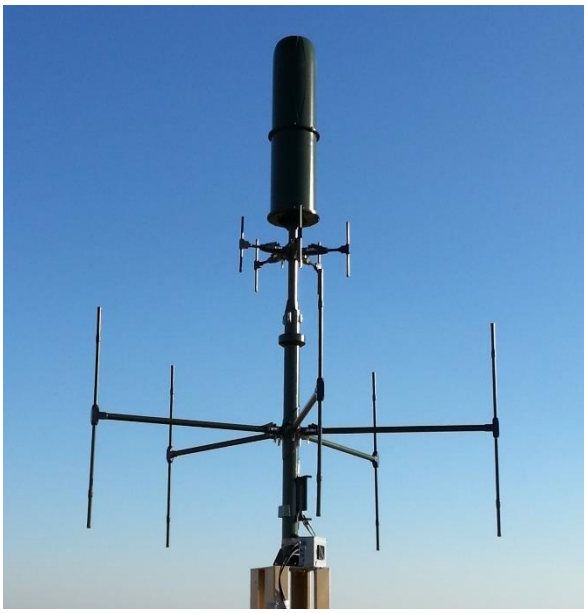
Direction Finding and Monitoring Antenna

20 – 6000 MHz

VERSION: 2.7

Product Code: DF-A0062



PRODUCT DESCRIPTION:

The DF-A0062 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 1º for most of the frequency range. Dipole elements provide good cross-polarisation rejection, and fair performance for signals arriving from up to 15º above or below the horison.

The integrated monitoring antenna is in two bands, mounted above the Band C & D DF antenna module 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-A0064, DF-A0057-03, DF-A0038 and DF-A0098

MECHANICAL FEATURES:

- Designed for tower-mounting

SPECIFICATIONS:

Product codes:			
DF-A0062		DF with monitoring up to 6 GHz, TNC connectors.	
DF-A0062-01		DF with monitoring up to 6 GHz, SMA connectors.	
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		**DF-A0062**	**DF-A0062-01**
		20 x TNC male	20 x SMA male
Monitoring connector		1 x N male	1 x SMA 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.) (S/N = 0 dB, BW = 1 Hz)*	20 – 100 MHz	-20 dBµV/m	
	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 m² (excluding antenna switch) 1.05 m² (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		60 kg 135 kg	

*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

Updated 2023-11-29

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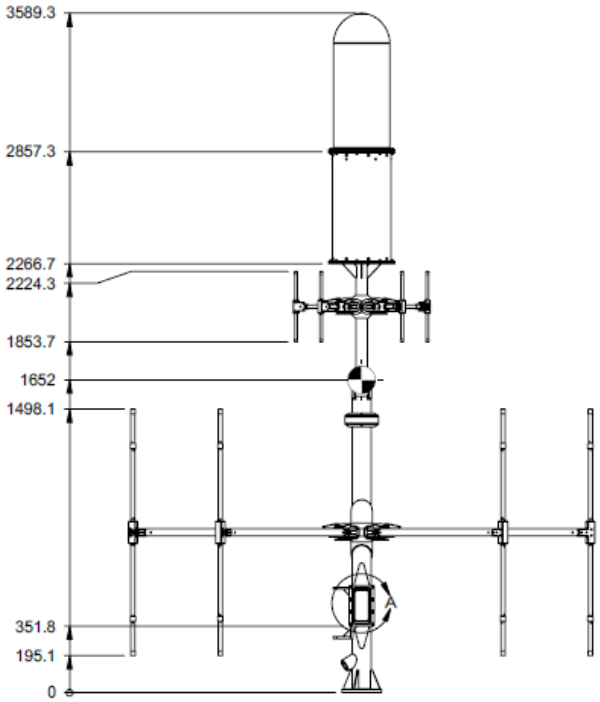
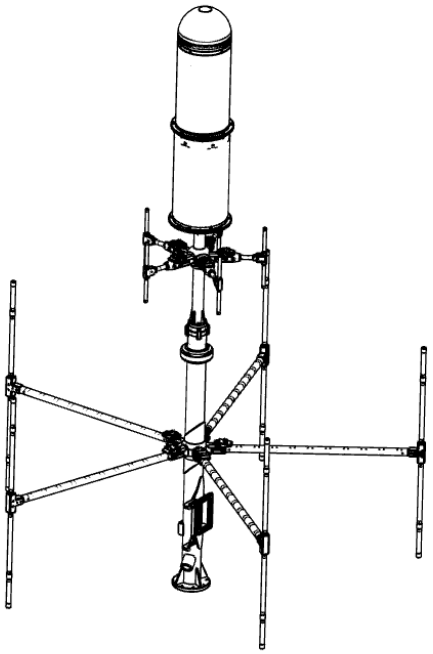
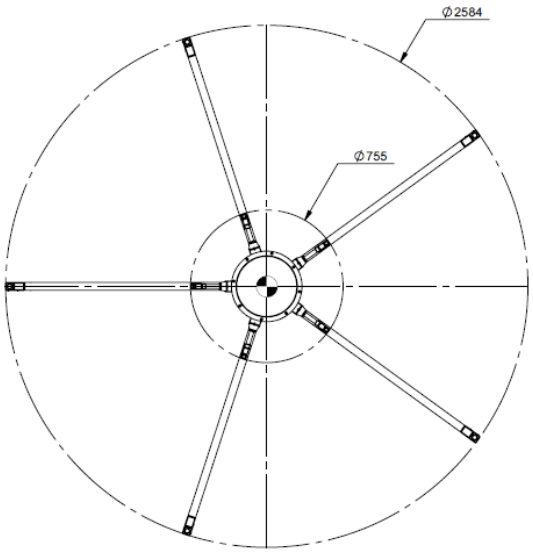
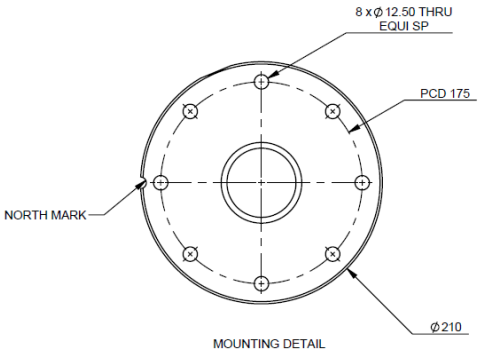
DF ANTENNA DIMENSIONS:







TOP



MOUNTING DETAIL

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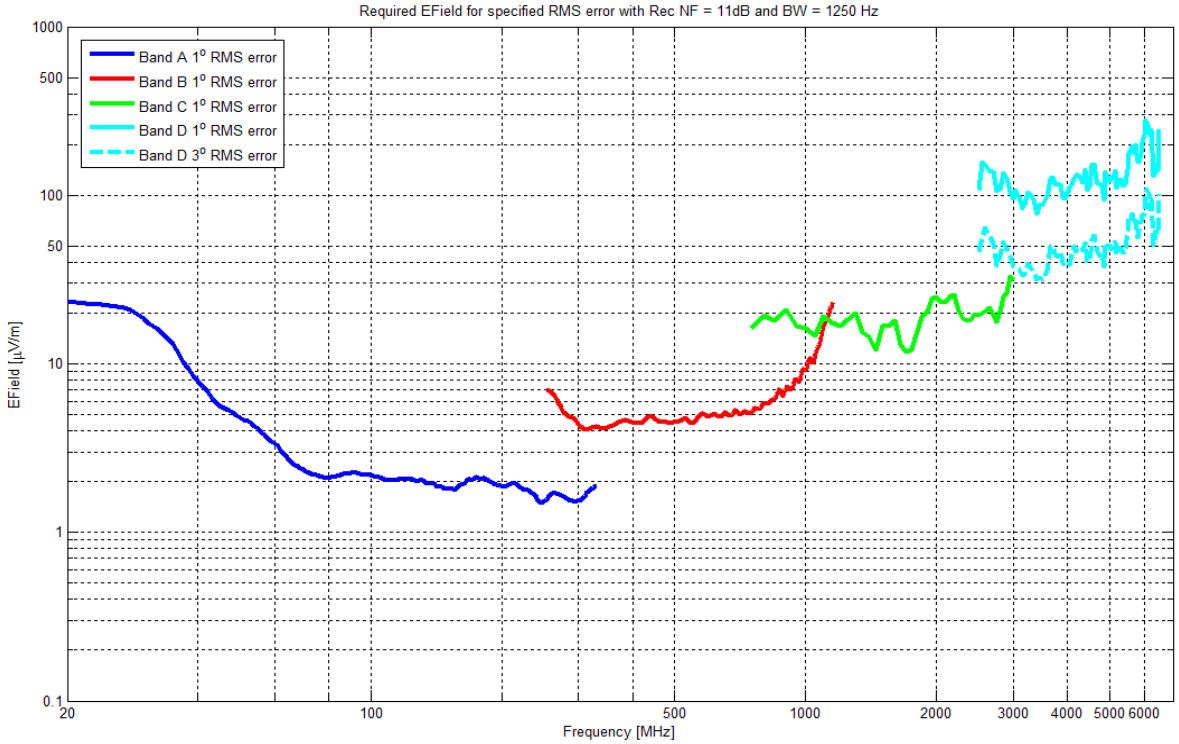
DF SENSITIVITY GRAPH:



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 1º for the frequency range 20 to 6000 MHz, less than 3º 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.

ENVIRONMENTAL SPECIFICATIONS AND TESTS (designed to meet the following):

Vibration	Designed for MIL-STD-810G CN1 method 514.7, category 4, procedure I b 2
Shock	Designed for MIL-STD-810G CN1 method 516.7
Temperature high and low storage and operating	Designed for MIL-STD-810G CN1 method 501.6 & 502.6, procedure I & II
Humidity	Designed for MIL-STD-810G CN1 method 507.6, procedure II
Rain	Designed for MIL-STD-810G CN1 506.6, procedure II
Solar radiation	Designed for MIL-STD-810G CN1 505.6, procedure I
Salt fog	Designed for MIL-STD-810G CN1 509.6
Dust	Designed for MIL-STD-810G CN1 510.6, procedure II

GAIN OF OMNI-DIRECTIONAL MONITORING ANTENNA: