

Our experience, your advantage

ALFOplus80HDX

From 10 to 20 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. ALFOplus80HDX achieves 10GBps full-duplex ultra high capacity in a single unit, and 20GBps in a 2+0 XPIC configuration.

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



ALFOplus80HDX

UNIVERSAL PRODUCT ARCHITECTURE

Millimetre wave 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.

ALFOplus80HDX 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

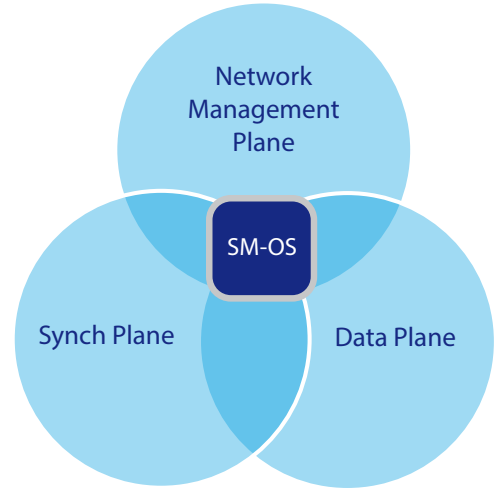
- NETCONF/Yang in SDN deployment
- SNMP v1/v2c/v3, HTTPs, SSH, SFTP
- RADIUS for centralized user management

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



MAIN FEATURES

- SM-OS based platform
- Up to 10 Gbps Throughput with single unit
- Integrated XPIC circuitry (2+0 up to 20 Gbps)
- Channel bandwidth up to 2000 MHz
- BPSK/4/16/64/128/256 QAM modulation schemes
- Hitless Adaptive Coding Modulation and Bandwidth
- Integrated flat antenna (ETSI only)
- AES128/256 Encryption
- 10 Gigabit and Gigabit interfaces
- L1 link aggregation
- PoE and dedicated power feeder connectors
- Multi Carrier Aggregation (Full Outdoor Aggregation with ALFOplus2; Split Mount with AGS20 ODUs)
- Network Management System: NMS5
- SDN Microwave Domain Controller: SM-DC

Supported Configurations:

- Single Unit: 1+0 (10 Gbps)
- Two Units : 2+0 XPIC (20 Gbps)

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



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 (dBm) 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 at BER 10 ⁻⁶ at point C (1+0 conf., RF filter losses included)			
4 QAM	-73	-70	-64
16 QAM	-64	-61	-
64 QAM	-58	-55	-
Frequency stability	±5 ppm		
RTPC	up to 20 dB in 1 dB steps, software programmable		
ATPC	up to 20 dB range implemented in 1 dB steps		
ODU connector	RJ45 or SFP Optical Plug-in		
Management interfaces	In-band or out-band management		
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 50W 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 / FCC CFR 47, Part 101 and Part 15		

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 (dBm) at point C*	Channel Spacing							
	62,5 MHz	125 MHz	250 MHz	500 MHz	750 MHz	1000 MHz	2000 MHz	
4 FQAM / 4 HQAM / 4 SQAM / 4 QAM	20	20	20	20	20	20	20	
16 SQAM / 16QAM	17	17	17	17	17	17	17	
32 QAM	15	15	15	15	15	15	15	
64 QAM	15	15	15	15	15	15	15	
128 QAM	14	14	14	14	14	14	14	
256 QAM	13	13	13	13	13	13	-	
Receiver sensitivity at BER 10 ⁻⁶ at point C (1+0 conf., RF filter losses included)								
4 FQAM / 4 HQAM	-	- / -80	-79.5 / -76.5	-76.5 / -73.5	-74.5 / -71.5	-73 / -70	-70 / -67	
4 SQAM / 4 QAM	-80 / -77.5	-77 / -47.5	-73.5 / -71.5	-70.5 / -68.5	-68.5 / -66	-67 / -65	-64 / -62	
16 SQAM / 16 QAM	-74 / -71.5	-71 / -68.5	-68 / -65	-65 / -62.5	-62.5 / -60	-61.5 / -58.5	-58.5 / -56	
32 QAM	-68.5	-65.5	-62.5	-59.5	-57	-55.5	-53	
64 QAM	-65.5	-62.5	-59.5	-56.5	-54	-52.5	-50	
128 QAM	-62.5	-59.5	-56.5	-53.5	-51	-49.5	-46.5	
256 QAM	-59.5	-56.5	-53.5	-50.5	-48	-47	-	
Frequency stability	±5 ppm							
RTPC	up to 20 dB in 1 dB steps, software programmable							
ATPC	up to 20 dB range implemented in 1 dB steps							
ODU connector	RJ45 or SFP Optical Plug-in							
Management interfaces	In-band or out-band management							
Dimensions ODU (WxHxD)	252 x 363x 117 (mm) 9,9 x 14,3 x 4,6 (in)							
Power supply	PoE or separated power feeding							
Power consumption (per terminal)	60W in 1+0 configuration							
Environmental performance	IP67							
ODU weather proofing class	-35° C to +55 ° C							
ODU temperature range								
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 SM-OS based feature set							
Compliant with	ETSI EN 302 217 / FCC CFR 47, Part 101 and Part 15							