

EFFECTS OF AIRCRAFT INTERACTION ON PERFORMANCE OF B-DOT SENSOR FOR
DELTA-WING AND CARGO-TYPE AIRCRAFT

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When an aircraft is used as an airborne platform for supporting an electromagnetic sensor, the aircraft will introduce field distortion and thus affect the measurement accuracy. Any object, metallic or dielectric, will produce scattering, but the effects of scattering may be minimized by properly choosing the location for the sensor. Theoretical considerations using simplified models suggest that to measure a horizontal magnetic field parallel to the fuselage, for example, the best location for the sensor are in the plane of symmetry of the aircraft, either at the nose or aft of the aircraft, and near the axis of the fuselage.

The precise location of the sensor can for simplified aircraft geometries be determined by calculations, but for more complex shapes scale model measurements can be used.

In this talk results of scale model measurement study to determine the optimum location of the sensor as well as sensor performance are presented. The examples presented are for a delta wing aircraft with sensor mounted forward of the aircraft and for a twin engine cargo aircraft with the sensor mounted at the aft.