Data Sheet

Meticomm

Qualcomm QCC2072
2x2 Wi-Fi 7 + Bluetooth 6
M.2 Soldered-down Type 1216 Module

November 2025

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1 Product Overview

Powered by Qualcomm high performance 2x2 Tri-band (2.4/5/6GHz) Wi-Fi 7 and Bluetooth 6 combo chipset QCC2072, MQC2072 M.2 Soldered-down Type 1216 module is purposely-designed to comply with the latest PCI Express M.2 Specification v5.1 published by PCI-SIG.

MQC2072 M.2 Soldered-down Type 1216 module also allows you to have 38.4MHz crystal unpopulated with external REFCLK_IN to synchronize with the host CPU board.

MQC2072 M.2 Soldered-down Type 1216 module has undergone rigorous regulatory compliance testing and is certified with FCC, CE, IC, MIC and environmentally compliant with RoHS and WEEE directives. It also certifies with Wi-Fi Alliance, Bluetooth SIG 6.

MQC2072 M.2 Soldered-down Type 1216 modules include the following configurations:

Module	Form Factor	XTAL
MQC2072-4U-0	12.0 x 16.0 x 2.2 mm, 0.5 mm pitch, 96-pin, Soldered-down Type 1216	No
MQC2072-4U-1	12.0 x 16.0 x 2.2 mm, 0.5 mm pitch, 96-pin, Soldered-down Type 1216	Yes

MQC2072 M.2 Soldered-down Type 1216 module is graphically illustrated below:

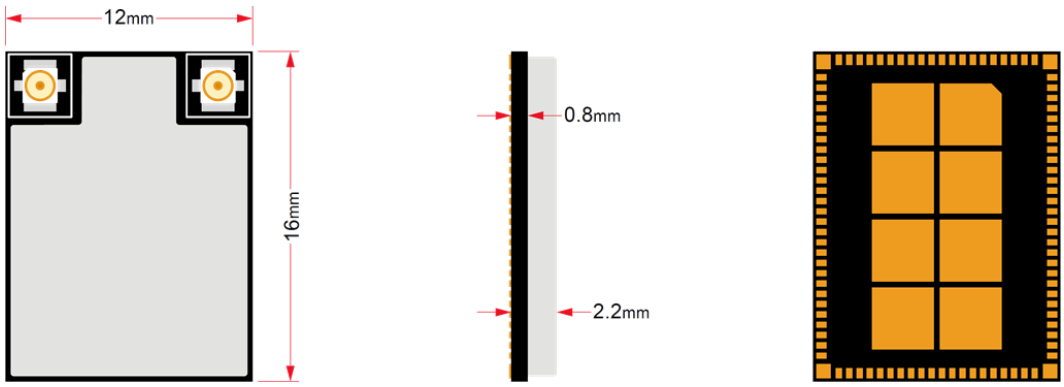


Figure 1: MQC2072 M.2 Soldered-down Type 1216 Module View

2 Hardware Specification

This section provides detailed hardware design and specification of MQC2072 M.2 Soldered-down Type 1216 module. The hardware design has been optimized for small footprint, enhanced RF performance, and reduced RBOM cost.

MQC2072 M.2 Soldered-down Type 1216 nodule has to versions – one for Window on Snagdragon (WoS) and the other for Window on x86 (x86). The difference is Bluetooth support. WoS version will have Bluetooth on UART and PCM while x86 version will have Bluetooth on USB.

2.1 M.2 Soldered-down Type 1216 Module (Window on Snapdragon)

2.1.1 M.2 Soldered-down Type 1216 Module (WoS) Block Diagram

MQC2072 M.2 Soldered-down Type 1216 module (WoS) integrates all discrete RF components, power management circuitry, and optional 38.4MHz crystal. The design supports 2x on-board K.FL2 connectors. The block diagram is shown below:

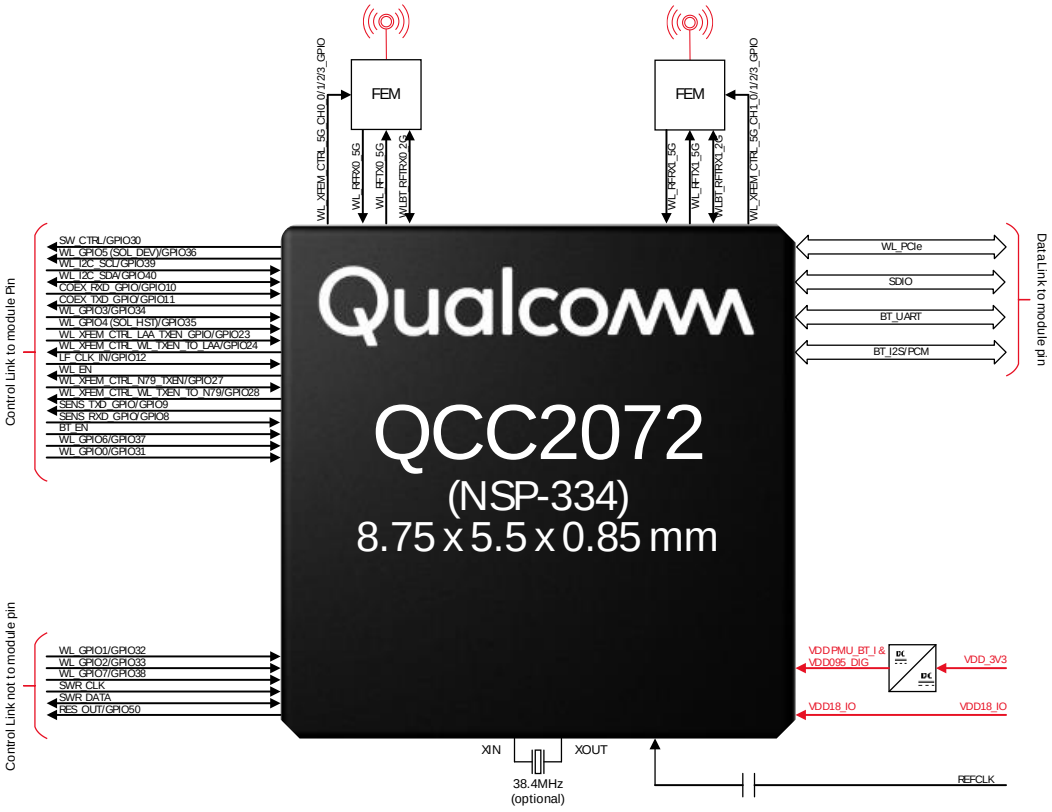


Figure 2: MQC2072 M.2 Soldered-down Type 1216 Module (WoS) Block Diagram

2.1.2 M.2 Soldered-down Type 1216 Module (WoS) Pin Map

MQC2072 M.2 Soldered-down Type 1216 nodule (WoS) follows standard M.2 Soldered-down Type 1216 pin definition as published in PCI Express M.2 Specification v5.1 (May-2024) as shown below:

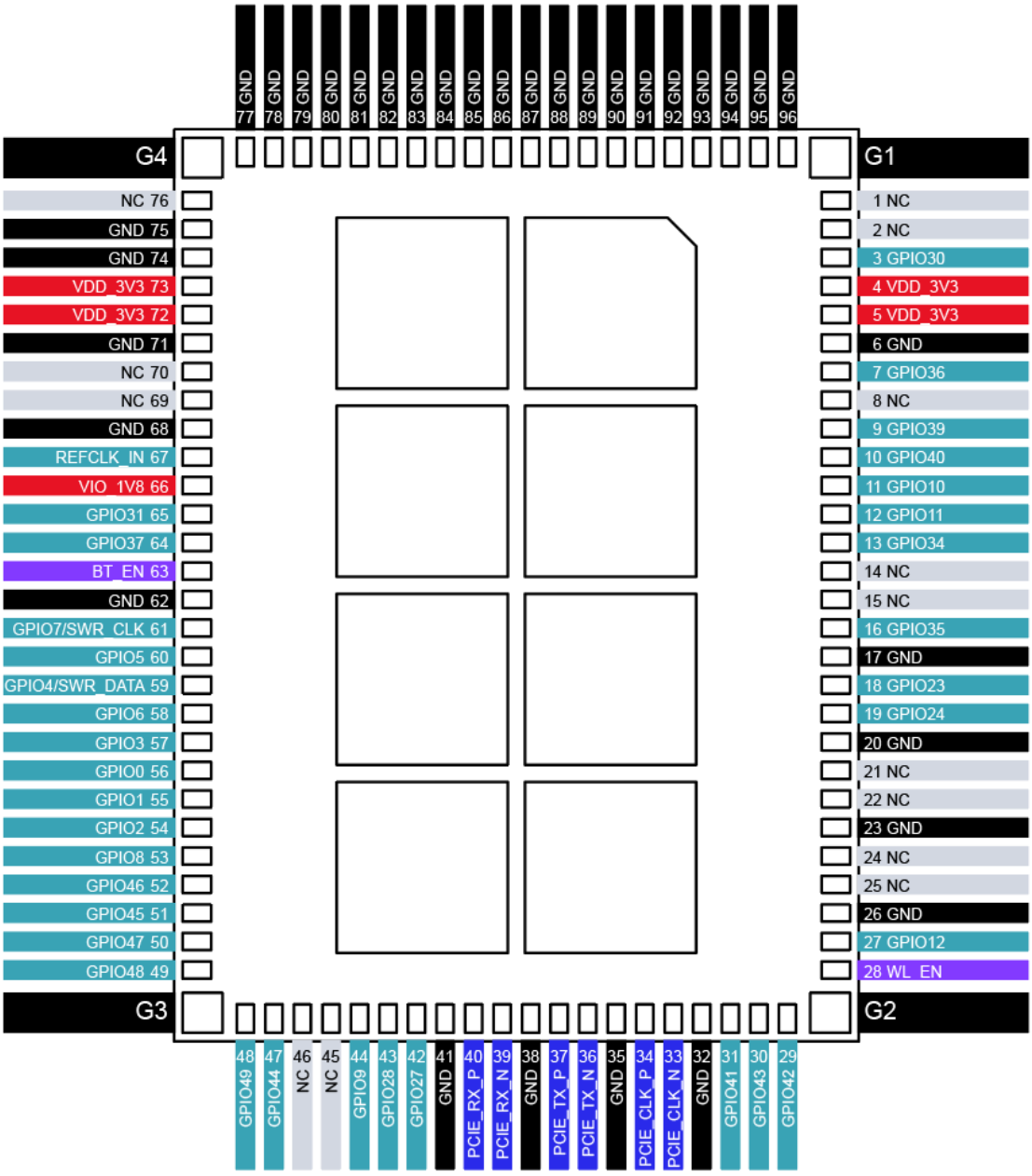


Figure 3: MQC2072 M.2 Soldered-down Type 1216 Module (WoS) Pin Map

2.1.3 M.2 Soldered-down Type 1216 Module (WoS) Pin Definition

MQC2072 M.2 Soldered-down Type 1216 module pin definition and mapping into QCC2072 is listed below:

Pin	M.2 Soldered-down Type 1216 Pin Name	QCA2072 Pin Name	Pin
1	UIM_POWER_SRC/GPIO1		
2	UIM_POWER_SNK		
3	UIM_SWP	GPIO30/SW_CTRL	Y4

4	+3.3V	+3.3V	
5	+3.3V	+3.3V	
6	GND	GND	
7	RESERVED	GPIO36/WL_GPIO5 (SOL_DEV)	T2
8	ALERT#		
9	I2C_CLK	GPIO39/WL_I2C_SCL	AK20
10	I2C_DATA	GPIO40/WL_I2C_SDA	AH20
11	COEX_TXD	GPIO10/COEX_RXD_GPIO	Y20
12	COXE_RXD	GPIO11/COEX_TXD_GPIO	AA15
13	COEX3	GPIO34/WL_GPIO3	AH14
14	SYSCLK/GNSS0		
15	TXBLANKING/GNSS1		
16	RESERVED	GPIO35/WL_GPIO4 (SOL_HST)	W1
17	GND	GND	
18	RESERVED	GPIO23/WL_XFEM_CTRL_LAA_TXEN_GPIO	W3
19	RESERVED	GPIO24/WL_XFEM_CTRL_WL_TXEN_TO_LAA	AA1
20	GND	GND	
21	PERn1		
22	PERp1		
23	GND	GND	
24	PETn1		
25	PETp1		
26	GND	GND	
27	SUSCLK	GPIO12/LF_CLK_IN	Y2
28	W_DISABLE1#	WL_EN	
29	PEWAKE0#	GPIO42/PCIE_WAKE_N_GPIO	P20
30	CLKREQ#	GPIO43/PCIE_CLKREQ_N_GPIO	N19
31	PERST0#	GPIO41/PCIE_RST_N_GPIO	P18
32	GND	GND	
33	REFCLKn0	WL_PCIE20_REFCLK_N	AC17
34	REFCLKp0	WL_PCIE20_REFCLK_P	AB18
35	GND	GND	
36	PERn0	PCIE20_TXM	AP14
37	PERp0	PCIE20_TXP	AP16

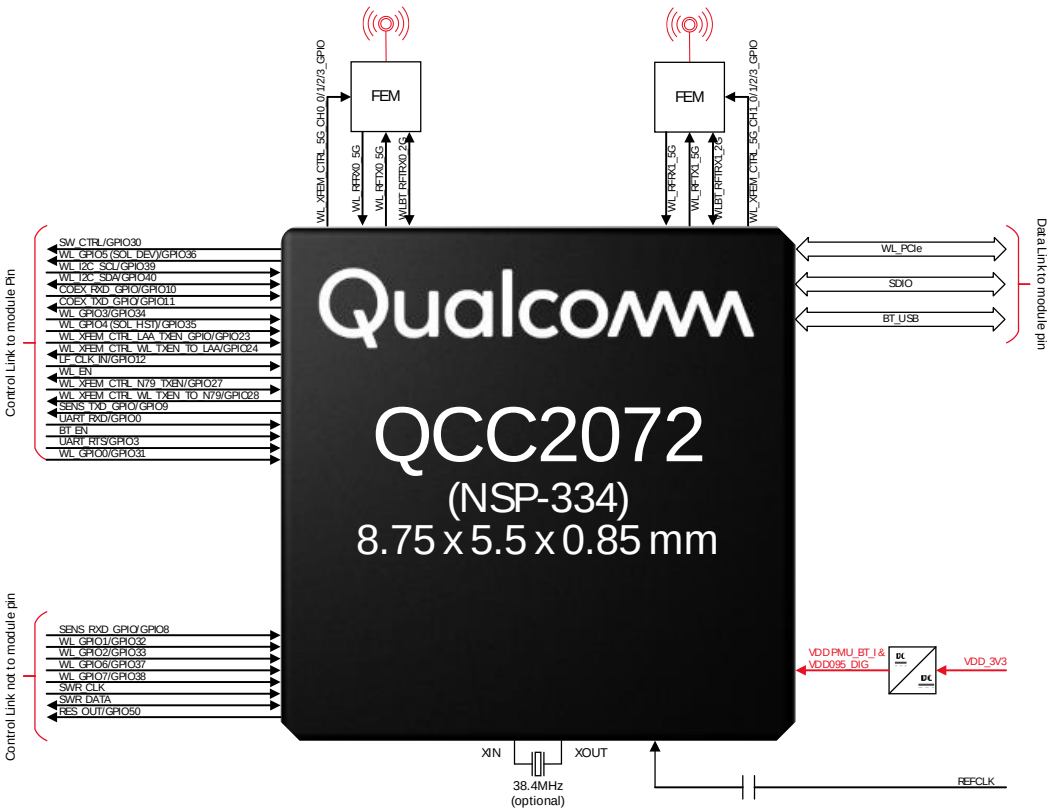
38	GND	GND	
39	PETn0	PCIE20_RXM	AP20
40	PETp0	PCIE20_RXP	AP18
41	GND	GND	
42	VENDOR DEFOINED	GPIO27/WL_XFEM_CTRL_N79_TXEN	AB2
43	VENDOR DEFOINED	GPIO28/WL_XFEM_CTRL_WL_TXEN_TO_N79	V4
44	VENDOR DEFOINED	GPIO9/SENS_TXD_GPIO	V14
45	SDIO_RESET#		
46	SDIO_WAKE#		
47	SDIO_DATA3	GPIO44/HOST_SDIO_DATA3	AC19
48	SDIO_DATA2	GPIO49/HOST_SDIO_DATA2	Y18
49	SDIO_DATA1	GPIO48/HOST_SDIO_DATA1	AA13
50	SDIO_DATA0	GPIO47/HOST_SDIO_DATA0	AB16
51	SDIO_CMD	GPIO45/HOST_SDIO_CMD	AB20
52	SDIO_CLK	GPIO46/HOST_SDIO_CLK	AC17
53	UART_WAKE#	GPIO8/SENS_RXD_GPIO	W15
54	UART_RTS	GPIO2/UART_CTS	T14
55	UART_RXD	GPIO1/UART_TXD	T18
56	UART_TXD	GPIO0/UART_RXD	M18
57	UART_CTS	GPIO3/UART_RTS	U19
58	PCM_SYNC	GPIO6/BT_I2S_0_WS	U13
59	PCM_OUT	GPIO4/BT_I2S_0_SDI (SWR_DATA)	R17
60	PCM_IN	GPIO5/BT_I2S_0_SDO	V20
61	PCM_CLK	GPIO7/BT_I2S_0_SCK (SWR_CLK)	T16
62	GND	GND	
63	W_DISABLE2#	BT_EN	AG5
64	LED_2#	GPIO37/WL_GPIO6	AM20
65	LED_1#	GPIO31/WL_GPIO0	AD20
66	VIO_1.8V	VIO_1V8	
67	RESERVED	REFCLK_IN (ext. clock in, not from chip)	
68	GND	GND	
69	USB_D-		
70	USB_D+		
71	GND	GND	

72	+3.3V	+3.3V	
73	+3.3V	+3.3V	
74	GND	GND	
75	GND	GND	
76	VIO_CFG	N/C	

2.2 M.2 Soldered-down Type 1216 Pin Map (Window on x86)

2.2.1 M.2 Soldered-down Type 1216 Module (x86) Block Diagram

MQC2072 M.2 Soldered-down Type 1216 module (x86) integrates all discrete RF components, power management circuitry, and optional 38.4MHz crystal. The design supports 2x on-board K.FL2 connectors. The block diagram is shown below:



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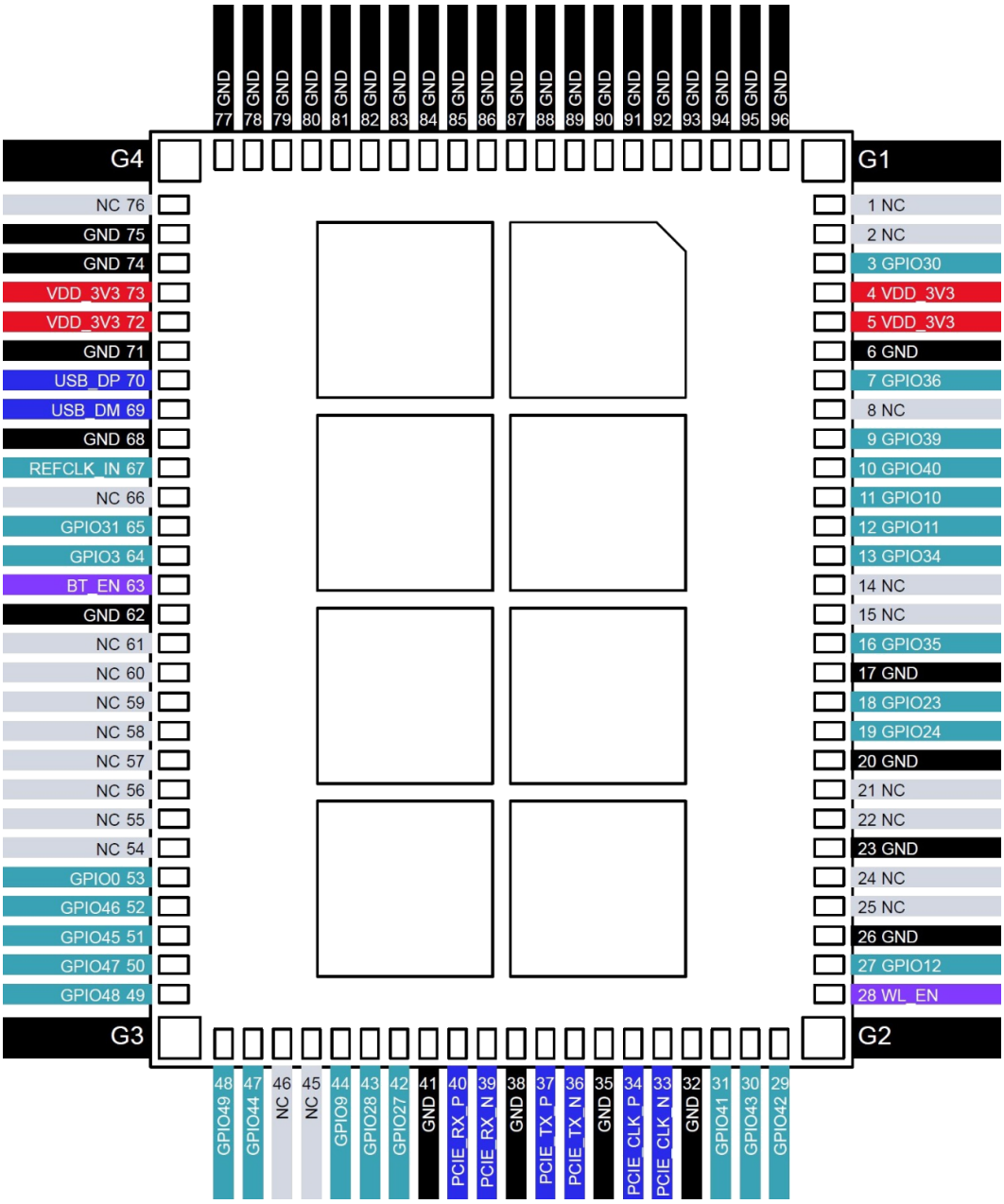

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2.2.3 M.2 Soldered-down Type 1216 Module (x86) Pin Definition

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Pin	M.2 Soldered-down Type 1216 Pin Name	QCA2072 Pin Name	Pin
1	UIM_POWER_SRC/GPIO1		
2	UIM_POWER_SNK		
3	UIM_SWP	GPIO30/SW_CTRL	Y4

4	+3.3V	+3.3V	
5	+3.3V	+3.3V	
6	GND	GND	
7	RESERVED	GPIO36/WL_GPIO5 (SOL_DEV)	T2
8	ALERT#		
9	I2C_CLK	GPIO39/WL_I2C_SCL	AK20
10	I2C_DATA	GPIO40/WL_I2C_SDA	AH20
11	COEX_TXD	GPIO10/COEX_RXD_GPIO	Y20
12	COXE_RXD	GPIO11/COEX_TXD_GPIO	AA15
13	COEX3	GPIO34/WL_GPIO3	AH14
14	SYSCLK/GNSS0		
15	TXBLANKING/GNSS1		
16	RESERVED	GPIO35/WL_GPIO4 (SOL_HST)	W1
17	GND	GND	
18	RESERVED	GPIO23/WL_XFEM_CTRL_LAA_TXEN_GPIO	W3
19	RESERVED	GPIO24/WL_XFEM_CTRL_WL_TXEN_TO_LAA	AA1
20	GND	GND	
21	PERn1		
22	PERp1		
23	GND	GND	
24	PETn1		
25	PETp1		
26	GND	GND	
27	SUSCLK	GPIO12/LF_CLK_IN	Y2
28	W_DISABLE1#	WL_EN	?
29	PEWAKE0#	GPIO42/PCIE_WAKE_N_GPIO	P20
30	CLKREQ#	GPIO43/PCIE_CLKREQ_N_GPIO	N19
31	PERST0#	GPIO41/PCIE_RST_N_GPIO	P18
32	GND	GND	
33	REFCLKn0	WL_PCIE20_REFCLK_N	AC17
34	REFCLKp0	WL_PCIE20_REFCLK_P	AB18
35	GND	GND	
36	PERn0	PCIE20_TXM	AP14
37	PERp0	PCIE20_TXP	AP16

38	GND	GND	
39	PETn0	PCIE20_RXM	AP20
40	PETp0	PCIE20_RXP	AP18
41	GND	GND	
42	VENDOR DEFOINED	GPIO27/WL_XFEM_CTRL_N79_TXEN	AB2
43	VENDOR DEFOINED	GPIO28/WL_XFEM_CTRL_WL_TXEN_TO_N79	V4
44	VENDOR DEFOINED	GPIO9/SENS_TXD_GPIO	V14
45	SDIO_RESET#		
46	SDIO_WAKE#		
47	SDIO_DATA3	GPIO44/HOST_SDIO_DATA3	AC19
48	SDIO_DATA2	GPIO49/HOST_SDIO_DATA2	Y18
49	SDIO_DATA1	GPIO48/HOST_SDIO_DATA1	AA13
50	SDIO_DATA0	GPIO47/HOST_SDIO_DATA0	AB16
51	SDIO_CMD	GPIO45/HOST_SDIO_CMD	AB20
52	SDIO_CLK	GPIO46/HOST_SDIO_CLK	AC17
53	UART_WAKE#	GPIO0/UART_RXD	M18
54	UART_RTS		
55	UART_RXD		
56	UART_TXD		
57	UART_CTS		
58	PCM_SYNC		
59	PCM_OUT		
60	PCM_IN		
61	PCM_CLK		
62	GND	GND	
63	W_DISABLE2#	BT_EN	AG5
64	LED_2#	GPIO3/UART_RTS	U19
65	LED_1#	GPIO31/WL_GPIO0	AD20
66	VIO_1.8V		
67	RESERVED	REFCLK_IN (ext. clock in, not from chip)	
68	GND	GND	
69	USB_D-	DM_USB_BT	V18
70	USB_D+	DP_USB_BT	W17
71	GND	GND	

72	+3.3V	+3.3V	
73	+3.3V	+3.3V	
74	GND	GND	
75	GND	GND	
76	VIO_CFG	N/C	

3 Electrical Characteristics

3.1 Absolute Maximum Ratings

The absolute maximum ratings provided in this section reflect the stress levels that, if exceeded, may cause permanent damage to the device. No functionality is guaranteed outside the operating specifications. Functionality and reliability are only guaranteed within the operating.

The following table summarizes the absolute maximum ratings

Pin	Parameter	Min	Max	Unit
VDD_3V3	Power input voltage	-0.3	3.63	V
VDD18_IO	I/O port voltage	-0.3	2.0	V
ESD Protection (HBM)				V
Ambient temperature		-30	+85	°C
Storage temperature		-55	+150	°C

3.2 Recommended Operating Conditions

Pin	Parameter	Min	TYP	Max	Unit
VDD_3V3	Power input voltage	3.0	3.3	3.63	V
VDD18_IO	I/O port voltage	1.5	1.8	2.0	V

4 Radio Performance

MQC2072 M.2 Key E 2230 module supports three radio bands (2.4GHz, 5GHz and 6GHz). The supported Channel bandwidth is listed below:

- 2.4GHz – 20MHz, 40MHz
- 5GHz – 20MHz, 40MHz, 80MHz, 160MHz
- 6GHz - 20MHz, 40MHz, 80MHz, 160MHz, 320MHz

4.1 2.4GHz 802.11b/g/n/ax/be

Standard	Modulation	Data rate (Mbit/s)	MCS Index	Max Tx Power @Single Chain (dBm)		Rx Sensitivity @Single Chain (dBm)	
				20MHz	40MHz	20MHz	40MHz
802.11b	DBPSK	1	-	20	/	-97	/
	DQPSK	2	-				
	B/DQPSK	5.5	-				
	Q/DQPSK	11	-	19	/	-91	/
802.11g	BPSK	6	-	19.5	/	-94	/
	BPSK	9	-				
	QPSK	12	-				
	QPSK	18	-				
	16-QAM	24	-				
	16-QAM	36	-				
	64-QAM	48	-				
	64-QAM	54	-	17	/	-76	/
802.11n	BPSK	-	MCS0	19	18.5	-94	-92
	QPSK	-	MCS1				
	QPSK	-	MCS2				
	16-QAM	-	MCS3				
	16-QAM	-	MCS4				
	64-QAM	-	MCS5				
	64-QAM	-	MCS6				
	64-QAM	-	MCS7	16	15.5	-75	-73
802.11ax/be (SU)	BPSK	-	MCS0	19	18.5	-94	-91
	QPSK	-	MCS1				
	QPSK	-	MCS2				
	16-QAM	-	MCS3				
	16-QAM	-	MCS4				
	64-QAM	-	MCS5				
	64-QAM	-	MCS6				

	64-QAM	-	MCS7	16	15.5	-75	-73
	256-QAM	-	MCS8				
	256-QAM	-	MCS9	15	14.5	-69	-66
	1K-QAM	-	MCS10				
	1K-QAM	-	MCS11	14.5	14	-63	-61
	4K-QAM	-	MCS12				
	4K-QAM	-	MCS13	13.5	13	-57	-55

4.2 5GHz 802.11a/n/ac/ax/be

Standard	Modulation	Data rate (Mbit/s)	MCS Index	Max Tx Power @Single Chain (+/-2 dBm)				Rx Sensitivity @Single Chain (dBm)			
				20MHz	40MHz	80MHz	160MHz	20MHz	40MHz	80MHz	160MHz
802.11a	BPSK	6	-	19	/	/	/	-94	/	/	/
	BPSK	9	-								
	QPSK	12	-								
	QPSK	18	-								
	16-QAM	24	-								
	16-QAM	36	-								
	64-QAM	48	-								
	64-QAM	54	-	16	/	/	/	-76	/	/	/
802.11n	BPSK	-	MCS0	18.5	17.5	/	/	-93	-91	/	/
	QPSK	-	MCS1								
	QPSK	-	MCS2								
	16-QAM	-	MCS3								
	16-QAM	-	MCS4								
	64-QAM	-	MCS5								
	64-QAM	-	MCS6								
	64-QAM	-	MCS7	15	14.5	/	/	-75	-73	/	/
802.11ac	BPSK	-	MCS0	18.5	17.5	17	16	-93	-91	-88	-85
	QPSK	-	MCS1								
	QPSK	-	MCS2								
	16-QAM	-	MCS3								
	16-QAM	-	MCS4								
	64-QAM	-	MCS5								
	64-QAM	-	MCS6								
	64-QAM	-	MCS7	15	14.5	14	13	-75	-73	-69	-65
	256-QAM	-	MCS8								
	256-QAM	-	MCS9	14.5	14	13.5	12.5	-68	-66	-63	59

802.11ax/be (SU)	BPSK	-	MCS0	18.5	17.5	17	16	-93	-91	-88	-85
	QPSK	-	MCS1								
	QPSK	-	MCS2								
	16-QAM	-	MCS3								
	16-QAM	-	MCS4								
	64-QAM	-	MCS5								
	64-QAM	-	MCS6								
	64-QAM	-	MCS7	15	14.5	14	13	-75	-73	-69	-66
	256-QAM	-	MCS8								
	256-QAM	-	MCS9	14.5	14	13.5	12.5	-68	-66	-63	-60
	1K-QAM	-	MCS10								
	1K-QAM	-	MCS11	14	13.5	13	12	-63	-61	-57	-54
	4K-QAM	-	MCS12								
	4K-QAM	-	MCS13	13	12.5	12	11	-57	-55	-51	-48

4.3 6GHz 802.11ax/be

Standard	Modulation	MCS Index	Max Tx Power @Single Chain (+/-2 dBm)					Rx Sensitivity @Single Chain (dBm)				
			20 MHz	40 MHz	80 MHz	160 MHz	320 MHz	20 MHz	40 MHz	80 MHz	160 MHz	320 MHz
802.11ax/be (SU)	BPSK	MCS0	18	17	16.5	15.5	14.5	-92	-90	-86	-84	-81
	QPSK	MCS1										
	QPSK	MCS2										
	16-QAM	MCS3										
	16-QAM	MCS4										
	64-QAM	MCS5										
	64-QAM	MCS6										
	64-QAM	MCS7	14	13.5	13	12	11	-74	-71	-68	-65	-62
	256-QAM	MCS8										
	256-QAM	MCS9	13.5	13	12.5	11.5	10.5	-67	-65	-62	-59	-56
	1K-QAM	MCS10										
	1K-QAM	MCS11	13	12.5	12	11	10	-62	-60	-56	-53	-50
	4K-QAM	MCS12										
	4K-QAM	MCS13	12	11.5	11	10	9	-56	-53	50	-47	-44

4.4 Bluetooth

Standard	Topology	PHY	Modulation	Data Rate	Max Tx Power (dBm)	Rx Sensitivity (dBm)

BT Classic	P2P	BR	GFSK	1Mbps	19	-96
		EDR	π/4 DQPSK	2Mbps	16	-96
		EDR	8DPSK	3Mbps	16	-89
BLE	P2P Broadcast Mesh	LE 2M	GFSK	2Mbps	19	-96
		LE 1M	GFSK	1Mbps	19	-93
		LE Coded (S=2)	GFSK	500Kbps	19	-103
		LE Coded (S=8)	GFSK	125Kbps	19	-106

5 Power Consumption

MQC2072 M.2 Key E 2230 module can operate in power saving and active modes:

- Active – Continuous transmitting or receiving on connection to AP or/and connection to clients
- Idle – No active transmitting or receiving.

5.1 Power Saving Mode

The power consumption for each state is listed in the table below:

Operation Mode	State	Typical	Unit	Comments
Power Saving	Idle		μA	
			μA	
			μA	

5.2 Active Mode

5.2.1 2.4GHz 802.11b/g/n/ax/be

Standard	Modulation	Data rate (Mbit/s)	MCS Index	Continuous Transmit (mW)		Continuous Receive (mW)	
				20MHz	40MHz	20MHz	40MHz
802.11b	DBPSK	1	-				
	DQPSK	2	-				
	B/DQPSK	5.5	-				
	Q/DQPSK	11	-				
802.11g	BPSK	6	-				
	BPSK	9	-				
	QPSK	12	-				
	QPSK	18	-				
	16-QAM	24	-				
	16-QAM	36	-				
	64-QAM	48	-				
	64-QAM	54	-				
802.11n	BPSK	-	MCS0				
	QPSK	-	MCS1				
	QPSK	-	MCS2				
	16-QAM	-	MCS3				
	16-QAM	-	MCS4				
	64-QAM	-	MCS5				

	64-QAM	-	MCS6				
	64-QAM	-	MCS7				
802.11ax/be (SU)	BPSK	-	MCS0				
	QPSK	-	MCS1				
	QPSK	-	MCS2				
	16-QAM	-	MCS3				
	16-QAM	-	MCS4				
	64-QAM	-	MCS5				
	64-QAM	-	MCS6				
	64-QAM	-	MCS7				
	256-QAM	-	MCS8				
	256-QAM	-	MCS9				
	1K-QAM	-	MCS10				
	1K-QAM	-	MCS11				
	4K-QAM	-	MCS12				
	4K-QAM	-	MCS13				

5.2.2 5GHz 802.11a/n/ac/ax/be

Standard	Modulation	Data rate (Mbit/s)	MCS Index	Max Tx Power (dBm)				Rx Sensitivity (dBm)			
				20MHz	40MHz	80MHz	160MHz	20MHz	40MHz	80MHz	160MHz
802.11a	BPSK	6	-								
	BPSK	9	-								
	QPSK	12	-								
	QPSK	18	-								
	16-QAM	24	-								
	16-QAM	36	-								
	64-QAM	48	-								
	64-QAM	54	-								
802.11n	BPSK	-	MCS0								
	QPSK	-	MCS1								
	QPSK	-	MCS2								
	16-QAM	-	MCS3								
	16-QAM	-	MCS4								
	64-QAM	-	MCS5								
	64-QAM	-	MCS6								
	64-QAM	-	MCS7								
802.11ac	BPSK	-	MCS0								

	QPSK	-	MCS1								
	QPSK	-	MCS2								
	16-QAM	-	MCS3								
	16-QAM	-	MCS4								
	64-QAM	-	MCS5								
	64-QAM	-	MCS6								
	64-QAM	-	MCS7								
	256-QAM	-	MCS8								
	256-QAM	-	MCS9								
802.11ax/be (SU)	BPSK	-	MCS0								
	QPSK	-	MCS1								
	QPSK	-	MCS2								
	16-QAM	-	MCS3								
	16-QAM	-	MCS4								
	64-QAM	-	MCS5								
	64-QAM	-	MCS6								
	64-QAM	-	MCS7								
	256-QAM	-	MCS8								
	256-QAM	-	MCS9								
	1K-QAM	-	MCS10								
	1K-QAM	-	MCS11								
	4K-QAM	-	MCS12								
	4K-QAM	-	MCS13								

5.2.3 6GHz 802.11ax/be

Standard	Modulation	MCS Index	Max Tx Power (dBm)					Rx Sensitivity (dBm)				
			20 MHz	40 MHz	80 MHz	160 MHz	320 MHz	20 MHz	40 MHz	80 MHz	160 MHz	320 MHz
802.11ax/be (SU)	BPSK	MCS0										
	QPSK	MCS1										
	QPSK	MCS2										
	16-QAM	MCS3										
	16-QAM	MCS4										
	64-QAM	MCS5										
	64-QAM	MCS6										
	64-QAM	MCS7										
	256-QAM	MCS8										

	256-QAM	MCS9										
	1K-QAM	MCS10										
	1K-QAM	MCS11										
	4K-QAM	MCS12										
	4K-QAM	MCS13										

5.2.4 Bluetooth

Standard	Topology	PHY	Modulation	Data Rate	Continuous Tx (mW)	Continuous Rx (mW)
BT Classic	P2P	BR	GFSK	1Mbps		
		EDR	π/4 DQPSK	2Mbps		
		EDR	8DPSK	3Mbps		
BLE	P2P Broadcast Mesh	LE 2M	GFSK	2Mbps		
		LE 1M	GFSK	1Mbps		
		LE Coded (S=2)	GFSK	500Kbps		
		LE Coded (S=8)	GFSK	125Kbps		

6 Mechanical Specification

MQC2072 M.2 Soldered-down Type 1216 module mechanical information is covered in this session with dimension and PCB landing pattern.

6.1 M.2 Soldered-down Type 1216 Module Dimension

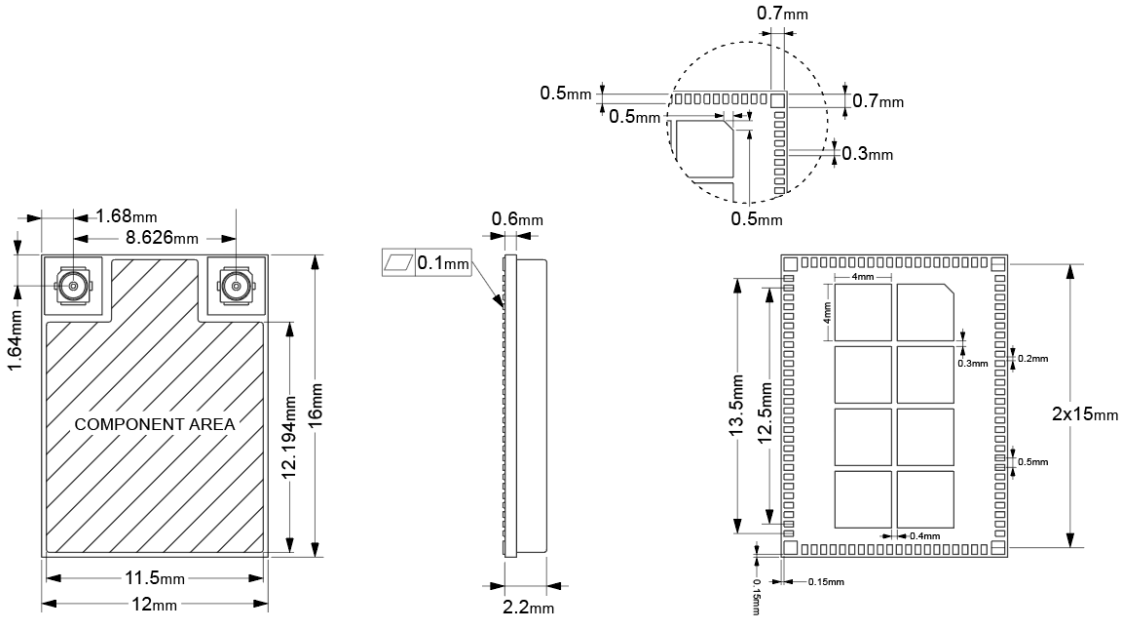


Figure 4: MQC2072 M.2 Soldered-down Type 1216 Module Dimension

6.2 M.2 Soldered-down Type 1216 Module PCB Landing Pattern

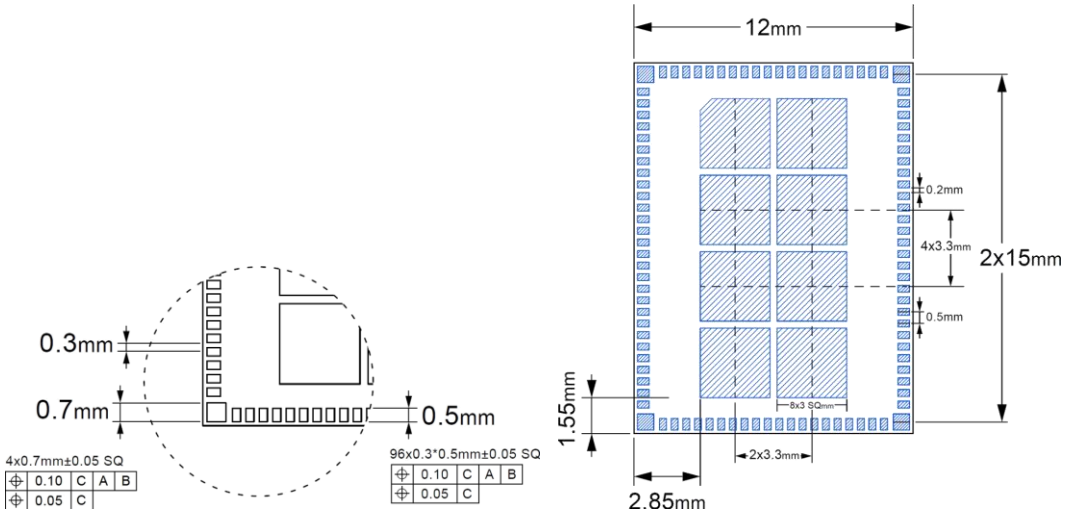


Figure 5: MQC2072 M.2 Soldered-down Type 1216 Module PCB Landing Pattern

7 M.2 Key E 2230 Carrier Board

To meet plug-in deployment requirement, MQC2072 M.2 Soldered-down Type 1216 module comes with M.2 Key E 2230 carrier board to convert M.2 Soldered-down Type 1216 to M.2 Key E 2230.

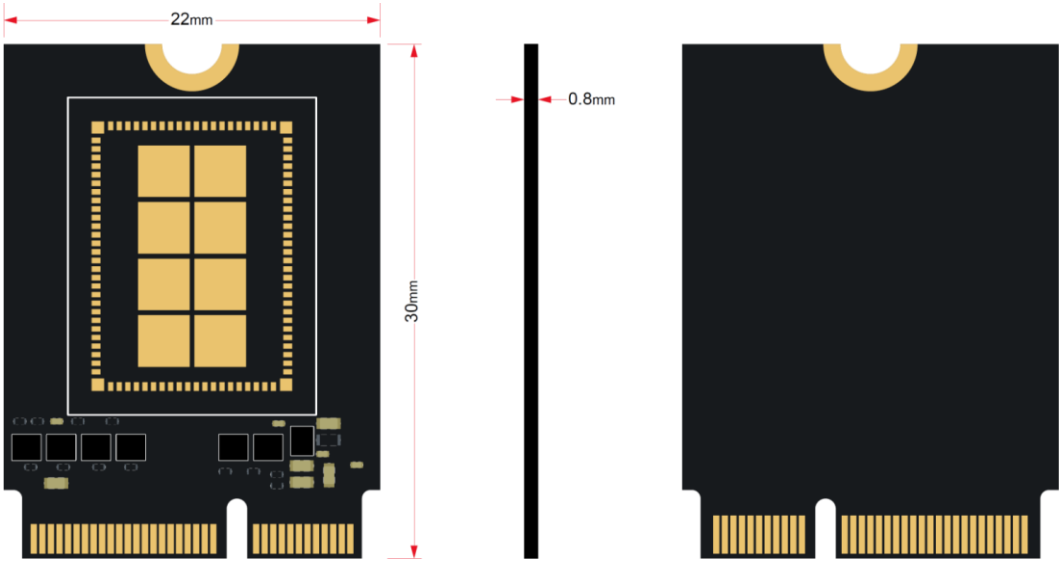


Figure 6: M.2 Soldered-down Type 1216 to M.2 Key E 2230 Carrier Board

M.2 Key E 2230 carrier board with MQC2072 M.2 Soldered-down Type 1216 module populated is shown below:

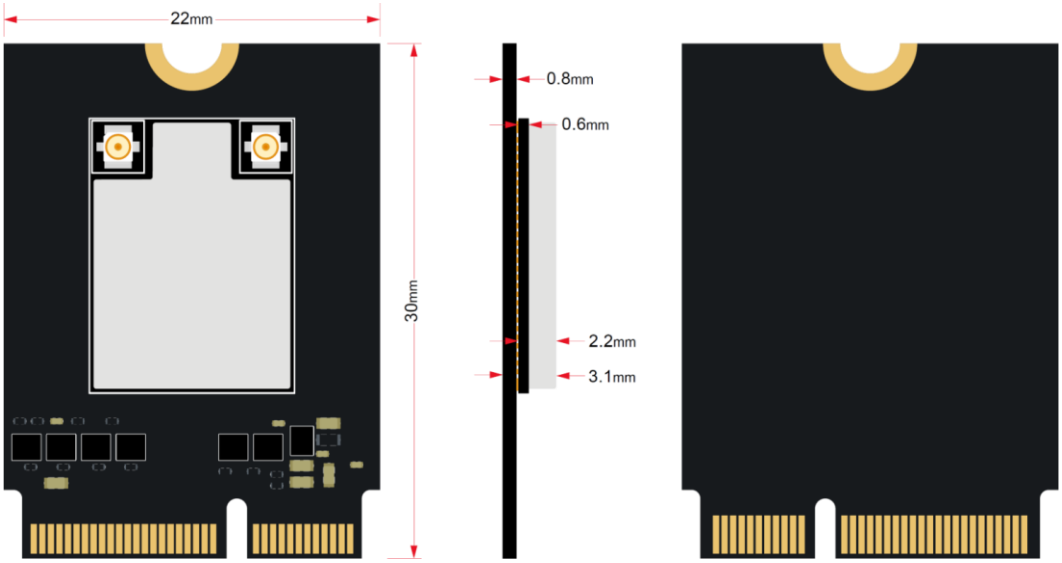


Figure 7: M.2 Key E 2230 Carrier Board with M.2 Soldered-down Type 1216 module

7.1 M.2 Key E 2230 Carrier Board Block Diagram

M.2 Key E 2230 carrier board Block diagram is listed below:

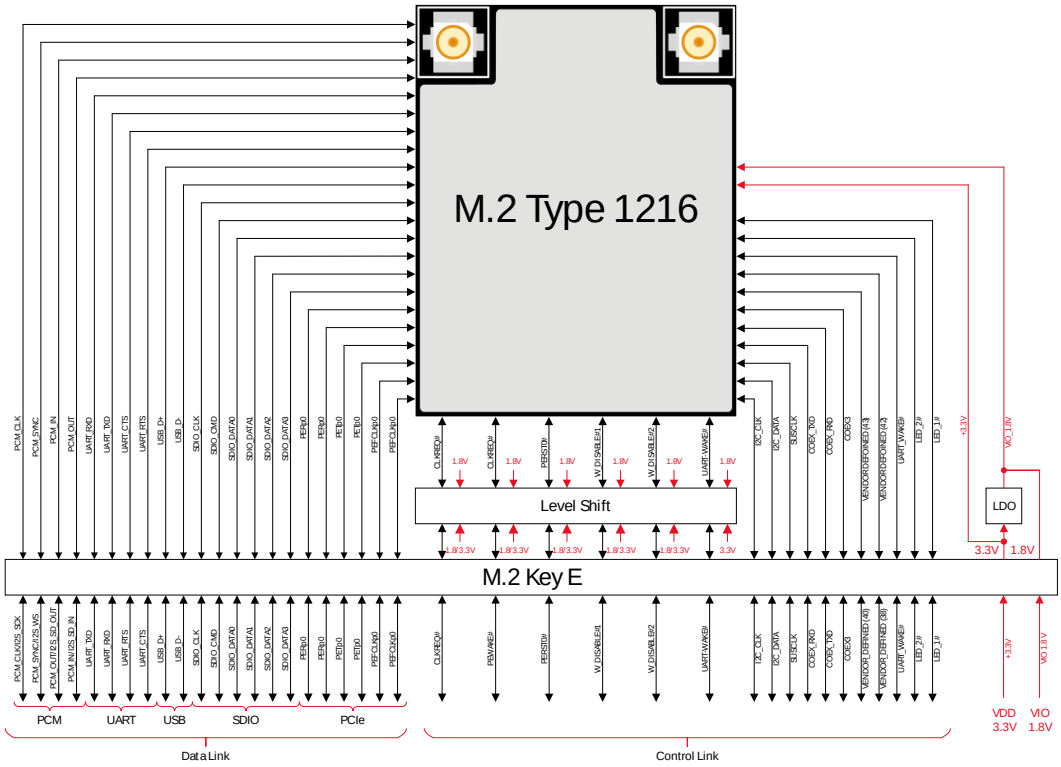


Figure 7: M.2 Key E 2230 Carrier Board Block Diagram

7.2 M.2 Key E 2230 Carrier Board Dimension

M.2 Key E 2230 carrier board dimension is listed below:

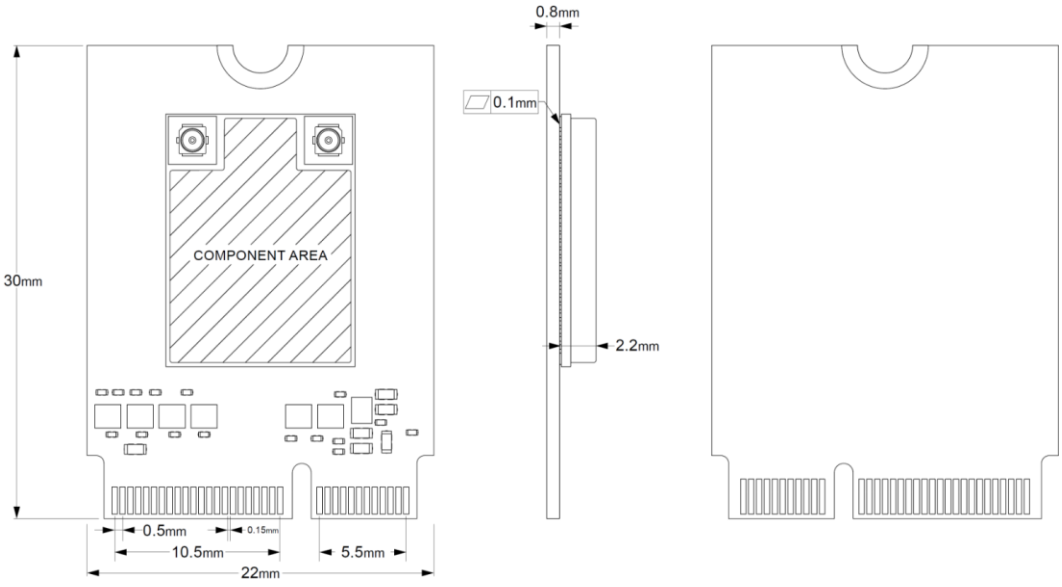


Figure 8: M.2 Key E 2230 Carrier Board Dimension

7.3 M.2 Key E 2230 Carrier Board Pin Map (WoS)

M.2 Key E 2230 carrier board pin map (front view) is listed below:

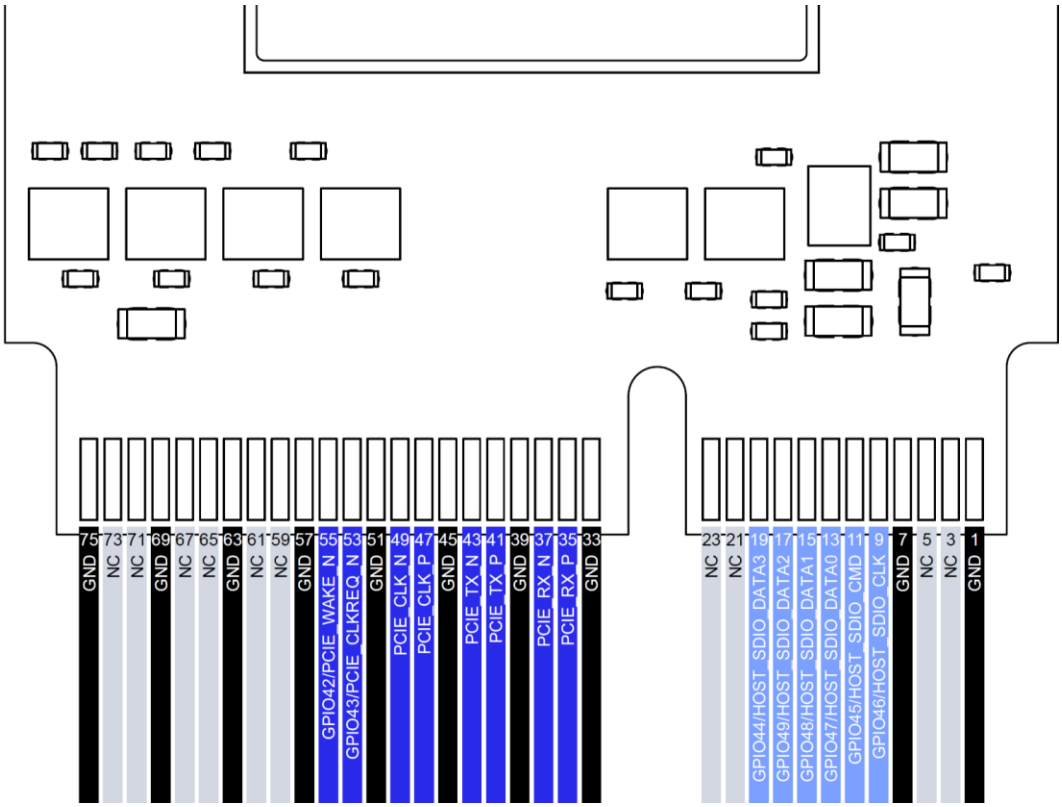


Figure 10: M.2 Key E 2230 Carrier Board Pin Map (Front View)

MQC2072 M.2 Soldered-down Type 1216 module (WoS) mapping into M.2 Key E 2230 carrier board (front view) is listed below:

Pin	M.2 Key E Type 2230 Pin Name	M.2 Soldered-down Type 1216 Pin Name	Pin
1	GND	GND	
3	USB_D+		
5	USB_D-		
7	GND	GND	
9	SDIO_CLK/SYSCLK (I)(0/1.8V)	GPIO46/HOST_SDIO_CLK	52
11	SDIO_CMD (I/O)(0/1.8V)	GPIO45/HOST_SDIO_CMD	51
13	SDIO_DATA0 (I/O)(0/1.8V)	GPIO47/HOST_SDIO_DATA0	50
15	SDIO_DATA1 (I/O)(0/1.8V)	GPIO47/HOST_SDIO_DATA1	49
17	SDIO_DATA2 (I/O)(0/1.8V)	GPIO47/HOST_SDIO_DATA2	48
19	SDIO_DATA3 (I/O)(0/1.8V)	GPIO47/HOST_SDIO_DATA3	47
21	SDIO_WAKE# (O)(0/1.8V)		
23	SDIO_RESET#/TX_BLANKING (I)(0/1.8V)		

25	KEY E		
27	KEY E		
29	KEY E		
31	KEY E		
33	GND	GND	
35	PERp0	PCIE20_RXP	37
37	PERn0	PCIE20_RXM	36
39	GND	GND	
41	PETp0	PCIE20_TXP	40
43	PETn0	PCIE20_TXM	39
45	GND	GND	
47	PEFCLKp0	PCIE20_REFCLK_EPCLK_P	34
49	REFCLKn0	PCIE20_REFCLK_EPCLK_N	33
51	GND	GND	
53	CLKREQ0# (I/O)(0/1.8V/3.3V)	GPIO43/PCIE_CLKREQ_N_GPIO	30
55	PEWAKE0# (I/O)(0/1.8V/3.3V)	GPIO42/PCIE_WAKE_N_GPIO	29
57	GND		
59	RESERVED/PERp1		
61	RESERVED/PERn1		
63	GND	GND	
65	RESERVED/PETp1		
67	RESERVED/PETn1		
69	GND	GND	
71	RESERVED/REFCLKp1		
73	RESERVED/REFCLKn1		
75	GND	GND	

M.2 Key E 2230 carrier board pin map (back view) is listed below:

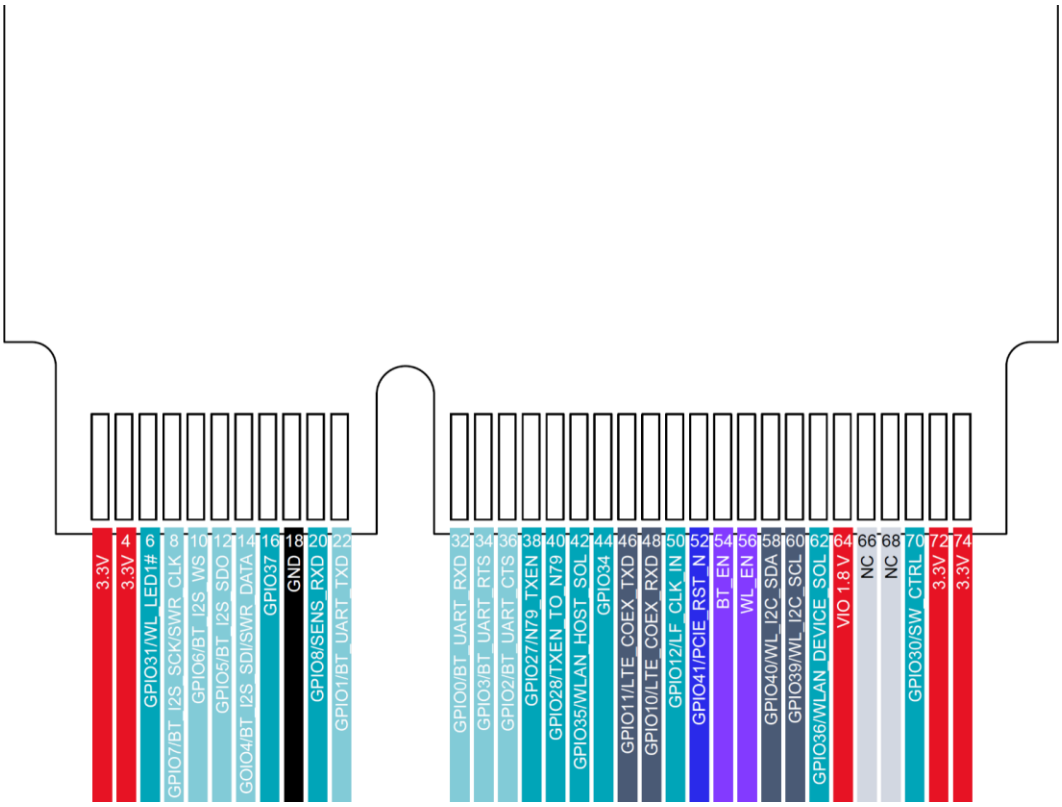


Figure 11: M.2 Key E 2230 Carrier Board Pin Map (Back View)

MQC2072 M.2 Soldered-down Type 1216 module (WoS) mapping into M.2 Key E 2230 carrier board (back view) is listed below:

Pin	M.2 Key E Type 2230 Pin Name	M.2 Soldered-down Type 1216 Pin Name	Pin
2	+3.3V	+3.3V	72
4	+3.3V	+3.3V	73
6	LED_1# (O)(OD)	GPIO31/WL_GPIO0	65
8	PCM_CLK/I2S_SCK (I/O)(0/1.8V)	GPIO7/BT_I2S_0_SCK (SWR_CLK)	61
10	PCM_SYNC/I2S_WS (I/O)(0/1.8V)	GPIO6/BT_I2S_0_WS	58
12	PCM_OUT/I2S_SD_OUT (O)(0/1.8V)	GPIO5/BT_I2S_0_SDO	60
14	PCM_IN/I2S_SD_IN (I)(0/1.8V)	GPIO4/BT_I2S_0_SDI (SWR_DATA)	59
16	LED_2# (O)(OD)	GPIO37/WL_GPIO6	57
18	VIO_CFG (O)	GND	
20	UART_WAKE# (O)(0/3.3V)	GPIO8/SENS_RXD_GPIO	56
22	UART_TXD (O)(0/1.8V)	GPIO1/BT_UART_TXD	55
24	KEY E		
26	KEY E		

28	KEY E		
30	KEY E		
32	UART_RXD (I)(0/1.8V)	GPIO0/BT_UART_RXD	56
34	UART_RTS (O)(0/1.8V)	GPIO3/BT_UART_RTS	57
36	UART_CTS (I)(0/1.8V)	GPIO2/BT_UART_CTS	54
38	VENDOR DEFINED	GPIO27/WL_XFEM_CTRL_N79_TXEN (optional)	42
40	VENDOR DEFINED	GPIO28/WL_XFEM_CTRL_WL_TXEN_TO_N79 (optional)	43
42	VENDOR DEFINED	GPIO35/WL_GPIO4 (SOL_HST) (optional)	16
44	COEX3 (I/O)(0/1.8V)	GPIO34/WL_GPIO3	13
46	COEX_TXD (O)(0/1.8V)	GPIO11/COEX_TXD_GPIO	12
48	COEX_RXD (I)(0/1.8V)	GPIO10/COEX_RXD_GPIO	11
50	SUSCLK (I)(0/1.8V/3.3V)	GPIO12/LF_CLK_IN	27
52	PERST0# (I)(0/1.8V/3.3V)	GPIO41/PCIE_RST_N_GPIO	31
54	W_DISABLE2# (I)(0/1.8V/3.3V)	BT_EN	63
56	W_DISABLE1# (I)(0/1.8V/3.3V)	WL_EN	28
58	I2C_DATA (I/O)(0/1.8 V)	GPIO40/WL_I2C_SDA	10
60	I2C_CLK (I)(0/1.8 V)	GPIO39/WL_I2C_SCL	9
62	ALERT# (O)(0/1.8 V)	GPIO36/WL_GPIO5 (SOL_DEV)	7
64	VIO 1.8 V	VIO_1V8	66
66	UIM_SWP/PERST1#		
68	UIM_POWER_SNK/CLKREQ1#		
70	UIM_POWER_SRC/GPIO_1/PEWAKE1#	GPIO30/SW_CTRL (optional)	3
72	+3.3V	+3.3V	5
74	+3.3V	+3.3V	4

7.4 M.2 Key E 2230 Carrier Board Pin Map (x86)

M.2 Key E 2230 carrier board pin map (front view) is listed below:

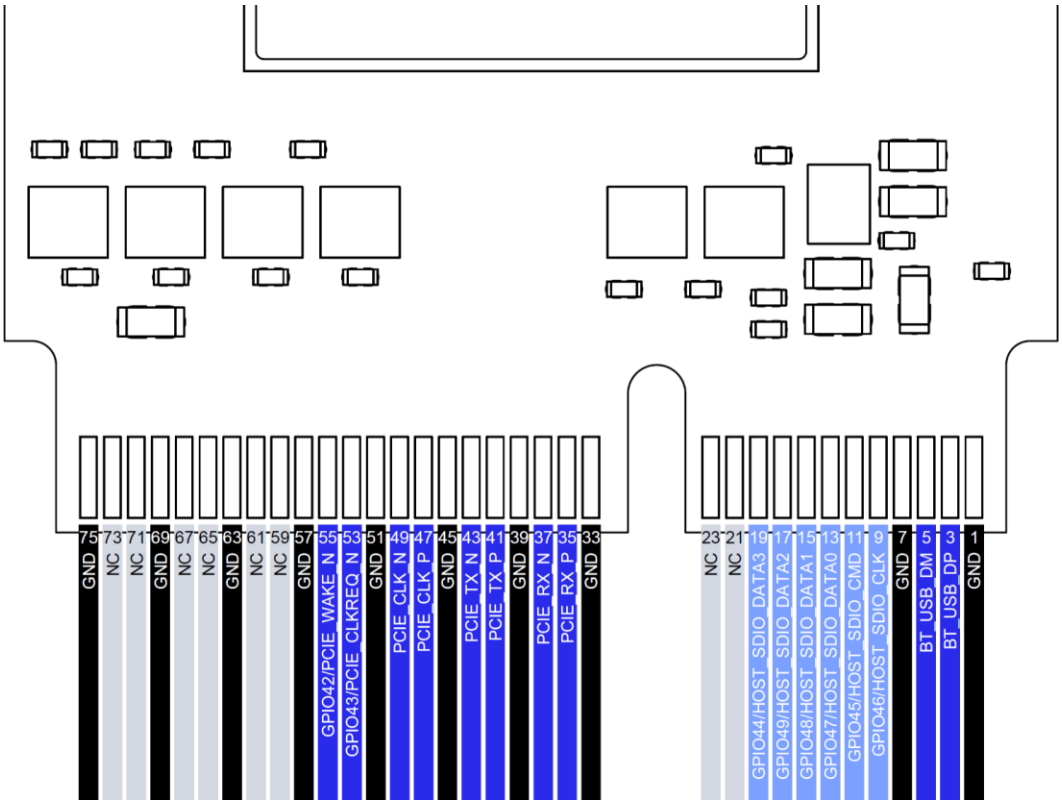


Figure 10: M.2 Key E 2230 Carrier Board Pin Map (Front View)

MQC2072 M.2 Soldered-down Type 1216 module (x86) mapping into M.2 Key E 2230 carrier board (front view) is listed below:

Pin	M.2 Key E Type 2230 Pin Name	M.2 Soldered-down Type 1216 Pin Name	Pin
1	GND	GND	
3	USB_D+	BT_USB_DP	70
5	USB_D-	BT_USB_DM	69
7	GND	GND	
9	SDIO_CLK/SYSCLK (I)(0/1.8V)	GPIO46/HOST_SDIO_CLK	52
11	SDIO_CMD (I/O)(0/1.8V)	GPIO45/HOST_SDIO_CMD	51
13	SDIO_DATA0 (I/O)(0/1.8V)	GPIO47/HOST_SDIO_DATA0	50
15	SDIO_DATA1 (I/O)(0/1.8V)	GPIO47/HOST_SDIO_DATA1	49
17	SDIO_DATA2 (I/O)(0/1.8V)	GPIO47/HOST_SDIO_DATA2	48
19	SDIO_DATA3 (I/O)(0/1.8V)	GPIO47/HOST_SDIO_DATA3	47
21	SDIO_WAKE# (O)(0/1.8V)		
23	SDIO_RESET#/TX_BLANKING (I)(0/1.8V)		
25	KEY E		

27	KEY E		
29	KEY E		
31	KEY E		
33	GND	GND	
35	PERp0	PCIE20_RXP	37
37	PERn0	PCIE20_RXM	36
39	GND	GND	
41	PETp0	PCIE20_TXP	40
43	PETn0	PCIE20_TXM	39
45	GND	GND	
47	PEFCLKp0	PCIE20_REFCLK_EPCLK_P	34
49	REFCLKn0	PCIE20_REFCLK_EPCLK_N	33
51	GND	GND	
53	CLKREQ0# (I/O)(0/1.8V/3.3V)	GPIO43/PCIE_CLKREQ_N_GPIO	30
55	PEWAKE0# (I/O)(0/1.8V/3.3V)	GPIO42/PCIE_WAKE_N_GPIO	29
57	GND		
59	RESERVED/PERp1		
61	RESERVED/PERn1		
63	GND	GND	
65	RESERVED/PETp1		
67	RESERVED/PETn1		
69	GND	GND	
71	RESERVED/REFCLKp1		
73	RESERVED/REFCLKn1		
75	GND	GND	

M.2 Key E 2230 carrier board pin map (back view) is listed below:

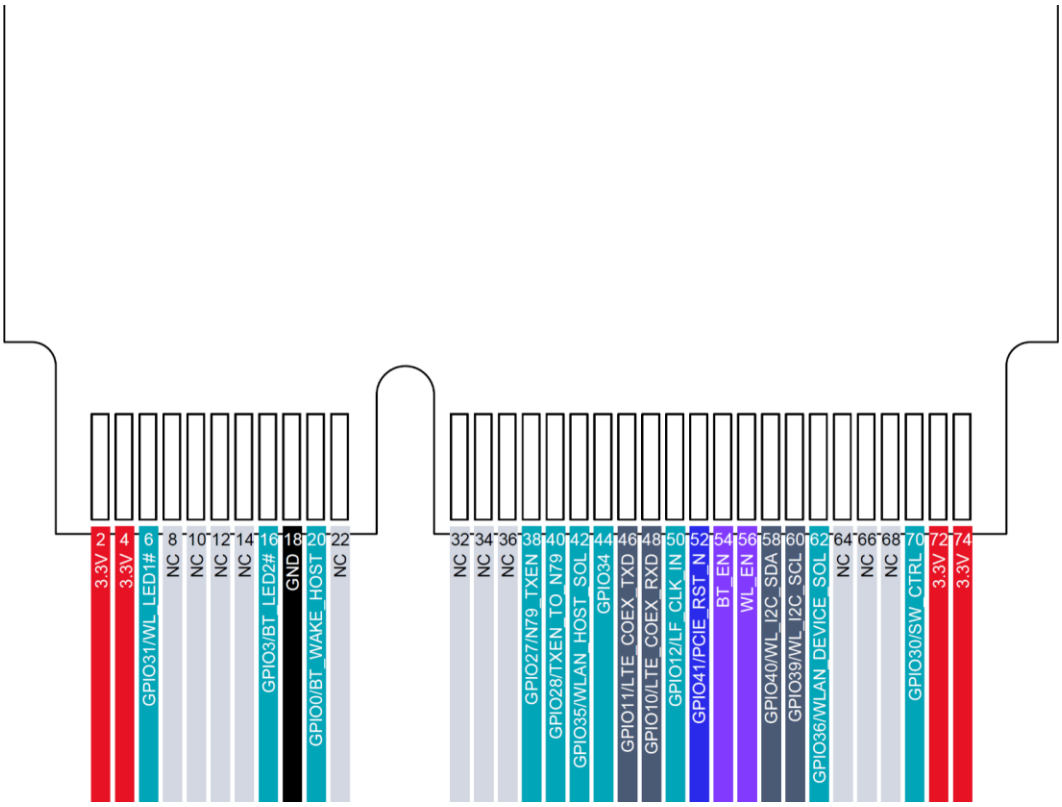


Figure 11: M.2 Key E 2230 Carrier Board Pin Map (Back View)

MQC2072 M.2 Soldered-down Type 1216 module (x86) mapping into M.2 Key E 2230 carrier board (back view) is listed below:

Pin	M.2 Key E Type 2230 Pin Name	M.2 Soldered-down Type 1216 Pin Name	Pin
2	+3.3V	+3.3V	73
4	+3.3V	+3.3V	72
6	LED_1# (O)(OD)	GPIO31/WL_GPIO0	65
8	PCM_CLK/I2S_SCK (I/O)(0/1.8V)		61
10	PCM_SYNC/I2S_WS (I/O)(0/1.8V)		58
12	PCM_OUT/I2S_SD_OUT (O)(0/1.8V)		60
14	PCM_IN/I2S_SD_IN (I)(0/1.8V)		59
16	LED_2# (O)(OD)	GPIO3/UART_RTS	57
18	VIO_CFG (O)	GND	
20	UART_WAKE# (O)(0/3.3V)	GPIO0/UART_RXD	56
22	UART_TXD (O)(0/1.8V)		
24	KEY E		
26	KEY E		

28	KEY E		
30	KEY E		
32	UART_RXD (I)(0/1.8V)		
34	UART_RTS (O)(0/1.8V)		
36	UART_CTS (I)(0/1.8V)		
38	VENDOR DEFINED	GPIO27/WL_XFEM_CTRL_N79_TXEN (optional)	42
40	VENDOR DEFINED	GPIO28/WL_XFEM_CTRL_WL_TXEN_TO_N79 (optional)	43
42	VENDOR DEFINED	GPIO35/WL_GPIO4 (SOL_HST) (optional)	16
44	COEX3 (I/O)(0/1.8V)	GPIO34/WL_GPIO3	13
46	COEX_TXD (O)(0/1.8V)	GPIO11/COEX_TXD_GPIO	12
48	COEX_RXD (I)(0/1.8V)	GPIO10/COEX_RXD_GPIO	11
50	SUSCLK (I)(0/1.8V/3.3V)	GPIO12/LF_CLK_IN	27
52	PERST0# (I)(0/1.8V/3.3V)	GPIO41/PCIE_RST_N_GPIO	31
54	W_DISABLE2# (I)(0/1.8V/3.3V)	BT_EN	63
56	W_DISABLE1# (I)(0/1.8V/3.3V)	WL_EN	28
58	I2C_DATA (I/O)(0/1.8 V)	GPIO40/WL_I2C_SDA	10
60	I2C_CLK (I)(0/1.8 V)	GPIO39/WL_I2C_SCL	9
62	ALERT# (O)(0/1.8 V)	GPIO36/WL_GPIO5 (SOL_DEV) (optional)	7
64	VIO 1.8 V		
66	UIM_SWP/PERST1#		
68	UIM_POWER_SNK/CLKREQ1#		
70	UIM_POWER_SRC/GPIO_1/PEWAKE1#	GPIO30/SW_CTRL (optional)	3
72	+3.3V	+3.3V	5
74	+3.3V	+3.3V	4

8 Deployment Model

MQC2072 M.2 Soldered-down Type 1216 module and M.2 Key E 2230 carrier board with MQC2072 M.2 Soldered-down Type 1216 module populated can be seamlessly attached to Qualcomm Dragonwing application processors as well as Qualcomm 5G/LTE modem, supporting both SoftAP and STA modes simultaneously via Dual Band Simultaneous (DBS).

8.1 Qualcomm Dragonwing Application Processor Attach

MQC2072 M.2 Soldered-down Type 1216 module and M.2 Key E 2230 carrier board with MQC2072 M.2 Soldered-down Type 1216 module populated can be attached to Qualcomm Dragonwing application processors as shown below:

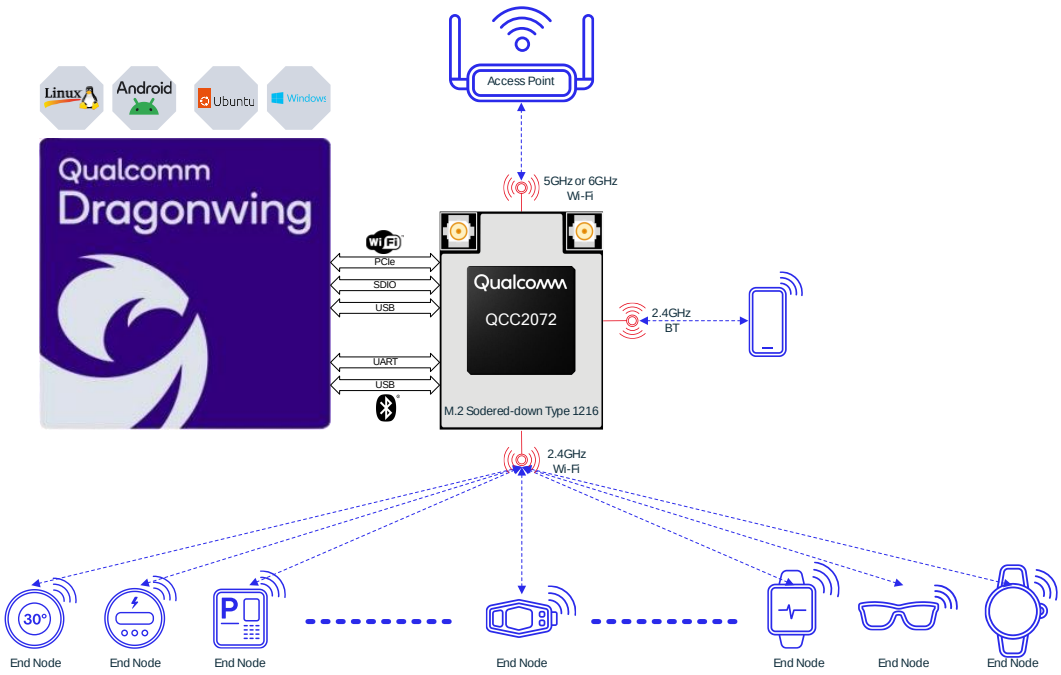


Figure 8: M.2 Soldered-down Type 1216 Module Dragonwing Attach

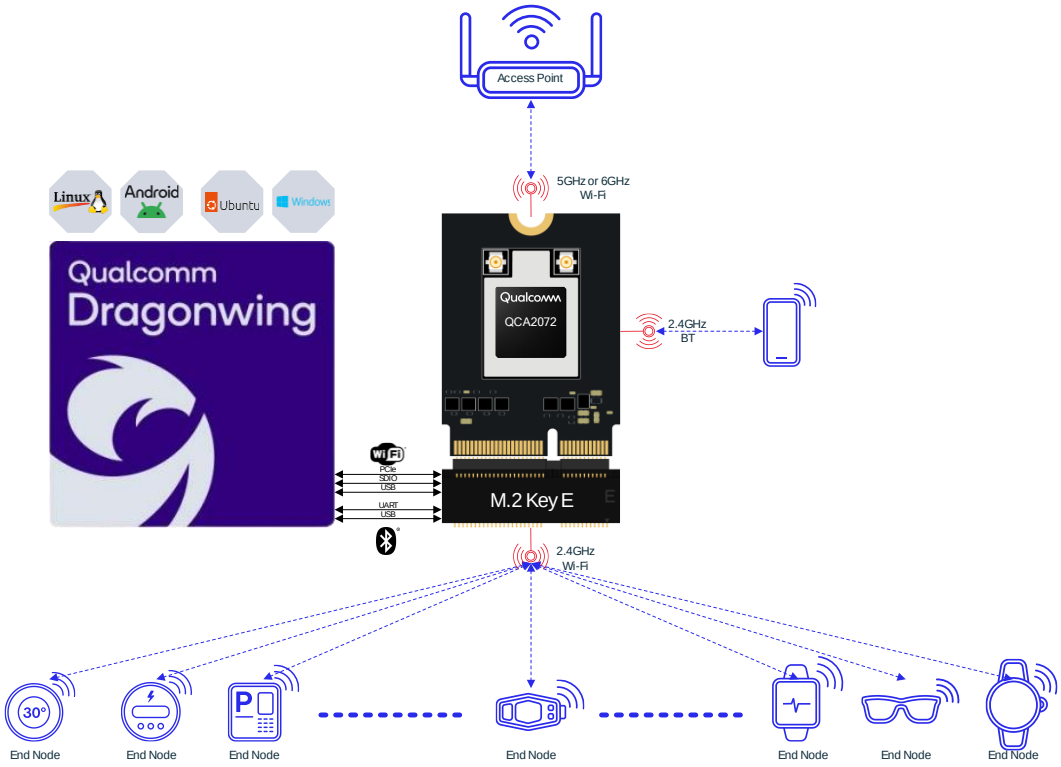


Figure 8: M.2 Key E 2230 Module Dragonwing Attach

8.2 Qualcomm 5G/LTE Modem Attach

MQC2072 M.2 Soldered-down Type 1216 module and M.2 Key E 2230 carrier board with MQC2072 M.2 Soldered-down Type 1216 module populated can be attached to Qualcomm 5G/LTE modem as shown below:

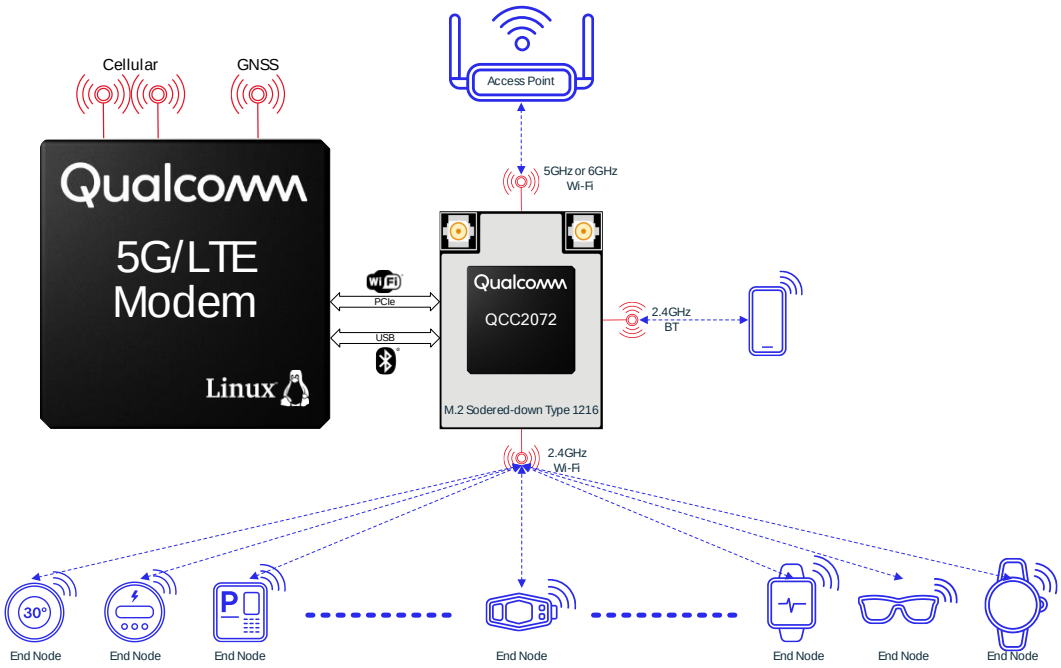


Figure 14: M.2 Soldered-down Type 1216 Module 5G/LTE Modem Attach

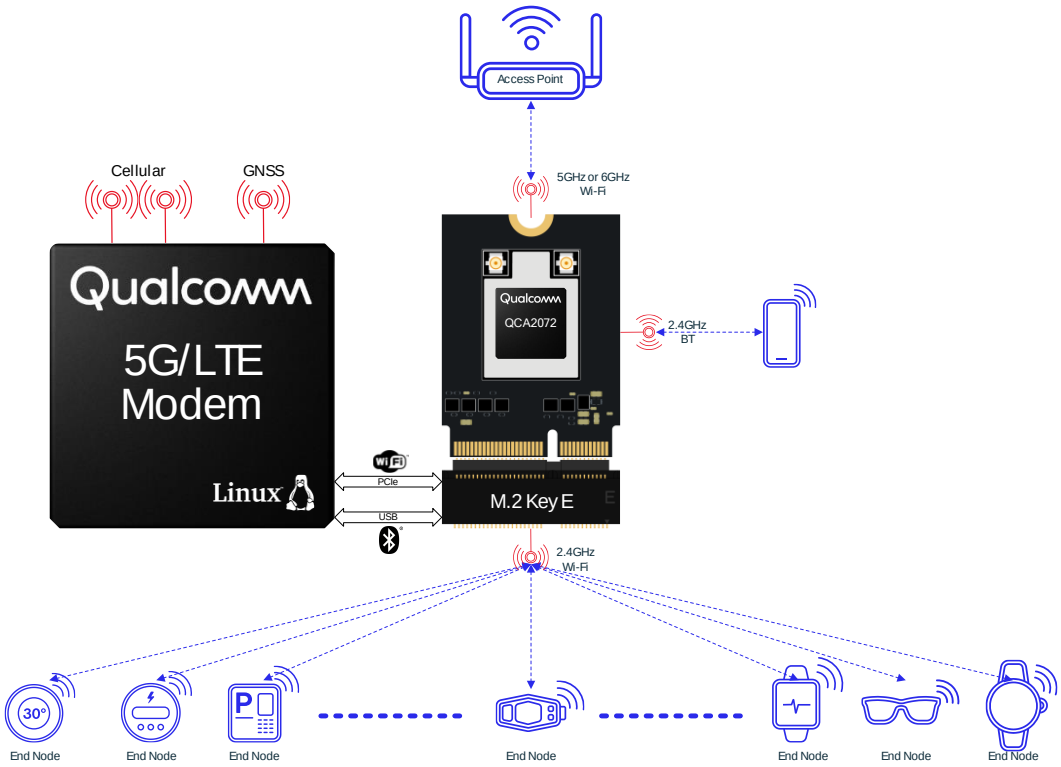


Figure 15: M.2 Key E 2230 Module 5G/LTE Modem Attach

9 Manufacturing Recommendation

9.1 Power Layout Guideline

MQC2072 M.2 Soldered-down Type 1216 module and M.2 Key E 2230 carrier board with MQC2072 M.2 Soldered-down Type 1216 module are powered by DC 3.3V and 1.8V. Power pin connection capacitor is as close as possible to chip and pin. Decoupling the power supply from the chip using a capacitor. Use capacitors to prevent noise from coupling back to the power plane.

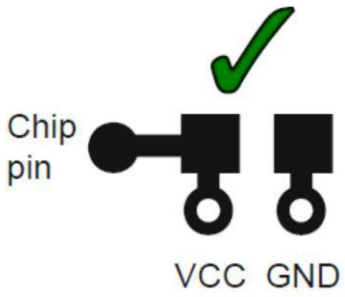


Figure 9: Power Layout Guideline

9.2 Soldering Recommendations

MQC2072 M.2 Soldered-down Type 1216 module can be SMT on the board following the temperature curve graph:

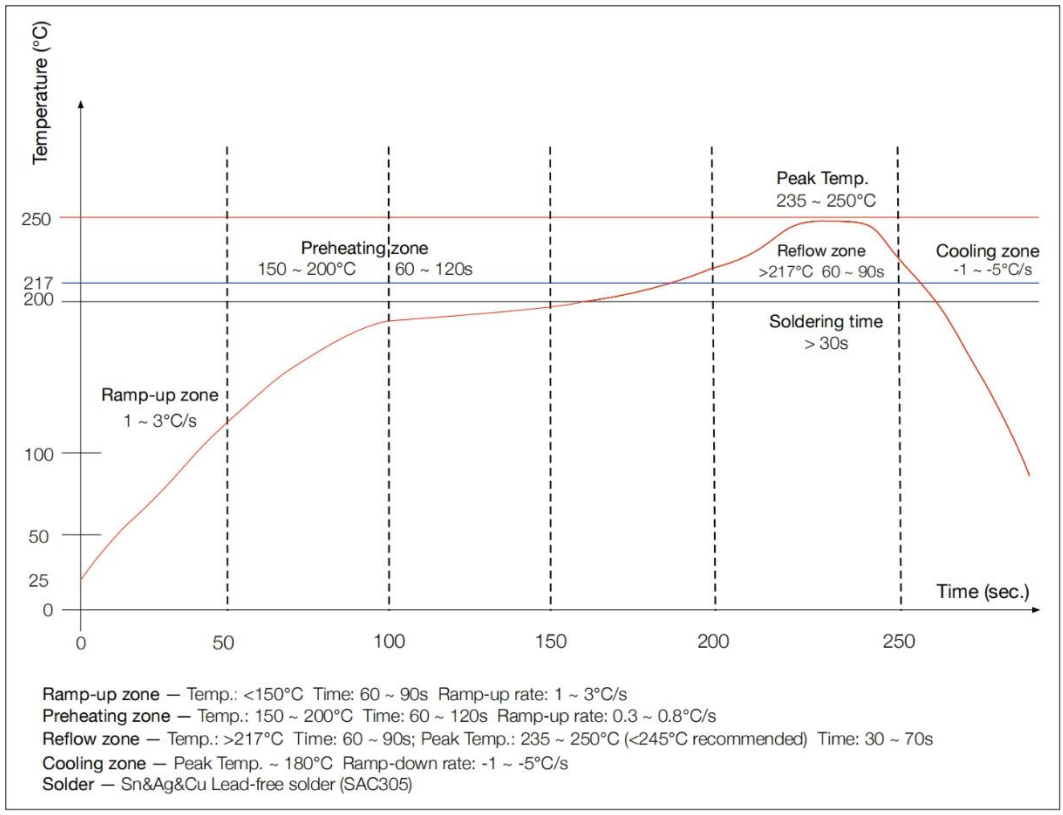


Figure 10: Soldering Guideline

10 Packaging

MQC2072 M.2 Soldered-down Type 1216 module and M.2 Key E 2230 carrier board with MQC2072 M.2 Soldered-down Type 1216 module are packaged on reels loaded with 1000 modules. Each reel is placed in an antistatic bag with a desiccant pack and a humidity card and placed in an 36 x 25 x 12 cm box. Anti-static warnings and labels adhere to the outside of the bag.

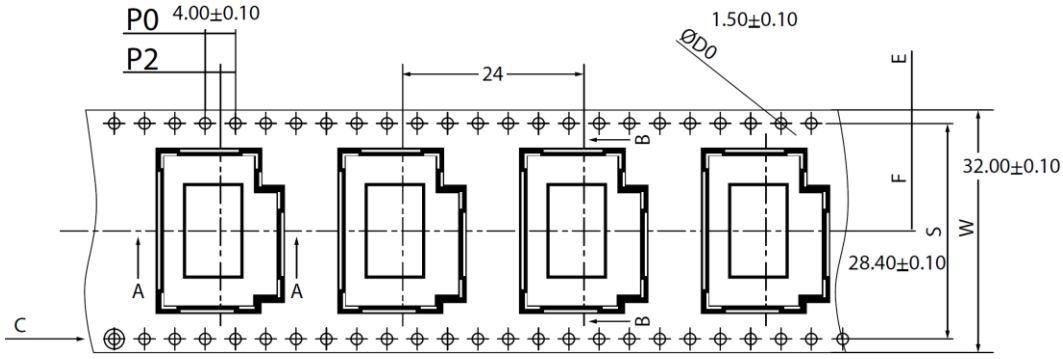


Figure 11: Module Packaging

Warning

The MeshConnect Modules contain highly sensitive electronic circuitry. Handling without proper ESD protection may destroy or damage the module permanently.

Warning

The MeshConnect Modules are moisture-sensitive devices. Appropriate handling instructions and precautions are summarized in J-STD-033. Read carefully to prevent permanent damage due to moisture intake.

Moisture Sensitivity Level (MSL)

MQC2072 M.2 Soldered-down Type 1216 module and M.2 Key E 2230 carrier board with MQC2072 M.2 Soldered-down Type 1216 module are qualified to moisture sensitivity (MSL3) in accordance with JEDEC J-STD-020

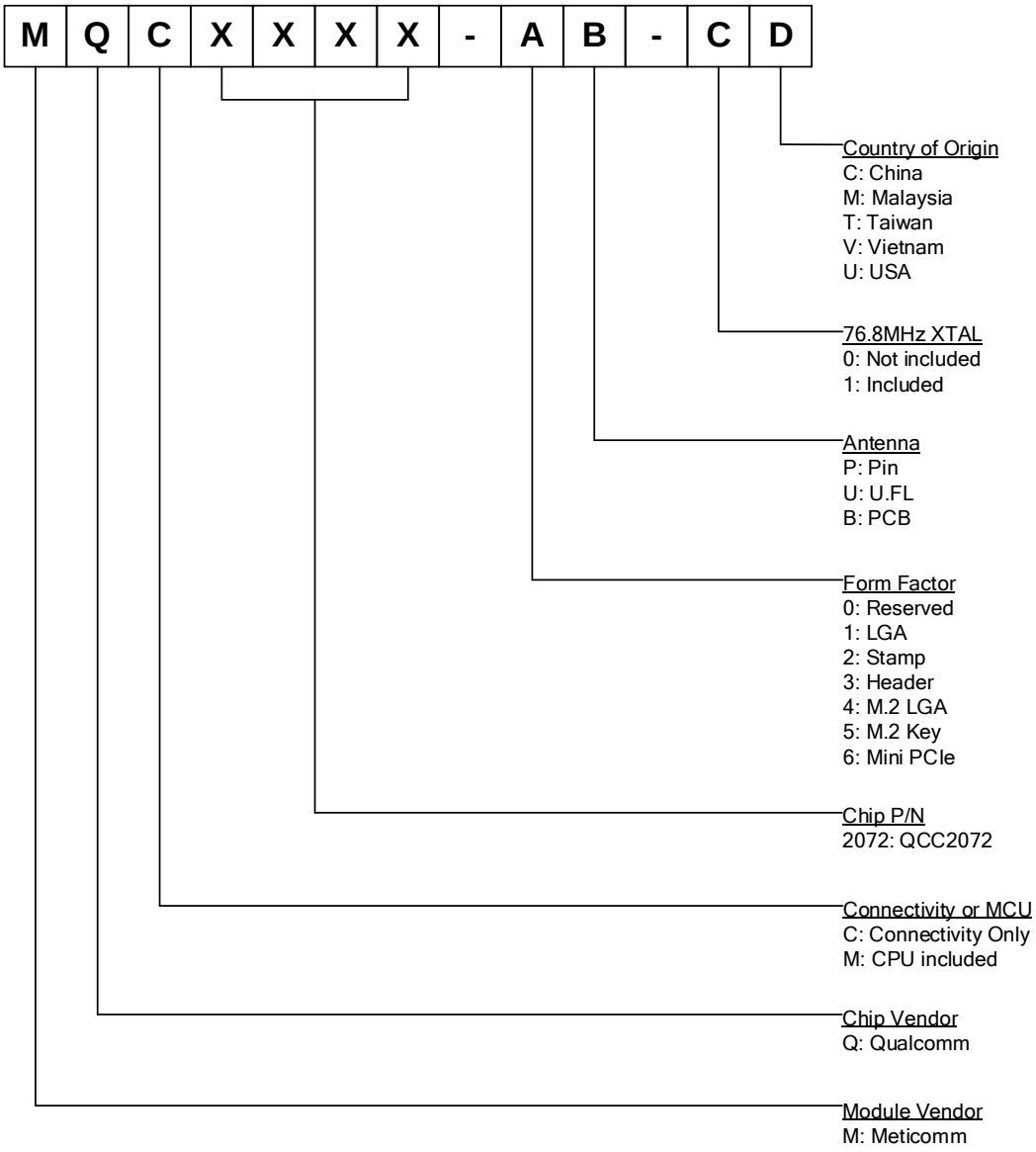
Storage

Storage/shelf life in sealed bags is 12 months at <40°C and <90% relative humidity. 12.2 Packing Label

11 Regulatory Compliance

Country	Certification	Registration Number
USA	FCC 15C	Coming soon
Europe Union	CE	Coming soon
Canada	IC	Coming soon
United Kingdom	UKCA	Coming soon
Japan	MIC	Coming soon

12 Order Information



Revision History

Revision	Description	Date
1.0	Initial draft	November 11, 2025

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