

Direction Finding and Monitoring Antenna

20 – 6000 MHz

Product Code: ZD-DFA-206000



PRODUCT DESCRIPTION:

The ZD-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 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 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.

MECHANICAL FEATURES:

Designed for tower-mounting

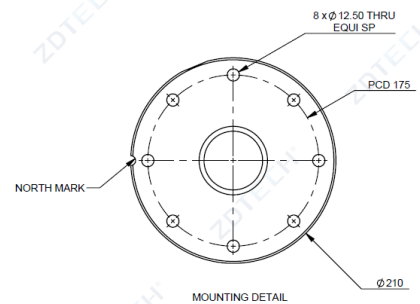
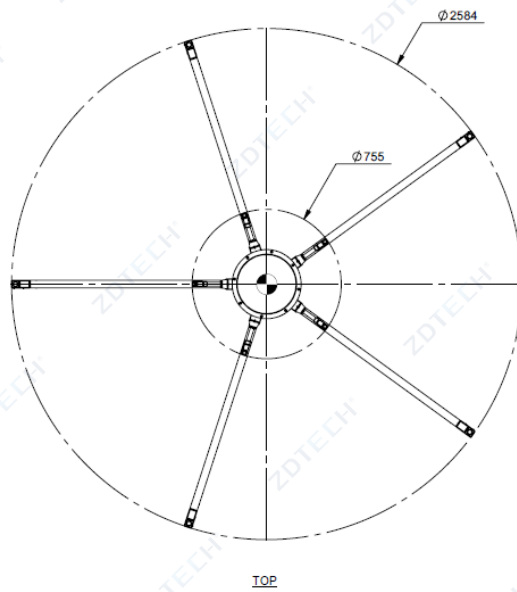
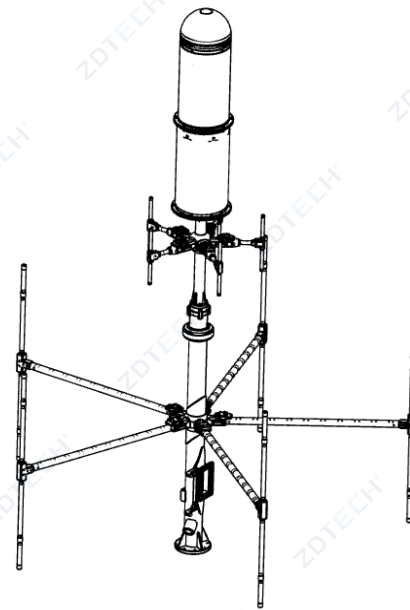
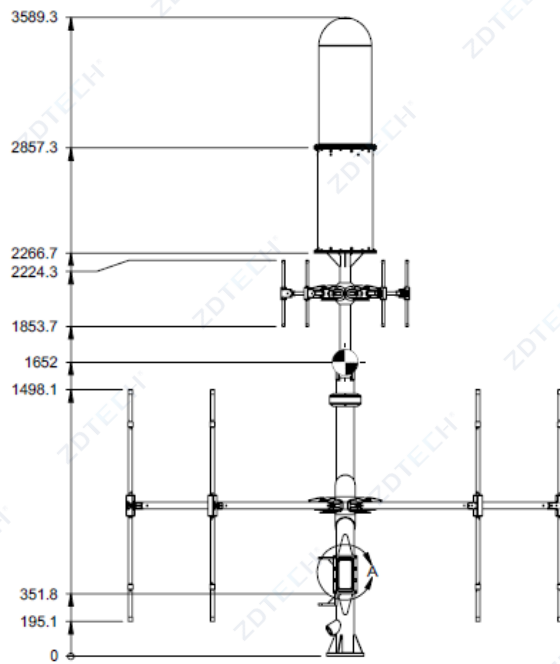
ELECTRICAL FEATURES:

- 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

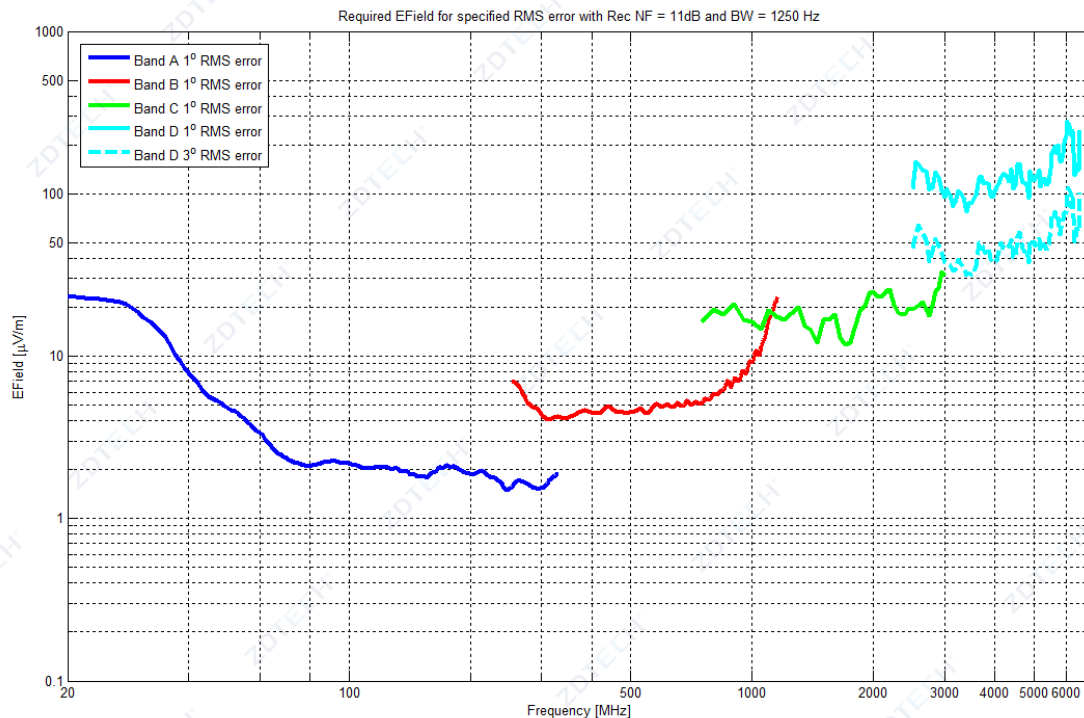
SPECIFICATIONS:

Product codes:		
ZD-DFA-206000	DF with monitoring up to 6 GHz, TNC connectors.	
ZD-DFA-206000-01	DF with monitoring up to 6 GHz, SMA connectors.	
Electrical - DF:		
DF frequency range	BandA: 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	ZD-DFA-206000	ZD-DFA-206000-01
Monitoring connector	20 x TNC male	20 x SMA male
	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	60 kg	
including shipping container	135 kg	

DF ANTENNA DIMENSIONS:



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.

GAIN OF OMNI.DIRECTIONAL MONITORING ANTENNA:

