SUPREME MODEL 666

ELECTRICAL SPECIFICATIONS

POWER SUPPLY REQUIREMENTS: **(Unless otherwise specified on plate attached to instrument.)**

Voltage.....110/125 volts A-C
Frequency.....50/60 cycles
Power Consumption.....50 watts maximum

MECHANICAL SPECIFICATIONS

OVER-ALL DIMENSIONS:

Height.....11-1/2 inches
Width.....15-1/2 inches
Depth..... 8-3/4 inches

WEIGHT:

Net.....35 pounds
Shipping.....40 pounds

STANDARD EQUIPMENT SUPPLIED WITH THE SUPREME MODEL 666

QUANTITY INCLUDED	STOCK NUMBER	DESCRIPTION	PACKER'S CHECK
1	9644	Booklet, Instructions	
1	6725	Card, Return Registration	
1	7682	Screen, Calibrated Non-linear	
2	5119	Connector, Shielded Cable	

The above list has been checked by the undersigned who is responsible for the completion of this package.

MODEL 666 *(Signed).....*
Shipping Department

SERIAL #.....

MENTION ABOVE NUMBERS IN ALL CORRESPONDENCE.

IMPORTANT

See enclosed colored page for information concerning Registration, Transportation Damages, Warranty, Replacement Parts, etc.

The instructions listed on this colored sheet *must* be complied with before the warranty policy is applicable. The Model and Serial numbers should be mentioned in *all* correspondence regarding this instrument.

SUPREME MODEL 666 COMBINATION
A—F AND R—F SIGNAL GENERATOR

GENERAL DESCRIPTION

The SUPREME Model 666 is a combination signal generator incorporating an audio frequency generator, radio frequency generator and a frequency modulator. This unit is capable of providing the service technician with any type of signal required for the testing and alignment of radio receivers and similar electronic apparatus.

The audio frequency generator is of the beat frequency type designed to produce a controlled source of signal covering the audio spectrum (15 to 15,000 cycles). The output of this section is provided with a special transformer which offers the operator a choice of four carefully selected impedances to match the input of P-A amplifiers, motion picture sound equipment, inter-department communication systems, etc.

The radio frequency generator is of the cathode tap feedback type using a separate tube as a buffer amplifier and modulator. The R-F coils are so designed as to provide voltage of good waveform from 65 kilocycles to 20.5 megacycles in five bands of two scales. The R-F coils use adjustable iron cores and air trimmer capacitors, making the overall accuracy extremely high. The output is equipped with a completely shielded attenuator network to provide continuous variation of the output signal.

The frequency modulator is of the electronic type and was especially designed to produce a variable frequency signal of almost constant amplitude over a predetermined band. The frequency sweep and time base provide a double image pattern with automatic synchronization.

The Model 666 also contains two vacuum-tube voltmeters, one for monitoring the A-F output and percentage modulation and the other for checking the amplitude of the unmodulated signal.

A special switching arrangement makes it possible to use each of the three generators individually or in conjunction with each other. Thus we have a generator capable of providing a radio frequency test voltage which can be completely controlled as to frequency, output, type of modulation, percent and frequency of amplitude modulation.

Power Supply Requirements

Unless otherwise specified the instrument is designed to operate from 110 to 125 volts at 50/60 cycles. Power consumption is 50 watts maximum.

Tubes incorporated in the Audio Generator Section are two 6SK7 as R-F oscillators, one 6C5 as a mixer, and one 6C5 as amplifier.

In the R-F section, one 6SK7 is used as variable R-F oscillator, one 6K6 is used as buffer-mixer, one 6SN7 is used as F-M oscillator and A-F vacuum tube voltmeter, one 6SN7 used as R-F vacuum tube voltmeter and frequency control tube. In the power supply one 6X5 is used as a rectifier.

Panel Markings and Components

METER:

Three-inch round, 200 microampere, D'Arsonval type.

SCALES:

'Set Carrier' - Top scale with mark near center for indicating relative amplitude of unmodulated signal.

'% Modulation' - Lower scale with calibration marks (20-80) for indicating the percentage of modulation.

SOCKET:

(Lower left hand corner of panel labeled 'A-F OUTPUT') Output connections for audio generator and time base connections for frequency modulator.

SOCKET:

(Lower right hand corner of panel labeled 'R-F OUTPUT') Output connections for radio frequency generator and frequency modulator.

PUSH BUTTONS:

(Upper left hand corner of panel labeled 'AUDIO OUTPUT IMPEDANCE') Five buttons for selection of output impedances. (50, 500, 5,000, 50,000 and Balance) inaicated above respective buttons.

PUSH BUTTONS:

(Upper right hand corner of panel labeled 'RADIO FREQUENCY SELECTOR') Five buttons for selection of radio frequency band (65kc-205kc, 205kc-650kc, 650kc-2050kc, 2050kc-6.5mc, 6.5mc-20.5mc) indicated above respective buttons.

PUSH BUTTONS:

(Center of panel labeled 'R-F MULTIPLIER') Four buttons for controlling output of R-F signal in decade multiples of 1, 10, 100, 1000.

ROTARY SWITCH:

(Lower center of panel labeled 'OUTPUT SELECTOR') Five positions for applying power and for selection of type of signal (OFF, C.W., AMP, FREQ., EXT. A-F.)

ROTARY POTENTIOMETER:

(Lower left hand side of panel labeled 'A.F. ATTENUATOR') For A-F, output and percent modulation control. 'OFF' position switches in R-F vacuum-tube voltmeter.

ROTARY POTENTIOMETER:

(Lower right hand side of panel labeled 'R.F.

ATTENUATOR') R-F output control used as fine adjustment in conjunction with R.F. MULTIPLIER.

DIAL: (Illuminated)

(Left hand side of panel controlled by large knob directly below dial window) For selection of audio frequency (0 to 15,000 cycles.)

DIAL: (Illuminated)

Right hand side of panel controlled by large knob directly below dial window.) For selection of radio frequencies between the band limits. Top scale (A-C-E) used in conjunction with 65-205, 650-2050, 6.5-20.5 buttons. Lower scale (B-D) used in conjunction with 205-650 and 2050-6.5 buttons.

HEXAGON KNOB:

(Near center of panel labeled AUDIO ZERO ADJ.') For initial adjustment of A-F Generator.

HEXAGON KNOB:

(Near center of panel labeled 'CARRIER LEVEL') For adjusting amplitude of carrier to a predetermined level.

MODEL NUMBER:

(Indicated on right hand side of panel)

SERIAL NUMBER:

Printed on panel directly above MULTIPLIER buttons.

OPERATION

1. Connect power supply cable to a convenient A-C supply socket after you have made certain that it is the proper voltage and frequency. (See POWER SUPPLY REQUIREMENTS).

2. To set up the audio generator, turn the OUTPUT SELECTOR switch to 'EXT. A.F.' position. Turn the audio dial (0-15,000) to '0' and advance the A.F. ATTENUATOR until the meter indicates approximately center scale deflection. Regulate the hexagon knob

'AUDIO ZERO ADJ'. for 'zero beat'. (This condition will be noted when the needle falls to zero deflection or is vibrating slowly on the left hand side of the meter scale.) The audio frequency voltage is available at the A.F. OUTPUT socket by depressing one of the numbered '50, 500, 5,000, 50,000' AUDIO OUTPUT IMPEDANCE buttons and setting the audio dial to the desired frequency. For using the A.F. OUTPUT in conjunction with balanced or push-pull circuits, depress the proper impedance and 'BAL' button simultaneously until both lock down. The output is available from the two leads of the cable and the chassis of the panel is the center tap. The audio oscillator performs a dual purpose - that is, it can be used to modulate the R.F. oscillator of the Model 561, or it can be used as a separate unit.

3. To set up the radio frequency section, push the button which indicates points on either side of the desired frequency. Rotate dial to number on scale which is some decade sub-multiple of the desired point. Turn OUTPUT SELECTOR switch to ON position and A.F. ATTENUATOR to 'OFF' position. Adjust hexagon knob CARRIER LEVEL until meter reads to center scale mark. (NOTE: Meter will not adjust to center scale mark on frequencies above approximately 8 megacycles). With the controls in these positions, an unmodulated signal is available at the 'R.F. OUTPUT' socket. Use 'R.F. MULTIPLIER' for rough attenuation and 'R.F. ATTENUATOR' for vernier.

Band E on the 666 has a coverage, on fundamental frequencies, from 6.5 mc. to 20.5 mc. For higher frequencies, it is only necessary to utilize harmonics of the band. The second harmonic of 6.5 mc is 13.0 mc. and the second harmonic of 20.5 is 41.0 mc, therefore, any frequency may be obtained between 20.5 and 41.0 by dividing the wanted frequency in half and obtaining this value on Band E. If a 20 mc signal is desired, you would set the dial on 10 mc in the E band. For frequencies from 41.0 mc to

61.5 mc. the third harmonic can be used. Thus, if a frequency of 45 mc. is desired, by dividing by three, the result would be 15 and the dial should be set at 15 mc.

4. For amplitude modulation set OUTPUT SELECTOR to 'AMP' position and 'zero beat' A.F. generator as described in Section 2. Adjust the carrier by turning the A.F. ATTENUATOR to 'OFF' position and setting the carrier as described in Section 3. After the desired R.F. and modulation frequencies have been selected on the respective dials, advance A.F. ATTENUATOR to the desired percentage of modulation. The modulated signal is available at the R.F. OUTPUT socket and may be controlled by MULTIPLIER and R.F. ATTENUATOR.

5. To produce a frequency modulated signal, rotate OUTPUT SELECTOR to 'FREQ' position and set RADIO FREQUENCY SELECTOR to desired frequency plus 1000 kc. For example, if a frequency modulated signal of 456 kc. is desired, set the dial at 456 kc. + 1000 kc. or 1456 kc. If a frequency modulated signal of 600 kc. is desired, set the dial at 600 kc + 1000 kc or 1600kc. This signal is available at the R.F. OUTPUT jack and controlled through the R.F. ATTENUATOR and MULTIPLIER. When using the frequency modulator section it is recommended that the 'CARRIER LEVEL' control be turned to full clock-wise rotation. The frequency modulated signal is available at the R.F. OUTPUT socket and the time base is available at the A.F. OUTPUT socket. (Care should be taken to avoid letting the A.F. OUTPUT leads touch when OUTPUT SELECTOR is in 'FREQ' position.

6. Remember that this instrument differs from the ordinary test oscillator in that the audio modulation can be completely reduced to zero. In other words, although the R-F dial might be set at the correct frequency, the 'OUTPUT SELECTOR' switch set in the correct position, no AUDIO NOTE can be heard in the receiver's speaker unless the 'A.F. ATTENUATOR' has been turned up to produce the

audio modulation. Also, remember that the FREQUENCY of the audio note heard will be determined by the setting of the audio dial. For general testing this should be about 400 cycles.

SERVICE AND MAINTENANCE

All functions and ranges of the SUPREME Model 666 were carefully tested and calibrated before shipment from the factory. Under normal operating conditions this instrument should give a long and trouble-free service. However, if for any reason this instrument should fail to operate properly, write the Service Engineer at the factory. Submit complete information regarding the difficulty and full instructions will be forwarded in detail. The Model and Serial numbers, position of controls, inoperative section, and any other information should be given in your *first* letter.

REPLACEMENT PARTS

The parts used in the SUPREME Model 666 were carefully inspected for mechanical and electrical defects at the factory. Under normal conditions and average use the life of the tubes will be equal to those in radio receivers (approximately 1500 hours). Any special parts which are not available from regular dealers stocks may be ordered from your nearest SUPREME distributor by describing the item and giving the Model and Serial numbers of your unit.

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