

# Technical Specifications SmartEPC V1.0



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## Highlights

Item	Description
Consolidated core solution	Consolidated Enhanced Packet Core solution supporting standard 3GPP interfaces like S1-MME, S1-U, S2a, S6a, Gx, Gy and etc and with MME, PGW, SGW, HSS and internal basic PCRF functionalities.
Multi APN	Support multi APN per UE or per UE groups
Operating small to medium networks	Quick network and users configuration (plug & play) Simple operation status view Full backup and restore procedures
Advanced IP allocation	Dynamic , Static, Internal, External , From dedicated pools
Advanced TFT support	Support standard and above the standard filter capabilities
Multi users	Support network behind 4G UE that acts as a bridge or router
NAT	Enables NAT for connected UEs
Billing	Already integrated with third party cost effective billing solution

## Mechanical & Electrical

Item	5U/6U chassis (DC/AC)
<b>Model</b>	SEPC_HW_ATCA5U
<b>Form factor</b>	ATCA
<b>Dimensions</b>	19" rack mount 445mm (W) x 222mm (H) x 383mm (D)
<b>Weight</b>	AC configuration (including 4 power supplies) - 20Kg (44lbs) DC configuration (including 2 PEMs) - 15Kg (33lbs)
<b>Input power</b>	AC: 90 – 240 VAC DC: -48 / -60 VDC; two feeds per PEM; up to 50Amp per feed
<b>Number of slots</b>	7 slots 8Ux280mm front blades 7 slots 8Ux70mm RTMs
<b>Power supply</b>	Three/five/six front redundant, self-cooled, hot swappable, integral power supply; 1+1 AC power supplies
<b>Power consumption</b>	Operational 300W MAX 700W
<b>MTBF</b>	> 376,102hours
<b>Compliance</b>	PICMG 3.0 R.2.0
<b>Cooling</b>	Push side-to-side cooling for optimal pressurized cooling Standard (6 fans) – provide 450W per slot at 55°C N+1: any one fan can fail with no service degradation Variable speed under shelf manager control; soft rotation start
<b>Certifications / Standards</b>	UL60950 certified CAN/CSA C22.2 No. 60950-1-07 including A1: 2011, ANSI/UL 60950-1-2011 CE compliant and FCC part 15 certified EMI gaskets and hardware spacing conforms to FCC part B Designed to meet NEBS and ETS
<b>ATCA shelf manager</b>	Two front accessible, redundant, hot-swappable IPMI Shelf Managers based on Pigeon Point ShMM Sentry 700

## Technical Specification EMS

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<b>Item</b>	<b>3U chassis</b>
<b>Model</b>	SEPC_HW_ATCA3U
<b>Form factor</b>	ATCA
<b>Dimensions</b>	19" rack mount 448mm (W) x 133.35mm (H) x 413.4mm (D)
<b>Weight</b>	14.4 Kg (including 2power supplies)
<b>Input power</b>	Input power 90 – 240 VAC
<b>Number of slots</b>	2 slot 8Ux280mm (11"), front boards 2 slot 70mm (2.73 inches), RTMs
<b>Power supply</b>	Three/five/six front redundant, self-cooled, hot swappable, integral power supply; 1+1 AC power supplies
<b>Power consumption</b>	Operational 300W MAX 700W
<b>MTBF</b>	> 376,102hours
<b>Compliance</b>	PICMG 3.0 R.2.0
<b>Cooling</b>	Front hot-pluggable fan tray with 4, N+1, axial fans for front and RTM slots Variable speed under shelf manager control Front washable field replaceable NEBS GR63 compatible air filter
<b>Certifications / Standards</b>	UL60950 certified CAN/CSA C22.2 No. 60950-1-07 including A1: 2011, ANSI/UL 60950-1-2011 CE compliant and FCC part 15 certified EMI gaskets and hardware spacing conforms to FCC part B Designed to meet NEBS and ETS
<b>ATCA shelf manager</b>	Pigeon point ShMM500 management module

## Technical Specification EMS

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<b>Item</b>	<b>1U chassis</b>
<b>Model</b>	SEPC_HW_ATCA1U
<b>Form factor</b>	ATCA
<b>Dimensions</b>	19" rack mount 1U (H) x 384 mm (W) x 440 mm (D)
<b>Weight</b>	4.5 Kg
<b>Input power</b>	AC: Input power 90 – 240 VAC (external PS) DC: Input voltage range -40V to -72 VDC
<b>Number of slots</b>	1 front slot ATCA board dimensions 1 RTM slot 70mm (2.76 inches), ATCA RTM dimensions
<b>Power supply</b>	PEM Redundant DC power inlets, each capable of supplying 100% of shelf power
<b>Power consumption</b>	Operational 150W MAX 200W
<b>MTBF</b>	> 59,567 hours
<b>Compliance</b>	PICMG 3.0 R.2.0
<b>Cooling</b>	Four fans attached 47 CFM for the front blade and 8 CFM for the RTM
<b>Certifications / Standards</b>	RoHS EMC: FCC part 15B, EN55022 CISPR Safety: UL 60950-1 - CSA certified CE certified
<b>ATCA shelf manager</b>	-

## Technical Specification EMS

Item	Micro
<b>Model</b>	SEPC_HW_M02
<b>Form factor</b>	Small form factor Industrial PC
<b>Dimensions</b>	40mm(H) x 190mm (W) x 160mm (D)
<b>Weight</b>	1.01 Kg
<b>Input power</b>	AC: Input power 100 – 240 VAC (external PS) DC: 60W 12VDC 5A
<b>CPU</b>	Intel 5 <sup>th</sup> Gen Core i7-5600U Processor
<b>Storage</b>	mSATA 256 GB (SSD)
<b>RAM</b>	2 x 8GB Non-ECC DDR3L-1600 (1.35V)
<b>Network / Connectivity</b>	<ul style="list-style-type: none"> <li>- 4 x USB 3.0</li> <li>- 2 x USB 2.0</li> <li>- 2 x GbE KAN ports</li> <li>- 3 x Serial communication ports, RS232 (mini serial)</li> <li>- 2 x HDMI</li> <li>- 1 x Display Port 1.2</li> </ul>
<b>Power consumption</b>	6-24 W
<b>Advanced Technologies</b>	<ul style="list-style-type: none"> <li>- CPU Virtualization support</li> <li>- AES</li> </ul>
<b>MTBF</b>	> 100,000 hours
<b>Cooling</b>	Passive Cooling Fan-less Design
<b>Environment</b>	Operating Temp (SSD models): <ul style="list-style-type: none"> <li>- Commercial: 0° C - 70° C</li> <li>- Extended: - 20° C - 70° C</li> <li>- Industrial: -40° C - 70° C</li> </ul> Relative Humidity: <ul style="list-style-type: none"> <li>- Operation: 10% to 90%</li> <li>- Storage: 5% to 95%</li> </ul>
<b>Certifications / Standards</b>	FCC 47CFR part 15: 2012, subpart B, Class B, ICES-003: 2012 Issue 5, Class B, AS/NZS CISPR 22: 2009 + A1(10), Class B standards  EN-301 489-17: V2.2.1 :2012, other than telecom center equipment Standard harmonized under article 3.1(b) of R&TTE Directive 1999/5/EC  EN-301 489-1 V1.9.2: 2011, other than telecom center equipment Standard harmonized under article 3.1(b) of R&TTE Directive 1999/5/EC and article 6(2) of EMC Directive 2004/108/EC  EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + IEC 60950-1:2005 + A1:2009 standards

## SEPC Blade

Item	Description
Capacity	Up to (3,000 or 10,000) concurrent subscribers Up to 200 eNBs
Ethernet	Dual Base interface channels 6 x 10/100/1000Base-T [RJ-45 connector] Dual 10GBASE-KX4/1000BASE-BX Fabric interface channels Full duplex Auto-Sensing Optional: 2 x 10GigE (AMC module)
Serial	1 x Serial RS-232 COM port RJ-45 Front-IO
USB	2 x USB 2.0 ports Front-IO
ATCA	PICMG® 3.0 R3.0 PICMG® Ethernet Over PICMG 3.0 R1.0, Option 1/9
Certifications	FCC, CE, UL, NEBS Level 3 (design)

## Environmental

Item	Description
Operating temperature	0°C to 50°C
Storage temperature	-20°C to 70°C
Humidity	5% to 95%, non-condensing

## Functionality set

Item	Description
<b>3gPP interfaces support</b>	<ul style="list-style-type: none"> <li>Gx, Gz, Gy, DHCPv4, SNMPv2/v3, GTP-v1u, SGi (transparent), S1-MME, S6a, S2a S10, S13, SBc</li> </ul>
<b>PDN</b>	<ul style="list-style-type: none"> <li>IPv4/IPv6 PDN Types</li> </ul>
<b>IP Allocation</b>	<ul style="list-style-type: none"> <li>Dynamic, Static, Internal, External , From dedicated pools</li> </ul>
<b>Default and Dedicated bearers</b>	<ul style="list-style-type: none"> <li>Multiple bearers support for each session</li> <li>Multiple sessions for each IMSI</li> <li>UE and Network initiated dedicated bearers</li> <li>Delete bearer capability</li> </ul>
<b>Advanced functionalities</b>	<ul style="list-style-type: none"> <li>Advanced TFT support: Support standard and above the standard filter capabilities</li> <li>Multi users: Support network behind 4G UE that acts as a bridge or router</li> </ul>
<b>Policy</b>	<ul style="list-style-type: none"> <li>Internal and external (PCRF) dynamic policy setting</li> <li>Dynamic quota allocation from external PCRF</li> </ul>
<b>Charging</b>	<ul style="list-style-type: none"> <li>Offline Charging</li> <li>Online Charging</li> </ul>
<b>Admission control</b>	<ul style="list-style-type: none"> <li>Supports admission control for connected users</li> </ul>
<b>Handover</b>	<ul style="list-style-type: none"> <li>X2, S1, inter-SGW, inter-MME</li> <li>Tracking area Update support</li> <li>Idle mode support (exit and enter)</li> </ul>
<b>UE disconnect control</b>	<ul style="list-style-type: none"> <li>By UE</li> <li>By SmartEPC management</li> <li>By external PCRF</li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>Ciphering and Integrity Protection of NAS messages</li> </ul>
<b>Redundancy</b>	<ul style="list-style-type: none"> <li>1+1 redundancy support</li> </ul>
<b>Maintenance</b>	<ul style="list-style-type: none"> <li>Full EPC backup and restore procedures</li> <li>Upload and download backup files</li> <li>Backup and restore procedures for UE database</li> </ul>
<b>Network</b>	<ul style="list-style-type: none"> <li>NAT (suitable for small operations)</li> <li>Simplified IP setting for RAN, Core and Management</li> </ul>
<b>Configuration</b>	<ul style="list-style-type: none"> <li>Quick network and users configuration (plug &amp; play)</li> <li>Simple operation status view</li> </ul>
<b>Management</b>	<ul style="list-style-type: none"> <li>Web based GUI</li> <li>SNMP v2/3</li> <li>SSH rescue interface</li> <li>Multiple levels of trace types and debugging facilities</li> <li>Error Levels, reporting, filtering error based on levels</li> </ul>
<b>UE configuration</b>	<ul style="list-style-type: none"> <li>White list of roaming partners (PLMN-ID)</li> <li>AKA based authentication (key generation and distribution)</li> <li>Multiple operator support (using unique group-ID)</li> </ul>
<b>Billing</b>	<ul style="list-style-type: none"> <li>Already integrated with third party cost effective billing solution</li> </ul>