# MT80-A0.7-1300.1600

**AO MODULATOR/SHIFTER**

TECHNICAL DATA SHEET 2014

## Product Overview

These free space modulators has been specially designed for general purpose high speed applications. They are dedicated to IR lasers such as 1300, 1500 nm. Their carrier frequency of 80 MHz will enable a fix frequency shift of 80 MHz as well as a variable frequency shift of 80 +/- 21 MHz.
With adapted frequency range, user will be able to operate this device as a high speed low resolution deflector.


## Features

- Large active aperture
- Linear/random polarization
- High diffraction efficiency

## Access to your operating manual

## Technical Specifications

| Parameter | MT80-A0.7-1300.1600 | |
|---|---|---|
| **Material-Acoustic mode-Velocity** | Te02 [L] - 4200 m/s | |
| **Optical Wavelength range (AR coated)** | 1300 nm -1600 nm | |
| **Optical Transmission** | > 95 % | |
| **Input / Output Polarization** | Linear / Linear | |
| **Active Aperture** | 0.7 x 3 mm² | |
| **Carrier Frequency / Frequency shift** | +/- 80 MHz | |
| **Separation Angle (0-1)** | 29.5 mrad @ 1550 nm | |
| **Static Extinction Ratio** | > 33 dB | |
| **Rise / Fall time** | 80 ns with 0.5 mm beam diameter | |
| **Diffraction Efficiency** | > 65% with TEM00 laser beam, M²≤1.1 | |
| **Analog Amplitude modulation bandwidth (-3 dB)** | 6 MHz, with 0.5 mm beam diameter | |
| **Input impedance** | Nom 50 Ω | |
| **Max optical power density (CW)** | 10 W/ mm² | |
| **V.S.W.R.** | Nom < 1.2/1 | |
| **Size / Weight** | (Lxlxh) 50.9 x 22.4 x 17.3 / 50 g | IN PRO 004 |
| **RF Power / Connector** | ≤ 2.2/ SMA | |
| **Operating Temperature** | +10 to +40 Non condensing | |
| **Storage Temperature** | -40 to +50 Non condensing | |

## On request

VARIABLE FREQUENCY SHIFT ☑ 80 +/- 21 MHz Diffraction Efficiency: > 40% over range




**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**

**MT80-B42-A0.7-1300.1600**

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

**FREQUENCY RANGE**
- **B42** 80 +/- 21 MHz
- **--** without frequency range

**APERTURE**
- **A0.7** 0.7 x 3 mm²

**WAVELENGTH RANGE**
- 1300 nm - 1600 nm




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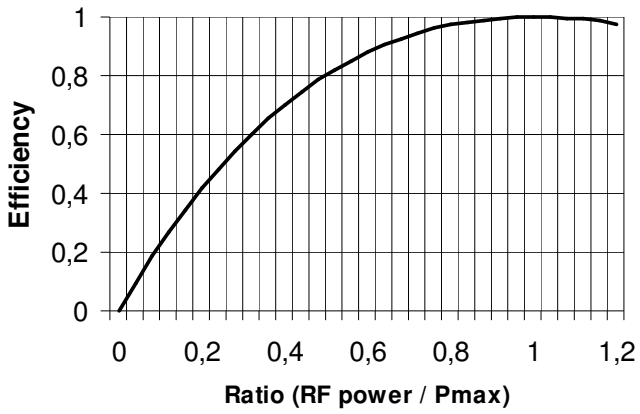
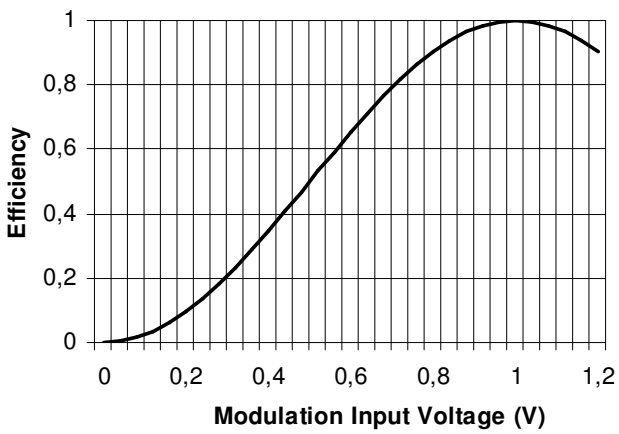
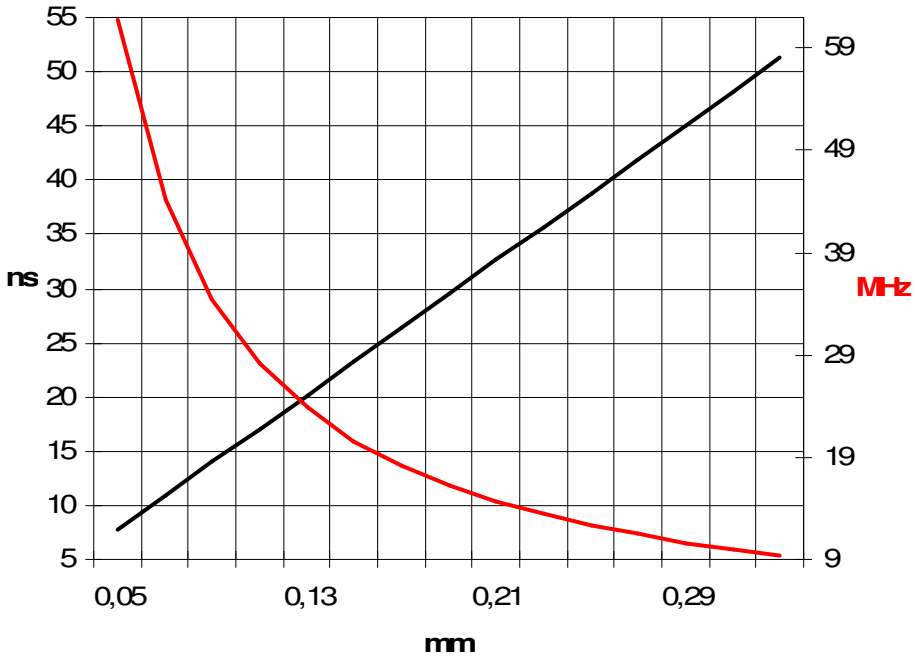
**Relative Efficiency versus RF power**




**AO relative Efficiency vs driver MOD IN**




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







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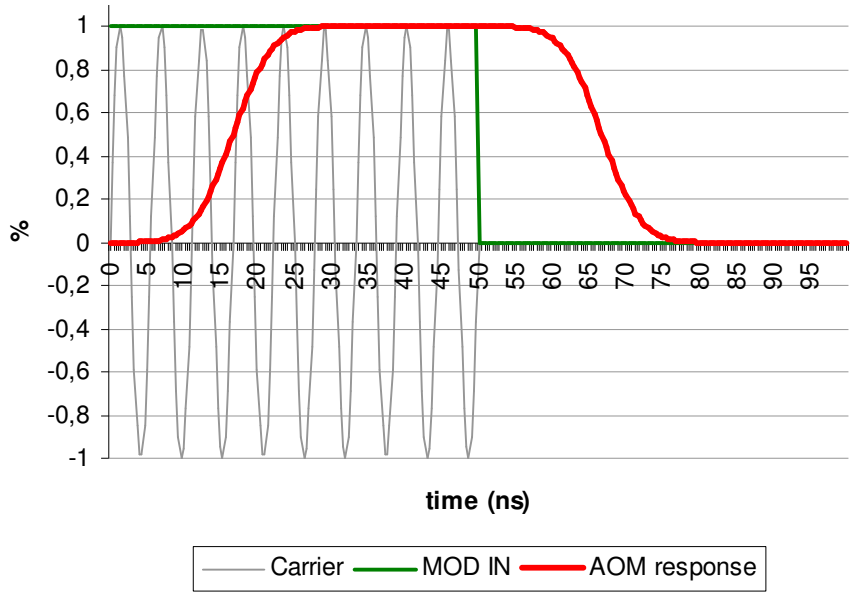
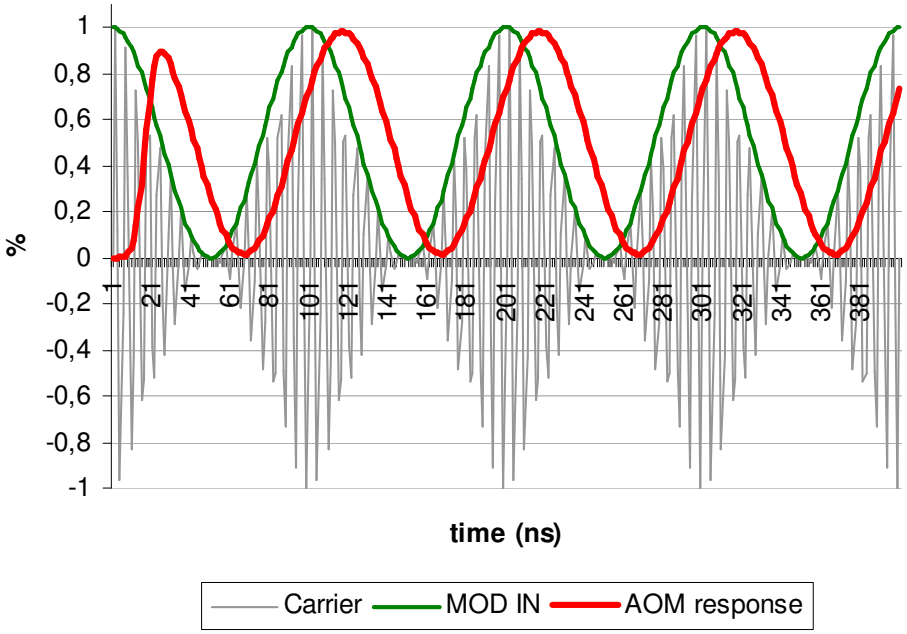
## Relative Efficiency / AOM temporal response




## Relative Efficiency / AOM temporal response (10MHz)







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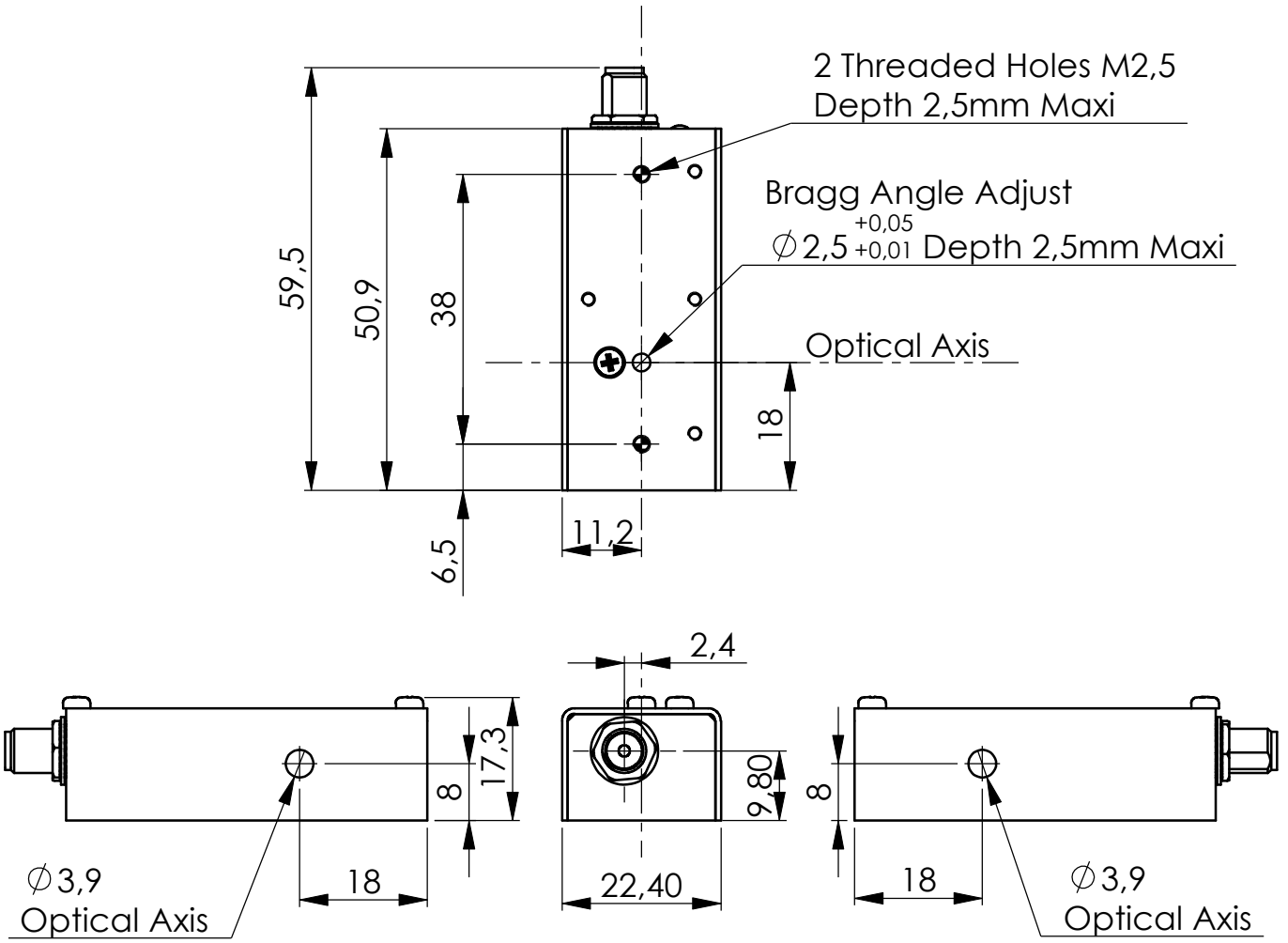


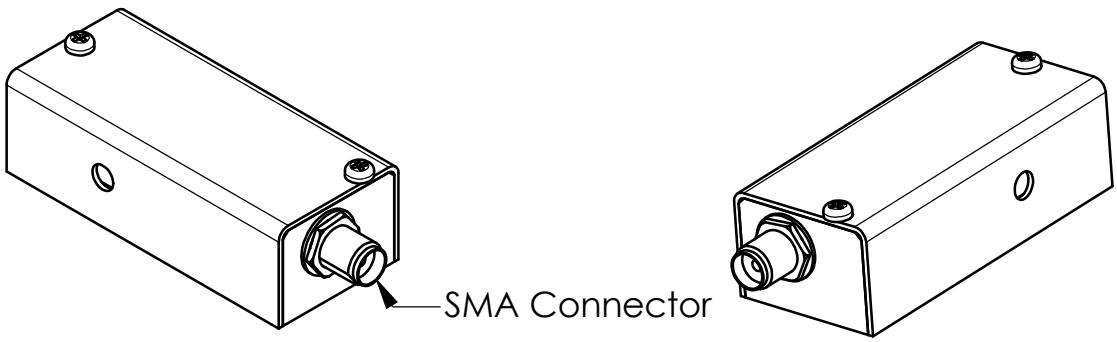


| Indice Index | Date | Auteur Author | Modifications |
|---|---|---|---|
| B | 18/12/06 | E.D | Mise en page |
| A | 15/10/03 | OGB | Plan initial / Initial Drawing |

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