TEST REPORT

Delivery Date: **July 14 2011**

1250nm LD Epiwafer

(#0707231-2)

Customer: ECE Department, UCSB

Customer： UCSB **Control No.：** 0707231-2

Test data：

1. DXCD

Item	Wafer No.	Spec (Å) (±10%)	test (Å)
1	DLDA1107133- C,D	150	150.49~150.95

2. PL

Item	Wafer No.	Spec(nm)	test (nm)
1	DLDA1107133	1250±10	1246.6

3. ECV

Item	Run No.	Layer #3(P-InP) (unit:10^{18} cm^{-3})		Layer #7(N-InP) (unit:10^{18} cm^{-3})		Layer #10(N-InGaAs) (unit:10^{18} cm^{-3})	
		Spec.	Test	Spec.(±20%)	Test	Spec.(±20%)	Test
1	DLDA1107133	2→1	~1.97	3	~2.86	3	~3.15

Comment：

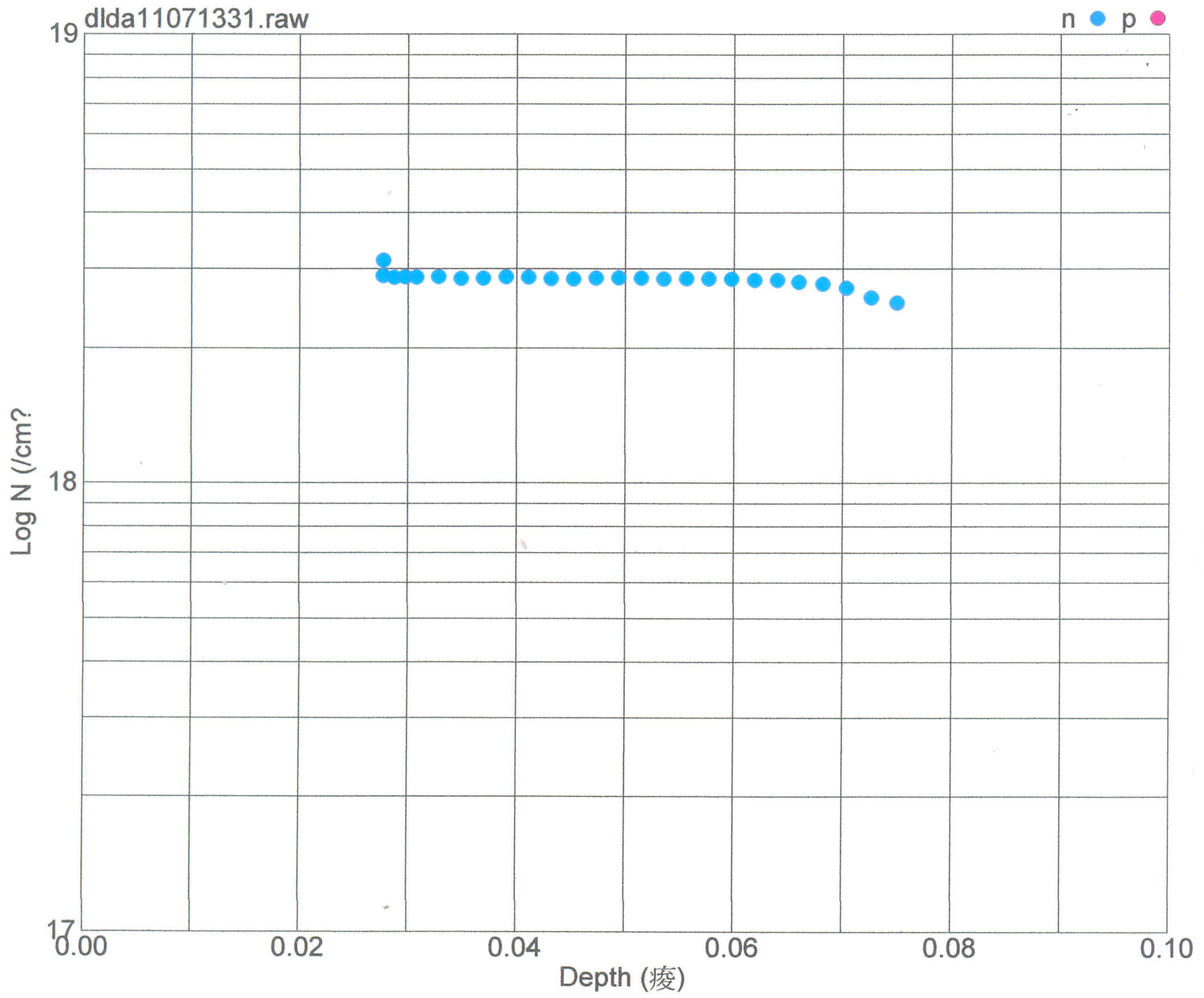
The super-lattice period had determined by QC200 Diffractometer. The BIO-RAD RPM2000 PL mode is used to measure the wavelength. The concentrations of P-InP & N-InP & N-InGaAs layers are measured by Electro-Chemical C-V Profile.

All wafers are tested under the same criteria. The attached graphs are the prototype of the testing results. All test results are in accordance with customer's specifications.

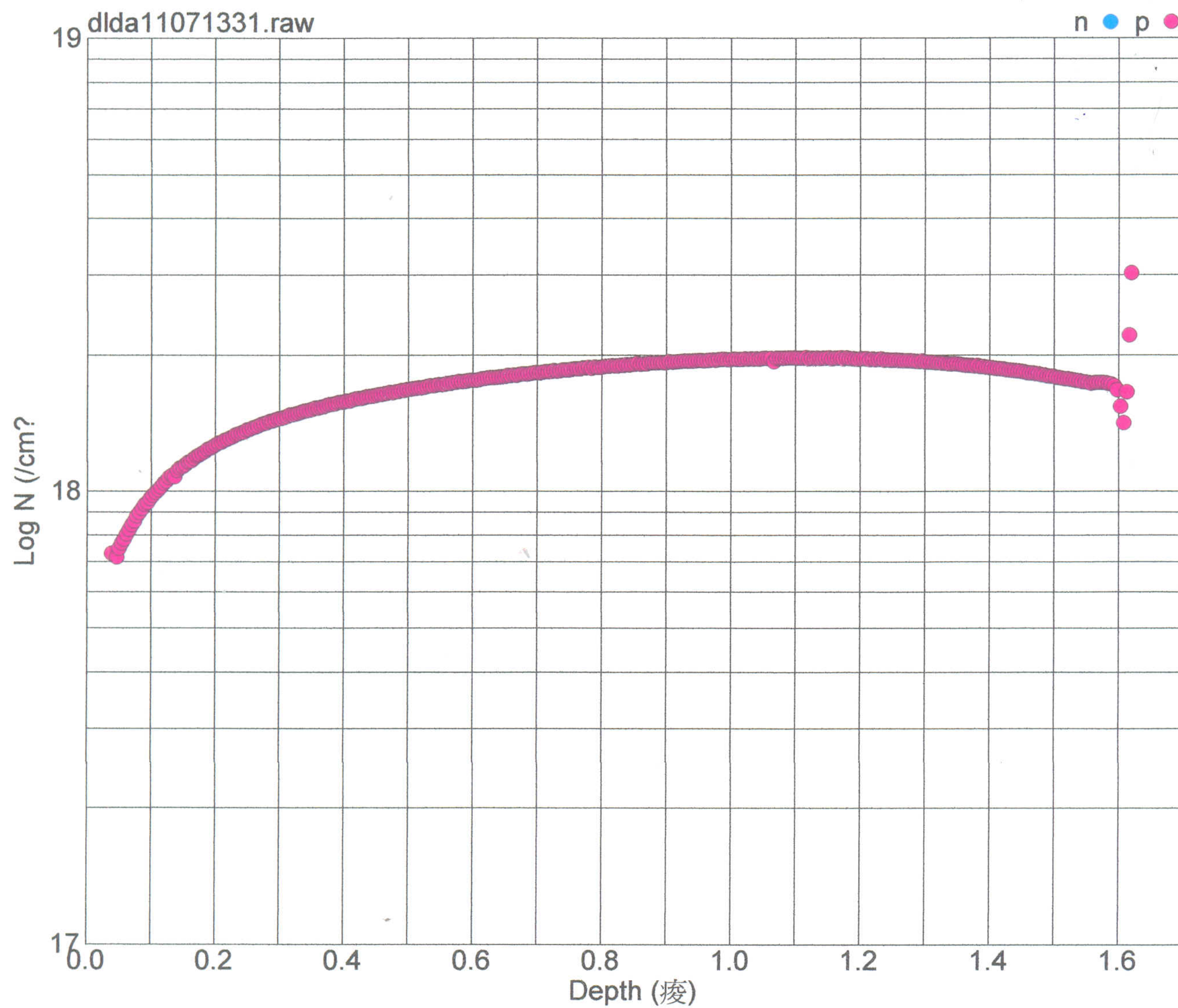
Signature：

Reported By: Jeremy Manager: Brian Yan Supervisor: Wei Lin

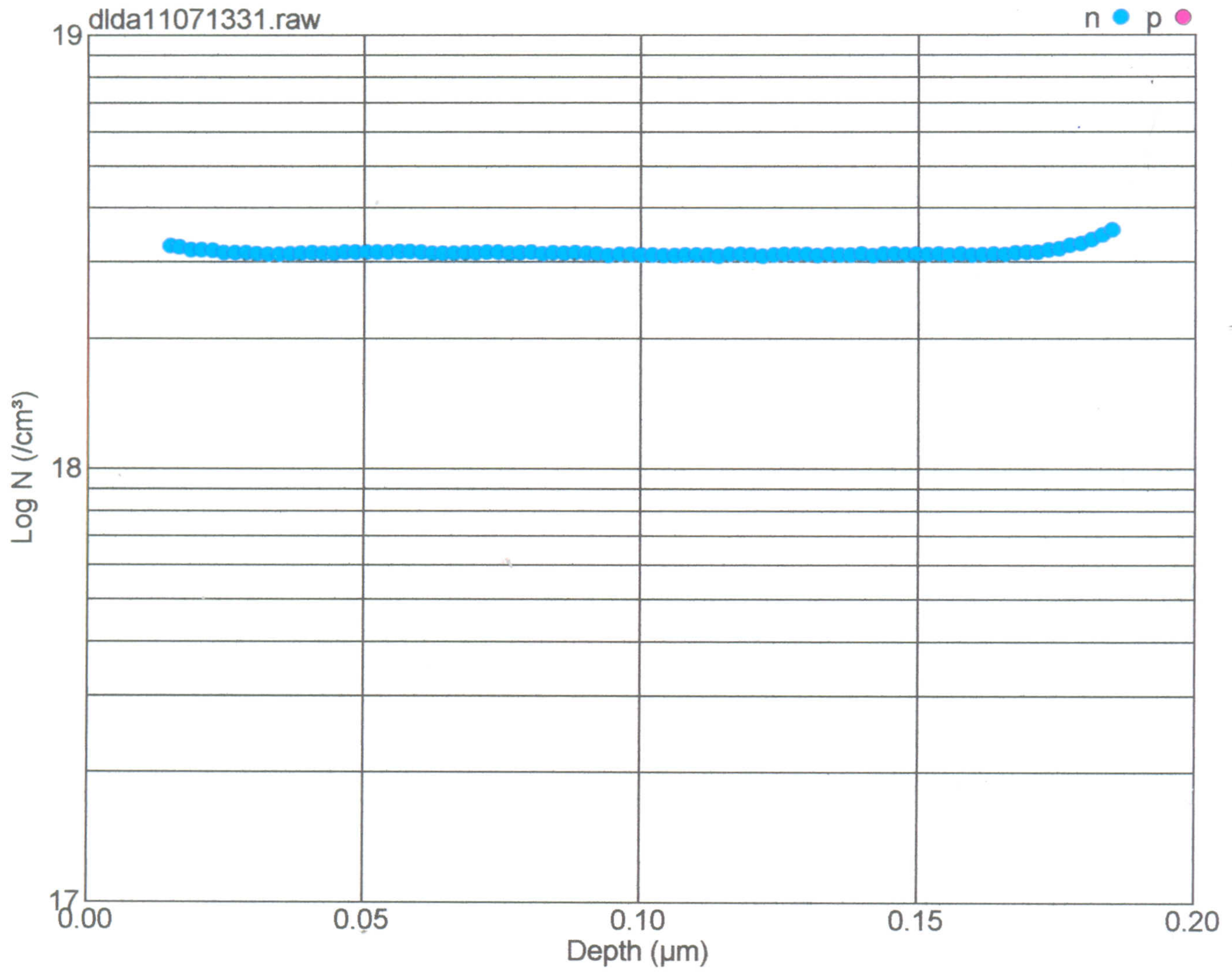
Reg End Mat1 +% Mat2 model EAC freq A-wet A-ill
1 26 InP 0 GaAs Parall Off 0.00 0.0945 0.0960



Reg End Mat1 +% Mat2 model EAC freq A-wet A-ill
1 356 InP 0 GaAs Parall Off 0.00 0.0089 0.0070



Reg	End	Mat1	+%	Mat2	model	EAC	freq	A-wet	A-ill
1	87	InAs	47	GaAs	Parall	Off	0.00	0.0956	0.0940

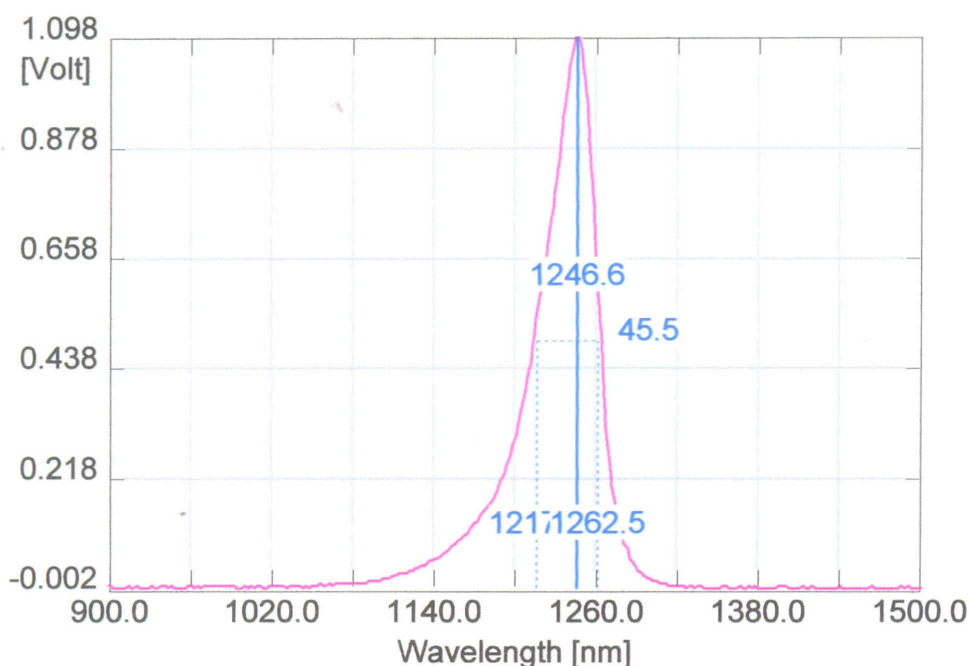


Vtera

ACCENT RPM2000

Date	: July 13, 2011 15:38:55	Operator	:
Wafer ID	: q-qw	Batch ID	: dlda1107133
Material	: InP	Thickness	: 350 µm
Filename	: D:\2011\dlda\1107133\q-qw1.spl		
Description	:		
Recipe	:		

Scan parameters		Wavelength settings		Laser parameters	
X	: -2.5 mm	Range	: 899.8 to 1532.2 nm	Name	: 532nm CW 10mW
Y	: 1.0 mm	Slit width	: 0.500 mm	Wavelength	: 532.0 nm
Scan rate	: 100 pts/s	Grating	: 150g/mm-1250	Power	: 6.3 mW
Temperature	: 24.2 C	Detector	: InGaAs		
		Gain	: x1 (corr.)		
		Filter	: 570nm HP		
		Calibration	: (none)		



Analysis Parameters		Results	
Mode	: Custom 2	Peak	: 1246.6 nm
Min Limit	: 900.0 nm	Height	: 1.098 Volt
Max Limit	: 1500.0 nm	FWHM	: 45.5 nm
Threshold	: 97.0 %	Area	: 29 a.u.
FWHM	: 50.0 %		

Fringe Thickness Analysis

dlda1107133c_0aa1.X01

Intensity (cps)

10^4

10^3

10^2

10^1

-5000 -4000 -3000 -2000 -1000 0 1000 2000 3000 4000 5000

OMEGA-2THETA (arcsec)

Fringe Thickness

Substrate: InP
Epilayer: -
Average Fringe Spacing: 1236.66 arcsec
Thickness: 150.95 Å

ID: dlda1107133c_0aa1.X01
h,k,l: (0,0,4)
Number of Fringes: 2

To: Martin Tan

規格需求表
(SPECIFICATIONS CONFORMATION)
(LM-WORKP-DC-T1)

1.功能模式來源： ☐ 契約 ☑ 訂單 ☐ 年度營運計畫書
(Order Type)

2.功能簡述：(Function Description) 1250nm LD Epi-wafer

3.相關法令、規章(附件) (Local Regulations for the Products Specified)：無(None)

4.制定者：UCSB (Specified By)　　5.制定日期：2011/03/09 (Date of Specification)

6.規格制定(Specifications)：

序號 (No.)	規格需求項目 (Item Name)	規格值 (Value for Customer)	單位 (Unit)	誤差 (DP)	工作條件 (Test Condition)	備註 (Note)
0	N- InP Substrate (M01*)	S-Doped, (>$2x10^{18}$)	cm^{-3}	—	---	2" wafer, 350±25μm
1	U- InP Buffer Layer	0.2	μm	±10%	---	---
2	P- $In_{0.53}Ga_{0.47}As$ (Concentration)	0.1 ($1x10^{19}$)	μm (cm^{-3})	±10% (±20%)	---	—
3	P-InP Layer (Concentration)	1.5 ($2\rightarrow1x10^{18}$)	μm (cm^{-3})	±10% (---)	C-V Test	On test wafer
4	U-$In_{0.5339}Al_{0.283}Ga_{0.1831}As$ (+0.05 % CS λ_g=1.1μm) SCH	0.15	μm	±10%	---	---
5	12x U- $In_{0.5721}Al_{0.187}Ga_{0.2409}As$ Well (+0.3% CS, λ_g=1.3μm) /13x U- $In_{0.4688}Al_{0.29}Ga_{0.2412}As$ Barrier(-0.4% TS, λ_g=1.05μm) (λ_{PL})	9 /6 (1250)	nm nm (nm)	±10% ±10% (±10nm)	DXRD & PL Measurement	On epi-wafer
6	U- $In_{0.5339}Al_{0.283}Ga_{0.1831}As$ (+0.05 % CS λ_g=1.1μm) SCH	0.075	μm	±10%	---	---
7	N-InP Layer (Concentration)	110 ($3x10^{18}$)	nm (cm^{-3})	±10% (±20%)	C-V Test	On test wafer
8	2xN-$In_{0.85}Ga_{0.15}As_{0.327}P_{0.673}$ / 2xN-InP (Concentration)	7.5 /7.5 ($3x10^{18}$)	nm nm (cm^{-3})	±10% ±10% (±20%)	---	---
9	N-InP (Concentration)	10 ($3x10^{18}$)	nm (cm^{-3})	±10% (±20%)	—	---
10	N- $In_{0.53}Ga_{0.47}As$ (Concentration)	0.2 ($3x10^{18}$)	μm (cm^{-3})	±10% (±20%)	---	---
#	Lattice Mismatch	<±1000	ppm	—	DCXD measurement	Test on center of epiwafer

7.研發部主管：(R&D Manager) [signature]　　8.技術部主管：(Supervisor) [signature]

9.需求者/客戶簽認：(Customer Confirmation) [signature] (signature)　　公司名稱：UCSB. (Customer)

10.管制碼：規需 0707231-2 (Control No.)

(Please mail back after the confirmation signature by manager who make this order)

保存年限：參 年　　密等：密　　