

Industry leading Wi-Fi Solutions for i.MX and RT

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Wi-Fi Solutions & Strategy

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SECURE CONNECTIONS
FOR A SMARTER WORLD

Generational Wi-Fi Nomenclature

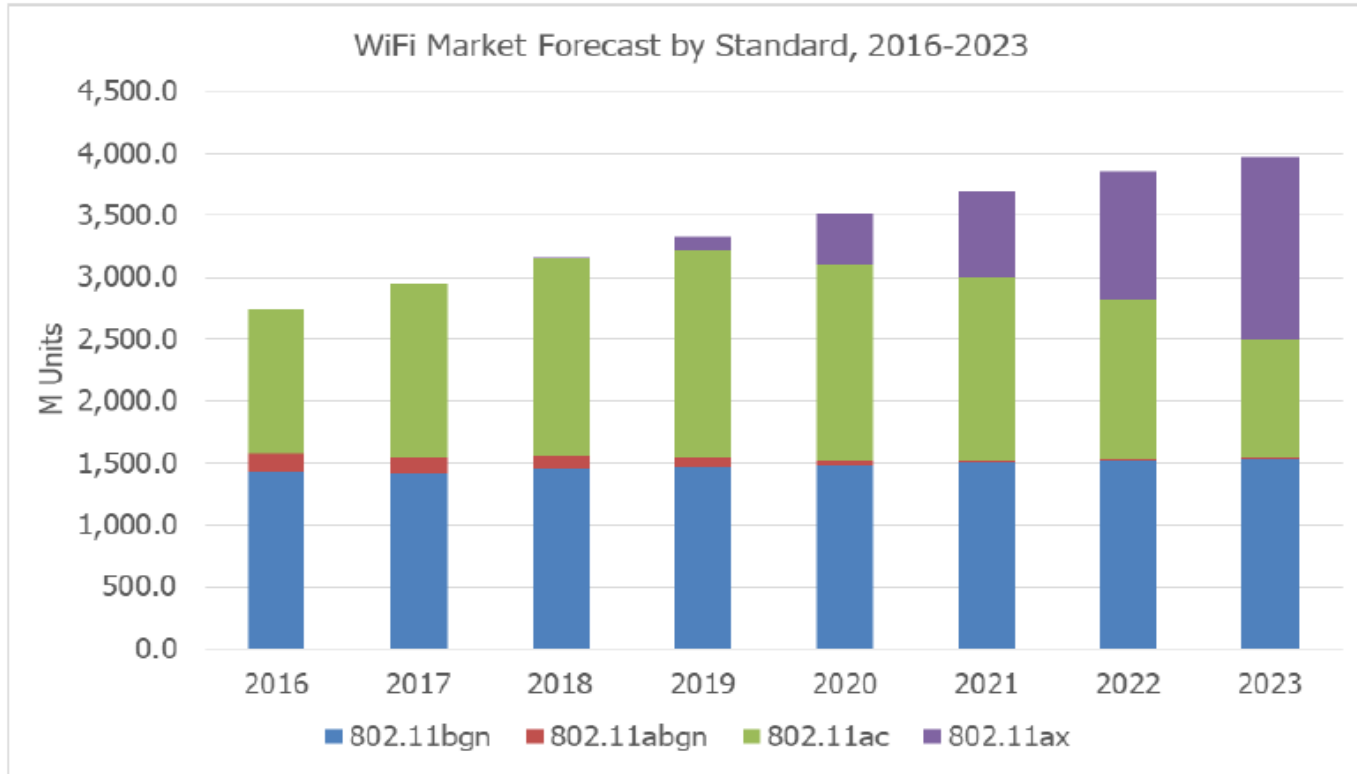
- The Wi-Fi Alliance (WFA) has introduced a new generational naming scheme for Wi-Fi devices
- Devices receive generation of the most advanced technology/radio they contain

If the most advanced technology a device supports is ...	Then it shall be identified as generation
802.11ax	Wi-Fi 6
802.11ac	Wi-Fi 5
802.11n	Wi-Fi 4

- Operators and device vendors will use generational nomenclature to identify Wi-Fi version supported by their devices



Wi-Fi Market Forecast by Standard



Source: TSR 2018-2019 Wireless Connectivity Analysis

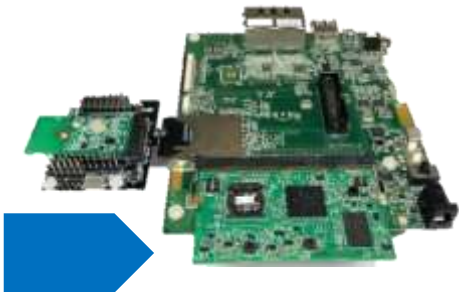
	2016	2017	2018	2019	2020	2021	2022	2023
WiFi total	2,737.6	2,952.0	3,149.6	3,329.4	3,520.0	3,695.0	3,859.3	3,976.3
G.R %	*	107.8%	106.7%	105.7%	105.7%	105.0%	104.4%	103.0%
802.11bgn	1,424.6	1,418.9	1,452.2	1,471.8	1,483.9	1,505.5	1,526.5	1,535.6
802.11abgn	156.6	122.8	107.1	70.5	41.4	20.1	12.9	7.7
802.11ac	1,156.4	1,410.3	1,589.7	1,650.2	1,566.2	1,469.3	1,272.8	949.8
802.11ax	0.0	0.0	0.7	136.8	428.4	700.1	1,047.1	1,483.2
802.11bgn	52.0%	48.1%	46.1%	44.2%	42.2%	40.7%	39.6%	38.6%
802.11abgn	5.7%	4.2%	3.4%	2.1%	1.2%	0.5%	0.3%	0.2%
802.11ac	42.2%	47.8%	50.5%	49.6%	44.5%	39.8%	33.0%	23.9%
802.11ax	0.0%	0.0%	0.0%	4.1%	12.2%	18.9%	27.1%	37.3%

- 3.1 billion Wi-Fi chipsets shipped in 2018
- Wi-Fi chipset shipments forecast to reach 4 billion by 2023
- Wi-Fi 4 (11n) expected to remain 38% of total market through 2023
- Single band (2.4GH) dominates Wi-Fi 4 shipments
- Wi-Fi 4 remains preference for IoT devices that do not require higher speed or high power consumption
- Growth of Wi-Fi 5 (11ac) market caps in 2019
- Growth of Wi-Fi 6 (11ax) comes at expense of Wi-Fi 5
- Single band Wi-Fi 6 chips for IoT devices are expected to launch in 2020 – 2021
 - Broad adoption of Wi-Fi 6 in IoT will start in 2022 - 2023

802.11bgn = 2.4GHz only
 802.11abgn/ 11ac = 2.4/ 5GHz dual band
 802.11ax: dual band and single band



Full Range of Wi-Fi Solutions for i.MX Boards



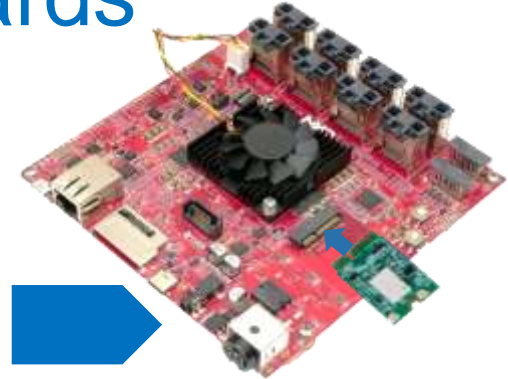
- 802.11n only
 - 802.11n + BT
 - 802.11ac 1x1 + BT
- For i.MX 6 Family

- 6QuadPlus
- 6Quad
- 6DualPlus
- 6Dual
- 6DualLite
- 6Solo
- 6SoloX
- 6SoloLite
- 6SLL
- 6UltraLite
- 6ULL

i.MX 8 series

i.MX 8M series

i.MX 8X series



- 802.11n + BT
 - 802.11ac 1x1 + BT
 - 802.11ac 2x2 + BT
- For i.MX 8 / 8M

i.MX 7ULP

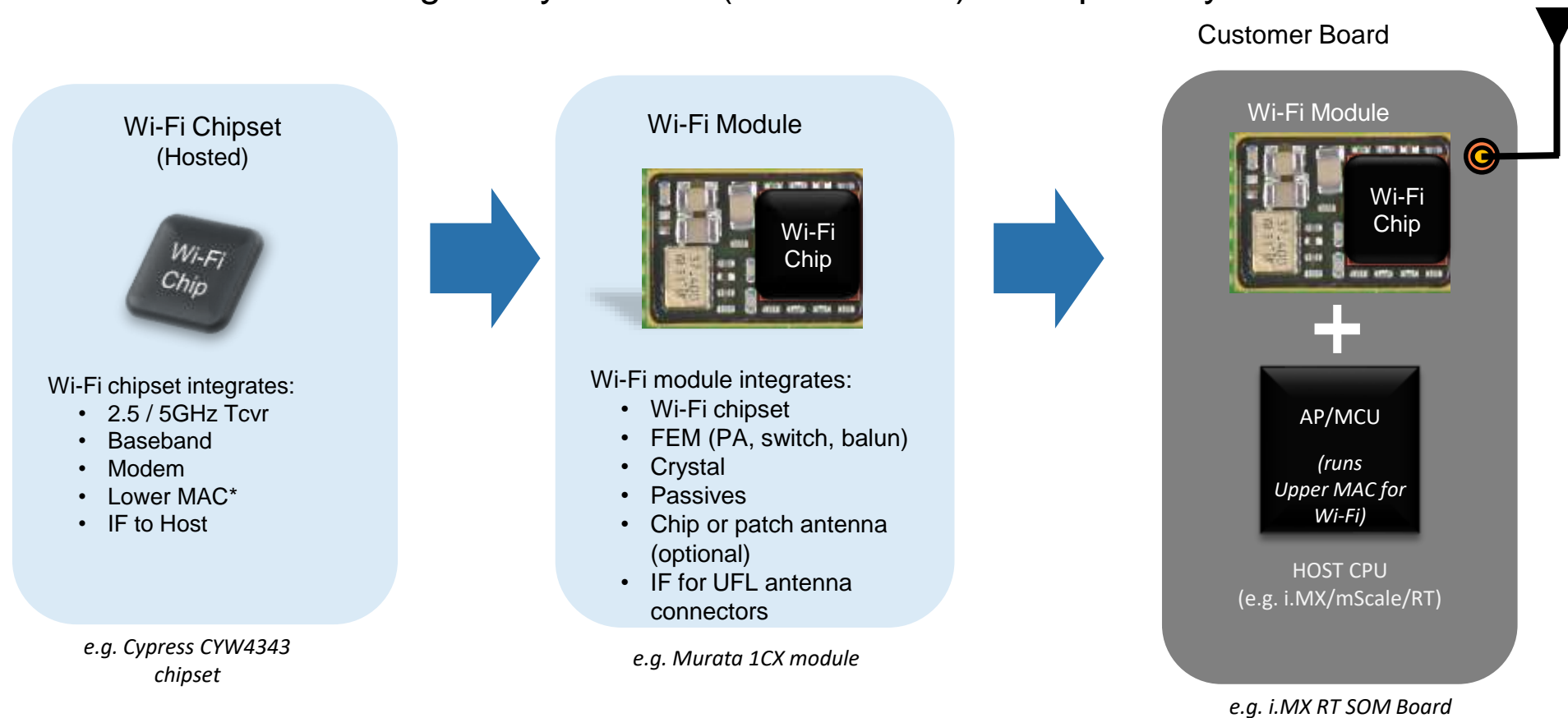
i.MX RT



- 802.11n + BT
 - 802.11ac + BT
- For i.MX 7 / RT

Wi-Fi Enablement – Terminology Overview

- Wi-Fi chipsets that require a host CPU (Hosted) cannot be certified by themselves
- Modules can be reference certified, allowing easier/lower-cost regulatory certification for customers
- Customer boards must be regulatory certified (with antenna) and optionally Wi-Fi certified



Wi-Fi Enablement Options for i.MX and RT

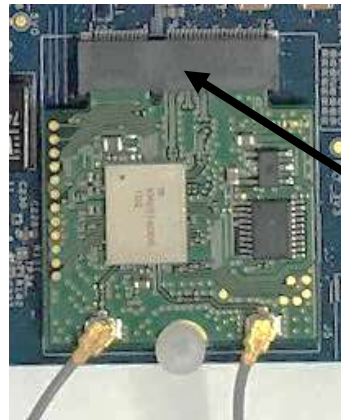
- Three options to connect Wi-Fi solutions to i.MX boards
 - Design Nxp Eval Or Reference Design Board With Wi-fi Module Down On Motherboard
 - Add M.2 Connector To Nxp Evk Board Or Reference Design Board
 - Use Murata uSD to M.2 interconnect card to bridge uSD/SD connector to M.2

Module soldered down onto
i.MX RT SOM board



Wi-Fi module

M.2 module connected to
i.MX EVK board



M.2
connector

Murata uSD to M.2
interconnect card



Murata uSD-M.2 Interposer Card

microSD connector provides
Power and WLAN-SDIO

SDIO bus test points:
SDIO DATA, CMD, and CLK

J3 = M.2 board connector,
type 2230-xx-E

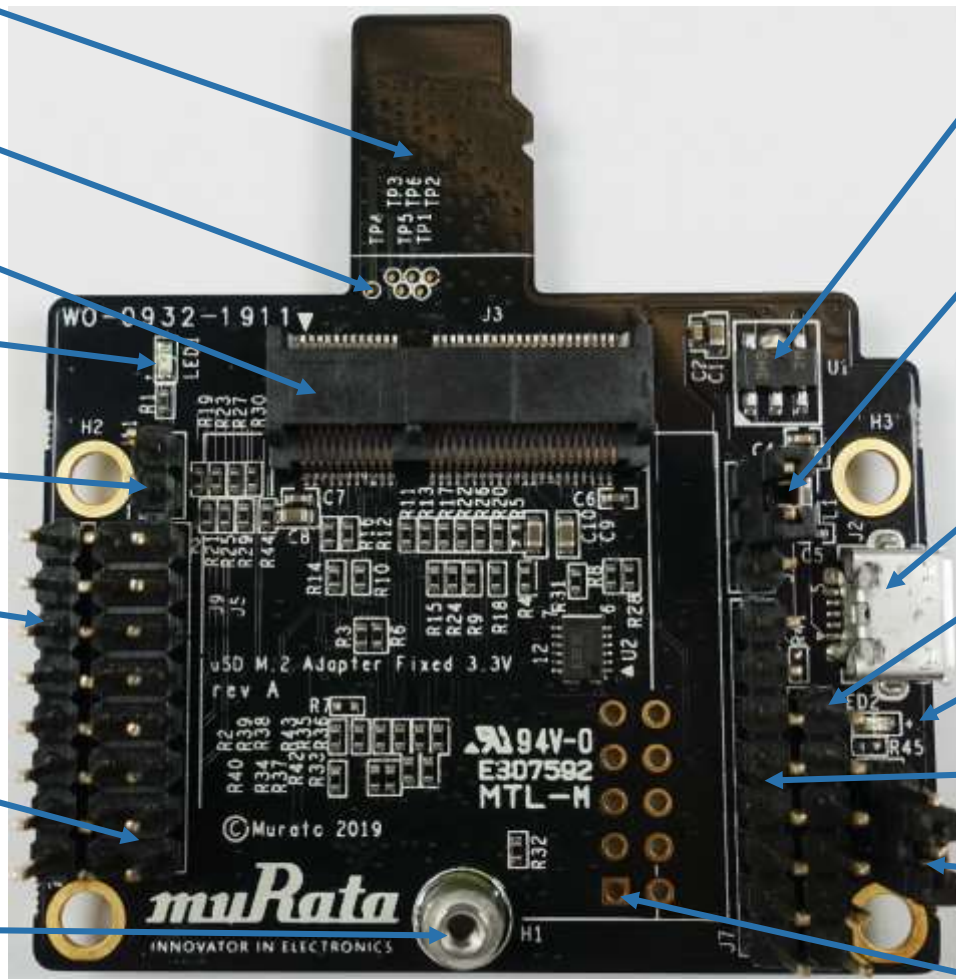
LED1 = Power LED Indicator
(Green)

J11 = Optional BT Disable
Jumper for WLAN-Only Mode

J9 = BT UART TX/RX and
WLAN/BT CTRL Arduino Header

J5 = Optional BT PCM and
WLAN/BT Debug Signals

H1 = M.2 Mounting Standoff



U1 = Voltage Regulator:
steps down 5V to 3.3V VBAT

J1 = Power Supply Selector
Jumper must be installed to power Adapter
Position 1-2: 5V/3.3V VBAT supply from micro-
USB (J2) or Arduino (J7); **Position 2-3:** VBAT
supply (typical 3.1~3.3V) from microSD connector

J2 = Optional USB Power Supply

J8 = BT UART RTS/CTS Arduino Header

LED2 = 3.3V VDDIO Override Indicator (Blue)

J7 = Optional Arduino Header Power Supply

J12 = VDDIO Override
Short for 3.3V VDDIO (open for 1.8V)

J10 = WLAN JTAG (unpopulated) header

Part Number: LBEE0ZZ1WE-TEMP; Availability: Now @ [Mouser](#); Price \$50 USD (single unit)

Murata uSD-M.2 Adapter Kit Box and Contents



Part Number: LBEE0ZZ1WE-TEMP
Availability: Now @ [Mouser](#)
Price: \$50 USD (single unit)

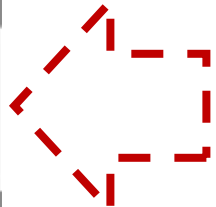


Some Assembly Required

Murata uSD-M.2 Interposer Card Kit for SD & uSD

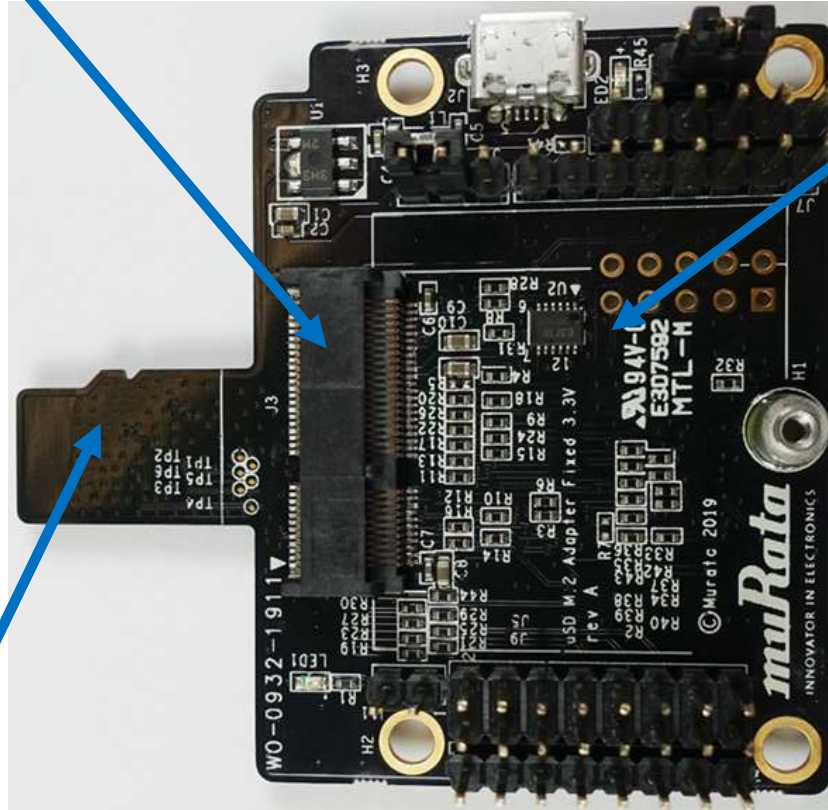


uSD-SD Adapter for full size SD slot on i.MX 6 boards

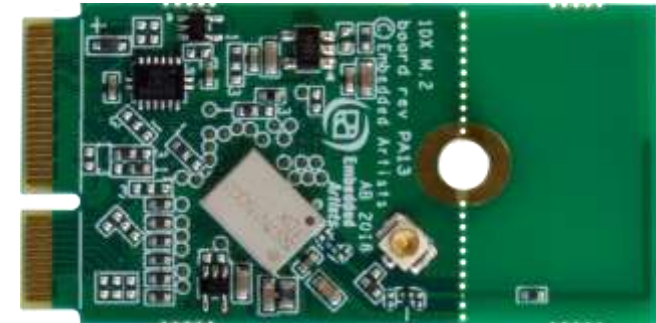


M.2 Connector

uSD connector for i.MX RT 10xx EVK boards

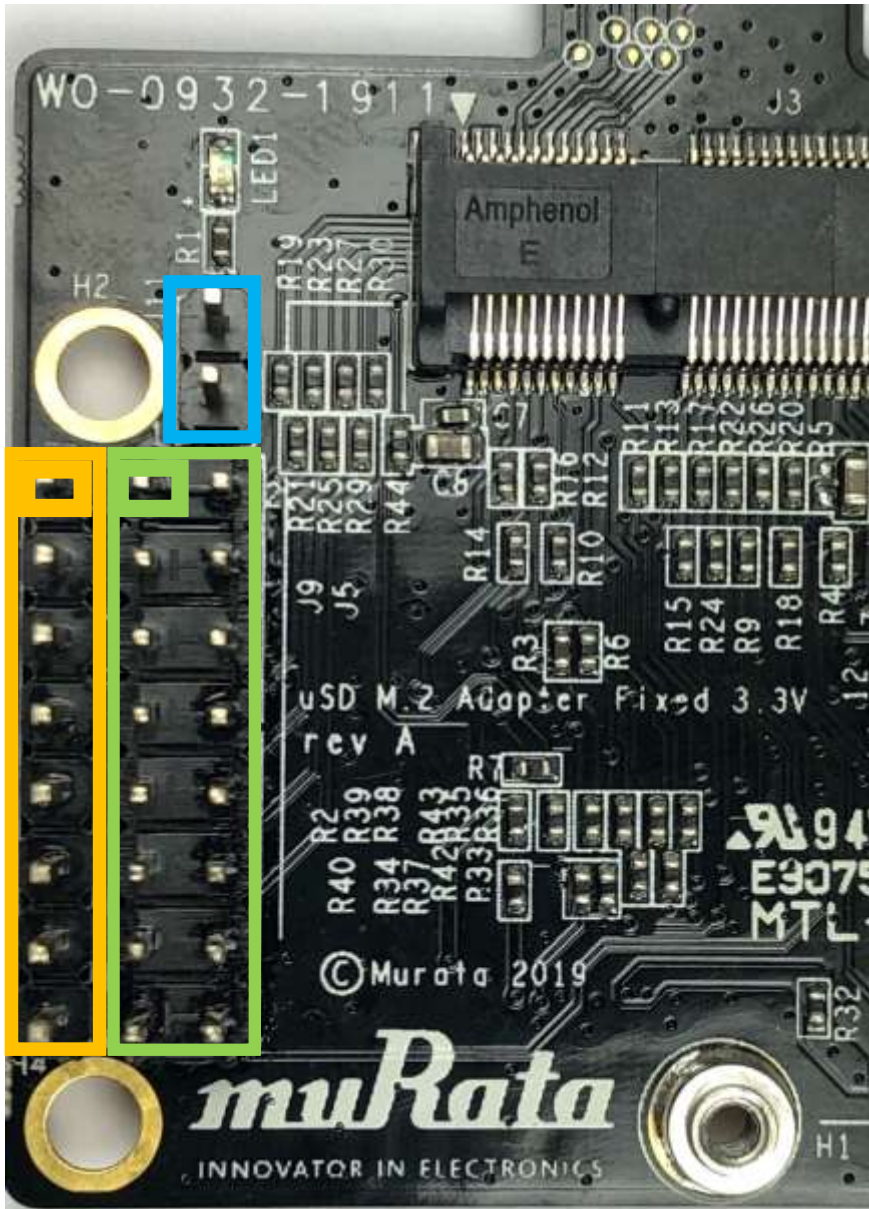


Murata uSD-M.2 Adapter with Arduino header & ribbon cable connect options for BT/BLE



Embedded Artists' 1DX M.2 EVB
→ Sold Separately

Murata uSD-M.2 Adapter: Left Headers/Jumpers



J11 = Optional BT Disable; Jumper for WLAN-Only Mode
 ➔ Jumper Installed = BT_REG_ON is Low (BT Core disabled)
 ➔ Not Installed = BT_REG_ON is driven active high by Adapter on-board circuitry (default); or driven by Host if Arduino cable installed (J9; Pin #4).

J9 = BT UART TX/RX and WLAN/BT CTRL Arduino Header

Pin#	J9 Signal	Pin#	J9 Signal
1	BT_UART_TXD_3V3	5	WL_HOST_WAKE_3V3
2	BT_UART_RXD_3V3	6	BT_HOST_WAKE_3V3
3	WL_REG_ON_3V3	7	WL_DEV_WAKE_3V3
4	BT_REG_ON_3V3	8	BT_DEV_WAKE_3V3

J5 = Optional BT PCM and WLAN/BT Debug Signals

Pin#	J5 Signal	Pin#	J5 Signal
1	BT_PCM_IN_3V3	14	LPO_IN_3V3
3	BT_PCM_OUT_3V3	15	GND
5	BT_PCM_SYNC_3V3	16	USD_3V3
7	BT_PCM_CLK_3V3		

Murata uSD-M.2 Adapter: Right Headers/Jumpers

J1 = Power Supply Selector

Jumper must be installed to power Adapter

➔ Position 1-2: 5V/3.3V VBAT supply from micro-USB (J2) or Arduino (J7)

➔ Position 2-3: VBAT supply (typical 3.1~3.3V) from microSD connector

J12 = VDDIO Override Short for 3.3V VDDIO (open for 1.8V)

➔ Jumper Installed = VDDIO set to 3.3V; LED2 (Blue) illuminates

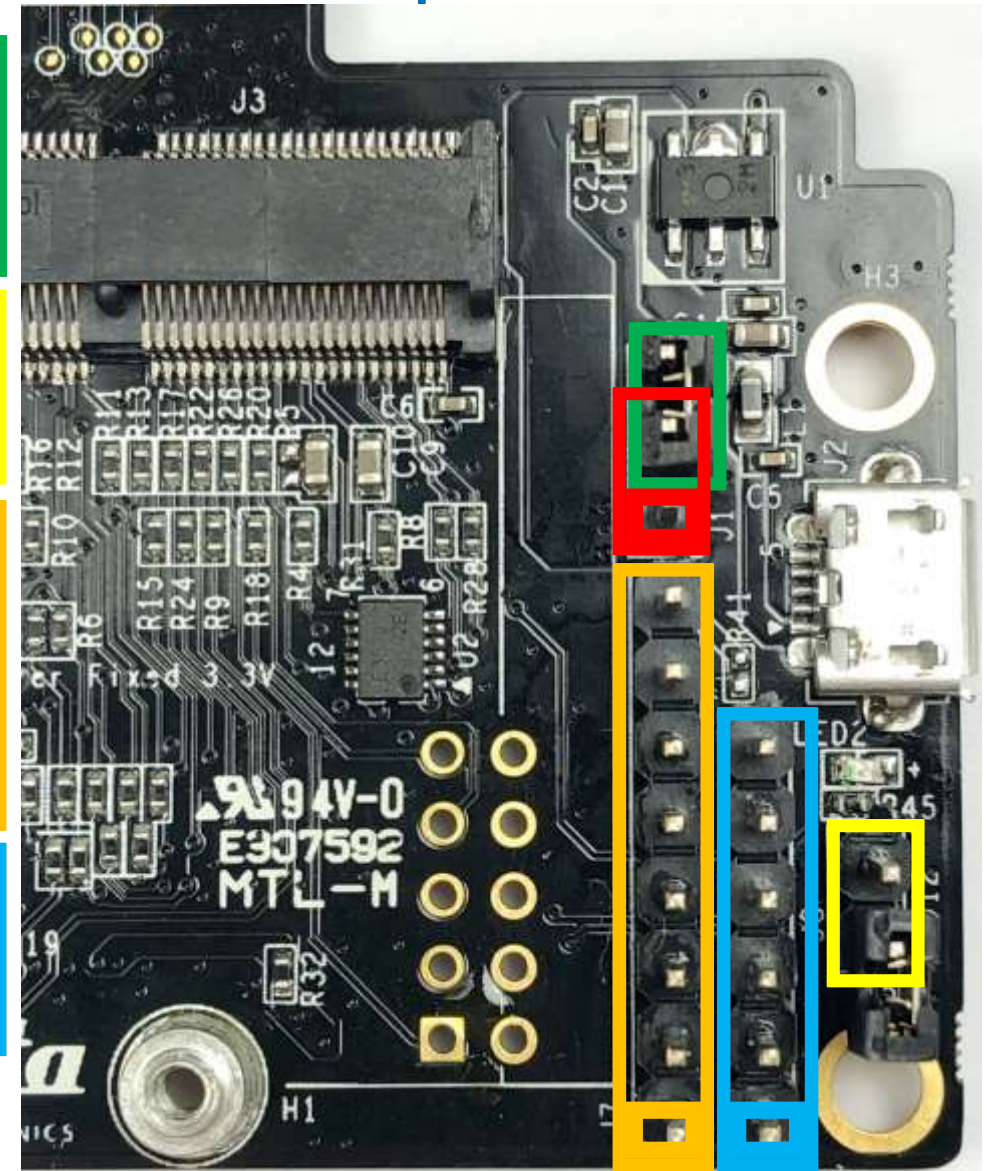
➔ Not Installed = VDDIO set to 1.8V (default)

J7 = Optional Arduino Header Power Supply

Pin#	J7 Signal	Pin#	J7 Signal
2	3V3	6	GND
4	3V3	7	GND
5	5V		

J8 = BT UART RTS/CTS Arduino Header

Pin#	J8 Signal	Pin#	J8 Signal
3	BT_UART_RTS_3V3	4	BT_UART_CTS_3V3



NEW – Embedded Artists Wi-Fi+BT M.2 EVB's

M.2 boards



Embedded Artists
Part Number:

EAR00318

EAR00315

EAR00323

EAR00321



1DX M.2

1MW M.2

1LV M.2

1CX M.2

1VA M.2

Cypress chipset	CYW4343W	CYW43455	CYW43012	CYW4356	CYW88359
WLAN/BT support	802.11 b/g/n BT/BLE 4.2	802.11 a/b/g/n/ac BT/BLE 5.0	802.11 a/b/g/n (ac friendly) BT/BLE 5.0	802.11 a/b/g/n/ac (2x2 MIMO) BT/BLE 5.0	802.11 a/b/g/n/ac (2x2 MIMO, RSDB) BT/BLE 5.0
WLAN interface	SDIO 2.0 (SDR25@50MHz)	SDIO 3.0 (SDR104@200MHz)	SDIO 3.0 (SDR40@80MHz)	PCIe	PCIe or SDIO 3.0 (SDR104@200MHz)
Operating temperature	-30 to +70 °C	-25 to +75 °C	-20 to +70 °C	-20 to +75 °C	-30 to +85 °C
M.2 Module size	44 x 22 mm	44 x 22 mm	44 x 22 mm	30 x 22 mm	30 x 22 mm

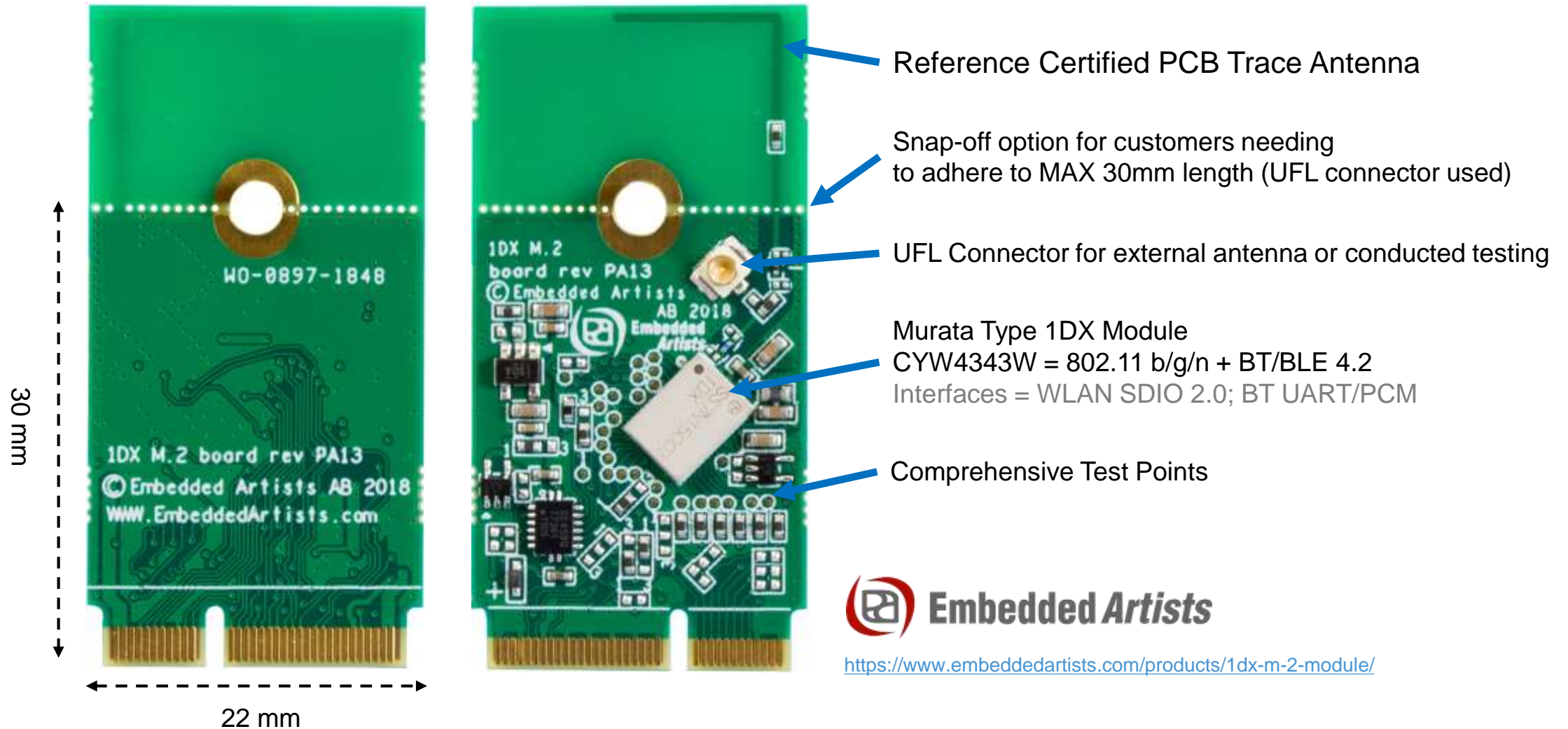


Embedded Artists is a proud
Proven Partner to NXP, delivering
stable and proven i.MX platforms.

Developed in close cooperation with:



Murata Type 1DX M.2 EVB



<https://www.embeddedartists.com/products/1dx-m-2-module/>

Murata Type 1MW M.2 EVB



Reference Certified PCB Trace Antenna (2.4/5 GHz)

Snap-off option for customers needing to adhere to MAX 30mm length (UFL connector used)

UFL Connector for external antenna or conducted testing

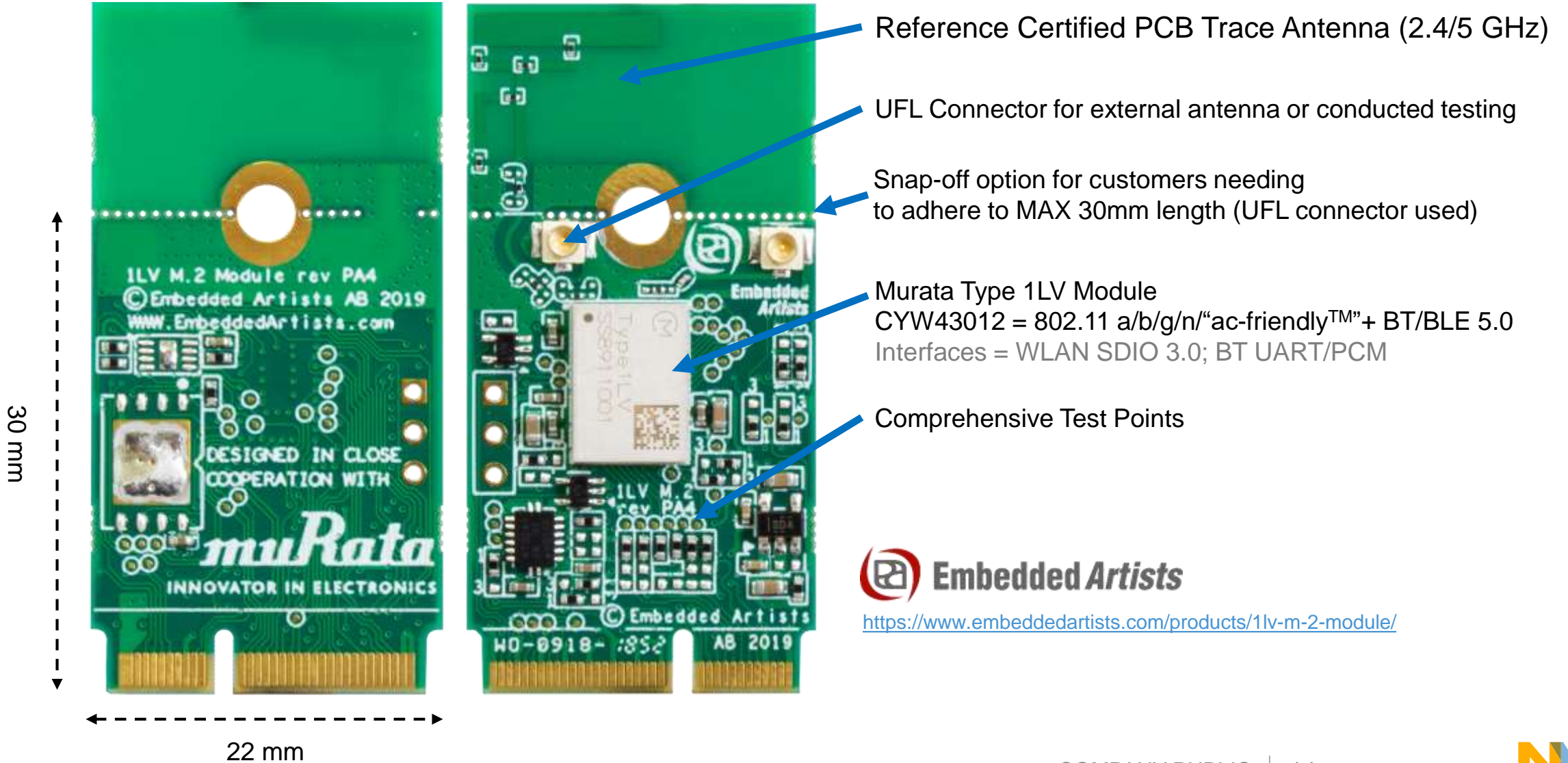
Murata Type 1MW Module
CYW43455 = 802.11 a/b/g/n/ac + BT/BLE 5.0
Interfaces = WLAN SDIO 3.0; BT UART/PCM

Comprehensive Test Points

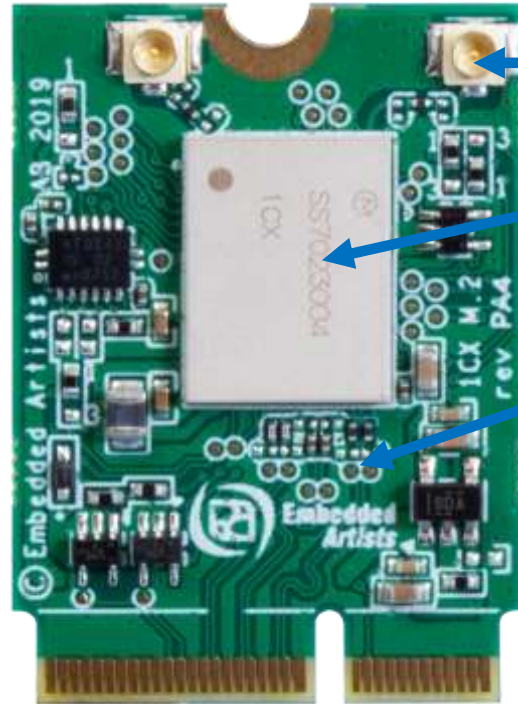


<https://www.embeddedartists.com/products/1dx-m-2-module/>

Murata Type 1LV M.2 EVB



Murata Type 1CX M.2 EVB



Two (2) UFL Connectors for external antennas

Murata Type 1CX Module
CYW4356 = 802.11 a/b/g/n/ac 2x2 MIMO + BT/BLE 5.0
Interfaces = WLAN PCIe Gen 3.0; BT UART/PCM

Comprehensive Test Points



<https://www.embeddedartists.com/products/1dx-m-2-module/>

i.MX CPU / Wi-Fi Module Matrix

Murata Module	Function	RT 1050/60	RT 1170	6UL (L/Z)	6SL(L) (WLAN Only)	6SoloX	6QP/Q/ DL/Solo	7Solo	7ULP	8MQuad	8M Mini	8QXP	8QM
Driver Type		RTOS			Linux								
1DX	11n + BT 4.2	uSD-M.2	M.2	uSD-M.2	uSD-M.2	uSD-M.2	uSD-M.2	WaRP7	EVK				M.2
1MW	11ac + BT 5.0	uSD-M.2	M.2	uSD-M.2	uSD-M.2	uSD-M.2	uSD-M.2		uSD-M.2*		EVK		M.2
1LV	11ac + BT 5.0 Low Power	uSD-M.2	M.2	uSD-M.2	uSD-M.2	uSD-M.2			uSD-M.2*				M.2
1CX	11ac 2x2 + BT 5.0									EVK	M.2	M.2	M.2
1VA	11ac 2x2 RSDB + BT 5.0			uSD-M.2	uSD-M.2	uSD-M.2	uSD-M.2		uSD-M.2*	M.2	M.2	M.2	M.2

EVK = Murata module soldered down

M.2 = Only Wi-Fi/BT M.2 EVB required

uSD-M.2 = uSD-M.2 Adapter + Wi-Fi/BT M.2 EVB required

uSD-M.2* = i.MX platform requires minor hardware rework (resistor stuffing options)

M.2/Adapter Pricing and Availability

EA Part Number	Wi-Fi/BT M.2 EVB	Mouser Price	Notes
EAR00318	1DX M.2 Module	\$35.10	100-Pack Options: Part# EAR00319 (Trace Ant) and EAR00319 (U.FL).
EAR00323	1LV M.2 Module	\$42.74	100-Pack Option: Part# EAR00324 (Trace Ant).
EAR00315	1MW M.2 Module	\$38.16	100-Pack Options: Part# EAR00316 (Trace Ant) and EAR00317 (U.FL).
EAR00321	1CX M.2 Module	\$42.74	100-Pack Option: Part# EAR00322 (U.FL).

Murata Part Number	Description	Mouser Price	Notes
LBEE0ZZ1WE-TEMP	Murata uSD-M.2 Adapter Kit	\$50.00	

Murata Channel Support

modules@murata.com

...worldwide modules email

...most information and technical know how is all within Web Portals and My Murata site

Email Murata

Channel Support

My Murata

Web Portal

Wireless.murata.com

...Cypress support forum NXP support forum (i.MX)

WirelessFAQ@murata.com

imxfaq@murata.com

...email contact for quick help on information and mostly help pointing in right direction



Murata Field Contacts



Region	Murata Contact	Phone	Email
US (Industrial / IOT)	Tony Garcia	1-214-662-1391	tgarcia@murata.com
US (Automotive)	Kazu Shiota	1-248-986-3501	Shiota@murata.com
EU (Industrial / IOT)	Rui Ramahlo	+31 (0) 646293900	rramalho@murata.com
EU (Automotive)	Simon Tsuji	1-847-707-7716	stsuji@murata.com
Singapore / India (all applications)	For Automotive – Gary Han	+65 91144450	Gary.han@murata.com
China (all applications)	For Automotive – Chao Wang	TBD	Chao.wang@murata.com



Software and Driver Support



Software Support for Murata/Cypress Wi-Fi Solutions

- License agreement with Cypress allows access and re-distribution of driver and firmware in our SDKs
- Linux drivers for all Murata M.2 Wi-Fi EVB kits have been validated and integrated in Linux SDK
- FreeRTOS driver for Murata 1DX module is now integrated in MCUXpresso 2.5.1
 - Wi-Fi client supported
 - BT/BLE and Soft AP features will be added with 2.6 release
- FreeRTOS drivers for Murata 1LV and 1MW modules will be integrated in MCUXpresso release at mid-year

New “meta-murata-wireless” Solution



<https://github.com/murata-wireless> hosts “**meta-murata-wireless**” and other necessary Cypress components (firmware, nvram, BT patchfiles, “wl” tool binaries, etc.)

- Seamlessly disables existing “bcmhdh” driver on i.MX release, fully leveraging Yocto framework
- Pulls latest Cypress “fmac” driver and run backports tool during Yocto build to generate necessary driver modules
- Additional/necessary patches to Cypress “fmac” driver for i.MX implementation
- i.MX Linux kernel customizations to support “fmac” driver with OOB IRQ interrupts
- Provide ultra-high speed (UHS) SDIO operation for WLAN interface to i.MX6UL(L) and i.MX6SX platforms with 1.8V VIO configuration
- Latest WLAN production firmware files for all modules
- Latest Murata NVRAM files for correctly configuring WLAN RF
- Example Bluetooth patchfiles
- WL tool binary necessary for RF testing
- Hostapd (Version 2.6) configuration with specific patch release
- Hostap-conf enablement
- Hostap-utils enablement
- WPA-suplicant (Version 2.6) configuration with specific patch release
- Wi-Fi Direct (P2P) enablement

In Short:

“Plug-n-Play” solution for customers to build a complete/comprehensive/correct image so they *can easily evaluate Murata module* without struggling with software

Murata Github Repositories



Murata Github Repository Name	Branch Names	Current Tag/Release Names	Contents	Notes
"meta-murata-wireless"	"imx8-morty-orga" "imx-morty-orga" "imx-krogoth-orga"	"imx8-morty-orga_r1.0" "imx-morty-orga-r1.0" "imx-krogoth-orga-r1.0"	"meta-murata-wireless" customized recipe layer. It drops into existing Yocto build environment.	Supports i.MX6/7/8 targets. Eventually adding support for TI Sitara; and evaluating other possible CPU's.
"cyw-fmac-v4.12-orga"	"master" "imx8-morty-orga" "imx-morty-orga" "imx-krogoth-orga"	"imx8-morty-orga_r1.0" "imx-morty-orga-r1.0" "imx-krogoth-orga-r1.0"	Cypress fmac backports tarball extracted. For "orga" this is extraction of "cypress-backports-v4.12-2017_1030-module-src.tar.gz" tarball.	The Cypress v4.12-orga package has been posted without access control here: https://community.cypress.com/docs/DOC-14597 However this is not a "git repository"; as such there is no easy mechanism to support fixes/enhancements (when it comes to source code control – i.e. tracking what customer is actually using).
"cyw-fmac-fw"	"master" "orga"		WLAN production firmware files (including any applicable "CLM blob" files) for following chipsets: CYW43362, CYW43364, CYW43430, CYW43340, CYW43012, CYW4339, CYW43455, CYW4354, and CYW4356.	Firmware for modules: SN8000, 1FX, 1DX/1LN, 1BW, 1LV, ZP/1CK, 1MW/1LC/1HK, 1BB, and 1CX/1DK. Only 1CX/1DK have PCIe interface for WLAN.
"cyw-fmac-nvram"	"master" "orga"		WLAN NVRAM files (customized by Murata with Cypress guidance) for following chipsets: CYW43362, CYW43364, CYW43430, CYW43340, CYW43012, CYW4339, CYW43455, CYW4354, and CYW4356.	NVRAM for modules: SN8000, 1FX, 1DX/1LN, 1BW, 1LV, ZP/1CK, 1MW/1LC/1HK, 1BB, and 1CX. Only 1CX has PCIe interface for WLAN.
"cyw-fmac-utils-imx32"	"master" "orga"		"wl" tool binary pre-compiled for i.MX 32-bit.	NOTE: no "wl" tool source code.
"cyw-fmac-utils-imx64"	"master" "orga"		"wl" tool binary pre-compiled for i.MX 64-bit.	NOTE: no "wl" tool source code.
"cyw-bt-patch"	"master" "morty-orga" "krogoth-orga"		Bluetooth patchfiles (*.hcd) which are used during Linux/BlueZ "hciattach" call to configure BT core. Bluetooth patchfiles for following chipsets: CYW43430, CYW43340, CYW43012, CYW4339, CYW43455, CYW4354, and CYW4356.	The Bluetooth patchfiles are meant as "example only". Only HCI UART functionality verified – no PCM. Customers need to request customized HCD files from Cypress for their platform/application. Modules supported include: 1DX/1LN, 1BW, 1LV, ZP/1CK, 1MW/1LC/1HK, 1BB, and 1CX.



Using “meta-murata-wireless”



Murata leverages the existing i.MX Yocto build, and drops in a “meta-murata-wireless” layer which gets “hooked into” the i.MX build

The steps to create an i.MX image (with “fmac” driver and BT support enabled) for end user are very simple:

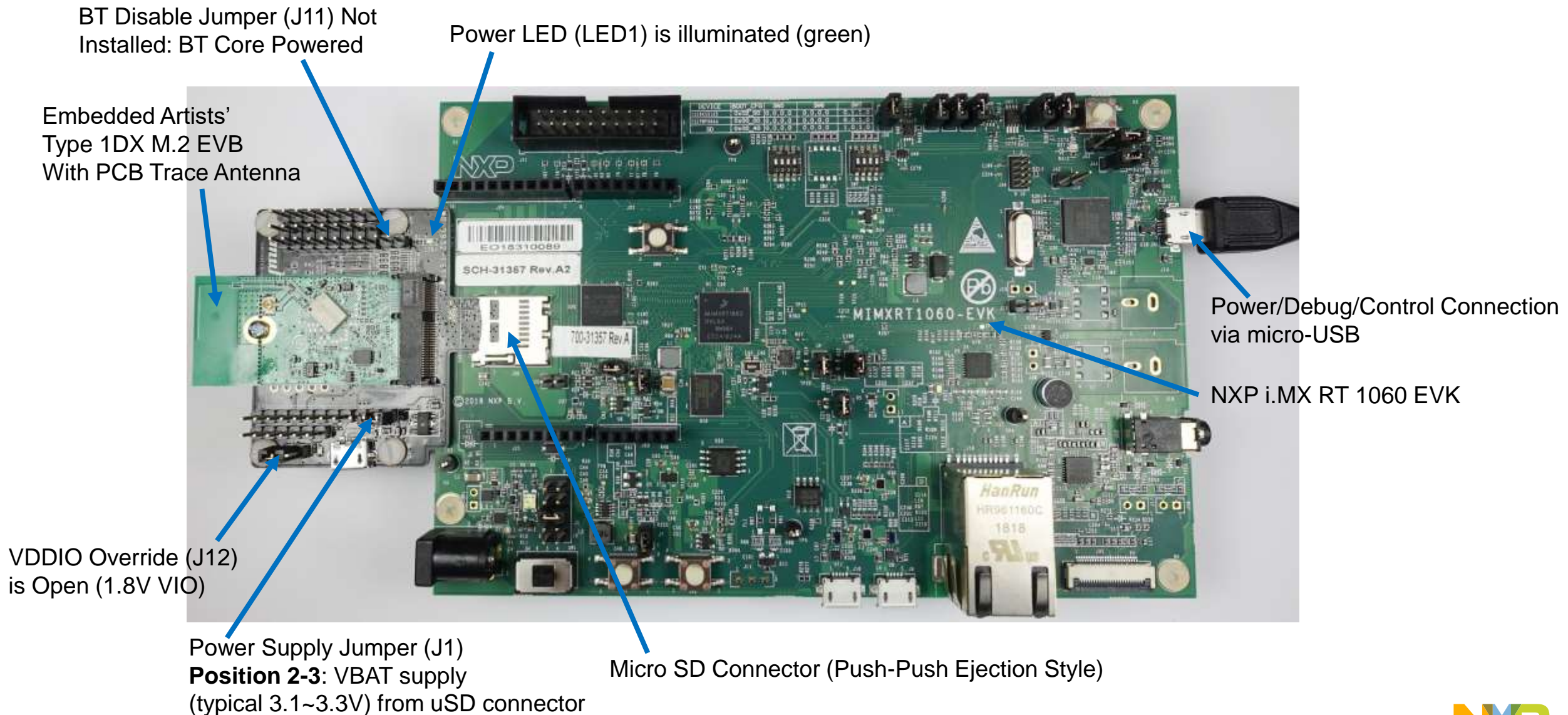
```
cd ~
mkdir murata-imx-bsp
cd murata-imx-bsp
export BSP_DIR=`pwd`
repo init -u git://git.freescale.com/imx/fsl-arm-yocto-bsp.git -b imx-morty -m imx-4.9.11-1.0.0_ga.xml ← standard procedure to setup Yocto build environment
repo sync
DISTRO=fsl-imx-x11 MACHINE=imx6ulevk source fsl-setup-release.sh -b build-imx6ulevk-x11 ← configure for specific i.MX platform
export BUILD_DIR=`pwd`
cd $BSP_DIR/sources
git clone https://github.com/murata-wireless/meta-murata-wireless.git ← pull Murata's customized layer which drops into Yocto build
cd meta-murata-wireless
git checkout imx-morty-orga_r1.0
cd $BSP_DIR
sh ./sources/meta-murata-wireless/add-murata-layer-script/add-murata-wireless.sh build-imx6ulevk-x11 ← invoke script for “hooking in” Murata Layer
cd $BSP_DIR/sources/meta-murata-wireless/recipes-kernel/linux
cp linux-imx_4.9.11.bbappend.6UL_6ULL@1.8V linux-imx_4.9.11.bbappend ← optional step to configure i.MX6UL(L) for 1.8V VIO (necessary for 1LV)
cd $BUILD_DIR
bitbake fsl-image-validation-imx ← invoke final build command
```

End Result: final i.MX image can be flashed to SD card and supports WLAN/BT chipsets with no modifications

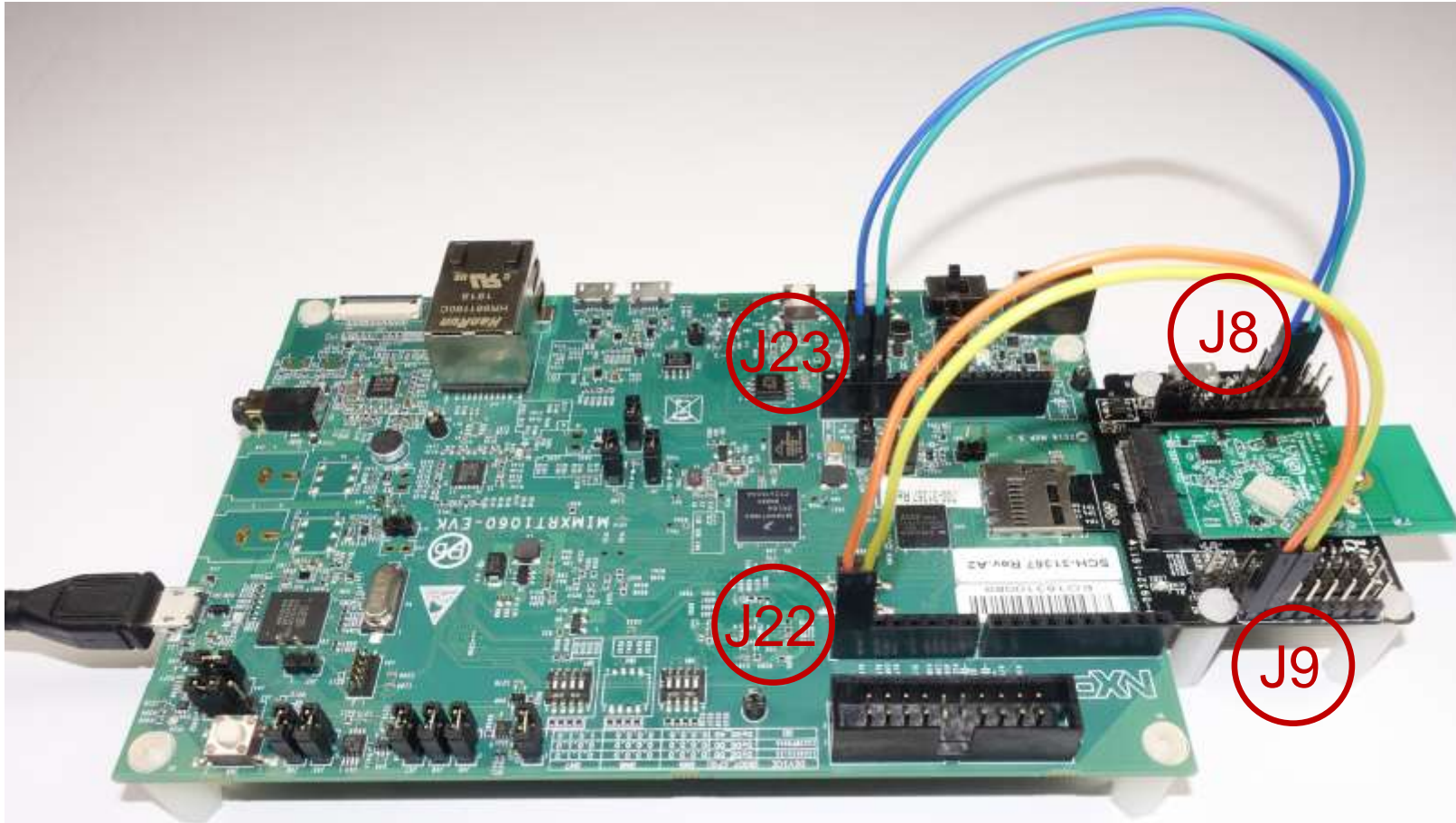
Wi-Fi Solutions on NXP Boards



NXP i.MX RT 1060 EVK + Murata 1DX (WLAN Only)



NXP i.MX RT 1060 EVK + Murata 1DX (WLAN + BT)

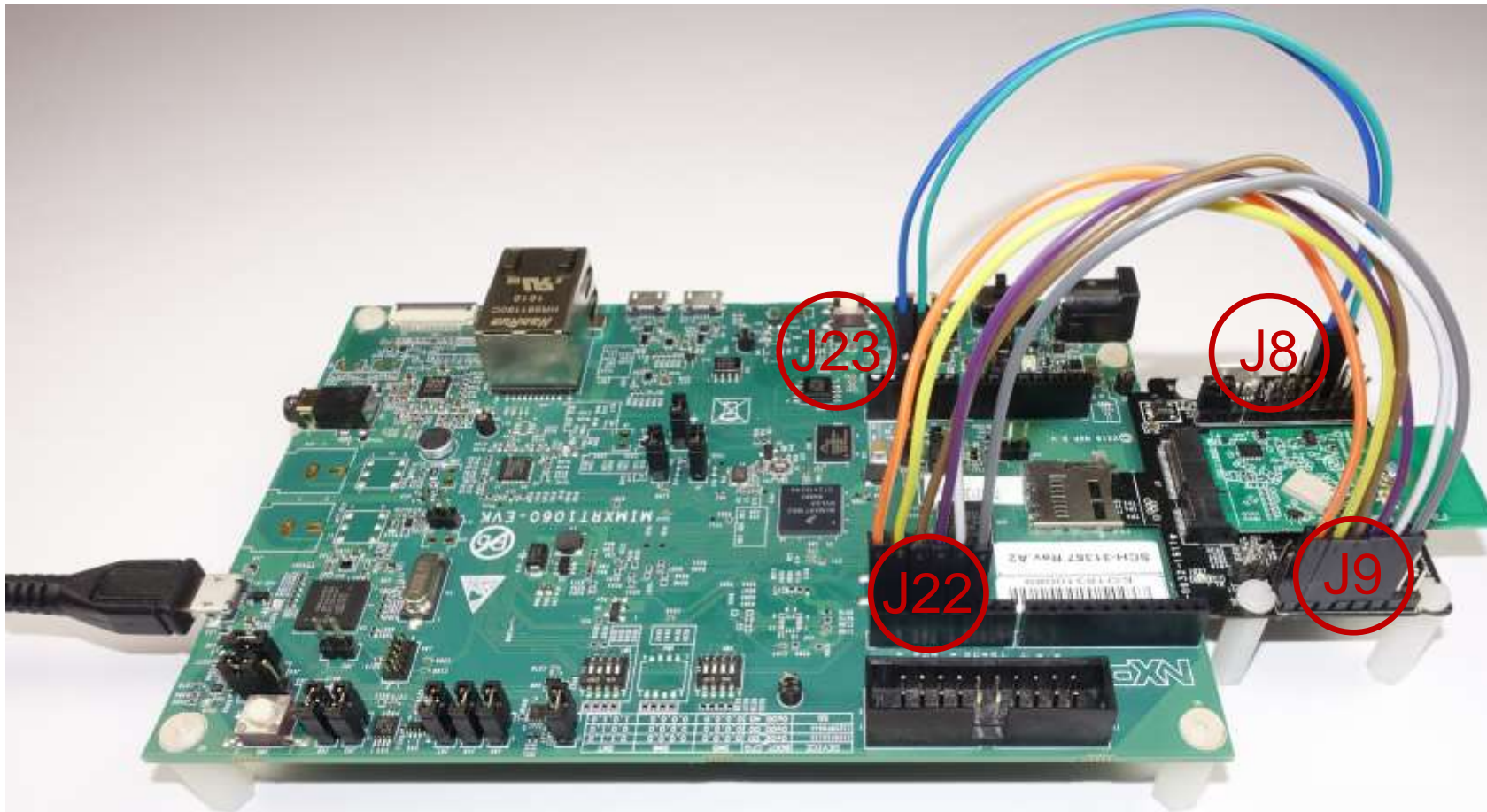


Pin#	J23 Signal	J8 Signal
3	LPUART3_CTS_B	BT_UART_RTS_3V3
4	LPUART3_RTS_B	BT_UART_CTS_3V3

Pin#	J22 Signal	J9 Signal
1	LPUART3_RX	BT_UART_TXD_3V3
2	LPUART3_TX	BT_UART_RXD_3V3

NOTE: Minimal number of connections to support Bluetooth H4 Signaling. Follow instructions to connect i.MX RT EVK Arduino header pins to corresponding pins on uSD-M.2 Adapter. TX/RX and CTS/RTS are “crossed”: TX->RX; RX->TX; CTS->RTS; RTS->CTS. J22/J23 on i.MX RT 1050/1060 EVK have pin-to-pin mapping on uSD-M.2 Adapter’s J9(BT TX&RX)/J8(BT RTS&CTS). In the configuration pictured, WL_REG_ON/BT_REG_ON/WL_HOST_WAKE **are not connected** to i.MX RT.

NXP i.MX RT 1060 EVK + Murata 1DX (WLAN + BT + WLAN/BT CTRL)



Pin#	J23 Signal	J8 Signal
3	LPUART3_CTS_B	BT_UART_RTS_3V3
4	LPUART3_RTS_B	BT_UART_CTS_3V3

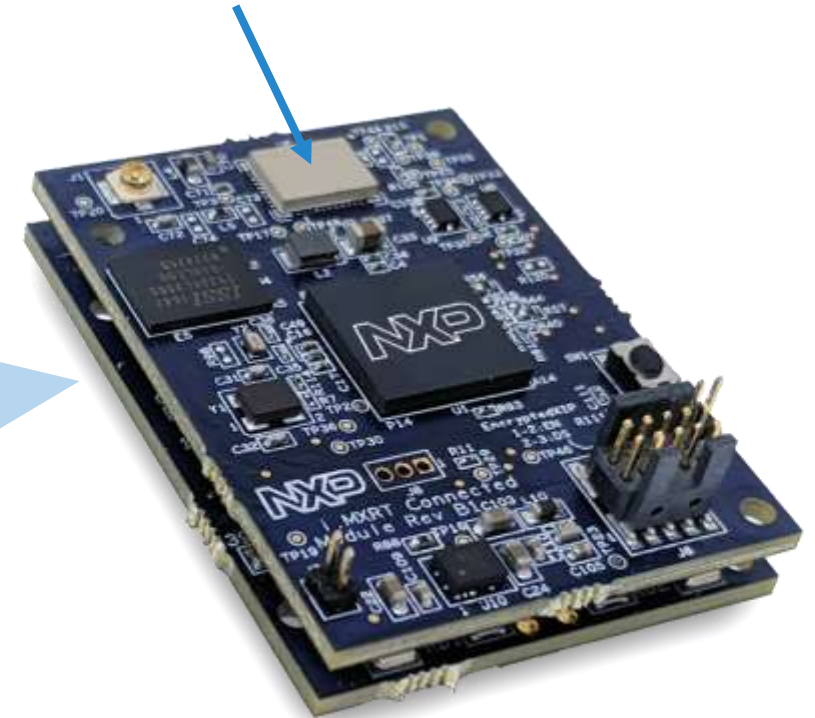
Pin#	J22 Signal	J9 Signal
1	LPUART3_RX	BT_UART_TXD_3V3
2	LPUART3_TX	BT_UART_RXD_3V3
3	GPIO1_IO11	WL_REG_ON_3V3
4	GPIO1_IO24	BT_REG_ON_3V3
5	GPIO1_IO09	WL_HOST_WAKE_3V3

NOTE: TX/RX and CTS/RTS are “crossed”: TX->RX; RX->TX; CTS->RTS; RTS->CTS. In the configuration pictured, WL_REG_ON/BT_REG_ON/WL_HOST_WAKE **are connected** to i.MX RT via J22/J9 Arduino connection.

i.MX RT Voice Board – Alexa Voice Services (AVS) Certified Solution

- Turn-key solution with AVS certification
- Based on i.MX RT 106x
- Murata 1DX module on board, supports Wi-Fi 4 and BT/BLE 4.2 (updating to 5.0)
- Ultra small form factor design
- Low BOM cost
- Full software capabilities, including Far-field, noise reduction, echo cancellation

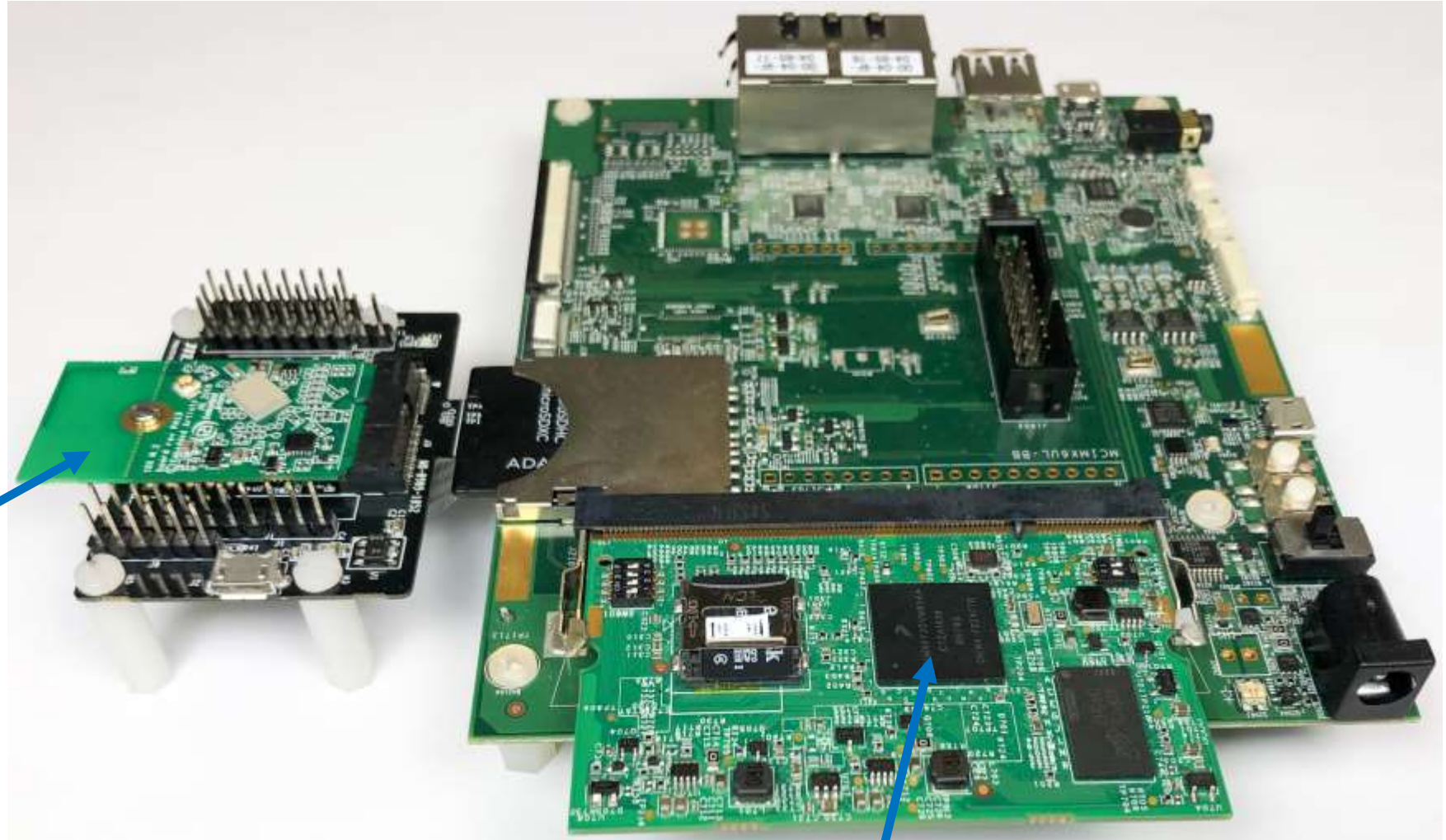
Murata 1DX



For more info: **Gregory Camuzat, Solutions Architect**
Email: Gregory.Camuzat@NXP.com

30mm x 40mm


NXP i.MX 6UL(L) EVK With New Type 1DX M.2 Kit

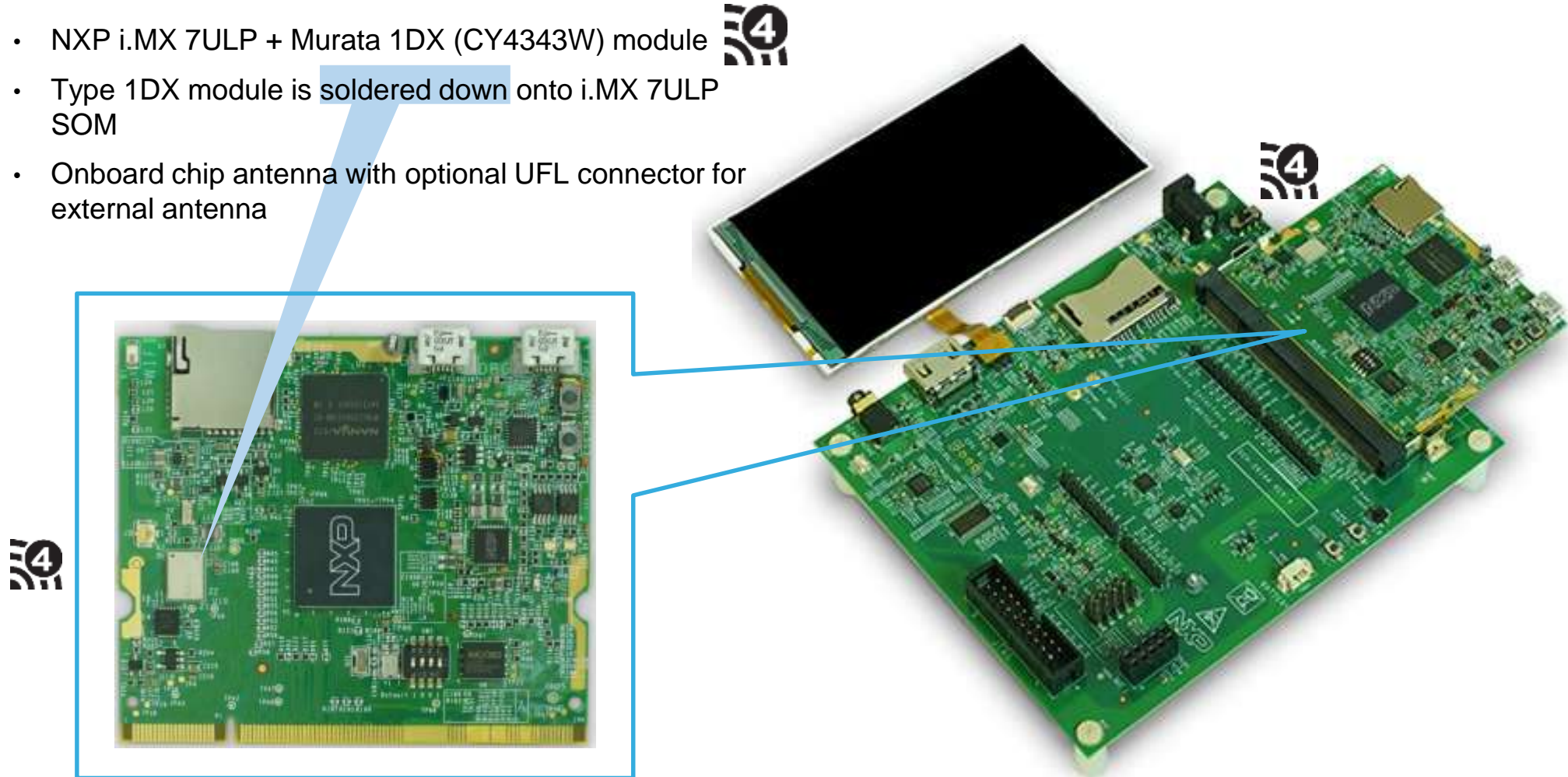


Type 1DX M.2 EVB

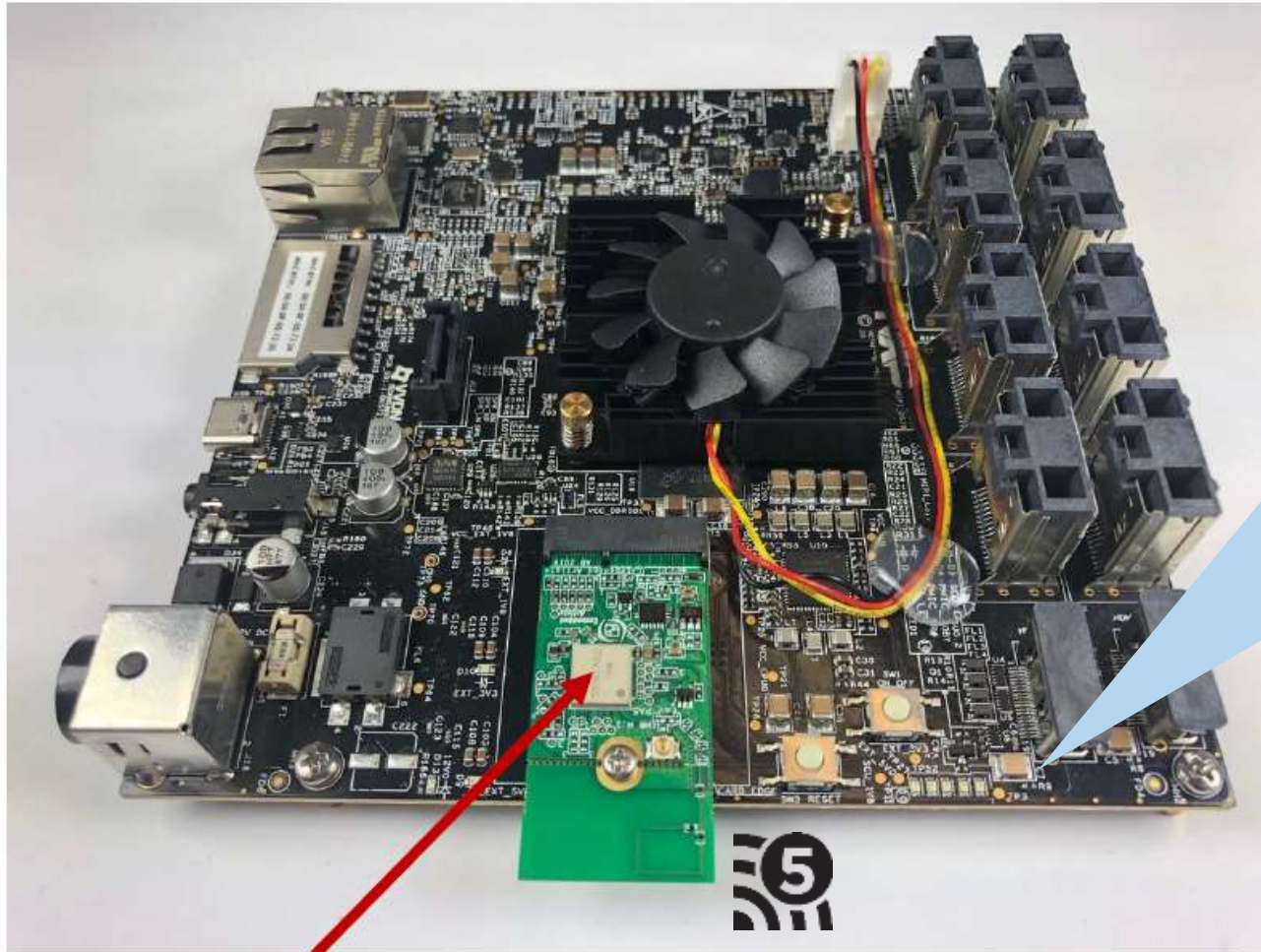
i.MX 6UL EVK

i.MX 7ULP SOM with Murata 1DX (CYW4343A) on Motherboard

- NXP i.MX 7ULP + Murata 1DX (CY4343W) module 
- Type 1DX module is soldered down onto i.MX 7ULP SOM
- Onboard chip antenna with optional UFL connector for external antenna



i.MX 8QM + Murata 1FD (CYW89359) Auto Grade for M.2



i.MX 8QM is a high end applications processor and the superset of the i.MX 8 family and can be configured as 8QM, 8QP or 8DM and targeted at automotive, industrial and consumer multimedia applications

Type 1FD (CYW89359) M.2 EVK:




- M.2 interface provides WLAN-PCIe, BT-UART, and BT-PCM, and control connections
- Two UFL connectors on Murata EVK board provide antenna connections

NOTE: Murata 1FD M.2 module can be used with i.MX 8 or i.MX 8X MEK boards

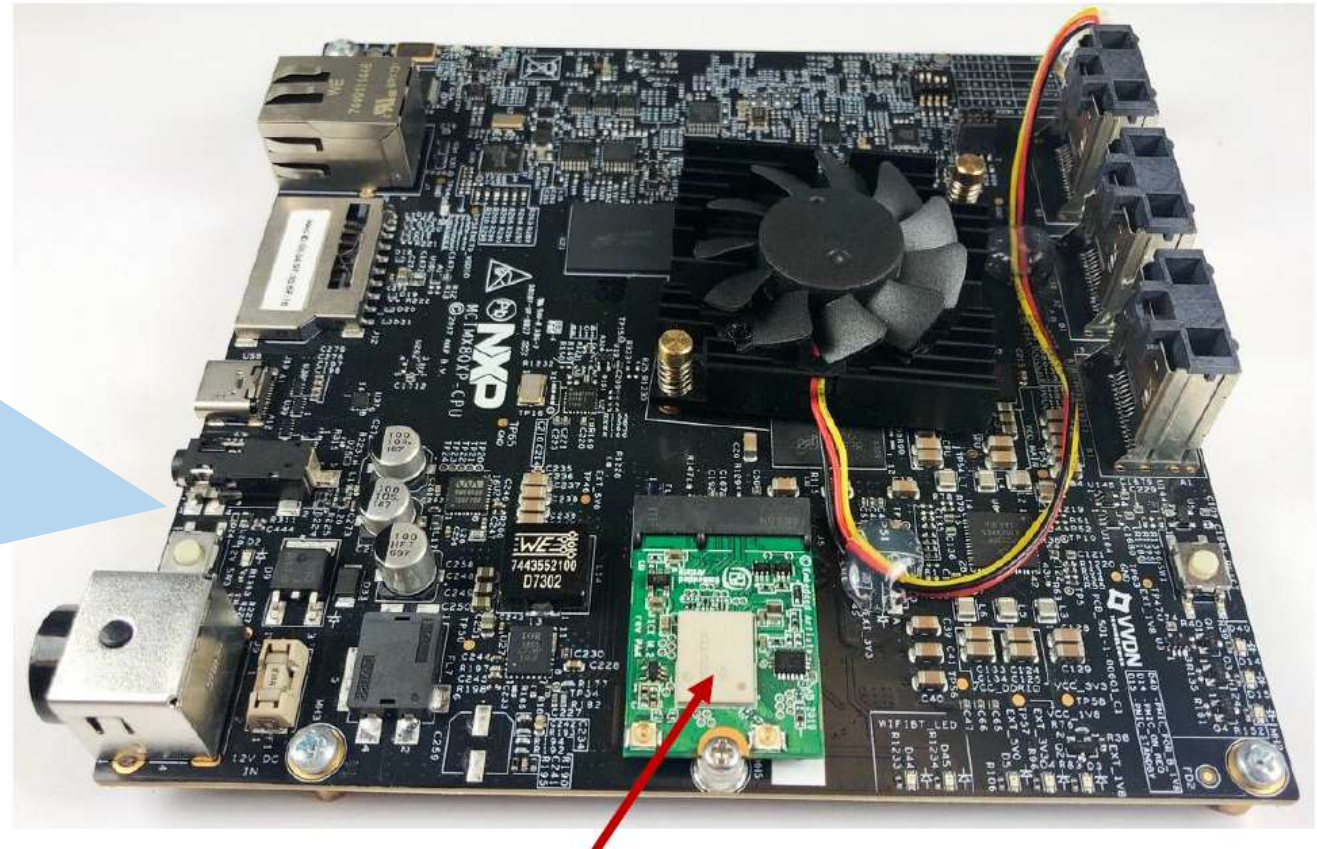
i.MX 8QXP + Murata 1CX (CYW4356)

i.MX 8QXP processor is the superset of the i.MX 8X family and can be configured as 8QXP, 8DXP or 8DX. The i.MX 8 family is designed to replace i.MX 6 processors offering new features and lower bill of materials in similar target markets

Type 1CX (CYW4356) EVK: 

- 1CX EVB with M.2 connects to MEK board
- M.2 interface provides WLAN-PCIe, BT-UART, and BT-PCM, and control connections

NOTE: M.2 adheres to industry-standard spec



Murata 1CX M.2 EVB board can be used with i.MX 8 or i.MX 8X MEK boards

Enablement: i.MX 8M Quad Evaluation Kit (EVK)

Part Number: MCIMX8M-EVK

Overview

- NXP i.MX 8M Quad Application Processor
 - 4 x Cortex-A53 @ 1.5GHz
 - 1x Cortex-M4 @ 266MHz
- i.MX 8M Dual and 8M QuadLite emulation

Power Management

- NXP PF4210 PMIC

Memory

- 4 GB LPDDR4 memory, x32
- 16 GB eMMC 5.0
- 32 MB SPI Flash
- MicroSD connector

Display / Camera Connectors

- HDMI 2.0a Type-A connector
- mini-SAS MIPI-DSI connectors
- Camera MIPI-CSI through mini-SAS connector



Audio

- Audio DAC 24-bit 192kHz Stereo
- headphone 3.5mm jack
- Audio Interfaces board expansion connector

Wireless

- Murata 1CX module (on board)
 - 802.11 a/b/g/n/ac MIMO 2x2
 - Bluetooth 5.0 / EDR
 - Onboard chip antenna

Connectivity

- 10/100/1000 Ethernet port
- USB 3.0 Type C connector
- USB 3.0 Type A connector
- PCIe M.2 Interface (on bottom)

For Additional Info

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**SECURE CONNECTIONS
FOR A SMARTER WORLD**