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Review: Palstar R30 Shortwave Receiver

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The Palstar R30 first came to our attention when it received very favorable reviews in the shortwave listening community. The moderately priced receiver was praised for outstanding performance for a radio of its size and price class. Wanting to know what all the fuss was about, we ordered one right away.

Looks Can Be Deceiving

Out of the box, the R30 doesn't *look* like other modern dedicated receivers. It has a dearth of user controls on the front panel, but those that are there are easy to operate. I was able to tune local AM broadcast stations on the R30 within a half minute of removing it from the box. Just plug in the included ac adapter, stick something into the antenna outlet in the rear, turn the power on, turn the tuning knob and enjoy.

The front panel of the R30 has a mere nine controls: two knobs and seven pushbuttons. The functions of all of these controls are intuitive, and there is no need to consult the manual for the most basic of operations. The OFF/AF GAIN knob controls power and volume. I did not turn this knob too far counterclockwise, as the internal speaker is quite powerful. Users in most high-noise environments will find the R30 useable there.

The TUNE knob on the right hand side of the radio feels sturdy to the touch and is easy to use. To the left of the knob, the label "PUSH 20/500 Hz" indicates how to switch between the slow and fast running rates. At the slow setting, the tuning rate is 20-100 Hz per step, depending on how fast the knob is turned. When the user pushes the knob to activate the fast setting, the tuning rate varies from 100-500 Hz per step. Users will find that it takes only a little practice to fine tune the desired signals.

Tuning knob too slow for you? No problem. To the right of the tuning knob are up and down arrow buttons, which increase or decrease frequency in 0.5 MHz steps. Holding these buttons down repeats the step rapidly and automatically. Even though one of my first thoughts was, "No direct frequency entry -- bummer," I can't say I missed it. Tuning the R30 was easy and fun.

Those Other Five Buttons

The five buttons below the easy-to-read LCD frequency display round out the front panel controls. The MODE key toggles between AM and lower and upper sideband. CW may be detected by dialing a display frequency just above (using LSB) or below (using USB) the desired signal until the desired note is reached.

The ATT, BW and AGC keys trigger three features to help increase the intelligibility of the desired signal. ATT activates a 10-dB attenuator, indicated by an LED above the button. AGC toggles between fast (for CW reception) and slow (for most other reception) automatic gain control response time. The BW key switches between wide and narrow bandwidth settings. The R30 is available with optional Collins 455 Hz mechanical filters; our model had them installed.

The last of the front panel keys is used to call up MEMory settings and enable storage of frequencies into the R30's non-volatile memory bank. Up to 100 frequencies and all associated settings (mode, bandwidth, AGC and attenuation) can be stored. There is no alphanumeric labeling capability, and the only way to delete a memory is to overwrite it. users who like storing a lot of frequencies may find this inconvenient, but the R30 is not designed to be a scanner – it's designed to be a tuneable receiver. And it receives very well.

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Nice Numbers

Taking a look at the test results in Table 3 (see page 3), the R30 does very well for a receiver of its price class. The blocking and third order intermodulation distortion dynamic range measurements registered a very credible 108 and 90 dB, respectively, at 14 MHz. While these numbers do not approach those of the receivers in high-end amateur transceivers, they do compare with some mid-grade ham rigs, and are almost hard to believe given the low price of the radio. Time spent listening to the evening mishmash of European broadcasters and North American hams from 7.1 to 7.3 MHz will put any rig's dynamic range to the test. The R30 passed this test with flying colors; I found I could successfully decipher any signal I wanted to listen to, with pleasant audio from the internal speaker.

Bottom Line

Palstar has produced an impressive portable receiver at a very attractive price.

A quick glance at the rear panel shows that the user need not be restricted to the internal speaker. A ¼-in mono jack can feed any speaker with an impedance of 8 Ω and a power handling capability of at least 3 W. What's more, the R30 can be used in conjunction with an external transmitter through the MUTE RCA jack. Someone wanting to put a QRP transmitter to the test in the field may consider using the very light (just over 2 pounds) R30 as a receiver.

In additional to these jacks and the 50 and 500-Ω antenna connections, the rear panel contains an on/off switch for the front display lamp and a switch to supply 12 V dc through the coaxial antenna connector to an active antenna. Users without such antennas will want to keep this switch blacked. Finally, a LINE AUDIO jack allows for output to a tape recorder.

How Do I Power Thee? Let Me Count The Ways.

The R30 comes with an ac adapter. The adapter worked, but we found it to be somewhat noisy in the ARRL lab. Users with a sensitivity to such noise may wish to use one of the other options: an external regulated dc power supply or 10 1.5 V AA batteries.

The battery compartment is inside the R30, and access requires removing the cover. Four Phillips head screws hold the cover in place. Users will want to avoid yanking the cover from the radio, lest the speaker on the top panel be loosened from the wires connecting it to the PC board. Once the panel is removed, another screw is removed to allow removal of a metal restraining bar and access to the compartment. This is a convoluted procedure, but it has some advantages: the batteries are securely held in place, and there are no external battery doors to lose. Further, it our experience is any indication, the user will not have to change batteries very often.

Conclusion

The R30 is very good MF and HF listening radio. It is light, portable and user friendly. It is also inexpensive. Not all hams will be in the market for a receive-only radio, but those who are may wish to pay attention to the praise the SWL community has bestowed on the Palstar R30.

Table 3	
Palstar R30, serial number 01840	
Manufacturer's Claimed Specifications	Measured in AARL Lab
Frequency coverage: Receive, 0.1-30 MHz.	Receive, as specified.
Modes of operation: AM, SSB, CW.	As specified.
Power requirements: 0.6 A (max), 12 V dc.	1.2 A (max volume, no signal), tested at 13.8 V dc.
Size (HWD): 2.6 X 8.3 x 7.7 inches; weight 2.2 lbs.	
CW/SSB sensitivity (10 dB S/N): 0.1-30 MHz, 0.5 µV	Noise floor (MDS): 1.0 MHz, -126 dBm; 3.5 MHz, -129 dBm; 14 MHz, -127 dBm
AM sensitivity (10 dB S/N): 0.1-2 MHz, 0.6 µV; 2-30 MHz, 0.5 µV.	AM narrow, test signal modulated 30% with a 1-kHz tone, 10 dB (S+N)/N: 1.0 MHz, 1.4 µV; 3.8 MHz, 2.4 µV
Blocking dynamic range: Not specified	3.5 MHz, 105 dB;* 14 MHz, 108 dB.*
Two-tone, third-order IMD dynamic range: Not Specified	Two-tone, third IMD dynamic range: 3.8 MHz, 91 dB*, 14 MHz, 90 dB.
Third-order intercept: Not specified	Third-order intercept: 3.8 MHz, +12.6 dMb; 14 MHz, + 11.0 dBm.
Second-order intercept point: Not specified	+52 dBm.
Audio output: 2 W at 2% THD into 8Ω	3.6 W at 2% THD into 8Ω
IF/audio response: Not specified	Range at –6 dB points, (bandwidth): USB: 329-2911 Hz (2582 Hz); LSB: 324-3095 Hz (2771 Hz); AM: 340-2512 Hz (2172 Hz)
Spurious and Image rejection: Not specified.	IF rejection: 68 dB; image rejection: 86 dB.
*All dynamic range measurements were taken using the ARRL Lab standard spacing of 20 kHz.	
Third-order intercept points were determined using S5 reference.	