



PIVOT
5GTM

mmWaveSolved

28 GHz Network Repeater with Holographic Beam Forming® Technology

Extends and Shapes 5G Coverage on Demand

Ultra-Low Latency

5G is PIVOTAL™

Overview

In another first, Pivotal Commware introduces the Pivot 5G™ network repeater for extending, redirecting and shaping mmWave signals from 5G base stations on demand and with low latency. Deploying Pivot 5Gs in conjunction with base stations, i.e., gNBs, allows operators to reach indoor and outdoor coverage objectives more effectively than using gNBs alone.



The gNB is designated by the red circle at left, while the Pivot 5G, designated by the green “P” at right, extends coverage to the homes shaded in green.

Breakthrough in Electromagnetic Physics

The Pivot 5G is a professionally installed on-the-pole/on-the-building repeater that uses Pivotal’s patented Holographic Beam Forming® (HBF) to achieve the lowest available cost, size, weight and power consumption profile. This way, network operators can extend coverage while minimizing siting costs and maximizing aesthetic appeal.

Solving the Business Case for mmWave

By extending and shaping 5G mmWave coverage, Pivot 5G helps operators minimize base station deployment CAPEX and reduce ongoing OPEX. Pivot 5G requires no fiber connection so siting cost and permitting time are drastically reduced.

Key Features

The Pivot 5G offers the following features:

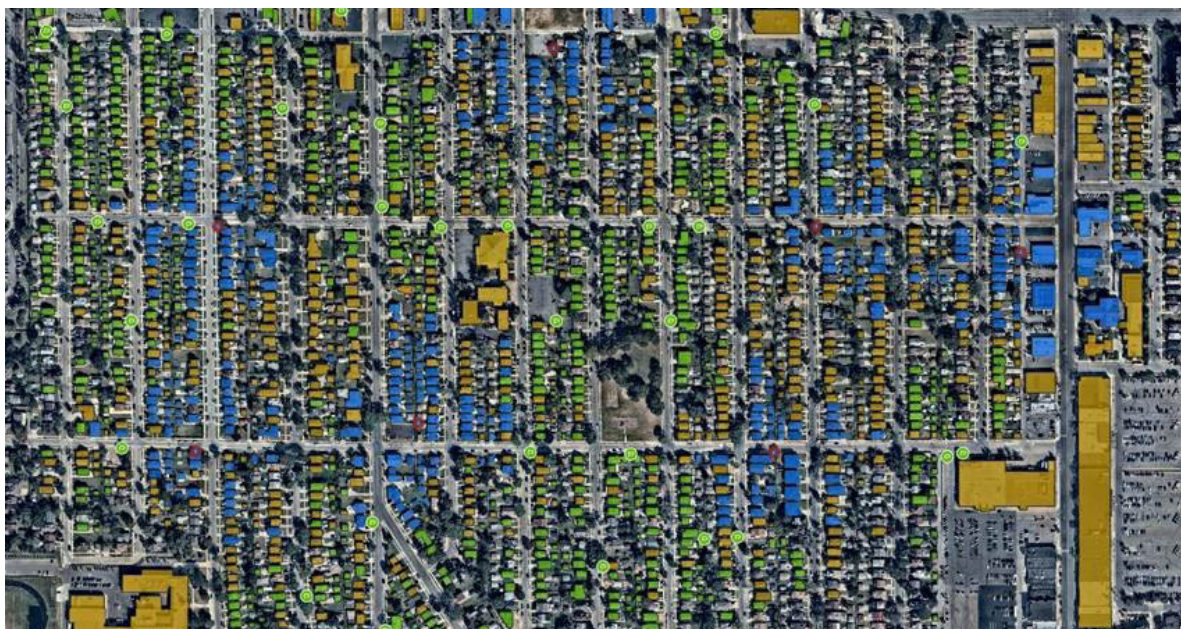
- Professionally installed on-the-pole/on-the-building repeater
- Ultra-low latency (<40 ns)
- Low power consumption (<30 Watts)
- Cloud-based remote management
- Lightweight (7.8 lbs.)
- High end-to-end gain (95 dB, oscillation free)
- Oscillation self-detection and prevention
- Auto-gain control for auto-ranging



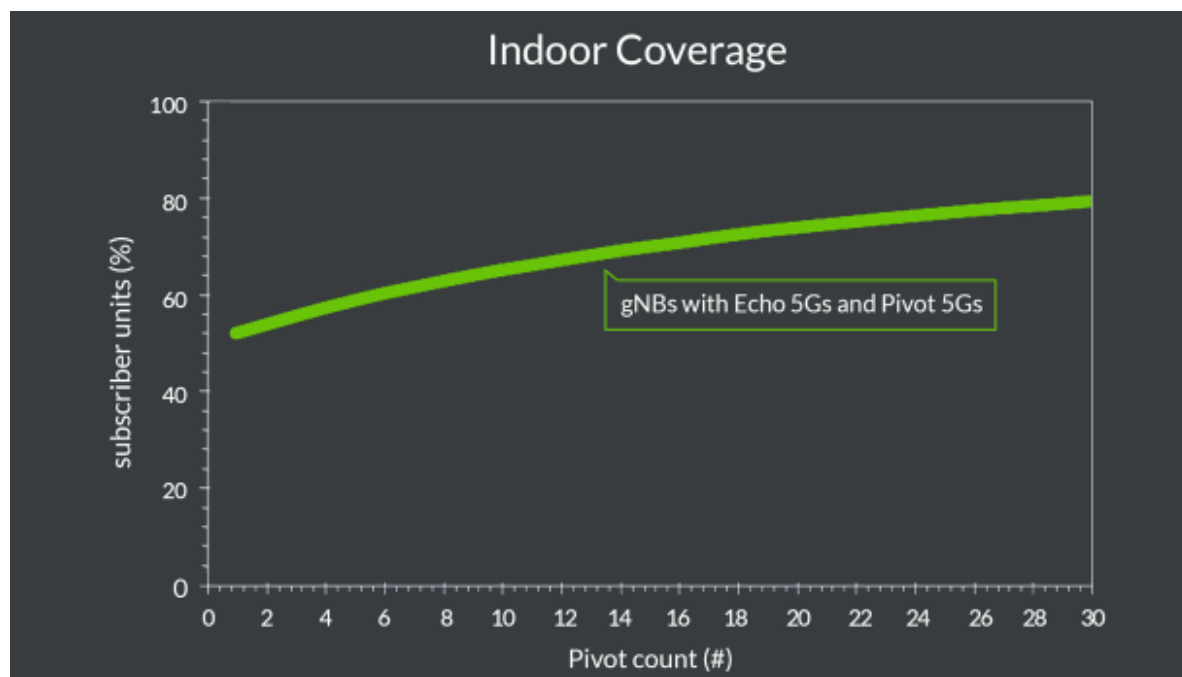
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Reducing 5G Deployment Costs with Pivot 5G

Propagation modelling depicts the seven red circles below as the budgetary limit of gNBs an operator will deploy for mobile coverage in one square kilometer of a suburb. Blue buildings, about 20% of the total, receive adequate indoor coverage from these gNBs. Yellow buildings served by window-mounted Echo 5Gs raise indoor coverage to 55%, and green buildings served by additional Echoes and Pivots (“P”) raise total coverage to 80%. See graph.



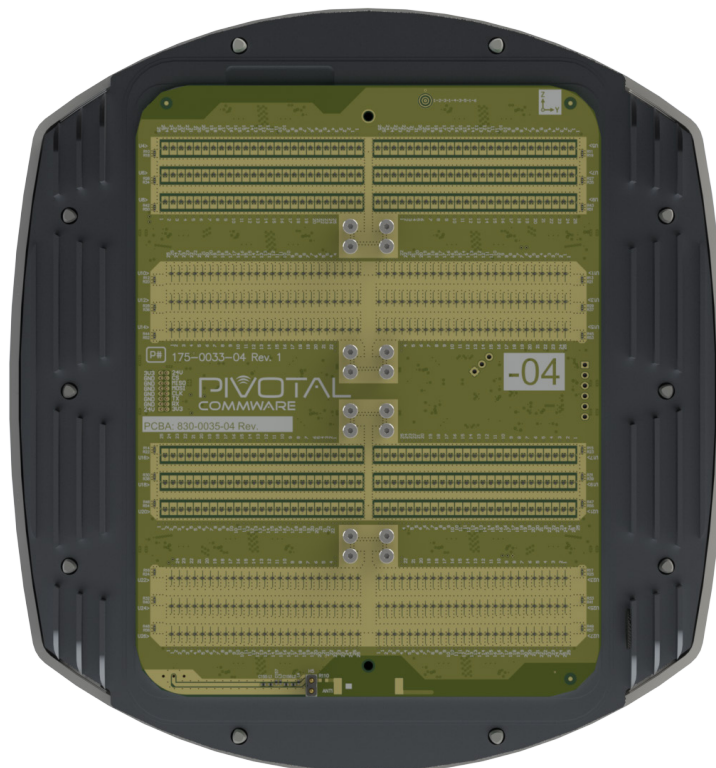
Raising coverage from 55% to 80% without adding gNBs – just Echoes and Pivots – will cost the operator \$468 per subscriber. Using additional gNBs to achieve 80% indoor coverage without Echoes or Pivots would cost \$1,822 per subscriber. For details please refer to *Reducing 5G Deployment Costs Using Holographic Beam Forming Repeaters* at www.pivotalcommare.com.



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Performance Specifications				
Parameter	Specification			
	Donor Unit	Service Unit (Narrow Beam)	Service Unit (Medium Beam)	Service Unit (Wide Beam)
Frequency of operation	27.5 to 28.35 GHz	27.5 to 28.35 GHz	27.5 to 28.35 GHz	27.5 to 28.35 GHz
Antenna Type	HBF	HBF	Horn	Horn
Az scan envelope	+/-76°	+/-76°	N/A	N/A
EI scan envelope	+/-35°	+/-35°	N/A	N/A
Azimuth (Horizontal)	5°	5°	50°	75°
Elevation (Vertical)	25°	25°	30°	45°
Gain tunable range - (DL / UL)	15 dB	15 dB	15 dB	15 dB
Max end-to-end gain - DL / UL (Oscillation free)	95 dB	95 dB	95 dB	95 dB
MIMO Max EIRP	41 dBm (UL)	41 dBm (DL)	37.5 dBm (DL)	34.5 dBm (DL)
Noise Figure at Max Gain - DL / UL	5 dB	5 dB	5 dB	5 dB
EVM at Max Gain - DL / UL	< 8%	< 8%	< 8%	< 8%
In-band ripple (per 100 MHz channel)	2 dB	2 dB	2 dB	2 dB
Latency	<40 ns	<40 ns	<40 ns	<40 ns

Additional Specifications				
Parameter	Specification			
	Donor Unit	Service Unit (Narrow Beam)	Service Unit (Medium Beam)	Service Unit (Wide Beam)
Operating Temperature	-40 to 55° C			
Maximum Donor Range (to gNB)	1000+ ft	N/A		
Dimensions (height x width x depth)	7.7” x 7.0” x 3.9”		7.7” x 7.0” x 5.0”	
Weight Donor Unit, Service HBF	3.6 lbs		4.2 lbs	
IP Rating	IP66			
Mounting Support	Pole, wall and roof - with MT-120018 bracket			
HW Configuration Supported	1DU and 1SU, 1DU and 2SU (with power splitter accessory), single and two hop			
Max. Power Consumption (single Donor Unit and Service Unit)	30 Watts			
Power Method	Wired, -48 VDC			
Configuration Management Interface	LTE CAT M1 and WiFi			
Commissioning	Local or Remote Commissioning			
Certifications	FCC, UL			



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WARNING: This is NOT a CONSUMER device. It is designed for installation by FCC LICENSEES and QUALIFIED INSTALLERS. You MUST have an FCC LICENSE or express consent of an FCC Licensee to operate this device. Unauthorized use may result in significant forfeiture penalties, including penalties in excess of \$100,000 for each continuing violation.

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