



President's Column

The MTT-S as a Hardware Society

■ Dylan Williams

The IEEE Microwave Theory and Techniques Society (MTT-S) has always had a strong focus on hardware. For example, early issues of *IRE Transactions on Microwave Theory and Techniques*, the predecessor of *IEEE Transactions on Microwave Theory and Techniques*, included an “Institutional Listing” on the back page. You are probably familiar with some of the company names found in these early issues of our transactions, including Motorola Communications and Electronics, Inc.; Narda Corporation; National Instrument Co.; Univox Corporation; Wheeler Laboratories, Inc.; Collins Radio Co.; and General Radio Company. You may be less familiar with other companies that appeared there: D.S. Kennedy & Co.; Epsy Mfg. Co., Inc.; General RF Fittings Company, Inc.; Premier Instrument Corp.; Hycon Mfg. Company; and Measurements Corporation. Later issues boasted full-page advertisements from manufacturers of microwave equipment, such as the DeMornay-Bonardi ad for microwave tuners from the September 1960 issue, shown Figure 1. Clearly our roots as a hardware-oriented Society go very deep.

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what is the frequency standard for the U.S.A?

ANSWER: By act of Congress, the U.S. Bureau of Standards determines the primary standard, based on the revolution of the earth. All DeMornay-Bonardi microwave instruments are calibrated at frequencies which are verified by our secondary standard, which, in turn, is periodically calibrated, point for point, by the U.S. Bureau of Standards.

One way to properly match a microwave transmission line is by using a D-B Stub Tuner to reduce mismatch losses and utilize the total energy available.

D-B stub tuners in the 2.6 to 18 KMC range have a new scale and vernier that gives precise reusability in longitudinal travel. A new micrometer scale on the probe measure penetration with very high accuracy. Probe wobble is eliminated, and no resonances can occur under any conditions. You can correct VSWR as high as 20:1 with amazing accuracy (1.02). You can tune with precision... reset to original settings with certainty that phase and magnitude have been duplicated.

Ditto for higher frequencies. D-B tuners in the 15 to 50 KMC range are not simply scaled-down units—they're engineered for ultraminiaturized size. All the above features are available, plus micrometer positioning which provides readability to 0.0001".

Write for data sheets—they detail all features, applications, dimensions, sizes, etc. Bulletin DB-919.

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Figure 1. An advertisement for microwave tuners that appeared in the September 1960 issue of *IRE Transactions on Microwave Theory and Techniques*.

The MTT-S continues to be a hardware-focused Society at its core and has always valued its close ties with the microwave industry. Many of our members are employed by companies that design, manufacture, or test microwave, millimeter-wave, or even terahertz equipment. And both the Society and our industry are strengthened by the ties between them.

One of the most important places Society members and representatives

of the microwave industry meet is at the MTT-S International Microwave Symposium (IMS), and this year's symposium in Hawai'i is no exception. The IMS always offers opportunities for those working in the industry to find out what their competitors are up to and gain more exposure to the latest research results from academia. For those in academia, the IMS is not only a chance to see what others are doing in the field but also to better understand what is relevant to the microwave industry and thereby redirect their research to topics of interest to their industrial colleagues.

Equally important are the meetings that take place on the symposium exhibit floor. These are a chance for attendees to learn more about the industry and the new products being offered; and, in fact, it is not only attendees who go to the exhibits to learn what's new and explore potential purchases. Savvy exhibitors also look at the exhibit floor



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Identify Potential Issues Early

The key issue for microwave businesses is to identify spectrum regulatory policies associated with new products very early in the development cycle. If the only approvals that will be needed are those for routine equipment authorization, make sure the development team knows what standards have to be met and that they include in their schedules and budgets the relatively minor

requirements for such approvals. If the regulatory issues are more significant, creating realistic schedules that include regulatory actions is crucial to keep them in sync with R&D and make sure that adequate resources are available to pursue these regulatory issues in parallel with R&D.

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as a place to get to know their colleagues and shop for components and parts they may want to incorporate into their own products. So you can see that the exhibits at the IMS are more than just a place to window shop!

Of course, any conference held in Hawai'i is bound to be very popular with attendees. Paper submissions to IMS2017 were exceptional, and everyone is looking forward to what they will find in the technical sessions, at the new 5G Summit showcasing next-generation wireless technologies, and at the Executive Forum to discuss the latest in 5G and the Internet of Things. But a conference in Hawai'i also presents real challenges for many of our exhibitors: travel and shipping costs are higher, and logistics are more complicated. Our conference organizers are keenly aware of these difficulties and

have been working hard to help alleviate them.

For example, the organizers of this year's symposium arranged for special shipping containers that exhibitors could share to bring down their individual shipping costs. This year's symposium will feature Exhibitor Workshops, providing exhibitors with a more focused and formal setting in which to interact with attendees. The exhibits will also feature an Exhibitor Rep program that matches exhibitors with representatives interested in advertising their products to their clientele. And, of course, there is Wednesday afternoon's "exhibits-only time," during which no lunch-hour panel sessions or early-afternoon technical sessions are scheduled, giving conference attendees plenty of time to spend on the exhibit floor.

Would you like to get more involved in the Society? If so, send me an e-mail at dylan@ieee.org with a short description of your interests, and I will get back to you about possibilities!

So this year, when you arrive in Hawai'i, I suggest that you think back to the industrial roots of our Society. If you are an exhibitor, you might think about how you can take advantage of some of the new opportunities offered at IMS2017 for interacting with your customers or even doing a little shopping of your own. If you are an attendee, you might consider going to one of the new Exhibitor Workshops or spending more time on the exhibit floor as a way of strengthening your own understanding of and ties to the microwave industry that drives our field.



Health Matters (continued from page 24)

and profiting from technologies enabled by miniaturization, microwave-device innovations, wireless mobility, ubiquitous networks, and computational intelligence to enhance human lives.

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