

What's so Super about the Super-909?

By Jim Clarke, NR2G

While listening to my favorite shortwave broadcast one evening, the usual group of timed advertisements interrupted the show. One of the items advertised that night was a radio called the Super-909. My ears perked up as the announcer described the modifications involved in transforming a Sangean ATS-909 into a Super-909. Boasting fantastic audio, beautiful backlighting, better sensitivity and selectivity, among other things, I thought it was worth going to the company's web site, <http://www.radiolabs.com>, to see what it was all about.

The RadioLabs company, based in Fortuna, California, specializes in radios, radio modifications, antennas, and features the Super-909 on their web site's homepage. The specifics of the Super's modifications are listed in Table 1.

Table 1. Super-909 Modification Summary

Green display LEDs replaced with blue
 Tuning knob detents removed
 Tuning mute disabled (eliminates "chuffing")
 Increased sensitivity
 Upgraded IF filters
 Upgraded speaker
 Modified audio passband
 Gold RCA antenna jack added to back panel

I've had a few portables in my time, so I was curious to see not only how well the ATS-909 performs, but just how much better the Super-909 really is. So, I contacted Chris at RadioLabs, and expressed my interest in doing a comparative review of the two radios for *Monitoring Times*. To my delight, he agreed to send one of each, and, just in time for Christmas, they both arrived.

Since the ATS-909 has been around for more than seven years, and has had numerous reviews written on it (reviewed in *MT* by Lawrence Magne, Sep 1996), I am going to concentrate on comparing the two radios with respect to the list of modifications carried out by RadioLabs. Additionally, from this point on, I will refer to the Super-909 as S909, and the ATS-909 as A909.

❖ Display Backlighting

RadioLabs swaps out the stock green display LEDs with a set that has a cool blue

color. The blue seems more readable to me, and it also appears to be a little brighter. The contrast also looks better in low ambient room light or total darkness.

❖ Tuning Detents

The A909 has a detented tuning knob. Whether this is good or bad depends on what you personally feel more comfortable with. I prefer no detents, but the negative side of the trade-off is accidentally changing the frequency by bumping into the tuning knob. Obviously, engaging the front panel lock, or setting the manual-tuning step to stop, would avoid this.

On the positive side of the trade-off is smooth tuning while clarifying SSB signals. In addition, without those detents, you can easily turn the tuning knob using the tip of your finger.

❖ Anti-Muting

The tuning knob detents weren't the only things to go in the S909. The muting function that takes place when changing frequency has been disabled. Now, when you turn the tuning knob, not only does it feel smooth, but also sounds smooth; no more "chuffing."

On the negative side of the trade-off,

you may hear a very short burst of noise in the speaker when jumping from one frequency to another using the keypad.

❖ Sensitivity

Sensitivity is another area in which the S909 is claimed to show improvement. Unfortunately, as seen in Table 2, the sensitivity measurements of the A909 and S909 that I tested were virtually equal. A cursory check of AM sensitivity yielded different measurement numbers, but, again, they were comparatively similar.

Perhaps I received a hotter than normal A909. Although the sensitivity is very similar, it should be noted that it is very respectable for a portable receiver.

Table 2: 10dB S+N/N Measurements, USB mode

| Frequency MHz | ATS-909 | Super-909 |
|---------------|--------------|--------------|
| 0.425 | 3.50 μ V | 3.80 μ V |
| 1.000 | 1.41 μ V | 1.55 μ V |
| 1.700 | 0.65 μ V | 0.67 μ V |
| 2.500 | 0.30 μ V | 0.32 μ V |
| 4.500 | 0.18 μ V | 0.19 μ V |
| 6.500 | 0.16 μ V | 0.18 μ V |
| 10.500 | 0.16 μ V | 0.17 μ V |
| 14.500 | 0.19 μ V | 0.18 μ V |
| 20.500 | 0.15 μ V | 0.17 μ V |
| 29.500 | 0.16 μ V | 0.18 μ V |



❖ Selectivity

Finding a portable in this price range with ideal selectivity can be problematic at best. The buyer is typically stuck with the compromises the manufacturer has built into the radio, with the exception of, in some cases, replacement filters offered by a third party. For example, Kiwa offers optional filters for the Sony 2010, available in a do-it-yourself install kit, or as a mail-in upgrade package.

For the purpose of this review, I did a rather crude "overall receiver selectivity" check. That means my measurements not only yield response characteristics of the IF filters, but are also influenced by the traits of all other RF and AF signal path circuits from the antenna to the line-out jack. I decided to measure the 6 dB bandwidths in SSB and AM, including the wide and narrow widths – in AM

Table 3. Bandwidth Measurements

| Radio | Mode | Filter | 6dB Width (kHz) |
|-------|------|--------|-----------------|
| S909 | AM | Wide | 7.5 |
| A909 | AM | Wide | 5.1 |
| S909 | AM | Narrow | 6.2 |
| A909 | AM | Narrow | 3.7 |
| S909 | USB | NA | 2.3 |
| A909 | USB | NA | 2.5 |

only – with the results shown in Table 3.

The measurements support one of the things I liked most about the S909: both wide and narrow bandwidths yield usable and useful audio. I don't know how manufacturers – for this type of receiver – decide what bandwidths to provide, but it usually seems like the narrow setting is too narrow. The very thing that you are depending on to eliminate adjacent-channel interference ends up ruining the audio of the desired signal. In the S909, the wide bandwidth really is wide, providing increased fidelity when listening to AM signals that have little or no interference. The narrow is just a little wider than the standard A909's wide bandwidth.

The only negative that I observed here was that, even in the narrow position, the S909 didn't eliminate adjacent channel heterodynes to the same degree that the A909 wide filter did. Although heterodynes were occasionally heard, their levels were completely within tolerable levels, and were offset by the quality of the received audio.

❖ Audio

That brings us to the speaker, and, I must say, this modification really jumps out at you when you tune into an FM broadcast of classical music. The crispness and fullness of the S909 audio is, well, super. And, yes, the difference is also noticeable when listening to shortwave broadcasts. I own one of the early YB400 (Yachtboy 400) receivers, but I experience audio fatigue after such a short time that I can't bear to listen for extended periods, let alone gain any pleasure from just tuning around. The sound of the S909 is as much of an improvement over the A909 as

the A909 is over my YB400.

It's not my intent to portray the A909 as having poor audio, because it doesn't – it's just that the S909 sounds so much better.

❖ What comes with it?

The S909 ships with the same complement of accessories as the A909. A 120 Vac to 6 Vdc wall adapter, a nice carrying case, stereo earpieces, and owner's information packet round out the contents of the box.

❖ Bottom line

I must say that I am as curious as I am disappointed with the sensitivity measurements of the S909. It doesn't lack sensitivity; I guess I just expected at least a little difference between the two 909s. Perhaps, at one time, the S909 did have better sensitivity than the typical A909, but since then Sangean has apparently made a circuit change to improve it.

Despite that surprise, I found the S909 package as a whole to be worth the money. RadioLabs takes a very respectable portable radio and "kicks it up a notch" to stand head and shoulders above its A909 siblings. Now if I could just find the cash lying around, I'd go ahead and buy one.

❖ How to get one

RadioLabs sells the S909 direct for \$329.95. If you already own an A909, you can ship your radio to them, and, for \$109.95 plus two weeks of time, they will transform it into an S909. After any A909 is converted, it goes through a 24-hour operational burn-in period, to ensure quality, before shipment.

❖ Other cool stuff

RadioLabs also sell some nifty portable solar power packs. One package includes a 10.4 Watt folding solar panel, an 8 AH battery with charging circuitry, a 12 Vdc input to 3-12 Vdc 1 A output converter, plug and play cables, and an S909. To see more, visit their web site at <http://www.radiolabs.com> or write for a catalog at RadioLabs, 1136 Main Street, Fortuna, CA 95540; call toll-free (877)575-3700.

These types of power packages seem to be popping up more and more lately. Let us know if you'd like to see a comparative review



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