



TE₁₁ MODE CIRCULAR WAVEGUIDE PRODUCTS AND CAPABILITIES

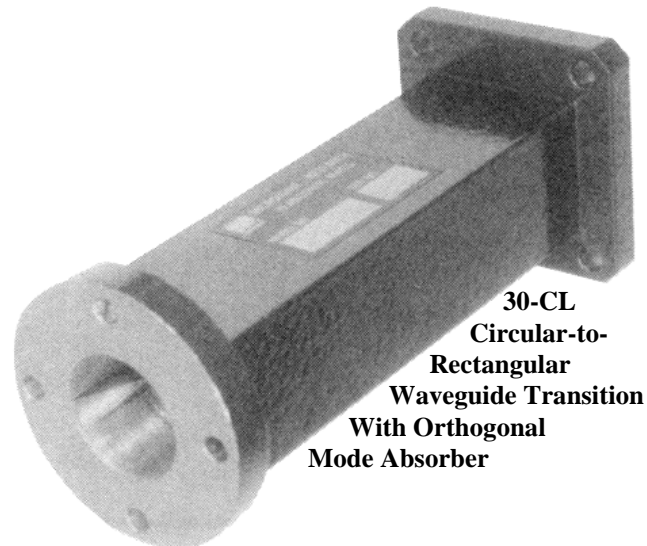
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- RESEARCH / DEVELOPMENT / ENGINEERING
- INTEGRATED SUB SYSTEMS
- POLARIZATION DIVERSITY

Microwave Engineering Corporation Circular Waveguide Components are used for the transmission and control of circular waveguide TE₁₁ dominant mode energy and for the conversion of rectangular waveguide TE₁₀ dominant mode to circular waveguide TE₁₁ energy. Further, certain components are used to establish or convert to dual linear and circular polarization. All are available in frequency ranges from 2 to 60 GHz. (Although the circular electric TE₀₁ mode has less transmission loss and is desirable for long straight runs, it is not often used due to its inherent susceptibility to mode conversion and difficulty in launching the mode efficiently). For TE₁₁ operation, the useful range of diameters, D, is $0.7\lambda_0 < D < 0.97\lambda_0$, where λ_0 is the free space wavelength. This is from about 20% above TE₁₁ cutoff up to TE₂₁ cutoff. Note that the TM₀₁ cutoff diameter is $0.77\lambda_0$, but this is not excited in the components described. Both standard WRC and non-standard diameters are available. Characteristic of all units are their high efficiency, low loss, and excellent match.

Fundamental to most systems is the rectangular-to-circular waveguide precision tapered transition. This may be incorporated with a coax-to- rectangular waveguide adapter to provide a mode-free, full band circular waveguide-to-coax adapter with excellent VSWR. Other standard circular waveguide components offered include straight sections, fixed and sliding terminations, short circuits, conical horn antennas, polarizers, orthomode transducers, and mode absorbers. Polarizers are reciprocal devices used to convert an incident TE₁₁ modes in circular waveguide. More specialized componentry such as corrugated horn antennas which feature low (40dB) side lobes, equal E and H plane beamwidths, and less beamwidth variation with frequency are also available.

Total in-house production capability coupled with circular waveguide expertise enables MEC to offer integrated subassemblies for specialized customer requirements with quick turn-around time (e.g. a conical horn antenna with circular polarizer and orthomode transducer). The principal advantages of an integrated subassembly are that performance can be optimized for the application and interactions between discrete components can be eliminated. Other advantages include size and weight reduction. Staff engineers are available to discuss component and system details. Your call or visit is invited.



30-CL
Circular-to-
Rectangular
Waveguide Transition
With Orthogonal
Mode Absorber

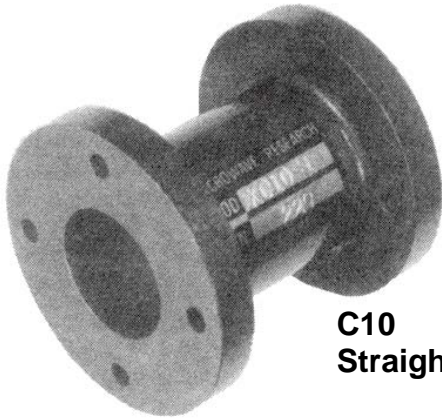


Corrugated
Conical Horn
Antenna with
Orthomode
Transducer



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C10
Straight Section



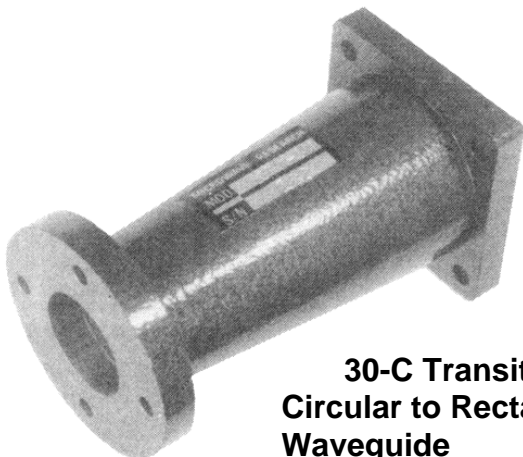
C80-L
Fixed Termination



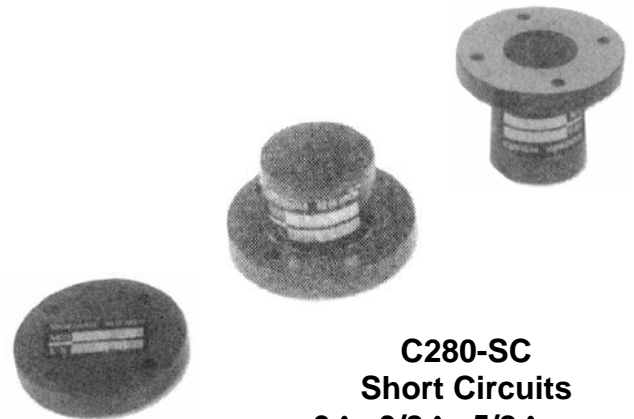
C40 Adapter
Circular Waveguide
to Coax



C80-LS
Sliding Termination



30-C Transition,
Circular to Rectangular
Waveguide



C280-SC
Short Circuits
 $0 \lambda_g$ $3/8 \lambda_g$ $5/8 \lambda_g$