



DATASHEET

RA820E AI-ENABLED ACCESS POINT

For Businesses to Deliver Innovative Services and Applications Beyond Connectivity

Intelligence at the Edge

The RA820E is an innovative, rugged outdoor access point that, combined with Aprecomm's AI Engine, serves as an intelligent network node in the Relay2 edge-computing platform.

Combining high-performance, industry-standard 802.11ac wireless access with a powerful processor, dedicated memory, and solid-state storage, the RA820E brings business-critical applications and services to life. Value-added applications and compute-intensive services are able to run locally, allowing for business solutions never before possible, all while greatly increasing performance and cost savings at the edge.

Pervasive Knowledge in the Cloud

Relay2 Cloud is not just another user interface to manage and configure access points: It is your virtual wireless expert, monitoring the wireless experience of your connected devices and helping you optimize it for your specific use case. This is done by harvesting and processing the available wealth of information generated by your wireless devices using the network. Based on this data, the Relay2 Cloud is correlating the various aspects of your network (wired/wireless) in real time, providing detailed and easy-to-understand insights, and providing information on how to improve network reliability and performance.

Relay2 Cloud learns about the behavior of every wireless client associated with it, deriving the best possible configuration to provide an unbeatable wireless customer experience. As the system is gaining more and more insights from active deployments, those learnings about optimal access-point configuration are made available to every customer subscribed to our services, further improving reliability and performance without further investment.



PRODUCT AT A GLANCE

- **Rugged Outdoor Design** built to withstand harsh weather conditions
- **Enterprise-Class 802.11ac Access Point** offering high-performance, scalable Wi-Fi connectivity and hotspot services
- **Virtual Wireless Expert** to always understand your wireless network and keep improving it
- **Powerful Edge Computing, Memory, and Storage** enabling edge applications, content hosting, and delivery
- **Real-Time Insights** with an artificial intelligence engine providing real insights of WLAN performance
- **Built-in Web Utilities and Contextual Intelligence** simplifying service delivery and enhancing business intelligence
- **Open Platform with SDK and API** enabling third-party applications integration
- **Plug-and-Play Deployment** fast-service rollout
- **Multitenancy Management** supporting managed service practice



FEATURES

MANAGED VIRTUAL AP (MVAP)

Each physical RA820E can be virtualized into as many as eight managed virtual AP (MVAP) instances, which enables multiple tenants to share a single common infrastructure. Each instance has its own management login, providing complete administrative control and visibility as well as security and segregation of networking and application resources. More than just a WLAN profile, tenants are able to manage and control an MVAP as if it was their own physical AP.

This Relay2 patent-pending capability allows venue operators and property owners to monetize their wireless infrastructure by selling each AP to multiple groups or organizations, ranging from tenants to service providers. Using MVAP

eliminates the need to overbuild infrastructure, which reduces per-tenant costs and keeps the spectrum clean to yield far superior radio performance.

MVAP is ideal for providing hassle-free, secure Wi-Fi access to tenant businesses in a shopping center or temporary access to event organizers and exhibitors at convention centers. Alternatively, MVAP can enable property owners to provide a neutral host solution to multiple carriers and hotspot operators offering public-access Wi-Fi. In both scenarios, MVAP customers are freed from maintaining a physical device while enjoying enterprise-class features.

FEATURES

SERVICE DELIVERY

Edge-Computing Hardware

Supporting a 2-core processor with 1 GB DDR memory and 8 GB solid-state drive (with the ability to scale up to 2 GB of DDR memory and a 128 GB solid-state drive), the RA820E has been specifically designed to provide the processing, memory, and storage power needed to deliver valued-added applications and services at the edge of the network.

Application Hosting

The RA820E has been architected to directly host a broad variety of applications via containers. The RA820E can host multiple containers, with each providing isolated environments in which one or more applications can run. Containers enable third-party applications to be installed in a secure and isolated manner.

AI Insights

With its artificial intelligence, the RA820E will proactively monitor the network to understand the behavior and demands of the connected wireless devices and measure the real-time wireless experience of each such device. Combined with pervasive knowledge in the cloud, the RA250 will be able to self-diagnose the problems occurring in the field. It also provides actionable, real-time insights to the IT administrators as to root causes in order to help improve the wireless experience.

Application Management

Applications are installed, managed, and monitored via the Relay2 Cloud Controller. Cloud management simplifies the deployment and maintenance of business-critical applications across many locations.

Virtual Wireless Expert (VWE)

A virtual wireless expert (VWE), built using Aprecomm's Evolv™ AI engine, is available to you 24/7, along with our Relay2 dashboard. Minimal Wi-Fi expertise is needed to manage Relay2 access points, as we are shipping a VWE with our dashboard. IT admins can now communicate in simple English with our VWE, which can answer all your network-related queries. The VWE also provides users with suggestions to improve the wireless experience.

Edge Content Hosting

Equipping with edge storage up to 128 GB, the RA820E enables businesses to host and cache digital and web content at the edge of the network. By keeping digital content at edge of the network, closer to the users, business can deliver their content quickly and reliably, even at loss of internet connectivity. It optimizes content viewers' experiences, reduces network bandwidth load, and eases IT administration operation support.



FEATURES

HIGH-PERFORMANCE WIRELESS

Rugged Outdoor Design

The RA820E is built to withstand harsh weather conditions and dust and is IP67-rated. Despite its rugged design, the RA820E is easy to deploy.

High-Density Capacity

The RA820E is designed for deployments in client-dense environments, such as shopping centers, resorts, sporting venues, and convention centers. The dual-band SR-AP delivers fast, reliable coverage in challenging environments for client devices that routinely use bandwidth-intensive applications.

Enterprise-Class WLAN

The RA820E features integrated, easy-to-use networking and security technologies to provide truly robust connectivity. Advanced security features include AES encryption, WPA2-Enterprise

authentication with 802.1X, and client isolation. Networking features include VLAN tagging and advanced QoS capabilities.

Client Traffic Control and Optimization

The RA820E includes integrated layer 3 and 4 packet inspection and client-traffic blocking, enabling better control of the WLAN. Integrated support of wireless multimedia (WMM) optimizes the performance of bandwidth-sensitive voice and video applications.

Autoconfiguration and Optimization

When first plugged in, the RA820E automatically connects to the Relay2 Cloud Controller, where it downloads its configuration and joins the appropriate network. The RA820E then self-optimizes, determining the ideal channel, transmit power, and client connection parameters.



TECHNICAL SPECIFICATIONS

Radios

- One 2.4 GHz 802.11b/g/n, one 5 GHz 802.11a/n/ac
- Dual concurrent operation in 2.4 and 5 GHz bands
- Max rate: 300 Mbps in 2.4 GHz; 867 Mbps in 5 GHz
- Operating frequency range (country-specific restrictions apply): 2.400–2.483 GHz; 5.150–5.350 GHz; 5.725–5.825 GHz

802.11n/ac Capabilities

- 2 x 2 MIMO with two spatial streams
- Maximal ratio combining (MRC)
- 20 and 40 MHz channels (802.11n/ac), 80MHz (802.11ac)
- Aggregation of 90-byte packets with AES encryption
- Fast channel switching (1 ms)
- Maximum clients: 252

Antennas

- External omnidirectional antennas
- Gain: 5 dBi gain for 2.4 GHz and 7 dBi for 5 GHz
- N-type male connector

Virtual Wireless Expert

- Real-time wireless experience measurement and monitoring
- Natural language interface to answer your questions
- Band steering and client load balance using AI insights
- Auto channel selection using radio-pattern analysis

Mounting

- All standard mounting hardware included
- Wall and pole mountable

Interfaces

- 1x Gig Ethernet (RJ45) with 802.3at PoE+
- 4x N-type female connector
- 1x USB 2.0 (max 0.5A)
- 1x serial console

Physical Characteristics

- Dimensions: 218 mm x 250 mm x 54 mm (without antennae)
- Weight: 1854 g (without antennae)

Wireless Optimization

- Band steering
- Client load balancing
- Auto channel switching
- 5GHz dynamic channel selection

LED Indicators

- 1x power status indicator
- 1x Ethernet connectivity indicator
- 1x 2.4 GHz indicator
- 1x 5 GHz indicator

Power

- Power over Ethernet (802.3at PoE+ compatible)

Service Delivery

- 2-core processor, 1 GB DDR memory, and 8 GB solid-state drive (extensible up to 2 GB DDR and 128 GB SSD)
- Built-in web utility services: web caching, web server, HTML insertion, client analytics

Quality of Service

- Wireless multimedia (WMM)
- Advanced power save (U-APSD)
- Rate limiting per VLAN, per WLAN, per client

Environmental Conditions

- UV resistant, waterproof, IP67
- Operating temperature: -35°C to +60°C
- Operating humidity: Up to 95%

Security

- WPA, WPA2-PSK, WPA2-Enterprise with 802.1X
- TKIP and AES encryption
- Guest isolation
- Rogue AP detection
- Blacklist and MAC address filtering
- Stateless ACL C
- Client-to-client traffic blocking

WLAN Network

- IPv4 and VLAN tagging (802.1q)
- Client DHCP relay per VLAN and per WLAN
- Seamless client L2 roaming
- Wireless multicast optimization

Regulatory

- TELEC 205-180318, Wi-Fi Alliance WFA75928 (802.11ac)
- FCC* (US) IC* (Canada), TA* (China), NCC* (Taiwan), TA* (Indonesia), * Regulatory Certification In-progress

Warranty

- Limited lifetime hardware warranty

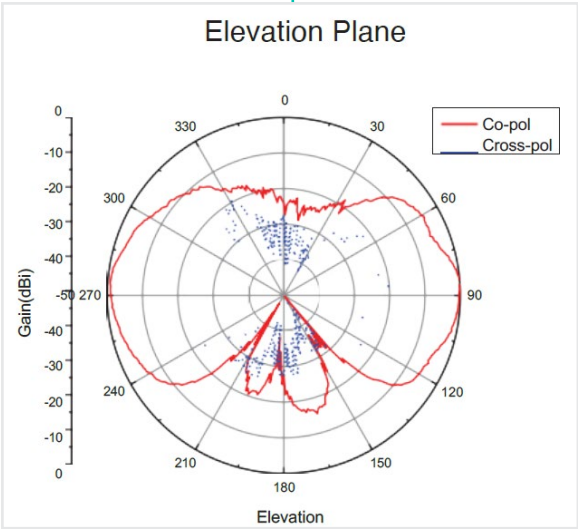
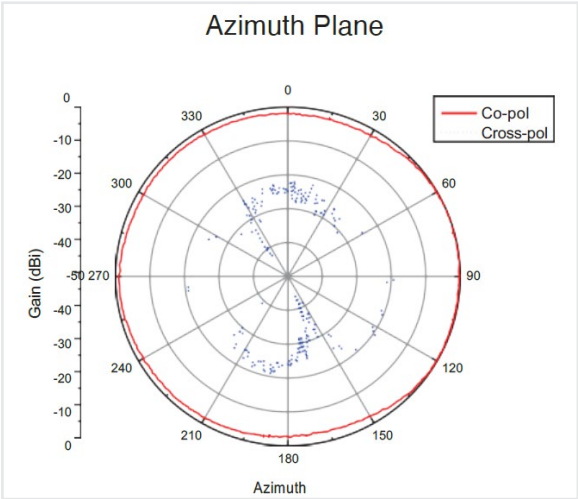
Ordering Information

- RA820E: 2x2 802.11ac outdoor SR-AP with external antennae

RF PERFORMANCE

Mode	Data Rate	TX Power	RX Sensitivity
802.11b	1 Mbps	21 dBm	-91 dBm
	11 Mbps	21 dBm	-88 dBm
802.11g	6 Mbps	23 dBm	-91 dBm
	54 Mbps	17 dBm	-76 dBm
802.11n (HT20)	MCS 0/8/16	21 dBm	-91 dBm
	MCS 1/9/17	20 dBm	-88 dBm
	MCS 2/10/18	18 dBm	-85 dBm
	MCS 3/11/19	17 dBm	-82 dBm
	MCS 4/12/20	17 dBm	-79 dBm
	MCS 5/13/21	17 dBm	-74 dBm
	MCS 6/14/22	17 dBm	-73 dBm
	MCS 7/15/23	17 dBm	-72 dBm
802.11n (HT40)	MCS 0/8/16	21 dBm	-88 dBm
	MCS 1/9/17	20 dBm	-85 dBm
	MCS 2/10/18	19 dBm	-82 dBm
	MCS 3/11/19	18 dBm	-79 dBm
	MCS 4/12/20	17 dBm	-76 dBm
	MCS 5/13/21	17 dBm	-72 dBm
	MCS 6/14/22	17 dBm	-70 dBm
	MCS 7/15/23	17 dBm	-70 dBm

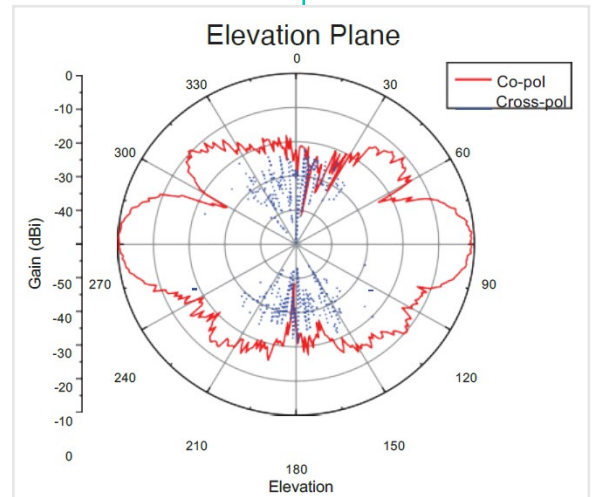
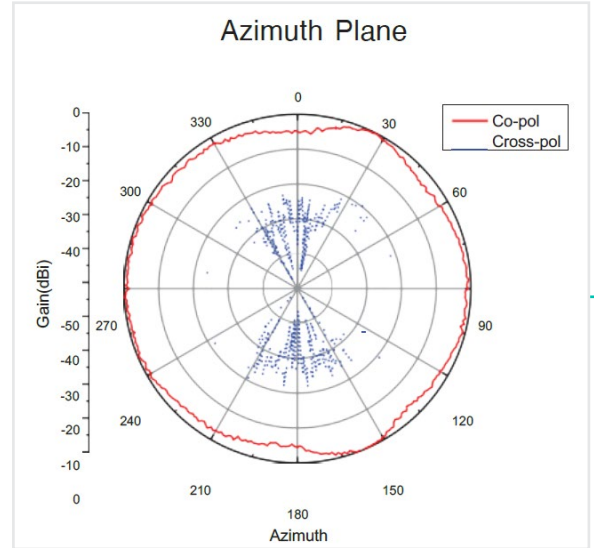
2.4 GHz ANTENNA COVERAGE



RF PERFORMANCE

Mode	Data Rate	TX Power	RX Sensitivity
802.11a	6 Mbps 54 Mbps	23 dBm 19 dBm	-92 dBm -76 dBm
802.11a/n (HT20)	MCS 0 MCS 1 MCS 2 MCS 3 MCS 4 MCS 5 MCS 6 MCS 7	19 dBm 17 dBm 17 dBm 16 dBm 16 dBm 15 dBm 15 dBm 14 dBm	-92 dBm -90 dBm -86 dBm -83 dBm -80 dBm -76 dBm -75 dBm -73 dBm
802.11n (HT40)	MCS 0 MCS 1 MCS 2 MCS 3 MCS 4 MCS 5 MCS 6 MCS 7	18 dBm 16 dBm 16 dBm 15 dBm 15 dBm 14 dBm 14 dBm 13 dBm	-92 dBm -90 dBm -86 dBm -83 dBm -80 dBm -76 dBm -75 dBm -73 dBm
802.11ac (HT80)	MCS 0 MCS 1 MCS 2 MCS 3 MCS 4 MCS 5 MCS 6 MCS 7 MCS 8 MCS 9	22 dBm 22 dBm 22 dBm 22 dBm 21 dBm 20 dBm 19 dBm 17 dBm 15 dBm	-86 dBm -84 dBm -82 dBm -78 dBm -76 dBm -74 dBm -72 dBm -64 dBm -62 dBm

5 GHz ANTENNA COVERAGE



5 GHz