ALFOplus80 series

Product Leaflet

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From 2 to 10 Gbps E-Band Full Outdoor



Whether in mobile, fix or private networks, the E-band millimetre wave represented a fundamental technology tool bridging the gap between fibre high capacity systems and flexible cost effective wireless transmission, nowadays the 3rd generation of E-band solutions -the ALFOplus80HDX- archieving 10Gbps ultra-high capacity, represents an even better solution acting as a prime actor with the fibre.

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



Siena, Italy

MILLIMETER WAVE RADIO

ALFOplus80 series

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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 named **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 from 250 to 1000 MHz/2000 MHz
- BPSK/4/16/64/128/256 QAM modulation schemes
- Hitless Adaptive Coding and Modulation
- Full Carrier Ethernet protocol stack
- AES Encryption
- Power Over Ethernet
- 10 Gigabit and Gigabit interfaces
- InBand and OutBand Management
- SM-OS based platform
- Packet Fragmentation to minimize jitter
- Integrated flat antenna
- Synchronous Ethernet and IEEE 1588v2 support
- CISCO Microwave Adaptive bandwidth feature interworking

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
- HQoS enhaced service management
- RMON Statistics

TYPICAL APPLICATIONS

- Any-G Mobile Backhaul for Access and aggregation
- CRAN, CPRI front haul 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
- Single Network Element concept towards NMS
- Power over Ethernet and integrated lighting protection to direct feed All Outdoor equipments
- TDM connectivity



LTE Advanced

MEMBER OF: ETSI MEF IWPC

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

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ALFOplus80 HD

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'		Channel Spacing		
		250 MHz	500 MHz	1000 MHz
	4 QAM	+18	+18	+18
	16 QAM	+15	+15	-
	64 QAM	+13	+13	-
Receiver sensitivity ar BER 10^{-6} at point C (1+0 conf., RF filter losses included)		Channel Spacing		
		250 MHz	500 MHz	1000 MHz
	4 QAM	-73	-70	-64
	16 QAM	-64	-61	-
	64 QAM	-58	-55	-
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 (IEE 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		

ALFOplus80 HDX

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[1]	Channel Spacing				
	250 MHz	500 MHz	750 MHz	1000 MHz	2000 MHz
4 FQAM / 4 HQAM / 4 SQAM / 4 QAM	18	18	18	18	18
16 SQAM / 16 QAM	15	15	15	15	15
32 QAM	15	15	15	15	15
64 QAM	13	13	13	13	13
128 QAM	12	12	12	12	12
256 QAM	11	11	11	11	11
Receiver sensitivity ar 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	- 71/ -78
4 SQAM / 4 QAM	-74 / -72,5	-71 / -69,5	-69,5/ -67,5	-68/ -66,5	- 65/ -63,5
16 SQAM / 16 QAM	-68/ -67	-65 / -64	-63,5/ -62	-62/ -61	- 59/ -58
32 QAM	-64	-61	-59	-58	-55
64 QAM	-61	-58	-56	-55	-52
128 QAM	-57,5	-54,5	-53	-51,5	-48,5
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 363x 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 (IEE 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 SDN / MPLS capable CPRI up to 1x 10Gbps (CPRI option 7) SM.OS based feature set				

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