



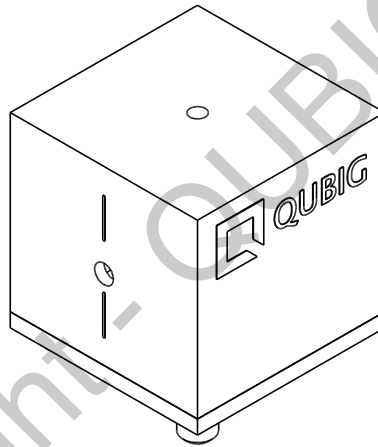
Test Data Sheet

PM6 - 0.1L3 - NIR

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

S/N:

Resonant electro-optic phase modulator



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

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

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

Measured modulation

Fig. 1: Oscilloscope trace

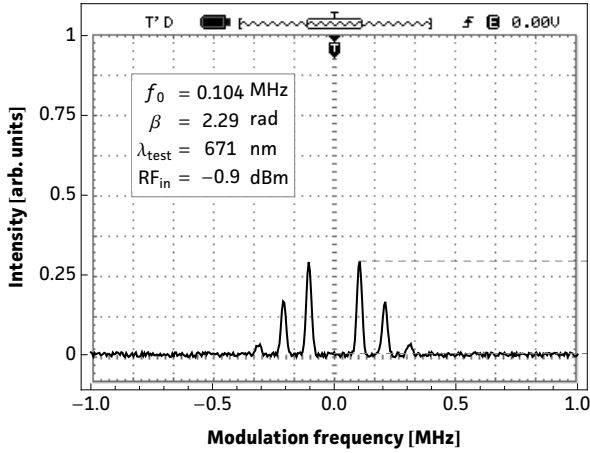


Fig. 2: Carrier/sideband ratio

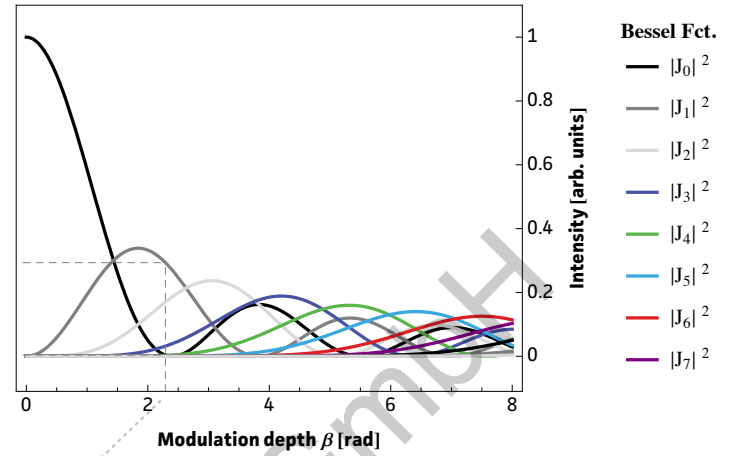


Table 1: Expected modulation

$\beta = 1$ rad	unit	λ_1	λ_2
λ	nm	626	671
P	dBm	-9.2	-8.4
P	mW	0	0
U	V _p	0.1	0.1
U _{π}	V _p	0.4	0.4
β / U	rad / V	9.09	8.33

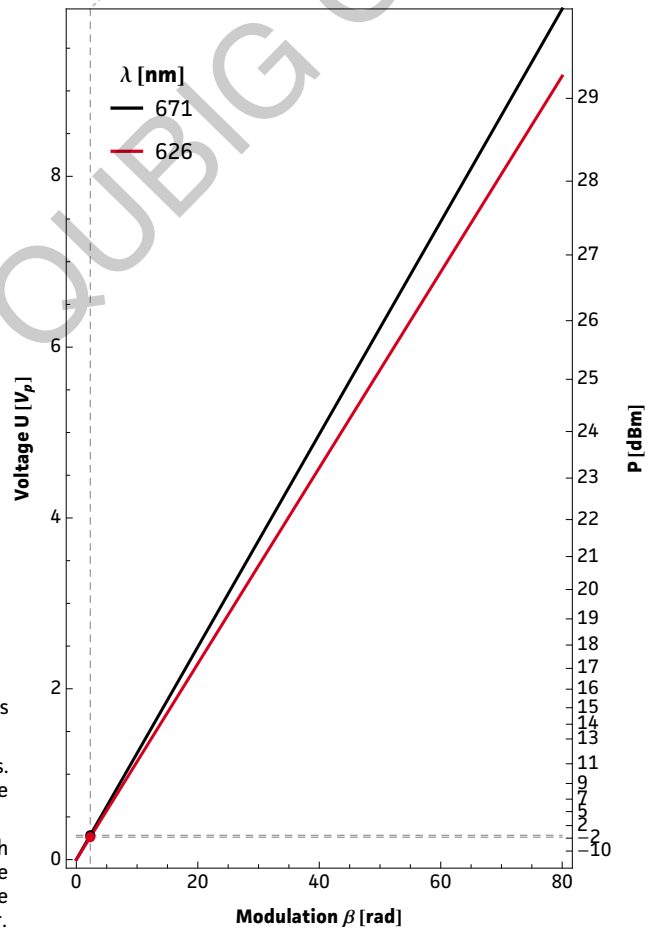


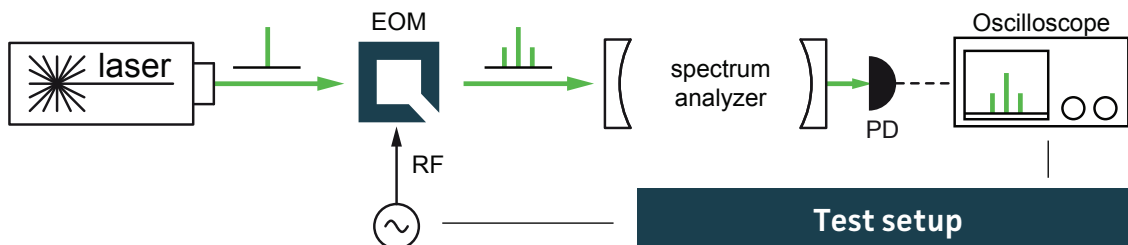
Fig.1: Recorded oscilloscope trace retrieved from a test setup as illustrated below.

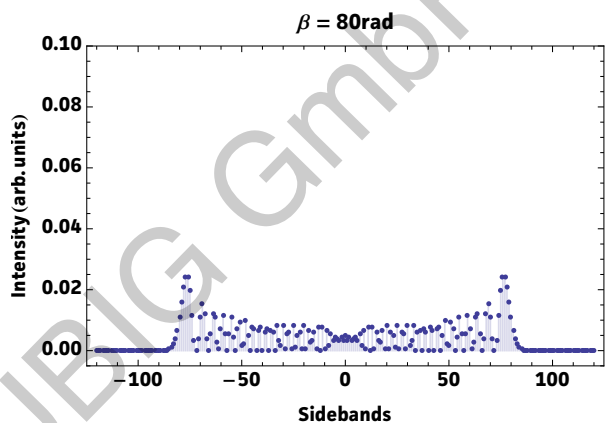
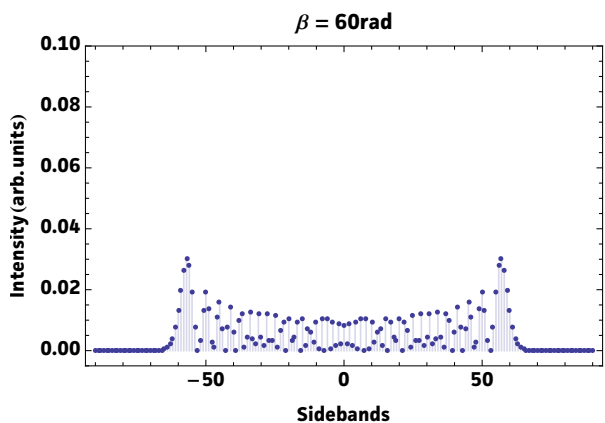
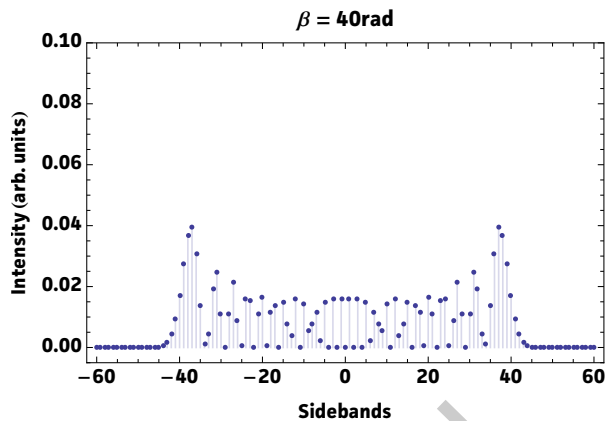
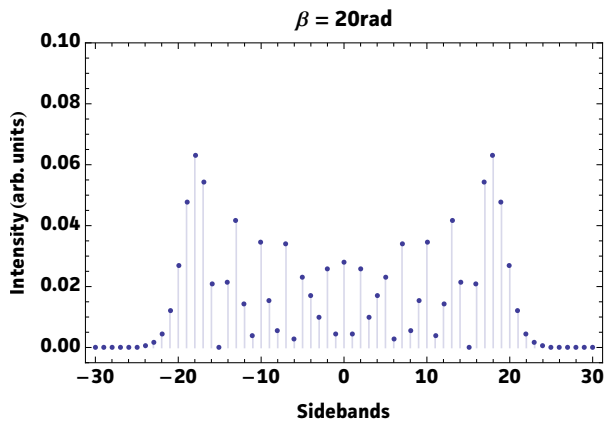
Fig.2: Squared absolute values of first-kind Bessel functions vs. modulation depth. Vertical lines reveal the ratio between the carrier $|J_0|^2$ and the i^{th} sideband $|J_i|^2$ at a specific β .

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 β or the max. achievable modulation depth for a given/available RF power.

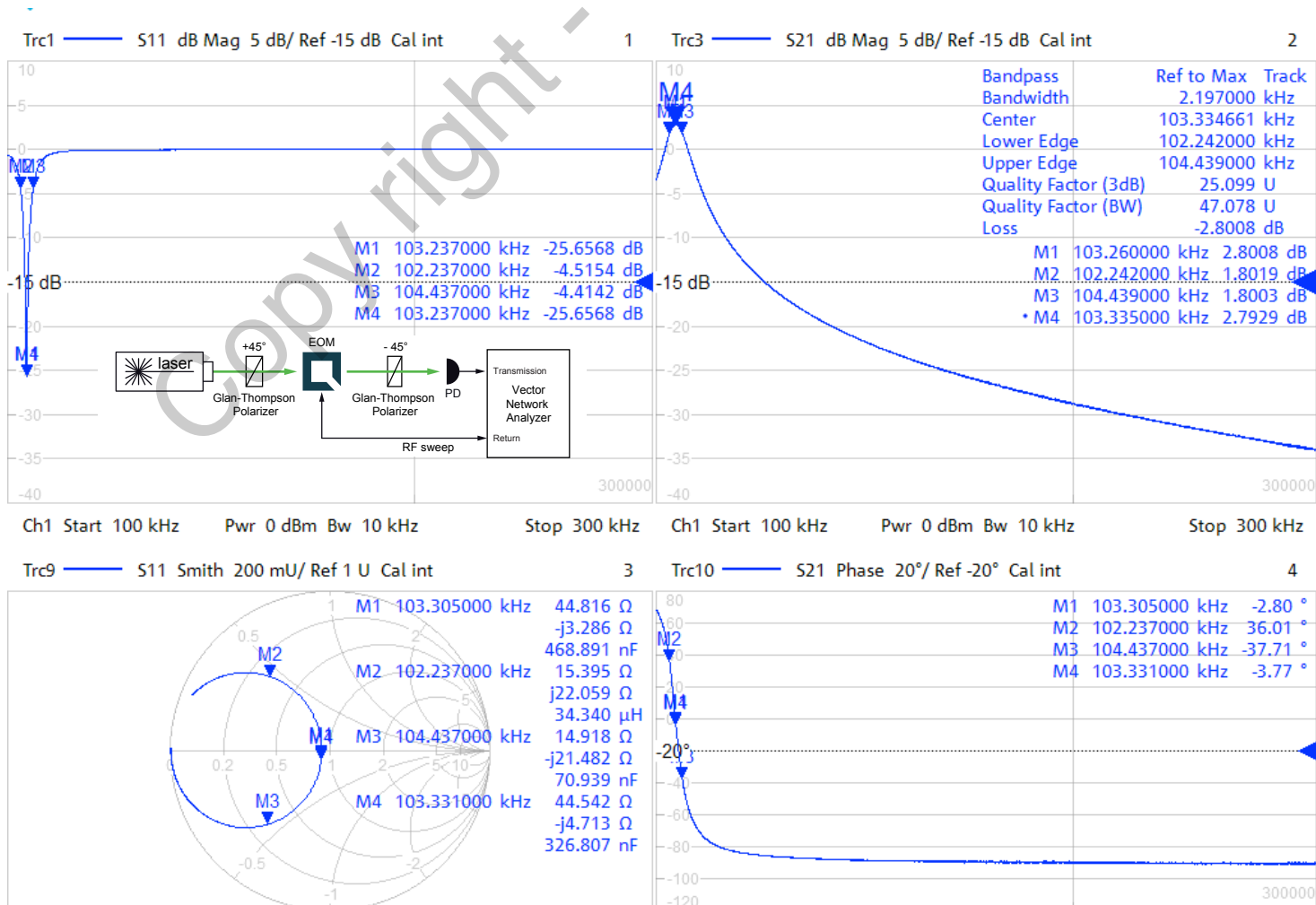
Table 1: Expected RF-amplitude/-power values and conversion factors for the required wavelength at the reference modulation depth of 1 rad. **Note:** Experimentally recorded modulation depth displayed in Fig.1 might vary from the respective values ($\beta=1$ rad) provided in the table.

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

