EW220, HELIA® Standard Elliptical Waveguide, 21.2–23.6 GHz, unjacketed

Product Classification

Brand: HELIA®
Product Type: Elliptical waveguide

Construction Materials

Jacket Material: Unjacketed
Conductor Material: Corrugated copper

Dimensions

Cable Volume: 74.0 L/km
Cable Weight: 0.18 kg/m
Diameter Over Jacket (E Plane): 17.80 mm | 0.70 in
Diameter Over Jacket (H Plane): 11.20 mm | 0.44 in

Electrical Specifications

Operating Frequency Band: 21.2 – 23.6 GHz
eTE11 Mode Cutoff: 13.338 GHz
Group Delay at Frequency: 127 ns/100 ft @ 22.400 GHz | 415 ns/100 m @ 22.400 GHz

Environmental Specifications

Installation Temperature: -40 °C to +60 °C (-40 °F to +140 °F)
Operating Temperature: -55 °C to +85 °C (-67 °F to +185 °F)
Storage Temperature: -70 °C to +85 °C (-94 °F to +185 °F)

Mechanical Specifications

Maximum Twist: 2.00 °/ft
Minimum Bend Radius, Multiple Bends (E Plane): 120.00 mm | 4.72 in
Minimum Bend Radius, Multiple Bends (H Plane): 230.00 mm | 9.06 in
Minimum Bend Radius, Single Bend (E Plane): 120.00 mm | 4.72 in
Minimum Bend Radius, Single Bend (H Plane): 230.00 mm | 9.06 in

Note

Performance Note: Values typical, unless otherwise stated

Standard Conditions
### Regulatory Compliance/Certifications

**Agency**  
ISO 9001:2015

**Classification**  
Designed, manufactured and/or distributed under this quality management system

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<table>
<thead>
<tr>
<th>Frequency (GHz)</th>
<th>Attenuation (dB/100 ft)</th>
<th>Attenuation (dB/100 m)</th>
<th>Average Power (kW)</th>
<th>Group Velocity %</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.2</td>
<td>8.547</td>
<td>28.042</td>
<td>0.398</td>
<td>77.7</td>
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<tr>
<td>21.6</td>
<td>8.473</td>
<td>27.799</td>
<td>0.401</td>
<td>78.7</td>
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<tr>
<td>22</td>
<td>8.406</td>
<td>27.577</td>
<td>0.404</td>
<td>79.5</td>
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<td>22.4</td>
<td>8.344</td>
<td>27.376</td>
<td>0.407</td>
<td>80.3</td>
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<tr>
<td>22.8</td>
<td>8.288</td>
<td>27.192</td>
<td>0.41</td>
<td>81.1</td>
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<tr>
<td>23.2</td>
<td>8.237</td>
<td>27.024</td>
<td>0.413</td>
<td>81.8</td>
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<tr>
<td>23.6</td>
<td>8.19</td>
<td>26.87</td>
<td>0.415</td>
<td>82.5</td>
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</tbody>
</table>

**Return Loss/VSWR**

<table>
<thead>
<tr>
<th>Frequency Band</th>
<th>VSWR</th>
<th>Return Loss (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.2–23.6 GHz</td>
<td>1.15</td>
<td>23.10</td>
</tr>
</tbody>
</table>

* VSWR/Return Loss indicated is for lengths up to 300 ft (91.4 m)
* VSWR/Return Loss is guaranteed for factory-fit and typical for field-fit assemblies

* Custom length performance: Call 828-324-2200 or 1-800-982-1708 (toll free), or your local CommScope representative

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### Attenuation, Ambient Temperature

- **24 °C | 75 °F**

### Average Power, Ambient Temperature

- **40 °C | 104 °F**

### Average Power, Temperature Rise

- **42 °C | 76 °F**