

Product Ordering Guide

For

WL-2000

Important Note: This document contains both released and planned product offerings for the WL-2000. Prior to making ANY delivery commitment, it is suggested that the Account Manager approves the latest delivery schedule.

January 2004

Rev. 0104

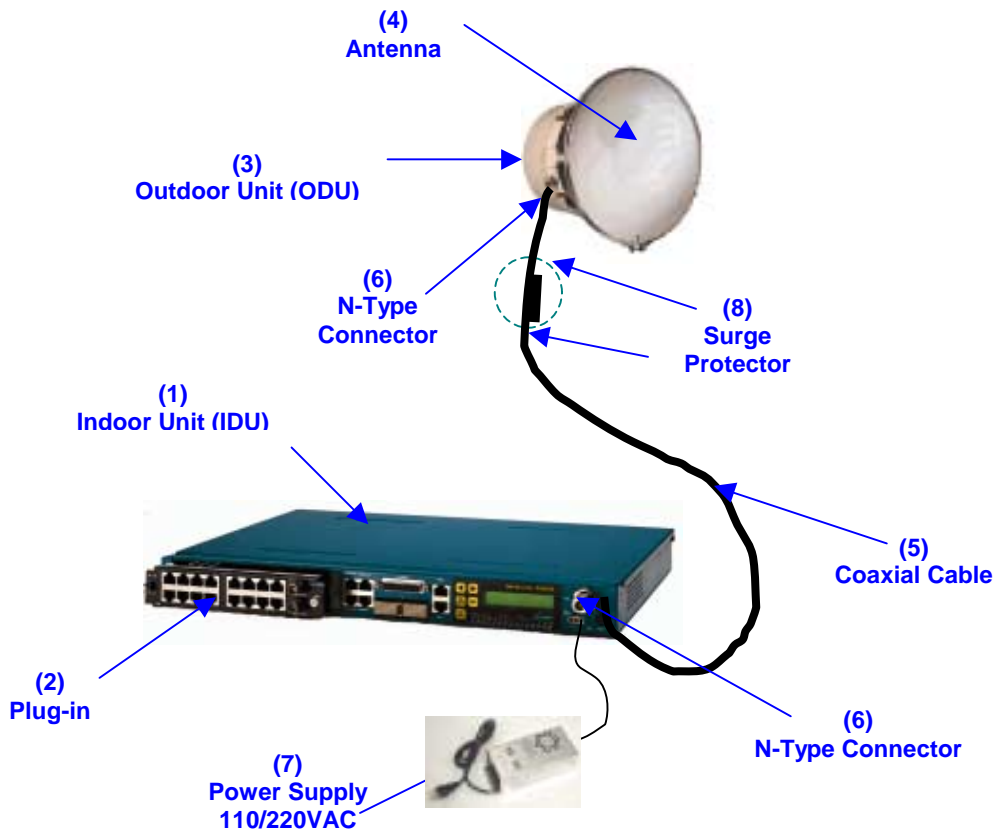
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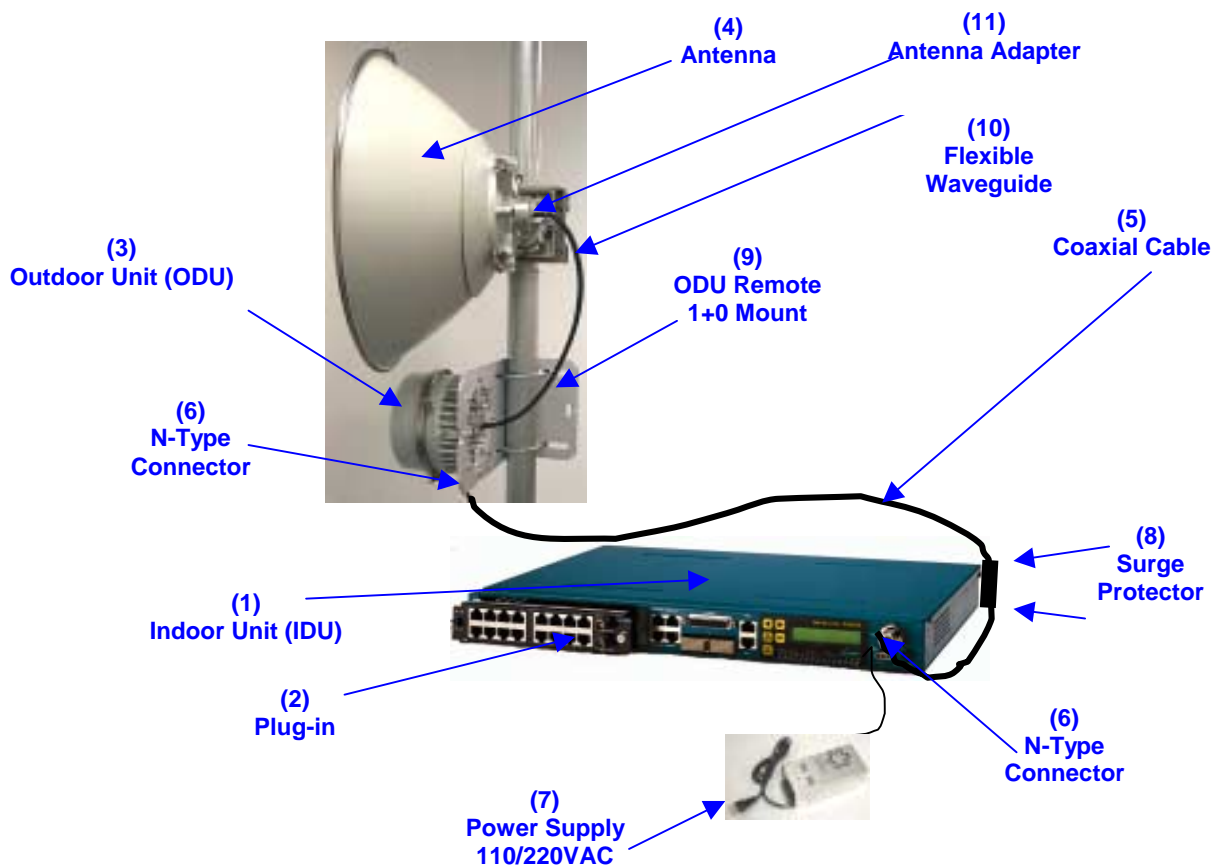
Non-Protected Radio Terminal Configuration, Direct ODU Mount



Item	Description	Part Number	Notes	Qty
1	Indoor Unit (IDU)	See page 6		1
2	IDU Plug-In, Non-Protected	See pages 7 & 9		1
3	Outdoor Unit (ODU)	See pages 11 – 14		1
4	Antenna	See pages 21 – 23	Includes Antenna Mount	1
5	Coax Cable	See page 24		1
6	N Type Connector	See page 24		2
7	Power Supply	See page 24	Optional. Used only when DC power is not available	1
8	Surge Protector	See page 24	Optional. Customer may request, however, not required for all installations. If ordered, increase qty of item #6 to four.	1

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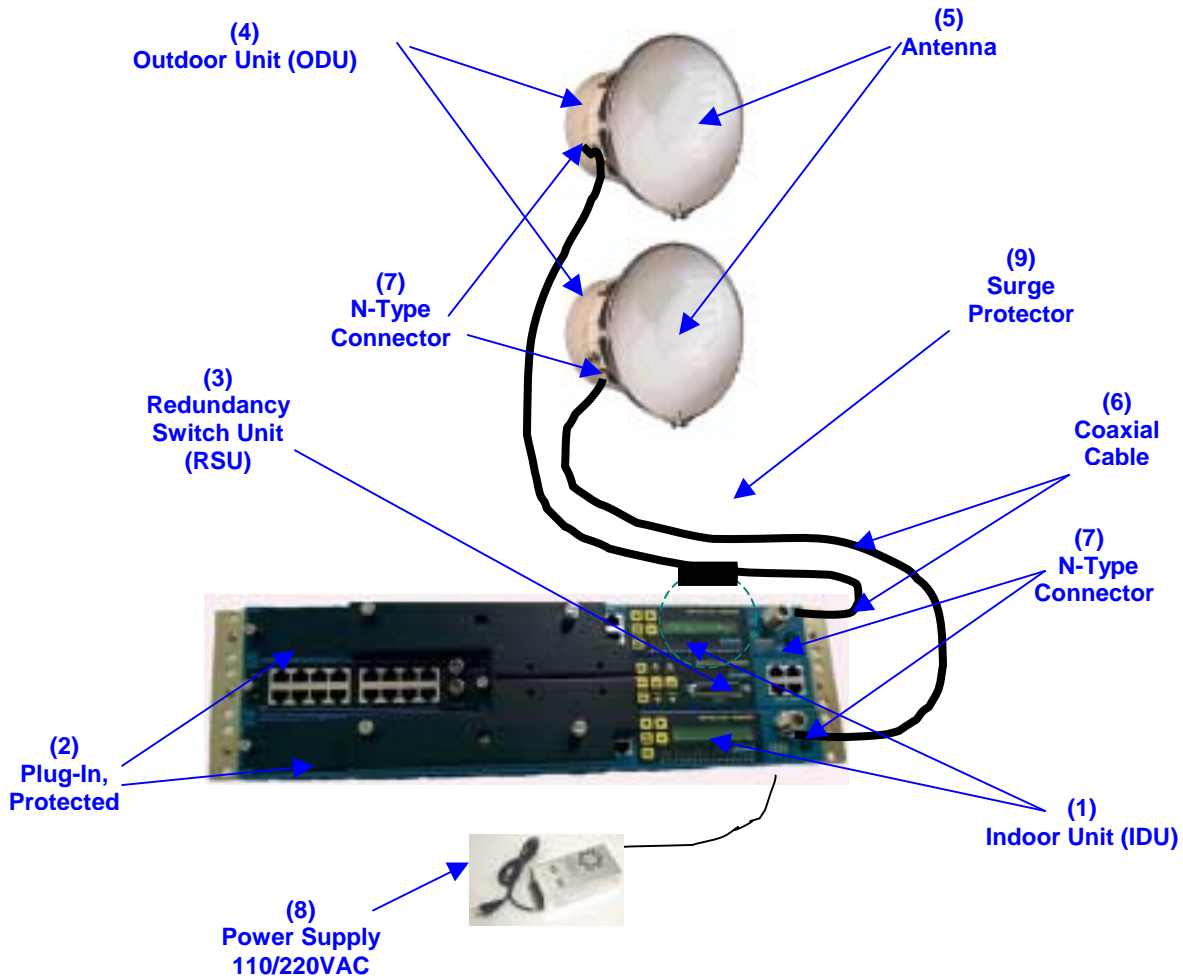
Non-Protected Radio Terminal Configuration, Remote ODU Mount



Item	Description	Part Number	Notes	Qty
1	Indoor Unit (IDU)	See page 6		1
2	IDU Plug-In, Non-Protected	See pages 7 & 9		1
3	Outdoor Unit (ODU)	See pages 11 – 14		1
4	Antenna	See pages 21 – 23		1
5	Coax Cable	See page 24		1
6	N Type Connector	See page 24		2
7	Power Supply	See page 24	Optional. Used only when DC power is not available	1
8	Surge Protector	See page 24	Optional. Customer may request, however, not required for all installations. If ordered, increase qty of item #6 to four.	1
9	ODU-Remote 1+0 Mount Kit	See page 19		1
10	Flexible Waveguide	See page 20	36" (90cm)	1
11	Antenna Adapter	See page 20	Required for Witcom's 30/60cm antennas	1

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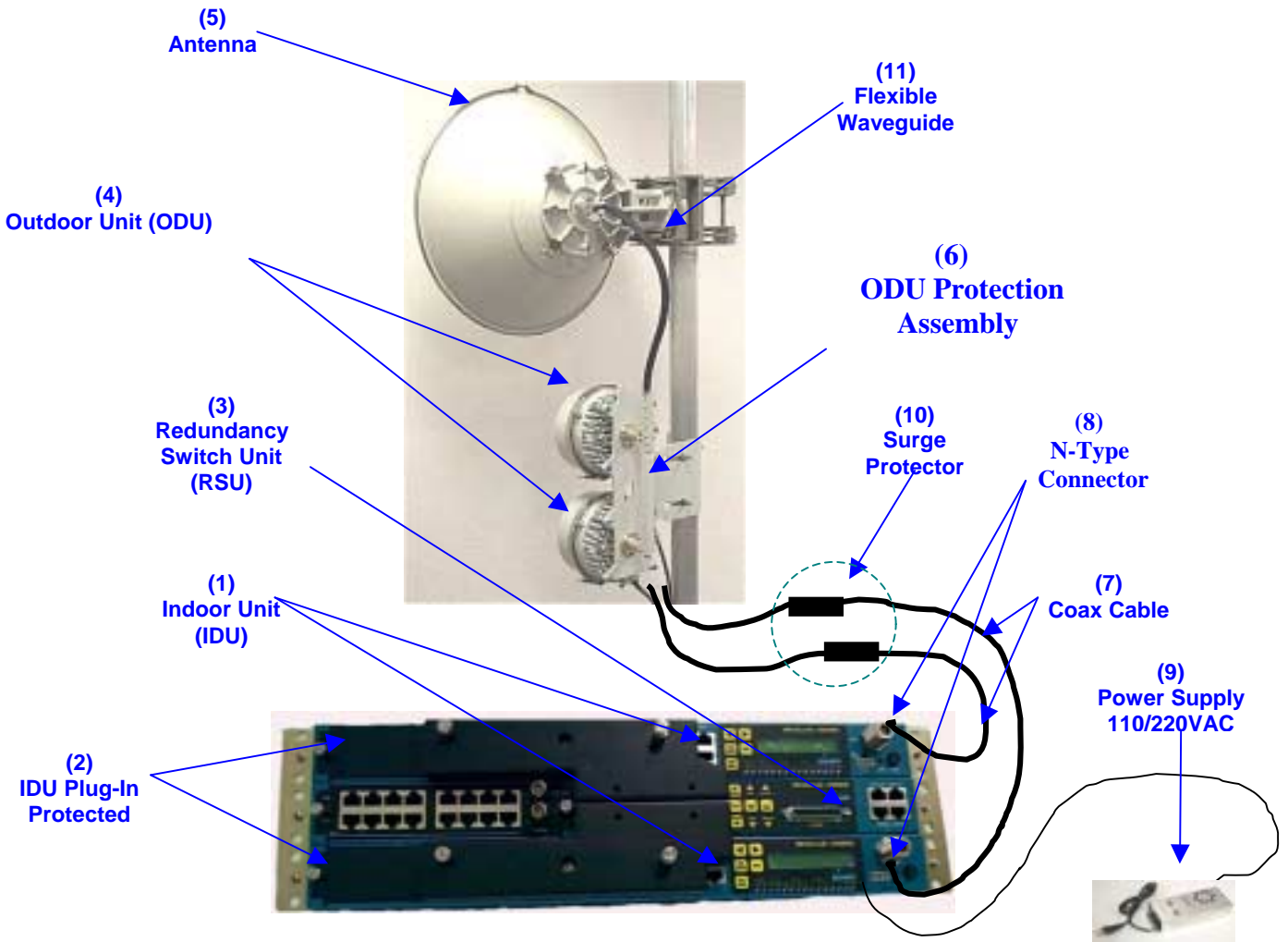
Protected Radio System Configuration, Two Antennas



Item	Description	Part Number	Notes	Qty
1	Indoor Unit (IDU)	See page 6		2
2	IDU Plug-In, Protected	See pages 8 & 10		2
3	Redundancy Switch Unit (RSU)	See page 15-17		1
4	Outdoor Unit (ODU)	See pages 11 – 14		2
5	Antenna	See page 21 – 23		2
6	Coax Cable	See page 24		2
7	N Type Connector	See page 24		4
8	Power Supply	See page 24	Optional. Used only when DC power is not available	2
9	Surge Protector	See page 24	Optional. Customer may request, however, not required for all installations. If ordered, increase qty of item #7 to eight.	2

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Protected Radio System Configuration, One Antenna



	Description	Part Number	Notes	Qty
1	Indoor Unit (IDU)	See page 6		2
2	IDU Plug-In, Protected	See pages 8 & 10		2
3	Redundancy Switch unit (RSU)	See page 15-17		1
4	Outdoor Unit (ODU)	See pages 11 – 14		2
5	Antenna	See pages 21 – 23		2
6	ODU Protection Assembly	See Page 18		
7	Coax Cable	See page 24		2
8	N Type Connector	See page 24		4
9	Power Supply	See page 24	Optional. Used only when DC power is not available	2
10	Surge Protector	See page 24	Optional. Customer may request, however, not required for all installations. If ordered, increase qty of item #7 to eight.	2
11	Flexible Waveguide	See page 20	36" (90cm)	1

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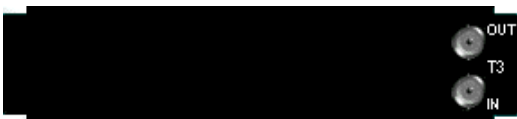
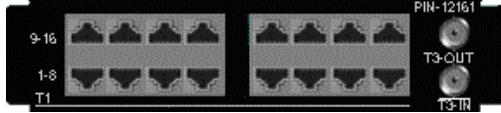

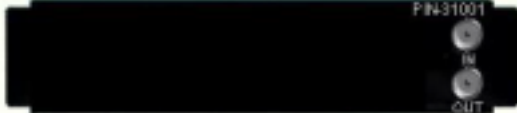
Indoor Unit Chassis



Description	Part Number	Notes
Indoor Unit Chassis, FCC	IDU-2001	Used in conjunction with FCC ODU's. Used with all DSX or LAN+4T1 plug-in cards. Used also with mixed mode CEPT or LAN+4E1 plug-in cards.
Indoor Unit Chassis, ETSI	IDU-2002	Used in conjunction with ETSI ODU's. Used with all CEPT or LAN+4E1 plug-in cards.



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IDU Plug-Ins, DSX Type, Non-Protected

	Description	Part Number	Notes
	1 – 8 DS1	PIN-12080	
	DS3	PIN-12001	
	DS3 + 16xDS1	PIN-12161	Up to 16DS1 or DS3+4DS1 modes
	Two 10/100 Ethernet + 4xDS1	PIN-42042	
	One STS-1	PIN-31000	



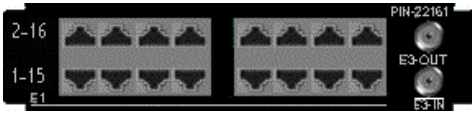


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IDU Plug-Ins, DSX Type, Protected

	Description	Part Number	Notes
	1 – 8 DS1, Protected	PIN-13080	
	DS3, Protected	PIN-13001	
	DS3 + 16xDS1, Protected	PIN-13161	
	One STS-1, Protected	PIN-33000	

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IDU Plug-Ins, CEPT Type, Non-Protected

	Description	Part Number	Notes
	1 – 8 E1, Non-Protected	PIN-22080	
	E3, Non-Protected	PIN-21001	
	E3 + 16xE1, Non-Protected	PIN-22161	Up to 16E1 or E3+2E1 modes
	Two 10/100 Ethernet + 4xE1, Non-Protected	PIN-52042	
	One STS-1, Non-Protected	PIN-31000	

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IDU Plug-Ins, CEPT Type, Protected

	Description	Part Number	Notes
	1 – 8 E1, Protected	PIN-23080	
	E3, Protected	PIN-23001	
	E3 + 16xE1, Protected	PIN-23161	
	One STS-1, Protected	PIN-33000	

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Outdoor Units

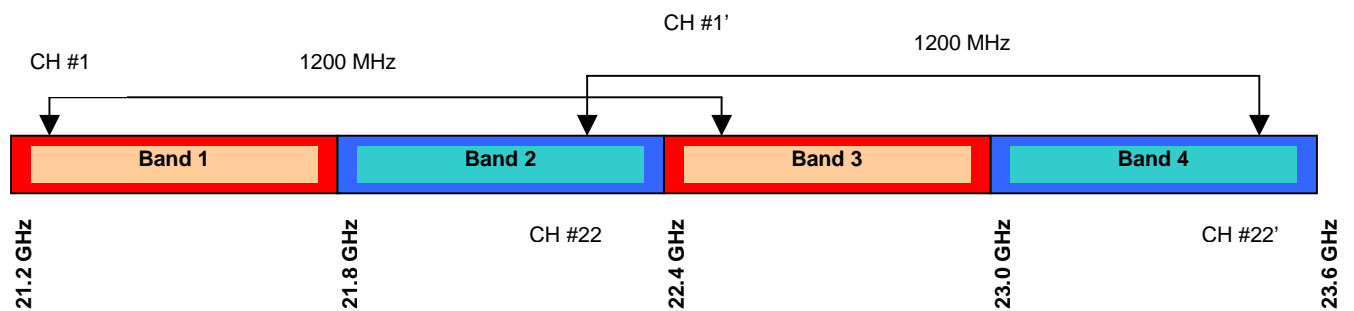


As the WL-2000 is a full duplex radio, there are two different ODU's required to make a complete link. Typically a Low-Band TX/High-Band RX is referred to as bands 1 or 2, while the High-Band TX/Low Band RX is referred to as bands 3 or 4.

T/R Spacing refers to the frequency separation between transmit and receive signals.

Example, 23 GHz, 1200 MHz T/R Spacing:

Band 1 interfaces with Band 3
Band 2 interfaces with Band 4



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Outdoor Unit Configurations, FCC

18 GHz, 1560 MHz T/R Spacing				
Band	Part Number	TX Frequency Range	RX Frequency Range	Notes
1	ODU-1-1-1-18	17.70 – 18.14 GHz	19.26 – 19.70 GHz	
3	ODU-1-1-3-18	19.26 – 19.70 GHz	17.70 – 18.14 GHz	

23 GHz, 1200 MHz T/R Spacing				
Band	Part Number	TX Frequency Range	RX Frequency Range	Notes
1	ODU-1-1-1-23	21.20 – 21.80 GHz	22.40 – 23.00 GHz	
2	ODU-1-1-2-23	21.80 – 22.40 GHz	23.00 – 23.60 GHz	
3	ODU-1-1-3-23	22.40 – 23.00 GHz	21.20 – 21.80 GHz	
4	ODU-1-1-4-23	23.00 – 23.60 GHz	21.80 – 22.40 GHz	

38 GHz, 700 MHz T/R Spacing				
Band	Part Number	TX Frequency Range	RX Frequency Range	Notes
1	ODU-1-1-1-38	38.60 – 38.95 GHz	39.30 – 39.65 GHz	
2	ODU-1-1-2-38	38.95 – 39.30 GHz	39.65 – 40.00 GHz	
3	ODU-1-1-3-38	39.30 – 39.65 GHz	38.60 – 38.95 GHz	
4	ODU-1-1-4-38	39.65 – 40.00 GHz	38.95 – 39.30 GHz	

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Outdoor Unit Configurations, ETSI

18 GHz, 1010 MHz T/R Spacing				
Band	Part Number	TX Frequency Range	RX Frequency Range	Notes
1	ODU-2-1-1-18	17.7-18.2	18.70-19.2	
2	ODU-2-1-2-18	18.2-18.7	19.20-19.7	
3	ODU-2-1-3-18	18.7-19.2	17.70-18.2	
4	ODU-2-1-4-18	19.2-19.7	18.20-18.7	

23 GHz, 1008 MHz T/R Spacing				
Band	Part Number	TX Frequency Range	RX Frequency Range	Notes
1	ODU-2-2-1-23	22.00-22.592	23.008-23.60	
3	ODU-2-2-3-23	23.008-23.60	22.00-22.592	

23 GHz, 1200 MHz T/R Spacing				
Band	Part Number	TX Frequency Range	RX Frequency Range	Notes
1	ODU-2-1-1-23	21.20 – 21.80 GHz	22.40 – 23.00 GHz	
2	ODU-2-1-2-23	21.80 – 22.40 GHz	23.00 – 23.60 GHz	
3	ODU-2-1-3-23	22.40 – 23.00 GHz	21.20 – 21.80 GHz	
4	ODU-2-1-4-23	23.00 – 23.60 GHz	21.80 – 22.40 GHz	

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ETSI ODUs (Continued)

23 GHz, 1232 MHz T/R Spacing				
Band	Part Number	TX Frequency Range	RX Frequency Range	Notes
1	ODU-2-3-1-23	21.224-21.784	22.456-23.016	
2	ODU-2-3-2-23	21.784-22.344	23.016-23.576	
3	ODU-2-3-3-23	22.456-23.016	21.224-21.784	
4	ODU-2-3-4-23	23.016-23.576	21.784-22.344	

38 GHz, 1260 MHz T/R Spacing				
Band	Part Number	TX Frequency Range	RX Frequency Range	Notes
1	ODU-2-1-1-38	37.00-37.625	38.250-38.875	
2	ODU-2-1-2-38	37.625-38.250	38.875-39.50	
3	ODU-2-1-3-38	38.250-38.875	37.00-37.625	
4	ODU-2-1-4-38	38.875-39.50	37.625-38.250	

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Redundancy Kits

Redundancy Kits are used to complete a protected terminal. They are divided into One or Two antenna configurations, RF Splitters or RF Couplers. They include the Redundant Switch Unit (RSU), Redundant plug-in (RPI) and the Upper and Lower drawers used to interconnect the RSU with the IDUs. The ODU Protection Assembly (OPA) is required for the One antenna configuration. The spare parts list for the 1+1 details all Redundant Kit components.

Redundancy Kit, DSX/CEPT, One Antenna, 38 GHz, 3 dB/3 dB	Part Number	Notes
Redundancy Kit, DSX/CEPT, One Antenna 38 GHz, 3 dB/3 dB (Main/Standby) Splitter	RDK-X2161-S-38-1ANT	
Includes the following:		
Redundancy Switch Unit (Qty 1)	RSU	
RSU Plug-In, E3/E1, DS3/DS1 (Qty 1)	RPI-X2161	
RSU Interconnect Assy, Upper (Qty 1)	DRW-1+1-U	
RSU Interconnect Assy, Lower (Qty 1)	DRW-1+1-L	
ODU Protection Assembly	OPA- 38-S	

Redundancy Kit, DSX/CEPT, One Antenna, 38 GHz, 1 dB/7 dB	Part Number	Notes
Redundancy Kit, DSX/CEPT, One Antenna 38 GHz, 1 dB/7 dB (Main/Standby) Coupler	RDK-X2161-C-38-1ANT	
Includes the following:		
Redundancy Switch Unit (Qty 1)	RSU	
RSU Plug-In, E3/E1, DS3/DS1 (Qty 1)	RPI-X2161	
RSU Interconnect Assy, Upper (Qty 1)	DRW-1+1-U	
RSU Interconnect Assy, Lower (Qty 1)	DRW-1+1-L	
ODU Protection Assembly	OPA- 38-C	

Redundancy Kit, DSX/CEPT, One Antenna, 18 - 26 GHz, 3 dB/3 dB	Part Number	Notes
Redundancy Kit, DSX/CEPT, One Antenna 18 - 26 GHz, 3 dB/3 dB (Main/Standby) Splitter	RDK-X2161-S-18-26-1ANT	
Includes the following:		
Redundancy Switch Unit (Qty 1)	RSU	
RSU Plug-In, E3/E1, DS3/DS1 (Qty 1)	RPI-X2161	
RSU Interconnect Assy, Upper (Qty 1)	DRW-1+1-U	
RSU Interconnect Assy, Lower (Qty 1)	DRW-1+1-L	
ODU Protection Assembly	OPA- 18-26-S	

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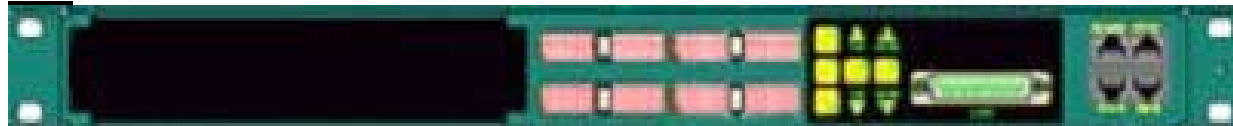
Redundancy Kit, DSX/CEPT, One Antenna, 18 - 26 GHz, 1 dB/7 dB	Part Number	Notes
Redundancy Kit, DSX/CEPT, One Antenna 18 - 26 GHz, 1 dB/7 dB (Main/Standby) Coupler	RDK-X2161-C-18-26-1ANT	
Includes the following:		
Redundancy Switch Unit (Qty 1)	RSU	
RSU Plug-In, E3/E1, DS3/DS1 (Qty 1)	RPI-X2161	
RSU Interconnect Assy, Upper (Qty 1)	DRW-1+1-U	
RSU Interconnect Assy, Lower (Qty 1)	DRW-1+1-L	
ODU Mount 1+1, 18-26GHz, 1 dB/7 dB (Qty 1)	OPA- 18-26-C	

Redundancy Kit, DSX/CEPT, Two Antennas, FCC	Part Number	Notes
Redundancy Kit, DSX/CEPT, Two Antennas, FCC	RDK-X2161-2ANT	
Includes the following:		
Redundancy Switch Unit (Qty 1)	RSU	
RSU Plug-In, E3/E1, DS3/DS1 (Qty 1)	RPI-X2161	
RSU Interconnect Assy, Upper (Qty 1)	DRW-1+1-U	
RSU Interconnect Assy, Lower (Qty 1)	DRW-1+1-L	

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Redundancy Switch - Spare Parts

RSU



	Part Number	Notes
Redundancy Switch Unit Chassis, one plug-in slot for RPI plug-in	RSU	Used for both FCC and ETSI systems

RSU Plug-Ins (RPI)

	Description	Part Number	Notes
	DS3 + 16xDS1 and E3 + 16xE1 RSU Plug-In	RPI-X2161	Universal plug for all PDH interfaces. Supports DS3+1-16DS1, E3+1-16E1 or STS-1/STM-0

RSU Interconnect Assemblies

	Description	Part Number	Notes
	RSU Interconnect Assembly, Upper	DRW-1+1-U	
	RSU Interconnect Assembly, Lower	DRW-1+1-L	

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ODU Protection Assembly

Includes ODU-1+1-Mount, one RF directional coupler or splitter for the selected frequency and one rigid waveguide.



Description	Part Number	Notes
ODU Protection Assembly, 38G, Splitter	OPA-38-S	38 GHz, FCC or ETSI, Equal Split 3 dB Main, 3 dB Standby Paths
ODU Protection Assembly, 38G, Coupler	OPA-38-C	38 GHz, FCC or ETSI, Un-Equal Split 1 dB Main, 7 dB Standby Paths
ODU Protection Assembly, 18-26G, Splitter	OPA-18-26-S	18-26 GHz, FCC or ETSI, Equal Split 3 dB Main, 3 dB Standby Paths
ODU Protection Assembly, 18-26G, Coupler	OPA-18-26-C	18-26 GHz, FCC or ETSI, Un-Equal Split 1 dB Main, 7 dB Standby Paths

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Miscellaneous Spare Parts

Remote 1+0 Mount Kit

ODU Adapter



Remote 1+0 Mount



Description	Part Number	Notes
Remote 1+0 Mount Kit	MNT-1+0-Frequency	Allows mounting of ODU separately to larger antennas via waveguide in 1+0 configuration. Use with standard waveguide antenna interface. Can also be used in 1+1 configurations, with two remotely mounted antennas. (Includes Remote 1+0 Mount and an ODU Adapter).
Remote 1+0 Mount Kit, 38 GHz	MNT-1+0-38	Used in 1+0 configuration, with Remote Mount Kit (ODU-1+0-Mount) for 38 GHz ODUs
Remote 1+0 Mount Kit, 23 GHz	MNT-1+0-23	Used in 1+0 configuration, with Remote Mount Kit (ODU-1+0-Mount) for 23 GHz ODUs
Remote 1+0 Mount Kit, 18 GHz	MNT-1+0-18	Used in 1+0 configuration, with Remote Mount Kit (ODU-1+0-Mount) for 18 GHz ODUs

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Antenna Adapters



Description	Part Number	Notes
Antenna Adapter, 38 GHz	AAD-38	Used to connect flexible waveguide to the 38GHz Antenna (proprietary mount), WR28 interface
Antenna Adapter, 23 GHz	AAD-23	Used to connect flexible waveguide to the 23GHz Antenna (proprietary mount), WR42 interface
Antenna Adapter, 18 GHz	AAD-18	Used to connect flexible waveguide to the 18GHz Antenna (proprietary mount), WR42 interface

Flexible Waveguide



Description	Part Number	Notes
Flexible Waveguide, WR42, 36" length	WVG-18-26-36"	Used for 18-26 GHz
Flexible Waveguide, WR28, 36" length	WVG-38-36"	Used for 38 GHz

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Antennas



30 cm high-performance antenna with integral mount



60 cm high-performance antenna with integral mount

Antennas for the WL-2000 are available in the following FCC/ETSI, sizes and mounts:

FCC	30 cm HP Int	60 cm HP Int
18 GHz	No	Yes
23 GHz	No	Yes
38 GHz	Yes	Yes

ETSI	30 cm HP Int	60 cm HP Int
18 GHz	Yes	Yes
23 GHz	Yes	Yes
38 GHz	Yes	Yes

Performance:

Most of the antennas offered are of the “high-performance (HP)” variety. These antennas typically meet more stringent requirements (customer or regulatory) for sidelobe suppression. High-performance antennas are usually found with a shroud around the reflector, which improves the radiation characteristics of the antenna.

Interface:

- Integral Mount ODU mounts directly to the back of the antenna. Available on 30 cm and 60 cm antennas only.
- Standard Mount ODU Remote Mount and Flexible Waveguide must be used to connect ODU to antenna. Customer can use any antenna, incl. larger size antennas. Call.

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FCC Antennas

18 GHz Antennas		
Description	Part Number	Notes
60CM, High-performance, Integral Mount	ANT-1-60-18	

23 GHz Antennas		
Description	Part Number	Notes
60CM, High-performance, Integral Mount	ANT-1-60-23	

38 GHz Antennas		
Description	Part Number	Notes
30CM, High-performance, Integral Mount	ANT-1-30-38	
60CM, High-performance, Integral Mount	ANT-1-60-38	

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ETSI Antennas

18 GHz Antennas		
Description	Part Number	Notes
30CM, High-performance, Integral Mount	ANT-2-30-18	
60CM, High-performance, Integral Mount	ANT-2-60-18	


23 GHz Antennas		
Description	Part Number	Notes
30CM, High-performance, Integral Mount	ANT-2-30-23	
60CM, High-performance, Integral Mount	ANT-2-60-23	

38 GHz Antennas		
Description	Part Number	Notes
30CM, High-performance, Integral Mount	ANT-2-30-38	
60CM, High-performance, Integral Mount	ANT-2-60-38	



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APPENDIX “A”- Miscellaneous

Coaxial Cable

Description	Part Number	Notes
Coax Cable, RG-8, 50Ω, different lengths.	Call	

N-Type Connectors & Surge Protectors

Description	Part Number	Notes
N-Type Crimp Connector	Call	
Crimp Tool for N-Type Crimp Connector	Call	
Surge Protector	LPR (Call for Others)	

Power Supply

Description	Part Number	Notes
48 VDC Power Supply, 5 A	Call	Converts 110/220 VAC to -48 VDC @ 5 amps max

16E1 Conversion Panel



Description	Part Number	Notes
16E1 120Ω to 75Ω Conversion Panel	Call	Used to convert the IDU 120 ohm balanced E1 interface to a 75 ohm unbalanced E1 interface