The Power of Direct Spatial Antenna Modulation (DSAM)

Altamira has developed and patented a novel framework and approach to controlling antenna arrays that allows not only power pattern control, but also destruction of information as a function of angle at the electromagnetic wave level. This ability to utilize Spatial Information Control (SIC) is a significant departure from traditional antenna array technologies, which preferentially direct or receive RF energy but do not act on the contained information. The ability to control the angular transmission or reception of information, in addition to the array power pattern, enables significant performance improvements in secure communications. SIC technology can be implemented in conjunction with existing protocols, waveforms, spread spectrum and cryptologic systems without impairment.

Secure Comms Capabilities
Low-Risk, High-Reward technology insertion with existing COTS/GOTS array systems. Provides protection from man in the middle attacks and hostile injection attempts.
- Reduces speed and accuracy of adversary geolocation attempts
- Allows single-sided communications security
- Lowers probability of intercept
- Reconfigurable and customizable in near real time
- Compatible with existing data, waveform and encryption protocols
- Low visibility mode allows information corruption without altering the transmitted spectrum
- Information content secured at the physical wave layer
- Un-recoverability feature destroys and distorts information when sent or received in the side lobe emissions.
Case Study: Secure Comms / Geobreaker

LOCATION: Classified, Non-Permissive Environment

SITUATION: Special Operations Forces (SOF), conducting Strategic Reconnaissance (SR) Mission

Two Days into the mission a SOF team is compromised and effectively breaks contact with enemy combatants. Armed with their individual kit, weapons, and AN/PRC-152A radios the team begins Escape and Evasion (E&E) procedures according to their PACE plan (Primary, Alternate, Contingency, Emergency).

BEFORE DSAM:
The SOF team transmits comms as per their PACE plan. The transmitted messages are intercepted by enemy Electronic Warfare (EW)/Direction Finding (DF) elements, who immediately identify the presence of SOF forces in their AOR and begin to triangulate a fix on the SOF team’s location.

AFTER DSAM:
The SOF team’s individual AN/PRC-152A radios were recently upgraded (prior to mission) with the DSAM Counter-Geo Antenna which reduces the signature and distorts electromagnetic emissions in the direction of hostile forces, thus increasing the security of sensitive datalinks. During E&E procedures the SOF team’s communications are secured and unable to be geo-located allowing them the ability to communicate current situation, position, and coordinates for exfiltration with inbound rescue forces without impairment.

Geo Breaker Capabilities
Prevents adversarial capabilities such as Time Difference of Arrival (TDOA) and Direction Finding (DF) techniques by reducing signal coherence and cross correlation when intercepted from different Angles of Arrival (AoA)

- Evades general DF techniques by altering the apparent frequency, bandwidth, and data rate when seen from different AoA.
- Provides a Low Probability of Intercept (LPI)/ Low Probability of Detection (LPD) effect to existing communications channels by lowering observable power away from the intended transmission direction.