工業技術研究院
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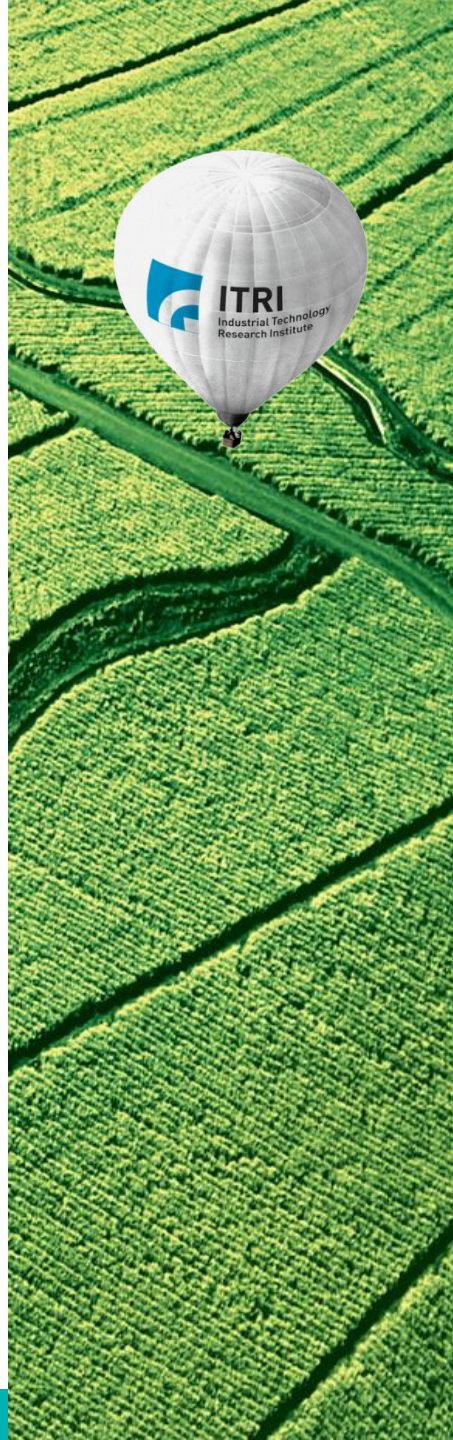
Research Institute



Taiwan-Japan 850MHz Wi-Fi HaLow Trial : Initial Results and Global Implications

AHPC/CIAT/Wi-Fi Alliance
2026/06/03

The strategic alliance driving 850MHz commercialization

台灣雲端物聯網產業協會
Cloud Computing & IoT Association in Taiwan

AHPC
802.11ah推進協議会

Wi Fi ALLIANCE

Accton

ALFA NETWORK

AsiaRF

ASKEY

NEWRACOM

AzureWave

WNC

SUNMI

Morse Micro

NTT東日本

FUJITSU

silex technology

BeMap

FURUNO SYSTEMS

BC

Leveraging Taiwan's IC design and system integration expertise to built an empirical reference model for Japanese frequency allocation and global AIoT deployments.

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Wi-Fi HaLow: Bridging the Gap Between Wi-Fi and LPWA

Extending Wi-Fi from Human Connectivity to Massive AIoT Applications

- **Long Range** — Up to Kilometers
- **Mbps-Class Throughput** — Ideal for real-world IoT
- **Low Power** — Longer battery life
- **Native IP** — Seamless integration
- **Without SIM** — Private & secure
- **Massive Scale** — 10K+ devices / AP

Massive AIoT Use Cases Enabled by Wi-Fi HaLow

Why Wi-Fi HaLow?

- **Global Standard** — IEEE 802.11ah Industry Ecosystem
- **Secure & Reliable** — Enterprise-grade security (WPA3)
- **Easy Integration** — Works with existing Wi-Fi infrastructure
- **Cloud & Edge Ready** — Seamless connection to cloud platforms
- **Energy Efficient** — Lower power for battery-powered IoT
- **Scalable Network** — Supports thousands of devices per AP

Why Taiwan-Japan 850MHz Wi-Fi HaLow Matters

From Policy Vision to Global AIoT Deployment

1 Phase 1 – Market Pull

Japan as the Demand Anchor

Japan builds on proven 920MHz success and leads the transition to 850MHz.

Proven 920MHz Deployments
Smart meters, industrial sensing, public infrastructure

Policy Shift to 850MHz
Transitioning to a comprehensive 850MHz ecosystem

Strategic Role
Defines future market demand and shapes regulatory direction

2 Phase 2 – Ecosystem Build

Taiwan as the Implementation Engine

Taiwan provides the complete supply chain and world-class engineering capability for rapid deployment.

Strong Semiconductor Ecosystem
IC design, foundry, packaging, testing

Complete Supply Chain
Modules, APs, devices, gateways, antennas, systems

Rapid Prototyping & Manufacturing
ODM/OEM partners for fast product realization

Real-World Readiness
Large-scale field testing in diverse environments

3 Phase 3 – Joint Validation

Cross-Border Validation Platform

Japan and Taiwan collaborate to build a live ecosystem validation platform connecting technology, industry and regulators.

Ecosystem Collaboration

- **IC Vendors** — Core silicon providers
- **ODM / OEM Partners** — System integration & device makers
- **Regulatory & Standards** — Spectrum compliance & certification

Real Ecosystem Validation in the Field

Technology Validation · Product Validation · Regulatory Validation · Market Validation

4 Phase 4 – Global Expansion

From Asia to the World

850MHz Wi-Fi HaLow expands from Japan and Taiwan to the world, enabling massive AIoT applications.

Taiwan–Japan 850MHz Wi-Fi HaLow Validation Ecosystem

From Real-World Validation to Global AIoT Deployment

CROSS-BORDER COLLABORATION
Taiwan and Japan unite diverse expertise to build a living ecosystem

REAL-WORLD VALIDATION
Rigorous field testing in diverse environments and scenarios

ECOSYSTEM READINESS
Technology, regulatory and product validation for future deployment

GLOBAL AIoT IMPACT
Enabling scalable, long-range AIoT applications worldwide

COLLABORATIVE VALIDATION ECOSYSTEM

Equal Partners. Complementary Strengths. Shared Success.

THREE-PHASE VALIDATION JOURNEY

1 Phase 1 Baseline & Reference Validation

Location: ITRI Campus

- Coverage Performance
- RSSI
- SNR
- Throughput
- Device Stability
- Repeatability

Completed

2 Phase 2 Real-World Scenario Validation

Locations:
- Zhubei Coastal Fish Farms
- Tainan Open Farmlands

- Non-Line-of-Sight Propagation
- Coastal Environments
- Agricultural Environments
- Interference Conditions
- Long-Distance Connectivity
- Deployment Practicality

Completed

3 Phase 3 Application & Interoperability Validation

Status: Planned & Under Development
Timeline: 2026 – 2027

- Multi-Vendor Interoperability
- AI Cameras
- Environmental Sensors
- Smart Agriculture
- Smart Fishery
- Drone Connectivity
- Commercial AIoT Platforms
- Industrial Applications

Milestone
Results will be showcased at
COMPUTEX 2027

TARGET AIoT APPLICATIONS

Not an Isolated Lab Test.

A Living Ecosystem for Long-Range AIoT Validation.

Building the foundation for scalable 850MHz Wi-Fi HaLow deployment across Taiwan, Japan, and future global markets.

What We Discovered in Taiwan

More than just better performance

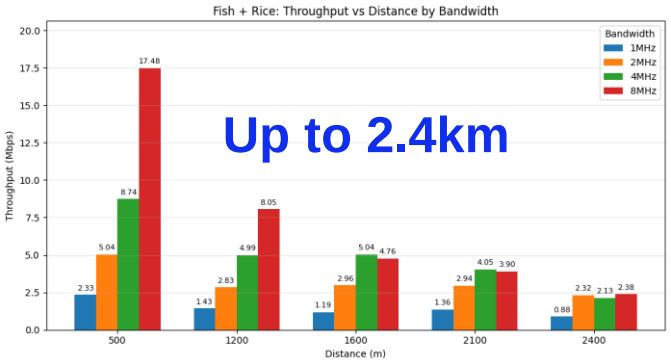
What We Measured

Propagation
Signal strength over long distances in real environments

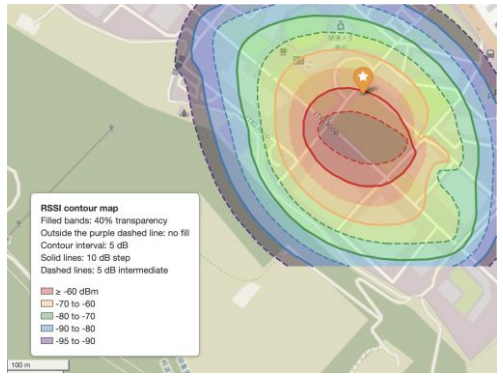
Throughput
Data rates under real-world conditions

Objective:
Evaluate the real potential of 850MHz Wi-Fi HaLow

1 Propagation: Longer Distance



2 Throughput: Stable Performance



850MHz Wi-Fi HaLow delivers superior propagation and maintains throughput over longer distances.

What We Observed

Wider Coverage
Signals reach farther, covering more area.

Fewer APs
Large areas can be covered with significantly fewer APs.

Simpler Deployment
Less equipment, easier planning and installation.

Lower Infrastructure Cost
Reduced CAPEX and OPEX for large-scale deployments.

The Real Impact: Connecting More with Less

850MHz enables massive connectivity across diverse environments.

The result was clear: 850MHz is not just a frequency option.
It has the potential to how we build and scale wireless networks.

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Conclusion & Next Steps: Scaling the Ecosystem

This trial is not the end of validation. It is the beginning of a new global Wi-Fi HaLow ecosystem.

2026: Refinement & Interoperability

- Finalize Phase 3 application testing.
- Produce Golden Samples.
- Conduct multi-vendor Interoperability Events.

2027: Pre-Commercialization

- Launch Japan pre-commercial pilots based on validated data.
- Deploy integrated Vertical Solutions (Fishery/Agri).

2028: Global Expansion

- Scale the Taiwan-Japan model into broader ASEAN and global sub-GHz Wi-Fi markets.

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