AOR AR-Mini B

By Larry Van Horn, N5FPW

AOR has been out of the highly competitive small scanner market for some time now, so it is good to see they have returned with their new AR-Mini B. AOR has always produced a quality radio, and this unit is no exception.

The AOR AR-Mini, a compact hand-held unit, is similar in size to the Icom IC-R5 that has been so successful.

The AR-Mini handheld offers continuous frequency coverage from 100 kHz to 1299.995 MHz (except for the mobile and base cellular bands). Reception modes include AM, narrowband FM and wideband FM. This scanner is a conventional scanner, with no trunking capability.

What's in the Box

The AR-Mini box contains the following items: AC adapter, two AA NiMH batteries, SMA antenna, belt clip, hand strap, and a printed manual.

Features

The AR-Mini has a load of interesting features for such a small package. Some of these key features include:

- Water resistant (Meets JIS4 waterproof standards to protect against spray and splash)
- High stability TCXO (+/- 2.5 ppm)
- Long battery life (up to 22 hours)
- 1000 Alpha memories in 10 banks are supplied
- CTCSS and DCS Decode
- Preprogrammed bug detector (with level beep)
- Two VFOs
- RF Attenuator
- Built-in ferrite bar antenna (100-5000 kHz)
- Battery saver
- Backlit LCD with signal meter
- Voice inverter descrambler (not available for the U.S. domestic version)

Some of the other features that are included with this unit include: Priority channel watch; memory channel skip; earphone cord antenna capability; battery save functions; auto power off timer; automatic or selectable tuning steps; and a low battery indicator.

Overall rating: 2 and 3/4 stars

Optional Accessories

There are several optional accessories available for the AR-Mini. These options include: AA-Mini "A" plug type replacement AC adapter (100-240V to 6VDC, 500 mA supplied current; DC-Mini DC cable with cigarette lighter plug (6VDC, 500 mA supplied current for 12/24VDC socket; CO-Mini data cloning cable (AR-Mini to AR-Mini cloning); PC-Mini PC cable (USB only); SC-Mini soft carrying case; and a SMA to BNC adapter for the antenna socket.

There is also programming software available. The AR-Mini programming tool helps the user easily edit and upload memory channel data and adjust the unit's settings. This software is not available with the unit on a CD-ROM, but it can be downloaded free of charge from the AOR website at **www.aorja.com/ar-mini/ar-mini.html**. Downloading the software is strongly recommended, since the unit does not have a conventional keyboard and programming manually is a bit of a chore.

If you are interested in getting a closer look at the operation of this receiver, you can download an Adobe PDF copy of the manual from the AOR website at **www.aorja.com/ar-mini/AR-Mini%20manual.pdf**.

Additional downloads from the AOR website include:

- Color leaflet/sales brochure
- Manual amendments and corrections (as of November 28, 2008)
- Manual page 37 detailed explanation
- Manual page 44 detailed explanation
- USB driver (v5.3-July 15, 2008) (5.95MB)
- Free software "Programming Tool"v1.00 mentioned above (7.55MB)
- Driver install and quick guide (v. Oct.28, 2008) (751kB)

TABLE 1: MISCELLANEOUS SPECIFICATIONS

Frequency Range: 100 kHz to 1299.995 MHz
(Cellular Blocked)
Receive Modes: FM, WFM, AM
Tuning circuits:
AM/Narrowband FM: Triple conversion super-heterodyne
Wideband FM: Double conversion super-heterodyne
Intermediate frequencies: 243.950 MHz, 21.7 MHz, and 450 kHz
Sensitivity:
200 kHz - 5.0 MHz
AM: 1.3μV (10dB S/N)
5.0 MHz - 160 MHz
AM: 0.6μV (10dB S/N)
FM: 0.2μV (12dB SINAD)
WFM: 0.9μV (12dB SINAD)
160 MHz - 370 MHz
AM: 0.6μV (10dB S/N)
FM: 0.2μV (12dB SINAD)
WFM: 0.8μV (12dB SINAD)
520 MHz - 1300 MHz
AM: 0.7μV (10dB S/N)
FM: 0.35μV (12dB SINAD)
WFM: 1.0μV (12dB SINAD)
Selectivity:
AM/Narrowband FM: More than 15 kHz (-6dB)
Wideband FM: More than 110 kHz (-6dB)
Memory channels: 1000 (10 banks)
Scan Speed: 8 steps per second
Tuning steps:
5, 6.25, 8.33*, 9*, 10, 12.5, 20, 25, 30, 50, 100 kHz (* selectable depending on band)
Select channel scans: 100
Priority channel: 1
Pass frequencies: 100
Frequency stability: ± 2.5 PPM
Conducted spurious emissions: Less than -54 dBm
AF Output Power:
100mW at 10% distortion with an 8 ohm load
External speaker connection:
3.5 mm mono jack
Power Consumption:
110 mA (nominal), 65 mA (stand by), 20 mA (stand by saver),
Dimensions:
2.4 wide (60 mm) x 3.7 high (95 mm) x 0.9 deep (24 mm) inches.
Weight: 7.4 ounces (210 grams) with antenna and battery
Antenna Jack: SMA
Specifications are subject to change without notice.

MT FIRST LOOK RATING (0-10 SCALE)	
Audio Quality	6
Audio Levels	7
Backlight/Display	6
Ease of Use	5
Feature Set	5
Keyboard/Control Layout	5
Overall Construction	7
Overall Reception	5
Owners Manual	7
Sensitivity	5
Selectivity	5
Spectrum Usability	5

❖ Bottom Line

Out of the box the AM/Shortwave reception using the stock rubber duck or the built-in bar antenna is poor. Add a good passive external antenna and shortwave reception improves considerably. However, even with an outdoor antenna, the AM broadcast band reception was still poor. Using an active antenna proved to be a disaster with the radio de-sensing due to more signal than the radio could handle.

Unfortunately, there is no SSB/CW mode capability. This limits the utility of shortwave reception to only shortwave broadcast stations (about 15-20 percent of the shortwave frequencies covered by this unit).

I thought overall VHF/UHF reception was good. I was especially impressed with the FM broadcast band reception. I was able to hear several stations here in western North Carolina that I have not heard on several other scanners we have tested.

The big drawback to this radio is it has no trunking capability and it does not have an APCO-25 digital decoder. This limits scanner reception to conventional, analog scanning.

The LCD screen was easy to read, programming was easy to perform with the programming software, and the manual was well written.

List price for this unit is $299, but you will find discounts at most dealers that carry the unit. It is available from several of the major amateur radio dealers in this country and abroad.

If you live in an area that has not moved into the trunking/P-25 communications scene, and you don't use this radio as your primary shortwave radio, the AR-Mini is a nice scanner to carry with you for travel use.

Bugging Blagojevich

By Bob Grove

The December corruption arrest of Illinois Governor Rod Blagojevich brought to light the use of surveillance devices and techniques. In the governor's case, his campaign headquarters, home, and personal office were bugged for about two months.

Federal investigators are understandably reluctant to reveal how they gained access to the governor's facilities, but a recent ABC news article by Scott Michels (Dec. 11, 2008) revealed quite a bit.

"It's not something you do overnight. You have plenty of time to develop probable cause. You do a survey, figure out how to get in," according to Lee Flosi, a former FBI agent in Chicago's Organized Crime Task Force.

But the privacy aspects must be considered as well in federal wiretaps. First, probable cause that such a tap will detect ongoing criminal activity must be presented to the Department of Justice and a federal judge. For a phone tap, investigators don't need access to a home or office; they just work with the phone company.

But to actually place a bug in a suspect's home or office often requires "surreptitious entries," says ABC's Brad Garrett, a former FBI agent. He observes that the agent may have to pick the lock and disable the alarm in a manner that no one will know you've been there.

Lee Flosi adds that some agents will pose as repairmen, or even get a job with a night cleaning crew.

❖ So how and where do you put the bug?

Flosi admitted in the ABC story that he once hid in an empty refrigerator box which agents delivered to the door of the suspect's house. Since the house was right across the street from the police station, they needed that cover to obscure the view of Flosi picking the lock from inside the box. The agents then retrieved the box and simply walked inside and planted the bug.

Long-time *MT* reader Kevin Murray, a well-known security consultant, also responded to ABC's story, noting how easy it is to get into most places, since locks and alarms rarely deter espionage. He added that modern listening devices are so small they can fit underneath a fingernail, and are often placed in walls, lamps, telephones, coasters and light fixtures.

But not all taps go as planned. One federal prosecutor, according to ABC, admitted that he has had people call him, saying, "Come pick up your equipment!" In another instance, a member of the Gambino crime family ostensibly took a sledge hammer to a parking meter outside a social club after learning that the police had bugged it.

❖ The state of the art

It's probably safe to assume that for most routine law enforcement, wireless bugs are still the traditional, small transmitters emitting FM signals in the 150-174, 406-420 and 450-470 MHz ranges. Bumper beepers, used to track vehicles, have often been detected in the 30-50 MHz low band. These are all easily detected with a spectrum analyzer.

But high-level espionage, compromising governments and major syndicates, is more sophisticated. As such, they require more sophisticated detection techniques. For more information on the state of the art, visit Kevin Murray's informative website at **www.spybusters.com/introduction.html**.