W band Antenna
12 Beam Rotman Lens

W-RL-12B-9296 Previously named TU-WRT94-12-12
12 Beam Rotman Lens Antenna*

Overview

The W-RL-12B-9296 is a beam forming Rotman lens antenna optimised for use in the 92-96 GHz band. The assembly is milled out of high quality low loss materials to realise a waveguide module.

It can be supplied with a low loss switch matrix to enable switching and therefore electronic scanning.

This lens antenna overcomes the problems of scanning electronically at high frequencies where mechanical scanners are big and heavy and phase shifters are too large and lossy.

*This product is filed under EU Patent Application EP15159261 and is subject to an EU Export License.

Features

- Complete waveguide assembly.
- Gain 14dB typical.
- Low sidelobes.
- Matching switch and horn modules.
Specification Overview

*Option 01 (open waveguide elements) is baseline for other options unless otherwise specified.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>-01</th>
<th>-02</th>
<th>-03</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>92 – 96 GHz</td>
<td>92 – 96 GHz</td>
<td>92 – 96 GHz</td>
<td>GHz</td>
</tr>
<tr>
<td>Angular FOV</td>
<td>±22 Degrees</td>
<td>±22 Degrees</td>
<td>±20 Degrees</td>
<td>Degrees</td>
</tr>
<tr>
<td>No of Beams</td>
<td>12</td>
<td>12</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Scan Angle Step</td>
<td>4 Degrees</td>
<td>4 Degrees</td>
<td>8 Degrees</td>
<td>Degrees</td>
</tr>
<tr>
<td>HPBW</td>
<td>9</td>
<td>10</td>
<td>10</td>
<td>Degrees</td>
</tr>
<tr>
<td>Lens Loss</td>
<td>&lt; 5 dB</td>
<td>&lt; 5 dB</td>
<td>&lt; 2.5 dB</td>
<td>dB</td>
</tr>
<tr>
<td>Gain</td>
<td>13 dB</td>
<td>19.5 dB</td>
<td>15* dB</td>
<td>dB</td>
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<tr>
<td>Dimensions</td>
<td>114 x 166 x 23 mm</td>
<td>140 x 166 x 23 mm</td>
<td>114 x 200 x 23 mm</td>
<td>mm</td>
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<tr>
<td>Operating Temperature</td>
<td>-10 to +40 °C</td>
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</tbody>
</table>

Options

01 Open waveguide antenna elements
02 Integrated horn antennas
03 Integrated hybrid couplers (for monopulse operation)
04 Waveguide switch module
05 Gold-plated construction

*all options can be combined except -01 and -02

Simulated Performance Data  
Gain (Option -01)

![Rotman Gain Diagram](image)

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