Signals and Systems
Market Intelligence and Consultancy Solutions

The Public Safety LTE & Mobile Broadband Market: 2012 - 2017

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1 Chapter 1: Introduction

1.1 Executive Summary

For more than 60 years first responders have relied on narrowband Land Mobile Radio (LMR) systems for mission critical voice communications. While many of these dedicated LMR systems generally support basic data applications such as short data messaging, first responders are often compelled to rely on commercial (cellular) mobile broadband networks to support data intensive applications such as bulk multimedia transfers in emergency situations.

However, commercial networks do not meet the availability and resilience requirements for public safety operations, where a single glitch in communications can result in a loss of human lives. Thus public safety agencies worldwide are echoing demands for the deployment of cost effective mobile broadband networks dedicated for public safety usage.

While a number of public safety agencies deployed a combination of private WiMAX and proprietary technology based mobile broadband networks between 2009 and 2011 to support data intensive applications such as video surveillance, it soon became apparent that a solution that is interoperable nationwide and across borders will be necessary enable cooperation among different public safety entities, and to achieve economies of scale.

Considering its thriving ecosystem, spectrum flexibility and performance metrics, public safety organizations worldwide recognize LTE as the de-facto standard for mobile broadband.
With spectrum already allocated, public safety agencies in the Middle East and the U.S have already begun to operate private LTE networks.

Signals and Systems Telecom estimates that the installed base of private public safety LTE base stations (eNode Bs) will reach nearly 80,000 globally by the end of 2017, following a CAGR of nearly 80% between 2012 and 2017, and serve more than 1 Million private public safety LTE subscribers.

However, it is important to note that, LTE will be one of the most complex technical changes the public safety communications industry will ever witness which will bring a new set of challenges in its own right. Furthermore, spectrum, regulatory and budgetary issues in certain regions such as Europe will delay large scale deployments until the end of 2014.

Nonetheless, service prioritization partnerships with commercial LTE network carriers will create an ecosystem for operating public safety devices over commercial LTE networks during this transition period. We estimate that public safety LTE device shipments over both private and commercial networks will account for nearly $1 Billion in annual revenue by the end of 2017.

This report presents an in-depth assessment of the global public safety LTE market, besides considering the wider LMR and mobile broadband industries. In addition to covering the business case, the challenges, spectrum allocation strategies, the industry’s roadmap, deployment case studies, vendor strategies, and the application ecosystem for public safety LTE, the report also presents comprehensive forecasts for mobile broadband, LMR and public safety LTE subscriptions from 2011 till 2017.
Also covered are public safety LTE service revenues as well as device and infrastructure (eNodeB base stations) shipments and associated revenues.

The report comes with an associated XLS datasheet covering quantitative data from all figures presented within the report, as well as a list and associated details of 26 global private public safety LTE network deployments (as of November 2012).
1.2 Topics Covered

The report covers the following topics:

- Business case for public safety LTE and mobile broadband services
- Key benefits of public safety LTE and mobile broadband
- Challenges to public safety LTE adoption
- Agency, carrier and vendor commitments to public safety LTE
- List of public safety LTE commitments worldwide
- Public safety LTE deployment case studies
- The industry roadmap for the public safety mobile broadband in general and the LTE market in particular
- Public safety LTE deployment and funding models
- Spectrum allocation for public safety LTE
- Public safety LTE applications ecosystem
- Public safety LTE vendor assessment and strategies
- Subscriptions, operating service revenue, unit shipment and revenue forecasts for (private and commercial) public safety LTE, mobile broadband (WiMAX, WCDMA, HSPA, EV-DO) and LMR (TETRA, TEDs, P25, Tetrapol, dPMR, PDT, Analogue Radio) user devices and infrastructure, globally and by region
1.3 **Key Questions Answered**

The report answers to the following key questions.

- Which countries will be the first to deploy and adopt LTE for public safety applications?
- How many private public safety LTE base stations (eNodeBs) and user devices will ship in 2017, and how will these compare to the wider commercial LTE market?
- How will the VoLTE ecosystem evolve and how will this impact PTT and voice services for public safety LTE?
- How much revenue will the public safety LTE application ecosystem generate in 2017?
- How will public safety LTE device shipments vary by form factor (Handportable LMR Terminals, Mobile In-Vehicle LMR Modems, Notebook PCs, USB Dongles, Smartphones, PDAs) overtime?
- Is a 10 MHz bandwidth for LTE realistically feasible to support public safety applications?
- Does Huawei stand a chance in the public safety LTE market following its ban in the U.S?
- How many first responders rely on private and commercial mobile broadband networks for their daily tasks?
- How will private and commercial public safety LTE subscriptions compare in 2017?
- How will public safety LTE subscriptions compare to other mobile broadband technologies such as WiMAX and HSPA in 2017?
1.4 **Methodology**

The contents of this report have been accumulated by combining information attained from a range of primary and secondary research sources. In addition to analyzing official corporate announcements, policy documents, media reports, and industry statements, Signals and Systems Telecom sought opinions from leading industry players within the public safety LTE and mobile broadband market to derive an unbiased, accurate and objective mix of market trends, forecasts and the future prospects of the public safety LTE and mobile broadband industry between 2011 and 2017.

1.5 **Target Audience**

The report targets the following audience.

- Government/military/public safety agencies
- Public safety communications integrators
- Mobile network carriers
- Mobile network Infrastructure, handset and sub-component vendors
- Application developers
- Investment firms
1.6 **Companies Mentioned**

The following companies have been reviewed, discussed or mentioned in the report:

- 3GPP
- Abu Dhabi Police
- Airspan Networks
- Airwave Solutions
- Alcatel-Lucent
- Amdocs
- Apple
- ARASKOM
- ASTRID
- AT&T Mobility
- Atlas Telecom
- ACMA (Australian Communications and Media Authority)
- Aviat Networks
- BAE Systems
- BayWEB (Bay Area Wireless Enhanced Broadband system)
- Brazilian Army
- Bridgewater (Now part of Bridgewater)
- Bridgewater Systems Corporation
- Cassidian
- Catalyst Communications
- China Mobile
- Cisco
- Covia Labs
- Dubai Police
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2012 - 2016
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- Dutch Police
- EADS
- Eircom
- Ericsson
- Etherstack
- ETSI (European Telecommunications Standards Institute)
- EENA (European Emergency Number Association)
- FCC (Federal Communications Commission)
- First Responder Network Authority ('FirstNet')
- General Dynamics
- Harris
- Henggeler Computer Consultants
- Hong Kong Police Force
- HTC
- Huawei
- Hytera
- Hytera Mobilfunk GmbH (Formely Rohde & Schwarz PMR Division)
- InterAct
- ITU (International Telecommunications Union)
- UIC (International Union of Railways)
- Intrado
- IP Wireless (Part of General Dynamics)
- jNetX (Part of Amdocs)
- Kenwood
- KPN
- Ktech Corporation
- LA-RICS (Los Angeles Regional Interoperable Communications System)
• LG Electronics
• LG Uplus
• Lockheed Martin
• Longshine Information Technology Company
• MetroPCS
• Mission Critical Partners
• Motorola Mobility
• Motorola Solutions
• MX Telecom
• NTIA (National Telecommunications and Information Administration)
• NDS Group
• Net4Mobility
• NetMotion
• New York Police Department
• Nokia
• Nokia Siemens Networks
• NPSTC (National Public Safety Telecommunications Council)
• Oman Royal Office
• Panasonic
• Pikewerks Corporation (Part of Raytheon)
• Police Federation of Australia
• PSCR (Public Safety Communications Research)
• Putian
• Qatar Armed Forces
• Qatar MOI
• Qualcomm
• Raytheon
Reality Mobile
RIM (Research in Motion)
Royal Canadian Mounted Police
Rohde & Schwarz
Samsung
Sao Paulo Military Police
Sapura Technologies
SANG (Saudi Arabian National Guard)
Saudi MOI
Seattle Fire Department
SELEX Elsag
Sepura
Shanghai Police
Sierra Wireless
SK Telecom
Sony
St. Petersburg Police Department
Tait Communications
TCS (TeleCommunication Systems)
Televate, LLC
TCCA (TETRA and Critical Communications Association)
TETRA Ireland Communications
TetraNed
Thales
T-Mobile
Turkish National Police Force
Twisted Pair Solutions
• U.S Army
• U.S Marine Corps
• U.S. Department of Defense
• U.S. Department of Homeland Security
• Verizon Wireless
• Vodafone
• West Australian Police
• ZTE
In all the mentioned scenarios, the public always expects government authorities to respond with an immediate and effective action to safeguard the human lives and restoring the services (e.g., roads, electricity, communication, etc.) at the emergency site.

2.1.1 LMR Market Size

The primary means of instant communications with field personnel has been narrowband Land Mobile Radio or simply LMR for the last 60 years with a subscriptions base of more than 40 Million users, which is expected to grow to over 45 Million subscriptions by the end of 2017.

![Figure 1: Global Land Mobile Radio (LMR) Subscriptions by Technology: 2011 – 2017 (Millions)](image)

Source: Signals and Systems Telecom
2.6 Public Safety LTE Technology & Architecture

In the context of a public safety network deployment, LTE can follow a number of deployment models, however, the inherit architecture would remain the same.

Figure 5: Public Safety LTE Network Architecture

Source: Signals and Systems Telecom
Chapter 4: Public Safety LTE and Mobile Broadband Applications Ecosystem

In this Chapter we review the public safety LTE applications ecosystem, firstly by discussing the applications of public safety LTE and then by reviewing the future prospects of the market.

4.1 Mobile Video

LTE makes it possible for first responders to practically use mobile video surveillance applications.

Figure 8: Global Mobile Video Surveillance Market: 2011 – 2017 ($ Millions)

Source: Signals and Systems Telecom

The market for mobile video surveillance is already expected to account for $1 Billion in global revenues and further expected to grow at a CAGR of
7 Chapter 7: Market Analysis and Forecasts

This chapter presents quantitative market analysis and forecasts for the public safety LTE, mobile broadband and LMR market, at both a global and regional level.

7.1 The Global Public Safety Mobile Broadband Market

Driven by the growing demand for bandwidth intensive applications such as large file/multimedia transfers, AVLS and mobile video, public safety agencies are taking an ever increasing interest in mobile broadband technologies.

7.1.1 First Responder Data Subscriptions over Public (Commercial) Cellular Networks

At present, we estimate at more than 13 Million public safety personnel utilize mobile broadband over public carrier networks to assist in their day to day activities.

The number is expected to increase drastically at a CAGR of nearly X% between 2012 and 2017, eventually accounting for nearly X Million subscriptions worldwide in 2017, which represents as many as X% of all public safety LMR subscriptions worldwide.

However, due to the their relatively slow evolution cycle, and the planned deployment of private LTE networks for public safety applications, data subscriptions on LMR networks will only account for X Million by the end of 2017.