

Using Mobile Cross-band Repeater to Get Packet Signals Out of RF-unfriendly Indoor Locations

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Overcoming obstacles and adapting has become the trademark of ARES-RACES units. When a signal has to make it from point A to point B, Amateur Radio operators will find a way to make it happen. Such was the case at a recent public health exercise in Delaware County in suburban Philadelphia.

Tasked with providing backup radio communications for an SNS (Strategic National Stockpile) drill, Delaware County ARES-RACES was asked to provide both voice and data capability for the event. The operations center for the exercise was set up inside a large conference room at the county's Intermediate Unit, an educational support facility. From a communications aspect the location was problematic. There was no way to route cables to outdoor antennas.

That presented no difficulty on voice. An indoor open-stub dual-band J-pole was used to access the primary voice repeater on 440 Mhz located about 8 miles from the site. A secondary voice channel on the county's newest D-Star repeater was also established with an indoor Yagi.

The challenge was to send email traffic via Winlink by accessing the 2-meter ARES telpac gateway located seven miles away. With an outdoor antenna it's not usually difficult to push a VHF packet signal that distance. Doing it from an indoor location is another story.



Indoor ARES radio position adjacent to large windows



Suction-cup mount for small dual-band window antenna

To get the VHF packet signal out of the building and into the telpac gateway required a little resourcefulness. A Kenwood TM-D700A in the mobile came to the rescue. The Kenwood's cross-band repeat function enabled configuration of a dual-band repeater in a vehicle parked just outside the conference room on a nearby street. The TM-D700A was set up to receive on a 440 frequency and retransmit the packet signal to the 2-meter telpac node.

Inside the conference room the packet radio transceiver was linked to the Kenwood on 440 via a small mag-mount antenna using a suction-cup grab handle fitted with a bracket. The window-mounted antenna was more than adequate to hit the cross-band repeater located 40 yards away. The redirected signal hit the packet node perfectly.



Kenwood TM-D700A configured as cross-band repeater