VLAC Policy for Measurement Traceability

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Preface

This document describes the policy for the traceability of measurement that is provided by VLAC. This document shall be used as a reference for laboratory accreditation assessment and contribute to ensure the quality of the test report which is provided by the VLAC accredited laboratory.

1．Purpose and scope

This document provides the guidance and interpretation of traceability requirements in ISO/IEC17025, JIS Q 17025 and VLAC-VR101. This document is used for the laboratory who likes to be accredited and already accredited and laboratory assessor refers this document for laboratory accreditation assessment.

2．Referenced documents

Following documents and standards are referred including the referenced documents in VR101 and VR102.

(1) ISO/IEC Guide 98:1995 Guide to the expression of uncertainty in measurement (GUM)
(2) 計測における不確かさの表現ガイド. 飯塚幸三 日本規格協会　（上記文書の邦訳）
(3) ILAC P10:2002 ILAC Policy on Traceability of Measurement Results
(4) CISPR 16-1-4 [2Ed] Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-4: Radio disturbance and immunity measuring apparatus - Ancillary equipment - Radiated disturbances
(5) ANSI/NCSL Z540.3-2006　Requirement for the Calibration of Measuring and Test Equipment
(6) Calibration Laboratory Manager’s Guidebook, NCSL International 1990

3. Definition

3.1 Traceability：Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties.(6.10　VIM:1993)。

3.2 Calibration：The set of operations that establish, under specified conditions, the relationship between values of quantities indicated by a measuring instrument or measuring system, or values represented by a material measure or a reference material, and the corresponding values realized by standards.（6.11 VIM:1993)。

3.3 Measurement：The set of operations to determine the value of a measurement quantity.（2.1 VIM:1993)。

3.4 Uncertainty of measurement：Parameter, associated with the result of a measurement, that

characterizes the dispersion of the values that could reasonably be attributed to the measured. The parameter, may be, for example, a standard deviation (or a given multiple of it), or the half-width of an interval having a stated level of confidence. 3.9 VIM:1993、GUM:1993）

3.5 Testing：Determination of one or more characteristics of an object of conformity assessment, according to a procedure.(4.2 ISO/IEC17000)

3.6 Reference standard：Standard, generally having the highest metrological quality available at a given location or in a given organization, from which measurements made there are derived. (6.6 VIM:1993)

4. Basic concept

4.1 Achievement of traceability

Traceability will be achieved with apply following clauses.

(1) it can be traced to the national, international, or recognized standards through an unbroken chain of comparisons.

(2) the unbroken chain is achieved by use of SI units.

(3) uncertainty of measurement is obtained in each stage of the comparison.

(4) operation procedure for the each comparison stage is documented and its result is recorded.

(5) the organization (calibration laboratory or testing laboratory who perform in-house calibration) can carries out the unbroken chain comparisons with the evidence that the organization has competence for execute the comparison stage (e.g. accreditation for calibration laboratory)

(6) measuring instruments shall be calibrated in accordance with above (1) to (5) before use.

4.2 Requirements for traceability of measurement for testing laboratories

For testing laboratories, the requirements for traceability to SI unit described in 5.6.2.1 of ISO/IEC17025, JIS Q17025 and/or VLAC-VR100 shall be applied unless it has been established that the associated contribution from the calibration contributes little[Note 1] to the total uncertainty of the test result. And this requirement shall be applied to in-house calibration that carries out by testing laboratory.[note 2]

Traceability to SI unit may be achieved by either of following calibrations.

(1) Calibration by the national or international metrology institute

(2) Calibration carried out by laboratory that's scope of calibration is accredited by APLAC or ILAC member accreditation body. Calibration certificate with accreditation logo meets traceability requirements.[ISO/IEC17025-2005 5.6.2.1.1 Note(1)]

(3) Calibration carried out by laboratory that is not accredited or calibration that is out-of-scope. In this case, all terms described 4.1 shall be certified.

(4) Calibration that is deliberated on VLAC technical committee and approved by VLAC. [ISO/IEC17025-2005 5.6.2.1.1 Note(1)]

[Note１] An example for "the calibration contributes little" may be in case that calibration uncertainty of a measuring instrument or a correction factor is little compare with uncertainty of the testing. However many measuring instruments or many correction factors are used for one testing item, in such case, it may not be decided to "the calibration contributes little" and it should be carefully considered about traceability of those instruments and correction factors calibration individually.

[Note２] It should not be accredited for in-house calibration of testing laboratory. However the in-house calibration shall be conform to requirements for calibration laboratory in ISO/IEC/ 17025,JIS Q17025 and VLAC-VR101. VLAC shall assess the in-house calibration if the testing laboratory carries out in-house calibration. [ISO/IEC17025-2005 5.4.6.1]