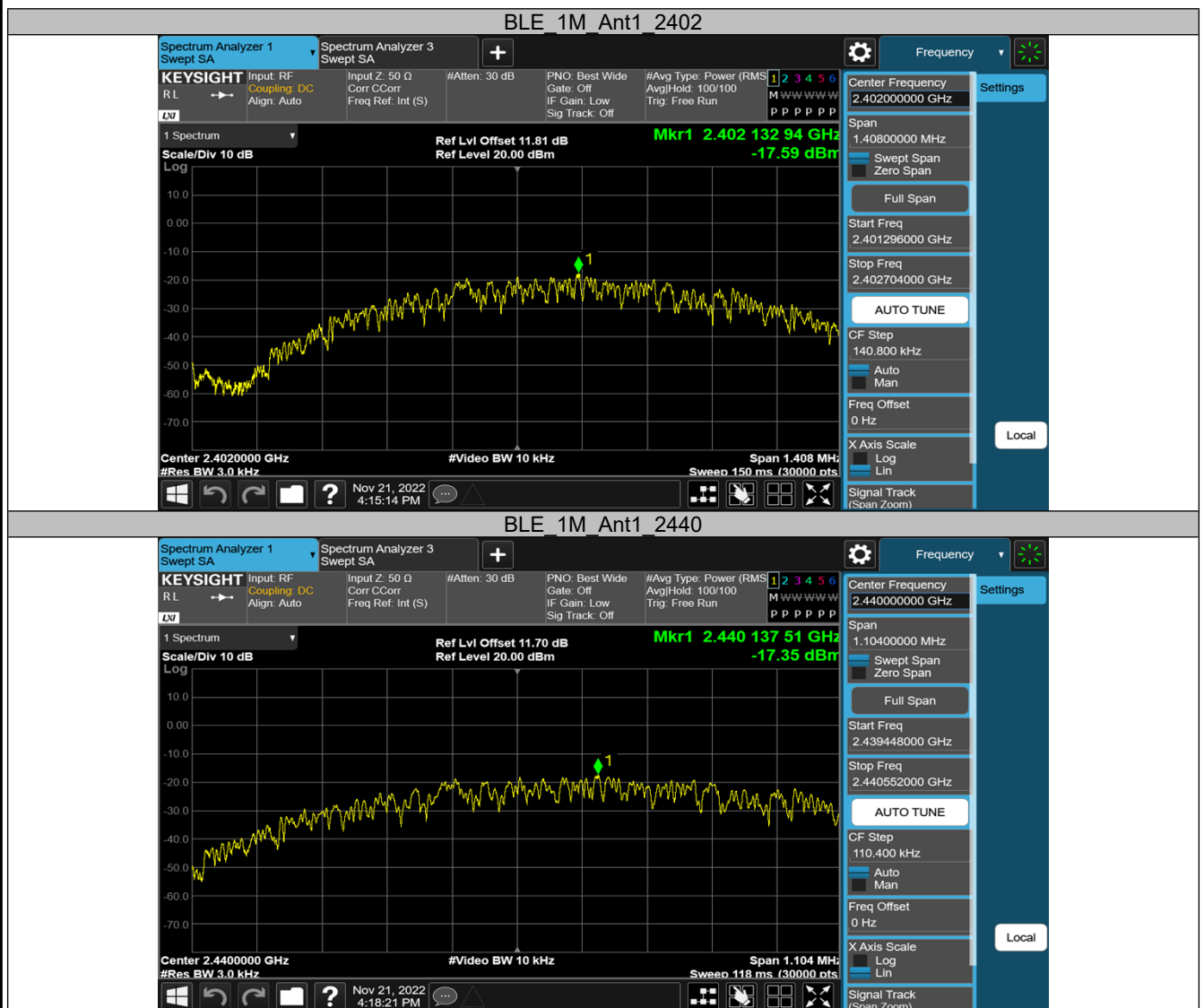


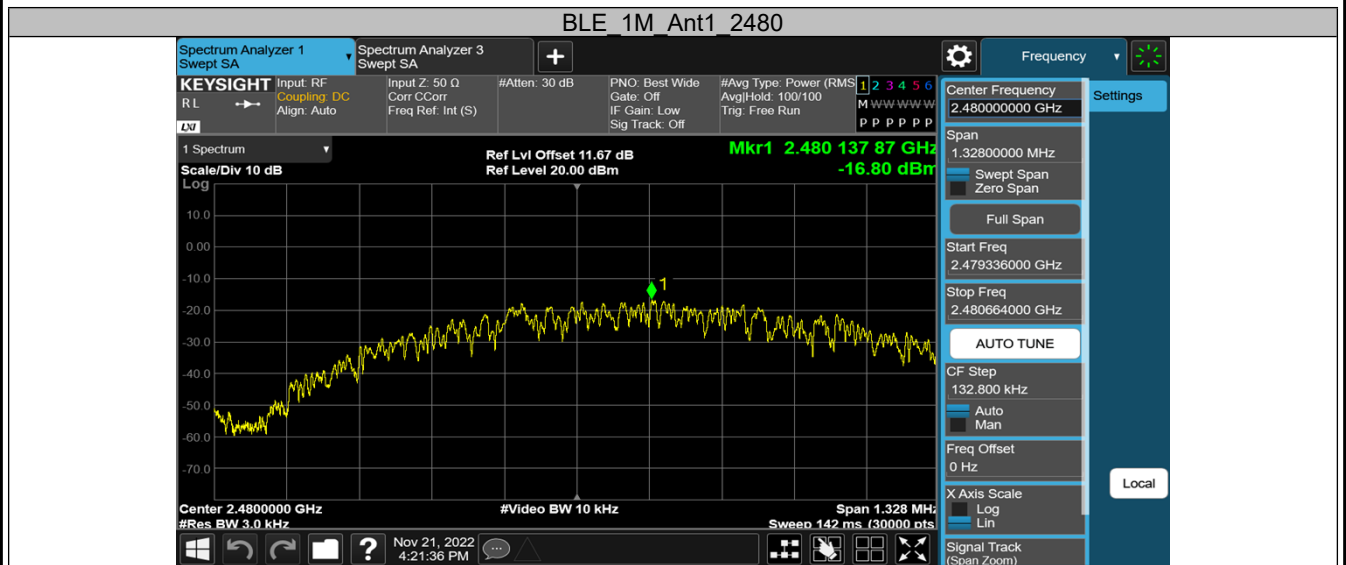
Appendix C: Test Results of Bluetooth Low Energy

APPENDIX C: TEST RESULTS OF BLUETOOTH LOW ENERGY	1
APPENDIX C.1: TEST RESULTS OF CONDUCTED POWER SPECTRAL DENSITY	2
APPENDIX C.2: TEST RESULTS OF 6dB BANDWIDTH	4
APPENDIX C.3: TEST RESULTS OF 99% BANDWIDTH.....	6
APPENDIX C.4: TEST RESULTS OF CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 kHz BANDWIDTH	8
<i>Band Edge</i>	8
<i>Conducted Spurious Emission</i>	9
APPENDIX C.5: TEST RESULTS OF RADIATED SPURIOUS EMISSIONS	13
30 MHz - 1GHz	13
1GHz - 18GHz	15
APPENDIX C.6: TEST RESULTS OF RADIATED EMISSIONS IN RESTRICTED BANDS	27

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

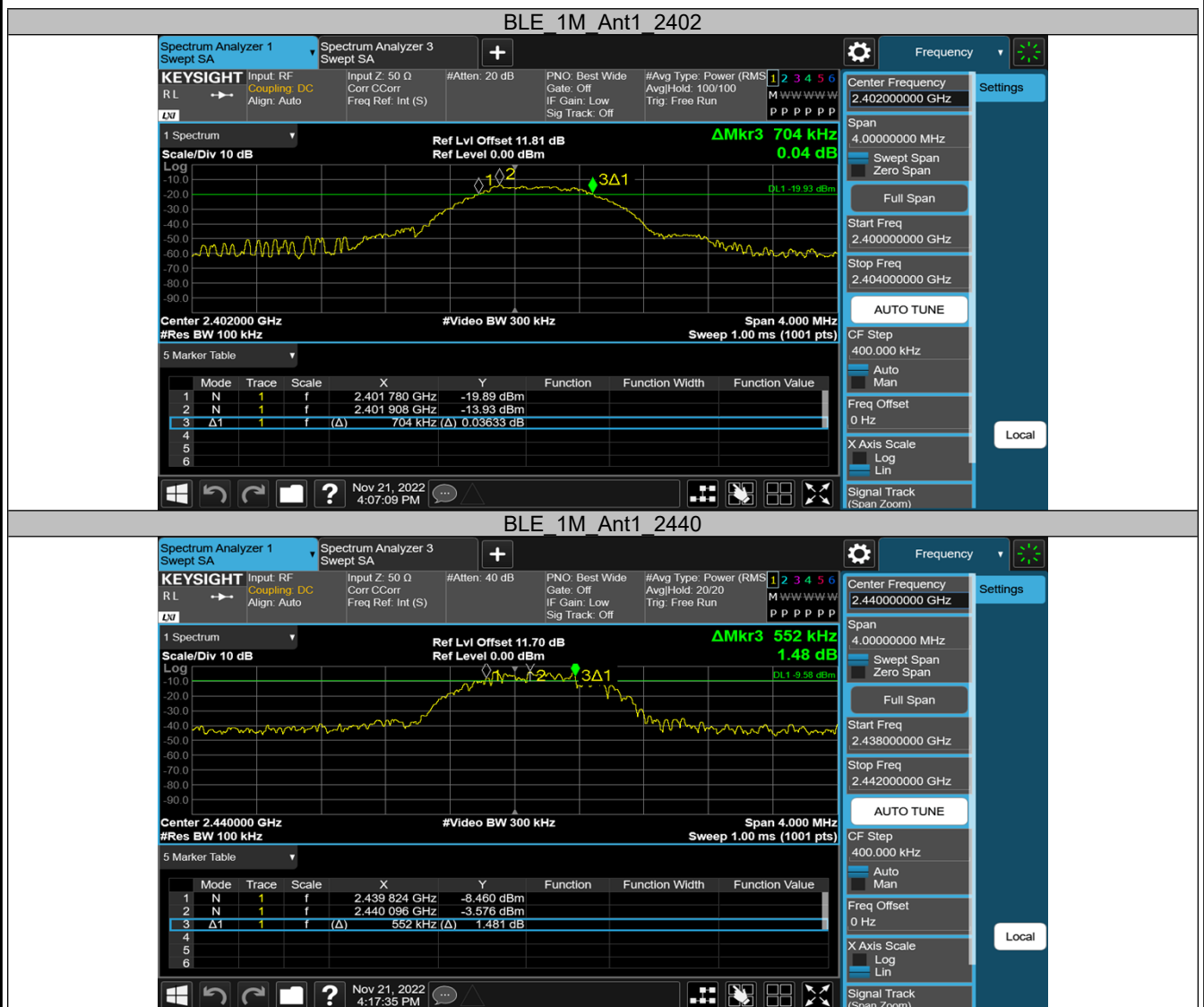
TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-17.59	≤8.00	PASS
		2440	-17.36	≤8.00	PASS
		2480	-16.80	≤8.00	PASS





Appendix C.2: Test Results of 6dB Bandwidth

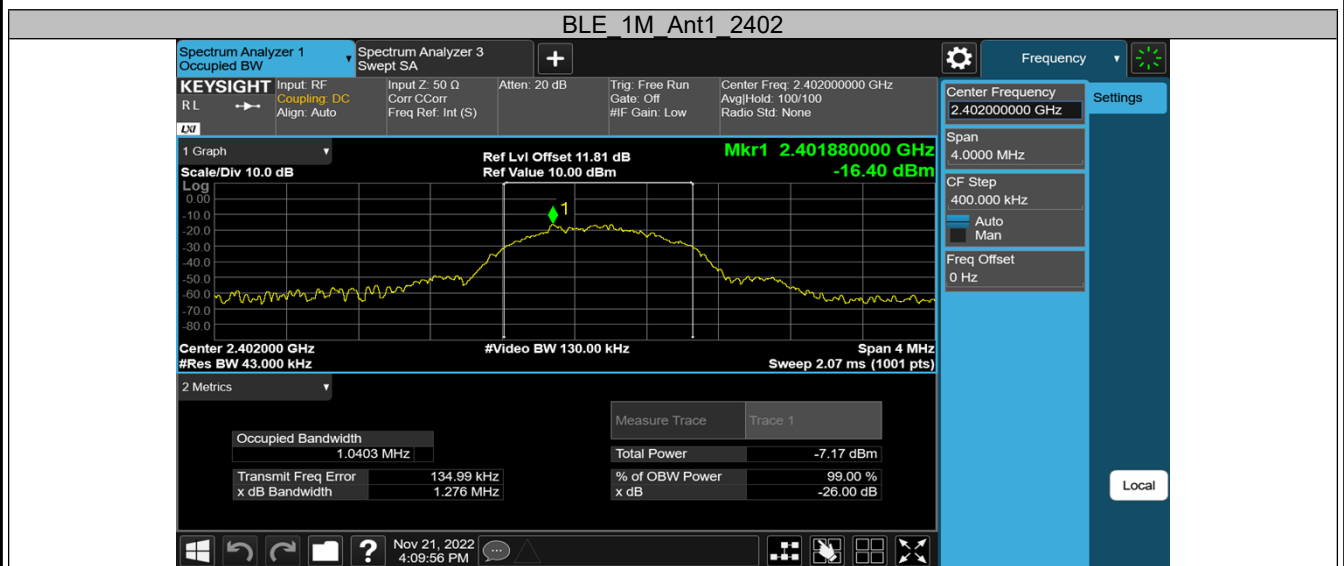
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.704	2401.780	2402.484	0.5	PASS
		2440	0.552	2439.824	2440.376	0.5	PASS
		2480	0.664	2479.792	2480.456	0.5	PASS





Appendix C.3: Test Results of 99% Bandwidth

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0403	2401.6148	2402.6551	---	PASS
		2440	1.0524	2439.6121	2440.6645	---	PASS
		2480	1.0327	2479.6273	2480.6600	---	PASS





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

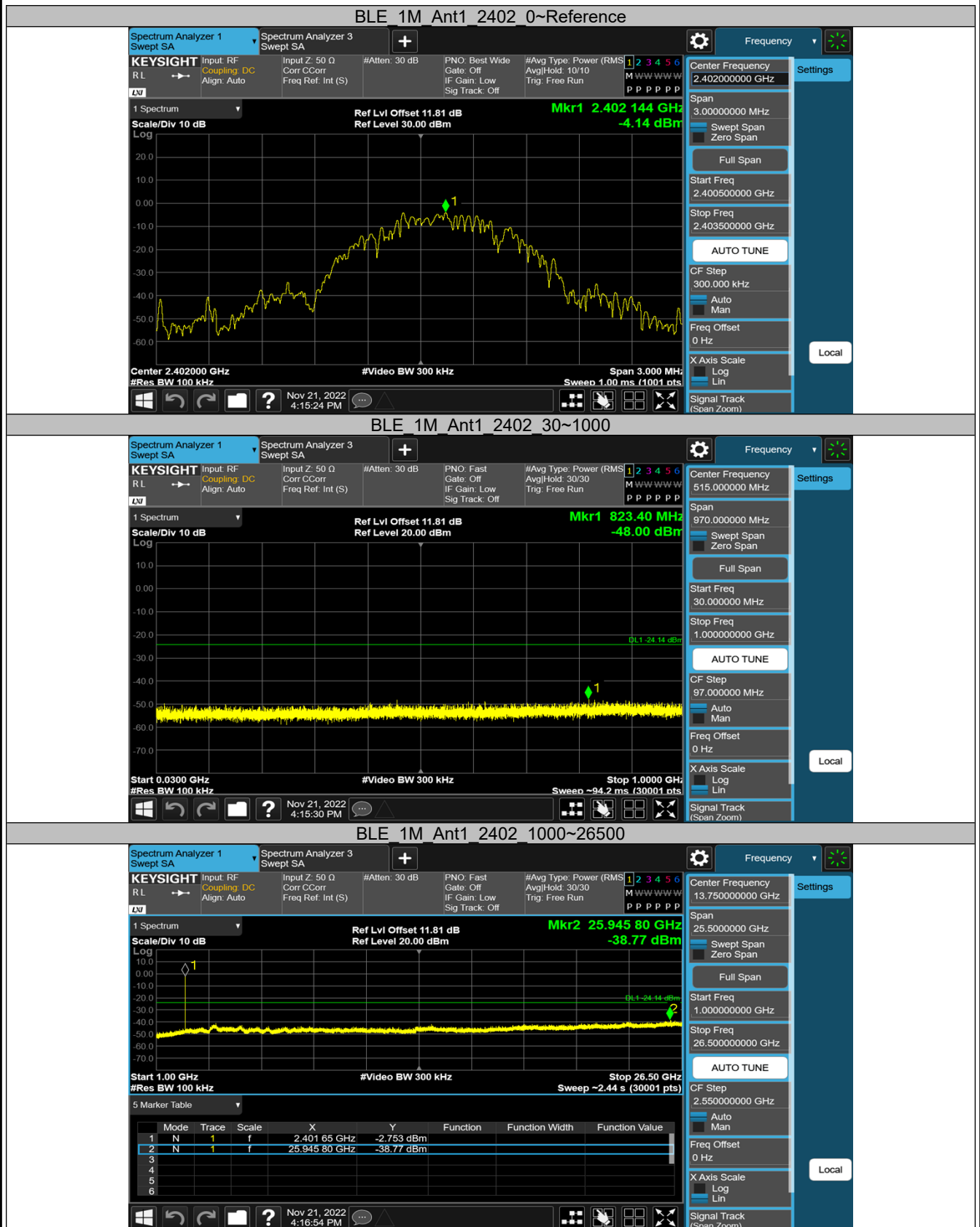
Band Edge

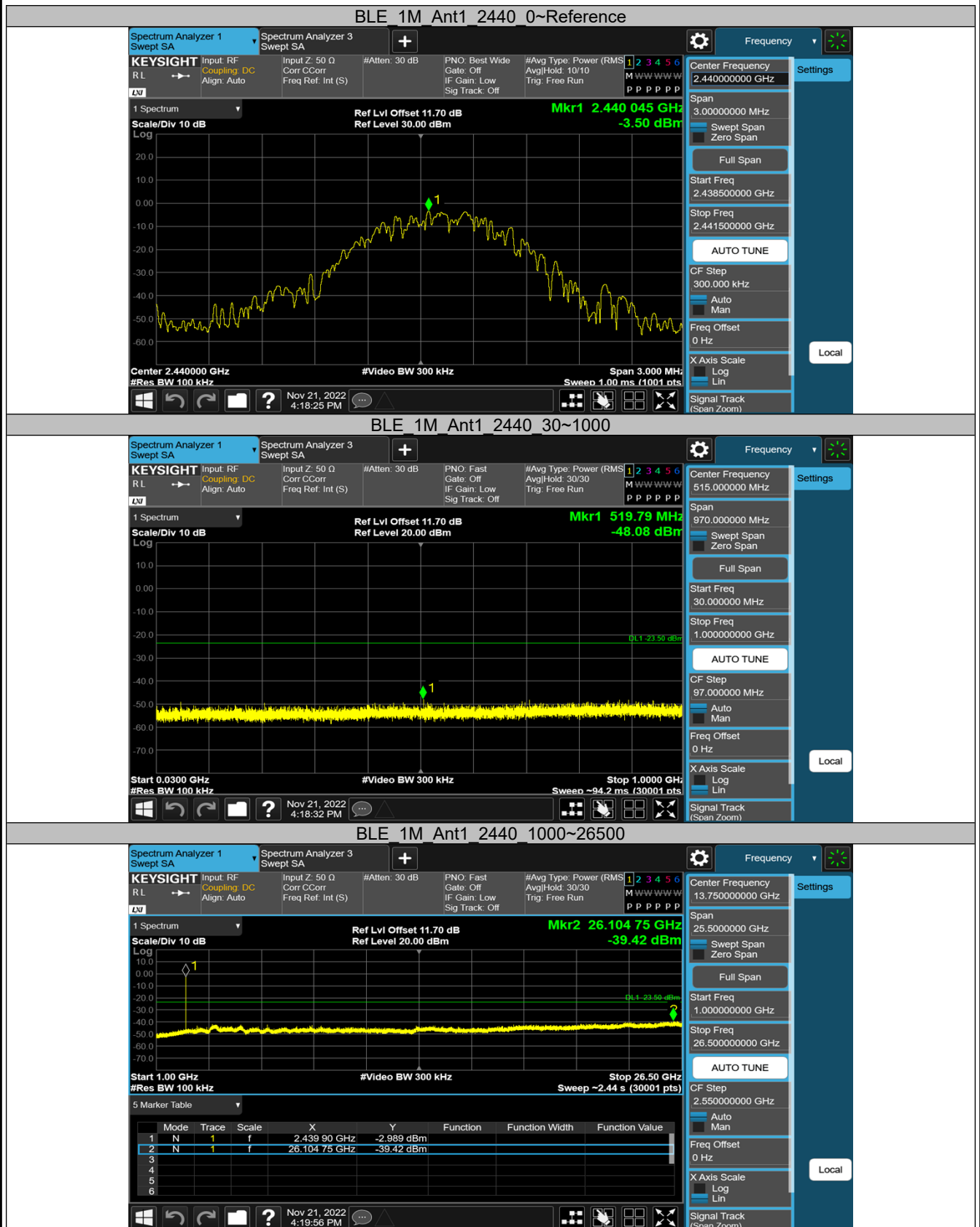
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-0.49	-31.72	≤-20.49	PASS
		High	2480	-2.60	-34.05	≤-22.60	PASS

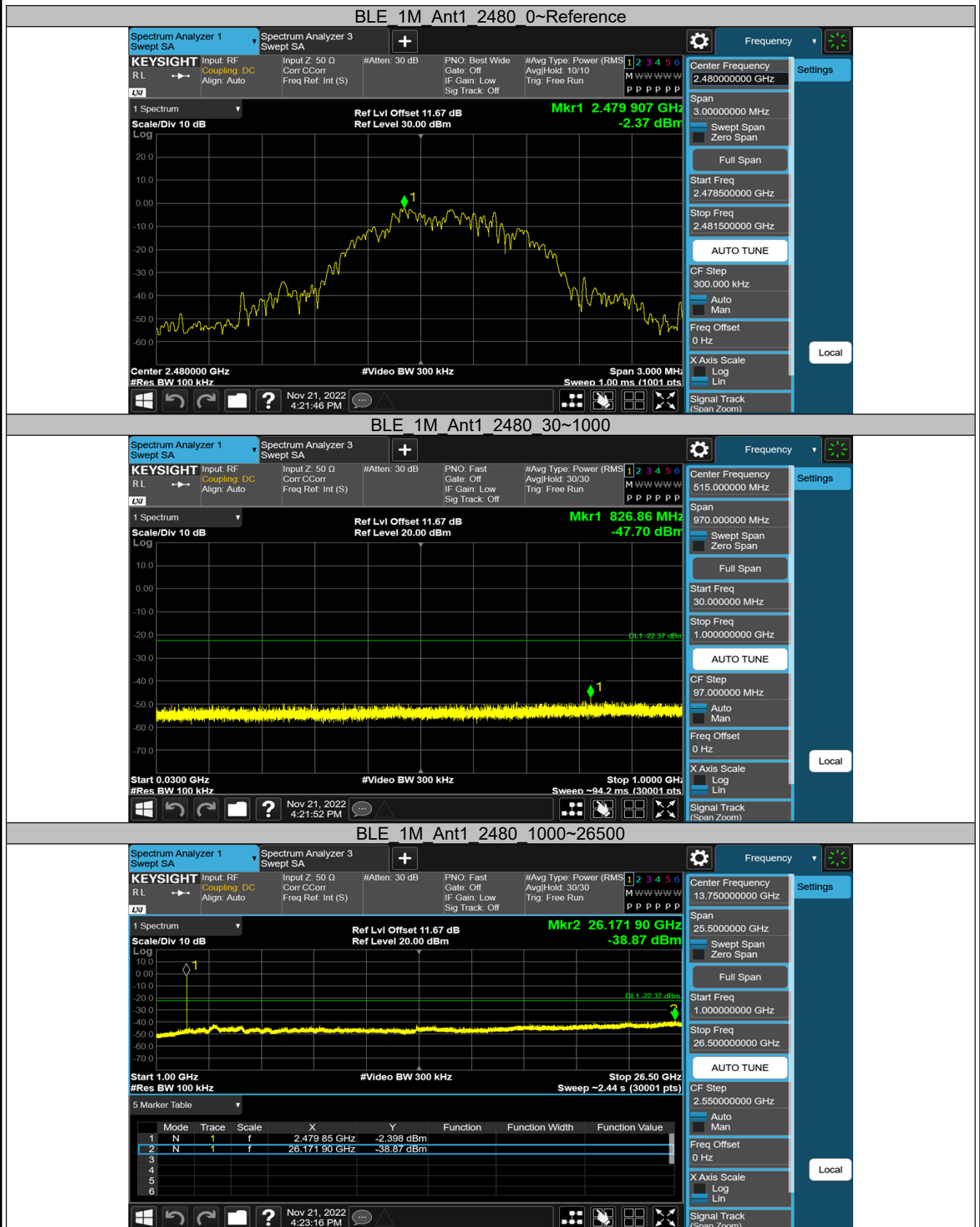


Conducted Spurious Emission

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-4.14	-4.14	---	PASS
			30~1000	-4.14	-48	≤-24.14	PASS
			1000~26500	-4.14	-38.77	≤-24.14	PASS
		2440	Reference	-3.50	-3.50	---	PASS
			30~1000	-3.50	-48.08	≤-23.5	PASS
			1000~26500	-3.50	-39.42	≤-23.5	PASS
		2480	Reference	-2.37	-2.37	---	PASS
			30~1000	-2.37	-47.7	≤-22.37	PASS
			1000~26500	-2.37	-38.87	≤-22.37	PASS







Appendix C.5: Test Results of Radiated Spurious Emissions

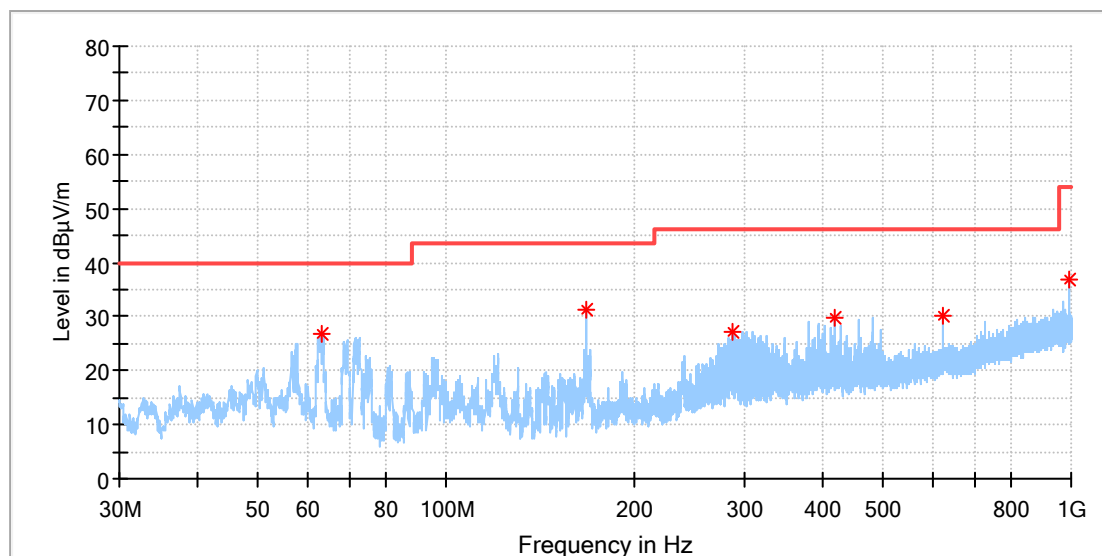
Note:

- 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:	Bluetooth module
Model:	RABT_ATS2819
Test Mode:	BLE 1M_Mid channel
Order No/Sample No:	168389208/A003324744-001
Test Voltage:	DC 3.3V
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

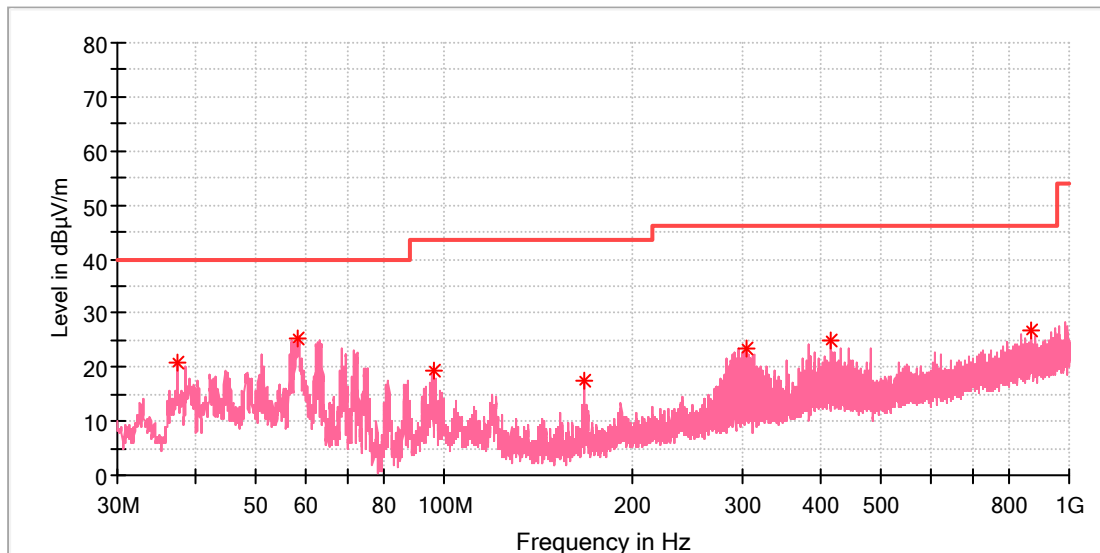
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
63.416500	26.80	40.00	13.20	100.0	H	302.0	-19.7
168.031000	31.08	43.50	12.42	100.0	H	234.0	-21.3
287.001500	27.30	46.00	18.70	100.0	H	332.0	-16.6
417.951500	29.90	46.00	16.10	100.0	H	347.0	-13.5
624.076500	30.18	46.00	15.82	100.0	H	281.0	-9.5
995.150000	36.84	54.00	17.16	100.0	H	202.0	-3.8

Final_Result

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

EUT Information

EUT Name: Bluetooth module
Model: RABT_ATS2819
Test Mode: BLE 1M_Mid channel
Order No/Sample No: 168389208/A003324744-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:52%
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)
37.498846	20.86	40.00	19.14	100.0	V	65.0	-21.2
58.428462	25.45	40.00	14.55	100.0	V	343.0	-19.1
96.445000	19.25	43.50	24.25	100.0	V	253.0	-19.8
168.001154	17.53	43.50	25.97	100.0	V	308.0	-21.7
305.218846	23.56	46.00	22.44	100.0	V	236.0	-16.5
416.060000	24.82	46.00	21.18	100.0	V	73.0	-13.8
869.646923	26.80	46.00	19.20	100.0	V	271.0	-5.7

Final Result

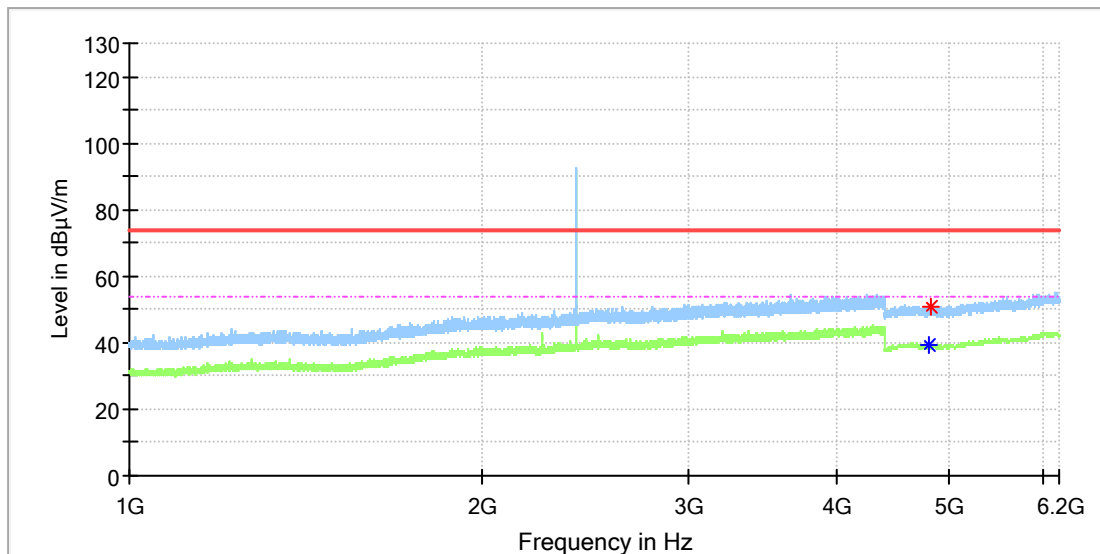
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
---	---	---	---	---	---	---	---

1GHz - 18GHz

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

EUT Information

EUT Name:	Bluetooth module
Model:	RABT_ATS2819
Test Mode:	BLE 1M_Low channel
Order No/Sample No:	168389208/A003324744-001
Test Voltage:	DC 3.3V
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

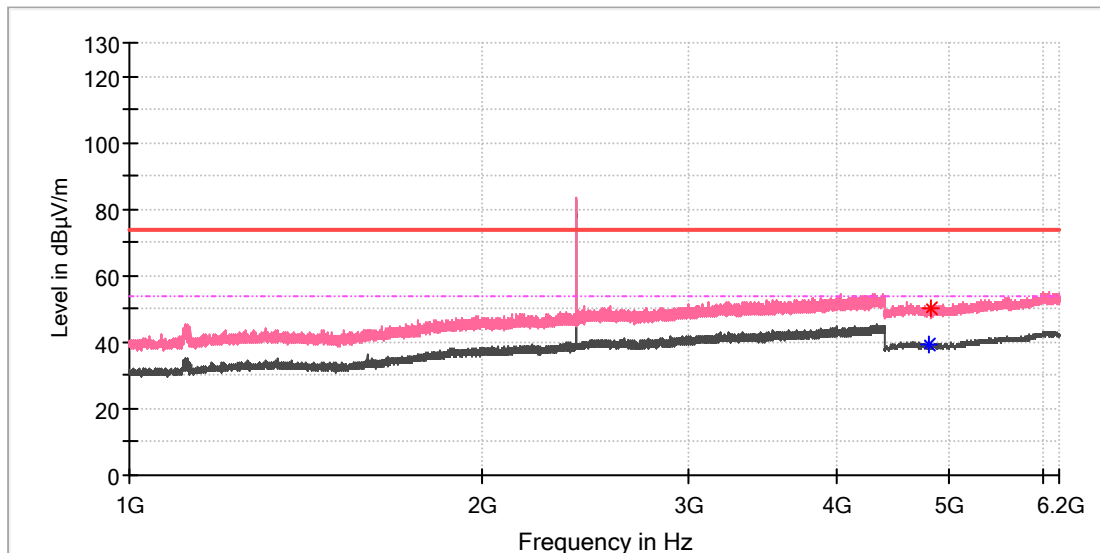
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4802.500000	---	39.52	54.00	14.48	100.0	H	179.0	11.8
4814.500000	50.76	---	74.00	23.24	100.0	H	340.0	11.8

Final Result

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

EUT Information

EUT Name: Bluetooth module
Model: RABT_ATS2819
Test Mode: BLE 1M_Low channel
Order No/Sample No: 168389208/A003324744-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:52%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

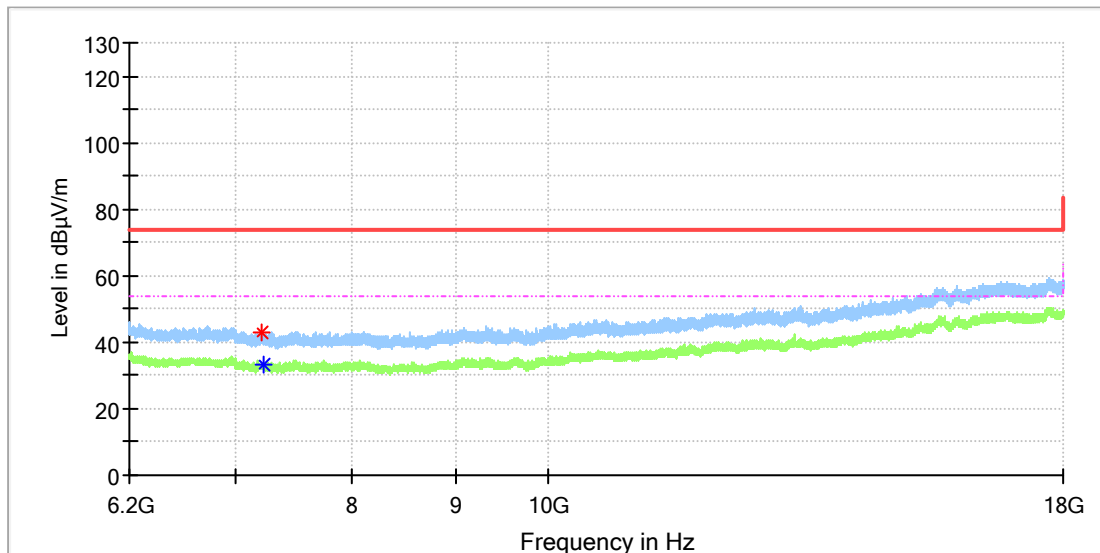
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.500000	---	39.28	54.00	14.72	100.0	V	271.0	11.8
4817.000000	50.48	---	74.00	23.52	100.0	V	180.0	11.8

Final Result

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

EUT Information

EUT Name: Bluetooth module
Model: RABT_ATS2819
Test Mode: BLE 1M_Low channel
Order No/Sample No: 168389208/A003324744-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:52%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

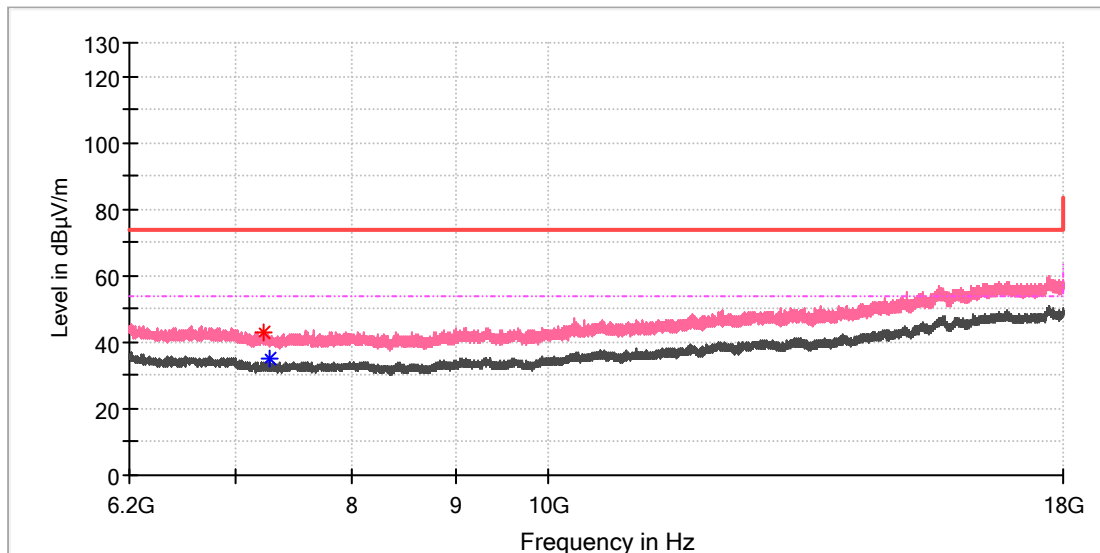
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7210.375000	42.64	---	74.00	31.36	100.0	H	168.0	8.7
7228.075000	---	33.52	54.00	20.48	100.0	H	264.0	8.7

Final_Result

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

EUT Information

EUT Name: Bluetooth module
Model: RABT_ATS2819
Test Mode: BLE 1M_Low channel
Order No/Sample No: 168389208/A003324744-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:52%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

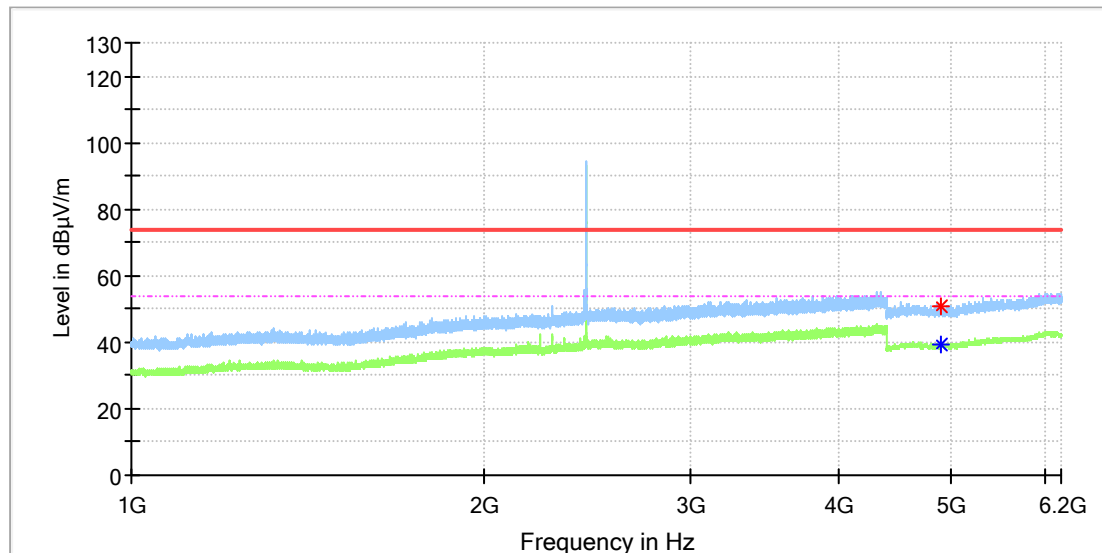
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7224.633333	42.83	---	74.00	31.17	100.0	V	353.0	8.7
7273.800000	---	35.05	54.00	18.95	100.0	V	179.0	8.4

Final_Result

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

EUT Information

EUT Name: Bluetooth module
Model: RABT_ATS2819
Test Mode: BLE 1M_Mid channel
Order No/Sample No: 168389208/A003324744-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:52%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

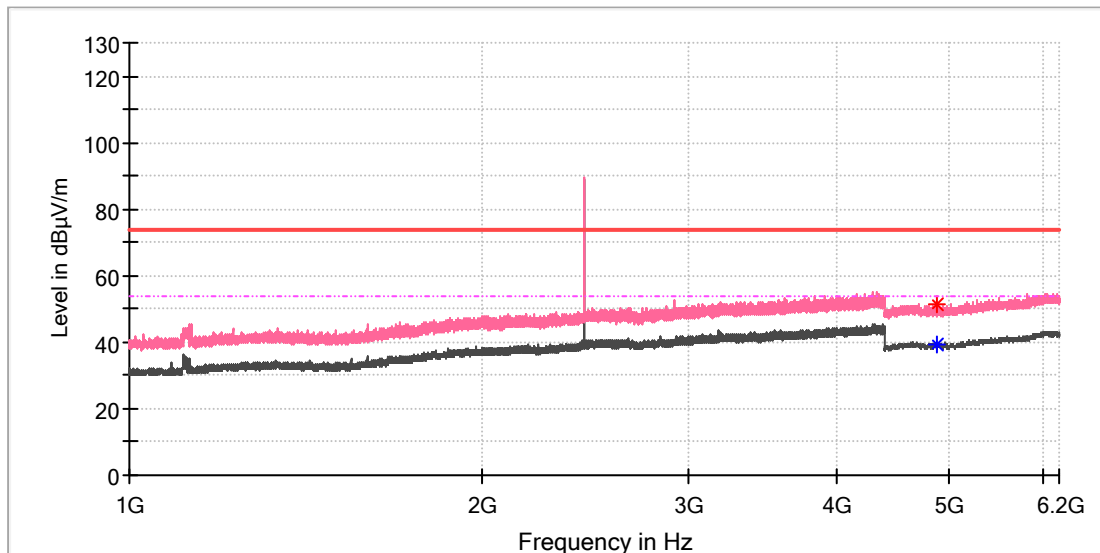
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4901.500000	50.94	---	74.00	23.06	100.0	H	353.0	11.8
4904.000000	---	39.38	54.00	14.62	100.0	H	127.0	11.8

Final Result

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

EUT Information

EUT Name: Bluetooth module
Model: RABT_ATS2819
Test Mode: BLE 1M_Mid channel
Order No/Sample No: 168389208/A003324744-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:52%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

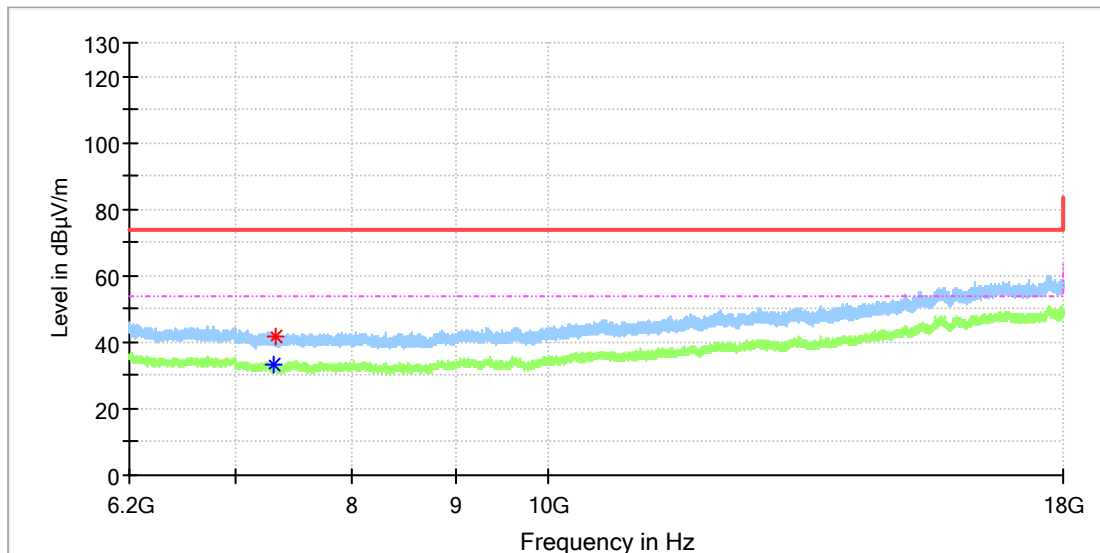
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4868.500000	51.23	---	74.00	22.77	100.0	V	81.0	11.8
4872.000000	---	39.30	54.00	14.70	100.0	V	318.0	11.8

Final Result

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

EUT Information

EUT Name:	Bluetooth module
Model:	RABT_ATS2819
Test Mode:	BLE 1M_Mid channel
Order No/Sample No:	168389208/A003324744-001
Test Voltage:	DC 3.3V
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

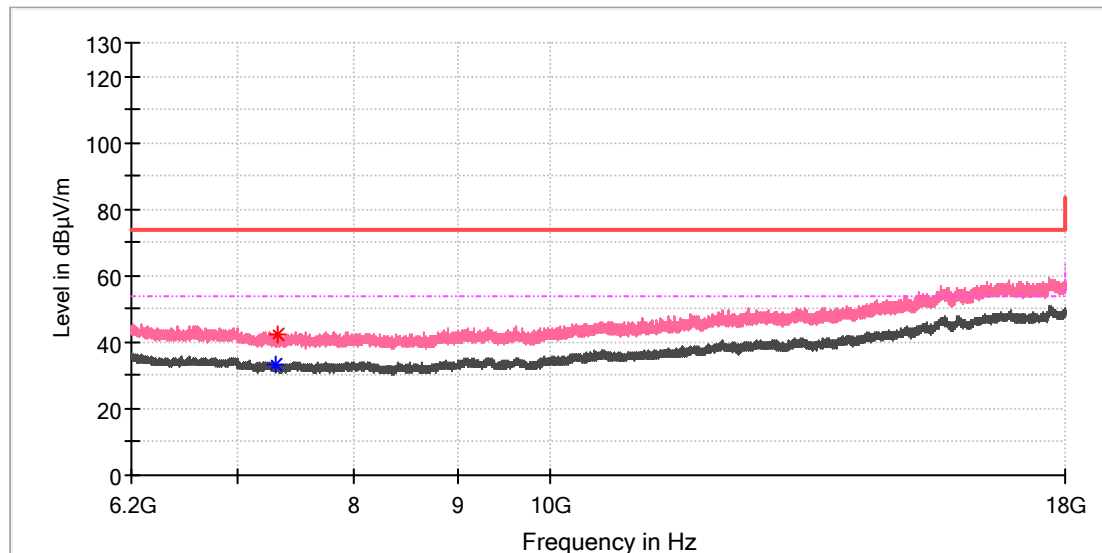
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7307.725000	---	33.19	54.00	20.81	100.0	H	354.0	8.3
7334.766667	41.57	---	74.00	32.43	100.0	H	110.0	8.1

Final_Result

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

EUT Information

EUT Name:	Bluetooth module
Model:	RABT_ATS2819
Test Mode:	BLE 1M_Mid channel
Order No/Sample No:	168389208/A003324744-001
Test Voltage:	DC 3.3V
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

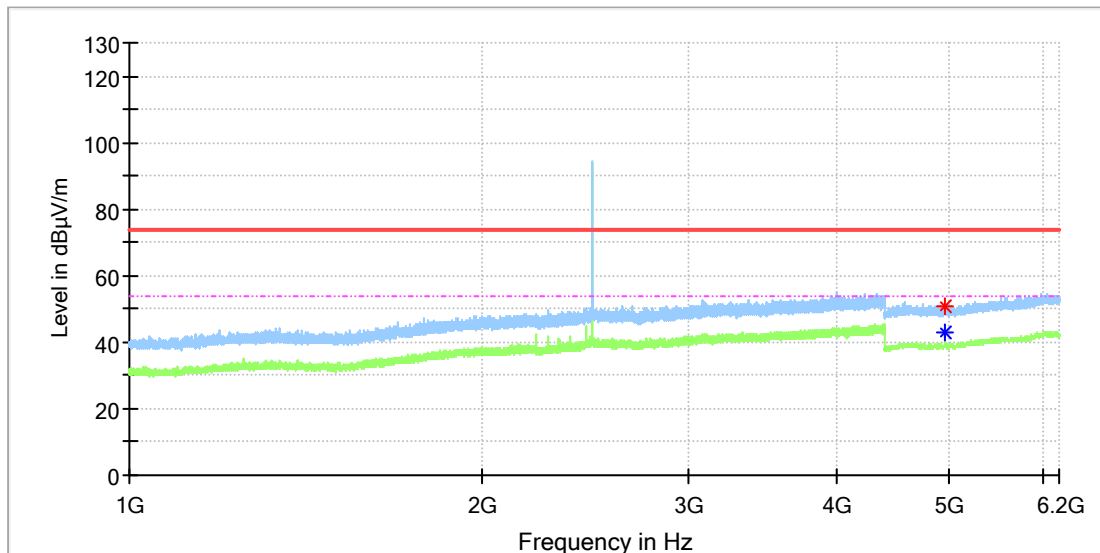
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7318.050000	---	33.54	54.00	20.46	100.0	V	0.0	8.2
7325.425000	42.49	---	74.00	31.51	100.0	V	65.0	8.2

Final Result

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

EUT Information

EUT Name: Bluetooth module
Model: RABT_ATS2819
Test Mode: BLE 1M_High channel
Order No/Sample No: 168389208/A003324744-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:52%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

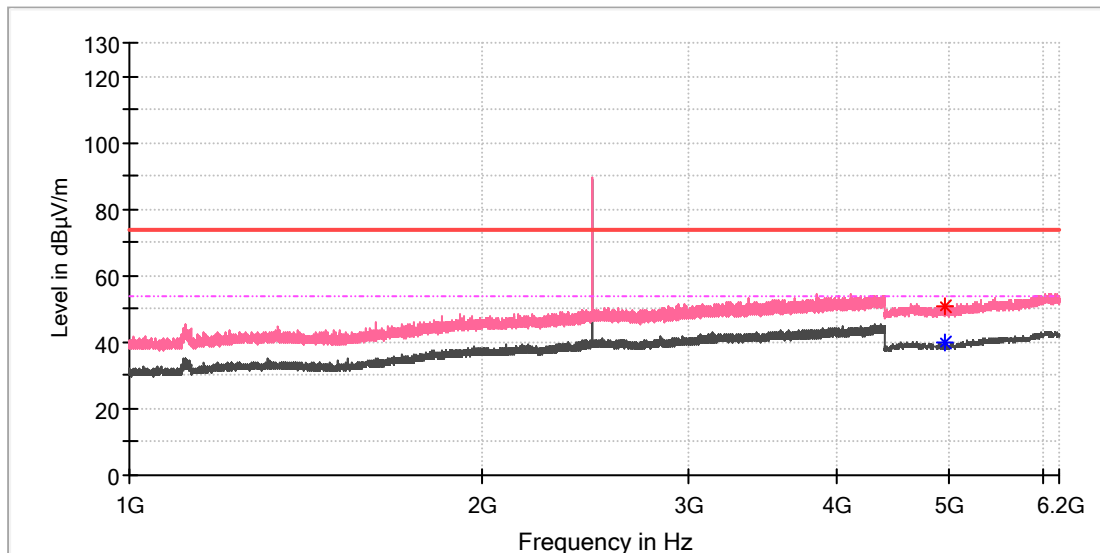
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.000000	---	42.87	54.00	11.13	100.0	H	271.0	11.8
4960.500000	50.93	---	74.00	23.07	100.0	H	328.0	11.8

Final Result

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

EUT Information

EUT Name: Bluetooth module
Model: RABT_ATS2819
Test Mode: BLE 1M_High channel
Order No/Sample No: 168389208/A003324744-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:52%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

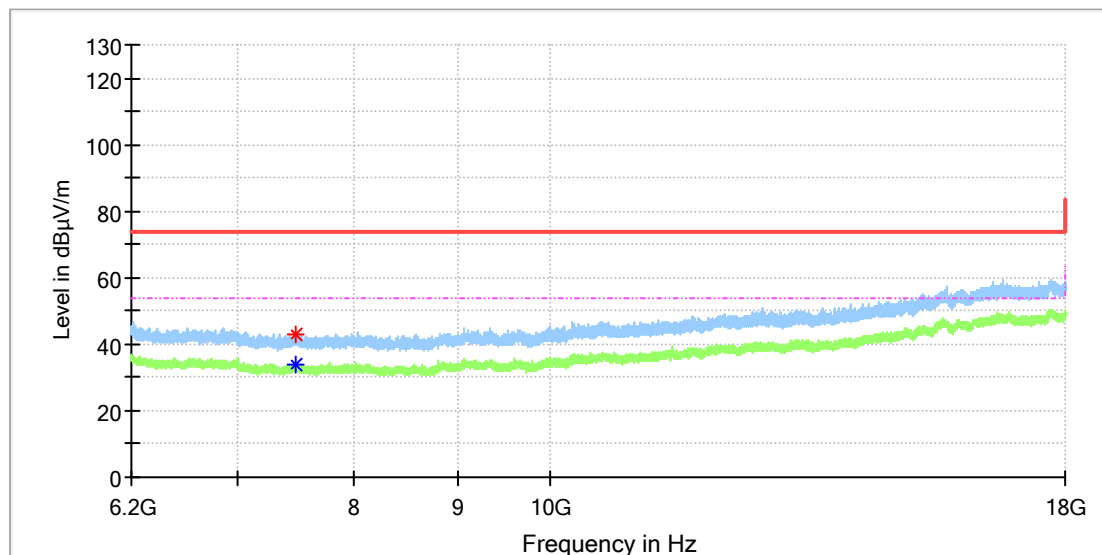
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4960.000000	---	40.03	54.00	13.97	100.0	V	201.0	11.8
4960.500000	50.90	---	74.00	23.10	100.0	V	236.0	11.8

Final Result

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

EUT Information

EUT Name: Bluetooth module
Model: RABT_ATS2819
Test Mode: BLE 1M_High channel
Order No/Sample No: 168389208/A003324744-001
Test Voltage: DC 3.3V
Remark: Temp 22 Humi:52%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

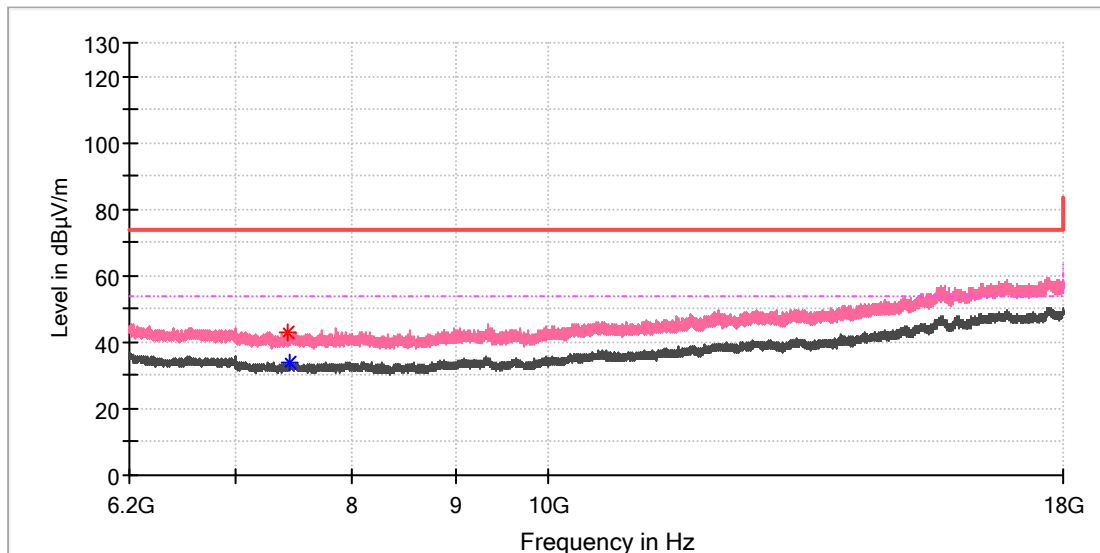
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7477.841667	43.01	---	74.00	30.99	100.0	H	0.0	8.6
7477.841667	---	34.10	54.00	19.90	100.0	H	0.0	8.6

Final Result

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

EUT Information

EUT Name:	Bluetooth module
Model:	RABT_ATS2819
Test Mode:	BLE 1M_High channel
Order No/Sample No:	168389208/A003324744-001
Test Voltage:	DC 3.3V
Remark:	Temp 22 Humi:52%
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)
7422.283333	42.92	---	74.00	31.08	100.0	V	222.0	8.4
7442.441667	---	33.72	54.00	20.28	100.0	V	328.0	8.4

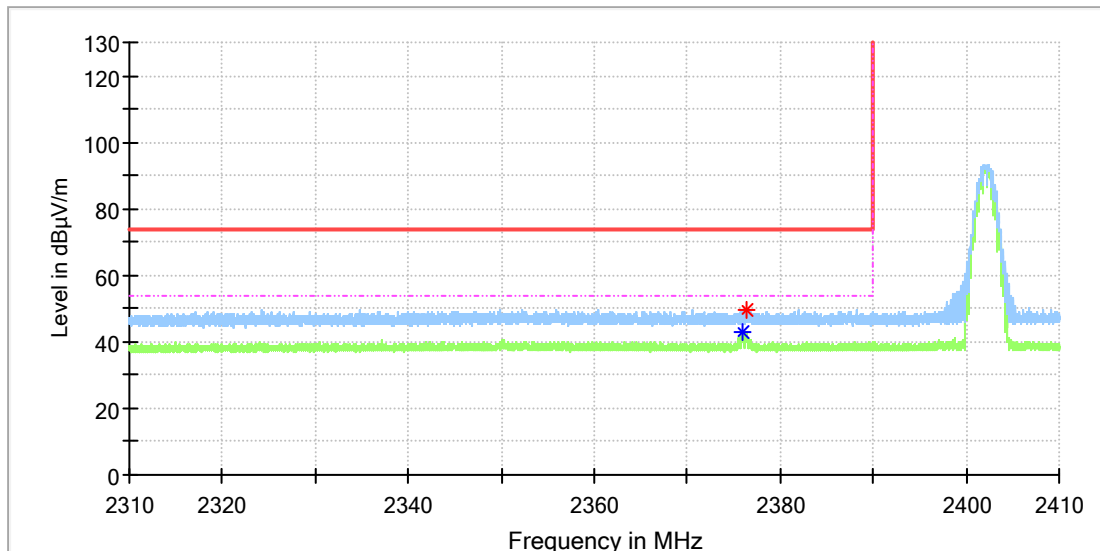
Final Result

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

Appendix C.6: Test Results of Radiated Emissions in Restricted Bands

EUT Information

EUT Name:	Bluetooth module
Model:	RABT_ATS2819
Test Mode:	BLE 1M_Low channel
Order No/Sample No:	168389208/A003324744-001
Test Voltage:	DC 3.3V
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

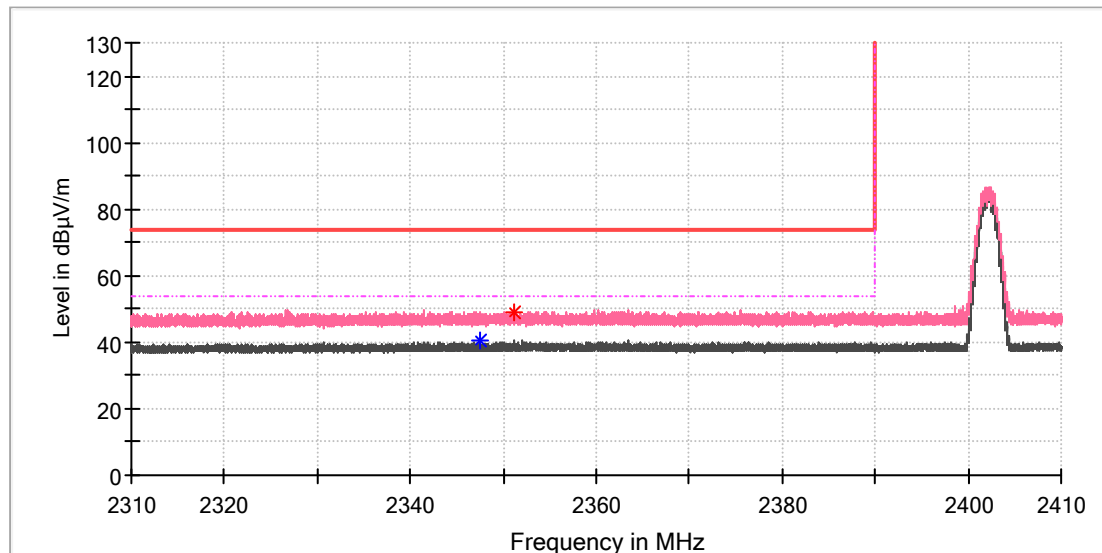
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2375.960000	---	43.05	54.00	10.95	100.0	H	223.0	6.9
2376.290000	49.58	---	74.00	24.42	100.0	H	304.0	6.9

Final_Result

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

EUT Information

EUT Name:	Bluetooth module
Model:	RABT_ATS2819
Test Mode:	BLE 1M_Low channel
Order No/Sample No:	168389208/A003324744-001
Test Voltage:	DC 3.3V
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

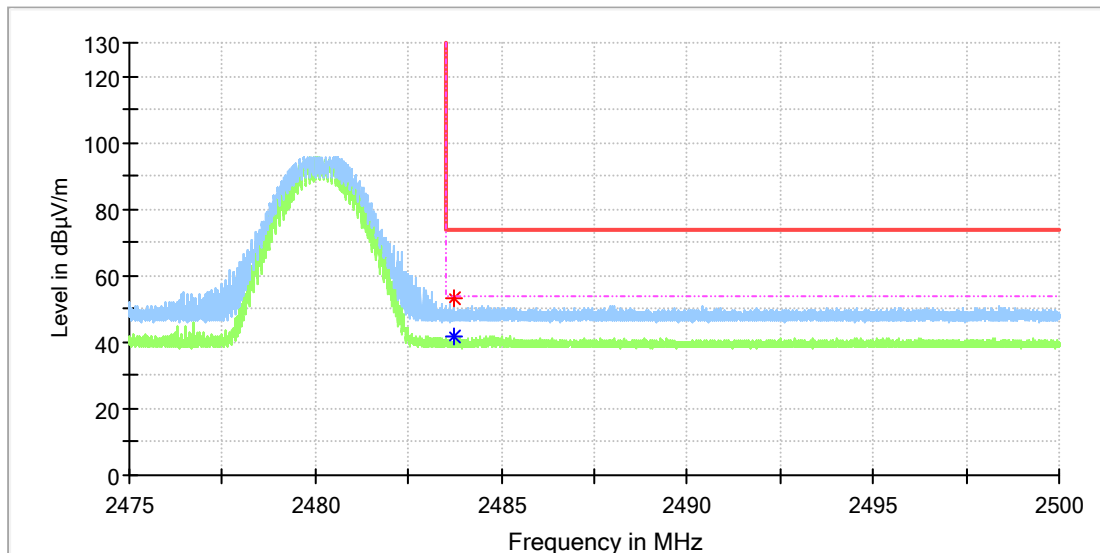
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2347.580000	---	40.22	54.00	13.78	100.0	V	302.0	6.9
2351.220000	49.08	---	74.00	24.92	100.0	V	357.0	6.9

Final Result

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

EUT Information

EUT Name:	Bluetooth module
Model:	RABT_ATS2819
Test Mode:	BLE 1M_High channel
Order No/Sample No:	168389208/A003324744-001
Test Voltage:	DC 3.3V
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

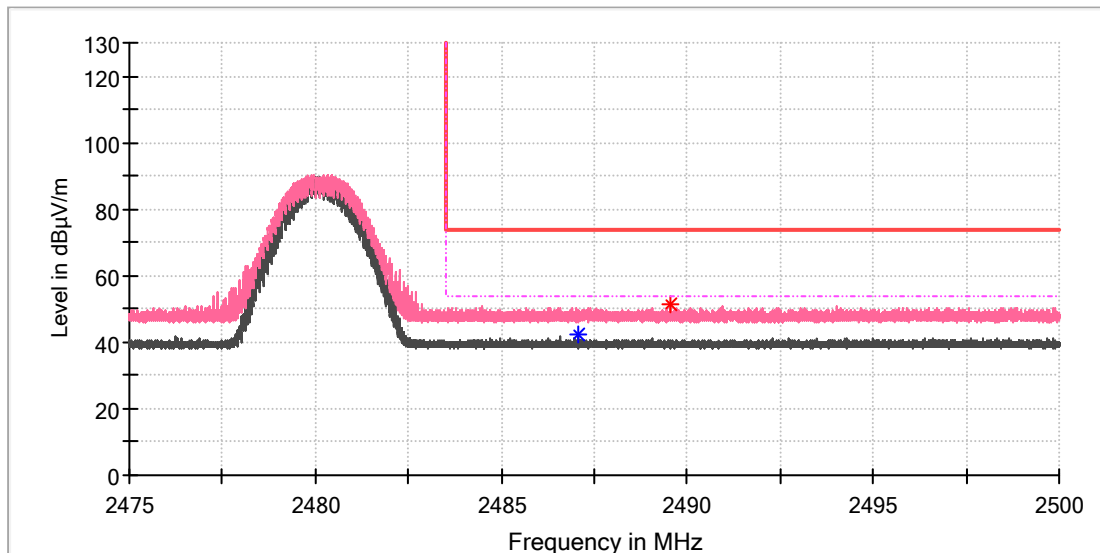
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.717500	---	41.51	54.00	12.49	100.0	H	290.0	7.4
2483.723750	53.22	---	74.00	20.78	100.0	H	309.0	7.4

Final Result

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

EUT Information

EUT Name:	Bluetooth module
Model:	RABT_ATS2819
Test Mode:	BLE 1M_High channel
Order No/Sample No:	168389208/A003324744-001
Test Voltage:	DC 3.3V
Remark:	Temp 22 Humi:52%
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)
2487.065000	---	42.18	54.00	11.82	100.0	V	269.0	7.4
2489.557500	51.18	---	74.00	22.82	100.0	V	53.0	7.4

Final Result

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