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Engineers***

**ENGINEERING COMMITTEE
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**Torque Requirements for Bond Wire
Penetration of Bonding Set Screw**

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1.0 SCOPE

This test procedure is to determine the mechanical force needed to penetrate bonding wire to the appropriate depth. Bonding wire penetration should be 25 +/-1% of wire O.D.

2.0 TEST EQUIPMENT

- 2.1 Wright Tools Torque Wrench model 2471 or equivalent
- 2.2 Square drive socket to fit bonding screw heads

3.0 TEST SAMPLES

- 3.1 6 ea. drop bonding blocks (3 different manufacturers)
- 3.2 6 ea. subscriber splitters (3 different manufacturers)
- 3.3 Bonding wire: 12 each 4 inch long pieces of #6, # 10, #12 and #14 bare copper

4.0 TEST METHOD

- 4.1 Mount unit under test in a vice or attach unit to a stationary object using screws and holes built into product for said purpose.
- 4.2 Using torque wrench and an appropriately sized socket, slowly tighten screw onto bonding wire, contacting firmly but not penetrating the wire.
- 4.3 Tighten screw, depending on wire diameter and screw thread, by the rotation angle noted below. This rotation corresponds to 25 +/-1% wire penetration.

For 32 threads per inch or 0.8mm pitch bonding screws:

#6 wire: 470°, #10 wire: 300°, #12 wire: 230°, #14 wire: 180°

For 24 threads per inch or 1.0mm pitch bonding screws:

#6 wire: 360°, #10 wire: 230°, #12 wire: 180°, #14 wire: 140°

Note the torque just as the rotation limit is reached, and record. Repeat for all samples.

5.0 MEASUREMENTS AND CALCULATIONS

5.1 Bond wire typical diameters:

<u>Type</u>		<u>O.D. (TYPICAL)</u>
# 6	=	.1610"
TW10	=	.1050"
TW12	=	.0800"
TW14	=	.0635"

5.2 Penetration of 25 +/-1%

<u>Wire Size</u>	<u>O.D.</u>	<u>25% Penetration</u>	<u>24% to 26% penetration</u>
# 6	.1610"	.040"	.038 to .041"
TW10	.1050"	.026"	.025 to .027"
TW12	.0800"	.020"	.019 to .021"
TW14	.0635"	.0158"	.015 to .0165"

6.0 TEST RESULTS

<u>Sample #</u>	<u>Torque at end of rotation</u>
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