ATTACHMENT 1

AEC - Q102-001

DEW TEST (DEW)
NOTICE

AEC documents contain material that has been prepared, reviewed, and approved through the AEC Technical Committee.

AEC documents are designed to serve the automotive electronics industry through eliminating misunderstandings between manufacturers and purchasers, facilitating interchangeability and improvement of products, and assisting the purchaser in selecting and obtaining with minimum delay the proper product for use by those other than AEC members, whether the standard is to be used either domestically or internationally.

AEC documents are adopted without regard to whether or not their adoption may involve patents or articles, materials, or processes. By such action AEC does not assume any liability to any patent owner, nor does it assume any obligation whatever to parties adopting the AEC documents. The information included in AEC documents represents a sound approach to product specification and application, principally from the automotive electronics system manufacturer viewpoint. No claims to be in conformance with this document shall be made unless all requirements stated in the document are met.

Inquiries, comments, and suggestions relative to the content of this AEC document should be addressed to the AEC Technical Committee on the link http://www.aecouncil.com.

Published by the Automotive Electronics Council.

This document may be downloaded free of charge, however AEC retains the copyright on this material. By downloading this file, the individual agrees not to charge for or resell the resulting material.

Printed in the U.S.A.
All rights reserved

Copyright © 2020 by the Automotive Electronics Council. This document may be freely reprinted with this copyright notice. This document cannot be changed without approval from the AEC Technical Committee.
METHOD – 001

OPTOELECTRONIC COMPONENT
DEW TEST (DEW)

1. SCOPE

1.1 Description:
The test evaluates the robustness of optoelectronic components regarding condensation in an automotive application.

1.2 Terms and Definitions:
The terms used in this specification are defined as follows.

1.2.1 Device Under Test (DUT):
An optoelectronic component being evaluated for its sensitivity to dew.

2. EQUIPMENT:

2.1 Test Apparatus:
The DUT shall be placed on a grille. Optionally, the DUT can be covered by a plastic hood, aligned to the chamber door, in order to eliminate effects caused by the circulation of air and water dropping on the DUT directly.

3. TEST PROCEDURE:

3.1 Sample Size:
Specified in AEC-Q102 Table 2.

3.2 Duration:
Duration is 10 cycles. One cycle takes 6.5 hours.

3.3 Detailed Procedure:
Each test cycle shall be done as shown in Table 1 and Figure 1.

During the condensation phase (phase 2), the climate control (temperature by chamber air condition) is switched off. During this phase, the chamber temperature is controlled by the water bath temperature only.

The DUT shall be turned off all time except in phase 3.
### Table 1: Dew Test Requirements

<table>
<thead>
<tr>
<th>Phase</th>
<th>Temperature</th>
<th>Relative Humidity</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Drop from 20°C to 10°C within 15 min.</td>
<td>Raise from 50% to between 50%-100%</td>
<td>Use climate control.</td>
</tr>
</tbody>
</table>
| 2     | Hold 60 min. at 10°C | First 30 min.: raise to between 90%-100%  
Second 30 min.: raise to between 95%-100% | Ensure DUT to reach starting temperature.  
Switch off climate control (temperature by chamber air condition) at the end of phase 2. |
| 3     | Raise from 10°C to 70°C within 3 hours by a heating rate of 20°C/hour | Held between 95%-100% | Condensation phase  
Turn on DUT for 2 min. each 30 min. only. The driving current shall be chosen not to exceed a rise of 3 K for T_{junction}. |
| 4     | Raise to 80°C within 30 min. | Held between 95%-100% | Condensation phase |
| 5     | Decrease to 75°C and held for 30 min. | Undefined and uncontrolled | Switch on climate control (temperature by chamber air condition) at the beginning of phase 5. |
| 6     | Decrease from 75°C to 20°C within 75° min. | Undefined and uncontrolled | Drying phase. DUT shall be dry after phase 6. |

![Figure 1: Dew Test Profile](image)

4. **FAILURE CRITERIA:**

   Specified in AEC-Q102 Appendix 5.
## Revision History

<table>
<thead>
<tr>
<th>Rev #</th>
<th>Date of change</th>
<th>Brief summary listing affected sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>Apr. 6, 2020</td>
<td>Initial Release.</td>
</tr>
</tbody>
</table>