THE JAMPRO Journal
News and Information for the Broadcast Industry

Volume 3 * Number 3

Stacked Aperture Antenna System Installed in Hawaii

A stacked aperture antenna system was recently installed utilizing broadband UHF panels and a VHF spiral antenna to serve the Honolulu market and the greater Oahu.

For those broadcasters who need to broadcast a digital and analog signal simultaneously, JAMPRO's TV antennas can be stacked to minimize tower loading. With tower loading and availability at a premium, the stacking of two proven and reliable antennas is yet another example of JAMPRO's success providing broadcast solutions.

"We expect to utilize our wide variety of VHF and UHF products for the broadcaster with various limitations," said Alex M. Perchevitch, Vice President and Sales Manager.

The UHF broadband antenna panels can be modularly placed around a tower to produce omni or directional patterns. The panel is broadband in order to handle NTSC channels 26 to 66 with a VSWR of 1.1:1 over this range. THe panel has a typical input of 2.5kW per panel, but higher power models are also available. JAMPRO is the only U.S. manufacturer to completely design, test and manufacture a broadband UHF panel antenna in the United States.

The JTC Spiral is the first circular polarized TV antenna manufactured. The Spiral is capable of a power input of 200kW and 20% bandwidth. The Spiral is customized for each application and can be supplied for any single VHF or UHF channel: 2-70. The Spiral produces the most omni azimuth pattern with a tolerance of +25dB at some frequencies.

This is just one example of stacking two proven and reliable antennas into a common aperture. Other antenna models can be configured to produce similar results.

THE JAMPRO Journal
News and Information for the Broadcast Industry

Volume 3 * Number 3 * Page 2

Overcoming Engineering Obstacles in Phoenix

By Bill Lawrence
VP Engineering, MAC America Communications, Inc.

South Mountain, one of the most heavily restricted transmitter sites in the country, lies within a city park outside of Phoenix. The rules are simple, replacement towers only. If you want to put up a new one take down an old one! Also no new antennas may be higher than the highest antenna presently on the mountain.

When I came here to KTVK in 1982, we had two RCA super turnstile antennas; the main, mounted on a 125 foot tower, and the auxiliary with its bury section in a concrete pad at the ground level.

A coverage survey conducted by a local firm confirmed that KTVK's coverage, especially with rabbit ear reception, was the poorest of all valley stations.

After considerable research, I concluded that the Jampro Spiral was the best possible antenna for our situation. Removal of the pad mounted super turnstile allowed us to build a 230 foot tower next to the 125 tower. The Jampro Spiral found its home at the top. Jampro also supplied the new diplexer and the single 6 and one-eight inch transmission line. The super turnstile became the auxiliary antenna.

In 1995 we entered into an LMA agreement with local channel 61. The new station had to be built from the ground up. We felt that the channel 3 transmitter site was the only viable location for the new UHF transmitter. Again a tower had to come down; this time it was the 125' auxiliary and the

super turnstile. The decision was made early on to put the top of the new UHF antenna at exactly the height of the channel 3 spiral.

The channel 3 spiral antenna has operated flawlessly since its installation in 1986; KTVK is the leading independent station in the country. Jampro did scalloping studies for us to determine what impact the new tower and antenna would have upon the existing channel 3 signal. It was determined that while some scalloping of the channel 3 pattern would occur, the impact would be minor.

Because of our comfort level with Jampro and its products, we felt it only natural for Jampro to supply our engineering and UHF transmission equipment for the new channel 61

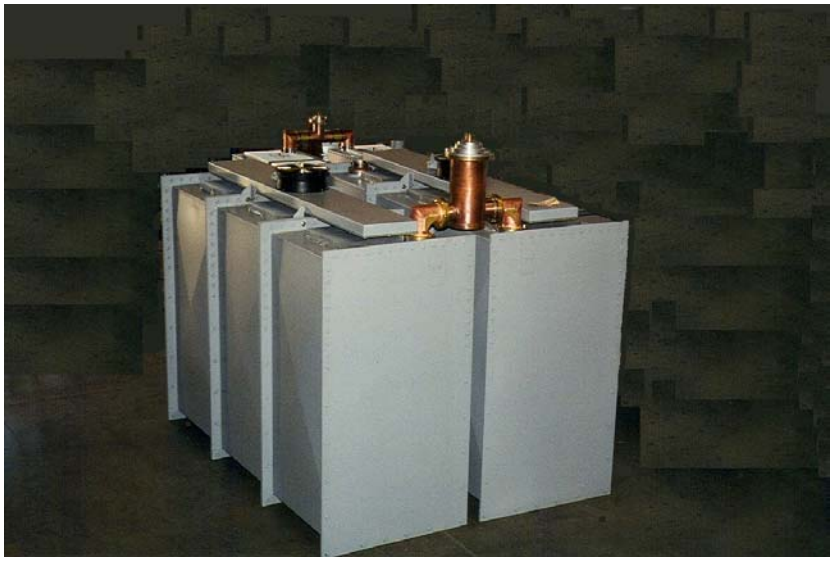
Another important factor was to adjust the polarization to afford good reception to TV sets operating with indoor antennas. Elliptical polarization was utilized by adding 15% of the transmitter power to the vertical polarization. A top mounted Jampro traveling wave slot antenna met all of these criteria. Jampro was commissioned to supply everything from the waveguide switch to the top of the tower, including the WR1150 waveguide. Jampro designed waveguide hangars, matching sections and antenna. At the same time, Jampro supplied a 12 bay one-half lambda FM antenna and a new channel 3 panel array. The panel array was used to allow riggers to work in the aperture to the channel 3 spiral during construction. It will also be used during the simulcast period of DTV.

Channel 61 is not the most desirable UHF channel; cheap splitters and coaxial cable used in many homes are terribly lousy at channel 61's frequency. Nevertheless, the Jampro traveling wave antenna with virtually zero reflected power is performing beyond our expectations.

As we look into the future with Digital Television, we will face even more challenges. But given my experience and satisfaction with Jampro, I know I will not have far to look.

THE JAMPRO Journal
News and Information for the Broadcast Industry

Volume 3 * Number 3 * Page 3



Starpoint Combiner Technology

Today more than ever the necessity of a highly efficient and reliable combining system has resulted in Bandpass combiners of two major topologies. They are constant Impedance commonly called "balanced" and Starpoint commonly called "branched" combiners. In a future issue we'll discuss the Balanced Combiner, but this issue will focus on the Starpoint.

Starpoint combiners are used most often for simpler combining applications. In theory, an infinite number of frequencies can be starpointed. In application, however, it is generally limited to a maximum of five or six channels with the bulk of the combiners of this type being two and three channel. The luxury of an inexpensive system with fairly conservative size considerations is one of the highlights of the Starpoint. This is due to the minimum number of components used in its construction. The major benefit is its relatively inexpensive cost. The downside is it does not offer the same level of performance as a Balanced (Constant Impedance) combiner. The isolation of a Starpoint is limited to the rejection of the filters used in the system. If one of the filters shown is centered at frequency 2 (F2) and has a rejection level of 30dB at frequency 1 (F1), then the isolation of F1 to F2 is 30dB. If the other filter is centered at F1 and has a rejection level of 38dB at frequency F2, then the isolation of F2 to F1 is 38dB.

The insertion loss and group delay performance of a Starpoint will mimic that of the filters. The point here is that the system performance is a direct reflection of the filter performance; high quality, high power filters must be used. For additional information on JAMPRO's combiners, contact our main sales office in Sacramento, Calif.

Multi-Channel UHF Turnkey System Commissioned in Indonesia

JAMPRO installed and commissioned a UHF multi-channel TV turnkey antenna system for Indosiar - one of the largest TV networks throughout Indonesia.

The UHF broadband panel system was utilized with a Starpoint Combiner so that 3 semi-adjacent UHF channels could be combined to transmit from one antenna system. The strong relationship with Indosiar is a direct result of our representative from Catur Mitra, Ronny Gozali who continues to create opportunities for JAMPRO.

JAMPRO worked with engineer Salim Kosassi from Indosiar to create custom azimuth patterns for each site, in order to provide substantial market penetration. The JUHD panel was utilized because of its broadbanding characteristics for multi-channel operation and its versatility to produce directional patterns. JAMPRO is the only U.S. manufacturer to design, test and manufacture a UHF broadband panel in the United States.

The JAMPRO RF SYSTEMS 3-channel Starpoint Combiner was selected because of the ease of combining semi-adjacent UHF frequencies. The major benefit of a Starpoint Combiner is its relatively inexpensive cost. The isolation of a Starpoint is limited to the rejection of the filters used in the system. If one of the filters has a rejection level of 30dB on one frequency, the other frequencies will have the same rejection level.

Also provided was an air transmission line from the transmitter up the tower. Rigid transmission line and associated components - elbows and couplers - were provided and utilized in the transmitter room. A factory-trained technician was on-site during the commissioning of the sites to ensure that all equipment, "after the transmitter" was installed per factory instructions.

Other Projects Delivered

- JHD VHF Multi-Channel Antenna and Combiner - Tonga
- JUHD Panel & T-line Antenna Systems - Vietnam
- JUHD UHF Panel & T-line Antenna Systems - Mexico
- JMPC FM Two-channel Antenna and RCCS Combiner - Alaska
- RCWL FM Switchless Combiner - Taiwan
- FM 10-Channel Combiner - KSL, Utah
- JFHD FM Horizontal Panel System - Canada
- RCCS FM Four-Channel Combiner - BE
- JHD VHF Panel Antenna System - Guam
- Stacked Antenna System - Hawaii
- JA/LS UHF Slot Antennas - Three Angels Broadcast Network
- JFVD FM Vertical Panel Systems - Sri Lanka
- JHEP FM Elliptical Directional Antenna System - Montana
- JBCP FM Broadband Sidemount Antennas - India
- JHD VHF Multi-Channel Antenna & Combiner Systems - Columbia