siae microelettronica

Our experience, your advantage

AGS20 SERIES

Universal Aggregation Platform

AGS20 is a Universal Microwave Aggregation Platform that flexibly addresses the different RAN generation needs over a common wireless transport infrastructure, including LTE-Advanced and 5G new stringent requirements. The AGS20 is a family of microwave aggregators with multiple mechanical arrangements designed to fit different needs and deployment scenarios in a modern mobile backhaul infrastructure. The ASNK ODU is extremely compact in size with less than 2 liters volume and with a benchmarking power consumption of 10W, help operators in diminishing CO2 emissions.

AGS20 addresses the need for carrier-class multi-technology traffic aggregation, with high performance Carrier Ethernet 2.0 and IP/MPLS engine, with multiple 1/2,5/10Gbps ports, while maintaining full support of the legacy traffic E1 and STM-1 services.

The platform enables convergence of the major microwave application segments:

- Next Generation indoor unit for advanced packet processing
- Aggregation of IF and All-Outdoor Radio including E-Band
- Modular configuration for evolving complex sites



AGS20 SERIES IDUs and ODUs

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001:2015 =

Data subject to change without notice - Not contractually binding | May 2019 © All rights reserved @ SIAE MICROELETTRONICA

UNIVERSAL PRODUCT ARCHITECTURE

Microwave radio products have evolved in terms of functionality and physical arrangements to cover in an effective and efficient way they can be employed in any application.

AGS20 as part of the SIAE MICROELETTRONICA Unified Product Architecture, utilizes at its core the SM-OS operating system based over three major components:

Network Management Plane

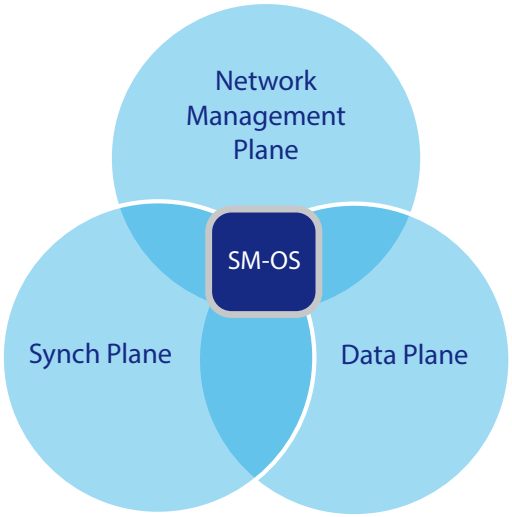
- NETCONF/Yang in SDN deployment
- SNMP v1/v2c/v3, HTTPs, SSH, SFTP
- RADIUS for centralized user management

Data Plane

- MEF 2.0 – Carrier Ethernet Services
- IP/MPLS – L2/L3 VPN Services
- QoS/HQoS – queue management/policing and shaping

Synch Plane

- Synchronous Ethernet
- ITU-T G.8275.1 Profiles (T-BC)
- 1 PPS in/out port



NEXT GENERATION UNIT FOR SPLIT MOUNT RADIO

AGS20 sets a new industry benchmark in split mount microwave by featuring the following capabilities:

- Modulation up to 4096 QAM
- Channel spacing up to 112 MHz
- Lower than 2 Litre volume for easier installation
- Multicarrier Aggregation for Hybrid Link
  (standard licensed frequency band and a millimeter wave 80 GHz band)



ASNK ODU

FAMILY PORTFOLIO

AGS20 series is the state of art microwave radio solution. AGS20 include three physical mechanical arrangements to satisfy simple point to point needs to the most complex sites including nodal configurations and scaling capacity in line with network growth.

The IDU can support a variety of interfaces with a mix of GE and Radio IF interfaces, for maximum flexibility when interconnecting heterogeneous technologies.

AGS20

AGS20 is a fully integrated single box solution. It offers a complete range of interfaces: Radio, 10/2.5/1 Gigabit/Fast Ethernet, E1 both native and pseudo wire and STM-1.
AGS20 can support up to four IF interfaces, allowing the set up a four direction nodal solution in a single rack unit IDU, or Radio LAG over 4x ODUs, with best cost/performance relationship. AGS20 minimizes space consumption without renouncing to functionalities.



AGS20
integrated single unit

AGS20M

AGS20M is an expandable split-mount edge node that hosts a frontal expansion slot. Its innovative structure provides both simplicity and flexibility matching the requirement of maintaining a low total cost of ownership (TCO) by giving the possibility to expand the node with more radio or client interfaces to meet the growing demands of the network.



AGS20M
integrated unit with single drawer expansion slot

AGS20L

AGS20L has a fully modular architectural design, addressing dense scenario applications where multiple directions, high capacity aggregation and convergence over the optical network are a need.

AGS20L aggregates traffic incoming from multiple IF based ODU and Ethernet based full outdoors, all feeding into a single node. Its modular design offers full redundancy (no Single Point o f Failure) regardless of the radio configuration, improving resiliency of aggregation and backbone sites.



AGS20L
2RU - 8modular slots

MAIN FEATURES

- SM-OS based platform
- 4 to 4096 QAM modulation
- Hitless Adaptive Code and Modulation
- Multi Layer Header Compression
- L1 Radio LAG over multiple ODU with XPIC
- Extended Ethernet connectivity: multiple 10/2,5/GE interfaces
- Multi Carrier Aggregation
- Mixed TDM/Ethernet interfaces for dual native transport
- PWE3 TDM services defined by software for full packet networks
- AES128/256 Encryption
- POE support
- Extended buffer for maximum TCP/IP efficiency in LTE networks
- Integrated antennas up to 1.8m (6ft)
- Single Universal ODU for any capacity and modulation
- Network Management System: NMS5
- SDN Microwave Domain Controller: SM-DC

LAYER 2 MAIN FUNCTIONALITIES

- MEF 2.0 certified
- 8 queues with flexible scheduler (Strict Priority, WRR and mixed)
- 4 level hierarchical scheduler (H-QoS)
- Flexible QoS definition based on VLAN, IPv4, IPv6, MPLS exp bits
- Per queue WRED congestion avoidance
- Flow Based Ingress Policing (CIR & EIR definition)
- Egress shaping
- Ethernet Ring Protection G.8032
- RMON statistics per service VLAN stacking (IEEE 802.1ad QinQ)
- Link Aggregation IEEE 802.3ad
- Ethernet OAM 802.3ah/ 802.1ag/ Y.1731
- Jumbo Frames up to 12 Kbytes

LAYER 3 MAIN FUNCTIONALITIES

- LDP (Label Distribution Protocol) / TLDP
- RSVP/RSVP-TE
- MPLS L2VPN / VPLS
- MPLS L3VPN
- MPLS TE using RSVP-TE
- OSPFv2 and OSPF with TE extension
- BGPv4, MP-BGP
- IS-IS
- eBGP
- BDF bidirectional forwarding detection for PW VCCV
- FRR Fast Re-route
- LSP RSVP-TE protection 1:1
- MPLS-OAM (with MPLS-TP)

siae microelettronica

SIAE MICROELETTRONICA
via Michelangelo Buonarroti, 1
20093 Cologno Monzese, Milano
Tel. +39 02273251 - Fax +39 0225391585

www.siaemic.com

AGS20	1xIF	2xIF	4xIF
Configuration	1+0	1+0 / 1+1 / 2+0 XPIC radio LAG	1+0 / 1+1 / 2+0 / 4+0 XPIC radio LAG
Switching capability	46 Gbps full duplex		
TDM transmission capability	Up to126 x E1 (per radio direction)		
Modulation	4 QAM to 4096 QAM with hitless ACM		
Ethernet/Radio interfaces	1 x IF (ODU) 2 x GE electrical 4 x GE SFP (1 / 2.5 Gbps) 2 x GE Combo (electrical /optical)	2 x IF (ODU) 2 x GE electrical 4 x GE SFP (1 / 10 / 2.5 Gbps) 2 x GE Combo (electrical / optical)	4 x IF (ODU) 2 x GE electrical 2x GE SFP (1 / 10 / 2.5 Gbps) 2 x GE Combo (electrical / optical)
TDM interfaces (optional)	16x E1 native / PWE3 mode software selectable 2x STM-1 native NBUS (nodal expansion)		
Local maintenance interfaces	Console port / LAN port		
Synchronization interfaces	1pps / ToD / 2048 KHz		

AGS20M	
Configuration	1+0 / 2+0 / 4+0 / 1+1 / 2+2/ XPIC / radio LAG
Switching capability	53 Gbps full duplex
TDM transmission capability	Up to126 x E1 (per radio direction)
Modulation	4 QAM to 4096 QAM with hitless ACM
Ethernet/Radio interfaces Main board unit	2 x IF Module 4 x 10Gbps, 4xGE, 2 x GE SFP 8xE1 Native or PWE3
Expansion unit	2 x IF Module
Local maintenance interfaces	Console port / LAN port
Synchronization interfaces	1pps / ToD / 2048 KHz

AGS20L	
Configuration	1+0 / 2+0 / 4+0 / 8+0 / 1+1 / 2+2/ 4+4/ XPIC / radio LAG
Switching capability	100 Gbps full duplex
TDM transmission capability	Up to126 x E1 (per radio direction)
Modulation	4 QAM to 4096 QAM with hitless ACM
Units	
Core card	2 x 10Gbps + 2 x 100Base T for DCN
DRI-2 card	2 x 10 Gbps Module
ARI-2 card	2 x IF Module
DRI-8 card	8xGE (4 x GE electrical + 4 x GE SFP)
TDM card	8xE1 + 2 STM-1
FAN card	Up to 2 module per IDU
PSU card	Nominal -48VDC
Local maintenance interfaces	Console port / LAN port
Synchronization interfaces	1pps / ToD / 2048 KHz

Data subject to change without notice - Not contractually binding | May 2019 © All rights reserved @ SIAE MICROELETTRONICA

Frequeny band	4 GHz	6L/6U GHz	7/8 GHz	10/11 GHz	13 GHz	15 GHz	18 GHz	23 GHz	26 GHz	28 GHz	32 GHz	38 GHz	42 Ghz
Frequency range	4.4-5	5.9-7.1	7.11-8.5	10.2-11.7	12.7-13.2	14.4-15.3	17.7-19.7	21.2-23.6	24.5-26.5	27.5-29.5	32.8-33.4	37-39.5	40.5-43.5
Modulation schemes	4 QAM / 16 QAM / 32 QAM / 64 QAM / 128 QAM / 256 QAM / 512QAM / 1024 QAM / 2048 QAM / 4096 QAM												
Channel spacing	7 MHz / 14 MHz / 20 MHz / 28 MHz / 30 MHz / 40 MHz / 50 MHz / 56 MHz / 80 MHz / 112 MHz												
Throughput	Up to 1Gbs per radio channel												
Output power (dBm) at point C'*													
4 QAM	+28	+32	+29	+30	+28	+28	+23	+23	+22	+21	+20	+19	+17
16 QAM	+25	+29	+26	+27	+25	+25	+21	+21	+20	+19	+18	+17	+15
32 QAM	+25	+29	+26	+27	+25	+25	+21	+21	+20	+19	+18	+17	+15
64 QAM	+24	+28	+25	+26	+24	+24	+19	+19	+18	+17	+16	+15	+13
128 QAM	+24	+28	+25	+26	+24	+24	+19	+19	+18	+17	+16	+15	+13
256 QAM	+23	+27	+24	+24	+23	+23	+18	+18	+17	+16	+15	+14	+12
512 QAM	+23	+27	+24	+25	+23	+23	+18	+18	+17	+16	+15	+14	+12
1024 QAM	+22	+26	+23	+24	+22	+22	+17	+17	+16	+15	614	+13	+11
2048 QAM	+22	+26	+23	+24	+22	+22	+17	+17	+16	+15	614	+13	+11
4096 QAM	+21	+25	+22	+23	+21	+21	+16	+16	+15	+14	+13	+12	-
Receiver sensitivity (dBm) at BER 10^{-6} at Point C (1+0, 28 MHz BW, RF filter losses included)													
4 QAM	-87	-88.5	-88.5	-88	-88	-88	-87.5	-87.5	-87	-85.5	-85	-85.5	-84.5
16 QAM	-81	-82.5	-82.5	-82	-82	-82	-81.5	-81.5	-81	-79.5	-79	-79.5	-78.5
32 QAM	-76.5	-78	-78	-77.5	-77.5	-77.5	-77	-77	-76.5	-75	-74.5	-75	-74
64 QAM	-73.5	-75	-75	-74.5	-74.5	-75.5	-74	-74	-73.5	-72	-71.5	-72	-71
128 QAM	-70.5	-72	-72	-71.5	-71.5	-71.5	-71	-71	-70.5	-69	-68.5	-69	-68
256 QAM	-67.5	-69	-69	-68.5	-68.5	-68.5	-68	-68	-67.5	-66	-65.5	-66	-65
512 QAM	-65.5	-67	-67	-65.5	-65.5	-65.5	-66	-66	-65.5	-64	-63.5	-64	-63
1024 QAM	-62	-63.5	-63.5	-63	-63	-63	-62.5	-62.5	-62	-60.5	-60	-60.5	-59.5
2048 QAM	-59	-60.5	-60.5	-60	-60	-60	-59.5	-59.5	-59	-57.5	-57	-57.5	-56.5
4096 QAM	-56	-57.5	-57.5	-57	-57	-57	-56.5	-56.5	-56	-54.5	-54	-54.5	-
Frequency stability	±5 ppm												
Frequency agility	250 KHz (software programmable)												
RTPC	Up to 30 in 1 dB steps												
ATPC	Up to 30 in 1 dB steps												
IDU/ODU interconnection per terminal	50Ω Coaxial Cable												
Dimensions (WxHxD)													
AGS20	442 x 44 x 223 (mm) / 17.4 x 1.7 x 8.7 (in)												
AGS20M	442 x 44 x 240 (mm) / 17.4 x 1.7 x 9.4 (in)												
AGS20L	442 x 88 x 240 (mm) / 17.4 x 3.4 x 9.4 (in)												
ODU (below 18 GHz)	254 x 254 x 114 (mm) / 10 x 10 x 4.5 (in)												
ODU (18 to 42 GHz)	182 x 182 x 65 (mm) / 7.1 x 7.1 x 2.5 (in)												
Power supply	-48 Vdc (-15%, +20%)												
Overall power consumption													
1+0 terminal	≤ 45W												
1+1 terminal	≤ 60 W												
Environmental performance	ODU weather proofing class: IP67							IDU temperature range: -5°C to +55°C ODU temperature range: -35°C to +55° Working temperature range with performance not guaranteed: -45°C to +60°C					
Altitude	3000 m												
Compliant with	ETSI EN 302 217 / FCC Part 101												

(*) Typical values

siae microelettronica

SIAE MICROELETTRONICA
via Michelangelo Buonarroti, 1
20093 Cologno Monzese, Milano
Tel. +39 02273251 - Fax +39 0225391585

www.siaemic.com