



Digital Radio Equipment

By Ken Reitz, KS4ZR

If you're ready to jump on the High-Definition Radio bandwagon (see feature article on page 14), you may have to search around to find appropriate receivers and antennas, since the field is so new. Following are *MT's* first reviews of HD equipment.

Until now manufacturers haven't exactly been flooding the market with HD Radio receivers. The most active has been Kenwood. That's not too surprising since they are also one of the early collaborators with iBiquity. Kenwood has been planning the introduction of HD Radio products for some time. In fact, many Kenwood car stereos going back to July 2003 are "HD ready," which means that, with the addition of the Kenwood KTC-HR100 digital tuner, you're ready to start listening to HD Radio. Look for the HD Radio symbol on the front of your radio or look in the owner's manual for more information.

❖ Kenwood EZ500 Mobile HD Radio

One of the more popular (and least expensive) Kenwood car radios is the EZ500. An extremely versatile car radio, it not only has AM/FM and a built-in CD player, but it's HD ready, Sirius satellite ready, will control an optional multi-disc changer, and has auxiliary inputs for whatever else you have. It has outputs for an additional optional amplifier and subwoofer for those who like their HD Radio with a little more oomph. Functions on this radio are menu driven via front panel buttons or remote control, it features an anti-theft removable faceplate, and comes with a clearly labeled wiring harness which makes hooking it up to your car less of a nightmare that it might be.

It's also easy to use the EZ500 as a home HD Radio by wiring it to a heavy duty 12 volt power supply. I used an Astron RS-12A and



Kenwood EZ500 Versatile AM/FM analog, HD Radio and satellite radio ready car radio also plays every type of CD. Comes with easy-to-use wiring harness and is easily installed in your home and run through your stereo using a separate 12v power supply. Sells typically for \$249.99 though discounts can be found. (Courtesy: Crutchfield)

the wire harness connecting the negative and positive wires to the appropriate terminals on the power supply. I combined the "accessory" wire with the red positive wire. The rest of the connections are very easy: attach the KTC-HR100 to the EZ500 via the supplied "head unit" cable; attach the AUX input pigtails to the audio output of the HR100; and attach the other two pigtails labeled "Front" to the line input on your home stereo. Finally, use an antenna adaptor to convert a 75 ohm coax fitting to Motorola auto antenna jack. That's it! Now you're ready to start enjoying HD Radio at home.

Auto installation is a little trickier, thanks to the sealed nature of most modern car dashboards. In an effort to deter thieves, it's been made very difficult for most people to do auto sound installation. It may be cheaper in the long run to take it to a local auto sound installer. On older cars with ready access to the underside of the dash installation is considerably easier. When you remove the old radio, label every wire so that you know which wire on the new harness to connect. Not all wires may be used. If you buy the radio from Crutchfield, you can get expert help on installation from their toll-free help line and you'll get the correct installation kit for your vehicle.

I ran the EZ500 at home 24/7 for two weeks straight with no problems. And the unit has continued to perform flawlessly for the last six months. The substantial heat sink on the back of the radio really does the job, and the outboard HD tuner puts out very little heat. When an HD signal is received, the EZ500 displays the station call sign and "HD1" after it. The "ps" icon on the display will be lit. If the station is multicasting, the display will show "HD2" on the second channel and the "ps" icon will flash. If the station is transmitting additional data, that data will scroll on the front panel display. Only the primary HD channel may be programmed into the memory presets. Once the primary channel is tuned, any other channels on that carrier may be tuned.

The radio performs very well with reception of analog stations – at least equal to my Kenwood home tuner/amp. The difference, of course, is when an HD Radio signal is tuned. At first the analog signal is heard and seconds

later, once the HD signal is sensed, it switches to HD mode.

This slight delay is actually useful in being able to compare analog and digital. The difference is stunning! All traces of FM broadcast, the slight background hiss and other audio artifacts, disappear. The audio level decreases and the dynamic range of the music seems to expand in your ears. Moving bass, clear highs and full mid-range audio makes you do a double take to see if there's a CD in the player.

Public radio stations programming classical, jazz and folk music tend to have the cleanest sound in HD. I noticed less dramatic difference listening to commercial HD-FM on popular music stations, where the audio is often overdriven. Hearing the commercials really breaks the HD spell.

Because car antennas are omni-directional and have considerably less gain and side lobe rejection than a beam antenna, you can expect reception in the vehicle to be less satisfactory than you can get at home. If you live in or near a city such as Chicago with a dozen or more HD stations operating, you'll have many formats from which to choose and mobile HD Radio will be great. The rest of us will have to wait until our local stations can bring HD signals to us.

On the AM band listeners will have the same experience with HD as they now have with analog AM stereo. If you live in a city you'll probably hear a difference, but only during the day.

❖ Winegard 10 Element Yagi

It's not been easy to find a good, relatively inexpensive FM band DX antenna. But, there is one: Winegard's HD6065P. This is a serious FM DX antenna for music lovers hoping to



Winegard HD6065P deep fringe 10 element Yagi FM antenna. Use with Winegard mast-mounted pre-amp to lock distant HD Radio signals out to 60 miles and analog FM signals to 100 miles and more. (Courtesy: Winegard)

increase their choice of programming with the advent of HD Radio or analog FM DXers eager to peer over the line-of-sight horizon. This well built, 10 element Yagi FM antenna is on a 10-1/2 foot long boom with the longest reflector element 5-3/4 feet long. There is a support boom attached to the main boom to maintain rigidity once it's mounted on the mast. It has a built-in balun with a 75 ohm cable fitting at the feed point.

According to Winegard's spec sheet, it's a slightly better performer in the upper part of the FM band. But, even at the bottom of the band (the so-called Public Radio band), it has 9.4 dB gain over a reference dipole at 88 MHz, a beamwidth of 59°, and a front to back ratio of 20 dB. This antenna has a shipping weight of 10 pounds and comes split to make UPS shipping possible. Assembly is very easy with excellent instructions. Winegard recommends their own AP series mast-mounted pre-amp to boost reception though you can use any VHF-TV pre-amp.

Unless you're interested in receiving from only one direction, you'll have best DX results using a rotator. Radio Shack has priced itself out of the market with its rotator selling for \$80. I found one for \$52, including shipping, from X10.com (www.x10.com). Reception will be dramatically improved with the addition of a mast-mounted pre-amplifier. Since you're only concerned with amplifying the VHF band, I recommend the Winegard AP3800 which advertises an increase of 29 dB gain at VHF frequencies. I found this product at www.summitsource.com/antennas-accessories-preamplifiers-c-47_66.html?ref=4 for \$49.95.

The MSRP on this antenna is \$89.99 but it's deeply discounted at Solid Signal to \$73.99. For ordering information go to: www.solidsignal.com/prod_display.asp?CAT=&PROD=HD6065P

❖ Winegard SharpShooter TV-FM HD Antenna

Last June Winegard released its SharpShooter SS3000 antenna, an amplified, indoor, directional antenna designed for VHF and UHF reception. Its unique design is particularly useful for city residents dealing with multi-path distortion caused by signals bouncing off large buildings and arriving at the receiver at slightly different times. Multi-path shows up in analog TV signals as "ghosts" and wreaks havoc on the FM band, making reception nearly impossible even for local stations. This antenna does the trick. It successfully eliminates multi-path and provides a stable, clean signal.

I used this antenna with the Kenwood HD Radio and found it would not lock up HD signals from 30 miles away. That's okay because it's not a DX antenna and I hadn't expected that it would. So, I thought I would give it the UHF-TV test. In this location there



Made in U.S.A. Patent Pending

Winegard SharpShooter SS3000 HD Radio and DTV amplified set top antenna. Combats multi-path distortion on digital TV and HD Radio reception for city dwellers. (Courtesy: Winegard)

is a very powerful UHF-TV station whose signal ricochets off the hills and mountains and is notorious for ghosting. With any other indoor antenna, the signal, while strong, is unwatchable because of the multi-path distortion. This antenna sorted it out and delivered a nearly studio quality picture. I was amazed.

The reason this is important is that on the FM and UHF-TV bands (almost all digital TV transmissions are UHF) multi-path distortion makes digital reception impossible. The digital receiver is confused by the data streams coming in at different times and, while the signal strength meter will indicate a strong signal, there will be no picture or sound. City dwellers have long suffered from multi-path, and in the coming digital FM and TV age, clean reception will be critical. The SharpShooter SS3000 may be the solution to this problem.

This antenna is so new to the market that I had trouble finding it. When I did, I found it at prices ranging from \$73 to \$130. For the best price do a "google" search or go to www.bizrate.com and see what you can find.

Monitoring Times is in line to review several other HD radios as they become available, so watch for more reviews by Ken Reitz in coming months!

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