



With growing demand in urban areas, operators need to respond by increasing their network capacity rapidly. The Nokia PowerHopper Vario™ Microwave Radio offers higher capacity in a compact and easy-to-install package.

Less site space needed

The Nokia PowerHopper Vario Microwave Radio is an advanced high capacity PDH or STM-1 radio for high-capacity voice and data transmission in demanding urban areas. This compact package minimizes the site space needed, a critical factor in densely built-up areas where suitable sites are at a premium. A superb solution for radio access transmission in the 6, 7, 8, 11, 13, 15, 18, 23, 26, 28, 32 and 38 GHz frequency bands, this radio provides high capacity connectivity combined with an easy-to-use interface.

Matches growing demand

The Nokia PowerHopper Vario provides flexible capacity upgrades from 32 E1 to 2 x STM-1 with XPIC or even 4 x STM-1 from a single indoor unit. Its small size combines with high reliability and low power consumption to cut site requirements to a minimum. This makes it a superb solution for use in dense urban areas.

The Nokia PowerHopper Vario Microwave Radio also offers modulation schemes which allow the operator to choose the capacity and bandwidth. The indoor unit has options to provide not only an STM-1 interface, but also Gigabit Ethernet and 64 E1 interfaces.

Comprehensive network management

Transmission management and supervision is based on Nokia NetAct™ Network Management Systems. All the standard management functions are

included, such as fault management, configuration management, performance monitoring and security.

Remote supervision is based on a LAN connection. Each terminal is equipped with an Ethernet connector to provide all the management functions to both local and remote terminals. An embedded TCP/IP stack allows the terminals to be inserted in an IP-based management network.

Main benefits

- High reliability and reduced cost of ownership
- Fast network roll-out with easy and cost-effective installation
- Compact design reduces site requirements
- Efficient use of spectrum
- Rapid expansion to meet network capacity needs

Nokia PowerHopper Vario™ Microwave Radio – small in size, big on capacity

NOKIA
Connecting People

Specifications													
High capacity PDH, 28 MHz:													
Frequency (GHz)	6	7	8	11	13	15	18	23	26	28	32	38	
Output power (dBm) (High Power OU)	26 (30)	25 (30)	25 (30)	20 (28)	21	20	20	20	20	20	20	18	
Receiver threshold, 10 ⁻⁶ 32/48/64 E1, 16/32/64 QAM (dBm)	-79/ -74/ -71	-79/ -74/ -71	-79/ -74/ -71	-79/ -74/ -71	-79/ -74/ -71	-79/ -74/ -71	-79/ -74/ -71	-79/ -74/ -71	-78/ -73/ -70	-78/ -73/ -70	-77/ -72/ -69	-77/ -72/ -69	-76/ -72/ -69
STM-1 single carrier: STM-1, 2 x STM-1 with XPIC													
Frequency (GHz)	6	7	8	11	13	15	18	23	26	28	32	38	
Channel spacing (MHz) 16 QAM / 128 QAM	-/ 28	-/ 28	-/ 28	-/ 28	-/ 28	-/ 28	27.5/ 55	28/ 56	28/ 56	28/ 56	28/ 56	28/ 56	
Output power 16 QAM / 128 QAM 1+0 (dBm), (High Power OU)	-/ 26, (29)	-/ 25, (29)	-/ 25, (29)	-/ 23, (27)	-/ 22	23/ 22	21/ 20	20/ 20	20/ 20	20/ 19	20/ 17	19/ 16	
Receiver threshold 32 QAM / 128 QAM (dBm), BER 10 ⁻⁶	-/ -69	-/ -69	-/ -69	-/ -69	-/ -68	-75/ -68	-75/ -68	-75/ -68	-75/ -68	-74/ -67	-74/ -67	-73/ -66	
2 x STM-1, single carrier													
Frequency (GHz)							15	18	23	26	28	32	38
Modulation (QAM)							128	128	128	128	128	128	128
Channel spacing (MHz)							56	55	56	56	56	56	56
Output power 16 QAM / 128 QAM 1+0 (dBm)							20	18	17	17	17	16	16
Receiver threshold 32 QAM / 128 QAM (dBm), BER 10 ⁻³							-65	-65	-65	-64	-64	-62	-63
Ethernet, single carrier													
Traffic throughput (Mbit/s)	100	150	150	200	300	400							
Modulation (QAM)	32	16	128	32	128	256							
Channel spacing (MHz)	28	56	28	56	56	56							
General													
Protection Methods	1+1, HSB, Space / Frequency diversity, hitless/errorless switching, 2+2 HSB												
Coupler losses (dB) Main/Secondary	1.6/6.5						1.7/6.6						
Tx Attenuation Range (dB)	16 QAM 30 dB, 128 QAM 25 dB												
Power consumption (W) max	OU: For 1+0: 40 W, High Power 80 W For 1+1: 63 W, High Power 130 W IU: For 1+0: 25 W For 1+1/2+0: 40 W												
Frequency tolerance	16 QAM: ±0.0005%, 128 QAM: ±0.001%												
Interfaces	Electrical, CMI/BNC Optical G.957 S-1.1 /SC 100Base-Tx/Fx Gigabit Ethernet, SFP 2 Mbit/s, G.703												
Power supply	-40.5 V and -72 V, nominally -48 V DC												
Weights and dimensions	OU: 25 cm diameter x 23 cm depth, Weight: 8 kg HP OU: 49 cm height x 14.4 cm width x 28 cm depth, Weight: 7 kg IU SDH: 4.3 cm height x 43.2 cm width x 24 cm depth, Weight: 5 kg IU PDH: 8.6 cm height x 43.2 cm width x 24 cm depth, Weight: 10 kg												
Operational temperature	IU: -5 °C to +45 °C OU: -35 °C to +55 °C (optional -45 °C)												

Copyright © 2006 Nokia. All rights reserved. Nokia, Nokia Connecting People, Nokia NetAct and Nokia PowerHopper Vario are trademarks or registered trademarks of Nokia Corporation. Other product and company names mentioned herein may be trademarks or trade names of their respective owners. Products are subject to change without notice. Nokia code: 11344 - 04/2006 Individual/Libris