

Tiami
NETWORKS

Enterprise
5G Signal

Cloud Compute

PolyEdge
Multifunction Sensor

PolyEdge™ Occupancy Sensing & Tracking

Monitoring People without Collecting Personally Identifiable Information

Tiami Networks is at the forefront of integrating fifth-generation (5G) connectivity with advanced edge computing, revolutionizing how wireless devices interact and function. Our PolyEdge Multifunction Sensor combines data and radar sensing, machine learning (ML), and 5G technology in a single, powerful solution.

PolyEdge can monitor environments using 5G, Wi-Fi, and other wireless signals to detect the presence of individuals and to characterize objects. This technology works by analyzing ambient mobile signals and using radar-like capabilities to determine whether a space is occupied, allowing for real-time tracking and data collection without the need for intrusive cameras or manual oversight.

This makes PolyEdge an ideal solution for smart building management, security, and energy efficiency. In smart buildings, for example, occupancy detection can optimize lighting, heating, and cooling systems based on real-time usage, thereby saving energy and reducing costs. The sensor's ability to work seamlessly with existing wireless infrastructure also allows for easy deployment in large or complex environments, making it a flexible and scalable solution for modern occupancy detection needs.



PolyEdge™ Occupancy Sensing

PolyEdge Principle

Connect: Our PolyEdge Multifunction Sensor is a versatile node in any 5G infrastructure, offering impressive radar functionality. Efficient in various settings, it complies with global industry standards.

Compute: Central to our solution is embedded machine learning, powered by Intel® FPGA technology. This facilitates rapid data analysis and enhances decision-making. The fusion of Intel Agilex® SoC FPGAs with our technology heralds a new era in 5G and edge computing.

Track: We utilize 5G (and 4G and Wi-Fi) as a radar signal of opportunity allowing object and movement detection without direct 5G device interaction.

Operational Frequencies: Our solution utilizes a 2-antenna FPGA operating in the 0.6–3.7GHz range. With multiple operators using 5G we have near-nationwide coverage in the US. Coverage beyond the US is expected as 5G is deployed globally.



Applications

- Smart Home Automation
- Energy Efficiency
- Workplace Optimization
- Public Spaces
- Elderly Care
- Environmental Perception
- Smart Building Management
- Retail or Other Stores
- Sensitive Security Locations

Key Characteristics

- RF Receiver
 - Physical Dimensions: 97x155x15mm (W,D,H)
 - External Power: 5V
- Host PC
 - Physical Dimensions: 350x300x120mm (W,D,H)
 - External Power: 110 V
- Cabinets
 - TS2 Type 1P cabinets
 - Intel® FPGA technology
 - Intel Agilex® SoC FPGAs
 - 5G waveform as a radar signal

Operational Benefits

- Nationwide coverage from multiple network operators (AT&T, T-Mobile, Verizon, etc.)
- Works with Enterprise 5G
- Optimize HVAC Settings Automatically
- Monitoring an environment in real time, such as observing traffic and intrusion detection
- Remote and stand-alone operation
- Interconnect several sensors into a sensor cluster for extended coverage and accuracy