Circular Polarization for Wi-Fi

Due to the advanced signal propagation properties, circularly polarized (CP) antenna technology offers numerous performance advantages over traditional linear (LP) technologies. When implemented as a central component within a Wi-Fi network, CP delivers better connectivity with both fixed and mobile devices and ultimately leads to a superior user experience.

CP waves "match" any Wi-Fi devices:

In the modern world, mobile and handheld wireless devices are everywhere. These handheld devices typically use linear polarized antennas and thus the orientation of the signal is often random, depending on how the device is being held by the user. This naturally leads to out of phase issues. CP antennas address this issue by transmitting in all planes, making it more likely for a mobile client device to be able to establish a reliable signal link regardless of the antenna orientation of the device.

CP waves propagate better:

RF signals from different planes react differently depending on the type of material being struck. Because it transmits on all planes, a CP antenna has a higher probability of penetration to deliver a successful, stable link. As an example, in a commercial office environment, a linear polarized antenna will have difficulty penetrating walls containing metal stud. However, in such a scenario, the signal from a CP antenna will more effectively be propagated through the wall and achieve an overall better reach throughout the building. Also, linear polarized antennas transmit in only one plane, if the reflecting surface does not reflect the signal precisely in the same plane, signal strength will be lost.

Less destructive interferences with a CP transmitting antenna:

In non-line-of-sight configuration LP systems have difficulty penetrating obstructions due to reflected signals, which weaken the propagating signal. Reflected linear signals return to the propagating antenna in the opposite phase, thereby weakening the propagating signal. Conversely, CP based systems also incur reflected signals, but the reflected signal is returned in the opposite orientation, largely avoiding conflict with the propagating signal. The result is that CP signals are much better at penetrating obstructions and for use in non-line-of-site applications.

Less multi-path effect when the transmitter and receiver use circularly polarized antennas:

Multi-path is when the primary signal and the reflected signal reach a receiver at nearly the same time. This creates an "out of phase" problem. When this happens, the receiving radio must spend its resources to distinguish, sort out, and process the proper signal, thus degrading performance and speed. An out of phase radio can result in dead-spots, decreased distance and throughput, and reduced overall network performance. Linear polarized antennas are more susceptible to multi-path due to the increased possibility of reflection, while a CP antenna transmitting on all planes will have a lower likelihood of signal cancellation.