# SUMMARY OF CHANGE (DIRECT BUMP)

| | From | To | Remarks |
|---|---|---|---|
| Bumping Site | ASE Kaohsiung (AEG) | Chip Bond KF (CB4) | Site Change |
| PI-1 | 10um | 10 um | - |
| UBM | Ti(0.2)/NiV(0.3)/Cu(0.8) | Ti(0.2)/Cu(0.4)/Cu(8) | Seed layer change (NiV to Cu) |
| Bump Composition | 95.5Sn_4.0Ag_0.5Cu | 95.5Sn_4.0Ag_0.5Cu | - |
| Final Bump Height | 240 um | 240 um | - |
| Backgrind | ASE Kaohsiung (AEG) | Chip Bond KF (CB4) | Site Change |
| Laser Marking | ASE Kaohsiung (AEG) | Chip Bond KF (CB4) | Site Change |

# SUMMARY OF CHANGE (CU RDL BUMP)

| | From | To | Remarks |
|---|---|---|---|
| Bumping Site | ASE Kaohsiung (AEG) | Chip Bond KF (CB4) | Site Change |
| PI-1 | 5um | 5 um | - |
| RDL | Ti(0.2)/Al(1.5)/Ti(0.2) | TiW(0.32)/Cu(0.2)/Cu(3) | RDL Met. Change |
| PI-2 | 5um | 5 um | - |
| UBM | Al(0.4)/NiV(0.3)/Cu(0.8) | Ti(0.2)/Cu(0.4)/Cu(8.6) | Seed Layer Change |
| Bump Composition | 96.8Sn_2.6Ag_0.6Cu | 95.5Sn_4.0Ag_0.5Cu | SAC266 to SAC405 |
| Final Bump Height | 200 um | 200 um | - |
| Backgrind | ASE Kaohsiung (AEG) | Chip Bond KF (CB4) | Site Change |
| Laser Marking | ASE Kaohsiung (AEG) | Chip Bond KF (CB4) | Site Change |

# Qualification Results Summary for Cu RDL Bump WLCSP at Chipbond

| TEST | SPECIFICATION | SAMPLE SIZE | RESULTS |
|---|---|---|---|
| Temperature Cycle (TC) | JEDEC *JESD22-A104* | 3 x 77 | Pass |
| Unbiased HAST (UHAST) | JEDEC *JESD22-A118* | 3 x 77 | Pass |
| High Temperature Storage (HTS) | JEDEC *JESD22-A103* | 3 x 77 | Pass |

# Qualification Results Summary for Direct Bump WLCSP at Chipbond

| TEST | SPECIFICATION | SAMPLE SIZE | RESULTS |
|---|---|---|---|
| Temperature Cycle (TC) | JEDEC *JESD22-A104* | 3 x 77 | Pass |
| Temperature/Humidity/Bias (THB) | JEDEC *JESD22-A101* | 3 x 45 | Pass |
| Unbiased HAST (UHAST) | JEDEC *JESD22-A118* | 3 x 77 | Pass |
| High Temperature Storage (HTS) | JEDEC *JESD22-A103* | 1 x 77 | Pass |