Automotive Qualification Plan Summary for LQFP_EP and MQFP at STATS ChipPAC China Jiangyin

TEST	SPECIFICATION	SAMPLE SIZE	EXPECTED COMPLETION DATE
Temperature Cycle (TC)*	JEDEC *JESD22-A104*	3 x 32	October 2016
Solder Heat Resistance (SHR)*	JEDEC/IPC *J-STD-020*	3 x 11	October 2016
Temperature Humidity and Bias Test (THB)*	JEDEC *JESD22-A110*	3 x 32	October 2016
Unbiased Highly Accelerated Stress Test (uHAST)*	JEDEC *JESD22-A118*	3 x 32	October 2016
High Temperature Storage (HTS)	JEDEC *JESD22-A103*	1 x 32	October 2016
Electrostatic Discharge *Field Induced Charge Device Model*	JEDEC *JESD22-C101*	3/voltage	October 2016

* These samples will be subjected to preconditioning (per J-STD-020 Level 3) prior to the start of the stress test. Level 3 preconditioning consists of the following: 1. Bake – 24 hours at 125ºC; 2. Soak – unbiased soak for 192 hours at 30ºC, 60%RH; 3. Reflow – three passes through a reflow oven with a peak temperature of 260ºC. TC samples will be subjected to wire-pull test after 500 cycles where results should be within specification limits.

Automotive Qualification Results Summary for LQFP at STATS ChipPAC China Jiangyin

TEST	SPECIFICATION	SAMPLE SIZE	RESULTS
Temperature Cycle (TC)*	JEDEC *JESD22-A104*	3 x 77	PASS
Solder Heat Resistance (SHR)*	JEDEC/IPC *J-STD-020*	3 x 11	PASS
Highly Accelerated Stress Test (HAST)*	JEDEC *JESD22-A110*	3 x 77	PASS
Unbiased Highly Accelerated Stress Test (uHAST)*	JEDEC *JESD22-A118*	3 x 77	PASS
High Temperature Storage (HTS)	JEDEC *JESD22-A103*	1 x 77	PASS
Electrostatic Discharge *Field Induced Charge Device Model – All Pins*	JEDEC *JESD22-C101*	3/voltage	PASS ±500V
Electrostatic Discharge *Field Induced Charge Device Model – Corner Pins*	JEDEC *JESD22-C101*	3/voltage	PASS ±750V

* These samples were subjected to preconditioning (per J-STD-020 Level 3) prior to the start of the stress test. Level 3 preconditioning consists of the following: 1. Bake – 24 hours at 125ºC; 2. Soak – unbiased soak for 192 hours at 30ºC, 60%RH; 3. Reflow – three passes through a reflow oven with a peak temperature of 260ºC. TC samples were subjected to wire-pull test after 500 cycles where results passed within specification limits.

Assembly Relocation of Select LQFP, LQFP_EP, MQFP, TQFP, TQFP_EP Products to STATS ChipPAC China Jiangyin

Qualification Results Summary for TQFP and TQFP_EP at STATS ChipPAC China Jiangyin

TEST	SPECIFICATION	SAMPLE SIZE	RESULTS
Temperature Cycle (TC)*	JEDEC *JESD22-A104*	3 x 32	PASS
Solder Heat Resistance (SHR)*	JEDEC/IPC *J-STD-020*	3 x 11	PASS
Unbiased Highly Accelerated Stress Test (uHAST)*	JEDEC *JESD22-A118*	3 x 32	PASS
Electrostatic Discharge *Field Induced Charge Device Model*	JEDEC *JESD22-C101*	3/voltage	PASS ±1250V

* Preconditioned per JEDEC/IPC J-STD0020.