Cobham Antenna Systems

Microwave Antennas

Specialist Antenna Design and Manufacture

Antennas for Ground Control Centres

The most important thing we build is trust

Designed to the highest specification

Critical and efficient communications

Antennas used worldwide on all types of unmanned airborne vehicles and target drones

Control links and robotics

Ground Control Centre Antennas

Airborne Platforms, UAVs, Ground Vehicles, Robots

Sector, Multi Sector and Omni Antennas

Unmanned helicopter

Sector

- Azimuth coverage from 30° to 210°
- Gain up to 20dBi
- Null-fill, electrical tilt and sidelobe suppression available

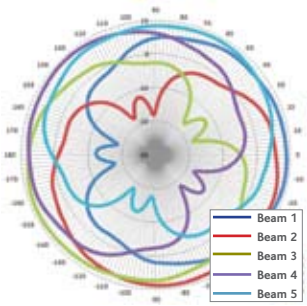
Sector antennas provide wide area coverage for military and security base station applications. They have clearly defined, wide, azimuth coverage, 30° to 210° in the horizontal plane with narrow elevation profiled vertical coverage.

SA7-150-0.36V/1572 sector under test during development

Multi Sector

Multi Sector arrays - a multiple beam antenna in one housing - provide high gain wide area (up to 360°) and overhead coverage if required.

MSA6-2.4V/1795: sector azimuth patterns show 9dBi peak gain, 120° beamwidth and high level of overlap



Omni-Directional

- Robust construction
- High gain, up to 10dBi
- Polarisation - circular or linear

An omni antenna radiates 360° in the horizontal plane with peak gain on or close to the horizon. All of our omnis are centre-fed making them ground-plane independent with stable radiation patterns across the band. High gain collinear omnis can be produced by stacking and feeding more elements. Sidelobes can be controlled and the elevation beam can be shaped to provide other features such as null-fill or electrical tilt. Collinear antennas are light weight with rigid glass fibre radomes and aluminium spigots for stable mounting.

Sector Antennas

Part Number	Frequency GHz	Gain dBi	Beamwidth Azimuth°	Beamwidth Elevation°	Polarisation	Dimensions mm	Connector	Photo +
SA7-150-0.36V/1572	0.34 - 0.37	6	173	35	Vertical	1090x386x3	N(F)	above
SA13-60-0.9V/1462	0.90 - 0.93	13	73	16.5	Vertical	560x250x30	N(F)	+
SA11-120-1.3V/1384	1.15 - 1.40	11	120	16	Vertical	870x95.6 Ø	N(F)	+
SA9-120-1.3V/1445	1.20 - 1.45	9	120	36	Vertical	490x95.6 Ø	N(M)	+
SA17-18V/417	1.71 - 1.88	17	70	9	Vertical	1204x140x21	N(F)	
SA16-19V/230	1.85 - 1.99	16	75	10	Vertical	782x150x20	N(F)	+
SA17-22V/555	2.00 - 2.30	17	65	8	Vertical	1140x150x14	N(F)	+
SA12-110-2.4V/1480	2.00 - 2.70	12	112	17	Vertical	569x79 Ø	TNC(F)	+

SA13-60-0.9V/1462

SA11-120-1.3V/1384

SA9-120-1.3V/1445

SA16-19V/230

SA17-22V/555

SA12-110-2.4V/1480

Part Number	Frequency GHz	Gain dBi	Beamwidth Azimuth°	Beamwidth Elevation°	Polarisation	Dimensions mm	Connector	Photo +
SA16-60-25V/858	2.40 - 2.70	16	60	10	Vertical	725x130x11	N(F)	+
SA16-60-35V/579	3.40 - 3.70	16	60	10	Vertical	474x88x9	N(F)	+
SA17-60-4.7V/1419	4.40 - 5.00	17	55	8.5	Vertical	470x106x23	N(F)	+
FPA10-4.7R/1564	4.40 - 5.00	9.5	54	58	Right Circular	10x84 Ø	TNC(F)	+
SA15-90-104V-D1/1124	10.10 - 10.65	15	84-87	7	Vertical	330x15x14	N(F)	
SA17-13R/1077	13.40 - 14.00	17	75	6	Right Circular	220x50x11	SMA(F)	+

SA16-60-25V/858

SA16-60-35V/579

SA17-60-4.7V/1419

FPA10-4.7R/1564

SA17-13R/1077

Sector, Multi Sector and Omni Antennas

Cranfield Aerospace prototype Boeing X-48B Blended Wing Body UAV, feature blade antennas

Multi Sector Antennas

Part Number	Frequency GHz	Gain dBi	Beamwidth Azimuth°	Elevation°	Polarisation	Dimensions mm	Connector	Photo +
MSA5-1400/1131	1.31 - 1.43	12 sector	88	19	Vertical			
		6.5 o/head	57	56	Right Circular	743x197 Ø	N(F)	
MSA6-2.4V/1795	2.00 - 2.70	8 sector	110	36	Vertical			
		7 o/head			Right Circular	300x155 Ø	SMA(F) x6	+
MSA7-16-2350R/829	2.30 - 2.40	14 sector	70	10				
		6.5 o/head	60	53	Right Circular	812x231 Ø	N(F)	+
MSA5-10-24R/389	2.30 - 2.50	10 sector	90	40				
		6 o/head	90	90	Right Circular	210x140 Ø	SMA(F) x5	
MSA4-24R/199	2.30 - 2.50	13	90	20	Right Circular	606x156 Ø	N(F)	+
MSA5-24L-ECS/1293	2.30 - 2.50	13 sector	90	20				
		7 o/head	80	80	Left Circular	582x156 Ø	N/a	
MSA5-24R/223	2.30 - 2.50	13 sector	80	20				
		7 o/head	80	80	Right Circular	706x156 Ø	N(F)	
MSA5-26L/117	2.48 - 2.68	13 sector	90	20				
		7 o/head	80	80	Left Circular	706x156 Ø	N(F)	
MSA5-3.3L/1407	3.20 - 3.40	12.5 sector	68	16.7				
		8 o/head	64	62	Left Circular	582x156 Ø	N/a	

MSA6-2.4V/1795

MSA7-16R-2350R/829 with 6 sectors and one overhead

MSA4-24R/199

MSA5-3.4V/1435	3.35 - 3.55	13	80	16.5	Vertical	482x162 Ø	SMA(F) x5	
MSA7-16-35R/497	3.40 - 3.50	15 sector	70	10				
		7 o/head	70	60	Right Circular	681x158 Ø	N(F)	+
MSA5-34L/963	3.40 - 3.60	13 sector	80	20				
		7 o/head	80	80	Left Circular	606x156 Ø	N(F)	
MSA5-34R-ECS/374	3.40 - 3.60	13 sector	80	20				
		7 o/head	80	80	Right Circular	706x156 Ø	N(F)	+
MSA6-15-46L/879	4.40 - 4.80	15 sector	70	8.4				
		8.5 o/head	60	55	Left Circular	527x158 Ø	N(F)	+
MSA6-4.7V/1484	4.40 - 5.00	15 sector	70	8	Vertical			
		8 o/head	70	65	Right Circular	627x162 Ø	N(F)	
MSA6-90-4.7V/1554	4.40 - 5.00	13.8 sector	90	8	Vertical			
		8 o/head	70	65	Right Circular	627x162 Ø	N(F)	
MSA10-HEX-105V/250	10.30 - 10.80	10	80	40	Vertical	50x60 Ø	SMA(M) x6	+

MSA7-16-35R/497

MSA5-34R-ECS/374

MSA6-15-46L/879

MSA10-HEX-105V/250

OA2-2.4V/1392
omni antenna

Omni Antennas

Part Number	Frequency GHz	Gain dBi	Beamwidth Azimuth°	Elevation°	Polarisation	Dimensions mm	Connector	Photo +
OA4-0.9V/1520	0.87 - 0.96	4.5	360	45	Vertical	605x57 Ø	N(F)	
OA8-1.4V/1251	1.35 - 1.525	9	360	12.6	Vertical	1208x57 Ø	N(F)	
OA6-1.44V/1508	1.43 - 1.45	7	360	19.5	Vertical	858x57 Ø	N(F)	+
VOA10-1615/897	1.59 - 1.64	9	360	10	Vertical	1225x57 Ø	N(F)	+
VOA10-1800/111	1.70 - 1.88	10	360	10	Vertical	1255x57 Ø	N(F)	+
OA4-1.8V/1641	1.71 - 1.88	4.4	360	38	Vertical	391x51 Ø	QN(M)	+
VOA10-1900/232	1.85 - 1.95	10	360	10	Vertical	1250x57 Ø	N(F)	+
XVO9-2150-D2/870	2.00 - 2.30	9	360	8	Vertical	1006x106 Ø	N(F)	

OA6-1.44V/1508

VOA10-1615/897

VOA10-1800/111

OA4-1.8V/1641

VOA10-1900/232

VOA10UT4-VOA4UT25-LPA5-2265/827

VOA10UT4-	2.20 - 2.335	9.5	360	7.5	Vertical			
VOA4UT25-	2.20 - 2.335	4	360	30	Vertical			
LPA5-2265/827	2.20 - 2.335	6	360	70	Right Circular	1505x150 Ø	N(F) x3	+
SVD2-2300/427	2.20 - 2.34	2	360	80	Vertical	103x11 Ø	SMA(M)	
OA2-2.4V/1392	2.25 - 4.00	2	360	65	Vertical	185x32 Ø	TNC(F)	above
LCO10-2350/720	2.27 - 2.43	10	360	10	Left Circular	800x104 Ø	N(F)	
VOA10-2340/459	2.28 - 2.38	10	360	10	Vertical	1008x57 Ø	N(F)	
OA4-2.5V/1542	2.28 - 2.70	4	360	40	Vertical	222x25 Ø	TNC(M)	+
OA10-2.4V/1655	2.30 - 2.55	9	360	13	Vertical	908x57 Ø	N(F)	+
VOA10-2450/177	2.40 - 2.50	10	360	80	Vertical	905x57 Ø	N(F)	+
RCO10-2460/255	2.40 - 2.55	10	360	10	Right Circular	891x104 Ø	N(F)	
VOA11-26/1095	2.50 - 2.70	10	360	10	Vertical	1133x31 Ø	716(F)	
XV010-3450/065	3.30 - 3.55	10	360	10	Vertical	600x95 Ø	N(F)	
RCO10-3500/931	3.40 - 3.60	9	360	12	Right Circular	647x85 Ø	N(F)	+
RCO10-3500-D1/1185	3.40 - 3.60	9	360	12	Right Circular	579x79 Ø	N(F)	
VOA7-36/1146	3.40 - 3.80	6	360	20	Vertical	356x31 Ø	N(F)	+
XVO9-3880/944	3.70 - 4.06	9	360	7	Vertical	782x98 Ø	N(F)	
VOA9-45/1161	4.30 - 4.70	9	360	11	Vertical	550 x 31 Ø	N(F)	+
OA9-4.6V/1701	4.49 - 4.80	9	360	12	Vertical	600x36 Ø	N(F)	

OA4-2.5V/1542

OA10-2.4V/1655

VOA10-2450/177

RCO10-3500/931

VOA7-36/1146

VOA9-45/1161

Control and data links for robotics applications

Ground Control Centre Antennas

Cobham Antenna Systems, Microwave Antennas provides antennas for both control centre and remote platform.

The control centre antenna usually provides the higher gain part of the link and may be a medium to high gain omni antenna, medium gain sector or high gain directional antenna.

A directional antenna is likely to require a two-axis steering system. A less complex but compact multi-sector antenna array provides intermediate range coverage for communicating with a remote platform. This type of arrangement can be used for quick deployment, tactical applications.

Cobham Antenna Systems, Microwave Antennas has a range of multi-sector arrays.

A selection of suitable antennas is listed in this leaflet, with more available in our main catalogue. Contact us for assistance.

Unmanned Vehicle Antennas

Unmanned Systems (UMS) are providing an increasing number of operational functions including airborne and remote ground surveillance, video transmission, border patrol and tactical systems.

As the demand for Unmanned Systems increases, so does the need for antennas for payloads, data communications systems, command and control.

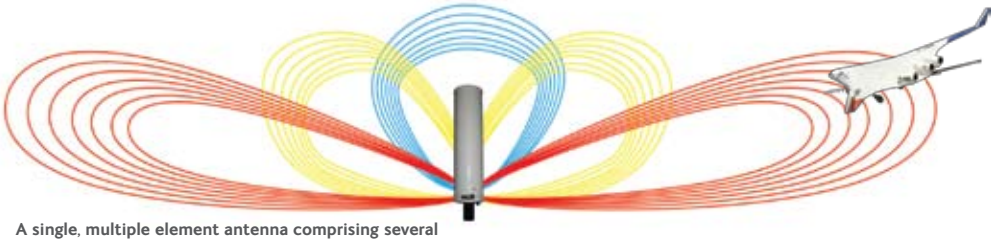
Cobham Antenna Systems, Microwave Antennas has a range of standard cost-effective, high performance antenna designs that are already used on Unmanned Systems.

Link Margin (Fly-By) Analysis

Link margin (fly-by) analyses can be performed for many airborne systems. The method is applicable to helicopter, unmanned airborne systems (UAS) and missile applications. These calculations are based upon real measured 3D antenna patterns, and can be used to assist in system planning. The region over which coverage is required is considered, and the path losses to points within the region are calculated. The gain of the antenna at the angle of each location is added to the path loss which provides data for plotting graphs of Relative Signal Strength vs. Range at different altitudes.

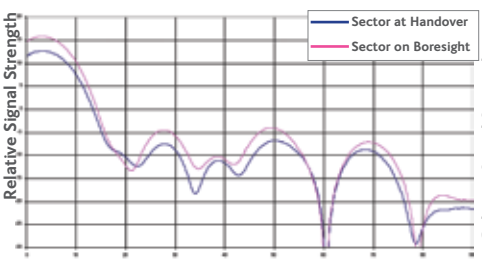
As the Cobham Antenna Systems library of measured antenna performance is so extensive, the optimum antenna combination can be considered for a given requirement. Such planning can assist in deciding when to use switched sector instead of omni-directional antennas, how many separate antennas to have provide elevation coverage, and whether or not to use an additional overhead antenna to ensure links are maintained for communication at high elevation angles.

The ideal antenna combination will vary according to the specifics of the requirement. Generally, a number of altitudes within the desired operational ceiling are considered, and link margins at all ranges within the required envelope are calculated at these altitudes. The worst case handover angle between sector antennas will be used, and any effects of polarisation mismatch loss through antenna misalignment can be factored in.



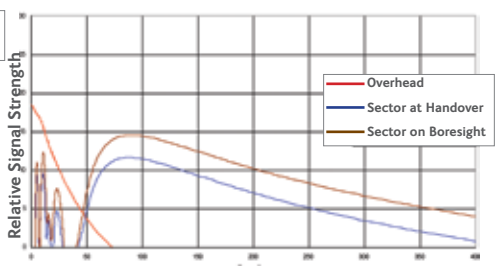
A single, multiple element antenna comprising several omni or omni and sectors can be designed to provide optimum coverage for a given operational requirement.

Typical Elevation Pattern of Sector Antenna used to Calculate Signal Strength



Elevation Angle/Degree

Calculated Output showing 40,000ft Altitude Signal Strength vs. Range



Range/km

OTHER BROCHURES

Antenna Catalogue

Total Capability

Ground Control

Antenna Testing

Link16

IED Countermeasures

Unmanned Systems

WiMAX and LTE

C-Band

Radar Systems

Cobham Antenna Systems

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