
SPACE
AIR
COBHAM
LAND
www.cobham.com
MARITIME

CONTENT

Cobham Aerospace Communications is the world leader in the design and manufacture of antennas, enabling platforms to communicate with complete confidence on land, at sea, and in the air.

Based on 60 years of experience, Cobham Aerospace Communications designs and manufactures high technology antennas for communication, navigation and surveillance, and data link applications in the world of commercial and military aircraft, space launchers, space satellite, missiles, satellites, infrastructure, tactical mobile ground installations, and naval applications. its antennas are used by customers in more than 100 countries throughout the world.

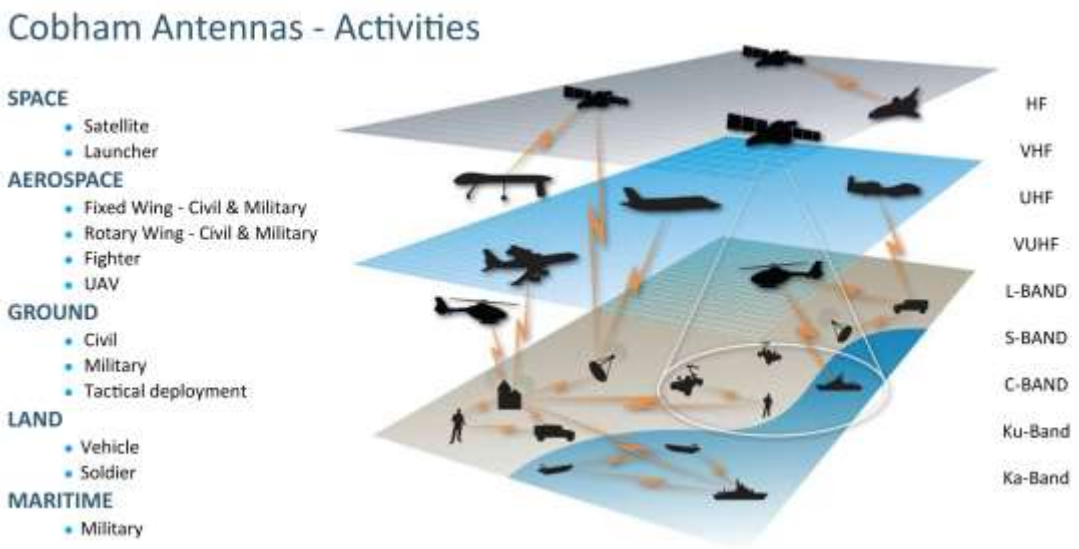
Always innovating with new technologies, Cobham Aerospace Communications continuously invests to improve performance levels, stealth, reduce weight, drag, and signature.

Cobham Aerospace Communications' top priority is to ensure the highest quality level for its products, as recognized by annual awards received from its major customers.

1. **Airborne: Multiple antennas are supplied by Cobham Antennas for civil and military aircraft to meet VHF, UHF, L-band, Ku-band and Ka-band applications**

2. **Land: Cobham Antennas provides a huge range of antennas for fixed, tactical and OTM applications**

3. **Space: Cobham Antennas provides a wide range of high-tech embedded antennas for positioning and TT&C**



Antennas for Communication and Navigation Antennas

Cobham is a leading manufacturer of reliable, high performance communication, navigation and GPS antennas for Military, Civil and Para Military applications.

Airborne Antenna Systems

Cobham Antenna Systems is World leader in the design and manufacture of airborne communications and navigation antennas and subsystems. Its pioneering spirit and breadth of experience have created a Worldwide reputation of quality, capability, reliability and innovative antenna design over six decades.

Airborne Communication Antennas

Cobham Antenna systems have a full range of airborne communications antennas covering the range of 2Mhz to 512Mhz.

Airborne GPS antennas

Cobham Antenna Systems GPS antennas include L1 and L1/L2 Antennas, amplified or passive.

Airborne Navigation Antennas

Cobham Antenna Systems has a full range of Navigation antennas, either separate function antennas or combined functions are available.

RF Airborne Components

As a compliment to our antenna range Cobham Antenna Systems can supply a wide range of diplexers (allowing a duel port radio to work with a one port antenna), splitters, couplers (allowing 2 VOR blades to be combined therefore allowing them to work as on antenna) together with pre-amps and a wide range of filters.

General Aviation Antennas

Cobham designs and manufactures an extensive range of civil antennas for General Aviation, Helicopters and Light Jet Aircraft platforms etc.

General Aviation Radiophone/DME Antennas

We offer a wide range of Radiophone and DME antennas, compatible with a number of varying applications and effective in a number of differing environments.

General Aviation VHF Comm Antennas

Comant VHF antennas offer a wide variety of fit, form and function options that will fit nearly every need. Most antennas provide 118-137 MHz but there are several models that provide 118-153 MHz wide band.

General Aviation VOR/LOC/GS

A wide variety of blade and whip antennas in the for use in aviation navigation, specifically in the frequencies of 108-118 MHz (VOR/LOC) and 329-335 MHz (GS)

DME/Transponder Antennas

We offer a wide range of DME and Transponder antennas, compatible with a number of varying applications and suitable for a variety of different environments.
Our range covers the following frequencies :-
1030-1090 MHz
960-1220 MHz
75 MHz

FM Band and AM/FM Antennas

A wide selection of specialty antennas from Comant, a leading manufacturer for General Aviation, Helicopter and Light Jet Aircraft Cobham Antenna Systems WiFi 2.4-2.5 GHz antennas. Aircell and Gogo Air-To-Ground antennas for internet and email in the sky. PCS timing antennas.

UHF/L Band Navigation Antennas

A wide variety of blade and whip antennas in the UHF / L band for use in aviation navigation Cobham Antenna Systems UHF/L Band Navigation Antennas are well designed for general aviation applications, these antennas are available in a number of varieties that suit many requirements.

UHF/L Band Communication Antenna

A wide variety of blade and whip antennas in the UHF band for use in communication and radiophone capabilities Newly designed Search and Rescue antennas like the CI 295 Series combine two important Public Service frequencies into one radome, saving hard to get space on crowded helicopter airframes.

ELT Antennas

A wide selection of ELT antennas manufactured by Cobham Antenna Systems, a leading manufacturer for General Aviation, Helicopter and Light Jet Aircraft These ELT antennas are designed to operate with ACR / Artex Emergency Beacons. Cobham Antenna Systems ELT antennas are available from ACR / Artex.

Comdat Multi-Function Antennas

ComDat's combine VHF, GPS and XM into one radome, saving time and money during installation as you simply can't install three separate antennas in the same time it can be done with one. Space is saved as there are up to three functions in one radome. Time is saved in calculating co-site interference issues.

FM Communication Antennas

A wide selection of FM antennas from Comant, a leading manufacturer for General Aviation, Helicopter and Light Jet Aircraft.
Cobham Antenna Systems FM / 2 Meter antennas offer a wide variety of fit, form and function options that will fit nearly every need. Most antennas provide 148-174 MHz but there are several models that provide 138-174 MHz wide band. Also in this section are AM/FM and FM receive only antennas. 88-108 MHz and 540-1600 KHz.

Electrostatic Dischargers for Antennas

The main purpose of an electrostatic discharger is to improve the dispersal of accumulated aircraft static charges in an effort to reduce the resultant radio interference.

Static Dischargers

The main purpose of a static discharger is to improve the dispersal of accumulated aircraft static charges in an effort to reduce the resultant radio interference. Location on the airframe enables them to serve a role as a lightning conductor and provide protection against arcing for the surrounding aircraft structure. Static dischargers are replaceable and may be mounted on supports that are attached to the aircraft structure in such a way as to ensure adequate electrical contact. Different types of static dischargers are used to alleviate different problems on various types of aircraft. This means a small general aviation aircraft flying at lower speeds will not use the same type of device as a commercial airliner or business jet.

Optimum Performance When considering the whole low life-cycle costs the unit price is only the beginning of the cost per flight hour. Oftentimes the labour to replace defective dischargers significantly outweighs the unit cost, making reliability extremely important. Inefficient dischargers may mean costly troubleshooting and premature replacement, which adds to maintenance hours and costs. By using Cobham dischargers, maintenance is reduced due to their exceptional lifespan and reliability. By controlling each step of the research and development and manufacturing process, Cobham assures that the quality of design is maintained and installed dischargers operate at maximum efficiency.

Noise Reduction Cobham Static Dischargers are intended to reduce or eliminate 'P-Static' noise interference on aircraft radio receivers operating principally in LF/MF/HF and VHF. • Both carbon tips and nichrome wire tips have low electrostatic thresholds to ensure the quietest possible discharge • Cobham dischargers provide greater or equal to 60dB noise quieting at LORAN, Omega and ADF frequencies when compared to an unprotected airframe

Antenna Couplers / Combiners and Diplexers

For General Aviation. A wide variety of devises for use in aviation navigation, specifically in the frequencies of 108-118 MHz (VOR/LOC) and 329-335 MHz (GS), or 75 MHz (Marker Beacon)

CI 120-3 Power Combiner

Two input - one output Power Combiner is standard equipment with Comant's CI 120G/S blade set. Combines VOR/LOC and GS signals from individual blades. Typically used with single coaxial cable runs to flight deck avionics.

CI 120-4 Power Combiner

Two input - two output Power Combiner is standard equipment with Comant's CI 120- 200G/S blade set. Combines VOR/LOC and GS signals from individual blades. Ideal for applications where dual coaxial cable runs to the avionics installation for NAV1 and NAV2 receivers

CI 120-5 Power Combiner

Two input - two output Power Combiner is standard equipment with Comant's CI 120-200G/S-L as supplied to Cessna. The CI 120-5 allows for 2 separate coaxial cable runs to the avionics installation for NAV1 and NAV2 receivers.

CI 502 Coupler

Dual VOR coupler allows the simultaneous use of two VOR receivers from one VOR antenna. Compact design makes for easy installation.

CI 503 Coupler

Dual glide slope coupler designed to allow the operation of two glide slope receivers from one glide slope antenna. Compact design makes installation easy

CI-601 Duplexer Switching

Dual communication/single antenna duplexer designed to provide operation between two transceivers and one antenna. In the de-energize mode, the diplexer acts as a 3 dB coupler with the output ports isolated by 20dB. Control voltage actuated by the microphone circuit switches the antenna to transmitter No. 1 or transmitter No. 2

GPS Navigation Antennas

For General Aviation. Cobham Antenna Systems offers a full range of GPS navigation antennas to meet a range of specifications.

GPS/XM Antennas

Highly popular combination antennas that combine GPS or GPS WAAS and XM into a single radome.Perfect for General Aviation, helicopters and light jets with little airframe space for multiple or additional antennas.

VHF/GPS Antennas

We offer Comant's ComDat dual function single engine antenna for VHF/GPS. Our patented technology provides 80 dB of VHF harmonic suppression allowing Comant to offer VHF and GPS in one radome without in-line filters. Designed as a "drop-in" replacement for common single engine teardrop footprint, the antennas are designed in a manner that makes them compatible with popular 26.5 dB gain GPS panel mount systems.

VHF/GPS/XM Antennas

Cobham Antenna Systems offer a full range of antenna for major GPS, VHF and XM applications. Comant's ComDat triple function single engine antenna for VHF/GPS/XM Weather. Our patented technology provides 80 dB of VHF harmonic suppression allowing Comant to offer VHF and GPS in one radome without in-line filters.

VHF/XM Antennas

Cobham Antenna Systems offer a full range of antenna for major VHF and XM applications. We offer both Comant's multi-function VHF/XM antenna for single engine aircraft, matches single engine common teardrop footprint, and VHF/XM high speed blade antenna for twins and light jet aircraft. Perfect to add XM weather data to a stand-alone VHF mounted antenna.

XM Antennas

Highly popular antennas that bring XM weather into the aircraft cockpit, superimposed on your GPS moving map system. Works great for music too.

VHF Communication Antennas

A wide selection of VHF antennas from Comant, a leading manufacturer for General Aviation, Helicopter and Light Jet Aircraft.Cobham Antenna Systems VHF antennas offer a wide variety of fit, form and function options that will fit nearly every need.

Marker Beacon Antennas

For General Aviation. A wide variety of mounting styles and form factors of popular marker beacons.

Comant CI 102

Designed for use with the modern, high sensitivity marker beacon receivers. Small and lightweight, featuring 4-hole internal mounting for simple installation. Antenna assembly is enclosed in an injection molded radome which is impervious to the tough environments typical of the underside of an aircraft. Skydrol and rain erosion resistant. DC grounded to minimize accumulation of precipitation static.

Comant CI 118

Designed specifically for high-performance aircraft applications. Features aerodynamic design in a lightweight package. Antenna is a low profile blade-type encased in a molded polyurethane shell. Skydrol and rain erosion resistant.

Comant CI 118-1

Low-drag, lower profile alternative to the popular CI 102 “boat style” marker beacon antenna. Approved for medium to high performance single, turbo-prop or jet aircraft and provides simple external mounting. Skydrol and rain erosion resistant. DC grounded to minimize accumulation of precipitation static.

Comant CI 118-9

Identical to the CI 118 except the mounting configuration allows for “drop-in” replacement to the Honeywell Bendix-King KA 26 Marker Beacon. This Comant design has been tested to the tough DO-160D environmental standards. Skydrol and rain erosion resistant. DC grounded to minimize accumulation of precipitation static.

Comant CI 118-10

This Comant marker beacon is identical to the CI 118 except with a 4-hole through mount configuration. This model has been tested to the tough DO-160D environmental standards. Skydrol and rain erosion resistant. DC grounded to minimize accumulation of precipitation static.

Comant CI 164 - Comant CI 164

Lightweight flush mount antenna. Provides for dual marker beacon signal outputs at the antenna, eliminating the need for a separate marker beacon splitter.

Antenna Shipset

GLIDE ANTENNA 3117-82-00 — 328-336 MHz

The receiving antenna P/N 3117-82-00 is designed to operate over a Glide Slope frequency range of 328 to 336 MHz, predominantly for use on helicopters and light aircraft.

- Floppy antenna for easy installation
- Proven maturity and reliability
- Light weight

GLIDE ANTENNA 6208-88-62 — 328-336 MHz

The passive Glide Slope antenna P/N 6208-88-62 is designed for heavy helicopter for use with Instrument Landing System over a frequency range from 328 to 336 MHz

- Designed for use with aircraft's Instrument Landing System
- Dual Glide Slope outputs
- Proven maturity and reliability
- DC-grounded to provide static charge flow and lightning protection

MARKER ANTENNA 6216-82-00 — 75 MHz

The Marker Beacon antenna P/N 6216-82-00 is designed for use on all airborne platforms over a frequency range from 74.750 to 75.250 MHz.

- Designed for use on all airborne platforms
- Proven maturity, design and reliability
- Low profile
- DC-grounded to provide static charge flow and lightning protection

ATC-IFF/DME-TACAN/TCAS ANTENNA 2442-88-03 — 960-1260 MHz

The antenna P/N 2442-88-03 is designed for use on all airborne platforms to operate ATC, IFF, DME, TACAN or TCAS functions.

- Robust, streamlined aluminum alloy cast blade antenna
- DC-grounded to provide static charge flow and lightning protection
- Excellent omnidirectional pattern over the entire frequency band
- Proven design and reliability

ELT ANTENNA 1327-82 — 121.5/243/406 MHz

The airborne antenna P/N 1327-82 is designed to transmit emergency signals on the 121.5, 243 and 406 MHz frequencies.

- Designed for general aviation (fixed-wings and helicopters)
- Three frequencies: 121.5, 243, 406 MHz (multi-channels)
- Proven maturity and reliability
- Certified with major ELT manufacturers
- DC-grounded to provide static charge flow and lightning protection

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- Designed for general aviation (fixed-wings and helicopters)
- Three frequencies: 121.5, 243, 406 MHz (multi-channels)
- Proven maturity and reliability
- Certified with major ELT manufacturers
- DC-grounded to provide static charge flow and lightning protection

Airborne Antennas & RF Sub-Systems

Major supplier for aeronautical programs in Europe Wide range of communication and navigation antennas and RF sub-systems for all kind of flying vehicles. :

- **Subsonic and supersonic aircrafts**
- **Missiles and UAVs**
- **Helicopters**

UHF Antenna

Band Reject Filter

S-Band Antenna

Trajectography Antenna

IFF Antenna

Ku-Band Antenna

Airborne Search and Rescue Systems

The compact, multi-receiver 935 series Direction Finder can be utilised for both SAR & CSAR operations.

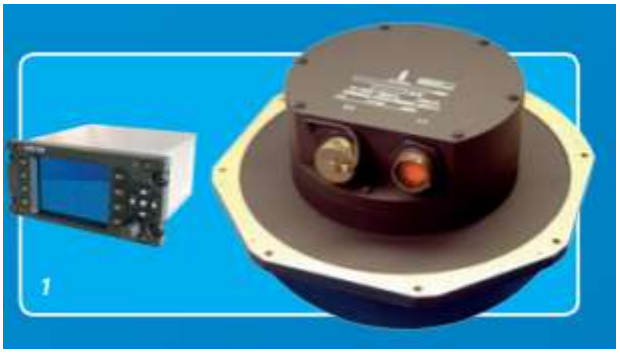
With the latest receiver technology, the 935 DF can confidently manage multiple beacon incidents. With a variety of interface protocols the 935 DF can be installed as part of a mission system or be totally autonomous.

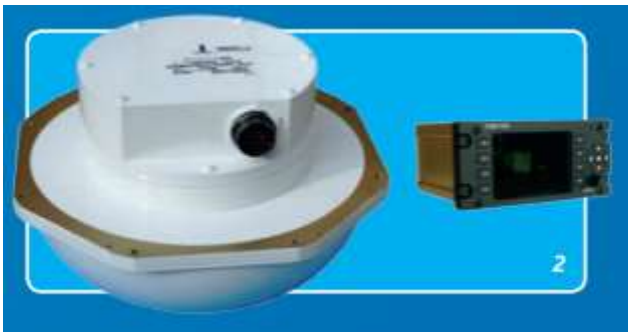
The Cobham Terrestrial Trunked Radio (TETRA) ensures complete incident co-ordination between the rescue services. This TETRA solution has an optional encryption capability providing maximum operation security.

Features	938	935	931	System 7
Frequency Range Operation				
30-88MHz		•	•	
88-118MHz	•	•	•	
118-243MHz	•	•	•	•
225-407MHz	•	•	•	•
407-470MHz	•	•	•	
Integrated Receivers				
30-470MHz		•	No Receivers embedded	Two parallel receivers tuneable over the individual bands stated above
88-470MHz	•			
121.5MHz Guard	•	•		
156.525MHz (CH70) Guard	•	•		
156.800MHz (CH16) Guard	•	•		
243MHz Guard	•	•		
406.025 - 406.076MHz Guard	•	•		
Specific Functions				
CSAR *		•		
COSPAS-SARSAT Decoding	•	•		•
GMDSS VHF DSC Decoding	•	•		
Interface Options				
RS 422	•	•		•
ARINC 407		•	•	
ARINC 429	•	•	•	• (when used with dedicated controller)
MIL STD 1553B		•		
Installation Details				
Antenna Overall Diameter	286mm	286mm	286mm	192mm
Antenna Height above Airframe	90mm	90mm	90mm	114mm
Antenna Penetration	75mm	75mm	75mm	75mm
Controller/Display Size	68x147x182mm	68x147x182mm	36x82x113mm	64x80x115mm

* With associated CSAR interrogator

Directions Finding (DF) Systems for all Search & Rescue (SAR) Missions





SAR Requirements The location of persons in distress needs to be quickly and accurately determined in order to maximise the chance of rescue success regardless of the prevailing conditions or the theatre of operation. Despite the improvements made in the COSPAS/SARSAT system, Search and Rescue crews on-board aircraft still rely on Direction Finding (DF) equipment to guide them in the last miles of the search, and indeed for much greater distances should the survivor not have a GNSS-based beacon.

The Solution: The 935- Series of Tactical Direction Finders provide a range of integrated solutions for bus-controlled (1553B) and stand-alone direction finding systems in both SAR and CSAR environments. The 938- Series of Civil Direction Finders provide solutions for SARonly requirements. The DFs in both families include an integral synthesised receiver (covering 30-470MHz for the 935- series, and 88-470MHz for the 938 series), together with five Guard receivers to monitor pre-defined distress frequencies. Bearings are taken on all six receivers simultaneously. Data decoding is provided for COSPAS-SARSAT messages and for marine DSC messages via the associated Guard receivers. Stand-alone installations typically control the DF via RS422 using a Cobham-supplied CDU, but the commandinterface protocol is available for customers to interface their own control interface as required.

The Cobham range of DF equipment utilises DSP (software defined) receiver technology and is designed for both military and civil use. The members of the DF family provide single box solutions, COSPAS/SARSAT compliant and compatible with the requirements of the Global Maritime Distress and Safety System (GMDSS)

Airborne TETRA

Cobham is the World's leading supplier of Avionic -standard TETRA systems, with ten years experience in fielding TETRA in aircraft.

TETRA (Terrestrial Trunked Radio) is the World's preferred Government communications infrastructure. TETRA, a cellular, trunked communications system, is similar in architecture to commercial cell-phone systems. Many governments are implementing single, countrywide, TETRA infrastructures as their new digital communication system for their key agencies. These include Police, Ambulance Military, Fire and other government users.

TETRA delivers: Secure, reliable trunked and direct-mode communications, interoperability between agencies and the ability to send both voice and data. Interoperability is facilitated by the ability to make point-to-point calls between all users on the Network and through Talkgroups.

The TETRA infrastructure consists of: Fixed base-stations, Switching and Management Infrastructure (SwMI) and the mobile radios (Terminals).

The UK is a World-leader in the implementation of TETRA and pioneered the implementation of TETRA for airborne use. Cobham Antenna Systems' involvement with this work since the beginning means that it is the most experienced provider of avionics-standard airborne TETRA systems. Cobham Antenna Systems has supplied avionics standard airborne TETRA systems for a wide-range of Government users, in the UK and Internationally.

TETRA (TErrestrial Trunked RAdio) is an open-standard, cellular-based, Professional Mobile Radio (PMR) system, which is in widespread use Worldwide by government agencies and departments. Cobham's equipment integrates a proven TETRA core transceiver into avionics-standard equipment.

Cobham Antenna Systems equipment is specifically designed for airborne use, with menu structures and keyboard/display layouts suited to airborne operations. These operations are usually conducted by users wearing gloves and in the noisy, high vibration helicopter environment.

Our airborne TETRA products provide configuration options to meet users' needs, including single or dual-transceivers which can be controlled by either single or dual Control and Display Units (CDUs). All transceivers are NVG compatible and can operate in TETRA's Gateway and Repeater modes.

The core TETRA transceiver, provided by Sepura, delivers a high level of network interoperability and is supplied with the necessary TETRA Air Interface Encryption (TEA). For example, TEA2 is the algorithm used in the Schengen Region and in the United Kingdom. TEAs 1 and 3 are also available for other regions, and End to End (E2E) encryption capability is also available if required.

Antennas and Terminals for Satcom

Cobham Antenna Systems offer a diverse portfolio of antennas covering a range of frequencies and compatible for use with a number of different systems. This allows our products to be used with in an extensive a range of applications across land, air and sea.

In addition to our antenna technology, we also offer fully integrated systems, for use in commercial and military communications compatible with X-band and KA-band satellites.

Datalink and Satcom Antennas

We offer a wide range of Datalink and SATCOM antennas, compatible with a number of varying applications and suitable for a variety of different environments. Our antennas provide a number of capabilities including wi-fi, continuous transmitted weather information and VHF and Narrow Cast datalink.

Our range covers the following frequencies:

2400-2500 MHz
118-137 MHz
136.450 - 136.475 MHz
Timing 1575.42MHz
118 - 150.05 MHz
Iridium™ 1616-1626.5 MHz
GPS 1575.42 +/- 10 MHz

Diamond Flatplate Satcom Antennas

Cobham Antenna Systems provides a range of highly efficient flatplate antenna technologies covering 5 – 45 GHz, including all the main satcom bands from X-band up to EHF-band.

Cobham's high-performance Diamond X-band flatplate antenna consists of a two-dimensional array of novel, broadband, dual-polarised printed elements, combined using beamformers implemented in low-loss stripline transmission line technology. The novel antenna measures 434 mm x 434 mm x 30 mm and is constructed using a number of thin printed circuit boards and ground planes positioned between foam layers, and bonded into a rigid 'picture frame' with the outermost layer acting as a weather-proof cover. Two full-band SMA ports are provided, one port for left hand circular polarisation and one for right hand circular polarisation. Polarisation is changed by switching ports.

UHF Airborne SATCOM Antennas

Cobham provides a wide-variety of specialised antennas on military airborne platforms including blades large and small, X-wing and eggbeater UHF SATCOM antennas, batwing antennas for fast moving fixed wing aircraft, and HF towel bar antennas for helicopters.

Part Numbers Data Sheet Links	Frequency	Power	Size	Detail	Data Sheet
UHF SATCOM Airborne					
19-400	225 - 400 MHz	200W	L 40.4 cm H 29.0 cm W 17.9 cm (Max)	UHF SATCOM	No Data Sheet - Contact Cobham Antenna Systems
19-405-01	244 - 318 MHz	200W	L 26.7 cm H 14.1 cm W 32.0 cm (Max)	Conformal UHF Satcom	Data Sheet available
19-409	225-400	200W	L 31.8 cm H 7.1cm W 29.2 cm (Max)	UHF SATCOM Conformal	Data Sheet available
19-410	225-400	200W	L 40.2 cm H 24.1 cm W 17.9 cm (at base) (Max)	VHF SATCOM and GPS	No Data Sheet - Contact Cobham Antenna Systems
19-420	225-400	200W	L 40.2 cm H 20.8 cm W 11.0 cm (at base) (Max)	UHF SATCOM High Angle	No Data Sheet - Contact Cobham Antenna Systems
19-429	225-400	200W	Height 27.0 cm Width 48.8 cm (max)	UHF SATCOM	No Data Sheet - Contact Cobham Antenna Systems
19-430-10	225-400	200W	Height 21.0 cm Width 40.2 cm (max)	UHF SATCOM	Data Sheet available
19-440-10	30 - 400 MHz LOS 225 - 400 MHz SATCOM	50W at Frequency 30 - 400 MHz 200W at Frequency 225-400 MHz	Height 30.0 cm Width 40.4 cm (max)	VI/UHF LOS and UHF SATCOM	Data Sheet available
19-450	225-400	200W	L 40.4 cm H 22.9 cm W 11.0 cm (at base) (Max)	UHF SATCOM and GPS	Data Sheet available
19-470-10	30 - 88 MHz 118-152 MHz 225 - 400 MHz	50W at Frequency 30 - 88 MHz 50W at Frequency 118-152 MHz 200W at Frequency 225 - 400 MHz	L 40.4 cm H 22.9 cm W 11.0 cm (at base) (Max)	VI/UHF SATCOM and GPS	No Data Sheet - Contact Cobham Antenna Systems
19-472	30 - 88 MHz 118-152 MHz 225 - 400 MHz	50W at Frequency 30 - 88 MHz 50W at Frequency 118-152 MHz 200W at Frequency 225 - 400 MHz	L 40.4 cm H 23.1 cm W 11.0 cm (at base) (Max)	VI/UHF SATCOM and Active GPS	No Data Sheet - Contact Cobham Antenna Systems
19-490	30 MHz to 88 MHz 118 MHz to 174 MHz 225 MHz to 512 MHz	30 MHz to 88 MHz 50 W max 118 MHz to 174 MHz 50 W max 225 MHz to 512 MHz 200 W max (140 W max if aircraft on the ground)	L 40.4 cm H 22.9 cm W 11.0 cm (at base) (Max)	VI/UHF SATCOM, L Band and GPS	No Data Sheet - Contact Cobham Antenna Systems

UHF Land Satcom Antennas

Cobham Antenna Systems range of Land based SATCOM antennas includes the provision for high & low angle SATCOM co-verage and a range of profiles and performance.

Part Number/Data sheets	Frequency	Power	Size		Detail
UHF SATCOM Antennas			Ø/W	H	
19-409	243-270MHz and 293-318MHz	150w	0.3m	0.1m	UHF SATCOM Antenna
19-429SR	225-400MHz	Low angle100w/High angle 200w	0.3m	0.5m	Low angle Monopole/High Angle Cross Dipole
19-429MM	225 -400MHz	Low angle100w/High angle 200w	0.3m	0.5m	Low angle Monopole/High Angle Cross Dipole
GV2432	243-318MHz	200w	0.3m	0.3m	High Performance Ground Plane Independent
5000-9007	243-380MHz	30w	0.5m	0.05m	High Angle Covert
5000-9010	244-380MHz	200w cw max	0.34m	0.26m	TacSat Antenna (UFO and MUOS)
GD2100	244-318MHz & 300-380MHz	200w	0.3m	0.4m	High Performance MUOS, UFO Ground-plane Independent
GD2110	292 MHz - 318 MHz / 244 MHz - 270 MHz / 300 MHz - 320 MHz / 360 MHz - 380 MHz	200w cw	0.33m	0.4m	UFO and MUOS SatCOM Antenna
GD2035	30-400MHz	25w	0.8m	0.8m	GD2035 - temporarily deployable
GD2135	30-400MHz	25w	0.8m	0.8m	GD2135 - permanently deployable

UHF/L/S Band Satellite Antennas

Cobham Antennas Systems manafacture antennas for UHF, L and S Band fixed and mobile, ground and GPS Satellite communications systems.

Cobham UHF, L and S Band antennas for Satellite communications are available for fixed and mobile, ground and GPS systems.

A range of passive antennas has been designed for fixed and mobile applications in UHF, L and S-Bands. UHF Hemi Omni antennas are used for data transmission from weather buoys (Meteosat and NOAA) and flat panels for ground-based static links.

L-Band Hemi Omni antennas are used on vehicles for regions which are low angle to the geo-stationary satellites. Some L-Band antennas have had GSM and GPS incorporated to provide high level of versatility.

High gain Directional antennas have narrow angles and are used for fixed locations (for SCADA) or for mobile applications on vehicles where elevation to the satellite is greater than 45 degrees.
S-Band Directional antennas for emerging markets are being developed. Unique antennas have been developed for placement on satellites for experimental work for Surrey Satellite Technology'.

Diamond X-Band Flatplate Antenna
434 mm x 434 mm x 30 mm

(a) front view

(b) rear view

Antennas for Battlefield Combat Identification

Omni Directional Antenna

Interrogater Antenna

X-band flat-plate antenna aperture for on the move applications

Microwave Antennas

MIMO Antennas

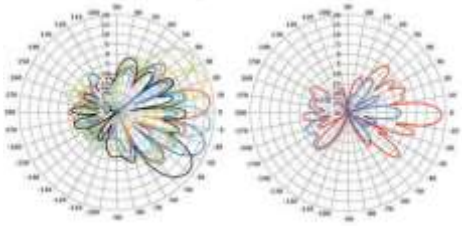
MIMO antennas, from Cobham, are compact and rugged with increased diversity-gain using dual-polarisation. MIMO is the use of multiple antennas at either the transmitter or receiver, or both, to improve communication performance. In order to achieve optimum performance both the transmitter and receiver must support MIMO.

Group 1 Antennas, 0.4GHz to 1GHz

Group 2 Antennas, 1GHz to 2GHz

Group 3 Antennas, 2GHz to 3GHz

Group 4 Antennas, 3GHz to 4GHz



Group 5 Antennas, 4GHz to 6GHz

Group 6 Antennas, 6GHz and above

C-Band Antennas - 4.7 GHz

C-Band (4.4 to 6.0GHz) Directional, Sector and Omni antennas are manufactured by Cobham Antenna Systems for defence and security, high data rate point-to-point and point-to-multipoint applications.

Tactical Communications
C-band, 4.4 to 5.0GHz Antennas

- Military and Security
- Fixed and Mobile
- Data Links
- WLAN
- Telemetry
- Video and Voice Links

C-band directional, sector and omni antennas are available for defence and security applications. Many countries have adopted this frequency range for high data rate point-to-point or point to multipoint applications. The restrictive use of this band ensures a greater level of security.
Commercially available radio systems based on WLAN and WiMAX technologies can be used in conjunction with our antennas, enabling systems to be developed rapidly.

Sector Antennas

Multi-Sector Antennas

Omni-directional Antennas

Light weight and rugged for full environment protection, our vertically polarised omni antennas function to full specification over the whole band. High gain omnis - up to 9dBi - cover designated parts of the band.

Electronic Warfare Antennas - UWB

Cobham Antenna Systems has developed a portfolio of high power, Ultra Wideband (UWB) Omni and Directional antennas operating within the frequency range 100MHz to 18GHz.

Ultra Wideband Omni

Biconical omnis are fully efficient, vertically polarised broadband antennas. Depending on design, bandwidths from 3:1 to 30:1 are achievable. Multi-stacked omnis can offer versatile configurations to counter multiple threats.

Cavity Backed Spirals

High fidelity cavity backed spirals for traditional EW direction finding systems. Phase and amplitude matching available.

Cavity-Backed Spiral Antennas - Receive only

The cavity-backed spiral is the traditional antenna that provides very wide bandwidth, circular polarization and high fidelity monotonic patterns and is the mainstay of an EW direction-finding system for instantaneous threat analysis

High Power Planar Spiral Antennas

The flat-panel, reflector-backed spiral has no absorber so it can handle up to 100Watts, fully efficiently, with up to 8dBi peak gain, giving an impressive level of EIRP for Countermeasures. Like their receive-only cavity-backed spiral counterparts, the reflector-spiral antenna provides circular polarisation which can have benefits in many scenarios where the polarisation of the threat signal is unknown.

Omni Antenna Matrix - Single and Multi-stacked

Some of the standard ultra wideband omni antennas that form the cornerstone of multistacked omnis and new development projects

Unmanned Vehicle Antennas

Unmanned Airborne and Ground Vehicle antennas from Cobham Antenna Systems are used within operational functions including Command and Control, Airborne Surveillance, Data (including Telemetry) and Video transmission, Border Patrol and Tactical Communication systems.

Omni - Rugged Dipole

Omni - Slim Flexible Dipole

Blade - Omni Directional

Antennas - Omni less than 1GHz for Unmanned Systems
Antennas - Omni 1GHz to 2GHz for Unmanned Systems

Antennas - Omni 2GHz to 3GHz for Unmanned Svstems

Unmanned Vehicle Antennas

Antennas - Omni 3GHz to 4GHz for Unmanned Systems

Antennas - Omni 4GHz to 6GHz for Unmanned Systems

Antennas - Ultra Wideband Omni for Unmanned Systems

Antennas - Ultra Wideband Directional Planar Spiral for Unmanned Systems

Sector Antennas, Multi Sector Antennas for Control Centres

Tactical Communications Antennas - Link16

The Cobham Antenna Systems range of Link16 Omni antennas features gain from 0dBi to 8.5dBi and up to 200 Watts power rating. New Sector developments provide a range of antennas gains from 5 to 13dBi and azimuth beamwidths from 120 to 180 degrees. Combinations of 120 degree or 180 degree azimuth beams can provide all-round coverage and allow extension of range.

Link16 Tactical Communications Ground to Air

Rugged Omni Antennas with spigot or flange

Omni Antennas with spigot or flange

Omni Antennas for Transmitters, Ground Station, Vehicle and Marine

Omni Antenna Ground, Vehicle and Marine

Dipole for Short Range 20W Transmitters

120° Sector Antenna

Bandpass and Bandstop Filters

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.

DAS - Distributed Antenna System

DAS antennas are a range of antennas for In-Building Wireless communications for improved call connection services, from PMR, TETRA, Wireless LAN or cellular (3G, 4G and Beyond)

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.

PMR and Tetra Antennas Open Area, Car Parking

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

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

Ground Control Antennas

Uninterrupted communications from UAV or ground based robotic vehicle to and from the control centre is vital. The control centre antenna usually provides the higher gain part of the link and may be a medium to high gain Omni, medium gain Sector or high gain Directional antenna.

WiMAX/LTE Antennas

Vector antennas meet RF and environmental specifications required for WiMAX, LTE, WLAN and WiFi networks. The Vector range of Base Station Sector antennas features Omni, Sector and Flat Panel Directional antennas including Window-Mounting option. They are available with Vertical, Horizontal and Dual Slant 45 degree and Dual Vertical/Horizontal polarisation

Wireless LAN Antennas

Wireless LAN antennas from Cobham Antenna Systems are suitable for internal and external use, for metropolitan or rural WiFi networks, point-to-point, point-to-multipoint and COFDM systems

RFID Antennas

RFID antennas can be incorporated as part of the readers used for tracking goods and assets, point of manufacture, point of sale, stock and cargo monitoring, road tolling, cost and time analysis and security for valuable assets.

Cellular Antennas

GSM-based Data Communication Systems use these antennas to monitor and maintain remote equipment via the GSM network. Suitable for internal and external use, single-band, dual-band, tri-band Omni, Directional and Sector antennas are available in GSM900, GSM1800, PCS1900, 3G and 4G, WiMAX, LTE and with MIMO. Multi-band and Ultra Wideband antennas provide networks with upgrade paths between these different protocols.

COFDM Antennas

COFDM antennas designed by Cobham Antenna Systems are used within National Security, Police and Military communication systems where integrity of video and data links is maintained.

Telemetry Antennas

Live transmission of telemetry from highly visual, and mobile, sources such as race cars for fuel levels or tyre temperatures have become an industry standard. Transmission of similar telemetry uses antennas for accurate, reliable, live readings from a wide range of system monitoring such as harvest levels, water levels and tidal flow, pollution, distribution of assets, liquid and chemical storage, and temperature variants where this is critical.

Security and Surveillance Antennas

Antennas are used in many applications within Security and Surveillance such as voice, data and High Definition video links. Systems using COFDM, PMR and Tetra are used for intelligence gathering, area and perimeter monitoring. Covert and Overt surveillance may use licensed and unlicensed bands requiring versatile antennas.

Radar Antennas

Radar Antennas from Cobham Antenna Systems for Radar arrays in Stripline and Waveguide for CW Doppler, FMCW, fixed beam pulse and Reflectometer applications.

PMR/Tetra Antennas

PMR and TETRA antennas from Cobham Antenna Systems are suitable for internal and external use, and are used within public service organisations, metropolitan and rural networks.

Tracking Antenna Systems

From UHF band up to Ku Band, Mono-Band and Dual-Band, Cobham's antennas provide robust solutions for telemetry, remote control, trajectography and image data reception.

- **Ku-Band antenna for Aircraft to Ground image data transmission**
- **C-Band and Ku-Band Tracking antennas – Ground to Aircraft for UAV and Missile control and data link and for Aircraft flight test centres**
- **X-Band, S-Band and X+S Dual-Band antennas – Ground Space Segment for launch vehicles and observation satellites**

Ku-Band airborne antenna

Aircraft to Ground antenna

Ku-Band antenna

Ground to Aircraft antenna

X-Band Antenna

Ground Space Segment for Launch vehicles and Observation satellites

X+S Dual-Band Antenna

Embedded Space Antennas

Cobham Antennas has developed a wide range of high tech antennas for ;

- **Launch vehicles, Ariane 5, Soyuz and Vega**
- **Earth observation and Telecommunication satellites**
- **Inter planetary missions**

– X-Band isoflux Telemetry antenna
– Dual-Band Positionning antenna
– GPS Patch antenna
– UHF dual frequency Argos antenna

X-Band Telemetry Antenna

Dual-Band UHF+S Positionning Doris Antenna

GPS Patch Antenna

C-Band Radar

UHF dual frequency Argos Antenna

Tactical Land Antennas

The Cobham range includes; single band, multi-band and broadband antennas for applications such as Combat Net Radio, Software Defined Radios, High Capacity Data and UHF SATCOM (UFO and MUOS).

- **Manpacks**
- **Vehicles**

Manpack Antennas

Cobham Antenna Systems provides the most extensive range of high performance, robust and compact antennas to support the latest generation of tactical personal radios and portable jammers: • Single band antennas, HF, VHF, UHF (including TacSAT), covert, TETRA. • Multi-band antennas for multi-role radios or manpack radios with built-in GPS. • Broadband antennas for Software Defined Radios and High Capacity Data Radios that maximise performance over very wide frequency bands. • High power versions of all of the above for portable jamming needs.

Vehicle Antennas

Cobham's range of vehicle antennas includes field proven whip designs covering HF, VHF with flexible interchangeable sections and spring mountings for impact survivability.

Vehicle Whip Antennas

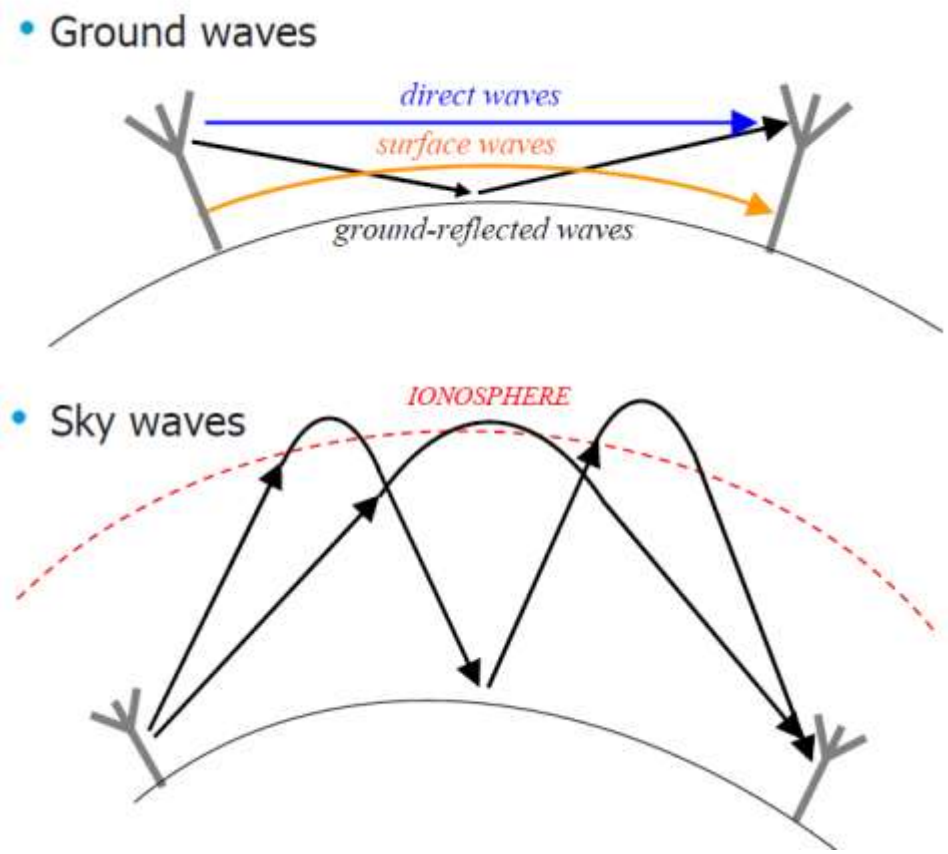
Vehicle Communications and Jamming Antennas

Cobham Antenna Systems product range with the addition of a strategic marketing alliance with the Shakespeare Company offering the most extensive range of high performance, robust and compact antennas to support the latest generation of tactical vehicle radios and mobile jammers: • Single band antennas, HF, VHF, UHF (including TacSAT), covert, TETRA • Multi-band antennas for multi-role radios or vehicle with GPS • Broadband antennas for Software Defined Radios and High Capacity Data Radios that maximize performance over very wide frequency bands • High power versions of all of the above for on-board vehicle jammers

Elevated Antennas for Base Stations

HF Full-Loop & Half-Loop Antennas

HF Communication Solutions
for Very Long Distance or Without Line Of Sight (mountainous regions)
using both Ground Waves and NVIS capabilities



HF Full-Loop Antenna Available in 150W, 500W and 1kW

HF Half-Loop Antenna Available in 150W

More than 1000 km of communication distance successfully tested

Ground to Air VHF & UHF Antennas

Cobham Antenna can provide you for limited space environment and tactical applications with our Ground to Air VHF & UHF Multiport Antenna solutions

UHF Dipole antenna

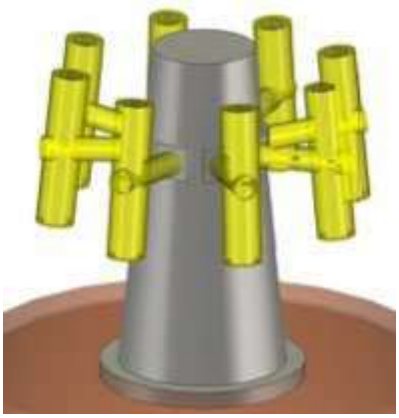
UHF Vertical colinear dipole stacking antenna
Up to 6 ports

12 UHF port antenna

3 VHF ports
3 UHF ports
1 V&UHF port

Naval Antennas

Cobham Antennas has also Space Limited and Easy to Install antenna solutions for Naval communications



UHF Multiport Antennas

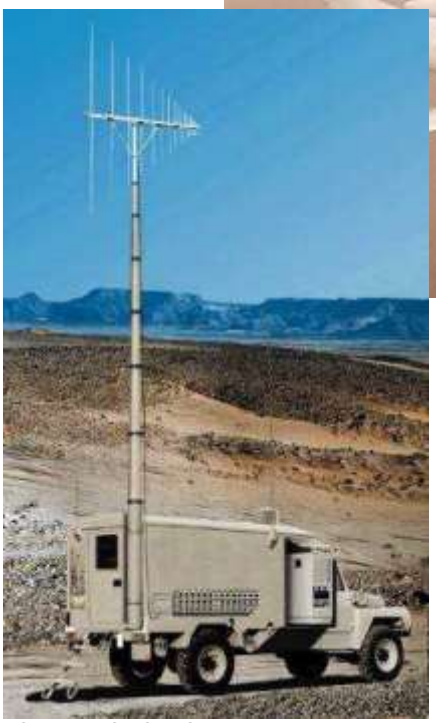
HF Recess Half Loop Antenna

HF Loop Antenna

Link 16 Antenna Family

Jamming Antennas

	P/N / MHz	0	20	30	50	100	300	500	1000	1200	3000	4000	5000	6000
Omnidirectional jamming antennas	4484-99 including :		Mobile 100W											
				30-88MHz										
						100-400MHz								
								400-6000MHz						
	1042-95		Mobile 1kW											
	1099-99						Mobile 1kW							
	1034-95						Mobile 100W							
	1032-25					Fixed 500W								
Directional log periodic antennas														
	2137-25			Tactical 1kW										
	2130-25							Fixed 700W						
	2145-29		Tactical 1kW											
Passive wide-band jamming airborne antennas														
	6501-85						200W							
	6502-85					400W								



Interface Cancellation Systems

Optimise the installed performance of multiple radios, jammers and intercom systems operating simultaneously on the same platform

ICE 7201
Multi-Radio Interference Cancellation System

The Problem:
The multi-radio interference problem arises when there are multiple transmitters/receivers operating in close proximity, typically with multiple antennas mounted on the same platform with limited separation. This can result in receiver saturation and the introduction of broadband noise in radio receivers. The combination of these effects reduces the sensitivity of radio equipment and can have a very significant adverse impact on the range of the radio system, degrading both operational effectiveness and safety. In order to restore the receiver sensitivity to an acceptable operational level it is necessary to not only reduce the large 'off-channel' signal coupled into the receiver from the neighbouring transmitter, but also to decrease the 'on-channel' interference from the transmitter's noise sidebands.

The Solution :
Cobham has developed an innovative RF interference cancellation technology offering a breakthrough in the level of sensitivity restoration which can be achieved in the receiving radios. This is realised by cancelling both the large transmit signal as well as the associated noise sidebands

ICE 7701
Communications-Through-ECM System

The Problem :
Electronic Countermeasures (ECM) systems emit broadband noise signals (jamming signals) to disrupt communications and protect vehicles and their occupants against remote detonation of radio-controlled Improvised Explosive Devices (IEDs). The jamming signals also couple into other co-located antennas on the vehicle and jam their associated radios. Typically these radio communications are restored by placing RF filters on the jammer output, inserting a notch in the jammer's transmitted signal to facilitate communications. However, this approach compromises security by reducing protection at these frequencies and offers limited flexibility to adapt to different frequencies.

The Solution :
Cobham has developed an innovative RF interference cancellation technology offering a breakthrough in the level of sensitivity restoration which can be achieved in on-board communications systems in a jamming environment. This is achieved through digital filtering techniques to suppress the jamming

Communication Masts

Cobham Antenna Systems range of masts includes Light, Medium & Heavy duty pneumatic masts as well as man-portable sectional composite masts for rapid deployment. Masts are available with compatible fixings for Cobham's range of base station antennas allowing the deployment of communications infrastructure, elevated for increased range and reduced interference.

EXB-Masts

EXB-masts are mechanical winch and belt operated (fixed) vehicle masts. EXB-masts are designed for heights up to 14 m with max. 110 kg top load. Masts are designed for unguyed through-the-roof vehicle installations. EXB-masts are made of composite material. EXB-masts have double belt system. One belt is used for lifting top load up and the other for pulling it down, when vehicle is inclined or weather conditions otherwise require it. The electric winch has hand crank as a backup system for power failures. EXB series are equipped with latch mechanism for controlling the raising order of the mast sections. EXB-masts can be painted in customer specific colours.

EXL-Masts

Light weight telescopic EXL-masts are mechanical winch and belt operated masts. EXL-masts are designed for larger and heavier top loads and are available in three sizes: EXL141 series is for for heights 15-24 meters with max. 55 kg top load, EXL167 series is for heights 15-30 meters with max. 60 kg top load and EXL195 series for heights 20-50 meters with max. 100 kg top load. EXL-masts are made of carbon and glass fibre composite material. Masts are delivered with full field deployment accessory kits and they can be supplemented with a wide range of mounting kits for vehicles and shelters. EXL-masts are deployed by two or three persons and are elevated with a hand cranked winch or by an optional electric winch motor unit. The entire mast is rotatable by 360°. In EXL-masts sections open one by one and automatic mechanical locking mechanism allows guying each lower section separately during winching up. This allows safe handling of higher top loads especially under windy conditions. EXL-masts can be painted in customer specific colours.

EX-Masts

Light weight telescopic EX-masts are mechanical winch and belt operated masts. EXmasts are available in three sizes: EX105 series is for heights 8-15 meters with max. 20 kg top load, EX128 series for heights 10-18 meters with max. 40 kg top load and EX141 series is for heights 10-20 meters with max. 50 kg top load. EX-masts are made of carbon and glass fibre composite material. The masts can be supplemented with a wide selection of mounting kits for vehicles and shelters. EX-mast can be deployed by one to three persons and are elevated with a hand cranked winch or by an optional electric winch powerm unit. The entire mast is rotatable by 360°.

Microwave Components and Systems

Cobham Microwave France has a long term experience in design and manufacture of Microwave Components and Systems for space, defense & security, industrial, scientific and medical applications. Our areas of capabilities are Silicon Diodes, RF & Microwave Modules, Isolators & Circulators, Filters & Duplexers, Waveguides and Systems. Our products are qualified and embedded on major space, defense & security, industrial, scientific and medical programmes and platforms worldwide.

Microwave Filters and Duplexers

Cobham designs and manufactures a complete line of Microwave Filters and Duplexers from DC to 40GHz. Four main leading edge technologies are available : air cavity, ceramic, lumped element and waveguide. Our products are suitable for aerospace, defence electronics and commercial systems. The quality management system is ISO 9001-2000 certified in accordance with EN/AS/JISQ 9100 requirements.

Microwave Isolators and Circulators

Cobham designs and manufactures a large range of Microwave Isolators, Circulators and Loads for various types for space, defence, avionics, land and maritime markets. Complete in-house capabilities have been developed, from design to final product manufacturing and testing. Cobham is commited to providing the highest level of satisfaction for its customers.

Microwave Systems and Test Benches

Cobham designs, manufactures and supports Microwave Systems and Test Benches for space, defence, industrrial, communications and scientific markets

Microwave Waveguides Couplers and Adapters

Cobham offers a range of Waveguide assemblies and Components covering frequency band from a few hundred MHz to 100GHz, WR2100 to WR10. The majority of the Waveguide assemblies are custom built to customer specific requirements and can be manufactured from a broad range of materials such as aluminium, copper or brass.

RF and Microwave Modules

Cobham RF and Microwave Modules product family offers solutions in various configurations from SMD to drop-in, connectors and Wave Guide package types dedicated for defence and space market. For the defence market, Cobham's RF and Microwave Modules offers passive and active high power limiters from UHF/ VHF, L, S and C frequencies band in QFN packages, 300W pulse power handling capabilities mainly dedicated to phase array antennas.

Silicon Pin Diodes

- ⇒ Mos capacitors
- ⇒ Switching pin diodes
- ⇒ Atenuator pin diodes
- ⇒ Hyperabrupt tuning varactors
- ⇒ Abrupt tuning varactors
- ⇒ Limiters pin diodes
- ⇒ Frequency multiplier pin diodes
- ⇒ Step recovery diodes
- ⇒ Voltage multiplier diodes
- ⇒ Anti parallel diodes

Silicon Diodes Products Family

Wide Range of Products :

- PIN : Low, medium & high voltage
  - ⇒ 30 V to 3000 V Vbr
  - ⇒ Low Rs & low Cj
- Tuning Varactor
  - ⇒ Abrupt varactor, 30 V Vbr
  - ⇒ Hyperabrupt varactor, 20 V Vbr
- SRD & Multiplier
- MOS capacitors
  - ⇒ 50 ppm/°C stability

Large choice of Packages :

- Naked dies
- Ceramic
- Plastic
- Custom







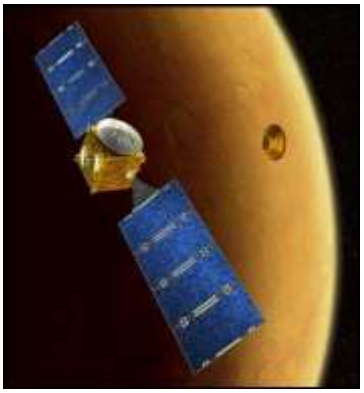


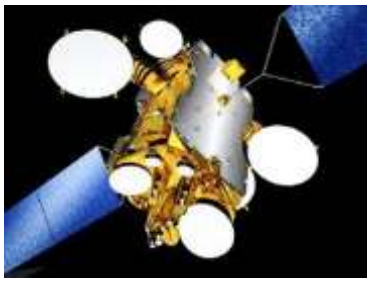






Space Products





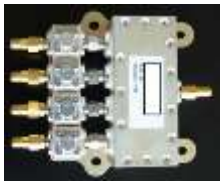
More than 30 years of space proven experience
More than 100 programs participation

Drop In Modules

Amplifier (ECI heritage)
Mixer (ECI Heritage)
Switch
Power Divider
3 dB 90° & 180° Coupler
Transformer
Driver
I&Q Demodulator

SMD Modules

Mixer



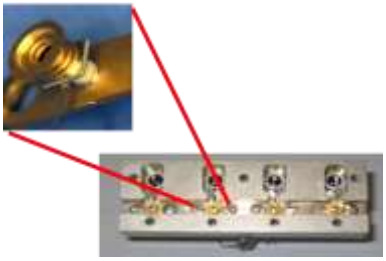
Connectorized Modules

Mixer (ECI Heritage)
Switch
Power Divider
Directionnal Coupler
90° Hybrid Coupler

Space Products

Switch SP1T





POWER DIVIDERS (High runners)

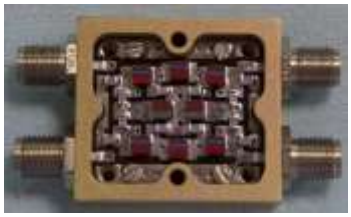


X band 4 & 6 ways Power divider Assembly

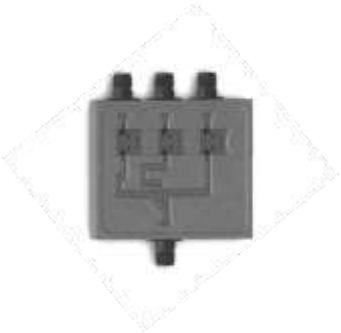


Couplers





Power Dividers + Integrated Isolators

Systems & Test Benches

Cobham Systems & Test Benches business unit designs, manufactures and supports all equipment and systems dedicated to Defence, Space, Industrial, Scientific and Communication areas.
More than 30 years expertise in the following fields:

- **Operating systems: microwave systems and equipment for ground and airborne applications**
- **Test systems: testing, simulation and system integrationmmbenches**
- **Maintenance in operational conditions, including the management of obsolescence and retrofit of systems and equipment**

Test Bench Systems

These are testing and simulation, system integration and validation benches.
• Radar echo simulator
• Bench tests for missile seekers
• Radar and transponder test bench
• IFF switch matrix
• Programmable delay line

Portable radar test bench

• Fixed frequencies: 5,9GHz, 8GHz and 12,5GHz
• Transmit power level: ! 39dBm
• Transmit range: 0 to 60dB by 10dB step
• Internal modulation: 1kHz/1µs
• External modulation:
- Pulse width: 0.2 to 5 microseconds
- Repetition frequency: 0.3 to 10kHz

Space Flight Subsystem

Combining its own manufactured space components (switches, mixers, couplers, dividers, isolators, filters, diodes, varactors, waveguides) and its capabilities to procure space products, Cobham designs, assembles and tests flight subsystems with multiple microwave functions. Cobham is the best choice for space customers looking for built to spec subsystems with high performance and reliability at an affordable price.

Satellite repeater ground testing equipment

Cobham offers a range of Waveguide assemblies and Components covering frequency band from a few hundred MHz to 100GHz, WR2100 to WR10. The majority of the Waveguide assemblies are custom built to customer specific requirements and can be manufactured from a broad range of materials such as aluminium, copper or brass.

Radar & Transponder Testers

Cobham Microwave has developed a range of Testers for C-band Transponders. These Testers provide calibration tests for most C-Band Transponders used in flight testing. The Tester set functions to verify proper transponder operation by simulating pulse interrogations and qualifying responses per specified parameters. Testers are available in portable or bench versions.

Bench Tester

The Multi-Radar Transponder Tester (models FS235 & FS318) is the appropriate tool to make launch vehicle or Missile transponder tests. These Testers are rackable units dedicated to be integrated in a test bench. They have added capabilities compared with portable version like response rate measurement status, frequency sweep function for transponder filter tuning, a wider dynamic range sensitivity and capacity to perform sequential test over 4 transponders. Pulse interrogation, pulse transponder and acquisition window could be displayed directly on an integrated oscilloscope.

Portable Tester

The Radar Transponder Portable Tester (model FS248) is the appropriate tool to make aircraft GO/NOGO radar transponder tests. The Tester is a C-Band transponder Test Set designed to test the operability of C-Band transponders (GO/NOGO tests). The model FS248 allows the user the ability to set the output to a single or a dual pulse interrogation, the pulse pair spacing and the RF output in the 5400 to 5900MHz frequency range. It can be use either on the operation field, with its antenna or in a laboratory (via its N-RF connector). Tester is fully protected against rain and dust. The front panel commands consist in four buttons panel to set all the parameters. The configuration is readable via a 2x16 LCD screen and configuration is saved at turned off. The result of the test (GO/NO-GO) is given by a LED light (front panel) and a buzzer. Model FS248 is a light tester and can be easily carried during tests processing. It can also be turned on and left alone on the ground. The operator can thus climb in the plane and turn on the transponder to check its operability directly. Tests can be achieved by one operator.

Transporder Tester

Cobham Microwave has developed a range of Testers for C-band Transponders. These Testers provide calibration tests for most C-Band Transponders used in flight testing. The Tester set functions to verify proper transponder operation by simulating pulse interrogations and qualifying responses per specified parameters. Testers are available in portable or bench versions.

Slip Rings - Instrumentation

A slip ring is an electromechanical device that allows the transmission of power and electrical signals from a stationary to a rotating structure. A slip ring can be used in any electromechanical system that requires rotation while transmitting power or signals. It can improve mechanical performance, simplify system operation and eliminate damage-prone wires dangling from movable joints.

Cobham designs and manufactures high-technology Slip Rings for a wide variety of applications. As a recognised world leader, Cobham supplies innovative Slip Rings for helicopters, battle tanks, infantry vehicles, submarines, radar, wind turbines, nuclear, oil and gas, and other industrial Slip Rings such as for the food and beverage sector.

Cobham is a major supplier of standard and highly-customised Slip Rings to meet specific customer requirements for the transmission of power, data, optical and RF signals, including contactless solutions, pneumatic couplings, and fiber optic rotary joints.

Slip Rings - Instrumentation

Instrumentation Slip Rings for various defence, naval, aerospace and industrial applications, for testing behavior, vibration levels, and other technical parameters for operational validations and qualification purposes.

Slip Rings for Defence and Aerospace

Electrical Slip Rings for defense and aerospace applications, for installation on main battle tanks, infantry vehicles, radars, weapon systems, submarines and helicopters.

Slip Rings - Wind Energy

Cobham electrical Slip Rings for wind turbines are used for blade pitch control and heating, and generator excitation.

Slip Rings - Industrial

Electrical Slip Rings for industrial applications such as beverage processing, oil and gas exploration/ extraction, motion control (robotic), machine tools, and nuclear plants.

Slip Rings - Commercial

Economical electrical slip ring solutions for various industrial and Professional applications.

Slip Ring Separates

Cobham offers a range of unpackaged Slip Ring Separates and components

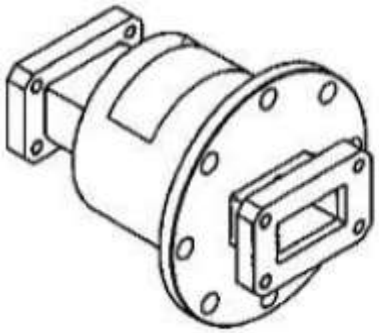
Rotating Sub Systems
Rotary Joints

Cobham Antenna Systems rotary joints and slip rings are passive rotating transmission lines designed to pass DC and RF signals between the stationary and rotating sections with minimal degradation. They are true electromechanical devices.

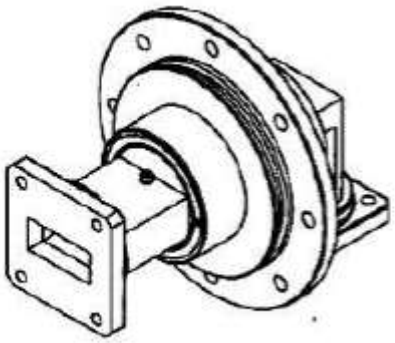
Standard Designs : Cobham Antenna Systems product line contains standard rotary joint designs, available in a wide variety of coaxial and waveguide configurations for diverse platform applications, including military and commercial SATCOM terminals, telemetry, test ranges and data links. Standard rotary joints are generally available with shorter lead times and lower cost than custom products.

Custom Designs : Cobham Antenna Systems is the world's foremost developer and manufacturer of custom state-of-the-art rotary joint and rotary joint sub-system technology.

'I' Type Rotary Joint WR62



''L' Type Rotary Joint WR112



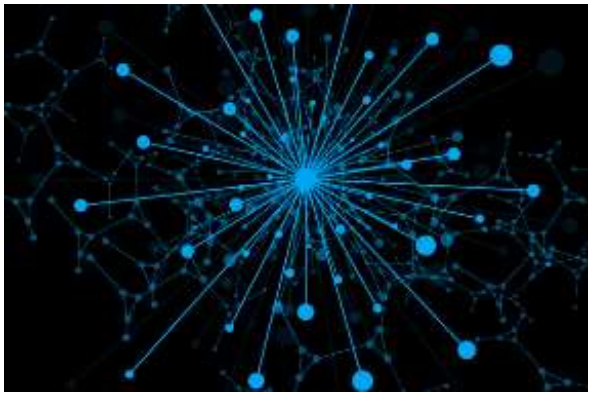
Lightning Testing and Consultancy

Cobham provides comprehensive lightning testing services, consultancy and R&D for aerospace and ground-based infrastructure and systems.

- In-depth knowledge of the direct and indirect effects of lightning strikes.
- Wide range of testing services at an extensively equipped lightning simulation laboratory in Abingdon (UK). Mobile equipment also available for off-site testing at customer premises.
- Consultancy on all stages of aircraft lightning protection design and certification, through review, testing and analysis.
- Computer simulation and modelling of indirect lightning effects in complex structures and installations, including aircraft and wind-turbine systems.
- Advanced in-house training courses on aircraft lightning protection as well as tailored short courses at customer premises.

Tactical Communications and Surveillance

IP Mesh Systems



Up to 12 of the radios can be combined into a ground-breaking IP mesh network - Cobham's first fluid, self-forming, self-healing mesh. Offering genuine non-line of sight coverage (COFDM), the system is truly mobile and therefore supplies a network with extended range - one which will deliver in environments too tough for other radio solutions to cope with. The systems have excellent RF penetration and are custom-designed for the security and military markets.

Wireless networks no longer need to be static. Unlike other wireless options, the COFDM IP Mesh constantly readjusts itself as nodes move, working out which are in range and finding the best route to send data between them. When one node can no longer operate, the rest of the nodes can still communicate with each other directly or through one or more intermediate nodes.

NETNode IP Mesh-MIMO 	**NETNode IP Mesh Radio Quad - Robust** 
NETNode IP Mesh Phase 3 - Plain 	**NETNode IP Mesh Phase 3 - Robust** 
NETNode IP Mesh Radio Infrastructure Node 	**NETNode IP Mini Mesh - Plain** 
NETNode IP Mini Mesh Robust 	**DUO IP Radio** 
NETNode IP Mesh Phase 2 - Plain 	**NETNode IP Mesh Phase 2 - Robust** 

Video Surveillance

Cobham's overt and covert COFDM video surveillance systems enable the monitoring and recording of critical video data through non-line of sight (NLOS) and line of sight (LOS) transmission systems.

COFDM Transmitters

Cobham's COFDM Transmitters a range of COFDM video transmitters which can operate in a variety of transmission bandwidths and frequencies allowing the user to trade off image quality against range.

COFDM Receivers

Cobham's COFDM Receivers are a range of feature-rich, diversity input COFDM digital video receivers covering a wide range of frequencies.

COFDM Transmitter and Receiver Kits

Cobham COFDM Kits are packaged solutions providing the customer with all the components needed for an easy deployment in any type of operation.

COFDM Airborne Downlink Solutions

COFDM Airborne Downlink Solutions are available in a variety of specifications, to suit demanding HD and SD applications.

COFDM Video Antennas and Accessories

Cobham's COFDM Video Antennas and Accessories range complements its feature rich COFDM video transmitter and receiver capability.

COFDM Video Ant's

Cobham offer a range of COFDM Video Antennas to complement the range of transmission equipment offered.

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