



T E N T A T I V E

GENERAL CHARACTERISTICS

The X-392 is a single tube designed to convert UHF signals in the band from 1470-2670 megacycles to a 130 megacycle intermediate frequency output signal.

The tube consists of a backward-wave amplifier and a backward wave oscillator in the same vacuum envelope. The r-f input signal is fed to the amplifier section where its level is increased. It is then mixed with the oscillator signal in the common electron beam that interacts with both r-f structures, to yield an i-f output signal which can be adjusted over a fairly large frequency range. This tube uses a 130 megacycle i-f.

The X-392 is a glass tube, mounted in an aluminum capsule. Solenoid focusing is required. A type "TNC" r-f input connector and a "TSM" i-f output connector are included as an integral part of the capsule. A type "TNC" l-o output connector can be supplied if required.

ELECTRICAL DATA

| | |
|----------------------------|----------------------|
| Operating Frequency | 1470-2670 megacycles |
| Bandwidth of Input Section | 10-30 megacycles |
| Noise Figure | 20 db |
| I-F Output | 130 megacycles |
| Conversion Gain | Unity |
| Image Rejection | 35 db |

NOTE: The image rejection is dependent upon the intermediate frequency selected. This tube utilizes a 130 megacycle i-f, an increase in the i-f would result in a higher level of image rejection.

MECHANICAL DATA

| | |
|------------------------------------|----------------------------|
| Mounting Position | Horizontal (preferred) |
| Capsule Length | 39 inches |
| Capsule Outside Diameter | 2 inches |
| R-F Input Connector | Type "TNC" coaxial, female |
| I-F Output Connector | Type "TSM" coaxial, male |
| L-O Output Connector (if required) | Type "TNC" coaxial, female |
| D.C. Connections | Color Coded Flying leads |

*This number identifies a particular experimental tube design, such number and identification data being subject to change without notice. This tube is for experimental purposes only, carries no obligation for future manufacture, and should not be used for design purposes without prior arrangement.

MAXIMUM RATINGS

| | | |
|--------------------------------|-----------------------------|----------------------------|
| Heater Voltage | 6.5 Volts dc maximum | |
| Heater Current | 4 Amperes maximum | |
| Cathode Voltage | -200 to -1400 Volts maximum | |
| Cathode Current | 8 ma maximum | |
| Focus Voltage | 0 to -10 Volts maximum) | |
| Anode No. 1 Voltage | +10 to +70 Volts maximum) | With respect to cathode |
| Anode No. 2 Voltage | +10 to +150 Volts maximum) | |
| Anode No. 3 Voltage | +30 to +300 Volts maximum) | |
| Anode No. 4 Voltage | +70 to +900 Volts maximum) | |
| Anode No. 5 Voltage | | |
| Amplifier Helix No. 1 Voltage) | | |
| Amplifier Helix No. 2 Voltage) | | |
| Capsule Voltage | Zero Volts (Ground) | |
| Oscillator Helix Voltage | -50 to +100 Volts maximum | |
| Collector Voltage | 250 Volts maximum | |
| Focus Current | .3 ma maximum | |
| Anode No. 1 Current | .3 ma maximum | |
| Anode No. 2 Current | .3 ma maximum | |
| Anode No. 3 Current | .3 ma maximum | |
| Anode No. 4 Current | .3 ma maximum | |
| Anode No. 5 Current | .3 ma maximum | |
| Amplifier Helix No. 1 Current) | | |
| Amplifier Helix No. 2 Current) | .5 ma maximum | |
| Capsule Current | | |
| Oscillator Helix Current | .3 ma maximum | |
| Collector Current | 8 ma maximum | |
| Solenoid Magnetic Field | 700 Gauss maximum | |

TYPICAL OPERATION

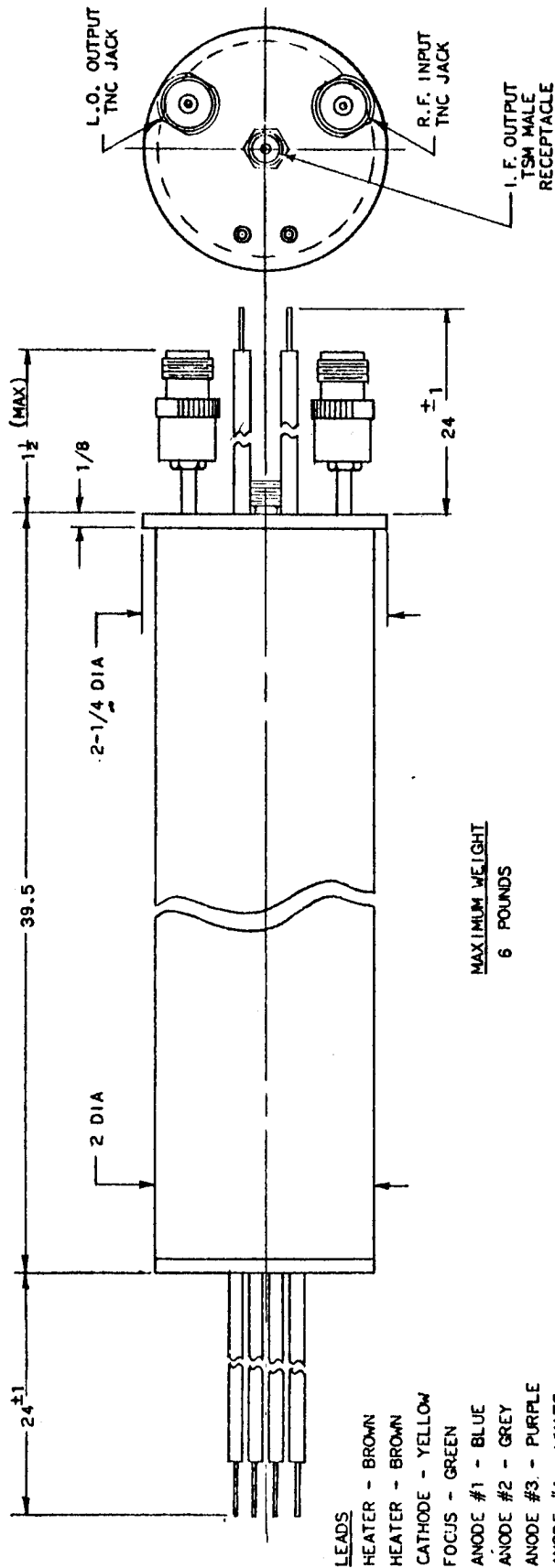
| | |
|--------------------------------|-----------------------------------|
| R-F Frequency | 2200 megacycles |
| L-O Frequency | 2070 megacycles |
| I-F Frequency | 130 megacycles |
| Conversion Gain | +3 db |
| Heater Voltage | 6.3 Volts dc |
| Heater Current | 3.5 Amperes |
| Cathode Voltage | -680 Volts with respect to ground |
| Cathode Current | 4.0 ma |
| Focus Voltage | 0 Volts) |
| Anode No. 1 Voltage | 35 Volts) |
| Anode No. 2 Voltage | 47 Volts) With respect to cathode |
| Anode No. 3 Voltage | 230 Volts) |
| Anode No. 4 Voltage | 550 Volts) |
| Anode No. 5 Voltage | |
| Amplifier Helix No. 1 Voltage) | |
| Amplifier Helix No. 2 Voltage) | 0 Volts (Ground) |
| Capsule Voltage | |
| Oscillator Helix Voltage | -30 Volts) |
| Collector Voltage | 200 Volts) With respect to ground |

| | |
|--------------------------------|-----------|
| Focus Current | 0 ma |
| Anode No. 1 Current | .06 ma |
| Anode No. 2 Current | .05 ma |
| Anode No. 3 Current | .05 ma |
| Anode No. 4 Current | .06 ma |
| Anode No. 5 Current | .04 ma |
| Amplifier Helix No. 1 Current) | |
| Amplifier Helix No. 2 Current) | .08 ma |
| Capsule Current) | |
| Oscillator Helix Current | .02 ma |
| Collector Current | 3.6 ma |
| Solenoid Magnetic Field | 650 Gauss |

Additional information for specific application can be obtained from the

Electron Tube Application Section
ITT Components Division
P.O. Box 412
Clifton, New Jersey





MAXIMUM WEIGHT
 6 POUNDS

- LEADS
 HEATER - BROWN
 HEATER - BROWN
 CATHODE - YELLOW
 FOCUS - GREEN
 ANODE #1 - BLUE
 ANODE #2 - GREY
 ANODE #3 - PURPLE
 ANODE #4 - WHITE
 ANODE #5 }
 AMPL. HELIX #1 } - GROUND-BLACK
 AMPL. HELIX #2 }
 COLLECTOR - RED
 OSCILLATOR HELIX - ORANGE

BACKWARD WAVE CONVERTER
 TYPE X-392