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FM SPECTRAL MODELING AND FDM/FM SIMULATION PROGRAMS

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ABSTRACT

This report is concerned with the spectral representation of analog FM signals, with particular attention to FDM/FM satellite communication systems. The FM spectral modeling and gaussian approximation principles are analyzed and extended to develop computer simulation programs capable of providing representative FM spectra. A generalized program is developed to accommodate a variety of baseband and preemphasis characteristics, and adapted to generate FDM/FM telephony spectra. The program features the automatic validation and generation of the gaussian spectrum model if applicable, or the automatic simulation of the modulation process to generate the FM spectrum samples otherwise. The program is used to simulate a collection of satellite FDM/FM telephony spectra, which are to be applied as input data into other available interference analysis programs, as part of a major automated computer capability dedicated to the comprehensive assessment of orbital congestion and spectrum resource management concerns pertinent to national and international satellite communication systems scenarios.

KEY WORDS

FM Spectrum Models
Gaussian Spectral Approximation
FM Spectrum Simulation
FDM/FM Telephony Spectra