

**ESYD POLICY  
RELEVANT TO PARTICIPATION IN PROFICIENCY  
TESTING SCHEMES AND  
INTERLABORATORY COMPARISONS**

***Hellenic Accreditation System***

**ESYD PDI**

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### **1. Scope and definitions**

- 1.1 This document (ESYD PDI) describes the ESYD policy relevant to participation in Proficiency Testing Schemes and Interlaboratory Comparisons, addressed to testing/calibration laboratories.
- 1.2 In this document the following definitions, according to ELOT EN ISO/IEC 17043:2011, are applied:

*“Proficiency testing is the evaluation of participant performance against pre-established criteria by means of interlaboratory comparisons»*

*“Interlaboratory comparison is the organization, performance and evaluation of measurements or tests on the same or similar items by two or more laboratories in accordance with predetermined conditions»*

### **2. Criteria of acceptance of PT providers by ESYD**

- 2.1 ESYD accepts the PT providers which are accredited according to **ELOT EN ISO/IEC 17043:2011**
- 2.2 In the case where the PT Scheme is organized by a non-accredited provider, the participating laboratory should evaluate the provider’s compliance to the requirements set by the ELOT EN ISO/IEC 17043:2011. The compliance of the provider will be demonstrated by provision of appropriate documented information concerning:
- the implemented QM System
  - the confirmed experience in organizing such PT schemes
  - the data for sample designation and handling
  - the analysis of the testing/calibration data and the subsequent determination of laboratory performance
  - the establishment of the reference values and the relevant uncertainties from testing/calibration laboratories, able to demonstrate the traceability of their measurements to National or International Standards, in accordance with ELOT EN ISO/IEC 17025 requirements (see §5.1).

The above information will be collected by the participating laboratory and evaluated by ESYD.

- 2.3 There are cases where the laboratory has to participate in an interlaboratory comparison organised by a non accredited according to ELOT EN ISO/IEC 17043:2011 provider, due to lesiltative or other obligation. In these cases the ILC provider has at least to make available information enabling the assessment teams to evaluate the way this ILC has been organised and conducted.

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### **3. Requirements for the participation of laboratories in suitable PT programs**

- 3.1 The testing/calibration laboratories shall demonstrate their performance through their participation in appropriate PT schemes by means of interlaboratory comparisons.
- 3.2 For reasons arising from the need to verify a particular corrective action, demonstrate the effectiveness of accreditation and / or of the mutual recognition agreements, ESYD can set mandatory participations of one or more laboratories in selected PT programs or programs that have been highlighted by the Laboratory Committee of the European Cooperation for Accreditation.
- 3.3 As a prerequisite for the accreditation of a calibration laboratory is considered the recent participation of at least one (1) a proficiency test program by "type" calibration, as shown in Annex A of the document, taking under consideration the availability of relevant programs. Regarding availability, multilateral PT programs are normally considered as suitable and therefore preferred. However, the participation in a suitable bilateral ILC cannot be excluded, when required in special circumstances, f.i. lack of suitable multerateral scheme etc. Assessing the performance of the laboratory in proficiency testing programs is discussed in Chapter 4. In case of scope extention to a new type of calibration, the same requirement to participate in one (1) proficiency testing program is applied.
- 3.4 As a prerequisite for the accreditation of a testing laboratory is considered the recent participation in at least one PT program, according with Annex B of this document taking under consideration the availability of relevant programs. In case of extension of scope to existing or new type of test, a recent participation in a related PT must be available. The degree of association between the PT program with the requested extension is documented based on the methodology chosen by the laboratory for determining the frequency of participation (see par.3.8).
- 3.5 By the wording "recent" PT participation, as mentioned in paragraphs 3.3 and 3.4, the participation that does not deviate from the time of application more than a year, is consider suitable.
- 3.6 The participation of laboratories in proficiency testing programs should be done frequently enough to ensure proof of their technical capacity in representative tests / calibrations of the scope of accreditation, subject to availability of adequate proficiency testing programs. Assessing the performance of the laboratory is carried out as indicated in Chapter 4. In the following paragraphs the requirements for calibration and test laboratories are specified separately.
- 3.7 For calibration laboratories in Annex A the required frequency of participation for each "type"<sup>1</sup> of Calibration (or for each test) is referred. Especially for calibrations, if, according to the measurement capabilities of the scope of accreditation a wide range of measuring instruments or individual types of measurement is covered, then the laboratory must take care to participate in each accreditation cycle to PT concering different calibration instrument.

<sup>1</sup> The term "type" is referred to the different types of testing or calibrations, presented in the following Tables for "type of testing" and "type of calibration"

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For instance if a dimensional measurement laboratory is accredited for calibrations of calipers, micrometers and tape measurements, the participation in PTs in each accreditation cycle only for callipers is not considered acceptable. The calibration laboratory covers the requirements for PT participation for the instruments under question by participating the first four years in the calibration of gauge plate, the second accreditation cycle in calibration of micrometer and the 3rd accreditation cycle in calibration of measuring tape (arbitrary order). The calibration laboratories must submit during initial assessment and reassessment a four-year participation program in interlaboratory comparisons, in which the participation during the last eight years will be taken under consideration.

- 3.8 The testing laboratories have to submit during the initial assessment and at reassessment a four-year program participation in interlaboratory comparisons, in order to justify the adopted frequency in PT participation, in correlation to the individual scope of accreditation. In addition they must submit each year, before the scheduled surveillance visit, an analytical review of the program. The above documentation will be assessed under the criteria, guidelines and methodologies referred to quide EA 4/18 par. 3 and 4 from the assessment team and the accreditation rapporteur. In any case the chosen frequency cannot be less than one participation in every four years, by type of tests. In case of flexible scope or multi site accreditation, the above requirements are not differentiated.
- 3.9 The responsibility of finding suitable proficiency testing programs belongs to accredited and the under accreditation laboratories. Indicative proficiency testing programs can be found online at [www.eptis.bam.de](http://www.eptis.bam.de). For calibration laboratories, as suitable proficiency testing organizers can be considered also the various National Metrology Institutes. It is recommended to search for suitable interlaboratory measurements on their respective websites.
- 3.10 It is recognized that there are areas of testing and calibration where there is no opportunity to participate in appropriate proficiency testing programs. In such cases should be sought from the laboratories, and agreed with ESYD, suitable alternative ways in which the performance and competence of the laboratories can be evaluated and monitored. Eg: initiative of organising comparative testing between similar laboratories, use of certified reference materials, etc.
- 3.11 In addition to the obligation to participate in proficiency testing programs as described in this document, it is also very important to emphasise the educational value of this kind of exercise, as well as the added value it brings to the risk management process and staff evaluation process for the laboratory.
- 3.12 In cases where the investigation of the root cause for any failed PT results indicates a non-conforming work, the laboratory shall inform E.SY.D. according the actions and obligations arising from the application of par. 5.1 and 5.2 e and g of Accreditation Regulations ESYD CAR.

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### **4. Use of the PT results in the laboratory assessment**

- 4.1 The laboratory sends prior to the assessment visit, the necessary documentation, the Table of Laboratory Participation PTs (ANNEX C), and any other detailed explanation to determine the frequency of participation provided in par.3.7, 3.8. The evaluation of PT results is made by the assessment team of E.SY.D. The Lead Assessor includes in the final report to the Service of ESYD (Form EAE04) a brief reference to the participation of the laboratory and attaches the completed table of Annex C. In the evaluation of PT participation of the laboratory a reference should be made to the documentation of the frequency of participation, which is assessed on the recommendation of the accreditation.
- 4.2 The results of PT/ILC tests are taken into account both during the evaluation phase and during the recommendation for initial accreditation / extension of scope / maintaining accreditation. To evaluate the results, the following basic rules are followed:
- 4.2.1 If the laboratory has successfully participated in all inter-laboratory comparative tests, then this fact is a positive factor to the proposal for accreditation.
- 4.2.2 In the case of initial accreditation / extension to a new type of test, if the laboratory presents unsuccessful results in only a small percentage of inter-laboratory comparison tests in which it has participated, concerning the under evaluation test category, then the assessment team investigates the way in which the laboratory has acted upon these results, the corrective actions it has implemented and their effectiveness. If the explanations and actions of the laboratory are satisfactory, then this will not affect the proposal for accreditation. However, it is asked from the laboratory to participate in appropriate interlaboratory comparison test until the next surveillance.
- 4.2.3 If the laboratory does not have successful results in a large percentage of inter-laboratory comparison tests in which he has participated, then the proposal for accreditation respectively limits the scope until the laboratory participates successfully in appropriate ILCs.
- 4.2.4 The results of interlaboratory comparative tests do not dictate the proposal for accreditation, but are taken into account together with all the other results of the assessment, in order to formulate an objective opinion regarding the technical competence of the laboratory.
- 4.2.5 Especially in case of calibrations for performance evaluation, the laboratory estimates for each participation in interlaboratory comparison, the combined expanded uncertainty, which exists solely as a contribution to the laboratory (ie without consideration of any contribution of transport standard) and which evaluates relative to the corresponding calibration measurement capability ( $k = 2$ ) of the scope of accreditation. The assessors of ESYD compare these two parameters, the uncertainty of the laboratory with the corresponding scope of accreditation and if the uncertainty corresponding to the contribution of the laboratory is significantly higher (up to 10%) comparing to the corresponding stated in the scope of accreditation, then they recommend a proportional increase to the uncertainty of scope of accreditation.
- 4.3 The results of ILC tests are also taken into account in the process of surveillance / reassessment and to the recommendation for the maintenance / renewal of accreditation. To evaluate the results, the following basic rules are followed:

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4.3.1. The participation of the laboratory in PT programs is of particular emphasis on cases where doubts are raised concerning the technical competence of the laboratory, for example, insufficient verification of methods used, unsatisfactory results from previous participation in PT programs, or changes that have been made affecting the technical competence of the laboratory eg change of equipment, personnel, facilities / relocation.

4.3.2. If the laboratory presents unsuccessful results in only a small percentage of inter-laboratory comparison tests in which it has participated, then the assessment team investigates the way in which the laboratory has acted upon these results, the corrective actions it has implemented and their effectiveness. If the explanations and actions of the laboratory are satisfactory, then this will not affect the proposal for maintenance / renewal of accreditation. However, it is asked from the laboratory to participate in the near future in appropriate interlaboratory comparison test.

If the laboratory presents a large number of unsuccessful PT results then the evaluation team should document a recommendation for possible limitation of the scope of accreditation, taking into account the actions of the laboratory upon those results, as well as the overall performance. In any case a new participation in PTs as soon as possible is a must.

4.3.3 Repeated findings of the assessment teams in the same or consecutive visits, concerning the PT participation frequency, evaluation of PT results, corrective actions applied in cases of unsuccessful results, identification and management of non-conforming work, lead to a shortening of scope in relevant tests / test categories.

4.3.4. The compliance with the PT participation program established by the laboratory, is reviewed by the assessment team during reassessment, and in cases of deviations it is requested from the laboratory to participate in the near future in appropriate PTs.

4.3.5 Furthermore, in cases of PT participation for which no final result has not been issued by the organizer after more than two years from the date of participation, it is asked from the laboratory to participate as soon as possible in an appropriate inter-laboratory comparison test.

## **5. Impact of the evaluation of PT Schemes on ESYD functioning**

- 5.1 Accreditation rapporteurs and appropriate Committees of ESYD evaluate the way in which the assessors, especially the lead assessor, handle and evaluate the results of proficiency testing programs to ensure their proper and objective use in the evaluation of laboratories. These findings are used for both the formulation of improvement proposals concerning the content of this document, and to evaluate the assessors.
- 5.2 The implementation of this document is evaluated during the examination of the laboratories files in the initial assessments / surveillances / modifications of scopes / reassessments.

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### **6. REFERENCES**

1. EA-2/02 – EA Policy and Procedures for the Multilateral Agreement
2. ILAC P9:06/2014 ILAC Policy for Participation in Proficiency Testing Activities
3. EA-4/18 - guidance on the level and frequency of proficiency testing participation
4. EAOT EN ISO/IEC 17043:2011 Conformity assessment -- General requirements for proficiency testing



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## ANNEX A

**Table of "Types" of Calibration**

A/A	TYPE OF CALIBRATION	Frequency of participation in PT's
	ELECTRICAL MEASUREMENTS	
	A) DC & LF	
1	<u>Resistance</u>	One every 4 years
2	<u>DC Volt</u>	-----»-----
3	<u>DC Intensity</u>	-----»-----
4	<u>AC Volt</u>	-----»-----
5	<u>AC Intensity</u>	-----»-----
6	<u>AC/DC Transfer</u>	-----»-----
7	<u>Capacitance</u>	-----»-----
8	<u>Energy</u>	-----»-----
9	<u>Inductance</u>	-----»-----
10	<u>Time / frequency</u>	-----»-----
11	<u>Vehicle speed</u>	
12	<u>Others</u>	-----»-----
	B) RF & Microwaves	
13	<u>Power</u>	One every 4 years
14	<u>Attenuation</u>	-----»-----
15	<u>Impedance measurements</u>	-----»-----
16	<u>Radiation patterns</u>	-----»-----
17	<u>Noise</u>	-----»-----
18	<u>Others</u>	-----»-----
	MECHANICAL MEASUREMENTS	
19	<u>Force</u>	One every 4 years
20	<u>Mass (standards)</u>	-----»-----
21	<u>Mass (weighing instruments)</u>	-----»-----
22	<u>Liquid flow</u>	-----»-----
23	<u>Gas flow</u>	-----»-----
24	<u>Liquid volume</u>	-----»-----
25	<u>Pressure</u>	-----»-----
26	<u>Viscosity</u>	-----»-----
27	<u>Liquid density</u>	-----»-----
28	<u>Solid density</u>	-----»-----
29	<u>Hardness (standards / hardness measuring machines)</u>	-----»-----
30	<u>Others</u>	-----»-----

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	PHYSICAL MEASUREMENTS	
31	<u>Temperature (measuring instruments)</u>	One every 4 years
32	<u>Temperature (chambers)</u>	-----»-----
33	<u>Humidity (measuring instruments)</u>	-----»-----
34	<u>Humidity (chambers)</u>	-----»-----
	<u>Dimension <sup>[2]</sup></u>	
35	<u>Radiations on the mise en Pratique</u>	One every 4 years
36	<u>- Linear dimensions – Length standards and instruments</u>	-----»-----
37	<u>- Linear dimensions and hand instruments</u>	-----»-----
38	<u>- Angle</u>	-----»-----
39	<u>- Form (flatness, roundness, straightness, cylindricity etc)</u>	-----»-----
40	<u>- Complex geometry</u>	-----»-----
41	<u>- Other dimensional measurements</u>	-----»-----
42	<u>Anemometry</u>	-----»-----
43	<u>Acoustics (generation / measuring instruments)</u>	-----»-----
44	<u>Optical measurements</u>	-----»-----
45	<u>Acceleration</u>	-----»-----
46	<u>Others</u>	-----»-----
	CHEMICAL ANALYSIS	
47	<u>Reference materials</u>	One every 4 years
	<u>Measurements pertaining to Technical Inspection of Vehicles</u>	
48	<u>Side slip measurements</u>	One every 4 years
49	<u>Headlight illuminance, % inclination of incident light beam</u>	-----»-----
50	<u>Exhaust gas analysis</u>	-----»-----
51	<u>Noise</u>	-----»-----
52	<u>Brake force, vehicle suspension</u>	-----»-----
53	<u>Other measurements</u>	One every 4 years

[2] Due to the large number of instruments / side quantities, further information on the classification of dimensional calibrations is provided in the pertinent table.

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### Table with the categorization of dimensional calibrations

<http://www.euramet.org/index.php?id=tc-l-dimvim>

<b>1 Radiations on the Mise en Pratique (a/a 35 of table with “types” of calibration)</b>
<b>1.1 Laser Radiations</b>
- stabilized laser of the mise en pratique/other stabilized laser
<b>1.2 Lamp Radiations</b>
- spectral lamp
<b>2 Linear Dimensions-Length Standards and Instruments (a/a 36 of table with “types” of calibration)</b>
- gauge blocks
- length bar (long gauge blocks)
- [plane, thread] micrometer setting rods
- gauge block comparators
<b>3 Linear Dimensions and hand Instruments (a/a 37 of table with “types” of calibration)</b>
<b>3.1 Length Measuring Instruments</b>
- EDM instruments
- 1-D measuring machines
- height measuring instruments
- 1-D displacement [transducer, actuator] (LVDT, PZT,...)
- dial-indicator testers
<b>3.2 End Standards</b>
- step gauge
- gap gauge
- feeler (thickness) gauge
<b>3.3 Line Standards</b>
- precision line scales
- stage micrometers
- grid plates
- 1-D grating
- 2-D grating
- linewidth standard
- measuring tapes
- surveyor leveling rods
- engineer or machinist scales, steel
<b>3.4 Diameter Standards</b>
- external cylinder (plug, piston, pin, wire)
- internal cylinder (rings)
- sphere (ball)
<b>3.5 Hand Instruments</b>
- external micrometer
- micrometer head.
- depth micrometer
- caliper
- depth gauge

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- internal two-point (bore) micrometer
- internal three-point (bore) micrometer
- dial gauge
- snap gauge (internal, external)
<b>3.6 Instruments/layer measuring standard</b>
- layer measuring instruments
- layer thickness standard
<b>3.7 Index of Refraction</b>
- refractometer for optical materials
<b>4 Angle (a/a 38 of table with “types” of calibration)</b>
<b>4.1 Angle by Circle Dividers</b>
- optical polygons
- index table.
- rotary table, rotary encoder scale.
<b>4.2 Small-Angle Generators</b>
- sine (bar, table).
<b>4.3 Angle Instruments</b>
- autocollimator.
- electronic level
- clinometer
- spirit (bubble) level
- theodolite.
- (bevel) protractor.
- squareness tester
<b>4.4 Angle Artifacts</b>
- angle blocks.
- 90° (steel, granite, try) square.
- 90° cylinder square.
- cone (taper) gauge.
<b>4.5 Angle Prisms</b>
- optical square (pentaprism).
- retroreflection (cube-corner, cat-eye) prism.
<b>5 Form (a/a 39 of table with types of calibrations)</b>
<b>5.1 Flatness Standards</b>
- optical flat.
- optical (parallel, wedge).
- surface plate.
<b>5.2 Roundness Standards</b>
- external cylinder.
- internal cylinder.
- sphere (hemisphere)
- magnification standard (e.g. flick standard).
<b>5.3 Straightness Standards</b>
- straight edge.
- cylindrical straightness standard.
- straightness of guideway.

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<b>5.4 Cylindricity Standards</b>
- external cylinder.
- internal cylinder.
<b>6 Complex Geometry (a/a 40 of table with types of calibrations)</b>
<b>6.1 Surface Texture Standards</b>
- (groove) depth (step height) standard (eg., ISO 5436-1 Type A).
- tip-condition standard (eg., ISO 5436-1 Type B).
- spacing standard (eg., ISO 5436-1 Type C).
- roughness standard (eg., ISO 5436-1 Type D).
- profile coordinate standard (eg., ISO 5436-1 Type E).
- soft gauge standard (reference software data set).
<b>6.2 Screw Standards</b>
- thread plug, plain.
- thread plug, tapered.
- thread ring, plain.
- thread ring, tapered.
- internal API screw thread gauge.
- external API screw thread gauge.
<b>6.3 Gear Standards</b>
- spur gear.
- bevel gear.
- gear pitch master
- gear lead master
- gear involute master
<b>6.4 CMM artifact</b>
- ball (hole, bore) plate.
- reference software.
<b>6.5 2-D, 3-D Instruments</b>
- measuring projector.
- measuring microscope.
- CMM.
- laser tracking measuring system.
- motion (translation, angle) stage.
- profile instruments
- (flatness, wavefront) interferometer
- form-measuring machine
<b>6.6 Hardness</b>
- hardness indenter [Rockwell, Vickers]
<b>7 Other dimensional measurements (a/a 41 of table with “types” of calibrations)</b>

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### ANNEX B

**Table of "Types" of Testing for initial accreditation**

A/A	Type of Testing	PARTICIPATION REQUIREMENTS FOR INITIAL ACCREDITATION
1	Chemical	At least one participation per testing category in order to assure the technical competence of the lab, for the total of under accreditation chemical testing, taking into account the analytical techniques, the parameters analysed and the various matrixes.
2	Microbiological (except microbiological testing in human samples: clinical laboratories)	One participation for every microbiologica test under accreditation (and for every matrix, as applicable)
3	Pesticide residues	At least one participation per testing category in order to assure the technical competence of the lab, for the total of under accreditation tests, taking into account the analytical techniques, the parameters analysed and the various matrixes.
4	Clinical testing	One participation for every test under accreditation
5	Analysis of pharmaceuticals and pesticides	At least one participation per testing category in order to assure the technical competence of the lab, for the total of under accreditation tests, taking into account the analytical techniques, the parameters analysed and the various matrixes.
6	Biological testing in food, feed and veterinary samples : Testing for Genetically modified organisms (GMOs), Allergen Testing , Testing in food, feed and veterinary samples using Elisa and PCR techniques	At least one participation per testing category in order to assure the technical competence of the lab, for the total of under accreditation tests, taking into account the analytical techniques, the parameters analysed and the various matrixes.
7	Health and Hygiene	At least one participation per testing category in order to assure the technical competence of the lab, for the total of under accreditation tests.
8	Acoustic	At least one participation in order to assure the technical competence of the lab, for the total of under accreditation tests.
9	Ballistic	-----»-----
10	Corrosion	-----»-----
11	Dimensional	-----»-----
12	Environmental Chambers	-----»-----
13	Fire	-----»-----
14	Geological	-----»-----
15	Mechanical testing in concrete , aggregates and construction materials	-----»-----
16	Mechanical testing in leather, textile and paper	-----»-----
17	Mechanical testing in metals and plastics	-----»-----
18	Physical testing in concrete , aggregates and construction materials	-----»-----
19	Physical testing in leather, textile and paper	-----»-----
20	Physical testing in metals and plastics	-----»-----
21	Non destructive	-----»-----
22	Performance	-----»-----
23	Safety	-----»-----
24	Sampling	-----»-----
25	Electrical	At least one participation in an available programa in order to assure the technical competence of the lab, for every type of sampling under accreditation
26	Electromagnetic compatibility	-----»-----
27	ITT (Information and Telecommunication Technology)	-----»-----
28	Other	-----»-----

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### **ANNEX C**

**LABORATORY:  
PARTICIPATION TIME FRAME:**

**TABLE OF LABORATORY'S PARTICIPATION IN PROFICIENCY TESTING SCHEMES**

<b>N</b>	<b>PROVIDER</b>	<b>Title of the PT Scheme</b>	<b>Other details of the Scheme</b>	<b>Categorization according to ESYP PDI</b>	<b>Tests/Calibrations</b>	<b>Matrix/Object of testing or calibration</b>	<b>Results</b>	<b>Remarks</b>

Remarks

1. Provider: Name of the Provider, Name of the organization of the Provider (if applicable), Country of the Provider
2. Name of the PT Scheme: Name of the specific scheme that laboratory participates
3. Other details of the scheme: Code, serial number, period and any other details provided by the Provider that identifies the scheme
4. Categorization according to PDI: if applicable: ACC: for Provider accredited according to ISO 17043, EVAL: laboratory provides evaluation of the provider according par.2.3, ILC: interlaboratory comparison and other notes if any
5. Testing/Calibrations : Specific tests or calibrations, being subject of the participation to the scheme
6. Matrix/Object of testing: Matrix, object of test or calibration, distributed by the Provider, e.g. z-score, satisfied/unsatisfied, detected/non detected etc
7. Results: Performance of the lab participation as given by the Provider
8. Remarks: Other remarks like: a) Evaluation and corrective actions in case of non successive results according to the Provider (this remark is obligatory for the the lab in case of non successive results). Evaluation and corrective actions shall be referred to the laboratory documentation. b) Remarks, made by the lab concerning the scheme, also referred to the laboratory documentation