

Appendix B

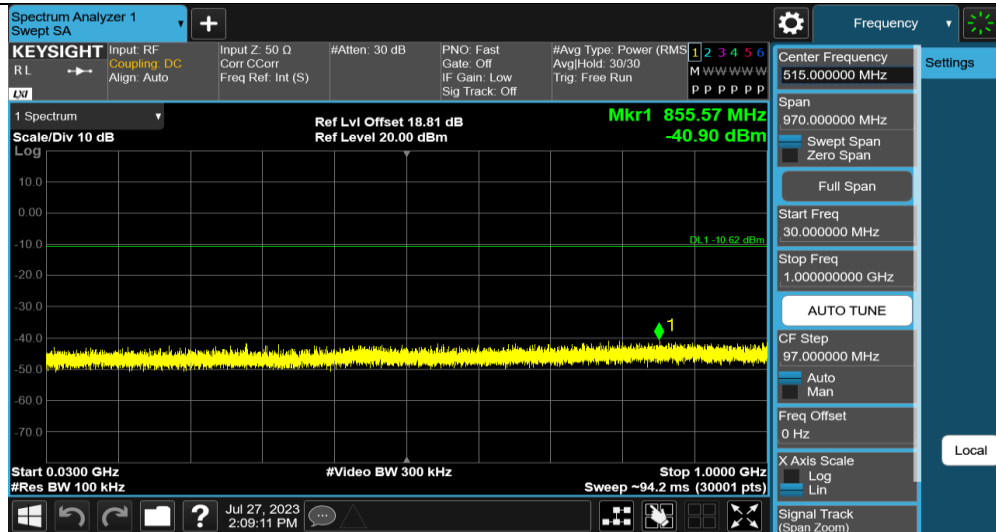
CN23DK47 001

Page 21 of 52

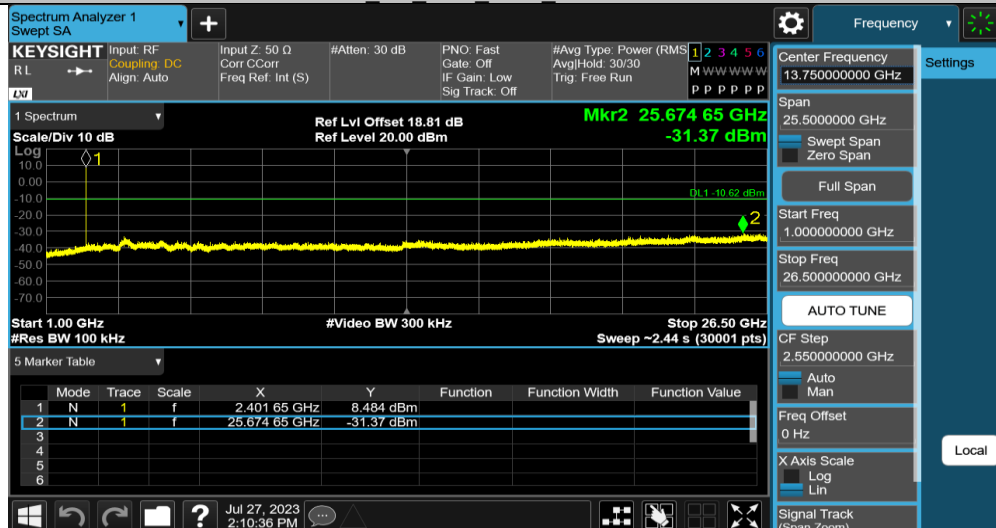


Prüfbericht - Produkte

Test Report - Products



BLE 1M Ant1 2402 1000~26500



BLE 1M Ant1 2440 0~Reference



BLE 1M Ant1 2440 30~1000

Appendix B

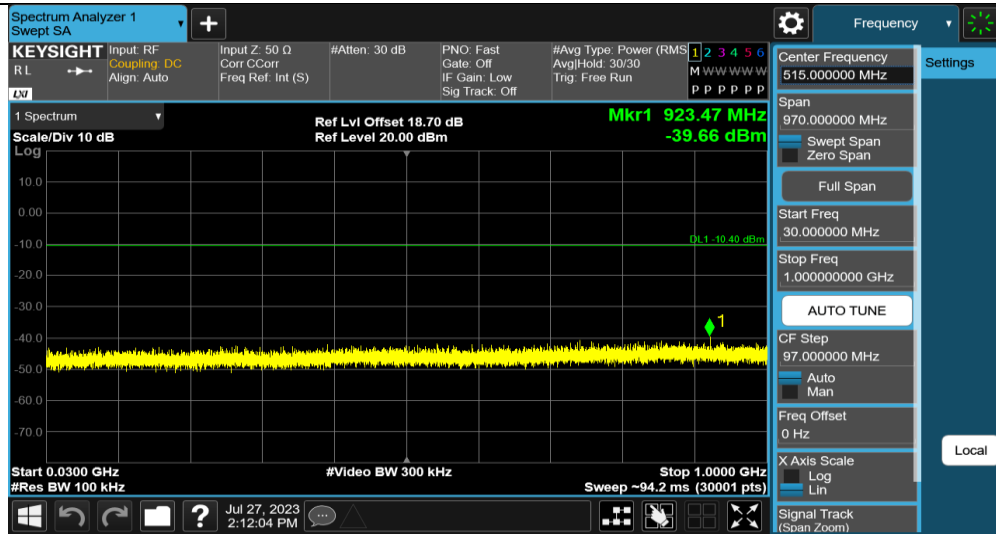
CN23DK47 001

Page 22 of 52

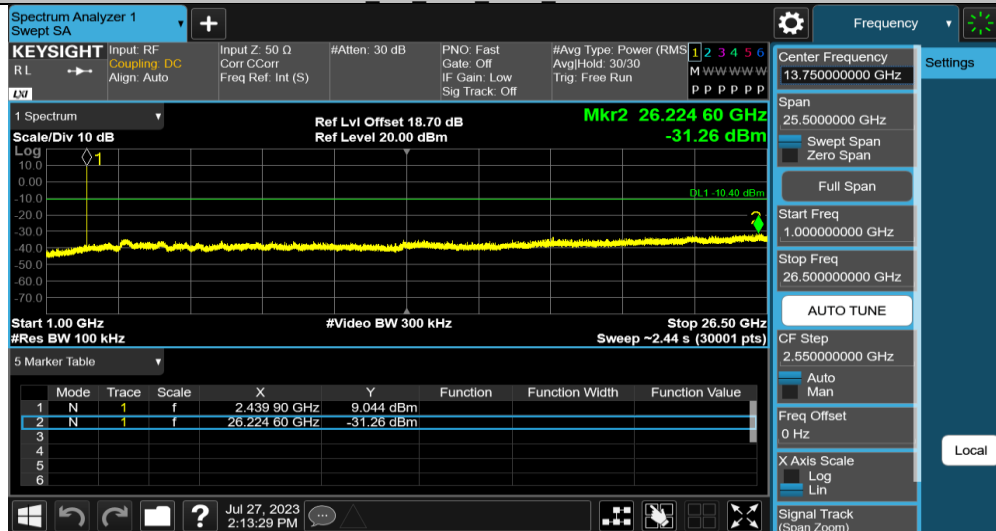


Prüfbericht - Produkte

Test Report - Products



BLE 1M Ant1 2440 1000~26500



BLE 1M Ant1 2480 0~Reference



BLE 1M Ant1 2480 30~1000

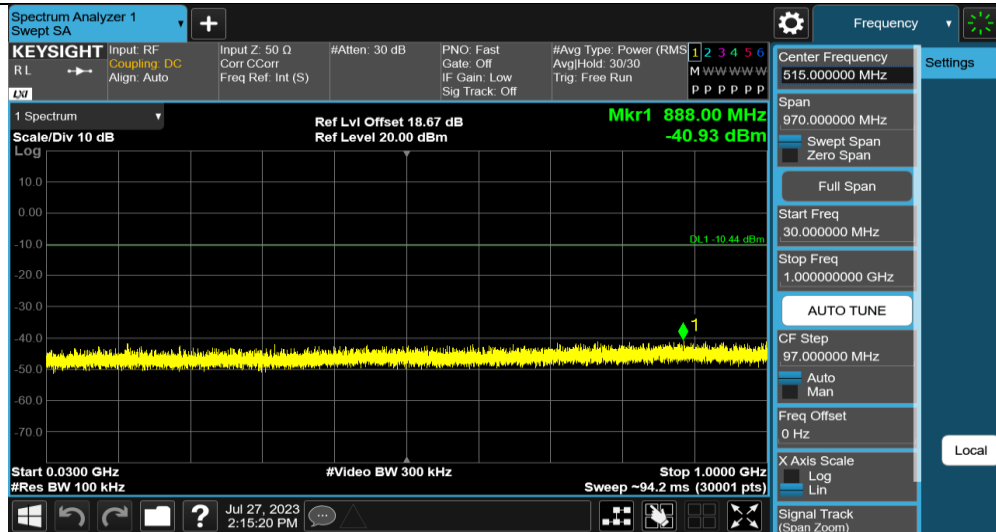
Appendix B

CN23DK47 001

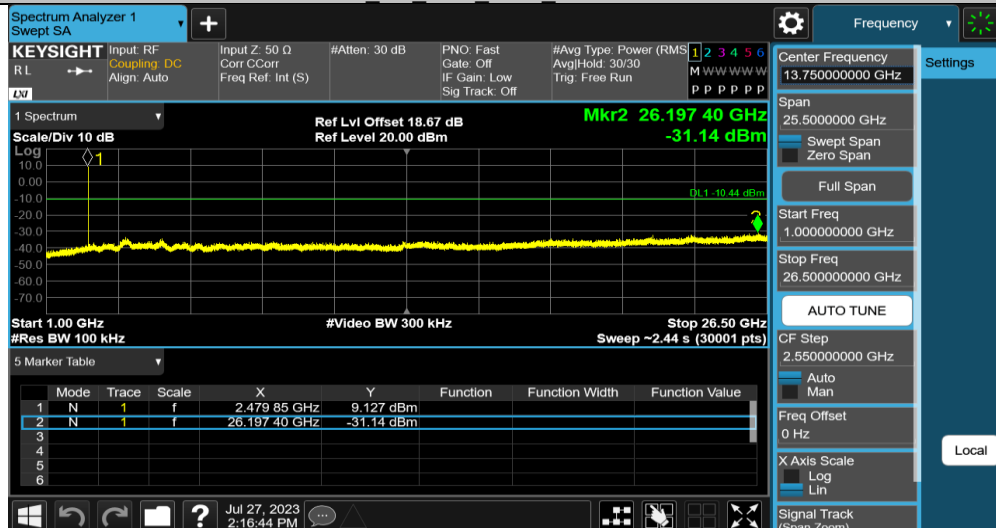
Page 23 of 52

Prüfbericht - Produkte

Test Report - Products



BLE 1M Ant1 2480 1000~26500



BLE 2M Ant1 2402 0~Reference



BLE 2M Ant1 2402 30~1000

Appendix B

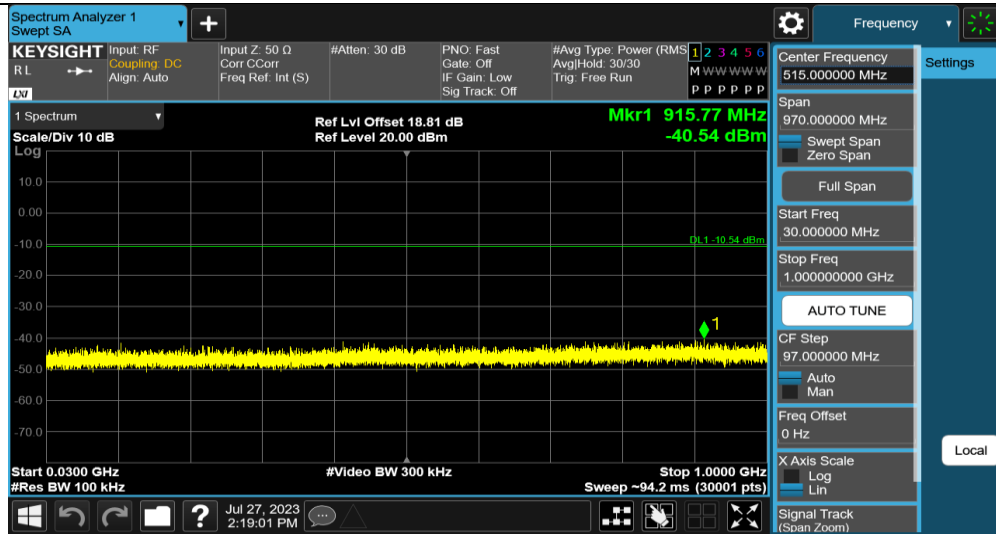
CN23DK47 001

Page 24 of 52

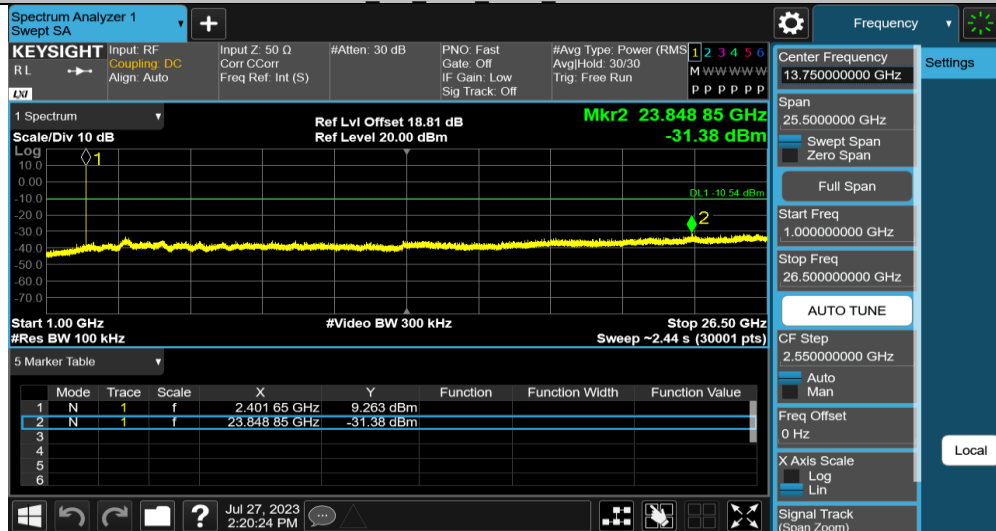


Prüfbericht - Produkte

Test Report - Products



BLE 2M Ant1 2402 1000~26500



BLE 2M Ant1 2440 0~Reference



BLE 2M Ant1 2440 30~1000

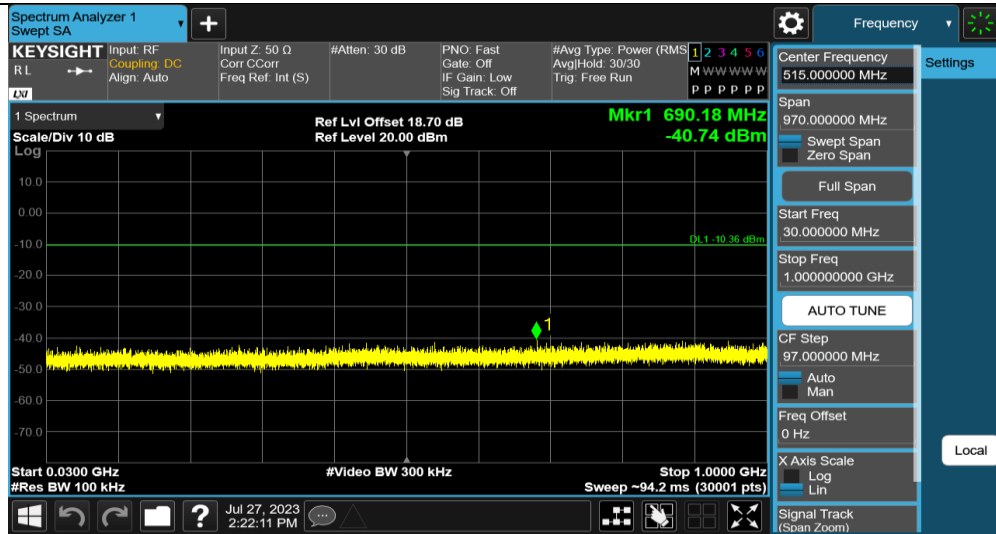
Appendix B

CN23DK47 001

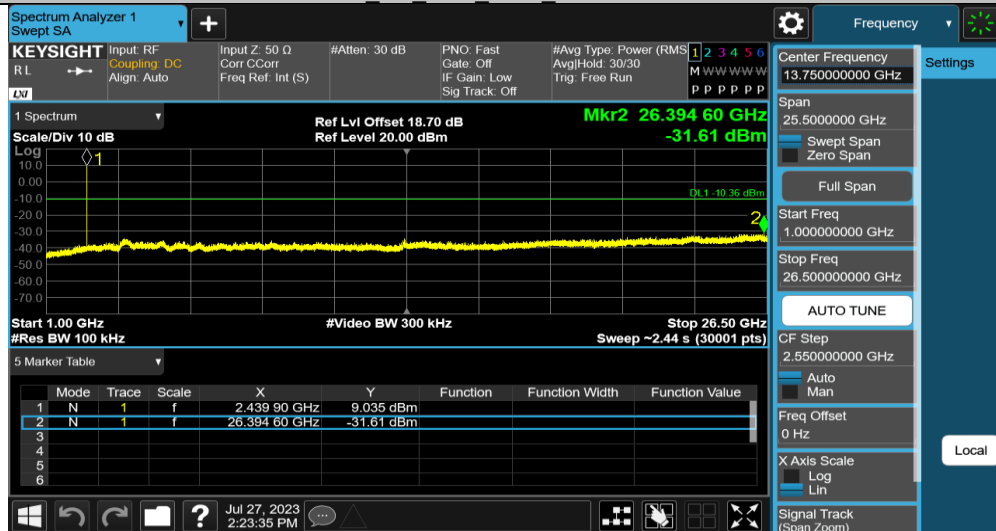
Page 25 of 52

Prüfbericht - Produkte

Test Report - Products



BLE 2M Ant1 2440 1000~26500



BLE 2M Ant1 2480 0~Reference



BLE 2M Ant1 2480 30~1000

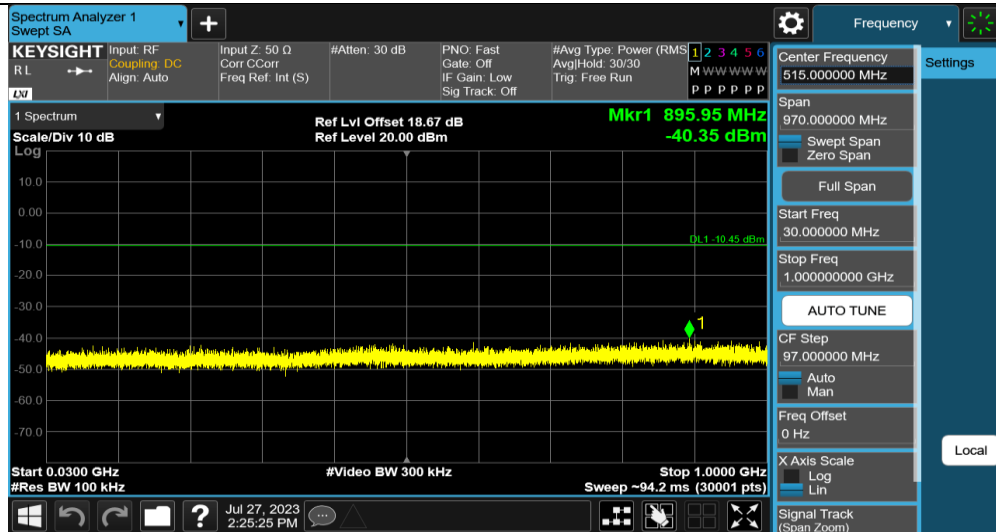
Appendix B

CN23DK47 001

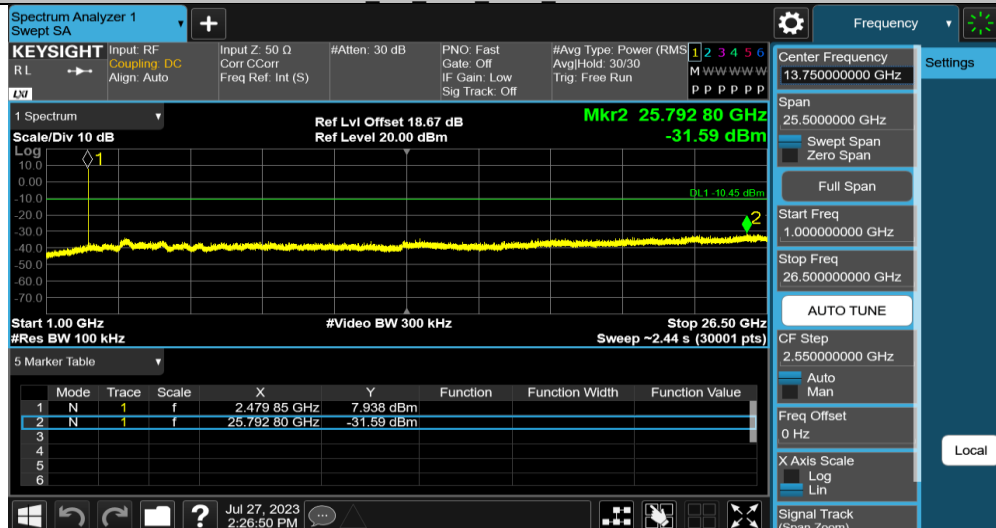
Page 26 of 52

Prüfbericht - Produkte

Test Report - Products



BLE 2M Ant1 2480 1000-26500



BLE 500K Ant1 2402 0-Reference



BLE 500K Ant1 2402 30-1000

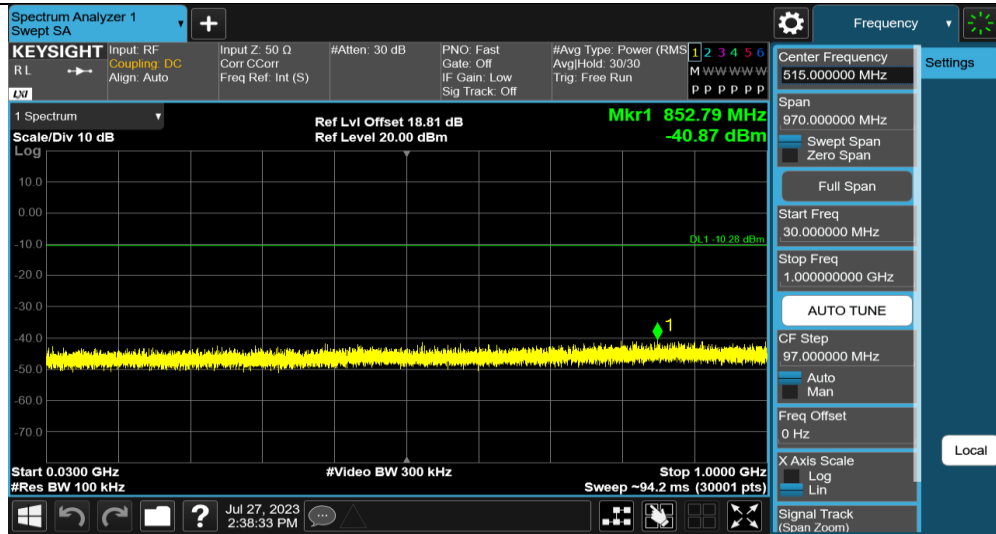
Appendix B

CN23DK47 001

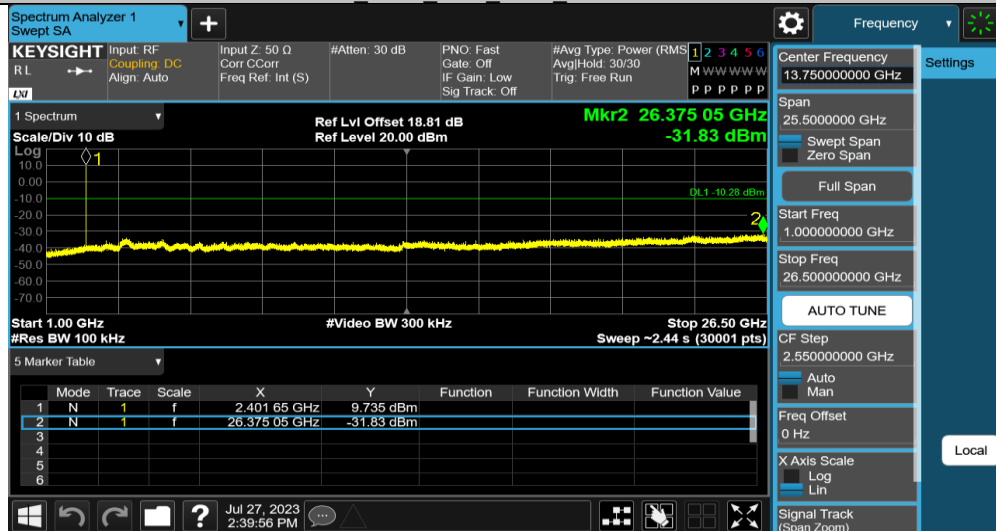
Page 27 of 52

Prüfbericht - Produkte

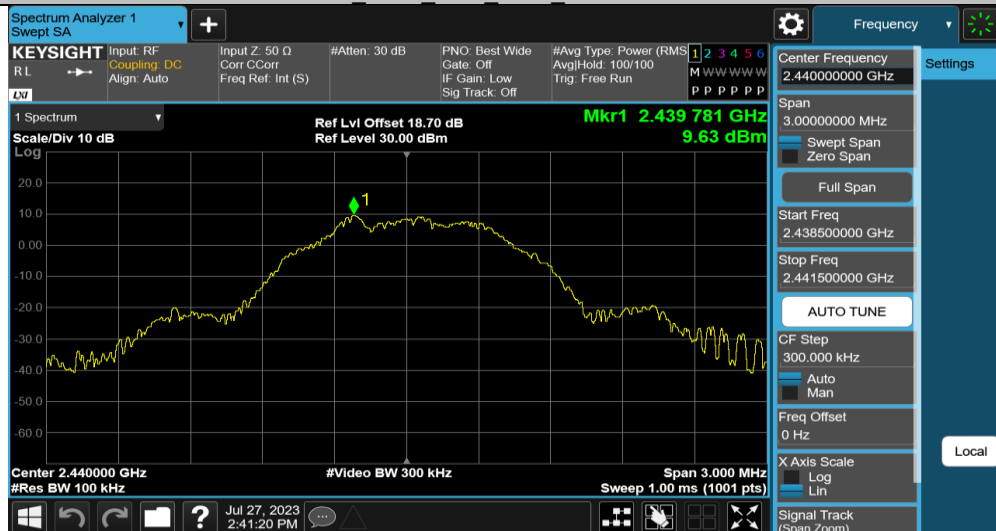
Test Report - Products



BLE_500K_Ant1_2402_1000~26500



BLE_500K_Ant1_2440_0~Reference



BLE_500K_Ant1_2440_30~1000

Appendix B

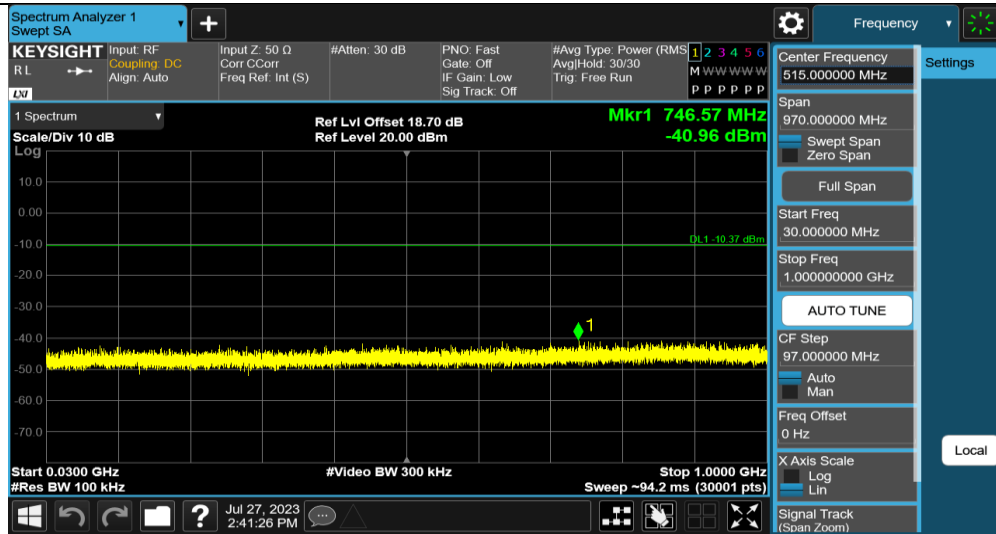
CN23DK47 001

Page 28 of 52

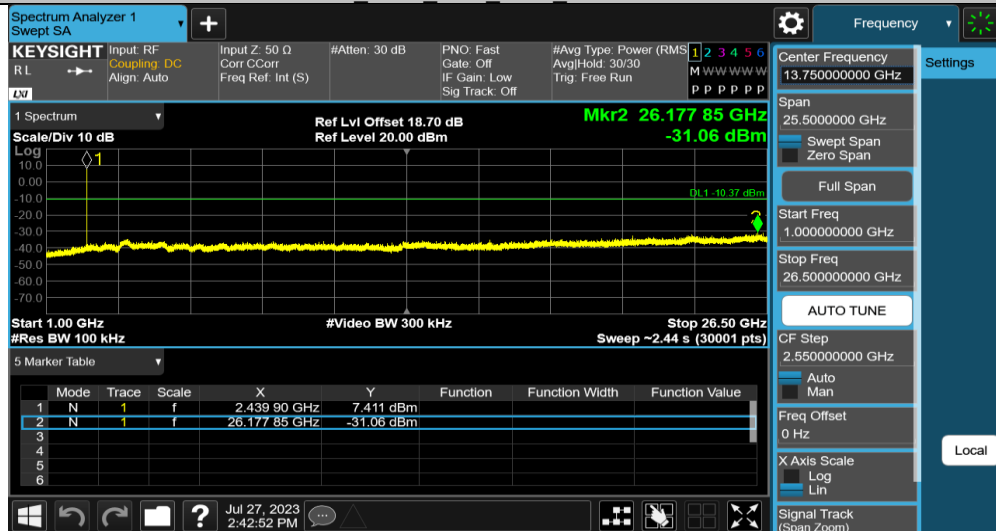


Prüfbericht - Produkte

Test Report - Products



BLE_500K_Ant1_2440_1000~26500



BLE_500K_Ant1_2480_0~Reference



BLE_500K_Ant1_2480_30~1000

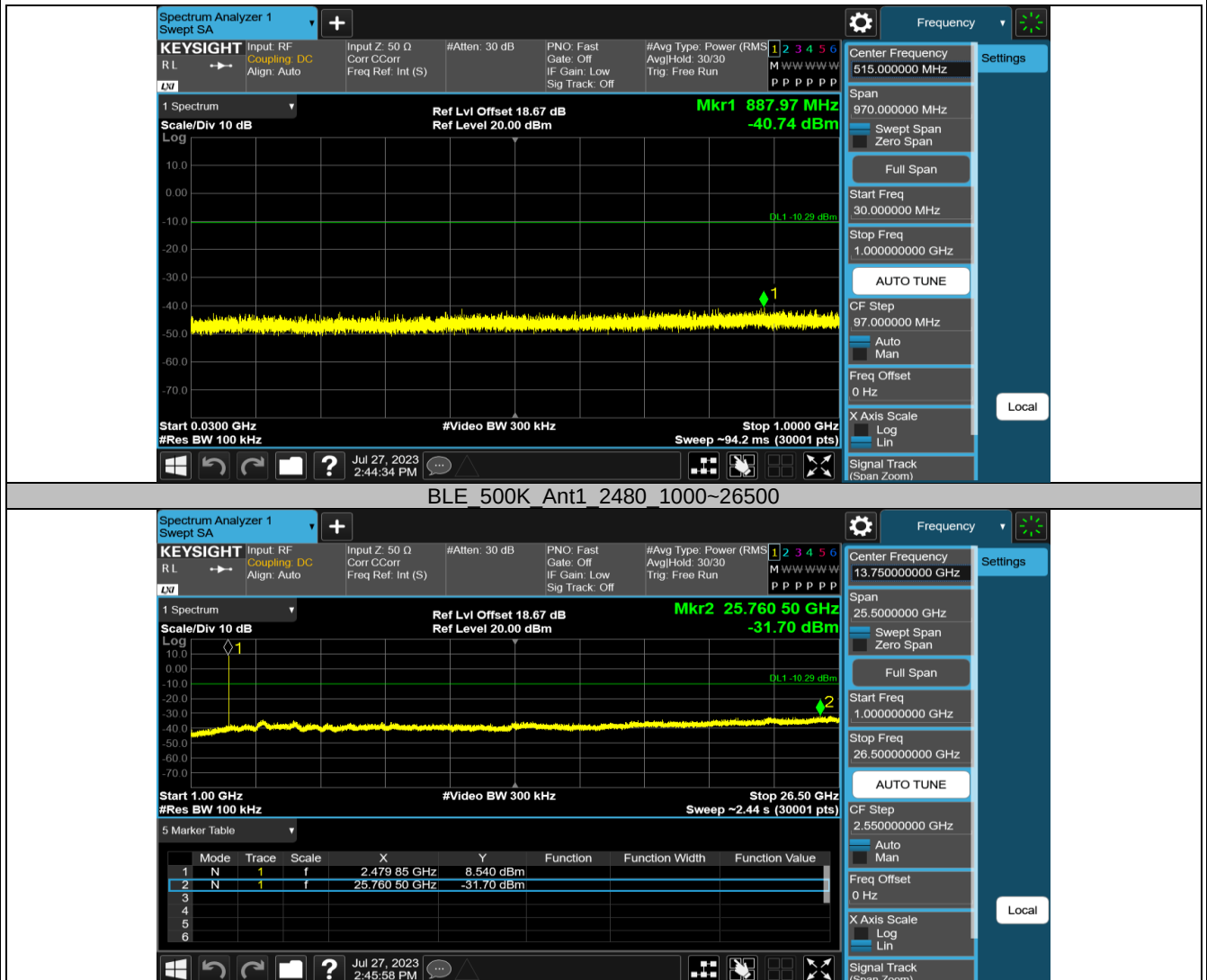
Appendix B

CN23DK47 001

Page 29 of 52

Prüfbericht - Produkte

Test Report - Products

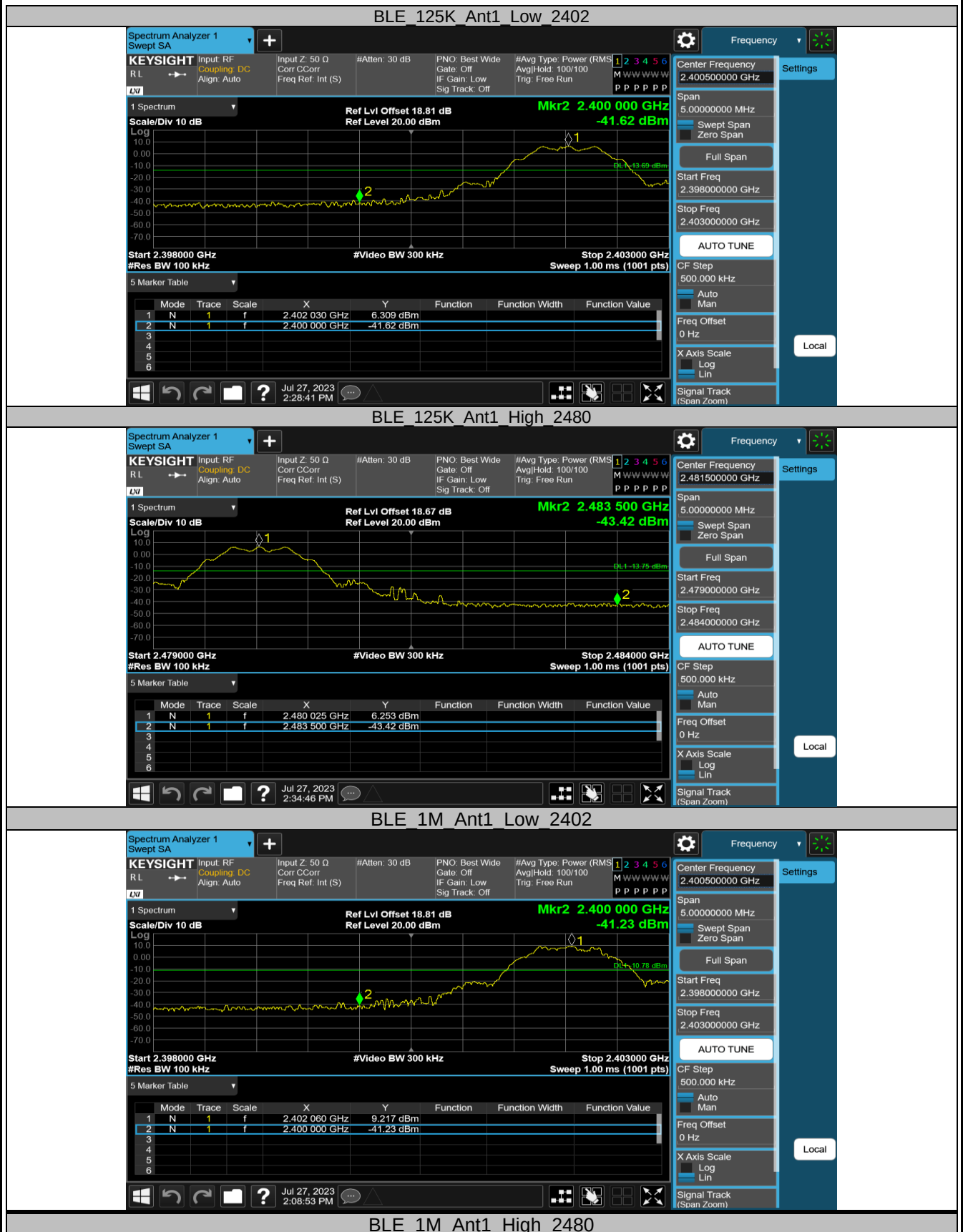


Band Edge

Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_125K	Ant1	Low	2402	6.309	-41.62	≤-13.69	PASS
		High	2480	6.253	-43.42	≤-13.75	PASS
BLE_1M	Ant1	Low	2402	9.217	-41.23	≤-10.78	PASS
		High	2480	9.552	-44.23	≤-10.45	PASS
BLE_2M	Ant1	Low	2402	9.405	-25	≤-10.6	PASS
		High	2480	9.338	-43.52	≤-10.66	PASS
BLE_500K	Ant1	Low	2402	9.697	-42.04	≤-10.3	PASS
		High	2480	9.698	-42.85	≤-10.3	PASS

Test Graphs



Appendix B

CN23DK47 001

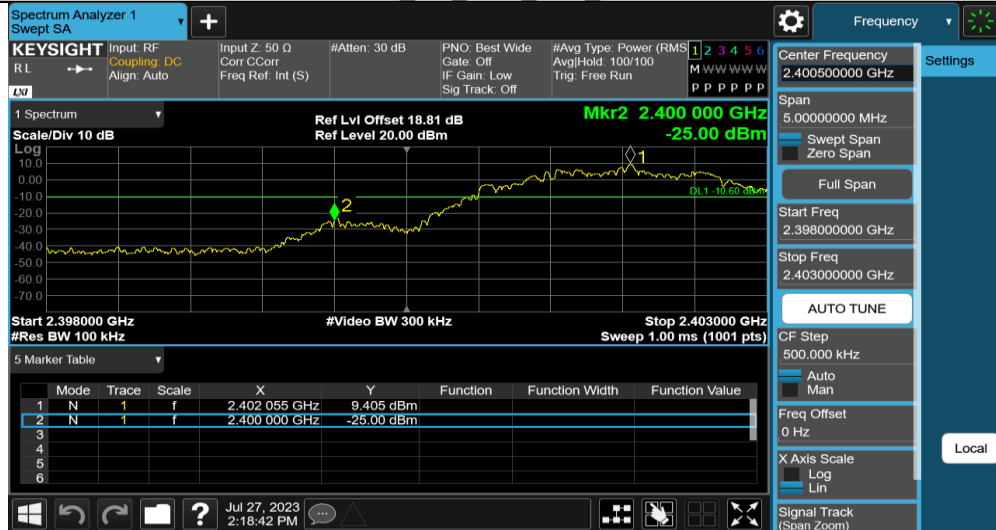
Prüfbericht - Produkte

Test Report - Products

Page 31 of 52



BLE_2M_Ant1_Low_2402



BLE_2M_Ant1_High_2480



BLE_500K_Ant1_Low_2402

Appendix B

CN23DK47 001



Prüfbericht - Produkte

Test Report - Products

Page 32 of 52



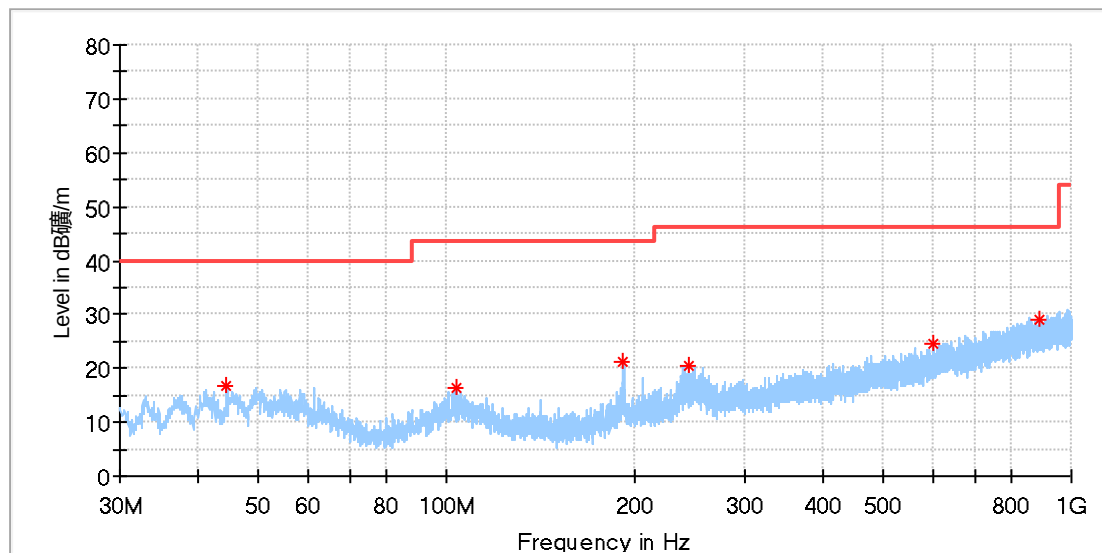
APPENDIX B.5: RADIATED SPURIOUS EMISSIONS

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.

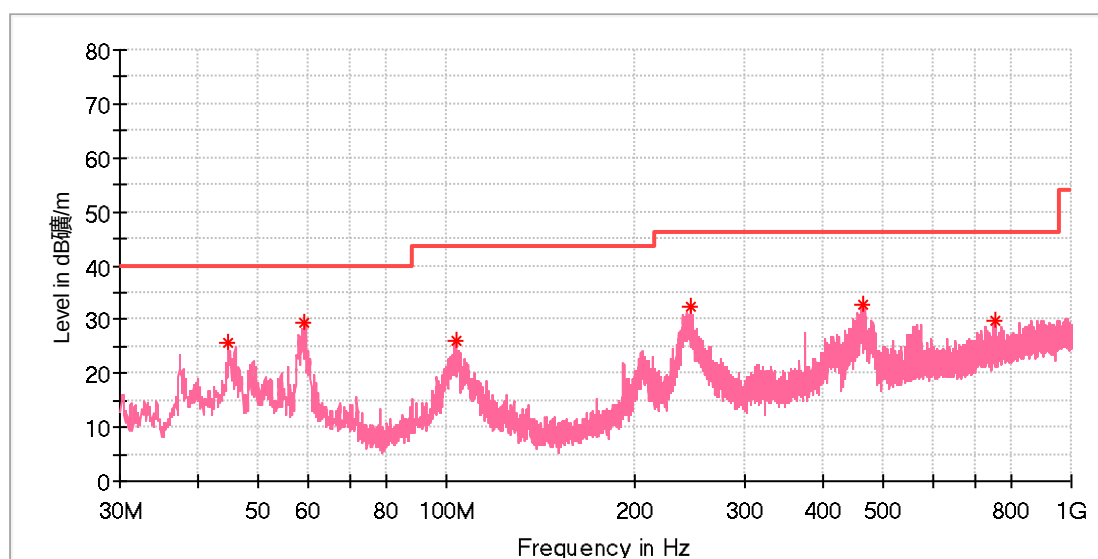
30 MHz to 1GHz

EUT Name:	I/O Module
Model:	IQ5-IO-4DO-G-B
Test Mode:	BLE 1M_Mid channel
Order No/Sample No:	168435417/A003516465-011
Test Voltage::	AC 120V/60Hz
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)
44.501500	16.91	40.00	23.09	100.0	H	177.0	-18.9
103.720000	16.25	43.50	27.25	100.0	H	123.0	-18.8
191.990000	21.30	43.50	22.20	100.0	H	95.0	-19.4
243.788000	20.32	46.00	25.68	100.0	H	57.0	-17.6
599.826500	24.60	46.00	21.40	100.0	H	70.0	-9.8
890.293000	29.16	46.00	16.84	100.0	H	143.0	-5.1

EUT Name: I/O Module
 Model: IQ5-IO-4DO-G-B
 Test Mode: BLE 1M_Mid channel
 Order No/Sample No: 168435417/A003516465-011
 Test Voltage:: AC 120V/60Hz
 Remark: Temp 22 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



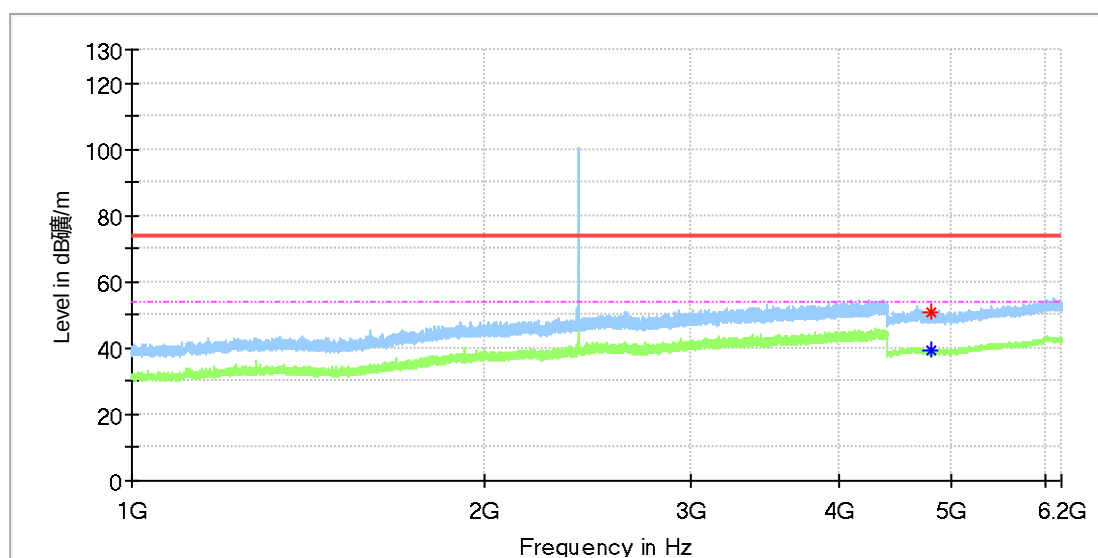
Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
44.744000	25.64	40.00	14.36	100.0	V	100.0	-18.9
59.342500	29.50	40.00	10.50	100.0	V	164.0	-18.9
103.380500	25.86	43.50	17.64	100.0	V	285.0	-18.8
245.194500	32.50	46.00	13.50	100.0	V	210.0	-17.6
464.657000	32.67	46.00	13.33	100.0	V	359.0	-12.6
753.862500	29.80	46.00	16.20	100.0	V	64.0	-7.1

1GHz-18GHz

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

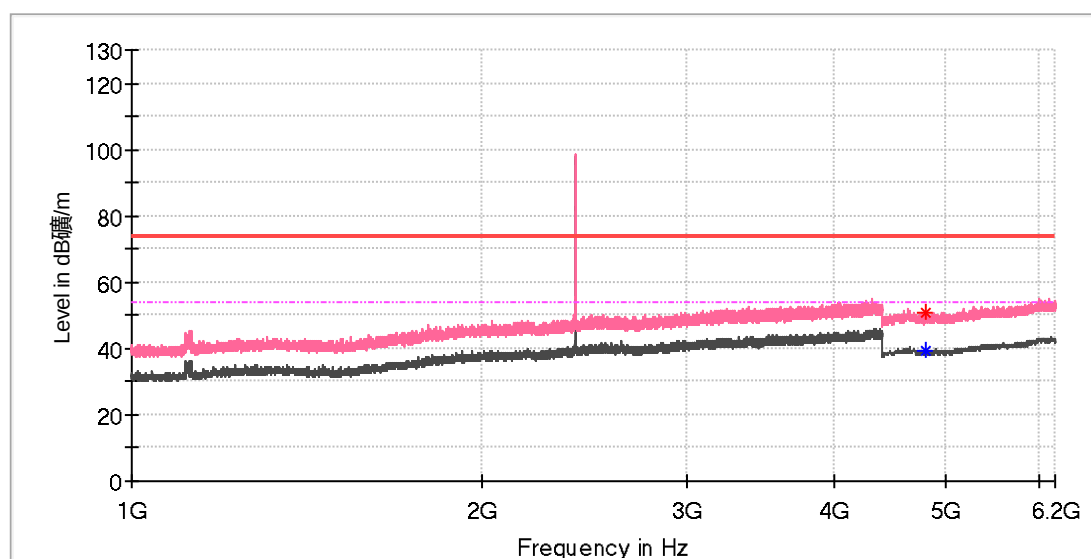
EUT Name: I/O Module
 Model: IQ5-IO-4DO-G-B
 Test Mode: BLE 1M_Low channel
 Order No/Sample No: 168435417/A003516465-011
 Test Voltage:: AC 120V/60Hz
 Remark: Temp 22 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4804.500000	---	39.36	54.00	14.64	150.0	H	159.0	11.8
4809.500000	50.71	---	74.00	23.29	150.0	H	67.0	11.8

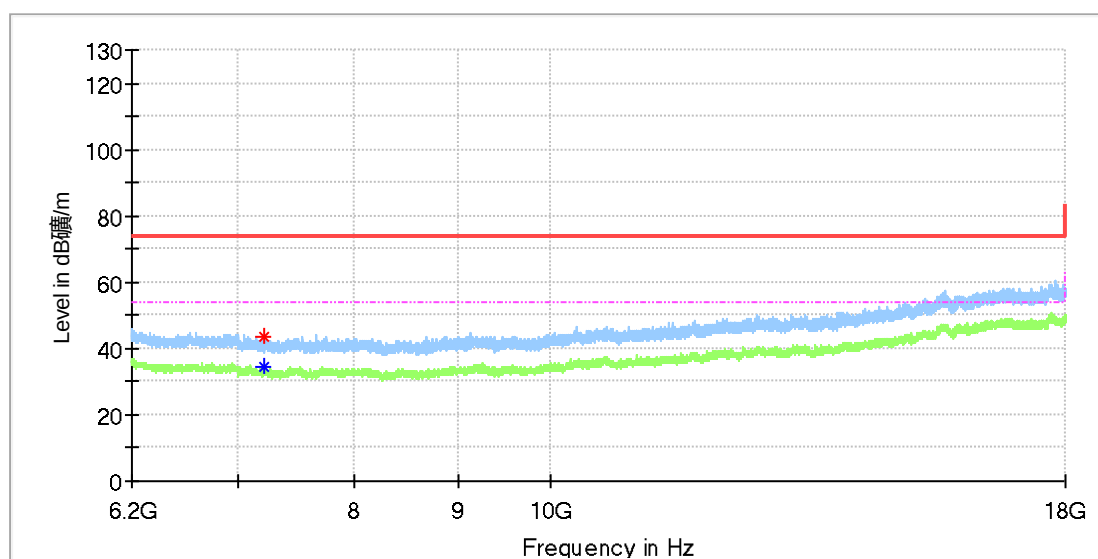
EUT Name: I/O Module
 Model: IQ5-IO-4DO-G-B
 Test Mode: BLE 1M_Low channel
 Order No/Sample No: 168435417/A003516465-011
 Test Voltage:: AC 120V/60Hz
 Remark: Temp 22 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4802.000000	50.51	---	74.00	23.49	150.0	V	316.0	11.8
4804.000000	---	39.43	54.00	14.57	150.0	V	243.0	11.8

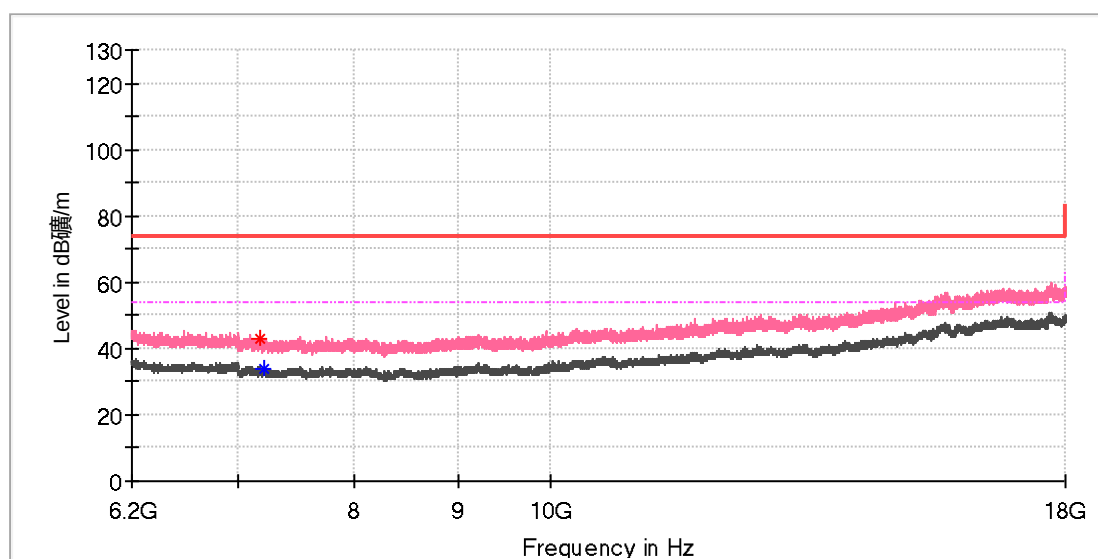
EUT Name:	I/O Module
Model:	IQ5-IO-4DO-G-B
Test Mode:	BLE 1M_Low channel
Order No/Sample No:	168435417/A003516465-011
Test Voltage::	AC 120V/60Hz
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7204.966667	43.51	---	74.00	30.49	150.0	H	250.0	8.8
7216.275000	---	34.62	54.00	19.38	150.0	H	89.0	8.7

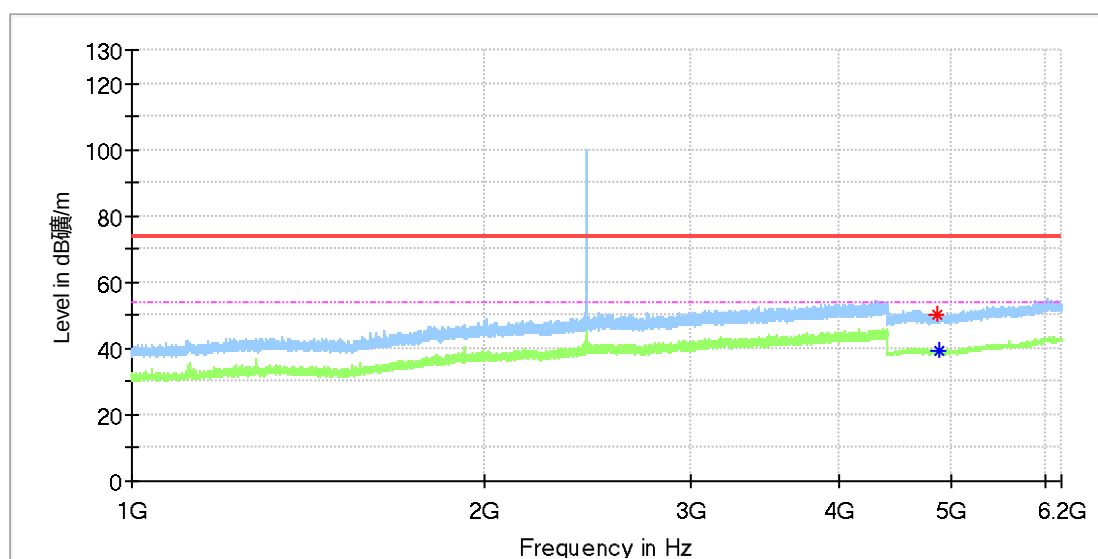
EUT Name: I/O Module
Model: IQ5-IO-4DO-G-B
Test Mode: BLE 1M_Low channel
Order No/Sample No: 168435417/A003516465-011
Test Voltage:: AC 120V/60Hz
Remark: Temp 22 Humi:55%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7184.808333	42.85	---	74.00	31.15	150.0	V	300.0	8.8
7204.966667	---	33.88	54.00	20.12	150.0	V	0.0	8.8

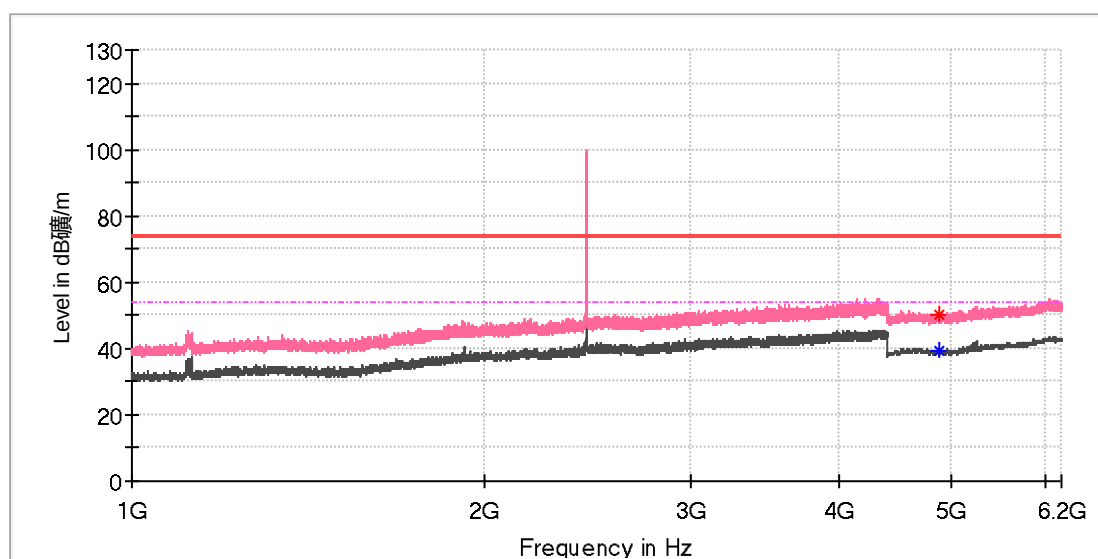
EUT Name: I/O Module
Model: IQ5-IO-4DO-G-B
Test Mode: BLE 1M_Mid channel
Order No/Sample No: 168435417/A003516465-011
Test Voltage:: AC 120V/60Hz
Remark: Temp 22 Humi:55%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4858.500000	50.34	---	74.00	23.66	150.0	H	171.0	11.8
4868.500000	---	39.37	54.00	14.63	150.0	H	16.0	11.8

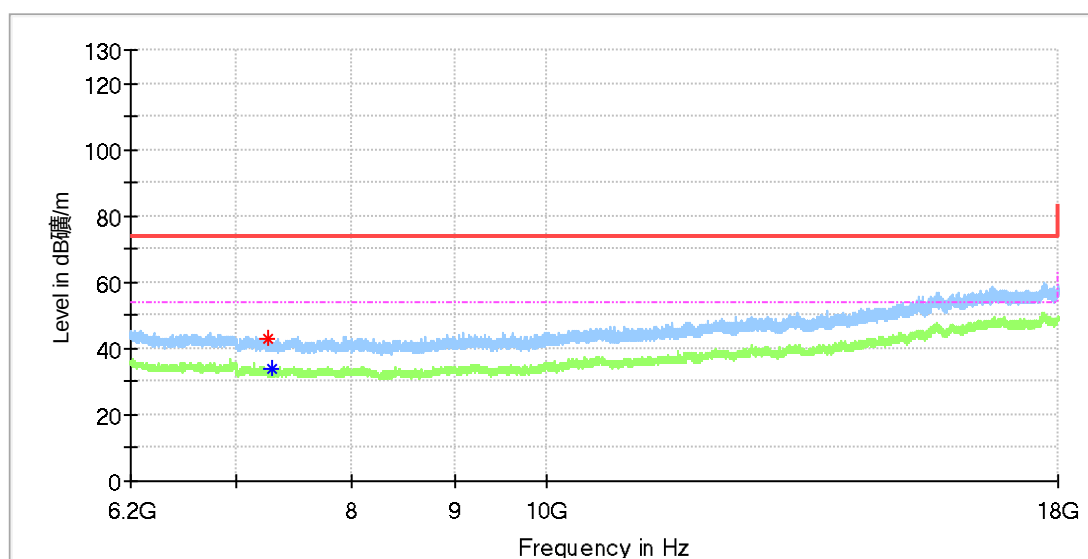
EUT Name:	I/O Module
Model:	IQ5-IO-4DO-G-B
Test Mode:	BLE 1M_Mid channel
Order No/Sample No:	168435417/A003516465-011
Test Voltage::	AC 120V/60Hz
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4870.500000	---	39.17	54.00	14.83	150.0	V	188.0	11.8
4880.000000	50.21	---	74.00	23.79	150.0	V	138.0	11.8

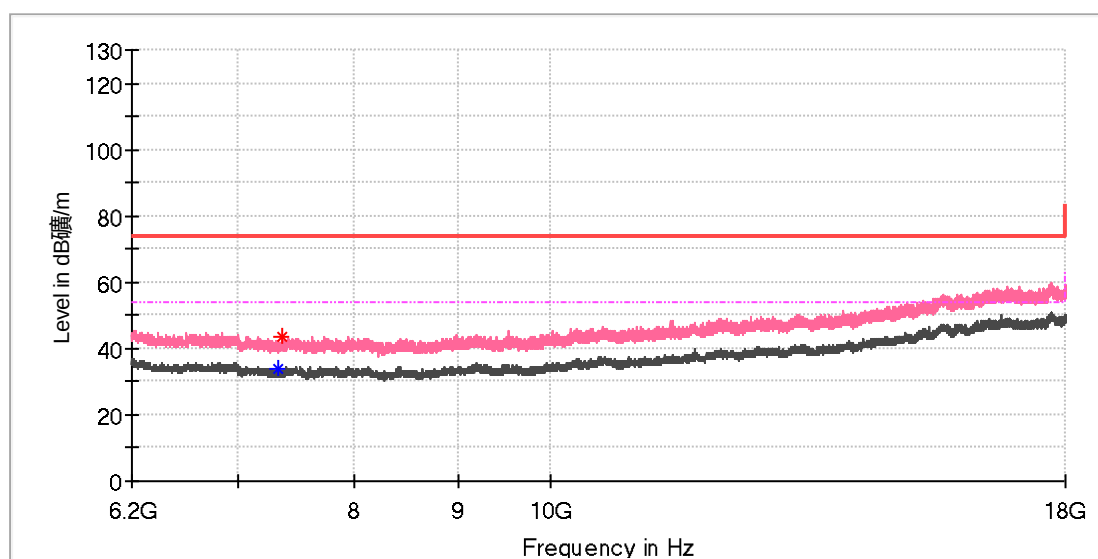
EUT Name: I/O Module
 Model: IQ5-IO-4DO-G-B
 Test Mode: BLE 1M_Mid channel
 Order No/Sample No: 168435417/A003516465-011
 Test Voltage:: AC 120V/60Hz
 Remark: Temp 22 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7267.408333	42.84	---	74.00	31.16	150.0	H	187.0	8.5
7285.600000	---	33.82	54.00	20.18	150.0	H	227.0	8.4

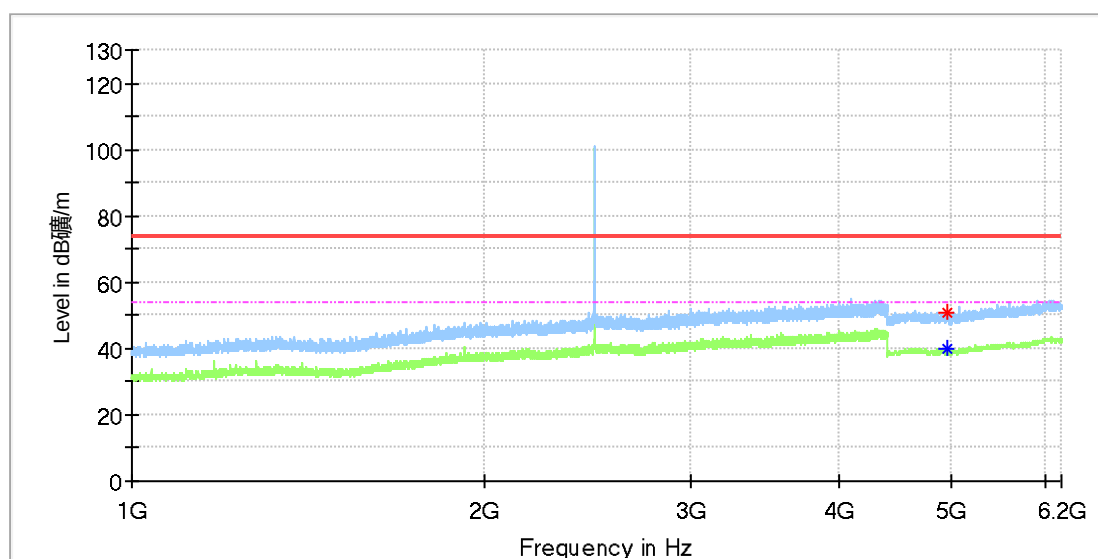
EUT Name: I/O Module
 Model: IQ5-IO-4DO-G-B
 Test Mode: BLE 1M_Mid channel
 Order No/Sample No: 168435417/A003516465-011
 Test Voltage:: AC 120V/60Hz
 Remark: Temp 22 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7318.541667	---	33.69	54.00	20.31	150.0	V	222.0	8.2
7363.283333	43.60	---	74.00	30.40	150.0	V	248.0	8.2

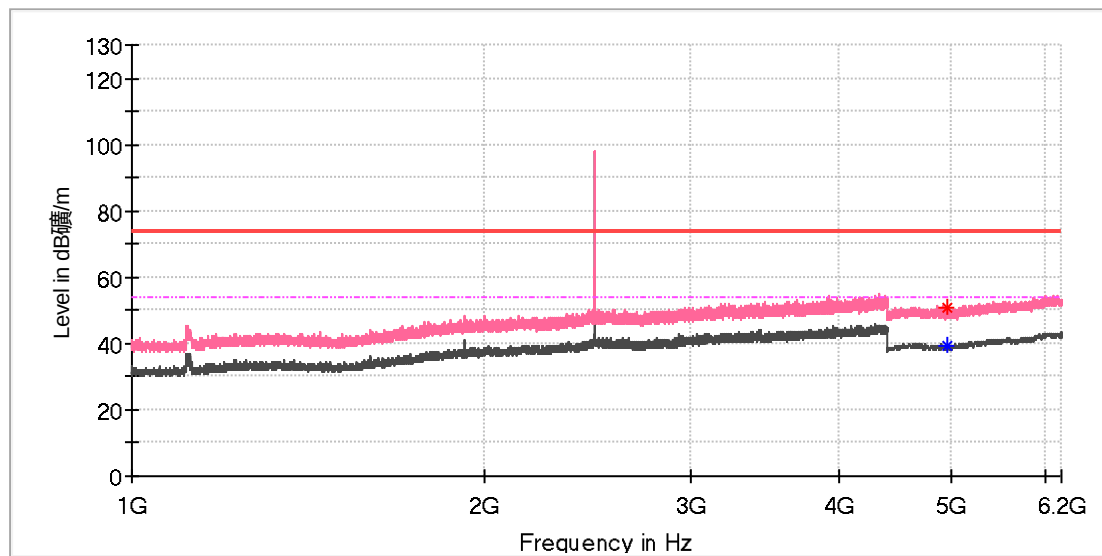
EUT Name: I/O Module
Model: IQ5-IO-4DO-G-B
Test Mode: BLE 1M_High channel
Order No/Sample No: 168435417/A003516465-011
Test Voltage:: AC 120V/60Hz
Remark: Temp 22 Humi:55%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4955.000000	50.75	---	74.00	23.25	150.0	H	15.0	11.8
4955.500000	---	39.81	54.00	14.19	150.0	H	185.0	11.8

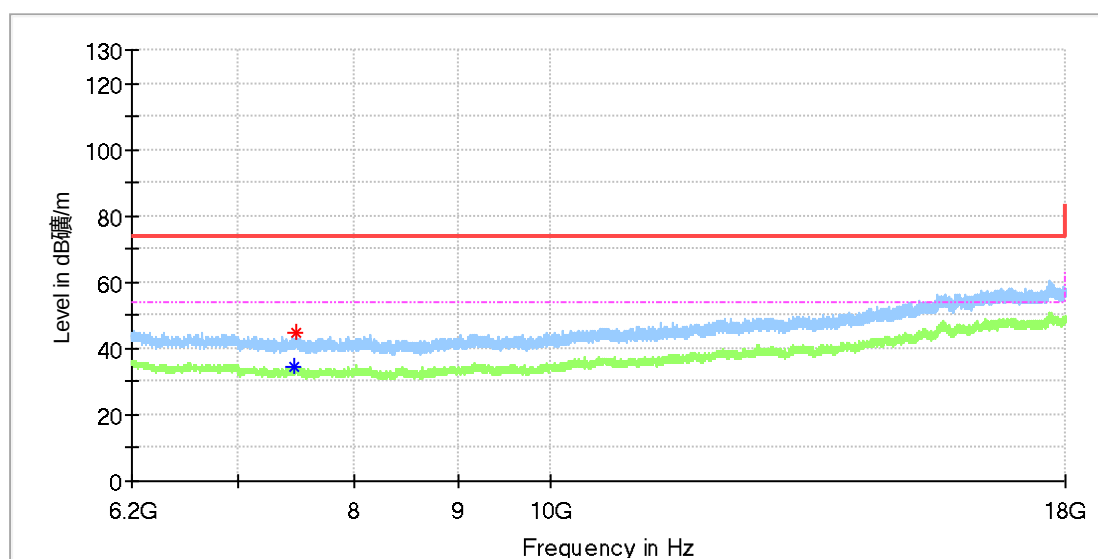
EUT Name: I/O Module
Model: IQ5-IO-4DO-G-B
Test Mode: BLE 1M_High channel
Order No/Sample No: 168435417/A003516465-011
Test Voltage:: AC 120V/60Hz
Remark: Temp 22 Humi:55%
Test Standard: FCC 15.247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4949.500000	---	39.50	54.00	14.50	150.0	V	78.0	11.8
4953.000000	50.70	---	74.00	23.30	150.0	V	210.0	11.8

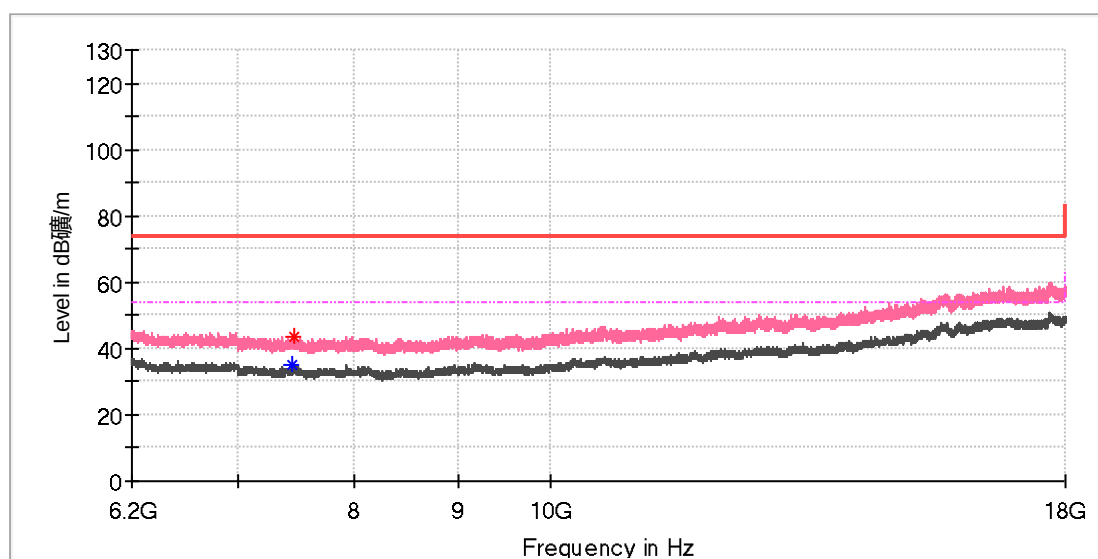
EUT Name:	I/O Module
Model:	IQ5-IO-4DO-G-B
Test Mode:	BLE 1M_High channel
Order No/Sample No:	168435417/A003516465-011
Test Voltage::	AC 120V/60Hz
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7464.566667	---	34.46	54.00	19.54	150.0	H	261.0	8.6
7479.808333	44.59	---	74.00	29.41	150.0	H	51.0	8.7

EUT Name: I/O Module
 Model: IQ5-IO-4DO-G-B
 Test Mode: BLE 1M_High channel
 Order No/Sample No: 168435417/A003516465-011
 Test Voltage:: AC 120V/60Hz
 Remark: Temp 22 Humi:55%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin

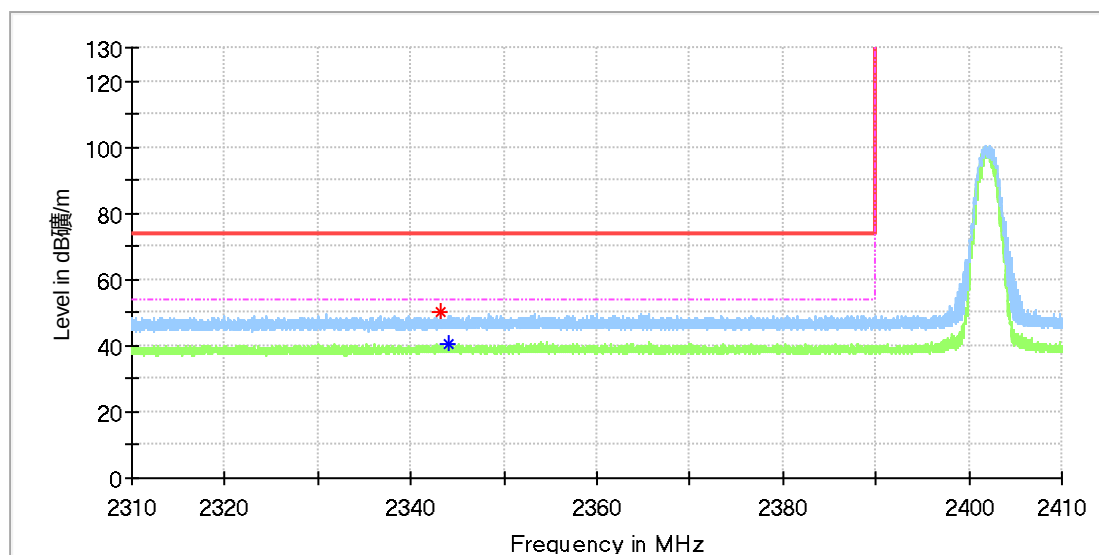


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7439.000000	---	34.99	54.00	19.01	150.0	V	349.0	8.4
7467.516667	43.74	---	74.00	30.26	150.0	V	313.0	8.6

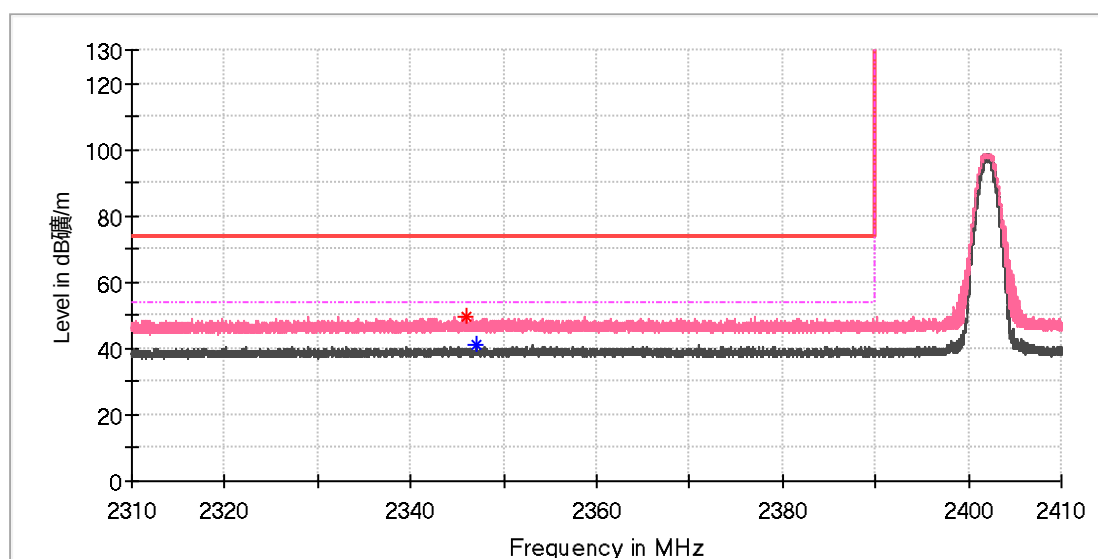
APPENDIX B.6: RADIATED EMISSIONS IN RESTRICTED BANDS

EUT Name: I O Module 2
 Model: IQ5-IO-4DO-G-B
 Test Mode: BLE 1M_Low channel
 Order No./Sample No: 168435417/A003516465-011
 Test Voltage:: AC 120V/60Hz
 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)
2343.175000	49.90	---	74.00	24.10	150.0	H	0.0	6.8
2344.120000	---	40.31	54.00	13.69	150.0	H	12.0	6.9

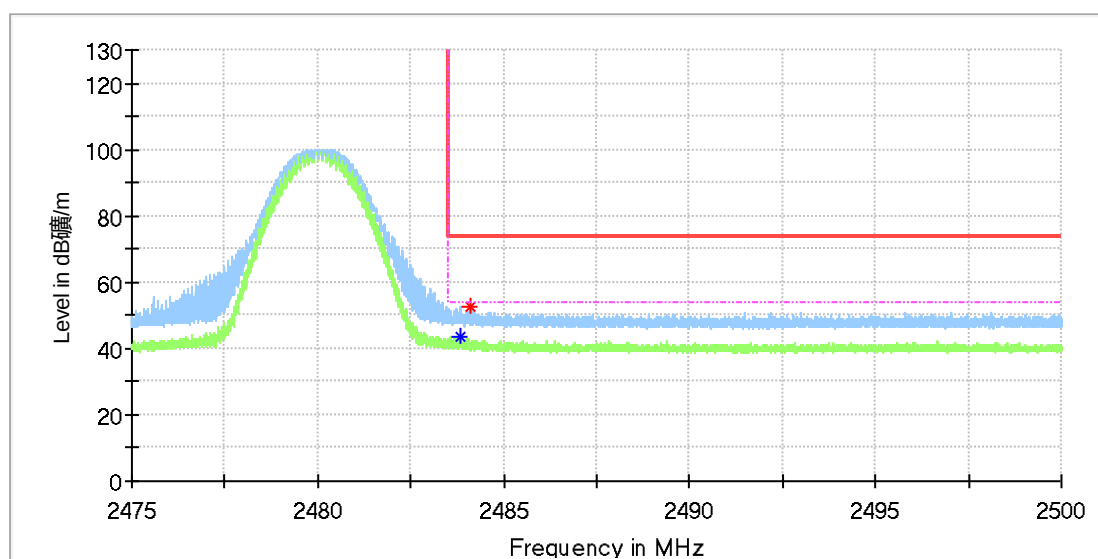
EUT Name:	I/O Module
Model:	IQ5-IO-4DO-G-B
Test Mode:	BLE 1M_Low channel
Order No/Sample No:	168435417/A003516465-011
Test Voltage::	AC 120V/60Hz
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2345.985000	49.55	---	74.00	24.45	150.0	V	349.0	6.9
2347.165000	---	40.97	54.00	13.03	150.0	V	259.0	6.9

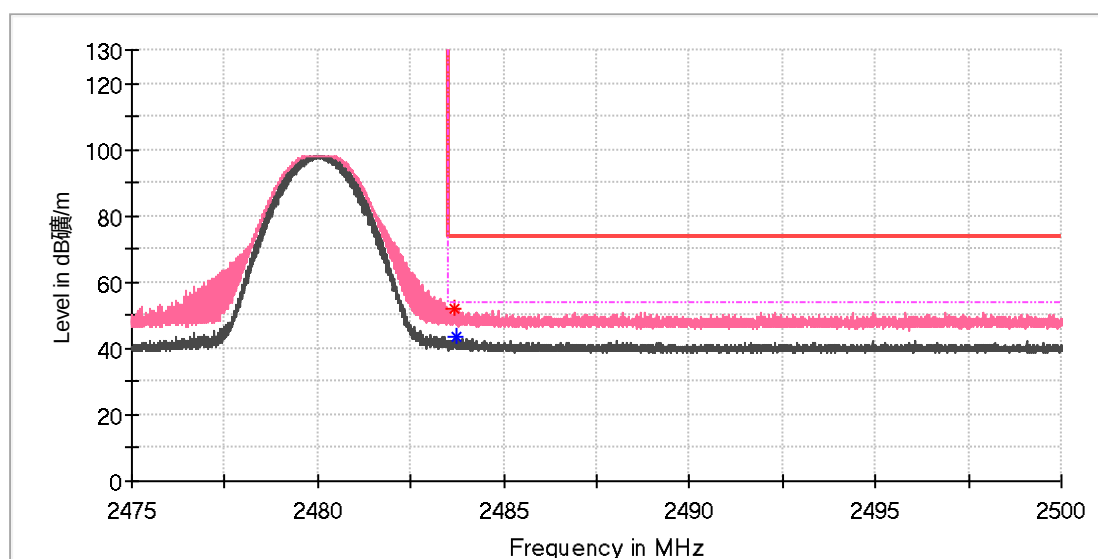
EUT Name:	I/O Module
Model:	IQ5-IO-4DO-G-B
Test Mode:	BLE 1M_High channel
Order No/Sample No:	168435417/A003516465-011
Test Voltage::	AC 120V/60Hz
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.830000	---	43.48	54.00	10.52	150.0	H	233.0	7.4
2484.096000	52.50	---	74.00	21.50	150.0	H	260.0	7.4

EUT Name:	I/O Module
Model:	IQ5-IO-4DO-G-B
Test Mode:	BLE 1M_High channel
Order No/Sample No:	168435417/A003516465-011
Test Voltage::	AC 120V/60Hz
Remark:	Temp 22 Humi:55%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



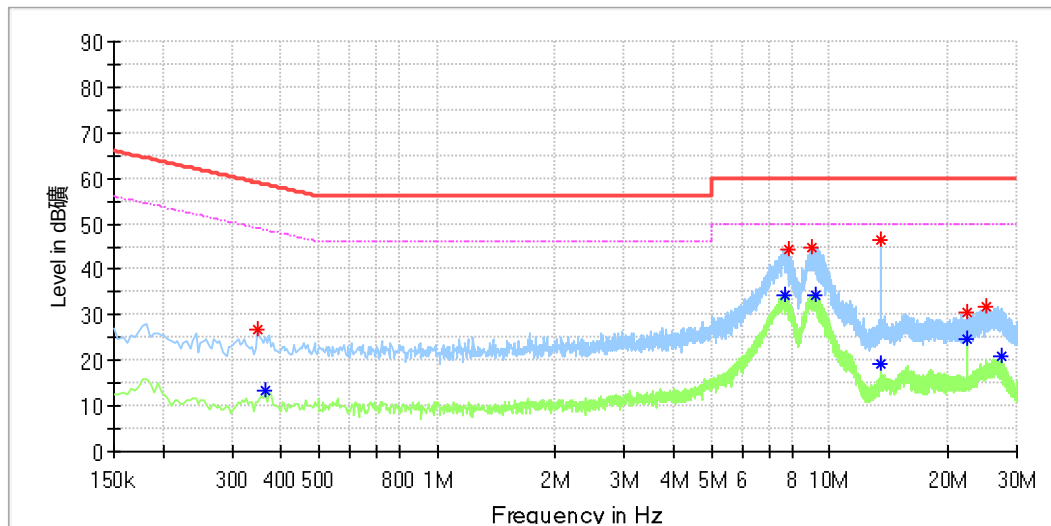
Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2483.658000	51.94	---	74.00	22.06	150.0	V	143.0	7.4
2483.750000	---	43.29	54.00	10.71	150.0	V	143.0	7.4

APPENDIX B.7: CONDUCTED EMISSION ON AC MAINS

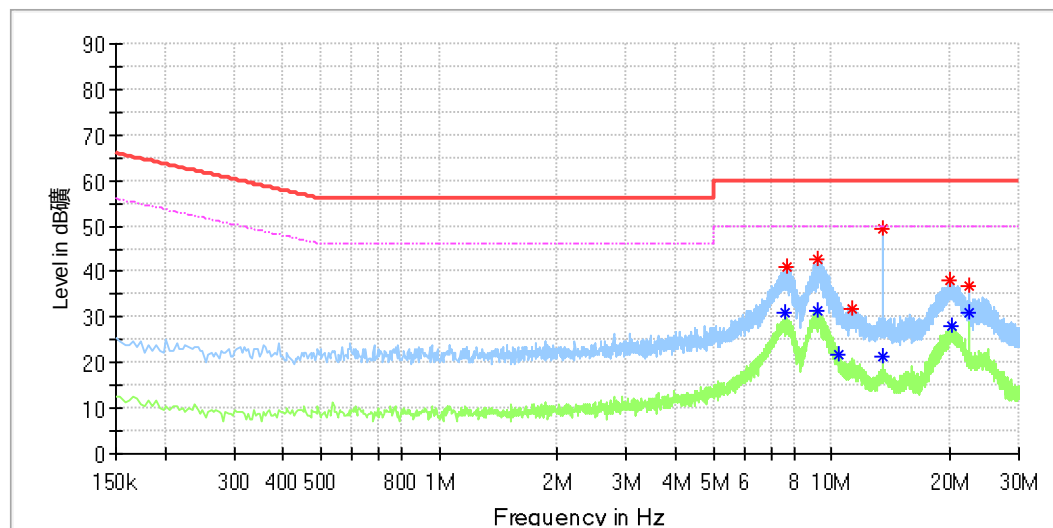
Normal Working with Bluetooth connected

EUT Name: I/O Module
 Order Number: 168435417(P01048896)
 Model: IQ5-IO-4DO-G-B
 Test Mode: On, Normal working with BLE connected
 Test Voltage: AC 120V/60Hz
 Test Standard: FCC Part 15C
 Test By:/Review By: Charlie Zha / Gary Chen
 Tem./Hum./Pressure: 23.2°C/50.6%/101kPa
 Remark: SR2

**Critical Freqs**

Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.350000	26.72	---	58.96	32.24	L1	9.9
0.366000	---	13.34	48.59	35.25	L1	9.9
7.702000	---	34.18	50.00	15.82	L1	10.3
7.830000	44.50	---	60.00	15.50	L1	10.3
8.994000	44.83	---	60.00	15.17	L1	10.3
9.166000	---	34.46	50.00	15.54	L1	10.3
13.558000	46.48	---	60.00	13.52	L1	10.4
13.558000	---	19.20	50.00	30.80	L1	10.4
22.498000	30.56	---	60.00	29.44	L1	10.4
22.502000	---	24.62	50.00	25.38	L1	10.4
25.002000	32.02	---	60.00	27.98	L1	10.4
27.322000	---	21.10	50.00	28.90	L1	10.4

EUT Name: I/O Module
 Order Number: 168435417(P01048896)
 Model: IQ5-IO-4DO-G-B
 Test Mode: On, Normal working with BLE connected
 Test Voltage: AC 120V/60Hz
 Test Standard: FCC Part 15C
 Test By:/Review By: Charlie Zha / Gary Chen
 Tem./Hum./Pressure: 23.2°C/50.6%/101kPa
 Remark: SR2



Critical Freqs

Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
7.578000	---	30.89	50.00	19.11	N	10.0
7.654000	41.08	---	60.00	18.92	N	10.0
9.174000	---	31.31	50.00	18.69	N	10.0
9.250000	42.55	---	60.00	17.45	N	10.0
10.414000	---	21.80	50.00	28.20	N	10.0
11.246000	31.85	---	60.00	28.15	N	10.0
13.558000	49.46	---	60.00	10.54	N	10.1
13.558000	---	21.32	50.00	28.68	N	10.1
20.062000	37.96	---	60.00	22.04	N	10.2
20.258000	---	28.15	50.00	21.85	N	10.2
22.502000	36.81	---	60.00	23.19	N	10.3
22.502000	---	30.89	50.00	19.11	N	10.3