AP33 ACCESS POINT DATASHEET

Product Overview

The AP33 access point and dynamic virtual Bluetooth LE (vBLE) antenna array automate network operations and boost Wi-Fi performance, while providing dynamic network insights and location services. Through its vBLE technology and open APIs, the AP33 enables the delivery of location-based services with one- to three-meter accuracy. It offers an aggregate data rate up to 3 Gbps with the 2.4 GHz and 5 GHz bands running concurrently.

Product Description

The Juniper® AP33 Wi-Fi 6 indoor access point delivers fast and reliable Wi-Fi experiences and location-based services with one- to three-meter accuracy for retail, warehouse, school, clinic, and home office environments. The AP33 offers an aggregate data rate up to 3 Gbps with the 2.4 GHz and 5 GHz bands running concurrently, and a patented virtual Bluetooth LE (vBLE) antenna array boosts Wi-Fi performance, while providing dynamic network insights and location services.

While wired and wireless networks are business critical, without the right architecture they can be harder to operate given the sheer number of mobile and IoT devices—not to mention the extensive variety of hardware, operating systems, and applications currently in use. Traditional architectures—highly manual and network-centric—lack the scale, flexibility, and end-to-end visibility required to support modern mobility requirements and the IT departments that manage them.

Juniper AI-Driven Network

Juniper Mist™ brings true innovation to wireless networking with the world's first AI-driven wireless LAN (WLAN). The Juniper AI-Driven Enterprise makes Wi-Fi predictable, reliable, and measurable with unprecedented visibility into the user experience through customizable service-level expectation (SLE) metrics. Proactive automation and a self-healing network replace time-consuming manual tasks, lowering Wi-Fi operational costs and saving substantial time and money.

The Juniper Mist Cloud Architecture

The Juniper Mist cloud-native, AI-driven microservices architecture delivers unparalleled agility, scale, and resiliency to your network. It lowers OpEx and delivers unprecedented insights into network performance, behaviors, traffic patterns, and potential trouble spots by using data science to analyze large amounts of rich metadata collected by the Juniper Access Points.

Juniper Access Point Family

The Juniper enterprise-grade access point family consists of:

- AP45 Series, AP34 , and AP24, which support Wi-Fi 6E, 802.11ax (Wi-Fi 6), and Bluetooth LE
- AP43 Series, AP33, AP32, AP12, and AP63 Series, which support 802.11ax (Wi-Fi 6) and Bluetooth LE

The real-time microservices in Juniper Mist cloud manage all these access points.

Table 1 compares the supported major functions of the Juniper Wi-Fi 6E and Wi-Fi 6 access points to help in selecting the most appropriate model(s).

Table 1: Juniper Wi-Fi 6E and Wi-Fi 6 Access Points

	AP45	AP34	AP24	AP43	AP33	AP12	AP63	AP64
Deployment	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor Wall Plate/ Desk Mount	Outdoor	Indoor/Outdoor
Wi-Fi Standard	Wi-Fi 6E 802.11ax (Wi-Fi 6E) 4x4:4	Wi-Fi 6E 802.11ax (Wi-Fi 6E) 2x2:2	Wi-Fi 6E 802.11ax (Wi-Fi 6E) 2x2:2 2.4/6 + 5 GHz	802.11ax (Wi-Fi 6) 4x4:4	802.11ax (Wi-Fi 6) 5 GHz: 4x4:4 2.4 GHz: 2x2:2	802.11ax (Wi-Fi 6) 2x2:2	802.11ax (Wi-Fi 6) 4x4:4	802.11ax (Wi-Fi 6E) 2x2:2
Wi-Fi Radios	Dedicated fourth radio for scanning	Dedicated fourth radio for scanning	Dedicated third radio for scanning	Dedicated third radio for scanning	Dedicated third radio for scanning	Dedicated third radio for scanning	Dedicated third radio for scanning	Dedicated third radio for scanning
Antenna Options	Internal/External	Internal	Internal	Internal/External	Internal	Internal	Internal/External	Internal
Virtual BLE	✓	–	–	✓	✓	–	✓	–
USB	✓	✓	✓	✓	✓	–	–	–
IoT Sensors	Temperature, Accelerometer	Temperature, Accelerometer	Temperature, Accelerometer	Humidity, Pressure, Temperature	Temperature, Accelerometer	–	Humidity, Pressure, Temperature	Temperature, Accelerometer
GPS/GNSS	–	–	–	–	–	–	–	✓
Warranty	Limited Lifetime	Limited Lifetime	Limited Lifetime	Limited Lifetime	Limited Lifetime	Limited Lifetime	One Year	One Year
Frequencies Supported	2.4 GHz, 5 GHz, 6 GHz	2.4 GHz, 5 GHz, 6 GHz	2.4 GHz, 5 GHz, 6 GHz	2.4 GHz, 5 GHz	2.4 GHz, 5 GHz	2.4 GHz, 5 GHz	2.4 GHz, 5 GHz	2.4 GHz, 5 GHz, 6 GHz

Services Available for the Juniper AP33

Wi-Fi Cloud Services

Juniper Mist Wi-Fi Assurance

For IT and NOC Teams

- Predictable and Measurable Wi-Fi
- Service-Level Expectation (SLE) Support
- WxLAN Policy Fabric for Role-Based Access
- Customizable Guest Wi-Fi Portal
- Radio Resource Management (RRM)

Marvis™ Virtual Network Assistant

For IT Helpdesk Teams

- AI-Powered Virtual Network Assistant
- Natural Language Processing Conversational Interface
- Anomaly Detection
- Client SLE Visibility and Enforcement
- Data Science-Driven Root Cause Analysis

Bluetooth Cloud Services

Juniper Mist Mobile Engagement

For Digital Experience Teams

- Accurate (1-3m) Turn-by-Turn Navigation
- Sensor Fusion with Dead Reckoning
- Unsupervised Machine Learning
- Virtual Beacons with Custom Notifications
- Mobile SDK for iOS and Android

Juniper Mist Asset Visibility

For Process and Resource Improvement Teams

- Identification of Assets by Name and View Location
- Zonal/Room Accuracy for Third-Party Tags
- Historical Analytics for Asset Tags
- Telemetry for Asset Tags (temperature, motion, and other data)
- APIs for Viewing Assets and Analytics

Analytics Cloud Services

Juniper Mist Premium Analytics

For Network Teams

- Baseline Analytics Features Come Included with Wi-Fi Assurance, Mobile Engagement, and Asset Visibility Subscriptions
- End-to-End Network Visibility
- Orchestrated Networking and Application Performance Queries
- Simplified Network Transparency

For Business Teams

- Baseline Analytics Features Come Included with Wi-Fi Assurance, Mobile Engagement, and Asset Visibility Subscriptions
- Customer Segmentation and Reporting Based on Visitor Telemetry
- Customized[1] Dwell and Third-Party Reporting for Traffic and Trend Analysis
- Correlated Customer-Guest Traffic and Trend Analysis

Access Point Features

High-Performance Wi-Fi

The AP33 is a six-stream access point. It supports 4x4:4 SS in the 5 GHz band, delivering a maximum data rate of 2,400 Mbps for high-bandwidth applications. It also supports 2x2:2 SS in the 2.4 GHz band, delivering a maximum data rate of 575 Mbps. The integrated third radio functions as a network, location, and security sensor, a synthetic test client radio, as well as a spectrum monitor.

AI for AX

With the new features that 802.11ax (Wi-Fi 6) introduces to boost performance and efficiency, configuring and operating an access point has grown far more complex. Juniper automates and optimizes these features with our AI for AX capabilities to improve data transmission scheduling within OFDMA and MU-MIMO and assign clients to the best radio to boost the overall performance of the network.

Greater Spectral Efficiency

OFDMA improves spectral efficiency so that an increasing density of devices can be supported on the network. Density has become an issue with the rapid growth of IoT devices, which often utilize smaller data packets than mobile devices and hence increase contention on the network. Additionally, BSS Coloring improves the coexistence of overlapping BSSs and allows spatial reuse within a given channel by reducing packet collisions.

Automatic RF Optimization

Radio Resource Management automates dynamic channel and power assignment, taking Wi-Fi and external sources of interference into account with a dedicated sensor radio. The AI engine continuously monitors coverage and capacity SLE metrics to learn and optimize the RF environment. The learning algorithm uses hysteresis on a 24-hour window to conduct a sitewide rebalancing for optimal channel and power assignment.

Proactive Insight and Action

A dedicated, dual-band third radio collects data for Juniper's patent-pending Proactive Analytics and Correlation Engine (PACE), which uses machine learning to analyze user experience, correlate problems, and automatically detect their root cause. These metrics are used to monitor SLEs and provide proactive recommendations to ensure problems don't occur (or are fixed as quickly as possible when they do). This radio also functions as a synthetic test client to proactively detect and mitigate network anomalies.

[1]Juniper Mist Premium Analytics service subscription is needed

Improved IoT Battery Efficiency

By incorporating the 802.11ax target wake time (TWT) capability and Bluetooth 5.0, AP33 access points help extend the battery life of IoT devices, particularly as additional ones join the network.

Dynamic Debugging

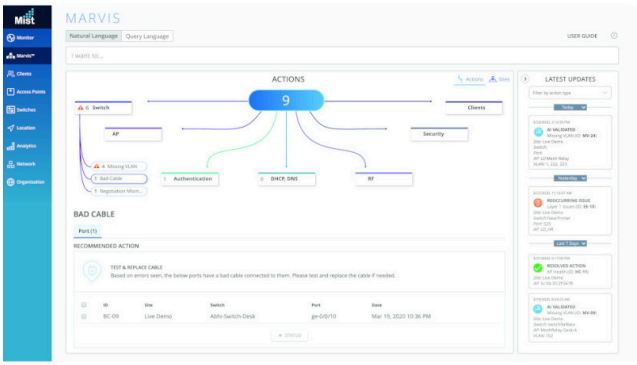
Constantly monitor services running on the AP33 Series and send alerts whenever a service behaves abnormally. Dynamic debugging relieves IT of having to worry about an AP going offline or any services running on it becoming unavailable.

Dynamic Packet Capture

The Juniper Mist platform automatically captures packets and streams them to the cloud when major issues are detected. This saves IT time and effort and eliminates the need for truck rolls with sniffers to reproduce and capture data for troubleshooting.

Marvis Virtual Network Assistant

Marvis is a natural language processing (NLP)-based assistant with a conversational interface that helps the understanding of user intent and goals, simplifies troubleshooting, and collects network insights. It uses AI and data science to proactively identify issues, determine the root causes and scope of impact, and gain insights into your network and user experiences. It eliminates the need to manually hunt through endless dashboards and CLI commands.



Effortless, Cloud-Based Setup and Updates

The AP33 automatically connects to the Juniper Mist cloud, downloads its configuration, and joins the appropriate network. Firmware updates are retrieved and installed automatically, ensuring that the network is always up to date with new features, bug fixes, and security updates.

Premium Analytics

Juniper Mist Wi-Fi Assurance, User Engagement and Asset Tracking services include a base analytics capability for analyzing up to 30 days of data, which enables you to simplify the process of extracting network insights across your enterprise. If you require dynamic insights like motion paths* and other third-party* data and would like the option of customized reports, the Juniper Mist Premium Analytics service is available as an additional subscription.

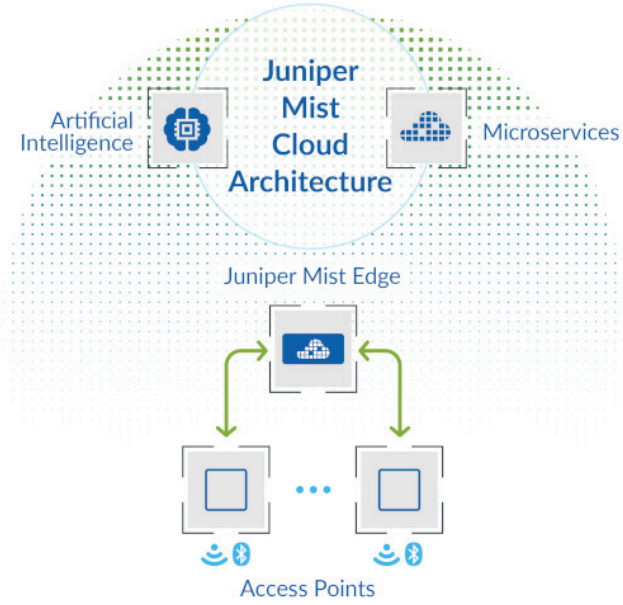
High-Accuracy Indoor Location

The AP33 has a 16-element vBLE antenna array controlled from the Juniper Mist cloud. Passive antennas enhance the power of a single transmitter and produce directional beams (or can be combined to act as an omnidirectional radio) to accurately detect distance and location with one- to three-meter accuracy. With Juniper's patented vBLE technology, you can deploy an unlimited number of virtual beacons in your physical environment with no battery-powered BLE beacons required. With support for Bluetooth 5.0, the access point boosts IoT device signal range and battery life.

Patented vBLE Technology

In addition to the industry-leading Wi-Fi technology at the heart of the AP33 access point, our second-generation, patented, and dynamic, 16-element vBLE antenna array combines with machine learning to eliminate the need for battery-powered beacons. This maximizes scalability and optimizes your deployment investment in location-based services.

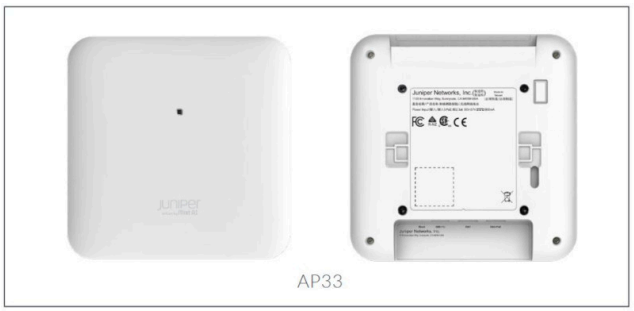
vBLE enables businesses to provide rich location-based experiences that are engaging, accurate, real-time, and scalable.



Juniper Mist Edge

Juniper APs offer a flexible data plane. Juniper Mist Edge is an on-premises appliance that runs a tunnel termination service. Traffic can be broken out locally or tunneled to Juniper Mist Edge.

Juniper Mist Edge use cases include seamless mobility in large campus environments, tunneling of guest traffic to a DMZ, IoT segmentation, and teleworker services.



Specifications

Wi-Fi Standard	802.11ax (Wi-Fi 6), including support for OFDMA, 1024-QAM, MU-MIMO, Target Wake Time (TWT), Spatial Frequency Reuse (BSS Coloring). Backwards compatibility with 802.11a/b/g/n/ac
Combined Highest Supported Data Rates	3.0 Gbps
2.4 GHz	2x2:2 802.11b/g/n/ac up to 400 Mbps data rate; 2x2:2 802.11ax up to 575 Mbps data rate
5 GHz	4x4:4 802.11ax up to 2,400 Mbps data rate
MIMO Operation	Four spatial stream SU-MIMO for up to 2,400 Mbps wireless data rate to individual 4x4 HE80 Four spatial stream MU-MIMO for up to 2,400 Mbps wireless data rate to up to four MU-MIMO-capable client devices simultaneously
Dedicated Third Radio	2.4 GHz and 5 GHz dual-band WIDS/WIPS, spectrum analysis, synthetic client and location analytics radio
Internal Antennas	Two 2.4 GHz omnidirectional antennas with 5 dBi peak gain Four 5 GHz omnidirectional antennas with 6 dBi peak gain
Bluetooth 5.0	vBLE 16-element directional antenna array + omnidirecctional Bluetooth antenna
Beam Forming	Transmit Beamforming and Maximal Ratio Combining
Power Options	802.3at PoE, 802.3bt PoE
Dimensions	202 x 202 x 44 mm (7.95 x 7.95 x 1.73 in)
Weight	0.98 kg (2.16 lbs) excluding mount and accessories
Operating Temperature	Internal antenna: 0° to 40° C
Operating Humidity	10% to 90% maximum relative humidity, non-condensing
Operating Altitude	3,048 m (10,000 ft)
Mean Time Between Failures (MTBF)	Indoor MTBF in hours is 846,297[2]
Trusted Platform Module (TPM)	Includes a TPM for infrastructure security

[2]Based on Telcordia SR-332 issue 3, Method I, Case 3 and measured at temperature of 25°C (77°F) for indoor access points, and 65°C (149°F) for outdoor access points.

I/O and Indicators

USB	USB 2.0 support interface
Eth0	100/1000Base-T, 2.5GBase-T (802.3bz); RJ45; PoE PD
Eth1	10/100/1000Base-T; RJ45
Reset	Reset to the factory default settings
Indicators	One multicolor status LED

Mounting Brackets

APBR-U[3]	Universal bracket
APBR-T58	3⁄8" threaded rod
APBR-M16	16mm threaded rod (M16-2)
APBR-ADP-CR9	9⁄16" T-Rail
APBR-ADP-RT15	15⁄16" T-Rail
APBR-ADP-WS15	1½" T-Rail
APBR-ADP-T12	½" threaded rod

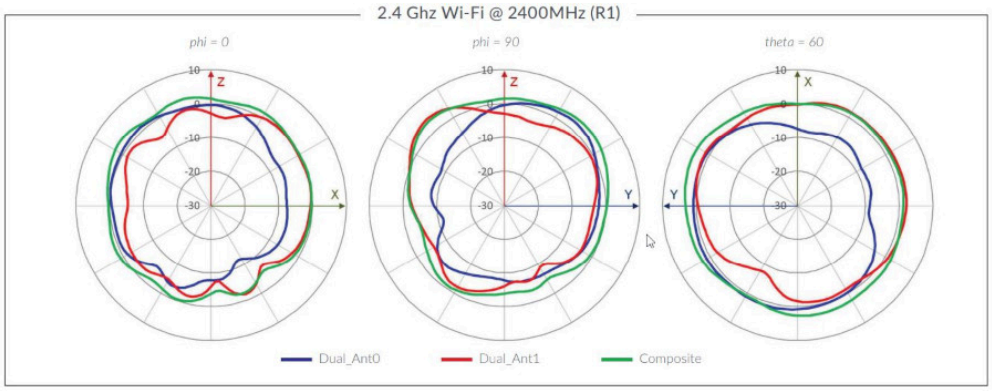
[3]The AP package includes one Universal Bracket. APBR-U is available separately as an accessory.

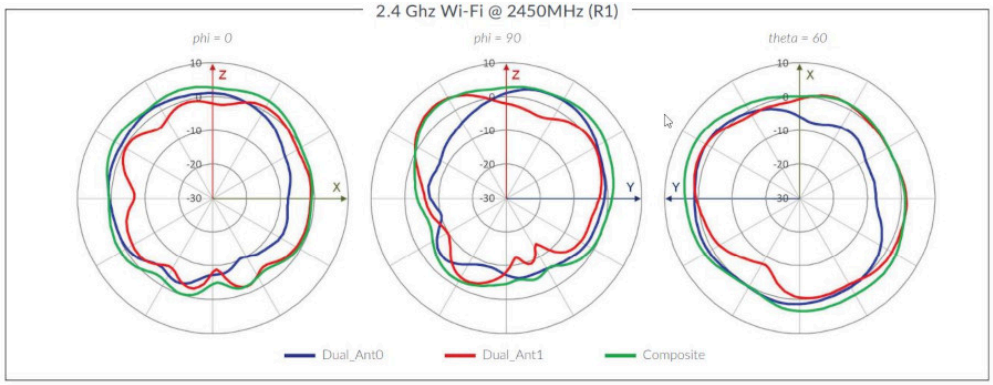
Ordering Information

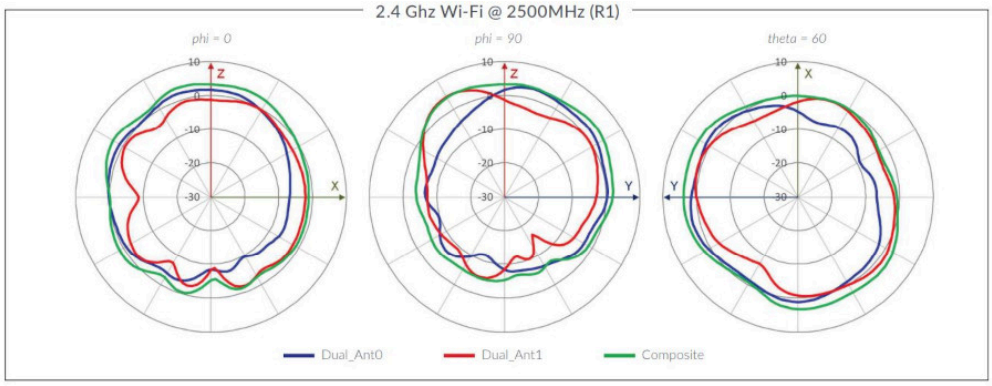
United States Only	AP33-US (Internal Antenna)
Outside of United States	AP33-WW (Internal Antenna)

Juniper products are manufactured in accordance with electrical and environmental regulations specific to certain regions and countries. Customers are responsible for ensuring that any regional or country-specific SKUs are only used in the specified authorized area. Failure to do so may void the warranty of the Juniper products.

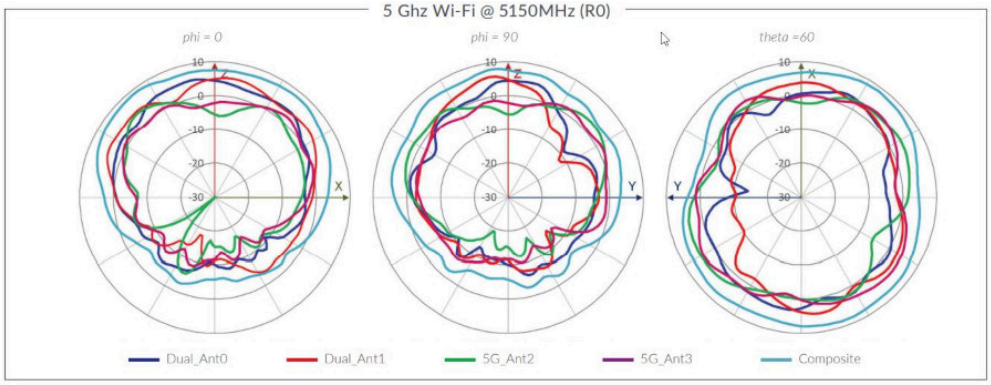
AP33 2.4 GHz Wi-Fi Antenna Plots

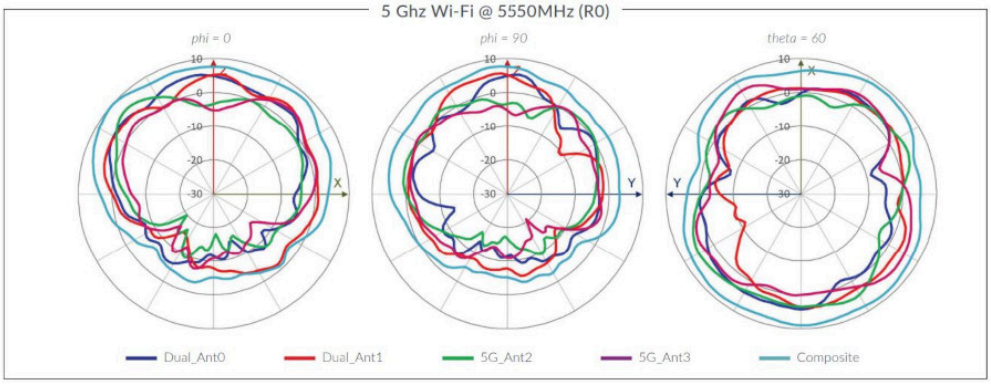


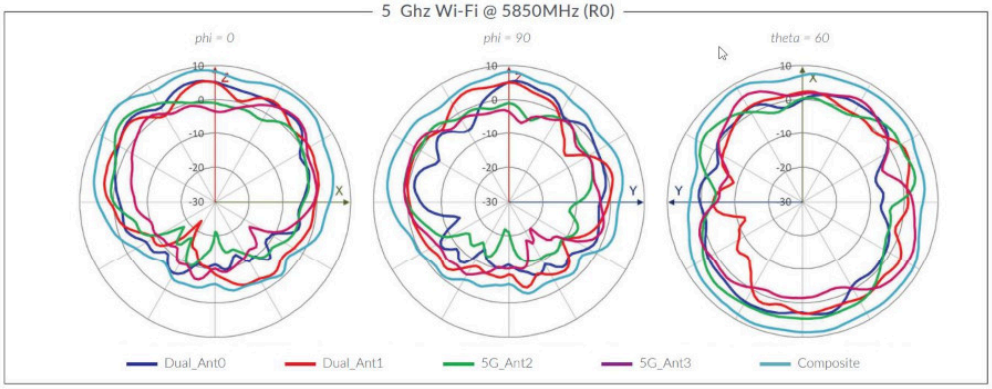




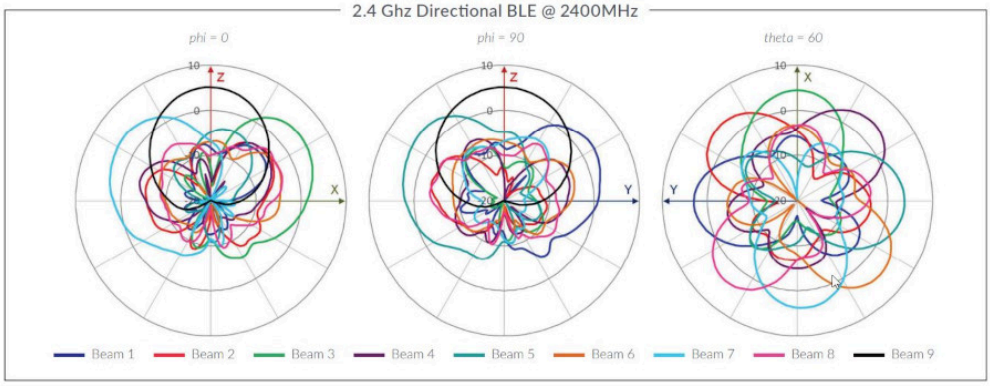
AP33 Wi-Fi Antenna Plots

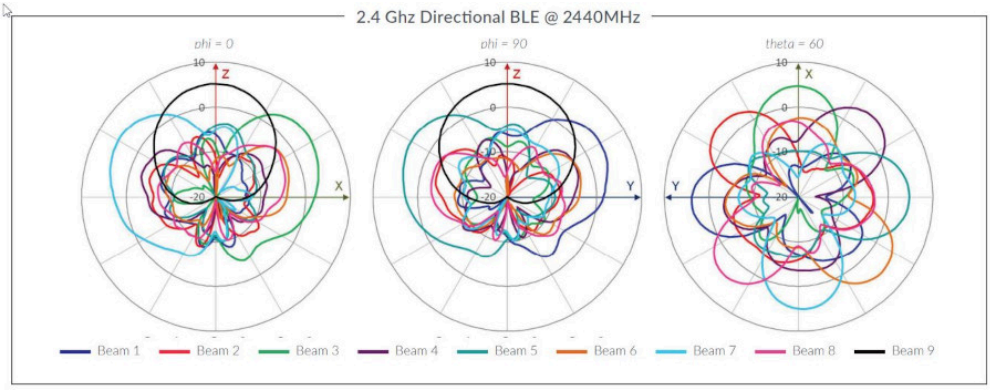


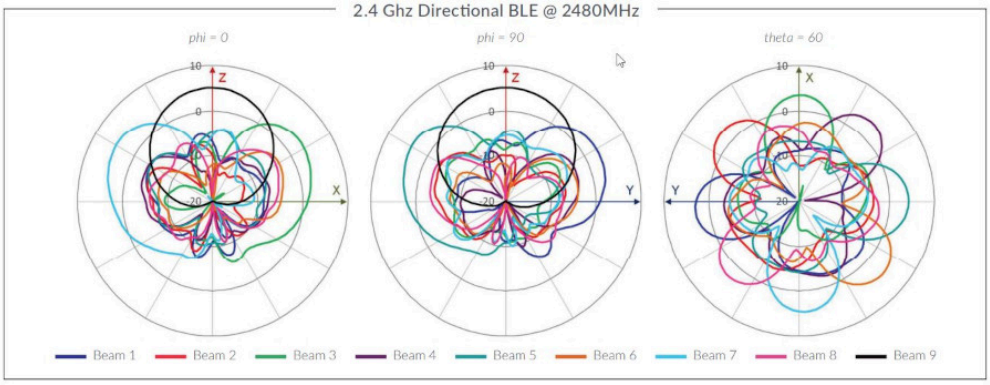




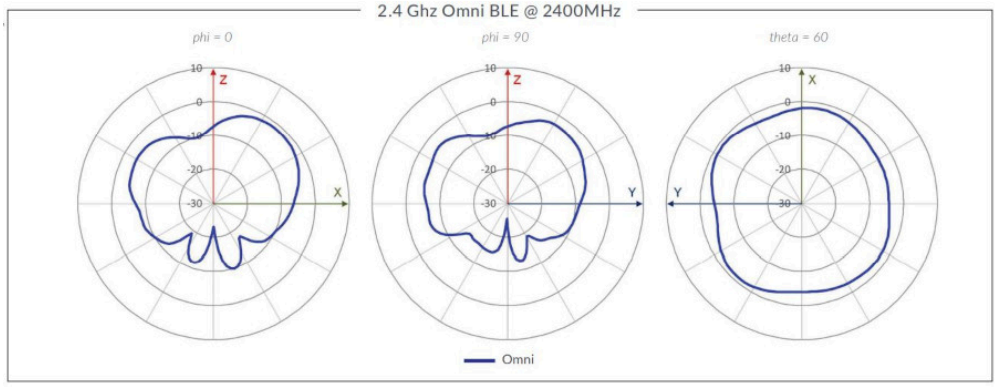
AP33 Directional BLE Antenna Plots

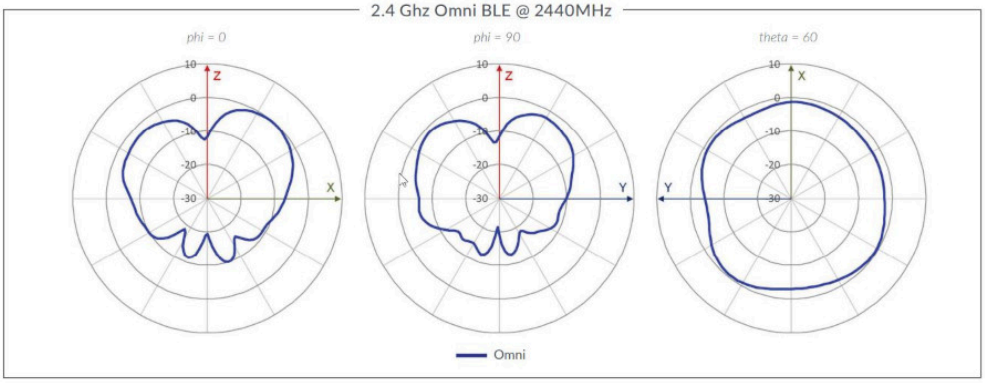


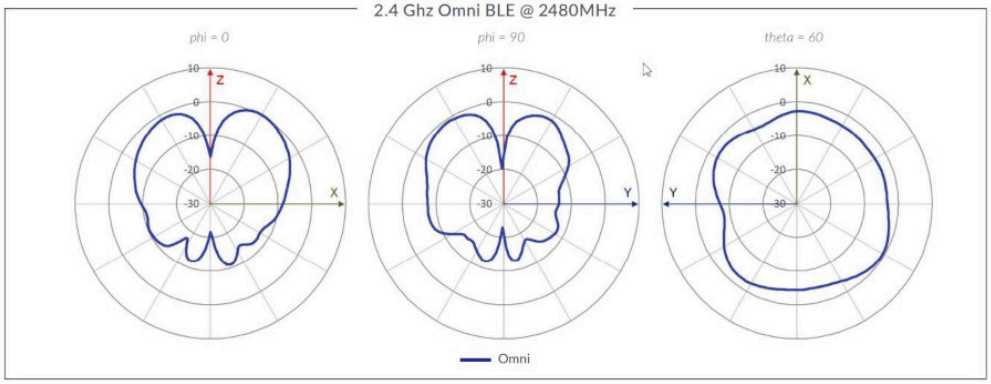




AP33 Omni BLE Antenna Plots







About Juniper Networks

Juniper Networks believes that connectivity is not the same as experiencing a great connection. Juniper's AI-Native Networking Platform is built from the ground up to leverage AI to deliver exceptional, highly secure, and sustainable user experiences from the edge to the data center and cloud. Additional information can be found at juniper.net or connect with Juniper on X (formerly Twitter), LinkedIn, and Facebook.

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