QUBIG

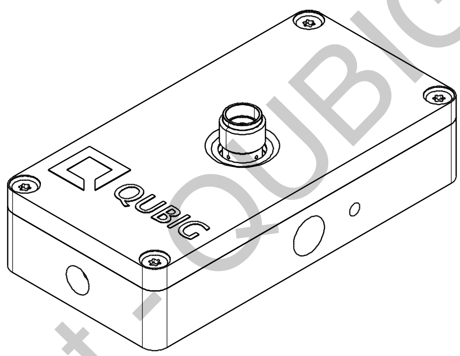
Empowering Laser Technologies

Test Data Sheet

PM11-NIR

S/N:

Resonant electro-optic phase modulator



RF properties	Value	Unit
Resonance frequency: f_0 [1)]	11400 - 11510	MHz
Preset frequency: f_{set} [1)]	11424	MHz
Bandwidth: $\Delta\nu$	65	MHz
Quality factor Q	176	
Required RF power for 1 rad @ 1030nm	39.4	dBm
max. RF power: RF_{max} [2)]	5	W

Optical properties		
EO crystal	KTP	
Aperture	⌀ 2	mm
Wavefront distortion (@ 633 nm)	$\lambda/8$	
recommended max. optical intensity (@ 1030nm)	10	W/mm^2
AR coating (R_{avg} < 1%)	630 - 1100	nm

[1)] at 24.7 °C [2)] no damage with RF_{in} < 10W, but use of a proper heatsink is strongly recommended at high powers

Measured phase modulation

Fig. 1: Oscilloscope trace

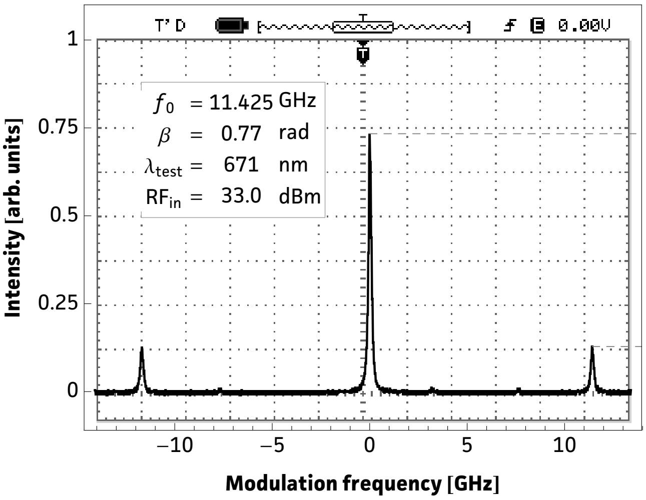


Fig. 2: Carrier/sideband ratio

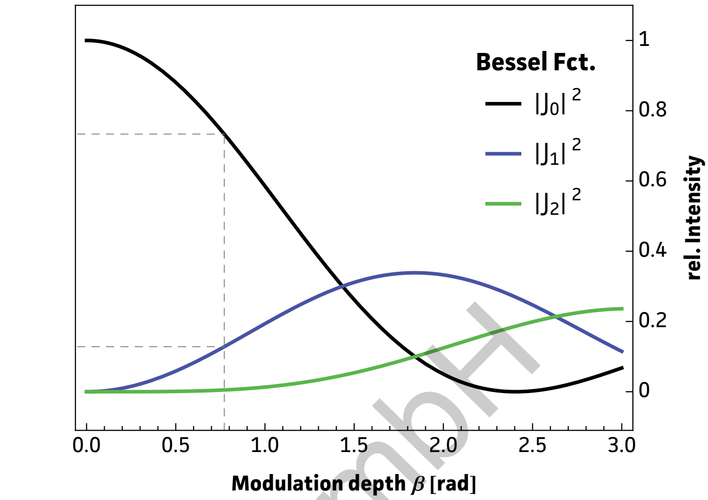


Table 1: Expected modulation

$\beta = 1$ rad	unit	λ_1	λ_2
λ	nm	**671**	**1030**
P	dBm	35.2	39.4
P	W	3.35	8.63
U	V_p	18.3	29.4
U_π	V_p	57.5	92.3
β / U	rad / V	0.05	0.03

Fig. 1: Recorded oscilloscope trace retrieved from a test setup as illustrated below.

Fig. 2: Squared absolute values of first-kind Bessel functions vs. modulation depth. Vertical lines reveal the ratio between the carrier $|J_0|^2$ and the i^{th} sideband $|J_i|^2$ at a specific ß.

Fig. 3: Dependency between RF amplitude and modulation depth for different wavelengths. Points on the curve allow to retrieve either the required RF amplitude for a specific/desired ß or the max. achievable modulation depth for a given/available RF power.

Table 1: Expected RF-amplitude/-power values and conversion factors for the required wavelength at the reference modulation depth of 1 rad. **Note:** Experimentally recorded modulation depth displayed in Fig. 1 might vary from the respective values (ß=1rad) provided in the table.

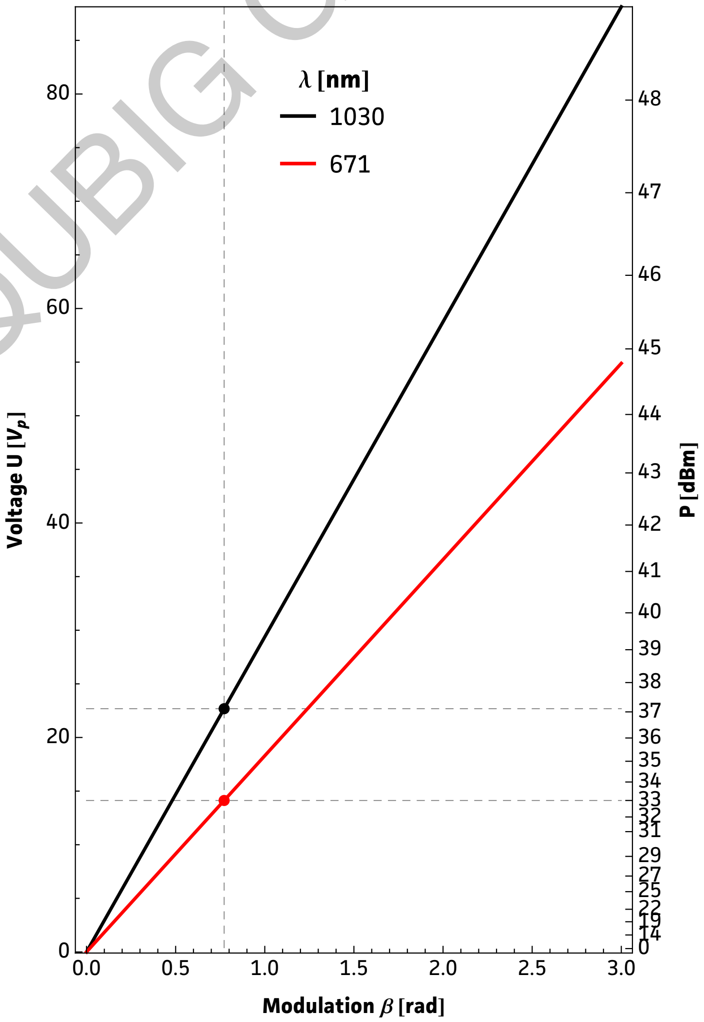
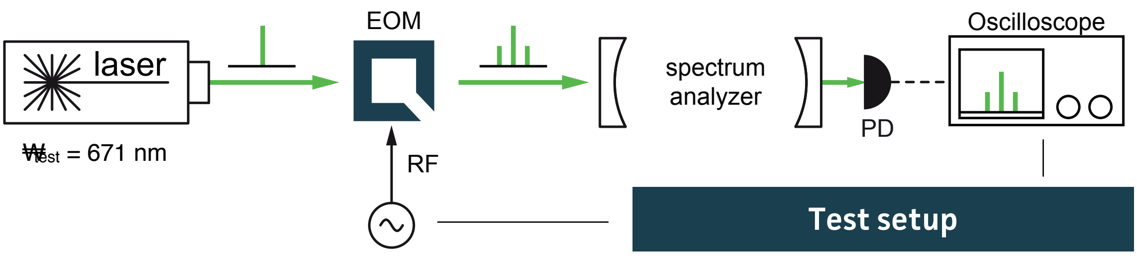
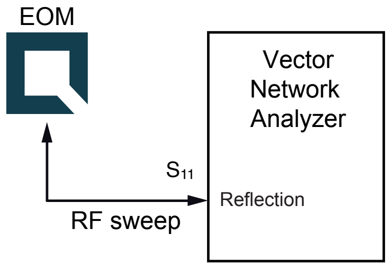


Fig. 3: RF–signal amplitude vs. modulation depth

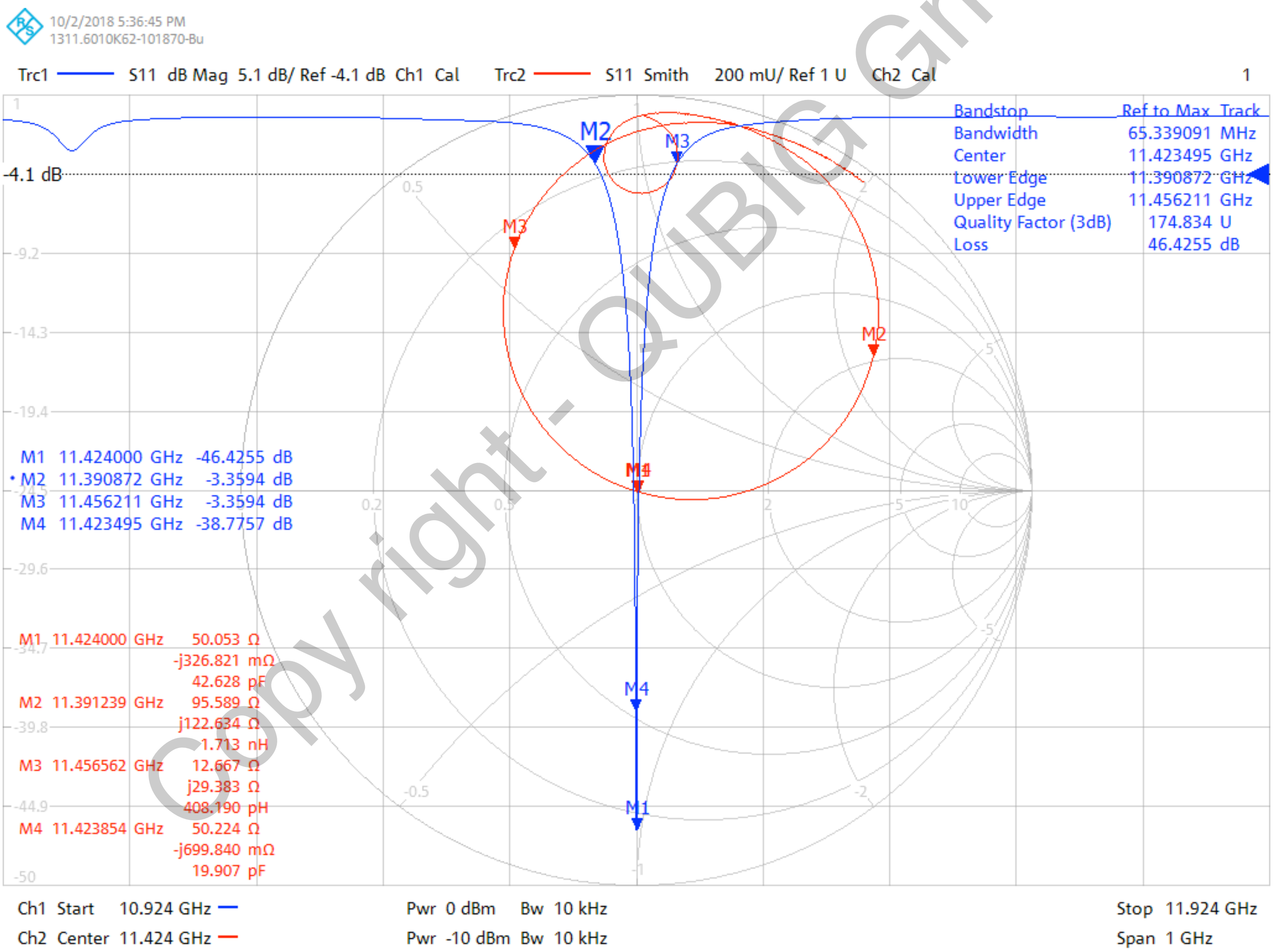


Test setup

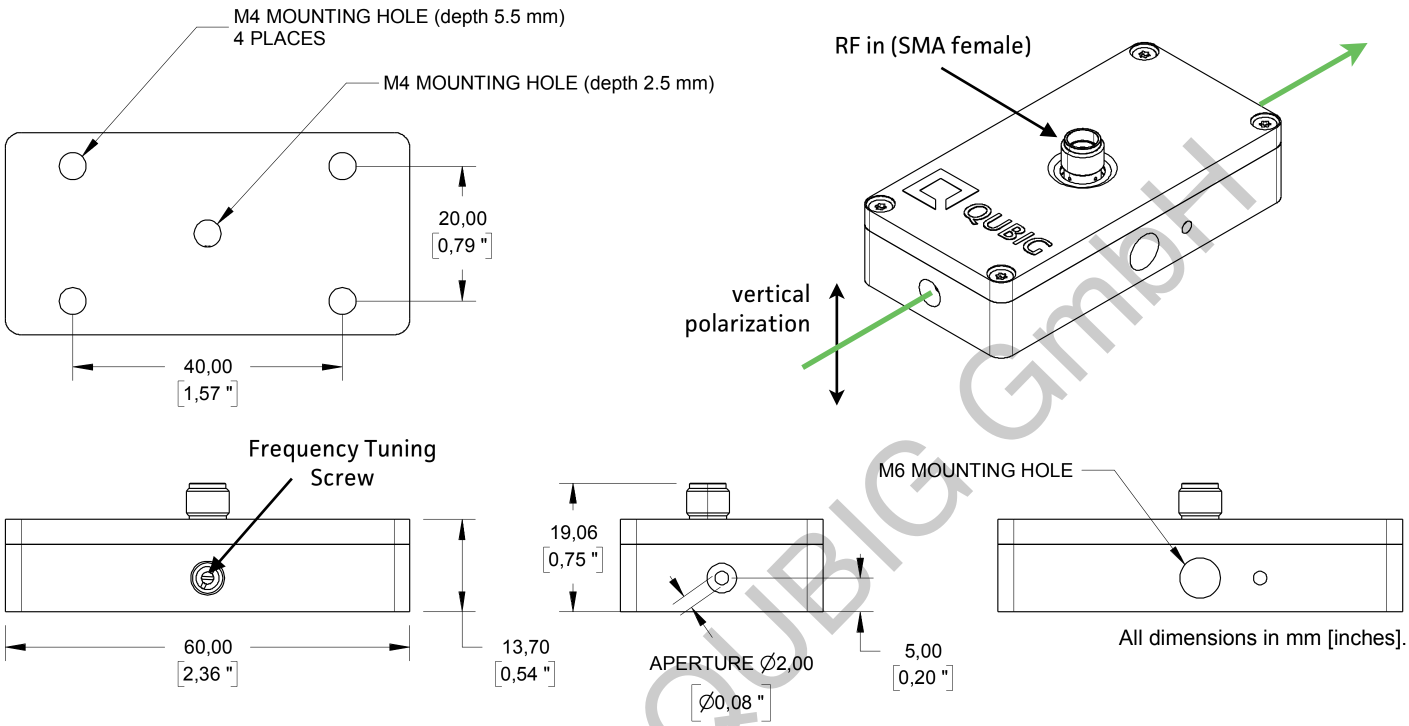
Resonance characteristics

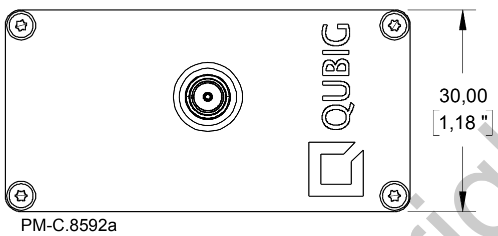


T_{EOM} = 24.13 °C



Package drawing





No user serviceable parts inside. None of the screws must be loosened at any time! EOM gets damaged otherwise.

Do not exert excessive force or torque on the SMA connector.

Please handle device carefully. Avoid shock. Don't drop.

Tested by:

____

Tel: +49 89 2302 9101
Fax: +49 89 2302 9102
eMail: mail@qubig.com
web: www.qubig.com

Qubig GmbH
Balanstr. 57
81451 Munich
Germany