

# Satellite Link Emulator

## for Geostationary Satellites



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## ❖ Description

Polaris' ASLE series products are satellite link emulators for geostationary satellites and provide an ideal solution for satellite modem testing, satellite to Earth station RF link testing, spacecraft payload testing, and general testing systems using satellite communications. The ASLE series products are categorized into IF-band emulators and L-band emulator. The IF-band emulators operate at 70MHz or 140MHz and the L-band emulator operates from 950 MHz to 1,450 MHz (950 MHz to 1,950 MHz optional). The ASLE series products provide reproductions for three types of satellite links.

- **Time Delay:**  
Reproduction for propagation time delay due to distance between satellite and earth station terminals
- **Doppler Effect:**  
Reproduction for doppler frequency shifts between satellite and moving earth station terminals
- **Attenuation:**  
Reproduction for radio path loss due to heavy rain or heavy snow

## ❖ Features

- Built-in L-band frequency converter (ASLE-L series)
- Operating bandwidth: up to 200 MHz
- Time delay range: 0 to 530 ms (1 us steps)
- Doppler shift range: -6 MHz to 6 MHz (1 Hz steps)
- Spurious: -50 dBc typ.
- Remote interfaces: USB, RS-232, or RS-422/485

## ❖ Applications

- Satellite Modem Test
- VSAT Test
- Satellite Payload Test
- UAV Test
- Earth Terminal Test
- Satellite System Integration Test Beds
- Mobile Transceiver Test

## ❖ Product Family

- L-band emulator



ASLE-L-200D:

- L: L-band
- 200D: 200 MHz Bandwidth, Doppler

- IF-band emulators



ASLE-140-36D:

- 140: 140 MHz
- 36D: 36 MHz Bandwidth, Doppler



ASLE-70-10D:

- 70: 70 MHz
- 10D: 10 MHz Bandwidth, Doppler

## **Data Sheet**

- ASLE-L-200D
- ASLE-140-36D
- ASLE-70-10D

## Features

- Built-in L-band frequency converter
- Operating bandwidth: 200 MHz
- Time delay range: 0 to 530 ms (1 us steps)
- Doppler shift range: -6 MHz to 6 MHz (1 Hz steps)
- Spurious: -50 dBc typ.
- Remote interfaces: USB, RS-232, or RS-422/485

## Applications

- Satellite Modem Test
- VSAT Test
- Satellite Payload Test
- UAV Test
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- Satellite System Integration Test Beds
- Mobile Transceiver Test

## Options

- Option F: Extended Frequency Range  
(950 MHz to 1950 MHz)

# Specifications

- ASLE-L-200D



Parameters		Specifications	Remarks
Operating Frequency	Range (MHz)	950 to 1450	Option F: 950 to 1950
	Step (MHz)	1	
RF Input Power (dBm)		≤ -10	
Maximun Gain (dB)		0±1 at 0dB attenuation & 1200MHz	
Operating Bandwidth (MHz)		≥ 200	
Gain Flatness (dBp-p)		≤ 2	
Time Delay	Range (ms)	0 (Bypass), 0.01 to 530	
	Step (us)	1	
	Accuracy (us)	≤ ±0.1	
Attenuation	Range (dB)	0 to -40	
	Step (dB)	0.5	
	Accuracy (dB)	≤ ±0.5	
Doppler Shift	Range (MHz)	-6 to 6	
	Step (Hz)	1	
	Accuracy (Hz)	Based on 10MHz reference	
Spurious (dBc)		≤ -45 at in-band (≤ -50dBc typical)	
V.S.W.R. (: 1)		≤ 1.5 at 50Ω	
Control and Interface	Local	Front Panel (VFD & Keypad)	
	Remote	USB, RS-232, or RS-422/485	
Primary Power	Voltage (Vac)	90 to 240	
	Frequency (Hz)	47 to 63	
Operating Temperature (°C)		+10 to +40	
Size (Width x Height x Depth) (inch)		19" x 5.25" x 21"	
External Reference Switching		Automatic (Switching Time: 5 sec)	10MHz, 0±2dBm, 50Ω

## Features

- Operating frequency: 140 MHz
- Operating bandwidth: 36 MHz
- Time delay range: 0 to 530 ms (1 us steps)
- Doppler shift range: -3 MHz to 3 MHz (1 Hz steps)
- Noise Floor: < -125 dBc/Hz
- Remote interfaces: USB, RS-232, or RS-422/485

## Applications

- Satellite Modem Test
- VSAT Test
- Satellite Payload Test
- UAV Test
- Earth Terminal Test
- Satellite System Integration Test Beds
- Mobile Transceiver Test



# Specifications

- ASLE-140-36D



Parameters		Specifications	Remarks
Operating Frequency		140	
RF Input Power (dBm)		$\leq -10$	
Maximun Gain (dB)		$0 \pm 1$ at 0dB attenuation & 140MHz	
Operating Bandwidth (MHz)		$\geq 36$	
Gain Flatness (dBp-p)		$\leq 1.5$	
Time Delay	Range (ms)	0 (Bypass), 0.01 to 530	
	Step (us)	1	
	Accuracy (us)	$\leq \pm 0.1$	
Attenuation	Range (dB)	0 to -40	
	Step (dB)	0.5	
	Accuracy (dB)	$\leq \pm 0.5$	
Doppler Shift	Range (MHz)	-3 to 3	
	Step (Hz)	1	
	Accuracy (Hz)	Based on 10MHz reference	
Spurious (dBc)		$\leq -45$ at in-band ( $\leq -50$ dBc typical)	
Noise Floor (dBc/Hz)		$\leq -125$	
V.S.W.R. ( : 1)		$\leq 1.5$ at 50 $\Omega$	
Control and Interface	Local	Front Panel (VFD & Keypad)	
	Remote	USB, RS-232, or RS-422/485	
Primary Power	Voltage (Vac)	90 to 240	
	Frequency (Hz)	47 to 63	
Operating Temperature ( $^{\circ}$ C)		+10 to +40	
Size (Width x Height x Depth) (inch)		19" x 5.25" x 21"	
External Reference Switching		Automatic (Switching Time: 5 sec)	10MHz, $0 \pm 2$ dBm, 50 $\Omega$

## Features

- Operating frequency: 70 MHz
- Operating bandwidth: 10 MHz
- Time delay range: 0 to 530 ms (1 us steps)
- Doppler shift range: -1 MHz to 1 MHz (1 Hz steps)
- Noise Floor:  $< -125$  dBc/Hz
- Remote interfaces: USB, RS-232, or RS-422/485

## Applications

- Satellite Modem Test
- VSAT Test
- Satellite Payload Test
- UAV Test
- Earth Terminal Test
- Satellite System Integration Test Beds
- Mobile Transceiver Test

# Specifications

- ASLE-70-10D



Parameters		Specifications	Remarks
Operating Frequency		70	
RF Input Power (dBm)		$\leq -10$	
Maximun Gain (dB)		$0 \pm 1$ at 0dB attenuation & 140MHz	
Operating Bandwidth (MHz)		$\geq 10$	
Gain Flatness (dBp-p)		$\leq 1$	
Time Delay	Range (ms)	0 (Bypass), 0.01 to 530	
	Step (us)	1	
	Accuracy (us)	$\leq \pm 0.1$	
Attenuation	Range (dB)	0 to -40	
	Step (dB)	0.5	
	Accuracy (dB)	$\leq \pm 0.5$	
Doppler Shift	Range (MHz)	-1 to 1	
	Step (Hz)	1	
	Accuracy (Hz)	Based on 10MHz reference	
Spurious (dBc)		$\leq -50$ at in-band ( $\leq -55$ dBc typical)	
Noise Floor (dBc/Hz)		$\leq -125$	
V.S.W.R. ( : 1)		$\leq 1.5$ at 50 $\Omega$	
Control and Interface	Local	Front Panel (VFD & Keypad)	
	Remote	USB, RS-232, or RS-422/485	
Primary Power	Voltage (Vac)	90 to 240	
	Frequency (Hz)	47 to 63	
Operating Temperature ( $^{\circ}$ C)		+10 to +40	
Size (Width x Height x Depth) (inch)		19" x 5.25" x 21"	
External Reference Switching		Automatic (Switching Time: 5 sec)	10MHz, $0 \pm 2$ dBm, 50 $\Omega$