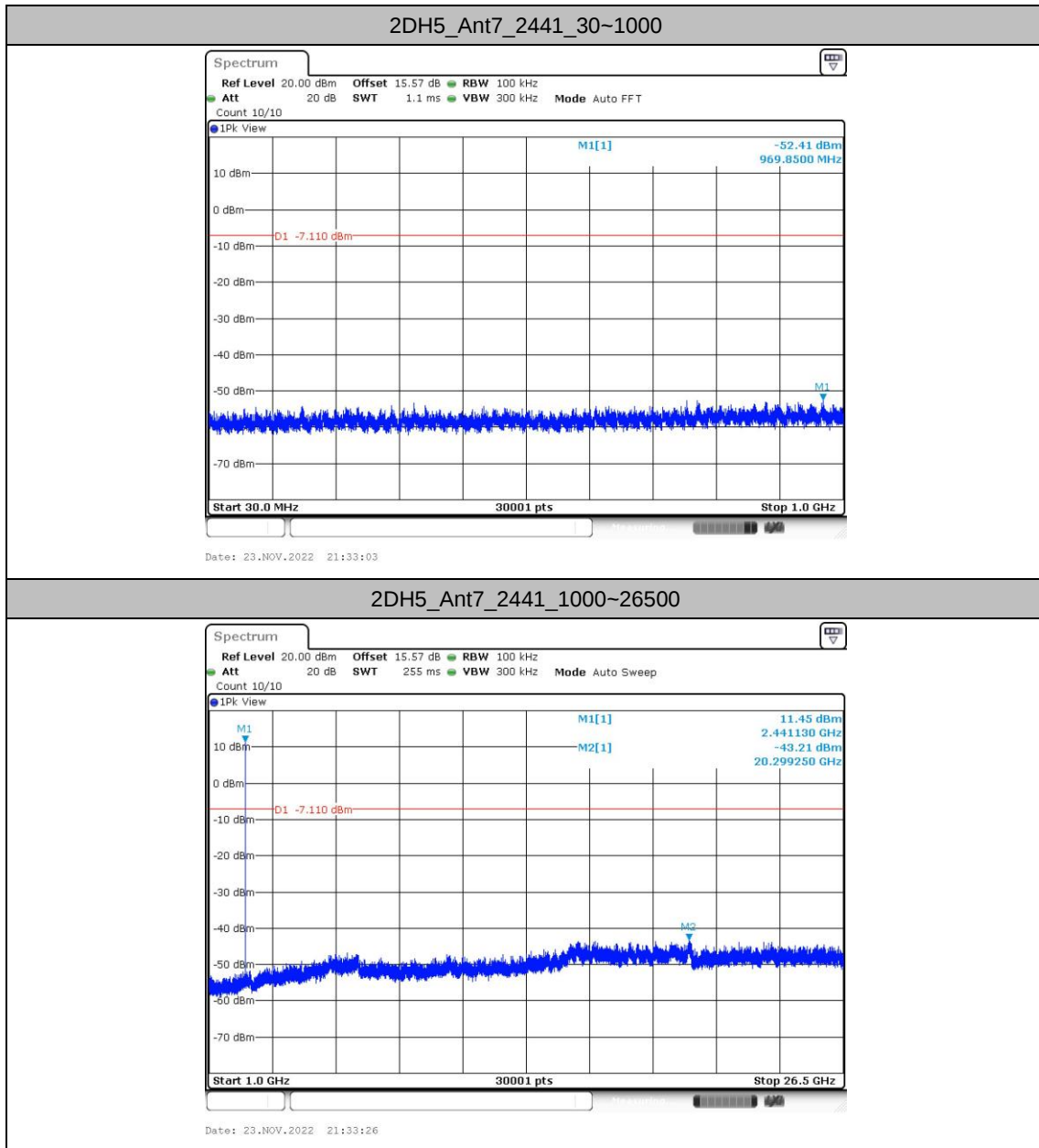


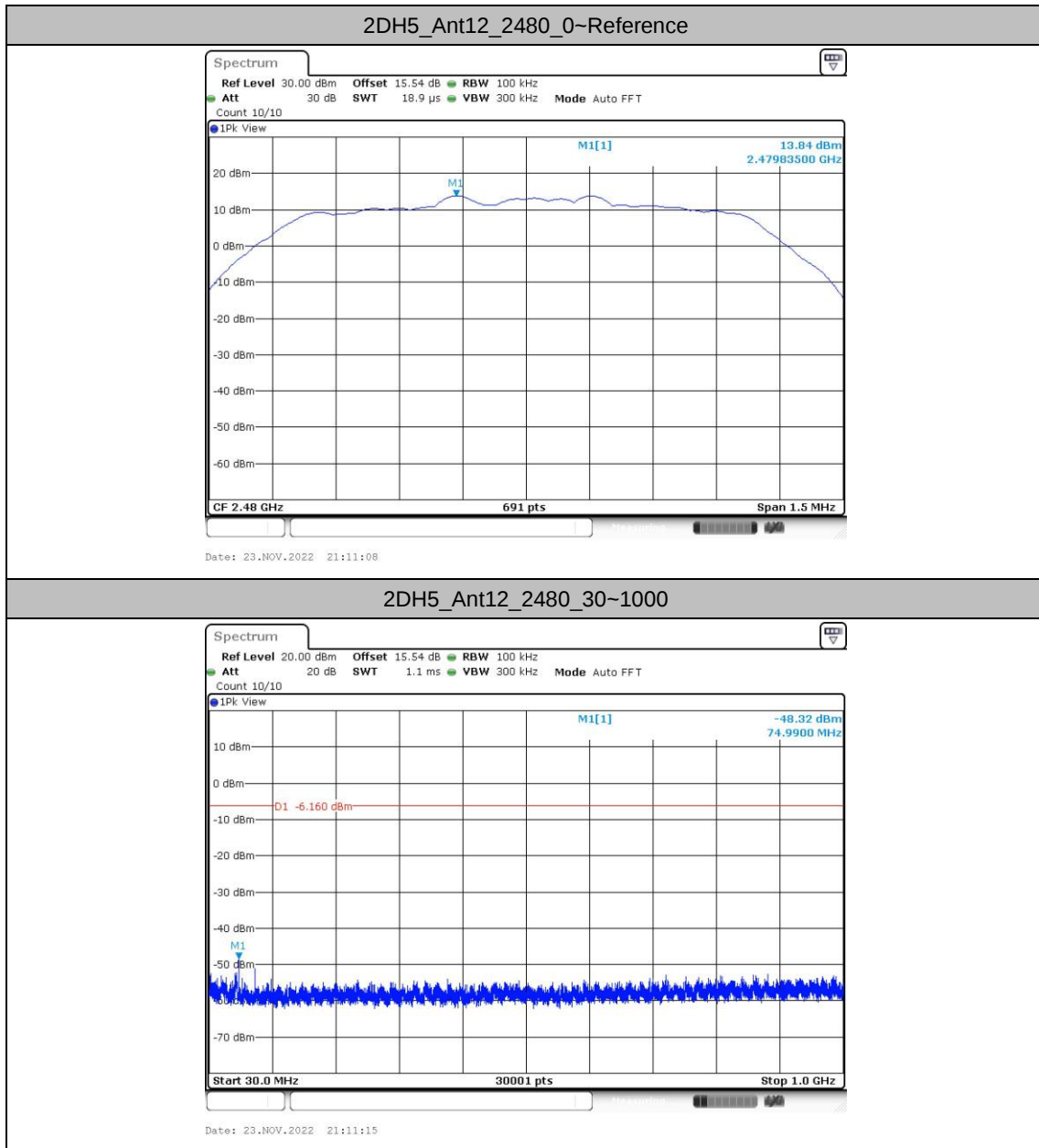


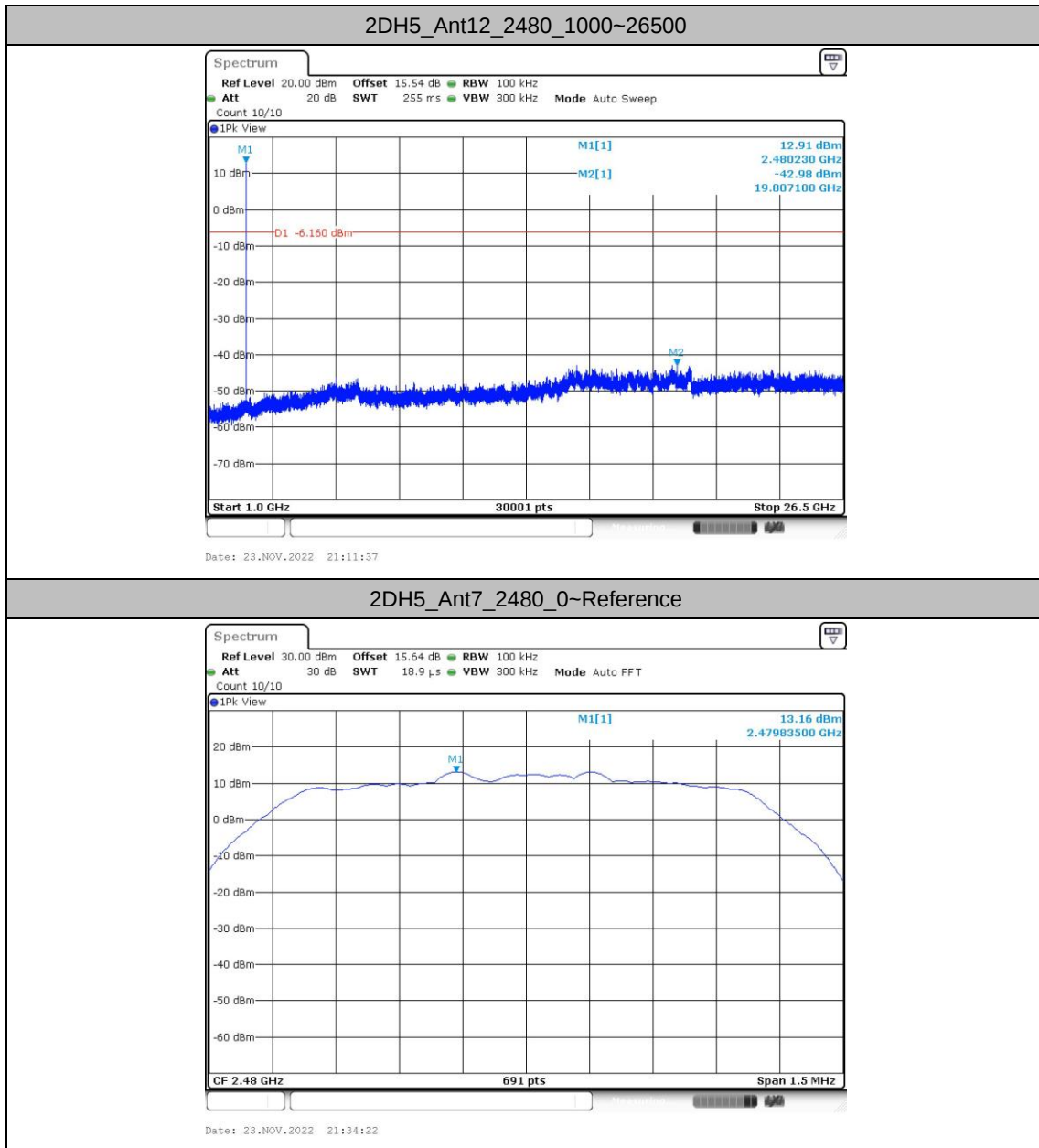


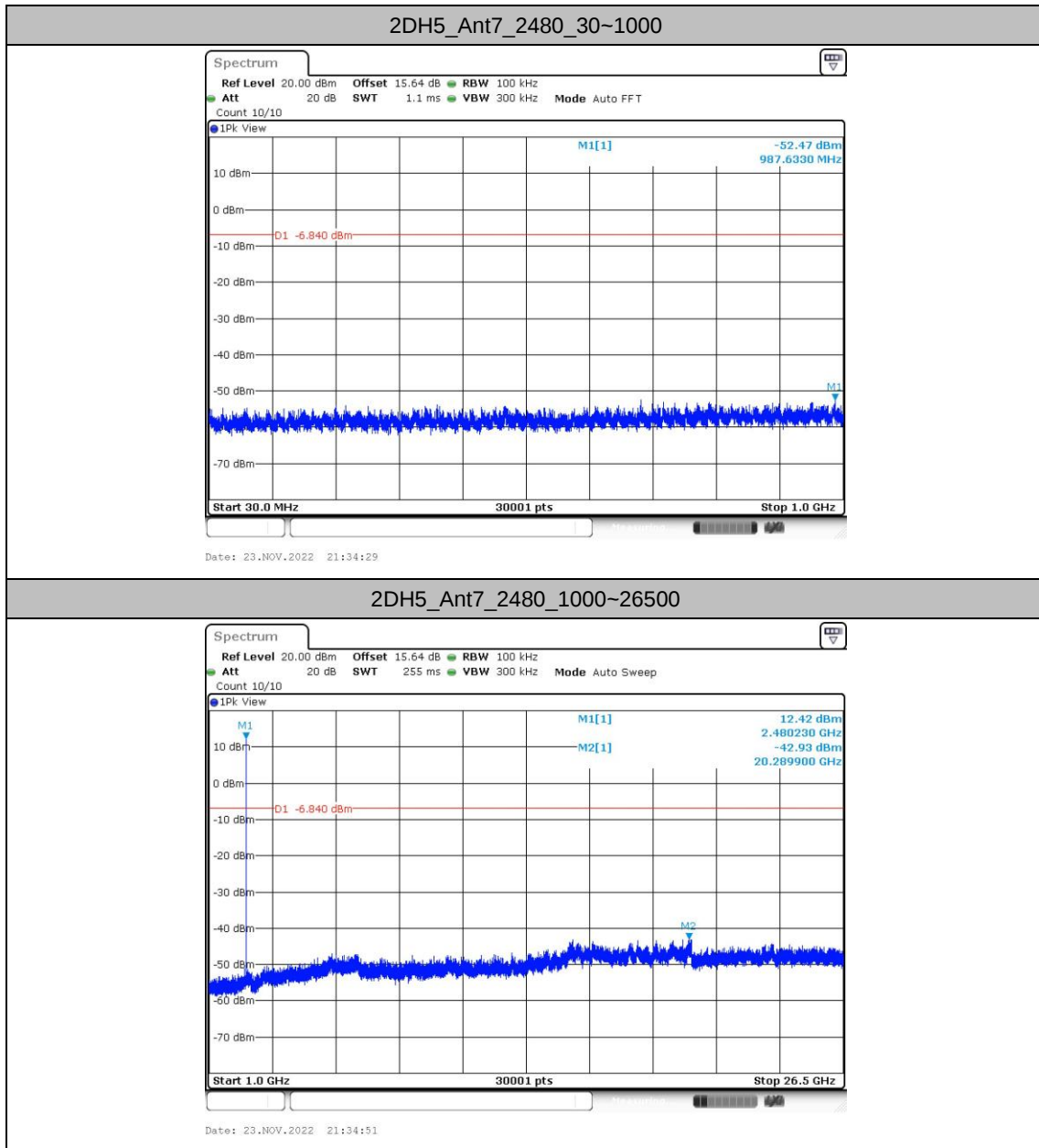


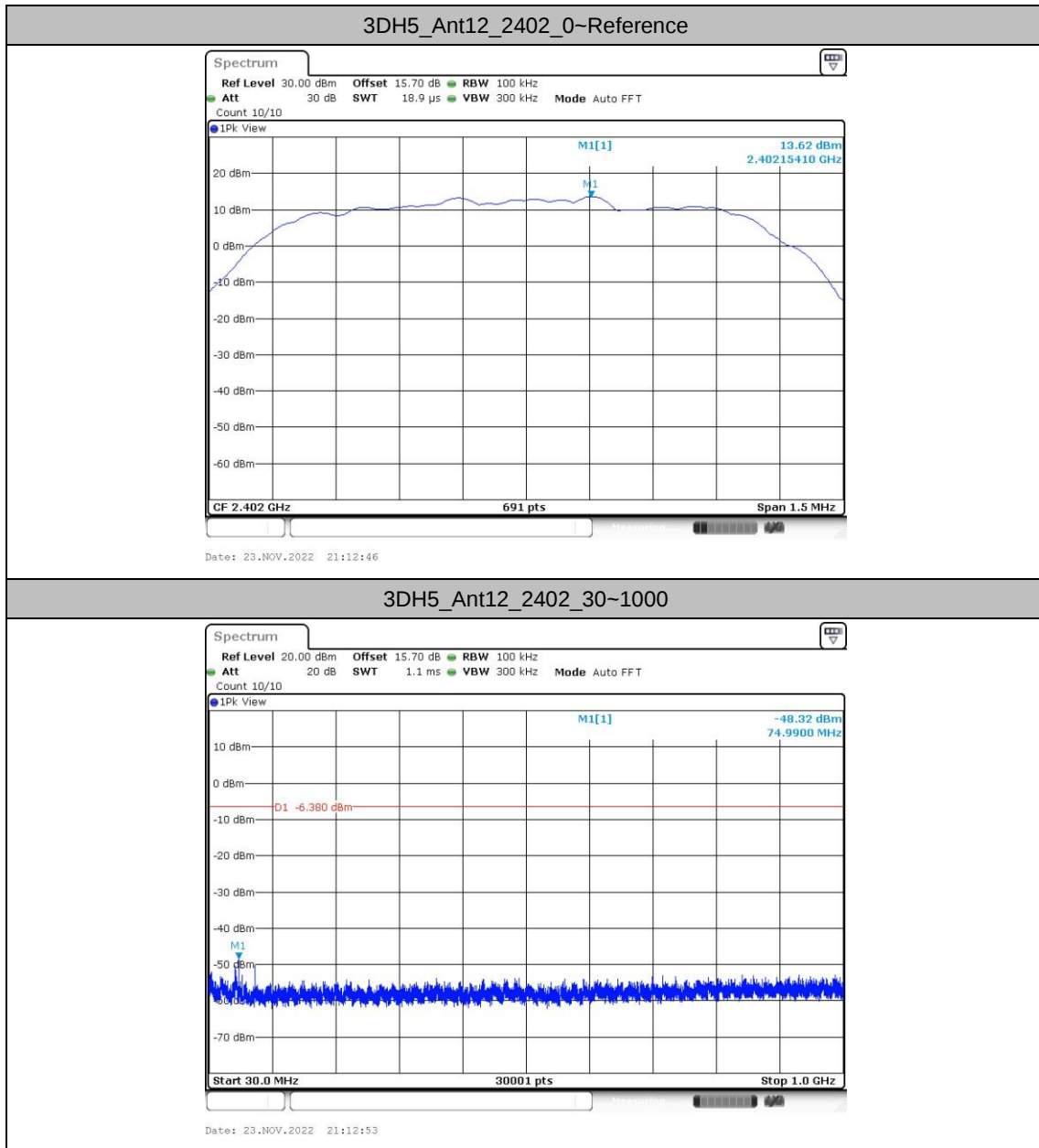


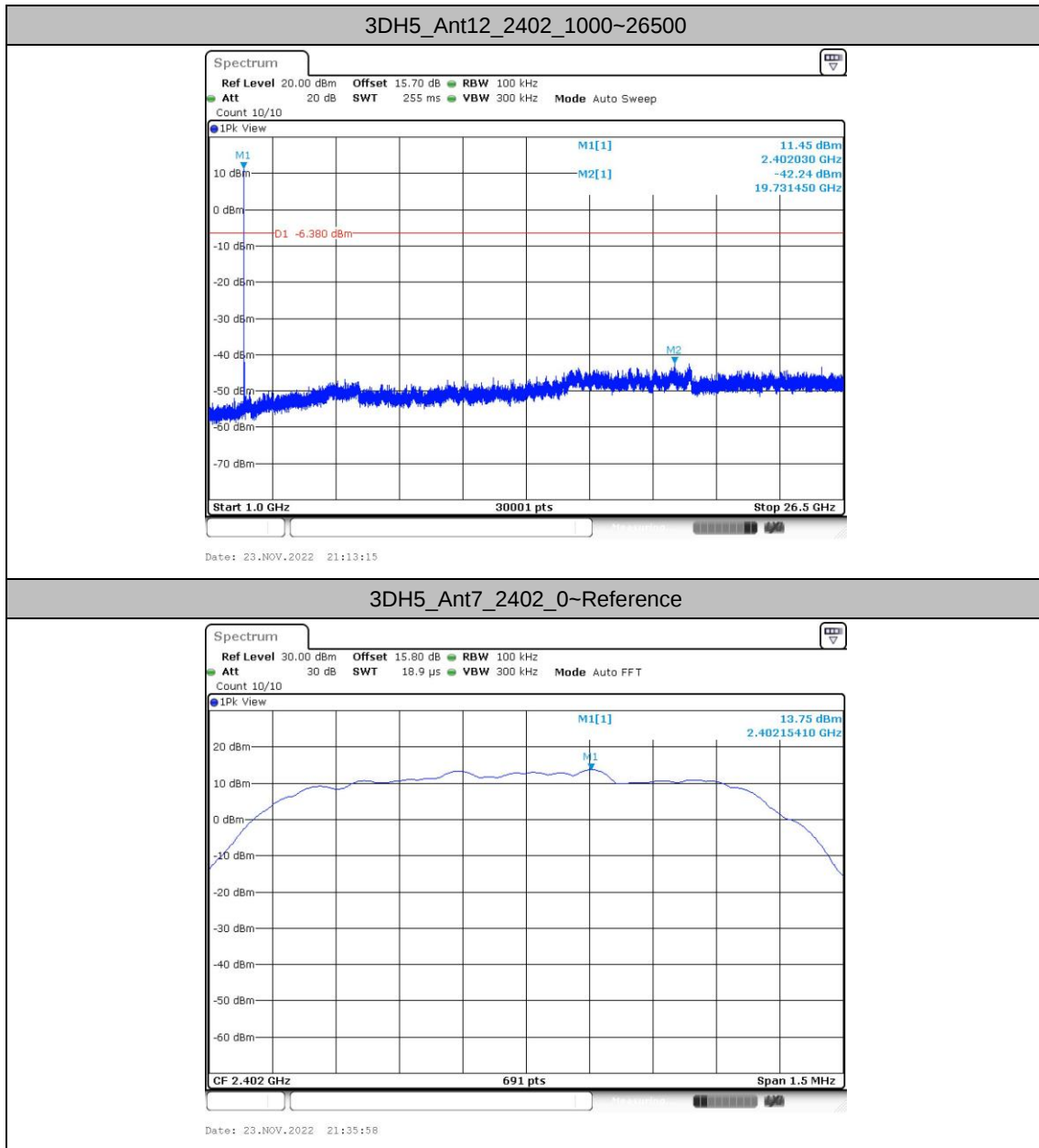


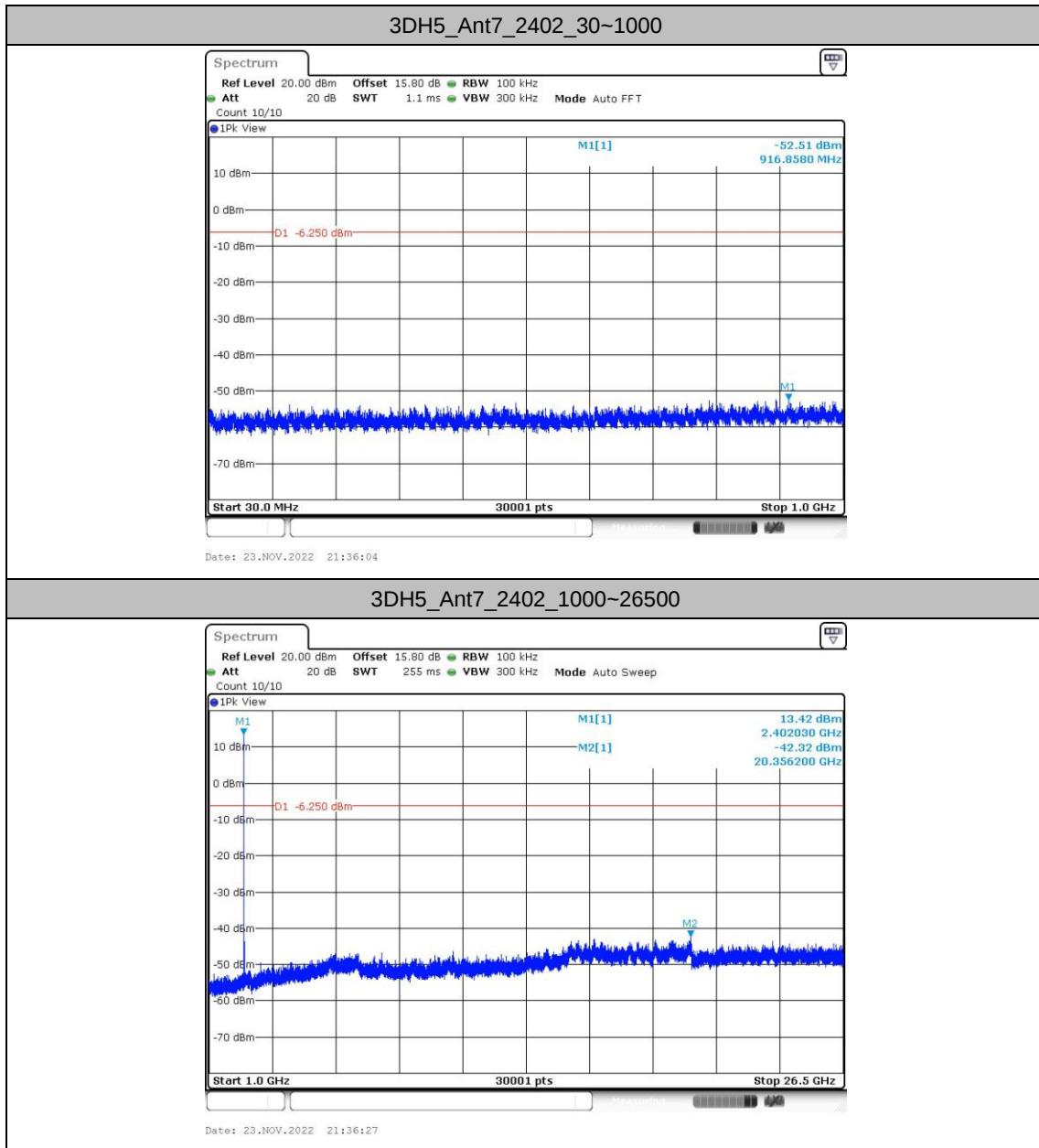


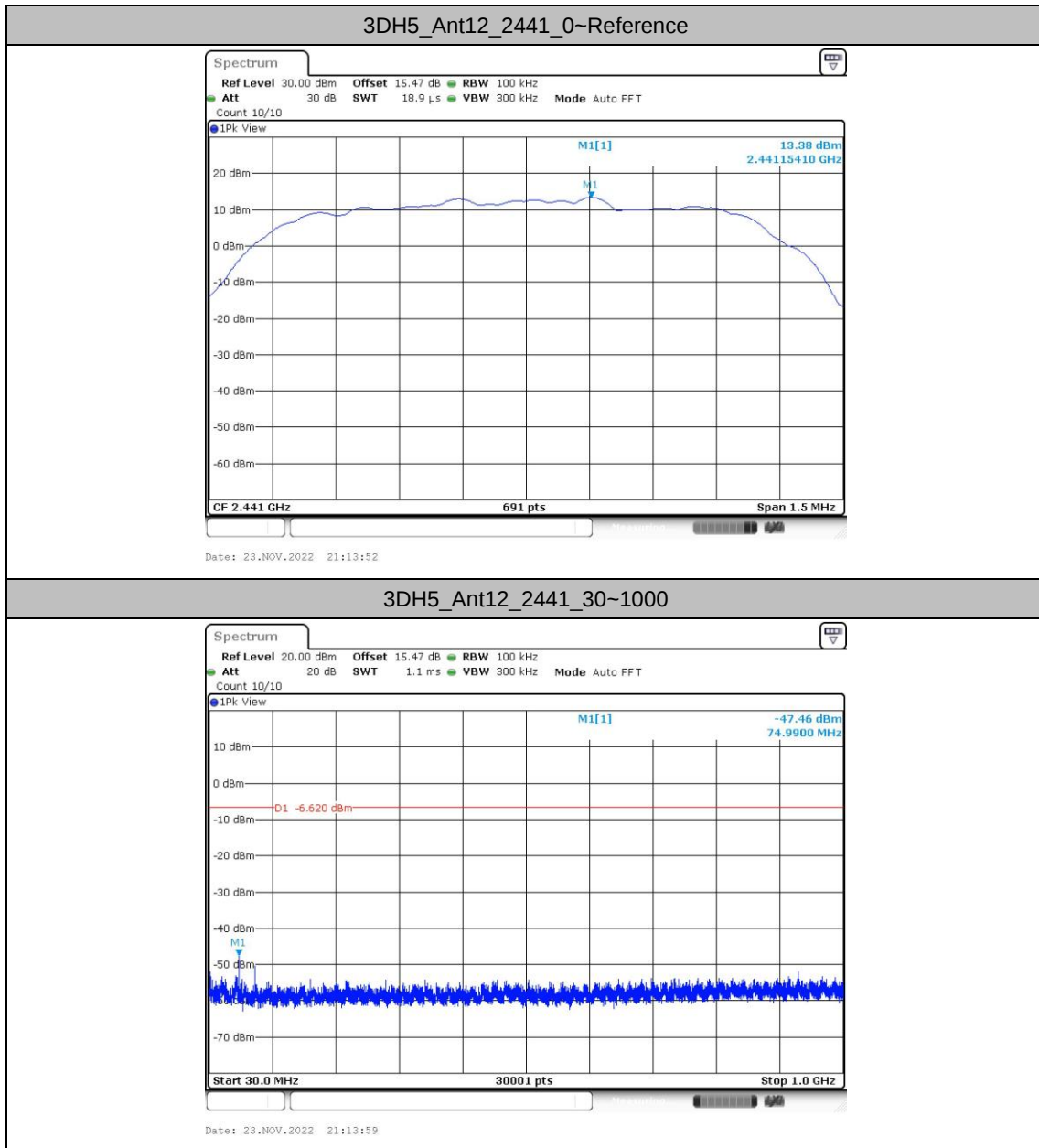


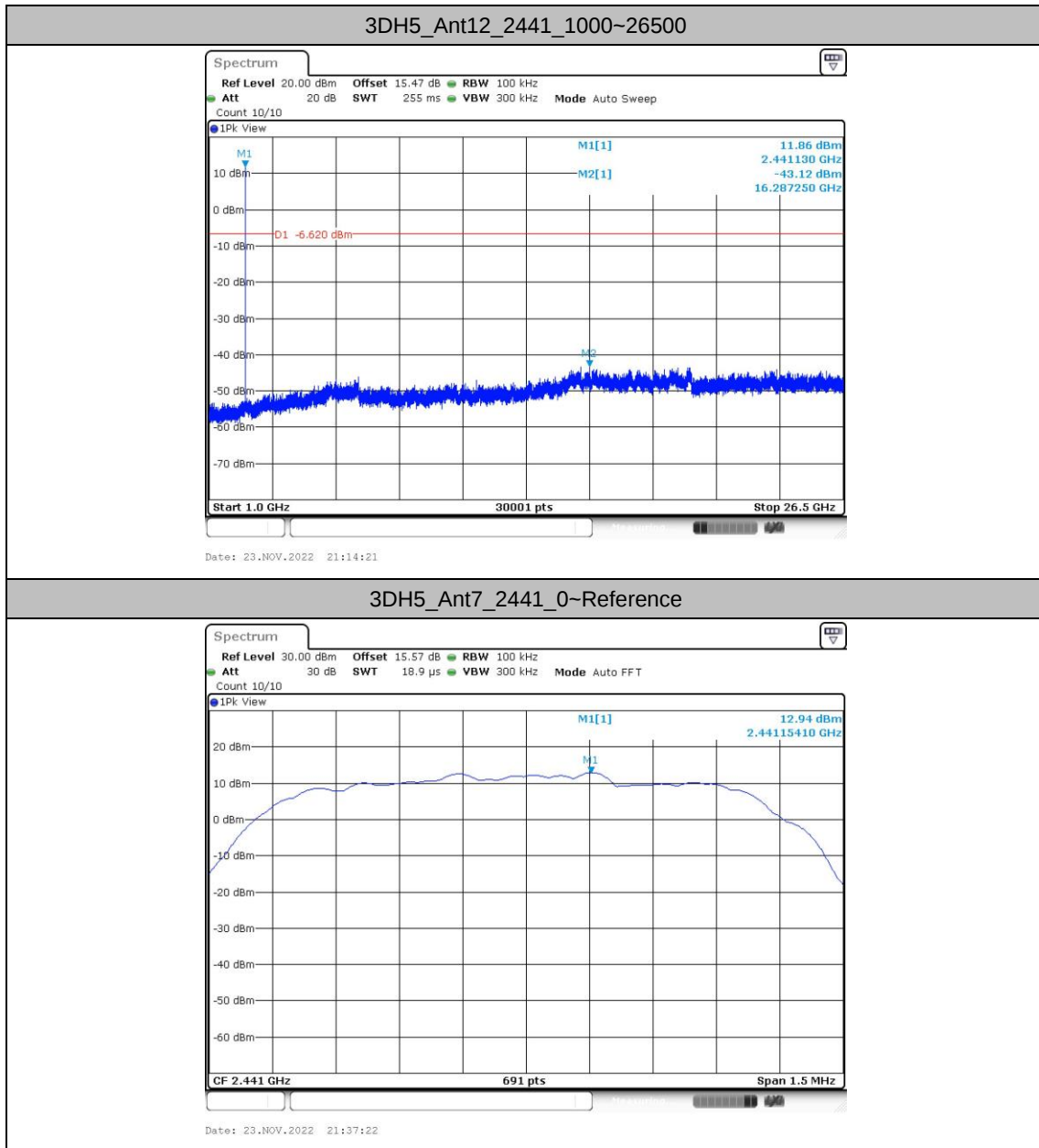


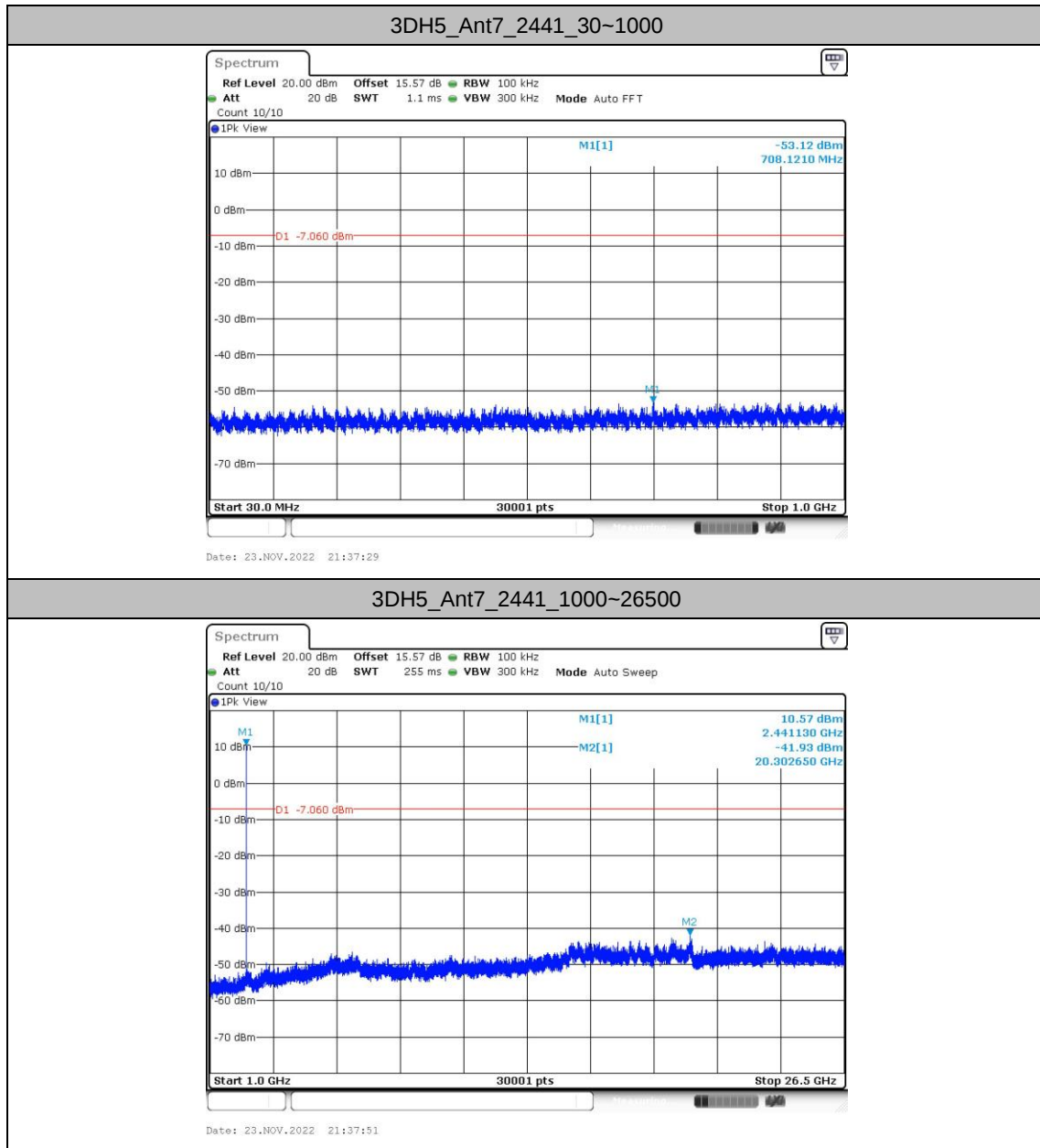


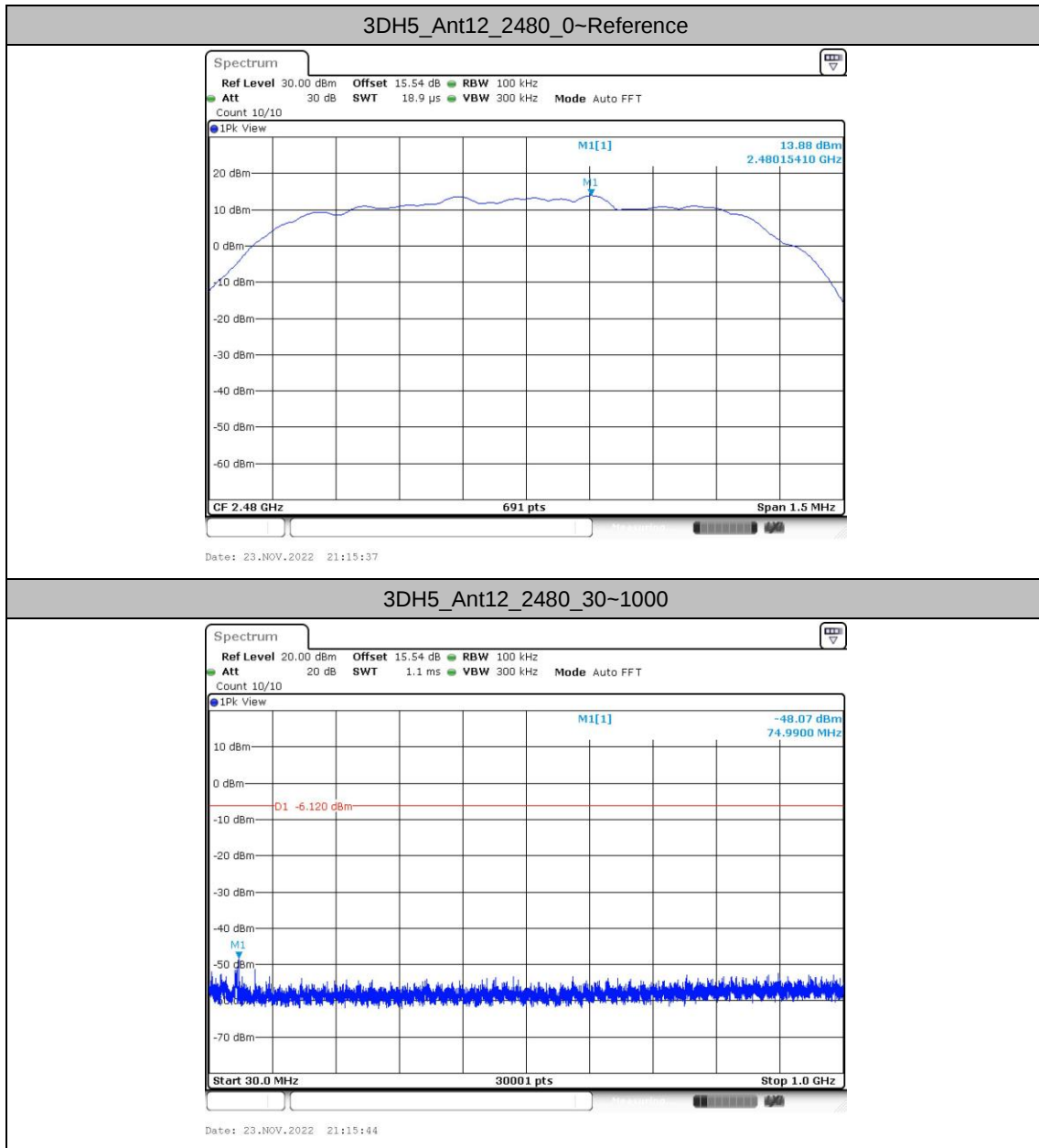


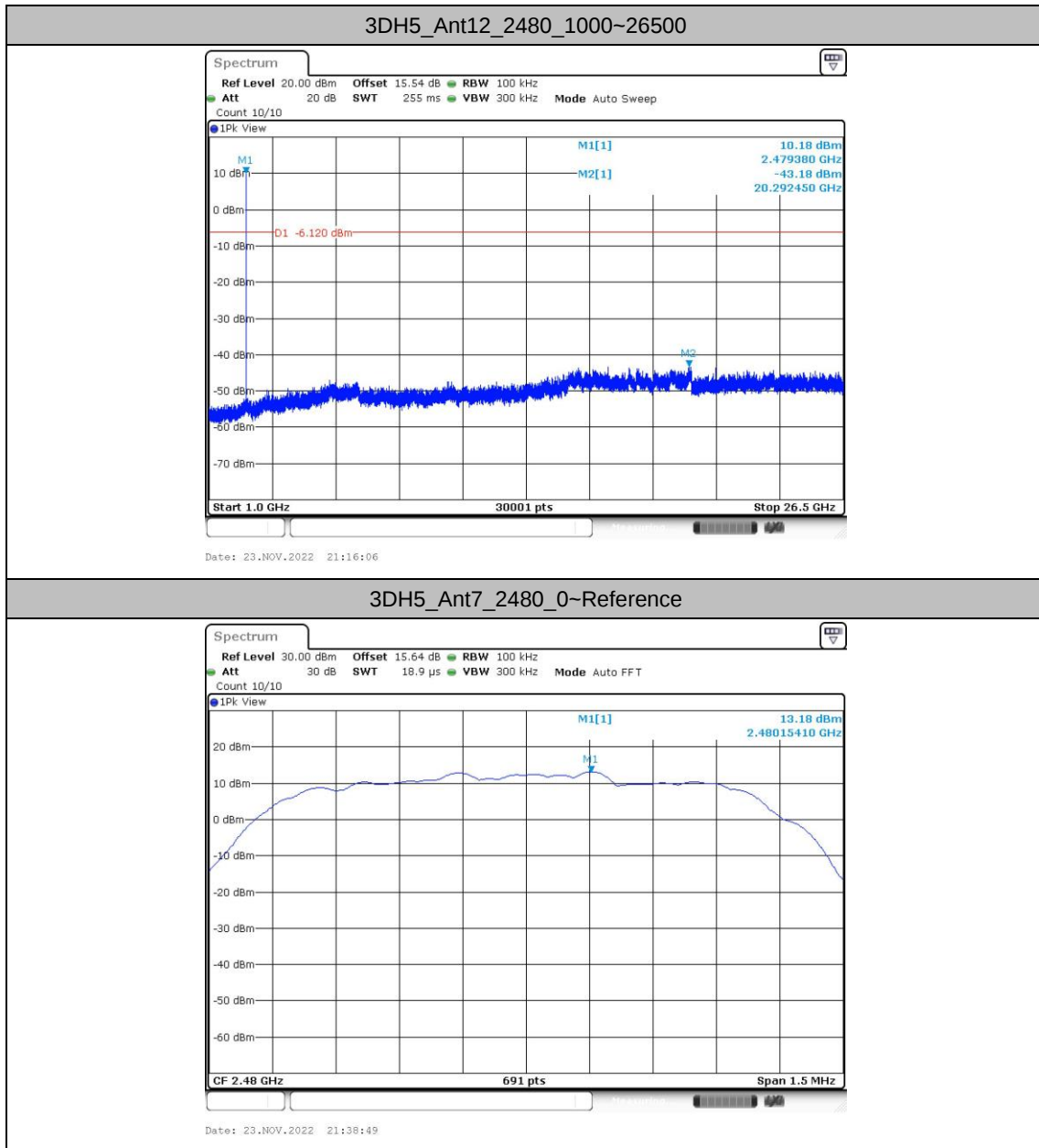


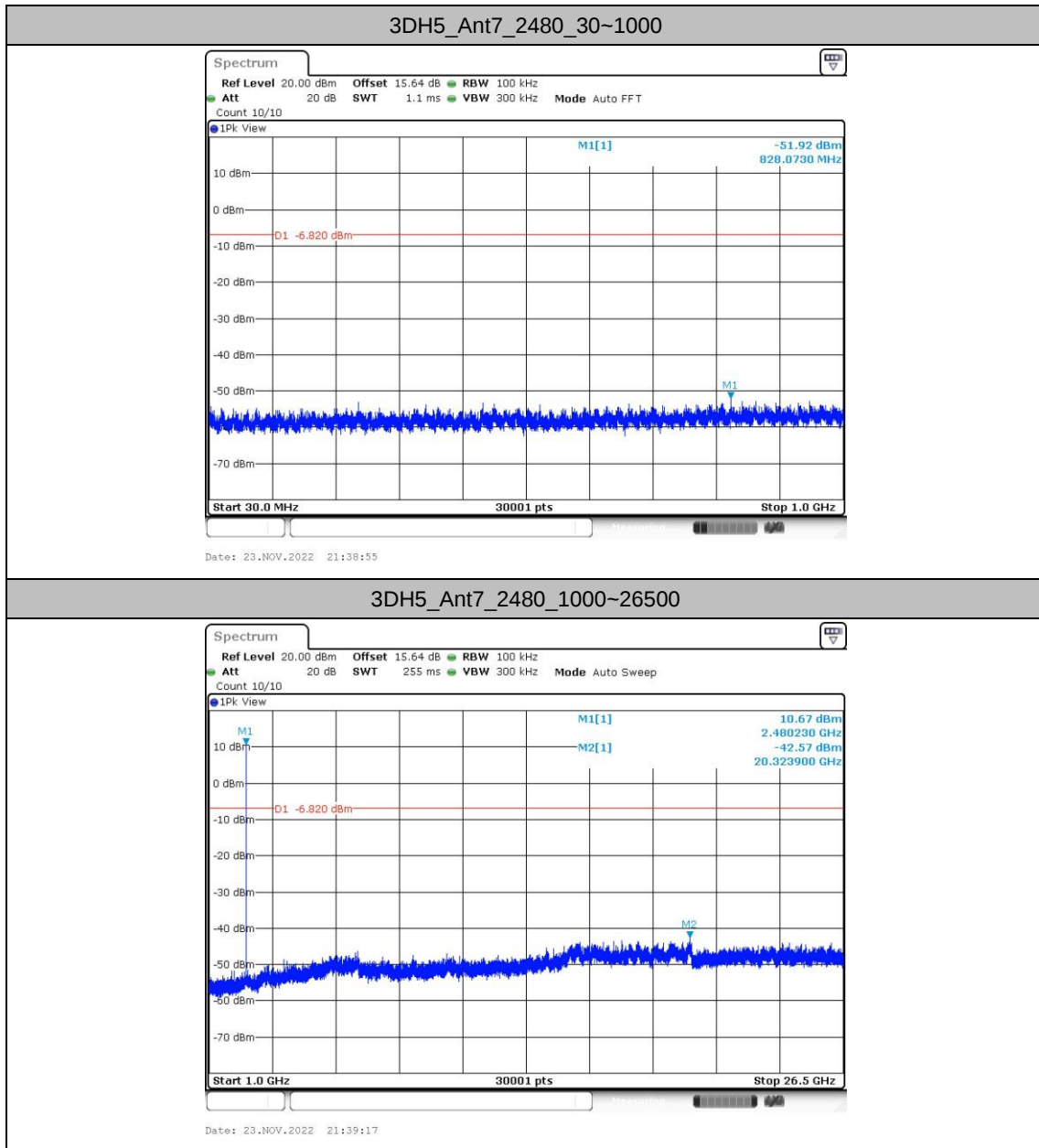






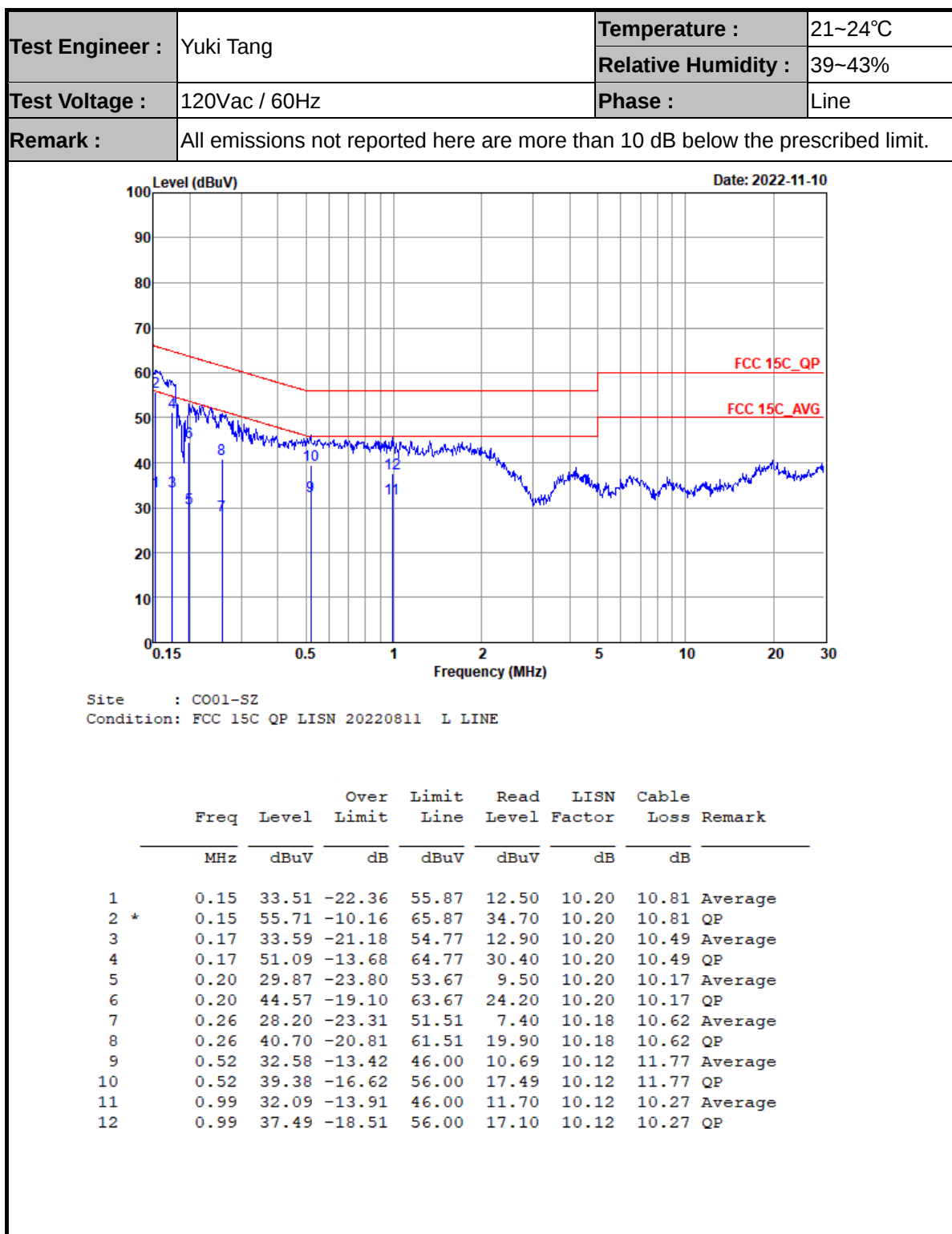






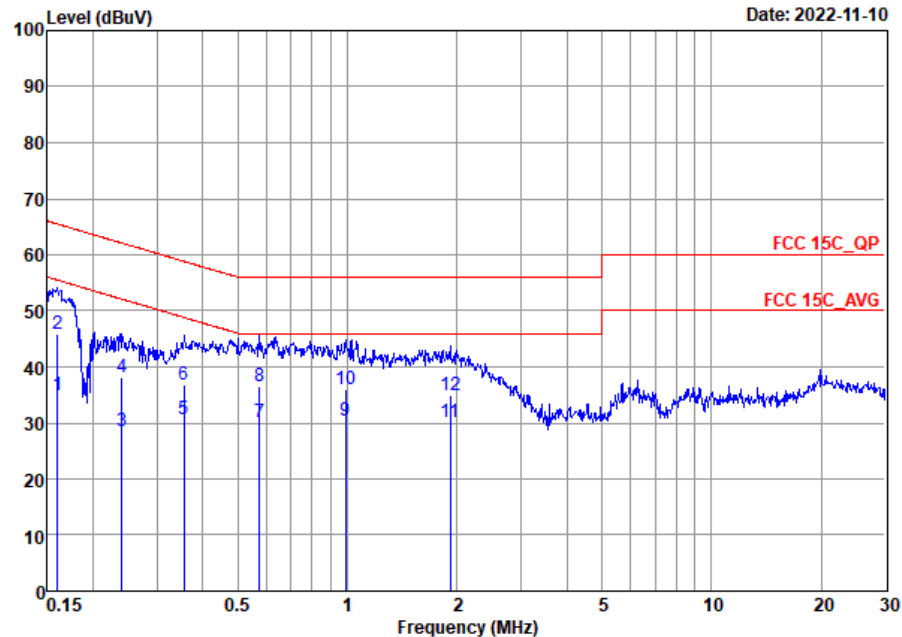


Appendix B. AC Conducted Emission Test Results





Test Engineer :	Yuki Tang	Temperature :	21~24°C
		Relative Humidity :	39~43%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-SZ
Condition: FCC 15C_QP LISN_20220811_ N NEUTRAL

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.16	35.00	-20.47	55.47	14.00	10.31	10.69	Average
2	0.16	45.90	-19.57	65.47	24.90	10.31	10.69	QP
3	0.24	28.55	-23.53	52.08	7.79	10.26	10.50	Average
4	0.24	38.25	-23.83	62.08	17.49	10.26	10.50	QP
5	0.36	30.60	-18.23	48.83	9.21	10.17	11.22	Average
6	0.36	36.70	-22.13	58.83	15.31	10.17	11.22	QP
7	0.57	30.17	-15.83	46.00	8.40	10.23	11.54	Average
8	0.57	36.67	-19.33	56.00	14.90	10.23	11.54	QP
9 *	0.99	30.38	-15.62	46.00	9.90	10.21	10.27	Average
10	0.99	35.88	-20.12	56.00	15.40	10.21	10.27	QP
11	1.92	30.04	-15.96	46.00	9.60	10.20	10.24	Average
12	1.92	35.04	-20.96	56.00	14.60	10.20	10.24	QP

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

Test Engineer :	ZhouLiangPing	Temperature :	24~25°C
		Relative Humidity :	48~49%

BT ANT7:

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		(MHz)	(dBμV/m)	(dB)	Line (dBμV/m)	Level (dBμV)	Factor (dB/m)	Loss (dB)	Factor (dB)	Pos (cm)	Pos (deg)	Avg. (P/A)	(H/V)
BT CH00 2402MHz		2348.43	50.62	-23.38	74	42.83	32.17	7.69	32.07	272	349	P	H
		2348.43	25.8	-28.2	54					272	349	A	H
	*	2402	111.67			103.67	32.28	7.8	32.08	272	349	P	H
	*	2402	86.85							272	349	A	H
		2380.875	50.42	-23.58	74	42.56	32.24	7.69	32.07	228	292	P	V
		2380.875	25.6	-28.4	54					228	292	A	V
		2402	105.99			97.99	32.28	7.8	32.08	228	292	P	V
	*	2402	81.17							228	292	A	V
BT CH 78 2480MHz	*	2480	110.33			102.08	32.46	7.88	32.09	259	345	P	H
	*	2480	85.51							259	345	A	H
		2483.68	53.07	-20.93	74	44.82	32.46	7.88	32.09	259	345	P	H
		2483.68	28.25	-25.75	54					259	345	A	H
	*	2480	106.42			98.17	32.46	7.88	32.09	134	274	P	V
	*	2480	81.6							134	274	A	V
		2485.12	48.75	-25.25	74	40.49	32.47	7.88	32.09	134	274	P	V
		2485.12	23.93	-30.07	54					134	274	A	V

Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.
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2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

BT	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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)
BT CH 00 2402MHz		4804	46.24	-27.76	74	51.92	34.82	11.08	51.58	-	-	P	H
		4804	21.42	-32.58	54					-	-	A	H
		4804	46.23	-27.77	74	51.91	34.82	11.08	51.58	-	-	P	V
		4804	21.41	-32.59	54					-	-	A	V
BT CH 39 2441MHz		4882	46.35	-27.65	74	51.94	34.85	11.11	51.55	-	-	P	H
		4882	21.53	-32.47	54					-	-	A	H
		7323	48.17	-25.83	74	49.93	36.33	13.08	51.17	-	-	P	H
		7323	23.35	-30.65	54					-	-	A	H
		4882	44.92	-29.08	74	50.51	34.85	11.11	51.55	-	-	P	V
		4882	20.1	-33.9	54					-	-	A	V
		7323	49.73	-24.27	74	51.49	36.33	13.08	51.17	-	-	P	V
		7323	24.91	-29.09	54					-	-	A	V
BT CH 78 2480MHz		4960	44.97	-29.03	74	50.46	34.88	11.14	51.51	-	-	P	H
		4960	20.15	-33.85	54					-	-	A	H
		7440	47.39	-26.61	74	49.21	36.38	12.99	51.19	-	-	P	H
		7440	22.57	-31.43	54					-	-	A	H
		4960	45.97	-28.03	74	51.46	34.88	11.14	51.51	-	-	P	V
		4960	21.15	-32.85	54					-	-	A	V
		7440	47.07	-26.93	74	48.89	36.38	12.99	51.19	-	-	P	V
		7440	22.25	-31.75	54					-	-	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



BT ANT12:

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BT CH00 2402MHz		2380.77	50.21	-23.79	74	42.35	32.24	7.69	32.07	168	54	P	H
		2380.77	25.39	-28.61	54					168	54	A	H
	*	2402	109.09			101.09	32.28	7.8	32.08	168	54	P	H
	*	2402	84.27							168	54	A	H
		2371.53	50.36	-23.64	74	42.52	32.22	7.69	32.07	354	281	P	V
		2371.53	25.54	-28.46	54					354	281	A	V
		2402	107.56			99.56	32.28	7.8	32.08	354	281	P	V
	*	2402	82.74							354	281	A	V
BT CH 78 2480MHz	*	2480	110.55			102.3	32.46	7.88	32.09	169	54	P	H
	*	2480	85.73							169	54	A	H
		2484.4	53.94	-20.06	74	45.68	32.47	7.88	32.09	169	54	P	H
		2484.4	29.12	-24.88	54					169	54	A	H
	*	2480	106.99			98.74	32.46	7.88	32.09	333	271	P	V
	*	2480	82.17							333	271	A	V
		2483.92	51.69	-22.31	74	43.44	32.46	7.88	32.09	333	271	P	V
		2483.92	26.87	-27.13	54					333	271	A	V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.



2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

BT	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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)
BT CH 00 2402MHz		4804	46.16	-27.84	74	51.84	34.82	11.08	51.58	-	-	P	H
		4804	21.34	-32.66	54					-	-	A	H
		4804	45.41	-28.59	74	51.09	34.82	11.08	51.58	-	-	P	V
		4804	20.59	-33.41	54					-	-	A	V
BT CH 39 2441MHz		4882	45.48	-28.52	74	51.07	34.85	11.11	51.55	-	-	P	H
		4882	20.66	-33.34	54					-	-	A	H
		7323	47.02	-26.98	74	48.78	36.33	13.08	51.17	-	-	P	H
		7323	22.2	-31.8	54					-	-	A	H
		4882	45.36	-28.64	74	50.95	34.85	11.11	51.55	-	-	P	V
		4882	20.54	-33.46	54					-	-	A	V
		7323	48.1	-25.9	74	49.86	36.33	13.08	51.17	-	-	P	V
		7323	23.28	-30.72	54					-	-	A	V
BT CH 78 2480MHz		4960	45.1	-28.9	74	50.59	34.88	11.14	51.51	-	-	P	H
		4960	20.28	-33.72	54					-	-	A	H
		7440	46.66	-27.34	74	48.48	36.38	12.99	51.19	-	-	P	H
		7440	21.84	-32.16	54					-	-	A	H
		4960	45.33	-28.67	74	50.82	34.88	11.14	51.51	-	-	P	V
		4960	20.51	-33.49	54					-	-	A	V
		7440	47.33	-26.67	74	49.15	36.38	12.99	51.19	-	-	P	V
		7440	22.51	-31.49	54					-	-	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



BT ANT12+7:

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BT CH00 2402MHz		2389.38	39.68	-34.32	74	40.65	27.52	5.37	33.86	154	340	P	H
		2389.38	14.86	-39.14	54					154	340	A	H
	*	2402	108.92			109.81	27.57	5.37	33.83	154	340	P	H
	*	2402	84.1							154	340	A	H
		2376.15	38.98	-35.02	74	40.02	27.48	5.34	33.86	100	270	P	V
		2376.15	14.16	-39.84	54					100	270	A	V
		2402	101.09			101.98	27.57	5.37	33.83	100	270	P	V
	*	2402	76.27							100	270	A	V
BT CH 78 2480MHz	*	2480	108.83			109.26	27.83	5.46	33.72	334	167	P	H
	*	2480	84.01							334	167	A	H
		2483.52	53.97	-20.03	74	54.39	27.84	5.46	33.72	334	167	P	H
		2483.52	29.15	-24.85	54	-	-	-	-	334	167	A	H
	*	2480	103.5			103.93	27.83	5.46	33.72	104	274	P	V
	*	2480	78.68							104	274	A	V
		2483.52	48.03	-25.97	74	48.45	27.84	5.46	33.72	104	274	P	V
		2483.52	23.21	-30.79	54					104	274	A	V

Remark

3. No other spurious found.
4. All results are PASS against Peak and Average limit line.



2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

BT	Note	Frequency (MHz)	Level (dBμV/m)	Margin (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)
BT CH 00 2402MHz		4804	42.71	-31.29	74	52.04	31.55	8.88	49.76	-	-	P	H
		4804	17.89	-36.11	54					-	-	A	H
		4804	42.8	-31.2	74	52.13	31.55	8.88	49.76	-	-	P	V
		4804	17.98	-36.02	54					-	-	A	V
BT CH 39 2441MHz		4882	42.69	-31.31	74	52.13	31.69	8.65	49.78	-	-	P	H
		4882	17.87	-36.13	54					-	-	A	H
		7323	45.49	-28.51	74	49.07	36.22	10.18	49.98	-	-	P	H
		7323	20.67	-33.33	54					-	-	A	H
		4882	43.71	-30.29	74	53.15	31.69	8.65	49.78	-	-	P	V
		4882	18.89	-35.11	54					-	-	A	V
		7323	45.26	-28.74	74	48.84	36.22	10.18	49.98	-	-	P	V
		7323	20.44	-33.56	54					-	-	A	V
BT CH 78 2480MHz		4960	40.69	-33.31	74	50.24	31.83	8.41	49.79	-	-	P	H
		4960	15.87	-38.13	54					-	-	A	H
		7440	45.08	-28.92	74	48.83	36.34	10.17	50.26	-	-	P	H
		7440	20.26	-33.74	54					-	-	A	H
		4960	40.44	-33.56	74	49.99	31.83	8.41	49.79	-	-	P	V
		4960	15.62	-38.38	54					-	-	A	V
		7440	44.93	-29.07	74	48.68	36.34	10.17	50.26	-	-	P	V
		7440	20.11	-33.89	54					-	-	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

2.4GHz BT (LF)

BT	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz BT LF		45.52	18.24	-21.76	40	31.98	19.61	1.61	34.96	-	-	P	H
		208.48	23.19	-20.31	43.5	38.83	16.26	2.8	34.7	-	-	P	H
		300.63	33.21	-12.79	46	45.46	19.14	3.21	34.6	-	-	P	H
		341.37	29.6	-16.4	46	40.77	20.03	3.4	34.6	-	-	P	H
		623.64	27.23	-18.77	46	31.98	26.17	3.63	34.55	-	-	P	H
		956.35	31.69	-14.31	46	31.66	29.8	4.52	34.29	-	-	P	H
		33.88	22.68	-17.32	40	37.73	18.46	1.27	34.78	-	-	P	V
		170.65	19.52	-23.98	43.5	34.03	17.75	2.44	34.7	-	-	P	V
		310.33	26.62	-19.38	46	38.61	19.35	3.26	34.6	-	-	P	V
		362.71	26.94	-19.06	46	37.58	20.52	3.41	34.57	-	-	P	V
		696.39	27.68	-18.32	46	31.33	27.03	3.73	34.41	-	-	P	V
		958.29	31.64	-14.36	46	31.58	29.81	4.53	34.28	-	-	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 Margin line.
P/A	Peak or Average
H/V	Horizontal or Vertical

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

BT	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BT CH 00 2402MHz		2390	55.45	18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		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. Margin (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. Margin (dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= 18.55(dB)

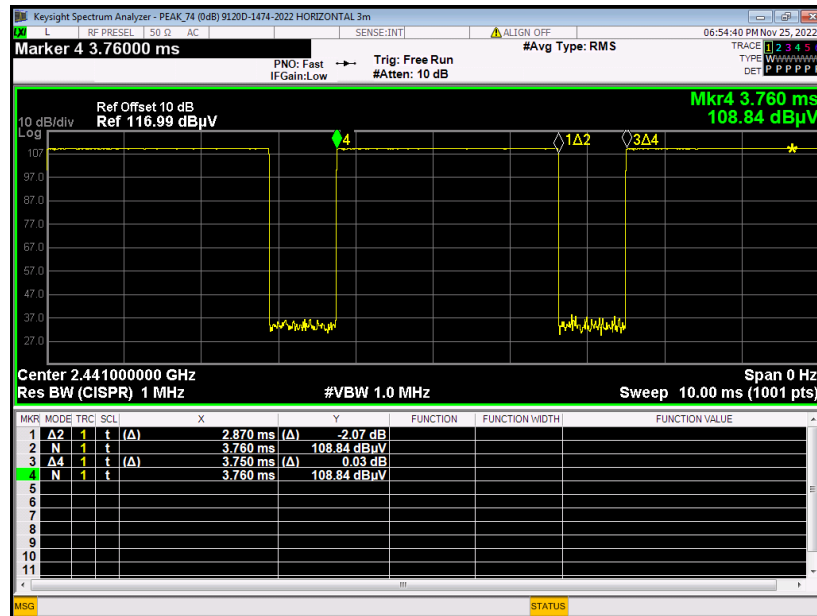
For Average Limit @ 2390MHz:

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. Margin (dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 43.54(dBμV/m) – 54(dBμV/m)
= 10.46(dB)

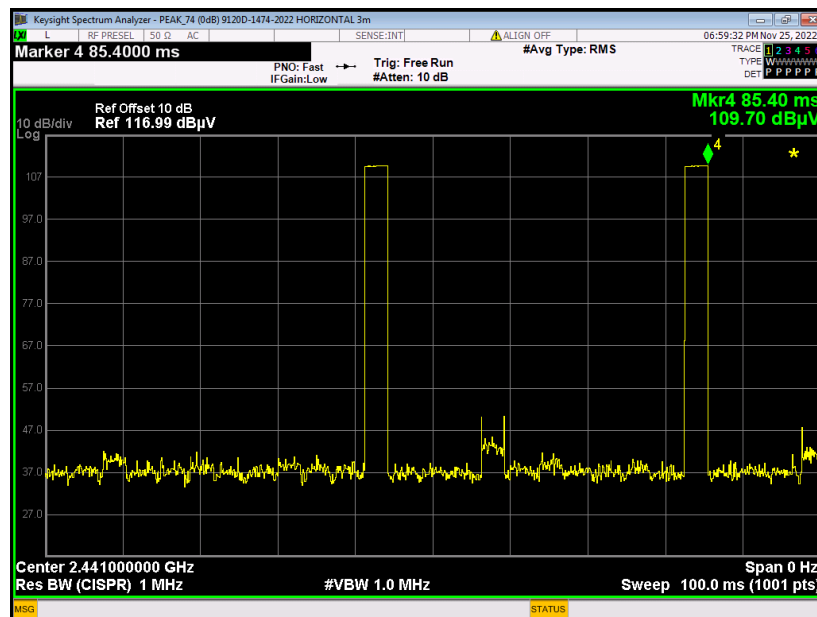
Both peak and average measured complies with the limit line, so test result is “PASS”.

Appendix D. Duty Cycle Plots

DH5 on time (One Pulse) Plot on Channel 39



DH5 on time (Count Pulses) Plot on Channel 39



Note:

1. Worst case Duty cycle = on time/100 milliseconds = $2 * 2.87 / 100 = 5.74 \%$
2. Worst case Duty cycle correction factor = $20 * \log(\text{Duty cycle}) = -24.82 \text{ dB}$
3. DH5 has the highest duty cycle worst case and is reported.