AGS20 series

Product Leaflet

Universal Aggregation Platform

Evolutions of the RAN are the main driver for changes in microwave products, like LTE requiring increased throughput and densification of the network, Small Cell and Cloud-RAN.

These changes lead to new technologies in the microwave industry to improve capacity by using complex modulation formats, dual carrier solutions, using new spectrum (60 and 80 GHz) and to improve network density at street level with NLOS sub-6 GHz.

AGS20 is the unique universal aggregation platform to address all these new application segments in a coherent solution.

Bologna, Italy

MICROWAVE RADIO

AGS20 is Universal Microwave Aggregation Platform addressing the need for carrier-class multi-technology traffic aggregation.

Based on high performance Carrier Ethernet 2.0 engine (MPLS ready), the platform enables convergence of the major microwave application segments:

• Next Generation indoor Unit for split Mount Radio
• Aggregation for All Outdoor Radio including E-Band
• Gateway handling Small Cell Radio Cluster

NEXT GENERATION UNIT FOR SPLIT MOUNT RADIO

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

• Carrie Ethernet 2.0 data plane (MPLS ready)
• Modulation up to 2048 QAM
• Compatibility with existing ASN ODUs (common to ALS series)
• Radio link aggregation up to 2 Gbps in a 1RU indoor unit
• Enhanced QoS feature set (ex. four level hierarchical scheduling)
• Time and phase synchronization according to ITU-T G.8275.1 (Transport –Boundary Clock)

ALL OUTDOOR RADIO AGGREGATOR

Radio Access migration towards full packet technology is boosting demand for All Outdoor microwave equipments.

AGS20 enables this move by providing:

• Connectivity towards ALFOplus and ALFOplus80 series
• 2.5 Gbps optical interface
• Single Network Element concept towards NMS
• Power over Ethernet and integrated lighting protection to direct feed all outdoor equipments
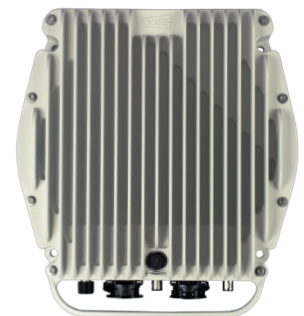
GATEWAY HANDLING SMALL CELL RADIO CLUSTER

Small cell layer is expected to increase number of transport connections of x10 factor compared to Macro- cell backhaul layer. Such network evolution demands for data traffic aggregation capability and some management intelligence in the network nodes to avoid flood of management traffic and prevent overwhelming complexity towards central NMS.

AGS20 (EasyCell Gateway) acts as small-cell cluster aggregator and manager providing the following features:

• Connectivity towards EasyCell small form factor radios
• Power over Ethernet and integrated lighting protection
• Gateway functionality between small cell backhauling radios and NMS: configuration, monitoring and management at cluster level

Universal Product Architecture

The increased number of application segments demands for a spread of microwave technologies in order to address each of the segments in an effective and efficient way. This scenario brings to a higher complexity in microwave portfolio challenging for the consistency of the overall network solution and streamlined roadmap.

SIAE MICROELETTRONICA answer is based on the adoption of a Unified Product Architecture, a common Ethernet hardware and software platform through all new generation products based on two main building blocks:

- Ethernet Core unit based on powerful switching gear featuring 25 Gbps full duplex capacity, high performance dual-core CPU and embedded IEEE1588v2 processor for frequency and phase synchronization

- SM-OS software based on carrier-grade field proven highly interoperable protocol stack to provision standard MEF and MPLS services and is SDN ready

Ethernet Core Unit

Operating System

AGS20s
New Generation split-mount Microwave

AGS20 can be configured as an Indoor Unit for split mount radio: AGS20s brings superior packet capabilities, certified to comply with LTE transport requirements. Still it supports TDM traffic, both native and pseudowire, to allow easy network evolution from pure TDM to pure IP.

A complete range of interfaces (Radio, Gigabit/Fast Ethernet) and a high degree of versatility allow very easy network planning and management.

MAIN FEATURES

- 4 to 2048 QAM modulations

- Hitless ACM adaptive code and modulation

- Multi Layer Header Compression

- L1 Radio LAG up to 4 ODUs and XPIC configuration in a 1RU IDU

- Convergence of all outdoor and split-mount microwave

- Extended Ethernet connectivity: 8xGE interfaces

- Synchronous Ethernet and IEEE 1588 v2 support

- SM-OS based platform

- CISCO Microwave Adaptive Bandwidth feature interworking

- Extended buffer for maximum TCP/IP efficiency in LTE networks

- Integrated antennas up to 6ft. in dia.

- Single Universal ODU for any capacity and modulation

- Unified Network Management System – NMS5

LAYER 2 MAIN FUNCTIONALITIES

- MEF-9 and MEF-14 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

TYPICAL APPLICATIONS

- 2G/3G/4G Cellular Network backhauling infrastructure

- Leased Lines replacement

- Utility Networks (Railways, Oil&Gas)

- Private Data Networks (WANs, LANs, etc)

- WiMAX Backhauling

- Fiber Optics extension, termination and backup

- Spur Links for Backbones/Rings

- High capacity Broadband Access Networks

Flexible Configuration

The IDU can host a variety of interfaces (a mix of GE and Radio IF interfaces), for maximum flexibility when interconnecting heterogeneous technologies. Up to ten interfaces can be equipped in single 1RU equipment allowing reaching up to ten different directions.

MEMBER OF: ETSI   MEF   IWPC INTERNATIONAL WIRELESS INDUSTRY CONSORTIUM

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV = ISO 9001:2008 =

INDOOR UNIT AGS20s

AGS20 version	1xIF	2xIF	4xIF
Configuration	1+0	1+0 / 1+1 / 2+0 / XPIX / radio LAG	1+0 / 1+1 / 2+0 / 4+0 / XPIX / radio LAG
Switching capability	25 Gbps full duplex		
Modulation	4 QAM to 2048 QAM with hitless ACM		
Ethernet/Radio interfaces	1 x IF (ODU) 2 x GE electrical 4 x GE optical / 2.5 Gbps 2 x Combo (GE electrical / optical)	2 x IF (ODU) 2 x GE electrical 4 x GE optical / 2.5 Gbps 2 x Combo (GE electrical / optical)	4 x IF (ODU) 2 x GE electrical 4 x GE optical / 2.5 Gbps 2 x Combo (GE electrical / optical)
Local Maintenance interfaces	Console port / LAN port		
Synchronization interfaces	1pps / ToD / 2048 Khz		

AGS20s IDU
1xIF + 8xGE

AGS20s IDU
2xIF + 8xGE

AGS20s IDU
4xIF + 6xGE

OUTDOOR NIT AGS20s

- Outstanding transmit power performance with top class power consumption (12 W)

- Small form factor, 103.7 cu. In. volume

- Easy and quick deployment

- 30 dB ATPC range

- Up to 2048 QAM modulation

- Supporting any radio configuration

MICROWAVE RADIO

AGS20s Techical specification

Frequency Band		6L/6U GHz	7/8 GHz	10/11 GHz	18 GHz	23 GHz
Frequency Range		5.9-7.1	7.11-8.5	10.2-11.7	17.7-19.7	21.2-23.6
Modulation Schemes		4 QAM / 16 QAM / 32 QAM / 64 QAM / 128 QAM / 256 QAM / 512QAM / 1024 QAM / 2048 QAM				
Channel Spacing		10 MHz / 20 MHz / 30 MHz / 40 MHz / 60 MHz				
Throughput		Up to 1 Gbps per radio channel				
Output Power (dBm) at Point C'*						
	4 QAM	+31	+29	+30	+23	+23
	16 QAM	+28	+26	+27	+21	+21
	32 QAM	+28	+26	+27	+21	+21
	64 QAM	+27	+25	+26	+19	+19
	128 QAM	+27	+25	+26	+19	+19
	256 QAM	+26	+24	+25	+18	+18
	512 QAM	+26	+24	+25	+18	+18
	1024 QAM	+25	+23	+24	+17	+17
	2048 QAM	+25	+23	+24	+17	+17
Receiver Sensitivity (dBm) at BER 10-6 at Point C (1+0, 28 MHz BW, RF filter losses included)						
	4 QAM	-88.5	-88.5	-88	-87.5	-887.5
	16 QAM	-82.5	-82.5	-82	-81.5	-81.5
	32 QAM	-78	-78	-77.5	-77	-77
	64 QAM	-75	-75	-74.5	-74	-74
	128 QAM	-72	-72	-71.5	-71	-71
	256 QAM	-69	-69	-68.5	-68	-68
	512 QAM	-67	-67	-65.5	-66	-66
	1024 QAM	-63.5	-63.5	-63.	-62.5	-62.5
	2048 QAM	-60.5	-60.5	-60	-59.5	-59.5
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 per RT				
Dimensions (WxHxD)	IDU	17.4 x 1.7 x 8.8 (in)				
	ODU (below 18 GHz)	10 x 10 x 4.5 (in)				
	ODU (18 to 42 GHz)	7.2 x 7.2 x 2.6 (in)				
Power Supply		-48 Vdc (-15%, +20%)				
Overall Power Consumption	1+0 terminal	≤ 45 W				
	1+1 terminal	≤ 60 W				
Environmental Performance		ODU Weather Proofing Class: IP65	IDU Temperature Range: -5°C to +50° ODU Temperature Range: -35°C to +55° Working Temperature range with performance not guaranteed: -45°C to +60°C			
Altitude		9,845 ft.				
Compliant with		FCC Part 101				

(*) Typical values

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