



## 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**

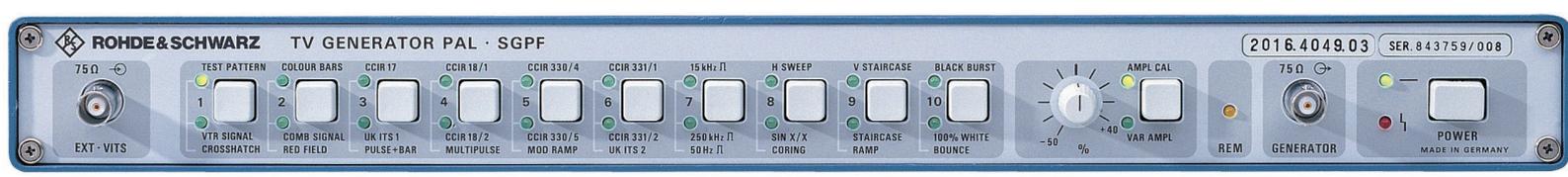
The three instruments are of identical design and offer the same functions. Common features:

- 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.





# PAL

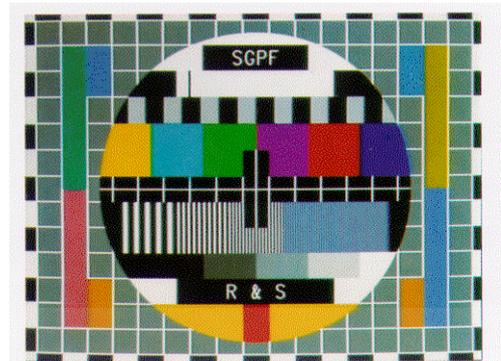
## TV Generator SGPF

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.

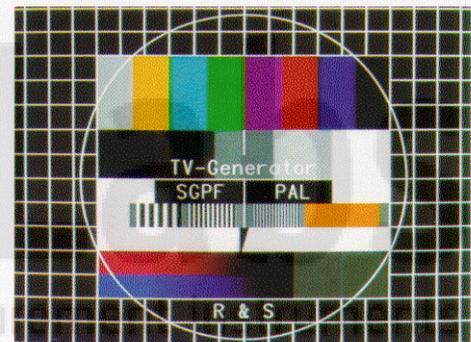
With the genlock option fitted, SGPF offers the possibility of inserting test signals into a program signal. If no program signal is available, the selected video test pattern is through-connected to the program output.

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

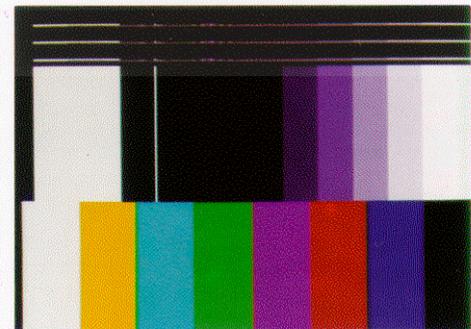
- Test pattern to German FuBK standard or general-purpose test pattern with optional source identification, crosshatch pattern and VTR signal
- CCIR insertion test signals
- Squarewave signals (50 Hz, 15 kHz, 250 kHz)
- Sawtooth signals
- Multipulse, H sweep, sin x/x and coring signals
- Black burst,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



General-purpose test pattern

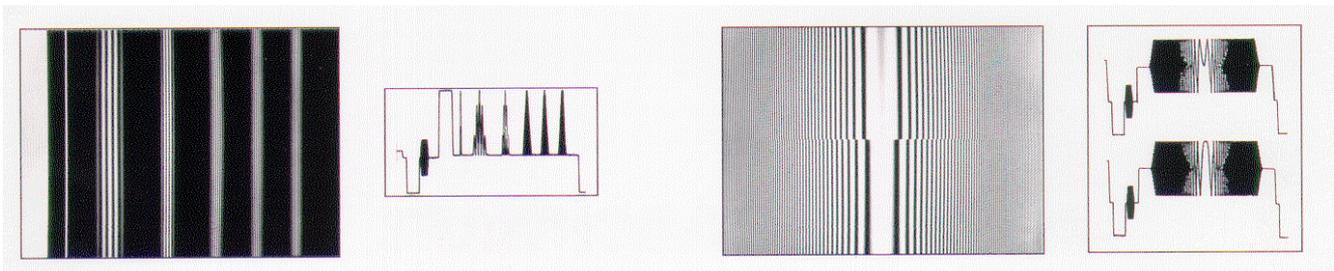


FuBK test pattern (optional) instead of general-purpose test pattern



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
SC/H phase	0° ±5°
V component	can be switched off for special meas- urements

### 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 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 10 to 300 Hz, 1.2 g rms
Random vibration	shock spectrum 40 g, meets MIL-STD- 810D and MIL-T-28800 D class 3 and 5
Shock	+25/+40°C, cyclic, at 95% rel. humidity, meets IEC68-2-30
Environmental stress	conforms to European EMC directives (applicable standards: EN 50 081-1, EN 50 082-1)
Electromagnetic compatibility	100/120/240 V +15/-10%, 230 V +10/-14%, 47 to 63 Hz (50 VA)
Power supply	450 mm x 59 mm x 510 mm; 6 kg
Dimensions (W x H x D); weight	

## Ordering information

### Order designation

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

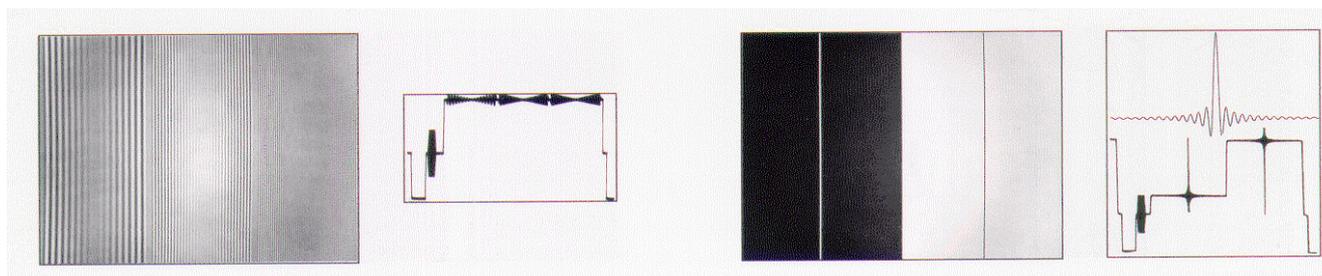
**Accessories supplied:** power cord, fuses, manual

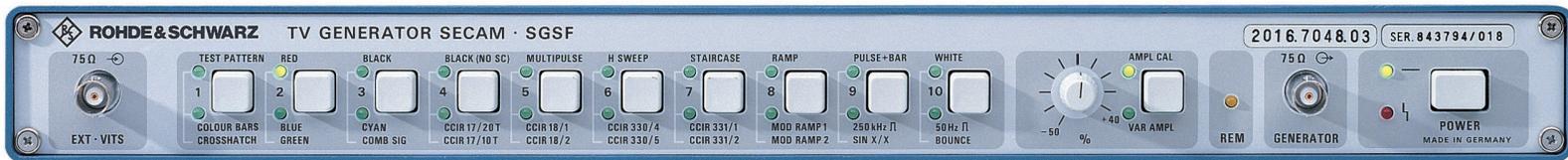
### Options

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.

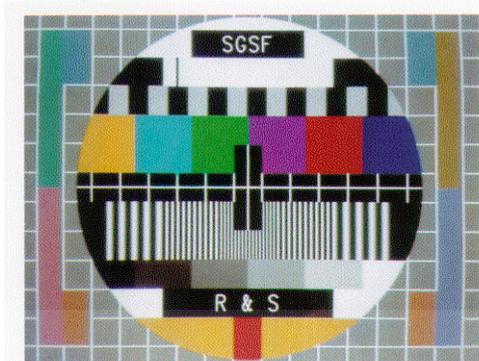
In addition to

- 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

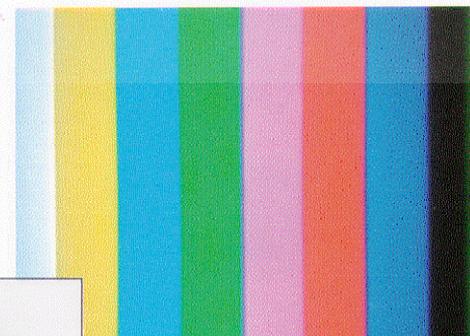
Thus it is possible to use the well-known analyzers from Rohde & Schwarz for automatic SECAM measurements.



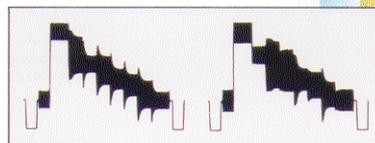
General-purpose test pattern



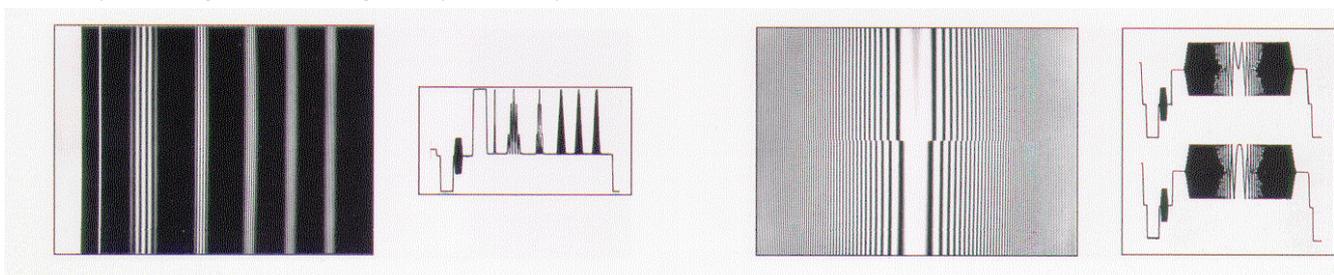
Combined signal



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

### Amplitude/frequency response

Multipulse, sweep signals	$\pm 0.1$ dB (up to 5.5 MHz)
Multiburst	$\pm 0.1$ dB (up to 5.8 MHz)

### Group delay

10T and 20T pulses	$\leq 5$ ns (modulated with frequencies $\leq 5$ MHz)
--------------------	---

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

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

### Line-time nonlinearity

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

### SECAM colour coding

Tolerance of colour-difference signal preemphasis	$\pm 0.2$ dB
Tolerance of subcarrier preemphasis	$\pm 0.15$ dB
Waveforms	acc. CCIR Rep. 624-3

### S/N ratio

RMS, weighted, 0.2 to 5 MHz	$\geq 74$ dB
Measured on all-black picture on sawtooth signal	$\geq 70$ 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, $75 \Omega$ $\geq 34$ dB (up to 6 MHz)
Sync pulse output	2 V into $75 \Omega$
EXT-VITS input	for insertion of external signals into test line region or for application of sweep signal to active picture region
Connector	BNC, $75 \Omega$
Gain	$0 \pm 0.1$ dB
Amplitude/frequency response	$\pm 0.1$ 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, $75 \Omega$
Return loss	$\geq 34$ dB (up to 6 MHz)
Amplitude/frequency response	$\pm 0.1$ dB (up to 6 MHz)
Group delay error	$\leq 5$ 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)	$\geq 74$ dB
Test signal insertion Level	same as generator signal:

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. IEC625-2 (IEEE488)
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 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	$+25/+40^\circ\text{C}$ , 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 $\pm 15\%$ $-10\%$ , $230$ 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

<b>Order designation</b>		
TV Generator SECAM	SGSF	2016.7048.03

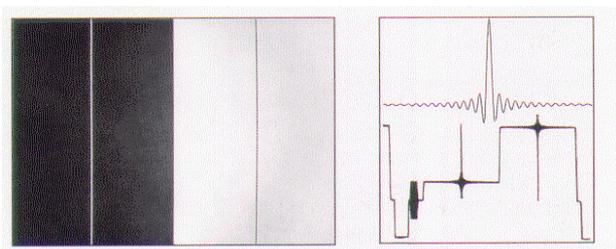
**Accessories supplied:** power cord, fuses, manual

### 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

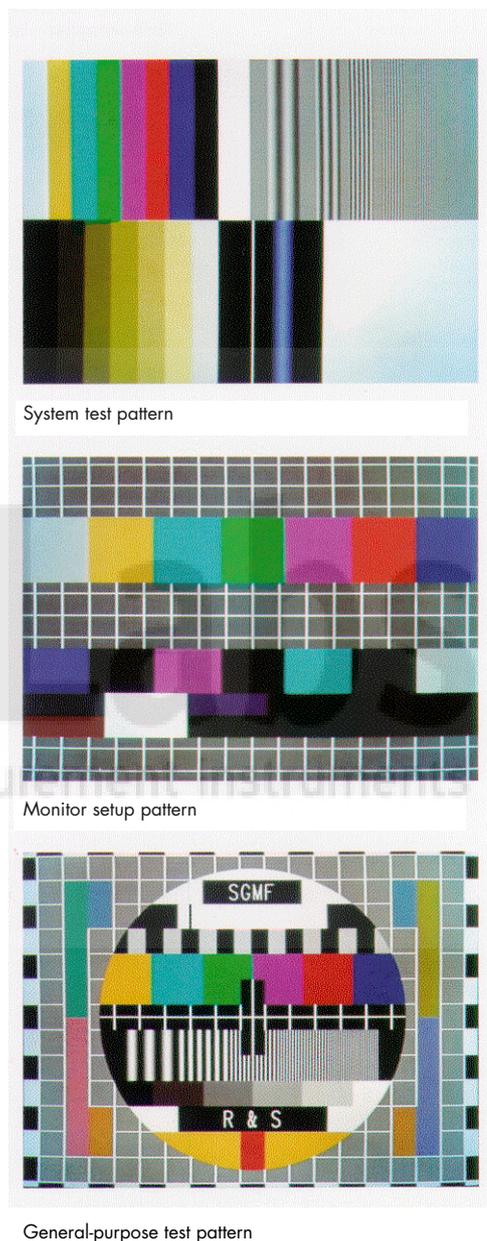
SGMF produces NTSC baseband signals of studio quality complying with the stringent requirements of the RS-170 A standard as regards SC/H phase, burst timing reference and burst width. It is possible to insert the NTSC identification pulse into the first field of the NTSC sequence.

Over 30 video signals are available:

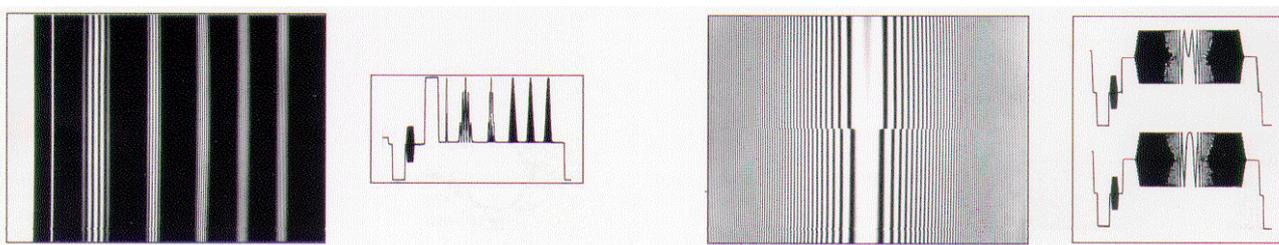
- General-purpose test pattern with optional source identification as well as different, combined test signals for adjusting convergence, brightness and colour during monitor setup
- NTC7 and FCC test signals
- Crosshatch-and-dot pattern

- 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  
(rms, weighted, 0.2 to 4.2 MHz) ≥74 dB  
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  
  Environmental stress 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 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

