

Newstar DR111 Digital Shortwave Receiver

By Ken Reitz KS4ZR (Photos courtesy the author)

Over the years *MT* has reviewed dozens of well-designed portable shortwave radios. They are usually inexpensive, under \$200, and have many features that have come to be standards among the genre. There has also been an industry movement towards Software Defined Radios (SDRs) that are typically much more expensive and require a considerable laptop or desktop to anchor the radio capabilities of these sets. One unique aspect of SDRs is that they can tune in Digital Radio Mondiale (DRM) transmissions, the European-based digital broadcast scheme. DRM promises clear, high-fidelity, stereo broadcasts on the shortwave bands and has the potential to revolutionize shortwave broadcasting. The Newstar DR111 would like to be an inexpensive shortwave radio with DRM reception capability.

❖ DRM's Glacial Progress

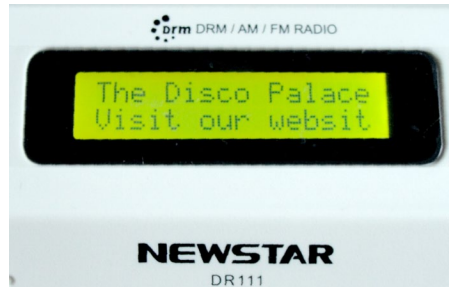
As North American shortwave listeners, we're been tantalized by the prospect of listening to DRM broadcasts for years. Yet, DRM seems no closer to most of us now than ever. Why? Partly this is due to the concentration of DRM progress on the European continent, partly it's due to the fact that digital broadcasting in the U.S. has meant HD-Radio; the scheme begun by iBiquity, a consortium of stateside broadcast interests launched ten years ago to bring digital radio to the American AM and FM bands. As you might expect, iBiquity's digital and DRM's digital transmissions are incompatible.

One of the biggest drawbacks to DRM broadcasting is that, like our digital TV transmissions, if you can't capture a big enough signal, the digital data that makes up the broadcast fails to produce any audio. On a typical shortwave frequency the signal is basically only viable for less than 1,000 miles which makes it perfect for European broadcasts but not so perfect outside Europe.

Earlier attempts to produce and sell a portable DRM-capable set in the U.S. have not fared well. Three years ago the Uniwave Di-Wave 100 debuted to dim sales and quietly disappeared a year later. If you wanted to tune into DRM broadcasts, you had to shell out for a Software Defined Radio.

❖ The Newstar DR111

One year ago the China-based Chengdu Newstar Electronics Corporation (CDNSE) introduced its Newstar DR111 digital shortwave radio at the April National Association



Disco Palace DRM reception demonstrates stereo audio capability.

of Broadcasters (NAB) convention. This year demonstration units for review were circulated by Newstar, one of which I received. The DR111 is deceptively simple looking. With only one small knob and one small button on the front panel, and a two-line LCD display, it looks a little like a stripped-down boom box. But, atop the radio are 17 buttons that actually comprise the rest of the controls you'll need for this radio.

You should expect designs to change with a radio this radically different and the DR111 attempts several new ideas. The first obvious idea is to have two speakers. Most portable shortwave radios don't need them but the DR111 makes use of them when tuning in local FM stereo stations and when tuning in DRM shortwave signals. When I first tuned in Disco Palace (15775 kHz)

I was startled to hear stereo on shortwave. Of course, the speakers are a very small, don't deliver much in the way of audio fidelity and they are only six inches apart, center-to-center, so you can forget hearing much stereo separation. Still, it was nonetheless interesting to hear stereo coming out of a portable shortwave radio. Actually, portable is not really the right word. Though it looks as if it should be, it's not portable. There isn't a battery pack in these first units though I expect it will become more of a portable set if it lives long enough to get into full production.



Vatican Radio in DRM via RCI's 9800 kHz relay, flawless reception sounded like a local FM station.

Another departure from any other small shortwave set is the eccentric tuning system. It's a little confusing at first, but once you've figured it out it's not that hard to get around the bands. Primary tuning is done with the small tuning knob on the front which can be made to tune rapidly or slowly through the frequencies. Once you get a frequency you'd like to keep, you can mark it as a preset and return to it when you like. Press the tuning button and it's a volume control, press it again and it's a tuning knob. Functions such as clock settings are done with the top-mounted buttons that are so labeled.

❖ The DR111 in Action

I've had use of the DR111 for part of the spring and all of the summer which is not the optimum time to be testing a new shortwave receiver; atmospheric conditions are high and the solar cycle has been shaky. Still, I was quite impressed with being able to receive DRM broadcasts from RCI's Sackville relay station (while it was still functioning) tuning into Vatican Radio broadcasts that sounded for all the world like a local FM station. This reception was with the 42 inch telescoping whip antenna only and the

DRM111 SPECIFICATIONS

(As provided by the manufacturer)

FM – 87.5 MHz-108 MHz

DRM Tuning (digital)

LW: 150-288 kHz

MW: 522-1720 kHz

SW: 2.3-27 MHz

AM Tuning (analog)

LW: 150-288 kHz

MW: 522-1720 kHz

SW: 2.3-27 MHz

Clock: Real time; Radio Alarm; Buzzer Alarm and Sleep Timer

Audio Out: 8 ohm Mini plug

Features: Stereo speakers and earbuds; 48 memory presets; 16 character 2 line LCD display, adjustable tuning speeds, SD card for firmware updates and to play prerecorded music, external antenna jack, USB slot.

Power: 5 volts DC at 1000 mA

Size: 10.9 (W) x 4.69 (H) x 3.5 (D)

Weight: 29.9 oz.



DR111 RDS FM display shows WCVE-FM Richmond.



Top-mounted tuning and function buttons are a little peculiar, but easy to use once you get used to them.

radio sitting on the dining room table. Attaching an external antenna at my desk to the DR111, the Disco Palace came through nicely.

One of the advantages of a firmware-driven digital receiver is being able to update the firmware as improvements are made. To do this you'll need an SD card (I found that the card in one of our digital cameras was perfect for the task) and a laptop that can download to such a card (my desktop computer doesn't have an SD slot). Once you've successfully downloaded the data to the SD card, simply slip the card into the handy card slot on the left side of the receiver (with the power off) and power up the radio. It detects the card, reads it and replaces the old firmware with the new version.

During the time I've had the receiver CDNSE made three firmware updates available that improved AM tuning, supported DRM reception logging, improved the volume control,

AGC tracking, and much more.

Using the Uniwave Di-Wave 100 two years ago and today using the DR111, I've found that DRM reception on the east coast is spotty. With only a handful of stations in Europe transmitting, only the best band conditions allow DRM signals to travel very far. With the Di-Wave 100 I was able to pick up the DRM signal from as far away as Romania. But, conditions were better that year. With the DR111, I've not been able to hear any European DRM stations though I understand that west coast listeners have been able to receive Radio New Zealand's DRM signal. But, with 9800 kHz now defunct and only occasional broadcasts from Disco Palace, you have to ask, what's the point? DRM appears to be moving backwards.

❖ The Bottom Line

AM and FM reception on the DR111 is about what you'd expect from any small portable radio. While analog shortwave reception was not up to the level of the Kaito 1103, for example, the DR111's big point is DRM reception, but only being able to tune in two DRM stations will make this radio a non-starter in the U.S. at any price. Even if it does make it to full production, I expect it to quietly disappear as did the Di-Wave 100.

DRM is actually doing quite nicely in Europe where it's making digital inroads on not only the shortwave bands but AM and FM bands as well. No such luck here. With FCC-mandated HD-Radio's stranglehold on domestic AM and FM digital broadcasting, there's little interest in DRM for domestic shortwave broadcasting. The reason is simple: money. It's very expensive to convert any transmitter to DRM broadcast standards and U.S. shortwave services are strapped enough for cash to give it much thought.

So, for U.S. audiences it's the old chicken-and-egg deal: How are you going to sell DRM capable radios to an audience that can't receive the signals? Why bother trying to transmit DRM to the U.S. if there aren't enough receivers to make up an audience?

The Newstar DR111 is not FCC approved for sale in the U.S. at this time and there is no word from the company as to whether or not it will even attempt FCC certification. There's no actual manufacturer's suggested retail price, but should they choose one, it will have to be under \$100 to attract the attention of any future U.S. buyers.

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