QUBIG

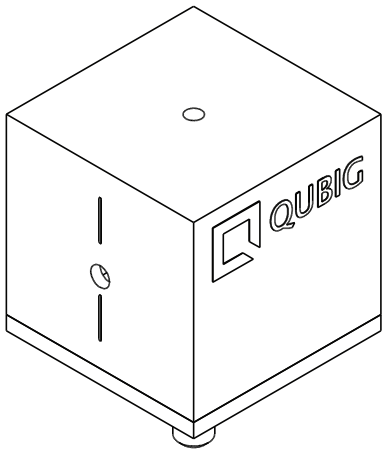
Empowering Laser Technologies

Test Data Sheet

EO-K40M3
S/N:

High-Q, resonant electro-optic phase modulator

with
- tunable resonance frequency
- thermal crystal mount

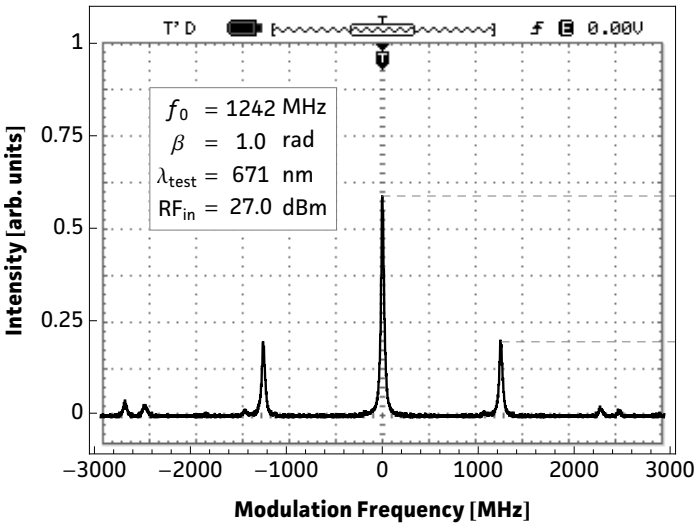


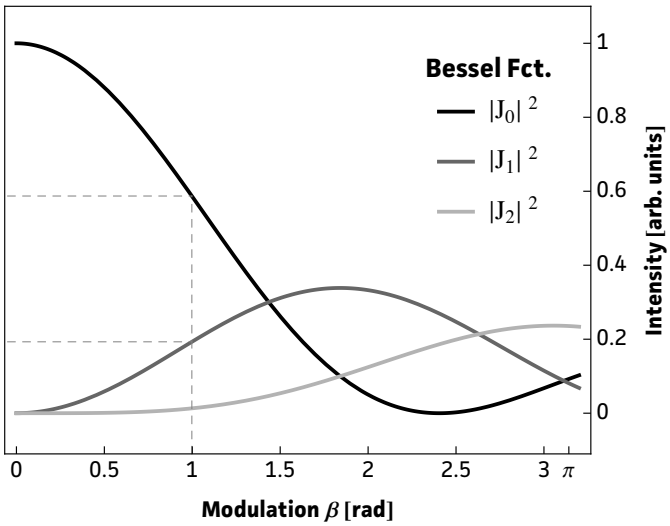
RF properties	Value	Unit
Resonance frequency: f_0 [1)]	1.12 - 1.36	GHz
Preset frequency: f_{set} [1)]	1242	MHz
Bandwidth: Δν	3.6	MHz
Quality factor: Q	345	
Required RF power for 1rad @ 767nm [2)]	28.4	dBm
max. RF power: RF_{max} [3)]	2	W

Optical properties		
EO crystal	MLN	
Aperture	3x3	mm^2
Wavefront distortion (633nm)	λ/4	nm
max. optical intensity (767nm)	<10	W/mm^2
AR coating (R<0.5%)	500 - 1100	nm

[1)] at 24.3°C [2)] with 50Ω termination [3)] no damage with RF_{in} < 4W

Measured modulation

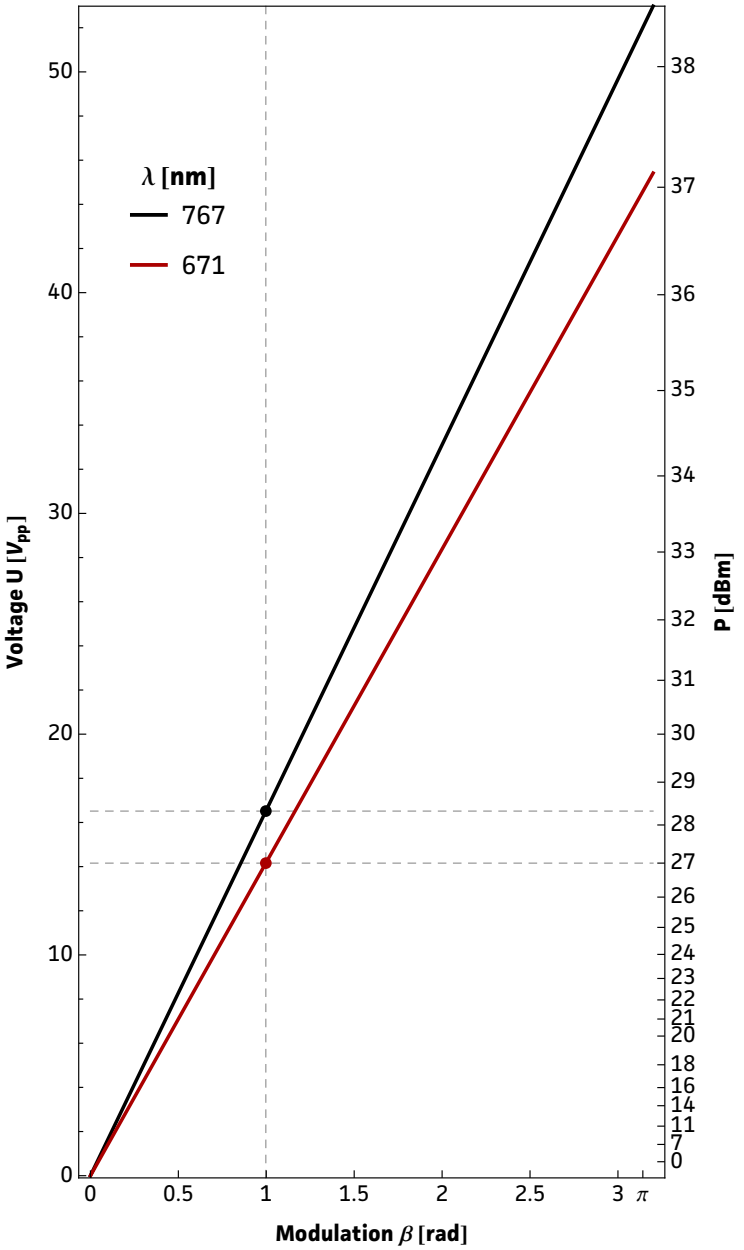




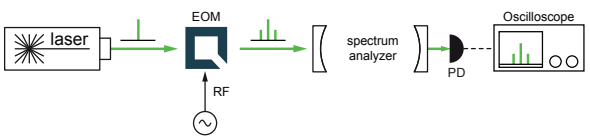
Expected modulation

Wavelength	λ_{use}	767	nm
Resonance frequency	f_0	1242	MHz
Modulation	β	1.0	rad
RF power	U	16.6	V_{pp}
	P_{dBm}	28.4	dBm
	P_W	686	mW
	U_π	52.0	V_{pp}
Modulation efficiency	β/U	0.06	rad/V

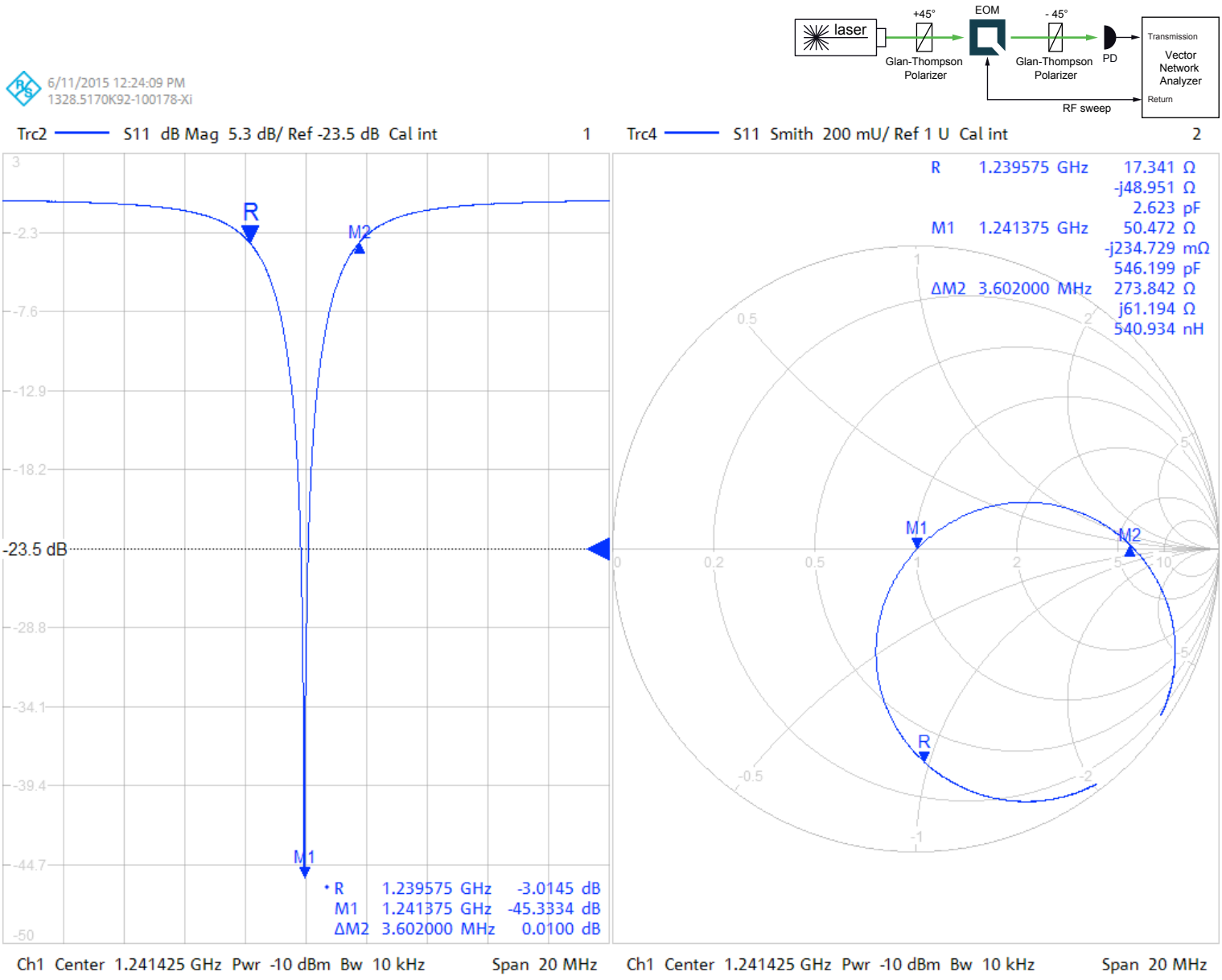
Note: After turn on, the resonance frequency might drift slightly with applied rf power. Please compensate by tuning the rf drive frequency until steady-state.



Test setup

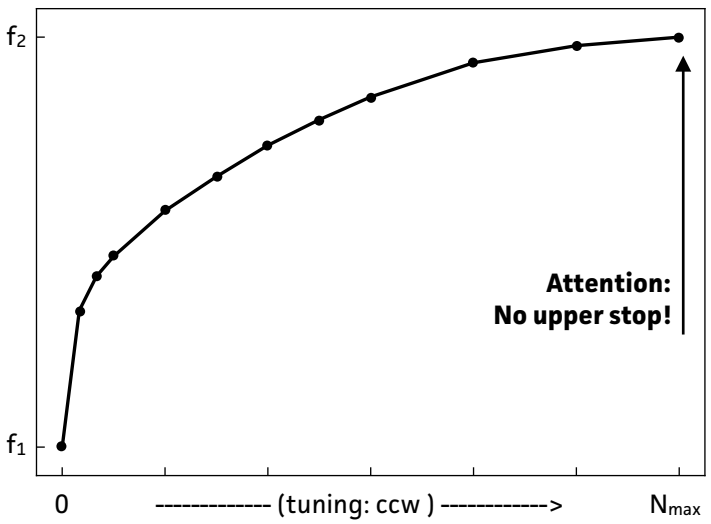


Resonance characteristics



Tuning performance

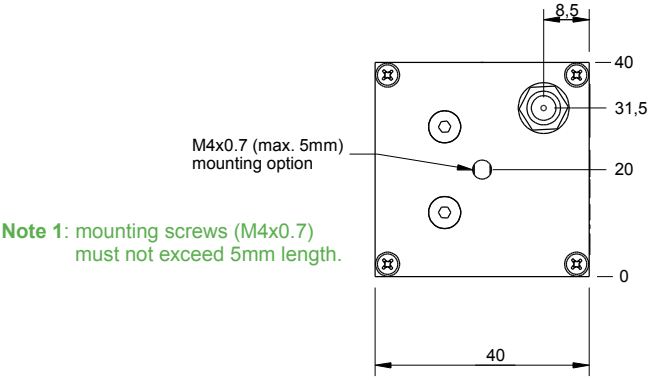
f_0 min | max*	f_1 | f_2	1.12 | 1.36	GHz
max. number of turns	N_{max}	6	turns
incr. frequency shift	Δf	~ 40	MHz / turn
tuning orientation		ccw	f_0 ↑



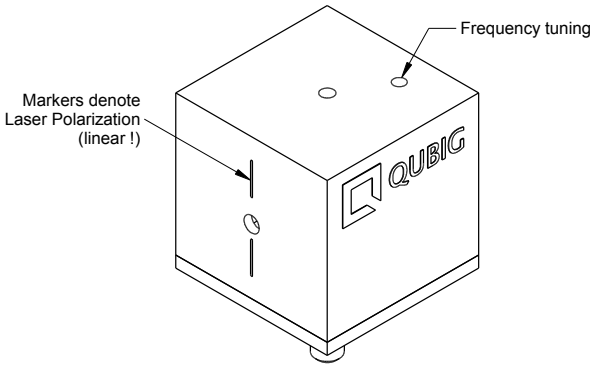
Attention!!

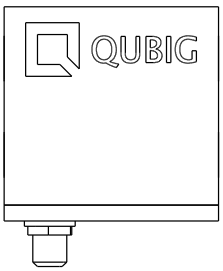
- use only supplied tuning tool
- actuate tuner carefully
- do not apply too much pressure or torque
- keep tuning tool coaxial
- tuner might not be perfectly orthogonal to box

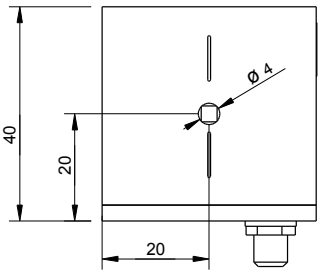
Package drawing

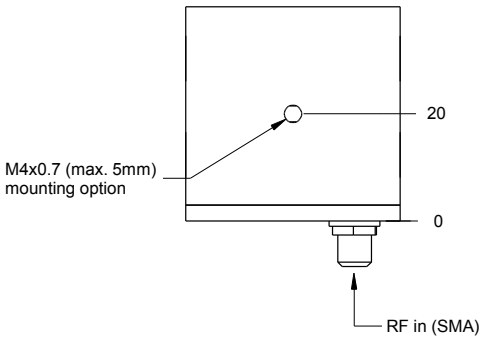


Note 1: mounting screws (M4x0.7) must not exceed 5mm length.

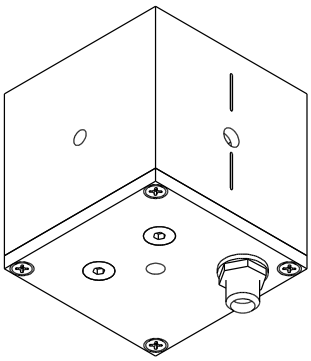


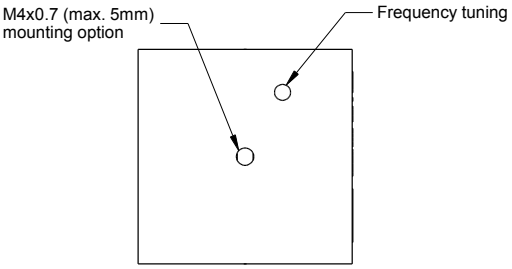






Note 2: crystal aperture is 3x3mm.





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Tested by:

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