

ITU-T Specifications

SPECTRUM II SYSTEM PERFORMANCE

TRANSMITTER	7/8 GHz	13 GHz	15 GHz	18 GHz	23 GHz	26 GHz	28/31 GHz	38 GHz
POWER OUTPUT (Guaranteed at RF Unit antenna port over temperature range)								
Standard (minimum)	+27.0 dBm (500 mW)	+18.0 dBm (63 mW)	+17.0 dBm (50 mW)	+17.0 dBm (40 mW)	+17.0 dBm (40 mW)	+16.0 dBm (40 mW)	+16.0 dBm (40 mW)	+16.0 dBm (40 mW)
High Power (minimum)	N/A	+27.0 dBm (500 mW)	+27.0 dBm (500 mW)	+24.0 dBm (250 mW)	+22.0 dBm (200 mW)	N/A	+21.0 dBm (125 mW)	N/A
Frequency Stability	± 0.0005%	± 0.0005%	± 0.0005%	± 0.0005%	± 0.0003%	± 0.0003%	± 0.0003%	± 0.0003%
Frequency Channel Selection	Frequency Synthesizer Software-Controlled from Indoor Unit							
Transmitter Type	Direct Modulation							

ATTENUATION RANGE (Standard Power)

S/W Variable (from IDU)	0-10.0 dB	0-10.0 dB	0-10.0 dB	0-20.0 dB	0-30.0 dB	0-30.0 dB	0-30.0 dB	0-30.0 dB
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RECEIVER	7/8 GHz	13 GHz	15 GHz	18 GHz	23 GHz	26 GHz	28/31 GHz	38 GHz
SENSITIVITY 10 ⁻⁶ BER (Guaranteed at RF Unit antenna port over temperature range)								
2xE1	-84.0 dBm	-84.0 dBm	-83.0 dBm	-82.0 dBm	-81.5 dBm	-81.0 dBm	-80.5 dBm	-80.0 dBm
4xE1	-81.0 dBm	-81.0 dBm	-80.0 dBm	-79.0 dBm	-78.5 dBm	-78.0 dBm	-77.5 dBm	-77.0 dBm
8xE1	-78.0 dBm	-78.0 dBm	-77.0 dBm	-76.0 dBm	-75.5 dBm	-75.0 dBm	-74.5 dBm	-74.0 dBm
16xE1	-75.0 dBm	-75.0 dBm	-74.0 dBm	-73.0 dBm	-72.5 dBm	-72.0 dBm	-71.5 dBm	-71.0 dBm
Frequency Stability	± 0.0005%	± 0.0005%	± 0.0005%	± 0.0005%	± 0.0003%	± 0.0003%	± 0.0003%	± 0.0003%
Frequency Channel Selection	Frequency Synthesizer Software-Controlled from Indoor Unit							
Receiver Type	Dual Conversion							
Dynamic Range	>60 dB							
Receiver Unfaded BER	10 ⁻¹² or better							
Forward Error Correction	Quintuple Error Correcting							

SYSTEM GAIN	7/8 GHz	13 GHz	15 GHz	18 GHz	23 GHz	26 GHz	28/31 GHz	38 GHz
STANDARD POWER (Guaranteed at RF Unit antenna port over temperature range, excluding antenna)								
2xE1	111.0 dB	102.0 dB	100.0 dB	99.0 dB	98.5 dB	97.0 dB	96.5 dB	96.0 dB
4xE1	108.0 dB	99.0 dB	97.0 dB	96.0 dB	95.5 dB	94.0 dB	93.5 dB	93.0 dB
8xE1	105.0 dB	96.0 dB	94.0 dB	93.0 dB	92.5 dB	91.0 dB	90.5 dB	90.0 dB
16xE1	102.0 dB	93.0 dB	91.0 dB	90.0 dB	89.5 dB	88.0 dB	87.5 dB	87.0 dB

HIGH POWER

2xE1	N/A	111.0 dB	110.0 dB	106.0 dB	103.5 dB	N/A	101.5dB	N/A
4xE1	N/A	108.0 dB	107.0 dB	103.0 dB	100.5 dB	N/A	98.5dB	N/A
8xE1	N/A	105.0 dB	104.0 dB	100.0 dB	97.5 dB	N/A	95.5dB	N/A
16xE1	N/A	102.0 dB	101.0 dB	97.0 dB	94.5 dB	N/A	92.5dB	N/A

ADDITIONAL LOSSES FOR PROTECTED MONITORED HOT STANDBY (MHSB) TERMINALS

	Single Antenna-MHSB	
	XMTR	RCVR A/B
7 GHz /13 GHz /15 GHz	1.0 dB	4.0/4.0 dB
18 GHz	1.0 dB	4.5/4.5 dB
23 GHz /26 GHz	1.5 dB	5.0/5.0 dB
28 GHz/31 GHz /38 GHz	4.5 dB	4.5/4.5 dB

GENERAL

SPECTRUM II FREQUENCY RANGES	FREQUENCY RANGE ¹				WAVEGUIDE FLANGE
7 GHz	7.10 - 8.50 GHz				UG-51/U
13 GHz	12.75 - 13.25 GHz				UBR-120/UDR-120
15 GHz	14.20 - 15.35 GHz				UBR-140 (UG-419)
18 GHz	17.70 - 19.70 GHz				UBR-220 (UG-595)
23 GHz	21.20 - 23.60 GHz				UBR-220 (UG-595)
26 GHz	24.50 - 26.50 GHz				UBR-220 (UG-595)
28 GHz	27.50 - 29.50 GHz				UBR-320 (UG-599)
31 GHz	29.50 - 31.50 GHz				UBR-320 (UG-599)
38 GHz	37.00 - 39.50 GHz				UBR-320 (UG-599)
	2xE1	4xE1	8xE1	16xE1	
Digital Capacity Options	✓	✓	✓	✓	
RF Channel Spacing	3.5 MHz	7.0 MHz	14.0 MHz	28.0 MHz	
Emission Designator	3M50F7W	7M00F7W	14M0F7W	28M0F7W	
Digital Interface	Per ITU-T Rec. G.703				
Digital Input/Output Connector (on IDU)					
75Ω Unbalanced	BNC Female				
120Ω Balanced	DB-25 Connector				
Digital Line Code	HDB3				
Modulation Type	4-FSK				
Xmt/Rcv Spacing	Per ITU-R Recommendations ¹				

INDOOR TO OUTDOOR UNIT INTERFACE

Connector Type (on IDU & ODU)	Coaxial TNC-Type Female
Recommended Coaxial Cable	
Up to 120 meters	RG-6 (Belden 9248 or Equivalent)
Up to 300 meters	RG-11 (Belden 9292 or Equivalent)

ENVIRONMENTAL

TEMPERATURE (Full Performance)

Outdoor Unit	-33°C to +55°C
Indoor Unit	-20°C to +55°C

RELATIVE HUMIDITY

Outdoor Unit	All weather protection
Indoor Unit	95% at +40°C

ALTITUDE

Up to 4,572m AMSL

POWER REQUIREMENTS

Source	±19.2 to 57.6 VDC, either polarity			
POWER CONSUMPTION (Complete Terminal)	7/8GHz	13/15/18/23/28/31GHz	26/38GHz	
<i>NON-PROTECTED (Typical)</i>	Standard Power	Standard Power	High Power	Standard Power
2xE1, 4xE1, and 8xE1	65W	55W	65W	55W
16xE1	80W	70W	80W	70W
<i>PROTECTED (Typical)</i>				
2xE1, 4xE1, and 8xE1	135W	115W	135W	115W
16xE1	165W	145W	165W	145W

MECHANICAL

INDOOR UNIT (<i>Fits in an EIA standard 19 inch equipment rack</i>)	DIMENSIONS (HxWxD)	WEIGHT
2xE1, 4xE1, and 8xE1 (non-protected)	1U x 42.2 cm x 30.0 cm	3.4 kg
2xE1, 4xE1, and 8xE1 (protected)	2U x 42.2 cm x 30.0 cm	6.8 kg
16xE1 (non-protected)	4U x 42.2 cm x 30.0 cm	4.0 kg
16xE1 (protected)	4U x 42.2 cm x 30.0 cm	5.7 kg

OUTDOOR UNIT (<i>Typical</i>)		
Non-Protected	31.0 x 36.0 x 17.0 cm	18.7 lbs/8.5 kg
Protected	33.0 x 59.0 x 17.0 cm	34.5 lbs/15.0 kg

ORDERWIRE AND DATA CHANNEL

GENERAL

Station Addressing	3 Digit Code
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ORDERWIRE PORTS

CUSTOMER PORT INTERFACE

Telephone Connector	Modular Jack (RJ-11)
VF Bandwidth	300 - 3400 Hz
Signaling	Dual Tone Multiple Frequency (DTMF)

DIGITAL DATA PORT INTERFACE

Interface	0-9600 Bit/s, Asynchronous RS-232C
Connector	DB-37 Connector

NMS

STANDARD PROTOCOL	TNET (DMC PROPRIETARY)
Interface	Dual RJ-45s

OPTIONAL PROTOCOL	SNMP V1 (MIBII)
Interfaces	Dual RJ-45s (10BaseT Ethernet Hub) DB-9 (PPP - SIO)

EMC STANDARDS

SPECTRUM II is proven to comply with ETSI specifications ETS 300 385 for microwave fixed links, and is entitled to carry the CE mark.

ADDITIONAL EMC CAPABILITIES

Radiated Susceptibility	80 - 1000 MHz & 1700 - 1900 MHz Result - No performance degradation @ 10 V/m
Radiated Emissions	1700 - 1900 MHz Result - None greater than 37dB μ V/m (1 meter measurement distance)
Conducted Emissions	Meets Class B Limits (Class A only is required for CE compliance)

Specifications subject to change without notice.

¹ Consult Digital Microwave Corporation sales representative for frequency plan availability.
Specifications subject to change without notice and apply to equipment connected back-to-back unless otherwise noted.
SPECTRUM is a trademark of Digital Microwave Corporation

SPECTRUM II is a trademark of Digital Microwave Corporation. All other trademarks are the property of their respective owners. SPECTRUM II meets all relevant directives and is entitled to carry the CE mark.

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