

Submillimeter Backward Wave Oscillator Tubes for 180-1110 GHz



- 180-1110 GHz in 7 bands
- Full waveguide operation
- High output power, 50 mW on 260 GHz typical

Applications

- Broadband sweepers
- Precision controllable and lower noise LO's
- Powerful submillimeter wave sources
- Spectrometry, plasma diagnostics, test and measurement equipment

Description

ELVA-1 BWO tubes series **OB-XX** are very broadband and powerful millimeter submillimeter sources cover 180-1500 GHz frequency band. Unique technology applied for producing of tubes allows to obtain oscillations within a full waveguide frequency band. Operation frequency depends on high voltage applied on a deceleration system of the tube - the anode voltage. The construction of the tube allows to sweep the frequency very fast. Few microsecond full band sweep is achieved in our laboratory. It is possible also to adjust the frequency changing the magnetic field. We supply each tube with a personal calibration for output power versus frequency and frequency versus high voltage dependencies. The dependence of frequency versus magnetic field is available upon request.

Specifications

Model	OB-24	OB-30	OB-32	OB-80	OB-81
Operating range, GHz	179-263	258-375	370-535	526-714	667-857
Output power, typ, mW	20-50	10-20	4-15	4-15	4-15
Output power*, min, mW	1-10	1-10	1-5	1-5	1-5
Power difference in the range, max, dB	13	13	13	13	13
Magnetic field required**, min, T	0.7	0.8	1	1	1
Anode voltage, kV	1-4	1-4	1-5	1.5-6	1.5-6
Cathode current, mA	25-40	25-40	25-40	30-45	30-45



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Model	OB-82	OB-83
Operating range, GHz	789-968	882-1111
Output power, typ, mW	3-10	3-10
Output power*, min, mW	1-3	1-3
Power difference in the range, max, dB	13	13
Magnetic field required**, min, T	1	1.1
Anode voltage, V	1.5-6	1.5-6
Cathode current, mA	30-45	30-45

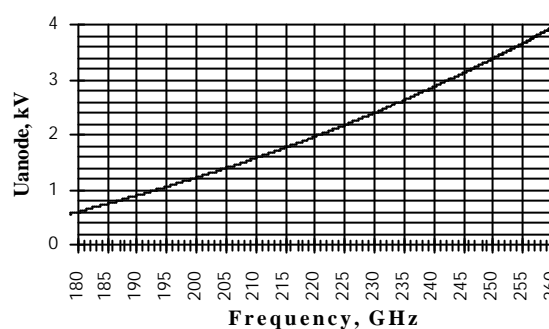
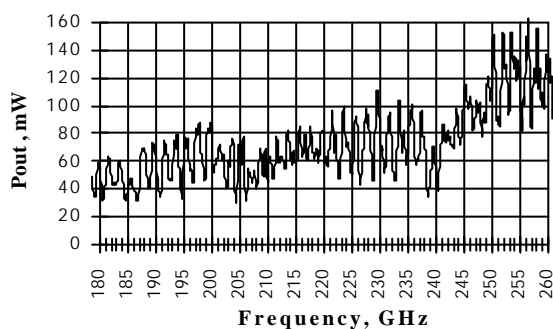
* Minimal output power can be different for various tubes of the same model.

** The magnetic field should be provided in the following minimal volume: Ø30 mm, L= 32 mm.

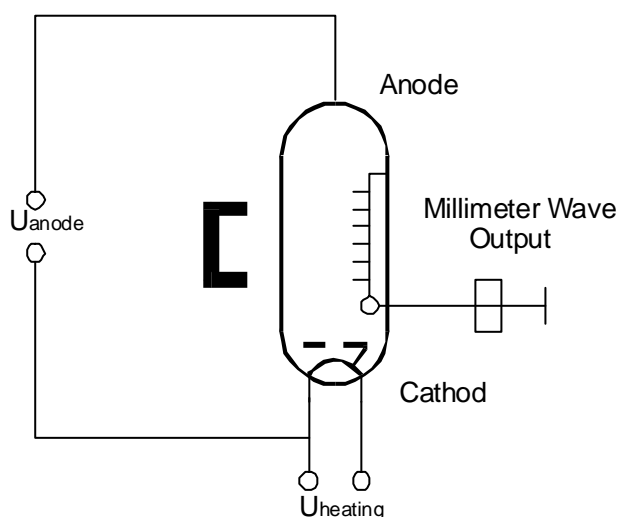
Tube Ø 30 mm.

Weight 0.3 kg. Water cooling.

Typical dependencies of power versus frequency and frequency versus high voltage applied to deceleration system are shown on the plots below for OB-24 model:



Typical electrical scheme of BWO using:



U_{anode} is as one mentioned in the table, $U_{heating} = +1.0 \div +1.2V_{AC}$, Heating Current 1-1.5 A typ, 2A max. Output waveguide is oversized for all tubes.

We also propose permanent magnets for the tubes and appropriated power suppliers. Details of specifications see in data sheet for sweepers **SMW** series.