

SECURE, SMART, AND CONNECTED IOT: POWERFUL NXP EDGE PROCESSING WITH NXP WI-FI AND BLUETOOTH

Featuring **NXP i.MX 8M Plus** and **88W8997** Silicon



2x2 Wi-Fi 5 (802.11ac) and **Bluetooth 5.3**



1.6 GHz quad-core Cortex-A53 and **800 MHz Cortex-M7**

Our customers asked for a high-performance, secure, and robust IoT SoM that's rugged, simplifies their BOM, has reliable connectivity, and is globally certified. One with a proven security architecture, long term software support, security fixes, and device management. Our new Summit SOM 8M Plus is powered by **NXP's innovative i.MX 8M Plus** processor and **88W8997** wireless silicon coupled with onboard NXP PMICs (PCA9450CHN and PM823UK), performance LPDDR4 RAM, and eMMC 5.1 storage. We combine this with our long-term support Summit Yocto Linux and Zephyr RTOS, **secure enclave**, and **Summit Linux FIPS Core Crypto** to offer a comprehensive hardware and software solution throughout your product's lifecycle.

- **Powerful Heterogenous Multiprocessing:** 1.6 GHz quad-core Cortex-A53 microprocessor and 800 MHz Cortex-M7 microcontroller allow you to run Linux and an RTOS on dedicated, hardware-firewalled subsystems.
- **Dedicated Machine Learning:** High-performance edge machine learning via an integrated neural processing unit, delivering up to 2.3 TOPS.
- **Diversity of Hardware Interfaces:** Wide selection of display, network, data, audio and camera interfaces
- **Virtualization:** Quad core MPU can run multiple firewalled Linux instances, i.e. separate instances for user interface, connectivity, and others
- **Secure and Encrypted Boot:** Robust, secure, and optionally encrypted boot mechanism to ensure only intended software boots on your device.
- **Advanced DVK:** Reference designs for display, camera, audio, LTE, GPS, power consumption profiling, PoE, battery usage, battery charging, USB 3.0 power, and a Bluetooth 5.2 module integration supporting LE coded/Long Range.

- **2x2 Wi-Fi 5 (802.11ac) with MIMO**
 - Supports **Adaptive World Mode:** ship a single SKU worldwide
 - Supports the latest **WPA3-Personal, WPA3-Enterprise, and WPA3-Enterprise SuiteB 192-bit** security standards.
 - Hardware LTE coexistence integrates seamlessly w/ LTE modules
 - PCIE 2.0 (WLAN)/UART(BT) or SDIO 3.0 (WLAN)/UART(BT)
- **Bluetooth 5.3** Classic BT & Bluetooth Low Energy (LE), inc. 2MPHY
- **Integrated Wi-Fi + Bluetooth coexistence** for seamless connectivity
- **Industrial Temperature Rating** (-30° to +85 °C)
- **Multiple high performance memory options:**
512MB LPDDR4 / 8GB eMMC 1GB LPDDR4 / 8GB eMMC
2GB LPDDR4 / 16GB eMMC 4GB LPDDR4 / 32GB eMMC
For other sizes of RAM / storage, please contact sales.
- **Extensive range of pre-certified antennas**
- **Rugged Design** – solder down 40mm x 47mm form factor
- **Power Efficient:** NXP PMICs, power optimized LPDDR4 and eMMC memory. Core shut off, clock/voltage scaling, low power interfaces, power optimized single stream Wi-Fi mode enable highly optimized power consumption.
- **Full Product Lifecycle Management** with our future Device Management solution to update devices in the field and long-term hardware availability
- **Hardware Connectivity Roadmap:** pin-compatible connectivity updated Summit SOM 8M Plus modules will be available in the future as NXP updates their 2x2 Wi-Fi-BT combo silicon to the latest standards.

FEATURES AT A GLANCE

- RELIABLE CONNECTIVITY: WI-FI 5 2X2 MIMO AND BT 5.3**
PA/LNA provide excellent connectivity in difficult environments, plus enterprise support for better roaming, encryption, single SKU support, hardware LTE coex, and more.
- ML, GRAPHICS, VIDEO, VISION, AND AUDIO - UP TO 3 DISPLAYS**
2.3 TOPS Machine Learning/Neural Processing Unit, up to 1200p60 or 4Kp30 displays, 2 shader GPU, 1080p60 multi codec encode and decode VPU, 2 MIPI-CSI camera interfaces, dedicated Image Signal Processing up to 12 MP, HiFi4 audio DSP
- SECURE ENCLAVE AND SECURE BOOT POWERED BY I.MX 8M PLUS**
Dedicated on-board security hardware, secure boot Linux, and high-performance and flexible secure storage system for passwords, certificates, and data storage.
- ROBUST SOFTWARE AND SPEED TO MARKET**
LTS Summit Yocto Linux and Zephyr RTOS with CVE remediation available, plus NXP's base Linux and FreeRTOS releases
- GLOBAL APPROVALS**
Carries several modular FCC, IC, CE, RCM, MIC and Bluetooth SIG approvals. Ship a single SKU worldwide with Adaptive World Mode.
- PERSONAL SUPPORT FROM DESIGN TO MANUFACTURE**
Our industry-renowned support and field application engineering team is passionate about helping you speed your design to market.

APPLICATION AREAS

- Smart Buildings and Appliances
- Smart Robots
- Industrial IoT, Vision Systems
- Printers and Scanners
- Medical Devices

KEY SPECIFICATIONS

| CATEGORY | FEATURE | SPECIFICATION |
|-------------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Processors | Microprocessor | 4x Cortex®-A53 cores @ 1.6 GHz |
| | Microcontroller | 1x Cortex®-M7 core @ 800 MHz |
| | Audio | Tensilica® HiFi 4 DSP |
| | Graphics | GC7000UL with 2 shaders for 3D and GC520L for 2D |
| | Machine Learning | Neural Processing Unit (NPU) with 2.3 TOP/s |
| Memory | RAM | 512MB, 1GB, 2GB and 4GB; For other sizes please contact sales |
| | Storage | 8GB, 16GB and 32GB; For other sizes please contact sales |
| Machine Learning | Neural Processing Unit | <ul style="list-style-type: none"> Keyword detect, noise reduction, beamforming Speech recognition (i.e. Deep Speech 2) Image recognition (i.e. ResNet-50) |
| Graphics and Video | Graphics Processing Unit | <ul style="list-style-type: none"> 166 million triangles/sec 1.0 giga pixel/sec 16 GFLOPs 32-bit OpenGL ES 1.1, 2.0, 3.0, OpenCL 1.2, Vulkan 2D acceleration |
| | Video Processing Unit | <p>Video Decode</p> <ul style="list-style-type: none"> 1080p60 HEVC/H.265 Main, Main 10 (up to level 5.1) 1080p60 VP9 Profile 0, 2 1080p60 VP8 1080p60 AVC/H.264 Baseline, Main, High decoder <p>Video Encode</p> <ul style="list-style-type: none"> 1080p60 AVC/H.264 encoder 1080p60 HEVC/H.265 encoder |
| | Display Interfaces | <ul style="list-style-type: none"> 1x MIPI DSI, up to UWHD and WUXGA 1x LVDS Tx, up to 1920x1080p60 1x HDMI 2.0a Tx, up to 4kp30 |
| Vision | Camera | 2x 4-lane MIPI CSI |
| | Image Signal Processor | 375 Mpixel/s HDR ISP supporting configurations, such as 12MP@30fps, 4kp45, or 2x 1080p80 |
| Audio | Audio Interfaces | <ul style="list-style-type: none"> SPDIF input and output Six external SAI modules supporting I2S, AC97, TDM, codec/DSP, and DSD interfaces ASRC eARC/ARC (HDMI) 8-channel PDM mic input |
| | Input/Output | <ul style="list-style-type: none"> 2x USB 3.0/2.0 Dual-Role with PHY 2x Gbit Ethernet with IEEE® 1588, AVB (One also supports TSN) 2x CAN/CAN FD 4x UART 5 Mbit/s 6x I2C 3x SPI 1x SDIO 3.0/eMMC 5.1 |
| Wireless Specification | Wi-Fi | Wi-Fi 5 (802.11ac) |
| | Bluetooth® | v5.3 |
| | Frequency | Dual-Band 2.4GHz & 5GHz |
| | Transmit Power | + 18 dBm (maximum) |
| | Antenna Options | 2x U.FL connectors for external antennas |
| | Raw Data Rates (Air) | Wi-Fi 5 866.7Mbit/s - MCS9, 2 Spatial Streams, 80MHz, 256QAM, SGI |
| Key Wi-Fi Features | Wi-Fi 5 (802.11ac) | <ul style="list-style-type: none"> IEEE 802.11 a/b/g/n/ac 20, 40 & 80MHz bandwidth support MIMO, OFDMA Transmit Beamforming |
| Key Bluetooth Features | Bluetooth | <ul style="list-style-type: none"> Classic Bluetooth – BR / EDR 2 x WideBand Speech (WBS) links Central / Peripheral Modes Up to 16 Bluetooth LE connections LE Secure Connections 2MPHY |
| Supply Voltage | | 3.3V |
| Physical | Dimensions | 40mm x 47 mm x 4.6 mm (SIP Modules) |
| Environmental | Temp Range | -30°C to +85°C |
| Miscellaneous | Lead Free | Lead-free and RoHS-compliant |
| | Development Kit | Development board, accessories, and evaluation software |
| Qualifications | Bluetooth® SIG | Bluetooth 5.3 |
| Regulatory | Approvals | FCC/IC/CE/MIC/RCM |

For full specifications on the Summit SOM 8M Plus module, please see the appropriate datasheet.

| Part # | Description |
|--------------|-------------------------------------------------------------------------------|
| 453-00070R | Module, Summit SOM 8M Plus, Quad Core CPU, 512MB LPDDR4, 8GB eMMC (Tape/Reel) |
| 453-00071R | Module, Summit SOM 8M Plus, Quad Core CPU, 1GB LPDDR4, 8GB eMMC (Tape/Reel) |
| 453-00072R | Module, Summit SOM 8M Plus, Quad Core CPU, 2GB LPDDR4, 16GB eMMC (Tape/Reel) |
| 453-00135R | Module, Summit SOM 8M Plus, Quad Core CPU, 4GB LPDDR4, 32GB eMMC (Tape/Reel) |
| 453-00070C | Module, Summit SOM 8M Plus, Quad Core CPU, 512MB LPDDR4, 8GB eMMC (Cut Tape) |
| 453-00071C | Module, Summit SOM 8M Plus, Quad Core CPU, 1GB LPDDR4, 8GB eMMC (Cut Tape) |
| 453-00072C | Module, Summit SOM 8M Plus, Quad Core CPU, 2GB LPDDR4, 16GB eMMC (Cut Tape) |
| 453-00135C | Module, Summit SOM 8M Plus, Quad Core CPU, 4GB LPDDR4, 32GB eMMC (Cut Tape) |
| 453-00070-K1 | Development Kit, Summit SOM 8M Plus, Quad Core CPU, 512MB LPDDR4, 8GB eMMC |
| 453-00071-K1 | Development Kit, Summit SOM 8M Plus, Quad Core CPU, 1GB LPDDR4, 8GB eMMC |
| 453-00072-K1 | Development Kit, Summit SOM 8M Plus, Quad Core CPU, 2GB LPDDR4, 16GB eMMC |
| 453-00135-K1 | Development Kit, Summit SOM 8M Plus, Quad Core CPU, 4GB LPDDR4, 32GB eMMC |

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