Using the Sangean ATS-803A for DRM
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The Sangean ATS-803A “World Band Radio” has been around for some 15 years and was available from Curry’s stores in the UK as the Matsui MR-4099 and from Tandy – Radio Shack as the Realistic DX-440.

The receiver covers the VHF FM band (87.5 to 108 MHz) and AM (150 kHz to 30 MHz), a BFO being provided for CW and SSB reception. The IF on VHF is 10.7 MHz, while on AM the receiver is double conversion, the first IF being 55.845 MHz and the second IF 450 kHz. Ceramic filters are used at both IF frequencies providing excellent second channel rejection and selectivity.

There is a two-position bandwidth switch, but even on the wide setting the bandwidth is only 8 kHz, which is inadequate for DRM reception. However, it was found that by taking the IF output prior to the 450 kHz ceramic filter a bandwidth of approximately 10.5 kHz was obtained.

In the above circuit diagram of part of the 2nd IF stages, the output is taken from the secondary of 111Z; in practice, this is across the 4kΩ resistor R103. This is fed via two 40mm leads to the input of a Sat-Schneider 12 kHz mixer module (http://www.sat-schneider.de). The +12V supply of 9V to the module is taken from the power supply PCB of the receiver. A convenient pad is just above the lower plastic mounting lug. The mixer module can be attached to the length of flat cable in the receiver by small pieces of Velcro and the output cable taken through an existing hole in the back cover of the receiver.

The adjustment of the core of the miniature Toko coil on the Sat-Schneider module for 12 kHz has been found to be extremely critical but can be set correctly with a little patience. However, a minor modification to the receiver is available which will enable the BFO control to operate as a fine frequency control when the BFO is switched off. Looking at the BFO switch from the back of the receiver, there are two rows of three pins on the PCB. Remove all the solder from the top, right hand pin, effectively isolating that pin from the PCB track. Then short the top row centre and left hand pins together by applying solder. The BFO will then work as normal on CW/SSB but will serve as a fine frequency control on AM.

This arrangement has been found to work very effectively in receiving DRM audio when the 12 kHz output is fed into a Creative SD Live! sound card. Multimedia has yet to be tested when transmissions are available and receivable at my location.

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