

TechTalk #78
Digital-ATV – Testing Report – Part 2
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On Oct 3, a County-wide RACES/MOU emergency communications drill was organized by the Orange County RACES (Radio Amateur Civil Emergency Service). Robbie Robinson KB6CJZ, with help from Sam James W6RDS, Cam Burke WV6V and Ken Konechy W6HHC, (all members of the COAR RACES group in the City of Orange), conducted DATV tests by sending digital ATV pictures to the Orange PD RACES Radio Room and EOC (Emergency Operations Center). This may have been the first use of DATV during a RACES operation in the United States?



Figure 1 – DATV DVB-S 1 mW Transmitter for 1.2 GHz

We did not have enough time to complete testing of the RF Power Amps, so the RACES testing of DATV was “jerry-rigged” using a portable 1 mWatt DVB-S transmitter that is shown in **Fig 1** and **Fig 2**, This D-ATV transmitter was more fully described last month in TechTalk 77 article (see www.W6ZE.org/DATV). The portable DATV transmitting station used a 20-element 1.2 GHz yagi antenna.

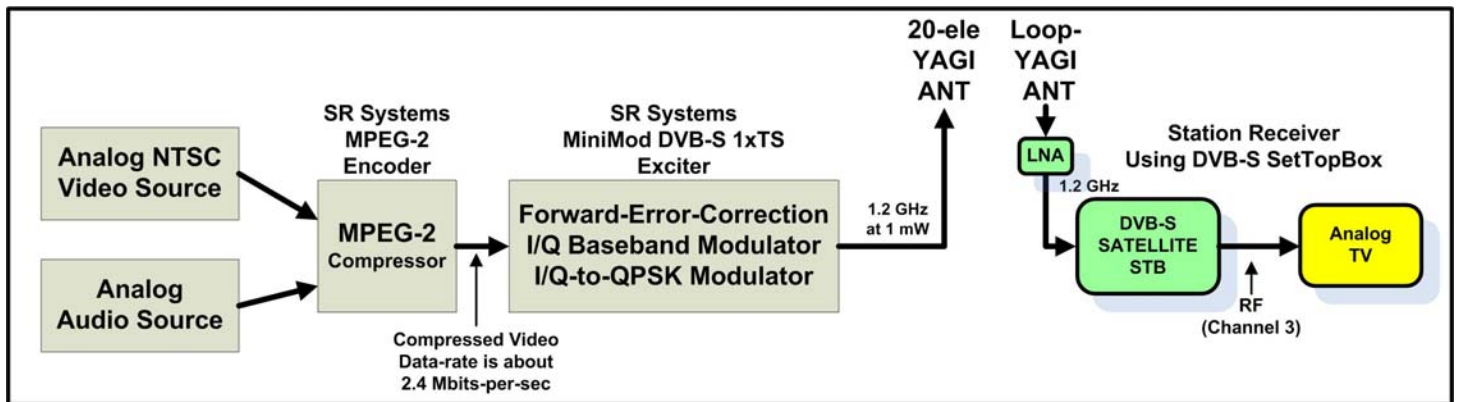


Figure 3 – Robbie KB6CJZ Adjusts RCVR Loop-Yagi

The receiving antenna was located on top of the Orange Police Department roof, near other RACES antennas normally used by COAR (City of Orange Amateur Radio) team. **Fig 3** shows Robbie-KB6CJZ adjusting the long 1.2 GHz loop-yagi antenna. A receiving Low-Noise-Amplifier (LNA) was used and can be seen in the lower-right corner of **Fig 3**. The coax then took the signals down three stories to the COAR Radio Room.

DATV cont'd – see Pg 09

Figure 2 – Block Diagram Showing DATV Station being Tested



DATV – from Pg 08



Figure 4 – Inside COAR RACES Radio Room

Fig 4 shows some of the radios and displays inside the OPD COAR RACES Radio Room. The lower display is an analog TV that shows the received DATV video directly. The larger display is also an analog TV that is connected to the network of video displays in the nearby City of Orange EOC room.



Figure 5 – COAR member Sam W6RDS watches DATV video being sent to the Radio Room

The video displayed inside the RACES Radio Room in **Fig 5** is being transmitted a distance of about 80-to-85 meters, from the far end of OPD parking lot. Not bad for 1 mWatt on 1.2 GHz!!

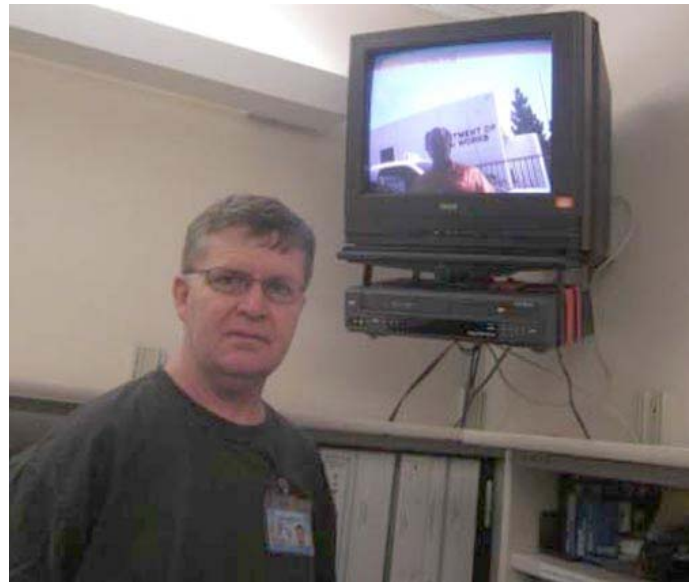


Fig 6 – Cam-WV6V watches the DATV networked-video

Test Results

In **Fig 6**, Cam-WV6V checks the DATV video quality that is now on the network that can be switched into the EOC room displays. The received video picture quality was great.

- Picture Quality - was perfect P5
- Signal Strength - was 3/4 scale on STB
- Signal Quality - was full scale on STB

In the preparation work for this RACES/MOU drill, Robbie-KB6CJZ had observed that the picture quality was either perfect or “blue screen” (aka “no picture”) as he drove around town. This is very characteristic of Digital-ATV that uses Forward-Error-Correction (FEC) to correct for noise or multipath distortion.

DATV Testing Plans

Ken-W6HHC and Robbie-KB6CJZ are now working on adding RF power amplifiers to the tiny 1 mWatt RF output of the DATV transmitter. We have a 1 Watt RF amplifier stage (that will be set to about 100 mWatt output) to feed a 30 Watt RF Power Amplifier (that will be set to around 10 Watt output). Once the power amplifiers are in place, further testing will be tried across town, including from portable locations in the hills of the City of Orange.