

MQC2064/6851 Series Module

PMN:IoT Module

HVIN:MQC2064-5-46-0U, MQC2064-0-46-0U,
MQC2064-0-40-0U, MQC2064-5-40-0U,
MQC6851-1-46-0U, MQC6851-5-46-0U,
MQC6851-1-40-0U, MQC6851-5-40-0U

Catalog

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MQC2064/6851 Series Module Datasheet		V1.1	Public		Aug 27, 2025

1 Product Overview

The MQC2064/WCN6851 is a highly integrated module supporting 802.11ax Wi-Fi and Bluetooth (BT). The module supports simultaneous operation on 2.4GHz and 5GHz. The wireless module complies with IEEE 802.11 a/b/g/n/ac/ax 2x2 MIMO standard and it can achieve up to a speed of 2975.6Mbps (2.4GHz 2x2 40MHz 11ax + 5GHz 2x2 160MHz 11ax DBS). The integrated module provides PCIe interface for Wi-Fi, UART/PCM or USB interface for Bluetooth.

Key Features:

Module	MQC2064-0-46-0U MQC2064-5-46-0U	MQC6851-1-46-0U MQC6851-5-46-0U	MQC2064-0-40-0U MQC2064-5-40-0U	MQC6851-1-40-0U MQC6851-5-40-0U
Chipset	QCA2064-0/5	WCN6851-1/5	QCA2064-0/5	WCN6851-1/5
Interfaces	WLAN: PCIe BT: QCA2064-0 UART QCA2064-5 USB	WLAN: PCIe BT: WCN6851-1 UART WCN6851-5 USB	WLAN: PCIe BT: QCA2064-0 UART QCA2064-5 USB	WLAN: PCIe BT: WCN6851-1 UART WCN6851-5 USB
WLAN Speciation	2 spatial data stream system (2T2R) 5GHz: Support 20/40/80/160MHz bandwidth mode 2.4GHz: Support 20/40MHz bandwidth mode			
Dimensions	22 x 30 x3.1 mm M.2 KEY E 2230		14.0 x 18.0 x 2.4 mm, 0.5 mm pitch, 96-pin LGA TYPE	
BT Speciation	BT5.3			
Antenna Connector	RF Connector Antenna+ x 2			
Operating Voltage	3.3 V ± 5%			
Operating Environment	Temperature: -30 ~ 65 °C Humidity: +5 ~ 85% RH (No Condensation)			
Storage Environment	Temperature: -40 ~ 125 °C Humidity: +5 ~ 60% RH (No Condensation)			

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The M.2 KEY E 2230 module is graphically illustrated below:



Figure 1 M.2 KEY E 2230 Module View

The LGA TYPE module is graphically illustrated below:

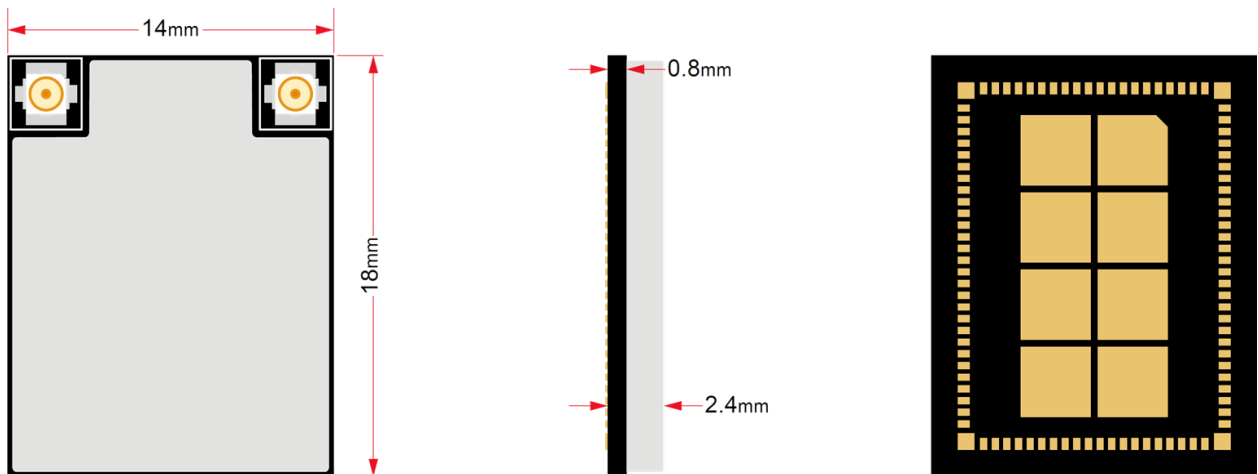


Figure 2 LGA TYPE Module View

2.1. LGA TYPE Block Diagram

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2.2. LGA TYPE Module Pinout Description

2.4.1. LGA TYPE Pin Map

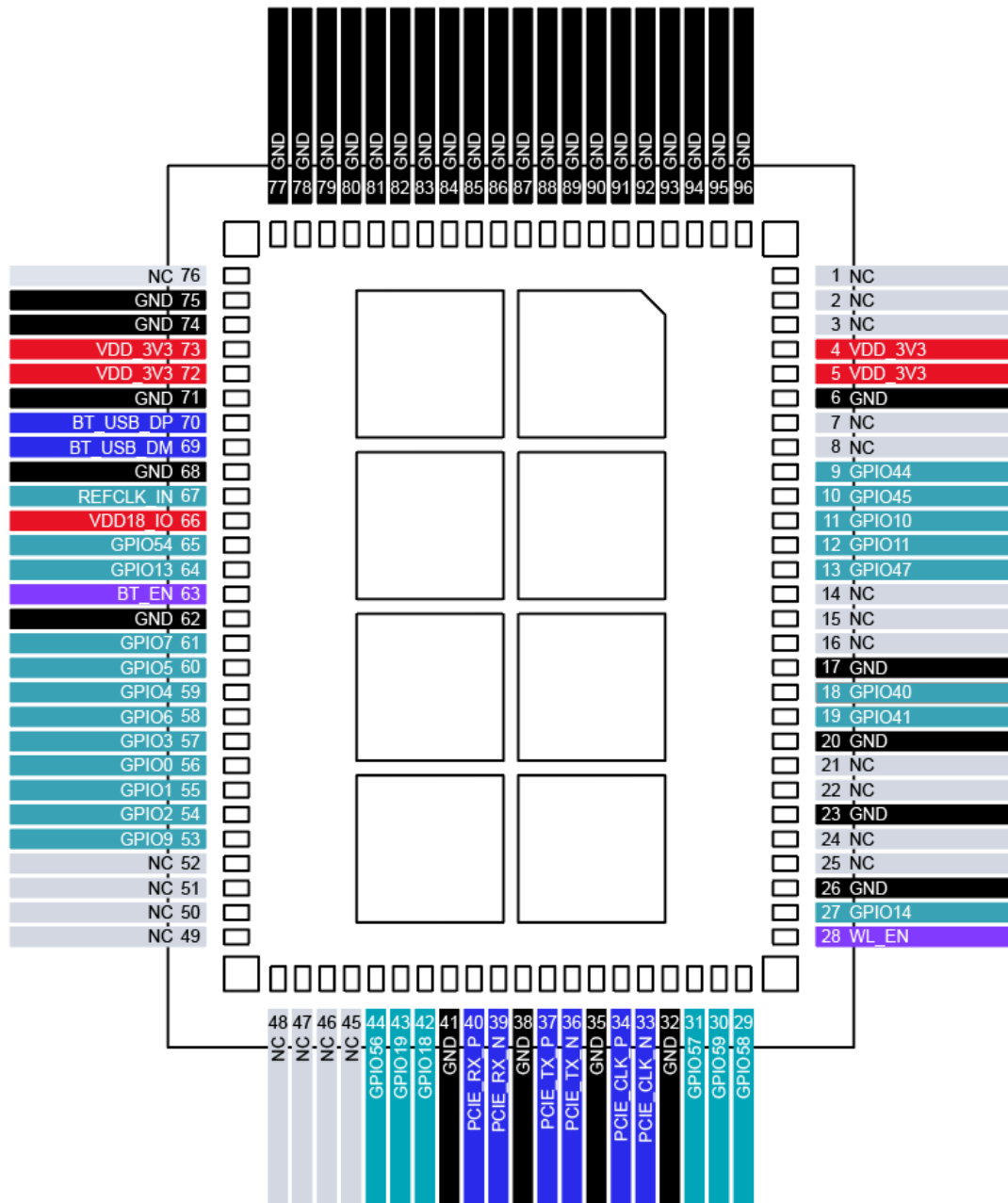


Figure 4 LGA TYPE Pin Map

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2.4.2. LGA TYPE Pin Definition

Pin	M.2 LGA Type Pin Name	QCA2064/WCN6851 Pin Name	Pin
1	UIM_POWER_SRC/GPIO1	N/C	
2	UIM_POWER_SNK	N/C	
3	UIM_SWP	N/C	
4	+3.3V	+3.3V	
5	+3.3V	+3.3V	
6	GND	GND	
7	RESERVED	N/C (Reserved for Wi-Fi 7)	
8	ALERT#	N/C (No such function)	
9	I2C_CLK	GPIO44/WL_I2C_SCL	W15
10	I2C_DATA	GPIO45/WL_I2C_SDA	AC15
11	COEX_TXD	GPIO10/LTE_COEX_UART_RXD	W21
12	COEX_RXD	GPIO11/LTE_COEX_UART_TXD	V22
13	COEX3	GPIO47/GPS_COEX	AE13
14	SYSCLK/GNSS0	N/C (No such function)	
15	TXBLANKING/GNSS1	N/C (No such function)	
16	RESERVED	N/C (Reserved for Wi-Fi 7)	
17	GND	GND	
18	RESERVED	GPIO40/LAA_TXEN	N7
19	RESERVED	GPIO41/WL_TXEN_LAA	R5
20	GND	GND	
21	PERn1	N/C (No such function)	
22	PERp1	N/C (No such function)	
23	GND	GND	
24	PETn1	N/C (No such function)	
25	PETp1	N/C (No such function)	
26	GND	GND	
27	SUSCLK	GPIO14/LF_CLK_IN	AC23
28	W_DISABLE1#	WL_EN	AA7
29	PEWAKE0#	GPIO58/WL_PCIE_WAKE_N	AD22
30	CLKREQ#	GPIO59/WL_PCIE_CLKREQ_N	Y14
31	PERST0#	GPIO57/WL_PCIE_RST_N	AB22
32	GND	GND	
33	REFCLKn0	WL_PCIE20_REFCLK_N	AC17
34	REFCLKp0	WL_PCIE20_REFCLK_P	AB18

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35	GND			GND		
36	PERn0			WL_PCIE20_TXM		AE19
37	PERp0			WL_PCIE20_TXP		AD18
38	GND			GND		
39	PERn0			WL_PCIE20_RXM		AE15
40	PERp0			WL_PCIE20_RXP		AE17
41	GND			GND		
42	VENDOR DEFOINED			GPIO18/N79_TXEN		L21
43	VENDOR DEFOINED			GPIO19/WL_TXEN_N79		R23
44	VENDOR DEFOINED			GPIO56/CLK_REQ_OUT		Y8
45	SDIO_RESET#			N/C (No such function)		
46	SDIO_WAKE#			N/C (No such function)		
47	SDIO_DATA3			N/C (No such function)		
48	SDIO_DATA2			N/C (No such function)		
49	SDIO_DATA1			N/C (No such function)		
50	SDIO_DATA0			N/C (No such function)		
51	SDIO_CMD			N/C (No such function)		
52	SDIO_CLK			N/C (No such function)		
53	UART_WAKE#			GPIO9/BT_SENS_UART_RXD		AA23
54	UART_RTS			GPIO3/BT_UART_CTS		U23
55	UART_RXD			GPIO1/BT_UART_TXD		R21
56	UART_TXD			GPIO0/BT_UART_RXD		T20
57	UART_CTS			GPIO3/BT_UART_RTS		V18
58	PCM_SYNC			GPIO6/BT_I2S_WS		W23
59	PCM_OUT			GPIO4/BT_I2S_SDI		T22
60	PCM_IN			GPIO5/BT_I2S_SDO		V20
61	PCM_CLK			GPIO7/BT_I2S_SCK		U21
62	GND			GND		
63	W_DISABLE2#			BT_EN		Y6
64	LED_2#			GPIO13/I2C_CLK_GPIO		AA21
65	LED_1#			GPIO54/WL_GPIO54		AB10
66	VIO_1.8V			VDD18_IO		AB6
67	RESERVED			REFCLK_IN (ext. clock in, not from chip)		
68	GND			GND		
69	USB_D-			BT_USB_DM		M20
70	USB_D+			BT_USB_DP		N21
71	GND			GND		

The diagram illustrates the electrical connections for an M.2 LGA Type 1216 (1418) module. The module is connected to a PCB through a series of pins. The connections are categorized into Data Link and Control Link. The Data Link includes PCM, UART, USB, and PCIe. The Control Link includes various control signals like VDI, BT, USB, and PCIe. The power lines include 3.3V, 1.8V, and 1.2V. The diagram is a detailed schematic showing the physical and electrical connections of the M.2 module to the host system.

Figure 5 M.2 KEY E 2230 Block Diagram

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2.4. M.2 KEY E 2230 Module Pinout Description

2.4.1. M.2 KEY E 2230 Pin Map

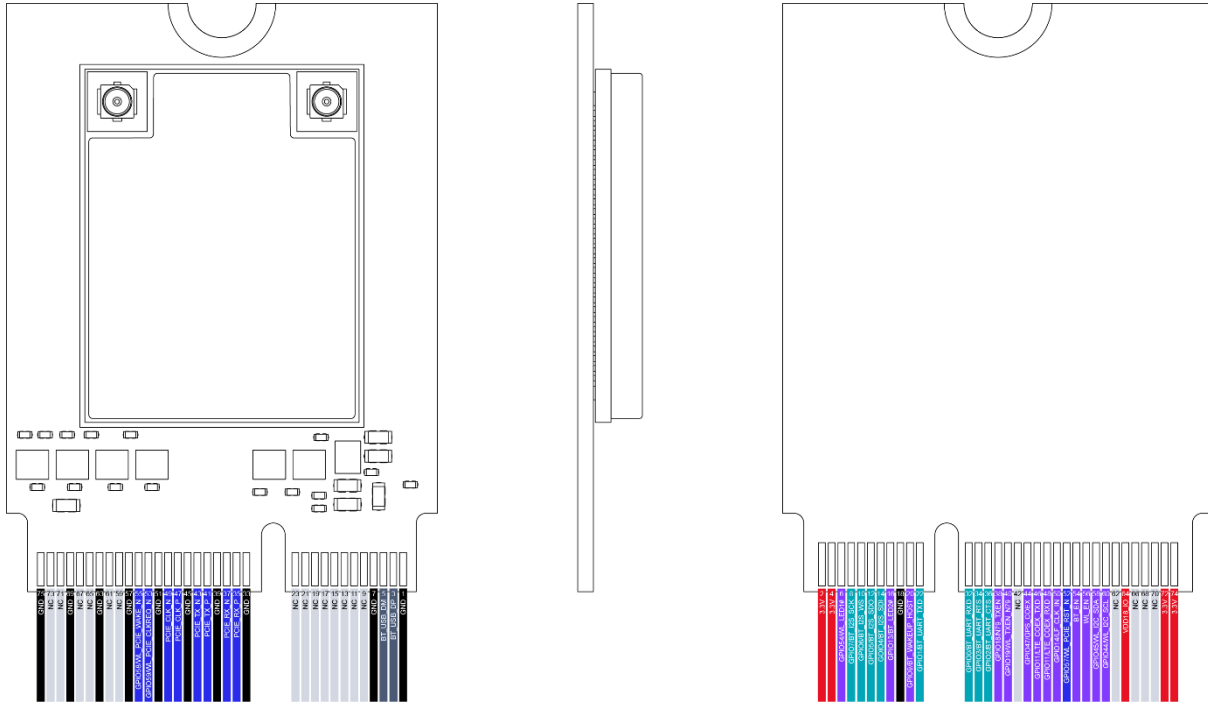


Figure 6 M.2 KEY E 2230 Pin Map

2.4.2. M.2 KEY E 2230 Module Pin Definition Front Side

Pin	M.2 KEY E 2230 Pin Name	M.2 96-pin Type Pin Name	Pin
75	GND	GND	
73	RESERVED/REFCLKn1	N/C (No such function)	
71	RESERVED/REFCLKp1	N/C (No such function)	
69	GND	GND	
67	RESERVED/PETn1	N/C (No such function)	
65	RESERVED/PETp1	N/C (No such function)	
63	GND	GND	
61	RESERVED/PERn1	N/C (No such function)	
59	RESERVED/PERp1	N/C (No such function)	
57	GND	GND	
55	PEWAKE0# (I/O)(0/1.8V/3.3V)	GPIO58/WL_PCIE_WAKE_N	29
53	CLKREQ0# (I/O)(0/1.8V/3.3V)	GPIO59/WL_PCIE_CLKREQ_N	30
51	GND	GND	
49	REFCLKn0	WL_PCIE20_REFCLK_N	33
47	PEFCLKp0	WL_PCIE20_REFCLK_P	34

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45	GND	GND	
43	PETn0	WL_PCIE20_TXM	36
41	PETp0	WL_PCIE20_TXP	37
39	GND	GND	
37	PERn0	WL_PCIE20_RXM	
35	PERp0	WL_PCIE20_RXP	
33	GND	GND	
23	SDIO_RESET#/TX_BLANKING (I)(0/1.8V)	N/C (No such function)	
21	SDIO_WAKE# (O)(0/1.8V)	N/C (No such function)	
19	SDIO_DATA3 (I/O)(0/1.8V)	N/C (No such function)	
17	SDIO_DATA2 (I/O)(0/1.8V)	N/C (No such function)	
15	SDIO_DATA1 (I/O)(0/1.8V)	N/C (No such function)	
13	SDIO_DATA0 (I/O)(0/1.8V)	N/C (No such function)	
11	SDIO_CMD (I/O)(0/1.8V)	N/C (No such function)	
9	SDIO_CLK/SYSCLK (I)(0/1.8V)	N/C (No such function)	
7	GND	N/C (No such function)	
5	USB_D-	BT_USB_DM	69
3	USB_D+	BT_USB_DP	70
1	GND	GND	

2.4.3. M.2 KEY E 2230 Module Pin Definition Back Side

Pin	M.2 KEY E 2230 Pin Name	M.2 96-pin Type Pin Name	Pin
74	+3.3V	+3.3V	4
72	+3.3V	+3.3V	5
70	UIM_POWER_SRC/GPIO_1/PEWAKE1#	N/C (No such function)	
68	UIM_POWER_SNK/CLKREQ1#	N/C (No such function)	
66	UIM_SWP/PERST1#	N/C (No such function)	
64	VIO 1.8 V	VDD18_IO	66
62	ALERT# (O)(0/1.8 V)	N/C (No such function)	
60	I2C_CLK (I)(0/1.8 V)	N/C (No such function)	
58	I2C_DATA (I/O)(0/1.8 V)	N/C (No such function)	
56	W_DISABLE1# (I)(0/1.8V/3.3V)	WL_EN	28
54	W_DISABLE2# (I)(0/1.8V/3.3V)	BT_EN	63
52	PERST0# (I)(0/1.8V/3.3V)	GPIO57/WL_PCIE_RST_N	31

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50	SUSCLK (I)(0/1.8V/3.3V)	GPIO14/LF_CLK_IN				27
48	COEX_RXD (I)(0/1.8V)	GPIO10/LTE_COEX_UART_RXD				11
46	COEX_TXD (O)(0/1.8V)	GPIO11/LTE_COEX_UART_TXD				12
44	COEX3 (I/O)(0/1.8V)	GPIO47/GPS_COEX				13
42	VENDOR DEFINED	N/C (Reserved for Wi-Fi 7)				
40	VENDOR DEFINED	GPIO19/WL_TXEN_N79				43
38	VENDOR DEFINED	GPIO18/N79_TXEN				42
36	UART_CTS (I)(0/1.8V)	GPIO2/BT_UART_CTS				54
34	UART_RTS (O)(0/1.8V)	GPIO3/BT_UART_RTS				57
32	UART_RXD (I)(0/1.8V)	GPIO0/BT_UART_RXD				56
22	UART_TXD (O)(0/1.8V)	GPIO1/BT_UART_TXD				55
20	UART_WAKE# (O)(0/3.3V)	GPIO9/BT_SENS_UART_RXD				53
18	VIO_CFG (O)	N/C				
16	LED_2# (O)(OD)	GPIO13/I2C_CLK_GPIO				64
14	PCM_IN/I2S_SD_IN (I)(0/1.8V)	GOIO4/BT_I2S_SDI				59
12	PCM_OUT/I2S_SD_OUT (O)(0/1.8V)	GPIO5/BT_I2S_SDO				60
10	PCM_SYNC/I2S_WS (I/O)(0/1.8V)	GPIO6/BT_I2S_WS				58
8	PCM_CLK/I2S_SCK (I/O)(0/1.8V)	GPIO7/BT_I2S_SCK				61
6	LED_1# (O)(OD)	GPIO54/WL_GPIO54				65
4	+3.3V	+3.3V				72
2	+3.3V	+3.3V				73

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3 Electrical Characteristics

3.1. Recommended Operating Conditions

Symbol	Parameter	Min	Typical	Max	Unit
VDD33	3.3V supply	3.2	3.3	3.45	V
Operation temperature	-	-30	-	65	°C
Storage temperature	-	-40	-	125	°C

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4 Radio Performance

4.1. 2.4GHz Wi-Fi

Tx power of 2.4GHz Operation (± 2 dBm)

Parameter	Typical (dBm)
54 Mbps	16.4
HE20, MCS11	14.0
HE40, MCS11	13

Receiving sensitivity of 2.4GHz Operation (± 2 dBm)

Parameter	Typical (dBm)
54 Mbps	-73
HE20, MCS11	-58
HE40, MCS11	-55

4.2. 5GHz Wi-Fi

Tx power of 5GHz Operation (± 2 dBm)

Parameter	Typical (dBm)
54 Mbps	17
HE20, MCS11	13
HE80, MCS11	13
HE160, MCS11	12.5

Receiving sensitivity of 5GHz Operation (± 2 dBm)

Parameter	Typical (dBm)
54 Mbps	-73
HE20, MCS11	-59
HE80, MCS11	-54
HE160, MCS11	-51

4.3. Bluetooth

Channel Bandwidth	Modulation	Parameter	Data Rate	Typical (dBm)
2MHz	GFSK	Rx Sensitivity @ 30.8% PER (Boost Mode)	2Mbps	-93
			1Mbps	-96

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5 Power Consumption

Description	Typ. Value (mA)	Max. Value (mA)
TX (2.4G HE40)	400	531
RX (2.4G HE40)	220	290
TX (5G HE160)	1050	1130
RX (5G HE160)	290	410
BT TX (1M@7dBm)	137	147
BT RX	116	136

Note: Use QRCT tool, TX mode: CONT TX99, TX Power Control: AutoPower, test the maximum current of the module 3.3V power supply when NSS=1.

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6 Mechanical Specification

6.1. LGA TYPE Dimension

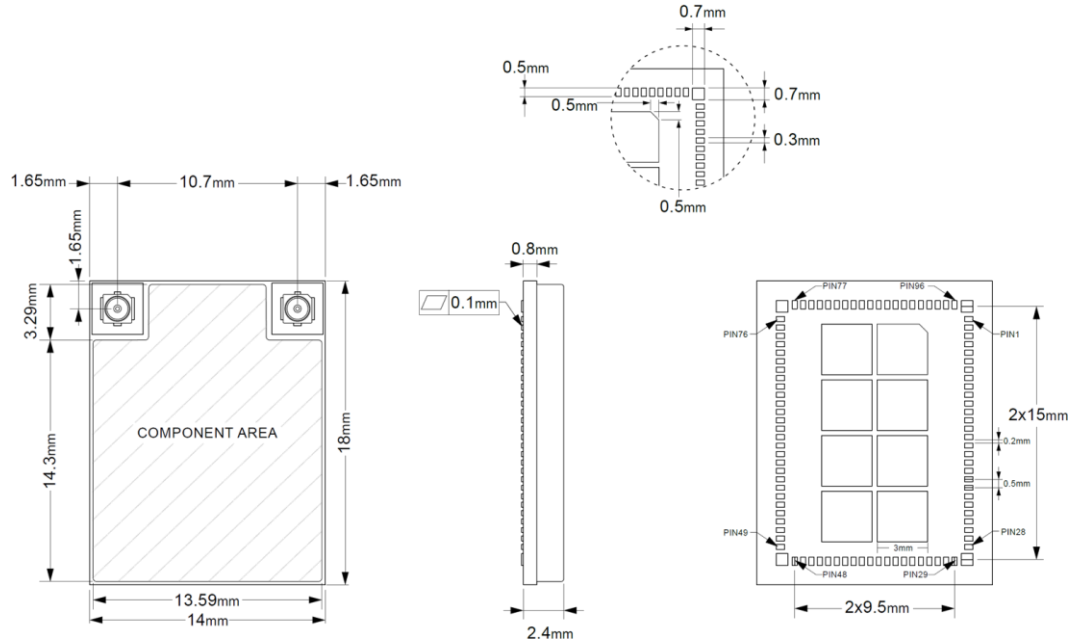


Figure 7 LGA TYPE Dimension

6.2. Recommended PCB Landing Pattern

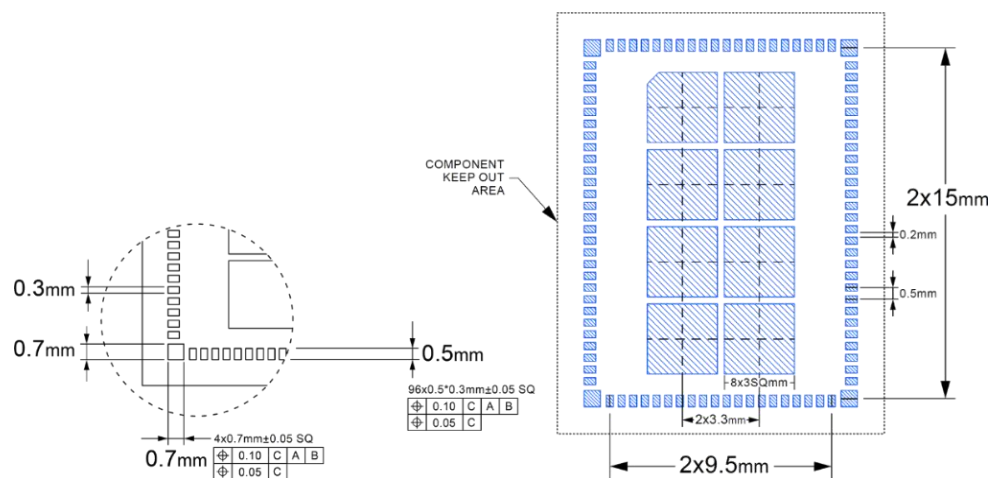


Figure 8 PCB Landing Pattern

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6.3. M.2 KEY E 2230 Dimension

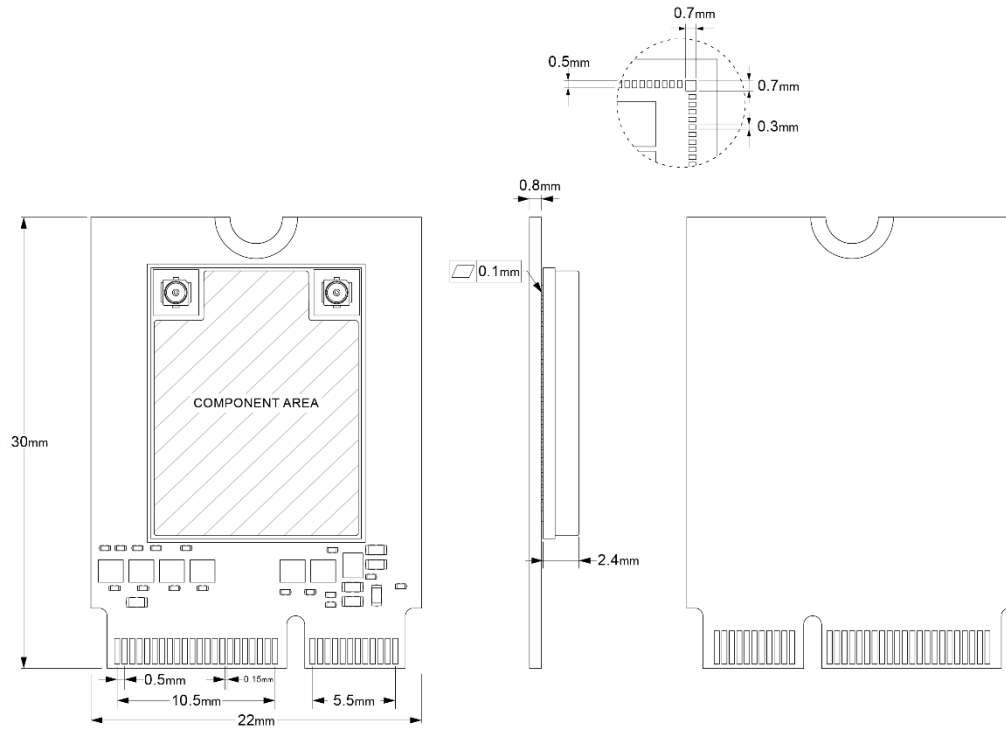


Figure 9 M.2 KEY E 2230 Dimension

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7 Manufacturing Recommendation

7.1. Power Layout Guideline

The module is powered by VDD3.3. Connect the power pin with a capacitor as close as possible to the chip and pin. Decouple the power supply from the chip using a capacitor. Utilize capacitors to prevent noise from coupling back to the power plane.

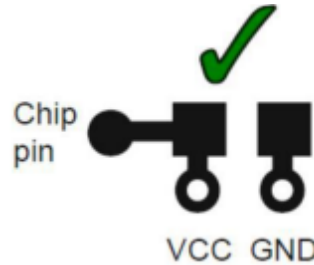


Figure 6: Power Layout Guideline

7.2. PCIe Layout Guideline

Category	Guidelines/remarks
Groups	PCIE_TX_P&N, PCIE_RX_P&N, PCIE_CK_OUT_P&N
Route type	Differential pair, 100 Ω impedance
Return path	Ensure continuous and unbroken return path without voids.
Length	< 10 cm preferred
Length match within pair	2ps
Length match across pairs	No strict requirements to length match the Tx, Rx, CLK pairs. Keep them within 10 ps
Spacing requirements	3H spacing between pairs
GND shielding	Provide GND shield at 3H spacing away from the signal pairs. Stitch the GND shape to the main GND in inner layers with vias at regular intervals of 0.25 cm.
Vias/layer transitions	For PCIe2.0, avoid layer transitions where possible; provide adequate GND return vias if taking via on the signal path.
AC coupling	Use 0.1 μ F capacitors on each signal line of the Tx pair from the EVB Board and place them symmetrically at the same point on the pair.
If unused	The outputs should be NC: float the input pins.

7.3. USB Layout Guideline

Category	Guidelines/remarks
Groups	USB_DP3&DM3, USB_DP4&DM4, MOUDULE_USB_DP2&DM2
Route type	Differential pair, 90 Ω impedance for the USB2.0 pair
Return path	Ensure continuous and unbroken return path without voids.
Length	< 10 cm preferred
Length match within pair	3ps
Length match across pairs	Not applicable
Spacing requirements	3H spacing between other signals
GND shielding	Provide GND shield at 3H spacing away from the signal pairs. Stitch the GND shape to the main GND in inner layers with vias at regular intervals of 1cm.

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Vias/layer transitions	Avoid layer transitions where possible; provide adequate GND return vias if taking via on the signal path.				
AC coupling	Not applicable				
If unused	The outputs should be NC: float the input pins.				

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FCC Caution:

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.

FCC ID: 2BQY7-M64510

EN

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

This device may not cause interference.

This device must accept any interference, including interference that may cause undesired operation of the device.

FR

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

L'appareil ne doit pas produire de brouillage;

L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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Radiation Exposure Statement

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Déclaration d'exposition aux radiations

Cet équipement est conforme Canada limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement doit être installé et utilisé à distance minimum de 20cm entre le radiateur et votre corps.

This device is intended only for OEM integrators under the following condition:

The transmitter module may not be co-located with any other transmitter or antenna.

As long as the condition above is met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

Cet appareil est destiné uniquement aux intégrateurs OEM dans les conditions suivantes : Le module émetteur ne peut pas être placé à côté d'un autre émetteur ou d'une autre antenne.

Tant que la condition ci-dessus est remplie, aucun test supplémentaire de l'émetteur ne sera nécessaire.

Cependant, l'intégrateur OEM est toujours responsable de tester son produit final pour toute exigence de conformité supplémentaire requise avec ce module installé.

Manual Information to the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

Manuel d'information à l'utilisateur final

L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final quant à la façon d'installer ou de supprimer ce module RF dans le manuel de l'utilisateur du produit final qui intègre ce module.

Le manuel de l'utilisateur final doit inclure toutes les informations réglementaires requises et avertissements comme indiqué dans ce manuel.

Caution:

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MQC2064/6851 Series Module Datasheet		V1.1	Public		Aug 27, 2025

- (i) The device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;
- (ii) For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the EIRP limit;
- (iii) For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the EIRP limits specified for point-to-point and non-point-to-point operation as appropriate; and Operations in the 5.25-5.35GHz band are restricted to indoor usage only.

Avertissement:

- (i) les dispositifs fonctionnant dans la bande de 5150 à 5250MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;
- (ii) pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis pour les dispositifs utilisant les bandes de 5250 à 5350MHz et de 5470 à 5725 MHz doit être conforme à la limite de la p.i.r.e;
- (iii) pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis (pour les dispositifs utilisant la bande de 5725 à 5850 MHz) doit être conforme à la limite de la p.i.r.e. spécifiée pour l'exploitation point à point et l'exploitation non point à point, selon le cas; Les opérations dans la bande de 5.25-5.35GHz sont limités à un usage intérieur seulement.

The ISED certification label of a module shall be clearly visible at all times when installed in the host product; otherwise, the host product must be labelled to display the ISED certification number for the module, preceded by the word "contains" or similar wording expressing the same meaning, as follows: Contains IC:34324-M64510

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FCC Certification

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01r01

2.2 List of applicable FCC rules

The MQC2064/WCN6851 is a highly integrated module supporting 802.11ax Wi-Fi and Bluetooth (BT). It is within U.S. FCC part 15.247, 15.407 standard

2.3 Specific operational use conditions

The EUT is a highly integrated module supporting 802.11ax Wi-Fi and Bluetooth (BT) Operation Frequency: 2402-2480MHz for BT; 2412-2462MHz for WIFI 2.4G, 5150-5350/ 5470-5725/5725-5850MHz/ for WIFI 5G Modulation Type: GFSK, $\pi/4$ -DQPSK, 8-DPSK for BT, GFSK for BLE, WLAN(DSSS/OFDM/OFDMA)

2.4 Limited module procedures

Not applicable; Single Modular Approval Request

2.5 Trace antenna designs

MQC2064/WCN6851 is a highly integrated module supporting 802.11ax Wi-Fi and Bluetooth (BT). It communicates with its antenna, which is External Antenna

2.6 RF exposure considerations

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna. inimum distance between 20cm the radiator your body: Use only the supplied antenna.

2.7 Antennas

MQC2064/WCN6851 is a highly integrated module supporting 802.11ax Wi-Fi and Bluetooth (BT). It communicates with its antenna, which is External Antenna

Antenna Designation:

BT/WIFI: External Antenna

Antenna Gain:

BT:2.5dBi

2.4G WiFi:

ant1/ant2:2.5dBi

5G WiFi:

Antenna type:External Antenna

5.2G Antenna 1: 4.2 dBi; Antenna 2: 4.2 dBi

5.3G Antenna 1: 4.4 dBi; Antenna 2: 4.4 dBi

5.6G Antenna 1: 4.4 dBi; Antenna 2: 4.4 dBi

5.8G Antenna 1: 4.3 dBi; Antenna 2: 4.3 dBi Antenna manufacturer:Abracon LLC's

2.8 Label and compliance information

The final end product must be label in a visible area , the Host must Contains FCC ID: 2BQY7-M64510

2.9 Information on test modes and additional testing requirements

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Data transfer module demo board can control the EUT work in RF test mode at specified test channel.

2.10 Additional testing, Part 15 Subpart B disclaimer

The module without unintentional-radiator digital circuit, so the module does not required an evaluation by FCC Part 15 Subpart B. The host should be evaluated by the FCC Subpart B

2.11 OEM integration instructions:

This device is intended only for OEM integrators under the following conditions: The transmitter module may not be co-located with any other transmitter or antenna. The module shall be only used with the external antenna(s) that has been originally tested and certified with this module. As long as the conditions above are met, further transmitter test will not be required.

However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

2.12 Validity of using the module certification:

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization for this module in combination with the host equipment is no longer considered valid and the FCC ID of the module cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

ATTENTION

This device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) This device and its antenna(s) must not be co-located with any other transmitters except in

accordance with FCC multi-transmitter product procedures. Referring to the multi-transmitter policy, multiple transmitter(s) and module(s) can be operated simultaneously without C2PC.

- 3) For all products market in US, OEM has to limit the Operating Frequency: 2402-2480MHz for BT; 2412-2462MHz for WIFI 2.4G, 5150-5250MHz / 5725-5850MHz for WIFI 5G. by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

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USERS MANUAL OF THE END PRODUCT:

In the user manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio- frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

This device is intended only for OEM integrators under the following condition:

The transmitter module may not be co-located with any other transmitter or antenna.

As long as the condition above is met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

Cet appareil est destiné uniquement aux intégrateurs OEM dans les conditions suivantes : Le module émetteur ne peut pas être placé à côté d'un autre émetteur ou d'une autre antenne.

Tant que la condition ci-dessus est remplie, aucun test supplémentaire de l'émetteur ne sera nécessaire.

Cependant, l'intégrateur OEM est toujours responsable de tester son produit final pour toute exigence de conformité supplémentaire requise avec ce module installé.

Manual Information to the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

Manuel d'information à l'utilisateur final

L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final quant à la façon d'installer ou de supprimer ce module RF dans le manuel de l'utilisateur du produit final qui intègre ce module.

Le manuel de l'utilisateur final doit inclure toutes les informations réglementaires requises et avertissements comme indiqué dans ce manuel.

Caution:

- (i) The device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;
- (ii) For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the EIRP limit;
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Avertissement:

- (i) les dispositifs fonctionnant dans la bande de 5150 à 5250MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;
- (ii) pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis pour les dispositifs utilisant les bandes de 5250 à 5350MHz et de 5470 à 5725 MHz doit être conforme à la limite de la p.i.r.e.;
- (iii) pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis (pour les dispositifs utilisant la bande de 5725 à 5850 MHz) doit être conforme à la limite de la p.i.r.e. spécifiée pour l'exploitation point à point et l'exploitation non point à point, selon le cas; Les opérations dans la bande de 5.25-5.35GHz sont limités à un usage intérieur seulement.

This radio transmitter [IC:34324-M64510] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

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BT 2402-2480MHz:2.5dBi
2.4G WiFi: 2412-2462MHz
ant1/ant2:2.5dBi

5.2G Antenna 1: 4.2 dBi; Antenna 2: 4.2 dBi
5.3G Antenna 1: 4.4 dBi; Antenna 2: 4.4 dBi
5.6G Antenna 1: 4.4 dBi; Antenna 2: 4.4 dBi
5.8G Antenna 1: 4.3 dBi; Antenna 2: 4.3 dBi

Antenna type:External Antenna
Antenna manufacturer:Abracon LLC's

Revision History

Revision	Description	Date
0.1	Initial draft	Apr 2,2025
1.0	Update Pin Map and Definition	Jun 24,2025
1.1	Add LGA TYPE Information	Aug 27,2025
The specified chips are QCA2064 and WCN6851.		

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