Solutions for i.MX wireless connectivity

muRata

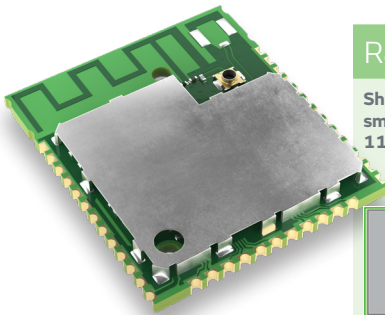INNOVATOR IN ELECTRONICS

World-leading solutions

Murata's wireless modules already account for more than 53% of the world market.

Our market-leading position in module design also extends 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.

A wide range of modules

Murata offers an extensive range of wireless modules, including a rapidly expanding offering based on NXP chipsets. Modules with integrated MCU are used in combination with NXP EZ-SDK or NXP MCUXpresso software.

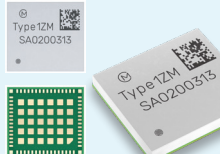Radio-only modules are hosted by MPU (Linux/Android) or MCU (FreeRTOS). These modules cover a wide range of specifications. From Single band Wi-Fi 2.4GHz to Dual band Wi-Fi 11ac 2.4/5GHz 2x2 MIMO. Most options include Bluetooth®.

Murata's wide range of modules enable applications from a small connected gadget or sensor node to a high data rate video streaming device.

NXP GOLD PARTNER

	Radio + MCU	Radio only	
	Shielded small Wi-Fi® 11b/g/n + MCU	Shielded ultra-small dual band Wi-Fi® 11a/b/g/n/ac + Bluetooth® 5.1	Shielded ultra-small dual band Wi-Fi® 11a/b/g/n/ac 2x2 MIMO + Bluetooth® 5.2
	Actual size 10.2 x 9.3 x 1.3mm	Actual size 10.2 x 9.3 x 1.3mm	Actual size 11.8 x 8.4 x 1.3mm

Specifications	Type ABR	Type 1ZM	Type 1YM
Murata part number	CMWC1ZZABR-107	LBEE5QD1ZM-572	LBEE5XV1YM-574
Embedded Artists M.2 module P/N	N/A	EAR00364	EAR00370
Technology	Wi-Fi + MCU	Wi-Fi + Bluetooth	Wi-Fi + Bluetooth
Chipset	NXP 88MW320	NXP 88W8987	NXP 88W8997
Wi-Fi specification	802.11b/g/n	802.11a/b/g/n/ac	802.11a/b/g/n/ac 2x2 MIMO
Bluetooth specification	N/A	5.1	5.2
Frequency (GHz)	2.4	2.4 & 5	2.4 & 5
Hosted/Hostless architecture	Hosted/Hostless	Hosted	Hosted
Software	EZ-Connect, MCUXpresso	Linux, MCUXpresso	Linux
Wi-Fi interface	UART, SPI	SDIO 3.0	PCIe, SDIO 3.0
Bluetooth interface	N/A	UART	UART, SDIO 3.0
MAX data rate - Wi-Fi (Mbps)	72.2	433	866
MAX data rate - Bluetooth (Mbps)	N/A	3	3
Interface voltage (V)	1.8, 3.3	1.8	1.8, 2.5, 3.3
Operating temp. Range (°C)	-30 to +85	-20 to +85	-30 to +85
Antenna configuration	PCB trace antenna	PCB trace antenna or U.FL connected patch antenna	U.FL connected patch antennas
Regulatory certification	FCC/IC, CE	FCC/IC, CE, MIC	FCC/IC, CE, MIC

Note: CE marking and declaration should be done by customer as a final product

## Soldered-down in major development platforms

Many of Murata's extensive range of wireless modules are designed into to leading development platforms including Linux, Android, FreeRTOS and others, for example:

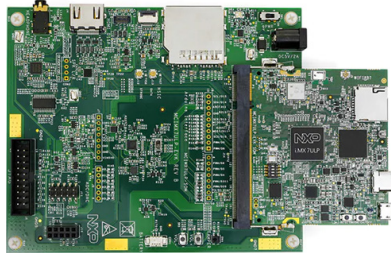**NXP i.MX - Linux/Android/MCUXpresso**

- i.MX 8M EVK - **Type 1CX**
- i.MX 8M Mini EVK - **Type 1MW**
- i.MX 8M Nano EVK - **Type 1MW**
- i.MX 7ULP EVK - **Type 1DX**
- i.MX RT Alexa Voice Board - **Type 1DX**
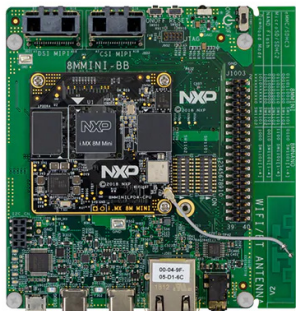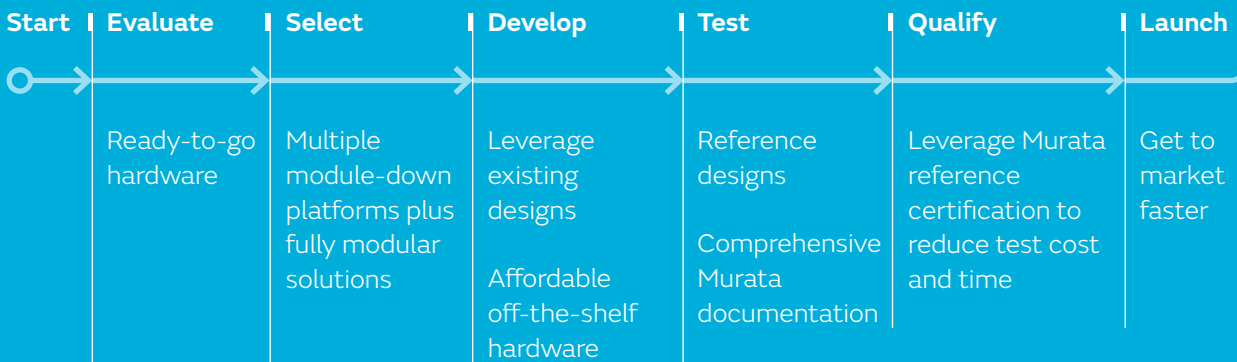
i.MX 8M Mini/Nano EVK
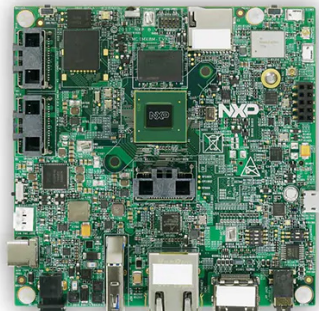
i.MX 8M EVK

i.MX 7ULP EVK

i.MX RT Voice Board: Alexa Voice Services (AVS) certified solution

Making IoT connectivity easier

Murata is focused on delivering a comprehensive Software/Hardware/Regulatory/Documentation solution that enables customers to get their wireless IoT enabled products to market faster and easier.

Hardware team   **Software team**

Start	Evaluate	Select	Develop	Test	Qualify	Launch
	Ready-to-go hardware	Multiple module-down platforms plus fully modular solutions	Leverage existing designs	Reference designs	Leverage Murata reference certification to reduce test cost and time	Get to market faster
			Affordable off-the-shelf hardware	Comprehensive Murata documentation		

A rich ecosystem supporting your entire project lifecycle

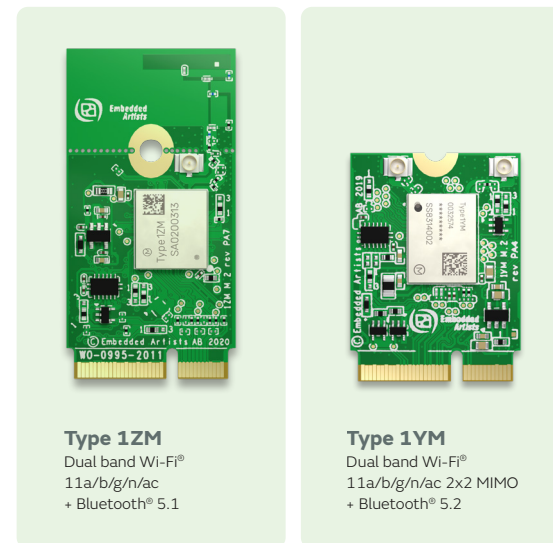**muRata** INNOVATOR IN ELECTRONICS

Modular solutions

M.2 boards

Murata embarked on a close partnership with Embedded Artists to develop a best-of-class Wi-Fi®/Bluetooth® evaluation board. Based on the industry standard M.2 Key 'E' specification; these professionally designed and proven M.2 Modules provide customers ultimate flexibility in validating Murata's Wi-Fi®/Bluetooth® solutions. In M.2-enabled end products, the M.2 is the fastest option in time-to-market.

Features

🔖 Standard M.2 form factor

🔖 Reference-certified antennas & snap-off option

🔖 UFL connectors for antenna or conducted testing

🔖 Comprehensive interface support including SDIO, PCIe, UART, PCM, and radio control lines

Type 1ZM
Dual band Wi-Fi®
11a/b/g/n/ac
+ Bluetooth® 5.1

Type 1YM
Dual band Wi-Fi®
11a/b/g/n/ac 2x2 MIMO
+ Bluetooth® 5.2

μSD adapter

Murata's μSD-M2 Adapter board offers offers modular enablement for NXP's i.MX EVKs with Embedded Artist's M.2 module family. Enabling WLAN-SDIO modules, the following WLAN/BT signals are brought out of the Adapter:

🔖 WLAN SDIO
🔖 BT UART
🔖 BT PCM/I2S

🔖 WLAN/BT CTRL
🔖 WLAN JTAG
🔖 Debug GPIOs
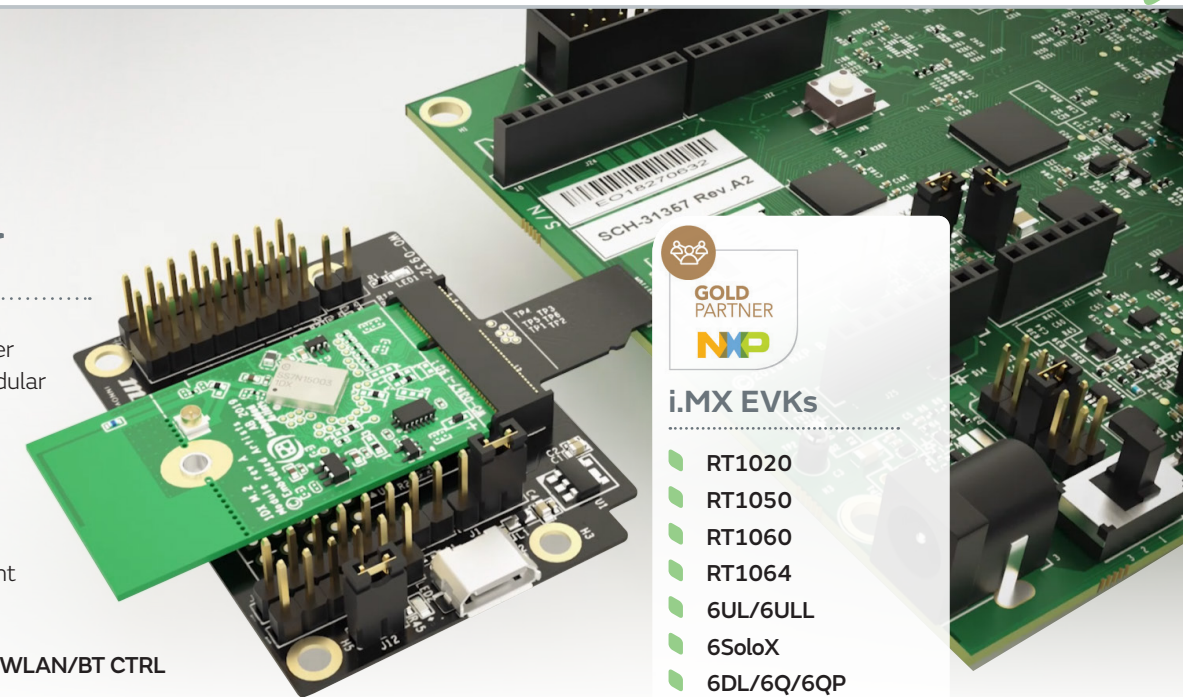
i.MX EVKs

🔖 RT1020
🔖 RT1050
🔖 RT1060
🔖 RT1064
🔖 6UL/6ULL
🔖 6SoloX
🔖 6DL/6Q/6QP
🔖 8M Mini
🔖 8M Nano

Fully modular system

Embedded Artists partnered closely with Murata to arrive at the ultimate modular Wi-Fi®/Bluetooth® solution which offers IoT designers a quick, easy and cost-effective route to world-class connectivity.

Developer's Kits are available for use as your evaluation/prototyping platform. The kits include the hardware and software components needed to get up-and-running with your software development on day 1.

🔖 Easily evaluate different Wi-Fi/BT solutions – by just switching M.2 modules

🔖 Fast-to-market integration

🔖 Less regulatory burden

🔖 Use certified antennas

🔖 Re-use FCC certification

Embedded
Artists

1. Choose a COM/OEM board

Embedded Artists have developed a suite of COM (Computer-on-Modules) and OEM boards, integrating all core components around a a variety of NXP processors and microcontrollers:

🔖 i.MX RT1062
🔖 i.MX RT1052
🔖 i.MX8M Quad
🔖 i.MX8M Mini uCOM
🔖 i.MX8M Nano uCOM
🔖 i.MX6 Quad
🔖 i.MX6 DualLite
🔖 i.MX6 Ultralite
🔖 i.MX6 SoloX
🔖 i.MX7 Dual
🔖 i.MX7 Dual uCOM
🔖 i.MX7ULP uCOM

2. Plug into COM carrier board

There are two types of carrier boards: One for i.MX RT family boards (with a slot for the OEM board) and another for i.MX 6/7/8 family boards (supporting larger COM board).

🔖 Support for i.MX RT/6/7/8 designs

🔖 Support for Wi-Fi/BT M.2 Key 'E' interface, including advanced debug features developed with Murata

🔖 Extensive MPU/MCU Interface support

🔖 Ultimate ease-of-use

3. Plug in your connectivity

Choose the Murata-enabled Embedded Artists M.2 connectivity module appropriate for your application in terms of:

🔖 Performance
🔖 Power consumption
🔖 Range
🔖 Cost
🔖 Temperature range
🔖 Supported standards

4. Start your evaluation

🔖 Pre-loaded software drivers
🔖 Comprehensive user manuals
🔖 Responsive support

Murata Forum

Murata's Community provides customers any necessary support to get their Murata module-enabled product to market. The Forum has global reach, allowing any customer to get online and seek assistance.

Software

Murata has developed res ources and made key strategic partnerships to create a strong software ecosystem support model for customers.

Linux – Murata has developed an enhanced solution for both NXP and Cypress-based modules that support plug-n-play solutions. Additional wireless hardware configurations are supported with some leading-edge wireless functionality not seen elsewhere. Murata's dedicated team has fine-tuned the software offering over our five-year collaboration with NXP (previously Freescale). Current modules supported include Type 1ZM, 1YM, 1FX, 1DX, 1MW, 1LV, 1CX, and 1XA.

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

Android – NXP provides a built-in solution on their BSP release which currently supports Type 1ZM, 1MW, and 1CX.

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