

CAPABILITIES AND EXPERIENCE IN PROVISION OF AIR-TO-GROUND VIDEO DOWNLINK SYSTEMS



Overview

Navtech Systems Limited has been designing, manufacturing, supplying and installing video downlink equipment for more than 12 years. The company has acquired considerable experience in this specialist field, particularly amongst airborne surveillance operators involved in security provision. We have an established customer base of Police and paramilitary organisations covering the USA, Europe and the Middle East.

Navtech downlink equipment has been selected on two recent occasions to provide the principle video downlink facility for the security surveillance aircraft used at both the Summer and Winter Olympic Games. The most recent high-profile application of the COFDM link technology offered by Navtech was the FIFA World Cup in Germany, where it provided video downlinks for the German Police helicopters.

In the UK, Navtech has successfully provided and supported downlink equipment to Police Forces in London, Manchester, Merseyside, Durham, Northern Ireland and Leicestershire. In addition, the technology currently utilised in virtually all UK Police aircraft to enable long range analogue links with automatically tracking antennas is designed and supplied by Navtech. In recognition of its achievements, Navtech was awarded a UK Government DTI 'Foresight' award in 2001 to endorse the previous 'Smart' awards for our down link technology.



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Technology - Digital Video Links

With the development and evolution of digital transmission systems and their increasing adoption in downlink applications, Navtech has invested heavily in this technology. Using private and customer's aircraft, we have completed a development and testing regime that has resulted in a competitively priced, high performance COFDM downlink product that is available now.

We have worked closely with partner companies to assess and evaluate a variety of technologies, with the emphasis on developing a system optimised for our security surveillance operators. Navtech's principle technology partner for COFDM digital video links is **Tandberg**. Tandberg is a multi-million pound turnover, world-class European company at the forefront of video compression, digital modulation and digital delivery techniques, backed up by a particularly strong RF engineering capability. Navtech and Tandberg have worked closely over the past few years to develop high performance, reliable digital link systems for airborne and terrestrial surveillance.

Of particular concern during the development process was the need to address the requirements of the UK Home Office MG42 specification. The equipment offered by Navtech is field-proven by both security and broadcast users in both airborne and ground-based applications. Our transmission equipment is already **fully aircraft-approved (certified) to Eurocopter standards** for the latest generation of aircraft and is in current use by European Police Air Support Units. From an integration perspective, the transmission equipment is a very compact 'single-box' solution. It incorporates integral redundant forced air cooling fans and a comprehensive remote control facility giving operational status information and warning of loss of output power, antenna faults or video loss.

Compatibility - interoperability

A principle requirement for the digital COFDM system proposed by Navtech for UK Police operations has been **the need to avoid 'proprietary' technologies and adhere to proven and established standards**. Digital technology is mature enough to allow a 'standard' to be adopted which all equipment vendors could readily comply with. This allows interoperability between forces but also enables a choice of equipment from different suppliers to be used. Detailed discussions about interoperability issues have been held by Navtech with UK Police Air Support Units. As a result we therefore comply fully with the international DVB-T standard and can provide either AES digital encryption or the EBU BISS encryption system, dependant upon a particular customer's preference or requirement



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Reception Equipment – fixed receive sites and portable systems

The systems offered by Navtech include the latest generation **MRC (maximal ratio combining) diversity technology** to provide optimal reception capability. Central receive sites can be either non-tracking diversity combining antenna arrays or the more traditional GPS-based switched sector array. Of concern to Navtech has been the ability to receive images at one site from more than one aircraft simultaneously. With a GPS-based solution, each aircraft would require a dedicated antenna array, control system and receiver. Using a diversity array, one set of antennas and down-converters can supply two receivers without any control system being required. Navtech offers this flexibility in equipment choice to its customers. In addition to central receive solutions, Navtech provides a range of very competitively priced equipment for portable applications and mobile command posts, again making use of MRC diversity (which is of particular importance in urban environments and with mobile equipment).

Uplinks

The same diversity equipment that is utilised for portable ground receivers is also used for enabling digital up-links to a Police aircraft. A compact dual antenna diversity receiver is offered which can feed up-linked 'ground camera' images to the aircraft's on-board video management system. For those customers wishing to utilise existing analogue FM equipment in use nationally by the divisional TSU's, for uplinks, Navtech also provides suitable aircraft receive equipment (with an option for diversity reception if required).

'Turn-key' System provision and support

Designing and supplying complete system level microwave link solutions for airborne surveillance operators on a 'turn-key' basis has been at the core of Navtech's activities for the last 12 years. We are a specialist company in this field, employing highly experienced staff, dedicated to providing optimal solutions to our customer's needs. We have the proven capability to support and service the equipment anywhere in the World. Whilst being a relatively small company (which allows flexibility in our services) we are backed and supported by the technological and financial capabilities of our carefully selected partners, who are all World leaders in their respective technological fields.

Service and After-sales Support

To provide comprehensive after sales service to our customers Navtech has three experienced, UK-based field service engineers (supported by office-based engineering staff) who are available to investigate and resolve any reported downlink problems at a customer's site. Navtech has a proven ability to service UK Police downlink systems, having undertaken such tasks for the **London Metropolitan, Manchester and Merseyside forces**. As a measure of Navtech's capabilities, we are regularly engaged by clients to undertake field servicing and fault investigation tasks in overseas locations for equipment and systems manufactured by other microwave vendors.



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