

Cobham Antenna Systems

COBHAM

Tactical Communications Antennas
Link16, MIDS, JTRS, JTIDS

The most important thing we build is trust



High specification



Critical communications



Omni-Directional and Sectoral coverage



NATO



Omni and Sector Antennas for Link16



Link16 Tactical Communications, Ground to Air

The Link16 protocol uses frequency bands that cover 960-1215MHz. This range of extended performance, broadband omni and sector antennas has been designed for use in Link16 systems for terrestrial and naval applications communicating with airborne platforms.

Link16 systems can be incorporated in to MIDS, JTRS and JTIDS systems for high data rate transmission. Multiple bands will be in use.

For short range applications a broadband dipole, model EVD2-960-1215/004 that has nominal 0dBi gain and moderate power can be used.

Model XPO2V-500-1300/034 is a high power, 2dBi gain omni, which has been used for marine applications by the UK Navy.

The product catalogue includes a 4dBi gain omni for 'intermediate' range. Size and elevation beamwidth enables model XV04-960-1215/1425 to be used for marine and ground applications.

All Link16 antennas are rugged, designed for extreme weather and temperature and have been used in battlefield conditions without affecting the performance or inhibiting mission requirements.

Antenna Development Programmes and Enhancements

Additional capabilities that are available across Link16 products include

- Feed through for additional omni on top providing high isolation
- Sector antennas to create pseudo-omni pattern

Link16

Link16 is a military inter-computer data exchange format of NATO enabling military aircraft, ships, Army and Marine Corps units to exchange their tactical picture in near real time. Link16 is one of the digital services of the MIDS in the Standardization Agreement STANAG 5516. It is a TDMA-based secure, jam-resistant high-speed digital data link operating in the L-band portion (969–1206 MHz) of the UHF spectrum.

MIDS

Multifunctional Information Distribution System (MIDS)

JTIDS

Joint Tactical Information Distribution System (JTIDS)

JTRS

Joint Tactical Radio System (JTRS)



Omni antenna
XV07-960-1215/1120
weighs 5.5lbs (2.5kgs)
and has a base
spigot for mounting
to standard 1 inch
pole mount clamps,
although other
configurations are
possible.

120° Sector antenna
SA13-120-0.96-
1.22V/1694 for Ground
Station applications is
mounted via adjustable
brackets top and base.

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Omni and Sector Antennas for Link16



Omni Antenna
XVO4-960-1250/1425

Rugged Omni Antennas with spigot or flange

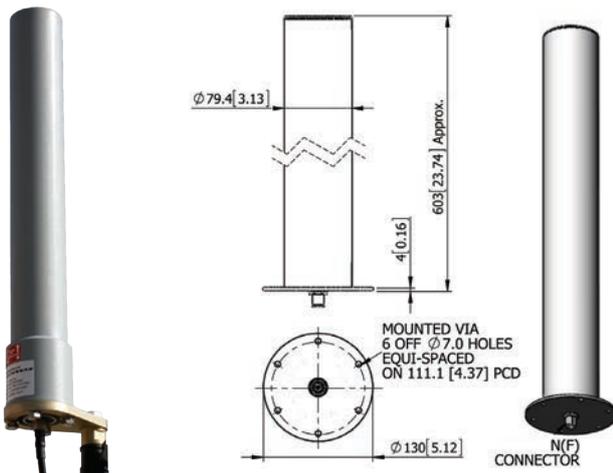
XVO4-960-1215/1425 & OA4-0.96-1.22V/1990

NATO Stock No 5985-99-190-8940

These rugged antennas are smaller than other major Link16 antennas and have low azimuth ripple. They feature alternative mounting arrangements, colour and dimensions.

XVO4-960-1215/1425

OA4-0.96-1.22V/1990



ELECTRICAL XVO4-960-1215/1425 OA4-0.96-1.22V/1990

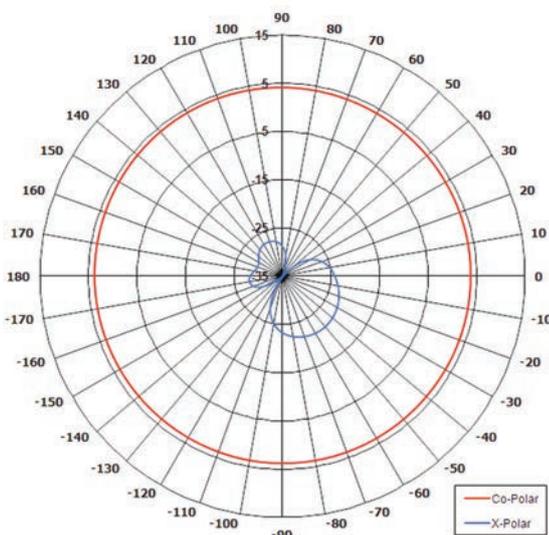
Gain	4.5dBi	4.5dBi
Beamwidth	360° x 33°	360° x 33°
Cross Polar	>20dB	>20dB
VSWR	2:1 max, <1.5:1 typical	2:1 max
Power Rating	200W @ at 50% Duty	200W @ at 50% Duty
Impedance	50 Ohms	50 Ohms
DC Grounding	DC Grounded	DC Grounded

MECHANICAL

Standard Finish	Grey RAL7001	Grey Marine Paint
Mass	2.2kg (4.84lbs)	2.2kg (4.84lbs)
Temperature	-40 to +50°C	-40 to +50°C
Wind Loading	8.2kg (18lbs) at 100mph	8.2kg (18lbs) at 100mph
Ice Load	25mm at 100mph	20mm at 100mph
Size	620x 79.4Ø mm	603x79.4Ø mm
Mounting	Via 24Ømm spigot	Via flange
Connector	N(F)	N(F)

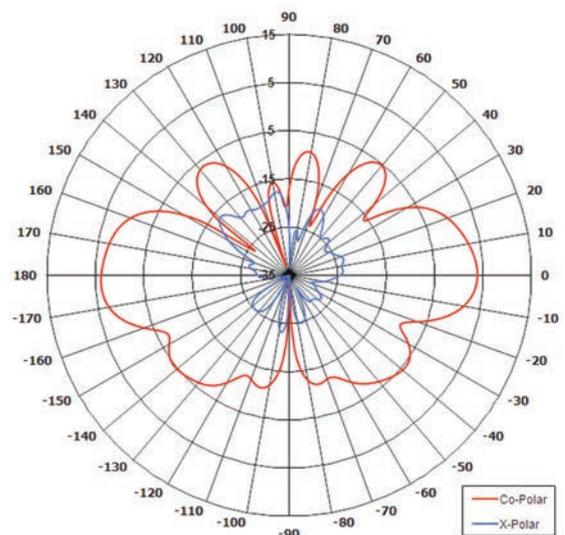
XVO4-960-1215/1425

Azimuth Pattern at 1000MHz



XVO4-960-1215/1425

Elevation Pattern at 1000MHz



Omni Antennas for Link16



XVO7-960-1215/1120 mounted

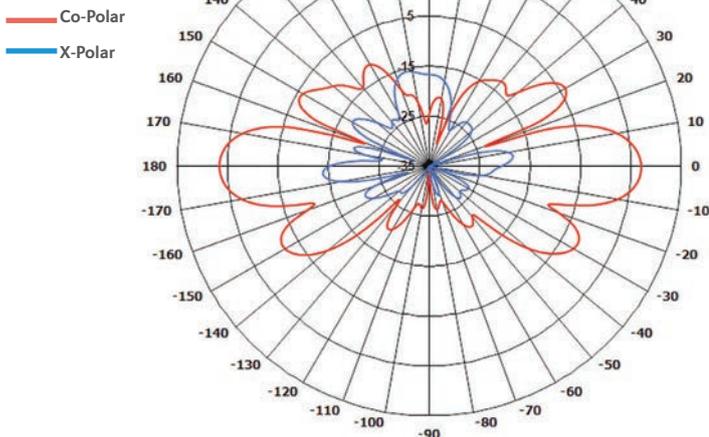
Omni Antennas with spigot or flange

XVO7-960-1215/1120

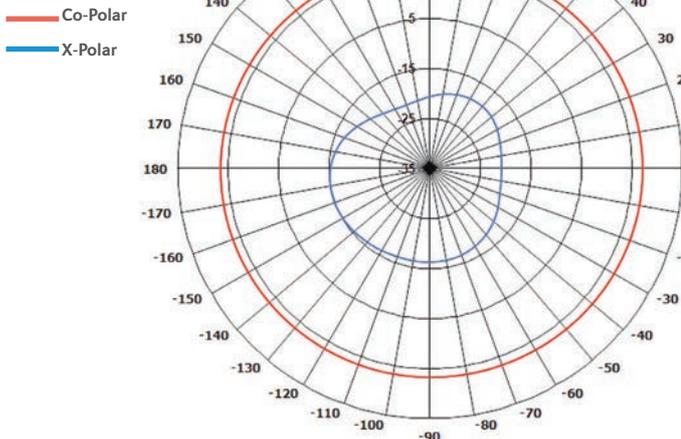
NATO Stock No 5985-99-758-6585

The Original Link16 High Gain 7dBi Omni Antenna, XVO7-960-1215/1120 is a high gain, robust Omni Antenna designed for Link16 Ground-based installations.

XVO7-960-1215/1120
 Measuring Plane: Elevation
 Peak Gain: 7.1dBi
 Frequency; 1.087GHz
 Beamwidth: 17.4°



XVO7-960-1215/1120
 Measuring Plane: Azimuth,
 Extremely Low Ripple
 Peak Gain: 7.1dBi
 Frequency; 1.087GHz
 Beamwidth: 360°



XVO7-960-1215/1120

OA7-1090V/1328 with flange

OA7-1090V/1328 features a very similar specification to XVO7-960-1215/1120, but was designed for use on an Arctic ice breaker and has additional strength to withstand ice loading and a flange base for ease of mounting.



OA7-1090V/1328

	XVO7-960-1215/1120	OA7-1090V/1328
ELECTRICAL		
Gain	7dBi	7dBi
VSWR	2:1 max	2:1 max
Polarisation	Vertical	Vertical
Beamwidth	360° x 16.5°	360° x 16.5°
Cross Polar	25dB	25dB
Power Rating	200W at 50% duty	200W at 50% duty
Electrical Tilt	1.5° Up-tilt	1.5° Up-tilt
DC Grounding	DC Grounded	DC Grounded
Impedance	50 Ohms	50 Ohms
MECHANICAL		
Standard Finish	Gloss Grey	Gloss White
Wind Loading	13.2kg at 100mph	14.3kg at 100mph
Ice Load	-	25mm at 100mph
Size	1029x790 mm (40.5x31")	1040x1800 mm (41x71") flange
Mass	2.5kg (5.5lbs)	2.5kg (5.5lbs)
Temperature	-40 to +50°C	-40 to +50°C
Connector	N(F)	N(F)

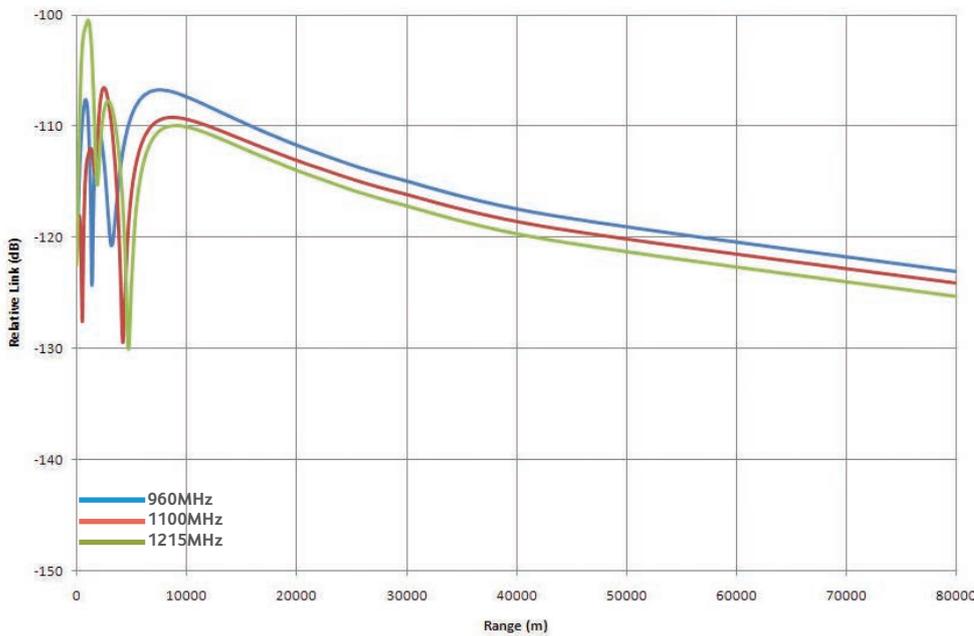
Omni Antennas for Link16



Omni antenna
OA7-1090V/1328 used in
Link16 system on Arctic
ice breaker

Fly-By Analysis

XVO7-960-1215/1120 Fly-By Analysis, Altitude 5000ft



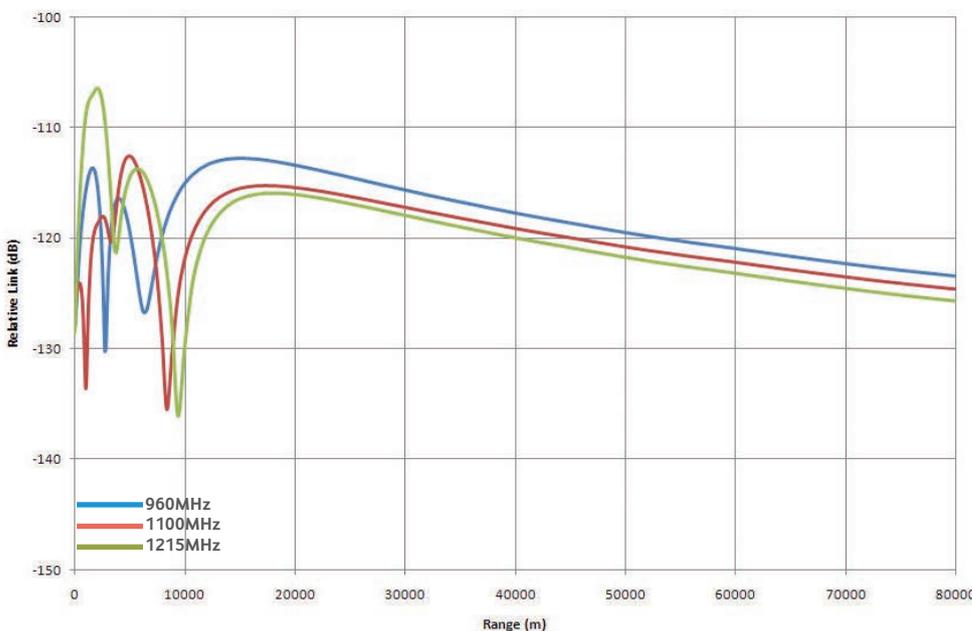
The ground-based Omni antennas provide high gain at low angles in order to be able to receive signals from distant aircraft which appear to be only a few degrees above the horizon.

Although this provides optimum signal strength at long-range it is important that it is also able to communicate equally well with close-in aircraft which will be at higher angles, or even overhead.

In order to demonstrate that the high gain Omni antenna will be able to fulfil these diverse needs, a Fly-By Analysis has been carried out.

This analysis calculates the signal strength at the aircraft for a number of aircraft altitudes and ranges from overhead to the far extent of range (for example 250miles) at various frequencies taking account of the transmission path loss and the antenna's elevation radiation pattern.

XVO7-960-1215/1120 Fly-By Analysis, Altitude 10000ft



The graphs show relative signal strengths at 5000ft and 10,000ft, for a specific application out to 80km (50 miles) demonstrating that the antenna will provide useable signal over a large range.

Similar Fly-by analyses can be carried out for all antennas where there is communications between static and remote platforms but is most useful where the mobile vehicle can move in three dimensions (usually aircraft).

Omni Antennas for Link16

200W Omni Antennas for Transmitters, Ground Station, Vehicle and Marine

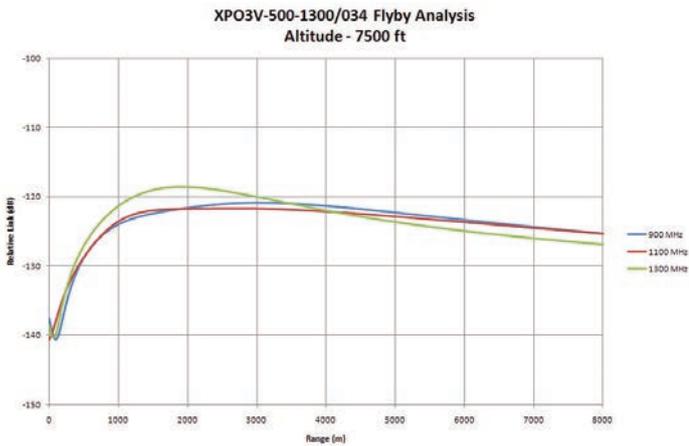
Omni Antennas for Transmitters, Ground Station, Vehicle and Marine

XPO2V-500-1300/034

NATO Stock No 5985-99-573-7366

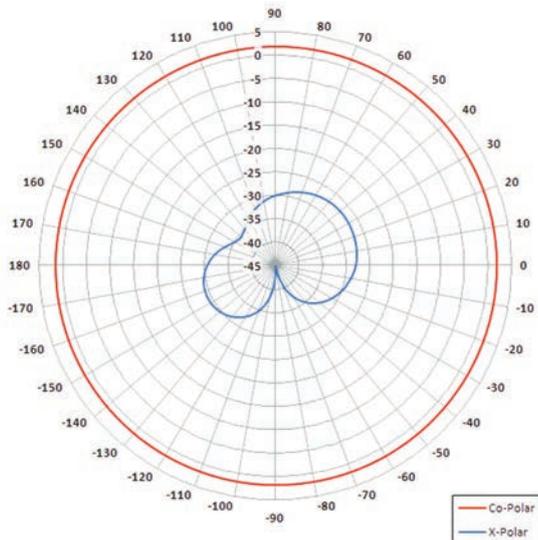


XPO2V-500-1300/034 Fly-by Analysis Pattern

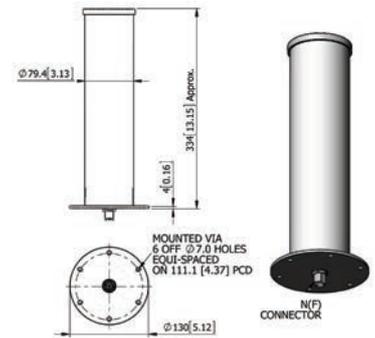


XPO2V-500-1300/034

Azimuth Pattern at 900MHz



OA2-0.5-1.3V/1989



ELECTRICAL

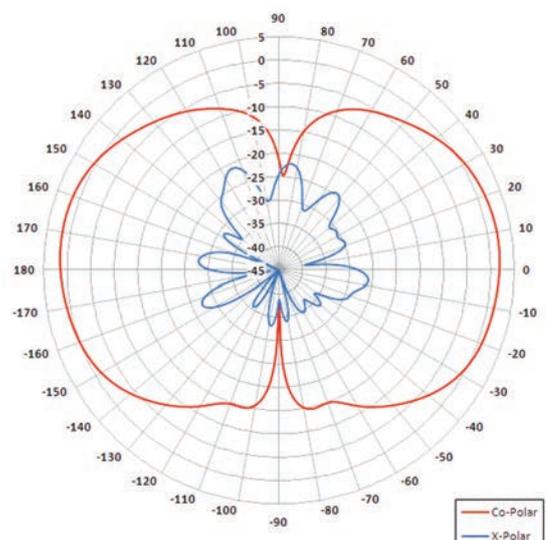
	XPO2V-500-1300/034	OA2-0.5-1.3V/1989
Gain	2dBi	2dBi
Polarisation	Vertical	Vertical
Beamwidth	360° x 80°	360° x 80°
Cross Polar	20dB	20dB
VSWR	1.5:1	2:1
Power Rating	200W	200W

MECHANICAL

Standard Finish	Glass Fibre, Gloss White	Grey Marine Paint
Mass	1.5kg	1.5kg
Temperature	-20 to +50°C	-20 to +50°C
Wind Loading	4.3kg at 100mph	4.3kg at 100mph
Size	333x79Ø mm (108Ø flange)	334x79Ø (130Ø flange)
Connector	N(F)	N(F)

XPO2V-500-1300/034

Elevation Pattern at 900MHz



Omni Antennas for Link16

Omni Antenna Ground, Vehicle and Marine

OA8-0.96-1.22/1932

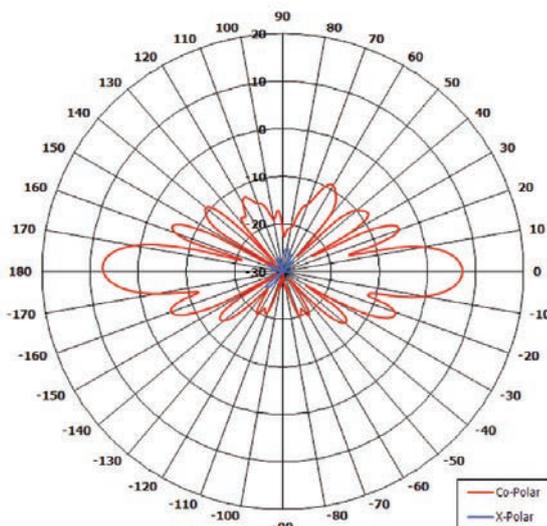
With Spigot. High Gain - 8.5dBi

This antenna has very high gain at 8.5dBi with vertical polarisation and low azimuth ripple.

ELECTRICAL	OA8-0.96-1.22/1932
Gain	8.5dBi
Beamwidth	360° x 11.5°
Cross Polar	>25dB
VSWR	1.5:1
Power Rating	200W
MECHANICAL	
Standard Finish	Gloss Grey
Mass	3kg
Temperature	-40 to +50°C
Wind Loading	18.6kg at 100mph
Size	1450x800mm
Connector	N(F)
Mounting	Via 240 mm spigot



OA8-0.96-1.22/1932
Elevation Pattern



Dipole for Short Range 20W Transmitters

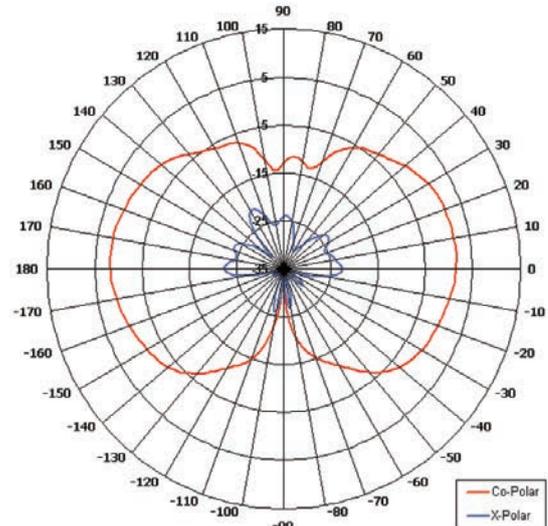
EVD2-960-1215/004

Broadband omni dipole antenna for 20W transmitters and short range. Use for hand held radio or vehicles.

ELECTRICAL	EVD2-960-1215/004
Gain	2dBi
Beamwidth	360° x 90°
VSWR	2:1
Power Rating	20W
Polarisation	Vertical
MECHANICAL	
Standard Finish	Glass Fibre, Matt Black
Mass	0.12kg
Temperature	-20 to +50°C
Wind Loading	0.6kg @ 100ph
Size	281x250 mm
Connector	N(F)



EVD2-960-1215/004
Elevation Pattern



Sector Antennas for Link16



The Advantages of Sector Antennas

Sector antennas generally have a much higher gain than omni antennas enabling them to have a far longer range.

Combinations of three 120° sector antennas or two 180° sector antennas provide long range, wide area, all round coverage. This gives the effect of an omni antenna but with much higher gain.

Overhead coverage can also be provided and custom configurations and developments are available on request.

Individual sector antennas allow the operator to concentrate the signal within a particular region where the requirement is most critical.

These sector antennas have high power.



180° Sector Antenna with flange

SA9-180-0.96-1.22V/1814

NATO Stock No 5985-99-476-6387

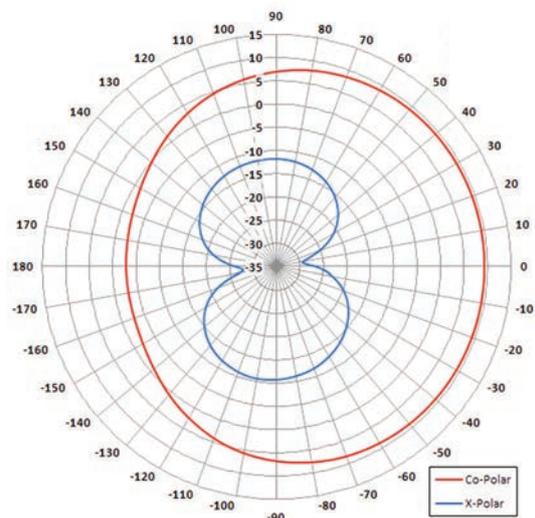
High Gain & Power, for Ground Stations

ELECTRICAL		SA9-180-0.96-1.22V/1814
Frequency	0.96 - 1.215 GHz	
Gain	9dBi	
Beamwidth	180° x 20°	
VSWR	1.7:1	
Power Rating	100W average, 200W peak	
Front to Back Ratio	10dB	
MECHANICAL		
Standard Finish	Interthane 987	
	Storm Grey N42	
Mass	6.4kg	
Temperature	-28 to +55°C	
Wind Loading	300N at 100mph	
Size	1055x247Ø mm	
	(41.5x10 inches)	
Connector	N(F)	



SA9-180-0.96-1.22V/1814

Azimuth Pattern



Sector Antennas for Link16

120° Sector Antenna for Ground Stations

SA13-120-0.96-1.22V/1694

NATO Stock No 5985-99-551-8880

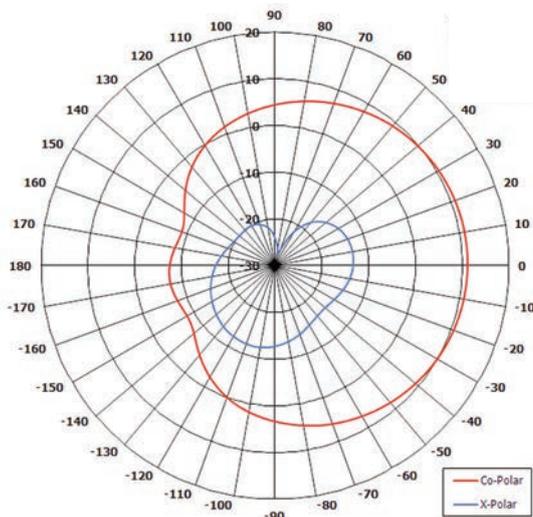
High Gain & Power

ELECTRICAL	
Frequency	0.96 - 1.22 GHz
Gain	13dBi >10dBi over 120° Azimuth
VSWR	2:1
Power Rating	100W
Front to Back Ratio	>20dB
MECHANICAL	
Standard Finish	Aerodur HF Matt Grey
Mass	5.6kg
Temperature	-33 to +55°C operating -55 to +71°C storage
Wind Loading	3.4kg N
Size	1650x1530 mm (65x6 inches)
Connector	N(F)



SA13-120-0.96-1.22V/1694

Azimuth Pattern



120° Sector Antenna

SA5-120-0.96-1.22V/1669

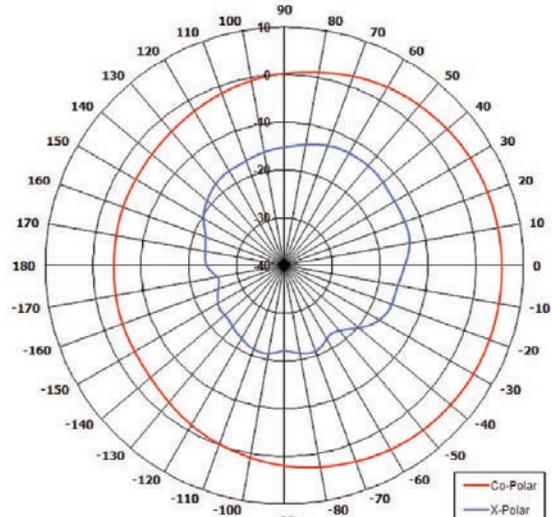
Small Sector, Low Weight & Wind Loading

ELECTRICAL	
Frequency	0.96 - 1.215 GHz
Gain	5dBi
Beamwidth	120° x 60°
VSWR	2:1 max
Power Rating	50W
Front to Back Ratio	>20dB
MECHANICAL	
Standard Finish	Matt Grey
Mass	3kg
Temperature	-30 to +55
Wind Loading	8.64kg at 100mph
Size	330x1620 mm (13x7 inches)
Connector	N(F)



SA5-120-0.96-1.22V/1669

Azimuth Pattern



Filters

Bandpass and Bandstop Filters

Bandstop Filter BSF-1030-1090/1347

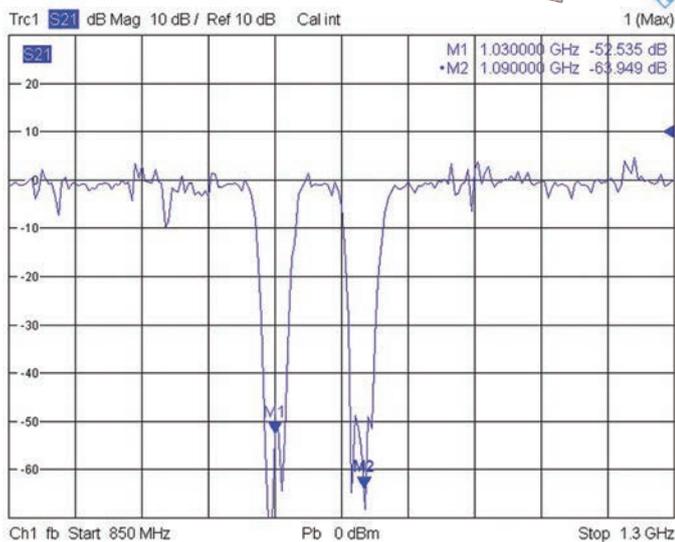
NATO Stock No 5915-99-725-5169

High power bandstop filter provides 40dB notches at the IFF frequencies 1030MHz and 1090MHz and band stop above 2GHz for protection against harmonics. Reduces mutual interference where IFF and Link16 equipment is co-sited. Can be mounted externally but can afford greater protection when located close to the radio.

Passband	From to 1008MHz From 1053 to 1065MHz From 1113 to 1215MHz
Passband insertion loss	1dB min
Passband VSWR	1.6:1 max
Rejection from	1023 - 1037MHz: 35dB min 1083 - 1097MHz: 35dB min 1900 - 4000MHz: 30dB min, 45dB typ
Power Handling	200W peak, 40W average
Mass	3.7kg max
Operating Temperature	-20 to +50°C
Connectors	Input/Output N(F)
Dimensions	210x100x85mm (8.3x4x3.4 inches)
Finish	White

BSF-1030-1090/1347

Rejection characteristics of Notch Filter showing over 50dB rejection at IFF frequencies, 1030MHz and 1090MHz.



Bandpass Filter - BPF-0.96-1.22/1911

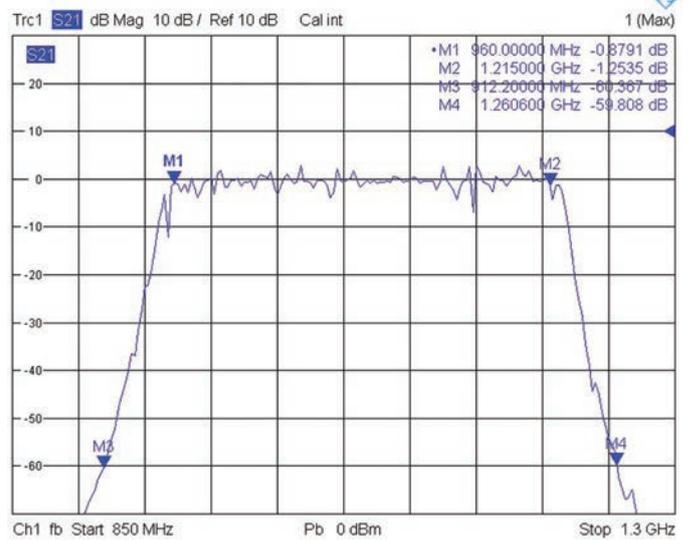
NATO Stock No 5915-99-958-7202

High power, 200W Interdigital bandpass filter.

Passband	0.962 - 1.213GHz
Insertion loss at band edges	0.9dB max 0.7dB typ
VSWR	1.3:1 max
Rejection from	DC -900MHz: 60dB min 1265 - 4000MHz: 60dB
Power Handling	1000W peak, 220W average
Mass	0.675kg
Operating Temperature	-20 to +50°C
Connectors	Input/Output: N(F)
Dimensions	175x75x25mm (7x3x1 inches)
Finish	White

BPF-0.96-1.22/1911

Pass-band characteristics showing -60dB rejection 50MHz outside the primary Link16 band.



Catalogue of Link16 Antennas

Reference	Frequency	Gain dBi	Beamwidth		Polarisation	Power W	Dimensions		Page
	GHz		Az°	El°			mm	inches	

Omni Antennas

OA2-0.5-1.3V/1989	0.50 - 1.30	1 to 2	360	80	Vertical	200 at 50% duty	334x130 Ø	13x5 Ø	6
XPO3V-500-1300/034, NATO Stock No 5985-99-573-7366	0.50 - 1.30	1 to 2	360	80	Vertical	200 at 50% duty	333x108 Ø	13x4.2 Ø	6
EVD2-960-1215/004	0.96 - 1.215	2	360	80	Vertical	20	281x26 Ø	11x1 Ø	7
OA2-0.96-1.22V/1990	0.96 - 1.215	4.5	360	33	Vertical	200 at 50% duty	603x130 Ø	23.7x5 Ø	3
OA7-1090V/1328	0.96 - 1.215	7	360	16	Vertical	200 at 50% duty	1040x180 Ø	41x7 Ø	4
XVO7-960-1215/1120, NATO Stock No 5985-99-758-6585	0.96 - 1.215	7	360	16	Vertical	200 at 50% duty	1029x79 Ø	40.5x3 Ø	4
OA8-0.96-1.22/1932	0.96 - 1.215	8.5	360	11	Vertical	200 at 50% duty	1450x80 Ø	57x3 Ø	7
XPO4-960-1215/1425, NATO Stock No 5985-99-190-8940	0.96 - 1.215	4.5	360	33	Vertical	200 at 50% duty	620x79 Ø	24.4x3 Ø	3

Sector Antennas

Reference	Frequency	Gain dBi	Beamwidth		Polarisation	Power W	Dimensions		Page
	GHz		Az°	El°			mm	inches	
SA9-180-0.96-1.22V/1814, Sector 180° NATO Stock No 5985-99-476-6387	0.96 - 1.215	9	180	20	Vertical	200 at 50% duty	1055x247 Ø	41.5x10 Ø	8
SA13-120-0.96-1.22V/1694, Sector 110° NATO Stock No 5985-99-551-8880	0.96 - 1.22	13	110	9	Vertical	200 at 50% duty	1650x155 Ø	65x6 Ø	9
SA5-120-0.96-1.22V/1969, Sector 120°	0.96 - 1.22	5	120	60	Vertical	200 at 50% duty	330x162 Ø	13x6.4 Ø	9

Filters

Reference	Frequency	Dimensions		Page
		mm	inches	
Band Pass Filter				
BPF-0.96-1.22/1911, NATO Stock No 5915-99-958-7202	0.962 - 1.213	175x75x25	7x3x1	10
Band Stop Filter				
BSF-1030-1090/1347, NATO Stock No 5915-99-725-5169	Notches at 1.030GHz and 1.090GHz	210x100x85	8x4x3	10



BROCHURES



2012 Catalogue



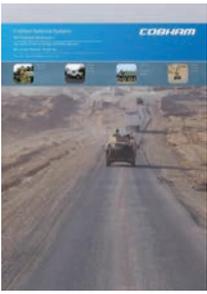
Total Capability



Antenna Testing



Ground Control



Electronic Warfare



Body Worn



DAS



IED Countermeasures



WiMAX and LTE



Unmanned Systems



C-Band



Radar Systems



Chelton Limited trading as Cobham Antenna Systems

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