## Low profile, conformal, dual polarised, dual transmit/receive, ultra wide band antenna for decoy missile applications



Missile based electronic warfare involve a number of techniques, like remote eves dropping, signal jamming and decoy signal generation. For decoy applications, dummy missile has receivers working over a very wide bandwidth that can sense the incoming signals from the enemy missile, and then play it back. The key requirement is that the antenna for such decoy systems must be able to receive and transmit simultaneously, over a very large bandwidth. Secondly the incoming wave can be both left hand circular polarised (LHCP) and right hand circular polarised (RHCP). Therefore the antenna should be dual polarised. Finally the antenna should have a low profile and be conformal so that it can be easily integrated with the missile body. Companies like Cobham provide such antennas but they are based on a cavity backed design which causes the antenna to have a very high profile.

In this regard our group has developed a spiral design based ultra-wide band (UWB) antenna works over the frequency range of 1–12 GHz. The design consists of 2 dual spirals one each for the transmitter and the receiver. The dual spiral ensures dual polarisation in the antennas. The input to the two spirals should be differential so that the radiation patterns of the transmitter and receiver do not interfere. We used a balun integrated on the bottom side of the antenna to produce these differential signals. Finally a dielectric layer over the entire antenna was added and the entire structure encased in a metallic housing.

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