



These Test Translators are designed for applications where frequency translation is needed with a minimum of amplitude and group delay distortion.

Refer to data sheet GS10 for outdoor translators below 18 GHz and datasheet GS47 for outdoor Ka band translators. Rack mountable multiple band translators are located in datasheet GS40. Outdoor multiple band translators are located in datasheet Gs46.

A second independent channel is available as an option to support two polarization applications.

STANDARD FEATURES

- Local oscillator monitor port
- RS422, RS485 and 10/100Base-T Ethernet
- Output signal monitor port (L-band output only)
- Low phase noise, IESS-308/309
- Low intermodulation distortion
- 30 dB level control
- CE Mark

OPTIONS

- Additional gain - Transmit to L-band
- Reference clean-up loop and improved stability
- Second independent RF channel

RF TRANSMIT-BAND TO RF RECEIVE-BAND

Input Frequency (GHz)	Output Frequency (GHz)	LO Frequency (GHz)	Model Number
5.85-6.425	3.625-4.2	2.225	TRR-6.1-3.9
5.85-6.65	3.4-4.2	2.45	TRR-6.25-3.8
6.725-7.025	4.5-4.8	2.225	TRR-6.8-4.6
7.9-8.4	7.25-7.75	0.65	TRR-8.15-7.5
7.9-8.4	7.175-7.675	0.725	TRR-8.15-7.4
12.75-13.25	10.7-11.2	2.05	TRR-13-11.2
13.2-14.2	10.7-11.7	2.5	TRR-13.7-11.2
13.75-14.5	10.7-11.45	3.05	TRR-14-11
13.75-14.5	11.45-12.2	2.3	TRR-14-11.8
13.75-14.5	12.0-12.75	1.75	TRR-14-12.3
13.75-14.5	10.95-11.7	2.8	TRR-14-11.3
13.75-14.5	11.7-12.45	2.05	TRR-14-12
17.3-17.8	12.2-12.7	5.1	TRR-17.55-12.45
17.3-18.1	11.7-12.5	5.6	TRR-17.7-12.1

Ka-BAND

29.5-30	19.2-19.7	10.3	TRR-29.75-19.45
29.5-30	19.7-20.2	9.8	TRR-29.75-19.95
29-30	19.2-20.2	9.8	TRR-29.5-19.7
30-31	20.2-21.2	9.8	TRR-30.5-20.7

RF TRANSMIT-BAND TO L-BAND

Input Frequency (GHz)	Output Frequency (GHz)	LO Frequency (GHz)	Model Number
5.85-6.65	0.95-1.75	4.9	TLR-6.25
5.85-6.725	0.95-1.825	4.9	TLR-6.28
5.925-6.425	0.95-1.45	7.375	TLR-6.175-INV
7.9-8.4	0.95-1.45	6.95	TLR-8.15
12.75-13.25	0.95-1.45	11.8	TLR-13
14.0-14.5	0.95-1.45	13.05	TLR-14.25
13.75-14.5	0.95-1.7	12.80	TLR-14.125
14.5-14.8	0.95-1.25	13.55	TLR-14.65
17.3-18.1	0.95-1.75	16.35	TLR-17.7
17.3-18.4	0.95-2.05	16.35	TLR-17.85

Ka-BAND

28.35-28.6	0.95-1.2	27.4	TLR-28.475
29.25-29.5	0.95-1.2	28.3	TLR-29.375
29.25-30	0.95-1.7	28.3	TLR-29.75
30-31	0.95-1.95	29.05	TLR-30.5
30-31	1-2	29	TLR-30.5-1

SPECIFICATIONS

INPUT CHARACTERISTICS	RF TRANSMIT-BAND TO	RF TRANSMIT-BAND TO L-BAND
	RF RECEIVE BAND	
Frequency	Refer to model number table	
Impedance	50 ohms	
Return Loss	18 dB minimum	
Input Level (Non-damage)	+10 dBm maximum	

OUTPUT CHARACTERISTICS

Frequency	Refer to model number table	
Impedance	50 ohms	
Return Loss	18 dB minimum	
Output Signal Monitor	N/A	-20 dBc nominal

TRANSFER CHARACTERISTICS

Level Control	30 dB continuously adjustable, 30 dB/0.2 dB step (Option 9-2)					
Amplitude Response	± 0.25 dB/40 MHz, ± 1 dB/output frequency band					
Noise Figure at Minimum Attenuation	25 dB maximum			15 dB maximum		
Frequency Stability	$\pm 2 \times 10^{-8}$, 0 to 50°C					
Frequency Aging	5×10^{-9} /day after 24 hours on time					
Conversion Loss	25 dB maximum			15 dB maximum (20 dB gain optional)		
Conversion Loss Stability	± 0.25 dB/day at 23°C					
Intermodulation	-50 dBc minimum at -5 dBm input					
Phase Noise (dBc/Hz) –	LO Frequency	Offset (Hz)				
Typical Phase Noise		100	1K	10K	100K	1M
	≤ 4.2 GHz	-85	-90	-92	-100	-120
	$4.2 < \text{LO} \leq 9$ GHz	-80	-84	-87	-90	-115
	$9 \text{ GHz} < \text{LO} \leq 16$ GHz	-70	-77	-85	-87	-110
Automatic Reference Configuration	External 5 or 10 MHz at $+4 \pm 3$ dBm. If external reference is below +1 dBm nominal, the converter will automatically lock to the internal reference.					
Input/Output Isolation	60 dB minimum					
Translator Mute	60 dB minimum					

INDICATOR and ALARMS

LO Out-of-lock	Red LED (front panel)
Internal Reference	Yellow LED (front panel)
Power ON Indicator	Green LED (front panel)
Summary Alarm	Contact closure status for DC voltage and local oscillator

REMOTE CONTROLS

Serial Interface	RS485/RS422
Ethernet Interface	10/100Base-T Ethernet interface providing:
	-HTTP-based web server
	-SNMP1.0 configuration
	-Alarm reporting via SNMP Trap
	-Telnet Access
	-Password protection

OPTIONS

- 9-1. Reference Clean-up Loop and Improved Frequency StabilityReference oscillator acts as an analog phase lock with a 0.1 Hz nominal loop bandwidth.
Typical loop suppression of the external reference is as follows:
28 dB at 1 Hz offset, 65 dB at 10 Hz offset and
65 dB at 10 Hz offset and
Frequency Stability: $\pm 2 \times 10^{-9}$, 0 to 50°C
Frequency Aging: 1×10^{-9} per day after 24 hours operation preceded by 10 days operation
- 9-3. Gain on Transmit to L-band Units -
Gain 20 \pm 3 dB
Power Output (1 dB Compression) +18 dBm minimum
Gain Slope 0.03 dB/MHz maximum
Gain Stability ± 0.25 dB/day maximum at constant temperature
Group Delay 1 ns peak-to-peak maximum
Spurious Outputs (Inband) -
Signal Related 65 dBc minimum at 0 dBm output
Signal Independent -75 dBm maximum
Intermodulation Distortion (Third Order) With two inband signals at 0 dBm output, third order intermodulation products are less than 60 dBc minimum and 50 dBc minimum (Ka-band units)
- 9-4. Second independent translator channel ... Change model number to TLR2-XXX or TRR2-XXX.

PRIMARY POWER REQUIREMENTS

Voltage..... 90-250 VAC
Frequency..... 47-63 Hz
Consumption 40W typical
Fuse..... T1.25A

PHYSICAL

Connectors -
RFSMA female
(2.92 mm above 18.4 GHz)
L-band SMA female
L-band Monitor SMA female
External Reference BNC female
Summary Alarm DE-9P
Remote Interface DE-9S for RS422, RS485
RJ-45 female for Ethernet
Primary Power IEC-320

ENVIRONMENTAL

Operating -
Ambient Temperature 0 to 50°C
Relative Humidity Up to 95% at 30°C
Altitude Up to 10,000 feet
Non-operating -
Ambient Temperature -50 to +70°C
Relative Humidity Up to 95% at 45°C
Altitude Up to 40,000 feet
Shock and Vibration Normal handling by commercial carriers

PHYSICAL

Weight 10 pounds (4.5 kg) nominal with rack slides,
14 pounds (6.4 kg) nominal without rack slides
Chassis Dimensions 19" x 1.75" panel height x 20" maximum