Case Study | Outdoor-to-Outdoor

Lighthouse™ Smart Network Controlled Repeater Trial Enhances 5G Coverage at Airgain Headquarters, San Diego

The Challenge

Despite proximity to a 5G macro cell site in Carmel Valley, outside San Diego, CA, the outdoor area around Airgain's headquarters (between buildings, adjacent walkways, and seating areas) experienced inconsistent 5G coverage due to urban clutter, obstructions, and orientation relative to the cell tower. The area surrounding the office complex showed highly degraded RSRP and limited usable throughput, particularly in the zones between buildings.

Without enhancement, over 66% of walk-test measurements in the target area fell below -100 dBm RSRP and over 48% of throughput points were recorded under 100 Mbps — far below expectations for 5G performance.

Solution

Airgain conducted a trial of its dual-beam Smart Network Controlled Repeater solution, installed 400 meters from the macro site and strategically placed near the facility's weak coverage zone. The solution used:

- Dual-beam smart repeaters to intelligently redirect and amplify signal
- Multiple SU antennas to increase coverage width and signal quality
- Non-intrusive rooftop placement at the test area edge

Installation completed **within one business day**.

Challenge

Inconsistent 5G coverage experienced in outdoor areas of office complex

Solution

Dual-beam Smart Repeater installed with multiple SU antennas to increase coverage width and signal quality

Installation

Mapping of area, integration of directional antenna facing macro site, and beam tuning to match coverage voids

Results

Improved RSRP and throughput, clear greenfield coverage footprint, and validated for outdoor edge-enhancement

For more Information:
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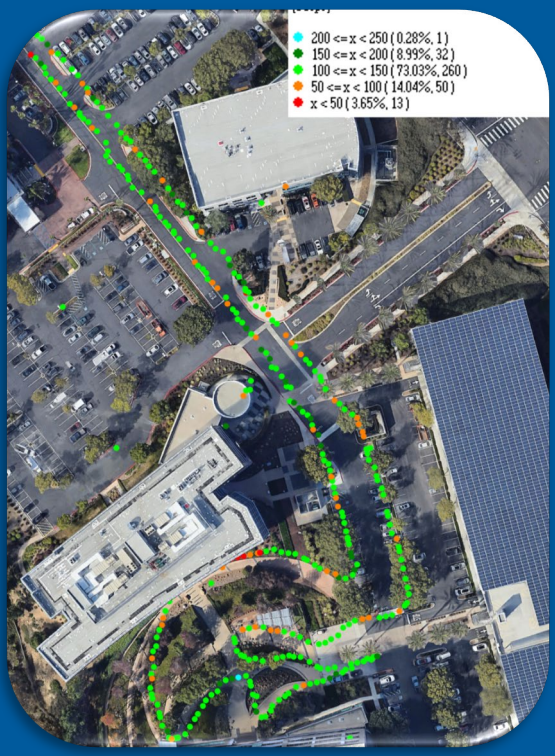
Walk Test Results

Without Lighthouse™ Repeater



With Lighthouse™ Repeater

Installation Approach

- Mapping of **test zone (between two buildings)** and adjacent walkways
- Integration of **directional antenna facing macro site**
- Repeater deployment near Airgain HQ
- **Beam tuning** to match coverage voids without overlap or interference

The Results

- **RSRP improvement:** From >66% below -100 dBm to **99% above -90 dBm**
- **Throughput improvement:** Majority of test area now sees **>150 Mbps**
- Clear **greenfield coverage footprint** over previously degraded regions
- Validated suitability for outdoor edge-enhancement in smart campus models

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