CLAIMS

What is claimed is:

1. A test handler system for conducting thermal testing of a device, comprising:

a kit-less device handling system comprising a thermal soak plate configured to receive the device and maintain an accurate position of the device;

a test contactor to electrically contact the device;

a first prime mover for placing the device on the thermal soak plate;

a second prime mover to carry the device to the test contactor, hold the device during thermal testing, and move the device from the test contactor; and

a test site actuator to exert force on the second prime mover during thermal testing.

2. The test handler system of claim 1, wherein the first prime mover comprises a gantry and an XYZ head.

3. The test handler of claim 2, wherein the XYZ head further comprises one or more pick and place heads, wherein each of the pick and place heads comprises a vacuum tip under a constant or intermittent vacuum for picking up the device, and a removing element for separating the vacuum tip from the device.

4. The test handler of claim 3, wherein each of the one or more pick and place heads is connected to a same vacuum source.

5. The test handler of claim 3, wherein each of the one or more pick and place heads is connected to different vacuum sources.

6. The test handler of claim 2, wherein the XYZ head is configured to rotate the device prior to and after testing in a unitary pick and place motion, wherein the XYZ head makes a theta correction to the device both prior to and after testing, and wherein the theta correction occurs during the pick and place movement.

7. The test handler system of claim 2, wherein the gantry and XYZ head are configured to transfer the device between the thermal soak plate and a joint electron device engineering council (JEDEC) tray.

8. The test handler system of claim 7, further comprising a tray frame to hold the JEDEC tray, wherein the tray frame biases the JEDEC tray to an unwarped configuration.

9. The test handler system of claim 1, further comprising a heat transfer system for the thermal soak plate.

10. The test handler system of claim 9, wherein the heat transfer system uses pressurized helium as a heat transfer medium to heat and cool the device.

11. The test handler system of claim 9, wherein the heat transfer system uses pressurized gas or liquid as a heat transfer medium to heat and cool the device.

12. The test handler system of claim 1, wherein the device is an integrated circuit.

13. The test handler system of claim 1, wherein the thermal soak plate comprises a surface for maintaining a position of the device without mechanical structures.

14. The test handler system of claim 1, wherein the thermal soak plate comprises a tacky surface for maintaining a position of the device based on a friction between the device and the thermal soak plate.

15. The test handler system of claim 1, wherein the test handler system is further configured to visually verify the location of the device through the use of a camera prior to the placement of the device onto the soak plate.

16. The test handler system of claim 1, further comprising a plurality of tray separators each associated with a bin, and wherein the test handler system is configured to separate the device into a bin and transport the binned device into a corresponding one of the plurality of tray separators.

17. The test handler system of claim 16, wherein the plurality of tray separators separates a plurality of trays, wherein separating occurs based on whether each tray holds tested devices, untested devices, or no devices.

18. The test handler system of claim 1, wherein the test handler system is configured to conduct thermal testing of a plurality of devices.

19. The test handler system of claim 1, wherein the test handler system is further configured to learn a location of pick and place points in the test handler system based on at least one of: fiducials or image recognition.