

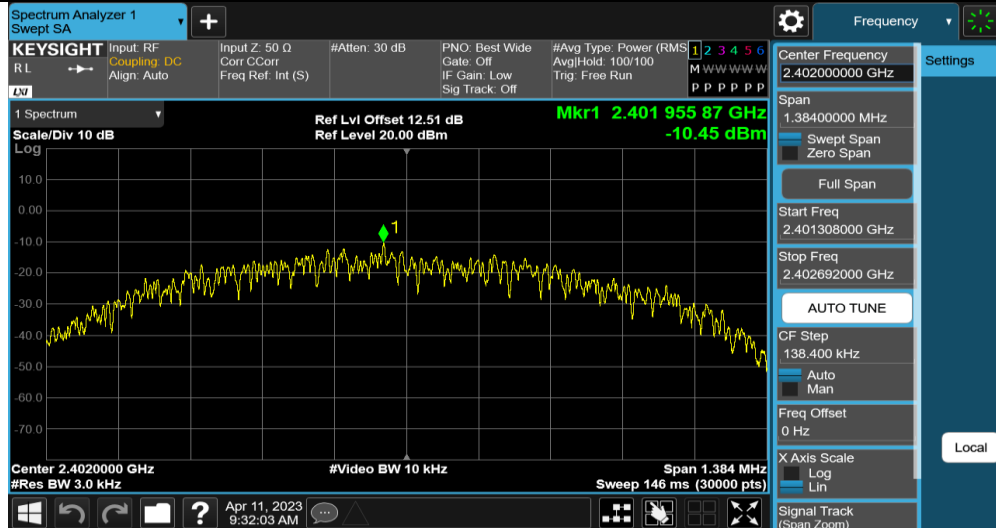
Appendix A: Test Results of Bluetooth Low Energy

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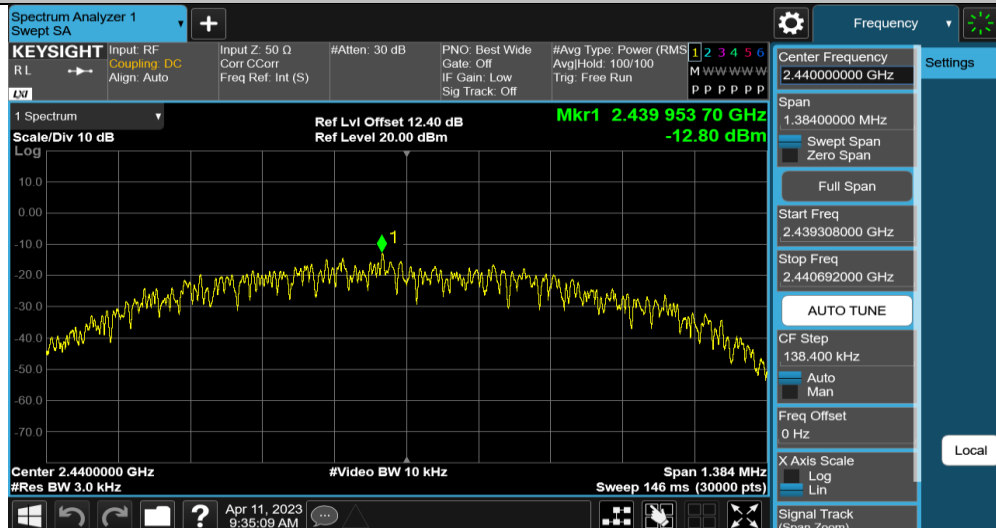
Appendix A.1: Test Results of Conducted Power Spectral Density

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-10.45	≤8.00	PASS
		2440	-12.8	≤8.00	PASS
		2480	-11.01	≤8.00	PASS

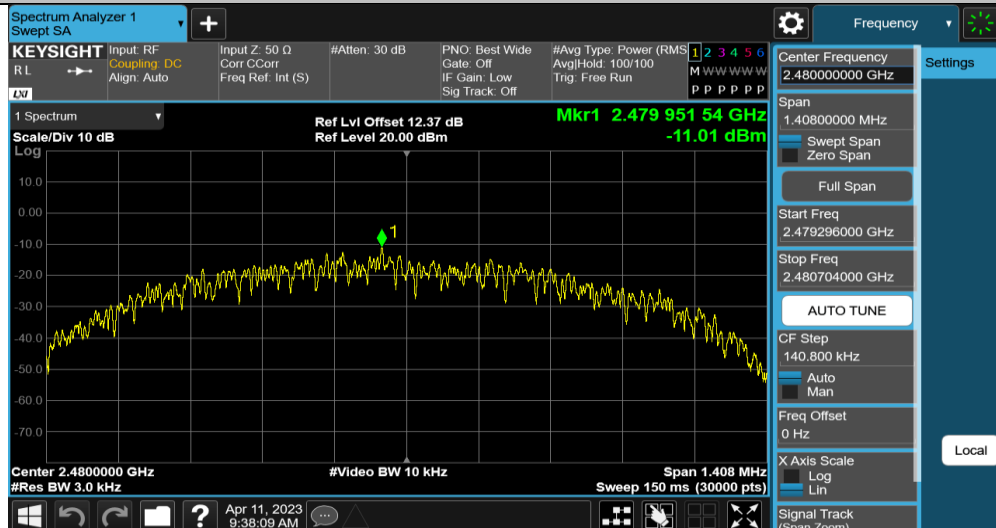
BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



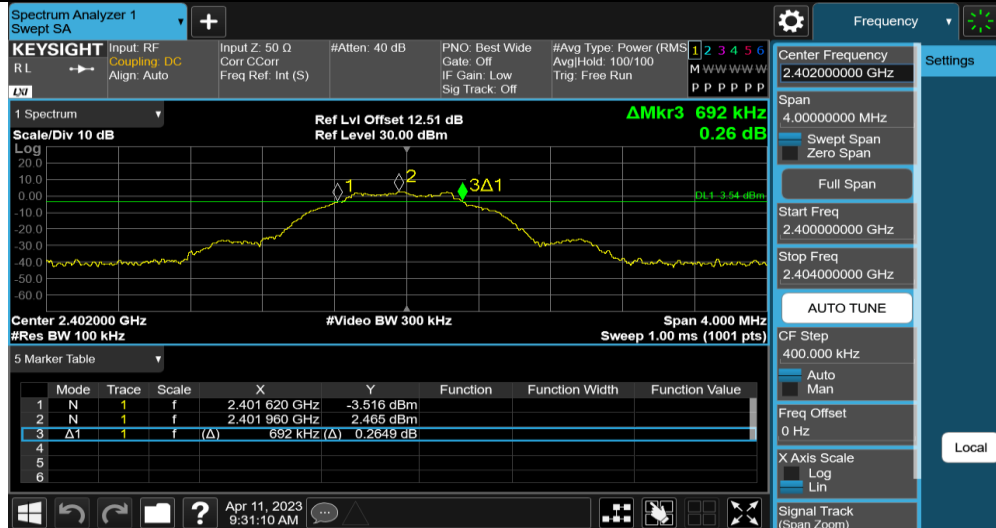
BLE_1M_Ant1_2480



Appendix A.2: Test Results of 6dB Bandwidth

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.692	2401.620	2402.312	0.5	PASS
		2440	0.692	2439.628	2440.320	0.5	PASS
		2480	0.704	2479.608	2480.312	0.5	PASS

BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



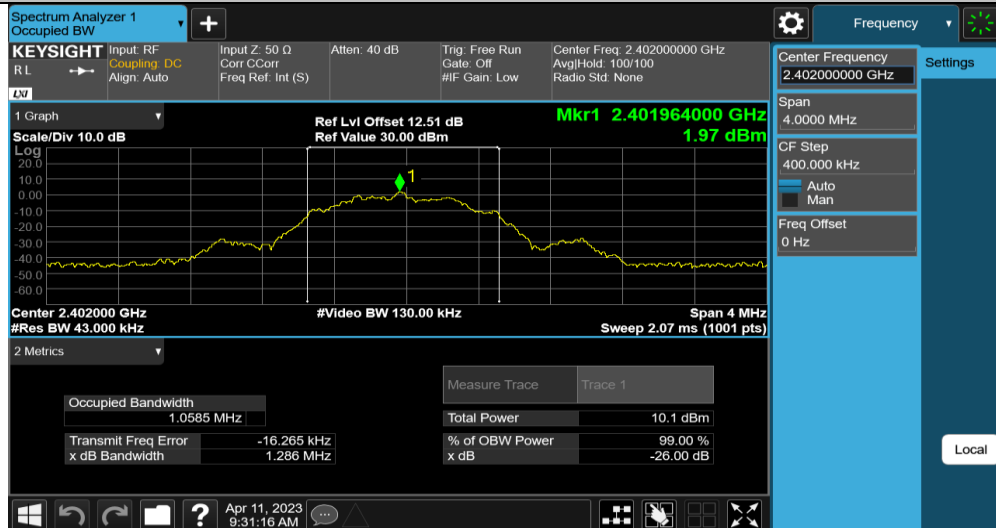
BLE_1M_Ant1_2480



Appendix A.3: Test Results of 99% Bandwidth

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0585	2401.4545	2402.5130	---	PASS
		2440	1.0643	2439.4513	2440.5156	---	PASS
		2480	1.0671	2479.4469	2480.5140	---	PASS

BLE_1M_Ant1_2402



BLE_1M_Ant1_2440



BLE_1M_Ant1_2480



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

Band Edge

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	2.86	-49.8	≤-17.14	PASS
		High	2480	2.44	-50.7	≤-17.56	PASS

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



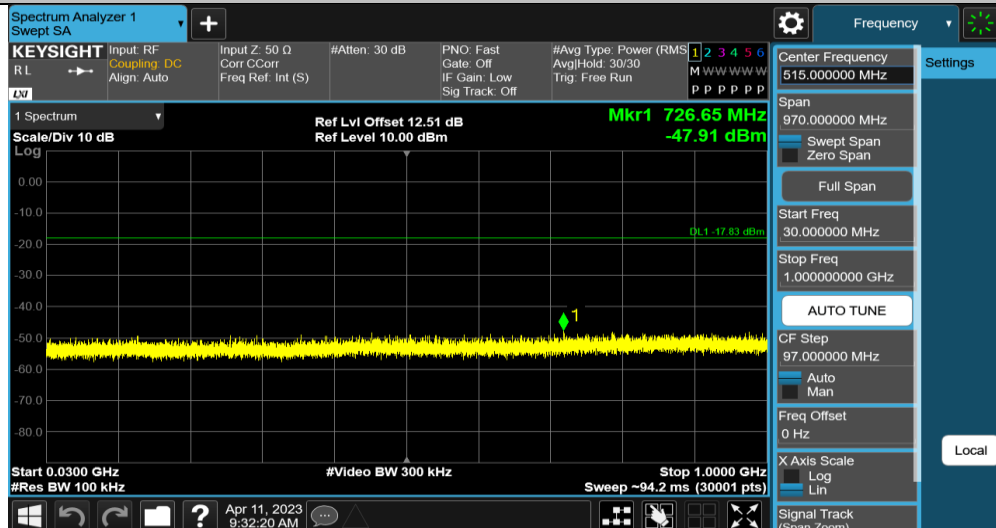
Conducted Spurious Emission

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	2.17	2.17	---	PASS
			30~1000	2.17	-47.91	≤-17.83	PASS
			1000~26500	2.17	-37.9	≤-17.83	PASS
		2440	Reference	-0.15	-0.15	---	PASS
			30~1000	-0.15	-46.1	≤-20.15	PASS
			1000~26500	-0.15	-38.53	≤-20.15	PASS
		2480	Reference	1.60	1.60	---	PASS
			30~1000	1.60	-47.65	≤-18.4	PASS
			1000~26500	1.60	-38.41	≤-18.4	PASS

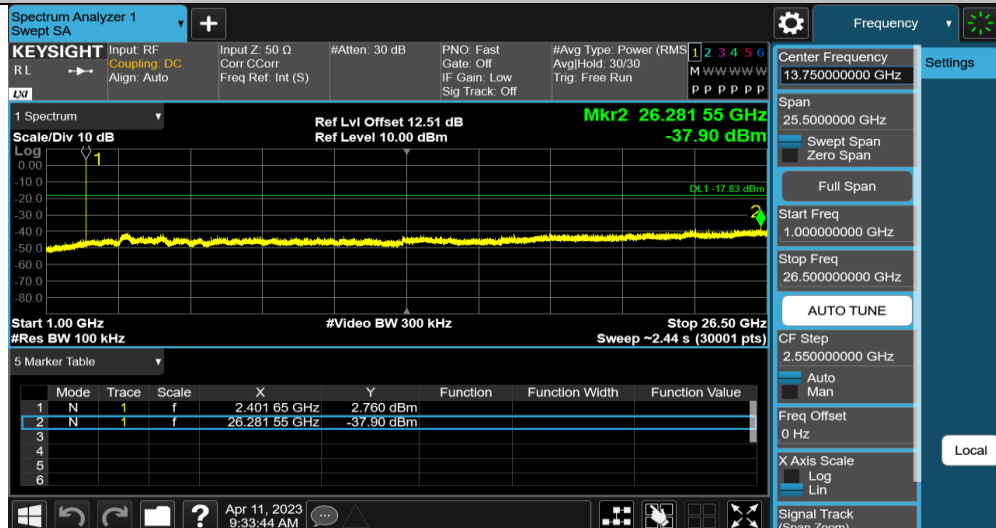
BLE_1M_Ant1_2402_0~Reference



BLE_1M_Ant1_2402_30~1000



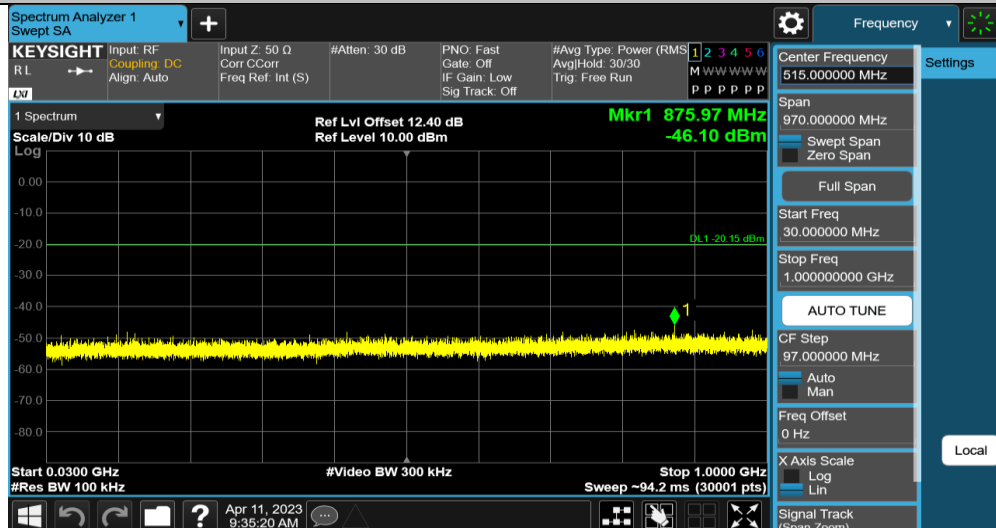
BLE_1M_Ant1_2402_1000~26500



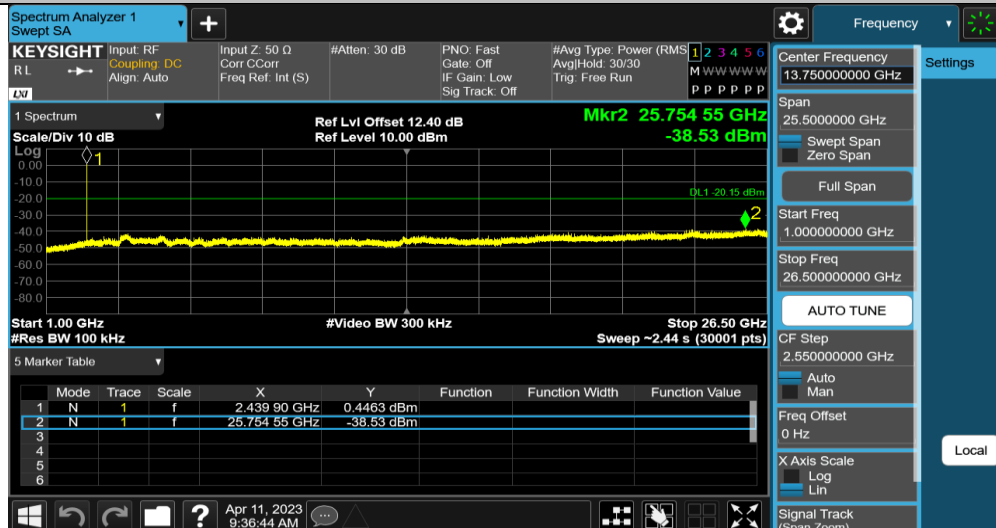
BLE_1M_Ant1_2440_0~Reference



BLE_1M_Ant1_2440_30~1000



BLE_1M_Ant1_2440_1000~26500



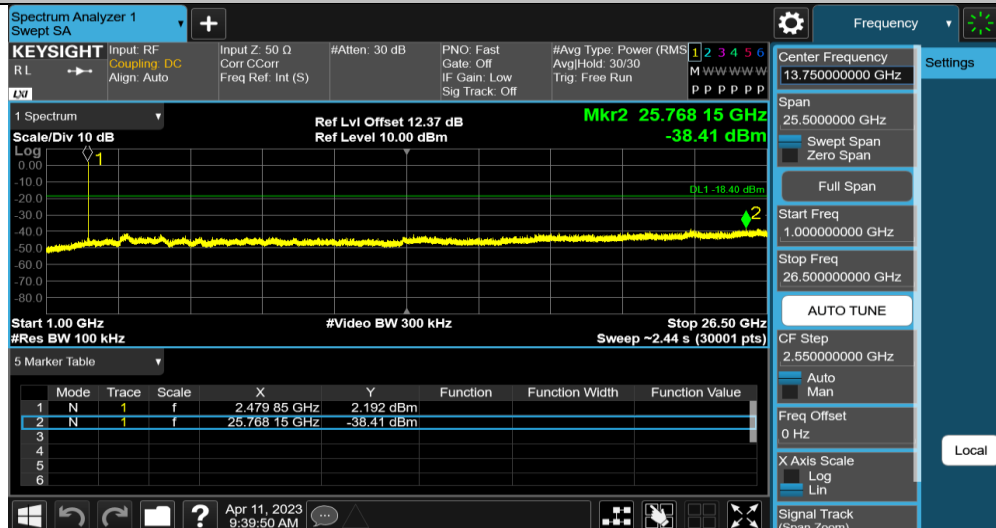
BLE_1M_Ant1_2480_0~Reference



BLE_1M_Ant1_2480_30~1000



BLE_1M_Ant1_2480_1000~26500



Appendix A.5: Test Results of Radiated Spurious Emissions

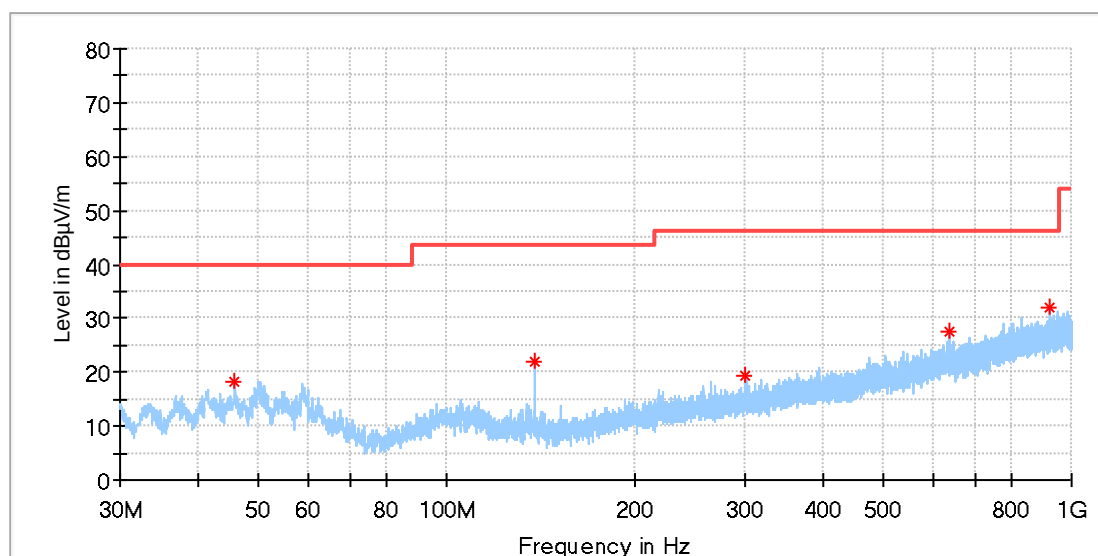
Note:

- 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 above 18GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

30 MHz - 1GHz

EUT Information

EUT Name: 2.4G WIFI-BLE Module
Model: TBAP6212
Test Mode: BLE 1M_Mid channel
Order No/Sample No: 168417780/A003436718-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:55%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

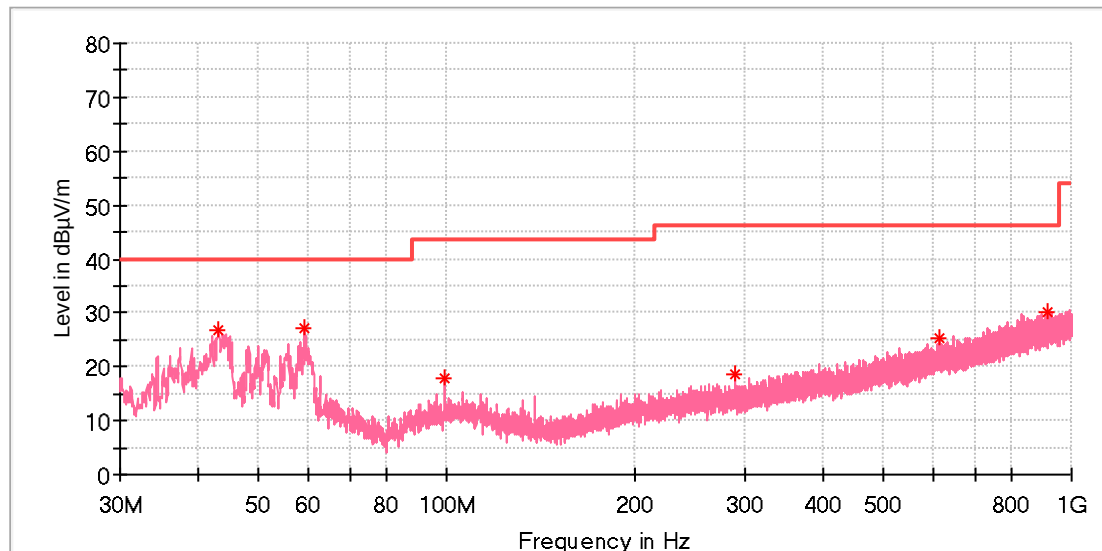
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
45.811000	18.39	40.00	21.61	100.0	H	61.0	-18.7
138.591500	21.85	43.50	21.65	100.0	H	273.0	-22.2
301.212000	19.27	46.00	26.73	100.0	H	303.0	-16.3
635.231500	27.50	46.00	18.50	100.0	H	310.0	-9.3
924.049000	32.01	46.00	13.99	100.0	H	2.0	-4.8

Final Result

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

EUT Information

EUT Name: 2.4G WIFI-BLE Module
Model: TBAP6212
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Order No/Sample No: 168417780/A003436718-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:55%
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)
43.046500	26.86	40.00	13.14	100.0	V	164.0	-19.3
59.051500	27.15	40.00	12.85	100.0	V	0.0	-18.9
99.015500	17.88	43.50	25.62	100.0	V	152.0	-19.1
289.475000	18.44	46.00	27.56	100.0	V	77.0	-16.5
614.182500	25.38	46.00	20.62	100.0	V	13.0	-9.6
913.185000	30.07	46.00	15.93	100.0	V	301.0	-4.9

Final_Result

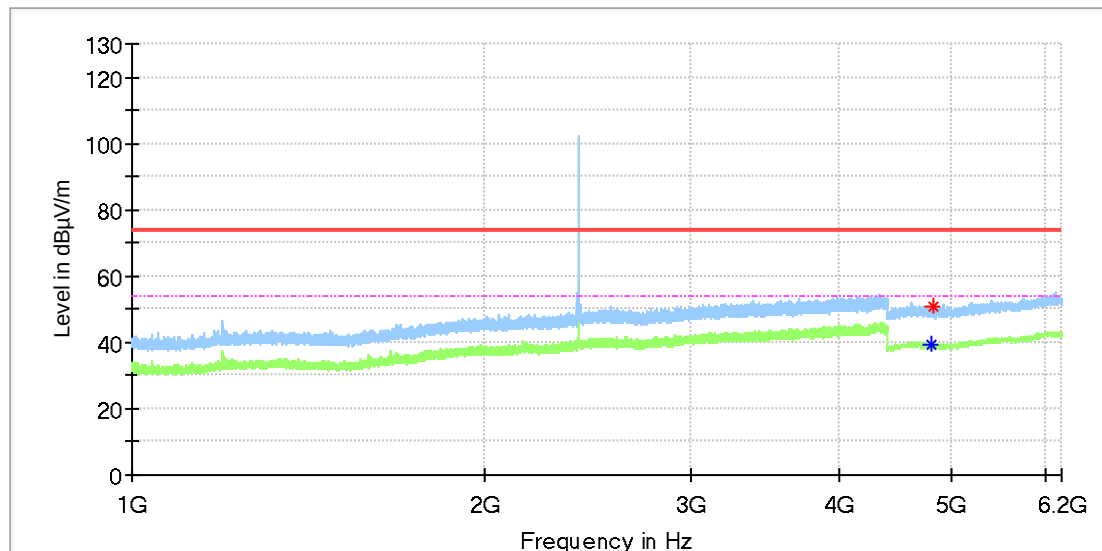
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---		---	---

1GHz - 18GHz

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

EUT Information

EUT Name:	2.4G WIFI-BLE Module
Model:	TBAP6212
Test Mode:	BLE 1M_Low channel
Order No/Sample No:	168417780/A003436718-001
Test Voltage:	DC 3.3V
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

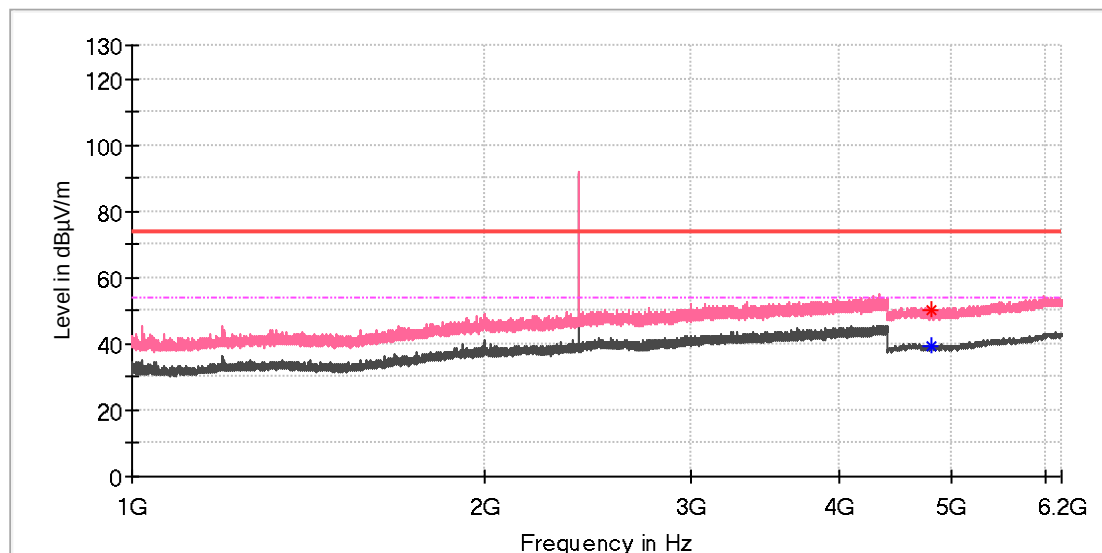
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4809.500000	---	39.36	54.00	14.64	100.0	H	74.0	11.8
4819.000000	50.86	---	74.00	23.14	100.0	H	112.0	11.8

Final Result

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

EUT Information

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Test Voltage: DC 3.3V
Remark: Temp 22 Humi:55%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

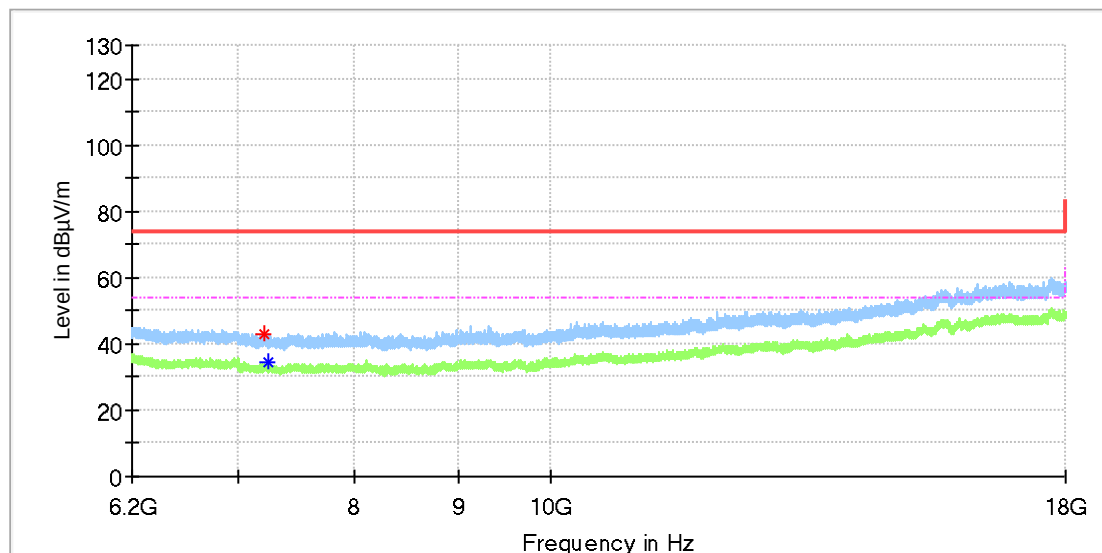
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4810.000000	50.10	---	74.00	23.90	100.0	V	202.0	11.8
4810.000000	---	39.35	54.00	14.65	100.0	V	202.0	11.8

Final Result

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

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Critical Freqs

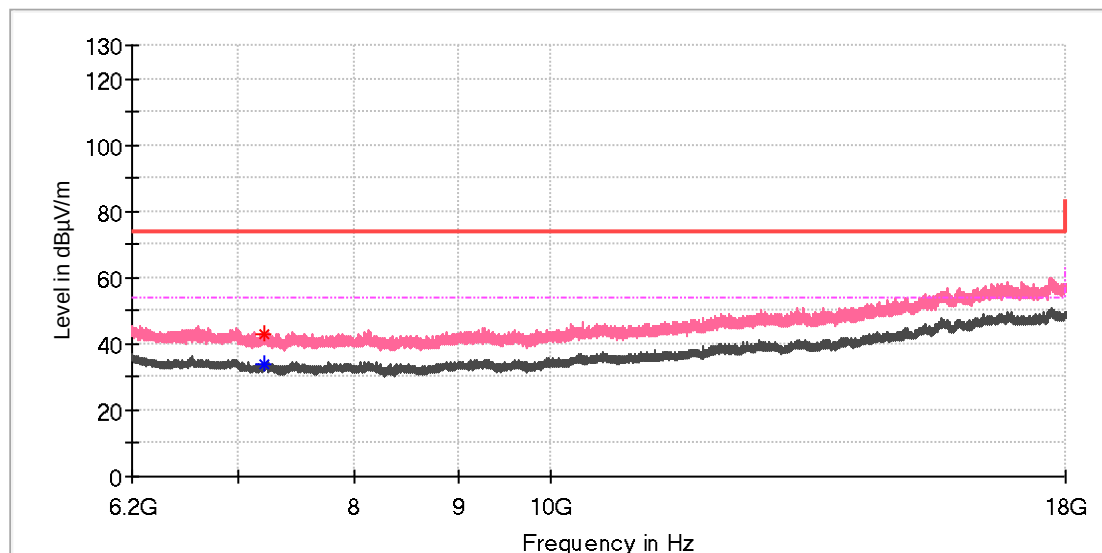
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7210.866667	42.90	---	74.00	31.10	100.0	H	29.0	8.7
7238.891667	---	34.47	54.00	19.53	100.0	H	99.0	8.6

Final Result

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

EUT Information

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Test Mode: BLE 1M_Low channel
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Test Voltage: DC 3.3V
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Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

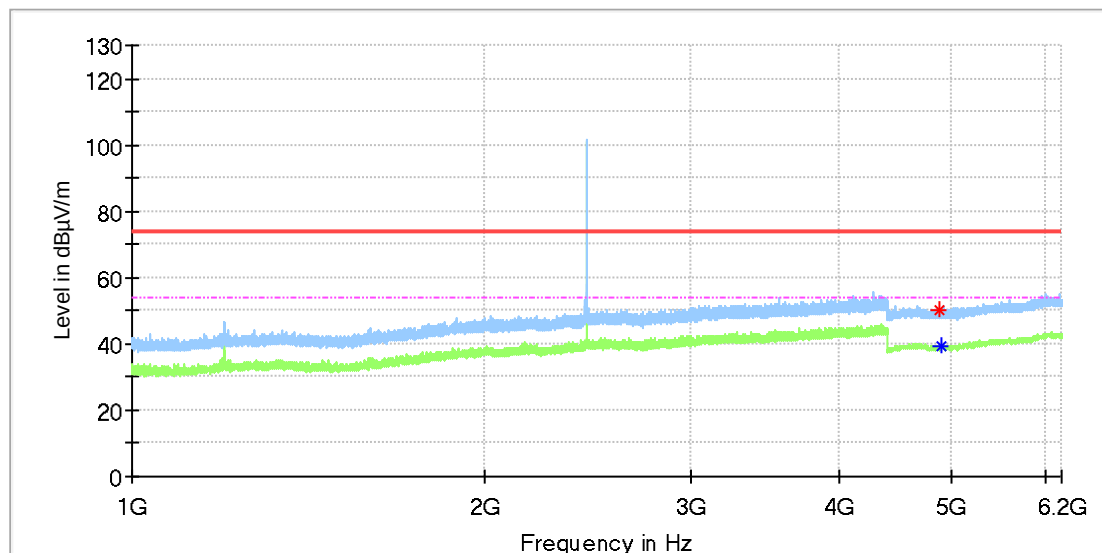
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7207.425000	---	33.72	54.00	20.28	100.0	V	168.0	8.8
7211.850000	42.85	---	74.00	31.15	100.0	V	44.0	8.7

Final_Result

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

EUT Information

EUT Name: 2.4G WIFI-BLE Module
Model: TBAP6212
Test Mode: BLE 1M_Mid channel
Order No/Sample No: 168417780/A003436718-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:55%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

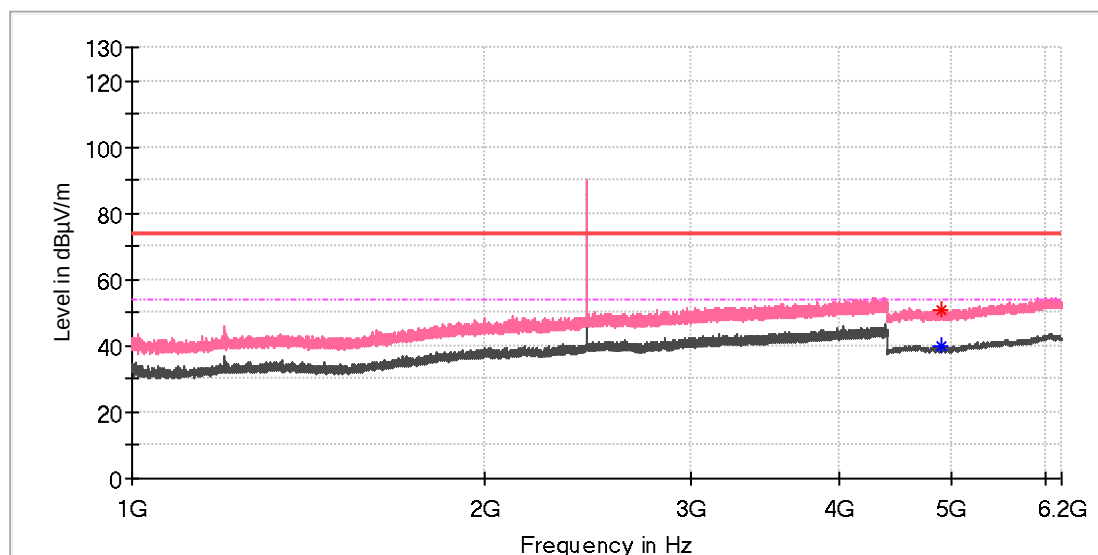
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4883.000000	50.01	---	74.00	23.99	100.0	H	116.0	11.8
4896.500000	---	39.48	54.00	14.52	100.0	H	177.0	11.8

Final Result

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

EUT Information

EUT Name: 2.4G WIFI-BLE Module
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Order No/Sample No: 168417780/A003436718-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:55%
Test Standard: FCC 15.247
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Critical Freqs

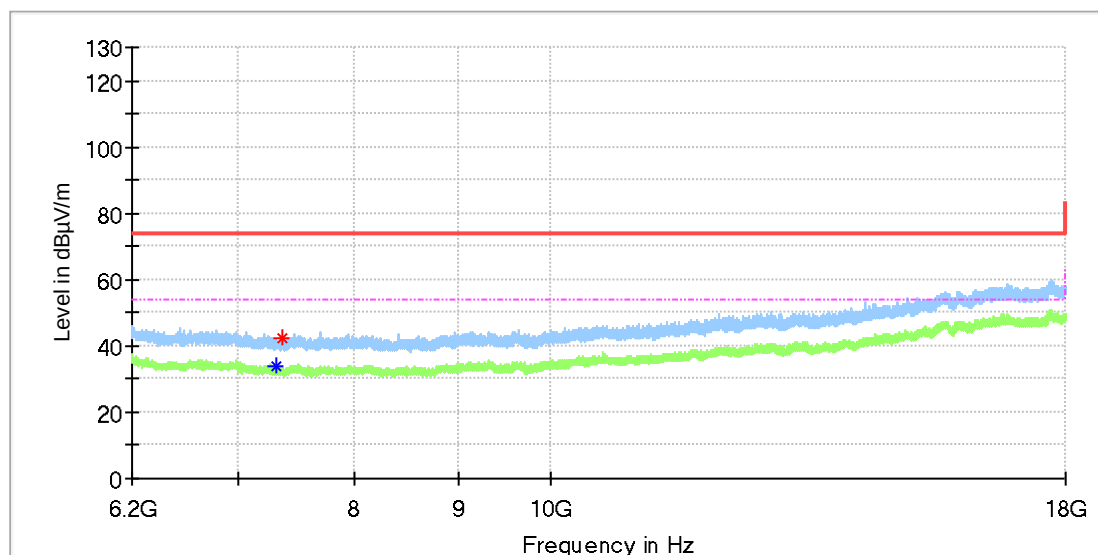
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4903.000000	50.95	---	74.00	23.05	100.0	V	137.0	11.8
4905.500000	---	39.77	54.00	14.23	100.0	V	31.0	11.8

Final Result

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

EUT Information

EUT Name: 2.4G WIFI-BLE Module
Model: TBAP6212
Test Mode: BLE 1M_Mid channel
Order No/Sample No: 168417780/A003436718-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:55%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

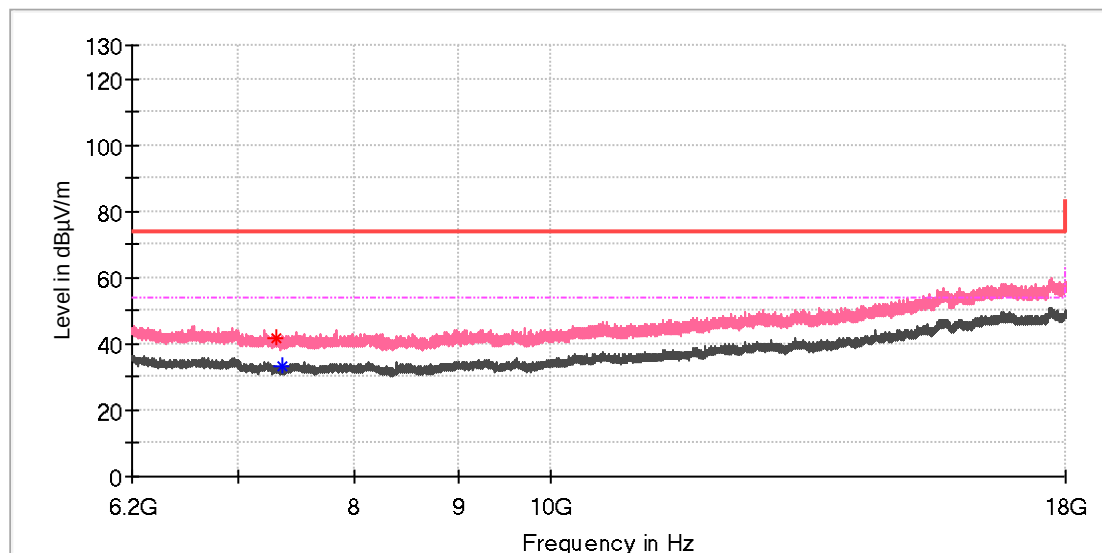
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7304.283333	---	33.81	54.00	20.19	100.0	H	0.0	8.3
7355.908333	42.34	---	74.00	31.66	100.0	H	290.0	8.1

Final_Result

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

EUT Information

EUT Name: 2.4G WIFI-BLE Module
Model: TBAP6212
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Order No/Sample No: 168417780/A003436718-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:55%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

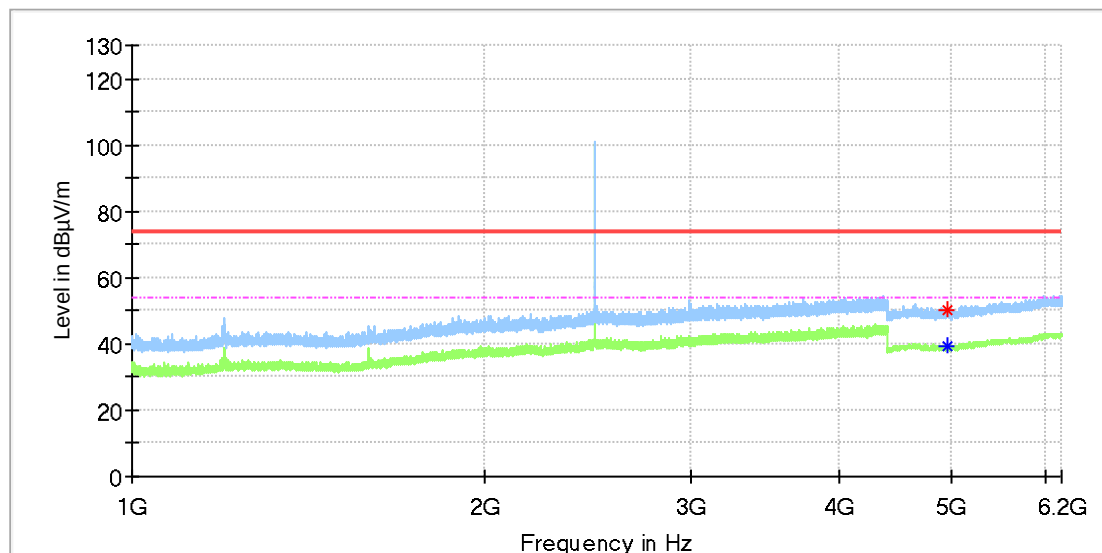
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7315.591667	41.79	---	74.00	32.21	100.0	V	0.0	8.2
7355.416667	---	33.19	54.00	20.81	100.0	V	240.0	8.1

Final_Result

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

EUT Information

EUT Name: 2.4G WIFI-BLE Module
Model: TBAP6212
Test Mode: BLE 1M_High channel
Order No/Sample No: 168417780/A003436718-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:55%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

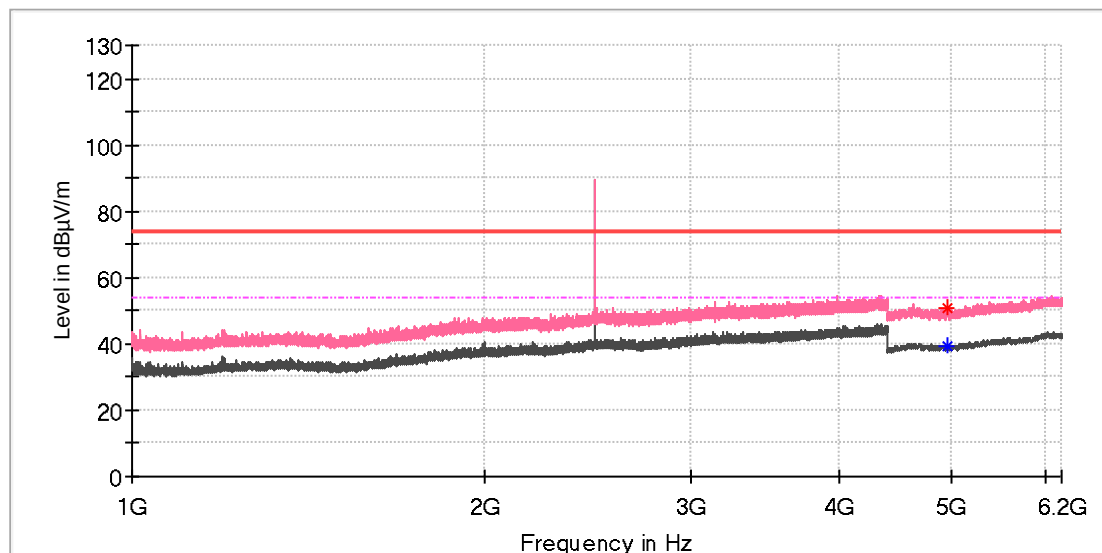
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4962.000000	50.47	---	74.00	23.53	100.0	H	76.0	11.8
4963.500000	---	39.57	54.00	14.43	100.0	H	190.0	11.8

Final Result

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

EUT Information

EUT Name: 2.4G WIFI-BLE Module
Model: TBAP6212
Test Mode: BLE 1M_High channel
Order No/Sample No: 168417780/A003436718-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:55%
Test Standard: FCC 15.247
Tested By: Kei Zhang
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Critical_Freqs

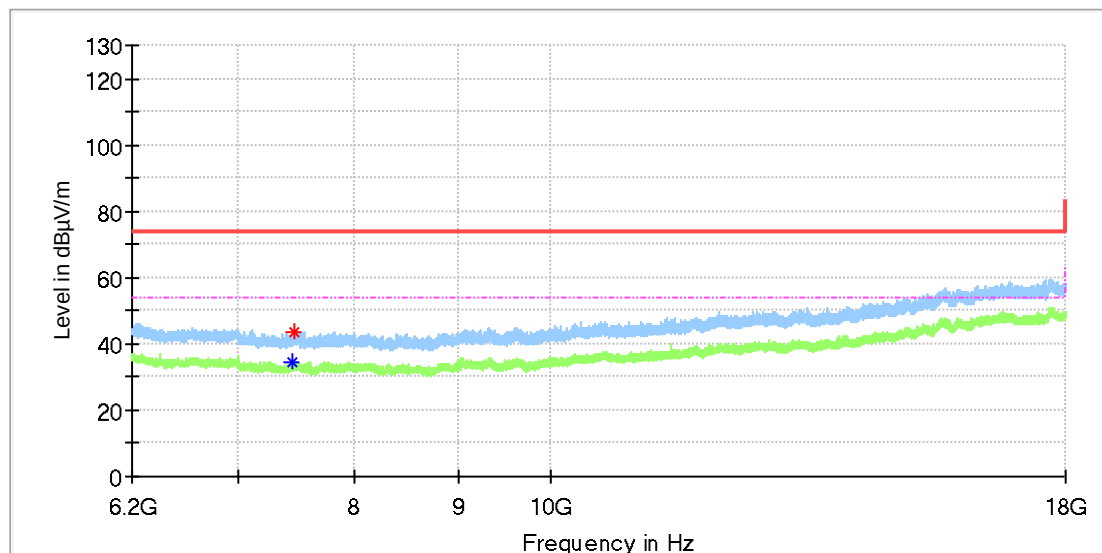
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4950.500000	---	39.44	54.00	14.56	100.0	V	12.0	11.8
4954.500000	50.70	---	74.00	23.30	100.0	V	6.0	11.8

Final_Result

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

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Critical Freqs

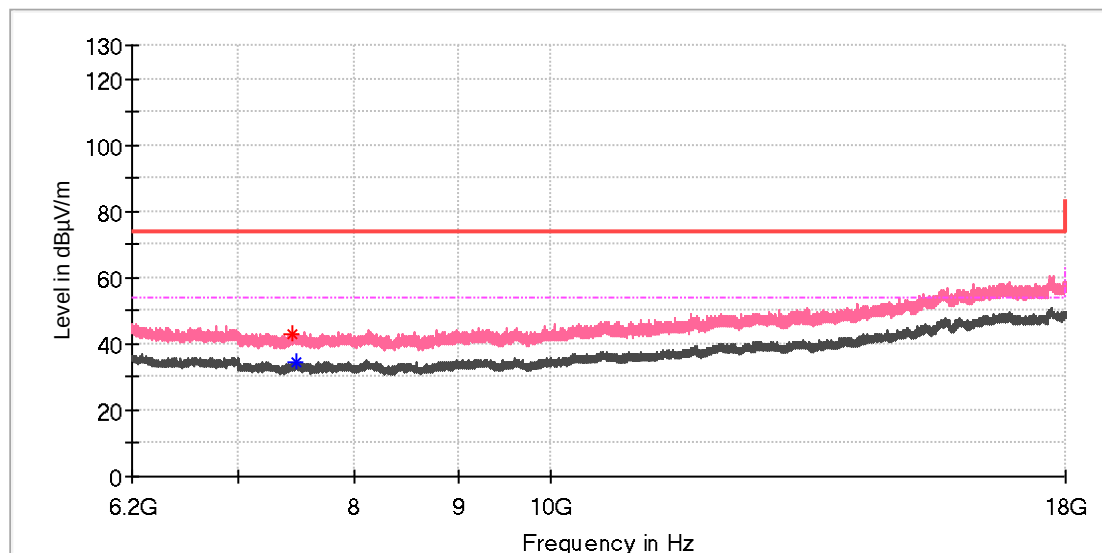
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7447.358333	---	34.19	54.00	19.81	100.0	H	0.0	8.5
7468.991667	43.57	---	74.00	30.43	100.0	H	309.0	8.6

Final Result

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

EUT Information

EUT Name: 2.4G WIFI-BLE Module
Model: TBAP6212
Test Mode: BLE 1M_High channel
Order No/Sample No: 168417780/A003436718-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:55%
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)
7451.291667	43.01	---	74.00	30.99	100.0	V	168.0	8.5
7477.841667	---	34.36	54.00	19.64	100.0	V	252.0	8.6

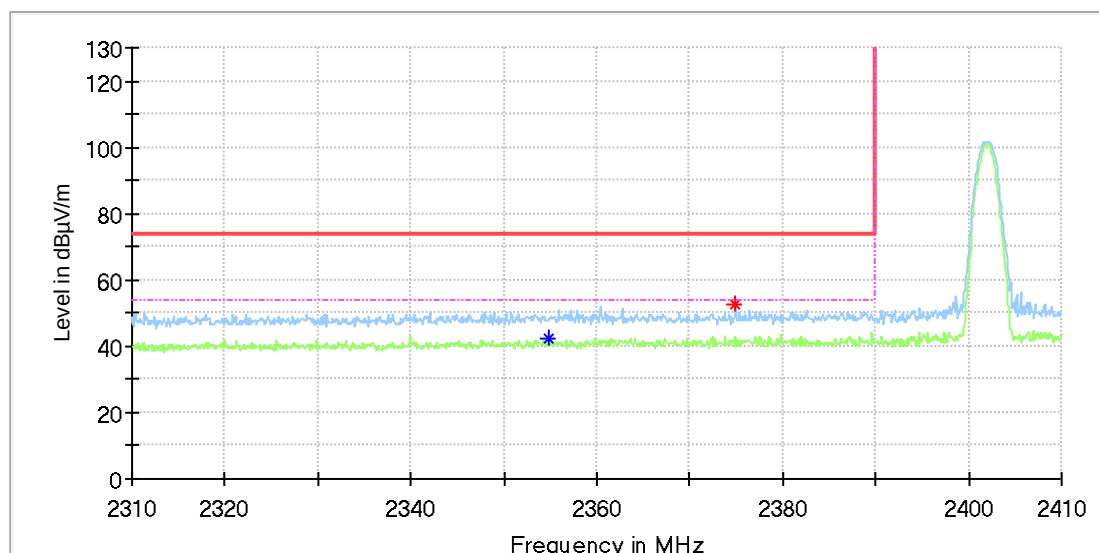
Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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Appendix A.6: Test Results of Radiated Emissions in Restricted Bands

EUT Information

EUT Name:	2.4G WIFI-BLE Module
Model:	TBAP6212
Test Mode:	BLE 1M_Low channel
Order No/Sample No:	168417780/A003436718-001
Test Voltage:	DC 3.3V
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

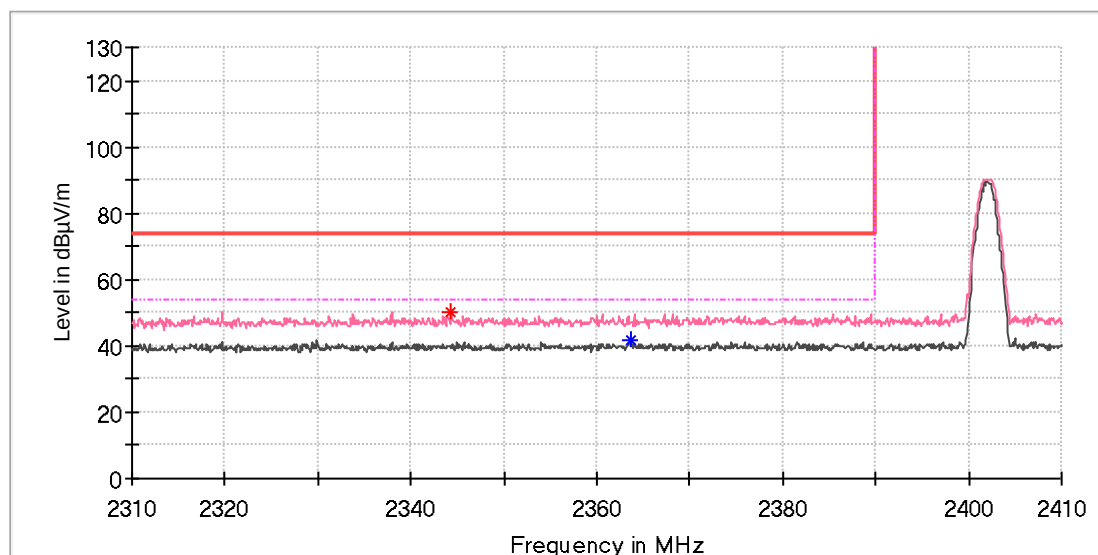
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2354.800000	---	42.22	54.00	11.78	100.0	H	238.0	6.9
2374.900000	52.58	---	74.00	21.42	100.0	H	238.0	6.9

Final Result

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

EUT Information

EUT Name: 2.4G WIFI-BLE Module
Model: TBAP6212
Test Mode: BLE 1M_Low channel
Order No/Sample No: 168417780/A003436718-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:55%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

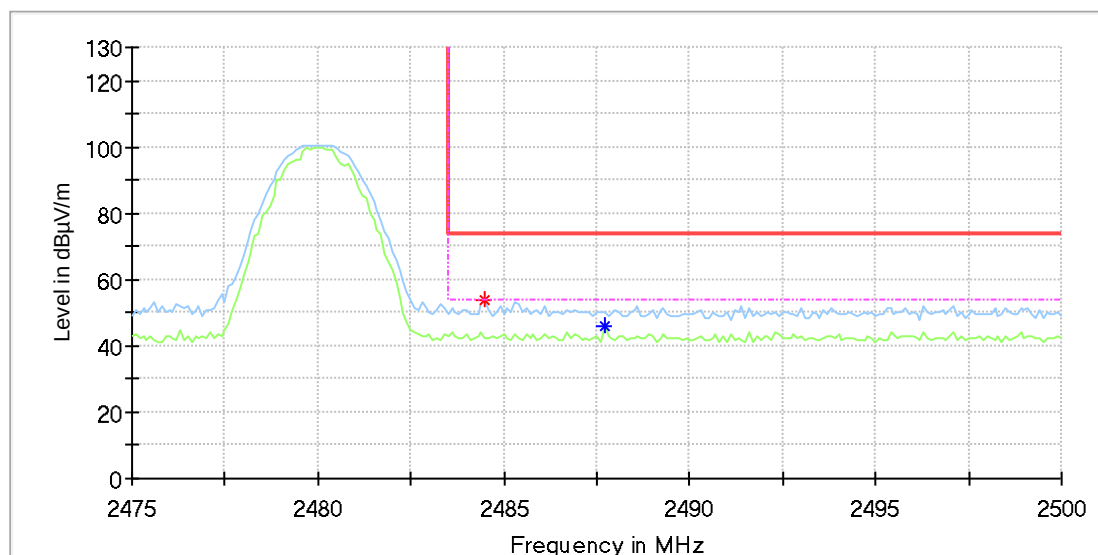
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2344.300000	50.37	---	74.00	23.63	100.0	V	333.0	6.9
2363.600000	---	41.67	54.00	12.33	100.0	V	344.0	6.9

Final_Result

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

EUT Name: 2.4G WIFI-BLE Module
Model: TBAP6212
Test Mode: BLE 1M_High channel
Order No/Sample No: 168417780/A003436718-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:55%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

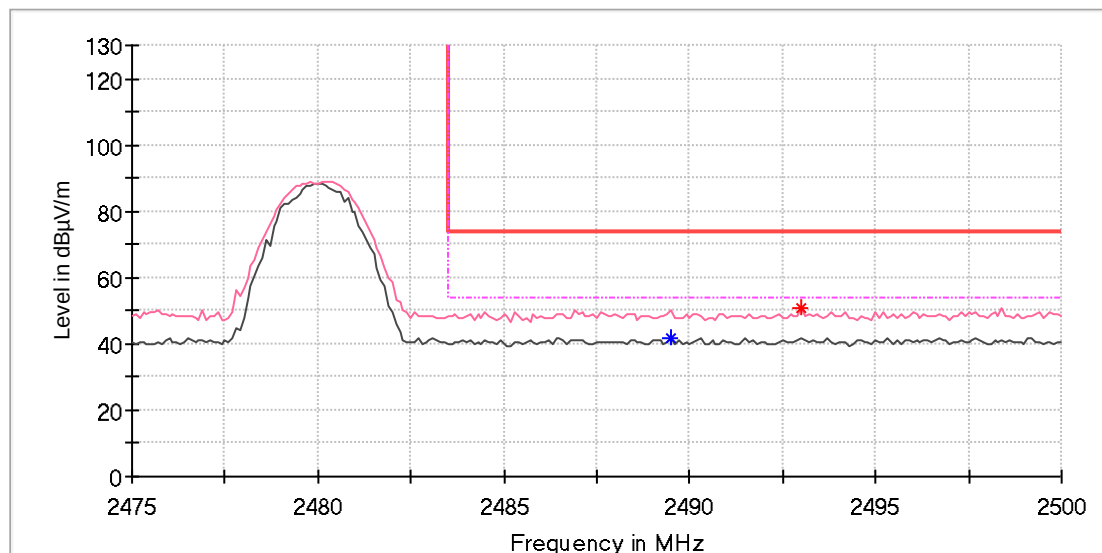
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2484.500000	53.72	---	74.00	20.28	100.0	H	102.0	7.4
2487.700000	---	45.80	54.00	8.20	100.0	H	238.0	7.4

Final Result

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

EUT Name: 2.4G WIFI-BLE Module
Model: TBAP6212
Test Mode: BLE 1M_High channel
Order No/Sample No: 168417780/A003436718-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:55%
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)
2489.500000	---	41.79	54.00	12.21	100.0	V	332.0	7.4
2493.000000	50.75	---	74.00	23.25	100.0	V	0.0	7.4

Final_Result

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