

The LTE, LTE-Advanced & 5G Ecosystem: 2016 – 2030 – Infrastructure, Devices, Operator Services, Verticals, Strategies & Forecasts

<https://marketpublishers.com/r/LBACE4E6879EN.html>

Date: September 2016

Pages: 399

Price: US\$ 2,500.00 (Single User License)

ID: LBACE4E6879EN

Abstracts

As a natural upgrade path for mobile operators from the previously detached GSM, CDMA and TD-SCDMA ecosystems, LTE has emerged as the first truly global mobile communications standard. Commonly marketed as the “4G” standard, LTE promises to provide higher data rates and lower latency at a much lower TCO (Total Cost of Ownership) than 3G technologies.

The TCO and performance is further enhanced by deployment of small cells and the LTE-Advanced standard, which improves performance and data rates using features such as the aggregation of carriers, interference management and advanced antenna techniques.

With over 500 fully commercial network launches, LTE has become a mainstream technology, and a number of mobile operators have already deployed LTE-Advanced technology. SNS Research estimates that LTE service revenues will account for over \$600 Billion in 2016. The figure is further expected to grow at a CAGR of more than 5% over the next four years.

While LTE and LTE-Advanced deployments are still underway, mobile operators and vendors have already embarked on R&D initiatives to develop so-called “5G” networks, with a vision of commercialization by 2020. 5G is essentially a revolutionary paradigm shift in wireless networking to support the throughput, latency, and scalability requirements of future use cases such as extreme bandwidth augmented reality applications and connectivity management for Billions of M2M (Machine to Machine) devices.

By 2020, LTE and 5G infrastructure investments are expected to account for a market worth \$32 Billion. This includes spending on distributed macrocells, small cells, C-RAN architecture equipment and mobile core solutions.

The “LTE, LTE-Advanced & 5G Ecosystem: 2016 – 2030 – Infrastructure, Devices, Operator Services, Verticals, Strategies & Forecasts” report presents an in-depth assessment of the LTE, LTE-Advanced and 5G ecosystem including key market drivers, challenges, technologies, service revenue potential, deployment strategies, vertical market opportunities, mobile operator case studies, R&D initiatives, future roadmap, value chain, vendor assessment and market share. The report also tracks revenue and shipments for both infrastructure and devices, along with subscription and service revenue from 2016 through to 2030.

The report comes with an associated Excel datasheet suite covering quantitative data from all numeric forecasts presented in the report.

Contents

1 CHAPTER 1: INTRODUCTION

- 1.1 Executive Summary
- 1.2 Topics Covered
- 1.3 Forecast Segmentation
- 1.4 Key Questions Answered
- 1.5 Key Findings
- 1.6 Methodology
- 1.7 Target Audience
- 1.8 Companies & Organizations Mentioned

2 CHAPTER 2: LTE & LTE-ADVANCED ECOSYSTEM

- 2.1 Mobile Broadband Growth
- 2.2 LTE Technology & Market Momentum
 - 2.2.1 What is LTE?
 - 2.2.2 Architectural Overview & Components
 - 2.2.3 Underlying Technologies & Key Performance Metrics of LTE
 - 2.2.4 Choice of Spectrum Bands
 - 2.2.5 Overtaking WiMAX as the Dominant 4G Standard
 - 2.2.6 Providing an Upgrade Path for Both 3GPP and 3GPP2 Mobile Operators
 - 2.2.7 An Established Market: Over 500 Commercial Deployments
 - 2.2.8 Motivation for LTE-Advanced
- 2.3 What is LTE-Advanced?
 - 2.3.1 Carrier Aggregation
 - 2.3.2 Optimizing Small Cell Performance
 - 2.3.3 eICIC (Enhanced Inter-Cell Interference Coordination)
 - 2.3.4 Higher Order MIMO
 - 2.3.5 CoMP (Coordinated Multipoint)
 - 2.3.6 Unlicensed Spectrum
- 2.4 Key Market Drivers: What Factors Are Driving LTE and LTE-Advanced Investments?
 - 2.4.1 Growing Traffic Capacity Demands
 - 2.4.2 Competitive Operator Landscape: Seizing the \$1.3 Trillion Opportunity
 - 2.4.3 LTE Value Proposition: Network Performance and Cost Savings
 - 2.4.4 Flexible Spectrum & Spectral Efficiency
 - 2.4.5 Address 2G/3G Legacy Network Congestion

- 2.4.6 Seamless Interoperability with Legacy Networks
- 2.4.7 Strategic Choice for CDMA & WiMAX Operators: Join Mainstream Ecosystem
- 2.4.8 Bringing Broadband to the Masses: Enabling Cheap Mobile Broadband

Connectivity

- 2.4.9 Growing Interest from Vertical Markets
- 2.4.10 Vendor Endorsement
- 2.4.11 Narrow Competition from Competing Standards

2.5 Challenges & Inhibitors to the Ecosystem

- 2.5.1 Time to Market
- 2.5.2 Operator CapEx
- 2.5.3 Spectrum Congestion
- 2.5.4 Impact of RAN Sharing
- 2.5.5 Social, Political, Economic and Environmental Risks
- 2.5.6 Committing to Initial Investments
- 2.5.7 Roaming Challenges
- 2.5.8 Voice Support: VoLTE Comes to Rescue
- 2.5.9 Investment Returns: The OTT Threat
- 2.5.10 Backhaul Capacity Limitations

3 CHAPTER 3: LTE & LTE-ADVANCED DEPLOYMENT STRATEGIES

3.1 Antenna & RAN Strategies

- 3.1.1 Single RAN vs. Overlay Deployment
- 3.1.2 Adopting an RRH and FTTA Design
- 3.1.3 Adopting a C-RAN Architecture
- 3.1.4 Optimal Antenna Selection
- 3.1.5 Interference Limitation Strategies
- 3.1.6 Managing Co-Existence with Legacy 3G/2G RF Sites

3.2 EPC/Mobile Core Strategies

- 3.2.1 Integration of Functions & Virtualization
- 3.2.2 Deployment Architecture Choices
- 3.2.3 Supporting Legacy Networks
- 3.2.4 Integration with IMS
- 3.2.5 Embedding DPI for Policy Enforcement & Network Optimization

3.3 LTE Backhaul & Fronthaul Strategies

- 3.3.1 Architectural Impact of X2 Interface
- 3.3.2 LTE-Advanced Requirements
- 3.3.3 Growing Backhaul Capacity & Latency Requirements
- 3.3.4 IPsec

- 3.3.5 Technology Options: Fiber, Microwave & Millimeter Wave
- 3.3.6 Developing a HetNet Backhaul Strategy
- 3.3.7 Synchronization and Timing
- 3.3.8 Backhaul Sharing
- 3.3.9 Fronthaul Options: Fiber vs. Wireless

4 CHAPTER 4: OPERATOR SERVICE MODELS – MONETIZING LTE

- 4.1 LTE as an Enhanced Data Offering
 - 4.1.1 Driving Consumer Uptake of LTE
 - 4.1.2 Enterprise Specific LTE Plans
- 4.2 VoLTE & RCS: Enabling Integrated Voice, Video & IM Services
 - 4.2.1 Pricing Strategies
 - 4.2.2 Layered Service Offering for Enterprises
- 4.3 Fixed Broadband Alternative
- 4.4 M2M Connectivity
 - 4.4.1 Capitalizing on LTE's Performance Characteristics
 - 4.4.2 Impact of Decommissioning 2G/3G Networks
- 4.5 Wholesale Services
- 4.6 LTE Broadcast & eMBMS: Is there a Business Case Yet?

5 CHAPTER 5: UNLICENSED LTE NETWORKS

- 5.1 What is Unlicensed LTE?
- 5.2 Key Technologies
 - 5.2.1 LTE-U
 - 5.2.2 LAA (License Assisted Access)
 - 5.2.3 LWA (LTE - Wi-Fi Link Aggregation)
 - 5.2.4 MPTCP Based LTE - Wi-Fi Aggregation
 - 5.2.5 MulteFire
- 5.3 Commercial Prospects
- 5.4 Mobile Operator Commitments
- 5.5 Wi-Fi Community Concerns

6 CHAPTER 6: EVOLVING 5G ECOSYSTEM

- 6.1 What is 5G?
- 6.2 5G Requirements
 - 6.2.1 Data Volume

- 6.2.2 Throughput
- 6.2.3 Response Time & Latency
- 6.2.4 Device Density
- 6.2.5 Availability & Coverage
- 6.2.6 Battery Life
- 6.2.7 Energy Saving & Cost Reduction
- 6.3 Development Timeline
- 6.4 5G Market Drivers
 - 6.4.1 Why the Need for a 5G Standard?
 - 6.4.2 Improving Spectrum Utilization
 - 6.4.3 Advances in Air Interface Transmission Schemes
 - 6.4.4 Gigabit Wireless Connectivity: Supporting Future Services
 - 6.4.5 Moving Towards the IoT (Internet of Things): Increasing Device Density
 - 6.4.6 Towards a Flatter Network Architecture
- 6.5 Challenges & Inhibitors to 5G
 - 6.5.1 Skepticism
 - 6.5.2 Standardization Challenges: Too Many Stakeholders
 - 6.5.3 Spectrum Regulation & Complexities
 - 6.5.4 Massive MIMO, Beamforming & Antenna Technology Issues
 - 6.5.5 Higher Frequencies Mean New Infrastructure
 - 6.5.6 Complex Performance Requirements
 - 6.5.7 Energy Efficiency & Technology Scaling
- 6.6 5G Applications & Use Cases
 - 6.6.1 Extreme Bandwidth Applications: Video, Internet Gaming & Augmented Reality
 - 6.6.2 MTC/M2M, IoT & Ubiquitous Communications
 - 6.6.2.1 Short-burst Traffic
 - 6.6.3 Vertical Industries & Safety Critical Domains

7 CHAPTER 7: ENABLING TECHNOLOGIES FOR 5G

- 7.1 Key Technologies & Concepts
 - 7.1.1 Air Interface: Waveform Options
 - 7.1.2 Millimeter Wave Radio Access
 - 7.1.3 Massive MIMO
 - 7.1.4 Phased Array Antennas
 - 7.1.5 Beamforming
 - 7.1.6 D2D (Device to Device) Communications
 - 7.1.7 Self-Backhauling & Mesh Networking
 - 7.1.8 Cognitive Radio & Spectrum Sensing

- 7.1.9 Unlicensed Spectrum Usage
- 7.1.10 LSA (Licensed Shared Access)
- 7.1.11 Spectrum Aggregation
- 7.1.12 Integration of VLC (Visible Light Communication)
- 7.2 Complimentary Technologies
 - 7.2.1 NFV & SDN
 - 7.2.2 HetNet & C-RAN Architecture
 - 7.2.3 Cloud RAN
 - 7.2.4 MEC (Mobile Edge Computing)
 - 7.2.5 Drones & Satellites
 - 7.2.5.1 Satellite Integration in 5G Networks
 - 7.2.5.2 Google and Facebook's Drone Ambitions
 - 7.2.5.3 Interest from Mobile Operators
- 7.3 How Much is Being Invested in 5G R&D
- 7.4 R&D Investments by Technology
 - 7.4.1 New Waveforms & Millimeter Wave Radio Access
 - 7.4.2 MIMO, Beamforming & Antenna Technologies
 - 7.4.3 Interference & Spectrum Management
 - 7.4.4 C-RAN, Virtualization & Other Technologies

8 CHAPTER 8: VERTICAL MARKETS FOR LTE & 5G NETWORKS

- 8.1 Vertical Market Opportunities: Capitalizing on LTE & 5G
- 8.2 Private LTE & 5G Network Investments
- 8.3 Key Vertical Markets
 - 8.3.1 Automotive & Transportation
 - 8.3.2 Energy & Utilities
 - 8.3.3 Healthcare
 - 8.3.4 Public Safety
 - 8.3.5 Military
 - 8.3.6 Mining
 - 8.3.7 Smart Cities
 - 8.3.8 Other Sectors
- 8.4 Vertical Market Case Studies
 - 8.4.1 Abu Dhabi Police
 - 8.4.2 Beach Energy
 - 8.4.3 Busan Transportation Corporation
 - 8.4.4 China Southern Power Grid
 - 8.4.5 Harris County

- 8.4.6 Qatar MOI (Ministry of Interior)
- 8.4.7 South Korea's National Disaster Safety Communications Network
- 8.4.8 Tampnet
- 8.4.9 TEN (Texas Energy Network)
- 8.4.10 U.S. Navy

9 CHAPTER 9: INDUSTRY ROADMAP & VALUE CHAIN

9.1 Industry Roadmap

- 9.1.1 2016 - 2020: Large Scale LTE-Advanced Rollouts
- 9.1.2 2020 - 2025: The Cloud RAN Era - Moving Towards C-RAN and Virtualization
- 9.1.3 2025 - 2030: Continued Investments with 5G Network Rollouts

9.2 Value Chain

9.3 Embedded Technology Ecosystem

- 9.3.1 Chipset Developers
- 9.3.2 Embedded Component/Software Providers

9.4 Device Ecosystem

- 9.4.1 Mobile Device OEMs

9.5 RAN Ecosystem

- 9.5.1 Macrocell RAN OEMs
- 9.5.2 Pure-Play Small Cell OEMs
- 9.5.3 Wi-Fi Access Point OEMs
- 9.5.4 DAS & Repeater Solution Providers
- 9.5.5 C-RAN Solution Providers
- 9.5.6 Other Technology Providers

9.6 Transport Networking Ecosystem

- 9.6.1 Backhaul & Fronthaul Solution Providers

9.7 Mobile Core Ecosystem

- 9.7.1 Mobile Core Solution Providers

9.8 Connectivity Ecosystem

- 9.8.1 Mobile Operators
- 9.8.2 Wi-Fi Connectivity Providers
- 9.8.3 SCaaS (Small Cells as a Service) Providers

9.9 SON Ecosystem

- 9.9.1 SON Solution Providers

9.10 SDN & NFV Ecosystem

- 9.10.1 SDN & NFV Providers

10 CHAPTER 10: VENDOR & OPERATOR LANDSCAPE

- 10.1 LTE Infrastructure
 - 10.1.1 Accelleran
 - 10.1.2 Adax
 - 10.1.3 Affirmed Networks
 - 10.1.4 Airspan Networks
 - 10.1.5 Altiostar Networks
 - 10.1.6 Arcadyan Technology Corporation
 - 10.1.7 Argela
 - 10.1.8 ARItel
 - 10.1.9 Artemis Networks
 - 10.1.10 ASOCS
 - 10.1.11 Athonet
 - 10.1.12 Axxcelera Broadband Wireless
 - 10.1.13 BaiCells
 - 10.1.14 Brocade Communications Systems
 - 10.1.15 Casa Systems
 - 10.1.16 Cisco Systems
 - 10.1.17 CommScope
 - 10.1.18 Contela
 - 10.1.19 Core Network Dynamics
 - 10.1.20 Datang Mobile
 - 10.1.21 Ericsson
 - 10.1.22 Fujitsu
 - 10.1.23 Gemtek Technology Company
 - 10.1.24 GENBAND
 - 10.1.25 General Dynamics Mission Systems
 - 10.1.26 Google
 - 10.1.27 GWT (Global Wireless Technologies)
 - 10.1.28 Hitachi
 - 10.1.29 Huawei
 - 10.1.30 ip.access
 - 10.1.31 JRC (Japan Radio Company)
 - 10.1.32 Juni Global
 - 10.1.33 Kumu Networks
 - 10.1.34 Lemko Corporation
 - 10.1.35 Luminata Wireless
 - 10.1.36 Mitel Networks Corporation
 - 10.1.37 NEC Corporation

- 10.1.38 New Postcom Equipment Company
- 10.1.39 Nokia Networks
- 10.1.40 Nutaq
- 10.1.41 Oceus Networks
- 10.1.42 Phluido
- 10.1.43 Polaris Networks
- 10.1.44 Potevio (China Potevio Company)
- 10.1.45 Quanta Computer
- 10.1.46 Qucell
- 10.1.47 Quortus
- 10.1.48 Redline Communications
- 10.1.49 Samji Electronics Company
- 10.1.50 Samsung Electronics
- 10.1.51 SerComm Corporation
- 10.1.52 SK Telesys
- 10.1.53 SpiderCloud Wireless
- 10.1.54 Star Solutions
- 10.1.55 Sunnada (Fujian Sunnada Communication Company)
- 10.1.56 Tecore
- 10.1.57 TEKTELIC Communications
- 10.1.58 Telrad Networks
- 10.1.59 Telum
- 10.1.60 WNC (Wistron NeWeb Corporation)
- 10.1.61 Z-com (ZDC Wireless)
- 10.1.62 ZTE
- 10.1.63 ZyXEL Communications Corporation
- 10.2 LTE Devices
 - 10.2.1 Accelerated Concepts
 - 10.2.2 Apple
 - 10.2.3 ASUS (ASUSTeK Computer)
 - 10.2.4 BBK Electronics Corporation
 - 10.2.5 Belkin International
 - 10.2.6 BlackBerry
 - 10.2.7 Coolpad
 - 10.2.8 D-Link Corporation
 - 10.2.9 Dovado
 - 10.2.10 Fujitsu
 - 10.2.11 Gionee
 - 10.2.12 HTC Corporation

- 10.2.13 Huawei
- 10.2.14 Kyocera Corporation
- 10.2.15 Lenovo
- 10.2.16 LG Electronics
- 10.2.17 Meizu
- 10.2.18 Microsoft Corporation
- 10.2.19 NEC Mobile Communications
- 10.2.20 Netgear
- 10.2.21 Novatel Wireless
- 10.2.22 Panasonic Corporation
- 10.2.23 Pantech
- 10.2.24 Samsung Electronics
- 10.2.25 Sharp Corporation
- 10.2.26 Sierra Wireless
- 10.2.27 Sony Mobile Communications
- 10.2.28 TCL Communication
- 10.2.29 Xiaomi
- 10.2.30 ZTE
- 10.3 LTE Operators
 - 10.3.1 AT&T
 - 10.3.2 China Mobile
 - 10.3.3 EE
 - 10.3.4 KDDI Corporation
 - 10.3.5 KT Corporation
 - 10.3.6 LG Uplus
 - 10.3.7 NTT DoCoMo
 - 10.3.8 SK Telecom
 - 10.3.9 SoftBank Group
 - 10.3.10 Verizon Communications

11 CHAPTER 11: MARKET ANALYSIS & FORECASTS

- 11.1 Global LTE Infrastructure Shipments & Revenue
 - 11.1.1 Submarket Segmentation
 - 11.1.2 Regional Segmentation
 - 11.1.3 LTE Distributed Macrocell Base Stations
 - 11.1.3.1 FDD vs. TDD Segmentation
 - 11.1.3.2 FDD LTE Macrocell Base Stations
 - 11.1.3.3 TD-LTE Macrocell Base Stations

- 11.1.3.4 Regional Segmentation
- 11.1.4 LTE Small Cells
 - 11.1.4.1 FDD vs. TDD Segmentation
 - 11.1.4.2 FDD LTE Small Cells
 - 11.1.4.3 TD-LTE Small Cells
 - 11.1.4.4 Form Factor Segmentation
 - 11.1.4.5 LTE Femtocells
 - 11.1.4.6 LTE Picocells
 - 11.1.4.7 LTE Microcells
 - 11.1.4.8 Use Case Segmentation
 - 11.1.4.9 Residential LTE Small Cells
 - 11.1.4.10 Enterprise LTE Small Cells
 - 11.1.4.11 Urban LTE Small Cells
 - 11.1.4.12 Rural & Suburban LTE Small Cells
 - 11.1.4.13 Deployment Model Segmentation
 - 11.1.4.14 Indoor LTE Small Cells
 - 11.1.4.15 Outdoor LTE Small Cells
 - 11.1.4.16 Regional Segmentation
- 11.1.5 LTE C-RAN Architecture Infrastructure
 - 11.1.5.1 Submarket Segmentation
 - 11.1.5.2 LTE RRH
 - 11.1.5.3 Deployment Model Segmentation
 - 11.1.5.4 Indoor LTE RRH
 - 11.1.5.5 Outdoor LTE RRH
 - 11.1.5.6 LTE C-RAN BBU
 - 11.1.5.7 Regional Segmentation
- 11.1.6 EPC
 - 11.1.6.1 Regional Segmentation
- 11.2 Global 5G Infrastructure Shipments & Revenue
 - 11.2.1 Submarket Segmentation
 - 11.2.2 Regional Segmentation
 - 11.2.3 5G Distributed Macrocell Base Stations
 - 11.2.4 5G Small Cells
 - 11.2.5 5G C-RAN Architecture Infrastructure
 - 11.2.5.1 Submarket Segmentation
 - 11.2.5.2 5G RRH
 - 11.2.5.3 5G C-RAN BBU
 - 11.2.6 5G Mobile Core
- 11.3 Global LTE Device Shipments & Revenue

- 11.3.1 FDD vs. TDD Segmentation
 - 11.3.1.1 FDD LTE Devices
 - 11.3.1.2 TD-LTE Devices
- 11.3.2 Form Factor Segmentation
 - 11.3.2.1 Handsets
 - 11.3.2.2 Tablets
 - 11.3.2.3 Embedded M2M Modules
 - 11.3.2.4 USB Dongles
 - 11.3.2.5 Routers
- 11.3.3 Regional Segmentation
- 11.4 Global 5G Device Shipments & Revenue
 - 11.4.1 Form Factor Segmentation
 - 11.4.1.1 Handsets
 - 11.4.1.2 Tablets
 - 11.4.1.3 Embedded M2M Modules
 - 11.4.1.4 USB Dongles
 - 11.4.1.5 Routers
 - 11.4.2 Regional Segmentation
- 11.5 Global LTE Subscriptions & Service Revenue
 - 11.5.1 FDD vs. TDD Segmentation
 - 11.5.1.1 FDD LTE Subscriptions
 - 11.5.1.2 TD-LTE Subscriptions
 - 11.5.2 Regional Segmentation
- 11.6 Global 5G Subscriptions & Service Revenue
 - 11.6.1 Regional Segmentation
- 11.7 Asia Pacific
 - 11.7.1 LTE Infrastructure
 - 11.7.2 LTE Distributed Macrocell Base Stations
 - 11.7.3 LTE Small Cells
 - 11.7.4 LTE C-RAN Architecture Infrastructure
 - 11.7.5 EPC
 - 11.7.6 5G Infrastructure
 - 11.7.7 LTE Devices
 - 11.7.8 5G Devices
 - 11.7.9 LTE Subscriptions & Service Revenue
 - 11.7.10 5G Subscriptions & Service Revenue
- 11.8 Eastern Europe
 - 11.8.1 LTE Infrastructure
 - 11.8.2 LTE Distributed Macrocell Base Stations

- 11.8.3 LTE Small Cells
- 11.8.4 LTE C-RAN Architecture Infrastructure
- 11.8.5 EPC
- 11.8.6 5G Infrastructure
- 11.8.7 LTE Devices
- 11.8.8 5G Devices
- 11.8.9 LTE Subscriptions & Service Revenue
- 11.8.10 5G Subscriptions & Service Revenue
- 11.9 Latin & Central America
 - 11.9.1 LTE Infrastructure
 - 11.9.2 LTE Distributed Macrocell Base Stations
 - 11.9.3 LTE Small Cells
 - 11.9.4 LTE C-RAN Architecture Infrastructure
 - 11.9.5 EPC
 - 11.9.6 5G Infrastructure
 - 11.9.7 LTE Devices
 - 11.9.8 5G Devices
 - 11.9.9 LTE Subscriptions & Service Revenue
 - 11.9.10 5G Subscriptions & Service Revenue
- 11.10 Middle East & Africa
 - 11.10.1 LTE Infrastructure
 - 11.10.2 LTE Distributed Macrocell Base Stations
 - 11.10.3 LTE Small Cells
 - 11.10.4 LTE C-RAN Architecture Infrastructure
 - 11.10.5 EPC
 - 11.10.6 5G Infrastructure
 - 11.10.7 LTE Devices
 - 11.10.8 5G Devices
 - 11.10.9 LTE Subscriptions & Service Revenue
 - 11.10.10 5G Subscriptions & Service Revenue
- 11.11 North America
 - 11.11.1 LTE Infrastructure
 - 11.11.2 LTE Distributed Macrocell Base Stations
 - 11.11.3 LTE Small Cells
 - 11.11.4 LTE C-RAN Architecture Infrastructure
 - 11.11.5 EPC
 - 11.11.6 5G Infrastructure
 - 11.11.7 LTE Devices
 - 11.11.8 5G Devices

- 11.11.9 LTE Subscriptions & Service Revenue
- 11.11.10 5G Subscriptions & Service Revenue
- 11.12 Western Europe
 - 11.12.1 LTE Infrastructure
 - 11.12.2 LTE Distributed Macrocell Base Stations
 - 11.12.3 LTE Small Cells
 - 11.12.4 LTE C-RAN Architecture Infrastructure
 - 11.12.5 EPC
 - 11.12.6 5G Infrastructure
 - 11.12.7 LTE Devices
 - 11.12.8 5G Devices
 - 11.12.9 LTE Subscriptions & Service Revenue
 - 11.12.10 5G Subscriptions & Service Revenue

12 CHAPTER 12: INFRASTRUCTURE, DEVICES, OPERATOR SERVICES & VERTICALS SUMMARY

- 12.1 Infrastructure
 - 12.1.1 Commercial Availability
 - 12.1.2 RAN Vendor Share: Who Leads the Market?
 - 12.1.3 The Outlook for Tier 2 Vendors: Samsung and Fujitsu Lead the Market
 - 12.1.4 Impact of Small Cells & Unlicensed Spectrum
 - 12.1.5 EPC Vendor Share
 - 12.1.6 How will NFV Affect the EPC Market?
- 12.2 Devices
 - 12.2.1 Commercial Device Availability
 - 12.2.2 Are Smartphones the Most Dominant Form Factor?
 - 12.2.3 Vendor Share: Who Leads the Market?
 - 12.2.4 What About Chipsets?
- 12.3 Subscriptions & Operator Services
 - 12.3.1 Economic Downturn: Initial Deployment Delays
 - 12.3.2 Commercial Availability
 - 12.3.3 How Big is the LTE Service Revenue Opportunity?
 - 12.3.4 Vertical Market Opportunities
 - 12.3.5 Outlook for LTE-Advanced
 - 12.3.6 Moving Beyond Carrier Aggregation
 - 12.3.7 Outlook for LTE Broadcast & eMBMS
 - 12.3.8 Outlook for VoLTE & RCS

List Of Figures

LIST OF FIGURES

Figure 1: LTE Architecture

Figure 2: E-UTRAN Architecture

Figure 3: EPC Architecture

Figure 4: Functional Split between E-UTRAN and the EPC

Figure 5: Annual Throughput of Mobile Network Data Traffic by Region: 2016 - 2030 (Exabytes)

Figure 7: Mobile Network Service Revenue by Region: 2016 - 2030 (\$ Billion)

Figure 8: TCO Comparison for 2G, 3G, LTE and HetNet Deployments (\$ per GB)

Figure 8: RRH & FTTA Design

Figure 9: Legacy RAN to C-RAN Architectural Migration

Figure 11: Global Unlicensed LTE Small Cell Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 12: Global Unlicensed LTE Small Cell Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 12: 5G Requirements

Figure 13: IMT-2020 Development Roadmap

Figure 14: Potential Waveform Options for 5G

Figure 15: D2D Communication Scenarios

Figure 16: LSA Concept

Figure 17: NFV Concept

Figure 18: C-RAN Architecture

Figure 19: Cloud RAN Concept

Figure 20: Global 5G R&D Investments: 2016 - 2020 (\$ Million)

Figure 21: Global 5G R&D Investments by Technology: 2016 - 2020 (\$ Million)

Figure 22: Global 5G R&D Investments on New Waveforms & Millimeter Wave Radio Access: 2016 - 2020 (\$ Million)

Figure 23: Global 5G R&D Investments on MIMO, Beamforming & Antenna Technologies: 2016 - 2020 (\$ Million)

Figure 24: Global 5G R&D Investments on Interference & Spectrum Management: 2016 - 2020 (\$ Million)

Figure 25: Global 5G R&D Investments on C-RAN, Virtualization & Other Technologies: 2016 - 2020 (\$ Million)

Figure 26: Global Private LTE & 5G Network Infrastructure Revenue by Vertical: 2016 - 2030 (\$ Million)

Figure 27: Global Private LTE & 5G Network Infrastructure Investments in the

Transportation Sector: 2016 - 2030 (\$ Million)

Figure 28: Global Private LTE & 5G Network Infrastructure Investments in the Energy & Utilities Sector: 2016 - 2030 (\$ Million)

Figure 29: Global Private LTE & 5G Network Infrastructure Investments in the Public Safety Sector: 2016 - 2030 (\$ Million)

Figure 30: Military LTE Network Architecture

Figure 31: Global Private LTE & 5G Network Infrastructure Investments in the Military Sector: 2016 - 2030 (\$ Million)

Figure 32: Global Private LTE & 5G Network Infrastructure Investments in Mining & Other Sectors: 2016 - 2030 (\$ Million)

Figure 33: The LTE & 5G Industry Roadmap: 2016 - 2030

Figure 34: Wireless Network Infrastructure Value Chain

Figure 35: Global LTE Infrastructure Revenue: 2016 - 2030 (\$ Million)

Figure 36: Global LTE Infrastructure Revenue by Submarket: 2016 - 2030 (\$ Million)

Figure 37: LTE Infrastructure Revenue by Region: 2016 - 2030 (\$ Million)

Figure 38: Global LTE Macrocell Base Station Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 39: Global LTE Macrocell Base Station Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 40: Global LTE Macrocell Base Station Unit Shipments by Technology: 2016 - 2030 (Thousands of Units)

Figure 41: Global LTE Macrocell Base Station Unit Shipment Revenue by Technology: 2016 - 2030 (\$ Million)

Figure 42: Global FDD LTE Macrocell Base Station Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 43: Global FDD LTE Macrocell Base Station Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 44: Global TD-LTE Macrocell Base Station Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 45: Global TD-LTE Macrocell Base Station Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 46: LTE Macrocell Base Station Shipments by Region: 2016 - 2030 (Thousands of Units)

Figure 47: LTE Macrocell Base Station Shipment Revenue by Region: 2016 - 2030 (\$ Million)

Figure 48: Global LTE Small Cell Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 49: Global LTE Small Cell Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 50: Global LTE Small Cell Unit Shipments by Technology: 2016 - 2030 (Thousands of Units)

Figure 51: Global LTE Small Cell Unit Shipment Revenue by Technology: 2016 - 2030 (\$ Million)

Figure 52: Global FDD LTE Small Cell Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 53: Global FDD LTE Small Cell Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 54: Global TD-LTE Small Cell Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 55: Global TD-LTE Small Cell Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 56: Global LTE Small Cell Unit Shipments by Form Factor: 2016 - 2030 (Thousands of Units)

Figure 57: Global LTE Small Cell Unit Shipment Revenue by Form Factor: 2016 - 2030 (\$ Million)

Figure 58: Global LTE Femtocell Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 59: Global LTE Femtocell Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 60: Global LTE Picocell Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 61: Global LTE Picocell Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 62: Global LTE Microcell Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 63: Global LTE Microcell Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 64: Global LTE Small Cell Unit Shipments by Use Case: 2016 - 2030 (Thousands of Units)

Figure 65: Global LTE Small Cell Unit Shipment Revenue by Use Case: 2016 - 2030 (\$ Million)

Figure 66: Global Residential LTE Small Cell Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 67: Global Residential LTE Small Cell Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 68: Global Enterprise LTE Small Cell Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 69: Global Enterprise LTE Small Cell Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 70: Global Urban LTE Small Cell Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 71: Global Urban LTE Small Cell Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 72: Global Rural & Suburban LTE Small Cell Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 73: Global Rural & Suburban LTE Small Cell Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 74: Global LTE Small Cell Unit Shipments by Deployment Model: 2016 - 2030 (Thousands of Units)

Figure 75: Global LTE Small Cell Unit Shipment Revenue by Deployment Model: 2016 -

2030 (\$ Million)

Figure 76: Global Indoor LTE Small Cell Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 77: Global Indoor LTE Small Cell Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 78: Global Outdoor LTE Small Cell Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 79: Global Outdoor LTE Small Cell Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 80: LTE Small Cell Unit Shipments by Region: 2016 - 2030 (Thousands of Units)

Figure 81: LTE Small Cell Unit Shipment Revenue by Region: 2016 - 2030 (\$ Million)

Figure 82: Global LTE C-RAN Infrastructure Revenue: 2016 - 2030 (\$ Million)

Figure 83: Global LTE C-RAN Infrastructure Revenue by Submarket: 2016 - 2030 (\$ Million)

Figure 84: Global LTE RRH Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 85: Global LTE RRH Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 86: Global LTE RRH Unit Shipments by Deployment Model: 2016 - 2030 (Thousands of Units)

Figure 87: Global LTE RRH Unit Shipment Revenue by Deployment Model: 2016 - 2030 (\$ Million)

Figure 88: Global Indoor LTE RRH Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 89: Global Indoor LTE RRH Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 90: Global Outdoor LTE RRH Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 91: Global Outdoor LTE RRH Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 92: Global LTE C-RAN BBU Shipments: 2016 - 2030 (Thousands of Units)

Figure 93: Global LTE C-RAN BBU Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 94: LTE RRH Unit Shipments by Region: 2016 - 2030 (Thousands of Units)

Figure 95: LTE RRH Unit Shipment Revenue by Region: 2016 - 2030 (\$ Million)

Figure 96: C-RAN LTE BBU Shipments by Region: 2016 - 2030 (Thousands of Units)

Figure 97: C-RAN LTE BBU Shipment Revenue by Region: 2016 - 2030 (\$ Million)

Figure 98: Global LTE Mobile Core (EPC) Revenue: 2016 - 2030 (\$ Million)

Figure 99: LTE Mobile Core (EPC) Revenue by Region: 2016 - 2030 (\$ Million)

Figure 100: Global 5G Infrastructure Revenue: 2016 - 2030 (\$ Million)

Figure 101: Global 5G Infrastructure Revenue by Submarket: 2016 - 2030 (\$ Million)

Figure 102: 5G Infrastructure Revenue by Region: 2020 - 2030 (\$ Million)

Figure 103: Global 5G Macrocell Base Station Shipments: 2020 - 2030 (Thousands of Units)

Figure 104: Global 5G Macrocell Base Station Shipment Revenue: 2020 - 2030 (\$ Million)

Figure 105: Global 5G Small Cell Unit Shipments: 2020 - 2030 (Thousands of Units)

Figure 106: Global 5G Small Cell Unit Shipment Revenue: 2020 - 2030 (\$ Million)

Figure 107: Global 5G C-RAN Infrastructure Revenue: 2020 - 2030 (\$ Million)

Figure 108: Global 5G C-RAN Infrastructure Revenue by Submarket: 2020 - 2030 (\$ Million)

Figure 109: Global 5G RRH Unit Shipments: 2020 - 2030 (Thousands of Units)

Figure 110: Global 5G RRH Unit Shipment Revenue: 2020 - 2030 (\$ Million)

Figure 111: Global 5G C-RAN BBU Shipments: 2020 - 2030 (Thousands of Units)

Figure 112: Global 5G C-RAN BBU Shipment Revenue: 2020 - 2030 (\$ Million)

Figure 113: Global 5G Mobile Core Investments: 2020 - 2030 (\$ Million)

Figure 114: Global LTE Device Unit Shipments: 2016 - 2030 (Millions of Units)

Figure 115: Global LTE Device Unit Shipment Revenue: 2016 - 2030 (\$ Billion)

Figure 116: Global LTE Device Unit Shipments by Technology: 2016 - 2030 (Millions of Units)

Figure 117: Global LTE Device Unit Shipment Revenue by Technology: 2016 - 2030 (\$ Billion)

Figure 118: Global FDD LTE Device Unit Shipments: 2016 - 2030 (Millions of Units)

Figure 119: Global FDD LTE Device Unit Shipment Revenue: 2016 - 2030 (\$ Billion)

Figure 120: Global TD-LTE Device Unit Shipments: 2016 - 2030 (Millions of Units)

Figure 121: Global TD-LTE Device Unit Shipment Revenue: 2016 - 2030 (\$ Billion)

Figure 122: Global LTE Device Unit Shipments by Form Factor: 2016 - 2030 (Millions of Units)

Figure 123: Global LTE Device Unit Shipment Revenue by Form Factor: 2016 - 2030 (\$ Billion)

Figure 124: Global LTE Handset Unit Shipments: 2016 - 2030 (Millions of Units)

Figure 125: Global LTE Handset Unit Shipment Revenue: 2016 - 2030 (\$ Billion)

Figure 126: Global LTE Tablet Unit Shipments: 2016 - 2030 (Millions of Units)

Figure 127: Global LTE Tablet Unit Shipment Revenue: 2016 - 2030 (\$ Billion)

Figure 128: Global LTE Embedded M2M Module Unit Shipments: 2016 - 2030 (Millions of Units)

Figure 129: Global LTE Embedded M2M Module Unit Shipment Revenue: 2016 - 2030 (\$ Billion)

Figure 130: Global LTE USB Dongle Unit Shipments: 2016 - 2030 (Millions of Units)

Figure 131: Global LTE USB Dongle Unit Shipment Revenue: 2016 - 2030 (\$ Billion)

Figure 132: Global LTE Router Unit Shipments: 2016 - 2030 (Millions of Units)

Figure 133: Global LTE Router Unit Shipment Revenue: 2016 - 2030 (\$ Billion)

Figure 134: LTE Device Unit Shipments by Region: 2016 - 2030 (Millions of Units)

Figure 135: LTE Device Unit Shipment Revenue by Region: 2016 - 2030 (\$ Billion)

Figure 136: Global 5G Device Unit Shipments: 2020 - 2030 (Millions of Units)

- Figure 137: Global 5G Device Unit Shipment Revenue: 2020 - 2030 (\$ Billion)
- Figure 138: Global 5G Device Unit Shipments by Form Factor: 2020 - 2030 (Millions of Units)
- Figure 139: Global 5G Device Unit Shipment Revenue by Form Factor: 2020 - 2030 (\$ Billion)
- Figure 140: Global 5G Handset Unit Shipments: 2020 - 2030 (Millions of Units)
- Figure 141: Global 5G Handset Unit Shipment Revenue: 2020 - 2030 (\$ Billion)
- Figure 142: Global 5G Tablet Unit Shipments: 2020 - 2030 (Millions of Units)
- Figure 143: Global 5G Tablet Unit Shipment Revenue: 2020 - 2030 (\$ Billion)
- Figure 144: Global 5G Embedded M2M Module Unit Shipments: 2020 - 2030 (Millions of Units)
- Figure 145: Global 5G Embedded M2M Module Unit Shipment Revenue: 2020 - 2030 (\$ Billion)
- Figure 146: Global 5G USB Dongle Unit Shipments: 2020 - 2030 (Millions of Units)
- Figure 147: Global 5G USB Dongle Unit Shipment Revenue: 2020 - 2030 (\$ Billion)
- Figure 148: Global 5G Router Unit Shipments: 2020 - 2030 (Millions of Units)
- Figure 149: Global 5G Router Unit Shipment Revenue: 2020 - 2030 (\$ Billion)
- Figure 150: 5G Device Unit Shipments by Region: 2020 - 2030 (Millions of Units)
- Figure 151: 5G Device Unit Shipment Revenue by Region: 2020 - 2030 (\$ Billion)
- Figure 152: Global LTE Subscriptions: 2016 - 2030 (Millions)
- Figure 153: Global LTE Service Revenue: 2016 - 2030 (\$ Billion)
- Figure 154: Global LTE Subscriptions by Technology: 2016 - 2030 (Millions)
- Figure 155: Global LTE Service Revenue by Technology: 2016 - 2030 (\$ Billion)
- Figure 156: Global FDD LTE Subscriptions: 2016 - 2030 (Millions)
- Figure 157: Global FDD LTE Service Revenue: 2016 - 2030 (\$ Billion)
- Figure 158: Global TD-LTE Subscriptions: 2016 - 2030 (Millions)
- Figure 159: Global TD-LTE Service Revenue: 2016 - 2030 (\$ Billion)
- Figure 160: LTE Subscriptions by Region: 2016 - 2030 (Millions of Units)
- Figure 161: LTE Service Revenue by Region: 2016 - 2030 (\$ Billion)
- Figure 162: Global 5G Subscriptions: 2020 - 2030 (Millions)
- Figure 163: Global 5G Service Revenue: 2020 - 2030 (\$ Billion)
- Figure 164: 5G Subscriptions by Region: 2020 - 2030 (Millions)
- Figure 165: 5G Service Revenue by Region: 2020 - 2030 (\$ Billion)
- Figure 166: Asia Pacific LTE Infrastructure Revenue: 2016 - 2030 (\$ Million)
- Figure 167: Asia Pacific LTE Macrocell Base Station Shipments: 2016 - 2030 (Thousands of Units)
- Figure 168: Asia Pacific LTE Macrocell Base Station Shipment Revenue: 2016 - 2030 (\$ Million)
- Figure 169: Asia Pacific LTE Small Cell Unit Shipments: 2016 - 2030 (Thousands of

Units)

Figure 170: Asia Pacific LTE Small Cell Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 171: Asia Pacific LTE RRH Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 172: Asia Pacific LTE RRH Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 173: Asia Pacific C-RAN LTE BBU Shipments: 2016 - 2030 (Thousands of Units)

Figure 174: Asia Pacific C-RAN LTE BBU Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 175: Asia Pacific LTE Mobile Core (EPC) Revenue: 2016 - 2030 (\$ Million)

Figure 176: Asia Pacific 5G Infrastructure Revenue: 2020 - 2030 (\$ Million)

Figure 177: Asia Pacific LTE Device Unit Shipments: 2016 - 2030 (Millions of Units)

Figure 178: Asia Pacific LTE Device Unit Shipment Revenue: 2016 - 2030 (\$ Billion)

Figure 179: Asia Pacific 5G Device Unit Shipments: 2020 - 2030 (Millions of Units)

Figure 180: Asia Pacific 5G Device Unit Shipment Revenue: 2020 - 2030 (\$ Billion)

Figure 181: Asia Pacific LTE Subscriptions: 2016 - 2030 (Millions)

Figure 182: Asia Pacific LTE Service Revenue: 2016 - 2030 (\$ Billion)

Figure 183: Asia Pacific 5G Subscriptions: 2020 - 2030 (Millions)

Figure 184: Asia Pacific 5G Service Revenue: 2020 - 2030 (\$ Billion)

Figure 185: Eastern Europe LTE Infrastructure Revenue: 2016 - 2030 (\$ Million)

Figure 186: Eastern Europe LTE Macrocell Base Station Shipments: 2016 - 2030
(Thousands of Units)

Figure 187: Eastern Europe LTE Macrocell Base Station Shipment Revenue: 2016 -
2030 (\$ Million)

Figure 188: Eastern Europe LTE Small Cell Unit Shipments: 2016 - 2030 (Thousands of
Units)

Figure 189: Eastern Europe LTE Small Cell Unit Shipment Revenue: 2016 - 2030 (\$
Million)

Figure 190: Eastern Europe LTE RRH Unit Shipments: 2016 - 2030 (Thousands of
Units)

Figure 191: Eastern Europe LTE RRH Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 192: Eastern Europe C-RAN LTE BBU Shipments: 2016 - 2030 (Thousands of
Units)

Figure 193: Eastern Europe C-RAN LTE BBU Shipment Revenue: 2016 - 2030 (\$
Million)

Figure 194: Eastern Europe LTE Mobile Core (EPC) Revenue: 2016 - 2030 (\$ Million)

Figure 195: Eastern Europe 5G Infrastructure Revenue: 2020 - 2030 (\$ Million)

Figure 196: Eastern Europe LTE Device Unit Shipments: 2016 - 2030 (Millions of Units)

Figure 197: Eastern Europe LTE Device Unit Shipment Revenue: 2016 - 2030 (\$ Billion)

Figure 198: Eastern Europe 5G Device Unit Shipments: 2020 - 2030 (Millions of Units)

Figure 199: Eastern Europe 5G Device Unit Shipment Revenue: 2020 - 2030 (\$ Billion)

Figure 200: Eastern Europe LTE Subscriptions: 2016 - 2030 (Millions)

Figure 201: Eastern Europe LTE Service Revenue: 2016 - 2030 (\$ Billion)

Figure 202: Eastern Europe 5G Subscriptions: 2020 - 2030 (Millions)

Figure 203: Eastern Europe 5G Service Revenue: 2020 - 2030 (\$ Billion)

Figure 204: Latin & Central America LTE Infrastructure Revenue: 2016 - 2030 (\$ Million)

Figure 205: Latin & Central America LTE Macrocell Base Station Shipments: 2016 - 2030 (Thousands of Units)

Figure 206: Latin & Central America LTE Macrocell Base Station Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 207: Latin & Central America LTE Small Cell Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 208: Latin & Central America LTE Small Cell Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 209: Latin & Central America LTE RRH Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 210: Latin & Central America LTE RRH Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 211: Latin & Central America C-RAN LTE BBU Shipments: 2016 - 2030 (Thousands of Units)

Figure 212: Latin & Central America C-RAN LTE BBU Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 213: Latin & Central America LTE Mobile Core (EPC) Revenue: 2016 - 2030 (\$ Million)

Figure 214: Latin & Central America 5G Infrastructure Revenue: 2020 - 2030 (\$ Million)

Figure 215: Latin & Central America LTE Device Unit Shipments: 2016 - 2030 (Millions of Units)

Figure 216: Latin & Central America LTE Device Unit Shipment Revenue: 2016 - 2030 (\$ Billion)

Figure 217: Latin & Central America 5G Device Unit Shipments: 2020 - 2030 (Millions of Units)

Figure 218: Latin & Central America 5G Device Unit Shipment Revenue: 2020 - 2030 (\$ Billion)

Figure 219: Latin & Central America LTE Subscriptions: 2016 - 2030 (Millions)

Figure 220: Latin & Central America LTE Service Revenue: 2016 - 2030 (\$ Billion)

Figure 221: Latin & Central America 5G Subscriptions: 2020 - 2030 (Millions)

Figure 222: Latin & Central America 5G Service Revenue: 2020 - 2030 (\$ Billion)

Figure 223: Middle East & Africa LTE Infrastructure Revenue: 2016 - 2030 (\$ Million)

Figure 224: Middle East & Africa LTE Macrocell Base Station Shipments: 2016 - 2030 (Thousands of Units)

Figure 225: Middle East & Africa LTE Macrocell Base Station Shipment Revenue: 2016 - 2030 (\$ Million)

- 2030 (\$ Million)

Figure 226: Middle East & Africa LTE Small Cell Unit Shipments: 2016 - 2030

(Thousands of Units)

Figure 227: Middle East & Africa LTE Small Cell Unit Shipment Revenue: 2016 - 2030

(\$ Million)

Figure 228: Middle East & Africa LTE RRH Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 229: Middle East & Africa LTE RRH Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 230: Middle East & Africa C-RAN LTE BBU Shipments: 2016 - 2030 (Thousands of Units)

Figure 231: Middle East & Africa C-RAN LTE BBU Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 232: Middle East & Africa LTE Mobile Core (EPC) Revenue: 2016 - 2030 (\$ Million)

Figure 233: Middle East & Africa 5G Infrastructure Revenue: 2020 - 2030 (\$ Million)

Figure 234: Middle East & Africa LTE Device Unit Shipments: 2016 - 2030 (Millions of Units)

Figure 235: Middle East & Africa LTE Device Unit Shipment Revenue: 2016 - 2030 (\$ Billion)

Figure 236: Middle East & Africa 5G Device Unit Shipments: 2020 - 2030 (Millions of Units)

Figure 237: Middle East & Africa 5G Device Unit Shipment Revenue: 2020 - 2030 (\$ Billion)

Figure 238: Middle East & Africa LTE Subscriptions: 2016 - 2030 (Millions)

Figure 239: Middle East & Africa LTE Service Revenue: 2016 - 2030 (\$ Billion)

Figure 240: Middle East & Africa 5G Subscriptions: 2020 - 2030 (Millions)

Figure 241: Middle East & Africa 5G Service Revenue: 2020 - 2030 (\$ Billion)

Figure 242: North America LTE Infrastructure Revenue: 2016 - 2030 (\$ Million)

Figure 243: North America LTE Macrocell Base Station Shipments: 2016 - 2030 (Thousands of Units)

Figure 244: North America LTE Macrocell Base Station Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 245: North America LTE Small Cell Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 246: North America LTE Small Cell Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 247: North America LTE RRH Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 248: North America LTE RRH Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 249: North America C-RAN LTE BBU Shipments: 2016 - 2030 (Thousands of Units)

Figure 250: North America C-RAN LTE BBU Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 251: North America LTE Mobile Core (EPC) Revenue: 2016 - 2030 (\$ Million)

Figure 252: North America 5G Infrastructure Revenue: 2020 - 2030 (\$ Million)

Figure 253: North America LTE Device Unit Shipments: 2016 - 2030 (Millions of Units)

Figure 254: North America LTE Device Unit Shipment Revenue: 2016 - 2030 (\$ Billion)

Figure 255: North America 5G Device Unit Shipments: 2020 - 2030 (Millions of Units)

Figure 256: North America 5G Device Unit Shipment Revenue: 2020 - 2030 (\$ Billion)

Figure 257: North America LTE Subscriptions: 2016 - 2030 (Millions)

Figure 258: North America LTE Service Revenue: 2016 - 2030 (\$ Billion)

Figure 259: North America 5G Subscriptions: 2020 - 2030 (Millions)

Figure 260: North America 5G Service Revenue: 2020 - 2030 (\$ Billion)

Figure 261: Western Europe LTE Infrastructure Revenue: 2016 - 2030 (\$ Million)

Figure 262: Western Europe LTE Macrocell Base Station Shipments: 2016 - 2030 (Thousands of Units)

Figure 263: Western Europe LTE Macrocell Base Station Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 264: Western Europe LTE Small Cell Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 265: Western Europe LTE Small Cell Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 266: Western Europe LTE RRH Unit Shipments: 2016 - 2030 (Thousands of Units)

Figure 267: Western Europe LTE RRH Unit Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 268: Western Europe C-RAN LTE BBU Shipments: 2016 - 2030 (Thousands of Units)

Figure 269: Western Europe C-RAN LTE BBU Shipment Revenue: 2016 - 2030 (\$ Million)

Figure 270: Western Europe LTE Mobile Core (EPC) Revenue: 2016 - 2030 (\$ Million)

Figure 271: Western Europe 5G Infrastructure Revenue: 2020 - 2030 (\$ Million)

Figure 272: Western Europe LTE Device Unit Shipments: 2016 - 2030 (Millions of Units)

Figure 273: Western Europe LTE Device Unit Shipment Revenue: 2016 - 2030 (\$ Billion)

Figure 274: Western Europe 5G Device Unit Shipments: 2020 - 2030 (Millions of Units)

Figure 275: Western Europe 5G Device Unit Shipment Revenue: 2020 - 2030 (\$ Billion)

Figure 276: Western Europe LTE Subscriptions: 2016 - 2030 (Millions)

Figure 277: Western Europe LTE Service Revenue: 2016 - 2030 (\$ Billion)

Figure 278: Western Europe 5G Subscriptions: 2020 - 2030 (Millions)

Figure 279: Western Europe 5G Service Revenue: 2020 - 2030 (\$ Billion)

Figure 280: Global LTE & 5G Service Revenue by Technology: 2016 - 2030 (\$ Billion)

Figure 281: Global Private vs. Commercial LTE & 5G Network Infrastructure

Investments: 2016 - 2030 (\$ Million)

Figure 282: Global LTE Service Revenue by Network Type: 2016 - 2030 (\$ Billion)

Figure 283: Global VoLTE Subscriptions: 2016 - 2030 (Millions)

LIST OF COMPANIES MENTIONED

3GPP (3rd Generation Partnership Project)

5G-PPP

Abu Dhabi Police

Accelerated Concepts

Accelleran

Adax

Affirmed Networks

Airspan Networks

Airvana

Alcatel-Lucent

Altistar Networks

Apple

Arcadyan Technology Corporation

Argela

ARItel

Artemis Networks

ASOCS

ASTRI (Hong Kong Applied Science and Technology Research Institute)

ASUS (ASUSTeK Computer)

AT&T

AT&T Mobility

Athonet

Axxcelera Broadband Wireless

BaiCells

BBK Electronics Corporation

Beach Energy

Belkin International

BlackBerry

Brocade Communications Systems

BT Group

Busan Transportation Corporation
Casa Systems
China Mobile
China Southern Power Grid
Cisco Systems
CommAgility
CommScope
Connectem
Contela
Coolpad
Core Network Dynamics
Datang Group
Datang Mobile
D-Link Corporation
Dovado
DT (Deutsche Telekom)
Eden Rock Communications
EE
Ericsson
Etisalat
ETRI (Electronics and Telecommunications Research Institute)
Facebook
Fraunhofer Fokus
Fujitsu
Gemtek Technology Company
GENBAND
General Dynamics Corporation
General Dynamics Mission Systems
Gionee
Google
GWT (Global Wireless Technologies)
Harris County
Hitachi
Home Office, UK
HTC Corporation
Huawei
IETF (Internet Engineering Task Force)
ip.access
ITU (International Telecommunication Union)

ITU-R (ITU Radiocommunication Sector)
JRC (Japan Radio Company)
Juni Global
KDDI Corporation
KT Corporation
Kumu Networks
Kyocera Corporation
Lemko Corporation
Lenovo
LG Electronics
LG Uplus
Linksys
LTE-U Forum
Luminate Wireless
M1
Mavenir Systems
MediaTek
Meizu
Microsoft Corporation
Mitel Networks Corporation
MOF (Ministry of Oceans and Fisheries, South Korea)
Moseley Associates
Motorola Mobility
Motorola Solutions
MPSS (Ministry of Public Safety and Security, South Korea)
MulteFire Alliance
NEC Corporation
NEC Mobile Communications
Netgear
New Postcom Equipment Company
Nokia Networks
Novatel Wireless
NTT DoCoMo
NuRAN Wireless
Nutaq
O3b Networks
Oceus Networks
OPPO
Orange

Panasonic Corporation
Pantech
Phluido
Polaris Networks
Potevio (China Potevio Company)
Qatar MOI (Ministry of Interior)
Qualcomm
Quanta Computer
Qucell
Quortus
Redline Communications
Ruckus Wireless
Samji Electronics Company
Samsung Electronics
Samsung Group
SerComm Corporation
SES
Sharp Corporation
Sierra Wireless
Singtel
SK Telecom
SK Telesys
SoftBank Group
Sony Mobile Communications
SpiderCloud Wireless
Spreadtrum
Sprint Corporation
Star Solutions
STC (Saudi Telecom Company)
Sunnada (Fujian Sunnada Communication Company)
Tampnet
TCL Communication
Tecore
TEKTELIC Communications
Telrad Networks
Telum
Telus
TEN (Texas Energy Network)
T-Mobile USA

TrustComm
U.S. Navy
UQ Communications
Verizon Communications
Verizon Wireless
Vivo
Vodacom Group
Vodafone Group
Wi-Fi Alliance
WNC (Wistron NeWeb Corporation)
Xiaomi
Z-com (ZDC Wireless)
ZTE
ZyXEL Communications Corporation

About

The report covers the following topics:

LTE and LTE-A ecosystem

5G technology, initiatives and R&D commitments

LTE infrastructure (FDD/TDD macrocell base stations, small cells & EPC)

LTE devices (smartphones and other form factors)

LTE subscriptions and service revenue (FDD and TDD)

LTE infrastructure and device vendor market share

LTE operator reviews and network deployment case studies

LTE Broadcast (eMBMS) and VoLTE

Market drivers and barriers

Wireless network infrastructure industry roadmap and value chain

Company profiles and strategies of LTE ecosystem players

Market analysis and forecasts from 2014 till 2020

The report has the following key findings:

In 2014 wireless carriers will pocket nearly \$103 Billion from commercial LTE service revenues

LTE and LTE-Advanced service revenues are further expected to grow at a CAGR of nearly 40% over the next 6 years, eventually accounting for \$672 Billion by the end of 2020

By 2020 nearly 50% of all LTE subscriptions will be on LTE-Advanced networks

Samsung and Apple lead LTE-enabled smartphone shipments with a combined market share of 73%

LTE infrastructure spending is expected to account for nearly \$15 Billion by the end of 2014. This includes spending on LTE macrocells, small cells and EPC/mobile core equipment

Huawei and Ericsson lead the LTE infrastructure market with a combined market share of 44%

Samsung is expected to significantly increase its stake in LTE infrastructure contracts, and eventually become a Tier-1 vendor by 2017

Wireless carriers and vendors will spend at least \$1 Billion per annum in R&D spending to drive standardization and commercialization of 5G technology

I would like to order

Product name: The LTE, LTE-Advanced & 5G Ecosystem: 2016 – 2030 – Infrastructure, Devices, Operator Services, Verticals, Strategies & Forecasts

Product link: <https://marketpublishers.com/r/LBACE4E6879EN.html>

Price: US\$ 2,500.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/LBACE4E6879EN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:
Last name:
Email:
Company:
Address:
City:
Zip code:
Country:
Tel:
Fax:
Your message:

****All fields are required**

Customer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970

