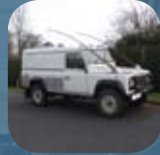


# IED Countermeasures

## Ultra Wideband and Multiband Antennas



Man Pack Antennas



Antennas for Light Vehicles



Antennas for Armoured Vehicles



Antennas for Vehicles on Patrol



# IED Countermeasures

## Ultra Wideband and Multiband Antennas

Man-pack and wearable antennas for foot patrol



### IED Countermeasures are no longer an option, but a necessity.

Effective countermeasures for field operations are becoming mandatory as commercially available RF products continue to be used by insurgents to set off IEDs, 'the road side bomb'.

Denying use of the RF spectrum to the enemy is critical for the protection of convoys, individual vehicles, and the dismounted soldier who is vulnerable to this form of covert and lethal attack.

As RF sources and amplifiers used for jamming are developed to cover wider bands at higher power, it is important that antennas are developed in parallel. The antennas must be wide-open (covering all specified bands); peak gain must be on the horizon at all frequencies; they must be small enough to be used by foot

soldiers and rugged for vehicle applications; high efficiency extends battery life.

Chelton Limited have developed a portfolio of ultra wideband omni antennas in the range 100MHz to 18GHz to cover all of the bands in which high power amplifiers currently operate. Multistack omni arrangements have been developed as well as specific products with high gain for cellular band countermeasures.

Chelton are developing antennas in conjunction with radio/HPA manufacturers to meet these demanding RF requirements to provide wide area safe zones for military personnel.



Left to right

XPO2V-2.0-18.0/1397

XPO2V-0.8-6.0GF/1441

### Ultra Wideband Omni

Biconical omnis are fully efficient, vertically polarised broadband antennas.

Depending on configuration, bandwidths from 3:1 to 30:1 are achievable.

- Frequencies from 100MHz to 18GHz
- Ground plane independent
- Vertically polarised
- Elevation HPBW typically 30°
- Typically 0 to 2dBi gain across the band
- Excellent azimuth ripple patterns
- High power
- Peak gain on horizon across all bands

### Multistacked Omni

Wideband omni antennas can be 'stacked' so that several antennas may be designed into a single housing, and more importantly a single mounting point on any vehicle.

- New feed through technology allows multiple antennas to be co-located, saving space and shadowing
- Overlapping frequencies for multiple applications
- High isolation between bands
- 200W per band simultaneously
- Good return loss across all bands
- Optional NATO spring mount



### Directional Antennas

Directional, ultra wideband, high power, vertical and circular polarised antennas are available. This range is expanding with new developments to meet customers' deployment requirements.

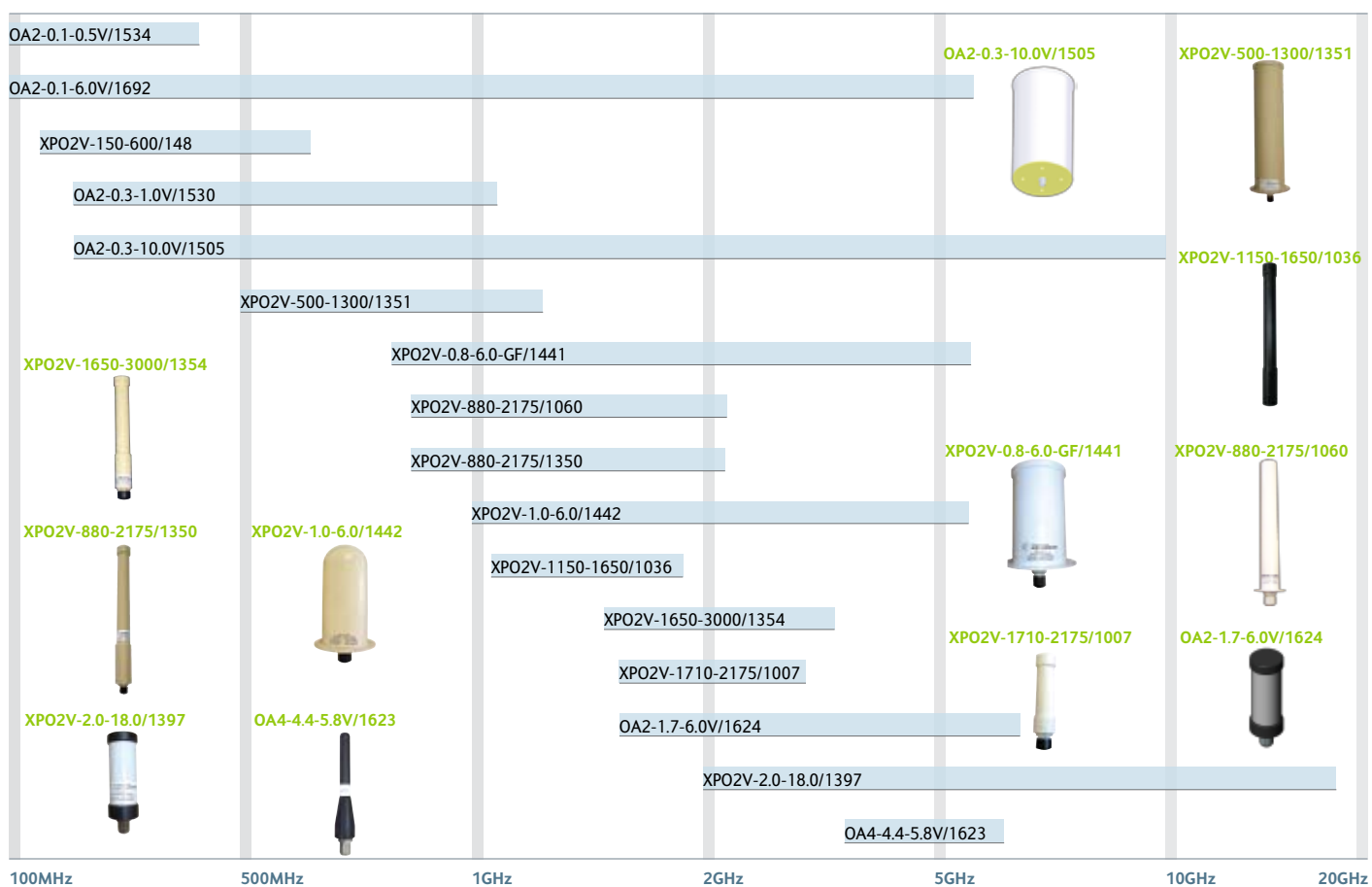
Omni antennas on light vehicles for army patrols



Omni antennas on armoured vehicles



## Standard ultra wideband omni antennas which form the cornerstone of development projects for specific applications



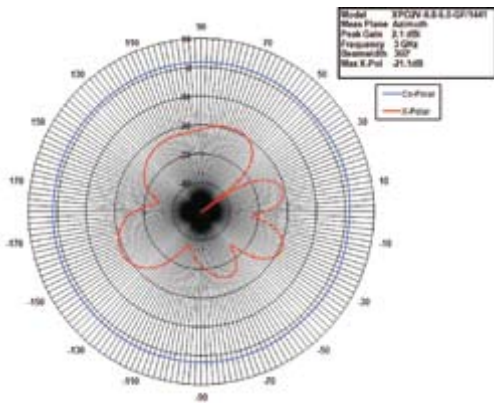
| Model                 | Frequency GHz              | Gain dBi | Beamwidth az° el° | Polarisation | Dimensions mm | Connector | Photo p |
|-----------------------|----------------------------|----------|-------------------|--------------|---------------|-----------|---------|
| OA2-0.1-6.0V/1692     | 0.10 - 0.50<br>0.50 - 6.00 | 2        | 360 80            | Vertical     | 1250x140 Ø    | N(F) x2   |         |
| OA2-0.1-0.5V/1534     | 0.13 - 0.50                | 2        | 360 60            | Vertical     | 855x104 Ø     | N(F)      |         |
| OA2-0.3-1.0V/1530     | 0.30 - 1.00                | 2        | 360 60            | Vertical     | 472x104 Ø     | N(F)      |         |
| XPO2V-150-600/148     | 0.15 - 0.60                | 2        | 360 80            | Vertical     | 805x155 Ø     | N(F)      |         |
| OA2-0.3-10.0V/1505    | 0.30 - 10.0                | 2        | 360 65            | Vertical     | 305x161 Ø     | N(F)      | p       |
| XPO2V-500-1300/1351   | 0.50 - 1.30                | 2        | 360 80            | Vertical     | 333x79 Ø      | N(F)      | p       |
| XPO2V-0.8-6.0-GF/1441 | 0.80 - 6.00                | 2        | 360 75            | Vertical     | 143x108 Ø     | N(F)      | p       |
| XPO2V-880-2175/1060   | 0.80 - 2.40                | 2        | 360 50            | Vertical     | 221x31 Ø      | N(F)      | p       |
| XPO2V-880-2175/1350   | 0.80 - 2.40                | 2        | 360 50            | Vertical     | 344x36 Ø      | N(F)      | p       |
| XPO2V-1.0-6.0/1442    | 1.00 - 6.00                | 2        | 360 70            | Vertical     | 134x59 Ø      | N(F)      | p       |
| XPO2V-1150-1650/1036  | 1.15 - 1.65                | 2        | 360 70            | Vertical     | 249x25 Ø      | N(M)      | p       |
| XPO2V-1650-3000/1354  | 1.65 - 3.00                | 2        | 360 80            | Vertical     | 253x25 Ø      | N(F)      | p       |
| XPO2V-1710-2175/1007  | 1.70 - 2.17                | 2        | 360 50            | Vertical     | 147x26 Ø      | N(F)      | p       |
| OA2-1.7-6.0V/1624     | 1.70 - 6.00                | 2        | 360 70            | Vertical     | 104x35 Ø      | N(F)      | p       |
| XPO2V-2.0-18.0/1397   | 2.00 - 18.0                | 2        | 360 70            | Vertical     | 104x39 Ø      | N(F)      | p       |
| OA4-4.4-5.8V/1623     | 4.40 - 5.80                | 4        | 360 40            | Vertical     | 153x14 Ø      | N(M)      | p       |

# RF Performance

Antennas used for IED countermeasures must provide high efficiency coupled with exceptional ground area coverage. The radiation patterns must be consistent across the whole band of operation.

## Azimuth pattern

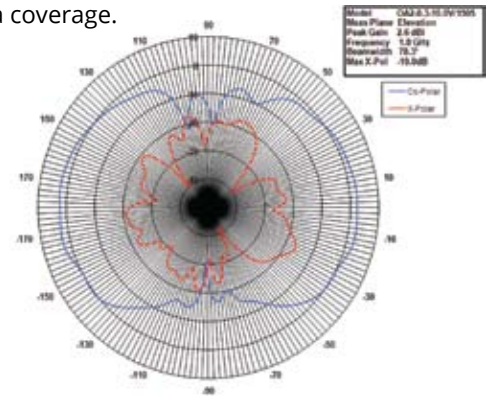
The measured azimuth pattern shown for model XPO2V-0.8-6.0GF/1441 demonstrates positive gain on the horizon and very low azimuth ripple, which is essential to ensure maximum area protection.



## Elevation pattern

The measured elevation pattern shown for OA2-0.3-10.0V/1505 demonstrates that the peak gain is on the horizon and remains so across all frequencies. This is a feature of our centre-fed antennas and is vital to ensure that the RF energy is not wasted.

The elevation beamwidth of at least 60° allows for vehicles or man-pack units to be off vertical but still maintain the protection area coverage.



## Chelton Limited

Chelton Limited, Lambda House  
Cheveley, Newmarket, Suffolk CB8 9RG, UK  
T: +44 (0)1638 732177  
E: Newmarket.sales@chelton.com

©Chelton Limited

Chelton Limited has a policy of continuous development and stress that the information provided is a guide only and does not constitute an offer or contract or part thereof.

Whilst every effort is made to ensure the accuracy of the information contained in this brochure, no responsibility can be accepted for any errors or omissions. All photography is copyright and is used with thanks to the respective owners.

