



WPQ618

Wi-Fi 6 (802.11ax) Embedded Board

Hardware User Guide

Wi-Fi 6 / 802.11ax Dual-Band On-Board 2.4GHz + 5GHz	IPQ6018 Qualcomm Cypress Series	5 Ethernet Ports 4× 1GbE + 1× 2.5GbE RJ45 Port	2×2 MU-MIMO Up to 1201 Mbps (5GHz)
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Contents

1. Introduction	3
2. Package Contents	5
3. Hardware Overview.....	6
3.1 Board Layout.....	6
3.2 Connector Descriptions.....	8
3.3 LED Indicators.....	13
3.4 Hardware Pinouts.....	14
4. Wi-Fi Specifications	21
4.1 Wi-Fi Capability	21
4.2 Notes & Recommendations	21
5. Mechanical Specifications	22
5.1 Board Dimensions.....	22
5.2 Environmental Ratings.....	22
5.3 Mounting & Installation Notes	22
6. Power Specifications	23
6.1 Power Requirements.....	23
6.2 Power Delivery Protection.....	23
6.3 Notes & Recommendations	23
7. Installation & Integration	24
7.1 Pre-Installation Checklist	24
7.2 Antenna Connection.....	24
7.3 M.2 Module & SIM Card Installation (Optional).....	24
7.4 Power Connection.....	25
7.5 Ethernet Connection	25
8. Configuration	26
8.1 Default Settings.....	26
8.2 Accessing the Web Interface	26
8.3 Wireless Configuration.....	27
9. Troubleshooting.....	28
10. Safety Precautions.....	29
11. Technical Support.....	30
12. Full Specifications	31
13. Regulatory Information.....	33

1. Introduction

Thank you for choosing the Compex WPQ618. This document provides complete hardware integration guidance for engineers and system developers deploying the WPQ618 in embedded, industrial, and networking platforms.

The WPQ618 is a multi-function embedded board powered by Qualcomm's IPQ6018 'Cypress' Series quad-core ARM Cortex-A53 processor running at 1.8GHz. The board integrates dual-band 2×2 MU-MIMO Wi-Fi 6 radio directly on-board, an on-board Bluetooth 4.2 BLE module, two M.2 (NGFF) B Key expansion slots for a 5G cellular modem and companion module, four SIM card slots, PoE input, and multiple high-speed Ethernet ports, delivering a flexible platform for networking product development.

Key Highlights

- Qualcomm IPQ6018 'Cypress' Quad-Core ARM 64-bit A53 @ 1.8 GHz SoC for network processing.
- Dual-band Wi-Fi 6 (802.11ax) integrated on-board — 2×2 MU-MIMO OFDMA on both 2.4GHz and 5GHz.
- On-board wireless: 2.4GHz 802.11b/g/n/ax, max 20dBm per chain, up to 573 Mbps; 5GHz 802.11a/n/ac/ax, max 20dBm per chain, up to 1201 Mbps.
- 1× M.2 (NGFF) B Key socket with PCIe 3.0, supporting a 5G cellular modem.
- 1× M.2 (NGFF) B Key socket with USB 3.0 for companion module expansion.
- On-board Bluetooth via CSR8811, BLE 4.2.
- Multi-Ethernet: 4× 1Gbps RJ45 ports + 1× 2.5Gbps RJ45 port.
- 1× USB 2.0 port for external storage and peripherals.
- 1× Audio/SLIC interface (30-pin) for telephony/audio applications.
- Power over Ethernet (PoE) input — supports IEEE 802.3at, 48~56V.
- Onboard memory: 1GB (2× 512MB) DDR3L (16-bit interface, 32-bit memory bus), 256MB NAND Flash, and 32MB NOR Flash.
- 1× hardware reset button, 1× software reset button, 1× boot configuration DIP switch (S7), and an 8-LED status array.
- CompexWRT firmware.
- REACH and RoHS compliant.

Intended Use

The WPQ618 is an engineering-grade embedded board intended for OEM/ODM integration and product development. Typical target applications include:

- 802.11ax MU-MIMO OFDMA Wi-Fi 6 access points and dual-band router platforms.
- Mesh router supporting Easymesh.
- Smart AP TWT.

2. Package Contents

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

Checklist

- 1 × WPQ618 embedded board

⚠ Note: External antennas (U.FL pigtail cables), M.2 (NGFF) expansion modules, SIM cards, SD card, Ethernet cables, and power supply are not included unless specified in the order. Contact sales@compex.com.sg for accessory options.

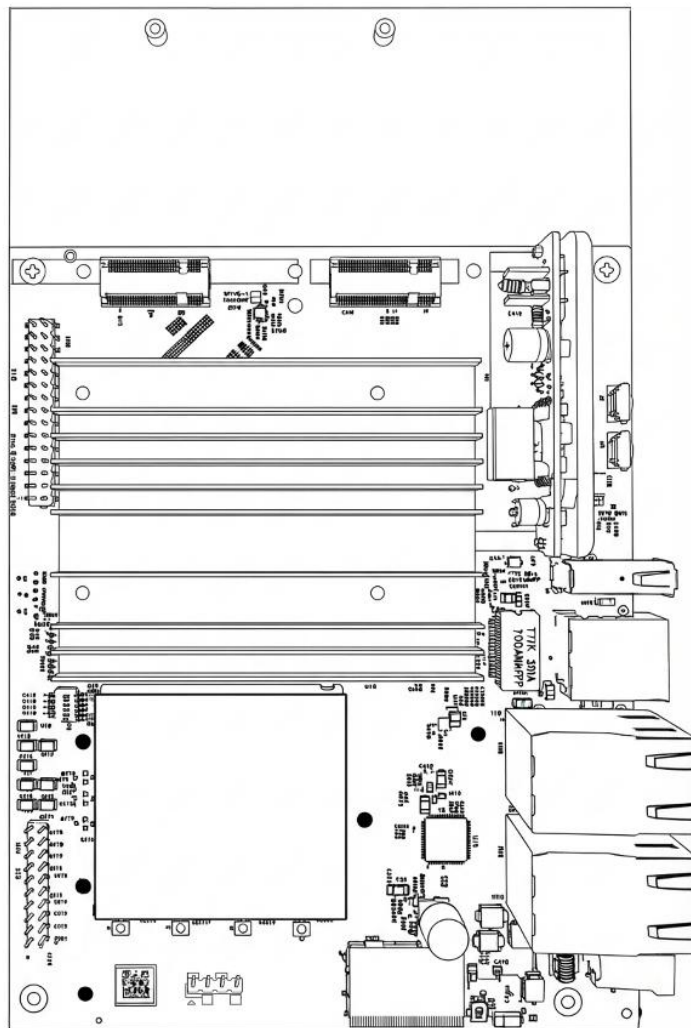
If any item is missing or damaged, contact Compex Technical Support (see Chapter 11) before proceeding.

3. Hardware Overview

The WPQ618 is a fully integrated embedded networking platform based on the Qualcomm IPQ6018 SoC. Dual-band 2x2 MU-MIMO Wi-Fi 6 radio, on-board Bluetooth 4.2, routing, and switching are handled entirely on-board, with two M.2 (NGFF) B Key slots available for 5G cellular modem and companion module expansion.

3.1 Board Layout

The WPQ618 features the following major components and connectors:

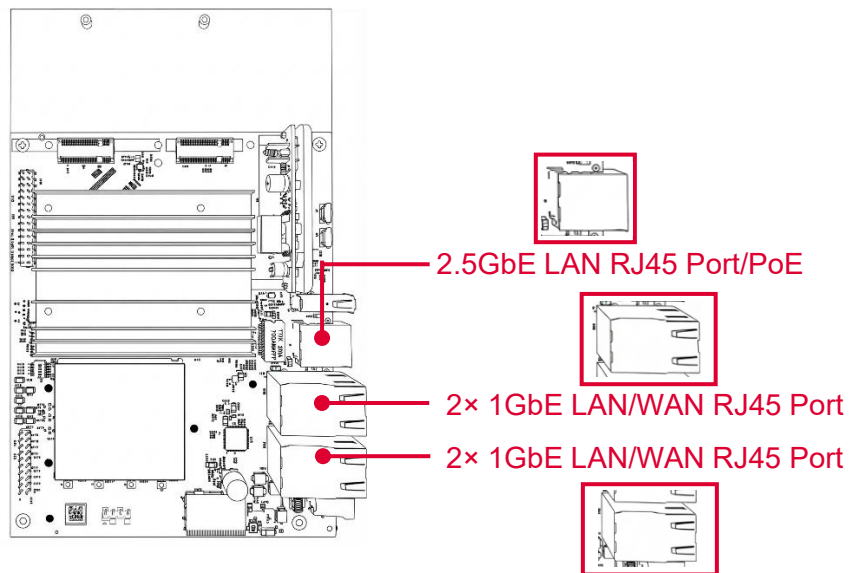


SoC	Qualcomm IPQ6018 'Cypress' Series, Quad-Core ARM 64-bit A53 @ 1.8 GHz
Reference Design	Qualcomm Atheros CP01
System Memory	1GB (2× 512MB) DDR3L, 16-bit interface, 32-bit memory bus
Flash Storage	256MB NAND Flash + 32MB NOR Flash
On-Board Wi-Fi	2×2 2.4GHz MU-MIMO 802.11b/g/n/ax, max 20dBm per chain 2×2 5GHz MU-MIMO 802.11a/n/ac/ax, max 20dBm per chain
RF Connectors	4× U.FL connectors (2 per band: 2.4GHz, 5GHz)
M.2 (NGFF) Slots	1× M.2 B Key socket with PCIe 3.0, for 5G cellular modem 1× M.2 B Key socket with USB 3.0
SIM / SD Card Slots	4× SIM card slots + 1× SD card slot
Ethernet Ports	4× 1Gbps LAN/WAN RJ45 + 1× 2.5Gbps LAN RJ45
USB	1× USB 2.0 Port
Bluetooth	CSR8811, BLE 4.2
Audio / SLIC Interface	1× 30-pin header for telephony/audio applications
PoE Input	Supports IEEE 802.3at, 48~56V, via the 2.5Gbps port
Serial / Debug	1× Serial 4-Pin Connector (TTL) + 1× JTAG 20-Pin Connector
Other I/O	1× Hardware Reset Button, 1× Software Reset Button, 1× Boot Configuration DIP Switch (S7), 8-LED Status Array
Form Factor	128mm × 210mm × 33.9mm (with heatsink)

3.2 Connector Descriptions

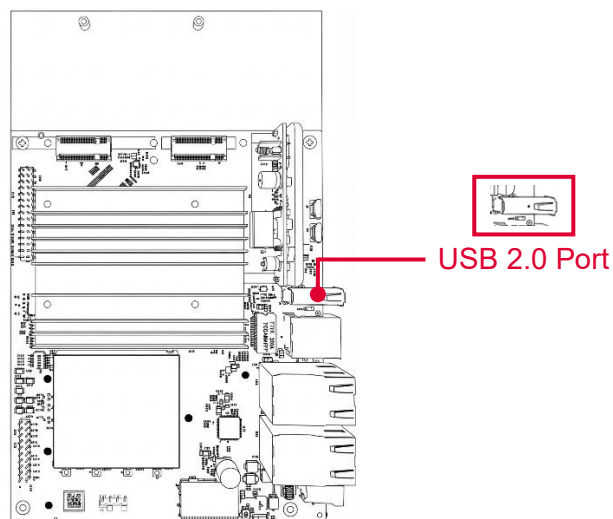
Ethernet Ports (RJ45)

- 4× 1Gbps LAN/WAN RJ45 ports and 1× 2.5Gbps LAN RJ45 port for wired network connectivity.
- PoE input on the 2.5Gbps LAN port, supporting IEEE 802.3at, 48~56V — allows the board to be powered directly over the Ethernet cable.
- All ports support auto-MDI/MDIX and auto-negotiation.



USB Port

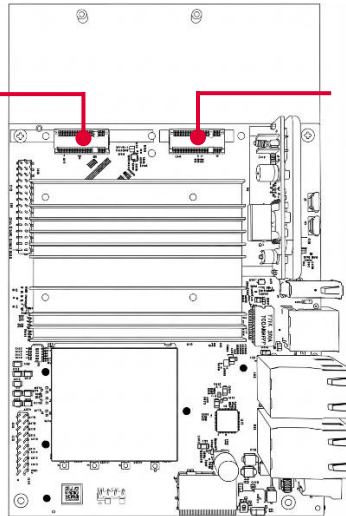
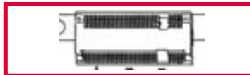
- 1× USB 2.0 Port for external storage, peripherals, or firmware upgrade via USB.



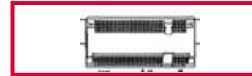
M.2 (NGFF) B Key Slot

- 1× M.2 B Key slot with PCIe 3.0 — designed for a 5G cellular/LTE modem module, enabling WAN failover or primary cellular connectivity.
- 1× M.2 B Key slot with USB 3.0 — for a companion module such as additional wireless connectivity or storage expansion.

M.2 (NGFF) B Key Socket with PCIe 3.0

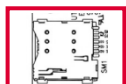


M.2 (NGFF) B Key Socket with USB 3.0

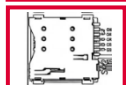


SIM Card & SD Card Slots

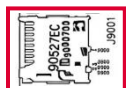
- 4× SIM card slots for cellular modem connectivity.
- 1× SD card slot for external storage expansion, such as logging or firmware images.



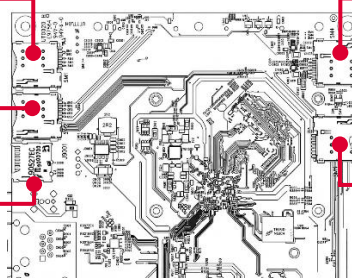
SIM1 Card Slot



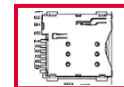
SIM2 Card Slot



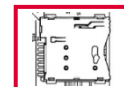
SD Card Slot



SIM4 Card Slot

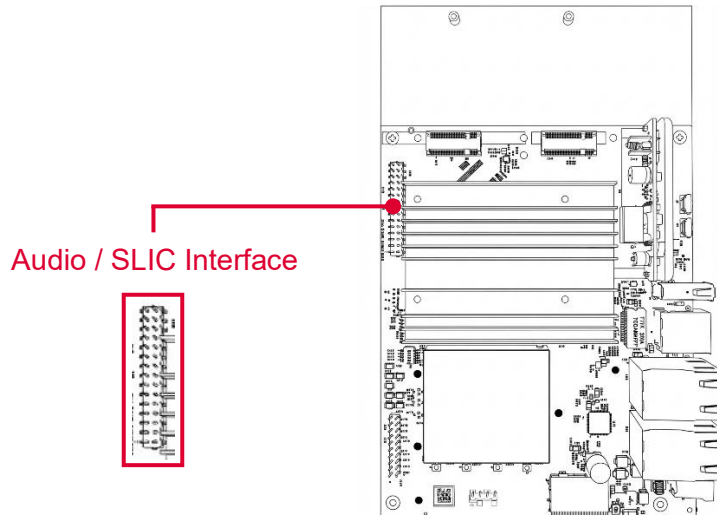


SIM5 Card Slot



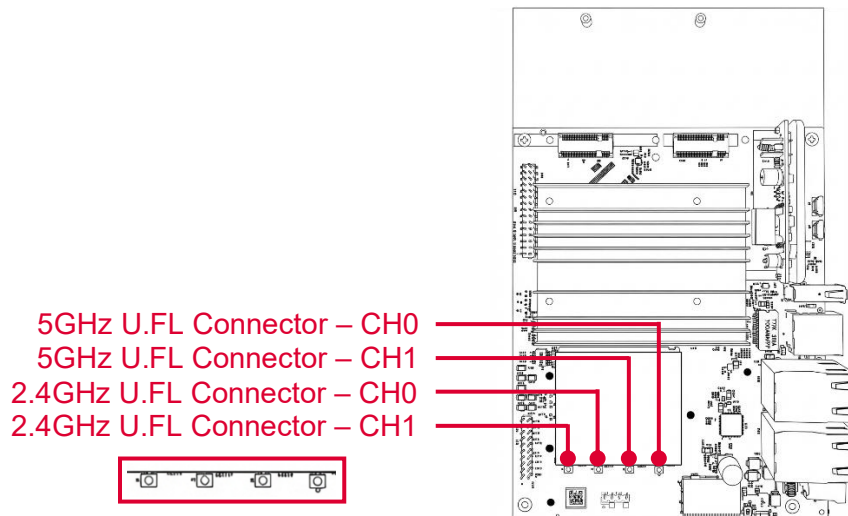
Audio / SLIC Interface

- 1× 30-pin header providing audio and SLIC (Subscriber Line Interface Circuit) signals — for telephony/VoIP or analog audio applications.



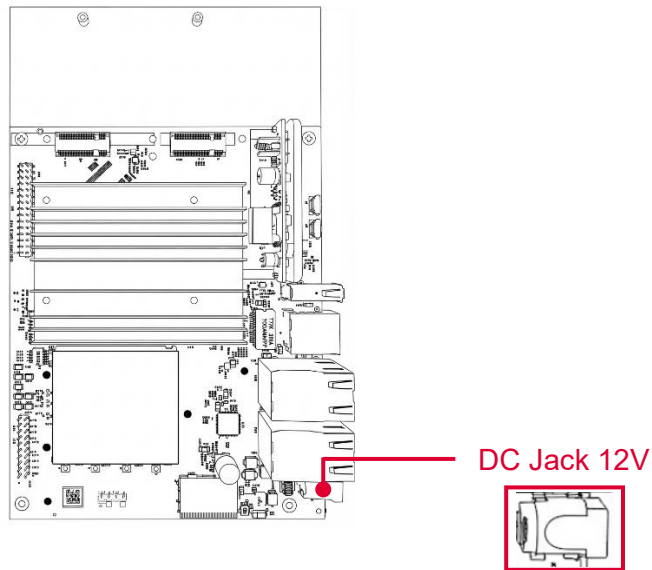
U.FL RF Connectors

- 4× U.FL connectors total, providing 2 connectors per band: 2× for the 2.4GHz onboard radio, 2× for the 5GHz onboard radio.
- Connect suitable external antennas rated for the respective frequency band.



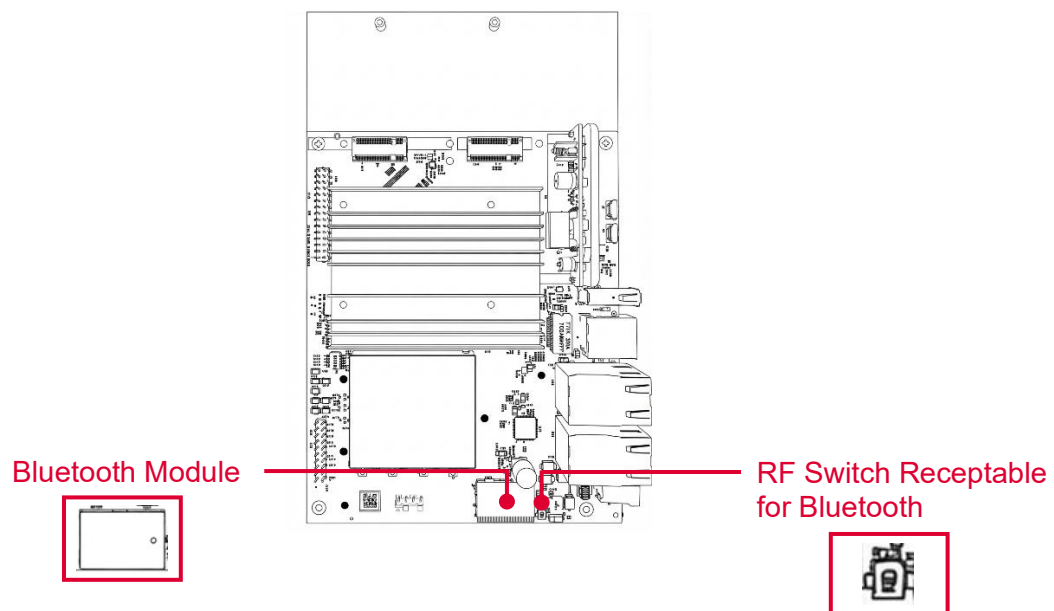
Power Connector

- 1× DC Jack Connector, 12V DC input.
- Maximum board-only power consumption: 17.5W (including Bluetooth).
- Alternatively, power can be supplied via PoE (IEEE 802.3at, 48~56V) on the 2.5Gbps LAN RJ45 port; do not connect both DC and PoE power sources simultaneously unless the board's power arbitration circuitry supports it.



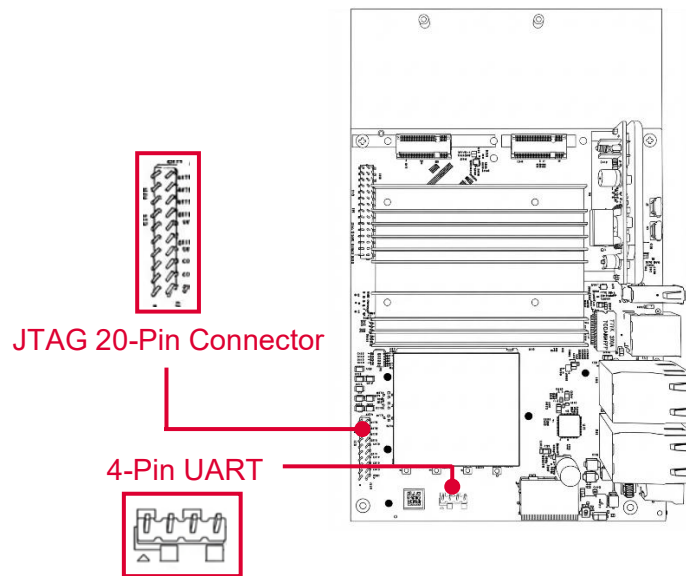
Bluetooth

- On-board CSR8811 module supporting Bluetooth 4.2 and BLE (Bluetooth Low Energy), suitable for peripheral pairing and short-range device management applications.



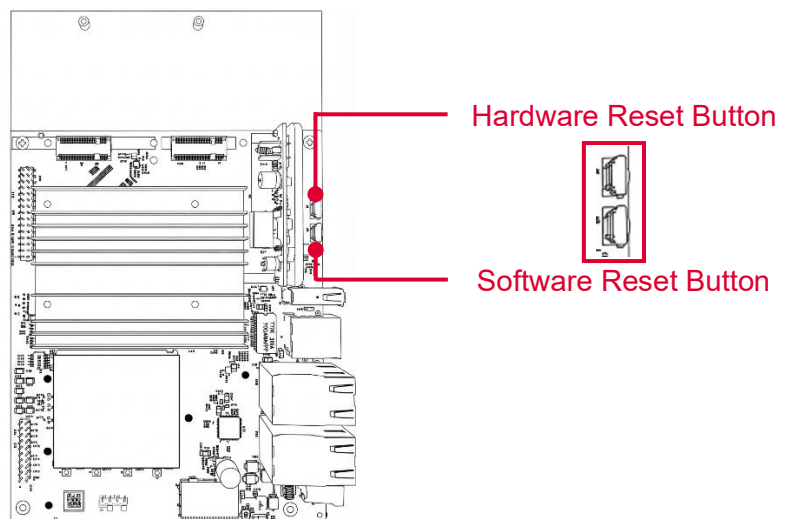
Serial / JTAG Debug Interface

- Serial: 4-pin TTL header (DVDD_3V3, UART_TXD_CONN, UART_RXD_CONN, GND) for serial console access during firmware development and debugging. A Serial Converter (TTL to RS-232) is available for standard serial debugging.
- JTAG: 20-pin header for low-level firmware programming and hardware debugging. A JTAG kit is available for writing self-developed loaders and firmware directly.



Reset Buttons

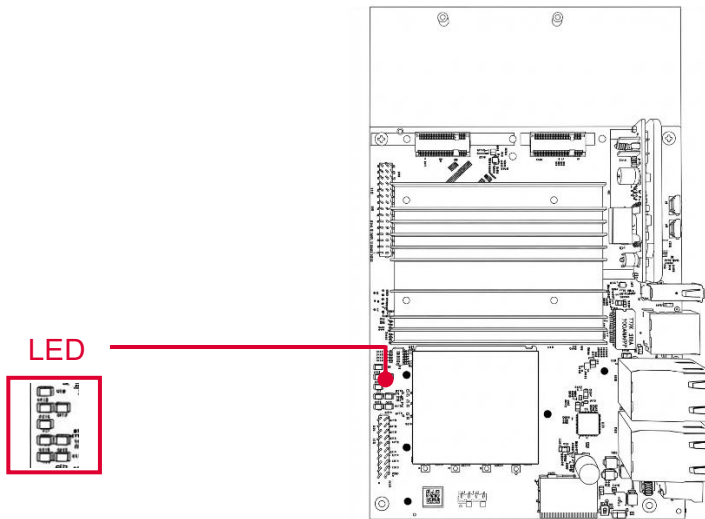
- Hardware Reset Button: performs a hardware-level reset of the board.
- Software Reset Button: press once for software reset (reboot).



3.3 LED Indicators

LED

- Power LED (LED2): Solid green when powered, fully booted and operational.
- LED1, LED6, LED7, LED8: 1GbE LAN/WAN port connection status.
- LED3 – 2.4GHz WiFi: Indicates 2.4 GHz on-board Wi-Fi radio activity.
- LED4 – 5GHz WiFi: Indicates 5 GHz on-board Wi-Fi radio activity.
- LED5: NAPA_LED



3.4 Hardware Pinouts

Ethernet LAN/WAN Port Pin Assignment

Ethernet LAN/WAN Port (RJ45 1Gbps)	
Pin	Signal
1	1G_CH0_P
2	1G_CH0_N
3	1G_CH1_P
4	1G_CH2_P
5	1G_CH2_N
6	1G_CH1_N
7	1G_CH3_P
8	1G_CH3_N

Ethernet LAN Port Pin Assignment

Ethernet LAN Port (RJ45 2.5Gbps)	
Pin	Signal
1	2.5G_CH0_P
2	2.5G_CH0_N
3	2.5G_CH1_P
4	2.5G_CH2_P
5	2.5G_CH2_N
6	2.5G_CH1_N
7	2.5G_CH3_P
8	2.5G_CH3_N

Serial Interface Pin Assignment

4-Pin UART	
Pin	Signal
1	DVDD_3V3
2	UART_TXD_CONN
3	UART_RXD_CONN
4	GND

JTAG Interface Pin Assignment

Pin	Signal	Pin	Signal
1	VDD_1V8	2	VDD_1V8
3	JTAG_TRSTN	4	NC
5	JTAG_TDI	6	GND
7	JTAG_TMS	8	GND
9	JTAG_TCK	10	GND
11	PULL UP_1V8	12	GND
13	JTAG_TDO	14	GND
15	JTAG_SRSTN	16	GND
17	GND	18	GND
19	GND	20	GND

SIM Slot Pin Assignment

Pin	Signal
1	VCC
2	RST
3	CLK
4	CD
5	GND
6	NC
7	I/O

SD Card Slot Pin Assignment

Pin	Signal
1	SDC1_DATA_2
2	SDC1_DATA_3
3	SDC1_CMD
4	VDD_3V3
5	SDC1_CLK
6	GND
7	SDC1_DATA_0
8	SDC1_DATA_1
9	SDC1_DETECT
10	GND

Audio / SLIC Interface Pin Assignment

Pin	Signal	Pin	Signal
1	BLSP4_SCL	2	CYP_AUDIO_BCLK
3	BLSP4_SDA	4	NC
5	ADC_RST	6	GND
7	PWM_LED_RST	8	PDM_CLK1
9	MUTE_ON	10	PDM_DATA1
11	KYPD_HOME_N	12	GND
13	MIC_VOL_P	14	EXT_MCLK2_ADC
15	MIC_KPD_PWR_N	16	NC
17	MIC_VOL_M	18	GND
19	AUDIO_MUTE_BUT	20	PDM_CLK0
21	VDD_3V3	22	PDM_DATA0
23	GND	24	GND
25	VDD_1V8	26	VDD_5V
27	VDD_1V8	28	VDD_5V
29	GND	30	GND

LED Array Assignment

Location	Signal
LED1	P1_1000_LED
LED2	POWER_LED
LED3	2G_LED
LED4	5GM_LED
LED5	NAPA_LED
LED6	P3_1000_LED
LED7	P4_1000_LED
LED8	P2_1000_LED

Boot Configuration DIP Switch (S7)

Boot_Config Switch (S7)			
Boot_Config			Boot-up Interface Select
1	2	3	
off	off	off	SPI NOR (default)
off	off	on	eMMC
off	on	off	QPIC, Parallel NAND
off	on	on	USB 2.0
on	off	off	SPI-NOR-GPT
4			Boot up interface select
off			Boot from code RAM (default)
on			Boot from ROM

M.2 B Key Slot Pin Assignment

M.2 B Key Slot with USB3.0			
Top side		Bottom side	
1	NC	2	VDD_3V7
3	GND	4	VDD_3V7
5	GND	6	FULL_Card_off
7	USB0_DP	8	WAN_DISABLE
9	USB0_DM	10	NC
11	GND		
Mechanical key B			
21	NC	20	NC
23	NC	22	NC
25	NC	24	NC
27	GND	26	NC
29	USB0_SS_RXN	28	NC
31	USB0_SS_RXP	30	SIM1_RST
33	GND	32	SIM1_CLK
35	USB0_SS_TXN	34	SIM1_I/O
37	USB0_SS_TXP	36	SIM1_VCC
39	GND	38	NC
41	NC	40	SIM2_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	NC
53	NC	52	NC
55	NC	54	NC
57	GND	56	NC
59	NC	58	NC
61	NC	60	NC
63	NC	62	NC
65	NC	64	NC
67	NC	66	SIM1_CD
69	NC	68	NC
71	GND	70	VDD_3V7
73	GND	72	VDD_3V7
75	NC	74	VDD_3V7

M.2 B Key Slot with PCIe3.0			
Top side		Bottom side	
1	NC	2	VDD_3V7
3	GND	4	VDD_3V7
5	GND	6	FULL_Card_off
7	NC	8	WAN_DISABLE
9	NC		NC
11	GND		
Mechanical key B			
21	NC	20	NC
23	NC	22	NC
25	NC	24	NC
27	GND	26	NC
29	NC	28	NC
31	NC	30	SIM5_RST
33	GND	32	SIM5_CLK
35	NC	34	SIM5_I/O
37	NC	36	SIM5_VCC
39	GND	38	NC
41	PCIE_RX_N	40	SIM4_CD
43	PCIE_RX_P	42	SIM4_I/O
45	GND	44	SIM4_CLK
47	PCIE_TX_N	46	SIM4_RST
49	PCIE_TX_P	48	SIM4_VCC
51	GND	50	PCIE_RST
53	PCIE_REFCLKN	52	PCIE_WAKE
55	PCIE_REFCLKP	54	NC
57	GND	56	NC
59	NC	58	NC
61	NC	60	NC
63	NC	62	NC
65	NC	64	NC
67	NC	66	SIM5_CD
69	NC	68	NC
71	GND	70	VDD_3V7
73	GND	72	VDD_3V7
75	NC	74	VDD_3V7

GPIO Pin Mapping

GPIO PIN	Function	GPIO PIN	Function
GPIO_0	AUDIO_MUTE_BUT	GPIO_1	QPIC_BUSY_N
GPIO_2	MIC_VOL_M	GPIO_3	QPIC_WE_N
GPIO_4	QPIC_RE_N	GPIO_5	QPIC_DAT4
GPIO_6	QPIC_DAT5	GPIO_7	QPIC_DAT6
GPIO_8	QPIC_DAT7	GPIO_9	WPS
GPIO_10	QPIC_CLE_N	GPIO_11	QPIC_NAND_CE_N
GPIO_12	QPIC_DAT1	GPIO_13	QPIC_DAT2
GPIO_14	QPIC_DAT3	GPIO_15	QPIC_DAT0
GPIO_16	MIC_KPD_PWR_N	GPIO_17	QPIC_ALE
GPIO_18	KYPD_HOME_N	GPIO_19	Boot_Config(PULL_DOWN)
GPIO_20	Boot_Config(PULL_DOWN)	GPIO_21	MUTE_ON
GPIO_22	ADC_RST	GPIO_23	WSA_SWR_CLK
GPIO_24	WSA_SWR_DATA	GPIO_25	PWM_LED_RST
GPIO_26	Boot_Config(PULL_DOWN)	GPIO_27	WSA_EN_R
GPIO_28	WSA_EN_L	GPIO_29	PDM_CLK0
GPIO_30	PDM_DATA0	GPIO_31	PDM_CLK1
GPIO_32	PDM_DATA1	GPIO_33	EXT_MCLK2_ADC
GPIO_34	MIC_VOL_P	GPIO_35	LED_5G
GPIO_36	PCIE_WAKE	GPIO_37	LED_2GS
GPIO_38	SPI0_CLK	GPIO_39	SPI0_CS_NI
GPIO_40	SPI0_MISO	GPIO_41	SPI0_MOSI
GPIO_42	BLSP4_SCL	GPIO_43	BLSP4_SDA
GPIO_44	BLSP2_UART_RX	GPIO_45	BLSP2_UART_TX
GPIO_46	BLSP5_SCL	GPIO_47	BLSP5_SDA
GPIO_48	NC	GPIO_49	Boot_Config(PULL_DOWN)
GPIO_50	LED_USB0	GPIO_51	BT_PRIORITY_PTA11
GPIO_52	WLA_ACTI_PTA12	GPIO_53	BT_ACT_PTA10
GPIO_54	Boot_Config(PULL_DOWN)	GPIO_55	WAN_DISABLE
GPIO_56	FULL_Card_off	GPIO_57	NC
GPIO_58	NC	GPIO_59	PCIE_CLK_REQ
GPIO_60	PCIE_RSTn	GPIO_61	NC
GPIO_62	SD_DET	GPIO_63	SD_WP
GPIO_64	MDC	GPIO_65	MDIO
GPIO_66	SD_LDO_EN	GPIO_67	NC
GPIO_68	NC	GPIO_69	SPI_CLK_UART_RTSn
GPIO_70	SPI_CS_UART_CTSn	GPIO_71	SPI_MISO_UART_RX
GPIO_72	SPI_MOSI_UART_TX	GPIO_73	NC
GPIO_74	NC	GPIO_75	Malibu_RESET
GPIO_76	NAPA_INT0	GPIO_77	NAPA_RESET
GPIO_78	QTZ_INT	GPIO_79	QTZ_RESET

4. Wi-Fi Specifications

4.1 Wi-Fi Capability

The WPQ618 features fully integrated dual-band 2×2 MU-MIMO Wi-Fi 6 radios operating on the 2.4GHz and 5GHz bands. Both radios are driven by the Qualcomm IPQ6018 SoC and require no external radio modules.

Wi-Fi Standard	IEEE 802.11ax (Wi-Fi 6) - backward compatible to 802.11a/b/g/n/ac
2.4GHz Radio	2×2 MU-MIMO 802.11b/g/n/ax; max 20dBm per chain; up to 573 Mbps
5GHz Radio	2×2 MU-MIMO 802.11a/n/ac/ax; max 20dBm per chain; up to 1201 Mbps
Frequency Ranges	2.4GHz: 2.412 ~ 2.472GHz 5GHz: 5.150 ~ 5.825GHz
Modulation	OFDMA: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM
Antenna Connectors	4× U.FL connectors (2 per band)

4.2 Notes & Recommendations

- Always connect appropriate antennas to all 4 U.FL ports before powering on. Never operate with open (unterminated) U.FL connectors, as this may damage the RF front-end.
- Use antennas rated for the specific frequency band (2.4GHz or 5GHz) and ensure 50Ω impedance matching.
- Do not modify the onboard antenna circuitry or U.FL connector wiring. Unauthorised modifications will void regulatory compliance.

5. Mechanical Specifications

5.1 Board Dimensions

Dimensions (W × H × D)	128mm × 210mm × 33.9mm (with heatsink)
PCB Thickness	Standard (multi-layer PCB)

5.2 Environmental Ratings

Operating Temperature	-20°C to 70°C
Storage Temperature	-40°C to 90°C
Operating Humidity	5% to 95%, Non-Condensing
Storage Humidity	Max. 90%, Non-Condensing
Certification	REACH & RoHS Compliant

5.3 Mounting & Installation Notes

- Allow sufficient clearance around the board for airflow and RF signal propagation. The WPQ618 board includes mounting holes at the corners for secure mechanical integration into an enclosure or chassis.
- Ensure adequate clearance around all connectors (RJ45, USB, U.FL, DC Jack) for cable routing.
- Provide sufficient airflow or thermal management for the SoC and on-board radio components, particularly in high-throughput applications.
- Do not stack objects directly on the board surface. Ensure the PCB is mounted horizontally or secured in a suitable bracket.
- All dimensions are in millimetres. Refer to the mechanical drawing on the datasheet for precise mounting hole locations.

6. Power Specifications

6.1 Power Requirements

Operating Voltage	12 V DC (via DC Jack Connector) or PoE 48~56V (IEEE 802.3at, via 2.5Gbps LAN port)
Power Consumption	17.5W (max, board only, including Bluetooth)

6.2 Power Delivery Protection

- Ensure the external power supply is rated to deliver at least 17.5W at 12V DC continuously, or a compliant PoE source if using PoE input.
- Use a regulated DC power supply. Unregulated or noisy supplies may adversely affect RF performance.

6.3 Notes & Recommendations

- Disconnect power before installing any external cables or performing maintenance.
- Never exceed 12 V DC input. Overvoltage will permanently damage the board.
- Verify power supply polarity before connecting. Reverse polarity damage may not be covered under warranty.
- Do not connect DC and PoE power simultaneously unless confirmed safe by the power arbitration circuitry.
- Account for the full 17.5W maximum power draw when sizing the power supply for enclosure designs.

7. Installation & Integration

7.1 Pre-Installation Checklist

- Verify package contents (see Section 2) before starting installation.
- Prepare a 12V DC, 17.5W regulated power supply (or a compliant PoE source).
- Prepare external antennas for all 4 U.FL connectors (2 per band: 2.4GHz, 5GHz).
- Prepare Ethernet cables (Cat5e or higher) for LAN/WAN connections.
- If using the M.2 (NGFF) slots, prepare the intended 5G modem/companion module and SIM cards in advance.
- Ensure an ESD-safe work environment before handling the board (see Section 10).
- Have a laptop or PC available for initial configuration via Ethernet.

7.2 Antenna Connection

The WPQ618 provides 4 U.FL antenna connectors for on-board Wi-Fi (2 per band). All antenna connectors in use must be fitted before powering on the board.

- Identify the correct U.FL connectors for each band using the Component Map (Section 3.2).
- Press each U.FL connector cable firmly until a tactile click is felt, confirming full engagement.
- Ensure antenna cables are not sharply bent or kinked, as this degrades RF performance.

7.3 M.2 Module & SIM Card Installation (Optional)

- Power off and disconnect the board before installing or removing an M.2 module or SIM card.
- Insert the M.2 module into the appropriate B Key slot at an angle, then press down firmly and secure with the mounting screw.
- Insert SIM cards into the SIM card slots corresponding to the installed cellular modem, observing correct orientation.
- Confirm module compatibility (PCIe 3.0 for the 5G modem slot; USB 3.0 for the companion module slot) before installation.

7.4 Power Connection

Connect the 12V DC power supply to the DC Jack connector on the board, or alternatively connect a PoE-compliant Ethernet cable (IEEE 802.3at) to the 2.5Gbps LAN port.

- Verify the power supply is rated at 12V DC, 17.5W (minimum).
- Insert the DC Jack plug firmly into the board's DC Jack socket.
- Power on the supply and confirm the LED array responds.
- Allow the board sufficient time to complete its boot sequence before testing connectivity.

7.5 Ethernet Connection

- Connect a PC or network device to any of the 1Gbps LAN/WAN ports or the 2.5Gbps LAN port as required by the application.
- Ensure Ethernet cables are Cat5e or higher for 1Gbps connections, and Cat6 or higher for 2.5Gbps connections.
- Both Ethernet ports support auto-MDI/MDIX, so straight-through or crossover cables may be used.

8. Configuration

The WPQ618 runs the CompexWRT firmware stack and can be configured via the webUI or through the SSH/serial console command line.

8.1 Default Settings

Default Management IP	192.168.1.1
Default Subnet	192.168.1.0/24
Web UI Port	80 (HTTP) / 443 (HTTPS)
Default Username	admin
Default Password	password
SSH Access	Port 22 (enabled by default)
Default Mode	Access Point
Serial Console	115200 bps, 8N1

8.2 Accessing the Web Interface

- Connect a PC to one of the WPQ618's 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> (default IP Address).
- Log in with username admin and the password password. If no password has been set, the browser will prompt you to create one.
- The webUI management interface will load, providing access to network, wireless, cellular, 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 webUI: Navigate to Network > Wireless to configure SSID, security, channel, and bandwidth settings for both 2.4 GHz and 5 GHz radios.
- Via SSH: Connect using PuTTY or any SSH client to 192.168.1.1 on port 22.
- Via Serial Console: Connect using TeraTerm or similar terminal software with the Serial 4-pin connector (115200 bps, 8N1) and a TTL serial converter.
- Wireless configuration files are located at /etc/config/wireless.
- Use UCI commands to modify settings, e.g.:

```
uci set wireless.wifi0.disabled='0'  
uci set wireless.wifi0.htmode='EHT40'  
uci commit wireless  
wifi
```

- wifi0 typically corresponds to the 2.4GHz radio and wifi1 to the 5GHz radio; confirm the exact radio-to-band mapping for your board using iw dev before applying changes.
- Use iw dev to verify radio status after applying changes.
- Refer to the CompexWRT documentation supplied by Compex for the full set of UCI options and configuration file locations.

9. Troubleshooting

Power LED not lit	Check 12V DC power supply voltage and polarity. Verify DC jack connection is secure. Confirm supply provides at least 17.5W continuous power.
Ethernet link not established	Verify Ethernet cable is fully seated in RJ45 port. Confirm link partner supports the relevant speed (1G or 2.5G). 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.
Wi-Fi SSIDs not visible	Confirm all 4 U.FL antenna connectors in use are properly attached. Allow the board sufficient boot time. Refer to CompexWRT documentation to verify radio settings are enabled.
Poor Wi-Fi throughput	Verify antenna orientation and placement. Ensure correct channel and bandwidth settings. Check for RF interference sources nearby.
Bluetooth not detected	Confirm the on-board Bluetooth module is enabled in the firmware configuration. Verify no physical damage to the Bluetooth module.
Board overheating	Ensure adequate airflow clearance around the SoC and radio components. Verify ambient temperature is within operating range (-20 to 70°C).
Firmware upgrade fails	Do not power off during update. Use a wired Ethernet connection for firmware upload. Reset to factory defaults before upgrading if previously customised.
M.2 module / 5G modem not detected	Ensure the module is correctly seated in the M.2 slot and secured with the mounting screw. Verify the module is supported by the installed CompexWRT firmware version. If using a 5G modem, confirm the SIM card is correctly inserted.
Factory Reset	To restore factory default settings: •Press and hold the RESET button for 10 seconds while the board is powered on. •Go to webUI > System > Reset Board. •Alternatively, via SSH or serial console, run: <code>rm -rf /overlay/*</code> <code>reboot</code> 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 connecting or disconnecting any cables or performing any maintenance.
- Never exceed the rated input voltage (12 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 radios or the 5G modem without antennas or 50 Ω termination loads on all U.FL ports.
- Do not modify antennas or RF circuitry. Unauthorised 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 WPQ618. 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 (WPQ618)	https://compex.com.sg/shop/embedded-board/802-11ax/wpq618/
Qualcomm Design Centre	Qualcomm Authorized Design Centre (ADC) since 2014

Before contacting support, please:

- Note the firmware version (visible via webUI: System > Software, or via SSH/serial console: `cat /etc/openwrt_release`)
- Record the MAC address of the board (visible on PCB label).
- 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	WPQ618
SoC	Qualcomm IPQ6018 'Cypress' Series, Quad-Core ARM 64-bit A53 @ 1.8 GHz
Reference Design	Qualcomm Atheros CP01
System Memory	1GB (2× 512MB) DDR3L, 16-bit interface, 32-bit memory bus
NAND Flash	256MB
NOR Flash	32MB
Wi-Fi Standard	IEEE 802.11ax (Wi-Fi 6) - backward compatible to 802.11a/b/g/n/ac
2.4GHz Radio	On-board 2×2 MU-MIMO OFDMA 802.11b/g/n/ax; max 20dBm per chain; up to 573 Mbps
5GHz Radio	On-board 2×2 MU-MIMO OFDMA 802.11a/n/ac/ax; max 20dBm per chain; up to 1201 Mbps
Frequency Ranges	2.4GHz: 2.412 ~ 2.472GHz 5GHz: 5.150 ~ 5.825GHz
Modulation	OFDMA: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM
Advanced RF Features	Supports Dynamic Frequency Selection (DFS)
Antenna Connectors	4× U.FL connectors (2 per band)
M.2 (NGFF) Slots	1× B Key with PCIe 3.0 (5G modem) + 1× B Key with USB 3.0
SIM Card Slots	4× SIM card slots
SD Card Slot	1× SD card slot
Ethernet Ports	4× 1Gbps LAN/WAN RJ45 + 1× 2.5Gbps LAN RJ45
USB	1× USB 2.0 Port
Bluetooth	CSR8811, BLE 4.2
Audio / SLIC	1× 30-pin Audio/SLIC interface
PoE	IEEE 802.3at, 48~56V, via 2.5Gbps LAN port
Serial Debug	1× Serial 4-Pin Connector (TTL)
JTAG	1× JTAG 20-Pin Connector
Reset	1× Hardware Reset Button + 1× Software Reset Button

Boot Configuration	1× DIP Switch (S7): SPI NOR (default), eMMC, QPIC/NAND, or USB 2.0
LED Indicators	8-LED status array
Power Interface	1× DC Jack (12V) or PoE (48~56V via 2.5Gbps LAN port)
Max Power Consumption	17.5W (board only, including Bluetooth)
Dimensions (W×H×D)	128mm × 210mm × 33.9mm (with heatsink)
Operating Temperature	-20°C to 70°C
Storage Temperature	-40°C to 90°C
Operating Humidity	5% to 95% (non-condensing)
Storage Humidity	Max. 90% (non-condensing)
OS / Firmware	CompexWRT
Certification	REACH & RoHS Compliant
Ordering Code	WPQ618HV 6A03PR321GBR-5G

13. Regulatory Information

Declaration of Conformity

The WPQ618 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 WPQ618 is provided as an embedded board for OEM/ODM integration and does not carry end-product regulatory approval.

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), restricting 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. Return it to an authorised recycling facility or contact Compex Systems for take-back options.

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