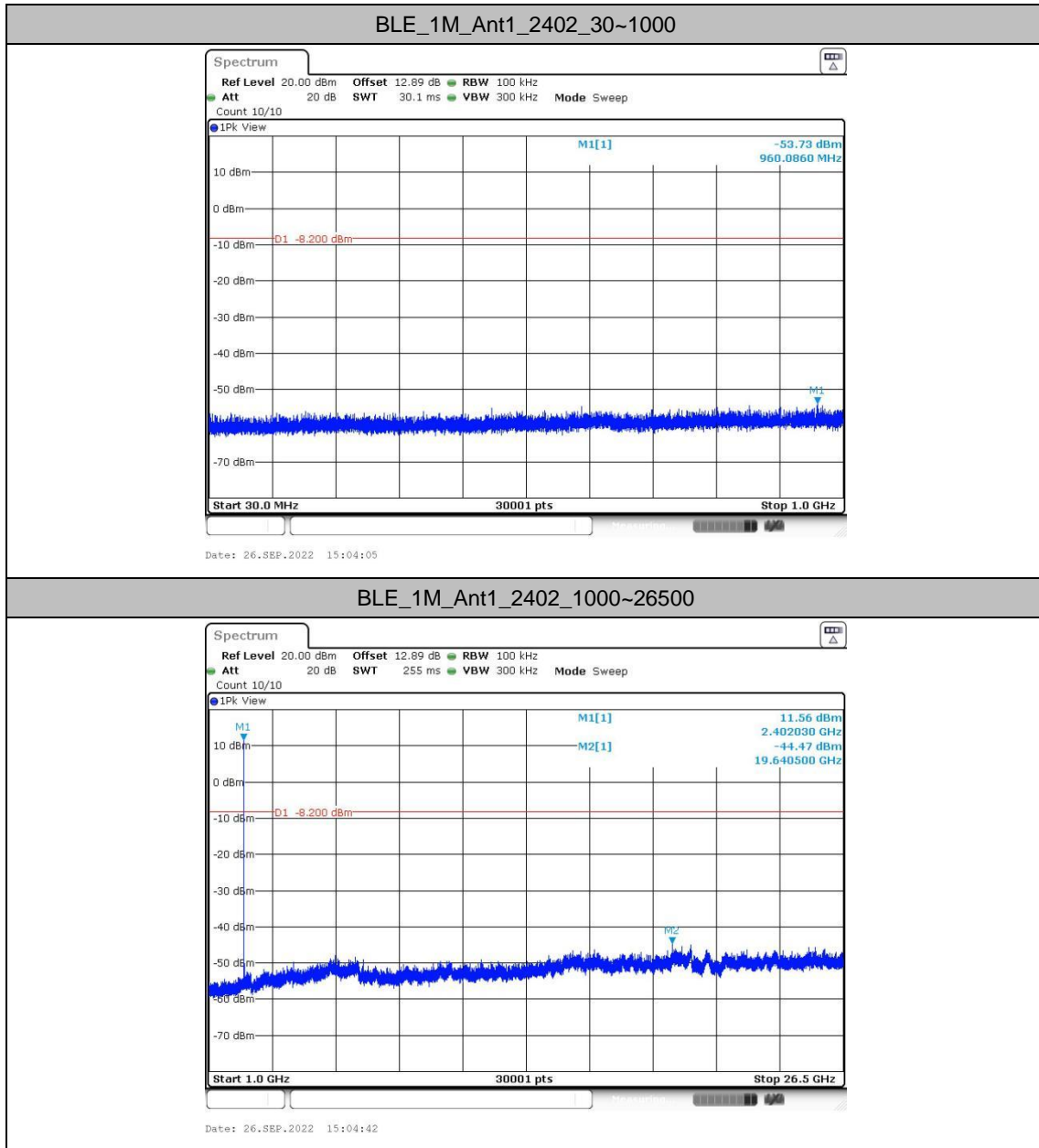
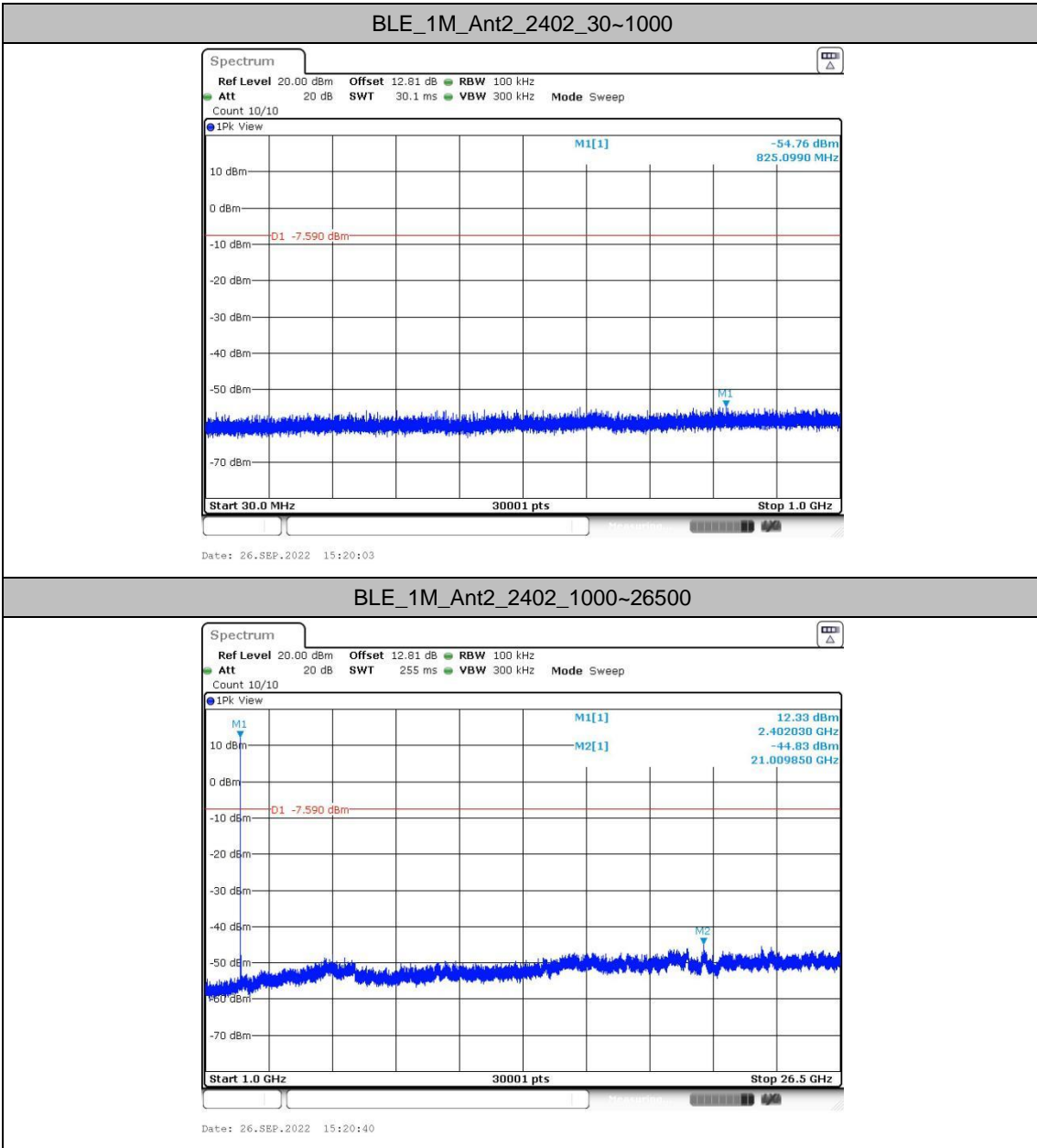
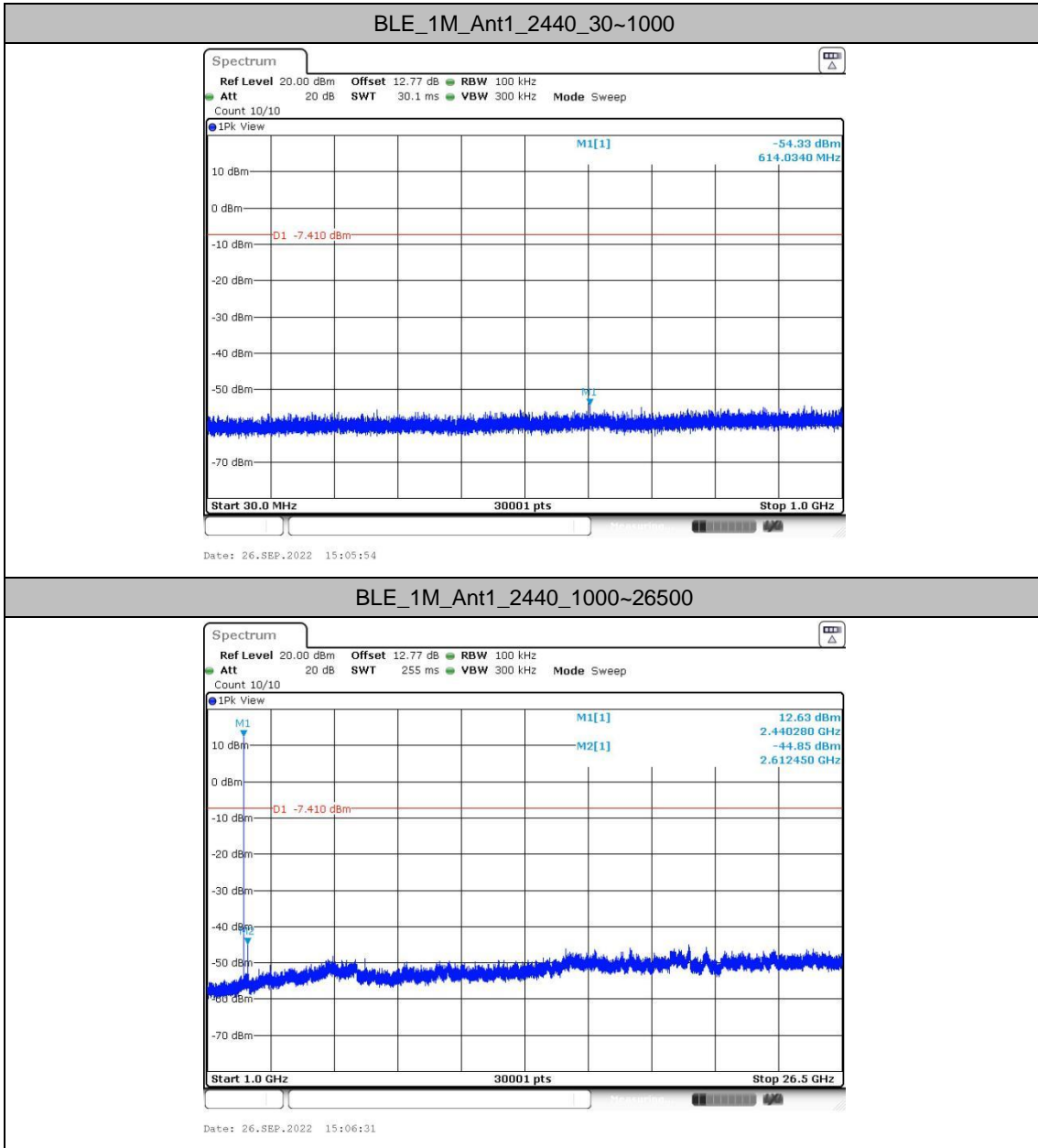


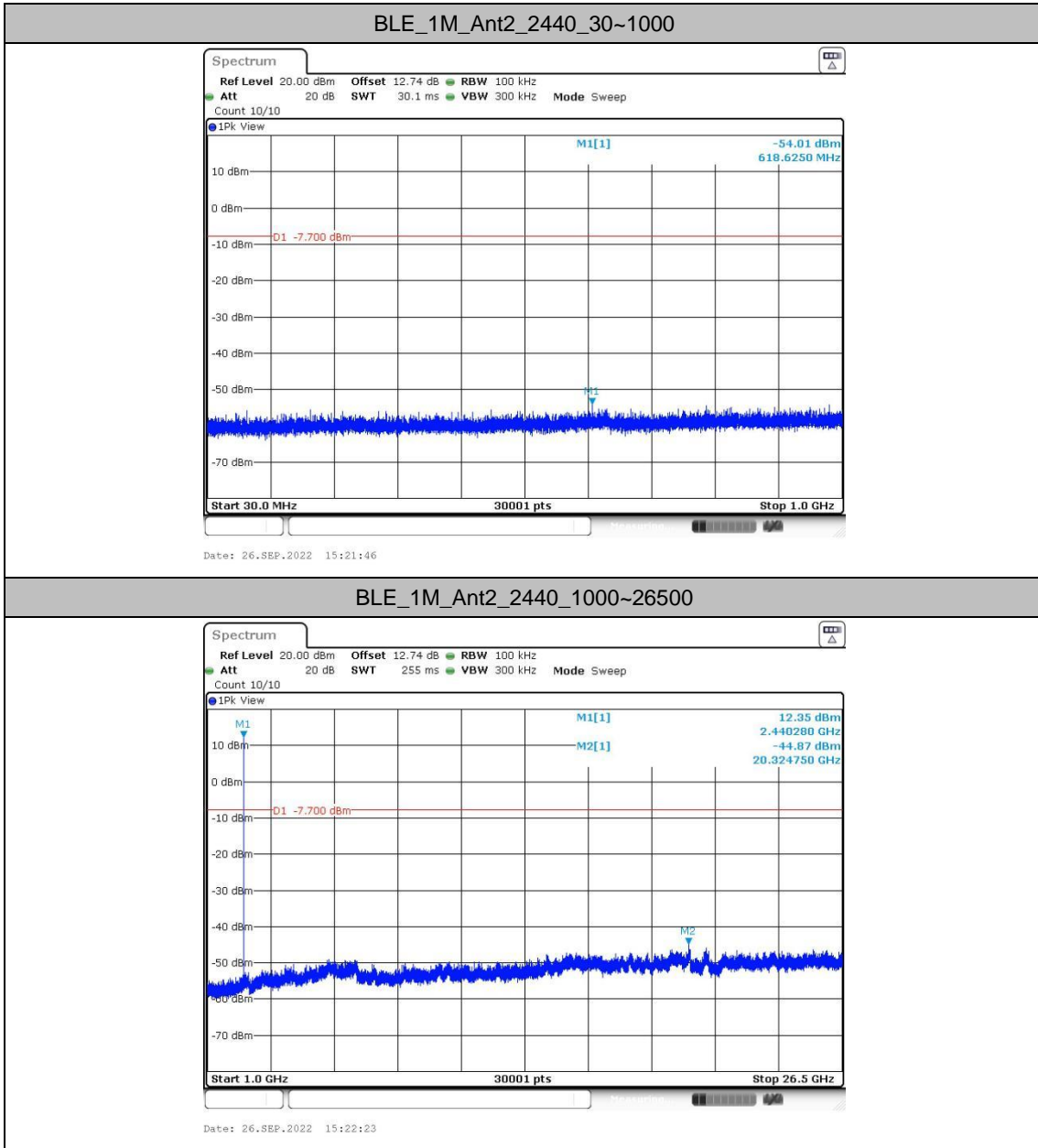


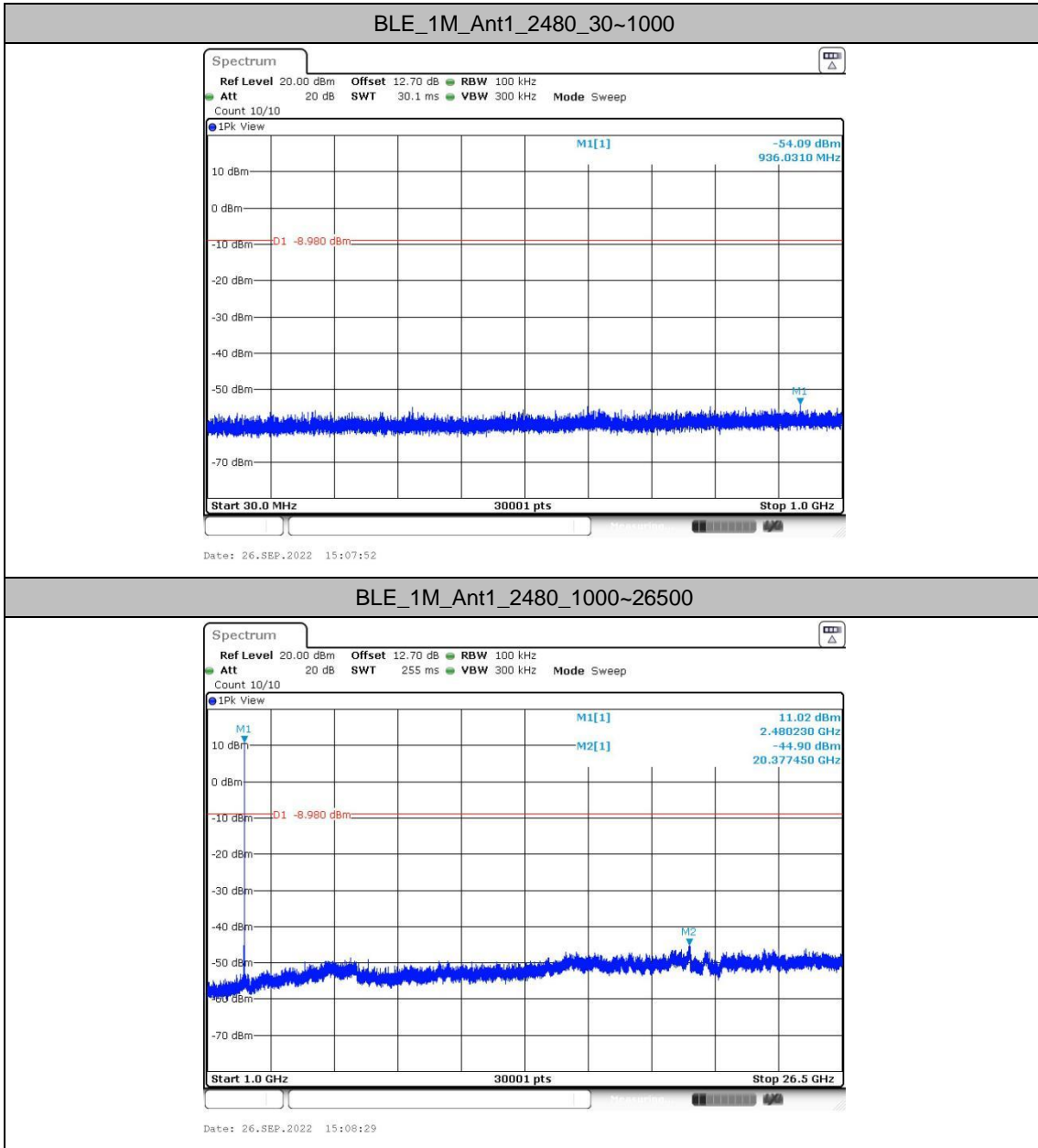
Test Graphs

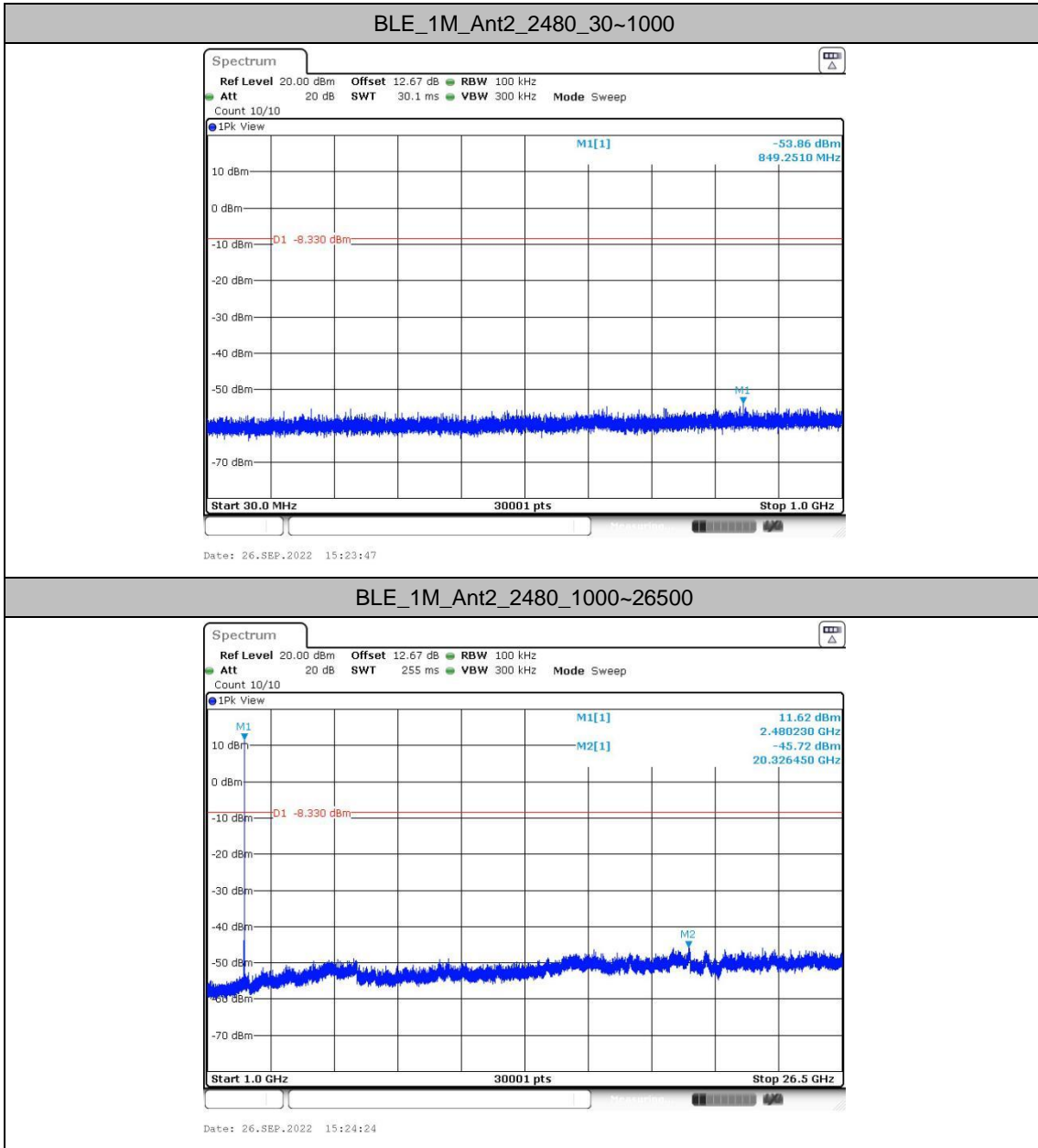


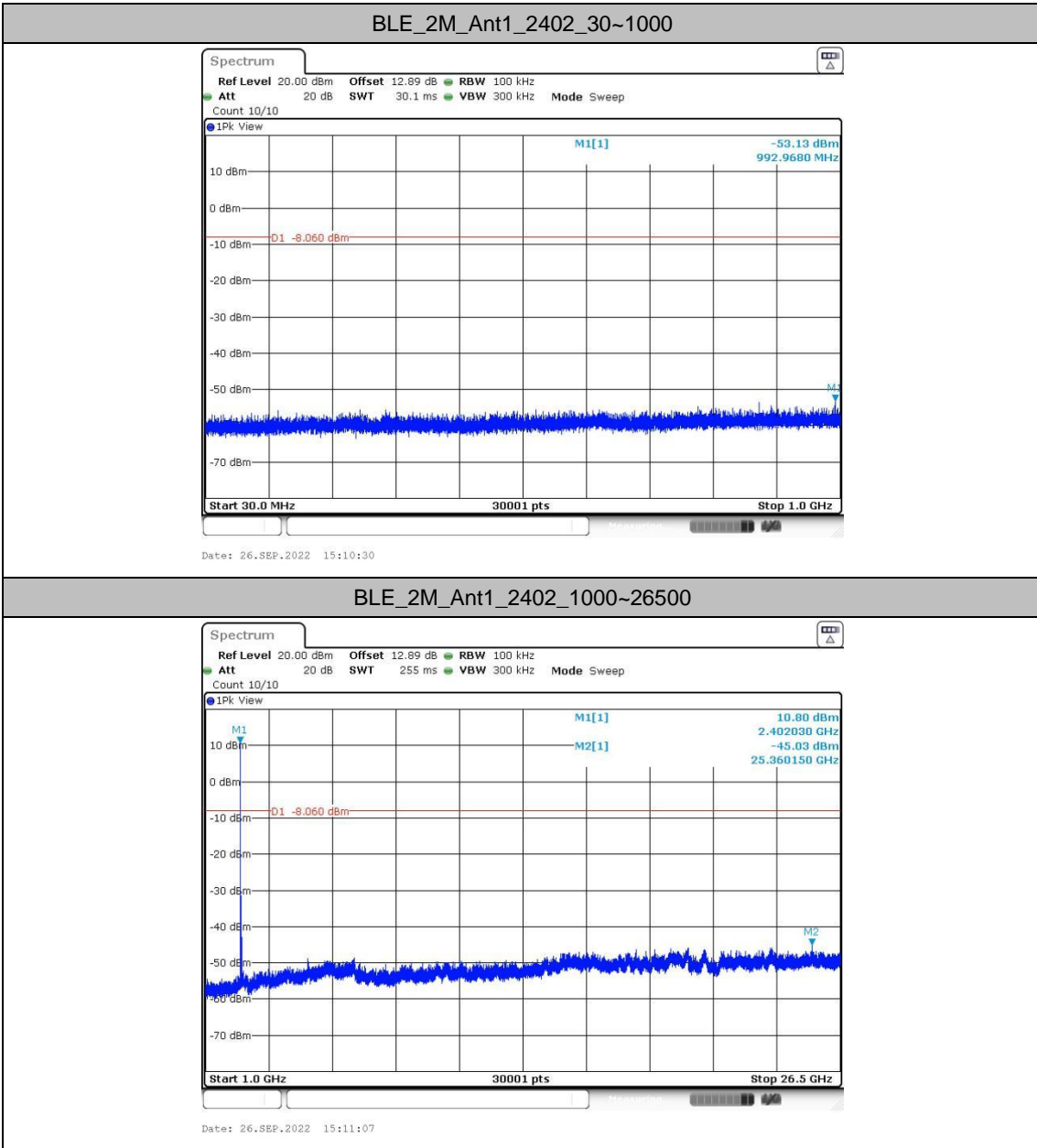


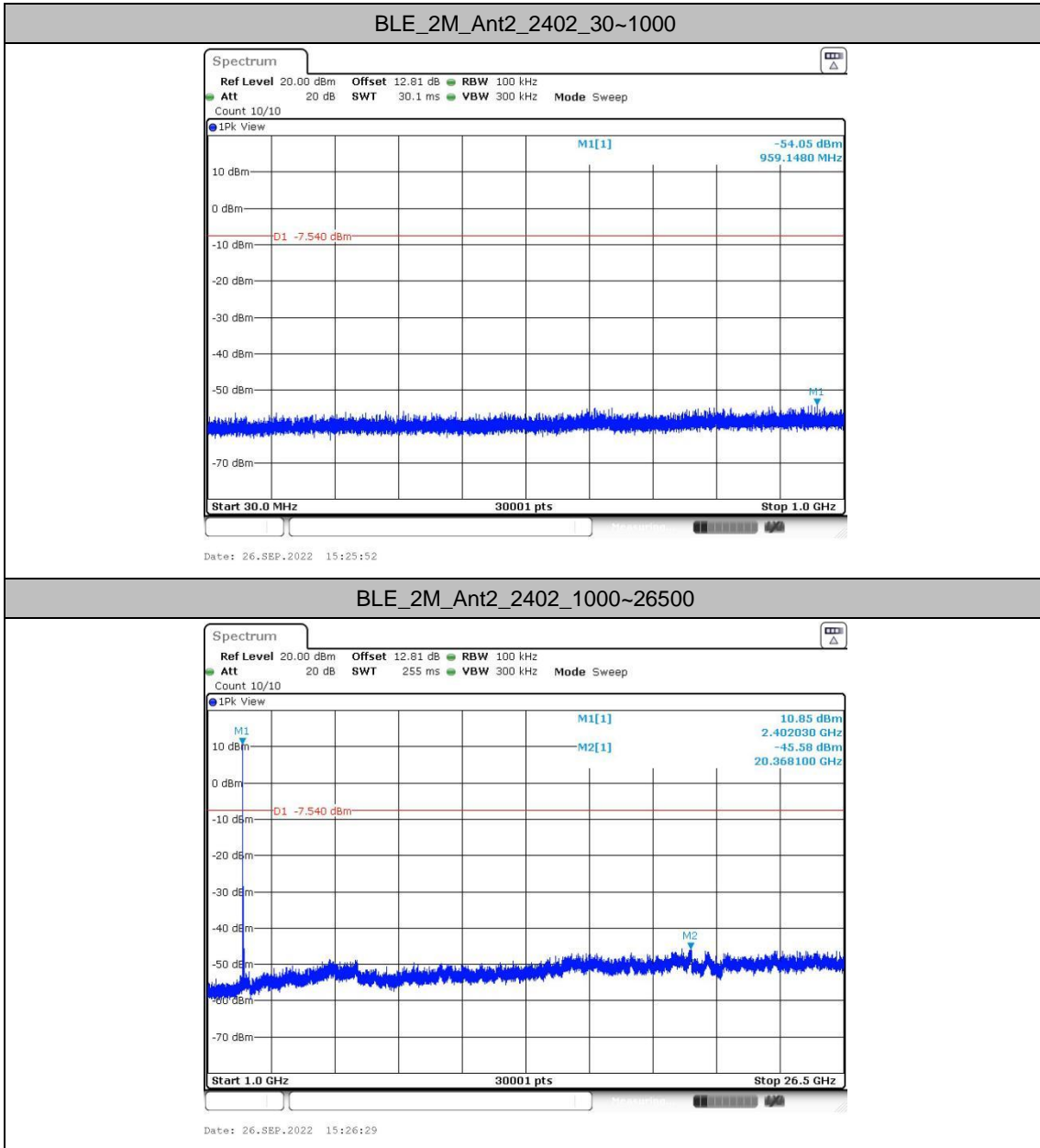


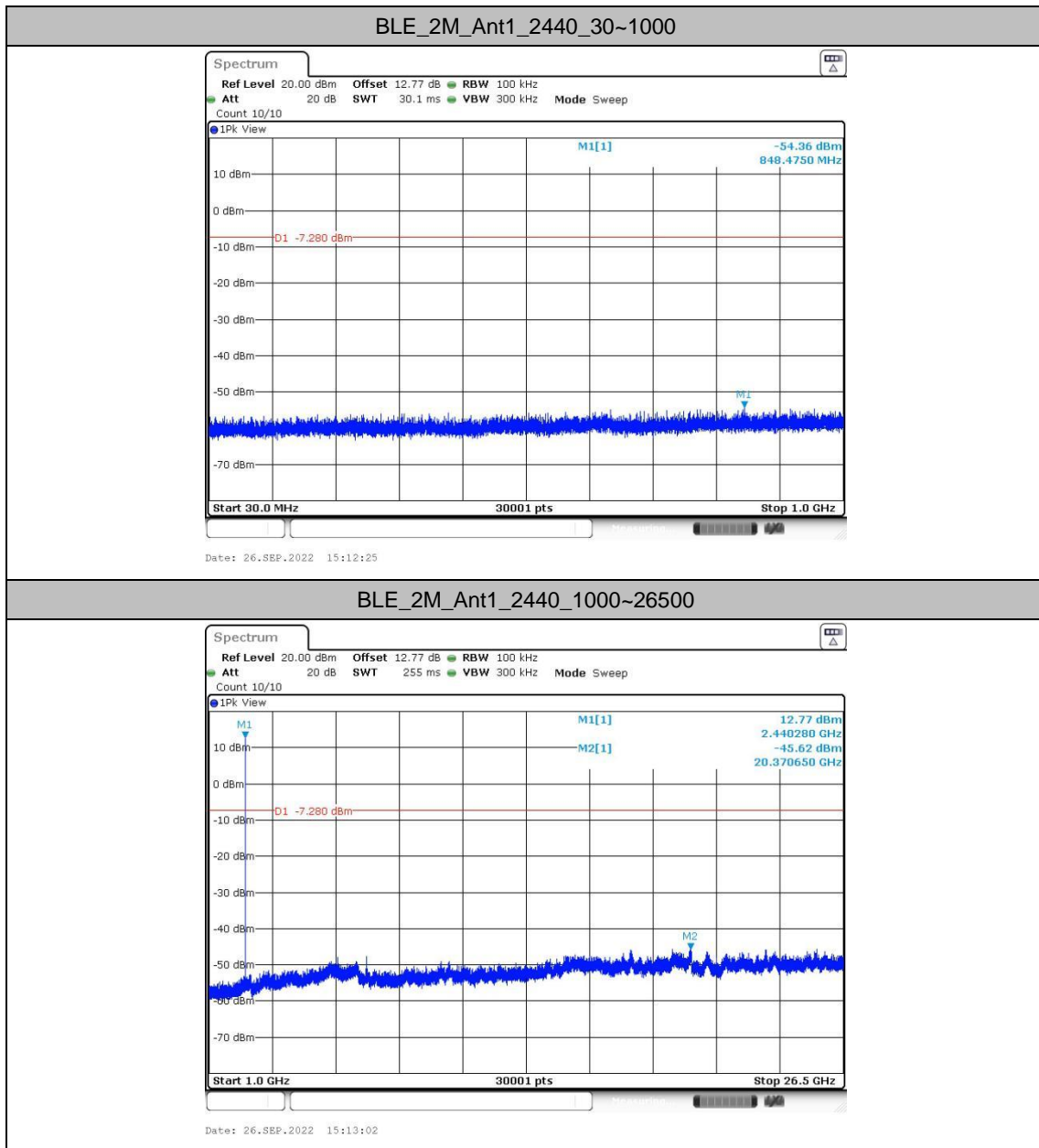


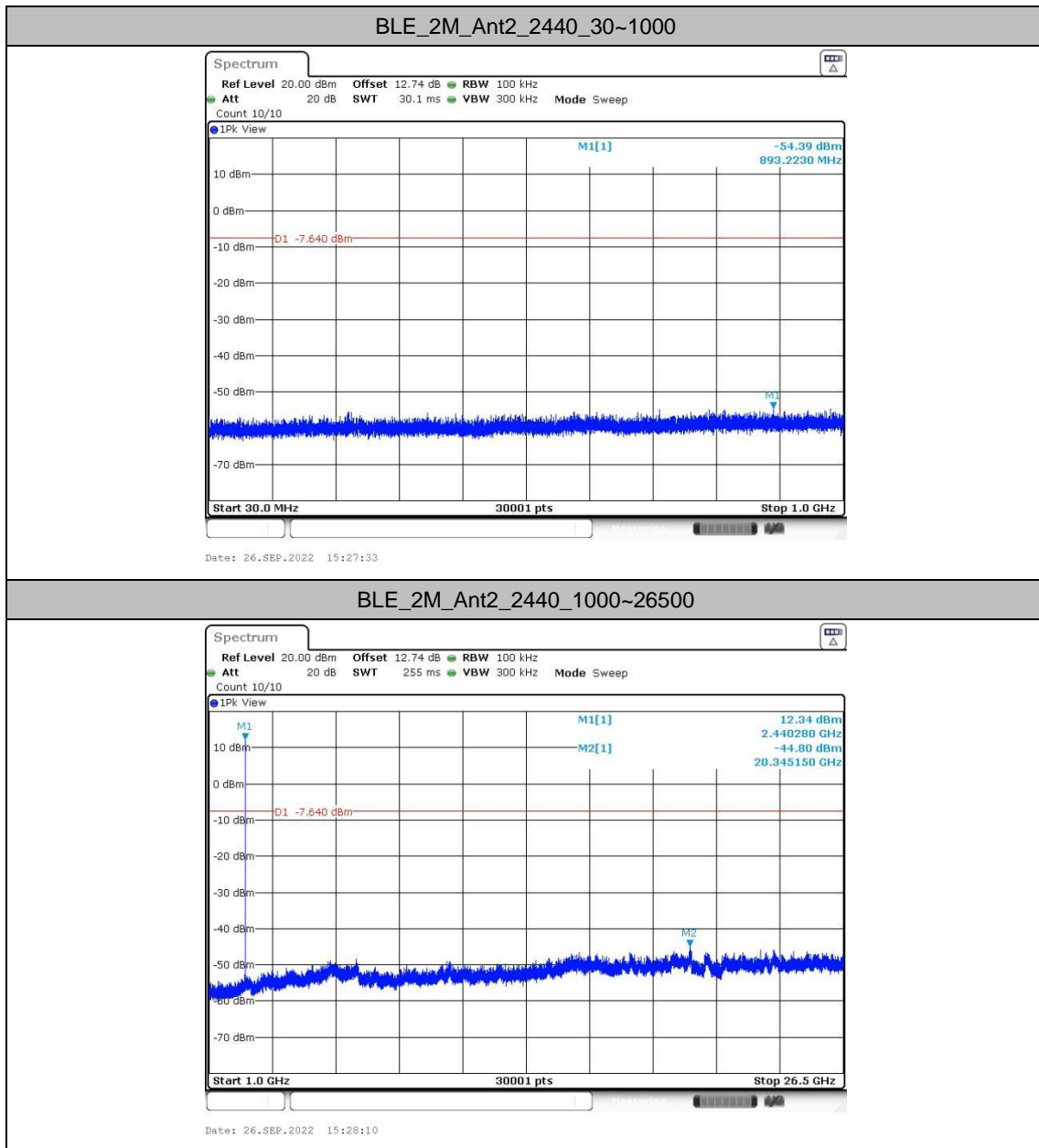


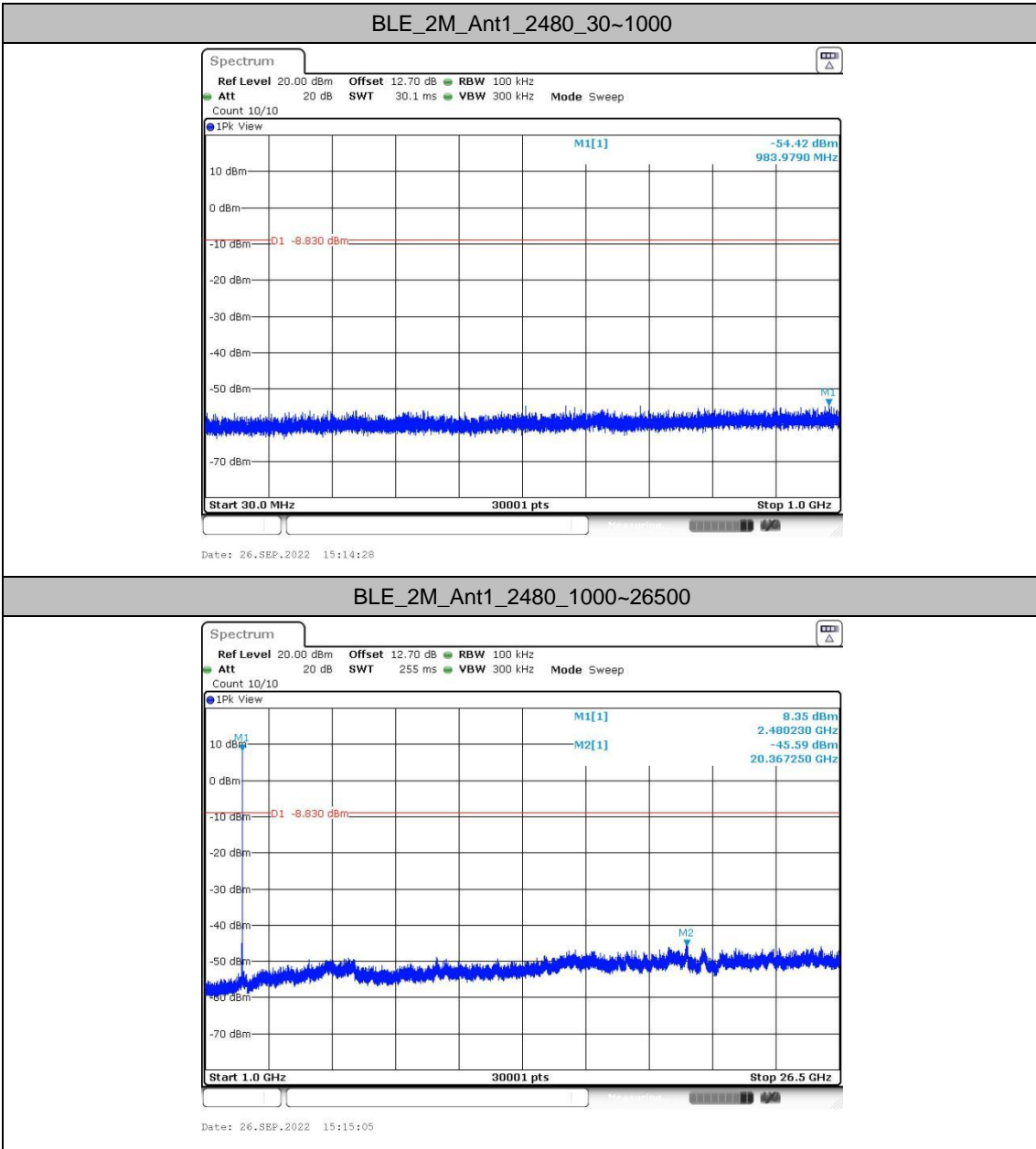


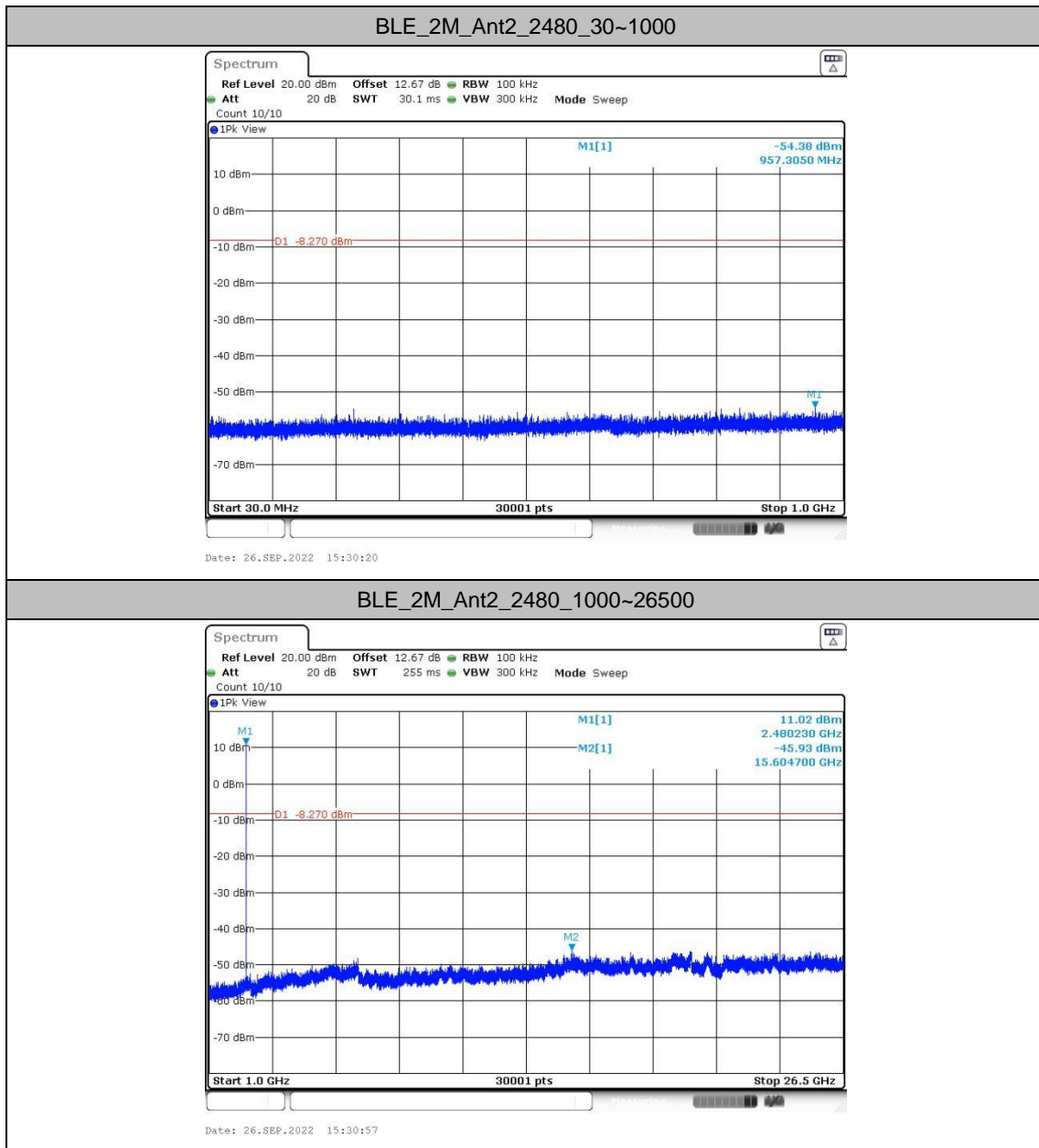








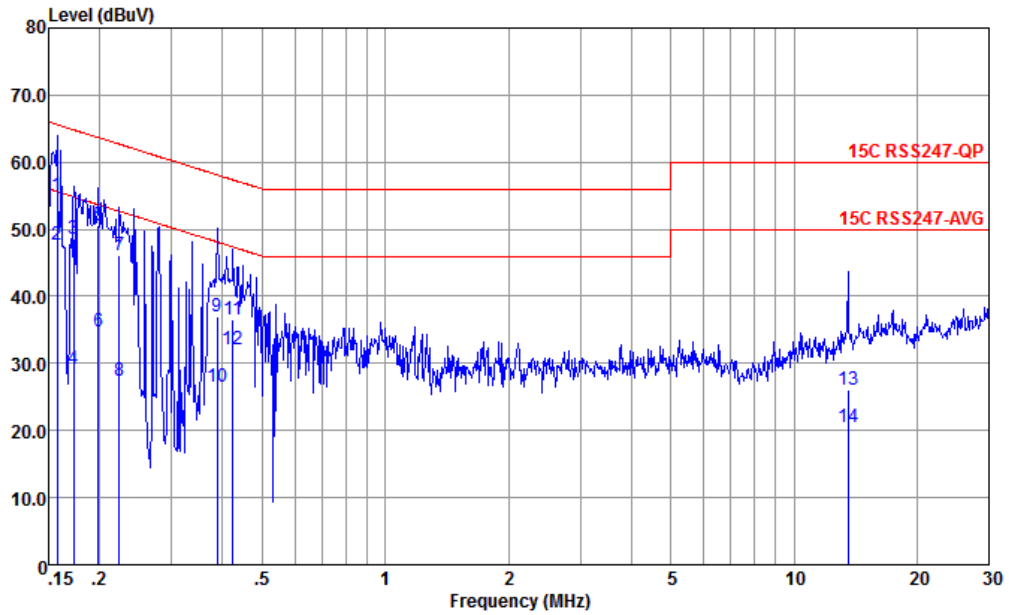






Appendix B. AC Conducted Emission Test Results

Test Engineer :	Amos	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.		

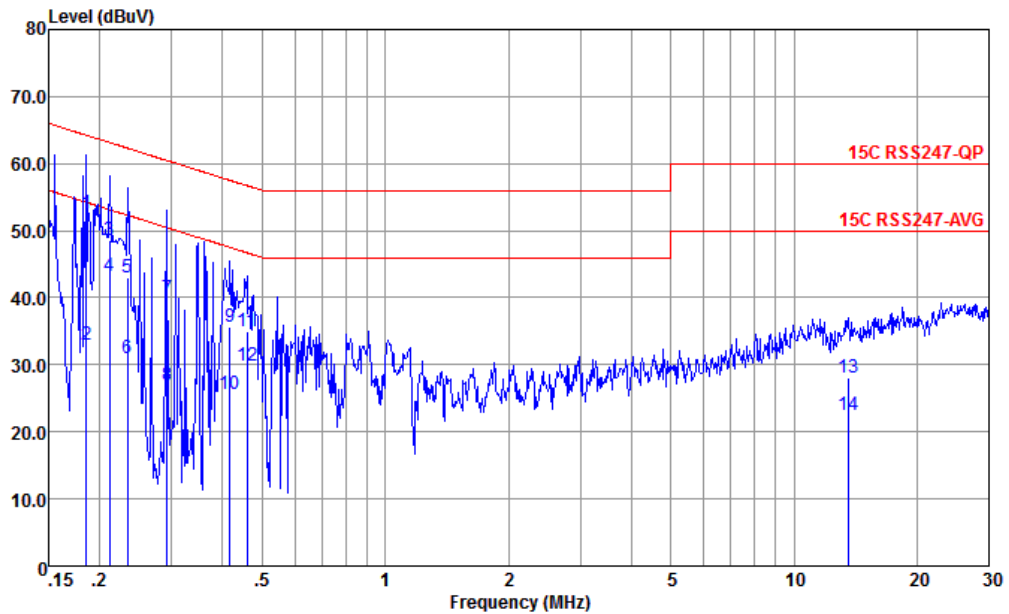


Site : CO01-KS
 Condition : 15C RSS247-QP LISN-060105-LINE LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.157	55.09	-10.51	65.60	44.60	0.06	10.43	QP
2 *	0.157	47.59	-8.01	55.60	37.10	0.06	10.43	Average
3	0.173	48.67	-16.14	64.81	38.19	0.05	10.43	QP
4	0.173	29.27	-25.54	54.81	18.79	0.05	10.43	Average
5	0.199	50.64	-13.03	63.67	40.20	0.02	10.42	QP
6	0.199	34.74	-18.93	53.67	24.30	0.02	10.42	Average
7	0.223	46.23	-16.47	62.70	35.80	0.03	10.40	QP
8	0.223	27.33	-25.37	52.70	16.90	0.03	10.40	Average
9	0.387	36.92	-21.20	58.12	26.60	0.01	10.31	QP
10	0.387	26.62	-21.50	48.12	16.30	0.01	10.31	Average
11	0.424	36.48	-20.89	57.37	26.20	0.00	10.28	QP
12	0.424	32.17	-15.20	47.37	21.89	0.00	10.28	Average
13	13.560	26.12	-33.88	60.00	15.20	-0.20	11.12	QP
14	13.560	20.52	-29.48	50.00	9.60	-0.20	11.12	Average



Test Engineer :	Amos	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 : 15C RSS247-QP LISN-060105-NEUTRAL NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.185	52.67	-11.57	64.24	42.21	0.04	10.42	QP
2	0.185	33.07	-21.17	54.24	22.61	0.04	10.42	Average
3	0.212	48.65	-14.49	63.14	38.20	0.04	10.41	QP
4 *	0.212	43.15	-9.99	53.14	32.70	0.04	10.41	Average
5	0.234	42.90	-19.40	62.30	32.50	0.01	10.39	QP
6	0.234	31.00	-21.30	52.30	20.60	0.01	10.39	Average
7	0.292	39.91	-20.55	60.46	29.60	-0.04	10.35	QP
8	0.292	26.91	-23.55	50.46	16.60	-0.04	10.35	Average
9	0.417	35.71	-21.80	57.51	25.50	-0.07	10.28	QP
10	0.417	25.71	-21.80	47.51	15.50	-0.07	10.28	Average
11	0.459	34.97	-21.74	56.71	24.81	-0.08	10.24	QP
12	0.459	29.87	-16.84	46.71	19.71	-0.08	10.24	Average
13	13.560	28.14	-31.86	60.00	17.20	-0.18	11.12	QP
14	13.560	22.44	-27.56	50.00	11.50	-0.18	11.12	Average

Note:

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



AppendixC. Radiated Spurious Emission

Test Engineer :	Carry Xu	Temperature :	22~23°C
		Relative Humidity :	41~42%

Note: All modes had been tested and only the worst channel test data shown in the report

2.4GHz 2400~2483.5MHz

BLE (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE CH 39 2480MHz	*	2480	102.51	-	-	95.99	32.43	6.73	32.64	299	303	P	H
	*	2480	100.78	-	-	94.26	32.43	6.73	32.64	299	303	A	H
		2483.5	58.35	-15.65	74	51.83	32.43	6.73	32.64	299	303	P	H
		2483.56	46.32	-7.68	54	39.8	32.43	6.73	32.64	299	303	A	H
	*	2480	109.1	-	-	102.58	32.43	6.73	32.64	127	112	P	V
	*	2480	107.12	-	-	100.6	32.43	6.73	32.64	127	112	A	V
		2483.56	65.07	-8.93	74	58.55	32.43	6.73	32.64	127	112	P	V
		2483.5	50.31	-3.69	54	43.79	32.43	6.73	32.64	127	112	A	V
Remark	<ol style="list-style-type: none"> No other spurious found. All results are PASS against Peak and Average limit line. 												



2.4GHz 2400~2483.5MHz

BLE (Harmonic @ 3m)

BLE	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)
BLE CH 39 2480MHz		4965	41.15	-32.85	74	59.01	34.1	9.61	61.57	300	0	P	H
		7440	43.23	-30.77	74	57.45	35.7	11.78	61.7	300	0	P	H
		4965	41.11	-32.89	74	58.97	34.1	9.61	61.57	100	0	P	V
		7440	43.15	-30.85	74	57.37	35.7	11.78	61.7	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

2.4GHz BLE (LF)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz BLE LF		68.8	14.96	-25.04	40	30.95	15.24	1.17	32.4	-	-	P	H
		94.02	15.76	-27.74	43.5	31.48	15.32	1.36	32.4	-	-	P	H
		187.14	19.94	-23.56	43.5	35.27	15.06	2.01	32.4	-	-	P	H
		265.71	17.84	-28.16	46	28.56	19.45	2.23	32.4	-	-	P	H
		350.1	21.5	-24.5	46	30.53	20.61	2.76	32.4	-	-	P	H
		691.54	26.91	-19.09	46	28.73	26.67	3.91	32.4	-	-	P	H
		67.83	27.48	-12.52	40	47.03	12.36	0.93	32.84	-	-	P	V
		98.87	23.56	-19.94	43.5	39.16	15.93	1.34	32.87	-	-	P	V
		250.19	18.76	-27.24	46	30.75	18.65	2.13	32.77	-	-	P	V
		323.91	21.53	-24.47	46	32.28	19.68	2.43	32.86	-	-	P	V
		518.88	25.33	-20.67	46	30.98	24.27	3.07	32.99	-	-	P	V
	690.57	28.02	-17.98	46	30.75	26.77	3.55	33.05	-	-	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:

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		(MHz)	(dBμV/m)	(dB)	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
					(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BLE		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 00		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H
2402MHz													

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)

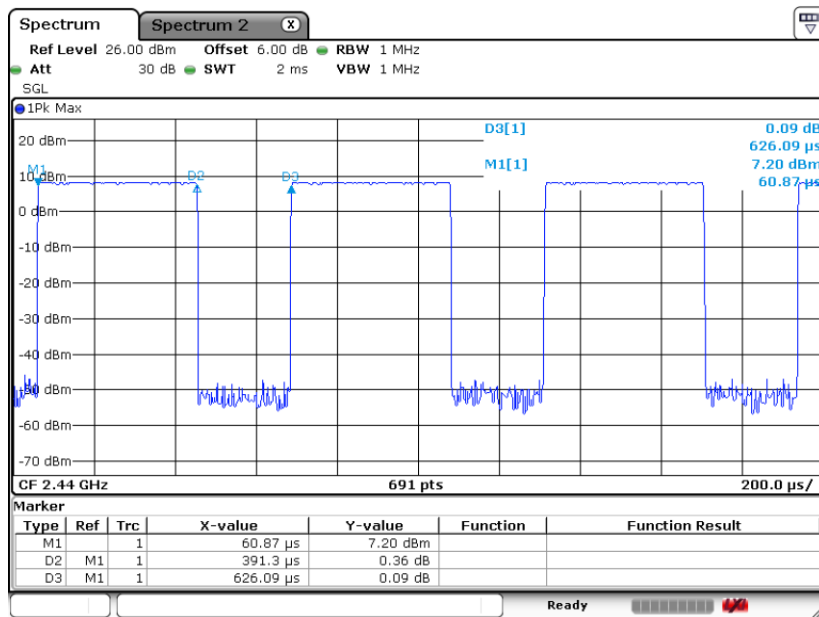
Both peak and average measured complies with the limit line, so test result is “PASS”.



Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
Bluetooth LE 1Mbps	62.50	0.391	2.556	2.7KHz
Bluetooth LE 2Mbps	33.33	0.209	4.792	5.1KHz

Bluetooth LE 1Mbps





Bluetooth LE 2Mbps

