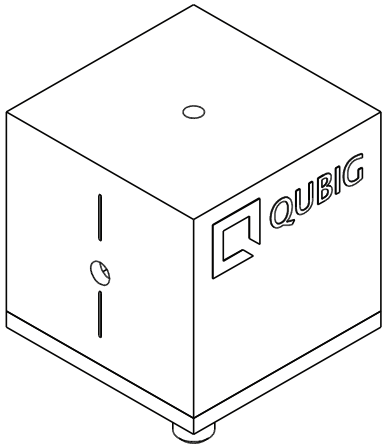
Test Data Sheet

PM7 - NIR

(EO-F20L3-NIR)

S/N:

Resonant electro-optic phase modulator



RF properties	Value	Unit
Resonance frequency: f_0 [1]	19.5	MHz
Preset frequency: f_{set} [1]	19.5	MHz
Bandwidth: $\Delta\nu$	256	kHz
Quality factor: Q	76	
Required RF power for 1 rad @ 780nm [2]	12.6	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 (1228nm)	<1	W/mm^2
AR coating (R<0.5%)	630 - 1070	nm

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

Measured modulation

Fig. 1: Oscilloscope trace

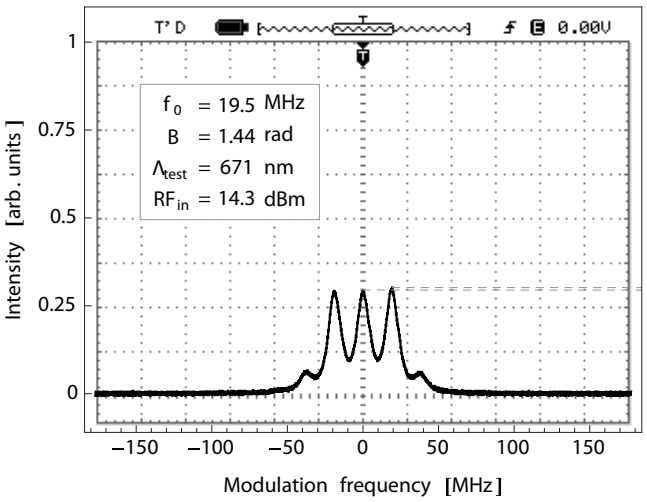


Fig. 2: Carrier /sideband ratio

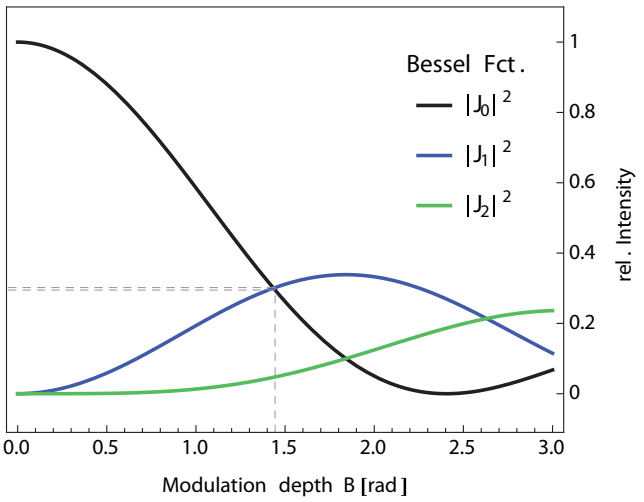


Table 1: Expected modulation

B = 1 rad	unit	Λ1	Λ2
Λ	nm	671	780
P	dBm	11.1	12.6
P	mW	13	18
U	V_p	1.1	1.4
U_Π	V_p	3.6	4.2
B / U	rad / V	0.88	0.74

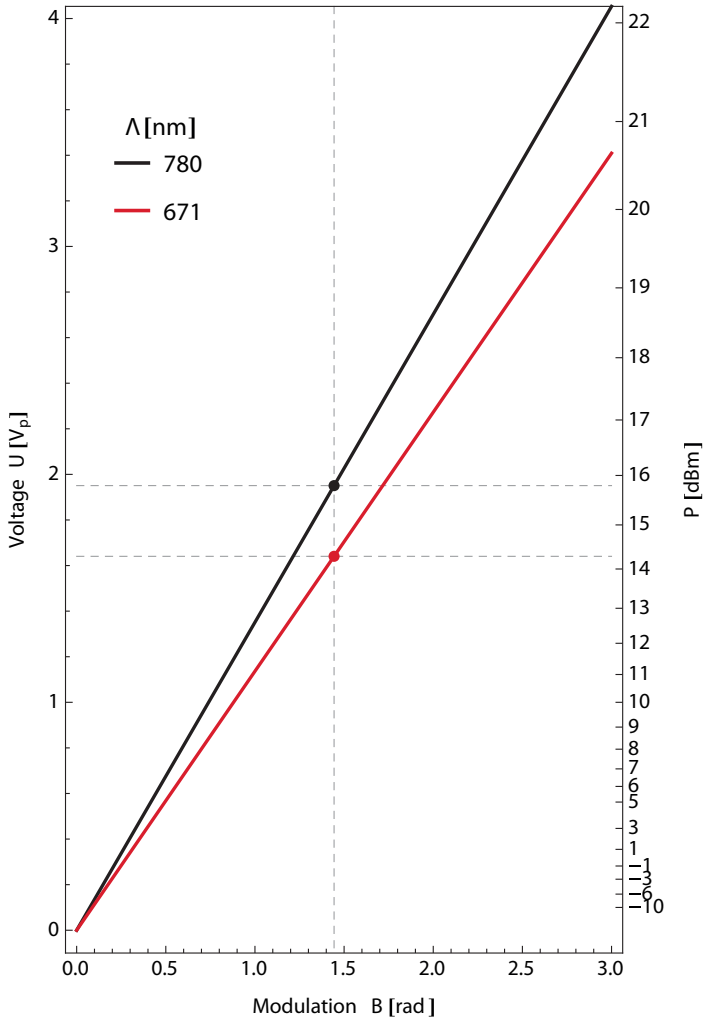


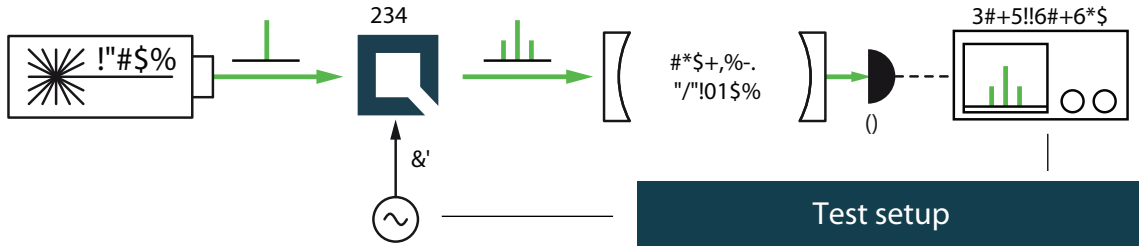
Fig. 3: RF –signal amplitude vs. modulation depth

Fig.1: Recorded oscilloscope t race retrieved from a test setup as illust rated below.

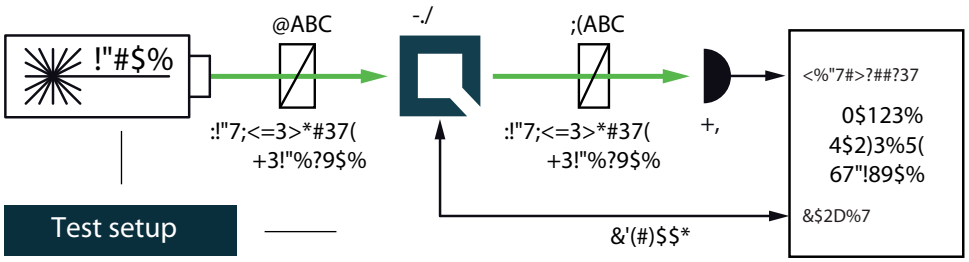
Fig.2: Squared absolute values of first-kind Bessel functions vs. modulation depth. Ve rtical lines reveal the ratio between the carrier $|J_0|^2$ and the i^{th} sideband $|J_i|^2$ at a specific ß.

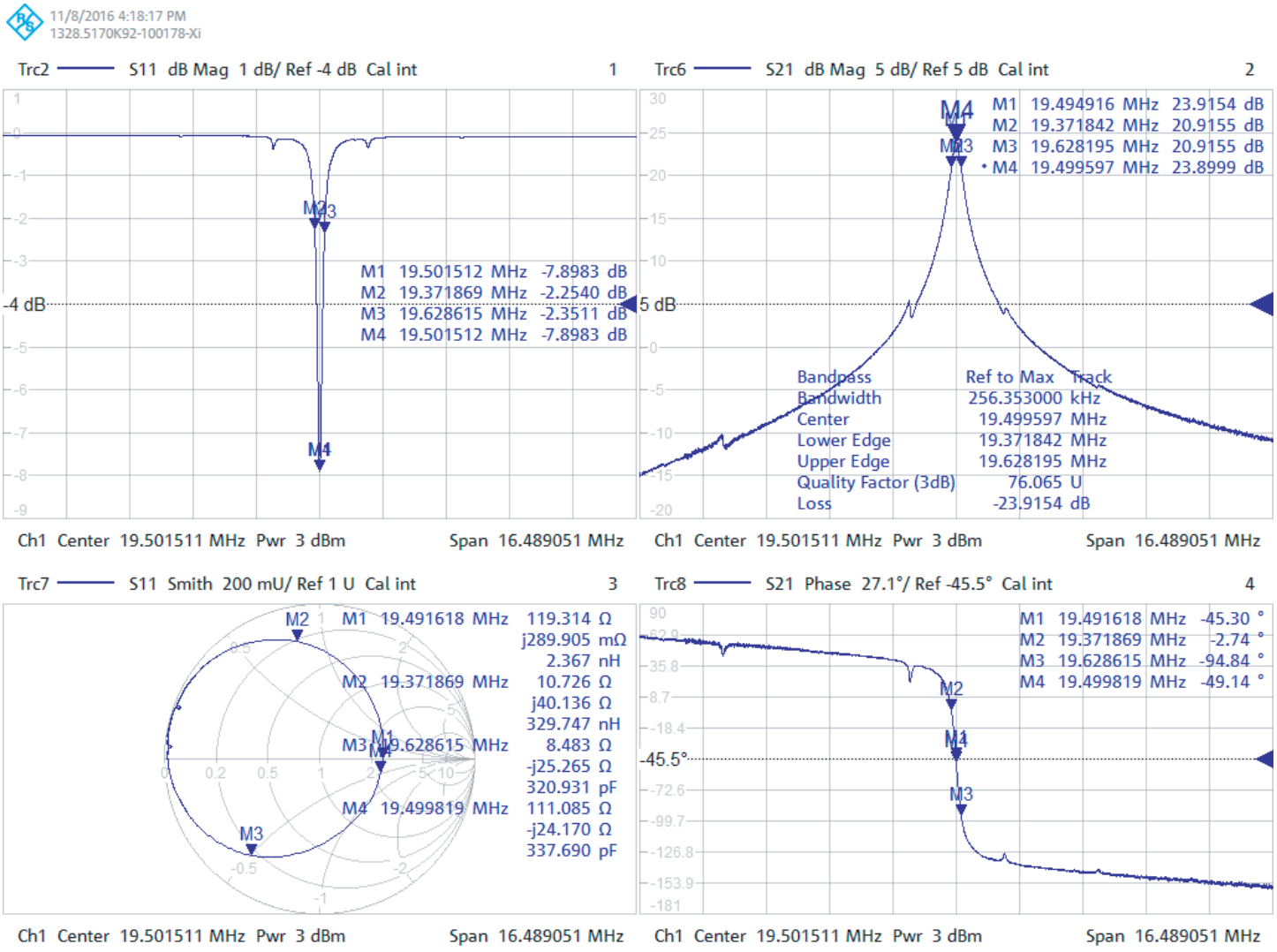
Fig.3: Dependency between RF amplitude and modulation depth for di fferent wavelengths. Points on the cu rve allow to retrieve either the required RF amplitude for a specific/desired ß or the max. achievable modulation depth for a given/available RF power.

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 va ry from the respective values (ß=1 rad) provided in the table.



Resonance cha racteristics





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 d rawing