

# Marc NR82 multi-band superhet receiver

*The Marc NR82 is a most unusual receiver with continuous coverage of the medium and high frequency bands up to 30MHz and selected coverage of VHF and UHF bands up to 570MHz. It also has a 5-digit frequency display and generous audio output.*

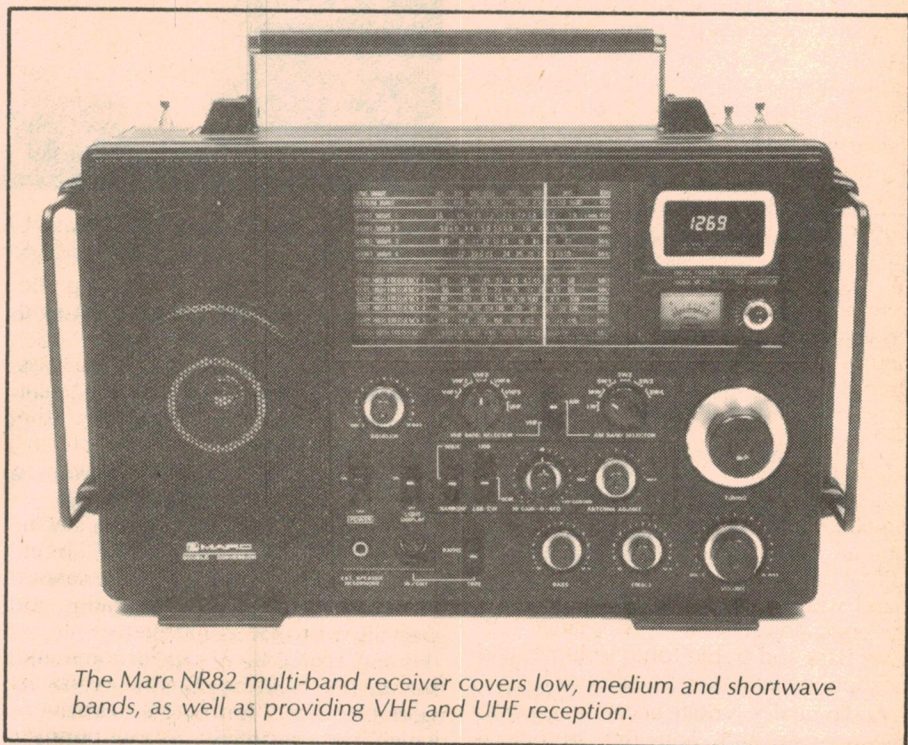
With 12 selectable band segments within the frequency range from 145kHz to 470MHz and provision for tape in or out, this receiver provides the user with a choice of normal broadcast reception, shortwave broadcasts, HF amateur bands, FM broadcast band, VHF and UHF amateur bands plus coverage of several commercial VHF/UHF and low frequency aircraft bands. The tape facility allows recording off air or use as an amplifier for a tape deck.

Physically it is on the large size, with overall dimensions being 484mm (H) × 355mm (W) × 165mm (D). Weight is 5kgs without dry cell batteries fitted.

In appearance it is eye-catching, having overtones of military/commercial design accentuated by the handles at each end. These protect the controls from damage should it be tipped over. However, the unit is very stable standing in an upright position.

Three telescopic antennas, HF, VHF and UHF, plus a ferrite rod antenna for the low frequency bands are provided, together with provision for attaching external VHF and UHF and long wire HF aerials when the receiver is used in a position for serious SWL DX-ing. A recess in the back of the case houses the PL259 socket for the VHF/UHF aerial, terminal screws for wire aerial, antenna change over switch and socket for external 12 volts supply.

A three-way power supply system, with 240V mains, eight D-size cells or external 12V is provided.



*The Marc NR82 multi-band receiver covers low, medium and shortwave bands, as well as providing VHF and UHF reception.*

The receiver is basically a double-conversion superhetrodyne and uses a 10.245MHz crystal-controlled local oscillator for the VHF and UHF bands. It is capable of receiving amplitude and frequency modulation, upper and lower single sideband, CW (Morse code) and radioteletype. The stability is good even when checked over a period of over two hours on the 430-470MHz band.

All controls are well marked and easily read.

Band switching is simple and positive. Two six-position rotary switch banks allow selection of the desired bands. One selects the low, medium and high frequency segments, the other the VHF segments and UHF band. A flick of a switch allows either bank to be activated.

The band segments are: 145kHz – 360kHz; 525kHz – 1.6MHz; 1.6MHz – 3.8MHz; – 3.8MHz – 9MHz; 9MHz – 22MHz; 22MHz – 30MHz. On the VHF

switch the segments are: 30MHz – 50MHz; 68MHz – 86MHz; 88MHz – 108MHz; 108MHz – 136MHz; 144MHz – 176MHz; and UHF 430MHz – 470MHz.

A 165mm × 95mm dial clearly shows the frequency range of each of the 12 band segments plus a logging scale. A vertical cursor, cord driven by a 40mm diameter tuning control knob, allows tuning to approximately the desired frequency. This is supplemented by a digital frequency counter readout with a resolution of 1kHz on LF, MF, and HF bands and 10kHz on the VHF bands. There is no digital readout display on the UHF band, 430MHz – 470MHz.

A signal strength meter (which is not illuminated) is also provided as a tuning aid although its performance as an "S" meter leaves something to be desired. The meter is also used in conjunction with the SW calibrator for accurate readout.

The tuning mechanism is an epicyclic



gear train and has some backlash, allowing small movement of the tuning knob before any frequency change takes place. However, the gear train for the cord driven cursor does not reflect any backlash. There is only one speed tuning rate, which appears to be a compromise so as to accommodate tuning of all bands.

Individual converters are used for each VHF segment and the UHF band and a switched pre-tuned coil system is used for the other band segments.

Apart from the circuit schematic in the user's manual no other technical information was available when writing the review so mixing frequencies and other pertinent information were not known. However, low noise FETs are used in the tuning circuits and sensitivity seems reasonable.

The construction is good, all components being accommodated on one large printed circuit board. Use is made of plug-in leads where necessary. Along with a 12.5cm speaker and antennas, power cords and dry cell batteries are housed in the strong black plastic case. Removal from the case for internal inspection by an inexperienced person is not recommended.

Other controls are: Power on/off switch; Digital display and dial light on/off switch; Squelch, which is effective on all VHF band segments except 108MHz - 136MHz; Wide or narrow band width selector; RF gain and BFO; Antenna adjust; USB - Normal - LSB-CW; Bass and treble tone; Volume; and headphone/extension speaker jack.

Audio quality is quite acceptable for ordinary use and amplifier output is quoted at five watts.

Overall performance on the MF broadcast and VHF FM bands is good. On the HF bands, it is quite lively and gave reasonable satisfaction for broadcast DX-ing. SSB amateur station signals could also be resolved with a little practice.

On VHF bands other than the FM broadcast segment, tuning is somewhat critical except on continuous or strong

signals. It really depends on what the listener wants to hear on these bands, as to how well it is seen to perform. For example you could listen to air traffic control, taxi services, commercial traffic or 144MHz - 148MHz amateur stations. The UHF band has similar activity and tuning is extra critical. Aircraft beacons are to be found on the LF band.

Other points noted were several spurious beat notes on some HF and VHF band segments. Double spotting occurred on VHF band segment five with 144MHz - 148MHz signals appearing approximately 21MHz higher, probably due to mixing with a harmonic of an intermediate frequency.

There was some breakthrough of broadcast station signals into adjacent LF and HF band segments. This was also present at low levels on the FM broadcast band when in close proximity to a strong FM station.

Hash from the digital frequency counter appears on some VHF segments but can be eliminated by turning the display switch off, after you have tuned the set.

Information in the "Handling Manual" is sparse and barely sufficient to acquaint an inexperienced person with the operating procedures. The "foreign" English text could also confuse non or semi-technical readers.

Although the NR82's sensitivity, stability and audio quality have been favourably commented upon, it cannot be classed as a communication or specialised broadcast receiver.

Having said that, I should commend the Marc NR82 as an unusually versatile receiver. Considering its relatively straightforward circuitry, it does perform surprisingly well, particularly in regard to stability. For the listener who wants to cover all these bands with just one receiver, it is probably the only choice. And at \$349 including sales tax, it would appear to be quite reasonably priced.

The Marc NR82 is available from Jaycar Pty Ltd, 125 York St, Sydney NSW 2000 and from Altronics, 105 Stirling St, Perth, WA 6000 (PJH).

## AN INTRODUCTION TO DIGITAL ELECTRONICS

### Here are the chapter headings:

- |                                |                              |
|--------------------------------|------------------------------|
| 1. Signals, circuits and logic | 12. Basic readout devices    |
| 2. Basic logic elements        | 13. Multiplexing             |
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| 4. Logic convention and laws   | 15. Arithmetic circuits      |
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| 9. Flipflops in registers      | 20. D-to-A converters        |
| 10. Flipflops in counters      | 21. A-to-D converters        |
| 11. Encoding and decoding      |                              |

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