



WPQ530MR

Wi-Fi 7 (802.11be) Embedded Board

Hardware User Guide

Wi-Fi 7 / 802.11be Tri-Band via M.2 Module	IPQ5322 Qualcomm Miami Series	M.2 E-Key + B-Key PCIe 3.0 + USB 3.0	2×2 MU-MIMO On-Board 2.4 GHz Radio
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1. Introduction

Thank you for choosing the Compex WPQ530MR. This document provides complete hardware integration guidance for engineers and system developers deploying the WPQ530MR in embedded, industrial, and networking platforms.

The WPQ530MR is a compact Wi-Fi 7 embedded board powered by Qualcomm's IPQ5322 'Miami' Series quad-core ARM Cortex-A53 processor. It features an on-board 2×2 2.4 GHz radio and supports concurrent tri-band Wi-Fi 7 and 5G cellular/LTE connectivity via M.2 expansion slots.

Key Highlights

- Qualcomm IPQ5322 'Miami' Quad-Core ARM Cortex-A53 @ 1.5 GHz SoC for high-throughput network processing.
- On-board 2×2 2.4 GHz MU-MIMO 802.11b/g/n/ax/be radio — up to 688 Mbps physical data rate; max 22 dBm per chain.
- 1× M.2 (NGFF) E-Key socket with PCIe 3.0 for additional Wi-Fi radio module (5 GHz / 6 GHz band expansion).
- 1× M.2 (NGFF) B-Key socket with USB 3.0 for 5G cellular/LTE modem module.
- Concurrent Tri-Band Wi-Fi 7 and 5G cellular/LTE support.
- 2× 2.5GbE RJ45 ports for high-speed LAN/WAN connectivity.
- Power over Ethernet (PoE): supports up to 802.3bt standard via the 2.5GbE port.
- Dual SIM card slots for cellular redundancy.
- 1 GB DDR4 RAM, 512 MB NAND Flash, 8 MB NOR Flash.
- OpenWrt 23.05 firmware with full SDK and QCA binary driver support.
- REACH and RoHS compliant for global deployment.

Intended Use

The WPQ530MR is an engineering-grade embedded board intended for OEM/ODM integration and product development. Typical target applications include:

- 802.11be MU-MIMO OFDMA Wi-Fi 7 access points with integrated 5G cellular backhaul.
- Internet of Things (IoT) gateways requiring concurrent wireless and cellular connectivity.
- HD streaming and gaming platforms requiring low-latency wireless.
- Industrial networking appliances and edge computing nodes.
- CPE (Customer Premises Equipment) and broadband gateway appliances.

2. Package Contents

Verify the following items are included in the package before proceeding with installation:

Checklist

- 1 × WPQ530MR embedded board

⚠ Note: External antennas, M.2 Wi-Fi radio modules, M.2 cellular modem modules, SIM cards, Ethernet cables, and power supply are not included unless specified in the order. Contact sales@compex.com.sg for accessory options.

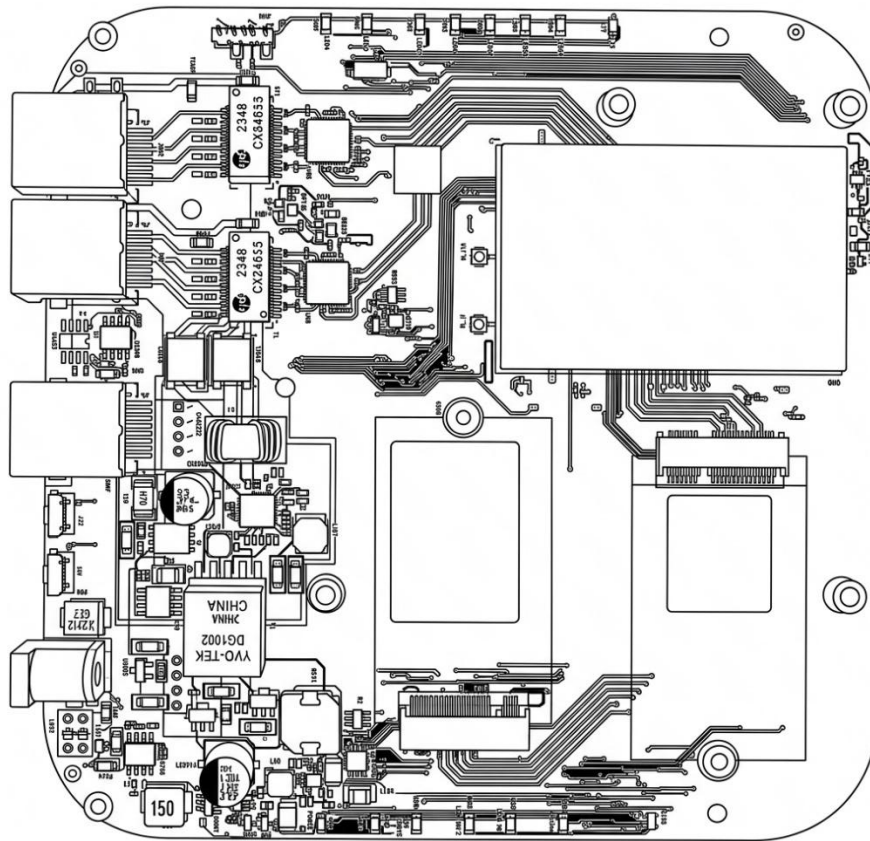
If any item is missing or damaged, contact Compex Technical Support (see Chapter 11) before proceeding.

3. Hardware Overview

The WPQ530MR is a compact embedded networking platform based on the Qualcomm IPQ5322 SoC. The board features an integrated 2.4 GHz radio with full tri-band Wi-Fi 7 capability available through M.2 module expansion, alongside 5G/LTE cellular support.

3.1 Board Layout

The WPQ530MR features the following major components and connectors:

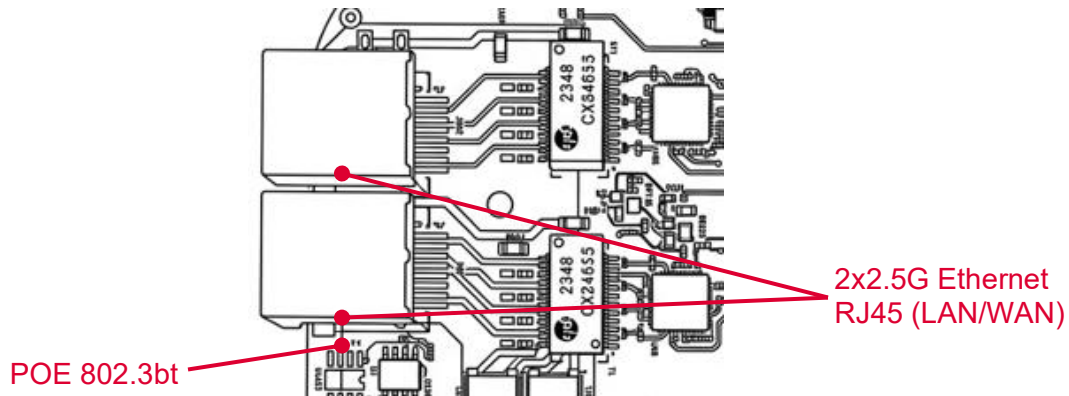


SoC	Qualcomm IPQ5322 'Miami' Series, Quad-Core ARM Cortex-A53 @ 1.5 GHz
Reference Design	Qualcomm AP.MI01.2
System Memory	1 GB DDR4, 16-bit interface (1× 16-bit)
Flash Storage	512 MB NAND Flash + 8 MB NOR Flash
On-Board Wi-Fi	2×2 2.4 GHz MU-MIMO 802.11b/g/n/ax/be, max 22 dBm per chain
Antenna Connectors	2× U.FL connectors for 2.4 GHz (CH0, CH1)
M.2 Expansion	1× M.2 (NGFF) E-Key socket with PCIe 3.0 + 1× M.2 (NGFF) B-Key socket with USB 3.0
Ethernet Ports	2× 2.5GbE RJ45 (LAN/WAN)
SIM Card Slots	2× SIM card slots (for 5G cellular/LTE modem)
Serial / Debug	1× UART 4-Pin Connector (TTL)
LED Indicators	11× LED (Green) + 3× LED (RGB) Indicators
Other I/O	1× Serial Input Interface, 1× Reset Switch, 1× WPS Button
Dimensions (W×H×D)	142 mm × 142 mm × 20.8 mm

3.2 Connector Descriptions

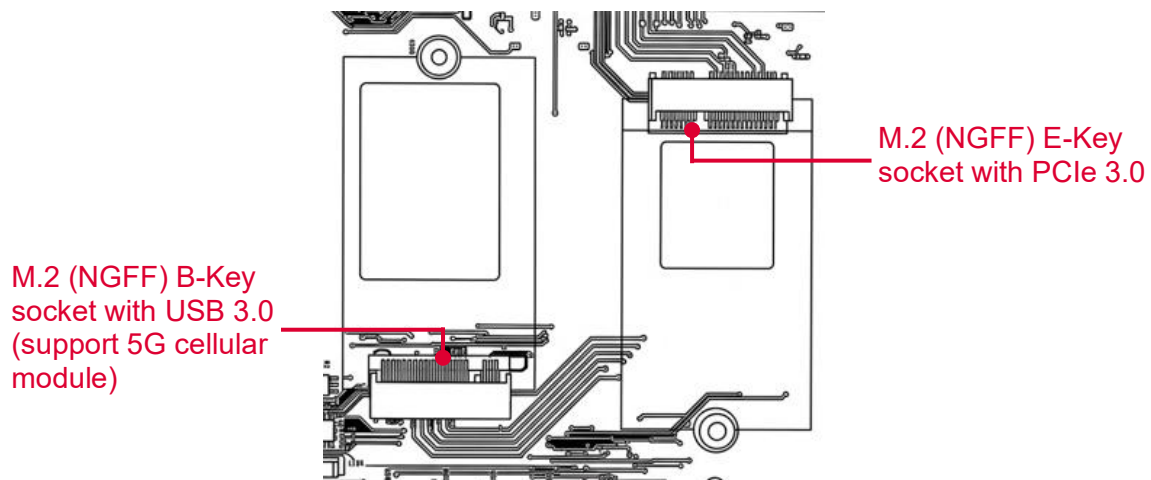
Ethernet Port(RJ45)

- 2× 2.5GbE RJ45 ports for high-speed LAN/WAN connectivity.
- One port supports PoE 802.3bt input (up to 90 W).
- All ports support auto-MDI/MDIX and auto-negotiation.



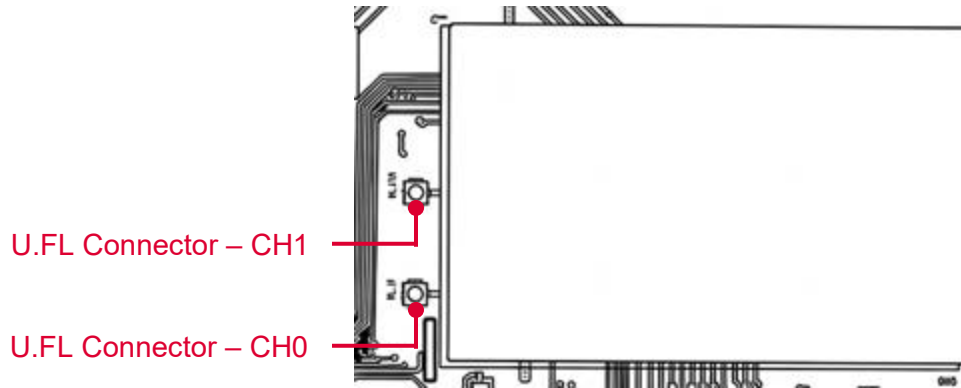
M.2 (NGFF) Expansion Slots

- 1× M.2 E-Key socket with PCIe 3.0 — for additional Wi-Fi radio module (5 GHz or 6 GHz band expansion for tri-band operation).
- 1× M.2 B-Key socket with USB 3.0 — for 5G cellular/LTE modem module.



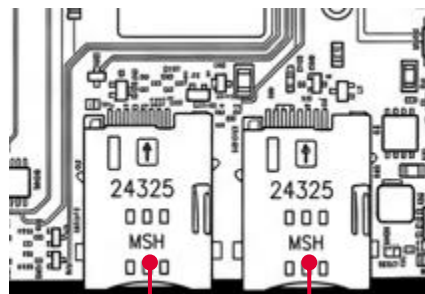
U.FL RF Connectors

- 2× U.FL connectors (CH0, CH1) for the on-board 2.4 GHz radio.
- Connect suitable external antennas rated for 2.4 GHz operation.
- Additional U.FL connectors provided on installed M.2 radio modules for 5 GHz / 6 GHz bands.



SIM Card Slots

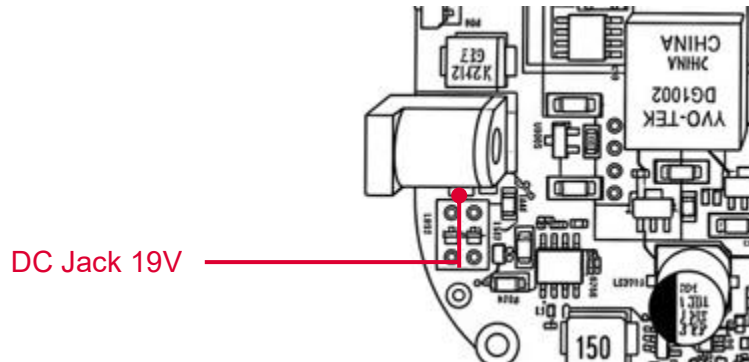
- 2× SIM card slots for dual-SIM cellular connectivity.
- Supports standard SIM cards for 5G/LTE modem modules installed in the M.2 B-Key slot.



2x SIM Card slot for 5G cellular module

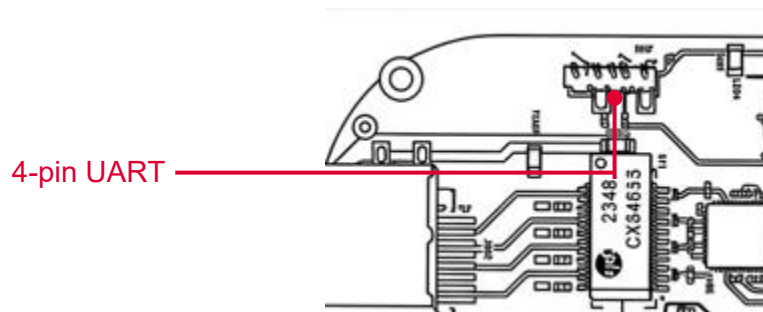
Power Connector

- 1× DC Jack Connector, 19V DC input.
- Maximum board-only power consumption: 11.3 W.
- PoE input supported via the 2.5GbE Ethernet port (802.3bt standard).



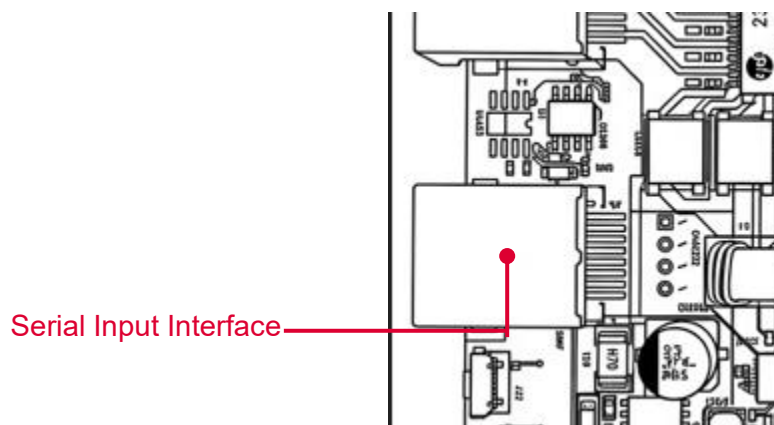
UART Debug Interface

- UART: 4-pin TTL header for serial console access. A Serial Converter (TTL to RS-232) is available for standard serial debugging.



Serial Input Interface

- 1× Serial Input Interface for integration with external serial devices or custom I/O peripherals.



Reset Button

- Press once to trigger a hardware reboot.

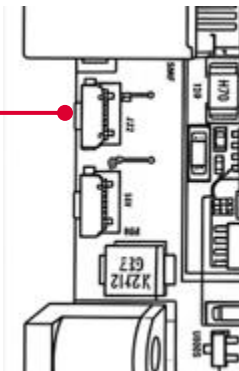
Reset Button



WPS Button

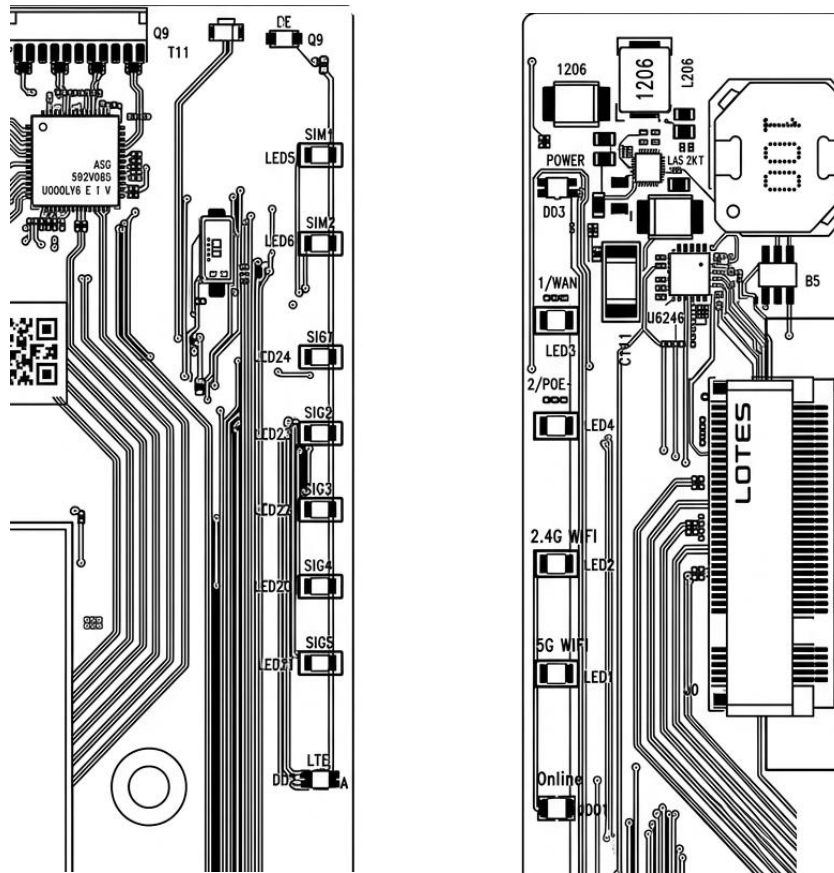
- Press once for WPS pairing function for EasyMesh.

WPS Button



3.3 LED Indicators

Color	Description
Power LED	Green when powered; transitions to white during boot; returns to green when fully booted and operational
LED1 (Green) — 5G WIFI	Indicates 5G Wi-Fi radio activity (via M.2 E-Key module)
LED2 (Green) — 2.4G WIFI	Indicates 2.4 GHz on-board Wi-Fi radio activity
LED3 (Green) — WAN	WAN port connection status
LED4 (Green) — PoE	Power over Ethernet (PoE) status indicator
LED5 (Green) — SIM1	SIM1 slot status indicator
LED6 (Green) — SIM2	SIM2 slot status indicator
LED20–LED24 (Green)	Cellular signal strength indicators: SIG1 (LED24) — level 1; SIG2 (LED23) — level 2; SIG3 (LED22) — level 3; SIG4 (LED20) — level 4; SIG5 (LED21) — level 5
DD2 (RGB) — LTE	LTE status indicator
DD1 (RGB) — Online	Device online status



3.4 Hardware Pinouts

GPIO Pin	Function	GPIO Pin	Function
GPIO_0	2G_PA_EN0	GPIO_27	NC
GPIO_1	2G_LNA_EN0	GPIO_28	NC
GPIO_2	NC	GPIO_29	SCL_3V3
GPIO_3	NC	GPIO_30	SDA_3V3
GPIO_4	2G_PA_EN1	GPIO_31	SIM_SELECT
GPIO_5	2G_LNA_EN1	GPIO_32	WDIS_PCIE1_5G
GPIO_6	NC	GPIO_33	USIM_CD
GPIO_7	NC	GPIO_34	MEC_GPIO34
GPIO_8	NAND_DATA3	GPIO_35	WPS/INT
GPIO_9	NAND_DATA2	GPIO_36	INT_1V8
GPIO_10	NAND_DATA1	GPIO_37	INT_1V8
GPIO_11	NAND_DATA0	GPIO_38	MANUAL_RST
GPIO_12	NAND_CS_N	GPIO_39	NAPA_INT
GPIO_13	NAND_CLK	GPIO_40	WSI_CLK_5>2
GPIO_14	SPI_CLK	GPIO_41	WSI_DAT_5>2
GPIO_15	SPI_MOSI	GPIO_42	WSI_CLK_2>5
GPIO_16	SPI_MISO	GPIO_43	PCIE0_CLK_REQ
GPIO_17	SPI_CS_N	GPIO_44	PCIE0_RSTN
GPIO_18	UART_RX	GPIO_45	PCIE0_WAKE
GPIO_19	UART_TX	GPIO_46	PCIE1_CLKREQ_N
GPIO_20	RST_OUT_N	GPIO_47	PCIE1_RST_N_5G
GPIO_21	core_voltage_control[0]	GPIO_48	PCIE1_WAKE_N_5G
GPIO_22	DTR_IN	GPIO_49	WD_OE
GPIO_23	core_voltage_control[1]	GPIO_50	WDI_GPIO50
GPIO_24	DC_IN	GPIO_51	NAPA_RST
GPIO_25	SM_SEL	GPIO_52	WSI_DAT_2>5
GPIO_26	RESET		

Serial Input Pin Assignment

Pin	Signal	Pin	Signal
1	RTS_OUT	6	TX_OUT
2	DCD_IN	7	DTR_OUT
3	RX_IN	8	CTS_IN
4	GND	9	GND
5	GND	10	GND

Ethernet Port Pin Assignment

Pin	Signal	Pin	Signal
1	NAPA2_PX_P_0	2	NAPA2_PX_N_0
2	NAPA2_PX_P_1	4	NAPA2_PX_P_2
3	NAPA2_PX_N_2	6	NAPA2_PX_N_1
4	NAPA2_PX_P_3	8	NAPA2_PX_N_3
5	GND	10	GND

UART Pin Assignment

Pin	Signal
1	VDD_3V3
2	UART_RX
3	UART_TX
4	GND

M.2 Slot Pin Assignment (B Key)

Top Side		Bottom Side	
1	NC	2	VDD_3V3
3	GND	4	VDD_3V3
5	GND	6	Card_Power_Off
7	USB_DP	8	3G_WAN_DISABLE
9	USB_DM	10	NC
11	GND		
Mechanical key B			
21	NC	20	NC
23	NC	22	NC
25	NC	24	NC
27	GND	26	GPS_DISABLE
29	USB0_SS_RXN	28	PLA_S2
31	USB0_SS_RXP	30	SIM_RST
33	GND	32	SIM_CLK
35	USB0_SS_TXN	34	SIM_I/O
37	USB0_SS_TXP	36	SIM_VCC
39	GND	38	NC
41	NC	40	SM2_CD
43	NC	42	SIM2_I/O
45	GND	44	SIM2_CLK
47	NC	46	SIM2_RST
49	NC	48	SIM2_VCC
51	GND	50	PCIE0_RSTn
53	PCIE_REFCLKN	52	PCIE0_CLK_REQ
55	PCIE_REFCLKP	54	PCIE_WAKE
57	GND	56	NC
59	NC	58	NC
61	NC	60	NC
63	NC	62	NC
65	NC	64	NC
67	RESET	66	SIM1_CD
69	NC	68	NC
71	GND	70	VDD_3V3
73	GND	72	VDD_3V3
75	NC	74	VDD_3V3
77	GND	76	GND
79	NC	78	NC
		80	GND

M.2 Slot Pin Assignment (E Key)

Top Side		Bottom Side	
1	GND	2	VDD_3V3
3	NC	4	VDD_3V3
5	NC	6	NC
7	GND	8	NC
9	NC	10	NC
11	NC	12	GND
13	NC	14	WSI_DAT_IN
15	NC	16	PCIE1_LED1
17	NC	18	GND
19	NC	20	WSI_CLK_IN
21	NC	22	GND
23	NC		
Mechanical key E			
33	GND	32	WSI_DAT_OUT
35	PCIE0_TX0_P	34	GND
37	PCIE0_TX0_N	36	WSI_CLK_OUT
39	GND	38	GND
41	PCIE0_RX0_P	40	GND
43	PCIE0_RX0_N	42	NC
45	GND	44	NC
47	REFCLK_P	46	NC
49	REFCLK_N	48	NC
51	GND	50	NC
53	CLKREQ_3V3	52	PERST_3V3
55	WAKE_3V3	54	NC
57	GND	56	WLAN_DISABLE
59	PCIE0_TX1_P	58	NC
61	PCIE0_TX1_N	60	NC
63	GND	62	NC
65	PCIE0_RX1_P	64	NC
67	PCIE0_RX1_N	66	NC
69	GND	68	NC
71	NC	70	GND
73	NC	72	VDD_3V3
75	GND	74	VDD_3V3

4. Radio Module Specifications

4.1 Wi-Fi Capability

The WPQ530MR board integrates an onboard 2×2 2.4 GHz MU-MIMO Wi-Fi 7 radio. Additional 5 GHz and 6 GHz Wi-Fi 7 capability for concurrent tri-band operation is provided by installing a compatible Wi-Fi radio module into the M.2 E-Key socket.

Wi-Fi Standard	IEEE 802.11be (Wi-Fi 7) via M.2 radio module — backward compatible with 802.11b/g/a/n/ac/ax
2.4 GHz Radio (On-Board)	2×2 MU-MIMO 802.11b/g/n/ax/be; up to 688 Mbps; max 22 dBm per chain
5 GHz / 6 GHz Radio	Via M.2 E-Key module (module-dependent)
Frequency Range (2.4 GHz)	2.412–2.472 GHz
MIMO Configuration	2×2 MU-MIMO onboard (2.4 GHz); up to 4×4 MU-MIMO via M.2 module (module-dependent)
OFDMA	DL/UL OFDMA supported (module-dependent)
Modulation	OFDMA: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM, 4096-QAM
5G Cellular	1× M.2 B-Key socket with PCIe 3.0
Antenna Connectors	2× U.FL connectors (CH0, CH1) for onboard 2.4 GHz radio
Security	WPA3-Personal, WPA3-Enterprise, OWE, WPA2 (backward compatible)
Operating Modes	AP, Station (Client)

4.2 Notes & Recommendations

- For 5 GHz and/or 6 GHz Wi-Fi 7 operation, install a compatible Qualcomm M.2 E-Key Wi-Fi 7 radio module into the E-Key socket.
- For 5G cellular/LTE connectivity, install a compatible M.2 B-Key cellular modem module and insert SIM cards into the onboard SIM card slots.
- For 6 GHz band operation, verify local regulatory approval in your target market before deployment.
- Ensure the M.2 module thermal requirements are met — attach heatsinks where required.
- Refer to Section 7 for installation steps.
- Wi-Fi performance for 5 GHz and 6 GHz bands depends on the installed M.2 E-Key radio module specifications. Compex recommends qualified Qualcomm Wi-Fi 7 radio modules for optimal compatibility and performance.

5. Mechanical Specifications

5.1 Board Dimensions

Dimensions (W × H × D)	142 mm × 142 mm × 20.8 mm
PCB Thickness	Standard (multi-layer PCB)

5.2 Environmental Ratings

Operating Temperature	-20°C to +70°C
Storage Temperature	-40°C to +90°C
Relative Humidity (Operating)	5% to 95%, non-condensing
Relative Humidity (Storage)	Max 90%, non-condensing

5.3 Mounting & Installation Notes

- The WPQ530MR board includes mounting holes at the corners for secure mechanical integration into an enclosure or chassis.
- Ensure adequate clearance around all connectors (RJ45, U.FL, M.2 slots, DC Jack, SIM slots) for cable and module routing.
- Provide sufficient airflow or thermal management for the SoC and installed M.2 modules.
- Do not stack objects directly on the board surface. Ensure the PCB is mounted horizontally or secured in a suitable bracket.
- Route Ethernet and antenna cables away from high-frequency signal traces on the PCB.
- All dimensions are in millimetres. Refer to the mechanical drawing in the datasheet for precise mounting hole locations.

6. Power Specifications

6.1 Power Requirements

Input Voltage	19 V DC (via DC Jack Connector)
PoE Input	802.3bt standard via 2.5GbE Ethernet port
Power Consumption (Board only, Max)	11.3 W

6.2 Power Delivery Protection

- Over-Voltage Protection: Protects against supply voltage surges above rated input.
- Over-Current Protection: Automatically limits current draw to safe levels.
- Reverse Polarity Protection: Guards against incorrect power connection polarity.
- Short Circuit Protection: Prevents PCB damage from momentary short circuits.
- ESD Protection: TVS diodes on all external-facing interface pins.

6.3 Notes & Recommendations

- Use a regulated 19 V DC power supply with adequate current rating for the board and installed M.2 modules.
- Ensure the supply can deliver stable voltage under peak load conditions.
- When using PoE, verify the PoE source meets 802.3bt requirements.
- Disconnect power before installing any M.2 modules, SIM cards, or external cables.

7. Installation & Integration

Follow these steps carefully to set up or install the WPQ530MR.

7.1 Pre-Installation Checklist

- Verify package contents (Section 2).
- Ensure a 19 V DC regulated power supply with sufficient current capacity is available, or a PoE 802.3bt-compliant source.
- Prepare M.2 Wi-Fi radio module and antenna pigtail cables if full tri-band Wi-Fi operation is required.
- Prepare M.2 5G/LTE modem module and SIM cards if cellular connectivity is required.
- Prepare Ethernet cables (Cat5e minimum recommended for 2.5GbE connections).
- Ground yourself with an ESD wrist strap before handling the board.

7.2 M.2 Module Installation

- Power off the board and disconnect all cables before installing M.2 modules.
- For the E-Key socket: insert the M.2 Wi-Fi radio module at a 30° angle, press down, and secure with the M.2 mounting screw. Connect antenna pigtail cables to the U.FL connectors on the M.2 module as per the module's documentation.
- For the B-Key socket: insert the M.2 5G cellular/LTE modem module at a 30° angle, press down, and secure with the M.2 mounting screw. Insert SIM cards into the onboard SIM card slots as required by the modem module.
- Attach heatsinks or thermal pads to the SoC and any M.2 modules if operating in high-ambient-temperature environments (>50°C).

7.3 Power Connection

- Connect a 19 V DC regulated power supply to the DC Jack connector on the board. Observe correct polarity.
- Alternatively, connect a PoE 802.3bt-compliant source via one of the 2.5GbE RJ45 ports.
- Apply power. The Power LED should illuminate within 3 seconds. Boot completes within approximately 60 seconds.

7.4 Ethernet Connection

- Connect Ethernet cables to the 2.5GbE RJ45 ports as required for your network topology.
- Once connected, the Ethernet interfaces will be available for network configuration.
- Configure IP addressing — static or DHCP — as required (see Section 8 for default settings).
- Verify link LEDs for each Ethernet port to confirm connectivity.

8. Configuration

The WPQ530MR runs an OpenWrt 23.05-based firmware stack and is configured via the web user interface (webUI) or SSH/serial console command line.

8.1 Default Settings

Default Management IP	192.168.1.1
Default Subnet	192.168.1.0/24
webUI Port	80 (HTTP) / 443 (HTTPS)
Default Username	admin
Default Password	password
SSH Access	Port 22 (enabled by default)
UART Baud Rate	115200 bps, 8N1
Default Mode	Router / Access Point
Firmware	OpenWrt 23.05

8.2 Accessing the Web Interface

- Connect a PC to one of the WPQ530MR's 2.5GbE Ethernet ports.
- Set the host PC's Ethernet adapter to a static IP address in the 192.168.1.x range (e.g. 192.168.1.10, subnet 255.255.255.0).
- Open a web browser and navigate to <http://192.168.1.1>.
- Log in with username admin and the password set during first-time setup. If no password has been set, the browser will prompt you to create one.
- The webUI will load, providing access to network and system configuration.

8.3 Wireless Configuration

Wireless settings can be configured via the webUI, or via SSH/serial console using UCI commands or by directly editing the configuration files.

- Via SSH: Connect using PuTTY or any SSH client, entering the IP address 192.168.1.1 and port 22.
- Via Serial Console: Connect via the Serial Interface at 115200 bps, 8N1 using a TTL serial converter.
- Wireless configuration files are located at /etc/config/wireless.
- Use UCI commands to modify wireless settings, for example:

```
uci set wireless.wifi0.disabled='0'
```

```
uci set wireless.wifi0.htmode='EHT40'
```

```
uci commit wireless
```

```
wifi
```

- Use iw dev to verify radio status after applying changes.
- For cellular modem configuration, refer to the modem module's documentation and use the appropriate AT commands via the serial interface.

9. Troubleshooting

Power LED not lit	Check 19 V DC power supply voltage and polarity. Verify DC jack connection is secure. Confirm supply provides sufficient current for board and installed modules.
Ethernet link not established	Verify Ethernet cable is fully seated in RJ45 port. Confirm link partner supports 2.5GbE. Try a different cable or port.
Cannot access webUI	Confirm host PC IP is set to 192.168.1.x/24. Disable any VPNs or firewall rules blocking 192.168.1.1. Verify Ethernet link LED is active.
2.4 GHz SSID not visible	Verify antennas are connected to both U.FL ports (CH0, CH1). Confirm the board has completed boot (~60 sec). Use <code>iw dev</code> or <code>uci show wireless</code> commands to verify that the wireless radio settings are correctly enabled.
5 GHz / 6 GHz SSID not visible	Check M.2 Wi-Fi module is correctly seated in the E-Key slot and antenna cables are attached. Confirm module compatibility with IPQ5322.
Poor Wi-Fi throughput	Verify antenna orientation and placement. Avoid metal obstructions near antennas. Ensure correct channel and bandwidth settings.
5G cellular/LTE modem module not detected	Confirm M.2 B-Key cellular modem module is correctly seated. Verify SIM cards are properly inserted. Confirm the modem module is supported by the installed firmware version.
No cellular data connection	Verify SIM card is active and provisioned for data. Check APN settings for your carrier. Confirm the modem module has adequate signal strength.
Module overheating	Attach heatsinks to SoC and M.2 modules. Ensure adequate airflow clearance. Verify ambient temperature is within operating range (-20°C to +70°C).
PoE device not powering	Confirm PoE source is 802.3bt compliant. Verify connection is to the PoE-enabled 2.5GbE port.
Factory Reset	To restore factory default settings: •Press and hold the RESET button for 10 seconds while the module is powered on. •Go to webUI > System > Reset Board. •Alternatively, via SSH or serial console, run: <pre>rm -rf /overlay/* reboot</pre> The board will reboot and restore all settings to factory defaults. This process takes approximately 60 seconds.

10. Safety Precautions

Electrical Safety

- Disconnect power before installing or removing M.2 modules or connecting cables.
- Never exceed the rated input voltage (19 V DC). Overvoltage will permanently damage the board.
- Verify power supply polarity before connecting. Reverse polarity damage is not covered under warranty.
- Keep the board away from conductive materials that may cause short circuits.

RF / Antenna Safety

- Never operate Wi-Fi radio modules without antennas or 50 Ω termination loads on all U.FL ports.
- Maintain a minimum safety distance of 20 cm from the antennas during normal operation.
- For 6 GHz operation, ensure regulatory approval and proper certification for your target market.
- Do not modify antennas or RF circuitry. Unauthorized modifications will void regulatory compliance.

Thermal Safety

- Operating the board above 70°C ambient temperature may cause thermal shutdown or permanent damage. Ensure adequate cooling is installed.
- Do not obstruct ventilation around the board.
- Allow the board to cool down before handling after extended operation.

ESD Precautions

- Handle the board only at a properly grounded ESD workstation.
- Wear an ESD wrist strap connected to ground at all times when handling the board.
- Store the board in its original ESD protective bag when not in use.
- Avoid touching PCB traces, IC pads, or connector pins directly.

11. Technical Support

Compex Systems Pte Ltd provides engineering and technical support for the WPQ530MR. For technical assistance, integration support, or to report a hardware issue, please contact:

Company	Compex Systems Pte Ltd
Headquarters	Singapore
Sales Enquiries	sales@compex.com.sg
Technical Support	https://compex.com.sg/support-downloads/
Website	https://compex.com.sg
Product Page (WPQ530MR)	https://compex.com.sg/shop/embedded-board/802-11be-embedded-board/wpq530mr/
Qualcomm Design Centre	Qualcomm Authorized Design Centre (ADC) since 2014

Before contacting support, please:

- Review this user guide and the Troubleshooting section (Section 9).
- Note the firmware version (visible in webUI: System > Software).
- Record the MAC address of the board (visible on PCB label or in webUI).
- Describe the issue with steps to reproduce, observed symptoms, and host platform details.

For sample requests, pre-production evaluations, or OEM/ODM partnership enquiries, contact the Compex sales team at sales@compex.com.sg.

12. Full Specifications

Model Number	WPQ530MR
SoC	Qualcomm IPQ5322 'Miami' Series, Quad-Core ARM Cortex-A53 @ 1.5 GHz
Reference Design	Qualcomm AP.MI01.2
System Memory	1 GB DDR4, 16-bit interface (1× 16-bit)
NAND Flash	512 MB
NOR Flash	8 MB
On-Board Wi-Fi	2×2 MU-MIMO 802.11b/g/n/ax/be (2.4 GHz), max 22 dBm per chain; up to 688 Mbps
Wi-Fi Standard	IEEE 802.11be (Wi-Fi 7) — backward compatible to 802.11a/b/g/n/ac/ax
Frequency Range	2.4 GHz: 2.412–2.472 GHz
Channel Widths	2.4 GHz: 20/40 MHz (EHT20 / EHT40)
Modulation	OFDMA: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM, 4096-QAM
Antenna Connectors	2× U.FL connectors (2.4 GHz, CH0 & CH1)
M.2 E-Key Slot	1× M.2 (NGFF) E-Key with PCIe 3.0 (Wi-Fi radio module)
M.2 B-Key Slot	1× M.2 (NGFF) B-Key with USB 3.0 (5G cellular/LTE modem)
Ethernet Ports	2× 2.5GbE RJ45 (LAN/WAN)
SIM Card Slots	2× SIM card slots
Serial Debug	1× UART 4-Pin Header (TTL)
Serial Input Interface	1× Serial Input Interface
LED Indicators	11× LED (Green) + 3× LED (RGB)
Other Connectors	1× DC Jack (19 V), 1× Reset Switch, 1× WPS Button
PoE	802.3bt via 2.5GbE port
Max Power Consumption	11.3 W (board only)
Dimensions (W×H×D)	142 mm × 142 mm × 20.8 mm
Operating Temperature	-20°C to +70°C

Storage Temperature	-40°C to +90°C
Humidity	5–95% non-condensing (operating); Max 90% (storage)
OS / Firmware	OpenWrt 23.05 (WebUI + SSH CLI)
SDK	SDKs with QCA binary drivers available for software developers
Certification	REACH & RoHS Compliant
Ordering Code	WPQ530MR 6A01PR8F1GB-TE

13. Regulatory Information

Declaration of Conformity

The WPQ530MR is designed to comply with applicable regional regulatory requirements. End-product manufacturers are responsible for obtaining all necessary regulatory certifications (e.g., FCC, CE, IMDA) for their final product in each target market. The WPQ530MR is provided as an embedded module for OEM/ODM integration and does not carry end-product regulatory approval.

6GHz Band Restrictions

Operation in the 6 GHz frequency band (when enabled via an installed M.2 radio module) is subject to national regulatory authority approval. Manufacturers must ensure compliance with local regulations before enabling 6 GHz radio operation. Unauthorized use of restricted frequency bands may be illegal and could cause harmful interference to other services.

REACH & RoHS Compliance

This product is manufactured in compliance with REACH Regulation (EC) No 1907/2006 and RoHS Directive 2011/65/EU (amended by 2015/863/EU). These regulations restrict the use of hazardous substances in electrical and electronic equipment.

Disposal & Recycling

Do not dispose of this product in unsorted municipal waste. This product is subject to the Waste Electrical and Electronic Equipment (WEEE) Directive. At the end of its service life, return the product to an authorized recycling facility or contact Compex Systems for take-back options.

Legal Notices

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