

OPERATING INSTRUCTIONS
FOR
MODEL
705A



RADIO CITY PRODUCTS COMPANY, INC.

127 WEST 26TH STREET



NEW YORK 1, N. Y.

MANUFACTURERS OF PRECISION ELECTRONIC LIMIT BRIDGES — VACUUM TUBE VOLTMETERS
— VOLT-OHM-MILLIAMMETERS — SIGNAL GENERATORS — ANALYZER UNITS — TUBE TESTERS
— MULTI-TESTERS — OSCILLOSCOPES — AND SPECIAL INSTRUMENTS BUILT TO SPECIFICATIONS

GENERAL

The Model #705A Signal Generator incorporates a thoroughly shielded, electron coupled oscillator, continuously variable over a range of fundamental frequencies from 100 kilocycles to 25 megacycles. By the use of harmonics, the high frequency band will extend the range to over 100 megacycles.

The two tubes included in the Signal Generator serve the following functions. The 6SJ7 metal tube is the R.F. oscillator, the 6SN7 tube is the rectifier and audio oscillator.

TUNING

Smooth tuning is accomplished by a ball bearing type of variable condenser. This condenser is controlled through a planetary drive of high ratio. The dial calibration is etched directly on the panel. For any desired frequency, observe the band (A, B, C, D, E or F) which includes the desired frequency, then turn the knob marked "FREQUENCY BANDS" to the proper position. This automatically connects the correct coil in the oscillator circuits and also automatically short circuits all of the other coils. The accuracy of calibration is held within 2%. This is accomplished at the factory by means of the individual trimming of condensers for each band and the proper adjustment of the split end plates of the tuning condenser.

OPERATION

This instrument is designed for operation from a 115 volt 60 cycle power line. CAUTION: This instrument CANNOT be used on 110 Volt D.C. power lines.

PROTECTION

The Model #705A is protected by a 1 ampere fuse. The fuse is mounted near the power transformer on the chassis.

CONNECTION

The output signal of the generator is coupled to the radio set or other apparatus through a coaxial cable and connector. Alligator clips at the opposite end facilitate connection. The alligator clip connected to the long flexible black wire is connected to the ground terminal of the set or apparatus and the other alligator clip, which is soldered to the inner conductor of the shielded cable, is connected to the antenna terminal of the device under test through a 0.01 or 0.1 mfd. condenser having a rating of 400 volts or more.

It is important that the set under test be thoroughly grounded for best results. This, does not apply to those AC-DC sets which should not be grounded, but only to those sets on which a ground connection is provided.

The opposite end of the shielded connector cable should be connected to the coaxial cable connector on the panel of the Model #705A marked "LO RF OUTPUT".

On sets having only an antenna terminal, connect the antenna alligator clip on the shielded cable to this antenna cable, through a 0.01 to 0.1 mfd. condenser. The ground lead from the signal generator should be connected independently to a good ground.

I.F. AMPLIFIER CONNECTIONS

Always use a paper blocking condenser in series with the signal generator output lead when connecting the I.F. signal to the I.F. stages of any receiver.

MODULATION

An audio signal of approximately 400 cycles is generated by one triode section of the 6SN7 tube. The R.F. or I.F. signal generated by the 6SJ7 oscillator tube may be modulated by the signal generated by the audio oscillator by placing the switch marked "MOD. ON-OFF" to the "ON" position. Thus, when the modulated R.F. or I.F. signal is coupled to a radio set tuned to the same frequency, a 400 cycle note will be heard. The percentage of modulation can be adjusted to approximately 30% or 80% by placing the "MOD." switch in the "LO" or "HI" positions respectively. This is useful in checking detectors and audio amplifiers of receivers for overload and distortion. The Model #705A signal generators can also be modulated with modulating voltages from an external source. This voltage should be connected to the GND and HF terminals and the "MOD ON-OFF" switch should be in the "OFF" position.

AUDIO FREQUENCY SIGNAL

The Model #705A may be used as a source of 400 cycle audio frequency voltage. This audio frequency voltage may be used for testing the audio frequency section of a receiver, A.F. amplifier, public address and sound systems.

The audio frequency voltage generated is available at the pin jacks marked "AUDIO OUTPUT" on the panel of the Model #705A. With the "MOD." switch in the "HI" position, the output voltage at these terminals is approximately 1.5 volts. With the "MOD." switch in the "LO" position it is approximately 1 volt. This voltage may be attenuated by connecting a 5,000 ohm potentiometer across the two pin jacks and connecting the ground end of this potentiometer to the ground on the audio amplifier. The sliding contactor on the potentiometer is connected to the audio frequency amplifier input through a shielded cable, whose shield is connected to ground.

Stability of operation is assured through careful and efficient electrical and mechanical design. Magnetic and electrostatic shielding is provided for the instrument as a whole, as well as for the oscillator tube, R.F. coils, attenuator, output jack, power transformer, etc. The circuit design incorporates all modern features to eliminate drift and other symptoms of instability. If it is desired to procure extreme accuracy of better than 1 per cent deviation, a series of charts are provided for listing fine corrections applying to the major dial readings for each band.

CAUTION: THE CORRECT CARE MUST BE OBSERVED IN USING AND OTHERWISE HANDLING THIS INSTRUMENT IF ACCURACY IS TO BE MAINTAINED. PHYSICAL SHOCK TO THE GENERATOR MUST BE AVOIDED. THE INSTRUMENT SHOULD NOT BE EXPOSED TO EXCESSIVE HEAT OR MOISTURE.

ATTENUATED OUTPUT

The output signal level or strength of signal is controlled by means of a shielded, 5 step ladder type attenuator controlled by a variable potentiometer and a 5 point multiplier switch. Operation of the attenuator consists of adjusting the knob marked "ATTENUATOR" and the knob marked "OUTPUT MULTIPLIER" for the desired results.

The output voltage may be determined approximately by multiplying the indication of the "MULTIPLIER" knob setting by that of the "ATTENUATOR" knob setting. This product is the approximate output in microvolts, and is reasonably accurate for bands A, B, C, and D. The attenuator thus permits a continuously variable output of from approximately 1 microvolt minimum to 0.5 volt maximum.

UNATTENUATED OUTPUT

If it is desired to obtain a greater RF output voltage than is available from the "IO RF" output terminal, the "HI RF" output jack should be used.

This is particularly useful in the case of receivers with badly misaligned or inoperative IF coupling units. The "HI RF" output jack provides a signal 10 times greater than that available at the "IO RF" output connector. The output from this jack is not affected by the setting of either the "OUTPUT MULTIPLIER" or the "ATTENUATOR".

In ordinary alignment work, the value of the signal voltage is unimportant, but it is very important to use the lowest voltage that can possibly be utilized. This is, of course, at the lowest setting of the attenuator on the short wave or higher frequency bands. The selectivity of some sets is such that "Image Frequency" or "spurious response" may be indicated by signal reception at two or more positions on the radio dial.

To distinguish between the two positions:- the actual signal should be more audible than the image. The image will occur at a point that differs from the signal frequency by twice the value of the I.F. (Intermediate Frequency) in superheterodyne receivers.

The details peculiar to the alignment of any particular set are furnished by the manufacturer of that set. Such information is available in the service notes published by the set manufacturers, as well as in the various commercial service manuals that are on the market.

It is absolutely necessary to first have a knowledge of the circuit design constants of the receiver to be tested or adjusted (such as the frequency at which the different bands should be aligned for proper dial reading) in order to intelligently use this signal generator in conjunction with such testing. It is essential to know the process of aligning various types of circuits and this can be learned by reading various textbooks or studying in various resident and home study radio schools. This, together with actual shop and field experience, constitutes fundamental requirements for service work and particularly for the proper use of a signal generator.

Guarantee

The instrument is guaranteed to be free from any defect in material and workmanship that may develop within a period of 90 days from date of purchase under the terms of the standard RMA guarantee. Any part or parts that prove defective within this period will be replaced without charge when subjected to examination at our factory providing such defect is, in our opinion, due to faulty workmanship or material, and not caused by tampering, abuse or normal wear.

Radio City Products Company, Inc. reserves the right to make changes in design or add improvements to instruments manufactured by them without incurring any obligation to install such changes or improvements in any instrument previously purchased.

Radio City Products Co., Inc.
127 West 26th St.
New York, 1, N.Y.

A

Fre- quency	+ Corr. in KC	- Corr. in KC
100		
120		
140		
160		
180		
200		
220		
240		
260		

B

Fre- quency	+ Corr. in KC	- Corr. in KC
300		
350		
400		
440		
500		
550		
600		
650		
700		
750		
800		

C

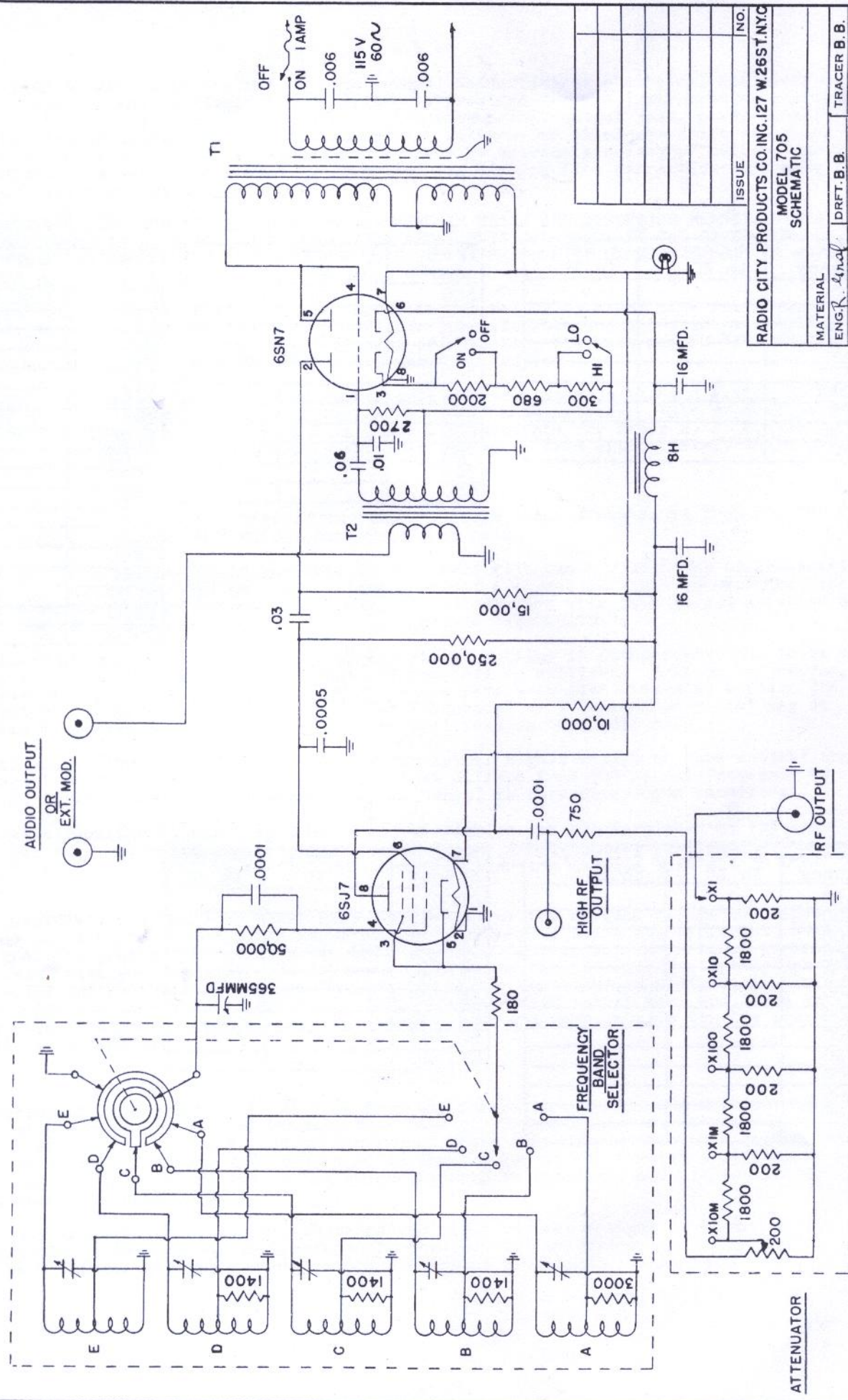
Fre- quency	+Corr. in KC	- Corr. in KC
800		
850		
900		
950		
1000		
1100		
1200		
1300		
1400		
1500		
1600		
1700		
1800		
1900		
2000		
2200		
2400		
2600		

D

Fre- quency	+ Corr. in KC	- Corr. in KC
2600		
3000		
3500		
4000		
4500		
5000		
5500		
6000		
6500		
7000		
7500		
8000		
8500		

E

Fre- quency	+ Corr. in KC	- Corr. in KC
8000		
10,000		
12,000		
14,000		
16,000		
18,000		
20,000		
22,000		
24,000		



RADIO CITY PRODUCTS CO. INC. 127 W. 26 ST. N.Y.C.	
MODEL 705	NO.
SCHEMATIC	ISSUE
MATERIAL	
ENG. R. <i>W. B.</i>	DRFT. B. B.
DATE 30 APR 46	DWG. NO. 705200
	TRACER B. B.

AUDIO OUTPUT
OR
EXT. MOD.

HIGH RF
OUTPUT

FREQUENCY
BAND
SELECTOR

ATTENUATOR