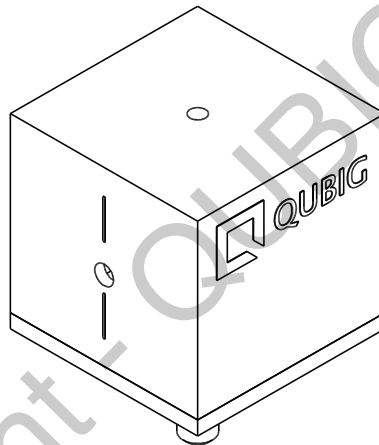


Test Data Sheet

PM7 - VIS
 (EO-28M3-VIS)
 S/N: J7729

Resonant electro-optic phase modulator
 with
- thermal crystal mount



RF properties	Value	Unit
Resonance frequency: f_0 ¹⁾	28.9	MHz
Bandwidth: $\Delta\nu$	478	kHz
Quality factor: Q	60	
Required RF power for 1rad @ 369nm ²⁾	7.4	dBm
max. RF power: RF_{max} ³⁾	0.5	W

Optical properties		
EO crystal	MLN	
Aperture	3x3	mm ²
Wavefront distortion (633nm)	$\lambda/4$	nm
Recommended optical intensity (369nm)	< 0.1	W/mm ²
AR coating ($R_{avg} < 1\%$)	360 - 650	nm

¹⁾ at 27°C ²⁾ with 50Ω termination ³⁾ no damage with $RF_{in} < 1W$

Measured modulation

Fig. 1: Oscilloscope trace

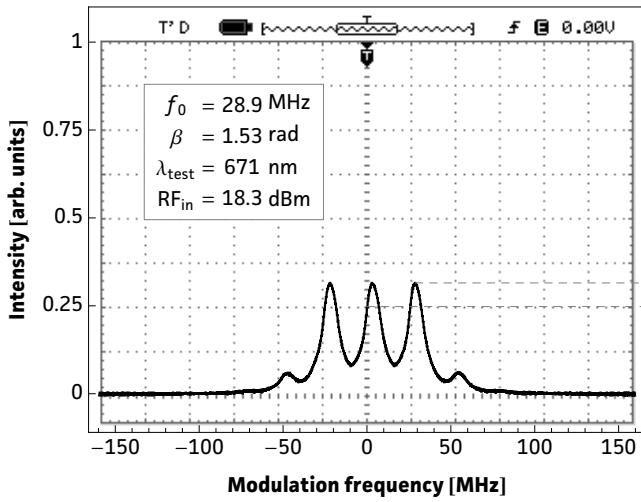


Fig. 2: Carrier/sideband ratio

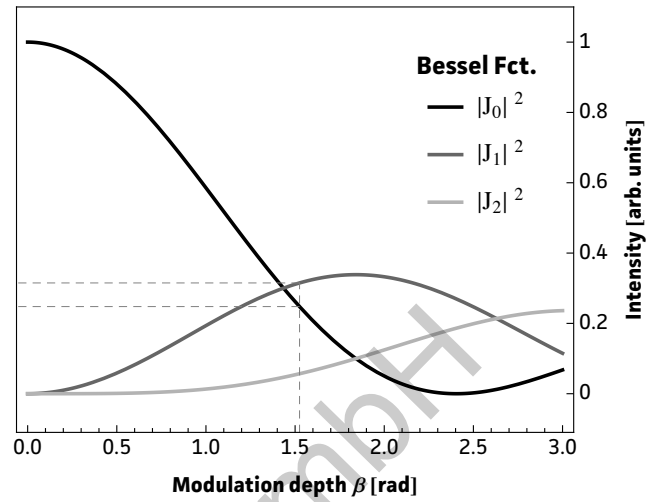


Table 1: Expected modulation

$\beta = 1 \text{ rad}$	unit	λ_1	λ_2
λ	nm	369	671
P	dBm	7.4	14.7
P	mW	5	29
U	V _p	0.7	1.7
U_π	V _p	2.3	5.4
β / U	rad / V	1.35	0.58

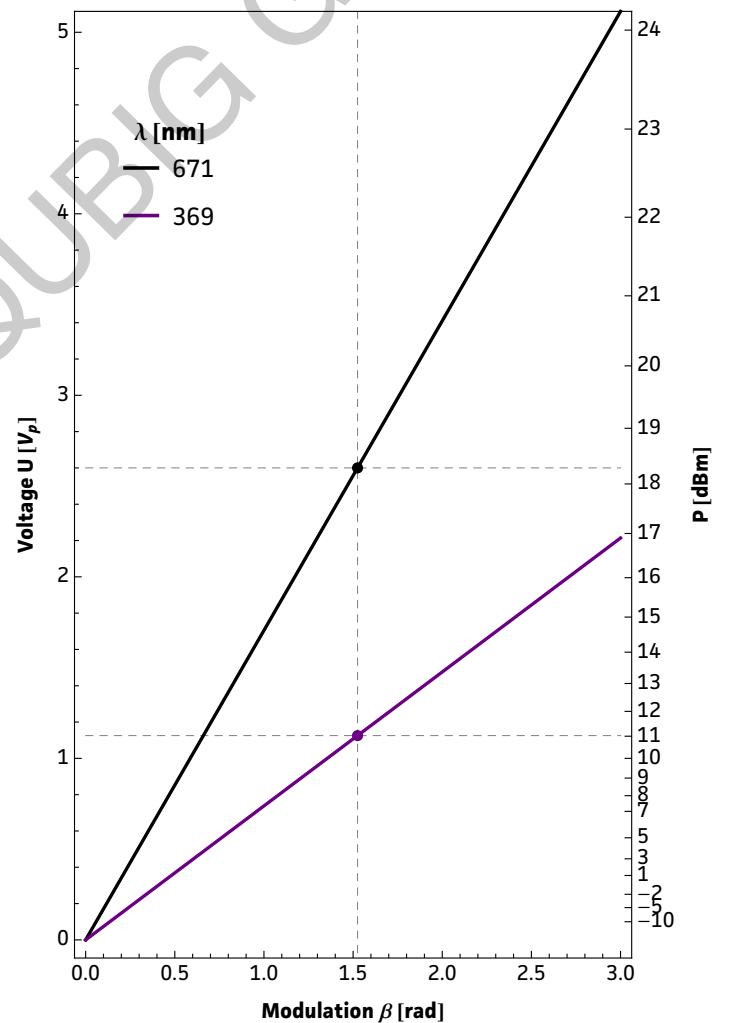


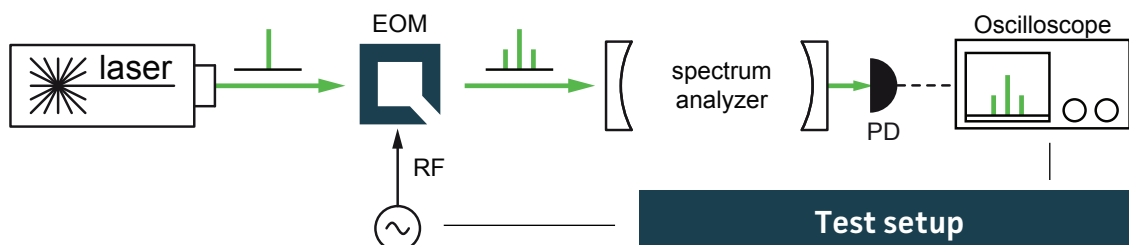
Fig.1: Recorded oscilloscope trace retrieved from a test setup as illustrated below.

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 .

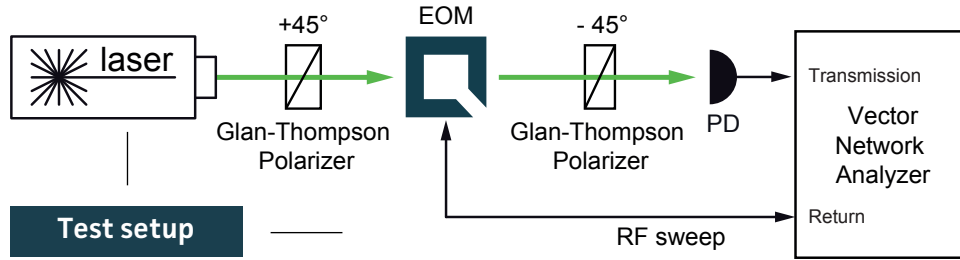
Fig.3: Dependency between RF amplitude and modulation depth for different wavelengths. Points on the curve allow to retrieve either the required RF amplitude for a specific/desired β or the max. achievable modulation depth for a given/available RF power.

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 ($\beta=1\text{rad}$) provided in the table.

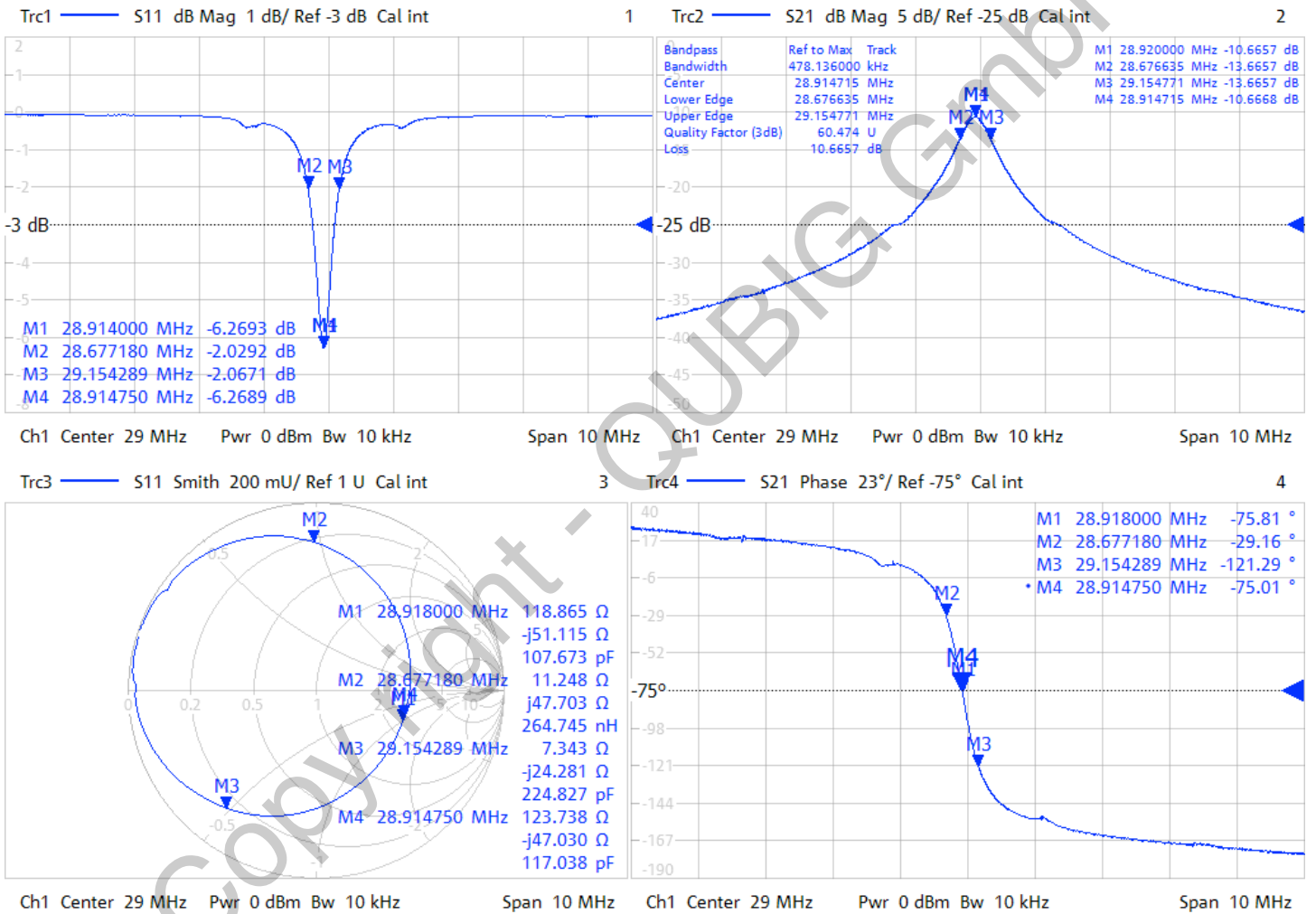
Fig. 3: RF-signal amplitude vs. modulation depth



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)

