Performance Specifications[1]

Part number: HEPS-1000-3A3A-1566-9/125-S				
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	4×10^6	3×10^6	1×10^6	Pairs/second
Coincidence-to-accidental ratio[4]	–	1000	100	
Lower bound of the fidelity defined as[5] : $F_{p\omega} = \langle \Psi^-_\omega \mid \langle \Phi^+_p \mid \rho_{p\omega} \mid \Phi^+_p \rangle \mid \Psi^-_\omega \rangle$, With frequency bin separation of < 7 nm	99%[6]	98%	97%	

Note:
1 Under continuous-wave (CW) operation.
2 The degeneracy wavelength is usually conveniently set at the boundary of C- and L-bands. Customized degeneracy wavelength in the indicated range is possible.
3 This bandwidth refer to 3-dB spectral brightness. Not all other specs are satisfied over this broad bandwidth.
4 Coincidence counts are measured on signal/idler FWHM bandwidth of 16 nm each, over 0.65 ns window, with free-run SPAD detectors having dark counts of ~5 kHz.
5 For detailed definition, assumptions, and method of determining the fidelity to the frequency-polarization hyperentangled state, please refer to [1].

Optical Specifications

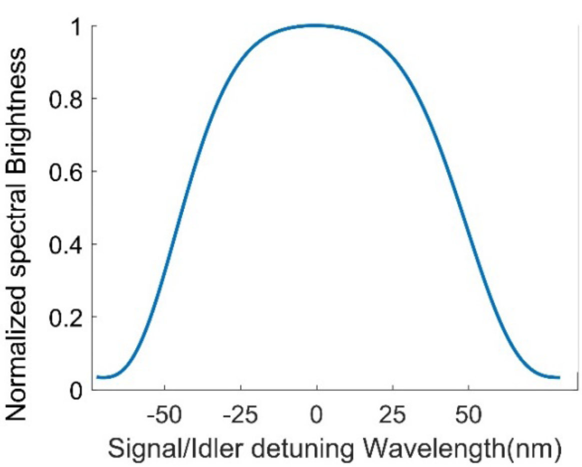
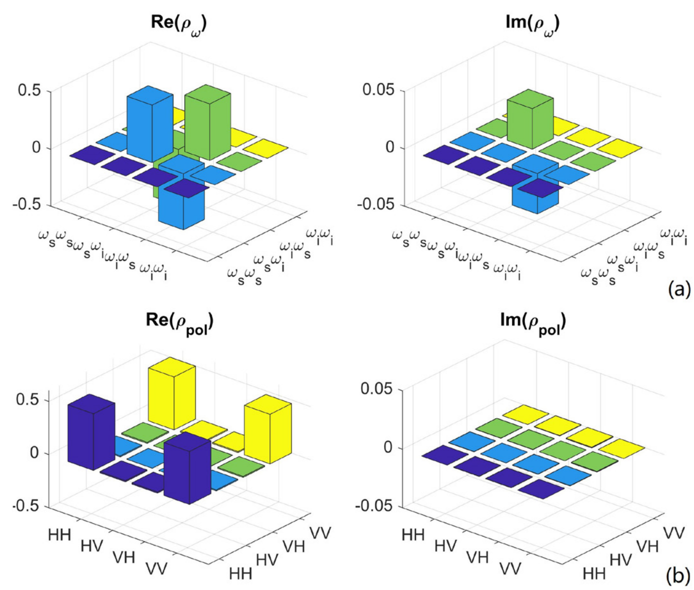


Figure 1. Typical biphoton spectrum



The real and imaginary parts of the reduced density matrices of the PF hyperentangled state which are reconstructed from the experimental data in: (a) Frequency domain $\rho\omega$; (b) Polarization domain ρpol

Figure 2. Typical polarization density matrix

Operating And Storage Conditions

Parameter	Min.	Max.
Operating temperature	15°C	25°C
Operating relative humidity (% RH)	5	60
Storage temperature	-40°C	40°C
Storage relative humidity (% RH)	0	90

Links To White Paper

[1] Changjia Chen, Calvin Xu, Arash Riazi, Eric Y. Zhu, Alexander Greenwood, Alexey V.Gladyshev, Peter G. Kazansky, Brian T. Kirby, Li Qian ,"Telecom-band Hyperentangled Photon Pairs from a Fiber-based Source" arXiv: 2112.03369 [quant-ph](2021)

[2] Changjia Chen, Eric Y. Zhu, Arash Riazi, Alexey V. Gladyshev, Costantino Corbari, Morten Ibsen, Peter G. Kazansky, and Li Qian, "Compensation-free broadband entangled photon pair sources," Opt. Express 25, 22667–22678 (2017). https://www.osapublishing.org/oe/abstract.cfm?uri=oe-25-19-22667

[3] Zhu, E. Y., et al. "Multi-party agile quantum key distribution network with a broadband fiber-based entangled source," arXiv preprint arXiv:1506.03896 (2015).

[4] Changjia Chen, Arash Riazi, Eric Y. Zhu, Alexey V. Gladyshev, Mili Ng, Peter G. Kazansky, and Li Qian. "A Compact All-fiber Polarization Entangled Photon Source Pumped by a Laser Diode," Conference on Lasers and Electro-Optics, 2018, San Jose, CA, USA. https://arxiv.org/abs/1506.03896