Guidelines for the evaluation of CMC claims in light of comparison results.

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Scope

These guidelines describe the evaluation of new CMC claims which are supported by comparison results. They do not describe the evaluation of existing CMC claims against new comparison results. These guidelines also do not cover 'how far comparison light shines', i.e., interpolation or extrapolation beyond comparison points or derived quantities.

Declarations

y_i	measurement result of the artefact by the ith participant of the comparison
$u(y_i)$	standard measurement uncertainty of y_i stated by the ith participant
DoE_i	degrees of equivalence of participant i defined as the deviation from the key comparison reference value (KCRV).[1]
$u(DoE_i)$	standard uncertainty of DoE_i
k	coverage factor appropriate to generate CMC entries

Guidelines[2]

Case A: If $|DoE_i| < k * u(DoE_i)$, the CMC claim must be $k * u(y_i)$ or greater.

Case B: If $|DoE_i| > k * u(DoE_i)$, the CMC claim must be $k * u(y_i) + [|DoE_i| - k * u(DoE_i)]$ or greater and the uncertainty budget must be revised to account for this with a meaningful uncertainty component.

However, if the comparison report indicates that some source of error means the comparison is unable to support CMC claims, the results of that comparison cannot be used as evidence for CMC claims.

Also, for n points in a comparison (e.g. a spectral quantity compared at n different wavelengths), if less than or equal to n/20 points have $|DoE_i| - k * u(DoE_i) > 0$ and this can be attributed to statistical variation (i.e. there is no obvious spectral/magnitude pattern and the outlying points satisfy $|DoE_i| - (k+1) * u(DoE_i) > 0$), case B is not invoked.

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[1] This can be (i) the difference between the measurement result y_i and the KCRV or (ii) the estimate of a quantity which can be identified with degrees of equivalence in the sense of the MRA. An example of the latter is the laboratory effect in the Laboratory Effects Modell (LEM) which is a parameter which accounts for systematic effects that may have been overlooked by the laboratory

[2] These guidelines were developed assuming that the statistical model for the comparison is similar to those used in previous CCPR comparisons (see for example CCPR-K6, CCPR-K6.2010, CCPR-K1.a, or CCPR-K2.c). If a significantly different model is used, the guidelines may need to be reviewed.