

# Maritime Direction Finding and Monitoring Antenna

20 – 6000 MHz

Product Code: DF-A0263

VERSION: 1.0



## PRODUCT DESCRIPTION:

The DF-A0263 direction finding antenna covers a frequency range of 20 MHz to 6 GHz. A separate, but fully integrated active monitoring antenna gives high sensitivity omni-directional coverage on the same axis as the DF antenna, without interfering with the DF array.

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 integrated monitoring antenna has two bands, mounted above the Band C & D DF antenna array housed in the radome. Each band of the monitoring array is amplified at the top of the cable, and passively combined to give continuous coverage over the frequency range 20 MHz to 6 GHz, with a single output connector.

This DF antenna is designed to be usable with either a 5- or 2-channel phase-sensitive receiver and correlative algorithm. Characterisation of the antenna can be performed on request.

**Related products:** DF-A0226, DF-A0183, DF-A0038, DF-A0062 and DF-A0098

## SPECIFICATIONS:

Product codes:	
DF-A0263	DF with monitoring up to 6 GHz
Electrical - DF:	
DF frequency range	Band A: 20 – 300 MHz; Band B: 300 – 1000 MHz; Band C: 1000 – 3000 MHz; Band D: 3000 – 6000 MHz
Nominal input impedance	50 Ω
Antenna type	5-element DF interferometer (From 5- to 2-channel receiver compatible)
Polarisation	Vertical
Output cables	RG 400 cables
DF connectors	20 x TNC male
Monitoring connector	1 x N male
Electrical - monitoring:	
Frequency range	20 – 6000 MHz
Nominal H-plane beamwidth	360°
Nominal E-plane beamwidth	60°
Typical VSWR*	2:1
Polarisation	Vertical
Connector type	N-type male
Nominal impedance	50 Ω
Input voltage (via coax)*	13 – 24 V DC
Input current*	< 150 mA
Power consumption (nom)*	< 2.25 W
OP1dB (typ.)*	> 11 dBm
OIP2 (typ.)*	> 31 dBm
OIP3 (typ.)*	> 21 dBm
Sensitivity (typ.)	20 – 100 MHz -20 dBμV/m
(S/N = 10 dB, BW = 1 Hz)*	100 – 1000 MHz -30 dBμV/m
	1 – 3 GHz -35 dBμV/m
	3 – 6 GHz -40 dBμV/m
Mechanical:	
Cross-sectional wind area	0.99 m <sup>2</sup> (excluding antenna switch) 1.05 m <sup>2</sup> (including antenna switch)
Maximum wind speed	160 km/h (without ice load)
Assembled height	3.60 m
Assembled diameter (max)	2.70 m
Shipping dimensions	2.20 m x 0.90 m x 0.60 m
Weight of antenna including shipping container	TBC

\*in active mode

## ELECTRICAL FEATURES:

- Full-size DF
- Wideband DF
- 5-element interferometer
- Optimised for 2-channel receivers
- High sensitivity omni antenna integrated
- Rapid deploy/stow design with integrated dust caps

## MECHANICAL FEATURES:

- Designed for tower-mounting

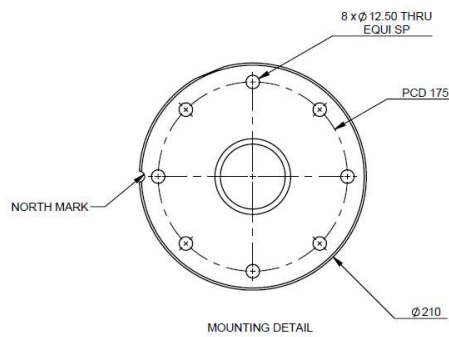
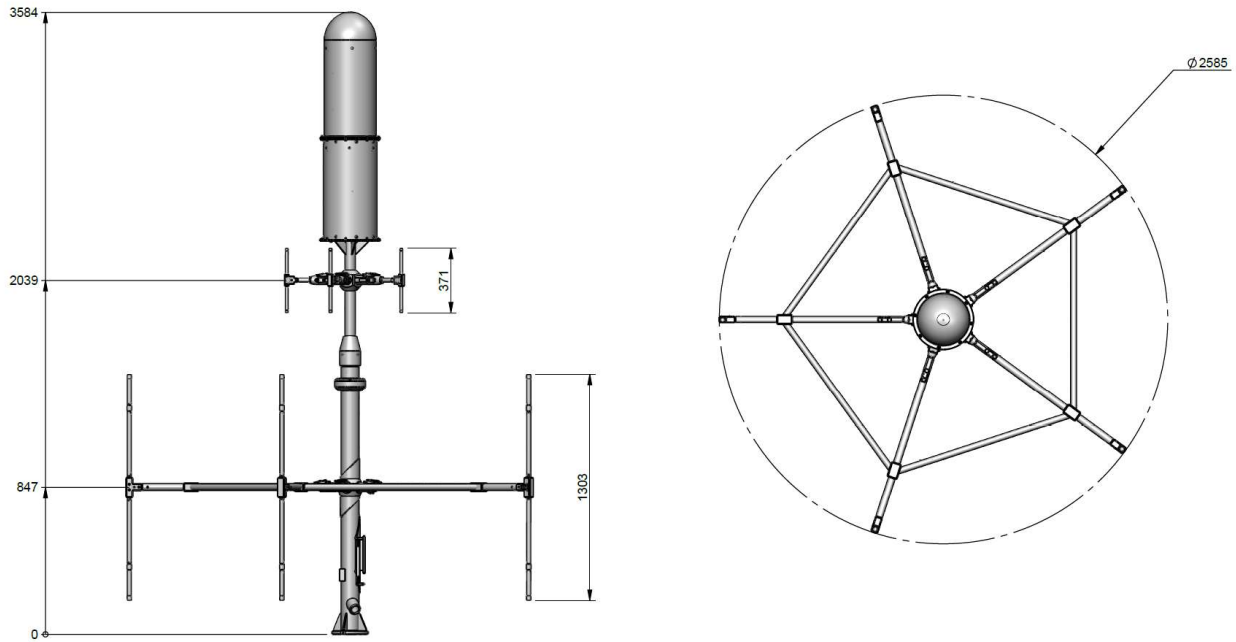
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## DF ANTENNA DIMENSIONS:



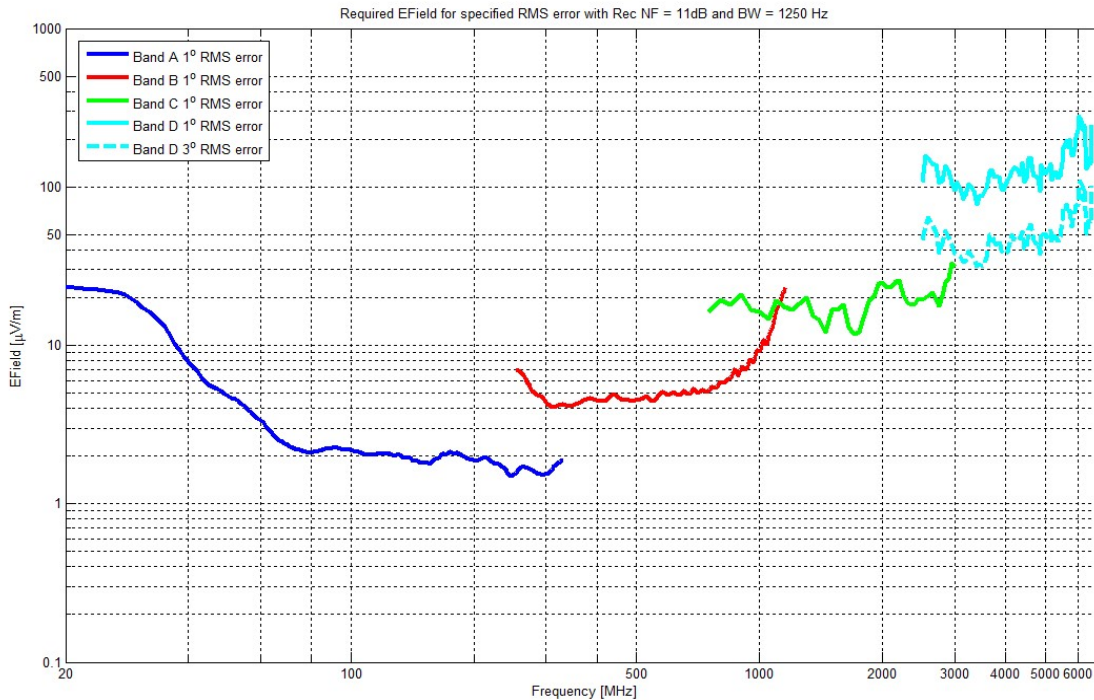
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## DF SENSITIVITY GRAPH:



The graph illustrates the direction finding sensitivity of a typical system. The sensitivity is measured using an IF bandwidth of 1.25 kHz and **without** averaging. The graph shows the minimum signal required to obtain a bearing fluctuation of less than 1° for the frequency range 20 to 6000 MHz, less than 3° for the frequency range 3000 to 6000 MHz. **The values should be adapted for the system in question if it uses a different bandwidth and receiver noise figure, or if considering a different required accuracy.**

## INTEROPERABILITY WITH DF RECEIVERS:

The DF sensitivity of the full system is highly dependent on the receivers, processing and algorithm used, as well as the characterisation table density. The graph above assumes a 5-channel, low noise receiver and correlative algorithm. The sensitivity will be between 1 and 10 dB worse with a 2-channel receiver system.

The 1 to 6 GHz band of this antenna is designed for efficient operation with a commutated 2-channel receiver.

Special attention has been paid to the nulls which usually occur in this band due to the large diameter mast. Receiver systems with two channels, commutated to measure five antennas, are sensitive to nulls in the element patterns. Depending on the receiver and algorithm, reducing the null depth leads to a more reliable system.

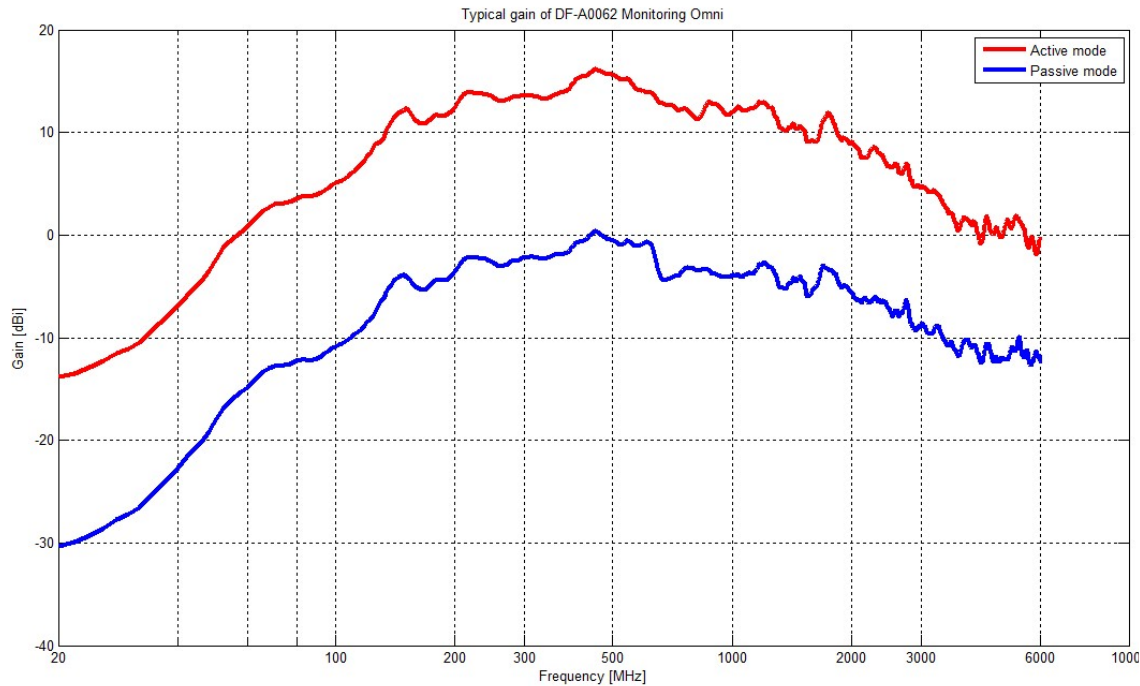
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## GAIN OF OMNI-DIRECTIONAL MONITORING ANTENNA:



## ENVIRONMENTAL SPECIFICATIONS AND TESTS (Designed to meet):

Vibration	Designed for MIL-STD-810G CN1 method 528.1.
Temperature high and low, storage and operating	Designed for MIL-STD-810G CN1 method 501.6 & 502.6.
Humidity	Designed for MIL-STD-810G CN1 method 507.6, procedure II.
Rain	Designed for MIL-STD-810G CN1 method 506.6, procedure II.
Solar radiation	Designed for MIL-STD-810G CN1 method 505.6, procedure II.
Salt fog	Designed for MIL-STD-810G CN1 method 509.6.