DATA SHEET

NEWBRIDGE AP644-C

Indoor Wi-Fi 6 (802.11ax) 4x4:4 Dual-Band Ceiling Access Point

2.4 GHz | 5 GHz

An enterprise-class Wi-Fi 6 ceiling access point — 4×4:4 MU-MIMO on both bands, up to 3.55 Gbps of aggregate PHY capacity, and a 2.5G PoE+ uplink that keeps wired backhaul ahead of the air.

3,550	2.5G	8
MBPS · DUAL-BAND	POE+ UPLINK	SPATIAL STREAMS

RADIO TECHNOLOGY

- 802.11ax 5 GHz 4x4:4 — 2,402[1] Mbps
- 802.11ax 2.4 GHz 4x4:4 — 1,148[2] Mbps
- Up to 3,550[3] Mbps aggregate PHY
- 1024-QAM · up to 160 MHz · OFDMA · MU-MIMO

WIRED PORTS

- 1 × 2.5G RJ45 PoE+ uplink (802.3at+)
- 1 × 2.5G RJ45 LAN port
- Auto-sensing 100 / 1,000 / 2,500 Mbps
- DC 12 V input · 1 × Reset

MANAGEMENT & AI

- Newbridge 9X80 On-Premises Controller
- Newbridge Controller — cloud or on-prem
- Internet Access Management Gateway
- Advanced reporting & network insight

SECURITY

- WPA2 / WPA3 encryption
- Client isolation
- Privacy VLAN isolation
- 802.1X / RADIUS authentication

INTRODUCTION

The Newbridge AP644-C is an enterprise-class Wi-Fi 6 (802.11ax) ceiling-mount access point built to deliver secure, dense connectivity across hospitality, hostels, public hotspots, education, and enterprise deployments — anywhere robust coverage and high client counts matter.

Eight spatial streams — 4×4 MIMO on the 2.4 GHz band and 4×4 on the 5 GHz band — give the AP644-C four transmitters and four receivers per radio, and up to four concurrent spatial streams on each. Built on the Qualcomm IPQ8072A platform, it sustains high performance under heavy concurrency while cutting airtime contention and co-channel interference.

MU-MIMO lets one access point serve several clients at the same time on the same frequency, downlink and uplink. Paired with OFDMA, which splits a single channel into resource units and schedules several users inside one transmission, the result is finer scheduling granularity and greater usable capacity in dense rooms.

A 2.5G PoE+ uplink and a second 2.5G Ethernet port keep wired backhaul ahead of the air. The AP runs standalone or under Newbridge on-premises and cloud controllers, and enforces WPA2/WPA3 encryption, 802.1X/RADIUS, client isolation, and private-VLAN separation end to end.

DENSE-ENVIRONMENT PERFORMANCE

Multi-user MIMO moves more downlink data at once, letting an access point handle more devices concurrently. Downlink MU-MIMO raises usable capacity in environments full of devices with few antennas by multiplexing their transmissions in the spatial domain.

Uplink MU-MIMO lets multiple clients transmit to the access point simultaneously — live video, content sharing, video conferencing, large file uploads, and online gaming. Because access points carry more antennas than the phones and laptops that connect to them, the AP644-C uses its extra antennas to transmit to, and receive from, several clients at once.

The 4×4 designation counts simultaneous spatial streams. More antennas in the access point means faster access speed and more clients served at the same time — the practical definition of AP capacity.

OFDMA operates in the frequency domain rather than the spatial one, splitting the available bandwidth into resource units so a single channel access can serve several clients at once. Together, MU-MIMO and OFDMA let the AP644-C schedule multi-user transmissions across spatial streams and frequencies alike, bringing finer granularity to scheduling decisions in a dense network.

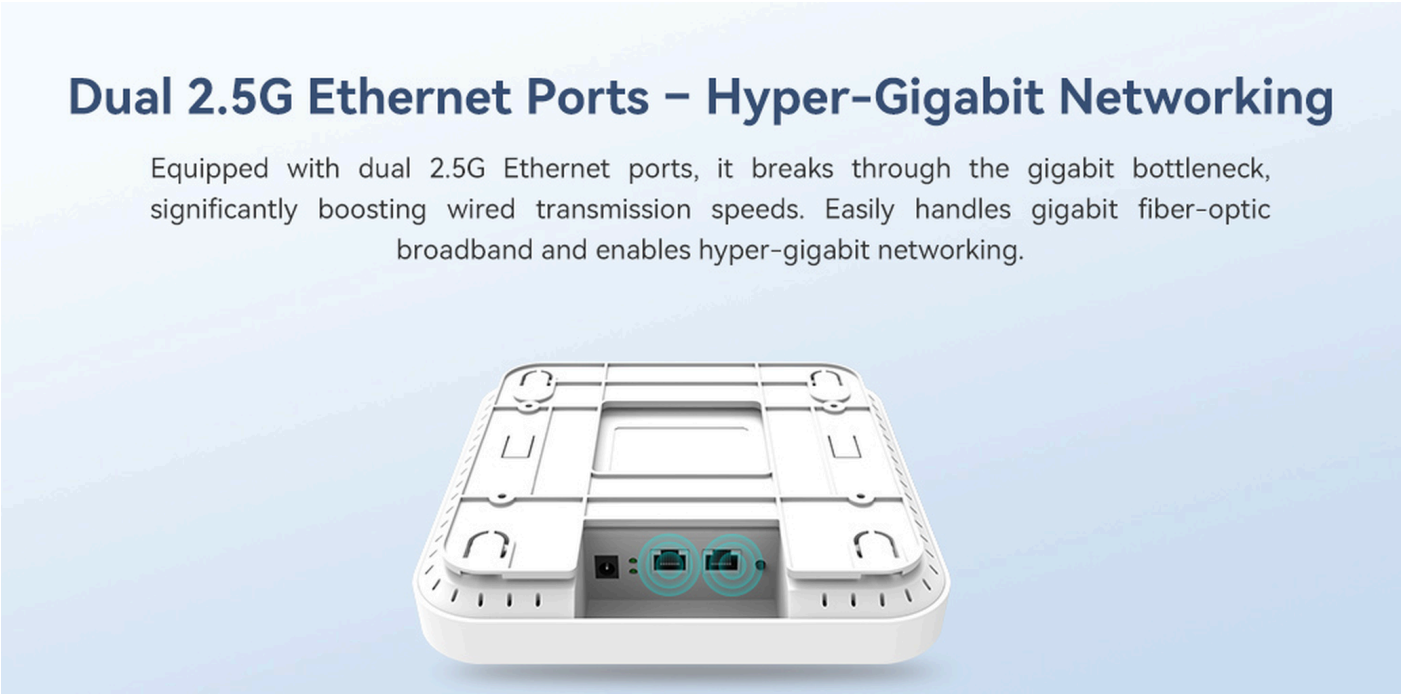
Client roaming is steered by rejecting weak-signal association and triggering reconnection, guiding each client onto a stronger RF signal rather than letting it cling to a distant access point.

Security is enforced end to end: WPA2/WPA3 encryption protects sessions, 802.1X integrates with RADIUS, and client isolation with private VLANs contains untrusted devices.

[1] The 5 GHz peak rate requires Wi-Fi 6 (802.11ax) features — 80 MHz channel width and 1024-QAM — and compatible client devices. Channel availability may vary by region and regulatory domain.

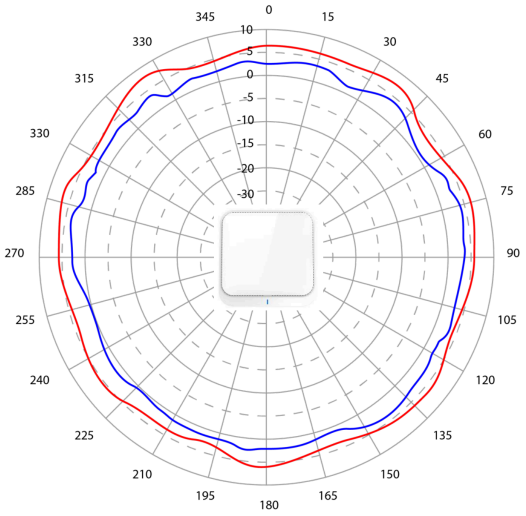
[2] The 2.4 GHz peak rate requires Wi-Fi 6 features on 2.4 GHz, including 40 MHz channel width and 1024-QAM, on compatible client devices, and may be restricted by local regulatory conditions.

[3] The 3,550 Mbps figure is the aggregate theoretical PHY (link) rate — the sum of the 2.4 GHz and 5 GHz PHY rates — not user-achievable throughput. Actual wireless data throughput and coverage vary with environmental conditions, network factors, product placement, network complexity, and client-specific limitations.

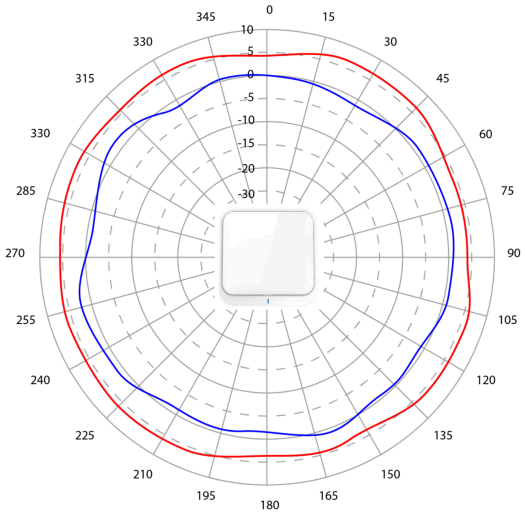


ACCESS POINT ANTENNA PATTERN

Horizontal plane (azimuth, top view) • Average Azimuth / Average Downtilt

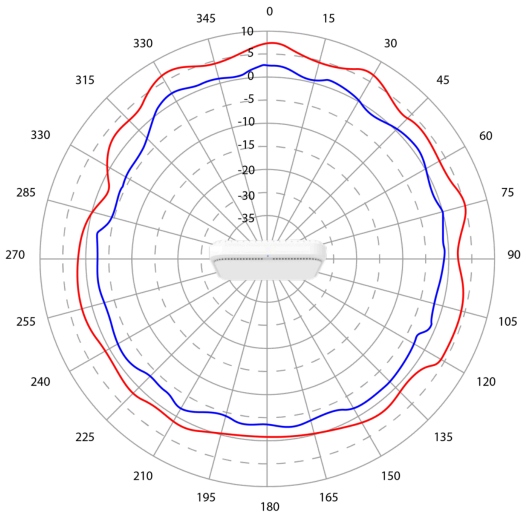


2.45 GHz

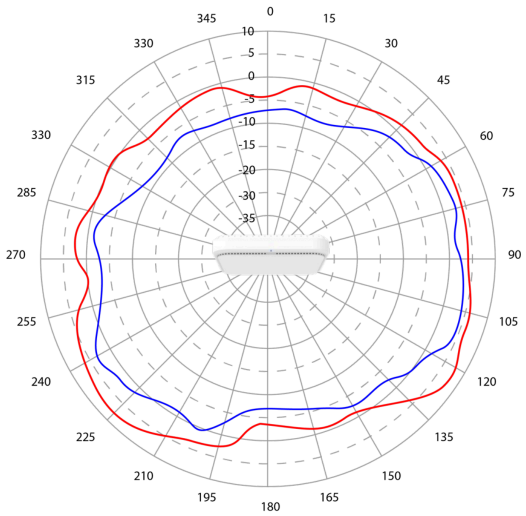


5.5 GHz

Vertical plane (elevation, side view – AP facing down) • Average Elevation 0° / 90°



2.45 GHz



5.5 GHz

TRANSMIT POWER (TX POWER)

STANDARD	RATE	TX / CHAIN	TX · 4 CHAINS
2.4 GHz – TX POWER			
802.11b	1M	17 dBm	22 dBm
802.11b	11M	17 dBm	22 dBm
802.11g	6M	17 dBm	22 dBm
802.11g	54M	15 dBm	21 dBm
802.11n HT20	MCS0	17 dBm	22 dBm
802.11n HT20	MCS7	15 dBm	21 dBm
802.11n HT40	MCS0	16 dBm	22 dBm
802.11n HT40	MCS7	14 dBm	20 dBm
802.11ax HE20	MCS0	17 dBm	22 dBm
802.11ax HE20	MCS11	10 dBm	16 dBm
802.11ax HE40	MCS0	16 dBm	22 dBm
802.11ax HE40	MCS11	11 dBm	17 dBm

STANDARD	RATE	TX / CHAIN	TX · 4 CHAINS
5 GHz – TX POWER			
802.11a	6M	17 dBm	22 dBm
802.11a	54M	16 dBm	21 dBm
802.11n/ac VHT20	MCS0	17 dBm	22 dBm
802.11n/ac VHT20	MCS9	15 dBm	20 dBm
802.11n/ac VHT40	MCS0	17 dBm	22 dBm
802.11n/ac VHT40	MCS9	14 dBm	20 dBm
802.11n/ac VHT80	MCS0	17 dBm	22 dBm
802.11n/ac VHT80	MCS9	13 dBm	19 dBm
802.11ax HE20	MCS0	17 dBm	22 dBm
802.11ax HE20	MCS11	12 dBm	18 dBm
802.11ax HE40	MCS0	17 dBm	22 dBm
802.11ax HE40	MCS9	12 dBm	18 dBm
802.11ax HE80	MCS0	17 dBm	23 dBm
802.11ax HE80	MCS11	14 dBm	18 dBm
802.11ax HE160	MCS0	17 dBm	23 dBm
802.11ax HE160	MCS11	14 dBm	18 dBm

RECEIVE SENSITIVITY (RX SENS)

STANDARD	RATE	RX SENSITIVITY
2.4 GHz – RX SENSITIVITY		
802.11b	1M	-102 dBm
802.11b	11M	-95 dBm
802.11g	6M	-97 dBm
802.11g	54M	-83 dBm
802.11n HT20	MCS0	-95 dBm
802.11n HT20	MCS7	-78 dBm
802.11n HT40	MCS0	-93 dBm
802.11n HT40	MCS7	-73 dBm
802.11ax HE20	MCS0	-93 dBm
802.11ax HE20	MCS11	-73 dBm
802.11ax HE40	MCS0	-92 dBm
802.11ax HE40	MCS11	-66 dBm

STANDARD	RATE	RX SENSITIVITY
5 GHz – RX SENSITIVITY		
802.11a	6M	-97 dBm
802.11a	54M	-82 dBm
802.11n/ac VHT20	MCS0	-91 dBm
802.11n/ac VHT20	MCS9	-81 dBm
802.11n/ac VHT40	MCS0	-95 dBm
802.11n/ac VHT40	MCS9	-74 dBm
802.11n/ac VHT80	MCS0	-91 dBm
802.11n/ac VHT80	MCS9	-69 dBm
802.11ax HE20	MCS0	-96 dBm
802.11ax HE20	MCS11	-71 dBm
802.11ax HE40	MCS0	-94 dBm
802.11ax HE40	MCS9	-68 dBm
802.11ax HE80	MCS0	-81 dBm
802.11ax HE80	MCS11	-50 dBm
802.11ax HE160	MCS0	-78 dBm
802.11ax HE160	MCS11	-47 dBm

Transmit power is the conducted power at the antenna port. Effective radiated power, supported channels, and maximum permitted output vary by country/region per local regulatory requirements.

SYSTEM PLATFORM

Chipset Platform	Qualcomm IPQ8072A + QCN5054 + QCN5024 + QCA8081 × 2
Flash	NOR 8 MB + NAND 256 MB
Memory	1 GB DDR

WI-FI RADIO SPECIFICATIONS

Wireless Standards	IEEE 802.11a/b/g/n/ac/ax
Frequency Bands	‣ 2.4 GHz: 2.400–2.484 GHz ‣ 5 GHz: 5.150–5.850 GHz
Supported Rates	‣ 802.11ax (Wi-Fi 6): 2.4 GHz up to 1,148 Mbps · 5 GHz up to 2,402 Mbps ‣ 802.11ac: up to 1,733 Mbps (80 MHz) ‣ 802.11n: up to 600 Mbps (40 MHz) · 802.11a/g: up to 54 Mbps · 802.11b: up to 11 Mbps
Supported Channels	‣ 2.4 GHz: 1–13 ‣ 5 GHz: 36–64, 100–144, 149–165
MIMO	4×4 MU-MIMO, downlink and uplink (backward compatible with SU-MIMO for older clients)
Spatial Streams	4×4:4 per band (8 streams total)
Channelization	20, 40, 80, 160 MHz. The 5 GHz peak PHY rate of 2,402 Mbps is reached at 4×4 / 80 MHz; 160 MHz channel width does not raise the peak rate.
Modulation	OFDM: BPSK, QPSK, 16/64/256-QAM, 1024-QAM
Antenna	4 built-in dual-band omnidirectional antennas (4 elements per band), vertical polarization. Gain: up to 3 dBi
Max Transmit Power	2.4 GHz ≤ 22 dBm · 5 GHz ≤ 23 dBm (conducted, 4-chain aggregate)
Receiver Sensitivity	Down to -102 dBm (802.11b, 1 Mbps)
Regulatory Bands	ISM (2.400–2.484 GHz); U-NII-1 (5.150–5.250 GHz); U-NII-2A (5.250–5.350 GHz); U-NII-2C (5.470–5.725 GHz); U-NII-3 (5.725–5.850 GHz)
Security	Personal: WPA2/WPA3-PSK (AES); Enterprise: WPA2/WPA3-Enterprise (802.1X/RADIUS); Dynamic PSK

PHYSICAL

WAN	1 × 10/100/1,000/2,500 Mbps auto-negotiation RJ45, IEEE 802.3at+ PoE input
LAN	1 × 10/100/1,000/2,500 Mbps auto-negotiation RJ45
Reset	1 × Reset button
LED	SYS · 2.4G · 5G · WAN · LAN
Power Supply	PoE (IEEE 802.3at+, 48 V); DC 2.0 input, 12 V / 3 A
Power Consumption	< 35 W max (access point)
Dimensions	198 × 198 × 41 mm
Weight	0.710 kg
Operating Temperature	Working: -20 °C to 45 °C · Storage: 0 °C to 70 °C
Operating Humidity	Working: 5% to 95% (non-condensing) · Storage: max 90%

PERFORMANCE & CAPACITY

Peak PHY Rates	‣ 2.4 GHz: 1,148[2] Mbps ‣ 5 GHz: 2,402[1] Mbps
Maximum Stations Capacity	Up to 1,024 associated clients per radio (2,048 per AP) – association limit; recommended active capacity depends on RF design and traffic profile
BSSID	Up to 32 per AP

NETWORKING

Operating Mode	Controller-managed; Standalone
IP	IPv4, IPv6, dual-stack
VLAN	VLAN pooling; port-based
802.1x	Authenticator & supplicant
Roaming	Yes
DHCP Server	Yes

SOFTWARE SPECIFICATION

Operating Modes

- Fat AP (standalone) and FIT AP (controller-managed) modes, switchable
- Home dashboard: AP up/down rates, running time, device & Wi-Fi information

Wireless

- SSID broadcast; multiple SSIDs per band; hide SSID
- Encryption: WPA3-PSK (AES), WPA2-PSK (AES), OPEN; legacy WPA/WPA2-TKIP for backward client compatibility only
- Wireless MAC address filtering (whitelist)
- Band steering (5 GHz first)
- Wi-Fi scheduled off (timer)
- User isolation (between networks and within the AP)
- Adjustable transmit power · Client number limit · QoS: WMM
- Weak-signal access rejection and roaming reconnection trigger

Network & Services

- IP: IPv4 / IPv6 dual-stack
- DHCP server: built-in or external
- Cloud server management · Firewall
- VLAN: VLAN pooling / port-based
- 802.1x: authenticator & supplicant · Roaming

Device Management

- Configuration backup & restore; restore factory settings
- Restart: scheduled and immediate
- Firmware upgrade
- Time management: system time display & synchronization
- System log · Fat / FIT AP switching

ORDER INFORMATION

ORDER NO.	DESCRIPTION
NB-AP644-C	Newbridge AP644-C Wi-Fi 6 Ceiling Mount Wireless Access Point, 4x4:4 (2.4 GHz) and 4x4:4 (5 GHz)
NB-AP644C-SU-1Y	Newbridge AP644-C Hardware and Software Support, 1Y
VC-AP644C-RPL-1Y	VCARE AP644-C NBD AHR, Hardware & Software Support, 1Y

CE markings indicate that a product complies with European Union (EU) regulations and directives regarding health, safety and environmental protections. CE marking also has implications for obtaining full RoHS compliance.

Contact us at https://www.newbridge-tech.com/