

Kathrein Scala Division X-Pol antennas for polarization diversity represent the latest development stage in antenna technology. An increasing number of network operators realize the advantage of installing three dual +/-45 degree polarized antennas for a complete three sector site, where previously six or nine vertically polarized antennas had to be installed.

For polarization diversity to function properly it is very important that the different polarized signals are as independent as possible from each other (principle of uncorrelated signals). The most important point is the "Cross-polar ratio (CPR)", i.e. the ratio of the signal levels of similar polarizations compared to dissimilar polarizations. The CPR should be quoted for the whole sector width (+/-60 degree), not just for the main radiating direction.

The antenna gain is already considerably reduced at the sector edges due to the horizontal pattern, therefore a CPR as high as possible is desired. The system suppliers demand at least 10 dB for +/-60 degree from the main direction. Kathrein Scala Division X-Pol antennas more than fulfil these requirements.

Kathrein X-Pol Panels 800/900 MHz Typical Cross Polar Ratio (CPR)

Half-power Beam Width	CPR Main direction	CPR ±30° sector	CPR ±60° sector
65°	22 dB	20 dB	15 dB
90°	20 dB	15 dB	12 dB

Kathrein X-Pol Panels 1800 MHz Typical Cross Polar Ratio (CPR)

Half-power Beam Width	CPR Main direction	CPR ±30° sector	CPR ±60° sector
65°	20 dB	16 dB	14 dB
90°	17 dB	13 dB	10 dB

Many of the X-Pol antennas on the market are of patch technology on printed circuit boards for power-splitting purposes.

Kathrein, for many years, has used the proven dipole-type technology together with low-loss cable harnesses, which clearly offers more opportunities for perfecting certain antenna characteristics.

We present the new, Kathrein Panels as our concept for the 800/900 MHz X-Pol antenna line. We adapted the excellent and well proven mechanical design used in our line of 1800/1900 MHz antennas. Instead of a fiberglass cover screwed and sealed to an aluminum back-plate, the radome now consists of a closed, self-supporting fiberglass profile into which the metal parts of the antenna are inserted. There are no drill-holes at all in the profile which is closed by two sealed end caps. This completely closed design offers ideal permanent protection against environmental influences and also increases the mechanical stability of the antennas.

Apart from the existing comprehensive range of X-Pol antennas which can be found in our catalogues, we now also have low gain versions for 800/900 MHz band with a length of 26 inches (656 mm).

Advantages of Kathrein's dipole X-Pol type antennas compared to typical patch printed or circuit board solutions:

1. *Excellent cross polar ratio over azimuth.*
The dipole design delivers remarkable cross polar ratio not only in the main direction but also across the complete sector.
2. *Low intermodulation products.*
Unlike printed circuit antennas, the intermodulation products are typically -150 dBc (2X25 watts).
3. *Low internal losses.*
The cable harness provides a low loss power distribution, which enables shorter antenna lengths.
4. *High isolation.*
Patent pending decoupling elements ensure an isolation between the two inputs of a min. >30 dB (typically 35 dB).
5. *Constant electrical performance under bad weather conditions.*
Due to the dipole design, rain, ice and snow have little effect on the electrical parameters such as VSWR, isolation and cross polar ratio.



All specifications are subject to change without notice