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Hong Kong's Innovative Coverage Model

How Public Safety Extends Signals Inside Buildings

Inside

DMR: Digital on a Budget

The Truth about LTE for Public Safety

The Latest Antennas and Accessories

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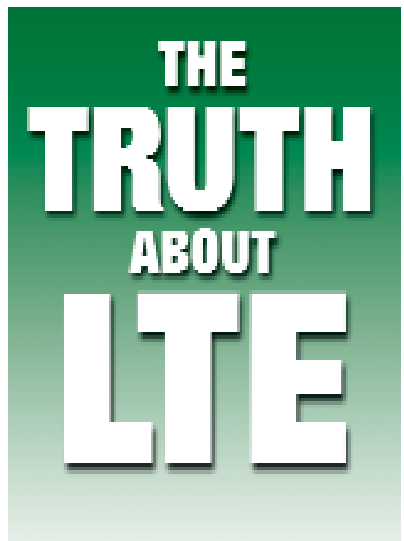

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2012 Brings Technology Changes

The new year promises to be a dynamic and exciting 12 months for our industry. There are many changes and decisions to be made on the horizon, and those developments will affect the direction of mission-critical communications policy, technology and the overall market.

This issue's cover story tackles a constant challenge for critical communications users across the globe — coverage. If your mobile radio network doesn't have coverage in areas where it's needed, dire consequences could follow. The Hong Kong Police Force (HKPF) implemented a new model for improving coverage inside high-rise buildings. Beginning on Page 26, read about the details of the public-private partnership and determine if your agency or company could implement a similar solution.

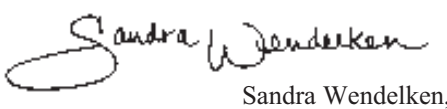
Digital Mobile Radio (DMR) is poised to make further inroads in 2012, with Tier 3 products under the standard to be commercially available this year. Read about how the standard can benefit your business and communications network on Page 20.

Although professional mobile radio (PMR) voice and data communications are in place to serve our industry for the foreseeable future, it's prudent to learn more about technologies on the horizon. Long Term Evolution (LTE) is a broadband technology likely to affect our industry in the future. Learn more about what it does and doesn't offer to mission-critical communications users in the article on Page 34.

As we went to press with this issue, the TETRA Association noted the future importance of broadband technology by changing its name to the TETRA + Critical Communications Association (TCCA). "This change is in response to the growing demand from PMR users for mobile broadband services," an association statement said.

With the many changes slated for 2012, there won't be a dull moment. Let us know what you'd like to see in the magazine and on our website throughout the year and keep us abreast of news and announcements. We appreciate your feedback.

We value your opinions! Please email your feedback to me at swendelken@RRMediaGroup.com.



Sandra Wendelken, Editor
swendelken@RRMediaGroup.com

RadioResource INTERNATIONAL

RadioResource International delivers wireless voice and data information for mobile and remote mission-critical operations for professionals who reside or do business outside the United States and Canada. The magazine covers private and trunked mobile radio, wireless data, location technologies, public safety communications, microwave radio, satellite, paging/messaging, remote monitoring, and other wireless applications. Editorial content is international in scope and encompasses emerging technologies, industry reports and trends, innovative applications, product information and comparisons, news, standards, and troubleshooting tips.

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RadioResource International (ISSN 1080-3025) is published five times a year in the United States. It is circulated free, by name and title, to personnel responsible for purchasing, recommending, specifying or managing equipment and services for radio communications systems outside the United States and Canada. Canadian Post Publications Mail Agreement No. # 40065056. Canadian Return Address : DP Global Mail, 4960-2 Walker Road, Windsor, ON N9A 6J3.

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ASIA/PACIFIC

Taiwanese Agencies Select $2.7M in P25 Equipment

Daniels Electronics passed acceptance testing of radio systems for the Taiwanese Civil Defence Command Center (CDCC). Combined with systems provided to the Taiwanese National Fire Agency (NFA), this represents a total of $2.7 million in new international business for Daniels' latest generation of firmware-based digital public-safety radio technology.

The Project 25 (P25) digital radio repeaters will be used by both agencies to expand Taiwan's nationwide emergency communications warning and response network. The systems will provide siren alerting, as well as encrypted digital communications for first responders on the beaches and other areas at risk in the event of a natural disaster.

The Taiwan CDCC is responsible for using the national civil defense alerting system to warn Taiwanese citizens in the event of national emergencies. Similarly, the NFA has national responsibility for firefighting, ambulance services and emergency response following a natural disaster. The need for a comprehensive nationwide radio network to coordinate response efforts is critically important with the increasing number of severe typhoons that Taiwan experiences annually.

Taiwanese officials and Daniels executives sign a Project 25 (P25) contract.

Daniels is providing the radios through its local system integration and engineering partner Harbinger Technology, which will oversee the system design, installation and life cycle maintenance. The entire network is expected to be fully operational by the end of 2012. Harbinger engineers have worked with the two agencies during the past three years to determine the agencies' immediate requirements and long-term communications evolution plan.

In 2007, Daniels Electronics provided a network of 40 radio repeaters across the country to create a communications backbone for NFA. This network is now being expanded nationwide.

SYDNEY — Airwave Solutions was selected by Ergon Energy to design and build a radio network using Project 25 (P25) technology.

Ergon Energy held a tender to secure a trunked digital P25 system in the Warwick/Toowoomba area, leading to a statewide deployment. The core network will be equipped with an Inter RF Subsystem Interface (ISSI) to allow dispatch, talk group interoperability and internetwork connectivity with other P25-compliant networks across regional and state boundaries.

For the network, Airwave teamed with **Auria Wireless** (**Etherstack**) and **Tait Electronics**. The wide-area network will provide location-based services for vehicles and staff.

BRISBANE, Australia — A 46-position installation of **Zetron**'s Advanced Communication (Acom) system was tested and deployed at the new Queensland emergency operations center (QEOC) near Brisbane.

Two main operations are housed at QEOC, the communications center and the state disaster operations center. The system installed at the communications center will serve as the command-and-control point for the Queensland Ambulance Service, the Queensland Fire and Rescue Service, Queensland Corrective Services and Emergency Management Queensland.

The QEOC system includes 46 operator consoles, 10 analog private automated branch exchange/public switched telephone network (PABX/PSTN) interfaces, 156 analog radio interfaces, 10 utility audio interfaces, 46 PABX phone-to-console interfaces, and 10 digital long-term logging interfaces that use E1 links from all console and radio lines. The technology can provide a stream of radio and console events to the CAD system and accept CAD-initiated controls.

SHENZHEN, China — Hytera Communications supplied technology to facilitate efficient communications for Universiade Shenzhen 2011 held in Shenzhen, China, in August. Hytera deployed 4,000 terminals and more than 100 repeaters. During the events, Hytera also designated an engineering team to the stadiums for on-site support.

Universiade Shenzhen 2011 had 63 venues, including 22 newly constructed venues and 10 temporary venues. Hytera supplied a complete system, including coverage plan, deployment connectivity and on-site support. Repeaters were deployed in 10 venues to enhance coverage.

The Universiade Village system comprised about 700 professional analog portable radios and 15 digital repeaters, facilitating daily communications and efficient dispatching. Hytera tailored a lease/purchase solution for the event.

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NEWTON, Australia — Codan is completing delivery of more than $17 million total of radio communications systems under contracts for a number of central Asian countries in support of U.S. Department of Defense (DoD) initiatives.

The contracts, cumulative during a six-month period, include orders for HF radios and interoperability systems to support counter narcotics and border security missions in Afghanistan and central Asia.

HONG KONG — Hong Kong Police Force (HKPF) was awarded the Connected Government Award at the annual FutureGov Summit and Award, held in Cyberjaya, Malaysia. The recognition is bestowed by a stringent panel of judges who select the best innovative use of technology in the modernization of government policies and operations.

"I am so pleased that our unified digital communications platform (UDCP) vision has contributed to the best practices in government policies and operations modernization," said Jolly Wong, HKPF chief telecommunications engineer. "This is what the award is intended — recognizing the visionary leadership and technical excellence in inter-agency and intra-agency workflows for the greater common good."

The Auxiliary Medical Service, Department of Health, Security Bureau, and Customs and Excise Department have recently joined the airwaves of UDCP. The Fire Services Department has a voice patching arrangement to maintain dialogue with other agencies under UDCP.

BISHKEK, Kyrgyz Republic — Raytheon was awarded a $24 million contract to modernize air traffic management (ATM) systems in the Kyrgyz Republic, including the country's main international airport near the capital city, Bishkek.

The competitively procured contract calls for the delivery of a wide-area multilateration (WAM)-based air traffic control (ATC) system, ATC radio systems, a new air traffic control tower (ATCT) at Manas International Airport, and related ancillary equipment and systems integration services.

The Raytheon team, including Saab Sensis, will establish an air management system for en-route air traffic within the Kyrgyz Republic along with aircraft operating at the airport.

EUROPE

HELSINKI — Creowave won a tender with Finland's State Security Networks for 50 TETRA indoor repeaters and control and surveillance systems. State Security Networks is a limited

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non-profit company owned by the Finnish government and operates the nationwide TETRA VIRVE network, used by Finnish authorities.

"Creowave has already delivered the first 10 repeaters and will deliver the last 40 pieces within a couple of weeks," said Jyrki Koski, CEO of Creowave.

OSLO, Norway — Oslo Airport Gardermoen deployed **Zetron**'s mission-critical touchscreen system to enable three operators to handle many of the radio and telephone calls between the 13,000 people and 100 companies that keep the airport open for business.

The Gardermoen system brings 27 TETRA VHF and UHF radio channels and 60 public access branch exchange (PABX) lines onto single screens, making it easy for operators

Continued on Page 16

Berlin Airport Connects TETRAPOL, TETRA Networks

Cassidian won a contract to extend the TETRAPOL digital radio network to cover the new Berlin Brandenburg Airport Willy Brandt, the largest airport project in Europe. The airport also commissioned Cassidian to deliver, install and maintain an indoor radio system for the new airport's TETRAPOL network and for Germany's BOS digital radio system.

The extension of the existing TETRAPOL digital radio system to cover the airport's outside premises essentially involves adapting the TETRAPOL infrastructure. The system will also be extended to connect the airport's new security control center to the radio network. Cassidian will carry out training sessions for airport staff to ensure the system can be handled without difficulty.

The indoor radio system will serve internal radio communications within the airport's buildings via the existing system and will integrate the BOS TETRA radio system. To this end, it will be connected to the airport's existing TETRAPOL base stations and the TETRA base stations of the authorities.

The latter will exclusively be used for communications between BOS participants at Berlin Brandenburg Airport. The indoor radio system will mainly serve the newly built passenger terminal, as well as other airport buildings such as the fire station, the tower and the ground-handling service facilities.

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Who is Hytera

Hytera, the leading designer and manufacturer of innovative radio communications equipments, offers complete portfolio & customized solution, ranging from conventional terminals to DMR, TETRA digital radios, trunking systems to data applications, to government, public security, utility, transportation, and enterprise & business users across the world.

Headquartered in Shenzhen, China, we have established a global sales and marketing network: three R&D centers in Shenzhen (China), Harbin (China) and Bad Münder (Germany), three subsidiaries in the USA, UK and Germany, more than 20 offices and 95 after-sale service offices. With products distributed in more than 80 countries and regions, our market shares have reached 2nd in LMR Terminal category, 4th in TETRA System category*. Nowadays, we are dedicated to taking a significant position in the worldwide analog-to-digital migration in professional communications field.

In May, 2011, Hytera went public on the Shenzhen Stock Exchange of China (Stock Code: 002583), and in August Hytera acquired Rohde & Schwarz PMR to expand the TETRA portfolio, which strengthened our capability to better serve customers' demands.

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*Source: IMS Research 2011

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AV Equipment Integrates with TETRA Networks During Papal Visit

The organizers of the papal visit to Berlin, Freiburg and Erfurt in Germany used communications and AV systems from Riedel Communications to ensure successful events. The papal visit locations needed to be ready to distribute audio and video signals to both broadcast networks and to the on-site video walls.

The two largest events were held in Freiburg, including a vigil and the farewell celebration at the local airport. Two interconnected TETRA cells with four base radios were used to guarantee reliable radio network coverage across the entire Freiburg region. The cells were connected via a Riedel headliner RF link. Headliner RF links allow 25-mile-long bidirectional connections with a bandwidth of up to 300 Megabits per second (Mbps).

The security personnel and organizers in Freiburg used 1,000 digital handheld radios with more than 50 TETRA groups. More than 300 professional analog radios supplemented the installation. Riedel Connect Duo and Connect IP interfaces integrated the radio network into the Artist digital matrix intercom system, forming a single infrastructure.

The pope's German visit in September

At the three other major locations included in the visit — the Deutscher Bundestag (German Parliament), Berlin Olympia Stadium and the cathedral in Erfurt — comprehensive TETRA radio installations were used. A base station and 150 radios were at the Olympia Stadium in Berlin.

All gates to the Erfurt cathedral's square were equipped with speakers connected to Riedel TETRA interfaces that allowed individual gates to be addressed directly. An FM transmitter and 20 professional FM receivers were used as a redundant backup.

Continued from Page 12

to coordinate key elements of ground operations from power and support systems to security, fire and rescue.

Gardermoen is Norway's international aviation hub and is on a second phase of expansion that will increase capacity from 21 million to 28 million passengers a year.

BUCHAREST, Romania — The U.S. Trade and Development Agency (USTDA) awarded a $400,000 grant to Romania's General Inspectorate for Emergency Situations (GIES) for a study to evaluate technologies deployed during field emergency response operations.

"Portable communications technologies are necessary to further improve Romania's emergency response systems, which is a priority for the Romanian government," said USTDA Director Leocadia Zak.

Romania is one of the most earthquake-prone countries in Europe. The government of Romania has made improvements to the country's emergency management and response system a national priority.

The objective of this study is to demonstrate the feasibility of three core technologies through portable deployment: critical information management systems, geographical information systems (GIS) and interoperable communications. The study will coordinate the selection and deployment of these technologies, support a field exercise and then evaluate the results of that exercise to recommend future implementation strategies.

HESSEN, Germany — Motorola Solutions won a tender to supply TETRA digital radio solutions to security authorities and organizations in Hessen, Germany. The police, emergency services, aid agencies, and public and private fire departments in Hessen will use the 53,000 digital two-way radios plus accessories and supporting services.

The order includes handheld digital radios, vehicle mobile radios and portable ATEX radios for use in hazardous environments. The radios were specially developed in accordance with the requirements of German authorities and organizations with roles in security and the emergency services.

The contract contains training, technical support, programming of terminals, and setup and management of a Web-based order system for all non-police security authorities and organizations.

EDINBURGH, Scotland — The Scottish government selected **Selex Elsag** to supply highly secure voice and data satellite communications for use in supporting public safety on offshore islands. A headquarters facility will be provided in Edinburgh, linked by satellite services to the Shetland Islands, Orkney Islands and Isle of Lewis. In addition, a mobile trailer-based unit will be held on the mainland to provide a deployable communications center.

The network will be independent of existing communications systems and be connected by very small aperture terminal (VSAT) satellite links. Uninterruptible power supplies (UPS) are provided to support all the equipment for up to six hours, with the possibility of extending this time by the use of generators.

MALAGA, Spain — Alcatel-Lucent and Adif, a Spanish railway infrastructure administrator, signed a frame agreement focused on research and development (R&D) on communications technologies that improve the

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efficiency of high-speed rail transportation.

Alcatel-Lucent will establish a laboratory in Adif's railways technology center in Malaga, Spain, to investigate the use of Long Term Evolution (LTE) and IP convergence to standardize and improve communications at railways.

LONDON — A new study found that despite shrinking budgets in Europe, Middle East and Asia (EMEA), public-safety groups are increasingly interested in using mobile broadband and mission-critical TETRA networks during the next five years. The **IDC**-conducted research was sponsored by **Motorola Solutions**.

The study showed that two-thirds (64 percent) of emergency services plan to deploy or extend their use of TETRA or TETRA Enhanced Data Services (TEDS) during the next five years, and many (61 percent) are interested in next-generation broadband services such as Long Term Evolution (LTE) networks for public safety.

The research included 105 public-safety organizations in EMEA and underlined the ongoing need for robust, highly secure and continuous voice communications. Advancing TETRA technology will allow agencies to deploy services such as instant messaging and more precise location tracking for field-based personnel.

IDC surveyed emergency services, police, fire, ambulance and other public-safety forces in 2010. Countries covered included the United Kingdom, Germany, Italy, Poland, South Africa, Norway and Netherlands.

INTERNATIONAL

OSAKA, Japan — Icom and **Fylde Micro** said the first stage digital Private Mobile Radio (dPMR) Mode 3 products are nearing completion. The companies announced a partnership in 2011.

The product components consist of Fylde Micro's fourth-generation controller and Icom's dPMR Mode 3-capable IDAS series terminals and repeaters. The combined product suite is the first based on the open European Telecommunications Standards Institute (ETSI) TS 102 658 Tier 2 Mode 3 dPMR standards, and will be the first trunking- and networking-capable system to be based on ETSI digital two-way radio standards outside of TETRA, company officials said.

The initial system capability will be a trunked and networked radio system ranging in size from a single site up to 16-site multisite trunking operation. Further enhancements planned for 2012 will see the system scope expand — up to 1,000 sites and 500,000 subscribers — with telephone interconnect and other features.

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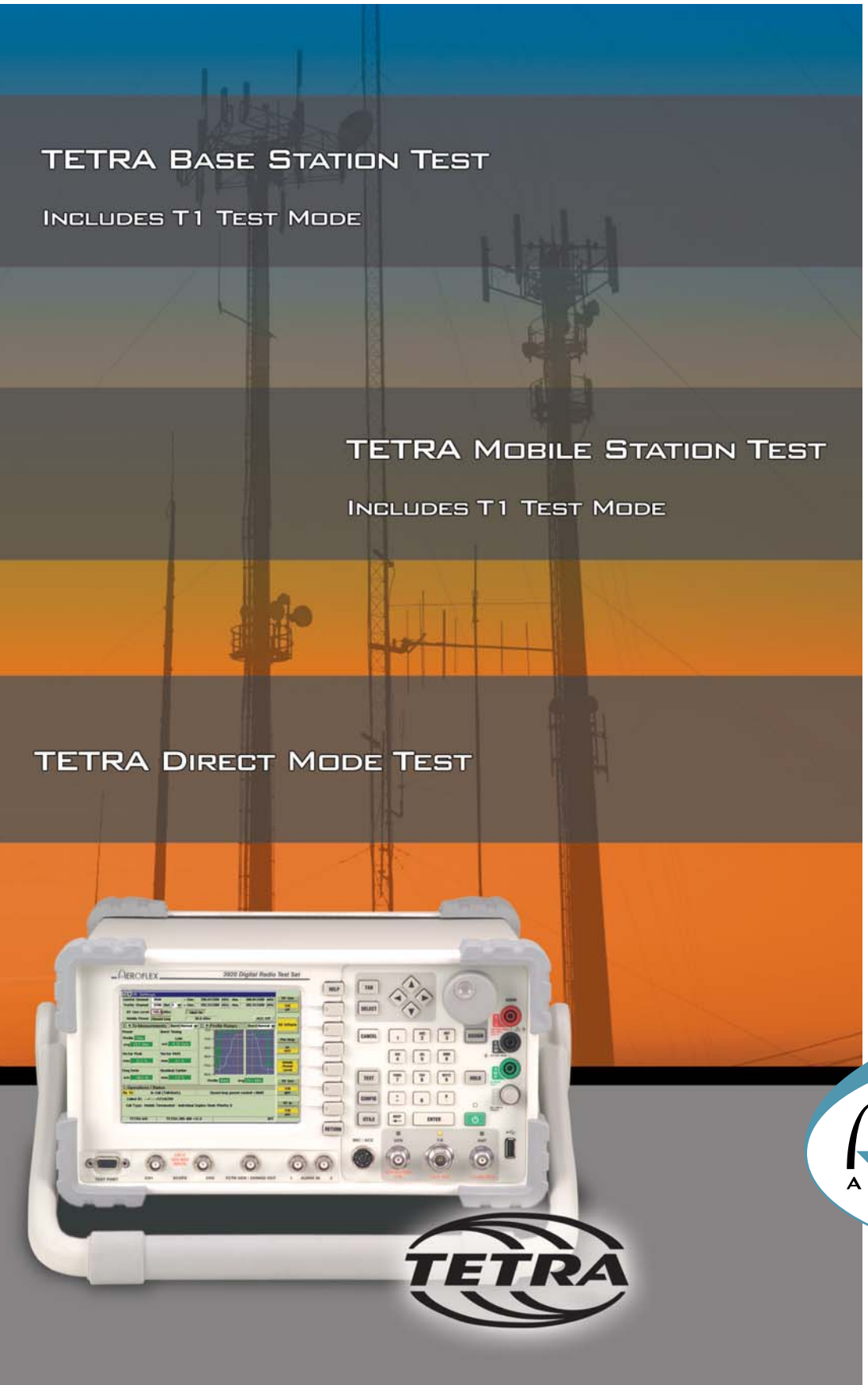

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Photos courtesy Hytera Communications

Digital on a Budget

Companies are using the Digital Mobile Radio (DMR) standard's numerous features to cost effectively increase productivity and efficiency.

By Nicholas Bacigalupi

In the current economic climate, where businesses are reluctant to incur the additional costs of adding manpower, companies seek cost-effective tools that optimize efficiency and productivity. Since the introduction of the Internet to the business world, we have seen an increase in the rate of improvements and upgrades to the communications tools available to organizations. During the past few decades, continuous innovations in management software helped many companies improve productivity and accountability while reducing unnecessary costs. The development of Digital Mobile Radio (DMR) technology allowed for this innovation to fully integrate into the radio industry.

DMR technology was designed with the needs of commercial and industrial users in mind. Using the DMR standard established by the European Telecommunications Standards Institute (ETSI), the DMR Association tests interoperability between the latest DMR equipment from suppliers and ensures that the ETSI guidelines are met. While analog radios are limited by the nature of the technology, digital radios using TDMA technology can transfer large amounts of data while leaving a talk path available for voice communications.

Digital Technology Benefits

Although DMR technology can lower costs in the long term, the main advantage is the availability of feature-rich data applications that can increase efficiency and improve communications. Software designers use DMR technology to create compatible software applications that can deliver all the short-term benefits of enhancing customer service and employee efficiency, while offering an additional long-term return on investment as they save on operating expenses.

The data applications and the lower infrastructure costs inherent to the DMR standard represent a unique opportunity for commercial system operators. They now have a low-cost digital solution capable of managing data and allowing them to easily load their systems with users from different markets, each taking advantage of the data and technical benefits of DMR technology.

To the average radio user, the obvious benefit of digital communications is the audio clarity. The digital vocoder suppresses background noises while using forward error correction (FEC) technology to further improve audio quality. This gives the user clear and consistent audio and makes sure the transmission is heard correctly the first time.

The elimination of coverage gaps is another noticeable benefit of DMR

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DMR's enhanced data capabilities permit text messages to be sent to radios in situations where the noise level might be too high to transmit via voice.

technology. Tunnels, basements and other previously challenging areas are now covered with the range of a digital system. This is particularly helpful in environments where the security team needs to effectively receive and transmit communications from every section of the property.

The TDMA method also provides the radio with an enhanced battery life because of the two-slot operation. Individual calls use only one of the two available time slots. This splits the effective transmit time in half and limits the drain on the battery, resulting in up to a 40 percent increase in battery life. Depending on the level of usage, this could allow a radio to work multiple shifts without needing a recharge or last one entire shift of heavy usage.

Dynamic mixed-mode repeaters provide a path to easily migrate from existing analog systems at a pace that is within budgets. The ability to monitor and troubleshoot a digital repeater remotely via software saves the integrator time and money. The addition of an IP and telephone connection into a system and the seamless roaming from site to site creates a network of multiple connected sites that can be loaded with thousands of terminals to recoup the buildout costs.

Industry Applications

Many operators have waited for a low-cost digital alternative to deliver enhanced data services to their users, particularly fleet management and logistics companies. Software applications use the rich data functions and IP connection of the DMR infrastructure to communicate over the Internet and convey real-time GPS information, set up landmarks, geofences and alerts, as well as monitor the speed and direction of vehicles. Fleet managers can also observe the miles left for maintenance, survey route history and analyze a comprehensive set of reports to ensure the reduction of idle time and other activities that lead to unnecessary fuel costs.

The two talk paths used in DMR's TDMA technology allow for faster access to system resources and make key functions like telemetry monitoring and reporting run more efficiently. Telemetry can be of use in markets such as waste management and taxi fleets. This provides added value in managing fleets by allowing a dispatcher to see whether a vehicle is on or off duty. Dispatch communications can also be recorded and replayed for analysis or training purposes.

Fleet management and logistic firms aren't the only businesses benefitting from this technology. DMR suppliers can provide their customers with customized communications solutions that can be further enhanced with software tailored for their particular industries. Such customized solutions can also be continuously improved upon with downloadable updates that provide new features and interface enhancements.

Universities, hospitals and medium- to large-sized hotels use work order management software to enhance their service, efficiency and coordination. Just seconds after receiving a request or incident report, the information is entered into the software to create a service order that is sent to the appropriate personnel via a DMR radio. The technology is enhanced when a radio features a larger display, allowing for the user to see most messages completely without the need to scroll multiple times. The ability to send preprogrammed messages and alerts discreetly to the radio also limits the possibility of disturbing nearby guests. This type of messaging is helpful in situations where the noise level might be too high to transmit via voice.

DMR applications and features have also benefited companies in industrial applications such as manufacturing and construction. Work order management, dispatch and indoor personnel location software can improve productivity while advanced lone-worker and man-down features can work together with location positioning to improve safety and emergency response times. Intrinsically safe DMR radios are available for users who may periodically enter potentially explosive environments. These radios have been Factory Mutual (FM 2010) and ATEX approved and undergo stringent testing and evaluation to ensure that the radios do not cause sparks in the explosive atmosphere.

With an expanding array of compatible security software suites available in the marketplace, private security firms and security departments within organizations are also taking advantage of the enhanced data capabilities of DMR technology. A dispatcher at a security control center can set in-building patrol routes, preprogram alert messages and exchange emails with the radios. The increasing list of software applications added to security features such as enhanced encryption, man-down and lone-worker functionalities gives decision makers an a-la-carte solution with the ability to select features and options to fit their budgets.

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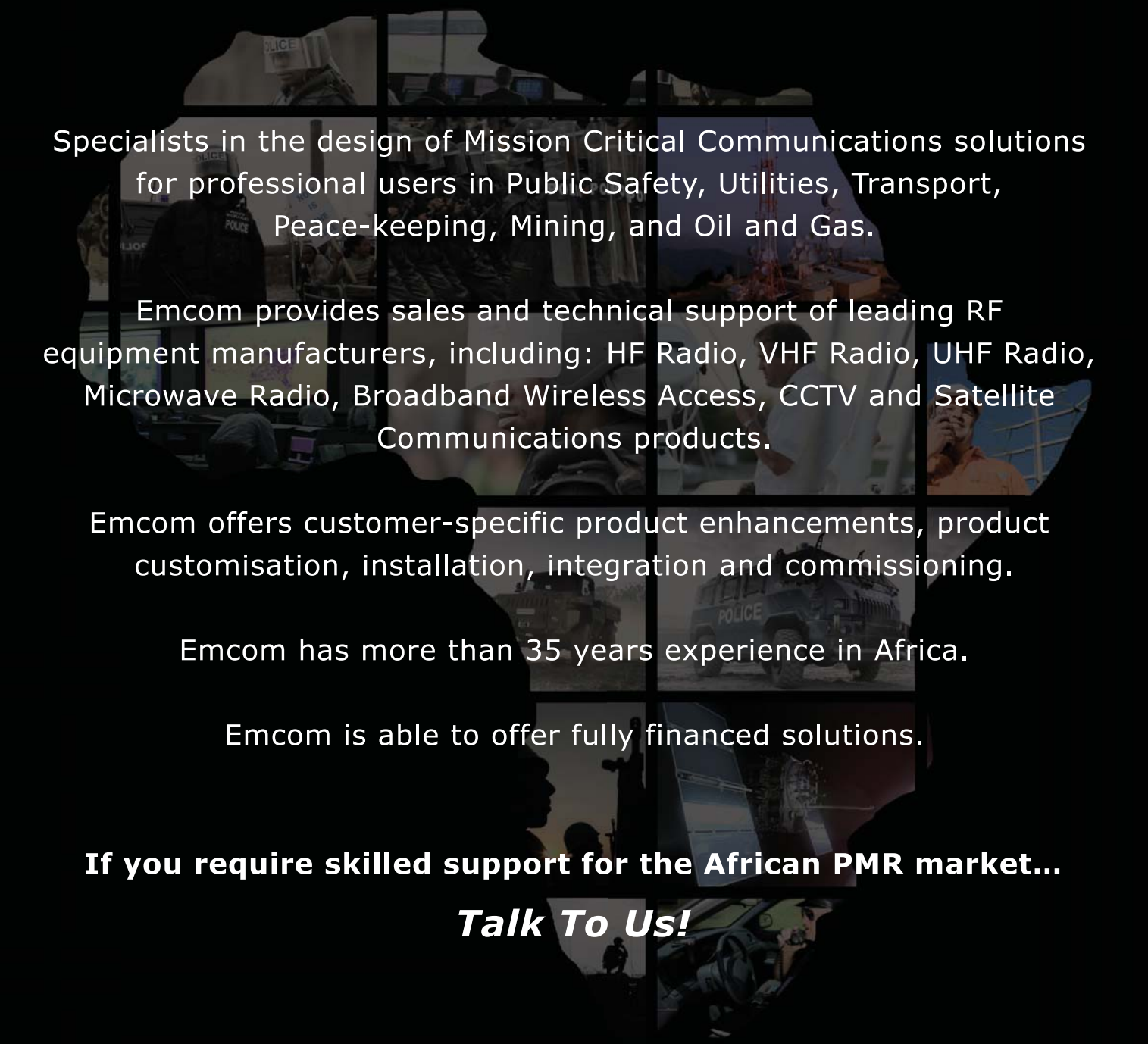

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While analog radios are limited by the nature of the technology, digital radios using TDMA technology can transfer large amounts of data while leaving a talk path available for voice communications.

communications solution networks are looking for return on their investments. They require something that is not only in compliance with the latest guidelines but that also provides value in customer service and personnel productivity. DMR and its host of applications accomplish this with the range of available software applications that use the radio system resources to increase efficiency and enhance communications within an organization.

Further Developments

We are still in the early stages of DMR technology, and although there are only a few suppliers of DMR equipment, other manufacturers have DMR infrastructure and terminals in the works. The DMR Association is working with these manufacturers to encourage support of the ETSI open standard guidelines for Tier 2 licensed conventional and Tier 3 digital trunking. DMR Tier 3 open standard trunking will be available in 2012. This is an attractive option for commercial operators and system integrators because it allows for interoperability among multiple manufacturers and can lead to a healthy mix of competition and innovation in the industry.

The next few years should make for an exciting time in the radio industry as we continue to see a trend toward smaller and lighter radios with larger displays and a variety of feature-rich applications, as well as the ability to connect with wireless accessories by using built-in Bluetooth technology. Radios are becoming more similar to smartphones while maintaining the additional functionalities of a radio terminal. With this unique blend, DMR providers are creating new tools for the efficient businesses of tomorrow. ■

Nicholas Bacigalupi is the marketing manager for Hytera America, where he has worked for five years. Bacigalupi has a master's degree in business administration (MBA) from the University of Miami. Email Bacigalupi at info@hytera.us.

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Hong Kong's

Innovative Coverage Model

The Hong Kong Police Force explores a public-private partnership to extend emergency radio services inside buildings.

By Ir Jolly Wong

Providing indoor radio coverage has long been a persistent operational challenge for the Hong Kong Police Force (HKPF). The police force is using a public-private partnership to extend the police radio waves into buildings at an affordable cost and in an efficient manner. A new business model is facilitating cooperation among key stakeholders — police, industry and community — to share common infrastructure. The model could be rolled out by the emergency services management sector globally.

On average the HKPF receives 10,000 emergency calls daily. The HKPF performance pledge strives to respond to all genuine emergency calls within 9 minutes in the urban area and within 15 minutes in the rural territory. The HKPF rolled out the Third Generation Command and Control Communications System (CC3) in March 2006. CC3 was primarily designed for outdoor radio communications during the initial rollout.

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Photos courtesy Hong Kong Police Force

Equipment from the distributed antenna system (DAS), including bidirectional amplifiers, at Telford Plaza, a Hong Kong shopping mall.

The Laws of Physics

To cope with the intensive metropolitan development in Hong Kong, developers are building more indoor facilities, such as shopping malls, thereby creating even bigger operational challenges for frontline patrolling officers in carrying out their police duties at these indoor areas. Emergency services groups require clear and reliable radio communications for efficient incident management and personal safety.

In many cases, officers need to travel completely outside a building before they can make use of their police radios to communicate. In worst cases, officers inside a building are trapped, injured or killed, and they can't contact anyone. Indoor radio coverage is therefore essential for public-safety networks in tunnels, railway and subway stations, convention centers, hospitals, airports and other special locations.

Inadequate indoor radio coverage is caused by both building losses and by interference from intentional or unintentional transmitters. The laws of physics explain the building losses. The signal waves from the radio normally start at the transmitter tower located on a hilltop or building-top. The waves are reduced as they travel to and from the radio.

The amount of loss varies under different materials, and is diminished even over the air. This means that anything attenuates or reduces the radio waves. On the other hand, each radio has a minimum signal level that it must receive to work. The signal waves begin high and are reduced along the path to the radio. Buildings and their construction materials, such as concrete, cinderblock, steel, brick and tinted glass, all reduce the radio waves. These construction materials, used in most large structures, absorb radio waves. The strong outside radio waves quickly become nonexistent inside buildings. Path loss is a major component in the analysis and design of the link budget and signal loss of a radio system.

In-Building Challenges

Worldwide public-safety agencies, including fire jurisdictions and police authorities, have adopted standards for in-building public-safety radio enhancement systems (RES). These standards are developed to ensure adequate indoor radio coverage for firefighters and police officers for emergency response. RES is better known in the industry as distributed antenna system (DAS).

DAS in the Telford Plaza, a Hong Kong shopping mall, for example, is a network of components that distributes radio signals throughout the building from a central point. The system takes radio waves, amplifies and distributes them, by an off-air bidirectional amplifier (BDA) connected to an outside antenna, which points to a donor site and a cabling structure. Then, the BDA transmits the waves through remote antennas to provide adequate radio coverage. Using a traditional design of repeater systems, distributed antennas or radiating coaxial feeders can obtain seamless internal radio coverage. However, a DAS solution bears high installation costs and has a lengthy implementation time.

With constraints of time, cost and technicalities of implementation, it is seemingly impossible to refurbish all legacy buildings or to build new comprehensive radio infrastructure for public safety inside all buildings. On the other hand, real estate builders and owners are also challenged with providing comprehensive coverage in parking garages, elevators, and open areas for both commercial devices such as cell phones, smart phones, personal digital assistants (PDAs) and public-safety radios. Building developers and owners now rate the ability to coordinate with local emergency responders as the most important public-safety feature. Developers have a stronger motivation to meet building and fire codes involving safety. And they need better solutions to ensure clear in-building radio coverage is made available for emergency personnel.

The Hong Kong project recognized this mutual challenge and had a clear focus of meeting the challenges of in-building police radio dead spots, by developing and deploying a novel and affordable technical design with an innovative business model, for the public-safety sector to share the in-building transmission and antenna systems of commercial mobile operators, with a view to achieving

These construction materials, used in most large structures, absorb radio waves. The strong outside radio waves quickly become nonexistent on the inside of the building.

benefits for all stakeholders — police, commercial mobile operators and the public.

A Win-Win Partnership

Public-private partnerships (PPPs) are arrangements where the public and private sectors bring their complementary skills to a project, with varying levels of involvement and responsibility, for the purpose of providing public services or projects.

The exact benefits will vary, depending on the types and nature of the partnership. Depending on the contractual structures, communications infrastructure services through PPPs can be delivered via a mix of strategies. It can be purely public, purely private or a mix of the two.

There are partnerships that share only a portion of the infrastructure. An example includes the private sector keeping the operation, maintenance and risk but sharing some of its extra infrastructure bandwidth with emergency services agencies for the public good.

HKPF developed a PPP model for in-building communications that includes tapping into the spare facilities capacity of the mobile operators. The HKPF pays a small subscription fee and uses the communications infrastructure on demand.

The Hong Kong model extends that commercial mobile-phone operator partnership by allowing police and fire services to ride on the carriers' infrastructure with often extensive and sometimes overlapped coverage in many locations in Hong Kong, including shopping malls and car parks.

The compelling reasons for the operators to form the partnership with the CCC3 team include:

1. No extra or minimal cost to the operators, and moderate fees are received from HKPF;
2. Good for public relations/corporate citizenship;
3. Good will with the government;
4. In cases where landlords block operators from extending systems into buildings or areas, cellular carriers have additional leverage to gain access into these premises.

Photo courtesy Hong Kong Police Force

Indoor radio coverage at Telford Plaza was enhanced, covering more than 640,000 square feet of floor space.

The Pilot

In 2008, police regions were asked to examine locations within Hong Kong where indoor radio coverage was absolutely essential, according to the criteria laid down by the CC3 operations implementation team. The criteria include:

- Number of incidents
- Crime reports
- Pedestrian average
- Pedestrian peak
- High-risk premises
- Public events

Based on analysis of the user requirement and statistical data submitted by the regions, 59 specific indoor locations were selected and endorsed by the force management for enhancement with CC3 indoor radio coverage.

Telford Plaza, the largest regional shopping and entertainment complex in East Kowloon, was selected as a pilot site for the CC3 indoor radio coverage enhancement project. In addition to Telford Plaza's 560,000 East Kowloon residents and the 20,000 residents of Telford Gardens, the close proximity of the Kowloon Bay Mass Transit Railway (MTR) station provides a steady flow of commuters averaging 150,000 per day.

A survey revealed that there were 45 locations (76.3 percent) with good mobile operator coverage at these 59 selected indoor locations. As such, HKPF can enjoy the radio coverage at such locations by adding CC3 radio to the public operators' infrastructure. Five public mobile operators in Hong Kong deliver seamless mobile-phone services inside the shopping malls with general radio penetration of more than 95 percent at public areas.

Three field trials were conducted with the mobile operators at Cheong Hing Square, Yuen Long Neway Karaoke and Fu Chong Shopping Center with encouraging results. The project employed wideband radio

equipment (380 MHz to 2.1 GHz) for CC3 radio signals riding on the current public mobile operators' infrastructure. The solution was proven, and the synergy effect has been evident during the field trials. A new business model between public and private sectors regarding the provision of public services over a private infrastructure was established.

The solution has been successfully delivered at Telford Plaza since August 2009. The project was commissioned by one of the public mobile operators with collaboration from Mass Transit Railway Corporation Ltd.'s (MTRCL's) maintenance contractors, through competitive tendering, at an affordable cost. The cost savings was around 40 percent compared with the other engineering solutions, but with an effective use of the existing resources inside the shopping mall. This initiative introduced minimal investment with maximal benefits to HKPF.

The communications branch of the HKPF played a leading role, providing close liaison with frontline officers to formulate the service strategy and implementation plan for the delivery of services. The disturbance to the end users was minimal.

Difficulties and Challenges

In the planning stage, it was anticipated that the following difficulties would occur during the implementation stage:

- Installation work at the shopping mall's public areas and inside the shops may affect customer flow and would be a high concern of the management office.
- The location of the outdoor antenna may be located near the residential areas and may cause inconvenience to the residents of Telford Garden.
- The selection of wideband radio components should consider the system scalability to mobile 4G Long Term Evolution (LTE) delivery in the future.
- The appearance of the indoor antenna should match the indoor environment and not affect the corporate image of the shopping mall.

These inherent difficulties were factored in during the detailed design stage. The following challenges were handled properly by a flexible and proactive approach:

- Night work was carried out at public areas after the shopping mall closed. In locations that didn't allow for access for installation, the antennas were relocated and diverted with detailed engineering prediction.
- Close liaison was maintained with the shopping mall management office to successfully install an outdoor antenna at the podium level of the commercial building. Significant distance from residential areas was achieved.
- Wideband radio components were selected and fitted for the wideband mobile delivery of the future.
- The appearance and color scheme of the antenna was approved by the shopping mall prior to installation.

With constraints of time, cost and technicalities of implementation, it is seemingly impossible to refurbish all legacy buildings or to build a new comprehensive radio infrastructure for public safety inside all buildings.

Following installation, the frontline officers were invited to take part in the user acceptance test at Telford Plaza. This ensured the services delivered would meet the user operational requirement in action. Senior management carried out a project review with post-implementation customer feedback. The lessons learned in the pilot scheme were adopted for the full deployment at the remaining 58 locations. Under the new indoor premises, provision of radio injection ports for HKPF will be considered with policy support from the Office of the Telecommunications Authority (OFTA) in Hong Kong. That will be beneficial with minimal retrofit work required for extending police radio coverage into the new indoor premises.

Radio Signal Field Strength

The radio signal field strength was measured prior to and after the migration works for CC3 and mobile network to verify the performance of the existing integrated radio network (IRN) would not be significantly degraded. Before the commencement of any modification, the radio signal field strength of the mobile systems (GSM, PCS and 3G) at Telford Plaza were performed and recorded. After the modification of the IRN and migration with CC3, the radio signal field strength measurement for the cellular systems with the same test routes and test point locations were repeated. No performance degradation was reported on the mobile systems.

Testers injected the CC3 signal from the hilltop base station via the BDA and fiber-optic cable; then measured the radio signal field strength for CC3 and ascertained that the CC3 performance met the design specifications.

From the test results of the radio signal field strength of mobile systems, it was determined that the performance of the mobile systems can be maintained at the acceptable level after the modification of the IRN and migration of the CC3 into the IRN. The radio coverage of CC3 inside the Telford Plaza was found to be greatly

Reasons for Mobile Operators to Partner with Public Safety

HKPF recognized the following reasons why private companies would want to participate in a public-private partnership:

1. No extra or minimal cost to the operators, and moderate fees are received from HKPF;
2. Good for public relations/corporate citizenship;
3. Good will with the government;
4. In cases where landlords block operators from extending systems into buildings or areas, cellular carriers have additional leverage to gain access into these premises.

improved and met the design specifications.

The in-building partnership was implemented successfully in 2009 with the following key achievements:

■ A creative, innovative and sensible solution.

■ Timely services delivered, within budget and meeting all user requirements. The implementation period was shortened from six to three months with projected cost savings of around 40 percent compared with other engineering solutions that achieve similar results.

■ Indoor radio coverage at Telford Plaza was enhanced, covering more than 640,000 square feet of floor space.

■ Rental and electricity charge waivers were granted by the shopping mall.

■ Excellent feedback was received from the end users.

The operational challenge of extending radio communications support to frontline officers in the discharge of their duties at the indoor shopping malls was met by this novel approach. The operational efficiency and personal safety of frontline officers were achieved, and public safety to the community was enhanced.

Moreover, there were three perceived benefits of the proposed PPP model to both government and community. First, private sector resources, expertise and creativity were exploited. Second, the commercial potential of a government-held project — value-added commercial services are normally not government's core business — was maximized. Third, costs and risks were properly transferred under strict control protocols. ■

Ir Jolly Wong is the chief police telecommunications engineer with the Hong Kong Police Force (HKPF), now serving as head of the communications branch. Wong is a fellow of the Hong Kong Institution of Engineers (FHKIE), along with other computer and engineering associations. He is past chairman of the information technology (IT) division, past chairman of the electronics division and founding discipline representative of the information engineering discipline, representing the HKIE. In 2010, Wong was named the TETRA Association's Asian ambassador. Contact Wong at jollywong@police.gov.hk.

What Long Term Evolution (LTE) Will and Will Not Deliver for Public Safety

By Joe Ross

Long Term Evolution (LTE) has received attention from the public-safety community since its adoption by several public-safety organizations as the preferred 700 MHz broadband solution. The commercial cellular world is betting a lot of money on LTE technology for the foreseeable future. Public safety has an opportunity to leverage these investments and associated technological innovations. Public safety can potentially ride the coattails of the billions of commercial dollars that will be invested in LTE and associated technologies and reap those benefits for years to come. However, LTE doesn't solve all of public safety's problems, and it's important to understand the standard's shortcomings.

While a cellular operator's objectives may differ from public safety, both want to do more with less. As the consumer base demands more capabilities, the cellular industry delivers them. This continuous outpouring of capabilities transforms the cellular standard, and in the end, the cellular ecosystem. Do smartphones loaded with capabilities meet all public safety's needs? No. Yet the public-safety community uses these devices on commercial networks for emergency communications. The scale of the devices and the resulting cost make it more likely for public safety to leverage such technologies in the future, but several obstacles must be overcome.

What LTE Delivers

Because commercial users demand access to their applications nationwide or globally, the Third Generation Partnership Project (3GPP), the global entity that develops the LTE standard, must deliver standards that allow portability of service. This means that the technology supports the ability to access networks wherever services exist and then roam from network to network. Although the subscriber device must support the right frequencies and be authorized to roam, all of the mechanisms on the devices and infrastructure are in place for automatic network-to-network roaming. The two entities need a roaming agreement and inter-network configuration to accommodate this. Changes to the devices are pushed over the air.

LTE allows an interoperability framework to occur with unprecedented speeds. Anything the typical user does on a daily basis on a desktop over a LAN is possible over an LTE network. LTE can support up to tens of megabits per second (Mbps) throughput over a 5-megahertz channel; but throughput degrades as the user's distance from the cell site increases. Even at the edge of the cell's coverage area, the speeds allow broadband applications such as streaming video and high-resolution images to transmit. With even 10 megahertz of spectrum (5 megahertz paired), the number of users who can stream high-quality video at the edge of the cell is limited, and public safety will likely have to ration video users and usage. However, 3GPP continues to enhance the LTE standard to deliver higher speeds, improved coverage and enhanced performance.

There are two reasons why cellular broadband fails public safety. First, carriers don't prioritize public-safety traffic. Public safety must compete with thousands of local users for resources during an emergency when commercial networks are most congested. While this may change, it's likely that it will be a paid service and that others will also secure priority, possibly resulting in no priority at all. Second, cellular carriers do not build their networks to public-safety reliability standards, and they may not be available during a natural or manmade disaster. Public safety's ability to build to its construction standards and operate over its own dedicated spectrum eliminates these issues.

A number of new capabilities become possible via the LTE standard. One important capability that public safety does not have is public-safety

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Public safety will ride the coattails of the billions of commercial dollars that will be invested in LTE and associated technologies and reap those benefits for years to come.

grade cell-phone service and text messaging. The 3GPP developed the IP multimedia subsystem (IMS) to address these needs over LTE. More work must be accomplished in the 3GPP to finalize the requirements, and the cellular carriers need to deploy such technologies. While much is being said about voice capabilities for the public-safety community, there is no reason why public-safety agencies couldn't deploy voice clients over their LTE networks. Multiple IP telephone private branch exchanges (PBXs) would allow such a capability. However, IMS provides a number of important quality of service (QoS), interoperability, emergency communications and other features that a VoIP PBX would not. The IMS platform also offers text capabilities that can be interfaced with billions of cell-phone users worldwide.

Other relevant LTE capabilities that should be coming during the next two to four years include:

Multicast/broadcast. Perhaps the most important feature in the LTE roadmap is the ability to better marry public safety's one-to-many style of communications. The multimedia broadcast/multicast system (MBMS) provides public safety with the ability to use a single set of resources for traffic destined to a number of users. If 10 users need to view a helicopter video stream, one instance can be transmitted instead of 10.

Relays. An LTE relay operates as an in-band repeater to extend coverage or enhance capacity. While many are investigating pico cells or femtocells for such a capability, those devices need some way to carry the traffic back to the LTE core network. Incidents will occur where no access exists, and there is no way to quickly or easily establish a connection. The relay uses capacity from a host LTE cell site (eNodeB) and retransmits the information. If relays can be miniaturized to fit in a command bus, that command bus could enhance coverage at the incident — which also improves capacity — as long as coverage exists at the command bus.

RAT mobility. The LTE standard also accommodates mobility with other radio access technologies (RAT). Initially, the standard specifies roaming on the 3GPP technologies and then moves to 3GPP (1x EVDO) and Wi-Fi.

LTE Advanced. The spectral efficiency and other performance associated with LTE Advanced increases with Release 10 radio enhancements. LTE Advanced is the release from the 3GPP that met the International Mobile Telecommunications (IMT) requirements to qualify as a 4G technology in 2010.

Location. While public safety can always use GPS positioning over any IP network, LTE delivers the ability to provide location capabilities when GPS isn't available.

SON. LTE has several basic self-organizing network (SON) features in Release 8, but additional enhancements occur with future releases that will improve coverage, capacity and load balancing. These features will make it easier to manage and optimize LTE networks and will enable a network to become self healing in the event of a loss of a site to minimize coverage loss.

Performance enhancements. A number of other performance-enhancing features are planned in Releases 9 or 10.

LTE offers intercell interference coordination (ICIC) and uses the same block of spectrum at every eNodeB. The system's performance is limited by self interference — other eNodeBs on the same network. Interference avoidance between the sectors will then improve the throughput available to the users.

LTE's broadcast benefits are only useful when multiple users are subscribing to the same media stream. Cooperative multipoint (CoMP) allows multiple eNodeBs to participate in a single user's session on the downlink and uplink to leverage the best site for any one transmission rather than waiting for a handoff. This provides simulcast/voting-style performance improvements in a single user scenario, and therefore, will improve coverage and capacity.

The benefits of the antenna technology used in LTE and other wireless technologies called multiple input multiple output (MIMO) are significant. In Release 9, 3GPP builds on the multi-user aspects of MIMO. This will enable improved performance for different types of environments, further improving the speeds supported by the LTE base station.

The list of features and capabilities that will evolve from LTE in the future is substantial. However, it's important to understand that inclusion in the standard doesn't mean that vendors will implement these features. For example, multicast technology was included in the 1x EVDO standards, but there was little cellular operator interest, and vendors chose not to support it commercially. Many features will be important to cellular carriers and will be rapidly introduced. The challenge will be those features that are important to public safety but may not have traction with the cellular carriers. Public safety will need to come together to deliver enough return for the vendors to invest in commercializing those features.

What LTE Does Not Deliver

LTE lacks a number of capabilities important to public safety. While it's a powerful technology and it's important to leverage its economies of scale to

the greatest extent possible, public safety needs to be mindful of its limitations.

First of all, LTE does not deliver complete interoperability. It delivers an interoperability framework, but that's not real interoperability. Real interoperability allows individuals to share useful information. If configured properly, LTE will allow IP packets to be exchanged, but if a user's applications cannot decipher the packet contents to deliver useful text, images, video, audio, resource availability, telemetry or other content, then it hasn't achieved interoperability. Public safety needs to develop standards for those information flows for real interoperability to occur.

A significant amount of attention has been given to LTE providing mission-critical voice. This means different things to different people, but the real discussion is around replacing professional mobile radio (PMR). There is no reason why LTE can't deliver voice packets reliably as long as the user has good LTE coverage; but replacing PMR is something quite different. Among the chief issues are:

No direct mode. The ability to communicate subscriber device to subscriber device doesn't exist in LTE. If relay technology can be miniaturized to the handheld device, it will help; but the relay still requires connectivity to an eNodeB or another relay. The use case for direct mode must accommodate no connectivity to the core network.

Low power results in less coverage. A public-safety portable has 3 watts of output power versus 250 milliwatts (mW) for LTE devices.

No standard. Public safety does not have a standard for radio over IP (RoIP) to enable interoperability across LTE networks.

Lack of devices. A public-safety radio has specific features that make it well suited for the public-safety environment such as large knobs and buttons and intrinsically safe. Initial LTE devices will not meet these requirements. Vendors are working on such products, but they will likely build them to include Project 25 (P25) and TETRA. Users will rely on PMR networks to support mission-critical voice needs — not LTE.

Many in public safety think they will receive devices with all the bells and whistles that cell phones include. There is tremendous potential for this to be delivered, but it isn't guaranteed. Public safety needs commercial economies of scale to access these devices. Handset vendors are seeking 1 million devices per month to justify the investment in a new subscriber line. U.S. public safety may eventually purchase 1 million devices every year if the market includes all government users. Vendors are trying to reduce the number of devices they manage in their portfolios to reduce their costs, and there may not be enough return on investment (ROI) to

It will also be challenging for LTE to provide coverage where PMR does.

add a product line to support public-safety volumes. Public safety may have to settle for niche devices.

Because there will be a limited vendor community, there will be less competition and the nonrecurring development costs will be higher on a per-device basis. This means that the promise of leveraging commercial economies of scale is not realized yet. A device vendor willing to support public-safety LTE will benefit from existing commercial device investment — the screen, enclosure, operating system and other software should be the same. However, device vendors must develop and integrate the filters and a new chipset, resulting in additional manufacturing cost to be recovered. We cannot predict future device types and price, but we know they'll cost more than current smartphones. The question is how much more?

It will also be challenging for LTE to provide coverage where PMR does. PMR frequencies are dedicated to each site and aren't reused over a large geographic area. With LTE, the frequencies are reused at every site. That means that an LTE system is interference — not noise — limited. Some of the sites that cover large areas — tall towers, buildings and mountain sites — may not be useable in an LTE design. To exacerbate this issue, the PMR link budget is better than LTE because of the differential in subscriber output power. This means it will require far more LTE sites to match PMR coverage. Covering mountainous areas will become more challenging, because one mountain site might interfere with hundreds of other sites, degrading an entire system's performance. As a result, LTE does not easily deliver the kind of coverage that PMR can. It's possible, but more sites with more strategic placement than with PMR sites will be required.

While LTE will deliver unprecedented capabilities to public safety, it's important to understand its challenges and what it can't deliver. The challenges aren't impossible to resolve, but it's going to take years and investments by the public-safety community and its vendors to overcome them. ■

Joe Ross is a senior partner at Televate, a U.S.-based consultancy specializing in system engineering and program management for public-safety communications. He has nearly 20 years of leadership in designing and operating PMR and commercial cellular systems and chairs the Public Safety Spectrum Requirements Working Group for the National Public Safety Telecommunications Council (NPSTC) Technology Committee. E-mail comments to editor@RRMediaGroup.com.

Product Expo: Antennas and Accessories

ANTENNAS

Amphenol Jaybeam

Amphenol Jaybeam offers a portfolio of more than 600 products for professional radio networks for professional mobile radio (PMR), TETRA, air radio, marine and broadcast. The products include antennas such as yagis, colinears, end and center fed dipoles, stacked dipoles, discones and log periodic. Custom designs or minor modifications to existing products are available upon request.

www.amphenol-jaybeam.com

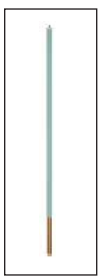
Antenna Factor

The WRT-MON series monopole antenna is compact and tamper resistant, making it ideal for wireless vending machines, traffic equipment and power equipment applications where space is limited and security is important. The 2.4 GHz antenna is attached to a 22.6-centimeter long coax cable with an RP-SMA, SMA or U.FL/MHF connector on the other end. More connectors, colors and coax length options are available for OEM customers.

www.antennafactor.com

dbSpectra

The DS7C10F36U-D is an omnidirectional antenna for base station operation in 764 – 869 MHz that is rated at 500 watts with 10 dB gain and 105-megahertz bandwidth. The antennas are rugged, with copper encased in a fiberglass radome and a heavy-duty mount. The weatherproof radome will withstand winds up to 161 kilometers per hour (kph). The antennas are terminated with 7/16 DIN connectors. Mounting hardware is included.



www.dbspectra.com

Kaltman Creations

The HyperLOG 20300 and 20600 EMI antennas are electromagnetic compatibility/electromagnetic interference (EMC/EMI) pre-compliance test antennas, featuring ultra-high accuracy and high gain over the full frequency range. The 20300 offers a range up to 3 GHz, and the 20600 meets the latest EMI/EMC standards up to 6 GHz. The antennas combine the advantages of a biconical antenna and those of a log periodic antenna in a single high-end EMC/EMI antenna. The antennas offer a high accuracy of 0.3 dB over the full-specified frequency range and can be used as reference antennas.

www.rfanalyzers.com

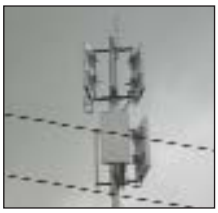
Lea Antenne & Progetti

TETRACube is a small and smart panel antenna for TETRA applications. The antenna can be tailor made for user needs by adding more modules. The antenna offers good performances with smaller dimensions, reducing weight and wind resistance, which also makes installation easier, company officials said. With a single code, users can cover all TETRA markets — civil, military and transportation — because of the antenna's large bandwidth.

www.leagroup.it

MiMOMax Wireless

The Panel Antenna is a rugged, wideband (420 – 480 MHz), flat panel, directional antenna specifically designed for high-altitude sites that encounter ice, snow and strong wind loading, up to 250 kilometers per hour (kph) wind speed with heavy snow and ice buildup and wind loading of 660 N at 160 kph. The antenna provides independent horizontal and vertical polarizations with typically more than 35 dB of isolation between them, making the antenna ideal for a wide range of radio applications including multiple input multiple output (MIMO). The antenna features two female 7/16 connectors. With typical 11.5 dBi antenna gain and maximum input power of 250 watts, the product is a highly versatile base station antenna.



www.mimomax.com

Mobile Mark

Mobile Mark recently added UHF coverage to several of its GPS fleet management antennas. The SMW-310 series multiband antenna offers three separate cable feeds that correspond to three separate modems: GPS, UHF and Wi-Fi. The UHF element covers the 450 – 470 MHz range. Typical SMW-310 installations combine GPS for positioning, Wi-Fi for wireless video and UHF for voice communications. For additional UHF bands, the company offers the SMF series surface mount antennas, which provide UHF coverage at 380 – 430, 400 – 450 or 430 – 512 MHz. The antennas come with a flexible external whip that can go through a car wash without removal.

www.mobilemark.com

Panorama Antennas

The 700/800 MHz Covert Antenna is an addition to the easyfit EF series covert antenna line. The EF-BAD antenna supports 700, 800 and 900 MHz frequency bands with 2 dBi gain and comes with 3 or 5 meters of low-loss coax and various connectors. As the first product in the Panorama EF line to meet the requirements of the 700/800 MHz public-safety market, the antenna is simple to install, covert and cost effective, company officials said.

www.panorama-antennas.com

Procom

Procom introduced a line of high-performance, low-profile patch antennas for UHF TETRA and Project 25 (P25) bands. The antenna series includes indoor/outdoor and circularly/linearly polarized variants — a total of four main antenna variants all with 50-megahertz bandwidth. The antennas are typically used externally on buildings, inside ships, in basements, in tunnels and other closed rooms. The PCPI xH/TETRA patch antenna and the PLPI/TETRA patch antenna are for indoor operation in the 380 – 430 MHz band. The PLPO/TETRA patch antenna and the PCPO xH/TETRA patch antenna are for outdoor operation in the 380 – 430 MHz band. Other frequencies are available on request.

www.procom.dk

Telewave

The ANT425D folded dipole antennas cover 380 – 470 MHz for base station operations up to 500 watts. A single, dual and four-element array produce up to 9-dBd gain, and offer the ability to customize the horizontal pattern at any time. Up to 15 degrees of electrical up or downtilt is also available. The ANT425D, D3 and D6-9 antennas withstand winds up to 322 kilometers per hour (kph), and are highly resistant to corrosive and abrasive environments with Txylan coating on all metal components. The phasing harness junctions are completely sealed by the company's Millenium Seal.

www.telewave.com

Webb Industries

The Alpha antenna is a roof-mount Iridium/GSM/GPS combination antenna based on a dual ceramic patch design with printed circuit board (PCB) GSM radiator. For the GPS, using a 24 dB patch and amplifier, the antenna has a time-to-first-fix (TTFF) of less than 45 seconds and, for the GSM, an upright PCB radiator gives an omnidirectional signal with a maximum gain of 2 dBi. The antenna works for data and voice.

www.webb.co.za

RADIO ACCESSORIES

Aria Industrial

The PYD-32 radio microphone replaces the OEM keypad microphone KMC-32. The microphone is compatible with Kenwood mobile radios with the DTMF feature.

www.ariabattery.com

BatteryJack

The Titan speaker microphones features IP67 construction that allows the rugged mics to be waterproof, while the patented metal plate spring clip allows users to position the mic as needed. Combined with the Kevlar-reinforced cable, and the company's one-year warranty, the mic is available in 35 different connector options, covering more than 1,000 radio options, company officials said.

www.batteryjackdealer.com

Bee Electronics

The company's Durus nylon cases are available for all brands of TETRA radios, including the THR9. The cases come with various carrying methods, including the ultra rugged metal D-swivel, metal clip and shoulder harness. The 1000D nylon is water-repellant treated and comes with a 3/16-inch foam backing for extra protection. The cases offer access to all ports and connectors while in the case, eliminating the need to remove the antenna. All cases are available with reflective material. The orange nylon case is popular with fire brigades and EMS, company officials said.

www.beecase.com

David Clark

Communications is clear and simple with Radio Direct intrinsically safe (IS) headsets designed to connect directly to a wide variety of portable radios without requiring an adapter, company officials said. The headset features a push-to-talk (PTT) switch on the ear dome for ease of communications. The headsets enhance safety and communications in hazardous environments such as refineries, oil rigs, chemical plants and mining operations, officials said.

www.davidclark.com

The Ear Phone Connection

The BlueWi NightHawk is a Bluetooth lapel microphone that delivers more than 10 hours of talk time, easy pairing, no connectivity loss and fully functional push to talk (PTT). The unit is multifunctional, featuring a replaceable earphone and a rechargeable/replaceable battery. The microphone can be cooperatively paired to multiple Bluetooth devices, including Bluetooth-compatible mobile phones. The complete kit includes the lapel microphone, fox listen-only earpiece, Bluetooth radio adapter and charger.

www.earphoneconnect.com

Eartec

The XTreme dual-ear headset can be worn with most protective headgear, bumpcaps and hardhats. All headsets include patented heptagonal-shaped earcups and gel-filled earpads. The headsets

Professional 2-Way radio accessory manufacturer

Manufacturing in our own factory for 20-plus years

E24
Adjustable and swiveling ear loop suitable for either ear

E26
Adjustable ear loop and tube suitable for either ear

E38
EZ connect tube (screw on) water resist

Compatible with Nexus U-174/U plugs

H-500
- 7.3mm jack for Nexus connector.
- Side PTT and tactical front-mounted PTT for different application
- dual microphone for noise cancelling
- IP-67 rated

Bone conduction headset

For both listening and speaking

H-300
Heavy-duty speaker microphone
- Heavy-duty, rubber-sealed, slip-proof
- RJ-45 replaceable cable

M10
For Motorola MOTOTRBO

M11
For Motorola CLP series

T3
For Hytera PD785

S11
For Sepura STP8000

H-400
IP68-rated speaker microphone
- Patented, professional-grade design
- Can be used in all weather conditions

For over 20 years, we've been manufacturing speaker microphones and other accessories in our own factory. We continuously develop new products, including patented items and the IP68-rated speaker microphone, skull microphone and bone conduction headset shown here. We have advanced inspection machines that we use during the QC process. As an integrated service provider, we offer advantages such as stable quality and cost effectiveness. Customization services and product guarantees are available. Contact us today.

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Email: sales@jeancouk.com

IWCE
Las Vegas
Feb. 22-23, 2012
Booth # 9097

feature a stainless steel backband and an adjustable over-the-head tension strap to ensure a snug, comfortable fit, company executives said. The headset is available for almost all existing wireless systems, as well as Eartec brand transceivers and all hard-wired intercoms, executives said.

www.eartec.com

Guardian Safety Systems

Guardian is upgrading its Guardian Comms portable speaker microphones to provide improved audio quality with crisper, clearer

received audio, and revised mechanical construction to improve reliability and survivability. The microphone offers an IP68 waterproof rating and a swiftwater kit that includes a waterproof bag to house a standard portable radio and a waterproof speaker microphone. The speaker microphone can be used by fire services and offers reliability where it matters most, in hazardous, harsh environments, company officials said. The product enhancements are in response to user feedback and are expected to ship early in 2012.

www.guardian.com.au

Harris Public Safety and Professional Communications (PSPC)

The Harris Bluetooth Remote Speaker Microphone (XPAE6K) provides improved speaking flexibility for users operating the company's

Unity line of multiband radios. The Bluetooth remote speaker microphone accessory includes a push-to-talk (PTT) button, volume up-and-down control and an emergency call button. The Bluetooth module is based on BT 2.1 standard for secure and reliable device paring and communications. The speaker microphone uses a rechargeable battery designed to hold more than 10 hours of battery life and is IP55 rated, providing advanced dust and water protection for reliable use in harsh environments and inclement weather.

www.pspc.harris.com

Imtradex

The Aurelis line includes a Bluetooth speaker microphone designed

as an accessory for mobile radios, ideally suited for police and rescue services. The 180-gram handheld product features a send button, microphone, speaker, emergency call button, three-level volume control and a programmable LED with functions that depend on the digital radio used. The microphone offers additional connection for external audio equipment and a robust, splash- and dustproof plastic housing. The unit operates without cable connection to the radio, increasing ease of use, company officials said.

www.imtradex.com

Invisio Communications

The Invisio Bone Conduction Technology is at the core of all the company's headsets. The universal fit range offers performance,

comfort and fit for professional TETRA and Project 25 (P25) users, with a form factor that has been researched and designed during the past decade, company officials said. The in-ear tactical headsets are available in black or beige and left or right versions. The customized range of headsets are made to fit the ear of the individual user and manufactured from the actual impression of the user's ear. The customized ergonomic design increases comfort and the duration of time the headset can be used, officials said.

www.invisiocommunications.com

JCK JeanCouk Enterprise

The H-500 is a heavy-duty speaker microphone for all weather applications that features an IP68-rated rubber sealed

speaker microphone designed for professional users in rough environments. Curved push to talk (PTT) and patented tactical front-mounted PTT design gives users ease of operation, even while wearing heavy fireman gloves, company executives said. The top 7.3-millimeter (mm) jack for Nexus U-174/U plug is compatible with a Savox audio accessory or Peltor headset. Featured dual-microphone noise cancellation technology offers better quality audio transmission, executives said.

www.jeancouk.com

Jing Deng Industrial (JDI)

The JDI JD-DM1 desktop microphone was designed for control,

base station and mobile radio users. The microphone features monitor and push-to-talk (PTT)-lock function on the surface. The microphone also features a second PTT function on the vertical side for convenience when used while standing. The dynamic, condenser microphone can be applied, depending on user specification. Customized services are also available.

www.jdi-co.com

Kenwood

Kenwood's KMC-47GPS and KMC-48GPS microphones combine a

high-performance built-in GPS receiver with advantages of an external GPS receiver, allowing better reception performance under difficult operating conditions and quicker satellite acquisition. Additionally, the microphones come equipped with noise-cancelling functions for clear communications in noisy operating conditions.

www.kenwood.com

MobilitySound

www.mobilitysound.com

Your Partner for State-of-the-Art Product Development

- Advanced technology radio adapters with Wireless PTT, Bluetooth, Data and GPS capabilities

Many more models available.

Wireless PTT

GPS Box

BT Mobile

In your housings or ours

- Rugged speaker microphones including waterproof designs, wireless PTT, and integrated GPS systems

Wireless

- Custom accessory designer
  Low MOQ and Advanced Engineering

MobilitySound is a radio accessory design company which develops accessories for rugged two-way radio applications. Our high-quality design technology delivers state-of-the-art of product performance, and enables operation under outdoor and difficult environments. We offer PCBA, reference design, and technical documentation to facilitate customers adopting our products. Using MobilitySound's reference design and assistance from our highly capable support team, customers can focus their attention on product differentiation. Our solutions are targeted at applications such as Bluetooth Accessories, GPS for Mobiles and Portables, Wireless PTT, etc. We can provide customers a competitive edge through customized designs and application specific solutions.

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Fax:+886-2-2881 8012
www.mobilitysound.com
info@mobilitysound.com

Klein Electronics

The Titan OEM noise-canceling headset is a professional-grade, high-noise, dual-muff headset with a push-to-talk (PTT) button that features extreme noise reduction, company officials said. The headset can be used for manufacturing, oil rig communications, construction, engineering and U.S. Occupational Safety and Health Administration (OSHA) applications. The headset features impact rated and dB reduction rated earshells, as well as a universal five-pin cable connector port.

www.headsetusa.com

Mobility Sound Technology

The Bluetooth Adapter is compatible with readily available Bluetooth headsets and other audio accessories. The adapter offers an easy pairing process that allows users to store paired connection to the wireless headset even if the radio is powered off or the adapter is removed from the two-way radio. The device has no time delays on transmitted or received audio messages. Several push-to-talk (PTT) options are available, including use of the PTT button on the adapter to initiate transmissions or use of an optional quick-disconnect wired audio accessory. The adapter is enhanced with optional wired quick-disconnect earphone or audio accessory for additional privacy. Receive and transmit audio is automatically routed to the two-way radio or the appropriate wireless or wired audio accessory, depending on what accessories are connected. A status LED indicates connection to a compatible wireless accessory. The adapter works with Motorola Solutions, Kenwood, Icom and Vertex Standard products.

www.mobilitysound.com

Otto

The Pro Series 200 speaker microphone delivers audio clarity. The microphone's cable disconnect RJ45 connector allows users to switch easily between radio platforms. It is fitted with a 360-degree rotating, spring-loaded clip and 3.5-millimeter (mm) accessory jack. The microphone's durable design is water resistant to Mil-Std-810 standards, and offers an optional emergency button. The company expanded its Pro Series line to include new low-cost alternative speaker microphones designed for basic security, hospitality and daily maintenance use.

www.ottoexcellence.com

Peter Jones

The Dock 08 is a retro mounting dock in the KlickFast Dock product line that features an easy-to-use "screw-to-fit" dock. The garment-mounting device can be used to upgrade any existing garment to the KlickFast carrying system and is ideal for use while waiting for new garments featuring built-in docks to be delivered. The KlickFast system allows any equipment featuring the KlickFast connector to be docked securely. Slide the connector into any dock to lock it securely in place and twist to the best position for comfort. To release, the user inverts the case and lifts it out.

www.klickfast.com

Plantronics

The CA12CD is a cordless headset adapter that provides wireless communications and push-to-talk (PTT) functionality for applications within E9-1-1 dispatch and air traffic control. The headset uses digital, 64-bit encryption and operates within the unlicensed personal communications services (UPCS) band (1.92 – 1.93 GHz). The unit offers built-in battery chargers and two batteries that provide 8 hours of talk time each. The base features about 3 meters coil cord terminated with a PJ7 connector. The remote features a quick disconnect that is compatible with all Plantronics H-tops. Corded and USB versions of the PTT interface are also available.

www.plantronics.com

Pryme Radio Products

Pryme introduced several new products including the WTX-500 push-to-talk (PTT) adapter for two-way radios with a quick disconnect jack, the PrymeBLU Bluetooth-mobile adapter/hands free kit, and the noise resistant bone conduction headset SPM-1600, which reduces noise by picking up transmit audio directly from vibrations below the user's skin. Pryme also introduced the Wireless Bluetooth PTT/BT-500 series adapter, which allows users to activate the radios' PTT function wirelessly, and the HDS-EM, a professional-grade dual-muff headset for any high-noise environment.

www.pryme.com

Radio Hardware Supplies

PJ & RHS produces leather cases in a variety of styles, weights and finishes for all the leading brands and models of TETRA and analog radios, printers and PDAs. A bespoke design and product development service works with users to design prototype cases for any product or equipment type. The company also offers a comprehensive range of batteries, antennas, chargers, earpieces and other accessories.

www.rhsupplies.co.uk

RAM Mounting Systems

The new line of microphone clips for the RAM Tough-Box Console System feature a no-fail safety latch that holds the microphone

securely while not in use. The latch can also be easily removed to achieve a quick-release feature. Offering the ability to quickly adjust or remove the microphone clip, the product uses three rare-two magnets to securely attach the clip to any location on the console box.

www.ram-mount.com

Savox Communications

The C-C500 communications control/push-to-talk (PTT) unit is a multifunctional PTT and remote speaker microphone unit designed for use with most professional radios. The modularity concept

means it can be used stand alone or connected to the range of Savox audio accessories, which include helmet units, throat microphones and D earpieces, single earbuds and lightweight headsets. The device is durable and water resistant (IP67), includes two large PTT buttons, a rotating belt clip, function and volume buttons and an emergency button for radios that support this feature. An ATEX approved version is also available.

www.savox.com

Stop Noise Finland

The Multi Handset 3 in 1 offers audio, data and image in a solution

catering to various needs of TETRA users. The handset features speaker microphone functionality, a keypad for controlling the terminal's functions and barcode scanning or RFID reading in a TETRA network. User organizations can choose the technology they require and tailor the handset to their needs, offering the user modern solutions, such as biometric identification, in a familiar speaker microphone device.

www.stopnoise.fi

Wireless Pacific

Wireless Pacific's iTRQ professional ear microphones are designed to allow users to leave the whisper clear microphone harness

attached permanently to the radio and to only swap earpieces when users change shifts. An extensive range of twist and lock earpieces and lapel speakers deliver exceptional performance in all work environments. Economically priced, the microphones keep personal issue costs down and workplace hygiene and employee morale high, company officials said. The accessories deliver clear audio and attractive pricing, officials said.

www.wirelesspac.com

New Products

Project 25 Phase 2 TDMA Portable Radios

Motorola Solutions added to its APX Project 25 (P25) Phase 2 TDMA two-way radio product line. The APX 4000 portable is targeted at public works, utilities and rural public-safety users. The radio incorporates two microphones to reduce background noise. The unit is compact but features an enlarged multifunction knob for powering the device on and off, setting the volume and switching talk groups. The product also features GPS outdoor location capabilities, encryption, mission-critical wireless and over-the-air programming. The radio allows public works and utility users to interoperate with P25 mission-critical users, Motorola said. The radio is IP67 certified and will be available in the 700/800 MHz, VHF, UHF R1, UHF R2 and 900 MHz frequency bands.
www.motorolasolutions.com

Transportable Repeater

Icom UK introduced a series of transportable dual-mode digital and analog repeaters that provide temporary repeater coverage between the company's mobile and portable radio equipment. The TRP transportable repeater comes in a portable carrying case about the size of a large suitcase and includes a duplexer, main power supply and battery back-up. The product weighs 20 kilograms. The product is ideal for agencies that require rapid deployment to increase coverage, especially groups that change locations frequently, the company said. The company is offering two 25-watt versions in the United Kingdom, as well as 50-watt versions for export.
www.icomuk.co.uk

P25 USB Device

Digital Voice Systems Inc. (DVSI) introduced a USB-controlled device that is interoperable with Project 25 (P25) and incorporates the company's voice compression technology. The USB-3000 P25 connects to Windows-based PCs and encodes and decodes P25 files and processes real-time speech. The product includes DVSI's Enhanced Dual-Rate Vocoder, which incorporates the enhanced AMBE+2 full-rate vocoder plus the AMBE+2 enhanced half-rate vocoder designated for P25 Phase 2. Both vocoders are based on the company's Multi-Band Excitation (MBE) technology. The product features voice activity detection (VAD) and adaptive comfort noise insertion (CNI) and supports tones, soft-decision decoding and bit stealing options. The device is available off the shelf and does not require upfront licensing fees or royalties.
www.dvsinc.com

900 MHz Digital Radios

MiMOMax Wireless released digital IP radios for the 806 – 960 MHz frequency range. The radios operate in 12.5- and 25-kilohertz narrowband channels in 6.25- and 5-kilohertz steps. Features of the radio

include a dual 10/100 Base-T Ethernet switch that supports auto negotiation; lightweight antennas that offer a 14 dBi nominal gain and come with fully enclosed radome; internal band pass duplexer instead of notch-type duplexer to help with on-site interference from other equipment; and a new digital processing system that improves CPU, memory, microprocessor and clock performance.

www.mimomax.com

TETRA Indoor Antennas

Skymasts Antennas launched its Ultra Broadband TETRA indoor antenna series, which includes two antenna options. The 752 indoor panel operates in the entire band from 380 – 470 MHz and can be deployed in TETRA and professional mobile radio (PMR) installations. The 802.01.05 ceiling mount antenna operates from 380 – 430 MHz and is designed to fit on either solid or suspended ceiling tile surfaces. Both antennas are passive intermodulation (PIM) tested.

www.skymasts.com

Distributed Antenna System

Zinwave showcased the 3000 Distributed Antenna System (DAS), which includes primary hub units, distributed secondary hubs and remote units. The system's primary

and secondary hubs operate in the 136 MHz to 2.7 GHz frequency range and provide up to eight optical or coaxial interfaces to secondary hubs or remote units. The units support up to four wireless services connection interfaces and feature a software programmable RF combiner architecture. The remote units are available in coaxial and fiber-connected versions. The units can be mounted on ceilings, walls or roof space.

www.zinwave.com

Dual-Band MIMO Antenna

PCTEL introduced its UHFM2458-6-RPC dual-band multiple input multiple output (MIMO) antenna. The antenna provides six-port diversity coverage of 2.4 – 2.5 Wi-Fi and 4.9 – 5.9 GHz public safety/

industrial, scientific, and medical (ISM)/Wi-Fi broadband wireless frequencies. The antenna is designed for above-ceiling mount in an in-building environment. The antenna includes dual-band integrated elements that terminate with high-performance, low-loss cable as well as UL 94-V0 listed materials and Plenum

cable, company executives said.
www.antenna.com

Lightning Protector

Rojone released the ROJ-180A commercial low IM3 lightning protector, designed for high-power professional RF transmit/receive antenna systems in the 800 MHz to 2.5 GHz band. The product is ideally suited for digital/multichannel antenna systems, including GSM, CDMA, 3G and WLAN applications.

Specifications include 2500 watts maximum input RF power, 30 KA discharge capacity at 8/20 uS wave, less than 15 KV/uS residual voltage, DIN 7/16 male and female RF connectors, less than -155 dBC IM3 at 43 dBm x2, DC grounded input/output, less than 1.25:1 input VSWR and less than 0.15 dB insertion loss.
www.rojone.com.au

Search and Rescue Transmitter

CML Microcircuits launched a Marine Automatic Identification System Search and Rescue Transmitter (AIS-SART) processor. The self-contained radio transmitters are activated by distressed ships to provide position reports for rescuers. The CMX7045 is a baseband processor that provides the core AIS-SART formatted data functionality and a Gaussian minimum shift keying (GMSK) modem for transmission of formatted AIS data. The product supports auxiliary operations including PA ramp automation, analog-to-digital convertor (ADC) for battery monitoring, system phase locked loop (PLL) clocks and four digital-to-analog convertor (DAC) outputs for general purpose and visual indicator use. The product meets International Electrotechnical Commission (IEC) 61097-14 AIS-SART requirements.

www.cmlmicro.com

Man-Down Modules

Midian Electronics introduced two lone-worker/man-down modules. The VAE-1 allows users to record voice messages detailing their locations that can be sent with an emergency automatic number identification (ANI). Both the TS-120 and VAE-1 modules can send ANI and emergency ANI in Motorola Solutions' MDC-1200, Kenwood's FleetSync, Harris' G-Star, DTMF and five-tone, company officials said. The products support the lone-worker feature, which sends an emergency ANI if the user does not interact with the radio. Some versions of the modules contain an accelerometer to support man-down applications.

www.midians.com

Interactive Software Application

General Dynamics C4 Systems released an interactive software application for first responders. GeoSuite is an adaptation of a system designed for soldiers who were transitioning from combat operations to patrol duties in Iraq and Afghanistan. The Web-based product adapts to a variety of formats, including

handheld devices and desktop computers and delivers real-time information and historical data to first responders, field agents and soldiers. The product operates in disconnected mode when connectivity is lost, providing stored data up to the point of lost connectivity and storing new data locally until connectivity is restored.

www.gdc4s.com

Rugged Radio Interface Unit

C4i submitted its Radio Interface Unit (RIU) to Mil-Std-810 altitude qualification

testing to demonstrate extreme durability. An independent test facility in Virginia conducted the testing, which included running the product at temperatures as low as -60 degrees Fahrenheit in a decompression chamber continuously for seven days. The unit was also subjected to an environment that mimics high altitude to determine whether it can operate in low-pressure and low-temperature situations. In addition, the product passed drop, shock and vibration tests.

www.c4i.com

Updated Networking Protocol

Fluidmesh Networks updated its FluidMAX protocol. FluidMAX 2.0 allows any wireless Fluidmesh product to operate with a centralized medium access control protocol or with a distributed medium access control protocol, allowing units to operate in either Carrier Sense Multiple Access (CSMA) or TDMA modes. The system automatically chooses which

mode to use based on its layout, company executives said. The company's technology allows the throughput available on each link to be calculated during the network design phase and allows networks to be created with multiple architectures, mixing mesh, point-to-multipoint and point-to-point designs into a single mixed infrastructure. The new version is available with Firmware 6.0.4 that is available free from the company's website.

www.fluidmesh.com

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Events

23 January – 17 February: World Radiocommunication Conference (WRC-12), Geneva. International Telecommunication Union (ITU): www.itu.int

23 – 24 January: European Defense and Security, London. Chatham House Conferences: +44 20 7957 5729, conferences@chathamhouse.org, www.chathamhouse.org/Defence2012

20 – 24 February: IWCE, Las Vegas. Penton Business Media: 203-358-3777, stacey.orlick@penton.com, www.iwceexpo.com

6 – 8 March: ATC Global 2012, Amsterdam. United Business Media: +44 207 921 8535, www.atcglobalhub.com

6 – 10 March: CeBIT, Hannover, Germany. CeBIT: +49 511 89-0, www.cebit.de

12 – 14 March: APCO Australasia Conference and Exhibition, Queensland, Australia. Association of Public-Safety Communications Officials (APCO) Australasia: +61 3 8378 8200, events@apcoaust.com.au, www.apcoaust.com.au

26 – 28 March: Emergency RespoNZe & Recovery Management Summit 2012, Wellington, New Zealand. Association & Communications Events: +64 9 918 1860, www.acevents.co.nz

27 – 29 March: Critical Messaging Convention, Austin, Texas, USA. Critical Messaging Association: www.criticalmessagingassociation.org/conferences.asp

10 – 12 April: LAAD Security 2012, Rio de Janeiro. Clarion Events: +55 11 3893 1300, info@laadsecurity.com, www.laadsecurity.com

16 – 17 April: British APCO 2012, Manchester, U.K. British Association of Public-Safety Communications Officers (APCO): +44 20 7973 6635, l.mcphail@hgluk.com, www.bapco.co.uk

1 – 3 May: APCO Global Congress, Dubai, United Arab Emirates. Association of Public-Safety Communications Officials (APCO) Global Alliance: www.apcoglobalcongress.org

6 – 9 May: Vehicular Technology Conference (VTC) 2012 Spring, Yokohama, Japan. IEEE Vehicular Technology Society: www.ieeevtc.org/vtc2012spring

14 – 17 May: TETRA World Congress, Dubai, United Arab Emirates. Informa: +44 20 7017 7878, www.tetraworldcongress.com

20 – 23 May: UTC Telecom 2012, Orlando, Florida, USA. Utilities Telecom Council (UTC): +1 202 833 6813, www.utctelecom2012.utc.org

23 – 24 May: LTE World Summit, Barcelona, Spain. Informa Telecoms & Media: +44 20 7017 5506, itmevents@informa.com, ws.lteconference.com

19 – 22 June: CommunicAsia, Singapore. CommunicAsia: +65 6233 6638, www.communicasia.com

27 – 29 June: Wireless Innovation Forum European Conference on Communications Technologies and Software Defined Radio, Brussels, Belgium. Wireless Innovation Forum: http://europe.wirelessinnovation.org

19 – 22 August: APCO 2012, Minneapolis, Minnesota, USA. Association of Public-Safety Communications Officials (APCO) International: www.apco2012.org

11 – 15 September: VSAT2012, London. Comsys: +44 1727 832288, www.comsys.co.uk/wvc_main.htm

17 – 19 September: Professional Mobile Radio (PMR) 2012, Barcelona, Spain. IIR Telecoms & Technology: +44 20 7017 7483, www.iir-telecoms.com/event/PMR

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2. Which of the following best describes your organization?
❑ A Mobile Communications Dealer/Reseller
❑ B Distributor, Agent, Importer, Exporter, Rep
❑ C Commercial Trunked Radio and Other Wireless Service Providers
❑ D Government/Public Safety/Military
❑ E Business/Industrial/Transportation User
❑ F Communications Manufacturer/OEM/Software Developer
❑ G Engineering and Consulting Firm
❑ Z Other—please specify _____

3. What is your function?
❑ A Corporate Management
❑ B Operations/Administration Management
❑ C Technical/Engineering Management
❑ D Sales/Marketing
❑ Z Others Allied to the Field—please specify _____

4. Do you recommend, specify or purchase mobile communications equipment or services?
❑ A Yes ❑ B No

5. Is there any servicing of mobile communications equipment at your location?
❑ A Yes ❑ B No

6. In what area of the world do you do most of your business? (mark only one)
❑ A Western Europe
❑ B Eastern Europe
❑ C Middle East
❑ D Asia
❑ E Australia/New Zealand
❑ F Africa
❑ G Mexico/Central and South America
❑ H United States/Canada
❑ Z Other _____

7. What wireless technologies does your organization plan to use/buy over the next 2 years? (check all that apply)
❑ A Conventional Two-Way
❑ B Cellular/Personal Communications
❑ C Paging/Messaging
❑ D Mobile Data
❑ E SCADA/Telemetry
❑ F Microwave radio
❑ G Trunking
❑ H Location Technologies
❑ I Tone Signaling (ANI, Encryption, etc.)
❑ J Interconnect
❑ K Satellite
❑ L CAD
❑ M Wireless Broadband
❑ Z Other _____

Q112

Australia's Spectrum Outlook

By Geoff Spring

Spectrum allocation and harmonization remains high on the agenda for the Australian public-safety communications sector. The Australian Attorney General's Public Safety Mobile Broadband Steering Committee is seeking and consolidating the views of public-safety agencies on future broadband spectrum needs to provide input to the Australian Communications and Media Authority's (ACMA) spectrum review of the 800 – 900 MHz band. Advice on the future allocation of spectrum for public-safety communications will then be given to the Standing Council for Police and Emergency Management (SCPEM).

The Association of Public Safety Communications Officials (APCO) Australasia, a not-for-profit representing public-safety professionals, views this work as critical to the future effectiveness of public-safety communications in Australia in the context of developing policy and strategy for intra- and inter-spectrum regional harmonization and interoperability.

APCO Australasia's position can be summarized as:

■ Supports the ACMA approach for the allocation of spectrum for mobile broadband communications;

■ Maintains the position that dedicated narrowband and broadband spectrum should be provided; and

■ Proposes that dedicated spectrum be enhanced through appropriate formal and auditable arrangements facilitating access to commercial networks to provide capacity and capability, and hence resilience and scalability, in times of major events and natural disasters.

Spectrum Announcement

The Public Safety Mobile Broadband Steering Committee announcement is expected to report to the Council of Australian Governments in early 2012. This timing leads into the 2012 APCO Australasia Conference and Exhibition 12 – 14 March at the Gold Coast Convention and Exhibition Centre in Queensland, Australia. The timing allows the content of the conference to be centered on the future of public-safety communications. The event will generate comment about recommendations, together with the assessment of the current status and strategic direction of both traditional and next-generation public-safety communications and their respective standards.

One conference stream will focus on the three radio communications standards — Project 25 (P25), TETRA and 4G/Long Term Evolution (LTE) — and their interoperability with broadband. APCO Australasia is in discussions with the peak bodies associated with these standards and a research body regarding speaking about their future direction and the possibility of holding briefings for Australia's public-safety agencies, vendors and network operators at the conference.

Global Harmonization

The four APCO partners — APCO Australasia, APCO Canada, APCO International and British APCO — form the APCO Global Alliance. The global forum provides information and resources to the world's public-safety communications community through regular meetings considering issues associated with public-safety communications that have a global impact and require a coordinated effort outside the normal sphere of influence of the individual associations.

The latest meeting of the president's council of the APCO Global Alliance took place in Ottawa in November. Global spectrum harmonization was a key agenda item.

P25 Standard

APCO Australasia became a member of the P25 Steering Committee and is the first member outside the United States to sit on the committee. This representation allows users of P25 equipment in Australia and New Zealand an opportunity to provide direct input into the continuing evolution of the standard. Further information will be published at regular intervals on the APCO Australasia website. The membership appointment came after the establishment of the APCO Australasia P25 user group in September 2010.

APCO Australasia will continue to contribute toward determining the most effective and efficient way for public-safety agencies to obtain an interoperable, reliable and robust mobile broadband capability. Australia has an important role in public-safety communications in the Asia Pacific region, and the association will draw on the skills and experience of its members and stakeholders and build relationships with other peak bodies in both the private and public sectors to perform that role. ■

Geoff Spring is executive chairman of APCO Australasia and chair of the APCO Global Alliance. Spring has been director – strategic planning and area coordination for the Country Fire Authority (CFA) in Victoria, Australia, for 10 years. He is a former member of the Emergency Services Organizations Advisory Committee to the board of the Emergency Services Telecommunications Authority (ESTA) and a member of the Victorian Spatial Council. Email comments to geoff.spring@apcoaust.com.au.

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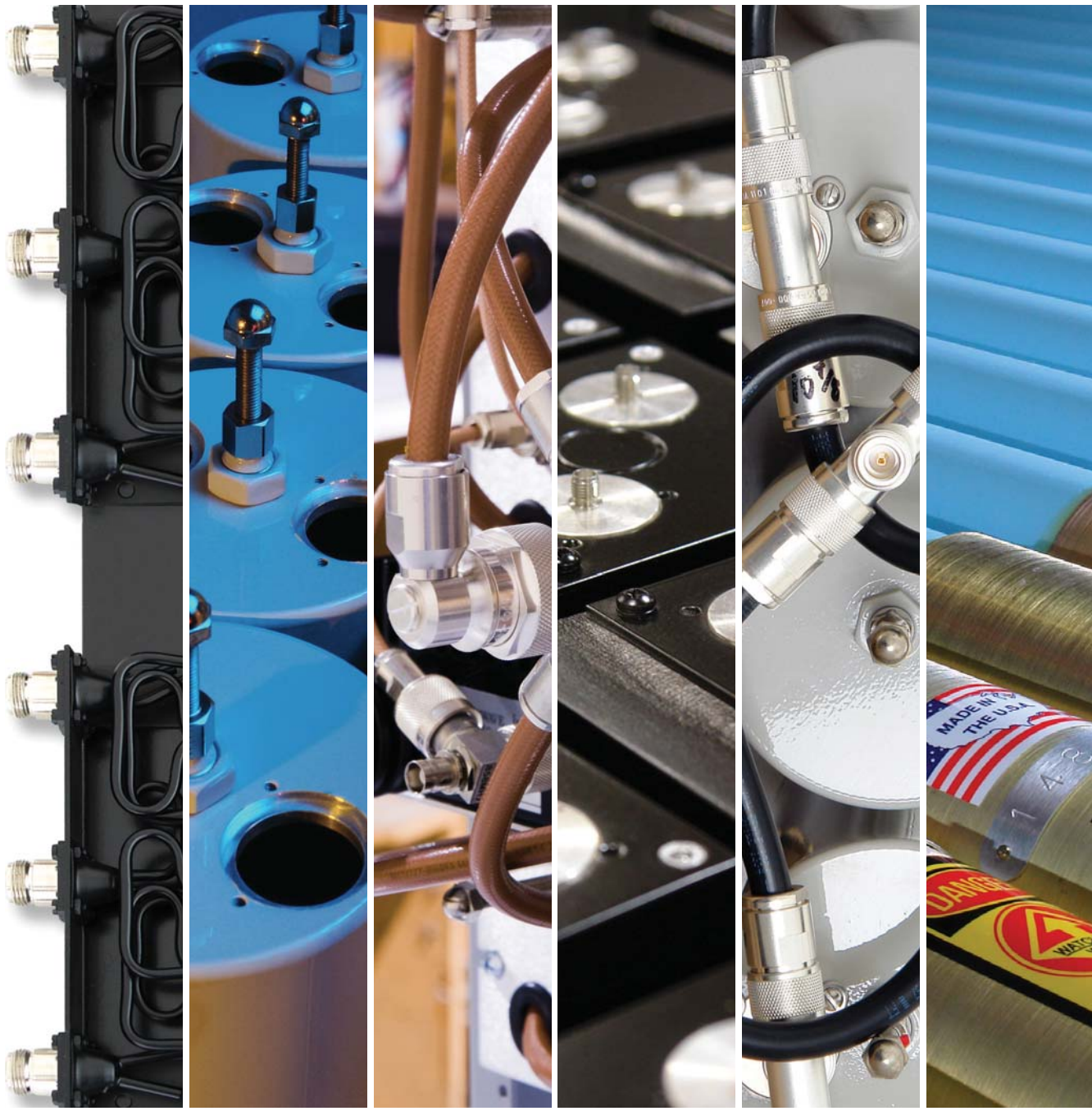

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