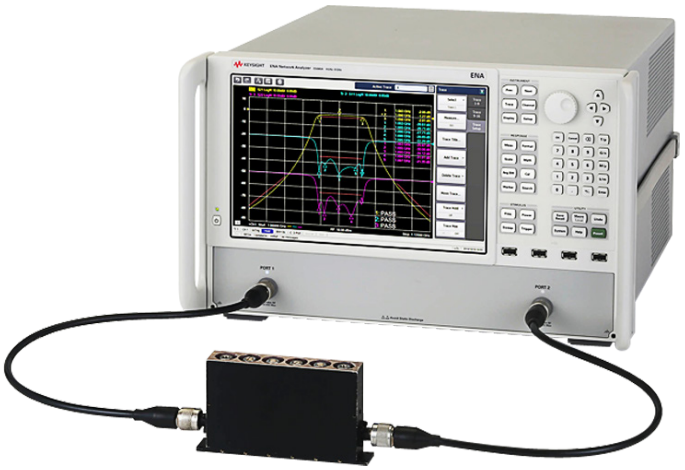
E5080A ENA Series Network Analyzer
Improving Speed and Accuracy in the Testing of BTS Filters and Duplexers

Application Requirements

In today's high-speed mobile networks, base transceiver stations (BTS) use filters with steep skirts that reduce interference by aggressively rejecting out-of-band signals. Sophisticated BTS components such as combiners, duplexers and filter banks can reduce signal levels by more than 110 dB in the rejection band. For those that operate in the LTE band, frequency coverage must reach 3.8 GHz, and during final test it is also necessary to measure the second harmonic above the carrier.



Challenge

Using previous-generation network analyzers, test times can be quite long when measuring devices with wide dynamic range. As test times increase, test efficiency falls and the cost of test rises.

Solution

The next-generation Keysight E5080A vector network analyzer provides wide dynamic range at faster measurement speeds. For example, the E5080A has 147 dB of dynamic range (typical), and this is 10 dB better than the popular Keysight E5071C (Table 1).

Table 1. Comparison of previous- and current-generation ENA vector network analyzers

	E5080A	E5071C	E5061B
Dynamic range (typical)[1]	147 dB	130 dB	130 dB
Measurement speed[2]	0.17 s	1.6 s	1.6 s
Source power (specified)	–90 to +15 dBm	–55 to +10 dBm	–45 to +10 dBm
Number of markers	15	9	9
Display size	12.1"	10.4"	10.4"
Measurement points (max.)	100,001	20,001	1,601

1. 10 Hz IF bandwidth, maximum power
2. 801 points, full two-port calibration, 110 dB dynamic range

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Greater precision in filter adjustments

Figure 1 shows the S21 response of a high-rejection filter, as measured with the E5080A (red trace) and E5071C (blue trace). With its lower noise level and wider dynamic range, the E5080A enables more leeway in test margins and reduces the likelihood of errors during manual filter tuning.

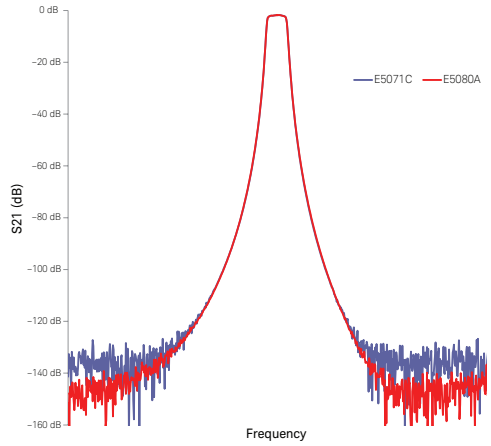

Figure 1. Compared to the E5071C, the E5080A enables greater precision during manual tuning of filters.

Faster throughput and lower costs

Figure 2 compares measurement speeds for the E5080A and E5071C at the same dynamic range. The E5080A is about 10 times faster, providing greater throughput and a lower instrument cost per device under test (DUT).

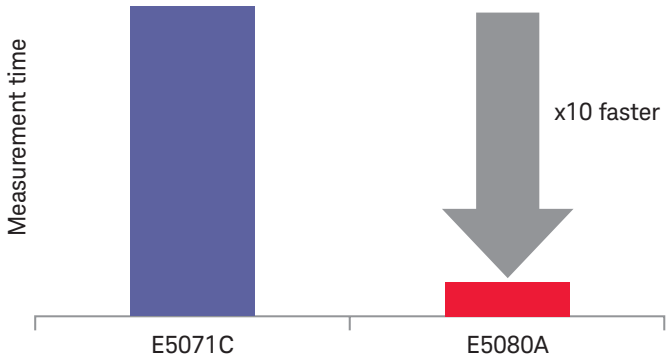

Figure 2. The faster measurement speeds of the E5080A improve test throughput cost per DUT.

Improved operator efficiency

The E5080A also has a large, 12.1-inch (30.7-cm) display and an intuitive user interface (UI). This streamlines the measurement flow and helps ensure better results in less time.

With its combination of best-in-class performance, flexible functionality and advanced usability, the E5080A is the ideal choice for BTS manufacturers.

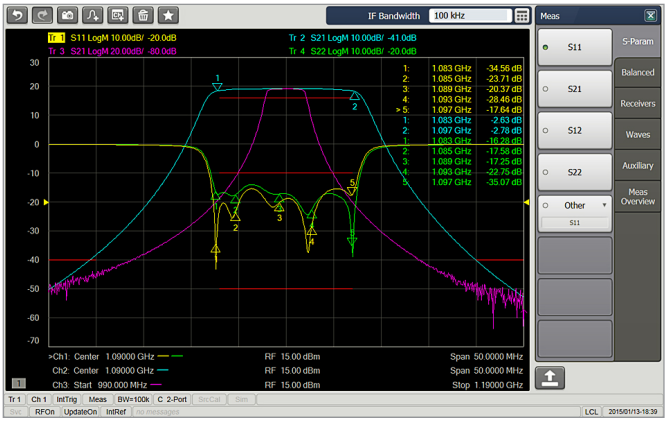

Figure 3. The E5080A UI provides tremendous flexibility in the presentation of traces, channels and displays.

Drive Down The Cost Of Test

When you need to measure basic S-parameters, the right mix of speed and performance gives you an edge. On the production line, the ENA Series provides the throughput, repeatability and reliability you need to create accurate, dependable test stations—and transform parts into competitive components.

www.keysight.com/find/BTS-filter-test

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Published in USA, February 11, 2015
5992-0457EN
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