Wavelength
REFERENCES

ClarityPlus™
Precision Frequency Standard
Full C Band Tunable Laser

The ClarityPlus is a unique instrument that serves as both a full featured C-band bench laser and a source with inherent NIST traceable wavelength that can be used to calibrate your other optical instrumentation. The instrument has two basic modes: a Reference mode where the laser is locked to a built in gas cell line (any of 50 lines) and a Wavelength/ITU mode where the laser is set anywhere in the C-band but referenced to a nearby gas line. The ITU mode offers live frequency offset that allow stress testing without interruption by a locking process.

The use of an internal $H^{13}C^{14}N$ gas cell means that the accuracy of the instrument does not degrade with time. The 0.1pm absolute accuracy specification is absolute, not depending on periodic calibration.

The laser offers external control via RS232 with a SCPI compliant command set. For operation over USB a readily available external convertor can be used.

Specifications[1]	Performance	Notes
Wavelength Range	1528-1567nm	C-band[3]
Reference Mode Absolute Accuracy	±0.1pm ±0.1pm typical	Reference Lines Other gas lines
Wavelength/ITU Mode Absolute Accuracy	±1pm typical	1 hour[2]
Allan Deviation (100 sec)	$<1x10^{-9}$	Reference Mode
Laser Linewidth	<500 KHz typical	
ITU Grid Resolution	100, 50, 25 GHz	ITU Mode
ITU Frequency Offset	0-50 GHz	Live
Operating Temperature	15-45 degC	
Side Mode Suppression	>35 dB typical	
RIN	<-140dB typical	
Output Power	10 dBm typical	
Power Stability	±0.015 dB typical ±0.025dB typical	1 hour 24 hours
FiberType, interface	PM Panda, SCAPC	
Serial Interface	RS-232, 9-pin D-Sub socket	SCPI Compliant
Power Requirements	90-250 VAC, 50/60 Hz, 0.5 amp	Universal AC socket

1. Specifications reported at 25 ± 3 °C
2. Within 1 hour of initial setting
3. L-band coming, check factory

Features

- **Primary frequency standard**
- **Traceable accuracy**
- **ITU grid mode with offset**
- **Superior power stability**
- **Narrow linewidth**

Applications

- **Test bed for optical communications**
- **Sensing**
- **General purpose bench laser**
- **Coherent communications**

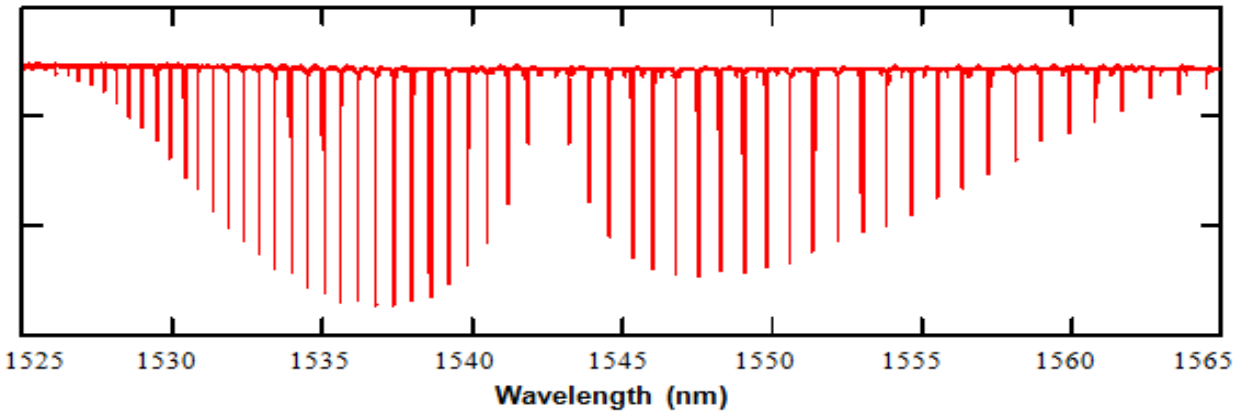
Ordering Information (example)

CLX-C

C: C-band
L: L-band

PH: 541.738.0528 • FAX: 541.738.0998

Wavelength
REFERENCES

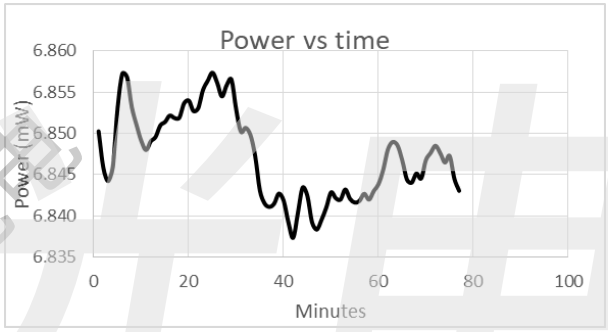


Sample Spectrum of H13N14 Reference Lines Showing Relative Line Strength

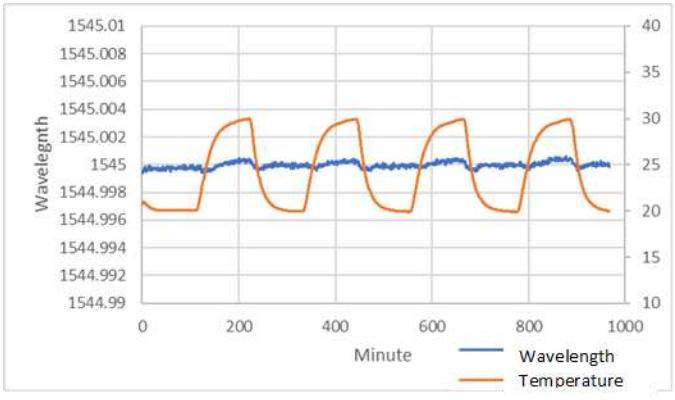
R Branch	Wavelength (nm)	P Branch	Wavelength (nm)
26	1527.63329(5)	1	1543.11410(4)
25	1528.0546(12)	2	1543.80949(17)
24	1528.48558(4)	3	1544.51481(4)
23	1528.92625(4)	4	1545.23006(4)
22	1529.37662(4)	5	1545.95524(4)
21	1529.83667(4)	6	1546.69036(4)
20	1530.30643(4)	7	1547.43545(23)
19	1530.78591(4)	8	1548.19050(4)
18	1531.27512(4)	9	1548.95555(4)
17	1531.77405(4)	10	1549.73058(4)
16	1532.28273(4)	11	1550.51561(4)
15	1532.80114(4)	12	1551.31066(4)
14	1533.32931(4)	13	1552.11573(5)
13	1533.86725(4)	14	1552.93084(4)
12	1534.41497(4)	15	1553.75600(5)
11	1534.97245(4)	16	1554.59120(5)
10	1535.53973(4)	17	1555.43649(5)
9	1536.11682(4)	18	1556.29185(5)
8	1536.70370(5)	19	1557.15730(5)
7	1537.30039(5)	20	1558.03285(12)
6	1537.90692(5)	21	1558.91851(5)
5	1538.52330(4)	22	1559.81430(5)
4	1539.14950(8)	23	1560.72023(5)
3	1539.78556(4)	24	1561.63631(4)
2	1540.43150(4)	25	1562.56253(5)
1	1541.08730(8)	26	1563.49892(5)
0	1541.75300(4)	27	1564.44549(5)

High Accuracy Line List for Reference Mode

Expanded (2 sigma) uncertainties are stated in parenthesis and apply to least significant digits. Uses pressure shift and uncertainty data supplied by NIST in conjunction with a 2.4 +/- 0.5 Torr HCN Reference Cell.



Power versus time at room temperature over 1.5 hours showing superior power stability for applications such as insertion loss testing. Variation over this time ±0.006dB.



Wavelength versus time for a general wavelength anywhere in the range with ambient temperature cycling over a 10°C range. Total drift <<1pm. The ClarityPlus allows generation of a wavelength traceable to NIST for any wavelength in the C-band.

PH: 541.738.0528 • FAX: 541.738.0998