ECHO 5G BOOST 28

mmWaveSolved

Echo 5G™ Boost for 28 GHz Networks

Overcomes up to 50 dB of Low-E Glass Loss
Gbps+ Throughput, Ultra-low Latency
Holographic Beam Forming™
Customer Installable

PIVOTAL COMMWARE®

OVERVIEW

Today more than 50% of window sales in the commercial market and 80% of the sales in the residential market incorporate low emissivity (low-E) coatings. That's good news for saving energy, but bad news for acquiring an adequate mmWave signal through window glass. That's why Pivotal Commware gave its Echo 5G product line a Boost.

Pivotal pioneered the world's first on-glass beamforming smart repeater, Echo 5G™, to counteract signal loss at millimeter wave frequencies on standard glass. Now, Pivotal introduces the world's first and only subscriber repeater, Echo 5G Boost, designed for signal penetration through low-E glass.

HOLOGRAPHIC BEAM FORMING

All Pivotal repeaters use Holographic Beam Forming® to counteract window penetration and reflection loss so consumers and enterprises can enjoy Gigabit speeds beyond the reach of cable and DSL. HBF offers the lowest available cost, size, weight and power consumption (C-SWaP) beamformer profile of any mmWave repeater.

TRANSFORMING WORK AND PLAY FROM THE INSIDE

The Echo 5G Boost ensures the same Gigabit+ throughput and ultra-low latency to deliver secure, virtual/augmented reality and immersive experiences to homes and businesses. The Boost brings this capability inside using its uniquely lightweight and low-power design, attaching directly to low-e glass and powering through it from a wall plug inside. No under window cables. The Boost installs by the customer in minutes and closes the business case for carriers offering end-to-end solutions that will transform the way people work and play indoors, where 80% of wireless traffic typically originates.

KEY FEATURES

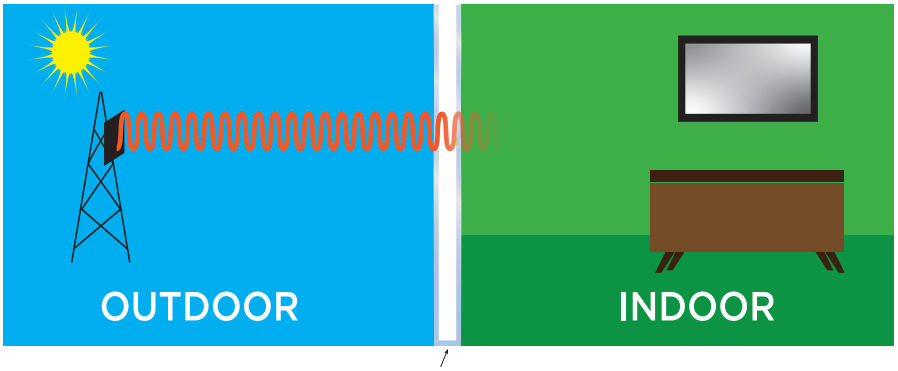
The Echo 5G Boost offers these features:

- On-the-window RF repeater
- Overcomes penetration loss on all low-e glass types by boosting the signal up to 50 dB
- Overcomes reflection loss by scanning to near horizon in azimuth
- Narrow and steerable beam towards gNB, wide static beam towards indoor CPE/UE
- Outdoor Unit (ODU) with HBF antenna and RF Front End functions, wirelessly powered through the window (Nominal: 20 Watts)
- Indoor Unit (IDU) with wireless power module and AC adapter interface
- Self-commissioning with auto acquisition and auto ranging functions
- Enables Gbps service indoors at distances up to 1 kilometer from the base station and 100+ ft into the interior of the building
- Compatible with 5G NR non-standalone (NSA) EN-DC and standalone (SA)
- Small IDU form factor, 8” dia. x .75” depth, 1.5 lbs. (See last page for full spec table)
- Cloud based remote OA&M and optimization functions via IoT

WHY IS LOW-E GLASS A CHALLENGE?

Low-e glass or Low emissivity glass has a thin coating between two or three panes of glass to reflect energy and keep temperatures in your home or enterprise consistent. This is good news for saving energy, but bad news for acquiring a mmWave 5G signal. The losses indoors from low-e glass can be as high as 50dB.

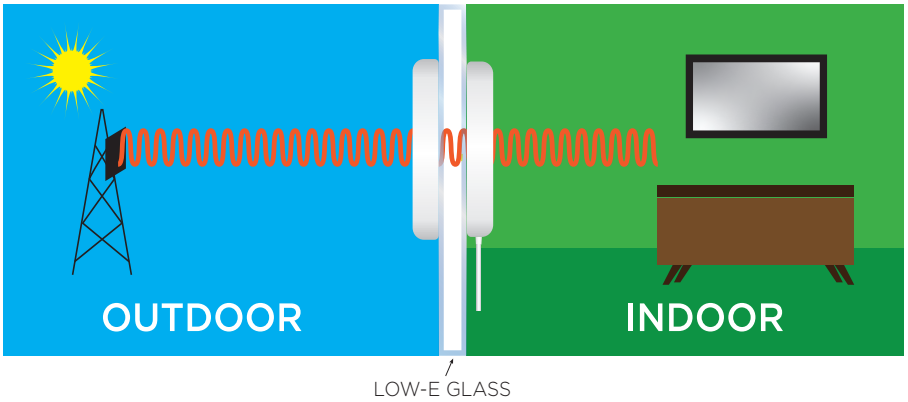
Estimates of low-e glass in U.S. households and businesses approximate 25% and 35%, respectively. But recently, says the Department of Energy[1], more than 50% of window sales in the commercial market and 80% of the sales in the residential market incorporate low-E coatings.



HOW DOES ECHO 5G BOOST SOLVE LOW-E GLASS?

Echo 5G outdoor units use Pivotal's patented Holographic Beam Forming® technology to acquire the 5G mmWave signal, amplify it, and transmit it indoors though the low-e glass. When the signal arrives indoors it has been attenuated significantly due to the difficulties penetrating low-e glass.

By adding an Indoor Boost Unit, that low signal can be captured, amplified and flooded indoors to extend the range of the gNb and provide gigabit coverage.



[1]EERE Success Story—Energy-Efficient Windows are Saving Americans Billions of Dollars, https://www.energy.gov/eere/success-stories/articles/eere-success-story-energy-efficient-windows-are-saving-americans

ECHO 5G BOOST DELIVERS PREMIUM CONNECTIVITY TODAY, METAVERSE TOMORROW

Untethered XR immersion for consumers and businesses won't happen without the high throughput and ultra-low latency of 5G mmWave. To learn more about how Pivotal's award-winning mmWave product ecosystem – Echo 5G, Pivot 5G, WaveScape and IBMS – helps carriers deploy economical mmWave networks, visit www.pivotalcommare.com.

PIVOTAL 5G BOOST 28 PARAMETER	SPECIFICATION
Frequency of operation	27.5 GHz to 28.35 GHz
HBF az scan envelope	+/-76°
HBF el scan envelope	+/-35°
HBF antenna gain (donor side)	16 dB
HPBW towards gNB - azimuth	5°
HPBW towards gNB - elevation	20°
HBF scan loss	6 dB at 76°
Static antenna gain (service side)	6 dB
HPBW towards CPE/UE - azimuth	120°
HPBW towards CPE/UE - elevation	60°
Gain tunable range - DL	30 dB
Gain tunable range - UL	30 dB
Max electronic gain - DL	55 dB
Max electronic gain - UL	55 dB
Max EIRP - DL	29 dBm
Max EIRP - UL	29 dBm
Min noise figure - DL	5 dB
Min noise figure - UL	5 dB
In-band ripple (per 100 MHz channel)	2 dB
Operating Temperature	ODU: -30 to 45° C IDU: 0° to 45° C
Dimensions	ODU: 8.25" diameter circle x 1.2" IDU: 8" diamter circle x 0.75"
Weight RF ODU	2.3 lbs.
Weight IDU	1.5 lbs.
IP Rating	ODU: IP54 IDU: IP31
Support Glass Type	Low-e dual and triple pane glass
Mounting	ODU: Adhesive, VHB IDU: Gecko Tape
Max. Power Consumption	40 Watts (from outlet)
Power Method	AC adapter for IDU and wireless power magnetically induced to ODU
Configuration Management Interface	Bluetooth® and LTE CAT M1
Activation	Automated
Certifications	FCC, UL certifications pending

WARNING. This is not a CONSUMER device. This device may not be sold at retail. You MUST have an FCC LICENSE or express consent of an FCC Licensee (or express consent of your service provider) to operate this device. Antennas must be installed at least 20 cm (8 inches) from any person. Unauthorized use may result in significant forfeiture penalties, including penalties in excess of $100,000 for each continuing violation.

PIVOTAL COMMWARE®

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