Agilent PN 8590-8

Measuring Third-Order Intermodulation, N dB Bandwidth, and Percent AM with Built-in Functions

Product Note

How to use three one-button measurement functions in Agilent C/E/L-series spectrum analyzers

This product note shows how to use three of the advanced functions found in all Agilent Technologies 8590 C/E/L-series spectrum analyzers. The three functions are:

- Third-Order Intermodulation
- N dB Bandwidth
- Percent AM

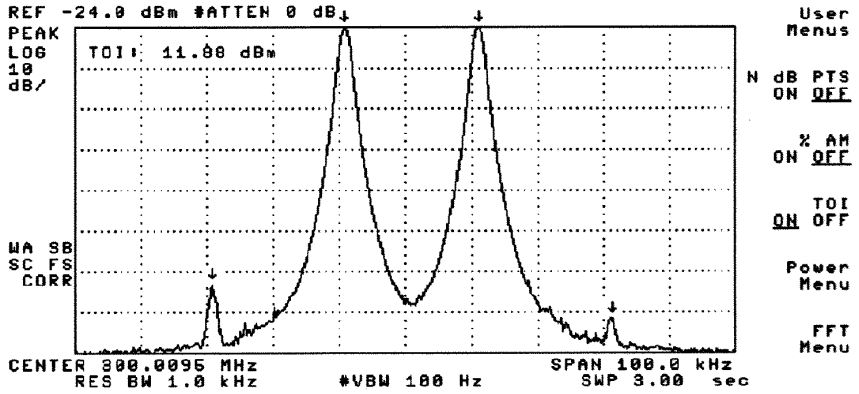

Figure 1. The two highest signals are assumed to be the two tones for the TOI measurement. TOI is read out with each sweep.

Third-Order intermodulation measurements (TOI)

This function makes quick, continuous intermodulation measurements of microwave analyzers, mixers or converters. First press the [MEAS/USER] hardkey to bring up the TOI softkey. Then center the two test signals in the display and press the [TOI ON] softkey. The analyzer computes and displays the TOI, marking all four signals with arrows to confirm the correct signal selection (see Fig. 1). The measurement repeats every sweep to enable real-time optimization of devices or systems under test. If the signal fails the TOI criteria, an error message is placed on the display.

N dB bandwidth measurement

This function allows you to quickly measure the bandwidth of a signal response, such as that of a band-pass filter. Center the response on the display and press the [N dB PTS] key in the [MEAS/USER] menu. The analyzer places arrow markers at the -3 dB points on either side of the response and displays the 3 dB bandwidth (Fig. 2). The measurement repeats with every sweep to accommodate real-time filter adjustments. For other bandwidths, enter the number of dB desired from -1 dB to -80 dB.

Percent AM

You can make a percent AM measurement in seconds. Position the double-sideband AM signal in the display and press [%AM] in the [MEAS/USER] softkeys. The analyzer places arrow markers on the three signals to be used to compute %AM, and displays the value (Fig. 3). The measurement repeats with every sweep to accommodate real-time modulation adjustments. If the sidebands are not in the frequency span, the measurement stops and an error message is displayed.

Repeatable and convenient

Spectrum analyzer one-button 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.

Ordering Information:

Compatible Spectrum Analyzers:

- 8590L
- 8591C
- 8591E
- 8592L
- 8593E
- 8594E
- 8595E
- 8596E

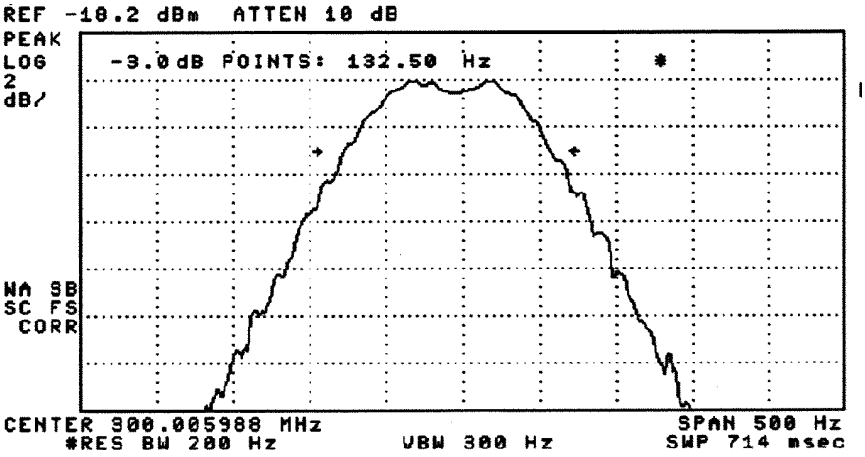

Figure 2. A 200 Hz EMI bandwidth is measured using the N dB bandwidth feature set to look 3 dB down on each side of the response.

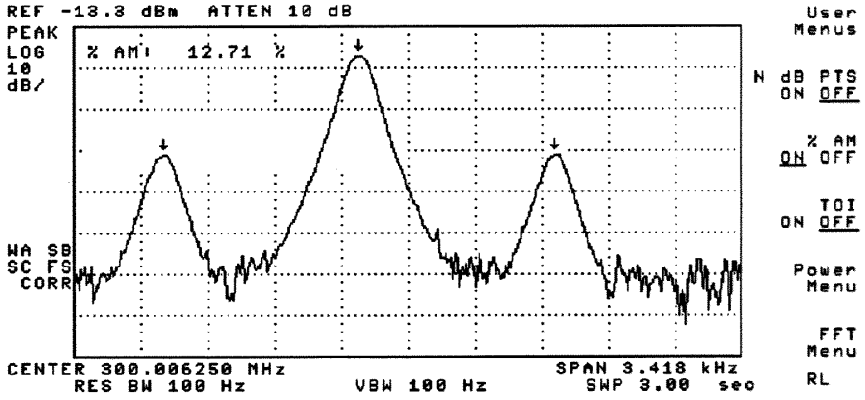

Figure 3. Percent AM is read for the carrier and sidebands designated by arrows. The measurement can be made with log or linear amplitude scaling.

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