



RFS Helps Cobham Wireless Improve Public Safety and Cellular Communications at the Largest High School in the USA

RFS' HYBRIFLEX® Hybrid Cabling Solution was Key to Increasing Wireless Coverage and Capacity at Evanston Township High School

Summary

When Cobham Wireless decided to bring the benefits of a modern digital communications system to Evanston Township High School (ETHS) near Chicago, Illinois, the largest high school in the USA, the company turned to RFS for the cable requirements in the updated solution. HYBRIFLEX®, RFS' innovative, all-in-one cabling solution for remote radio units (RRUs), fit the project requirements perfectly.

With RFS as their partner, Cobham Wireless was able to improve multi-user wireless coverage on the first floor of the school and uplink throughput by 86 percent. Now, first responders, students, staff and visitors enjoy superior access to public safety and cellular services everywhere in the high school.

The Challenge

ETHS faced a challenge that many other schools, businesses and venues face — the need to increase wireless coverage and capacity indoors to meet fast-growing user requirements. With more than one million square feet of indoor space to cover in a historic building that dates from the nineteenth century and coverage only from the existing AT&T macro system, in-building signal strength was a serious problem. By the time the signal from the nearby cellular tower reached the core of the building, it was degraded and unreliable. Communications could not be guaranteed throughout the building for students, staff, or public safety personnel.

In addition to the capacity requirements for the approximately 4,000 students and staff at the enormous high school, the in-building coverage challenges also meant that the school's public safety team could not rely on network

By using RFS' innovative HYBRIFLEX cabling solution, Cobham Wireless was able to improve wireless coverage on the first floor of the school and uplink throughput by 86 percent.



Photo supplied by Cobham Wireless

Evanston Township High School needed better support for public safety and cellular communications indoors

coverage for its internal communications in the core of the building. In an emergency, these challenges were likely to be magnified as first responders, parents, and students would not have access to reliable and adequate cellular services to communicate with each other.

The Project

Cobham Wireless led a multi-company initiative to install and maintain a combined intelligent digital Distributed Antenna System (idDAS) to bring public safety coverage and optimized macro network coverage to the core of the ETHS building. The multi-carrier system supports the VHF and UHF bands for the Evanston Police and Fire Departments as well as AT&T's 4G technologies for cellular coverage. The system can also be upgraded to support the 700 MHz band for FirstNet initiatives when required.

RFS was a key partner in the ETHS project, providing its innovative HYBRIFLEX cabling solution to the initiative.

The Solution

HYBRIFLEX combines optical fiber and DC power in a single, lightweight aluminum corrugated cable. It features:

- Excellent bending characteristics to minimize installation time and to enable mechanical protection and EMC shielding

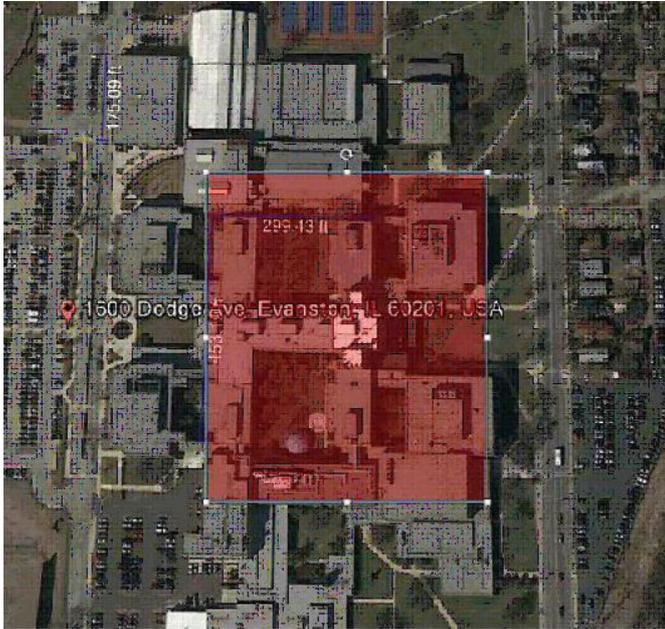


Photo supplied by Cobham Wireless

Improving signal strength in the core of the historic building was crucial to the project.

- Outer conductor grounding to eliminate the need for additional grounding

With HYBRIFLEX, the Cobham Wireless team was able to deploy a single power source at the headend of the in-building system rather than deploying multiple power sources in wiring closets scattered throughout the school.

According to Ray Fought, System Engineering Manager, Americas, for Cobham Wireless, the cable's multi-mode support gave Cobham Wireless another important advantage: "The multimode capability in the HYBRIFLEX cable worked really well for us because we had short runs and the equipment we were using supported single-mode and multi-mode. As a result, we were able to use multi-mode to increase throughput. Other hybrid cable providers rely on single-mode fiber for backhauling," explains Fought.

Fought says the Cobham Wireless team found the cable easy to install with good bending radii for tighter corners. The Cobham team terminated the fiber ends themselves in the field. About half of the fiber in the cable was terminated for the initial deployment, with the rest conveniently available to support future expansion. Working with the DC power

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– Ray Fought, System Engineering Manager – Americas, Cobham Wireless

component of the HYBRIFLEX cable was also straightforward, according to Fought.

The Many Benefits of HYBRIFLEX

HYBRIFLEX simplifies installations and paves the way to the future. The all-in-one cable:

- Requires fewer accessories — grounding attachments and clamps, for example — than a multi-cable solution
- Is ready to support for future requirements with no need for additional space in the building
- Offers very low loss so is ideal for installations with high-bandwidth and long-length requirements
- Reduces the need for passive equipment and repeaters
- Streamlines installation efforts by reducing the number of cable runs

A Dedicated Team of Experts with a Common Goal

The collaborative project at ETHS was organized by Keith Radosky of Radvisory 5G and led by Cobham Wireless. Along with RFS, the team included Galtronics, Graybar, Chicago Communication, and Fullerton Engineering. AT&T also donated significant engineering and testing time to ensure that signals from its nearby macrocells were adequately enhanced in the core of the building.



Photo supplied by Cobham Wireless

A combined idDAS provides public safety coverage and optimizes macro network coverage.



Photo supplied by Cobham Wireless

The new communications equipment provides public safety coverage and optimizes macro network coverage throughout the school.

This project highlights the value that RFS solutions bring to public safety projects and confirms we are ready to support FirstNet initiatives. ”

– Suzanne Kasai, New Business Development, RFS

Conclusion

From a public safety standpoint, the updated communications system performed very well when tested with local police and fire departments. “When we tested the system with local first responders, they were very happy with the end result because they were familiar with the coverage challenges in the school and had concerns about public safety. They were very pleased we were able to alleviate those concerns,” says Fought.

However, Fought also points out that public safety is not just about the frequencies that are supported. It’s about providing good cellular coverage everywhere. Today, ETHS enjoys better macro network coverage in the core of the school so neither students nor staff have to worry about an inability to send or receive communications from certain locations.

With plenty of fiber still available in the HYBRIFLEX cable, ETHS is in an excellent position to easily evolve and support FirstNet initiatives without having to install a new system. And because HYBRIFLEX brings fiber and power to the communications equipment, a centrally located backup power solution can be added to further increase safety. With this approach, communications equipment will continue to operate should the school lose power to a certain floor, or a certain section of the building. Power will be supplied to the remote fiber equipment from the headend, or from a single location on the floor, where a backup uninterruptable power supply (UPS) has been installed.

“We were very pleased to provide our HYBRIFLEX cabling solution for the Evanston Township High School project,” says Suzanne Kasai from RFS. “RFS is dedicated to providing wireless communications solutions that help first responders and citizens communicate quickly and easily, whenever, wherever needed. This project highlights the value that RFS solutions bring to public safety projects and confirms we are ready to support FirstNet initiatives.”

ABOUT RFS

Radio Frequency Systems (RFS) is a global designer and manufacturer of cable, antenna and tower systems, as well as active and passive RF conditioning modules, providing total-package solutions for outdoor and indoor wireless infrastructure. RFS serves OEMs, distributors, system integrators, operators and installers. Its customers currently include the four largest wireless carriers, the majority of tier 2 and 3 wireless carriers in North America and many of the top wireless and microwave OEMs worldwide.

For more than 70 years, RFS has provided its customers with world-class service that is backed by a global presence of nine manufacturing facilities worldwide and sales and technical support centers in 23 countries. RFS offers advanced engineering capabilities, superior field support, and expert technical assistance and training to provide scalable, flexible, future-proof and lightweight end-to-end solutions optimized across the entire RF chain. As an ISO-compliant organization, RFS solutions offer proven longevity, premium performance and unrivalled quality.

ABOUT COBHAM WIRELESS

Cobham Wireless is a global leader in provisioning advanced wireless coverage and mobile communications systems, producing innovative, cost-effective solutions that address market requirements for improved connectivity, greater capacity and better quality of experience.

Cobham Wireless builds on a strong foundation of market leadership, combined with years of experience and a wealth of heritage. The company was formed when global test and measurement vendor, Aeroflex Wireless, and leading DAS provider, Axell Wireless came together.

As an international company, with a network of offices all over the world, customers are never far from the Cobham Wireless team. With intelligent digital Distributed Antenna Systems (DAS) and advanced network validation tools for mobile and IP networks, Cobham Wireless is ready to help propel networks to the next generation.