Alcatel-Lucent MDR-8000

2 GHz PCS BAND DIGITAL RADIOS

OVERVIEW

The MDR-8702 is Alcatel-Lucent's premier digital microwave radio for long-haul, point-to-point wireless communications. The flexible platform offers features designed to provide robust operation, while also reducing your total cost of ownership. With a common platform that supports virtually all frequency bands from 2-11 GHz, the MDR-8702 specifically operates in the 1.850 - 1.990 GHz band used by PCS providers. Since 1900 MHz spectrum is licensed on a regional basis, the MDR-8000 allows operators to take full advantage of their spectrum, and control potential interference by using their own licensed frequencies. With prudent selection of frequencies for mobile radio service and backhaul links, the two signals can coexist in the same PCS block. High system gain coupled with excellent RF propagation at 2 GHz make the MDR-8000 an ideal choice for difficult links to remote locations.

Compact mechanical dimensions and low power consumption allow operators to place the MDR-8702 in cramped spaces without sacrificing system performance and availability. This flexible and scalable architecture is ideal for meeting the critical backhaul infrastructure requirements of PCS operators.

COST-SAVING FEATURES

- Industry-high system gain
  - ¬ Allows longer paths, potentially avoid repeater sites
  - ¬ Allows smaller antennas
    - Lower purchase price
    - Reduces tower loading & rent
  - ¬ Improves path availability
- Common platform for all frequency bands & capacities
  - ¬ Simplifies training and maintenance
  - ¬ Minimizes spares
- In-service capacity upgrades
  - ¬ Graceful migration to higher capacities
  - ¬ No stranded investment
- Flexible Ethernet options
  - ¬ Provision bandwidth dynamically, as needed
  - ¬ Auto-sensing simplifies installation and turn-up
- Low power consumption
  - ¬ Reduces size of DC power plant and batteries
  - ¬ Reduces cost of HVAC
- Small size
  - ¬ Reduces amount of rack space needed

PERFORMANCE-ENHANCING FEATURES

- All-indoor operation
  - ¬ No tower-mounted electronics
  - ¬ Simplifies maintenance and troubleshooting
- Industry-leading receiver selectivity and interference rejection
  - ¬ Allows coordination in frequency congested areas
  - ¬ Speeds up licensing
- Robust multipath countermeasures
  - ¬ Used to overcome propagation problems

MDR-8702 - Low Capacity

EQUIPMENT IDENTIFIER	MDR-8702-4
Frequency Band (GHz)	1.850 - 1.990
RF Channel Bandwidth	1.25 MHz
Capacity per RF Channel (DS1s)	4
Modulation Type (TCM)	128
Radio Data Rate (Mb/s)	6.18
System Gain (BER = 10^{-6}) @ 31 dBm (dB)*	113
Transmitter Power Output (dBm)	15
Optional Power Amplifier Outputs (dBm)	31
Receiver Threshold (BER = 10^{-6}) (dBm)*	-82
Maximum RSL for 10^{-6} BER (dBm)*	-17
Dispersive Fade Margin for 10^{-3} BER (dB)	80
Threshold/Interference	
Cochannel (dB)	34
Adjacent Channel (dB)	-8

MDR-8702E - Ethernet Radio

EQUIPMENT IDENTIFIER	MDR-8702E-12
Ethernet Specifications	
Ethernet Forwarding Capacity	Up to 12 Mb/s
	21,611 pps
Ethernet Latency (S/F)	185-1180 µs
RF Specifications	
Frequency Band (GHz)	1.850 - 1.990
RF Channel Bandwidth (MHz)	2.5
TDM Lines Capacity	8xDS1
Modulation Type (TCM)	128
Radio Data Rate (Mb/s)	13.135
System Gain (BER = 10^{-6}) @ 31 dBm (dB)*	110
Transmitter Power Output (dBm)	15
Optional Power Amplifier Outputs (dBm)	31
Receiver Threshold (BER = 10^{-6}) (dBm)*	-79
Maximum RSL for 10^{-6} BER (dBm)*	-17
Dispersive Fade Margin for 10^{-3} BER (dB)	80
Threshold/Interference	
Cochannel (dB)	34
Adjacent Channel (dB)	-8

*Typical values as measured at the antenna port for nonstandby and hot-standby/space diversity configurations. Hot-standby configurations will have 1 dB less receiver threshold on the A side and 10 dB less receiver threshold on the B side.

Note: These specifications are subject to change without notice.

TECHNICAL SUMMARY

Power Requirements

- Input voltage: +/- 20 V dc to +/- 60 V dc
- Typical power consumption per T/R @ 15 dBm:
  - ¬ MDR-8702 (DS1): 69 Watts
  - ¬ MDR-8702E (Ethernet): 71 Watts

Mechanical Dimensions & Interfaces

- Size: 12.25 x 19.0 x 16.25 in.
- Weight (1+1): 70 lb.
- RF interface: SMA (female) – other RF interfaces available
- DS1 interface: 37 pin D-type
- Ethernet interface: RJ-45 standard data connector or optical SFP
- Orderwire handset interface: RJ-11 standard telephone handset jack
- Alarm/Management interfaces:
  - ¬ SNMP = RJ-48, 10 Base-T
  - ¬ USI = RS-232
  - ¬ MCS-11 = RS-422
  - ¬ TBOS = RS-485
  - ¬ Parallel = Form A relays

Environmental

- Ambient temperature:
  - ¬ Specification compliant: 0° to +50° C
  - ¬ Operating without failure: -20° to +65° C
  - ¬ Storage: -40° to +80° C
- Relative humidity: 5 to 95% noncondensing
- Altitude:
  - ¬ Operating: -350 to 16,500 ft.
  - ¬ Storage: -350 to 40,000 ft

Note: These specifications are subject to change without notice.

ABOUT ALCATEL-LUCENT WIRELESS TRANSMISSION:

With more than 50 years of experience in wireless transmission, Alcatel-Lucent provides the solid foundation for your mission-critical network, and continually fosters visions for the future. As a pioneer in point-to-point microwave radios, Alcatel-Lucent has demonstrated leadership in wireless technology.

Our history of design innovation began when the former Collins Radio Company developed the first commercial microwave radios in the 1950s. Alcatel-Lucent maintains the Collins tradition, setting the industry standard for microwave communications all over the world with scalable, reliable, economical and readily deployable wireless backbone communications systems.

In the last five years, Alcatel-Lucent has installed more than 300,000 microwave radios in more than 150 countries. For more information, visit www.alcatel-lucent.com/microwave or call 1-800-ALCATEL.

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