

Connecting **green** Ideas



# **CFIP–100 Mbps Capacity Microwave Radio System**

## SAF Tehnika Profile

SAF Tehnika AS is a 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. The

Company offers 3 product lines: CFM family – low to medium capacity radio equipment (PDH), CFQ family – high capacity radio equipment (SDH) and the new CFIP family – 100Mbps capacity radio equipment.

## CFIP Product Family

**CFIP product family** is the new next generation product line which is targeting growing demands for data transmission over microwave radio.

As a result the primary traffic interface for CFIP radio is Fast Ethernet. In addition, CFIP is capable to deliver **up to 4E1** interfaces for legacy connectivity or any other use. As CFIP is capable to provide **up to 100Mbps** of bit rate to all interfaces combined, it is a perfect addition to SAF portfolio. This product family provides perfect solution for a user looking for higher than PDH E3 capacity without need for STM-1 capacity. The excellent CFIP radio and modem performance allows achieving perfect system capacity by employing 32-level modulation scheme by user's choice. Apart from the **full system capacity of**

**100Mbps**, it is possible to configure the radio to any of 7 MHz, 14 MHz and 28 MHz channels as well as to any of **QPSK, 16APSK and 32APSK modulations**, thus providing various capacities to suit particular needs.

SAF Tehnika has employed most modern design solutions and components to create high performance compact radio with **low power consumption** – 15-20 W per radio, thus we have a capability to feed the unit by using standard PoE (Power over Ethernet) means.

CFIP is a perfect building block for any modern future proof wireless network, including mobile service providers, fixed data service operators, enterprise customers, municipal and governmental networks among others.

## CFIP Technical Specification

### SAF CFIP FODU

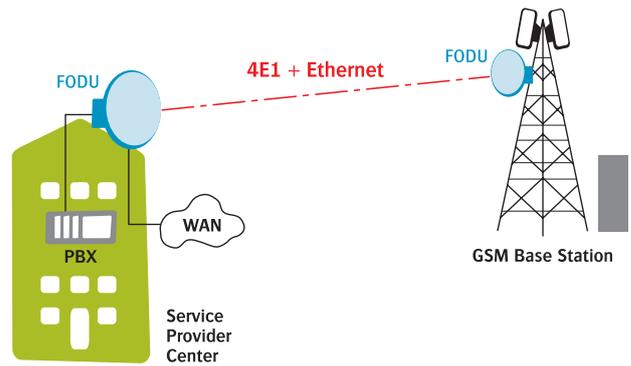
Model		CFIP-13	CFIP-15	CFIP-18	CFIP-23
Capacity		100 Mbps			
Channel bandwidth (MHz)		7/14/28	7/14/28	7/14/28	7/14/28
Modulation		QPSK, 16APSK, 32APSK			
<b>Performance</b>					
Frequency stability (ppm)		+/- 7			
Guaranteed max power (dBm)	QPSK	+19	+19	+19	+19
	16APSK	+18	+18	+18	+18
	32APSK	+17	+17	+17	+17
RSL Threshold at BER 10 <sup>-6</sup> , 28MHz, 32APSK, 100Mbps		-77 dBm			
Automatic Code Modulation (ACM)		Hitless			
System payload bit-rate (Mbps) (28MHz / 14MHz / 7MHz)	32APSK	100* / 50* / 25*			
	16APSK	80* / 40* / 20*			
	QPSK	40 / 20 / 10			
<b>Ports</b>					
Flange		UBR 140	UBR 140	UBR 220	UBR 220
Ethernet with PoE		RJ-45 (data traffic, management port, power)			
4 E1		18-pin connector			
RSL port, RSSI, BNC connector		Output voltage vs RSL: 0 to 5 V vs -90 to -20 dBm			
Serial port for configuration		Twin BNC			
<b>Environmental requirements</b>					
Stationary use		Ref. ETSI EN 300 019-2-4, class 4.1E; non weather-protected locations			
Temperature range		-33°C to +55°C			
<b>Mechanical data</b>					
Dimensions: HxWxD, mm / weight, kg		285x285x80 / 3.5			
<b>DC Power distribution</b>					
Max. Power (ODU only)		15-20 W			
<b>Management Features</b>					
TCP/IP		Web, SNMP, Telnet - local and remote			
ASCII Terminal		Serial via Twin-BNC			
Monitoring		via Telnet, WEB GUI, SAF NMS, SNMP Manager			

\* ACM supported

# CFIP Application Examples

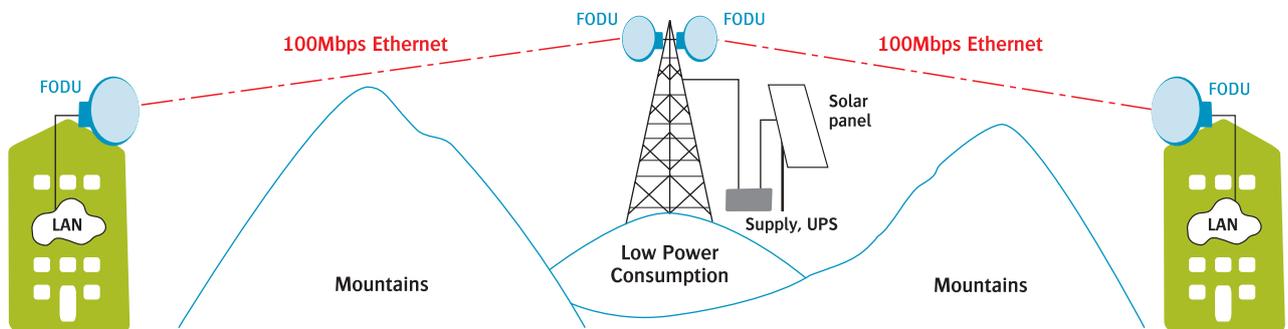
## ■ 4E1 + Ethernet with CFIP FODU

- CFIP is a perfect tool to replace the existing low capacity E1 radio system by preserving E1 connectivity where needed and adding high capacity Ethernet channel for future use, perfect for overlaying GSM network with 3G/WiMax and LTE (Long Term Evolution) services;
- Suitable for transition from TDM to Ethernet based networks;
- CFIP FODU supports SNMP protocol for NMS.



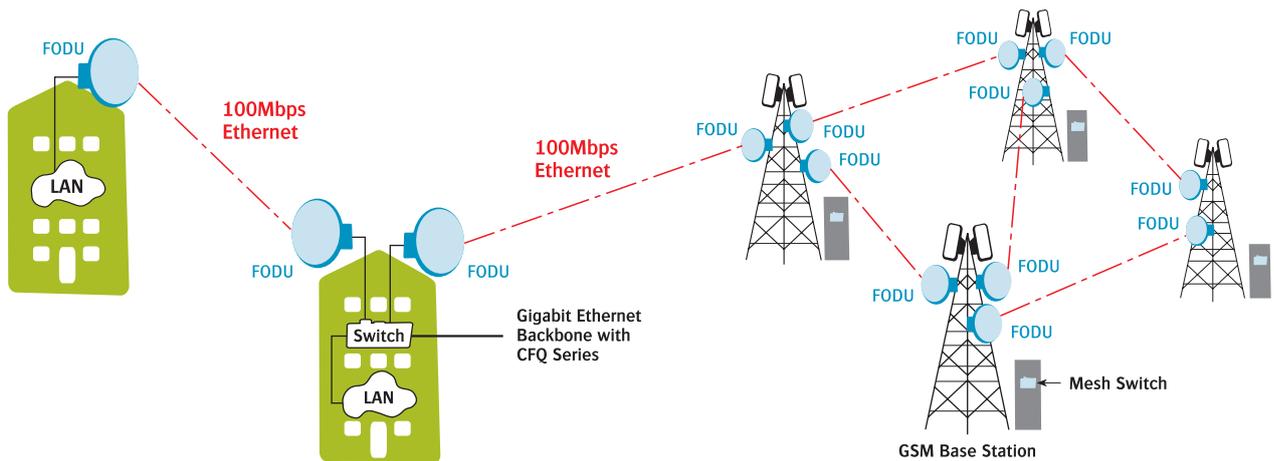
## ■ Low Power Active Repeater with CFIP FODU

- Extends network to non line-of-sight locations;
- Ideal for crossing mountains and interconnecting Ethernet networks;
- Low power consumption allows the use of battery backed alternative power sources like solar panel and small wind turbine for off-grid remote sites.



## ■ Metro Ethernet and Mesh Networks with CFIP FODU

- Suitable for any 100Mbps 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;
- Gigabit Ethernet backhaul can be supported with SAF CFQ Series products.



Metro Ethernet

100Mbps Mesh Network

# CFIP Highlights and Benefits

- **Excellent system gain** allows efficiently upgrade PDH radios to 100Mbps capacity avoiding the antenna size change;
- **Low power consumption** enables standard 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.



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