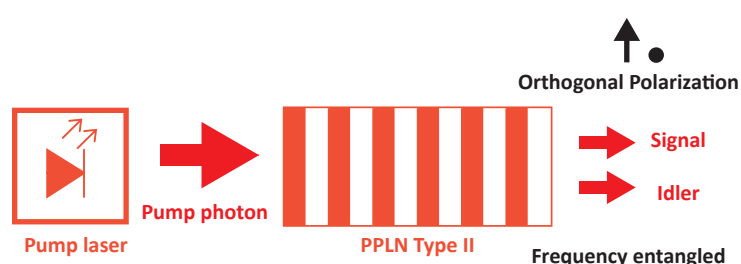


# TPS\_1550\_TYPE\_II

## Quantum photon source

Self-contained entangled photon source  
[Telecom wavelength - 1550 nm]



The TPS\_1550\_TYPE\_II is a new generation of self-contained quantum photon source working at room temperature generating orthogonally-polarized frequency-entangled photons in the C-band. Pairs of photons are produced by Spontaneous Parametric Down Conversion (SPDC) in Periodically Poled Lithium Niobate PPLN waveguide (Quasi Phase Matching-QPM).

Based on a table-top design, the TPS\_1550\_TYPE\_II combines a temperature-tunable PPLN waveguide crystal with wavelength stabilized laser source. The laser pump power and the internal temperature of the crystal are controlled to adjust the phase matching with high-precision via the USB interface and the proprietary software interface.

Very well-designed, the compactness and the modern interfaces of the TPS\_1550\_TYPE\_II makes it your essential analytical tool for the most demanding academic and industrial quantum research !

### Features

- Photon pairs generation at 1550 nm
- High brightness > 250 000 pairs/sec
- Bi-photon bandwidth < 2 nm
- Entangled photons
- Internal laser pump
- Adjustable pump power up to 5 mW
- PPLN waveguide crystal type
- Room temperature operation
- Remote control
- DLL libraries : LabVIEW, C++

### Applications

- Photon pairs generation
- Quantum communications
- Quantum Key Distribution
- Quantum tomography
- Quantum teleportation
- Atomic interferometry

### Options

- 1550 nm Type 0
- Polarization-entanglement
- 810 nm source

## TECHNICAL SPECIFICATIONS

### Photon pair generation - type II - 1550 nm

Central wavelength	1550 nm +/- 10 nm
Biphoton bandwidth	< 2 nm
Effective pair-generation rate <sup>1</sup>	250 000 pairs/s
Heralded efficiency <sup>2</sup>	35%
$g^{(2)}(0)$ factor	< 0.01
Coincidence to Accidental ratio <sup>3</sup>	10 000
Two-photons interference visibility :	
- Frequency	> 99%
- Polarization <sup>4</sup>	> 99%
Wavelength stability	20 pm
Central wavelength tunability	+/- 2 nm

### Input/Output - Mechanical - Environmental

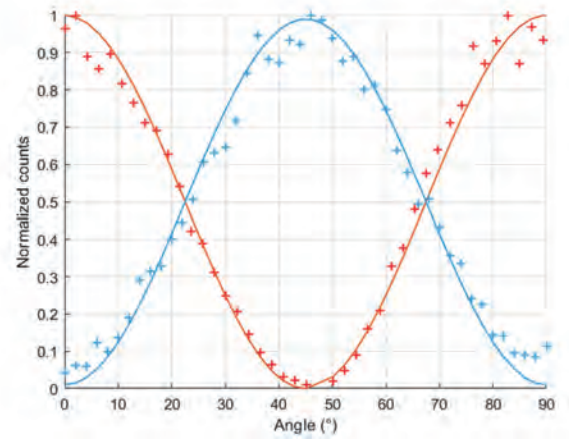
1550 nm Out	FC/APC for PM 1550 fiber
Optical Pump Out	FC/APC for PM HI780 fiber
Optical Pump In	FC/APC for PM HI780 fiber
Computer connection	Mini USB 2.0 type B
Power consumption	< 40 W
Dimensions (LxWxH)	250 x 280 x 70 mm <sup>3</sup>
Weight	4.5 kg
Operating temperature	+ 10°C to + 30°C
Cooling time	< 2 min @ 25°C

<sup>1</sup> @1mW pump power

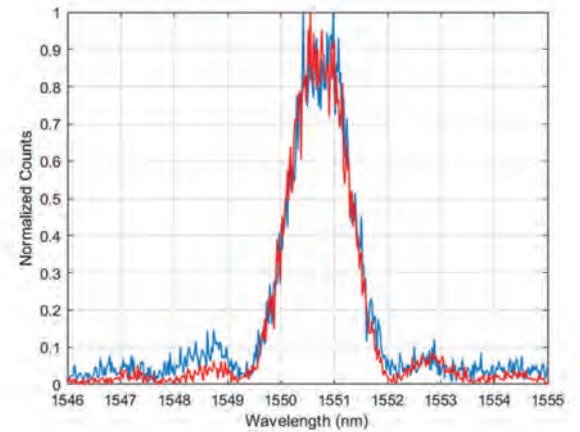
<sup>2</sup> @1mW pump power

<sup>3</sup> After jitter correction

<sup>4</sup> Additional filtering module is required



Visibility measurements in polarization  
(point : experimental data | curve : theoretical fit)



Signal & Idler spectrum at degeneracy

## OTHER PRODUCTS : COMPLETE QUANTUM SYSTEMS

AUREA Technology also provides complete Quantum Optics systems with Entangled Photon Sources, Photon Counters, Timing Electronics and Software. Both 1550 nm and 810 nm versions are available.



Complete Quantum instruments suite

## ORDERING INFORMATION

TPS\_1550\_X\_00

II : type II  
 0 : type 0\*

00 : frequency entanglement  
 01 : frequency & polarization entanglement

\*Please contact us for more information about type 0 sources

## NOTE

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