Emerald™ Specification v2.1.0 Stability Test Update

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SNIA Emerald Power Efficiency Measurement Specification,

Version 2.1

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Stability Test

◆ **Test measurement interval**

 ◆ Continuous interval of 30 one-minute metric measurements

◆ **Measurement interval validity test**

 ◆ A series of tests and outcomes including stability (flatness)

 ◆ Valid active test phase interval used to calculate primary metrics

Stability Test Update

- ◆ Measurement spec v2.0.2 had one stability test
  - ◆ Smoothing filter test
  - ◆ Measurement interval had to be last 30 minutes of a test (phase)
  - ◆ Required for SUT conditioning test and active test phases

- ◆ Measurement spec v2.1.0 now has two stability tests
  1) Linear approximation slope test - New
  2) Smoothing filter test – Modified but mathematically equivalent
  - ◆ Both must pass for valid stability
  - ◆ Measurement interval can now be any chosen continuous 30 minutes of a test (phase)
  - ◆ Required only for active test phases

Linear Approximation Slope Test

◆ **Uses least squares linear approximation method**
  - Uses 30 metric values from selected measurement interval
  - Two equations to determine approximation slope and Y intercept
  - Final linear fit equation used for validation
  - Ex:

Linear fit equation

● = 1 Min Metric Values

Selected Measurement Interval
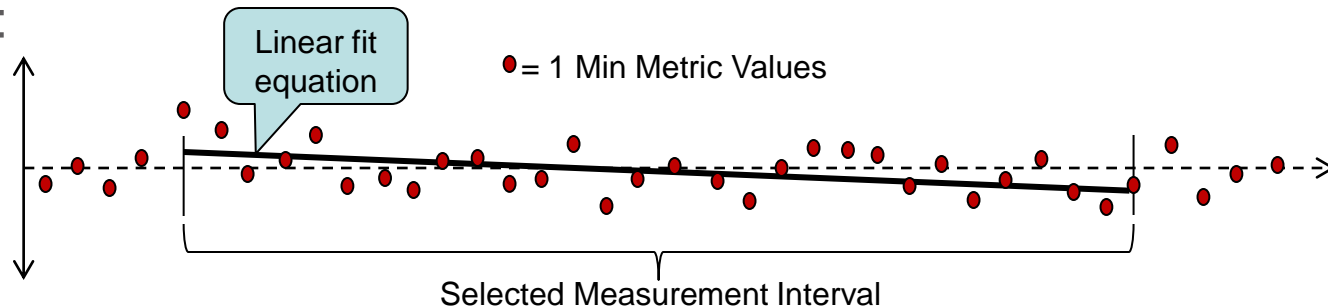
◆ **Test**
  - Value of the linear fit equation at the end of the measurement interval shall not differ from the value of the linear fit equation at the beginning of the measurement interval by more than 5%

Smoothing Filter Test

◆ **Mathematically equivalent to version from v2.0.2**

- Baseline average of measurement interval metric values

- Smoothing function produces weighted moving average values based on measurement interval metric values using a weighting value *w* specified in the Measurement Spec

- Ex:

= 1 Min Metric Values
= 1 Min Weighted Ave Values

Baseline + 5%

Baseline Ave

Baseline - 5%

Selected Measurement Interval
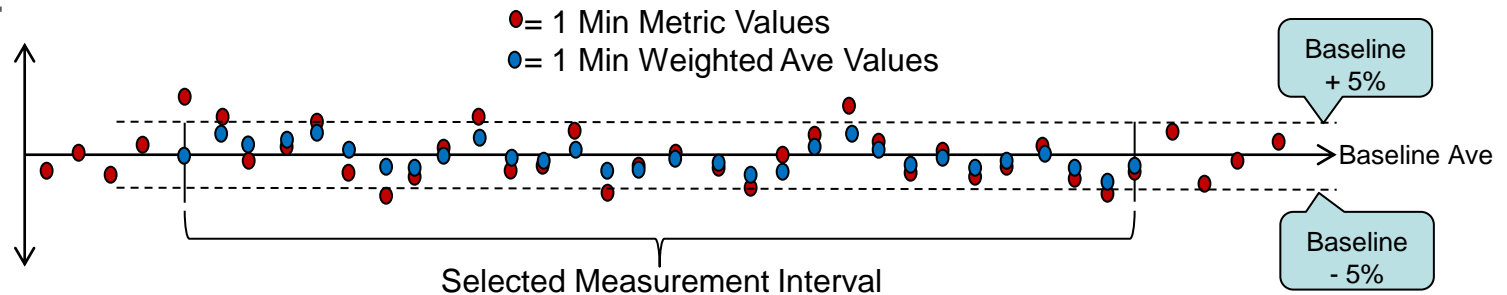
◆ **Test**

- All weighted moving average values in the measurement interval shall not differ from the baseline average by more that +/-5%

Questions?

Thank You