

Apex™ Micro Small Cell

RAN Solution - Coverage and Capacity

LTE-FDD, LTE-TDD, CBRS



Casa Systems' end-to-end small cell solution is designed to address coverage and capacity needs for today's mobile subscribers and use cases. Casa's Apex Radio Access Network (RAN) solutions include a range of small cells – Lifestyle, Enterprise, Strand and Micro small cells - to meet service providers' many different deployment requirements.

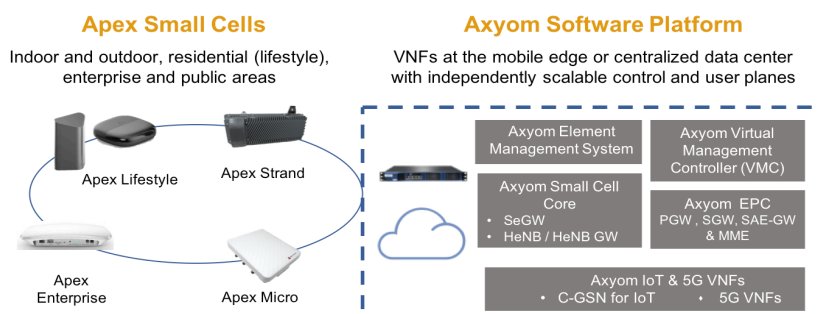
The Apex Micro Small Cell is designed for environments where a high density of UEs are present, such as campuses and outdoor public venues. The Apex Outdoor Pico cell cost-effectively supports two FDD or TDD LTE carriers. Both Mobile Service Providers and MSOs can take advantage of the Apex Outdoor Pico cell to provide targeted coverage and capacity. As the figure below shows, Apex Outdoor Picocells are part of Casa's overall Small Cell Solution. Other components of the solution are:

- The Axyom Element Management System (AeMS) - The AeMS provides real-time SON and Small Cell Gateway functions that reduce operational costs, speed time to market, and optimize the customer experience. An advanced GUI gives control over all small cell and small cell gateway parameters.
- The Axyom Small Cell Gateways - aggregation of control and user plane traffic and capabilities necessary to manage large clusters of small cells.
- The Axyom Virtual Management Controller - VNF management and integration.
- The Axyom Location Function - real-time small cell location information which is critical in some countries to support emergency services.

Highlights

- Outdoor Microcell supporting LTE licensed and CBRS 3.5 GHz bands
- Rugged, carrier-grade solution
- 2W transmit power per LTE Carrier
- 2 LTE Carriers
- Ceiling, wall or pole mount
- Sleek form factor and smart plug-and-play installation
- Seamless mobility with macro network
- SON: hybrid SON support with dSON and cSON; SON macro integration
- Intelligent traffic management with E2E QoS support

Casa's Small Cell Solution



Delivering high performance with minimum power consumption and smooth integration with other Radio Access Network (RAN) solutions, the Apex Outdoor Picocell is ideally suited for network densification while also supporting VoLTE, IoT and QoS based services. Casa's Open API Framework includes, e.g., geo-location APIs that leverage zonal presence and traffic flow information available from the Apex Outdoor Picocell to enable new services.

Casa Systems' mobile broadband solutions are engineered for high performance, strong security, ease of integration, and most of all, flexibility. Whether seeking small cells to densify an existing network and add capacity, or to profit from services, such as IoT, Private LTE, and location insight, service providers will find a comprehensive and innovative answer with Casa.

Technical Specifications

INSTALLATION MOUNTING OPTIONS	Ceiling, Wall, Pole
GENERAL	
Antennas	6 external antenna interfaces, type N and 4 integrated 12dBi antennas
Max TX Power RF	33 dBm, 2W per LTE Carrier
Ports (Tx & Rx)	4
GPS Ports	1
Synchronization	GNSS, 1588 timing
PoE	802.3bt
Backhaul Options	10/100/1000 Gigabit Ethernet, RJ-45, SFP
PHYSICAL AND ENVIRONMENTAL	
Operational Temperature	-40°C to 60°C, Humidity 5% to 100% Relative Humidity
Storage Temperature	-45°C to 70°C
Protection	IP65
Dimensions	275 mm x 235 mm x 90 mm (LxWxD)
Weight	9.5 Kg
Nominal Power Consumption (W)	45W / Power over Ethernet (PoE)
ANTENNA	
Radiation Pattern	Antenna dependent
Polarization	Antenna dependent
FREQUENCY BANDS	1, 3, 4, 7, 13, 38, 41, 42, 48, 66 and 71- additional bands and band combinations upon request
CAPACITY	
LTE Carriers	2 Carriers
MIMO Configuration	2x2 MIMO DL, UL Rx diversity (2Tx / 2Rx)
Throughput DL / UL Max. for TDD	240 / 30 Mbps with CA enabled
Throughput DL / UL Max. for FDD	300 / 75 Mbps (64 QAM modulation), 400 / 75 Mbps (256 QAM modulation) FDD mode with CA enabled
Max. Users	Max. scheduled users / TTI: 16; max RRC connected users: 64 - 256
eNB ID Support	20 bit and 28 bit Macro eNB ID supported
Cross Carrier Scheduling	Supported
Dual Cell Mode	Supported
Carrier Aggregation Mode	Supported
Performance Counters and Alarms	Over 500 performance counters; over 50 alarms

Technical Specifications

RADIO ACCESS TECHNOLOGY	R13
Axyom Small Cell Manager	<p>OAM&P</p> <ul style="list-style-type: none"> • H(e)MS small cell management system functions (3GPP TS 32.592 and TS 32.593) • TR-069 Auto-Configuration Server (with TR-196v2 and TR-181 Data Model Support) • KPI Management standard KPI definition (TS 32.453), custom KPI definition support • Fault Management 3GPP TS 32.111-2 Alarms (IRP/IS) • Syslog Server • X2 Gateway <p>SON</p> <p>Self-optimization</p> <ul style="list-style-type: none"> • Mobility load balancing (MLB) • Mobility robustness optimization (MRO) • Capacity and coverage optimization (CCO) • RACH organization • Energy saving <p>Self-healing</p> <ul style="list-style-type: none"> • Automatic cell outage detection • Software recovery <p>Self-configuration</p> <ul style="list-style-type: none"> • Automatic Neighbor Relation (ARO) • Physical Cell Identity (PCI) autoconfiguration • Radio Environment Management (REM) • S1/X2 autoconfiguration • RACH channel self-configuration • Channel Selection • Transmission Power Management • Optical Cluster Configuration
Supported Services	<p>Supported services include:</p> <ul style="list-style-type: none"> • LIPA: Local IP Access with a Local GW included in the eNB subsystem supported for providing edge & local offloading • SON: Hybrid SON support with dSON and cSON; dSON agent can work with or without cSON and supports using a real-time interface through X2 or TR-069; SON macro integration supported through X2-GW, X2-Proxy or direct connection • TR-069: TR-069 agent supports TR-196v2 and TR-181 data models