GM82006C C-Band Tunable Laser Source Module

(PC Base USB Control)

Product Specification

(Preliminary)

Jan., 2011

Revision: 2.06

Description

UC INSTRUMENTS' GM82006C is a high power C-band fast tuning tunable laser source module. This compact tunable laser source provides high output power up to +13 dBm. It covers C –band (1528.80 nm ~ 1563.90 nm. It also can be extension to 1525.00 nm ~ 1568.00 nm for customers request) application. The compact design makes it a flexible and cost-effective stimulus for single and multi-channel DWDM application. The high optical output power of the tunable laser source improves the testing of all types of optical amplifiers and other active components as well as broadband passive optical components. Super flatness output optical power (ripple small than +/- 0.10 dB, typical small than +/- 0.02 dB) enables it directly use in testing system without power reference. Accuracy wavelength output makes testing result reliable and accuracy. Since no mechanical or thermal adjustments are necessary, channel switching is fast with straight for ward control circuitry. The SOA facilitates flexible control of the output power and acts as a shutter when reverse biased, enabling dark tuning between channels.

The modules are packaged into a compact, low- profile package, with an internal Optical isolator and a wavelength locker. The locker monitors both output power and frequency of the light emitted from the front facet of the chip, enabling a control that guarantees stability of the frequency and output power over life, to within the requirements of continue tune spacing applications.

The assembly contains all electronics necessary to control the laser, offering users a simple and well-defined digital command interface. UC INSTRUMENTS' GM82006C is provided with polarization maintaining fiber for use with an external modulator.

Feature

- Full C-band tuning. Tuning range from 1528.80 nm ~ 1563.90 nm (can be extended to 1525.00 nm ~ 1565.00 nm for customer's special order). High power, 13 dBm out put. Low power dissipation, typically< 3.7W at 75℃
- High side-mode suppression ratio>40dB
- Integral wavelength locker, allowing stabilization to within ±1.0 GHz over lifetime
- Up to ±0.1 GHz tuning resolution
- Channel to channel tuning time<0.1s
- Dark tuning by reverse biasing the integrated amplifier(>40dB suppression)
- Polarization maintaining fiber pigtail

Applications

- Fiber grating sensor testing
- Tunable DWDM transponders and transceivers
- Dynamic provisioning and wavelength routing in metro DWDM systems
  Reconfigurable optical add/drop multiplexers (ROADM)
- Optical packet or burst-mode switching Test and measurement
- DWDM Transmission system
- OFDR Application

Specifications

Optical Performance

Parameter	*Sym*	*Conditions*	*Min*	*Typ*	*Max*	*Unit*
Wavelength range			1525.00	1528.80 ~ 1563.90	1565.00	nm
Wavelength resolution				1		pm
Absolute wavelength accuracy				+/- 10.0 ; typ., +/- 3.0		pm
Relative wavelength accuracy				+/- 10.0 ; typ., +/- 3.0		pm
Wavelength repeatability				+/- 5.0 ; typ., +/- 2.0		pm
Wavelength stability		At constant temp		+/- 5.0; Typ. +/- 2.0 over 24 hrs		pm
Output optical power				+13.0 dBm		
Power stability		At constant temp		+/- 0.03 dB over 1 hr; typ < +/- 0.01 dB +/- 0.05 dB over 24 hr; tpy < +/- 0.03 dB		
Power flatness versus wavelength		At constant temp		+/- 0.30 dB; typ < +/- 0.10 dB		
Power repeatability		At constant temp		+/- 0.05 dB; typ. +/- 0.02 dB		
Frequency/Wavelength tuning time	tT			0.02	0.10	s
Output power when disabled					-35	dBm
Side-mode suppression ratio	SMSR		40			dB
Optical signal-to-noise ratio	OSNR	0.1 nm bandwidth	50	55		dB
Linewidth	LW	Phase noise density meas.			5	MHz
Relative intensity noise	RIN	Average over 0.1 – 10 GHz			-140	dB/Hz
Back reflection tolerance					-14	dB
Optical isolation			40			dB
Polarization extinction ratio	PER		20			dB

Electrical and Thermal Performance

Parameter	*Sym*	*Conditions*	*Min*	*Typ*	*Max*	*Unit*
Operating case temperature	T_C		-5		60	°C
Positive supply voltage	V_{CC}	+ 3.7 V (1)	3.30	3.70	4.20	V
	V_{CC}	+ 3.3 V (2)	3.15	3.30	3.45	V
Power supply noise		100 Hz to 20 MHz			1.0	% rms

Fiber Connection

Parameter	*Comments*	*Min*	*Typ*	*Max*	*Unit*
Fiber type	Polarization maintaining single-mode fiber[1]				
Fiber length		0.9	1.0	1.1	m
Mode field diameter		9.5	10.5	11.5	μm
Fiber cladding diameter		122	125	128	μm
Fiber polymer coating diameter		380	400	420	μm
Fiber outer jacket diameter	Loose tube		900		μm
Polarization orientation	Parallel to slow axis of PM fiber				
Fiber bend radius		20			mm
Fiber proof strength		1.38			GPa

1. Fujikura SM15-PS-U40A-H PANDA or equivalent.

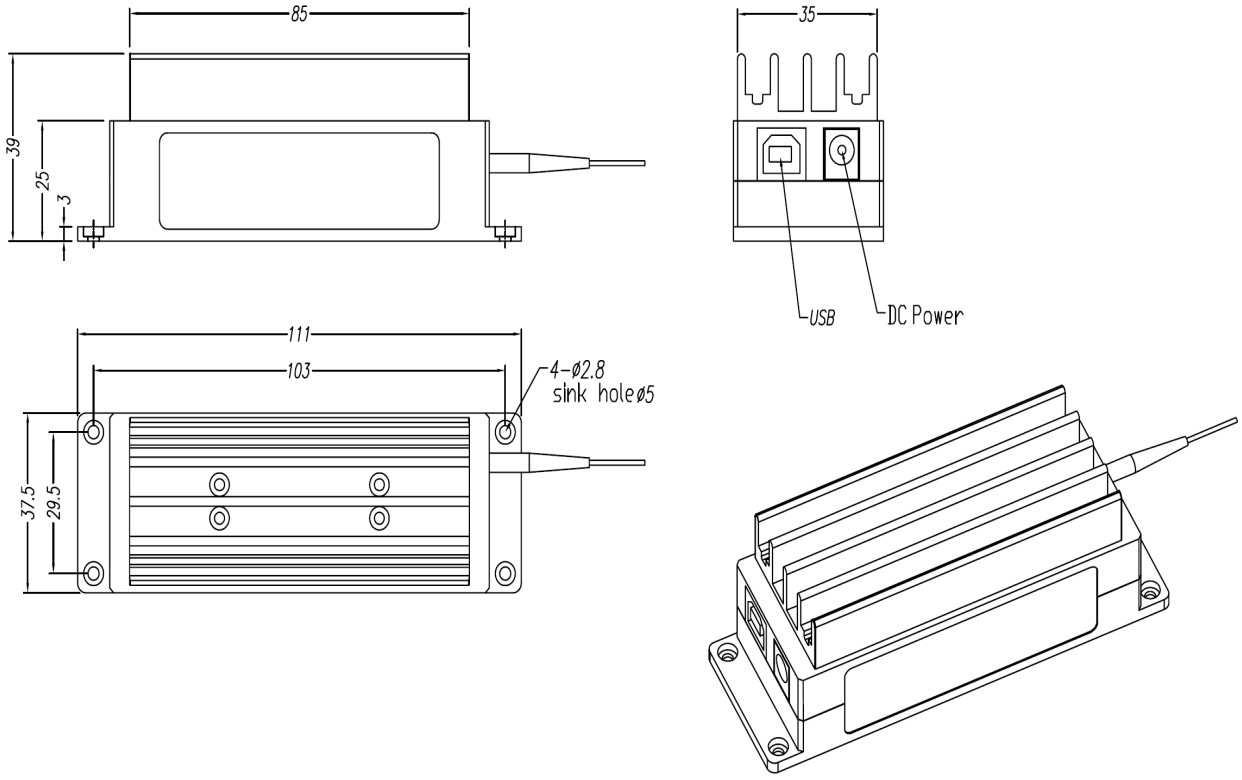
Absolute Maximum Rating

Parameter	*Sym*	*Conditions*	*Min*	*Max*	*Unit*
Storage temperature range			-40	85	°C
+ 3.3 V supply voltage		+ 3.7 V (1)	-0.3	7.0	V
		+ 3.3 V (2)	-0.3	3.6	V

Mechanical Dimension

Dimensions are in millimeters: 111.0 X 39.0 X 37.5.

General tolerances are ±0.13 mm. Mounting holes are M2 tapped holes.



Product Picture:

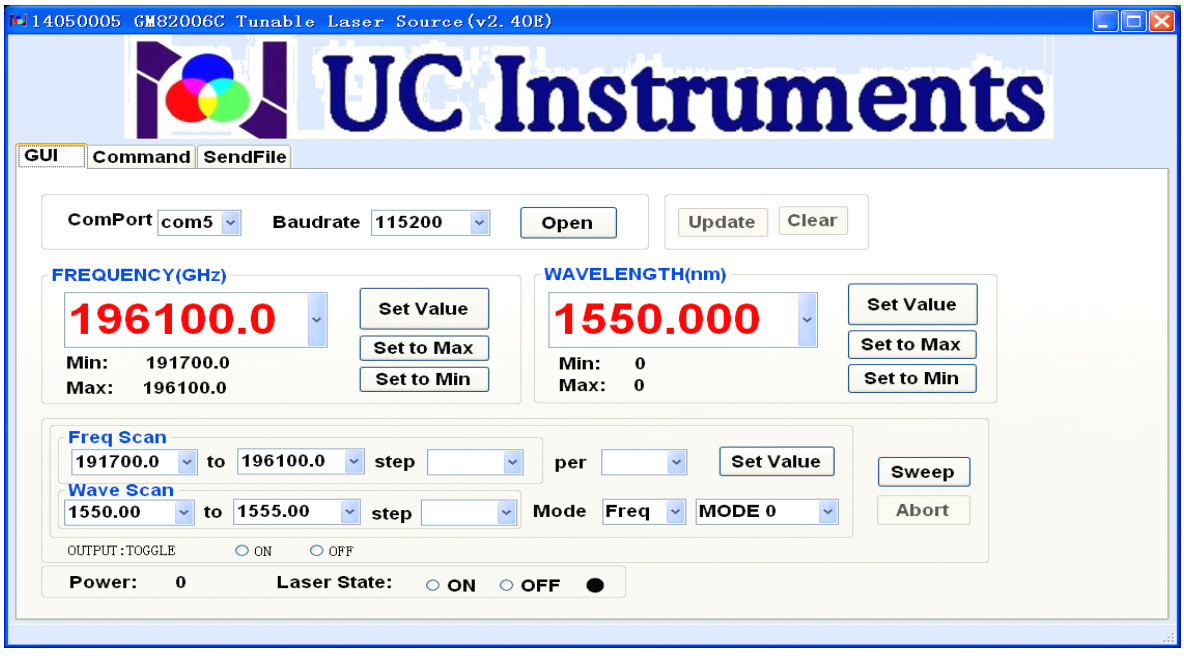
GM82006C PC Control Quick Scan Tunable Laser Source Module

Order Information

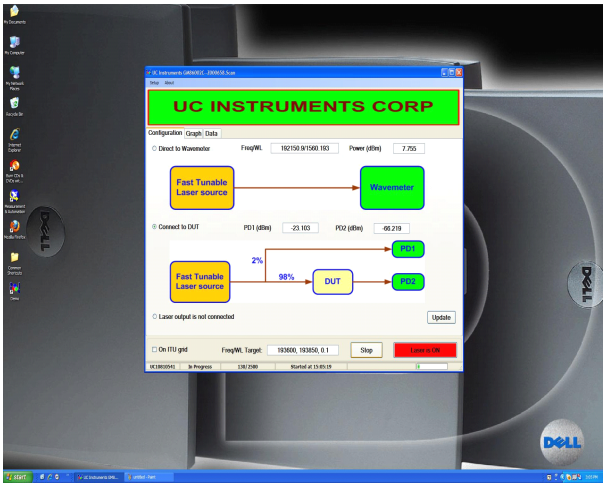
PN: GM82006C

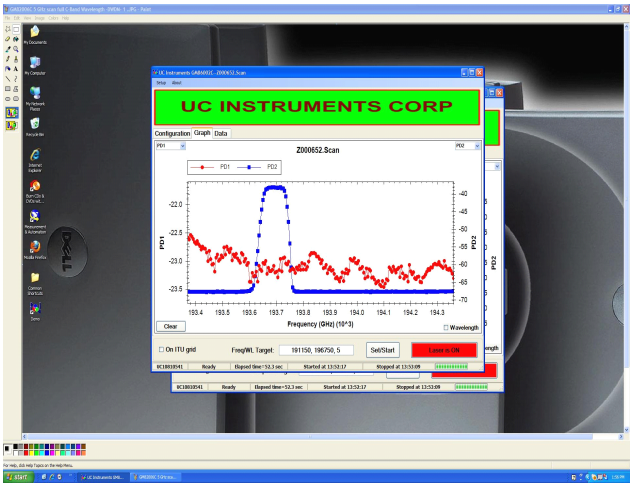
Description: Tunable laser source module, tune spacing from 1528.80 nm to 1563.90 nm. +13 dBm optical output power, 900 μm loose tube polarization maintaining fiber pigtail with ST test plug.

Computer Interface:

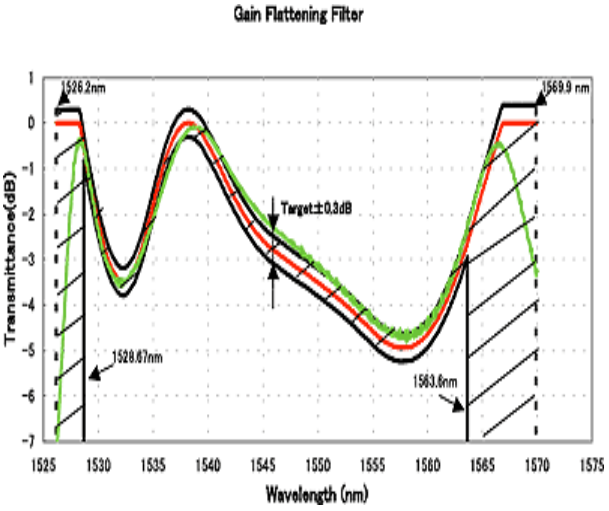


Some Testing Data:

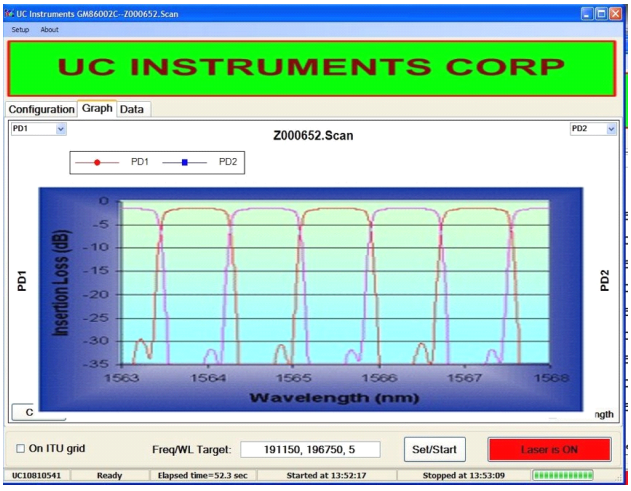




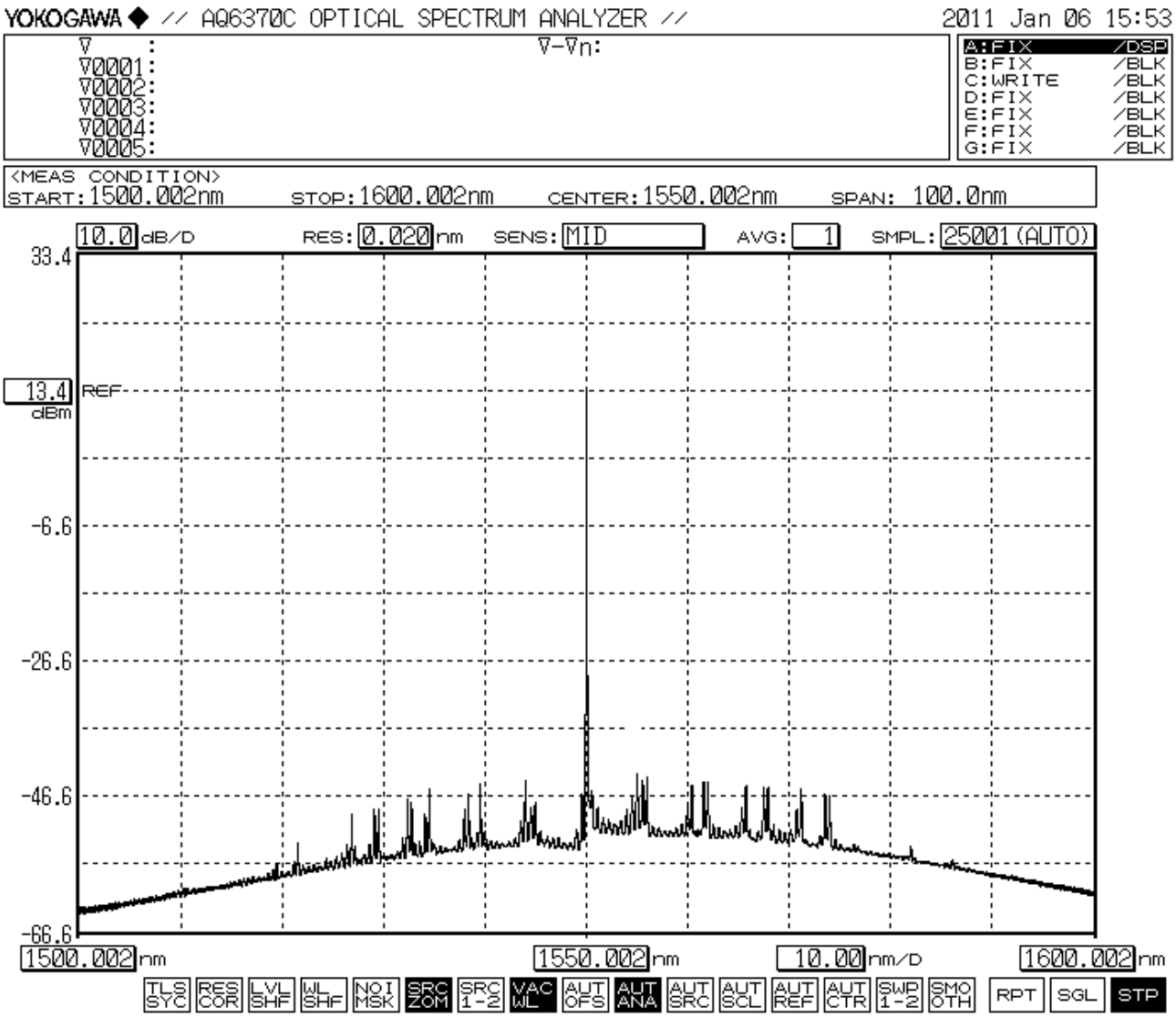
DWDM TESTING



GFF Filter



Interleaver Spectrum



Tunable Laser Source Spectrum

Jan.,, 2011

31000011 V2.06