

Cypress Semiconductor Package Qualification Report

**QTP# 080501 VERSION 1.0
July 2008**

81-Ball Wafer Level Chip Scale Package (WLCSP)

(3.8 x 3.8 x 0.53 mm)

MSL1, 260C

Amkor-Taiwan (AU)

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

Rene Rodgers
Reliability Engineer, MTS
(408) 943-2732

Mira Ben-Tzur
Quality Engineering Director
(408) 943-2675

PACKAGE QUALIFICATION HISTORY

QUAL REPORT	DESCRIPTION OF QUALIFICATION PURPOSE	DATE COMP.
072207	Qualify 7C071001A Antioch-SP from CMI Fab 81-ball WLCSP (Wafer Level Chip Scale Package) Package Technology Assembled in Amkor Taiwan for MSL1	Sep 2007
080501	Qualify 7C071001A Antioch-SP from GSMC Fab 81-ball WLCSP (Wafer Level Chip Scale Package) Package Technology Assembled in Amkor Taiwan for MSL1	Jun 08

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION

Package Designation:	81FN
Package Outline, Type, or Name:	81-Ball Wafer Level Chip Scale Package
Die Separation Method:	Saw
Solder Ball/Bump Material:	SnAgCu
Bond Diagram Designation	001-15422
Bonding Method:	Redistribution Layer (RDL)
Redistribution Material:	Polyimide and Copper
Assembly Process Flow:	001-15621
Name/Location of Assembly (prime) facility:	Amkor-Taiwan (AU)

ELECTRICAL TEST / FINISH DESCRIPTION

Test Location:	Amkor-Philippines
-----------------------	-------------------

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENT

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Acoustic Microscopy Test	Cypress Spec. 25-00104	P
Constructional Analysis	Cypress Spec. 25-20035	P
Dye Penetration	Cypress Spec. 25-00046	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	500V Cypress Spec. 25-00020	P
Electrostatic Discharge Human Body Model (ESD-HBM)	2,200V JESD22, Method A114-E	P
External Visual	Cypress Spec. 12-00288	P
Highly Accelerated Saturation Test (HAST)	130°C, 5.25V, 85%RH Precondition: JESD22 Moisture Sensitivity Level 1 168 Hrs, 85C/85%RH + 3x Reflow, 260°C+0, -5°C	P
High Temperature Operating Life Early Failure Rate	Dynamic Operating Condition, Vcc Max=3.8V, 125°C	P
High Temperature Storage	150°C, no bias	P
Internal Visual	Cypress Spec. 25-00017	P
Physical Dimension	Cypress Spec. 25-00031	P
Pressure Cooker	121°C, 100%RH, 15 Psig Precondition: JESD22 Moisture Sensitivity Level 1 168 Hrs, 85C/85%RH + 3x Reflow, 260°C+0, -5°C	P
Solder Ball Shear	Cypress Spec. 12-00288 / JESD22-B117	P
Static Latch-up	125C, ± 200mA Cypress Spec. 01-00081	
Temperature Cycle	MIL-STD-883C, Method 1010, Condition B, -55°C to 125°C Precondition: JESD22 Moisture Sensitivity Level 1 168 Hrs, 85C/85%RH + 3x Reflow, 260°C+0, -5°C	P
Thermal Shock	Cypress Spec. 25-00014	P

Reliability Test Data

QTP #: 072207

Device	Fab Lot#	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC-MSL1							
CYWB0124AB (7C071001A)	4649511	ES19999	AU-TAIWAN	COMP	15	0	
CYWB0124AB (7C071001A)	4715237	610735373	AU-TAIWAN	COMP	17	0	
CYWB0124AB (7C071001A)	4716366	610735374	AU-TAIWAN	COMP	17	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CYWB0124AB (7C071001A)	4649511	ES19999	AU-TAIWAN	COMP	5	0	
STRESS: DYE PENETRATION							
CYWB0124AB (7C071001A)	4649511	ES19999	AU-TAIWAN	COMP	15	0	
CYWB0124AB (7C071001A)	4715237	610735373	AU-TAIWAN	COMP	15	0	
CYWB0124AB (7C071001A)	4716366	610735374	AU-TAIWAN	COMP	15	0	
STRESS: ESD-CHARGE DEVICE MODEL (500V)							
CYWB0124AB (7C071001A)	4649511	610734348	AU-TAIWAN	COMP	9	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-E, 2200V							
CYWB0124AB (7C071001A)	4649511	610734348	AU-TAIWAN	COMP	8	0	
STRESS: EXTERNAL VISUAL							
CYWB0124AB (7C071001A)	4649511	610734348	AU-TAIWAN	COMP	461	0	
CYWB0124AB (7C071001A)	4715237	610735373	AU-TAIWAN	COMP	461	0	
CYWB0124AB (7C071001A)	4716366	610735374	AU-TAIWAN	COMP	461	0	
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 3.63V), PRE COND 168 HR, 85C/85%RH, MSL1							
CYWB0124AB (7C071001A)	4649511	ES19999	AU-TAIWAN	128	74	0	
CYWB0124AB (7C071001A)	4715237	610735373	AU-TAIWAN	128	75	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (125C, 3.80V, Vcc Max)							
CYWB0124AB (7C071001A)	4649511	610734348	AU-TAIWAN	96	422	0	
CYWB0124AB (7C071001A)	4715237	610735373	AU-TAIWAN	96	447	0	
CYWB0124AB (7C071001A)	4716366	610735374	AU-TAIWAN	96	424	0	
STRESS: HIGH TEMPERATURE STORAGE, 150C, no bias							
CYWB0124AB (7C071001A)	4649511	ES19999	AU-TAIWAN	1000	96	0	
STRESS: INTERNAL VISUAL							
CYWB0124AB (7C071001A)	4649511	ES19999	AU-TAIWAN	COMP	5	0	
CYWB0124AB (7C071001A)	4715237	610735373	AU-TAIWAN	COMP	5	0	
CYWB0124AB (7C071001A)	4716366	610735374	AU-TAIWAN	COMP	5	0	

Reliability Test Data

QTP #: 072207

Device	Fab Lot#	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: PHYSICAL DIMENSION							
CYWB0124AB (7C071001A)	4649511	ES19999	AU-TAIWAN	COMP	30	0	
CYWB0124AB (7C071001A)	4715237	610735373	AU-TAIWAN	COMP	30	0	
CYWB0124AB (7C071001A)	4716366	610735374	AU-TAIWAN	COMP	30	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), PRE COND 168 HRS, 85C/85%RH, MSL1)							
CYWB0124AB (7C071001A)	4649511	610734348	AU-TAIWAN	96	76	0	
CYWB0124AB (7C071001A)	4715237	610735373	AU-TAIWAN	96	83	0	
CYWB0124AB (7C071001A)	4716366	610735374	AU-TAIWAN	96	79	0	
STRESS: SOLDER BALL SHEAR							
CYWB0124AB (7C071001A)	4649511	610734348	AU-TAIWAN	COMP	5	0	
STRESS: STATIC LATCH-UP TESTING (125C, 2.7V/4.95V, ±200mA)							
CYWB0124AB (7C071001A)	4649511	610734348	AU-TAIWAN	COMP	6	0	
STRESS: TC COND. B -55C TO 125C, PRE COND 168 HRS, 85C/85%RH, MSL1							
CYWB0124AB (7C071001A)	4649511	ES19999	AU-TAIWAN	500	96	0	
CYWB0124AB (7C071001A)	4715237	610735373	AU-TAIWAN	500	84	0	
CYWB0124AB (7C071001A)	4716366	610735374	AU-TAIWAN	500	83	0	
STRESS: THERMAL SHOCK							
CYWB0124AB (7C071001A)	4649511	ES19999	AU-TAIWAN	600	76	0	

Reliability Test Data

QTP #: 080501

Device	Fab Lot#	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC-MSL1							
CYWB0124ABX (7C071001BK)	4803103	610707060	AU-TAIWAN	COMP	15	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CYWB0124ABX (7C071001BK)	4803103	610707060	AU-TAIWAN	COMP	5	0	
STRESS: EXTERNAL VISUAL							
CYWB0124ABX (7C071001BK)	4803103	610707060	AU-TAIWAN	COMP	353	0	
STRESS: HIGH TEMPERATURE STORAGE, 150C, no bias							
CYWB0124ABX (7C071001BK)	4803103	610707060	AU-TAIWAN	500	90	0	
CYWB0124ABX (7C071001BK)	4803103	610707060	AU-TAIWAN	1000	90	0	
STRESS: TC COND. B -55C TO 125C, PRE COND 168 HRS, 85C/85%RH, MSL1							
CYWB0124ABX (7C071001BK)	4803103	610707060	AU-TAIWAN	500	79	0	
CYWB0124ABX (7C071001BK)	4803103	610707060	AU-TAIWAN	1000	74	0	
CYWB0124ABX (7C071001BK)	4739893	610808012	AU-TAIWAN	500	83	0	
CYWB0124ABX (7C071001BK)	4739893	610808012	AU-TAIWAN	1000	82	0	
CYWB0124ABX (7C071001BK)	4743242	610808013	AU-TAIWAN	500	84	0	
CYWB0124ABX (7C071001BK)	4743242	610808013	AU-TAIWAN	1000	78	0	