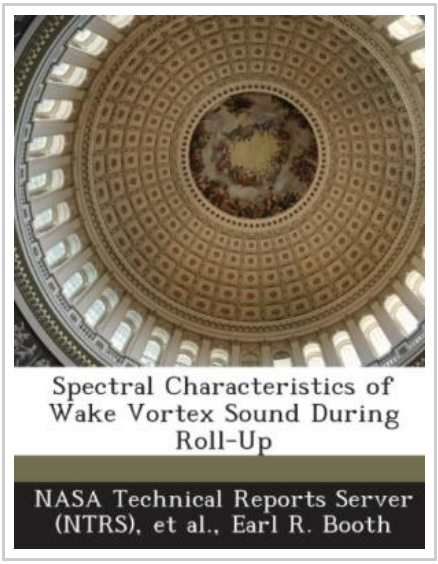

Spectral Characteristics of Wake Vortex Sound During Roll-Up (Paperback)

By Earl R Booth

Bibliogov, United States, 2013. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.This report presents an analysis of the sound spectra generated by a trailing aircraft vortex during its rolling-up process. The study demonstrates that a rolling-up vortex could produce low frequency (less than 100 Hz) sound with very high intensity (60 dB above threshold of human hearing) at a distance of 200 ft from the vortex core. The spectrum then drops o rapidly thereafter. A rigorous analytical approach has been adopted in this report to derive the spectrum of vortex sound. First, the sound pressure was solved from an alternative treatment of the Lighthill s acoustic analogy approach [1]. After the application of Green s function for free space, a tensor analysis was applied to permit the removal of the source term singularity of the wave equation in the far field. Consequently, the sound pressure is expressed in terms of the retarded time that indicates the time history and spacial distribution of the sound source. The Fourier transformation is then applied to the sound pressure to compute its spectrum. As a result, the Fourier transformation greatly simplifies the expression...

Reviews

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