

5G for FWA (Fixed Wireless Access): 2017 – 2030 – Opportunities, Challenges, Strategies & Forecasts

<https://marketpublishers.com/r/584C17E6F6DEN.html>

Date: August 2017

Pages: 213

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

ID: 584C17E6F6DEN

Abstracts

Commonly referred to as FWA, Fixed Wireless Access has emerged as one of the most predominant use cases for early 5G network rollouts. Multiple mobile operators and service providers are initially seeking to capitalize on 5G as a fixed wireless alternative to deliver last-mile connectivity – at multi-hundred Megabit and Gigabit speeds – in areas with insufficient fiber holdings.

The very first standardized deployments of 5G-based FWA are expected to be commercialized as early as 2019. Largely driven by early commercial rollouts by Verizon Communications and AT&T in the United States, 5G-based FWA subscriptions are expected to account for \$1 Billion in service revenue by the end of 2019 alone. The market is further expected to grow at a CAGR of approximately 84% between 2019 and 2025, eventually accounting for more than \$40 Billion.

The “5G for FWA (Fixed Wireless Access): 2017 – 2030 – Opportunities, Challenges, Strategies & Forecasts” report presents an in-depth assessment of the emerging 5G-based FWA ecosystem including key market drivers, challenges, enabling technologies, revenue potential, application scenarios, service provider deployment commitments, case studies, spectrum availability/allocation, vendor profiles and strategies. The report also presents forecasts for 5G-based FWA investments and operator services.

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

Contents

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

CHAPTER 2: AN OVERVIEW OF 5G

- 2.1 What is 5G?
- 2.2 High-Level Architecture of 5G Networks
 - 2.2.1 5G NR (New Radio) Access Network
 - 2.2.2 NextGen (Next Generation) Core Network
- 2.3 5G Performance Requirements
 - 2.3.1 Data Volume
 - 2.3.2 Data Rate
 - 2.3.3 Bandwidth
 - 2.3.4 Spectral Efficiency
 - 2.3.5 Response Time & Latency
 - 2.3.6 Connection Density
 - 2.3.7 Reliability
 - 2.3.8 Mobility
 - 2.3.9 Availability & Coverage
 - 2.3.10 Energy Efficiency
- 2.4 Target Application Areas
 - 2.4.1 eMBB (Enhanced Mobile Broadband)
 - 2.4.2 URLLC (Ultra-Reliable and Low Latency Communications)
 - 2.4.3 mMTC (Massive Machine-Type Communications)
- 2.5 Key Enabling Technologies
 - 2.5.1 Air Interface Design Enhancements
 - 2.5.2 Centimeter & Millimeter Wave Radio Access
 - 2.5.3 Advanced Antenna Technologies
 - 2.5.4 D2D (Device-to-Device) Connectivity & Communication

- 2.5.5 Self-Backhauling & Mesh Networking
- 2.5.6 Spectrum Sharing & Aggregation
- 2.5.7 Multi-Site & Multi-RAN Connectivity
- 2.5.8 Control and User Plane Separation
- 2.5.9 Network Slicing
- 2.5.10 Service Based Architecture
- 2.5.11 Other Complementary Technologies & Concepts
- 2.6 Market Drivers
 - 2.6.1 Why the Need for a 5G Standard?
 - 2.6.2 Improving Spectrum Utilization
 - 2.6.3 Advances in Key Enabling Technologies
 - 2.6.4 Gigabit Wireless Connectivity: Supporting Future Services
 - 2.6.5 Extreme Device Densities with the IoT (Internet of Things)
 - 2.6.6 Moving Towards a Flatter Network Architecture
 - 2.6.7 Role of Vertical Sectors & the 4th Industrial Revolution
- 2.7 Challenges & Inhibitors
 - 2.7.1 Standardization Challenges: Too Many Stakeholders
 - 2.7.2 Spectrum Regulation & Complexities
 - 2.7.3 Massive MIMO, Beamforming & Antenna Technology Issues
 - 2.7.4 Higher Frequencies Mean New Infrastructure
 - 2.7.5 Complex Performance Requirements
 - 2.7.6 Energy Efficiency & Technology Scaling

CHAPTER 3: BUSINESS CASE, APPLICATIONS & SPECTRUM FOR 5G-BASED FWA

- 3.1 Overview & Revenue Potential
- 3.2 Segment-Specific Market Growth Drivers
- 3.3 Segment-Specific Market Barriers
- 3.4 Key Application Scenarios
 - 3.4.1 Broadband Internet
 - 3.4.2 Pay TV
 - 3.4.3 IoT & Other Applications
- 3.5 Spectrum for 5G-Based FWA

CHAPTER 4: CASE STUDIES OF FWA DEPLOYMENTS

- 4.1 5G-Based FWA Networks
 - 4.1.1 Arqiva

- 4.1.2 AT&T
- 4.1.3 C Spire
- 4.1.4 Hammer Fiber
- 4.1.5 Now Corporation
- 4.1.6 U.S. Cellular
- 4.1.7 Verizon Communications
- 4.2 FWA Networks Based on Other Technologies
 - 4.2.1 Facebook
 - 4.2.2 Google
 - 4.2.3 NBN Co
 - 4.2.4 Prairie Hills Wireless
 - 4.2.5 Redzone Wireless
 - 4.2.6 Starry

CHAPTER 5: MARKET ANALYSIS & FORECASTS

- 5.1 Pre-Standards 5G Network Investments
 - 5.1.1 Segmentation by Submarket
 - 5.1.2 Base Stations
 - 5.1.3 User Equipment
 - 5.1.4 Transport Networking & Other Investments
- 5.2 Global Outlook for Standardized 5G Infrastructure
 - 5.2.1 Segmentation by Submarket
 - 5.2.2 5G NR
 - 5.2.2.1 Macrocell Base Stations
 - 5.2.2.2 Small Cells
 - 5.2.2.3 RRHs (Remote Radio Heads)
 - 5.2.2.4 C-RAN BBUs (Baseband Units)
 - 5.2.3 NextGen Core Network
 - 5.2.4 Fronthaul & Backhaul Networking
 - 5.2.5 Segmentation by Region
- 5.3 Global Outlook for Standardized 5G-Based FWA User Equipment
 - 5.3.1 5G-Based FWA CPEs
 - 5.3.2 Segmentation by Region
- 5.4 Global Outlook for 5G-Based FWA Operator Services
 - 5.4.1 5G-Based FWA Subscriptions
 - 5.4.2 5G-Based FWA Service Revenue
 - 5.4.3 Application Scenario Segmentation
 - 5.4.3.1 Broadband Internet

- 5.4.3.2 Pay TV
- 5.4.3.3 IoT & Other Applications
- 5.4.4 User Base Segmentation
 - 5.4.4.1 Residential
 - 5.4.4.2 Business
- 5.4.5 Regional Segmentation
- 5.5 Asia Pacific
 - 5.5.1 5G Infrastructure
 - 5.5.2 5G-Based FWA User Equipment
 - 5.5.3 5G-Based FWA Subscriptions
 - 5.5.4 5G-Based FWA Service Revenue
- 5.6 Eastern Europe
 - 5.6.1 5G Infrastructure
 - 5.6.2 5G-Based FWA User Equipment
 - 5.6.3 5G-Based FWA Subscriptions
 - 5.6.4 5G-Based FWA Service Revenue
- 5.7 Latin & Central America
 - 5.7.1 5G Infrastructure
 - 5.7.2 5G-Based FWA User Equipment
 - 5.7.3 5G-Based FWA Subscriptions
 - 5.7.4 5G-Based FWA Service Revenue
- 5.8 Middle East & Africa
 - 5.8.1 5G Infrastructure
 - 5.8.2 5G-Based FWA User Equipment
 - 5.8.3 5G-Based FWA Subscriptions
 - 5.8.4 5G-Based FWA Service Revenue
- 5.9 North America
 - 5.9.1 5G Infrastructure
 - 5.9.2 5G-Based FWA User Equipment
 - 5.9.3 5G-Based FWA Subscriptions
 - 5.9.4 5G-Based FWA Service Revenue
- 5.10 Western Europe
 - 5.10.1 5G Infrastructure
 - 5.10.2 5G-Based FWA User Equipment
 - 5.10.3 5G-Based FWA Subscriptions
 - 5.10.4 5G-Based FWA Service Revenue

CHAPTER 6: VENDOR PROFILES

- 6.1 3Roam
- 6.2 4RF
- 6.3 Advantech Wireless
- 6.4 Airspan Networks
- 6.5 ALCOMA
- 6.6 Aviat Networks
- 6.7 Blu Wireless Technology
- 6.8 BluWan
- 6.9 BridgeWave Communications
- 6.10 CableFree (Wireless Excellence)
- 6.11 Cambium Networks
- 6.12 Carlson Wireless Technologies
- 6.13 CBNL (Cambridge Broadband Networks Ltd.)
- 6.14 CCI (Communication Components, Inc.)
- 6.15 CCS (Cambridge Communication Systems)
- 6.16 Ceragon Networks
- 6.17 Cielo Networks
- 6.18 Cohere Technologies
- 6.19 Collinear Networks
- 6.20 DragonWave
- 6.21 E-Band Communications
- 6.22 Eblink
- 6.23 ELVA-1
- 6.24 Ericsson
- 6.25 Exalt Wireless
- 6.26 FastBack Networks
- 6.27 Filtronic
- 6.28 Fujitsu
- 6.29 GlobalFoundries
- 6.30 Huawei
- 6.31 HXI
- 6.32 IBM Corporation
- 6.33 IDT (Integrated Device Technology)
- 6.34 Imec International
- 6.35 InfiNet Wireless
- 6.36 Intel Corporation
- 6.37 InterDigital
- 6.38 Intracom Telecom
- 6.39 JRC (Japan Radio Company)

- 6.40 KMW
- 6.41 Lattice Semiconductor
- 6.42 LightPointe Communications
- 6.43 LigoWave
- 6.44 Loea Corporation
- 6.45 Maja Systems
- 6.46 MAX4G
- 6.47 MaxLinear
- 6.48 Microwave Networks
- 6.49 Mimosa Networks
- 6.50 MIMOtech
- 6.51 MTI (Microelectronics Technology, Inc.)
- 6.52 NEC Corporation
- 6.53 NexxCom Wireless
- 6.54 Nokia
- 6.55 PHAZR
- 6.56 Polewall
- 6.57 Proxim Wireless Corporation
- 6.58 Qualcomm
- 6.59 RACOM
- 6.60 Radio Gigabit
- 6.61 RADWIN
- 6.62 Redline Communications
- 6.63 REMEC Broadband Wireless Networks
- 6.64 SAF Tehnika
- 6.65 Samsung Electronics
- 6.66 SIAE Microelectronica
- 6.67 Siklu Communication
- 6.68 Sivers IMA
- 6.69 SkyFiber
- 6.70 Solectek Corporation
- 6.71 Spectronite
- 6.72 Star Microwave
- 6.73 Tarana Wireless
- 6.74 Trango Systems
- 6.75 Vubiq Networks
- 6.76 Wave1
- 6.77 Wavesight
- 6.78 Wytec International

6.79 Xilinx

6.80 ZTE

CHAPTER 7: CONCLUSION & STRATEGIC RECOMMENDATIONS

7.1 Why is the Market Poised to Grow?

7.2 Review of Ongoing 5G-Based FWA Deployments

7.3 Prospects for Millimeter Wave Wireless Connectivity Specialists

7.4 28 GHz Spectrum to Lead Early Deployments

7.5 Preparing Networks for 5G Mobile Services

7.6 What is the Cost Saving Potential of 5G-Based FWA for Last Mile-Connectivity?

7.7 Strategic Recommendations

7.7.1 Vendors

7.7.2 Service Providers

List Of Figures

LIST OF FIGURES

Figure 1: 5G Network Architecture & Interaction with Other Networks

Figure 2: 5G Performance Requirements

Figure 3: Conceptual Architecture for End-to-End Network Slicing in Mobile Networks

Figure 4: Service Based Architecture for 5G

Figure 5: Leading 5G Use Cases

Figure 6: Distribution of 5G-Based FWA Service Revenue, by Application Scenario: 2019 (%)

Figure 7: 5G-Based FWA Application Scenarios

Figure 8: Convergence of 5G with Wireline Networks

Figure 9: LTE-Based FWA TV Service Architecture

Figure 10: Key Characteristics of Verizon's 5G Specifications

Figure 11: Facebook's Terragraph Network

Figure 12: NBN's FWA Equipment Setup

Figure 13: Global Pre-Standards 5G Network Investments: 2016 - 2018 (\$ Million)

Figure 14: Global Pre-Standards 5G Network Investments by Submarket: 2016 - 2018 (\$ Million)

Figure 15: Global Pre-Standards 5G Base Station Shipments: 2016 - 2018 (Units)

Figure 16: Global Pre-Standards 5G Base Station Shipment Revenue: 2016 - 2018 (\$ Million)

Figure 17: Global Pre-Standards 5G User Equipment Shipments: 2016 - 2018 (Units)

Figure 18: Global Pre-Standards 5G User Equipment Shipment Revenue: 2016 - 2018 (\$ Million)

Figure 19: Global Transport Networking & Other Investments for Pre-Standards 5G Networks: 2016 - 2018 (\$ Million)

Figure 20: Global 5G Infrastructure Investments: 2019 - 2030 (\$ Million)

Figure 21: Global 5G Infrastructure Investments by Submarket: 2019 - 2030 (\$ Million)

Figure 22: Global 5G NR Investments: 2019 - 2030 (\$ Million)

Figure 23: Global 5G NR Investments by Submarket: 2019 - 2030 (\$ Million)

Figure 24: Global 5G Macrocell Base Station Shipments: 2019 - 2030 (Thousands of Units)

Figure 25: Global 5G Macrocell Base Station Shipment Revenue: 2019 - 2030 (\$ Million)

Figure 26: Global 5G Small Cell Shipments: 2019 - 2030 (Thousands of Units)

Figure 27: Global 5G Small Cell Shipment Revenue: 2019 - 2030 (\$ Million)

Figure 28: Global 5G RRH Shipments: 2019 - 2030 (Thousands of Units)

- Figure 29: Global 5G RRH Shipment Revenue: 2019 - 2030 (\$ Million)
- Figure 30: Global 5G C-RAN BBU Shipments: 2019 - 2030 (Thousands of Units)
- Figure 31: Global 5G C-RAN BBU Shipment Revenue: 2019 - 2030 (\$ Million)
- Figure 32: Global NextGen Core Network Investments: 2019 - 2030 (\$ Million)
- Figure 33: Global 5G Fronthaul & Backhaul Investments: 2019 - 2030 (\$ Million)
- Figure 34: 5G Infrastructure Investments by Region: 2019 - 2030 (\$ Million)
- Figure 35: Global 5G-Based FWA CPE Unit Shipments: 2019 - 2030 (Millions of Units)
- Figure 36: Global 5G-Based CPE Unit Shipment Revenue: 2019 - 2030 (\$ Billion)
- Figure 37: 5G-Based FWA CPE Unit Shipments by Region: 2019 - 2030 (Millions of Units)
- Figure 38: 5G-Based FWA CPE Unit Shipment Revenue by Region: 2019 - 2030 (\$ Billion)
- Figure 39: Global 5G-Based FWA Subscriptions: 2019 - 2030 (Millions)
- Figure 40: Global 5G-Based FWA Service Revenue: 2019 - 2030 (\$ Billion)
- Figure 41: 5G-Based FWA Service Revenue by Application Scenario: 2019 - 2030 (\$ Billion)
- Figure 42: 5G-Based FWA Service Revenue for Broadband Internet: 2019 - 2030 (\$ Billion)
- Figure 43: 5G-Based FWA Service Revenue for Pay TV: 2019 - 2030 (\$ Billion)
- Figure 44: 5G-Based FWA Service Revenue for IoT & Other Applications: 2019 - 2030 (\$ Billion)
- Figure 45: 5G-Based FWA Subscriptions by User Base: 2019 - 2030 (Millions)
- Figure 46: 5G-Based FWA Service Revenue by User Base: 2019 - 2030 (\$ Billion)
- Figure 47: 5G-Based FWA Subscriptions for Residential Users: 2019 - 2030 (Millions)
- Figure 48: 5G-Based FWA Service Revenue for Residential Users: 2019 - 2030 (\$ Billion)
- Figure 49: 5G-Based FWA Subscriptions for Business Users: 2019 - 2030 (Millions)
- Figure 50: 5G-Based FWA Service Revenue for Business Users: 2019 - 2030 (\$ Billion)
- Figure 51: 5G-Based FWA Subscriptions by Region: 2019 - 2030 (Millions)
- Figure 52: 5G-Based FWA Service Revenue by Region: 2019 - 2030 (\$ Billion)
- Figure 53: Asia Pacific 5G Infrastructure Investments: 2019 - 2030 (\$ Million)
- Figure 54: Asia Pacific 5G-Based FWA CPE Unit Shipments: 2019 - 2030 (Millions of Units)
- Figure 55: Asia Pacific 5G-Based FWA CPE Unit Shipment Revenue: 2019 - 2030 (\$ Billion)
- Figure 56: Asia Pacific 5G-Based FWA Subscriptions: 2019 - 2030 (Millions)
- Figure 57: Asia Pacific 5G-Based FWA Service Revenue: 2019 - 2030 (\$ Billion)
- Figure 58: Eastern Europe 5G Infrastructure Investments: 2019 - 2030 (\$ Million)
- Figure 59: Eastern Europe 5G-Based FWA CPE Unit Shipments: 2019 - 2030 (Millions)

of Units)

Figure 60: Eastern Europe 5G-Based FWA CPE Unit Shipment Revenue: 2019 - 2030 (\$ Billion)

Figure 61: Eastern Europe 5G-Based FWA Subscriptions: 2019 - 2030 (Millions)

Figure 62: Eastern Europe 5G-Based FWA Service Revenue: 2019 - 2030 (\$ Billion)

Figure 63: Latin & Central America 5G Infrastructure Investments: 2019 - 2030 (\$ Million)

Figure 64: Latin & Central America 5G-Based FWA CPE Unit Shipments: 2019 - 2030 (Millions of Units)

Figure 65: Latin & Central America 5G-Based FWA CPE Unit Shipment Revenue: 2019 - 2030 (\$ Billion)

Figure 66: Latin & Central America 5G-Based FWA Subscriptions: 2019 - 2030 (Millions)

Figure 67: Latin & Central America 5G-Based FWA Service Revenue: 2019 - 2030 (\$ Billion)

Figure 68: Middle East & Africa 5G Infrastructure Investments: 2019 - 2030 (\$ Million)

Figure 69: Middle East & Africa 5G-Based FWA CPE Unit Shipments: 2019 - 2030 (Millions of Units)

Figure 70: Middle East & Africa 5G-Based FWA CPE Unit Shipment Revenue: 2019 - 2030 (\$ Billion)

Figure 71: Middle East & Africa 5G-Based FWA Subscriptions: 2019 - 2030 (Millions)

Figure 72: Middle East & Africa 5G-Based FWA Service Revenue: 2019 - 2030 (\$ Billion)

Figure 73: North America 5G Infrastructure Investments: 2019 - 2030 (\$ Million)

Figure 74: North America 5G-Based FWA CPE Unit Shipments: 2019 - 2030 (Millions of Units)

Figure 75: North America 5G-Based FWA CPE Unit Shipment Revenue: 2019 - 2030 (\$ Billion)

Figure 76: North America 5G-Based FWA Subscriptions: 2019 - 2030 (Millions)

Figure 77: North America 5G-Based FWA Service Revenue: 2019 - 2030 (\$ Billion)

Figure 78: Western Europe 5G Infrastructure Investments: 2019 - 2030 (\$ Million)

Figure 79: Western Europe 5G-Based FWA CPE Unit Shipments: 2019 - 2030 (Millions of Units)

Figure 80: Western Europe 5G-Based FWA CPE Unit Shipment Revenue: 2019 - 2030 (\$ Billion)

Figure 81: Western Europe 5G-Based FWA Subscriptions: 2019 - 2030 (Millions)

Figure 82: Western Europe 5G-Based FWA Service Revenue: 2019 - 2030 (\$ Billion)

Figure 83: Cost Comparison Between 5G-Based FWA and FTTP for Last-Mile Connectivity Establishment (\$ per Premises)

LIST OF COMPANIES MENTIONED

3GPP (Third Generation Partnership Project)

3Roam

4RF

Avantech Wireless

Airspan Networks

ALCOMA

Alphabet

Arqiva

AT&T

Aviat Networks

BLiNQ Networks

Blu Wireless Technology

BluWan

BridgeWave Communications

C Spire

CableFree (Wireless Excellence)

Cambium Networks

Carlson Wireless Technologies

CBNL (Cambridge Broadband Networks Ltd.)

CCI (Communication Components, Inc.)

CCS (Cambridge Communication Systems)

Ceragon Networks

China Mobile

Cielo Networks

Cohere Technologies

Collinear Networks

DragonWave

E-Band Communications

EBlink

ELVA-1

Ericsson

Exalt Wireless

Expway

Facebook

FastBack Networks

FiberTower Corporation

Filtronic
Fujitsu
GlobalFoundries
Go Long Wireless
Google
Google Fiber
Hammer Fiber
Huawei
HXI
IBM Corporation
IDT (Integrated Device Technology)
Imagine
Imec International
InfiNet Wireless
Intel Corporation
InterDigital
Intracom Telecom
ITU (International Telecommunication Union)
JRC (Japan Radio Company)
KMW
KT Corporation
Lattice Semiconductor
LG Electronics
LightPointe Communications
LigoWave
Loea Corporation
Maja Systems
MAX4G
MaxLinear
Microwave Networks
Mimosa Networks
MIMOtech
Moseley Associates
MTI (Microelectronics Technology, Inc.)
NBN Co
NEC Corporation
NetComm Wireless
NexxCom Wireless
Nokia

Now Corporation
NTT DoCoMo
PHAZR
Polewall
Prairie Hills Wireless
Proxim Wireless Corporation
Qualcomm
RACOM
Radio Gigabit
RADWIN
Redline Communications
Redzone Wireless
REMEC Broadband Wireless Networks
SAF Tehnika
Samsung Electronics
SIAE Microelectronica
Siklu Communication
Sivers IMA
SK Telecom
SkyFiber
Solectek Corporation
Spectronite
Star Microwave
Starry
Straight Path Communications
Tarana Wireless
Telus
Telrad Networks
Time Warner
Trango Systems
U.S. Cellular
U.S. FCC (Federal Communications Commission)
Verizon Communications
Vubiq Networks
Wave1
Wavesight
Webpass
Wytec International
Xilinx

XO Communications
ZTE

I would like to order

Product name: 5G for FWA (Fixed Wireless Access): 2017 – 2030 – Opportunities, Challenges, Strategies & Forecasts

Product link: <https://marketpublishers.com/r/584C17E6F6DEN.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/584C17E6F6DEN.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

