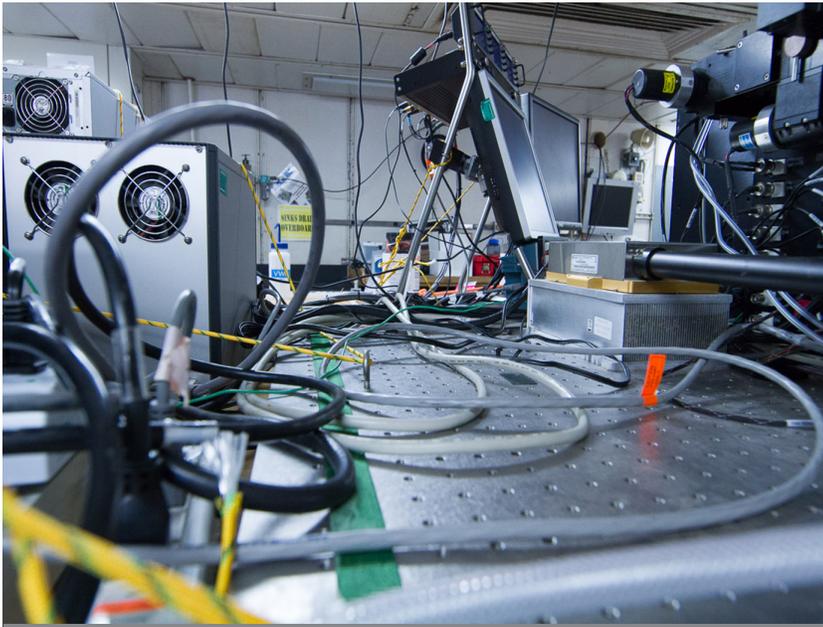




TECHNOLOGY SOLUTION

Instrumentation



A two-way microwave power divider using microstrip transmission lines

Low reflected power and high isolation between output ports.

Prevalent designs of microwave power dividers utilize quarter-wave transmission lines to match output and input branches. To provide isolation between the output ports, a discreet resistor is placed across them. This type of construction requires the transmission lines to be a quarter of the wavelength length, limiting function over a narrow bandwidth. NASA Goddard Space Flight center has invented a power divider with matched impedances via Klopfenstein tapered transmission lines to provide ultra-bandwidth functionality with low losses and small physical footprint.

BENEFITS

- Ultra High Bandwidth
- Low losses
- Small footprint



THE TECHNOLOGY

The power divider use Klopfenstein tapered transmission lines on each output branch of the junction impedance that is matched the input port. Thus, the output lines are well matched to the input, and a reflected power of 1% can be easily achieved. Resistors are distributed along the transmission lines to provide isolation between the two output ports which prevents power of one output port from coupling to the other output port. A large amount of the power is dissipated in the resistors rather than exiting through any other ports in the system. Due to the symmetry of the design, very little power is dissipated during normal operation.

The resulting power divider is operable at high bandwidths as the tapered impedance match which have no upper frequency limitation. Additionally, the tapered lines eliminate many discontinuities in the layout which in turn reduce microwave junction effects. The power divider is capable of being manufactured using known methods and may be utilized in a compact microwave spectrometer.

APPLICATIONS

The technology has several potential applications:

- Spectroscopy
- Microwave Applications

PUBLICATIONS

Patent No: 10243250

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