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TELECOMMUNICATION STANDARDIZATION SECTOR

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STUDY GROUP 5

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Title: LS/r Part 2 on IEEE 802.3 Ethernet Working Group (reply to IEEE 802.3WorkingGroup-LS110)

LIAISON STATEMENT

For action to: -

For information to: IEEE 802.3 Working Group

Approval: ITU-T Study Group 5 meeting, (Geneva, 1 July 2022)

Deadline: N/A

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Abstract: Part 2 contains responses to the IEEE 802.3 Working Group cover sheet.

This LS is a reply to IEEE 802.3WorkingGroup-LS110.

ITU-T Study Group 5 would like to thank the IEEE 802.3 Ethernet Working Group for its comments on Recommendation ITU-T K.147 "Protection of networked information technology equipment".

IEEE 802.3WorkingGroup-LS110 consists of a cover sheet and two attachments. This reply has ordered responses to the cover sheet list.

Response to item 2

The ITU-T SG5 remark was based on the previous IEEE 802.3 electrical isolation clauses, which delegated to the IEC 60950: 1991. People looking at later versions of IEC 60950 found that the referenced 5.3.2 clause was concerned with motors. This is now all in the past, given that the latest 802.3 Annex J.1 has been made independent of IEC 60950-1. Nevertheless, it retains some inherent design and test restrictions for wired ports as it does not comprehend the use of internal voltage limiters to protect the port insulation or the termination conditions of adjacent Ethernet ports.

Response to item 3

"Since ITU-T K.147 is a document that is supposed to align to characteristics of Ethernet, ITU-T K.147 should align with the IEEE 802.3 definitions."

This is no longer the case. The AAP comments on ITU-T K.147 from IEEE 802.3 (LC C 01: Cisco Systems, Inc.) and their AAP review (LC Comment Resolution Log) resulted in ITU-T K.147 becoming a generic networking equipment environment document rather than Ethernet specific.

Response to item 6:

"Vpse 42-57V, see IEEE Std 802.3 Clause 33, Table 33-5 and Clause 145, Table 145-16."

This contains too much data; protection designers are *only* interested in the maximum steady state system operating voltage to set the protector voltage limiting threshold. Extra considerations apply, like the voltage increase as a result of a fault condition or standards compliance (one IEC standard was found where NPD testing was at 70 V).

Review of the latest version of ITU-T K.147

Scope

"The IEEE 802.3 reviewed the scope of the five documents, noting that the first four are about telecommunications ports. The last one (ITU-T K.117) is about Ethernet ports and predates any of the Single Pair Ethernet (SPE) specifications. As such, there should be no mention of SPE in this document – it is out of scope."

IEEE 802.3 encouraged to consult the ITU Terms and Definitions: https://www.itu.int/br_tsb_terms/#/ to understand the ITU term meanings. Different standards organisations assign their own definitions to terms. Telecommunications used to be summarised as "communication at a distance". In the ITU Terms and Definitions it appears as "Any transmission, emission or reception of signs, signals, writing, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems". This means subsets such as ICT networking are covered.

ITU-T K.117 is not Ethernet ports but a device, specifically a surge protective device (SPD). This is sometimes referred to as a primary protector, usually connected in the link wiring. The ITU-T K.117 title emphasises this "Primary protector parameters for the surge protection of equipment Ethernet ports". The SPD can have a single parallel connection to the link or two ports in the link (unprotected port and protected port connected to the telecommunications equipment).

The author appears to have confused single pair differential testing of a multi-pair link to Single Pair Ethernet (SPE) testing. The document does not have dedicated SPE testing by reference in the scope, definitions, acronyms or body text. As SPE is not in the document scope, there is nothing to remove. Future revisions of ITU-T K.117 will incorporate SPE and SPoE SPD testing.

The main differences between the established plain, old telephone system (POTS) single line SPDs and SPE SPDs are that the signal is digital rather than analogue and, because of frequency, the capacitance differential with voltage needs to be low in order to avoid distortion. Long-distance screened cable SPE will have a differential earth potential rise (EPR) between equipment, which will require higher test levels of resultant screen impulse current. The recent ATIS PEG 2022 conference paper "The Effects GPR in a Suburban Environment" calculated values of differential EPR.

Vocabulary

"Offering assistance to address item 3, we note that ITU-T K.147 has invented a new term NPD that differentiates the ITU definition from the IEEE definition."

This conclusion is incorrect. Had the author diligently read the terms and definition he or she should have understood that this was an established definition occurring in ISO/IEC TR 29108. The NPD abbreviation defines powering comes from the network.

Publication

"We understand the document has entered back into the publication process even though the concerns of the IEEE 802.3 WG have not been resolved."

This situation is explained in the Part 1 reply to IEEE 802.3 TD133. Because IEEE 802.3 did not review the resultant AAP LC Comment Resolution Log document or make a reply during the AAP LJ period, due process was followed and a new revised Recommendation ITU-T K.147 was published.

ITU-T looks forward to liaising further with the IEEE 802.3 working group to harmonize protection requirements with IEEE 802.3 and other international standards.

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