# TLT(A) Series

## Single Band Test Loop Translators


### *Test Loop Translator Products;*

| | |
|---|---|
| **TLT202** | S-Band (TX) to S-Band (RX) |
| **TLT600** | C-Band (TX: 5.85-6.65GHz) to L-Band |
| **TLT601i** | C-Band (TX: 5.85-6.425GHz) to L-Band, inverted spectrum |
| **TLT672** | Extended C-Band (TX) to L-Band |
| **TLT7025** | Super extended C-Band (TX) to L-Band |
| **TLT7025B** | INSAT C-Band (TX) to L-Band |
| **TLT642, 2225** | C-Band (TX) to C-Band (RX) |
| **TLT585, 585i** | C-Band (TX) to C-Band (RX), inverted and non-inverted spectrum available |
| **TLT6725** | INSAT C-Band (TX) to INSAT C-Band (RX) |
| **TLT790** | X-Band (TX) to L-Band |
| **TLT742** | X-Band (TX) to X-Band (RX) |
| **TLT127** | Ku-Band (TX; 12.75 to 13.50GHz) to L-Band |
| **TLT137** | Ku-Band (TX; 13.75 to 14.50GHz) to L-Band |
| **TLT140** | Ku-Band (TX; 14.00 to 14.50GHz) to L-Band |
| **TLT148** | Ku-Band (TX; 13.75 to 14.80GHz) to L-Band |
| **TLT145** | Ku-Band (TX; 14.50 to 14.80GHz) to L-Band |
| **TLT1000, 1001** | Ku-Band (TX) to Ku-Band (RX) |
| **TLT142** | Ku-Band (RX) to C-Band (RX) |
| **TLT180** | DBS-Band (TX) to L-Band |
| **TLT184** | Extended DBS-Band (TX) to L-Band |
| **TLT173** | Extended DBS-Band (TX) to Ku-Band (RX) |

For other 'non-standard' frequency requirements or multi-channel versions, please contact the factory.
For multiple-range TLT units please see TLT(B) series datasheet.
For equivalent units with full user interface, remote control and digital attenuation, please see TLTH(A) series datasheet.
For equivalent remote mount units, please see TLTR(A) series datasheet.

The **TLT(A) series** of test loop translators are designed to take a sample of the transmit signal and convert it to a frequency at which it can be monitored or analysed. Often monitoring of the transmit signal is required at L-Band, or alternatively a translation of the transmit signal to the receive band which is then applied to the receive equipment in a test mode.

TLT units are supplied without filtering and the output of the unit therefore contains all mixing products. For higher level applications, units with filtering are also available, please consult the factory.

The optional 0 to 30dB variable attenuator control is used to balance the incoming power with the monitoring system.

The unit is housed in 19-inch 1'U' high chassis, suitable for rack mounting, is 400 mm deep and may be fitted with rack slides if required.

### *Peak Features*

- High stability and excellent phase noise
- Full alarm monitoring
- Optional manual continuously variable 0 to 30dB attenuator

# *TLT(A) series – Typical Specification*

| Model | Input | Output | Notes |
|---|---|---|---|
| TLT202 | 2020-2120MHz | 2200-2300MHz | |
| TLT600 | 5.85-6.65GHz | 950-1750MHz | |
| TLT601i | 5.85-6.425GHz | 1525-950MHz | Inverted output spectrum. |
| TLT672 | 5.850-6.725GHz | 950-1825MHz | |
| TLT7025 | 5.850-7.025GHz | 950-2125MHz | In-band carrier related spurious limited to -38dBc at 0dBm input typ. |
| TLT7025B | 6.725-7.025GHz | 950-1250MHz | |
| TLT2225 | 5.850-6.425GHz | 3.625-4.200GHz | In-band carrier related spurious limited to -40dBc at 0dBm input typ. |
| TLT585 | 5.85-6.65GHz | 3.4-4.2GHz | In-band carrier related spurious limited to -40dBc at 0dBm input typ. |
| TLT585i | 5.85-6.65GHz | 4.2-3.4GHz | Inverted output spectrum. |
| TLT642 | 6.425-6.725GHz | 3.4-3.7GHz | |
| TLT6725 | 6.725-7.025GHz | 4.5-4.8GHz | |
| TLT790 | 7.9-8.4GHz | 950-1450MHz | |
| TLT742 | 7.9-8.4GHz | 7.25-7.75GHz | In-band carrier related spurious limited to -45dBc at 0dBm input typ. |
| TLT127 | 12.75-13.50GHz | 950-1700MHz | |
| TLT137 | 13.75-14.50GHz | 950-1700MHz | |
| TLT148 | 13.75-14.8GHz | 950-2000MHz | |
| TLT140 | 14.0-14.5GHz | 950-1450MHz | |
| TLT145 | 14.5-14.8GHz | 950-1250MHz | |
| TLT142 | 12.25-12.75GHz | 3.7-4.2GHz | |
| TLT1000 | 13.75-14.50GHz | 11.85-12.60GHz | |
| TLT1001 | 14.0-14.5GHz | 11.7-12.2GHz | |
| TLT180 | 17.3-18.1GHz | 950-1750MHz | |
| TLT184 | 17.3-18.4GHz | 950-2050MHz | |
| TLT173 | 17.3-18.4GHz | 10.85-11.95GHz | In-band carrier related spurious limited to -45dBc at 0dBm input typ. |

Note; other ranges are available as well as multi-channel versions, please consult the factory.

## Input

| | |
|---|---|
| Connector | SMA (f), 50Ω |
| Option 2a; | N-type (f), 50Ω |
| Return loss | >18dB |
| 1dB GCP | +10dBm |
| Max input power | +15dBm |

## Output

| | |
|---|---|
| Connector | SMA (f), 50Ω |
| Option 2b; | N-type (f), 50Ω |
| Return loss | 15dB |

## Transfer Characteristics

| | |
|---|---|
| Conversion loss | 20dB ±2dB at 0dB attenuation |
| Gain stability | ±0.25dB from 0 to 40°C |

## RF Performance

| | |
|---|---|
| LO phase noise | -75dBc/Hz @ 100Hz<br>-92dBc/Hz @ 1kHz<br>-100dBc/Hz @ 10kHz<br>-105dBc/Hz @ 100kHz<br>-125dBc/Hz @ 1MHz |

## Internal Reference Stability

| | |
|---|---|
| Allan deviation | $5 \times 10^{-11}$ over 1s |
| Ageing | $<5 \times 10^{-9}$ per day, $<5 \times 10^{-7}$ per year |
| Temp stability | $<5 \times 10^{-8}$ over 0 to $50^{0}$C |

Note; higher stability reference option available

## External Reference Input (Option 4) with automatic detection

| | |
|---|---|
| Frequency | 10MHz (5MHz factory settable) |
| Level | 0dBm ±5dB |
| Connector | BNC (f), 50Ω |
| Required phase noise | to be better than 50dBc/Hz of output phase noise |
| Locking delay | <2 minutes to stabilise from cold |

## Manual Attenuation (Option 1)

| | |
|---|---|
| Attenuation range | 30dB |
| Control | Continuously variable from front panel. |

Note; can degrade gain flatness performance

## RF Mute (Option 13)

| | |
|---|---|
| Activation | Front panel switch |
| Option 13a; | Discrete control input on rear panel (replaces the front panel switch actuation) |
| Option 13b; | Discrete control input on rear panel (in addition to the standard front panel switch) |
| Isolation | 60dB min |

## Mechanical

| | |
|---|---|
| Width | 19" standard rack mountable |
| Height | 1U (1.75") |
| Depth | ~400mm (15.7"), plus connectors |
| Construction | Aluminium chassis |
| Weight | 4.5kgs (10lbs) |

## Control System Interface

| | |
|---|---|
| Alarms | PSU fail (form C), LO fail (form C) |
| Controls | Mute input (Option 13a) |
| Connector | D-type, 15-way |

## Environmental

| | |
|---|---|
| Operating temp | 0°C to +50°C |
| EMC | EN 55022, part B & EN 50082-1 |
| Safety | EN 60950 |

## Power Supply

| | |
|---|---|
| Voltage | 90-264VAC |
| Frequency | 47-63Hz |
| Power | 30 Watts max |
| Option 7; | Redundant PSU; provides a 1+1 redundant PSU configuration with separate prime power inputs |

## *Options*

| | |
|---|---|
| 1a) | Manual variable attenuator, 0-30dB, at L/ S-band |
| 1b) | Manual variable attenuator, 0-30dB, at SHF |
| 2a) | N-type (f) input connection |
| 2b) | N-type (f) output connection |
| 4) | External 10MHz reference input |
| 7) | Redundant power supply |
| 13) | RF mute option, activated from front panel |
| 13a) | Mute control input on rear panel replacing front panel switch |
| 13b) | Mute control input on rear panel as well as front panel switch |

Note; some of the above options have an impact on the performance specification, for details please contact the factory if this is thought to be critical.

## ***Rear panel view*** *(sample)*