



Agilent PN 8590-9

Measuring Complex Burst Signals with Time-Gated Spectrum Analysis

Product Note

How to measure TDMA and other digital signals using Agilent Technologies 8590 C/E-series spectrum analyzers with Option 105

Agilent 8590 C/E-series spectrum analyzers with Option 105, Time-Gated Spectrum Analysis, can help make measurements of pulsed signals such as TDMA (Time-Division Multiple-Access) easy.

Digital cellular communication systems require measurements of complex pulsed-amplitude and digital phase-modulated signals. Measurements must be accurately aligned with the TDMA burst of the digitally-modulated carrier. The analyzer's time-gated option along with user-friendly measurement firmware provides these features:

- Displays time and frequency domains simultaneously
- Communication carriers viewed directly
- Graphic display of gate time position
- Continuous measurements
- Analyzer settings optimized automatically

Use the time and frequency windows to view the burst

Often it is necessary to examine the burst shape at a particular time. This requires precise alignment of the spectrum analyzer sweep with the desired portion of the TDMA burst. Time alignment is simple with the spectrum analyzer controls. Time-selective signals are viewed in the time domain on the analyzer's screen with the corresponding frequency response. You set the gate position and interval in real time. Select any part of the TDMA burst by marking

the selected interval in the time-domain (upper) window, and the frequency-domain response will be displayed in the lower window (Fig. 1). To see the spectral effects, simply move the gate over transitions or change the interval.

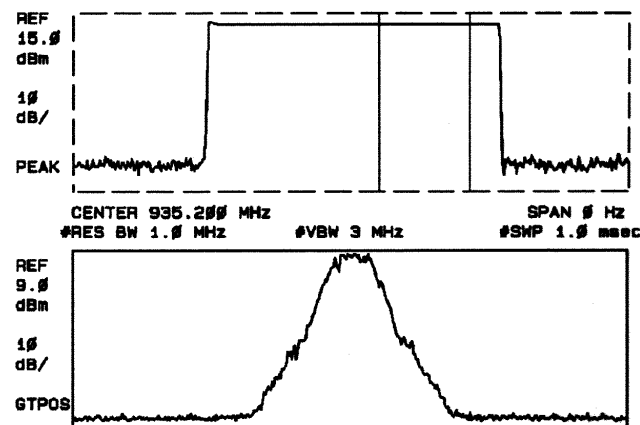


Figure 1. Time-selective spectrum measurements for the GSM continuous modulation test. Vertical lines mark the GSM regulation time-gate position in the upper display.



Agilent Technologies

Innovating the HP Way

Spectrum settings are optimized for time-selective measurements

Resolution bandwidth, video bandwidth and sweep time are optimized automatically to maintain the frequency resolution, pulse response, time resolution, and amplitude accuracy of the spectrum analyzer.

Built-in delay capability eliminates transient effects

Many digital mobile system specifications require separating continuous spectra due to digital and pulse modulation from transient spectra which is due to pulse edges. The spectrum analyzer can focus on the amplitude-stable portion of the burst, effectively eliminating the transient effects.

Repeatable and convenient

Time-selective measurements are repeatable, giving you confidence in the measurement of signals or components over time, temperature and calibration variations. You can select continuous sweep to see changes as they happen, or single sweep to get snapshots of the spectra.

How to get time-selective signal analysis

To obtain time-gated measurement capability, install the Time-Selective Spectrum Analysis Option 105 in any of the 8590 C/E-series spectrum analyzers. The Fast ADC card, Option 101, provides sweep times down to 20 μ sec. Sweeps as fast as 20 msec are available without the option.

Ordering Information

Compatible Spectrum Analyzers:

- 8591C
- 8591E
- 8593E
- 8594E
- 8595E
- 8596E

Required Configuration

- Time-Selective Signal Analysis, Option 105
- Fast ADC Board, Option 101, recommended

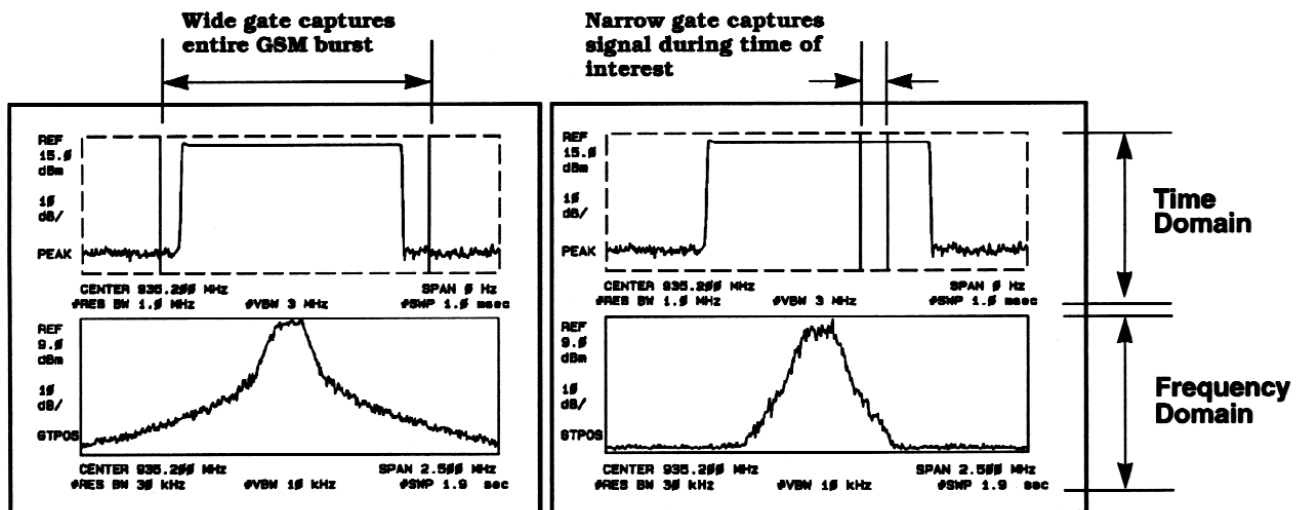


Figure 12. Measuring transient spectral levels. Notice how different gate positions and intervals on a GSM burst reveal that transient energy obscures the low-level features of the continuous modulation spectrum.

Agilent Technologies' Test and Measurement Support, Services, and Assistance

Agilent Technologies aims to maximize the value you receive, while minimizing your risk and problems. We strive to ensure that you get the test and measurement capabilities you paid for and obtain the support you need. Our extensive support resources and services can help you choose the right Agilent products for your applications and apply them successfully. Every instrument and system we sell has a global warranty. Support is available for at least five years beyond the production life of the product. Two concepts underlie Agilent's overall support policy: "Our Promise" and "Your Advantage."

Our Promise

"Our Promise" means your Agilent test and measurement equipment will meet its advertised performance and functionality. When you are choosing new equipment, we will help you with product information, including realistic performance specifications and practical recommendations from experienced test engineers. When

you use Agilent equipment, we can verify that it works properly, help with product operation, and provide basic measurement assistance for the use of specified capabilities, at no extra cost upon request. Many self-help tools are available.

Your Advantage

"Your Advantage" means that Agilent offers a wide range of additional expert test and measurement services, which you can purchase according to your unique technical and business needs. Solve problems efficiently and gain a competitive edge by contracting with us for calibration, extra-cost upgrades, out-of-warranty repairs, and on-site education and training, as well as design, system integration, project management, and other professional services. Experienced Agilent engineers and technicians worldwide can help you maximize your productivity, optimize the return on investment of your Agilent instruments and systems, and obtain dependable measurement accuracy for the life of those products.

By internet, phone, or fax, get assistance with all your test and measurement needs.

Online Assistance

www.agilent.com/find/assist

Phone or Fax

United States:

(tel) 1 800 452 4844

Canada:

(tel) 1 877 894 4414

(fax) (905) 206 4120

Europe:

(tel) (31 20) 547 2323

(fax) (31 20) 547 2390

Japan:

(tel) (81) 426 56 7832

(fax) (81) 426 56 7840

Latin America:

(tel) (305) 269 7500

(fax) (305) 269 7599

Australia:

(tel) 1 800 629 485

(fax) (61 3) 9272 0749

New Zealand:

(tel) 0 800 738 378

(fax) (64 4) 495 8950

Asia Pacific:

(tel) (852) 3197 7777

(fax) (852) 2506 9284

Product specifications and descriptions in this document subject to change without notice.

Copyright © 1998, 2000 Agilent Technologies

Printed in U.S.A. 7/00

5091-4053E



Agilent Technologies

Innovating the HP Way