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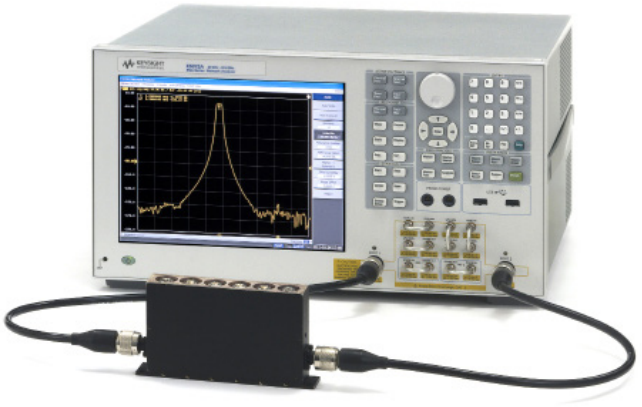
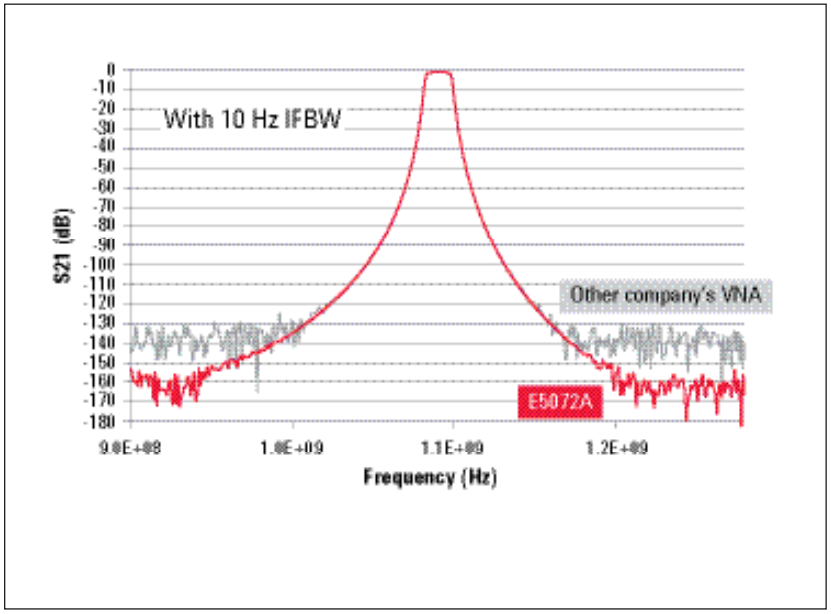
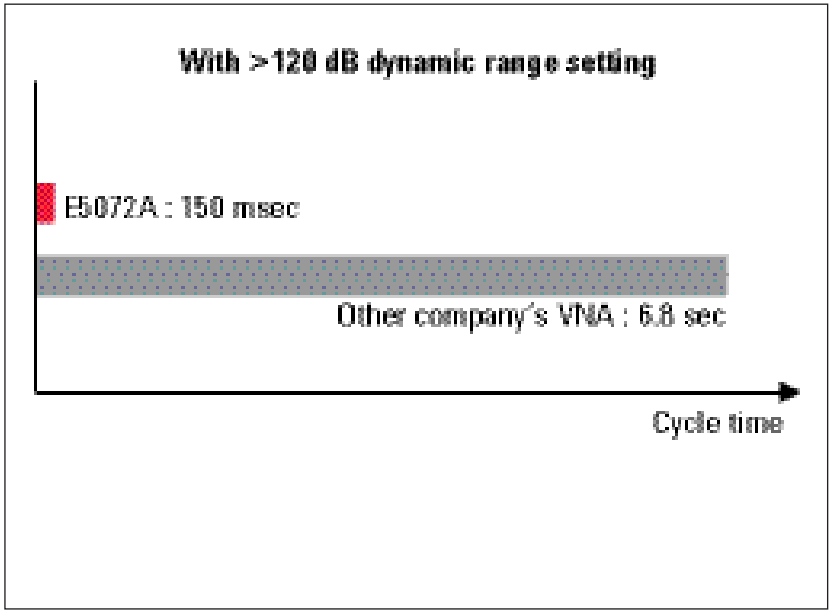
Fast Measurement of High-Rejection Filter Devices - Keysight E5072A ENA Series Network Analyzer

The measurement of high-rejection devices is a challenging task for vector network analyzers. For example, the BTS duplexers for 4G wireless communication systems need to guarantee extremely high rejections of around 110 dB. And it is desired that the VNAs make fast measurements while providing a dynamic range of more than 120 dB in the tuning and final test stages. The E5072A offers an unparalleled wide dynamic range with its unique configurable test set and segment sweep capabilities. Compared to the competition, the E5072A provides::

- 20 dB wider dynamic range
- 40-times faster speed for testing high-rejection duplexers







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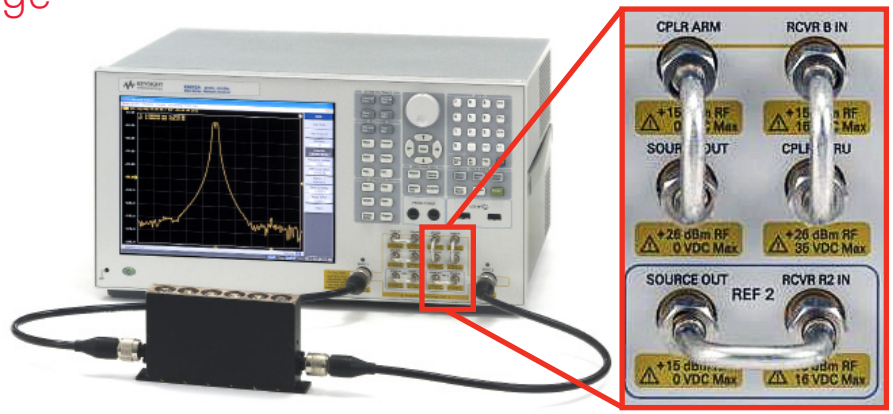
Configuration for Achieving Extreme Dynamic Range

The E5072A's extremely wide dynamic range is achieved by reversing the port 2 coupler to improve the S21 measurement SNR by 25 dB, and optimizing the source power and IFBW settings with the segment sweep function.



Segment table of E5072A

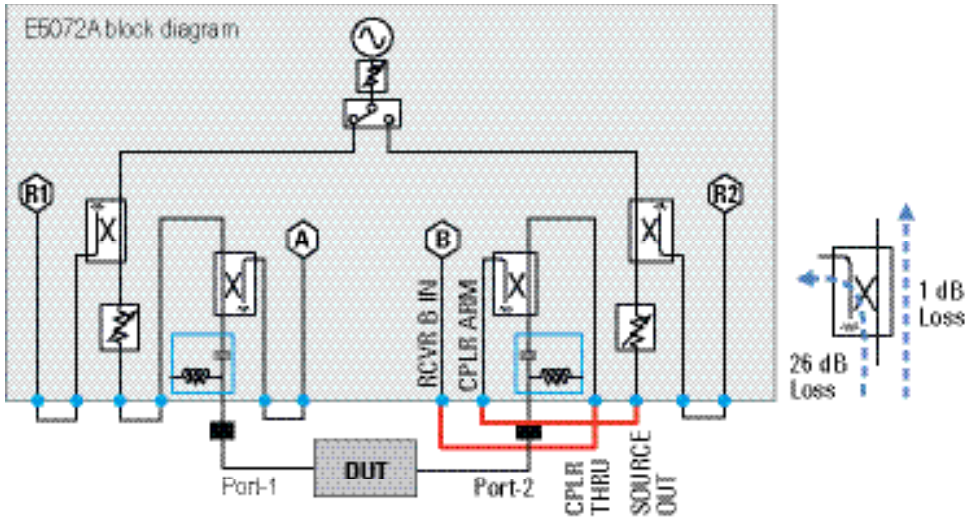
	Start/Stop	NOP	IFBW	PORT-1 power	PORT-2 power
Seg-1	0.9 – 1.07 GHz	171	10 Hz	+18 dBm	+18 dBm
Seg-1	1.071 – 1.101 GHz	39	1 kHz	–10 dBm	+18 dBm
Seg-3	1.11 – 1.28 GHz	171	10 Hz	+18 dBm	+18 dBm

NOTE: The source power of Port-1 and 2 are reduced to -10 dBm and 0 dBm respectively at all segments when performing the calibration (to avoid the compression and overload of the RCVR BIN port).

Segment table of other company's VNA

	Start/Stop	NOP	IFBW	PORT-1 power	PORT-2 power
Seg-1	0.9 – 1.07 GHz	171	10 Hz	+13 dBm	+13 dBm
Seg-1	1.071 – 1.101 GHz	39	1 kHz	+13 dBm	+13 dBm
Seg-3	1.11 – 1.28 GHz	171	10 Hz	+13 dBm	+13 dBm

NOTE: Not possible to set independent source power levels by test portin the segment sweep.



Reversing the port 2 coupler to improve the S21 measurement SNR

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