

Postal services — Quality of service — Measurement of the transit time of end-to-end services for bulk mail

The European Standard EN 14534:2003, incorporating amendment A1:2007, has the status of a British Standard

ICS 03.240

National foreword

This British Standard is the UK implementation of EN 14534:2003, incorporating amendment A1:2007.

The UK participation in its preparation was entrusted to Technical Committee SVS/4, Postal services.

A list of organizations represented on this committee can be obtained on request to its secretary.

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 13 January 2004

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Amendments issued since publication

Amd. No.	Date	Comments
17115	31 May 2007	Implementation of CEN amendment A1:2007

ISBN 0 580 43228 9

English Version

Postal services - Quality of service - Measurement of the transit time of end-to-end services for bulk mail

Services postaux - Qualité de service - Mesure de la qualité de service de bout en bout pour courrier en nombre

Postalische Dienstleistungen - Dienstqualität - Laufzeitmessung 'end-to-end' für Massensendungen

This European Standard was approved by CEN on 23 May 2003 and includes Amendment 1 approved by CEN on 4 February 2007.

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Foreword

This document (EN 14534:2003+A1:2007) has been prepared by Technical Committee CEN/TC 331, "Postal services", the secretariat of which is held by NEN.

This document shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2007 and conflicting national standards shall be withdrawn at the latest by September 2007.

This document includes Amendment 1, approved by CEN on 2007-02-04.

This document supersedes EN 14534:2003.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 and A1.

This bulk mail standard has been developed from the requirements of EN 13850 *Postal services - Quality of service - Measurement of the transit time of end-to-end services for single piece priority mail and first class mail*. Both European Standards consider methods using a representative end-to-end sample of all types of addressed letter mail appropriate for their coverage. A separate standard is required for the measurement of bulk mail for the following reasons.

- **Contract Services:** mail posted in bulk will often be mailed under a contract between the sender and the postal operator. Typically bulk services require customers to undertake a level of pre-sortation or to present mail in different ways according to the contract conditions.
- **Senders:** members of the public posting single items are replaced by companies, small in number, posting large volumes of mail; third party agents may also act on behalf of posting customers.
- **Volumes of mailings:** bulk mailings may contain thousands or millions of items.
- **Performance Measures:** on-time performance measures are expanded to provide additionally on, by or between specific dates performance depending on what is agreed with the customers or is specified for this service.
- **Discriminant Characteristics:** the range of characteristics varies by type of mail service and a wider set of potential characteristics should be considered.
- **Dates of deposit:** the rules and requirements for bulk mails are more complex and may be specific to the contract between customer and postal operator.

Test items: have to match the characteristics of customer mailings and where database seeding methods are used 'live' items of mail may be used in the survey. This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

In the Green paper on postal services in 1992 the European Commission emphasised the need to establish common rules for the development of community postal services and the improvement of quality of service. The Commission identified requirements for quality of service measurement that include:

- independent end-to-end measurement capabilities;
- a focus on cross-border delivery service performance;
- a single, uniform and reliable system for monitoring delivery service performance within the Union.

The Commission acknowledged that the different postal traditions and cultures in Europe would not allow for the establishment of one common unified European measurement system and that national systems should have sufficient degrees of freedom to reflect national needs and peculiarities. On the other hand, they should fulfil a defined set of minimum requirements to satisfy the information interests of the national regulatory authority and postal customers and postal operators themselves.

The objective of the measurement is to estimate the quality of service given to the customer in each European country domestically and cross-border between European countries.

This European Standard refers to a number of principles and minimum requirements to be applied for the measurement of the transit time of national and cross-border mail.

A1 When EN 14534 was developed it was decided to base it on existing measuring systems already in use among the European Union member states. Since the publication of EN 14534 in 2003 more countries have joined the European Union which have increased the number of cross-border mail flows significantly and therefore made it necessary to adapt the standard accordingly.

Amendment 1 to this European Standard has been developed to make it possible to economically measure a larger number of mail flows from a wider range of countries than the original versions of the standard was made for.

Amendment 1 to this European Standard gives information on how to categorize mail flows for measuring purposes and explain how required accuracy for small and medium sized mail flows can be obtained by measuring under a consecutive number of years. **A1**

1 Scope

This European Standard specifies methods for measuring the end-to-end transit time of the domestic and cross-border, priority and non-priority, bulk mail, collected, processed and distributed by postal service operators. It considers methods using a representative end-to-end sample of addressed bulk mail. End-to-end is defined as from the point mail is placed into the collection/acceptance system under the responsibility of the postal operators, to the final delivery point under the responsibility of the postal operators.

For the purpose of this European Standard, bulk mail can include all types of addressed bulk mail: letter mail, direct mail, magazines, and newspapers, unless otherwise indicated.

The overall quality of service result should be expressed as the percentage of mail delivered within $J + n$ days end-to-end according to the EC postal directive or the percentage of mail delivered by, on or between expected dates. The measurement should be in whole days and not be restricted by reference to a specific time of day for delivery.

This quality of service indicator does not measure the postal operator's overall performance in a way which provides direct comparison of postal service operators, and does not include other service performance indicators than those related to transit time. In particular this European Standard does not measure whether the timing of collections meets customers' requirements.

The European Standard can be used to assess the performance of postal operators for specific products or services at a national level or for an individual or a group of customers.

The European Standard should not be used to assess the overall performance of a group of products or services which have other service specifications in terms of transit time expectation.

It specifies a set of requirements for the design of a quality of service measurement system for bulk mail, involving the selection and distribution of test mail sent and received by selected panellists. The test mail sample design gives the specifications for the mail to be representative of real mail flows.

This European Standard relates to the measurement of services offered to businesses that have pick ups at their offices or give their mail to postal service operators. If a third party agent acts for the postal operator then the time the mail is handed over to the agent should form part of the measurement. Where a third party agent acts for the sending customer then the measurement should be from the point when mail is handed over to the postal operator.

For technical reasons the European Standard may not in all parts be suitable for the measuring of very small volumes of mail and for operators with limited coverage. It is not applicable for measuring the end-to-end transit time distribution of single piece mailings which require different measurement systems. The European Standard EN 13850 has been developed for single piece priority mail and EN 14508 for single piece non-priority mail.

This European standard includes specifications for the quality control and auditing of the measurement system.

In certain circumstances this European Standard allows a choice between alternatives or deviations to be made subject to the approval of the regulator. This approval is only necessary if the product or service is within the universal service obligation.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 13850		<i>Postal services - Quality of service - Measurement of the transit time of end-to-end services for single piece priority mail and first class mail.</i>
EN 30011-1		<i>Guidelines for auditing quality systems - Part 1: Auditing (ISO 10011-1:1990).</i>
EN ISO 9000	2000	<i>Quality management systems - Fundamentals and vocabulary (ISO 9000:2000).</i>
ISO 3534-1	1993	<i>Statistics - Vocabulary and symbols - Part 1: Probability and general statistical terms.</i>
ISO 3534-2	1993	<i>Statistics - Vocabulary and symbols - Part 2: Statistical quality control.</i>

 deleted text 

International Chamber of Commerce / ESOMAR International Code of Marketing and Social Research Practice¹

¹ The International Chamber of Commerce / ESOMAR International Code of Marketing and Social Research Practice is available from:

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3 Terms and definitions

For the purposes of this European Standard the following terms and definitions apply.

3.1

accuracy

closeness of agreement between a test result and the accepted reference value

NOTE 1 The term accuracy, when applied to a set of test results, involves a combination of random components and a common systematic error or bias component. [ISO 3534-1:1993]

NOTE 2 In this standard the accuracy is given by the length 2ε of the confidence interval at the confidence level 95 % for the parameter being estimated, namely the probability of attaining the specification with respect to the transit time.

3.2

aggregation

compounding of primary data into an aggregate for the purpose of expressing them in a summary form

3.3

audit

systematic and independent examination to determine whether activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve objectives

[EN ISO 9000:2000]

3.4

average (arithmetic mean)

sum of values divided by the number of values [ISO 3534-1:1993]

3.5

bring service

mail collection or mail delivery service specifically contracted by the customer

3.6

bulk mail

large volume of mail having similar characteristics posted by a single sender at the same induction point

NOTE Customers typically share the outward processing of bulk mail by sorting or segregating the mail to enable the postal operator to by-pass the first sortation stages.

Cf **sender**

3.7

business

bodies other than households that receive and send mail

3.8

characteristic

property which helps to identify or differentiate between items of a given population

NOTE 1 The characteristics can be either quantitative - by variables, or qualitative - by attributes [ISO 3534-1:1993]

NOTE 2 In this European Standard the population is postal test items and the characteristics are related to type of senders, type of receivers, times and types of induction or delivery, physical aspects of test items, franking, etc.

3.9

city

geographically defined area according to national classification systems

3.10

conformity

fulfilment of specified requirements [EN ISO 9000:2000]

3.11

corrective action

action taken to eliminate the causes of an existing non-conformity, defect or other undesirable situation in order to prevent recurrence [EN ISO 9000:2000]

3.12

correlation

relationship between two or several random variables within a distribution of two or more random variables

NOTE Most statistical measures of correlation measure only the degree of linear relationship. [ISO 3534-1:1993]

3.13

correlation coefficient

ratio of the covariance of two random variables to the product of their standard deviations [ISO 3534-1:1993]

3.14

country

territory of a nation with its own government

3.15

cross-border mail

mail distributed from one country to another country

3.16

customer

natural or legal person having a business relationship with a postal operator

3.17

date of delivery

date on which a postal item is delivered to the address or to the addressee

3.18

date of deposit (J)

date on which a postal item is posted, provided posting takes place before the last collection of that day

NOTE 1 The term date of deposit is used in relation to quality of service measurement. The definition is based on the Postal Directive 97/67/EC.

NOTE 2 Last collection refers to the advertised last time for collection (not the actual time) or to the contracted latest time for collection.

NOTE 3 If a postal item is posted after the last collection for that day's mail then the date of deposit is the next date on which there is a collection for that type of mail .

3.19

date of posting

calendar date on which a postal item is posted

3.20

delivery point

physical location at which delivery of postal items by a postal operator takes place and where they leave the operator's responsibility

3.21**design factor**

ratio of the variance of the estimator in the given sample design by the variance of the estimator in an elementary sample design of the same size. The design factor is related to a given sample design and estimator.

3.22**discriminant (characteristic)**

characteristic affecting the outcome

NOTE In this standard a characteristic is discriminant when transit time differs according to the different modes of the characteristic.

3.23**distribution**

process from collecting mail at collecting points through sorting at the distribution centre to delivery of mail items to the addressee

3.24**domestic mail**

mail items sent and received within one country

3.25**end-to-end (transit time)**

from the point mail is placed into the collection/acceptance system under the responsibility of the collecting postal operator to the final delivery point under the responsibility of the delivering postal operator

3.26**estimate**

value of an estimator obtained as a result of an estimation [ISO 3534-1:1993]

3.27**estimator**

statistic used to estimate a population parameter [ISO 3534-1:1993]

NOTE In this European Standard, a function of the observed values of test item transit times allowing the estimation of the probability of attaining the specification with respect to the transit time.

3.28**expectation**

for a discrete random variable X taking the values x_i , with the probabilities p_i , the expectation if it exists, is:

$$\mu = E(X) = \sum p_i x_i$$

the sum being extended over all the values x_i which can be taken by X [ISO 3534-1:1993]

3.29**field of study**

total mail flow of one product and service between defined postal areas as:

- Domestic - one operator in one country
- Domestic - one operator in one country for an individual or a group of customers
- Domestic - a group of operators in one country
- Cross-border - one operator to one country
- Cross-border - one operator to a group of countries
- Cross-border - one country to one country

— Cross-border - one country to a group of countries

3.30

frequency

number of occurrences of a given type of event or the number of observations falling into a special class
[ISO 3534-1:1993]

3.31

geographical coverage

spread of postal services within a pre-defined geographical area

3.32

independent performance monitoring organisation

body charged with the monitoring of the quality of service according to the methodology specified in this standard and which body is external to, and having no links of ownership or control with the postal service provider or customers thus monitored

3.33

independence

two random variables are independent if their distribution functions are related by

$$F(x,y) = F(x,\infty) \cdot F(\infty,y) = G(x) \cdot H(y)$$

where $F(x,\infty) = G(x)$ and $F(\infty,y) = H(y)$ are the marginal distribution functions of X and Y , respectively for all pairs (x,y) [ISO 3534-1:1993]

3.34

induction

deposition of mail into the postal network

3.35

induction point

physical location at which postal items are placed into the collection/acceptance system under the responsibility of the collecting postal operator

3.36

inspection

activity such as measuring, examining, testing or gauging one or more characteristics of an entity and comparing the results with specified requirements in order to establish whether conformity is achieved for each characteristic
[EN ISO 9000:2000 and ISO 3534-2:1993]

3.37

metered mail

mail franked by franking machines

3.38

national and regional holiday

day with limited postal collection or delivery activities

3.39

observed value

value of a characteristic obtained as the result of a single observation [ISO 3534-1:1993]

3.40

office of exchange

place where a postal operator accepts cross-border mail from a postal operator of another country

3.41**on-time probability**

probability of the event that the transit time T of a mail item meets the specifications, i.e. does not exceed the specified number s of days:

$$\Pr(T \leq s)$$

3.42**on-time performance**

proportion of postal items within a given period of time t with transit times meeting the specification

Formal definition: $\frac{1}{N(t)} \sum_{i=1}^{N(t)} X_i$ where $N(t)$ is the total number of postal items inducted during the period,

and $X_i = 1$ if postal items i fulfils the specification and otherwise $X_i = 0$

3.43**performance indicator**

expression derived from postal transit time statistics and data used to characterise the performance of a postal operator

3.44**postal catchment area**

postal area served by a domestic sorting centre or by an office of exchange for cross-border mail outbound or inbound. Catchment areas can be different for outbound and inbound mail, or for different fields of study

3.45**postal area**

one of the parts into which a postal operator's whole territory is divided and which is suitable for characterising postal delivery peculiarities

3.46**postal service**

services involving the clearance, sorting, transport and delivery of postal items

3.47**priority item, first class item, A-class item**

letter post item sent with priority by air or by surface and receiving different processing compared to items classified as non-priority

3.48**probability distribution**

function giving the probability that a random variable takes any given value or belongs to a given set of values [ISO 3534-1:1993]

3.49**quality**

totality of characteristics of an entity that bear on its ability to satisfy stated and implied needs [EN ISO 9000:2000]

3.50**quality assurance**

all the planned and systematic activities implemented within the quality system and demonstrated as needed, to provide adequate confidence that an entity will fulfil requirements for quality [EN ISO 9000:2000]

3.51**quality control**

operational techniques and activities that are used to fulfil requirements for quality [EN ISO 9000:2000 and ISO 3534-2:1993]

3.52

quality evaluation

systematic examination of the extent to which an entity is capable of fulfilling specified requirements [EN ISO 9000:2000]

3.53

random sample

sample of n items taken from a population of N items in such a way that each item in the population has a strictly positive probability of being selected

3.54

random variable

variable that may take any of the values of a specific set of values and with which is associated a probability distribution [ISO 3534-1:1993]

3.55

real mail

postal items sent by customers

3.56

real mail flow

number and types of postal items distributed end-to-end by postal operators

3.57

real mail study

studies on real mail flows or real mail characteristics

3.58

rural

cities and communes with less than a specified number of inhabitants

3.59

sample

one or more sampling units taken from a population and intended to provide information on the population [ISO 3534-1:1993]

3.60

sender

business sending bulk mail

NOTE The sender can be a consolidator or a mailing house

3.61

service standard

standard that specifies requirements to be fulfilled by a service, to establish its fitness for purpose

3.62

single piece mail

postal items posted and processed individually

3.63

sorting centre

place where the main sorting of mail is done

3.64

stamped mail

postal items paid for with postage stamps

3.65**standard**

document, established by consensus and approved by a recognised body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context

NOTE Standards should be based on the consolidated results of science, technology and experience, and aimed at the promotion of optimum community benefits [EN 45020].

3.66**stratification**

division of a population into mutually exclusive and exhaustive sub-populations (called strata) which are thought to be more homogeneous with respect to the characteristics investigated than the total population [ISO 3534-1:1993]

3.67**study domain**

sub-populations for which separate results can be appropriate

NOTE Study domains could be defined for example by geographic segmentation or by sub-product

3.68**test item**

postal item produced in the test measurement system for the purpose of measuring real mail performance. Test items should be representative of real mail. Test items can be either pre-fabricated by the survey operator specifically for the test measurement system or generated by a customer using an address list provided by the survey operator.

3.69**test period**

period of time under which measurement has been carried out and for which the results are presented in a separate test report

3.70**time of delivery**

time when a postal item is delivered at its delivery point

3.71**transit time**

number of days elapsed between induction and delivery of mail item as calculated in 4.2.3

3.72**transit time distribution**

transit time of a mail item is random and therefore it is modelled as a random variable; the set of probabilities of any event concerning the random variable transit time of a mail item forms its probability distribution

3.73**urban**

cities, including their outskirts, with not less than a specified number of inhabitants

3.74**variance**

measure of dispersion, which is the sum of the squared deviations of observations from their average divided by one less than the number of observations [ISO 3534-1:1993]

3.75**weight**

value to compensate for the difference between the distribution of characteristics in the survey compared to real mail

4 Performance indicators

4.1 General

The system for measuring the on-time performance of bulk mail shall be robust and shall give statistical measures at a defined level of accuracy. All measurements shall refer to on-time performance, either the end-to-end transit time or the percentage of mail delivered by, on or between expected dates.

The test mail sample design shall be representative of real mail flows.

The measuring system shall at a minimum provide for one figure for each relevant field of study for a time period not longer than ^{A1} 1, 2 or 3 years according to Annex G.

NOTE For cross border mail flows in categories 2 or 3 according to Annex G it will take 2 or 3 years, respectively to reach the required accuracy for the particular size of mail flow. ^{A1}

The measuring methodology shall be objective and shall be auditable.

Any references to “country” can be interpreted as “area served by one postal operator”.

If for a field of study an operator is defined as one operator or a group of co-operating operators, this group shall be used consistently.

Operators or regulatory authorities who want to measure small mail flows between countries have the option of measuring the flow between one country and a defined group of countries. When the field of study is a group of countries, this group shall be used consistently in the measurement.

If the field of study is composed of several study domains, it is the overall quality of service measurement for the field of study that shall comply with the requirements of this European Standard. Where additional reporting is required this should be agreed at the outset by regulator, customer, operator as appropriate. See annex F for examples. All reported figures shall be accompanied by a statement of their accuracy.

^{A1} A field of study shall not be modified during a yearly test period or over the full period of the years needed for full accuracy. ^{A1}

4.2 Calculation and presentation of on-time performance

All reports shall state the level of on-time performance accuracy achieved in the test period. It may be the percentage delivered by $(J + n)$ days or, for example with magazines or newspapers, the percentage of mail delivered by, on or between expected days. The base survey would be the same, only the choice of indicator would change. Whatever indicator of performance is used, the measurement system shall be based on a date of deposit and a date of delivery.

The following subjects are related to the calculation and presentation of the on-time performance.

4.2.1 Measurement unit

In accordance with the European Directive, (J) is the date of deposit provided induction takes place before the published last collection time at the point of induction of the mail or is made available to be collected by the postal operator by a contracted time. The date of deposit shall be determined for each individual item.

For measurement purposes the date of deposit is when the postal operator takes responsibility for the mail. The handover to the postal operator may be made by the sending customer or an agent acting on behalf of the sending customer. In cases where there are a range of collections from large customers, bulk mails containing test items posted after the last collection or posting time of the day for the type of mail shall be identified by the sending customer to the survey operator and the date of deposit derived accordingly.

4.2.2 Continuity of measurement

Across the field of study as a whole the measurement system shall be continuous. All months, weeks and days of the year in accordance with the definition of the measurement unit shall be eligible, including Christmas, Easter and summer holiday periods. Participation of customers may not always fully represent all periods of the year and in such circumstances the auditor shall comment on the possible consequences of this.

Non-functioning of the postal operator and days of strikes or industrial disputes shall not be discounted. However in case of “force majeure” events, deduction of corresponding period may be considered and shall be indicated in the reporting.

Test items shall be posted on all days where bulk mails may be posted in proportion to real mail.

Where the field of study is defined as an individual or a group of customers the standard may be applied for a shorter time period than 12 months, e.g. to assess the delivery performance of a large one-off mailing. Correct use of the European Standard will provide an accurate assessment solely for that specific mailing. It will not be possible to draw conclusions about full year performance from monitoring over less than 12 months and there will be a greater potential for bias from small surveys conducted over a limited period of time.

4.2.3 Transit time

The transit time of a postal item shall be measured in units of days and expressed as $(J + n)$ days.

For the purpose of this European Standard, transit times for cross-border and domestic mail shall be calculated according to a five-day working week calculation rule; whereby Saturdays, Sundays, and national holidays in the country of delivery are subtracted, in accordance with B.1.

For domestic mail, the transit times may, in addition, be calculated according to the weekend collection and delivery pattern provided, in accordance with one of the calculation rules of B.2, subject to the requirements of the national regulatory authority.

For purposes other than this European Standard, the operator can apply any other calculation rule. In this case no references shall be made to this European standard.

Published regional holidays may be subtracted in the calculation of transit time, by agreement with the national regulatory authority. Any adjustments shall be visible or traceable.

4.2.4 Service performance indicators

Two indicators shall be used in the presentation of the service performance; on-time performance and distribution of delivery days.

Test mail items with imprecise dates of deposit or delivery shall always be excluded from the calculations.

All postal items delivered up to $J + 30$ shall be considered in the calculations. Postal items not delivered by $J + 30$ can be excluded.

All reports shall state the level of on-time performance accuracy achieved in the test period.

4.2.4.1 On-time performance

On-time performance shall be presented in one or more of the following ways. The result shall be presented as the percentage of postal items arriving within $J + \left\lceil \frac{A_1}{n} \right\rceil$ days, where J is the date of deposit and $\left\lceil \frac{A_1}{n} \right\rceil$ is the number of qualifying days for the service standard, or as the percentage of postal items delivered by/on/between expected days.

4.2.4.2 Distribution of delivery days

The distribution of delivery days shall be presented in one or more of the following ways. The result shall be presented as the cumulative percentage of mail delivered within a given period to $J + 10$ or the percentage delivered early, on-time and late.

5 Methodology

5.1 Representative test mail methodology

The methodology shall be based on test mail representative of the real mail and shall provide indicators that are representative of the actual real mail transit time quality of service. The European Standard is designed to be used to monitor a representative sample of a postal operator's customers. However, the field of study may also be defined as an individual customer or a small group of customers.

The test mail method shall consist of a process in which senders post test mail into the postal operators' mail network and register date and time of posting, to the destination of panellists acting as receivers who register the day of delivery. Test mail shall be contained within a sender's mailing and form part of the mailing and shall comply in all discriminatory aspects with the mailing within which it is contained. This includes, in particular, that test mail shall respect the sortation sequence of the sender's mailing. Test mail shall not form a separate mailing to be posted by a sender.

The use of test mail shall allow for precise end-to-end measurement. This test mail may - but does not have to - contain electronic chips or other advanced technology that can be monitored throughout the whole journey of each test item to allow for more detailed diagnostic analysis of the transit time. The organisation operating the measuring system shall take steps to ensure that the diagnostic system does not introduce biases in the end-to-end measurement system.

Senders and receivers shall be spread all over the field of study in order to fulfil the specifications of stratification and geographical coverage. The sending and receiving process shall be organised in order to fulfil the specifications of the sample design and the test mail shall be manufactured in order to fulfil the specifications of mail characteristics.

The panel of senders and receivers shall be independent of postal service operators and shall be managed in accordance with the International Chamber of Commerce / ESOMAR International Code of Marketing and Social Research Practice including its attachment. Measurement shall be carried out by an independent monitoring organisation.

The performance monitoring organisation, the panels of senders and the panels of receivers shall be independent of the postal operator. However, it is recognised that the postal operator may know the senders taking part. The postal operator shall not be advised, in advance of posting of the dates of monitoring.

5.2 Creation of test mail

Surveys of business mail cannot be conducted without the co-operation of posting customers. The impact on the sending customers' mailing operation has to be taken into account and the size and the complexity of the sending customers' operations call for a variety of approaches to be considered. A method of sampling shall be used which ensures that the performance monitoring organisation knows the correct date and time of posting of each individual item.

Two main approaches are the seeding of mailing lists and the pre-fabrication of test items to be manually inserted into a bulk mailing.

- seeding of mailing lists may be a simpler task for the sender but it may cause problems in practice over the identification of dates of deposit, particularly for large multi-day mailings.
- manual insertion may involve more work for the sender and the performance monitoring organisation but it can help control the merging of test items with the bulk posting.

5.3 Establishing the date of deposit

To derive the date of deposit the most important practical pieces of information are the date and time of posting. The date of deposit is determined by comparing the date and time of posting with the latest acceptance time for this mailing. The following steps shall be required to minimise the recording errors for dates of deposit.

- a) the date and time of posting shall be provided to the survey organisation by the sending customer or the sending customer's agent, e.g. a mailing house. This information may be provided electronically by means of transponders and aerials or by manual observation.
- b) where practicable, the date and time of posting shall be verifiable using information from the postal operator. In many cases of bulk mail this will not, however, be possible.

It is the responsibility of the survey monitoring organisation to put in place a method that provides for consistent, accurate dates of posting. The methods used to obtain accurate dates of posting shall be agreed by the sending customer and the survey monitoring organisation before participation and before a method of induction is agreed. The induction method shall facilitate the identification of dates of posting for each individual item.

For some bulk mail one date of deposit will suffice for all items that are posted. In many cases, however, a posting may be spread over two or more days and knowledge of where each item is within the posting will be key to determining accurate dates of deposit.

The main options are shown in Table 1:

Table 1 — Options for date of deposit

Options	Information required by survey monitoring organisation	Information available from postal operator
All mail posted on the same day before the latest acceptance time	All mail will have the same date of deposit	Postal operator will be able to confirm the date of deposit
Posted over more than 1 day (i.e. the mailing is split in some way)	Date of deposit required for individual items	If information on each split is captured the postal operator may be able to confirm the date of deposit for each split.
Posted on a continuous basis	Date of deposit required for individual items	The postal operator is unlikely to be able to confirm the date of deposit

In practice these options may be further complicated by different times of posting being applied to different geographical areas. The information needed from the sending customer becomes more complex and systems required by postal operators, if they are to attempt to verify dates of deposit, more extensive.

The following minimum requirements shall apply:

- Recording errors shall be small enough so that they do not affect the survey results after taking into account the accuracy claimed for them.
- Tests shall be made to monitor the level of inaccuracy in recording dates of deposit.
- The method of seeding used shall be one which leaves least scope for error and which provides dates of deposit sufficient to meet the above requirements.

One way of overcoming some of these problems is to vary the seeding method. Different methods may help the sending customer to provide an accurate date of deposit but do little to help the postal operator confirm the date. For example, manual insertion of pre-fabricated test items may be a way for continuous senders to control the day

of deposit but all a postal operator will be able to confirm is that some mail has been handled on the day. Each sending customer may require a unique approach from the survey monitoring organisation.

5.4 Sample design

The sample design shall be representative of the mail flows and of the discriminant characteristics of the real mail. This can be realised either by a strict proportionality of the test mail flows with respect to the real mail flows, or by an over-representation or an under-representation of some strata in return for a weighting a posteriori allowing the proportionality to be restored.

5.5 Real mail studies

The survey shall be representative of real bulk mail. Real mail studies for domestic and cross-border mail measurement shall be implemented prior to the set up of the test mail measurement system in order to obtain the information needed for the sample design. In the case of single customer or group of customers this may be as simple as asking the customer or customers what they post.

Where required real mail studies shall:

- collect statistics on real mail flows and mail characteristics, according with the minimum information requirements of the statistical design. The estimation of the following weights as a minimum is mandatory:
 - the geographical stratification weights, according to 5.6. To estimate these weights it is necessary to measure the size of mail flows by size of city/office of origin, size of city of destination (urban/rural), and distance between them.
 - the discriminant characteristics according to 6.2.
 - be implemented with an intrinsic statistical accuracy coherent with the objectives of the statistical sample design and accuracy of the quality of service monitoring system itself
- [A1] NOTE** The intrinsic accuracy of the real mail studies may therefore be lower for those fields of study where less measurement accuracy is required. **[A1]**
- consider all postal items of a given field of study: e.g. non-priority magazines, priority bulk letter mail etc.
 - be implemented either by the postal operators themselves or by an external body
 - be auditable by an independent auditor when implemented, or otherwise be collected by an independent organisation.
 - include detailed information about the precision of each estimated quantity.

External studies shall be managed in accordance with the International Chamber of Commerce / ESOMAR International Code of Marketing and Social Research Practice including its attachment.

The frequency of the real mail studies shall be determined in accordance with the national regulator authority and shall be performed at a minimum once every third year.

Annex D gives guidelines about the determination of geographic stratification weights as well as the weights related to discriminant mail characteristics.

5.6 Geographical stratification

5.6.1 General

Geographical stratification shall be the basis of the sample design. The following stratification is a minimum requirement that may be improved for each country by including additional strata, and shall only be replaced by other geographical parameters if it is demonstrated by auditable proof, that these are more discriminant, and by agreement with the national regulatory authority.

5.6.2 Geographical stratification parameters

The geographical stratification is based on the following parameters:

- Urban: cities including their outskirts - 50 000 inhabitants and above
- Rural: cities and communes - less than 50 000 inhabitants
- distance I: within a straight line distance of 200 km
- distance II: above a straight line distance of 200 km
- office of exchange: cross-border mail exchange point
- regional catchment areas: the postal areas which are served by one office of exchange
- total outbound/inbound: the total proportion of the strata category outbound from or inbound to the country or defined group of countries

The definitions of outskirts, urban, rural, local and distances may take national peculiarities into account, by agreement with the national regulatory authority.

NOTE Postcode/zip code areas (key zones or key areas) could be used as a tool to define the distance.

5.6.3 Stratification for domestic mail

The test items sample shall be representative of the real mail proportions for at least the following strata:

- urban - distance I
- urban - distance II
- rural - distance I
- rural - distance II

EXAMPLE "urban - distance I" means: The total of mail to cities and their outskirts above 50 000 inhabitants in the country, within distance I.

5.6.4 Stratification for cross-border mail

For each cross-border field of study the test mail sample shall be representative of the real mail proportions for:

- urban – total inbound
- rural – total inbound
- total outbound

Where total inbound is the total of the strata category inbound to a field of study

EXAMPLE Each cross-border field of study test mail sample should be representative of the real mail regional catchment areas proportions.

Within each country, the sample of test items shall be representative of the real mail domestic distance I and distance II proportions, in relation to the distance from the posting/induction point to the outbound office of exchange and from the inbound office of exchange to the final delivery point.

By 'inbound' or 'outbound' it is meant:

- inbound: for inbound mail, the proportion of international mail going from the inbound office of exchange to the final delivery point, according to distance I and distance II, shall be representative of the real inbound mail proportion. Besides, the spread of the test items over the field of study shall be representative of the spread of the real inbound mail over urban and rural areas.
- outbound: for outbound mail, the proportion of international mail going from the posting/induction point to the outbound office of exchange, according to distance I and distance II, shall be representative of the real outbound mail proportion.