



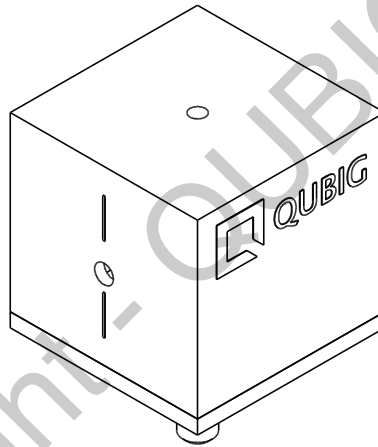
## Test Data Sheet

### PM6 - 0.1L3 - NIR

(old: EO-F0.1L3-NIR)

S/N:

### Resonant electro-optic phase modulator



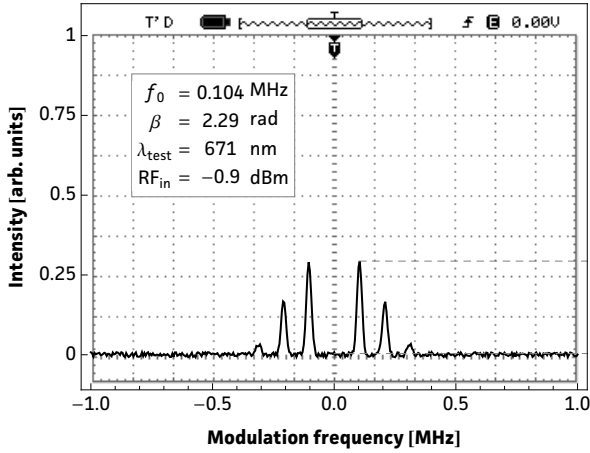
RF properties	Value	Unit
Resonance frequency: $f_0$ <sup>1)</sup>	104	kHz
Preset frequency: $f_{set}$ <sup>1)</sup>	104	MHz
Bandwidth: $\Delta\nu$	2	kHz
Quality factor: Q	~50	
Required RF power for 1rad @ 626nm <sup>2)</sup>	-9.2	dBm
max. RF power: $RF_{max}$ <sup>3)</sup>	1	W

Optical properties		
EO crystal	LN	
Aperture	3x3	mm <sup>2</sup>
Wavefront distortion (633nm)	$< \lambda/6$	nm
recommended optical intensity (626nm)	$< 0.1$	W/mm <sup>2</sup>
AR coating (R<0.5%)	630 - 1100	nm

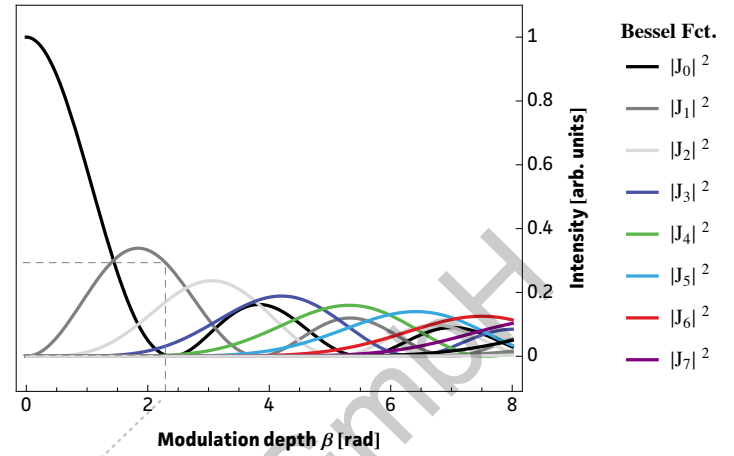
<sup>1)</sup> at 24.3°C <sup>2)</sup> with 50Ω termination <sup>3)</sup> no damage with  $RF_{in} < 2W$

# Measured modulation

**Fig. 1: Oscilloscope trace**

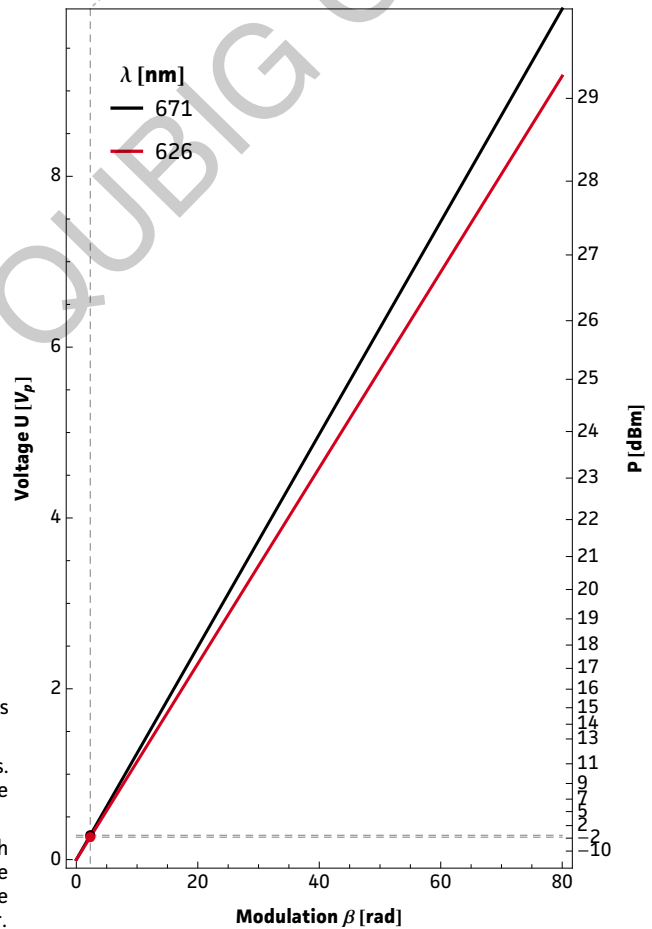


**Fig. 2: Carrier/sideband ratio**



**Table 1: Expected modulation**

$\beta = 1$ rad	unit	$\lambda_1$	$\lambda_2$
$\lambda$	nm	626	671
P	dBm	-9.2	-8.4
P	mW	0	0
U	$V_p$	0.1	0.1
$U_\pi$	$V_p$	0.4	0.4
$\beta / U$	rad / V	9.09	8.33



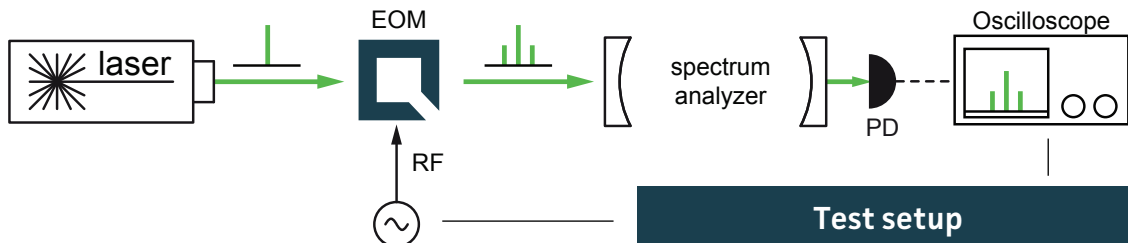
**Fig.1:** Recorded oscilloscope trace retrieved from a test setup as illustrated below.

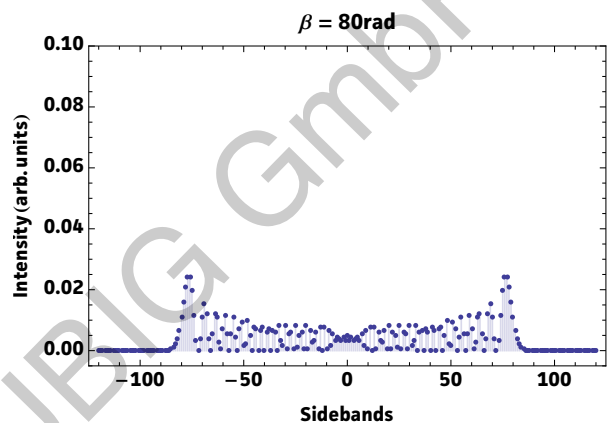
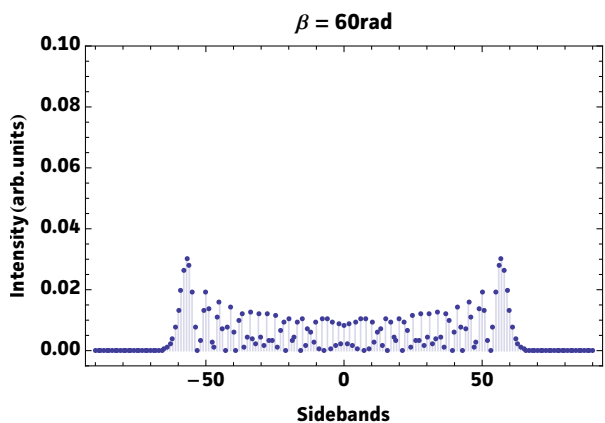
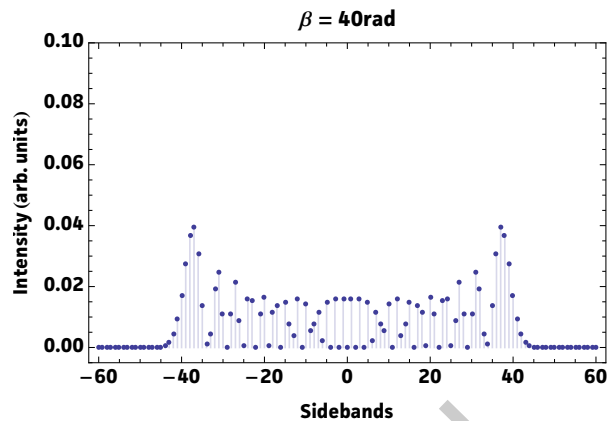
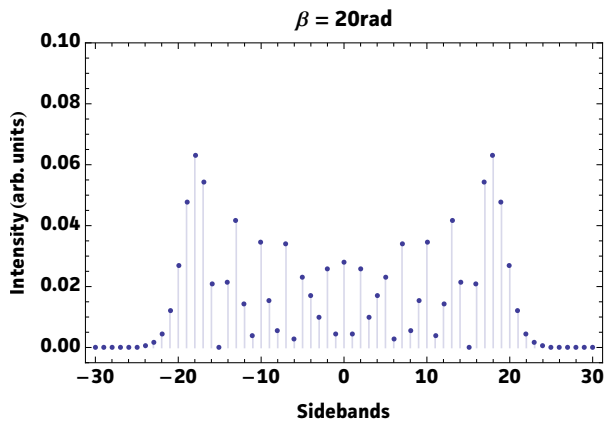
**Fig.2:** Squared absolute values of first-kind Bessel functions vs. modulation depth. Vertical lines reveal the ratio between the carrier  $|J_0|^2$  and the  $i^{\text{th}}$  sideband  $|J_i|^2$  at a specific  $\beta$ .

**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.

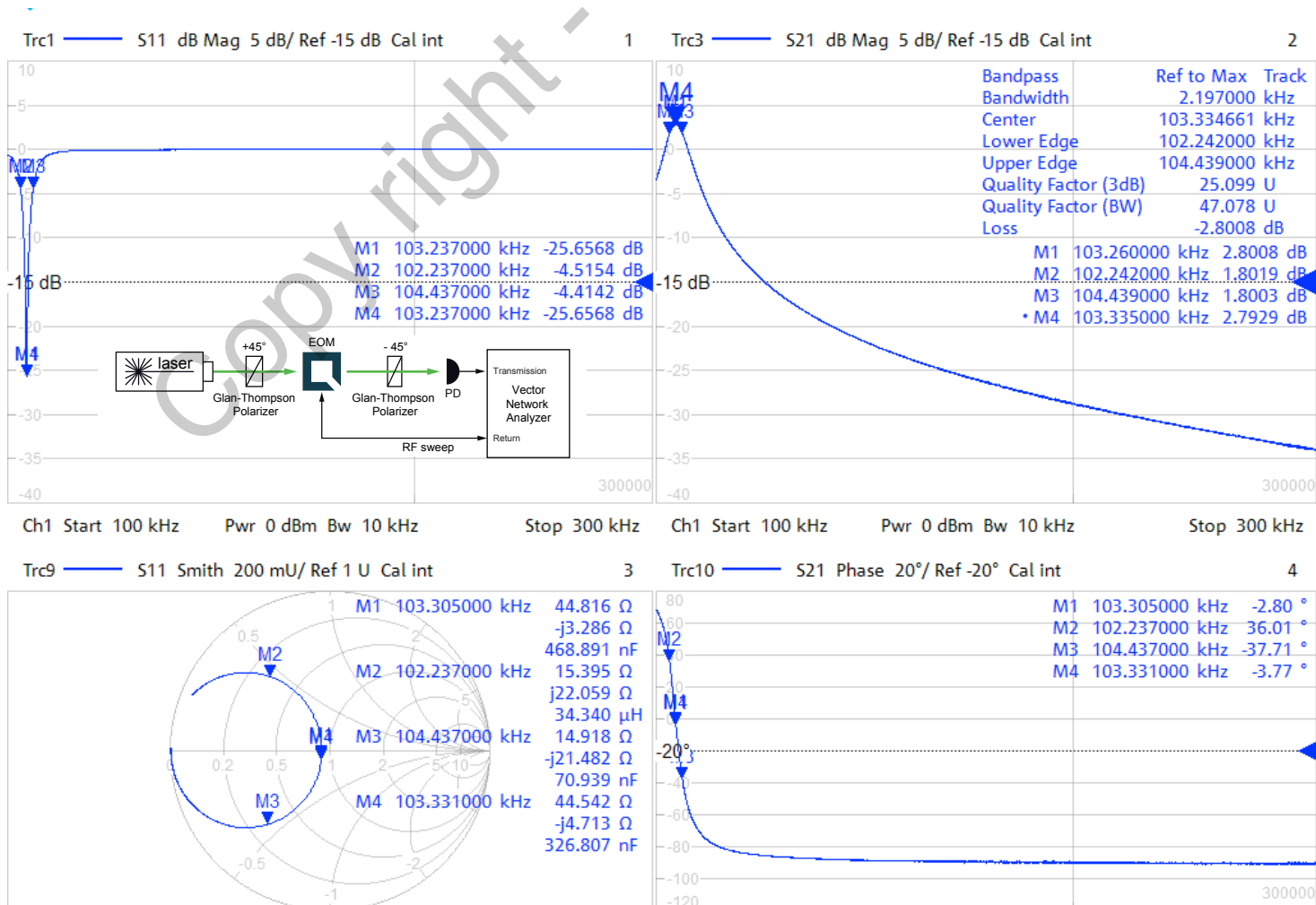
**Table 1:** Expected RF-amplitude/-power values and conversion factors for the required wavelength at the reference modulation depth of 1 rad. **Note:** Experimentally recorded modulation depth displayed in Fig.1 might vary from the respective values ( $\beta=1$ rad) provided in the table.

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





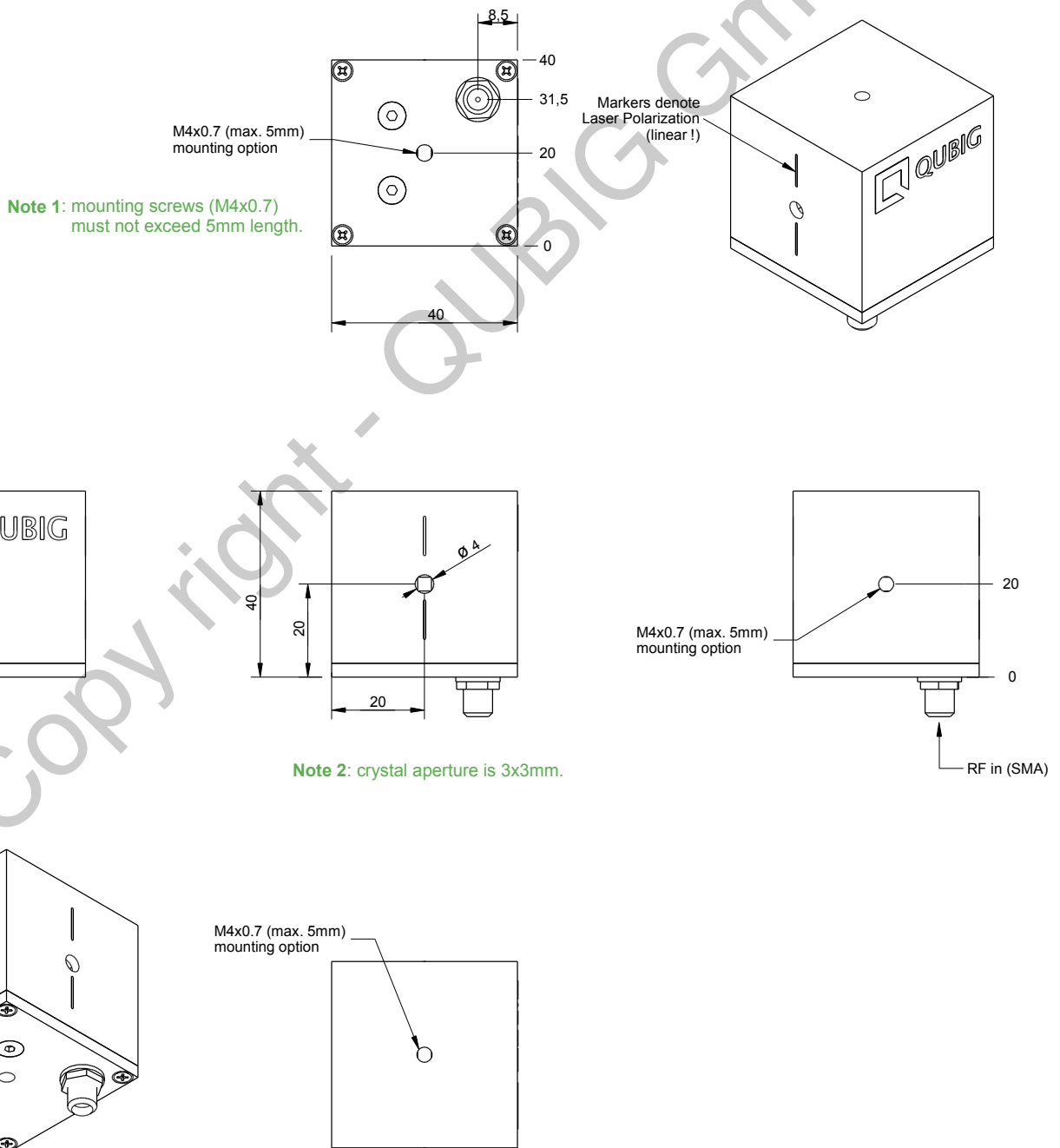
## Resonance characteristics



## 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



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