

AW-PSA360

Handheld Wireless Signal Detector

User Manual · V1.0



Ashwing · RF Filter Solutions

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1. Overview

Professional RF surveillance equipment is typically expensive, bulky and requires trained operators. The AW-PSA360 is built around a full spectrum analyzer core, wrapped in an intuitive user interface designed for non-specialists: switch it on and it immediately detects and tracks over-the-air signals.

The detector has a walkie-talkie form factor with a high-resolution touchscreen and internal Li-ion battery. It charges from any 5 V USB Type-C source (charger or power bank) and runs 7–8 hours per charge. Detection covers 30 MHz – 6000 MHz across up to 20 user-configurable bands (bin count independently set per band). The screen combines a live signal-strength histogram with a scrolling waterfall of spectrum history; overlaid magenta bars show the standard deviation of each frequency's history (how 'bursty' the signal is). The five strongest signals are ranked with center frequency, level and an estimated distance to the source. An adjustable alarm threshold triggers beeps (faster as signals get stronger), vibration, both, or silent mode. The display can be switched off to save power while detection continues.

1.1 Key Features

1. **Simple operation:** works out of the box with default configuration;
2. **All-in-one interface:** spectrum, waterfall, alarms, threat ranking and distance estimation on one high-resolution screen;
3. **Flexible bands:** up to 20 bands, bin count (resolution) set independently per band;
4. **Adjustable alarm threshold:** -90 to -20 dBm in 1 dB steps;
5. **Long battery life:** up to 8 hours; screen-off operation supported;
6. **Multiple alert modes:** silent, beep and vibrate;
7. **Data & charging:** single USB Type-C port.

1.2 Specifications

Item	Specification
Model	AW-PSA360
Frequency Range	30 – 6000 MHz
In-band Flatness	1 dB (factory calibrated)
RBW	10 – 500 kHz (default 500 kHz)
DANL (avg. noise floor)	-110 dBm (typical)
Amplitude Accuracy	±1 dBm (factory calibrated)
Single-point Sweep Time	2 ms
Strongest-signal Ranking	Supported (top 5)
Histogram / Waterfall	Supported
Alarm Threshold	-90 to -20 dBm adjustable, 1 dB step
Alarm Modes	Silent / Beep / Vibrate / Beep + Vibrate
Touchscreen	Supported
Display Refresh	1 – 5 Hz (depends on band count)
LCD	3.97-inch TFT, 800×480

Item	Specification
RF Port	SMA female (50 Ω)
Battery	Li-ion, 5800 mAh (typical)
Charging	USB Type-C, 5 V / 1 A, 5–6 h full charge
Runtime	Approx. 8 hours
Dimensions	154 × 79 × 38 mm (excl. knob & antenna)
Operating / Storage Temp.	-20 to +45 °C / -30 to +70 °C
Measurement Range	-90 to -20 dBm

2. Functions & Operation

2.1 Appearance & Controls



Figure 2-1 Detector overview

Figure labels (CN → EN): 按压式旋钮 = push rotary knob · 天线 = antenna · SMA-K(50Ω) = SMA female, 50 Ω · 工作指示灯 = status LED · 3.97寸LCD = 3.97" LCD touchscreen · USB充电口 = USB-C port · 功能按键 = function keys

1. Status LED: blue in operation, red while charging, green when fully charged;
2. USB port is Type-C; charge current 1 A at 5 V;
3. Antenna port is a standard SMA female, mating with SMA male antennas. Rated life is about 1000 mating cycles — beyond this, loss increases and contact may become unstable;
4. Function keys enter their corresponding functions directly;
5. The top rotary encoder sets the alarm threshold: clockwise decreases the value continuously, counter-clockwise increases it;
6. The POWER key is on the left side. Power-off works from the main screen; on other screens the key acts as ESC back to the main screen.

2.2 User Interface

A single screen combines: real-time in-band power (green blocks), the corresponding waterfall (color-mapped signal strength), the five strongest signals with frequency and level, and a status area with alarm indication, approach/retreat analysis and distance estimation.

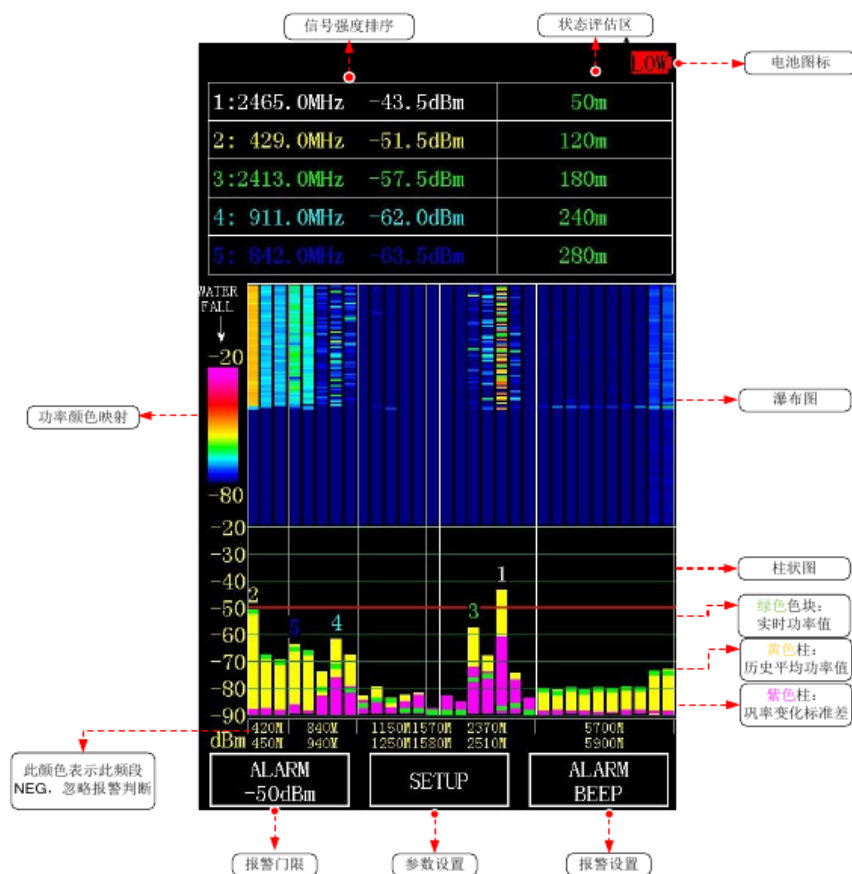


图 2-2 探测仪界面分类说明

Figure 2-2 UI layout

Figure labels (CN → EN): 信号强度排序 = signal ranking · 状态评估区 = status area · 电池图标 = battery · 功率颜色映射 = power color map · 瀑布图 = waterfall · 柱状图 = histogram · 绿色块 = green: real-time power · 黄色柱 = yellow: historical average · 紫色柱 = magenta: std deviation · 报警门限 = alarm threshold · 参数设置 = setup · 报警设置 = alarm mode · NEG = band monitored but alarms ignored



Figure 2-3 Side keys

Figure labels (CN → EN): USB接口 = USB port · 报警设置 = alarm mode key · 上按键 = Up · 下按键 = Down · 电源/ESC = Power / ESC

Alarm modes: cycle with the side key or on-screen button through four modes: silent, beep, vibrate, vibrate + beep;

Alarm threshold: set with the top rotary encoder, 1 dBm steps, -90 to -20 dBm. When any band exceeds the threshold, the alarm icon flashes and the current alert mode is triggered;

Power & screen: short-press POWER to switch on; long-press on the main screen to switch off; short-press to turn the screen off (extends runtime) and again to wake it.

2.3 System Setup

From the main screen, tap SETUP (or press ENTER) to open system setup. Use Up / Down / Enter / Return to choose: BAND SETUP, Default SETTING, or Return.

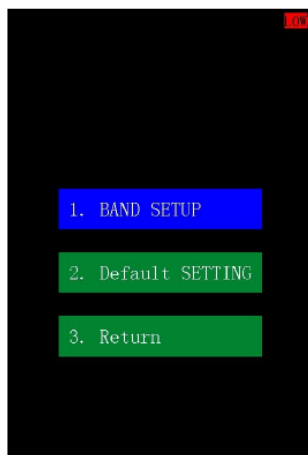


Figure 2-4 Setup menu

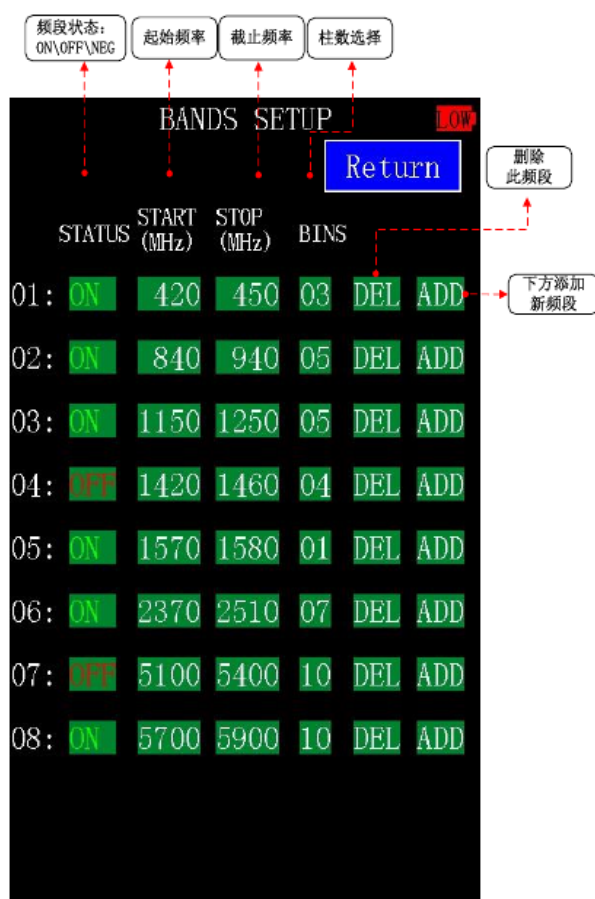


Figure 2-5 Band setup screen

Figure labels (CN → EN): 频段状态 = band status ON/OFF/NEG · 起始频率 = start frequency · 截止频率 = stop frequency · 柱数选择 = bins · 删除此频段 = delete band · 下方添加新频段 = add band below

- **STATUS:** band state. ON/OFF controls whether the band is monitored and displayed; NEG means the band is monitored but excluded from alarm evaluation;
- **START / STOP:** band edges. Use Up/Down + Enter to select each digit, then Up/Down or the rotary knob to change it — any frequency within the measurement range can be set;
- **BINS:** number of bins for this band. Keep the total across all bands under 100 — more bins slow the sweep;
- **DEL / ADD:** delete this band / insert a new band below;
- **Default SETTING:** press Enter for the restore prompt, confirm again to restore factory defaults (6 bands by default, up to 20), Return cancels.

3. Application Guide

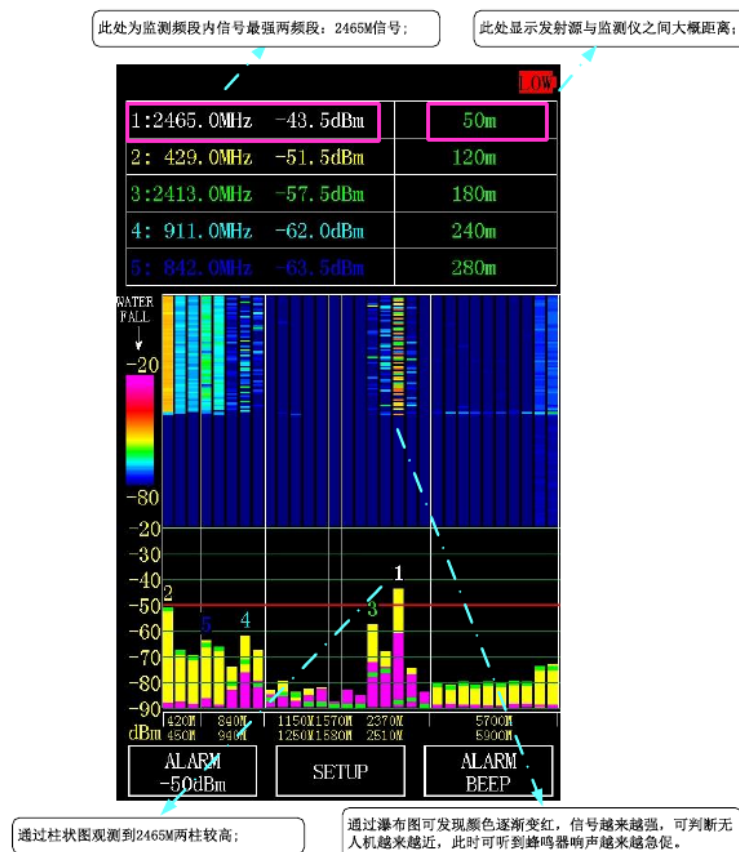
3.1 Application Fields

1. Airborne transmitter spectrum detection
2. Indoor covert-signal sweeps
3. Walkie-talkie, cellphone, base-station and radio signal detection
4. Jammer detection
5. Wireless coverage testing
6. Production-line batch testing

3.2 Example: Drone Signal Detection

Switch on, configure detection bands for the target application, attach a suitable antenna and set the alarm threshold to monitor drone signals in real time. Below is a 2.4 GHz video-link example: two bins near 2465 MHz stand out in the histogram; the status area shows the strongest signal's frequency, level and estimated distance; the waterfall turning red over time means the signal is strengthening — the drone is approaching — and beeps grow faster.

无人机信号监测如下图所示；

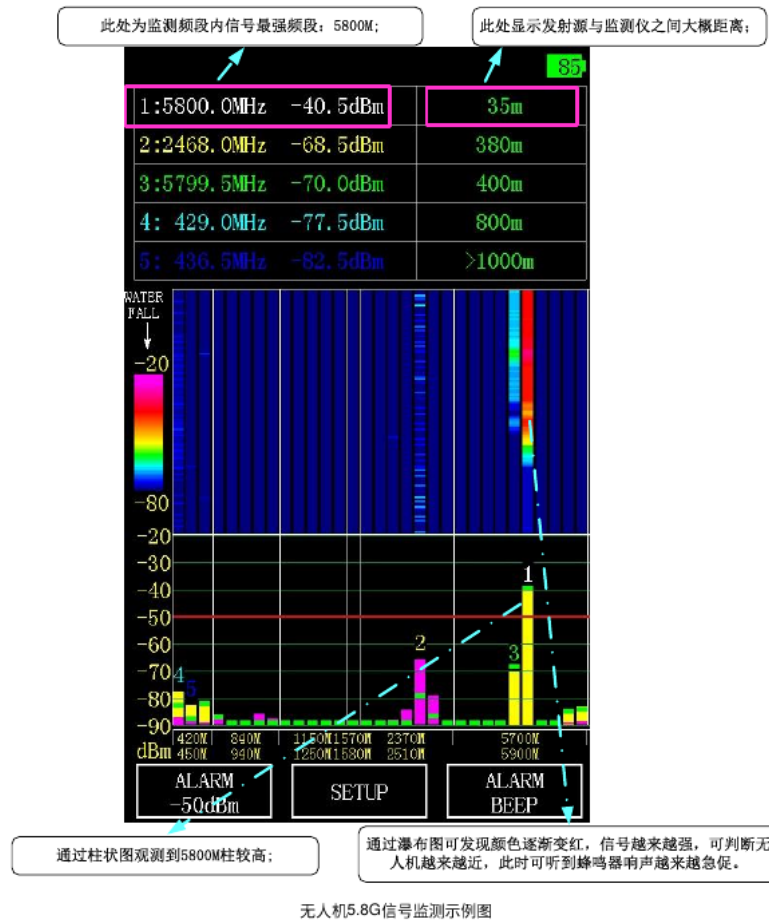


无人机2.4G信号监测示例图

Figure 3-1 2.4 GHz drone-link monitoring example

Figure labels (CN → EN): 监测频段内信号最强频段 = strongest signal in monitored bands · 发射源与监测仪大概距离 = estimated distance to source · 柱状图2465M两柱较亮 = two bright bars at 2465 MHz · 瀑布图颜色渐变红 = waterfall turns red as

signal strengthens / drone approaches



无人机5.8G信号监测示例图

Figure 3-2 5.8 GHz drone-link monitoring example

The 5.8 GHz case works the same way: strongest signal 5800 MHz at -40.5 dBm, estimated distance 35 m, with the 5800 MHz bar clearly elevated in the histogram.

4. Care & Maintenance

4.1 Normal Use

- Use with an antenna normally; if feeding via RF cable, keep input below 10 dBm to avoid damage;
- Tighten antenna/cable threads snugly — do not over-torque or the threads may strip;
- Keep the battery charged to avoid automatic shutdown;
- The USB port is delicate — plug gently and avoid side loads;
- Mind storage and operating temperatures; do not leave in direct sun;
- Transport in its box to keep hard objects from scratching the LCD;
- If you swap antennas often, protect the main port with an SMA adapter; clean RF connectors monthly with an alcohol swab.

4.2 Environment

- Do not use the unit if it has taken in water, rattles when shaken, or shows any other abnormality;
- Never test outdoor equipment during thunderstorms — including equipment fitted with lightning rods;

- Moving from winter cold into a heated room can cause internal condensation — let the unit dry before powering on.

4.3 Battery

- Keep away from flammables while operating or charging; ensure ventilation and never cover the unit or charger;
- Charge regularly — avoid waiting for the low-battery warning;
- Do not float-charge long term; during extended use avoid charging continuously — intermittent battery use extends battery life;
- For long storage, store fully charged and top up at least every three months.

5. Warranty

This product carries a one-year warranty. Not covered: physical damage such as drops and impacts; burnout from excessive input power; water ingress; unauthorized disassembly. Out-of-warranty repairs are available for a fee.

Contact: sales@ashwingrf.com · WhatsApp/Telegram +1 (346) 409-5578 · ashwingrf.com

Address: 7F, Building G, Chuangkeda Laser Industrial Park, No. 3 Guanguang Road, Guanlan Street, Longhua District, Shenzhen, Guangdong, China