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Getting Connected in 2012

Scott L. Spencer
Publisher



January 2012 marks the beginning of our 10th year as *High Frequency Electronics* magazine. Of the numerous topics we cover during a 12-month editorial cycle none is more popular than cables and connectors. This may be the case because most engineers must familiarize themselves with the nomenclature and performance characteristics of not only the numerous types of transmission lines available, but also with the host of connector families available.

In the 1980s I worked for Omni Spectra, a leading supplier of a variety of products including SMA connectors. We didn't call them SMAs; instead they were referred to as OSMs -- Omni Spectra Miniatures. Omni Spectra engineers knew that by not just meeting -- but exceeding -- the requirements of prevailing Mil-Spec, Mil-C-39012, the OSM would outperform the generic SMA every time. So, by design and via strict controls on machining and assembly operations, Omni Spectra was able to produce a superior connector that users preferred. By holding positions of the center conductor and dielectric in a tight tolerance position with respect to the connector reference plane, performance was improved to behave more like a continuous transmission line. Tighter manufacturing tolerances could sometimes lead to poor yields and delivery slippages, but these problems were soon overcome. The OSM brand name was synonymous with quality. Component designers knew that input and output VSWR requirements were more likely to be met with an OSM. Savvy system-level integrators knew that solid transmission line interconnects served to cut tuning time and rework costs.

The Connector Kings

If such statistics are even kept, it is likely that no one man ever purchased more microwave connectors than Mike Peacock. Mike recently retired from Raytheon in Goleta, Calif. He began purchasing connectors for Raytheon in 1962. Legendary Southern California microwave distributor C.W. "Chuck" Swift was the Omni Spectra distributor in California for much of Mike's career. Raytheon Goleta used boatloads of OSMs on phase-matched cables made from .141 semi rigid cable for use on their Surface Navy Electronic Warfare suites. The systems used large beam-forming lenses driven by miniature TWTs and semi-rigid cable was everywhere. All of it terminated with OSMs.

Chuck pilots a Beechcraft Bonanza that he purchased at the height of Omni Spectra's business success. The vanity tail numbers on the plane read "201 Whiskey Charlie." In what may be pure coincidence, 201 was the part

number Omni Spectra assigned to its largest selling connector--the OSM that terminates .141 semi-rigid.

Today there are numerous suppliers of precision SMA connectors and, to a large degree, they are a price-driven commodity. On the development front, smaller line sizes, more use of air dielectrics, improvements in cable performance, better durability, blind mating considerations, and color coding standards are the trends.

2012 Outlook

Many analysts believe that global GDP growth will slow in 2012 to around 3.2% with modest improvements in 2013. The U.S. could see domestic GDP grow as slow as 2% in 2012. There has been dialogue from Washington that the Super Committee impasse may trigger massive spending cuts to our defense programs. The Secretary of Defense recently warned that cutting \$1 trillion from the nation's defense spending over the next 10 years would gut almost every high-priority program. The F-35 Joint Strike Fighter, the Air Force's next generation bomber program, the Navy's SSBN-X submarine replacement program, the Navy's next generation Littoral Combat Ship, new satellite, surveillance and reconnaissance systems -- all could be affected. This would have a significant adverse impact on suppliers heavily invested in those programs and to their subcontractors and vendors. Another concern for 2012 is possible fallout from the unresolved European sovereign debt crisis which has the potential to put a heavy burden on the global financial system, slowing the growth of emerging economies.

On the other hand, the end of 2011 saw almost every major indicator of economic health moving in the right direction. The DJIA ended the year well above 12,000. Let's say Europe starts to stabilize and fast-

growing places like China, India, Indonesia, Brazil and Russia continue to grow at a faster pace than the U.S. If that scenario plays out and Washington comes up with a plan that addresses deficit reduction while continuing to invest in vital defense programs like the F-35, then economic opportunity will grow

not only for this industry but also for the larger economy as a whole.

Upcoming

Don't forget DesignCon 2012. This year it is being held at the Santa Clara, Calif., Convention Center from January 30 through February 2, and is billed as the event "Where Chipheads Connect." [HFE](#)