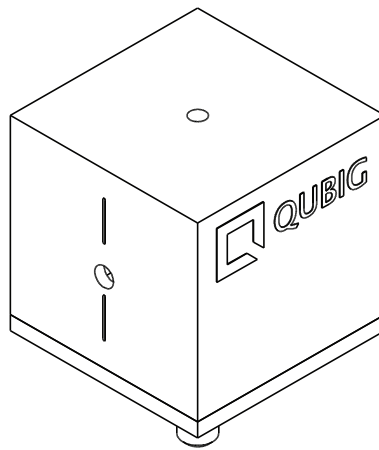


## Test Data Sheet

**EO-88K3-NIR**

S/N: J1614

### Resonant electro-optic phase modulator



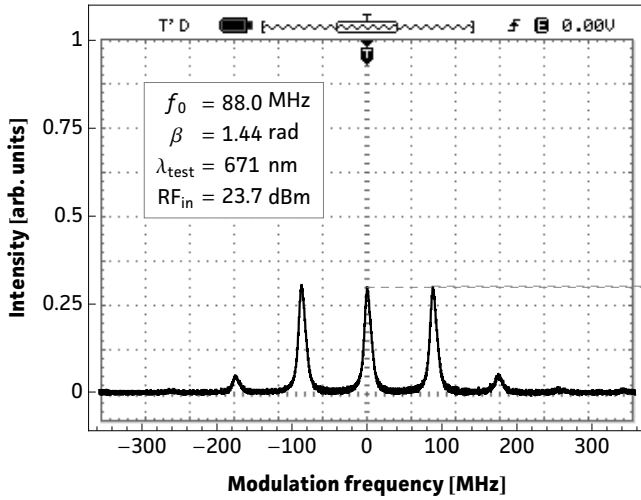
RF properties	Value	Unit
Resonance frequency: $f_0$ <sup>1)</sup>	88.0	MHz
Bandwidth: $\Delta\nu$	1.0	MHz
Quality factor: Q	88	
Required RF power for 1rad @ 1064nm <sup>2)</sup>	24.9	dBm
max. RF power: $RF_{max}$ <sup>3)</sup>	1	W

Optical properties		
EO crystal	KTP	
Aperture	3x3	mm <sup>2</sup>
Wavefront distortion (633nm)	$\lambda/8$	nm
recommended optical intensity (1064nm)	<10	W/mm <sup>2</sup>
AR coating ( $R_{avg}$ <0.5%)	780 - 1560	nm

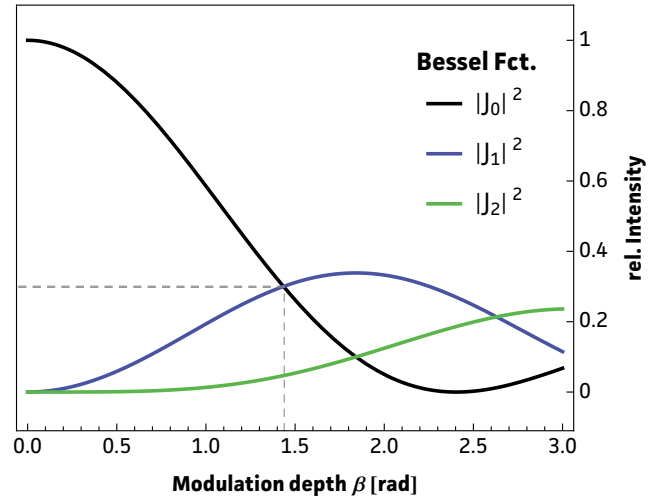
<sup>1)</sup> at 24.3°C <sup>2)</sup> with 50Ω termination <sup>3)</sup> no damage with  $RF_{in} < 2W$

# Measured modulation

**Fig. 1: Oscilloscope trace**

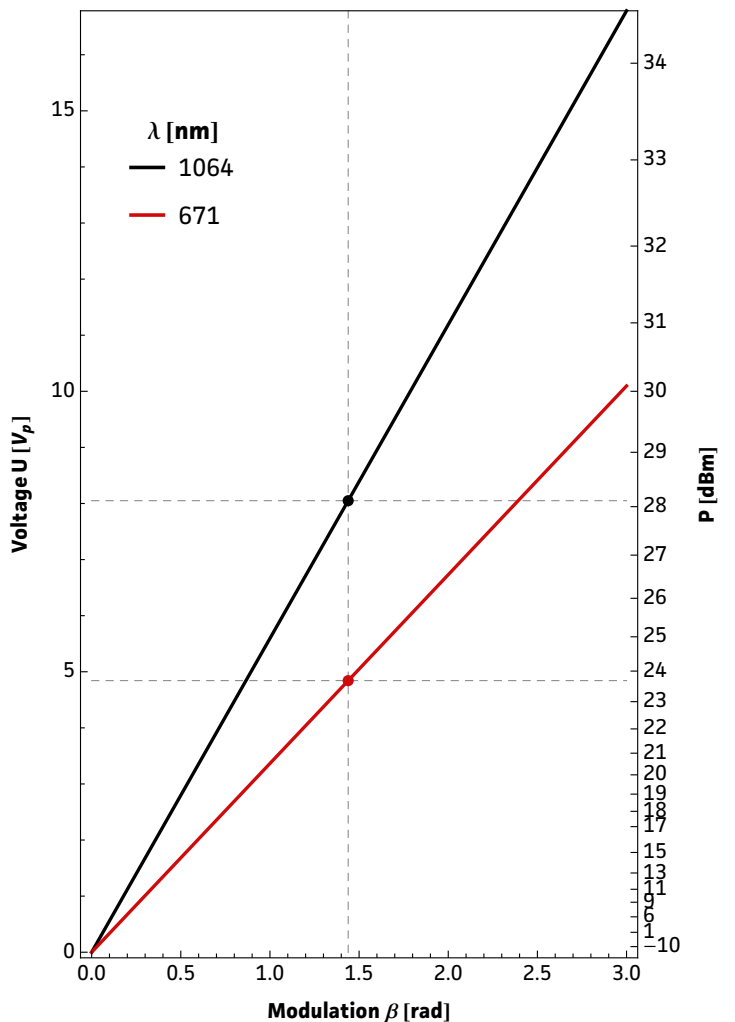


**Fig. 2: Carrier/sideband ratio**



**Table 1: Expected modulation**

$\beta = 1 \text{ rad}$	unit	$\lambda_1$	$\lambda_2$
$\lambda$	nm	<b>671</b>	<b>1064</b>
P	dBm	20.6	24.9
P	mW	114	312
U	V <sub>p</sub>	3.4	5.6
U <sub><math>\pi</math></sub>	V <sub>p</sub>	10.6	17.6
$\beta/U$	rad/V	0.3	0.18



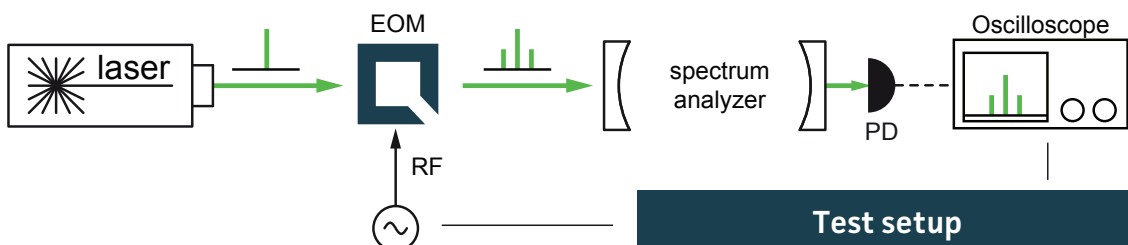
**Fig. 3: RF-signal amplitude vs. modulation depth**

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

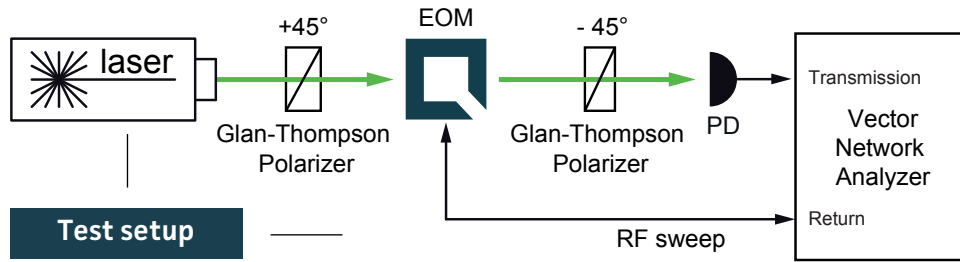
**Fig.2:** Squared absolute values of first-kind Bessel functions vs. modulation depth. Vertical lines reveal the ratio between the carrier  $|J_0|^2$  and the  $i^{\text{th}}$  sideband  $|J_i|^2$  at a specific  $\beta$ .

**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  $\beta$  or the max. achievable modulation depth for a given/available RF power.

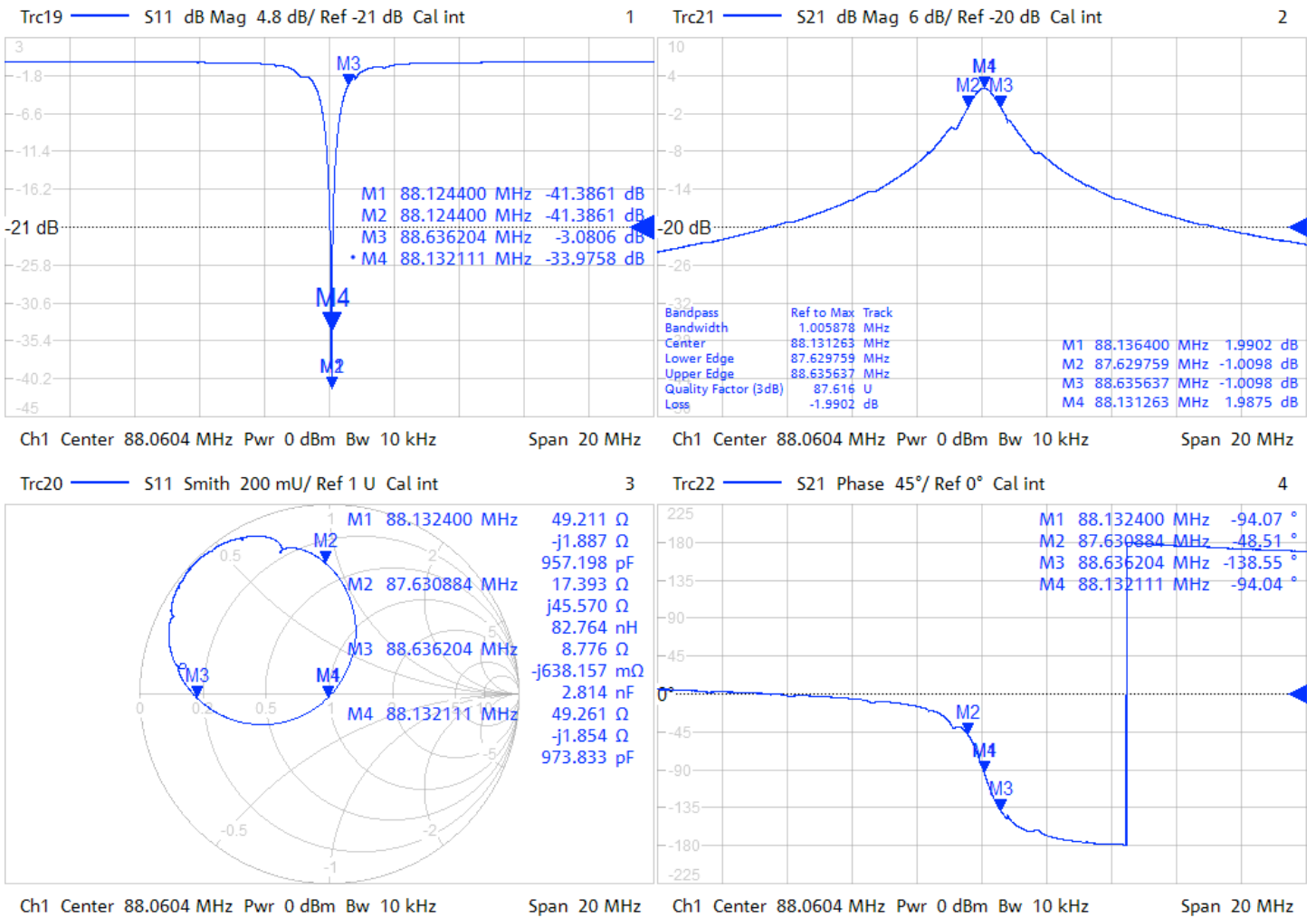
**Table 1:** Expected RF-amplitude/-power values and conversion factors for the required wavelength at the reference modulation depth of 1 rad. **Note:** Experimentally recorded modulation depth displayed in Fig.1 might vary from the respective values ( $\beta=1\text{rad}$ ) provided in the table.



## Resonance characteristics



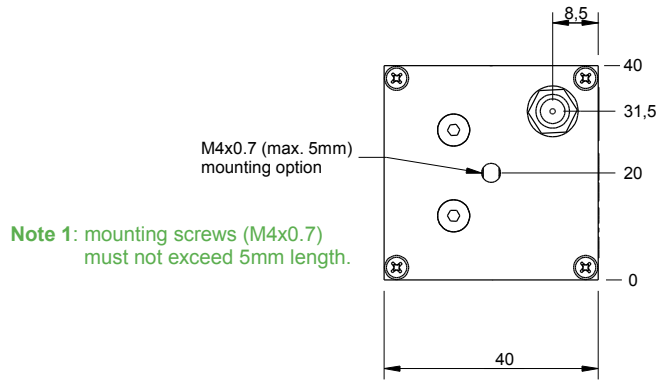
1/27/2017 12:03:37 PM  
1328.5170K92-100178-XI



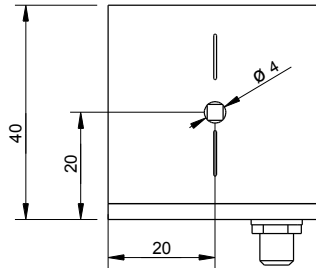
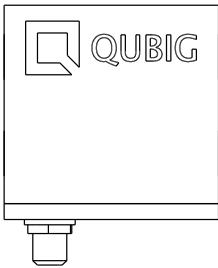
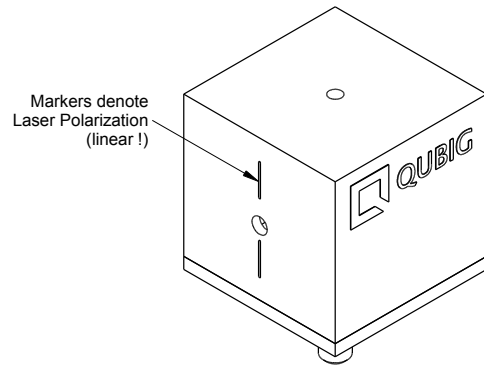
## Handling instructions

- Input laser polarization must be aligned with respect to the white markers on the housing
- Please handle device carefully. Avoid shock. Don't drop.
- After turn on the resonance frequency might drift slightly with applied RF power. Please compensate by tuning the RF drive frequency until steady-state (~min).
- Slight angle adjustment can reduce unwanted residual amplitude modulation (RAM)

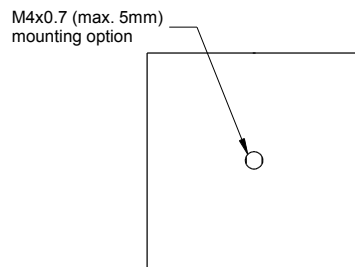
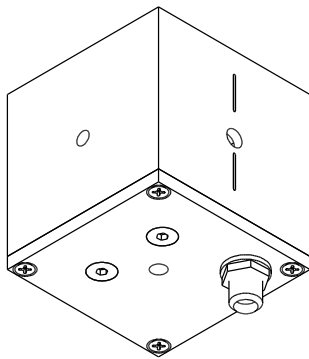
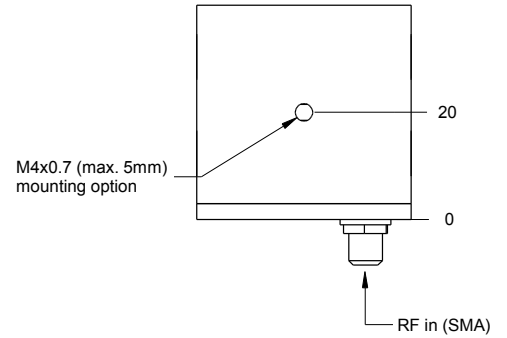
# Package drawing



**Note 1:** mounting screws (M4x0.7) must not exceed 5mm length.



**Note 2:** crystal aperture is 3x3mm.



Tested by:

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