

Review of Moonraker MRP-2000 (aka Watson WRP-2500) by Bill Robertson

If you have an early scanner that could do with a signal boost, or if you live in an area where many of your received signals are weak, then you might be considering adding an in-line pre-amplifier. The latest offering from Moonraker is their MRP-2000 Mk2 scanner pre-amplifier, which has been designed to increase the strength of incoming signals between 25 and 2000MHz. Moonraker say that the unit is suitable for all scanners and basic receivers available today.

The pre-amp comes fitted with BNC connectors for antenna input and amplified signal output and a short BNC to BNC patch lead is provided for connecting the unit to your scanner. The specifications give a gain of between 6dB and 20dB. A neat surface-mount printed circuit board is used inside the case for the pre-amp itself, with the BNC connectors directly soldered to this. It comes as a self-contained unit in a sturdy extruded black alloy case measuring just 100 x 53 x 38mm. You can power the pre-amplifier from either an internal 9V PP3 battery that you can fit, or from an external regulated power supply of between 9 and 15V. Plugging in an external supply automatically disconnects the internal battery, if you've fitted one. The unit draws around 10-15mA, so a typical rechargeable PP3 battery would give around 15-20 hours of use before a recharge is needed. The unit weighs 105g with no battery fitted and around 180g with an internal PP3 battery.

In Use

First of all, after finding a PP3 battery, I opened the unit by removing the four lower screws and lifting off the lower half of the case, plugged in the battery but then realised it would have been better if I had first fed the wire beneath the small internal PCB. So, off came the battery but, unfortunately, so did the connection of the wire dear! Out came my soldering iron for a quick repair and away I went, although I could, of course, have used an external supply instead, which I have done were I to use the pre-amp in a home listening post with a mains socket handy.

I tested the pre-amp on a variety of receivers. With a BC-246T hand-held Bearcat, traditional less sensitive when compared to AOR and Yupiteru hand-helds, the pre-amp really did improve the readability of very weak signals on both VHF low and high band ranges and the 450MHz UHF range. As was to be expected, it also brought up the strength of unwanted interference like image signals but this was a limitation of the receiver rather than the pre-amp. With a Yupiteru MVT-9000MkII, again there was an increase in signal level with a moderate, but still noticeable, readability improvement of weak signals if these were free of interference. Using the pre-amp with a modern multi-band 6m/2m/70cm (50MHz/145/435MHz) FT-847 amateur radio base station transceiver (with its internal pre-amp already switched in) gave me an impressive increase in signal strength on the S-meter but this time the actual readability of weak signals wasn't noticeable. Yet this impressively showed that the pre-amp had a good low-noise performance on VHF and UHF, matching that of a top-flight base station that has been purpose-designed for weak signal reception.

Where the pre-amp really did come into its own was when I used it with a temporary external antenna on my hand-held scanner, like the 'Nomad' antenna I often use in hotel rooms when away from home. This antenna is, of course, an excellent travelling solution and works very well when hung from a curtain rail by a window but it can't usually be positioned somewhere much better - like on a hotel rooftop! Adding the pre-amp in line did allow me to pick up that bit more. The pre-amp itself is also portable and self-contained so it fitted nicely into my briefcase along with the scanner and antenna.

Lab Test

A quick test using a calibrated laboratory HP Network Analyser across 25-2000MHz showed the pre-amp has a gain of just over +20dB at the lower end between 25 and 35M Hz, reducing to 6dB at around 1000MHz. Above this the gain gradually reduced to give -11 dB at 2000MHz .

Conclusions

If you're in need of extra gain across the VHF/UHF spectrum for your scanner and you're relatively free from rock-crushing strong off-air signals, then the addition of this pre-amp could well give you the weak-signal receiving capability of a top-flight base station.

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