

# Quick Deployment Active HF NVIS DF Element

1 – 30 MHz

VERSION: 1.1

Product Code: DF-A0172



## SPECIFICATIONS:

<b>Electrical:</b>	
Frequency range	1 – 30 MHz
VSWR	< 2.0:1 (typical CP modes)
Nominal impedance	50 Ω
RF power handling	Receive only
Polarisation	Linear, vertical, LCP or RCP
<b>Connector:</b>	
RF	N(f)
Control	4-pin Amphenol
Power supply	12 V
OIP3 (Active mode)	38 dBm
Switching cycles	Designed for 100 Mc
<b>Mechanical:</b>	
Total height (deployed/stowed)	< 2250/1200 mm
Total diameter (deployed /stowed )	< 1600/280 mm (excl. quadpod) < 1900/280 mm (incl. quadpod)
Total mass	< 8.3 kg
Mounting	- Self-standing with quadpod - Bolt hole flange for semi-permanent mounting
Colour	Per request
<b>Environmental: designed to meet the following specifications</b>	
Temperature range	Designed for storage: -30 °C to +70 °C Designed for operation -30 °C to +55 °C
Weatherproofing	Designed for IP66 rain resistant
Shock and vibration	Designed for MIL-STD 810E 516.4: vibration category 8, shock 40 g
Wind resistance	120 km/h without guy ropes 160 km/h when fitted with guy ropes
Exposed materials	Painted aluminium and fibreglass

## PRODUCT FEATURES:

- Low visual profile
- Quick deployment
- Active operation with passive bypass option
- Integrated switching system
- Lightning/ESD protected
- Compact stowed form factor

## APPLICATIONS:

- Tactical HF DF array element
- Linear or circular arrays
- SSL arrays

\*CA Application 2,853,219;

\*EP Patent 2771943;

\*U.S. Patent No. 14/353,382;

\*ZA Patent No. 2014/02806

## PRODUCT DESCRIPTION:

The DF-A0172 antenna is a single site location (SSL) Active HF DF array element. Polarisation is selectable between linear vertical, RHCP and LHCP through the injecting of different DC voltages into the circular interface connector.

The antenna includes a low noise pre-amp that increases the antenna sensitivity, an integrated switching system and lightning and ESD protection. In passive bypass mode, there are no nonlinear active components in the chain to introduce unwanted distortion on the received signals.

It can be deployed as part of either a linear or circular array and is quickly and easily deployed and stowed. The product is unique in that it features a fully integrated quadpod for rapid deployment but can also be bolted to a plinth for semi-permanent installations. When stowed, the antenna collapses into a very small form factor for easy transportation and storage.

The design of the antenna element is such that it is able to switch between one of three modes: LHCP, RHCP and a VP omni mode. In LHCP and RHCP modes, the antenna element is capable of receiving waves of LHCP and RHCP polarisation respectively, incident from the upper half sphere, with a gain peak at  $\theta = 0^\circ$  (directly upwards). In VP omni mode, the antenna operates similar to a monopole antenna, able to receive waves with vertical polarisation with a gain peak on the horizon (or just above it) and a null at  $\theta = 0^\circ$ .

The antenna is intended for use in constructing DF interferometer arrays consisting of a number of DF-A0172 antennas.

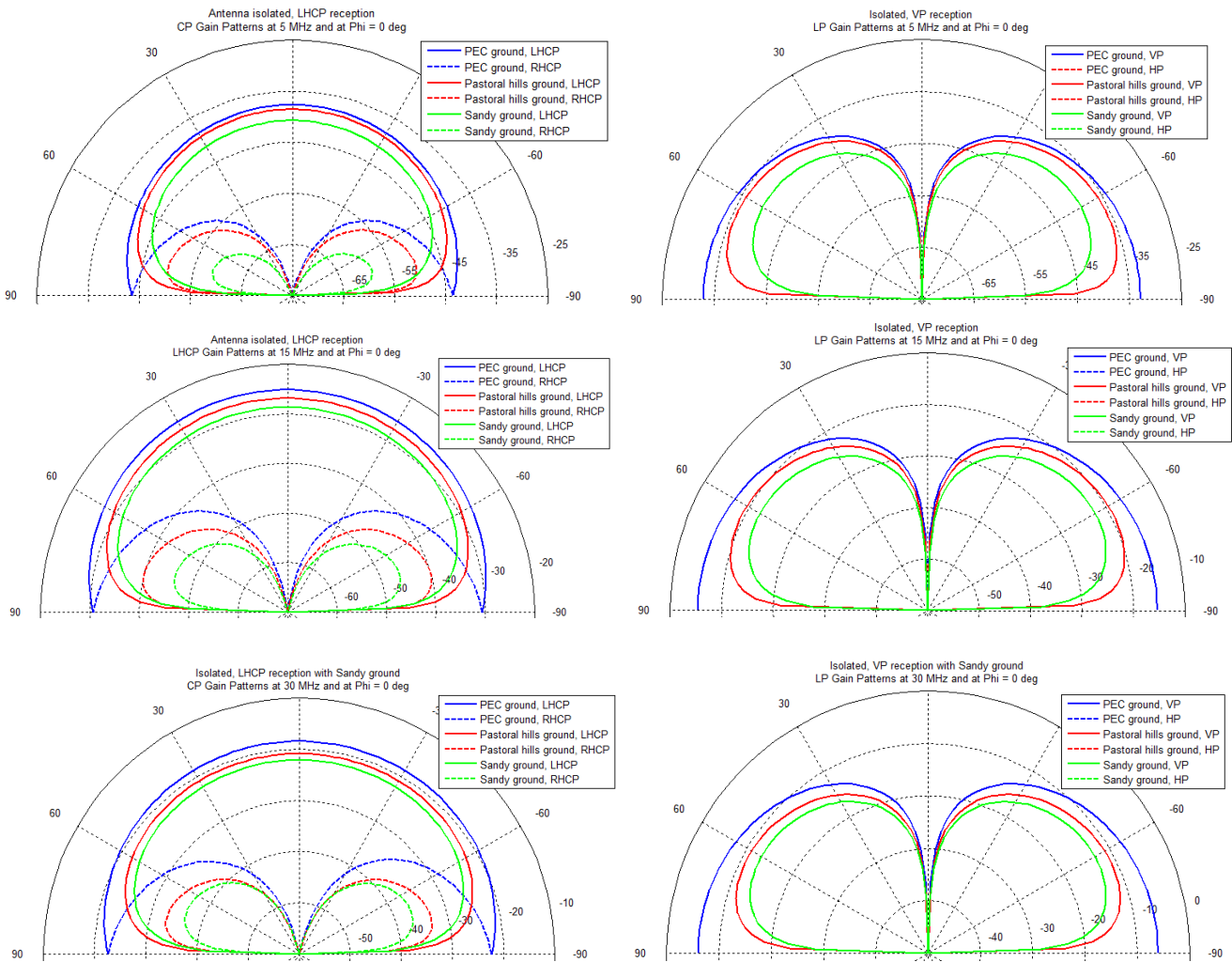
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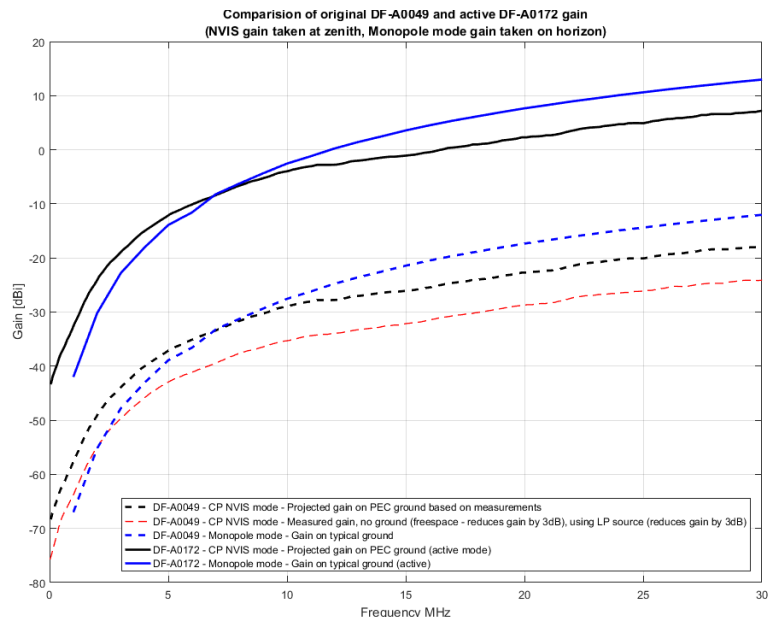
## Elevation patterns for various ground types:



## Gain and pattern symmetry:

NB. Gain patterns are measured with the antenna in free space using a VP source and reference (coloured traces adjacent) for 4 elevation cuts at 45° to each other.

On this average, for these different elevation cuts, we can add 6 dB to predict the circular polarised gain that would be obtained on a good ground (like pastoral hills). Gain is for incidence from directly above ( $\theta = 0^\circ$ ).



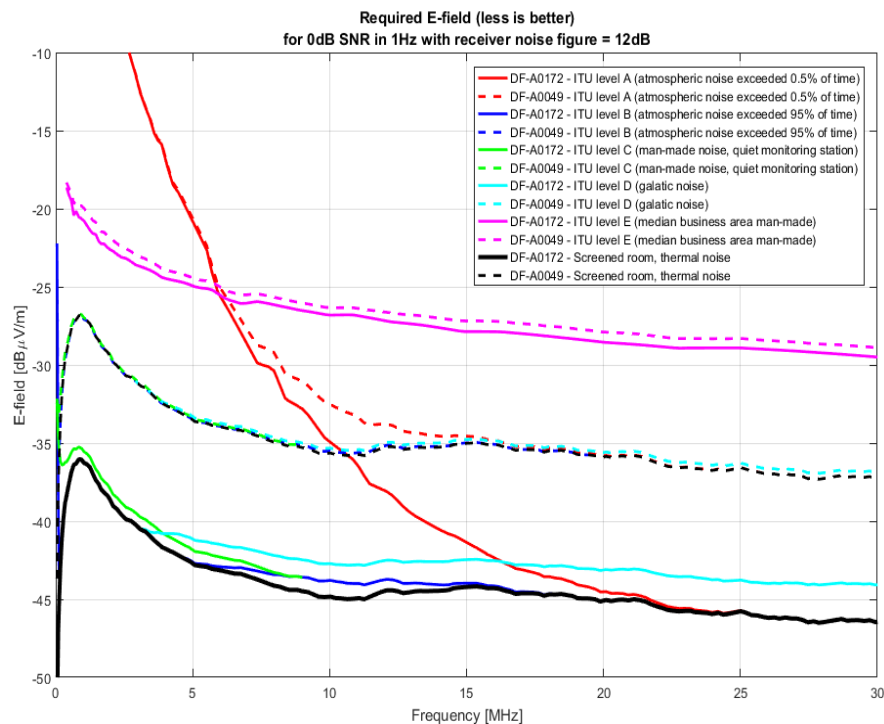
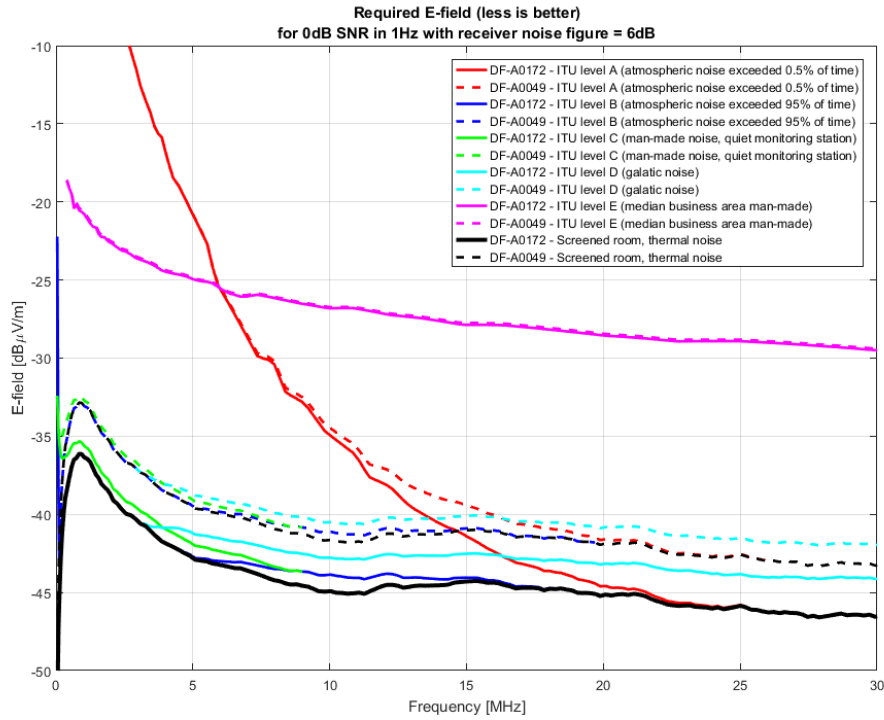
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E-field requirements:



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Outline dimension drawings:

