

QUALITY AND RELIABILITY REPORT

ZQR No. : 3062067B

Please see below	Title/Purpose LEAD-FREE (Pure Tin) and GREEN COMPOUND QUALIFICATION	Date : 09/23/05 Device : See below Die ID/Rev : See below Pkg Type : See below STR No. : N/A
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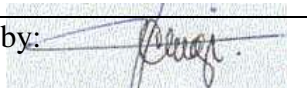
I. OBJECTIVE:

This is a summary of all test results on devices/packages/lead type which were used as vehicle in the qualification of Pure Tin lead plating and green compound materials.

II. LOT DETAILS and BILL OF MATERIALS:

	Z84C1510FEC KZ239KROPD 100L QFP	Z84C0010FEC BZ246BU0QB 44L QFP	Z8018008VSC KZ230FLOS 68L PLCC	Z86L8108SSCR528HTR NZHCN3A.05C 28L SOIC	Z84C1516ASC K239KRPE 100L LQFP	Z86L9808HSCR52F4TR BHCNQ5.00QB 28L SSOP	Z84C1516ASC AZ239KROPX2 100L LQFP	Z85C3008PSG ET5066092QB 40L PDIP	Z86E3116PSG B4188745AZ 28L PDIP
Subcon	ASEK	AMKOR	ASEK	NSEB	ASEK	AMKOR	AIT	ISPL	AMKOR
Molding Compound	G700A	G700M	G700A	G600	CEL9200THF	GC7450KS-2	G700	G600T	G600
Die Attach Epoxy	CRM1076DS	Ablestik3230	CRM1076DS	CRM2200D	Ablebond8340A	Ablestik8290	CRM1076DF	Ablebond 8290	8390A
Bonding Wire	1.0 mil	1.0 mil	1.0 mil	1.0 mil	1.0 mil	1.0 mil	1.0 mil	1.0 mil	1.2 mil
Pb-Free Solder	Pure Tin	Pure Tin	Pure Tin	Pure Tin	Pure Tin	Pure Tin	Pure Tin	Pure Tin	Pure Tin

Reported by:



V.L. CRUDA, JR.

Approved by:



M. F. FONTE

III. DATA and RESULTS:

III-A Plating

	Z84C1510FEC KZ239KR0PD 100L QFP	Z84C0010FEC BZ246BU0QB 44L QFP	Z8018008VSC KZ230FLOS 68L PLCC	Z86L8108SSCR528HTR NZHCN3A.05C 28L SOIC	Z84C1516ASC K239KRPE 100L LQFP	Z86L9808HSCR52F4TR BHCNQ5.00QB 28L SSOP	Z84C1516ASC AZ239KROPX2 100L LQFP	Z85C3008PSG ET5066092QB 40L PDIP	Z86E3116PSG B4188745AZ 28L PDIP
Visual Inspection	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED
Adhesion Test	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED
Solderability Test	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED
Whisker Formation									
A.) At Room Temp	PASSED after 6 mos.	-	PASSED after 6 mos.	PASSED after 24 mos.	PASSED after 6 mos.	PASSED after 6 mos.	-	PASSED after 24 mos.	PASSED after 24 mos.
B.) After dry bake at 50-55°C	-	PASSED after 10 weeks	PASSED after 30 mos.	PASSED after 30 mos.	-	PASSED after 30 mos.	-	PASSED after 30 mos.	PASSED after 30 mos.
C.) After 85°C/85% RH	PASSED after 6 weeks	PASSED after 10 weeks	PASSED after 18 weeks	PASSED after 18 weeks	PASSED after 6 weeks	PASSED after 18 weeks	-	PASSED after 18 weeks	PASSED after 18 weeks
D.) After 30°C/60% RH	PASSED after 24 weeks	PASSED after 10 weeks	PASSED after 48 weeks	PASSED after 48 weeks	PASSED after 24 weeks	PASSED after 48 weeks	-	PASSED after 48 weeks	PASSED after 48 weeks
E.) After TC @ -65C - 150C	PASSED after 500 cycles	PASSED after 500 cycles	PASSED after 1000 cycles	PASSED after 1000 cycles	PASSED after 500 cycles	PASSED after 1000 cycles	PASSED after 500 cycles	PASSED after 1000 cycles	PASSED after 1000 cycles

III-B MSL TEST for SMD (using MSL 3 conditions for PLCC, QFP and LQFP; MSL 1 conditions for SOIC and SSOP)

	Z84C1510FEC KZ239KR0PD 100L QFP	Z84C0010FEC BZ246BU0QB 44L QFP	Z8018008VSC KZ230FLOS 68L PLCC	Z86L8108SSCR528HTR NZHCN3A.05C 28L SOIC	Z84C1516ASC K239KRPE 100L LQFP	Z86L9808HSCR52F4TR BHCNQ5.00QB 28L SSOP	Z84C1516ASC AZ239KROPX2 100L LQFP	Z85C3008PSG ET5066092QB 40L PDIP	Z86E3116PSG B4188745AZ 28L PDIP
Visual Inspection	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	N/A	N/A
Bake @ 24 hours, 125°C	DONE	DONE	DONE	DONE	DONE	DONE	DONE	N/A	N/A
Temp Humidity 30°C/60% RH, 192 hours (MSL 3)	DONE	DONE	DONE	-	DONE	-	DONE	N/A	N/A
Temp Humidity 85°C/85% RH, 168 hours (MSL 1)	-	-	-	DONE	-	DONE	-	-	-
Convection Reflow @ 260°C, 3 cycles	DONE	DONE	DONE	DONE	DONE	DONE	DONE	N/A	N/A
Visual Inspection	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	N/A	N/A
Delamination Check	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	N/A	N/A
Electrical Test	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	PASSED	N/A	N/A

III-C Green Compound Qualification

	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	Z85C3008PSG ET5066092QB 40L PDIP	Z86E3116PSG B4188745AZ 28L PDIP
Package Integrity	0/15	0/15	0/15	0/15	0/15	0/15	0/15	0/15	0/15
PPOT(121°C, 100% RH, 2 ATM) 168 hrs, 336hrs	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	0/45	0/45	0/45	0/45
T/C, (-65°C - 150 °C) 500x	0/45	0/45	0/45	0/45	0/45	0/45	0/45	0/45	0/45
1000x	0/45	0/45	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	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	0/5	0/5

IV. CONCLUSION:

Based on the above results, ZiLOG standard packages (PDIP, PLCC, SOIC, SSOP, QFP, LQFP) using Pure Tin and Green Compound (as indicated) materials passed the qualification and MOISTURE SENSITIVITY LEVEL 3 test at 260°C (for PLCC, QFP, LQFP); MOISTURE SENSITIVITY LEVEL 1 test at 260° (for SOIC and SSOP), including whisker verification on plating.