APPLICATION NOTE

AE-AN-SK-012- SK SERIES - CONTACT PAPER TESTING

Purpose:
The purpose of this document is to provide instructions for compression testing for troubleshooting prior to returning product for repair to Amphenol Ardent Concepts, using contact paper on the SK series.

The Socket:
Amphenol Ardent Concepts makes customizable sockets that can be adjusted to fit a variety of applications. Our sockets are categorized by three proprietary contact technologies: RC Springprobe™(SP), RC Connect-R™(CR) and Scrub-R™(SC). This contact paper test can be applied to all three contact types.

The Contact Paper:
The contact paper used during the testing process is the Fujifilm Prescale line of pressure film, distributed by Sensor Product Inc. This type of film provides a visual tool to check the distribution of compression between two mating surfaces. Depending on the amount of compression and the pressure range of the film, a distinguishable scale can be seen that will determine the amount of compression seen in an area. The film provides a permanent image that can be used to analyze areas of compression, or lack thereof, and perform analysis on the socket without initiating the Repair Order process. For more information regarding this product, please visit https://www.fujifilm.com/products/prescale/prescalefilm/

Actions:

- **Disassemble the socket –** Depending on the socket, there may be a variety of Hex Drivers (Allen Keys) and screwdrivers that may need to be used to remove the socket from the application.
- **Inspect the contact area –** It is imperative that the surfaces of the socket contacts are clean and free of debris. Clean the area with compressed are and/or isopropyl alcohol, if needed (see AE-AN-SK-006 – SK SERIES – CARE AND MAINTENANCE).
- **Determine the Contact Paper Pressure –** The contact paper comes in many different pressure ranges. To determine the approximate pressure needed, reference the Lid Drawing (LDXXX…) provided during the design phase (See Figure 1). This drawing will provide an output from the lid in lbs. Determine the X and Y dimensions of the socket that being tested and calculate the area. Using the lid output, divided by the area of the socket, that will provide the number, in PSI, to determine the contact paper needed for the application.

ITEM NO.	PART NUMBER	DESCRIPTION	OPEN/QTY.
1	LLD25GA-55	LEVER LID CLAMP ASSEMBLY	1
2	FA40-01	2 WIRE 40mm FAN ASSEMBLY W TE CONNECTOR	1
3	HS45-01	HEAT SINK, 25mm AND BELOW, MODIFIED 4-151511U	1

Figure 1: Example Bill of Materials from an Ardent Concepts Lid Drawing, showing 55lb lid.

For most of the sockets in the Amphenol Ardent Concepts family, there will be a choice between 2 different options.

- **Ultra Low Film Type (LLLW/ UL270) –** The pressure range of this paper is listed as 28- 85 PSI
- **Super Low Film Type (LLW/ SL270) –** The pressure range of this paper is listed as 70- 350 PSI

- **Prepare the Contact Paper –** The contact paper will include 2 different films, a transfer sheet and developer sheet. It is important to cut both sheets simultaneously to ensure similar size. Using the socket, determine the size of contact paper that is within the alignment pins of the socket.
  - Reference the directions of the Fujifilm Prescale to determine the orientation of the paper. Applicable to the 2 Film Types above, the matte sides of the film need to face each other for the film to correctly function. (See Figure 2)

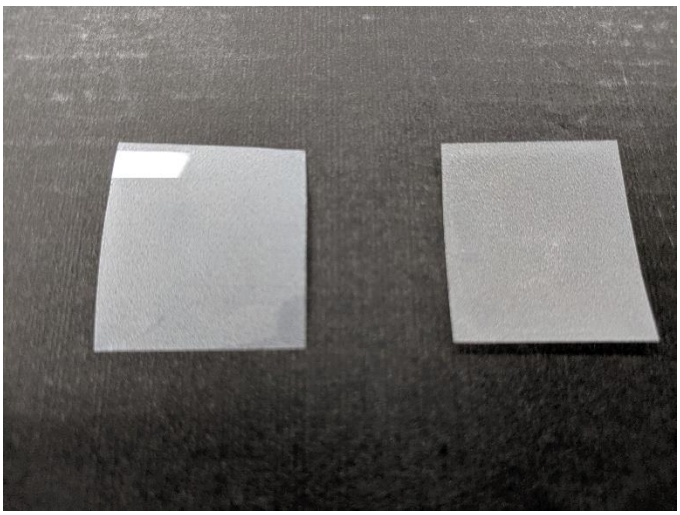


Figure 2: Glossy (Left) and Matte (Right) Sides of the Film

- **Place the Contact Paper Under the Test Area –** The contact paper will be placed between 2 surfaces and compressed. Where this paper is placed will show different patterns of compression. Below are examples of where the compression tests can occur, but the applications of the contact paper are not limited to these examples.
    - **Between the Socket and Board –** This can show the compression pattern being exerted from the lid onto the entire socket system. This can include the stiffener assembly or a flat plate to determine the effect of the stiffener on the system.
    - **Between the Stiffener and Board –** This can show the effect of the stiffener assembly more clearly and how pressure is transferred from the socket through the board.
    - **Between the Device and Lid –** This can show the pattern of compression that the lid is exerting on the device and where pressure is being applied.

- **Reassemble the Socket –** Build the socket as normal with the contact paper in the test area. (See Figure 3)

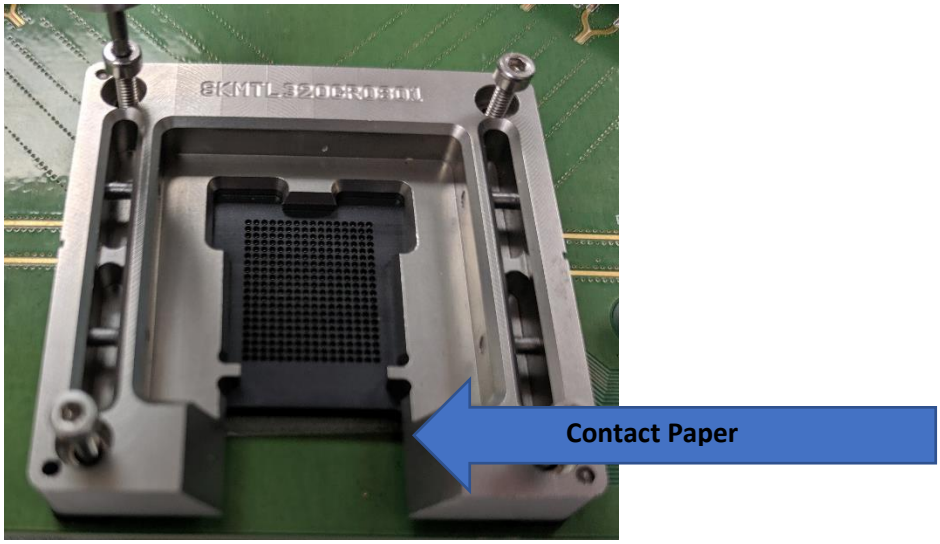


Figure 3: Socket Reassembly with Contact Paper between the Socket and Test Board

- **Place the Device into the Socket and Use the Lid to Test –** Assemble the socket with the device placed into the socket and the lid, as if the socket were being used. Actuate the lid to apply pressure to the device. (See Figures 4 and 5)

Figure 4: Device Placed in Socket

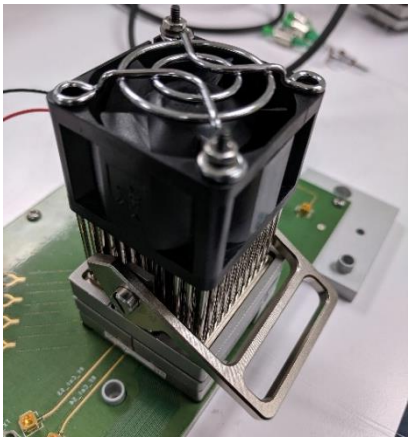


Figure 5: Lid Actuated with Device in Socket

- **Wait 10 Seconds –** The contact paper requires a dwell time of 10 seconds to ensure the compression results are consistent and representative of the pressure seen in the test area.
- **Remove the Lid and Device –** The lid can be removed, and the device removed from the socket. These items can be placed to the side.
- **Disassemble the Socket –** Take the socket apart to access the test area where the contact paper is located. (See Figure 6)

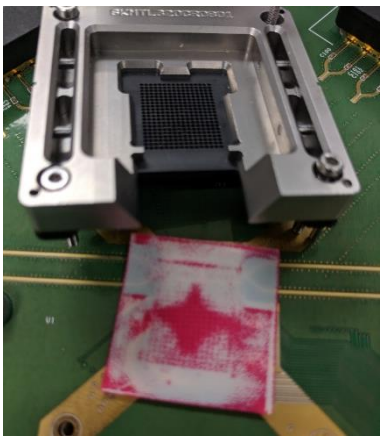
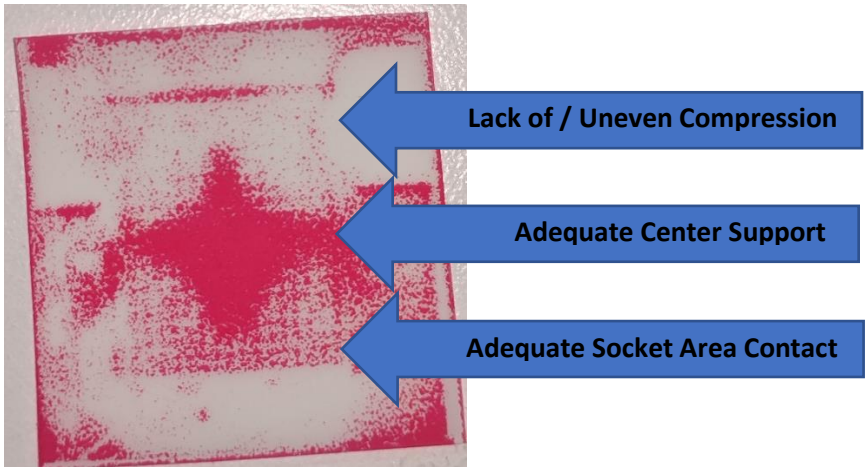


Figure 6: Socket Disassembled with Contact Paper Results

- **Analyze Results –** Once the compression testing is completed, there will be visible results on the contact paper.



  - *Figure 7: Socket Total System Test, Adequate Center Compression, but lack of Compression in Socket Area*

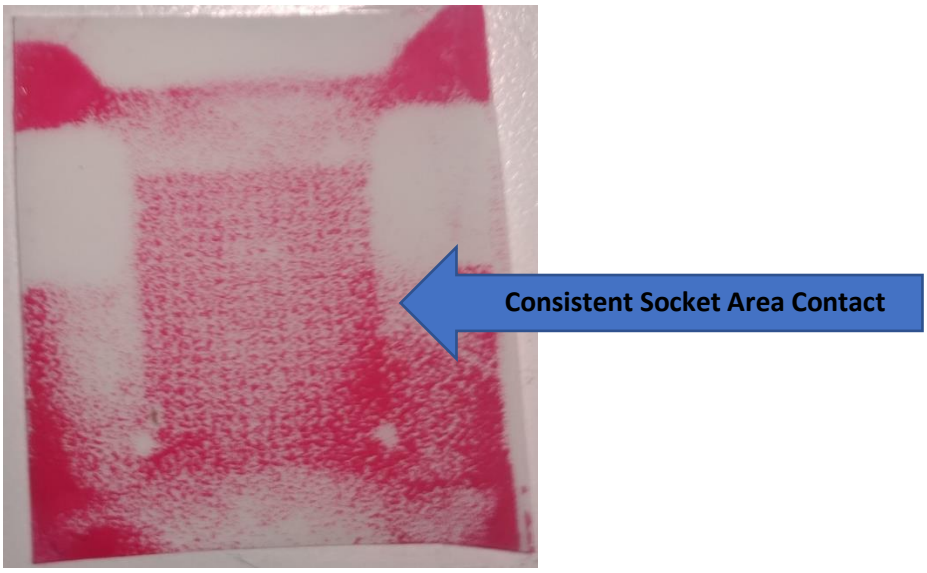


Figure 8: Socket Tested with Flat Stock as Stiffener, Adequate Overall Compression

- **Perform Tests As Needed –** Continue carrying out the testing until the desired results or data is found.

Who is Amphenol Ardent Concepts?

Amphenol Ardent Concepts is a leading designer and manufacturer of high performance multicoax and coaxial assemblies, connectors, and sockets used in the development of next generation semiconductors and electronics systems. Our core technology is the smallest, fastest, most electrically efficient compression mount connector technology worldwide. As data rate requirements increase and devices and systems shrink, Ardent's products deliver superior signal integrity in a dense footprint that can be reusable across programs to maximize cost savings.