

### 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



**GOLD PARTNER**



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, **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  
*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 Summit 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, and 2GB; For other sizes please contact sales		
	Storage	8GB and 16GB; For other sizes please contact sales		
Machine Learning	Neural Processing Unit	<ul style="list-style-type: none"> <li>▪ Keyword detect, noise reduction, beamforming</li> <li>▪ Speech recognition (i.e. Deep Speech 2)</li> <li>▪ Image recognition (i.e. ResNet-50)</li> </ul>		
Graphics and Video	Graphics Processing Unit	<ul style="list-style-type: none"> <li>▪ 166 million triangles/sec</li> <li>▪ 1.0 giga pixel/sec</li> </ul>	<ul style="list-style-type: none"> <li>▪ 16 GFLOPs 32-bit</li> <li>▪ OpenGL ES 1.1, 2.0, 3.0, OpenCL 1.2, Vulkan</li> </ul>	▪ 2D acceleration
	Video Processing Unit	<b>Video Decode</b> <ul style="list-style-type: none"> <li>▪ 1080p60 HEVC/H.265 Main, Main 10 (up to level 5.1)</li> <li>▪ 1080p60 VP9 Profile 0, 2</li> <li>▪ 1080p60 VP8</li> <li>▪ 1080p60 AVC/H.264 Baseline, Main, High decoder</li> </ul>	<b>Video Encode</b> <ul style="list-style-type: none"> <li>▪ 1080p60 AVC/H.264 encoder</li> <li>▪ 1080p60 HEVC/H.265 encoder</li> </ul>	
	Display Interfaces	<ul style="list-style-type: none"> <li>▪ 1x MIPI DSI, up to UWHD and WUXGA</li> <li>▪ 1x LVDS Tx, up to 1920x1080p60</li> </ul>		<ul style="list-style-type: none"> <li>▪ 1x HDMI 2.0a Tx, up to 4kp30</li> </ul>
	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"> <li>▪ SPDIF input and output</li> <li>▪ Six external SAI modules supporting I2S, AC97, TDM, codec/DSP, and DSD interfaces</li> </ul>	<ul style="list-style-type: none"> <li>▪ ASRC</li> <li>▪ eARC/ARC (HDMI)</li> <li>▪ 8-channel PDM mic input</li> </ul>	
Peripherals	Input/Output	<ul style="list-style-type: none"> <li>▪ 2x USB 3.0/2.0 Dual-Role with PHY</li> <li>▪ 2x Gbit Ethernet with IEEE® 1588, AVB (One also supports TSN)</li> <li>▪ 2x CAN/CAN FD</li> </ul>	<ul style="list-style-type: none"> <li>▪ 4x UART 5 Mbit/s</li> <li>▪ 6x I2C</li> <li>▪ 3x SPI</li> <li>▪ 1x SDIO 3.0/eMMC 5.1</li> </ul>	
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"> <li>▪ IEEE 802.11 a/b/g/n/ac</li> <li>▪ 20, 40 &amp; 80MHz bandwidth support</li> </ul>	<ul style="list-style-type: none"> <li>▪ MIMO, OFDMA</li> <li>▪ Transmit Beamforming</li> </ul>	
Key Bluetooth Features	Bluetooth	<ul style="list-style-type: none"> <li>▪ Classic Bluetooth – BR / EDR</li> <li>▪ 2 x WideBand Speech (WBS) links</li> <li>▪ Central / Peripheral Modes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Up to 16 Bluetooth LE connections</li> <li>▪ LE Secure Connections</li> <li>▪ 2MPHY</li> </ul>	
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)
453-00070C	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)
453-00070-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