CLAIMS:

1. An interconnect bond test apparatus for testing a bond strength of an electronic device including at least one interconnect bond attached to the electronic device, the interconnect bond test apparatus comprising:

a positioning mechanism;

a test tool assembly mounted onto the positioning mechanism and configured to push a first portion of the interconnect bond and to pull a second portion of the interconnect bond during testing to test the bond strength with at least one sensor operatively connected to the test tool assembly; and

a jig including at least one force sensing element mounted on the jig for conducting a self-monitoring machine force test, the at least one force sensing element being configured to exert a reaction force on the test tool assembly when it is engaged by the test tool assembly during the self-monitoring machine force test,

wherein the positioning mechanism is operative to move such that the test tool assembly is positioned to engage the interconnect bond during testing, and to apply a pushing force on the first portion of the interconnect bond and a pulling force on the second portion of the interconnect bond.

2. The interconnect bond test apparatus of claim 1, wherein the test tool assembly comprises a first test tool configured to apply the pushing force to push the first portion of the interconnect bond and a second test tool configured to apply the pulling force to pull the second portion of the interconnect bond.

3. The interconnect bond test apparatus of claim 1, wherein a direction of the pushing is perpendicular to a direction of the pulling force.

4. The interconnect bond test apparatus of claim 2, further comprising at least one sensor connected to the first and the second test tool, the at least one sensor being operative to determine reaction forces exerted on the first and second test tools when the pushing and pulling forces are applied.

5. The interconnect bond test apparatus of claim 4, wherein the at least one sensor is a first force sensor.

6. The interconnect bond test apparatus of claim 2, wherein the first test tool has a tip at a bottom end distal of the positioning mechanism, the tip being configured to engage the first portion of the interconnect bond when the pushing force is applied.

7. The interconnect bond test apparatus of claim 2, wherein the second test tool has a hook at a distal end of the second test tool remote from the positioning mechanism, the hook being configured to engage the second portion of the interconnect bond when the pulling force is applied.

8. The interconnect bond test apparatus of claim 1, wherein the at least one force sensing element comprises at least one flexure.

9. The interconnect test apparatus of claim 8, wherein the jig further comprises a constant weight mounted to the jig, and the test tool assembly is configured to engage and lift the constant weight.

10. The interconnect bond test apparatus of claim 9, wherein the constant weight is a dead mass.

11. The interconnect bond test apparatus of claim 1, wherein the at least one force sensing element comprises a second force sensor.

12. The interconnect bond test apparatus of claim 11, wherein the second force sensor is a strain gauge.

13. The interconnect bond test apparatus of claim 12, wherein the jig further comprises a lever mass mounted to the jig, and the test tool assembly is configured to engage and lift the lever mass.

14. The interconnect bond test apparatus of claim 11, wherein the second force sensor is a piezoelectric sensor.

15. The interconnect bond test apparatus of claim 11, wherein the second force sensor is a flexural sensor.

16. The interconnect bond test apparatus of claim 1, wherein the positioning mechanism is further configured to move the test tool assembly to engage the at least one force sensing element during the self-monitoring machine force test.

17. A method of testing a bond strength of an electronic device including at least one interconnect bond attached to the electronic device, the method comprising the steps of:

providing a test tool assembly mounted onto a positioning mechanism;

moving the test tool assembly with the positioning mechanism to align the test tool assembly with the interconnect bond;

applying a pushing force on a first portion of the interconnect bond and a pulling force on a second portion of the interconnect bond with the test tool assembly to test the bond strength with at least one sensor operatively connected to the test tool assembly;

engaging, with the test tool assembly, a force sensing element mounted on a jig to conduct a self-monitoring machine force test; and

determining reaction forces exerted on the test tool assembly by the force sensing element.

18. The method of claim 17, wherein the test tool assembly comprises a first test tool configured to apply the pushing force on the first portion of the interconnect bond and a second test tool configured to apply the pulling force on the second portion of the interconnect bond.

19. The method of claim 18, wherein when applying the pushing and pulling forces, further comprising the step of determining reaction forces exerted on the first and second tools with at least one sensor connected to the first and second tools.