

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)  
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A COMPACT AND RELIABLE METHODOLOGY TO DESIGN OSCILLATOR AT S-BAND  
FREQUENCIES SUITABLE FOR SATELLITES COMMUNICATIONS SYSTEMS**Abstract**

One of the fundamental parts in the satellite communications systems is the oscillator that generates the carrier frequency in which the information will be transmitted. At S-Band there are several applications such as meteorology, remote sensing, military applications, etc., that requires an oscillator. Since the oscillator is part of a satellite, it is very desirable a compact and high efficiency oscillator with a moderate output power in order to avoid amplifiers stage that increases the area and weight of the front-end of the wireless communication system. The design of RF oscillators is based on trial and errors of the elements of the feedback loop. Thus, this work presents a simple but effective methodology to design compact and reliable oscillator using microstrip coupled lines coupler and a transmission line as feedback loop. The methodology is explained with the design of an oscillator in L-Band in order to understand clearly the conditions required that an active device starts to oscillate, and then it would be shown an oscillator in S-Band in order to corroborate the usefulness of the proposed methodology.