

Prüfbericht-Nr.: <i>Test report no.:</i>	CN22HUFG 001	Auftrags-Nr.: <i>Order no.:</i>	168378328	Seite 1 von 15 <i>Page 1 of 15</i>
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2022-06-20	
Auftraggeber: <i>Client:</i>	Shenzhen RAKwireless Technology Co.,Ltd. Room 506, Building B, New Compark, Pingshan First Road, Taoyuan Street, Nanshan District, Shenzhen, Guangdong, P.R. China			
Prüfgegenstand: <i>Test item:</i>	WisGate Edge Pro			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	RAK7289V2H, RAK7289CV2H (Trademark: RAK, ARDUINO)			
Auftrags-Inhalt: <i>Order content:</i>	Type Test			
Prüfgrundlage: <i>Test specification:</i>	CFR47 FCC Part 15: Subpart B Section 15.107 CFR47 FCC Part 15: Subpart B Section 15.109 ICES-003 Issue 7 October 2020			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2022-06-22	Refer to photos documents		
Prüfmuster-Nr.: <i>Test sample no.:</i>	A003285159-002, 003			
Prüfzeitraum: <i>Testing period:</i>	2022-06-22 – 2022-07-25			
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von: <i>tested by:</i>	genehmigt von: <i>authorized by:</i>			
Datum: <i>Date:</i> 2022-08-05				
	Signed by: Alex Lan		Signed by: Winnie Hou	
Stellung / Position	Assistant Project Manager	Stellung / Position	Department Manager	
Sonstiges / Other:	FCC ID: 2AF6B-RAK7289CV2H			
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>			
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend N/A = nicht anwendbar	4 = ausreichend N/T = nicht
* Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory N/A = not applicable	4 = sufficient N/T = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

Test Summary

- 5.1 *Conducted emissions*
RESULT: Pass
- 5.2 *Radiated emissions*
RESULT: Pass

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1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:
Appendix A: Test result.

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

No. 362 Huanguan Road Middle, Longhua District, Shenzhen 518110, People's Republic of China

FCC Registration No.: 694916

IC Registration No.: 25069, CAB identifier: CN0078

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Radiated Emission Testing				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
3m SAC	ETS-Lindgren	SAC3	CT001632-Q1362	2024-04-26
EMI Test Receiver	R&S	ESR7	102111	2022-12-01
Horn Antenna	R&S	HF907	102706	2022-08-07
Preamplifier (1-18GHz)	FIT	SCU-18F	180077	2022-08-13
Active magnetic loop antenna	SCHWARZBECK	FMZB1519B	00080	2022-09-08
Trilog-Broadband antenna	SCHWARZBECK	VULB9168	0945	2022-12-12
EMC32 test software	R&S	EMC32(Ver.10.50.00)	N/A	N/A
Conducted Emissions testing				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
EMI Test Receiver	R&S	ESR3	102428	2022-08-10
Artificial Mains Network	R&S	ENV216	102333	2022-08-10
Impedance Stabilisation Network	R&S	ENY81	100323	2022-08-11
EMC32 test software	R&S	EMC32(Ver.10.50.00)	N/A	N/A

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table

Test	Parameters	uncertainty
Conducted Emission	Conducted emission 150kHz-30MHz (AMN)	± 3.70 dB ± 3.30 dB
Radiated Emission (3m SAC)	Radiated emission 30MHz-1GHz	± 4.52 dB
	Radiated emission 1GHz-18GHz	± 4.37 dB

2.6 Location of Original Data

The original copies of all test data taken during actual testing were at this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at No. 362 Huanguan Road Middle, Longhua District, Shenzhen 518110, People's Republic of China. is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUTs are a WisGate Edge Pro, which supports 2.4GHz Wi-Fi, BLE, Lora+GNSS and/or LTE functions.

For model: RAK7289V2H

Note: This product contains transmitter modules, the Lora module is optional.

2.4GHz Wi-Fi module Model: RAK634	Contains FCC ID: 2AF6B-RAK634 Contains IC: 25908-RAK634
BLE module Model: RAK13400	Contains FCC ID: 2AF6B-RAK13400 Contains IC: 25908-RAK13400
Lora module Model: RAK5146	Contains FCC ID: 2AF6B-RAK5146 Contains IC: 25908-RAK5146
Lora + GNSS module Model: RAK2287X	Contains FCC ID: 2AF6B-RAK2287X Contains IC: 25908-RAK2287X

For model: RAK7289CV2H

Note: This product contains transmitter modules, the Lora module is optional.

LTE module Model: EG95-NA	Contains FCC ID: XMR201807EG95NA Contains IC: 10224A-2018EG95NA
2.4GHz Wi-Fi module Model: RAK634	Contains FCC ID: 2AF6B-RAK634 Contains IC: 25908-RAK634
BLE module Model: RAK13400	Contains FCC ID: 2AF6B-RAK13400 Contains IC: 25908-RAK13400
Lora module Model: RAK5146	Contains FCC ID: 2AF6B-RAK5146 Contains IC: 25908-RAK5146
Lora + GNSS module Model: RAK2287X	Contains FCC ID: 2AF6B-RAK2287X Contains IC: 25908-RAK2287X

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment	WisGate Edge Pro
Type Designation	RAK7289V2H, RAK7289CV2H
Trade Mark	RAK, ARDUINO
FCC ID	2AF6B-RAK7268CV2H
Input Voltage	DC 12V via DC Source or DC 37 ~57V via POE adapter
Testing Voltage	AC 120V, 60Hz or DC 48V

3.3 Independent Operation Modes

The basic operation modes are:

- A, On, WIFI link + BLE link + Lora link , powered by AC adapter
- B, On, WIFI link + BLE link + Lora link, powered by POE adapter
- C, Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Block Diagram
- Photo Document
- Schematics
- User Manual

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in ANSI C63.4: 2014.

According to clause 3.1, all test were applied on model RAK7289V2H & RAK7289CV2H.

4.3 Special Accessories and Auxiliary Equipment

Table 3: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model No.	Serial Number or Rating
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	166305
Portable Laptop	Lenovo	ThinkPad T480	10Q67059
POE Adapter	RAK	R012-4800500	Input: AC 100-240V, 50/60Hz, 0.6A Max Output: DC 48.0V, 0.5A 24.0W

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

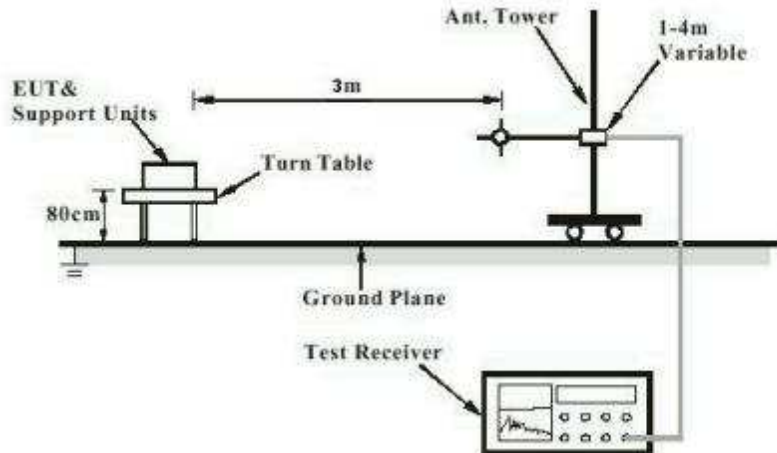


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

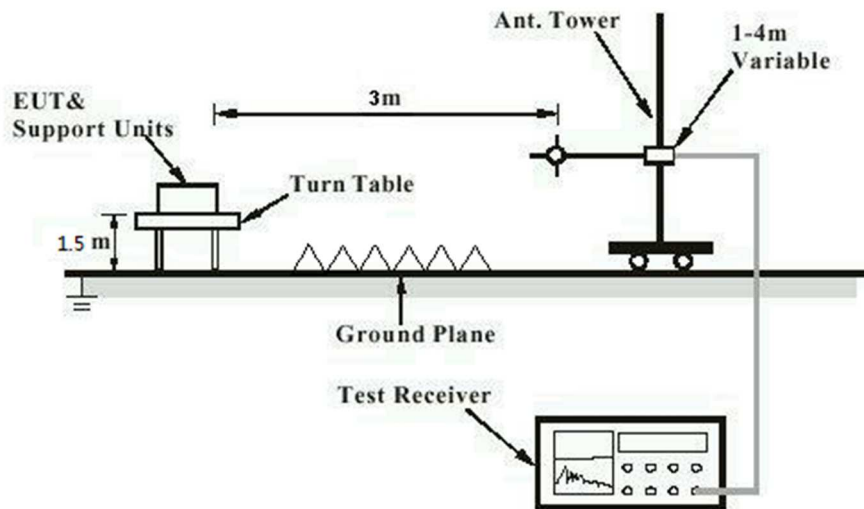
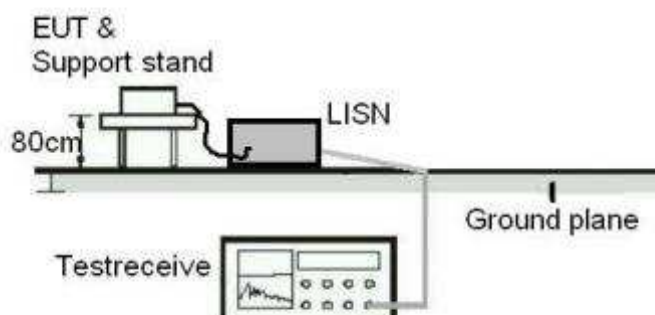


Diagram of Measurement Configuration for Mains Conduction Measurement



5 Test Results

5.1 Conducted emissions

RESULT:

Pass

Test Specification

Test standard	: FCC Part 15.107(a) ICES-003 Issue 7, Clause 3.2.1
Basic standard	: ANSI C63.4: 2014
Frequency range	: 150KHz - 30MHz
Classification	: Class B
Limit	: FCC Part 15.107(a) & ICES-003 Table 1
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2022-06-22 to 2022-07-25
Input voltage	: AC 120V, 60Hz
Operation mode	: A
Earthing	: Not Connected
Ambient temperature	: Refer to test data
Relative humidity	: Refer to test data
Atmospheric pressure	: 101 kPa

For the measurement records, refer to appendix A, only the worst case mode are shown in this report.

5.2 Radiated Emission

RESULT:

Pass

Test Specification

Test standard	: FCC Part 15.109(a) ICES-003 Issue 7, Clause 3.2.2
Basic standard	: ANSI C63.4: 2014
Frequency range	: 30MHz to 5 th highest fundamental frequency
Classification	: Class B
Limit	: FCC Part 15.109(a) ICES-003 Table 2 & Table 4
Kind of test site	: 3m Semi-anechoic Chamber & 3m Full-anechoic Chamber

Test Setup

Date of testing	: 2022-06-22 to 2022-07-25
Input voltage	: AC 120V, 60Hz or DC 48V
Operation mode	: A, B
Earthing	: Not Connected
Ambient temperature	: Refer to test data
Relative humidity	: Refer to test data
Atmospheric pressure	: 101 kPa

For the measurement records, refer to appendix A, only the worst case mode are shown in this report.

Remark 1: The limit of below radiated emission test data is from FCC part 15.109, it also meet the limit of ICES-003 issue 7.

Remark 2: The host (RAK7289V2H) has been evaluated according to modular: WisLink LPWAN Concentrator with C2PC (FCC ID: 2AF6B-RAK2287X) procedure in test report CN22GRUS 001, and the Radiated Spurious Emissions was carried out within frequency range 9 kHz to the fifth harmonics, refer to CN22AG77 001 for details of measurement results.

Remark 3: The host (RAK7289V2H) has been evaluated according to modular: WisLink LPWAN Concentrator with C2PC (FCC ID: 2AF6B-RAK5146) procedure in test report CN22EZX6 001, and the Radiated Spurious Emissions was carried out within frequency range 9 kHz to the fifth harmonics, refer to CN22SLLJ 001 for details of measurement results.

Remark 4: The host (RAK7289CV2H) has been evaluated according to modular: WisLink LPWAN Concentrator with C2PC (FCC ID: 2AF6B-RAK2287X) procedure in test report CN22RX13 001, and the Radiated Spurious Emissions was carried out within frequency range 9 kHz to the fifth harmonics, refer to CN22CATP 001 for details of measurement results.

Remark 5: The host (RAK7289CV2H) has been evaluated according to modular: WisLink LPWAN Concentrator with C2PC (FCC ID: 2AF6B-RAK5146) procedure in test report CN223NTZ 001, and the Radiated Spurious Emissions was carried out within frequency range 9 kHz to the fifth harmonics, refer to CN223ZEA 001 for details of measurement results.

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Appendix A

Test Results

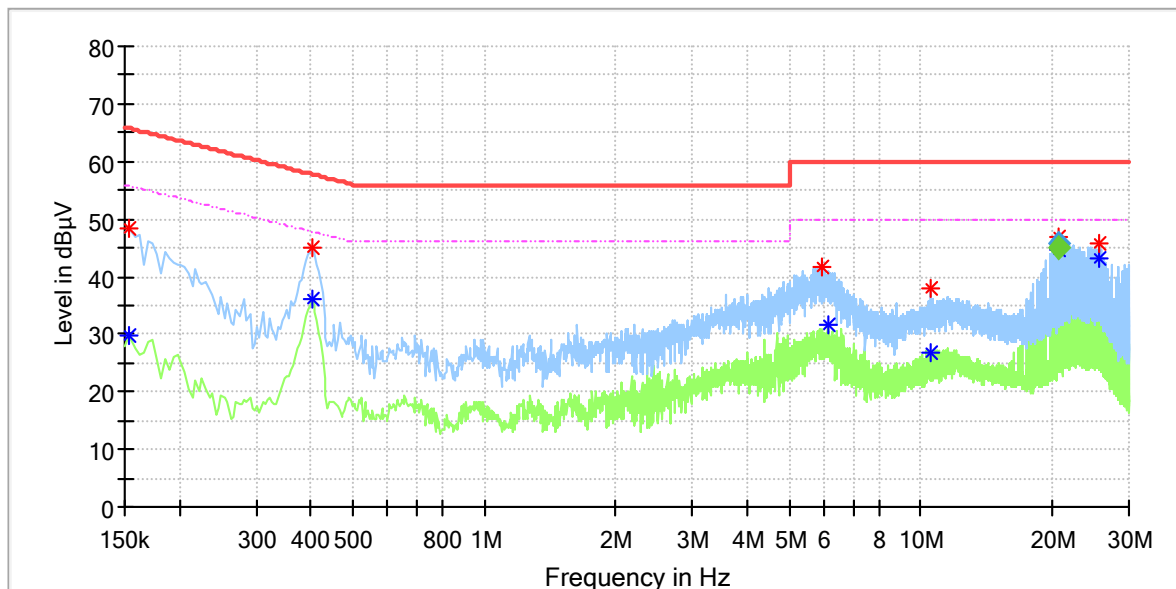
1	APPENDIX A.1: TEST PLOTS OF CONDUCTED EMISSIONS.....	2
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1 Appendix A.1: Test Plots of Conducted Emissions

Model RAK7289CV2H with Lora module RAK2287X

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289CV2H
Test Mode:	operating
Test Voltage:	AC 120V/60Hz
Test By/Review By:	Kevin Zhou/Gary Chen
Test Standard:	FCC Part 15
Tem./Hum./Pressure:	23.9°C/51.4%/101kPa
Remark:	SR1



Critical Freqs

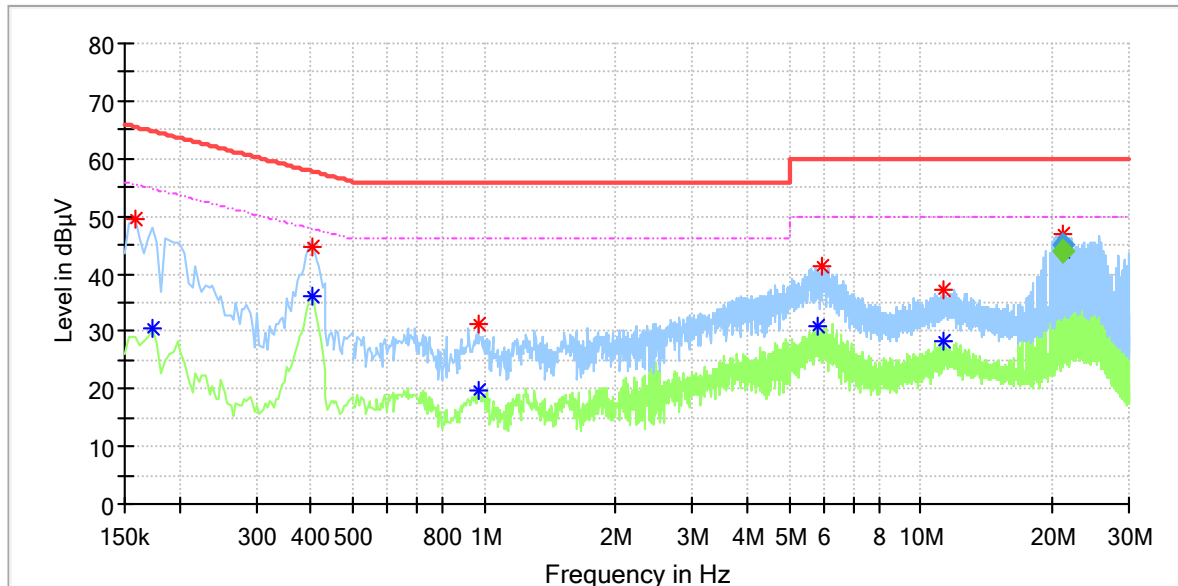
Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.154000	---	29.61	55.78	26.18	L1	9.6
0.154000	48.33	---	65.78	17.45	L1	9.6
0.402000	44.89	---	57.81	12.92	L1	9.7
0.402000	---	35.95	47.81	11.87	L1	9.7
5.928000	41.63	---	60.00	18.37	L1	10.0
6.108000	---	31.47	50.00	18.53	L1	10.0
10.484000	37.85	---	60.00	22.15	L1	10.0
10.564000	---	26.94	50.00	23.06	L1	10.0
25.744000	45.84	---	60.00	14.16	L1	10.4
25.744000	---	43.06	50.00	6.94	L1	10.4

Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
20.698500	---	44.87	50.00	5.13	1000.0	9.000	L1	10.3
20.698500	45.85	---	60.00	14.15	1000.0	9.000	L1	10.3

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289CV2H
Test Mode:	operating
Test Voltage:	AC 120V/60Hz
Test By/Review By:	Kevin Zhou/Gary Chen
Test Standard:	FCC Part 15
Tem./Hum./Pressure:	23.9°C/51.4%/101kPa
Remark:	SR1



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.158000	49.55	---	65.57	16.01	N	9.6
0.174000	---	30.55	54.77	24.21	N	9.6
0.402000	44.78	---	57.81	13.03	N	9.7
0.402000	---	36.05	47.81	11.76	N	9.7
0.968000	31.29	---	56.00	24.71	N	9.7
0.968000	---	19.82	46.00	26.18	N	9.7
5.832000	---	30.98	50.00	19.02	N	10.0
5.932000	41.13	---	60.00	18.87	N	10.0
11.228000	37.21	---	60.00	22.79	N	10.2
11.288000	---	28.13	50.00	21.87	N	10.2

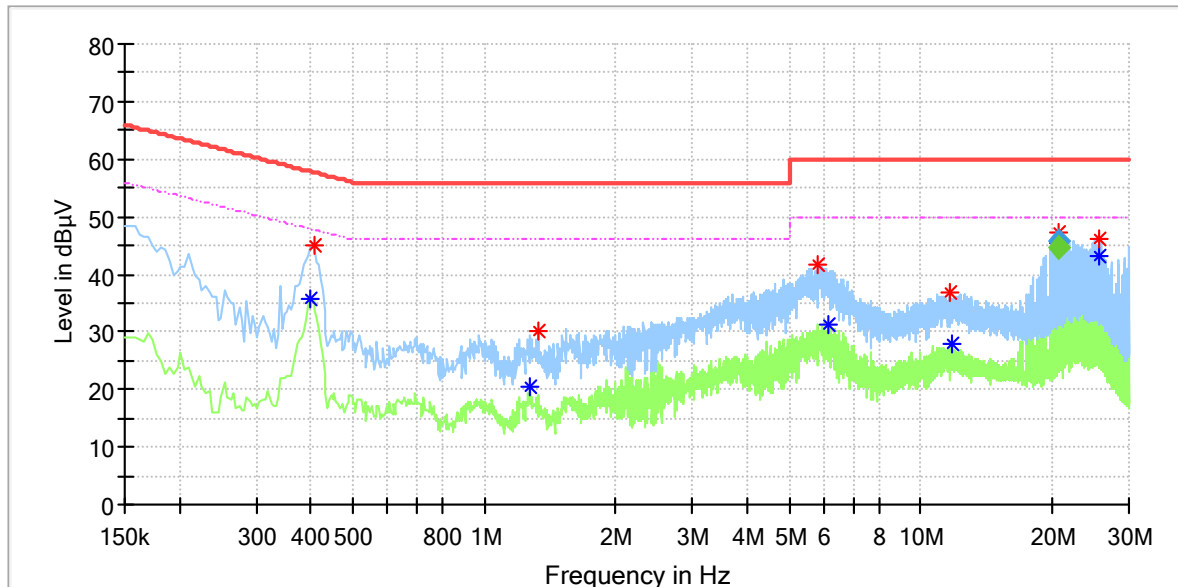
Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
21.202500	---	43.93	50.00	6.07	1000.0	9.000	N	10.3
21.202500	45.09	---	60.00	14.91	1000.0	9.000	N	10.3

Model RAK7289CV2H with Lora module RAK5146

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289CV2H
Test Mode:	operating
Test Voltage:	AC 120V/60Hz
Test By/Review By:	Kevin Zhou/Gary Chen
Test Standard:	FCC Part 15
Tem./Hum./Pressure:	23.9°C/51.4%/101kPa
Remark:	SR1



Critical Freqs

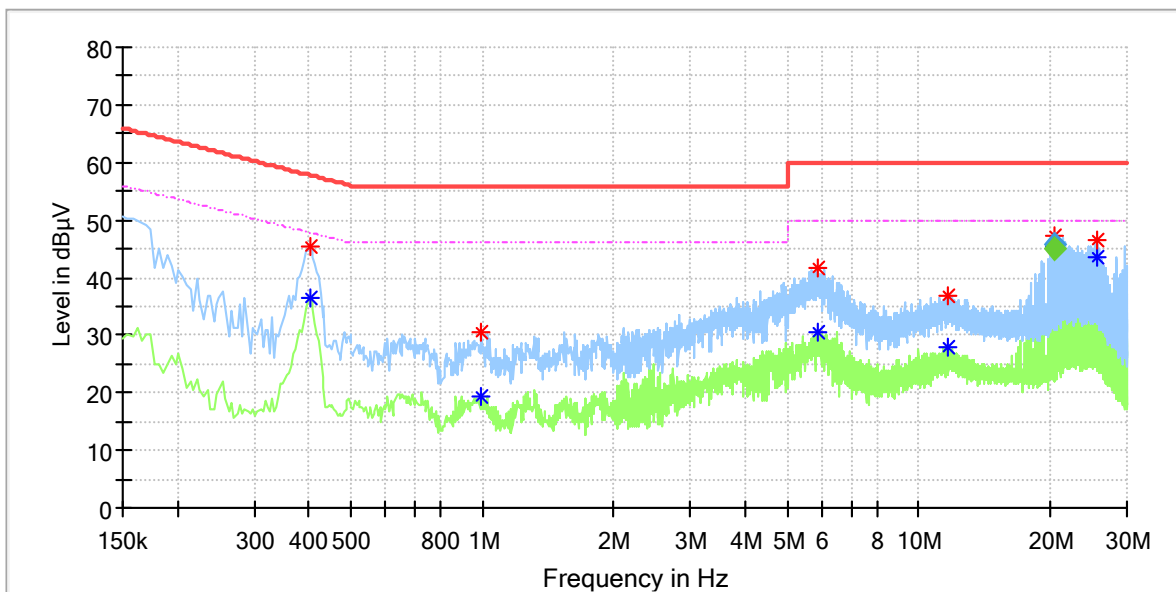
Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.398000	---	35.69	47.90	12.20	L1	9.7
0.406000	45.03	---	57.73	12.70	L1	9.7
1.276000	---	20.29	46.00	25.71	L1	9.7
1.332000	30.17	---	56.00	25.83	L1	9.7
5.836000	41.64	---	60.00	18.36	L1	10.0
6.152000	---	31.27	50.00	18.73	L1	10.0
11.624000	36.94	---	60.00	23.06	L1	10.1
11.816000	---	27.82	50.00	22.18	L1	10.1
25.496000	---	43.20	50.00	6.80	L1	10.4
25.496000	46.23	---	60.00	13.77	L1	10.4

Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
20.698500	45.70	---	60.00	14.30	1000.0	9.000	L1	10.3
20.698500	---	44.79	50.00	5.21	1000.0	9.000	L1	10.3

EUT Information

EUT Name: WisGate Edge Pro
 Order No: 168378328_P00734853
 Model: RAK7289CV2H
 Test Mode: operating
 Test Voltage: AC 120V/60Hz
 Test By/Review By: Kevin Zhou/Gary Chen
 Test Standard: FCC Part 15
 Tem./Hum./Pressure: 23.9°C/51.4%/101kPa
 Remark: SR1



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.402000	45.38	---	57.81	12.43	N	9.7
0.402000	---	36.42	47.81	11.39	N	9.7
0.996000	---	19.34	46.00	26.66	N	9.7
0.996000	30.68	---	56.00	25.32	N	9.7
5.848000	41.62	---	60.00	18.38	N	10.0
5.876000	---	30.48	50.00	19.52	N	10.0
11.624000	36.72	---	60.00	23.28	N	10.2
11.680000	---	27.77	50.00	22.23	N	10.2
25.496000	46.64	---	60.00	13.36	N	10.5
25.496000	---	43.54	50.00	6.46	N	10.5

Final Result

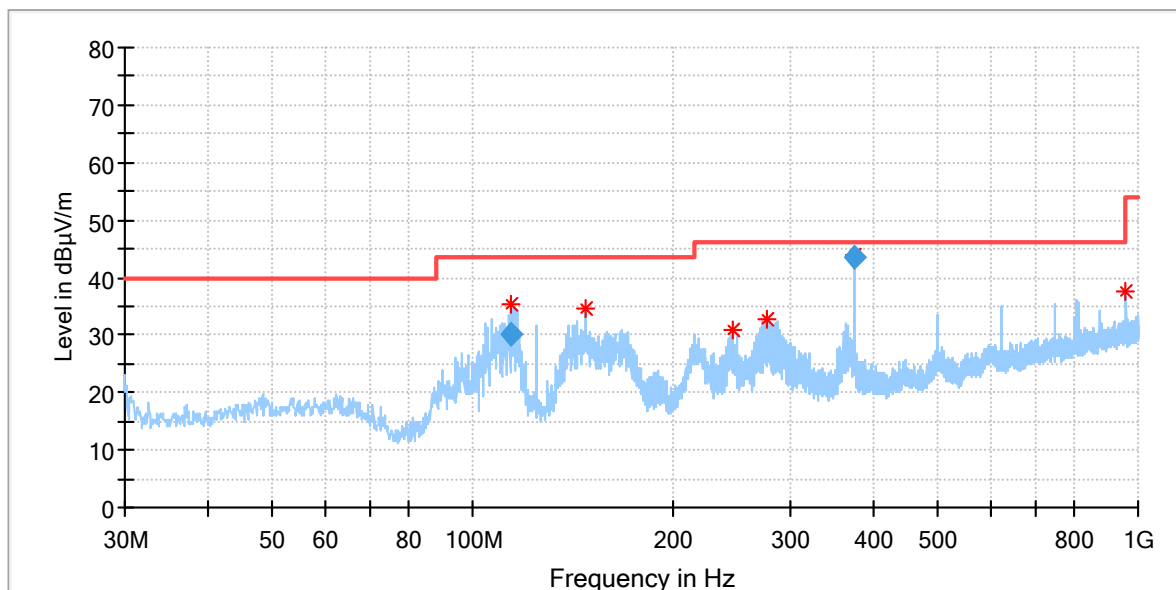
Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
20.446500	---	44.86	50.00	5.14	1000.0	9.000	N	10.3
20.446500	45.61	---	60.00	14.39	1000.0	9.000	N	10.3

2 Appendix A.2: Test Plots of Radiated Emissions, below 1GHz

Model RAK7289V2H with Lora module RAK2287X

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289V2H
Test Mode:	operating
Test Voltage:	AC 120V/60Hz
Standard:	FCC Part 15
Test By:/Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber



Critical Freqs

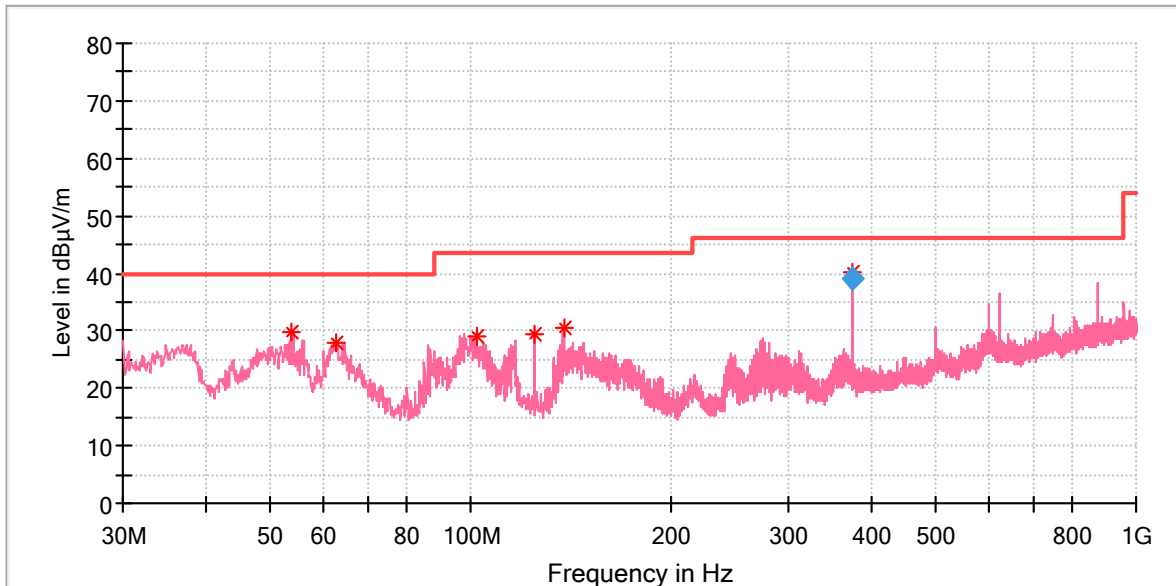
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
114.022000	35.20	43.50	8.30	200.0	H	199.0	18.8
148.049000	34.60	43.50	8.90	200.0	H	61.0	20.4
245.340000	30.75	46.00	15.25	100.0	H	303.0	18.6
277.544000	32.67	46.00	13.33	100.0	H	24.0	20.2
375.009000	43.76	46.00	2.24	100.0	H	164.0	22.8
960.036000	37.72	54.00	16.28	100.0	H	53.0	31.9

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
114.022000	30.26	43.50	13.24	1000.0	120.000	200.0	H	199.0	18.8
375.009000	43.36	46.00	2.64	1000.0	120.000	100.0	H	164.0	22.8

EUT Information

EUT Name: WisGate Edge Pro
 Order No: 168378328_P00734853
 Model: RAK7289V2H
 Test Mode: operating
 Test Voltage: AC 120V/60Hz
 Standard: EN 301489-1
 Test By:/Review By: Kevin Zhou/Gary Chen
 Tem./Hum./Pressure: 24.1°C/50.8%/101kPa
 Remark: 3m chamber



Critical Freqs

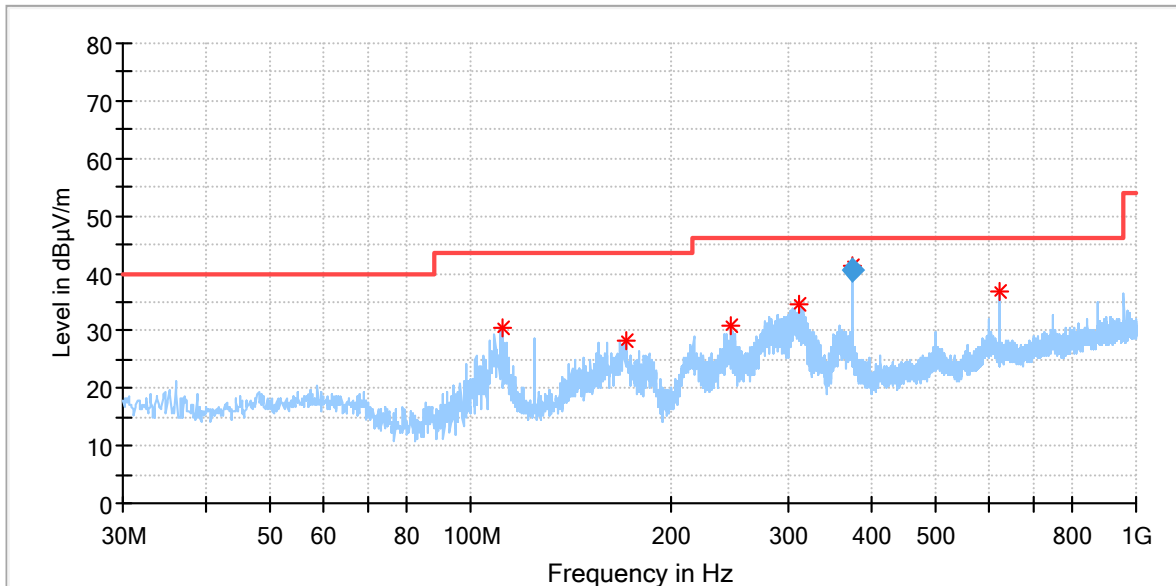
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
53.765000	29.68	40.00	10.32	100.0	V	135.0	21.0
62.883000	27.78	40.00	12.22	100.0	V	180.0	20.5
101.877000	29.20	43.50	14.30	100.0	V	9.0	17.2
124.963000	29.56	43.50	13.94	100.0	V	102.0	19.1
137.864000	30.50	43.50	13.00	200.0	V	139.0	20.0
375.009000	40.23	46.00	5.77	100.0	V	114.0	22.8

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
375.009000	39.21	46.00	6.79	1000.0	120.000	100.0	V	114.0	22.8

EUT Information

EUT Name: WisGate Edge Pro
 Order No: 168378328_P00734853
 Model: RAK7289V2H
 Test Mode: operating
 Test Voltage: DC 12V
 Standard: FCC Part 15
 Test By:/Review By: Kevin Zhou/Gary Chen
 Tem./Hum./Pressure: 24.1°C/50.8%/101kPa
 Remark: 3m chamber



Critical Freqs

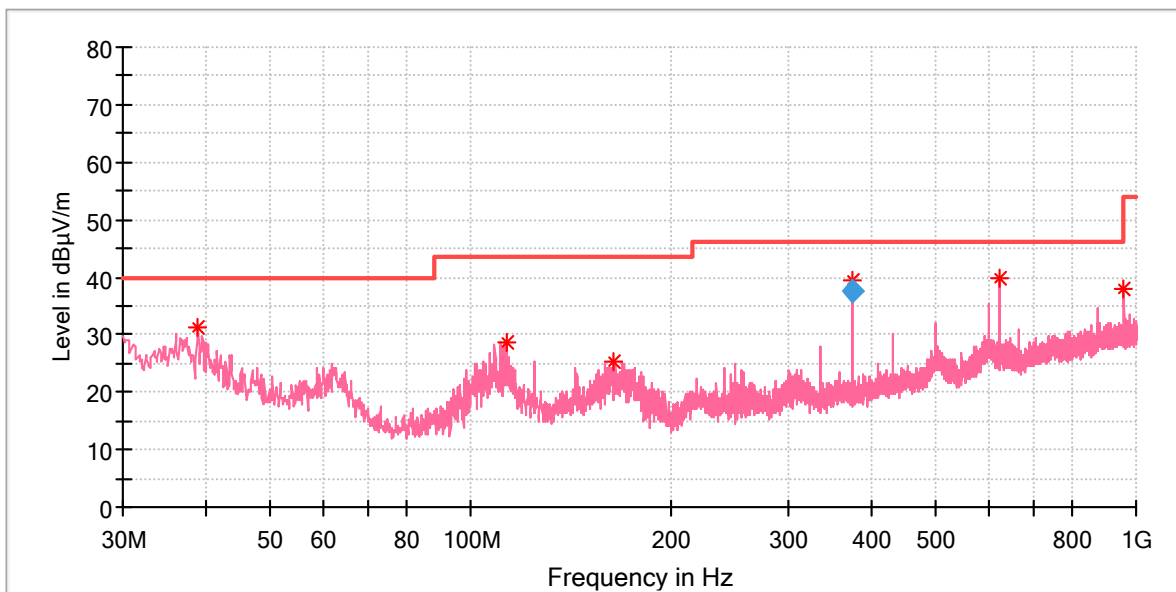
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
111.577000	30.56	43.50	12.94	200.0	H	92.0	18.3
171.523000	28.34	43.50	15.16	200.0	H	168.0	21.4
245.631000	30.83	46.00	15.17	100.0	H	316.0	18.6
310.912000	34.64	46.00	11.36	100.0	H	86.0	21.7
375.009000	41.24	46.00	4.76	100.0	H	101.0	22.8
624.998000	36.86	46.00	9.14	200.0	H	301.0	27.5

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
375.009000	40.55	46.00	5.45	1000.0	120.000	100.0	H	101.0	22.8

EUT Information

EUT Name: WisGate Edge Pro
 Order No: 168378328_P00734853
 Model: RAK7289V2H
 Test Mode: operating
 Test Voltage: DC 12V
 Standard: FCC Part 15
 Test By:/Review By: Kevin Zhou/Gary Chen
 Tem./Hum./Pressure: 24.1°C/50.8%/101kPa
 Remark: 3m chamber



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
38.924000	31.16	40.00	8.84	100.0	V	247.0	19.3
113.032000	28.58	43.50	14.92	100.0	V	277.0	18.6
163.957000	25.45	43.50	18.05	100.0	V	223.0	21.3
375.009000	39.52	46.00	6.48	100.0	V	201.0	22.8
624.998000	39.75	46.00	6.25	100.0	V	43.0	27.5
960.036000	38.05	54.00	15.95	100.0	V	187.0	31.9

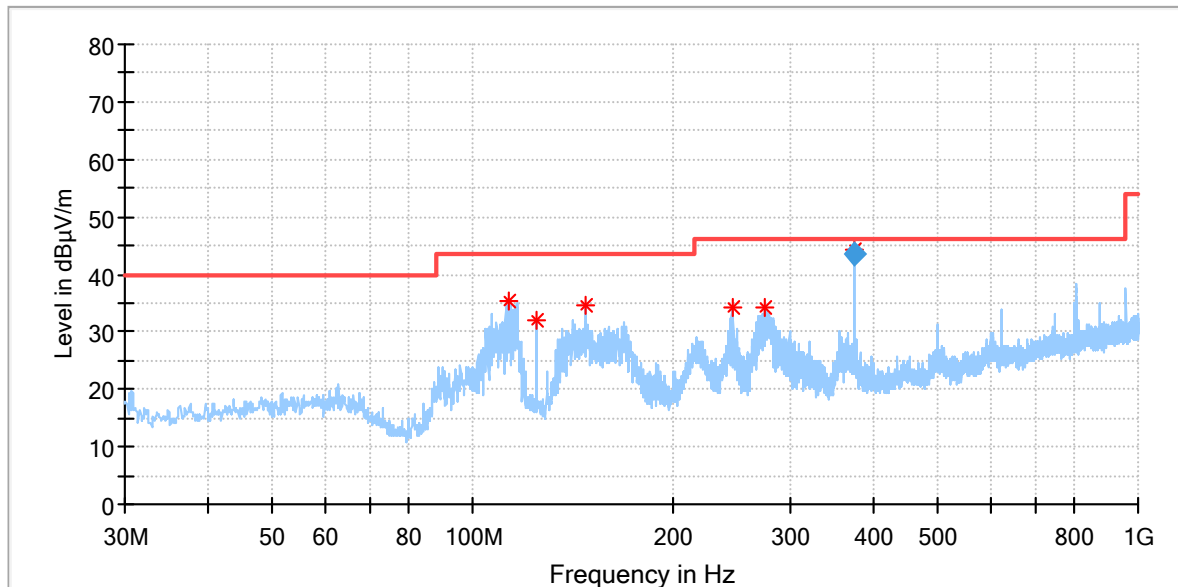
Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
375.009000	37.48	46.00	8.52	1000.0	120.000	100.0	V	201.0	22.8

Model RAK7289V2H with Lora module RAK5146

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289V2H
Test Mode:	operating
Test Voltage:	AC 120V/60Hz
Standard:	FCC Part 15
Test By:/Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber



Critical Freqs

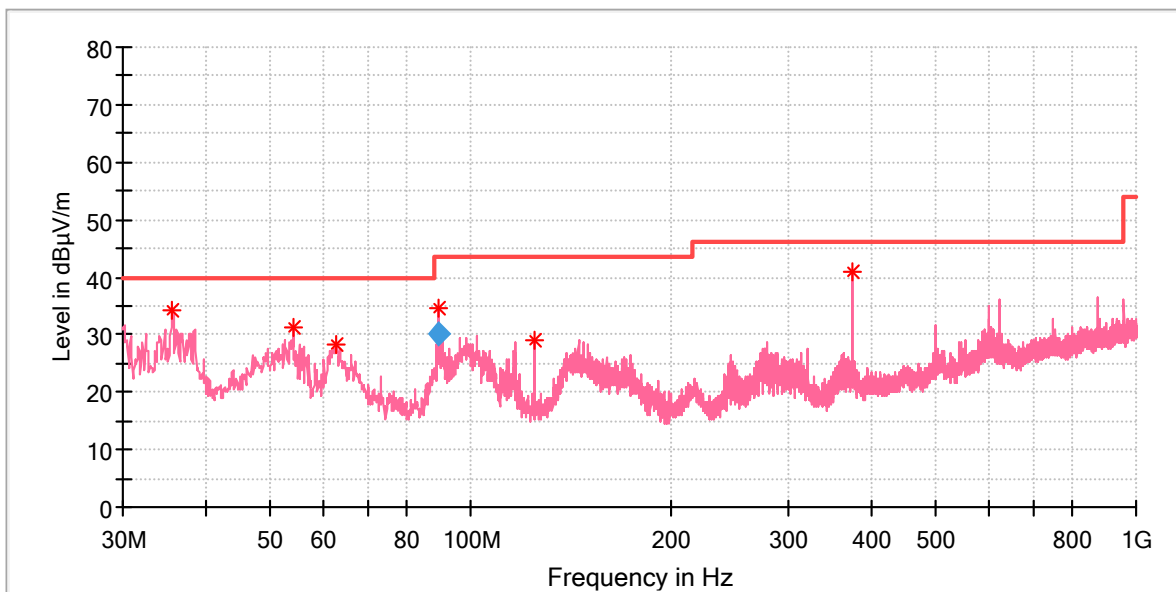
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
113.420000	35.30	43.50	8.20	200.0	H	195.0	18.7
124.963000	31.97	43.50	11.53	100.0	H	302.0	19.1
148.049000	34.72	43.50	8.78	200.0	H	187.0	20.4
245.049000	34.22	46.00	11.78	100.0	H	299.0	18.5
274.246000	34.08	46.00	11.92	100.0	H	24.0	20.4
375.009000	44.18	46.00	1.82	100.0	H	158.0	22.8

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
375.009000	43.40	46.00	2.60	1000.0	120.000	100.0	H	158.0	22.8

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289V2H
Test Mode:	operating
Test Voltage:	AC 120V/60Hz
Standard:	FCC Part 15
Test By:/Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber



Critical_Freqs

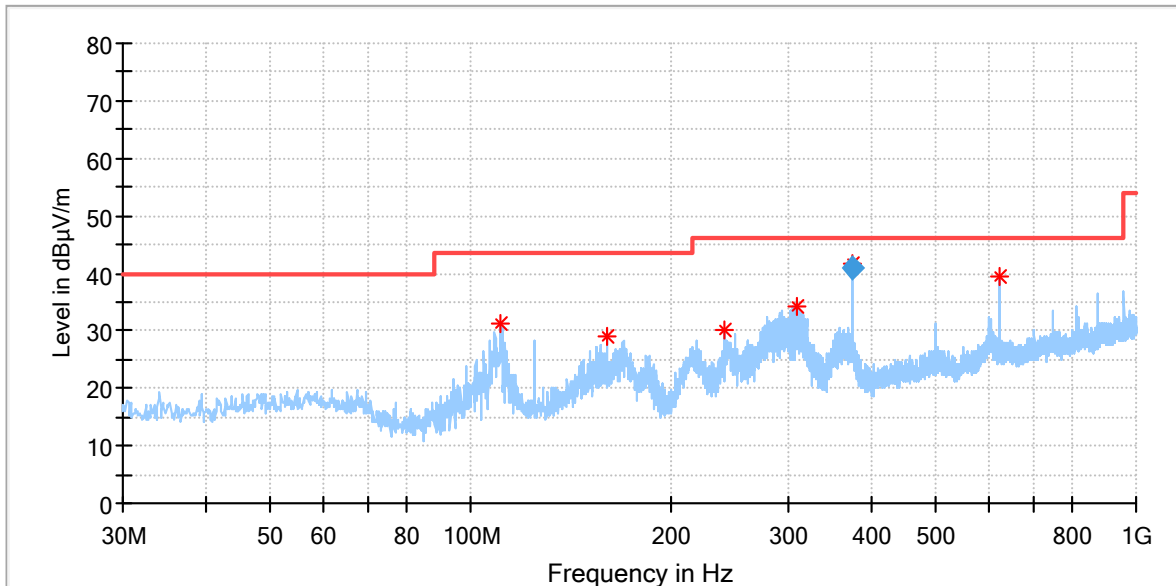
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
35.626000	34.17	40.00	5.83	100.0	V	136.0	18.6
54.153000	31.10	40.00	8.90	100.0	V	104.0	21.0
62.689000	28.41	40.00	11.59	100.0	V	104.0	20.5
89.287000	34.68	43.50	8.82	100.0	V	341.0	15.3
124.963000	28.99	43.50	14.51	100.0	V	139.0	19.1
374.932000	40.81	46.00	5.19	100.0	V	130.0	22.8

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
89.287000	30.13	43.50	13.37	1000.0	120.000	100.0	V	341.0	15.3

EUT Information

EUT Name: WisGate Edge Pro
 Order No: 168378328_P00734853
 Model: RAK7289V2H
 Test Mode: operating
 Test Voltage: DC 12V
 Standard: FCC Part 15
 Test By:/Review By: Kevin Zhou/Gary Chen
 Tem./Hum./Pressure: 24.1°C/50.8%/101kPa
 Remark: 3m chamber



Critical Freqs

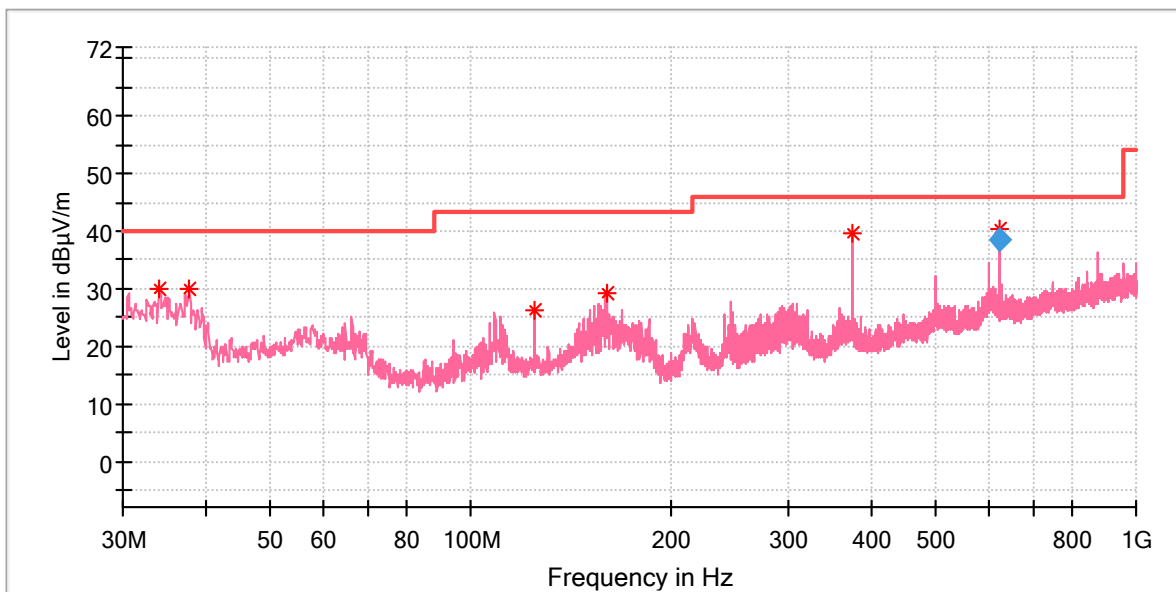
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
110.801000	31.34	43.50	12.16	200.0	H	276.0	18.1
159.980000	29.08	43.50	14.42	200.0	H	215.0	21.7
240.005000	30.25	46.00	15.75	100.0	H	100.0	18.7
308.778000	34.41	46.00	11.59	100.0	H	100.0	21.6
375.009000	41.75	46.00	4.25	100.0	H	207.0	22.8
624.998000	39.62	46.00	6.38	200.0	H	308.0	27.5

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
375.009000	40.90	46.00	5.10	1000.0	120.000	100.0	H	207.0	22.8

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289V2H
Test Mode:	operating
Test Voltage:	DC 12V
Standard:	FCC Part 15
Test By:/Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
34.074000	29.88	40.00	10.12	100.0	V	99.0	18.3
37.760000	30.11	40.00	9.89	100.0	V	99.0	19.1
124.963000	26.12	43.50	17.38	200.0	V	86.0	19.1
159.980000	29.37	43.50	14.13	100.0	V	71.0	21.7
375.029000	39.61	46.00	6.39	100.0	V	135.0	22.8
625.018000	40.54	46.00	5.46	100.0	V	334.0	27.5

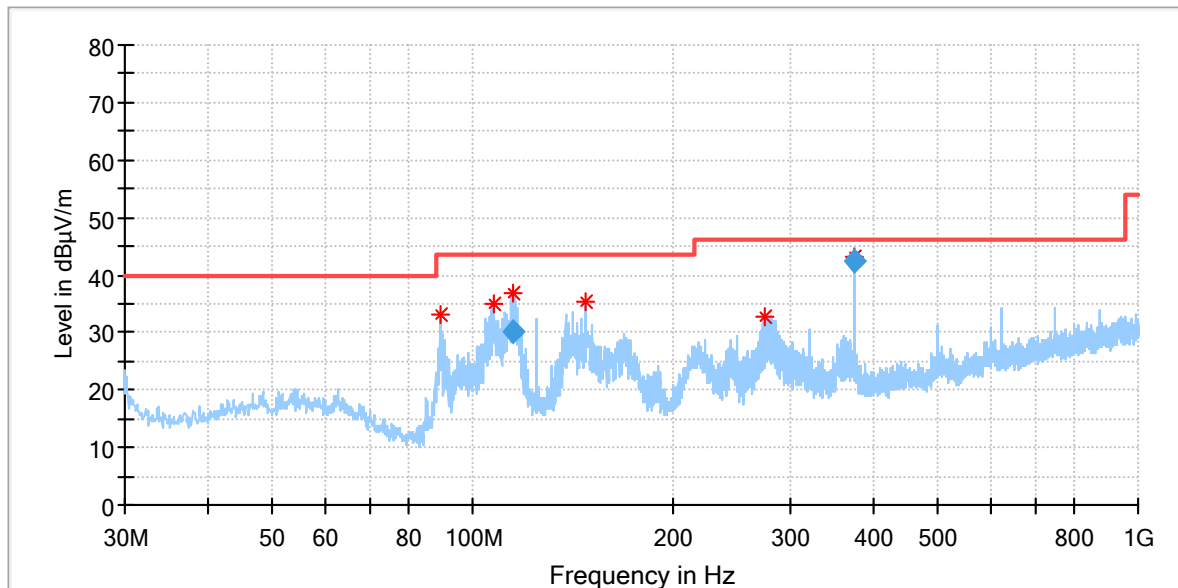
Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
625.018000	38.62	46.00	7.38	1000.0	120.000	100.0	V	334.0	27.5

Model RAK7289CV2H with Lora module RAK2287X

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289CV2H
Test Mode:	operating
Test Voltage:	AC 120V/60Hz
Standard:	FCC Part 15
Test By:/Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber



Critical Freqs

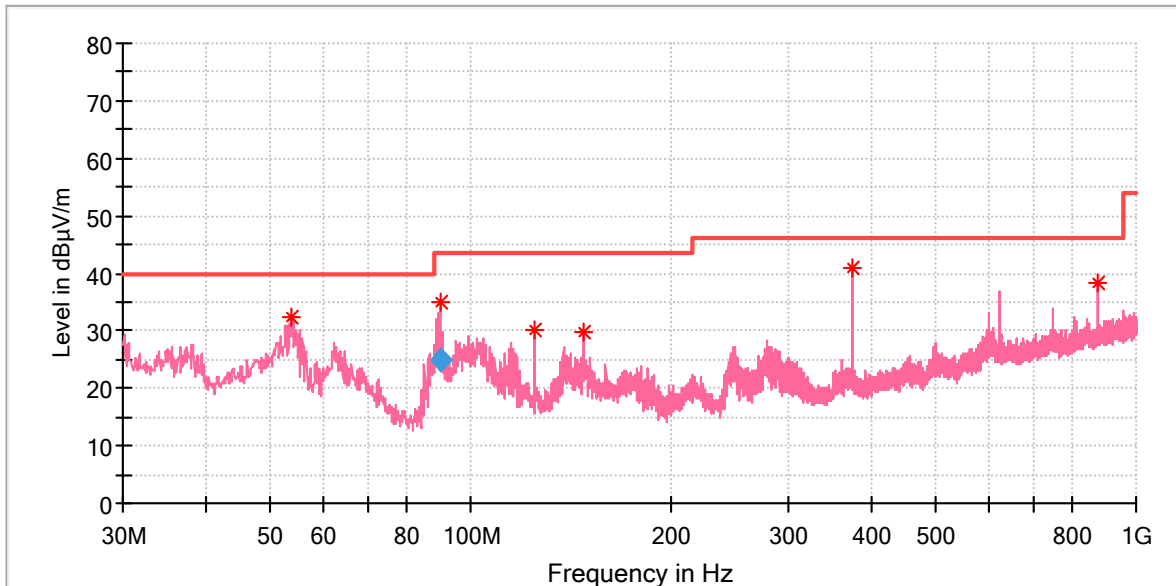
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
89.267000	33.08	43.50	10.42	200.0	H	176.0	15.3
107.309000	35.07	43.50	8.43	200.0	H	176.0	17.6
115.380000	36.83	43.50	6.67	200.0	H	325.0	19.1
148.049000	35.38	43.50	8.12	200.0	H	188.0	20.4
275.410000	32.72	46.00	13.28	100.0	H	36.0	20.3
375.009000	43.18	46.00	2.82	100.0	H	159.0	22.8

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
115.380000	30.21	43.50	13.29	1000.0	120.000	200.0	H	325.0	19.1
375.009000	42.45	46.00	3.55	1000.0	120.000	100.0	H	159.0	22.8

EUT Information

EUT Name: WisGate Edge Pro
 Order No: 168378328_P00734853
 Model: RAK7289CV2H
 Test Mode: operating
 Test Voltage: AC 120V/60Hz
 Standard: EN 301489-1
 Test By:/Review By: Kevin Zhou/Gary Chen
 Tem./Hum./Pressure: 24.1°C/50.8%/101kPa
 Remark: 3m chamber



Critical Freqs

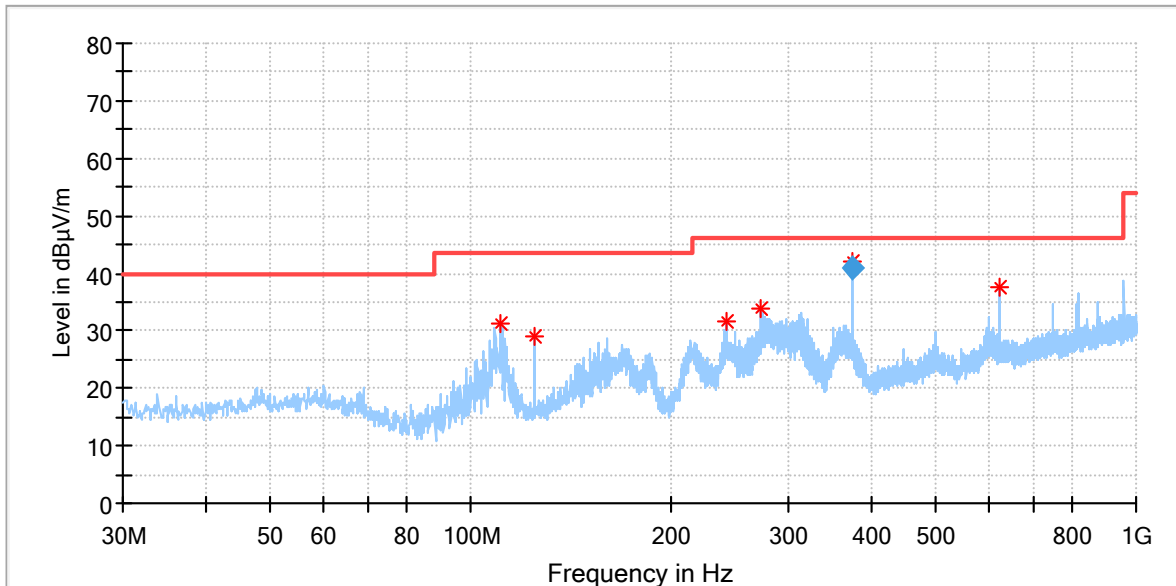
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
53.862000	32.41	40.00	7.59	100.0	V	262.0	21.0
90.063000	34.98	43.50	8.52	100.0	V	316.0	15.3
124.963000	30.20	43.50	13.30	100.0	V	134.0	19.1
148.049000	29.64	43.50	13.86	200.0	V	264.0	20.4
375.029000	40.99	46.00	5.01	100.0	V	110.0	22.8
875.064000	38.35	46.00	7.65	100.0	V	113.0	30.9

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
90.063000	25.01	43.50	18.49	1000.0	120.000	100.0	V	316.0	15.3

EUT Information

EUT Name: WisGate Edge Pro
 Order No: 168378328_P00734853
 Model: RAK7289CV2H
 Test Mode: operating
 Test Voltage: DC 12V
 Standard: FCC Part 15
 Test By:/Review By: Kevin Zhou/Gary Chen
 Tem./Hum./Pressure: 24.1°C/50.8%/101kPa
 Remark: 3m chamber



Critical Freqs

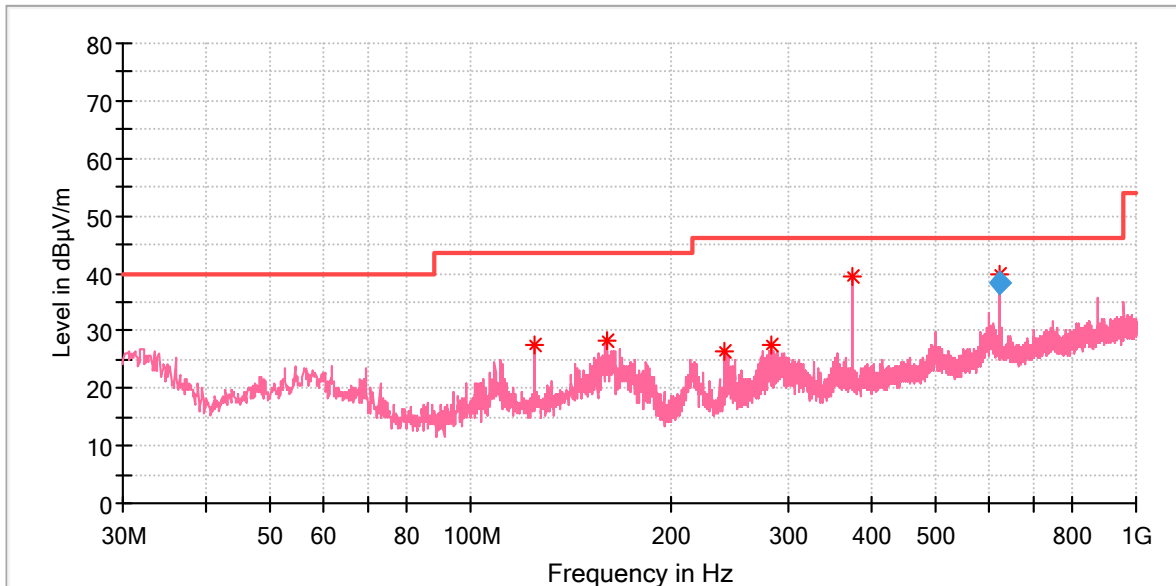
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
110.801000	31.39	43.50	12.11	200.0	H	283.0	18.1
124.963000	28.88	43.50	14.62	200.0	H	315.0	19.1
242.042000	31.48	46.00	14.52	100.0	H	323.0	18.6
273.179000	33.79	46.00	12.21	100.0	H	12.0	20.4
375.009000	42.17	46.00	3.83	100.0	H	103.0	22.8
624.998000	37.54	46.00	8.46	200.0	H	307.0	27.5

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
375.009000	40.87	46.00	5.13	1000.0	120.000	100.0	H	103.0	22.8

EUT Information

EUT Name: WisGate Edge Pro
 Order No: 168378328_P00734853
 Model: RAK7289CV2H
 Test Mode: operating
 Test Voltage: DC 12V
 Standard: FCC Part 15
 Test By:/Review By: Kevin Zhou/Gary Chen
 Tem./Hum./Pressure: 24.1°C/50.8%/101kPa
 Remark: 3m chamber



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
124.963000	27.67	43.50	15.83	200.0	V	66.0	19.1
159.980000	28.32	43.50	15.18	100.0	V	86.0	21.7
240.005000	26.59	46.00	19.41	100.0	V	12.0	18.7
282.879000	27.68	46.00	18.32	100.0	V	347.0	20.0
375.029000	39.26	46.00	6.74	200.0	V	344.0	22.8
625.018000	39.83	46.00	6.17	100.0	V	326.0	27.5

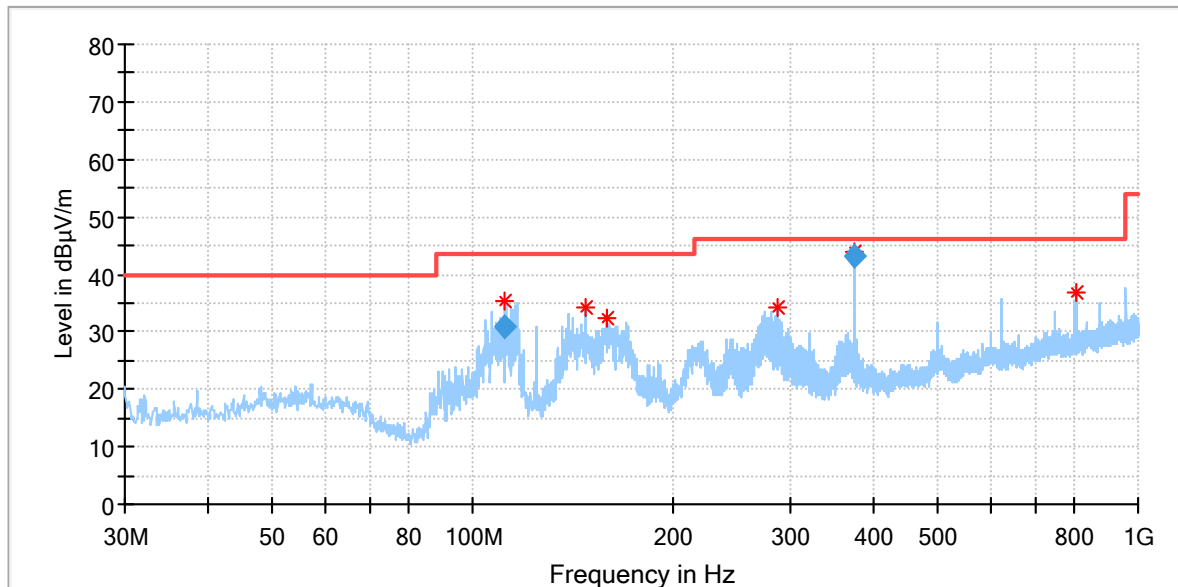
Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
625.018000	38.45	46.00	7.55	1000.0	120.000	100.0	V	326.0	27.5

Model RAK7289CV2H with Lora module RAK5146

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289CV2H
Test Mode:	operating
Test Voltage:	AC 120V/60Hz
Standard:	FCC Part 15
Test By:/Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber



Critical Freqs

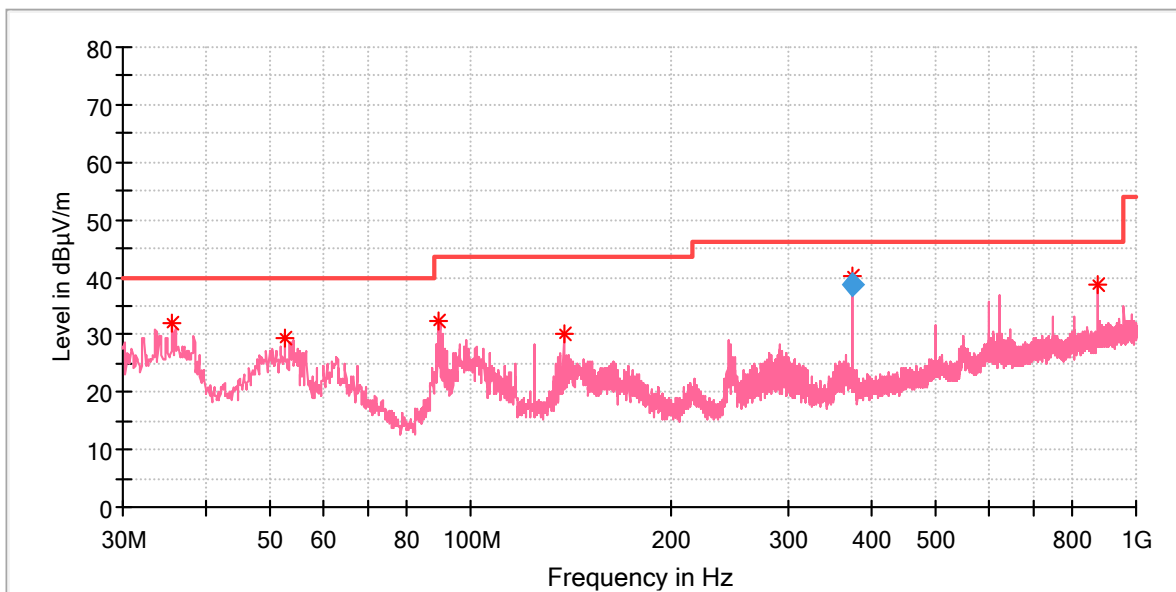
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
112.025000	35.44	43.50	8.06	200.0	H	188.0	18.4
148.146000	34.18	43.50	9.32	200.0	H	15.0	20.4
159.495000	32.21	43.50	11.29	200.0	H	95.0	21.6
286.468000	34.26	46.00	11.74	100.0	H	16.0	19.9
375.009000	43.86	46.00	2.14	100.0	H	164.0	22.8
804.836000	36.73	46.00	9.27	100.0	H	52.0	30.1

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
112.025000	30.78	43.50	12.72	1000.0	120.000	200.0	H	188.0	18.4
375.009000	43.34	46.00	2.66	1000.0	120.000	100.0	H	164.0	22.8

EUT Information

EUT Name: WisGate Edge Pro
 Order No: 168378328_P00734853
 Model: RAK7289CV2H
 Test Mode: operating
 Test Voltage: AC 120V/60Hz
 Standard: FCC Part 15
 Test By:/Review By: Kevin Zhou/Gary Chen
 Tem./Hum./Pressure: 24.1°C/50.8%/101kPa
 Remark: 3m chamber



Critical_Freqs

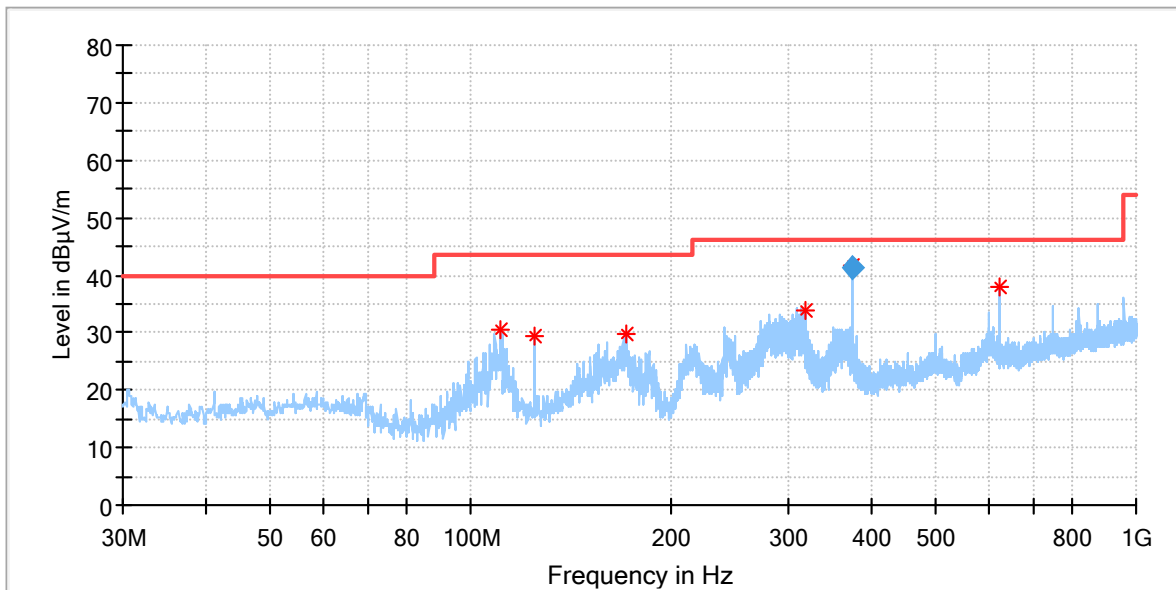
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
35.626000	31.87	40.00	8.13	100.0	V	224.0	18.6
52.504000	29.22	40.00	10.78	100.0	V	209.0	20.9
89.267000	32.32	43.50	11.18	100.0	V	320.0	15.3
137.961000	30.29	43.50	13.21	200.0	V	135.0	20.0
375.009000	40.37	46.00	5.63	100.0	V	132.0	22.8
875.064000	38.82	46.00	7.18	100.0	V	111.0	30.9

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
375.009000	38.60	46.00	7.40	1000.0	120.000	100.0	V	132.0	22.8

EUT Information

EUT Name: WisGate Edge Pro
 Order No: 168378328_P00734853
 Model: RAK7289CV2H
 Test Mode: operating
 Test Voltage: DC 12V
 Standard: FCC Part 15
 Test By:/Review By: Kevin Zhou/Gary Chen
 Tem./Hum./Pressure: 24.1°C/50.8%/101kPa
 Remark: 3m chamber



Critical Freqs

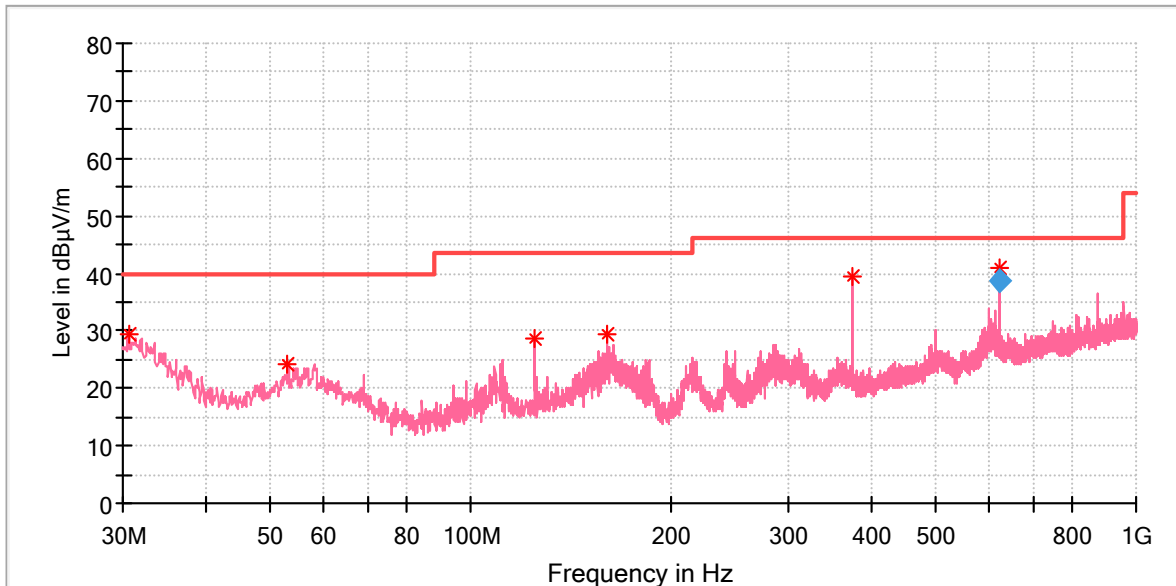
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
110.801000	30.39	43.50	13.11	200.0	H	108.0	18.1
124.963000	29.35	43.50	14.15	200.0	H	286.0	19.1
171.329000	29.63	43.50	13.87	200.0	H	198.0	21.4
317.605000	33.78	46.00	12.22	100.0	H	73.0	21.9
374.992000	41.73	46.00	4.27	100.0	H	218.0	22.8
624.998000	38.03	46.00	7.97	200.0	H	310.0	27.5

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
374.992000	41.30	46.00	4.70	1000.0	120.000	100.0	H	218.0	22.8

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289CV2H
Test Mode:	operating
Test Voltage:	DC 12V
Standard:	FCC Part 15
Test By:/Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30.582000	29.52	40.00	10.48	100.0	V	185.0	18.1
53.086000	24.32	40.00	15.68	100.0	V	132.0	20.9
124.963000	28.82	43.50	14.68	100.0	V	78.0	19.1
159.980000	29.23	43.50	14.27	100.0	V	31.0	21.7
375.029000	39.39	46.00	6.61	100.0	V	143.0	22.8
625.018000	40.86	46.00	5.14	100.0	V	332.0	27.5

Final Result

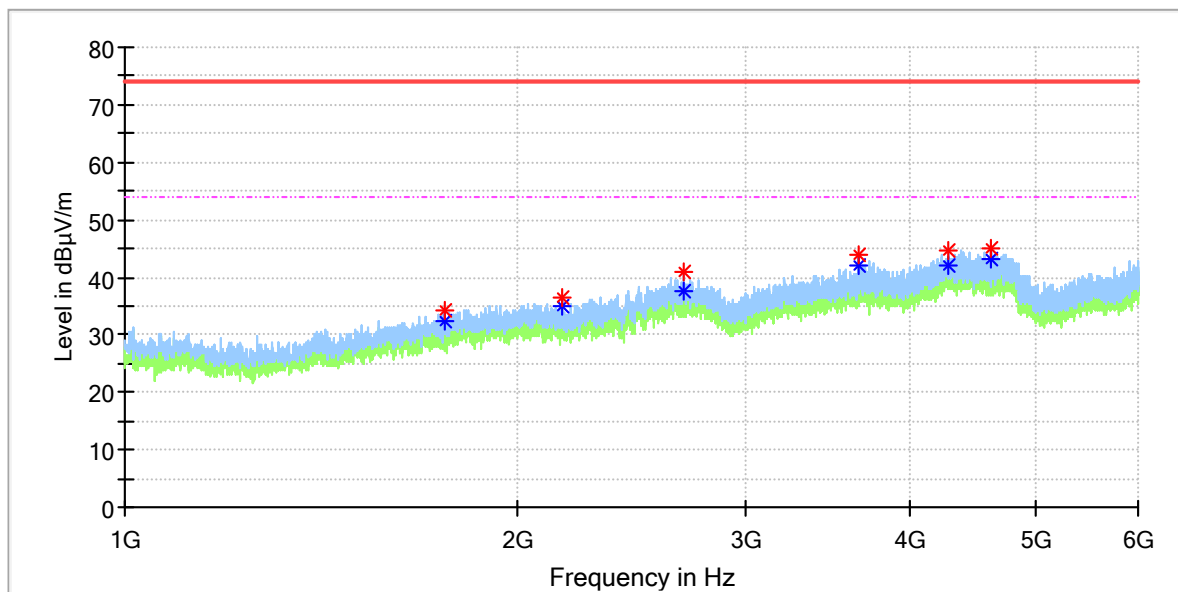
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
625.018000	38.85	46.00	7.15	1000.0	120.000	100.0	V	332.0	27.5

3 Appendix A.3: Test Plots of Radiated Emissions, above 1GHz

Model RAK7289V2H with Lora module RAK2287X

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289V2H
Test Mode:	operating
Test Voltage:	AC 120V/60Hz
Standard:	FCC Part 15
Test By:/Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber

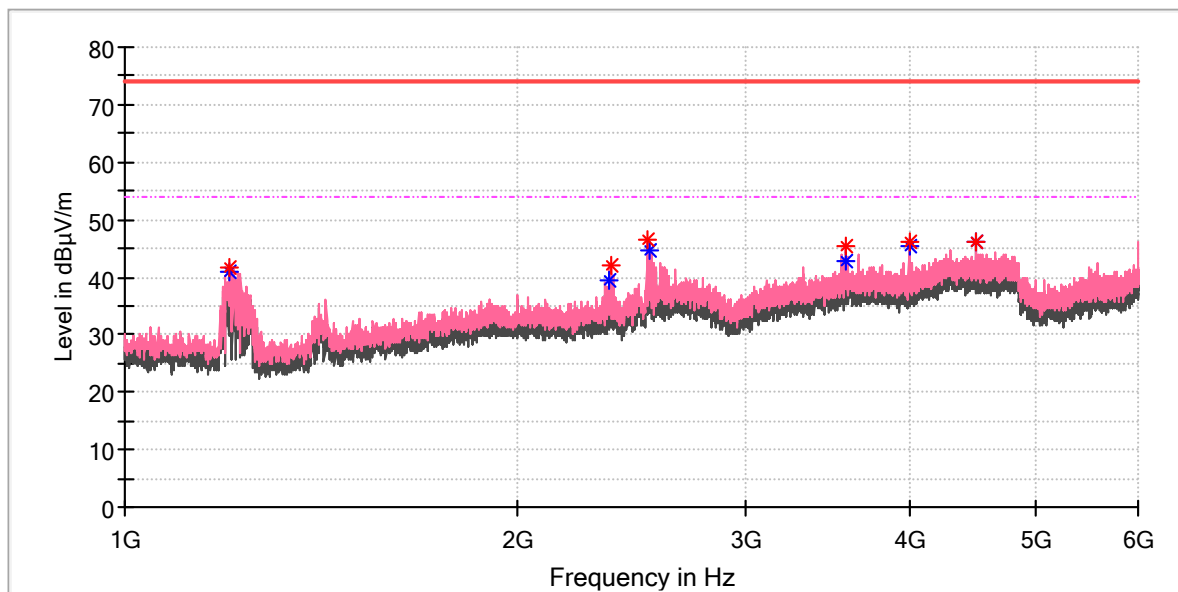


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1759.500000	34.41	---	74.00	39.59	100.0	H	310.0	-8.7
1759.500000	---	32.36	54.00	21.64	100.0	H	310.0	-8.7
2166.000000	---	34.96	54.00	19.04	100.0	H	68.0	-7.4
2166.000000	36.31	---	74.00	37.69	100.0	H	68.0	-7.4
2689.000000	---	37.73	54.00	16.27	100.0	H	0.0	-3.1
2689.000000	40.96	---	74.00	33.04	100.0	H	0.0	-3.1
3656.500000	---	41.96	54.00	12.04	100.0	H	225.0	-0.1
3657.000000	44.01	---	74.00	29.99	100.0	H	225.0	-0.1
4283.500000	44.72	---	74.00	29.28	100.0	H	22.0	2.1
4283.500000	---	42.09	54.00	11.91	100.0	H	22.0	2.1
4633.500000	44.89	---	74.00	29.11	100.0	H	0.0	2.1
4633.500000	---	43.28	54.00	10.72	100.0	H	0.0	2.1

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289V2H
Test Mode:	operating
Test Voltage:	AC 120V/60Hz
Standard:	FCC Part 15
Test By:/Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber

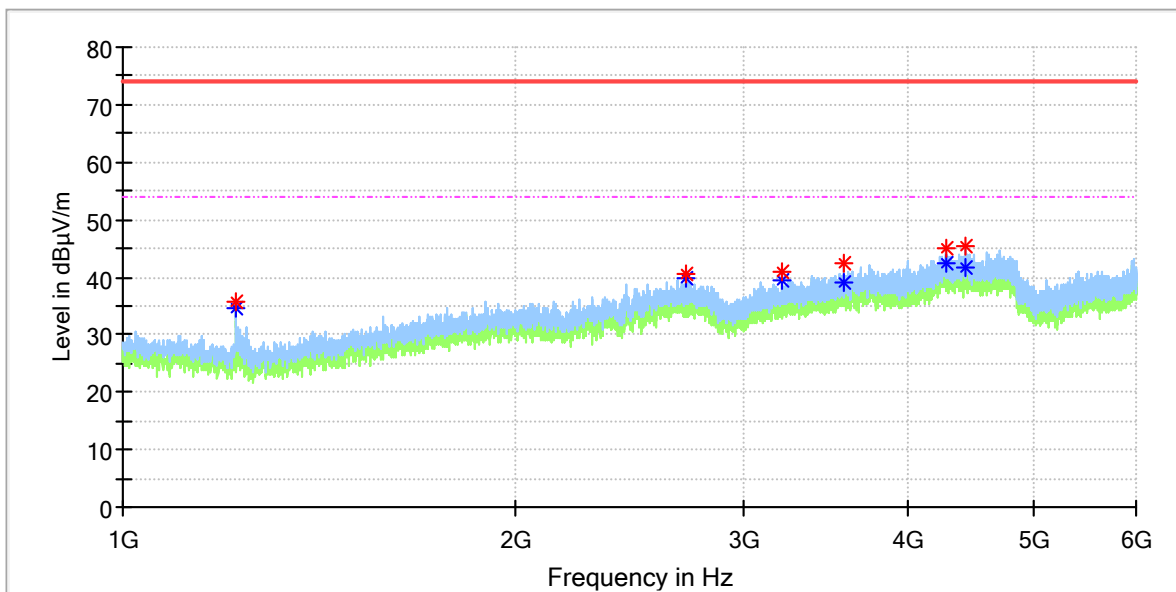


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1204.000000	41.57	---	74.00	32.43	100.0	V	35.0	-14.0
1204.000000	---	40.89	54.00	13.11	100.0	V	35.0	-14.0
2351.500000	---	39.62	54.00	14.38	100.0	V	107.0	-6.2
2367.000000	41.92	---	74.00	32.08	100.0	V	107.0	-6.0
2521.000000	46.44	---	74.00	27.56	100.0	V	317.0	-4.3
2529.500000	---	44.50	54.00	9.50	100.0	V	317.0	-4.2
3581.000000	---	42.95	54.00	11.05	100.0	V	0.0	-0.7
3581.000000	45.25	---	74.00	28.75	100.0	V	0.0	-0.7
4000.500000	46.08	---	74.00	27.92	100.0	V	17.0	-0.1
4000.500000	---	45.41	54.00	8.59	100.0	V	17.0	-0.1
4500.500000	---	45.99	54.00	8.01	100.0	V	312.0	2.1
4500.500000	46.32	---	74.00	27.68	100.0	V	312.0	2.1

EUT Information

EUT Name: WisGate Edge Pro
 Order No: 168378328_P00734853
 Model: RAK7289V2H
 Test Mode: operating
 Test Voltage: DC 12V
 Standard: FCC Part 15
 Test By:/Review By: Kevin Zhou/Gary Chen
 Tem./Hum./Pressure: 24.1°C/50.8%/101kPa
 Remark: 3m chamber

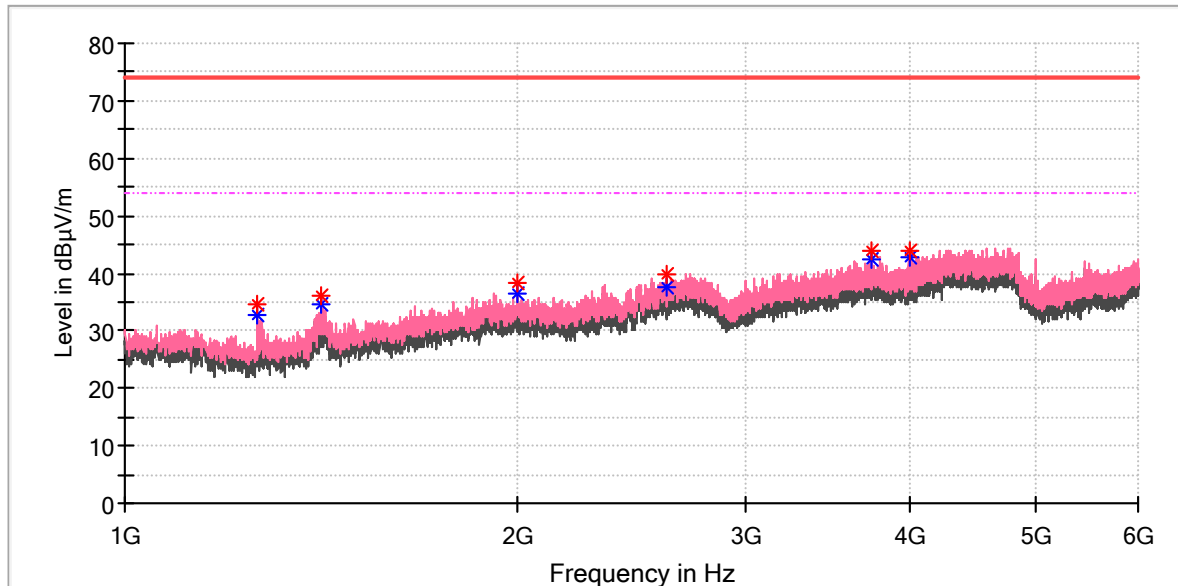


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1221.500000	35.75	---	74.00	38.25	100.0	H	184.0	-14.1
1221.500000	---	34.66	54.00	19.34	100.0	H	184.0	-14.1
2707.000000	40.66	---	74.00	33.34	100.0	H	150.0	-3.3
2707.000000	---	39.64	54.00	14.36	100.0	H	150.0	-3.3
3212.000000	40.86	---	74.00	33.14	100.0	H	150.0	-2.2
3212.000000	---	39.39	54.00	14.61	100.0	H	150.0	-2.2
3581.000000	42.31	---	74.00	31.69	100.0	H	107.0	-0.7
3581.000000	---	38.90	54.00	15.10	100.0	H	107.0	-0.7
4281.500000	44.92	---	74.00	29.08	100.0	H	294.0	2.1
4281.500000	---	42.53	54.00	11.47	100.0	H	294.0	2.1
4432.000000	45.25	---	74.00	28.75	100.0	H	196.0	1.9
4432.000000	---	41.61	54.00	12.39	100.0	H	196.0	1.9

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289V2H
Test Mode:	operating
Test Voltage:	DC 12V
Standard:	FCC Part 15
Test By:/Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber



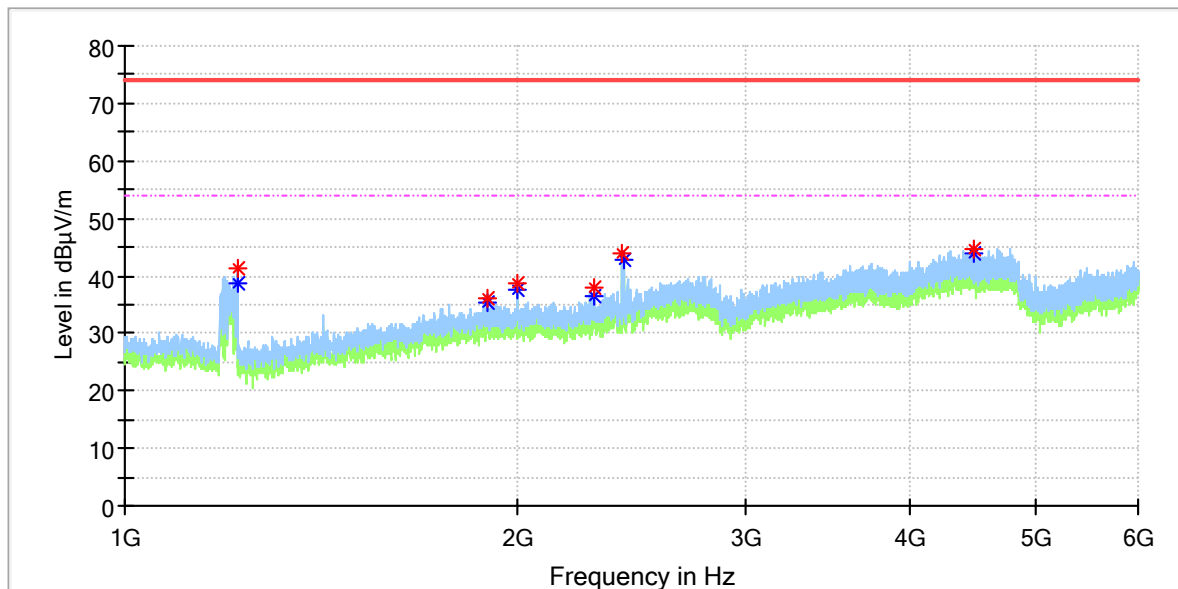
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1264.500000	34.45	---	74.00	39.55	100.0	V	188.0	-14.0
1265.000000	---	32.72	54.00	21.28	100.0	V	188.0	-14.0
1417.500000	35.94	---	74.00	38.06	100.0	V	350.0	-13.0
1417.500000	---	34.69	54.00	19.31	100.0	V	350.0	-13.0
2000.500000	---	36.31	54.00	17.69	100.0	V	350.0	-7.4
2000.500000	38.18	---	74.00	35.82	100.0	V	350.0	-7.4
2604.500000	---	37.49	54.00	16.51	100.0	V	148.0	-3.7
2605.000000	39.76	---	74.00	34.24	100.0	V	159.0	-3.7
3750.000000	---	42.33	54.00	11.67	100.0	V	300.0	0.1
3750.000000	43.87	---	74.00	30.13	100.0	V	300.0	0.1
4000.500000	43.73	---	74.00	30.27	100.0	V	23.0	-0.1
4000.500000	---	42.72	54.00	11.28	100.0	V	23.0	-0.1

Model RAK7289V2H with Lora module RAK5146

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289V2H
Test Mode:	operating
Test Voltage:	AC 120V/60Hz
Standard:	FCC Part 15
Test By./Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber

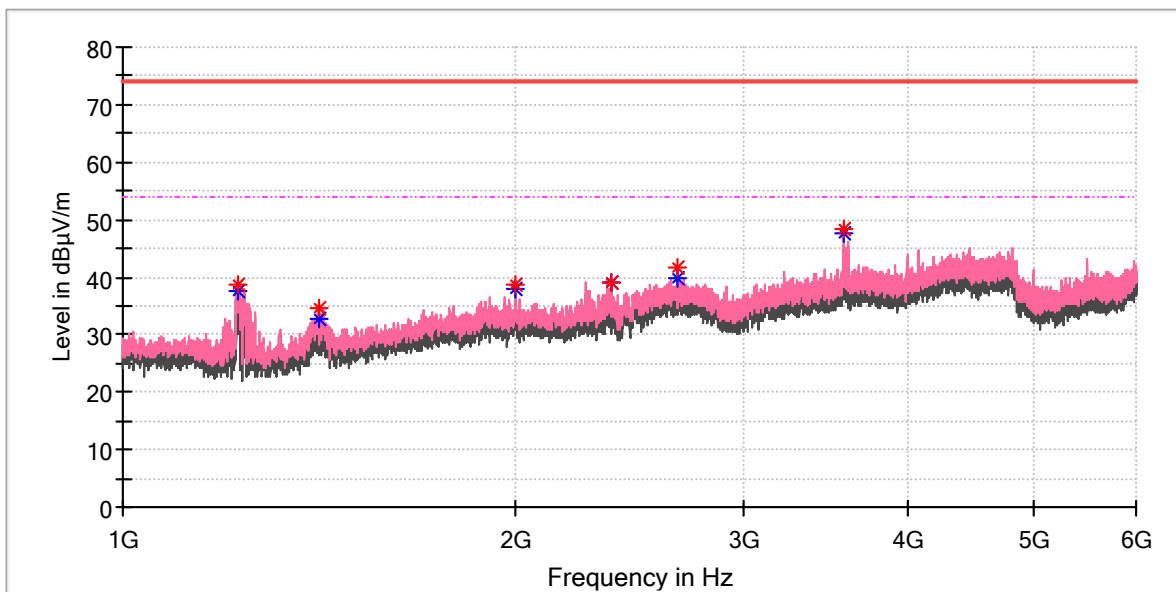


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1219.500000	---	38.71	54.00	15.29	100.0	H	232.0	-14.1
1219.500000	41.26	---	74.00	32.74	100.0	H	232.0	-14.1
1895.500000	36.27	---	74.00	37.73	100.0	H	200.0	-7.8
1895.500000	---	35.31	54.00	18.69	100.0	H	200.0	-7.8
2000.500000	38.78	---	74.00	35.22	100.0	H	220.0	-7.4
2000.500000	---	37.57	54.00	16.43	100.0	H	220.0	-7.4
2291.500000	38.09	---	74.00	35.91	100.0	H	0.0	-6.7
2291.500000	---	36.39	54.00	17.61	100.0	H	0.0	-6.7
2409.500000	44.00	---	74.00	30.00	100.0	H	0.0	-5.6
2415.000000	---	42.93	54.00	11.07	100.0	H	0.0	-5.6
4487.000000	44.73	---	74.00	29.27	100.0	H	74.0	2.1
4487.000000	---	43.75	54.00	10.25	100.0	H	74.0	2.1

EUT Information

EUT Name: WisGate Edge Pro
 Order No: 168378328_P00734853
 Model: RAK7289V2H
 Test Mode: operating
 Test Voltage: AC 120V/60Hz
 Standard: FCC Part 15
 Test By:/Review By: Kevin Zhou/Gary Chen
 Tem./Hum./Pressure: 24.1°C/50.8%/101kPa
 Remark: 3m chamber

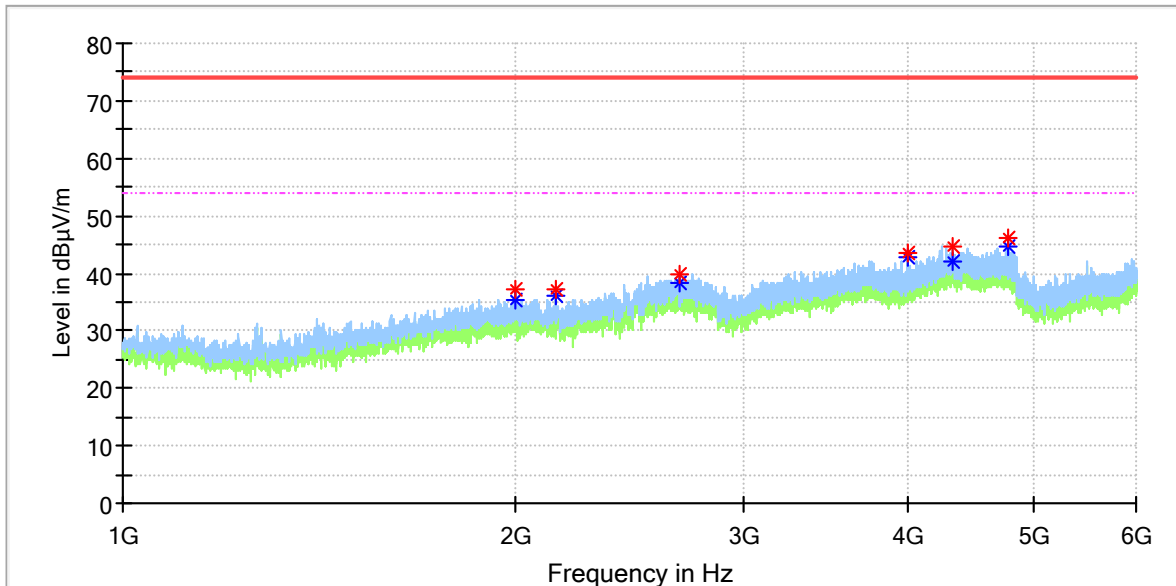


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1226.500000	38.56	---	74.00	35.44	100.0	V	254.0	-14.1
1226.500000	---	37.42	54.00	16.58	100.0	V	254.0	-14.1
1412.500000	34.74	---	74.00	39.26	100.0	V	345.0	-13.0
1412.500000	---	32.83	54.00	21.17	100.0	V	345.0	-13.0
2000.500000	38.77	---	74.00	35.23	100.0	V	350.0	-7.4
2000.500000	---	38.00	54.00	16.00	100.0	V	350.0	-7.4
2369.500000	38.98	---	74.00	35.02	100.0	V	304.0	-6.0
2370.000000	---	39.06	54.00	14.94	100.0	V	304.0	-6.0
2664.500000	41.69	---	74.00	32.31	100.0	V	224.0	-3.3
2664.500000	---	39.93	54.00	14.07	100.0	V	224.0	-3.3
3580.500000	48.31	---	74.00	25.69	100.0	V	345.0	-0.7
3580.500000	---	47.57	54.00	6.43	100.0	V	345.0	-0.7

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289V2H
Test Mode:	operating
Test Voltage:	DC 12V
Standard:	FCC Part 15
Test By:/Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber

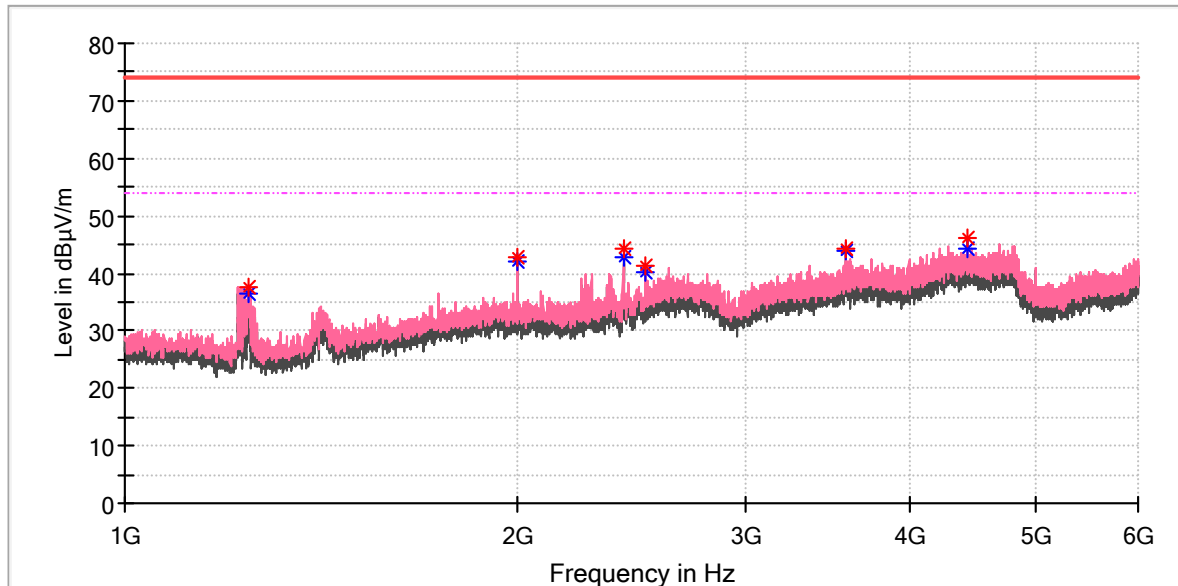


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2000.000000	---	35.50	54.00	18.50	100.0	H	212.0	-7.4
2000.000000	37.14	---	74.00	36.86	100.0	H	212.0	-7.4
2153.500000	---	36.20	54.00	17.80	100.0	H	35.0	-7.4
2153.500000	37.30	---	74.00	36.70	100.0	H	35.0	-7.4
2677.500000	39.98	---	74.00	34.02	100.0	H	171.0	-3.2
2677.500000	---	38.30	54.00	15.70	100.0	H	171.0	-3.2
4000.500000	43.42	---	74.00	30.58	100.0	H	16.0	-0.1
4000.500000	---	42.94	54.00	11.06	100.0	H	16.0	-0.1
4331.500000	---	42.05	54.00	11.95	100.0	H	188.0	2.2
4331.500000	44.54	---	74.00	29.46	100.0	H	188.0	2.2
4777.500000	46.26	---	74.00	27.74	100.0	H	49.0	2.7
4777.500000	---	44.71	54.00	9.29	100.0	H	49.0	2.7

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289V2H
Test Mode:	operating
Test Voltage:	DC 12V
Standard:	FCC Part 15
Test By./Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber



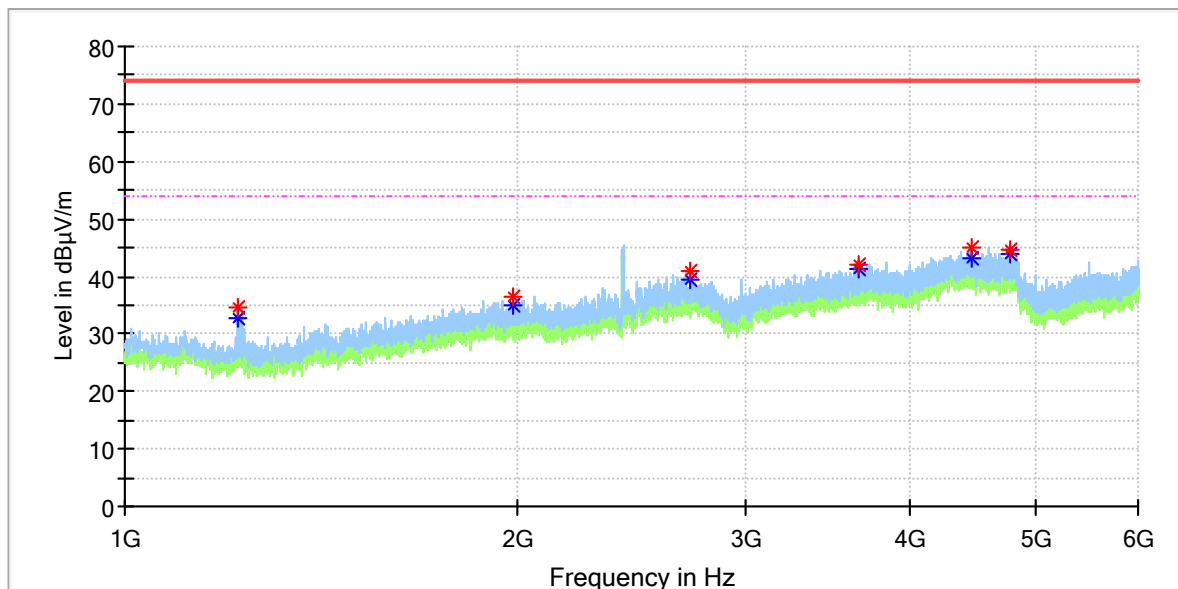
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1244.000000	37.72	---	74.00	36.28	100.0	V	283.0	-14.1
1244.000000	---	36.42	54.00	17.58	100.0	V	283.0	-14.1
2000.000000	42.65	---	74.00	31.35	100.0	V	356.0	-7.4
2000.000000	---	42.05	54.00	11.95	100.0	V	356.0	-7.4
2415.000000	44.30	---	74.00	29.70	100.0	V	228.0	-5.6
2415.500000	---	42.84	54.00	11.16	100.0	V	228.0	-5.6
2511.500000	---	40.30	54.00	13.70	100.0	V	228.0	-4.6
2514.000000	41.29	---	74.00	32.71	100.0	V	228.0	-4.5
3580.000000	44.34	---	74.00	29.66	100.0	V	246.0	-0.7
3580.000000	---	43.98	54.00	10.02	100.0	V	246.0	-0.7
4441.500000	---	44.17	54.00	9.83	100.0	V	131.0	1.9
4441.500000	46.10	---	74.00	27.90	100.0	V	131.0	1.9

Model RAK7289CV2H with Lora module RAK2287X

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289CV2H
Test Mode:	operating
Test Voltage:	AC 120V/60Hz
Standard:	FCC Part 15
Test By:/Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber

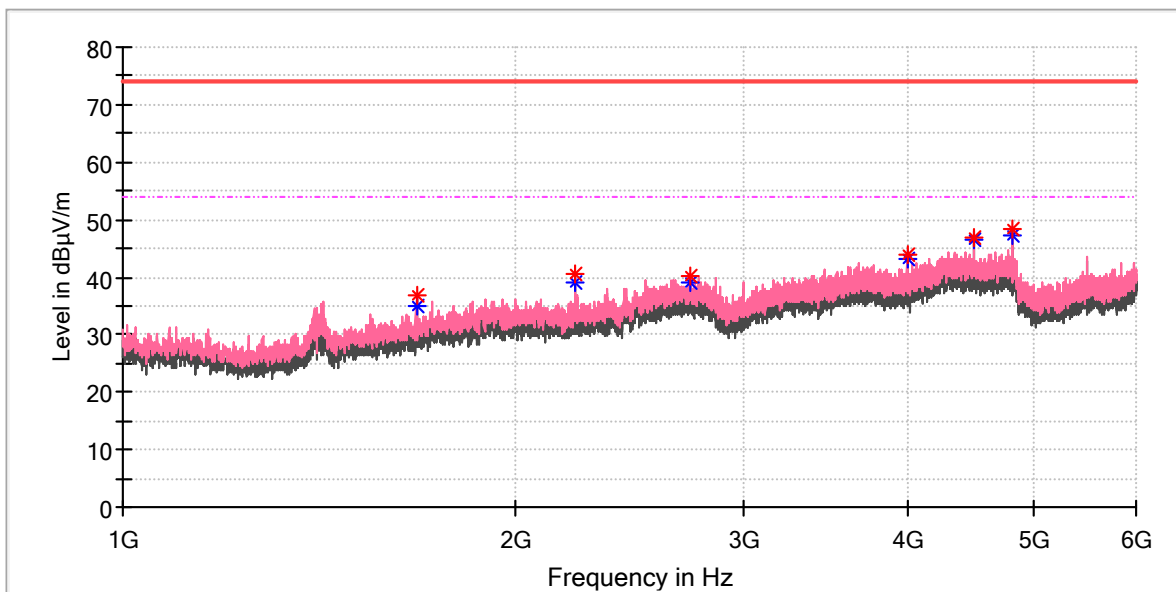


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1220.500000	34.59	---	74.00	39.41	100.0	H	152.0	-14.1
1220.500000	---	32.78	54.00	21.22	100.0	H	152.0	-14.1
1986.500000	36.57	---	74.00	37.43	100.0	H	19.0	-7.5
1986.500000	---	35.07	54.00	18.93	100.0	H	19.0	-7.5
2717.000000	40.87	---	74.00	33.13	100.0	H	175.0	-3.3
2717.000000	---	39.27	54.00	14.73	100.0	H	175.0	-3.3
3662.000000	42.22	---	74.00	31.78	100.0	H	59.0	0.0
3662.000000	---	41.21	54.00	12.79	100.0	H	59.0	0.0
4475.500000	44.97	---	74.00	29.03	100.0	H	159.0	2.0
4475.500000	---	43.25	54.00	10.75	100.0	H	159.0	2.0
4792.000000	44.83	---	74.00	29.17	100.0	H	325.0	2.5
4792.000000	---	44.04	54.00	9.96	100.0	H	325.0	2.5

EUT Information

EUT Name: WisGate Edge Pro
 Order No: 168378328_P00734853
 Model: RAK7289CV2H
 Test Mode: operating
 Test Voltage: AC 120V/60Hz
 Standard: FCC Part 15
 Test By:/Review By: Kevin Zhou/Gary Chen
 Tem./Hum./Pressure: 24.1°C/50.8%/101kPa
 Remark: 3m chamber

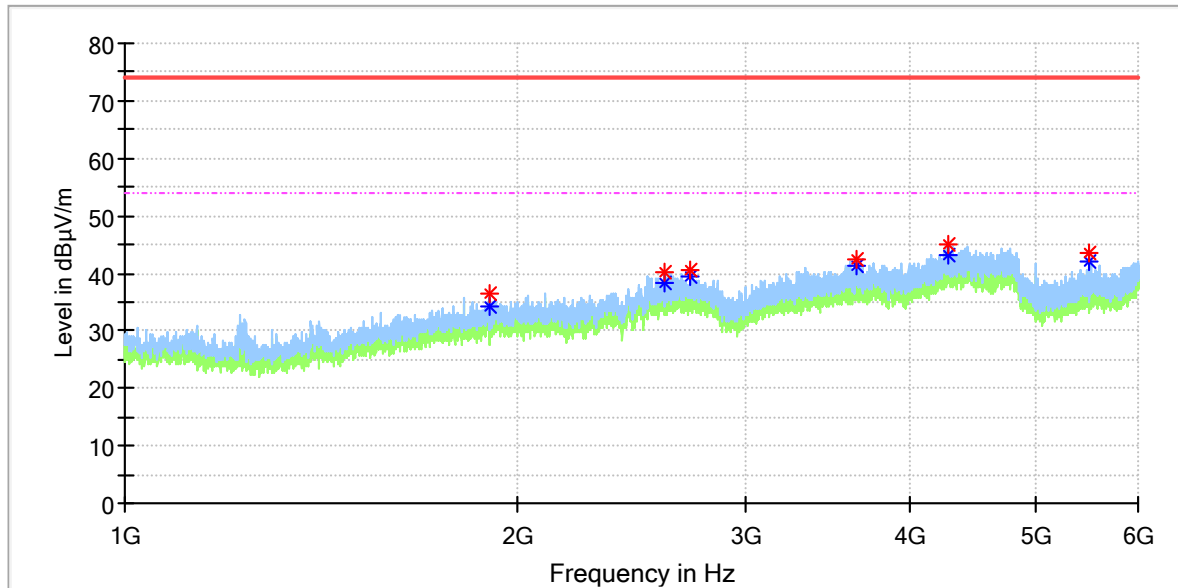


Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1680.500000	36.67	---	74.00	37.33	100.0	V	306.0	-9.5
1680.500000	---	35.00	54.00	19.00	100.0	V	306.0	-9.5
2226.000000	---	39.10	54.00	14.90	100.0	V	0.0	-7.3
2226.000000	40.64	---	74.00	33.36	100.0	V	0.0	-7.3
2730.500000	40.13	---	74.00	33.87	100.0	V	119.0	-3.3
2730.500000	---	39.23	54.00	14.77	100.0	V	119.0	-3.3
4000.500000	44.02	---	74.00	29.98	100.0	V	23.0	-0.1
4000.500000	---	43.12	54.00	10.88	100.0	V	23.0	-0.1
4500.500000	47.06	---	74.00	26.94	100.0	V	324.0	2.1
4500.500000	---	46.50	54.00	7.50	100.0	V	324.0	2.1
4824.500000	---	47.25	54.00	6.75	100.0	V	126.0	2.0
4824.500000	48.47	---	74.00	25.53	100.0	V	126.0	2.0

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289CV2H
Test Mode:	operating
Test Voltage:	DC 12V
Standard:	FCC Part 15
Test By:/Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber

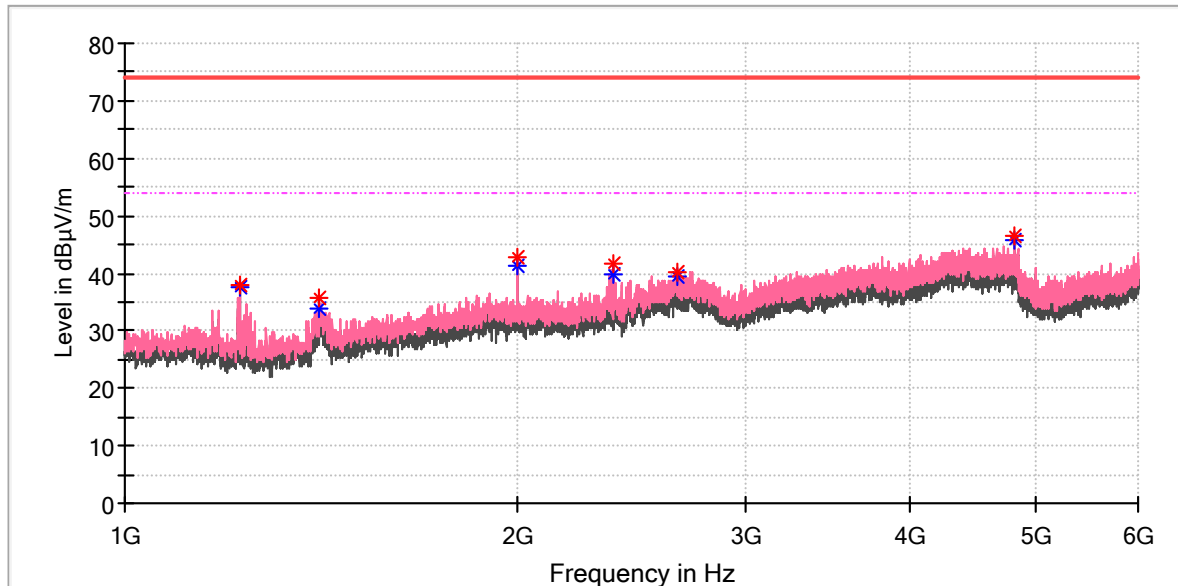


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1906.000000	---	34.27	54.00	19.73	100.0	H	208.0	-7.8
1906.000000	36.37	---	74.00	37.63	100.0	H	208.0	-7.8
2601.000000	40.31	---	74.00	33.69	100.0	H	114.0	-3.7
2601.500000	---	38.41	54.00	15.59	100.0	H	114.0	-3.7
2714.000000	---	39.40	54.00	14.60	100.0	H	278.0	-3.3
2714.000000	40.68	---	74.00	33.32	100.0	H	278.0	-3.3
3640.000000	---	41.40	54.00	12.60	100.0	H	351.0	-0.2
3640.000000	42.50	---	74.00	31.50	100.0	H	351.0	-0.2
4293.000000	---	43.33	54.00	10.67	100.0	H	30.0	2.2
4293.000000	45.06	---	74.00	28.94	100.0	H	30.0	2.2
5501.000000	43.68	---	74.00	30.32	100.0	H	278.0	0.9
5501.000000	---	41.98	54.00	12.02	100.0	H	278.0	0.9

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289CV2H
Test Mode:	operating
Test Voltage:	DC 12V
Standard:	FCC Part 15
Test By:/Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber



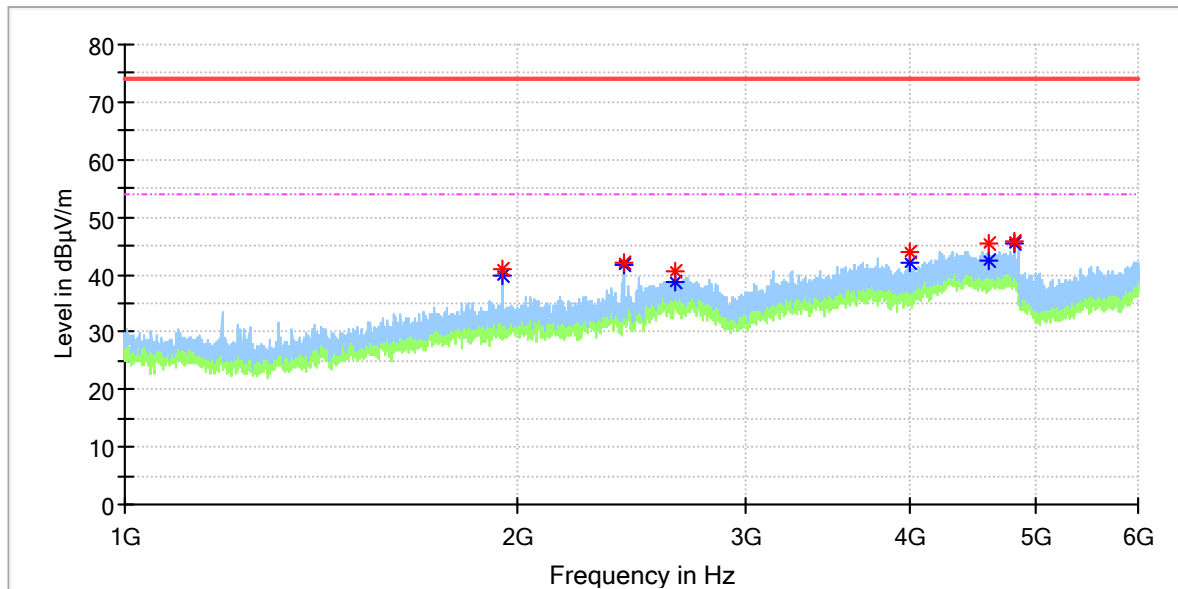
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1227.000000	37.98	---	74.00	36.02	100.0	V	50.0	-14.1
1227.000000	---	37.64	54.00	16.36	100.0	V	50.0	-14.1
1412.000000	35.57	---	74.00	38.43	100.0	V	0.0	-13.0
1412.000000	---	33.83	54.00	20.17	100.0	V	0.0	-13.0
2000.000000	---	41.43	54.00	12.57	100.0	V	356.0	-7.4
2000.000000	42.83	---	74.00	31.17	100.0	V	356.0	-7.4
2370.500000	---	39.76	54.00	14.24	100.0	V	130.0	-6.0
2372.000000	41.81	---	74.00	32.19	100.0	V	130.0	-6.0
2652.000000	40.11	---	74.00	33.89	100.0	V	106.0	-3.2
2652.000000	---	39.52	54.00	14.48	100.0	V	106.0	-3.2
4824.500000	---	45.80	54.00	8.20	100.0	V	300.0	2.0
4824.500000	46.41	---	74.00	27.59	100.0	V	300.0	2.0

Model RAK7289CV2H with Lora module RAK5146

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289CV2H
Test Mode:	operating
Test Voltage:	AC 120V/60Hz
Standard:	FCC Part 15
Test By:/Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber

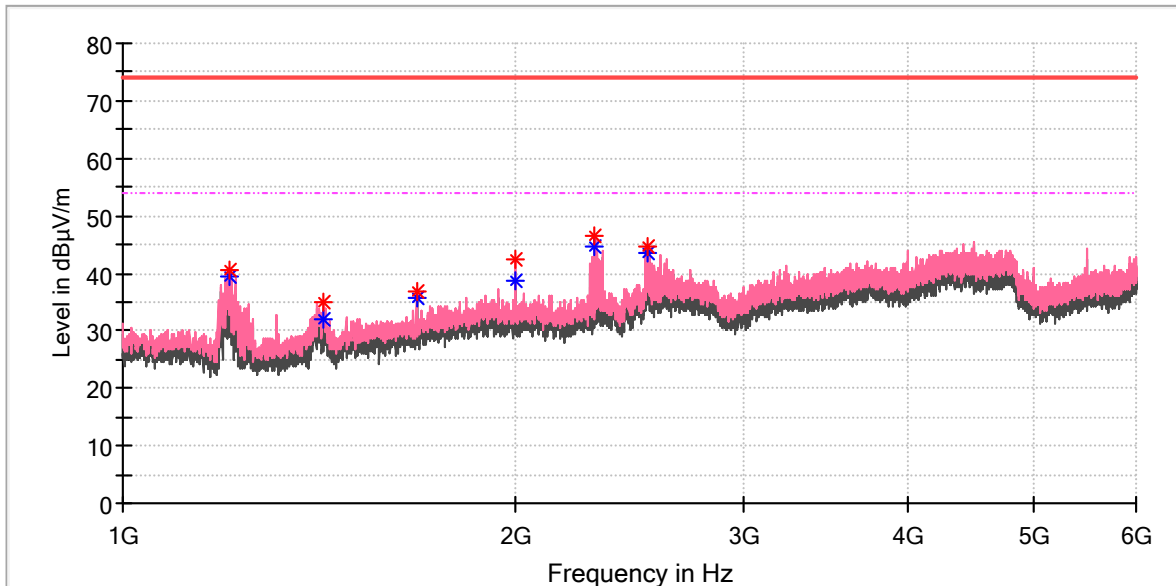


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1950.000000	41.10	---	74.00	32.90	100.0	H	151.0	-7.6
1950.000000	---	39.94	54.00	14.06	100.0	H	151.0	-7.6
2416.000000	42.09	---	74.00	31.91	100.0	H	291.0	-5.6
2416.000000	---	41.64	54.00	12.36	100.0	H	291.0	-5.6
2648.000000	40.39	---	74.00	33.61	100.0	H	99.0	-3.2
2648.000000	---	38.76	54.00	15.24	100.0	H	99.0	-3.2
4000.500000	43.86	---	74.00	30.14	100.0	H	20.0	-0.1
4000.500000	---	42.04	54.00	11.96	100.0	H	20.0	-0.1
4607.500000	---	42.28	54.00	11.72	100.0	H	337.0	2.0
4607.500000	45.31	---	74.00	28.69	100.0	H	337.0	2.0
4824.500000	---	45.34	54.00	8.66	100.0	H	0.0	2.0
4824.500000	45.80	---	74.00	28.20	100.0	H	0.0	2.0

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289CV2H
Test Mode:	operating
Test Voltage:	AC 120V/60Hz
Standard:	FCC Part 15
Test By:/Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber

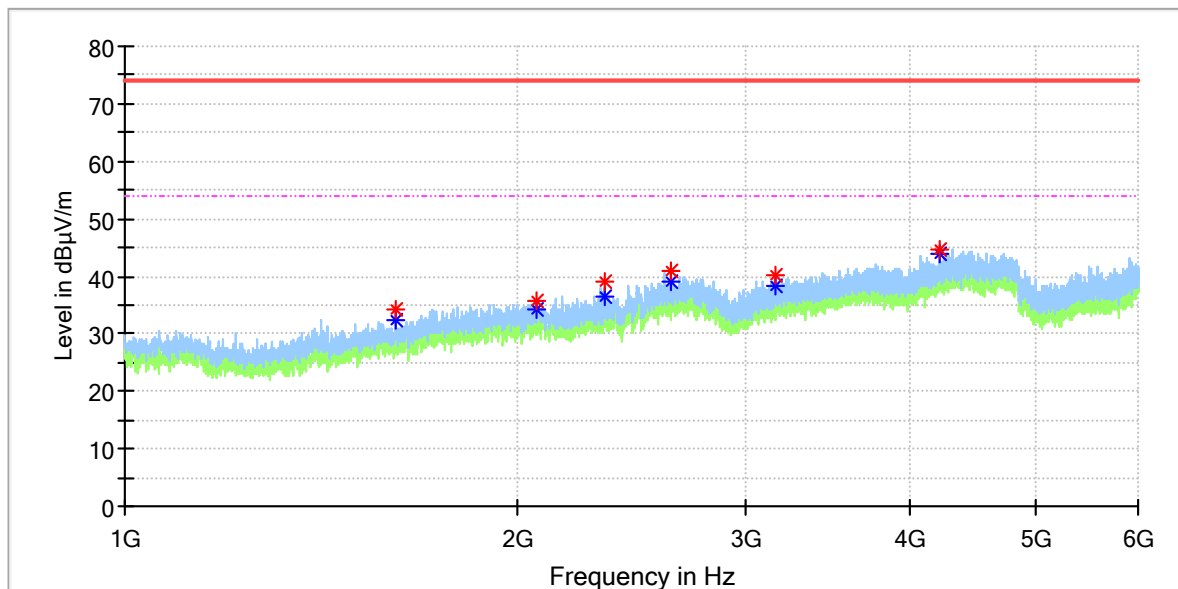


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1208.500000	40.61	---	74.00	33.39	100.0	V	149.0	-14.0
1208.500000	---	39.38	54.00	14.62	100.0	V	149.0	-14.0
1425.500000	---	32.18	54.00	21.82	100.0	V	337.0	-12.8
1425.500000	34.89	---	74.00	39.11	100.0	V	337.0	-12.8
1680.500000	36.87	---	74.00	37.13	100.0	V	314.0	-9.5
1680.500000	---	35.54	54.00	18.46	100.0	V	314.0	-9.5
2000.500000	42.40	---	74.00	31.60	100.0	V	0.0	-7.4
2000.500000	---	38.70	54.00	15.30	100.0	V	0.0	-7.4
2299.000000	46.41	---	74.00	27.59	100.0	V	344.0	-6.7
2299.000000	---	44.65	54.00	9.35	100.0	V	344.0	-6.7
2527.500000	44.75	---	74.00	29.25	100.0	V	4.0	-4.2
2527.500000	---	43.38	54.00	10.62	100.0	V	4.0	-4.2

EUT Information

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Model:	RAK7289CV2H
Test Mode:	operating
Test Voltage:	DC 12V
Standard:	FCC Part 15
Test By:/Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber

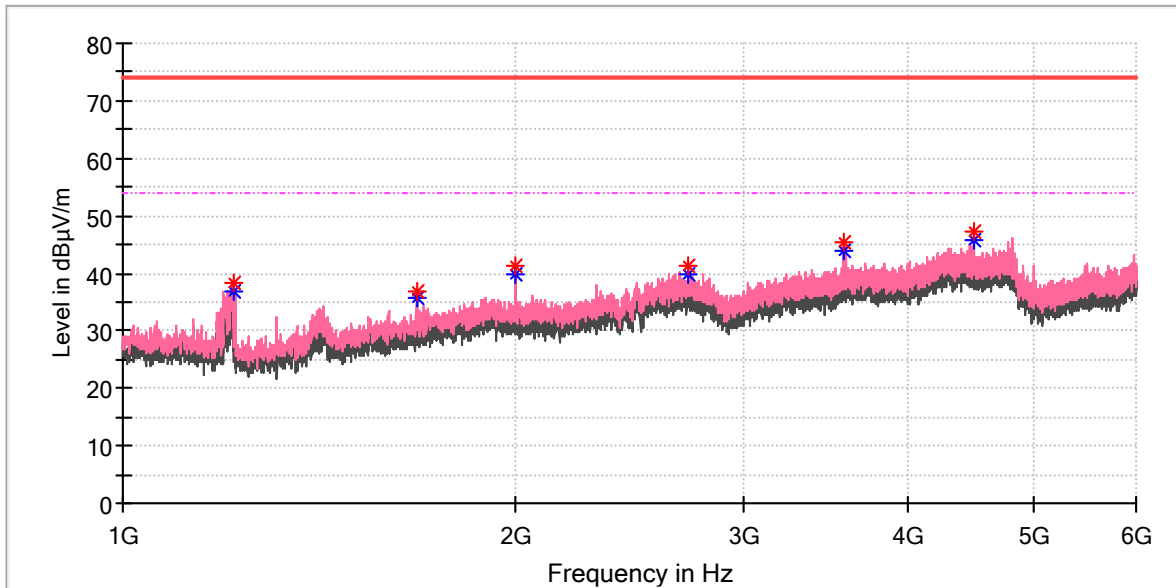


Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1616.000000	---	32.29	54.00	21.71	100.0	H	194.0	-10.1
1616.000000	34.06	---	74.00	39.94	100.0	H	194.0	-10.1
2071.000000	---	34.09	54.00	19.91	100.0	H	350.0	-7.2
2071.000000	35.83	---	74.00	38.17	100.0	H	350.0	-7.2
2337.500000	---	36.65	54.00	17.35	100.0	H	350.0	-6.4
2337.500000	38.91	---	74.00	35.09	100.0	H	350.0	-6.4
2626.500000	---	39.01	54.00	14.99	100.0	H	258.0	-3.6
2626.500000	41.02	---	74.00	32.98	100.0	H	258.0	-3.6
3163.500000	40.11	---	74.00	33.89	100.0	H	5.0	-2.6
3163.500000	---	38.17	54.00	15.83	100.0	H	5.0	-2.6
4224.500000	---	44.06	54.00	9.94	100.0	H	313.0	1.6
4224.500000	44.79	---	74.00	29.21	100.0	H	313.0	1.6

EUT Information

EUT Name:	WisGate Edge Pro
Order No:	168378328_P00734853
Model:	RAK7289CV2H
Test Mode:	operating
Test Voltage:	DC 12V
Standard:	FCC Part 15
Test By:/Review By:	Kevin Zhou/Gary Chen
Tem./Hum./Pressure:	24.1°C/50.8%/101kPa
Remark:	3m chamber



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1214.500000	---	36.81	54.00	17.19	100.0	V	345.0	-14.1
1214.500000	38.27	---	74.00	35.73	100.0	V	345.0	-14.1
1680.000000	36.90	---	74.00	37.10	100.0	V	299.0	-9.5
1680.500000	---	35.55	54.00	18.45	100.0	V	299.0	-9.5
2000.000000	---	39.70	54.00	14.30	100.0	V	0.0	-7.4
2000.500000	41.42	---	74.00	32.58	100.0	V	0.0	-7.4
2720.500000	41.40	---	74.00	32.60	100.0	V	345.0	-3.2
2720.500000	---	39.93	54.00	14.07	100.0	V	345.0	-3.2
3580.500000	---	43.93	54.00	10.07	100.0	V	222.0	-0.7
3581.000000	45.45	---	74.00	28.55	100.0	V	222.0	-0.7
4500.500000	47.12	---	74.00	26.88	100.0	V	322.0	2.1
4500.500000	---	45.69	54.00	8.31	100.0	V	322.0	2.1