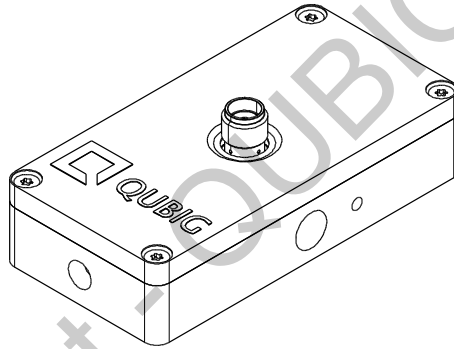


## Test Data Sheet

### PM10 - VIS

S/N:

### Resonant electro-optic phase modulator



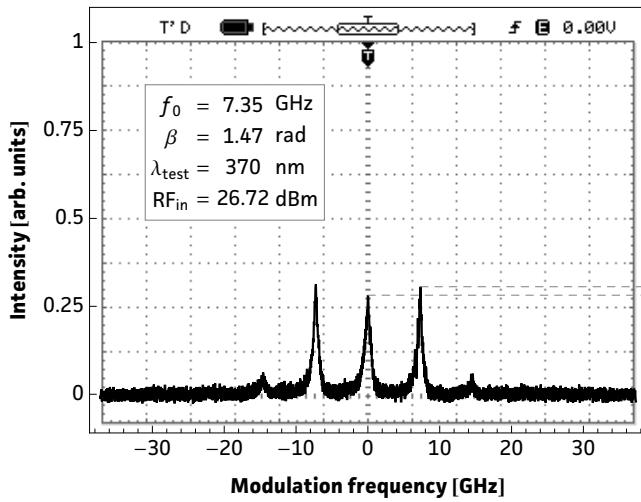
RF properties	Value	Unit
Resonance frequency: $f_0$ <sup>1)</sup>	7.3 - 7.4	GHz
Preset frequency: $f_{set}$ <sup>1)</sup>	7.35	GHz
Bandwidth: $\Delta\nu$	25.6	MHz
Quality factor Q	287	
Required RF power for 1 rad @ 369nm	23.4	dBm
max. RF power: $RF_{max}$ <sup>2)</sup>	2	W

Optical properties		
EO crystal	MLN	
Aperture	∅ 2	mm
Wavefront distortion (@ 633 nm)	$\lambda/4$	
recommended max. optical intensity (@ 369nm)	0.1	W/mm <sup>2</sup>
AR coating ( $R_{avg} < 1\%$ )	360 - 650	nm

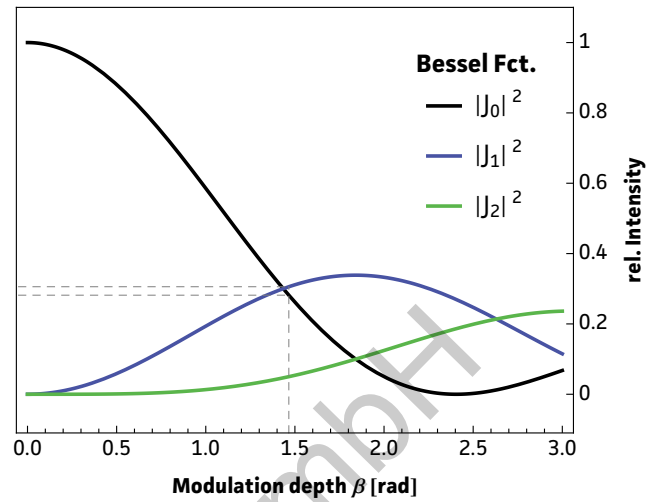
<sup>1)</sup> at 24.7 °C <sup>2)</sup> no damage with  $RF_{in} < 5W$ , but use of a proper heatsink is strongly recommended at high powers

# Measured phase modulation

**Fig. 1: Oscilloscope trace**



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



**Table 1: Expected modulation**

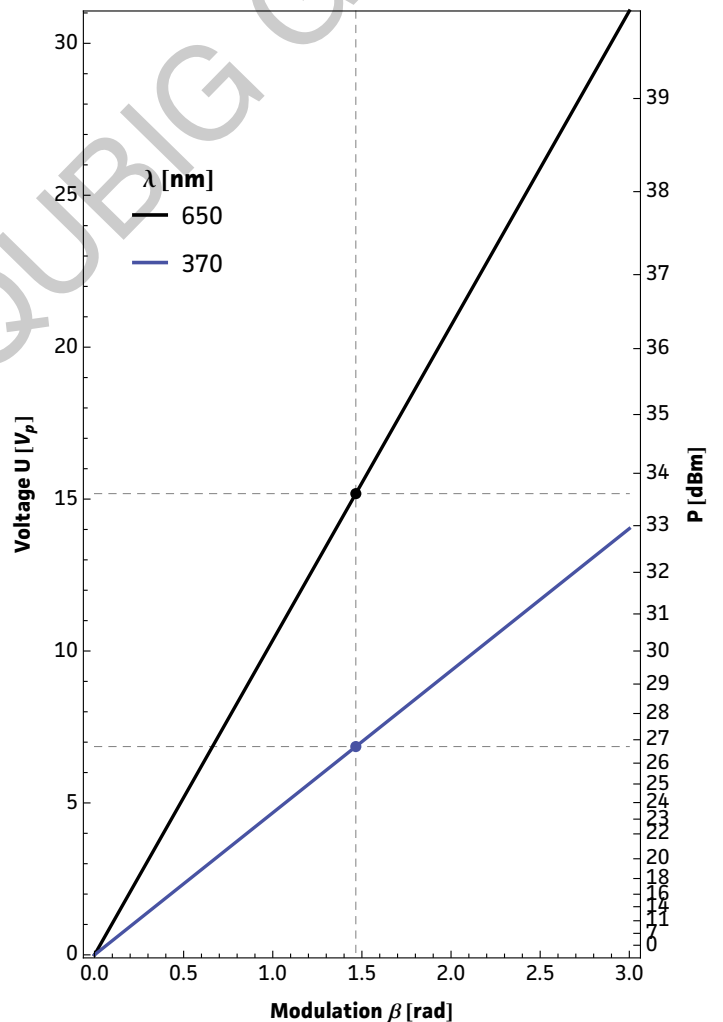
$\beta = 1 \text{ rad}$	unit	$\lambda_1$	$\lambda_2$
$\lambda$	nm	370	650
P	dBm	23.4	30.3
P	W	0.22	1.07
U	$V_p$	4.7	10.3
$U_\pi$	$V_p$	14.7	32.5
$\beta / U$	rad / V	0.21	0.1

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

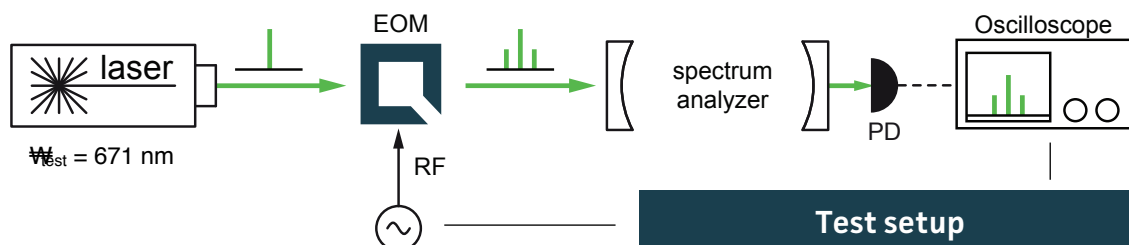
**Fig. 2:** Squared absolute values of first-kind Bessel functions vs. modulation depth. Vertical lines reveal the ratio between the carrier  $|J_0|^2$  and the  $i^{\text{th}}$  sideband  $|J_i|^2$  at a specific  $\beta$ .

**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.

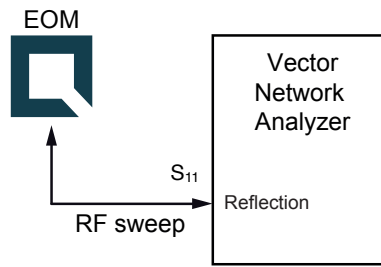
**Table 1:** Expected RF-amplitude/-power values and conversion factors for the required wavelength at the reference modulation depth of 1 rad. **Note:** Experimentally recorded modulation depth displayed in Fig. 1 might vary from the respective values ( $\beta=1\text{rad}$ ) provided in the table.



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

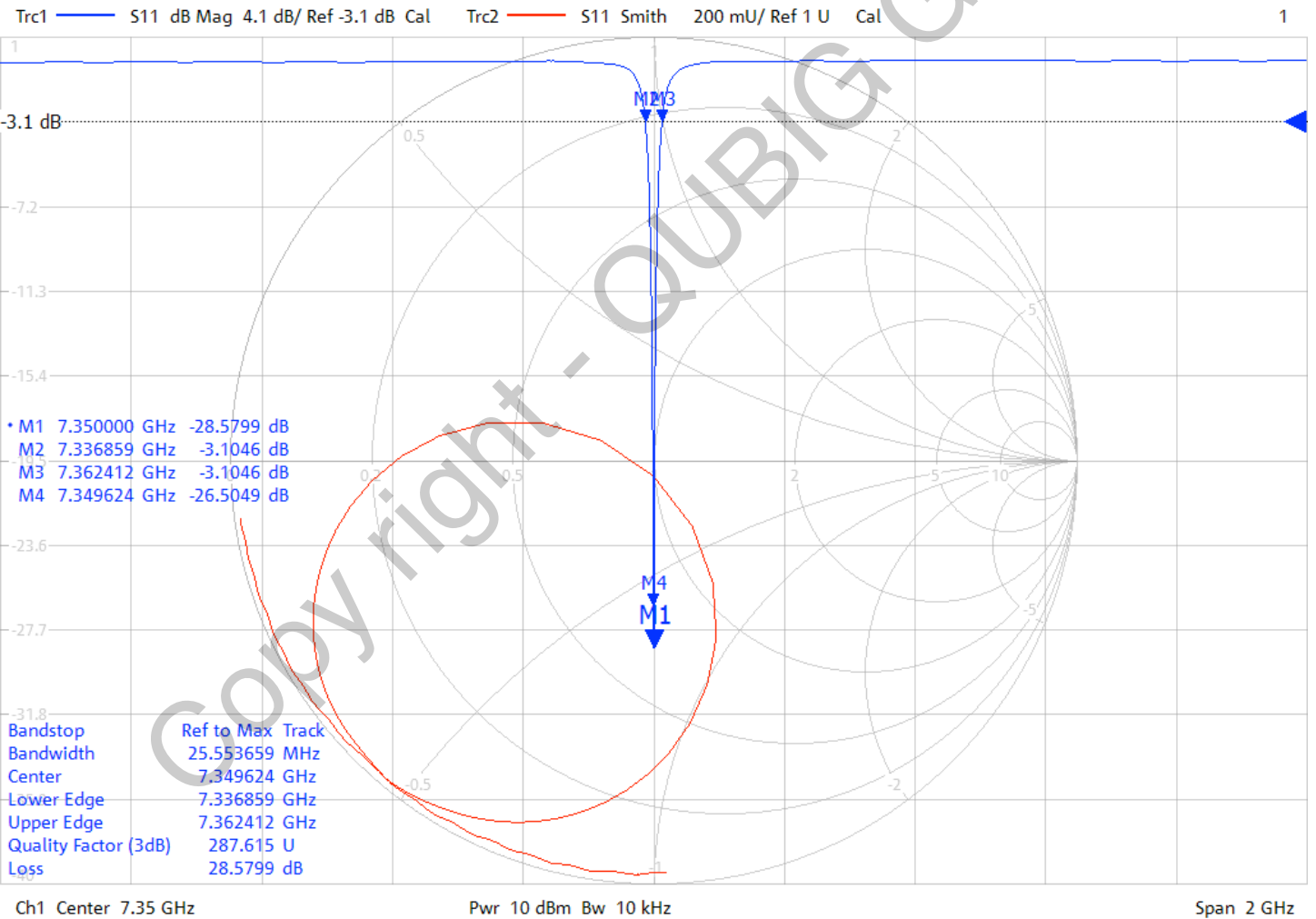


# Resonance characteristics

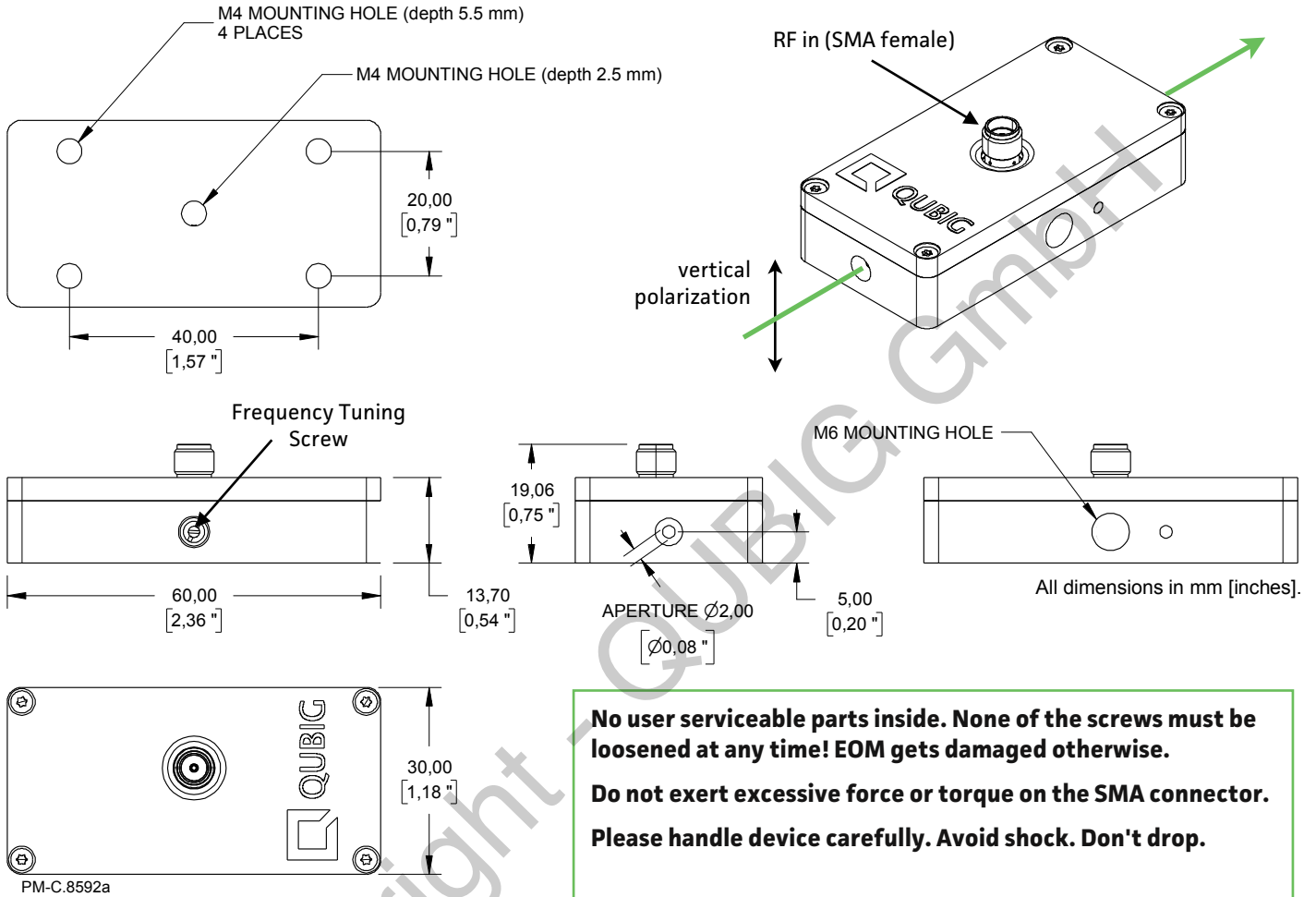


T<sub>EOM</sub> = 24.13 °C

10/29/2018 3:27:18 PM  
1311.6010K62-101870-Bu



# Package drawing



**No user serviceable parts inside. None of the screws must be loosened at any time! EOM gets damaged otherwise.**

**Do not exert excessive force or torque on the SMA connector.**

**Please handle device carefully. Avoid shock. Don't drop.**