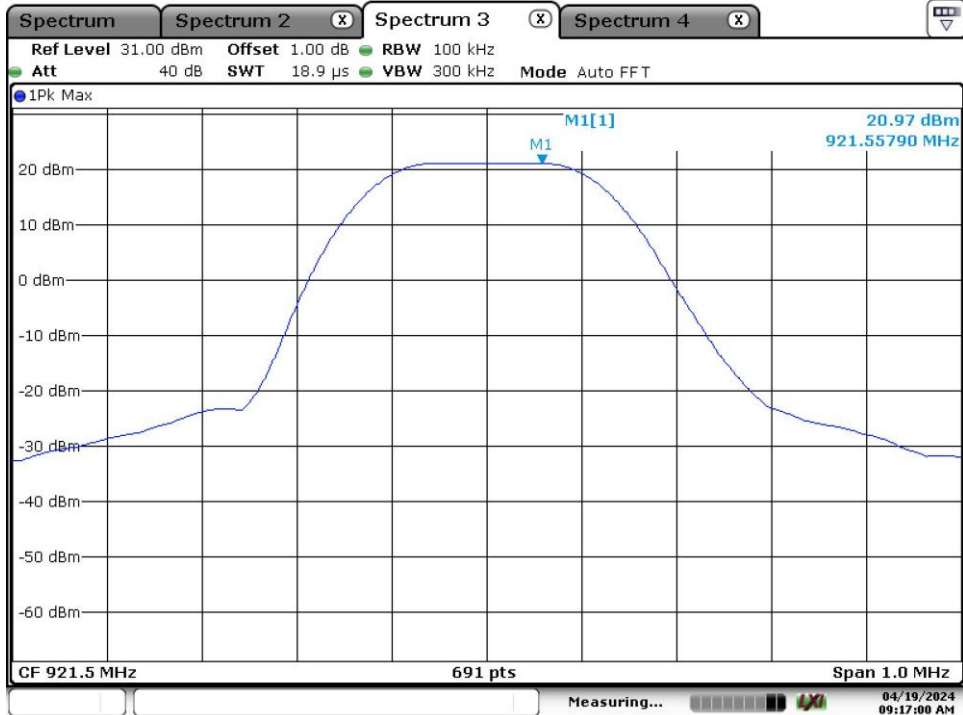
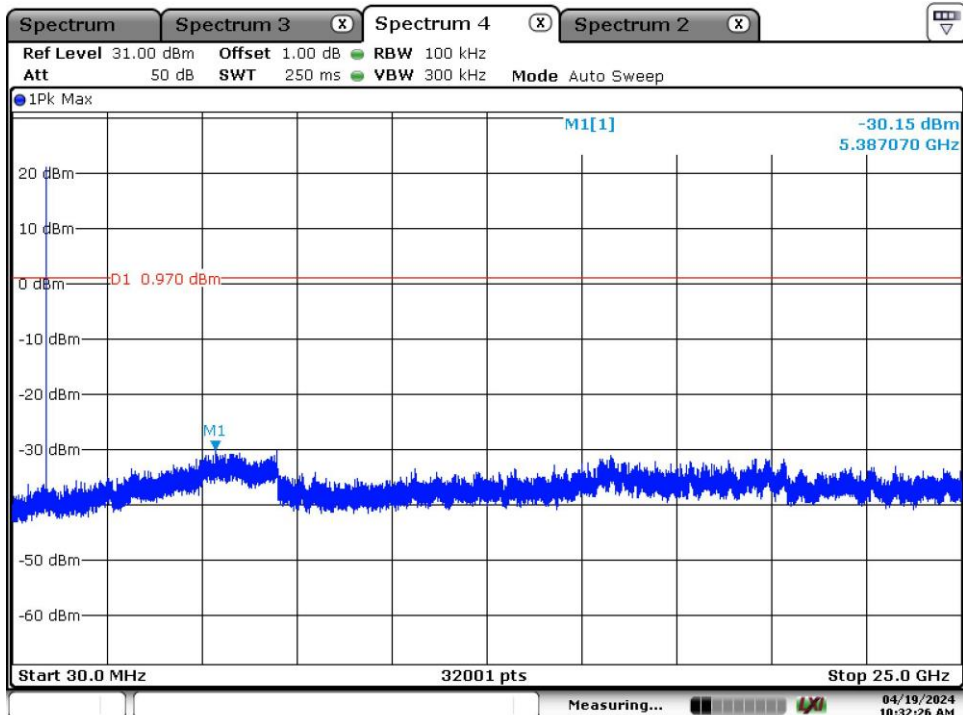


Middle Channel

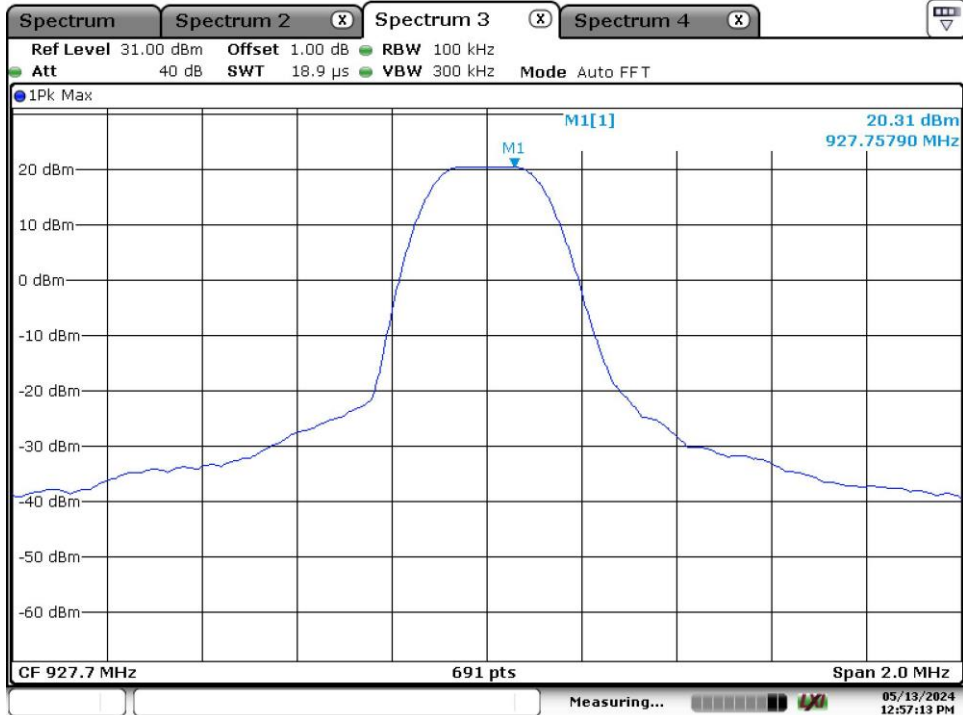


Date: 19.APR.2024 09:17:00

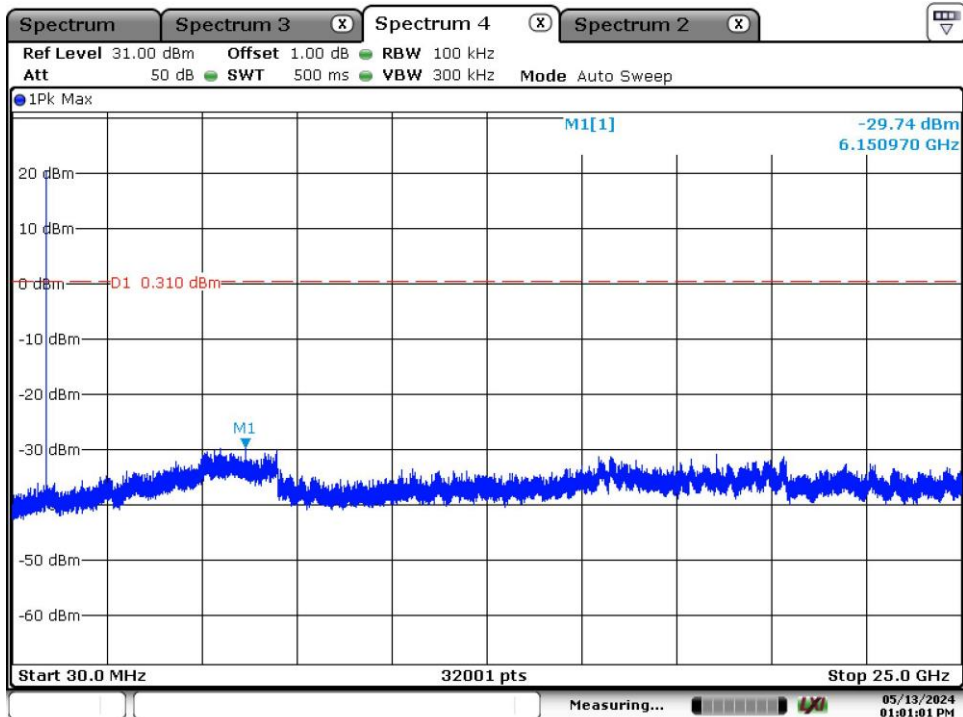


Date: 19.APR.2024 10:32:26

High Channel

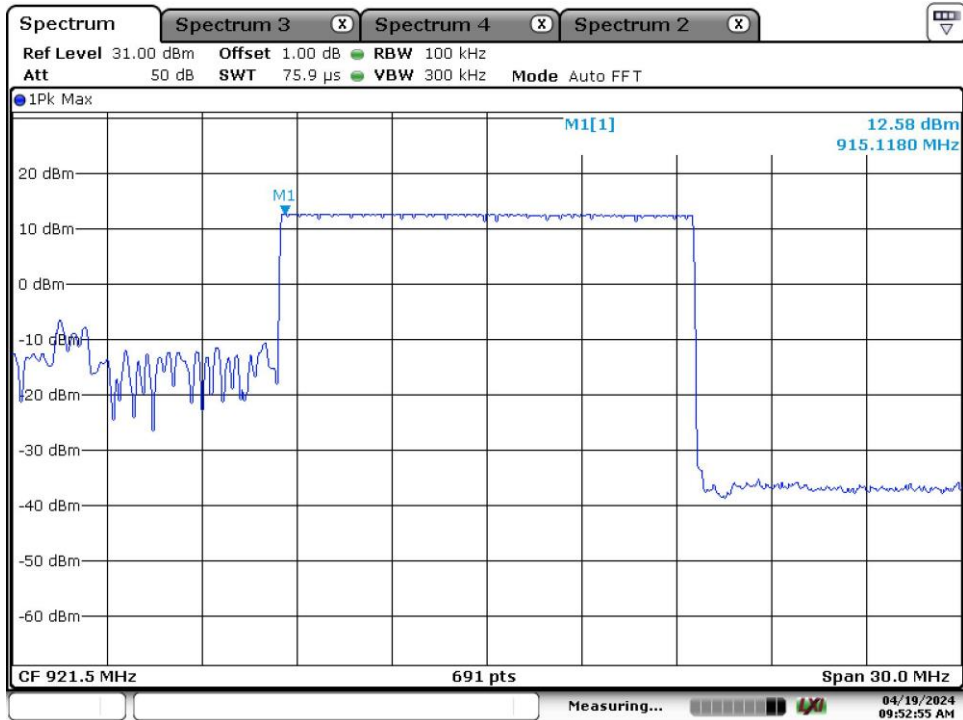


Date: 13.MAY.2024 12:57:14

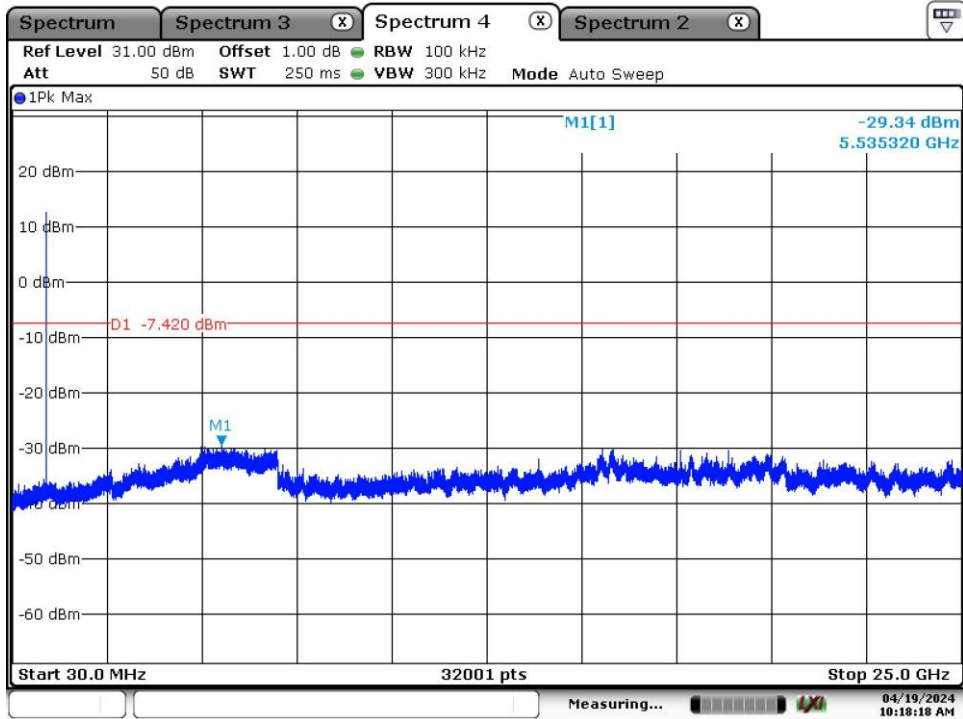


Date: 13.MAY.2024 13:01:02

Lora FHSS, no-hopping, Configuration 1:



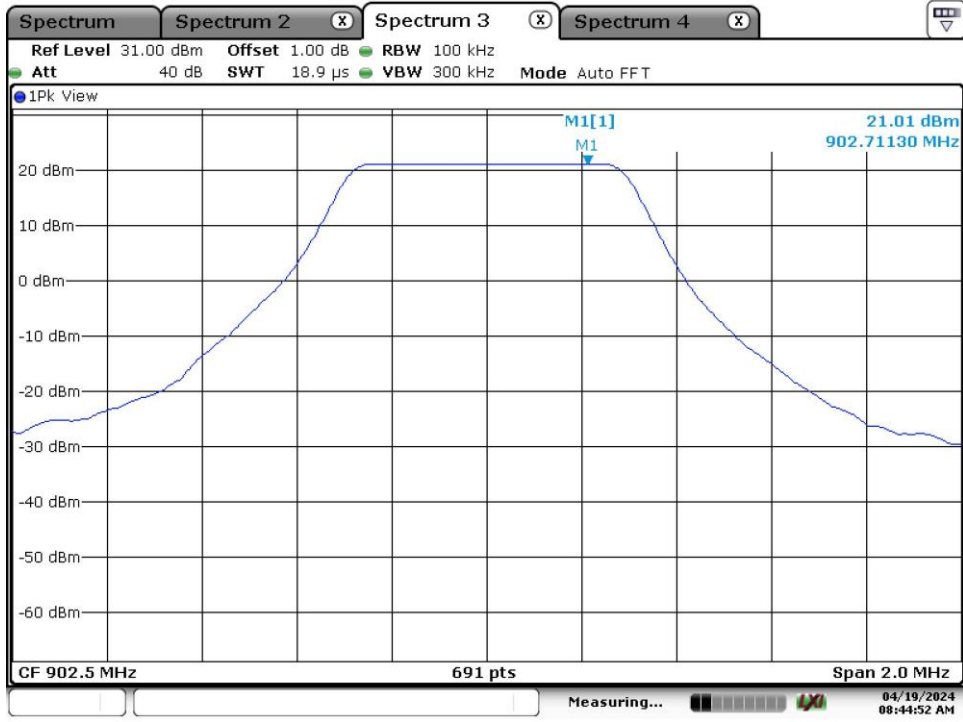
Date: 19.APR.2024 09:52:55



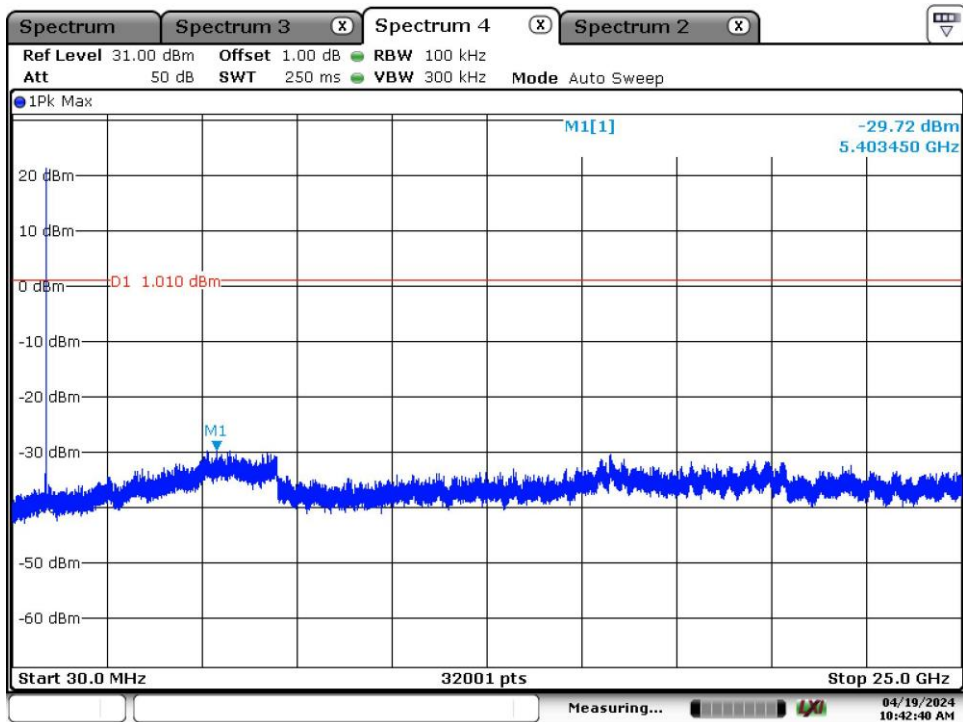
Date: 19.APR.2024 10:18:18

Lora DTS, Configuration 2:

Low Channel



Date: 19.APR.2024 08:44:52

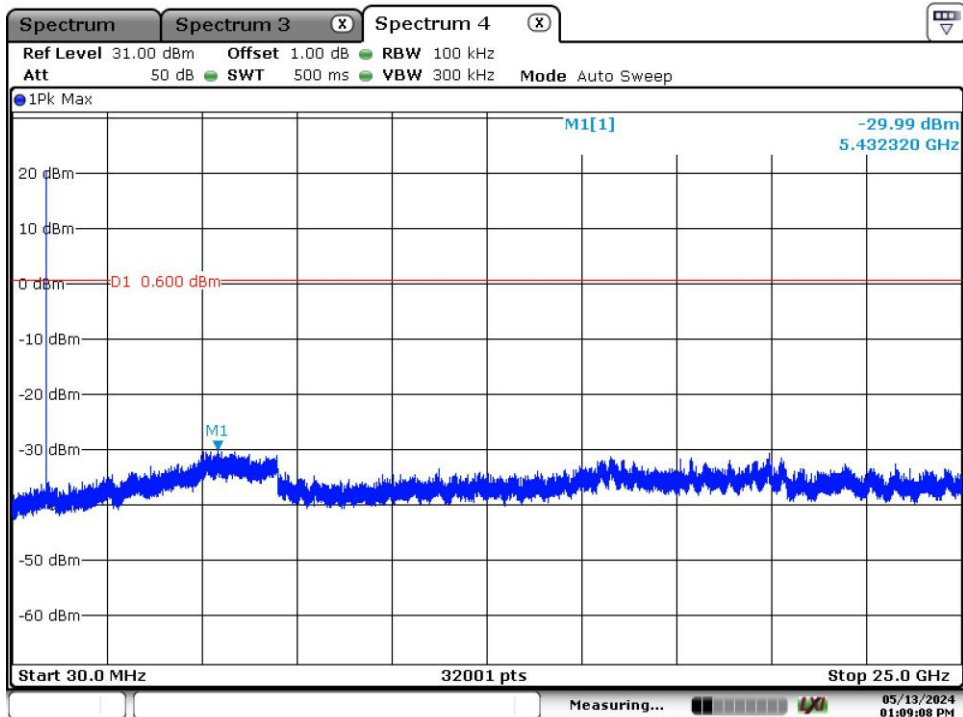


Date: 19.APR.2024 10:42:40

High Channel



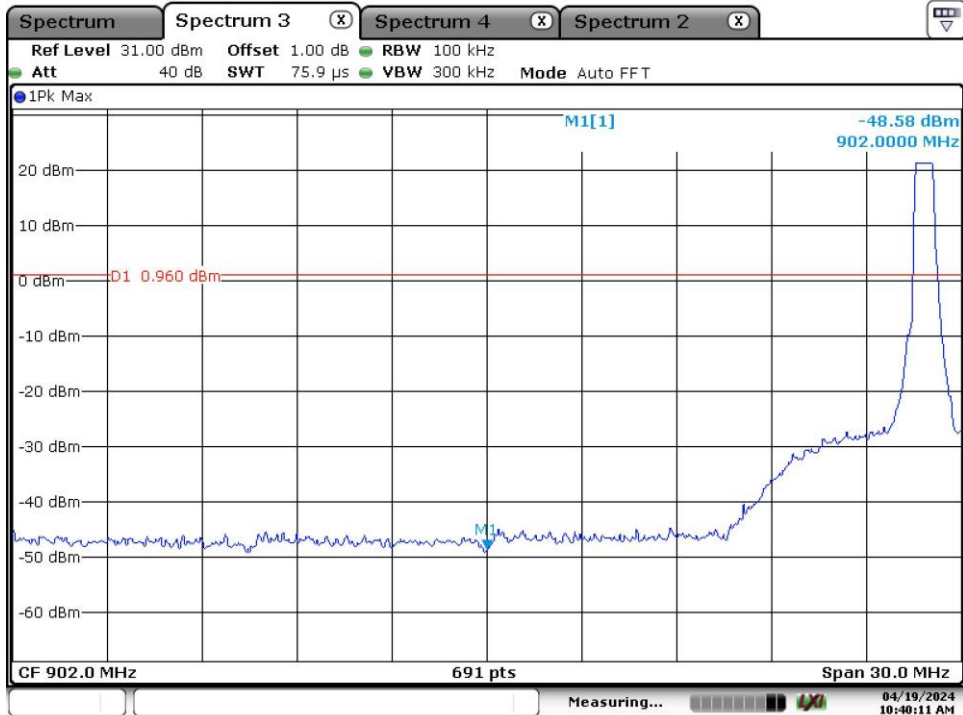
Date: 13.MAY.2024 13:05:39



Date: 13.MAY.2024 13:09:08

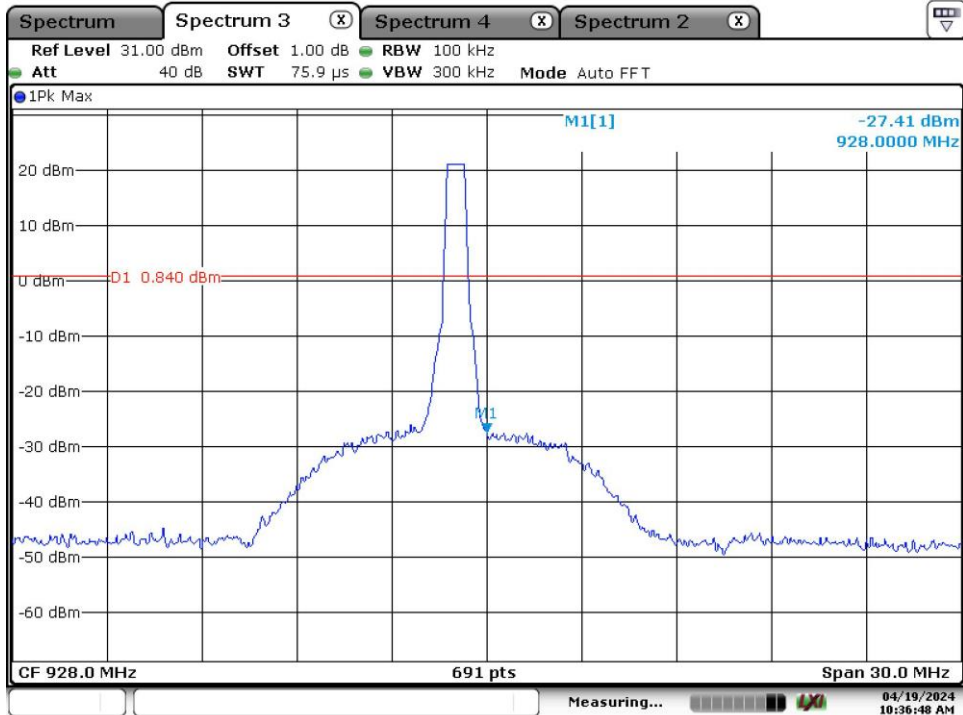
Lora DTS, Band Edge, Configuration 1:

Low Channel



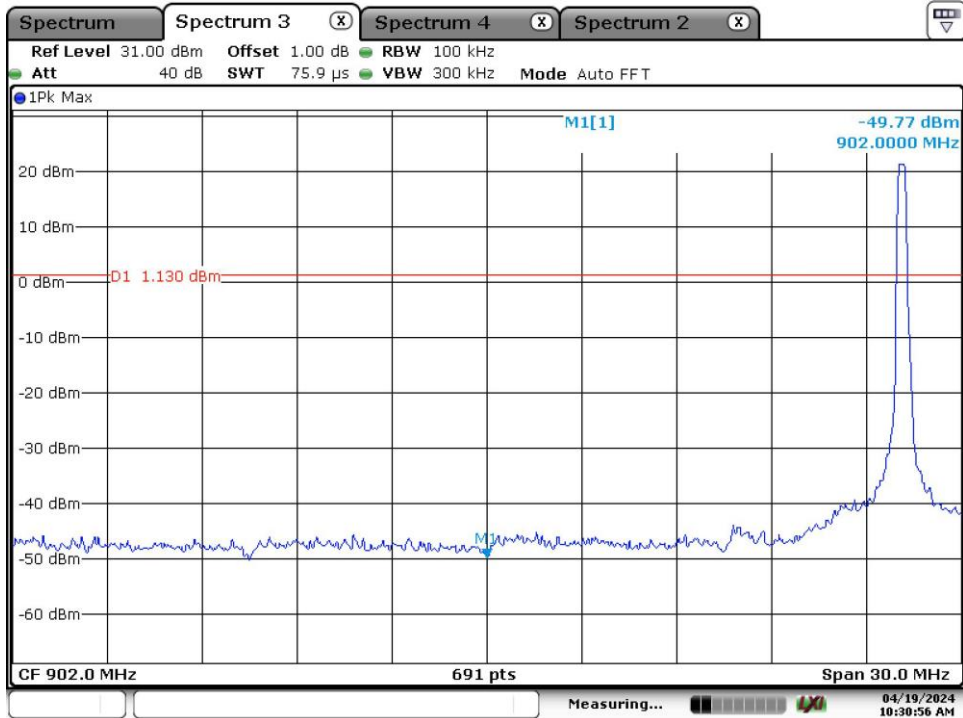
Date: 19.APR.2024 10:40:11

High Channel



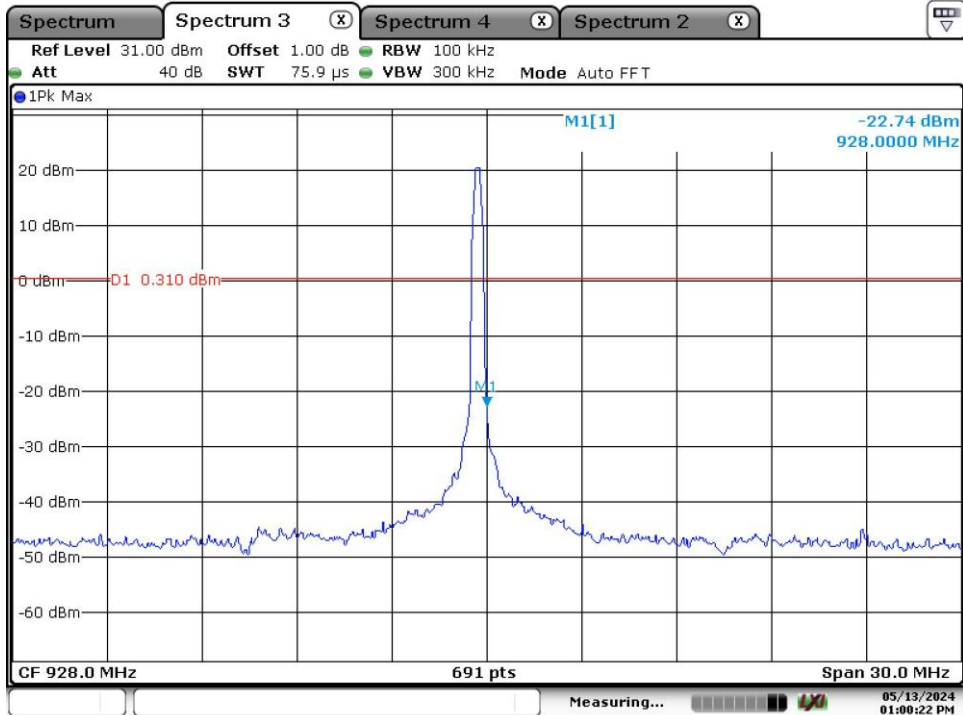
Date: 19.APR.2024 10:36:48

Lora FHSS, Band Edge, Configuration 1:
Low Channel



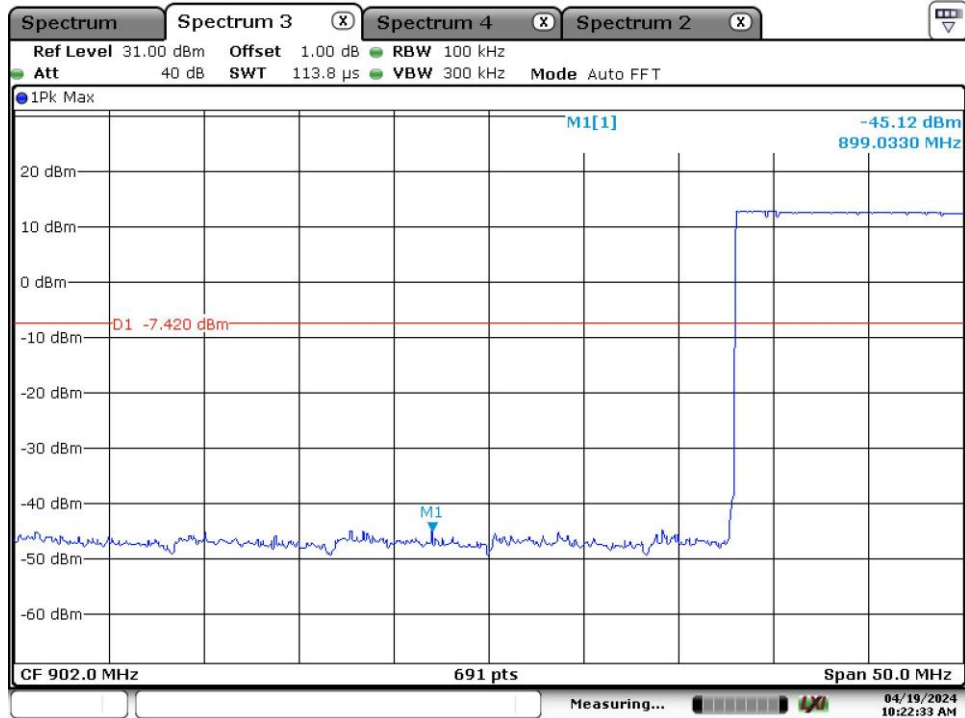
Date: 19.APR.2024 10:30:56

High Channel



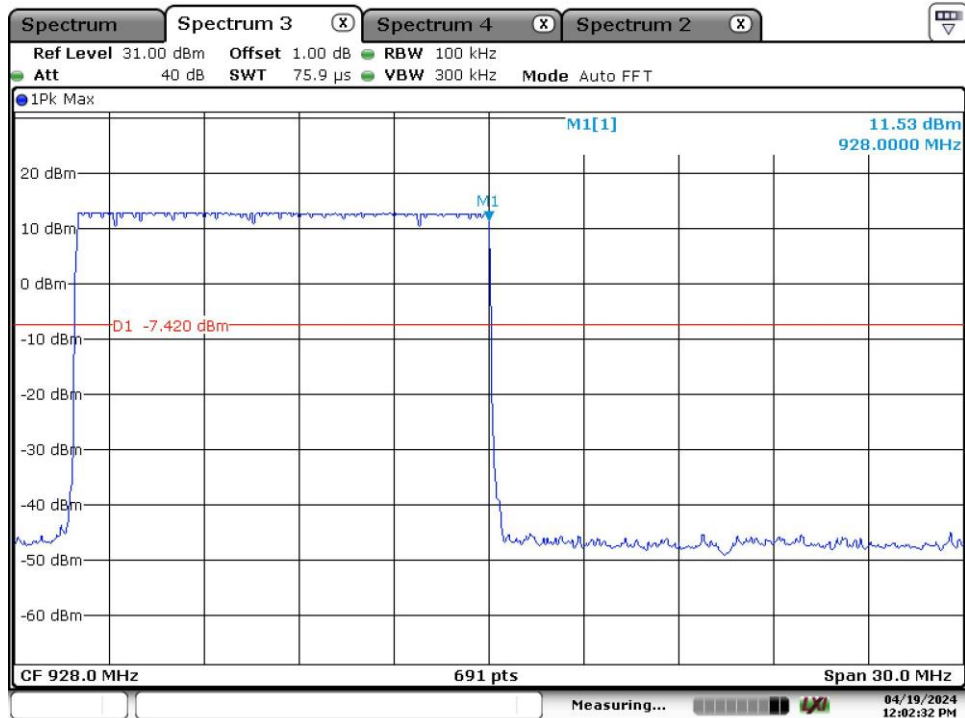
Date: 13.MAY.2024 13:00:22

Lora FHSS, no-hopping, Band Edge, Configuration 1:
Below 920MHz



Date: 19.APR.2024 10:22:33

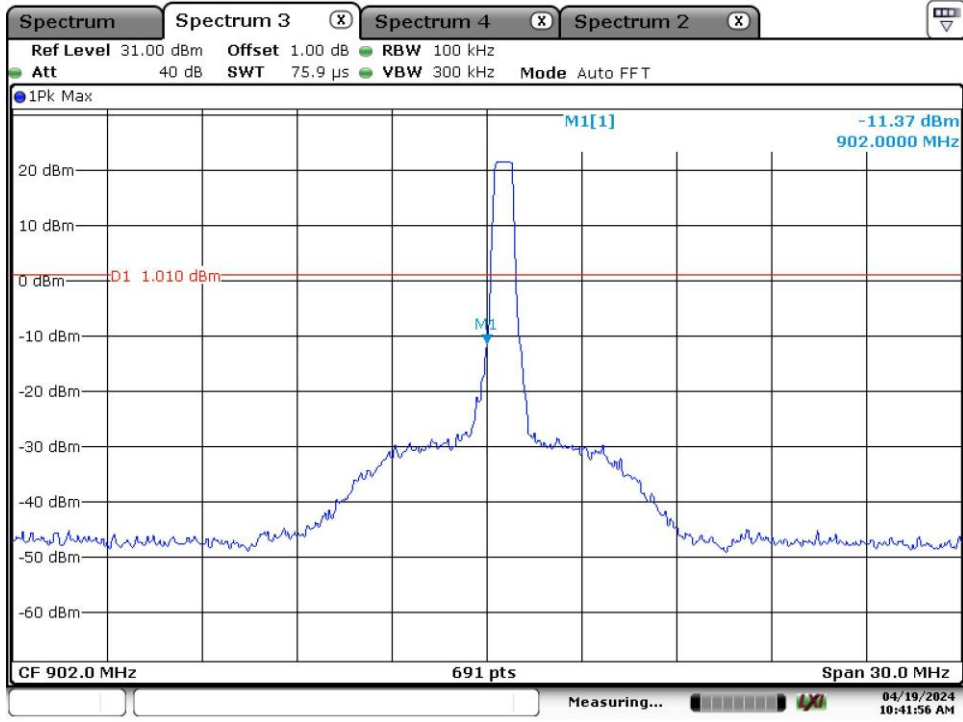
Above 928MHz



Date: 19.APR.2024 12:02:32

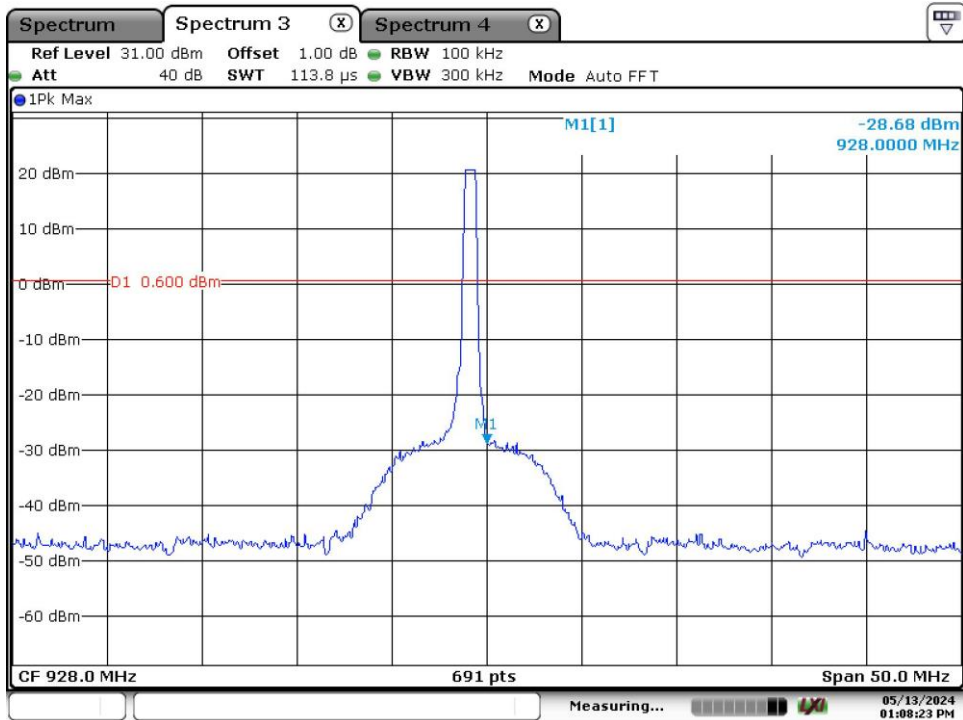
Lora DTS, Band Edge, Configuration 2:

Low Channel



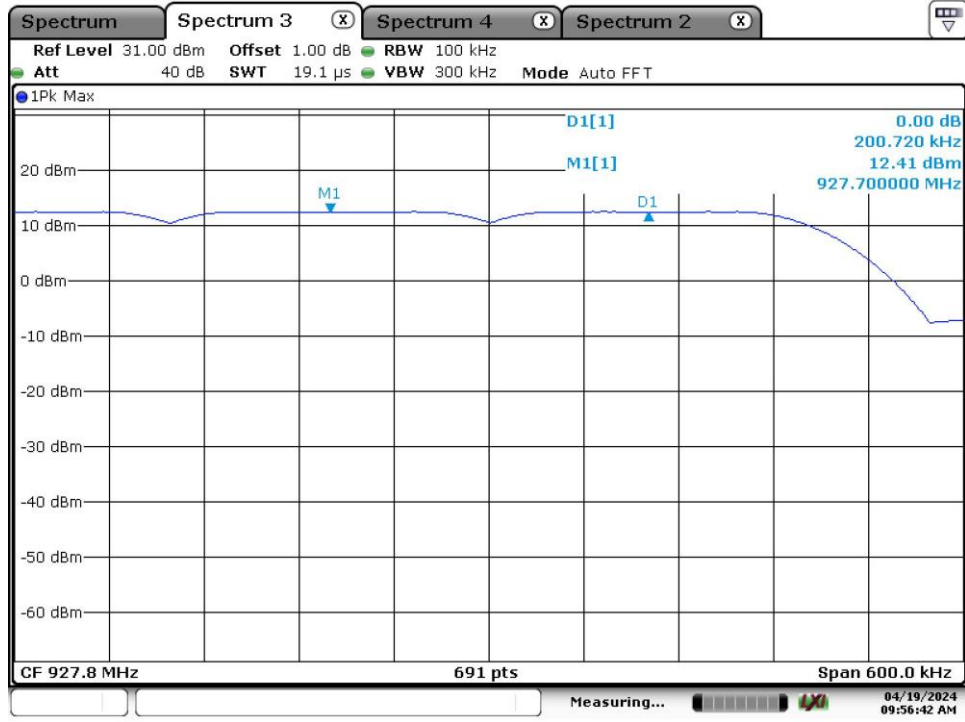
Date: 19.APR.2024 10:41:55

High Channel



Date: 13.MAY.2024 13:08:23

High Channel



Date: 19.APR.2024 09:56:41

04/19/2024
09:56:42 AM

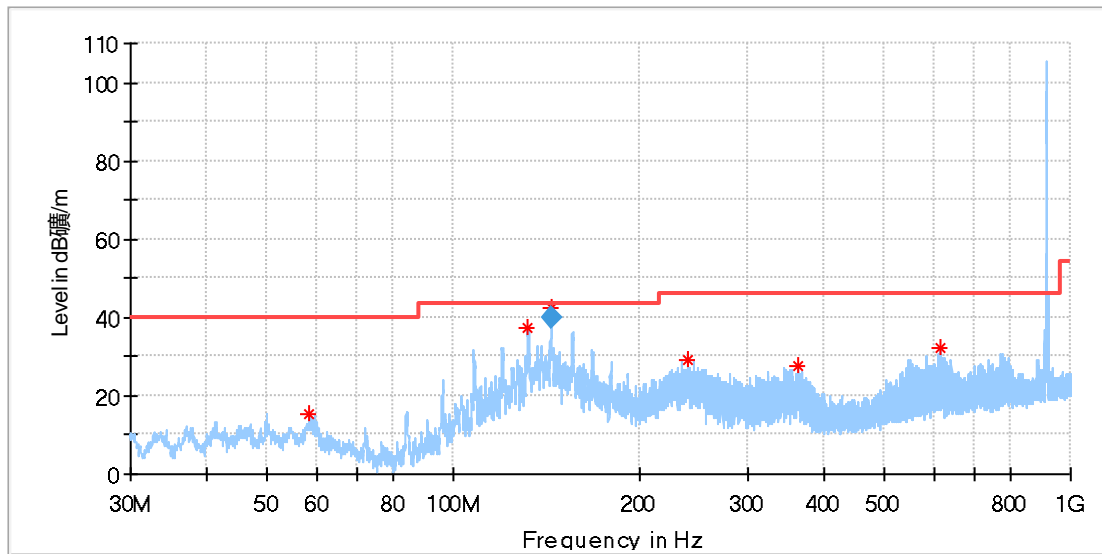
Note 1: Testing was carried out within frequency range 9 kHz to the tenth harmonics. The measurement results below 30MHz and above 18GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

Appendix B.7: Test Results of Radiated Spurious Emissions

Lora DTS, Configuration 1:

EUT Information

EUT Name:	WisDuo LPWAN+BLE Module
Model:	RAK11720
Test Mode:	DTS 500K_SF7_915.8MHz
Order No/Sample No:	168478328A003697710-003
Test Voltage::	DC 5V From USB
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical Freqs

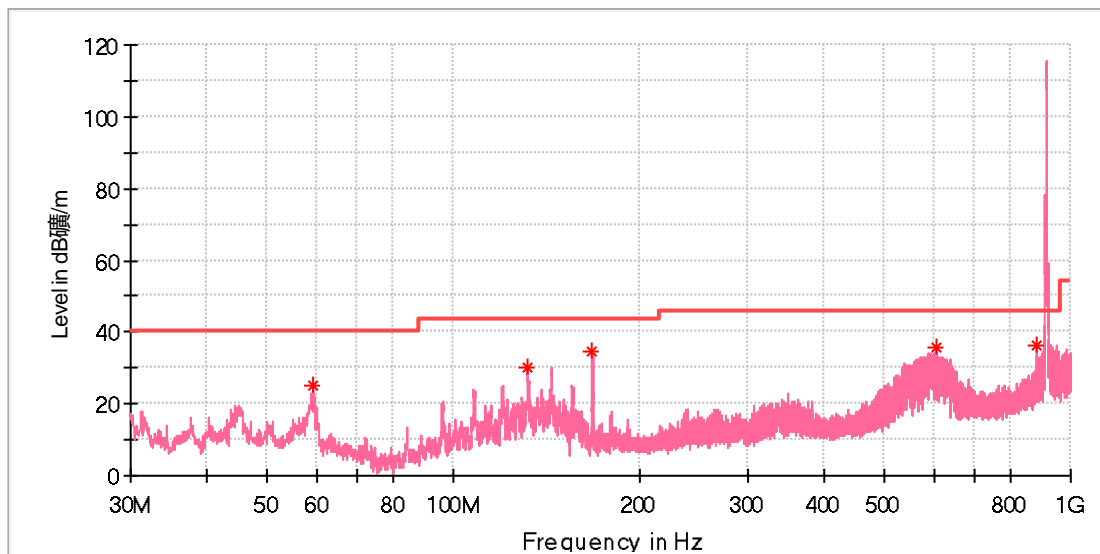
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
58.391154	15.36	40.00	24.64	100.0	H	36.0	-19.1
132.073846	37.24	43.50	6.26	100.0	H	116.0	-22.3
143.975000	42.23	43.50	1.27	100.0	H	150.0	-22.6
239.967692	29.16	46.00	16.84	100.0	H	309.0	-18.0
361.404231	27.40	46.00	18.60	100.0	H	251.0	-14.9
613.343077	32.44	46.00	13.56	100.0	H	251.0	-10.0

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
143.857500	40.12	43.50	3.38	105.0	H	155.0	-22.6

EUT Information

EUT Name:	WisDuo LPWAN+BLE Module
Model:	RAK11720
Test Mode:	DTS 500K_SF7_915.8MHz
Order No/Sample No:	168478328A003697710-003
Test Voltage::	DC 5V From USB
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

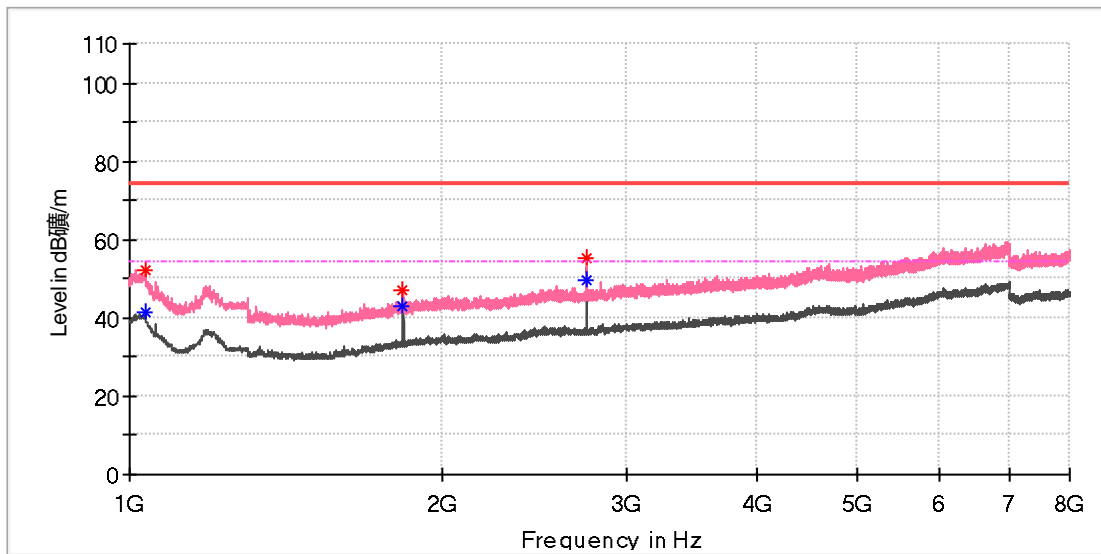
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
59.323846	25.13	40.00	14.87	100.0	V	345.0	-19.2
132.073846	30.35	43.50	13.15	100.0	V	214.0	-22.3
168.038462	34.68	43.50	8.82	100.0	V	75.0	-21.7
604.389231	35.75	46.00	10.25	100.0	V	308.0	-10.1
883.711923	36.30	46.00	9.70	100.0	V	345.0	-5.5

Final_Result

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

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: DTS 500K_SF7_915.8MHz
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

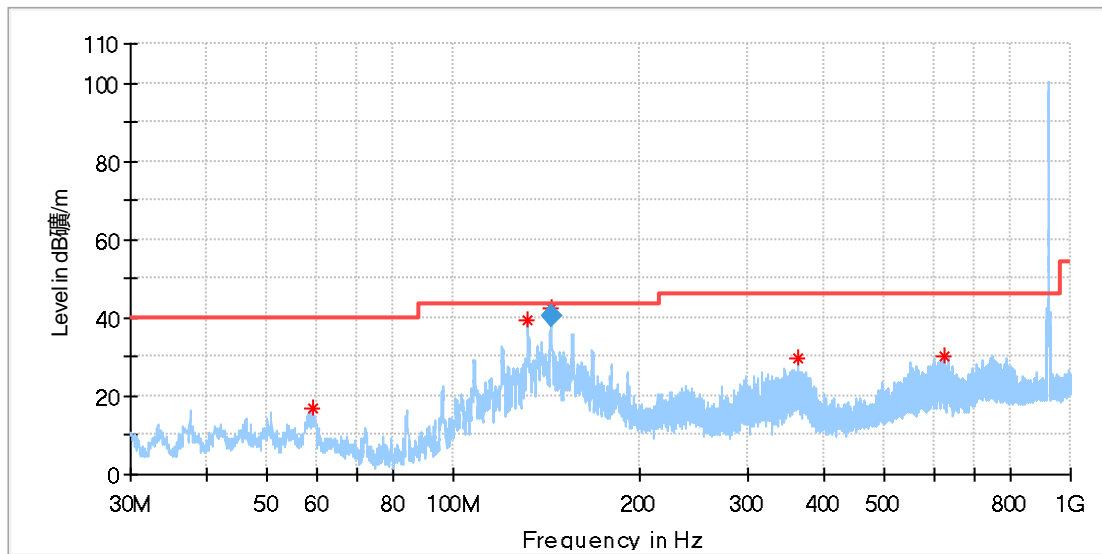
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1035.500000	52.17	---	74.00	21.83	150.0	V	317.0	-0.2
1035.500000	---	41.54	54.00	12.46	150.0	V	317.0	-0.2
1830.975000	46.95	---	74.00	27.05	150.0	V	289.0	4.9
1831.533333	---	43.15	54.00	10.85	150.0	V	289.0	4.9
2747.758333	55.36	---	74.00	18.64	150.0	V	139.0	7.8
2748.316667	---	49.38	54.00	4.62	150.0	V	139.0	7.8

Final_Result

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

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: DTS 500K_SF7_920.6MHz
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

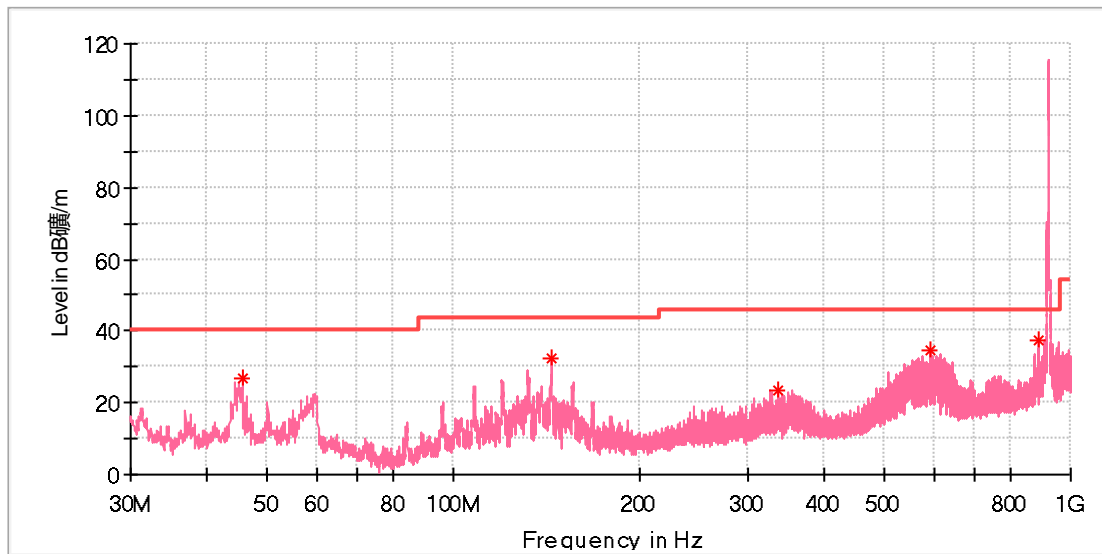
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
59.361154	17.09	40.00	22.91	100.0	H	354.0	-19.2
131.999231	39.28	43.50	4.22	100.0	H	311.0	-22.3
144.012308	42.39	43.50	1.11	100.0	H	138.0	-22.6
360.620769	29.76	46.00	16.24	100.0	H	254.0	-14.9
625.766539	30.00	46.00	16.00	100.0	H	254.0	-9.8

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
143.939731	40.25	43.50	3.25	105.0	H	133.0	-22.6

EUT Information

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: DTS 500K_SF7_920.6MHz
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

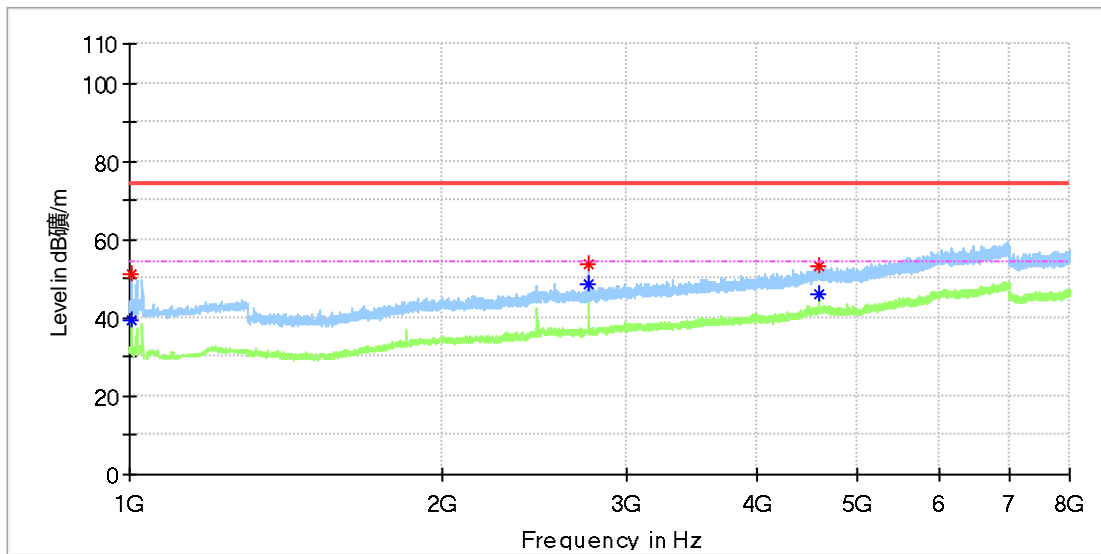
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
45.520000	26.66	40.00	13.34	100.0	V	187.0	-19.1
144.049615	32.43	43.50	11.07	100.0	V	219.0	-22.6
336.631923	23.39	46.00	22.61	100.0	V	155.0	-15.5
592.973077	34.49	46.00	11.51	100.0	V	0.0	-10.3
888.785769	37.30	46.00	8.70	100.0	V	0.0	-5.5

Final_Result

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

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: DTS 500K_SF7_920.6MHz
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

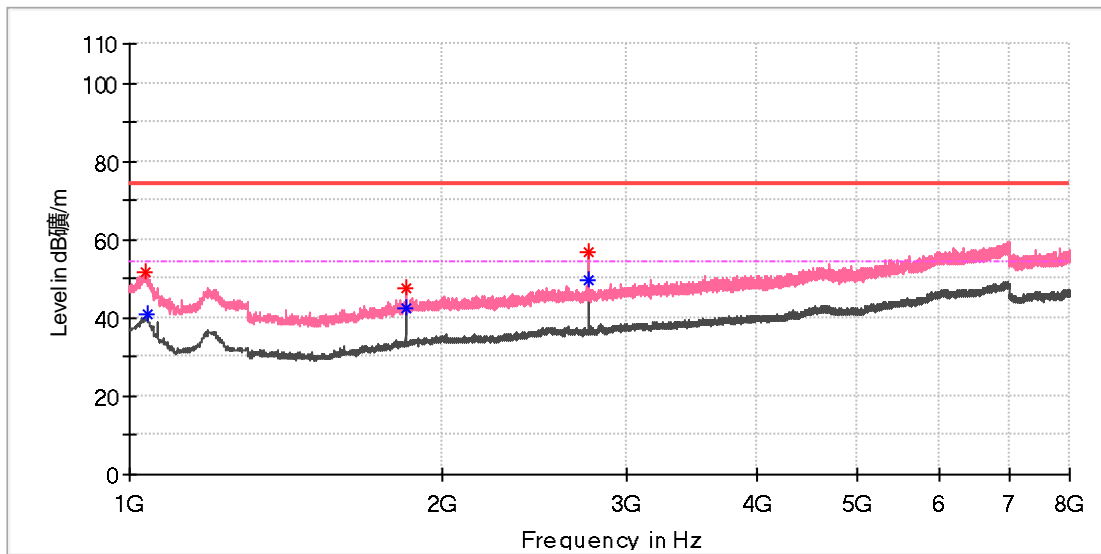
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1004.500000	51.09	---	74.00	22.91	150.0	H	358.0	-0.1
1004.500000	---	39.19	54.00	14.81	150.0	H	358.0	-0.1
2761.716667	---	48.35	54.00	5.65	150.0	H	0.0	7.9
2762.275000	53.48	---	74.00	20.52	150.0	H	0.0	7.9
4597.516667	53.04	---	74.00	20.96	150.0	H	146.0	12.0
4602.541667	---	46.28	54.00	7.72	150.0	H	213.0	12.0

Final_Result

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

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: DTS 500K_SF7_920.6MHz
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 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)
1034.500000	51.50	---	74.00	22.50	150.0	V	284.0	-0.2
1040.000000	---	40.72	54.00	13.28	150.0	V	284.0	-0.2
1841.025000	47.77	---	74.00	26.23	150.0	V	71.0	4.9
1841.025000	---	42.66	54.00	11.34	150.0	V	71.0	4.9
2761.158333	56.61	---	74.00	17.39	150.0	V	280.0	7.9
2762.275000	---	49.84	54.00	4.16	150.0	V	280.0	7.9

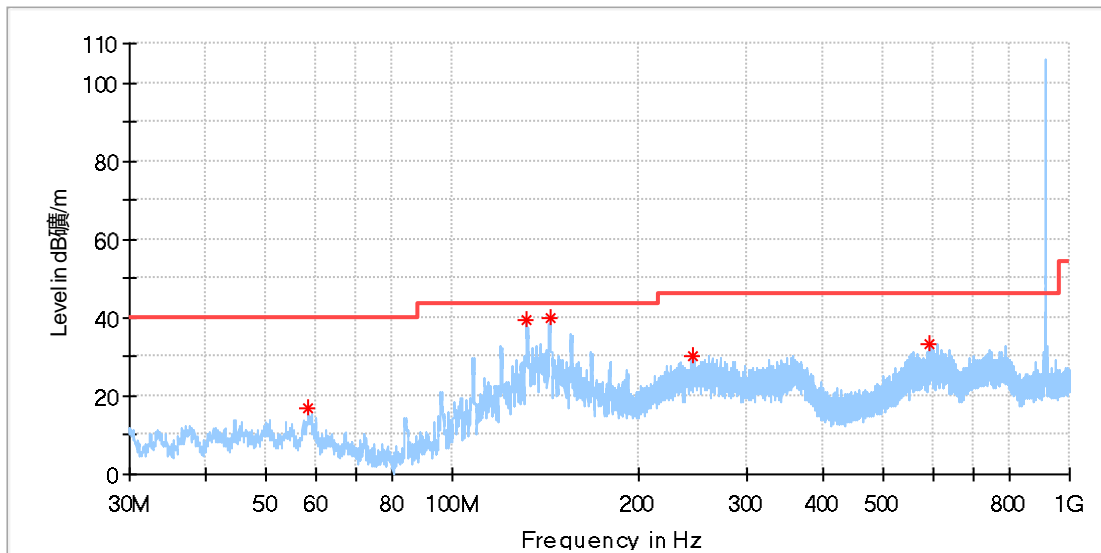
Final_Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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Lora FHSS, Configuration 1:

EUT Information

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: FHSS 125K_SF7_915.1MHz
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

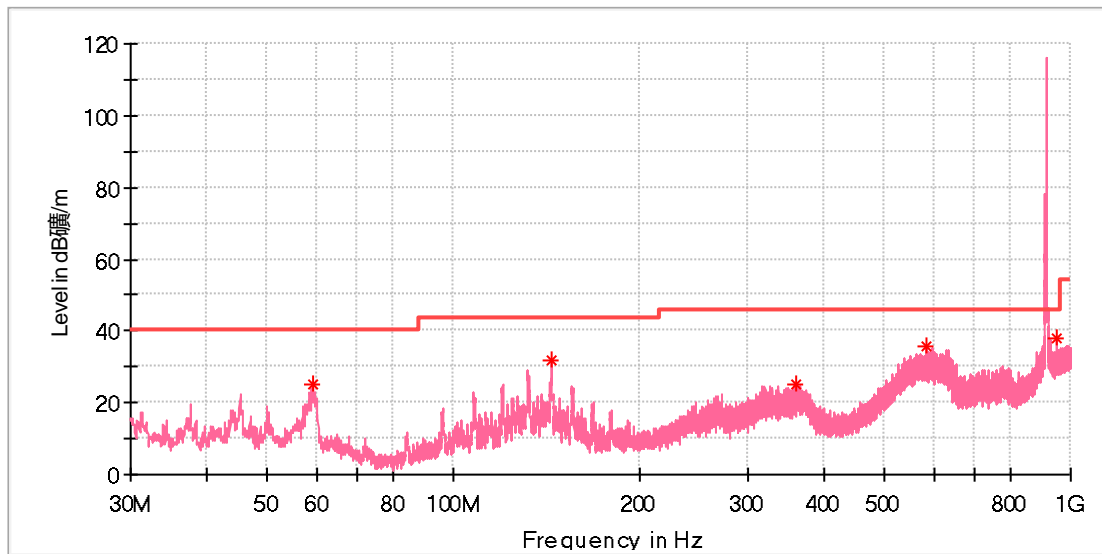
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
58.391154	16.76	40.00	23.24	100.0	H	216.0	-19.1
131.887308	39.63	43.50	3.87	100.0	H	270.0	-22.3
143.863077	39.90	43.50	3.60	100.0	H	270.0	-22.6
245.974231	30.34	46.00	15.66	100.0	H	160.0	-17.8
594.129615	33.12	46.00	12.88	100.0	H	295.0	-10.3

Final_Result

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

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: FHSS 125K_SF7_915.1MHz
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

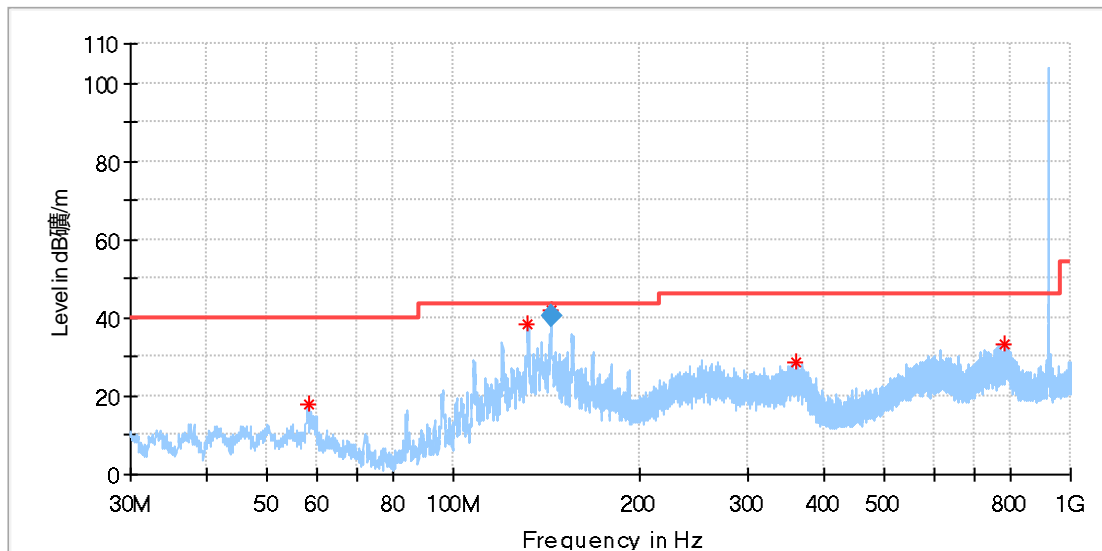
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
59.361154	24.97	40.00	15.03	100.0	V	223.0	-19.2
143.975000	31.64	43.50	11.86	100.0	V	206.0	-22.6
359.315000	25.34	46.00	20.66	100.0	V	181.0	-15.0
584.840000	35.75	46.00	10.25	100.0	V	67.0	-10.5
947.097692	38.02	46.00	7.98	100.0	V	271.0	-4.9

Final_Result

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

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: FHSS 125K_SF7_921.5MHz
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

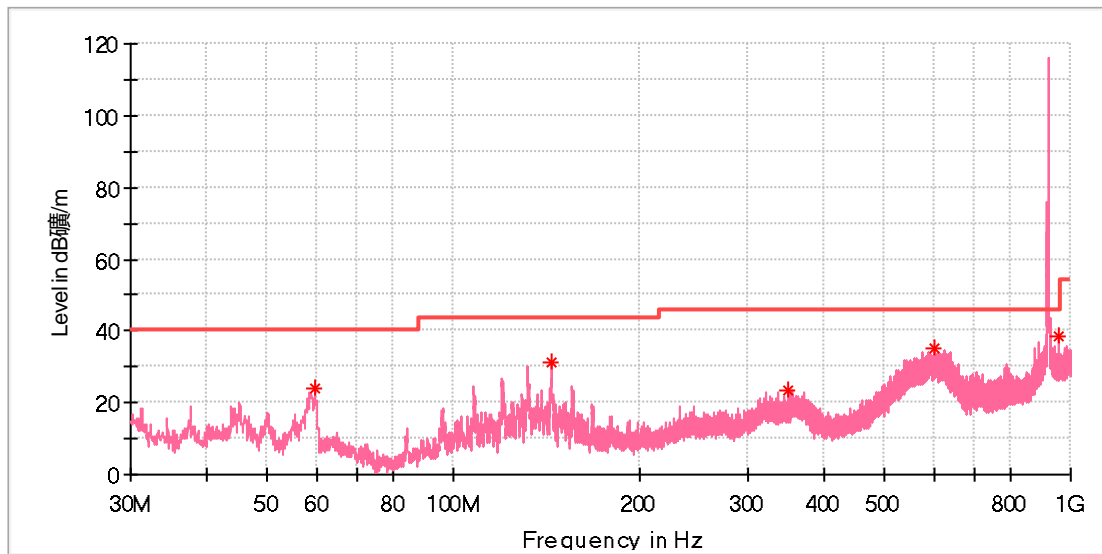
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
58.241923	17.86	40.00	22.14	100.0	H	133.0	-19.1
132.223077	38.49	43.50	5.01	100.0	H	315.0	-22.3
144.049615	42.06	43.50	1.44	100.0	H	149.0	-22.6
358.680769	28.51	46.00	17.49	100.0	H	133.0	-15.0
782.757308	33.37	46.00	12.63	100.0	H	92.0	-7.1

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
144.061077	40.17	43.50	3.33	105.0	H	144.0	-22.6

EUT Information

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: FHSS 125K_SF7_921.5MHz
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

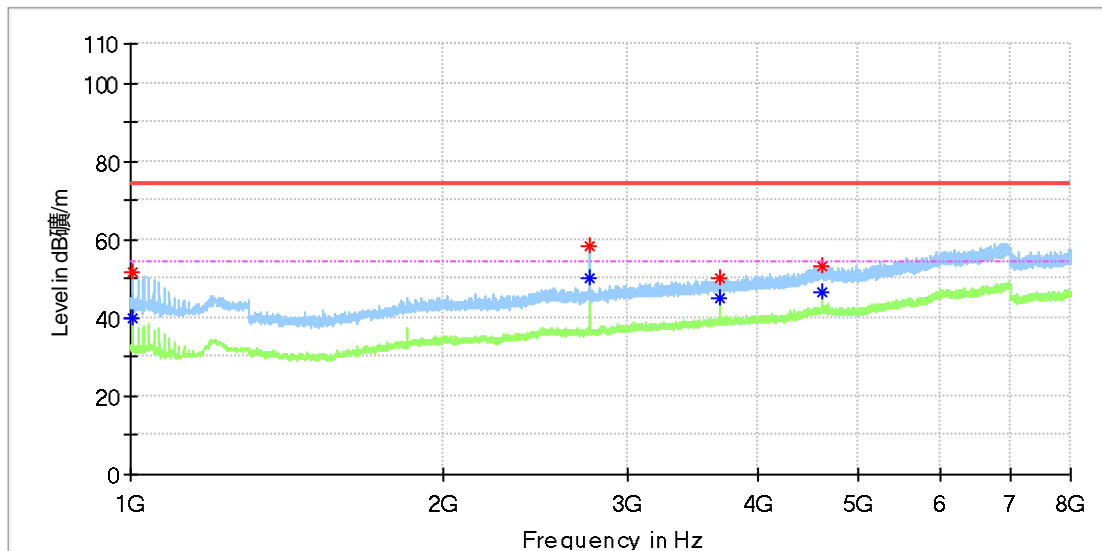
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
59.734231	23.79	40.00	16.21	100.0	V	136.0	-19.3
143.937692	31.41	43.50	12.09	100.0	V	231.0	-22.6
349.764231	23.41	46.00	22.59	100.0	V	207.0	-15.2
601.889615	35.06	46.00	10.94	100.0	V	95.0	-10.2
953.514615	38.26	46.00	7.74	100.0	V	301.0	-4.8

Final_Result

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

EUT Name:	WisDuo LPWAN+BLE Module
Model:	RAK11720
Test Mode:	FHSS 125K_SF7_921.5MHz
Order No/Sample No:	168478328A003697710-003
Test Voltage::	DC 5V From USB
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

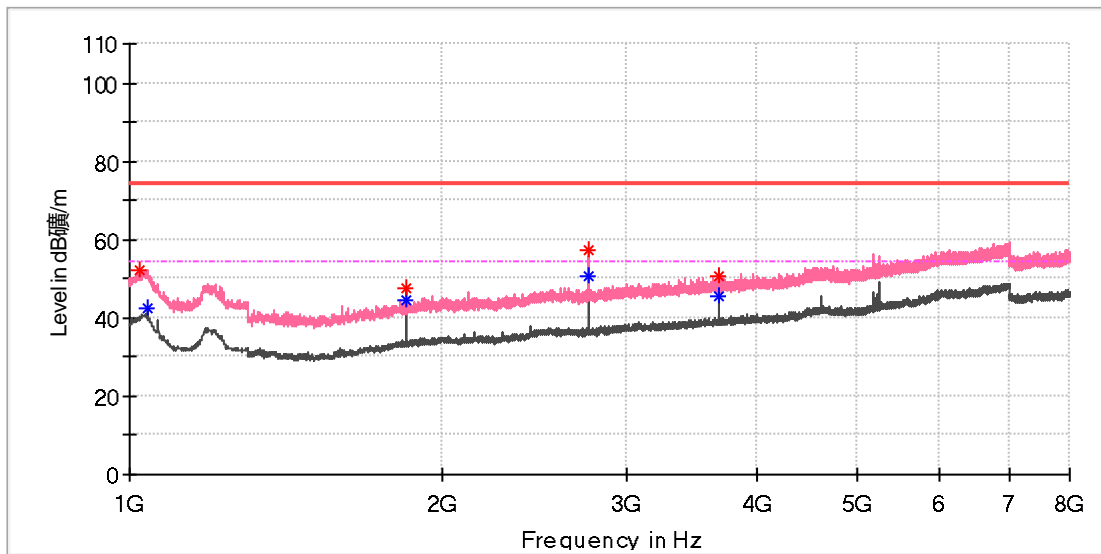
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1005.500000	51.50	---	74.00	22.50	150.0	H	329.0	-0.1
1005.500000	---	39.82	54.00	14.18	150.0	H	329.0	-0.1
2764.508333	58.15	---	74.00	15.85	150.0	H	67.0	7.9
2765.066667	---	50.07	54.00	3.93	150.0	H	67.0	7.9
3685.758333	50.13	---	74.00	23.87	150.0	H	67.0	9.5
3685.758333	---	44.96	54.00	9.04	150.0	H	67.0	9.5
4607.566667	---	46.35	54.00	7.65	150.0	H	203.0	12.0
4611.475000	53.02	---	74.00	20.98	150.0	H	2.0	12.0

Final_Result

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

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: FHSS 125K_SF7_921.5MHz
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

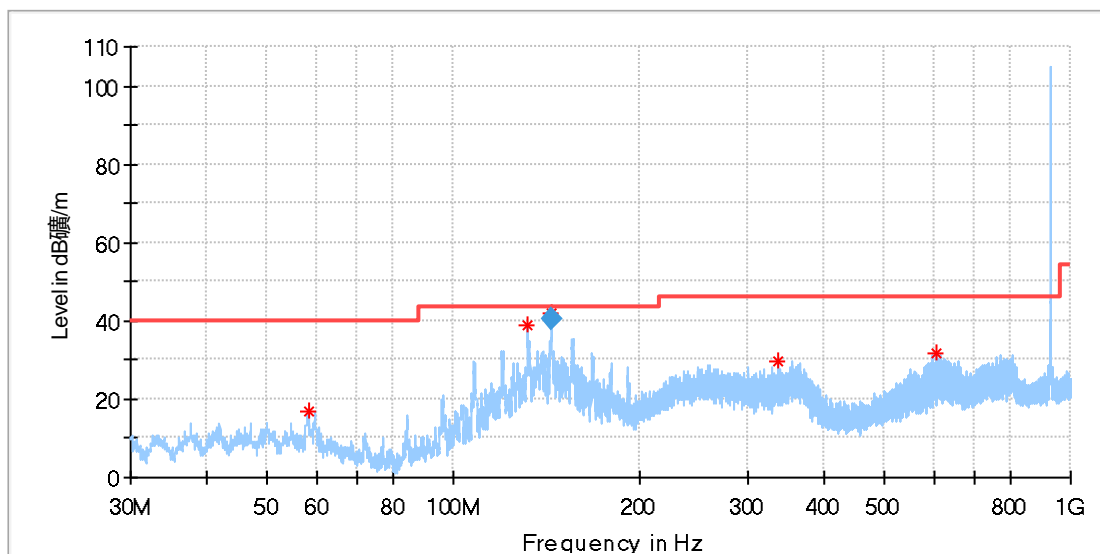
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1024.500000	52.09	---	74.00	21.91	150.0	V	348.0	-0.2
1041.500000	---	42.43	54.00	11.57	150.0	V	0.0	-0.2
1842.700000	47.59	---	74.00	26.41	150.0	V	185.0	4.9
1842.700000	---	44.62	54.00	9.38	150.0	V	185.0	4.9
2763.950000	57.54	---	74.00	16.46	150.0	V	275.0	7.9
2765.066667	---	50.52	54.00	3.48	150.0	V	335.0	7.9
3685.758333	50.82	---	74.00	23.18	150.0	V	126.0	9.5
3685.758333	---	45.71	54.00	8.29	150.0	V	126.0	9.5

Final_Result

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

EUT Name:	WisDuo LPWAN+BLE Module
Model:	RAK11720
Test Mode:	FHSS 125K_SF7_927.7MHz
Order No/Sample No:	168478328A003697710-003
Test Voltage::	DC 5V From USB
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

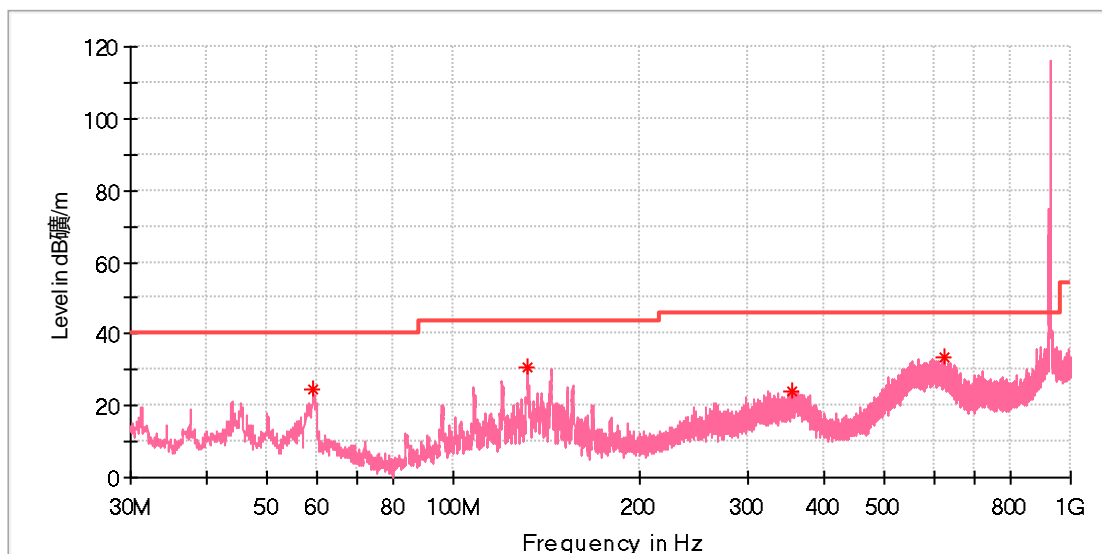
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
58.167308	16.76	40.00	23.24	100.0	H	326.0	-19.1
131.961923	39.00	43.50	4.50	100.0	H	319.0	-22.3
144.049615	42.11	43.50	1.39	100.0	H	319.0	-22.6
336.035000	29.93	46.00	16.07	100.0	H	155.0	-15.5
606.627692	31.61	46.00	14.39	100.0	H	295.0	-10.1

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
144.011577	40.38	43.50	3.12	100.0	H	324.0	-22.6

EUT Information

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: FHSS 125K_SF7_927.7MHz
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

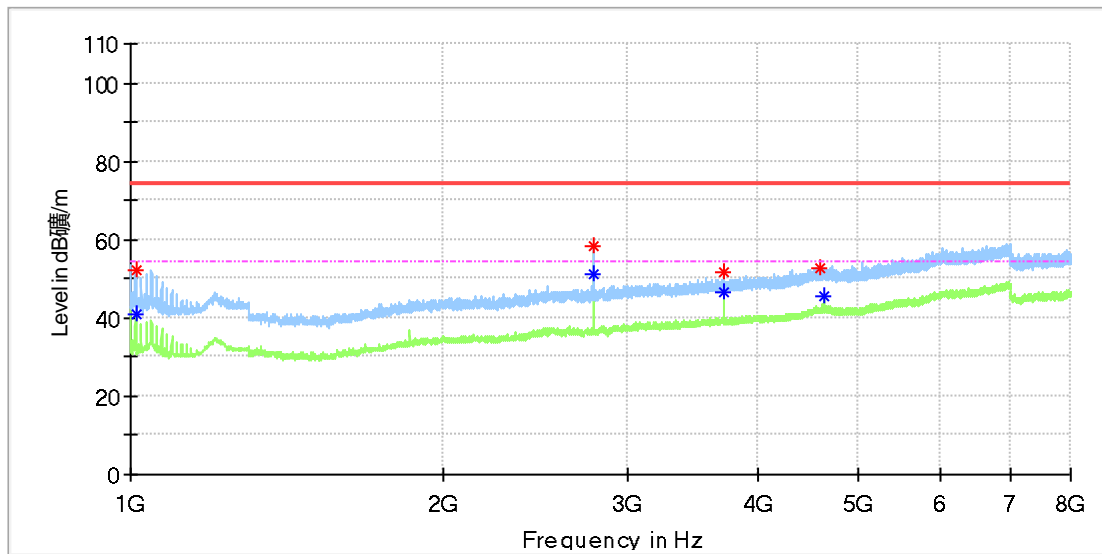
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
59.398462	24.44	40.00	15.56	100.0	V	354.0	-19.2
131.999231	30.65	43.50	12.85	100.0	V	232.0	-22.3
354.017308	23.95	46.00	22.05	100.0	V	177.0	-15.1
623.565385	33.56	46.00	12.44	100.0	V	354.0	-9.8

Final_Result

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

EUT Name:	WisDuo LPWAN+BLE Module
Model:	RAK11720
Test Mode:	FHSS 125K_SF7_927.7MHz
Order No/Sample No:	168478328A003697710-003
Test Voltage::	DC 5V From USB
Remark:	Temp 24 Humi:50%
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)
1011.500000	---	40.85	54.00	13.15	150.0	H	334.0	-0.2
1012.000000	52.14	---	74.00	21.86	150.0	H	334.0	-0.2
2783.491667	58.26	---	74.00	15.74	150.0	H	76.0	7.9
2784.050000	---	51.29	54.00	2.71	150.0	H	76.0	7.9
3711.441667	51.47	---	74.00	22.53	150.0	H	4.0	9.6
3711.441667	---	46.61	54.00	7.39	150.0	H	4.0	9.6
4591.375000	52.90	---	74.00	21.10	150.0	H	113.0	12.0
4639.950000	---	45.44	54.00	8.56	150.0	H	87.0	12.0

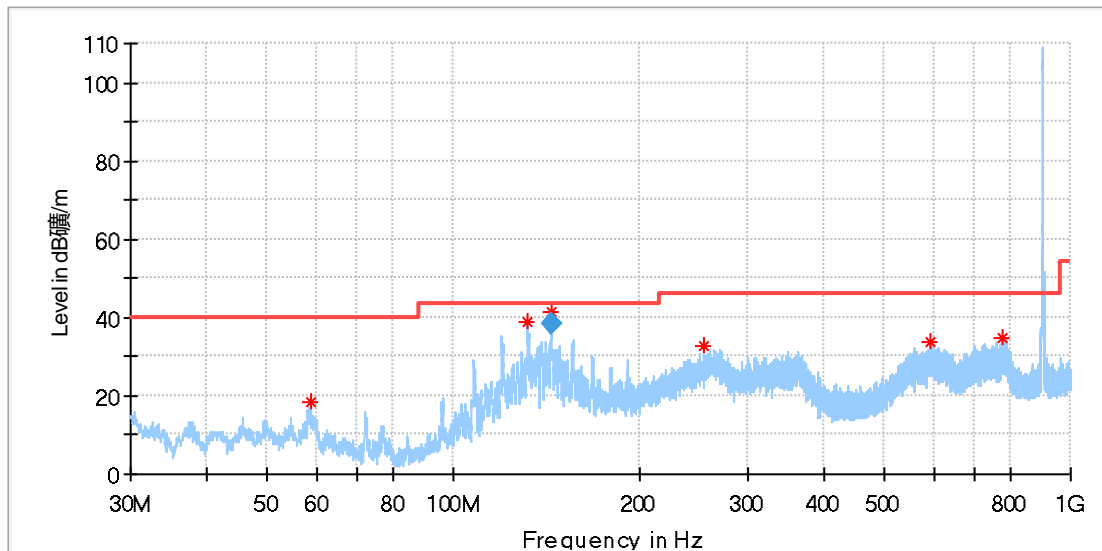
Final_Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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Lora DTS, Configuration 2:

EUT Information

EUT Name:	WisDuo LPWAN+BLE Module
Model:	RAK11720
Test Mode:	DTS 500K_SF10_902.5MHz
Order No/Sample No:	168478328A003697710-003
Test Voltage::	DC 5V From USB
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

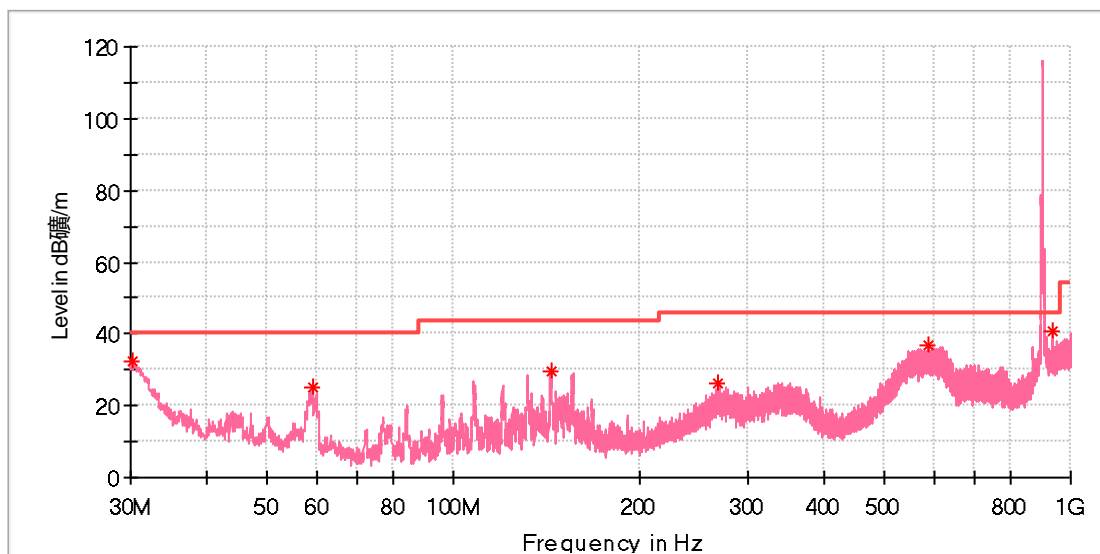
Frequency (MHz)	MaxiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
58.726923	18.65	40.00	21.35	100.0	H	151.0	-19.2
131.999231	38.99	43.50	4.51	100.0	H	276.0	-22.3
143.975000	41.69	43.50	1.81	100.0	H	276.0	-22.6
254.070000	32.65	46.00	13.35	100.0	H	151.0	-17.6
594.204231	33.52	46.00	12.48	100.0	H	291.0	-10.3
777.571539	34.63	46.00	11.37	100.0	H	284.0	-7.1

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
144.244923	38.24	43.50	5.26	105.0	H	274.0	-22.6

EUT Information

EUT Name:	WisDuo LPWAN+BLE Module
Model:	RAK11720
Test Mode:	DTS 500K_SF10_902.5MHz
Order No/Sample No:	168478328A003697710-003
Test Voltage::	DC 5V From USB
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

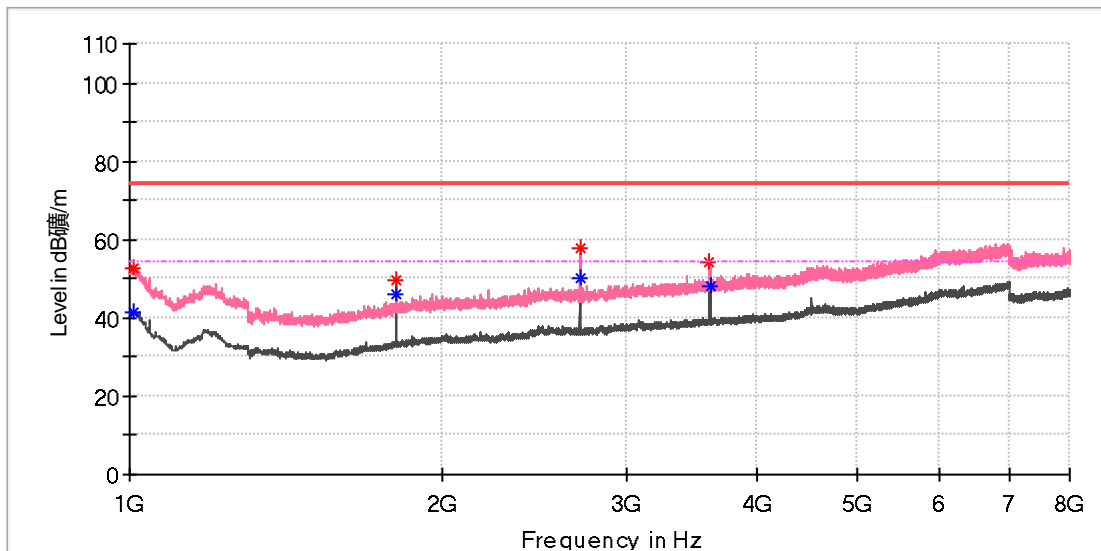
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.149231	32.57	40.00	7.43	100.0	V	256.0	-23.3
59.100000	24.99	40.00	15.01	100.0	V	233.0	-19.2
144.273462	29.56	43.50	13.94	100.0	V	218.0	-22.6
268.657308	26.23	46.00	19.77	100.0	V	163.0	-17.3
588.682692	36.64	46.00	9.36	100.0	V	62.0	-10.4
934.636923	40.70	46.00	5.30	100.0	V	272.0	-5.1

Final_Result

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

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: DTS 500K_SF10_902.5MHz
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

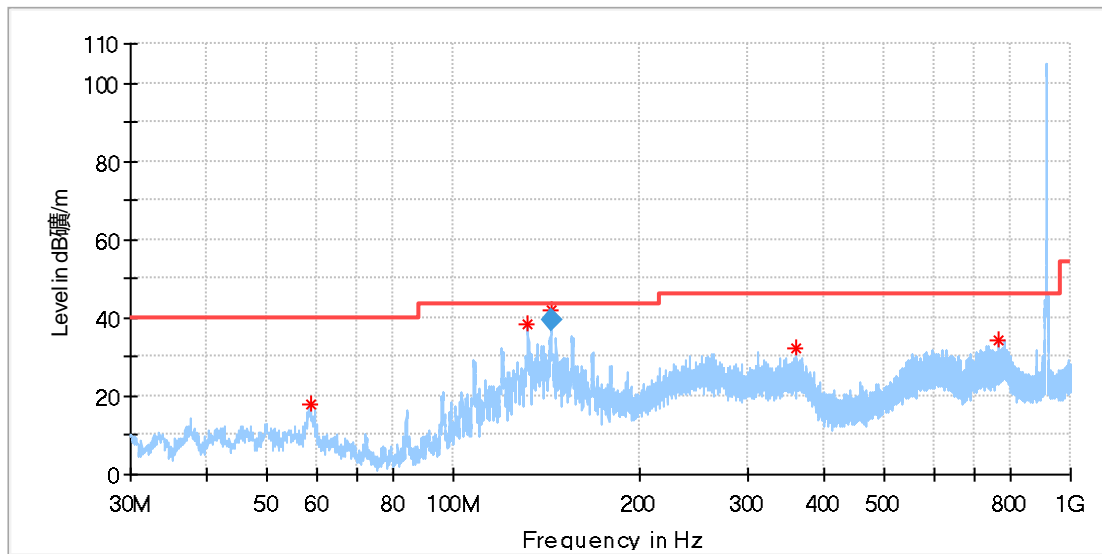
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1007.000000	---	41.51	54.00	12.49	150.0	V	2.0	-0.1
1008.000000	52.86	---	74.00	21.14	150.0	V	2.0	-0.1
1804.733333	49.85	---	74.00	24.15	150.0	V	220.0	4.8
1805.291667	---	45.97	54.00	8.03	150.0	V	200.0	4.8
2706.441667	---	50.09	54.00	3.91	150.0	V	190.0	7.5
2707.000000	58.04	---	74.00	15.96	150.0	V	190.0	7.6
3609.266667	54.03	---	74.00	19.97	150.0	V	117.0	9.4
3609.825000	---	48.17	54.00	5.83	150.0	V	117.0	9.4

Final_Result

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

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: DTS 500K_SF10_914.5MHz
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

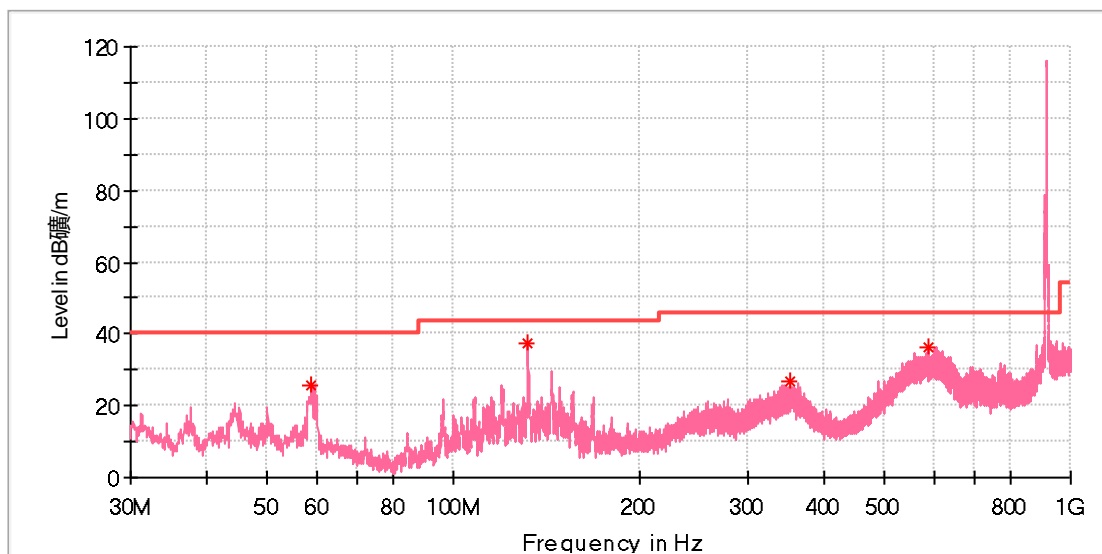
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
58.838846	18.09	40.00	21.91	100.0	H	343.0	-19.2
131.961923	38.52	43.50	4.98	100.0	H	156.0	-22.3
143.937692	41.72	43.50	1.78	100.0	H	141.0	-22.6
358.568846	32.15	46.00	13.85	100.0	H	148.0	-15.0
762.835000	34.52	46.00	11.48	100.0	H	274.0	-7.4

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
144.357423	39.52	43.50	3.98	100.0	H	139.0	-22.6

EUT Information

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: DTS 500K_SF10_914.5MHz
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

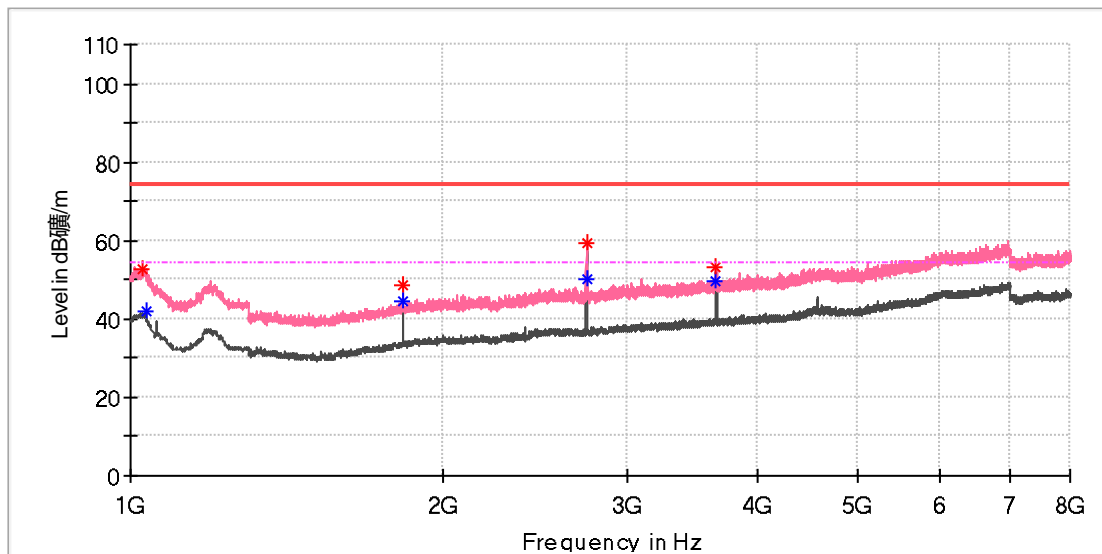
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
58.988077	25.44	40.00	14.56	100.0	V	0.0	-19.2
132.185769	37.28	43.50	6.22	100.0	V	322.0	-22.3
350.696923	26.84	46.00	19.16	100.0	V	167.0	-15.2
588.608077	36.53	46.00	9.47	100.0	V	77.0	-10.4

Final_Result

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

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: DTS 500K_SF10_914.5MHz
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

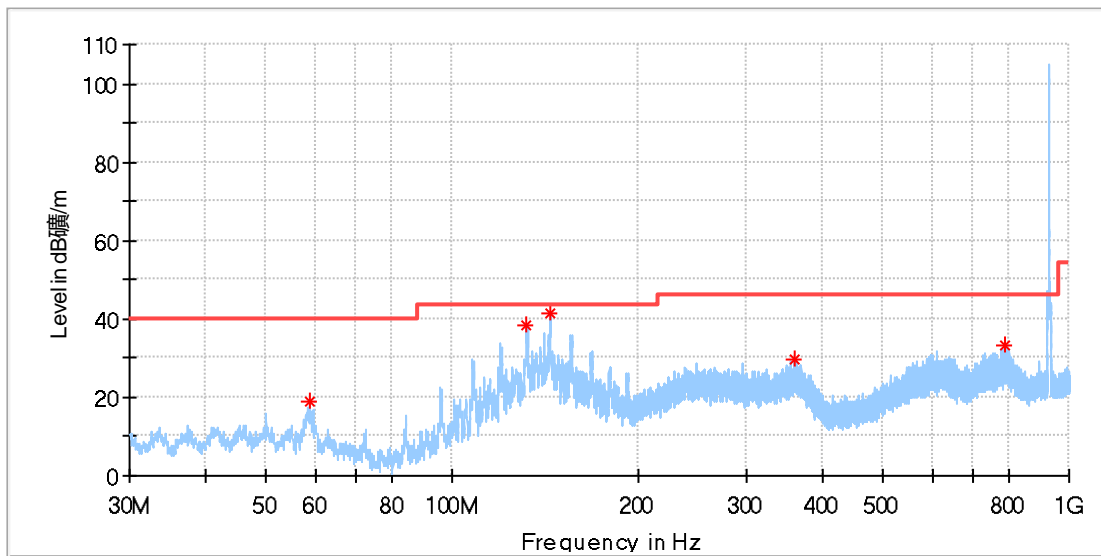
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1027.500000	52.91	---	74.00	21.09	150.0	V	0.0	-0.2
1034.000000	---	41.98	54.00	12.02	150.0	V	356.0	-0.2
1828.741667	48.36	---	74.00	25.64	150.0	V	305.0	4.9
1828.741667	---	44.75	54.00	9.25	150.0	V	305.0	4.9
2743.291667	59.21	---	74.00	14.79	150.0	V	254.0	7.8
2744.408333	---	50.05	54.00	3.95	150.0	V	92.0	7.8
3657.841667	53.43	---	74.00	20.57	150.0	V	121.0	9.4
3657.841667	---	49.77	54.00	4.23	150.0	V	121.0	9.4

Final_Result

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

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: DTS 500K_SF10_927.1MHz
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

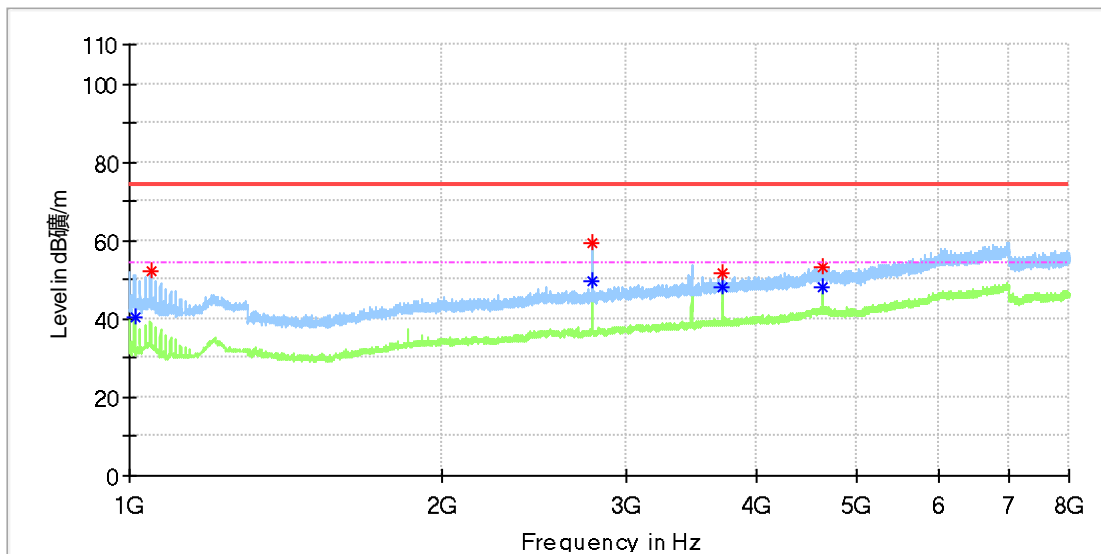
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
58.689615	18.90	40.00	21.10	100.0	H	42.0	-19.1
131.999231	38.25	43.50	5.25	100.0	H	154.0	-22.3
144.049615	41.29	43.50	2.21	100.0	H	112.0	-22.6
359.091154	29.54	46.00	16.46	100.0	H	175.0	-15.0
786.600000	33.07	46.00	12.93	100.0	H	283.0	-7.0

Final_Result

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

EUT Name:	WisDuo LPWAN+BLE Module
Model:	RAK11720
Test Mode:	DTS 500K_SF10_927.1MHz
Order No/Sample No:	168478328A003697710-003
Test Voltage::	DC 5V From USB
Remark:	Temp 24 Humi:50%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

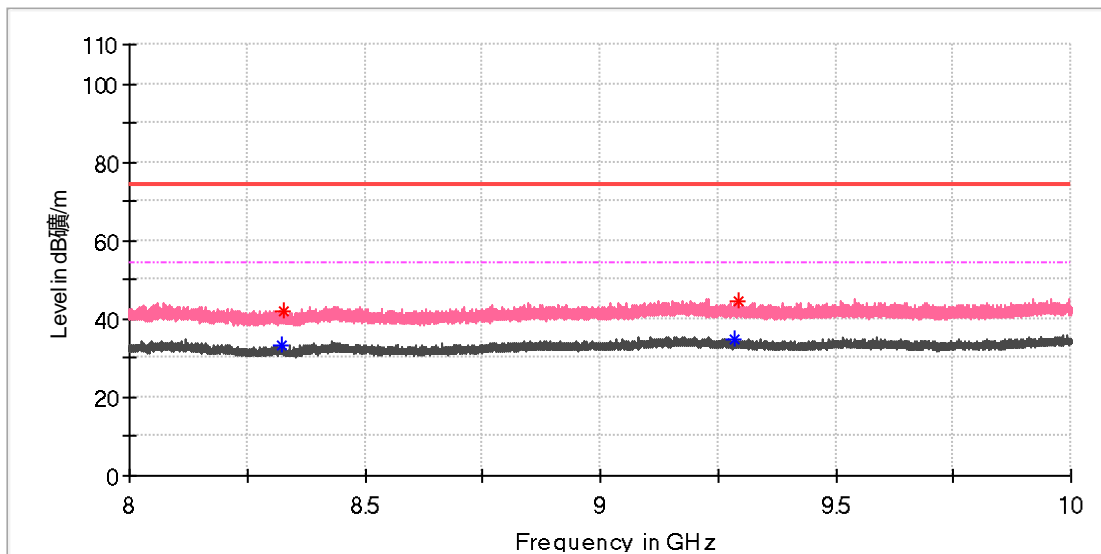
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1011.500000	---	40.24	54.00	13.76	150.0	H	227.0	-0.2
1048.000000	51.98	---	74.00	22.02	150.0	H	347.0	-0.2
2781.816667	---	49.39	54.00	4.61	150.0	H	355.0	7.9
2782.933333	59.19	---	74.00	14.81	150.0	H	71.0	7.9
3711.441667	51.65	---	74.00	22.35	150.0	H	231.0	9.6
3711.441667	---	48.07	54.00	5.93	150.0	H	231.0	9.6
4639.391667	53.21	---	74.00	20.79	150.0	H	82.0	12.0
4639.391667	---	47.95	54.00	6.05	150.0	H	82.0	12.0

Final_Result

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

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: DTS 500K_SF10_927.1MHz
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 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)
8325.100000	---	33.31	54.00	20.69	150.0	V	225.0	8.8
8329.000000	41.94	---	74.00	32.06	150.0	V	356.0	8.8
9283.200000	---	34.64	54.00	19.36	150.0	V	54.0	10.3
9292.400000	44.46	---	74.00	29.54	150.0	V	180.0	10.2

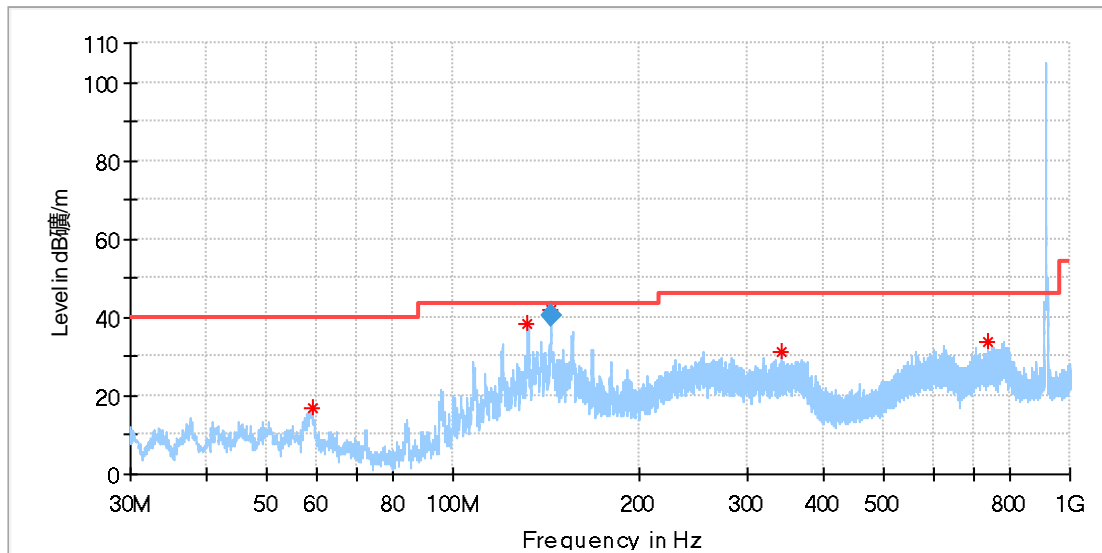
Final_Result

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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Co-located mode (Lora FHSS+BLE)

EUT Information

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: BLE+Lora
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical Freqs

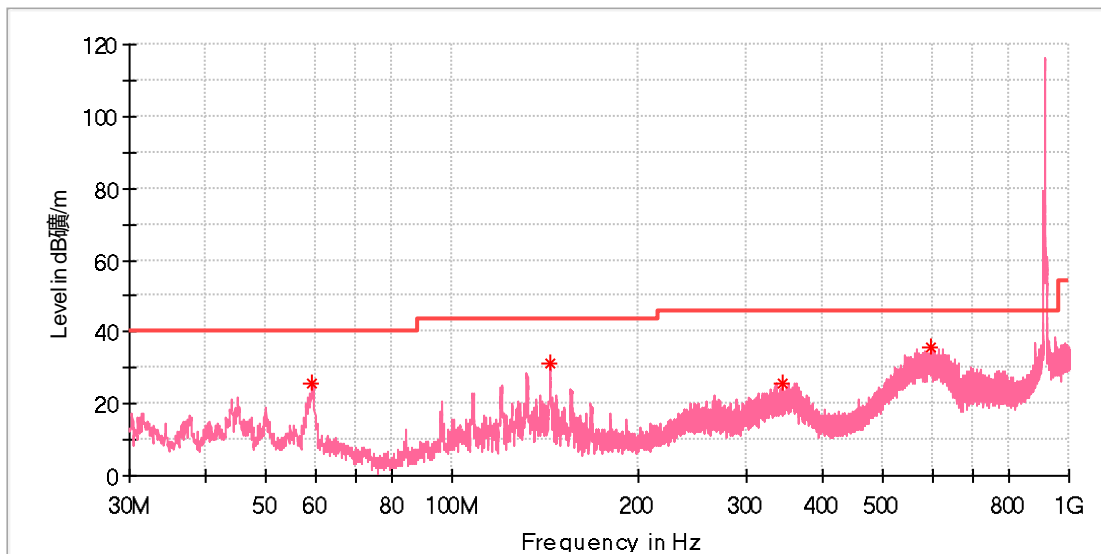
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
59.323846	16.80	40.00	23.20	100.0	H	8.0	-19.2
131.924615	38.44	43.50	5.06	100.0	H	328.0	-22.3
144.049615	41.78	43.50	1.72	100.0	H	133.0	-22.6
340.437308	31.03	46.00	14.97	100.0	H	155.0	-15.4
737.764231	33.81	46.00	12.19	100.0	H	276.0	-7.8

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
144.111731	40.24	43.50	3.26	100.0	H	138.0	-22.6

EUT Information

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: BLE+Lora
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

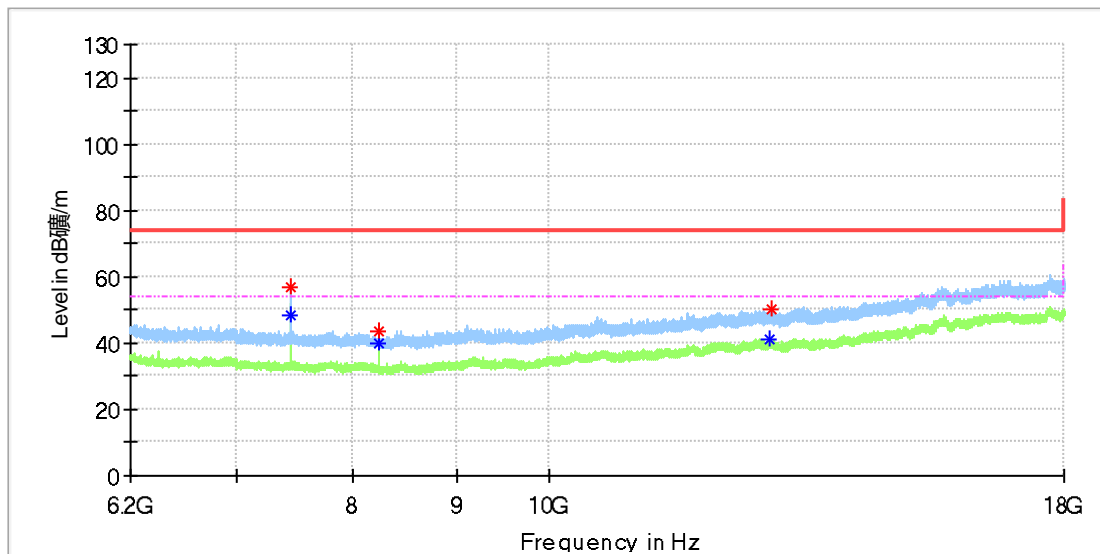
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
59.211923	25.62	40.00	14.38	100.0	V	236.0	-19.2
144.049615	31.00	43.50	12.50	100.0	V	217.0	-22.6
342.340000	25.88	46.00	20.12	100.0	V	185.0	-15.4
595.621923	35.62	46.00	10.38	100.0	V	90.0	-10.3

Final_Result

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

EUT Name: WisDuo LPWAN+BLE Module
 Model: RAK11720
 Test Mode: BLE+Lora
 Order No/Sample No: 168478328A003697710-003
 Test Voltage:: DC 5V From USB
 Remark: Temp 24 Humi:50%
 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)
7438.508333	---	48.60	54.00	5.40	150.0	H	52.0	8.4
7439.983333	56.71	---	74.00	17.29	150.0	H	52.0	8.4
8229.108333	43.46	---	74.00	30.54	150.0	H	63.0	8.8
8229.108333	---	40.13	54.00	13.87	150.0	H	63.0	8.8
12864.541667	---	40.98	54.00	13.02	150.0	H	97.0	15.4
12893.058333	50.18	---	74.00	23.82	150.0	H	354.0	15.5

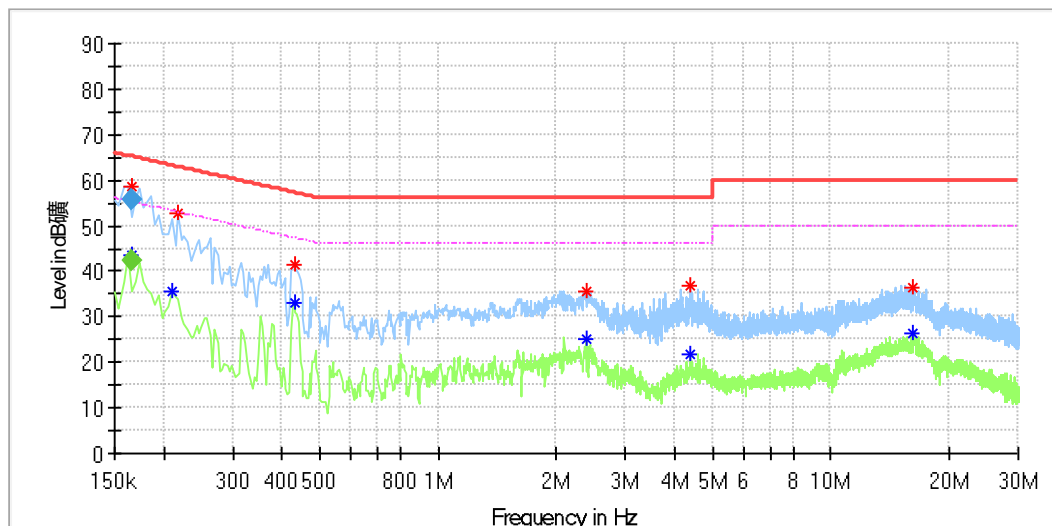
Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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Appendix B.8: Test Results of Conducted Emission on AC Mains

EUT Information

EUT Name: WisDuo LPWAN+BLE Module
 Order Number: 168478328 50(P01450873)
 Model: RAK11720
 Test Mode: On, Normal Operating (FCC-LoRa1+BLE)
 Test Voltage: DC 5V Via USB port
 Test Standard: EN 301489-1
 Test By:/Review By: Junhua/ Shower Dai
 Tem./Hum./Pressure: 24.3°C/52.2%/101kPa
 Remark: SR2



Critical Freqs

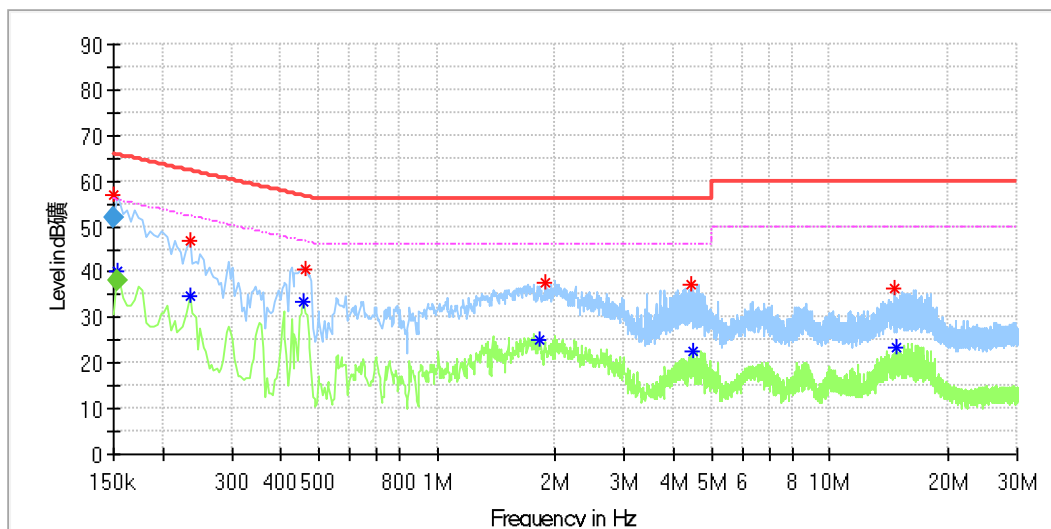
Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.165500	58.77	---	65.36	6.59	L1	9.9
0.166500	---	43.71	55.36	11.66	L1	9.9
0.210000	---	35.70	53.21	17.50	L1	9.9
0.218000	52.85	---	62.90	10.04	L1	9.9
0.430000	---	33.15	47.25	14.10	L1	9.9
0.430000	41.52	---	57.25	15.73	L1	9.9
2.374000	---	25.11	46.00	20.89	L1	10.2
2.382000	35.44	---	56.00	20.56	L1	10.2
4.366000	---	21.67	46.00	24.33	L1	10.2
4.366000	36.64	---	56.00	19.36	L1	10.2
16.186000	---	26.51	50.00	23.49	L1	10.4
16.206000	36.43	---	60.00	23.57	L1	10.4

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.165500	55.79	---	65.18	9.39	1000.0	9.000	L1	9.9
0.166500	---	42.25	55.13	12.89	1000.0	9.000	L1	9.9

EUT Information

EUT Name:	WisDuo LPWAN+BLE Module
Order Number:	168478328 50(P01450873)
Model:	RAK11720
Test Mode:	On, Normal Operating (FCC-LoRa1+BLE)
Test Voltage:	DC 5V Via USB port
Test Standard:	EN 301489-1
Test By./Review By:	Junhua/ Shower Dai
Tem./Hum./Pressure:	24.3°C/52.2%/101kPa
Remark:	SR2



Critical Freqs

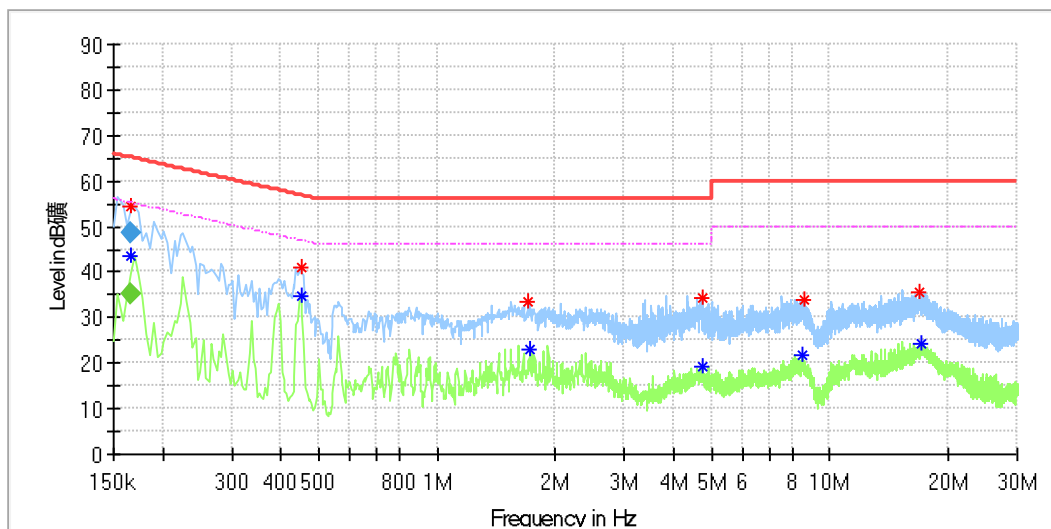
Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.150000	56.86	---	65.78	8.92	N	9.8
0.154000	---	40.22	55.78	15.56	N	9.8
0.234000	---	34.65	52.31	17.65	N	9.8
0.234000	47.03	---	62.31	15.27	N	9.8
0.458000	---	33.31	46.73	13.42	N	9.8
0.462000	40.46	---	56.66	16.19	N	9.8
1.830000	---	25.24	46.00	20.76	N	9.8
1.882000	37.64	---	56.00	18.36	N	9.8
4.446000	37.34	---	56.00	18.66	N	9.9
4.474000	---	22.80	46.00	23.20	N	9.9
14.542000	36.62	---	60.00	23.38	N	10.1
14.734000	---	23.41	50.00	26.59	N	10.1

Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	52.09	---	66.00	13.91	1000.0	9.000	N	9.8
0.154000	---	38.24	55.78	17.54	1000.0	9.000	N	9.8

EUT Information

EUT Name:	WisDuo LPWAN+BLE Module
Order Number:	168478328 50(P01450873)
Model:	RAK11720
Test Mode:	On, Normal Operating (FCC-LoRa2+BLE)
Test Voltage:	DC 5V Via USB port
Test Standard:	EN 301489-1
Test By./Review By:	Junhua/ Shower Dai
Tem./Hum./Pressure:	24.3°C/52.2%/101kPa
Remark:	SR2



Critical Freqs

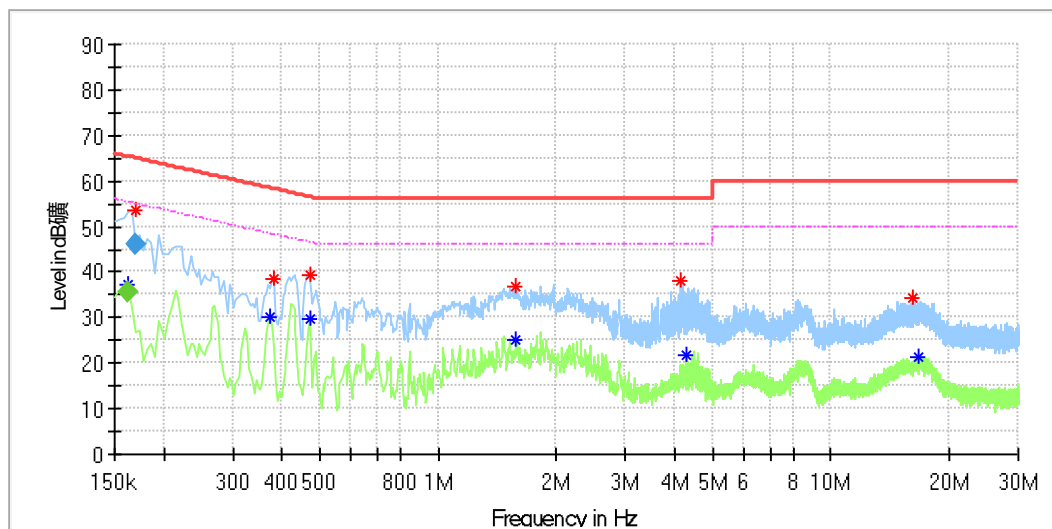
Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.165500	54.32	---	64.96	10.64	L1	9.9
0.165500	---	43.71	54.96	11.25	L1	9.9
0.450000	---	34.76	46.88	12.11	L1	9.9
0.450000	40.86	---	56.88	16.02	L1	9.9
1.710000	33.40	---	56.00	22.60	L1	10.1
1.718000	---	23.12	46.00	22.88	L1	10.1
4.722000	---	19.15	46.00	26.85	L1	10.2
4.730000	34.12	---	56.00	21.88	L1	10.2
8.506000	---	21.65	50.00	28.35	L1	10.3
8.618000	33.97	---	60.00	26.03	L1	10.3
16.814000	35.47	---	60.00	24.53	L1	10.4
17.038000	---	24.16	50.00	25.84	L1	10.4

Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.165500	---	35.08	55.18	20.10	1000.0	9.000	L1	9.9
0.165500	48.40	---	65.18	16.78	1000.0	9.000	L1	9.9

EUT Information

EUT Name:	WisDuo LPWAN+BLE Module
Order Number:	168478328 50(P01450873)
Model:	RAK11720
Test Mode:	On, Normal Operating (FCC-LoRa2+BLE)
Test Voltage:	DC 5V Via USB port
Test Standard:	EN 301489-1
Test By./Review By:	Junhua/ Shower Dai
Tem./Hum./Pressure:	24.3°C/52.2%/101kPa
Remark:	SR2



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.161500	---	37.27	55.36	18.09	N	9.8
0.169500	53.44	---	65.16	11.72	N	9.8
0.374000	---	30.19	48.41	18.23	N	9.8
0.382000	38.56	---	58.24	19.68	N	9.8
0.470000	---	29.90	46.51	16.62	N	9.8
0.470000	39.31	---	56.51	17.20	N	9.8
1.578000	36.77	---	56.00	19.23	N	9.8
1.582000	---	25.12	46.00	20.88	N	9.8
4.126000	38.28	---	56.00	17.72	N	9.9
4.278000	---	21.58	46.00	24.42	N	9.9
16.150000	34.50	---	60.00	25.50	N	10.2
16.710000	---	21.34	50.00	28.66	N	10.2

Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.161500	---	35.68	55.39	19.71	1000.0	9.000	N	9.8
0.169500	46.24	---	64.99	18.74	1000.0	9.000	N	9.8