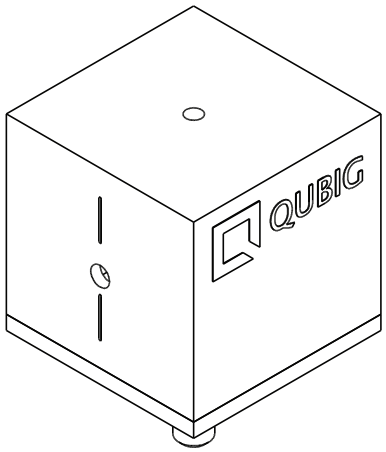
QUBIG

Empowering Laser Technologies

Test Data Sheet

EO-F200M3
S/N:

High-Q, resonant electro-optic modulator
with
- thermal crystal mount



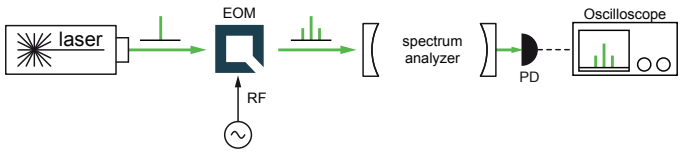
RF properties	Value	Unit
Resonance frequency: f_0 [1]	197.8	MHz
Preset frequency: f_{set} [1]	197.8	MHz
Bandwidth: Δν	1.4	kHz
Quality factor: Q	138	
Required voltage for 1rad @ 1064nm [2]	13.0	V_{pp}
max. RF_{in} power: RF_{max} [3]	10	W

Optical properties		
EO crystal	MLN	
Aperture	3x3	mm^2
Wavefront distortion (633nm)	λ/4	nm
max. optical intensity (800nm)	<10	W/mm^2
AR coating (R<0.5%)	500-1100	nm

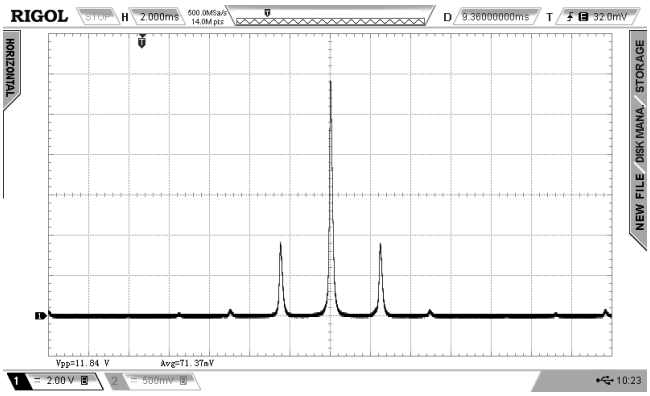
[1] at 20.1°C [2] with 50Ω termination [3] no damage with RF_{in} < 15W

Measured modulation

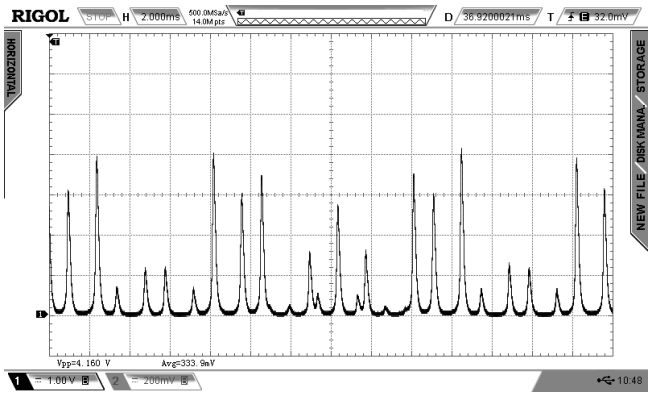
Test wavelength	λ_{test}	671	nm
Resonance frequency	f_0	197.8	MHz



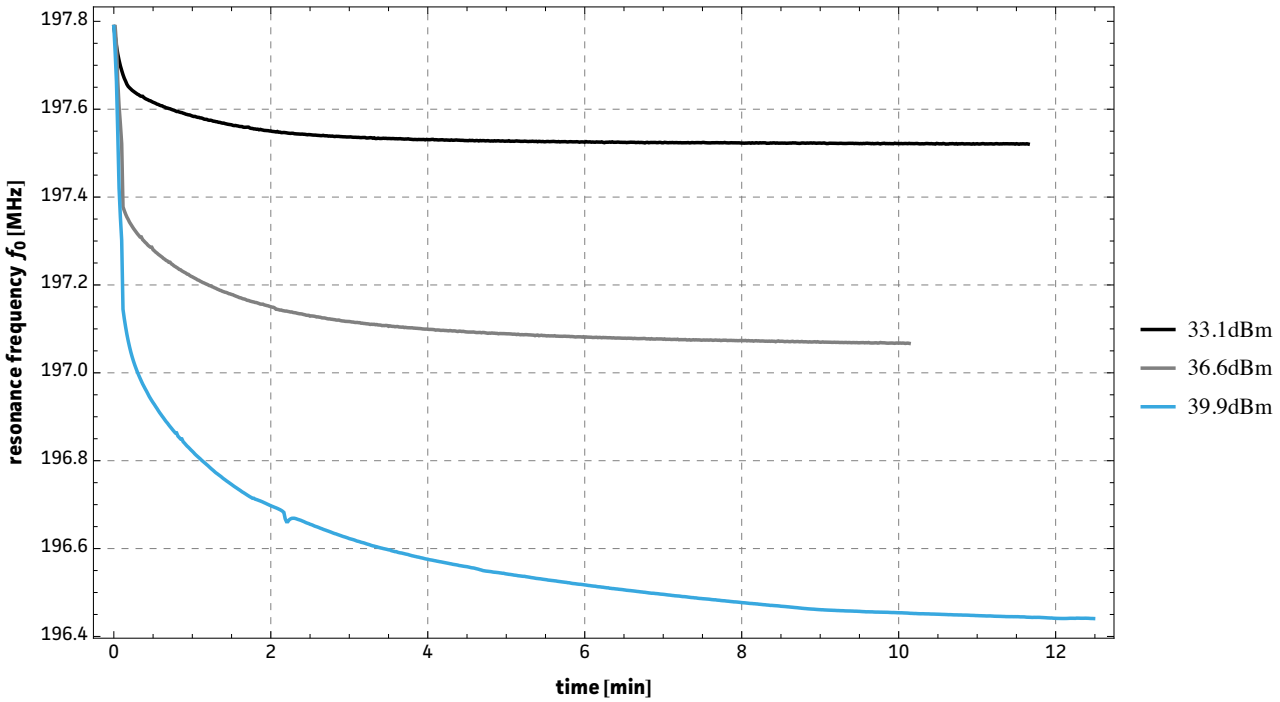
RF power	RF_{in}	7.8	V_{pp}
		21.8	dBm
	ADU Display	2.4	%



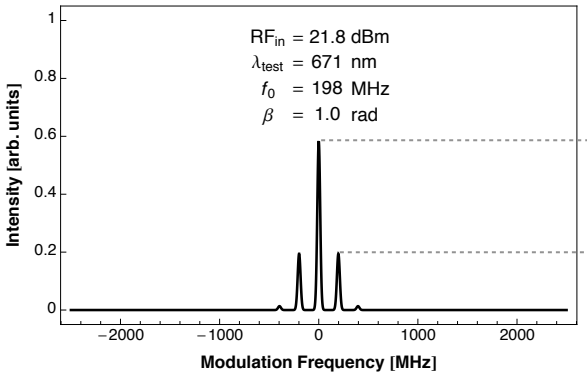
RF power	RF_{in}	62.5	V_{pp}
		39.9	dBm
	ADU Display	30	%

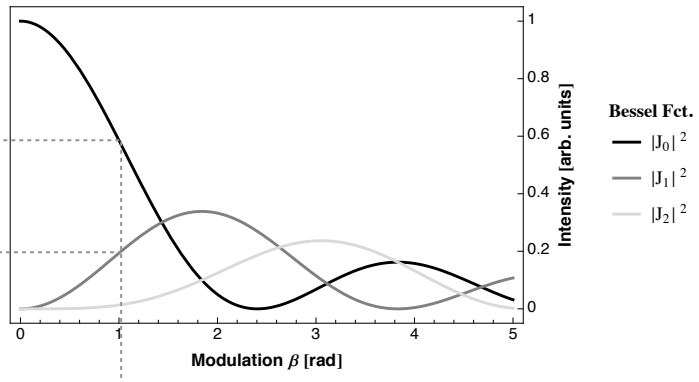


Thermal performance / Frequency drifts



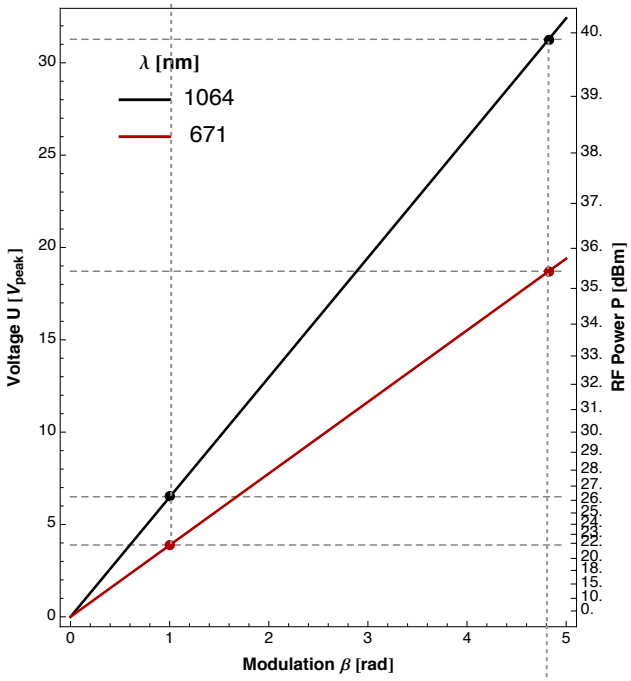
Expected modulation performance

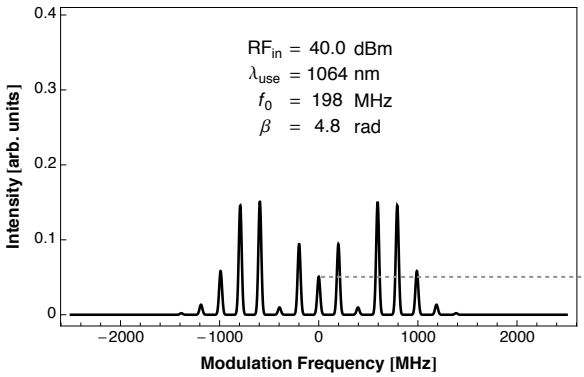


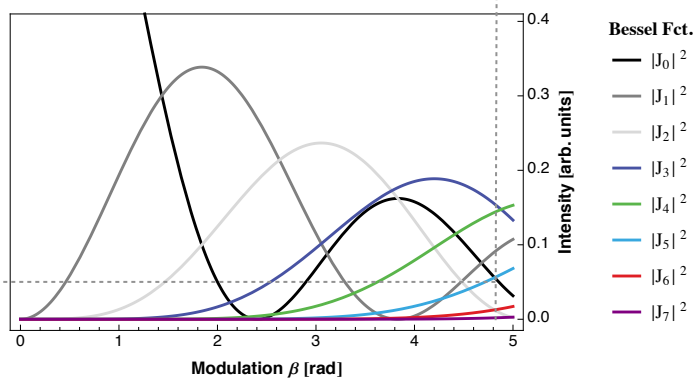


β = 1.0rad	unit	λ_1	λ_2
λ	nm	**671**	**1064**
P	dBm	21.8	26.2
P	mW	151	420
U	V_{peak}	3.9	6.5
U_π	V_{peak}	12.2	20.4
β / U	rad / V	0.13	0.08

β = 4.8rad	unit	λ_1	λ_2
λ	nm	**671**	**1064**
P	dBm	35.4	39.9
P	W	3.5	9.77
U	V_{peak}	18.7	31.3





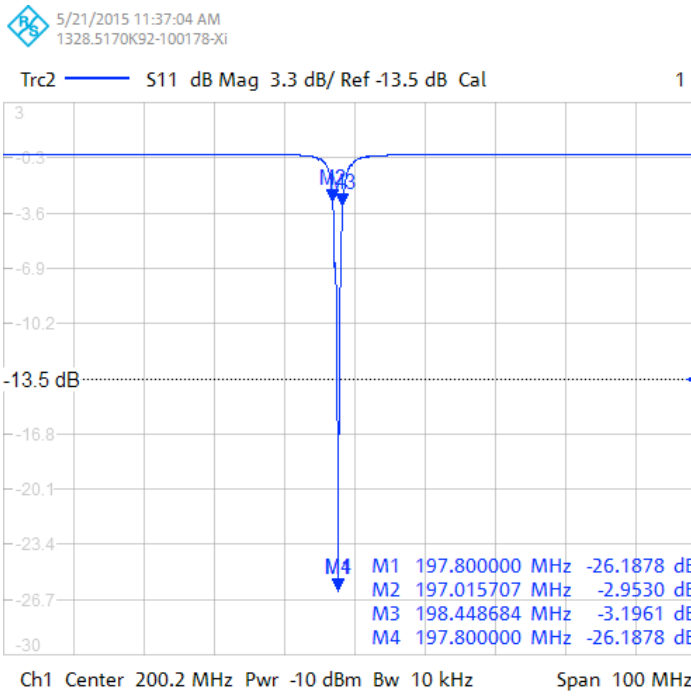


Note:

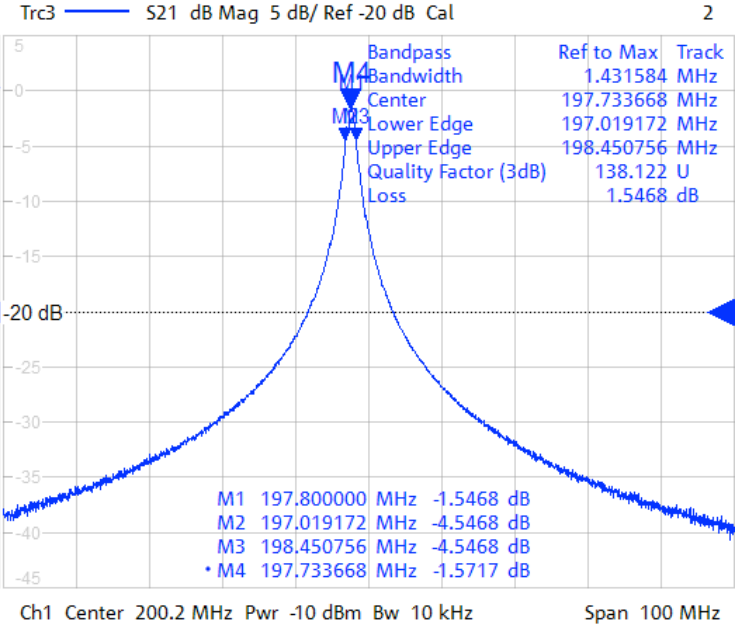
- In order to prevent damage to the RF amplifier, make sure that the EOM is already connected to the “RF out” via a SMA cable **before** switching on the RF driver.

- The modulation efficiency depends on temperature. At high RF-levels the desired modulation strength may not be achieved with inappropriate heat sinking.

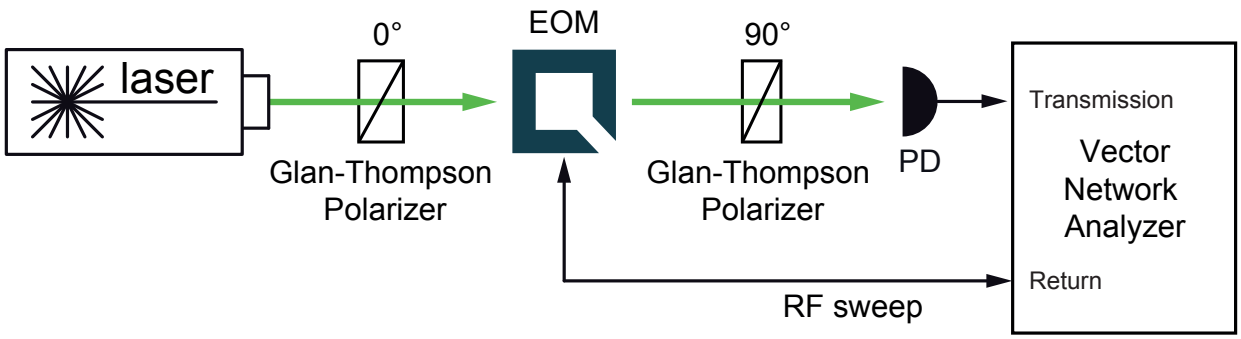
Return loss



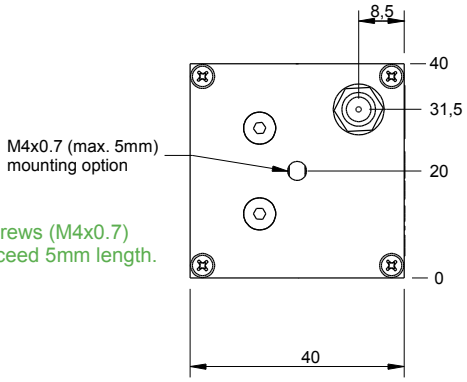
Optical modulation



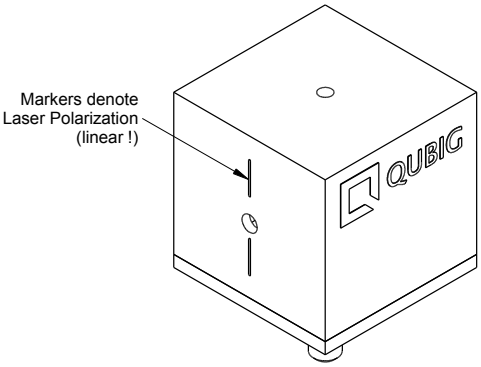
Test setup

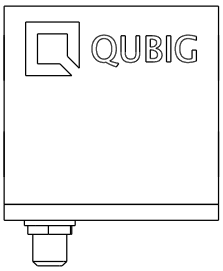


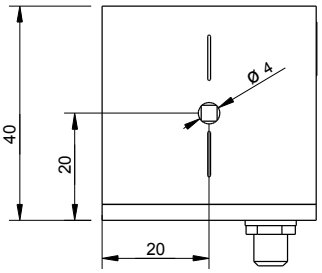
Package drawing

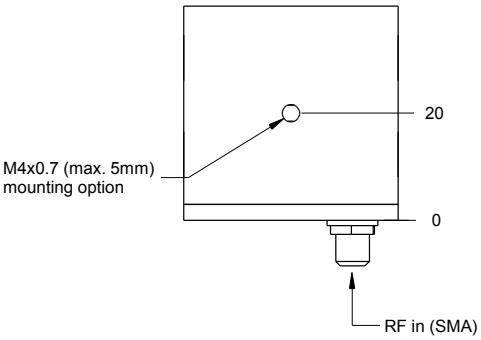


Note 1: mounting screws (M4x0.7) must not exceed 5mm length.

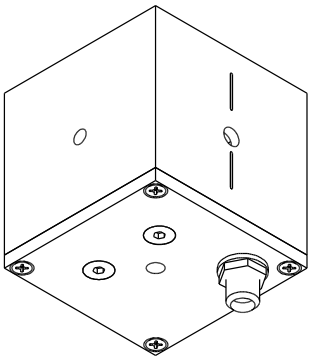


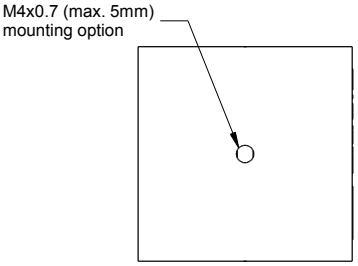






Note 2: crystal aperture is 3x3mm.





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Tested by:

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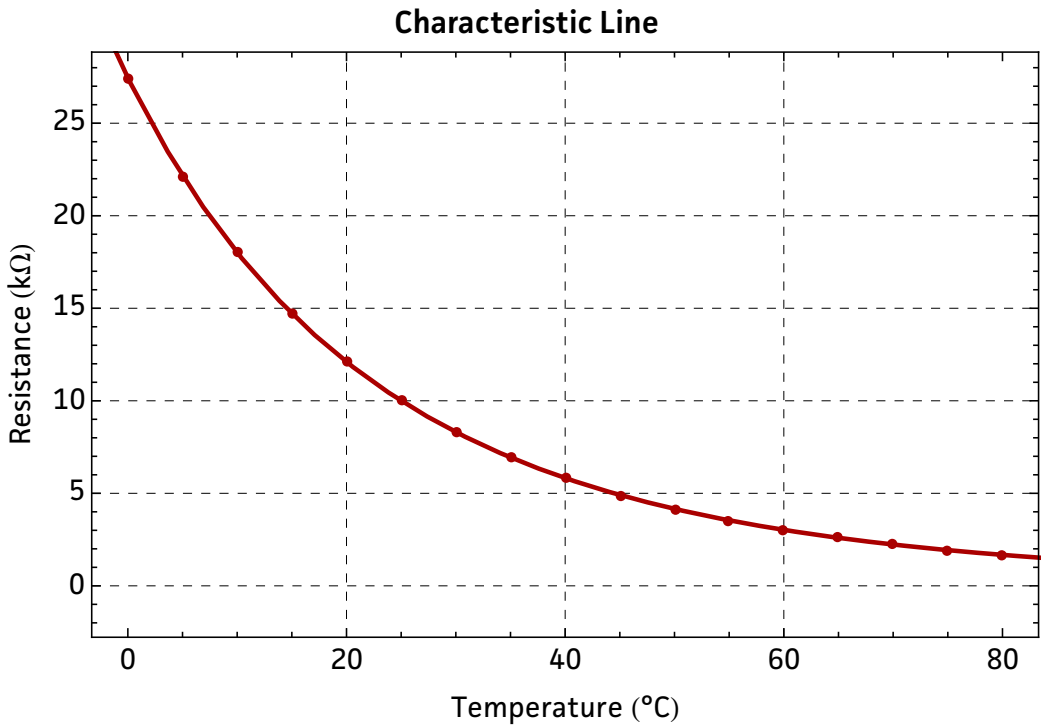
Temperature sensor characteristics:

NTC part number	Resistance (25°C) (ohm)	B-Constant (25-50°C) (K)	Operating Current for Sensor (25°C) (mA)	Rated Electric Power (25°C) (mW)	Typical Dissipation Constant (25°C) (mW/°C)	Thermal Time Constant (25°C) (s)
NXFT15XH103FA2B050	10k +/- 1%	3380 +/- 1%	0.12	7.5	1.5	4

- Operating Current for Sensor rises Thermistor's temperature by 0.1°C
- Rated Electric Power shows the required electric power that causes Thermistors's temperature to rise to 30°C by self heating, at ambient temperature of 25°C.



Part Number	NXFT15XH103
Resistance	10kΩ
B-Constant	3380K
Temp. (°C)	Resistance (kΩ)
-40	197.388
-35	149.395
-30	114.345
-25	88.381
-20	68.915
-15	54.166
-10	42.889
-5	34.196
0	27.445
5	22.165
10	18.010
15	14.720
20	12.099
25	10.000
30	8.309
35	6.939
40	5.824
45	4.911
50	4.160
55	3.539
60	3.024
65	2.593
70	2.233
75	1.929
80	1.673
85	1.455
90	1.270
95	1.112
100	0.976
105	0.860
110	0.759
115	0.673
120	0.598
125	0.532