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## Executive Summary

The case study focuses on a US tier 1 wireless carrier's trial of Aglocell Maximizer algorithms in their communication network. These algorithms significantly enhanced signal quality by improving the signal-to-interference plus noise ratio (SINR) in low band frequencies by 58%. This improvement led to higher floor speed throughput and reduced low-band exhaustion. The challenge in modern



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5G/4G communication networks, is managing interference, particularly with the widespread use of tight frequency reuse to increase capacity. This often results in co-channel interference.

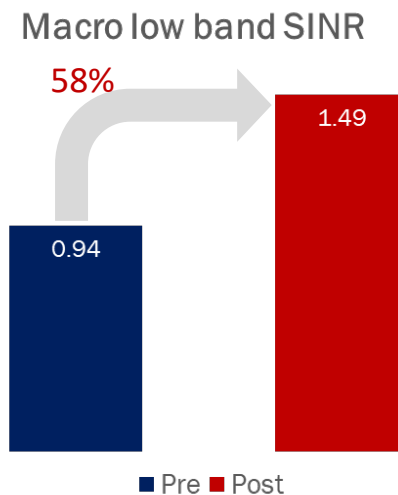
The trial demonstrated that by addressing interference, the overall network performance, particularly in metro suburban areas, can be substantially improved.

The case study explored the implementation of Aglocell's Infill and Layer Maximizer algorithms in a Radio Access Network (RAN) to mitigate interference. Key findings include:

1. Identification of a threshold for Signal Interference plus Noise Ratio (SINR) in RAN cells, beyond which there is a noticeable decline in downlink (DL) throughput.
2. The application of Aglocell algorithms led to a significant reduction in interference and an enhancement in SINR. This was achieved through refined RF tuning and layer management parameters adjustments.
3. Notably, these algorithms boosted the measured SINR in the low-band frequency by 58%, which correspondingly increased modulation rates and throughput speeds.

The Layer Maximizer algorithm introduces a novel approach to layer management, replacing absolute rules with dynamic cell pairing parameter adjustments for optimal signal quality. The Infill Maximizer identifies cells with SINR issues near neighboring sectors and analyses coverage intersections for precise adjustments.

A case study in a US tier 1 metro suburban market demonstrated a 58% improvement in low band SINR, showcasing the algorithms' effectiveness in real-world applications.



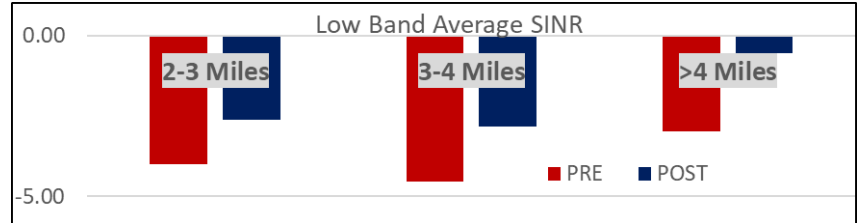
The Aglocell Infill and Layer Maximizer algorithms offer significant benefits in optimizing wireless network performance:

1. Addressing System Performance Degradation: The algorithms effectively tackle the issue of performance degradation in RAN cells with high interference. This is a crucial aspect since excessive interference is a primary factor in reducing overall system efficiency.
2. Optimization of SINR: Through strategic RF tuning and layer management, these algorithms enhance SINR. This optimization is pivotal in maintaining high-quality network connectivity, especially in areas with dense wireless traffic.
3. Significant Improvement in low band frequencies: A notable achievement of these algorithms is the 58% improvement in low band SINR. This substantial enhancement directly correlates to an increase in low-end throughput for end-users, translating to a more

reliable and faster network experience, particularly at the cell edge where low-band frequencies are heavily utilized.

Overall, the Aglocell Infill and Layer Maximizer algorithms demonstrated a tangible impact in improving network quality by mitigating interference and enhancing SINR, crucial for meeting the growing demands of modern wireless communication systems.

Improving low band cell edge SINR significantly increases low band performance by increasing modulation rates and throughput speeds between mid-band coverage areas.



The above chart highlights SINR improvement at the cell edge.