CTL DECISION SHEET

Standard(s) (incl. year)	Subclause(s)	No.	Year
IEC 60335-1(2010) + am1 (2013)	8.1.4	2013	2021
Category			
HOUS			

Subject	Keywords	Developed by	To be approved
PTC Enclosure heater in Class II construction	- Insulation coordination - Reinforced insulation, - Protective impedance	ETF 1	2022 CTL Plenary Meeting

Question

A PTC enclosure heater is protected against electrical shock by class II construction. The heating element is insulated by three layers of Kapton foil from the heat sink in compliance with sub clause 29.3.2.
The relevant tests of sub clauses 8, 13, 16 and 29 were passed with positive results.

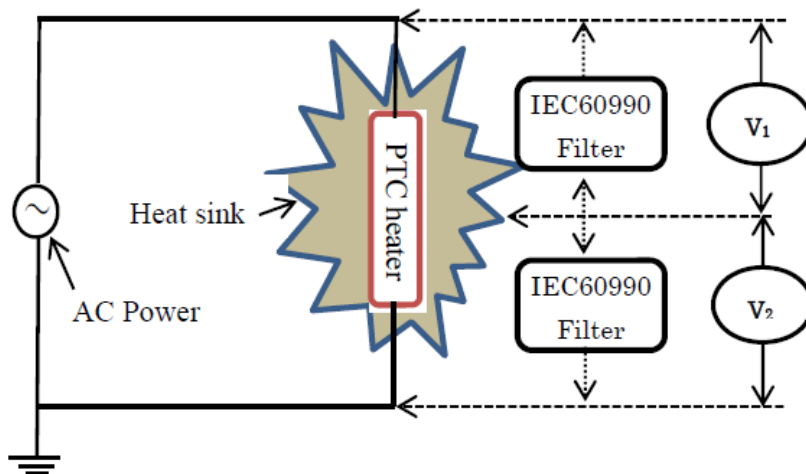Are the requirements of subclause 8.1.4 for protective impedance applicable for this design?

Figure 1: Block diagram of measuring circuitry

Decision

The requirements of subclause 8.1.4 for protective impedance are not applicable because there are no components (protective impedance specified in 3.3.6) connected between live parts and the heat sink.

Explanatory notes

The standard can be interpreted in a way that the part of the heat sink shall comply with the requirement of protective impedance specified in subclause 8.1.4 if the voltage of the heat sink is greater than 42.4 V, which is measured without the filters specified in IEC 60990 as shown in the following table.

Instruments used	V_1 (V)		V_2 (V)	
	Filter disconnected	Filter connected	Filter disconnected	Filter connected
Digital multimeter A	82.03	0.0346	91.72	0.0344
Digital multimeter B	18.73	0.0392	20.56	0.0383

The requirement of the protective impedance shall not apply due to the following reasons:
1. There is no protective impedance used in the part in question but a floating capacitance therefore

the data measured without filter will vary depend of the impedance of measuring instruments.
2. Compliance with the first dashed item (42.4 V) of 8.1.4 is achieved with the filter specified in IEC 60990 referred in NOTE 1 of 8.1.4.