

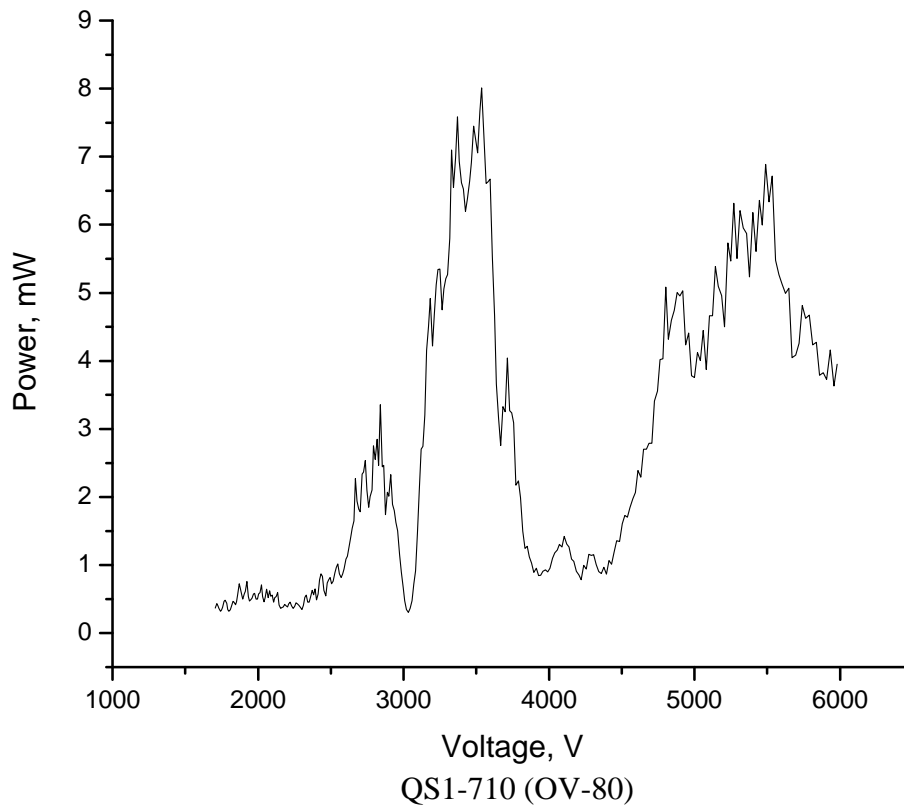
QS1-710-T Quasi-Optical Source

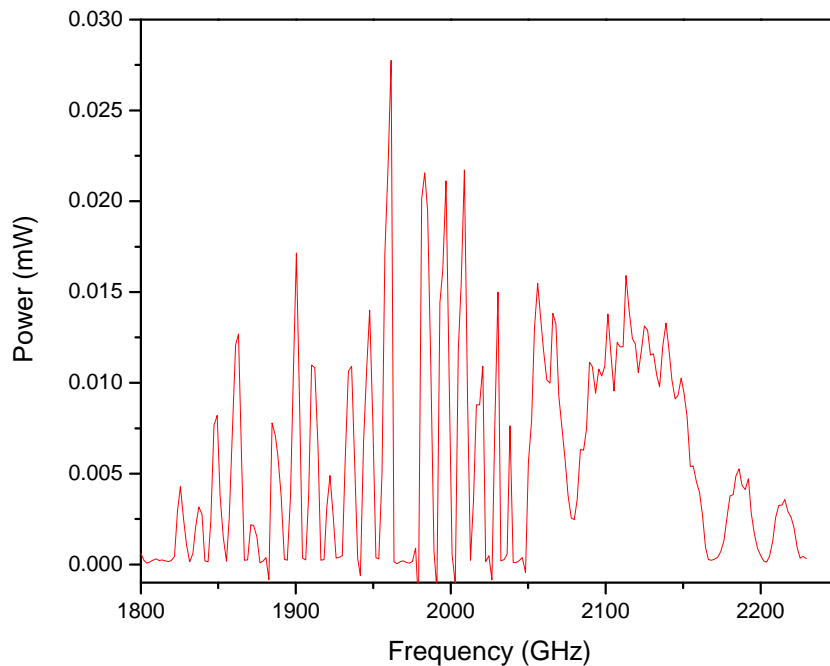


Frequency Range (GHz)	Power Range (mW)
438-711	1-7
1800-2100	0.001-0.025

1. Cathode voltage, V	4000±50
2. Cathode current, mA	29
3. Grid voltage, V	200±10
4. Heater current, A	1.65±0.01
5. Output frequency, GHz	624±1

The QS1-710-T is a quasi-optical source composed of a QS1-710 (OV-80) backward wave oscillator (BWO) and a Schottky diode frequency tripler. It is tunable across the 438-711 GHz and 1800-2100 GHz frequency ranges.



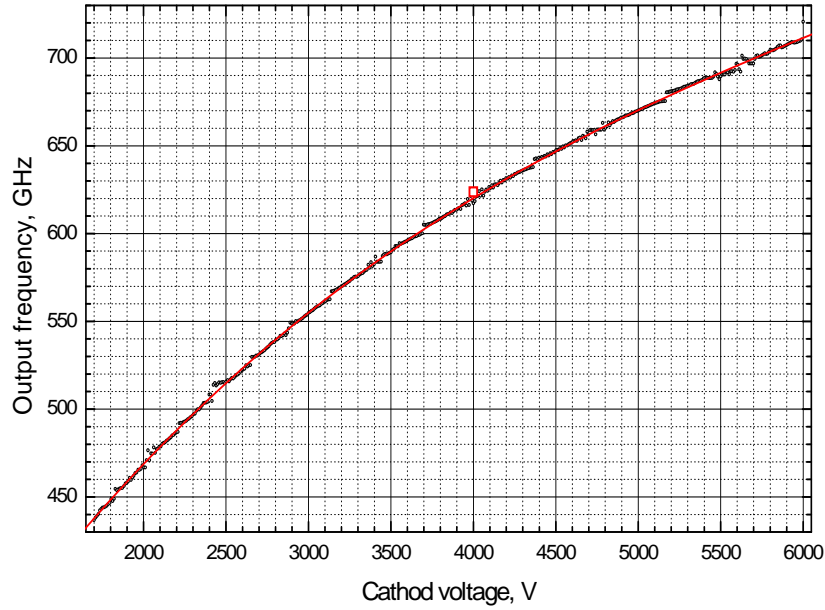


QS1-710-T (OV-80 with frequency tripler)

The unit is rapidly configurable for any of those ranges. This makes it an excellent choice for a broad range of research and industrial applications.

The QS1-710-T BWO is mounted in a MS-1.2 system offered by Microtech Instruments Inc. Operation of QS1-710-T also requires a high voltage power supply such as VR-6M and a water cooling system. In the baseline configuration, QS1-710-T produces up to 7 mW of continuous wave tunable monochromatic power with a bandwidth of 3 MHz.

CALIBRATION CURVE



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

Tables of the polynomial parameters

$U_0 = -30,9921992100$	$f_0 = 9,3990130070$
$U_1 = 0,2729353410$	$f_1 = 11,0136286100$
$U_2 = -0,0003695882$	$f_2 = -0,0046476556$
$U_3 = 0,0000002815$	$f_3 = -0,0002667217$

$U(F) s < 0.39\%$ $F(U) s = 0.28\%$

Turn ON Procedure for QS1-710-T (Using VR6-M BWO Power supply)

1. Confirm the following settings for switches on VR6-M front panel
 - “Range kV” selector is set at **4 kV**
 - “Control” switch is in “INT” position
 - “Heater current control” is set at 2-3% below the value specified in control point parameter table (Section II)
2. Turn ON the main power by pushing the **big black “ON” button on the right side of VR6-MU**. Green Power indicator will light up at this point.
3. Press the “LOAD” button (above the heater current control). Green indicator above the load button will start blinking and heater current will increase gradually. Once the heater current reaches a preset value, the green indicator will stop blinking.
4. Turn the “COARSE” adjustment knob all the way counter clockwise (setting it to zero) and make 2 turns in the clockwise direction. This will preset the high voltage in 1000-1500 V range
5. Switch ON high voltage by pressing the **big black “ON” button on the left side of VR6-M** front panel. Red “High Voltage” indicator will light up and cathode voltage meter should show 1000-1500V at this point.
6. Set cathode voltage at the control point value (specified in Section II) by “COARSE” potentiometer.
7. By adjusting the heater current set the cathode current to a value 1-2 mA smaller than the control point value. The heater current setting is adjusted by entering a new value and pressing the load button again. Once the tube warms up (after 20-30 minutes), the cathode current should reach the control point value.
8. Change the cathode voltage to choose the output frequency required. Do not exceed maximum voltage specified in Section I.

Turn OFF procedure for QS1-710-T (Using VR6-M BWO Power supply)

1. **Turn OFF the high voltage** by pressing the big red button on the left side of VR6-M front panel.
2. Press the red “UNLOAD” button. Wait until the heater current goes down to zero and green indicator stops blinking.
4. Switch OFF the main power by pressing the big red button on the right side of VR6-M front panel.

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

Please check the cathode current at the control point once every 30 minutes to make sure it does not exceed the value specified in Section II.