Researchers at the University of South Florida have developed a meshed rectangular waveguide structure for high power, low loss, and reduced weight applications.

The use of Additive Manufacturing (AM) technologies to fabricate microwave circuits and antennas is continually being demonstrated, with results that are comparable or better than those obtained with traditional manufacturing methods. However, they suffer from limited power capability due to the low glass transition temperatures of the plastics and delamination issues; and typically they have higher loss when compared to solid metal waveguides.

In order to reduce the higher loss and weight, our inventors have developed a meshed rectangular waveguide structure, where a weight reduction of 22% is possible with only a mere 5% increase in attenuation constant.

To prove the effect of meshing of the walls, our inventors have created and tested a set of Ku band rectangular waveguides with the mesh. The performance of the meshed waveguides were superior to the standard, non-meshed waveguides, and it was possible to reduce weight with minimal effect on the high frequency performance.

The 3D printed low weight waveguides have numerous microwave applications including radar, communications, astronomy and space.

**ADVANTAGES:**
- Very light-weight
- Low manufacturing cost
- High power handling
- Low insertion loss

**Meshed Waveguide for High Power and Light Weight Applications**

**A Meshed Waveguide Geometry**

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