

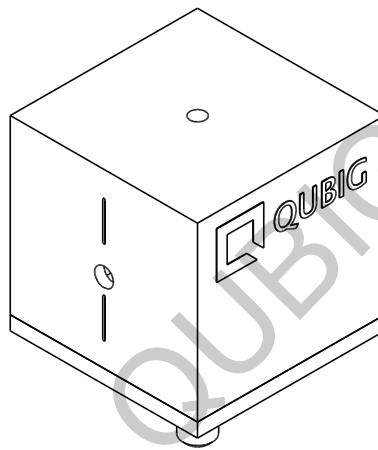
## Test Data Sheet

**PM6 - 0.1M3 - VIS**

(EO-0.15M3-VIS)

S/N:

### Resonant electro-optic phase modulator



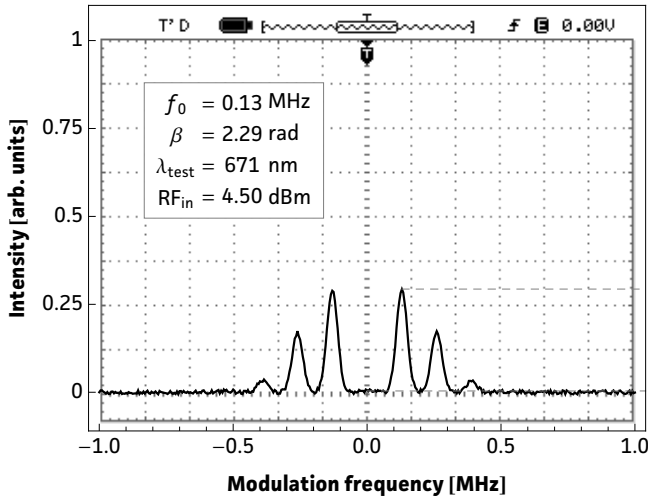
RF properties	Value	Unit
Resonance frequency: $f_0$ <sup>1)</sup>	132	kHz
Bandwidth: $\Delta\nu$	4.9	kHz
Quality factor: Q	27	
Required RF power for 1rad @ 461nm <sup>2)</sup>	-7.1	dBm
max. RF power: $RF_{max}$ <sup>3)</sup>	1	W

Optical properties		
EO crystal	MLN	
Aperture	3x3	mm <sup>2</sup>
Wavefront distortion (633nm)	$\lambda/4$	nm
recommended optical intensity (@ 461nm)	0.5	W/mm <sup>2</sup>
AR coating (R<0.5%)	360 - 650nm	nm

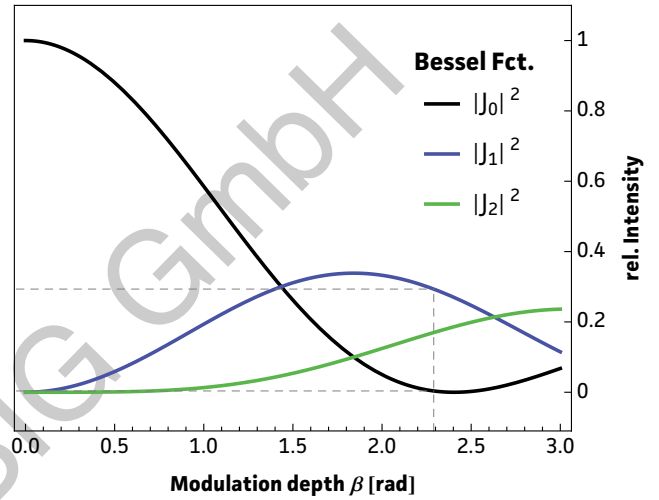
<sup>1)</sup> at 24.3°C   <sup>2)</sup> with 50Ω termination   <sup>3)</sup> no damage with  $RF_{in} < 2W$

# Measured modulation

**Fig. 1: Oscilloscope trace**

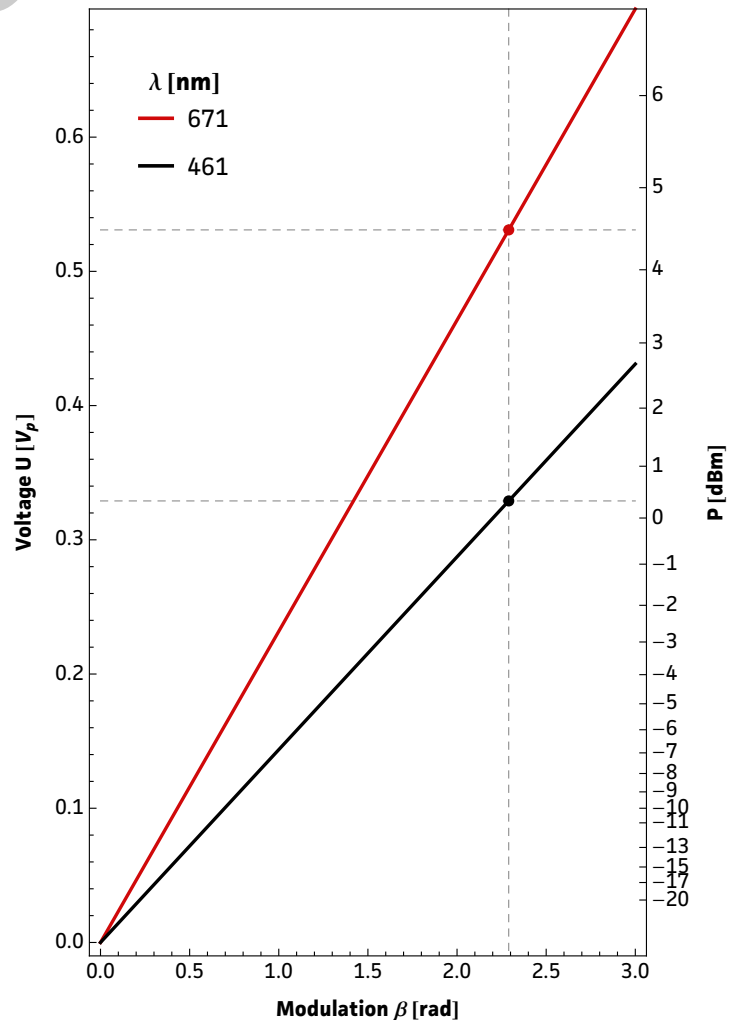


**Fig. 2: Carrier/sideband ratio**



**Table 1: Expected modulation**

$\beta = 1$ rad	unit	$\lambda_1$	$\lambda_2$
$\lambda$	nm	<b>461</b>	<b>671</b>
P	dBm	-7.1	-2.8
P	mW	0	1
U	V <sub>p</sub>	0.1	0.2
U <sub><math>\pi</math></sub>	V <sub>p</sub>	0.4	0.7
$\beta/U$	rad/V	7.14	4.35



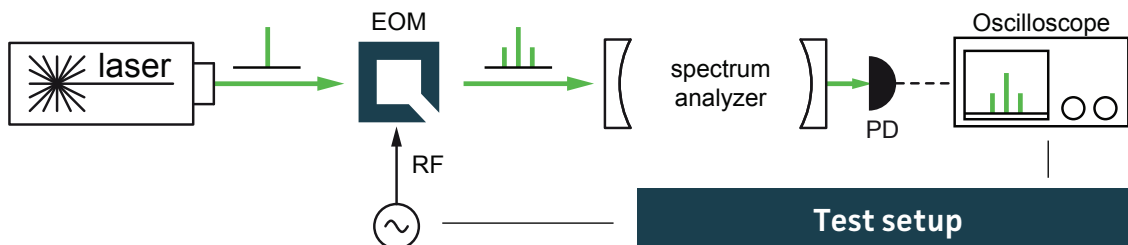
**Fig.1:** Recorded oscilloscope trace retrieved from a test setup as illustrated below.

**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  $\beta$ .

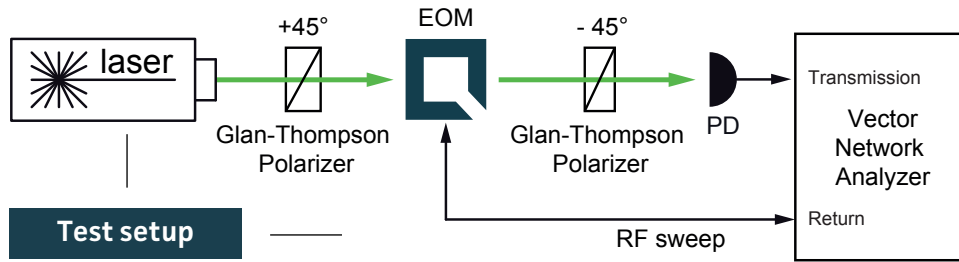
**Fig.3:** Dependency between RF amplitude and modulation depth for different wavelengths. Points on the curve allow to retrieve either the required RF amplitude for a specific/desired  $\beta$  or the max. achievable modulation depth for a given/available RF power.

**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 ( $\beta=1$ rad) provided in the table.

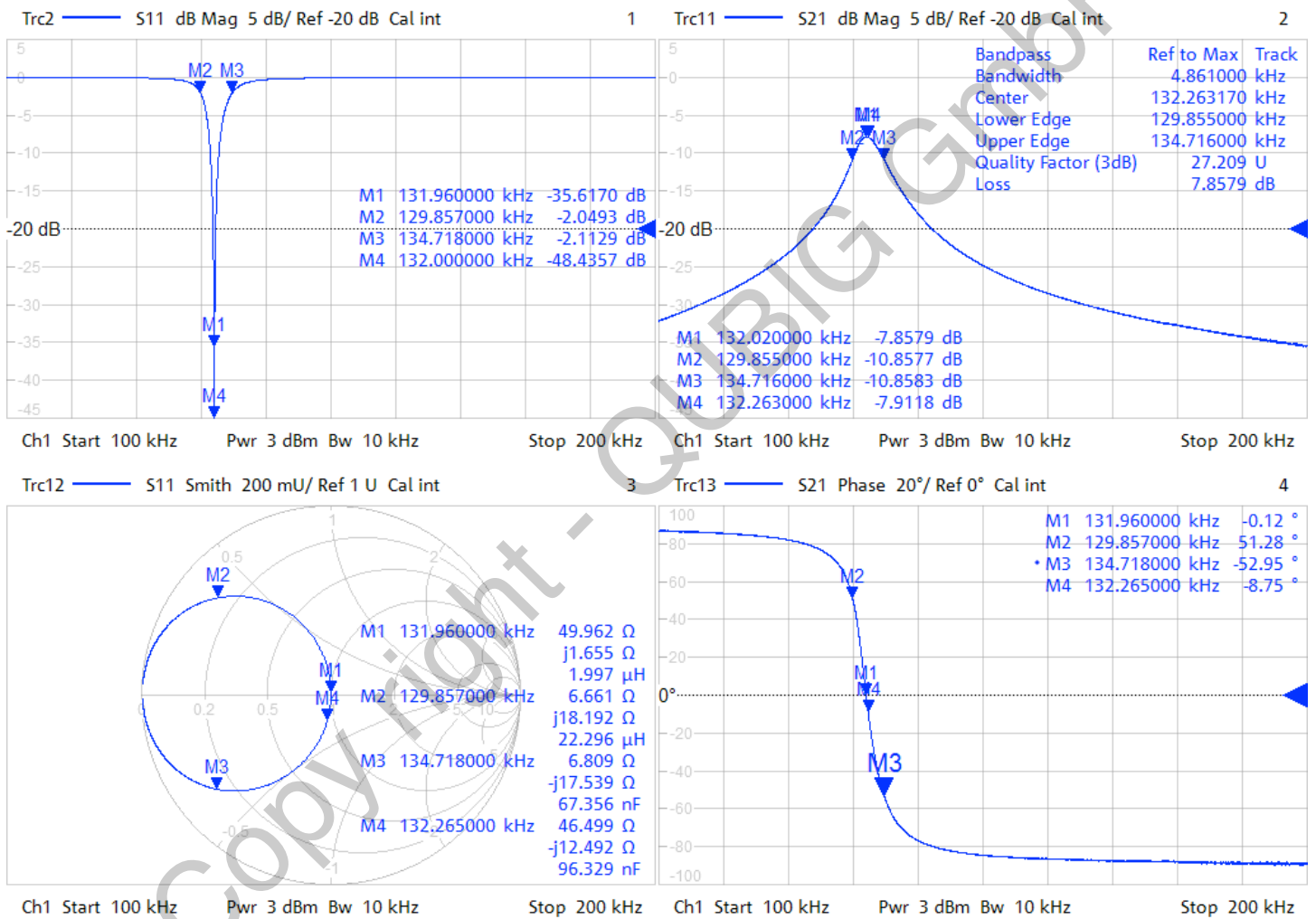
**Fig. 3: RF-signal amplitude vs. modulation depth**



## Resonance characteristics



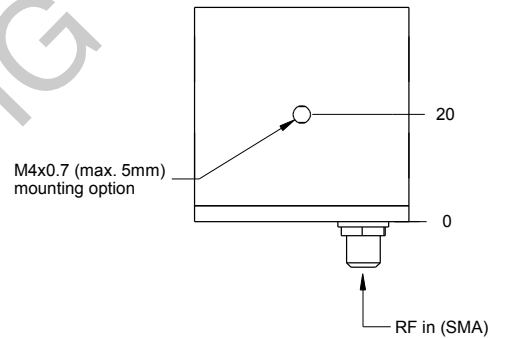
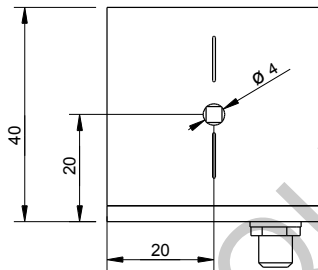
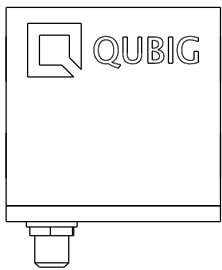
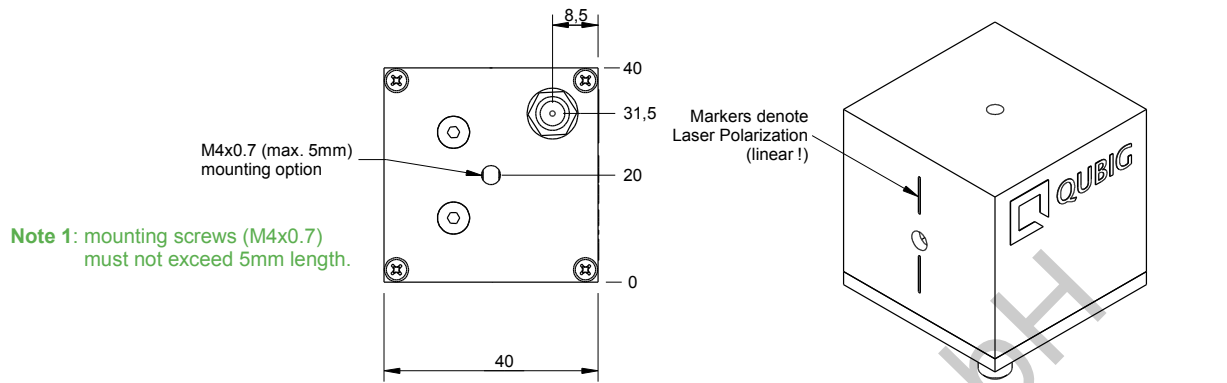
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## Handling instructions

- 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 2:** crystal aperture is 3x3mm.

