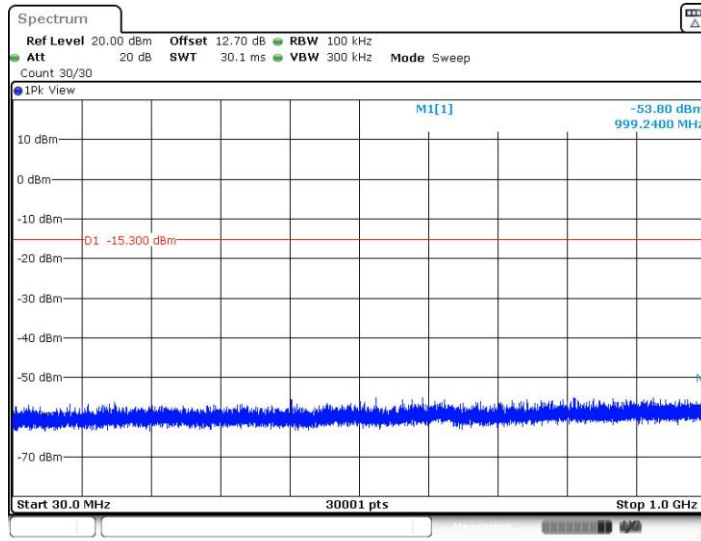


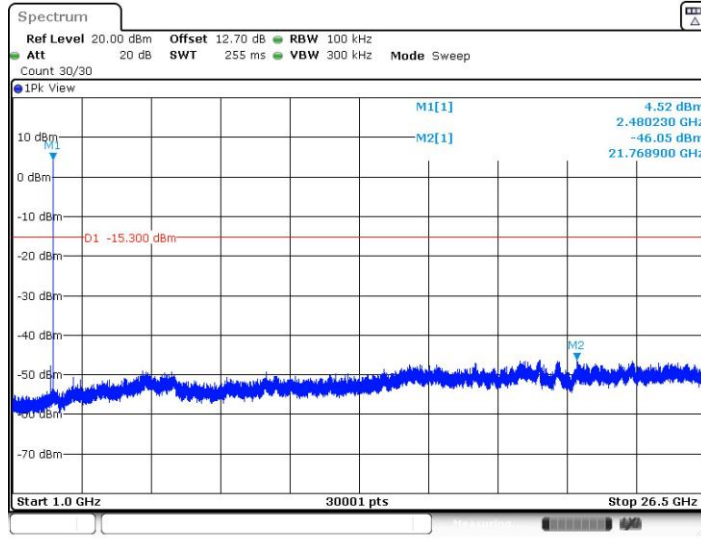


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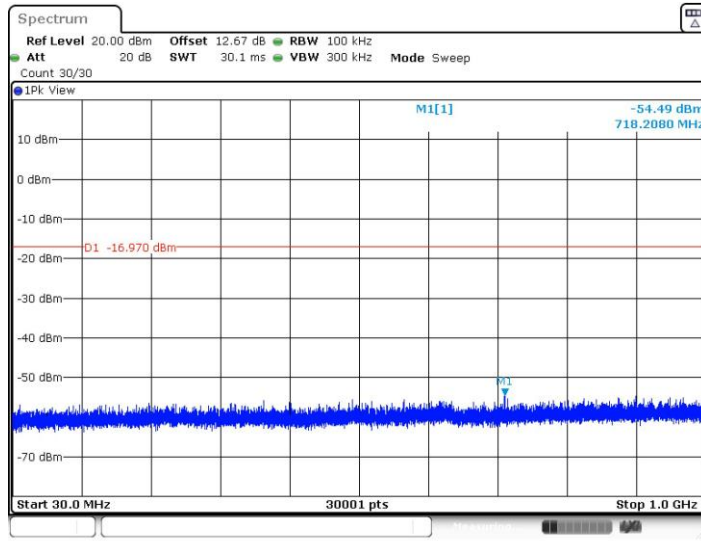
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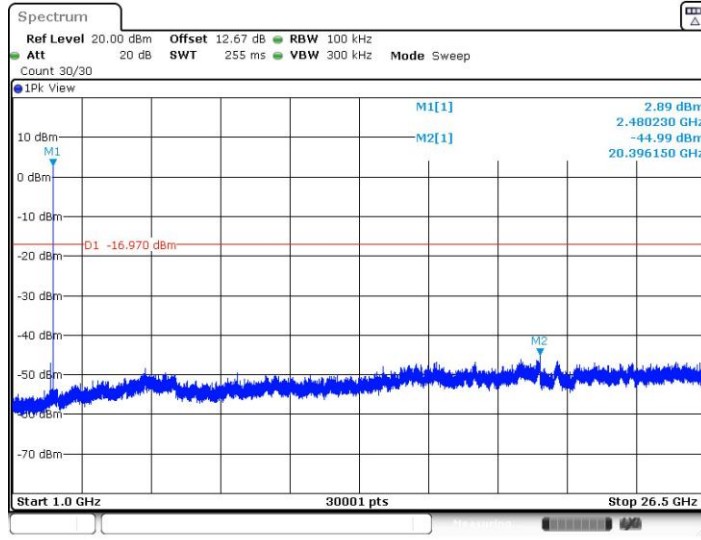
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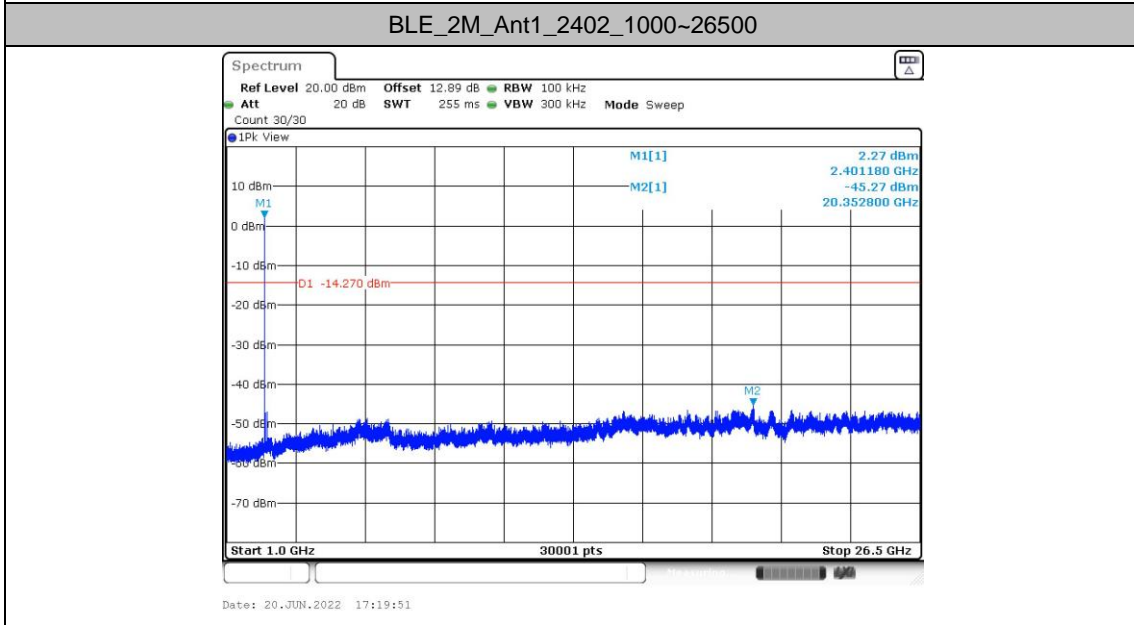
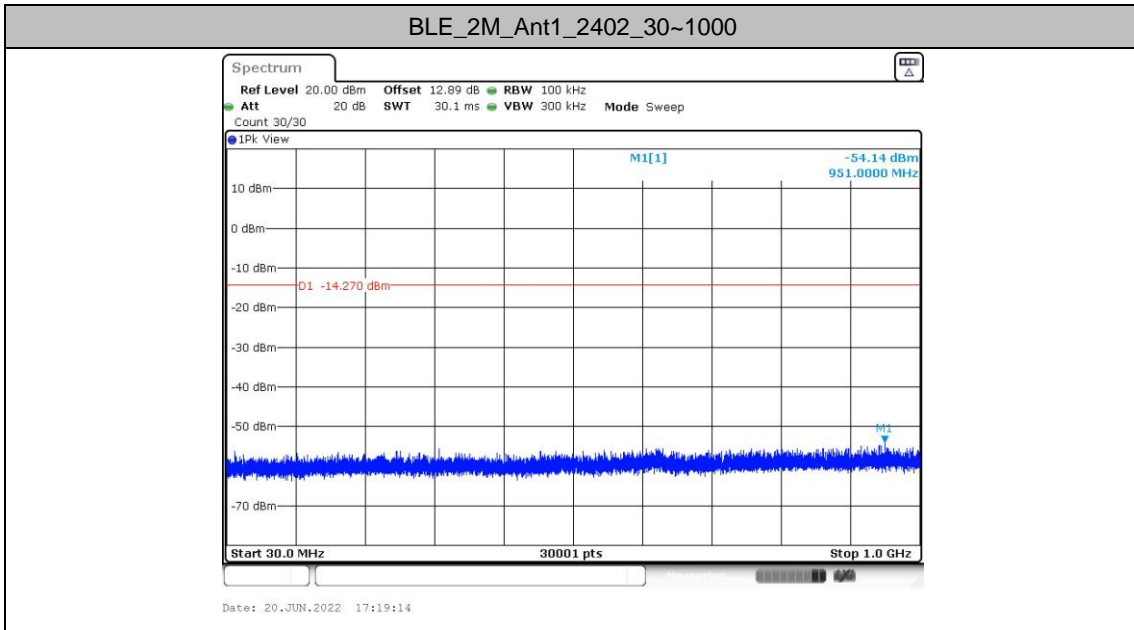


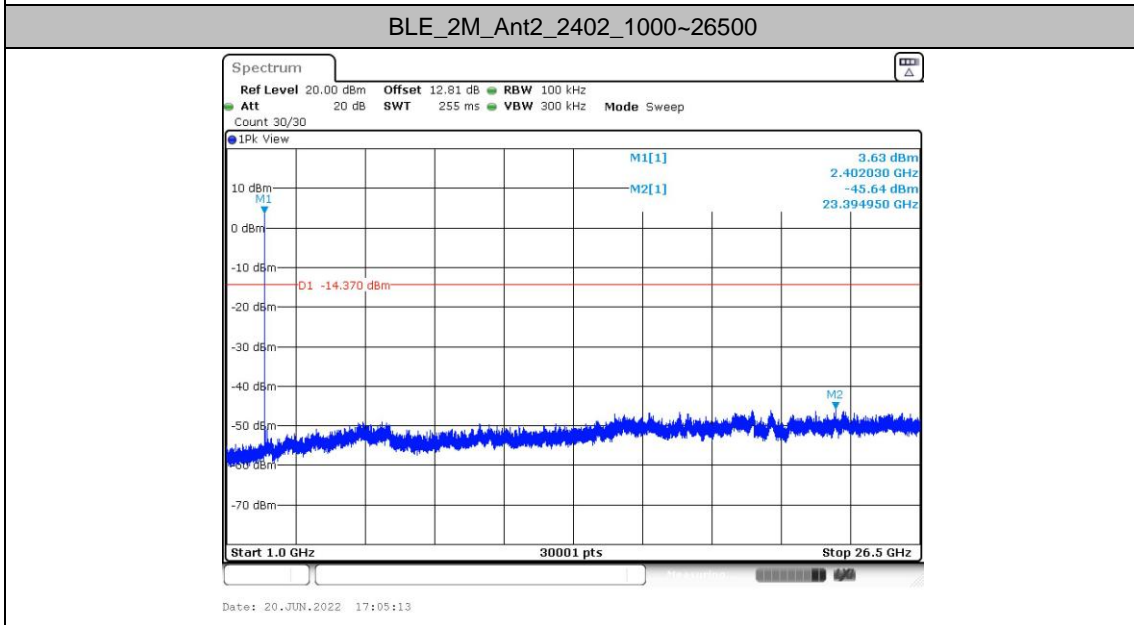
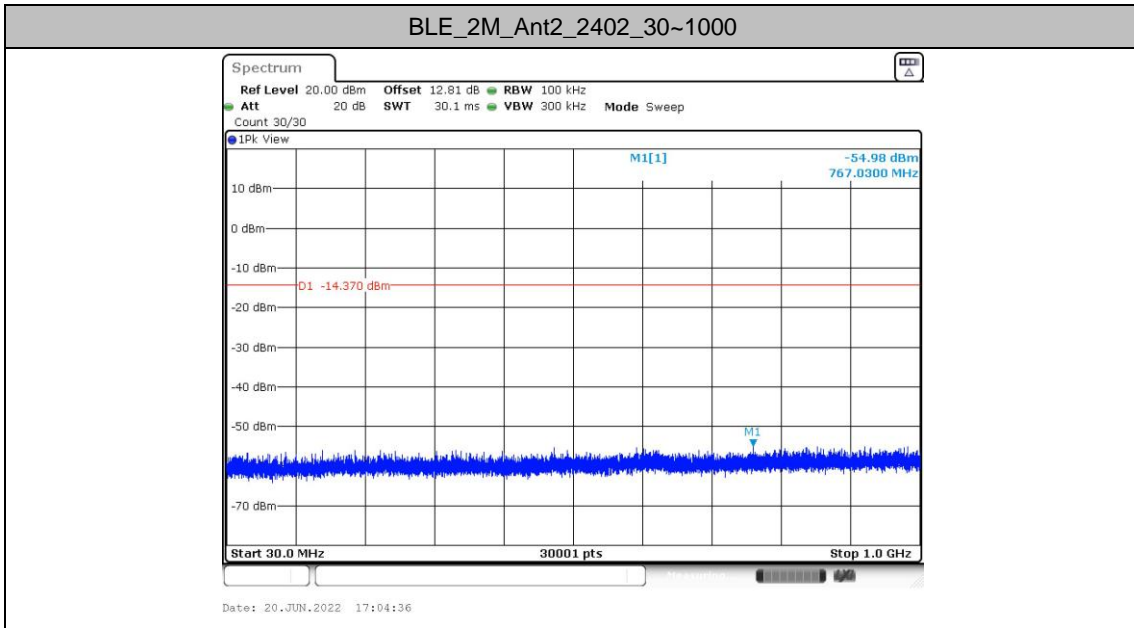
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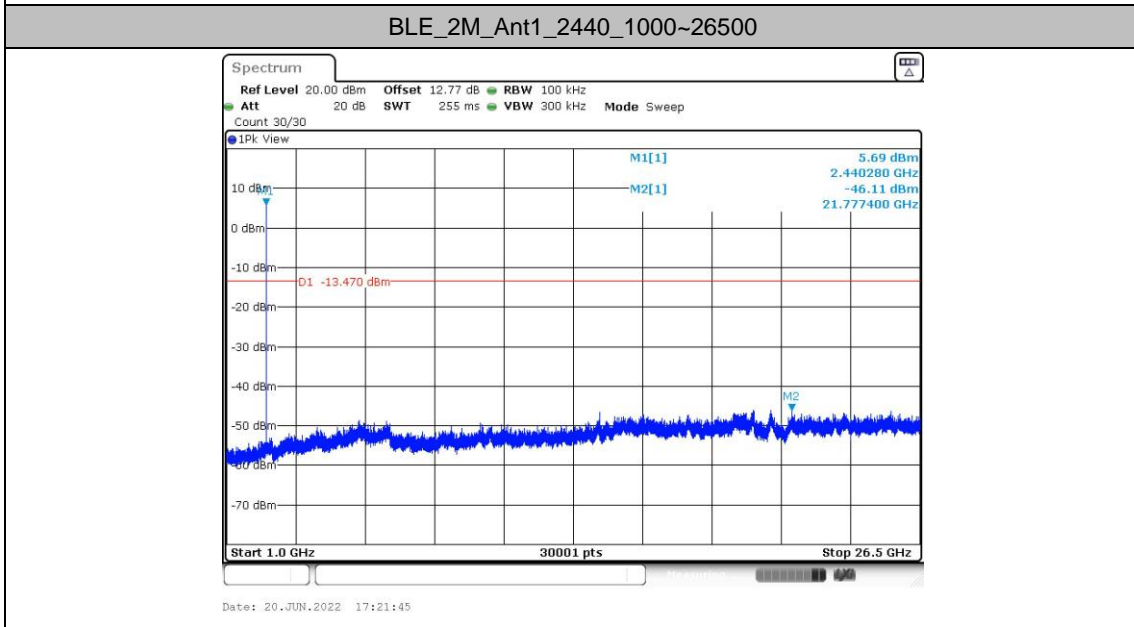
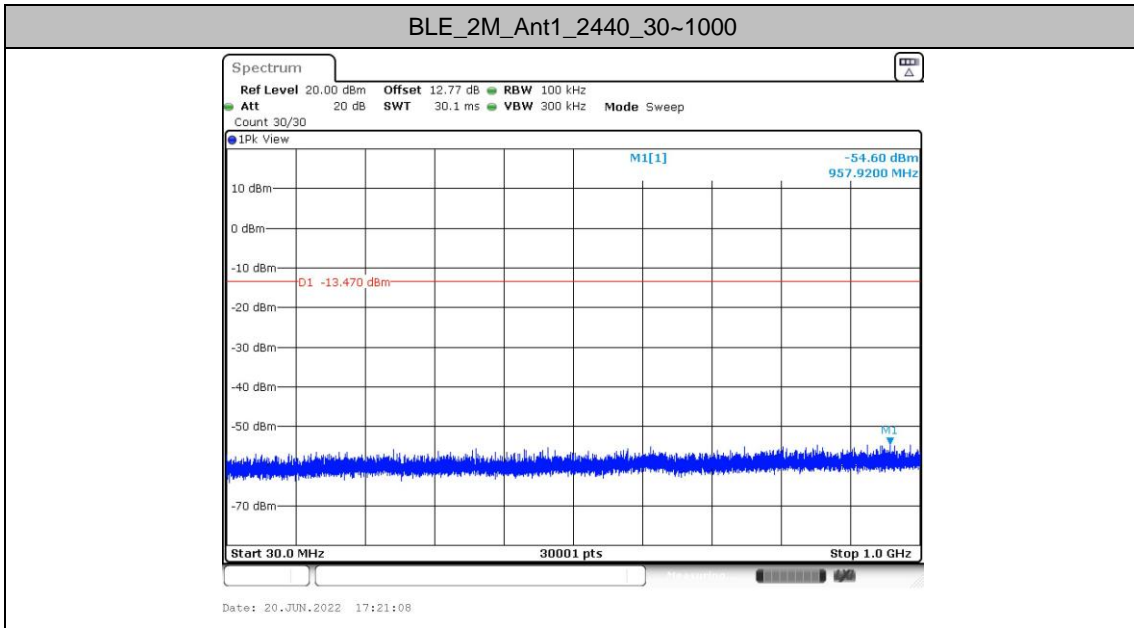


BLE\_1M\_Ant2\_2480\_1000~26500



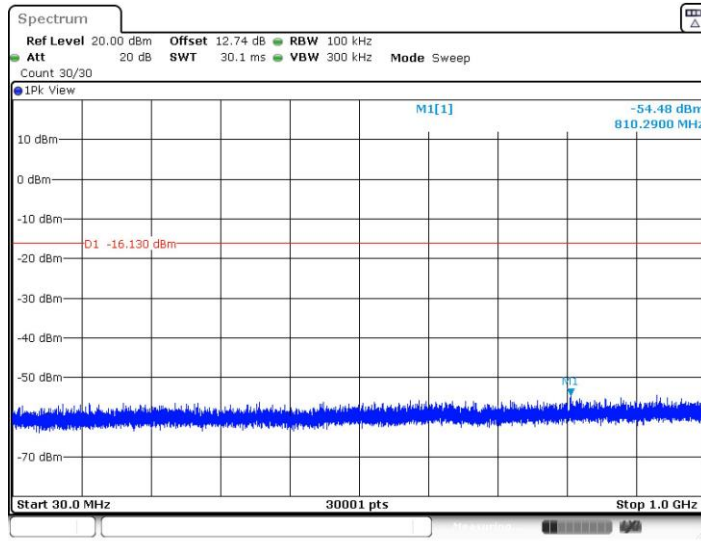






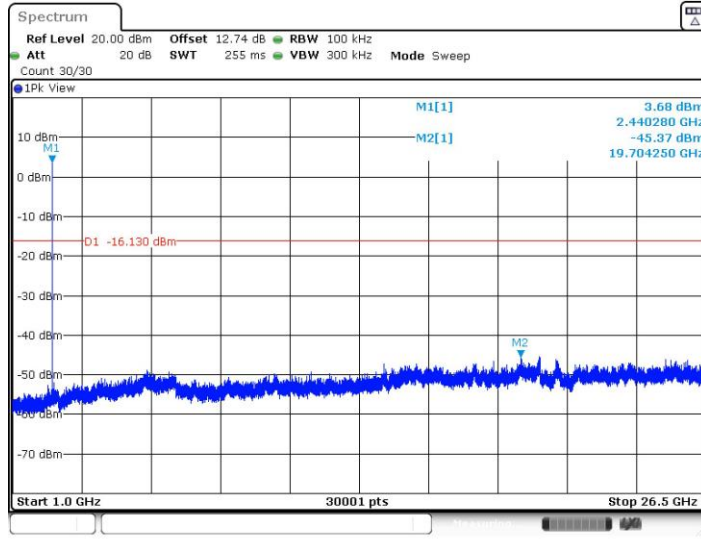


BLE\_2M\_Ant2\_2440\_30~1000

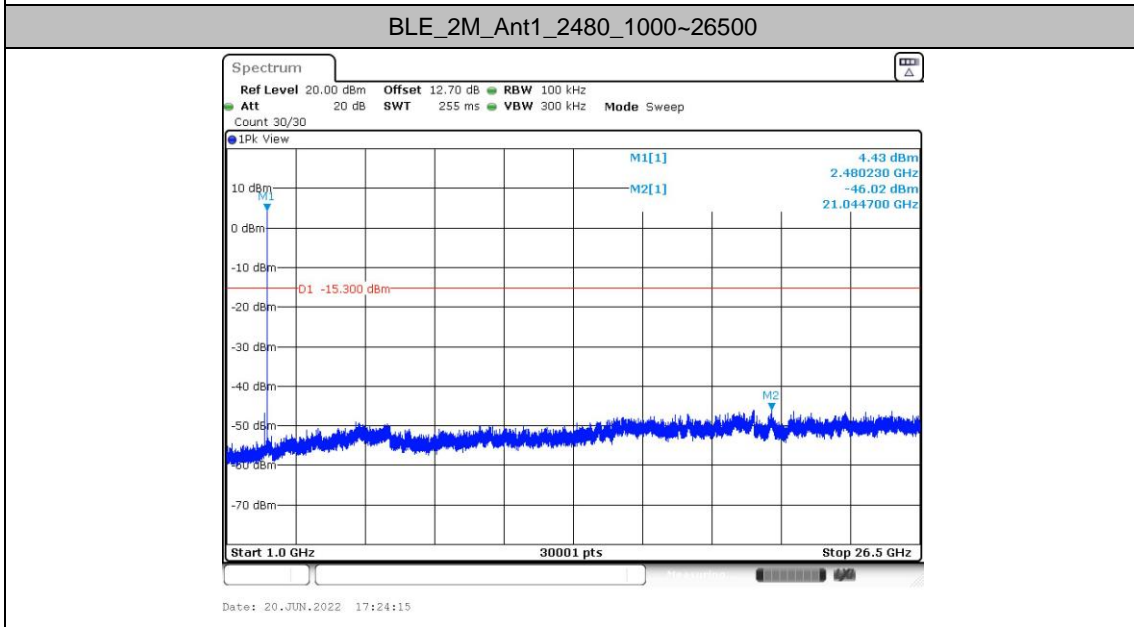
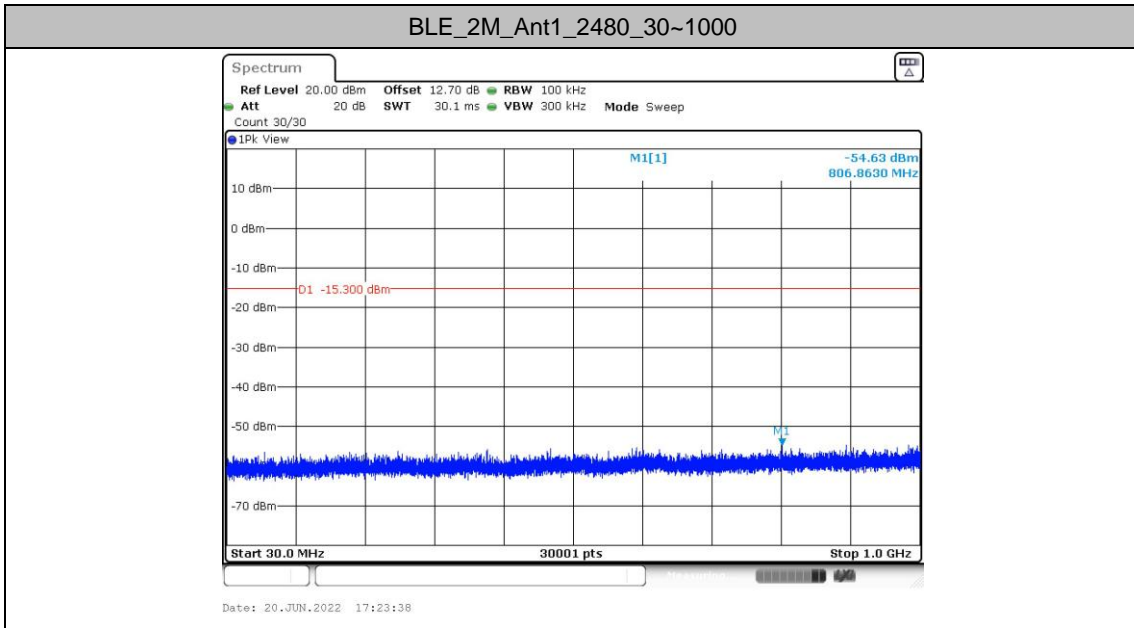


Date: 20 JUN.2022 17:06:41

BLE\_2M\_Ant2\_2440\_1000~26500

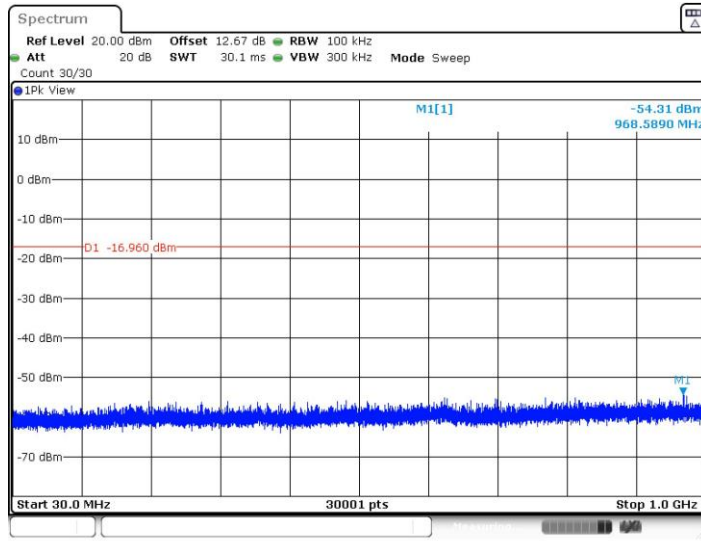


Date: 20 JUN.2022 17:07:18



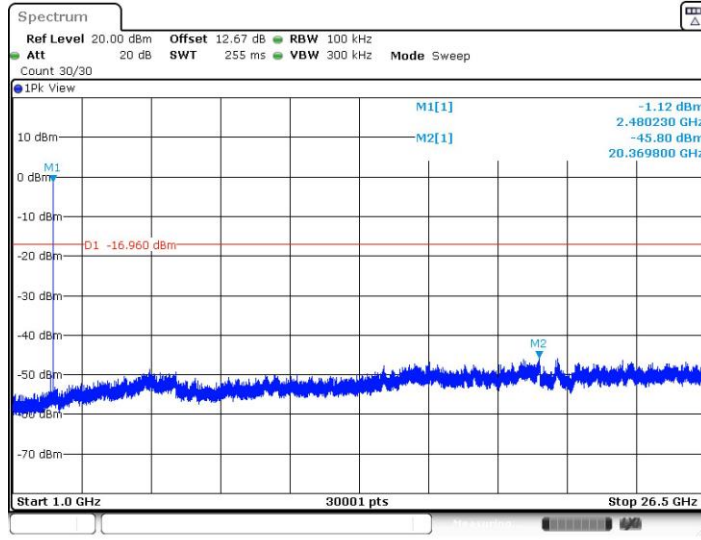


BLE\_2M\_Ant2\_2480\_30~1000



Date: 20 JUN.2022 17:09:05

BLE\_2M\_Ant2\_2480\_1000~26500



Date: 20 JUN.2022 17:09:42





### Maximum Output Power

#### Peak Power

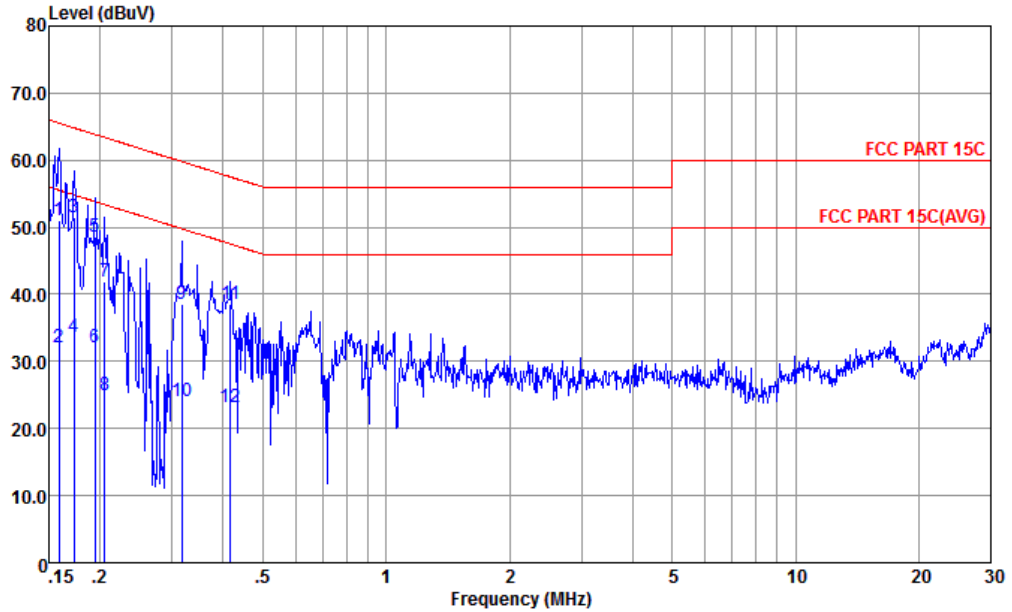
Ant	Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
Ant 1	BLE	1Mbps	1	0	2402	6.74	30.00	-3.30	3.44	36.00	Pass
	BLE	1Mbps	1	19	2440	7.83	30.00	-3.30	4.53	36.00	Pass
	BLE	1Mbps	1	39	2480	6.25	30.00	-3.30	2.95	36.00	Pass
Ant 2	BLE	1Mbps	1	0	2402	7.21	30.00	-3.70	3.51	36.00	Pass
	BLE	1Mbps	1	19	2440	6.24	30.00	-3.70	2.54	36.00	Pass
	BLE	1Mbps	1	39	2480	4.93	30.00	-3.70	1.23	36.00	Pass

Ant	Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
Ant 1	BLE	2Mbps	1	0	2402	6.94	30.00	-3.30	3.64	36.00	Pass
	BLE	2Mbps	1	19	2440	8.07	30.00	-3.30	4.77	36.00	Pass
	BLE	2Mbps	1	39	2480	6.49	30.00	-3.30	3.19	36.00	Pass
Ant 2	BLE	2Mbps	1	0	2402	7.39	30.00	-3.70	3.69	36.00	Pass
	BLE	2Mbps	1	19	2440	6.47	30.00	-3.70	2.77	36.00	Pass
	BLE	2Mbps	1	39	2480	5.32	30.00	-3.70	1.62	36.00	Pass



## Appendix B. AC Conducted Emission Test Results

Test Engineer :	Amos Zhao	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.		

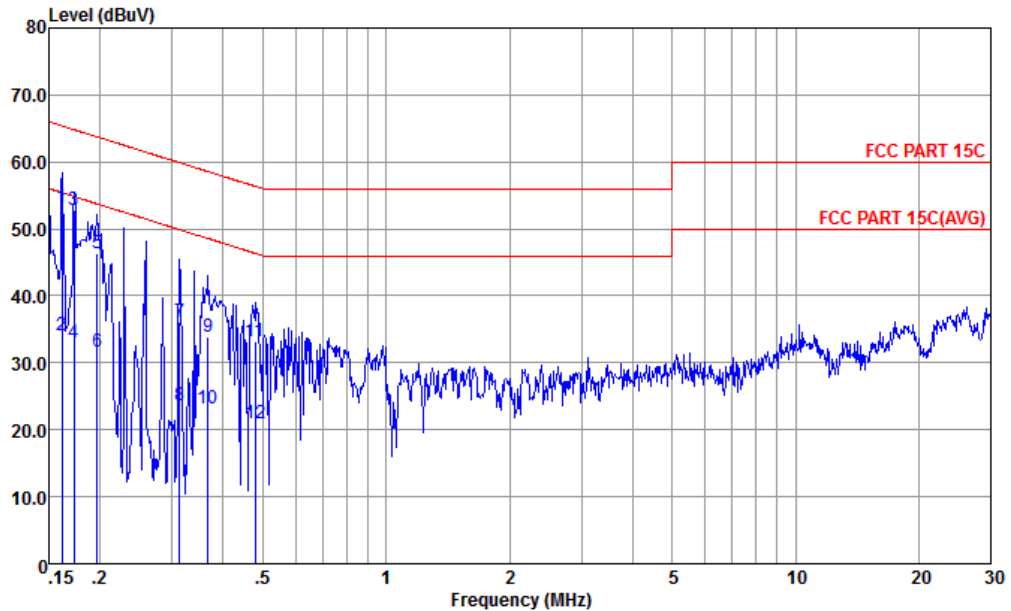


Site : CO01-KS  
 Condition : FCC PART 15C LISN-060105-L LINE

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.159	51.08	-14.44	65.52	40.60	0.02	10.46	QP
2	0.159	32.08	-23.44	55.52	21.60	0.02	10.46	Average
3 *	0.173	51.55	-13.26	64.81	41.10	0.03	10.42	QP
4	0.173	33.75	-21.06	54.81	23.30	0.03	10.42	Average
5	0.194	48.61	-15.23	63.84	38.20	0.04	10.37	QP
6	0.194	32.01	-21.83	53.84	21.60	0.04	10.37	Average
7	0.205	41.90	-21.50	63.40	31.50	0.04	10.36	QP
8	0.205	25.00	-28.40	53.40	14.60	0.04	10.36	Average
9	0.317	38.57	-21.23	59.80	28.20	0.07	10.30	QP
10	0.317	24.00	-25.80	49.80	13.63	0.07	10.30	Average
11	0.417	38.55	-18.96	57.51	28.20	0.09	10.26	QP
12	0.417	23.15	-24.36	47.51	12.80	0.09	10.26	Average



Test Engineer :	Amos Zhao	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 15C 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 *	0.162	53.36	-12.02	65.38	42.80	0.11	10.45	QP
2	0.162	34.16	-21.22	55.38	23.60	0.11	10.45	Average
3	0.173	52.73	-12.08	64.81	42.20	0.11	10.42	QP
4	0.173	33.03	-21.78	54.81	22.50	0.11	10.42	Average
5	0.197	46.27	-17.49	63.76	35.80	0.10	10.37	QP
6	0.197	31.57	-22.19	53.76	21.10	0.10	10.37	Average
7	0.313	36.00	-23.88	59.88	25.60	0.10	10.30	QP
8	0.313	23.70	-26.18	49.88	13.30	0.10	10.30	Average
9	0.367	33.98	-24.58	58.56	23.60	0.10	10.28	QP
10	0.367	23.18	-25.38	48.56	12.80	0.10	10.28	Average
11	0.479	33.15	-23.21	56.36	22.80	0.11	10.24	QP
12	0.479	20.95	-25.41	46.36	10.60	0.11	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

### 2.4GHz 2400~2483.5MHz

#### BLE(2Mbps) (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	95.02	-	-	91.61	32.98	7.25	36.82	293	55	P	H
	*	2480	93.47	-	-	90.06	32.98	7.25	36.82	293	55	A	H
		2488.72	50.87	-23.13	74	47.43	33	7.25	36.81	293	55	P	H
		2483.5	43.54	-10.46	54	40.13	32.98	7.25	36.82	293	55	A	H
	*	2480	97.81	-	-	94.4	32.98	7.25	36.82	107	113	P	V
	*	2480	96.34	-	-	92.93	32.98	7.25	36.82	107	113	A	V
		2483.68	50.81	-23.19	74	47.4	32.98	7.25	36.82	107	113	P	V
		2483.5	45.46	-8.54	54	42.05	32.98	7.25	36.82	107	113	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

### 2.4GHz 2400~2483.5MHz

#### BLE(2Mbps) (Harmonic @ 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		4965	40.33	-33.67	74	61.11	34.28	10.41	65.47	300	0	P	H
		7440	44.1	-29.9	74	61.73	35.89	12.79	66.31	300	0	P	H
		4965	41.16	-32.84	74	61.94	34.28	10.41	65.47	100	0	P	V
		7440	43.52	-30.48	74	61.15	35.89	12.79	66.31	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 )	Limit	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
					Line	(dBμV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
2.4GHz BLE LF		30.97	20.82	-19.18	40	27.93	24.98	0.71	32.8	-	-	P	H
		127.97	15.3	-28.2	43.5	28.65	17.77	1.72	32.84	-	-	P	H
		260.86	17.77	-28.23	46	28.79	19.57	2.47	33.06	-	-	P	H
		418	21.22	-24.78	46	27.83	23.03	3.12	32.76	-	-	P	H
		564.47	25.48	-20.52	46	28.64	25.78	3.63	32.57	-	-	P	H
		754.59	28.35	-17.65	46	30.29	26.54	4.2	32.68	-	-	P	H
		30	22.47	-17.53	40	28.96	25.5	0.71	32.7	-	-	P	V
		135.73	16.25	-27.25	43.5	29.64	17.67	1.77	32.83	-	-	P	V
		250.19	19.35	-26.65	46	30.63	19.4	2.42	33.1	-	-	P	V
		437.4	22.33	-23.67	46	28.48	23.38	3.19	32.72	-	-	P	V
		591.63	26.11	-19.89	46	29.35	25.57	3.71	32.52	-	-	P	V
	785.63	28.66	-17.34	46	30.16	26.78	4.28	32.56	-	-	P	V	
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



**Note symbol**

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



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 )	( 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)

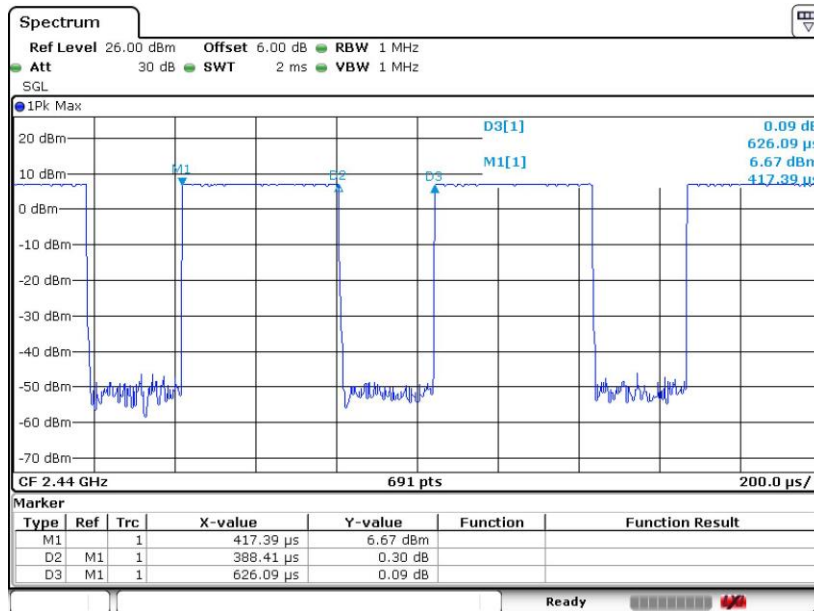
**Both peak and average measured complies with the limit line, so test result is “PASS”.**



### Appendix D. Duty Cycle Plots

Ant	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1	Bluetooth LE 1Mbps	62.04	0.39	2.575	2.7KHZ
1	Bluetooth LE 2Mbps	32.41	0.20	4.929	5.1KHZ
2	Bluetooth LE 1Mbps	62.04	0.39	2.575	2.7KHZ
2	Bluetooth LE 2Mbps	32.41	0.20	4.929	5.1KHZ

Bluetooth LE 1Mbps\_Ant1

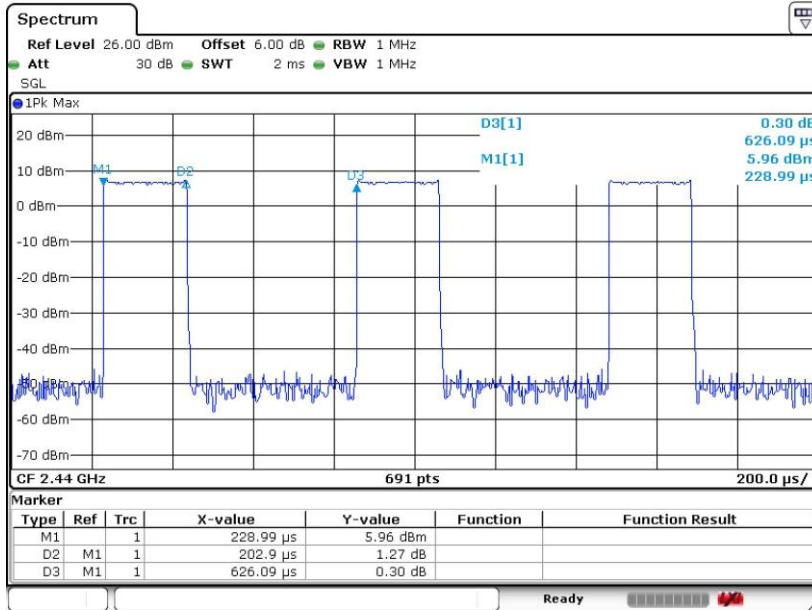


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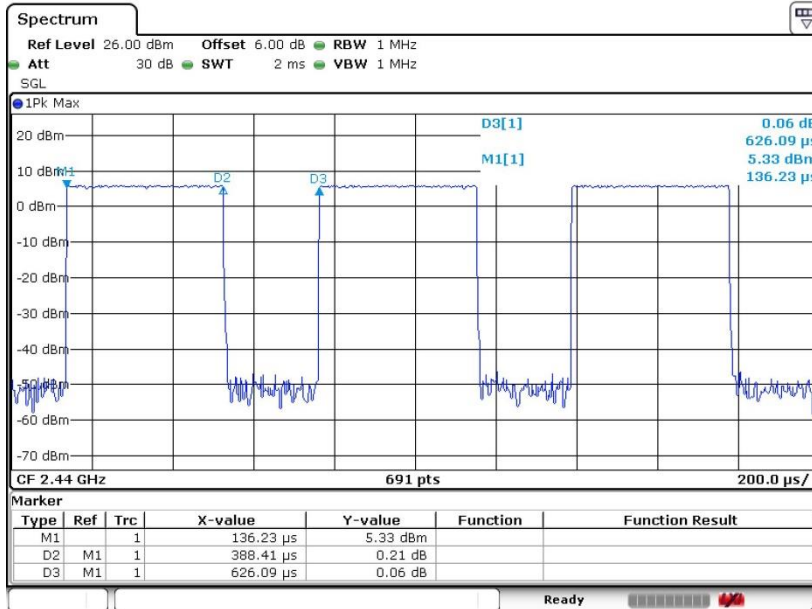


### Bluetooth LE 2Mbps\_Ant1



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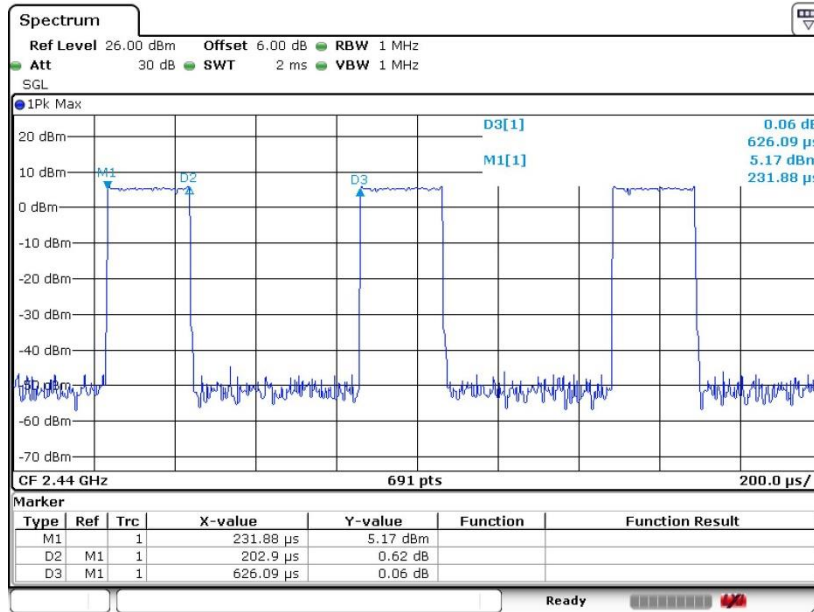
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Bluetooth LE 2Mbps\_Ant2



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