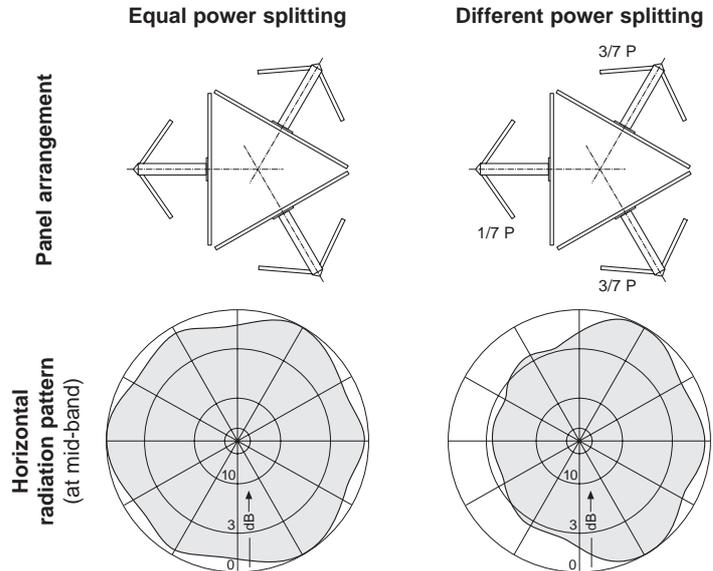


Kathrein offers a wide variety of antenna systems, allowing the broadcaster to select the optimum configuration for each station.

Following is an overview of various arrays and their typical characteristics and advantages.

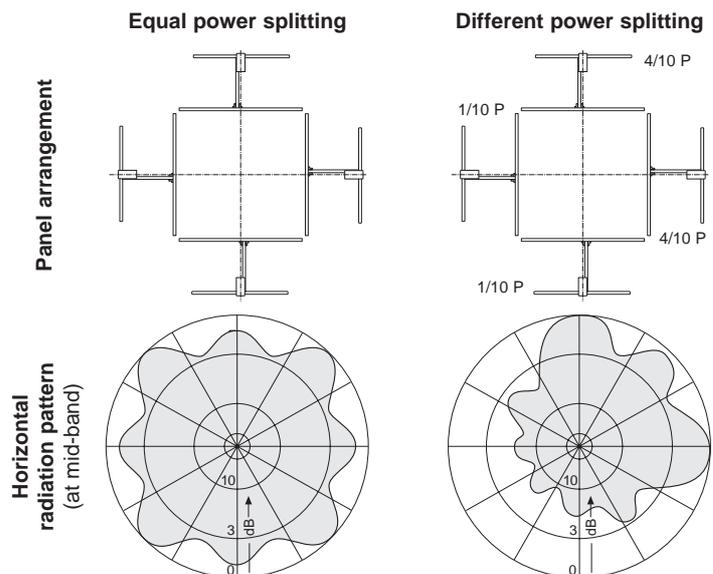
## Three-sided Panel Array

The individual panels are designed to cover an azimuth sector of 120 degrees and three panels fed with equal power will result in an omni-directional pattern. Directional horizontal radiation patterns can be achieved by using a different panel arrangement and/or feeding the panels with unequal power levels. This arrangement is especially suitable for triangular and round towers or masts. These broadband systems are available with horizontal or circular polarization.



## Four-sided Panel Array

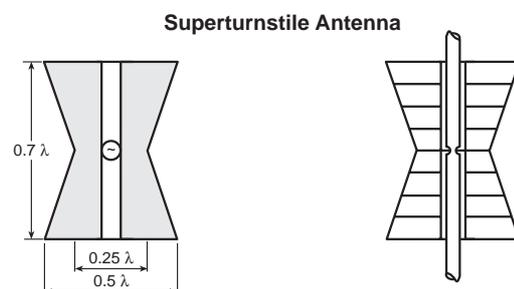
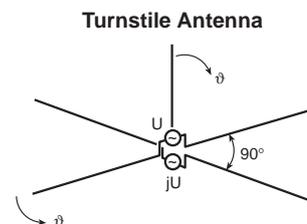
The individual panels are designed to cover an azimuth sector of 90 degrees so that four panels fed with equal power will produce an omni-directional pattern. Again, directional horizontal radiation pattern can be produced with other panel arrangements and unequal power fed to various panels in the array. This configuration is especially suitable for square towers or masts. These broadband systems can be supplied for any polarization.



## Turnstile and Superturnstile-Antennas

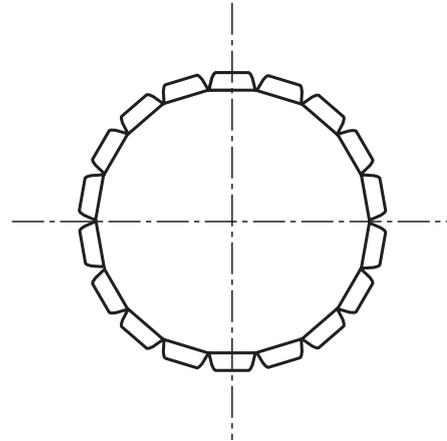
This type of antenna (also known as a "batwing") produces an excellent horizontally polarized omni-directional pattern.

A metal mast can be placed in the center of a turnstile-antenna as long as the mast has a small diameter relative to the wavelength of the signal.



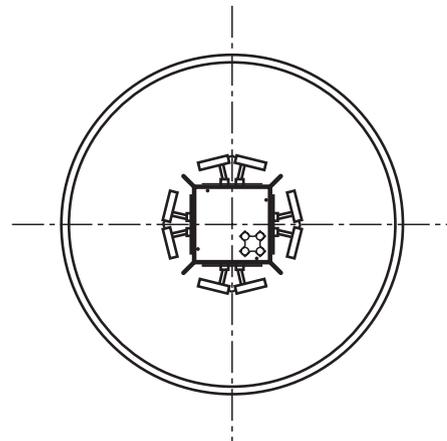
## Multi-panel Array

If the cross section of the mast or tower is more than one wavelength it is impossible to obtain a satisfactory omni-directional horizontal radiation pattern using three or four panels per bay. However, an omni pattern can be achieved by increasing the number of panels per bay. The horizontal patterns of these “multi-panel” arrays will vary with frequency, but they can be designed for excellent omni performance over limited bandwidths. Multi-panel arrays are available with horizontal or vertical polarization.



## Special Antenna Systems Inside Self-supporting GRP Towers

A large-diameter GRP (Glass Reinforced Plastic) pipe can be utilized to substitute a metal support structure and enclose an antenna system. The GRP pipe is transparent to RF energy and it allows the antenna engineer to use an optimized antenna design with a small cross-section at the center of the pipe. Antenna elements may be dipoles or turnstiles. The GRP pipe also provides excellent protection against severe environmental conditions such as rain, ice, snow, wind and corrosive agents and it allows access for inspections and maintenance at any time. Horizontally and vertically polarized systems can be supplied.



## Relay Receiving Antennas

For professional receive applications such as transposer/translator inputs Kathrein offer a full range of antennas including yagis and logarithmic-periodic types. UHF models are equipped with radomes to assure reliable operation in icing conditions and to protect the antennas against weather damage.

Arrays of these antennas are available to provide very high gain, extremely narrow main lobes, and high rejection of co-channel and other interfering signals coming into the rear and sides of the array. Receiving antennas and arrays are available with either horizontal or vertical polarization.

### Examples for Radiation Patterns

