PNI Sensor

Smart Parking: Fine-Tuning Your LoRaWAN® Deployments
Best practices for LoRaWAN® deployments

• Perform a site survey prior to installation

• Test for RSSI with the actual end device vs. a generic testing tool

• Test for the device manufacturer’s recommended RSSI values

• Troubleshoot issues and make improvements
Use Case – Smart Parking

Vehicle Detection Sensor

Gateway

Public or Private LoRaWAN®

LoRa Network Service

Applications
Use Case: City of Montréal

- **Need**: Monitor on-street parking spaces in business district to reduce traffic congestion and manage enforcement

- **Situation**: Smart parking managed on a public LoRaWAN®

- **Challenge**: Sensor must function reliably in harsh weather; installation sites are in deep “urban canyons”
Use Case: City of Montréal

• Solution:
  • Tested parking sensors for -90dBm in spaces without car present
  • Configured gateways to optimize network performance
  • Deployed gateways in a higher location based on RSSI results
  • Parking sensors buried in-ground
  • Sensors reliably filter interference from passing traffic
Use Case: Nvidia Corporate Headquarters

- **Need**: Monitor space availability in parking garage of new, state of the art corporate campus in Silicon Valley

- **Situation**: Nvidia uses a private, on-premise LoRaWAN®

- **Challenge**: Garage has multiple stories; contains rebar-reinforced concrete obstructions; signal “dead zone” in center of garage
Use Case: Nvidia Corporate Headquarters

• Solution:
  • Tested parking sensors for -90dBm in spaces without car present
  • Adjusted gateway placement to account for the unique layout/shape of garage
  • Used more powerful gateway antennas
  • Installed surface-mount sensors in each parking space
Use Case: City of El Monte, California

- **Need**: Monitor space availability in city-managed parking lot and direct drivers where to park
- **Situation**: City uses a public LoRaWAN®
- **Challenge**: Large parking lot with an alley; integration with digital sign
Case Study: City of El Monte, California

• **Solution:**
  • Tested parking sensors for -90dBm in spaces without car present
  • Mounted gateway high on light pole in center of lot to reach edge devices
  • Used more powerful gateway antenna
  • Installed in-ground sensors in each parking space
  • Integrated with digital sign to guide drivers to rows with available parking
Factors to consider

• Density of gateways for **RELIABLE** network performance
• Placement of gateways
• Nearby buildings and obstructions
• Antenna size
• Device performance characteristics
Best practices for LoRaWAN® deployments

1. Plan
2. Site Survey
3. Set Up
4. Deploy
5. Test
6. Optimize
For more information visit: PNI Sensor Smart Parking