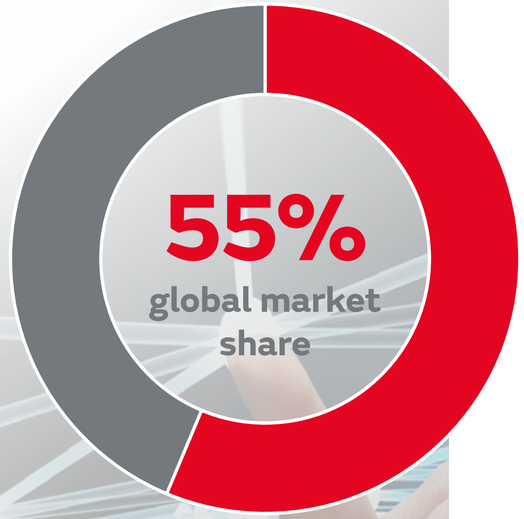

muRata
INNOVATOR IN ELECTRONICS
World-leading
connectivity solutions



Murata wireless modules already account for more than half of the world market.

Our market-leading position in module design also extend to low power and battery operated sensor nodes, gateways/border routers, software development for both embedded, application software, and more.

We go beyond thinking about just the modules, to identify the optimal approach and platform for the complete end-to-end solution.

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Global #1 for connectivity

Contents

Murata offers an extensive range of wireless modules based on Cypress chipsets.

MCU-integrated modules and select Wi-Fi®/Bluetooth® combo modules can be used in combination with Cypress WICED software.

Radio-only Wi-Fi®/Bluetooth® combo modules can be used in combination with a MPU (Linux) or MCU (FreeRTOS).

These modules cover a wide range of specifications. From Single band WiFi® 2.4GHz to dual band Wi-Fi® 802.11ac 2.4GHz and 5GHz. Most of the options also include Bluetooth®.

With this variety of wireless modules we can cover a wide range of applications that can go from a connected wearable or sensor node to a high-data-rate video streaming device.

Infineon + CYPRESS EMBEDDED IN TOMORROW™

Modules with MCU

Type 1LD

Shielded ultra-small Wi-Fi® 11b/g/n+Bluetooth® 4.2 +MCU module

- 2.4GHz WiFi®+Bluetooth® MCU Module
- Network Topology: AP and STA dual mode
- Chipset: Cypress (CYW43438) + STM32 (ARM Cortex-M4F)
- Processor: STM32 ARM Cortex-M4F
- 8.9 x 7.8 x 1.2 mm
- FCC/IC 'reference' certified
- Modulation: DSSS / CCK / OFDM
- Wifi Stack runs inside, 1MB Flash, 256KB RAM
- Cypress WICED, SPP on Bluetooth® and GATT on Bluetooth LE are supported by WICED

Type 1GC

Shielded ultra-small dual band Wi-Fi® 11a/b/g/n+Ethernet+MCU module

- 2.4GHz & 5GHz Wi-Fi®+Ethernet MCU Module
- Network Topology: AP and STA dual mode
- Chipset: Cypress (CYW43907)
- Processor: ARM Cortex-R4
- 10.0 x 10.0 x 1.2 mm
- FCC/IC 'reference' certified
- Modulation: DSSS / CCK / OFDM
- Wifi Stack runs inside
- Cypress WICED, USB 2.0, SDIO 3.0 host and device mode

Radio-only modules

Type 1DX

802.11 b/g/n SISO + Bluetooth® 5.1

- Cypress CYW4343W chipset
- 6.95 x 5.15 x 1.1 mm
- SDIO WiFi host interface
- UART Bluetooth® host interface
- PCM for Bluetooth® audio
- Shielded, FCC/IC/TELEC 'reference' certified
- NXP Linux BSP Support, MCUXpresso

Type 1LV

802.11 a/b/g/n+11ac HT20 SISO + Bluetooth® 5.0

- Cypress CYW43012 chipset
- Bluetooth® 5.0
- 10.0 x 7.2 x 1.4 mm
- SDIO3.0 WiFi host interface
- UART Bluetooth® host interface
- PCM/I2S for Bluetooth® audio
- Shielded, FCC/IC/TELEC 'reference' certified
- NXP Linux BSP support, MCUXpresso

Type 1MW

802.11 a/b/g/n/ac SISO

- Cypress CYW43455 chipset
- Bluetooth® 5.1
- 7.9 x 7.3 x 1.1 mm
- SDIO3.0 WiFi host interface
- UART Bluetooth® host interface
- PCM/I2S for Bluetooth™ audio
- Shielded, FCC/IC/TELEC 'reference' certified
- NXP Linux BSP support

A wide range of modules

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Many of Murata's extensive range of wireless modules are designed into to the leading Linux development platforms, including:

NXP

- i.MX 8M Mini EVK - **Type 1MW**
- i.MX 8M Nano EVK - **Type 1MW**
- i.Mx7ULP EVK - **Type 1DX**

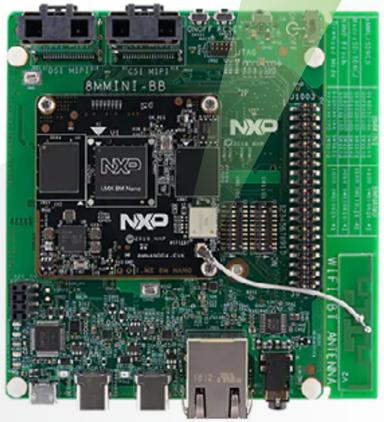
ST Micro

- STM32MP1 Discovery Kit - **Type 1DX**

1DX

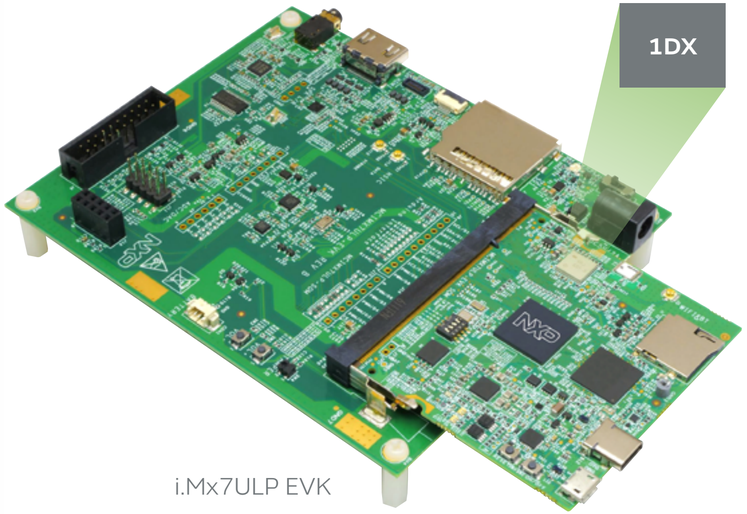
STM32MP1 Discovery Kit

1MW



i.MX 8M Mini/Nano EVK

1DX



i.Mx7ULP EVK

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Soldered-down in Linux platforms

Murata wireless modules are also soldered down in many FreeRTOS and other development platforms:

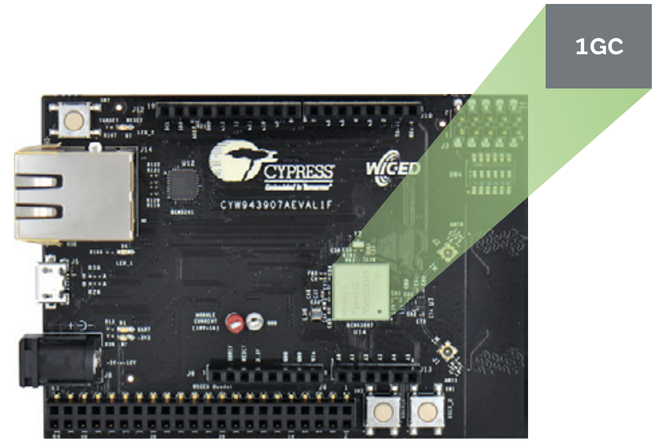
NXP
- i.MX RT Alexa Voice Board - **Type 1DX**

Cypress
- PSoC® 6 WiFi-BT Pioneer Kit - **Type 1DX/Type 1LV**
- CYW43907 Eval Kit - **Type 1GC**

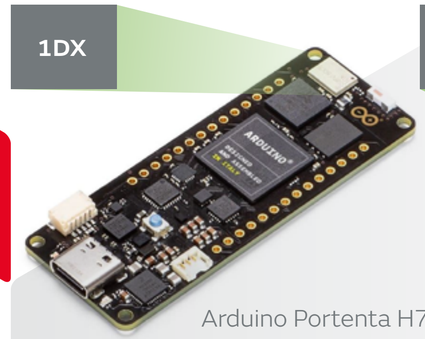
Arrow
- Quicksilver - **Type 1GC**

Arduino
- Arduino Portenta H7 - **Type 1DX**

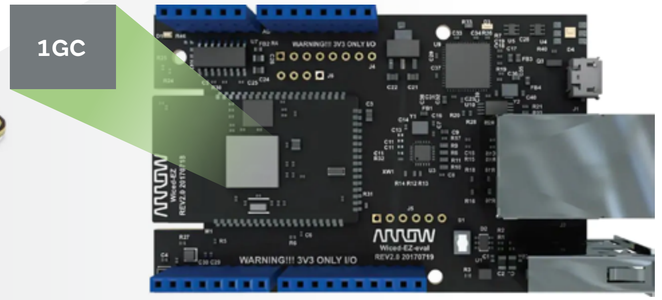
i.MX RT Alexa Voice Board



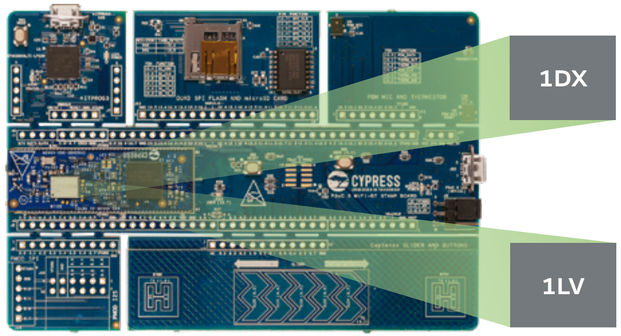
Cypress CYW43907 Eval Kit



Arduino Portenta H7



Arrow Quicksilver



PSoC® 6 WiFi-BT Pioneer Kit

Soldered-down in FreeRTOS platforms

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Our world-leading wireless modules are now available with reference-certified antennas in an M.2 ‘plug and play’ format.

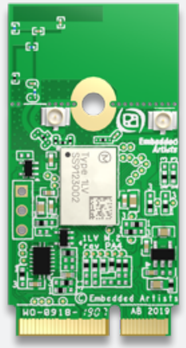
Embedded Artists’ M.2 modules, co-developed by Murata, are designed for evaluation, integration and ease-of-use. These professionally designed and proven M.2 modules provide easy evaluation of different Wi-Fi/Bluetooth solutions, lower your risk and shortern your time to market.

Features

- Industry-standard M.2 form factor
- Reference-certified antennas & snap-off option
- U.FL connectors for antenna or conducted testing
- Comprehensive interface support including SDIO, UART, PCM, and radio control lines

Type 1DX
Cost optimized

Type 1MW
High performance



Type 1LV
Low power consumption

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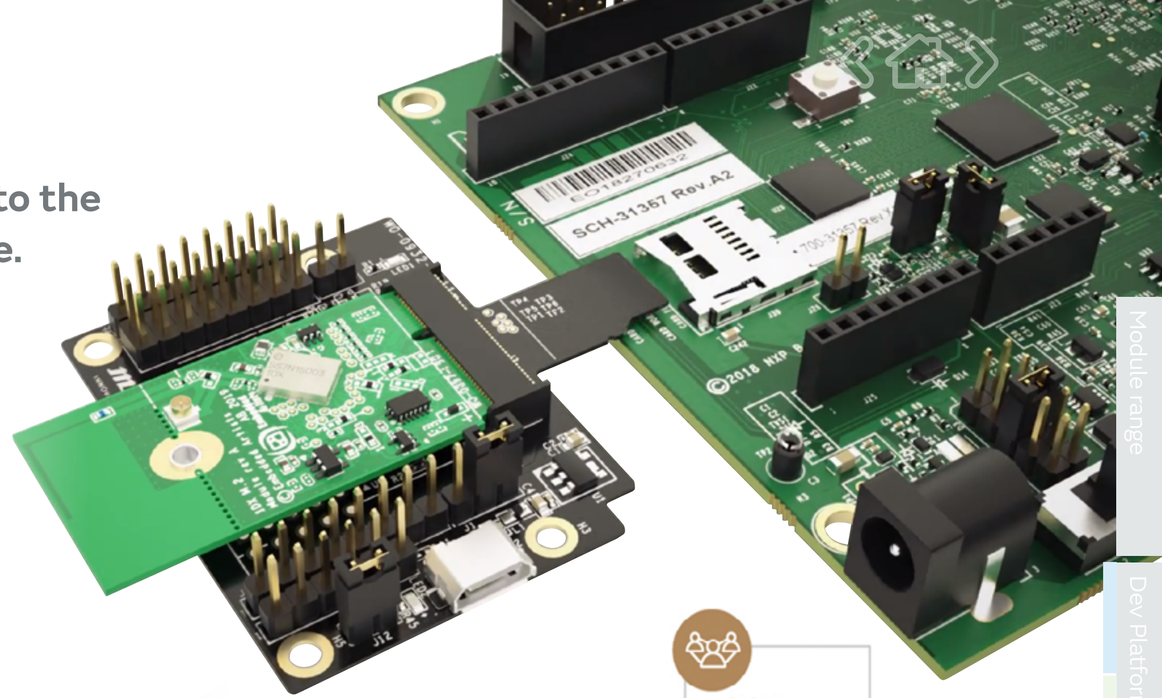
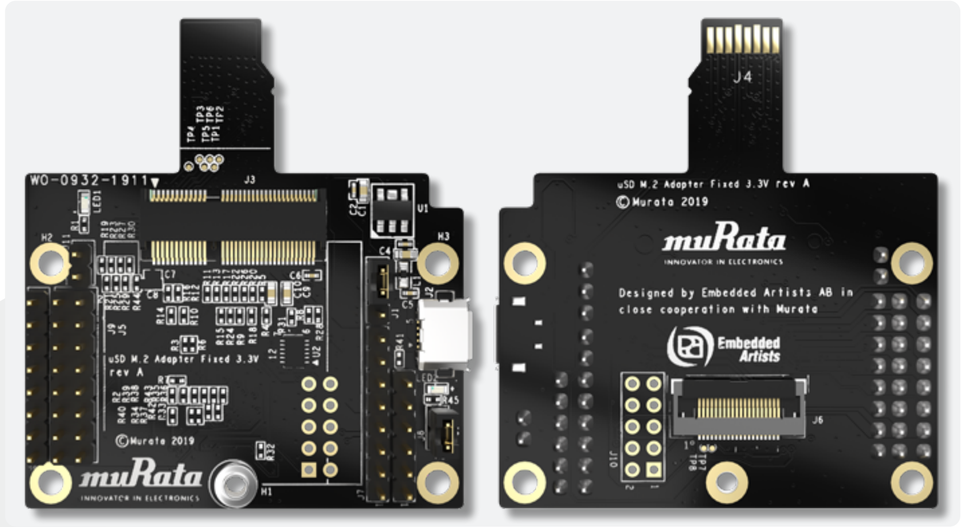
M.2 connectivity modules

Plug your preferred connectivity into the i.MX development kit of your choice.

Murata's µSD-M2 adapter board offers an out-of-the-box experience for NXP i.MX with Murata's module family - enabled by Embedded Artists' M.2 EVBs. All WLAN/ BT-necessary signals are included on M.2 connector pins (Key 'E') including:

- WLAN SDIO
- BT H4 UART
- BT PCM/I2S
- GPIOs





GOLD PARTNER NXP

EVKs

- i.MX RT1020
- i.MX RT1050
- i.MX RT1060
- i.MX RT1064
- i.MX 6ULL
- i.MX 6 Quad Sabre

µSD-M.2 adapter

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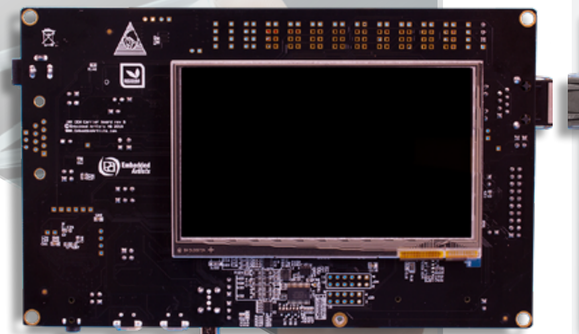
Embedded Artists

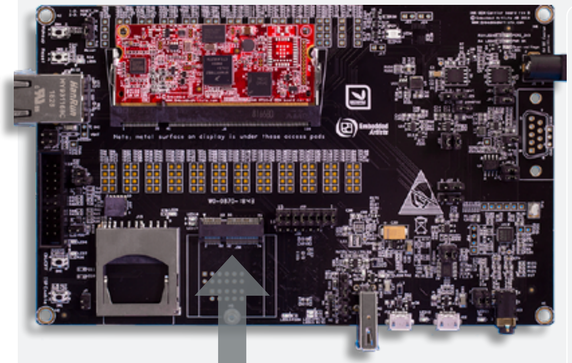
Embedded Artists now offer Murata-wireless-enabled Developer kits which get you up and running quickly, with all relevant interfaces available for evaluation or prototyping...



iMX RT1062 Developer's Kit

iMX RT1062 OEM board

Combines the real-time processing of a microcontroller with the multimedia functionality of an application processor.



Add connectivity
Simply plug your M.2 module directly into the carrier board

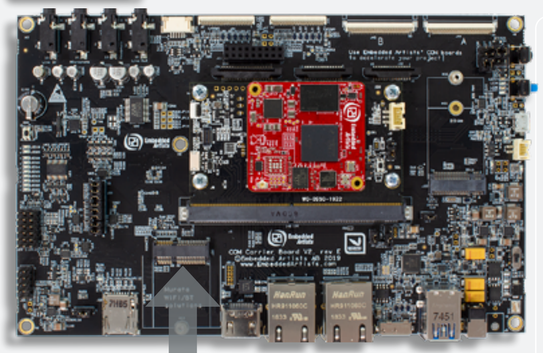
Connectors & interfaces

- SODIMM200, 200-pos connector, 1.8V keying for OEM board
- M.2 connector for Wi-Fi/BT module
- 10/100 Mbps Ethernet RJ45 connector
- USB OTG interface with ESD protection
- USB Host interface with ESD protection
- SD memory card connector
- CAN transceiver with ESD protection and termination
- UART-to-USB FTDI bridge for UART interface with ESD protection
- Debug interface with 2x5 pos 50 mil pitch Cortex debug connector and 2x10 pos 100 mil pitch ARM debug connector, with ESD protection
- Parallel 16-bit RGB display interface and touch panel interface for 4.3 inch 480x272px LCD
- Expansion connectors for accessing OEM board signals
- Audio codec with 3.5mm audio jack connector (for microphone input and headphone output) and option for external speakers

iMX8M Mini uCOM Developer's Kit

iMX8M Mini uCOM board

Optimized for advanced multimedia applications, video decoding, and comes with up to 4x A53 and 1x M4 cores.



Add connectivity
Simply plug your M.2 module directly into the carrier board

Connectors & interfaces

- MXM3, 314-pos connector with standoffs for COM boards
- Dual 10/100/1000 Mbps Ethernet RJ45 connectors
- USB 3.0 OTG interface
- Dual USB 3.0 Host interfaces (via USB 3.0 Hub)
- HDMI connector
- UART-to-USB bridge for console connection
- uSD connector
- Audio codec with line out, line in, mic in and headphone out via 3.5mm audio jack connectors
- M.2 E-key connector (with SDIO, PCIe and USB interfaces connected) - for Wi-Fi/BT M.2 modules
- M.2 B-key connector (with USB, SIM card holder and SATA interfaces connected)
- Dual LVDS connectors, connects directly to a New Haven NHD-10.1-1024600AF-LSXV-CTP display
- FPC connectors for serial camera interface (MIPI-CSI), parallel camera interface and serial display output (MIPI-DSI)
- Parallel RGB display interface connector
- Dual 50-pos FPC expansion connectors (to access many COM Board signals)

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Fully modular solution

Murata has taken on our own initiatives and made key strategic partnerships in arriving at a strong software ecosystem support model for customers.

WICED

Cypress' **WICED FreeRTOS**-based solution provides comprehensive IDE and SDKs which enable customers to rapidly develop software for their Wireless IoT product.

The WICED platform enables a number of Murata modules, including Type 1GC, 1LD, 1DX, and 1LV.

Various partners such as Arrow and Cypress enable Evaluation Kits featuring Murata's modules with and without additional MCU's.

Cypress' WICED Community Forum support is extensive with Murata being an active support partner on the Forum.

Modus Toolbox

Cypress' **Modus Toolbox** provides multiple O/S solutions (MBED O/S, Amazon AWS and FreeRTOS) for the Cypress PSoC6 MCU evaluation kits enabled with both Murata Type 1DX and 1LV.

The Modus Toolbox is Cypress' latest IDE/ SDK solution and is similarly supported on the Cypress Community Forum.

Linux

NXP provides a baseline **Linux** release which supports Murata modules Type 1DX, and 1MW on various platforms.

The NXP release is a solid starting point but does not include the latest Cypress wireless driver update.

Murata provides a low-touch i.MX Linux solution for Cypress' FMAC wireless driver support.

Murata's Linux solution provides comprehensive support for multiple NXP i.MX Linux kernels and Cypress' FMAC releases.

Bluetooth stack support leverages large community following of BlueZ.

Murata modules supported include Type 1DX, 1MW, and 1LV. To truly ease out-of-box evaluation support, Murata provides an executable script which builds images for all supported NXP i.MX targets.

Strong support ecosystem

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MCUXpresso

NXPs **MCUXpresso** FreeRTOS-based solution provides strong and flexible IDE and SDKs which currently enable Murata Type 1DX, 1MW, and 1LV.

Various i.MX RT platforms are supported, including i.MX RT 1020, 1050, 1060, and 1064. NXP's i.MX Community provides strong support for i.MX RT solutions with Murata playing an active role on the Forum.

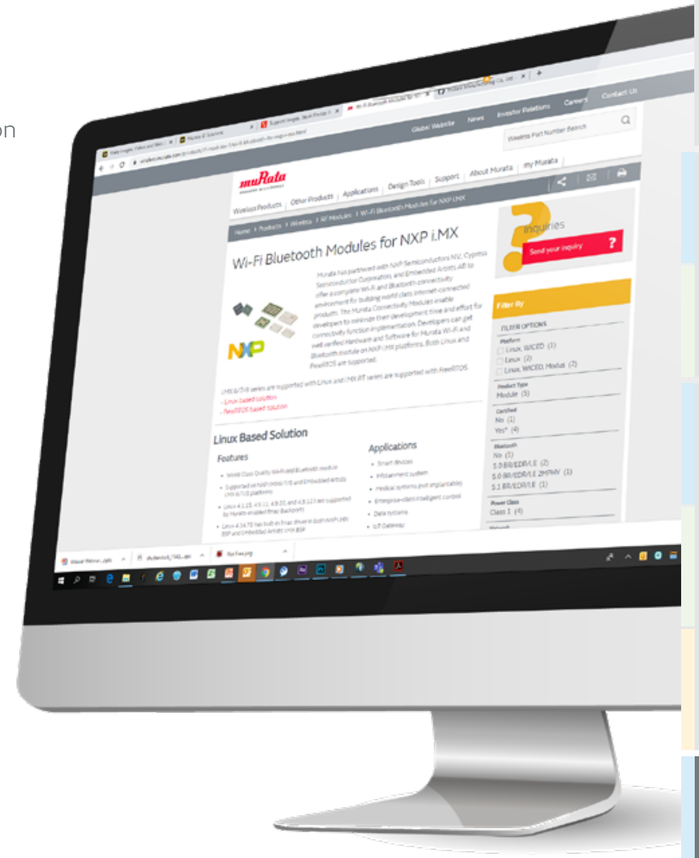
MicroPython

The newcomer **Arduino Portenta H7** platform provides a MicroPython-based solution.

Both Arduino Community and the MicroPython Forum provide end customers with support for this MCU platform with Murata Type 1DX module soldered down.

Documentation

Murata provides extensive documentation support (hardware, software, testing, regulatory certification) openly at Murata's wireless connectivity site.



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Strong support ecosystem