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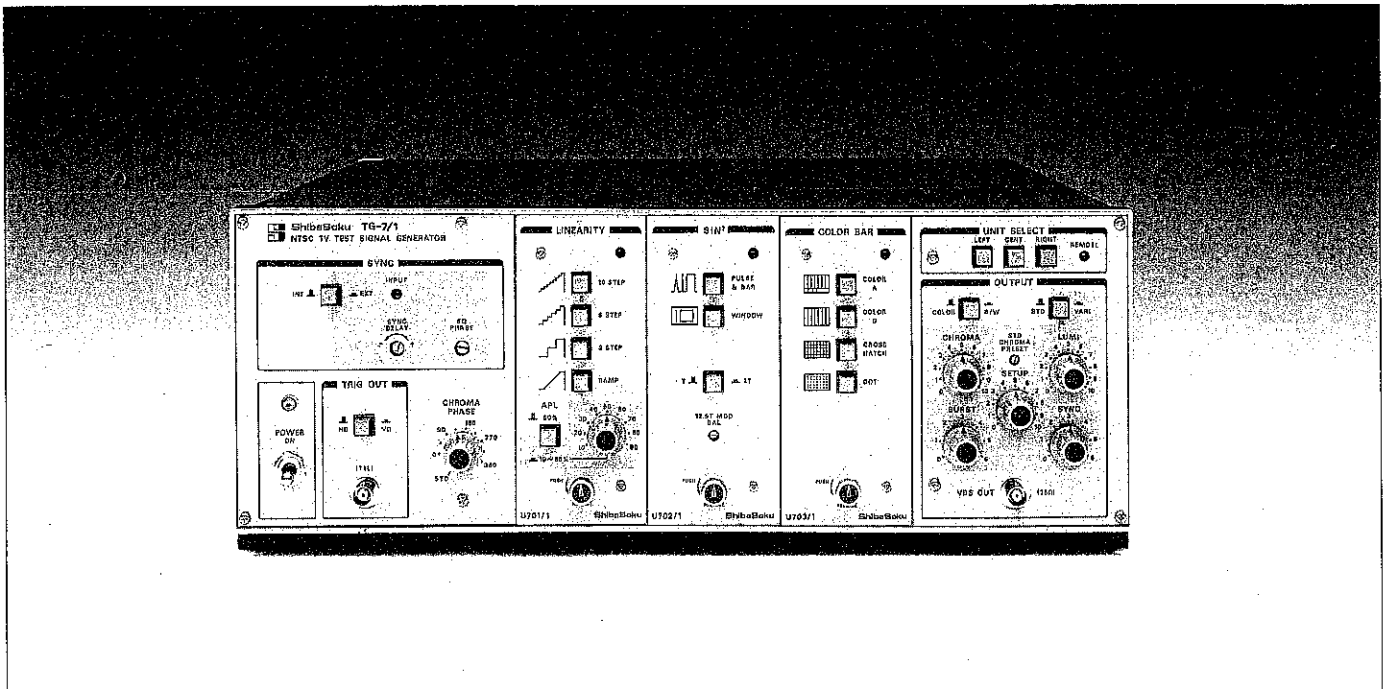
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TELEVISION INSTRUMENTS

TG-7/1 TV Test Signal Generator



GENERAL

The TG-7 series is an extremely flexible, modular test generator system designed for use in television studios, VCR and tape research and development laboratories. When used with the optional GP-IB interface and the QB102B, the TG-7 can be used for automated testing applications for manufacturing or quality control labs.

The TG-7 mainframe houses the main power supply and the internal sync generator. With over 14 different signal modules available, the TG-7 is one of the most flexible generator systems available, providing all of the internationally accepted video test signals.

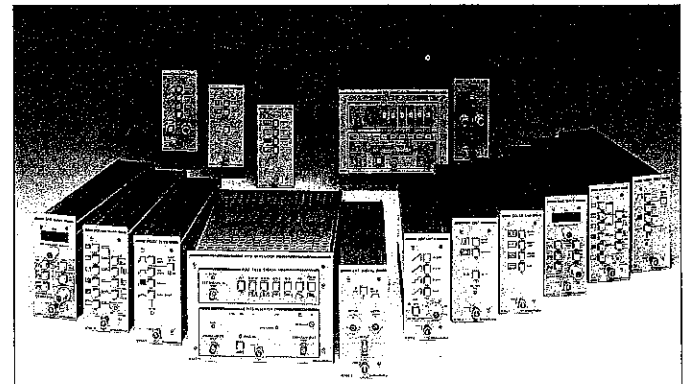
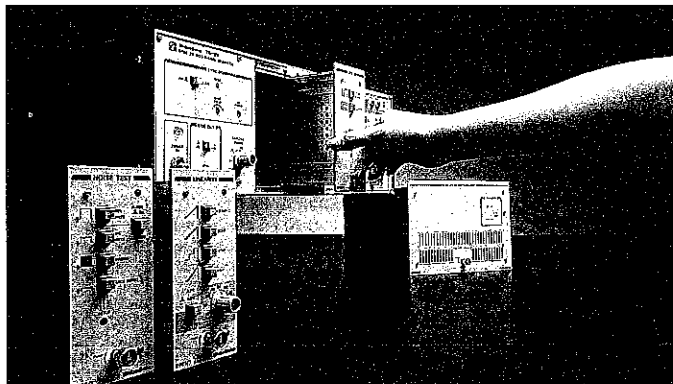
Up to three modules can be installed in the mainframe at one time. A simple three-position switch set selects the appropriate module to the main signal output, or the signal may be selected via the remote control connector. With a Vertical Interval Key pulse signal input, Vertical Interval Test Signals (VITS) can also be produced.

TELEVISION SYSTEMS

TG-7/1 System M; Color NTSC

FEATURES

- NTSC (RS-170A standard), versions are available.
- Gen-lock and Color-lock with any composite video signal input.
- Provides all standard drive and sync output signals.
- Black burst output.
- Chroma Phase fully variable 360°.
- Local or Remote operation signal selection.
- GP-IB interface optional, model QB102B for automated testing (ATE).
- Modular test signals include: Ramp, Stair Step, Sin² with Pulse & Bar, Window, Color Bars, Crosshatch, Dot, Sinewave, 10MHz sweep, Multiburst, Squarewave patterns, B/W fields with variable bounce rate, Luminance and Chrominance noise test signals, VITS test signal inserter.



TELEVISION INSTRUMENTS

SPECIFICATIONS (TG-7/1)

• Test Signal Output

VBS Output

- Number of outputs 2 (BNC)
- Output impedance $75 \Omega \pm 3\%$
- Luminance signal TG-7/1: $0.714 \text{ Vp-p} \pm 3\%$ as standard
Continuous variable: $> 0-1 \text{ Vp-p}$
- SYNC signal TG-7/1: $0.286 \text{ Vp-p} \pm 3\%$ as standard
- Chrominance signal Depending on plug-in module as standard $\pm 3\%$
Continuous variable: 0 to specified value of plug-in module +3 dB
- Color burst signal TG-7/1: $0.286 \text{ Vp-p} \pm 3\%$ as standard
Continuous variable: $> 0-0.6 \text{ Vp-p}$
- Set-up signal 0 Vp-p as standard
Continuous variable: $> 0-1 \text{ Vp-p}$

Y+S Output

- Number of outputs 1, $75 \Omega \pm 3\%$ (TG-7/1)
- Luminance signal Same as VBS output
- SYNC signal Same as VBS output

C Output

- Number of outputs 1, $75 \Omega \pm 3\%$ (TG-7/1)
- Chrominance signal Same as VBS output
- Color burst signal Same as VBS output

Black Burst Signal

- SYNC signal TG-7/1: $0.286 \text{ Vp-p} \pm 3\%$ as standard
- Color burst signal TG-7/1: $0.286 \text{ Vp-p} \pm 3\%$ as standard

• Internal Sync Signal Output

Output signals

TG-7/1: HD / VD / BL / SYNC / BF / SC / FIELD REF

Output level of pulse

TG-7/1: $4 \text{ Vp-p} \pm 10\%$ each output, negative polarity

SC output level

TG-7/1: $2 \text{ Vp-p} \pm 10\%$, Sine wave

Output impedance

TG-7/1: $75 \Omega \pm 5\%$

Number of outputs

TG-7/1: 1 output for each signal

- Subcarrier Frequency TG-7/1: $3.579545 \text{ MHz} \pm 5 \text{ Hz}$
- Phase range Chroma phase: $0-360^\circ$ or more variable (color burst not variable)

• Gen-lock Operation

Input Signal

- TG-7/1: NTSC standard signal or sync with color burst
- Input Level (VBS) $< 1 \text{ Vp-p} \pm 6 \text{ dB}$
- SC locked range $\pm 50 \text{ Hz}$

• VIK Pulse Input

- Input level TTL, positive polarity
- Input impedance $> 150 \Omega$ (BNC)

• External Control

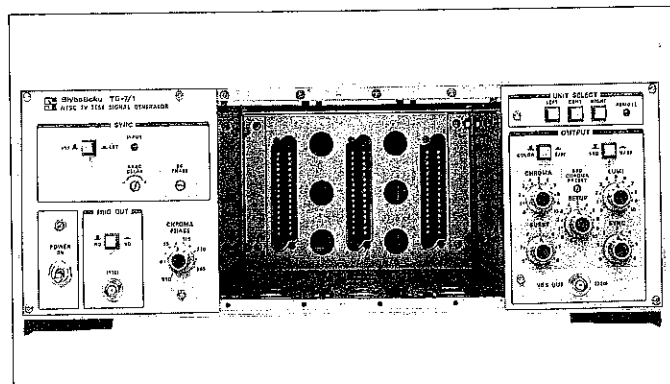
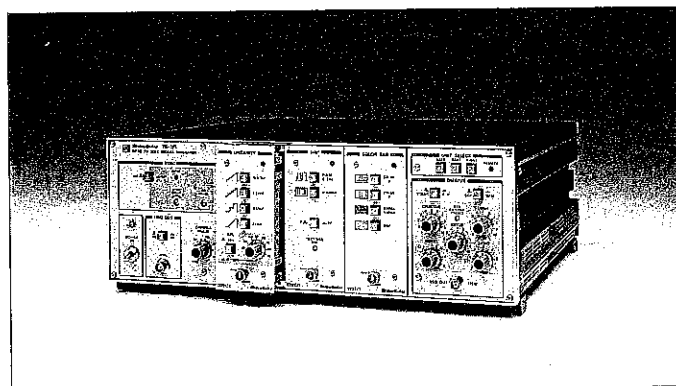
- Gen-lock Internal/External, switchable
- Chroma phase adjustment $0-360^\circ$ variable
- Color/B&W switching Available
- Plug-in module selection Available
- Selection of signals generated by plug-in module Variable

• Characteristics

- Hum and noise (at standard output) $< 1 \text{ mVp-p}$
- Synchronized noise (at standard output) $< 5 \text{ mVp-p}$

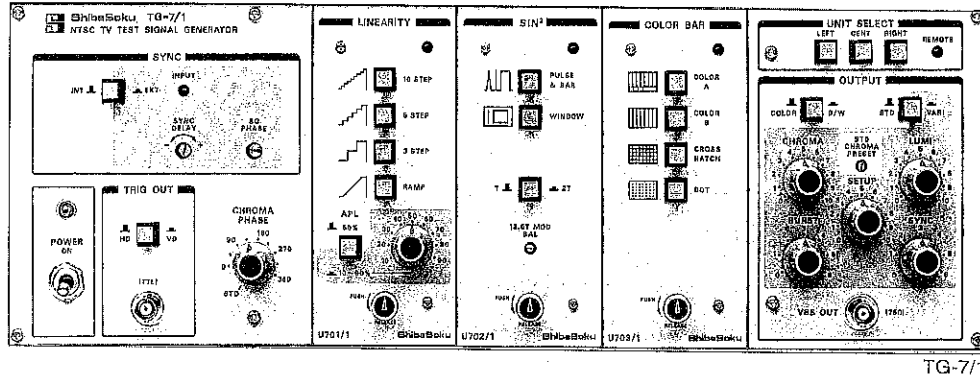
• General Specifications

- Power supply AC 100/120/220/240 V $\pm 10\%$,
50/60 Hz, approx. 130 VA
- Dimensions 426 (W) x 149 (H) x 450 (D) mm
- Weight Approx. 14 kg
- Accessories
Supplied Extender board x 2
(Extender boards are available for both main frame and plug-in units.)

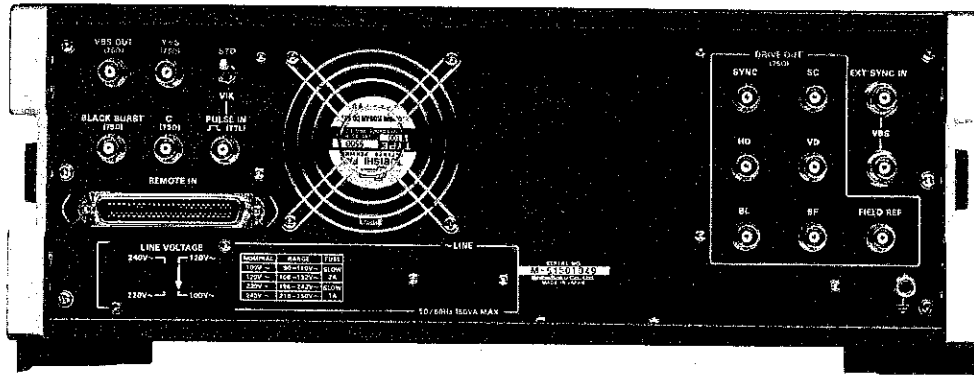


TELEVISION INSTRUMENTS

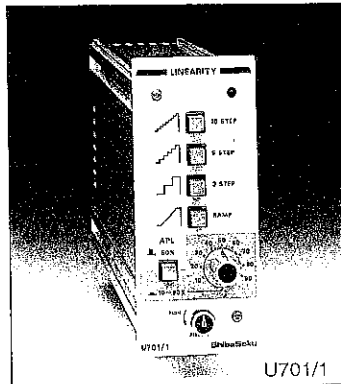
Front View



Rear View



U701 Linearity Unit



GENERAL

This TG-7 module generates 4 signals for evaluating non-linear distortion in video and television equipment.

FEATURES

- Generates 4 signals: 10/5/3-Stair Step, and Ramp signals, selected by pushbutton switches.
- With the Subcarrier signal ON, this unit is an ideal source for Differential Gain - Differential Phase measurements.
- Signals conform to CCIR-REC 421-2 Signal #3 standards.

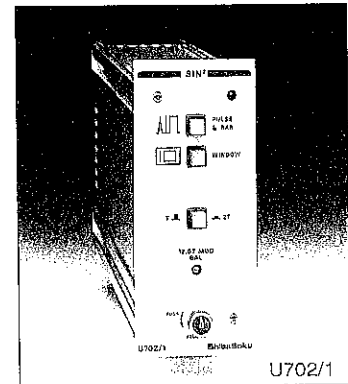
TELEVISION SYSTEMS

U701/1 System M; Color NTSC

SPECIFICATIONS

- Output Waveform
 - Stair-step signals 10-, 5-, 3-stair step signals and ramp signal
 - APL U701/1: 50% and 10-90% adjustable
 - Luminance output level ... Depending on mainframe
 - Chrominance signal (standard value) U701/1: 0.286 Vp-p \pm 3%
- Characteristics
 - Chroma phase U701/1: $\leq 1^\circ$ against color burst
 - DG, DP 0.1%, 0.1°
- External Signal Selection ... All signals available
- General Specifications
 - Dimensions 61.5 (W) x 142 (H) x 285 (D) mm
 - Weight Approx. 2 kg

U702 SIN² Unit



GENERAL

This TG-7 module generates 4 signals for evaluating the response to Sin² signal in video and television equipment.

FEATURES

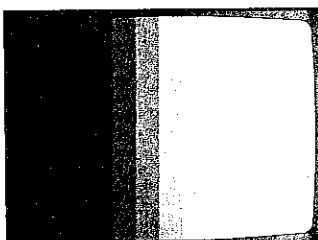
- Generates 4 signals U702/1: 12.5T Modulation Pulse and T/2T Pulse and Window Selected by pushbutton switches.
- An ideal source for measuring Luminance and Chrominance Linearity in equipment that utilizes a 1-H delay for Y/C separation.
- Signals conform to CCIR-REC 421-2 Signal #2 standards.

TELEVISION SYSTEMS

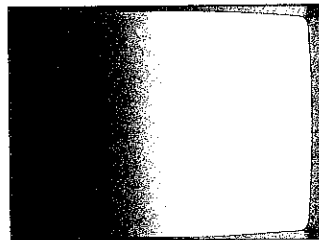
U702/1 System M; Color NTSC

SPECIFICATIONS

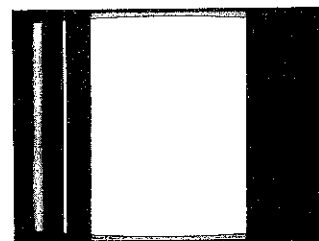
- Output Waveform
 - Pulse & bar (full field) 12.5T NTSC, T/2T and bar
 - Window 12.5T NTSC, T/2T and window
 - Luminance output level ... Depending on mainframe
 - Modulated 12.5T chroma level U702/1: 0.714 Vp
- Characteristics
 - T pulse & bar (half amp.) 125 \pm 4 ns
 - 2T pulse & bar (half amp.) 250 \pm 8 ns
 - Modulated 12.5T 12.5T: 1560 \pm 70 ns
 - Window White window on black background
 - Rating factor K: ≤ 1
 - Modulated 12.5T characteristics Envelop delay: ≤ 10 ns Provided 60 Hz NTSC offset against subcarrier of mainframe
- External Signal Control All signals available
- General Specifications
 - Dimensions 61.5 (W) x 142 (H) x 285 (D) mm
 - Weight Approx. 2 kg



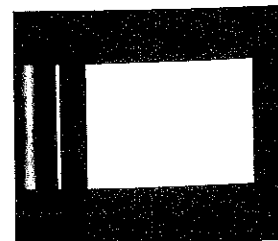
Mod. 10 Step



Mod. Ramp

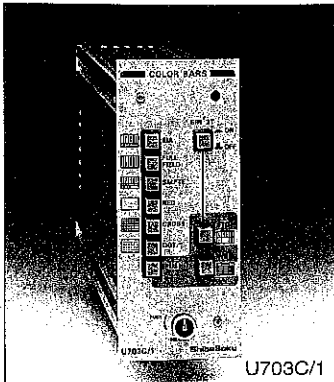


2T Pulse & Bar



2T Window

U703 Color Bar Unit



GENERAL

This TG-7 module generates 4 signals for evaluating color reproduction and deflection characteristics in video and television equipment.

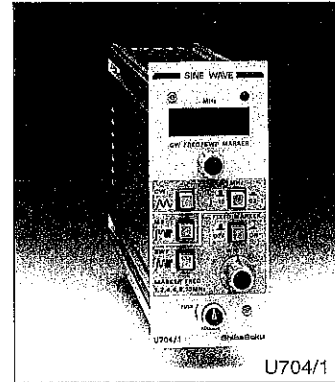
TELEVISION SYSTEMS

- U703/1 System M; Color NTSC
- U703C/1 System M; Color NTSC

SPECIFICATIONS

- Output Waveform
 - Color bar U703/1: EIA standard and full-field (SET UP 7.5%)
U703C/1: SMPTE bars, EIA bars, Full-field, White balance, Chroma phase/gain adj pattern, Red raster (SET UP 7.5%)
 - Crosshatch 17 x 13 lines white grating
 - Dot Approx. 200 white dot
 - Luminance Output Level
 - Color bar $\pm 2.5\%$ to reference value (U703/1)
 - Crosshatch & dot Depending on mainframe
 - Chrominance output level $\pm 2.5\%$ to ref. val. (U703/1)
 - Characteristics
 - Chroma phase $\pm 2.5\%$ to ref. val. (U703/1, U703C/1)
 - Y/C delay inequality ± 50 ns (U703/1, U703C/1)
 - External signal control All signals available
- General Specifications
 - Dimensions 61.5 (W) x 142 (H) x 285 (D) mm
 - Weight Approx. 2 kg

U704 Sine Wave Unit



GENERAL

This TG-7 module generates 3 signals for evaluating frequency response characteristics in video and television equipment.

FEATURES

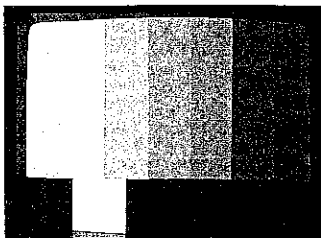
- Generates 3 signals: Sine wave (CW), Video sweep, and Multiburst, selected by pushbutton switches.
- Signals are generated with video sync to provide easy measurement of resolution and frequency response of monitors, VTRs, and other video equipment.
- Built-in frequency counter displays frequency of sinewave signals or the video sweep variable marker.

TELEVISION SYSTEMS

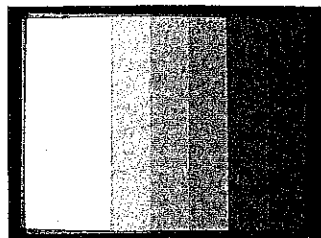
- U704/1 System M; Color NTSC

SPECIFICATIONS

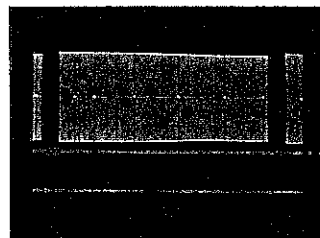
- Output Waveforms Sine wave, Sweep, Multiburst
- Output level Depending on mainframe
- Characteristics
 - Frequency Range and Flatness
 - Sine wave 100 kHz ~ 10 MHz, ± 0.5 dB
 - Sweep 100 kHz ~ 10 MHz, ± 0.5 dB
 - Fixed marker 1/2/4/6/8/10 MHz
 - Variable marker 100 kHz ~ 10 MHz
 - Multiburst U704/1: White/0.5/1/2/3/3.58/4.2 MHz, ± 0.5 dB
 - Frequency Accuracy
 - Frequency counter 5×10^{-4}
 - Sine wave Counter display ± 1 count
 - Variable marker Counter display ± 1 count
 - Fixed marker $\pm 3\%$
 - Multiburst $\pm 3\%$
 - Distortion $\leq 3\%$
- External Signal Control Available for all signals
- General Specifications
 - Dimensions 61.5 (W) x 142 (H) x 285 (D) mm
 - Weight Approx. 2 kg



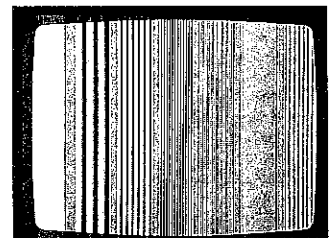
EIA Bar



Full-field

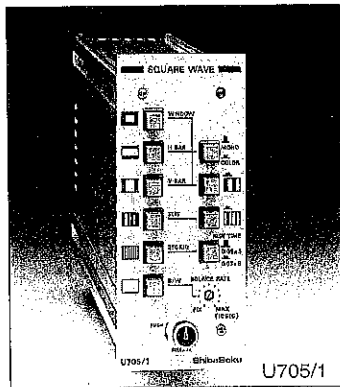


Sweep



Multiburst

U705 Square Wave Unit



GENERAL

This TG-7 module generates 12 signals for evaluating the response to squarewave signals in video and television equipment.

FEATURES

- Generates 12 signals: H Bar, V Bar, Window, Slit, 250-kHz Bar, B/W Field with variable bounce rate, Color Window, and Bar. Selected by pushbutton switches.
- Three Slit waveforms with different pulse widths are generated simultaneously.
- Selectable rise time for 250-kHz squarewave, 0.05 μ s or 0.03 μ s.
- Full White Field with bounce rate in fixed position.

TELEVISION SYSTEMS

U705/1 System M; Color NTSC

SPECIFICATIONS

Output waveforms Window, H bar, V bar, color window, color H bar, color V bar, twin V bar, color twin V bar, slit, reverse slit, 250 kHz bar, and B/W (variable bounce rate)

Luminance output level Depending on main frame

Characteristics

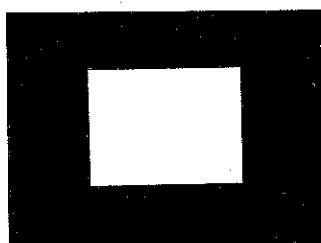
Waveform distortion $\leq 1\%$ overshoot, sag, smear
 Rise time of 250-kHz bar Switchable: 0.03 μ s $\pm 20\%$ and 0.05 μ s $\pm 20\%$

Bounce rate Fixed or 0~10 sec. variable

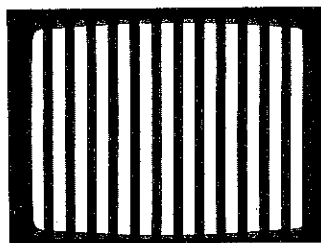
External control of signal Available for all signals

General Specifications

Dimensions 61.5 (W) x 142 (H) x 285 (D) mm
 Weight Approx. 2 kg

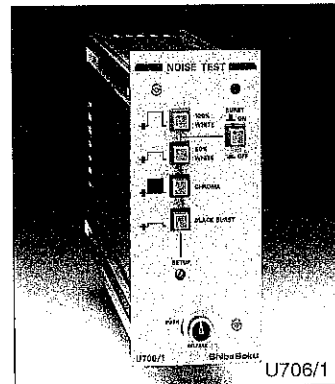


Color Window



250 kHz Bar

U706 Noise Test Unit



GENERAL

This TG-7 module generates 4 signals for evaluating Luminance and Chroma noise in video and television equipment, especially in VTR and video tape testing.

FEATURES

- Generates 4 signals: 100% White Field, 50% White Field, 100% Chroma, and Black burst. Selected by pushbutton switches.
- Burst selectable for ON/OFF for White Field signals.
- Provides an ideal reference signal for Luminance and Chroma noise measurements with the Shibasoku VN31AX color noise meters.

TELEVISION SYSTEMS

U706/1 System M; Color NTSC

SPECIFICATIONS

Output waveform 100% white, 50% white, 100% chroma, black burst
 Color burst ON/OFF, selectable for 100% and 50% white

Output Level

100% white 0.714 $\pm 3\%$
 50% white 0.357 $\pm 3\%$
 100% chroma 0.714 $\pm 3\%$
 Black burst Set-up 0~0.143 Vp-p

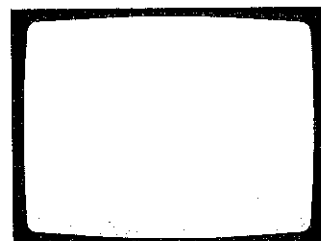
Characteristics

S/N
 -60 dB 100 Hz ~ 4.2 MHz 100 Hz ~ 5 MHz
 -65 dB 10 kHz ~ 4.2 MHz 10 kHz ~ 5 MHz
 (S = 0.714 Vp-p, (S = 0.7 Vp-p,
 N = Vrms) N = Vrms)

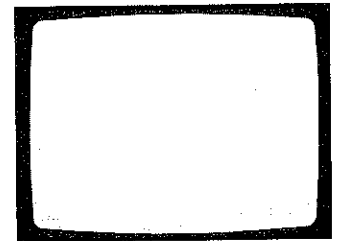
External control of signal Available for all waveforms

General Specifications

Dimensions 61.5 (W) x 142 (H) x 285 (D) mm
 Weight Approx. 2 kg



50% White



100% Chroma



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