

- High output power
- Digital/Electrical Frequency control
- High power and frequency stability
- Digital/Electrical control of output power
- Ability of long-term frequency stability
- Stable spectrum
- Ability of remote control/diagnostics through internet
- Long life time

Applications

- Laboratory measurement and test equipment
- Mm-wave source of high power
- EPR spectrometer bridge
- DNP polarizer source
- Plasma diagnostics
- FMCW radar module



Description

Millimeter-wave oscillators of **VCOM-XX** series originally was designed for purposes of EPR spectroscopy and plasma diagnostics. It provides electromagnetic energy within some range around of central frequency with high output power. Original design uses low frequency stable voltage controlled oscillator and frequency multiplier. To increase output power an IMPATT mm-wave power amplifier can be used. Max value of output power level depends on requested frequency range. It can be 200 mW at 94 GHz, 50 mW at 140 GHz and 10 mW at 170 GHz.

Output power and frequency are controlled by means digital code signal (symbol **D** at end of p/n: VCOM-...-DD, VCOM-...-DA, VCOM-...-DP models) or with external DC or pulse voltages (VCOM-...-T, VCOM-...-DA, VCOM-...-DP models). Digital control models of VCOM-XX have built in frequency counter what allows providing high long-term stability of output frequency. Also remote control and diagnostics of operation through internet is admissible. Reliable work of **VCOM-XX** oscillators allows using them in scientific experiments which last for long time, a few weeks or even months.

There are set of standard models of the **VCOM-XX** oscillators now.

- T- analogue control of frequency and power level
- DD- digital control of frequency and power level
- DA- analogue and digital control (switchable modes)
- DP- digital control of output frequency, digital and analogue control of power level (up to 5kHz pulse modulation of power level available)

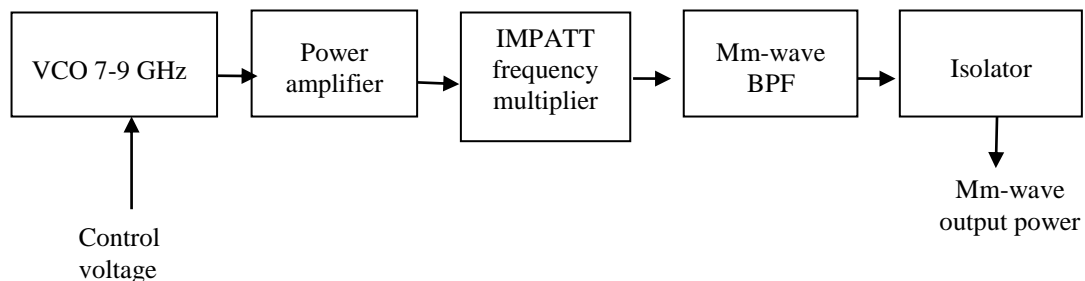
Custom designed VCOM models can be produced by special order.

Specifications

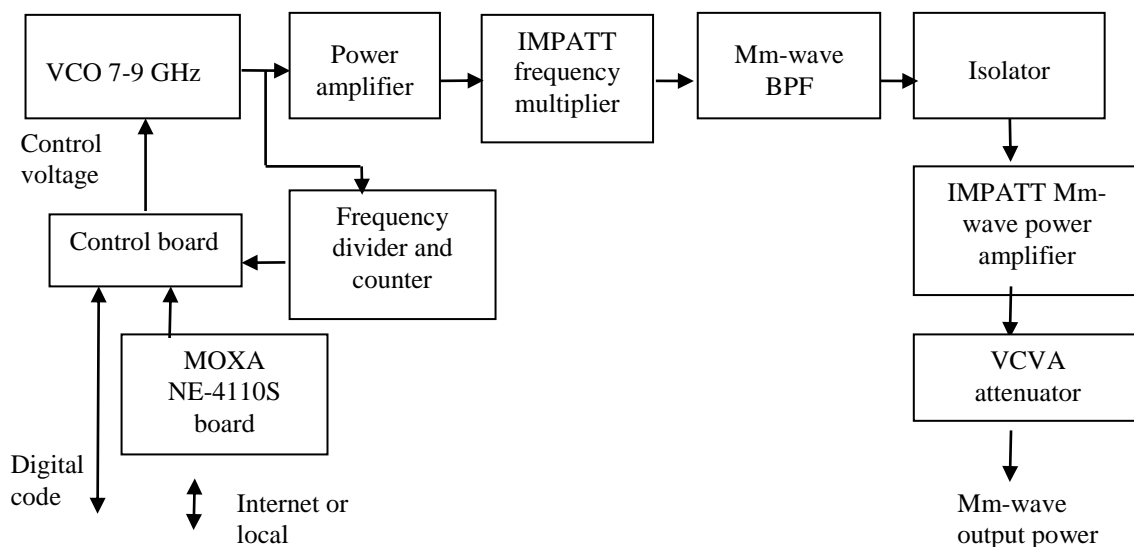
MODEL	VCOM-10/94/0.5/200-XX	VCOM-06/140/2/20-XX	VCOM-06/170/2/10-XX
Central frequency	94 GHz	140 GHz	170 GHz
Bandwidth	500 MHz	2 GHz	2 GHz
Frequency Range (controlled)	93.75-94.25 GHz	139-141 GHz	169-171 GHz
Output power (controlled)	0- 200 mW	0- 20 mW	0-10 mW
Spectrum line width at -3dBc	100 kHz max	100 kHz max	100 kHz max
Control attenuation	0...50 dB	0...50 dB	0...40 dB
Flange/ Waveguide	UG-387/U-M /WR-10	UG-387/U-M /WR-06	UG-387/U-M /WR-06
Operating Humidity at Temp range +10 to +40deg°C	< 70% (non-condensing)	< 70% (non-condensing)	< 70% (non-condensing)
For models with digital control:			
Frequency Step (max)	250kHz	350kHz	500kHz
Power Level Step	< 1mW	< 0.1mW	0.05mW
Absolute accuracy of set Frequency: within +10 to +40deg°C	<0.5MHz	<0.7MHz	<1MHz
Settling time to major frequency step within 0.5MHz	less than or equal to 500 msec (max)	less than or equal to 500 msec (max)	less than or equal to 500 msec (max)
Long term stability of reference crystal oscillator: at constant temperature	+/- 1 ppm per month	+/- 1 ppm per month	+/- 1 ppm per month
Output Frequency/Power Control connector	RS232/DB-9 Plug	RS232/DB-9 Plug	RS232/DB-9 Plug
Remote Diagnostic Protocol	Ethernet/SNMP v1	Ethernet/SNMP v1	Ethernet/SNMP v1
Ethernet port:	RG-45 Socket	RG-45 Socket	RG-45 Socket

Basic block- schemes of VCOM oscillator:

A. Wideband VCOM...-T (does not have powerful output power amplifier which limits operating bandwidth):



B. High power VCOM...-DD with digital control and remote control/diagnostics:





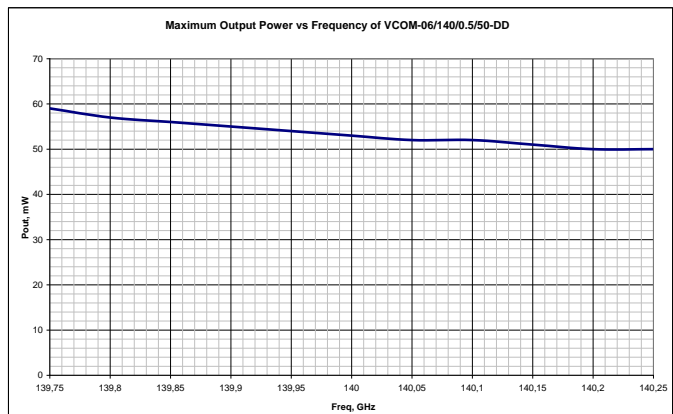
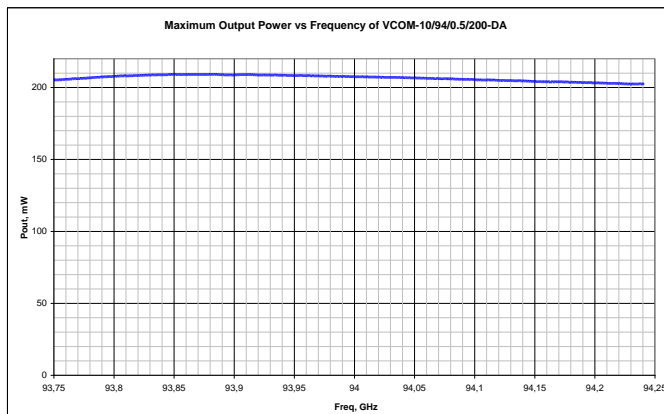
a)



b)

Control panel of VCOM-10/94/0.5/200-DA (a) and VCOM-06/140/0.5/50-DD oscillators (b)

Typical measured data of W- and D- band VCOM-XX oscillators:



How to Order

Specify Model Number VCOM-XX/CF/BW/P-AB, where

- **XX** – number of waveguide standard (Ex. 10 for WR-10 and 06 for WR-06)
- **CF** – central operating frequency in GHz
- **BW** – operating bandwidth, GHz
- **P** – output power (nom), mW
- **AB** type of output frequency and power control: **-T** or **-DD**, or **-DA** or **-DP**

Standard flange is **UG-XXX/U-M** round

Example

VCOM-10/94/0.5/200-DD (W-band oscillator, WR-10 waveguide, Central frequency **94** GHz, Bandwidth **0.5** GHz, Output power **200** mW (typ), Digital control of output power and frequency).