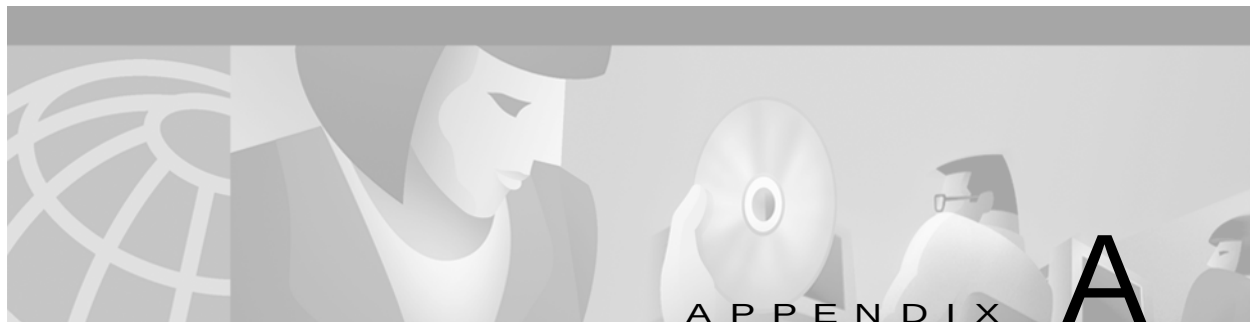




Technical Specifications

This appendix contains the following technical specifications for the Cisco uBR925 cable access router:

- [Physical, Power, and Environmental Specifications, page A-1](#)
- [Data Specifications, page A-2](#)
- [Voice Specifications, page A-4](#)

Physical, Power, and Environmental Specifications

[Table A-1](#) lists the Cisco uBR925 cable access router physical specifications and power requirements.

Table A-1 Cisco uBR925 Cable Access Router Physical Specifications

Description	Specification
Dimensions (H x W x D)	2.30 x 13 x 9.30 in. (5.842 x 33.02 x 24.77 cm)
Weight	3 lb (1.36 kg) 1 lb (0.45 kg) for the AC-input external power supply
AC-input voltage	100 to 240 VAC ¹ wide input with power factor correction
AC-input current rating	1 A ² maximum
AC-input cable	18 AWG ³ three-wire cable, with an IEC 320 three-lead receptacle on the power supply end, and a North American (NEMA 5-15P) plug on the power source end; other country-specific cords are available and supplied as ordered.
Power dissipation	12 to 15W
Frequency	50/60 Hz ⁴
Temperature	32° to 104°F (0 to 40°C) operating; -13° to 158°F (-25° to 70°C) nonoperating
Humidity	5 to 95% noncondensing
Noise level	38 dBa ⁵ maximum at desktop, 43 dBa maximum in an office
Altitude, operating and nonoperating	Sea level to 10,000 ft (3,050 m)
Vibration, operating	10 to 200 Hz, 0.0005 g (1 oct./min.)
Vibration, nonoperating	10 to 100 Hz, 0.0065 g (1 oct./min.)

Table A-1 Cisco uBR925 Cable Access Router Physical Specifications (continued)

Description	Specification
Software requirement	Cisco uBR925 cable access router software—Cisco IOS Release 12.2(2)XA
Agency approvals	Safety: UL 1950, CSA 22.2 No. 950, EN60950, IEC60950, AS/NZS3260, TS001 EMI: EN50082-1:1992, EN55022:1994 Class B, AS/NZS 3548:1995, VCCI 3197.04 Class B, 47 CFR 15 Subpart B, 1997 Class B. Note See also Appendix C, “Regulatory Compliance and Safety Information.”

1. VAC = volts alternating current.
2. A = ampere.
3. AWG = American Wire Gauge.
4. Hz = hertz.
5. dBa = adjusted decibels.

Data Specifications

[Table A-2](#) lists the specifications for the Cisco uBR925 cable access router’s data ports.

Table A-2 Cisco uBR925 Cable Access Router Data Specifications

Description	Downstream Values	Upstream Values
Frequency Range	88 to 860 MHz	5 to 42 MHz
Modulation	64 QAM 256 QAM	QPSK 16 QAM
Data Rate	64 QAM—30 Mbps (27 Mbit/sec after FEC overhead) 256 QAM—42.8 Mbps (36 Mbit/sec after FEC overhead)	QPSK—320 Kbit/sec to 5 Mbit/sec 16 QAM—640 Kbit/sec to 10 Mbit/sec
Note	The above data rates are the theoretical maximums and do not take into account the frame and packet overhead required by the DOCSIS, IP, and other protocols that are used on a DOCSIS cable network. Actual maximum throughput will be less than these values.	
Bandwidth	6 MHz	200K, 400K, 800K, 1.6M, 3.2 MHz
FEC	RS (122, 128) Trellis	—

Table A-2 Cisco uBR925 Cable Access Router Data Specifications (continued)

Description	Downstream Values	Upstream Values
Signal-to-Noise Ratio (SNR)	64 QAM: >23.5 dB @ BER<10⁻⁸ 256 QAM*: >30 dB @ BER <10⁻⁸ (For input level between +15 and -6 dBmV, SNR must be greater than 30 dB. For input level between -6 and -15 dBmV, SNR must be greater than 33 dB.) Note These performance numbers are in laboratory-controlled conditions, against statistically pure noise sources (AWGN). Because such conditions do not exist in practice, a 6 or more dB SNR margin is required for reliable operation. Check with your local system guidelines.	QPSK: >15 dB @ BER<10⁻⁸ (QPSK works at 98% successful ping rate for SNR>13 dB. An SNR of 15 dB is needed to get almost optimal packets per minute transition.) 16 QAM: >22 dB @ BER <10⁻⁸ (For 16 QAM, an SNR>22 dB provides only a 98% ping efficiency. To get good packet rate, you need SNR>25 dB) Note These measurements were done for 0 and -10 dBmV input to the CMTS, 1280 ksym/sec and 64 bytes packet size with laboratory-controlled conditions.
One Channel	Receive level of digital signal -15 to +15 dBmV Note Most field measurements are of nearby or adjacent analog signal, which is normally +6 to +10 dB (system specific) above the digital signal level.	QPSK— +8 to +58 dBmV 16 QAM— +8 to +55 dBmV
Security	DES decryption: DOCSIS Baseline Privacy Interface (BPI), 40-bit, 56-bit, and 168-bit DES encryption, as controlled by the headend and configuration files. Note Cisco IOS images must contain encryption software at both the CMTS and the Cisco uBR925 cable access router. Both the Cisco uBR925 cable access router and CMTS must be enabled and properly configured to support encryption.	

Voice Specifications

Table A-3 lists the specifications for the voice ports on the Cisco uBR925 cable access router.

Table A-3 Cisco uBR925 Cable Access Router Voice Specifications

Metric	Value	
Loss (between DCS and BTI gateway)	Nominal: 4 dB $\pm$ 0.5 dB (off hook)	Nominal: 9 dB $\pm$ 0.5 dB (on hook)
Attenuation distortion: DCS <> BTI (200Hz-3.5kHz) BTI<> DCS (304 Hz-3004Hz) DCS -> BTI (204 Hz-3004 Hz)	Nominal: +1 dB/-3 dB $\pm$ 0.5 dB $\pm$ 0.5 dB0	
Idle channel noise	<= 18 dBmC (noise shall not exceed)	
Signal to C-notched noise	>= 35 dB	
Inter-modulation distortion: R2 R3	>= 52 dB >= 52 dB	
Single frequency interference: 0 to 12 kHz 0 to 4 kHz	<= -28 dBmO <= -40 dBmO	
Frequency shift (offset)	<= $\pm$ 0.2 Hz (max) <= $\pm$ 0.1 Hz (99.5%)	
Amplitude tracking (input Level, dBmO): -37 to 0 (on-hook) -37 to +3 (off hook) -50 to -37 (off-hook) -55 to -50 (off-hook)	Max Dev. <= $\pm$ 0.5 dB <= $\pm$ 0.5 dB <= $\pm$ 1.0dB <= $\pm$ 3.0 dB	Ave. Dev. <= $\pm$ 0.25 dB <= $\pm$ 0.5 dB <= $\pm$ 1.5 dB
Crosstalk	<= -65 dBmO	
Amplitude jitter: 20-300 Hz 4-300 Hz	<= 2.5% Peak <= 2.9% Peak	
Phase jitter: 20 to 300 Hz 4 to 300 Hz	<= 1.5 P-P <= 1.8 P-P	
Envelope delay distortion: 1704 Hz to 604 Hz 1704 Hz to 2804 Hz 1704 Hz to 204 Hz 1704 Hz to 3404 Hz	<= 350 usec <= 195 usec <= 580 usec <= 400 usec	

Table A-3 Cisco uBR925 Cable Access Router Voice Specifications (continued)

Metric	Value
Hybrid balance:	
Echo Return Loss (ERL)	> 26 dB (standard test line) > 14 dB (station off hook)
SRL	> 21 dB (standard test line) > 11 dB (station off hook)
Clipping: Speech segments <5 ms Speech segments > 5ms	< 0.5% 0.0%
Impulse noise: (≥ 6 dB below receive signal)	0 in 93% of all 15 min intervals ≤ 1 count in all 30 min intervals
Phase hits (≥ 10 deg)	0 in 99.75% of all 15 min intervals ≤ 1 count in all 30 min intervals
Gain hits (≥ ± 3dB)	0 in 99.9% of all 15 min intervals ≤ 1 count in all 30 min intervals
Dropouts (≥ 12)	0 in 99.9% of all 15 min intervals ≤ 1 count in all 60 min intervals
Ringling Characteristics	
Ringling Voltage	54 Vrms @ 20Hz (1REN) 46.5Vrm @ 20Hz (5REN) 50Vrms @ 25Hz (1REN) 43Vrms @ 25Hz (5REN)
Ring Frequency (adjustable)	20 Hz (default), 25 H Note Does not support a Ring Frequency of 50 Hz.
Ring Load (per line) 5 REN (Ringer Equivalence Number) 4 REN 3 REN 2 REN 1 REN	Maximum Distance 10000 ft 13000 ft 17000 ft 26000 ft 50000 ft
On Hook/Off Hook Characteristics	
On-Hook Voltage (Tip/Ring)	–18 V
Off-Hook Current	23 mA
Port Terminating Impedance	600 ohms resistive (default) 900 ohms resistive, complex

