

Sangean ATS-909X Multiband Portable Radio

Three reviews by Bob Grove, W8JHD

The notion of worldwide shortwave reception on a portable radio has titillated listeners for decades. The early offerings pale in comparison to modern solid-state technology with direct frequency entry, digital signal processing, and other advances that trickle down from more sophisticated products.

Many long-time SWLs will recall the hoopla surrounding the Barlow-Wadley XCR-30 when it was released in 1977. Developed and manufactured in Zambia, this was the first portable sporting direct frequency readout and exalted carrier selectable sideband (ECSS). Its cost was a mere \$269.

But even with this innovative design, it suffered from severe front-end overload, and no attenuator switch was provided to alleviate this condition. It was also faulted for poor medium-wave sensitivity.

An excellent collection of reviews and critiques of this old classic may be found at www.barlowwadley.it/literature.htm.

The Sangean ATS-909X

A good example of superior performance from a modern compact portable at lower cost is available in the recently-released ATS-909X from Sangean Corporation.

Measuring 7-3/4 inches wide x 5-1/4 inches high x 1-1/2 inches deep and weighing in at 28 ounces, its three inch speaker is rated at three watts and puts out clean sound from the radio's one watt of audio. A rear-panel tilt bracket supports the radio at a more convenient desktop or tabletop viewing angle.

A side slide switch serves as a tone control, contouring the audio for best reception of talk and news programming or music. Audio jacks are also provided for recording are auxiliary input, line out, and standby switching (see details below).

Internal power is provided by four AA cells (alkaline or rechargeable, not included). A nine-volt, 700 mA, AC adapter/charger comes with the radio, as does a pair of ear buds for FM stereo listening. Also in the pack is a protective, vinyl soft case.

Frequency coverage and modes are 87.5-108 MHz FM and 153-29999 kHz AM/USB/LSB in four bands.

A wide/narrow switch allows a choice of selectivity on the medium wave and shortwave AM bands. In the SSB mode, narrow is automatically selected. The same switch doubles as a stereo/mono selector in the FM mode. In the stereo mode, left and right channels are separated for monitoring through stereo earplugs (provided).

Once made, preferred settings can be locked



The compact ATS-909X shown next to a pen for size comparison (No, the pen isn't included!)

to avoid accidental change or tampering by a press of the lock key.

The large backlit LCD display is easy to read and includes information on more than two dozen selections including frequency, tuning speed, signal strength, squelch, band, mode, memory page, button/memory lock, battery condition, and time.

The display may be activated manually in battery mode, but stays on when using the included AC adapter.

Antennas

The subject of antennas always comes up when dealing with radio equipment, whether transmitting or receiving. In the case of the 909X, it has two integrated antennas – a telescoping whip for FM and shortwave, and an internal ferrite bar for long wave and medium wave reception.

The 46-inch telescoping whip can be extended even further for shortwave reception by connecting the included 24-foot reel-up antenna accessory. It can be plugged into the radio's external antenna jack, attached directly to the whip with its snap-on adaptor.

Tuning

Frequency entry can be direct via the numeric keypad, selected during automatic scanning, manually tuned by up/down step keys, or rotary tuned in the traditional fashion.



Lots of audio interconnect possibilities, an external AM antenna jack, and an RF gain control.

Fast or fine tuning is accomplished by selecting 100 or 50 kHz in the FM mode, 9/10 kHz or 1 kHz on AM long wave, 10 or 1 kHz on AM medium wave, 5 kHz or 1 kHz on AM shortwave, and 1 kHz or 40 kHz on single sideband (USB/LSB).

Toggleing between fast and slow tuning speeds is quickly enabled by a pushbutton in the center of the tuning dial.

Digital Signal Processing

Digital signal processing (DSP) has become a trigger phrase in modern receiving equipment. It is an incisive means of removing unwanted interference while passing desired signal contents.

There has been considerable debate on chat rooms about whether or not the ATS-909X has DSP. The latest answer, direct from Sangean engineers, is that it has DSP for both FM and AM receiving modes (including shortwave), but not for SSB.

Memory

The ability to store lists of discrete frequencies for fast selection is endemic among shortwave radios. The ATS-909X can store up to 406 station frequencies which are assigned to nine-frequency pages ("banks" on scanners).

Selections include 351 memory frequencies for shortwave, 27 for FM, 18 for medium wave, and nine for long wave.

If you pay special attention to one particular frequency, you can recall it at any time instantly by simply pressing the priority key.

RF Gain Control

One of the most common shortcomings of inexpensive portable radios is their vulnerability to front-end overload. This can be compounded by the use of an external antenna.

Excessively strong signals produce a variety of degrading symptoms like reduced sensitivity and phantom signals on multiple frequencies. By purposely reducing the signal levels as they enter the radio, these artifacts can be moderated or even eliminated. Certainly, shortening the whip is one answer for FM and shortwave, but on long and shortwave, there is no way to adjust the internal ferrite antenna.

Sangean handles this by including a thumb-wheel potentiometer which has a continuous range of gain control. For most environments, you will keep the gain at maximum, but in those cases where a nearby, excessively-strong broadcaster is causing problems, it's a handy gadget. But keep in mind, all signals are reduced, including desirable weak ones.



The LCD window, shown here only partially filled, is a busy place, and it's backlit.

World Time with Alarm

Once you enter your own time zone into the 909X, it automatically reports the correct time for 42 cities around the globe. When seasonal time changes (daylight savings time), a key press automatically advances the time one hour.

Three timer circuits are individually selectable for time and frequency to be activated for that wake up call. A snooze feature is activated by pressing any key during the alarm sound to deactivate the alarm for five minutes.

Additionally, the radio can be set to auto-

matically shut off in any ten-minute increments between 10 and 90 minutes.

Squelch

Scanner listeners know how irritating it is to have to listen to the noisy hiss on a vacant channel as you await activity. This is the reason for a squelch feature. The 909X also has an adjustable squelch to remove the irritating background noise as you search for active stations.

Audio In/Out

A standard 3.5 mm jack is provided, allowing the user to feed an iPod, MP3, or CD player into the radio to benefit from the 909X's audio.

In addition, two additional jacks, line out and standby out, can be used to feed an optional recorder like Sangean's DAR-101.

Radio Data System

Newer automobile radios often have the Radio Data System (RDS) feature which alphanumerically displays name and/or call sign of the FM station, the format (news, classical, etc.), and any texted news items. The 909X has an RDS display for that information.

The Bottom Line

As I sit here typing this review, I'm listening to Rossini's *Overture to the Barber of Seville* as broadcast from a 100-mile distant FM station. On most other portables, reception would be a bit "iffy," but on my 909X using only its whip, it's full quieting with brilliant sound coming from the internal speaker.

While the radio was sensitive on FM and AM broadcast reception, it did lack sensitivity on shortwave. I confirmed that with a second radio for comparison. This is probably why Sangean includes the reel antenna for better signal capture.

I did find that one section of the telescopic whip was resistant when trying to compress it. This was likely one of those occasional anomalies that wouldn't be found on all radios. A polite wipe of WD40 silicone lubricant helped.

The recently-released Sangean ATS-909X has a lot going for it at its competitive pricing point, but don't expect it to compare with a more expensive desktop.

The Sangean ATS-909X is available from Grove Enterprises for \$259.95, and is also available from other *MT* advertisers.

Jetstream JTPS31MB Power Supply

There is no question that the traditional linear power supply with the husky transformer is inherently quieter than the newer switching type supplies. Place a portable radio next to a switching supply and you're likely to hear quite an audio assault.

The very fact that the high efficiency (75% in the case of the JF-PS31MB) of a switching supply is accompanied by the generation of enormous numbers of harmonics from its square-wave switching of the internal voltage regulator guarantees wideband noise.

But that doesn't mean that this electrical noise is necessarily going to radiate enough to compromise reception on a sensitive receiver connected to an outdoor antenna. Such noisy circuitry, when properly designed, can confine most of its harmonics inside the box.

Switching-mode power supplies typically switch at between 50 kHz and 1 MHz, thus generating hash at the lower frequencies, and these harmonics diminish the higher you tune.

I recently replaced my heavyweight 20 amp linear supply with a smaller, lighter, cheaper, Jetstream switch-

ing supply and noticed only a slight presence of occasional weak switching harmonics on the low-frequency range of my HF ham transceiver. Of course I was using an external antenna. An antenna close to the power supply will guarantee the reception of radio frequency interference (RFI)!

The Specs

Considering the power it produces (up to 500 watts), the little Jetstream leaves a small footprint (5 inches wide x 2-1/2 inches high x 6 inches deep plus knob extensions), and weighs slightly more than two pounds. Voltage is variable from 4-16 VDC, and the adjustment knob has a convenient detent at 13.8 VDC to emulate automotive voltage.

Power is delivered from a black and red pair of rear-panel binding posts. An internal, rear-slotted fan is automatically activated under heavy current drain (up to 32 amps) to prevent overheating. The speed of the fan is regulated by the amount of heat being generated.

A rear-panel slide switch selects operating voltage between 100-120 VAC and 220-240 VAC at 50-60 Hz. A removable line cord is included.



Jetstream JTPS28 13.8 VDC PS

Designed for operating mobile equipment from AC, Jetstream's new 13.8 VDC power supply is handy and affordable. Like the JTPS31MB, the circuitry is of the switching type of lightweight, compact affordability. And as with the previously-described model, you don't want to get an antenna close to the unit if you want to avoid switching harmonics.

With that caveat, we found this model quieter than the variable-voltage model in terms of RFI.

The JTPS28 is not voltage adjustable, but it is voltage regulated for stability throughout its current range, and that's up to 28 amps surge, 25 amps continuous duty. The circuitry is overload-protected.

Voltage is available from three places, a rear panel pair of binding posts for up to seven amps, a front panel pair of binding posts for up to 28 amps, and a front panel cigarette lighter jack for up to seven amps.

The JTPS28 is also equipped to operated from 120/240 VAC lines at the flip of a switch. An internal fan is automatically activated under high-heat stress, indicated by a front panel LED. As with the previously-described model, the speed of the fan varies with the heat being produced.

The power supply weighs in at three pounds and measures 7 inches wide x 2-1/4 inches high x 8 inches deep. A removable line cord is included.



The Bottom Line on the Jetstreams

I found both power supplies to be well constructed and properly specified. With the RFI aspects of all switching power supplies understood, I would recommend these two units from a price/performance perspective.

The Jetstream JTPS31MB sells for \$84.95 and the JTPS28 for \$89.95 each. Both are available from Grove Enterprises.