

## Application Note Wireless Connectivity for Sports Events 10 Gigabit Wireless Networks



### About Wireless Excellence

Founded in 1996 and with headquarters in Oxford UK, Wireless Excellence Limited is a leading designer and supplier of outdoor and indoor Broadband Wireless communication products.

With a complete range of solutions including Radio, Microwave, Millimeter-Wave, Free Space Optics, WiFi and 4G/5G/LTE, customers in over 80 countries have chosen Wireless Excellence as the “one stop shop” solution of choice for dependable wireless networking.

## Scenario

CableFree FSO links are used extensively by Formula One racing teams as a mobile solution for instant, reliable wireless trackside communications at races worldwide.

With exceptional demands for performance and reliability, Formula One teams require best-in-class equipment to support

Formula One teams which have adopted the CableFree system already download telemetry data from each of their cars as they enter the pits, via a low-bandwidth radio pick-up, usually mounted on the pit wall. The cars typically have whip aerials mounted on the front of the vehicle transmitting the data continuously.



This data, which includes all the details about the car's systems, such as timing, throttle function, oil pressure, and temperature, is then networked into the computers of the pit garage, where the team mechanics can see processed information on which they can make decisions about service requirements for the car.

↳ CableFree links in use with British American Racing. Engineers on the pit-wall make split-second race decisions based on information carried over the links

Configured to transmit data at speeds of 100Mbps and Gigabit Ethernet, the CableFree laser heads are employed both to send this vital information from the pit wall to the pit garage computers and/or from the pit garage computers to the computers of the team's support trucks, often based in the race-course 'paddock', where further analysis can take place.

↳ Jordan F1 using 100Mbps CableFree from the garage to pit wall. Note the compact FSO unit (team colours!) mounted on the garage wall.





The F1 teams also use the CableFree link to access their entire network from the pit wall, including downloaded data from previous races stored on their server. This allows much wider, real-time analysis to take place and, at Gigabit Ethernet, allows the fastest, most appropriate decisions to be made.

← Jaguar F1 using CableFree 100Mbps links in identical configuration. F1 teams carry spares of every item from car parts to IT systems for "unexpected incidents".

Being the first choice of the majority of leading Formula 1 racing teams, whose exacting data communications requirements mean that any transmission systems employed must be absolutely reliable, highlights the level of sophistication that CableFree Laser/FSO equipment has attained, as well as the level of respect it has achieved in such a high-profile sector.

Wireless Excellence offers race-winning solutions.

CableFree was awarded 'official supplier' status with British American Racing, who use Gigabit Ethernet for pit-lane communications



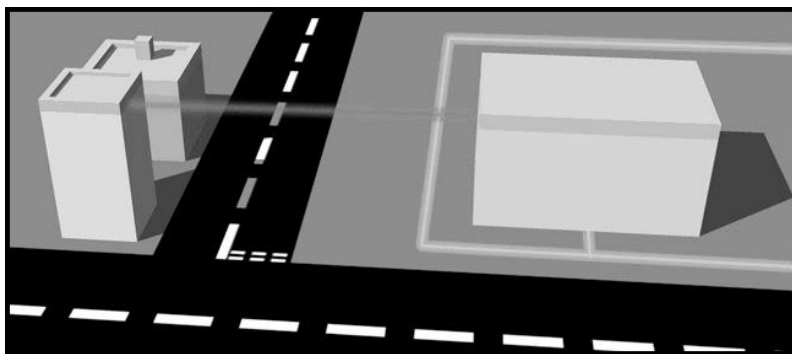
## Solution

A CableFree wireless solution offers the following features and benefits:

High Performance	Gigabit Ethernet (1.25Gbps) using FSO and Microwave, 5Gbps using MMW, 550Mbps using Radio
Rapid installation:	3 hours achievable, 15 minutes temporary
Highly reliable:	99.999% availability achievable
License-free Operation:	No fees to pay on license free bands
No monthly rental fee:	Low maintenance solution
Diverse technology options:	Complete range of FSO, Broadband Radio, Microwave, MMW, WiFi
Fully manageable:	Advanced software tools
Resilient solutions:	1+1 Hybrid FSO+RF resilient link options
Highly Secure:	Proven inherently secure technologies
Low Total-Cost-of-Ownership (TCO):	Moveable asset
Safe & Environmentally friendly:	Low disruption during installation

CableFree products are field-proven, with thousands of deployments in over 80 countries since 1997. Excellence in performance and reliability are not sacrificed in providing highly competitive priced solutions together with a comprehensive range of support services.

## Application Diagram



Two or more vehicles or buildings are connected by CableFree wireless products. Clear Line-of-Sight (LOS) for FSO or Near-Line-of-Sight (NLOS) for radio is required.

Network connections (10/100/1000 Ethernet, E1/T1, video, voice) connect to the wireless units which can be mounted on tripods, rooftops, towers, poles or behind windows.

For permanent installation a site survey is recommended before installation, to determine suitable mounting points, location of cable runs etc. Installation involves physically mounting the equipment, aligning it, connecting data and power circuits and commissioning.

## Recommended Products

CableFree Access FSO	FSO Connectivity up to 155Mbps, range up to 4km
CableFree Gigabit FSO	FSO Gigabit Ethernet and Fibre Channel up to 2km
CableFree AC-MIMO	Radio links up to 550Mbps, range up to 40km
CableFree MW	Licensed Microwave links up to 6Gbps, range up to 100km
CableFree MMW	60/70GHz Millimeter Wave links up to 10Gbps+, range up to 10km

## For More Information

Please contact Wireless Excellence Ltd for information on the complete range of CableFree products and services

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