

## **New Spectrum Analyzer Family from Aeroflex Combines High Performance with Low Cost**

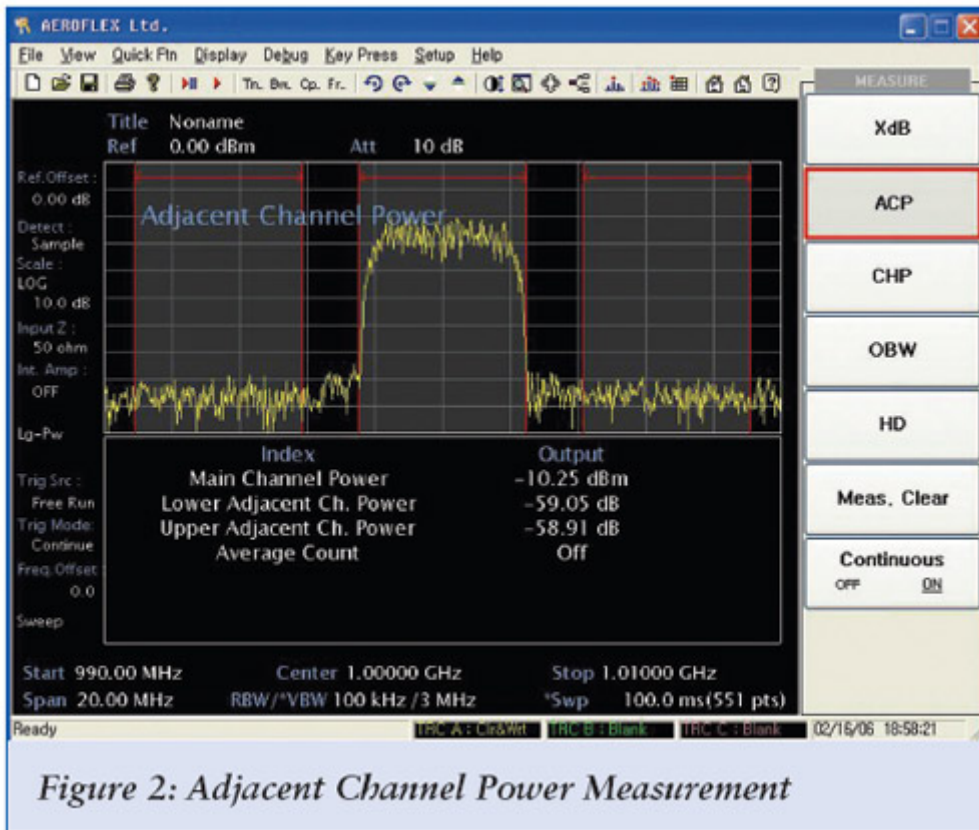
*By Bryan Harber, Product Manager, Microwave & Spectrum Analyzers, Aeroflex*

The Aeroflex 3280 series of spectrum analyzers incorporates an improved receiver front end, compared with previous low cost models, and couples it with a fully digital IF system to offer a new, high performance product at an affordable price.

An all new local oscillator system for the 3280 series provides the low SSB phase noise local oscillator that is required to compete in the R&D and manufacturing segment of the market.



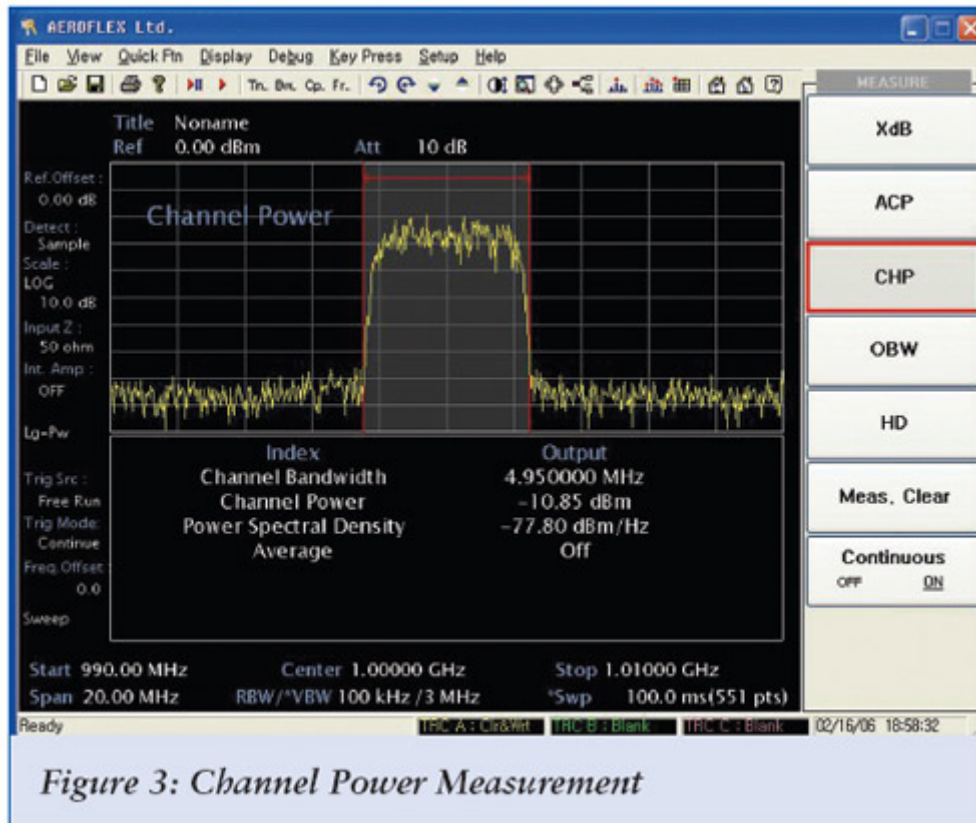
The all-digital IF system provides, as standard, 20 selectable RBW filters in a range of 5 MHz maximum bandwidth down to a minimum bandwidth of 1 Hz, allowing the measurement of many types of signals. The frequency ranges of 3 Hz to 3 GHz, 13.2 GHz and 26.5 GHz allow its use for wideband radar signals through cellular phone frequencies down to the exacting requirements of local oscillator design. The latter requires the low SSB phase noise of the spectrum analyzer local oscillator to allow the measurement of the higher performance oscillator systems. The phase noise of the units' internal local oscillator is typically -115 dBc/Hz at an offset of 10 kHz from a 3 GHz signal to be measured.



*Figure 2: Adjacent Channel Power Measurement*

The high grade front end and digital IF performance also allow high dynamic range measurements to be performed from a low displayed average noise level (DANL) of typically -130 dBm in a 100 Hz bandwidth up to a 1 dB compression point of 0 dBm. The maximum input signal rating is +30 dBm, which allows testing of low power transmitting systems, such as WiFi devices, by direct connection.

Within the next months, a tracking generator version of each of the three units will be released covering a frequency range of 9 kHz to 3 GHz. A tracking generator is employed to make simple scalar network measurements to characterize devices such as filters. The high dynamic range of the spectrum analyzer receiver allows the user to see the skirt responses of filters even though they may be more than 80 dB below the pass band response.



*Figure 3: Channel Power Measurement*

Common measurements such as occupied bandwidth (OCBW), adjacent channel power (ACP) and channel power are catered for under the front panel “Measure” key. This key allows access to the menu suite for common measurement types that can be semi-automated. This menu is planned to be extended to include further common measurement functions, such as SSB phase noise, in the near future. Future additional measurement functions will be available by downloading new software from the Aeroflex web site, [www.aeroflex.com](http://www.aeroflex.com).

The 3280 series display system consists of a large (10.4 inch) TFT LCD display with 800 x 600 pixel resolution that provides comfortable viewing of the displayed data and this, coupled with the front panel keyboard and rotary control, offers conventional, easy operation.

The LCD display can display a normal single window or can be split into two separate windows for trace comparison. Each window can display a live trace plus two further traces that can either be stored traces or held traces. For example, the trace window can display a live trace with both a minimum hold trace and a maximum hold trace to show peak to peak excursions. The dual window display can also be enabled for a tabular data format; for example, a marker table showing the frequency and level of all nine markers following a marker peak search request.

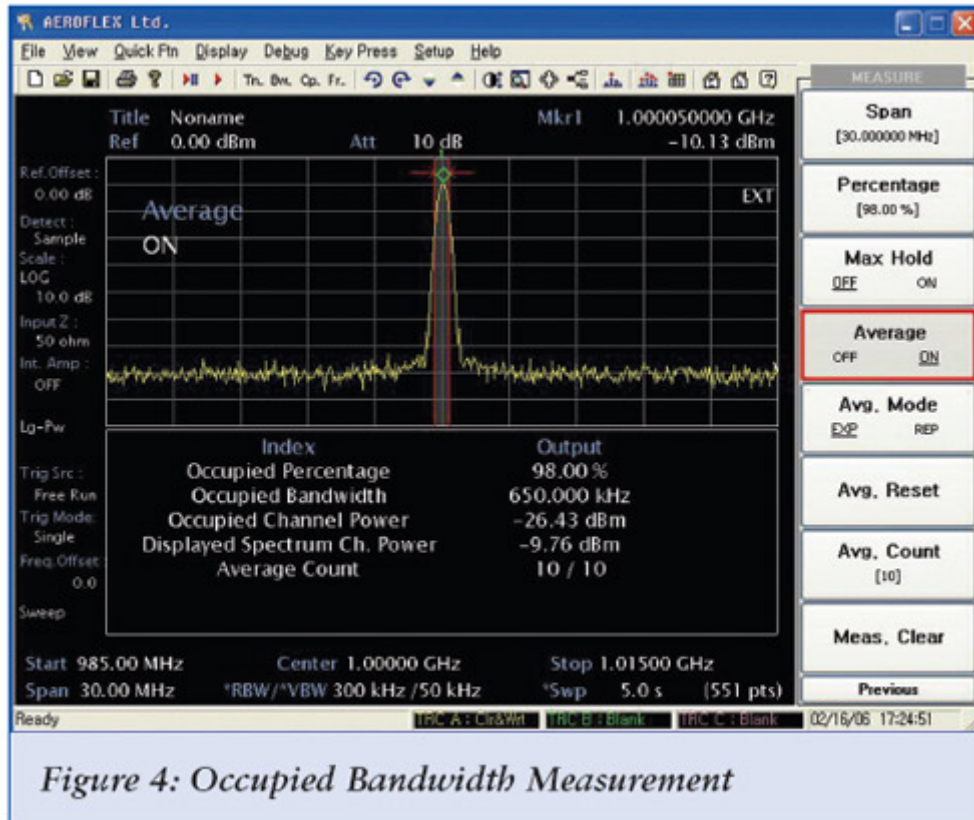
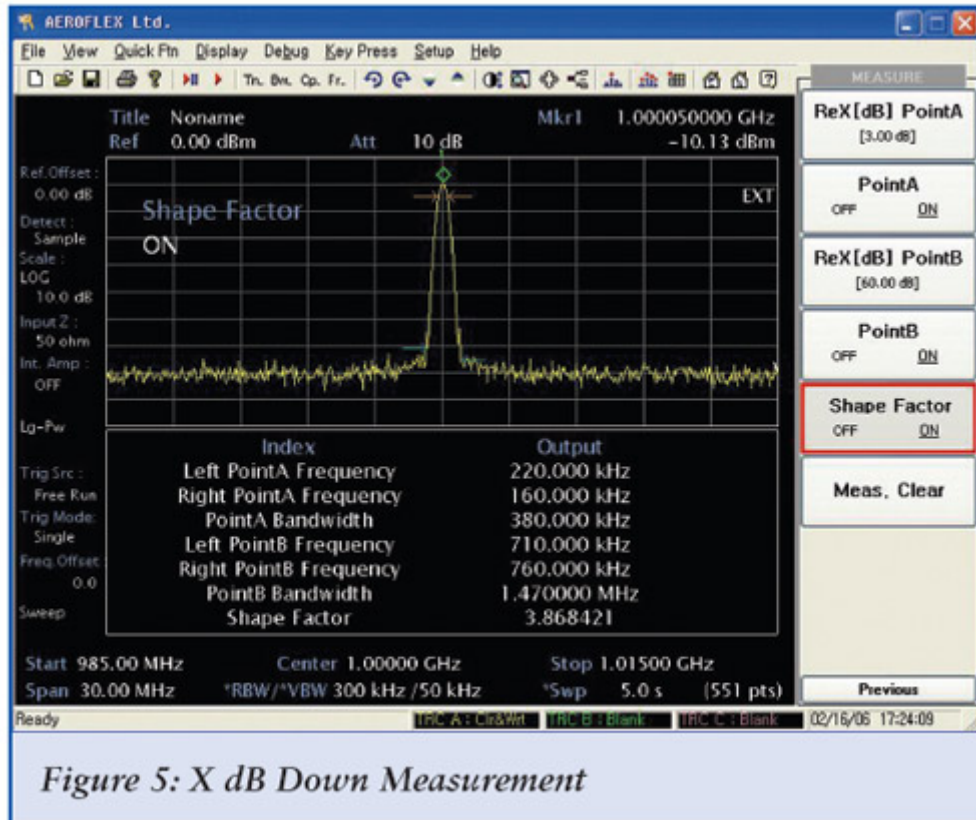


Figure 4: Occupied Bandwidth Measurement

The front panel allows the connection of a standard mouse, with either PS2 or USB connectivity, and coupled with a standard PC PS2 keyboard, the front panel facilities can be accessed to select all unit functions.

The front panel also hosts a CD-RW drive for large memory storage, although it is expected that the front panel USB 2.0 port will be used as the primary transfer storage through USB memory sticks. Internal data storage is to an internal hard drive that has sufficient capacity to store many thousands of traces, settings or complete displayed pictures. The picture formats can be BMP or JPG and tabular data can be stored in MS Excel? data format as CSV files.

The Windows XP? operating system, in conjunction with the CD-ROM drive, does however, solve the perennial problem of printers and printer drivers. With printer manufacturers changing their models on a continual basis, it becomes impossible for test and measurement vendors to recommend specific printer models. The 3280 series gets around this problem by allowing Windows XP? to download drivers from the printer manufacturer's CD- ROM, thus enabling the use of the latest available printer.



*Figure 5: X dB Down Measurement*

The 3280 series offers the user connectivity for several different standards. The printer port may be either a parallel port with a 25 way D-type connector or via USB.

For remote control, both RS232 and IEEE 488 (GPIB) are included and the inclusion of the LAN port with internal network server allows for later use for monitoring, control and remote calibration applications.

Above all, the 3280 series is designed for further expansion. It utilizes a compact PCI backplane with spare slots for the addition of hardware modules to increase the product's capability.

Demodulation options are available for conventional AM and FM but expansion to include other modulation types via additional hardware and software is imminent.