ELECTRICAL WIRING COMPONENT APPLICATION PARTNERSHIP

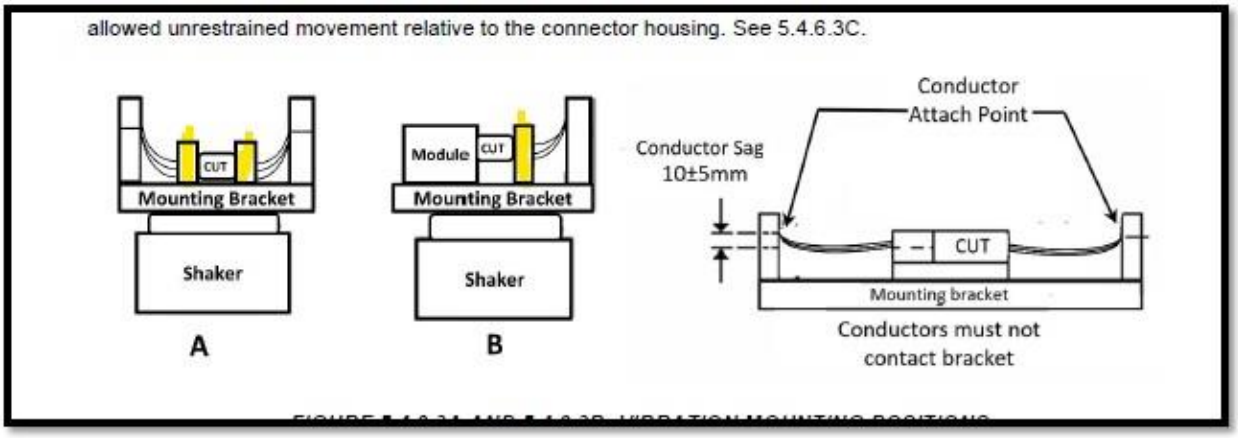
03/13/2024

Subject: Change to SAE/USCAR-2, Revision 8, (Letter #12)

Changes have been made to the USCAR-2 specification. Comments and questions can be sent to EWCAP@uscar.org.

Situation:

1) Figures for vibration set up (figures 5.4.6.3A and 5.4.6.3B) do not represent all cable types tested using USCAR-2 which, leads to confusion. Specifically, coaxial cables with foam dielectric do not "sag" the way low voltage wires do and cannot meet the 5mm sag requirement in the set-up. To be generic, figures 5.4.6.3A/B (on the far right) that shows a mandatory sag needs to be eliminated (the 5mm sag can to be added to 5.4.6.3C as "reference only").
2) Figures 5.4.6.3A and 5.4.6.3B have boxes (highlighted below) to suggest extra hardware such as back caps, but they are not identified which led to confusion. The boxes provide no information and need to be removed.
3) In 5.4.6.3, there is conflicting information on whether it's okay to use a production retainer clip for mounting to the vibration fixture/base or not. Figure 5.4.6.3C clearly shows clips being used. This needs to be resolved… showing clips to be allowed.
4) Several steps of 5.4.6.3 has information that is not needed to perform the test. It was meant to be helpful, but just leads to confusion. These need to be eliminated.



Resolution:

USCAR-2 has changed 5.4.6.3 to address the above topics. The actual test method is unchanged and this change is considered to be editorial only. Changes are highlighted below.

5.4.6.3 Procedure

1. CUT must include all applicable wedges (TPAs, PLRs, etc.), seals, etc. Number each mated connector pair. Prepare each sample by assembling all applicable parts and bundling (with tape,

convolute, scroll, etc.) the conductors. Consult the Authorized Person for details on intended bundling. ~~See Figure 5.4.6.3 for examples of test mounting arrangements. Mounting position A is for in-line type connectors. Position B is for connectors that will mate to an electrical device.~~

2. Construct a suitable mounting apparatus using the following design criteria:

    a. The mounting apparatus must be constructed and secured to minimize added effects (harmonics, dampening, resonance, etc.).

    b. For In-Line Connectors, mount the mated connector pair directly to the mounting bracket using the connector feature provided for mounting. See Figure 5.4.6.3A. ~~Do not use a "Fir Tree" or any other type of mounting device. Instead, the mounting bracket itself must be constructed so as to include a direct mounting feature to mate with the mounting feature (dovetail) on the mated connector pair.~~

    c. For Device Connectors, mount the device directly to the mounting bracket. See Figure 5.4.6.3B. Use the normal device mounting feature(s) used to secure the device in its intended vehicle location. ~~Do not use any intervening bracket or mounting device. Instead, the mounting bracket must be fabricated to include any cooperating features necessary to mount the device directly to it.~~

    d. The conductor attachment must be 100 mm ± 10 mm from the rear of the connector body per Figure 5.4.6.3C.

3. Should an application arise that does not lend itself to either situation described above, consult the Authorized Person. It is his or her responsibility to devise a suitable method for attaching the CUT as directly and firmly as possible to the mounting bracket consistent with the intended vehicle mounting.

4. Securely attach the conductor bundle ends to the mounting fixture such that there is no stress on the cable. (For low voltage wire, a 10 mm ± 5 mm sag relative to the ~~bisecting plane of the~~ attachment points is typical). See Figure 5.4.6.3C. ~~NOTE: It is vital to secure the conductors to their respective connector housings. Terminals "float" in their cavities and will wear rapidly if the associated conductors are allowed unrestrained movement relative to the connector housing. See 5.4.6.3C.~~

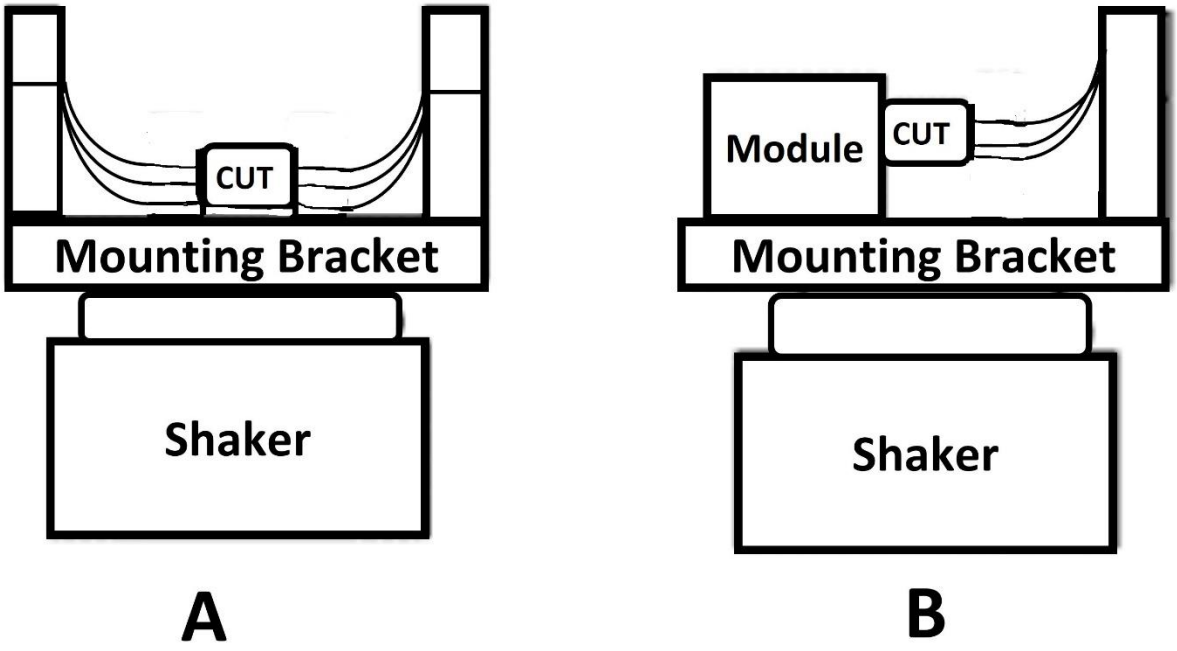


FIGURE 5.4.6.3A AND 5.4.6.3B: VIBRATION MOUNTING POSITIONS

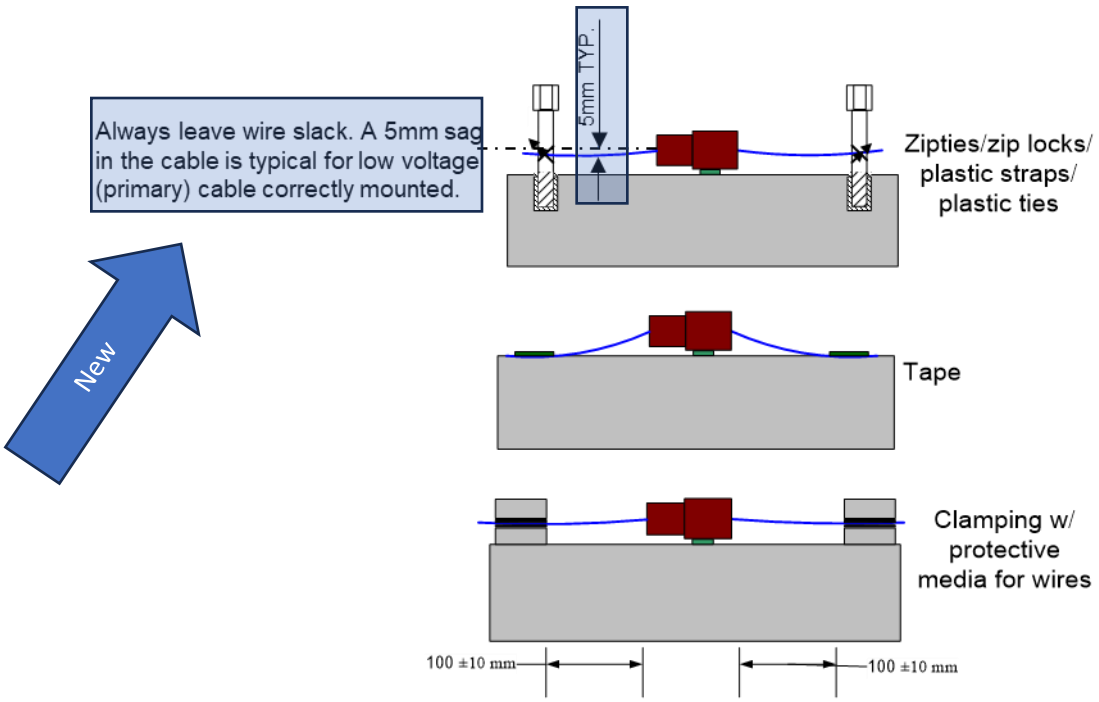


FIGURE 5.4.6.3C: TYPICAL WIRE ATTACHMENT TEST SET-UP FOR VIBRATION

5. Subject the CUT to mechanical shock per Table 5.4.6.3A in each of the three mutually perpendicular axes. Mechanical shock and vibration testing may be completed in sequence for each axis before proceeding to the next axis.

6. Subject the CUT to the appropriate vibration class schedule per Table 5.4.6.3B in each of the three mutually perpendicular axes. When identified in Table 5.4.6.3B, thermal cycling shall be performed during the entire vibration cycle. Related to the temperature/vibration profile that the temperature profile in ISO 16750-3 Section 4.1.1 is an acceptable alternate to the temperature cycle shown in Table 5.4.6.3B. Sine and random profiles shall be run separately (not concurrently as sine + random profile). Sine Frequency sweep is 1 octave/minute for all sine profiles.

7. Repeat the schedule for vibration duration (Table 5.4.6.3B) until the test is complete.

8. Age the samples for 48 hours at ambient conditions.

9. At the conclusion of the test, measure the CUT/TUT as required per appropriate test sequencing table