

## QUALITY AND RELIABILITY REPORT

**ZQR No. : 3062067A**

Please see below	<b>Title/Purpose</b>  <b>LEAD-FREE (Pure Tin) and GREEN COMPOUND QUALIFICATION</b>	<b>Date</b> : 10/28/03 <b>Device</b> : <b>Die ID/Rev</b> : } Please see below <b>Pkg Type</b> : } <b>STR No.</b> : N/A
Cc: ZEPI DC/ Subcon Operation		

**PACKAGES EVALUATED**

	Z84C1510FEC KZ239KR0PD 100L QFP	Z84C0010FEC BZ246BU0QB 44L QFP	Z8018008VSC KZ230FLOS 68L PLCC	Z86L8108SSCR528HTR NZHCN3A.05C 28L SOIC	Z84C1516ASC K239KRPE 100L LQFP	Z86L9808HSCR52F4TR BHCN05.00QB 28L SSOP	Z84C1516ASC AZ239KROPX2 100L LQFP
Subcon	ASEK	AMKOR	ASEK	NSEB	ASEK	AMKOR	AIT
Molding Compound	G700A	G700M	G700A	G600	CEL9200THF	GC7450KS-2	G700
Die Attach Epoxy	CRM1076DS	Ablestik3230	CRM1076DS	CRM2200D	Ablebond8340A	Ablestik8290	CRM1076DF
Bonding Wire	1.0 mil	1.0 mil	1.0 mil	1.0 mil	1.0 mil	1.0 mil	1.0 mil
Pb-Free Solder	Pure Tin	Pure Tin	Pure Tin	Pure Tin	Pure Tin	Pure Tin	Pure Tin

**Pb-FREE QUALIFICATION TESTS**

	Z84C1510FEC KZ239KR0PD 100L QFP	Z84C0010FEC BZ246BU0QB 44L QFP	Z8018008VSC KZ230FLOS 68L PLCC	Z86L8108SSCR528HTR NZHCN3A.05C 28L SOIC	Z84C1516ASC K239KRPE 100L LQFP	Z86L9808HSCR52F4TR BHCN05.00QB 28L SSOP	Z84C1516ASC AZ239KROPX2 100L LQFP
Visual Inspection	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED
Adhesion Test	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED
Solderability Test	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED
<b>Whisker Formation</b>							
A.) At Room Temp, 6 mos	PASSED	-	PASSED	-	PASSED	-	-
B.) After dry bake at 50-55°C	-	PASSED (10 WEEKS)	-	PASSED (48 WEEKS)	-	PASSED (10 WEEKS)	-
C.) After 85°C/85% RH	PASSED (6 WEEKS)	PASSED (10 WEEKS)	PASSED (6 WEEKS)	PASSED (18 WEEKS)	PASSED (6 WEEKS)	PASSED (10 WEEKS)	-
D.) After 30°C/60% RH	PASSED (24 WEEKS)	PASSED (10 WEEKS)	PASSED (24 WEEKS)	PASSED (48 WEEKS)	PASSED (24 WEEKS)	PASSED (10 WEEKS)	-
E.) After 500X TC	PASSED	PASSED	PASSED	-	PASSED	PASSED	PASSED

Reported by:

E. Gines

Approved by:

M. F. Fonte

**MSL 3 EVALUATION**

	Z84C1510FEC KZ239KR0PD 100L QFP	Z84C0010FEC BZ246BU0QB 44L QFP	Z8018008VSC KZ230FL0S 68L PLCC	Z86L8108SSCR528HTR NZHCN3A.05C 28L SOIC	Z84C1516ASC K239KRPE 100L LQFP	Z86L9808HSCR52F4TR BHCNQ5.00QB 28L SSOP	Z84C1516ASC AZ239KROPX2 100L LQFP
Visual Inspection	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED
Bake @ 24 hours, 125°C	DONE	DONE	DONE	DONE	DONE	DONE	DONE
Temp Humidity 30°C/60% RH, 192 hours	DONE	DONE	DONE	DONE	DONE	DONE	DONE
Convection Reflow @ 260°C, 3 cycles	DONE	DONE	DONE	DONE	DONE	DONE	DONE
Visual Inspection	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED
Delamination Check	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED
Electrical Test	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED

**GREEN COMPOUND QUALIFICATION TEST**

	Z84C1510FEC KZ239KR0PD 100L QFP	Z84C0010FEC BZ246BU0QB 44L QFP	Z8018008VSC KZ230FL0S 68L PLCC	Z86L8108SSCR528HTR NZHCN3A.05C 28L SOIC	Z84C1516ASC K239KRPE 100L LQFP	Z86L9808HSCR52F4TR R BHCNQ5.00QB 28L SSOP	Z84C1516ASC AZ239KROPX2 100L LQFP
Package Integrity	0/15	0/15	0/15	0/15	0/15	0/15	0/15
Pressure Pot Test, (121°C, 100% RH, 2 ATM) 168 hours 336 hours	0/45 0/45	0/45 0/45	0/45 0/45	0/45 0/45	0/45 0/45	0/45 0/45	0/45 0/45
Temp Cycle, 1000X (- 65°C to 150 °C)	0/45	0/45	0/45	0/45	0/45	0/45	0/45
HTS, 168 hours @ 150 °C	N/A	N/A	N/A	0/77	0/77	0/77	0/77
Burn-in, 168 hrs @ 125 °C	0/77	0/77	0/77	-	-	-	-
Sonoscan after 1000X Temp Cycle	0/5	0/5	0/5	0/5	0/5	0/5	0/5

**CONCLUSION**

Above results indicate that LEAD-FREE and GREEN COMPOUND PASSED QUALIFICATION TESTS and MOISTURE SENSITIVITY LEVEL 3 at 260°C.