



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.

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. These programs cannot calculate the effect of any metallic or dielectric structures near the antenna elements and therefore must be considered inaccurate.

Designs are optimized using the Particle Swarm algorithm, which is considered **one of the best** antenna optimization algorithms available, followed by a classic Nelder-Mead Simplex algorithm for fine-tuning.

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

PA1296-70-6AUT

Electrical Specifications

Frequency Range:	1290 - 1310 MHz
Free Space Forward Gain:	23.2 dBi
Front to Back Ratio:	37 dB
3 dB Horizontal Beamwidth:	13.2°
3 dB Vertical Beamwidth:	13.4°
Polarization:	Horizontal
Nominal Input Impedance:	50 Ohms
SWR Across Entire Band:	< 1.2
Maximum Power Input:	300 W
Matching Method:	Voltage balun. UT141 or similar Teflon cable
Connector:	"N"

Mechanical Specifications

Number of Elements:	70
Element Diameter:	4 mm Aluminum rod
Dipole Diameter:	3 mm Copper
Longest Element:	120 mm
Element Mounting Position:	Above the Boom
Balun and Connector:	Included
Boom Length:	5.9 m
Boom Size:	20x20 mm + 30x30 mm support
Number of Boom Pieces:	5 + 4
Guy rope support:	No
Mounting Mast Diameter:	32 - 50 mm 1" - 1-1/2"
Survival Wind Speed:	120 km/h
Net Weight:	6.7 kg
Gross Weight:	8.7 kg
Transportation Length:	1.19 m (Airplane Checked Baggage Length)

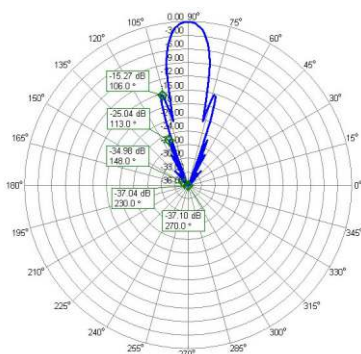
Vertical Stacking Distance

2 antennas for F/S< -13.6 dB
Gain: 96 cm
26 dBi

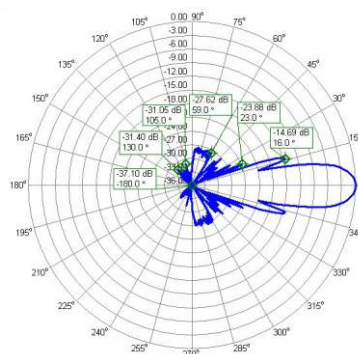
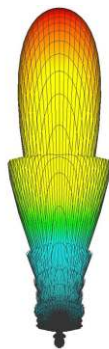
Horizontal Stacking Distance

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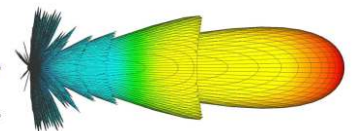
Radiation Patterns



Azimuth



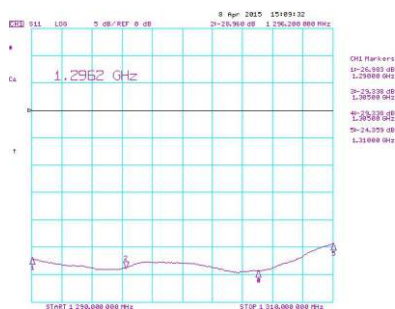
Elevation



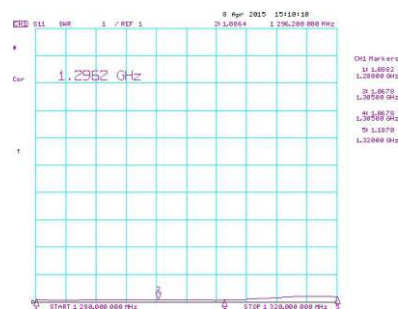
Company Dual The largest antenna and ham radio equipment manufacturer in Serbia, established 1988
Trg puk. D. Gavrilovica 2, 37000 Krusevac, Serbia. www.dual.rs <https://antennas-amplifiers.com/>
info@antennas-amplifiers.com Tel:+381 37 3419 100, +381 69 3419 100

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PA1296-70-6 Measured characteristics with calibrated HP8753ES Network Analyzer.

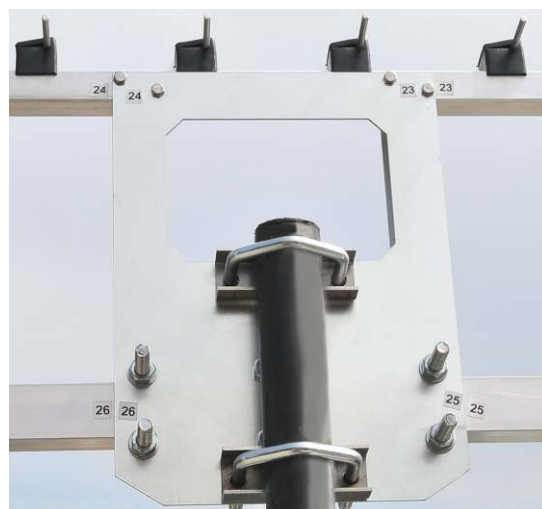


Measured Return Loss (S11)
at antenna connector



Measured SWR
at antenna connector

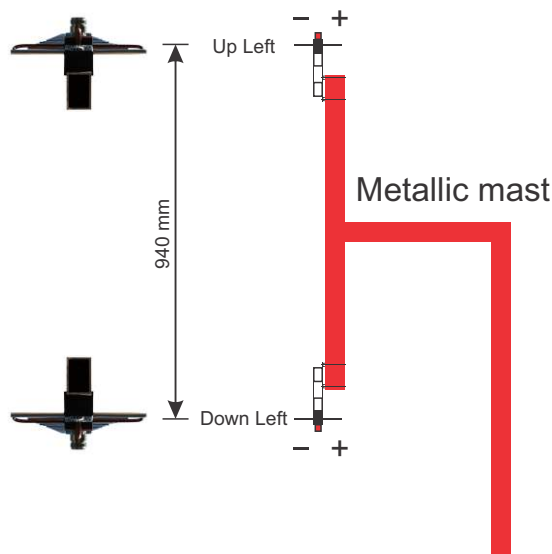
Attach all parts number to number. All elements are already attached, positioned and measured
Just join the boom and support.



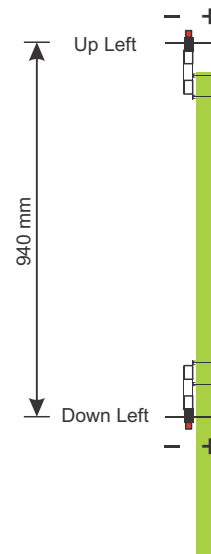
Join the central bracket and boom parts.



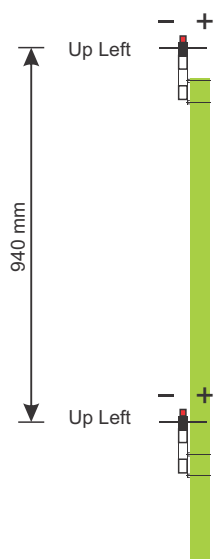
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Ver 1. Metallic mast
2 different antennas
(upper and lower)



Ver 2. Fiberglass mast
2 different antennas
(upper and lower)



Ver 3. Fiberglass mast
2 same antennas
(upper and upper)



Ver 4. Fiberglass mast
2 different antennas
(lower and upper)

Ver 1. Metallic mast. Two different antennas. Longer cables.

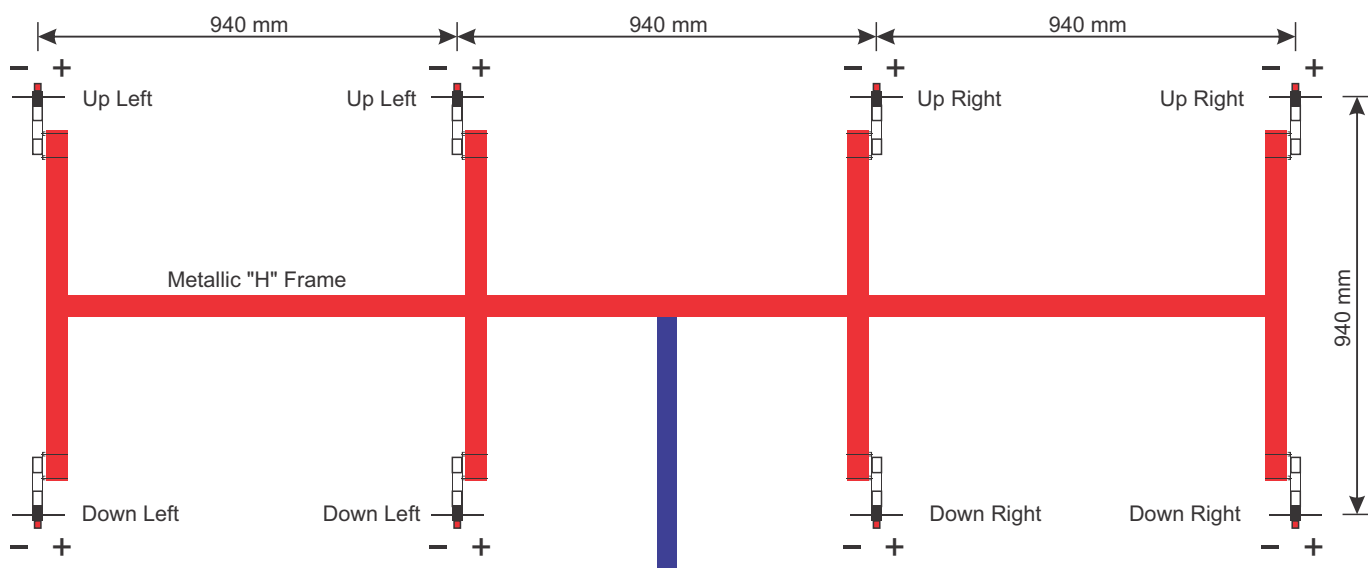
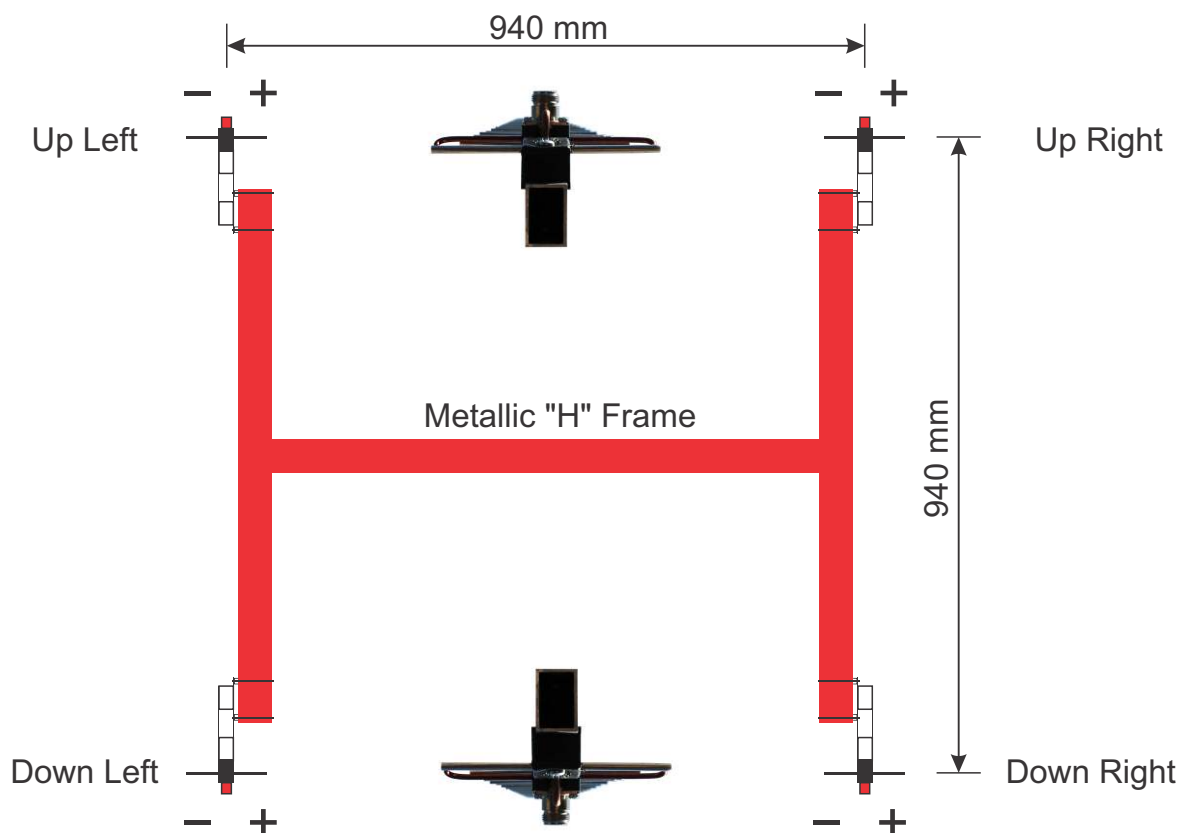
Ver 2. Plastic mast. Two different antennas. Longer cables.

Ver 3. Plastic mast. Two same antennas. Longer cables.

Ver 4. Plastic mast. Two different antennas. Shorter cables.

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Every antenna has unique mounting position in "H" configuration. Follow the marking



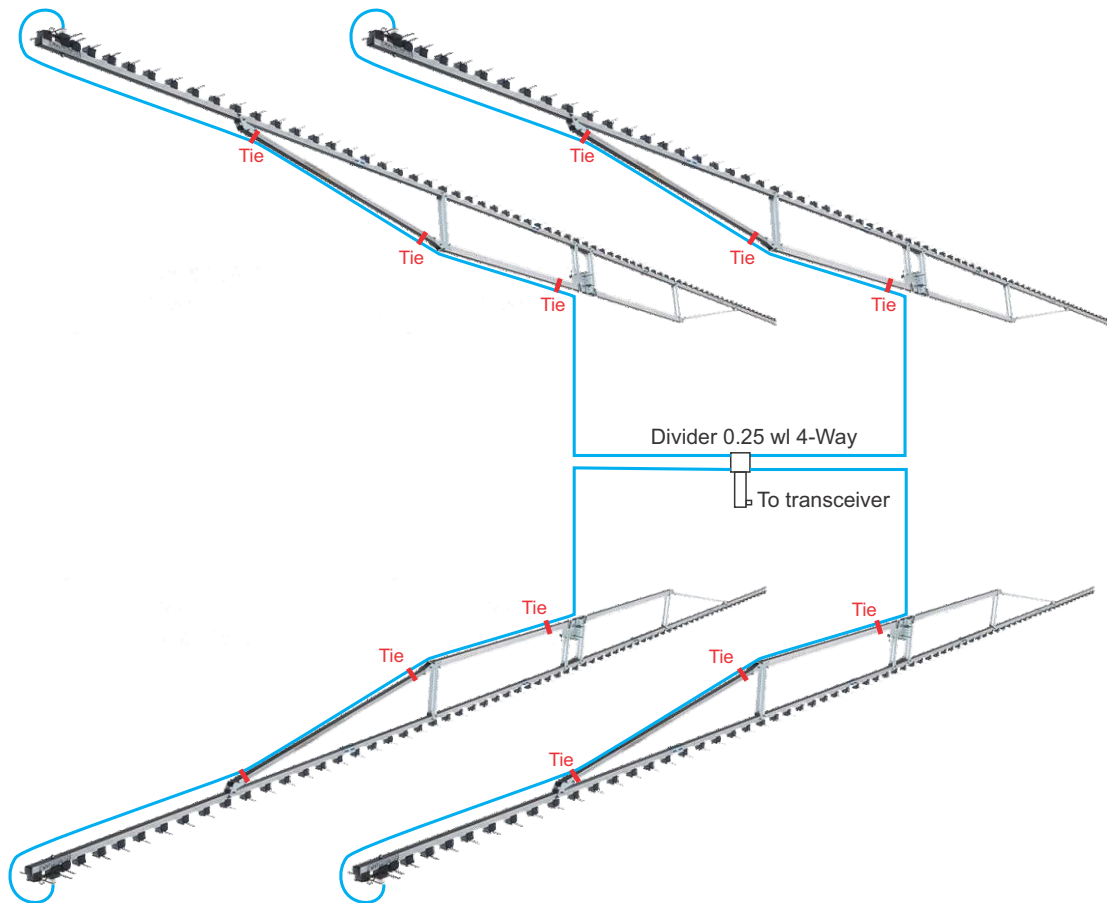
Raise the antenna. Measure SWR. It must be as predicted or very close on all frequencies. Low SWR is a sign that you assembled everything correctly. Best DX - EME.



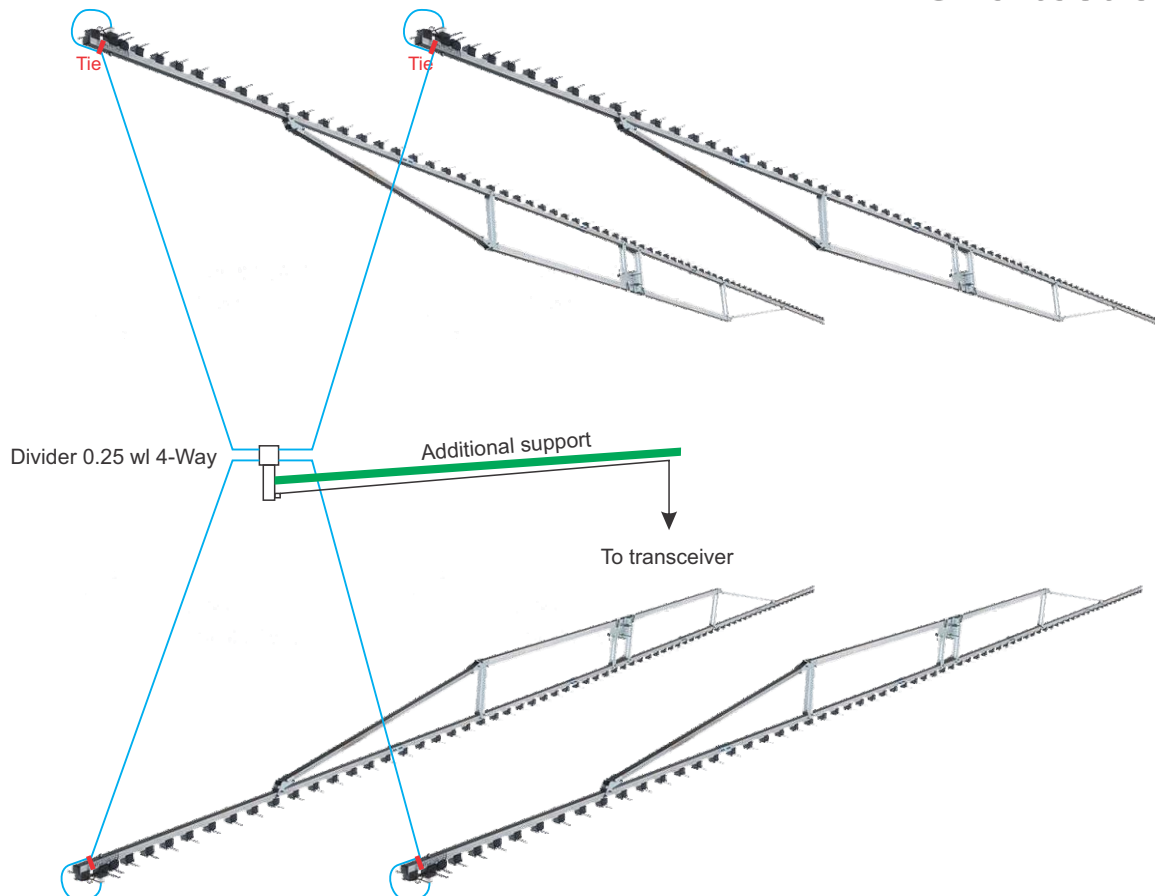
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Longer cables. Easy to handle.



Shortest cables

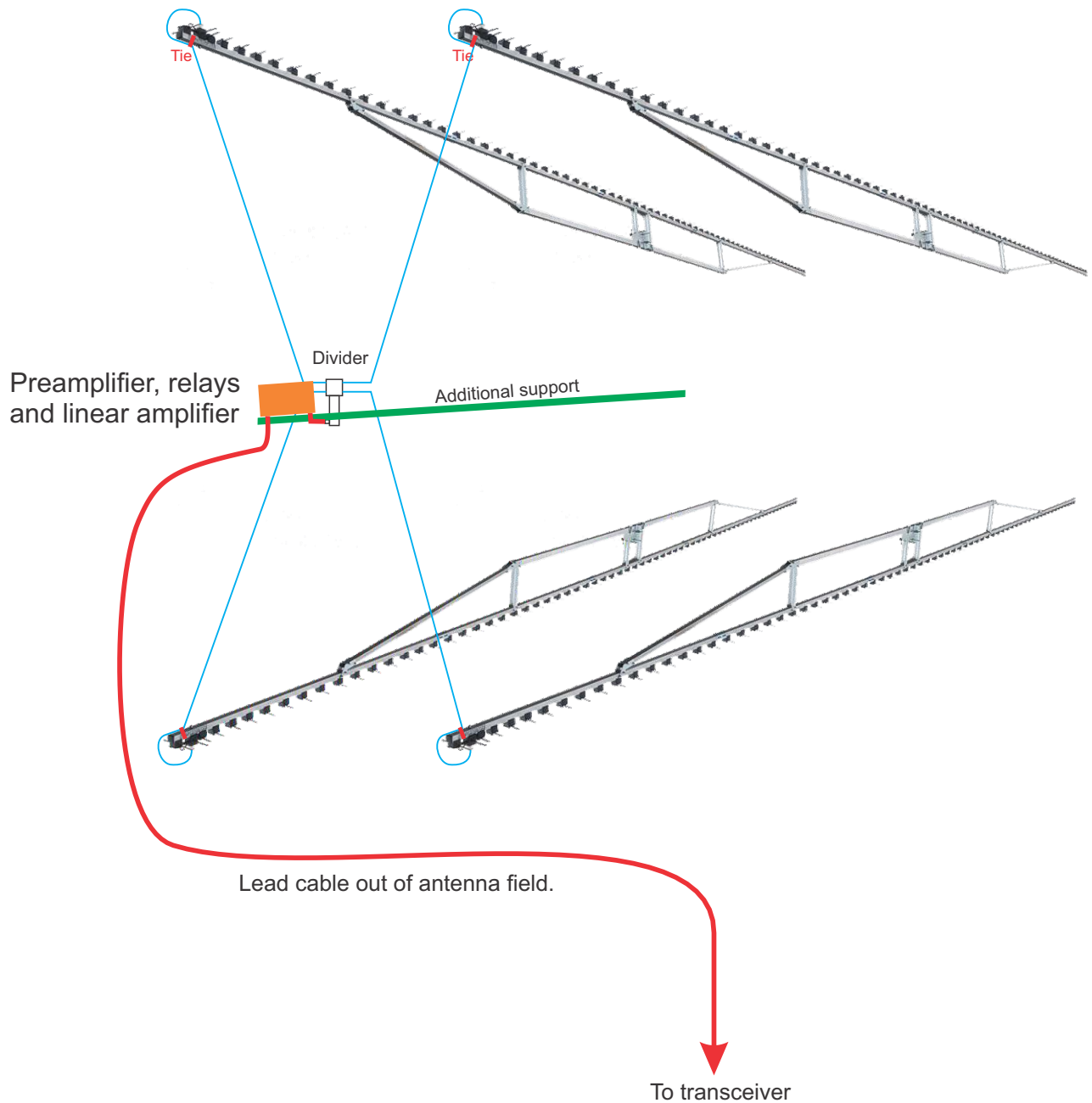


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The best possible variant.

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Shortest cables.
Minimum losses.
Best reception.
Maximum power to the antennas.
Highest mechanical demands.



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