Abstracts

Analysis of a passive spatial combiner using tapered slotline array in oversized coaxial waveguide

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Tapered finline or slotline array has shown a wide bandwidth from 8 to 12 GHz in rectangular waveguide based spatial power combiner, but its bandwidth is still limited by the cutoff frequency of the rectangular waveguide. In this paper, a tapered slotline array in an oversized coaxial waveguide is analyzed and fabricated. A much wider bandwidth of more than 12 GHz is achieved. The Spectral Domain Method (SDM) is used to model the passive structure. The modeling shows good agreement with the HP HFSS simulation, and is vindicated by the experimental result. The tapered slotline array in an oversized coaxial waveguide also shows little dispersion and low higher modes over the 4-16 GHz bandwidth. This proves that the slotline array in an oversized coaxial waveguide is a good candidate for a wideband high power combiner.

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