MT80-A1-VIS/IR/1064, MT80-A1.5-VIS/IR/1064
MT110-A1-VIS/IR/1064, MT110-A1.5-VIS/IR

AO MODULATOR/SHIFTER

TECHNICAL DATA SHEET 2014

Product Overview

These free space modulators are proposed with different aperture sizes and at various wavelength ranges. They have been specially designed for general purpose high speed application such as amplitude modulation.
They can also be used as fixed frequency shifters or variable frequency shifters as well as a high speed but low resolution deflector.

Features

- Large active aperture
- Linear polarization
- High diffraction efficiency

Access to your operating manual

Technical Specifications

Parameter	MT80-xx	MT110-xx
Material-Acoustic mode-Velocity	Te02 [L] - 4200 m/s	
Optical Wavelength range (AR coated)	VIS: 450nm -700 nm IR: 700nm-1100nm 1064: 980nm-1100 nm	
Optical Transmission	> 95 %	
Input / Output Polarization	Linear / Linear	
Active Aperture	1 x 2 mm² or 1.5 x 2 mm²	
Carrier Frequency / Frequency shift	+/- 80 MHz	+/- 110 MHz
Separation Angle (0-1)	20.3 mrad @ 1064 nm	27.9 mrad @ 1064 nm
Static Extinction Ratio	> 33 dB	
Rise / Fall time	160 ns / mm	
Diffraction Efficiency	> 85 %, nom 90 % with TEM00 laser beam	
Analog Amplitude modulation bandwidth (-3 dB)	10 MHz, with 0.3 mm beam diameter	
Max optical power density (CW)	VIS: 5 W/mm² IR/1064: >10 W/mm²	
Input impedance	Nom 50 Ω	
V.S.W.R.	Nom < 1.2/1	
RF Power / Connector	VIS: ≤1W / SMA IR/1064: ≤2W /SMA	VIS: ≤1W / SMA for **A1** VIS: ≤1.2 W/ SMA for **A1.5** IR/1064: ≤2 W /SMA
Size / Weight	(Lxlxh) 50.9 x 22.4 x 17.3 / 50 g	IN PRO 004
Operating Temperature	+10 to +40 Non condensing	
Storage Temperature	-40 to +50 Non condensing	

On request

VARIABLE FREQUENCY SHIFT	☑ 80 +/- 15 MHz	*Diffraction Efficiency: >80%@ F0, >60% over range
	☑ 110 +/- 25 MHz	*Diffraction Efficiency: >80%@ F0, >60% over range

**Diffraction efficiency depends on wavelength*

AA Sa, 18, rue Nicolas Appert F-91898 ORSAY Tel: +33 (0)1 76 91 50 12 Fax: +33 (0)1 76 91 50 31

Rise Time (Tr) is beam diameter (Φ) sensitive:

$$Tr = 0.66\frac{\Phi}{V}$$

Amplitude modulation bandwidth (F_{-3dB}) is rise time (Tr) sensitive:

$$F_{-3dB} = \frac{0.48}{Tr}$$

Separation angle (Δθ) is wavelength (λ) sensitive:

$$\Delta\theta = \frac{\lambda F}{V}$$

RF power (P) is wavelength (λ) sensitive:

$$\frac{P_1}{P_2} = \frac{\lambda_1^2}{\lambda_2^2}$$

How to determine your model

MT110-B50-A1.5-VIS

CARRIER FREQUENCY
- **110** 110MHz
- **80** 80 MHz

FREQUENCY RANGE
- **B50** 50 MHz
- **B30** 30 MHz
- **--** without frequency range

APERTURE
- **A1.5** 1.5 x 2 mm²
- **A1** 1 x 2 mm²

WAVELENGTH RANGE
- **VIS** 450 nm - 700 nm
- **IR** 700 nm - 1100 nm
- **1064** 980 nm - 1100 nm

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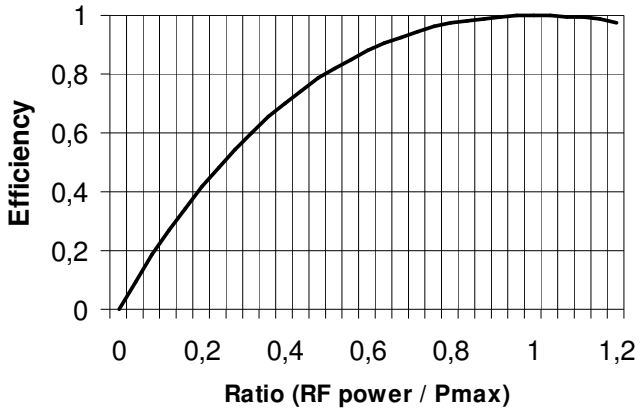
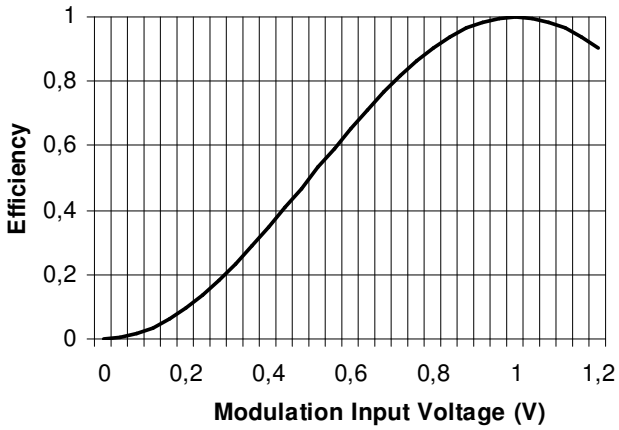
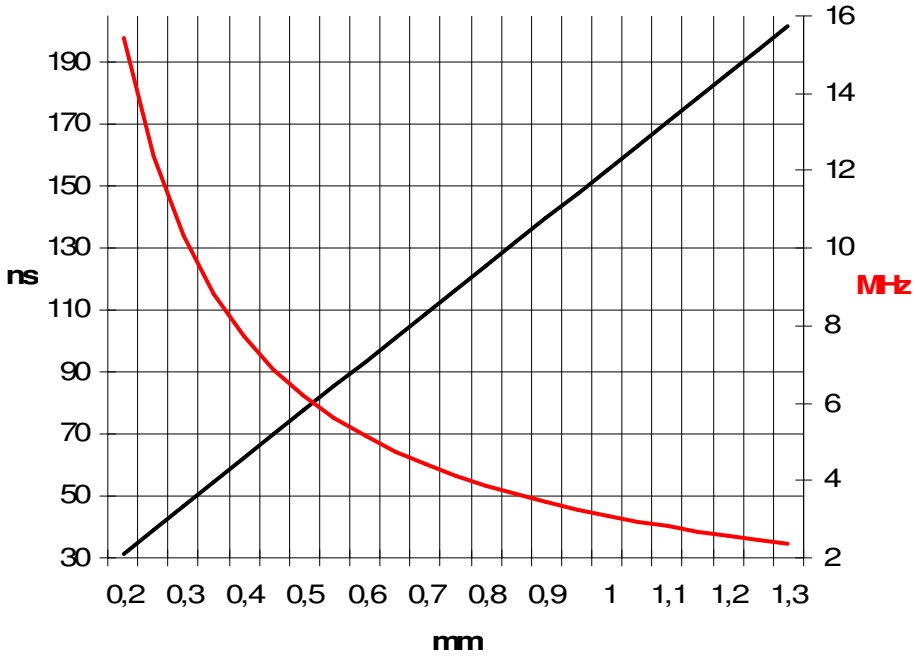
Relative Efficiency versus RF power



AO relative Efficiency vs driver MOD IN



Rise Time (black) / Analog Modulation BW (-3dB) vs Beam diameter



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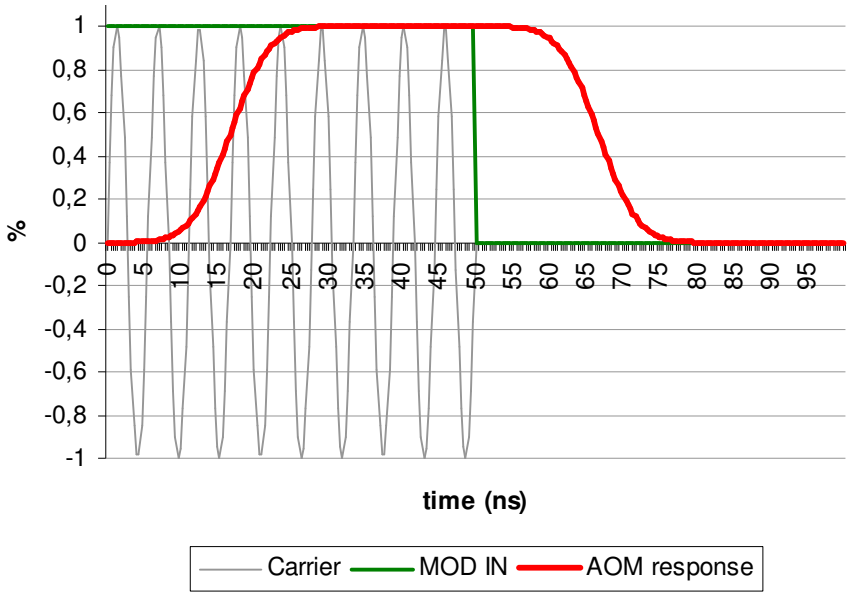
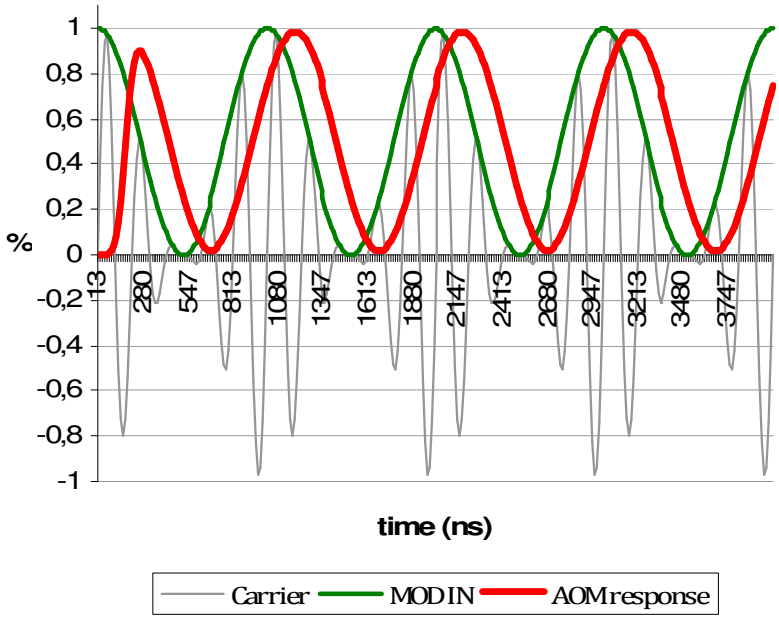
Relative Efficiency / AOM temporal response



Relative Efficiency / AOM temporal response
1 MHz with 0,7 mm beam dia



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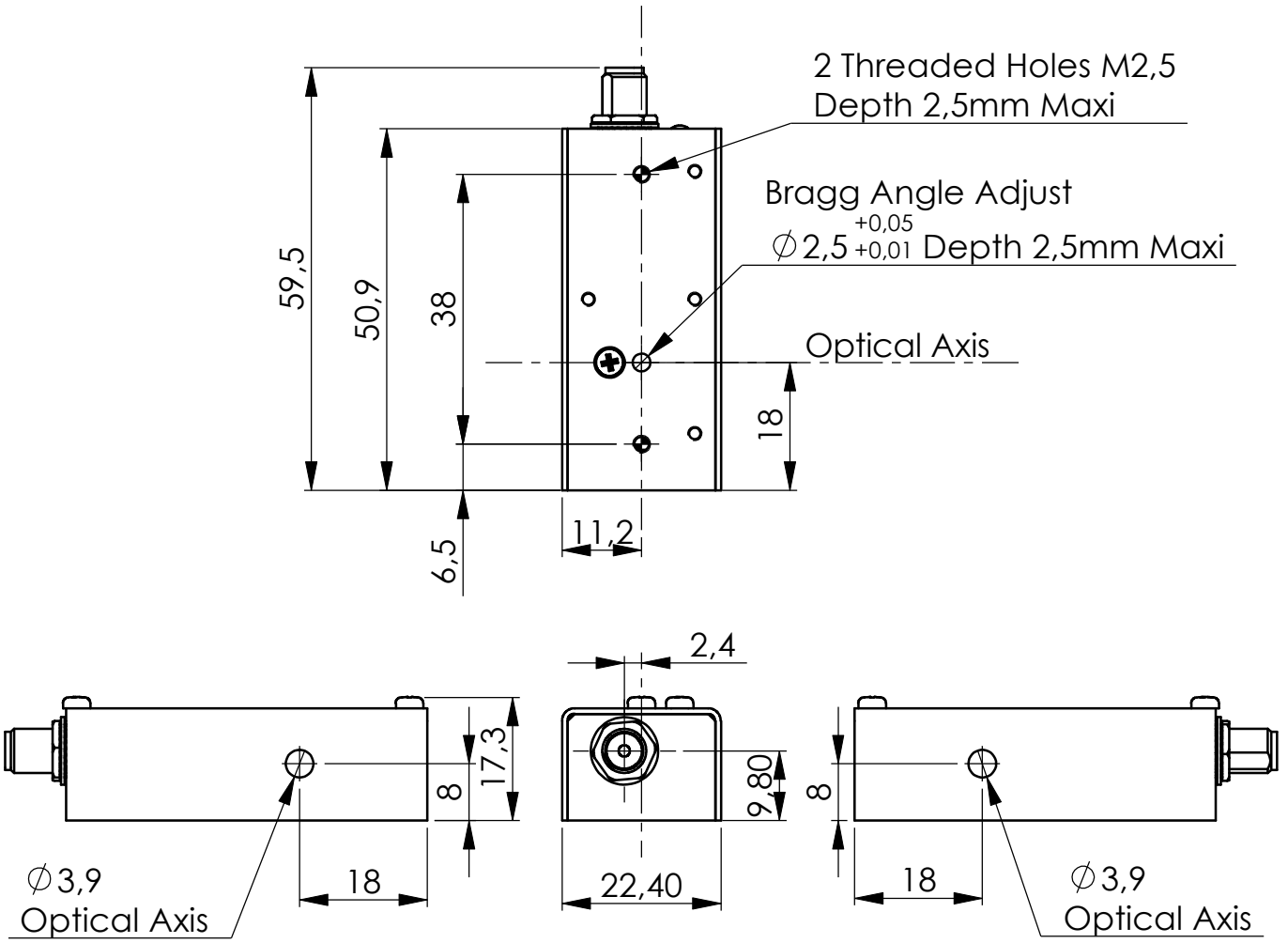

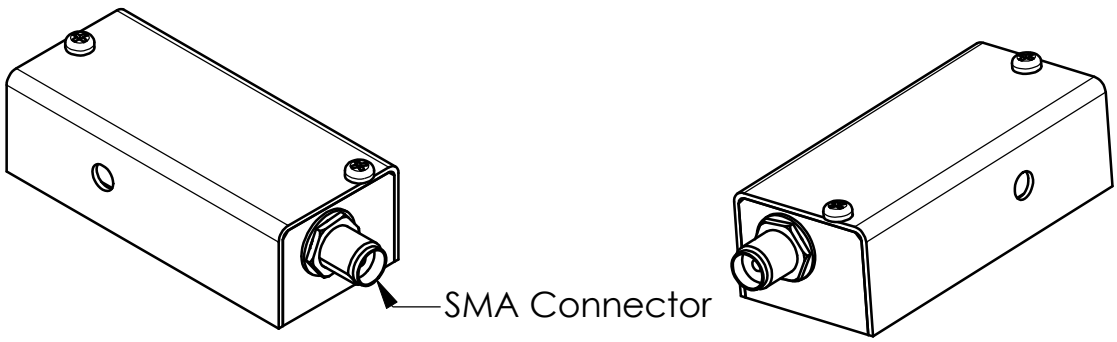

Indice Index	Date	Auteur Author	Modifications
B	18/12/06	E.D	Mise en page
A	15/10/03	OGB	Plan initial / Initial Drawing

Conception Design: E.D	PLAN D'INTERFACE / OUTLINE DRAWING	OPTO-ELECTRONIC A.A. SA OPTO-ELECTRONIQUE DIVISION 18, rue Nicolas Appert F-91898 ORSAY tel : 08 11 09 76 76 fax : 01 76 91 50 31
Vérification Checking: E.D		
Tolérance Tolerance: ISO 2768mK	Référence / Reference IN-PRO-004	
Echelle Scale: 1:1		
Format A4		Folio / Sheet: 1/1 Indice / Index: B