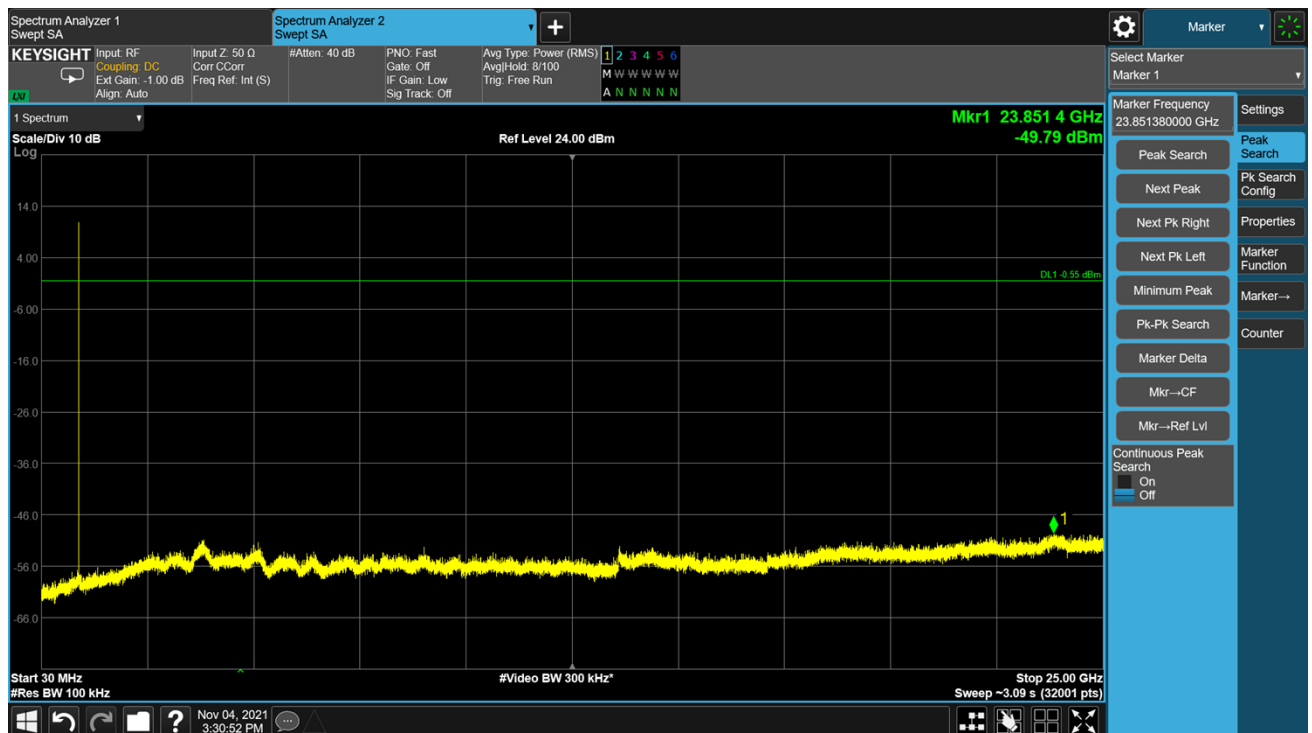
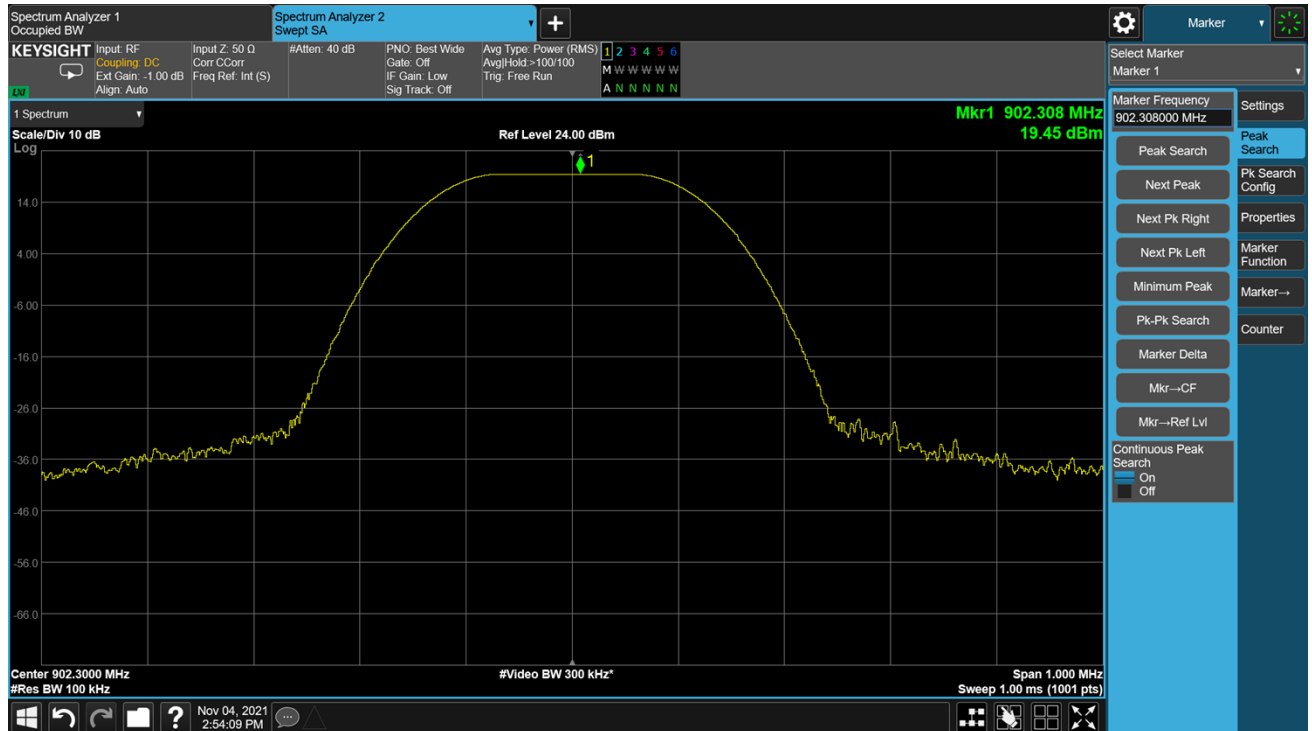
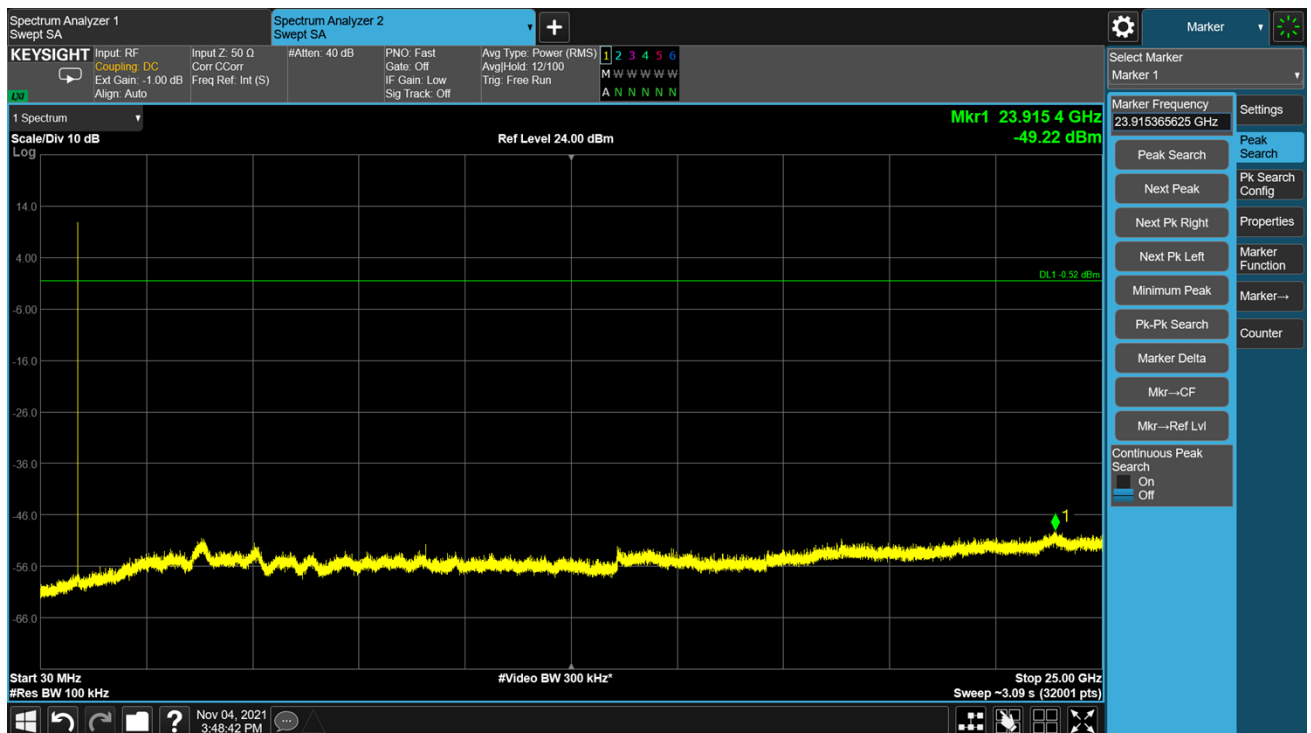
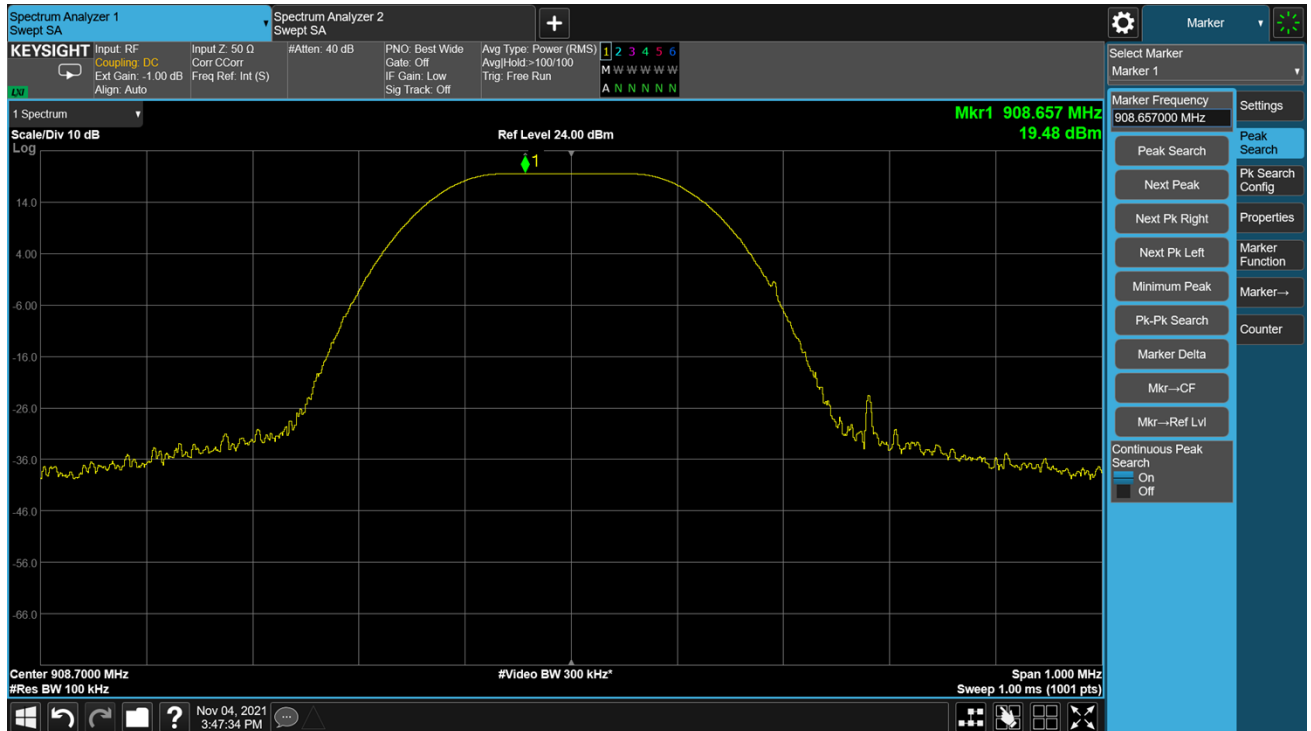


Prüfbericht - Produkte
Test Report - Products

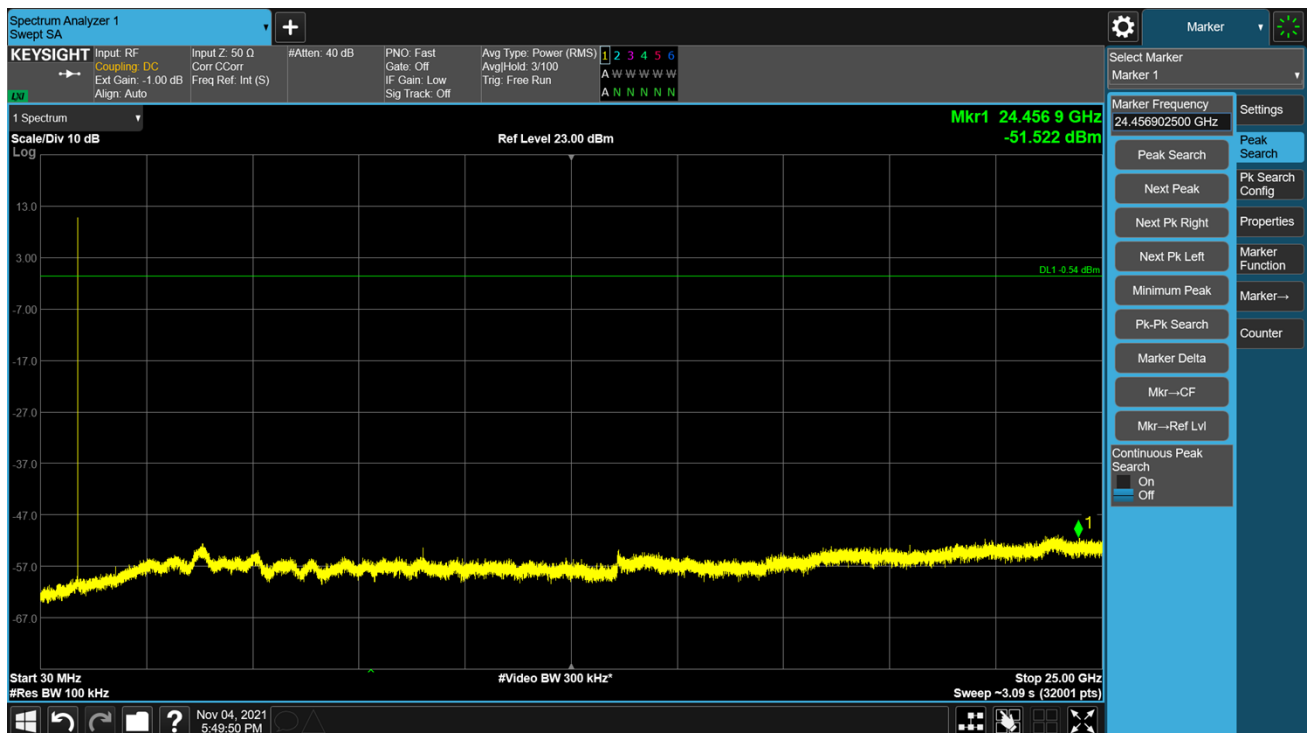
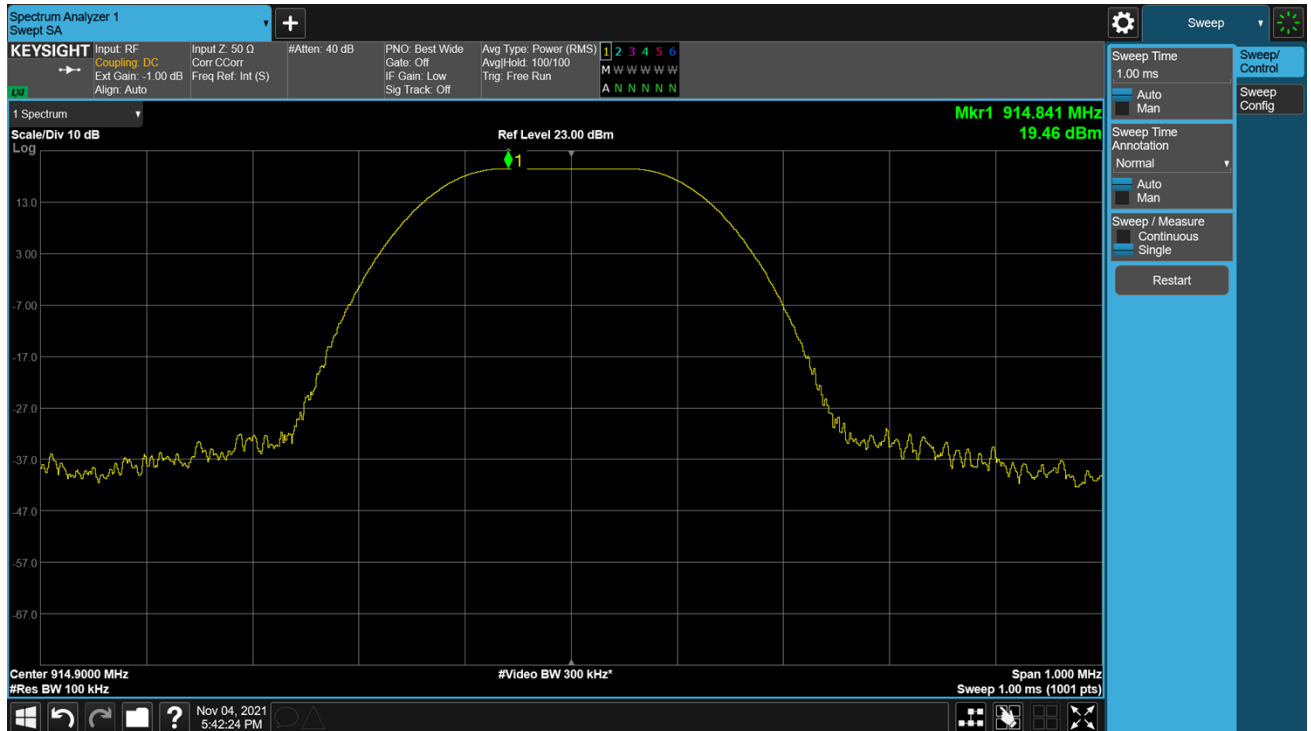
Lora FHSS, No hopping
Low Channel



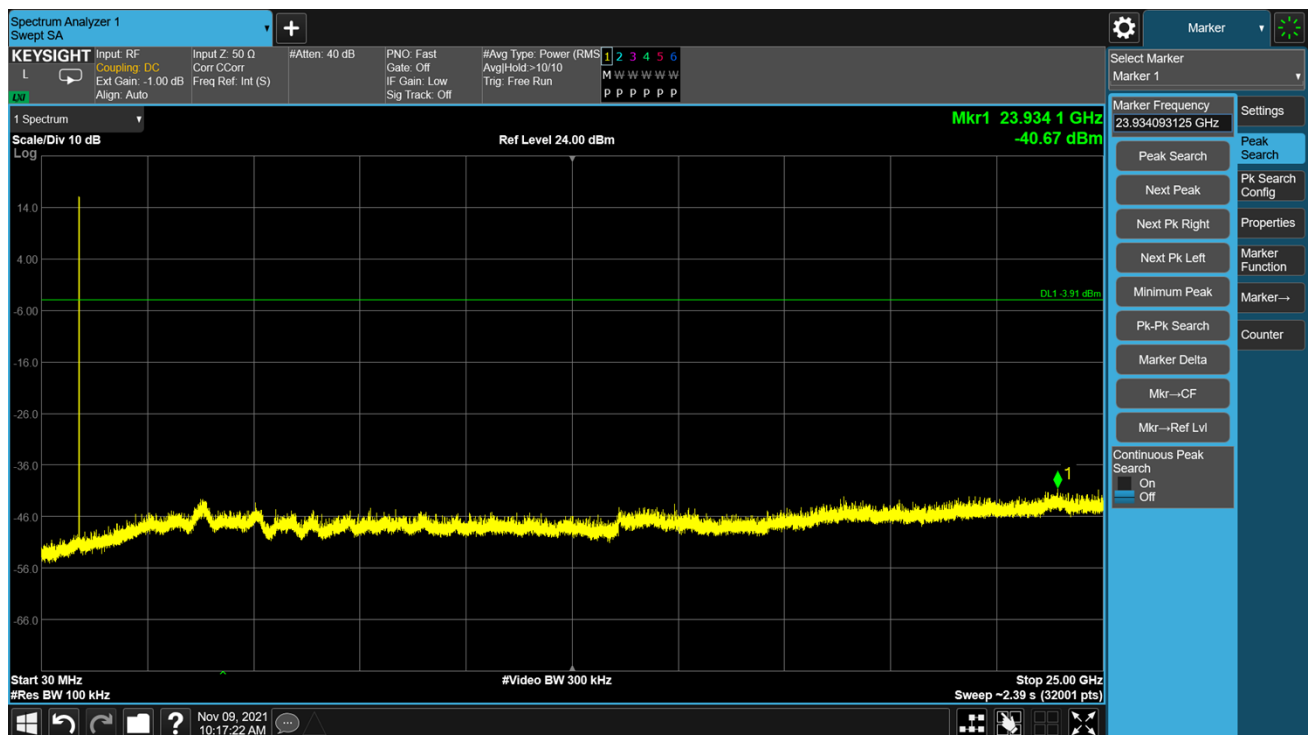
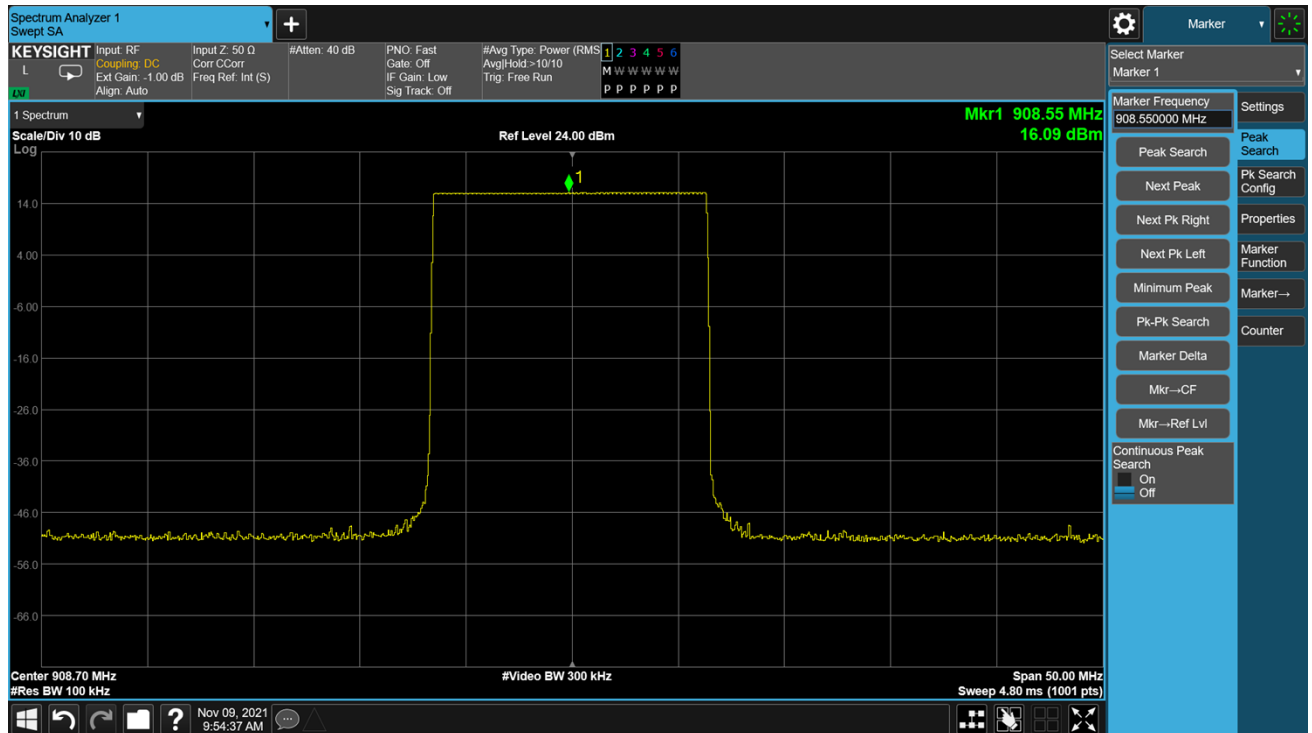
Middle Channel



High Channel

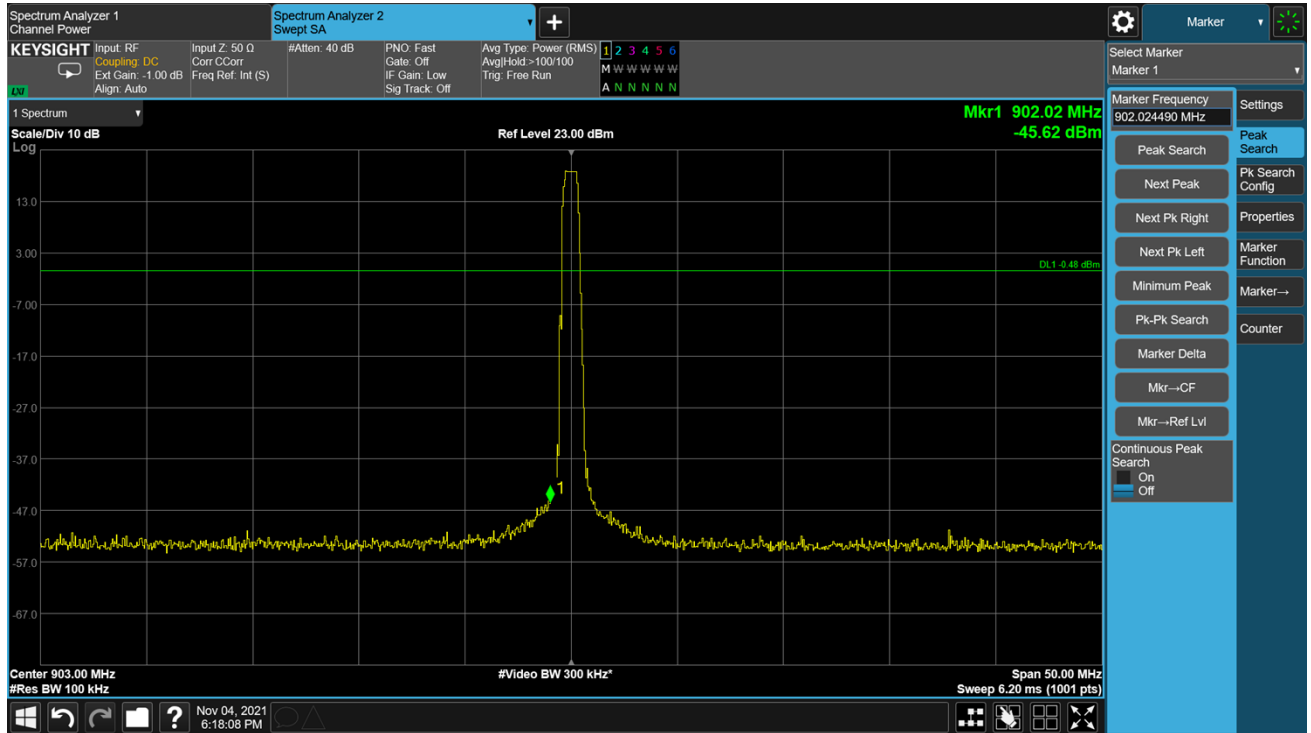


Lora FHSS, hopping

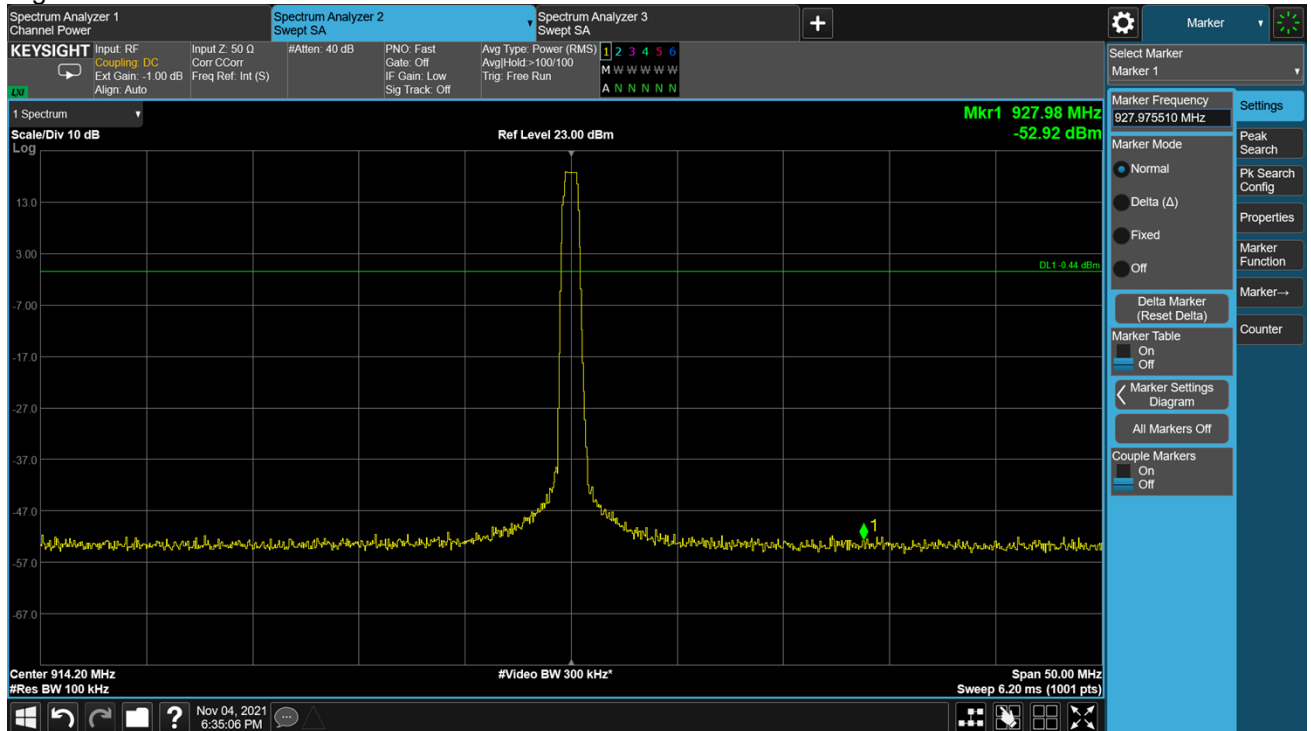


Lora DTS, Band Edge

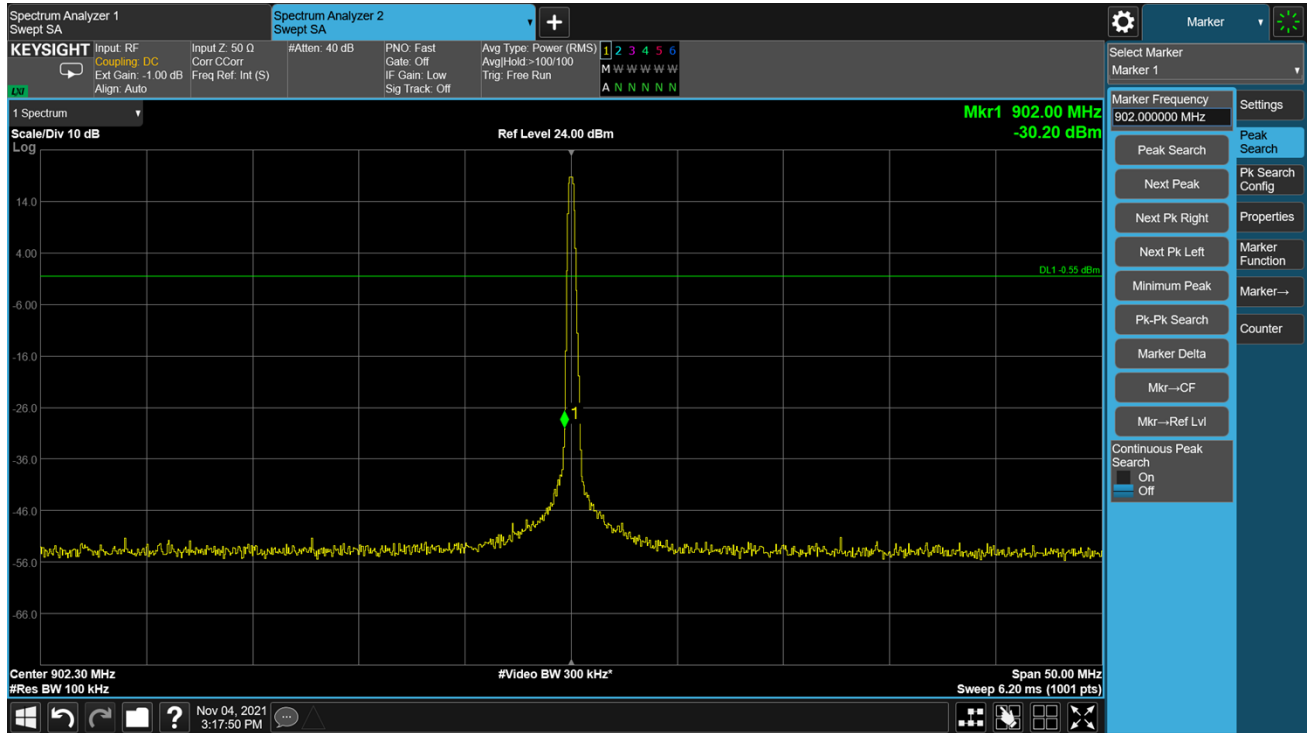
Low Channel



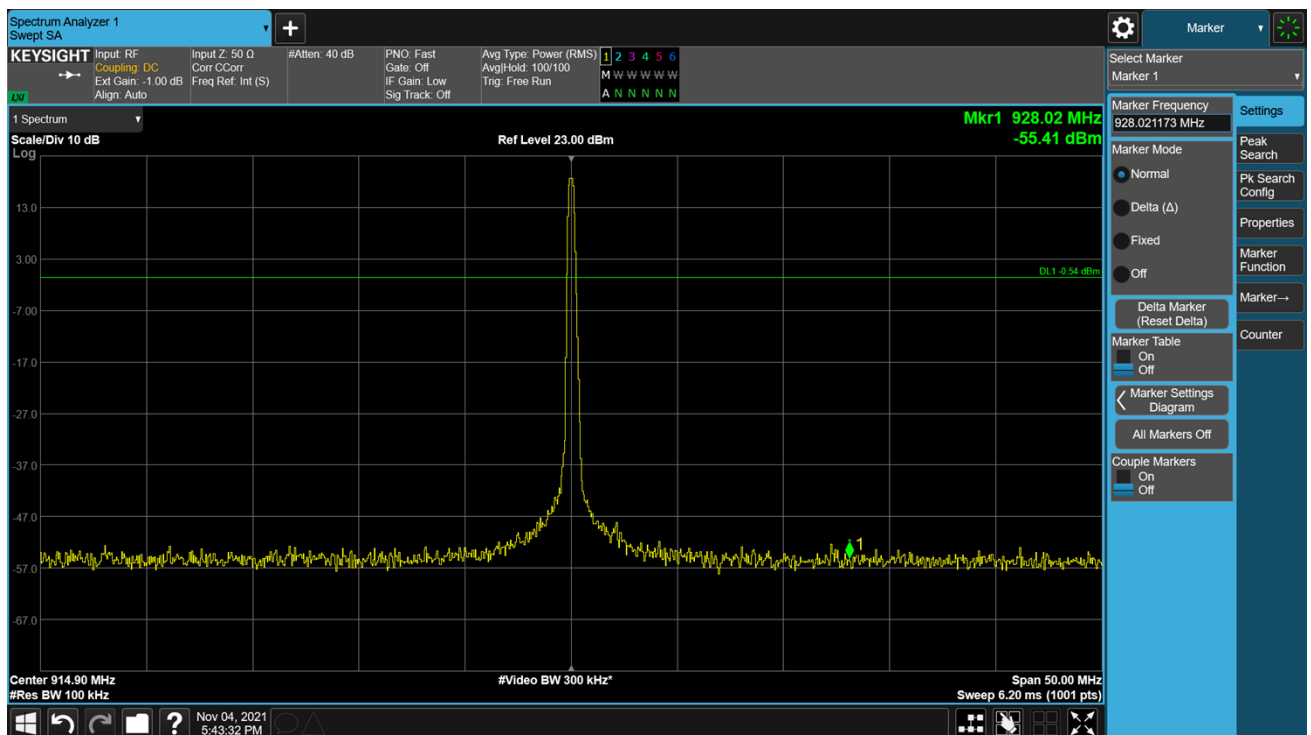
High Channel



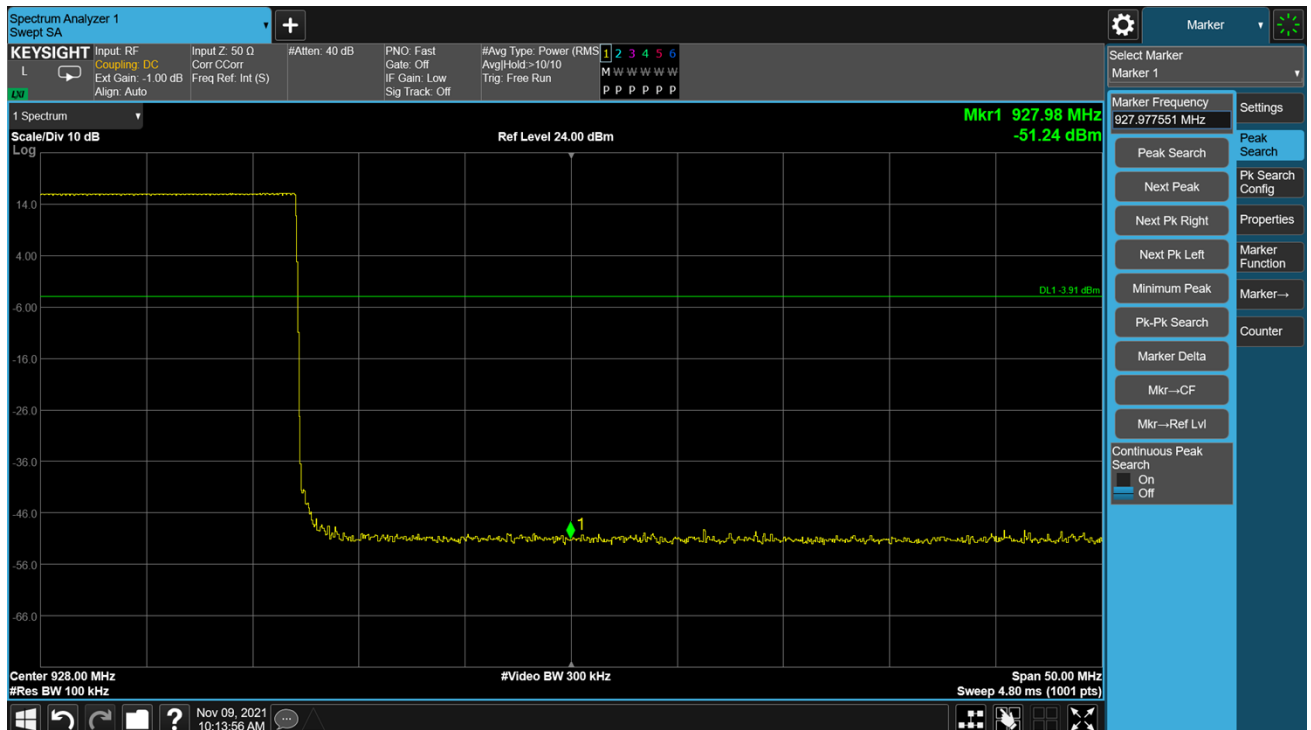
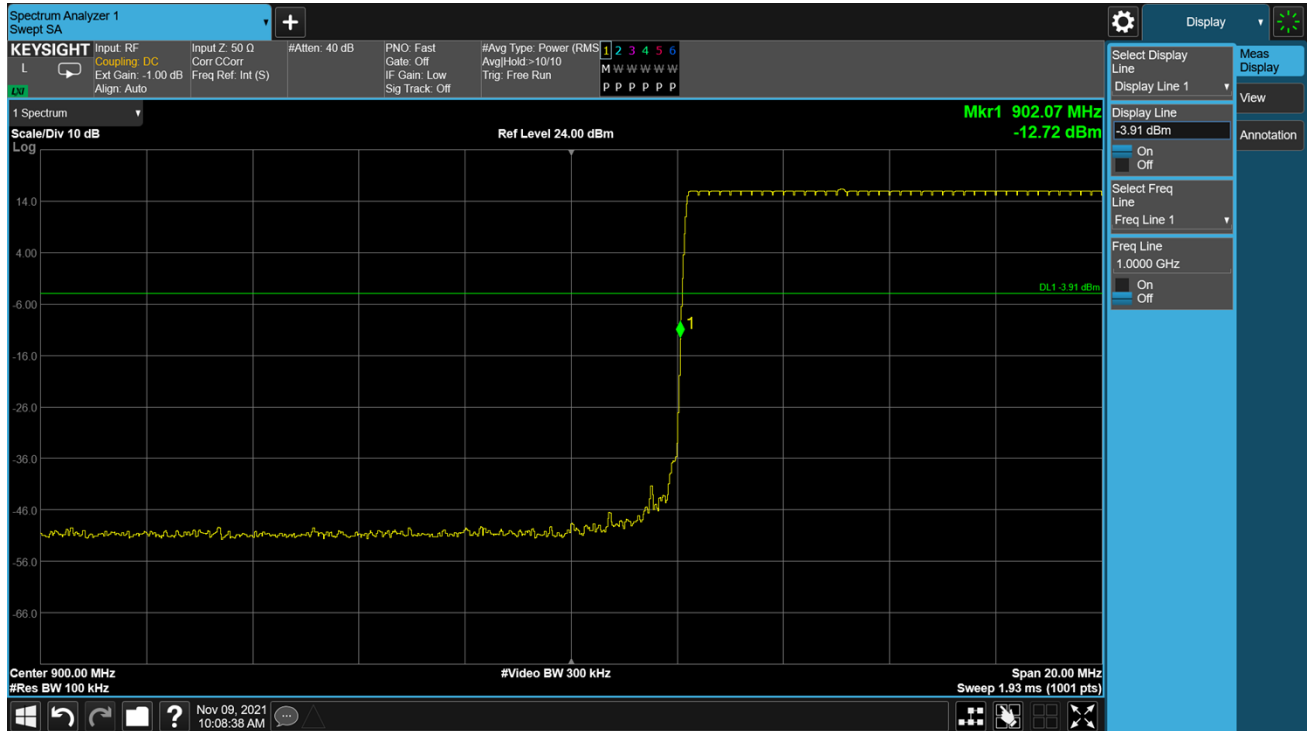
Lora FHSS, No hopping, Band Edge Low Channel



High Channel



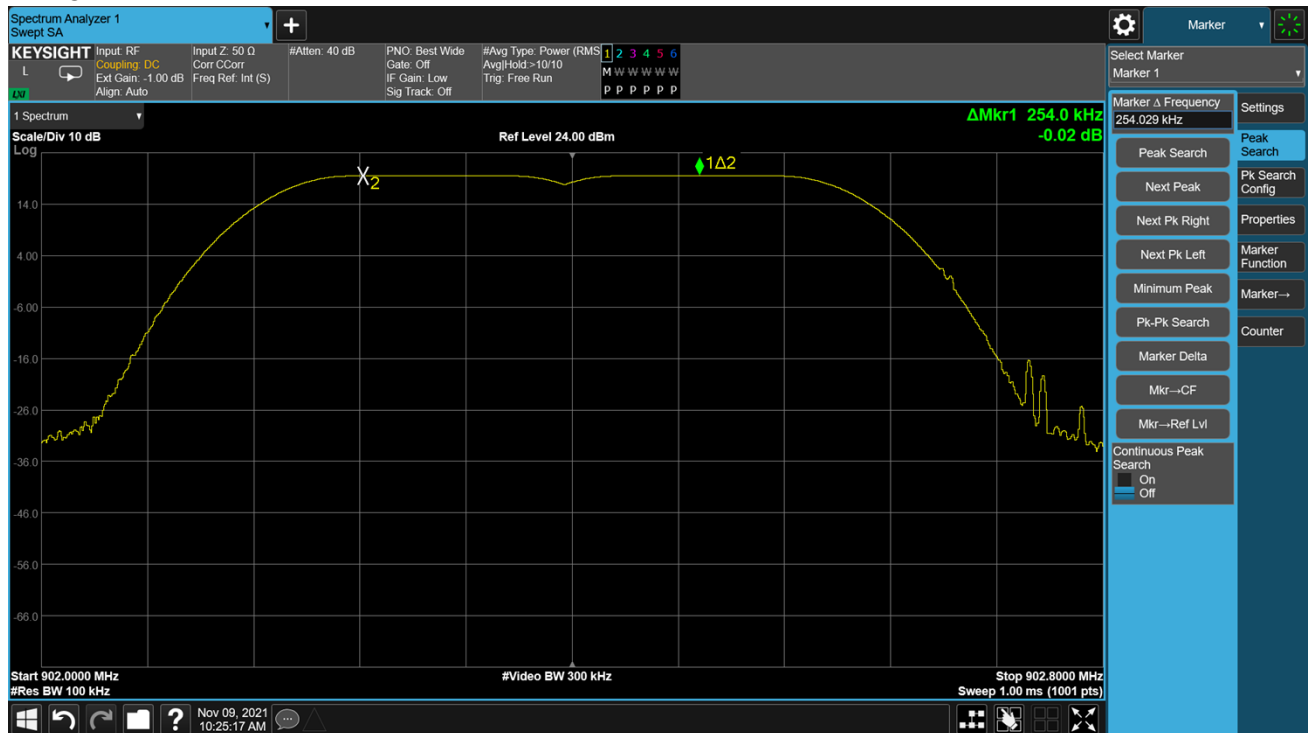
Lora FHSS, hopping, Band Edge



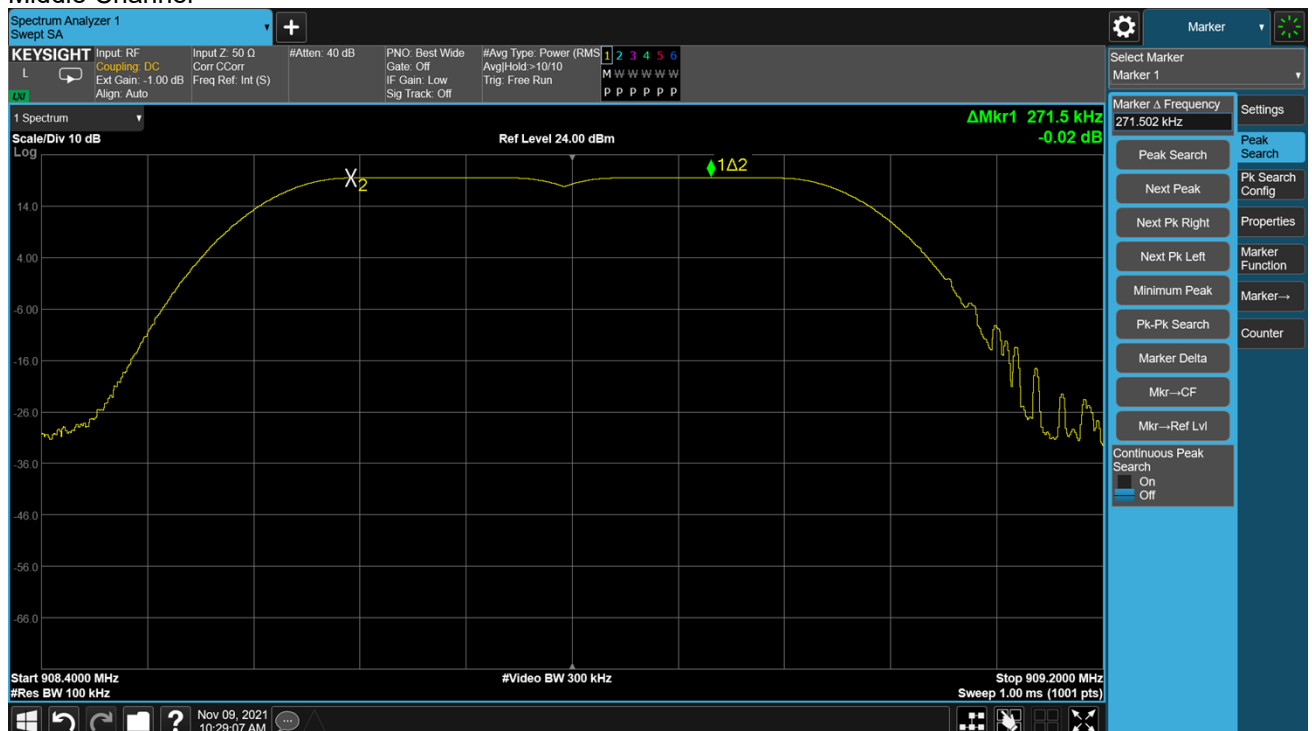
Appendix B.6: Carrier Frequency Separation

Lora FHSS

Low Channel

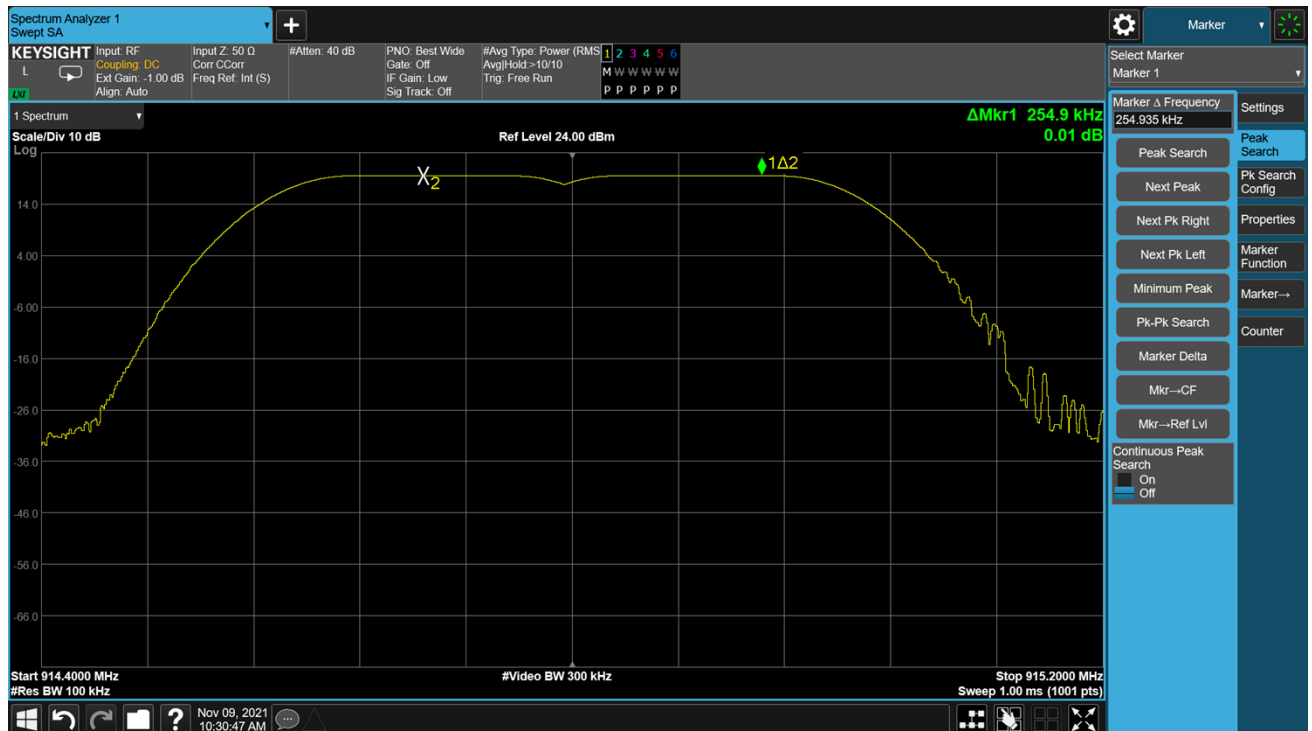


Middle Channel



Prüfbericht - Produkte
Test Report - Products

High Channel



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.

Note 2: Testing was carried out with antenna RAKARG19 (5.1dBi) for all modes and worst case was carried out with antenna KRAKBJ2701C01C (2.3 dBi).

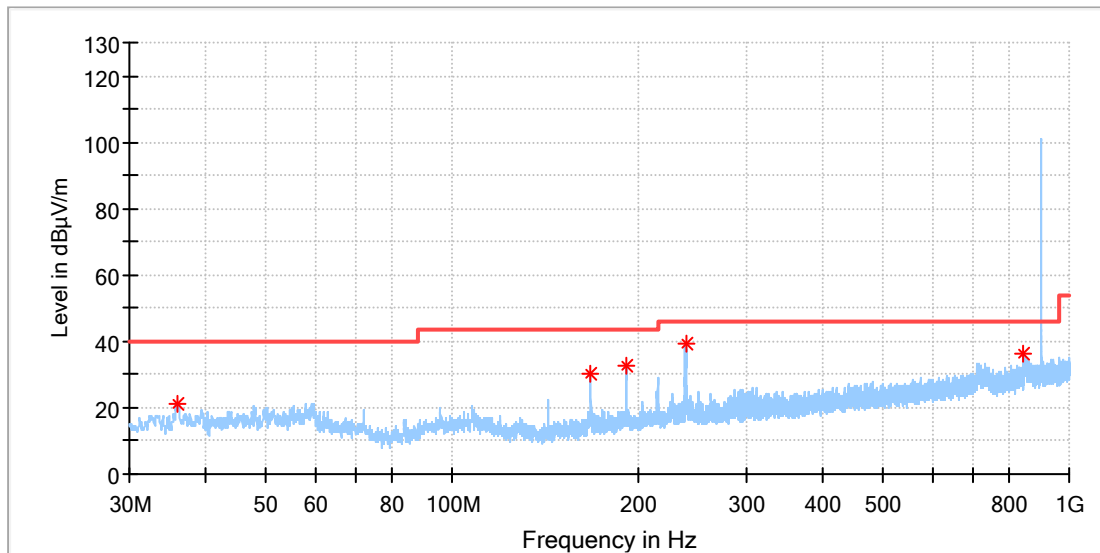
Appendix B.7: Test Results of Radiated Spurious Emissions

Lora FHSS, Antenna Gain: 5.0dBi

30MHz - 1GHz

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_902.3MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

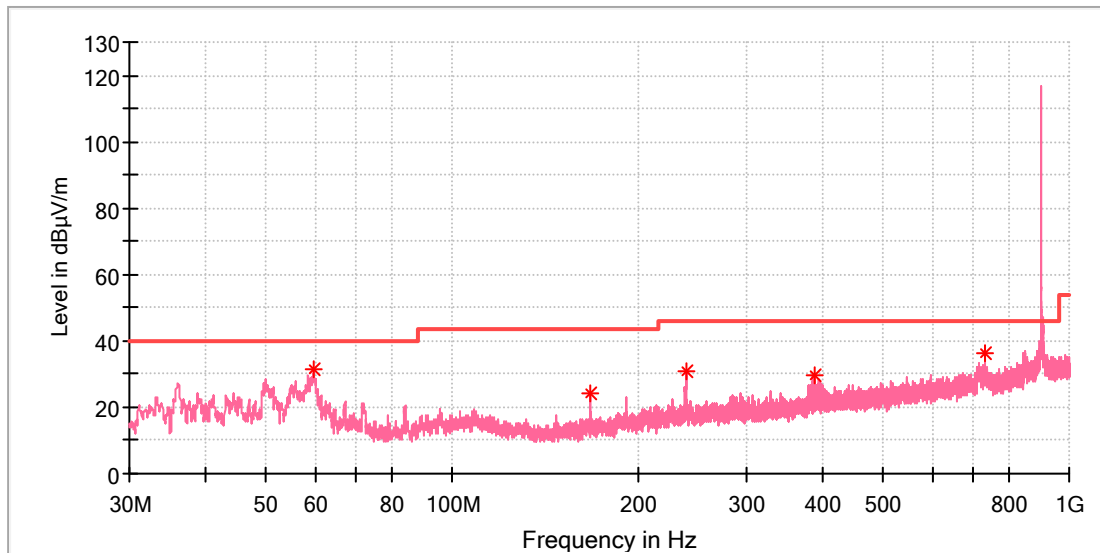


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
36.006539	21.28	40.00	18.72	100.0	H	358.0	-21.8
167.963846	30.16	43.50	13.34	100.0	H	0.0	-21.7
191.057308	32.93	43.50	10.57	100.0	H	122.0	-19.8
238.885769	39.38	46.00	6.62	100.0	H	130.0	-18.1
845.098462	36.10	46.00	9.90	100.0	H	33.0	-6.0

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_902.3MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

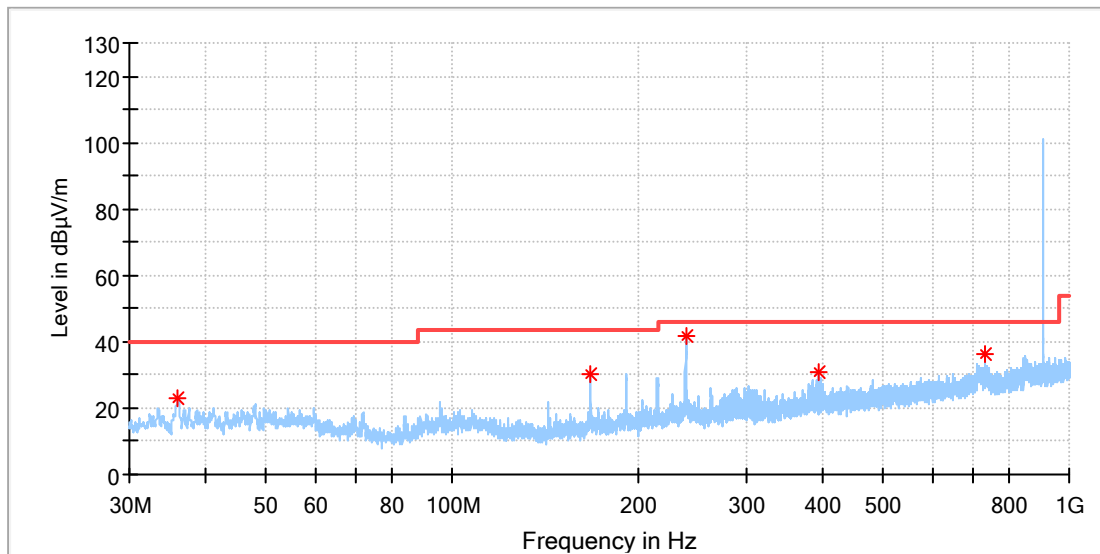


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
59.696923	31.57	40.00	8.43	100.0	V	85.0	-19.3
167.963846	24.32	43.50	19.18	100.0	V	76.0	-21.7
238.997692	30.95	46.00	15.05	100.0	V	340.0	-18.1
387.818077	29.78	46.00	16.22	100.0	V	76.0	-14.4
729.855000	36.33	46.00	9.67	100.0	V	349.0	-7.9

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_908.5MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

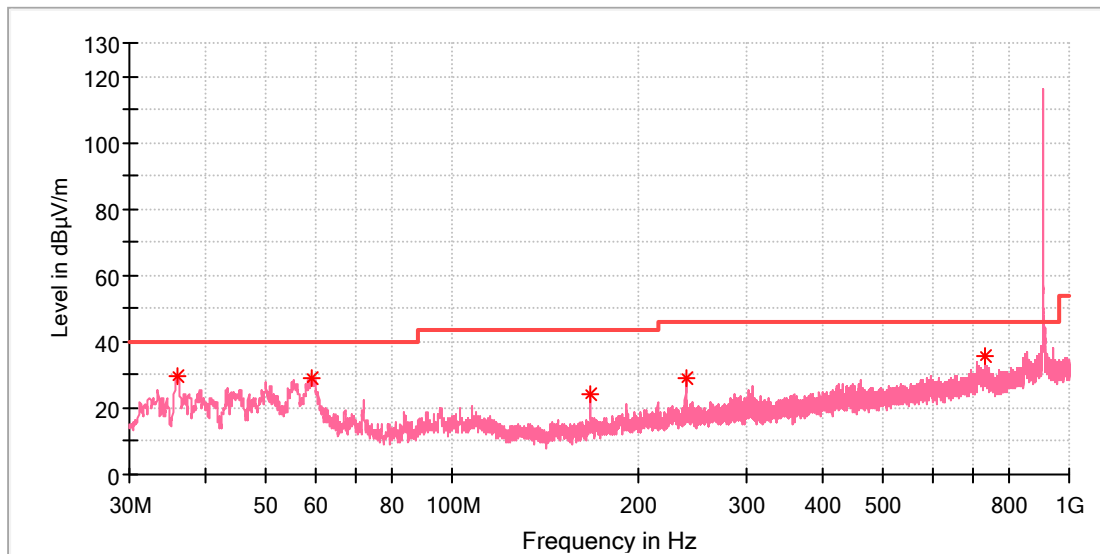


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
35.931923	23.23	40.00	16.77	100.0	H	146.0	-21.9
168.001154	30.50	43.50	13.00	100.0	H	14.0	-21.7
239.296154	41.58	46.00	4.42	100.0	H	127.0	-18.0
392.742692	30.77	46.00	15.23	100.0	H	259.0	-14.3
729.146154	36.15	46.00	9.85	100.0	H	14.0	-7.9

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_908.5MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

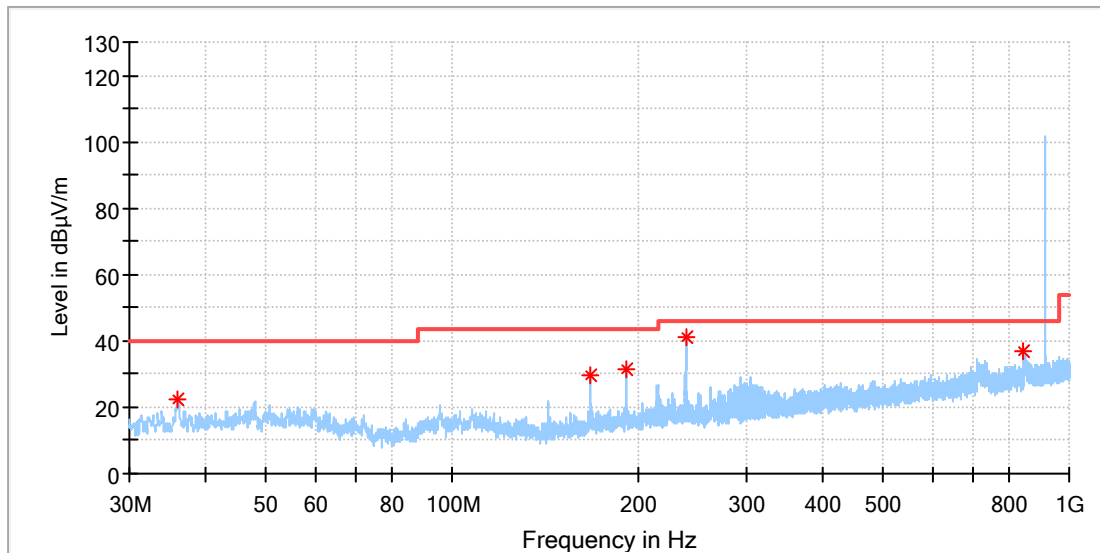


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
35.894615	29.70	40.00	10.30	100.0	V	282.0	-21.9
59.361154	29.04	40.00	10.96	100.0	V	92.0	-19.2
167.963846	24.45	43.50	19.05	100.0	V	61.0	-21.7
239.109615	28.93	46.00	17.07	100.0	V	137.0	-18.1
728.773077	35.87	46.00	10.13	100.0	V	224.0	-7.9

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_914.9MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

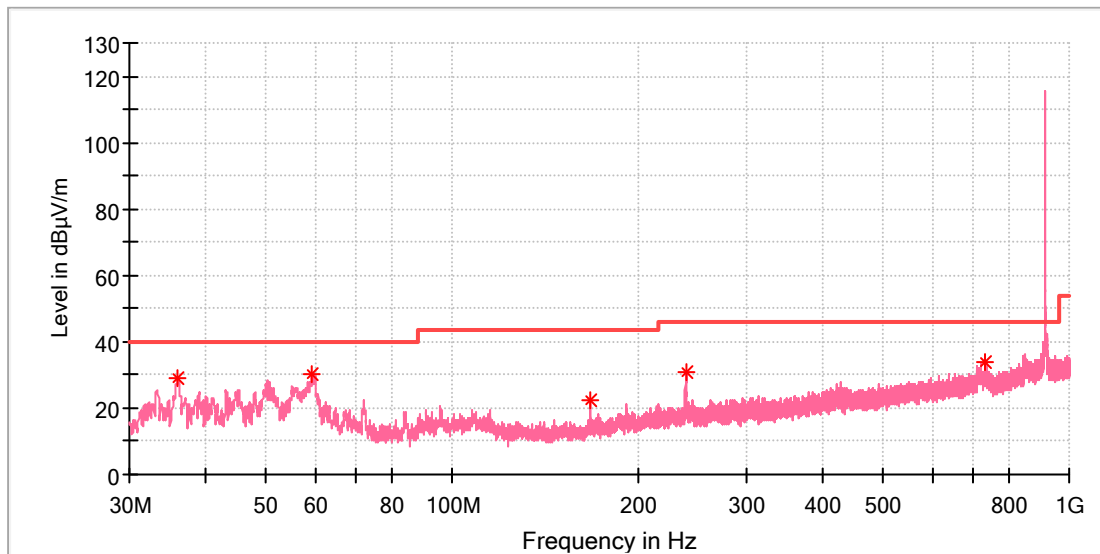


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
35.969231	22.07	40.00	17.93	100.0	H	355.0	-21.9
167.963846	29.56	43.50	13.94	100.0	H	126.0	-21.7
191.430385	31.20	43.50	12.30	100.0	H	117.0	-19.8
239.072308	41.15	46.00	4.85	100.0	H	108.0	-18.1
844.874615	36.91	46.00	9.09	100.0	H	13.0	-6.0

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_914.9MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



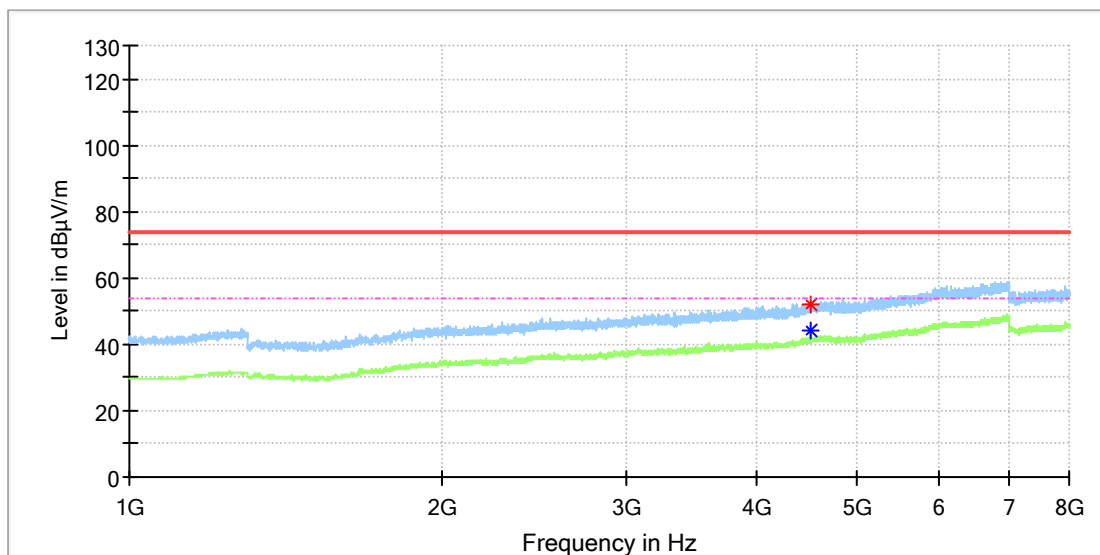
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
35.857308	28.80	40.00	11.20	100.0	V	85.0	-21.9
59.323846	30.45	40.00	9.55	100.0	V	320.0	-19.2
167.963846	22.27	43.50	21.23	100.0	V	68.0	-21.7
239.184231	30.88	46.00	15.12	100.0	V	0.0	-18.0
729.855000	33.92	46.00	12.08	100.0	V	354.0	-7.9

1GHz - 8GHz

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_902.3MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

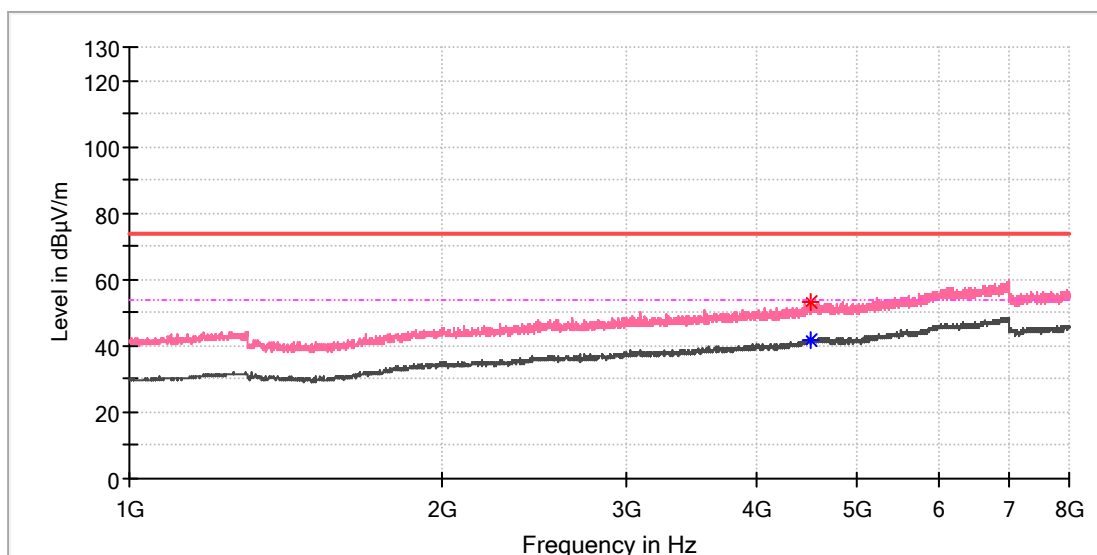


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4510.975000	52.04	---	74.00	21.96	100.0	H	265.0	11.6
4510.975000	---	44.06	54.00	9.94	100.0	H	265.0	11.6

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_902.3MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

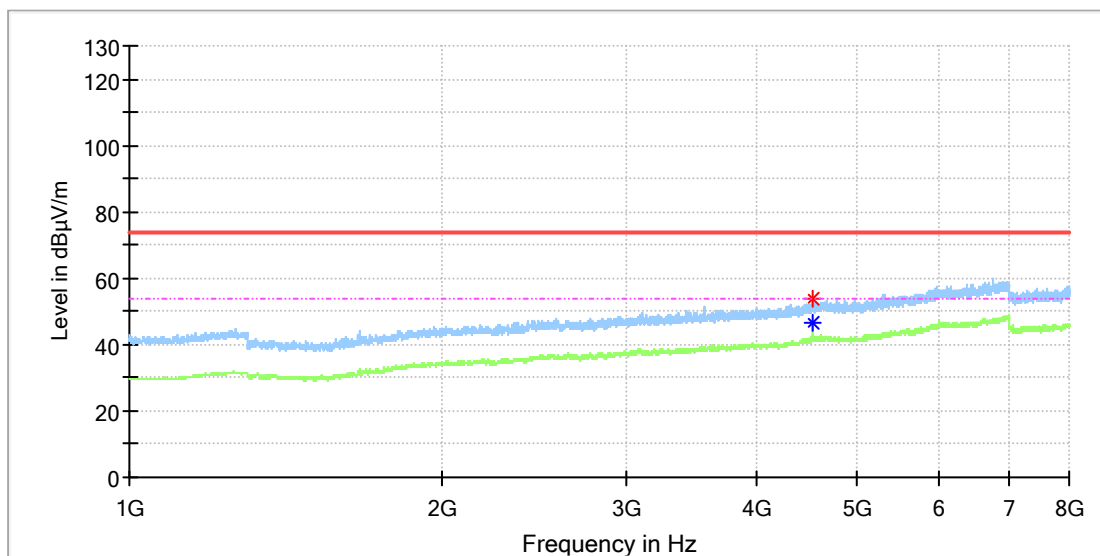


Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4511.812500	---	41.43	54.00	12.57	100.0	V	280.0	11.6
4519.350000	53.03	---	74.00	20.97	100.0	V	358.0	11.7

EUT Information

EUT Name: WisDuo LoRa Module
Model: RAK4200(H)
Test Mode: Lora 125K_SF12_908.5MHz
Order No/Sample No: 168338434/A003143961-003
Test Voltage:: DC 5V From USB
Remark: Temp 22 Humi:52%
Test Standard: FCC 15.247 & RSS-247
Tested By: Kei Zhang
Reviewed By: Terry Yin

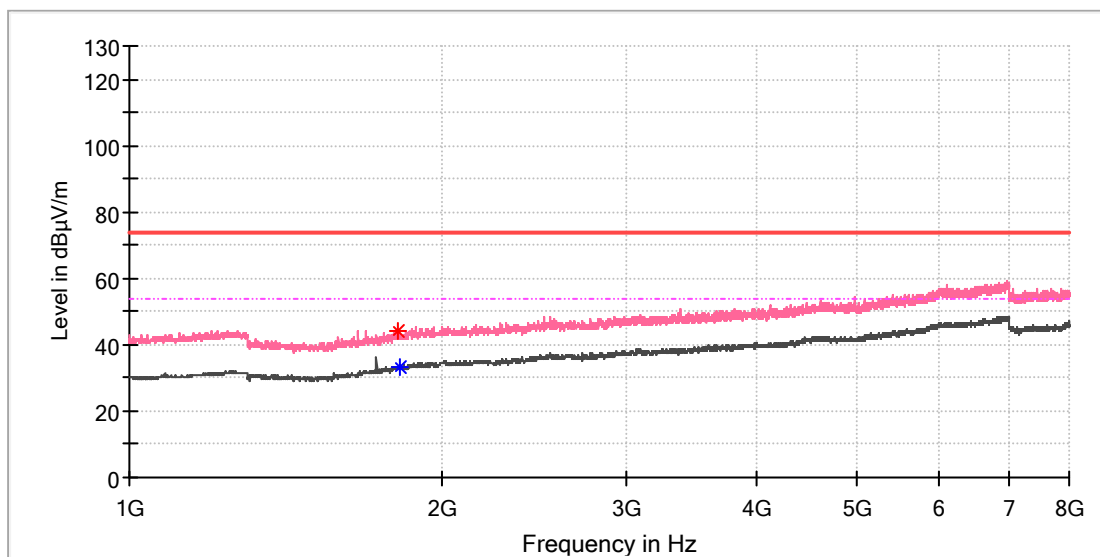


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4541.962500	53.60	---	74.00	20.40	100.0	H	345.0	11.8
4541.962500	---	46.60	54.00	7.40	100.0	H	345.0	11.8

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_908.5MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

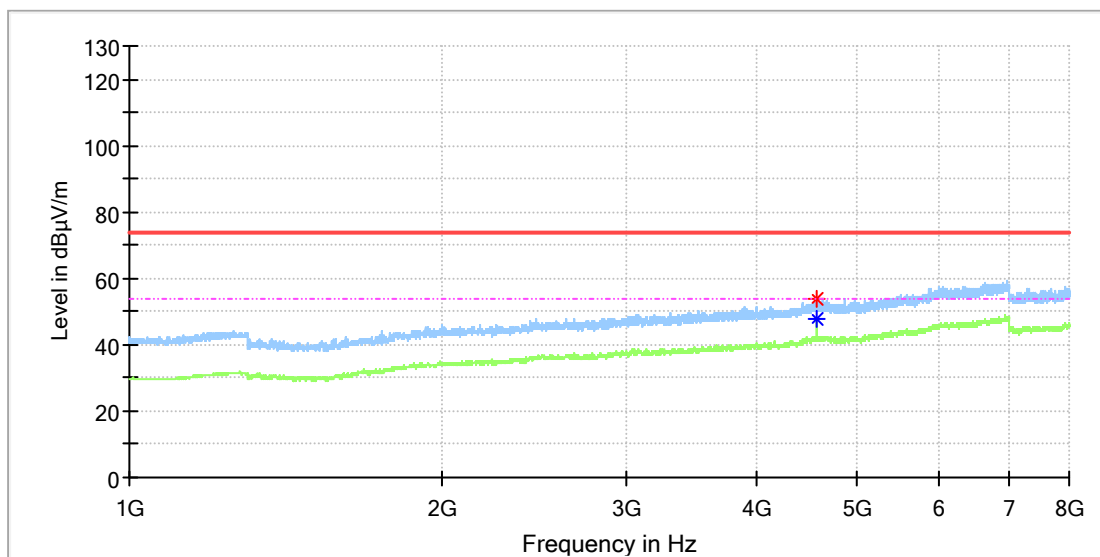


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1814.225000	43.93	---	74.00	30.07	100.0	V	299.0	4.8
1819.250000	---	33.25	54.00	20.75	100.0	V	344.0	4.8

EUT Information

EUT Name: WisDuo LoRa Module
Model: RAK4200(H)
Test Mode: Lora 125K_SF12_914.9MHz
Order No/Sample No: 168338434/A003143961-003
Test Voltage:: DC 5V From USB
Remark: Temp 22 Humi:52%
Test Standard: FCC 15.247 & RSS-247
Tested By: Kei Zhang
Reviewed By: Terry Yin

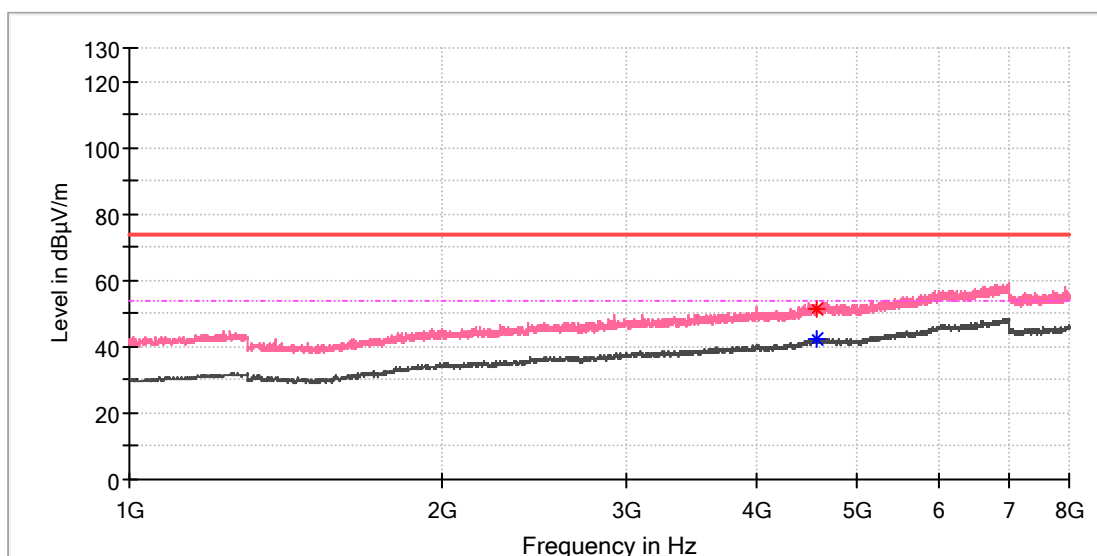


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4574.625000	53.60	---	74.00	20.40	100.0	H	347.0	12.0
4574.625000	---	47.71	54.00	6.29	100.0	H	347.0	12.0

EUT Information

EUT Name: WisDuo LoRa Module
Model: RAK4200(H)
Test Mode: Lora 125K_SF12_914.9MHz
Order No/Sample No: 168338434/A003143961-003
Test Voltage:: DC 5V From USB
Remark: Temp 22 Humi:52%
Test Standard: FCC 15.247 & RSS-247
Tested By: Kei Zhang
Reviewed By: Terry Yin



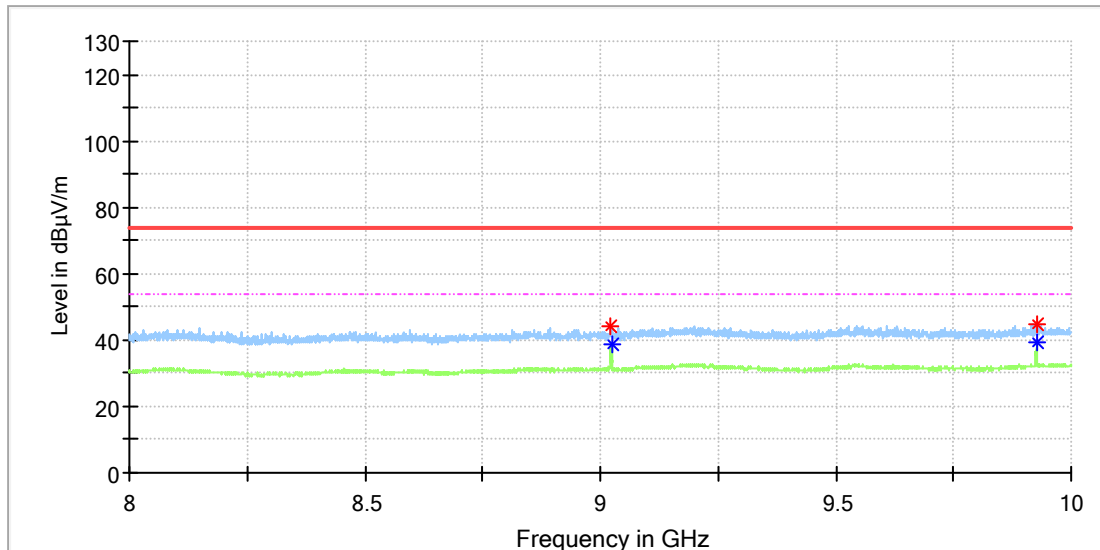
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4577.137500	51.38	---	74.00	22.62	100.0	V	163.0	12.0
4579.650000	---	42.15	54.00	11.85	100.0	V	128.0	12.0

8GHz - 10GHz

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_902.3MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

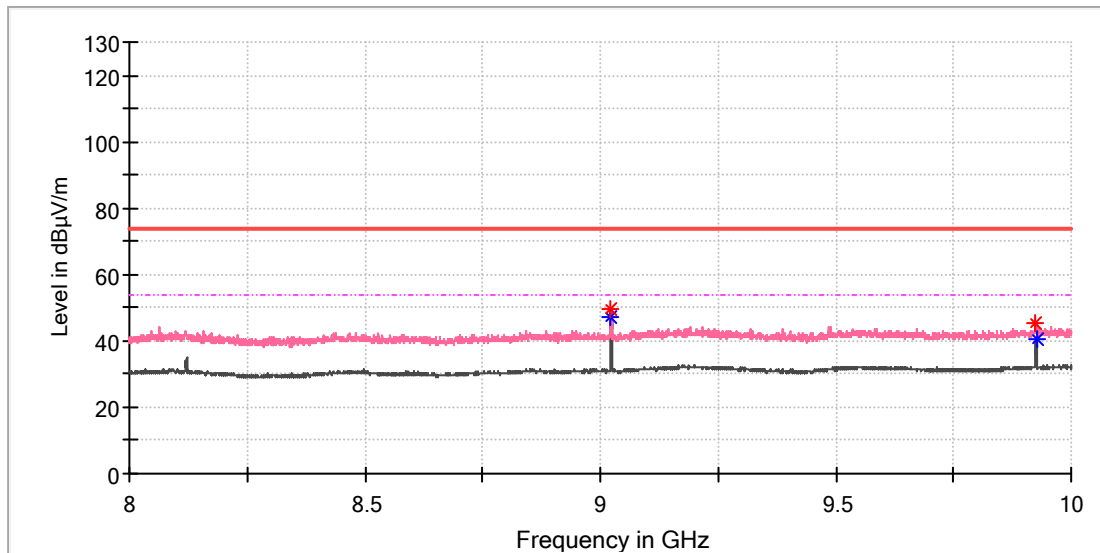


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
9023.000000	44.15	---	74.00	29.85	100.0	H	340.0	8.9
9023.500000	---	38.70	54.00	15.30	100.0	H	340.0	8.9
9926.500000	44.98	---	74.00	29.02	100.0	H	340.0	10.4
9926.500000	---	39.20	54.00	14.80	100.0	H	340.0	10.4

EUT Information

EUT Name: WisDuo LoRa Module
Model: RAK4200(H)
Test Mode: Lora 125K_SF12_902.3MHz
Order No/Sample No: 168338434/A003143961-003
Test Voltage:: DC 5V From USB
Remark: Temp 22 Humi:52%
Test Standard: FCC 15.247 & RSS-247
Tested By: Kei Zhang
Reviewed By: Terry Yin

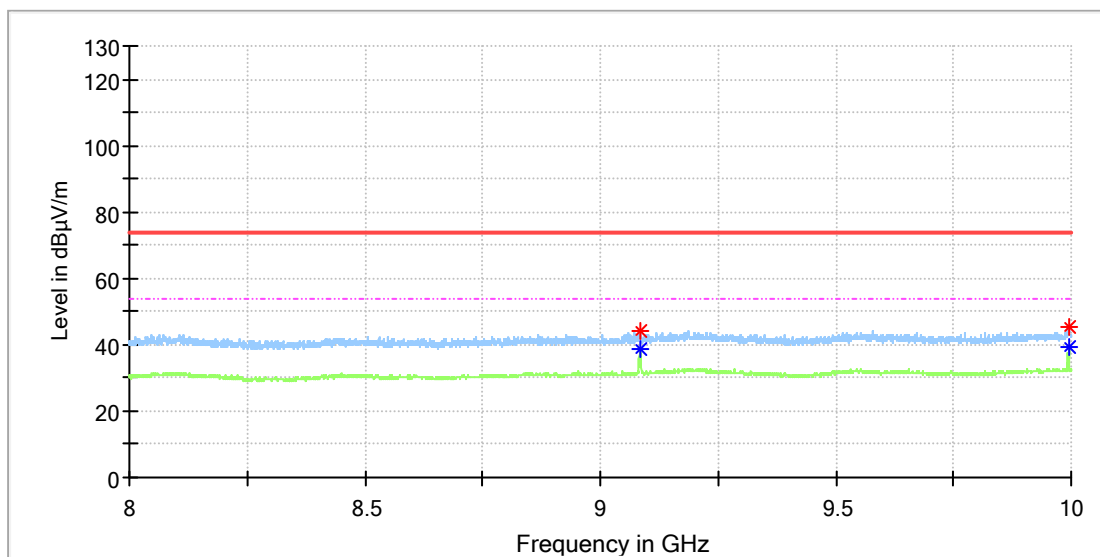


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
9022.000000	---	47.11	54.00	6.89	100.0	V	335.0	8.9
9022.500000	49.83	---	74.00	24.17	100.0	V	335.0	8.9
9925.500000	45.31	---	74.00	28.69	100.0	V	324.0	10.4
9926.000000	---	40.23	54.00	13.77	100.0	V	182.0	10.4

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_908.5MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

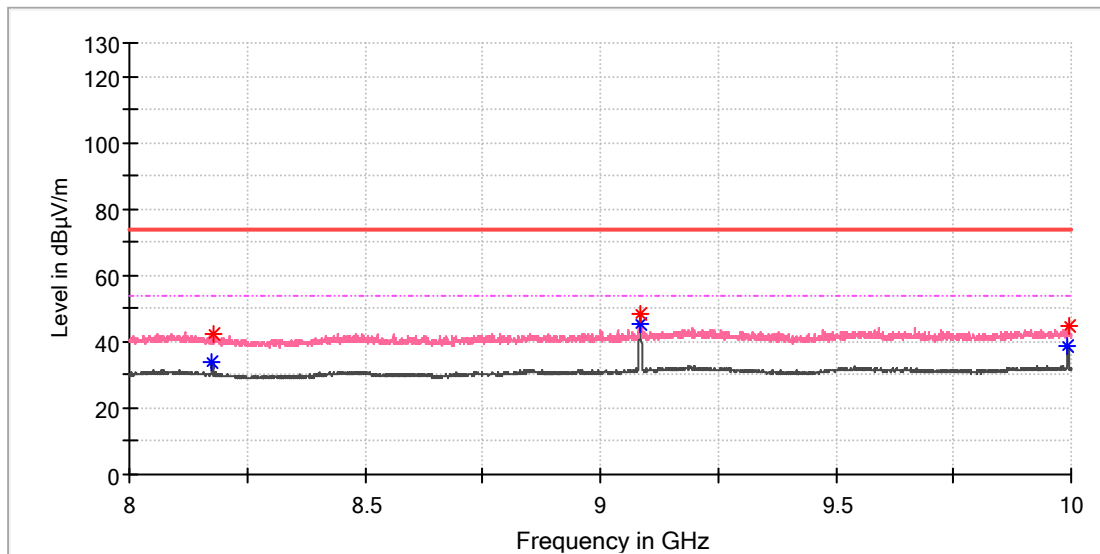


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
9083.000000	44.07	---	74.00	29.93	100.0	H	60.0	9.5
9086.000000	---	38.66	54.00	15.34	100.0	H	346.0	9.5
9996.000000	45.25	---	74.00	28.75	100.0	H	346.0	10.5
9996.000000	---	39.35	54.00	14.65	100.0	H	346.0	10.5

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_908.5MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

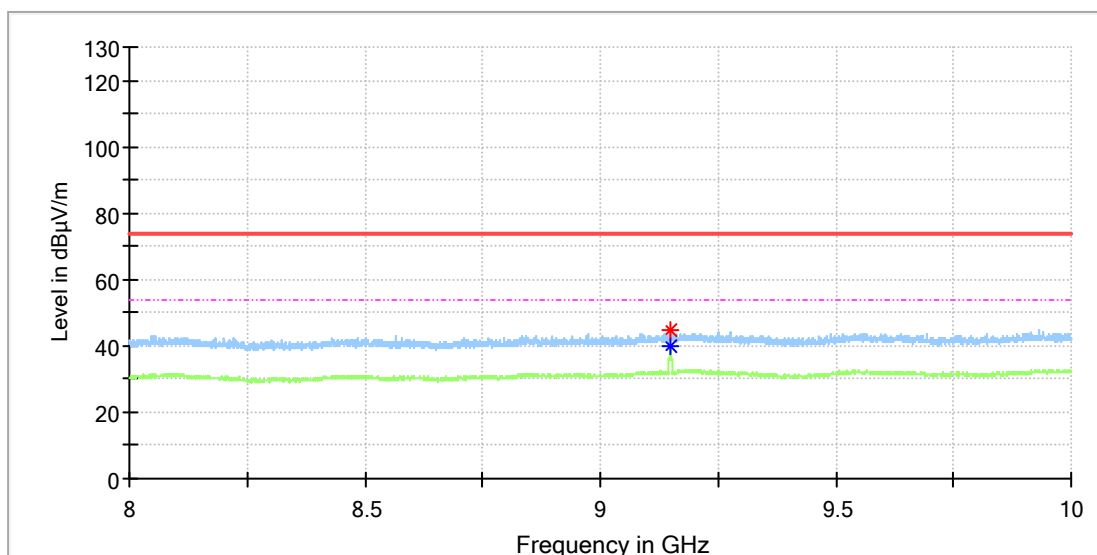


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
8174.500000	---	33.95	54.00	20.05	100.0	V	323.0	8.5
8177.000000	42.26	---	74.00	31.74	100.0	V	176.0	8.5
9083.500000	48.46	---	74.00	25.54	100.0	V	184.0	9.5
9083.500000	---	45.10	54.00	8.90	100.0	V	184.0	9.5
9993.500000	---	38.65	54.00	15.35	100.0	V	315.0	10.5
9995.000000	44.94	---	74.00	29.06	100.0	V	176.0	10.5

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_914.9MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

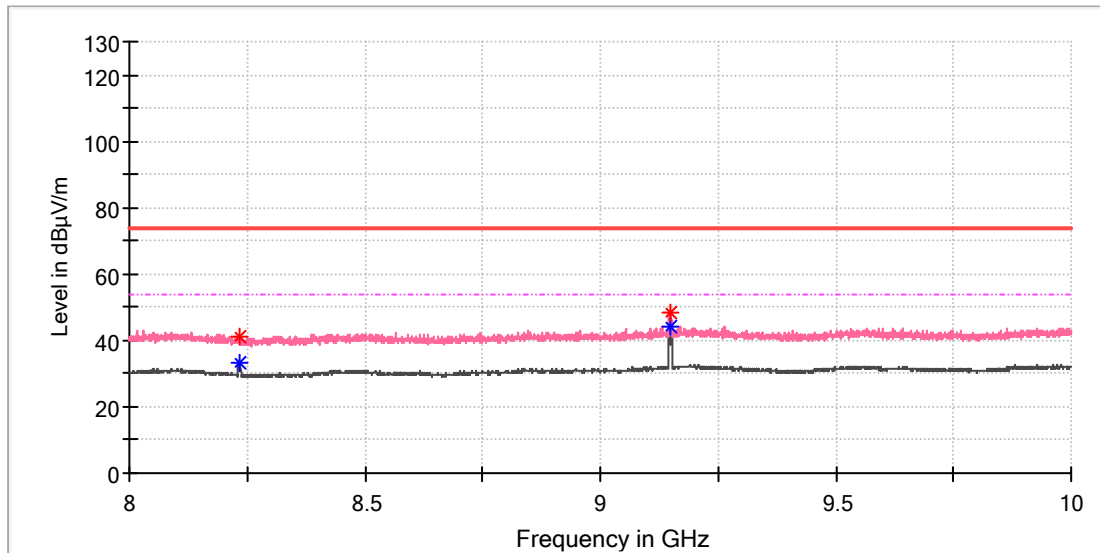


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
9147.500000	44.82	---	74.00	29.18	100.0	H	341.0	10.1
9148.000000	---	40.21	54.00	13.79	100.0	H	341.0	10.1

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_914.9MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

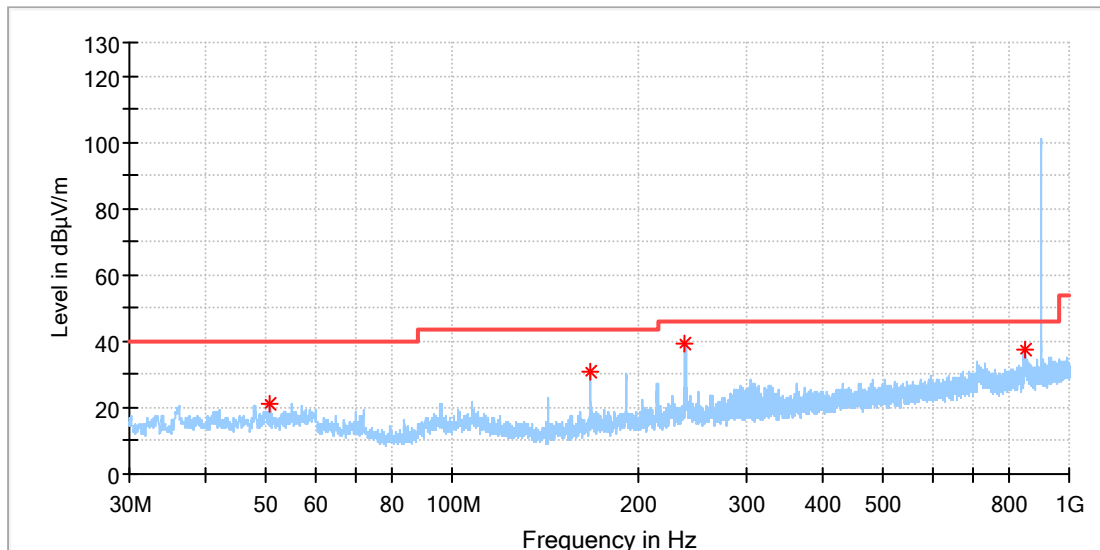
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
8234.000000	41.12	---	74.00	32.88	100.0	V	8.0	8.4
8234.500000	---	33.10	54.00	20.90	100.0	V	355.0	8.4
9147.000000	48.23	---	74.00	25.77	100.0	V	164.0	10.1
9147.000000	---	44.20	54.00	9.80	100.0	V	164.0	10.1

Lora DTS, Antenna Gain: 5.0dBi

30MHz - 1GHz

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_903MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

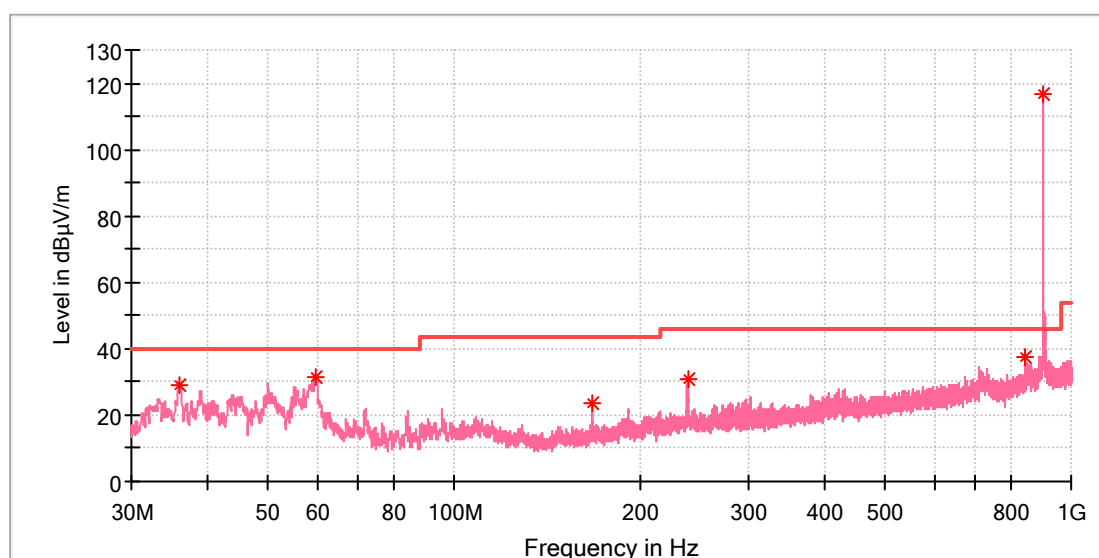


Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
50.780385	21.46	40.00	18.54	100.0	H	147.0	-18.6
167.963846	30.70	43.50	12.80	100.0	H	13.0	-21.7
238.848462	39.30	46.00	6.70	100.0	H	147.0	-18.1
846.217692	37.28	46.00	8.72	100.0	H	22.0	-6.0

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_903MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

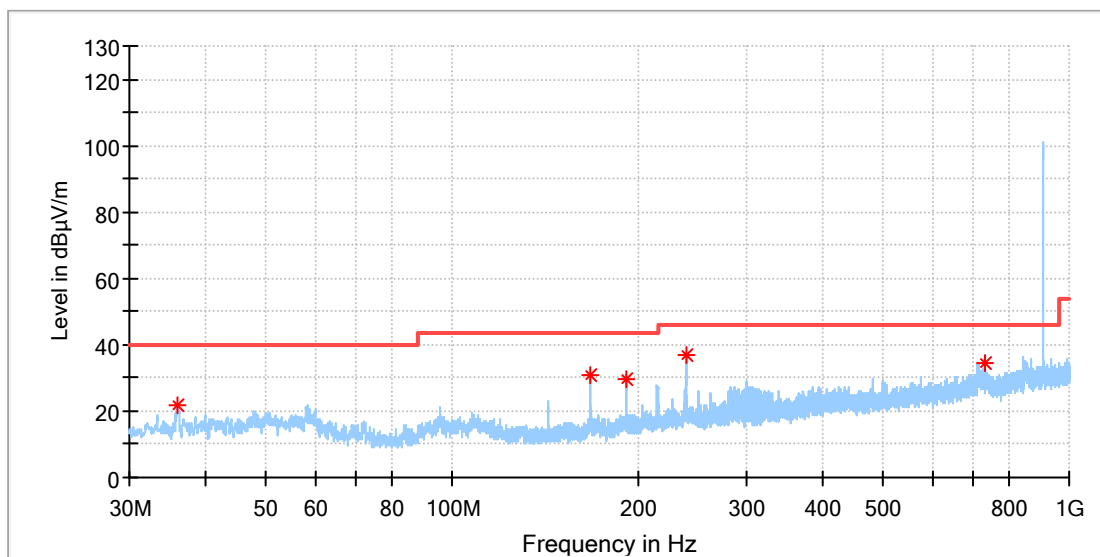


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
35.857308	29.26	40.00	10.74	100.0	V	104.0	-21.9
59.808846	31.24	40.00	8.76	100.0	V	42.0	-19.3
167.963846	23.45	43.50	20.05	100.0	V	95.0	-21.7
239.035000	30.57	46.00	15.43	100.0	V	95.0	-18.1
844.874615	37.79	46.00	8.21	100.0	V	271.0	-6.0
903.074615	116.45	/	/	100.0	V	131.0	-5.4

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_907.8MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

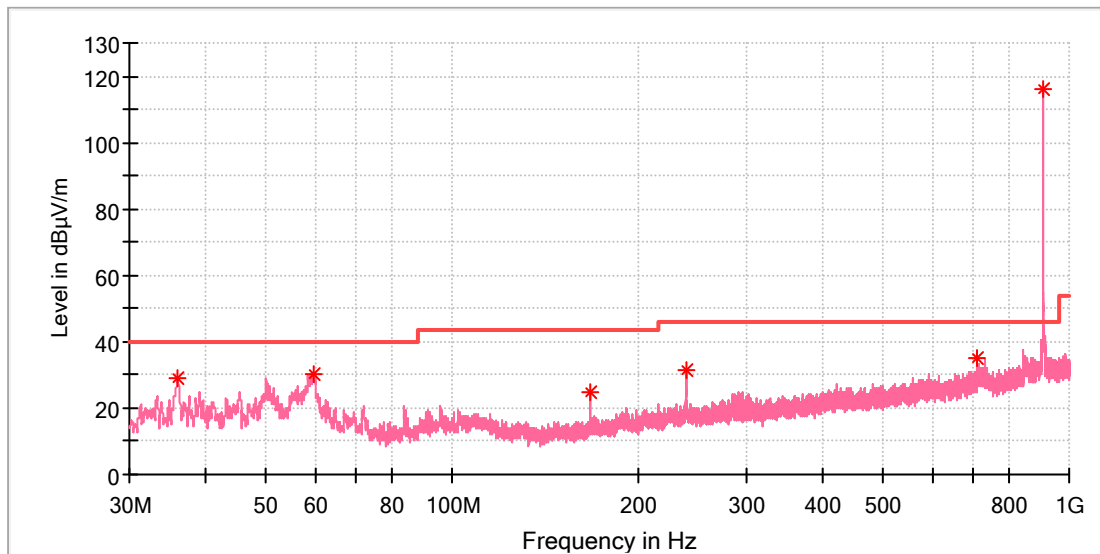


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
35.857308	21.93	40.00	18.07	100.0	H	21.0	-21.9
167.963846	30.55	43.50	12.95	100.0	H	12.0	-21.7
191.206539	29.75	43.50	13.75	100.0	H	137.0	-19.8
239.072308	37.00	46.00	9.00	100.0	H	83.0	-18.1
729.034231	34.34	/	/	100.0	H	300.0	-7.9

EUT Information

EUT Name: WisDuo LoRa Module
Model: RAK4200(H)
Test Mode: Lora 500K_SF12_907.8MHz
Order No/Sample No: 168338434/A003143961-003
Test Voltage:: DC 5V From USB
Remark: Temp 22 Humi:52%
Test Standard: FCC 15.247 & RSS-247
Tested By: Kei Zhang
Reviewed By: Terry Yin

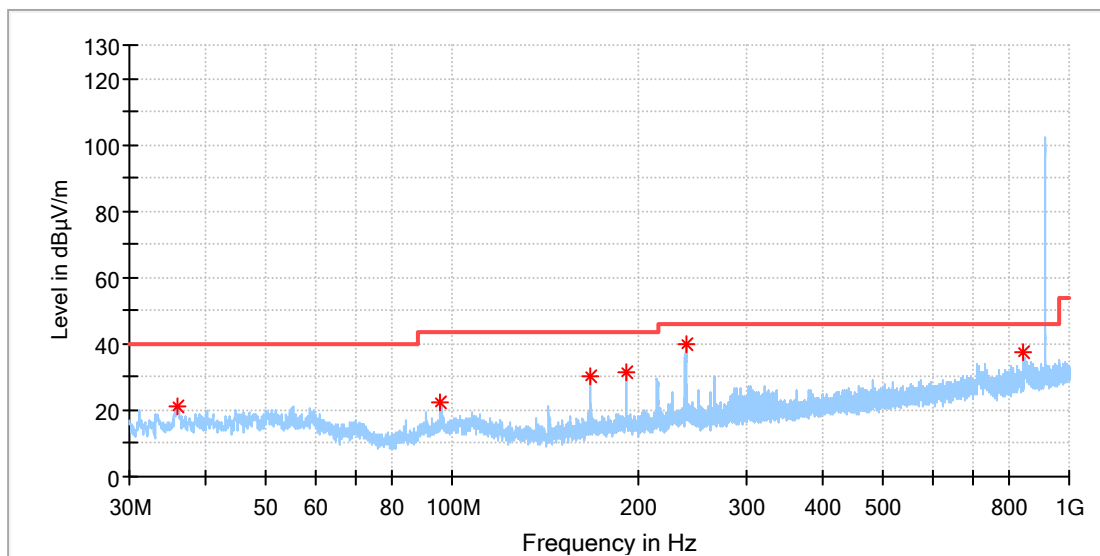


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
35.894615	28.85	40.00	11.15	100.0	V	279.0	-21.9
59.659615	30.21	40.00	9.79	100.0	V	45.0	-19.3
167.963846	24.98	43.50	18.52	100.0	V	84.0	-21.7
239.035000	31.57	46.00	14.43	100.0	V	120.0	-18.1
709.037308	34.94	46.00	11.06	100.0	V	245.0	-8.3
907.588846	116.11	/	/	100.0	V	36.0	-5.3

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_914.2MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

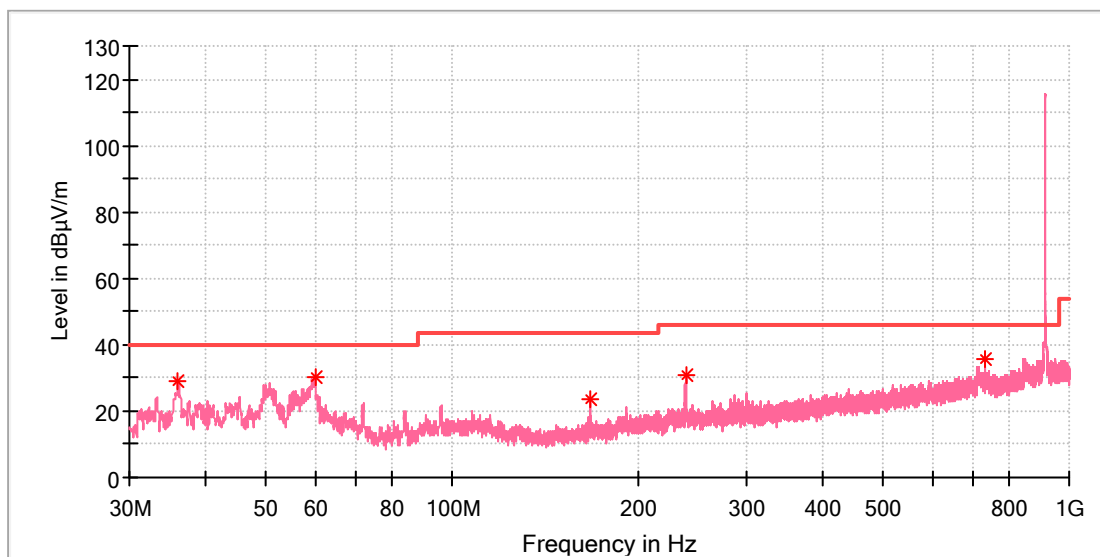


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
36.006539	21.17	40.00	18.83	100.0	H	194.0	-21.8
95.698846	22.21	43.50	21.29	100.0	H	136.0	-20.0
168.001154	30.18	43.50	13.32	100.0	H	0.0	-21.7
191.169231	31.59	43.50	11.91	100.0	H	136.0	-19.8
239.109615	39.88	46.00	6.12	100.0	H	98.0	-18.1
844.800000	37.72	46.00	8.28	100.0	H	0.0	-6.0

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_914.2MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



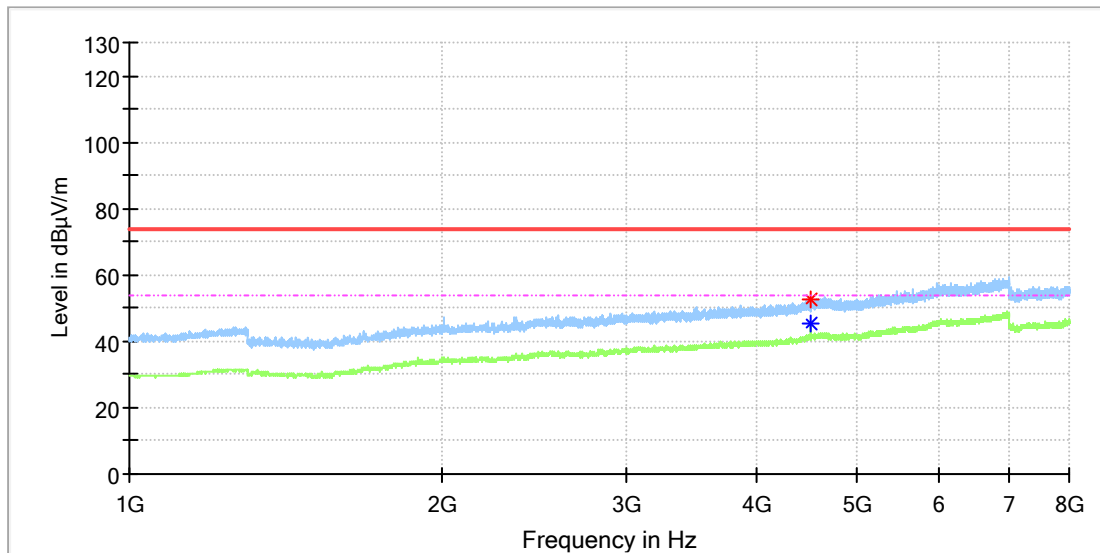
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
35.931923	28.88	40.00	11.12	100.0	V	261.0	-21.9
59.958077	30.12	40.00	9.88	100.0	V	211.0	-19.3
167.963846	23.53	43.50	19.97	100.0	V	96.0	-21.7
238.923077	30.97	46.00	15.03	100.0	V	96.0	-18.1
728.437308	35.52	46.00	10.48	100.0	V	330.0	-7.9

1GHz - 8GHz

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_903MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

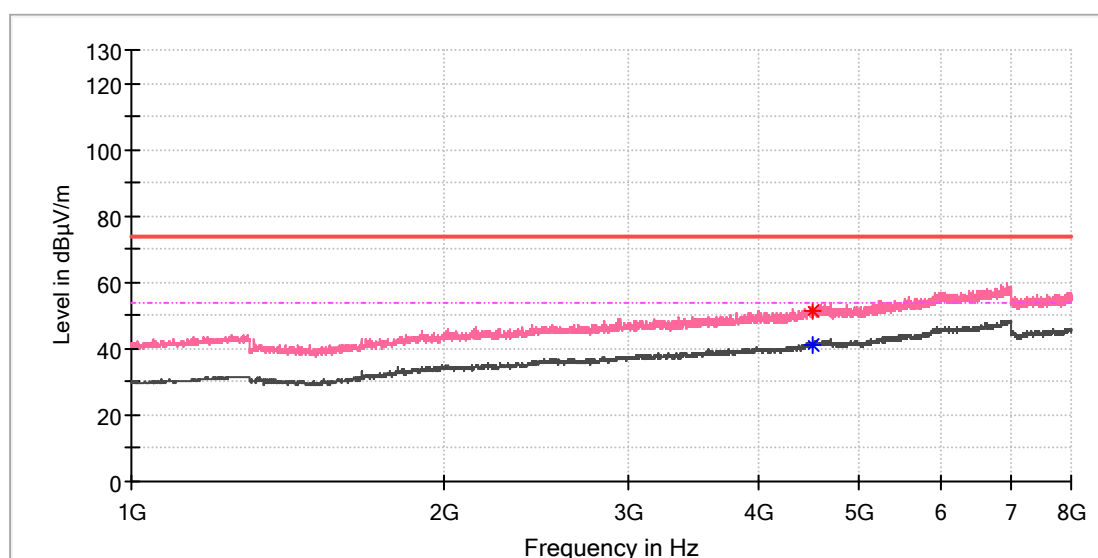


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4514.325000	52.72	---	74.00	21.28	100.0	H	332.0	11.6
4514.325000	---	45.61	54.00	8.39	100.0	H	332.0	11.6

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_903MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

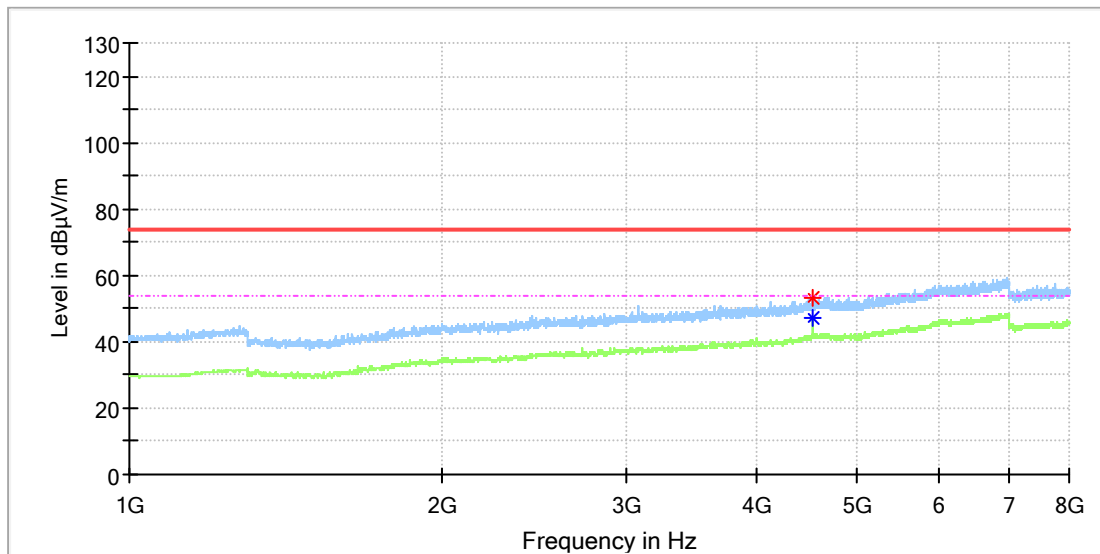


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4514.325000	---	41.39	54.00	12.61	100.0	V	272.0	11.6
4521.025000	51.37	---	74.00	22.63	100.0	V	163.0	11.7

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_907.8MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

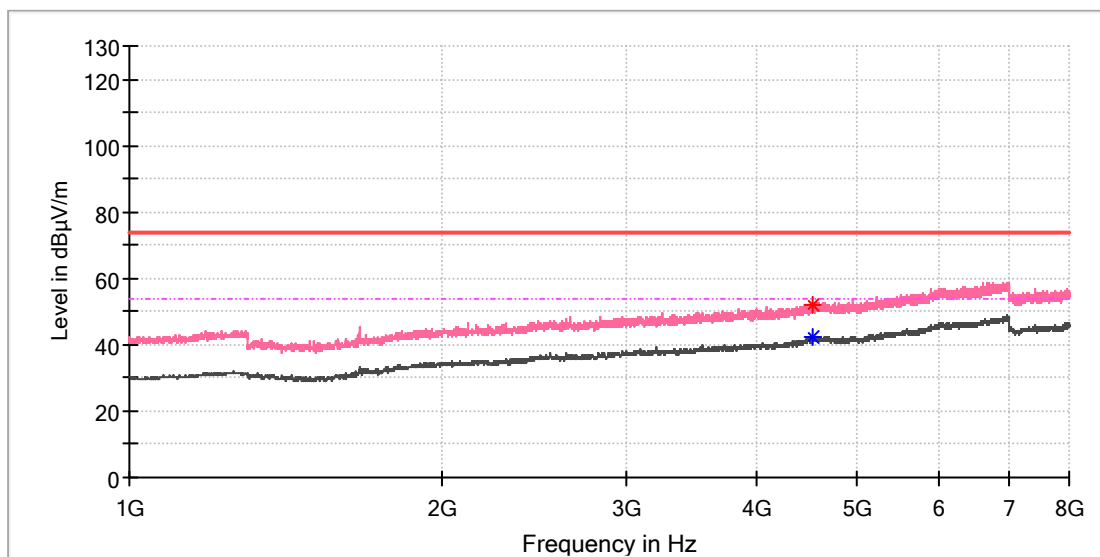


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4537.775000	53.39	---	74.00	20.61	100.0	H	348.0	11.8
4538.612500	---	47.27	54.00	6.73	100.0	H	336.0	11.8

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_907.8MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

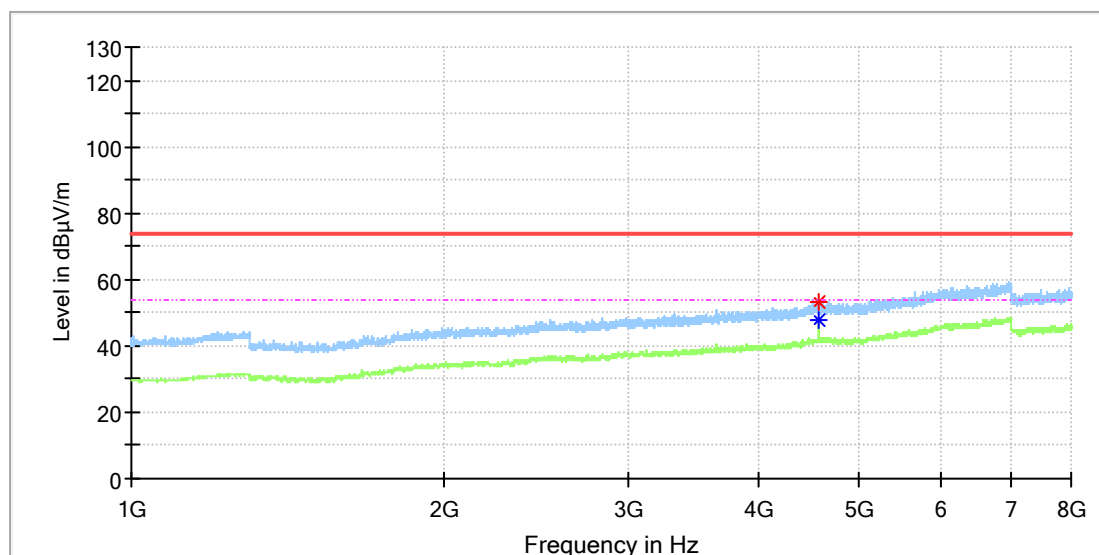


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4531.912500	52.09	---	74.00	21.91	100.0	V	309.0	11.8
4538.612500	---	42.10	54.00	11.90	100.0	V	94.0	11.8

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_914.2MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

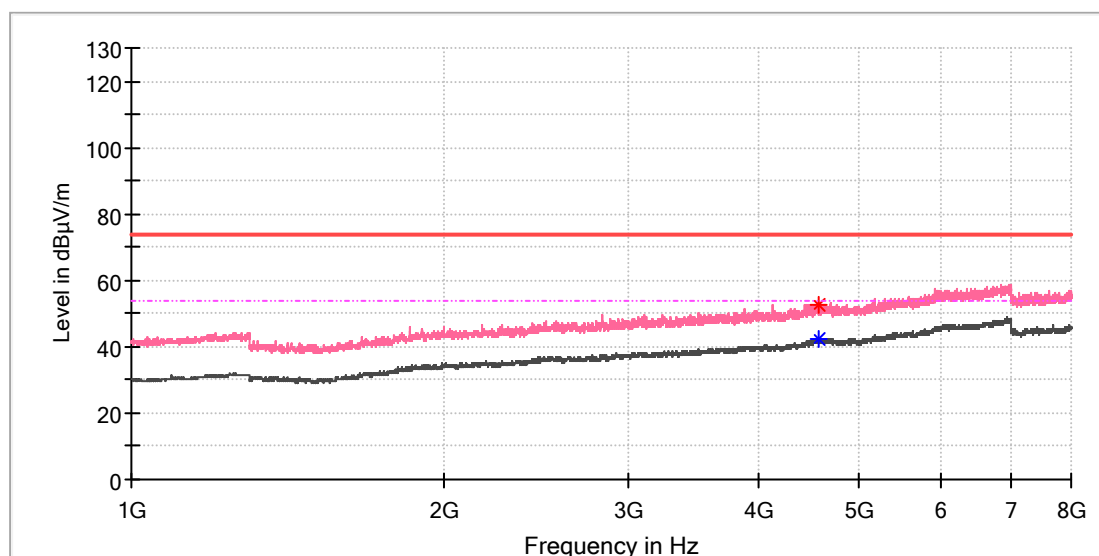


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4569.600000	53.26	---	74.00	20.74	100.0	H	343.0	12.0
4569.600000	---	47.99	54.00	6.01	100.0	H	343.0	12.0

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_914.2MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



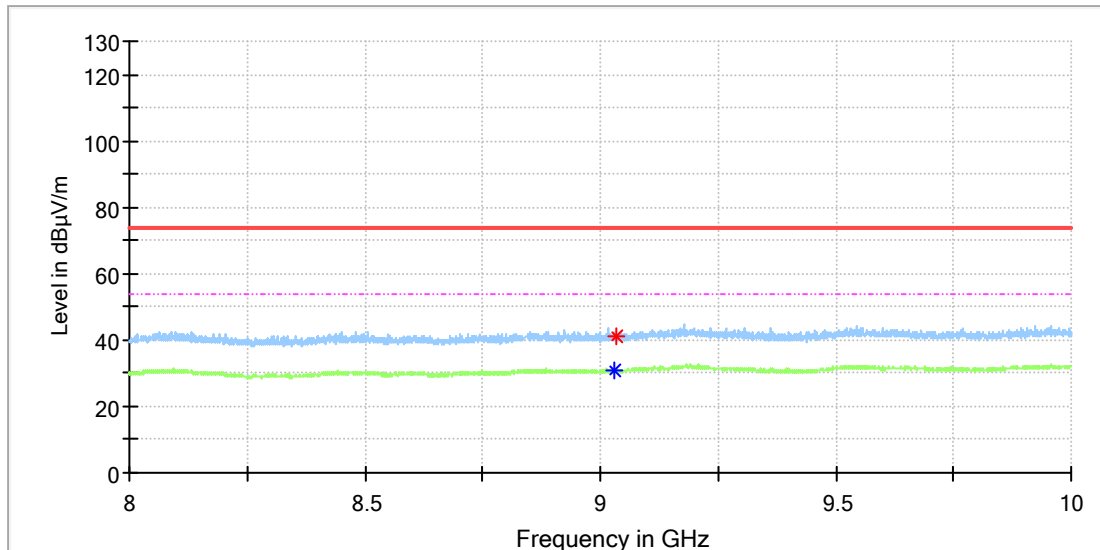
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4570.437500	---	42.07	54.00	11.93	100.0	V	301.0	12.0
4572.112500	52.51	---	74.00	21.49	100.0	V	324.0	12.0

8GHz - 10GHz

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_903MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

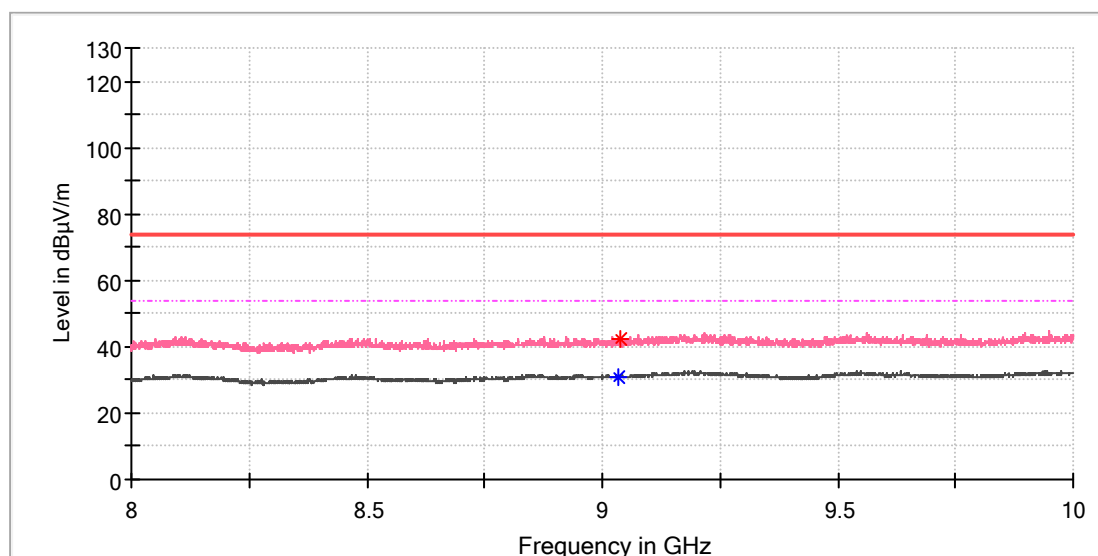


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
9031.000000	---	30.81	54.00	23.19	100.0	H	235.0	8.9
9032.500000	41.26	---	74.00	32.74	100.0	H	27.0	8.9

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_903MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

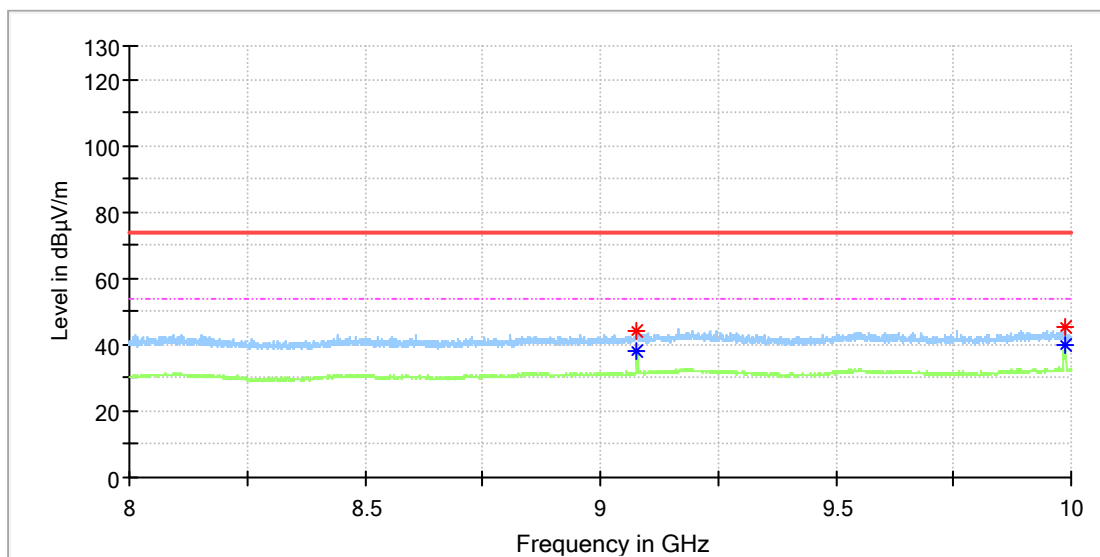


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
9033.000000	---	31.04	54.00	22.96	100.0	V	343.0	8.9
9038.500000	42.55	---	74.00	31.45	100.0	V	132.0	8.9

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_907.8MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

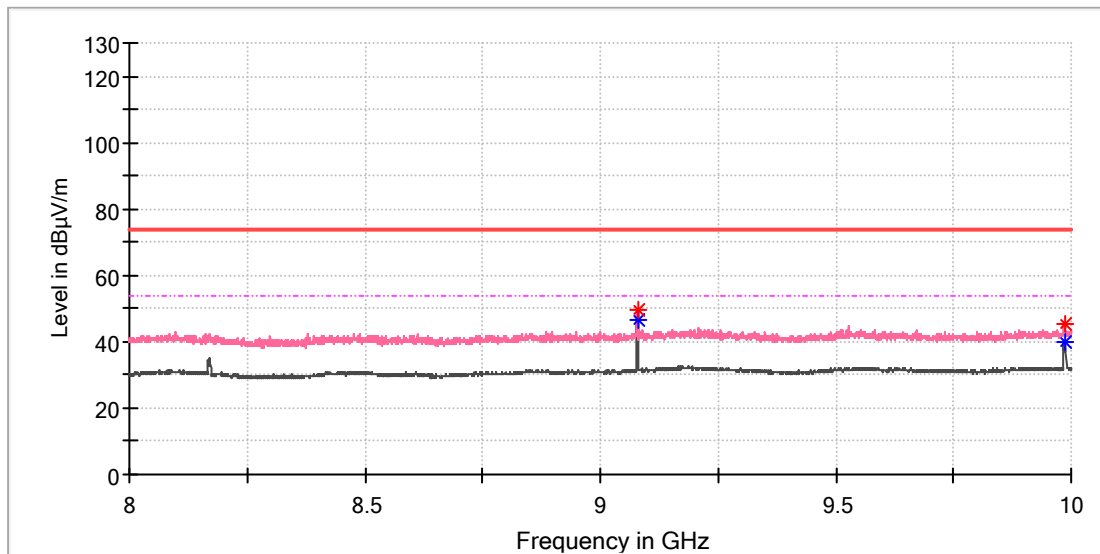


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
9077.500000	43.85	---	74.00	30.15	100.0	H	346.0	9.4
9078.000000	---	38.16	54.00	15.84	100.0	H	346.0	9.4
9987.500000	45.34	---	74.00	28.66	100.0	H	358.0	10.5
9988.500000	---	39.68	54.00	14.32	100.0	H	335.0	10.5

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_907.8MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

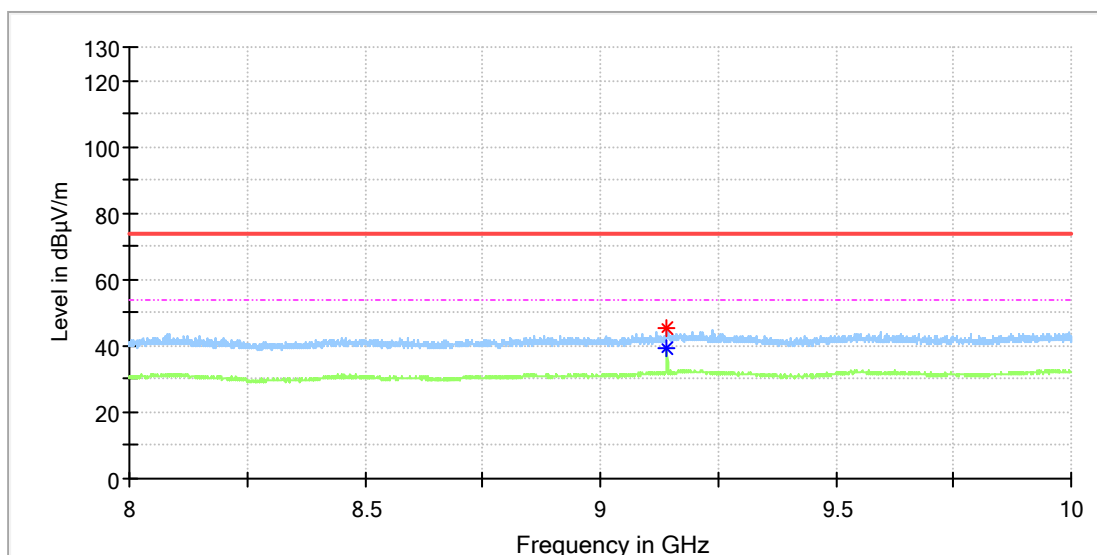


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
9079.000000	49.83	---	74.00	24.17	100.0	V	178.0	9.4
9079.500000	---	46.61	54.00	7.39	100.0	V	178.0	9.4
9987.000000	45.42	---	74.00	28.58	100.0	V	169.0	10.5
9988.000000	---	39.79	54.00	14.21	100.0	V	323.0	10.5

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_914.2MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

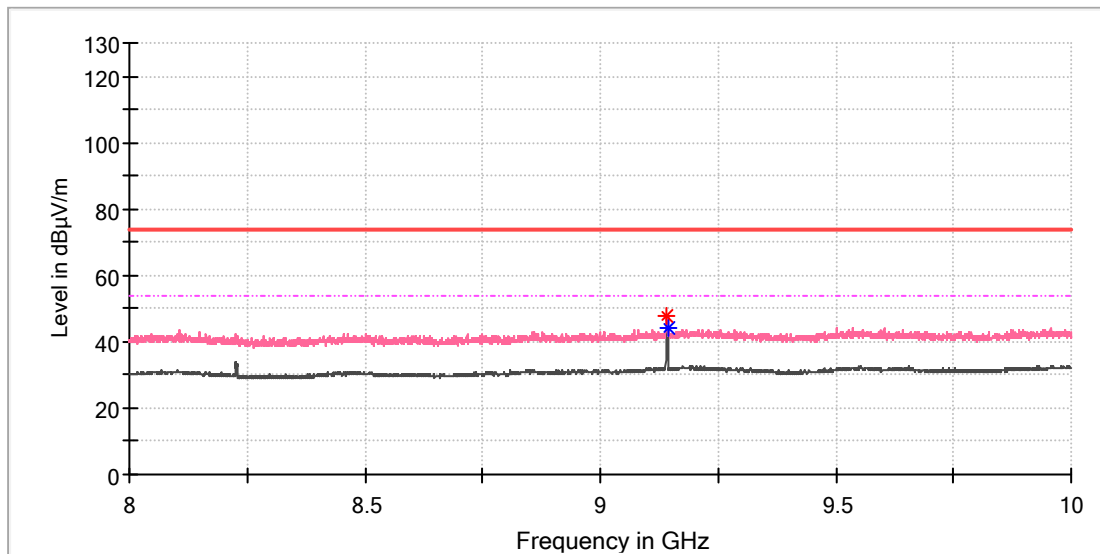


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
9140.500000	45.55	---	74.00	28.45	100.0	H	355.0	10.0
9141.000000	---	39.48	54.00	14.52	100.0	H	348.0	10.0

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_914.2MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

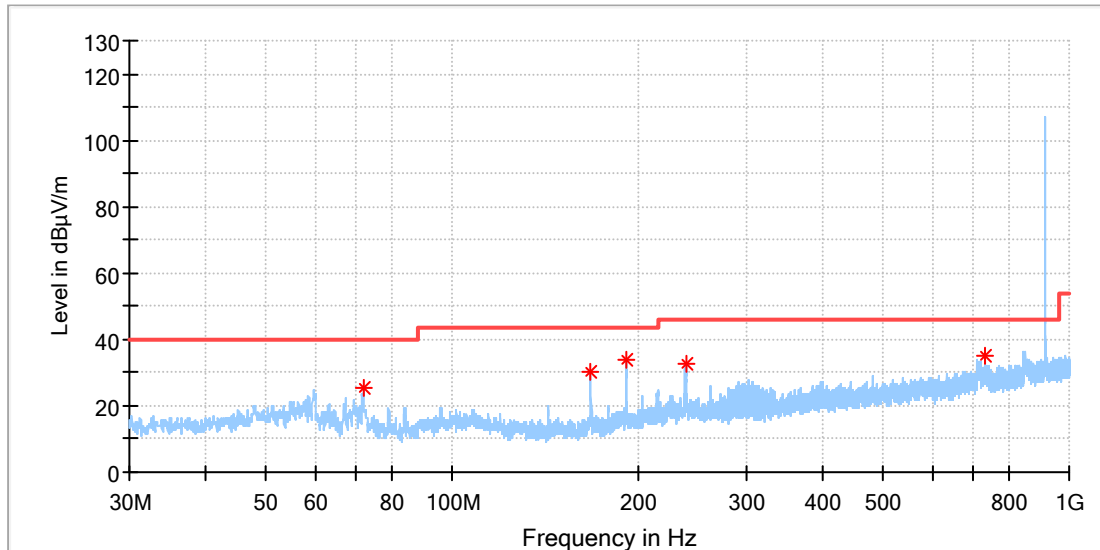
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
9142.500000	47.97	---	74.00	26.03	100.0	V	150.0	10.1
9144.000000	---	44.31	54.00	9.69	100.0	V	353.0	10.1

Lora FHSS, Antenna Gain: 2.3dBi

30MHz - 1GHz

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_914.9MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

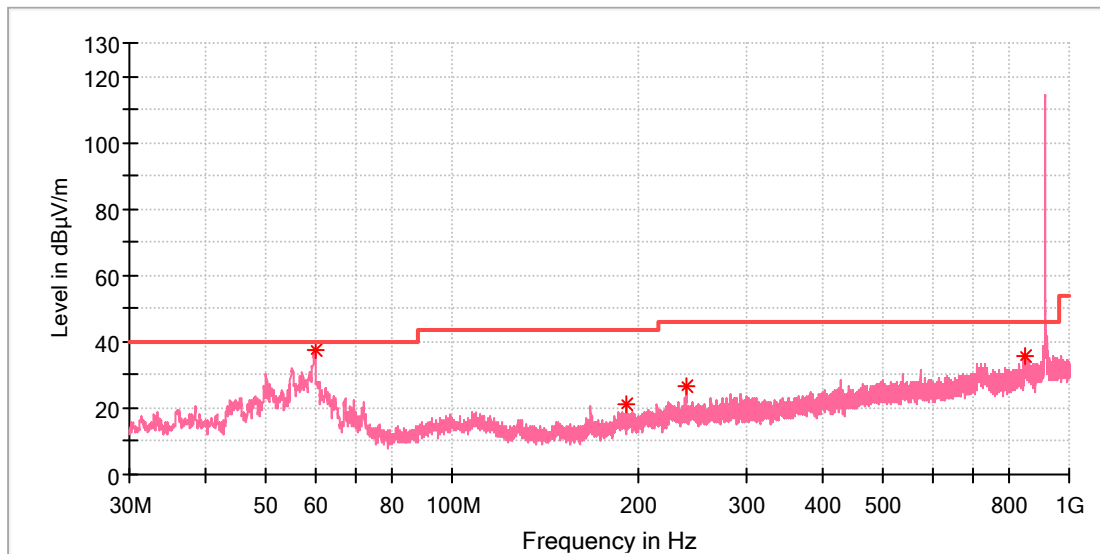


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
71.896539	25.46	40.00	14.54	100.0	H	181.0	-22.7
168.001154	30.48	43.50	13.02	100.0	H	131.0	-21.7
191.057308	33.93	43.50	9.57	100.0	H	139.0	-19.8
238.997692	32.48	46.00	13.52	100.0	H	331.0	-18.1
728.810385	35.11	46.00	10.89	100.0	H	0.0	-7.9

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_914.9MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



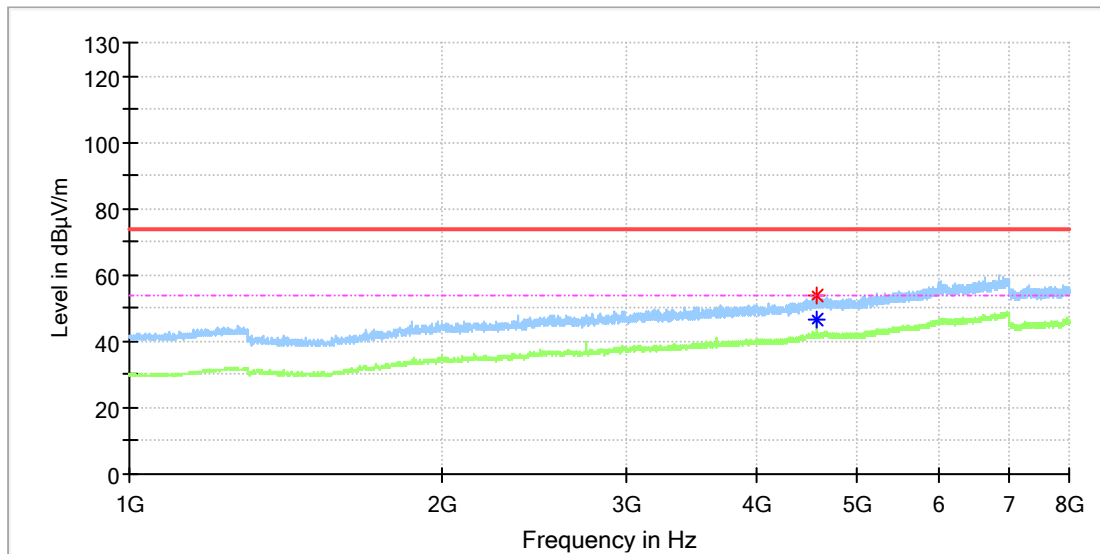
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
59.920769	36.97	40.00	3.03	100.0	V	12.0	-19.3
191.243846	21.40	43.50	22.10	100.0	V	352.0	-19.8
239.072308	26.80	46.00	19.20	100.0	V	222.0	-18.1
845.620769	35.93	46.00	10.07	100.0	V	21.0	-6.0

1GHz - 8GHz

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_914.9MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

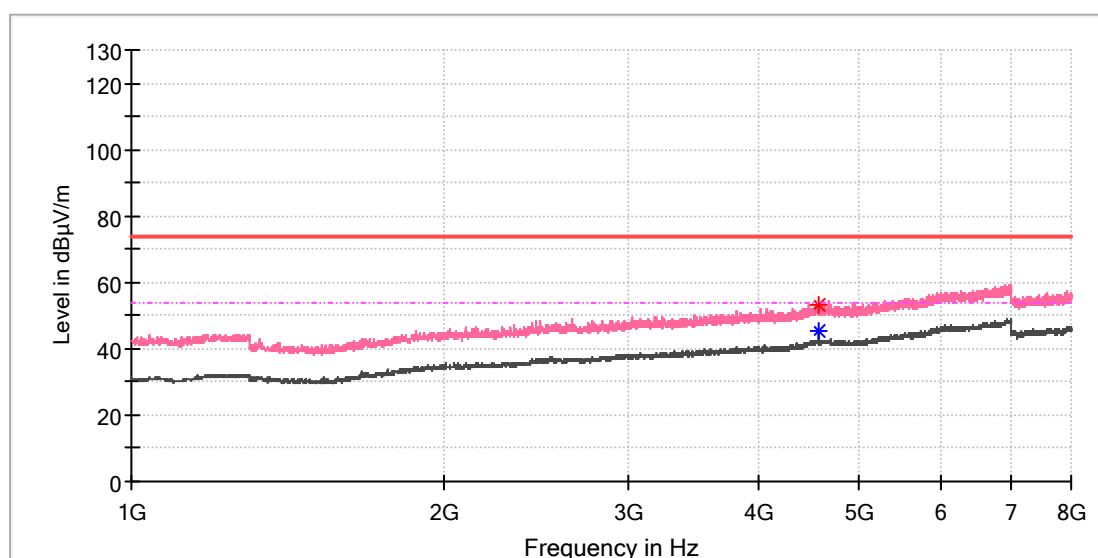


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4574.625000	53.66	---	74.00	20.34	100.0	H	141.0	12.0
4574.625000	---	46.62	54.00	7.38	100.0	H	141.0	12.0

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_914.9MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



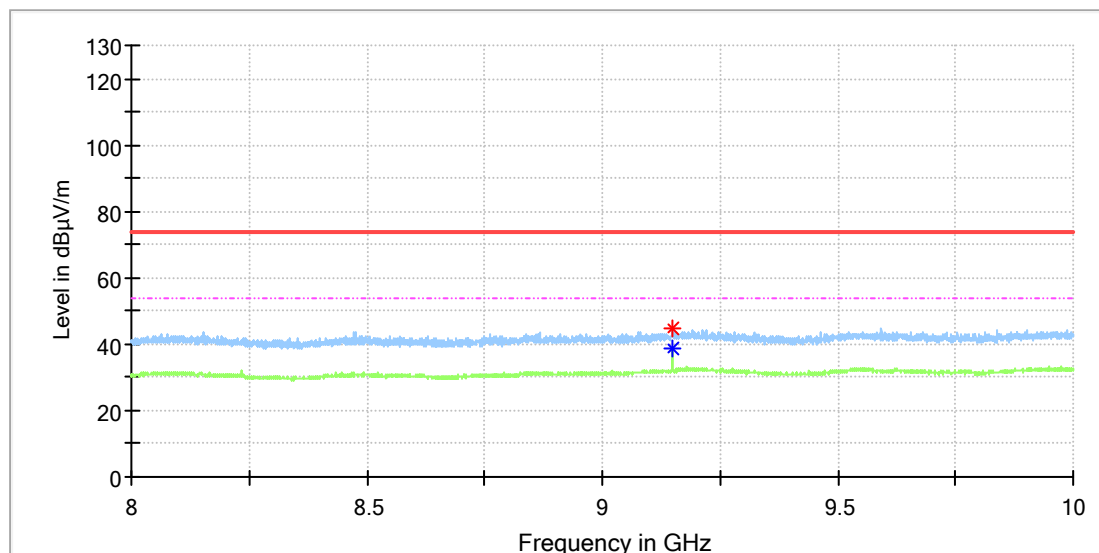
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4574.625000	53.12	---	74.00	20.88	100.0	V	0.0	12.0
4574.625000	---	45.19	54.00	8.81	100.0	V	0.0	12.0

8GHz - 10GHz

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 125K_SF12_914.9MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

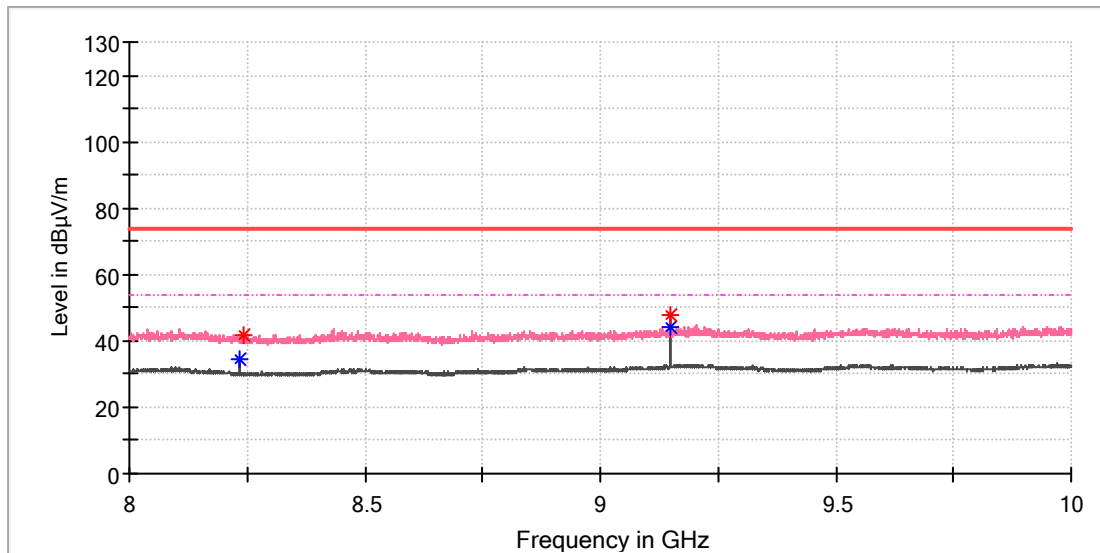


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
9148.500000	44.78	---	74.00	29.22	100.0	H	347.0	10.1
9149.000000	---	38.71	54.00	15.29	100.0	H	330.0	10.1

EUT Information

EUT Name: WisDuo LoRa Module
Model: RAK4200(H)
Test Mode: Lora 125K_SF12_914.9MHz
Order No/Sample No: 168338434/A003143961-003
Test Voltage:: DC 5V From USB
Remark: Temp 22 Humi:52%
Test Standard: FCC 15.247 & RSS-247
Tested By: Kei Zhang
Reviewed By: Terry Yin



Critical_Freqs

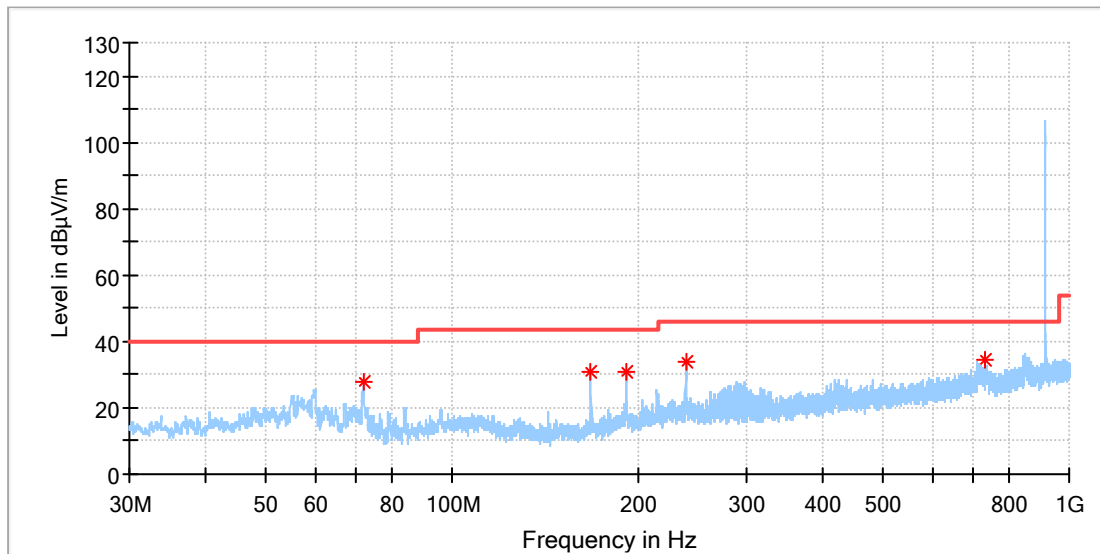
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
8233.500000	---	34.55	54.00	19.45	100.0	V	172.0	8.4
8241.000000	41.84	---	74.00	32.16	100.0	V	161.0	8.4
9148.000000	48.06	---	74.00	25.94	100.0	V	21.0	10.1
9148.500000	---	44.20	54.00	9.80	100.0	V	0.0	10.1

Lora DTS, Antenna Gain: 2.3dBi

30MHz - 1GHz

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_914.2MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

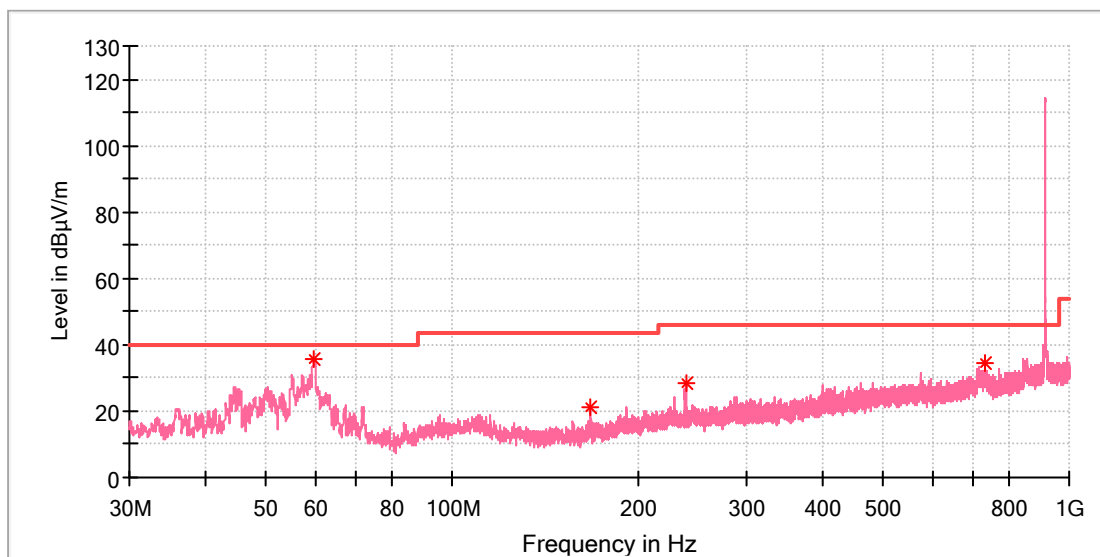


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
71.971154	27.86	40.00	12.14	100.0	H	188.0	-22.7
167.963846	31.00	43.50	12.50	100.0	H	117.0	-21.7
191.281154	31.00	43.50	12.50	100.0	H	152.0	-19.8
238.960385	33.70	46.00	12.30	100.0	H	339.0	-18.1
729.593846	34.70	46.00	11.30	100.0	H	0.0	-7.9

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_914.2MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



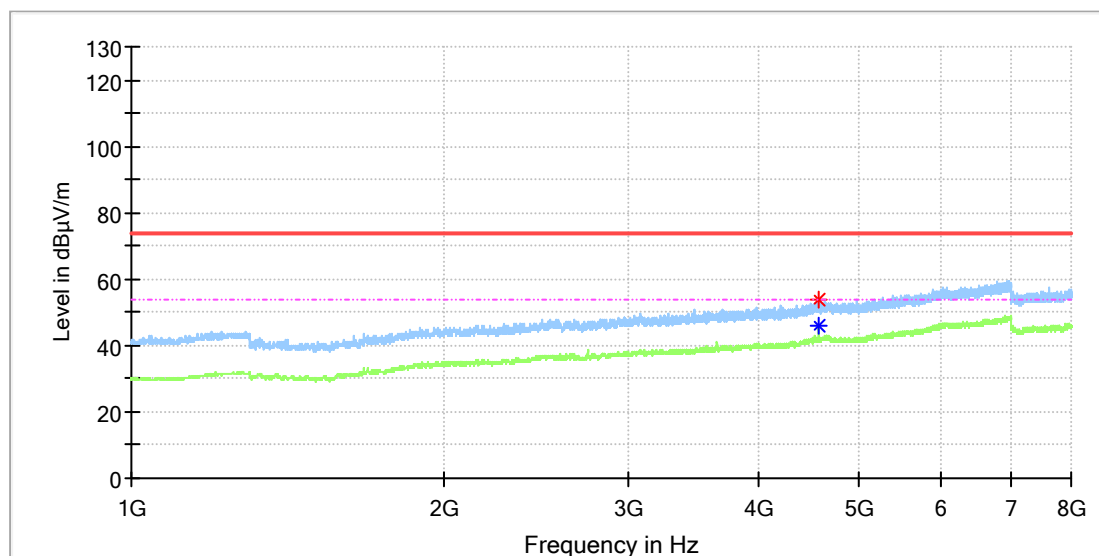
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
59.771539	35.75	40.00	4.25	100.0	V	338.0	-19.3
168.001154	21.10	43.50	22.40	100.0	V	73.0	-21.7
238.960385	28.31	46.00	17.69	100.0	V	207.0	-18.1
728.847692	34.55	46.00	11.45	100.0	V	137.0	-7.9

1GHz - 8GHz

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_914.2MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

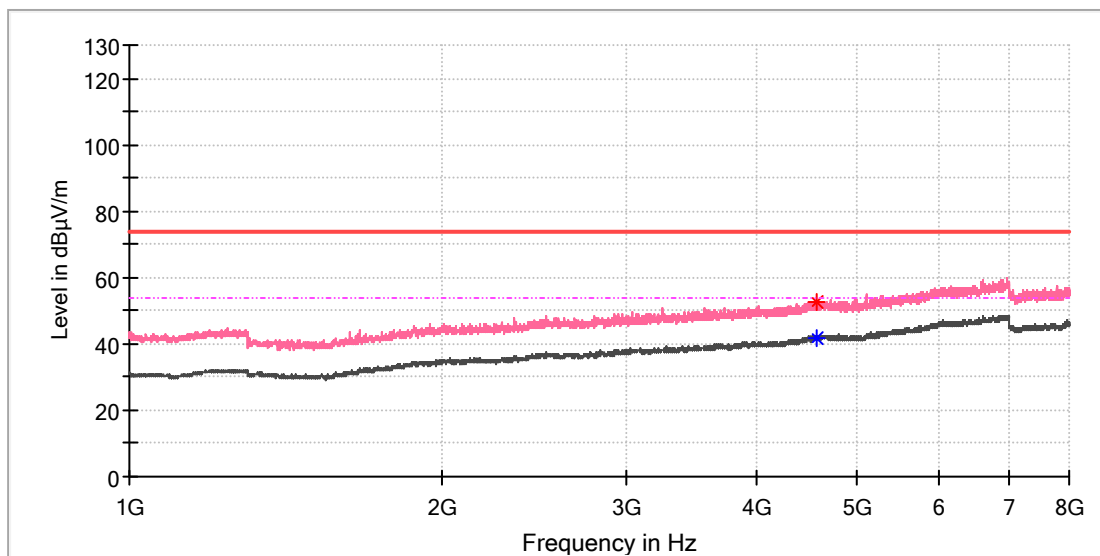


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4569.600000	---	45.86	54.00	8.14	100.0	H	0.0	12.0
4571.275000	53.93	---	74.00	20.07	100.0	H	143.0	12.0

EUT Information

EUT Name: WisDuo LoRa Module
Model: RAK4200(H)
Test Mode: Lora 500K_SF12_914.2MHz
Order No/Sample No: 168338434/A003143961-003
Test Voltage:: DC 5V From USB
Remark: Temp 22 Humi:52%
Test Standard: FCC 15.247 & RSS-247
Tested By: Kei Zhang
Reviewed By: Terry Yin



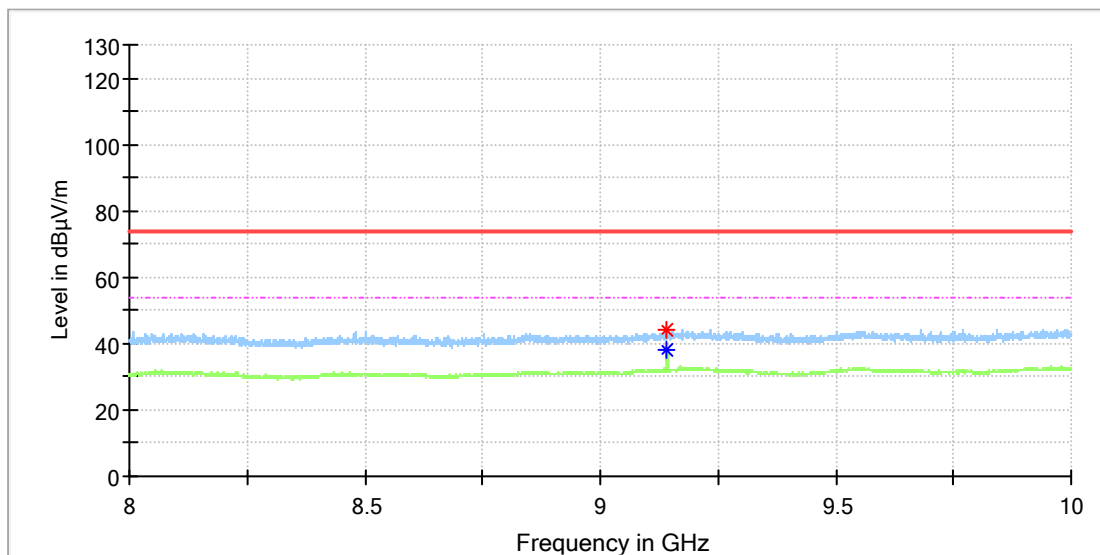
Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4574.625000	52.33	---	74.00	21.67	100.0	V	26.0	12.0
4576.300000	---	42.01	54.00	11.99	100.0	V	103.0	12.0

8GHz - 10GHz

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_914.2MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin

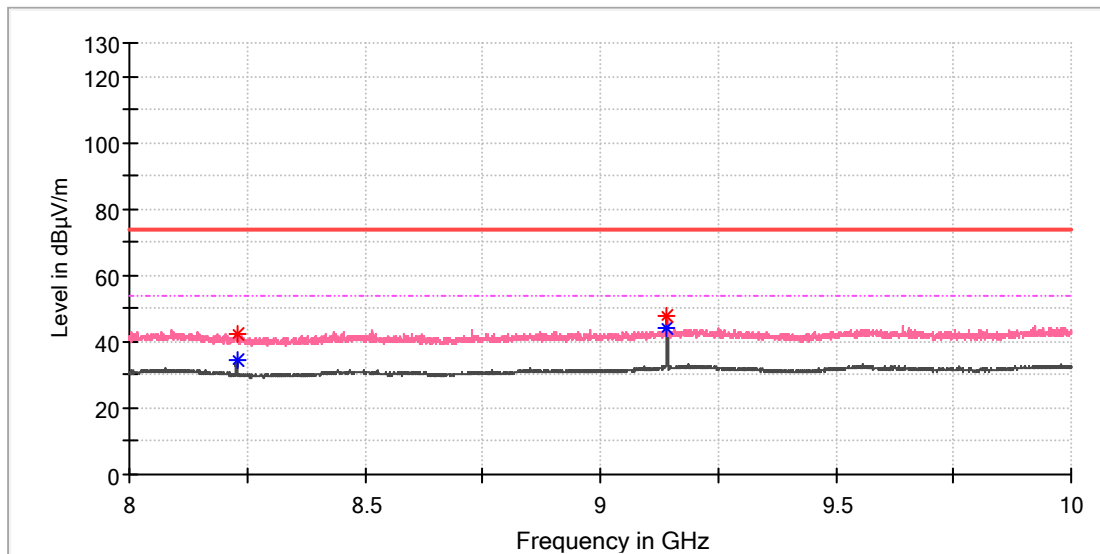


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
9141.500000	---	38.32	54.00	15.68	100.0	H	354.0	10.0
9142.500000	43.92	---	74.00	30.08	100.0	H	0.0	10.1

EUT Information

EUT Name:	WisDuo LoRa Module
Model:	RAK4200(H)
Test Mode:	Lora 500K_SF12_914.2MHz
Order No/Sample No:	168338434/A003143961-003
Test Voltage::	DC 5V From USB
Remark:	Temp 22 Humi:52%
Test Standard:	FCC 15.247 & RSS-247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

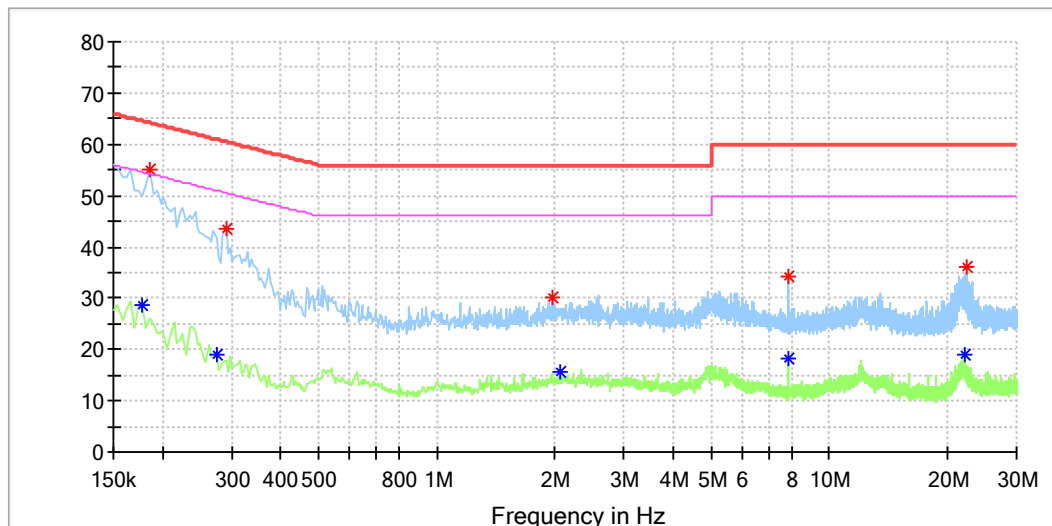
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
8229.500000	---	34.63	54.00	19.37	100.0	V	170.0	8.4
8230.000000	42.55	---	74.00	31.45	100.0	V	170.0	8.4
9142.000000	47.99	---	74.00	26.01	100.0	V	0.0	10.0
9142.000000	---	44.26	54.00	9.74	100.0	V	0.0	10.0

Appendix B.8: Test Results of Conducted Emission on AC Mains

EUT Information

EUT Name: WisDuo LoRa Module
Order No: 168338434
Model: RAK4200(H)
Test mode: ON
Test Voltage: AC 120V/60Hz
Test By: Kei Zhang
Review By: Terry Yin
Remark: SR2

Level in dB μ V



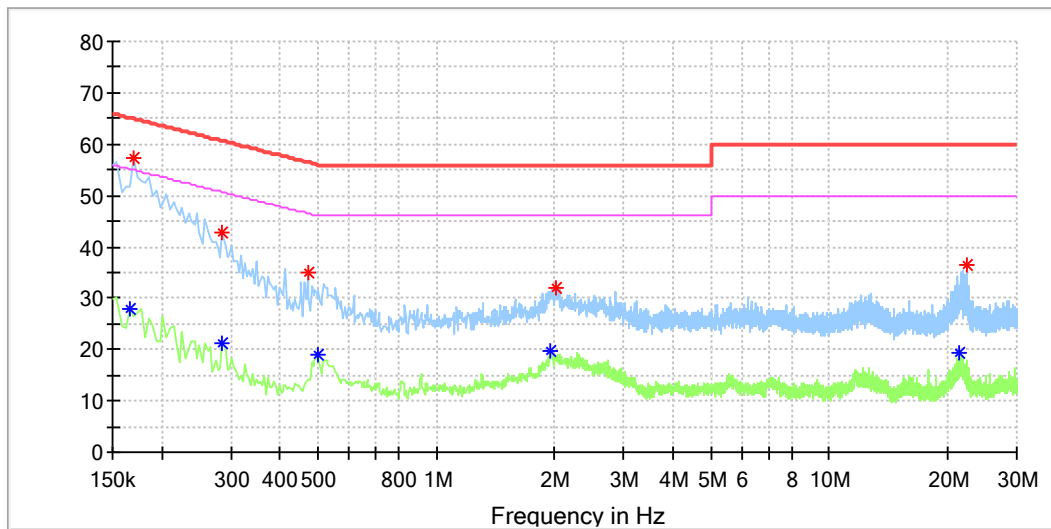
Critical Freqs

Frequency (MHz)	MaxPeak (dB μ V)	Average (dB μ V)	Limit (dB μ V)	Margin (dB)	Line	Corr. (dB)
0.178000	---	28.78	54.58	25.80	L1	9.9
0.186000	55.16	---	64.21	9.06	L1	9.9
0.274000	---	19.12	51.00	31.88	L1	9.9
0.290000	43.60	---	60.52	16.92	L1	9.9
1.970000	30.07	---	56.00	25.93	L1	10.1
2.054000	---	15.77	46.00	30.23	L1	10.1
7.846000	---	18.42	50.00	31.58	L1	10.3
7.846000	34.20	---	60.00	25.80	L1	10.3
22.182000	---	18.86	50.00	31.14	L1	10.4
22.474000	36.09	---	60.00	23.91	L1	10.4

EUT Information

EUT Name: WisDuo LoRa Module
Order No: 168338434
Model: RAK4200(H)
Test mode: ON
Test Voltage: AC 120V/60Hz
Test By: Kei Zhang
Review By: Terry Yin
Remark: SR2

Level in dBμV



Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)
0.166000	---	27.81	55.16	27.35	N	9.8
0.170000	57.15	---	64.96	7.81	N	9.8
0.286000	42.92	---	60.64	17.72	N	9.8
0.286000	---	21.14	50.64	29.50	N	9.8
0.470000	34.95	---	56.51	21.56	N	9.8
0.498000	---	18.79	46.03	27.24	N	9.8
1.958000	---	19.63	46.00	26.37	N	9.8
2.006000	31.84	---	56.00	24.16	N	9.9
21.350000	---	19.17	50.00	30.83	N	10.3
22.278000	36.30	---	60.00	23.70	N	10.3