

ALFOplus80 series

Product Leaflet



siae microelettronica

From 2 to 10 Gbps E-Band Full Outdoor

Whether in mobile, fixed or private networks, the E-band millimetre wave solution represents a fundamental technology tool bridging the gap between fibre high capacity systems and flexible cost effective wireless transmission. Today, our 3rd generation E-band solution, the ALFOplus80HDX, achieves 10Gbps full-duplex, ultra-high capacity and represents an even better solution acting as a prime transmission media as with fibre.

ALFOplus80HDX provides the same capacity of fibre, highest deployment flexibility and homogeneous operational behaviour as traditional microwave, allow operators to fully liaise on existing knowledge and skills, minimizing introduction costs, while modernizing the transport network.



Siena, Italy

MILLIMETER WAVE RADIO

ALFOplus80HDX

ALFOplus80 series is a Full-Outdoor, full IP Next Generation Millimetre wave radio operating in the E-Band (71-76 GHz / 81-86 GHz).

The 3rd generation system **ALFOplus80HDX** is the ideal solution for ultra high capacity wireless links in urban environment for all carrier-class applications: mobile backhaul, fronthaul, enterprise, ISP.

MAIN FEATURES

- Up to 10 Gbps Throughput
- Channel bandwidth up to 2000 MHz
- BPSK/4/16/64/128/256 QAM modulation schemes
- Hitless Adaptive Coding Modulation and Bandwidth
- Integrated flat antenna
- AES-256 Encryption
- Power Over Ethernet
- 10 Gigabit and Gigabit interfaces
- L1 link aggregation (2+0 XPIC and Multi Band Link)
- Carrier Ethernet protocol stack
- Native SDN ready (NETCONF agent)
- SM-OS based platform
- Synchronous Ethernet and IEEE 1588v2
- Time Sync (ITU-T G.8275.1, G8273.2)
- Microwave Adaptive bandwidth notification

LAYER 2 MAIN FUNCTIONALITIES

- MEF 2.0 Carrier Ethernet Services
- Complete VLAN management
- Per VLAN flexible ingress Policer (CIR & EIR definition)
- Color-Aware Classification
- Programmable queues length
- Jumbo Frames up to 12 kbytes
- Flexible QoS definition based on VLAN, IPv4, IPv6, MPLS
- H-QoS enhanced service management
- RMON Statistics

TYPICAL APPLICATIONS

- Any-G Mobile Backhaul for Access and aggregation
- CRAN, front-haul up to 10 Gbps
- Last Mile fiber extension for business customers
- Emergency wireless links
- Complementary solution to fibre deployment

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
- 2.5/10 Gbps optical interface
- Load balancing and link protection
- Power over Ethernet and integrated lighting protection to direct feed All Outdoor equipments
- TDM connectivity



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

ALFOplus80 series

Product Data Sheet

ALFOplus80HD

2.5 Gbps E-Band Full Outdoor



Frequency	80 GHz (71-76 GHz / 81-86 GHz)		
Supported configurations	(1+0), (1+1), (2+0)		
Modulation schemes	BPSK / 4 / 16 / 64 QAM with ACM		
Traffic interfaces	2 x GE electrical / optical or 1 x 2.5 Gbps optical		
Output power at point C ¹	Channel Spacing		
	250 MHz	500 MHz	1000 MHz
	4 QAM	+18	+18
	16 QAM	+15	-
	64 QAM	+13	-
Receiver sensitivity at BER 10 ⁻⁶ at point C (1+0 conf., RF filter losses included)	Channel Spacing		
	250 MHz	500 MHz	1000 MHz
	4 QAM	-73	-64
	16 QAM	-64	-
	64 QAM	-58	-
Frequency stability	± 5 ppm		
ATPC	20 dB range implemented in 1 dB steps		
RTPC	Up to 20 dB in 1 dB step, software programmable		
ODU connector	RJ45 or SFP Optical Plug-in		
Management Interfaces	In-band or out-band management		
Mechanical dimensions ODU (WxHxD)	290 x 302,5 x 117,6 (mm) 11,4 x 11,9 x 4,6 (in)		
Power supply	PoE or separated power feeding		
Power consumption (per terminal)	32W to 53W in 1+0 configuration		
Environmental performance	ODU weather proofing class		IP65
	ODU temperature range		-35° C to +55 ° C
Ethernet characteristics	MAC address switching, ageing and learning VLAN / VLAN stacking (IEEE 802.1ad-QinQ) Ethernet QoS (IEEE 802.1p) Flow Control (IEEE 802.3x) RMON Statistics (RFC 2819) LLF (Link Loss Forwarding) ETH OAM (IEEE 802.1ag / 802.3ah / ITU-T Y.1731) G.8261/8262/8264 SyncE / IEEE 1588 v2 Selective QinQ based on VLAN and 802.1p priority		
Compliant with	ETSI EN 302 217 / FCC CFR 47, Part 101 and Part 15		

MILLIMETER WAVE RADIO

ALFOplus80HDX

10 Gbps E-Band Full Outdoor



Frequency	80 GHz (71-76 GHz / 81-86 GHz)				
Supported configurations	(1+0), (1+1), (2+0), (2+0 XPIC)				
Modulation schemes	4 / 16 / 32 / 64 / 128 / 256 QAM with ACM				
Traffic interfaces	2 x 10 Gbps optical* / 4 x GE electrical / optical (*also 2.5 Gbps configurable)				
Output power at point C'	Channel Spacing				
	250 MHz	500 MHz	750 MHz	1000 MHz	2000 MHz
	4 FQAM / 4 HQAM / 4 SQAM / 4 QAM	18	18	18	18
	16 SQAM / 16 QAM	15	15	15	15
	32 QAM	15	15	15	15
	64 QAM	13	13	13	13
	128 QAM	12	12	12	12
	256 QAM	11	11	11	11
Receiver sensitivity at BER 10 ⁻⁶ at point C (1+0 conf., RF filter losses included)	Channel Spacing				
	250 MHz	500 MHz	750 MHz	1000 MHz	2000 MHz
	4 FQAM / 4 HQAM	- / -77	-78 / -75	-75,5 / -72,5	-74 / -71
	4 SQAM / 4 QAM	-74 / -72,5	-71 / -69,5	-69,5 / -67,5	-68 / -66,5
	16 SQAM / 16 QAM	-68 / -67	-65 / -64	-63,5 / -62	-62 / -61
	32 QAM	-64	-61	-59	-58
	64 QAM	-61	-58	-56	-55
	128 QAM	-57,5	-54,5	-53	-51,5
	256 QAM	-54,5	-51,5	-49,5	-48,5
Frequency stability	± 5 ppm				
ATPC	up to 20 dB range implemented in 1 dB steps				
RTPC	up to 20 dB in 1 dB step, software programmable				
ODU connector	RJ45 or SFP Optical Plug-in				
Management Interfaces	In-band or out-band management				
Mechanical dimensions ODU (WxHxD)	252 x 363 x 117 (mm) 9,92 x 14,3 x 4,6 (in)				
Power supply	PoE or separated power feeding				
Power consumption (per terminal)	70W in 1+0 configuration				
Environmental performance	ODU weather proofing class IP67				
	ODU temperature range -35° C to +55 ° C				
Ethernet characteristics	MAC address switching, ageing and learning VLAN / VLAN stacking (IEEE 802.1ad-QinQ) Ethernet QoS (IEEE 802.1p) Complete H-QoS support Flow Control (IEEE 802.3x) RMON Statistics (RFC 2819) LLF (Link Loss Forwarding) ETH OAM (IEEE 802.1ag / 802.3ah / ITU-T Y.1731) G.8261/8262/8264 SyncE / IEEE 1588 v2 Selective QinQ based on VLAN and 802.1p priority SM-OS based feature set				
Compliant with	ETSI EN 302 217 / FCC CFR 47, Part 101 and Part 15				