

# RDF PRODUCTS

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## Product Data Sheet; Model DFA-1405B1 Wide-Coverage UHF Fixed-Site Sleeve-Dipole Adcock Radio Direction Finding Antenna

### FEATURES

- C 300-1,000 MHz Continuous Frequency Coverage
- C Fixed-Site Sleeve-Dipole Mast-Mount Design
- C True Adcock - Does Not Use Inferior Loops
- C Self-Decoupled From Support Tower Or Mast
- C 2.5 Degrees Typical RMS Bearing Accuracy
- C High Signal Handling Capability
- C Rugged, Weather-Sealed Design
- C Built-in RS-232 Personality ID Module

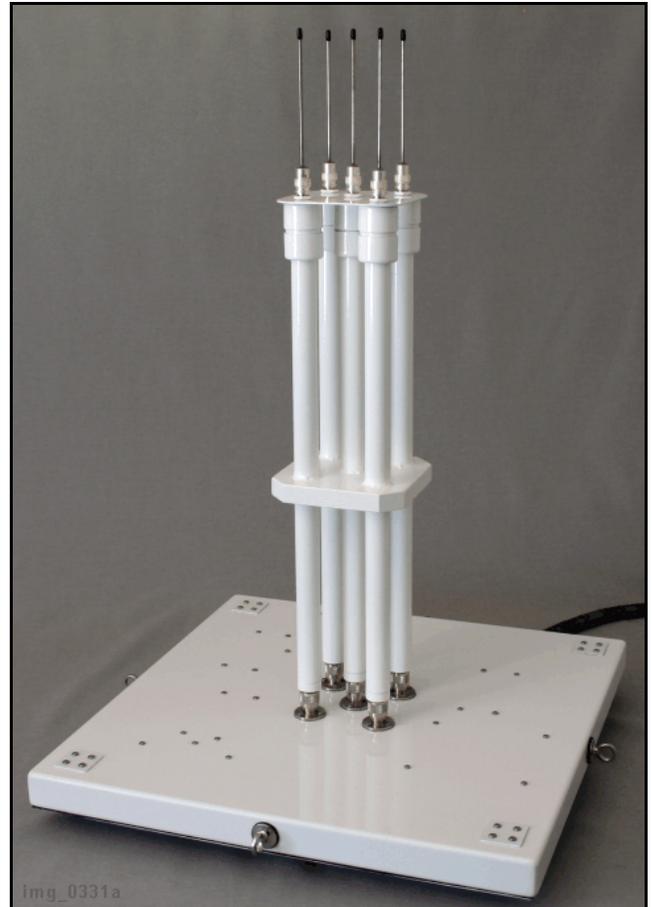
### DESCRIPTION

The RDF Products Model DFA-1405B1 is a 5-aerial UHF sleeve-dipole Adcock single-channel radio direction finding antenna continuously covering 300-1,000 MHz. This rugged, weather-sealed unit is specifically designed for permanent or transportable fixed-site DF applications, and is readily mast- or tower-mounted.

Being of a true Adcock design, the DFA-1405B1 avoids the erratic performance associated with inferior loop DF antennas and provides sensitivity and listen-thru capability superior to that of comparable pseudo-Doppler DF antennas. The DFA-1405B1 has also been designed for high signal-handling capability for reliable performance in dense signal environments.

The DFA-1405B1 has been specially designed so that its performance is independent of its supporting mast or tower (this is accomplished with the supplied isolation mast). This is in sharp contrast to competing mast-mounted DF antenna designs where performance is adversely and unpredictably affected not only by the presence of the mast, but also by changes in mast height.

The DFA-1405B1 directly interfaces with all RDF Products DF receivers and bearing processors via a single 8-meter interface cable (routed through the isolation mast). Custom interface cables with user speci-



**DFA-1405B1 300-1,000 MHz Sleeve-Dipole Adcock DF Antenna (close-up view without 5' iso-mast)**

fied lengths are also available. The aerials are removable to facilitate storage, transport, and user testing. The isolation mast can also be removed.

The DFA-1405B1 includes a digital "personality ID module" that reports model number and frequency coverage information for this DF antenna. When connected to any of the RDF Products "B"-series DF processors/receivers (e.g., the DFP-1000B, DFP-1010B, or DFR-1000B), the DFA-1405B1 automatically reports its model number and frequency coverage information. This information is then displayed so that the user can easily avoid out-of-band operation.

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## SPECIFICATIONS (subject to change without notice)

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DF Technique:	Single-channel 2-phase Adcock (derived sense)	Power Requirements:	11-16 VDC @ 280 mA (negative ground)
Frequency Coverage:	300-1,000 MHz continuous	Operating Temperature:	-40 to +60 degrees C
Bearing Accuracy:	3.5 degrees RMS max.; 2.5 degrees RMS typical (ideal siting conditions)	Storage Temperature:	-40 to +70 degrees C
Polarization:	Vertical	Humidity:	0-100%
Output Impedance:	50 ohms nominal	Dimensions:	105.3"x22.5"x22.5" (HxWxD, w/5' iso-mast and 24" support pipe)
2nd Order Intercept:	+28 dBm typical (referenced to derived sense input)	Structural Weight:	36 lbs. (includes main chassis, aerials, iso-mast, 8-meter interface cable; excludes 6.5 lb. stainless-steel mast support pipe)
3rd Order Intercept:	+13 dBm typical (referenced to derived sense input)		

## APPLICATIONS INFORMATION

Most mast-mounted DF antenna designs fail to take the necessary steps to decouple (isolate) the supporting mast from the antenna. The close proximity of the mast to the aerials results in mutual coupling that distorts the antenna gain patterns. This distortion in turn degrades bearing accuracy and DF sensitivity. This performance degradation is not only difficult to predict, but its severity greatly changes as a function of mast height.

The problem is most noticeable with wide-coverage DF antennas and most acutely manifests itself as frequency "holes" (narrow and sometimes not-so-narrow frequency bands where severe performance degradation is experienced). In addition, these "holes" tend to shift in frequency when the mast height is changed or the unit is installed at a different location. Furthermore, these "holes" are actually just the extreme manifestation of the broader problem that some degree of performance degradation exists over all or most of the DF antenna's frequency range as a consequence of inadequate mast decoupling. Users are often unaware of these problems, however, attributing them instead to site anomalies or the vagaries of radio direction finding in general. The problem is further compounded by the reluctance of most vendors to fully meet their duty of candor to customers to disclose this serious performance shortcoming.

In fact, these problems actually occur as a result of a design deficiency that is overcome in RDF Products mast-mounted DF antennas. All such DF antennas manufactured by RDF Products have been specifically designed so that the aerials are properly decoupled from the supporting mast, thus eliminating the above-mentioned mast-induced performance degradations. DF antenna performance is thus unaffected by the mast and there are no frequency "holes".



DFA-1405B1 Mounted on 5' Iso-Mast