

Advantech Qualcomm-Based Solutions



ADVANTECH

Enabling an Intelligent Planet

Qualcomm

EdgeAI

Computing Solutions

Accelerating AI Transformation in Embedded Markets

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Advancing Intelligence at the Edge

In the era of AI transformation in embedded markets, Edge Computing and Edge AI have emerged as game-changers driving future innovation. Their unique combination of scalability, efficiency, and adaptability empowers industries to meet the demands of an increasingly connected world.

As edge devices become more advanced, Qualcomm's Dragonwing™ products and solutions, powered by cutting-edge on-device AI, with rich connectivity, unlock new potential and elevate industries to new heights. With real-time processing capabilities and seamless AI integration, Qualcomm technology addresses the critical needs of emerging applications. Positioned at the forefront of edge innovation, it enables industries to adopt smarter solutions, optimize resource utilization, and scale innovation efficiently.

Through the collaboration between Advantech and Qualcomm Technologies, Inc., Advantech is proudly positioned as a key partner in Qualcomm Technologies' IoT ecosystem. With forward-looking design and adaptive capabilities, we are not only accelerating the deployment of intelligent solutions across industries, we are shaping the future of the edge.



REAL-TIME

Enabling precise, real-time operations with advanced software and networking technologies for critical tasks.

“ USD \$163 Billion ”
Edge AI market to emerge globally by 2033.

source: Market.us



POWER EFFICIENCY

Minimized power consumption on edge devices, ensuring longer operation and lower power costs.



PERFORMANCE & VISION AI

Providing high accuracy and efficiency through real-time visual data processing and productive multitasking for automated detection and decision-making.



GENERATIVE AI

Personalized, interactive interfaces with real-time speech-to-text and text-to-speech for seamless edge device interactions.



SECURITY

Delivering robust, multi-layered security through advanced technologies and industry standards.

Worldwide Leadership in Embedded Platform Innovations and Design-in Services



Mini-ITX

Micro-ATX

Industrial Motherboards



2.5" Pico-ITX



3.5" SBC



4" SBC

Single Board Computers



Client Size A



Client Size C



Server Size D

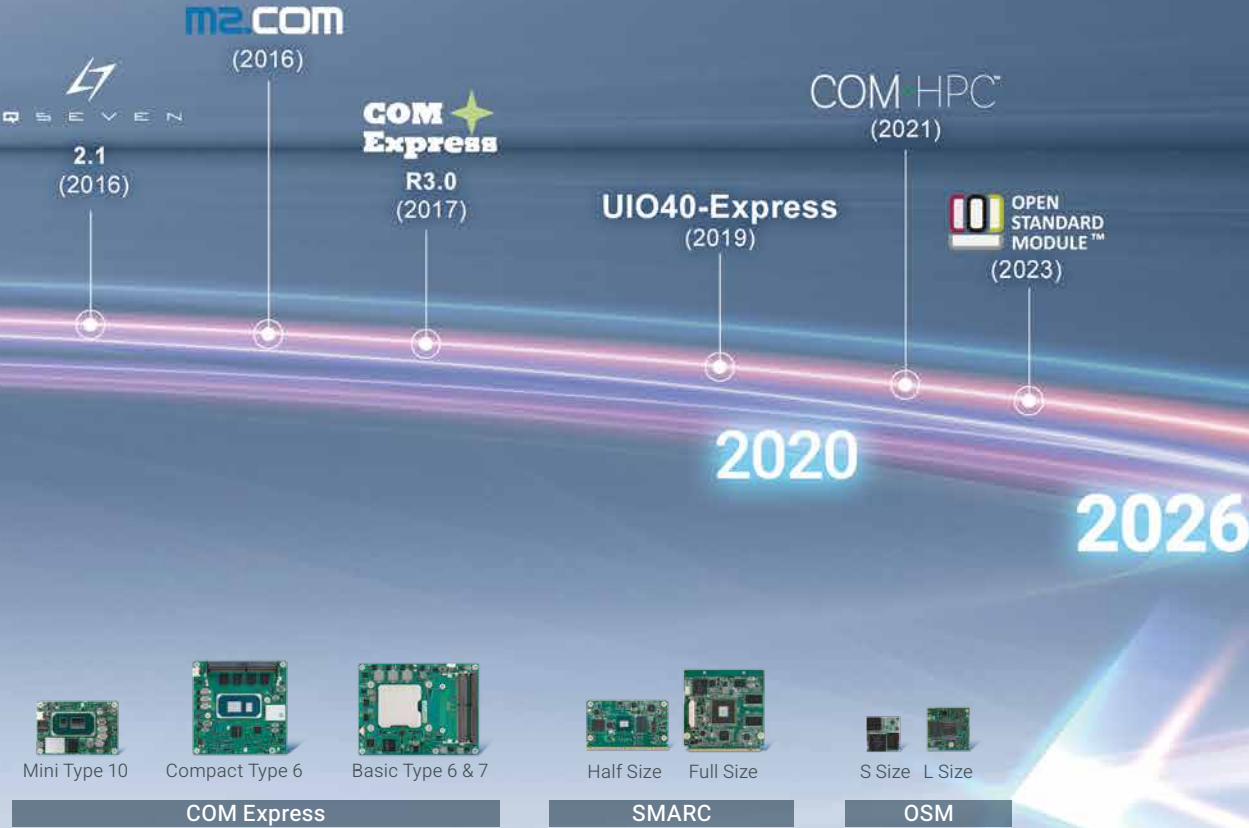


Server Size E

COM-HPC

Advantech stands as a global leader in embedded platform innovation and design-in services, driving technological advancements since 1990. With a rich standard form-factor portfolio spanning carrier board designs, thermal optimization, and AI acceleration modules, the company empowers diverse industries.

Advantech’s scalable edge computing solutions integrate robust hardware and software, ensuring seamless support for IoT and AI applications. Through its pioneering spirit, innovative ecosystems, and customer-centric approach, Advantech consistently sets new standards for industrial computing, enabling clients worldwide to unlock the full potential of edge and AI-driven technologies.





Intelligent and Connected Edge Computing to Transform the Industry

Qualcomm's mission in the IoT market is to enable smart, connected devices that drive digital transformation across industries, enhancing efficiency, innovation, and sustainability through cutting-edge wireless and AI technologies.



Intelligence

Qualcomm's NPU delivers industry-leading AI processing, enabling faster and more efficient edge intelligence. This provides customers with enhanced real-time data analysis capabilities, crucial for AI-driven IoT applications.

Computing

Qualcomm's processors are optimized for high performance, offering superior processing power with low latency. This allows customers to run demanding applications smoothly, improving operational efficiency and response times.

Connectivity

Qualcomm excels in connectivity, supporting advanced wireless technologies like 5G, Wi-Fi 6E and Wi-Fi 7. This ensures seamless and reliable IoT device communication, benefiting customers with faster data transmission and lower latency.

Power Efficiency

Qualcomm's power-efficient designs maximize battery life while maintaining high performance. This offers customers the advantage of deploying IoT devices in energy-sensitive environments, reducing operational costs.

Simplify and Accelerate Application Deployment

By providing comprehensive SDKs, AI models, software tools, and resources, developers can seamlessly integrate and deploy advanced solutions on Qualcomm platforms. This approach accelerates innovation across AI, 5G, and IoT, driving faster digital transformation.



Redefining the Edge with Qualcomm-Based Solutions

Advantech is redefining the edge with an innovative portfolio of Qualcomm-based solutions, designed to meet the evolving demands of diverse industries. Our offerings include scalable pre-configured AI-ready edge systems, standardized AI modules and boards for rapid development, and industrial appliance solutions tailored to specific industry needs. These advanced solutions empower businesses to accelerate AI deployment, enhance operational efficiency, and seamlessly integrate intelligent systems. With a focus on scalability, performance, and sensor integration, Advantech delivers the tools necessary to unlock the full potential of AI at the edge.



AI-Ready Edge System

Scalable and pre-configured solutions to accelerate edge AI application deployment.

AI on Modules & Boards

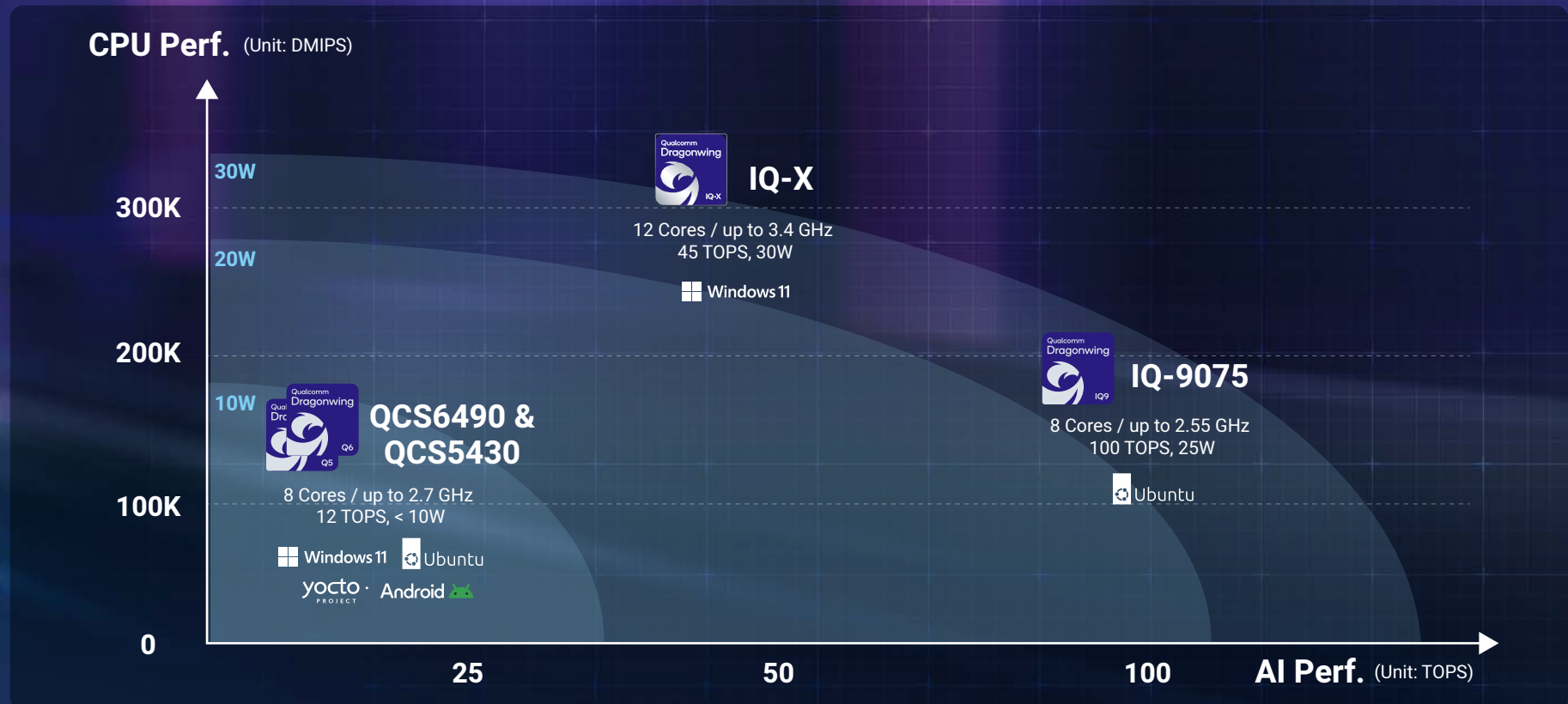
Standardized AI modules and boards that simplify and expedite the development of AI-enabled equipment.

Industrial Appliance

Tailored to specific industries with system expertise and sensor integration.

Qualcomm Platform Adoption Plan

Qualcomm's platform portfolio perfectly addresses the current demands for mid-to-high-tier Arm computing performance. The Dragonwing QCS6490 and QCS5430 platforms deliver 12 TOPS of AI processing power, efficiently meeting industrial edge requirements. With support for a comprehensive OS ecosystem, including Windows, Ubuntu, Yocto, and Android, these platforms enable faster adaptation to diverse application scenarios. Building on this foundation, the Dragonwing IQ-X platforms elevate performance to 45 TOPS, catering to data-intensive and advanced AI applications. Looking ahead, the Dragonwing IQ-9075 platform pushes the boundaries with 100 TOPS, offering exceptional computational power for high-performance AI workloads. With a tiered approach and robust OS support, Advantech is poised to penetrate various Advantech is redefining the edge with an innovative portfolio of Qualcomm-based solutions, designed to meet the evolving demands of application markets, delivering scalable, high-performance Arm-based solutions seamlessly.



Ready-to-Use and Power-Efficient Edge AI Solution

QCS6490 / QCS5430

Up to Octa-core, 12 TOPS, TDP 6~9 Watts



Ubuntu

yocto
PROJECT

android



High Performance, Low Power

QCS6490 combines up to 8-core CPUs for superior edge processing and design flexibility in a low-power package.

Powerful AI-for-Edge Solution

Support for new-generation, power-efficient 12 TOPS NSP AI engine supporting multiple channels and multiple AI models concurrently.

Multiple OS and Longevity Support

15-year long-term support for OS and security updates, allowing customers to build products based on the same hardware design.

Target Applications



Handheld Equipment



Self-Service

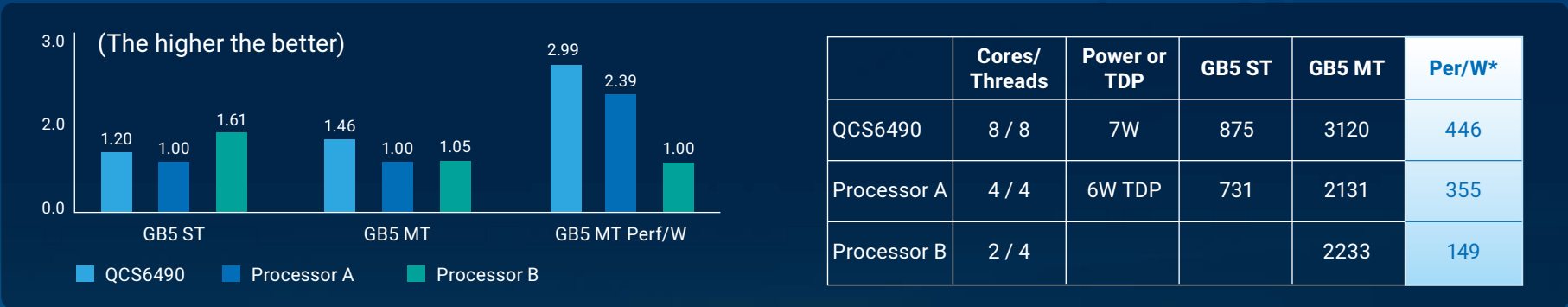


Industrial Automation

CPU Benchmark Comparison

QCS6490 vs. x86 Competitor Processors

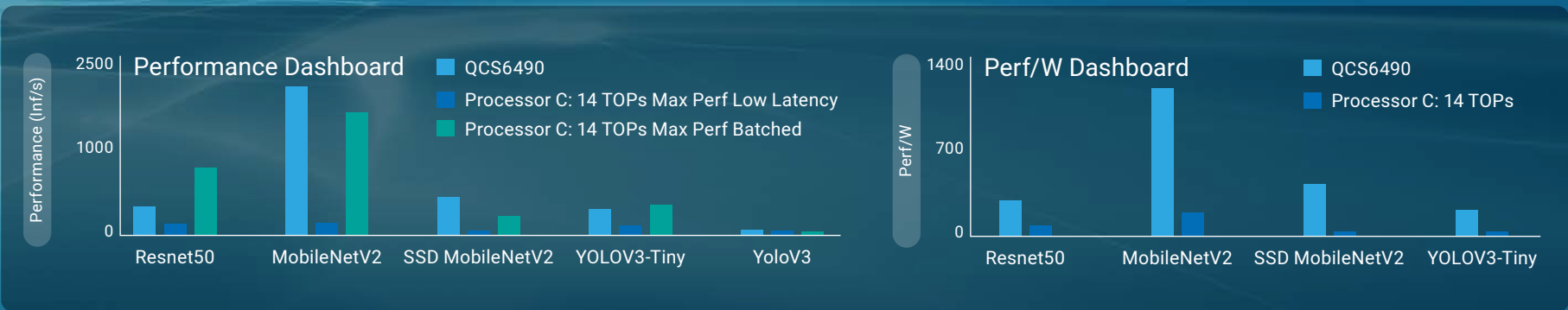
QCS6490 has higher performance per watt than both Processor A (up to 1.25x) and Processor B (up to 2.99x).



AI Competitive Landscape

QCS6490 vs. Processor C

Qualcomm's integrated AI leads in power efficiency and beats Processor C's performance in low-latency-driven use cases.



AOM-2721

Open Standard Module Size-L

Phase In Q1 2025 Longevity Q3 2036



A New Era for Compact Edge AI

Features

High-Performance Processing

- Qualcomm® 8x Kryo™ 670 ArmV8 cores up to 2.7GHz
- Qualcomm® Hexagon processor, capable of delivering up to 12 TOPS
- 4K30P full-duplex video codec, supporting OpenCL/GL for vision developments

Network and I/O Connectivity

- USB 3.2 Gen1 for Qualcomm 5G module SDX62
- USB 2.0 and PCIe Gen3.0 for Qualcomm WCN6856, Wi-Fi 6E, and BT V5.3
- 1 x RGMII, 1 x SGMII, 1 x USB 3.2 Gen1, and 2 x PCIe for expansion connectivity
- 1 x MIPI-DSI, 1 x eDP (share MIPI-DSI) and 1 x DP for multiple displays

Compact Design and Outdoor Durability

- Compatible with various OS including Windows, Ubuntu, Yocto, and Android for the different applications
- On-board OSM design fulfills the outdoor and anti-vibration applications

Applications



Robotics / Automation



AMR / Drone



HMI / AIO (All-in-One)

AOM-5721

SMARC 2.2 Half Size

Phase In Q1 2026 Longevity Q3 2036



Empowering Efficiency and AI at the Edge

Features

High-Performance Processing

- Qualcomm® Kryo™ 670 CPU with 8 ArmV8 cores at up to 2.7GHz ensures powerful computation
- The Qualcomm® Hexagon processor delivers up to 12 TOPS for robust on-device AI, enhancing machine vision and efficiency
- With an ISP and VPU, the AOM-5721 supports 4K60 video decoding and pre-processing

Multi-I/O Connectivity

- Offers versatile I/O for AIoT, up to 2 x GbE, 1 x USB 3.2 Gen1, 4 x USB 2.0, 1 x PCIe Gen 3 x2, 2 x PCIe Gen3 x1, 1 x MIPI-DSI, 1 x eDP and 1 x DP, ensuring seamless sensor and peripheral integration

Comprehensive Software Support for Linux and Windows

- Unified core, driver, and longevity maintenance
- Modularized value-added app and SDK framework
- Multiple OS support, Windows and Ubuntu

New Form Factor for AI

- Featuring an ultra-thin AOM with MXM 3.0 connector, this design enhances space efficiency, facilitating seamless integration into confined spaces

Applications



Robotics / Automation



Smart Retail



Medical Equipment

ASR-D501

UAV Module

Phase In Q3 2026 Longevity Q3 2036



Dedicated Controller for Drone Applications

Features

Excellent Computing and AI Performance with Low Power

- Qualcomm QCS6490 Kryo 8 Cores up to 2.7GHz
- Built-in 12 TOPS AI accelerator
- AI streaming, Visual SLAM, gimbal

Dedicated Design for Industrial Applications

- Fan-less thermal design
- Supports DC input of 5-12V for 3S/6S battery connection
- Operation temperature from -20 ~ 70°C
- Compact size 60 x 100 mm

Dedicated I/Os for Drones

- 1 x GbE (GH connector), 2 x USB 3.0 (Type C) for LiDAR & depth cameras, etc.
- 3 x UART, 2 x I2C, 8 x GPIO (GH connector) for multiple sensors
- 2 x CAN-FD for connecting flight controllers
- M.2 expansion slots for LTE/5G/GPS add-on modules

Low Latency Visible Camera Embedded

- 5 x MIPI-CSI with stackable camera-interfaced sensor module

Applications



Logistics Drone



Farming UAV



Infrastructure Inspection Drone

MIO-5355

3.5" Single Board Computer

Phase In Q4 2025 Longevity Q3 2036



Ready-to-Use
Power-Efficient
Edge AI Solution

Features

High Performance with Build-in NPU, but Low Power Computing

- 8x Kryo 670 CPU from 1.9 up to 2.7 GHz + Adreno GPU 643
- Up to 12 dense TOPS from integrated NPU for AI inference applications

Rugged On-Board Design and Extended Temperature Range

- 8GB LPDDR5 on-board memory and 128GB UFS or eMMC on-board storage
- 3 x standalone M.2 slots for solid extension: E-Key 2230 for Wi-Fi/BT, B-Key 3052 for 4G/LTE, M-Key 2280 for NVMe SSD
- -20 ~ 70°C extended operating temperature range

Multi-I/O Interface and Multi-Display

- 2x GbE, 6x USB, 4x COM, 2x I2C, 2x MIPI-CSI, 1x 8b GPIO, 1x Audio Combo Jack
- Dual Display: 1x LVDS or eDP (Selected by Switch Setting) + 1x HDMI 2.0

Flexible OS and Longevity Support

- Multi-OS support with Yocto Linux, Windows 11 IoT LTSC and Ubuntu LTS
- Hardware and Software technical support up to 2036

Applications



Industrial Automation



Self-Service Kiosks



Handheld Equipment

DS-011

Ultra-Slim Edge AI Box

Phase In Q4 2025 Longevity Q3 2036



Ultra-slim Box with
12 TOPS and Dual 4K
UHD Digital Signage

Features

Best Power Efficient Solution by Qualcomm SoC

- Up to 2.7GHz & 12 TOPS DSP/NSP AI engine supporting multiple AI models
- Dual HDMI 2.1 TMDS: 4K H.265 decode ability
- Multi-OS : Linux Yocto ; Android 15; Win11 on Arm, OS support for app developer

GMSL/IP Camera & Multi-IO for Rich Peripheral

- 2x GMSL input for real time inference, video, human behavior analysis
- Multiple LAN, USB, Type-C, and RS-232 ports enable diverse peripheral and multi-camera AI deployments for retail, security, and signage

Ready Qualcomm AI Hub , Edge AI SDK and VisionSense

- 180+ Models, in Qualcomm AI-Hub all Runs in NPU < 300 MB VRAM
- Edge-AI SKD for fast AI model POC, Device-on Orchestration for OTA
- VisionSense enable AI modules: Face Vision, People Vision, and Object Vision

23mm, the Slimmest Qualcomm-IPC for Limited Space

- Fanless thermal solution without dust/noise concern
- Easy installing behind TV Wall, or in limited space
- Wall mount and rack mount support in different applications

Applications



Surveillance



Smart Retail



AMR/AGV

AIR-050S

Edge AI Inference System

Phase In Q4 2025 Longevity Q3 2036



Ready-to-Deploy, Cost-Efficient Edge AI System for Scalable Vision and Inference

Features

High Performance AI Computing in a Compact Power-Efficient Design

- Powered by AOM-5721, an octa-core Kryo 670 CPU (up to 2.7 GHz) and Adreno 643 GPU within a compact SMARC short form factor
- Integrated NPU delivers 12.5 INT8 TOPS, enabling advanced AI inference with low power consumption

Multi-I/O Interface

- 2 x GbE, 4 x USB-A, 1 x USB-C, 2 x COM, 1 x DIO
- 1 x HDMI 1.4

Reliable Operation with Flexible Expansion & Wide Temp. Support

- Up to 16GB LPDDR5 on-board memory and 64GB eMMC on-board storage
- 3 x standalone M.2 slots for solid extension: E-Key 2230 for Wi-Fi/BT, B-Key 3052 for 4G/LTE, M-Key 2280 for NVMe SSD

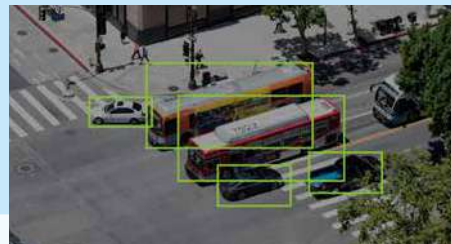
Flexible OS and Longevity Support

- Multi-OS support with Windows 11 IoT LTSC and Ubuntu (24.04 LTS)
- Hardware and Software technical support up to 2036

Applications



Industrial AOI-Lite & Automation



Smart City & Traffic Monitoring



Heavy Machinery & Fleet Safety

IQ-X

Up to 12 cores, LPDDR5X 64GB, 45 TOPS

 Windows 11



High-Performance Processing

- Snapdragon X1 Elite 12C/X1 Plus 10C Orton CPU up to 3.4GHz
- LPDDR5X and UFS 4.0 Gear5 for high speed data operations.
- Integrated Qualcomm Wi-Fi 6E & 5G drivers for connectivity.

Powerful Multimedia

- Snapdragon Adreno 5th Gen. VPU 4K60P full duplex Codec.
- Snapdragon Adreno Snapdragon X GPU featuring OpenCL/G.
- Integrating Microsoft DirectX12 libraries.
- Hexagon DSP for Audio accelerations.

Comprehensive AI Packages

- Hexagon NPU capable 45 TOPS.
- 100+ pre-trained and optimized AI models on Qualcomm's AI Hub website.

Target Applications



Robotics



Machine Vision

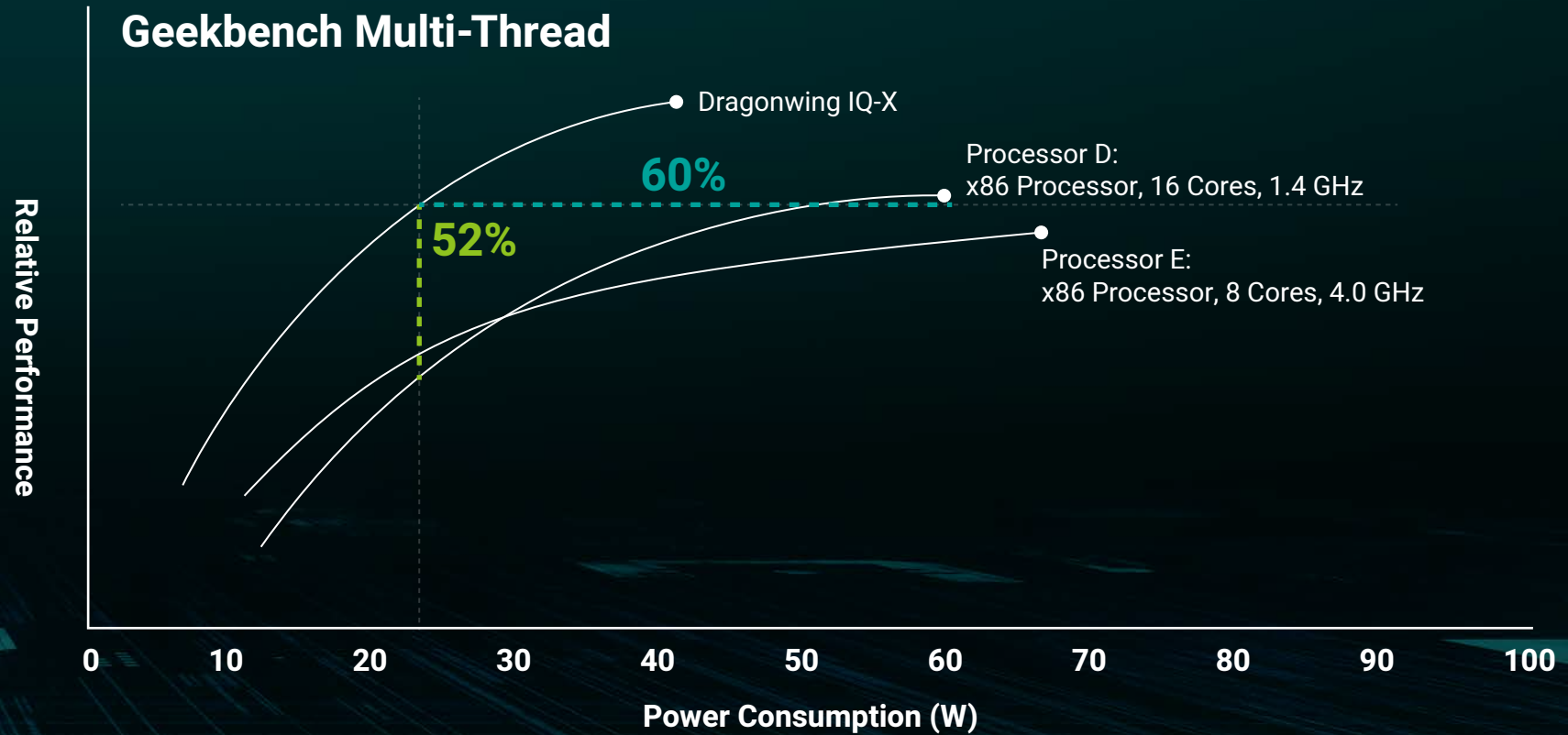


LLM & Generative AI

Multi-Threaded Performance

Dragonwing IQ-X vs. x86 Competitor Processors

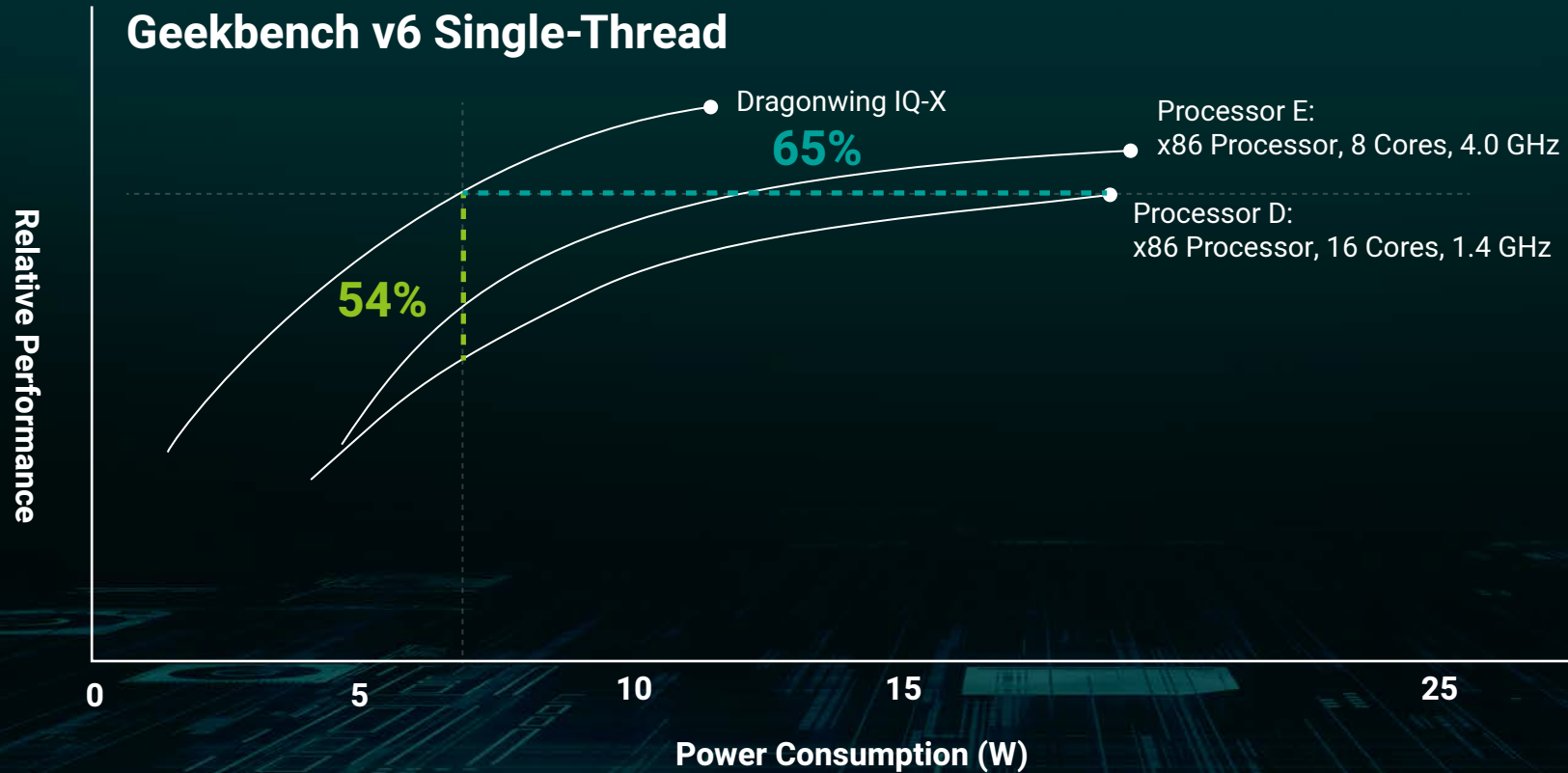
- Up to 52% faster CPU performance vs. the competition at ISO power
- Matches competitor peak PC performance at 60% less power



Single-Thread Performance

Dragonwing IQ-X vs. x86 Competitor Processors

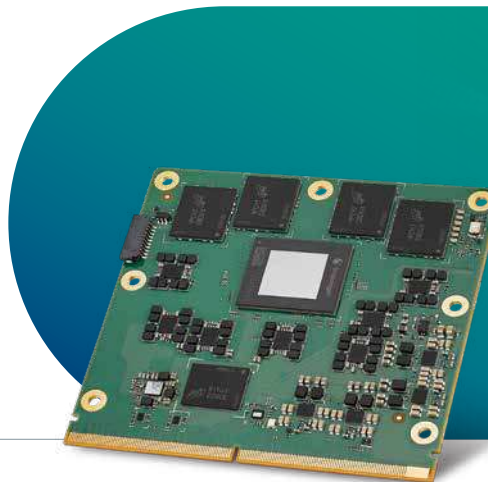
- Up to 54% faster CPU performance vs. the competition at ISO power
- Matches competitor peak PC performance at 65% less power



AOM-6731

SMARC 2.2 Full Size

Phase In Q1 2026 Longevity Q4 2034



A New Era of the Powerful Efficient AI Module

Features

High-Performance Processing

- Qualcomm 12 Kryo CPU cores up to 3.4GHz
- Qualcomm Hexagon processor, up to 45 TOPS for robust on-device AI computation
- Adreno 5th Gen. VPU for 4K60P Codec, Adreno GPU supports DirectX 12.2, OpenCL/GL for vision applications

Network and I/O Connectivity

- USB 3.2 Gen2 for Qualcomm 5G module SDX62
- USB 2.0 and PCIe Gen3.0 for Qualcomm WCN6856 for Wi-Fi 6E and BT V5.3
- 2 x GbE (Gigabit Ethernet), 2 x USB 3.2 Gen2, 2 x PCIe for the expansion connectivity
- 1 x eDP and 1 x DP for multiple displays

Compact and Flexible Design

- SMARC 2.2 Full built-in onboard LPDDR5X, UFS storage for ruggedized requirements
- Advantech Edge AI SDK for faster and more efficient AI
- Utilizing Qualcomm AI Hub for 100+ pre-trained and optimized AI models for faster integration

Applications



Intelligent Surveillance



Manufacturing

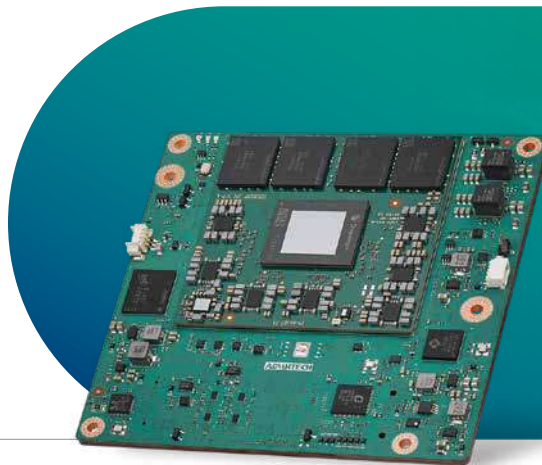


Fleet Management

SOM-6820

COM Express Type6 R3.1 Compact

Sample Q4 2025 Longevity Q4 2034



1st Arm COMe with Native AI Solution for Seamless AI Integration

Features

Advanced Performance with Exceptional Power Efficiency

- Qualcomm Oryon CPU supports 12 Cores up to 3.8GHz
- 45W TDP, high performance per watt for edge computing
- Supports LPDDR5X up to 64GB

Excellent AI Performance with Comprehensive SW Support

- Adreno GPU supports up to 4.6 TFLOPs AI
- Hexagon™ NPU supports 45 TOPS AI
- Edge AI SDK escalates AI evaluation and development

Versatile, High-speed I/O with Minimal Latency

- Maximum 16x PCIe lanes support up to Gen4
- 4 x USB3, 4 x SATA, 1 x GbE

Design-in Service Makes Implementation Effortless

- Windows 11 IoT ready-to-use OS environment
- QFCS thermal solution delivers 100% performance under 0 ~ 60°C conditions

Applications



Humanoid Robots



Medical Imaging

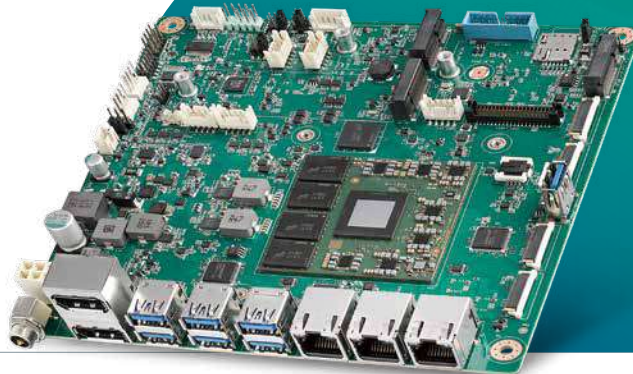


Factory Automation

AIMB-293

Mini-ITX Industrial Motherboard

Phase In Q3 2026 Longevity Q4 2034



Enhance Productivity with
Efficient AI Computing for
Medical AI PCs

Features

Enhanced Productivity with Efficient AI Computing

- Superior AI performance with up to 12 Core, and LPDDR5
- 45 TOPS Hexagon™ NPU.
- Low latency and power efficiency for edge inferencing

Easy Integration with Standard THIN Mini-ITX

- High-speed I/O: 9 x USB3 configuration for existing devices and extend more applications
- Wireless connectivity by M.2 expansion
- Flexible and ready-to-use standard industrial motherboard

Reliable Design for Long-Term Operation

- Stability enhanced with memory down, SoC and SSD onboard
- Compact QFCS thermal solution to ensure consistently high performance

Windows Accelerate Development

- Windows 11 IoT ready-to-use OS environment
- Edge AI SDK for performance evaluation and software design

Applications



Medical Imaging



Endoscopy



Medical Equipment

Exceptional AI Performance in Harsh Environments

IQ-9075

Up to Octa-core, LPDDR5 32GB, 100 TOPS



Superior Performance with AI

8-core CPU at 2.35GHz, delivering powerful computing performance. The integrated AI engine achieves 100 TOPS, offering exceptional AI performance and LLM flexibility to support customers' own AI models.

Rugged & Reliable

LPDDR5 with ECC support with an operating temperature range of -40 ~ 85°C, IQ-9075 is built to withstand even the harshest conditions. The Safety Island also ensures functional safety, preventing potential accidents.

Development Friendly

The ready-to-use Linux software stack, AI Hub, and support for multiple operating systems make it easy for customers to develop, validate, and deploy applications and AI solutions on the IQ-9075.

Target Applications



Robotics/Automation



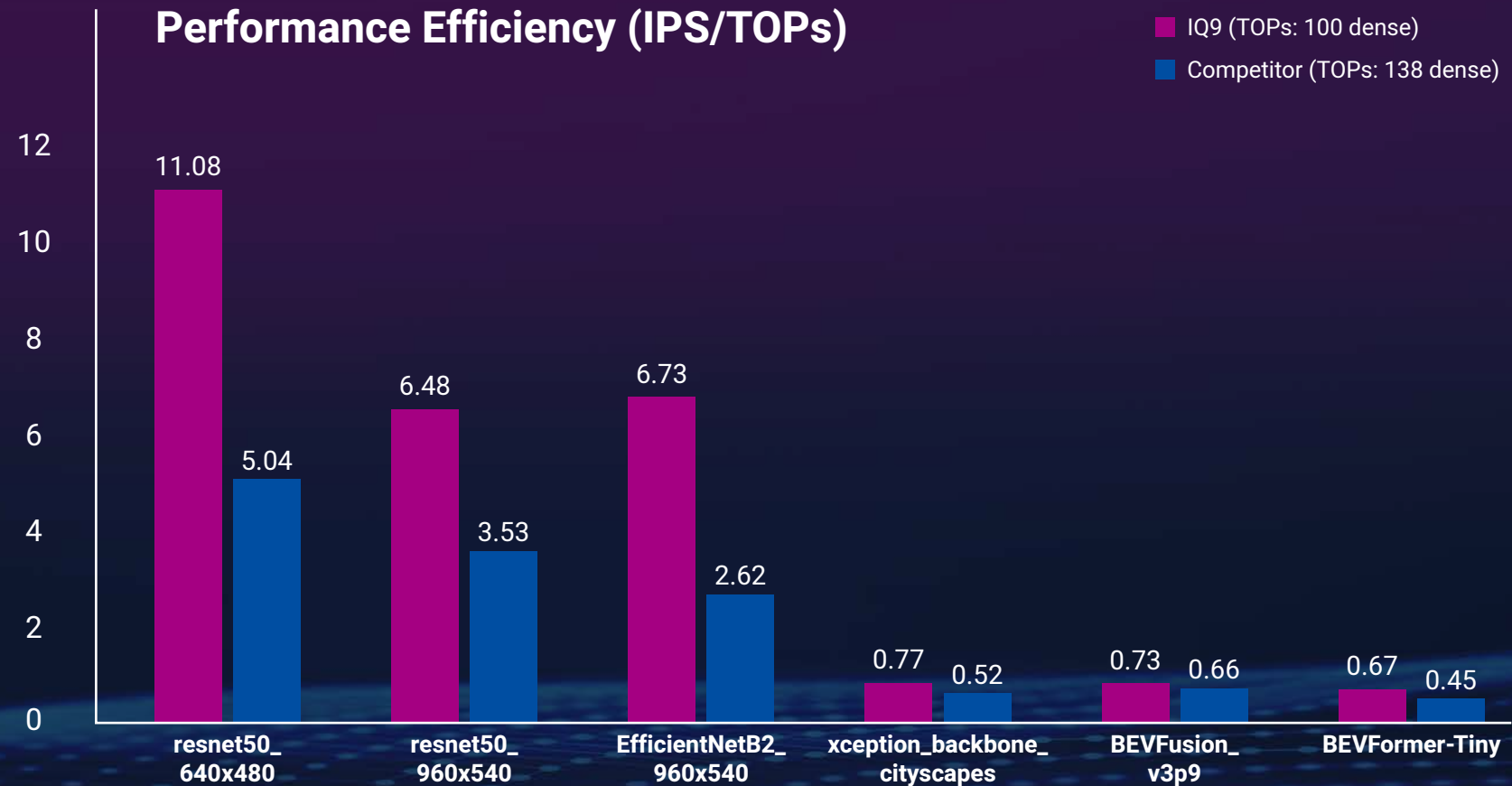
Drone/Transportation



Aerospace/Mission Critical

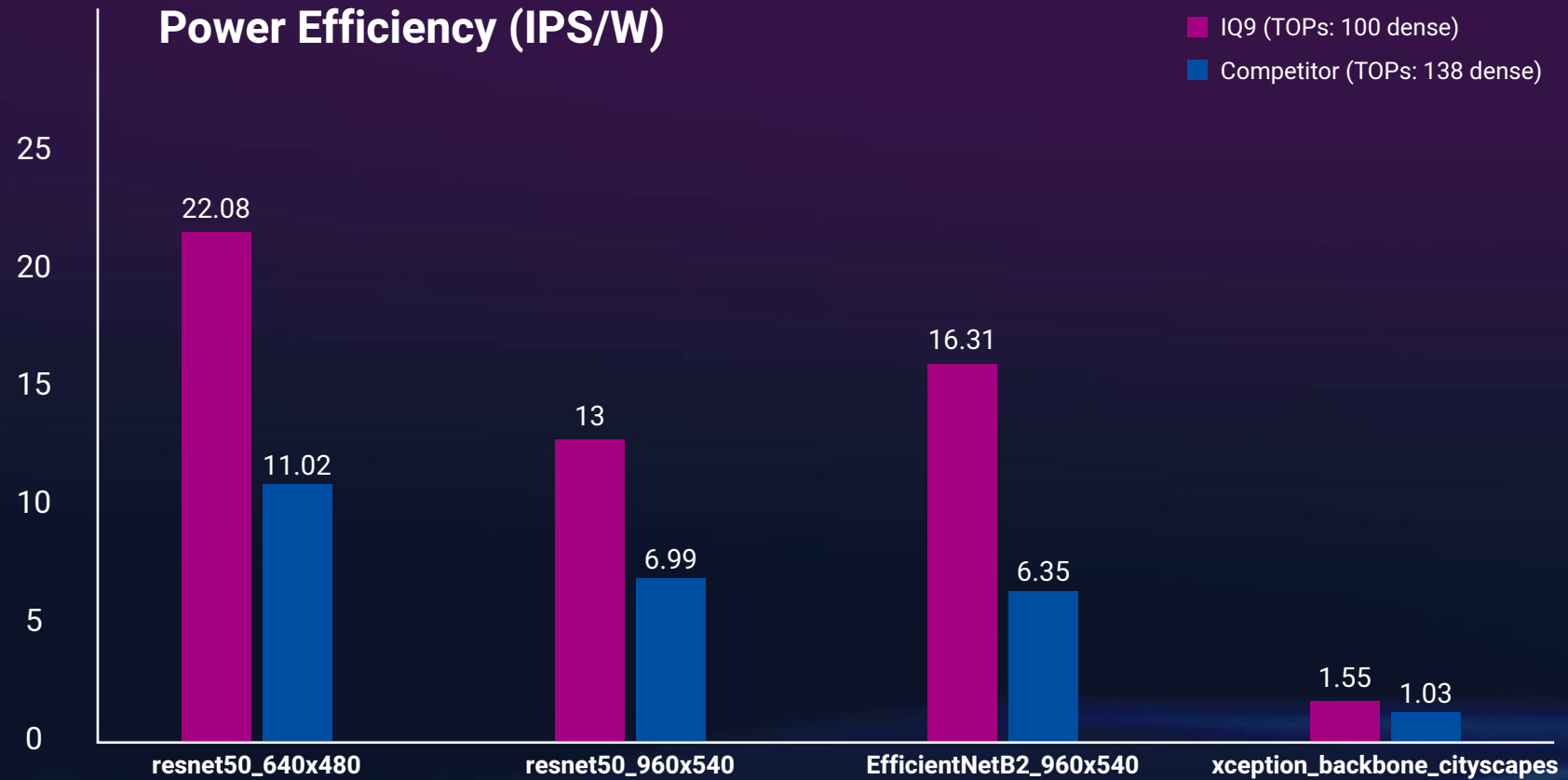
Efficiency Comparison Across AI Workloads

IQ9 has higher performance efficiency (IPS/TOPs) compared to GPU-based competition due to IQ-9's Tightly Coupled Memory (TCM) and lossless bandwidth compression, IQ9's effective DDR memory bandwidth is significantly higher.



Efficiency Comparison Across AI Workloads

IQ9 has significantly lower power consumption, and outperforms competition on performance/watt.



AOM-6741

SMARC 2.2 Full Size

Phase In Q4 2026 Longevity Q1 2038



Compact and Standard Design for Vision Intelligence

Features

Superior Performance with AI

- 100 TOPS AI performance supporting on-device LLM & vision inference
- Heterogeneous compute (CPU + GPU + NPU + DSP) optimized for efficiency
- Designed for robotics, drones, transportation, and aerospace workloads.
- Supports up to 4 x MIPI-CSI 4-lanes and 2x 2.5 GbE

Rugged & Reliable Design

- ECC memory and industrial temperature range
- Long lifecycle and extended product support
- Safety features for fault prevention and recovery

Development-Friendly Software Environment

- Ready-to-use Linux / AI Hub / SDK ecosystem
- Supports multiple frameworks: ONNX, TensorFlow, PyTorch
- Qualcomm tools for model quantization, validation, and deployment

Applications



Drones



Robotics & Automation



Aerospace/Mission Critical

AFE-A503 & ASR-A503

Robotic Controller

Phase In Q3 2026 Longevity Q1 2038



Dedicated Controller for AMR Applications

Features

Great AI Performance in an Ultra-Slim Form Factor

- IQ-9075M up to octa-core, LPDDR5 32GB, 100 TOPS
- Compact size for robot integration

Rugged and Reliable Design

- 20-36 VDC for battery connection with sufficient tolerance
- ESD and TVS protection: up to 2kV (direct pin), 8kV (contact), 15kV (air)
- Wide operating temperature range: -20 ~ 60°C

Dedicated I/Os for AMR

- 4 x GbE (2x PoE), 4 x USB 3.2 for Lidar, sensors, cameras, etc.
- 2 x RS-232/422/485
- Isolated 16-bit DIO for light indicators, e-stops, etc.
- Isolated CAN-FD for motors
- 8 x GMSL camera input (2x miniFAKRA)

Enabling Autonomous Robotics Development

- Supports Ubuntu 24.04
- Integrated with Advantech Robotic Suite (ROS2) and QIRP

Applications



Patrol Robots



Cobots



Autonomous Farming Vehicle

AIR-055

Edge AI Inference System

Phase In **Q2, 2026** Longevity **Q1, 2038**



A Rugged, High-Performance Edge AI System for Industrial Vision

Features

High-Integration I/O for Imaging AI

- IQ-9075M up to octa-core, LPDDR5 36GB, 100 TOPS
- Supports up to 8 x GMSL1/2 cameras via AMO-0211GMSL dongle
- Dual 2.5GbE LAN with optional PoE for high-speed video streaming
- HexaDisplay output via HDMI, DisplayPort, and USB-C (DP-Alt Mode) for up to six simultaneous display outputs

Modular Design for System Flexibility

- 3 x M.2 slots (NVMe, Wi-Fi/BT, 5G/LTE)
- Supports local storage and wireless transmission
- Operates in -20°C to 60°C, ideal for field and edge deployments

Integrated AI Inference Framework

- Compatible with Advantech Edge AI Inference Kit
- Supports AI SSD for fast inference and efficient model compression

Applications



Smart Inspection Assistant



Autonomous Mobile Robot

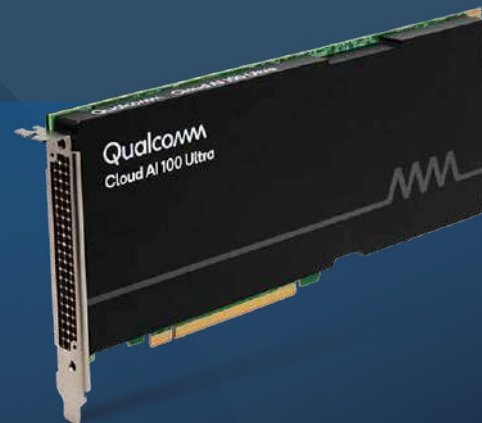


Multi-Angle Inspection for Manufacturing Defects

AI acceleration cards designed for Vision AI and Generative AI

Cloud AI100 Ultra

Up to 64 AI cores, 128 GB LPDDR4X 870 TOPS



Superior AI Performance

The Qualcomm AI100 Ultra offers 870 TOPS of AI processing. Built with up to 128GB of LPDDR4X memory and ECC support, the AI100 Ultra can handle LLM models with up to 100B parameters.

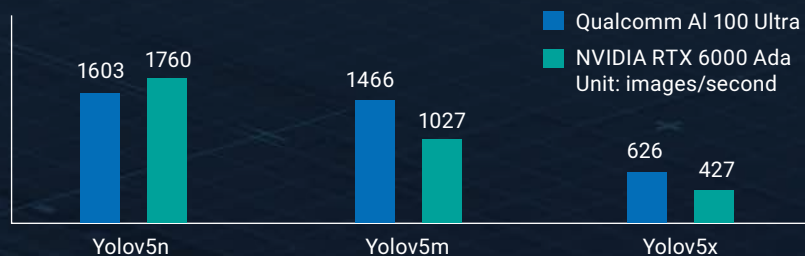
Exceptional Power Efficiency

Qualcomm AI 100 Ultra achieves 62 (tokens/s) in the Llama 8B model, and 9.3 (tokens/s) in the Llama 70B model, while maintaining TDP of only 150W.

Useful AI Toolkits

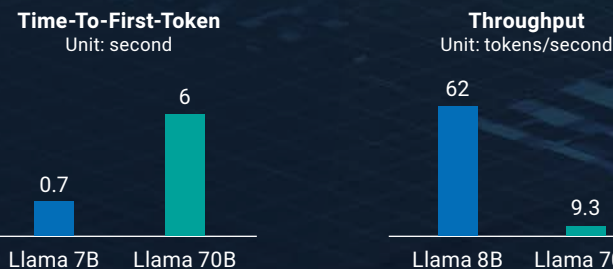
The Qualcomm AI Inference Suite includes pre-trained applications and libraries for Generative AI and Vision AI, simplifying the deployment of AI solutions such as chatbots, image generation, transcription, translation, and RAG.

Vision AI Inference



Testing condition:
Running popular object detection model by ONNX conversion under Ubuntu 22.04
(Kernel: 5.15, Batch size: 1, Data type: FP16, Resolution: 640 x 640)

LLM Inference



Source:
Qualcomm Cloud AI 100 Ultra Large-Language Model (LLM)
Inference Performance April 2025

AIR-410

Edge AI Workstation Supporting One PCIe GPU

Phase In Q4 2025 Longevity Q3 2032



Scalable Edge AI HPC for Generative AI and Cost-Effective Edge LLM/VLM Applications

Features

Integrated AI CPU with 1x Full height GPU Compatible

- AMD Ryzen 8040 processor up to 54W with in total 39 TOPS (CPU+iGPU+iNPU)
- Compatible with NVIDIA & Qualcomm graphic card

Versatile I/Os and Expansion for Vision AI

- 1 x DP 1.4 up to 3840 x 2160 @60Hz, 1 x HDMI 2.1 3840 x 2160 @120Hz
- 1 x M.2 M-Key, 2 x swappable 2.5" SSD/HDD for up to 10TB storage

Precision Software for Edge AI Applications

- Compatible with NVIDIA pre-trained AI models
- Edge AI SDK: Accelerate inference performance evaluation

Innovative Design for an Edge AI Server

- Smart fan control to optimize the heat dissipation and noise
- Compact size (17L) with built-in 850W PSU

Applications



Manufacturing



Defect Inspection



LLM Fine-tuning

AIR-420

AI Inferencing Edge Server

Phase In Q4 2025 Longevity Q3 2032



Edge Server with Best TCO AI Computing Power

Features

PCIe-Optimized Powerhouse Edge AI Server

- RYZEN Embedded 7000/9000 Series and EPYC 4005 Series
- Support DDR5 up to 192GB
- Total 4 PCIe slots, 2 for AI cards and 2 for add-on cards

High-Capacity I/O for Edge AI Bandwidth

- 1 x 20Gbps, 4 x 10Gbps USB Gen3.2 ports for data transmission
- 1 x 10GbE, 2 x 2.5GbE LAN for smooth data stream
- 1x M.2 M-Key for NVMe & 1 x M.2 E-Key for Wi-Fi 7

Precision Software for Edge AI Applications

- GenAI Studio: No-code GUI to simplify LLM training
- Edge AI SDK: Accelerate inference performance evaluation

Innovative Design for an Edge AI Server

- Compact 28.6L chassis with dual 3.9-Slot Graphics
- Smart fan control to optimize the heat dissipation and noise
- Redundant power supply for unmatched reliability

Applications



LLM Post Training



Customer Service



Defect Inspection

AIR-540

Edge AI HPC

Phase In Q4 2025 Longevity Q3 2032



Born for LLM/VLM Post-Training
to Maximize Edge Performance
for Enterprises

Features

High Performance Computing

- AMD EPYC 8004 series processor provides up to 64 cores
- Six DDR5 4800 MHz ECC RDIMM, up to 576GB
- Support Four Qualcomm Cloud AI 100 Ultra
- NVMe SSD for AI model & dataset storage

High-Density Compute Architecture

- 4 x PCIe Gen5 x16 slots, providing data transfer speed
- 2 x USB Gen3.2 ports for data transmission
- 2 x 10GbE , 2 x 2.5GbE LAN Support for low latency data ingestion

Off-the-shelf Solution for LLM Finetune Training

- Integrated aiDAPTIV+ tech. to enable 140B open-source LLM finetune training on-prem
- GenAI Studio provides no-code GUI to lower LLM training entry barrier.
- Offer option for NVIDIA AI Enterprise

Innovative Design for an Edge AI Server

- Smart fan algorithm for optimal noise control
- Redundant power supply for unmatched reliability

Applications



LLM Post Training



Customer Service



AI Agent Host

Domain-Driven Software and Service Blueprint

Advantech, in collaboration with Qualcomm, integrates three foundational modules, value-enhanced OS, edge applications, and scalable cloud services, to empower next-generation edge AI and IoT ecosystems.

With a global team of over 1,000 software and technical design experts, Advantech excels in delivering customized solutions for BIOS, OS, and APIs, ensuring seamless integration and optimized system performance. Supported by a global network of 90 distribution services and R&D sites, Advantech provides efficient and innovative services.

By fostering early engagement and leveraging ecosystem partnerships, Advantech strengthens customer collaboration, enabling agile deployment, streamlined workflows, and scalable solutions tailored to the most demanding edge-to-cloud applications.



Learn about
Advantech AIoT Software & Services

Customer-Centric Support and Service

Experienced Experts

1,000+

Software and Technical Design Experts

Global Customer Base

\$10 Million+

Cumulative Software Sales

Design-in Services

1,000+

Customized Software-Firmware-Hardware



Worldwide Network

90

Distribution Services and R&D Sites

Ecosystem Partnerships

Early Engagement and Backend Support

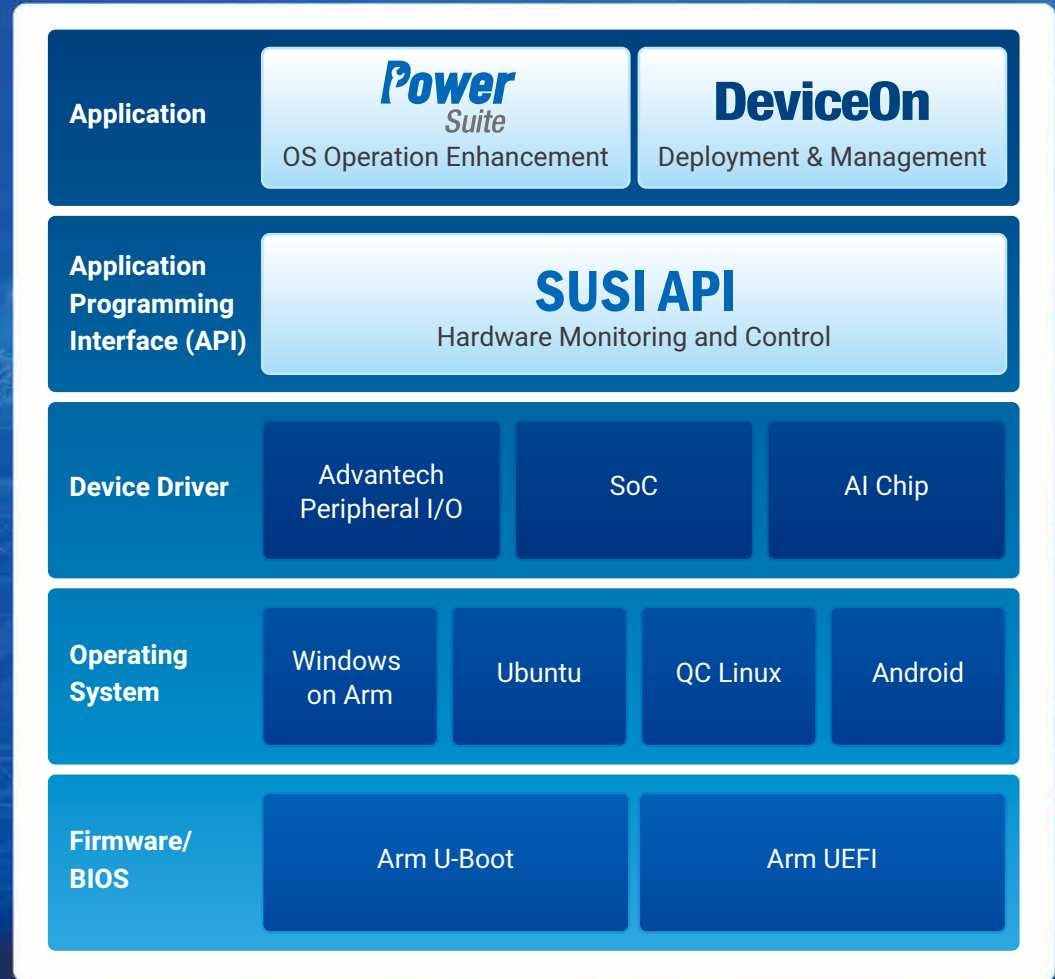
Edge Computing & Edge AI Software Solutions

Advantech embedded software integrates foundational software development, device management, and cloud services to address the growing demands of edge AI and diverse industries.

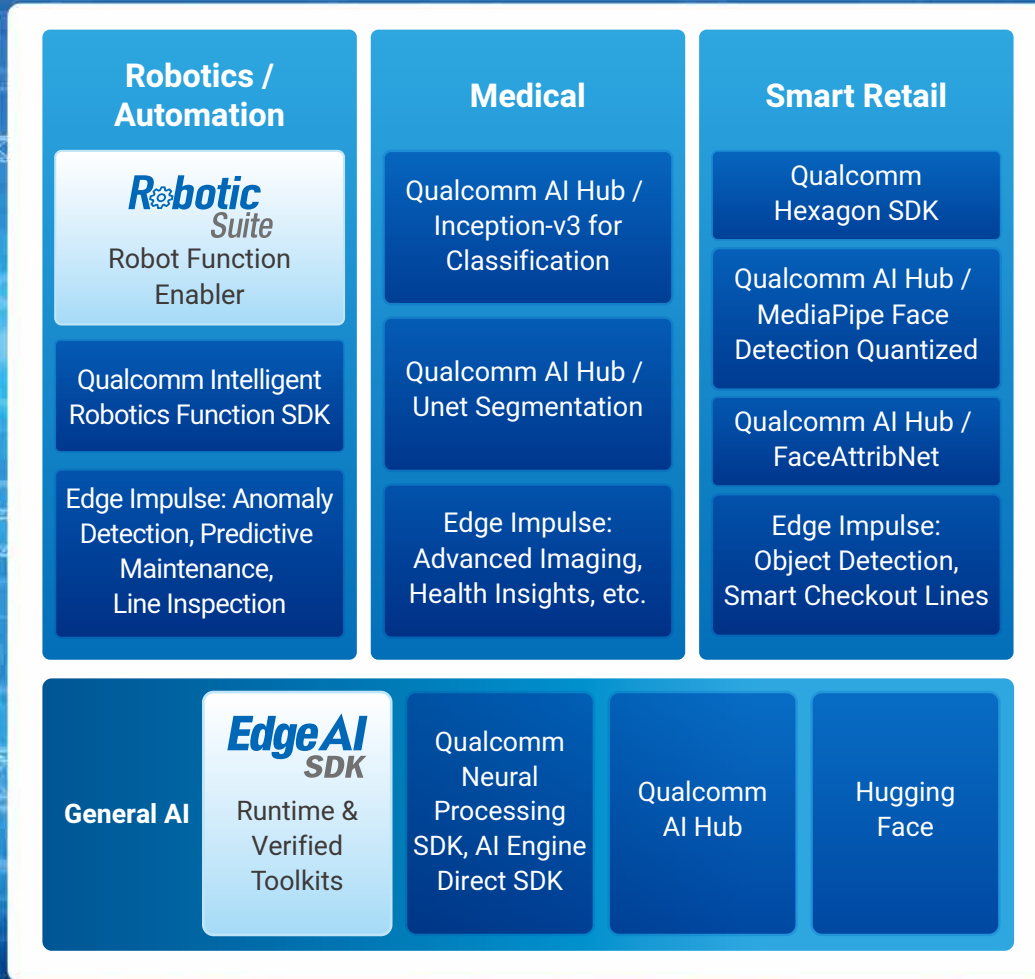
Advantech supports four major operating systems: Windows on Arm, Ubuntu, Qualcomm Linux, and Qualcomm Android, all tailored for embedded and industrial-grade applications. Each OS provides unique benefits, including long-term support, seamless integration, and scalability to meet diverse edge AI and IoT needs. Additionally, scalable cloud services bridge edge and cloud computing, offering robust tools for AI model deployment, migration, and system scalability.

Qualcomm's AI advancements and Advantech's expertise in embedded solutions empower industries like robotics and automation with intelligent, scalable tools. The Advantech Edge AI SDK seamlessly integrates with hardware, offering a compatible AI inference development platform, while the Advantech Robotic Suite enhances development by providing ROS2 nodes tailored to Advantech boards and peripherals. This collaboration accelerates robotic application integration, enabling businesses to achieve smarter, faster, and more efficient operations, setting new benchmarks in innovation.

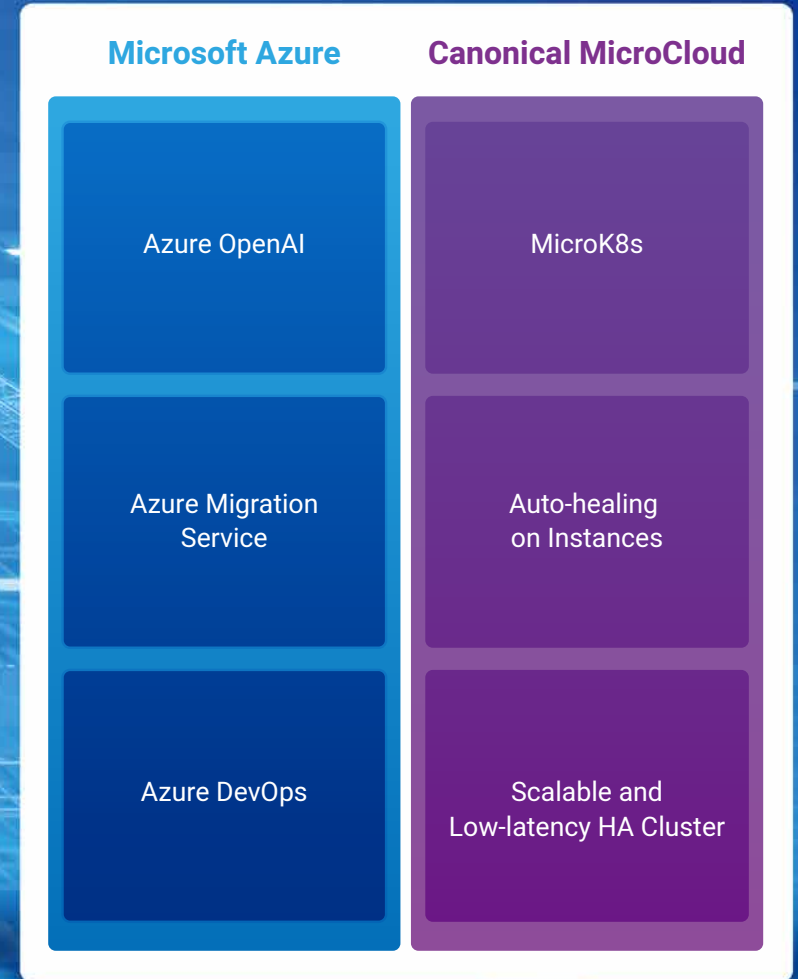
Value-Enhanced OS



Edge Applications

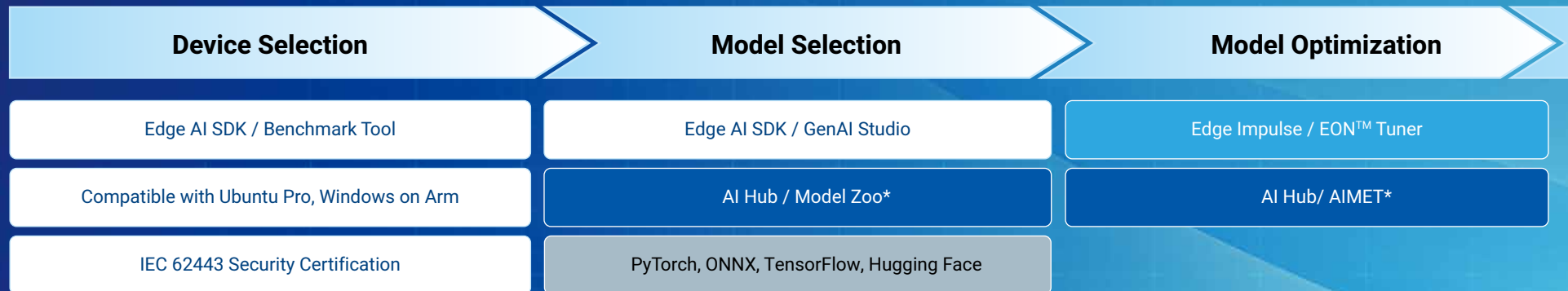


Scalable Cloud Services



Optimized Collaboration to Empower Your AI Journey

We've simplified the complexities of edge AI development workflows through the seamless integration of Advantech and Qualcomm technologies. No matter the challenges or stage in development, our comprehensive tools and services provide tailored support to accelerate progress. From hardware and software compatibility to robust technical solutions, the collaboration between Advantech and Qualcomm empowers developers to deliver innovative edge AI applications efficiently and effectively.



- Advantech Offerings
- Qualcomm Offerings
- Edge Impulse Offerings
- Open Source

* AI Hub/Model Zoo: 100+ pretrained models using TensorFlow, PyTorch, ONNX or Keras

* AI Hub/AIMET: An open-source library for advanced model quantization and compression

✓ **Essential Runtime Environments
and Tools Ready for Use**

✓ **Industry-Focused Reference
Examples Provided**

✓ **End-to-End Support in
Collaboration with Qualcomm**

AI/ML Application

Edge AI SDK / Runtime SDK

Edge AI SDK / Workflow Navigator

Edge AI SDK / GenAI Studio

Edge Impulse, MobileNetV2 SSD for Vision Inspection

Neural Processing SDK, AI Engine Direct SDK

Intelligent Robotics SDK

Intelligent Multimedia SDK with GStreamer plugins

Hexagon SDK for Hexagon DSP Apps

Model/App Deployment

Edge AI SDK / DeviceOn

Acronis for Backup, Recovery

Trellix for Cyber Security

Azure for MLOps Integration

FoundriesFactory for Linux Device Mgmt.



Gen AI



Robotics



Medical



Smart Retail



Smart Manufacturing



The End-to-End Edge AI MLOps Platform

Click. Train. Deploy. No Code Required

Develop edge and physical AI solutions with Edge Impulse, the trusted platform for streamlining and accelerating the MLOps process. Build, train, optimize and deploy models for vision, audio, or predictive insights with low latency, high security, and no cloud reliance. Paired with Advantech industrial hardware, your devices become autonomous, context-aware systems that reduce downtime, protect data privacy, cut cloud costs, and deliver real-time intelligence across factory floors, remote sites, and customer touchpoints.



Development Kit and Platform

- QCS6490: Camera, Signage Player, Drone Controller
- IQ-9: Edge AI System, AMR Control System
- IQ-X: Embedded Board, Edge AI System

Powered by



Edge Impulse Built-in

- Pre-verified Advantech Devices
- Pre-installed Edge Impulse Tools for AI Inference
- Exclusive 3-month Starter Bundled Package



Market-Driven Adoption

- Robotics & AMR – Safety in Factories
- Smart Manufacturing – Anomaly Detection
- Smart Retail – Product Identification

Turn Your Devices into Intelligent, Context-aware Systems

Powered by Advantech Edge Computing Platforms and Edge Impulse Tools

EON™ Tuner

One-click optimization delivers maximum accuracy and efficiency, removing the need for manual parameter tuning

EON™ Compiler

Shrink models to fit into more and smaller devices, cutting RAM by up to 70% and ROM by 40%, without performance trade-offs

AI Labeling

Accelerate dataset creation with collaborative sensor labeling - 70% faster prep



Industrial Wireless Solution

Enabling Seamless Connectivity for AIoT

New Generation Technology Provider

- Wi-Fi 7
- MCU+Wi-Fi 6
- 5G Redcap
- LTE Cat. 1bis

Longevity Support Industrial-Grade Products

- 5-year product lifecycle
- -40~85°C temperature support

Wireless System Integration

- Antenna design
- FW and driver support

RF Testing & Certification Services

- Global RF certification
- Wireless performance testing



AIW 100 Series
Wi-Fi



AIW 200 Series
GNSS / GPS



AIW 300 Series
Cellular



AIW 400 Series
Wireless MCU



AIW 500 Series
Antenna

Wireless Market Focus and Star Solutions

Advantech Industrial Wireless (AIW) is a leading wireless solution provider empowering edge devices by connecting them via wireless technologies for AIoT. AIW offers diverse module and antenna solutions for different vertical applications and focuses on wireless system integration based on their AIW Design-In service.



Agriculture



Medical



EV Chargers



Transportation



Retail



Smart Cities



AMR

Wi-Fi 7

AIW-100 Series

- Well-established standard
- High indoor network coverage
- High-speed connection
- Made for industrial applications



AIW-172



AIW-173

4G LTE / 5G NR

AIW-300 Series

- Wide spectrum efficiency
- High traffic capacity
- Fastest connection speeds
- Excellent longevity support



EWM-341



AIW-356



Throughput Enhancement

Max speed up to 46.4Gbps to satisfy application areas like medical and Edge AI with demand for massive real-time data transmission.



Latency Improvement

Additional 6Ghz bandwidth and puncturing help lower latency to 1ms and enhance stability.



Ready-to-Go Certificate

AIW products have global certificates to help customers speed up the certification process and reduce cost.



High-Speed Connectivity

5G technology brings new bandwidth power for applications with 4K/8K video demands.



Latency Improvement

Average latency via 4G is 50ms, and through 5G the latency can be lowered to 1ms and provide more connections.



AIW Tool Support

The AIW tool simplifies installation and provides a record of any disconnection and reconnection.

Future-Driven Solution:

The Rise of Wi-Fi 7 Connectivity

Qualcomm
Wi-Fi 7 solution
(-40-85°C)

Extremely low
latency -1ms

Multi-Link
operation and DBDC
support

FCC/CE/IC/
TELEC/NCC/RCM
certified

AIW-173 Series



Product Highlights

Qualcomm WCN7851

2x2 2.4/5/6GHz 11b/g/n/a/ac/ax/be WLAN

Various Form Factor Support

M.2 2230 E-Key / Mini-PCle / LGA 1620

Multi-OS Support on x86 & Arm

Windows 11 & Ubuntu 22.04

Dual Band Simultaneous (DBS)

2.4 GHz + 5GHz or 6GHz

Industrial-Grade Temperature Range

Operating temperature range: -40 ~ 85°C

Global Certification

FCC/CE/IC/TELEC/NCC/RCM/KCC/ANATEL

BT

GNSS

5G

LoRa

Wi-Fi

Design-In Services

AIW is revolutionizing IoT development with its Wireless Design-In Services, set to transform wireless connectivity for IoT devices. Through collaborations with strategic partners, testing is sped up and manufacturing is simplified. It comprises four parts: solution assessment, RF and antenna design, system integration, and certification acquisition. AIW is especially impactful in RF design, testing, and certification.



Leading
Industrial Wireless Solution Provider



Robust RD Capability
for Design-In Service



Strong Partnership
for A+ Products & Speed to Market

Antenna Customization Service

- Requirement assessment, antenna placement evaluation
- Throughput optimization, radiation pattern and isolation testing

Global Certification Service

- Cost reduction via early assessment and wireless kit selection
- Pre-test and troubleshooting during the certification process

IQ9 Use Case

Autonomous Vision-Reasoning Drone Patrol

Traditional perimeter patrol and inspection across private or industrial sites still rely on fixed cameras and human operators, limiting scalability and response speed. While drones extend coverage, most solutions remain operator-dependent. By integrating high-performance AI capabilities with Vision-Language Models, drones evolve into autonomous edge AI agents capable of real-time perception, reasoning, and action—without reliance on the cloud or continuous human supervision.



Challenges & Market Demands

- Operator-dependent patrol limits scalability and efficiency
- Fixed cameras create blind spots and delayed response
- Centralized monitoring increases manpower cost
- Continuous video streaming overloads network bandwidth

Solutions & Technologies

- IQ9-powered Edge AI supports 100 dense TOPS for autonomous reasoning
- On-device VLM enables contextual understanding at the edge
- Distributed drones act as independent AI agents
- Event-driven edge video processing filters raw streams
- Pre-integrated BSP, ROS2, and AI software (Edge AI SDK & Edge Impulse) for drone development

Key Benefits

- Scalable autonomous deployment without monitoring bottlenecks
- Reduced manpower cost and operational complexity
- Faster incident detection and response
- Lower bandwidth usage with real-time intelligence
- Shortened development cycle and faster deployment

Event: Unauthorized intrusion (Zone A-3 Restricted Area)

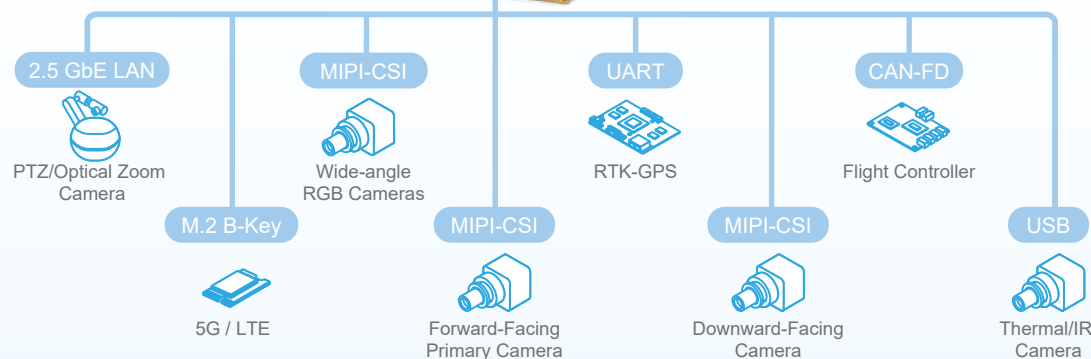
One person in dark hoodie, no helmet/ID badge, crossed fence line near Gate A3 and is approaching the electrical cabinet.

Action: Drone switches to shadow-follow mode

VLM at the Edge

AOM-6741

Dragonwing IQ-9075
(100 Dense TOPS)



IQ9 Use Case

Defect and Safety Monitoring in Manufacturing

Traditional factory monitoring relies on manual oversight, often leading to inconsistent quality and delayed safety responses. By integrating high-performance AI with advanced software stacks and versatile camera support, production lines evolve into intelligent, self-sensing environments. This enables seamless model deployment for real-time defect detection and safety compliance. The result is a localized, low-latency system that enables autonomous action and operational excellence without dependence on cloud connectivity.



Challenges & Market Demands

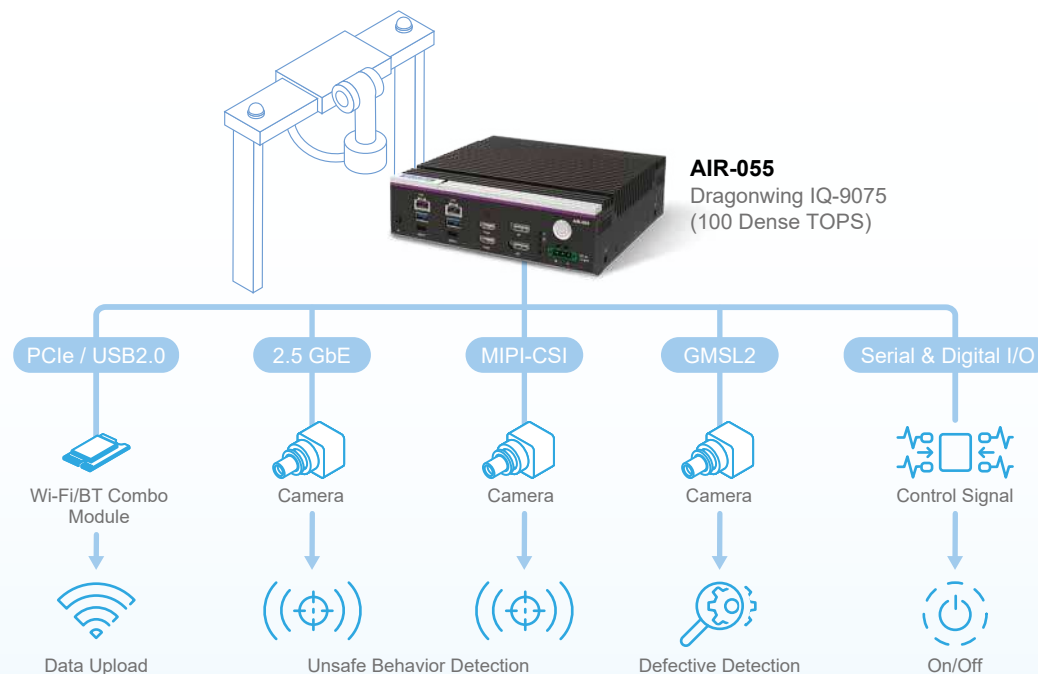
- Manual inspection is labor-intensive and prone to inconsistency
- Subtle defects are often missed by legacy AOI systems
- Introducing new AI models to production lines takes too long
- Deploying new AI models to production lines is time-consuming
- Workers may perform unsafe actions near machinery
- Accident investigations lack reliable visual evidence

Solutions & Technologies

- AIR-055 (IQ9075, up to 100 TOPS) for edge AI inference
- Real-time defect detection and safety alerts at the edge
- Edge Impulse for rapid data labeling and model deployment
- PPE and posture recognition to enhance worker safety
- Integration with PLC / MES / SCADA for alerts and event logging

Key Benefits

- Millisecond-level precision defect detection
- Proactive safety hazard alerts and prevention
- Flexible integration with versatile camera support
- Local processing for data security and privacy
- Enhanced efficiency in AI model deployment



Q6 Use Case

Robotic Lawn Mowers

Robotic lawnmowers are gaining popularity as they provide time optimization, labor reduction, and automation of repetitive tasks. These battery-powered autonomous machines are equipped with specialized sensors, cameras, and navigation systems to identify mowing areas and avoid obstacles. They offer convenience, precision, and eco-friendliness, enabling autonomous operation and ensuring a consistently well-maintained lawn.



Challenges & Market Demands

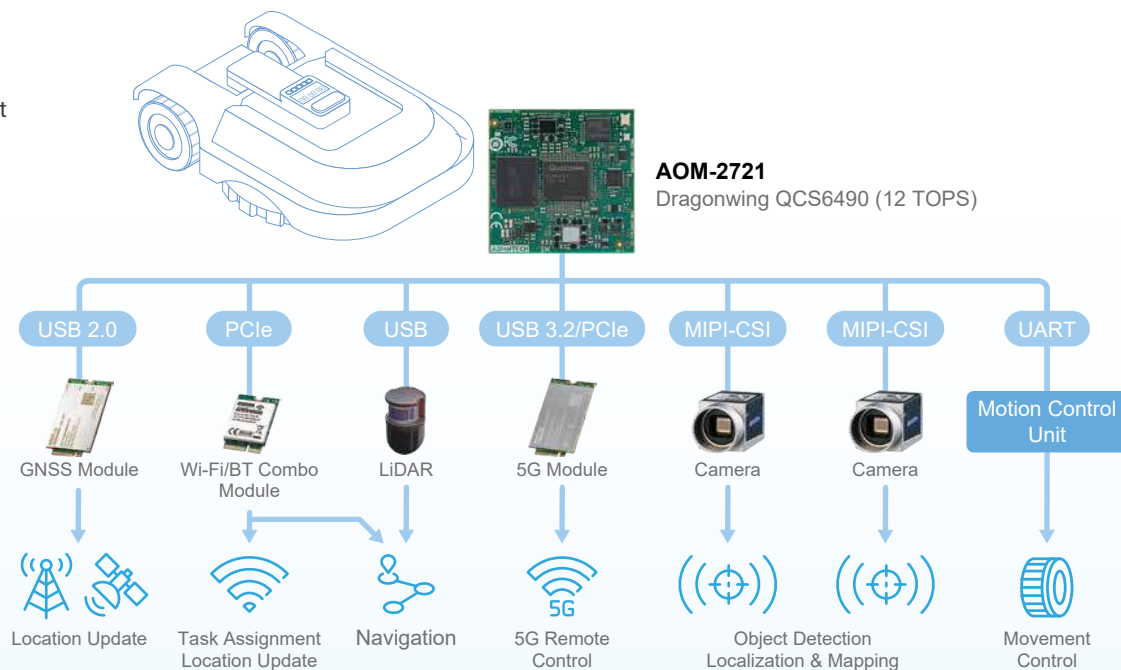
- Lower power requirements for extended battery-powered operation
- On-device AI computing for instant machine vision
- GNSS and 5G connectivity for the low-latency fleet lawnmower management
- High-vibration tolerance for outdoor, ruggedized environments

Solutions & Technologies

- Solder-on, ultra-thin open standard module
- Powered by Qualcomm QCS6490 (8 cores, up to 2.7 GHz, 6.5 watts)
- On-device machine learning up to 12 TOPS
- Equipped with ISP and VPU for 4K60 video decoding and pre-processing
- Supports Qualcomm GNSS and 5G technologies via optional M.2 modules
- Compatible with Ubuntu OS and Advantech Robotic Suite

Key Benefits

- High integration from processing, connectivity, to software in a single chip to streamline development efforts
- Optimal performance and efficiency with advanced Edge-AI and computing at lower power
- Space efficiency and enhanced reliability for mobile edge devices



Q6 Use Case

Autonomous BVLOS Pipeline Inspection

Traditional perimeter patrol and inspection across private or industrial sites still rely on fixed cameras and human operators, limiting scalability and response speed. While drones extend coverage, most solutions remain operator-dependent. By integrating high-performance AI capabilities with Vision-Language Models, drones evolve into autonomous edge AI agents capable of real-time perception, reasoning, and action—without reliance on the cloud or continuous human supervision.



Challenges & Market Demands

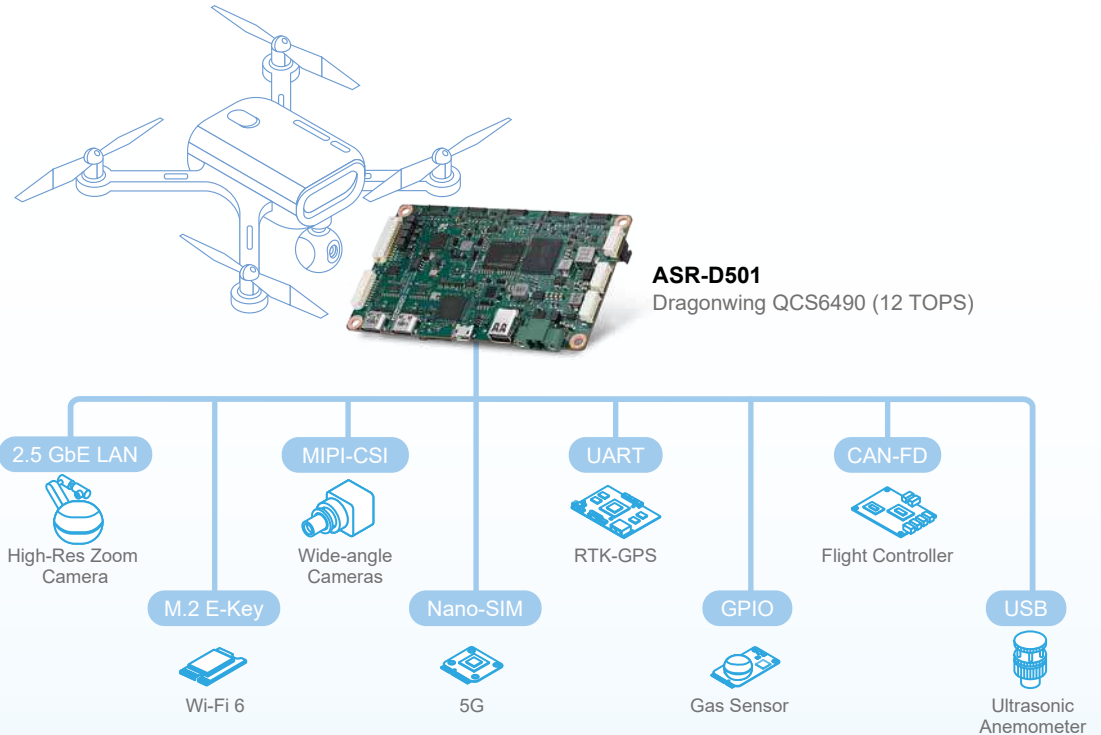
- Manual inspections pose high safety risks and inconsistent quality
- GPS-denied environments disrupt stable autonomous flight
- Long-range BVLOS operations require reliable connectivity
- Post-mission analysis delays critical defect detection

Solutions & Technologies

- 12 TOPS Edge AI enables real-time defect detection
- Visual SLAM/VIO via multi MIPI-CSI for GPS-denied navigation
- 5G failover with C2 redundancy ensures BVLOS connectivity
- Pre-integrated BSP, ROS2, and AI software stack

Key Benefits

- Safe, autonomous BVLOS inspection without human risk
- Stable flight in signal-shielded industrial environments
- Faster incident detection with real-time edge intelligence
- Shortened development cycle and faster deployment



IQ-X Use Case

Gen AI-Enabled Interactive Kiosks

The retail sector is evolving to meet changing consumer preferences and dietary trends, driven by digitalization and automation. Managing inventory and reducing food waste present both challenges and opportunities. Enhancing customer experience through personalized service is essential, while balancing labor costs and efficiency with automation will shape the future of retail.

By seamlessly integrating smart technologies with Gen AI, retailers can enhance efficiency and customer satisfaction while optimizing operational processes.



Challenges & Market Demands

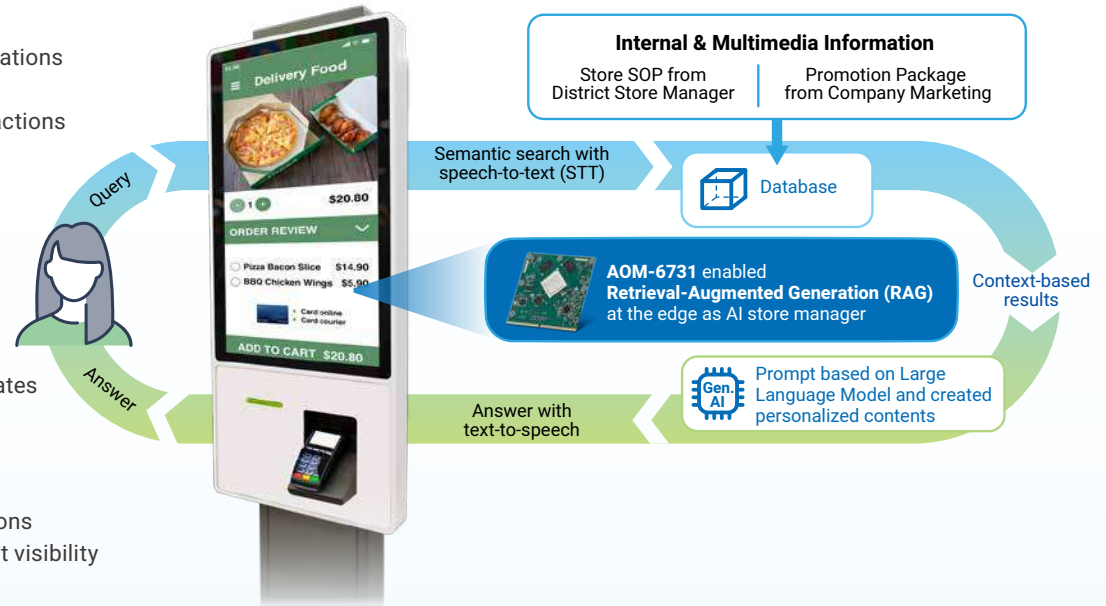
- Real-time Gen AI is required for quick, personalized services and recommendations
- Flexible and scalable systems are needed to support peripheral integration
- Multi-display support is essential for both product showcases and user interactions
- Data security is crucial for online transactions and customer privacy

Solutions & Technologies

- AOM-6731, powered by Qualcomm Snapdragon X Elite, offers up to 45 TOPS with Windows 11 Copilot, enabling intelligent retail applications.
- High-speed connectivity: 4 × PCIe Gen3.0 x1, 2 × USB 3.2 Gen 2, 4 × USB 2.0
- Multi-display support: eDP (5120 × 2880 @ 60Hz), DP (4096 × 2160 @ 60Hz)
- Long-term Windows support: 10+ years of maintenance & security patch updates

Key Benefits

- Offline Copilot AI assistant enables quick responses to user needs
- Comprehensive multi-IO support ensures compatibility with diverse applications
- Seamless multi-display support enhances customer engagement and product visibility
- A mature Windows environment facilitates efficient software development



Wi-Fi 7 Use Case

Surgery Robot Video System

With advancements in wireless technology, real-time video streaming of surgical procedures has become increasingly popular. These streams can be shared with more than four devices, allowing medical teams to stay updated on the latest status and provide instant assistance to surgeons during operations. This technology has become a mainstream solution for surgical training and medical AR/VR applications.

The AIW-173 series functions as both an access point (AP) and client, enabling stable and reliable wireless connections for critical medical tasks.



Challenges & Market Demands

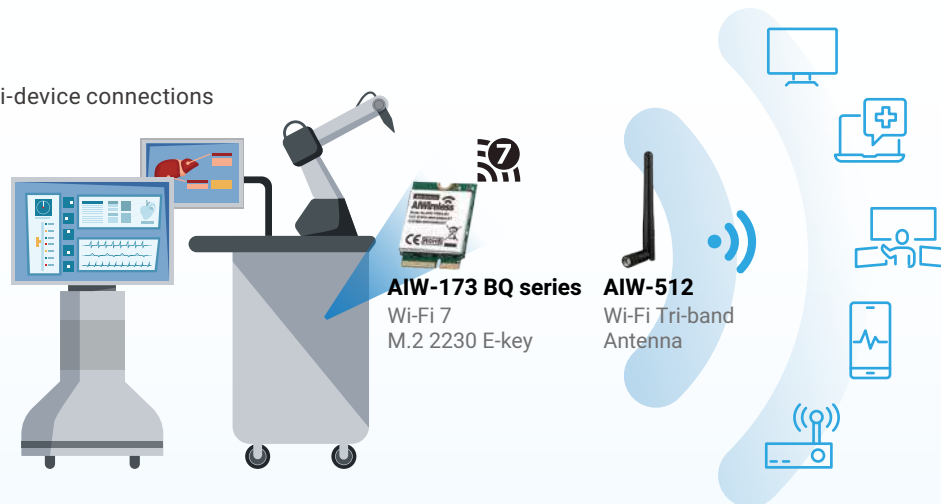
- Limited space and budget constraints for dual Wi-Fi module designs
- Antenna design optimization for optimal performance
- Driver integration challenges in Linux on Arm-based systems

Solutions & Technologies

- 320MHz bandwidth and 6GHz frequency enable ultra-high-speed, low-latency multi-device connections
- Driver integration and firmware optimization provided by the AIW firmware team
- Customized antenna design & performance testing for optimized connectivity

Key Benefits

- Dual-band, dual-concurrent support with a single AIW-173 series module
- Reduced wireless development time and cost through streamlined integration
- Low-latency 4K video streaming for multi-client medical applications



Computer On Modules



Model Name	AOM-2721	AOM-5721	AOM-6731	SOM-6820	AOM-6741
Form Factor	OSM 1.1 Size-L	SMARC 2.2 Half Size	SMARC 2.2 Full Size	COM Express Compact Type6 R3.1	SMARC 2.2 Full Size
Processor	Dragonwing QCS6490/ QCS5430	Dragonwing QCS6490/ QCS5430	Dragonwing IQ-X	Dragonwing IQ-X	Dragonwing IQ9075M
NPU	Hexagon NPU up to 12 TOPS	Hexagon NPU up to 12 TOPS	Hexagon NPU up to 45 TOPS	Hexagon NPU up to 45 TOPS	Hexagon Tensor Processors up to 100 INT8 TOPS
Memory	LPDDR5 8GB	Up to 16GB LPDDR5 (on-board)	LPDDR5X 16GB	LPDDR5X up to 64GB	On-board up to 36GB
Display	1 x eDP, 1 x DP	1 x 4-Lane MIPI DSI/HDMI, 1 x eDP, 1 x DP	1 x eDP, 1 x DP	1 x eDP/LVDS, 3 x DP	2 x 4 lane MIPI DSI & 4 x DP
I/O	2 x GbE, 1 x USB 3.2 Gen1, 2 x PCIe x1, 1 x PCIe x2, 2 x 4-Lane MIPI-CSI	1 x PCIe Gen3 x2, 2 x PCIe Gen 3 x1, 1 x USB 3.2 Gen 1, 2 x GbE	1 x GbE, 2 x USB 3.2 Gen2, 2 x PCIe x1, 1 x PCIe x2, 3 x 4-Lane MIPI-CSI, 1 x 2-Lane MIPI-CSI	Up to 16 lanes PCIe, 4x SATA, 4x USB3, 1x 1GbE	1 x PCIe 3.0 x4, 1 x PCIe 3.0 x2, 2 x USB 3.2 Gen2, 1 x USB2.0, 4 x 4-Lane MIPI-CSI, 6 x CAN-FD by Real-time Subsystem + 2 x CAN-FD
Operating Temp.	-20 ~ 70°C	0 ~ 60°C / -20 ~ 70°C	0 ~ 60°C	0~60°C / -40~85°C	0 ~ 60 °C / -40 ~ 85 °C
Operating System	Yocto, Windows 11 IoT Enterprise, Ubuntu Pro, Android	Yocto, Windows 11 IoT Enterprise, Ubuntu Pro, Android	Windows 11 IoT Enterprise	Windows 11 IoT Enterprise	Ubuntu Pro
Dimensions	45 x 45 mm	82 x 50 mm	82 x 80 mm	95 x 95mm	82 x 80 mm

Single Board Computers



Model Name	MIO-5355	AIMB-293	ASR-A503	ASR-D501
Form Factor	3.5" SBC	Mini-ITX	4" SBC	Proprietary
Processor	Dragonwing QCS6490/ QCS5430	Dragonwing IQ-X	Dragonwing IQ9075M	Dragonwing QCS6490
Memory & Storage	8GB LPDDR5, 128GB UFS or eMMC	Up to 64GB LPDDR5, UFS or NVMe	8GB LPDDR5, 128GB UFS	8GB LPDDR5, 128GB UFS
Display	LVDS / eDP, HDMI	2 x DP, 1 x LVDS/eDP	1x HDMI	1x eDP
I/O	2 x GbE, 6 x USB, 4 x COM, 2 x MIPI-CSI, 1 x Combo Audio Jack, 1 x 8-bit GPIO	9 x USB3, 2 x USB2, 4 x COM, 3 x GbE, 8-bit GPIO	4 x 2.5 GbE, 4 x USB, 2 x COM, 8 x GMSL, 2x CAN FD, 1 x 16-bit GPIO	4 x 2.5 GbE, 2 x USB 3.2 Type-C, 3 x COM, 5 x MIPI-CSI, 2x CAN FD, 1 x 8-bit GPIO, 2x I2C
Expansion	1x M.2 E-Key 2230, 1x M.2 B-Key 2280, 1x M.2 B-Key 3052	1 x M.2 M-Key 2280, 1 x M.2 E-Key 2230, 1 x M.2 B-Key 3052	1x M.2 E-Key 2230, 1x M.2 B-Key 2242/3052, 1x M.2 M-Key 2280	1x M.2 E-Key 2230, 1x M.2 B-Key 3052
Operating Temp.	0 ~ 60°C / -20 ~ 70°C	0 ~ 60°C	0 ~ 60°C / -20 ~ 70°C	-20 ~ 70°C
Operating System	Yocto, Windows 11 IoT Enterprise, Ubuntu Pro	Windows 11 IoT Enterprise	Ubuntu, ROS2 (Advantech Robotic Suite)	Ubuntu, Yocto, ROS2 (Advantech Robotic Suite)
Dimensions	146 x 102 mm	170 x 170mm	165 x 115mm	100 x 60mm

Edge AI Systems



Model Name	DS-011	AFE-A503	AIR-050S	AIR-055	AIR-410	AIR-420	AIR-540
Processor	Dragonwing QCS6490/ QCS5430	Dragonwing IQ9075M	Dragonwing QCS6490/ QCS5430	Dragonwing IQ9075M	RYZEN™ Embedded 8000 Series	RYZEN™ Embedded 7000/9000 Series and EPYC 4005 Series	LGA 4844(Socket SP6) AMD® EPYC™ Embedded 8004 Series Server Processors
Memory	LPDDR5 8GB	8GB LPDDR5, 128GB UFS	Onboard LPDDR5 8GB, 8533MT/s	LPDDR5 up to 36GB	Dual Channel DDR5 5600 MHz2 x SODIMM slots, Max. 96GB (48GB per SODIMM)	4 x 288pin UDIMM ECC DDR5 up to 5200MHz 7000: Up to 128GB 9000: Up to 192GB	Six DDR5 4800 MHz ECC RDIMM, up to 576GB
Display	2 x HDMI	1x HDMI	1x HDMI1.4	2 x HDMI, 2 x DP, 2 x USB-C with DP ALT mode	1 x DisplayPort 1 x HDMI	4 x HDMI 2.0	VGA
I/O	2 x GbE, 2 x USB 3.2, 1 x COM, 1 x Console, 1 x USB-C, 1 x Micro-SD, 1 x Audio Jack, 2 x GMSL (optional)	4 x GbE, 4 x USB, 2 x COM, 8 x GMSL, 2x isolated CAN FD, 1 x isolated 16-bit GPIO	2 x GbE, 4 x USB-A, 1 x USB-C, 2 x COM, 1 x CAN, 1 x DIO	2 x USB 3.2, 2 x USB-C (DP ALT Support), 2 x USB 2.0, 2 x 2.5 GbE, 3 x COM, 1 x DIO, 2 x CAN, 1 x Headphone Combo Jack	3 x 2.5GbE 4 x USB3.2 2 x USB2.0 4 x RS232	2 x 2.5GbE 1 x 10GbE 4 x USB 3.2 2 x USB 2.0	2 x USB 3.2 Gen1, 2 x 2.5GbE LAN, 2 x 10 GbE LAN, 1 x COM
Expansion	1 x M.2 M-Key 2280, 1 x M.2 E-Key 2230, 1 x M.2 B-Key 3042	1 x M.2 E-Key 2230, 1x M.2 B-Key 2242/3052, 1 x M.2 M-Key 2280	1 x M.2 M Key 2280, 1 x M.2 B Key 3050, 1 x M.2 E Key 2230	1 x M.2 M-Key 2280, 1 x M.2 E-Key 2230, 1 x M.2 B-Key 3052	PCIe x 16 (x8 signal)	2 x PCIe Gen4x4 slot 1 x M.2 E key 2230	4 x PCIe Gen5 x16, 2 x MCIO (Gen5), 2 x M.2 2280 M-Key
Operating Temp.	0 ~ 40°C	-20 ~ 55°C	-20 ~ 50°C with 0.7m/s air flow	-20 ~ 60°C	0 ~ 45°C w/o PCIe Card0 ~ 50°C w/PCIe Card	0 ~ 40°C	0 ~ 40°C (w/o Graphic card)
Operating System	Yocto, Windows 11 IoT Enterprise, Android	Ubuntu Pro ROS2 (Advantech Robotic Suite)	Windows 11 IoT Enterprise, Ubuntu Pro	Ubuntu Pro	Windows 11 IOT Ubuntu Pro	Windows 11 LTSC Ubuntu Pro	Windows Server 2025 (64bit) Ubuntu Pro
Dimensions	180 x 190 x 23 mm	175 x 119 x 80 mm	138 x 110 x 57 mm	190 x 174 x 60 mm	240 x 190 x 380.7 mm	480 x 360 x 215 mm	438 x 440 x 183 mm

Development Kits



AOM-2721 OSM with carrier board
for industrial evaluation and OS
comparison on QCS6490

Part Number: AOM-DK2721-FAA1E



AOM-2721 OSM with carrier board
for rapid edge ML prototyping on
Edge Impulse platform

Part Number: AOM-DK2721-FAA1Y



QCS6490-powered edge AI box pre-installed
with visual studio code for Windows-based
application development and debugging

Part Number: DS-011QF-P0A1U



AOM-6731 SMARC with carrier board
for high-performance Windows AI and
edge computing

Part Number: AOM-6731-FAA1E



Wi-Fi 7 and Bluetooth Combo Solution



Model Name	AIW-172	AIW-173 LQ		AIW-173 BQ		AIW-173 HQ	
Part Number	AIW-172BQ-GC1	AIW-173LQ-GI1	AIW-173LQ-GI2	AIW-173BQ-GI1	AIW-173BQ-GI2	AIW-173HQ-GI1	AIW-173HQ-GI2
Chipset	Qualcomm QCC2072	Qualcomm WCN7851					
Wireless Generation	Wi-Fi 7 + BT 5.4	Wi-Fi 7 + BT 5.3					
Form Factor	M.2 2230 E-Key	M.2 1620		M.2 2230 E-Key		Full-Size Mini-PCIe	
Interface	WiFi : PCIe BT: USB	Wi-Fi: PCIe BT: USB	Wi-Fi: PCIe BT: UART	Wi-Fi: PCIe BT: USB	Wi-Fi: PCIe BT: UART	Wi-Fi: PCIe BT: USB	Wi-Fi: PCIe BT: UART
Antenna Information	2 x MHF4 connectors						
Advanced Security	WPA3						
Operating Temperature Range	0 ~ 70°C	-40 ~ 85°C					
OS Support	Windows / Linux	Windows 11 / Linux					
Certification	FCC / CE / IC / TELEC / NCC / RCM / KCC / ANATEL	FCC / CE / IC / TELEC / NCC / RCM / IMDA / MOC / ANATEL / WPC					
Recommended Antenna	AIW-512 / AIW-513 (IP67) / AIW-514 (Dipole, 2-in-1) / AIW-515 (PIFA, 2-in-1)						

Cellular Solution



Model Name	EWM-340	EWM-341	EWM-351	EWM-352
Part Number	EWM-340LQGI1	EWM-341CQGI1	EWM-351DQGI2	EWM-352CQGI1
Chipset	Qualcomm QCX216	Qualcomm SDX12	Qualcomm SDX72-0	Qualcomm SDX35
Wireless Technology	LTE Cat. 1bis + GNSS	LTE Cat.6 + GNSS	5G NR FR1 + GNSS	5G Redcap + GNSS
Form Factor	LGA	M.2 3042 B-Key	M.2 3052 B-Key	M.2 3042 B-Key
Signal Protocol	USB 2.0, UART, I2C, GPIOs	USB 2.0/ USB 3.2 Gen 1	USB 2.0/USB 3.2 Gen 2/PCIe Gen 3	USB 2.0/PCIe Gen 2
Downlink/Uplink	10Mbps / 5Mbps	300Mbps / 50Mbps	4.9Gbps / 550Mbps	223Mbps / 123Mbps
Frequency Band	LTE bands: B1, B2, B3, B4, B5, B7, B8, B8, B12, B13, B18, B19, B20, B25, B26, B28, B66, B34, B38, B39, B40, B41	LTE bands: B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B38, B39, B40, B41, B42, B43, B48, B66, B71, B106 3G bands: B1, B2, B4, B5, B6, B8, B9, B19	5G FR1 bands: n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n25, n26, n28, n29(DL), n30, n38, n39, n40, n41, n48, n53*, n66, n67, n68, n70, n71, n75, n76, n77, n78, n79, n90, n91, n92, n93, n94 LTE bands: B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66, B67, B68, B70, B71 3G bands: B1, B2, B4, B5, B8	5G FR1 bands: n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n25, n26, n28, n30, n38, n40, n41, n48, n53, n66, n70, n71, n77, n78, n79 LTE bands: B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B30, B34, B38, B39, B40, B41, B42, B43, B48, B66, B71, B106
Operating Temperature Range	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C
Support Area	Global	Global	Global	Global
OS Support	Windows 11 / Linux	Windows 11 / Linux	Windows 11 / Linux	Windows 11 / Linux
Antenna information	2 x Ports (1 for LTE, 1 for GNSS)	3 x MHF4 Connectors	5 x MHF4 Connectors	3 x MHF4 Connectors
Recommended Antenna	AIW-534 / AIW-530 (IP67)	AIW-534 / AIW-530 (IP67)	AIW-536	AIW-536

Wi-Fi Antennas



Model Name	AIW-512	AIW-513	AIW-514	AIW-515
Antenna Type	Dipole	Dipole	Dipole	Dipole
Frequency	2.4-2.5GHz, 5.15-5.85GHz 5.925-7.125GHz	2.4-2.5GHz, 5.15-5.85GHz 5.925-7.125GHz	2.4-2.5GHz, 5.15-5.85GHz 5.925-7.125GHz	2.4-2.5GHz, 5.15-5.85GHz 5.925-7.125GHz
Antenna Peak Gain	2.87dBi @2.4GHz 3.11dBi @5GHz 3.22dBi @6GHz	1.48dBi @2.4GHz 3.58dBi @5GHz 4.04dBi @6GHz	ANT0: 1.59dBi @2.4GHz 2.19dBi @5GHz 1.55dBi @6GHz ANT1: 1.58dBi @2.4GHz 2.56dBi @5GHz 2.99dBi @6GHz	ANT0: 1.56dBi @2.4GHz 2.36dBi @5GHz 1.89dBi @6GHz ANT1: 1.58dBi @2.4GHz 3.02dBi @5GHz 2.87dBi @6GHz
Dimension (cm)	11.1 x Φ1	18.3 x 2.16	7.83 x Φ4.5	12.68 x 5.68 x 5.2
Cable Length (cm)	-	-	200	200
Connector	RP-SMA male	RP-SMA male	RP-SMA male	RP-SMA male
IP Level	IP54	IP67	IP67	IP67
Operating Temperature	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C

Cellular Antennas



Model Name	AIW-532	AIW-534
Antenna Type	Dipole	Dipole
Frequency	617 – 960 MHz 1428 – 1610 MHz (including GNSS L1) 1710 – 2690 MHz 3300 – 5000 MHz 5150 – 5925 MHz	617 – 960 MHz 1428 – 1610 MHz (including GNSS L1) 1710 – 2690 MHz 3300 – 5000 MHz 5150 – 5925 MHz
Antenna Peak Gain	1.78dBi @699~960MHz, 3.27dBi @1710~2700MHz, 0.18dBi @3300~5000MHz, 4.02dBi @5150~5850MHz	-0.7 dBi @ 617 – 960 MHz 2.16 dBi @ 1428 – 1610 MHz 1.9 dBi @ 1710 – 2700 MHz -0.2 dBi @ 3300 – 5000 MHz -0.8 dBi @ 5150 – 5850 MHz
Dimension (cm)	16.7 x 2.5	13.4 x 1.9
Connector	SMA male	SMA male
IP Level	-	-
Operating Temperature	-40 ~ 85°C	-40 ~ 85°C

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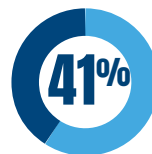


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Source: OMDIA – Market Share estimates for
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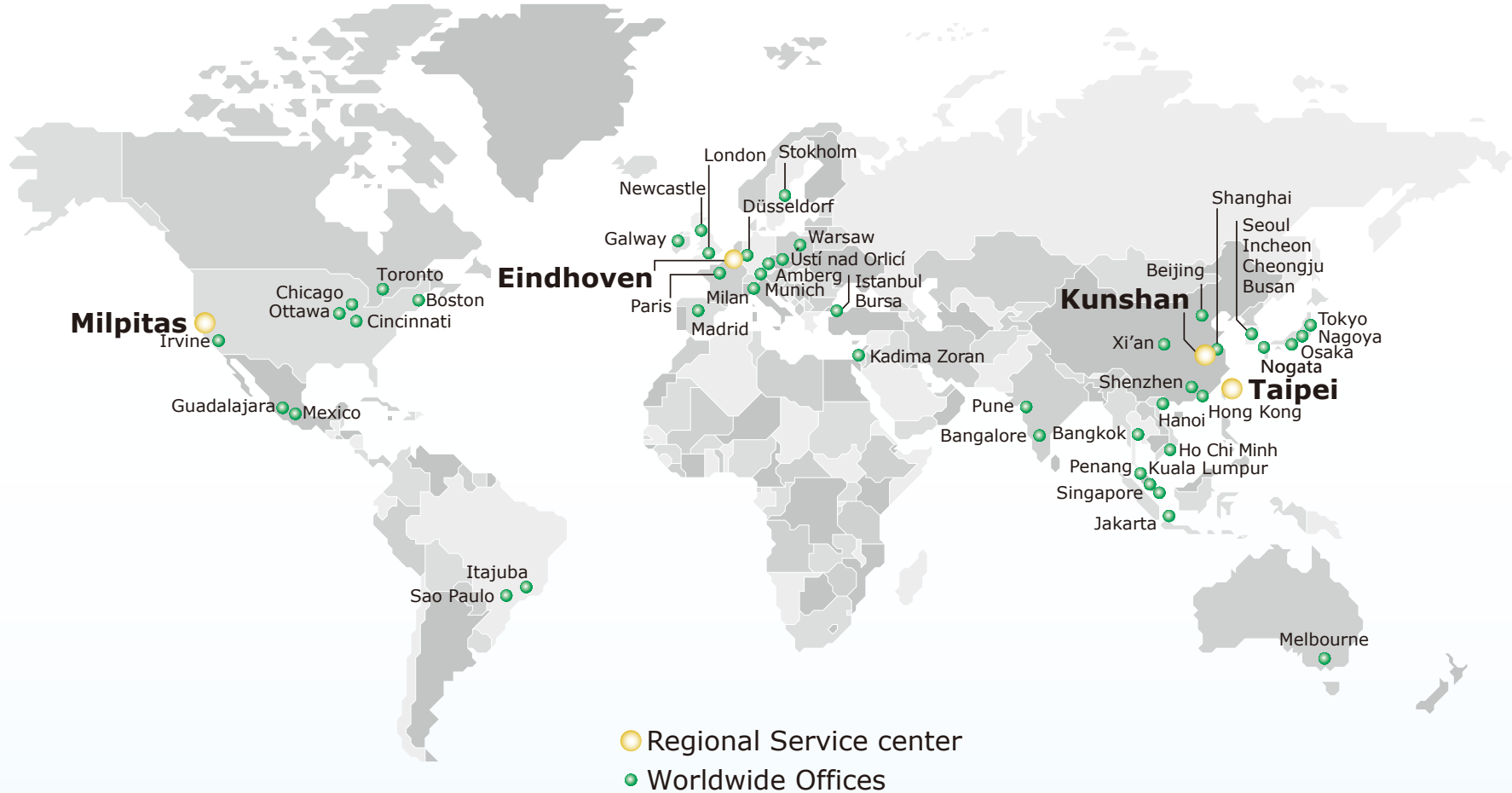
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