DATASHEET



rocket PRISM AC GEN2

5 GHz airMAX® ac Radio BaseStation with airPrism® Active RF Filtering Technology

Model: RP-5AC-Gen2

- 5 GHz Wide Band Operating Frequency
- Custom Ubiquiti® airMAX ac Processor
- Dedicated Wi-Fi Radio for Management

UBIQUITI® NETWORKS

Overview

Ubiquiti Networks has designed airMAX ac radios with high performance and ease of installation in mind. The Rocket®Prism 5AC Gen 2 features both airMAX ac and airPrism technologies for maximum wireless performance in high-density areas.

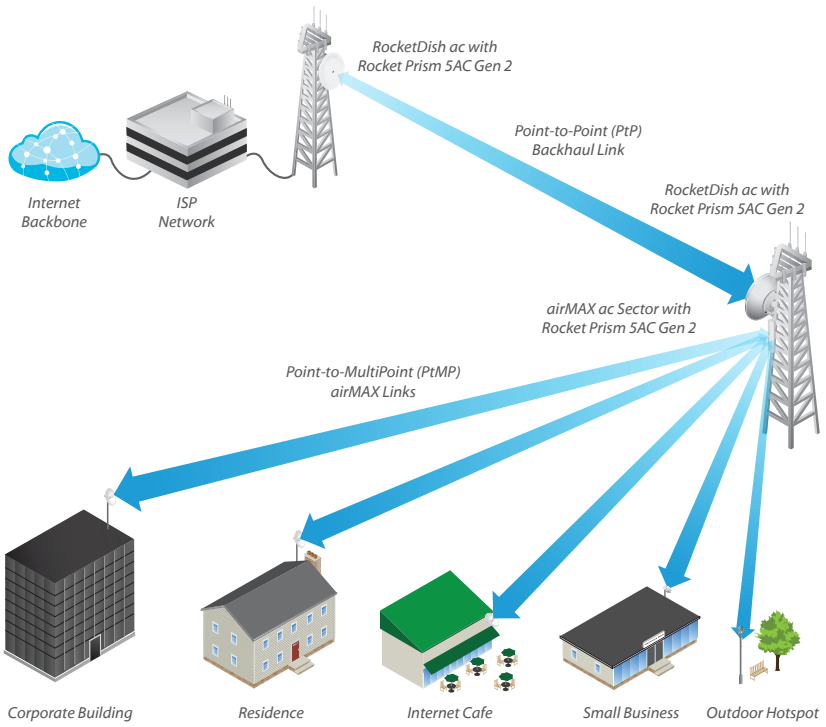
Pair the Rocket Prism 5AC Gen 2 with airMAX ac antennas for optimal performance:

- **PtP backhaul** RocketDish™ ac Antenna
- **PtMP links** airMAX ac Sector

Worldwide 5 GHz Coverage

Deploy the Rocket Prism 5AC Gen 2 anywhere in the world. It delivers complete coverage of the 5 GHz spectrum with a single radio. The Rocket Prism 5AC Gen 2 allows for flexibility in configuring channel bandwidths (subject to local country regulations).

Application Example



Software

airOS® 8

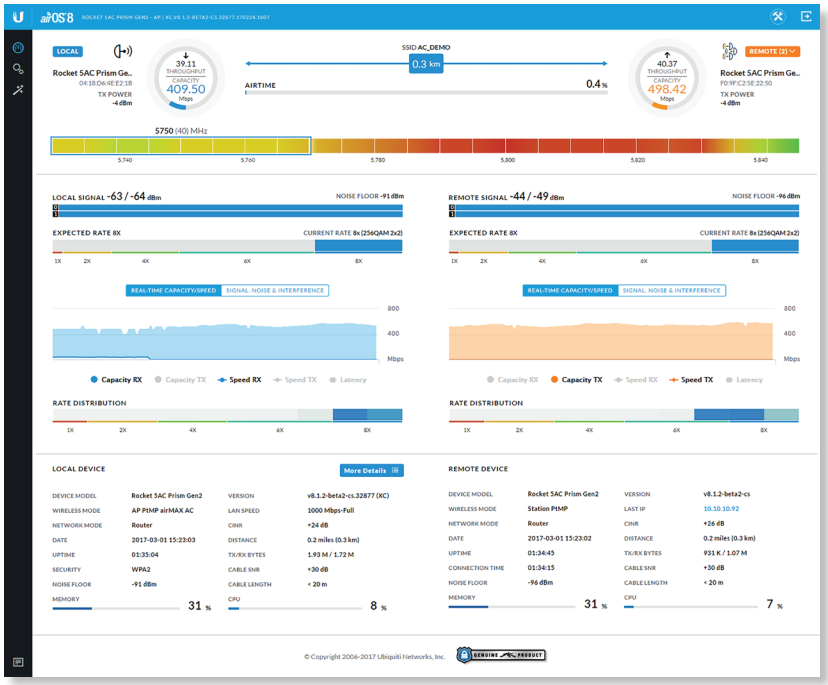
airOS® 8 is the revolutionary operating system for Ubiquiti® airMAX ac products.

Powerful Wireless Features

- Access Point PtMP airMAX Mixed Mode
- airMAX ac Protocol Support
- Long-Range Point-to-Point (PtP) Link Mode
- Selectable Channel Width
  - PtP: 10/20/30/40/50/60/80 MHz
  - PtMP: 10/20/30/40 MHz
- Automatic Channel Selection
- Transmit Power Control: Automatic/Manual
- Automatic Distance Selection (ACK Timing)
- Strongest WPA2 Security

Usability Enhancements

- airMagic® Channel Selection Tool
- Redesigned User Interface
- Dynamic Configuration Changes
- Instant Input Validation
- HTML5 Technology
- Optimization for Mobile Devices
- Detailed Device Statistics
- Comprehensive Array of Diagnostic Tools, including RF Diagnostics and airView® Spectrum Analyzer



Advanced RF Analytics

airMAX ac devices feature a multi-radio architecture to power a revolutionary RF analytics engine.

An independent processor on the PCBA powers a second, dedicated radio, which persistently analyzes the full 5 GHz spectrum and every received symbol to provide you with the most advanced RF analytics in the industry.

Data from the spectrum analysis and RF performance monitoring is displayed on the *Main* tab and airView Spectrum Analyzer.

Real-Time Reporting

airOS 8 displays the following RF information:

- Persistent RF Error Vector Magnitude (EVM) constellation diagrams
- Signal, Noise, and Interference (SNI) diagrams
- Carrier to Interference-plus-Noise Ratio (CINR) histograms

Spectral Analysis

airView allows you to identify noise signatures and plan your networks to minimize noise interference. airView performs the following functions:

- Constantly monitors environmental noise
- Collects energy data points in real-time spectral views
- Helps optimize channel selection, network design, and wireless performance

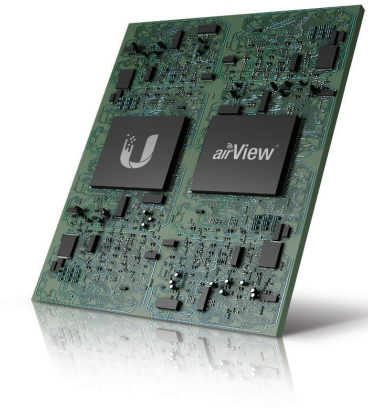
airView runs in the background without disabling the wireless link, so there is no disruption to the network.

In airView, there are three spectral views, each of which represents different data.

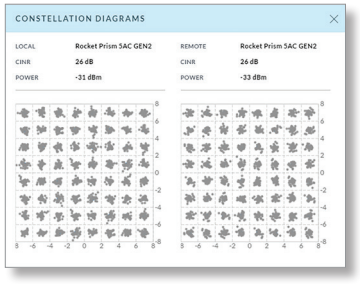
- **Waterfall** Aggregate energy collected for each frequency
- **Waveform** Aggregate energy collected
- **Ambient Noise Level** Background noise energy shown as a function of frequency

airView provides powerful spectrum analyzer functionality, eliminating the need to rent or purchase additional equipment for conducting site surveys.

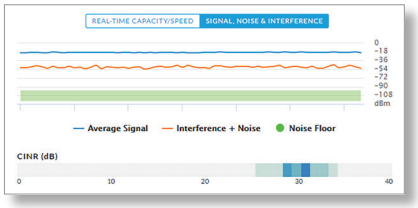
Multi-Radio Architecture



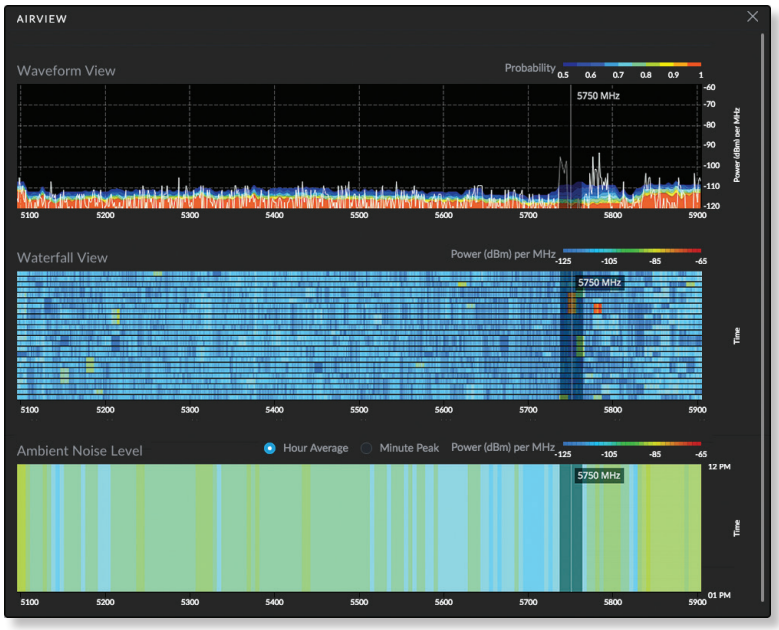
Constellation Diagrams



SNI Diagram and CINR Histogram



Dedicated Spectral Analysis



Technology

airMAX ac

Unlike standard Wi-Fi protocol, Ubiquiti's Time Division Multiple Access (TDMA) airMAX ac protocol allows each client to send and receive data using pre-designated time slots scheduled by an intelligent AP controller.

This time slot method eliminates hidden node collisions and maximizes airtime efficiency, so airMAX ac technology provides performance improvements in latency, noise immunity, scalability, and throughput compared to other outdoor systems in its class.

Intelligent QoS Priority assigned to voice/video for seamless streaming.

Scalability High capacity and scalability.

Long Distance Capable of high-speed, carrier-class links.

Superior Performance

The next-generation airMAX ac technology boosts the advantages of our proprietary TDMA protocol.

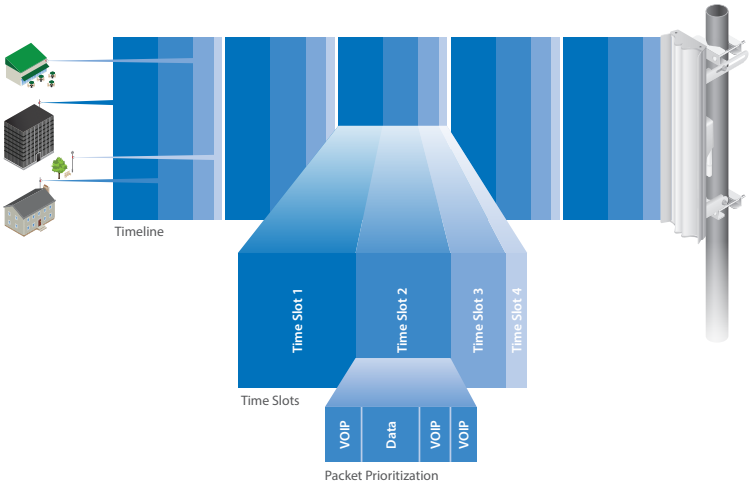
Ubiquiti's airMAX engine with custom IC dramatically improves TDMA latency and network scalability. The custom silicon provides hardware acceleration capabilities to the airMAX scheduler, to support the high data rates and dense modulation used in airMAX ac technology.

Throughput Breakthrough

airMAX ac supports high data rates, which require dense modulation: 256QAM – a significant increase from 64QAM, which is used in airMAX.

With their use of proprietary airMAX ac technology, airMAX ac products supports up to 500+ Mbps* (maximum 80 MHz channel width) real TCP/IP throughput – up to triple the throughput of standard airMAX products.

airMAX ac TDMA Technology

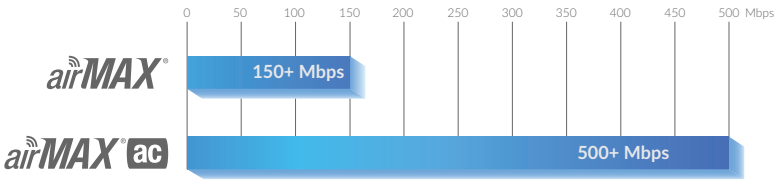


Up to 100 airMAX ac stations can be connected to an airMAX ac Sector; four airMAX ac stations are shown to illustrate the general concept.

airMAX ac Network Scalability



Superior Throughput Performance



* Up to 330+ Mbps (maximum 40 MHz channel width) for PtMP links.

Technology

airPRISM®

To enhance airMAX ac performance, Ubiquiti Networks introduces our patented airPrism technology, which is featured on the Rocket Prism 5AC Gen 2, model RP-5AC-Gen2.

Improves SNR

High data rates require a high Signal-to-Noise Ratio (SNR), which is challenging to achieve, especially in noisy, high-density areas.

Integrated into Ubiquiti's custom silicon, airPrism technology creates a high SNR by isolating signals within the operating channel and rejecting interference using specialized circuitry, the High-Selectivity Receiver (HSR).

Removes Interference

Depending on the product model and operating mode, available channel widths may include 10, 20, 30, 40, 50, 60, and/or 80 MHz.

Theoretically APs operate on different channels; however, because of the wider channel bandwidths, there can be overlap in spectrum usage.

airPrism technology removes up to an additional 30+ dB of adjacent channel interference through the active filtering design, so an airMAX ac AP with airPrism technology can provide significantly greater performance than a typical AP.

Facilitates AP Co-Location

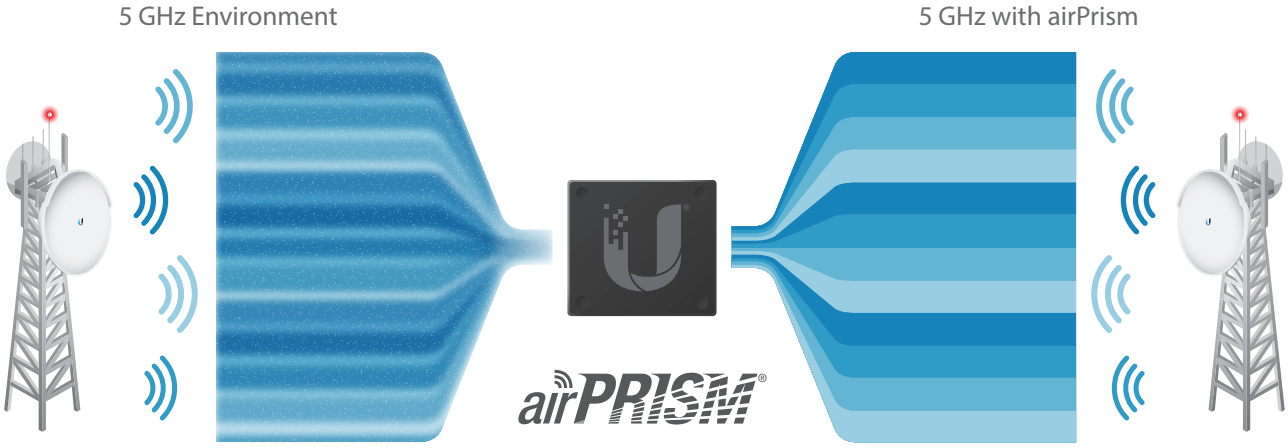
Co-location is vital in many scenarios. For example, a WISP may have limited tower space, so it must co-locate all APs within that allotted footprint. Shielding and other means can lessen interference but may be impractical.

By deploying airMAX ac APs with airPrism technology, you can co-locate APs and enhance the overall performance of your wireless network.

Number of APs	Channel Width
4	80 MHz*
8	40 MHz
16	20 MHz

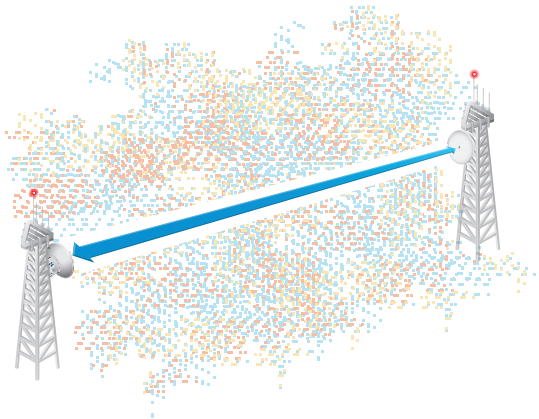
* PtP only

Active Radio Frequency Filtering



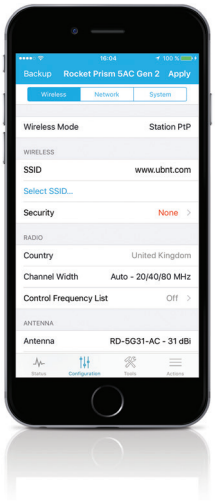
What the Radio Sees

Improved Latency and Noise Immunity



UNMS App

The RocketPrism 5AC Gen 2 integrates a separate Wi-Fi radio for fast and easy setup using your mobile device.



Accessing airOS via Wi-Fi

The UNMS™ app provides instant accessibility to the airOS configuration interface and can be downloaded from the App Store (iOS) or Google Play™ (Android). The UNMS app allows you to set up, configure, and manage the Rocket Prism 5AC Gen 2 and offers various configuration options once you're connected or logged in.

The Rocket Prism 5AC Gen 2 is designed to deliver maximum spectral efficiency and up to 500+ Mbps Real TCP/IP throughput.



Features

5 GHz Frequency Band With plenty of available spectrum, this unlicensed band works well for long-distance links. The Rocket Prism 5AC Gen 2 features full-band 5 GHz coverage and maximizes output power for the US market, meeting strict OOBE requirements.

airView Use the real-time spectrum analyzer so you can identify noise signatures and design your wireless links to minimize noise interference.

High Performance To take full advantage of its design and capabilities, deploy the Rocket Prism 5AC Gen 2 for PtP or PtMP links in high RF noise environments.

airPrism Sector Antenna You can mount three Rocket Prism 5AC Gen 2 radios on the airPrism 5 GHz 3x30° HD Sector Antenna, model AP-5AC-90-HD, for PtMP links. Each Rocket radio corresponds with a specific 30° beamwidth and independently transmits and receives.

Dedicated Management Radio Access the airOS configuration interface instantly through the UMobile app to set up and manage your Rocket 5AC Prism Gen 2.

Robust Die Cast Aluminum Casing Helps protect the Rocket Prism 5AC Gen 2 against electromagnetic interference.

GPS for Superior Co-Location Performance Precise GPS frame synchronization enable co-located Rocket Prism 5AC Gen 2 radios to transmit and receive data without interfering with each other, allowing for better frequency reuse and increased network stability.

Improved Surge Protection The Rocket Prism 5AC Gen 2 utilizes the latest ESD protection to help protect against power surges.

Gigabit Ethernet Delivers high throughput over its wired connection.

Plug and Play Every airMAX antenna has a built-in Rocket mount, so no tools are needed to install the Rocket Prism 5AC Gen 2. (airMAX ac antennas are recommended for optimal performance.)

Specifications

RP-5AC-Gen2		
Dimensions	88 x 40 x 230 mm (3.47 x 1.58 x 9.06")	
Weight	400 g (14.11 oz)	
Networking Interface	(1) 10/100/1000 Ethernet Port	
RF Connectors	(2) RP-SMA (Waterproof), (1) GPS* (Waterproof)	
LEDs	(4) Signal Strength, GPS*, LAN, Power	
Enclosure	Die-Cast Aluminum with White Powder Coating	
Max. Power Consumption	9.5W	
Power Supply	24V, 1A Gigabit PoE Adapter (Included)	
Power Method	Passive PoE (Pairs 4, 5+; 7, 8 Return)	
Processor Specs	Atheros MIPS 74Kc	
Memory	128 MB DDR2 SDRAM	
Supported Voltage Range	18-26VDC	
Signal Strength LEDs	Software-Adjustable to Correspond to Custom RSSI Levels	
Channel Sizes	PtP Mode	PtMP Mode
	10/20/30/40/50/60/80 MHz	10/20/30/40 MHz
ESD/EMP Protection	± 24 kV Contact / Air for Ethernet	
Operating Temperature	-40 to 80° C (-40 to 176° F)	
Operating Humidity	5 to 95% Noncondensing	
RoHS Compliance	Yes	
Shock and Vibration	ETSI300-019-1.4	
Modes	Access Point, Station	
Services	Web Server, SNMP, SSH Server, Telnet , Ping Watchdog, DHCP, NAT, Bridging, Routing	
Utilities	airMagic, airView, Antenna Alignment Tool, Discovery Utility, Site Survey, Ping, Traceroute, Speed Test	
Distance Adjustment	Dynamic Ack and Ackless Mode	
Power Adjustment	Software Adjustable UI or CLI	
Security	WPA2 AES Only	
QoS	Supports Packet Level Classification WMM and User Customer Level: High/Medium/Low	
Statistical Reporting	Up Time, Packet Errors, Data Rates, Wireless Distance, Ethernet Link Rate	
Other	Remote Reset Support, Software Enabled/Disabled, VLAN Support, 256QAM, GPS*, TX Filter	
Ubiquiti Specific Features	30/50/60 MHz Channels, airMAX ac Mode, Traffic Shaping with Burst Support, Discovery Protocol, Frequency Band Offset, Ackless Mode	
Certifications	CE, FCC, IC	

* GPS sync support available in airOS firmware v8.3.0 and newer.

Operating Frequency (MHz)				
Worldwide	5150 - 5875			
USA	U-NII-1: 5150 - 5250	U-NII-2A: 5250 - 5350 MHz	U-NII-2C: 5470 - 5725 MHz	U-NII-3: 5725 - 5850

Management Radio (MHz)	
Worldwide	2412 - 2472
USA	2412 - 2462

RP-5AC-Gen2 Output Power: 28 dBm							
TX Power Specifications				**RX Power Specifications**			
Modulation	Data Rate	Avg. TX	Tolerance	Modulation	Data Rate	Sensitivity	Tolerance
airMAX ac	1x BPSK (½)	28 dBm	± 2 dB	airMAX ac	1x BPSK (½)	-96 dBm	± 2 dB
	2x QPSK (½)	28 dBm	± 2 dB		2x QPSK (½)	-95 dBm	± 2 dB
	2x QPSK (¾)	28 dBm	± 2 dB		2x QPSK (¾)	-92 dBm	± 2 dB
	4x 16QAM (½)	28 dBm	± 2 dB		4x 16QAM (½)	-90 dBm	± 2 dB
	4x 16QAM (¾)	28 dBm	± 2 dB		4x 16QAM (¾)	-86 dBm	± 2 dB
	6x 64QAM (⅔)	28 dBm	± 2 dB		6x 64QAM (⅔)	-83 dBm	± 2 dB
	6x 64QAM (¾)	27 dBm	± 2 dB		6x 64QAM (¾)	-77 dBm	± 2 dB
	6x 64QAM (⅚)	26 dBm	± 2 dB		6x 64QAM (⅚)	-74 dBm	± 2 dB
	8x 256QAM (¾)	24 dBm	± 2 dB		8x 256QAM (¾)	-69 dBm	± 2 dB
	8x 256QAM (⅚)	22 dBm	± 2 dB		8x 256QAM (⅚)	-65 dBm	± 2 dB

Plug and Play Integration

Rocket radios and airMAX antennas have been designed to seamlessly work together. Every airMAX antenna has a built-in Rocket mount, so installation requires no special tools.

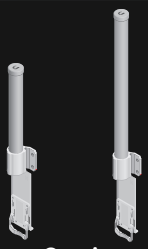
Antenna Compatibility



Rocket Prism 5AC Gen 2

Frequency Band

5 GHz



Omni

AMO-5G10
AMO-5G13
AM-5AC21-60
AM-5AC22-45
AM-V5G-Ti
AM-M-V5G-Ti
AM-5G16-120
AM-5G17-90
AM-5G19-120
AM-5G20-90
AP-5AC-90-HD



Sector



Rocket Dish

RD-5G31-AC
RD-5G30-LW
RD-5G30
RD-5G34

Specifications are subject to change. Ubiquiti products are sold with a limited warranty described at: www.ubnt.com/support/warranty
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