LILEE SYSTEMS

Company and Solutions Overview

641 River Oaks Parkway, San Jose, CA 95134

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Company Overview

LILEE SYSTEMS was founded in 2009 by industry leaders with extensive backgrounds in wireless communications, network routing and switching, and software defined radio (SDR). Headquartered in San Jose, we opened a subsidiary office in Taipei, Taiwan in 2010 to establish an engineering center and work more efficiently with our manufacturer in production, testing, and rollouts of various PTC projects.

Founded with the main purpose of providing communication networks to the railroad industry, we shipped our first products in 4Q 2011 into the freight railroad market, seizing the opportunity that emerged with the Congress-mandated deployment of Positive Train Control (PTC) which required wired and wireless networking solutions that were previously nonexistent in the railroad industry.

We recently expanded into the broader transportation market with a solutions portfolio that includes passenger connectivity and other broadband solutions such as safety, security, maintenance and management. Additional markets include First Responders, Homeland Security and Military, and Machine-to-Machine (M2M) communications in the broader Internet of Things (IoT) market.

Our mission is to create a “Connectivity in Motion” experience by merging multiple wireless connections into a predictable, stable and manageable network. All our hardware and software is manufactured in-house, and our hardware is ruggedized, future-proof and modular. LILEE is the market leader in the connected transportation space, with well-established partner and alliance programs.

Since our founding in 2009, Lilee Systems has grown from a staff of less than 10 core engineers and administrative staff to over 110 people. Our team is recognized as leaders in the wireless industry, with core strengths and cross-disciplined backgrounds obtained from careers at Cisco, Juniper, Extreme Networks, AMD, Apple Inc., Aruba Networks, Motorola, Citrix, Fujitsu Network Communications, Safetran Systems Inc., Invensys Rail, and GE Transportation. We are actively participating in the standard bodies in defining next generation wireless architectures and have been Voting Members of both 802.11 WLAN and 802.16 WiMAX for several years.

Our executives have many years of engineering, project management and go-to-market experience in the networking industry and in wireless design and development, holding several patents for Software Defined Radio.

With a strong technical foundation in place by 2012, LILEE Systems focused on strengthening our outbound-facing functions such as sales and marketing to successfully present our solutions to the industry and bring our products to market. Since then, we achieved several major milestones that contributed to LILEE Systems growth:

- LILEE Systems selected by Parsons to provide WMS-2000 Wayside Messaging Servers (WMS) and Wayside Status Relay Service (WSRS) Server for the Metrolink Positive Train Control project.
- LILEE Systems’ WMS-2000 became the first supplier to achieve Red Hat certification for our Wayside Messaging Server hardware.
- LILEE Systems’ TransAir PTC-3000 series radio gained approved from the Federal Communications Commission (FCC) as the first 220 MHz radio certified as a software-defined radio (SDR).
- LILEE Systems’ TransAir PTC-3000 series radios have been selected by partners for deployment in city bus, wind farm, and high voltage power grid applications.
- LILEE Systems was selected by Norfolk Southern to provide WMS-2000 Wayside Messaging Servers, Systems Management Gateway, ITCM-related software development, and engineering services in support of their Positive Train Control deployment.
- LILEE Systems was selected by Canadian National to provide ITCM-related software development and design services in support of their Positive Train Control deployment.
- LILEE Systems was selected by Alstom to develop, manufacture, and deliver the CommMgr-2100 Communications Management Unit product families for use in the Northeast Corridor ACSES PTC deployment. Using our strengths in ATCS Specification 200 and TCP/IP networking, these product families provide a complete end-to-end solution, including Office Communication Manager (OCM), Base Communication Manager (BCM), Mobile Communication Manager (MCM), and Base Radio Communication Manager (BRCM).

Target Markets and Solution Portfolio

LILEE Systems products and solutions are targeted at addressing the Intelligent Transportation Machine-to-Machine (M2M) segment of the broader Internet of Things market (IoT). We sold our first products into the freight rail market in 2011 as part of the emerging PTC market which required networking solutions that were previously nonexistent in the railroad industry. Since then we leveraged the technology developed for that market to expand into the intelligent transportation market with solutions that address passenger broadband connectivity and other broadband solutions such as safety, security, maintenance and management.

While our solution covers every aspect of the intelligent transportation market we specifically carved out the subset of applications listed below, as they are showing the highest demand. It should be noted however, that while customer discussions often start with one individual application, the broad applicability of our hardware and software solutions allows us to up-sell and cross-sell the entire portfolio.

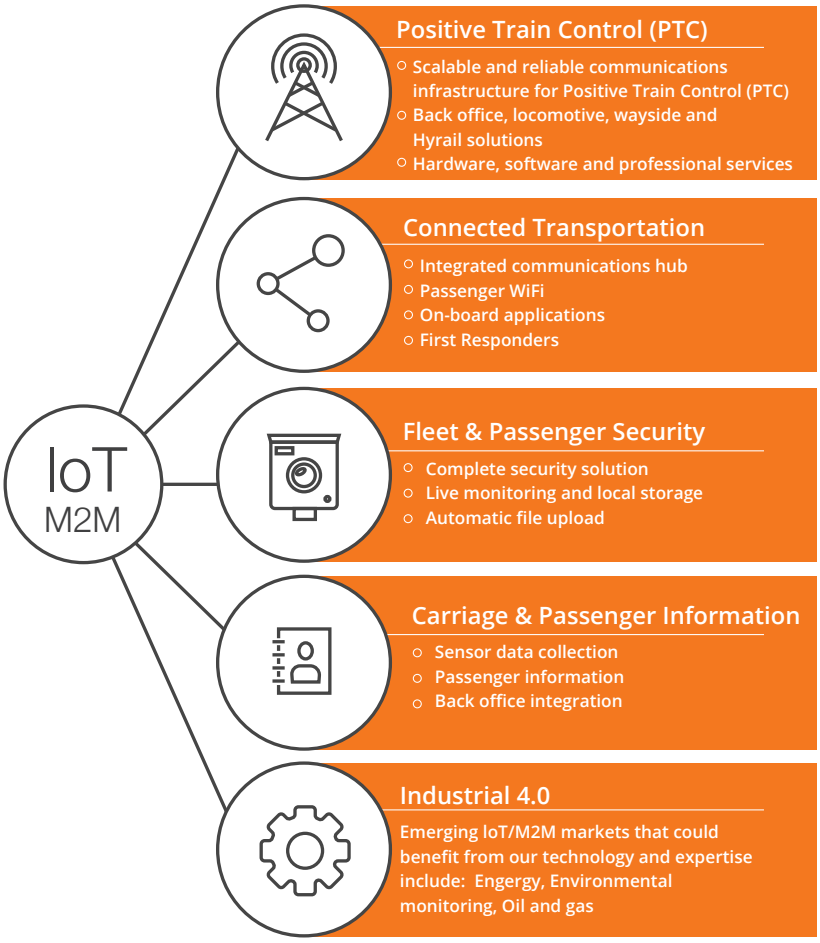

Figure 1: LILEE Systems Target Markets and Solutions Portfolio

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APPLICATION	LILEE SYSTEMS INTELLIGENT TRANSPORTATION SOLUTION HIGHLIGHTS
Positive Train Control	• Scalable and reliable communications infrastructure for Positive Train Control (PTC) • Back office, locomotive, wayside and Hyrail solutions • Hardware, software and professional services
Connected Transportation	• Integrated communications hub for all networking needs • Passenger WiFi • On-board applications
Fleet and Passenger Security	• Complete security solution • Live monitoring and local storage • Automatic file upload
Carriage and Passenger Information	• Sensor data collection • Passenger Information • Back office integration

Table 1: *LILEE Systems Solution Focus*

Intelligent Transportation Solution Components

LILEE's flexible solution architecture makes it the default communications foundation on buses, trains, and other commercial and emergency response vehicles to enhance safety, security, and the passenger experience, all while offering several monetization opportunities to solidify the business case.

LILEE SYSTEMS' solution consists of three components as depicted in Figure 2:

- An on-board Communications Server
- A Communications Controller
- A Management Software Suite

At the heart of LILEE Systems solution is the Communications Controller that typically resides in the cloud, although some customers will prefer it to run on dedicated hardware in their data center. One Communications Controller can manage multiple on-board Communications Servers that are located on trains, buses or other vehicles, and performs the following critical functions:

- Seamless roaming between cellular, Wi-Fi, trackside radio and future media
- Integrated network management for centralized provisioning, monitoring, and management

The on-board Communications Servers can house up to 10 wireless network interfaces (3G, LTE, WiFi, GPS) and/or appliances like Ethernet switches and application engines and serves as the network access point and central communications hub for all passengers and services that require access to the Internet.

The Management Software Suite is a web-based service that provides the user interface to all administrative functions running on the Communications Controller to provision, configure manage and monitor the on-board communications servers. It also supports a suite of troubleshooting and diagnostic tools and provides a comprehensive reporting tool that accumulates all network and passenger statistics that are collected by the Communications Controllers and renders them in easy-to-use reports that provide detailed insight on device performance, network performance down to individual networks, connections and user sessions, usage statistics, ridership reports and much more.

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On-board Communications Server

Scalable, Flexible and Hardened

- 6.2/9.25/11.5 inches (LMS-2450)
- 1.5/5.0/6.0 inches (DTS-2000)
- Wide operating temperature range -40 to 70°C (-40 to 158°F)
- Compact, low-power, fanless sealed design
- AAR Standard S-9401, AREMA 11.5.1, EN-50155

Modular Interfaces

- S Type 1 slots / 10 Type 2 slots
- Wi-Fi Interface Card
- LTE Interface Card (2x SIM Card Slots)
- Precision GPS Interface Card
- x86 Application Engine
- 6xM12 Ethernet Switch Card

Communications Controller

- Appliance-based or cloud-based
- Seamless roaming between cellular, Wi-Fi, trackside radio and future media
- Maintains IP addresses for all client devices
- Topology agnostic to hide complexity of underlying layer 2 or layer 3 IP network
- User traffic tunneled via DTLS (layer 2 UDP tunnel)
- Integrated network management system for centralized provising, monitoring, and management

Management Software

- Pluggable software modules running on LileeOS foundation
- Web-baed services that provide the user interface to all administrative functions:
  - *Provisions*
  - *Management*
  - *Troubleshooting*
  - *Analytics*
  - *Reporting*
  - *Common look & feel*
- Detailed insight on device, link and network performance, connections and user sessions, usage statistics, ridership reports and more

Figure 2: *LILEE Systems Solutions Components Detail*

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Positive Train Control

LILEE Systems is currently providing ITCM wayside and back office products and services to several Class I railroads. These solutions include Wayside Messaging Servers, Wayside Status Relay Service (WSRS), PTC systems management gateway, WMS and LMS software imaging, ITCM-related development services, and ITCM network design, testing, and deployment. Managing in excess of $60B in railroad assets these solutions cover all areas of deployment: back-office, Locomotive, Wayside and Hyrail.

Table 2: *LILEE Systems PTC/ITCM Portfolio*

APPLICATION	LILEE SYSTEMS INTELLIGENT TRANSPORTATION SOLUTION HIGHLIGHTS
Back Office	• PTC/ITCM Back Office Design: Data Center, Network Infrastructure, High Availability • Professional Services: System Integration and Customization, 24x7 TAC Support • SMG : Asset Provisioning and Management, Comprehensive GUI • WSRS: Design and Implementation
Locomotive	• Central Communication Hub: GE ACC Alternative • LMS-2450 as Companion for Wabtec on board computer to replace slot 10 ITCM capability • ZCC : Zero Touch Software Upgrade and Maintenance for LMS/DTS and 3rd Party Devices
Wayside	• DTS-2000 • SMA : System Management Agent (End-to-End Seamless Solution between SMG and SMA) • ZCC : Zero Touch Software Upgrade and Maintenance for LILEE DTS and 3rd Party WIUs • Retrieve WIU information, encapsulate data and send to ITCM Infrastructure
Hyrail	• GPS services for HLCS • Wi-Fi connectivity for crew members

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Connected Transportation

People have become accustomed to having Internet access available for any device, at any time, from anywhere —at home, at the office, in public areas and most recently while on the move. That is why we are seeing a growing number of commercial, private and corporate transportation services offering (mostly) free Internet services. In addition, with global warming gaining more attention and traffic and pollution getting worse every day,it is environmentally and politically advantageous to encourage commuters and travelers to leave their car at home and switch to public and/or shared corporate transportation.

As passengers increasingly desire to use their travel time to work or be entertained, high bandwidth Internet has become a default expectation. While train and bus operators are pressured to offer the service for free to grow and retain ridership, the current offerings are falling short of expectations.

LILEE SYSTEMS' "Connectivity in Motion" platform provides a compelling business case to give passengers the broadband connectivity they crave by integrating applications such as video surveillance, infotainment, advertising, passenger experience, and maintenance and operations into a single communications hub that consolidates hardware, software and maintenance. Our solutions cover train, light rail, bus, vans, first responders, and any business that requires "connectivity in motion" Beyond improving the passenger experience and building customer loyalty, the technology and applications enabled by LILEE's modular solution also dramatically improve the operational efficiency for the bus or rail operator as the crew and dispatch center can get access to real-time information that allows them to monitor and improve the performance of the train or bus, better assist passengers, and optimize the business aspects of running a bus or train company.

Operational Efficiency	Business Profitability
• Fuel Management • Improve miles between failure • Consolidate communications requirements • Route optimization	• Automated ticketing • Pass validation • Advertising • CCTV • TransAir™ modularity • Ridership reports
Passenger Comfort/Safety	**Train/Bus Safety**
• Positive Train Control • CCTV • Information displays • Passenger communications • Passenger community portal • Emergency handling • Infotainment	• Positive Train Control • Real-time maintenance data • CCTV

Figure 3: Impact of LILEE's Connected Transportation Solution

Appendix 1 provides more information about our Connected Transportation solution and includes a brief description of the operational principle, solution components and physical insyallation.

Fleet and Passenger Security

Protecting passengers, personnel and property...all are top priorities for transportation service providers. When security incidents occur on public transport, early detection and complete situational awareness contribute to an effective response. Currently, bus drivers and train engineers mostly communicate by radio, providing a limited picture. In some situations, they cannot communicate at all, and transportation security authorities don't find out about the incident until it is too late to prevent harm or mitigate the situation. Trains and buses equipped with a LILEE Systems on-board communications hub can transmit live video to a command center for continuous monitoring. Alternatively, all video captured from cameras on buses or trains can be stored digitally on the application engine that is part of our solutions offering. LILEE's fleet and passenger security solution can be used to

- Create a safer transportation environment
- Reduce costs of vandalism and graffiti
- Driver surveillance
- Efficiently monitor cargo and property
- Reduce incident response times
- Quickly decide the correct incident response

Carriage and Passenger Information

Carriage and passenger information [display] systems provide real-time vehicle and passenger information. They may include predictions about arrival and departure times, as well as information about the nature and causes of disruptions and may be used both physically within a transportation hub or remotely using a web browser or mobile device.

This is a "natural" application for LILEE Systems all the components of our solution can be leveraged to provide the required "information services." Our integrated communications hub supports

- Precision GPS for location-based services
- An Ethernet switch to connect displays, cameras and other appliances
- An application engine that can provide storage and compute
- Network uplinks for connectivity
- Analog and digital sensor inputs for maintenance and operations purposes

Using these capabilities a variety of services that impact the passenger experience can be provided. At a station or stop, it is normal to provide up to date predictions of:

- Which service does the next vehicle to arrive operate, including its route and destination?
- When will this vehicle arrive?
- How closely it is running to timetable?
- General advice on current travel disruptions that may be useful to the passenger in understanding the implications for their travel plans.

At the dispatch center data can be collect on:

- The amount of passengers on the vehicle
- Are we running to timetable?
- Location, temperature, weight and other operational parameters that can impact service quality and operational efficiency

On a vehicle, it is normal to provide up to date predictions of:

- What is the next station or stop?
- When will it get there?
- How closely it is running to timetable?
- Advice on connecting services.

Lastly, mobile applications can be created to provide passenger with up-to-date information on the service such as:

- Next Arrival
- How many seats are available
- Estimated trip duration
- Is there a bike rack?
- Or on-board Wifi?
- Maybe infotainment?

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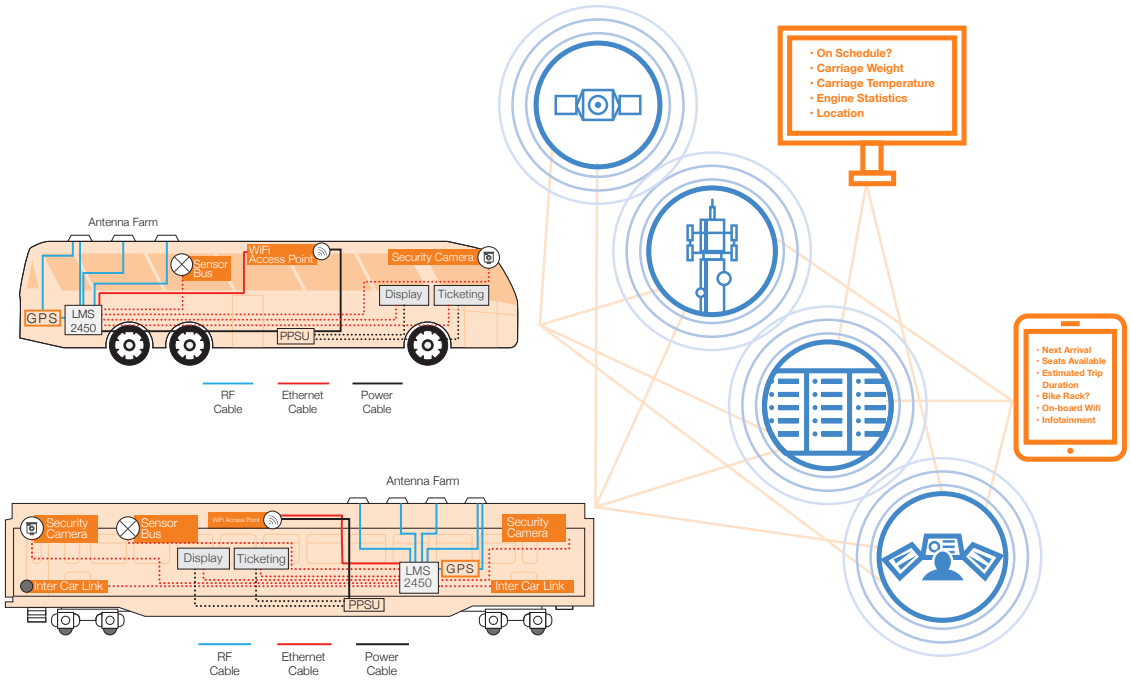

Figure 4: Carriage and Passenger Information System using LILEE On-board Communications Server

Why choose LILEE Systems for Intelligent Transportation?

LILEE Systems is recognized industry-wide for the following core competencies:

Technology

Leveraging the talent base from the Silicon Valley, as well as the extensive background in network and wireless communications, LILEE has established a proven channel for bringing next-generation technologies to the industry.

Agility

To accommodate for the nature of the technology sector, LILEE is structured in a manner designed to increase customer responsiveness, reduce bureaucracy in the decision-making process, and enable closer coordination between our customers and our engineering department.

Focus

Unlike other firms in the industry, LILEE focuses solely on communications technology. We do not dilute our expertise across areas in which we cannot offer our customers a clear, distinct advantage. This is one of the primary reasons that LILEE has been selected by various established systems integrators in support of their PTC projects.

Flexibility with Systems Integrators

Each customer's ecosystem of suppliers is different, and given LILEE's focus on communications, we have proven the ability to work with a wide array of suppliers such as GE Transportation, Parsons, Xorail, and Herzog.

Worldwide manufacturing base

Through our exclusive agreement with Wistron, LILEE has established access to an extensive worldwide manufacturing base that can address the various needs of our customers.

Reliability of in-house software and hardware

(<0.1% RMA after 3 years of shipping)

Dependable delivery and deployment

Business case and ROI

(modularity of solution)

Appendix 1:

Connected Transportation Solution Brief

LILEE's flexible solution architecture makes it the default communications foundation on buses, trains, and other commercial and emergency response vehicles to enhance safety, security, and the passenger experience, all while offering several monetization opportunities to solidify the business case.

- An on-board Communications Server
- A Communications Controller
- tA Management Software Suite

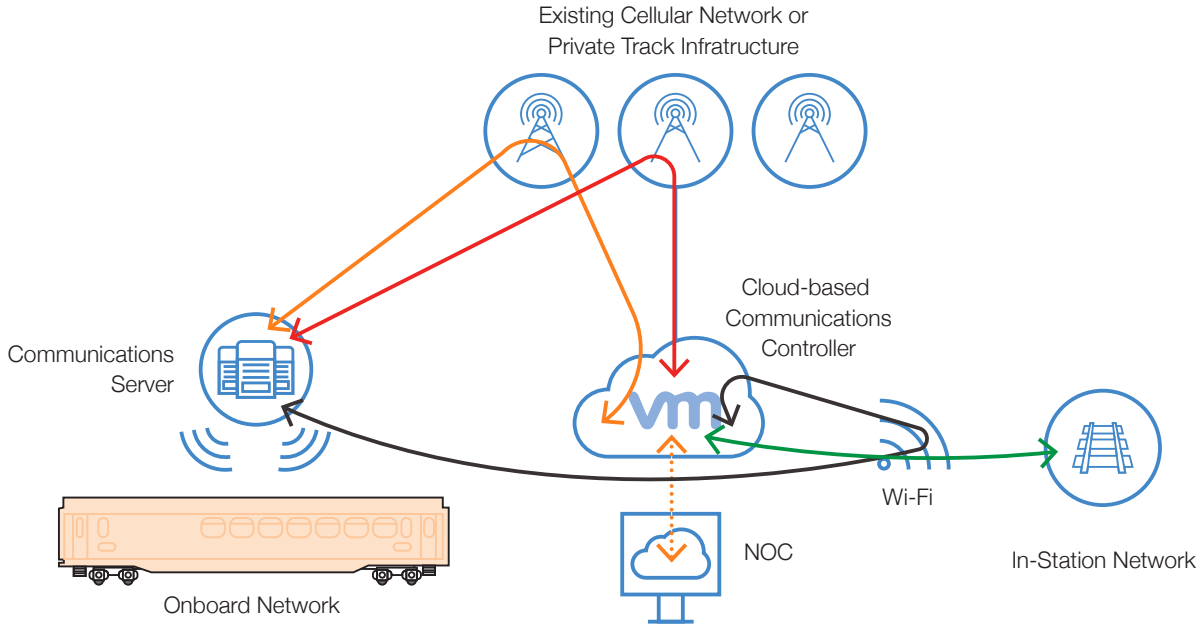

Figure 5: LILEE SYSTEMS "Connectivity in Motion" Service Operational Principle and System Components

At the heart of the solution is the Communications Controller that typically resides in the cloud, although some customers will prefer it to run on dedicated hardware in their data center. One Communications Controller can manage multiple on-board Communications Servers that are located on trains, buses or other vehicles, and performs the following critical functions:

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LMS-2450 and DTS-2000 On-Board Communications Servers

LILEE'S on-board communications servers are hardened from years of providing mission-critical applications under the stringent requirements of Positive Train Control (PTC). The modular LMS system supports up to 10 wireless interface cards, WiFi, GPS location services, a 6-port Ethernet switch, an application engine, and is field-upgradable to handle future generations of cellular and other wireless technologies. The DTS supports two modular slots that can accommodate SIM cards and/or GPS modules cards, and includes an embedded application engine. The LMS-2450 and DTS-2000 share compatibility with the interface card (IC) modules listed in Table 2 for a lower total cost of ownership.

APPLICATION	ON-BOARD SERVER INTERFACE CARDS	
IC-WIFI-11N	WiFi Interface Card	
IC-GPS-P	Precision GPS	
IC-LTE	LTE Network Card (USA)	
IC-LTE-G	LTE Network Card (Global)	
IC-LTE-GPS	Combo LTE/GPS Card	
IC-4S	4-port Serial Interface Card	Roadmap
SM-GE-6M	6-port GE Switch Module	
SM-GE-6M-4P	6-port GE Switch Module	4 ports with POE Support (802.3at)
SM-AE-AK	Application Engine / 8GB Storage	DTS-2000 has embedded AE Industrial grade
AM-AE-AK-2T	Application Engine / 2TB Storage	Commercial grade Roadmap
IC-AD-IO	Analog/Digital I/O Card	DTS-2000 has embedded A/D I/O Roadmap

Table 3: *Interface Modules*

Multiple wireless Networks

Supporting WiFi, 3G and 4G technologies, our solution uses multiple broadband connections on major carrier, municipal, service providers and private networks to connect to the Internet and support entertainment and business services as well as applications that optimize operations and/or provide on-board such as security and surveillance, automated ticketing, information displays, advertising and infotainment. The various wireless network connections are managed transparently by the Mobility Controller, which will be discussed in the next section.

GPS

The GPS modules provide precise location tracking, accurate to within 3 feet, with a trace that indicates the direction of travel. Current and historical positions are available at all times and are recorded by the Mobility Controller, or third-party tracking systems. In addition to location tracking, the GPS data can be used for passenger information systems (such as ridership reports), carrier network coverage surveys and “heat maps” and for safety applications like HLCS (HyRail Limits Compliance System).

Ethernet Switch

The SM-GE-6M and SM-GE-6M-4P Gigabit Ethernet Switch cards allow appliances that require network connectivity to get access to the “Connectivity in Motion” broadband network. Combined with the platform’s modularity, this functionality is a critical component of the business case as it accelerates the return on investment by consolidating all network requirements into one hub and reducing the infrastructure and cellular network costs. A typical example is security; most transportation systems use some form of closed-circuit video (CCTV) for passenger safety and system security. Cameras mounted either on-board or at terminal stations can be utilized by fleet operators during transit, or recorded and always available for offline analysis. These systems can be connected directly to LILEE’s LMS system, allowing for inbound access to a digital recorder, even while the vehicle is in transit. Other examples include information displays, automated ticketing and pass validation systems, and on-board computers.

Application Engine

The application engine allows integrating software that would otherwise have to run on dedicated appliances, thus saving valuable space and power. Examples include fuel management software, dynamic route optimization, video storage and real-time maintenance data collection and reporting, to name a few. Other applications that can be supported are content caching, radius proxy, integrated network test tool, and many more.

LMC-5500

LILEE SYSTEMS' LMC-5500 Series Mobility Controller handles the registration of the radio interfaces equipped in the LMS and DTS Mobility Servers and coordinates network connectivity management and seamless vertical roaming to maintain continuous communications with the Internet host while moving from one LTE base station to another or from one medium to another. With handovers of less than 50ms, connectivity appears to be stationary for all users. The LMC also manages link aggregation and provides a comprehensive web-based monitoring and management tool that collects and reports all statistics required to support detailed performance analysis and ridership reporting. LILEE's onboard mobility solution maintains sessions in the face of IP address changes, because the connections are at Layer 2. LILEE hides the complexity of roaming to the user and presents one stable, predictable and manageable network, just like in the office or at home. Furthermore, our solution works with a "make before break" algorithm that that moves flows to alternate links before the current connection is abandoned. We also supports a "vertical roaming" capability wherein multiple tunnels can be established between the LMC and the LMS through different networks. And these tunnels can be grouped into a single logical link. User traffic is distributed across tunnels in a group for load balancing and failover.

With link monitoring and dynamic weighted load balancing, each tunnel monitors the link quality between the LMC and LMS and determines the weight for user traffic load balancing in the tunnel aggregation group. The weight changes dynamically when the link quality changes.

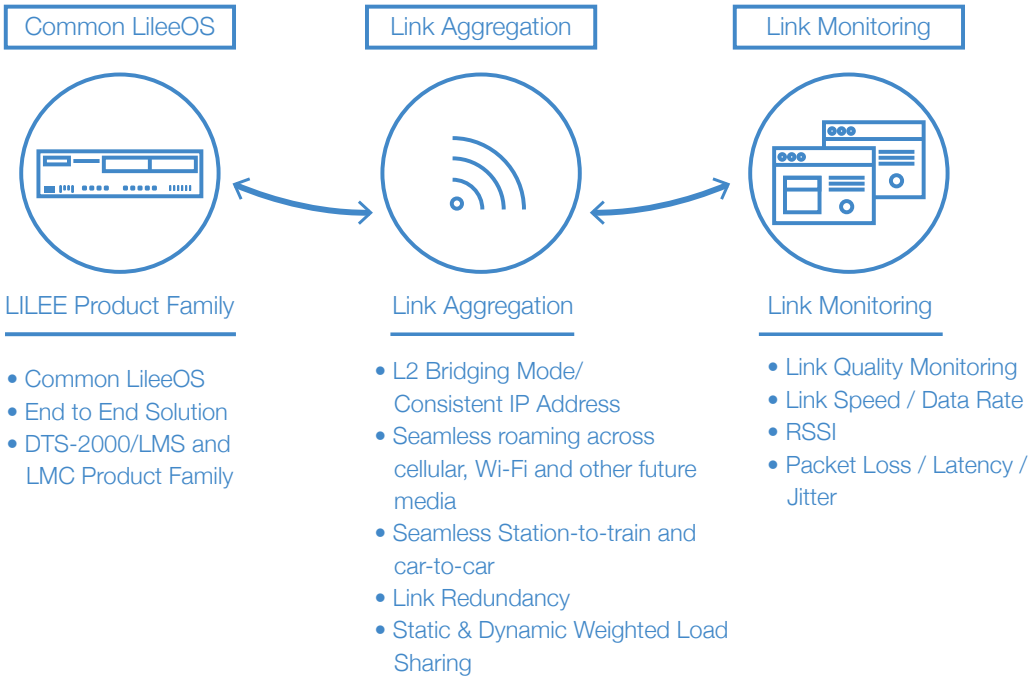


Figure 6: LILEE SYSTEMS Link Aggregation and Monitoring

TransAir™ supports both per-packet and per-flow load balancing. With per-packet load balancing the router sends one packet to the destination over the first path, the second packet for (the same) destination over the second path, and so on. This guarantees equal load across all links. Flow-based load balancing identifies different flows of traffic based on the key fields in the data packet and sends the entire flow over the link with highest quality.

DESCRIPTION	NOTES
L2 tunneling with UDP and DTLS encapsulation	The tunnels between LMC and LMS provide a transparent L2 bridged transport for Ethernet frames from user devices
Handoff Handling	"Make before break" algorithm moves flows to alternate links before connection breaks (based on RSSI/jitter/drop/link speed/throughput)
Vertical roaming	Multiple tunnels can be established between LMC and LMS through different networks. Connectivity is maintained transparently for user data by switching traffic to another tunnel when a link fails
Tunnel link aggregation	Multiple tunnels can be grouped into a single logical link. User traffic is distributed across tunnels in a group for load balancing and failover
Link monitoring and dynamic weighted load balancing	Each tunnel monitors link quality (throughput, RSSI, latency, etc.) between LMC and LMS and determines the weight for user traffic load balancing in the tunnel aggregation group. The weight changes dynamically with link quality

Table 4: Link Aggregation and Load Balancing Functionality

Mobility Manager: Comprehensive Centralized Management

LILEE Mobility Manager is a cloud-based managed service that is hosted by LILEE SYSTEMS and provides detailed up-to-the minute reporting on the status and performance of all deployed and operational LILEE devices.

Mobility Manager displays information including device status and uptime, firmware version, number of users connected and network signal quality. The system also tracks device positioning, throughput, applications being run, data usage, and various fleet management reports. These reports identify trends for ridership and usage, and can provide valuable background information that can be used to optimize the device configuration to maximize throughput and minimize costs.

Ridership reporting statistics include: throughput, packet loss, and usage by vehicle, network, SIM, or MAC address. These definitive summaries give you an at-a-glance sense of how your WiFi services are being used, and you get important feedback from which to calculate ROI. You can determine how many people used the service over specified periods of time, how much data was transferred, etc.

Figure 8 depicts a high-level operational view of the Mobility Manager. At the highest level (Level 1), the admin machine can create virtual machines (VM) in the datacenter where the virtual LMC (vLMC) is hosted (Level 2). A single admin can manage all assets and all on-board users at any time, although it is possible to assign one vLMC for each user account. Furthermore, a history of onboard usage is maintained in the database. Data is available for immediate on-line access for three months, and archived for off-line retrieval for up to 2 years.

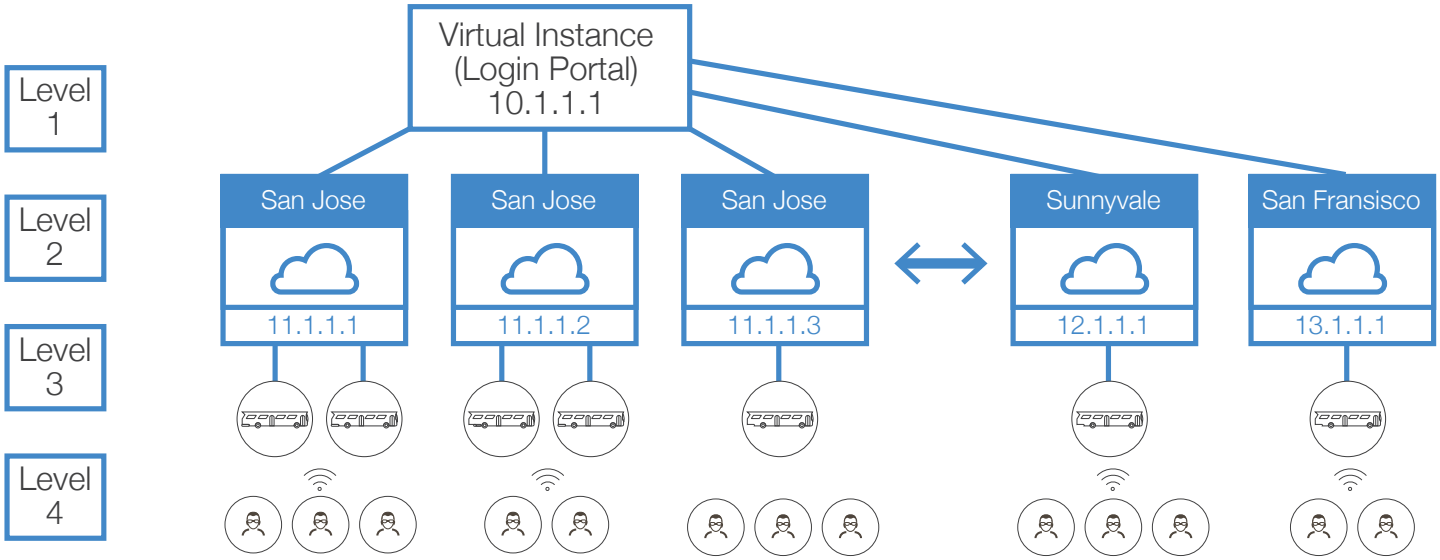


Figure 7: LILEE Mobility Manager Operational View

LILEE MOBILITY MANAGER HAS 9 PRIMARY REPORTING LEVELS:

SIM Management

Mobility manager retrieves data from SIM cards and makes it available to the admin who then may act based on usage, traffic shaping needs, or alarm handling; you can avoid overage, control allocation and understand geo-differences in billing (roaming).

User Management

This report tells you how many users are online, monitors individual usages and includes the ability to throttle traffic per MAC address to ensure fair bandwidth usage across all passengers. Saving this information lets you track user history and loyalty. The system can track users connected to either the Wi-Fi service or an Ethernet interface.

Fleet Management

Tracks ridership details that could then be used for dispatch or for real-time management of fleet resource. This could include e-ticketing, route scheduling, fuel management etc.

Asset Management

Inventory and control/configuration of field equipment (DTS/LMS), including line cards and interface cards, SIMs, application engines, LMCs (virtual and physical), third party access points, etc. With Asset Management, you can see what devices are online, how many users are online, what the connection strength is, and other details.

Event Management

Logging, notification and alarms are associated with status lights. The status lights may indicate that a device has dropped out of coverage for a specified period of time. Low receive signal strength may also trigger an event.

Application Management

Allows to balance or throttle traffic based on application, and to block certain applications and/or websites that may consume too much bandwidth.

System Management

Displays information including device status and uptime, firmware version, memory and CPU usage. Allows uploading the latest firmware to the on-board units.

Landing Page

A built-in captive portal with customizable screens that include a branded landing page, splash screen, login and authentication, and an editable survey for gathering market research.

History

The analytics shown here may include number of users at certain times on certain routes. How long they were connected, etc. You can look at number of sessions at different points in time and different locations, and determine whether these were new or returning users. This information can be used to analyze system uptake and evaluate ROI. Another of the historic views is the location history. You can track a certain device's (LMS/DTS) journey within a specified time frame.

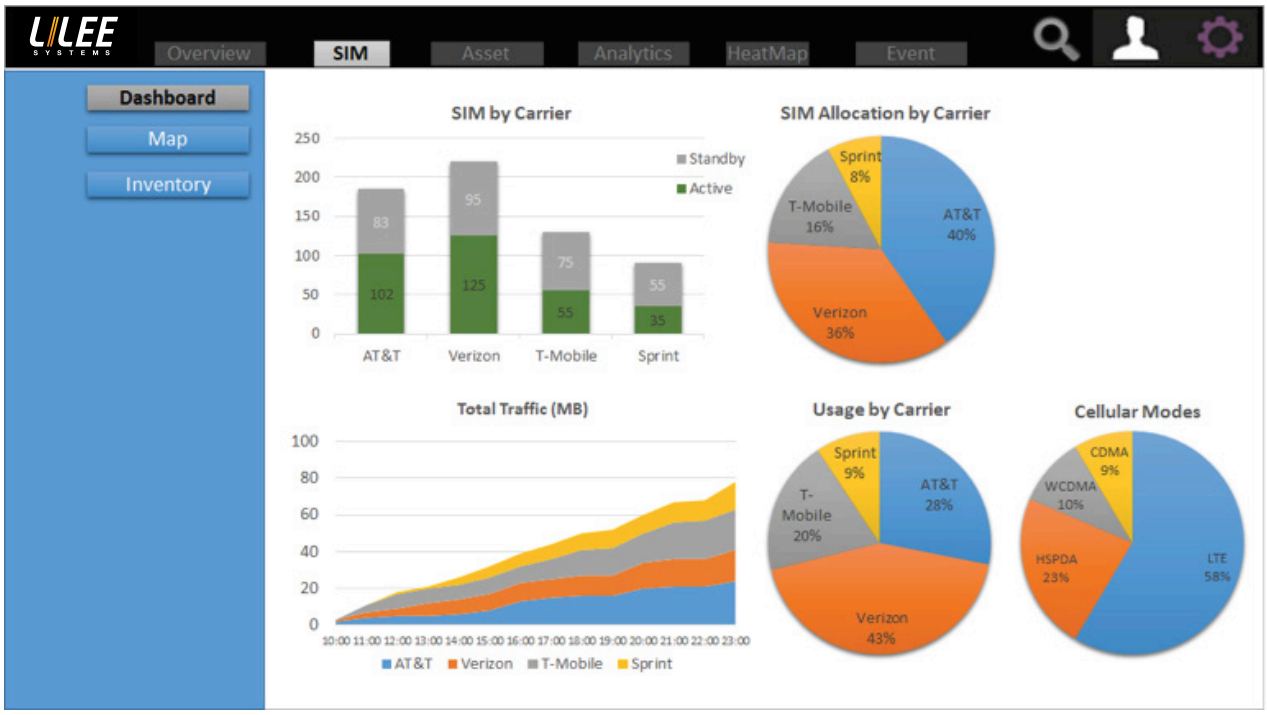


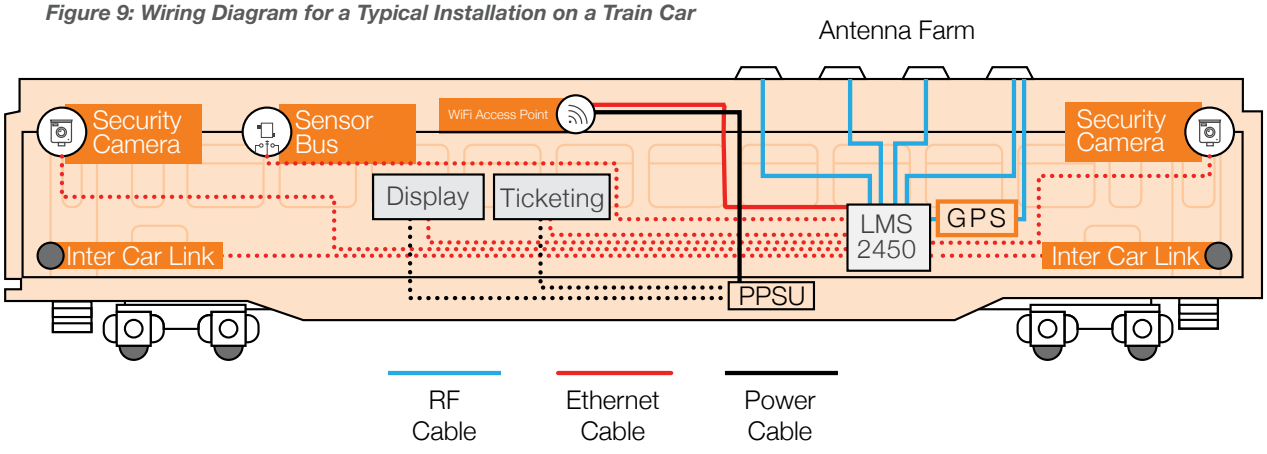
Figure 8 SIM Dashboard

Physical Installation

Requiring a 10 to 30 VDC power source from the vehicle's electrical system, combined with a fanless design and total power consumption of less than 200 Watts, LILEE's on-board systems can be installed practically anywhere on board: overhead compartments, under seats or behind paneling, in luggage storage, even in the engine compartment. For best performance, roof antennas should be used and connected directly to the wireless interface cards outfitted in LMS-2450 or DTS-2000 chassis. For trial purposes, window antennas or antennas mounted inside directly behind the windows can be used, although performance can be impacted if the windows are treated for privacy or sun screening as these treatments typically contain metallic substances. The LMS or DTS systems can be preconfigured before deployment, and remotely updated when new features are available.

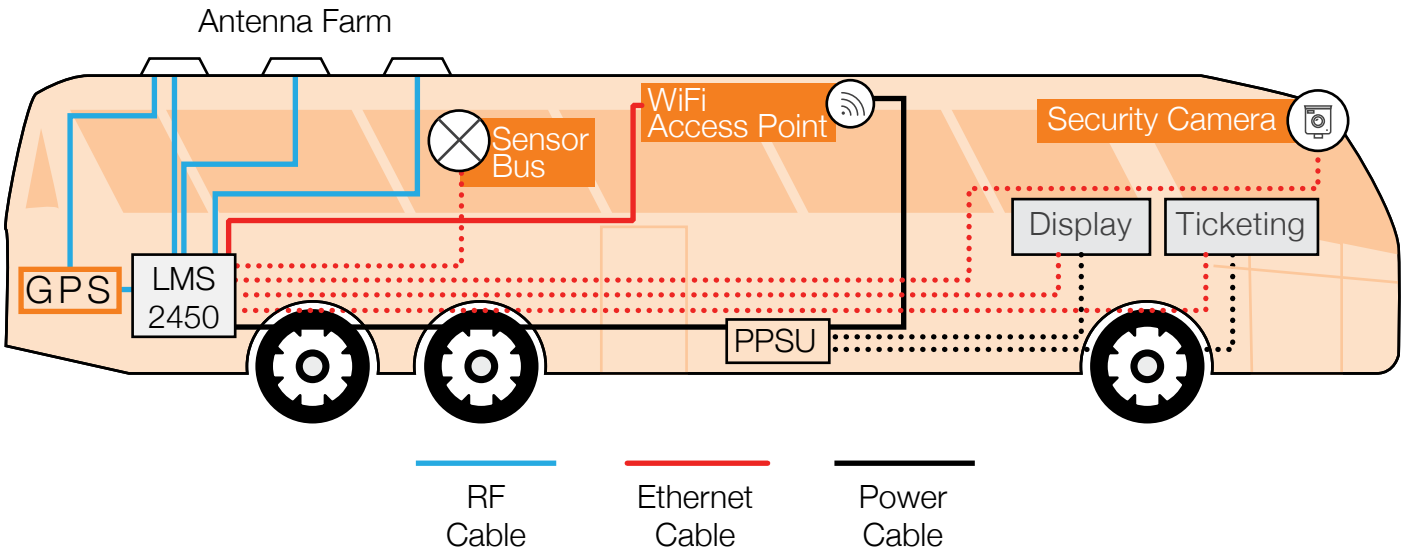
Figures 10 and 11 illustrate a typical installation diagram for deployment of an LMS-2450 on a train car and bus, respectively.

Figure 9: Wiring Diagram for a Typical Installation on a Train Car



The solid lines represent the minimum wiring that needs to be done to connect power, WiFi access point and the antennas. A protected power supply isolates the "Connectivity in Motion" infrastructure from the other electrical components of the carriage, protects the system against power surges and provides a battery back-up when the main power supply is interrupted. This is particularly useful in environments where vehicles cannot idle beyond a minute (e.g., San Francisco) and the system needs to operate continuously even when the engine is shut off.

Figure 10: Wiring Diagram for a Typical Installation on a Bus



Antennas should be connected directly to the network interface cards in the on-board systems avoiding excess wiring and intermediate connectors to reduce signal loss. The antenna farm should be selected to maximize efficiency of the desired network configuration and can contain antennas for LTE access, GPS, WiFi (for in-station/terminal network) and/or trackside radio.

The dotted lines in the diagrams identify auxiliary equipment connected to the LMS-2450 on-board unit via the 6-port Ethernet switch module. Examples include ticketing and pass validation systems, Information displays and security cameras, which can be powered by the switch module's PoE+ ports. As mentioned earlier, these auxiliary systems are an integral part of the business case, and with the ability to become the central communications hub in the train carriage, bus or other vehicle, the LMS-2450 can consolidate all networking requirements and optimize capex and opex. For train applications, LMS-2450 can also accommodate the inter-car communications systems, which can consists of cat 6 GE or wireless interconnects.

The third application worth mentioning is deployment on HyRail vehicles as part of HLCS (HyRail Compliance Limit System), which adds an additional layer of safety to the operation of HyRail vehicles on active mainline tracks. It does so by using Global Positioning Satellites (GPS) to monitor the locations of "on-rail" HyRail vehicles and comparing locations against respective track authorization limits issued to the vehicle.

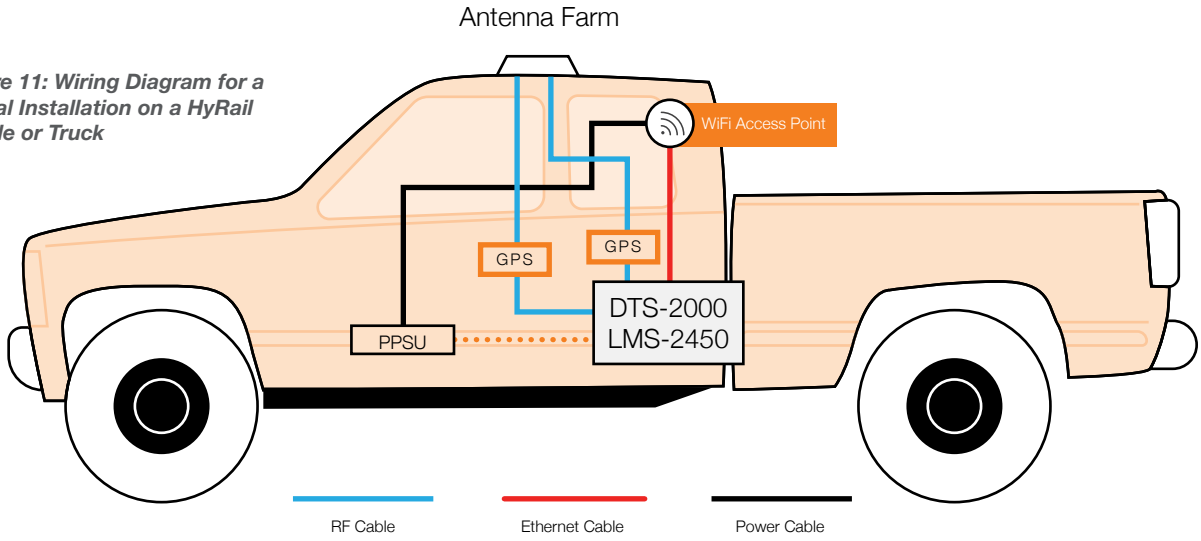


Figure 11: Wiring Diagram for a Typical Installation on a HyRail Vehicle or Truck

This application can typically be supported by the 2-slot DTS-2000. Since it requires high-precision GPS, which occupies one slot, the second slot can be used to provide Internet access to the HyRail crew and potentially other crew members if a WiFi access point is equipped as well. If less accurate GPS is acceptable, a combined LTE+GPS module can be used, doubling the LTE capacity. If more network capacity is desired or there is a need to connect additional equipment, the LMS-2450 should be used and additional antennas need to be mounted.

The configuration depicted in Figure 12 also serves as the basis for emergency vehicles such as police cars, ambulances and fire trucks.

LILEE Company Overview

LILEE SYSTEMS was founded in 2009 by industry leaders with extensive backgrounds in wireless communications, network routing and switching, and software defined radio (SDR). Headquartered in San Jose, we opened a subsidiary office in Taipei, Taiwan in 2010 to establish an engineering center and work more efficiently with our manufacturer in production, testing, and rollouts of various PTC projects.

Founded with the main purpose of providing communication networks to the railroad industry, we shipped our first products in 4Q 2011 into the freight railroad market, seizing the opportunity that emerged with the Congress-mandated deployment of Positive Train Control (PTC) which required wired and wireless networking solutions that were previously nonexistent in the railroad industry.

We recently expanded into the broader transportation market with a solutions portfolio that includes passenger connectivity and other broadband solutions such as safety, security, maintenance and management. Additional markets include First Responders, Homeland Security, Military, and Machine-to-Machine (M2M) communications in the broader Internet of Things (IoT) market.

Our mission is to create ”Connectivity in Motion” by merging multiple wireless connections into a predictable, stable and manageable network. All our hardware and software is manufactured in-house, and our hardware is ruggedized, future-proof and modular. LILEE is the market leader in the connected transportation space, with well-established partner and alliance programs. Our hardware, software and services enable customers to provide applications and services in the growing software defined transportation market.

Since our founding in 2009, LILEE Systems has grown from a staff of less than 10 core engineers and administrative staff to over 110 people. Our team is recognized as leaders in the wireless industry, with core strengths and cross-disciplined backgrounds obtained from careers at Cisco, Juniper, Extreme Networks, AMD, Apple Inc., Aruba Networks, Motorola, Citrix, Fujitsu Network Communications, Safetran Systems Inc., Invensys Rail, and GE Transportation. We are actively participating in the standard bodies in defining next generation wireless architectures and have been Voting Members of both 802.11 WLAN and 802.16 WiMAX for several years. Our executives have many years of engineering, project management and go-to-market experience in the networking industry and in wireless design and development, holding several patents for Software Defined Radio.

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