Agilent Technologies

PCN: A04-065-48475418-0A

Product Change Notice

Issue Date: 24th August 2004

Type of Change(s):

Please be advised that Agilent Technologies is making the following product change on the effective date noted for the products listed below:

A) Introduction of Lead Free (Pb-Free) products.
B) Pb-Free product identification.

Parts Affected:

All Seven Segment Display, Annunciator and Cluster part numbers as listed below.

Seven Segment Display	Annunciator	Clusters
5082-76xx	HLCP-A/B/C/D/E/F/G/H/J100	HDSM-4xxx
HDSP-3xxx	HDSP-48xx	HDSM-5xxx
HDSP-4xxx	HLMP-2xxx	HDSP-56xC
HDSP-5xxx	QDSP-4985	HDSP-A22x
HDSP-7xxx	QLCP-A/B/Cxxx	HDSP-A23D
HDSP-8xxx	QLCP-M0xx	HDSP-A4xC
HDSP-Axxx	QLMP-2xxx	QDSM-5xxx
HDSP-Bxxx		QDSP-399G
HDSP-Exxx		QDSP-497G
HDSP-Fxxx		QDSP-498G
HDSP-Gxxx		QDSP-499G
HDSP-Hxxx		HDSP-43xG
HDSP-Kxxx		HDSP-BxxG
HDSP-Mxxx		HDSP-B0xE
HDSP-Nxxx		
HDSP-Rxxx		
HDSP-Sxxx		
HDSP-Uxxx		
QDSC-A000		
QDSP-302G		
QDSP-525G		
QDSP-7xxx		
QDSP-A586		
QDSP-Fxxx		
QDSP-G545		
QDSP-H225		
QDSP-K580		
QDSP-Sxxx		
QDSP-U239		

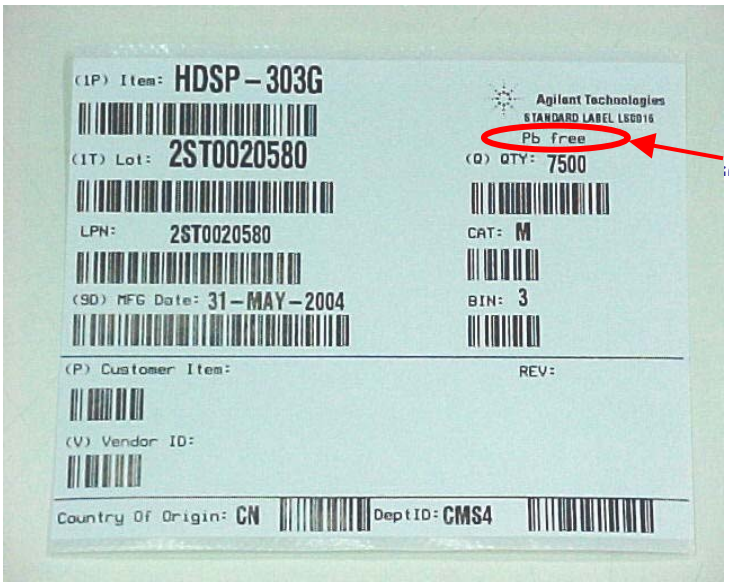
Description and Extent of Changes:

A) Introduction of Lead-Free (Pb-Free) products

The extent of change will cover the change of product content and terminal finishing, that will be manufactured using lead-free solder material and system. The Pb free products are compatible to Agilent recommended soldering system below and the existing profile as published in Agilent application note AN1027 that is illustrated in the following page.

B) Pb-free Product Identification

"Pb free" text will be added onto the mother label to indicate Pb-free products. A sample label is shown below.



"Pb free" text

Reasons for Change:

Pb-free products are introduced in anticipation to the EU Directive on the Restriction on the use of certain Hazardous Substances in Electrical & Electronic Equipment (RoHS).

Effect of Change on Fit, Form, Function, Quality, or Reliability:

This change affects Fit, Form and Function of the product in the following manner:

1) Soldering system and profile

Pb-free products are compatible with the following systems and conditions:

Product Family	Product Terminal Finish	Compatible Soldering system
Seven Segment Displays	96.5%Sn-3.0%Ag-0.5%Cu	63%Sn-37%Pb, 96.5%Sn-3.5%Ag
Annunciators	96.5%Sn-3.0%Ag-0.5%Cu	63%Sn-37%Pb, 96.5%Sn-3.5%Ag
Clusters	Pure Sn	63%Sn-37%Pb, 96.5%Sn-3.5%Ag

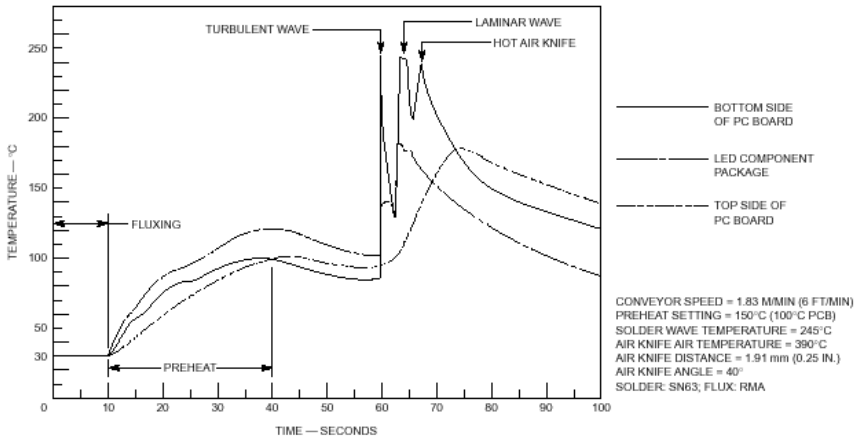


Figure 16. Sample Temperature Profile of a Wave Solder Process

Wave Soldering Profile for Seven Segment Displays, Annunciators and Clusters (applicable to both SnPb and SnAg Agilent recommended soldering system)

2) Quality & Reliability Performance

Qualification has been completed for the affected parts listed above. The quality and reliability results are as tabulated below.

Seven Segment Displays

Test Type	Sample Size	Test Condition	Test Results
Wet Hot Temperature Storage Life	30	85°C/85%RH	Passed up to 1000hrs
Steam Aging	30	Steam aging at 100'C, 100%RH, followed by visual inspection	Passed up to 36hrs
Temperature Cycling	400	-55°C to 100°C, 15min dwell, 5min transfer	Passed up to 100x
Solderability	30	Steam aging 12hrs @ 100'C, 100%RH, followed by 1x solder dipping	No failure at 1x dipping; solder coverage >95%

Annunciators

Test Type	Sample Size	Test Condition	Test Results
Wet Hot Temperature Storage Life	10	85°C/85%RH	Passed up to 1000hrs
Steam Aging	10	Steam aging at 100'C, 100%RH, followed by visual inspection	Passed up to 36hrs
Temperature Cycling	200	-55°C to 100°C, 15min dwell, 5min transfer	Passed up to 100x
Solderability	10	Steam aging 12hrs @ 100'C, 100%RH, followed by 1x solder dipping	No failure at 1x dipping; solder coverage >95%

Clusters

Test Type	Sample Size	Test Condition	Test Results
Wet Hot Temperature Storage Life	60	85°C/85%RH	Passed up to 1000hrs
Steam Aging	30	Steam aging at 100'C, 100%RH, followed by visual inspection	Passed up to 36hrs
Temperature Cycling	600	-40°C to 85°C, 15min dwell, 5min transfer	Passed up to 100x
Solderability	20	Steam aging 12hrs @ 100'C, 100%RH, followed by 1x solder dipping	No failure at 1x dipping; solder coverage >95%
Solder Joint Reliability	20	16hrs steam aging, followed by 100x TMCL	Passed with no visual reject at solder joint

Effective Date of Change:

1) 24th Nov 2004 :
   - Agilent will start the manufacturing conversion to Pb-free products.
   - Shipment to Distributors and Direct Customers may contain mixture of both leaded and lead-free versions with proper labels.
   - However, within a shipping box there will not be a mixture of both leaded and lead-free versions.

2) Transition period (24th Nov 2004 – 24th May 2005)

   - All 100% Pb-free products will be identified with a "Pb-free" text/marking , which will be indicated on the mother label. (See page-2[B]).

   - Agilent shipment to Distributors and Direct Customers will be fully leadfree after 24th May 2005.

   - Shipment from Agilent Distributors may still contain mixture of leaded and lead-free parts until all the leaded inventories are fully depleted.

Qualification Data:

Qualification data has been generated and approved (See page-3&4: Quality & Reliability Performance).