Narda Satellite Networks SATELLITE SIMULATORS TRI-BAND, QUAD-BAND AND KA-BAND



With the Wideband Global SATCOM (WGS) becoming operational, L-3 Narda Satellite Networks has expanded its Satellite Simulator product line beyond Tri-band, now including both Quad-band and Ka-band capabilities.

Designed for use as a training test-bed, L-3 Narda Satellite Networks satellite simulators can be used by operations personnel to setup and operate satellite earth terminals in the field under realistic operating conditions without the need for an actual satellite.

Use of the L-3 Narda Satellite Networks simulators in lieu of a satellite permits signal acquisition by the earth terminal, antenna pointing, uplink power adjustment, signal reception, link closure and communications systems adjustment to establish acceptable bit error rates with very low satellite terminal transmit power.

Key Features

- Simulates C-, X-, Ku-, Ka-Bands simultaneously
- Permits earth station set-up without actual satellite available
- Ruggedized/ weatherproof enclosures for outdoor deployment
- Typical operation range is 50-1000 ft (actual range is determined by antenna size and power
- Low-phase noise for digital data
- Wireless remote control (availablewith Quad-Band Simulator)
- Lightweight
- Easy to operate



Narda Satellite Networks

SATELLITE SIMULATORS TRI-BAND, QUAD-BAND AND KA-BAND

QUAD-BAND

	ER		
Power Requirements	12 VDC or Battery Pack Option		
RF INPUT SIGNALS			
Ka-Band	30.0 to 31.00 GHz @ nominal -25 to +0 dBm		
Power levels are dependent or power			
TRANSFER CHARACTERIST	TICS ALL BAN	DS	
Phase Noise	10 dB (typical) better than IESS 308/309		
Midband Gain	antenna gain	tenuation setting	including
Gain Ripple Full Band	±1.5 dB max		
Gain Ripple per 80 MHz	±0.75 dB max		
Phase Linearity per 5 MHz			
Frequency Translation Accurac	y ±lppm		
In-band Signal Related Spurious	-45 dBc		
Leakage Signals	-45 dBm max		
Image Rejection	>30 dB		
1 dB Compression Point			
Input and Output Antennas	Linear polarized (nominal 5 dBi gain)		
Input IP3	>+20 dBm min		
Group Delay	±0.5 ns/40 MHz		
PHYSICAL SPECIFICATION			
Mechanical Dimensions	Approx. size 6" x 3.5" x 1.5" w/o battery option, or C-, X-, and Ku-Bands, call factory for Ka-Band		
Weight	< 5 lbs		
Operating Temperature	0° to 50° C		
Operating Temperature			KU-BAND
Operating Temperature FRI-BAND RF SIGNALS	C-BAND	X-BAND	KU-BAND
Operating Temperature FRI-BAND RF SIGNALS RF Input Frequencies (GHz)	C-BAND 5.850 to 6.425	X-BAND 7.90 to 8.40	KU-BAND 14.00 to 14.50
Operating Temperature TRI-BAND RF SIGNALS RF Input Frequencies (GHz) RF Output Frequencies (GHz) TRANSFER CHARACTERIST	C-BAND 5.850 to 6.425 3.625 to 4.200 TCS – ALL BANE	X-BAND 7.90 to 8.40 7.25 to 7.75	KU-BAND 14.00 to 14.50 10.95 to 11.20 11.45 to 11.70 11.70 to 12.20 12.25 to 12.75
Operating Temperature FRI-BAND RF SIGNALS RF Input Frequencies (GHz) RF Output Frequencies (GHz) IRANSFER CHARACTERIST Type	C-BAND 5.850 to 6.425 3.625 to 4.200 ICS – ALL BANE Non-Inverting	X-BAND 7.90 to 8.40 7.25 to 7.75	KU-BAND 14.00 to 14.50 10.95 to 11.20 11.45 to 11.70 11.70 to 12.20 12.25 to 12.75
Operating Temperature FRI-BAND FF SIGNALS FInput Frequencies (GHz) FF Output Frequencies (GHz) FRANSFER CHARACTERIST Type Sain	C-BAND 5.850 to 6.425 3.625 to 4.200 TICS – ALL BANI Non-Inverting -10 dB	X-BAND 7.90 to 8.40 7.25 to 7.75	KU-BAND 14.00 to 14.50 10.95 to 11.20 11.45 to 11.70 11.70 to 12.20 12.25 to 12.75
Operating Temperature TRI-BAND RF SIGNALS RF Input Frequencies (GHz) RF Output Frequencies (GHz) IRANSFER CHARACTERIST Type Sain Attenuation Control	C-BAND 5.850 to 6.425 3.625 to 4.200 1CS - ALL BANE Non-Inverting -10 dB 30 dB (60 dB	X-BAND 7.90 to 8.40 7.25 to 7.75 IS optional)	KU-BAND 14.00 to 14.50 10.95 to 11.20 11.45 to 11.70 11.70 to 12.20 12.25 to 12.75
Operating Temperature FRI-BAND RF SIGNALS RF Output Frequencies (GHz) RF Output Frequencies (GHz) FRANSFER CHARACTERIST Fype Sain Attenuation Control Sain Ripple	C-BAND 5.850 to 6.425 3.625 to 4.200 1CS – ALL BANE Non-Inverting -10 dB 30 dB (60 dB ±0.25 dB/40 ±1.0 dB/600 l	X-BAND 7.90 to 8.40 7.25 to 7.75 IS optional) WHz HHz	KU-BAND 14.00 to 14.50 10.95 to 11.20 11.45 to 11.70 11.70 to 12.20 12.25 to 12.75
Operating Temperature FRI-BAND RF SIGNALS RF Input Frequencies (GHz) RF Output Frequencies (GHz) FRANSFER CHARACTERIST Fype Sain Attenuation Control Sain Ripple LdB Compression Point Output)	C-BAND 5.850 to 6.425 3.625 to 4.200 1CS - ALL BANE Non-Inverting -10 dB 30 dB (60 dB ±0.25 dB/40 ±1.0 dB/600 -10 dBm (@ 0	X-BAND 7.90 to 8.40 7.25 to 7.75 IS optional) WHz dB attenuation)	KU-BAND 14.00 to 14.50 10.95 to 11.20 11.45 to 11.70 11.70 to 12.20 12.25 to 12.75
Operating Temperature FRI-BAND RF SIGNALS F Input Frequencies (GHz) RF Output Frequencies (GHz) IRANSFER CHARACTERIST Type Sain Attenuation Control Sain Ripple IdB Compression Point Output) Sain Stability	C-BAND 5.850 to 6.425 3.625 to 4.200 ICS - ALL BANE Non-Inverting -10 dB 30 dB (60 dB ±0.25 dB/40 (±0) -10 dBm (@ 0) 0.25 dB/day (2)	X-BAND 7.90 to 8.40 7.25 to 7.75 S optional) WHz WHz dB attenuation) 25°C)	KU-BAND 14.00 to 14.50 10.95 to 11.20 11.45 to 11.70 11.70 to 12.20 12.25 to 12.75
Operating Temperature TRI-BAND RF SIGNALS RF Input Frequencies (GHz) RF Output Frequencies (GHz) IRANSFER CHARACTERIST Type Sain Attenuation Control Sain Ripple LdB Compression Point Output) Sain Stability mpedance	C-BAND 5.850 to 6.425 3.625 to 4.200 ICS - ALL BANE Non-Inverting -10 dB 30 dB (60 dB ±0.25 dB/d0 1 ±1.0 dB/600 l -10 dBm (@ 0 0.25 dB/day (2 50 ohms	X-BAND 7.90 to 8.40 7.25 to 7.75 VS optional) WHz WHz dB attenuation) 25°C)	KU-BAND 14.00 to 14.50 10.95 to 11.20 11.45 to 11.70 11.70 to 12.20 12.25 to 12.75
Operating Temperature IRI-BAND RF SIGNALS RF Input Frequencies (GHz) RF Output Frequencies (GHz) IRANSFER CHARACTERIST Type Gain Attenuation Control Gain Ripple LdB Compression Point Output) Gain Stability impedance /SWR In/Out	C-BAND 5.850 to 6.425 3.625 to 4.200 ICS – ALL BANE Non-Inverting -10 dB 30 dB (60 dB ±0.25 dB/d0 l ±1.0 dB/600 l -10 dBm (@ 0 0.25 dB/day (0 50 ohms 2.0:1 max	X-BAND 7.90 to 8.40 7.25 to 7.75 IS optional) WHz dB attenuation) 25°C)	KU-BAND 14.00 to 14.50 10.95 to 11.20 11.45 to 11.70 11.70 to 12.20 12.25 to 12.75
Operating Temperature TRI-BAND RF SIGNALS RF Input Frequencies (GHz) RF Output Frequencies (GHz) TRANSFER CHARACTERIST Type Sain Attenuation Control	C-BAND 5.850 to 6.425 3.625 to 4.200 ICS – ALL BANE Non-Inverting -10 dB 30 dB (60 dB ±0.25 dB/d0 l ±1.0 dB/600 l -10 dBm (@ 0 0.25 dB/day (0 50 ohms 2.0:1 max 50 dB min in-l	X-BAND 7.90 to 8.40 7.25 to 7.75 IS optional) MHz dB attenuation) 25°C) uand	KU-BAND 14.00 to 14.50 10.95 to 11.20 11.45 to 11.70 11.70 to 12.20 12.25 to 12.75

±0.5 ns/40 MHz

19" H x 32" D x 27" W

78 lb

Waveguide horns with nominal gains of 10 dB

Group Delay

Dimensions

Weight

Input/Output Antennas

PHYSICAL SPECIFICATIONS

DC Power 12 to 24 Volts DC RF INPUT SIGNALS C-Band 5.85 to 6.425 GHz @ nominal -15 dBm X-Band 7.9 to 8.4 GHz @ nominal -15 dBm Ku-Band 14.0 to 14.5 GHz @ nominal -15 dBm Ku-Band 30.0 to 31.0 GHz @ nominal -15 dBm Ka-Band 30.0 to 31.0 GHz @ nominal -15 dBm Ka-Band 30.0 to 31.0 GHz @ nominal -15 dBm Input levels are dependent on dish size, distance to simulator, and transmitter oower TRANSFER CHARACTERISTICS – ALL BANDS Phase Noise 10 dB (typical) better than IES 308/309 Midband Gain 30 dB loss + attenuation setting (measured @ input/output antenna interfaces) Gain Ripple Full Band ±1.5 dB max Gain Ripple per 80 MHz ±0.75 dB max Phase Linearity per 5 MHz ±10 deg max Frequency Translation Accuracy ±5kHz nominal, ±/-10kHz for Ka-Band In-band Signal Related Spurious 50 dB continuously variable L0 Leakage -90 dBm max Image Rejection >50 dB VSWR In and Out 2.0:1 Input and Output Antennas With nominal gains of 6 dB 1 dB Compression Point 0 dBm at 0 dB attenuation	QUAD-BAND		
AC Power115 to 230 VAC @ 5 watts nominalDC Power12 to 24 Volts DCRF INPUT SIGNALSC-Band5.85 to 6.425 GHz @ nominal -15 dBmX-Band7.9 to 8.4 GHz @ nominal -15 dBmKu-Band14.0 to 14.5 GHz @ nominal -15 dBmKa-Band30.0 to 31.0 GHz @ nominal -15 dBmInput levels are dependent on dish size, distance to simulator, and transmitter powerTRANSFER CHARACTERISTICS - ALL BANDSPhase Noise10 dB (typical) better than IES 308/309Midband Gain30 dB loss + attenuation setting (measured @ input/output antenna interfaces)Gain Adjustment35 dB continuously variableGain Ripple Full Band±1.5 dB maxFrequency Translation Accuracy t ±5kHz nominal+10kHz for Ka-BandL0 Leakage-90 dBm maxImage Rejection>50 dBVSWR In and Out2.0:1Input and Output AntennasWith nominal gains of 6 dB1 dB Compression Point0 dB mat 0 dB attenuationGroup Delay+/- 5 ns/40 MHzPHYSICAL SPECIFICATIONSWeight<35 lbsFront Panel Indicators£0 dB attenuation (continuous) per bandFront Panel IndicatorsLock alarms		ER	
DC Power 12 to 24 Volts DC RF INPUT SIGNALS C-Band 5.85 to 6.425 GHz @ nominal -15 dBm C-Band 7.9 to 8.4 GHz @ nominal -15 dBm C-Band 14.0 to 14.5 GHz @ nominal -15 dBm Ca-Band 30.0 to 31.0 GHz @ nominal -15 dBm Ca-Band 30.0 to 31.0 GHz @ nominal -15 dBm Ca-Band 30.0 to 31.0 GHz @ nominal -15 dBm Input levels are dependent on dish size, distance to simulator, and transmitter Phase Noise 10 dB (typical) better than IES 308/309 Alidband Gain 30 dB loss + attenuation setting (measured @ input/output antenna interfaces) Sain Adjustment 35 dB continuously variable Sain Ripple Full Band ±1.5 dB max Phase Linearity per 5 MHz ±10 deg max Prequency Translation Accuracy ±5kHz nominal, +/-10kHz for Ka-Band n-band Signal Related Spurious 50 dB /SWR In and Out 2.0:1 nput and Output Antennas With nominal gains of 6 dB /SWR In and Out 2.0:1 nput and Output Antennas 6'' H x 14'' D x 12'' W Weight <35 lbs ront Panel Controls 30 dB attenuation (continuous) per band Group Palay +/-5 sins/40 MHz	AC Power		
RF INPUT SIGNALS 2:Band 5.85 to 6.425 GHz @ nominal -15 dBm 4:Band 7.9 to 8.4 GHz @ nominal -15 dBm Ku-Band 14.0 to 14.5 GHz @ nominal -15 dBm Ku-Band 30.0 to 31.0 GHz @ nominal -15 dBm Input levels are dependent on dish size, distance to simulator, and transmitter rower 10 dB (typical) better than IES 308/309 Wildband Gain 30 dB loss + attenuation setting (measured @ input/output antenna interfaces Gain Adjustment 35 dB continuously variable Gain Ripple Full Band ±1.5 dB max Phase Linearity per 5 MHz ± 10 deg max Prequency Translation Accuracy ±5kHz nominal, +/-10kHz for Ka-Band n-band Signal Related Spurious 50 dB comminal 0.0 Leakage -90 dBm max mage Rejection >50 dB VSWR In and Out 2.0:1 nput and Output Antennas With nominal gains of 6 dB 0.0 BB attenuation CodBm at 0 dB attenuation Group Delay +/-5 ns/40 MHz PHSICAL SPECIFICATIONS 30 dB attenuation (continuous) per band Group Pael Controls 30 dB attenuation (continuous) per band Group Pael Indicators Lock alarms	DC Power	12 to 24 Volts DC	
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C-Band 7.9 to 8.4 GHz @ nominal -15 dBm Ku-Band 14.0 to 14.5 GHz @ nominal -15 dBm Ku-Band 30.0 to 31.0 GHz @ nominal -15 dBm Ka-Band 30.0 to 31.0 GHz @ nominal -15 dBm Input levels are dependent on dish size, distance to simulator, and transmitter onwer TRANSFER CHARACTERISTICS - ALL BANDS Phase Noise 10 dB (typical) better than IES 308/309 Widband Gain 30 dB loss + attenuation setting (measured @ input/output antenna interfaces Sain Adjustment 35 dB continuously variable Sain Ripple Full Band ±1.5 dB max Sain Ripple per 80 MHz ±0.75 dB max Phase Linearity per 5 MHz ±10 deg max requency Translation Accuracy ±5kHz nominal, +/-10kHz for Ka-Band in-band Signal Related Spurious 50 dB cominal .0 Leakage -90 dBm max image Rejection >50 dB .50 xdB attenuation Galmation Group Delay +/- 5 ns/40 MHz PHYSICAL SPECIFICATIONS With nominal gains of 6 dB Wechanical Dimensions 6" H x 14" D x 12" W Weight <35 lbs	C-Band	5.85 to 6.425 GHz @ nominal -15 dBm	
Ku-Band 14.0 to 14.5 GHz @ nominal -15 dBm Ka-Band 30.0 to 31.0 GHz @ nominal -15 dBm Input levels are dependent on dish size, distance to simulator, and transmitter nower TRANSFER CHARACTERISTICS – ALL BANDS Phase Noise 10 dB (typical) better than IES 308/309 Midband Gain 30 dB loss + attenuation setting (measured @ input/output antenna interfaces Gain Adjustment 35 dB continuously variable Gain Ripple Full Band ±1.5 dB max Gain Ripple Full Band ±0.75 dB max Phase Linearity per 5 MHz ±10 deg max Frequency Translation Accuracy ±5.14 nominal, +/-10kHz for Ka-Band In-band Signal Related Spurious -50 dB VSWR In and Out 2.0:1 Input and Output Antennas With nominal gains of 6 dB 1 dB Compression Point 0 dBm at 0 dB attenuation Group Delay +/. 5 ns/40 MHz PHYSICAL SPECIFICATIONS 30 dB attenuation (continuous) per band Weight <35 lbs	X-Band	7.9 to 8.4 GHz @ nominal -15 dBm	
Ka-Band 30.0 to 31.0 GHz @ nominal -15 dBm Input levels are dependent on dish size, distance to simulator, and transmittersower TRANSFER CHARACTERISTICS – ALL BANDS Phase Noise 10 dB (typical) better than IES 308/309 Midband Gain 30 d B loss + attenuation setting (measured @ input/output antenna interfaces) Gain Adjustment 35 dB continuously variable Gain Ripple Full Band ±1.5 dB max Gain Ripple Full Band ±0.75 dB max Phase Linearity per 5 MHz ±10 deg max Frequency Translation Accuracy ±5kHz nominal, +/-10kHz for Ka-Band In-band Signal Related Spurious 50 dB nominal LO Leakage -90 dBm max Image Rejection >50 dB VSWR In and Out 2.0:1 Input and Output Antennas With nominal gains of 6 dB L dB Compression Point 0 dBm at 0 dB attenuation Group Delay +/- 5 ns/40 MHz PHYSICAL SPECIFICATIONS 30 dB attenuation (continuous) per band Weight <35 lbs	Ku-Band	14.0 to 14.5 GHz @ nominal -15 dBm	
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Phase Noise 10 dB (typical) better than IES 308/309 Widband Gain 30 dB loss + attenuation setting (measured @ input/output antenna interfaces) Gain Adjustment 35 dB continuously variable Gain Ripple Full Band ±1.5 dB max Sain Ripple per 80 MHz ±0.75 dB max Phase Linearity per 5 MHz ±10 deg max requency Translation Accuracy ±5kHz nominal, +/-10kHz for Ka-Band in-band Signal Related Spurious -50 dB combinal .0 Leakage -90 dBm max inage Rejection >50 dB /SWR In and Out 2.0:1 input and Output Antennas With nominal gains of 6 dB L dB Compression Point 0 dBm at 0 dB attenuation Group Delay +/- 5 ns/40 MHz PHYSICAL SPECIFICATIONS 30 dB attenuation (continuous) per band Weight <35 lbs	FRANSFER CHARACTERIST	TCS – ALL BANDS	
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Sain Adjustment 35 dB continuously variable Sain Ripple Full Band ±1.5 dB max Sain Ripple per 80 MHz ±0.75 dB max Phase Linearity per 5 MHz ±10 deg max Frequency Translation Accuracy ±5kHz nominal, ±/-10kHz for Ka-Band In-band Signal Related Spurious 50 dBc nominal LO Leakage -90 dBm max Image Rejection >50 dB VSWR In and Out 2.0:1 Input and Output Antennas With nominal gains of 6 dB L dB Compression Point 0 dBm at 0 dB attenuation Group Delay +/- 5 ns/40 MHz PHYSICAL SPECIFICATIONS 30 dB attenuation (continuous) per band Weight <35 lbs	Midband Gain	30 dB loss + attenuation setting (measured @ input/output antenna interfaces	
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iroup Delay +/- 5 ns/40 MHz PHYSICAL SPECIFICATIONS Wechanical Dimensions 6" H x 14" D x 12" W Weight <35 lbs	dB Compression Point	0 dBm at 0 dB attenuation	
PHYSICAL SPECIFICATIONS Mechanical Dimensions 6" H x 14" D x 12" W Weight <35 lbs	Group Delay	+/- 5 ns/40 MHz	
Mechanical Dimensions 6" H x 14" D x 12" W Weight <35 lbs	PHYSICAL SPECIFICATION	S	
Weight <35 lbs	Vechanical Dimensions	6" H x 14" D x 12" W	
Front Panel Controls 30 dB attenuation (continuous) per band Front Panel Indicators Lock alarms Remote Switch Control Band select	Weight	<35 lbs	
Front Panel Indicators Lock alarms Remote Switch Control Band select	Front Panel Controls	30 dB attenuation (continuous) per band	
Remote Switch Control Band select	Front Panel Indicators	Lock alarms	
	Remote Switch Control		



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L-3. Headquartered in New York City, L-3 Communications is a prime contractor in aircraft modernization and maintenance, C³ISR (Command, Control, Communications, Intelligence, Surveillance and Reconnaissance) systems and government services. L-3 is also a leading provider of high technology products, subsystems and systems.

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