1566nm All-Fiber Broadband Polarization-Entangled Photon Source



Broadband Polarization-Entangled Photon Source

Product Description

We have developed a series of polarization-entangled photon sources to support the growing field of quantum information science. These sources are room-temperature nonlinear optical photon-pair sources based on polarization crystal technology and polarization fiber technology, supporting all common phase-matching schemes. They are available in OEM, benchtop, and rack-mount configurations, covering a broad wavelength range from near-infrared to short-wave infrared. Each source can be further customized to meet niche applications.

Product features

All-fiber structure; Broadband entanglement; High brightness output; Low noise design; Intelligent calibration

Part Number

MP-EPS-1000-3A3A3A-1566-9/125-S

Application area

Quantum communication | Quantum computing | Precision measurement | Quantum imaging | Fundamental research

Core parameters

Center Wavelength	Wavelength Accuracy
1566nm	2nm

General Parameters

General Specifications

Parameter Table*1

Parameter	Max.	Typical	Min.	Unit
Signal/Idler degeneracy wavelength*2	1580	1566 ±2	1530	nm

Signal/Idler degeneracy wavelength accuracy		-	±2	-	nm
Biphoton bandwidth (3 dB)[*3]		>120	80	60	nm
Signal/Idler sum frequency bandwidth (3 dB)		0.4	0.2	0.1	nm
Pair-generation rate		$4x10^6$	$2x10^6$	$1x10^6$	Pairs/second
Coincidence-to-accidental ratio[*4]		-	1000	100	
Fidelity[*5] to $\Psi=(\|HV\rangle + \|VH\rangle)/\sqrt{2}$		99.5%[*6]	98%	97%	
Two-photon interference visibility[*7]		99.5%[*6]	98%	97%	
Physical dimensions	W×D×H (cm)	39×34.4×8.6			
	Mass (kg)	~4			

Notes:

*1 Under continuous wave (CW) operation.

*2 Degeneracy wavelength is typically conveniently set at the boundary between C-band and L-band. Degeneracy wavelength can be customized within the specified range.

*3 Before the signal and idler are separated by a wavelength division multiplexer.

*4 Coincidence counts measured over a 0.65 ns window, over each 16 nm signal/idler FWHM bandwidth, with free-running SPAD detector dark count ~5 kHz.

*5 Measured on conjugate signal/idler pairs with 1 nm FWHM bandwidth centered at degeneracy over 80 nm. Accidental coincidences are not subtracted.

*6 Limited by detector dark counts.

*7 Measured in HV basis and AD basis. Accidental coincidences are not subtracted.

Operating and Storage Conditions

Condition	Specification
Operating Temperature	15°C to 25°C
Operating Relative Humidity (%RH)	5% - 60%
Storage Temperature	-40°C to 40°C
Storage Relative Humidity (%RH)	0% - 90%

Characteristic Curves

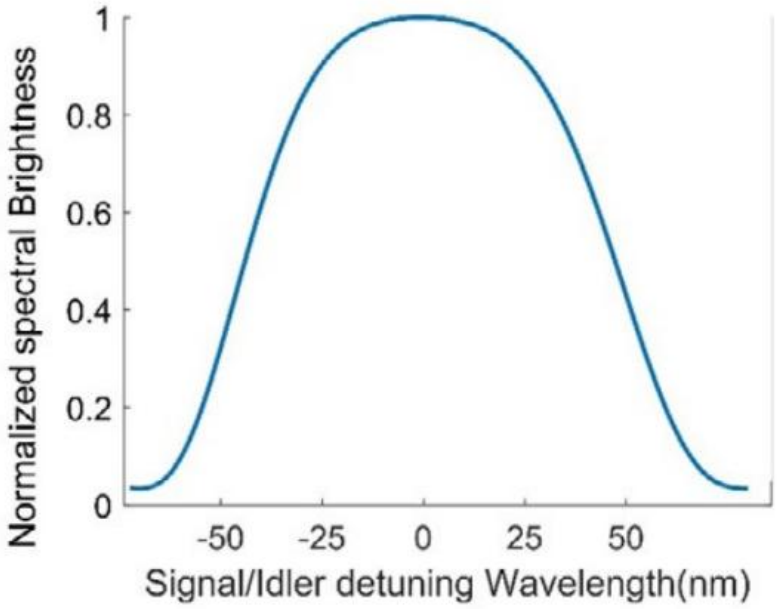


Figure 1. Typical biphoton spectrum.

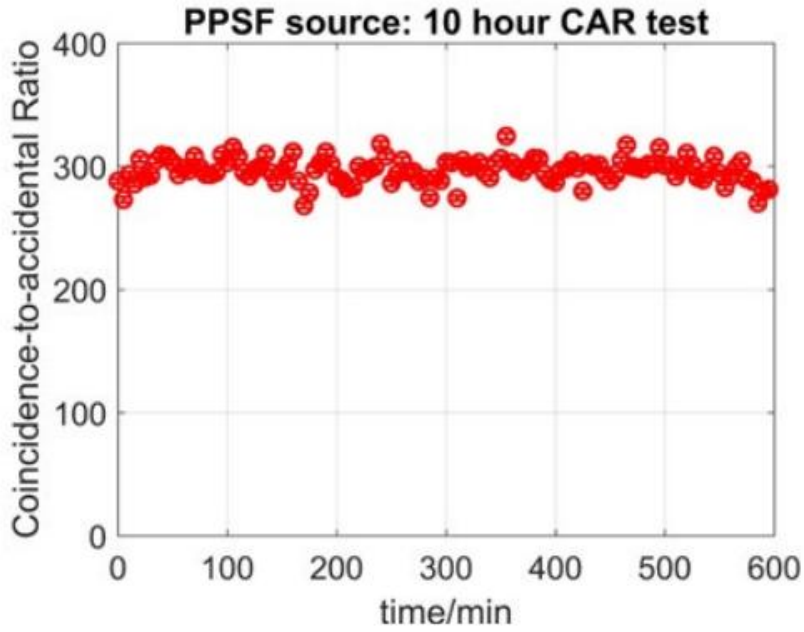
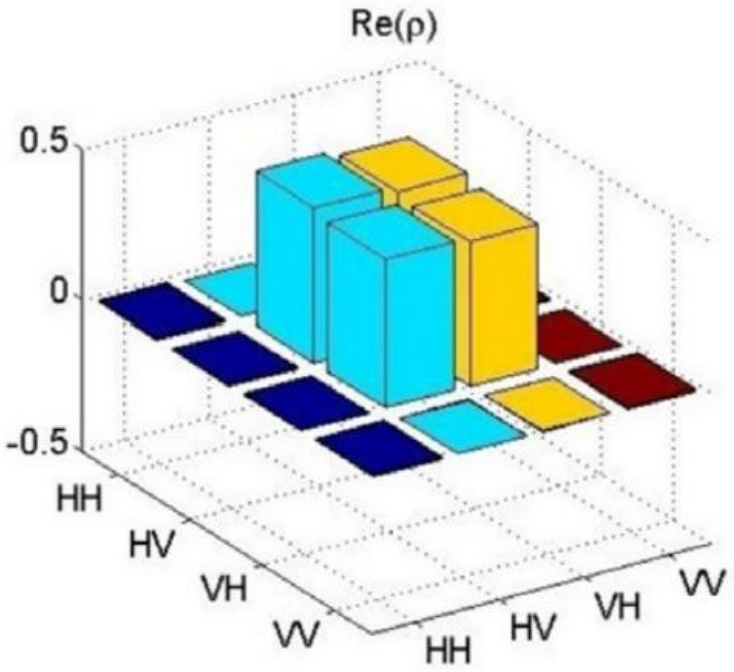
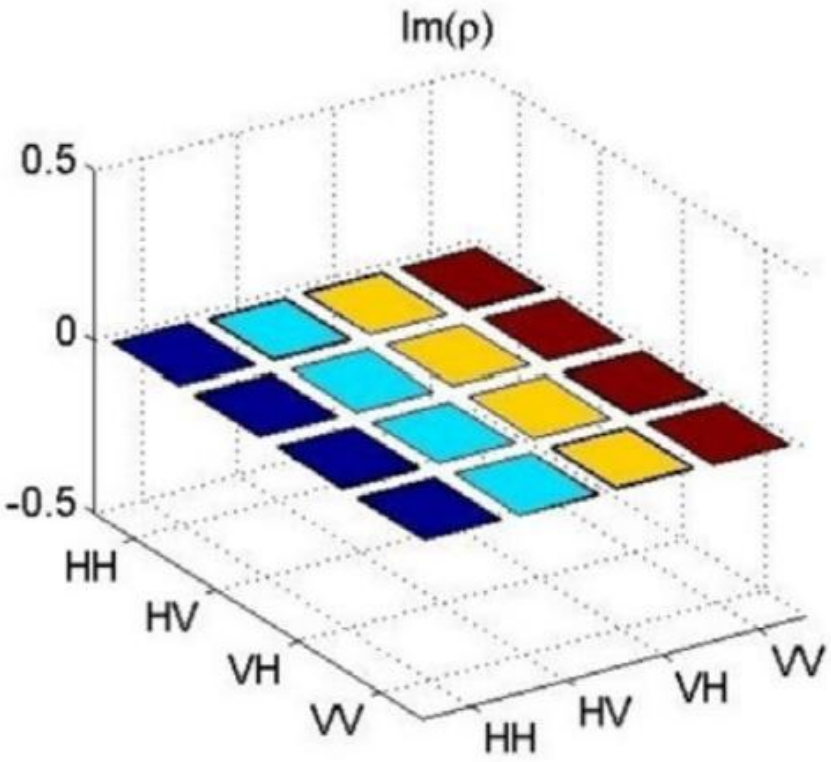


Figure 2. Typical Coincidence-to-Accidental Ratio (CAR) over 10 hours of continuous operation.


Re(ρ)
0.5
0
-0.5
HH
HV
VH
VV
HH
HV
VH
VV


Im(ρ)
0.5
0
-0.5
HH
HV
VH
VV
HH
HV
VH
VV