

## LPIT Frequency response

SC B3 PS3 Q18

Question Q18: One argument for using LPITs is their wideband characteristic for measurement of harmonics up to kHz ranges. In this report, only the frequency response up to 250 Hz is presented. What is the expected frequency response behaviour of the voltage and current part?

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## LPIT frequencies response

•The IEC 61869 standard for Instrument Transformer, conventional and LPIT, specifies several bandwidth and accuracy class extensions for harmonics in Protection, Measuring and Wide bandwidth application

Application	Accuracy class extension for harmonics	Bandwidth	Digital Sampling Rate IEC 61869-9
Protection LPIT		up to harmonic 5	80xfr, 4800 Sps
Measuring Wide bandwidth	WB0	up to harmonic 13	80xfr, 4800 Sps
	WB1	up to 3 kHz	256xfr, 14400 Sps
	WB2	up to 20 kHz	
	WB3	up to 150 kHz	
	WB4	up to 500 kHz	

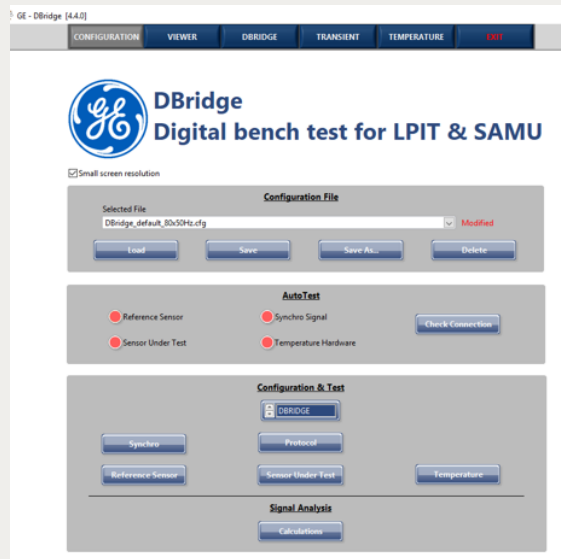
•For all LPIT's and SAMU, extension WB0 is mandatory, while the extensions WB1, WB2, WB3 are optional.

Group Discussion Meeting

# Frequency response

- Frequency response of a Rogowski Electronic Current Transformer in GIS
- WB0 Measures up to harmonic 13 according to IEC 61869

## Tools for calibration



RECT Frequency response  
Measuring application CI 0.2S



## Next steps

- The new edition of the IEC 61869-1 standard offers the possibility to use the mechanism introduced by the IEC 61850-7-4:2020 Ed 2.1 allowing the IT frequency response compensation factors to be exposed to the IED by using the frequency correction setting.



LPIT typical arrangement for demanding applications

Main1  
Protection / Metering / Qualimetry WB1

Backup  
Protection / Metering / Qualimetry WB1

For new requirements  
Qualimetry WB2 , WB3, Smart monitoring

Thank you for your attention !