



The "Dual" company has been producing antennas for more than 30 years.

Our focus is on:

- wide bandwidth,
- designs that work equally well in all weather conditions,
- very low SWR and superior G/T, F/B and F/S ratios across the entire frequency band,
- excellent mechanical properties, and
- uncompromised durability.

We do not use amateurish programs like **EZNEC Pro/4, 4NEC2, EZNEC, MMANA AO or YO**. We perform the design work using **the latest professional full-3D electromagnetic modelling software**. This enables us to accurately include the influence of the boom, insulators, baluns, feed point, connections, etc

Our designs are optimised using the Particle Swarm algorithm, which is considered one of the best global optimization algorithms. We also use the classic Nelder-Mead Simplex algorithm for fine-tuning. Our optimization runs frequently exceed 1 million evaluations.

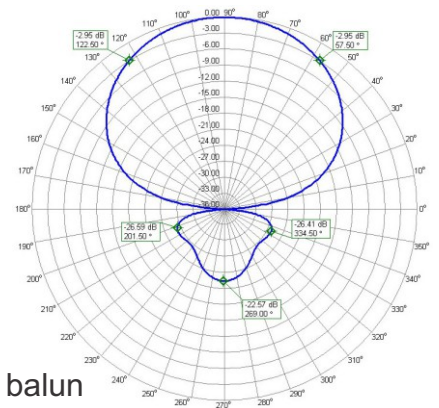
We rely on solid physics, not on "clever" tinkering with antenna elements or spacings. By paying the greatest attention to all of the important details, we are able to consistently produce top performance designs.

Our antennas are precision physical instruments, they are real **"Precision Antennas" (PA)**.

PA5070-7-3B

Electrical Specifications 6m

Frequency Range:	50 - 50.5 MHz
Free Space Forward Gain:	7.7 dBi
Front to Back Ratio:	22 dB
3 dB Horizontal Beamwidth:	65°
Polarization:	Horizontal
Nominal Input Impedance:	50 Ohms
SWR Across Entire Band:	< 1.2
Maximum Power Input:	1000W
Matching Method:	Direct feed through common mode balun
Connector:	"N" (SO239 by order) (Common connector for both bands)



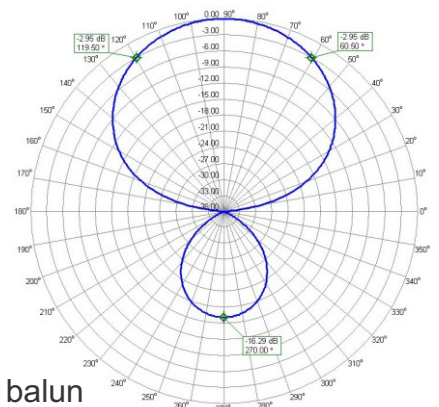
6 m Azimuth Radiation Pattern

Mechanical Specifications 6m

Number of elements:	3
Element Diameter:	Tapered elements. Center tube 12mm, outer 10 and 8 mm
Dipole Diameter:	Tapered dipole. Center tube 12mm, outer 10 and 8 mm
Longest element:	3.1 m
Element Mounting Position:	Below the Boom
Balun and Connector:	Included

Electrical Specifications 4m

Frequency Range:	70 - 70.5 MHz
Free Space Forward Gain:	9.1 dBi
Front to Back Ratio:	16 dB
3 dB Horizontal Beamwidth:	59°
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



4 m Azimuth Radiation Pattern

Mechanical Specifications 4m

Number of elements:	4+1
Element Diameter:	Tapered elements. Center tube 12 mm, outer 10 mm
Longest element:	2.1m
Element Mounting Position:	Below the Boom
Balun and Connector:	Included

Common Mechanical Specifications

Boom Length:	2.6 m
Boom Size:	30 x 30 mm
Number of Boom Pieces:	2
Guy rope support:	Not necessary. Strong boom.
Mounting Mast Diameter:	43 - 70 mm 1-1/4" - 2-3/4"
Survival Wind Speed:	160 km/h
Transportation Length:	1.49 m
Net Weight:	4.1 kg
Gross Weight:	5.6 kg

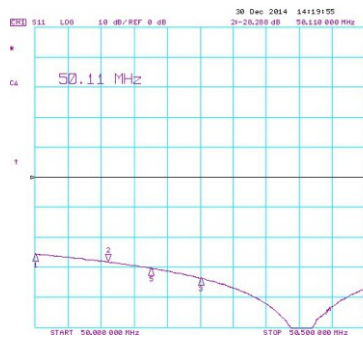


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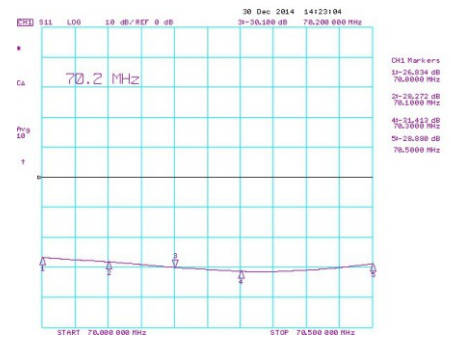
PA5070-7-3BG Measured characteristics with calibrated HP8753ES Network Analyzer.



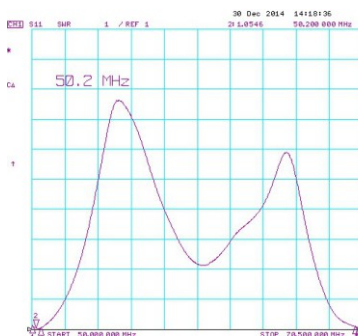
Measured Return Loss (S11) at antenna connector



6 m Measured Return Loss (S11) at antenna connector



4 m Measured Return Loss (S11) at antenna connector



Measured 50 - 70.5 MHz SWR



Measured 50 - 50.5 MHz SWR



Measured 70 - 70.5 MHz SWR

Assembly instruction:

Join the boom.




Before tightening all screws, apply thread lock like Loctite 243 or Permatex Threadlocker BLUE.

Join element extensions. Starting with E1 to the end with supplied stainless steel screws.



Please use Torque screwdriver. Required torque is 1.4 Nm.
Before tightening the screws, apply thread lock like Loctite or Permatex.

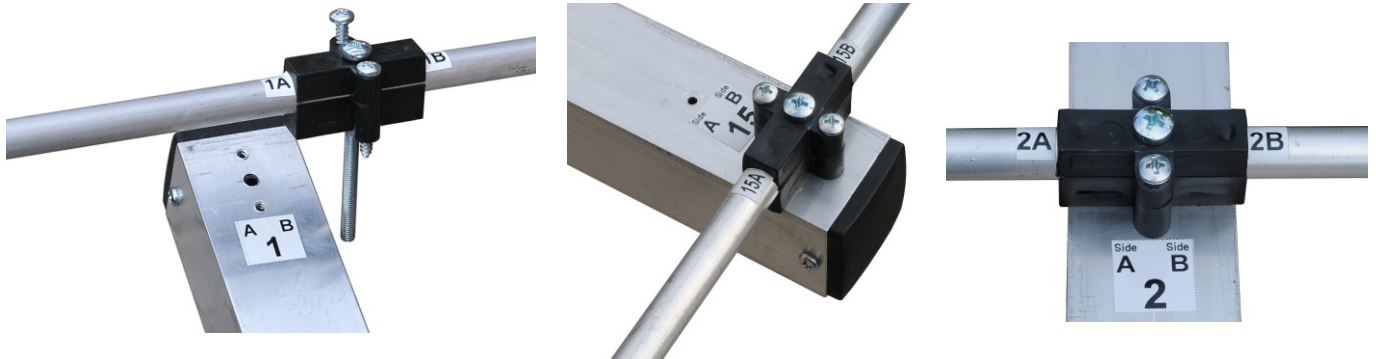


Company Dual. The largest antenna and ham radio equipment manufacturer in Serbia.
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Attach the elements (number to number).

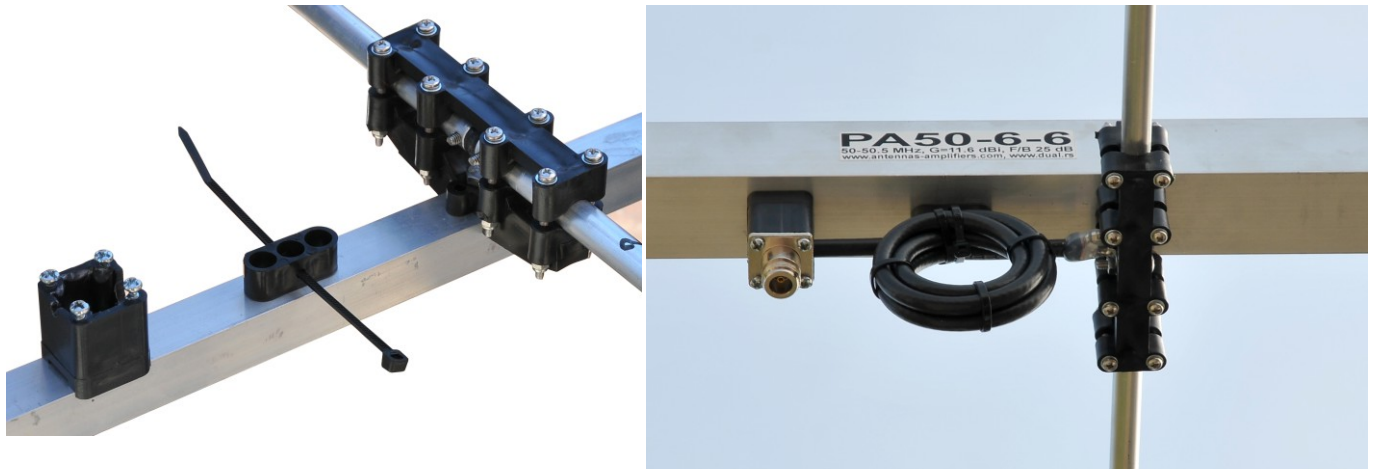
Not all pictures are related to the particular antenna.



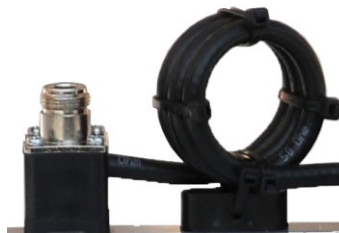
Starting with 1, paying special attention on orientation. Required torque 2.2 Nm.
If needed align elements and screw tightly. Elements must stand in one plane. Before tightening all screws, apply thread lock.

Attach the dipole.

Not all pictures are related to the particular antenna.



Attach balun to the dipole.




Screw connector to connector holder



Fasten balun with plastic zip tie to balun holder.



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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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