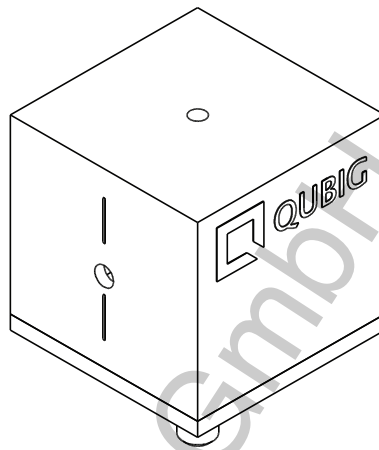


## Test Data Sheet

### PM7 - NIR (EO-F20L3-NIR)

S/N:

### Resonant electro-optic phase modulator

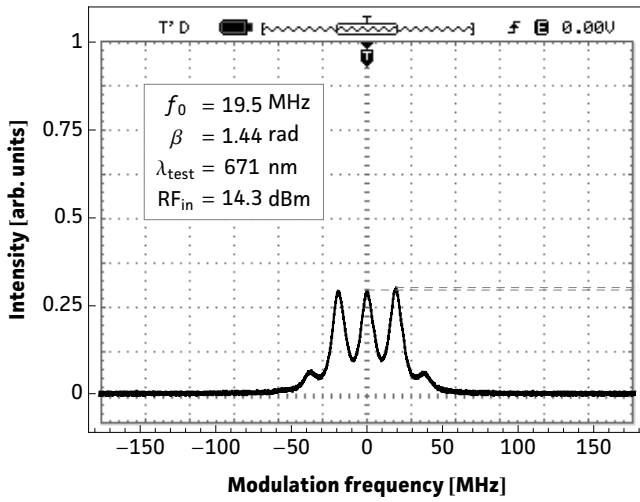


RF properties	Value	Unit
Resonance frequency: $f_0$ <sup>1)</sup>	19.5	MHz
Preset frequency: $f_{set}$ <sup>1)</sup>	19.5	MHz
Bandwidth: $\Delta\nu$	256	kHz
Quality factor: Q	76	
Required RF power for 1rad @ 780nm <sup>2)</sup>	12.6	dBm
max. RF power: $RF_{max}$ <sup>3)</sup>	1	W

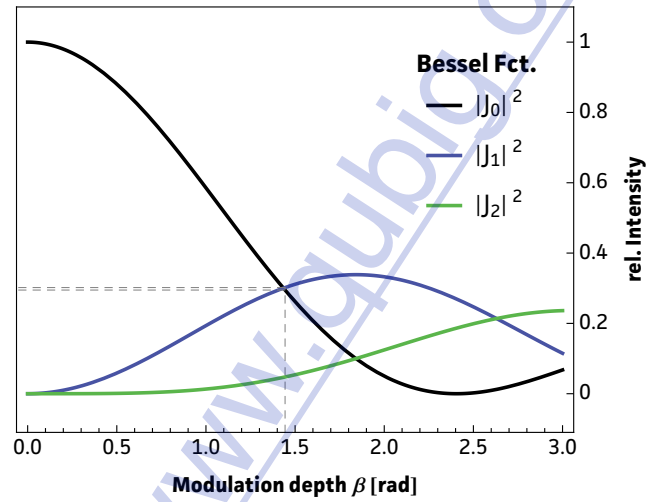
Optical properties		
EO crystal	LN	
Aperture	3x3	mm <sup>2</sup>
Wavefront distortion (633nm)	$\lambda/6$	nm
recommended optical intensity (1228nm)	<1	W/mm <sup>2</sup>
AR coating (R<0.5%)	630 - 1070	nm

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

**Fig. 1: Oscilloscope trace**

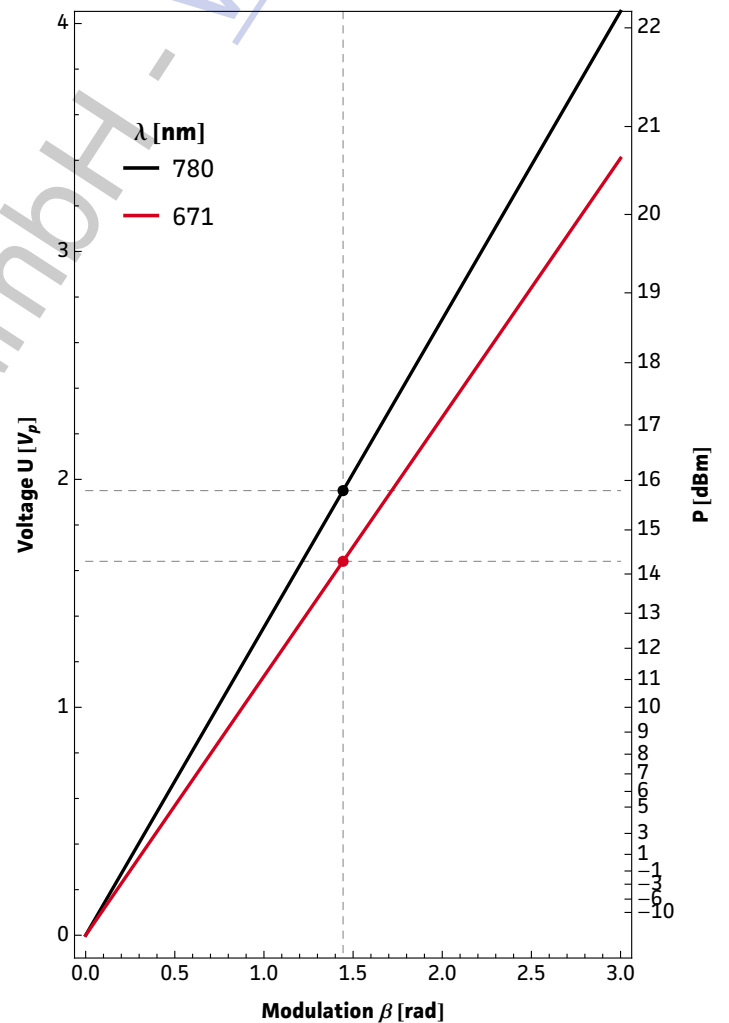


**Fig. 2: Carrier/sideband ratio**



**Table 1: Expected modulation**

$\beta = 1 \text{ rad}$	unit	$\lambda_1$	$\lambda_2$
$\lambda$	nm	<b>671</b>	<b>780</b>
P	dBm	11.1	12.6
P	mW	13	18
U	$V_p$	1.1	1.4
$U_\pi$	$V_p$	3.6	4.2
$\beta / U$	rad / V	0.88	0.74



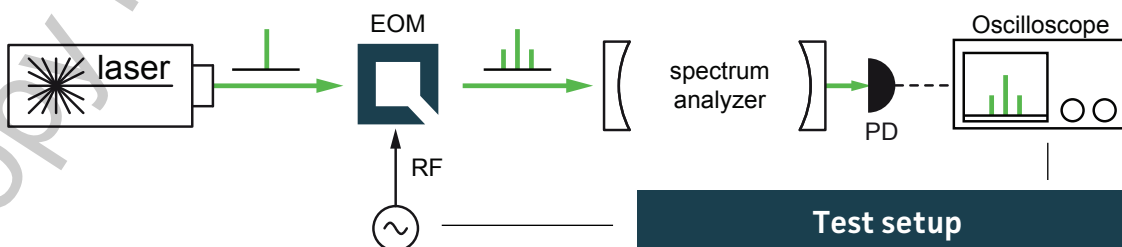
**Fig. 3: RF-signal amplitude vs. modulation depth**

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

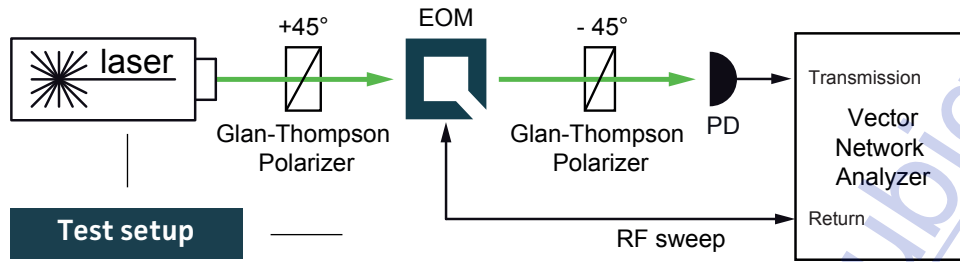
**Fig.2:** Squared absolute values of first-kind Bessel functions vs. modulation depth. Vertical lines reveal the ratio between the carrier  $|J_0|^2$  and the  $i^{\text{th}}$  sideband  $|J_i|^2$  at a specific  $\beta$ .

**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.

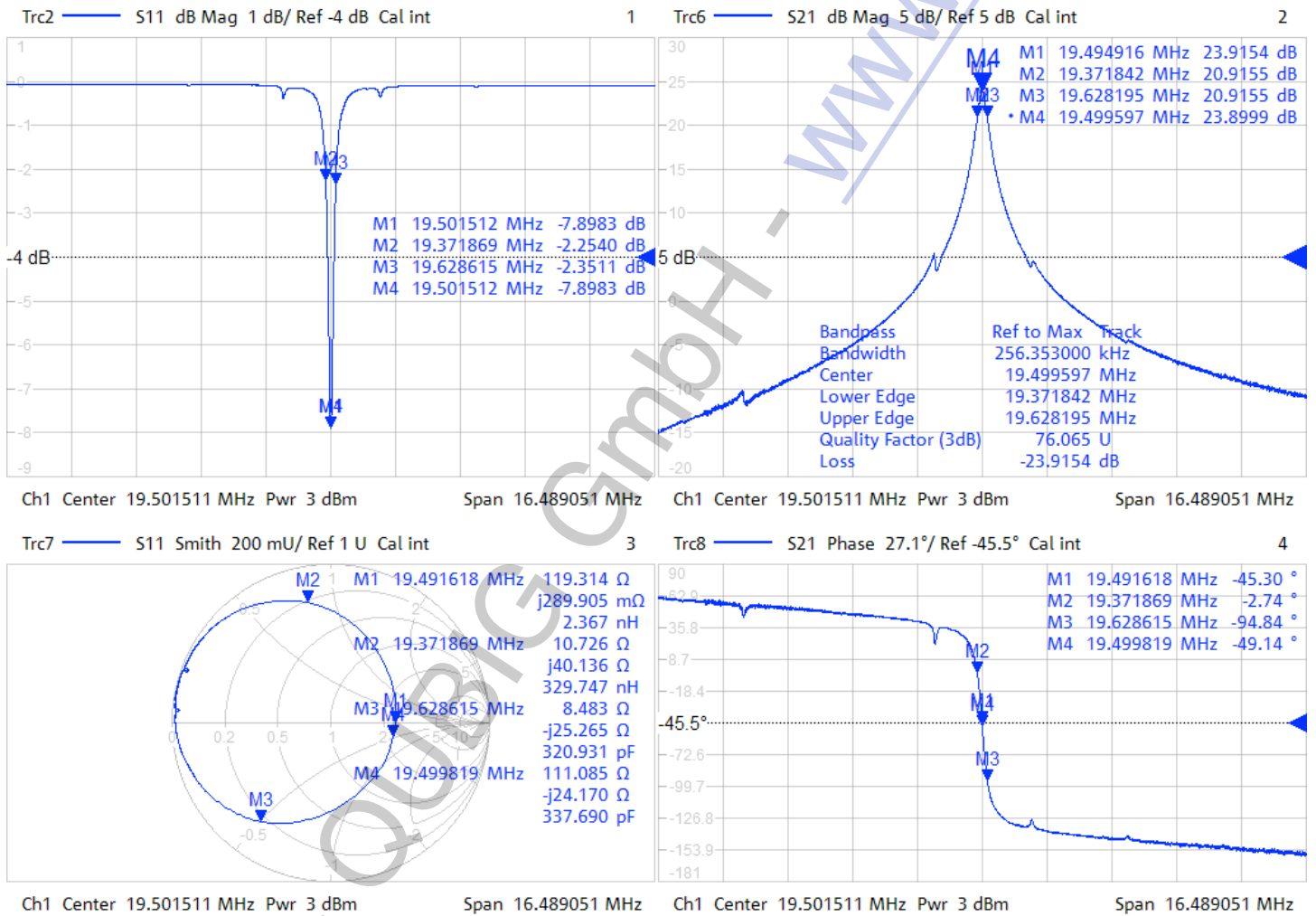
**Table 1:** Expected RF-amplitude/-power values and conversion factors for the required wavelength at the reference modulation depth of 1 rad. **Note:** Experimentally recorded modulation depth displayed in Fig.1 might vary from the respective values ( $\beta=1\text{rad}$ ) provided in the table.



## Resonance characteristics



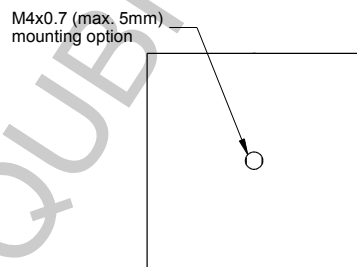
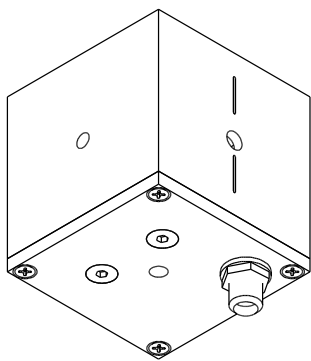
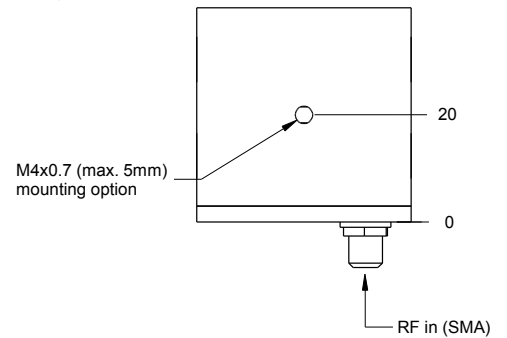
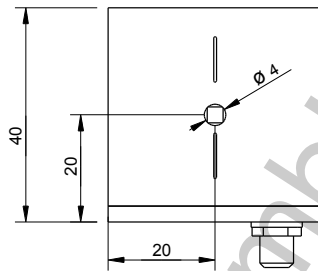
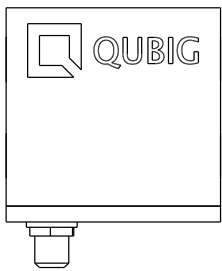
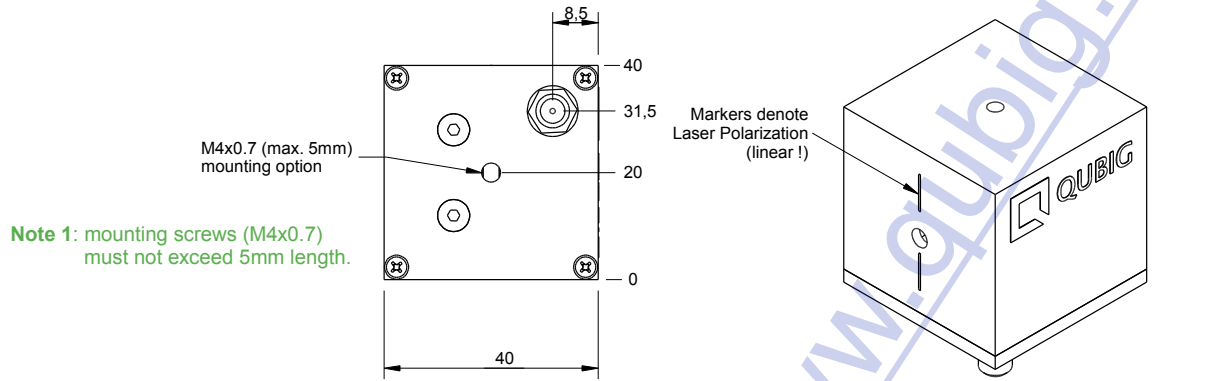
11/8/2016 4:18:17 PM  
1328.5170K92-100178-XI



## 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



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