V2/23

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**

NXP GOLD PARTNER

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
  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, and 2GB; For other sizes please contact sales		
	Storage	8GB and 16GB; For other sizes please contact sales		
Machine Learning	Neural Processing Unit	▪ Keyword detect, noise reduction, beamforming ▪ Speech recognition (i.e. Deep Speech 2) ▪ Image recognition (i.e. ResNet-50)		
Graphics and Video	Graphics Processing Unit	▪ 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	**Video Decode** ▪ 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	**Video Encode** ▪ 1080p60 AVC/H.264 encoder ▪ 1080p60 HEVC/H.265 encoder	
	Display Interfaces	▪ 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	▪ 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	
Peripherals	Input/Output	▪ 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)	▪ IEEE 802.11 a/b/g/n/ac ▪ 20, 40 & 80MHz bandwidth support	▪ MIMO, OFDMA ▪ Transmit Beamforming	
Key Bluetooth Features	Bluetooth	▪ 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)
453-00070C	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