

Application Note

Executive Summary

The Great Dane was designed for optimum performance in the 2X2 cellular configuration. The standard solution has been to use 2 SISO pole mount antennas on a roof mount tripod. The problem with this setup is that although they are omni-directional antennas- there's no indication of where the peak gain is for each antenna. Customers who have this type of setup have performance issues throughout the day as carriers change bands depending on usage. The Great Dane solves this problem by focusing the gain of all the bands in the same direction using increased spacial diversity which increases throughput.



WHY

4G uses MIMO (Multiple In Multiple Out) technology. This simply means 2 or more diverse signals on both the downstream and upstream path of the wireless system. This is where spatial diversity between the two inputs determines the quality of the signal as well as the speed of the signal on both upload and download paths. By having each path separated by space or direction, improves the signal reception by the receiver and transmitter inside the router. This is what we refer to as RightPath Signal Technology™

The Great Dane creates a wider signal path by having a mirror image of two antenna elements inside a signal package. We are able to create more spatial diversity by having a mirror image with the peak gain of each element facing in the opposite directions. This maximizes the best possible diverse signal path on both the transmit and the receive path for the best possible speeds, all while being in the same package. It is worthy to note that all 3G, 4G, and 5G/5GNR signals are mostly reflected signals. It is in this implementation of MIMO technology that we are able to use the reflected signals to our advantage and get the best possible performance.

Parsec has developed an omnidirectional alternative to multi-SISO network solutions by creating a new approach to the standard 2:1 MIMO setup. Typically, most manufacturers use a small package or even a cross polarization scheme that helps with isolation but does not create a greater or wider signal path. True diversity of the receive or transmit paths since they're both going in the same direction just at a 90-degree slant.

THE PROBLEM

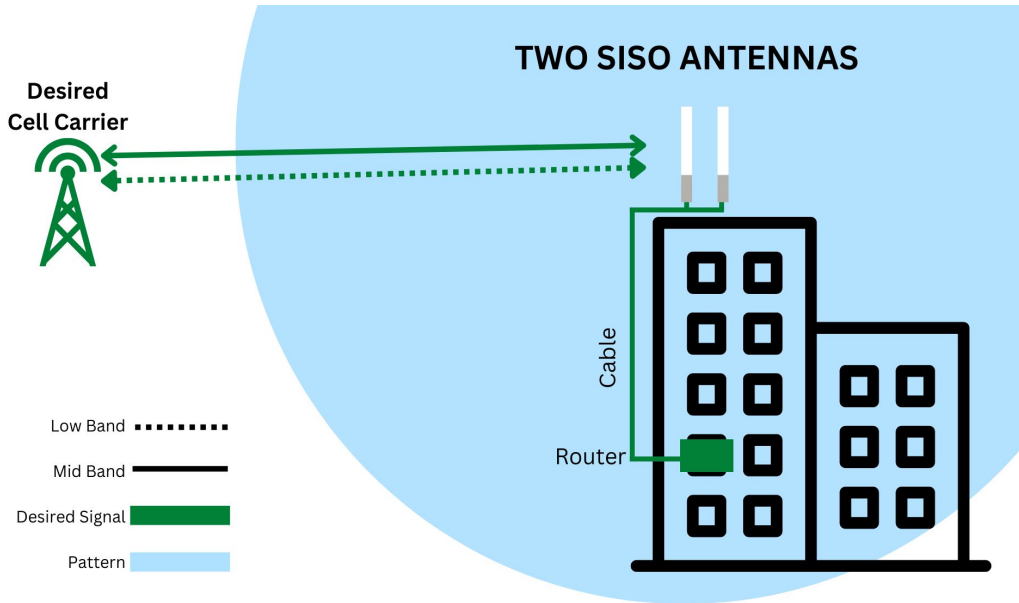


Figure 1. Common SISO antennas roof mounted together experiencing interference due to proximity.

HOW

True Gain technology sets Parsec antennas apart from other manufactures. Parsec's Great Dane 5G antenna uses proper size and spacing to maximize gain in the proper directions while containing all antenna elements in one 13" X 16" housing. By orienting the antenna elements outwards and away from one another- this omnidirectional antenna can access all 600 MHz- 6 GHz ranges without excessive energy emissions or creating its own interference. Our low loss cables prevent excessive energy loss between router and antenna to improve efficiency and strengthen your cellular signal. Without having to orient two separate antennas, the Great Dane makes installation easier while offering higher performance than its competitors (Figure 2).

THE SOLUTION

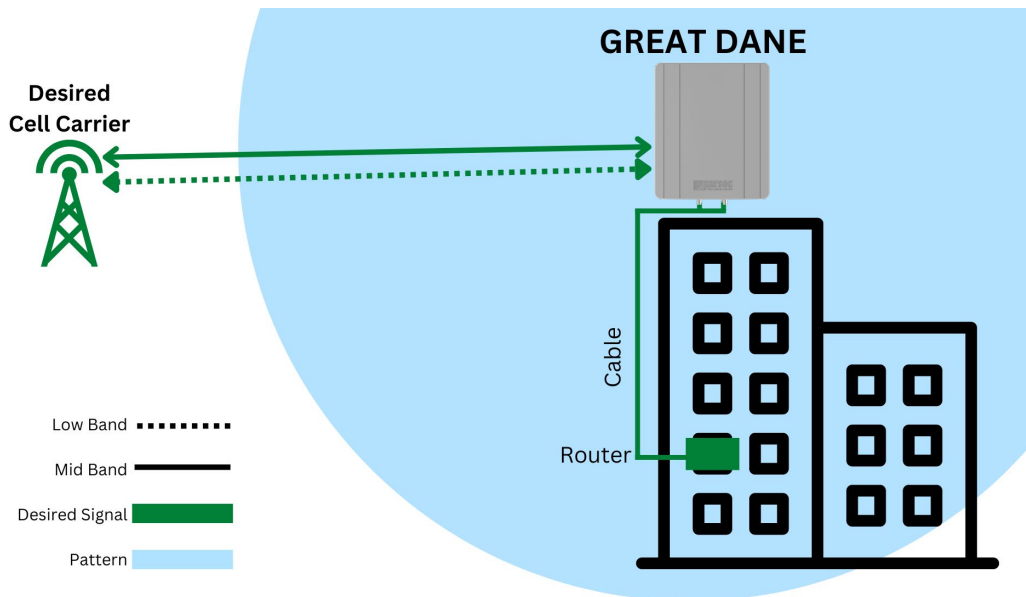


Figure 2. The Great Dane omni-directional antenna receiving and emitting clear frequencies due to patent pending technology by Parsec.

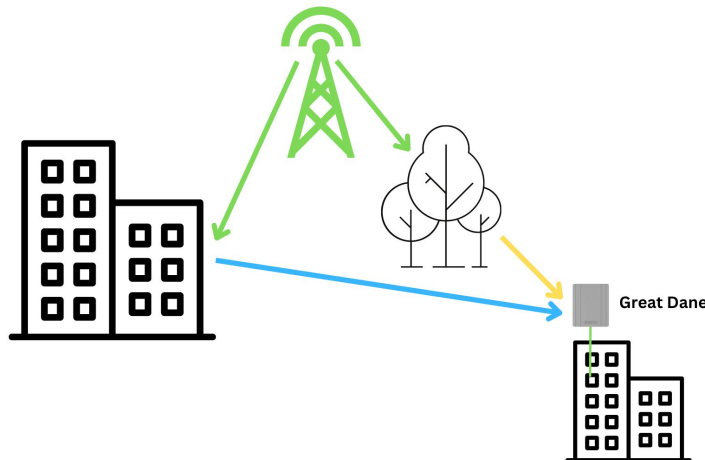


Figure 3. The Great Dane omni-directional antenna receiving multipath signals which is typical in non-line of sight applications.

WHERE

The Great Dane has True Gain technology making installation a breeze since you can't set it up wrong. Regardless of the orientation of the antenna to the cell tower(s) there will always be a strong and weak signal path to the antenna thus great diversity is achieved for optimum performance.

The Great Dane is designed for high-speed enterprise data network solutions in a rugged, IP54 rated housing. This roof mounted, 5G antenna is ready to withstand heavy use and inclement weather to keep your business up and running with limited maintenance. This is also an easy solution for installers with limited RF experience.

WHEN

The Great Dane is ideal for enterprise roof mount antennas looking for a high performance, external antenna with high gain. This solution provides a simple install with minimal expertise needed to implement correctly. Mount to any roof or pole mount to get maximum efficiency in your 5G cellular coverage to your enterprise.