

# Apex™ Outdoor Picocell

## Coverage and Capacity

### LTE-FDD, LTE-TDD, 3.5 GHz CBRS

Casa Systems' end-to-end small cell solution is designed to address the need for mobile network coverage and capacity for today's subscribers and use cases, and are ready as the core network evolves to 5G. Casa's solutions include a range of Apex small cells – indoor and outdoor, residential (lifestyle), enterprise and public area (picocells) - to meet service providers' evolving needs.

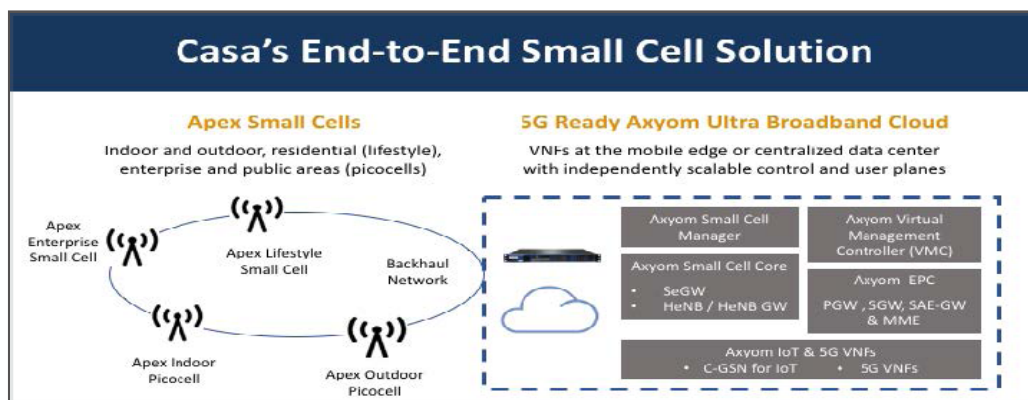
The Apex Outdoor Picocell is designed for environments where a diversity of UEs are present, such as campuses and outdoor public venues. The Apex Outdoor Picocell cost-effectively supports two FDD or TDD LTE carriers.

Casa's Axyom™ Ultra-broadband Cloud supports a small cell core, including eHNB gateways and security gateways which provide the scale, intelligence, and deployment flexibility needed for mobile edge computing and 5G use cases. The Axyom Ultra-broadband Cloud also supports EPC core solutions, including MME, SGW and PGW. Deployable at the edge on a COTS x86 server, or as independently scalable control and service forwarding elements at a centralized location, Casa's end-to-end small cell solution enables simple, seamless network densification and traffic offload as well as use cases like Private LTE.

The Axyom Small Cell Manager provides H(e)MS and real-time SON functions that reduce operational costs, speed time to market, and optimize the customer experience.

## Highlights

- Outdoor picocell supporting a combination of licensed and unlicensed technologies in one rugged, carrier-grade solution
- 2W picocell
- 2LTE Carriers
- Ceiling, wall or pole mount
- Flexible transport options (DOCSIS 3.1, GPON/EPON, or Gigabit Ethernet)
- 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



## Technical Specifications

<b>INSTALLATION MOUNTING OPTIONS</b>	Ceiling, Wall, Pole
<b>INTERFACES</b>	
Antennas	6 external antenna interfaces, type N
Max TX Power RF	33 dBm (2 streams @ 30 dBm), 2x2W
Ports (Tx & Rx)	4
GPS Ports	1
Synchronization	GNSS, 1588 timing
PoE	802.3bt
Backhaul Options	10/100/1000 Gigabit Ethernet, RJ-45, SFP
<b>PHYSICAL AND ENVIRONMENTAL</b>	
Operational Temperature	-20°C to 65°C, Humidity 5% to 100% RH
Storage Temperature	-45°C to 70°C
Protection	IP65
Dimensions	TBD
Weight	9.5 Kg
Power Consumption (W)	145W (Max) @ 2x5W operation
<b>ANTENNA, SUPPORTED BANDS AND RATS</b>	
Radiation Pattern	Antenna dependent
Polarization	Antenna dependent
LTE Frequency Bands	3, 4, 7, 38, 40, 41, 48 - additional bands and band combinations upon request
Dual Cell Mode	Supported
Carrier Aggregation Mode	Supported
<b>CAPACITY</b>	
LTE Carriers	2 Carriers
MIMO Configuration	2x2 MIMO DL, UL Rx diversity (2Tx / 2Rx)
Throughput DL / UL	150 / 75 Mbps ; 300 / 75 Mbps CA
Max. Users	Max. scheduled users / TTI: 32; max RRC connected users: 128
eNB ID Support	20 bit and 28 bit Macro eNB ID supported
Cross Carrier Scheduling	Supported
Performance Counters and Alarms	Over 500 performance counters; over 50 alarms
<b>RADIO ACCESS TECHNOLOGY</b>	R9 with feature support from R10, R11, R12 and R13

## Technical Specifications

<p><b>Axyom Small Cell Manager</b></p>	<p><b>OAM&amp;P</b></p> <ul style="list-style-type: none"> <li>• H(e)MS small cell management system functions (3GPP TS 32.592 and TS 32.593)</li> <li>• TR-069 Auto-Configuration Server (with TR-196 and TR-181 Data Model Support)</li> <li>• KPI Management standard KPI definition (TS 32.453), custom KPI definition support</li> <li>• Fault Management 3GPP TS 32.111-2 Alarms (IRP/IS)</li> <li>• Syslog Server</li> <li>• X2 Gateway</li> </ul> <p><b>SON</b></p> <p>Self-optimization</p> <ul style="list-style-type: none"> <li>• Mobility load balancing (MLB)</li> <li>• Mobility robustness optimization (MRO)</li> <li>• Capacity and coverage optimization (CCO)</li> <li>• RACH organization</li> <li>• Energy saving</li> </ul> <p>Self-healing</p> <ul style="list-style-type: none"> <li>• Automatic cell outage detection</li> <li>• Software recovery</li> </ul> <p>Self-configuration</p> <ul style="list-style-type: none"> <li>• Automatic Neighbor Relation (ARO)</li> <li>• Physical Cell Identity (PCI) autoconfiguration</li> <li>• Radio Environment Management (REM)</li> <li>• S1/X2 autoconfiguration</li> <li>• Primary Scrambling Code (PSC) autoconfiguration</li> <li>• LAC (Location Area Code) / RAC (Routing Area Code)</li> <li>• Common pilot channel (CPICH) maximum power setting</li> </ul>
<p><b>Supported Services</b></p>	<p>Supported services include:</p> <ul style="list-style-type: none"> <li>• LIPA: Local IP Access with a Local GW included in the eNB subsystem supported for providing edge &amp; local offloading</li> <li>• 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</li> <li>• TR-069: TR-069 agent supports TR-196v2 and TR-181 data models</li> </ul>