

WG C57.98 – IEEE Guide for Transformer Impulse Tests

Unapproved Meeting Minutes

Columbus, OH | October 28th, 2019 | Union AB Room @ Hyatt Regency Hotel

Chair: Thang Hochanh
Vice Chair: Reto Fausch
Secretary: John Foschia

Meeting Attendance

The working group met at 1:45pm. There were 82 attendees and 17/34 members present. Quorum was achieved at 50%.

Discussions

- No essential patent claims noted.
- Bertrand Poulin noted that we can only illustrate the high frequency peak overshoot issue in the C57.98 guide but that the test code can only make requirements. He noted that IEEE Std-4 and C57.12.90 mandates the use of k-factor.
- Jim McBride suggested that even with the IEC 60-1, none of the waves on page 7/8 of the chair's presentation meet the peak voltage requirements. (see attached)
- The chair provided examples of poor waveforms and the means of which they were improved.
- Secretary noted to the chair that the quorum was achieved.
- Chair presented a slide of proposals:
 - Mandatory use of k-factor
 - Test circuit set up to ideal waveform 1.2/50
 - No limitations to relative overshoot, even if calculated relative overshoot is >10%.
 - Considerations to be made to the chop wave.
- Pierre noted that C57.12.90-2015 allows for up to 2.5 micro-second front times and that the overshoot at that point must be accepted.
- JMX noted that there are two methods of chop wave evaluation.
 - Tail patch method – IEEE Std-4, A.2.4.2 (only method in IEC)
 - Voltage reduction method - IEEE Std-4, A.2.4.1
 - “If peak reduced by 4% on previous full wave, do the same for the chop wave”
 - Jim McBride stated that in order to measure the voltage of a chop wave using k-factor, the tester must have a previous full wave before. All software should be using a previous full-wave for the tail patch method.
- Discussion was held between Bertrand Poulin, Yang Baitun and Jim McBride regarding how to measure chop wave impulses. Jim brought up the fact that depending on overshoot magnitude that the chop wave voltage could be less than the full wave magnitude, if the k-factor is not used during the chop-wave.
 - Issues also exist about the inability to chop depending wave shape oscillations.

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- The vice chair brought up that you could simply use the linear relationship between charging voltage and applied voltage for chop waves.
 - Pierre Riffon said that it is important to use the voltage divider at the transformer terminal and that you cannot rely on the accuracy of the stage voltage's voltage measurements.
 - Yang Baitun stated that the charging voltage not being linear to the applied voltage.
 - Pierre disagreed with the charging voltage approach and stated that you would need a calibrated charging voltage divider.
 - Jim McBride agreed and said that the use of k-factor on the waveform applied to the transformer will achieve the same goal.
- The chair stated that he will compile text for the next meeting regarding the use of k-factor for the guide.
 - Jitka Fuhr and Jim McBride volunteered to provide examples of waveform overshoots.
- Jim McBride stated that IEEE Std-4 published the frequency filtration characteristics but left it to the apparatus groups to determine the applicability of waveform evaluation.

Adjournment

A motion to adjourn the meeting was made by Jim McBride and seconded by Ajith Varghese. The meeting was adjourned at 3:00pm.

John Foschia

Attachment

