



CFIP product line - up to 366Mbps
FCC Series Microwave radio



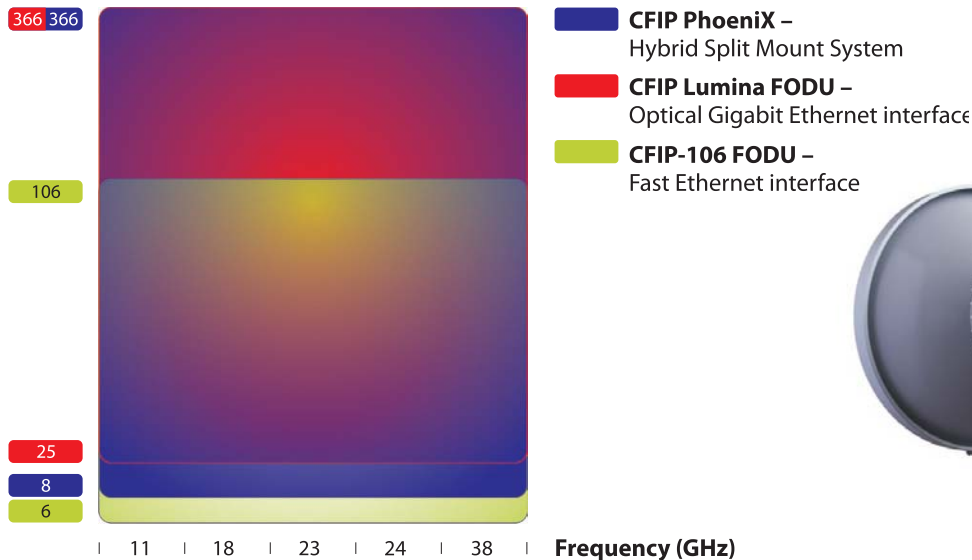
Think Smart • Get Connected

SAF Tehnika

SAF Tehnika is a Latvian (Europe) designer, producer and distributor of digital microwave data transmission equipment. SAF Tehnika products provide wireless backhaul solutions for digital voice and data transmission to mobile and fixed network operators, data service providers, governments and private companies.

Overview of SAF CFIP Products

Total capacity (Mbps)



CFIP Lumina FODU

● CFIP FODU - up to 106 Mbps

Model	CFIP-11	CFIP-18	CFIP-23	CFIP-24 UL	CFIP-38	
Max. capacity (Mbps)	100; 106 with 4xT1 wayside channels (ANSI)					
Modulation	QPSK / 16APSK / 32APSK / 64QAM / 128QAM					
Channel bandwidths (MHz)*	5, 10, 20, 30					
Max.transmit power (dBm) Standard Power / High Power						
Modulation	QPSK	+19 / +25	+19	+19	+5	+17
	16APSK	+18 / +24	+18	+18	+4	+16
	32APSK	+17 / +23	+17	+17	+3	+15
	64QAM	+15 / +21	+15	+15	+1	+13
	128QAM	+14 / +20	+14	+15	0	+12
Ports						
Flange	UBR 100	UBR 220	UBR 220	Circular 10 mm	UBR 320	
Ethernet with power over Ethernet cable	RJ-45 (data traffic, managment, power)					
4xT1	18-pin connector (bal. 100 Ohm)					
RSL port, RSSI, BNC connector	Output voltage vs RSL: 0 to 1.4 V vs -90 to -20 dBm					
Serial port for configuration	RS-232, Twin BNC connector					
Environment						
Power consumption Standard Power / High Power	19-25W / 27-33W					
Temperature range	-27.4°F to +131°F					

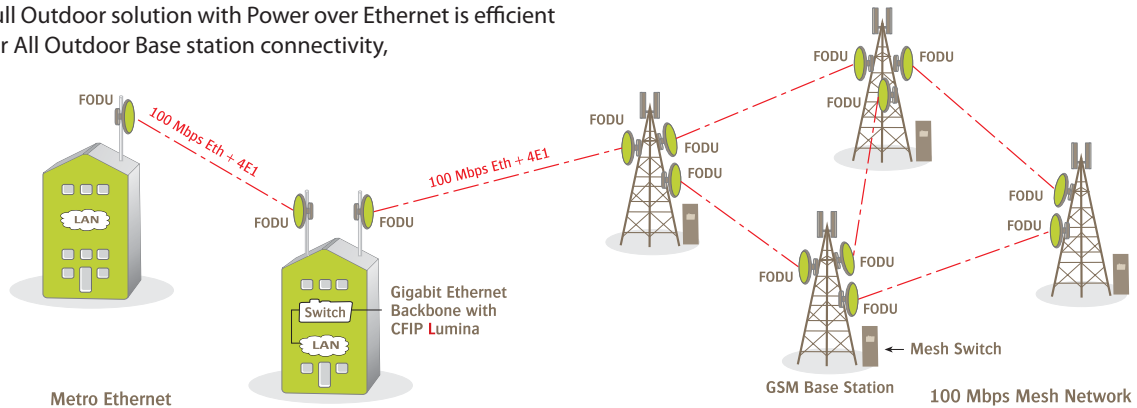
* according to FCC channel plan

CFIP-106 Highlights

- **Excellent system gain** allows efficiently upgrade PDH radios to 106 Mbps capacity avoiding the antenna size change;
- **Low power consumption** enables PoE+ operation and use of solar/wind power;
- **ACM and ATPC** for high availability and high density deployments;
- **Very high flexibility** allows to configure the system to various channel bandwidths, modulation schemes and capacity settings.
- **SNMP** support for remote network monitoring and management.

■ Metro Ethernet and Mesh Networks with CFIP-106 FODU

- Suitable for any 100 Mbps Ethernet network topology star, ring, mesh network;
- Full Outdoor solution with Power over Ethernet is efficient for All Outdoor Base station connectivity,
- Last Mile Access for demanding power user and many other applications;



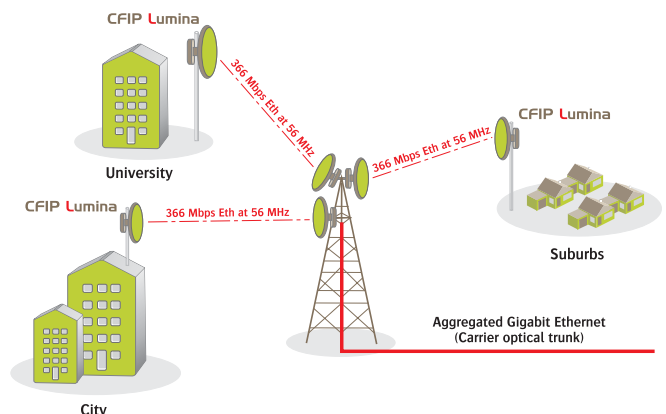
● CFIP Lumina FODU - up to 366 Mbps*

Model	Lumina 11	Lumina 18	Lumina 23	Lumina 24 UL	Lumina 38	
Max. capacity (Mbps)	366*					
Modulation	QPSK / 16APSK / 32APSK / 64QAM / 128QAM / 256QAM					
Channel bandwidths (MHz)**	20, 30, 40, 50, 56					
Max.transmit power (dBm)						
Modulation	QPSK	+19	+19	+19	+5	+17
	16APSK	+18	+18	+18	+4	+16
	32APSK	+17	+17	+17	+3	+15
	64QAM	+15	+15	+15	+1	+13
	128QAM	+14	+14	+14	0	+12
	256QAM	+12	+12	+12	-2	+10
Ports						
Ethernet	Optical 1 or 2 ODC ports. Electrical 1 or 2 RJ-45					
RSL port, RSSI, BNC connector	Output voltage vs RSL: 0 to 1.4 V vs -90 to -20 dBm					
Serial port for configuration	RS-232, Twin BNC connector					
Environment						
Power consumption	25-35W					
Temperature range	-27.4°F to +131°F					

* radio max. user data rate - up to 366Mbps at 56MHz; up to 312Mbps at 50MHz
 ** according to specific channel plan

■ Carrier Gigabit Ethernet trunk distribution with CFIP Lumina FODU

- Superb for extending Fiber Optics network over high capacity radio;
- Ideal for crossing mountains and interconnecting Gigabit Ethernet networks;
- Designed for building Ethernet backhaul network.



CFIP Lumina Highlights

- Most up-to-date technology with **up to 256QAM modulation and 56MHz channel bandwidth** allows high capacity throughput up to 366 Mbps;
- **Optical Ethernet connections** provide **excellent protection against lightning strikes** and allow long distances from user equipment to radio;
- **Up to 4093 concurrent VLAN traffic** allows building many port-to-port networks paths for specific client services;
- **2 Gigabit Ethernet ports** provide simple (management and user traffics on separate ports) and advanced configuration (various network protection schemes and topologies);
- **Jumbo frame size supports up to 9728 bytes**, which allows using longer header info (VLAN, MPLS) and transmitting more useful content and less headers, thus gaining on total throughput.

CFIP Phoenix IDU and ODU system – up to 366 Mbps

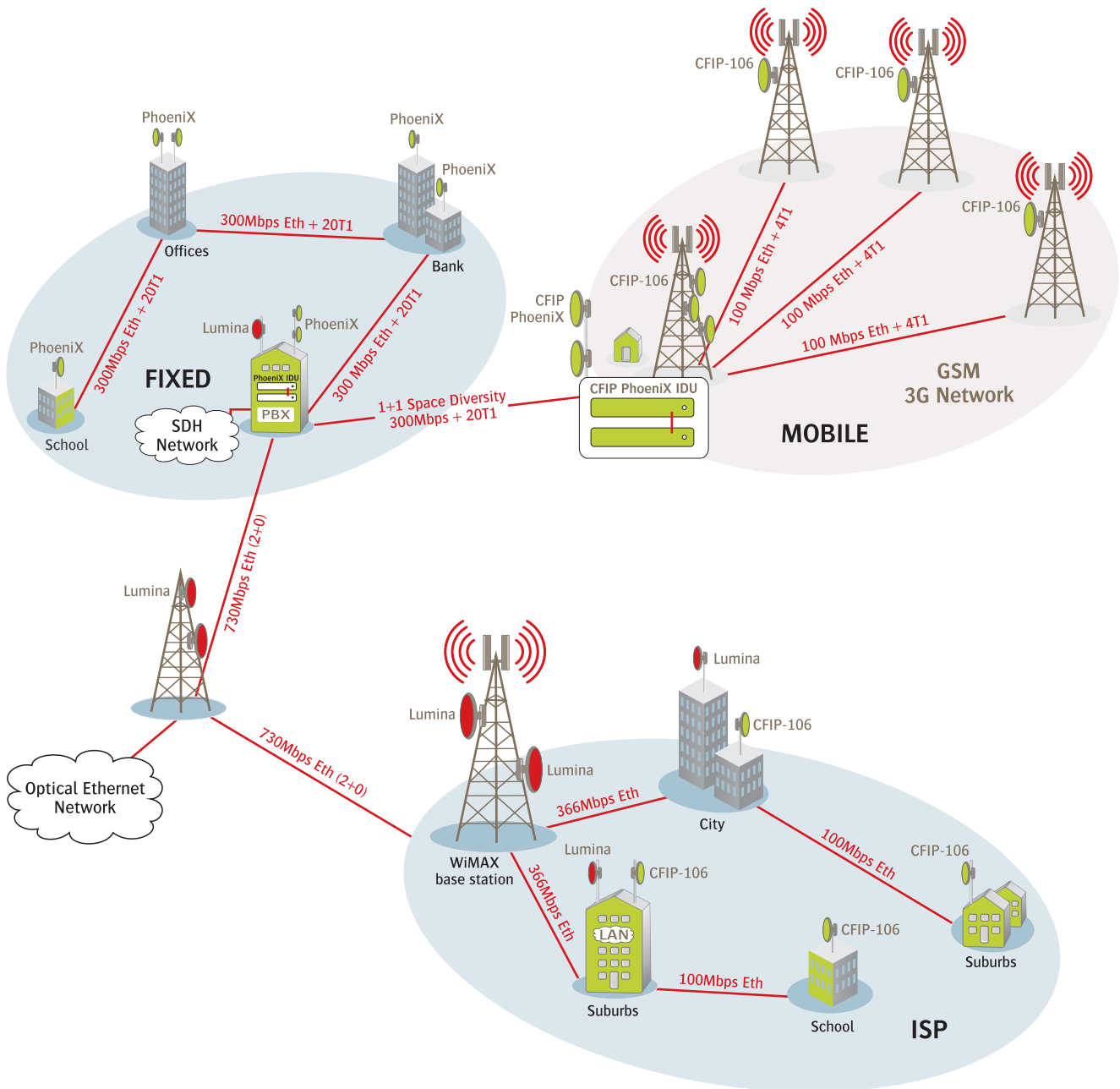
Model	Phoenix 11	Phoenix 18	Phoenix 23	Phoenix 24	Phoenix 38	
Capacity	8 - 366 Mbps					
Channel bandwidths*	7 / 10 / 14 / 20 / 28 / 30 / 40 / 56 MHz					
Max. transmit power (dBm) Standard Power / High Power						
Modulation	QPSK	+19 / +25	+19	+19	+5	+17
	16APSK	+18 / +24	+18	+18	+4	+16
	32APSK	+17 / +23	+17	+17	+3	+15
	64QAM	+15 / +21	+15	+15	+1	+13
	128QAM	+14 / +20	+14	+14	0	+12
	256QAM	+12 / +17	+12	+12	-2	+10
ODU Flange	UBR100	UBR 220	UBR 220	Circular 10 mm	UBR 320	
Applications						
Configuration	1+0, 1+1					
Protection switching	Hot Stand-by (hitless, errorless; Active Tx <50ms), Space/Frequency diversity					
Ports						
Ethernet	4x1000Base-T, RJ-45					
E1/T1	20 T1, RJ-45					
Serial port for configuration	RS-232, DB-9 connector					
Alarm port	4 digital inputs, 4 relay outputs (26 pin hi-density D-SUB)					
ODU port	N-Type Female					
EOW port	3.5mm headset and mic, 64 Kbps					
Extension/protection port	RJ-45					
Ethernet						
QoS/CoS	64 level DiffServ (DSCP) or 8 level 802.1p mapped in 4 prioritization queues with VLAN support					
Max frame size	9728 bytes					
Flow Control	Yes					
802.1q VLAN support	Up to 4093 concurrent traffic VLANs					
MAC address learning	8K MAC addresses					
CoS, 802.1p	Yes, per interface CoS (8 CoS served by 4 queues)					
Performance monitoring	Per port Ethernet counters; Enhanced radio Ethernet statistics (Frame Error Rate, Throughput, Capacity)					
Spanning Tree	802.1d-1998 STP					
Other data						
Power consumption IDU / ODU	20-30W / 13-18W					
Temperature range, humidity IDU / ODU	23°F to 113°F, 5% to 95% / -27°F to 131°F, 100%					
Dimensions: HxWxD, weight IDU / ODU	1U 1.77x16.92x9.44 in., 6.83 lb / 11.33x11.33x3.15 in., 7.7 lb					

* according to specific channel plan



CFIP Phoenix IDU and ODU hybrid split mount system

Application diagram of CFIP Product line



CFIP Phoenix Highlights

- High capacity system with **up to 20 E1 and up to 366 Mbps Gigabit Ethernet** is ideal for building **hybrid networks** to facilitate **transition from TDM traffic to Ethernet only**;
- Industrial grade **fanless design** increases reliability and enables low power consumption;
- Most up-to-date technology utilizing **256QAM modulation and 56MHz channel bandwidth** allows high capacity throughput up to 366 Mbps;
- Excellent **upgrade for existing PDH split mount systems**;
- **Up to 4093 concurrent VLAN traffic** allows building many port-to-port networks paths for specific client services;
- **Jumbo frame size supports 9728 bytes**, which allows using longer header info (VLAN, MPLS) and transmitting more useful content and less headers, thus gaining on total throughput.



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