**TGR2050 - FREQUENCY**

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>Frequency Modulation</th>
<th>Phase Modulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>62.5MHz to 2000MHz</td>
<td>800kHz</td>
<td>80.0 rads</td>
</tr>
<tr>
<td>500MHz - 1000MHz</td>
<td>400kHz</td>
<td>40.0 rads</td>
</tr>
<tr>
<td>1250MHz - 2500MHz</td>
<td>200kHz</td>
<td>20.0 rads</td>
</tr>
<tr>
<td>625MHz - 1250MHz</td>
<td>100kHz</td>
<td>10.0 rads</td>
</tr>
<tr>
<td>1500Hz - 62.5MHz</td>
<td>100kHz</td>
<td>5.0 rads</td>
</tr>
</tbody>
</table>

**Amplitude Modulation**

- Max Dev: 100%
- Setting Resolution: 0.5%
- Deviation Accuracy: <±(5% setting + 1%) for 1kHz Internal or 1kHz / 1VIms External Modulation.
- External Modulation: ±1dB to 1kHz.
- Distortion: 150kHz to 1GHz - <±10%
- Deviation Accuracy: See Table.

**TGR2050 - OUTPUT LEVEL**

- Output Level Range: –127dBm to +7dBm (0·1µV to 500mV into 50Ω).
- Setting Resolution: 0·1dB to 100dB (or 0·01µV to 100mV).
- Accuracy: Better than ±2.5dB.
- Harmonics: <–25dBc at ±7dBm.
- Non-Harmonic Spurious: <–60dBc at ±52.5MHz.
- Carrier Leakage: <0.5µV generated into a 50Ω load by a 2 turn 25mm loop, at a distance of 25mm from the generator with the output set to <-10dBm into a 50Ω sealed load.

**TGR2050 - MODULATION**

- Modulation Source: Internal from built-in sine wave generator, or external from front panel BNC.
- Frequency Modulation: See Table.
- Max Peak Deviation: 150kHz.
- Setting Resolution: 0.5kHz.
- Deviation Accuracy: <±10% or ±50kHz for 1kHz Internal or 1kHz / 1VIms External Modulation.
- External Modulation: 100kHz to 500kHz - <±1dB relative to 1kHz.
- Distortion: 150kHz to 1GHz - <±10%
- Deviation Accuracy: See Table.

**TGR2050 - REFERENCE FREQUENCY**

- Options: Internal or External (via rear panel BNC).
- Accuracy: Better than ±2.5ppm.
- Stability: ±1 ppb per year.

**TGR2050 - BUS INTERFACES**

- External Ref In: 10MHz into 50Ω.
- Internal Ref Out: 10MHz from 50Ω.
- Internal Accuracy: <±1 ppm over temperature range 5°C to 40°C.

**TGR1040/2050 - REFERENCE FREQUENCY**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Deviation</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>150kHz - 62.5MHz</td>
<td>10.0 rads</td>
<td>±1 ppm/year</td>
</tr>
<tr>
<td>250MHz - 500MHz</td>
<td>20.0 rads</td>
<td>±1 ppm/year</td>
</tr>
<tr>
<td>625MHz - 1250MHz</td>
<td>10.0 rads</td>
<td>±1 ppm/year</td>
</tr>
<tr>
<td>1.0GHz - 2.0GHz</td>
<td>5.0 rads</td>
<td>±1 ppm/year</td>
</tr>
<tr>
<td>2.0GHz - 4.0GHz</td>
<td>1.0 rads</td>
<td>±1 ppm/year</td>
</tr>
</tbody>
</table>

**TGR1040/2050 - GENERAL SPECIFICATIONS**

- Display: 20 character x 4 row backlit alphanumeric LCD.
- Mechanical: Size: 130mm (3U) H; 212mm (half-rack) W; 300mm D. Weight: 4.6 kg (10 lb).
- Power Requirements: 220V to 240V ±10% or 100V or 110V to 120V ±10% 50/60Hz, adjustable internally.
- Environmental: Indoor use at altitudes up to 2000m, Pollution Degree 2.

**Technical Specifications (continued)**
**Overview**

The TGR series are low cost, synthesised RF signal generators that incorporate the essential features required for most development, test and service work; namely high frequency accuracy and stability, wide dynamic range, low phase noise and leakage, and flexible modulation capabilities.

The TGR2050 covers from 150kHz up to 2GHz and incorporates AM, FM and Phase modulation (internal and external). The wide frequency range and comprehensive modulation capabilities make it suitable for most tasks within the 2GHz spectrum.

The TGR1040 has a more restricted frequency range of 10MHz to 1GHz and incorporates FM modulation only (internal and external). It retains the high stability and wide amplitude range of the 2050 making it suitable for many tasks including FM radio receiver sensitivity characterisation particularly easy.

**Ease of use**

The TGR series incorporates a simple and straightforward user interface.

The back-lit four line display shows all the major signal parameters simultaneously. Data can be entered numerically using 0-9 keys or can be incremented/decremented using up/down keys or the rotary encoder. Both frequency and output level can be adjusted in steps of user programmed size.

**Technical Specifications**

### TGR1040 - FREQUENCY

<table>
<thead>
<tr>
<th>Specification</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>10MHz to 1GHz</td>
</tr>
<tr>
<td>Setting Resolution</td>
<td>1kHz by direct keyboard entry, or in user-set increments of 1kHz to 999 999kHz</td>
</tr>
<tr>
<td>Display Resolution</td>
<td>1kHz</td>
</tr>
<tr>
<td>Accuracy</td>
<td>&lt; ± 1 ppm over temperature range 15°C to 30°C</td>
</tr>
<tr>
<td>Stability</td>
<td>&lt; ± 1 ppm over temperature range 8°C to 40°C</td>
</tr>
<tr>
<td>Phase Noise</td>
<td>&lt; ±1°/year ageing</td>
</tr>
<tr>
<td>Residual FM</td>
<td>Equivalent peak deviation in a 300Hz to 3kHz bandwidth: 17Hz at 500MHz carrier</td>
</tr>
</tbody>
</table>

### TGR1040 - OUTPUT LEVEL

<table>
<thead>
<tr>
<th>Specification</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Range</td>
<td>–127dBm to +7dBm (0·1µV to 500mV into 50Ω)</td>
</tr>
<tr>
<td>Setting Resolution</td>
<td>0·1dB (or 0·01µV) by direct keyboard entry, or in user-set increments of 0·1dB to 100dB (or 0·01µV to 100mV)</td>
</tr>
<tr>
<td>Accuracy</td>
<td>&lt; ± 2 ppm over temperature range 5°C to 40°C</td>
</tr>
<tr>
<td>Harmonics</td>
<td>Typically ~±(50±20) ±(1Vmp to 1Vmp), any carrier frequency, output level 0·01µV</td>
</tr>
<tr>
<td>Non-Harmonic Spurii</td>
<td>~±0·00001µV at ±2kHz offset</td>
</tr>
<tr>
<td>Carrier Leakage</td>
<td>~±0·05V generated into a 50Ω load by a 2 turn 25mm loop, at a distance of 25mm from the generator with the output set to &lt;–10dBm into a 50Ω matched load</td>
</tr>
<tr>
<td>Output Type</td>
<td>Output impedance 50Ω Type N connector, reverse protection 50V DC</td>
</tr>
<tr>
<td>Output Switch</td>
<td>RF OUT on-off switch with LED showing ON status</td>
</tr>
</tbody>
</table>

### TGR2050 - FM MODULATION

<table>
<thead>
<tr>
<th>Specification</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Deviation</td>
<td>0kHz to 100Hz</td>
</tr>
<tr>
<td>Setting Resolution</td>
<td>0kHz</td>
</tr>
<tr>
<td>Modulation Frequency</td>
<td>0·1kHz to 5kHz</td>
</tr>
<tr>
<td>Deviation Accuracy</td>
<td>&lt;±10% of setting ±0·5kHz, excluding residual FM, for 1kHz modulation, internal or 1Vrms external</td>
</tr>
<tr>
<td>External Modulation Frequency</td>
<td>±1dB from 300Hz to 500Hz relative to 1kHz</td>
</tr>
<tr>
<td>Distortion</td>
<td>&lt;±2% total harmonic distortion at 1kHz modulating frequency, 100kHz deviation and 500kHz carrier</td>
</tr>
<tr>
<td>Input Type</td>
<td>BNC connector, input impedance 100Ωs</td>
</tr>
</tbody>
</table>

**TGR Series**

- **Setability of 10Hz in up to 2GHz (TGR2050)**
- **Accuracy better than 1 ppm over 15°C to 30°C**
- **Ageing better than 1 ppm per year**
- **External frequency locking (TGR2050)**
- **Low phase noise and low leakage**
- **Amplitude range of –127dBm to +7dBm**
- **Amplitude entry in dBm or µV / mV**
- **Amplitude setability of 0·1dBm or 0·01µV**
- **FM, Phase and AM modulation (TGR2050)**
- **Direct numeric entry or rotary control with user settable frequency/amplitude increments**
- **Non-volatile storage for 9 generator set-ups**
- **Full remote control via RS-232 or GPIB**
- **Unmatched price/performance ratio**

**Lower cost through innovative design**

The TGR series sets a new price standard for high performance RF generators. Advanced design techniques utilising the latest component technologies have made this possible.

The low cost makes it possible for every engineer involved in RF design, manufacture or testing to have a generator of their own.

**High Precision and Stability**

The TGR series uses a fully synthesised source locked to a temperature compensated crystal oscillator. This provides excellent signal frequency stability against temperature and ageing. The TGR2050 adds the further capability of locking to an external 10MHz source.

The frequency can be set to a resolution of 10Hz across the whole frequency range (1kHz resolution on TGR1040).

Frequency steps can be set to any value and stepping can be done with up/down keys or the rotary encoder.

The frequency stepping system makes operations such as precise amplitude response characterisation particularly easy.

**Wide Amplitude Range & Low Leakage**

The TGR series provides an amplitude range of –127dBm to +7dBm (0·1µV to 500mV into 50Ω). Setting resolution is 0·1dBm or 0·01µV.

Output level steps can be set anywhere between 0·1dBm and 100dBm (or 0·01µV to 100mV depending on the entry mode). Stepping the level is useful for quick assessment of circuit linearity and dynamic range for instance.

The advanced attenuator design provide excellent flatness over the whole frequency range.

Meticulous internal screening provides very low output leakage enabling accurate low level measurements in sensitive circuits such as receivers.

**Comprehensive Modulation**

The TGR2050 offers AM, FM and Phase modulation using either an internal or external source.

Wide modulation range and low distortion make the TGR2050 suitable for most modulated signal test procedures.

The TGR1040 provides FM modulation only using either an internally generated modulator signal or an external signal in the range 300Hz to 50kHz.

This wide bandwidth allows for audio band demodulator testing as well as LF digital modulation.
TGR Series low-cost synthesised RF generators

TGR2050 - 150kHz to 2000MHz
TGR1040 - 10MHz to 1000MHz

Lower cost through innovative design

The TGR series sets a new price standard for high performance RF generators. Advanced design techniques utilising the latest component technologies have made this possible. The low cost makes it possible for every engineer involved in RF design, manufacture or testing to have a generator of their own.

Overview

The TGR series is a low cost, synthesised RF signal generators that incorporate the essential features required for most development, test and service work; namely high frequency accuracy and stability, wide dynamic range, low phase noise and leakage, and flexible modulation capabilities. The TGR2050 covers from 150kHz up to 2GHz and incorporates AM, FM and Phase modulation (internal and external). The wide frequency range and comprehensive modulation capabilities make it suitable for most tasks within the 2GHz spectrum. The TGR1040 has a more restricted frequency range of 10MHz to 1000MHz and incorporates AM, FM Phase modulation (internal only) and LF digital modulation. The TGR1040 directly interface or GPIB interface or GPIB interface.

High Precision and Stability

The TGR series uses a fully synthesised source locked to a temperature compensated crystal oscillator. This provides excellent signal frequency stability against temperature and ageing. The TGR2050 adds the further capability of locking to an external 10MHz source. The frequency can be set to a resolution of 10Hz across the whole frequency range (1kHz resolution on TGR1040).

Frequency steps can be set to any value and stepping can be done with up/down keys or the rotary encoder. The frequency stepping system makes operations such as precise amplitude response characterisation particularly easy.

Wide Amplitude Range & Low Leakage

The TGR series provides an amplitude range of –127dBm to +7dBm (0·1µV to 500mV into 50Ω). Setting resolution is 0·1dBm or 0·01µV.

Output level steps can be set anywhere between 0·1dBm and 100dBm (or 0·01µV to 100mV depending on the entry mode). Stepping the level is useful for quick assessment of circuit linearity and dynamic range for instance. The advanced attenuator design provides excellent flatness over the whole frequency range.

Meticulous internal screening provides very low output leakage, enabling accurate low level measurements in sensitive circuits such as receivers.

Ease of use

The TGR series incorporates a simple and straightforward user interface.

The back-lit four line display shows all the major signal parameters simultaneously. Data can be entered numerically using 0 - 9 keys or can be incremented/decremented using up/down keys or the rotary encoder. Both frequency and output level can be adjusted in steps of user programmed size.

Output level can be set either in dBm or linear units of µV or mV. A single button press will translate from one to the other. The TGR series can store nine full instrument set-ups in non-volatile memory. This allows repetitive testing procedures to be undertaken quickly and accurately.

Full remote control

The TGR series provides full remote control facilities for all its functions using both RS-232 and GPIB (IEEE-488.2) interfaces. (GPIB is an option for the TGR1040).

Comprehensive Modulation

The TGR2050 offers AM, FM and Phase modulation using either an internal or external source.

Wide modulation range and low distortion make the TGR2050 suitable for most modulated signal test procedures.

The TGR1040 provides FM modulation only using either an internally generated modulator signal or an external signal in the range 300Hz to 500Hz.

This wide bandwidth allows for audio band demodulator testing as well as LF digital modulation.

Technical Specifications

TGR1040 - FREQUENCY

Frequency Range: 10MHz to 1000MHz
Setting Resolution: 1kHz by direct keyboard entry, or in user-set increments of 1kHz to 999 999kHz
Display Resolution: 1kHz
Accuracy: < ± 1 ppm over temperature range 15°C to 30°C
Stability: < ± 1 ppm/year ageing
Phase Noise: < -110dBc/Hz at 25kHz offset, 500MHz carrier.
Residual FM: (FM Off) Equivalent peak deviation in a 300Hz to 3kHz bandwidth: 17Hz at 500MHz carrier.

TGR1040 - OUTPUT LEVEL

Output Level Range: –127dBm to +7dBm (0·1µV to 500mV into 50Ω).
Setting Resolution: 0·1dB (or 0·01µV to 1mV) by direct keyboard entry, or in user-set increments of 0·1dB to 100dB (or 0·01µV to 100mV).
Accuracy: Better than ± 3dBm, except for output levels < 70dBm at 500·1000 MHz, ±3dBm.
Harmonics: Typically <±5dBc, maximum ±20dBc, any carrier frequency, output level ±5dBm.
Non-Harmonic Spur: –60dBc at 2kHz offset.
Carrier Leakage: <0·5µV (generated into a 50Ω load by a 2 turn 25mm loop, at a distance of 25mm from the generator with the output set to <-10dBm into a 50Ω sealed load).
Output Type: Output impedance 50Ω, Type N connector, Reverse protection 50V DC.
Output Switch: RF OUT off switch with LED showing ON status.

TGR1040 - FM MODULATION

Peak Deviation: 0kHz to 100kHz
Setting Resolution: 0kHz
Modulation Frequency: Internal 1kHz External 300Hz to 500Hz
Deviation Accuracy: < ±10% of setting ±5kHz, excluding residual FM, for 1kHz modulation, internal or 1Vrms external.
External Modulation
Frequency Response: ±1dB from 300Hz to 500kHz relative to 1kHz.
Distortion: <2% total harmonic distortion at 1kHz modulating frequency, 100kHz deviation and 500kHz carrier.
Input Type: BNC connector, input impedance 100Ω.

TGR1040 - FURTHER SPECIFICATIONS

Specifications for Bus Interfaces, Power Requirement, Mechanical Details etc. are given on the rear page.
**TGR2050 - FREQUENCY**

Frequency Range: 62.5MHz to 2000MHz
Setting Resolution: 10Hz by direct keyboard entry, or in user-set increments of 10Hz to 999,999,999Hz.
Display Resolution: 1Hz.
Frequency Accuracy: See Frequency Reference specifications.
Phase Noise: -116dBc at 25Hz offset, 500MHz carrier.
Residual FM (FM Off): Equivalent peak deviation in a 300Hz to 3.4kHz bandwidth: 12Hz at 500MHz carrier.

**TGR2050 - REFERENCE FREQUENCY**

Options: Internal or External (via rear panel BNC).
Internal Accuracy: ±2ppm over temperature range 5°C to 40°C.
Internal Stability: ±1ppm per year.
Internal Ref. Out: 10MHz from 50Ω, amplitude 2V pk-pk into 50Ω.
External Ref In: 10MHz into 50Ω, amplitude 2V pk-pk to 5V pk-pk.

**TGR2050 - OUTPUT LEVEL**

Output Level Range: –127dBm to +7dBm (0.1μV to 500mV into 50Ω), –127dBm to +1dBm in AM mode.
Setting Resolution: 0.1dB or 0.01µV to 1mV by direct keyboard entry, or in user-set increments of 0.1dB to 100dB (or 0.01µV to 100mV).
Accuracy: Better than ±2ppm.
Harmonics: <–50dBc at 1kHz, <–60dBc at 3kHz, <–70dBc at 6kHz.
Non-Harmonic Spur: <–60dBc at ±6.25MHz, <–50dBc at ±12.5MHz, <–40dBc at ±25MHz.
Carrier Leakage: <0.5µV generated into a 50Ω load, a 2 turn 25mm loop, at a distance of 25mm from the generator with a 50Ω sealed load.
Output Type: Output impedance 50Ω, Type N connector.
Reverse Protection: 50V DC, up to 25W from 50Ω source.
External Modulation: 100Hz to 1kHz or 1Vrms External Modulation.
Max Mod. Depth: 100%, useability decreasing to 90% at 2GHz.
Deviation Setting Resolution: 0.1 rads for <10.0 rads deviation, 0.5 rads for >10.0 rads deviation.
Deviation Accuracy: ±5% setting +1% for 1kHz Internal or 1kHz / 1Vrms External Modulation, <70% depth.
Distortion: 150kHz to 1GHz - 2% @ 30%, 2% @ 70% @ 1GHz to 2GHz - 6% @ 30%, 2% @ 70% @ 1GHz modulation, max. deviation (300-3.4kHz bandwidth).

**Max. Peak Deviation versus Carrier Frequency**

<table>
<thead>
<tr>
<th>Frequency Mod</th>
<th>Phase Modulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000MHz - 2000MHz</td>
<td>800Hz</td>
</tr>
<tr>
<td>500MHz - 1000MHz</td>
<td>400Hz</td>
</tr>
<tr>
<td>250MHz - 500MHz</td>
<td>200Hz</td>
</tr>
<tr>
<td>125MHz - 250MHz</td>
<td>100Hz</td>
</tr>
<tr>
<td>62.5MHz - 125MHz</td>
<td>50Hz</td>
</tr>
<tr>
<td>150Hz - 62.5MHz</td>
<td>100Hz</td>
</tr>
</tbody>
</table>

**Amplitude Modulation**

Max Mod. Depth: 100%, usability decreasing to 90% at 2GHz.
Setting Resolution: 0.5%.
Deviation Accuracy: ±15% setting +1% for 1kHz Internal or 1kHz / 1Vrms External Modulation, <70% depth.
External Modulation: 50Hz - 200kHz (±1dB relative to 1kHz).
Distortion: 150kHz to 1GHz - 2% @ 30%, 2% @ 70% @ 1GHz to 2GHz - 6% @ 30%, 2% @ 70% @ 1GHz modulation, max. deviation (300-3.4kHz bandwidth).

**TGR1040/2050 - REFERENCE FREQUENCY**

Options: Internal or External (via rear panel BNC).
Internal Accuracy: ±1ppm per year.
Internal Ref. Out: 10MHz from 50Ω.
Internal Stability: < ±2 ppm per year.
Internal Ref. Out: 10MHz from 50Ω, amplitude 2V pk-pk into 50Ω.
External Ref In: 10MHz into 50Ω, amplitude 2V pk-pk to 5V pk-pk.

**TGR1040/2050 - OUTPUT LEVEL**

Output Level Range: –127dBm to +7dBm (0.1μV to 500mV into 50Ω), –127dBm to +1dBm in AM mode.
Setting Resolution: 0.1dB or 0.01µV to 1mV by direct keyboard entry, or in user-set increments of 0.1dB to 100dB (or 0.01µV to 100mV).
Accuracy: Better than ±2ppm.
Harmonics: <–50dBc at 1kHz, <–60dBc at 3kHz, <–70dBc at 6kHz.
Non-Harmonic Spur: <–60dBc at ±6.25MHz, <–50dBc at ±12.5MHz, <–40dBc at ±25MHz.
Carrier Leakage: <0.5µA generated into a 50Ω load by a 2 turn 25mm loop, at a distance of 25mm from the generator with the output set to –10dBm into a 50Ω load.
Output Type: Output impedance 50Ω, Type N connector.
Reverse Protection: 50V DC, up to 25W from 50Ω source.
External Modulation: 100Hz to 1kHz or 1Vrms External Modulation.
Max Mod. Depth: 100%, useability decreasing to 90% at 2GHz.
Deviation Setting Resolution: 0.1 rads for <10.0 rads deviation, 0.5 rads for >10.0 rads deviation.
Deviation Accuracy: ±5% setting +1% for 1kHz Internal or 1kHz / 1Vrms External Modulation, <70% depth.
Distortion: 150kHz to 1GHz - 2% @ 30%, 2% @ 70% @ 1GHz to 2GHz - 6% @ 30%, 2% @ 70% @ 1GHz modulation, max. deviation (300-3.4kHz bandwidth).

**Max. Peak Deviation versus Carrier Frequency**

<table>
<thead>
<tr>
<th>Frequency Mod</th>
<th>Phase Modulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000MHz - 2000MHz</td>
<td>800Hz</td>
</tr>
<tr>
<td>500MHz - 1000MHz</td>
<td>400Hz</td>
</tr>
<tr>
<td>250MHz - 500MHz</td>
<td>200Hz</td>
</tr>
<tr>
<td>125MHz - 250MHz</td>
<td>100Hz</td>
</tr>
<tr>
<td>62.5MHz - 125MHz</td>
<td>50Hz</td>
</tr>
<tr>
<td>150Hz - 62.5MHz</td>
<td>100Hz</td>
</tr>
</tbody>
</table>

**Amplitude Modulation**

Max Mod. Depth: 100%, usability decreasing to 90% at 2GHz.
Setting Resolution: 0.5%.
Deviation Accuracy: ±15% setting +1% for 1kHz Internal or 1kHz / 1Vrms External Modulation, <70% depth.
External Modulation: 50Hz - 200kHz (±1dB relative to 1kHz).
Distortion: 150kHz to 1GHz - 2% @ 30%, 2% @ 70% @ 1GHz to 2GHz - 6% @ 30%, 2% @ 70% @ 1GHz modulation, max. deviation (300-3.4kHz bandwidth).

**TGR1040/2050 - BUS INTERFACES**

Full remote control facilities are available through both RS232 and GPIB interfaces (RS232 included on both units, GPIB included on TGR2050 and optional on TGR1040).

**TGR1040/2050 - GENERAL SPECIFICATIONS**

**General**

Display: 20 character x 4 row backlit alphanumeric LCD
Data Entry: Keyboard selection of frequency, amplitude, etc.; value entry direct by numeric keys or by rotary control.
Store Settings: Up to 9 complete instrument set-ups may be stored and recalled from battery-backed memory.
Mechanical:
Size: 130mm (3U) H; 212mm (half-rack) W; 330mm D.
Weight: 4.6 kg. (10 lb)

**Power Requirements**

100V or 110V - 120V or 220V - 240V, all ±10% 50/60Hz, adjustable internally; 30VA max. Installation Category II.

**Temperature & Environmental**

Operating Range: +5°C to 40°C, 20-80% RH.
Storage Range: –30°C to + 60°C.
Environmental: Indoor use at altitudes up to 2000m, Pollution Degree 2.

**Safety & EMC**

Safety: Complies with EN61326, Safety: Complies with EN61010-1.

**MODEL RANGE**

TGR1040GP (includes RS-232 and GPIB interfaces).
TGR2050 (includes RS-232 and GPIB interfaces).

**Options:**

19 inch rack mounting kit.

Specifications apply after 30 minute warm-up, ambient 5°C to 40°C.

**Thurlby Thandar Instruments Ltd.** operates a policy of continuous development and reserves the right to alter specifications without prior notice.