



CONNEX PROSIGHT ANTENNA GUIDELINES

Whether you plan to use CONNEX ProSight antennas, or design your own, we highly recommend following these guidelines:

Full 5GHZ Frequency Band Support

The ProSight antennas are designed to cover the full span of the 5GHz unlicensed band, between 5150MHz and 5925MHz. This capability to function well, without degradation at any of the sub-bands, allows the ProSight system to:

- Archive best performance over all available bands
- Select the best available channel over the entire band (ProSight enables 'Automatic Frequency Selection')
- Coexist better with all other ProSight systems
- Coexist better with other analog systems

* Note: Analog systems usually utilize the sub-band of 5600MHZ to 5900MHZ, hence their antennas are designed to function best at these frequencies

* Note: This is also the case with most circular antennas

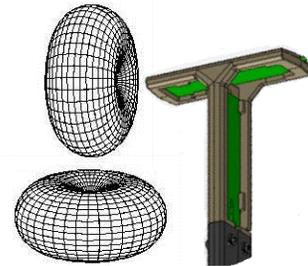
Two Transmitting Antennas, Five Receiving ones

CONNEX ProSight uses MIMO (Multiple Input and Multiple Output) and diversity technology. This means the ProSight HD Transmitter uses two transmitting antennas, while the ProSight HD Receiver uses five receiving antennas.

The ProSight MIMO configuration was specially designed to support the unique requirements of the PFV Racing drones: Fast maneuvers and high speeds.

The "T" shaped antenna was selected after rigorous tests, with multiple antenna types at various configurations:

- The link will remain stable as long as at least one of the transmitting antennas' beam is pointing towards the receiving antennas
- The RF beam of the ProSight transmitting antennas is omnidirectional:
 - The horizontal antenna's RF signal propagates like a "bagel" that is 90 degrees to the ground (the "bagel" center is where the Tx power = zero):
 - The vertical antenna's RF signal propagates like a "bagel" that is parallel to the ground:



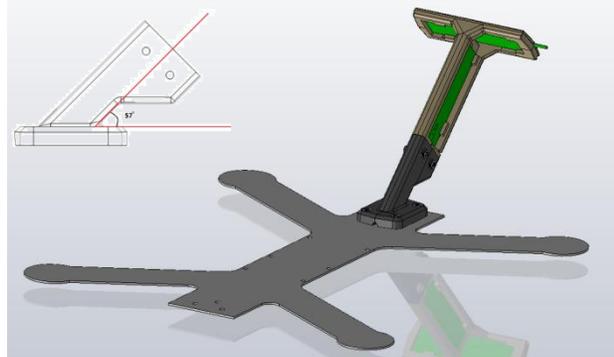
The RF beams of the ProSight receiving antennas are vertical omnidirectional as well. Therefore the best configuration for a robust link of a maneuvering drone would be to have the two transmitting antennas placed at 90 degrees to each other and setting all the five receiving antennas straight upwards. This configuration best ensures that at least one transmitting antenna will be in a (almost) vertical position towards the Rx antennas at during the drone's maneuvers.



Line Of Sight

RF signals are obstructed, absorbed and reflected by physical obstacles on their path. Therefore one should consider best performance at a clear line of sight setup. Unfortunately, the drone's body itself can become an obstacle to the RF signal, if placed between the transmitting and receiving antennas. For this reason we highly recommend to:

- To place the transmitting antennas at least **3 cm (1.2 inch)** away (usually above) from the body. This reduces the possible signal obstruction.
- To place the transmitting antennas at the **rear** of the drone. Quads tend to tilt forward, so most of the flight time the antennas will be at the highest point, and therefore less obstructed by the drone's body.
- CONNEX ProSight antennas are placed at **33 degrees back** from the vertical position. This allows the antennas to be vertical during most of the flight time (which introduces the best antenna pattern), while the drone tilts forward. This is a good compromise between fast flight and hovering. The horizontal antenna's positioning was selected so it covers the transmission during rolls of the drone.
- To avoid any metal or cables near the antennas:
 - Try to place the antenna's **RF cable as far as possible** from the antenna's body – otherwise it becomes an obstacle by itself
 - Be aware that other materials (including plastic) which are covering/connected to the antennas, do affect the antenna's performance.



Platform Considerations

- The CONNEX ProSight link is bi-directional, full-duplex, meaning the HD transmitter antennas also receive data from the ProSight HD Receiver. For that reason we recommend not to place any other transmitting antennas in close proximity to the ProSight HD Transmitter antennas
- The antennas' RF cables are rigidly connected to the ProSight HD Transmitter connectors. We suggest securing the RF cables in a way that they will not be pulled out from the connectors of the ProSight HD Transmitter during crashes.
- When folding the RF cables to secure them to the drone (with zip ties or glue), make sure to roll the cables with a minimal 5mm radius, in order to avoid damage to the internal conductive wire.