Ruckus MetroFlex NG

High Performance 802.11g Access Gateway and Wi-Fi Router

Ruckus WIRELESS

Wi-Fi CERTIFIED b g

Reliable broadband connectivity to outdoor Wi-Fi networks and high performance Wi-Fi access point in a single device

The Ruckus MetroFlex NG is two products in one. It acts as a wireless access gateway, providing reliable connectivity to outdoor Wi-Fi networks, as well as an extended range indoor 802.11b/g access point.

The Ruckus MetroFlex NG is the world's first customer premise equipment specifically designed and optimized for broadband operators building large-scale metro Wi-Fi networks.

Patent-pending hardware and software let subscribers connect faster and more reliably to outdoor metro Wi-Fi networks – automatically optimizing around changing environmental conditions. Intelligent connection algorithms determine the fastest Wi-Fi mesh node with which to associate based on the highest data rates and best signal strength.

The Ruckus MetroFlex NG is the only system that provides unprecedented diversity through the use of a unique, dual-polarized antenna array. This provides the largest coverage area possible, the strongest resilience to interference and the highest receive sensitivity.

The Ruckus MetroFlex NG is equipped with integrated smart-MIMO antenna technology developed to reliably communicate with the metro Wi-Fi nodes. Compatible with standard 802.11b/g metro Wi-Fi nodes, the Ruckus MetroFlex NG 802.11b/g wireless access gateway extends the metro Wi-Fi coverage to hard-to-reach indoor locations.

For increased deployment flexibility, the Ruckus MetroFlex also comes equipped with an external RF connection. This provides the ability to deploy a high-gain antenna away from the CPE.

BENEFITS

Increased performance/range for communicating with metro Wi-Fi nodes
Advanced customer premise equipment (CPE) designed to provide indoor (home and office) coverage extension of metro Wi-Fi signals

Dual zone support
Simultaneously functions as a long-range wireless receiver to outdoor Wi-Fi networks and as a high performance Wi-Fi access point indoors

Unprecedented reliability
Antenna diversity and automatic antenna selection optimizes signal quality to metro Wi-Fi network

Secure management access
IP management access allows providers to restrict and control remote access to in-home subscriber units

Robust security
Discrete SSIDs and associated security configurations for both the WAN and LAN

Automatic interference avoidance
Mitigates multipath fading and avoids RF interference by continuously selecting the best signal path to the metro Wi-Fi Nodes

Long-range bidirectional connectivity
Wi-Fi node selection based on link capacity and high output power deliver faster, long-range connections (optional external RF antenna connection available)

Automatic upgrades
Periodic updating provides automatic downloads of latest firmware without user intervention

Ruckus MetroFlex NG

High Performance Access Gateway and Wi-Fi Router

Introducing the Ruckus MetroFlex

The Ruckus MetroFlex NG is the first smart-MIMO Wi-Fi gateway that reliably extends metro Wi-Fi signals indoors. The Ruckus MetroFlex NG is equipped with industry's first dual-polarized antenna array to optimize communication with metro Wi-Fi nodes. Additionally, an external RF antenna option works in concert with the smart antenna array and Ruckus' patented expert control software to ensure the best antenna patterns and RF paths are selected for sending and receiving traffic.

The Ruckus MetroFlex NG automatically avoids Wi-Fi interference and mitigates multipath fading by selecting the best signal path to the wireless AP. Traditional Wi-Fi systems are equipped with a single vertically-oriented, omni-directional antenna that becomes less effective when the multipath signal arrives out of phase and cross polarized.

The Ruckus MetroFlex NG integrates patent-pending Ruckus BeamFlex technology that constantly learns the RF environment and automatically adjusts the antenna pattern to steer signals to the optimum path. Just as the other Ruckus products (MediaFlex router and adapter), MetroFlex substantially increases both Wi-Fi performance and range.

The Ruckus MetroFlex NG seamlessly communicates with metro Wi-Fi nodes by automatically associating with the best outdoor node. This built-in intelligence delivers optimum connectivity upon initial association. In the event of changes to the Wi-Fi environment or adjustments to the outdoor metro mesh network (eg. changes to channel assignments), the Ruckus MetroFlex continually rescans the RF domain so the selection of the best outdoor AP is maintained.

Dramatic Increases in Range and Performance

BeamFlex is the first-of-its kind smart antenna technology that works with off-the-shelf 802.11 silicon to deliver the most cost effective MIMO benefits to 802.11a/b/g devices today. Each Ruckus MetroFlex NG integrates Ruckus BeamFlex™ technology - a compact, internal antenna array with multiple dual-polarized directional antenna elements capable of combining to form unique antenna patterns for diversity.

BeamFlex expert system control software continuously ranks the antenna patterns for each destination device using the feedback mechanism built into the 802.11 MAC layer protocol. Cognizant of the real time RF conditions, the direction and performance of the communicating devices, network capacity and application types, BeamFlex steers each packet to the optimum signal path, enabling a Wi-Fi device to sustain high transmission speeds and minimize retransmissions. Unlike conventional wireless devices, the Ruckus MetroFlex NG dynamically mitigates interference caused by multipath fading, neighbour networks and other wireless devices.
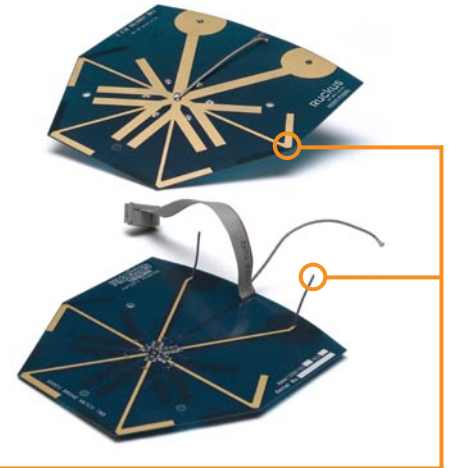
A state-of-the-art smart antenna array controlled by an expert software system integrates six high-gain horizonally-polarized antenna elements and two vertically-polarized antenna elements. This provides a 7 dBi gain thereby delivering unprecedented range extension and Wi-Fi signal reliability. The best antenna elements are use at any given moment for any given packet and any given client based on changing environmental conditions.

RECEIVE SENSITIVITY

Data Rate	RX Sensitivity
802.11b	
1 Mbps	-99 to -108 dBm
2 Mbps	-96 to -104 dBm
5.5 Mbps	-91 to -98 dBm
11 Mbps	-90 to -94 dBm
802.11g	
6 Mbps	-93 to -96 dBm
9 Mbps	-90 to -96 dBm
12 Mbps	-90 to -94 dBm
18 Mbps	-88 to -91 dBm
24 Mbps	-85 to -88 dBm
36 Mbps	-82 to -86 dBm
48 Mbps	-78 to -81 dBm
54 Mbps	-76 to -81 dBm

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SSID A
Channel 1

SSID B
Channel 1

SSID B
Channel 1
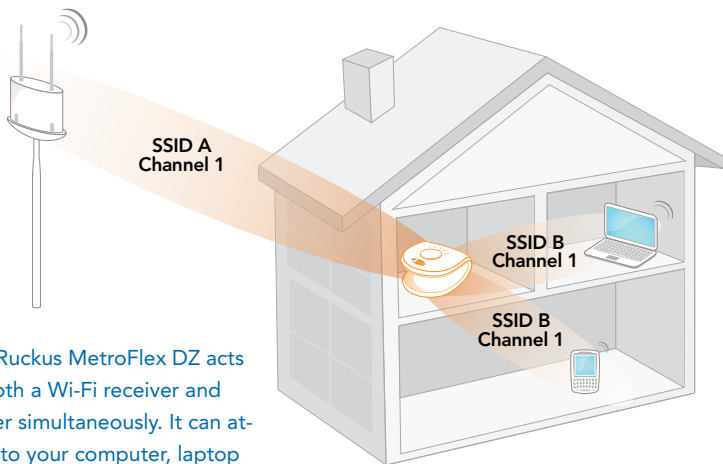
The Ruckus MetroFlex DZ acts as both a Wi-Fi receiver and router simultaneously. It can attach to your computer, laptop or networking hub using an Ethernet cable or via a wireless 802.11g link.

MetroFlex 2211-NG

MetroFlex 2225-NG

MetroFlex 2211-EXT

Simple Installation, Reduced Support Costs

Self-installable, the Ruckus MetroFlex NG utilizes dynamic host configuration protocol (DHCP) for automatic configuration with the metro Wi-Fi network. The Ruckus MetroFlex NG has a simple and intuitive user interface and pr vides a setup wizard to guide the home users to configure the device.

The Ruckus MetroFlex NG is equipped to be remotely manageable by the metro Wi-Fi service provider's network management center via HTTP, HTTPS, Telnet and SSH. The Ruckus MetroFlex NG provides extensive statistics to the service provider's network management center for ease of troubleshooting and monitoring. Multiple clients are supported behind the Ruckus MetroFlex NG in the metro Wi-Fi network. Integrated NUTTCP support allows providers to conduct performance testing directly from the metro node to the MetroFlex NG.

The Ruckus MetroFlex NG is equipped with DHCP server functionality. The MetroFlex supports multiple home PCs by automatically assigning dynamic IP addresses. Network address translation (NAT) is used to give home PCs Internet access. In the event of a broadband connection failure, the MetroFlex NG automatically alerts the user by redirecting them to an status page while continuing to provide local network connectivity.

Metro Hotspot Deployment

The Ruckus MetroFlex NG allows metro ISPs to easily extend wireless coverage while maintaining user identity. This is essential for providers that must authenticate users based on a unique MAC address. Through the use of L2TP tunnelling, traffic from a Ruckus AP is transparently bridged to a centralized data center or NOC, allowing the authentication and billing of individual users (see L2TP Application Note for more details)

FEATURES

- High gain horizontally and vertically- polarized directional antenna array

- L2TP tunnel bridges Wi-Fi clients onto carrier network allowing unique device authentication

- 200 milliwatt super high output power amplifier

- Management IP access lists

- Multiple SSIDs for WAN and LAN

- Separate security configurations between WAN and LAN

- Automatically alerts users when no Internet connectivity is available

- Network address translation

- Preferred BSSID to force association to a specific metro node

- DHCP client and server support

- Remote management support

- Integrated NUTTCP support

Specifications

Physical Characteristics

Power	• External power adapter • Input: 100-120V AC • Input: 220-240V AC • Output: 12V DC, 1A
Physical Size	• 14.2cm (L), 12.2cm (W), 7.5cm (H)
Weight	• 220 grams
Antenna	• Internal software-configurable antenna array with directional and omni high-gain elements that provide up to 63 unique antenna patterns • External RP-SMA connector option
Ethernet Ports	• 1 port (with or without external antenna) • 5 ports (without external antenna) • Auto MDX, auto-sensing 10/100 Mbps, RJ-45
LED display	• Power/status, Ethernet status, Wi-Fi status, Wi-FI network quality indicator
Environmental conditions	• Operating temperature: 32°F (0° C) -104°F (40°C) • Operating humidity: 15% - 95% non-condensing

Management (when individually managed)

Configuration and statistics interface	• Web user interface (HTTP/S) • CLI (Telnet, SSH) • SNMP
Statistics	• LAN, wireless and associated stations • Accessible via Web UI
Software update	• Manually or automatically via FTP or TFTP or WebUI (preconfigured with address of Ruckus-hosted firmware server)
Other utilities	• Configuration dump (admin only) • Simple support into transfer to provider • Smart configuration wizard

Wi-Fi

Standards	• 802.11b/g
Supported data rates	• 54,48,36,24,18,12,11,5.5,2,1 Mbps
Channels	• US/Canada: 1-11 • Europe (ETSI X30): 1-13 • Japan X41: 1-13
Routing	• Static routing
RF power output	• 23 dBm for 802.11b/g (200mW) • Country-specific power is configurable
NAT	• Supported
DHCP	• Supported
Bridge mode	• Supported
Router mode	• Supported
Tunnel mode	• L2TP
Auto channel selection	• Supported
Transmit power control	• Supported
Certifications	• FCC (U.S.), CE (EU), OFTA (Hong Kong) Canada, Australia/New Zealand • Plenum rating (UL 2043) - in process • WEEE/ROHS compliance
Wireless Security	• WEP, WPA-TKIP, WPA2-AES
Authentication	• 802.1x (EAP-TTLS)
Client statins supported	• 10

Product Ordering information

Model	Description
MM-2211-NG (US, EU, UK, AU, UN)	1-port metro Wi-Fi gateway
MM-2211-EXT (US)	1-port metro Wi-Fi gateway with external antenna option
MM-2225-NG (US, EU, UK, AU, UN)	5-port metro Wi-Fi gateway

PLEASE NOTE:
When ordering you must specify the destination region by indicating -US -EU or -UK following the model number.

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