

Abstract Submitted  
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**The Effects of Plasma Shield on the Radar Cross Section of a Generic Missile in UHF Band** SHEN SHOU MAX CHUNG, Dept. of Electronics Engineering, Southern Taiwan University — RF Stealth is the dominant technology in today's military aircraft, and most is achieved by shape design with a few reductions achieved by RAM, but most of these effects are only valid in X band. With the popularity of UHF radar again rising, the possibility of detecting a stealth object has increased due to resonance effect, and this is difficult to decrease with previous means due to the long wavelength. A plasma shield generated in front of an object may be suitable to alter the RCS in specific band without physically changing its shape. We examine the RCS of a generic missile in UHF band, and compared it with one with a cone-shape plasma generated in front of the missile. We find the plasma effectively changes the RCS of the missile, though not necessarily smaller. The RCS of the missile with the plasma shield is now dominated by the plasma instead of the missile. The RCS is a function of the size, shape, and density of the plasma shield. For higher frequency signals like the X band radar, it can still penetrate the plasma, and sees the original RCS of the missile. Due to the relatively lower UHF frequency, the plasma density needed is lower than one in X band and thus more practical to achieve.

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