

Dual-Polarised Direction Finding Antenna Array

20 – 3600 MHz

Product Code: DF-A0085

VERSION: 1.9



SPECIFICATIONS:

Electrical:	
Frequency range:	
Band A	20 – 300 MHz;
Band B	300 – 1000 MHz;
Band C	1000 – 3600 MHz
Gain	See gain graphs
VSWR	See VSWR graphs
3 dB Beam width	60 ° (typical on all bands)
Front-to-back ratio (Band C only)	20 dB (typical)
1 st Side lobe level (Band C only)	-15 dB (typical)
Cross polarization ratio:	
Band A	15 dB (typical)
Band B	15 dB (typical)
Band C	20 dB (typical)
Nominal input impedance	50 Ω
Max received power	2 W
Antenna type	5-element, 3-band DF interferometer
Polarisation	Vertical, Horizontal, and LHCP (Band C spiral array)
Strong signal DF accuracy	< 2° RMS*
Output cables	EF400 cables (qty 25)
Connectors	SMA male
Mechanical:	
Cross-sectional wind load area	0.75 m ²
Maximum wind speed	150 km/h (without ice)
Ingress protection	IP54
Antenna weight	< 60 kg
Assembled height	2672 mm
Assembled diameter (max)	3524 mm
Shipping container dimensions	1836 mm x 800 mm x 700 mm

* Measured with strong signals, on test range. Installed performance may be affected by nearby objects. RMS accuracy is measured over all azimuth, over each full band. Individual frequencies may exceed this figure.

The DF accuracy and sensitivity will be dependent on the number of receivers (5 receivers recommended) and processing algorithm used with the antenna.

PRODUCT DESCRIPTION:

The DF-A0085 dual-polarised fixed site direction finding antenna that covers a frequency range of 20 MHz to 3.6 GHz.

The full-size elements on all bands give excellent DF sensitivity. Ultimate angular resolution for strong signals is well under 1° for most of the frequency range. Dipole elements provide good cross-polarisation rejection, and fair performance for signals arriving from up to 15° above or below the horizon.

The DF-A0085 is capable of HP and VP DF, selectable for Band A and B, with each polarisation requiring characterisation. Two outputs are provided per element in each of bands A and B, one each per polarisation. Band C is polarisation agnostic, allowing concurrent VP, HP and LHCP DF a single characterisation table utilising the array of spiral antennas provided.

This DF antenna is designed to be used as a multi-channel phase-sensitive receiver, and correlative algorithm. Characterisation of the antenna can be performed on request.

The DF-A0085 provides a weatherproof interface at the top of the antenna onto which a lightning protection system can be mounted.

ELECTRICAL FEATURES:

- Full-size DF
- Wideband DF
- Dual-polarised
- 5-element interferometer

MECHANICAL FEATURES:

- Robust construction
- Waterproof
- Fixed site installation
- Lightning protection interface

RELATED PRODUCTS:

- **DF-A0086** Band switch for use with the DF-A0085

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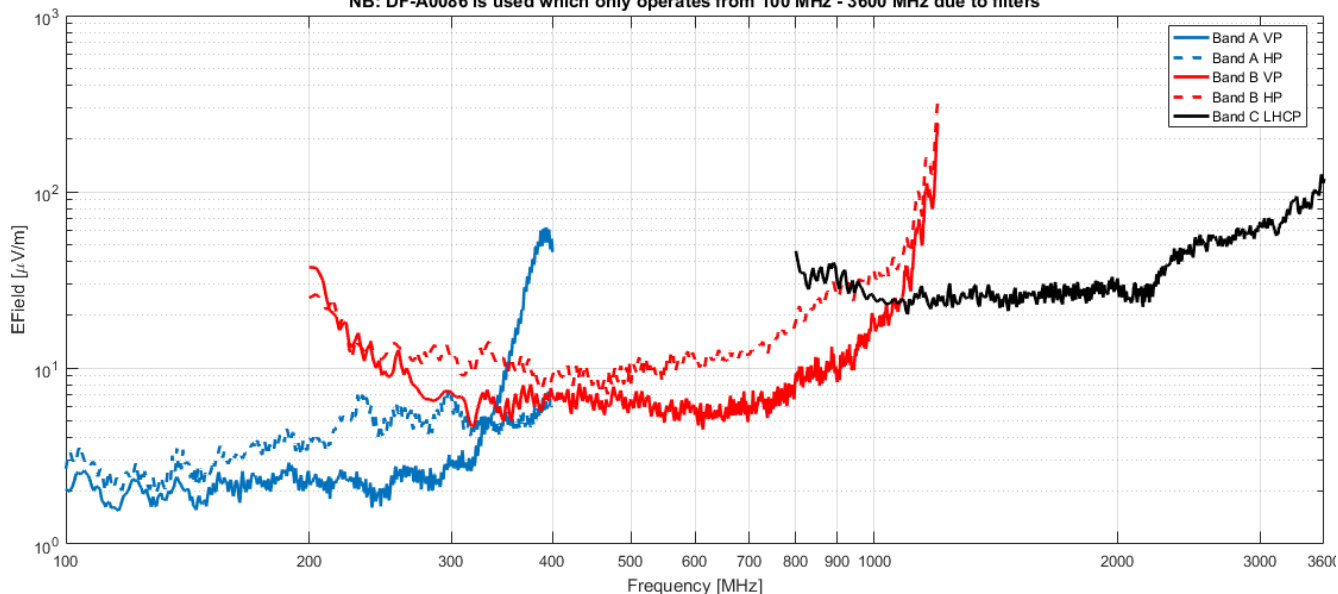
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DF SENSITIVITY:

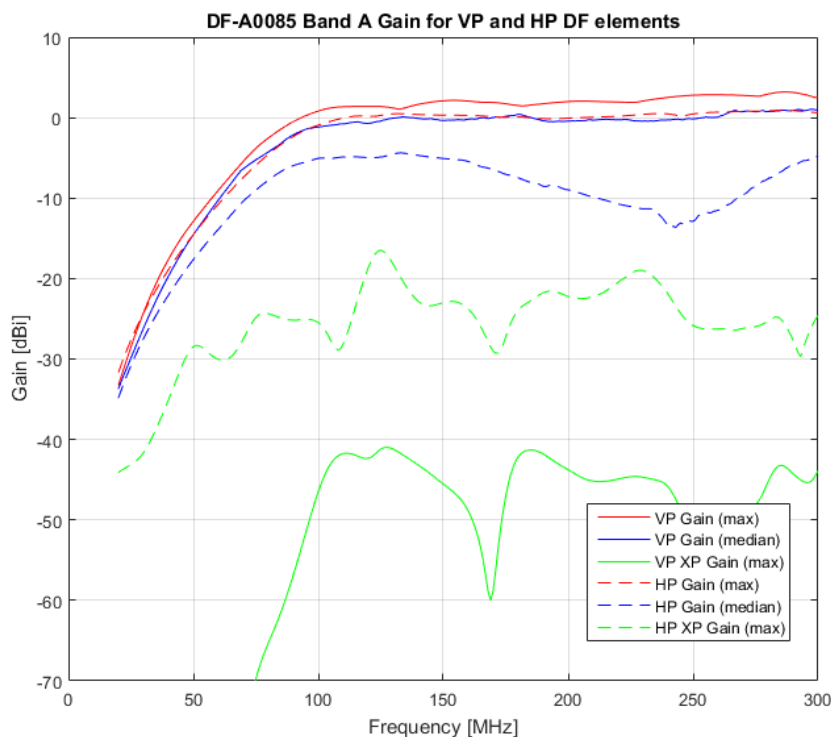
DF-A0085 Required EField for RMS error of about 2 with NF = 13dB and BW = 25 kHz with AOA over all ϕ at $\theta = 90^\circ$
 NB: DF-A0086 is used which only operates from 100 MHz - 3600 MHz due to filters



The graph illustrates the direction finding sensitivity of a typical system simulated under specific electrical conditions. The sensitivity is measured using an IF bandwidth of 25 kHz, without averaging and using a 5-receiver system.

The graph shows the minimum signal required to obtain a bearing fluctuation of less than 2° .

DF GAIN BAND A:



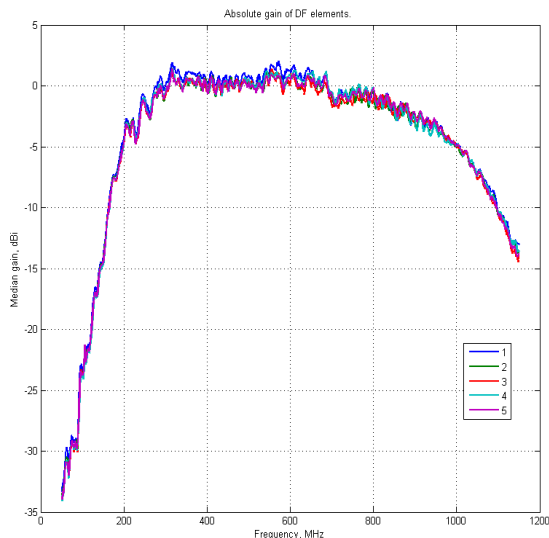
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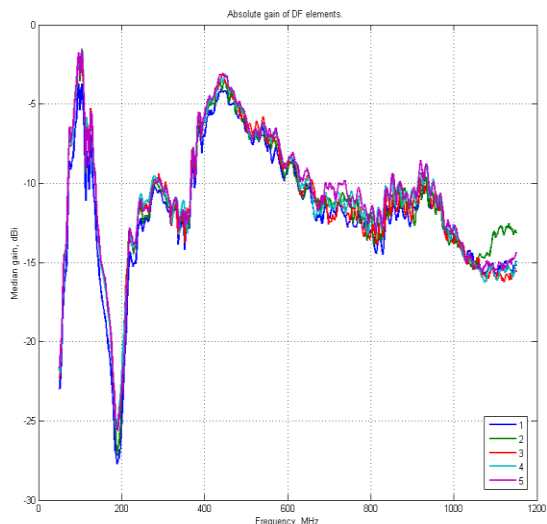
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DF GAIN BAND B:

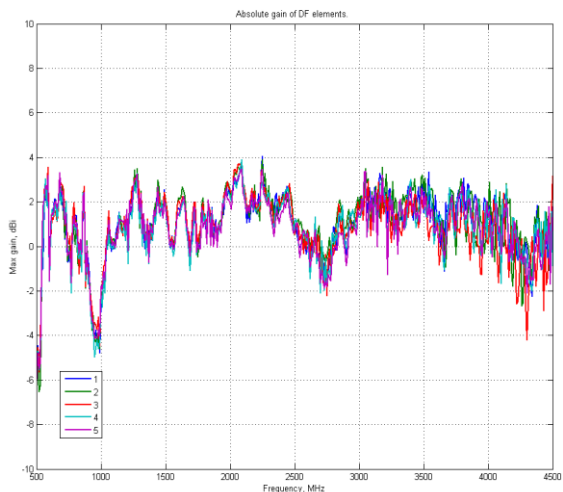


VP Gain

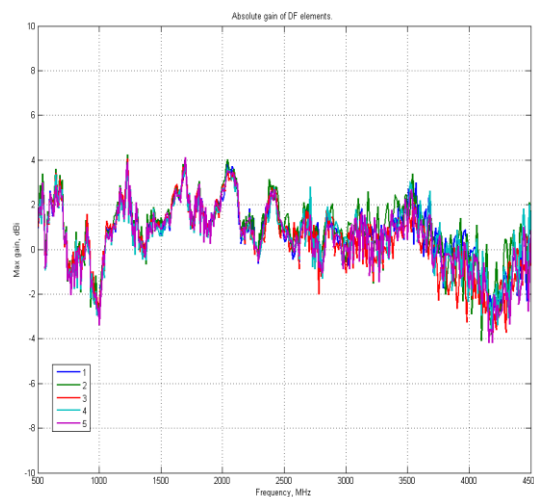


HP Gain

DF GAIN BAND C:



VP Gain



HP Gain

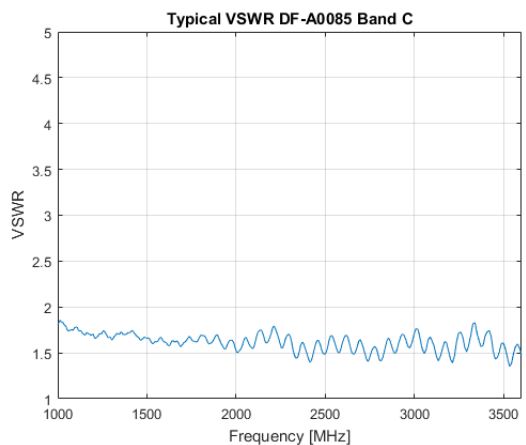
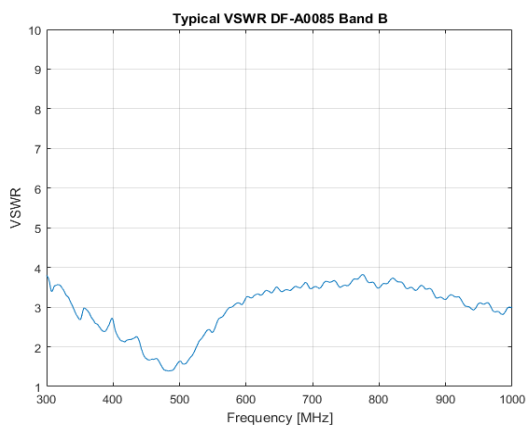
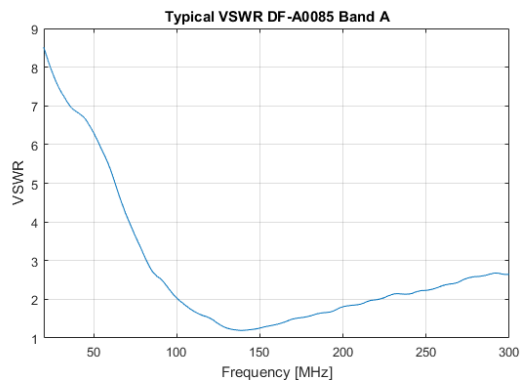
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DF VSWR:



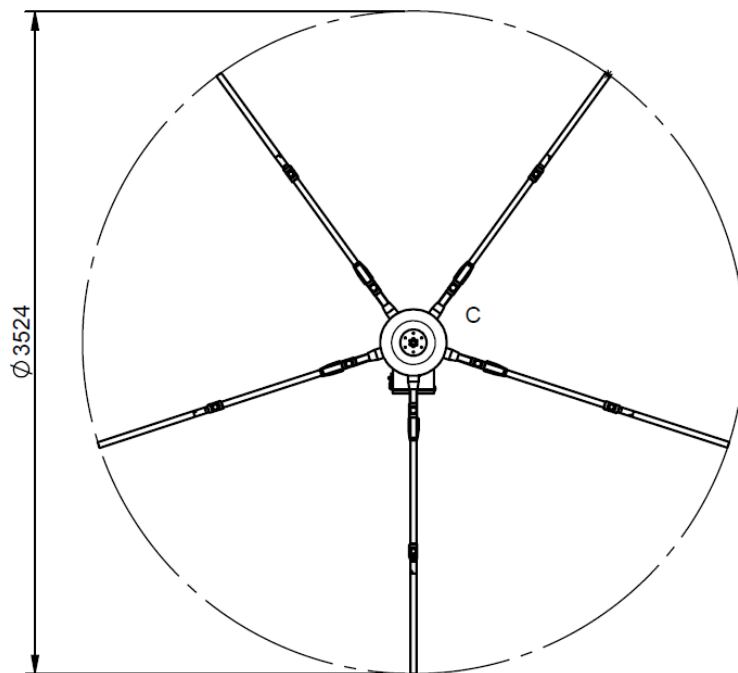
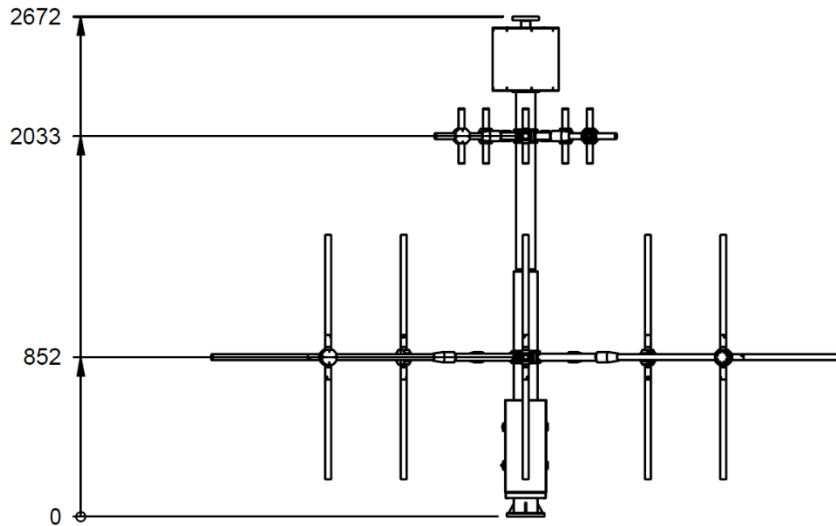
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DIMENSIONED OUTLINE DRAWING:



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LIGHTNING ROD INTERFACE:

LIGHTNING CONDUCTOR FLANGE DETAIL

