



TEST TRANSLATORS

For Satellite Communications

Standard Unit

Unit with
Digitally Controlled
Attenuators and
Remote Control



This equipment is designed for applications where frequency translation is needed with a minimum of amplitude and delay distortions.

FEATURES

- Minimum amplitude and delay distortion
- High frequency stability
- Low intermodulation distortion
- 30 dB level control
- Low phase noise contribution

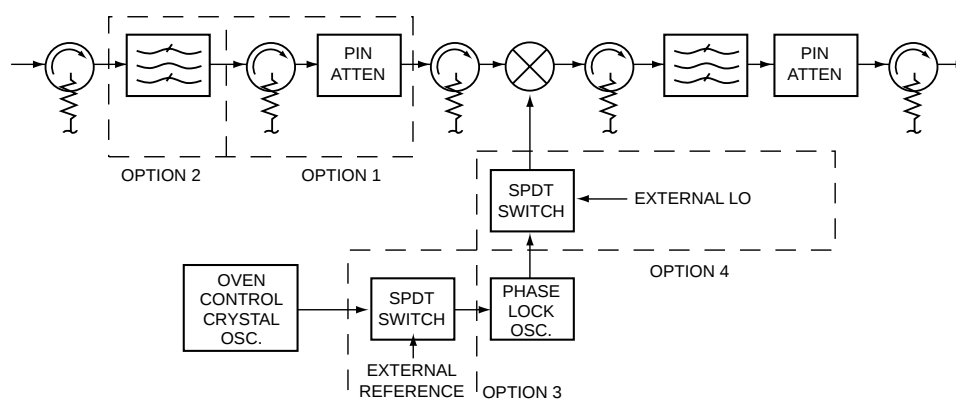
OPTIONS

- Digitally controlled attenuators
- 60 dB total level control
- Input filtering
- Internal/external reference selection
- Internal/external LO selection
- Input/output amplifiers
- Synthesized LO to 5 MHz reference
- High frequency stability
- Summary alarm

SPECIFICATIONS

Model Number	Input Frequency (GHz)	Output Frequency (GHz)	LO Frequency (GHz)	Phase Noise	Return Loss (dB) Input	Return Loss (dB) Output
TRANSMIT BAND TO RECEIVE BAND						
DNS-8011-1	5.845 – 6.425	3.62 – 4.2	2.225	A	20	20
DNS-8011-2	5.95 – 6.525	3.625 – 4.2	2.325	A	20	20
DNS-8011-3	5.84 – 5.93	2.55 – 2.63	3.3	A	20	20
DNS-8011-4	6.725 – 7.025	4.5 – 4.8	2.225	A	20	20
DNS-8011-5	6.425 – 6.725	3.4 – 3.7	3.025	A	20	20
DNS-8-7	7.9 – 8.4	7.25 – 7.75	0.65	A	20	20
DNS-8-7-1	7.9 – 8.4	7.25 – 7.75	0.725	A	20	20
DNS-13-10.95	12.75 – 13.25	10.7 – 11.2	2.05	A	20	20
DNS-13.9-12.6	13.75 – 14.0	12.5 – 12.75	1.247	A	20	20
DNS-13.9-12.6-1	13.75 – 14.0	12.5 – 12.75	1.25	A	20	20
DNS-13.9-12.6-2	13.75 – 14.0	12.5 – 12.75	1.2495	A	20	20
DNS-14-10	14.0 – 14.25	10.95 – 11.2	3.05	A	20	20
DNS-14-11	14.0 – 14.25	11.45 – 11.7	2.55	A	20	20
DNS-14-11-1	14.25 – 14.5	11.45 – 11.7	2.8	A	20	20
DNS-14-11-2	14.25 – 14.5	10.95 – 11.2	3.3	A	20	20
DNS-14-11-3	14.25 – 14.5	11.45 – 11.7	2.795	A	20	20
DNS-14-11.3	14.25 – 14.5	11.2 – 11.45	3.05	A	20	20
DNS-14-11.71	14.0 – 14.5	11.46 – 11.96	2.54	A	20	20
DNS-14-11.8	14.0 – 14.25	11.7 – 11.95	2.295	A	20	20
DNS-14-12	14.0 – 14.5	11.7 – 12.2	2.3	A	20	20
DNS-14-12.45	14.0 – 14.5	12.2 – 12.7	1.8	A	20	20
DNS-14-12.5	14.0 – 14.5	12.25 – 12.75	1.75	A	20	20
DNS-14-12.5-1	14.0 – 14.5	12.25 – 12.75	1.748	A	20	20
DNS-14-12.5-2	14.0 – 14.5	12.25 – 12.75	1.73	A	20	20
DNS-14-12.6	14.0 – 14.25	12.5 – 12.75	1.495	A	20	20
DNS-14-12.6-1	14.0 – 14.25	12.5 – 12.75	1.5	A	20	20
DNS-14-12.6-2	14.0 – 14.25	12.5 – 12.75	1.498	A	20	20
DNS-14.1-11.3	13.75 – 14.5	10.95 – 11.7	2.8	A	20	20
DNS-14.65-11.85	14.5 – 14.8	11.7 – 12.0	2.79782	A	20	20
DNS-14.85-12.65	14.7 – 15.0	12.5 – 12.8	2.232	A	20	20
DNS-17.55-11.95	17.3 – 17.8	11.7 – 12.2	5.6	B	20	20
DNS-17-12	17.3 – 17.8	12.2 – 12.7	5.1	B	20	20
DNS-17.7-12.1	17.3 – 18.1	11.7 – 12.5	5.6	B	20	20
DNS-18-11	18.1 – 18.4	10.7 – 11.0	7.4	B	20	20
TRANSMIT BAND TO L-BAND						
DNS-6-1.2	5.925 – 6.425	0.95 – 1.45	4.975	B	20	18
DNS-6-1.2-INV	5.925 – 6.425	0.95 – 1.45	7.375	B	20	18
DNS-6-1.24	5.845 – 6.425	0.95 – 1.53	4.895	B	20	18
DNS-8.15-1.2	7.9 – 8.4	0.95 – 1.45	6.95	B	20	18
DNS-13-1.2	12.75 – 13.25	0.95 – 1.45	11.8	D	20	18
DNS-14-1.2	14.0 – 14.5	0.95 – 1.45	13.05	E	20	18
DNS-14.1-1.35	13.75 – 14.5	0.95 – 1.7	12.8	E	20	18
DNS-14.65-1.1	14.5 – 14.8	0.95 – 1.25	13.55	E	20	18
DNS-17.55-1.2	17.3 – 17.8	0.95 – 1.45	16.35	E	20	18
DNS-17.7-1.35	17.3 – 18.1	0.95 – 1.75	16.35	E	20	18

FUNCTIONAL BLOCK DIAGRAM



SPECIFICATIONS

FUNCTIONAL

Conversion loss.....	12 dB, 15 dB with Options 1 or 2
Amplitude response.....	±0.25 dB over any 40 MHz, ±1 dB over output frequency band
Frequency stability	1×10^{-6} /day (0 to 50°C)
Level control.....	30 dB
Intermodulation distortion	With two inband input signals at -13 dBm, third order intermodulation products are less than 50 dBc
Input/output isolation	60 dB minimum
Phase noise.....	Refer to graph and code letter in table

PRIMARY POWER REQUIREMENTS

Voltage	100, 120, 220, 230/240 VAC +10%, -13% (rear panel selectable), 250 VAC maximum
Frequency	47–63 Hz
Power consumption.....	150 W typical

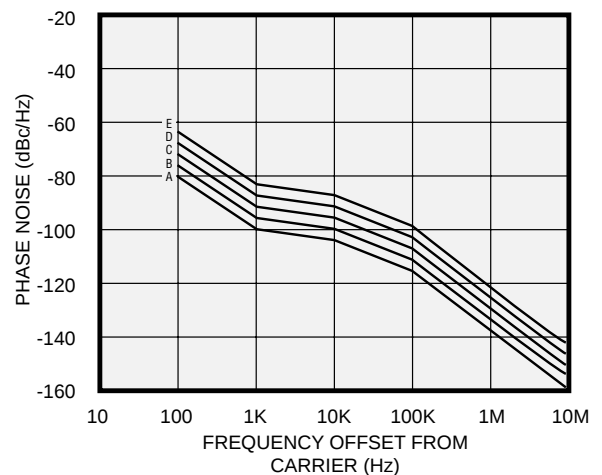
PHYSICAL

Weight	15 to 20 pounds nominal
Width	19"
Height	1.75"
Length	20" maximum
Connectors	
RF.....	N female (front panel, rear panel with Options 10, 17)
External reference input (Option 3, 6)	BNC female
Summary alarm (Option 7)	DE-9P (rear panel)
Remote interface (rear panel) (Option 17)	DE-9S for RS485 and RS422, DB-25P for RS232, IEEE-488 receptacle for GPIB
External local oscillator input (Option 4)	SMA female
Test points	
DC voltage.....	Jack (front panel display with Option 17)
LO phase voltage	Jack (front panel display with Option 17)
LO frequency/power monitor	SMA female

ENVIRONMENTAL

Operating	
Ambient temperature.....	0 to 50°C
Relative humidity	Up to 95% at 30°C
Atmospheric pressure	Up to 10,000 feet
Nonoperating	
Ambient temperature.....	-50° to +70°C
Relative humidity	Up to 95% at 40°C
Atmospheric pressure	Up to 40,000 feet
Shock and vibration.....	Normal handling by commercial carriers

**TYPICAL PHASE NOISE CHARACTERISTICS
(1.0 Hz BANDWIDTH)**



TEST TRANSLATORS

OPTIONS

- 1.** 30 dB additional level control.
 - A.** 60 dB level control. Simultaneous control of input and output attenuators.
 - B.** 60 dB level control. Independent control of input and output attenuators (not available if combined with Option 17).
- 2.** Input filter.
- 3.** External frequency reference input. Addition of SPDT switch for internal/external reference frequency selection. External reference input connector and selection switch location will depend on options ordered. Consult factory for location.
- 4.** External local oscillator input. Addition of SPDT switch for internal/external local oscillator selection. External local oscillator input connector and selection switch location will depend on options ordered. Consult factory for location.
- 5.** Higher frequency stability reference.
 $\pm 1 \times 10^{-7}$ /day (0 to 50°C). Refer to factory for higher stability options.
- 6.** 5 MHz reference configuration (not available for DNS-14.65-11.85).
 - A.** No internal reference. External 5 MHz reference at 0 $\pm$ 3 dBm.
 - B.** Internal 5 MHz crystal oscillator reference and SPDT switch for internal/external reference selection. Frequency stability $\pm 2 \times 10^{-8}$ (0 to 50°C). External 5 MHz reference at 0 $\pm$ 3 dBm. Refer to factory for higher stability options.
- 7.** Summary alarm. Contact closure for DC power and/or local oscillator fault.
- 8.** Input/output amplifiers. Refer to factory for available options.
- 10.** Rear panel input/output connectors. Standard on units ordered with Option 17.
- 17.** Remote control/digitally controlled attenuator. 30 dB level control in 0.2 dB step size. 60 dB level control in 1.0 dB step size if ordered with Option 1A.
 - A.** RS422 remote interface.
 - B.** RS485 remote interface.
 - C.** RS232 remote interface.
 - F.** IEEE-488 remote interface.

Note: Missing option numbers are not applicable for these systems.

