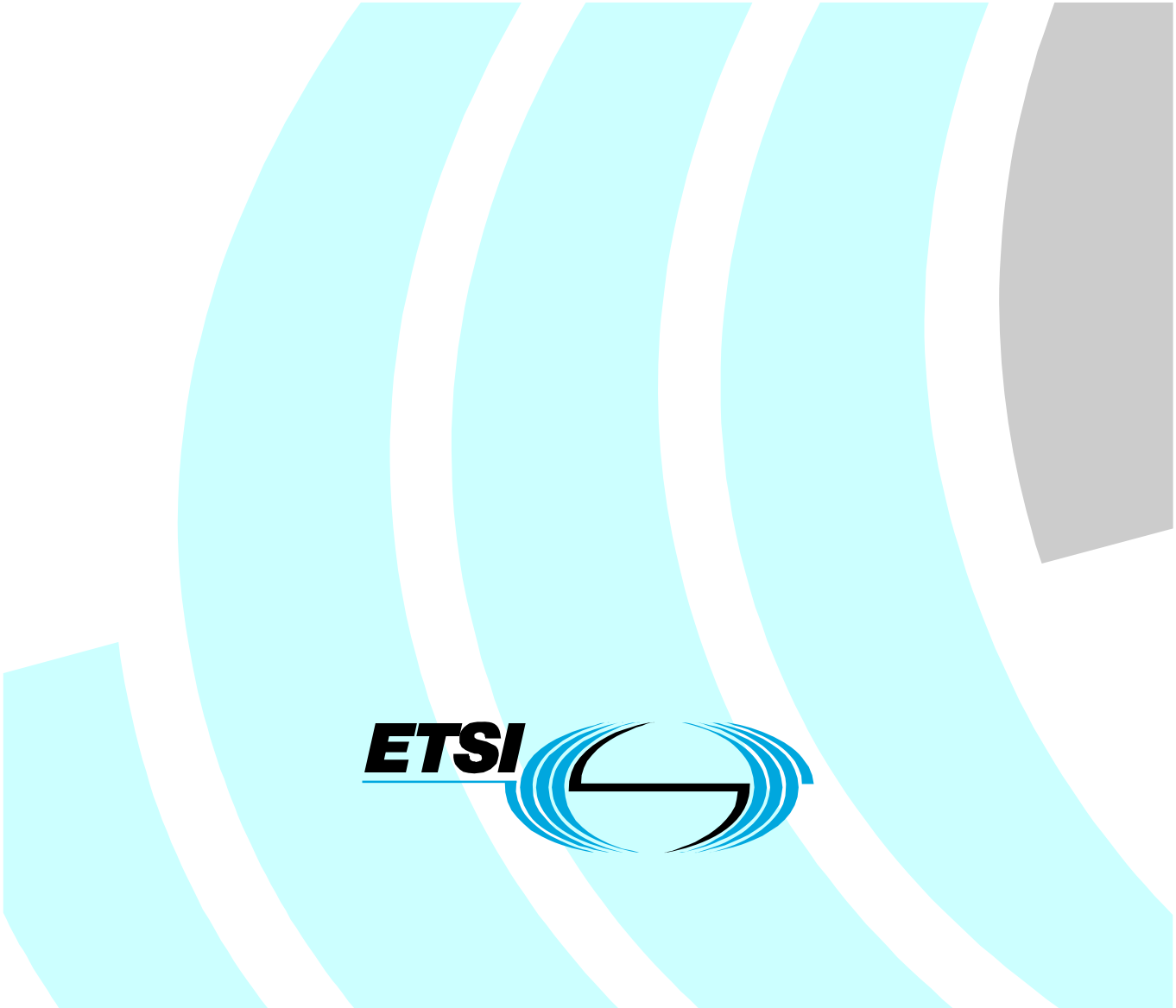
# ETSI TS 102 846 V1.1.1 (2010-06)

*Technical Specification*

**User Group;**
**Quality of ICT Services;**
**Requirements for Bodies Providing Conformity Assessment of Checking-up on Metering and Billing Processes**



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# Contents

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# Foreword

This Technical Specification (TS) has been produced by ETSI User Group (USER).

Information and Communications Technology (ICT) standardisation is part of the general standardisation activities, and contributes to policy objectives to improve the competitiveness of European industry, as specified in the Lisbon strategy. The legal basis for European standardisation and standardisation policy, including the ICT domain, is Directive 98/34/EC [i.4]. One of its main elements is the formal recognition of three European Standards Organisations (ESOs), CEN, CENELEC and ETSI, active in various degrees in the ICT domain. Standards produced by the three ESOs and resulting from an open consensus building process are by nature voluntary and non binding technical documents.

The standardization work described in the present document was funded by the European Commission, Enterprise and Industry Directorate-General, as part of the 2009 ICT Standardisation Work Programme and executed by ETSI.

The present document has been produced within the ETSI Special Committee USER GROUP (USER) by the Specialist Task Force (STF) 375. Several documents provided by European Telecommunications regulatory bodies have been used to develop the present document. They are detailed in TR 102 847 [i.3].

It is important to understand that conformity assessment takes place in the wider environment of accreditation principles as defined in European Community regulation No 765/2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93 [i.2].

# Introduction

A significant difference rate between theoretical and actual bills has been identified by several parties in the current metering and billing processes operated by service providers.

Several service providers, administrations and users associations have intended to reduce this difference rate in implementing rules in order to make users more confident in the reliability of their bills.

Nevertheless, due to the complexity of this issue and in absence of any available formal standard in this area, the current practices are hindered by significant limitations. The purpose of document TS 102 845 [1] is to fulfil the gaps of the current practices in order to provide a reference that can be used for a continuous and trustworthy checking-up on metering and billing processes. Such a checking is expected to contribute to a continuous quality improvement of metering and billing processes.

In order to provide evidence that metering and billing verification is conducted according to TS 102 845 [1], it will be usefull for a service provider to have its verification process audited by an independent party, that will formally assess the conformity of its checking-up on metering and billing with the technical specification. The purpose of present document) is to define when, how and by whom the conformity assessment audit shall be conducted. Such a conformity assessment is expected to contribute to an increased trust by service providers, customers, regulators and other stakeholders that metering and billing processes are reasonably monitored.

# 1 Scope

The present document details the specific requirements an independent party should comply with, in addition to the generic standard ISO/IEC 17065 [2] to assess conformity of the checking-up on metering and billing processes with the requirements defined in TS 102 845 [1].

# 2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

## 2.1 Normative references

The following referenced documents are necessary for the application of the present document.

[1] ETSI TS 102 845: "User Group; Quality of ICT Services; Requirements and Method for checking Metering and Billing systems".

[2] ISO/IEC CD 17065: "Conformity assessment -- Requirements for certification bodies certifying products, processes and services".

[3] ISO 19011: "Guidelines for quality and/or environmental management systems auditing".

## 2.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] List of members of European Cooperation for Accreditation.

[i.2] European Community regulation No 765/2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/933.

[i.3] ETSI TR 102 847: "User Group; Quality of ICT Services; Standardization and regulation references in the Metering and Billing area".

[i.4] Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 Laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services.

# 3 Definitions and abbreviations

## 3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

**accreditation body:** organization that has the power to accredit a conformity assessment body

**audit team:** group of auditors appointed to provide conformity assessment of metering and billing system checking activities with a technical standard

**auditor:** person who is competent to carry out audits

**billing verification body:** organization that has skills and methods to conduct the checking-up on metering and billing processes of a service provider

NOTE: The Billing Verification Body can be internal (i.e. a department of the service provider) or external (i.e. a specialized company to which the service provider has outsourced the checking-up on metering and billing).

**billing integrity principles:** principles that must be fulfilled to state that the billing activity of a service provider is correct

**checking-up on metering and billing:** activities used to verify how strongly a service provider metering and billing activities complies with billing integrity principles

**conformity assessment:** activities concerned with determining directly or indirectly that relevant requirements are fulfilled in billing and metering checking

**conformity assessment body:** organization that has skills and methods to conduct conformity assessment audit of the metering and billing checking process of another party

**customer:** user who is responsible for payment for the electronic communication services

**electronic communication:** service that helps people communicate

**independent observer:** entity which can evidence two characteristics: independency and externality

NOTE: In the context of the present document, the independency clause means that the entity in charge of checking has some level of independence from the entity in charge of operating metering and billing within the service provider. The externality means that the checking entity does not have to understand all the complexity of the information systems and network components involved in the metering and billing of a service provider.

**metering and billing:** activity, within a service provider, which aims at charging a customer either by producing an invoice or by decreasing a prepaid account

**service provider:** organization that provides electronic communications services to users and customers

NOTE: The Service Provider conducts the metering and billing processes for its services.

**tariff information:** set of principles defined by a service provider to price the electronic communications it offers to its customers

NOTE: Tariff information includes the definition of unit price (price for a unit billed quantity) and valuation methods (set of mathematic methods allowing to transform raw quantities into a billed quantities).

**tariff plan:** set of principles defined by a service provider to price the electronic communications service it offers to one customer

NOTE: Tariff plan is a sub set of Tariff Information.

## 3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

| | |
|---|---|
| AB | Accreditation Body |
| BVB | Billing Verification Body |
| CAB | Conformity Assessment Body |
| EC | Electronic Communication |
| ICT | Information and Communications Technology |
| SP | Service Provider |
| SSEC | Stratified Sample of Electronic Communications |

# 4 Approach for conformity assessment

## 4.1 Scope of conformity assessment

It is important to understand that the Conformity Assessment described in the present document is concerned with the compliance of the verification process with requirements described in document TS 102 845 [1].

NOTE: conformity assessment is not concerned with the way a service provider meters and bills its customers, but with the way a service provider verifies that it meters and bills correctly the electronic communications of its customers.

Figure 1 illustrate the different roles and actions of entities involved in the conformity assessment Process.

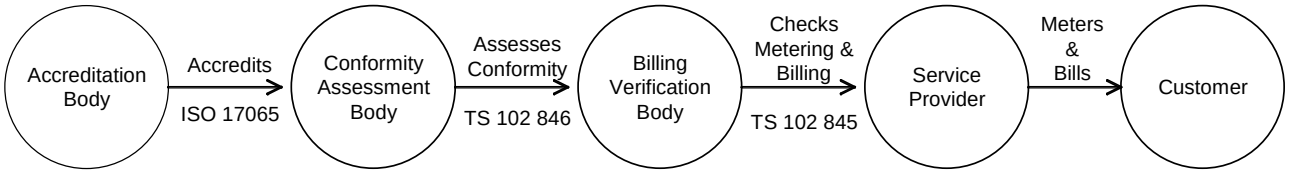


**Figure 1: Role of Entities and Applicable Standards in Conformity Assessment of Metering and Billing**

## 4.2 Types of conformity assessment

It is expected that some service providers may outsource the metering and billing checking to an external third party and that other service providers may insource the checking-up on metering and billing.

In order to address these two schemes, two types of conformity assessment have been defined:

A) **External BVB (**Billing Verification Body). When an external BVB checks-up on metering and billing of several service providers, the conformity assessment of the BVB can be carried on the basis of methods used by the BVB and examples of service providers monitored by the BVB. This is called a type A conformity assessment.

B) **Internal BVB.** When a service provider executes with its own means the checking-up on its own metering and billing processes, the conformity assessment is carried out on the basis of the process used to check metering and billing. This is called a type B conformity assessment.

With this flexible scheme, when a service provider wants to make stakeholders confident that the quality of his billing is checked according to the standard TS 102 845 [1], he will have the choice between:

- subcontracting the metering and billing checking-up process to an external BVB which has an up-to-date generic type A conformity assessment awarded by a CAB (Conformity Assessment Body); or
- executing by its own means the Metering and Billing Checking process and hiring a CAB to receive and update a specific type B conformity assessment.

NOTE: Type A conformity assessment is applicable only if the service provider has subcontracted to a BVB the totality of the checking-up process described in clause 7 of TS 102 845 [1]. In case of partial outsourcing, the service provider needs to look for a type B conformity assessment, even if its BVB owns a valid type A conformity assessment.

# 5 Audit scope

The team leader shall draft an audit and assessment plan as described in ISO 19011 [3] in accordance with the scope of the conformity assessment.

In case of type A conformity assessment, the BVB shall provide the audit team with the list of service providers it is involved with. From this list, the BVB shall provide several real checking process cases. The number of cases shall be significant. It shall consider at least the square root of the total number of monitored service providers, with a minimum of two cases. The cases examined by the audit team may be different for each requirement described in TS 102 845 [1] .

In case of type B conformity assessment, the scope of conformity assessment shall be clearly defined in term of Tariff Plans (list of tariffs to be audited).

# 6 Audit team

The audit team may be composed by a sole or several auditors. Each of them shall be qualified by the party providing assessment of the checking process. In case of an audit team with several auditors, one shall be designed as the audit team leader. Auditor(s) shall have:

- secondary education or 7 years of professional experience;
- significant knowledge (in the field of or including) in statistics;
- knowledge in information and communications technology;
- basic knowledge of mechanisms for metering and billing systems.

The audit team leader shall have experience in audit as lead auditor as described in ISO 19011 [3].

Auditors shall maintain their qualification on an annual basis through active participation in assessment activities in checking process and updating knowledge in the relevant standards.

# 7 Audit activities

## 7.1 Overview

The activities of the audit are the following:

1) Initiating the audit.
2) Conducting document review.
3) Preparing for the on-site audit activities.
4) Conducting on-site audit activities.
5) Preparing, approving and distributing the audit report.
6) Preparing the audit report.
7) Approving and distributing the audit report.
8) Completing the audit.

9) Conducting audit follow-up.

Additional information about audit activities can be found in ISO 19011 [3].

## 7.2 Audit methods

Three types of audit methods are defined to assess the compliance of the Metering and Billing Checking process:

- Inquiry: interview of the personnel in charge of the checking-up on metering and billing systems.
- Examination: review of documentation, visual examination.
- Test: tests or computation of results.

In the case of a type A conformity Assessment, the verification shall be performed only on a limited subset of cases as explained in clause 5.

## 7.3 Assessment of independent observer status

The BVB who conducts the checking process shall employ sufficient and competent personnel to perform the checking process as described in TS 102 845 [1]. This staff shall have the following minimum skill, knowledge and competences:

- Specialist knowledge in statistics;
- Specialist knowledge in ICT;
- Specialist knowledge in Automated Robot Network Management;
- Specialist knowledge of Mechanism for metering and billing systems;
- Specialist knowledge in pricing.

"Specialist" means that the personnel shall have a specialized education.

**Independency**

The BVB shall demonstrate that conflicts of interest do not exist with the departments in charge of operating the billing within the service providers. In particular, they shall not be involved in the design or parametrization of the billing system.

**Externality**

For the checking-up, the BVB shall not have access to the internal parts of the processes and systems used for metering and billing services. In particular they should never used the parameters of the billing systems instead of the public tariff information.

## 7.4 Assessment of prerequisites

The auditors shall assess the efficiency of the method used by the BVB to check the conformity of prerequisites with each requirements stated in clause 6 of TS 102 845 [1]. Audit by the auditors shall assess the correctness, completeness and coherence of the examination by the BVB.

The following documents shall be provided as inputs for the assessment of prerequisites:

a) list of every type of electronic communication offered by the service provider through the offers considered in the scope of conformity assessment;

b) document providing definition of successful and unsuccessful status for every type of electronic communication;

c) document providing definition of units;

d) document providing definition of time of each electronic communication type;

e) document providing definition of duration of each electronic communication type;

f) document providing definition of data volume of each electronic communication type;

g) document providing definition of classes of service of each electronic communication type;

h) document providing definition of rounding methods of raw parameters;

i) method used by the BVB to check Metering Rules documents (points a to h above);

j) service providers current tariff information;

k) document detailing history of service provider tariff information;

l) document detailing tax information;

m) document providing definition of rounding methods for pricing;

n) method used by the BVB to check Tariff Information (points j to m above);

o) result of the prerequisites examination by the BVB.

## 7.5 Assessment of checking-up process

The following documents shall be provided as inputs for the assessment of checking process:

a) Documented statistical method used to design the test campaign and the SSEC in accordance with TS 102 845 [1] (clause 7.2);

b) History of the SSEC and frequency of updates;

c) Evidence of test resource used for the SSEC in accordance with TS 102 845 [1] (clause 7.3);

d) List and locations of automated robots used for executing SSEC;

e) Documented capability of the automated robots;

f) Evidence for EC technical configuration in accordance with TS 102 845 [1] (clause 7.4);

g) Evidence for EC generation in accordance with TS 102 845 [1] (clause 7.5);

h) Documented Methods used to collect the Robots logs in accordance with TS 102 845 [1] (clause 7.6);

i) Documented Methods used to collect the Billing Details in accordance with TS 102 845 [1] (clause 7.7);

j) Documented Methods used to correlate generated ECs and billing events data and to perform the rerating of the billed ECs in accordance with TS 102 845 [1] (clause 7.8);

k) Documented Methods used to check Balances and Invoices in accordance with TS 102 845 [1] (clause 7.9);

l) Documented Processes used for the Reporting in accordance with TS 102 845 [1] (clause 7.10);

m) History of reports of checking process;

n) Records of validation by the service provider of the reports above;

o) Documented Methods used to compute the Billing Error Rate in accordance with TS 102 845 [1] (clause 7.11);

p) Logs of billing error rate values produced by the checking process.

The Auditors shall assess the reality of the execution of checking-up on metering and billing by the BVB and the conformity of its execution with each requirements stated in clause 7 of TS 102 845 [1].

## 7.6 Assessment of automated robots and software

BVB shall document the architecture and functions of automated robots and software implemented to checking-up on metering and billing processes.

The checking-up process shall use automated robots that are in sufficient number and capacity regarding the SSEC. The robots and the software used for identifying the gap between the service provider bills and the re-rating results shall be calibrated and regularly checked against malicious software. The automated robots shall be synchronized with universal time references on a regular basis. The BVB shall maintain a configuration management system for these robots.

## 7.7 Assessment of management involvement

The audit team shall verify that the test campaign and the billing error rate have been validated and are well known by the service provider management at a significant level.

The audit team shall ask the service provider Management about the quality of the summary of billing discrepancies issued by the BVB.

The audit team shall ask the service provider the way it implements "Case Management & corrective actions enforcement" (TS 102 845 [1], annex B).

In case of a type A conformity assessment, the auditor shall have access to at least one interview with a service provider representative that uses the BVB.

# 8 Audit report

The audit report re-states conclusions for each TS 102 845 [1] and the present document requirements. It identifies for each of them:

- activities performed;
- time period;
- locations;
- rationale of efficiency and findings;
- general conclusion.

Audit findings and non conformities can be classified in three levels:

- remark;
- minor non conformity;
- major non conformity.

# 9 Audit duration and frequency

## 9.1 Initial audit

The duration time given in this clause are minimal figures below which a comprehensive assessment cannot be carried out. The figures shall be understood for all audit activities as defined in clause 7.

Type A conformity assessment:

- Assessment scope comprising less than 5 service providers: 4 days

- Assessment scope comprising between 6 and 10 service providers: 5 days
- Assessment scope comprising more than 10 service providers: 6 days

Type B conformity assessment:

- Assessment scope comprising less than 50 tariff plans: 3 days
- Assessment scope comprising between 50 and 100 tariff plans: 4 days
- Assessment scope comprising more than 100 plans: 5 days

## 9.2 Monitoring audit

Follow up review shall be planned by the conformity assessment body, after the initial conformity assessment at least every 12 months.

Type A conformity assessment:

- Assessment scope comprising less than 5 service providers: 3 days
- Assessment scope comprising between 6 and 10 service providers: 4 days
- Assessment scope comprising more than 10 service providers: 5 days

Type B conformity assessment:

- Assessment scope comprising less than 50 tariff plans: 2 days
- Assessment scope comprising between 50 and 100 tariff plans: 3 days
- Assessment scope comprising more than 100 plans: 4 days

# Annex A (normative): List of members of European cooperation for accreditation

In the territory of European Union, to deliver a valid conformity assessment against technical specifications TS 102 845 [1] and the present document, a CAB shall be accredited, according to ISO/IEC 17065 [2], by an AB member of the European Cooperation for Accreditation.

For this avoidance of doubt, there is no specific requirements that the AB shall be in the same country as the SP, the BVB or the CAB. The sole requirement is that the AB (Accreditation Body) should be member of the European Cooperation for Accreditation.

The list below is provided for information. It is a list of all members of European Cooperation for Accreditation. It is an excerpt of http://www.european-accreditation.org/n1/doc/EA-1-05.pdf [i.1] dated on 23 December 2009:

| | |
|---|---|
| ACCREDIA: | Italian Accreditation System (ITALY) |
| BAS: | Executive Agency "Bulgarian Accreditation Service" (BULGARIA) |
| BELAC: | Belgian Accreditation Structure (BELGIUM) |
| BMWFJ: | Bundesministerium für Wirtschaft Familie und Jungend, (AUSTRIA) |
| CAI: | Czech Accreditation Institute, (Ceský Institut pro Akreditaci, o.p.s.) (CZECH REPUBLIC) |
| COFRAC: | Comite Francais d'Accreditation (FRANCE) |
| COPA: | Consorzio Pubblico per l'Accreditamento (ITALY) |
| CYS-CYSAB: | Cyprus Organization for the Promotion of Quality (CYPRUS) |
| DAkkS: | DeutscheAkkreditierungsstelle GmbH (GERMANY) |
| DANAK: | Danish Accreditation (DENMARK) |
| EAK: | Estonian Accreditation Centre (ESTONIA) |
| ENAC: | Entidad Nacional de Acreditacion (SPAIN) |
| ESYD: | Hellenic Accreditation System S.A. (GREECE) |
| FINAS: | Finnish Accreditation Service (FINLAND) |
| HAA: | Croatian Accreditation Agency (REPUBLIC OF CROATIA) |
| IARM: | The Accreditation Institute of the former Yugoslav Republic of Macedonia (R. of MACEDONIA) |
| INAB: | Irish National Accreditation Board (IRELAND) |
| IPAC: | Portuguese Institute for Accreditation (Portugal) |
| ISAC: | Icelandic Board for Technical Accreditation (ICELAND) |
| LA: | Lithuanian National Accreditation Bureau (LITHUANIA) |
| LATAK: | Latvian National Accreditation Bureau (LATVIA) |
| NA: | Norwegian Accreditation (NORWAY) |
| NAB: | National Accreditation Board -Malta (MALTA) |
| NAT: | Hungarian Accreditation Board (HUNGARY) |
| OLAS: | Office Luxembourgeois d'Accréditation et de Surveillance (LUXEMBURG) |
| PCA: | Polish Centre for Accreditation (POLAND) |
| RENAR: | Romanian Accreditation Association (Asociatia de Acreditare din Romania) (ROMANIA) |
| RvA: | Dutch Accreditation Council (Raad Voor Accreditatie) (NETHERLANDS) |
| SA: | Slovenska Akreditacija (SLOVENIA) |
| SAS: | State Secretariat for Economic Affairs (SECO), Swiss Accreditation Service (SWITZERLAND) |
| SNAS: | Slovak National Accreditation Service (SLOVAKIA) |
| SWEDAC: | Swedish Board for Accreditation and Conformity Assessment (SWEDEN) |
| TURKAK: | Turkish Accreditation Agency (TURKEY) |
| UKAS: | United Kingdom Accreditation Service (UNITED KINGDOM) |

# History

| Document history | | |
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