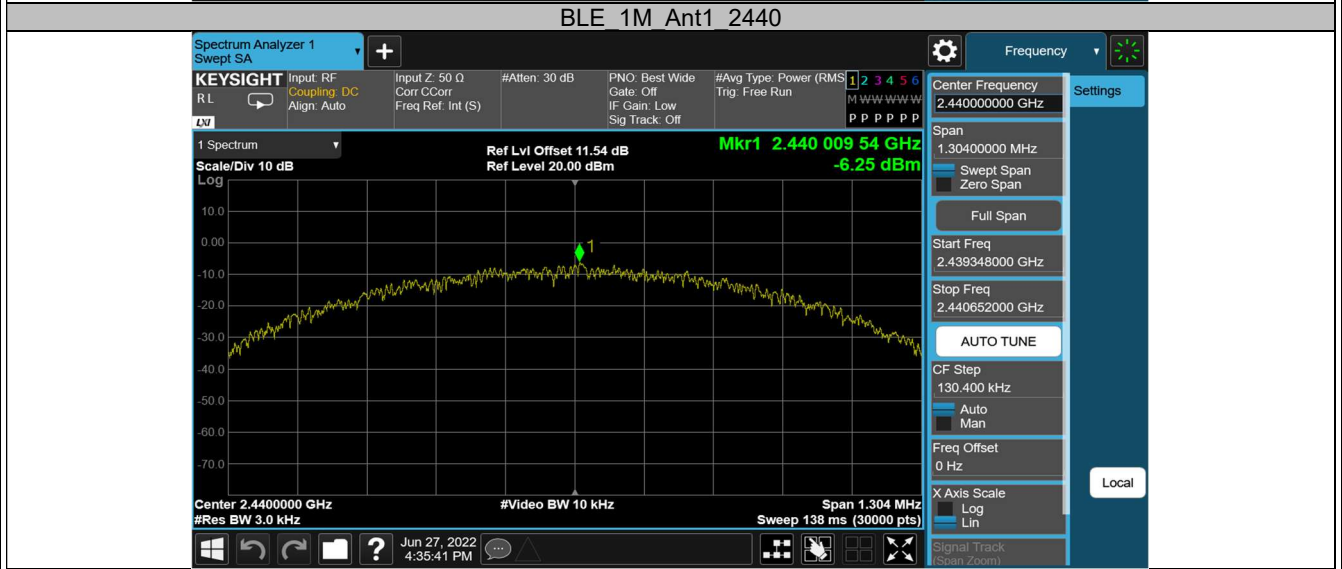


Appendix B: Test Results of Bluetooth Low Energy

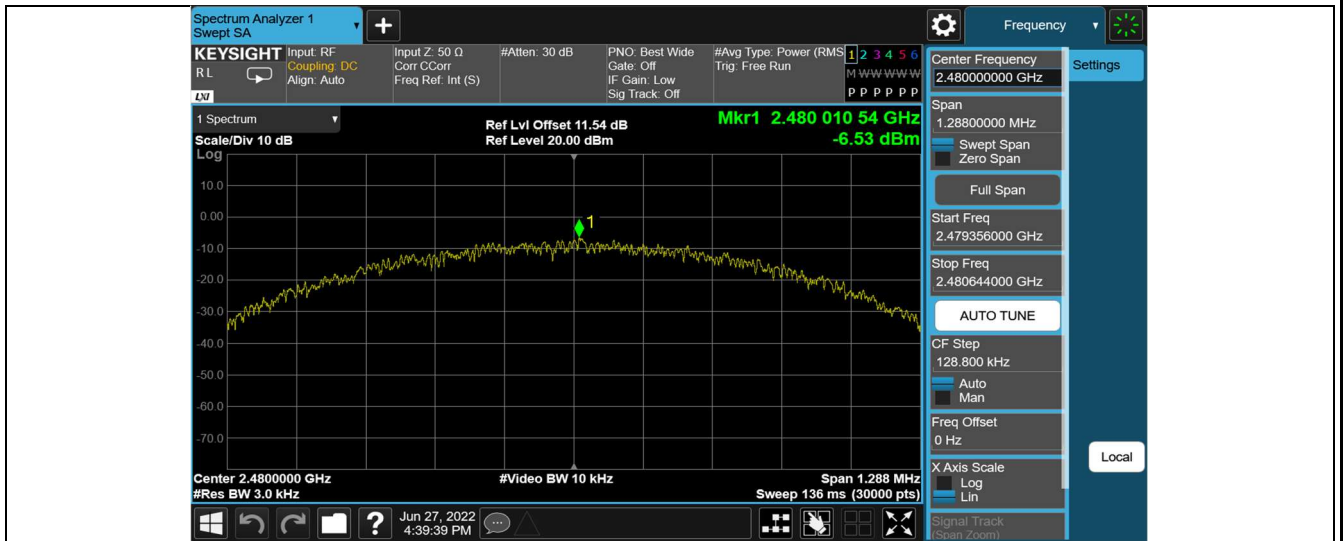
APPENDIX B: TEST RESULTS OF BLUETOOTH LOW ENERGY	1
APPENDIX B.1: TEST RESULTS OF CONDUCTED POWER SPECTRAL DENSITY	2
APPENDIX B.2: TEST RESULTS OF 6dB BANDWIDTH.....	4
APPENDIX B.3: TEST RESULTS OF 99% BANDWIDTH.....	6
APPENDIX B.4: TEST RESULTS OF CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHZ BANDWIDTH.....	8
<i>Conducted Spurious Emission</i>	8
<i>Band Edge</i>	12
APPENDIX B.5: TEST RESULTS OF RADIATED SPURIOUS EMISSIONS	13
30 MHz to 1GHz.....	13
1GHz-18GHz.....	15
APPENDIX B.6: TEST RESULTS OF RADIATED EMISSIONS IN RESTRICTED BANDS	27
APPENDIX B.7: TEST RESULTS OF CONDUCTED EMISSION	31

Appendix B.1: Test Results of Conducted Power Spectral Density

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-5.81	≤8	PASS
		2440	-6.25	≤8	PASS
		2480	-6.53	≤8	PASS

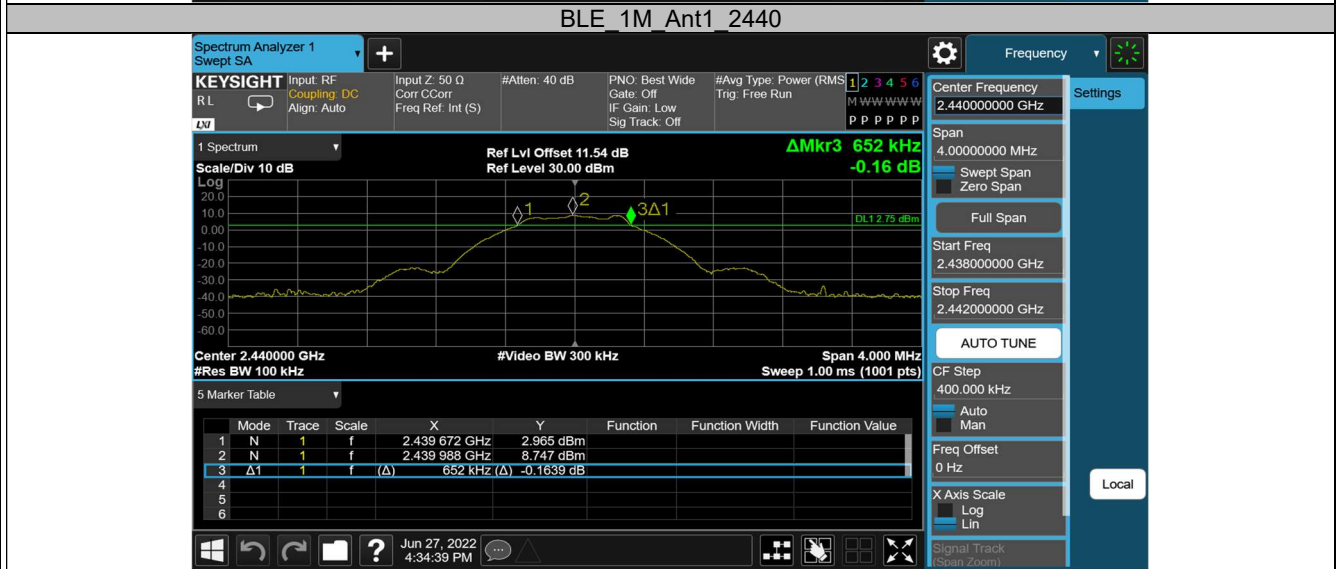
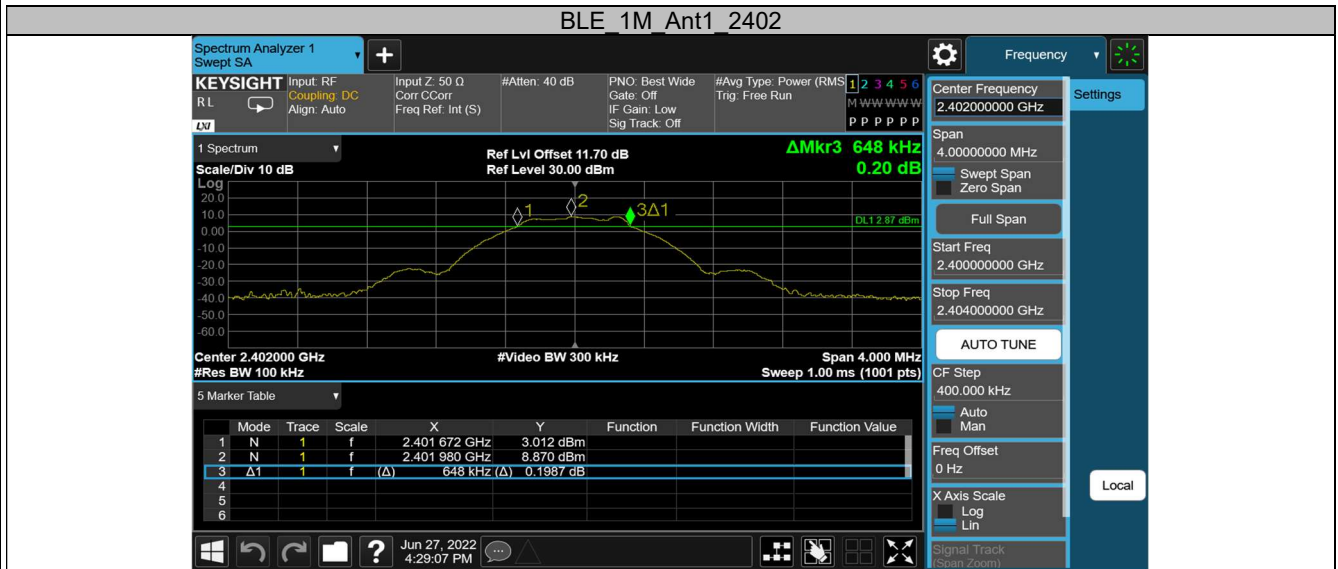


BLE 1M Ant1 2480



Appendix B.2: Test Results of 6dB Bandwidth

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.648	2401.672	2402.320	0.5	PASS
		2440	0.652	2439.672	2440.324	0.5	PASS
		2480	0.644	2479.676	2480.320	0.5	PASS

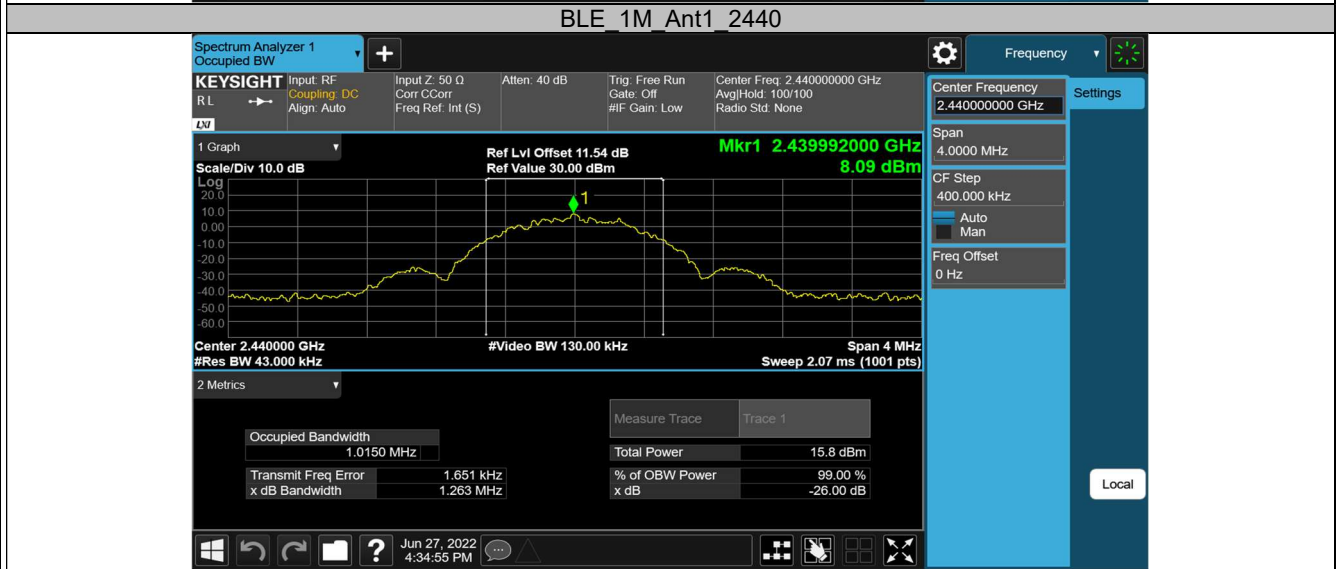
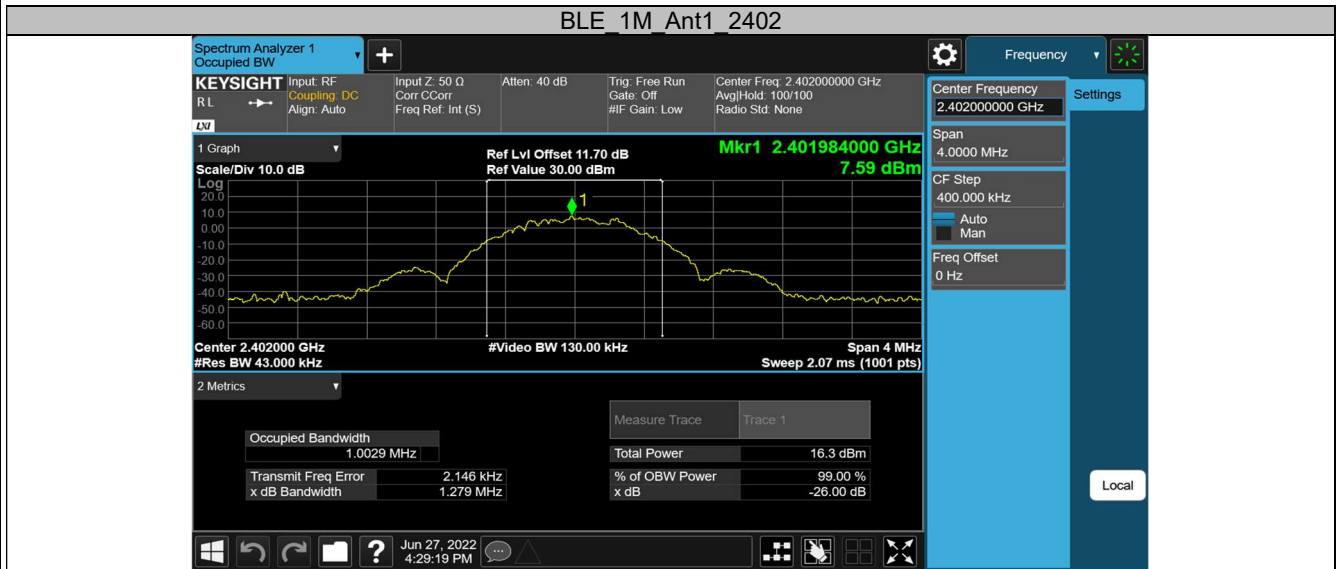


BLE 1M Ant1 2480

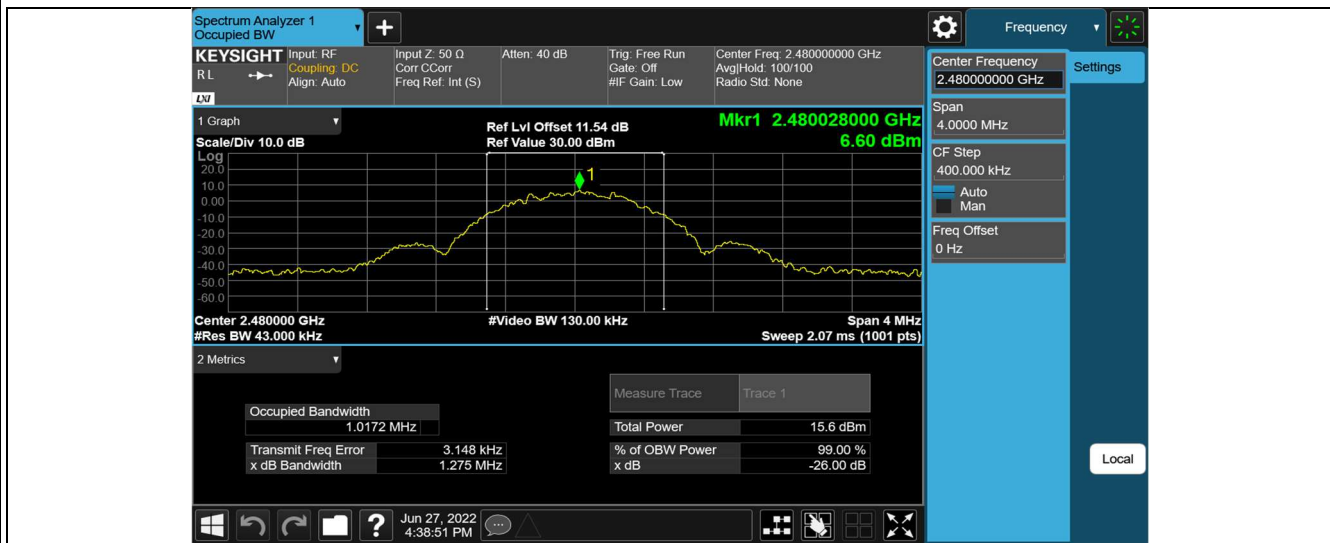


Appendix B.3: Test Results of 99% Bandwidth

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0029	2401.501	2402.504	---	PASS
		2440	1.0150	2439.494	2440.509	---	PASS
		2480	1.0172	2479.495	2480.512	---	PASS



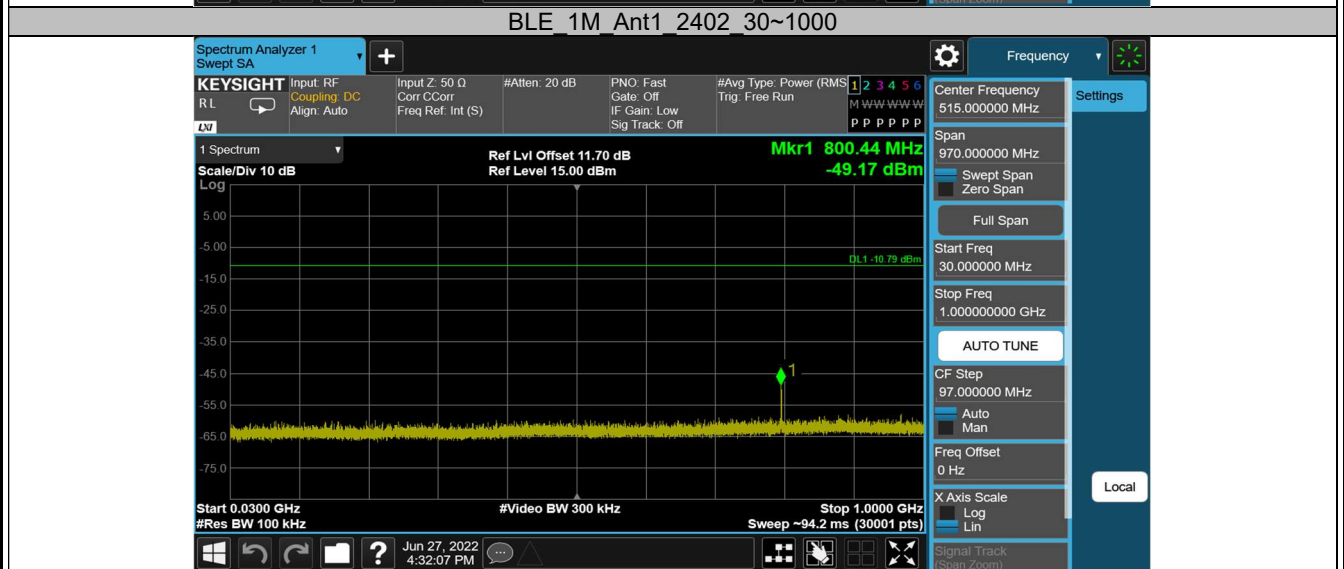
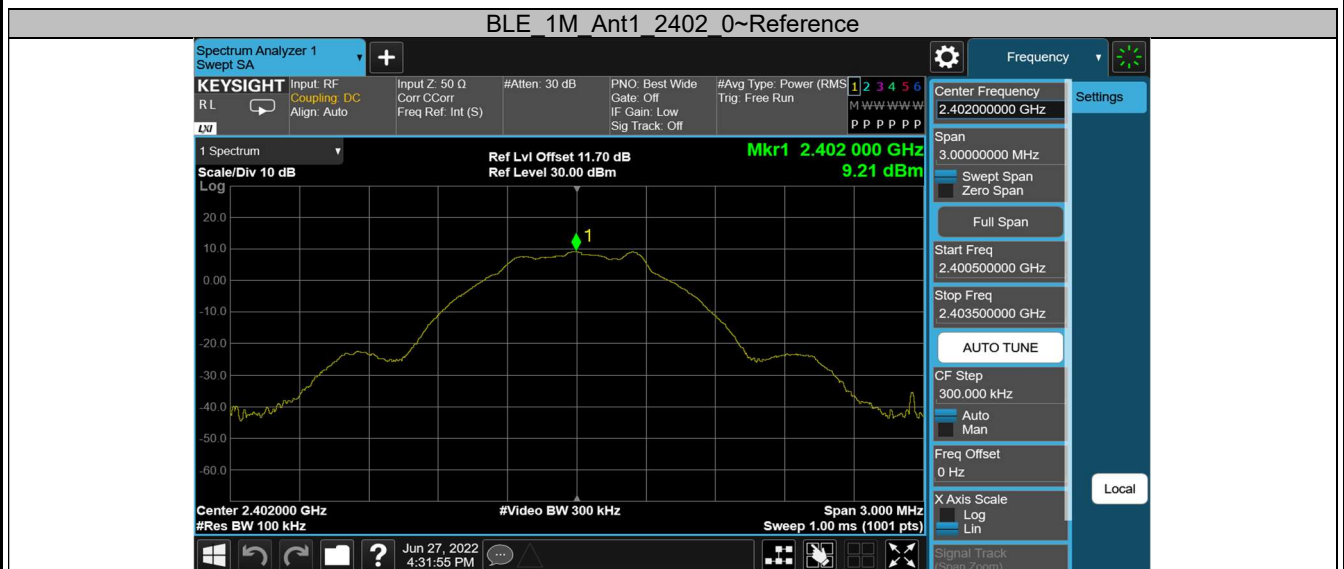
BLE 1M Ant1 2480



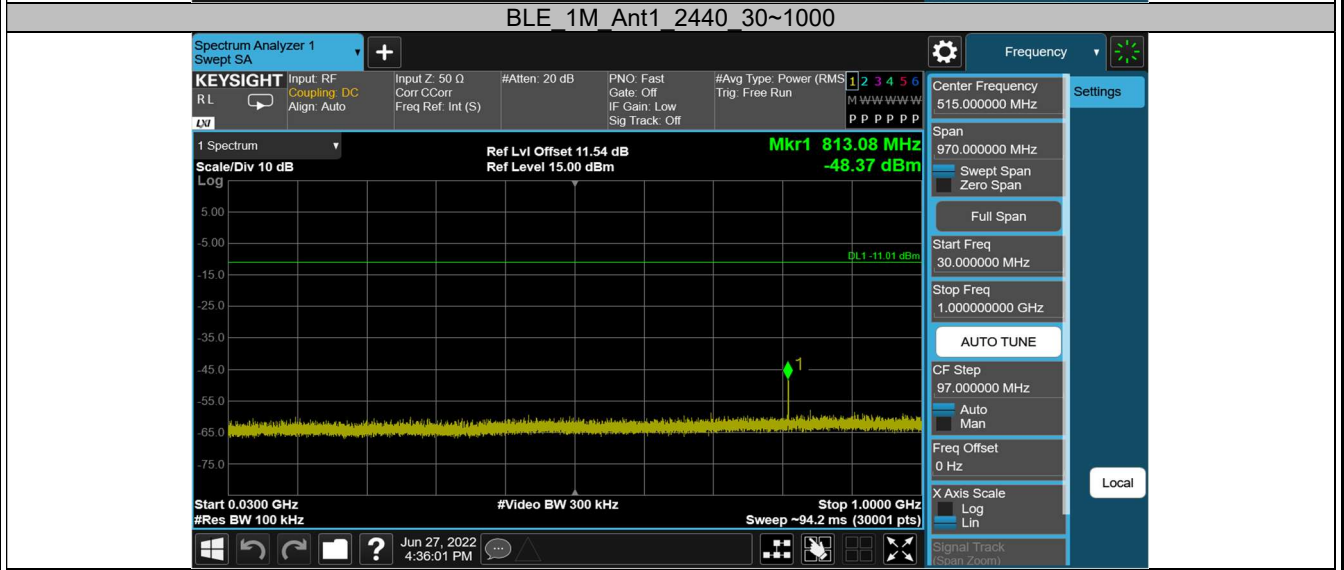
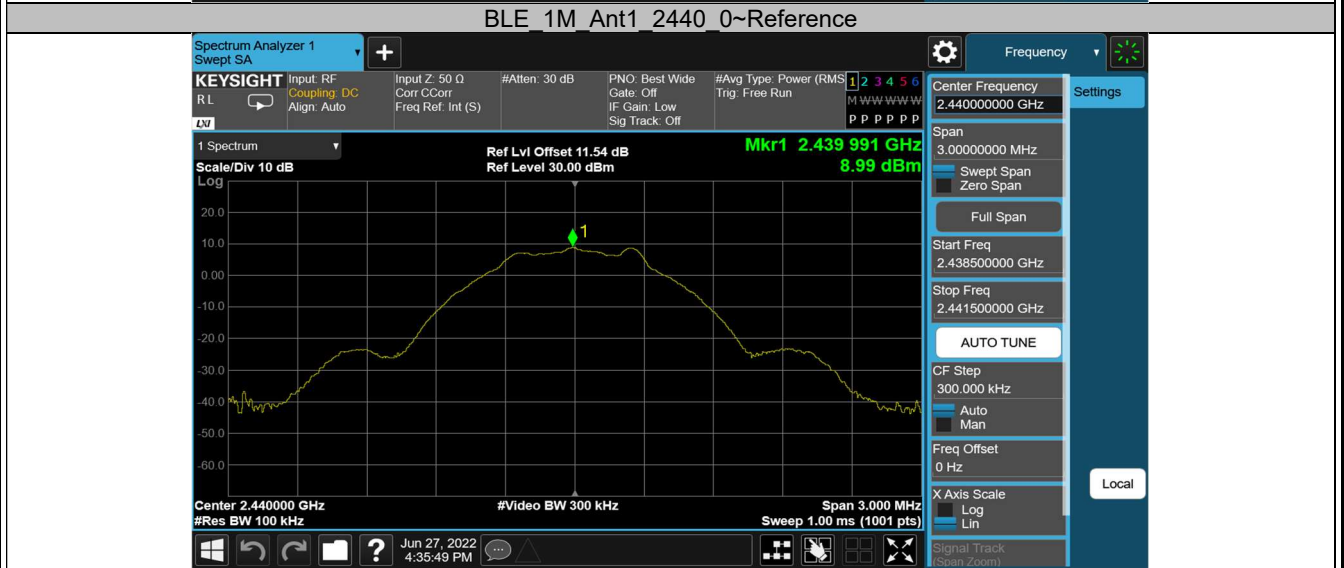
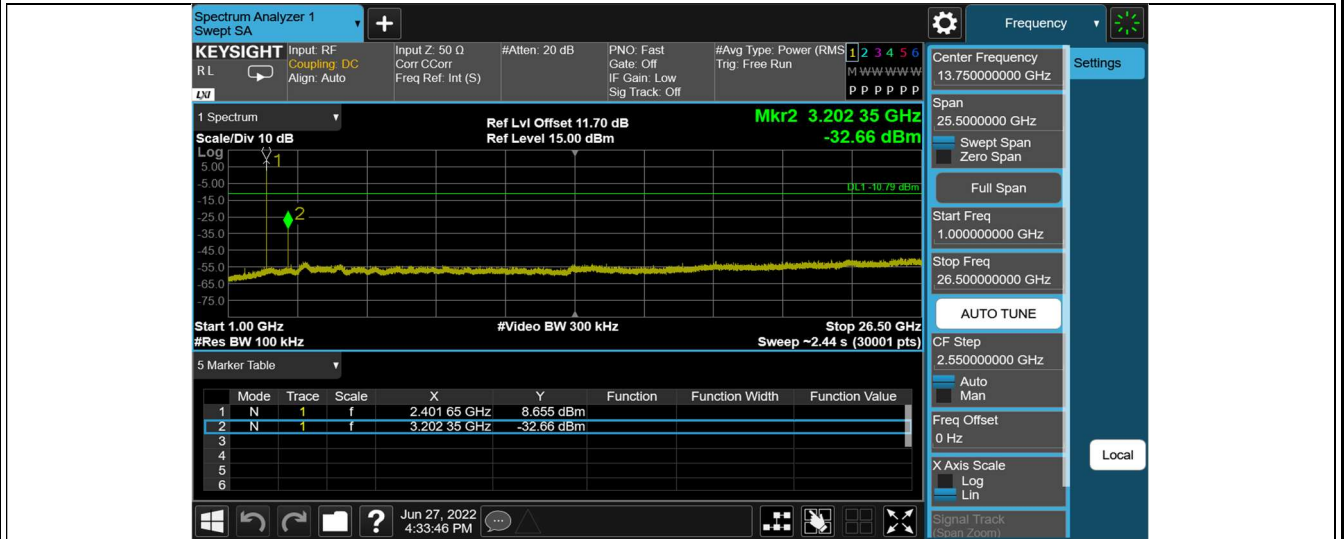
Appendix B.4: Test Results of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

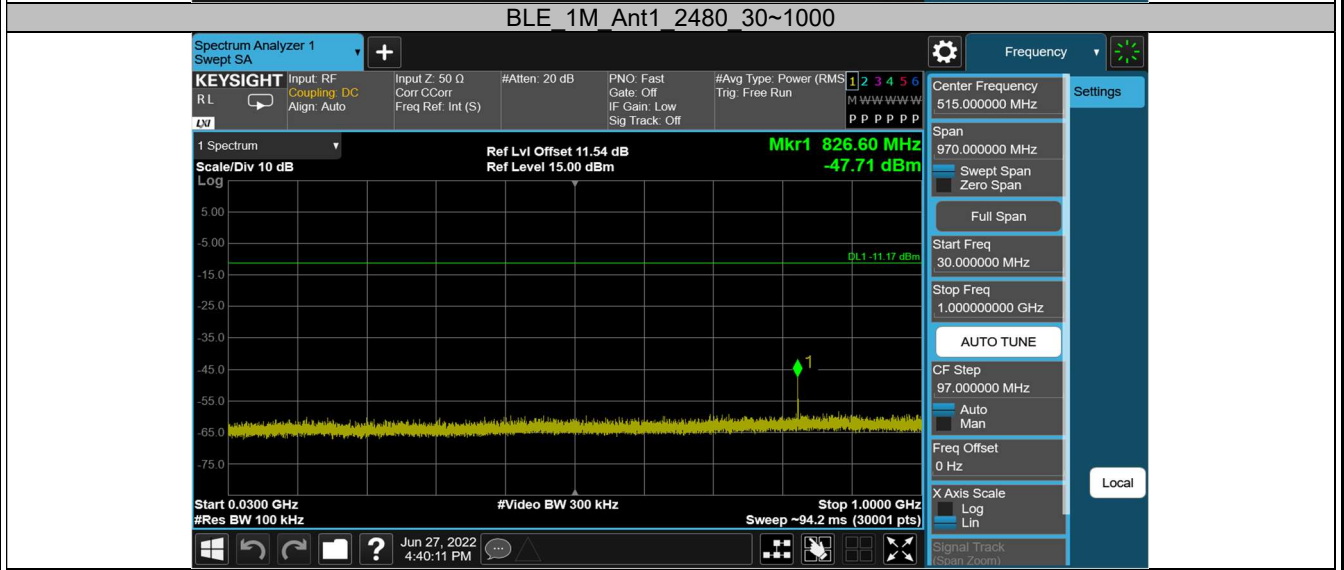
Conducted Spurious Emission

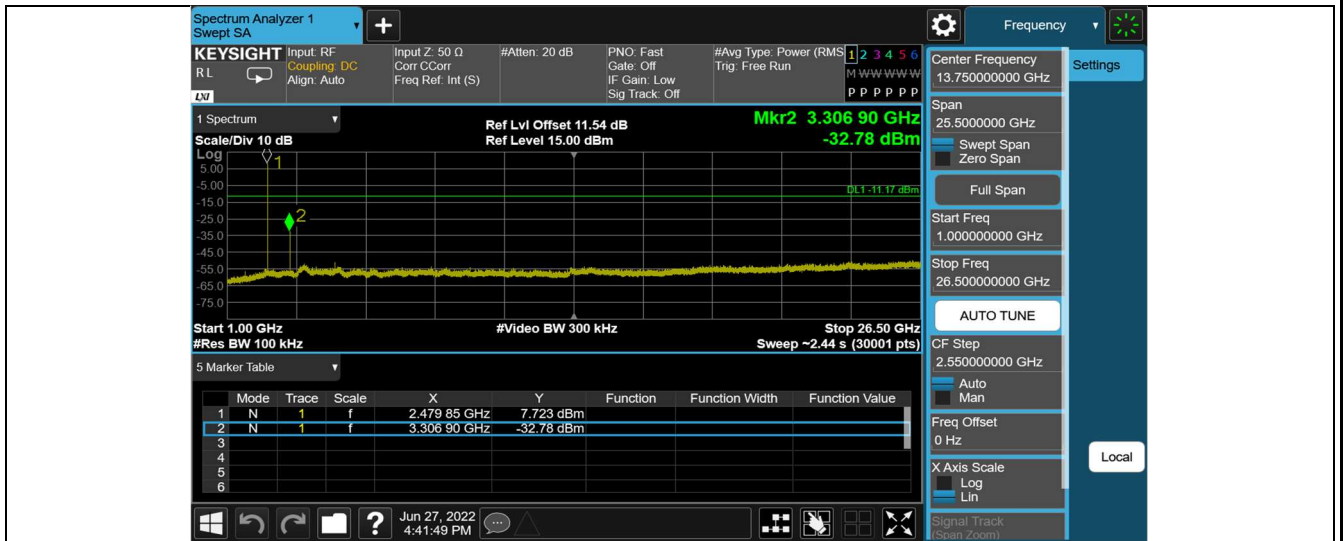
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	9.21	9.21	---	PASS
			30~1000	9.21	-49.17	≤-10.79	PASS
			1000~26500	9.21	-32.66	≤-10.79	PASS
		2440	Reference	8.99	8.99	---	PASS
			30~1000	8.99	-48.37	≤-11.01	PASS
			1000~26500	8.99	-32.74	≤-11.01	PASS
		2480	Reference	8.83	8.83	---	PASS
			30~1000	8.83	-47.71	≤-11.17	PASS
			1000~26500	8.83	-32.78	≤-11.17	PASS



BLE_1M Ant1 2402 1000~26500

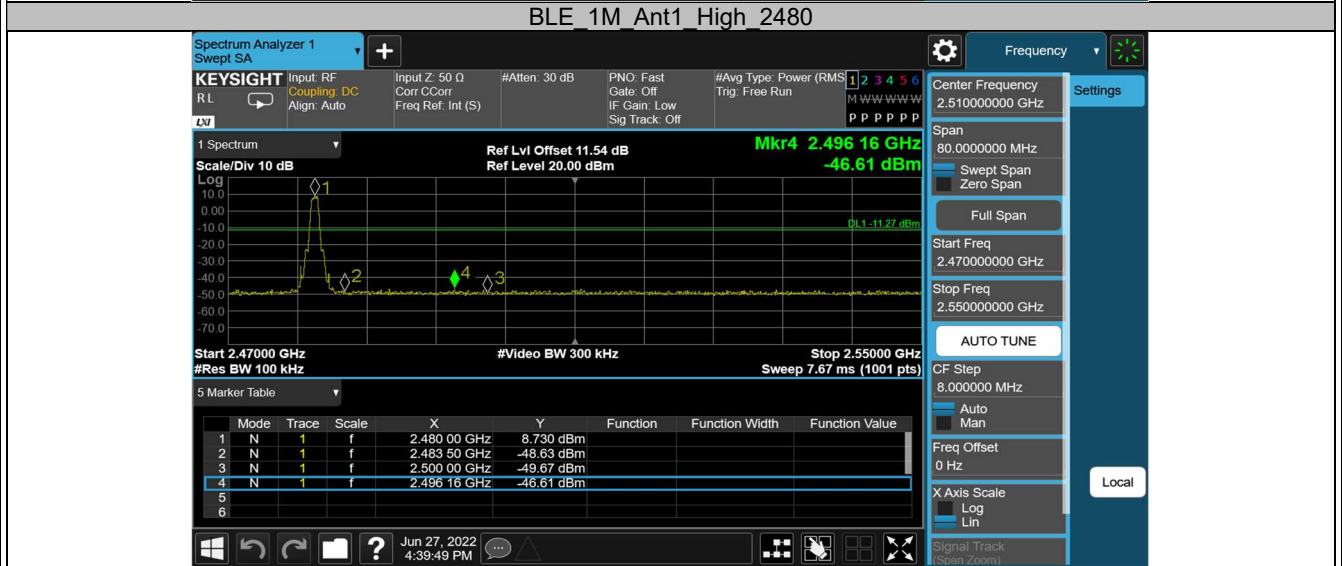
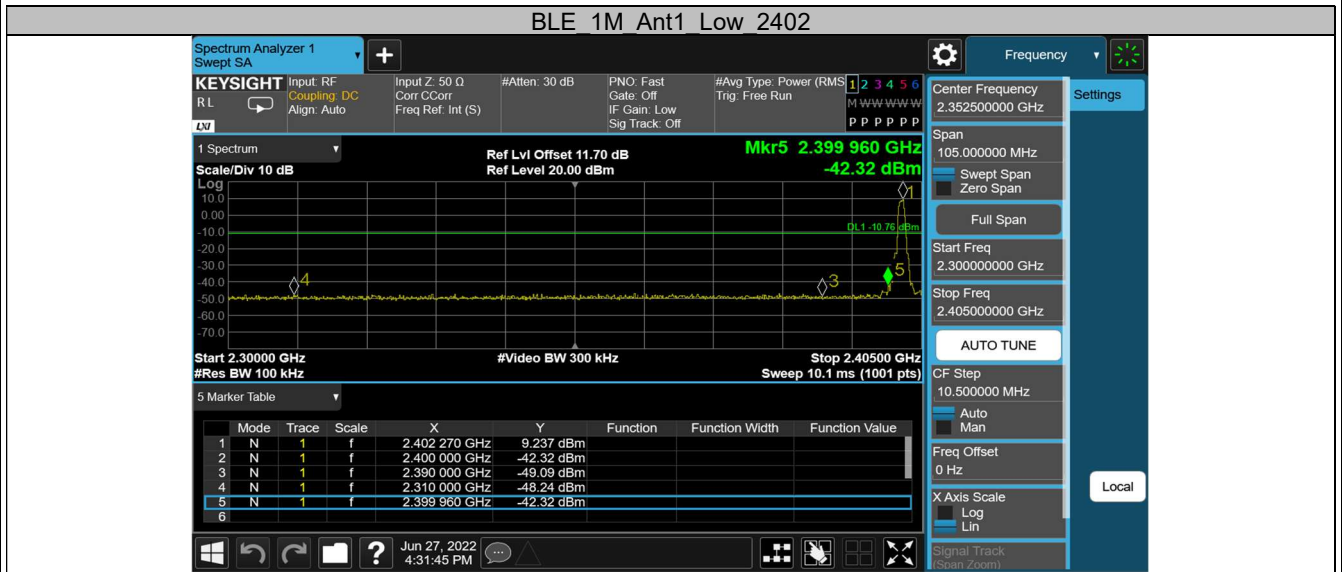






Band Edge

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	9.24	-42.32	≤-10.76	PASS
		High	2480	8.73	-46.61	≤-11.27	PASS



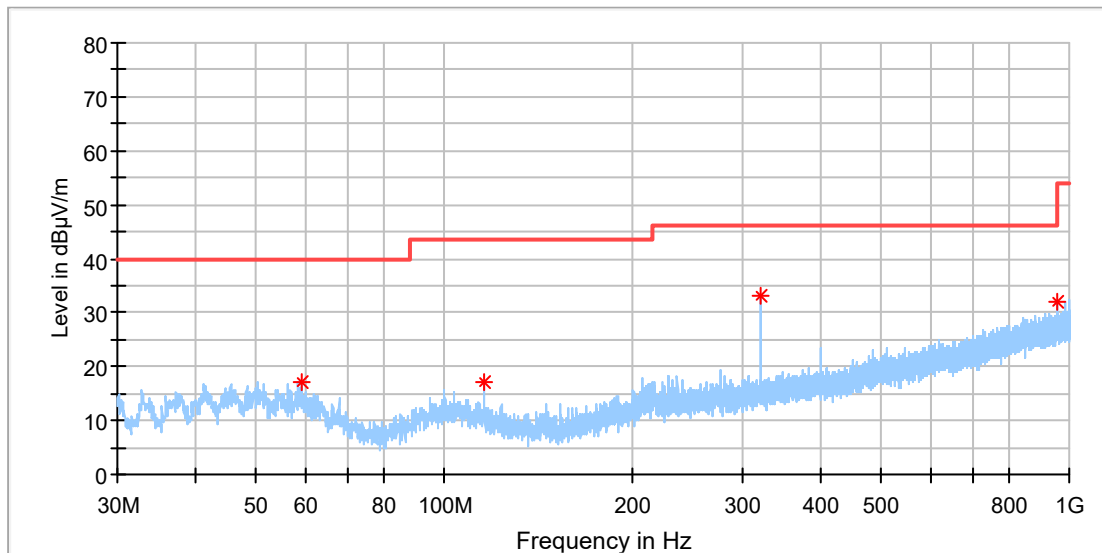
Appendix B.5: Test Results of Radiated Spurious Emissions

Note:

- 1) This testing was carried out on different modulations, but only the worst case was presented in this report.
- 2) Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and 18GHz - 26.5GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

30 MHz to 1GHz

EUT Name:	Smart Power Meter Switch
Model:	POWR320D
Test Mode:	BLE 1M_Mid channel
Order No/Sample No:	168377937/A003291051-004
Test Voltage::	DC 5V From USB
Remark:	Temp 23 Humi:53%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



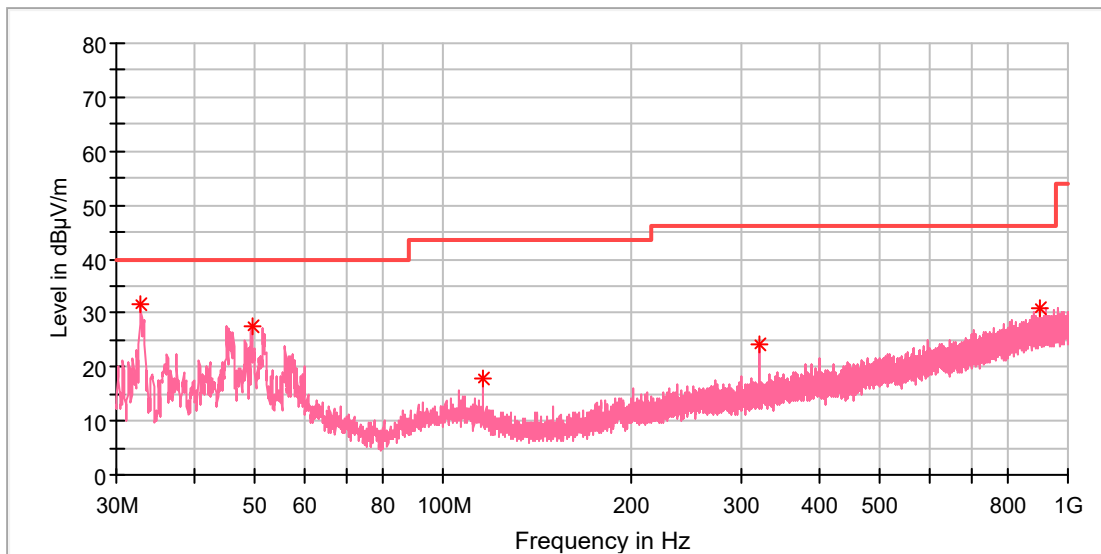
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
59.100000	17.24	40.00	22.76	100.0	H	31.0	-18.9
115.602500	17.17	43.50	26.34	100.0	H	211.0	-19.9
320.030000	32.97	46.00	13.03	100.0	H	313.0	-15.8
958.629500	32.05	46.00	13.95	100.0	H	218.0	-4.2

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Name: Smart Power Meter Switch
 Model: POWR320D
 Test Mode: BLE 1M_Mid channel
 Order No/Sample No: 168377937/A003291051-004
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:53%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
32.764500	31.61	40.00	8.39	100.0	V	101.0	-22.5
49.400000	27.41	40.00	12.59	100.0	V	71.0	-18.3
115.602500	17.80	43.50	25.70	100.0	V	252.0	-19.9
320.030000	24.27	46.00	21.73	100.0	V	252.0	-15.8
899.896000	30.92	46.00	15.08	100.0	V	308.0	-5.0

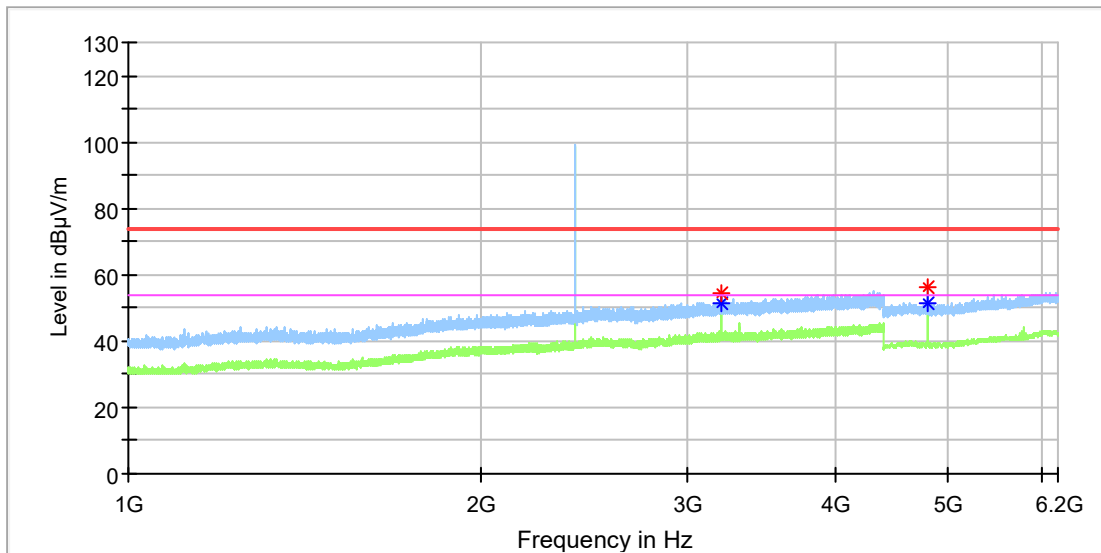
Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

1GHz-18GHz

Note: The highest waveform in the figure is Bluetooth Fundamental.

EUT Name: Smart Power Meter Switch
 Model: POWR320D
 Test Mode: BLE 1M_Low channel
 Order No/Sample No: 168377937/A003291051-004
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:53%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



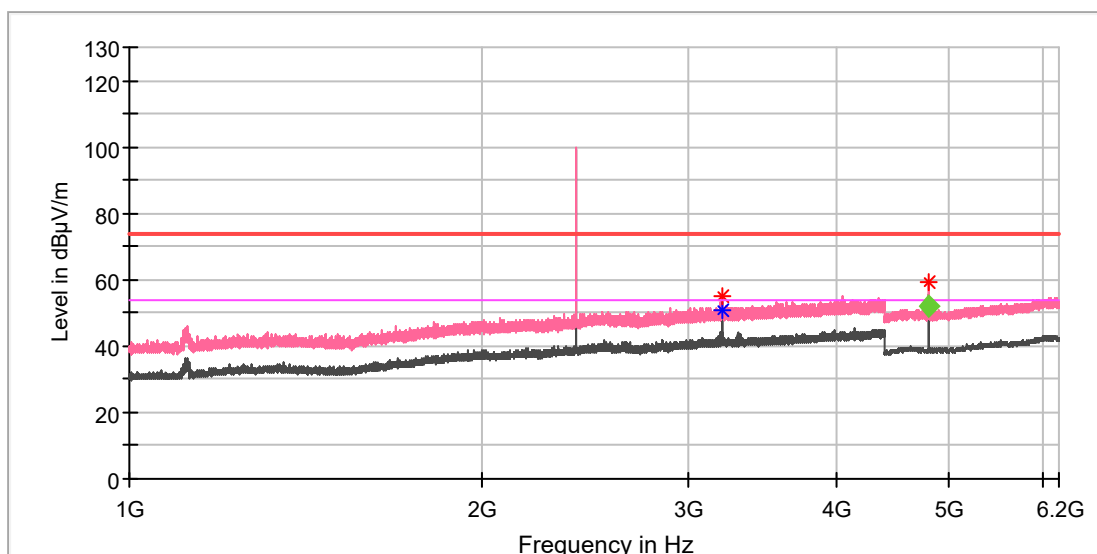
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3202.520000	54.44	---	74.00	19.56	100.0	H	198.0	8.6
3202.690000	---	51.24	54.00	2.76	100.0	H	111.0	8.6
4803.500000	56.15	---	74.00	17.85	100.0	H	251.0	11.8
4804.000000	---	51.17	54.00	2.83	100.0	H	251.0	11.8

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Name: Smart Power Meter Switch
 Model: POWR320D
 Test Mode: BLE 1M_Low channel
 Order No/Sample No: 168377937/A003291051-004
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:53%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



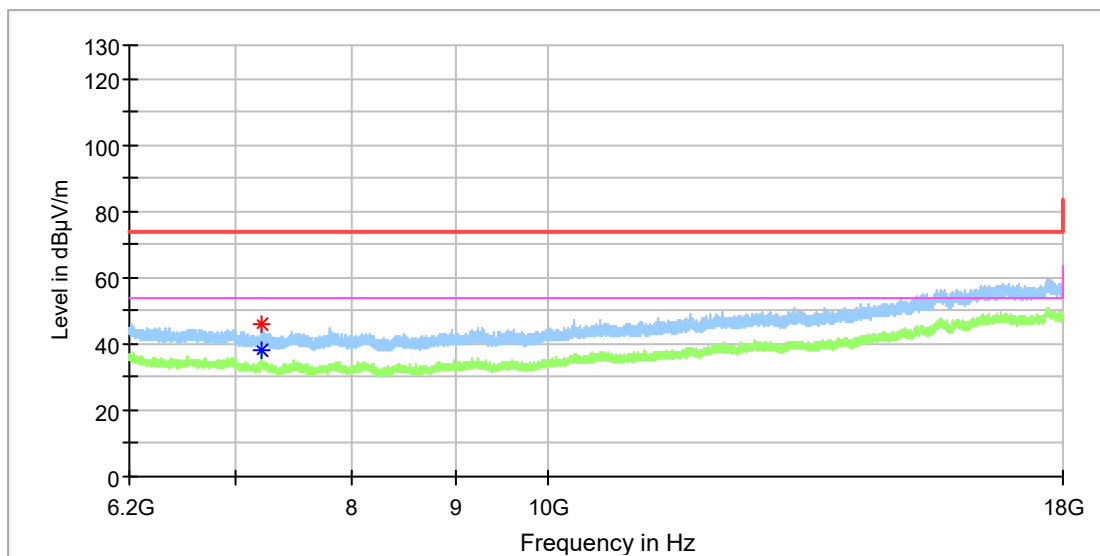
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3202.520000	54.81	---	74.00	19.19	100.0	V	186.0	8.6
3202.860000	---	50.65	54.00	3.35	100.0	V	316.0	8.6
4803.500000	59.33	---	74.00	14.67	100.0	V	178.0	11.8

Final_Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4803.991667	51.98	54.00	2.02	100.0	V	173.0	11.8

EUT Name: Smart Power Meter Switch
 Model: POWR320D
 Test Mode: BLE 1M_Low channel
 Order No/Sample No: 168377937/A003291051-004
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:53%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



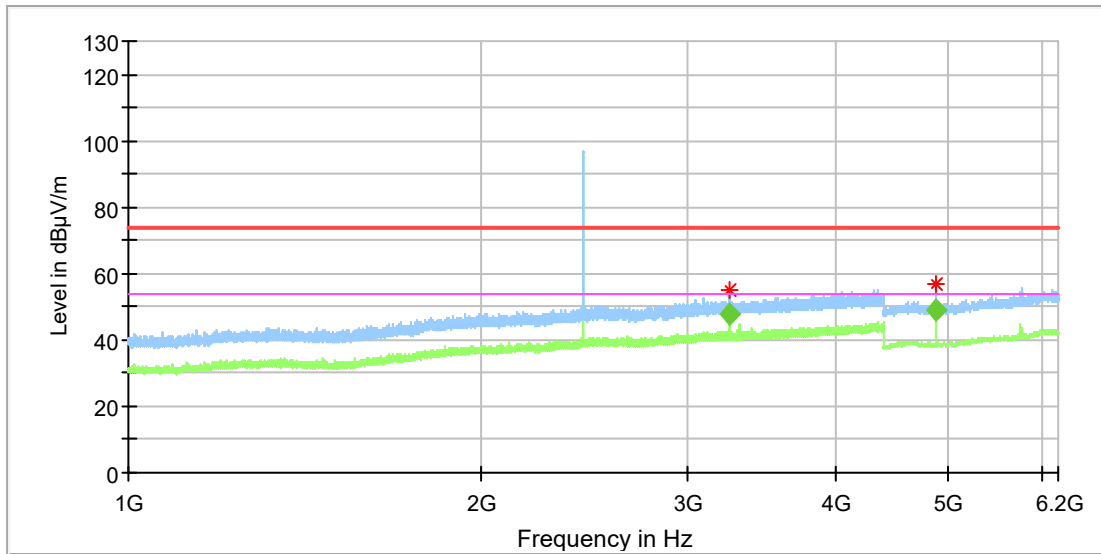
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7204.966667	45.67	---	74.00	28.33	100.0	H	287.0	8.8
7204.966667	---	38.30	54.00	15.70	100.0	H	287.0	8.8

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Name: Smart Power Meter Switch
 Model: POWR320D
 Test Mode: BLE 1M_Mid channel
 Order No/Sample No: 168377937/A003291051-004
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:53%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



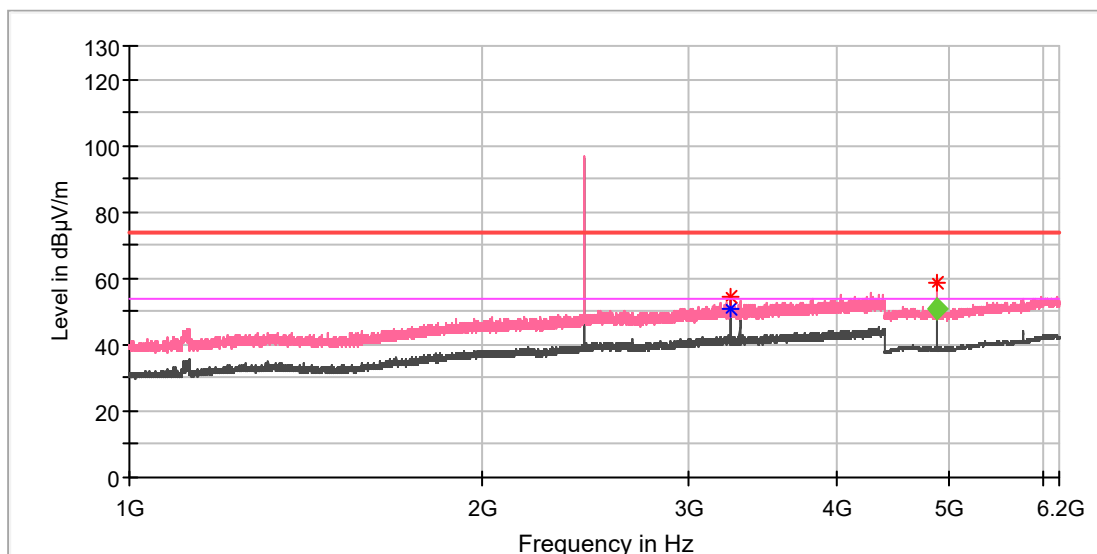
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3253.180000	54.90	---	74.00	19.10	100.0	H	203.0	8.5
4879.500000	56.65	---	74.00	17.35	100.0	H	252.0	11.8

Final Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3253.369000	47.91	54.00	6.09	100.0	H	198.0	8.5
4879.922222	49.02	54.00	4.98	100.0	H	250.0	11.8

EUT Name: Smart Power Meter Switch
 Model: POWR320D
 Test Mode: BLE 1M_Mid channel
 Order No/Sample No: 168377937/A003291051-004
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:53%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



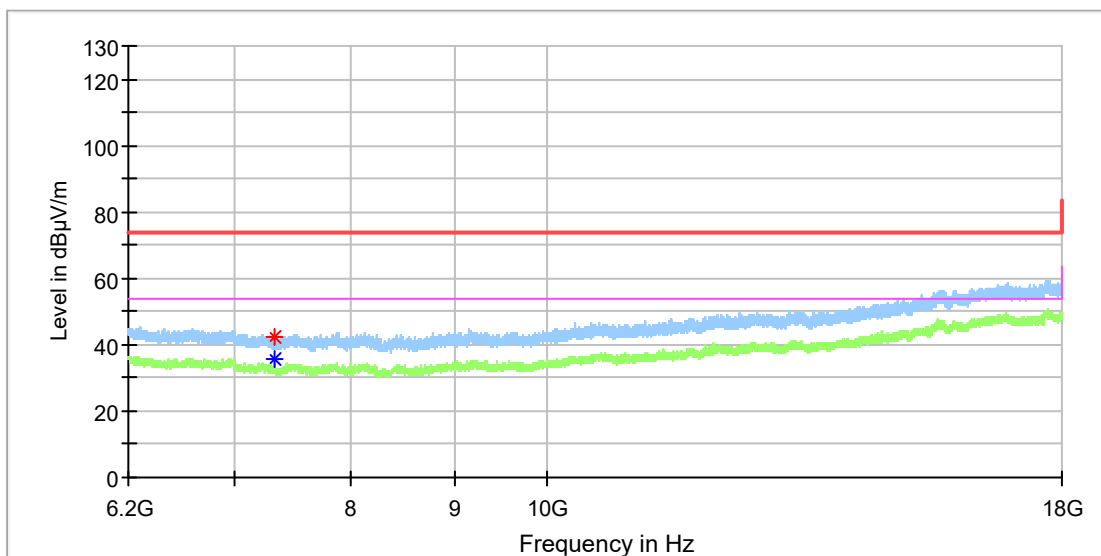
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3253.350000	---	50.62	54.00	3.38	100.0	V	187.0	8.5
3253.520000	54.60	---	74.00	19.40	100.0	V	187.0	8.5
4880.500000	58.44	---	74.00	15.56	100.0	V	204.0	11.8

Final Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4880.038889	51.08	54.00	2.92	100.0	V	191.0	11.8

EUT Name: Smart Power Meter Switch
 Model: POWR320D
 Test Mode: BLE 1M_Mid channel
 Order No/Sample No: 168377937/A003291051-004
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:53%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



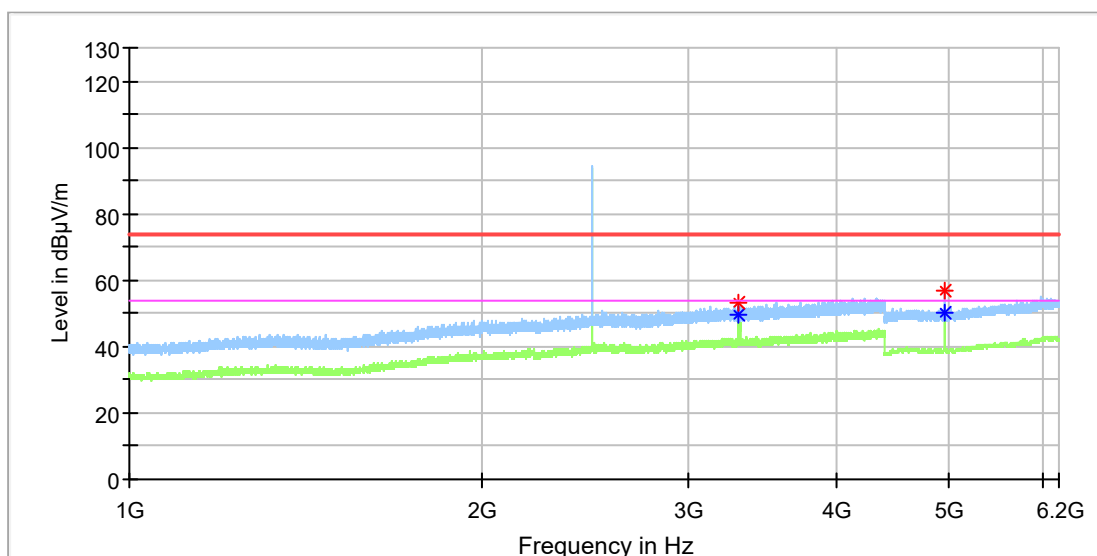
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7320.508333	---	35.86	54.00	18.14	100.0	H	210.0	8.2
7321.000000	42.56	---	74.00	31.44	100.0	H	210.0	8.2

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Name: Smart Power Meter Switch
 Model: POWR320D
 Test Mode: BLE 1M_High channel
 Order No/Sample No: 168377937/A003291051-004
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:53%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



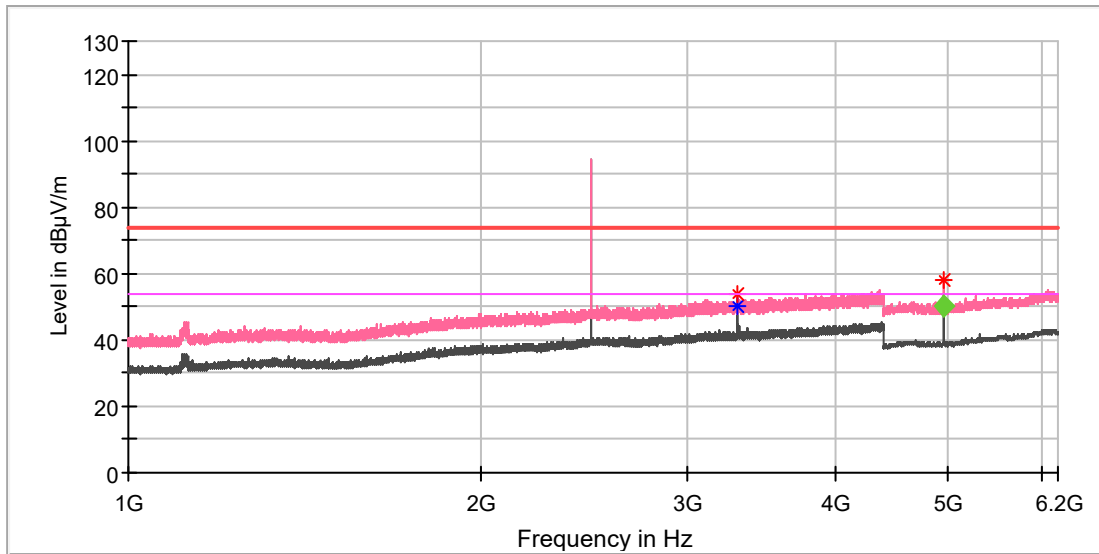
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3306.560000	53.28	---	74.00	20.72	100.0	H	188.0	8.6
3306.560000	---	49.56	54.00	4.44	100.0	H	188.0	8.6
4960.000000	---	50.01	54.00	3.99	100.0	H	263.0	11.8
4960.500000	56.84	---	74.00	17.16	100.0	H	263.0	11.8

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Name: Smart Power Meter Switch
 Model: POWR320D
 Test Mode: BLE 1M_High channel
 Order No/Sample No: 168377937/A003291051-004
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:53%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



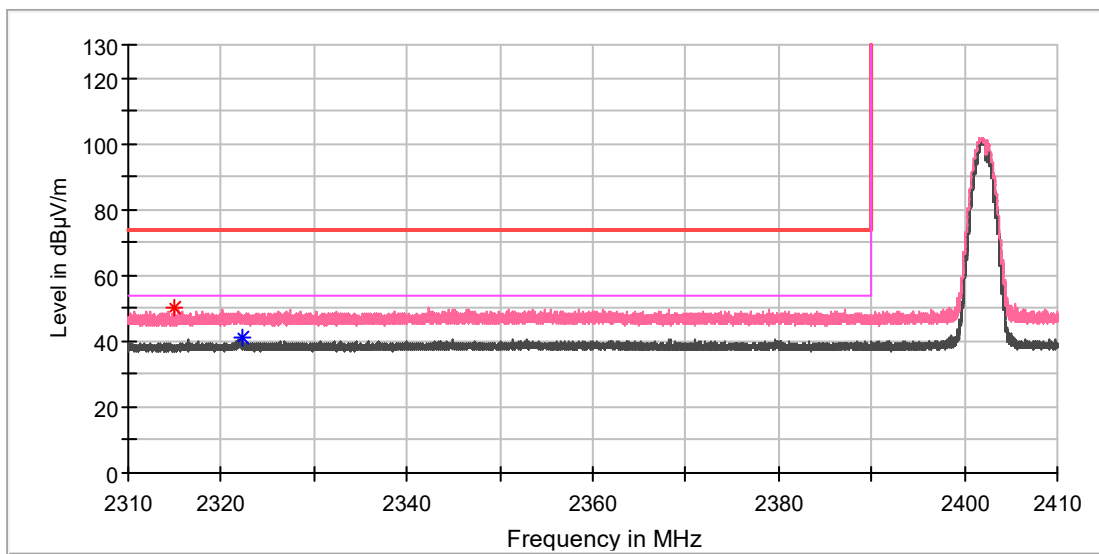
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3306.390000	54.09	---	74.00	19.91	100.0	V	188.0	8.6
3306.730000	---	50.32	54.00	3.68	100.0	V	188.0	8.6
4960.000000	57.81	---	74.00	16.19	100.0	V	178.0	11.8

Final Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4959.866667	50.18	54.00	3.82	100.0	V	173.0	11.8

EUT Name: Smart Power Meter Switch
 Model: POWR320D
 Test Mode: BLE 1M_Low channel
 Order No/Sample No: 168377937/A003291051-004
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:53%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



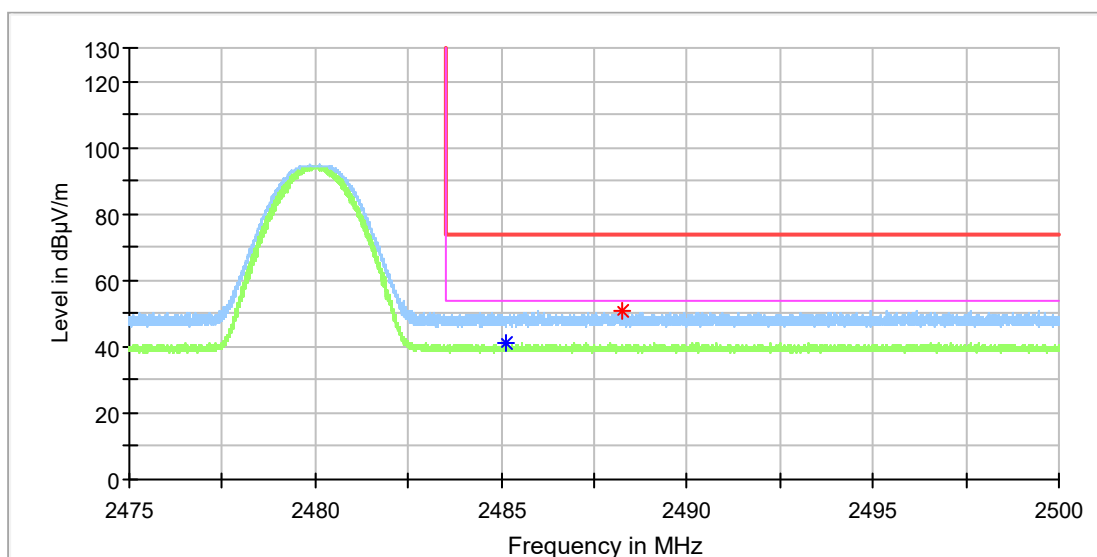
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2314.875000	50.32	---	74.00	23.68	100.0	V	277.0	6.5
2322.265000	---	41.30	54.00	12.70	100.0	V	265.0	6.6

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Name: Smart Power Meter Switch
 Model: POWR320D
 Test Mode: BLE 1M_High channel
 Order No/Sample No: 168377937/A003291051-004
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:53%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



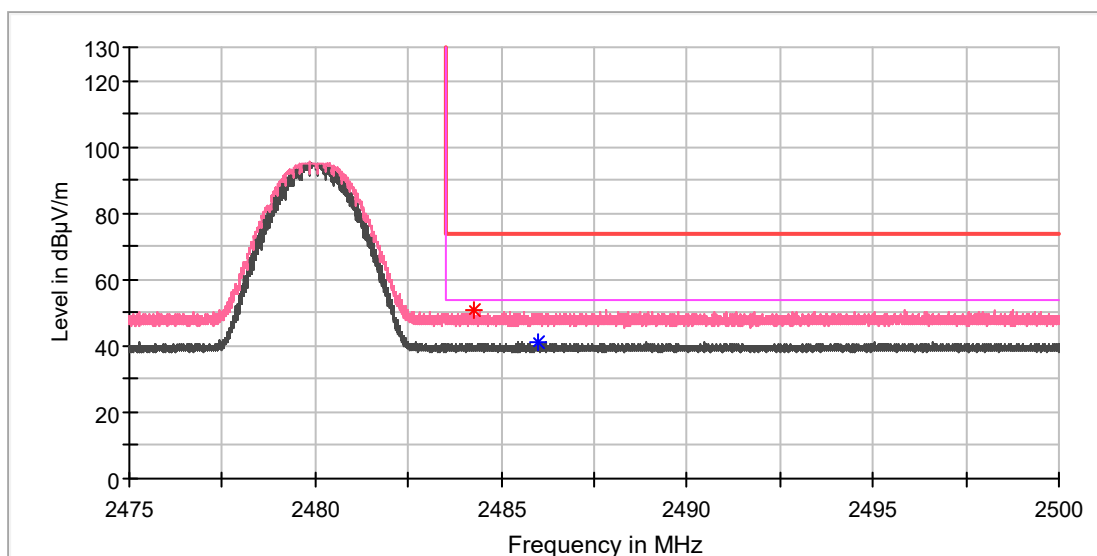
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2485.151250	---	41.06	54.00	12.94	100.0	H	0.0	7.4
2488.230000	51.04	---	74.00	22.97	100.0	H	323.0	7.4

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

EUT Name: Smart Power Meter Switch
 Model: POWR320D
 Test Mode: BLE 1M_High channel
 Order No/Sample No: 168377937/A003291051-004
 Test Voltage:: DC 5V From USB
 Remark: Temp 23 Humi:53%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical Freqs

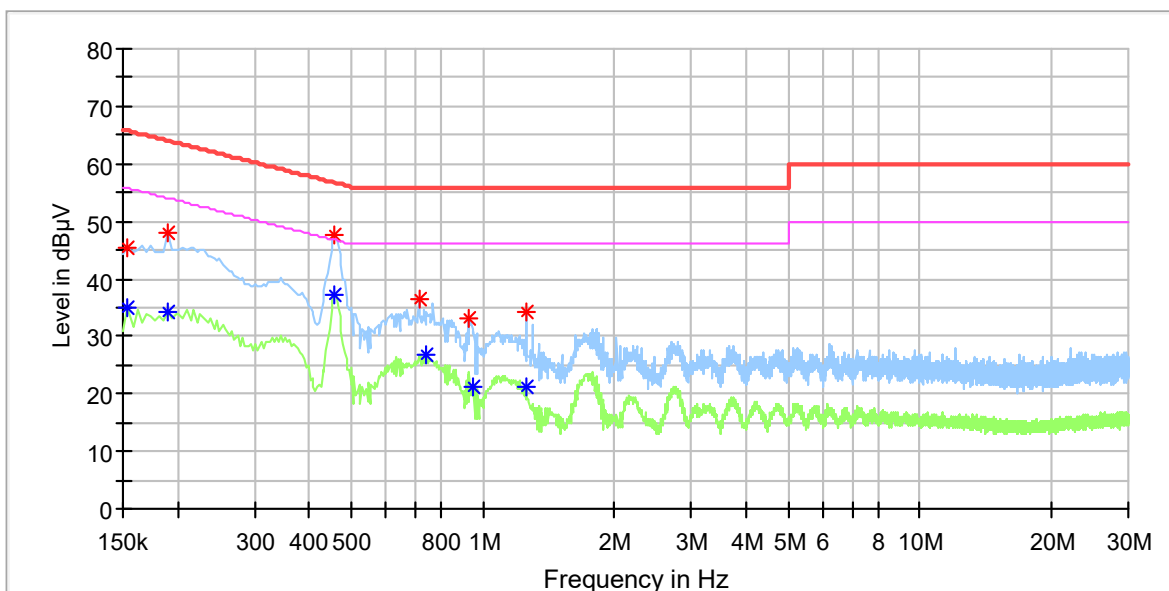
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2484.285000	50.66	---	74.00	23.34	100.0	V	88.0	7.4
2486.015000	---	41.27	54.00	12.73	100.0	V	9.0	7.4

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

Appendix B.7: Test Results of Conducted Emission

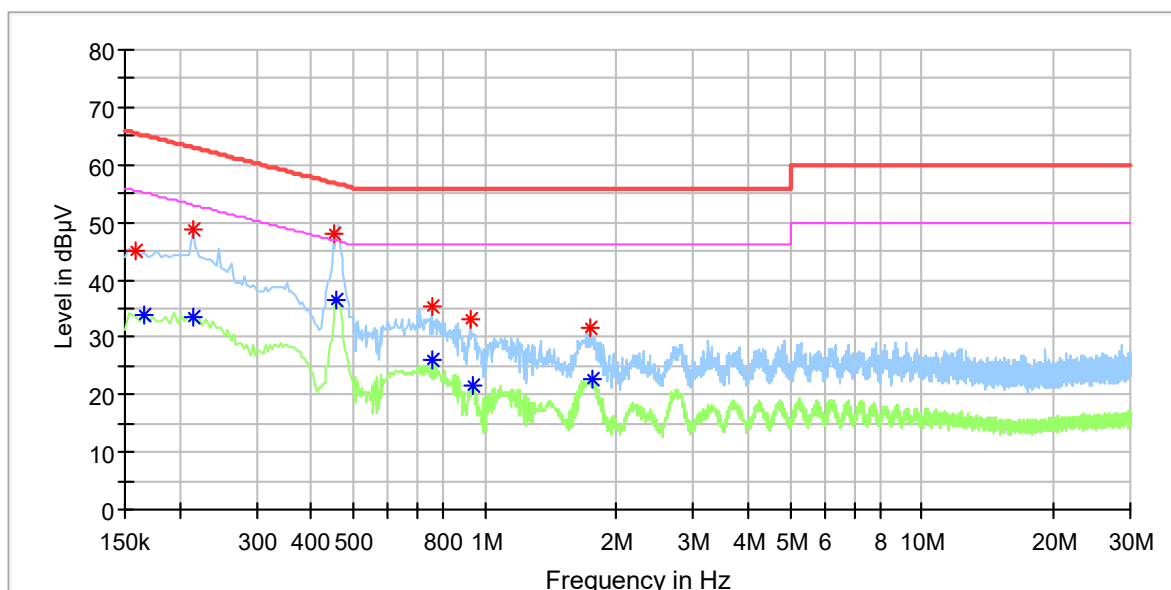
EUT Name: Smart Power Meter Switch
 Order No: 168377937 15
 Model: POWR320D
 Test Mode: BLE mode
 Test Voltage: AC 230V/50Hz
 Test Standard: Steve Lan/Gary Chen
 Tem./Hum./Pressure: 23.7°C/50.4%/101kPa
 Remark: SR1



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.154000	---	34.94	55.78	20.84	L1	9.6
0.154000	45.51	---	65.78	20.27	L1	9.6
0.190000	---	34.12	54.04	19.91	L1	9.6
0.190000	47.83	---	64.04	16.21	L1	9.6
0.458000	---	37.37	46.73	9.36	L1	9.7
0.458000	47.71	---	56.73	9.02	L1	9.7
0.716000	36.62	---	56.00	19.38	L1	9.7
0.744000	---	26.76	46.00	19.24	L1	9.7
0.932000	33.23	---	56.00	22.77	L1	9.7
0.944000	---	21.19	46.00	24.81	L1	9.7
1.256000	---	21.05	46.00	24.95	L1	9.7
1.256000	34.31	---	56.00	21.69	L1	9.7

EUT Name: Smart Power Meter Switch
 Order No: 168377937 15
 Model: POWR320D
 Test Mode: BLE mode
 Test Voltage: AC 230V/50Hz
 Test Standard: Steve Lan/Gary Chen
 Tem./Hum./Pressure: 23.7°C/50.4%/101kPa
 Remark: SR1



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.158000	45.13	---	65.57	20.44	N	9.6
0.166000	---	33.84	55.16	21.32	N	9.6
0.214000	---	33.40	53.05	19.65	N	9.6
0.214000	48.86	---	63.05	14.19	N	9.6
0.450000	48.13	---	56.88	8.75	N	9.7
0.458000	---	36.44	46.73	10.29	N	9.7
0.756000	---	26.14	46.00	19.86	N	9.7
0.756000	35.18	---	56.00	20.82	N	9.7
0.924000	32.97	---	56.00	23.03	N	9.7
0.936000	---	21.55	46.00	24.45	N	9.7
1.748000	31.68	---	56.00	24.32	N	9.7
1.768000	---	22.60	46.00	23.40	N	9.7