

# MTT-S World

## Giving the MTT-S Logo a Nice Sparkle

■ James C. Rautio

Being an entrepreneur means that you have to learn about a lot of different areas, many of which have absolutely nothing to do with Maxwell's equations. One of those areas that I've found useful is working with logos (with help from my son, Brian); see, for example, [1]–[3] for several Microwave Theory and Techniques Society (MTT-S)-related logos.

Several years ago, I found myself on the MTT-S Administrative Committee, and then last year, when I woke up, I discovered I was chair of the MTT-S Image and Visibility Committee. The previous chair, Mark Gouker, took pity on me and filled me up with lots of ideas for what could be done. One idea was to polish up the MTT-S logo. Right up my alley!

### A Bit of Research

The MTT-S logo, as it is often used, has the little registration mark, ®, down next to the letters "MTT-S." I thought that was a little strange. So I went to [www.uspto.gov](http://www.uspto.gov) (the U.S. Patent and

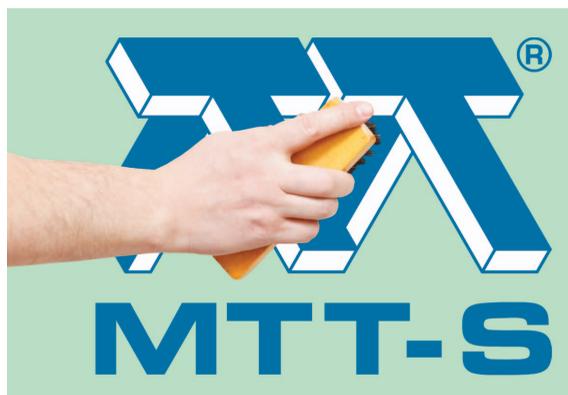


IMAGE OF HAND LICENSED BY INGRAM PUBLISHING

Trademark Office) and did a trademark search (very easy) for "MTT." Hmm ... 26 hits. Not good. Fortunately, even the exact same trademark can be registered and used by two different owners as long as the goods or services are not considered to be related in any way.

So I looked at every one of those hits: "Mobile Technical Training," no problem; "Medium Toast Traditional," no problem; and so on. We are in the clear.

It is interesting, however, that the MTT-S logo is registered twice (serial number 3989577, filed in 2010 with first use in 2004; and 4121971, filed in 2011

with first use in 1971). The USPTO sample of the logo, Figure 1, is identical in both cases. I'll take a guess that the later filing corrected the first-use date.

Note that the letters "MTT" are not part of the registration. This means the ® really should go on the graphic, not on the letters. So we should stop using MTT-S logos that have the ® on the letters.

### Designing a New Version

All I needed now was a good vector graphic (like an .eps file) of the logo. (Bit-mapped files, like .jpg or .tif, are horrible if you want to change scale, put on different backgrounds, etc.)

Not wanting to reinvent the wheel, I asked around, and several MTT-S members gave me the files they have of the logo. I found a wide variety

of logos with pesky little differences among them. All the differences would be viewed as errors, either from a graphical point of view or from a microwave-engineering point of view. So I decided

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to do my own. Oh, no—yet another version of the MTT-S logo?

This new version had to be 1) absolutely correct from both a graphical and microwave point of view and 2) as close as possible to the registered logo. So I downloaded the fairly coarse bit-mapped graphic from uspto.gov and started precisely measuring dimensions in Adobe Illustrator.

First, I found that the angled lines are all pretty much 30 or 60 degrees. Nice and simple. Next, I found that the back leg of the right-hand T had lines that were substantially out of parallel. Graphical *and* microwave error. Rectangular waveguide has all edges parallel. I suspect the artist shifted one of the lines so that the bottom middle of the M doesn't have a jig-then-jag discontinuity in it.

I then measured, as precisely as I could, the sides. I tried to make an exact vector drawing, but I couldn't do that by hand. Usually, graphic artists draw things like this on a snap grid. Unfortunately, the cosine and sine of 30 and 60 degrees do not typically fall on a snap grid. (I later talked to several professional artists; they had heard of cosine and sine in the distant past, but they really did not have a clue.)

So I pulled out a trusty Excel spreadsheet and calculated the exact coordinates of each and every vertex in the logo and imported the numbers into a plotting option in Illustrator. I then assembled the exact logo from the resulting graphic elements. Every vertex is exactly where it is supposed to be to full double precision, as reproduced in Figure 2.

### MTT-S Logo Varieties in Use

Of the great variety of MTT-S logos in current use, most have non-parallel lines in one place or another. Alternatively, they might have the jig-jag discontinuity at the bottom middle of the M. When you first start noticing these things, it looks really ugly.



Figure 1. The MTT-S logo on file at the U.S. Patent and Trademark Office.

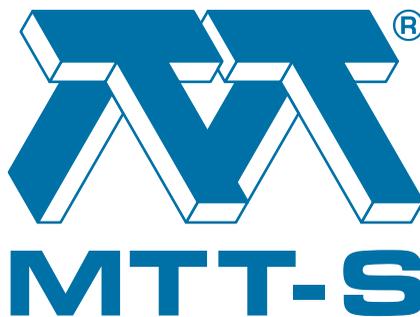


Figure 2. The new polished MTT logo, available at [www.mtt.org](http://www.mtt.org).

A common family of varieties has the top-right horizontal arm of each T noticeably shorter than the left. Sometimes, I feel like getting out a hack saw. The other day, I was using a water bottle with the MTT-S logo on it. This one had the left arm shorter than the right, something I've seen only in that one case (and it is a really nice water bottle!). Other times, different sizes of waveguide are cobbled together.

For another group of logo varieties, the artist helpfully beveled the length-wise edges of all the waveguides (it's tiny, and you have to zoom a bit to see it, which makes for an interesting EM problem!). Beveled edges help to soften the appearance of the logo, which is nice from a graphical point of view but totally wrong from a microwave-engineering perspective.

Every now and then, I found a logo with a totally weird aspect ratio. I also found blue versions of the logo. Blue is nice. I like blue. But the blue that was selected clashes horribly with the IEEE logo's blue. I like the IEEE logo,

too. It would be nice if our two logos could exist peacefully side by side.

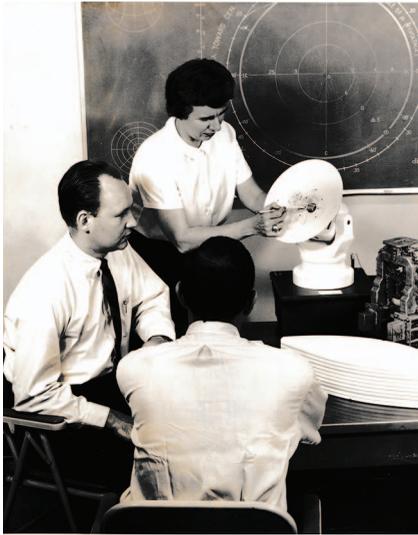
### Maintaining a "Standard" Logo

Using different varieties of a logo, any logo, is bad news. Of primary importance, it places our logo registration in jeopardy. Almost as important, it subconsciously leaves a sloppy impression of our Society in the minds of our members and friends. Sloppy = no sparkle. We want sparkle.

Once I had taken care of the cosines and sines and had a logo with exactly located vertices, I went to a professional artist to develop the final product. She knows professional art really well. I know microwaves and cosines and sines. We made a great team. You can go to [www.mtt.org](http://www.mtt.org), click on "About MTT" (at least until the website changes), and download a few versions of the new logo or the entire package complete with instructions about where to use what version. If you can't find it, just send me an e-mail. If you want a custom rasterization (i.e., conversion of a vector file to a bit-mapped file—say, for web display) and you do not have access to that capability, I'll be happy to do it for you.

Wait a minute. Didn't I just say that lots of different versions are bad? These versions are good. They all have *exactly* the same vertices. Some are black and white, or white and black (the choice depends on the background you're using), or blue and white, etc.; and the blue is *exactly* IEEE blue. Some you can use in print, others you can use on web pages. (Colors come out differently depending on your medium: Our professional artist correctly insists, "You have to use the right version!"). Some are vector files. Others are bit maps. If you have a professional designer doing, say, a call for papers, just give him or her a link to the entire set of logos and that designer will love you.

If you feel tempted to, say, change the color, or print the logo at an angle, or morph the logo, or modify the logo in any way ... STOP, DO NOT DO IT. All these things can place our registration in jeopardy. We do allow different colors when using single-color printing, as on the MTT *Transactions* cover. But that is it. (The opening art



**Figure 3.** Robert Puttre (left) at Wheeler Labs in the 1960s. The speaker is Pat Loth, a long-time IEEE Member and one of Wheeler Labs' original engineers. She is pointing to a model of a Nike Zeus [5] Cassegrain-type target-track antenna. Figures 4 and 5 show details of other hardware in the photograph.

for this column is a one-time exception designed for the logo's unveiling.)

We're in the process of converting all MTT-S logo usage to the new, sparkling version. It should be nearly complete by the time you read this. If you spot any usage of the old, non-sparkling logos, let me know. We will root them out.

### The Story of the Original Logo

In the course of all this work, Roger Kaul connected me with the creator of the original logo, Robert E. Puttre. Since Bob had been out of the microwave field for a few years, I am amazed Roger was able to find him. During their correspondence, Roger received from Bob a wonderful summary of his memories of those days, which I present in its entirety below:

I left Wheeler Labs after nine years in 1967 and was then working at Technical Research Group, a subsidiary of Control Data Corp.

One day in 1969, there was an astronaut space launch (they were a significant thing back then), and a small group of other engineers gathered in my office to listen to it on my portable radio. I kind of felt guilty of the

company man-hours being wasted, and in order to do something productive I decided to work on the contest. We had utilized lots of hybrid T junctions in Wheeler Labs-designed circuitry.

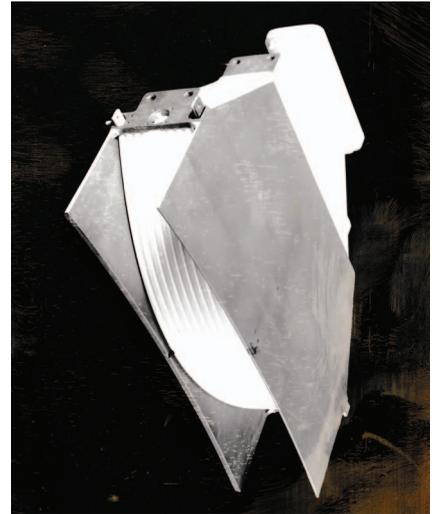
I figured two of them would make the Ts, and I would just have to orient them to form an M. By the time the astronauts were on their way, I knew I had a winning entry. I sketched it out on isometric graph paper at home and submitted it. My wife and I were a little disappointed that we did not win the two theater tickets (if memory is correct) that were supposed to go to the winner.

Sometime after, I remember seeing a picture of my logo as an ice sculpture at an MTT-S national convention. Then, it began to be printed on the cover of the *Transactions*. Lots of self-satisfaction! Finally, I noted that there was a registered trademark sign next to it.

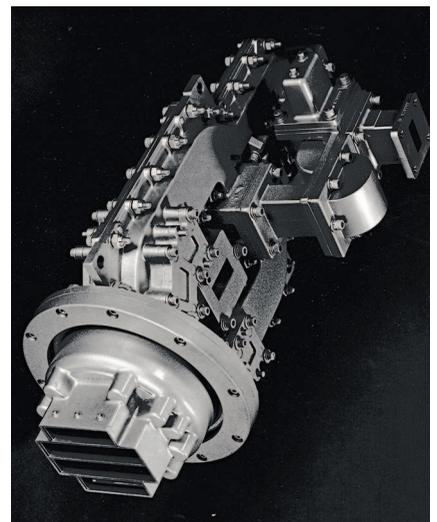
After six major layoffs at TRG, they finally closed the doors in 1970, and I then found secure employment for 26 years at New York Telephone/NYNEX/Verizon. After seven years at NYT working on audio-frequency circuits, my radio-frequency background became useful starting in 1977 in planning the initial locations for the cellular telephone antenna sites for the systems from Boston down to Virginia. The following 19 years working with antennas and propagation were very satisfying, until my retirement in 1996.

When the logo was trademarked, I had the Chairman of my local Communications Society chapter write to the MTT-S national requesting some recognition for me. I was invited to receive a certificate at an MTT-S National Convention held one year in Dallas.

Subsequently, I noted that the Antennas and Propagation Group did not have a logo. I tried to design one orienting a familiar dipole TV roof antenna to form



**Figure 4.** On the table in Figure 3 is a feedhorn lens made of Teflon, shown in detail here. Four of these feedhorns were used in each Nike Zeus Cassegrain, a model of which is in Figure 3. Note the quarter-wave matching grooves.



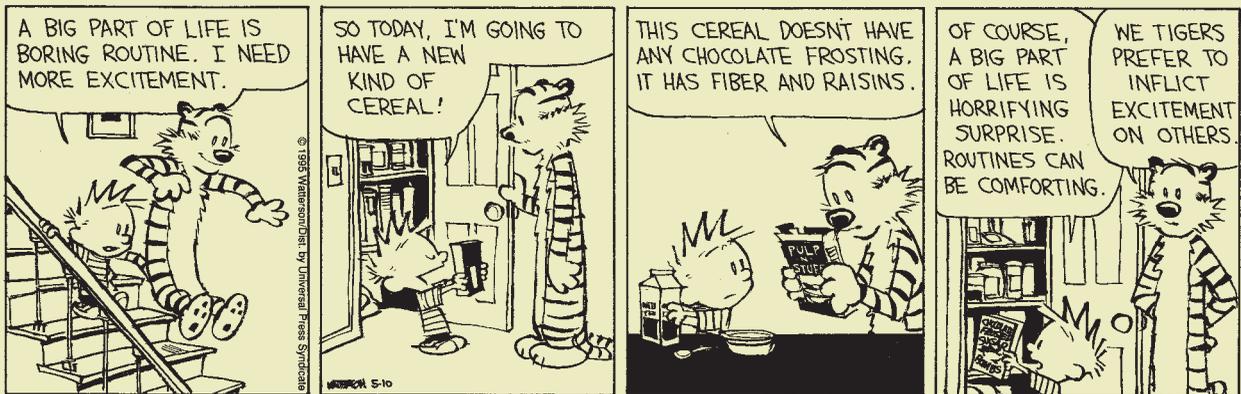
**Figure 5.** Also on the table in Figure 3 is a feedhorn comparator, comprising a number of hybrid T junctions and folded T junctions. The three ports of the comparator produce the sum and the elevation and azimuth difference patterns of the four feedhorns. This comparator is from a different antenna system.

an A and a P, but I was not satisfied with the result.

Bob received his certificate of appreciation, mentioned above, at the Dallas 1982 MTT-S Convention (today, IMS, the International Microwave Symposium; back then, MTT-S was both the Society

(continued on page 128)

# Calvin & Hobbes



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## MTT-S World (continued from page 107)

and the symposium). There was also a nice item (which Bob sent to me) in the Fall 1982 issue of the *MTT-S Newsletter*, page 27, that mentioned several of the key facts stated above.

### Some Additional History

Bob kindly provided several photos of his work at Wheeler Labs back in the 1960s; see Figures 3–5. According to Bob and [5],

The feedhorn was from the NZ TTR antenna, C-band 5250–5750 MHz (the frequencies were classified “Secret” back then), 10-MW peak power (5-kW average), allowing tracking of a 0.1-m<sup>2</sup> target at 580 nautical miles and 0.01 m<sup>2</sup> at 325 nautical miles. The antenna is 22 feet in diameter. I only designed the multimode feed at the throat of the horn.

Finally, Dick Sparks has an absolutely amazing and complete description of the events of those days in [4]. He includes illustrations of all the logo contest entries, and he also fills us in on why Bob’s entry—which had come in a close second place in the voting—was selected. Turns out the first-place entry was a modified version of the IEEE logo. As mentioned earlier, changes to logos (IEEE, MTT-S, and everyone else too) are simply not allowed.

As for the nonparallel edges in the logo we have on file at the USPTO, my guess is that this mistake was added by the (presumably) non-microwave-engineer artist who prepared the logo registration submission to remove the jig-jag

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discontinuity at the bottom middle of the M. Bob’s original logo, illustrated in [4], is simply perfect.

### References

- [1] K. A. Remley, “Uniquely identifying the magazine,” *IEEE Microwave Mag.*, vol. 11, no. 4, pp. 6–8, June 2010.
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- [3] J. C. Rautio, “The NEMO2013 logo,” *IEEE Microwave Mag.*, vol. 15, no. 4, pp. 147–149, June 2014.
- [4] R. A. Sparks, “The origin of the MTT society symbol,” *IEEE Microwave Mag.*, vol. 10, no. 6, pp. 160–156, Oct. 2009.
- [5] LIM-49 Nike Zeus [Online]. Available: [https://en.wikipedia.org/wiki/LIM-49\\_Nike\\_Zeus](https://en.wikipedia.org/wiki/LIM-49_Nike_Zeus)

