Isolation Issues

Scott Burton

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Floating Equipment

14.7.2.2 It is assumed that the equipment ... is properly earthed... . The use of floating or insulated equipment ... are beyond the scope of this standard.

27.5.2.2 It is assumed that the equipment to which the repeater is attached is properly grounded ... . The use of floating or insulated equipment ... are beyond the scope of this standard.

10BASE-T DTE Isolation

14.3.1.1 The MAU shall provide [1500Vrms or 2250VDC] isolation between the DTE physical layer circuits including frame ground and all MDI leads including those not used . . .

- This seems to indicate that an ungrounded DTE may not require any isolation from the MDI leads.

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100BASE-T4 Isolation

23.5.1.1 The PHY shall provide [1500VAC or 2250VDC] electrical isolation between the DTE, or repeater circuits including frame ground, and all MDI leads.

- This, however, seems to suggest that isolation between the DTE and all MDI leads is required regardless of whether the DTE is grounded.

100BASE-X - ANSI Isolation

ANSI X3.263, 8.4.1 The UTP-PMD shall provide [1500Vrms or 2250VDC] isolation between frame ground and all leads of the UTP-MIC, including those not used ...

- This further supports the requirement for isolation from frame ground.

Repeater - Port-Port Isolation

27.4.1 Network segments that have different isolation and grounding requirements shall have those requirements provided by the port-to-port isolation of the repeater set.

27.5.3.2 The attachment of network segments, which cross Environment B boundaries, requires ... isolation of 1500Vrms ... between each segment and all other attached segments and also the protective ground of the repeater unit.

- These clauses would appear to preclude the use of a common DC power source for all ports.

Repeater - Ground Isolation

27.5.3.1 Attachment of network segments ... requires ... isolation of 500Vrms ... between the segment and the protective ground of the repeater unit. [Environment A]

- The intra-building ground isolation requirement is less stringent than that imposed between buildings.

SELV

CSA C22.2 No. 950/UL1950

1.2.8.5 Safety Extra-Low Voltage (SELV) Circuit: A secondary circuit which is so designed and protected that under normal and single-fault conditions, the voltage between any two parts of the SELV circuit ... and for Class I equipment, between any one such part and the equipment protective earthing terminal does not exceed a safe value. [Under normal conditions the limit is either 42.4V peak, or 60VDC.]

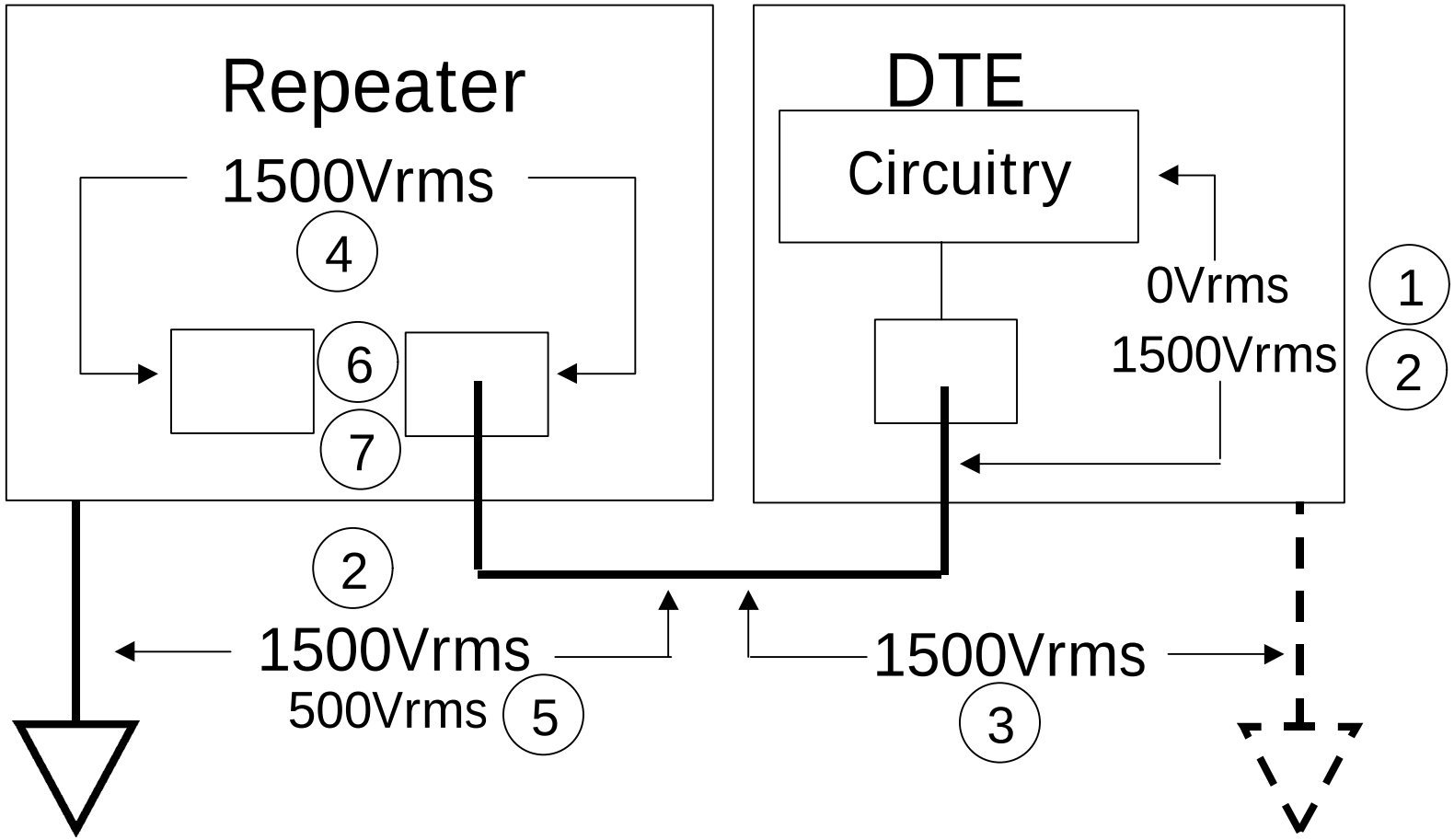
Energy Hazard

CSA C22.2 No. 950/UL1950

2.1.5 There shall be no energy hazard in operator access areas. [Compliance verified with test finger.]

1.2.8.7 Hazardous Energy Level: A stored energy level of 20J or more, or an available continuous power level of 240VA or more, at a potential of 2V or more.

Summary


Repeater
1500Vrms
4
6
7
DTE
Circuitry
0Vrms
1500Vrms
1
2
2
1500Vrms
500Vrms
5
1500Vrms
3