CORNERSTONE STANDARD COMPONENTS LIBRARY

(On 500 nm SOI Platforms)

Preface

In this document, we summarise the up-to-date designs and their measurement results of our CORNERSTONE standard components on SOI platforms, at the same time we are optimising the current designs, adding in new designs, and gathering more measurement results. Most of the dimensions are given in this document, whilst a few of them are not. Thus, please use this document together with our up-to-date GDS library which can be downloaded at https://www.cornerstone.sotonfab.co.uk/mpw-design-rules/

CORNERSTONE provides an MPW service on three SOI platforms, 220 nm, 340 nm and 500 nm, based on which we provide our standard components. On the 220 nm and 340 nm platforms, we have two waveguide etching depths in addition to a grating etch and we provide standard components working at 1550 nm and 1310 nm. On the 500 nm platform, we have only one waveguide etching depth in addition to a grating etch and we provide standard components working at 1550 nm only. Currently, all of the components are based on TE mode.

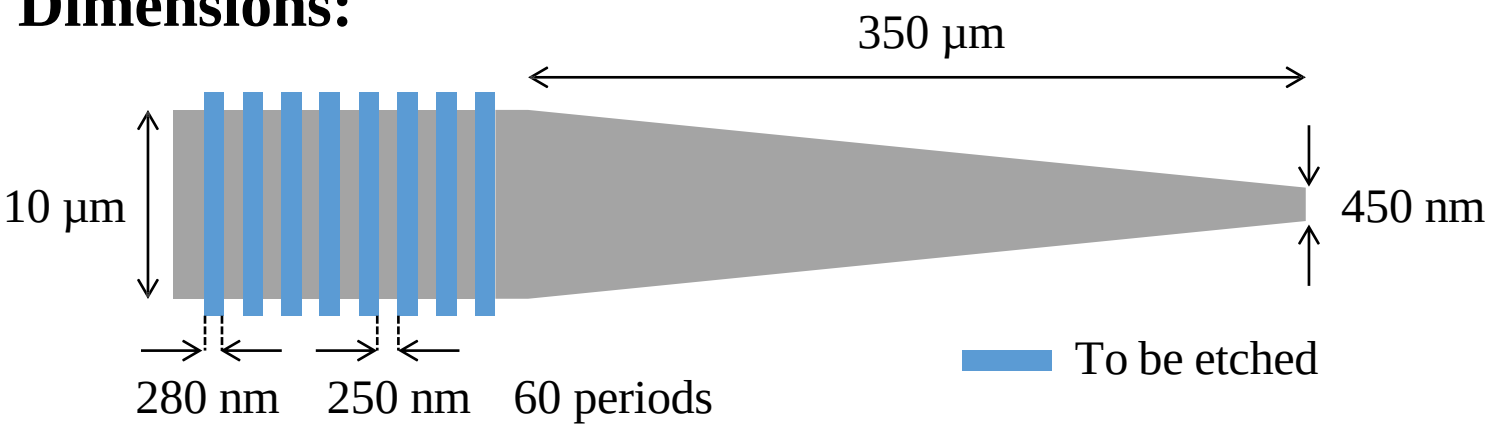
List of Contents

- **Wavelength: 1550 nm**
- **Platform: 500 nm SOI**

SOI500nm_1550nm_TE_RIB_Grating_Coupler

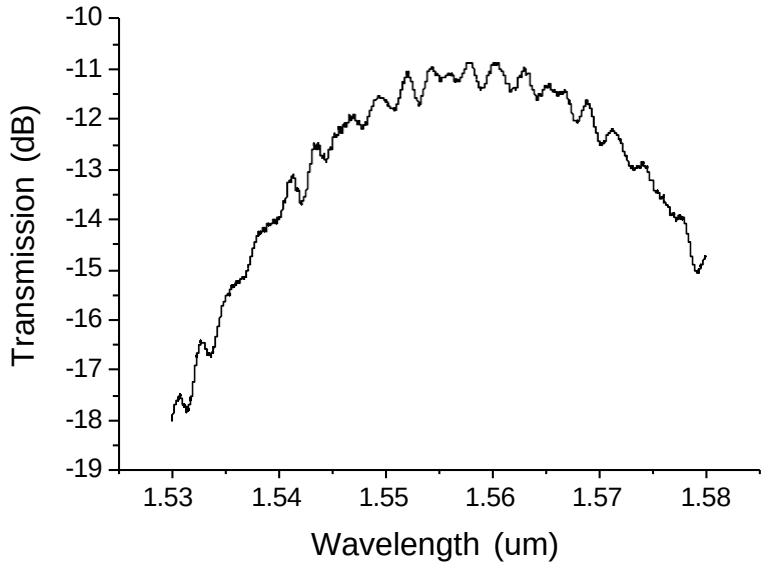
Platform:	500 nm SOI (3 um BOX layer)
Wavelength:	1550 nm
Etching depth:	160 nm (Grating etch depth)
Polarization:	TE
Cell name in GDS lib:	SOI500nm_1550nm_TE_RIB_Grating_Coupler

Dimensions:



Fiber coupling angle: 10 degree

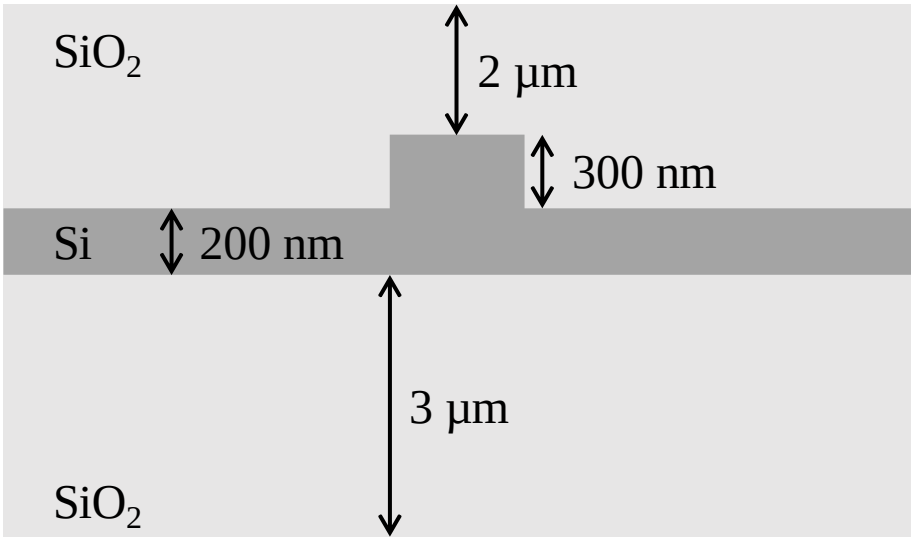
Measured transmission spectrum



Summarized performance:

- Coupling efficiency: 5-6 dB
- 1 dB bandwidth: > 30 nm
- Center wavelength: 1550-1570 nm

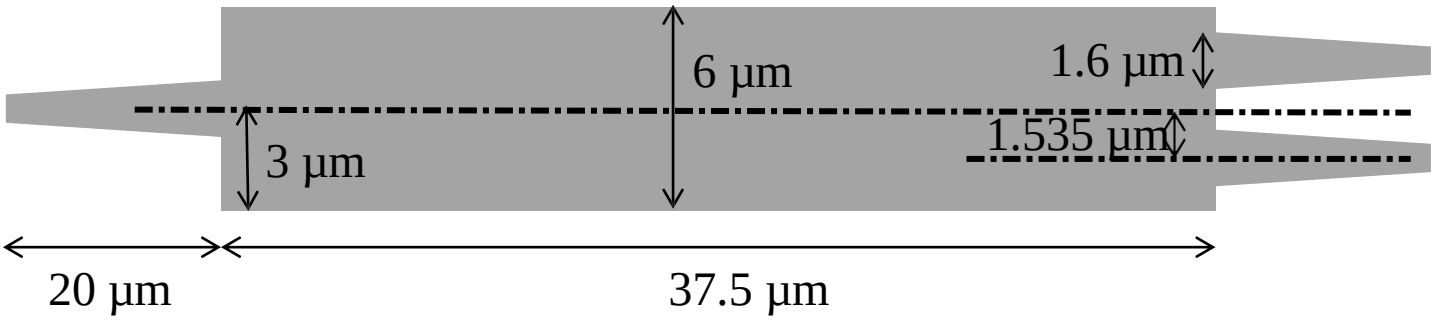
- Wavelength: 1550 nm
- Platform: 500 nm SOI
- **RIB**



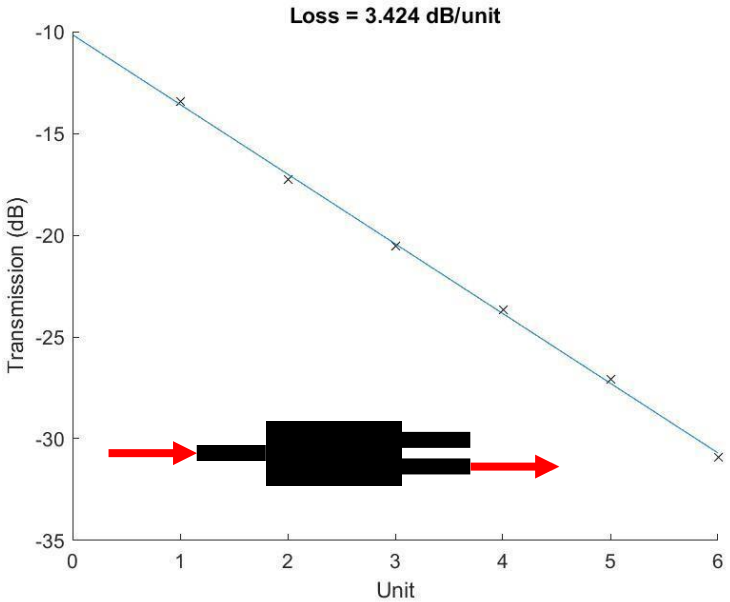
SOI500nm_1550nm_TE_RIB_2x1_MMI

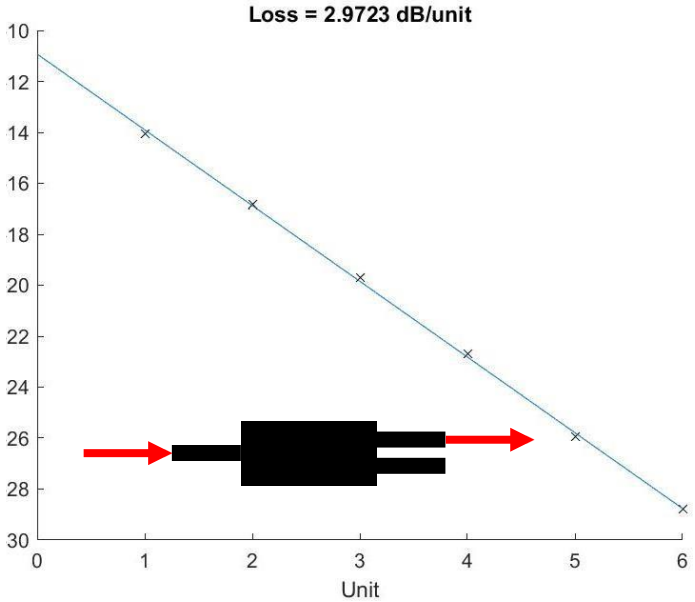
Platform:	500 nm SOI (3 um BOX layer)
Wavelength:	1550 nm
Etching depth:	300 nm (Rib design)
Polarization:	TE
Cell name in GDS lib:	SOI500nm_1550nm_TE_RIB_2x1_MMI

Dimensions:



Measurement results:

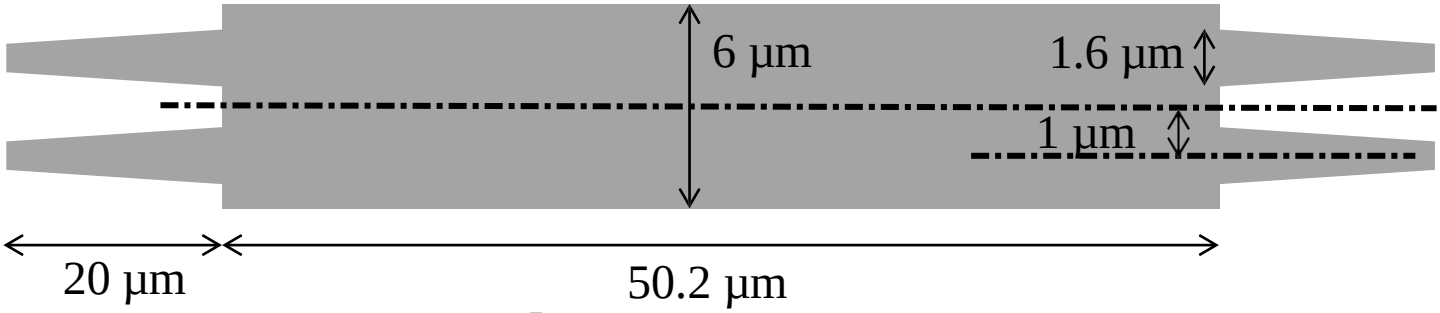




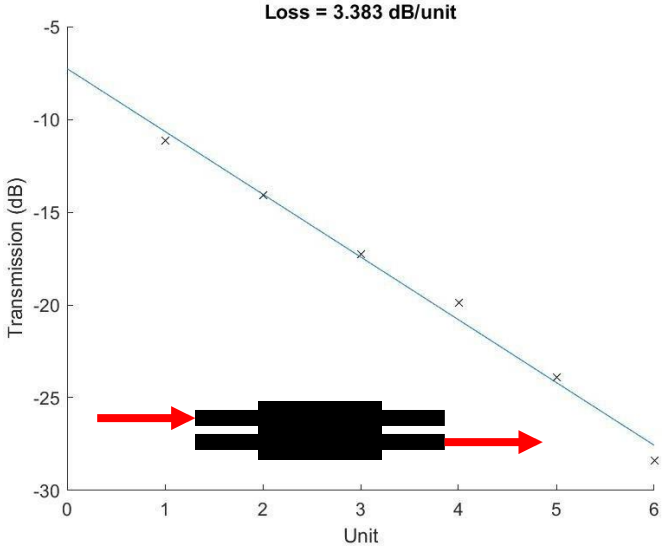
SOI500nm_1550nm_TE_RIB_2x2_MMI

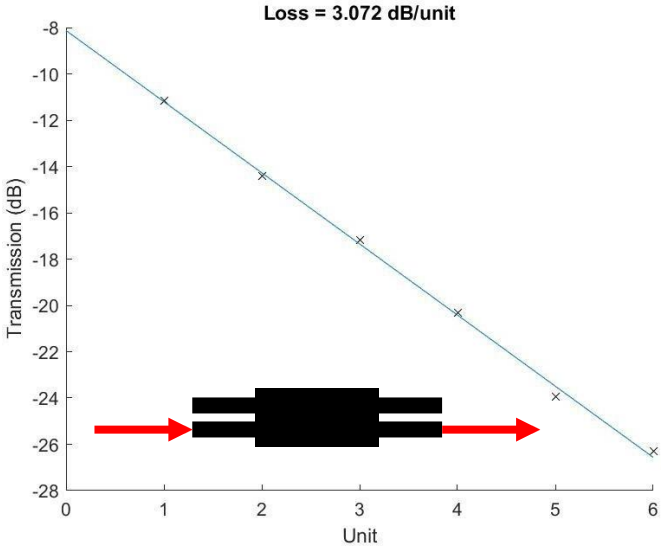
Platform:	500 nm SOI (3 um BOX layer)
Wavelength:	1550 nm
Etching depth:	300 nm (Rib design)
Polarization:	TE
Cell name in GDS lib:	SOI500nm_1550nm_TE_RIB_2x2_MMI

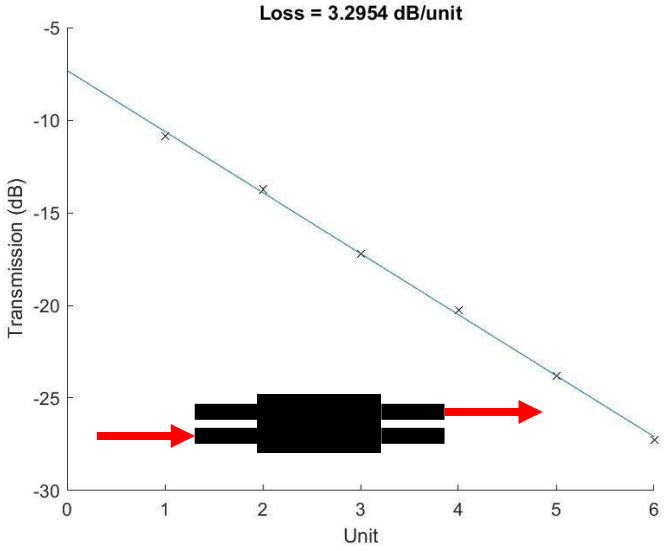
Dimensions:

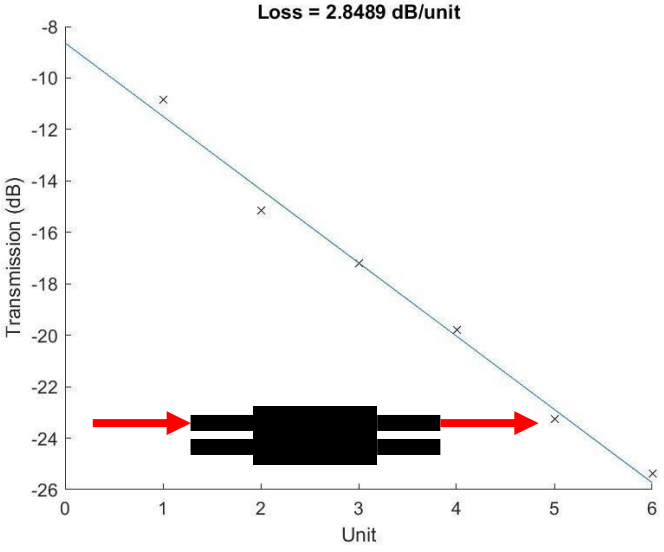


Measurement results:







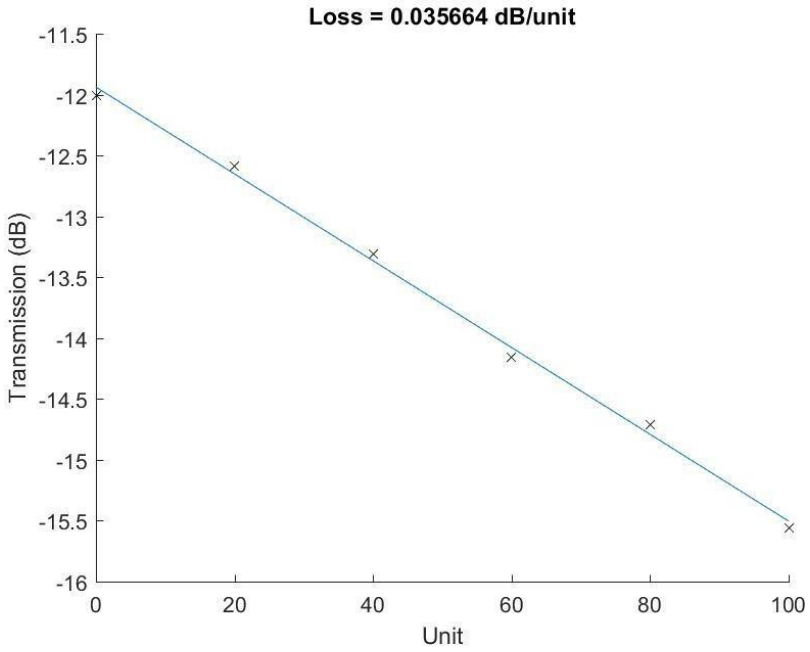


SOI500nm_1550nm_TE_RIB_90_Degree_Bend

Platform:	500 nm SOI (3 um BOX layer)
Wavelength:	1550 nm
Etching depth:	300 nm (Rib design)
Polarization:	TE
Cell name in GDS lib:	SOI500nm_1550nm_TE_RIB_90_Degree_Bend (Waveguide Width (W): 450 nm, Bend Radius (R): 25 um)

Measurement results:

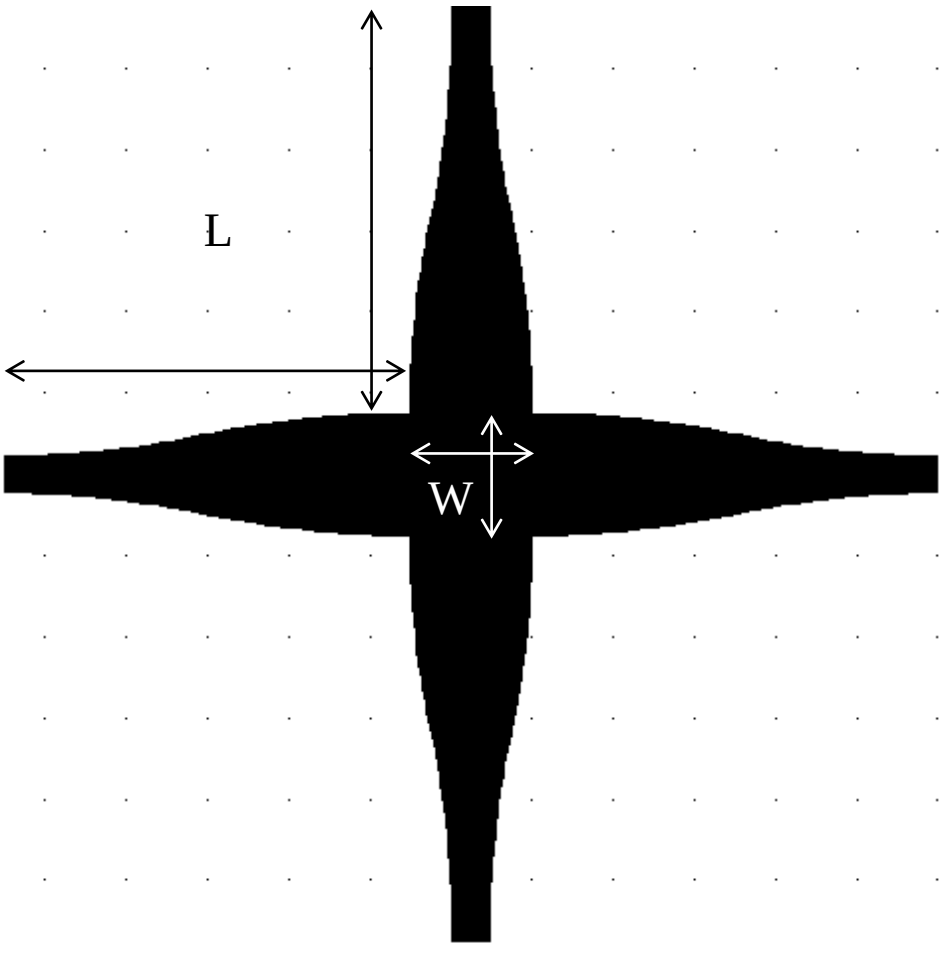
(Unit: 90° bend)



SOI500nm_1550nm_TE_RIB_Waveguide_Crossing_Curved Design

Platform:	500 nm SOI (3 um BOX layer)
Wavelength:	1550 nm
Etching depth:	300 nm (Rib design)
Polarization:	TE
Cell name in GDS lib:	Not in GDS library

Dimensions:

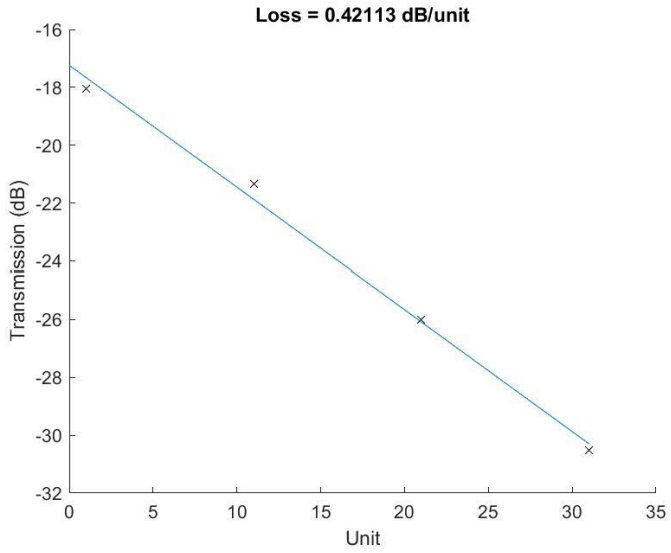


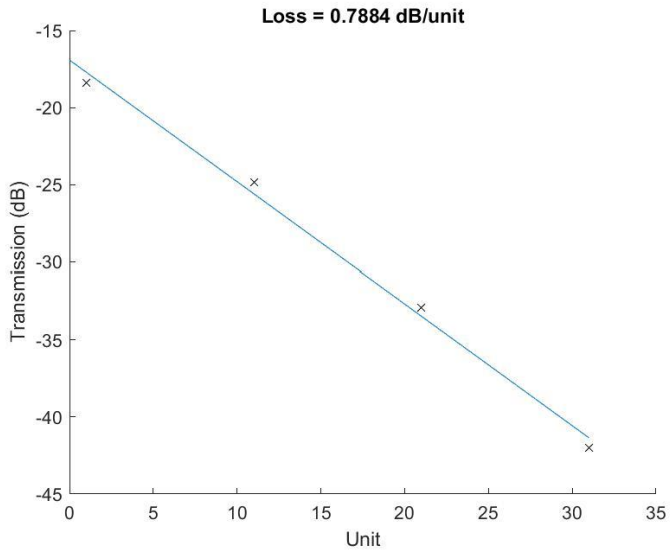
Measurement results on different dimensions: See next page

Measurement results on different dimensions (wavelength 1595-1605 nm):

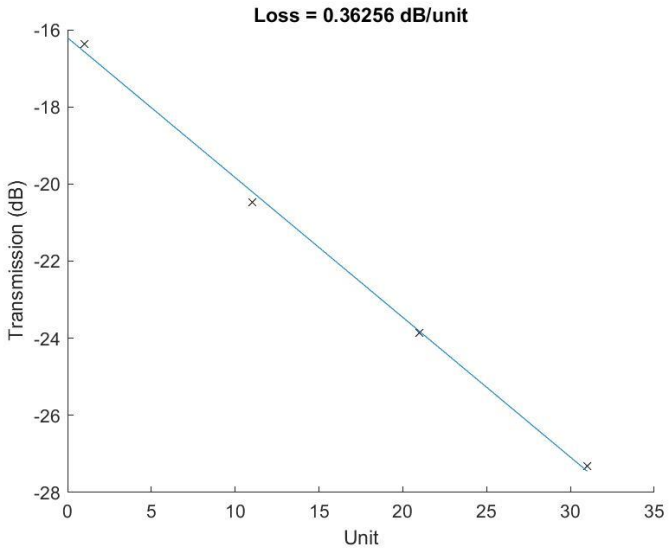
W: 1.2 µm | **W: 1.5 µm**

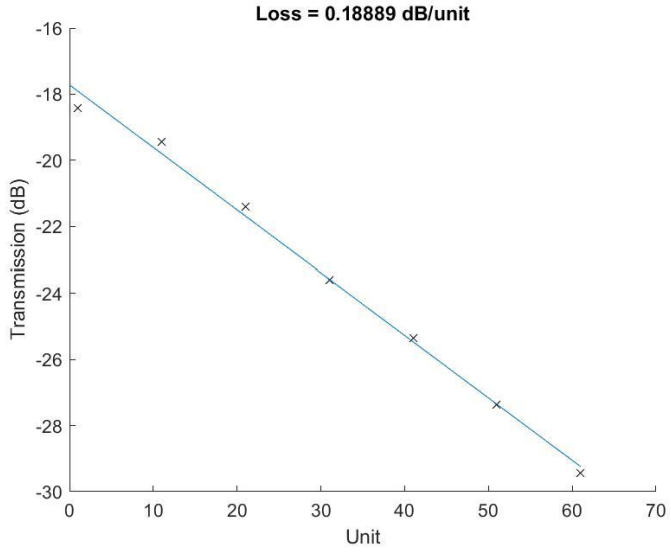
L: 5 µm





L: 8 µm





L: 10 µm