

The "Dual" company has been producing antennas for **over 34 years**.

Our focus is on:

- Wide bandwidth - **no tuning antennas**
- Designs that work well in **all weather** conditions
- **Low SWR and superior G/T, F/B and F/S** ratios across the entire band
- Excellent **mechanical properties**
- High durability, built **without compromise**

A Major advance in Amateur Radio antenna design.

F/B and G/T superiority

All antennas have been calculated using **state of the art full 3D Electromagnetic Simulation Software** including **the influence** of the boom, bracket, baluns and connectors.

The performance of antennas designed using these techniques are **exceptional, far better** than antennas designed using "wire" programs like EZNEC Pro/4 –NEC v5.0, 4NEC2, MMANA or AO

No tuning antennas

Before dispatch, we assemble each antenna and test antenna characteristics. That means you may expect exceptionally good electrical and mechanical characteristics including low SWR across the designed range immediately after assembling. No need to move or tune any element to get perfect SWR on the intended frequency range. Everything is pre-tuned.



PA144-432-25-4.5-2CAP

Electrical Specifications 2 m

Frequency Range:	144 - 145 MHz
Free Space Forward Gain:	13.9 dBi
Front to Back Ratio:	27 dB
3 dB Horizontal Beamwidth:	38.8°
Polarization:	Horizontal
Nominal Input Impedance:	50 Ohms
SWR Across Entire Band:	< 1.2
Maximum Power Input:	1500W
Matching Method:	Direct feed through common mode balun
Connector:	"N"
Coupling to 70cm:	-40 dB

Mechanical Specifications 2 m

Number of Elements:	9
Element Diameter:	8 mm Aluminum tube
Dipole Diameter:	8 mm Hard Copper tube
Longest Element:	1035 mm
Element Mounting Position:	Below the Boom
Balun and Connector:	Included

Electrical Specifications 70 cm

Frequency Range:	432 - 434 MHz
Free Space Forward Gain:	16.4 dBi
Front to Back Ratio:	28 dB
3 dB Horizontal Beamwidth:	26.9°
Polarization:	Horizontal
Nominal Input Impedance:	50 Ohms
SWR Across Entire Band:	< 1.2
Maximum Power Input:	850W
Matching Method:	Direct feed through common mode balun
Connector:	"N"
Coupling to 2m:	-30 dB

Mechanical Specifications 70 cm

Number of Elements:	16
Element Diameter:	4 mm Aluminum rod
Dipole Diameter:	8 mm Hard Copper tube
Longest Element:	340 mm
Element Mounting Position:	Above the Boom
Balun and Connector:	Included

Common Mechanical Specifications

Boom Length:	4.35 m
Boom Size:	Tapered Boom 20x20mm, 30x30mm, 20x20mm
Number of Boom Pieces:	4
Guy Rope Support:	No
Mounting Mast Diameter:	43 - 70 mm 1-11/16" - 2-3/4" OD
Survival Wind Speed:	150 km/h
Wind Load:	0.12m²
Transportation Length:	1.2 m
Net Weight:	4.6 kg
Gross Weight:	5.6 kg



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Horizontal Stacking Distance 2950 mm

Two Antennas Gain on 2 m **16.75 dBi** (+2.85 dB)
Two Antennas Gain on 70 cm **19.4 dBi** (+3 dB)

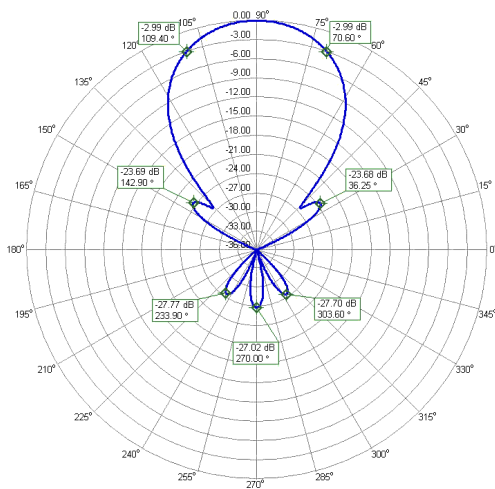
Vertical Stacking Distance 2650 mm

Two Antennas Gain on 2 m **16.72 dBi** (+2.82 dB)
Two Antennas Gain on 70 cm **19.4 dBi** (+3 dB)

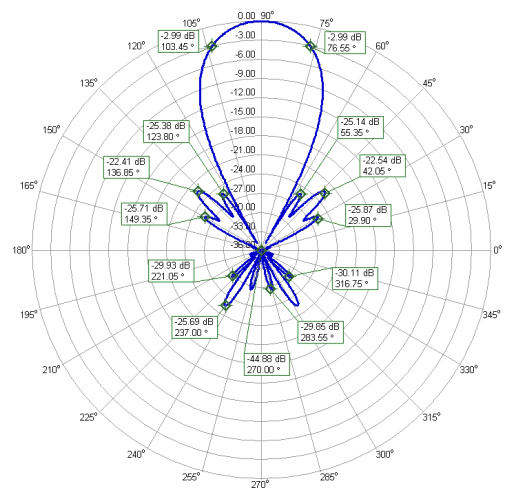
Four Antennas in "H" configuration 2950 x 2650 mm

Gain on 2 m **19.6 dBi** (+5.7 dB)
Gain on 70 cm **22.4 dBi** (+6 dB)

Radiation Patterns:



2 m Azimuth Radiation Pattern



70 cm Azimuth Radiation Pattern

Assembly instruction

Join the boom.



Not all pictures are related to the particular antenna.



Put the boom on the flat surface. Because of length you should tighten screws lightly for the first moment. Then look along the boom to see if any distortion occurs. When you are satisfied tighten firmly. Before tightening all screws, apply thread lock like Loctite 243 or Permatex Threadlocker BLUE.



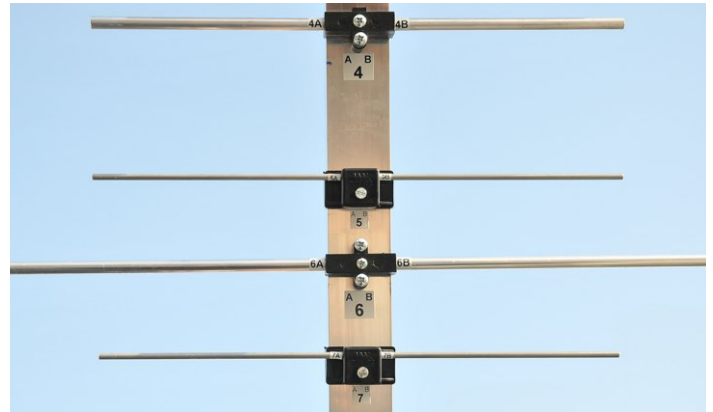
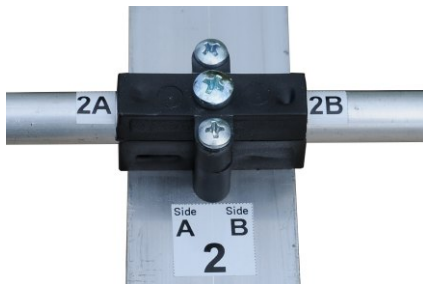
Company Dual The largest antenna and ham radio equipment manufacturer in Serbia, established 1988
Trg puk. D. Gavrilovica 2, 37000 Krusevac, Serbia. www.dual.rs <https://antennas-amplifiers.com/>
info@antennas-amplifiers.com Tel:+381 37 3419 100, +381 69 3419 100

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Attach the elements (number to number).

Starting with 1, paying special attention on orientation.

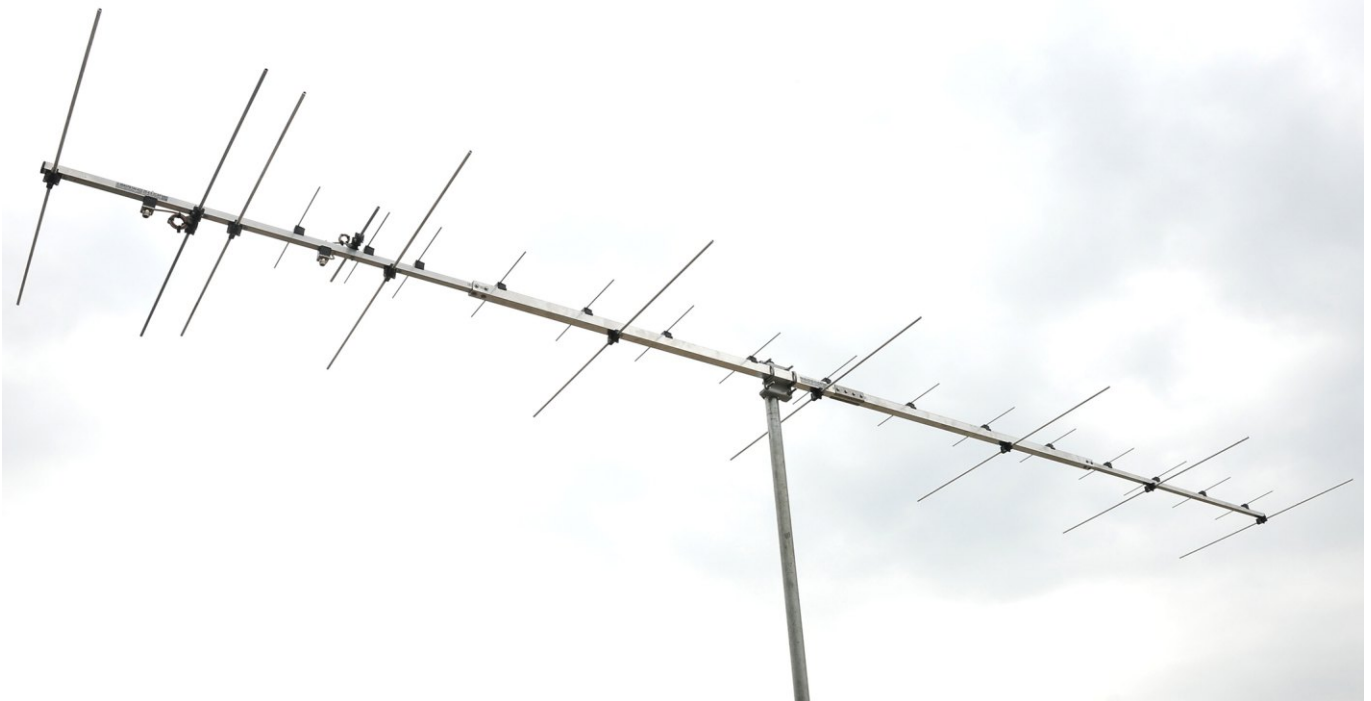
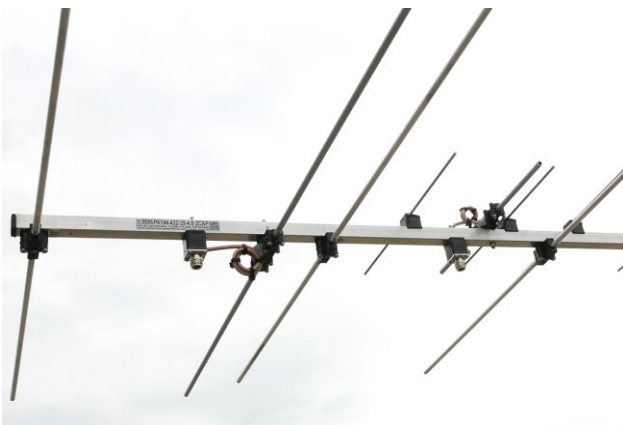
Not all pictures are related to the particular antenna.



Required torque 2.2 Nm for 8 mm elements and 1.4 Nm for 4 mm elements.
If needed align elements and screw tightly. Elements must stand in one plane.

Attach the dipoles.

Assemble and attach antenna mounting bracket.



Raise the antenna. Measure SWR. It must be as predicted or very close on all frequencies.
Low SWR is a sign that you assembled everything correctly. Best DX.



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info@antennas-amplifiers.com Tel:+381 37 3419 100, +381 69 3419 100