Cobham Antenna Systems

Microwave Antennas

Specialist Antenna Design and Manufacture

DAS - Distributed Antenna System

The most important thing we build is trust

Security and
Surveillance
Antennas

Satcom
Meteosat
Antennas

Unmanned
Vehicle
Antennas

Commercial
PMR & Tetra
St Pancras

DAS - Antennas

The Distributed Antenna System

About the Distributed Antenna System

DAS, a Distributed Antenna System, consists of a network of antennas that are spaced separately and connected to a common source which is able to provide wireless and radio coverage within buildings.

DAS can augment existing Cellular and WiFi networks.

The need for a system to support the changing face of mobile communications has been prompted by increasing use of all types of mobile devices - phones, laptops and tablets - with a major shift from voice and low data rate communications. Users now expect instant services including Internet access, emails, images, video and downloadable apps.

Passive DAS

RF is distributed via coax cables to each antenna, from repeater or base station.

Active DAS

Fibre optic cabling backbone overcomes the transmission losses that occur with a coax based system. Electric components convert and amplify signals to RF for radiation by antenna.

Distributed radios

A system of small cellular radios - PICOcells and FEMTOcells create an internal network that do not rely on the macro network.

Applications areas to benefit from DAS

4G, WiMAX, LTE.

Cellular

Public Safety

Government buildings

Hospitals, Healthcare

Corporate Offices, including High Rise In-Building

Convention Centres, Universities, Campuses

Transportation, Depots, Airports, Railway Stations

Stadia, Sports and Entertainment Arenas

Hotels and Hospitality

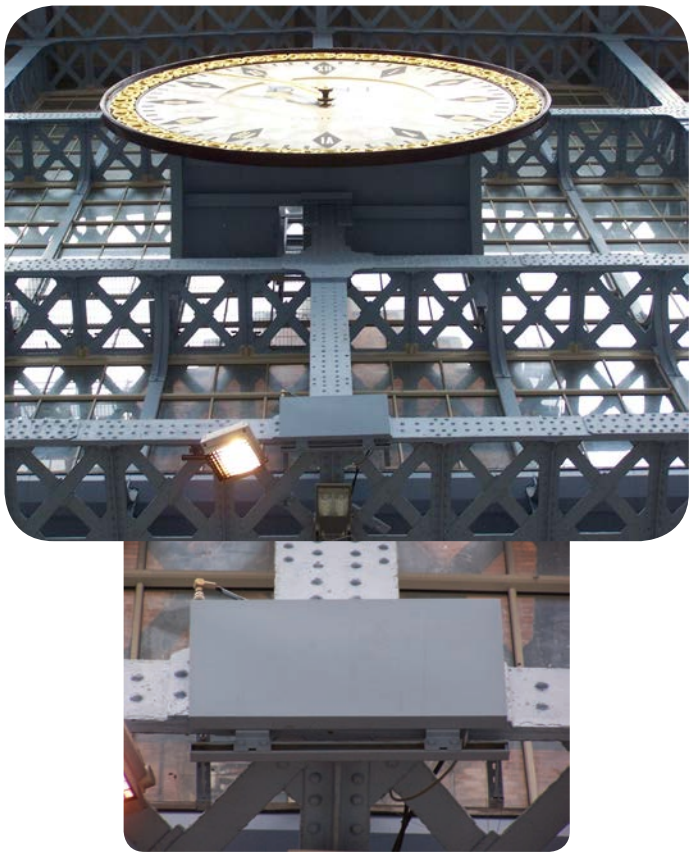
DAS - Antennas

PMR, Tetra, Security, Cellular

DAS Antennas for Transport Hubs such as Airports and Railway Stations

Cobham Antenna Systems, Microwave Antennas has developed many antennas for airports and major public buildings around the world.

Sophisticated modelling techniques combined with 20 years of experience in the design of microwave antennas will provide customers with an efficient, reliable antenna that meets their exact requirements. The company's near-field spherical anechoic test chamber supplies accurate patterns and 3D images to demonstrate compliance with customers' specifications.



DAS - Antennas

PMR, Tetra, Security, Cellular

PMR and Tetra Antennas - Open Area

- Low frequency wide band omni antenna
- Very wide bandwidth so that one antenna can accommodate several RF operations
- No ground plane
- Low azimuth ripple

An omni-directional antenna with an extended performance (XPO2V-150-600/148), wide band coverage - 150 to 600MHz - and 2dBi gain across the band supplies PMR and Tetra coverage within the airport complex.

XPO2V-150-600/148

PMR and Tetra Antennas - Car Park

An omni antenna, OA1-0.42V/1316, was designed for communication within an airport car park covering Tetra (385 to 400MHz) and PMR (450 to 470MHz) frequencies and suitable for DAS, within a single antenna.

In this frequency range, omni antennas would normally be very large, but due to severe height restrictions this antenna was developed whilst still maintaining high specification beam patterns. It was coloured-blended with its surroundings and the flying lead design enabled simplification of installation.

SAR or Touch Safe specifications are incorporated in to the design, together with bespoke mounting arrangements to ensure antennas meet required beam pattern, network design and architectural approval.

OA1-0.42V/1316

Ultra Wideband 0.6 to 4 GHz wall or ceiling mount Bi-Directional Antenna for GSM and Wireless LAN

An ultra wideband bi-directional antenna was developed to cover 600MHz to 4GHz in order to 'future-proof' and allow for expansion of a system without the need to change antennas (eg 3.5GHz and 700MHz band).

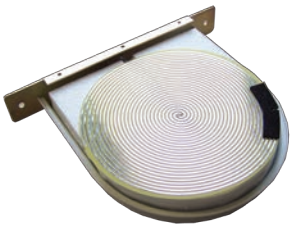
This antenna has a dual-directional (peanut) beam shape and a single flying lead for simple installation on to a flat wall or ceiling. It has been designed to blend in with surroundings. Another prerequisite was that all antennas were required to meet the SAR or Touch Safe legislation.

BDFPA-0.6-4.0-RL/1313

BDFPA-0.6-4.0RL/2020

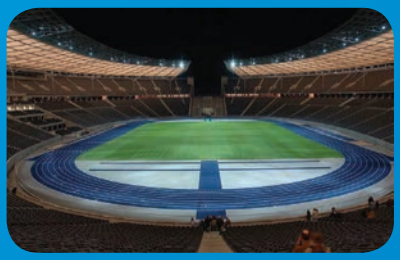
Above: this shows two 150-600MHz Omni Antennas (XPO2V-150-600/148) installed high up in the Terminal Building providing Diversity for PMR/TETRA and lower down a single Ultra Wideband (600-4000MHz) Bi-Directional antenna (BDFPA-06-40-RL/1313). The full range of communication services is provided by these two types of antenna, located throughout the airport complex.

BDFPA-0.6-4.0-RL/1313 Ultra Wideband, Bi-Directional Antenna



DAS - Antennas

PMR, Tetra, Security, Cellular



Ultra Wideband Directional Antenna (150-2700MHz) for PMR, Tetra, GSM and Wireless LAN

This low profile spiral antenna provides directional pattern over 75° angles over the band 0.15 to 2.70GHz. Providing circular polarisation is gives optimum coverage when mounted high up facing downwards in large open areas. It is ground-plane independent.

Variations of this antenna have been supplied for use in major public buildings in New York.

Model FPA-0.15-2.7R/1874

Omni Directional GSM Antenna (880-2175MHz) for low ceiling mounting

This omni directional antenna is suitable for covering all 2G and 3G GSM bands and may be suitable in low ceiling spaces. Model XPO2V-880-2175/1060 covers 820 to 2200MHz and does not require ground plane.

Model XPO2V-880-2175/1060

Ultra Wideband Ceiling Mount Omni Directional Antenna (380-6000MHz) for Tetra, GSM and Wireless LAN

This ultra wideband omni antenna was designed with a low profile enabling it to be ceiling mounted. It provides peak gain in the horizontal plane across the band 380-6000MHz, for use in the widest possible range of locations covering all bands, except the lowest frequency. With performance up to 6GHz it will "future-proof" the installation saving the need to install new antennas when requirements change. It is available in different colours to suit the environment.

Model OA-0.4-6.0V/2028

Ultra Wideband (380-2700MHz) Directional Antenna for Tetra, GSM and WiFi

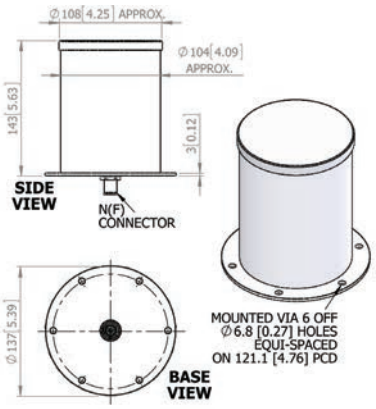
This low profile spiral antenna provides directional pattern over 75° angles over the band 380-2700MHz. Providing circular polarisation, it gives optimum coverage when mounted high up facing downwards in large open areas. It is ground-plane independent. Originally supplied for use in a New York Airport.

Model FPA-0.4-2.0/2023.

Ultra Wideband Omni Antenna

This rugged antenna has low azimuth ripple. It is suitable for multiple applications.

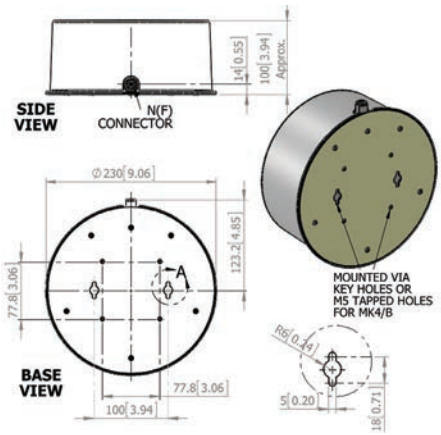
OA1-0.8-6.0V/2021



Ultra Wideband Directional Antenna

Circular Polarised directional antenna provides 0 to 6dBi gain across 600MHz to 6GHz. See datasheet.

FPA-0.6-6.0R/2022



Antennas for Wireless LAN/WiFi hotspots

Although the majority of general areas within the airport terminal which require WiFi are covered by multiplexing the 2.4 and 5.5GHz WiFi bands into the GSM wideband antennas (which cover up to 6GHz), there are hotspot (dense RF) regions which require higher density coverage for fast Internet access. For these points a range of dedicated dual frequency WiFi diversity antennas was developed.

These neat and discreet base station antennas were developed with each antenna operating across both frequency bands in one housing in order to keep the quantity of antennas required to a minimum. All antennas have dual slant ±45° polarisation for total versatility and are optimised to maximise system performance. There are three antennas for this application, all of which have been supplied and are used in UK Airports.

Omni directional diversity antenna (DSO3-24-54/1177) has dual frequency bands each with dual polarisation.

DSO3-24-54/1177

This slim, low profile directional antenna (DLPA7-2.5-5.5DS/1315) can be flush mounted, has 7dBi gain and has dual frequency bands each with dual polarisation.

DLPA7-2.5-5.5DS/1315

This directional antenna (DLPA6-2.5-5.5DS/1314) has flying leads for increased flexibility, enabling the system radio to be installed at a greater distance. Gain is 8dBi with dual frequency bands each with dual polarisation.

DLPA6-2.5-5.5DS/1314

The following antennas are now available through the online iBwave catalogue and vex files are available on request.

Model	Frequency GHz	Gain dBi	Beamwidth Az°	Beamwidth El°	Polarisation	Size mm	Size inches	Connector
DIRECTIONAL								
FPA-0.15-5.0R/1874	0.14 - 2.70	-2 to +7	45	90	Right Circular	110x980 Ø	3x39	N(F)
FPA-0.4-2.7R/2023	0.40 - 2.70	2 to +7	65	65	Right Circular	77x502 Ø	3x20	N(F)
BDFPA-0.6-4.0RL/1313	0.60 - 4.00	4.5	75	75	Dual Circular	280x227x50	11x9x2	N(F) 1m cable
BDFPA-0.6-4.0RL/2020	0.60 - 4.00	4.5	75	75	Dual Circular	280x227x94	11x9x4	N(F) 1m cable
FPA-0.6-6.0R/2022	0.60 - 6.00	2 to +8	72-79	69-88	Right Circular	100x230 Ø	4x9	N(F)
LPA6-TRI-FL-D4/957	0.88 - 0.96 1.71 - 1.88 1.92 - 2.175	6	80	80	Vertical	339x225x25	13x9x1	SMA(F) 2m LSZHJ cable x3
LPA7-18V-502/451	1.71 - 1.88	7	60	80	Vertical	22x132 Ø	1x5	SMA(F)
FPA7-2.0DS/1825	1.92 - 2.175	6	65	65	Dual ±45°	99x99x15	4x4x0.6	QMA x2
DLPA7-2.5-5.5DS/1315	2.40 - 2.50 5.15 - 5.85	7	60	60	Dual ±45°	37x132 Ø	1.5x5	SMA(F) x4
DLPA6-2.5-5.5DS/1314	2.40 - 2.50 5.15 - 5.85	8	60	60	Dual ±45°	55x161 Ø	2x6	N(M) 0.5m cable x4
OMNI								
XPO2V-150-600/148	0.15 - 0.60	2	360	80	Vertical	806x156 Ø	32x6	N(F)
OA1-0.42V/1316	0.38 - 0.47	1	360	85	Vertical	239x395 Ø	9x16	N(F) 1m cable
OA-0.4-6.0V/2028	0.38 - 6.00	-1 to +5	360	70	Vertical	182x352 Ø	7x14	N(F)
EVD2-915/1284	0.87 - 0.96	2	360	80	Vertical	262x26 Ø	10x1	N(M)
OA1-0.8-6.0V/2021	0.80 - 6.00	2	360	75	Vertical	143x108 Ø	6x4	N(F)
XPO2V-880-2175/1060	0.88 - 2.175	2.5	360	50	Vertical	221x50 Ø	9x2	N(F)
DSO3-24-54/1177	2.40 - 2.50 5.15 - 5.725	0	n/a	n/a	Dual ±45°	93x100 Ø	4x4	SMA(F) x4

Spherical Near-Field Testing

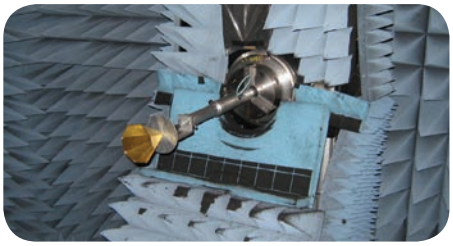
The on-site spherical near-field test facility is an example of our commitment to enhancing development facilities and technical support service to customers.

This facility provides 3-D radiation pattern data to verify specifications and to ensure compliance with stringent radiation pattern envelopes where necessary. The far field radiation pattern of the antenna can be calculated in any direction, in any polarisation, circular or linear, at any angle.

Operating within 0.4GHz to 40GHz, it has full dynamic range performance down to 0.8GHz, and sufficient sensitivity to test antennas in the lower frequency range.

Testing times depend on antenna size in wavelengths and the number of measurement frequencies. Gain and directivity measurements can be provided as well as phase. This allows for phase and amplitude matching batches of antennas which is necessary for Spiral antennas used in Direction-Finding systems.

An additional benefit of the spherical near field test facility is the ability to perform back projections on to a given plane within the measurement sphere which helps identify potential material defects. It also helps in the design process to determine if there is unwanted radiation off the feed circuit, which can be corrected at a very early stage, and the affects of coupling within a circuit that may otherwise cause amplitude or phase corruption within an array.



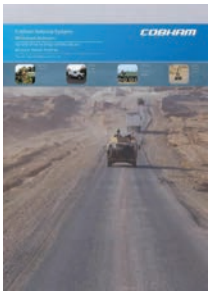
BROCHURES

2012 Catalogue

Total Capability

Antenna Testing

Ground Control



Electronic Warfare

Body Worn

Link16

WiMAX and LTE

Unmanned Systems

C-Band

Radar Systems

MIMO and Multi-Beam Antenna Technology

Cobham Antenna Systems

M: Cobham Antenna Systems, Lambda House
Cheveley, Newmarket, Suffolk CB8 9RG, UK
T: +44 (0)1638 732177
F: +44 (0)1638 731999
E: newmarket.sales@cobham.com

Chelton Limited trading as Cobham Antenna Systems

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