

# FCC Test Report

Report No.: 2405A110957EB Applicant: Shenzhen Retevis Technology Co., Ltd. Address: 7/F, 13-C, Zhonghaixin Science&Technology Park, No.12 Ganli 6th Road, Jihua Street, Longgang District, Shenzhen, China Product Name: Two Way Radio Product Model: Ailunce HA1UV Ailunce HA2, Ailunce H1 Multiple Models: Trade Mark: RETEVIS FCC ID: 2ASNSHA1UV Standards: FCC CFR Title 47 Part 15B Test Date: 2025-01-15 to 2025-01-21 Test Result: Complied **Report Date:** 2025-01-22 **Reviewed by:** 

Frank Tin

Approved by:

Jacob Gong

Frank Yin Project Engineer Jacob Kong Manager

### Prepared by:

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### **Revision History**

Version No. Issued Date		Description	
00	2025-01-22	Original	



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# 1 General Information

### **1.1 Client Information**

Applicant:	Shenzhen Retevis Technology Co., Ltd.		
Address:	7/F, 13-C, Zhonghaixin Science&Technology Park, No.12 Ganli 6th		
	Road, Jihua Street, Longgang District, Shenzhen, China		
Manufacturer:	Shenzhen Retevis Technology Co., Ltd.		
Address:	7/F, 13-C, Zhonghaixin Science&Technology Park, No.12 Ganli 6th Road,Jihua Street, Longgang District, Shenzhen, China		

# **1.2 Product Description of EUT**

The EUT is Two Way Radio that contains amateur radio, FM/NOAA receiver and scanning receiver, this report covers the full testing of the scanning receiver.

Sample Serial Number	2W43-1 for RE test (assigned by WATC)
Sample Received Date	2024-12-17
Sample Status	Good Condition
Operating Frequency Range <sup>#</sup>	Scanning Receiver: 136-174MHz, 400-480MHz
Power Supply	Radio: DC 7.4V from battery or DC 8.4V from Charger or DC 5.0V for charging battery Charger: DC 5V from AC Adapter
Charger Information	Model: CB01 Input: 5V, 1A Output: 8.4V/500mA
Modification	Sample No Modification by the test lab

# 1.3 Related Submittal(s)/Grant(s)

### No Related Submittal(s)/Grant(s)

Note: For the FM/NOAA receiver was approval pursuant to the SDoC procedures.

For the amateur transmitter used for amateur radio service per Part 97 is exempt from FCC certification as stated at one of the FCC Wireless Telecommunications Bureau (WTB) websites for Part 97, the FCC (OET) equipment authorization program does not generally apply to amateur radio service station transmitters.

### **1.4 Measurement Uncertainty**

Parameter		Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))
AC Power Lines Conducted Emissions		±3.14dB
	Below 1GHz	±4.84dB
Radiated emission	Above 1GHz	±5.44dB

**Note 1:** The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

**Note 2:** The Decision Rule is based on simple acceptance with ISO Guide 98-4:2012 Clause 8.2 (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

### 1.5 Laboratory Location

World Alliance Testing & Certification (Shenzhen) Co., Ltd

No. 1002, East Block, Laobing Building, Xingye Road 3012, Xixiang street, Bao'an District, Shenzhen, Guangdong, People's Republic of China

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The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 463912, the FCC Designation No. : CN5040.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0160.

### 1.6 Test Methodology

FCC CFR 47 Part 15

ANSI C63.4-2014

Unless otherwise stated there are no any additions to, deviations, or exclusions from the method



# 2 Description of Measurement

### 2.1 Test Configuration

The system was configured for testing in Typical Use Mode, which was provided by the manufacturer.

Test Mode:	
Mode 1:	Scanning(136-174MHz&400-480MHz)
Mode 2:	Receiving at 136MHz
Mode 3:	Receiving at 155MHz
Mode 4:	Receiving at 174MHz
Mode 5:	Receiving at 400MHz
Mode 6:	Receiving at 440MHz
Mode 7:	Receiving at 480MHz

### 2.2 Test Auxiliary Equipment

Manufacturer	Description	Model	Serial Number	
ROHDE& SCHWARZ	Vector Signal Generator	SMBV100A	256300	
XIAOMI AC Adaptor		MDY-08-ES	unknown	

### 2.3 Interconnecting Cables

Manufacturer	Description	Length(m)	From	То
Unknown	USB Cable	1.0	Adapter	Base/EUT

### 2.4 Block Diagram of Connection between EUT and AE

Mode 1:

Mode 2~7:



Note: for reference only, the actual connection setup used for testing please refer to the test photos.



### 2.5 Test Setup



Report Template: TR-4-E-001/V1.2

### 2.6 Test Procedure

#### Conducted emission:

- 1. The E.U.T is placed on a non-conducting table 40cm from the vertical ground plane and 80cm above the horizontal ground plane (Please refer to the block diagram of the test setup and photographs).
- 2. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4 on conducted measurement.
- 3. Line conducted data is recorded for both Line and Neutral

#### **Radiated Emission Procedure:**

#### a) For 30MHz-1GHz:

- 1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m.
- 2. EUT works in each mode of operation that needs to be tested. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.

#### b) For above 1GHz:

- 1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m fully anechoic room. The measurement distance from the EUT to the receiving antenna is 3 m.
- EUT works in each mode of operation that needs to be tested, and having the EUT continuously working. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.
- 3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.

### 2.7 Measurement Method

Description of Test	Measurement Method		
AC Line Conducted Emissions	ANSI C63.4-2014 Section 7		
Radiated emission	ANSI C63.4-2014 Section 8		

# 2.8 Measurement Equipment

Manufacturer	Description	Model	Management No.	Calibration Date	Calibration Due Date			
Radiated Emission Test								
R&S	EMI test receiver	ESR3	102758	2024/6/4	2025/6/3			
ROHDE& SCHWARZ	SPECTRUM ANALYZER	FSV40-N	101608	2024/6/4	2025/6/3			
SONOMA INSTRUMENT	Low frequency amplifier	310	186014	2024/6/4	2025/6/3			
A.H. Systems	PREAMPLIFIER	PAM-0118P	531	2024/6/4	2025/6/3			
SCHWARZBECK	Log - periodic wideband antenna	VULB 9163	9163-872	2023/7/7	2026/7/6			
Astro Antenna Ltd	Horn antenna	AHA-118S	3015	2023/7/6	2026/7/5			
N/A	Coaxial Cable	NO.9	N/A	2024/6/4	2025/6/3			
N/A	Coaxial Cable	NO.15	N/A	2024/6/4	2025/6/3			
N/A	Coaxial Cable	NO.16	N/A	2024/6/4	2025/6/3			
N/A	Coaxial Cable	NO.17	N/A	2024/6/4	2025/6/3			
Audix	Test Software	E3	191218 V9	/	/			
Scanning receivers and frequency converters used with scanning receivers								
ROHDE& SCHWARZ	Vector Signal Generator	SMBV100A	256300	2024/6/4	2025/6/3			
HP	RF Communication Test Set	HP8920A	T-01-EM163	2024/11/7	2025/11/6			

Note: All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or International standards.



# 3 Test Results

### 3.1 Test Summary

FCC Rules	Description of Test	Result
FCC §15.107	AC Line Conducted Emissions	N/A
FCC §15.109	Radiated emission	Compliance
FCC §15.121(b)	Scanning receivers and frequency converters used with scanning receivers	Compliance

### 3.2 Limit

Test items	Limit					
	Frequency	Class A Limit (dBµV)		Class B Limit (dBµV)		
	(MHz)	Quasi-Peak	Average	Quasi-Peak	Average	
	0.15 – 0.5	79	66	66 to 56 Note 1	56 to 46 Note 1	
AC Line Conducted Emissions	0.5 – 5	73	60	56	46	
	5 – 30	73	60	60	50	
	Note 1: The limit level in dBμV decreases linearly with the logarithm of frequency. Note 2: The more stringent limit applies at transition frequencies.					
	_	Class A Lin	nit (dBµV/m)	Class B Lin	nit (dBµV/m)	
	Frequency	Quasi-Peak	Quasi-Peak	Quasi-Peak	Quasi-Peak	
	(11172)	@ 3m	@ 10m	@ 3m	@ 10m	
	30 – 88	49.0	39.0	40.0	30.0	
	88 – 216	53.5	43.5	43.5	33.5	
Dedicted emission	216 – 960	56.0	46.0	46.0	36.0	
Radiated emission	960 – 1000	60.0	50.0	54.0	44.0	
	Note: The more stringent limit applies at transition frequencies.					
	Frequency	Class A Limit (dBµV/m) @ 3m		Class B Limit (dBµV/m) @ 3m		
	Trequency	Average	Peake	Average	Peake	
	Above 1 GHz	60.0	80.0	54.0	74.0	
	Note: The measurement bandwidth shall be 1 MHz or greater.					
	Except as provided in paragraph (c) of this section, scanning receivers shall				ceivers shall	
Scanning receivers and	reject any signals from the Cellular Radiotelephone Service frequence				uency bands	
frequency converters used with	onverters used with that are 38 dB or lower based upon a 12 dB SINAD measurement, which			nt, which is		
scanning receivers	considered the threshold where a signal can be clearly discerned from any					
	interference that may be present.					



### **3.3 AC Line Conducted Emissions Test Data**

Not applicable, the device was powered by battery while operating.



### 3.4 Radiated emission Test Data

#### 30MHz-1GHz:

Test Date:	2025-01-15~2025-01-21	Test By:	Bard Huang
Environment condition:	Temperature: 22.5~22.8°C; Re 101.1~101.6kPa	lative Humidity:33~41%;	ATM Pressure:











#### Mode 2: Receiving at 136MHz











#### Mode 3: Receiving at 155MHz











#### Mode 4: Receiving at 174MHz









#### Mode 5: Receiving at 400MHz











#### Mode 6: Receiving at 440MHz











#### Mode 7: Receiving at 480MHz











#### Above 1GHz:

Test Date:	2025-01-14~2025-01-18	Test By:	Luke Li
Environment condition:	Temperature: 22.1~22.5°C; Relative Humidity:32~36%;		
	ATM Pressure: 101.3~101.5kPa		











#### Mode 2: Receiving at 136MHz









#### Mode 3: Receiving at 155MHz









### Mode 4: Receiving at 174MHz









### Mode 5: Receiving at 400MHz









### Mode 6: Receiving at 440MHz









### Mode 7: Receiving at 480MHz







# 3.5 Scanning receivers and frequency converters used with scanning receivers

### • Test Procedure

1. Connected the EUT as below block diagram:



2. Apply a signal to the EUT antenna port at lowest, middle, highest channel frequencies of the operating band.

3. Adjust the audio output level of the EUT to it's rated value with the distortion less than 10%.

4. Adjust the Signal Generator output power to produce 12dB SINAD Without the audio output power dropping by more than 3dB; These output level of the Signal Generator at each channel frequency is the sensitivity of the EUT.

5. Select the lowest or worst case sensitivity level for all of the bands as the reference sensitivity.

6. Adjust the Signal Generator output to a level of +60 dB above the reference sensitivity obtained in step 5 and its frequency to the frequency point in the Cellular Band.

7. Set the EUT squelch to threshold, the signal required to open the squelch must be lower than the reference sensitivity level.

8. Set the EUT in a scanning mode and allow it to scan through it's complete receiving range.

9. If the EUT un-squelched or stopped on any frequency, receiving at this frequency, then adjust the signal generator output level until 12 dB SINAD is produced, this level is the spurious value and the difference between the reference sensitivity and the spurious value is the rejection ratio and must be at least 38 dB:

10. Repeat above procedure at the frequencies 824, 836 and 849MHz for the mobile band, and 869, 881.5 and 894MHz for the cellular base band.

### Test Data

Test Date:	2025-01-21	Test By:	Ryan Zhang
Environment condition:	Temperature: 23.2°C; Relative Humidity:41%; ATM Pressure: 101.0kPa		essure: 101.0kPa

Scanning Frequency	Test Frequency	Measurement Result	Limit(dB)
Range (MHz)	Range (MHz)	(Worst Case)(dB)	
136-174/400-480	824, 836, 849, 869, 881.5, 894	42	>38



# 4 Test Setup Photo

Please refer to the attachment 2405A110957EB Test Setup photo.



# 5 E.U.T Photo

Please refer to the attachment 2405A110957E External photo and 2405A110957E Internal photo.

---End of Report---