

# Apex Multi-Standard Small Cell



## Coverage & Capacity + Monetization

LTE-FDD/3G-HSPA+ Dual-mode Small Cell  
 TECHNICAL SPECIFICATION



Casa Systems’ end-to-end Apex small cell solution combines a low power indoor multi-standard small cell with distributed SON, robust virtualized small cell gateway and security functions to address coverage and capacity challenges with optimal TCO. More importantly, our solution is designed for a variety of monetization alternatives, including B2C, B2B and B2B2C opportunities.

Casa’s Apex small cell solution is designed to cost-effectively support deployed radio access technologies: LTE and 3G, new feature updates based on the 3GPP release roadmap, and has the flexibility to support future operational modes: LTE-U/LAA/LWA and MuLTeFire™. The Apex small cell solution targets worldwide markets through flexible RF front-end design that supports multiple band classes and band combinations. Best-in-class d-SON and zero-touch plug-and-play provisioning combine to minimize service provider installation costs.

<b>Radio Access Technology Support</b>	LTE-FDD: R9 with feature support from R10 3G-HSPA+ R7, R99 CS/PS 802.11n, 802.11ac (optional)
<b>Max. Power Output</b>	Up to 250 mW per radio
<b>Max. Data Throughput</b>	LTE-FDD: 150 Mbps DL/50 Mbps UL LTE-FDD: 300 Mbps DL/50 Mbps UL (2 x 20MHz DL carrier aggregation, Cat 6 UE support) 3G-HSPA+ 21Mbps DL/11Mbps UL
<b>Max. Simultaneous Active Users</b>	32 LTE-FDD + 32 3G-HSPA+ simultaneous users 64 LTE-FDD users LTE-FDD: 16 DL/UL UEs scheduled per TTI
<b>Band Support</b>	LTE-FDD bands: 1,3,4,7 3G-WCDMA FDD bands: 1,2,5,8 Additional band support option Flexible 3G/LTE band combination support
<b>Antenna Configurations</b>	LTE-FDD 2x2 MIMO DL, UL Rx diversity (2Tx/2Rx) 3G-HSPA+ SISO DL, UL Rx diversity (1Tx/2Rx)
<b>Backhaul Options</b>	2 x 10/100/1000 ethernet
<b>Interfaces</b>	3G: Iuh to HNB-GW LTE: S1-U, S1-MME, X2
<b>Additional Protocol Support</b>	LTE-U/LAA/LWA and MuLTeFire™ via upgrade

<b>Advanced Feature Support</b>	<p>Access control: open, prioritized or closed access carrier aggregation</p> <p>CMAS (commercial mobile alert system)</p> <p>ETWS (earthquake and tsunami warning system)</p> <p>ICIC (inter-cell interference coordination)</p> <p>LIPA (local IP access breakout)</p> <p>SIPTO (selective IP traffic offload)</p> <p>Voice: CSFB and VoLTE</p>
<b>Security Features</b>	<p>IPSEC: AES, 3DES</p> <p>PKI: IKEv2 key management, certificate-based authentication (X.509)</p> <p>Secure boot</p>
<b>SON</b>	<p><b>Self-optimization</b></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 optimization</li> <li>• Energy saving</li> </ul> <p><b>Self-healing</b></p> <ul style="list-style-type: none"> <li>• Automatic cell outage detection</li> <li>• Software recovery</li> </ul> <p><b>Self-configuration</b></p> <ul style="list-style-type: none"> <li>• Automatic neighbor relation (ANR)</li> <li>• Automatic physical cell identity (PCI)</li> <li>• Dynamic S1-MME configuration</li> <li>• Radio environment management (REM)</li> <li>• Frequency synchronization</li> <li>• Dynamic X2 configuration</li> <li>• Automatic primary scrambling code (PSC)</li> <li>• Automatic LAC (location area code) / RAC (routing area code)</li> <li>• Common pilot channel (CPICH) max power setting</li> <li>• Automatic UARFCN</li> </ul>
<b>Dimensions</b>	220mm x 190mm x 25mm
<b>Weight</b>	400g
<b>Power</b>	< 15W at full capacity