PRODUCT SPEC SHEET
RFS 4000 SERIES

RFS 4000 SERIES
802.11N INTEGRATED SERVICES CONTROLLER

TRUE CONVERGENCE OF WIRED AND WIRELESS SERVICES FOR BRANCH FACILITIES

The Zebra RFS 4000 802.11n wireless services controller integrates wired, wireless and security networking features into a compact and easy-to-use form factor, enabling organizations to create survivable branch networks using a single platform. The RFS 4000 is also available with an integrated dual radio dual band 802.11n access point** that features extensive coverage and performance — meeting all the needs of SME/SMB. Supports 3X3 MIMO with conducted transmit power of 27.7dBm and superior receive sensitivity- provides best in class range, coverage and application performance. In addition, the RFS 4000 Series offers built in applications such as Locationing for Wi-Fi and RFID* as well as Hotspot and VoWLAN/Video Services.

ALWAYS ON SECURE NETWORKING

The RFS 4000 offers multiple features that ensure reliability and survivability of branch networking services in virtually any situation. The RFS 4000 protects against access point and mesh node failure with SMART RF, a feature that keeps users on-Net with automatic optimization and healing. Zebra's patent pending clustering mechanism protects against wireless switch failure and offers Active/Active or Active/Standby controller redundancy options. In the event of a WAN outage, a 3G ExpressCard guarantees Internet services by providing WAN backhaul options. With the Integrated Dual Radio Dual band form factor, the RFS 4000 is the only Services Controller in the Industry that offers concurrent access in the 2.4 and 5 GHz bands, with mesh capabilities in a multi-cell environment. Also, as a hallmark of Zebra Enterprise WLAN and Security Solutions, one the of radios in the RFS 4000 can be utilized to provide 24x7x365 IDS/IPS, Spectrum Analysis and Advanced Troubleshooting capabilities — while the other radio can provide concurrent access to wireless users.
Finally, the RFS 4000 Series displays true convergence by securing both the wireless and wired network with its Integrated Stateful L2-7 Wired/Wireless Firewall, Integrated IDS/IPS engine for Rogue Detection and Containment, Anomaly Analysis engine, DoS Attack protection and Ad-Hoc Network Detection.

EXTREMELY SIMPLE TO DEPLOY AND MANAGE — NO LOCAL IT SUPPORT REQUIRED

Multiple features combine to eliminate the need for onsite IT support for deployment and day-to-day management, including: built-in intelligence that allows the network to identify and automatically address network issues; zero touch installation; and the integration of all wired and wireless networking infrastructure into a single device that is easily managed back in the NOC via auto-discovery and auto-configuration.

ADVANCED SERVICES FOR THE SMART BRANCH

The RFS 4000 not only offers wired and wireless networking and security services, but also value-added and productivity applications. An integrated customizable Secure Guest Access application with distributed or centralized authentication enables a branch network to offer hotspot services for guests. A real-time locationing system for Wi-Fi and RFID alike allows centralized asset tracking and monitoring*. Storage via USB allows the RFS 4000 to be used for software image distribution for wireless clients in a branch network. Support for VoWLAN provides cost-effective voice services throughout the wireless

FEATURES
A converged platform of features & functionality

The RFS 4000 is a fully integrated 802.11n wireless services controller, 802.11n access point, wired switch with 5 POE ports rolled into one, with IPSEC VPN/ firewall/WIPS security, RADIUS & DHCP server, location & RFID engines*, 3G failover, and more

WiNG Architecture

Improve business process flow with one platform for wireless voice, video, data and multiple RF technologies — such as RFID*, Wi-Fi (including 802.11n) and 4G technologies in the future; rich enterprise-class functionality includes seamless roaming across L2/L3 deployments, resilient failover capabilities, comprehensive security, toll-quality voice and other value-added services. Learn more at zebra.com/wing5.

Wireless

enterprise, enabling push-to-talk and more for employees inside the four walls as well as outside. The rich feature set provides granular control over the many wireless networking functions required to deliver high performance, persistent, clear connections with toll-quality voice. Quality of Service (QoS) ensures superior performance for voice and video services. WMM Admission Control, including TSPEC, SIP Call Admission Control, and 802.11k radio resource management, ensures dedicated bandwidth for voice calls as well as better control over active voice calls for a variety of VoIP handsets.

END-TO-END SUPPORT

As an industry leader in mobility, Zebra offers the experience gained from deploying mobility solutions all over the globe in many of the world's largest enterprises. Leverage this expertise through Zebra Enterprise Mobility Services, which provides the comprehensive support programs you need to deploy and maintain your RFS 4000 at peak performance. Zebra recommends protecting your investment with Service from the Start Advance Exchange Support, a multi-year program that provides the next-business-day device replacement , technical software support and software downloads you need to keep your business running smoothly and productively. This service also includes Comprehensive Coverage, which covers normal wear and tear, as well as internal and external components damaged through accidental breakage — significantly reducing your unforeseen repair expenses.

For more information, visit us on the web at **www.zebra.com/rfs4000** or access our global contact directory at **www.zebra.com/contact**

RFS 4000 Series: True wired/wireless convergence for a smart branch network
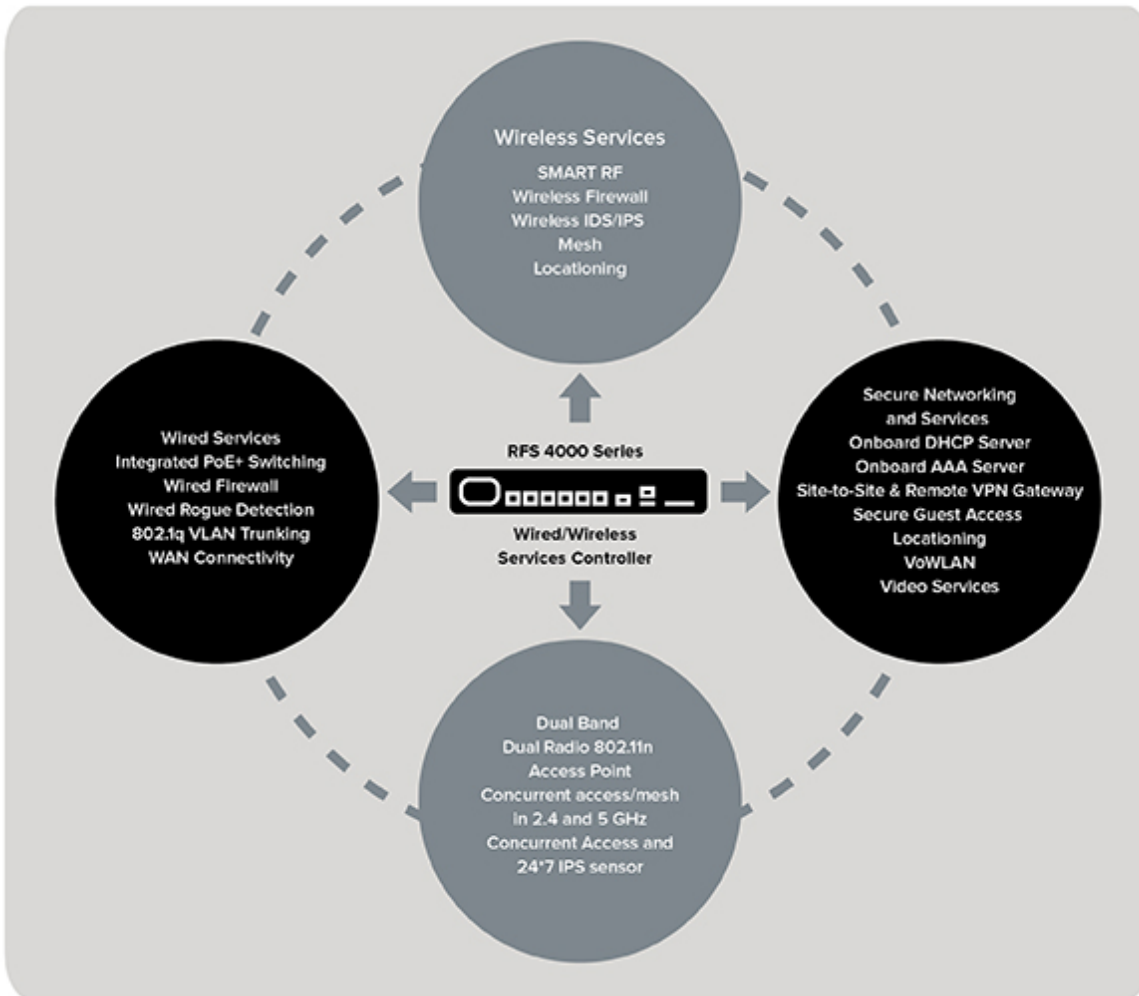
RFS 4000 network architecture — enabling branch mobility

Intrusion Detection/Protec System

The integrated IDS/IPS provides defense against over-the-air attacks by leveraging the dual-band sensing capabilities of the 802.11n APs. An Advanced WIPS modules provides further protection for the wireless network with wired side detection and containment of rogue APs over the air.**
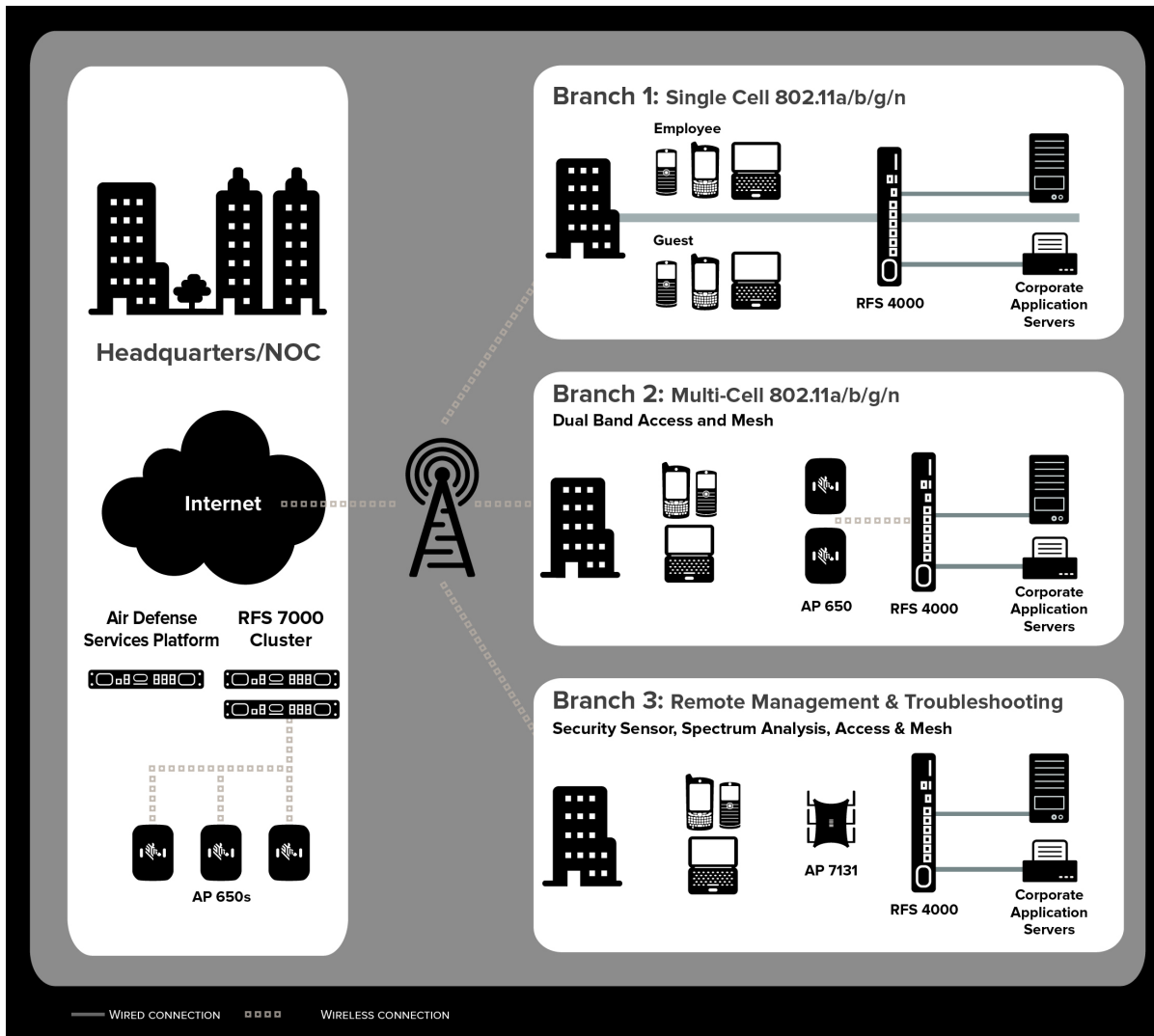
Secure Guest Access (Hotspot)

Provides secure guest access for wired* and wireless clients. built-in captive portal, customizable login/ welcome pages, URL redirection for user login, usage-based charging, dynamic VLAN assignment of clients, DNS white list, GRE tunneling of traffic to central site*, API support for interoperability with custom web portals*

Real Time Locationing System (RTLS) *

Provides rich locationing services to enable real-time enterprise asset-tracking through support for 802.11, RFID and third party locationing solutions — including industry leaders AeroScout, Ekahau, and Newbury Networks. Standards-based support for: EPC Global ALE interface for processing and filtering data from all active and passive tags; and EPC Global LLRP interface for passive RFID tag support

3G connectivity for failover or rapid deployment

Branch 1: Single Cell 802.11a/b/g/n

Employee

Guest

RFS 4000

Corporate Application Servers

Branch 2: Multi-Cell 802.11a/b/g/n
Dual Band Access and Mesh

AP 650   RFS 4000   Corporate Application Servers

Branch 3: Remote Management & Troubleshooting
Security Sensor, Spectrum Analysis, Access & Mesh

AP 7131   RFS 4000   Corporate Application Servers

Headquarters/NOC

Internet

Air Defense Services Platform   RFS 7000 Cluster

AP 650s

— WIRED CONNECTION   WIRELESS CONNECTION

Support for 3G wireless WAN backhaul with various off the shelf 3G PCI Express cards traffic when the primary WAN Link fails

Enhanced End-to-End Quality of Service (QoS)

Enhances voice and video capabilities; prioritizes network traffic to minimize latency and provide optimal quality of experience over the wire and over the air; SIP Call Admission Control and Wi-Fi Multimedia Extensions (WMM-Power Save) with Admission Control enhances multimedia application support and improves battery life and capacity

RFS 4000 Part Numbers:

RFS4010-00010-WR: 6 Port RFS 4000 Integrated Services Controller

RFS-4010-MTKT1U-WR: I RU Mounting Kit

RFS-4011-MTKT2U-WR: 2 RU Mounting Kit

RFS-4011-11110-US: RFS 4000 Services Controller with Integrated Dual Radio Access Point for US

RFS-4011-11110-WR: RFS 4000 Services Controller with Integrated Dual Radio Access Point for Worldwide (excluding US)

The RFS 4000 enables distributed enterprises to provide any size branch office with high performance, comprehensive, cost-effective and secure wireless and wired networking services.

RFS 4000 SPECIFICATIONS

PACKET FORWARDING

802.1D-1999 Ethernet bridging; 802.11-.802.3 bridging; 802.1Q VLAN tagging and trunking; proxy ARP; IP packet steering-redirection

WIRELESS NETWORKING

Wireless LAN	Supports 24 WLANs; multi-ESS/BSSID traffic segmentation; VLAN to ESSID mapping; auto assignment of VLANs (on RADIUS authentication); power save protocol polling; pre-emptive roaming; VLAN Pooling and dynamic VLAN adjustment; IGMP Snooping
Bandwidth	Congestion control per

NETWORK SECURITY

Role-based wired/wireless firewall (L2-L7) with stateful inspection for wired and wireless traffic; Active firewall sessions — 50,000 per RFS 4000 Integrated Services Controller; protects against IP Spoofing and ARP Cache Poisoning

Access Control Lists (ACLs)	L2/L3/L4 ACLs
Wireless IDS/IPS	Multi-mode rogue AP detection, Rogue AP Containment, 802.11n Rogue Detection, Ad-Hoc Network Detection, Denial of Service protection against wireless attacks, client blacklisting, excessive authentication/association; excessive probes; excessive

management	WLAN; per user based on user count or bandwidth utilization; bandwidth provisioning via AAA server
Layer 2 or Layer 3 deployment of access points	
Layer 3 Mobility (Inter-Subnet Roaming)	
IPv6 client support	
Thin Access Ports	Supports 6 802.11a/b/g AP 300 thin access points for L2 or L3 deployment per; 6*/ 36** AP 650s per controller **; Legacy support*: AP100 for L2 deployments only
Adaptive AP	Supports adoption of 6 adaptive AP 51X1 802.11a/b/g and 36** 802.11a/b/g/n access points in adaptive mode per RFS 4000 Integrated Services Controller; multiple country configuration support; Legacy support*: AP 4131 Access Point conversion for L2 deployments only

REAL TIME LOCATIONING SYSTEM (RTLS)*

RSSI based triangulation for Wi-Fi assets	
Tags supported	Ekahau, Aeroscout, Gen 2 Tags

QUALITY OF SERVICE

Wi-Fi Multimedia extensions	WMM-power save with TSPEC Admission Control; WMM U-APSD
IGMP snooping	Optimizes network performance by preventing flooding of the broadcast domain
SIP Call Admission Control	Controls the number of active SIP sessions initiated by a wireless VoIP phone
802.11k	Provides radio resource management to improve client throughput (11k client required)
Classification and marking	Layer 1-4 packet classification; 802.1p VLAN priority; DiffServ/TOS

PHYSICAL CHARACTERISTICS

Form factor	1U Rack Mount Tray available for the RFS4010

	disassociation/deauthentication; excessive decryption errors; excessive authentication failures; excessive 802.11 replay; excessive crypto IV failures (TKIP/CCMP replay); Suspicious AP, Authorized device in ad-hoc mode, unauthorized AP using authorized SSID, EAP Flood, Fake AP Flood, ID theft, ad-hoc advertising Authorized SSID
Geofencing	Add location of users as a parameter that defines access control to the network
WIPS sensor conversion	Supported on all dependent and Independent/ Adaptive Access Points
Anomaly Analysis	Source Media Access Control (MAC) = Dest MAC; Illegal frame sizes; Source MAC is multicast; TKIP countermeasures; all zero addresses
Authentication	Access Control Lists (ACLS); pre-shared keys (PSK); 802.1x/EAP—transport layer security (TLS), tunneled transport layer security (TTLS), protected EAP (PEAP); Kerberos Integrated AAA/RADIUS Server with native support for EAP-TTLS, EAP-PEAP (includes a built in user name/password database; supports LDAP), and EAP-SIM
Transport encryption	WEP 40/128 (RC4), KeyGuard, WPA—TKIP, WPA2-CCMP (AES), WPA2-TKIP
802.11w*	Provides origin authentication, integrity, confidentiality and replay protection of management frames for Zebra's AP 300 access point
IPSec VPN gateway	Supports DES, 3DES and AES-128 and AES-256 encryption, with site-to-site and client-to-site VPN capabilities
Secure guest access (Hotspot provisioning)	Provides secure guest access for wired and wireless clients. built-in captive portal, customizable login/ welcome pages, URL redirection for user login, usagebased charging, dynamic VLAN assignment of clients, DNS white list, GRE tunneling of traffic to central site*, API support for interoperabilty with custom web portals* support for

RFS 4011 available only with WiNG 5.

ML-2452-PTA4M3X3-1: 3X3 MIMO Facade Antenna for the RFS 4011

RFS-4000-6ADP-LIC:** 6 Adaptive Licenses for RFS4000

RFS-4000-ADWIP-LIC:** Advanced Wireless Intrusion Protection License for RFS4000

RFS 4011 802.11n MIMO Capabilities:

- 3X3 MIMO with 2 Spatial Streams
- 20 MHz and 40 MHz Channels
- 300 Mbps Data Rates per Radio
- Packet Aggregation (AMSDU, AMPDU)
- Reduced Interframe Spacing
- MIMO Power Save (Static and Dynamic)

Radio Specications for RFS 4011:

Network standards:

IEEE 802.11a/b/g/n, 802.11d and 802.11i WPA2, WMM and WMM-UAPSD

Wireless medium:

Direct Sequence

	2U Rack Mount Tray available for the RFS4011
Dimensions	RFS 4010: 1.75 in. H x 12 in. W x 10 in. D 44.45 mm H x 304.8 mm W x 254.0 mm D Antenna facade: 289.2mm x 340mm x 20.5mm
Weight	RFS 4010: 4.75 lbs./2.15 kg RFS 4011: 4.9lbs Antenna facade: 1.45lb
Physical interfaces	1x Uplink Port -10/100/1000 Cu/ Gigabit SFP interface 5x 10/100/1000 Cu Ethernet Ports, 802.3af and 802.3at Draft 1x USB 2.0 Host 1x ExpressCard™ Slot 1x Serial Port (RJ45 style)
Antenna Connections	RFS 4011: RP-SMA
MTBF	>65,000 Hours

RECOMMENDED ENTERPRISE MOBILITY SERVICES

Customer Services	Service from the Start Advance Exchange Support

USER ENVIRONMENT

Operating temperature	32° F to 104° F /0° C to 40° C
Storage temperature	-40° F to 158° F/-40° C to 70° C
Operating humidity	5% to 85% (w/o condensation)
Storage humidity	5% to 85% (w/o condensation)
Heat dissipation	95 BTU/hr for RFS 4010, 190 BTU/hr for RFS 4011
Max Operating Altitude	3000m

SYSTEM RESILIENCY AND REDUNDANCY

Active:Standby; Active:Active and N+1 redundancy with access port and Wireless Clients load balancing; Critical resource monitoring

Virtual IP*: Single virtual IP (per VLAN) for a switch/contoller cluster to use as the default gateway by mobile devices or wired infrastructure. Seamless fail-over of associated services e.g. DHCP Server.

SMART RF: Network optimization to ensure user

external authentication and billing systems

Wireless RADIUS Support (Standard and Zebra Vendor Specific Attributes)	User Based VLANs (Standard) MAC Based Authentication (Standard) User Based QoS (Zebra VSA) Location Based Authentication (Zebra VSA) Allowed ESSIDs (Zebra VSA)

NAC support with third party systems from Microsoft, Symantec and Bradford

SYSTEM EXTENSIBILITY

ExpressCard™ Slot: Driver support for 3G wireless cards for WAN backhaul
- AT&T (NALA) – HYPERLINK "http://www.wireless.att.com/businesscenter/sierra-wireless-aircard-890/index.jsp?skuId=sku9557600025" Sierra Wireless AirCard® 890, Option GT Ultra Express
- Verizon (NALA) – V770 Express Card
- Sprint (NALA) - Sprint Novatel Merlin C777 Express card
- Rogers Wireless (Canada) – Sierra Wireless AirCard® 503
- Vodaphone (EMEA) – Novatel Merlin XU870
- Vodaphone (EMEA) – Vodaphone E3730 3G Expresscard
- Telstra (Australia) – Sierra Wireless AirCard® 503, Telstra Turbo 7 series Expresscard (Aircard 880E)
- General Use – Novatel Merlin XU870, Option GE 0302, Sierra Wireless AirCard® 504

MANAGEMENT

Command line interface (serial, telnet, SSH); secure Web-based GUI (SSL) for the wireless switch and the cluster; SNMP v1/v2/v3; SNMP traps—40+ user configurable options; Syslog; Firmware, Config upgrade via TFTP, FTP & SFTP (clients); simple network time protocol (SNTP); text-based switch configuration files; DHCP (client/server/relay), switch auto-configuration and firmware updates with DHCP options; multiple user roles (for switch access); MIBs (MIB-II, Etherstats, wireless switch specific monitoring and configuration); Email notifications for critical alarms; MU naming capability

POWER REQUIREMENTS

AC input voltage	100-240 VAC 50/60Hz
Operating Voltage	44 to 57 VDC
Operating Current	2.5A(max) @48 VDC or 2.2A(max) @ 54 VDC
Max Power Consumption	120W for RFS 4010, 150W for RFS 4011

Spread Spectrum (DSSS), Orthogonal Frequency Division Multiplexing (OFDM) and Spatial multiplexing (MIMO)

Data rates supported:

802.11b/g: 1,2,5.5,11,6,9,12,18,24 and 54Mbps

802.11a: 6,9,12,18,24,36,48, and 54Mbps

802.11n: MCS 0-15 up to 300Mbps

quality of experience at all times by dynamic adjustments to channel and power (on detection of RF interference or loss of RF coverage/neighbor recovery). Available for both thin APs and Adaptive APs.

Dual Firmware bank supports Image Failover capability

REGULATORY

Product safety	UL / cUL 60950-1, IEC / EN60950-1
EMC compliance	FCC (USA), Industry Canada, CE (Europe), VCCI (Japan), C-Tick (Australia/New Zealand)

Maximum available transmit power per chain on an RFS 4011: 23 dBm
Maximum available transmit power per RFS 4011: 27.7 dBm

Receiver Sensitivity: Operating Band 2.4GHz			Receiver Sensitivity: Operating Band 5GHz		
		Typical Receive Sensitivity (dBm)			Typical Receive Sensitivity (dBm)
Operating Modes	Data Rate	RFS 4011 Radios 1 and 2	Operating Modes	Data Rate	RFS 4011 Radios 1 and 2
802.11b	1 Mb/s	-96	802.11a	6 Mb/s	-93
	2 Mb/s	-94		9 Mb/s	-93
	5.5 Mb/s	-93		12 Mb/s	-93
	11 Mb/s	-90		18 Mb/s	-92
802.11g	6 Mb/s	-94		24 Mb/s	-89
	9 Mb/s	-94		36 Mb/s	-86
	12 Mb/s	-95		48 Mb/s	-82
	18 Mb/s	-94		54 Mb/s	-80
	24 Mb/s	-90	802.11n (HT20)	MCS0	-93
	36 Mb/s	-87		MCS1	-92
	48 Mb/s	-83		MCS2	-90
	54 Mb/s	-82		MCS3	-86
802.11n (HT20)	MCS0	-95		MCS4	-83
	MCS1	-93		MCS5	-79

	MCS2	-91		MCS6	-78
	MCS3	-87		MCS7	-76
	MCS4	-85		MCS8	-92
	MCS5	-81		MCS9	-90
	MCS6	-79		MCS10	-87
	MCS7	-78		MCS11	-84
	MCS8	-94		MCS12	-81
	MCS9	-91		MCS13	-77
	MCS10	-88		MCS14	-75
	MCS11	-85		MCS15	-73
	MCS12	-82	802.11n (HT40)	MCS0	-90
	MCS13	-79		MCS1	-89
	MCS14	-77		MCS2	-86
	MCS15	-75		MCS3	-83
802.11n (HT40)	MCS0	-90		MCS4	-80
	MCS1	-89		MCS5	-76
	MCS2	-87		MCS6	-74
	MCS3	-84		MCS7	-73
	MCS4	-82		MCS8	-89
	MCS5	-78		MCS9	-86
	MCS6	-76		MCS10	-84
	MCS7	-75		MCS11	-81
	MCS8	-87		MCS12	-78
	MCS9	-87		MCS13	-74
	MCS10	-85		MCS14	-72
	MCS11	-83		MCS15	-71
	MCS12	-80			
	MCS13	-75			
	MCS14	-74			
	MCS15	-72			

ICSAlabs CERTIFIED FIREWALL-CORPORATE

a b g WiFi n CERTIFIED®

* Available in WING v4 only
** Available in WiNG v5 only

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