RANGE EXTENSION BEACON FOR ATOLS ON HIGH-SPEED UAVS

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Abstract

This paper presents an active beacon that modulates the radar cross section in an optimized manner. This active beacon provides an active modulation at a lower cost and a reliable way for extending the landing speed and the detection range beyond 30km. The main advantage of such a solution compare to the traditional ones is the absence of intermediate frequency which is often needed for the modulation. There is no mixer nor filter and the modulated signal can be very close to the carrier frequency, making it easier to integrate the beacon into existing Doppler radar systems. A false Doppler signal is generated, allowing the detection of stationary UAV (helicopters). The system is designed to cope with the Larsen effect, also it is wideband designed. This beacon is highly recommended for stealth aircrafts, as the beacon is a cooperative system that could be switch on demand. Theoretical results have been confirmed by full test experimentations which has validated the compatibility of the beacon with the existing Doppler radar.

Keywords:ATOLS, Radio Frequency Guidance, Active Beacon, Range Extension