

Prüfbericht-Nr.: Test report no.:	CN264ZYT 002	Auftrags-Nr.: Order no.:	27219487	Seite 1 von 10 Page 1 of 10
Kunden-Referenz-Nr.: Client reference no.:	N/A	Auftragsdatum: Order date:	2026-01-26	
Auftraggeber: Client:	Shenzhen RAKwireless Technology Co.,Ltd. Room 506, Building B, New Compark, Pingshan First Road, Taoyuan Street, Nanshan District, Shenzhen, Guangdong, P.R. China			
Prüfgegenstand: Test item:	Wisblock Wireless			
Bezeichnung / Typ-Nr.: Identification / Type no.:	RAK13302 (Trademark: )			
Auftrags-Inhalt: Order content:	Test Report			
Prüfgrundlage: Test specification:	CFR Title 47 FCC Part 1.1310 CFR Title 47 FCC Part 2.1091 RSS-102 Issue 6 December 2023			
Wareneingangsdatum: Date of sample receipt:	2026-01-27	(Please refer to Photo Document)		
Prüfmuster-Nr.: Test sample no.:	A004314138-002			
Prüfzeitraum: Testing period:	2026-01-27 - 2026-07-08			
Ort der Prüfung: Place of testing:	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von: tested by:	 Hardy Suo		genehmigt von: authorized by:	 Lin Lin
Datum: Date:	2026-07-08		Ausstellungsdatum: Issue date:	2026-07-08
Stellung / Position:	Sachverständige(r)/Expert		Stellung / Position:	Sachverständige(r)/Expert
Sonstiges / Other:	FCC ID: 2AF6B-13302 IC: 25908-13302, HVIN: RAK13302			
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:		Prüfmuster vollständig und unbeschädigt Test item complete and undamaged		
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	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. This test report only relates to the above mentioned 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.				

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Anmerkungen

Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. <i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i>
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3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. <i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i> <i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i>
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. <i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i>

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Test Summary

3.1.1 RF EXPOSURE COMPLIANCE
RESULT: Pass

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1. Test Sites

1.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

2-3F, 101 & 102, No.2, Nuclear Power Industrial Park, Fuming Community, Fucheng Street, Longhua District, Shenzhen 518000, People's Republic of China

FCC Test Site Number: CN1260

ISED Test Lab CAB identifier: CN0078

1.2 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

1.3 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.

1.4 Location of Original Data

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

1.5 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at 2-3F, 101 & 102, No.2, Nuclear Power Industrial Park, Fuming Community, Fucheng Street, Longhua District, Shenzhen 518000, People's Republic of China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

2. General Product Information

2.1 General Description

The Product is a Wisblock Wireless that supports 915 MHz LoRa.

RAK13302 has two different types of transmitter antenna that have the same power level.

- 1) One PCB ANT with 0.7dBi (declared by RAK), model: S2B1OD3A1L01000
- 2) One Dipole ANT with 1.89 dBi (declared by RAK), model: 81800V294, 81800V296 (81800V294 and 81800V296 are identical except the color of appearance)

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

2.2 Rating and System details

Table 1: Technical Specification of EUT

General Information of EUT	Value		
Kind of Equipment:	Wisblock Wireless		
Type Designation:	RAK13302		
Trademark:			
FCC ID:	2AF6B-13302		
IC:	25908-13302		
HVIN:	RAK13302		
Operating Voltage:	DC 5V		
Testing Voltage:	DC 5V (powered by computer) or AC 120V/60Hz (DC 5V powered by computer)		
Technical Specification of LoRa FHSS			
Operating Frequency:	902.3 MHz - 914.9 MHz		
Type of Modulation:	LoRa		
Data Rate:	Data Rate	Configuration	Indicative physical bit rate [bit/sec]
	0	LoRa Modulation: SF10 / Bandwidth 125 kHz	980
	1	LoRa Modulation: SF9 / Bandwidth 125 kHz	1760
	2	LoRa Modulation: SF8 / Bandwidth 125 kHz	3125
	3	LoRa Modulation: SF7 / Bandwidth 125 kHz	5470
Channel Number:	64		
Channel Separation:	200 kHz		
Occupied Bandwidth:	125 kHz		
Antenna Type:	PCB ANT or Dipole ANT		
Antenna Number:	1		
Antenna Gain:	PCB ANT with 0.7 dBi (declared by RAK) Dipole ANT with 1.89 dBi (declared by RAK)		
The type of wideband data transmission equipment:	FHSS		

Technical Specification of LoRa DTS			
Operating Frequency:		903.0 MHz - 914.2 MHz	
Type of Modulation:		LoRa	
Data Rate:	Data Rate	Configuration	Indicative physical bit rate [bit/sec]
	4	LoRa Modulation: SF8 / Bandwidth 500 kHz	12500
Channel Number:		8	
Channel Separation:		1.6 MHz	
Occupied Bandwidth:		500 kHz	
Antenna Type:		PCB ANT or Dipole ANT	
Antenna Number:		1	
Antenna Gain:		PCB ANT with 0.7 dBi (declared by RAK) Dipole ANT with 1.89 dBi (declared by RAK)	
The type of wideband data transmission equipment:		DTS	
Remark: LoRa FHSS and LoRa DTS share the same one transmitter port and cannot transmit simultaneously.			

Table 2: RF Channel and Frequency of LoRa FHSS

Channel Number	Frequency (MHz)
1	902.3
2	902.5
3	902.7
4	902.9
5	903.1
6	903.3
...	...+200 kHz
64	914.9

Table 3: RF Channel and Frequency of LoRa DTS

Channel Number	Frequency (MHz)
1	903
2	904.6
3	906.2
4	907.8
5	909.4
6	911.0
7	912.6
8	914.2

3. Test Results

3.1 RF Exposure Evaluation

3.1.1 RF Exposure Compliance

RESULT: **Pass**

Test standard : CFR Title 47 FCC Part 2.1091
RSS-102 Issue 6
KDB 447498 D01 General RF Exposure Guidance v06

Limit : Table 1 of CFR Title 47 FCC Part 1.1310
Section 5 table 7 of RSS-102 Issue 6

3.1.1.1 RF Exposure Compliance Requirement

a) Radio Frequency Exposure Limit

For FCC:

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Average Time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	<6
3.0-30	1842/f	4.89/f	*(900/f ²)	<6
30-300	61.4	0.163	1.0	<6
300-1,500	--	--	f/300	<6
1,500-100,000	--	--	1.0	<6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-3.0	614	1.63	*100	<30
3.0-30	824/f	2.19/f	*(180/f ²)	<30
30-300	27.5	0.073	0.2	<30
300-1,500	--	--	f/1500	<30
1,500-100,000	--	--	1.0	<30

f = frequency in MHz. * = Plane-wave equivalent power density.

For IC:

Frequency range (MHz)	Electric field (V _{RMS} /m)	Magnetic field (A _{RMS} /m)	Power density (W/m ²)	Reference period (minutes)
10-20	27.46	0.0728	2	6
20-48	58.07 / $f^{0.25}$	0.1540 / $f^{0.25}$	8.944 / $f^{0.5}$	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 $f^{0.3417}$	0.008335 $f^{0.3417}$	0.02619 $f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ $f^{1.2}$
150000-300000	0.158 $f^{0.5}$	4.21 × 10 ⁻⁴ $f^{0.5}$	6.67 × 10 ⁻⁵ f	616000/ $f^{1.2}$

Note: f is frequency in MHz.

b) Radio Frequency Exposure Calculation Formula

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density (in appropriate units, e.g. mW/cm²)
P = power input to the antenna (in appropriate units, e.g., mW)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

or:

$$S = \frac{EIRP}{4\pi R^2}$$

where: EIRP = equivalent (or effective) isotropically radiated power

c) RF Exposure Calculation, stand-alone mode

Mode	Band	PG (dBm)	PG (mW)	Power Density (mW/cm ²)	FCC Limit (mW/cm ²)
Lora FHSS	902-928MHz	26.51	447.71	0.089	0.60
Lora DTS	902-928MHz	26.41	437.52	0.087	0.60

Mode	Band	PG (dBm)	PG (W)	Power Density (W/m ²)	IC Limit (W/m ²)
Lora FHSS	902-928MHz	26.51	0.447	0.890	2.74
Lora DTS	902-928MHz	26.41	0.437	0.870	2.74

Note:

- 1) R = 0.2 m
- 2) Output power refer to test report CN264ZYT 001 (TÜV Rheinland (Shenzhen) Co., Ltd.)

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d) Simultaneous transmission MPE

N/A.

e) Conclusion

Therefore the maximum calculations result of above are meet the requirement of Radio Frequency Exposure (MPE) limit. This Transmitter must be installed to provide a separation distance of at least 20 cm from all persons.