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Accession number:20123015271864
Title:Scaled bistatic radar cross section measurements of aircraft with a fiber-coupled THz time-domain spectrometer
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Source title:IEEE Transactions on Terahertz Science and Technology
Abbreviated source title:IEEE Trans. Terahertz Sci. Technolog.
Volume:2
Issue:4
Issue date:2012
Publication year:2012
Pages:424-431
Article number:6198321
Language:English
ISSN:2156342X
Document type:Journal article (JA)
Publisher:IEEE Microwave Theory and Techniques Society, 2458 East Kael Circle, Mesa, AZ 85213, United States
Abstract:The knowledge of the radar cross section (RCS) of aircraft and other objects is of great interest both for civil and military applications. Scaled setups are often used in order to facilitate RCS measurements in a well-defined laboratory environment. As radar frequencies steadily increase, for high scaling factors these measurements have to be carried out in the THz regime. In this paper, we propose an experimental setup consisting of a fiber- coupled THz time-domain spectrometer integrated with a two circle goniometer, which enables bistatic scaled RCS measurements. To assess the accuracy of the setup, measurements on reference objects as well as on scale model aircraft are performed. The measured data of the reference objects is compared to the theoretical predictions. As for the aircraft, the comparison between a Panavia 200 Tornado and a Lockheed F117 Nighthawk is made and the influence of individual components like bombs on the overall RCS is evaluated. © 2012 IEEE.
Number of references:15
Main heading:Radar cross section
Controlled terms:Aircraft - Military applications - Spectrometers - Spectrometry
Uncontrolled terms:Bistatic - Bistatic radar cross section - Bistatic radars - Experimental setup - Individual components - Laboratory environment - Lockheed - Radar frequencies - Reference objects - Scaling factors - Scattering measurements - Submillimeter wave measurements - Theoretical prediction - Time-domain spectrometer
Classification code:404.1 Military Engineering - 652.1 Aircraft, General - 716.2 Radar Systems and Equipment - 801 Chemistry

DOI:10.1109/TTHZ.2012.2192929
Database:Compendex