

# Small Cells: Market Shares, Strategies, and Forecasts, Worldwide, 2019 to 2025

<https://marketpublishers.com/r/S4A24FA500CEN.html>

Date: June 2019

Pages: 248

Price: US\$ 4,400.00 (Single User License)

ID: S4A24FA500CEN

## Abstracts

LEXINGTON, Massachusetts (June 2, 2019) – WinterGreen Research announces that it has published a new study Small Cells: Market Shares, Strategy, and Forecasts, Worldwide, 2019 to 2025. The 2019 study has 248 pages, 135 tables and figures. The leading vendors in the small cell market have invested in high-quality technology and processes to develop leading edge monitoring and digital triggering activation capability.

Small Cell markets encompass virtualization, cloud, edge, and functional splits. As 5G networks come on line in 2020, they require increasing sophistication from mobile operators. The challenge going forward in mobile network buildout is to bring together a growing number of LTE and 5G radio access technologies. A range of connectivity services are needed. APIs are needed in each small cell to manage connectivity to a number of customer sensors that are implemented in different segments.

The small cell sales at \$11.5 billion in 2018 are forecast to reach \$52 billion in 2025. Networks spending has been transformed from macro cell tower dominance to 80% of spending on small cells. Small cells support wireless communications across short distances. All the indoor and outdoor places need to increase wireless coverage, providing significant market growth for small cells.

Small Cell markets encompass virtualization, cloud, edge, and functional splits. 5G requires increasing sophistication from mobile operators. The challenge is to bring together a growing number of LTE and 5G radio access technologies. A range of connectivity services are needed. Associated APIs are needed in each small cell to manage connectivity to a number of customer segments.

Figure 1. Small Cell Market Driving Forces

- Need for enabling evolution of local communications network
- Availability of fully virtualized, distributed, ultra-reliable software
- Effective software for controlling agile infrastructure
- Automation facilitates large-scale low-cost network densification
- Lowers cost by implementing network through third-party deployments
- Effective integration of base small cell technologies
- Systems integration achieved with open and interoperable standards
- Open and interoperable standards needed to ensure competition
- open and interoperable standards needed to ensure economies of scale
- Adoption of these 5G Era technologies will require culture shifts in processes

Small cells need infrastructure across a broad range of commercial and governmental organizations. Each have a part to play in making small cells work along with tower infrastructure to create a broadband commercial network. Service providers are focused on densification. Small cells are a critical part of the infrastructure for several key 5G Era deployment scenarios:

Figure 2. Small Cell Infrastructure Critical Issues

- Service providers are focused on densification
- Small cells are a critical part of the infrastructure for key 5G implementations
- 5G deployment needs small cells
- >6GHz spectrum propagation limits cell sizes
- Shared and license-exempt spectrum mandates lower power

Areas of hyper-dense broadband traffic need small cells

Small cells meet demand in cities, stadia, transport hubs

Scalable deployment

Low-cost deployment

Using a low-skilled, third-party, or end-user workforce

Small/medium enterprises requiring self-deployed indoor coverage

Coverage extension in rural, remote, moving and temporary deployment

Scenarios with equipment size, weight or power constraints.

The digital economy, self-driving cars, drones, traffic lights, and smart things all need more wireless coverage. According to Susan Eustis, leader of the team that prepared the research, “Small cell suppliers have a focus on broadband improvement. Power and performance are being improved. Small cells improve the transmission coverage and density.”

This 5G coverage is needed as IoT, the Internet of things and smart phone video increase transmission needs. “Everything will be connected,” said SoftBank Chief Executive Masayoshi Son, announcing an ARM processor deal in London.

WinterGreen Research is an independent research organization funded by the sale of market research studies all over the world and by the implementation of ROI models that are used to calculate the total cost of ownership of equipment, services, and software. The company has 35 distributors worldwide, including Global Information Info Shop, Market Research.com, Research and Markets, and electronics.ca. WinterGreen Research is positioned to help customers facing challenges that define the modern enterprises.

The increasingly global nature of science, technology and engineering is a reflection of the implementation of the globally integrated enterprise. Customers trust wintergreen research to work alongside them to ensure the success of the participation in a particular market segment.

WinterGreen Research supports various market segment programs; provides trusted technical services to the marketing departments. It carries out accurate market share and forecast analysis services for a range of commercial and government customers globally. These are all vital market research support solutions requiring trust and integrity.

## Contents

Abstract: Small Cells Used to Improve Wireless Coverage, Close the Gaps in Coverage

### **SMALL CELLS EXECUTIVE SUMMARY**

Small Cell Market Driving Forces

Small Cell Market Shares

Small Cell Market Forecasts

### **1. SMALL CELLS: MARKET DESCRIPTION AND MARKET DYNAMICS**

#### 1.1 Small Cells Definition

1.1.1 Web-Scale Architectures Deliver Signals Close to the Smart Phone

1.1.2 Small Cells Set To Be Major Enabler for 5G

1.1.3 Vision for 5G

1.1.4 Outdoor Small Cell Market Is in The Beginning Stages Of Deployment

#### 1.2 Small Cells Bring Transformational 5G

1.2.1 Small Cells Market Driving Forces

#### 1.3 Small Cell Networks

1.3.1 Small Cells Industry Addresses Fast-Paced Change

#### 1.4 Small Cell Signal Enhancement

#### 1.5 Shared Spectrum Radios

#### 1.6 Base Station Functional Splits

1.6.1 Small Cells Miniature Cellular Base Stations

1.6.2 Small Cell Operator Challenges

1.6.3 Small Cell Base Stations

#### 1.7 5G Envisioned As A Unifying Connectivity Fabric That Connects Everything Around Us

#### 1.8 Business Model for Small Cells

1.8.1 Small Cell Site Risks Different From Tower Site Risks

### **2. SMALL CELLS MARKET SHARES AND FORECASTS**

#### 2.1 Small Cell Market Driving Forces

#### 2.2 Small Cell Market Shares

2.2.1 Ericsson Small Cells

#### 2.3 Small Cell Market Forecasts

2.3.1 Small Cell Market Segments

- 2.3.2 Small Cell Applications 3G, 4G, and 5G
- 2.3.3 Number of Wireless Customers
- 2.3.4 Mobile Data Traffic
- 2.3.5 International 5G Activity Growing Significantly
- 2.3.6 5G Network Countries: South Korea
- 2.3.7 5G Networks in China
- 2.3.8 5G Network in Japan
- 2.3.9 5G Network in The United States
- 2.3.10 Leading 5G Vendors
- 2.3.1 Small Cell Installed Base
- 2.3.2 Small Cell Installation Issues
- 2.3.3 Small Cell Backhaul
- 2.3.4 Enterprise Needs For Indoor Coverage
- 2.4 Small Cells Industry Challenges
  - 2.4.1 Small Cell Vendor Response to Market Challenges
- 2.5 Number Of Mobile Internet Users
  - 2.5.1 Telecommunications Fiber
  - 2.5.2 Internet Traffic Growth
  - 2.5.3 5G Handles 10x More Data Than 4G
- 2.6 Small Cell Prices
- 2.7 Small Cell Regional Market Analysis
  - 2.7.1 Wholesale Turf Vendor Mobile Backhaul Network Operators
  - 2.7.2 US Small Cell Networks
  - 2.7.3 San Francisco Leads in Municipal Small Cell Deployment
  - 2.7.4 San Francisco Leads the Way in Municipal Small Cell Deployment
  - 2.7.5 Asia-Pacific Market
  - 2.7.6 China
  - 2.7.7 Japan
  - 2.7.8 UK
  - 2.7.9 UK EE
  - 2.7.10 Iran
  - 2.7.11 Small Cell Deployments by Region and Density, Indoor and Outdoor, Architecture

### **3. SMALL CELLS PRODUCT DESCRIPTION**

- 3.1 Wireless Industry Small Cells for Homeowners

### **4. SMALL CELLS RESEARCH AND TECHNOLOGY**

- 4.1 Modern Mobile Network
- 4.2 FCC Position on Small Cells
  - 4.2.1 Small Cell Legislation in California
  - 4.2.2 Small Cells Support Competitiveness of Nations
- 4.3 Industry Associations
  - 4.3.1 Cambridge Wireless
- 4.4 Small Cells Local Regulations
  - 4.4.1 ETSI
- 4.5 Macro Network Layer
  - 4.5.1 LTE Small Cell Technology

## **5. SMALL CELLS COMPANY PROFILES**

- 5.1 Airspan
- 5.2 ANs
  - 5.2.1 ANS Distributed Antenna Systems (DAS), Small Cells
- 5.3 ADRF
- 5.4 Airspan
- 5.5 AT&T
  - 5.5.1 AT&T Small Cells
  - 5.5.2 Fiber is Key to 5G
- 5.6 Ciena
  - 5.6.1 Ciena Reports Fiscal Fourth Quarter 2017 and Year-End Financial Results
- 5.7 Cisco Small Cells
  - 5.7.1 Cisco Universal Small Cell 8000 Series End-Of-Life
- 5.8 CommScope
  - 5.8.1 Commscope Revenue
  - 5.8.2 Airvana
  - 5.8.3 Commscope/Airvana
  - 5.8.4 Airvana Targets Mobile Operators
- 5.9 Corning/Spidercloud
  - 5.9.1 SpiderCloud LTE Small Cell Technology
- 5.10 Ericsson Small Cells
  - 5.10.1 Ericsson Holistic View Of The Network
  - 5.10.2 LM Ericsson Revenue
  - 5.10.3 Ericsson Benefits Of Integrated Small Cells
  - 5.10.4 Ericsson Lightpole Site
  - 5.10.5 Ericsson Radio Dot System

- 5.10.6 Ericsson Dual Band Radio Dot
- 5.10.7 Hardened Radio Dot for Outdoor and Stadium Deployments
- 5.10.8 Ericsson Small Cell In-Building Solutions
- 5.10.9 Ericsson, AT&T, Qualcomm, and Small cells
- 5.11 Huawei
  - 5.11.1 Huawei Small Cell Achievements in 4.5G/5G Technologies
  - 5.11.2 Densify Cellular Networks, Creating Serious Inter-Cell Interference Solution
  - 5.11.3 Huawei Revenue
  - 5.11.4 Huawei
  - 5.11.5 Huawei
  - 5.11.6 Huawei 5G Operator Collaboration
  - 5.11.7 Huawei 5G Vendor Trials
  - 5.11.8 Huawei 5G X-Haul
- 5.12 ip.access
  - 5.12.1 Ip.access Industry Standards
- 5.13 NBN
- 5.14 Nokia
  - 5.14.1 Nokia Small Cells Improve TCO
  - 5.14.2 Nokia Small Cells Deliver Cost-Effective Capacity And Coverage, Indoors And Outdoors, Key To Network Innovation
  - 5.14.3 Nokia Small Cells Support Heterogeneous Network
  - 5.14.4 Nokia Small Cell Deployments
  - 5.14.5 Smart WiFi Delivers Carrier Grade Wireless Access with Nokia AirScale Wi-Fi
  - 5.14.6 Nokia AirScale Wi-Fi Allows Service Providers Without Licensed Spectrum To Run a Wi-Fi service That Takes Advantage Of Mobile Edge Computing
  - 5.14.7 Nokia Revenue
- 5.15 NTSI
- 5.16 Optimos
  - 5.16.1 City of New York Selects Optimos
  - 5.16.2 Irma and Maria Recovery – Acorn
  - 5.16.3 Optimos International to Rollout PICOs Nationally
- 5.17 Qualcomm
- 5.18 Samsung
- 5.19 Signal Booster.com
  - 5.19.1 Cellular Signal Booster, Das, Public Safety Das Equipment
  - 5.19.2 Public Safety Bands
- 5.20 Small Cell Forum
- 5.21 Solid Technologies
- 5.22 Zouk Capital/ip.access



## 5.23 ZTE

### 5.23.1 ZTE Revenue

## 5.24 Selected List of Small Cell Companies

### 5.24.1 Cell Phone Signal Boosters For Home

## **WINTERGREEN RESEARCH**

WinterGreen Research Methodology

WinterGreen Research Process

Market Research Study

WinterGreen Research Global Market Intelligence Company

## List Of Figures

### LIST OF FIGURES

Abstract: Small Cells Used to Improve Wireless Coverage, Close the Gaps in Coverage

Figure 1. Small Cell Market Driving Forces

Figure 2. Small Cell Infrastructure Critical Issues

Figure 3. Industry Increasing Network Bandwidth Dramatically

Figure 4. Converged Networks

Figure 5. Small Cell Market Shares, Dollars, Worldwide, 2018

Figure 6. Small Cells Market Forecasts Dollars, Worldwide, 2019-2025

Figure 7. Vision for 5G

Figure 8. Small Cells That Amplify Cellular Phone Signals Making Possible More Uses Of A Mobile Phone Indoors

Figure 9. Barriers To Market Development for Outdoor Small Cell Market In Beginning Stages Of Deployment

Figure 10. Outdoor Small Cell Cost Issues

Figure 11. Constraints on 5G Development

Figure 12. Small Cells Market Driving Forces

Figure 13. Small Cells Industry Adaptation To Change

Figure 14. Small Cells Industry Adaptations

Figure 15. Small Cells Industry Imperatives

Figure 16. Inside Building Poor RF Coverage, RF Distribution Systems

Figure 17. Cell Phone Signal Enhancement Process

Figure 18. Cell Phone Signal Simulation using iBwave

Figure 19. Types of Buildings Using Cell Phone Signal Enhancement

Figure 20. Shared Spectrum Radios Network Changes

Figure 21. 5G Small Cell Benefits

Figure 22. Low Cost Characteristics Of Small Cells

Figure 23. Fixed Mobile Convergence Handset Illustration

Figure 24. 5G Innovation Platform Features

Figure 25. Small Cell Industry Increasing Network Bandwidth Dramatically

Figure 26. Small Cell Business Model Elements

Figure 27. Small Cell Operational Risks Different From Tower Site Rental Business

Figure 28. Small Cell Market Driving Forces

Figure 29. Small Cell Market Driving Factors

Figure 30. Small Cell Market Issues

Figure 31. Small Cell Infrastructure Critical Issues

Figure 32. Converged Networks

- Figure 33. Small Cell Market Shares, Dollars, Worldwide, 2018
- Figure 34. Small Cell Market Shares, Dollars, Worldwide, 2018
- Figure 35. Small Cell Equipment Market Shares, Units, Worldwide, 2018
- Figure 36. Small Cell Company Market Positioning, 2018
- Figure 37. Fiber Homes Passed AT&T
- Figure 38. Ericsson Multi-Operator Dot Small Cell
- Figure 39. Small Cells Market Forecasts Dollars, Worldwide, 2019-2025
- Figure 40. Small Cell Market Forecasts, Dollars, Worldwide, 2019-2025
- Figure 41. Small Cell Market Forecasts Units, Worldwide, 2019-2025
- Figure 42. Small Cell Market Segments, Carrier Indoor, Femto Cells, Carrier Outdoor, and Enterprise
- Figure 43. 5G Application Network Improvements
- Figure 44. Small Cell Market Industry Segments, 3G, 4G, and 5G, Dollars, Worldwide, 2019-2025
- Figure 45. Small Cell Market Industry Segments, 3G, 4G, and 5G, Percent, Worldwide, 2019-2025
- Figure 46. Wireless Customer Market Forecasts, Worldwide, 2018
- Figure 47. Industry Increasing Network Bandwidth Dramatically
- Figure 48. Mobile Data Traffic Growth
- Figure 49. Ericsson Estimate of Worldwide Wireless Subscriber Base
- Figure 50. Small Cell Market Forecasts, Installed Base Units, Worldwide, 2019-2025
- Figure 51. Power, Coverage, and Capacity of Small Cells
- Figure 52. Back Haul Small Cell Market Is Primarily Driving Factors
- Figure 53. Number of Mobil Subscribers Worldwide, 2017
- Figure 54. CTIA Count of Wireless Subscribers in Americas
- Figure 55. Mobile Subscribers by Technology Generation 2015
- Figure 56. Billions of M to M Connections
- Figure 57. Annual Net Subscriber Additions in US by Service Provider
- Figure 58. Smartphone Traffic vs Tablets Other Wireless Hones, and Laptops
- Figure 59. Massive Investment Cycle: US Homes Passed with Fiber
- Figure 60. Key Market Driver
- Figure 61. Small Cell Hyperdense Installation in Oakland CA
- Figure 62. Hyperdense Work Streams Features
- Figure 63. Hyper-dense Smart Cell Features
- Figure 64. Nokia Femtocell Price Image
- Figure 65. Small Cell Prices And Coverage, Verizon, Samsung and AT&T
- Figure 66. Sprint Magicbox
- Figure 67. Small Cells Regional Market Segments, 2018
- Figure 68. Small Cells Regional Market Segments, 2018

Figure 69. A Recent Crown Castle Small Cell with VZ on it at 35th & Lituanica, Chicago:

Figure 70. Small Cells San Francisco and Oakland

Figure 71. Small Cells and Electricity Distribution

Figure 72. Small Cells vs. DAS Locations

Figure 73. Houston Small Cell Separate Site Applications

Figure 74. Industry Small Cell Installations vs. Examples

Figure 75. Small Cell Forum Partners

Figure 76. Small Cell Forum Collaboration Partners

Figure 77. Integrate Wireless Technology Into The Built Environment

Figure 78. 5G Licensed, Shared, and Unlicensed Spectrum Bands and Properties

Figure 79. Bandwidth Allocation by Country

Figure 80. 5G Spectrum Utilizing Low, Mid, and High Bands

Figure 81. 5G NR mmWave Outdoor Coverage via co-Siting

Figure 82. ANS Trusted Source of Backhaul Expertise

Figure 83. DAS Services by ANS

Figure 84. Small Cell Services by ANS

Figure 85. DAS Services by ANS

Figure 86. ADRF Positioning

Figure 87. Ciena Revenue Q\$ 2017 and 2016

Figure 88. Cisco Universal Small Cell 8000 Series

Figure 89. Commscope Revenue by Segment

Figure 90. Metro Cell Solution Locations

Figure 91. Macro Cell Tower Solutions Locations

Figure 92. Macro Cell Tower Solutions Signal Transmission Types

Figure 93. Metro Cell Solution Signal Transmission Types

Figure 94. SpiderCloud LTE Small Cell Technology

Figure 95. Ericsson Small Cell Portfolio Features:

Figure 96. Ericsson Positioning for Small Cells

Figure 97. Ericsson End-To-End Integrated Small Cells

Figure 98. Ericsson Small Cell Strand-Mount Unit for Outdoor Micro Radios Making It Easier To Install Radios On Existing Grid: Hung On Aerial Coax, Fiber, Or Electricity Cables

Figure 99. Ericsson Multi-Operator Dot and the Multi-Dot Enclosure Functions

Figure 100. Ericsson Radio Dot System Architecture

Figure 101. Ericsson Dual Band Radio Dot

Figure 102. Ericsson Hardened Radio Dot for Outdoor and Stadium Deployments

Figure 103. Outdoor and Stadium Ericsson Hardened Radio Dot Small Cell Features

Figure 104. Ericsson Small Cell In-Building Solutions

Figure 105. Huawei Small Cells

- Figure 106. Huawei Positioning with Small Cells to Address Network Operator Needs
- Figure 107. Huawei Significant Breakthroughs In Air Interface Solutions
- Figure 108. Small Cell 4.5G Technologies Implementations
- Figure 109. Nokia eNode Bs Features
- Figure 110. Nokia 5G AirScale and AirFrame Radio Portfolio
- Figure 111. Nokia Broadband Traffic
- Figure 112. Nokia AirScale
- Figure 113. Nokia 5G Applications Remote Vehicle SubArrays, Multiple Nodes with 128 Antennae elements, Indoor Mobility, Adaptive Beam Tracking, Outdoor Vehicular Mobility
- Figure 114. Nokia In Building Wireless
- Figure 115. Nokia Small Cell Target Markets
- Figure 116. Nokia DAS and Hybrid Ethernet Based DAS
- Figure 117. Nokia Supports Indoor Wireless
- Figure 118. Nokia Advantages of Small Cells
- Figure 119. Small Cells Support Heterogeneous Network
- Figure 120. Nokia Small Cell Deployments
- Figure 121. Nokia AirScale Wi-Fi'
- Figure 122. NTSI Customers
- Figure 123. Qualcomm/Nokia Partnership
- Figure 124. Mobile Carriers And Wireless Networks That Need Enhanced Reception
- Figure 125. Small Cell Forum Standardization Of Key Elements Of Small Cell Technology
- Figure 126. Small Cell Forum Membership Standardization Of Key Elements Of Small Cell Technology
- Figure 127. 5G Issues As They Relate To Small Cells And Network Densification
- Figure 128. Small Cell Forum Issues, Virtualization, Cloud, Edge, Shared Spectrum, RAN
- Figure 129. Operational and Deployment Requirements, Including Regulatory Frameworks, Backhaul And Sites Topics
- Figure 130. Solid Technologies Small Cells for Hospitals
- Figure 131. Series of ZTE LTE Small Cell products
- Figure 132. ZTE Small Cell Product Highlights

## I would like to order

Product name: Small Cells: Market Shares, Strategies, and Forecasts, Worldwide, 2019 to 2025

Product link: <https://marketpublishers.com/r/S4A24FA500CEN.html>

Price: US\$ 4,400.00 (Single User License / Electronic Delivery)

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

[info@marketpublishers.com](mailto:info@marketpublishers.com)

## Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/S4A24FA500CEN.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