

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
- 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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