

# 26.5 - 140 GHz Cassegrain Antenna series for OEM Market



## Description

ELVA-1 has developed a low cost high performance microwave antennas to meet needs of the broadband market. These antennas are dual reflector Cassegrain type ECA - XX series. Antennas of ECA - XX series are available for frequencies from 26.5GHz to 140GHz with reflector diameters ranging from 100mm to 600mm. The gain is up to 48dBi depending upon the frequency. The main reflector has a highly accurate surface and is designed from aluminium. The subreflector is a machined aluminium hyperboloid or ellipsoid, which is rigidly supported by special plastic cylinder.

These antennas are designed to have minimal cross-section to reduce aperture blockage, and hence produce low sidelobe levels (typically 18dB). Typical VSWR is 1.25:1. The gain of the antenna depends upon its diameter. The antenna feed is a circular waveguide of appropriate diameter with an optional circular-to-rectangular transition.

Custom band antennas for 110-170 GHz are also available by special orders. Each antenna can be shipped with antenna bracket and radome as standard options.

## Specifications for Cassegrain antenna ECA - XX series

### Ka band. 26,5-40 GHz

| Part No      | Diameter of main reflector (mm) | Gain dB,(typ) | Bandwidth in deg. at 3dB level (typ) | VSWR (typ) |
|--------------|---------------------------------|---------------|--------------------------------------|------------|
| ECA-Ka-X-100 | 100                             | 26.3          | 6.0                                  | 1.40       |
| ECA-Ka-X-200 | 200                             | 32.7          | 2.9                                  | 1.35       |
| ECA-Ka-X-300 | 300                             | 36.4          | 2.0                                  | 1.25       |
| ECA-Ka-X-450 | 450                             | 40.9          | 1.3                                  | 1.25       |
| ECA-Ka-X-600 | 600                             | 42.9          | 0.9                                  | 1.25       |

Losses in a Protected cover is 0,7 dB (max)

Feed waveguide is circular or rectangular

Information for Ordering : X= Number for type of feed waveguide

*Available types of Circular waveguides are:*

| Number | Frequency Band (GHz) | Diameter of Waveguide (inch) | Flange   |
|--------|----------------------|------------------------------|----------|
| X=0    | 26.0-28.5            | 0.328                        | UG-381/U |
| X=1    | 28.5-33.0            | 0.281                        | UG-381/U |
| X=2    | 33.0-38.5            | 0.250                        | UG-381/U |
| X=3    | 38.5-43.0            | 0.219                        | UG-381/U |

*Available type of Rectangular waveguide is:*

|      |         |       |                                |
|------|---------|-------|--------------------------------|
| X=28 | 26,5-40 | WR-28 | UG-599/U<br>UG-381/U<br>UG-600 |
|------|---------|-------|--------------------------------|

Data for Gain and Bandwidth are typical for middle of frequency range

### **Q band. 33-50 GHz**

| Part No     | Diameter of main reflector (mm) | Gain dB,(typ) | Bandwidth in deg. at 3dB level (typ) | VSWR (typ) |
|-------------|---------------------------------|---------------|--------------------------------------|------------|
| ECA-Q-X-100 | 100                             | 28.3          | 4.8                                  | 1.40       |
| ECA-Q-X-200 | 200                             | 34.6          | 2.3                                  | 1.35       |
| ECA-Q-X-300 | 300                             | 38.5          | 1.6                                  | 1.25       |
| ECA-Q-X-450 | 450                             | 42.9          | 1.0                                  | 1.25       |
| ECA-Q-X-600 | 600                             | 44.9          | 0.7                                  | 1.25       |

Losses in a Protected cover is 0,7 dB (max)

Feed waveguide is circular or rectangular

Information for Ordering : X= Number for type of feed waveguide

*Available types of Circular waveguides are:*

| Number | Frequency Band (GHz) | Diameter of Waveguide (inch) | Flange   |
|--------|----------------------|------------------------------|----------|
| X=0    | 33.0-38.5            | 0.250                        | UG-383/U |
| X=1    | 38.5-43.0            | 0.219                        | UG-383/U |
| X=2    | 43.0-50.0            | 0.188                        | UG-383/U |

*Available type of Rectangular waveguide is:*

|      |       |       |                    |
|------|-------|-------|--------------------|
| X=22 | 33-50 | WR-22 | UG-383/U<br>TRG719 |
|------|-------|-------|--------------------|

Data for Gain and Bandwidth are typical for middle of frequency range

### **U band. 40-60 GHz**

| Part No     | Diameter of main reflector (mm) | Gain dB,(typ) | Bandwidth in deg. at 3dB level (typ) | VSWR (typ) |
|-------------|---------------------------------|---------------|--------------------------------------|------------|
| ECA-U-X-100 | 100                             | 32.0          | 3.9                                  | 1.35       |
| ECA-U-X-200 | 200                             | 38.2          | 2.0                                  | 1.30       |
| ECA-U-X-300 | 300                             | 41.7          | 1.3                                  | 1.25       |
| ECA-U-X-450 | 450                             | 44.8          | 0.9                                  | 1.25       |
| ECA-U-X-600 | 600                             | 46.4          | 0.7                                  | 1.25       |

Losses in a Protected cover is 0,7 dB (max)

Feed waveguide is circular or rectangular

Information for Ordering : X= Number for type of feed waveguide

*Available types of Circular waveguides are:*

| Number | Frequency Band (GHz) | Diameter of Waveguide (inch) | Flange   |
|--------|----------------------|------------------------------|----------|
| X=0    | 38.5-43.0            | 0.219                        | UG-383/U |
| X=1    | 43.0-50.0            | 0.188                        | UG-383/U |
| X=2    | 50.0-58.0            | 0.165                        | UG-383/U |

*Available type of Rectangular waveguide is:*

|      |       |       |                    |
|------|-------|-------|--------------------|
| X=19 | 40-60 | WR-19 | UG-383/U<br>TRG720 |
|------|-------|-------|--------------------|

Data for Gain and Bandwidth are typical for middle of frequency range

### V band. 50-75 GHz

| Part No     | Diameter of main reflector (mm) | Gain dB,(typ) | Bandwidth in deg. at 3dB level (typ) | VSWR (typ) |
|-------------|---------------------------------|---------------|--------------------------------------|------------|
| ECA-V-X-100 | 100                             | 34.0          | 3.1                                  | 1.3        |
| ECA-V-X-200 | 200                             | 39.7          | 1.5                                  | 1.25       |
| ECA-V-X-300 | 300                             | 42.4          | 1.0                                  | 1.25       |
| ECA-V-X-450 | 450                             | 45.4          | 0.7                                  | 1.25       |
| ECA-V-X-600 | 600                             | 47.5          | 0.5                                  | 1.25       |

Losses in a Protected cover is 0,7 dB (max)

Feed waveguide is circular or rectangular

Information for Ordering : X= Number for type of feed waveguide

*Available types of Circular waveguides are:*

| Number | Frequency Band (GHz) | Diameter of Waveguide (inch) | Flange   |
|--------|----------------------|------------------------------|----------|
| X=0    | 50.0-58.0            | 0.165                        | UG-385/U |
| X=1    | 58.0-68.0            | 0.141                        | UG-385/U |
| X=2    | 68.0-77.0            | 0.125                        | UG-385/U |

*Available type of Rectangular waveguide is:*

|      |       |       |          |
|------|-------|-------|----------|
| X=15 | 50-75 | WR-15 | UG-385/U |
|------|-------|-------|----------|

Data for Gain and Bandwidth are typical for middle of frequency range

### E band. 60-90 GHz

| Part No     | Diameter of main reflector (mm) | Gain dB,(typ) | Bandwidth in deg. at 3dB level (typ) | VSWR (typ) |
|-------------|---------------------------------|---------------|--------------------------------------|------------|
| ECA-E-X-100 | 100                             | 34.4          | 2.6                                  | 1.30       |
| ECA-E-X-200 | 200                             | 39.9          | 1.3                                  | 1.25       |
| ECA-E-X-300 | 300                             | 43.5          | 0.9                                  | 1.25       |
| ECA-E-X-450 | 450                             | 46.6          | 0.6                                  | 1.25       |

Losses in a Protected cover is 0,7 dB (max)

Feed waveguide is circular or rectangular

Information for Ordering : X= Number for type of feed waveguide

*Available types of Circular waveguides are:*

| Number | Frequency Band (GHz) | Diameter of Waveguide (inch) | Flange   |
|--------|----------------------|------------------------------|----------|
| X=1    | 68.0-77.0            | 0.125                        | UG-387/U |
| X=2    | 77.0-87.0            | 0.110                        | UG-387/U |
| X=3    | 87.0-100.0           | 0.094                        | UG-387/U |

*Available type of Rectangular waveguide is:*

|      |       |       |          |
|------|-------|-------|----------|
| X=12 | 60-90 | WR-12 | UG-387/U |
|------|-------|-------|----------|

Data for Gain and Bandwidth are typical for middle of frequency range

### W band. 75-110 GHz

| Part No     | Diameter of main reflector (mm) | Gain dB,(typ) | Bandwidth in deg. at 3dB level (typ) | VSWR (typ) |
|-------------|---------------------------------|---------------|--------------------------------------|------------|
| ECA-W-X-100 | 100                             | 35.7          | 2.1                                  | 1.25       |
| ECA-W-X-200 | 200                             | 41.7          | 1.0                                  | 1.25       |
| ECA-W-X-300 | 300                             | 45.0          | 0.7                                  | 1.25       |

Losses in a Protected cover is 0,7 dB (max)

Feed waveguide is circular or rectangular

Information for Ordering : X= Number for type of feed waveguide

*Available types of Circular waveguides are:*

| Number | Frequency Band (GHz) | Diameter of Waveguide (inch) | Flange     |
|--------|----------------------|------------------------------|------------|
| X=0    | 77.0-87.0            | 0.110                        | UG-387/U-M |
| X=1    | 87.0-100.0           | 0.094                        | UG-387/U-M |
| X=2    | 100.0-112.0          | 0.082                        | UG-387/U-M |

*Available type of Rectangular waveguide is:*

|      |        |       |            |
|------|--------|-------|------------|
| X=10 | 75-110 | WR-10 | UG-387/U-M |
|------|--------|-------|------------|

Data for Gain and Bandwidth are typical for middle of frequency range

## F band. 90-140 GHz

| Part No     | Diameter of main reflector (mm) | Gain dB,(typ) | Bandwidth in deg. at 3dB level (typ) | VSWR (typ) |
|-------------|---------------------------------|---------------|--------------------------------------|------------|
| ECA-F-X-100 | 100                             | 37.0          | 1.7                                  | 1.25       |
| ECA-F-X-200 | 200                             | 42.6          | 0.9                                  | 1.25       |
| ECA-F-X-300 | 300                             | 45.9          | 0.6                                  | 1.25       |

Losses in a Protected cover is 0,7 dB (max)

Feed waveguide is circular or rectangular

Information for Ordering : X= Number for type of feed waveguide

*Available types of Circular waveguides are:*

| Number | Frequency Band (GHz) | Diameter of Waveguide (inch) | Flange     |
|--------|----------------------|------------------------------|------------|
| X=0    | 87.0-100.0           | 0.094                        | UG-387/U-M |
| X=1    | 100.0-112.0          | 0.082                        | UG-387/U-M |
| X=2    | 112.0-125.0          | 0.075                        | UG-387/U-M |
| X=3    | 125.0-140.0          | 0.067                        | UG-387/U-M |

*Available type of Rectangular waveguide is:*

|     |        |      |            |
|-----|--------|------|------------|
| X=8 | 90-140 | WR-8 | UG-387/U-M |
|-----|--------|------|------------|

Data for Gain and Bandwidth are typical for middle of frequency range

## How to Order

Specify Model Number **ECA-A-X-BBB**

**A**- waveguide band

**X** - waveguide type

**BBB** – size of main reflector

**Example:** To order antenna meets the following specification: operation frequency 75-110 GHz, in WR-10 waveguide band with 300mm of main reflector, should be ordered as **ECA -W-10-300**

Delivery time 4-6 weeks for all models.

All ELVA-1 antennas are warranted for one year after receipt.