

Wirake NATO 4.43-4.97GHz

Modular TDM / IP split mount radio system
Military frequencies Spécifications



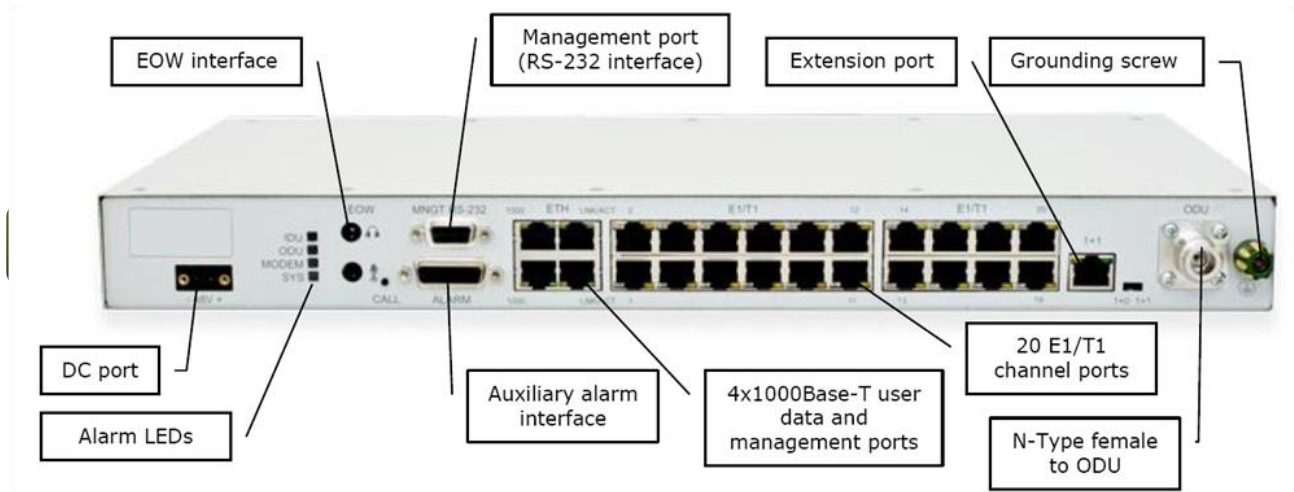
Radio Verte - Green Radio
Modular TDM / IP split mount
radio Intended for classic
telecom architecture

Wirake NATO split mount system is designed to fit in a classic telecom architecture with a radio located outdoor and a sheltered indoor unit. Wirake also enables transition from TDM networks to hybrid TDM/IP networks providing up to 20E1 + GigE. Total maximum capacity is up to 366 Mbps full duplex.

Conforme au Développement Durable
Compliant with Sustainable Development



DOCUMENT PROVISOIRE



For Wirake NATO 4.43/4.97 Ghz capacity refer to the 6 Ghz specifications

Ethernet	
Switch type	Managed Gigabit Ethernet Layer 2
Max frame size	9728 bytes
MAC table	4K entries; automatic learning and aging
Packet buffer	128KB; non-blocking store&forward
Flow Control	802.3x
VLAN support	802.1Q (up to 4K VLAN entries)
QinQ (Double Tagging)	Yes, 802.1ad (Providing Bridging Technique)
QoS	64 level DiffServ (DSCP) or 8 level 802.1p mapped in 4 prioritization queues with VLAN support
QoS queuing	Fixed or weighted (configurable ratio)
Spanning Tree Protocol	802.1D-2004 RSTP 802.1Q-2005 MSTP
MEF	MEF 9, MEF 14
Mechanical & Electrical	
Operational use	Conforms to ETSI EN 300 019 Class 3.1E, IP20, NEMA 1
Temperature Range / Humidity	-5°C to +55°C / 5% to 95%
Dimensions: HxWxD / weight	1U (45x430x240 mm) / 3.1 kg
Max. power consumption	20-30 W
IDU-ODU connection	Belden 9914/RG-8 cable (300 m), RG213 cable (200 m), N-Type connectors
DC port	-40.5V to -57V DC (conforms to ETSI EN 300 132-2)
Built-in DC and IF port surge protection	Conforms to ETSI EN 301 489-1; EN 61000-4-5; IEC 61000-4-5

Modem	
Channel Bandwidths	3.5, 7, 14, 28, 40, 56 MHz
Modulations	4QAM, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM
Capacity	9 - 366 Mbps
Supported ODUs	CFIP ODU
Applications	
Configuration	1+0, 1+1 (HSB, SD, FD), Ring/Mesh (with RSTP), 2+0, 3+0, 4+0 (built-in Ethernet aggregation)
Protection switching	Hot Stand-by (<50ms), Space/Frequency diversity (hitless, errorless)
Ports	
Ethernet	4x1000Base-T, RJ-45
E1/T1	20 E1/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
DC power connector	2ESDV-02 with screw locks
Management features	
Management port	Ethernet with VLAN support or serial (RS-232)
Monitoring	via Telnet, WEB GUI, NMS, SNMP Manager, Serial interface
SNMP	Yes, SNMP traps, MIB, SNMP v1/v2c, RMON
Performance graphs	Uptime, Rx level, Tx level, System temperature, Radial MSE, LDPC decoder stress, constellation diagram, equalizer graph
EMS	Web based, HTTP
ATPC feature	Yes
ACM feature	Hitless 0ms

CFIP ODU RSL at 10 ⁻⁶ (dBm) and Total Payload Capacity (Mbps)															
BW***, MHz	Modulation	FEC****	6 GHz	7 GHz	8 GHz	10 GHz	11 GHz	13 GHz	15 GHz	18 GHz	23 GHz	26 GHz	38* GHz	Bit rate, Mbps	
3.5	4QAM	Strong	-97	-95	-95	-97	-96	-95	-93,5	-95	-97	-96,5	-93,5	3	
	16QAM	Strong	-90,5	-88	-88	-90	-89	-88	-88	-88,5	-90	-89,5	-86,5	7	
	32QAM	Strong	-87	-85	-85,5	-87	-86	-85	-85	-85,5	-87	-86,5	-83,5	9	
	64QAM	Strong	-84	-81,5	-82	-84	-83	-82	-82	-82	-82	-83,5	-83	-80	13
		Weak	-81,5	-79	-79,5	-81	-80	-79,5	-79	-79,5	-79,5	-81	-81	-78	14
7	4QAM	Strong	-93	-92	-92	-94	-93	-92,5	-91	-92	-94	-93,5	-90,5	8	
	16QAM	Strong	-86,5	-85	-85,5	-87,5	-86,5	-85,5	-85	-85,5	-87,5	-87	-84	17	
	32QAM	Strong	-83,5	-82,5	-83	-84,5	-83,5	-83	-82,5	-83	-84,5	-84	-81	21	
	64QAM	Strong	-80	-79	-80	-81,5	-80,5	-79,5	-79,5	-79,5	-79,5	-81,5	-80,5	-77,5	28
		Strong	-77	-76	-76,5	-78	-77	-76	-76	-76,5	-76	-78	-77,5	-74,5	34
128QAM	Weak	-75	-73,5	-75	-76	-75	-74,5	-74	-74	-74	-75,5	-75,5	-72,5	36	
14	4QAM	Strong	-90	-90,5	-90	-91	-90	-90	-89	-90,5	-91	-90,5	-87,5	17	
	16QAM	Strong	-83,5	-83,5	-83,5	-84,5	-83,5	-83,5	-83	-84	-84	-83,5	-80,5	34	
	32QAM	Strong	-80	-80	-80,5	-81,5	-80,5	-80	-80	-80,5	-80,5	-80,5	-77,5	45	
	64QAM	Strong	-77,5	-77,5	-78	-79	-78	-77,5	-77,5	-78	-78,5	-78	-75	57	
		Strong	-74,5	-74,5	-75	-75,5	-74,5	-74,5	-74	-75	-75	-75	-72	68	
128QAM	Strong	-71	-71	-71,5	-72	-71	-70,5	-70,5	-72	-71,5	-71,5	-68,5	79		
28	256QAM	Weak	-67,5	-67,5	-68	-69	-68	-67,5	-67	-68	-65,5	-68	-65	86	
	4QAM	Strong	-90,5	-89,5	-89	-88,5	-89,5	-89,5	-89	-90	-89	-91,5	-85	35	
	16QAM	Strong	-84,5	-83	-83	-82,5	-83,5	-83,5	-83	-84	-83	-85	-79	69	
	32QAM	Strong	-81,5	-80	-80	-80	-80,5	-80,5	-80,5	-80,5	-80	-82	-76	88	
	64QAM	Strong	-79	-77,5	-77,5	-77	-78	-77,5	-77	-78	-77,5	-79,5	-73,5	115	
128QAM	Strong	-75,5	-74,5	-74	-73,5	-74,5	-74,5	-74	-75,5	-74	-76,5	-70	138		
256QAM	Strong	-72,5	-71	-70,5	-70,5	-71	-71	-70,5	-72	-71	-73	-67	161		
	Weak	-69	-67	-66	-66	-67	-67	-66,5	-69	-67,5	-70	-63,5	174		

CFIP ODU RSL at 10 ⁻⁶ (dBm) and Total Payload Capacity (Mbps)														
BW***, MHz	Modulation	FEC****	6 GHz	7 GHz	8 GHz	10 GHz	11 GHz	13 GHz	15 GHz	18 GHz	23 GHz	26 GHz	38* GHz	Bit rate, Mbps
40	4QAM	Strong	-89	-87,5	-88	-87,5	-88	-88	-88	-88	-87,5	-89,5	-83,5	49
	16QAM	Strong	-82,5	-81,5	-81,5	-81	-82	-82	-81,5	-82,5	-81	-83,5	-77	98
	32QAM	Strong	-80	-78,5	-79	-78,5	-79,5	-79,5	-79	-79,5	-78,5	-80,5	-74,5	127
	64QAM	Strong	-77	-76	-75,5	-75,5	-76,5	-76	-76	-77	-75,5	-78	-71,5	163
		Strong	-74	-73	-72,5	-72,5	-73,5	-73	-72,5	-73,5	-72,5	-74,5	-68,5	196
128QAM	Strong	-70,5	-69,5	-69	-68,5	-69,5	-69,5	-69	-70,5	-69	-71	-65	229	
256QAM	Weak	-68	-67	-64,5	-64,5	-65,5	-65	-65	-67,5	-66,5	-68,5	-62,5	245	
56	4QAM	Strong	-87	-85,5	-86	-85,5	-87	-86,5	-86	-87	-85,5	-88	-81,5	72/67**
	16QAM	Strong	-81	-80	-79,5	-79,5	-80,5	-80	-79,5	-80,5	-79,5	-82	-75,5	145/135**
	32QAM	Strong	-78	-77	-77,5	-77	-78	-77,5	-77	-77,5	-76,5	-79	-72,5	182
	64QAM	Strong	-75,5	-74,5	-74	-73,5	-74,5	-74,5	-74	-75,5	-74	-76	-70	240
		Strong	-72	-71	-71	-70,5	-71,5	-71,5	-71	-72	-70,5	-73	-66,5	287
128QAM	Strong	-68,5	-67,5	-67	-66,5	-68	-67,5	-67	-68,5	-67	-69,5	-63	335	
256QAM	Weak	-64	-63	-63	-62,5	-63,5	-63	-62,5	-64,5	-62,5	-65	-58,5	363	

Mechanical & Electrical	
Operational use	Conforms to ETSI EN 300 019 Class 4.1, IP65, NEMA 4X
Temperature Range	-33°C to +55°C
Dimensions: HxWxD / weight	288x288x80 mm / 3.5 kg
IF port surge protection	Conforms to ETSI EN 301 489-1; EN 61000-4-5; IEC 61000-4-5
Input DC voltage	-40.5V to -57V DC (conforms to ETSI EN 300 132-2)
Max. power consumption	SP: 13-27 W; HP: 21-39 W

CFIP ODU Tx Power				
Modulation	Standard/High Tx Power, dBm			
	6, 7, 8 GHz	10, 11, 13, 15 GHz	18, 23, 26 GHz	38* GHz
4QAM	+19 / +27	+19 / +25	+19	+17
16QAM	+18 / +26	+18 / +24	+18	+16
32QAM	+17 / +25	+17 / +23	+17	+15
64QAM	+15 / +23	+15 / +21	+15	+13
128QAM	+15 / +23	+15 / +21	+15	+13
256QAM	+12 / +20	+12 / +18	+12	+10

CFIP ODU waveguide flange sizes						
6 GHz	7, 8 GHz	10, 11 GHz	13, 15 GHz	18, 23 GHz	26 GHz	38 GHz
N-type	UBR84	UBR100	UBR140	UBR220	UBR260	UBR320

* Preliminary data

** Higher capacity is available in 16QAM and 4QAM if using 32QAM-256QAM with ACM enabled

*** According to ETSI channel plan

**** Forward Error Correction (FEC) can be optimized either for sensitivity (Strong FEC) or for capacity (Weak FEC)