



TV Generators SGPF, SGSE, SGMF

Video generators for any application and all TV standards

With the three TV generators of the SG.F series for the traditional colour standards PAL, NTSC and SECAM, Rohde & Schwarz has the right unit for any location in the world and for any production, studio or service requirement:

SGPF for **PAL**
SGSE for **SECAM**
SGMF for **NTSC**

The three instruments are of identical design and offer the same functions. Common features:

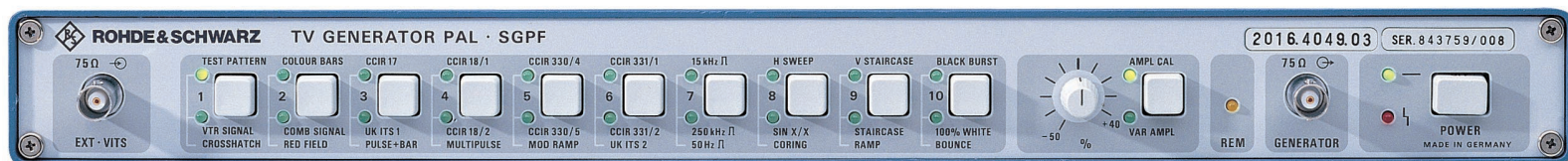
- More than 30 baseband signals available at the push of a button
- Selectable output amplitude
- Signal output on front and rear panel
- Remote control of all functions via IEC 625/IEEE 488 bus
- Insertion test signals included in every signal

- Insertion of external test signals into the field blanking interval or application of sweep signals to the active picture region
- Use as a test signal inserter with the genlock option fitted

The configuration of the field blanking interval can be freely programmed via DIP switches. Eight complete test signal configurations can be stored and recalled to suit any measurement task.



ROHDE & SCHWARZ



PAL

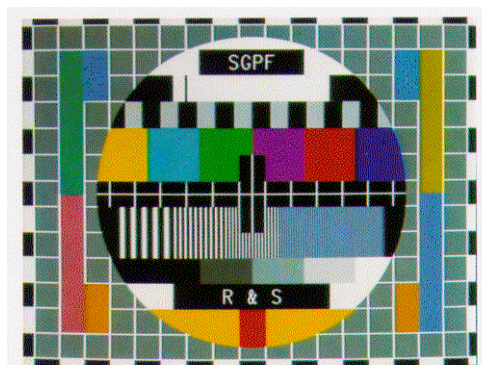
TV Generator SGPF

SGPF digitally generates a PAL composite colour video signal (CCVS) coded over the eight-field sequence with a resolution of 12 bits. Two LSI gate arrays convert the Y , C_B and C_R components into the digital CCVS which features an accurately defined colour-subcarrier/sync-pulse (SC/H) phase. For identification of the beginning of the eight-field sequence, the PAL identification pulse can be inserted into line 7 of the first field.

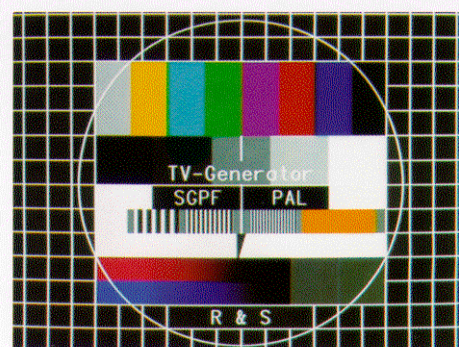
With the genlock option fitted, SGPF offers the possibility of inserting test signals into a program signal. If no program signal is available, the selected video test pattern is through-connected to the program output.

The test signals numbering more than 30 comprise the following groups:

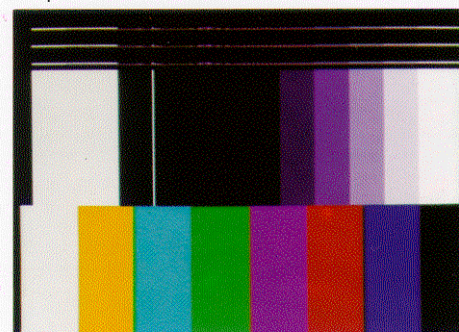
- Test pattern to German FuBK standard or general-purpose test pattern with optional source identification, crosshatch pattern and VTR signal
- CCIR insertion test signals
- Squarewave signals (50 Hz, 15 kHz, 250 kHz)
- Sawtooth signals
- Multipulse, H sweep, sin x/x and coring signals
- Black burst, vertical staircase, white field and bounce signals



General-purpose test pattern

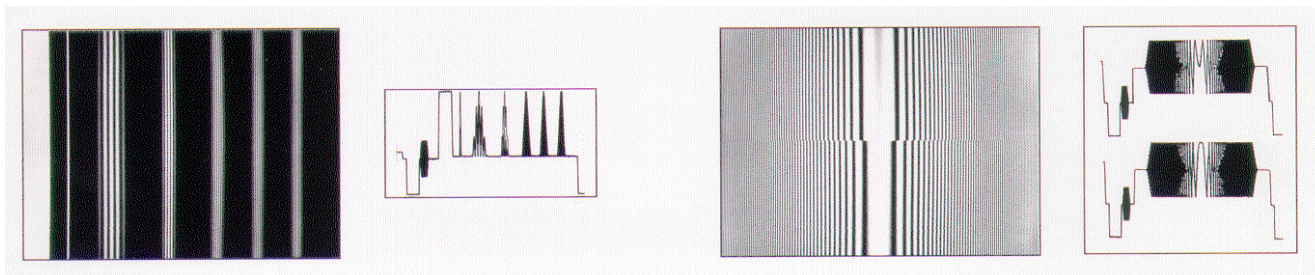


FuBK test pattern (optional) instead of general-purpose test pattern



VTR signal

Examples of test signals (from left to right): multipulse, H sweep, coring signal, sin x/x



Specifications

Level tolerances

| | |
|--|---|
| Nominal luminance level (cal.) | 700 ±4 mV |
| Nominal chrominance level (cal.) | 700 ±7 mV |
| Departure at nominal 500 to 700 mV <500 mV | ±1% ±5 mV |
| Squarewave, staircase and sawtooth signals | nominal ±4 mV |
| 2T pulse | nominal ±5 mV |
| 10T and 20T pulses | nominal ±7 mV |
| Amplitude setting | on front panel or via IEC/IEEE bus between -50 and +40% of calibrated value |

Amplitude/frequency response

| | |
|---------------------------|-------------------------|
| Multipulse, sweep signals | +0.1 dB (up to 5.5 MHz) |
| Multiburst | +0.1 dB (up to 5.8 MHz) |

Group delay

| | |
|--------------------|---|
| 10T and 20T pulses | ≤5 ns (modulated with frequencies ≤5 MHz) |
|--------------------|---|

Rise time (10 to 90%) and half-amplitude duration

| | |
|----------------------------------|-------------------------|
| Luminance rise time | 200 ±5 ns, 231 ±5 ns |
| Chrominance rise time | 300 ±10 ns, 1000 ±15 ns |
| Half-amplitude duration 2T pulse | 200 ±5 ns |
| 10T pulse | 1000 ±15 ns |
| 20T pulse | 2000 ±30 ns |

Line-time nonlinearity

| | |
|------------------|-------|
| 5-step staircase | ≤0.8% |
|------------------|-------|

Chrominance phase

| | |
|---|---------|
| Phase between R-Y and B-Y axes | 90° ±1° |
| Maximum departure of chrominance phase from nominal | ±2° |

S/N ratio

| | |
|---|------------------|
| RMS, weighted, 0.2 to 5 MHz, Measured on all-black picture on sawtooth signal | ≥74 dB ≥70 dB |
|---|------------------|

Clock frame

| | |
|---|--|
| sync frame and burst phase acc. CCIR Rep. 624.3 | 0° ±5° |
| SC/H phase | can be switched off for special measurements |
| V component | |

Inputs/outputs

| | |
|------------------------------|---|
| Return loss | BNC, 75 Ω |
| Sync pulse output | ≥34 dB (up to 6 MHz) |
| EXT-VITS input | 2 V into 75 Ω |
| | for insertion of external signals into test line region or for application of sweep signal to active picture region |
| Connector | BNC, 75 Ω |
| Gain | 0 ±0.1 dB |
| Amplitude/frequency response | ±0.1 dB (up to 6 MHz) |
| Differential gain | ≤0.3% |
| Differential phase | ≤0.3° |

Option "genlock with test signal insertion"

| | |
|--|-----------------------|
| for coupling the generator clock with the sync pulse and burst of the applied CCVS to permit test signal insertion | |
| Input/output | BNC, 75 Ω |
| Amplitude/frequency response | ±0.1 dB (up to 6 MHz) |

| | |
|---|---|
| Group delay error | ≤5 ns (up to 5.5 MHz) |
| Differential gain | ≤0.3% |
| Differential phase | ≤0.3° |
| S/N ratio (rms, weighted, 0.2 to 5 MHz) | ≥74 dB |
| Test signal insertion Level | same as generator signal: - CAL (default operation) - variable between -50 and +40% of CAL (for testing AGC circuits, etc) lines 6 to 22 lines 319 to 335 |

Insertion range in 1st field
in 2nd field

Manual setting

output amplitude, field-repetitive/line-repetitive operation, application of sweep signal to active picture region, coding and selection of 8 test line blocks, front panel disabled by 6th bit of IEC/IEEE-bus address switch

General data

| | |
|--------------------------------|---|
| Remote-control interface | acc. IEC 625-2 (IEEE 488) |
| Rated temperature range | +5 to +45°C |
| Operating temperature range | 0 to +50°C |
| Storage temperature range | -40 to +70°C |
| Mechanical stress | |
| Sinusoidal vibration | 5 to 150 Hz, max. 2 g at 55 Hz, 0.5g from 55 to 150 Hz, meets IEC68-2-6, EN61010, MIL-T-28800 D class 5 |
| Random vibration | 10 to 300 Hz, 1.2 g rms |
| Shock | shock spectrum 40 g, meets MIL-STD-810D and MIL-T-28800 D class 3 and 5 |
| Environmental stress | +25/+40°C, cyclic, at 95% rel. humidity, meets IEC68-2-30 |
| Electromagnetic compatibility | conforms to European EMC directives (applicable standards: EN 50 081-1, EN 50 082-1) |
| Power supply | 100/120/240 V +15/-10%, 230 V +10/-14%, 47 to 63 Hz (50 VA) |
| Dimensions (W x H x D); weight | 450 mm x 59 mm x 510 mm; 6 kg |

Ordering information

Order designation

| | | |
|------------------|------|--------------|
| TV Generator PAL | SGPF | 2016.4049.03 |
|------------------|------|--------------|

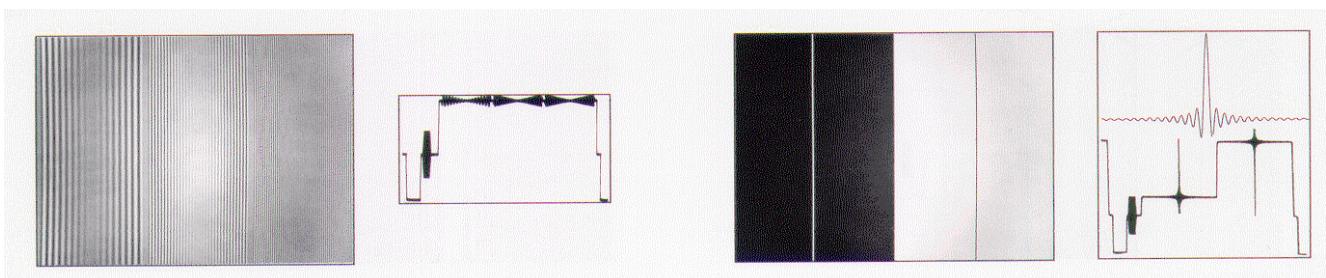
Accessories supplied: power cord, fuses, manual

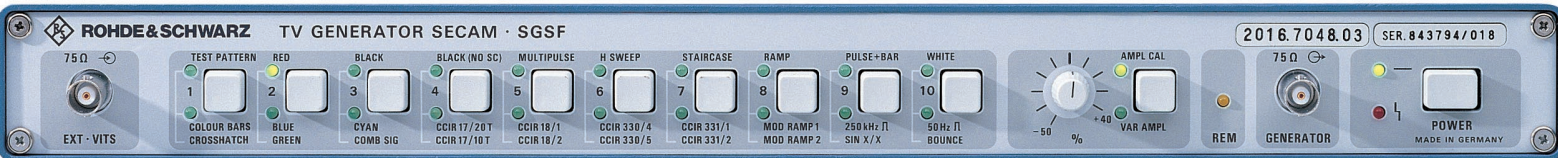
Options

| | | |
|---|---------|--------------|
| Source Identification (text in test pattern) | SG.F-B1 | 2016.1004.02 |
| Genlock with test signal insertion (not as retrofit) | SGPF-B2 | 2016.4278.02 |
| FuBK Test Pattern instead of general-purpose test pattern | SGPF-B3 | 2016.4284.02 |
| 16:9 Test Pattern instead of general-purpose test pattern | SGPF-B4 | 2016.4290.02 |

Recommended extras

| | | |
|---|---------|--------------|
| Junction Panel with bypass (only together with SGPF-B2) | SG.F-Z | 2016.1679.02 |
| 19" Adapter | ZZA-91 | 0396.4870.00 |
| Documentation of Calibration Values | SG.-DCV | 2082.0490.04 |
| Service Manual | | 2016.4149.24 |





SECAM

TV Generator SGSF

SGSF delivers video signals to SECAM standard in a twelve-field sequence with the (disconnectible) chrominance synchronization signals in the field blanking interval.

The genlock option permits insertion of test signals into a program signal. Moreover, it is possible to switch to a substitution signal in the case of program failure.

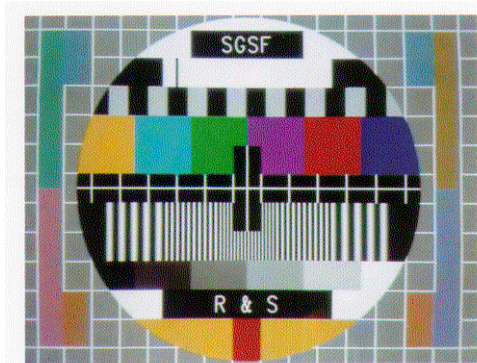
In addition to

- the general-purpose test pattern with optional text insertion for source identification, the colour bars, crosshatch pattern, white, red, blue, green and black fields, a signal for chroma noise measurement and a test signal for chrominance-to-luminance delay,

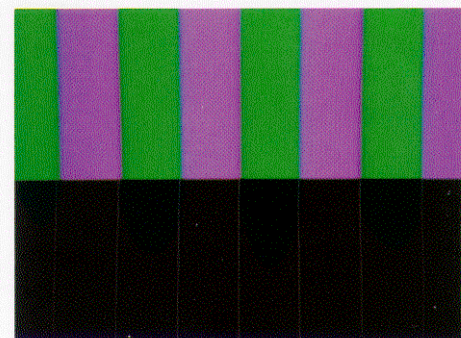
the following purely monochrome test signals are available:

- CCIR insertion test signals
- Multipulse, H sweep, sin x/x
- Squarewave signals (50 Hz, 15 kHz, 250 kHz, pulse-and-bar signal)
- Sawtooth and staircase signals
- Pluge and coring signals
- Black field and bounce signals

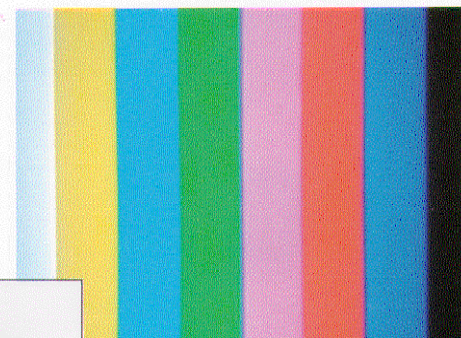
Thus it is possible to use the well-known analyzers from Rohde & Schwarz for automatic SECAM measurements.



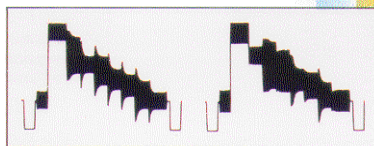
General-purpose test pattern



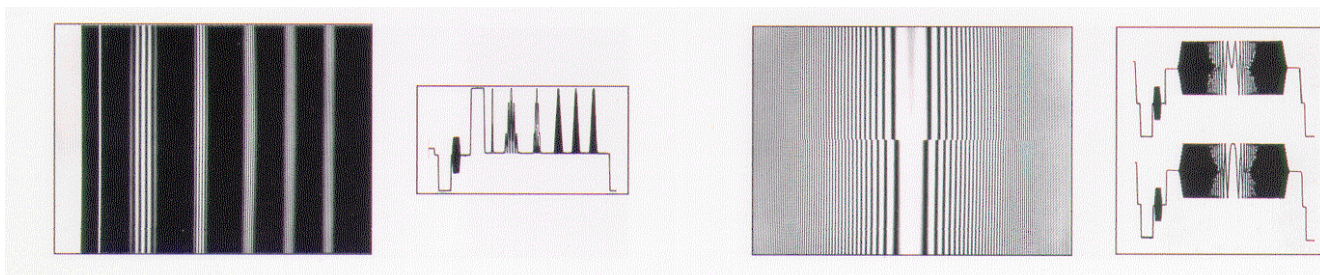
Combined signal



Colour bars



Examples of test signals (from left to right): multipulse, H sweep, sin x/x



Specifications

Level tolerances

| | |
|--|--|
| Squarewave, staircase and sawtooth signals | nominal ± 4 mV |
| 2T pulse | nominal ± 5 mV |
| 10T and 20T pulses | nominal ± 7 mV |
| Chrominance signals, departure at nominal 500 to 700 mV < 500 mV | $\pm 1\%$ ± 5 mV |
| Amplitude setting | on front panel or via IEC/IEEE bus between -50 and $+40\%$ of calibrated value |

Amplitude/frequency response

| | |
|---------------------------|------------------------------|
| Multipulse, sweep signals | ± 0.1 dB (up to 5.5 MHz) |
| Multiburst | ± 0.1 dB (up to 5.8 MHz) |

Group delay

| | |
|--------------------|---|
| 10T and 20T pulses | ≤ 5 ns (modulated with frequencies ≤ 5 MHz) |
|--------------------|---|

Rise time (10 to 90%) and half-amplitude duration

| | |
|----------------------------------|-----------------------------------|
| Luminance rise time | 200 ± 5 ns, 231 ± 5 ns |
| Rise time of 4.43 MHz components | 300 ± 10 ns, 1000 ± 15 ns |
| Half-amplitude duration | |
| 2T pulse | 200 ± 5 ns |
| 10T pulse | 1000 ± 15 ns |
| 20T pulse | 2000 ± 30 ns |

Line-time nonlinearity

| | |
|------------------|--------------|
| 5-step staircase | $\leq 0.8\%$ |
|------------------|--------------|

SECAM colour coding

| | |
|---|----------------------|
| Tolerance of colour-difference signal preemphasis | ± 0.2 dB |
| Tolerance of subcarrier preemphasis | ± 0.15 dB |
| Waveforms | acc. CCIR Rep. 624-3 |

S/N ratio

| | |
|--|--------------|
| RMS, weighted, 0.2 to 5 MHz | ≥ 74 dB |
| Measured on all-black picture on sawtooth signal | ≥ 70 dB |

Clock frame

| | |
|-------------|--|
| V component | sync frame and colour subcarrier D_R and D_B acc. CCIR Rep. 624-3 can be switched off for special measurements |
|-------------|--|

Inputs/outputs

| | |
|------------------------------|---|
| Return loss | BNC, 75Ω ≥ 34 dB (up to 6 MHz) |
| Sync pulse output | 2 V into 75Ω |
| EXT-VITS input | for insertion of external signals into test line region or for application of sweep signal to active picture region |
| Connector | BNC, 75Ω |
| Gain | 0 ± 0.1 dB |
| Amplitude/frequency response | ± 0.1 dB (up to 6 MHz) |
| Differential gain | $\leq 0.3\%$ |
| Differential phase | $\leq 0.3^\circ$ |

Option "genlock with test signal insertion"

for coupling the generator clock with the sync pulse of the applied CCVS to permit test signal insertion

| | |
|------------------------------|-----------------------------|
| Input/output | BNC, 75Ω |
| Return loss | ≥ 34 dB (up to 6 MHz) |
| Amplitude/frequency response | ± 0.1 dB (up to 6 MHz) |
| Group delay error | ≤ 5 ns (up to 5.5 MHz) |

| | |
|-------------------------------|---------------------------|
| Differential gain | $\leq 0.3\%$ |
| Differential phase | $\leq 0.3^\circ$ |
| S/N ratio | |
| (rms, weighted, 0.2 to 5 MHz) | ≥ 74 dB |
| Test signal insertion | |
| Level | same as generator signal: |

| | |
|--|--|
| | – CAL (default operation) |
| | – variable between -50 and $+40\%$ of CAL (for testing AGC circuits, etc) |
| Insertion range in 1st field | lines 6 and 16 to 22 |
| 2nd field | lines 319 and 329 to 335 |
| Identification signals of applied CCVS | in lines 7 to 15 and 320 to 328, can be replaced by all-black line or other signal |

Manual settings

| | |
|--|--|
| | output amplitude, field-repetitive/line-repetitive operation, application of sweep signal to active picture region, coding and selection of 8 test line blocks, front panel disabled by 6th bit of IEC/IEEE-bus address switch |
|--|--|

General data

| | |
|--------------------------------|--|
| Remote-control interface | acc. IEC 625-2 (IEEE 488) |
| Rated temperature range | $+5$ to $+45^\circ\text{C}$ |
| Operating temperature range | 0 to $+50^\circ\text{C}$ |
| Storage temperature range | -40 to $+70^\circ\text{C}$ |
| Mechanical stress | |
| Sinusoidal vibration | 5 to 150 Hz, max. 2 g at 55 Hz, 0.5 g from 55 to 150 Hz, meets IEC 68-2-6, EN 61010, MIL-T-28800 D class 5 |
| Random vibration | 10 to 300 Hz, 1.2 g rms |
| Shock | shock spectrum 40 g, meets MIL-STD-810D and MIL-T-28800 D class 3 and 5 |
| Environmental stress | $+25/+40^\circ\text{C}$, cyclic, at 95% rel. humidity, meets IEC 68-2-30 |
| Electromagnetic compatibility | conforms to European EMC directives (applicable standards: EN 50 081-1, EN 50 082-1) |
| Power supply | $100/120/240$ V $\pm 15\%$ -10% , 230 V $\pm 10\%$ -14% , 47 to 63 Hz (50 VA) |
| Dimensions (W x H x D); weight | 450 mm x 59 mm x 510 mm; 6 kg |

Ordering information

Order designation

| | | |
|--------------------|------|--------------|
| TV Generator SECAM | SGSF | 2016.7048.03 |
|--------------------|------|--------------|

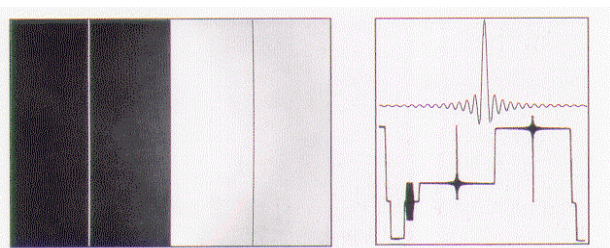
Accessories supplied: power cord, fuses, manual

Options

| | | |
|--|---------|--------------|
| Source Identification (text in test pattern) | SG.F-B1 | 2016.1004.02 |
| Genlock with test signal insertion (not as retrofit) | SGSF-B2 | 2016.7190.02 |
| French Front Panel (not as retrofit) | SGSF-B3 | 2016.7225.02 |

Recommended extras

| | | |
|---|---------|--------------|
| Junction Panel with bypass (only together with SGSF-B2) | SG.F-Z | 2016.1679.02 |
| 19" Adapter | ZZA-91 | 0396.4870.00 |
| Documentation of Calibration Values | SG.-DCV | 2082.0490.04 |
| Service Manual | | 2016.7148.24 |





NTSC

TV Generator SGMF

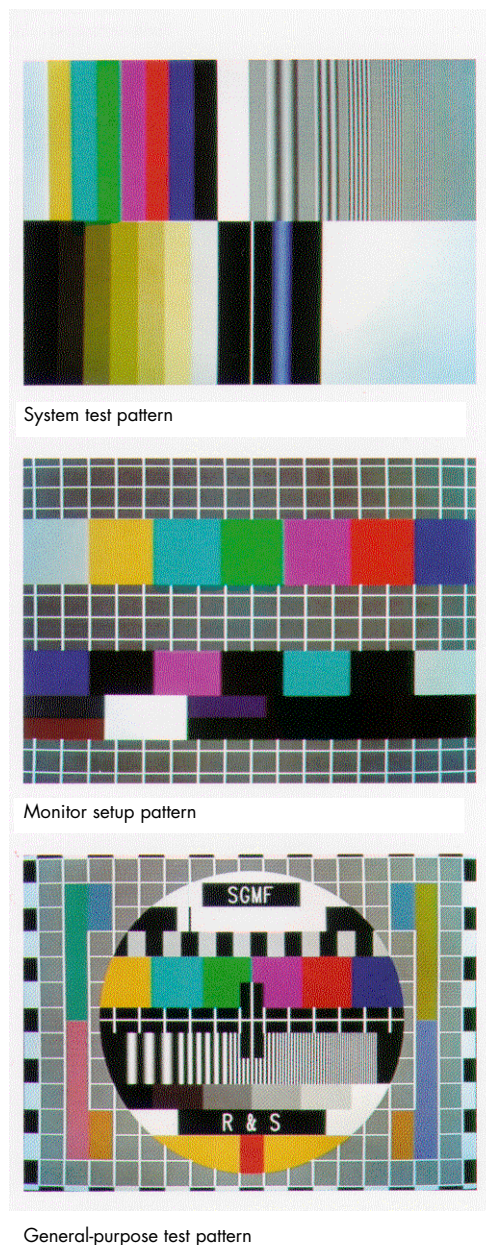
SGMF produces NTSC baseband signals of studio quality complying with the stringent requirements of the RS-170 A standard as regards SC/H phase, burst timing reference and burst width. It is possible to insert the NTSC identification pulse into the first field of the NTSC sequence.

Over 30 video signals are available:

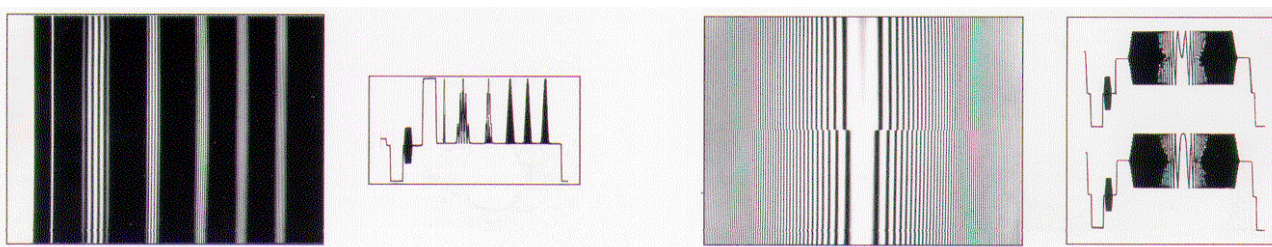
- General-purpose test pattern with optional source identification as well as different, combined test signals for adjusting convergence, brightness and colour during monitor setup
- NTC7 and FCC test signals
- Crosshatch-and-dot pattern

- Signals for measuring amplitude and group delay responses (multiburst, multipulse, H sweep, sin x/x)
- Squarewave signals (bounce, 60 Hz, 15 kHz, 250 kHz, pulse-and-bar signal)
- Ramp and staircase signals
- Colour bar signal and red field
- Special signals (pluge, coring, VIRS, eye test) and black burst

Using the genlock option it is possible to insert any of these signals into the field blanking interval of a program signal. All generator functions including level setting can be remote-controlled via the IEC/IEEE bus.



Examples of test signals (from left to right): multipulse, H sweep, coring signal, sin x/x



Specifications

Level tolerances

| | |
|--|---|
| Nominal luminance level (cal.) | 714 ±4 mV |
| Nominal chrominance level (cal.) | 714 ±7 mV |
| Departure at nominal 500 to 714 mV <500 mV | ±1% ±5 mV |
| Squarewave, staircase and sawtooth signals | nominal ±4 mV |
| 2T pulse | nominal ±5 mV |
| 12.5T pulse | nominal ±7 mV |
| Amplitude setting | on front panel or via IEC/IEEE bus between -50 and +40% of calibrated value |

Amplitude/frequency response

Multipulse, multiburst, sweep signals ±0.1 dB (up to 5.5 MHz)

Group delay

12.5T pulses ≤5 ns

Rise time (10 to 90%) and half-amplitude duration

| | |
|-------------------------|------------------------|
| Sync rise time | 140 ±5 ns |
| Luminance rise time | 125 ±5 ns, 250 ±5 ns |
| Half-amplitude duration | |
| 2T pulse | 250 ±5 ns |
| 12.5T pulse | 1570 ±5 ns |
| Chrominance rise time | 300 ±10ns, 1000 ±10 ns |

Line-time nonlinearity

5-step staircase ≤0.8%

S/N ratio

RMS, weighted, 0.2 to 4.2 MHz
Measured on all-black picture on sawtooth signal
≥74 dB
≥70 dB

Clock frame

V component standard coupling with stable SC/H phase (to RS-170 A) can be switched off for special measurements

Inputs/outputs

Return loss BNC, 75 Ω
≥34 dB (up to 6 MHz)
Sync pulse output 2 V into 75 Ω
EXT-VITS input for insertion of external signals into test line region or for application of sweep signal to active picture region
Connector BNC, 75 Ω
Gain 0 ±0.1 dB
Amplitude/frequency response ±0.1 dB (up to 6 MHz)
Differential gain ≤0.3%
Differential phase ≤0.3°

Option "genlock with test signal insertion"

for coupling the generator clock with the sync pulse and colour subcarrier of the applied CCVS to permit test signal insertion
Input/output BNC, 75 Ω

Amplitude/frequency response ±0.1 dB (up to 6 MHz)
Group delay error ≤5 ns (up to 6 MHz)
Differential gain ≤0.3%
Differential phase ≤0.3°
S/N ratio ≥74 dB
(rms, weighted, 0.2 to 4.2 MHz)
Test signal insertion into lines 10 to 21 of both fields

Manual setting

output amplitude, field-repetitive/line-repetitive operation, application of sweep signal to active picture region, coding and selection of 8 test line blocks, front panel disabled by 6th bit of IEC/IEEE-bus address switch

General data

Remote-control interface acc. IEC 625-2 (IEEE 488)
Rated temperature range +5 to +45 °C
Operating temperature range 0 to +50 °C
Storage temperature range -40 to +70 °C
Mechanical stress
 Sinusoidal vibration 5 to 150 Hz, max. 2 g at 55 Hz, 0.5g from 55 to 150 Hz, meets IEC68-2-6, EN61010, MIL-T-28800 D class 5
 Random vibration 10 to 300 Hz, 1.2 g rms
 Shock shock spectrum 40 g, meets MIL-STD-810D and MIL-T-28800 D class 3 and 5 +25/+40 °C, cyclic, at 95% rel. humidity, meets IEC68-2-30
Environmental stress
 Shock conforms to European EMC directives (applicable standards: EN 50 081-1, EN 50 082-1)
Electromagnetic compatibility
Power supply 100/120/240 V +15/-10%, 230 V +10/-14%, 47 to 63 Hz (50 VA)
Dimensions (W x H x D); weight 450 mm x 59 mm x 510 mm; 6 kg

Ordering information

Order designation

TV Generator NTSC SGMF 2016.0943.03

Accessories supplied: power cord, fuses, manual

Options

Source Identification (text in test pattern) SG.F-B1 2016.1004.02
Genlock with test signal insertion (not as retrofit) SGMF-B2 2016.1185.02

Recommended extras

Junction Panel with bypass (only together with SGMF-B2) SG.F-Z 2016.1679.02
19" Adapter ZZA-91 0396.4870.00
Documentation of Calibration Values SG.-DCV 2082.0490.04
Service Manual 2016.1104.24

Rear panel of TV Generators SG.F

