

Cyberguard Systems Sdn Bhd, Inc. Penang, Malaysia

The City of Penang, Malaysia

Unlocking the Power of Wireless Video Surveillance to Fight Crime.

With the states government's plans to introduce a 'City Safe Penang' program to combat crime with the cooperation of the public combined with the latest technology, the City of Penang has turned to AIRAYA and its partner Cyberguard Systems Sdn Bhd to deploy a wireless video surveillance system that goes well beyond the traditional "security camera monitors" to help reduce crime in the city center. The wireless network was also needed to provide public safety officers with network cameras that would provide details about exactly what is occurring at that particular scene to better prepare officers when approaching a situation, be cost effective, predictable and produce evidence grade, real-time high-resolution video.

The Challenge

Provide a Densely Populated City with State of the Art Video Monitoring and Surveillance System.

The City of Penang is a bustling metropolitan city in which Eastern and Western influences blend to form a unique culture. Thriving metropolitans' provide new challenges to city law enforcement officials who protect its citizens and businesses. Unable to expand its existing police force the City of Penang has turned to technology to solve the crime problems in its city center. By placing cameras where they are most needed, law enforcement officials have been able to combat crime in the area. The response to this program has been positive from day one as citizens and businesses have seen an immediate impact from the areas where the video surveillance systems are installed.

The Penang deployment offered many technical and aesthetic challenges for AIRAYA and its partners. In order to keep the Penang skyline visually

attractive the city does not allow radios or antennas to be installed on any building rooftop in the City of Penang. This stringent requirement made the design and deployment of the network extremely challenging.

"The 'No' installation on building rooftops restriction for base stations or backhaul radios meant that every radio had to be installed on street poles. As a result, multiple wireless hops on poles were required to connect all the cameras to the control centre." said Clarence Chew, Regional Support Manager, "making the Penang deployment extremely challenging from an RF design perspective. Lots of our radios are also located on the control center rooftop which is a high frequency interference environment."

Another challenge of the rooftop restriction was the placement of street cameras; many were deployed very far away from the control center making latency another challenge in the deployment of camera locations throughout the city. In some deployment areas, there are several cameras grouped together which also creates a bandwidth challenge for video streaming.

Other stringent Penang Project requirements added to the challenge of the deployment such as the:

- Need for wireless "real time" video streaming from street CCTVs to the Main Control Center for viewing and recording.
- Requirements for remote wireless viewing and recording at multiple police stations of all video streams from main control center.
- The capacity to handle videos streams of up to 25 frames per second, and 4CIF during real time viewing.
- Integration of a Public Address System that is needed to connect wirelessly to the street CCTV locations, allowing police to make emergency announcements to notify pedestrians of any events happening around the area.
- Emergency Call Points at road side locations for allowing distressed pedestrians to communicate with police in control room.
- Only 4.9GHz transmission is allowed. Therefore frequency planning became very crucial in order to avoid co-channel interference and allow for the re-use of frequency.

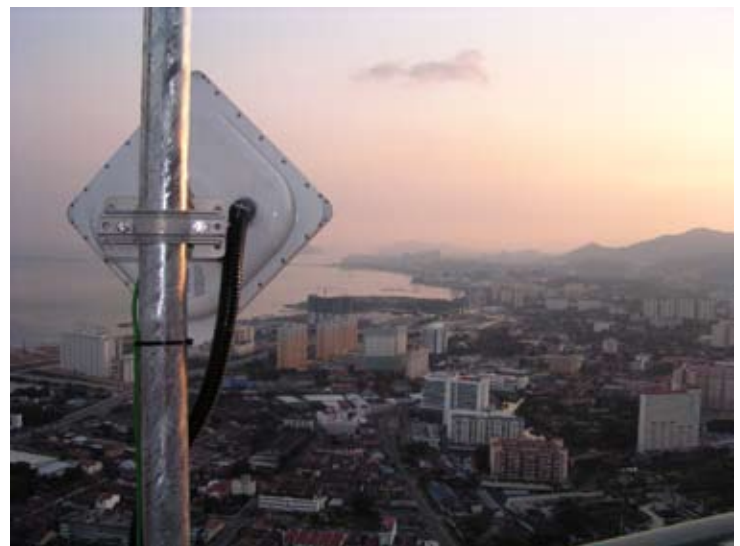
All of these challenging requirements were to be integrated with the AIRAYA WirelessGRID™ Outdoor Wireless Solutions.



The Power of Wireless Broadband Video Surveillance

Customer Facts	Cyberguard Systems Sdn Bhd, Inc.
Headquarters:	Penang, Malaysia
Contact:	Stephen Lee
Founded:	2003

Cyberguard Systems Sdn Bhd, Inc. is a leading provider of security solutions, specializing in wireless surveillance system and security system integration. For more information please visit the company web site at: www.cyberguard.com.my



AIRAYA

WirelessGRID™ Architecture



WirelessGRID™ Backhaul and Surveillance Link

Fully Integrated Radio and Antenna Technology

Utilizing OFDM technology in the 4.90-5.85 Ghz frequency range, WirelessGRID™ links operate in Backhaul (Point to Point) mode at ranges of up to 30 miles* and at speeds up to 108 Mbps per radio.

Proven in thousands of networks worldwide, WirelessGRID™ radios are ideally suited for low-latency bandwidth-hungry applications that require robust, reliable, and secure connectivity.

For further information regarding the AIRAYA WirelessGRID™: <http://www.airaya.com>

The Solution

A High Bandwidth Wireless Surveillance System that Secures Penang's Businesses and Private Citizens While Providing Evidence-Grade Video.

The Penang Police force is now able to better serve the city's center by using wireless video surveillance as an effective weapon to fight crime. By implementing an affordable, cutting-edge wireless surveillance solution AIRAYA's wireless technology provided the City of Penang with a video management system that improves security and public safety in response to public and business demand.

The AIRAYA WirelessGRID™ backhaul and multi-point radios are flexible, multiple user-selectable frequency capabilities offered various channel width sizes such as: 5MHz, 10MHz, 20MHz & 40MHz which avoided interference and solved the challenge of the roof top control center deployment issue. The availability of multiple channel sizes in AIRAYA radios provided the flexibility of using small channel sizes for links that did not require large bandwidth, which allowed the network designers to re-use frequency efficiently and effectively. Also, the use of different polarization on AIRAYA radios effectively resolved interferences issues among our own radios which were co-located at the control center. These WirelessGRID™ features were crucial in the Penang deployment where frequency spectrum usage is tight.

The WirelessGRID™ video security and surveillance subsystem provided the low latency that overcame the multiple hops issues that occurred from the "roof top" restrictions in Penang. The result was that videos streaming remained real time and there were no lags in the video footage at the control center. The WirelessGRID™ solution provided long distance capabilities to the wireless cameras without sacrificing network performance, speed or predictability. The point to multipoint connectivity of the WirelessGRID™ radios maximized the usage of frequency by clustering group of cameras to one base station. AIRAYA radios support point to point and point to multipoint connectivity allowing for network flexibility and scalability.

Like many large cities, Penang contends with robberies, gang fights, snatch thefts, assaults and other felonies within its city center. But the wireless video surveillance system isn't just limited to high-crime areas in the heart of Penang. The city has also deployed cameras in its business district to stimulate economic development, as well as at critical infrastructure sites for security purposes.

AIRAYA's wireless video surveillance system rose to the many challenges and has allowed Penang's law enforcement officials to respond more proactively instead of responding reactively to distress calls. Also, crime in the area has been reduced by 30% in the first 3 months of the installation. The network cameras also provide details about exactly what is occurring at that particular scene.

About Airaya

Predictable, Fast and Affordable Technology.

Founded in 2001, AIRAYA is a world-class designer of proven, fast and affordable outdoor wireless multipoint and backhaul products for high capacity public safety, service provider, and enterprise networks. The company is located in Morgan Hill, California and is privately held. AIRAYA products are available through a network of experienced North American and International distributors and reseller partners. For more information, please visit AIRAYA's web site at: <http://www.airaya.com>, email info@airaya.com, or call toll free 1.866.2AIRAYA (224.7292) - International 1.408.776.2846.



AIRAYA • info@airaya.com • www.airaya.com • 1.408.776.2846

AIRAYA, AIRAYA CORP, WirelessGRID™, SecureRF™, SuperBASE™ and/or other products and/or services referenced herein are either registered trademarks, trademarks or service marks of AIRAYA, CORP. All other names are or may be the trademarks of their respective owners. Information in this document is subject to change without notice. ©2008 AIRAYA Corp. All rights reserved.