



Appendix A

Hardware Specifications

A.1 Router Specifications

Table A-1 lists physical and environmental specifications for the router.

Table A-1 Physical and Environmental Specifications for the Router

Parameter	Specification
Dimensions	Height: 108 mm (4.25 inches) Width: 203.2 mm (8 inches) Depth: 266.7 mm (10.5 inches)
Weight	4 kg (8.75 pounds)
Construction	Steel outer housing and inner chassis
Operating temperature	0 to 43°C (32 to 122°F)
Relative humidity	Up to 95% noncondensing

Table A-2 describes the connectors you use to connect the router to the radio subsystem and to a wire-based network.

Table A-2 Router Connector Specifications

Connector	Specification
EIA-530	DB25 (male)
Power	5-pin DIN connector (female)
COM1	9-pin D-Sub (male)
COM2	9-pin D-Sub (male)
AUI	15-pin D-Sub (female)
Ethernet	RJ-45

A.2 Radio Specifications

Table A-3 lists physical and environmental specifications for the radio.

Table A-3 Physical and Environmental Specifications for the Radio

Parameter	Specification
Dimensions	Height: 50.8 mm (2 inches) Width: 228.6 mm (9 inches) Depth: 254 mm (10 inches)
Weight	L-band: 1.81 kg (4 pounds) S-band: 3.4 kg (7.5 pounds)
Construction	Aluminum outer housing and inner chassis
Operating temperature	0 to 50°C (32 to 122°F)
Relative humidity	Up to 95% noncondensing
Shock and vibration	NSTA Project 2A compliant

Table A-4 lists the connectors you use to connect the radio to the antenna and to the router subsystem.

Table A-4 Radio Connector Specifications

Connector	Specification
Antenna connector	Type-N (female)
DTE connector	DB25 (female)
Power connector	5-pin DIN connector (female)
Received Signal Strength (RSS) indicator	2 single-pin jacks (female)

Table A-5 lists general radio frequency (RF) specifications.

Table A-5 General RF Specifications

Parameter	Specification
Frequency range	L-band: 902 to 928 MHz S-band: 2400 to 2483.5 MHz
Radio technology	Spread spectrum, using direct sequence
Modulation technique	Binary phase shift keying (BPSK)
Channel bandwidth	5.12 MHz
Process gain	12 dB
System gain	L-band: 124 dB S-band: 123 dB
Antenna port impedance	50 ohms nominal

Table A-6 lists transmitter-specific specifications.

Table A-6 Transmitter Specifications

Parameter	Specification
Number of RF channels	L-band: 9 (5 nonoverlapping) S-band: 15
Frequency source	Synthesized
Bandwidth	5.12 MHz
Carrier Frequency Stability	± 10 parts per million (ppm)
Output power	L-band: Maximum of 800 mW (29 dBm) S-band: Maximum 650 mW (28 dBm)

Table A-7 lists receiver-specific specifications.

Table A-7 Receiver Specifications

Parameter	Specification
Acquisition time	During first acquisition burst
Noise figure	Maximum 5 dB at the antenna port
Receive sensitivity @ BER 10^{-6}	-95 dBm
Receive overload threshold	> -10 dBm
Carrier over interference tolerance	0 dB ¹

1. This number is an average value for nine uniformly spaced discrete frequencies in the band defined by: $f_c - f_{\text{chip}}$ to $f_c + f_{\text{chip}}$ where f_{chip} is 2.56 Mbps.

A.3 Power Supply Specifications

Table A-8 provides specifications for the power supplies that connect to the radio and the router.

Table A-8 Power Specifications

Parameter	Specification
External AC power supply:	
Input	100-250 Vac @ 50/60 Hz, 0.3-0.7A
Power cable	According to model ordered
Output	+5, ± 12 Vdc cable terminated with 5-pin male DIN connector
Dimensions	Height: 50.8 mm (2.00 inches) Width: 86.4 mm (3.40 inches) Length: 149.1 mm (5.87 inches)
Weight	.6 kg (1.3 pounds)
Maximum power consumption (power supply plus radio or router)	AC power supply: 23 watts

A.4 EIA-530 Connector Pinouts

The radio acts as a data communications equipment (DCE) device that outputs a clock rate of 160 kbps on an EIA-530 cable. The router acts as a data terminal equipment (DTE) device. EIA-530 cables are electrically compatible with RS-449/422 37-pin cables.

Table A-9 describes the EIA-530 pinouts. Paired signals are electrically balanced and must be physically twisted together.

Table A-9 EIA-530 Pinouts

Pin	Signal	Function	Direction	Comments
1		Shield		
2	BA (A)	Send Data (TxD+)	To Radio	
14	BA (B)	Send Data (TxD-)		
3	BB (A)	Receive Data (RxD+)	From Radio	
16	BB (B)	Receive Data (RxD-)		
4	CA (A)	Request To Send (RTS+)	To Radio	
19	CA (B)	Request To Send (RTS-)		
5	CB (A)	Clear To Send (CTS+)	From Radio	
13	CB (B)	Clear To Send (CTS-)		
6	CC (A)	DCE Ready (DSR+)	From Radio	
22	CC (B)	DCE Ready (DSR-)		
7	AB	Signal Ground		
8	CF (A)	Receive Detect (DCD+)	From Radio	
10	CF (B)	Receive Detect (DCD-)		
15	DB (A)	Transmit Timing (TxC+)	From Radio	
12	DB (B)	Transmit Timing (TxC-)		
17	DD (A)	Receive Timing (RxC+)	From Radio	
9	DD (B)	Receive Timing (RxC-)		
20	CD (A)	DTR Ready (DTR+)	To Radio	
23	CD (B)	DTR Ready (DTR-)		
18	/LL			(Not Supported)
21	RL	Remote Loopback		(Not Supported)
24	DA (A)	Transmit Timing (TxCE+)		(Not Supported)
11	DA (B)	Transmit Timing (TxCE-)		(Not Supported)
25	TM	Test Mode		(Not Supported)

A.5 Radio Switch Settings

Figure A-1 shows the switch settings for the L-band model of the SubSpace 2001. Only modify these switches during initial tests; once you establish a working network, control radio parameters using the software. During normal operation, switches SW2-3, SW2-4, and SW3-8 should be ON. All other switches should be OFF.

Figure A-1 SubSpace 2001 (L-Band) Switch Settings

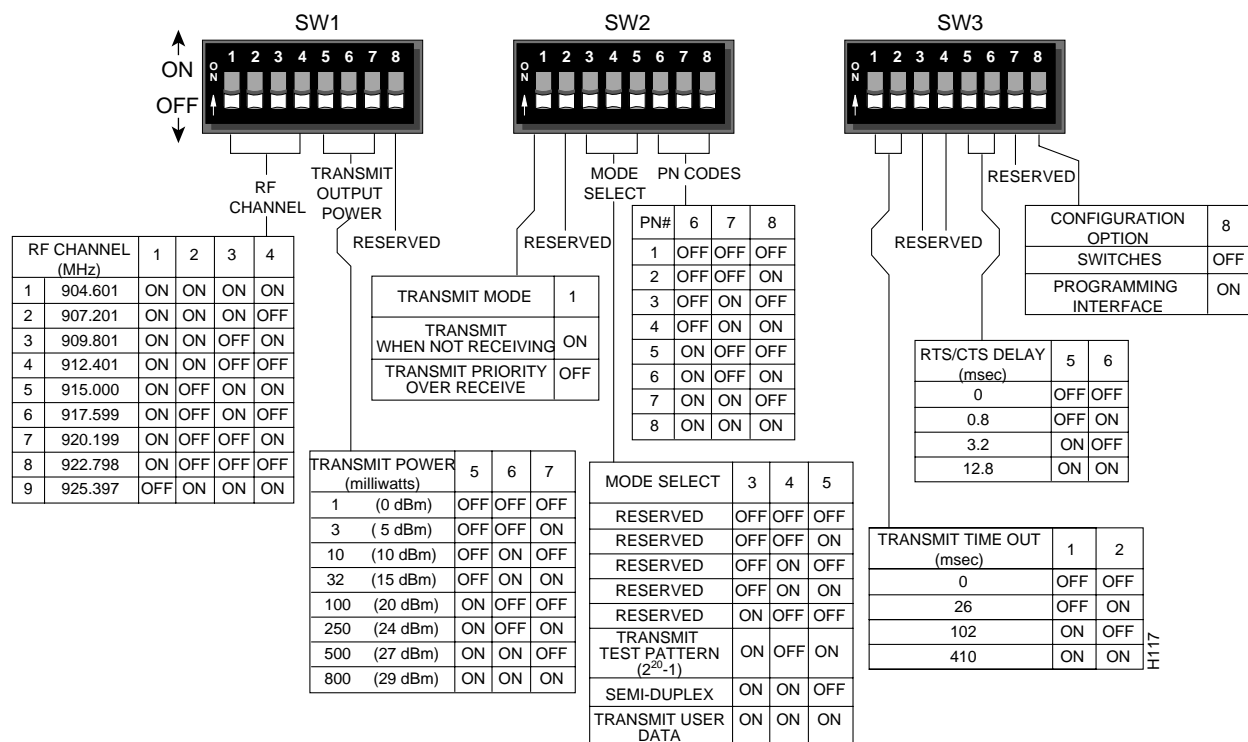
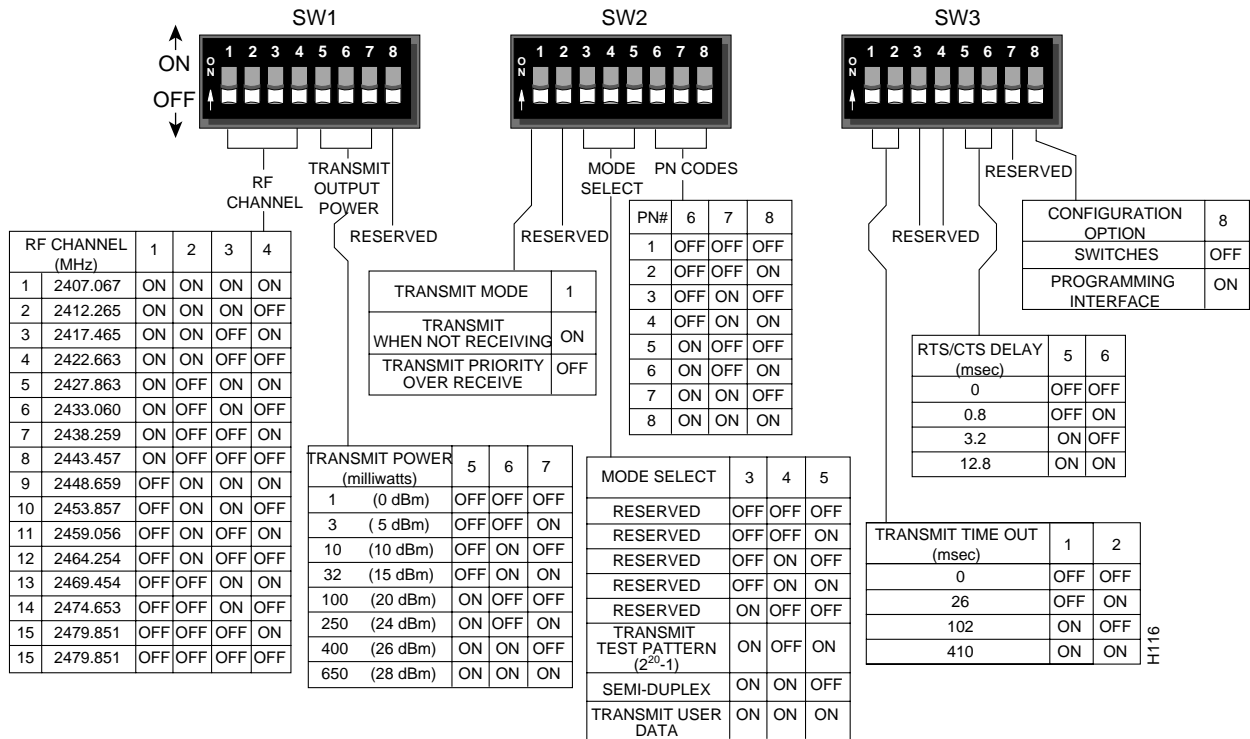


Figure A-2 shows the switch settings for the S-band model of the SubSpace 2001s. Only modify these switches during initial tests; once you establish a working network, control radio parameters using the software. During normal operation, switches SW2-3, SW2-4, and SW3-8 should be ON. All other switches should be OFF.

Figure A-2 SubSpace 2001s (S-Band) Switch Settings



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