

SWEEP GENERATOR Model 1703

GENERAL INFORMATION www.donatronix.com

INTRODUCTION

Model 1703 is a solid-state, electronically swept and tuned Sweep Generator covering the VHF and UHF frequency ranges. It is designed especially for testing and aligning varicap TV tuners.

The most outstanding feature of the Model 1703 is its ability to be remotely controlled and programmed. This enables the sweep generator to be sequenced to the test procedure with pushbutton switches or electronic sequencers instead of manual tuning and adjustments. The Model 1703 includes internal provision to program 10 different sequences using a single contact closure to each of 10 programming cards. The cards can select the varicap tuning voltage range for each program and can provide one, two, three or four switched voltages during a single sweep. This enables the user to look at both ends of the tuner simultaneously. By using three or four displays, complete alignment of the tuner can be accomplished accurately and rapidly. The cards may be programmed for a number of displays (from one to four), varicap tuning voltage, sweep center frequency for each display, sweep width, marker selection, and automatic frequency mode.

In automatic operation, the sweep generator frequency and RF output level are automatically adjusted to follow the variations of the tuner. This provides considerable time saving during the alignment procedure.

Included with the automatic options are scope indicators that provide both frequency and RF output indications directly on the oscilloscope display. Additional options are crystal-controlled RF markers (single frequency or harmonic type).

The Model 1703 will accept a total of sixteen RF markers. Local oscillator tracking markers are also available on each instrument.

All optional features, as well as the circuits for the basic sweep generator, have plug-in modular construction. This allows optional features to be factory installed at the time of purchase, or customer installed at a later date. This concept offers protection against obsolescence since updated and additional features can be simply and economically added as new tuner designs and test procedures dictate. Maintenance problems can also be greatly simplified by the stocking of several modules instead of hundreds of discrete parts. Servicing time of a defective instrument can be cut and service can be performed by relatively inexperienced technicians.

Specifications	
RF OUTPUT	
Frequency Range	RF1: 10 MHz to 1 GHz ; RF2: 10 - 70 MHz
Blanking	Retrace blanking of the RF output to provide a zero level base line.
Amplitude	Continuously adjustable from 0.7 VRMS to 100.00 mVRMS (+57 to +37 dBmV).

ATTENUATORS	
Step	0 to 35 dB in 5 dB steps; accuracy =+0.5 dB to 500 MHz, +/- 1 dB to 1 GHz.
Vernier	0 to 20 dB; uncalibrated
Flatness	+/- 0.25 dB (read with negative detector)
Impedance	75 ohms
SWEEP SPECIFICATIONS .	
Sweep Rate	AC line frequency (50-60 Hz)
Sweep Width	5 to 1000 MHz
Display Linearity	+/-2%
Horizontal Output	16 V _{pp} (symmetrical about ground)
REMOTE PROGRAMMING	The rear-panel EXT PROGRAMMING jack: provides necessary connections for remote control of center frequency and output level, and for selections of Program Card options.
Center Frequency	May be remotely programmed by a +/- 16 V signal (-16 V corresponds to low-frequency end of band).
Output Level	May be remotely programmed over a 20 dB range with a 0 to -18 V (-18 V corresponds to maximum output).
Program Cards	Single contact closure selects one of up to ten Program Card options.
MARKERS	
Type	Birdy by-pass: Provision for 8 plug-in marker modules plus external marker input (see also Option A). Markers may be either single frequency or harmonic (comb) type (see Options A-1 and A-2). Pulse markers are also provided with Option B and B-1.
Accuracy	Birdy: ±0.005% L.O. Tracking (Option B) Pulse: +/- .02% (+25 kHz) measured from leading edge.
External Marker Input	Front-panel BNC connector accepts external CW signal for conversion to a birdy marker. Input level = 100 mV in to 50 ohms.
Marker Size	Birdy: Adjustable from 3 mV _{pp} to 3V _{pp} . Pulse: Adjustable from 0 to 8 V _{pp} (differentiated pulses) at front-panel SCOPE VERT OUT connector. Option B pulse markers are also adjustable from 0 to 30 V _{pp} (switchable polarity) at rear-panel pulse MARKER OUTPUT connector.
GENERAL	
Power Requirements	100/120/220/240 VAC 50-60 Hz. ±10% (approx. 50 W)
Dimensions (including screw heads, knobs, and feet)	14.3 cm (5-5/8 in.) high 36.8 cm (14-1/2 in.) deep 48.3 cm (19 in.) wide
Weight	66 kg (30 lbs.) net ; 77 kg (35 lbs.) shipping
OPTIONS	
	NOTE; INFORMATION PERTAINING TO OPTIONS A-1, A-2, B/B-1, C, D, E, and CE01-1/2/3/4 IS INCLUDED IN THE MANUAL TEXT. INFORMATION FOR ALL OTHER OPTIONS IS LOCATED AT THE REAR OF THIS MANUAL WHEN THESE OPTIONS ARE INSTALLED.
A	Provision for eight additional markers.
A-1	Single Frequency Marker at any frequency within instrument range.

A-2	Harmonic Marker at 1, 10, or 50 MHz (other frequencies available on special order) intervals.
B	Local Oscillator Tracking generates two pulse markers based on the Channel output frequency from a converter. These markers indicate RF bandwidth, local oscillator frequency, and tracking. The markers can be any two frequencies within the IF input frequency range. With the addition of a capacitor, a channel-center pulse can be added if desired.
IF Input	
Frequency	28 to 47 MHz
Minimum Level	Approximately 1mV at IF IN connector ($Z_{in}=50\text{ohms}$)
B-1	Multiple Standard Local Oscillator Tracking, performs same function as Option B for two or three standards.
C	Automatic Level Control and Scope Indicators provides automatic adjustment of the RF output level to correct for variations in the gain of the tuner under test. Also provided are visual indications of the instrument's center frequency and RF output level.
D	A 70 dB (10 dB/step) Step Attenuator is available to replace the standard 35 dB (5 dB/step) Step Attenuator to provide greater RF output level range. NOTE; SINCE THE STEP ATTENUATOR INCREMENT IS DOUBLED, THE AUTOMATIC LEVEL RANGE OF OPTION C MAY BE SOMEWHAT REDUCED.
E	Automatic Frequency enables the instrument to track the tuner under test, maintaining the demodulated response at the center of the scope display. Opt. B is required with Option E.
J	Image Test System programs two displays, true response and image response. Switch and supply voltages are provided to control the gain of the external Image Test module. This option is used to check the image rejection of a tuner.
CE01-1/2/3/4	Program Cards control the instrument center frequency, sweep width, and markers, and the tuner varactor bias. The "dash" suffix indicates the number of displays each individual card will program.
R1/R2/R3	RF Routing Options, R1 is standard. R1 has two outputs, one has an attenuator or bypass and a frequency range of 10-1000 MHz, the other has an attenuator with a frequency range of 10-70 MHz. R2 has one output with three states, 10-1000 MHz through an attenuator, 10-1000 MHz with no attenuator, or 10-70 MHz with no attenuator. R3 has two outputs, one is 10-1000 MHz with an attenuator or 10-70 MHz with no attenuator, the other is 10-1000 MHz with an attenuator.
ACCESSORIES	
Furnished with instrument	Instruction Manual Spare plug with pins for remote programming (mates with EXT PROGRAMMING jack).

Wavetek 1703 & Fuchs 3002

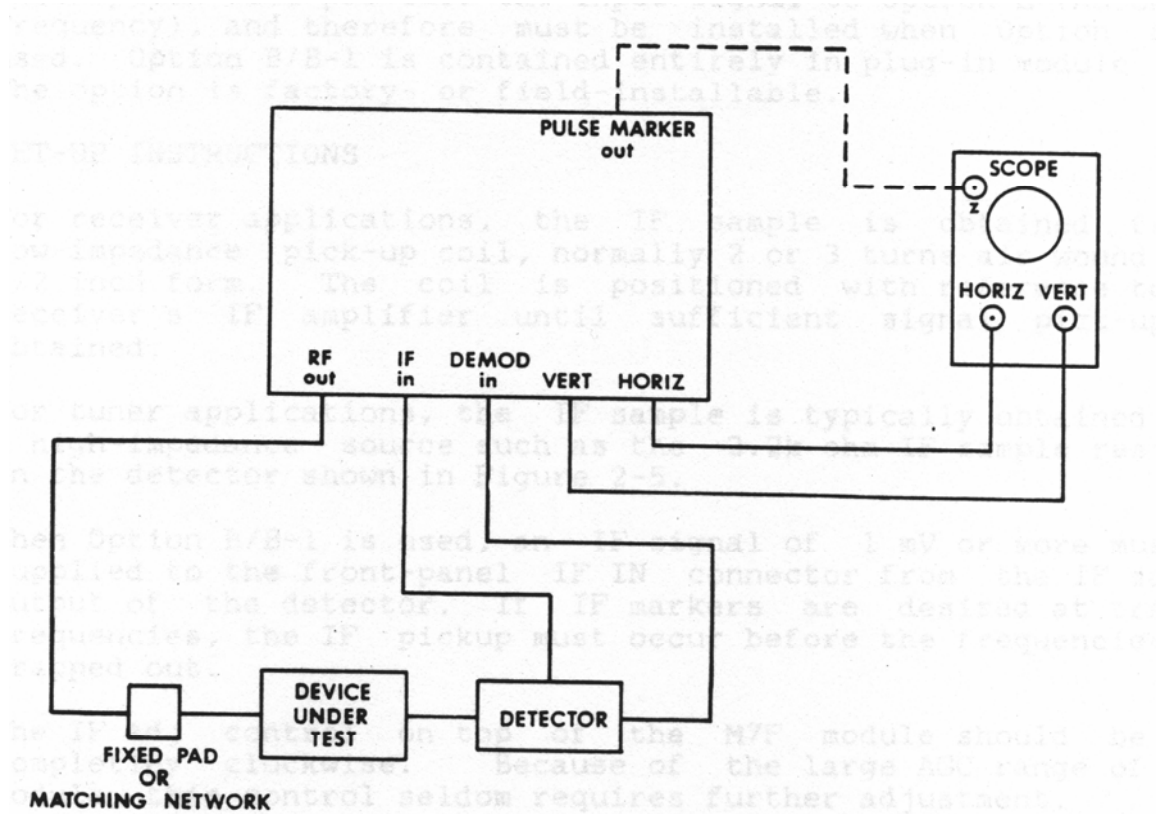


Figure 2-3. Typical Set-up

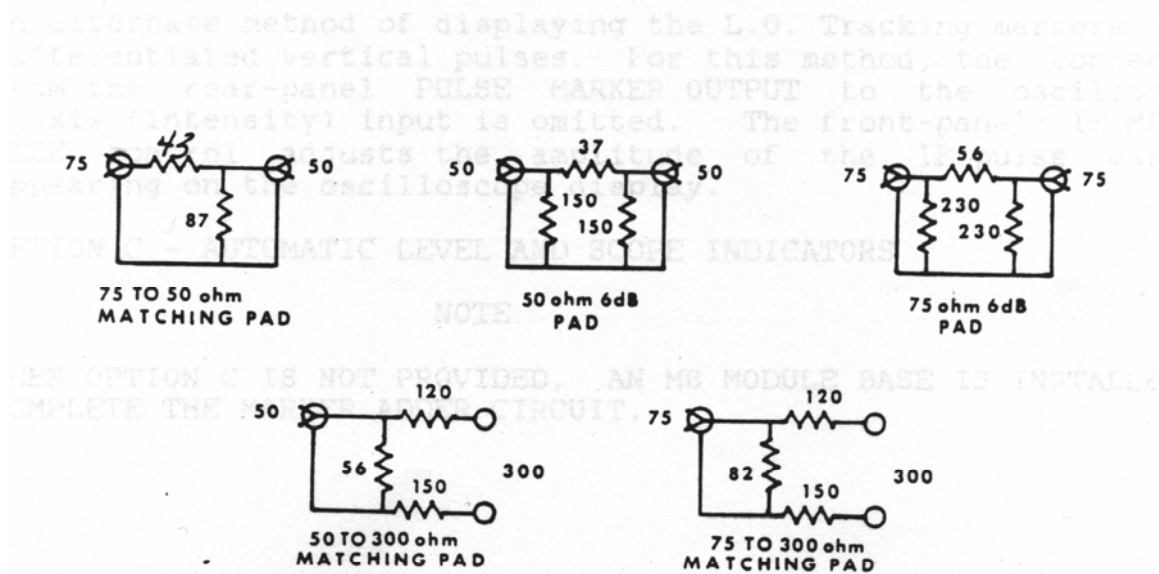


Figure 2-4. Typical Resistive Pads

CARD*	UNITRA ORDER NO. 36 220/9 2469	DIODES
1. CE01-1 OIRT VHP LOW	49.75 MHz 99.75 MHz	12. 18
2. CE01-1 OIRT VHFHI	175.25 MHz ; 229.75 MHz	22.28
3. CEOI-1 OIRT AUTO	49.75 MHz 99.75 MHz 175.25 MHz 229.75 MHz	12.18.22. 28.31
4. CE01-3 UHF	NO MARKER 471.25 MHz 790.00 MHz 860.75 MHz 861.75 MHz	32.34
5. CEOI-1 UHF AUTO	471.25 MHz 860.75 MHz 861.75 MHz	31.32.34
6. CEOI-1 CCIR Band 1	48.25 MHz ; 67.75 MHz	10. 16
7. CE01-3 CCIR Mid. Bd III Super Bd	110.75 MHz 112.25 MHz 175.25 MHz 299.75 MHz	20. 22. 30
8. CEOI-1 CCIR AUTO	110.75 MHz 112.25 MHz 299.75 MHz	20.30. 31
9. CEOI-1 FRENCH L VHFLO	41.25 MHz 63.75 MHz	8. 14
10. CEOI-3 FRENCH L VHF HI	NO MARKER 176.00 MHz 192.00 MHz 222.50 MHz	24.26