



ANSI/EIA-304-A-2019
Approved: February 5, 2019

EIA-304-A

EIA SPECIFICATION

Ridge Waveguides

EIA-304-A
(Revision of EIA-RS-304)

February 2019



Electronic Components Industry Association

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(From Standards Proposal No. 5413, formulated under the cognizance of the CE-2.2 Committee on RF Connectors and Rigid Coax Connectors and previously published in EIA RS-304)

Published by

©ELECTRONIC COMPONENTS INDUSTRY ASSOCIATION 2019
Standards & Technology Department
13873 Park Center Road, Suite 315
Herndon, VA 20171

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Ridge Waveguides

(From EIA Standards Proposal No. PN-5413, formulated under the cognizance of the EIA CE-2.2 Committee on Circular Waveguides, and previously published as RS-304)

1. Introduction

1.1 Scope

This standard pertains to both single ridge and double ridge waveguides, having bandwidth ratios of 2.4 to 1 and 3.6 to 1.

By specifying assembly dimensions in lieu of detail part drawings it provides for interchangeability and permits manufacturing flexibility.

2. Dimensions and Tolerances

2.1 Dimensions and Tolerances are specified in Table 1 through Table 4.

2.1.1 Mean wall thickness is one-half the difference between corresponding inside and outside dimensions at any cross-section perpendicular to the axis.

2.1.2 The maximum permissible deviation from the mean wall thickness shall not exceed $\pm 10\%$ of the mean wall thickness.

3. Frequency Range

3.1 Recommended frequency range for each size is specified in Table 1 through Table 4.

3.2 Specified frequency range assumes operation in the dominant (TE_{10}) mode.

3.3 Each specified frequency range starts at 1.18 times the cutoff frequency for the TE_{10} mode and is less than 0.98 times the cutoff frequency of the TE_{20} mode.

3.4 Waveguides having bandwidth ratios of 2.4 to 1 and 3.6 to 1 are specified. To permit selection of optimum waveguide sizes, two overlapping series are specified for both bandwidth ratio waveguides.

4. Bow, Twist, and Rectangularity

4.1 Longitudinal bow is the departure from straightness of a line parallel to the longitudinal axis, between any two points 2 feet apart on the external surface of the waveguide.

4.1.1 Longitudinal Bow shall not exceed 0.010" edgewise and 0.020" flatwise.

4.1.2 Measurement of bow shall not be altered by gravity or any other forces.

4.2 Transverse Bow is the departure from a straight line between any two adjacent external edges of the waveguide measured perpendicular to the longitudinal axis.