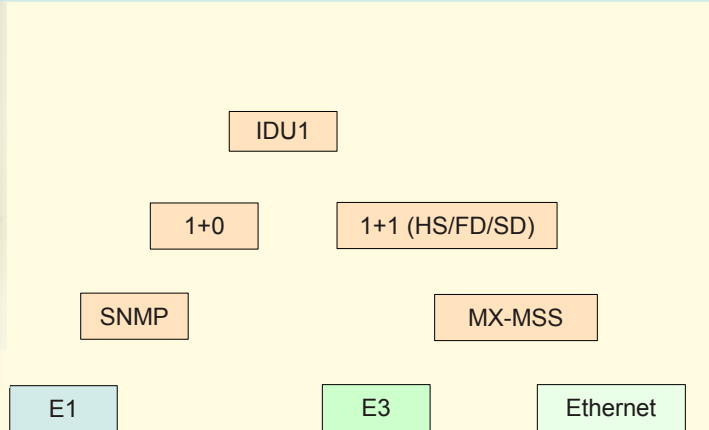


TDR-F-V2 Flexible Digital Microwave Radio Equipment
for the Frequency Bands 7, 8, 13, 15, 18, 23 and 38 GHz
with 2x2 – 32x2 Mbps, or 34+2 – 2x(34+2) Mbps
and Ethernet interfaces



Features:

- 1+0, 1+1 (HS, FD, SD) protection
- 4 / 16 / 32 QAM configurable
- Data rate independent ODU
- Frequency band independent IDU
- Software configurable
transmit power and channel frequency
- Choice of user interfaces
- SNMP based management
- Optical modem



5 Mbps 4 QAM / 3.5 MHz 0...2 E1 Ethernet	10 Mbps 4 QAM / 7 MHz 16 QAM / 3.5 MHz 0...4 E1 Ethernet	20 Mbps 4 QAM / 14 MHz 16 QAM / 7 MHz 0...8 E1 Ethernet	40 Mbps 4 QAM / 28 MHz 16 QAM / 14 MHz 0...16 E1 Ethernet	80 Mbps 16 QAM / 28 MHz 0...32 E1 Ethernet	40 Mbps 4 QAM / 28 MHz 16 QAM / 14 MHz E3 + E1 Ethernet	80 Mbps 16 QAM / 28 MHz 0...2 E3 + E1 Ethernet	100 Mbps 32 QAM / 28 MHz Ethernet
---	--	---	---	---	---	---	---

TOTALTEL TELECOM TECHNIQUES LTD Budapest, Hungary

TDR-F-V2

DIGITAL MICROWAVE RADIO EQUIPMENT

Members of the Totaltel Digital Radio Equipment Family operating in the 7-38 GHz communication bands serve for the transmission of digital signals within the data rate range of 2x2 Mbps ... 2x(34+2) Mbps or linking LANs as Ethernet bridges.

They are suitable for cost effective realisation of low and medium capacity links in public or private networks over ranges depending on the frequency band applied.

The excellent transmission performance, considerable flexibility, ease of handling, low power consumption and high reliability make up the important equipment features.

The indoor and outdoor equipment parts are interconnected by a single coaxial cable. The outdoor equipment and the antenna may be integrated. The indoor part is mounted to an 1U high 19" rack. The indoor and outdoor parts may be separated by a distance up to 300 m.

The outdoor unit is data-rate independent, and depends only on the frequency band of operation. Coverage of each frequency band is provided by minimum number of outdoor equipment versions. The channel frequency and transmit power are software configured. The indoor unit is frequency band independent. By sharing the radio channel bandwidth, the appropriate E1, E3 and Ethernet interfaces provide the simultaneous transmission of the respective signals through the built-in multiplexer. Radio channel interfacing is provided by the configurable 4/16/32 QAM modem based on DSP applying forward error correction and adaptive equalization as well. As a replacement to the RF modem an optical one may be applied for linking up with a remote indoor unit via optical fibre. Equipment and interface characteristics correspond to the relevant ITU recommendations and the ETSI/IEEE standards.

Equipment maintenance and supervisory functions built in: order wire with selective call, test loops for diagnostic purposes, continuous BER indication and registration of the transmission performance statistics. Control of the supervisory functions may take place by local PC, or via SNMP from the network management centre.

The design and production techniques applied result in excellent equipment reliability. For particular demand on availability the 1+1 hot standby protection in combination with frequency and space diversity may be applied.

	7-8 GHz	13 GHz	15 GHz	18 GHz	23 GHz	38 GHz
Frequency Band (GHz)	7.125-7.725 7.9-8.5	12.75-13.25	14.5-15.35	17.7-19.7	21.2-23.5	37.0-39.5
Electronic Retunability (MHz)	50	80	155	470	305	570
Frequency Stability	± 5 ppm					
Channel Spacing (MHz)	3.5 – 7 – 14/13.75 – 28/27.5					
Modulation	4 QAM / 16 QAM / 32 QAM					
Transmission Rates (Mbps)	E1, E3: 2x2-4x2-8x2-16x2-32x2 – 34+2-2x(34+2) Ethernet: 10/100Base-T					
Transmit Power (dBm)	4 QAM: 25 16/32 QAM: 20	23 18	23 18	20 15	20 15	20 15
RTPC, ATPC range (dB)	4 QAM: 0 .. -20			16/32 QAM: 0 .. -15		
Receiver Threshold @10 ⁻⁶ BER (dBm)						
5 Mbps	4 QAM: -92	-92	-92		-91	-90
10 Mbps	4/16 QAM: -89 / -85	-89 / -85	-89 / -85		-88 / -84	-87 / -83
20 Mbps	4/16 QAM: -86 / -82	-86 / -82	-86 / -82	-86	-85 / -81	-84 / -80
40 Mbps	4/16 QAM: -83 / -79	-83 / -79	-83 / -79	-83 / -79	-82 / -78	-81 / -77
80 Mbps	16 QAM: -76	-76	-76	-76	-75	-74
100 Mbps	32 QAM: -74	-74	-74	-74	-73	-72
Optical transmission	Standard SFP module (characteristics on separate data sheet)					
Interfaces	E1: 75 Ohm Unbal./120 Ohm Balanced			E3: 75 Ohm Unbal. Ethernet: 10/100Base-T		
Ambient Temperature	ODU: -40 .. +55 °C			IDU: -5 .. +45 °C		
Power Supply	23 ... 60 V DC					
Power Consumption	35 – 80 W, depending on frequency band and configuration					
Dimensions	ODU: 266 mm x 266 mm x 95 mm IDU: 484 mm x 44 mm x 345 mm					
Weight	ODU: 5.5 kg			IDU: 5 kg		

TOTALTEL TELECOM TECHNIQUES LTD

Address: H-1519 Budapest, Pf. 425, Hungary

Tel.: +36-1-204-7850, Fax: +36-1-206-2342

Premises: H-1116 Budapest, Temesvár u. 20.

www.totaltel.hu e-mail: totaltel@totaltel.hu