



QUASIOPTICAL SOURCE

QS-2 (OV-86) SN 536

I. TECHNICAL DATA

| | |
|---------------------------------------------|------------|
| 1. OPERATION RANGE, GHz | 116 ÷ 178 |
| 2. CATHODE VOLTAGE (negative), V | 900 ÷ 2560 |
| 3. MAXIMUM CATHODE CURRENT, mA | 21 |
| 4. HEATER CURRENT, A..... | 2.00 |
| 5. GRID VOLTAGE (positive), V | 200 |
| 6. MAXIMUM OUTPUT POWER (average), mW | 30 |
| 7. LIFETIME (warranted), h | 2000 |

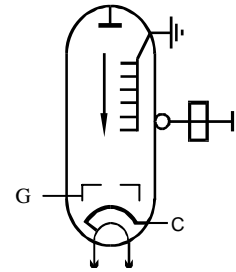
II. OPERATING CONDITIONS

- 1. Tube electrical grounding.*
- 2. Use of standard turn on/ off procedures described in Section VIII.*

III. SCHEME OF CONNECTION OF ELECTRODES

| Sign | Name of electrode | Color |
|------|-------------------|--------|
| HC | heater+cathode | brown |
| H | heater | yellow |
| G | grid | green |

Note:
Body of BWO tube must be connected to the ground.



IV. NOMINAL PARAMETERS IN CONTROL POINT

| | |
|--------------------------|------|
| 1. Cathode voltage, V | 1500 |
| 2. Cathode current, mA | 17 |
| 3. Heater current, A | 2.00 |
| 4. Grid voltage, V | 200 |
| 5. Output frequency, GHz | 145 |

V. CALIBRATION POLYNOMINAL

$$1) U(f) = (U_0 + U_1 f + U_2 f^2 + U_3 f^3)^2,$$

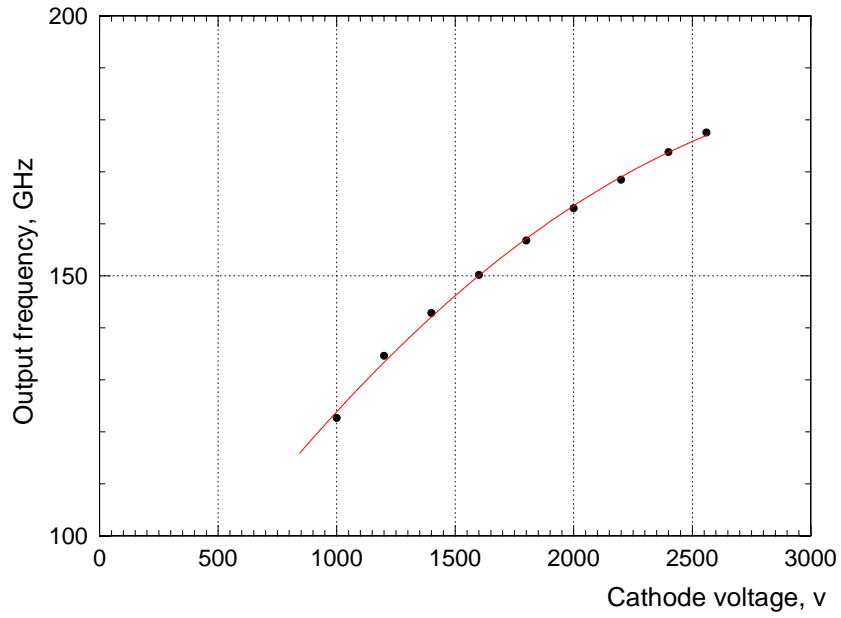
$$2) f(U) = f_0 + f_1 \sqrt{U} + f_2 U + f_3 U^{3/2},$$

U in Volts, f in GHz

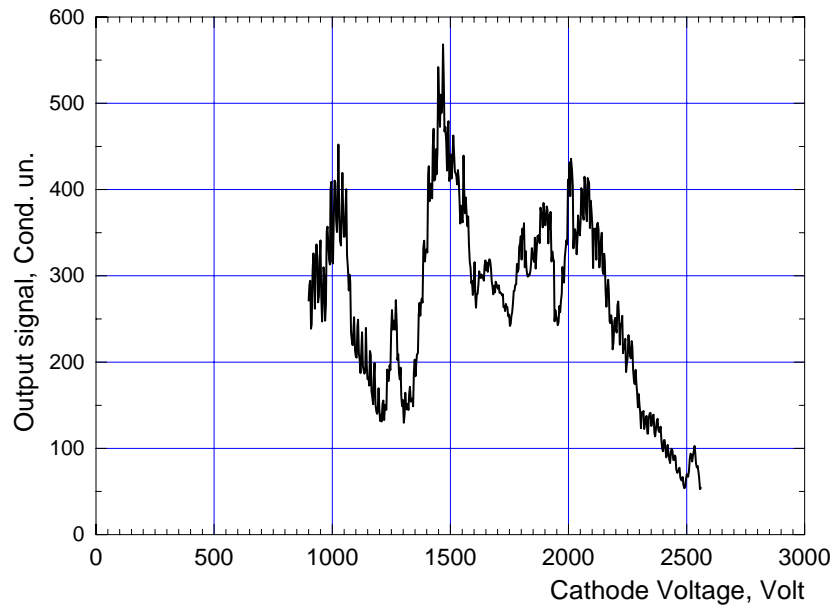
| | |
|-----------------------|-------------------------|
| $U_0 = 93.0098230624$ | $f_0 = -173.5919957079$ |
| $U_1 = -1.5545316375$ | $f_1 = 17.0559879396$ |
| $U_2 = 0.0112338528$ | $f_2 = -0.3144994925$ |
| $U_3 = -0.0000215481$ | $f_3 = 0.0022660305$ |

Mean square deviation U(F) s=0.1574% F(U) s=0.1927%

VI. CALIBRATION CURVE



VII. OUTPUT POWER PATTERN



VIII. OPERATING INSTRUCTIONS

Turn ON Procedure:

a. Initial turn ON (required for tube installation and for a tube that was not used for more than 2 weeks)

1. Make sure that high voltage (coarse) and heater potentiometers on VR-3 are in zero position.
2. Switch on air cooling.
3. Turn on main power on VR-3 (green button). Wait for 3 min.
4. Switch on BWO switch on VR-3 power supply (This turns on high and grid voltages). Set cathode voltage to 1500V.
5. Increase the value of the heater current to 1.95A, while monitoring the cathode current. Make sure the cathode current stays below 17 mA
6. Wait 1-2 minutes when cathode current will be stable.
7. By FINE adjustment of the heater current, set the cathode current at 15-16 mA. The cathode current will increase in the next 15 min.
8. Change the cathode voltage to choose the output frequency required.
9. Check on the cathode current once in a while and make sure the cathode current does not exceed 21 mA!

b. Regular turn ON (recommended for a tube that was used in the last 2 weeks)

1. Make sure that high voltage in the zero position
2. Make sure that the heater potentiometer is fixed in a preset position defined for this specific tube. If the heater potentiometer position is not certain please use procedure (a) above.
3. Turn on main power on VR-3 (green button). Wait for 3 min.
4. Switch on BWO switch on VR-3 power supply (This turns on high and grid voltages). Set cathode voltage to 1500V, while monitoring the cathode current. Make sure the cathode current stays below 17 mA.
5. By FINE adjustment of the heater current, set the cathode current at 15-16 mA. The cathode current will increase in the next 15 min.
6. Change the cathode voltage to choose the output frequency required.
7. Check on the cathode current once in a while and make sure the cathode current does not exceed 21 mA!

Turn OFF procedure:

1. Set the cathode voltage to zero.
2. Turn off the BWO switch
3. Turn off the main power (red button).
4. Switch off air cooling

Warning: Please follow recommended Turn ON/OFF procedures to prevent damage of quasi-optical sources.