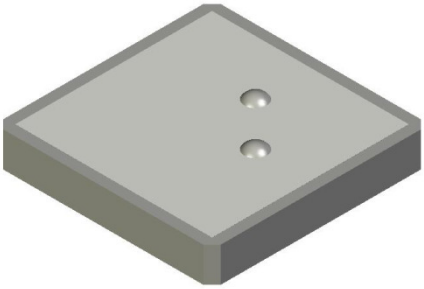
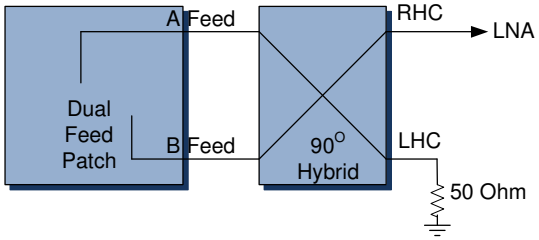
Tallysman's *Accutenna™* technology has proven its ability to provide superior multi-path signal rejection thereby providing un-matched precision for its size and price. *Accutenna™* technology:

- Employs Tallysman's unique dual feed patch technology
- Provides truly circular response over the entire antenna bandwidth
- Provides superior rejection of multi-path and cross polarized signals
- Offers pre-filtering option to provide additional protection from near band signals
- Is available for only GPS L1 coverage or multi-constellational coverage (GPS, GLONASS, BeiDou, and Galileo)

GNSS is changing. An increasing number of receivers are capable of accessing multiple constellations (GPS / GLONASS / BeiDou /Galileo). Yesterday's single feed antennas were perfectly fine for single constellation / single frequency access, but in today's world, Tallysman's *Accutenna™* technology is necessary to provide the precision you demand.

What is a Dual Feed Antenna?





Dual Feed Patch Architecture

Dual feed patch elements are comprised of two independent, linear antennas oriented on orthogonal axis. When the signals, received from each axis, are summed with a 90 degree phase shift in one, the overall transfer characteristic exactly complies with the mathematical requirement for a truly circularly polarized response. This applies over the full bandwidth of the antenna and greatly improves rejection of cross polarized signals (caused by multi-path reflections). Because multipath is a significant cause of positioning error, dual feed antennas provide much higher precision than single feed antennas.

In contrast, single feed patch antennas provide a circular response only at a singular frequency (at resonance). At frequencies increasingly offset from the resonant frequency, the antenna response becomes increasingly elliptical. A single feed antenna used to receive two constellations, such as GPS (1575.42 MHz) and upper GLONASS (1606 MHz), is typically tuned to a mid-point frequency (1590 MHz). Single feed patch elements then have typical axial ratios at GPS and GLONASS frequencies of 7-8dB, compared with 1dB typical for a well-balanced dual feed antenna. Thus a single feed antenna has poor rejection of cross polarized signals. The statistical end result is poor precision.

Figure 2 illustrates this point well. At the tuned frequency of 1590 MHz, the single feed antenna has a cross polarized signal rejection of about 25 dB but only about 5 dB of rejection at 1575.42 MHz and up to 1606 MHz (the frequencies of interest). Compare that with the approximately 20dB rejection provided by the dual feed patch equivalent.

If the signal presented from an antenna to a GNSS receiver is "mangled" by multipath interference, the available precision will be degraded because of irresolvable uncertainty, regardless of the capabilities of the GNSS receiver chip.

Multipath interference is common and to be expected even in normal reception situations and is a significant source of error most GNSS receivers with single feed antennas.

GNSS receivers are at the mercy of the quality of the signal presented by the antenna. No receiver can fully mitigate the effects of a poor antenna.

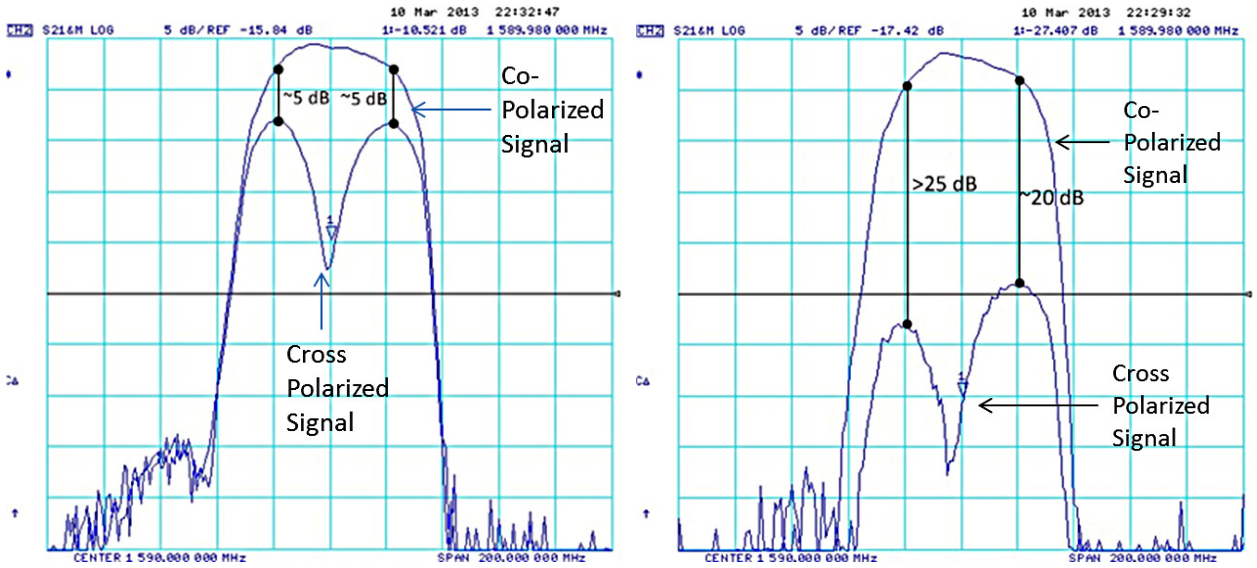


Figure 2 - Response of a Single Feed Antenna versus Response of an Accutenna antenna

Figure 2 provides an excellent illustration of the effects of using *Accutenna™* technology which provides a circular response over the entire bandwidth. The cross polarization rejection at the two frequencies of interest is significantly better: approximately 25 dB at 1575.42 MHz and 20 dB at 1602 MHz.

Tallysman's *Accutenna*™ technology is employed in many of our antennas. This technology has proven its superiority for multi-path rejection which provides the receiver with the best opportunity to reliably report the accuracy of position as shown in an independent side-by-side test of the *Accutenna*™ technology against a single feed patch both accessing GPS L1 and GLONASS G1.


100%
Google hybrid
Tracks:
- Accutenna Technology
- Single Feed Antenna
Center: 29.53139,-98.44044
Google
Map created at GPSVisualizer.com