

Agilent AN 1200-10

Examine Channel Switching Characteristics of Cellular Radios

Application Note

Agilent Technologies 53310A Modulation Domain Analyzer

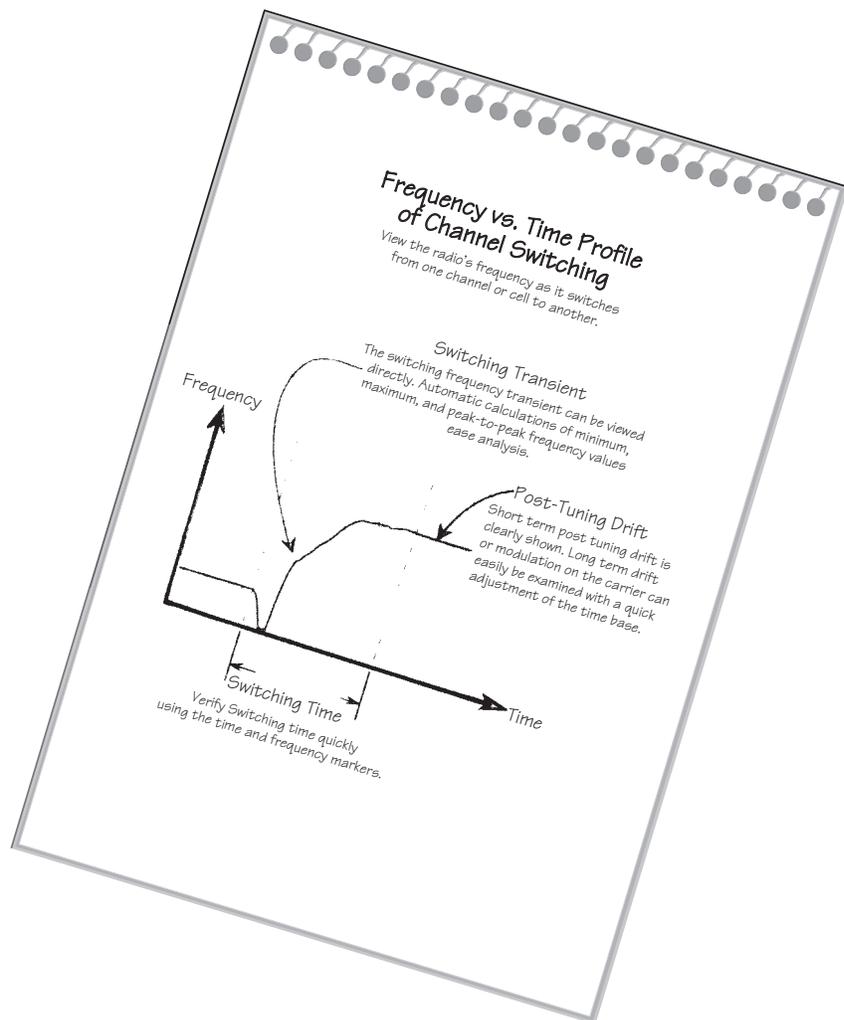
Better Analysis of Frequency Switching

Situation

Cellular telephones represent one of the fastest growing segments of the communications market. These mobile communication systems depend on frequency switching of Voltage Controlled Oscillators (VCOs) and synthesizers to select the correct carrier channel when initiating calls or handing off from one cell to another. Some modern systems employ active frequency hopping modes to minimize multipath fading effects.

Problem

Verifying parameters, such as switching time and overshoot of VCOs and frequency synthesizers used in cellular communication systems, is critical to achieving design goals. Conventional test techniques are cumbersome and temperature sensitive, require repetitive signals, and lack sufficient resolution in single-shot modes. Fast and direct analysis of frequency switching parameters is needed to improve characterization and shorten design cycles.



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Solution

The Agilent Technologies 53310A Modulation Domain Analyzer's ability to measure and display a signal's continuous frequency over time makes cellular communications channel-switching analysis easy. A direct frequency profile of channel-switching is provided on an easy-to-interpret display. Measurement markers allow you to quickly verify switching and settling time, overshoot, drift, and other key parameters.

Related Applications

- Examining frequency hopping sequences of hopped cellular radios or secure communication systems
- Examining turn-on time of mobile radios
- Examining modulation in mobile communication systems
- Characterizing phase-locked loop response
- Characterizing VCO step response

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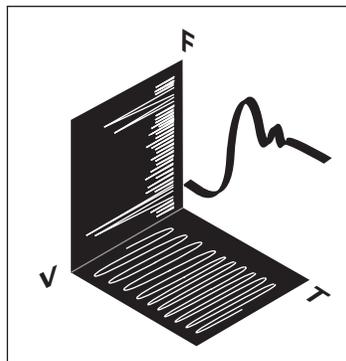
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5966-4483E

The Modulation Domain gives you a new way to view your complex signals

Better ways to analyze your complex signals don't come along often. Now Agilent brings you the Modulation Domain—a way of looking at frequency or time interval measurements that directly and clearly reveals both intentional and unintentional modulation.

For frequency analysis, it's the missing piece of the puzzle. The Time Domain shows you amplitude (voltage) vs. time. The Frequency Domain gives you amplitude vs. frequency. The Modulation Domain plots frequency vs. time—an intuitive and insightful way of examining your signal's dynamic frequency modulation.



For timing measurements, the Modulation Domain's view of time interval vs. time allows you to both see and quantify timing jitter directly—taking you one step beyond the Time Domain's qualitative view.



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