

PM Bulletin (Knowledge is Power!)

Subject Policy- TC Dynamic Burn-In (Phoenix Operation) (Ver 5.0) (External Version)
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Category PM Policy & Process



Phoenix Operation

Advantech Adds Phoenix Operation to Dynamic Burn-in Testing Capabilities

For Advantech Customers that need uncompromised assurance that their product can handle certain temperature conditions, Advantech would like to introduce our "Operation Phoenix" option for Dynamic Burn-in testing. Operation Phoenix is Temperature Cycling Dynamic Burn-in testing or "TCDB" for short. That is, the Advantech products that are tested using TCDB are live tested (while running testing software) to a range of temperatures that vary over a period of time. Since active and passive components are affected by temperature changes, which can have an affect on system reliability, testing for reliability under these conditions is critical for many Advantech customers.

TC Dynamic Burn-In. (TC = Temperature Cycle)

News:

For detail of the **Phoenix Operation's** news, please refer to the following link -->
http://www.advantech.com.tw/epc/newsletter/v25-06-01_00/TCDB.htm

Notes:

1. Subject to change with notice. (Please click here for update information -> )
2. The information here is mainly for internal use. Some of the test document were done in Chinese. Please distribute the content with caution.

NEW 3. New phoenix product launch **PCM-9550Z-F0A1** = PCM-9550F-F0A1 + USD\$35 (ready to take order now)

NEW 4. New phoenix product launch **PCM-3350Z-G0A1** = PCM-3350F-G0A1 + USD\$35 (ready to take order now)

The difference between Dynamic Burn-In and TC Dynamic Burn-In

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Here is the difference between [Dynamic Burn-In](#) (The factory) and [TC Dynamic Burn-In](#). **Dynamic Burn-In** is mainly used for our QA/QC System.

TC Dynamic Burn-In is for special program.

	Dynamic Testing Program	Dynamic Temperature	
Dynamic Burn-In	YES	NO	(Fixed at 60 degree C)
TC Dynamic Burn-In	YES	YES	(Dynamically changed, -)

Defining all Dynamic Burn-in Options Available at Advantech

With the Addition of the Phoenix (TCDB) option, Advantech now offers 3 distinct options for Dynamic Burn-in testing. Advantech feels these 3 options effectively cover most of our customers' needs. We want to make sure all our sales people as well as our customers are clear about these testing options. Let us explain further.

Standard Option 1: Burn-in Testing (DB) - Building Quality Into All EPC SBCs

This first choice is what Advantech offers our customers for all Advantech EPC SBCs. This testing procedure is a standard Quality Assurance item that helps prevent nonconforming products from reaching our customers. This is especially critical for SBCs that contain many vendor supplied components, overall system stability and reliability is better checked this way. All Advantech EPC SBCs tested using DB are live tested (running test software that verifies system performance throughout the test period) in a constant temperature environment. **This temperature is fixed at 60° C and applied over a 4 hour testing period.** This testing is performed as part of a production run quality procedure. That is, boards are sample tested from the production run with sample size determined to ensure 99% + conformance. If a nonconforming product is discovered, that particular production run is 100% tested for conformance. This is yet another safeguard to guarantee Advantech customers receive only the highest quality products.



Bar Code Tracking Throughout Burn-in Testing

This temperature is fixed at 60° C and applied over a 4 hour testing period. This testing is performed as part of a production run quality procedure. That is, boards are sample tested from the production run with sample size determined to ensure 99% + conformance. If a nonconforming product is discovered, that particular production run is 100% tested for conformance. This is yet another safeguard to guarantee Advantech customers receive only the highest quality products.

Option 2: Temperature Control Dynamic Burn-in Testing (TCDB Silver Package)



New TCDB Oven Offers State of the Art Process Control

This option is the Phoenix Operation Silver Package. It applies to all Advantech EPC products and is an even more rigorous testing procedure than the DB of option 1 mentioned above. Some of the differences between DB and Silver TCDB are as follows. The first is that products tested in the Silver Package TCDB are 100% tested for conformance. Every board is live tested, once again, running test software during the entire procedure. Second, these products are tested over a longer

period of time (12 Hours) with varying temperatures. This temperature ranges between -10°C ~ 60°C , with defined times at certain key temperatures. Changing temperature conditions affect individual component characteristics as well as overall system performance. This test confirms normal board operation under these grueling conditions, minimizing the chances of an underperforming board reaching our customers.

Option 3: Temperature Control Dynamic Burn-in Testing (TCDB Gold Package)

The TCDB Gold option expands the ranges of option 2 (Silver package) above by increasing the temperature testing range from -20°C ~ 80°C . This option is currently available for certain Advantech products, the PCA-6751, PCM-3345 and the PCM-3346. Like the Silver package, these products are 100% tested. Every board is live tested (running test software) with temperature varied continually throughout the testing period. Boards that pass this test are given a special "Gold Label" that helps identify and ensure the product has passed this stringent testing procedure.



TCDB Rack Ready For Testing

The Objective and Motivation of Phoenix Operation

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As we know the Operation Phoenix ("火鳳凰行動" in Chinese) - EPC Product Extend Temperature Test Model is a MUST operation.

Objective: To have the Filtering / Screening standard of picking up the product which can pass the extend temperature requirement.

Motivation: All the component we used, is base on commercial term, not military standard. I agree a serious design philosophy will increase the reliability of the product. I agree that if one product pass -70, it should pass -40 as well. But, I doubt you can use the design verification in RD stage to replace mass production quality assurance. In PC business, component version change and foundry change is routine. It is OK for office use. Is it OK for critical user environment ? No one can answer.

So, what should we do ?

We commit to carry out temperature cycling in our production line to screen out those unstable units, if customer want to pay for it. So far, very few % fail in the testing. Just the cost of extra working hour and facility. But, that kind of cycling may shorten the life cycle of the product, or component on board, as well. That is what we cannot promise. Also, if any customer challenge you that you are over spec usage of the components, you don't have any theory to back up.

(Jeff Chen, "Extended temperature on SBC", 4/21, 2000)

Here is the documentation of Advantech Temperature Cycle Test Specification (-10 to 60 Degree C)

Advantech TC Dynamic Burn-In -10~60 SPEC (1/26, 2000)

Based on this spec we will develop a test pattern for a new range of -20 to +80 Degrees C for Operation Phoenix.

Another purpose of this operation is to exam the any potential damage of the component if the test range is around such SPEC.

TC Dynamic Burn-In Order Information

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There are 2 kind of Dynamic Burn-In services available from Advantech EPC Division.

I. TC Dynamic Burn-In Order Information (Silver Package)

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Temperature Cover Range?	-10 ~60 Degree C
What models?	All EPC Products
What qty'?	Min qty = 50
What extra cost?	USD\$25 per pcs
How to apply?	OEM Flow
What lead-time?	PMC control
Effective date?	Effective now.
How to distinguish?	All the Silver Package will come with a special sticker which identify it is a -10~60 test approved item.



Here is the Example ~

Warranty? **2 Years (Term & Condition Apply)**

Label? Please click  for label approval sheet (P/N: 2096000290)

II. Dynamic Burn-In Order Information (Gold Package)

II. Dynamic Burn-In Order Information (Gold Package)

Temperature Cover Range?	-20 ~80 Degree C
What models?	PCA-6751, PCM-3345, PCM-3346, NEW PCM-9550, NEW PCM-3350
What qty'?	No min qty
What extra cost?	USD \$35 per pcs
How to apply?	Order Information PCA-6751Z-F1B1 = PCA-6751-F1B1 + USD\$35 PCM-3345Z-00A2 = PCM-3345-00A2 + USD\$35 PCM-3346Z-00A1 = PCM-3346F-00A1 + USD\$35 PCM-9550Z-F0A1 = PCM-9550F-F0A1 + USD\$35 PCM-3350Z-G0A1 = PCM-3350F-G0A1 + USD\$35
What lead-time?	PMC control
Effective date?	Effective now.
How to distinguish?	All the Gold Package will come with a special sticker which identify it is a -20~80 test approved item.



Here is the Example ~

Warranty?	2 Years (Term & Condition Apply)
Label?	Please click  for label approval sheet (P/N: 2096000300)

Term & Condition

Terms & Conditions

TERM (Lifetime Factors)

Higher temperatures cause faster chemical and physical reactions at approximately a factor of two for every ten degrees centigrade. These faster reactions can quickly decrease a module's operating lifetime. Extreme temperatures also cause mechanical fatigue.

CONDITION (Warranty Policy)

1. Advantech's **General Limited Warranty** applies to the products this service covers.
2. Advantech has performed "**standard temperature testing**" on all products.
3. Advantech's warranty is strictly based on the technical specifications provided by individual component manufacturers. Advantech is not responsible for failure caused by "**individual components not meeting their stated specifications**" or other component related unforeseeable issues in how it applies to the board itself, the design of the board or the software being used.
4. **Limits and Exclusions to Warranty**
 - i) Advantech defines **0 to 60 degree C** as the limits for "**standard**" surface temperature testing, however **+10 degree C** is always added for overheating of components.

ii) Some EPC products have an "extra" guarantee for reliable function from **0 to 70 degree C** surface temperature. (Please see Advantech product specifications for details on which products have this extended guarantee)

iii) Extreme Temperature Testing: Advantech has the capability and process in place to test products for temperature extremes beyond the standard ranges. Advantech can provide documented evidence the products have passed the requirements for the stated limits. However, at this time, Advantech can still only guarantee these products **from -10 to 70 degree C** operating range.

iv) Using products outside their specified temperature limits, invalidates the warranty.

v) This warranty does not apply to boards damaged by improper application use or boards damaged from improper handling, storage or other improper physical abuse.

Please click  for more internal reference on Phoenix Operation via Notes System (Internal Use Only).



Click  for more detail of PM Bulletin