

Microwave Oscillator Design:

A complete, practical and mathematical treatment of microwave LC-based oscillators using bipolar, MESFET, and CMOS transistors

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10:30 am – 12:00 pm

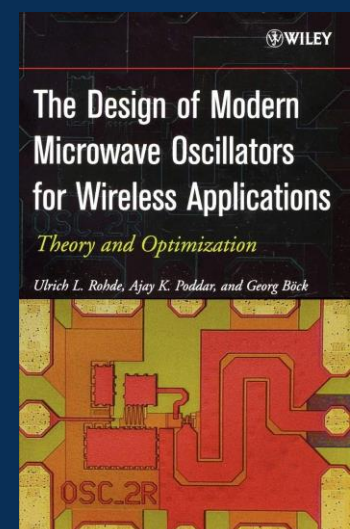
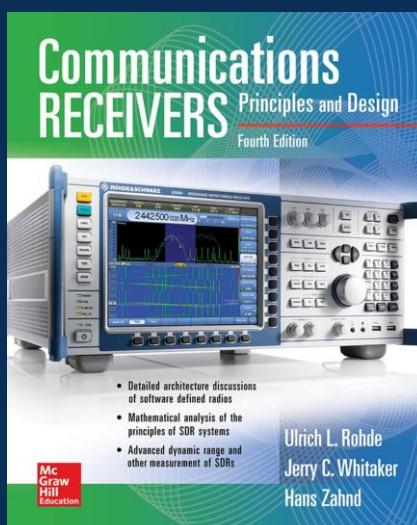
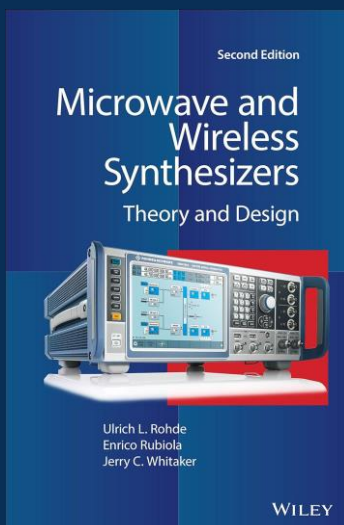
Room: S2-180

Tuesday October 8th, 2024

(Extended session with Q&A 12:30 pm – 2:30 pm)

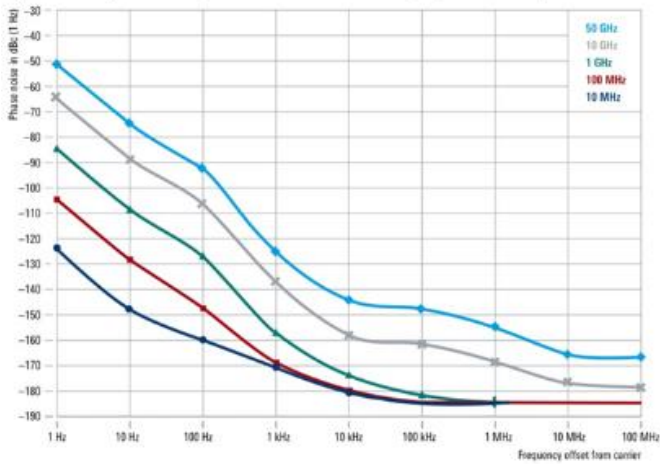
Zoom Link: <https://mitll.zoomgov.com/j/1610670756?pwd=PvwQIth7sUhE2Da3pifaKHras72sby.1>

Based in part on the following books:



Abstract

Typical sensitivity at various frequencies with R&S[®]FSWP-B61 option (start offset 1 Hz)



Rohde & Schwarz R&S[®]FSWP Phase Noise Analyzer and VCO Tester 7

The design of RF/microwave oscillators has been, and continues to be, the subject of many publications. Historically, oscillators have been designed largely based on past experience with mostly successful designs, and to a lesser degree on experimental data. Furthermore, high-resolution test equipment for validation of device phase noise has only become available in the last decade or so, and accurate measurement can still take hours. For a designer, however, it is preferable to start from a set of specifications and then apply a rigorous and advanced mathematics-based design procedure. In this talk, we will present linear data-based, measured large-signal-based, and non-linear Bessel function-based treatments of RF/microwave oscillators. The discussion will include LC-based oscillators, such as those using bipolar, MESFET, and CMOS transistors, as well as the design of high-performance, low-phase-noise oscillators, ranging from VHF crystal resonators to YIG oscillators, and their measured data.