

Appendix A: DTS Bandwidth

Test Result

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.692	2401.640	2402.332	0.5	PASS
		2440	0.688	2439.640	2440.328	0.5	PASS
		2480	0.700	2479.632	2480.332	0.5	PASS

Test Graphs



BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



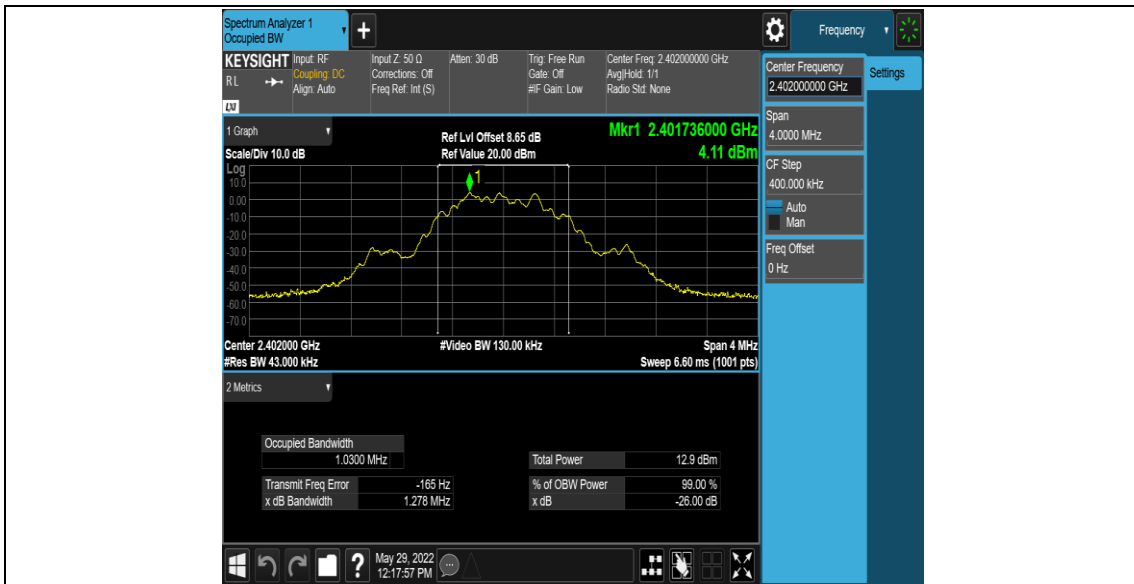
BLE_1M_Ant1_2480

Appendix B: Occupied Channel Bandwidth

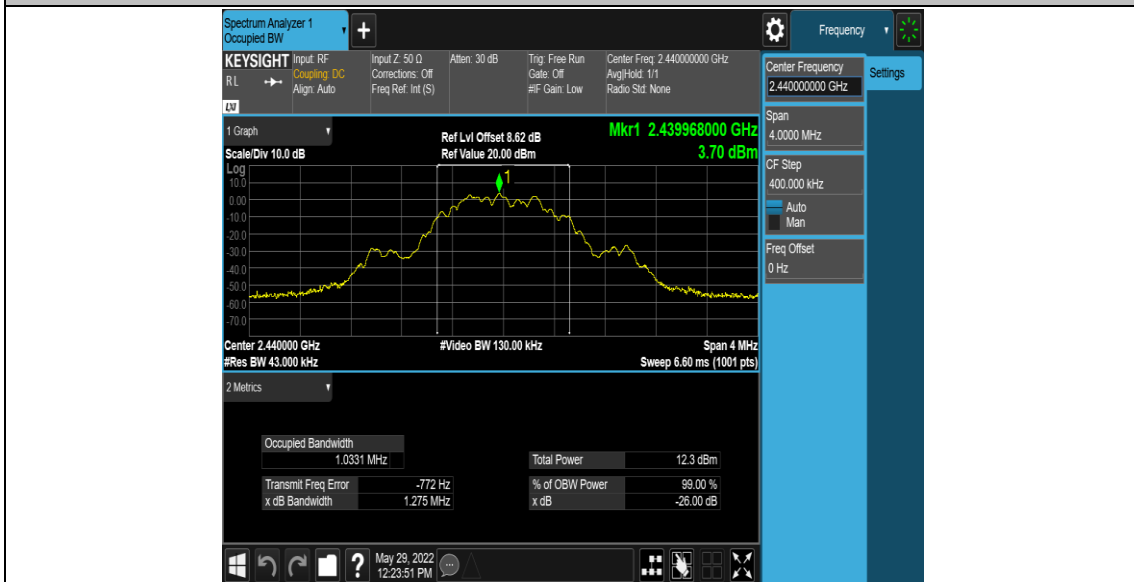
Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0300	2401.485	2402.515	---	---
		2440	1.0331	2439.483	2440.516	---	---
		2480	1.0319	2479.485	2480.517	---	---

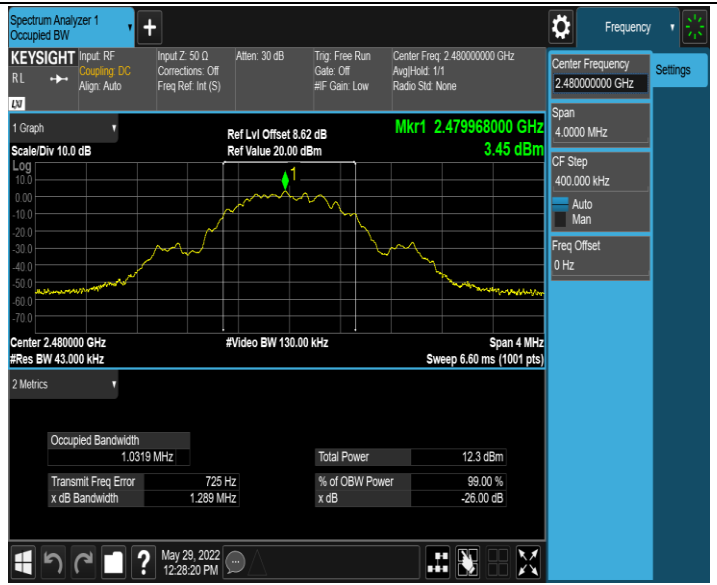
Test Graphs



BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

Appendix C: Maximum conducted output power

Test Result Peak

TestMode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	5.9	≤30	PASS
		2440	5.64	≤30	PASS
		2480	5.41	≤30	PASS

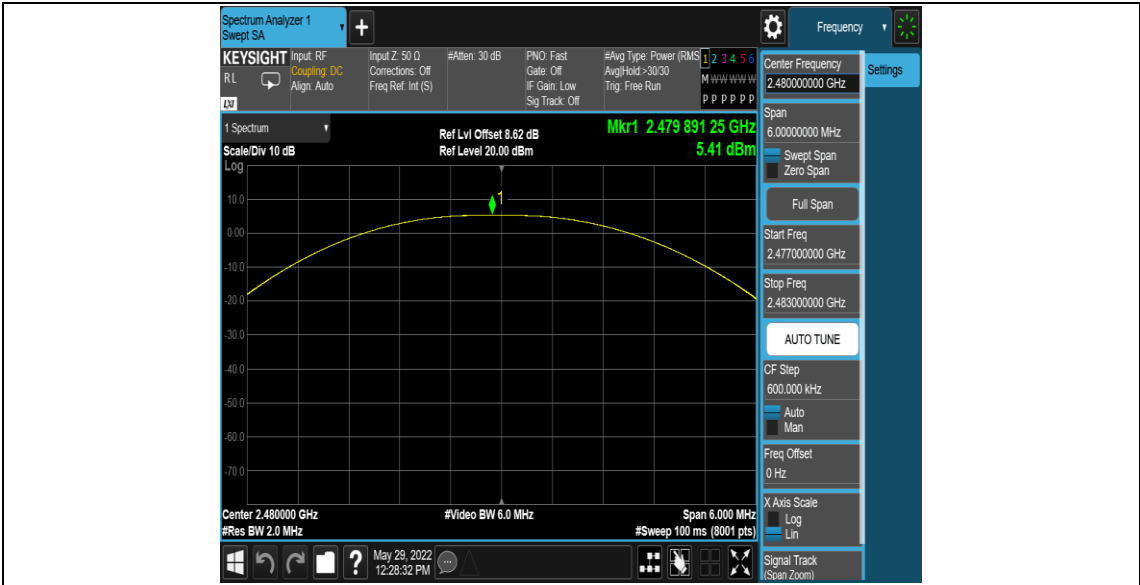
Test Graphs Peak



BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

Appendix D: Maximum power spectral density

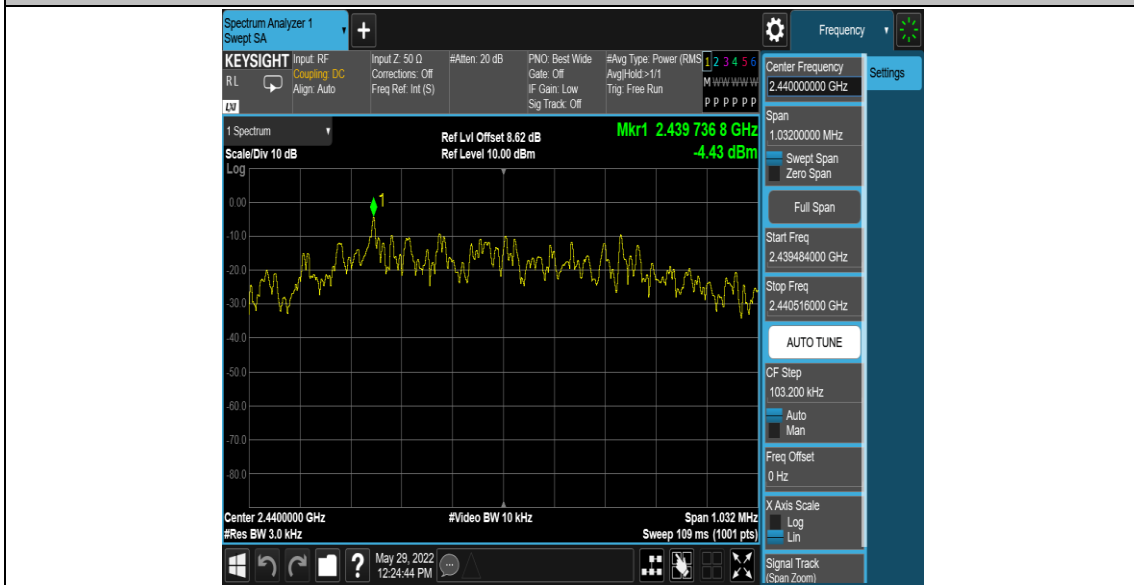
Test Result

TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-3.94	≤8.00	PASS
		2440	-4.43	≤8.00	PASS
		2480	-9.1	≤8.00	PASS

Test Graphs



BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

Reference level measurement

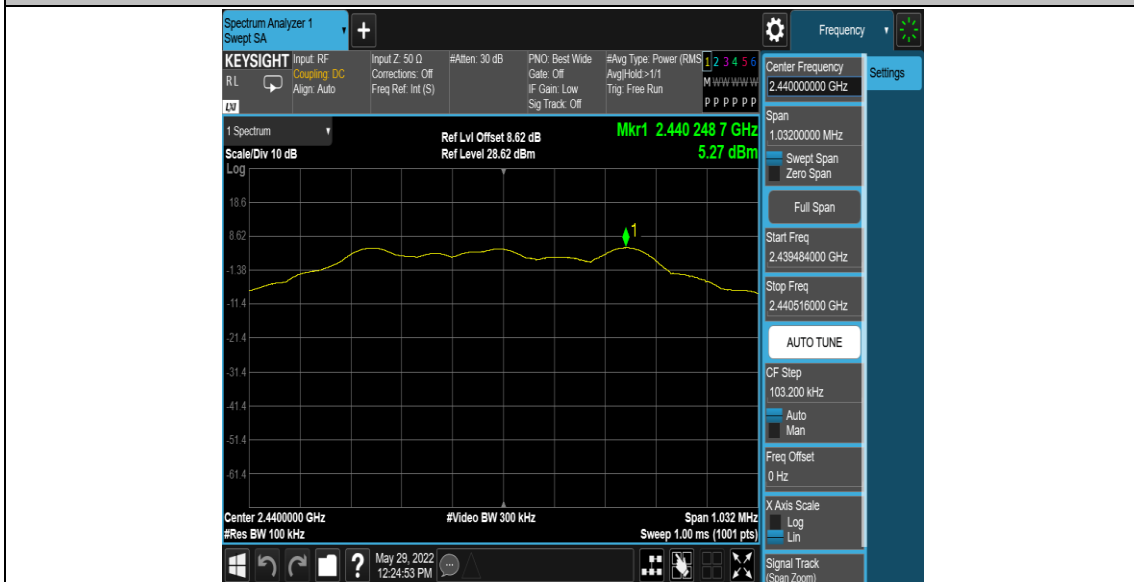
Test Result

TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm]
BLE_1M	Ant1	2402	2402.25	5.61
		2440	2440.25	5.27
		2480	2480.25	4.80

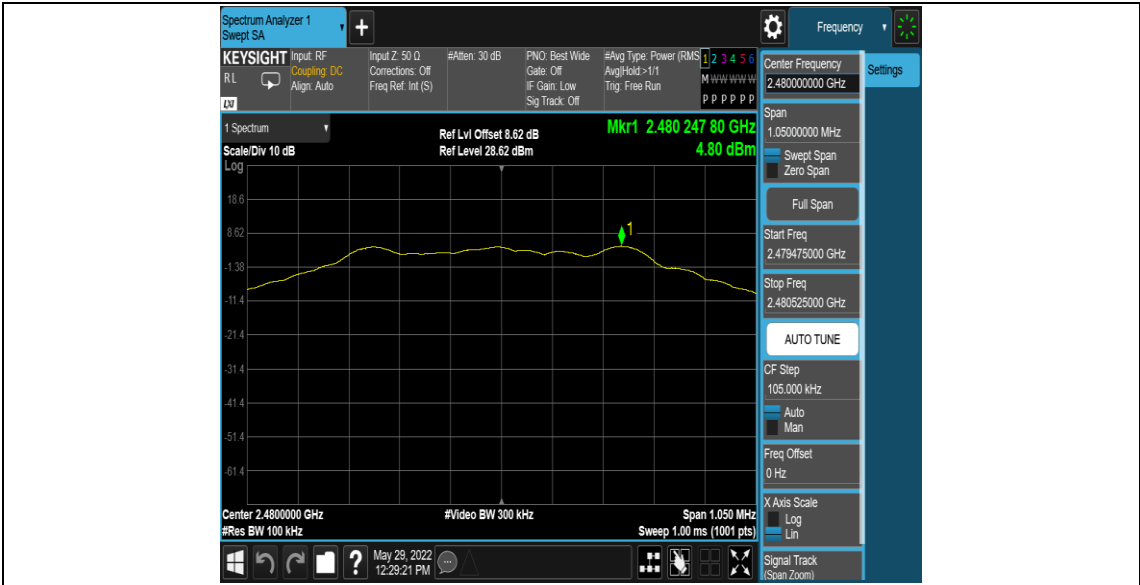
Test Graphs



BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



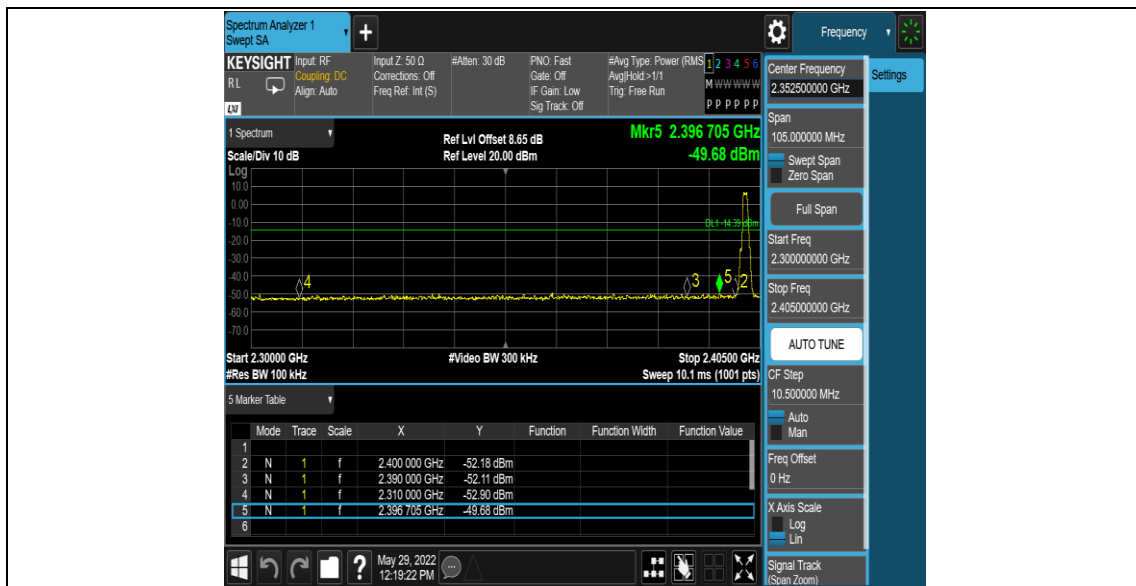
BLE_1M_Ant1_2480

Appendix E: Band edge measurements

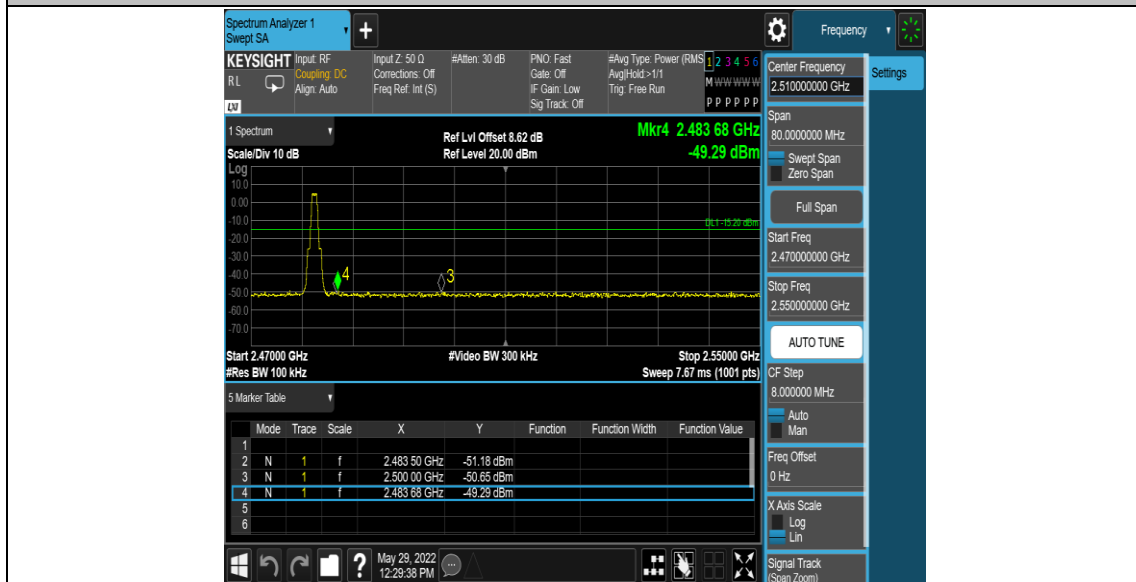
Test Result

TestMode	Antenna	Channel	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	5.61	-49.68	≤-14.39	PASS
		High	2480	4.80	-49.29	≤-15.2	PASS

Test Graphs



BLE_1M_Ant1_Low_2402



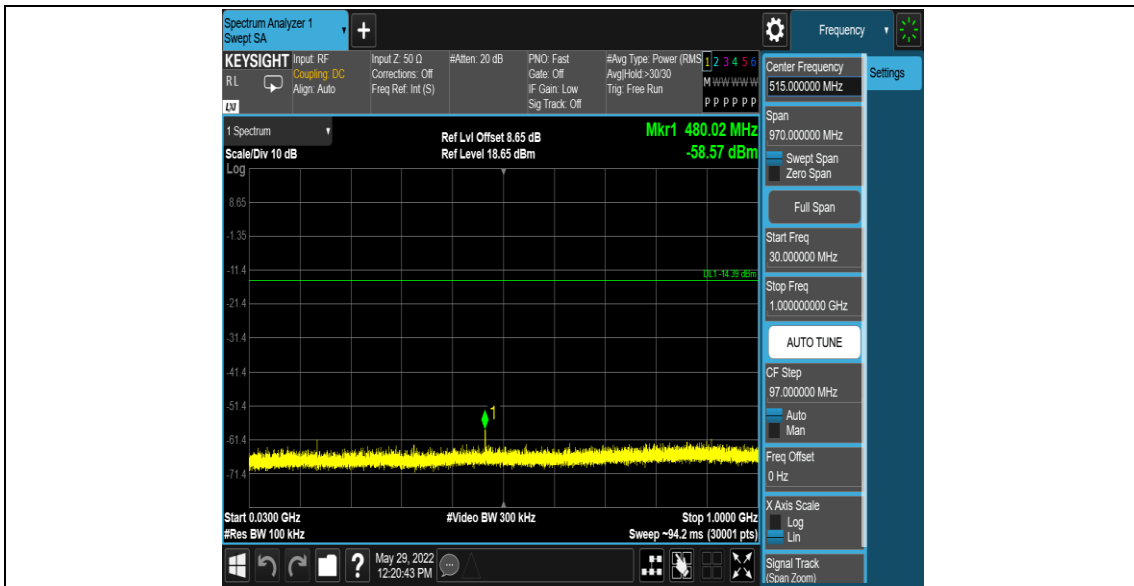
BLE_1M_Ant1_High_2480

Appendix F: Conducted Spurious Emission

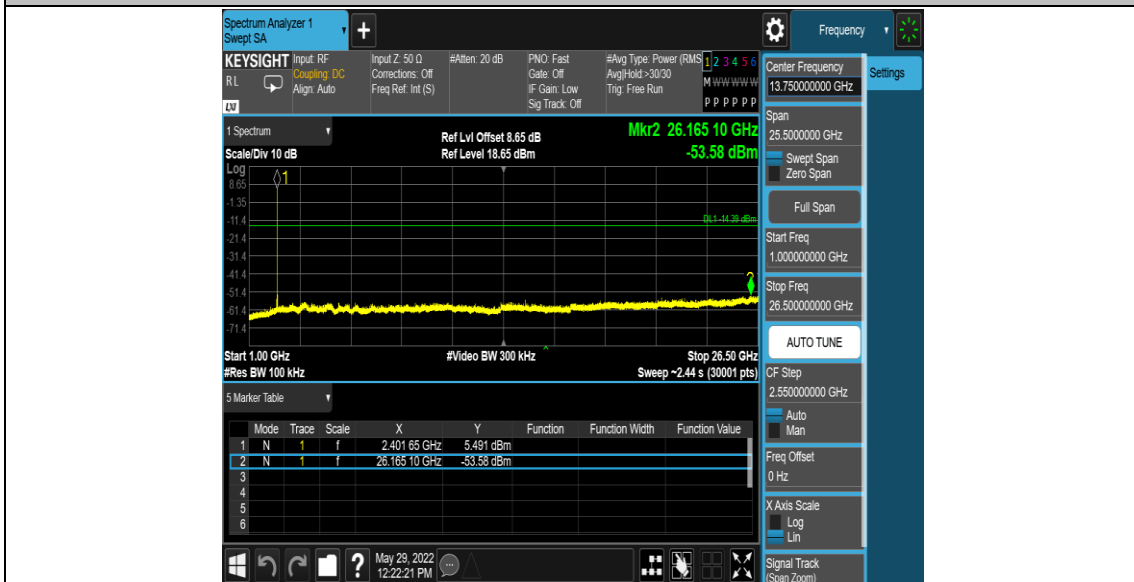
Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	30~1000	5.61	-58.57	≤-14.39	PASS
			1000~26500	5.61	-53.58	≤-14.39	PASS
		2440	30~1000	5.27	-58.89	≤-14.73	PASS
			1000~26500	5.27	-52.91	≤-14.73	PASS
		2480	30~1000	4.80	-58.76	≤-15.2	PASS
			1000~26500	4.80	-52.95	≤-15.2	PASS

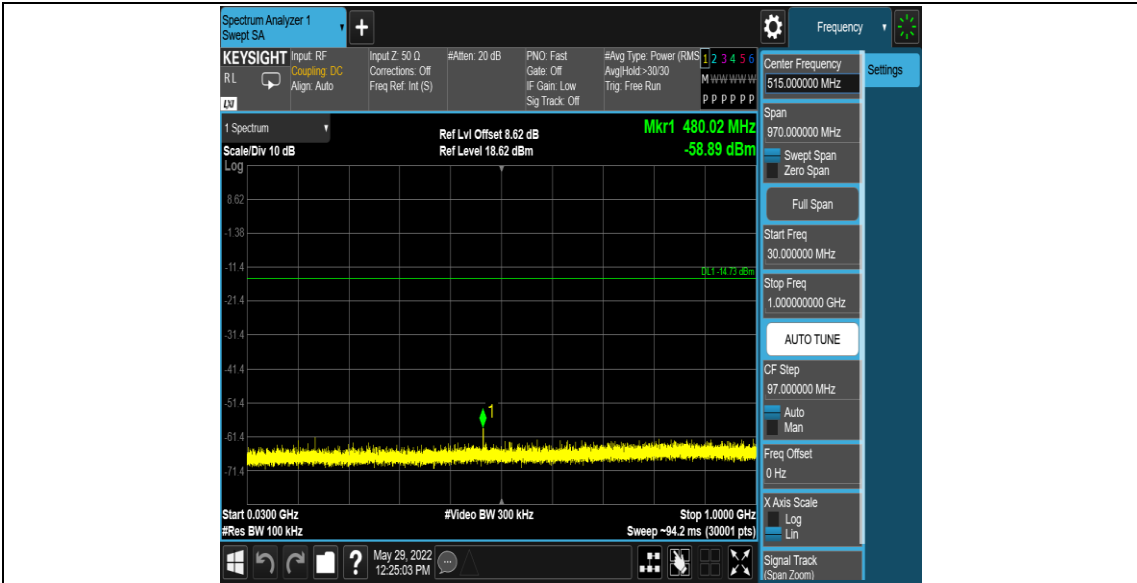
Test Graphs



BLE_1M_Ant1_2402_30~1000



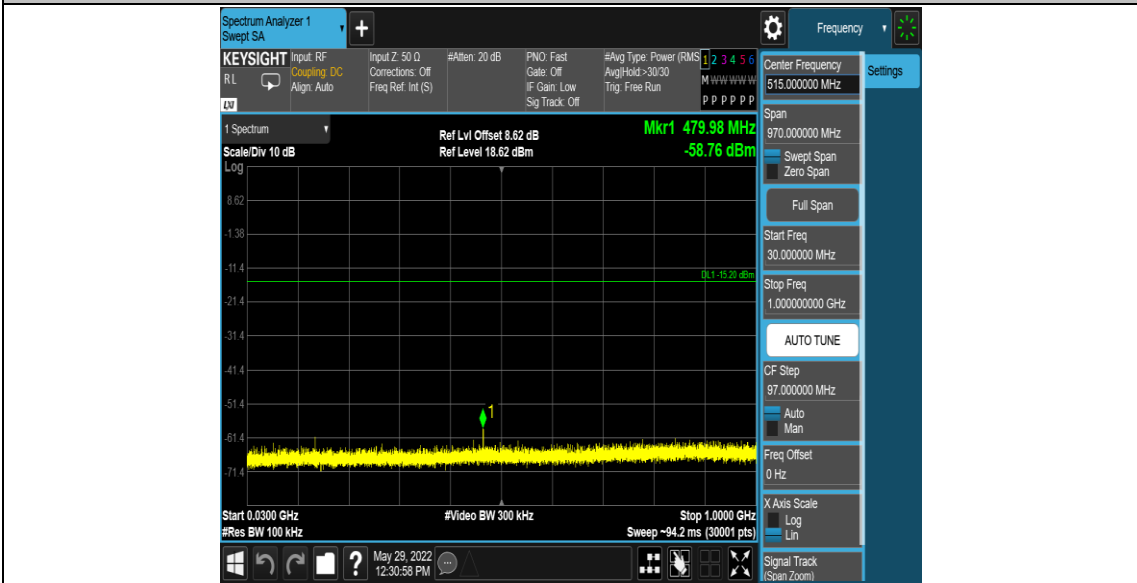
BLE_1M_Ant1_2402_1000~26500



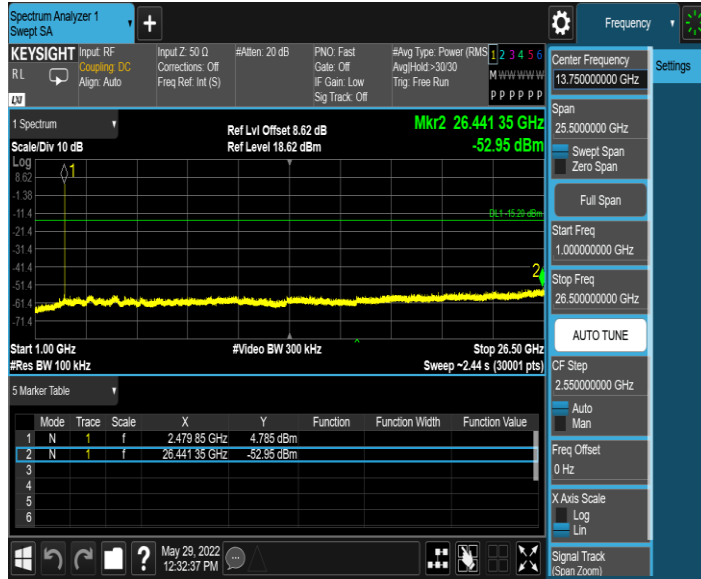
BLE_1M_Ant1_2440_30~1000



BLE_1M_Ant1_2440_1000~26500



BLE_1M_Ant1_2480_30~1000



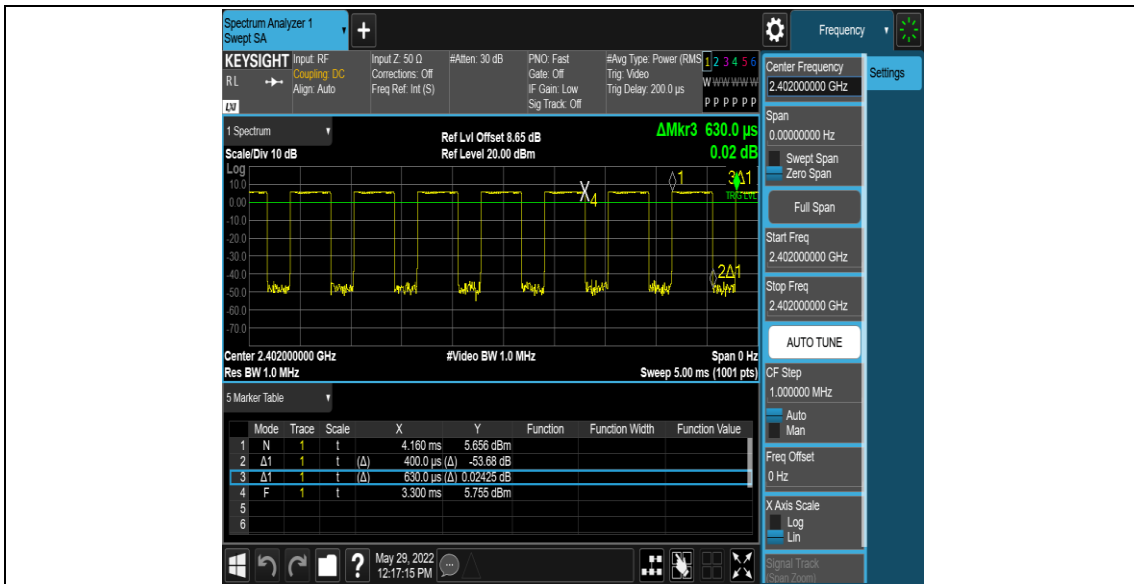
BLE_1M_Ant1_2480_1000~26500

Appendix G: Duty Cycle

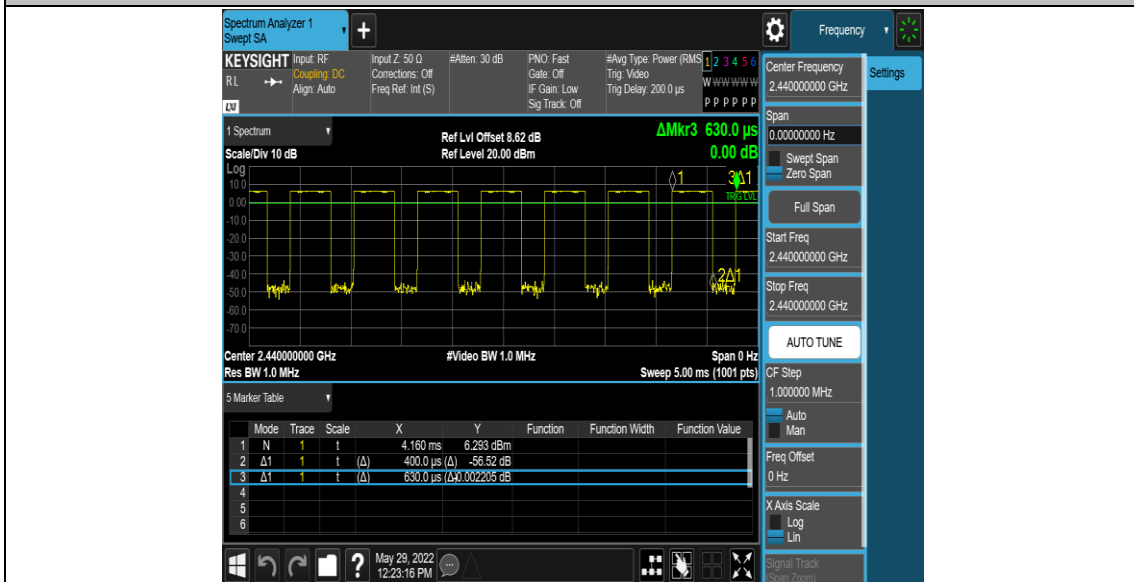
Test Result

TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
BLE_1M	Ant1	2402	0.40	0.63	63.49	1.97
		2440	0.40	0.63	63.49	1.97
		2480	0.40	0.63	63.49	1.97

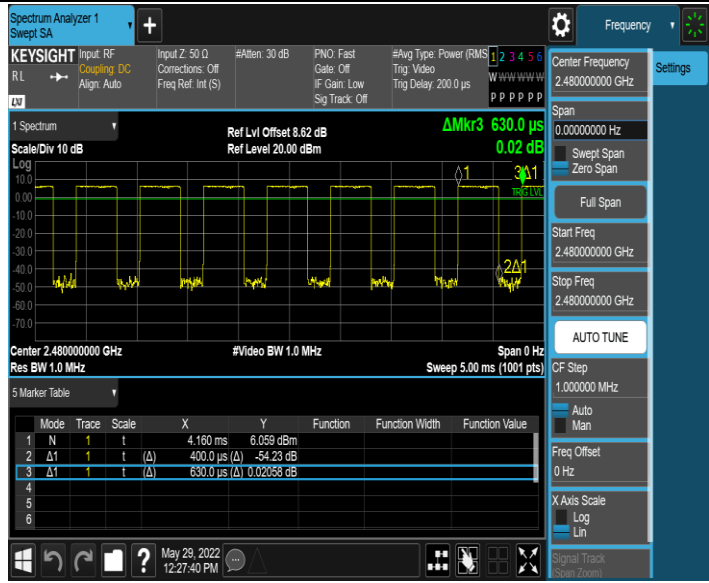
Test Graphs



BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480

Appendix I: Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Frequency [MHz]	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	AV	2310.000	-50.38	≤-41.20	44.82	≤54	PASS
				AV	2361.950	-49.11	≤-41.20	46.09	≤54	PASS
				AV	2390.000	-49.83	≤-41.20	45.37	≤54	PASS
				Peak	2310.000	-40.49	≤-21.20	54.71	≤74	PASS
				Peak	2389.565	-37.01	≤-21.20	58.19	≤74	PASS
				Peak	2390.000	-39.68	≤-21.20	55.52	≤74	PASS
		High	2480	AV	2483.500	-49.38	≤-41.20	45.82	≤54	PASS
				AV	2483.600	-49.24	≤-41.20	45.96	≤54	PASS
				AV	2500.000	-49.74	≤-41.20	45.46	≤54	PASS
				Peak	2483.500	-38.62	≤-21.20	56.58	≤74	PASS
				Peak	2490.240	-37.25	≤-21.20	57.95	≤74	PASS
				Peak	2500.000	-39.59	≤-21.20	55.61	≤74	PASS

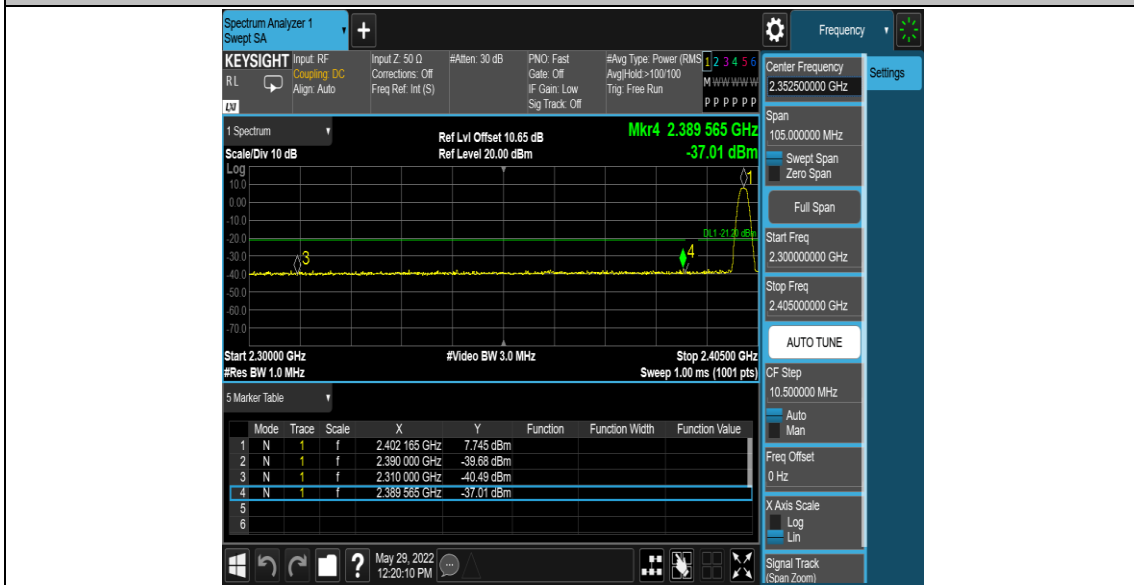
Note:

1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

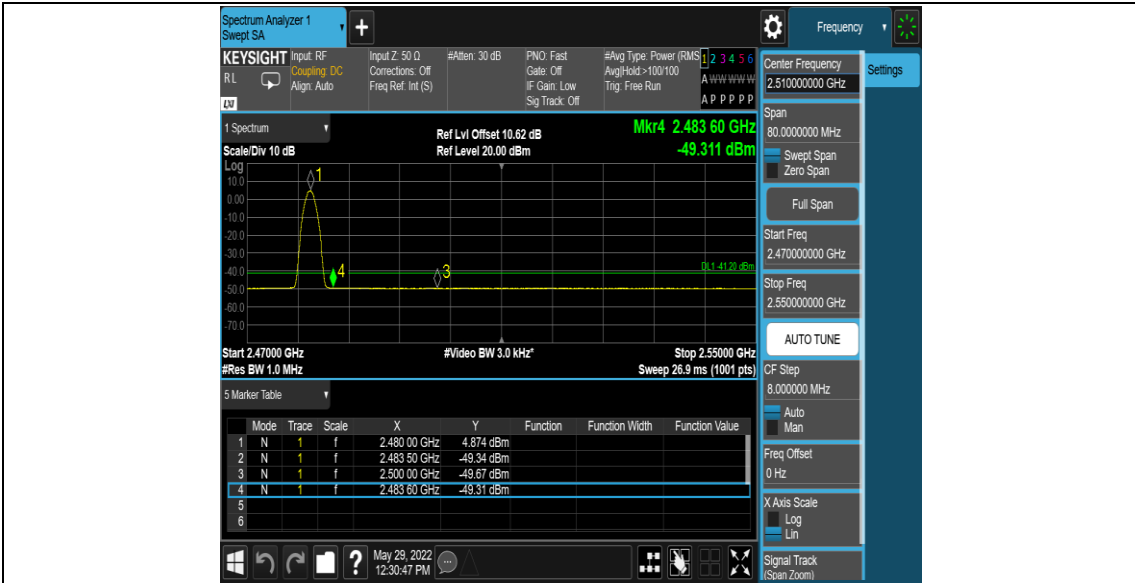
Test Graphs



BLE_1M_Ant1_Low_2402_AV



BLE_1M_Ant1_Low_2402_Peak



BLE_1M_Ant1_High_2480_AV



BLE_1M_Ant1_High_2480_Peak

Radiated emission measurements

Mode:	BLE 2480
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PK Final Data List								
NO.	Freq. [MHz]	PK Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB/m]	Limit [dB μ V/m]	Margin [dB]	Polarity	Verdict
1	2483.500	64.36	46.34	-18.02	74.00	27.66	Horizontal	PASS
2	2484.538	67.05	48.76	-18.29	74.00	25.24	Horizontal	PASS
3	2487.721	65.84	47.12	-18.72	74.00	26.88	Horizontal	PASS
4	2490.029	65.72	46.75	-18.97	74.00	27.25	Horizontal	PASS
5	2497.305	66.46	47.57	-18.89	74.00	26.43	Horizontal	PASS
6	2500.000	63.47	44.62	-18.85	74.00	29.38	Horizontal	PASS

PK Final Data List								
NO.	Freq. [MHz]	PK Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB/m]	Limit [dB μ V/m]	Margin [dB]	Polarity	Verdict
1	2483.500	63.56	45.54	-18.02	74.00	28.46	Vertical	PASS
2	2487.686	65.72	47.01	-18.71	74.00	26.99	Vertical	PASS
3	2490.206	65.53	46.56	-18.97	74.00	27.44	Vertical	PASS
4	2492.978	65.60	46.66	-18.94	74.00	27.34	Vertical	PASS
5	2496.160	66.17	47.26	-18.91	74.00	26.74	Vertical	PASS
6	2500.000	62.97	44.12	-18.85	74.00	29.88	Vertical	PASS

Mode:	BLE 2402
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PK Final Data List								
NO.	Freq. [MHz]	PK Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB/m]	Limit [dB μ V/m]	Margin [dB]	Polarity	Verdict
1	2310.000	63.77	43.98	-19.79	74.00	30.02	Horizontal	PASS
2	2327.937	64.71	44.95	-19.76	74.00	29.05	Horizontal	PASS
3	2344.594	65.05	45.32	-19.73	74.00	28.68	Horizontal	PASS
4	2362.132	66.56	47.49	-19.07	74.00	26.51	Horizontal	PASS
5	2382.232	66.93	48.94	-17.99	74.00	25.06	Horizontal	PASS
6	2390.000	63.29	45.72	-17.57	74.00	28.28	Horizontal	PASS

PK Final Data List								
NO.	Freq. [MHz]	PK Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB/m]	Limit [dB μ V/m]	Margin [dB]	Polarity	Verdict
1	2310.000	64.07	44.28	-19.79	74.00	29.72	Vertical	PASS
2	2328.418	64.68	44.92	-19.76	74.00	29.08	Vertical	PASS
3	2354.604	64.87	45.40	-19.47	74.00	28.60	Vertical	PASS
4	2362.612	66.21	47.17	-19.04	74.00	26.83	Vertical	PASS
5	2379.509	65.74	47.60	-18.14	74.00	26.40	Vertical	PASS
6	2390.000	63.54	45.97	-17.57	74.00	28.03	Vertical	PASS

Appendix I: Spurious emissions

Note:

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

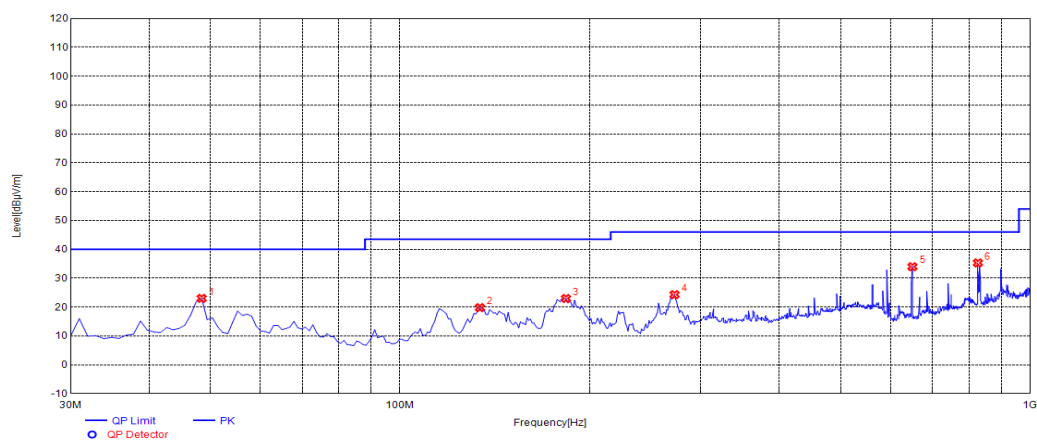
According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Above 1GHz, The emission level with margin less than 20db is recorded.

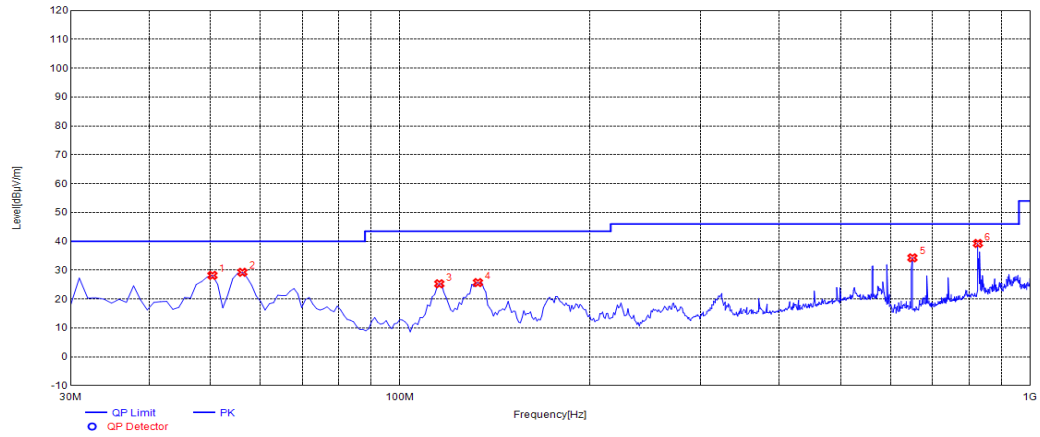
The worst case data were recorded.

Below 1GHz

GFSK-2402MHz



NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	48.4484	23.02	-15.79	40.00	16.98	100	343	Horizontal
2	133.893	19.82	-16.75	43.50	23.68	100	39	Horizontal
3	183.413	22.98	-17.61	43.50	20.52	100	100	Horizontal
4	272.742	24.32	-16.15	46.00	21.68	100	98	Horizontal
5	650.450	33.99	-8.41	46.00	12.01	100	343	Horizontal
6	826.196	35.30	-5.82	46.00	10.70	100	199	Horizontal



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	50.3904	28.20	-15.72	40.00	11.80	100	349	Vertical
2	56.2162	29.29	-15.98	40.00	10.71	100	300	Vertical
3	115.445	25.30	-18.65	43.50	18.20	100	42	Vertical
4	132.922	25.73	-16.85	43.50	17.77	100	29	Vertical
5	650.450	34.30	-8.41	46.00	11.70	100	70	Vertical
6	826.196	39.28	-5.82	46.00	6.72	100	359	Vertical

Mode:	BLE 2402
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Test Graph

PK Final Data List								
NO.	Freq. [MHz]	PK Reading [dBµV/m]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Verdict
1	1638.319	65.00	41.35	-23.65	74.00	32.65	Horizontal	PASS
2	2097.548	64.86	44.55	-20.31	74.00	29.45	Horizontal	PASS
3	3360.060	66.68	47.54	-19.14	74.00	26.46	Horizontal	PASS
4	6640.606	61.50	48.87	-12.63	74.00	25.13	Horizontal	PASS
5	10298.71	60.64	52.34	-8.30	74.00	21.66	Horizontal	PASS
6	12521.58	61.01	56.19	-4.82	74.00	17.81	Horizontal	PASS

PK Final Data List								
NO.	Freq. [MHz]	PK Reading [dBµV/m]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Verdict
1	1317.158	66.03	40.74	-25.29	74.00	33.26	Vertical	PASS
2	1991.495	64.78	44.21	-20.57	74.00	29.79	Vertical	PASS
3	3360.060	65.35	46.21	-19.14	74.00	27.79	Vertical	PASS
4	4245.207	64.32	47.08	-17.24	74.00	26.92	Vertical	PASS
5	7518.253	62.40	49.89	-12.51	74.00	24.11	Vertical	PASS
6	12044.00	59.15	53.89	-5.26	74.00	20.11	Vertical	PASS

Mode:	BLE 2440
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Test Graph

PK Final Data List								
NO.	Freq. [MHz]	PK Reading [dBµV/m]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Verdict
1	1387.193	65.89	40.78	-25.11	74.00	33.22	Horizontal	PASS
2	1888.444	66.59	45.22	-21.37	74.00	28.78	Horizontal	PASS
3	3360.060	67.01	47.87	-19.14	74.00	26.13	Horizontal	PASS
4	5422.903	63.40	48.07	-15.33	74.00	25.93	Horizontal	PASS
5	6995.665	61.86	49.32	-12.54	74.00	24.68	Horizontal	PASS
6	13489.24	59.38	55.49	-3.89	74.00	18.51	Horizontal	PASS

PK Final Data List								
NO.	Freq. [MHz]	PK Reading [dBµV/m]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Verdict
1	1197.098	65.95	40.21	-25.74	74.00	33.79	Vertical	PASS
2	2033.516	65.17	44.78	-20.39	74.00	29.22	Vertical	PASS
3	3360.060	65.17	46.03	-19.14	74.00	27.97	Vertical	PASS
4	4242.707	63.61	46.37	-17.24	74.00	27.63	Vertical	PASS
5	7275.712	62.03	49.17	-12.86	74.00	24.83	Vertical	PASS
6	9298.549	60.97	50.72	-10.25	74.00	23.28	Vertical	PASS

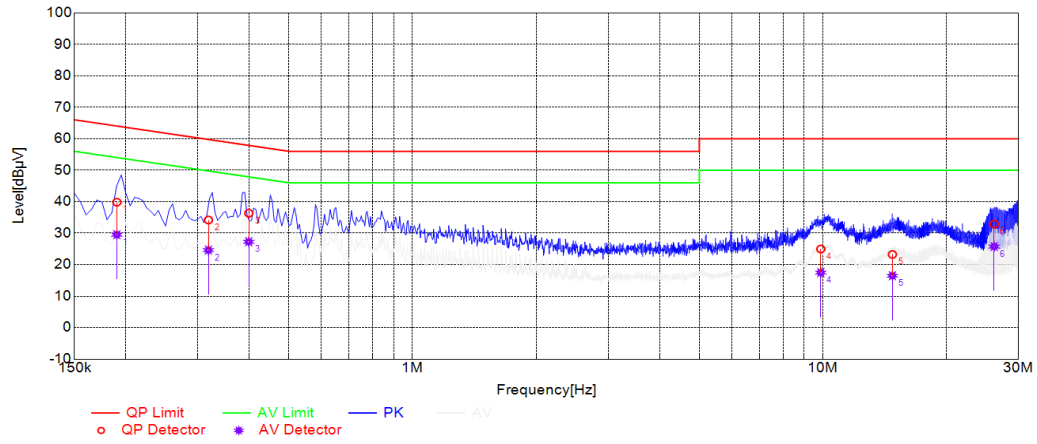
Mode:	BLE 2480
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Test Graph

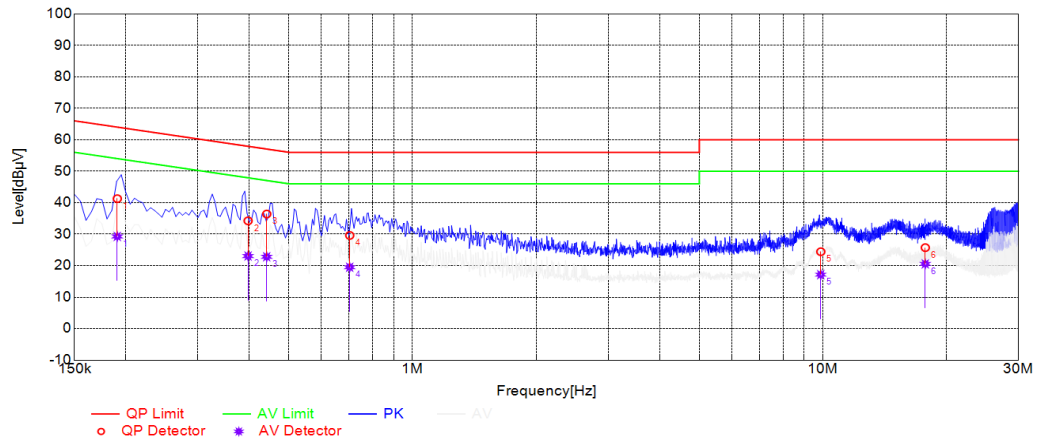
PK Final Data List								
NO.	Freq. [MHz]	PK Reading [dBµV/m]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Verdict
1	1556.278	65.57	41.19	-24.38	74.00	32.81	Horizontal	PASS
2	1955.477	64.63	43.74	-20.89	74.00	30.26	Horizontal	PASS
3	3360.060	64.93	45.79	-19.14	74.00	28.21	Horizontal	PASS
4	7500.750	62.13	49.72	-12.41	74.00	24.28	Horizontal	PASS
5	10018.66	60.33	51.48	-8.85	74.00	22.52	Horizontal	PASS
6	12566.59	59.93	55.07	-4.86	74.00	18.93	Horizontal	PASS

PK Final Data List								
NO.	Freq. [MHz]	PK Reading [dBµV/m]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Polarity	Verdict
1	1242.121	66.40	40.82	-25.58	74.00	33.18	Vertical	PASS
2	1941.470	64.91	43.91	-21.00	74.00	30.09	Vertical	PASS
3	3360.060	65.07	45.93	-19.14	74.00	28.07	Vertical	PASS
4	4905.317	63.07	46.74	-16.33	74.00	27.26	Vertical	PASS
5	9026.004	61.28	50.48	-10.80	74.00	23.52	Vertical	PASS
6	13074.17	60.12	56.12	-4.00	74.00	17.88	Vertical	PASS

Appendix J: Conducted emission AC power port



Final Data List										
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Type	Verdict
1	0.1902	10.24	39.85	64.03	24.18	29.53	54.03	24.50	N	PASS
2	0.3180	10.25	34.19	59.76	25.57	24.62	49.76	25.14	N	PASS
3	0.3988	10.24	36.35	57.88	21.53	27.27	47.88	20.61	N	PASS
4	9.8888	10.48	24.98	60.00	35.02	17.49	50.00	32.51	N	PASS
5	14.7811	10.61	23.24	60.00	36.76	16.50	50.00	33.50	N	PASS
6	26.1668	10.79	32.89	60.00	27.11	25.76	50.00	24.24	N	PASS



Final Data List										
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Type	Verdict
1	0.1907	10.24	41.28	64.01	22.73	29.28	54.01	24.73	L	PASS
2	0.3973	10.24	34.24	57.91	23.67	23.06	47.91	24.85	L	PASS
3	0.4411	10.26	36.40	57.04	20.64	22.82	47.04	24.22	L	PASS
4	0.7028	10.28	29.60	56.00	26.40	19.50	46.00	26.50	L	PASS
5	9.8867	10.53	24.43	60.00	35.57	17.15	50.00	32.85	L	PASS
6	17.7775	10.69	25.73	60.00	34.27	20.56	50.00	29.44	L	PASS