

## Annex 3

# Notification on the Ofcom Metering and Billing Direction

## Notification of a modification under section 49 of the Communications Act 2003

### The Ofcom Metering and Billing Direction

#### WHEREAS

- A. OFCOM issued a notification pursuant to section 49 of the Act setting out their proposals for the modification of the Ofcom Metering and Billing Direction, given under Condition 11 on Metering and Billing, as set by the General Condition Notification (the “First Notification”);
- B. A copy of the First Notification was sent to the Secretary of State in accordance with section 50(1)(a);
- C. In the First Notification and accompanying explanatory statement, OFCOM invited representations about any of the proposals set out therein by **5 p.m. on 11 January 2008**;
- D. By virtue of section 49(9) of the Act, OFCOM may give effect to any proposals to make the Direction as set out in the First Notification, with or without modification, where:
  - (i) they have considered every representation about the proposals made to them within the period specified in the First Notification; and
  - (ii) they have had regard to every international obligation of the United Kingdom (if any) which has been notified to them for this purpose by the Secretary of State;
- E. OFCOM received responses to the First Notification and have considered every such representation made to them in respect of the proposals set out in the First Notification and the accompanying explanatory statement; and the Secretary of State has not notified OFCOM of any international obligation of the United Kingdom for this purpose;

#### THEREFORE

### The Ofcom Metering and Billing Direction

1. Ofcom in accordance with section 49 of the Act hereby gives the following Ofcom Metering and Billing Direction;
2. The Direction is set out in the Schedule to this Notification;
3. The effect of, and Ofcom’s reasons for giving the Direction referred to in paragraph 1 above is set out in the accompanying explanatory statement;

4. Ofcom considers that the Direction referred to in paragraph 1 above complies with the requirements of sections 45 to 50 of the Act, as appropriate and relevant;
5. In making this Notification, Ofcom has considered and acted in accordance with their general duties in section 3 of the Act and the six community requirements in section 4 of the Act;
6. The Direction shall enter into force on the date of publication of this Notification;
7. Copies of this Notification and the accompanying statement have been sent to the Secretary of State in accordance with section 50(1)(a) of the Act;
8. In this Notification:
  - a. **“the Act”** means the Communications Act 2003;
  - b. **“General Condition Notification”** means the notification setting General Conditions under section 45 of the Act, issued by the Director General of Telecommunications on 22 July 2003;
  - c. **“Ofcom”** means the Office of Communications;
  - d. **“Ofcom Metering and Billing Direction”** means the direction made by the Director General of Telecommunications on 22 July 2003 under General Condition 11 setting out various requirements relating to metering and billing accuracy, set out in Annex 4 of the Statement on “The Ofcom Metering and Billing Scheme” dated 15 July 2008.
9. Except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them in this Notification and otherwise any word or expression shall have the same meaning as it has in the General Conditions Notification and otherwise any word or expression shall have the same meaning as it has in the Act.
10. For the purpose of interpreting this Notification:
  - a. headings and titles shall be disregarded; and
  - b. the Interpretation Act 1978 shall apply as if this Act were an Act of Parliament.
11. The Schedule to this Notification shall form part of this Notification.

**Claudio Pollack**

A person authorized by Ofcom under paragraph 18 of the Schedule to the Office of Communications Act 2002.

**15 July 2008**

## **The Schedule**

The Oftel Metering and Billing Direction is modified as set out below:

The Ofcom Metering and Billing Direction is Annex 1 to General Condition 11 as set by the General Condition Notification.

## **The Ofcom Metering and Billing Direction**

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## **A3.1 Introduction**

### **Purpose**

Customers cannot reasonably be expected to check the accuracy of all charges made by Communications Providers for services provided, especially where those charges are based on the extent of End-Users' usage of such services.

This Direction and its Annexes set out the requirements on Communications Providers to ensure that the risk to customers of being overcharged for their use of Public Electronic Communication Services is reduced.

### **Direction Overview**

This Direction requires that the systems and processes used to generate chargeable **Events** and the subsequent pricing of such Events are suitably designed, that they are being operated within their design limits and that there is reported evidence of performance. In the event of overcharging the remedial action is defined in section A3.4.7.

The Direction recognises that there will always be a need to make changes to the underlying systems and processes and requires that any change introduced is risk assessed to ensure that it does not compromise the integrity of the systems.

It also describes the means whereby Customers who suspect that there is an overcharge Event have access to a process to investigate and report on the disagreement in section A3.4.8.

In order to provide the End-Users with confidence, Ofcom uses independent Approval Bodies, who are accredited to approve those Communications Providers who are required to demonstrate compliance.

## **A3.2 Document Structure**

The intention is to make this document easily expandable either in the case that a new service is brought within the scope of the Direction by the addition of a new Annex, or by a voluntary Annex that applies to a particular service acquiring mandatory status. This document contains the following:

### **Communications Provider Applicability (3)**

Section three clarifies the criteria against which Communications Providers need to apply, gain and maintain Approval with this Direction.

### **Principal Obligations (4)**

Section four outlines those obligations which Communications Providers should implement and demonstrate compliance with, and are considered generic to all types of communications services, independent of market segment.

## **Compliance (5)**

Section five describes the process through which Communications Providers can demonstrate compliance with this Direction, and the role of the Approval Bodies.

Notes:

1. Defined terms will be presented in Title Case and can be found in the Definitions & Interpretations (M) Annex. Additionally, the first occurrence (excluding section/subsection titles) of a defined term will be marked in bold.
2. Reference to clause/section numbers will appear in text such as (2) or 2.
3. Annexes can be Mandatory (M), Voluntary (V) or for Guidance (G).
4. Where the term Direction is used throughout the document this includes relevant annexes.

## **A3.3 Communication Provider Applicability**

### **A3.3.1 Scope**

This Direction applies to any Total Metering and Billing System used for either retail or wholesale purposes, or both. It does not apply to an invoice raised by one Communications Provider against another for handling telecommunications traffic passed between their systems e.g. interconnection and settlement charges between Communications Providers.

A Communications Provider is required to comply with this Direction if its Relevant Turnover from End-Users contracted for each mandatory service (as outlined in the Annexes) is more than £40,000,000 on an annual basis (exclusive of VAT and other taxes directly related to turnover). Therefore, not all products and services offered by a Communications Provider are covered by this Direction.

### **A3.3.2 Initial Applications**

Initially, Communications Providers shall apply to an Approval Body within the timescales detailed in Section 5.

### **A3.3.3 Additional Approvals**

There are two options by which additional products and services can be introduced into the Scheme by Communications Providers with an approved Total Metering and Billing System.

In both instances, where there is an existing relationship with an Approval Body, it is for the Approval Body to determine whether an Extension of Scope or an Initial Application is appropriate.

#### **A3.3.3.1 New and Separate Approval**

The first is where the Communications Provider has introduced a substantial number of entirely new controls and systems for the new services and products. In this instance, it is appropriate for the new service to be considered as a new and separate application to the Approval Body. The application process is the same as for an Initial Application.

#### **A3.3.3.2 Extension of Scope to an existing Approval**

The second is where the Total Metering and Billing System and its controls are not substantially changed by the new product or service. In this instance, the Communications Provider is required to extend the scope of its existing Approval to cover the new product or service.

A new product or service requires a technical change to either the delivery mechanism or the usage mechanism. It is not simply a new combination of products and services, some of which may be in scope and some out of scope, into new 'packages'.

New products and services will be included within the extended scope once the turnover from these products or services represents at least £2,000,000 annual revenue (excluding VAT and other taxes directly related to turnover).

Once a product or service reaches this threshold, the Communications Provider shall apply for an extension of scope within 12 months.

### **A3.4 Principal Obligations**

This section outlines those obligations which Communications Providers should implement and demonstrate compliance with. They are applicable to all types of Public Electronic Communications Services.

This section should be read in conjunction with the relevant Annex depending on the service provided.

#### **A3.4.1 High Level Description**

The Communications Provider shall produce a **High Level Description** for each Total Metering and Billing System and agree the content of that description with its Approval Body. A High Level Description is a documented explanation of the Total Metering and Billing System and the associated risks to completeness and accuracy.

The High Level Description referred to above needs to be sufficient to enable a person who has no personal knowledge of the system, but has a reasonable level of technical understanding, to comprehend the principles of the operation and its associated risks.

The High Level Description shall refer to lower level documents such as appraisals so that it is clear how the system and process elements interoperate and how the Communications Provider inter-works with its suppliers of components and services that may impact on the Total Metering and Billing System, and with other Communications Providers.

The High Level Description shall be subject to change control and **Risk Management** throughout the life of the Total Metering and Billing System. Risk Management is an assessment of the risks to the total Metering and Billing System accuracy for impact and likely occurrence.

#### **A3.4.2 Total Metering and Billing System Risk Management**

A Communications Provider shall assess risks to the Total Metering and Billing System accuracy for impact and likely occurrence. Mitigation actions for these risks shall be documented. The **Measurement Strategy** is a statement of how risks are to be monitored

and where the occurrence of the risk is measured for reporting on the Total Metering and Billing System performance.

Whenever a change to the Total Metering and Billing System is planned, an impact analysis shall be carried out. This impact analysis shall include a revised risk assessment and will determine the need for any changes to the Measurement Strategy, High Level Description and maintained list / register of risks.

Where the scope of Approval changes either to add or delete products / services, the Approval Body will conduct an assessment of the revised Total Metering and Billing System.

The process of managing risks to Total Metering and Billing System accuracy is subject to audit by the Approval Body.

### A3.4.3 Process Management

A Communications Provider shall have and enforce the effective use of procedures and/or documentation covering all aspects of the Total Metering and Billing System.

All business and technical processes that can impact the Total Metering and Billing System shall be included within the scope of a process management system for Approval purposes, including those of related third parties or sub-contractors.

Where no external accredited certification of the process management system exists, it shall be assessed by the Approval Body against the relevant requirements of ISO 9000 or an equivalent standard. Formal certification against ISO 9000 is not a requirement.

The Total Metering and Billing System shall be subject to change control throughout its life.

### A3.4.4 Tariffs

#### A3.4.4.1 Introduction

In order for End-Users to understand the charges appearing on the Bill, the **Tariffs** and rules that determine the Event charges shall be made readily available to those End-Users.

Tariffs shall specify the resolution, rounding, method and the units of measure applied to Events and charges, both at an individual and aggregate level. The expression 'rounded to the penny' defines the resolution, but not the method of rounding.

#### A3.4.4.2 Rounding and Resolution

Both rounding and resolution influence the charge that appears on the Bill. For example: where rates are quoted in pence per minute, but applied as a rounded rate per second, then multiplied by the duration in seconds, the charge may not be as expected.

<b>Examples of the different effects of Rounding and Resolution when applied to a 1p per minute call lasting one minute</b>				
<b>Rounding Method</b>	<b>Rate Resolution</b>	<b>Rate pence per second</b>	<b>Duration in seconds</b>	<b>Cost in pence</b>
None	n/a	0.016 <sup>Recurring</sup>	60	1.00
Up	3 decimal	0.017	60	1.02

	places			
Down	3 decimal places	0.016	60	0.96
Up	2 decimal places	0.02	60	1.20

#### A3.4.4.3 Tariff Types

There are two types of Tariff, a public domain Tariff and a bespoke Tariff.

##### a) Public Domain Tariff

A **Public Domain Tariff** is one that can be confirmed by the general public and shall be made available on request. A Public Domain Tariff is a publicly available statement that specifies the charges which a Communications Provider makes for Electronic Communications Services.

In order to overcome the situation whereby two pieces of information purporting to be the public domain Tariff have differing information, the Communications Provider shall publicly identify which takes precedence.

Note: This allows Communications Providers to offer special rates to specific destinations over specified periods through advertising, without having to re-issue the complete Tariff.

Where the End-User is able to make a choice and the Tariff depends upon that choice, then the different Tariffs shall be contained within the public domain Tariff.

Note: This is important for certain types of calls such as those via 118xxx services, Operator Assistance, inadvertent Mobile Network Roaming and 0800 from Mobile Networks.

##### b) Bespoke Tariff

A **Bespoke Tariff** is confidential between the End-Users and the Communications Provider. The End-Users are provided access to the details of the Tariff through defined processes. A Bespoke Tariff is only available to a single End-User or to a limited class of individual End-Users.

Although End-Users may be initially provided with Tariff information at the point of contract acceptance it may be impractical to have a policy of reissuing Tariff information to End-Users when rates are changed. It is important that End-Users can verify the Tariff should they require to do so.

The information on a Bespoke Tariff is not available to the general public; it is not displayed on a publicly accessible page on a website nor is it disclosed at a contact point. The information could be contained on a password protected page within a website accessible to the End-User.

Where a previous public domain Tariff has been withdrawn from public use, but some End-Users remain on that Tariff, it shall be treated as a Bespoke Tariff, the terms of which shall be disclosed at the request of those End-Users.

Changes to the Bespoke Tariff shall be made in accordance with the documented and agreed change process.

#### A3.4.4.4 Using the Tariff for Clarification

The **Tariff Schedule** (which is a list of charges) should also be used to provide additional information to the End-User on avoiding and/or understanding perceived errors on the Bill.

The following examples of instances where statements would be of benefit are not exhaustive:

a) Call Bundling

There can be delays between calls completing and being presented on a Bill caused by a number of technical reasons. This can cause problems when an End-User is charged on the basis of a bundle of calls. Whilst every effort will be made to overcome this situation, calls can appear on a Bill not in call start time order and hence may not necessarily be included in the appropriate bundle if calls are made close to the end of a bundle period.

Note: Where such bundling errors occur, they will be evaluated by Approval Bodies according to their real effect on the End-User.

b) Inadvertent Roaming

The End-User will be charged for the call on the network that provided the service, even if this was not the End-User's intended Communications Provider. To prevent a situation where the network used is not the network of choice the End-User should turn off automatic network selection and manually select the preferred network. This ensures that the call is not inadvertently routed over another network at a different cost. This is particularly important in areas close to national borders and when travelling outside the UK where the preferred Communications Provider may have preferential rates with only one of the available networks. Communications Providers will take reasonable steps to publicise the consequences of inadvertent roaming and how to mitigate them.

c) Termination of Mobile Calls

Where a call originating from a mobile device (e.g. handset) is terminated other than by the caller pressing the specific button for that purpose, the network will initially assume that contact between the base station(s) and the handset has been temporarily lost - as when passing under a bridge or through a tunnel. The connection will be maintained and charged for during the first "n" seconds after contact is lost. Should contact be re-established, the call will continue as before. If however, the caller has switched off the phone, run out of battery capacity or moved permanently out of range of any base station etc, the charges for that call will include the "n" seconds. In order to minimise the risk of unnecessary charges, users should be careful to end each call as set out in the user instructions for the handset - e.g. pressing the "End" button.

#### **A3.4.5 Interworking between Communications Providers**

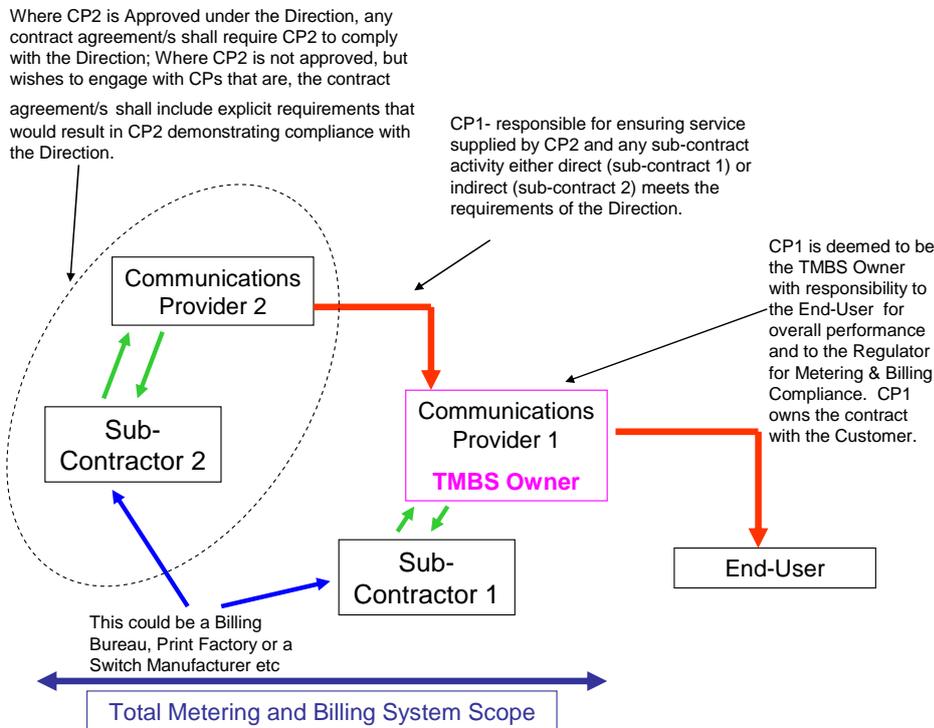
Where wholesale service contracts exist between two or more Communications Providers, it shall be for each Communications Provider to satisfy themselves that the services they offer or receive meet the requirements of this Direction. Primary responsibility shall rest with the Communications Provider that holds the contract with the End-User (deemed to be the overall Total Metering and Billing System owner) to ensure that the overall service meets the accuracy standards within this Direction. Evidence of an agreed Measurement Strategy shall be a key feature and shall be regarded as a minimum requirement.

Such contractual agreements shall not expect any individual party to operate their Total Metering and Billing System free from error nor allow an accumulation of errors to exceed the required overall performance standard laid down in this Direction.

Where issues arise that cannot be resolved between Communications Providers in a reasonable timeframe, escalation shall be first to the appropriate Approval Body (or Bodies) concerned, who shall seek to resolve differences, and then to Ofcom if a resolution cannot be achieved.

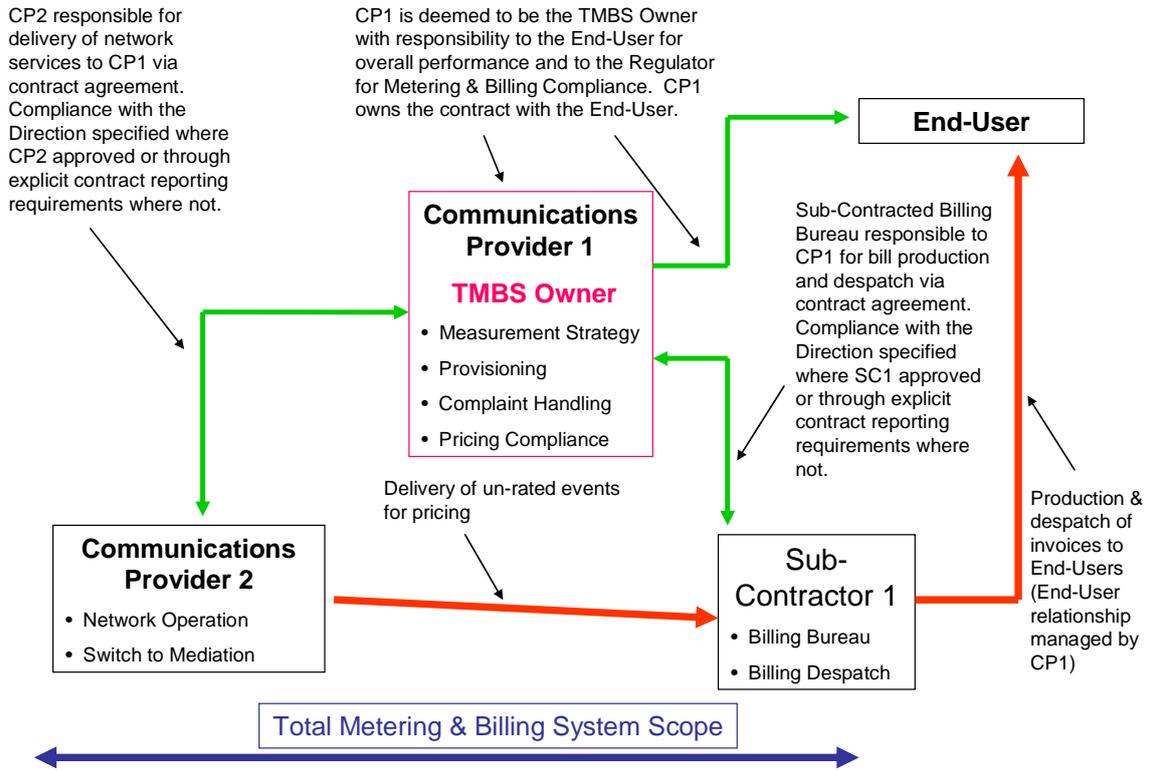
Figures 1, 2 and 3 in this section highlight the Total Metering and Billing System variations that can exist. The figures indicate how the Direction should be applied in each set of circumstances.

**Figure 1 - Example of a Mixed Total Metering and Billing System**



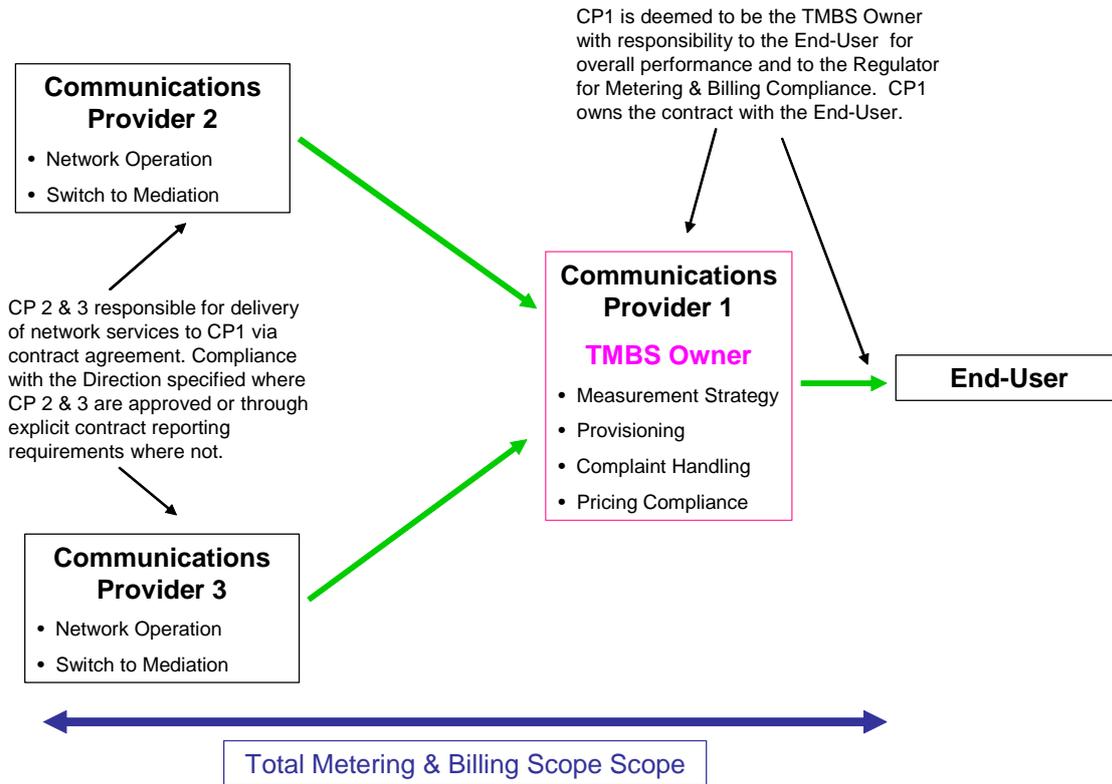
**Figure 1 - Example of a Mixed Total Metering and Billing System**

**Figure 2 - Example of a Mixed Total Metering and Billing System**



**Figure 2 - Example of a Mixed Total Metering and Billing System**

**Figure 3 - Example of a Mixed Total Metering and Billing System**



**Figure 3 - Example of a Mixed Total Metering and Billing System**

Where a Communications Provider owns part (or all) of the overall Total Metering and Billing System and receives a service from a non-Approved source, either from another Communications Provider or via a sub-contractor, they shall ensure the quality of that service either by direct reference to compliance with the Direction or by including explicit requirements that would result in such compliance.

**A3.4.6 Total Metering and Billing System Measurement Strategy**

**A3.4.6.1 Purpose**

The Communications Provider shall produce a Measurement Strategy for each Total Metering and Billing System and agree its content with its Approval Body. The High Level Description (4.1) and Risk Management (4.2) assessments of the Total Metering and Billing System will determine the content of the Measurement Strategy.

The purpose of the strategy is to describe the measurements to be taken and supporting controls that the Communications Provider shall produce, and undertake, to demonstrate the performance of the Total Metering and Billing System, as described in 4.1 and 4.2.

**A3.4.6.2 Reporting**

The Measurement Strategy shall specify the type and frequency of regular reports from operational or assurance systems demonstrating accuracy against the relevant tolerances.

Where a number of measurements are combined to provide an overall measure to demonstrate accuracy the method of calculation shall be described.

The Total Metering and Billing System Measurement Strategy shall be subject to change control throughout the period of its application..

### **A3.4.7 Assessment of Performance**

#### **A3.4.7.1 Introduction**

Measures shall be produced in accordance with the agreed Measurement Strategy, with accuracy limits reflecting the different charge types for usage and non-usage Events. This section outlines the generic measurement criteria applicable to all services. Product specific limits and tolerances are defined in the relevant annex. The inaccuracy limit defines the maximum number of permitted tolerance errors.

#### **A3.4.7.2 Routine Performance**

The Communications Provider shall maintain performance of the Total Metering and Billing System within the required accuracy limits over a rolling 12 month period. Where there is a failure to maintain **Routine Performance** remedial action will be agreed with the Approval Body. Routine Performance is a state in which the performance of the Total Metering and Billing System falls within the required accuracy limits over a rolling 12 month period.

#### **A3.4.7.3 Extraordinary Performance Failure**

When performance exceeds four times the accuracy limit in any one month, the following actions shall be followed:

- a) The Approval Body shall be informed within five working days of the performance failure being identified.
- b) End-Users shall not be financially disadvantaged, but where individual End-Users cannot be identified the Communications Provider shall derive no financial benefit from the failure, either by donating an equivalent sum to charity or by an adjustment of tariffs.
- c) An initial recovery plan shall be made available to the Approval Body as soon as practicable but no later than ten working days after the initial notification of the performance failure.
- d) The performance failure, impact and recovery plan shall be recorded and reviewed at regular Approval review meetings and in planned audit and assessments.
- e) Root cause and impact analysis shall be carried out and corrective actions recorded.
- f) The impact of **Extraordinary Performance Failure** (which is when performance exceeds four times the accuracy limit in any one month) shall be presented along with the Routine Performance results to the Approval Body when measurement results are required.

The Approval Body shall assess the frequency and severity of all Extraordinary Performance Failures collectively. Should this exceed the threshold level of three **Category 2** occurrences within a rolling 12 month period, a full review by the Approval Body of the Total Metering and Billing System shall take place to re-establish fitness for Approval.

#### **A3.4.7.4 Delayed Events**

**Chargeable Events** (which are Events that give rise to a charge) may be delayed for a number of reasons but shall be included in a Bill no later than:

- a) the next Bill, when Bills are rendered quarterly or less frequently;
- b) when Bills are rendered monthly, the fourth monthly Bill after the chargeable Events occurred; or
- c) where an End-User is not subject to a standard consumer contract and a prevailing bespoke contract exists it is permissible to specify in that contract the acceptable delay to Billing Events.

Any chargeable Event details not so presented shall not be subsequently Billed.

Agreement between the Communications Provider and the Approval Body to extend the time scales described in A3.4.7.4 shall be subject to written agreement with Ofcom.

Note: Late or lost Events should normally be counted for measurement purposes as relating to the period when they should have been Billed. If this is impracticable, it is acceptable to count them when they are written off.

#### **A3.4.7.5 Timing Effect on Bundled Events**

When clarity of information permits, a statement of bundle timing intervals shall be included in public domain or Bespoke Tariffs.

Where the timely allocation of Events to bundles is not practicable (e.g. Total Metering and Billing System recovery following a failure) and as a means of ensuring that the End-Users affected are not disadvantaged, the actions set out under sections A3.4.7.2 and A3.4.7.3 as appropriate shall apply.

#### **A3.4.7.6 Timely Despatch of Bills**

The Communications Provider shall ensure that an effectual Bill or Bill data file delivery schedule is in place.

The timeliness of Bill Issue or Bill data file Issue shall be subject to systematic processes.

### **A3.4.8 Individual Bill Accuracy**

#### **A3.4.8.1 Introduction**

The Measurement Strategy will measure overall Total Metering and Billing System performance and is not designed to capture inaccuracies on individual Bills. A Communications Provider shall employ processes for receiving, identifying, investigating and dealing with incorrect charges, including processes whereby End-Users can readily question the accuracy of their charges.

#### **A3.4.8.2 Error Handling and End-User Complaints**

When a Communications Provider identifies that an End-User has been overcharged, either through a End-User enquiry or from internal identification, appropriate and proportionate corrective action shall be undertaken.

The Communications Provider shall carry out a root cause analysis for verified overcharges, identify the cause and establish proportionate remedial action to correct it. Where the root cause affects multiple End-User accounts, then all affected Bills shall, if practicable, be included in a recovery programme (A3.4.7.2 and A3.4.7.3).

### A3.4.8.3 Detection of Gross Billing Errors

A Communications Provider shall employ a suitable mechanism, agreed with its Approval Body, for the detection of **Gross Billing Errors**, which are Bills that contain significant deviations from the expected norm. The precise nature of this mechanism will vary from one TMBS to another, but will usually be derived from existing management controls and reports. Typically it may involve any or all of the following:

- a) Detection of any bill which differs by a settable percentage from historical bills for that particular End-User or circuit;
- b) Detection of any billing run which differs in total value by a settable percentage from historical billing runs that would be expected to be similar;
- c) Trend analysis of rejected chargeable Events;
- d) Manual analysis / recalculation of a representative sample of bills;
- e) Specific analysis of the reasons for unexpected reports produced by Mediation / Rating / Billing systems etc.”

For the purposes of this Direction, Communications Providers can make use of any data provided to Ofcom for another purposes e.g. providing Quality of Service data. If not subject to dispute with Ofcom and agreed to be suitable by the Approval Body, this data need not be separately audited.

## A3.5 Compliance with this Direction

The Communications Provider shall provide the Approval Body with access to all people, locations, **Equipment** and data necessary to establish compliance with this Direction.

The Communications Provider shall nominate a senior manager, ideally a Board Member, to manage the relationship with Ofcom for the successful compliance with the Ofcom Metering and Billing Direction by the Communications Provider.

The responsibility of the nominated person is to provide the strategic direction for the implementation of the Direction within a Communications Provider, to act as the escalation point for the Approval Body and to ensure that an Ofcom Billing Accuracy Programme Manager is appointed, ensuring that they are of sufficient capability and experience to carry out the role.

The day-to-day operational management shall be delegated to the Ofcom Billing Accuracy Programme Manager, who shall have responsibility for maintaining compliance internally within the Communications Provider. The Ofcom Billing Accuracy Programme Manager will be the point of contact between the Approval Body and the Communications Provider. The Approval Body shall confirm the capability and appointment of this manager.

The timetable required for this process is as follows:

<b>Milestone</b>	<b>No later than</b>
Application for Approval	12 months of reaching Relevant Turnover
Agreed plan between Communications Provider and Approval Body	24 months of reaching Relevant Turnover
Initial Approval gained	48 months of reaching Relevant Turnover

Any deviations from this timetable shall be agreed with Ofcom.

### A3.5.1 The Assessment Process

In general, compliance with this Direction shall be determined by assessments and measurements as set out below:

**A3.5.1.1 Approval Body appointment**

Once it has been determined that a Communications Provider should be complying with the Direction, either through a voluntary or mandatory route, the Communications Provider selects an Approval Body. Each Approval Body is independent and accredited to approve Communications Providers; their details may be found on Ofcom’s website. However, their approaches to achieving Approval are not necessarily the same, and therefore the Communications Provider should choose an Approval Body that is suitable.

**A3.5.1.2 Initial Meeting**

The Communications Provider shall meet with the Approval Body to determine the extent of the Total Metering and Billing System to be assessed. The Communications Provider and the Approval Body will develop a joint and agreed plan, showing the scope of Approval, resources, activities, dependencies and timescales required by both parties. This plan is submitted to Ofcom by the Approval Body for endorsement. This endorsement confirms that the projected progress is acceptable to Ofcom and sets out how the Communications Provider and Approval Body will meet the deadline for achieving Approval.

**A3.5.1.3 Initial Assessment**

The Communications Provider must submit its technical / functional design documentation of the applicable Total Metering and Billing System in accordance with A3.4.1, and A3.4.2 to the Approval Body for initial assessment.

Assessment will typically include, but not be limited to, the following:

- Tariff, and Pricing, management processes
- Transaction Data processing activities
- Billing Operational & Audit processes
- Customer Management Processes
- Network data transaction processes
- Customer and Product Reference Data integrity processes
- Timeliness of processes
- Complaints handling

Note: where specified processes are audited under an accredited Quality or Financial Audit process, the Approval Body will take into account the documented audit findings.

**A3.5.1.3 a) Revision of the plan**

Revisions to the plan, which remains a live document, are to be made no less than annually, once Assessments commence and further Total Metering and Billing System requirements and actions come to light. Any significant slippage or amendments to the plan end date will be subject to Ofcom review and re-approval of the plan.

**A3.5.1.4 Main Assessment**

The main assessment conducted by the Approval Body shall comprise:

a) System Design

The Approval Body will review the High Level Description and the lower level appraisal documents to ensure that there are no inherent weaknesses within the

design and that it is capable of delivering the performance standards required by this Direction.

b) System Process Management

The Approval Body will assess the processes surrounding the operation of the Total Metering and Billing System to ensure that these processes are being operated correctly to achieve compliance with the requirements of the Direction.

c) System Performance

The Approval Body will assess the ongoing performance of the Total Metering and Billing System in meeting the standards in this Direction by means of a Measurement System as defined in the agreed Measurement Strategy document. The requirement is for a rolling 12 months' results to be presented. However, based on the stability of the results presented, the Approval Body may, at its discretion, recommend Approval prior to all of the initial 12 months' data being collected, subject to a minimum of six months' data having been collected in the case of a first approval.

d) Conducting Assessments

Audits will be scheduled in accordance with the agreed plan which will incorporate a mix of internal/third party and external Approval Body audits. Audit reports and relevant findings from all sources will be documented by the Approval Body and agreed with the Communications Provider. Findings will be Categorised and recorded. Communications Providers may appeal against the Categorisation of any matter by following the Approval Body's documented Appeal Process (provision of such a process is required by EN 45011).

e) Tracking Corrective Actions

The Approval Body will agree with the Communications Provider a process for documenting, tracking and addressing non Compliances and Deficiencies by means of Corrective Action.

### **A3.5.2 Approval and Certification**

Once the Approval Body has satisfied itself that all the requirements for Approval have been met, it will publicise its intention to approve the Communications Provider and offer a one month consultation period. Such a proposal would be subject to the formal public Notification procedure required under section 49 of the Communications Act 2003.

At that point, other parties are able to ask questions of the Approval Body on the background and basis of the decision to grant Approval.

Once any queries arising have been satisfactorily resolved, the Approval Body issues a Certificate of Approval. The Communications Provider's Approval number and scope are published on Ofcom's website.

### **A3.5.3 Maintenance of Approval**

Once Approval has been granted, the Communications Provider is required to maintain its Approval. This is achieved through the on-going audit and surveillance of the Total Metering and Billing System by the Approval Body.

Changes to the Total Metering and Billing System continue to be assessed through the review of appraisals of the key parts of the system.

The ongoing performance is reported monthly through the presentation of results to the Approval Body.

Should there be compliance related issues, these will be documented and Categorised. All Category 1 matters (for an existing Approval) shall be reported by the Approval Body to Ofcom.

In the case of a dispute arising between the Approval Body and the Communications Provider that they cannot resolve themselves, the parties may elect to take the dispute to Ofcom for resolution.

#### **A3.5.3.1 Change of Approval Body**

Where a Communications Provider changes Approval Body, the Approval Bodies are expected to recognise each other's certification.

The Communications Provider is able to initiate a change of Approval Body once the initial Approval has been achieved. However, in order to prevent switching being used to circumvent poor performance, Ofcom has to sanction the transfer and will monitor the process as necessary. Handover will be subject to a mutually agreed action list and time scale.

A change of Approval Body may also occur in circumstances where an Approval Body is no longer able to continue serving a Communications Provider.

#### **A3.5.3.2 Recertification**

The certificate is subject to periodic renewal by the Approval Body. Prior to any such renewal, the Approval Body will perform a re-certification exercise and assess the findings of the surveillance visits, audits and measures before determining whether to confirm continuation of the Communications Provider's Approval.

### **A3.5.4 Change of Scope of Approval**

Where the scope of Approval changes either to add or delete products / services, the Approval Body will conduct an assessment of the revised Total Metering and Billing System, using the above process.

Note: When the Approval Body adds additional items to the scope of an Approval not requiring a technical change this will require an Approval Certificate amendment

### **A3.5.5 Withdrawal of Approval**

Withdrawal of Approval can occur in one of two ways.

5.5.1 The product or service being offered by the Communications Provider is no longer covered by the Direction, either through a change in the scope, or through the reduction in the Relevant Turnover.

5.5.2 The Communications Provider's performance and actions are such that continued certification would contradict the requirements of General Condition of Entitlement 11 and the Ofcom Metering and Billing Direction.

## Annex List - Mandatory

In addition to the general obligations and principles contained in the main body of the Direction, the following annexes have been developed to give more specific information. They are either mandatory or voluntary.

<b>Mandatory annexes</b>	<b>Date of latest issue:</b>
Annex List	15 July 2008
A Definitions and interpretations	15 July 2008
B Fixed PATS	15 July 2008
C Mobile PATS	15 July 2008
<b>Voluntary annexes</b>	
D High Speed Internet (Broadband)	15 July 2008
E VOIP, all access networks	15 July 2008
F Undercharging Detrimental to End-Users	15 July 2008

# Annex A

## Definitions and Interpretations

Term	Definition and Interpretations	Notes
<p>Category (Categorisation)</p>	<p>Category 1:</p> <ul style="list-style-type: none"> <li>• A major Non-Compliance or Deficiency preventing the issue or continuance of Approval for which corrective action must be undertaken urgently. In view of the grave consequences of a Category 1 matter, it is expected that a Communications Provider will resolve it as a matter of the utmost importance.</li> <li>• In any event a detailed corrective action plan must be agreed within one month and put into effect within four months.</li> <li>• All Category 1 matters for an existing Approval are to be reported by the Approval Body to Ofcom.</li> <li>• As a Category 1 matter has the potential to constitute a breach of Condition 11, Ofcom reserves the right at its own discretion to provide guidance when a resolution is sought. One resolution would be to amend the scope of Approval until satisfactory Corrective Action has been undertaken.</li> <li>• Withdrawal of an Approval will only take place after discussion between Ofcom, the Approval Body and the Approval holder. Such a proposal would be subject to the formal public Notification procedure required under</li> </ul>	<p>The Categorisation of Non-Compliances, Deficiencies and Observations.</p>

	<p>section 49 of the Communications Act 2003.</p> <p>Category 2:</p> <ul style="list-style-type: none"> <li>• A Non-Compliance or Deficiency; which is a matter of concern. It is to be resolved within a period agreed with the Approval Body, but not exceeding 24 months.</li> <li>• In any event a detailed corrective action plan must be agreed and put into effect within four months. Categorisation: the accumulation of Category 2 matters may result in a Category 1 matter being raised.</li> </ul> <p>Category 3:</p> <ul style="list-style-type: none"> <li>• A Deficiency worthy of consideration by the Communications Provider, possibly leading to corrective and / or preventative action, but not of sufficient importance to warrant Category 1 or 2 status.</li> </ul> <p>Note that an Observation generally comes below "Category 3" in seriousness.</p>	
Equipment	all the hardware and software and/or firmware necessary for the correct operation of a function.	
Event	the use of Event is intended to overcome a future services issue where a charge can range from e.g. a telephone call, data download, access, content, bandwidth or non-usage based e.g. recurring charges.	<p>Note 1: The term Event can be usage charged for by duration as in a telephone call. Another example is the transmission of data, which could be charged for by counting the number of bytes or data packets required.</p> <p>Note 2: Events may occur without having been initiated</p>

		by the user. An example would be charges for the terminating leg of a call. Where charges apply to both the origination and termination of the same call, two distinct Events will have occurred. Examples are call diversion or mobile telephone roaming.
Event overcharged	means either:  (a) a chargeable Event for which the charge to the End-User exceeds that calculated on the basis of the applicable published Tariffs, or Bespoke Tariffs; or  (b) any other incident which results in a charge being logged or added erroneously to the Bill.	An example of (b) is multiple entries relating to the same service usage
Event undercharged	a chargeable Event, either :  (a) for which the charge to the End-User is lower than that calculated on the basis of published Tariffs, or Bespoke Tariffs; or  (b) which has been omitted from the logged record or Bill owing to an incident;  and which is not excluded from Measurement.	An example of (b) is the loss of call records as a result of a switch restart.
Interconnect	the passing of communications traffic between the systems of two or more Communications Providers	
Interworking	the passage of usage data between Communications Providers which will result in an entry and/or charge on an End-User's Bill	
Issue	the action whereby the Communications Provider, having completed preparation of a Bill, passes	The Communications Provider has completed preparation of the Bill if any further processing still to be

	it to the delivery agent or posts the information electronically.	performed by the delivery agent is for presentational purposes only.
Ofcom Billing Accuracy Programme Manager	the Ofcom Billing Accuracy Programme Manager shall have the authority to enforce compliance internally within the Communications Provider. The Ofcom Billing Accuracy Programme Manager will be the point of contact between their Communications Provider and Approval Body.	
Tariff	means publicly available statements (unless it is a Bespoke Tariff, see section A3.4.4.3) that specify the charges which a Communications Provider makes for Electronic Communications Services; Note: The term is intended to cover paper documents made available for public inspection, statements published in periodicals, advertisements, information published on the Internet, and the like.	

# Annex B

## Fixed Publicly Available Telephony Service - Mandatory

Note: This Direction does not apply to Public Pay Telephones.

### 2. Communications Provider Inclusion Thresholds

#### 2.1 Initial Application

A Communications Provider shall apply for Approval when the Relevant Turnover from fixed access network Publicly Available Telephone Service exceeds £40million per annum (exclusive of VAT and other taxes directly related to turnover).

#### 2.2 Extension of Scope

Where a Communications Provider introduces a new product or service that utilises the majority of the same elements as an existing Approved Publicly Available Telephone Service, e.g. it is delivered utilising a switched voice channel, mediated through an existing mediation device and Billed through an existing Billing engine any two of which are covered by an existing Total Metering and Billing System, then the Communications Provider shall apply for a suitable extension of scope when the turnover from this product or service reaches £2million per annum (exclusive of VAT and other taxes directly related to turnover). Other examples can be found in this Direction.

It will be for the Approval Body to determine whether a product or service falls into the category of Extension of Scope or Initial Application described above.

### 3. Description of Service

A Publicly Available Telephone Service Total Metering and Billing System utilises two distinct types of **Events** for charging purposes.

#### 3.1 Usage Events

These are Event records that are generated by a telecommunications switch, triggered by the use of a Publicly Available Telephone Service by the End-User.

#### 3.2 Non-Usage Events

These are sub-divided into two categories and cover the Event records not triggered by the use of a Publicly Available Telephone Service by the End-User.

##### 3.2.1 Non-Recurring Events

These include costs for the provision, change, suspension or removal of services, products and equipment. They are likely to be actions that do not result in the creation of a usage Event record.

Note: Provision includes both cease and re-provision processes.

##### 3.2.2 Recurring Events

These include subscriptions and rentals for equipment or availability that are applied on a regular basis to the Bill irrespective of any usage or non-usage Event.

### 4. Allowable Tolerances

These tolerances determine the Events in error that will be applied to the limits in 5 below.

Unless otherwise stated, these tolerances apply to the units of measure used in the systems being measured. Measurement results can be presented as a ratio or percentage.

#### 4.1 Usage Events

	Variable	Allowable Measurement Tolerance
a.	Duration	+1 second or +0.01% (whichever is less stringent)
b.	Time of Day	+ or – 1 second
c.	Count of Charges	+0.004% (1:25K)
d.	Value of Charges	0.1p

#### d. Value of Charges

The actual charge per usage Event, e.g. a Call Detail Record, shall be within 0.1p of the expected charge. Where rounding information is publicly available then the tolerance shall be + 0.1p of the rounded value for individual call charges. If no rounding is published then the same tolerance shall apply to the recorded value.

#### 4.2 Non-Usage Non-Recurring Events

	Variable	Allowable Measurement Tolerance
a.	Duration	n/a
b.	Time of Day	n/a
c.	Count of Events	+0.05% (1:2K)
d.	Value of Charges	1p

#### 4.3 Non-Usage Recurring Events

	Variable	Allowable Measurement Tolerance
a.	Duration	+1 day
b.	Time of Day	n/a
c.	Count of Events	+0.01% (1:10K)
d.	Value of Charges	1p

#### Notes:

1. Where the Recurring Event charge is based upon whole days, the start of the period is the day on which the service was first provided and the end is the day on which the service was de-provisioned, irrespective of the time of that provision, unless otherwise stated in the Tariffs.
2. Duration: shall be within +1 day on the entire lifetime of the rental or equivalent.

### 5. Measurement Limits

Performance of the Total Metering and Billing System shall be assessed on the basis of how many errors in charging are made. An error will be defined by tolerance levels being exceeded.

It is not practicable to combine accuracy limits into a single quantity for values (£) and the numbers of Events counted or recorded. This requires that the accuracy requirement is separated into three elements for the purposes of demonstrating compliance with the limits in this section.

The tolerances in 4 above determine Event errors that are to be applied to these limits.

**Value Overcharged (Billing)**

Each Value Overcharged (Billing) measure has an individual limit because all are significantly material.

A Value Overcharged (Billing) limit (a) is the total calculated value of the Count of Events Overcharged (b) and Over Recorded (c).

**Count of Events Overcharged and Over Recorded**

There will be several orders of magnitude between the numbers of Usage Events when compared with the number of Non-Usage Events during any specified period. Usage Events are measured with the limits in 5.1.1 b & c below.

As described in 3.2 above Non-Usage Events consist of either Non-Recurring Events or Recurring Events. The type of transaction errors produced by these Events will not be significantly material and for this reason limits are not needed. A Value Overcharged (Billing) measure of these Events is sufficient and for this reason there are no limits in 5.1.2.1 b & c or 5.1.2.2 b & c below.

**£600 Discretionary Threshold**

Where a Communications Provider has a total relevant turnover of less than £360 million per year (exclusive of VAT and other taxes directly related to turnover), the sum total of Value Overcharged (Billing) for each individual calendar month shall not exceed £600.

Without this discretionary threshold of £600 per month  $[(£360,000 / £50,000) / 12]$  a Communications Provider with a lower turnover would have a limit which is not practicable, for example £40million turnover (exclusive of VAT and other taxes directly related to turnover) has an over Billing upper limit of  $(£40,000,000 / £50,000) / 12$  or £67 per month.

**5.1 Charge consistency**

All charges shall be consistent with the Tariffs to the levels specified below:

**5.1.1 Usage Events**

	<b>Usage Events</b>	<b>Inaccuracy Limits</b>
<b>a.</b>	Value Overcharged (Billing)	0.002% (£1:£50k)
<b>b.</b>	Count of Events Overcharged	0.002% (1:50k)
<b>c.</b>	Events Over Recorded	0.002% (1:50k)

a Value Overcharged (Billing)

This is the total value of the errors from b & c.

b Count of Events Overcharged

Typically includes Events charged that should not have been charged, charged at the wrong rate and duplicate charged Events.

c Events Over Recorded

Typically includes duplicate usage Events and usage Events with start time and / or duration incorrect by more than the allowable tolerances.

### 5.1.2 Non-usage Events

#### 5.1.2.1 Non-Recurring:

	<b>Non-Recurring Events</b>	<b>Inaccuracy Limits</b>
<b>a.</b>	Value Overcharged (Billing)	0.04% (£1:£2.5k)
<b>b.</b>	Count of Events Overcharged	n/a
<b>c.</b>	Events Over Recorded	n/a

a Value Overcharged (Billing)

Is the total calculated value of b & c above, including duplicate, incorrectly charged and those charged for but not implemented.

#### 5.1.2.2 Recurring Events:

	<b>Recurring Events</b>	<b>Inaccuracy Limits</b>
<b>a.</b>	Value Overcharged (Billing)	0.01% (£1:£10k)
<b>b.</b>	Count of Events Overcharged	n/a
<b>c.</b>	Events Over Recorded	n/a

a Value Overcharged (Billing)

is the total calculated value of b & c above, including duplicate, incorrectly charged and those charged for but not implemented within the tolerances specified.

### 5.2 Monitoring Constraints

It is recognised that not all Billing systems can separate charges by type. In these circumstances the sum of the over charged values should be measured against the total revenue stream and shall not exceed the most stringent of the above requirements.

### 5.3 Period of Measurement

The results shall be based on a rolling 12 month average of performance.

## 6. Additional Notes and Exceptions

6.1 Where an item of service usage is completed other than intended, but the charge applied is correct for the service as delivered, this shall not be regarded as an overcharged Event.

Note: Examples include such occurrences as wrong numbers.

6.2 The increase in duration of items of service usage resulting from degraded transmission performance shall not be taken into account when computing the performance of the system.

Note: Such degradation may result in the repetition of voice or data messages.

# Annex C

## Mobile Publicly Available Telephony Service - Mandatory

### 2. Communications Provider Inclusion Thresholds

#### 2.1 Initial Application

A Communications Provider shall apply for Approval when the Relevant Turnover from mobile access network Publicly Available Telephone Service exceeds £40 million per annum (exclusive of VAT and other taxes directly related to turnover).

#### 2.2 Extension of Scope

Where a Communications Provider introduces a new product or service that utilises the majority of the same elements as an existing Approved Publicly Available Telephone Service, e.g. it is delivered utilising a switched voice channel, mediated through an existing mediation device and Billed through an existing Billing engine any two of which are covered by an existing Total Metering and Billing System, then the Communications Provider shall apply for a suitable extension of scope when the turnover from this product or service reaches £2million per annum (exclusive of VAT and other taxes directly related to turnover). Other examples can be found in this Direction.

It will be for the Approval Body to determine whether a product or service falls into the category of Extension of Scope or Initial Application described above.

### 3. Description of Service

A mobile access Publicly Available Telephone Service Total Metering and Billing System utilises two distinct types of Events for charging purposes.

#### 3.1 Usage Events

These are Event records that are generated by a telecommunications switch, triggered by the use of a Publicly Available Telephone Service by the End-User.

#### 3.2 Non-Usage Events

These are sub-divided into two categories and cover the Event records not triggered by the use of a Publicly Available Telephone Service by the End-User.

##### 3.2.1 Non-Recurring Events

These include costs for the provision, change, suspension or removal of services, products and equipment. They are likely to be actions that do not result in the creation of a usage Event record.

Note: Provision includes both cease and re-provision processes.

##### 3.2.2 Recurring Events

These include subscriptions and rentals for equipment or availability that are applied on a regular basis to the Bill irrespective of any usage or non-usage Event.

#### 3.3 Billing

A mobile Publicly Available Telephone Service uses two distinct types of billing, both of which are covered by the Direction.

### 3.3.1 Pre-Pay Charging

a These are charges deducted individually from a diminishing credit balance. The outstanding credit balance can be increased through the payment of additional monies or credits onto the account.

b Individual Billing Accuracy is not applicable to pre-Pay services in that a End-User is not presented with a Bill. In this instance the requirements set out in 4.8 of the main body of this Direction shall apply to the application of credits and debits to the account.

c Timeliness of Billing is not applicable to pre-Pay services. The End-User shall have the usage Event charge deducted from the outstanding credit balance during a usage Event and will expect to be disconnected once the credit has expired. For non-recurring non-usage events, such as tone downloads, the End-User shall have the full amount deducted at the end of the non-usage Event.

### 3.3.2 Post-Pay Charging

These are charges aggregated onto a Bill and submitted to the End-User for payment.

The assessment of performance for post paid charging is the same as that applied to fixed access PATS.

## 4. Allowable Tolerances

These tolerances determine the Events in error that will be applied to the limits in 5 below. Unless otherwise stated, these tolerances apply to the units of measure used in the systems being measured. Measurement results can be presented as a ratio or percentage.

### 4.1 Usage Events

	Variable	Allowable Measurement Tolerance
a.	Duration	+1 second or +0.01% (whichever is less stringent)
b.	Time of Day	+ or – 1 second
c.	Count of Charges	+0.004% (1:25K)
d.	Value of Charges	0.1p

#### d. Value of Charges

The actual charge per usage Event, e.g. a Call Detail Record, shall be within 0.1p of the expected charge. Where rounding information is publicly available then the tolerance shall be + 0.1p of the rounded value for individual call charges. If no rounding is published then the same tolerance shall apply to the recorded value.

### 4.2 Non-Usage Non-Recurring Events

	Variable	Allowable Measurement Tolerance
--	----------	---------------------------------

a.	Duration	n/a
b.	Time of Day	n/a
c.	Count of Events	+0.05% (1:2K)
d.	Value of Charges	1p

### 4.3 Non-Usage Recurring Events

	Variable	Allowable Measurement Tolerance
a.	Duration	+1 day
b.	Time of Day	n/a
c.	Count of Events	+0.01% (1:10K)
d.	Value of Charges	1p

#### Notes:

1. Where the Recurring Event charge is based upon whole days, the start of the period is the day on which the service was first provided and the end is the day on which the service was de-provisioned, irrespective of the time of that provision, unless otherwise stated in the Tariffs.
2. Duration: shall be within +1 day on the entire lifetime of the rental or equivalent.

### 5. Measurement Limits

Performance of the Total Metering and Billing System shall be assessed on the basis of how many errors in charging are made. An error will be defined by tolerance levels being exceeded.

It is not practicable to combine accuracy limits into a single quantity for values (£) and the numbers of Events counted or recorded. This requires that the accuracy requirement is separated into three elements for the purposes of demonstrating compliance with the limits in this section.

The tolerances in 4 above determine Event errors that are to be applied to these limits.

#### Value Overcharged (Billing)

Each Value Overcharged (Billing) measure has an individual limit because all are significantly material.

A Value Overcharged (Billing) limit (a) is the total calculated value of the Count of Events Overcharged (b) and Over Recorded (c).

#### Count of Events Overcharged and Over Recorded

There will be several orders of magnitude between the numbers of Usage Events when compared with the number of Non-Usage Events during any specified period.

Usage Events are measured with the limits in 5.1.1 b & c below.

As described in 3.2 above Non-Usage Events consist of either Non-Recurring Events or Recurring Events. The type of transaction errors produced by these Events will not be significantly material and for this reason limits are not needed. A Value Overcharged (Billing) measure of these Events is sufficient and for this reason there are no limits in 5.1.2.1 b & c or 5.1.2.2 b & c below.

### £600 Discretionary Threshold

Where a Communications Provider has a total relevant turnover of less than £360 million per year (exclusive of VAT and other taxes directly related to turnover), the sum total of Value Overcharged (Billing) for each individual calendar month shall not exceed £600.

### 5.1 Charge consistency

All charges shall be consistent with the Tariffs to the levels specified below:

#### 5.1.1 Usage Events

	Usage Events	Inaccuracy Limits
<b>a.</b>	Value Overcharged (Billing)	0.002% (£1:£50k)
<b>b.</b>	Count of Events Overcharged	0.002% (1:50k)
<b>c.</b>	Events Over Recorded	0.002% (1:50k)

a Value Overcharged (Billing)

This is the total value of the errors from b & c.

b Count of Events Overcharged

Typically includes Events charged that should not have been charged, charged at the wrong rate and duplicate charged Events.

c Events Over Recorded

Typically includes duplicate usage Events and usage Events with start time and / or duration incorrect by more than the allowable tolerances.

#### 5.1.2 Non-usage Events

##### 5.1.2.1 Non-Recurring:

	Non-Recurring Events	Inaccuracy Limits
<b>a.</b>	Value Overcharged (Billing)	0.04% (£1:£2.5k)
<b>b.</b>	Count of Events Overcharged	n/a
<b>c.</b>	Events Over Recorded	n/a

a. Value Overcharged (Billing)

Is the total calculated value of b & c above, including duplicate, incorrectly charged and those charged for but not implemented.

##### 5.1.2.2 Recurring Events:

	Recurring Events	Inaccuracy Limits
<b>a.</b>	Value Overcharged (Billing)	0.01% (£1:£10k)
<b>b.</b>	Count of Events Overcharged	n/a
<b>c.</b>	Events Over Recorded	n/a

a. Value Overcharged (Billing)

Is the total calculated value of b & c above, including duplicate, incorrectly charged and those charged for but not implemented within the tolerances specified.

### 5.2 Monitoring Constraints

It is recognised that not all Billing systems can separate charges by type. In these circumstances the sum of the over charged values should be measured against the total revenue stream and shall not exceed the most stringent of the above requirements.

### 5.3 Period of Measurement

The results shall be based on a rolling 12 month average of performance.

## 6. Additional Notes and Exceptions

6.1 Where an item of service usage is completed other than intended, but the charge applied is correct for the service as delivered, this shall not be regarded as an overcharged Event.

Note: Examples include such occurrences as wrong numbers and inadvertent roaming.

6.2 Inadvertent Roaming Charges appear on a Bill when the preferred network operator service is replaced by another network operator. This occurs in two scenarios, firstly in areas close to national borders and , secondly, where an End-User has a preferred roaming partner whilst abroad and another carrier takes precedence. In both instances the cause is the difference in signal level between the two operators while the mobile device (e.g. handset) is configured to automatic network selection based upon signal strength.

The End-User has the option within a mobile device to set the Network Selection to Manual, rather than Automatic. Therefore, inadvertent roaming is not deemed an overcharge. The Communications Provider will advise End-Users of the issue in its published Tariffs.

6.3 Termination of mobile calls, where a call originating by a mobile device (e.g. handset) is terminated other than by the caller pressing a specific button for that purpose, the network will initially assume that contact between the base station(s) and the handset has been temporarily lost - as when passing under a bridge or through a tunnel. The connection will be maintained and charged for during the first "n" seconds after contact is lost. Should contact be re-established, the call will continue as before. If however, the caller has switched off the handset, run out of battery capacity or moved permanently out of range of any base station etc, the charges for that call will include the "n" seconds. In order to minimise the risk of unnecessary charges, users should be careful to end each call as set out in the user instructions for the handset - e.g. pressing the "End" button.

6.4 The increase in duration of items of service usage resulting from degraded transmission performance shall not be taken into account when computing the performance of the system.

Note: Such degradation may result in the repetition of voice or data messages.

# Annex D

## High Speed Internet – Voluntary

### 1. Definition of Service

High Speed Internet, commonly known as Broadband, is a publicly available service or connection that provides high speed services that allow for the transfer of high volumes of data at high speeds. It is an always-on digital network connecting Customer premises equipment to their provider of Internet services.

Note: This for example can be a service accessing the Internet at speeds greater than 512kBits per second using a Digital Subscriber Line or Cable modem. Alternatively High Speed Internet can be achieved through provision of a data packet mobile service.

### 2. Communications Provider Inclusion Thresholds

2.1. Because this is a voluntary application the Communications Provider can apply for an extension to Approval provided it already has, or is in the process of gaining an Approval.

#### 2.2 Initial Application

As a voluntary scheme the Communications Provider may apply for approval when the relevant turnover from High Speed Internet exceeds £5,000,000 per annum.

#### 2.3 Extension of Scope

Where a Communications Provider introduces a new product or service that utilises the majority of the same elements as an existing Approved Total Metering and Billing System, e.g. it is delivered utilising an existing delivery mechanism, aggregated through an existing aggregation device and Billed through an existing Billing engine any two of which are covered by an existing Total Metering and Billing System, then the Communications Provider can apply for a suitable extension of scope when the relevant turnover from this product or service reaches £1,000,000 per annum (exclusive of VAT and other taxes directly related to turnover).

It will be for the Approval Body to determine whether a product or service falls into the category of Extension of Scope or Initial Application. Examples can be found in this Direction.

### 3. Description of Service

A High Speed Internet access Service Total Metering and Billing System utilises two distinct types of Events for charging purposes Usage events and non-Usage events.

#### 3.1 Usage Events

These are sub-divided into two categories.

##### 3.1.1 Specific Usage Events

These are Event records that are generated for the use of a particular High Speed Internet service by the End-User. For example they are charged on a one-off Event basis and appear as individual line items on a Bill. These Events will not usually be data volume in bytes but records of specific actions such as access to a page or a “click” selection or a specialist access service such as sending Multimedia Messages (commonly known as MMS).

### **3.1.2 Aggregated Usage Events**

This is the cumulative total of the service usage Events, typically recorded at a Server. For example up and down link usage is recorded which may include resending of data due to data packet corruption. The aggregated Events are priced and Billed after discount, bundle and overage (excess usage) is applied. These Events may be data volume in bytes or records of specific actions such as access to an information page or a “click” selection.

## **3.2 Non-Usage Events**

These are sub-divided into two categories and cover the Event records not triggered by the use of the service by the End-User.

### **3.2.1 Non-Recurring Events**

These include costs for the provision, change, suspension or removal of services, products and equipment. They are likely to be actions that do not result in the creation of a usage Event record.

Note: Provision includes both cease and re-provision processes.

### **3.2.2 Recurring Events**

These include subscriptions and rentals for equipment or availability that are applied on a regular basis to the Bill irrespective of any usage or non-usage Event.

## **3.3 Billing**

A High Speed Internet Service may use two distinct types of Billing, both of which are covered by the Direction.

### **3.3.3 Pre-Pay Charging**

a These are charges deducted individually from a diminishing credit balance. The outstanding credit balance can be increased through the payment of additional monies or credits onto the account.

b Individual Billing Accuracy is not applicable to pre-pay services in that an End-User is not presented with a Bill. In this instance the requirements set out in 4.8 of the main body of this Direction shall apply to the application of credits and debits to the account.

c Timeliness of Billing is not applicable to pre-pay services. The End-User shall have the usage Event charge deducted from the outstanding credit balance during a usage Event. For non-recurring non-usage events, such as tone downloads, the End-User shall have the full amount deducted at the end of the non-usage Event.

### **3.3.4 Post-Pay Charging**

These are charges aggregated onto a Bill and submitted to the End-User for payment.

## **4. Allowable Tolerances**

These tolerances determine the Events in error that will be applied to the limits in 5 below and may be time, duration, volume or value.

Unless otherwise stated, these tolerances apply to the units of measure used in the systems being measured. Measurement results can be presented as a ratio or percentage.

It is not practicable to combine the accuracy required for these Events into a single quantity for either the numbers or the values. Therefore the accuracy requirement is separated out into the four elements for the purposes of demonstrating compliance.

Unless otherwise stated, these tolerances apply to the units of measure used in the systems. The tolerance shall be applied after any published charge affecting rounding has taken place. For example, if a data total is recorded as 1018 Bytes rounded to next kilobyte it becomes 1Kb. If a total is actually 1028 bytes, then rounding makes this 2Kb and from the table at section 4.1.2 below this is just within tolerance. Measurement results can be presented as a ratio or percentage.

## 4.1 Usage Events

### 4.1.1 Specific Usage Events

	Variable	Allowable Measurement Tolerance
a.	Duration	+1 second or +0.01% (whichever is less stringent)
b.	Time of Day	+ or – 1 second
c.	Count of Events	+0.004% (1:25K)
d.	Value of Charges	0.1p

#### d. Value of Charges

The actual charge per usage Event shall be within 0.1p of the expected charge. Where rounding information is publicly available then the tolerance shall be + 0.1p of the rounded value for individual call charges. If no rounding is published then the same tolerance shall apply to the recorded value.

### 4.1.2 Aggregate Usage Events

	Variable	Allowable Measurement Tolerance
a.	Volume	+1KByte refer to a. below
b.	Time of Day	+ or – 1 Second
c.	Count of Aggregate Events	+0.004% (1:25K)
d.	Value of Aggregate Charges	0.1p

#### a. Volume

The Volume measured will vary by service application, therefore the Allowable Measurement Tolerance unit for an aggregated Volume of Events will be such that one additional Volume tolerance unit, when rated, remains within the charge tolerance d.

Examples:

1. Where 1KByte of data is priced the error shall be no greater than +0.1p. The Volume Allowable Measurement Tolerance will be 1KByte in this instance e.g. the charge for 1Kbyte + 1Kbyte of error will have a rating error of no more than 0.1p.
2. When 1MByte of data is priced the error shall be no greater than +0.1p. The Volume Allowable Measurement Tolerance in this instance 1MByte e.g. the charge for 1Mbyte + 1Mbyte of error will have a rating error of no more than 0.1p.

**d. Value of Aggregate Charges**

The actual charge of an aggregated Event shall be within 0.1p of the expected charge. Where rounding information is publicly available then the tolerance shall be +0.1p of the rounded value for individual call charges. If no rounding is published then the same tolerance shall apply to the recorded value.

**4.2. Non-Usage Non-Recurring Events**

	<b>Variable</b>	<b>Allowable Measurement Tolerance</b>
<b>a.</b>	Duration	n/a
<b>b.</b>	Time of Day	n/a
<b>c.</b>	Count of Events	+0.05% (1:2K)
<b>d.</b>	Value of Charges	1p

**4.3. Non-Usage Recurring Events**

	<b>Variable</b>	<b>Allowable Measurement Tolerance</b>
<b>a.</b>	Duration	within +1 day
<b>b.</b>	Time of Day	n/a
<b>c.</b>	Count of Events	+0.01% (1:10K)
<b>d.</b>	Value of Charges	1p

Note: Where the recurring Event charge is based upon whole days, the start of the period is the day on which the service was first provided and the end is the day on which the service was de-provisioned, irrespective of the time of that provision, unless otherwise stated in the Tariffs.

**5. Measurement Limits**

Performance of the Total Metering and Billing System shall be assessed on the basis of how many errors in charging are made. An error will be defined by tolerance levels being exceeded.

It is not practicable to combine accuracy limits into a single quantity for values (£) and the numbers of Events counted or recorded. This requires that the accuracy requirement is separated into three elements for the purposes of demonstrating compliance with the limits in this section.

The tolerances in 4 above determine Event errors that are to be applied to these limits.

**Value Overcharged (Billing)**

Each Value Overcharged (Billing) measure has an individual limit because all are significantly material.

A Value Overcharged (Billing) limit (a) is the total calculated value of the Count of Events Overcharged (b) and Over Recorded (c).

### Count of Events Overcharged and Over Recorded

There will be several orders of magnitude between the numbers of Usage Events when compared with the number of Non-Usage Events during any specified period. Usage Events are measured with the limits in 5.1.1.1/5.1.1.2 b & c below.

As described in 3.2 above Non-Usage Events consist of either Non-Recurring Events or Recurring Events. The type of transaction errors produced by these Events will not be significantly material and for this reason limits are not needed. A Value Overcharged (Billing) measure of these Events is sufficient and for this reason there are no limits in 5.1.2.1 b & c or 5.1.2.2 b & c below.

### £600 Discretionary Threshold

Where a Communications Provider has a total relevant turnover of less than £360 million per year (exclusive of VAT and other taxes directly related to turnover), the sum total of Value Overcharged (Billing) for each individual calendar month shall not exceed £600.

## 5.1 Charge consistency

All charges shall be consistent with the Tariffs to the levels specified below:

### 5.1.1 Usage Events

#### 5.1.1.1 Specific Usage Events:

	Specific Usage Events	Inaccuracy Limits
<b>a.</b>	Value Overcharged (Billing)	0.002% (£1:£50k)
<b>b.</b>	Specific Usage Events Over-counted	0.002% (1:50k)
<b>c.</b>	Specific Usage Events Over Recorded	0.002% (1:50k)

#### a. Value Overcharged (Billing)

This is the total value of specific errors from b & c.

#### b. Specific Usage Events Over-counted

Typically includes Events charged that should not have been charged, charged at the wrong rate and duplicate counted Events.

#### c. Specific Usage Events Over Recorded

Typically includes duplicate usage Events and usage Events with start time and / or duration incorrect by more than the allowable tolerances.

#### 5.1.1.2. Aggregate Usage Events:

	Aggregate Usage Events	Inaccuracy Limits
<b>a.</b>	Value Overcharged (Billing)	0.04% (£1:£2.5k)
<b>b.</b>	Aggregate Usage Events Over-counted	0.04% (1:2.5k)
<b>c.</b>	Aggregate Usage Events Over Recorded	0.04% (1:2.5k)

a. Value Overcharged (Billing)

This is the total value of the errors from b & c. It is the total calculated value of the number of Events over-counted and over recorded, including duplicate, incorrectly charged and those charged for but not implemented.

b & c Aggregate Usage Events

These are measured through the use of an incremental counter, like an electricity bill, invoices might show the starting figure and the end figure, but the End-User has no independent means of checking the figures.

**5.1.2 Non-usage Events**

5.1.2.1 Non-Recurring:

	<b>Non-Recurring</b>	<b>Inaccuracy Limits</b>
<b>a.</b>	Value Overcharged (Billing)	0.04% (£1:£2.5k)
<b>b.</b>	Events Over-counted	0.04% (1:2.5k)
<b>c.</b>	Events Over Recorded	0.04% (1:2.5k)

a. Value Overcharged (Billing)

Is the total calculated value of the number of Events over-counted and over recorded, including duplicate, incorrectly charged and those charged for but not implemented.

5.1.2.2 Recurring Events:

	<b>Recurring Events</b>	<b>Inaccuracy Limits</b>
<b>a.</b>	Value Overcharged (Billing)	0.01% (£1:£10k)
<b>b.</b>	Events Over-counted	0.01% (1:10k)
<b>c.</b>	Events Over Recorded	0.01% (1:10k)

a. Value Overcharged (Billing)

Is the total calculated value of the number of Events over-counted and over recorded, including duplicate, incorrectly charged and those charged for but not implemented within the allowable tolerances specified.

**5.2 Monitoring Constraints**

It is recognised that not all Billing systems can separate charges by type. In these circumstances the sum of the over charged values should be measured against the total revenue stream and shall not exceed the most stringent of the above requirements.

**5.3 Period of Measurement**

The results shall be based on a rolling 12 month average of performance.

**6. Additional Notes and Exceptions**

6.1. Where an item of service usage is completed other than intended, but the charge applied is correct for the service as delivered, this shall not be regarded as an overcharged Event.

Note: Examples include such actions as wrong files being downloaded and file transfers being interrupted.

6.2. The increase in duration of items of service usage resulting from degraded transmission performance shall not be taken into account when computing the performance of the system.

Note: Such degradation may result in the repetition of downloads or the reloading of web pages.

## Annex E

### Voice over Internet Protocol - Voluntary

#### 1. Definition of Service

“Voice over Internet Protocol” (VoIP) is a technology that allows users to send calls using Internet Protocol, using either the public internet or private IP networks<sup>3</sup>.

VoIP gateways interface between a telephony network and an IP network. Calls either stay within the VoIP network, i.e. calls to other Communications Providers’ Voice over IP End-Users, or they can travel outside the VoIP network to a fixed network or mobile terminal. The nature of the service is such that speech quality is determined by the loading on the internet.

The VoIP product is such that in the event of a power failure at the End-User terminal, the End-User is unable to use this service to contact Emergency Organisations.

#### 2. Inclusion Thresholds

##### 2.1 Initial Application

As a voluntary scheme the Communications Provider may apply for Approval when the relevant turnover from VoIP exceeds £5million per annum (excluding VAT and other taxes directly related to turnover).

##### 2.2 Extension of Scope

Where a Communications Provider introduces a new product or service that utilises the majority of the same elements as an existing Approved Total Metering and Billing System, e.g. it is delivered utilising a broadband channel or mobile packet data channel, mediated through an existing mediation device and billed through an existing billing engine any two of which are covered by an existing Total Metering and Billing System, then the Communications Provider can apply for a suitable extension of scope when the relevant turnover from this product or service reaches £1million per annum (excluding VAT and other taxes directly related to turnover).

It will be for the Approval Body to determine whether a product or service falls into the category of Extension of Scope or Initial Application.

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<sup>3</sup> Definition from the Regulation of VoIP Services, Notification, 29 March 2007, at <http://www.ofcom.org.uk/consult/condocs/voip/voipstatement/>

Note: Whilst the application remains voluntary, the timetable for achieving approval remains.

### 3. Description of Service

The VoIP generally utilises three distinct types of Events for charging purposes. A Publicly Available Telephone Service Total Metering and Billing System utilises two distinct types of Events for charging purposes.

#### 3.1 Usage Events

These are Event records that are generated by a telecommunications switch, triggered by the use of a Publicly Available Telephone Service by the End-User.

#### 3.2 Non-Usage Events

These are sub-divided into two categories and cover the Event records not triggered by the use of a Publicly Available Telephone Service by the End-User.

##### 3.2.1 Non-Recurring Events

These include costs for the provision, change, suspension or removal of services, products and equipment. They are likely to be actions that do not result in the creation of a usage Event record.

Note: Provision includes both cease and re-provision processes.

##### 3.2.2 Recurring Events

These include subscriptions and rentals for equipment or availability that are applied on a regular basis to the Bill irrespective of any usage or non-usage Event.

### 4. Allowable Tolerances

These tolerances determine the Events in error that will be applied to the limits in 5 below. Unless otherwise stated, these tolerances apply to the units of measure used in the systems being measured. Measurement results can be presented as a ratio or percentage.

#### 4.1 Usage Events

	Variable	Allowable Measurement Tolerance
a.	Duration	+1 second or +0.01% (whichever is less stringent)
b.	Time of Day	+ or – 1 second
c.	Count of Charges	+0.004% (1:25K)
d.	Value of Charges	0.1p

##### d. Value of Charges

The actual charge per usage Event, e.g. a Call Detail Record, shall be within 0.1p of the expected charge. Where rounding information is publicly available then the tolerance shall be + 0.1p of the rounded value for individual call charges. If no rounding is published then the same tolerance shall apply to the recorded value.

#### 4.2 Non-Usage Non-Recurring Events

	Variable	Allowable Measurement Tolerance
a.	Duration	n/a
b.	Time of Day	n/a
c.	Count of Events	+0.05% (1:2K)
d.	Value of Charges	1p

#### 4.3 Non-Usage Recurring Events

	Variable	Allowable Measurement Tolerance
a.	Duration	+1 day
b.	Time of Day	n/a
c.	Count of Events	+0.01% (1:10K)
d.	Value of Charges	1p

Notes:

1. Where the Recurring Event charge is based upon whole days, the start of the period is the day on which the service was first provided and the end is the day on which the service was de-provisioned, irrespective of the time of that provision, unless otherwise stated in the Tariffs.

2. Duration: shall be within +1 day on the entire lifetime of the rental or equivalent.

#### 5. Measurement Limits

Performance of the Total Metering and Billing System shall be assessed on the basis of how many errors in charging are made. An error will be defined by tolerance levels being exceeded.

It is not practicable to combine accuracy limits into a single quantity for values (£) and the numbers of Events counted or recorded. This requires that the accuracy requirement is separated into three elements for the purposes of demonstrating compliance with the limits in this section.

The tolerances in 4 above determine Event errors that are to be applied to these limits.

##### Value Overcharged (Billing)

Each Value Overcharged (Billing) measure has an individual limit because all are significantly material.

A Value Overcharged (Billing) limit (a) is the total calculated value of the Count of Events Overcharged (b) and Over Recorded (c).

##### Count of Events Overcharged and Over Recorded

There will be several orders of magnitude between the numbers of Usage Events when compared with the number of Non-Usage Events during any specified period. Usage Events are measured with the limits in 5.1.1 b & c below.

As described in 3.2 above Non-Usage Events consist of either Non-Recurring Events or Recurring Events. The type of transaction errors produced by these

Events will not be significantly material and for this reason limits are not needed. A Value Overcharged (Billing) measure of these Events is sufficient and for this reason there are no limits in 5.1.2.1 b & c or 5.1.2.2 b & c below.

**£600 Discretionary Threshold**

Where a Communications Provider has a total relevant turnover of less than £360 million per year (exclusive of VAT and other taxes directly related to turnover), the sum total of Value Overcharged (Billing) for each individual calendar month shall not exceed £600.

**5.1 Charge consistency**

All charges shall be consistent with the Tariffs to the levels specified below:

5.1.1 Usage Events

	<b>Usage Events</b>	<b>Inaccuracy Limits</b>
<b>a.</b>	Value Overcharged (Billing)	0.002% (£1:£50k)
<b>b.</b>	Count of Events Overcharged	0.002% (1:50k)
<b>c.</b>	Events Over Recorded	0.002% (1:50k)

a. Value Overcharged (Billing)

This is the total value of the errors from b & c.

b. Count of Events Overcharged

Typically includes Events charged that should not have been charged, charged at the wrong rate and duplicate charged Events.

c. Events Over Recorded

Typically includes duplicate usage Events and usage Events with start time and / or duration incorrect by more than the allowable tolerances.

## 5.1.2 Non-usage Events

### 5.1.2.1 Non-Recurring:

	<b>Non-Recurring Events</b>	<b>Inaccuracy Limits</b>
<b>a.</b>	Value Overcharged (Billing)	0.04% (£1:£2.5k)
<b>b.</b>	Count of Events Overcharged	n/a
<b>c.</b>	Events Over Recorded	n/a

#### a. Value Overcharged (Billing)

Is the total calculated value of b & c above, including duplicate, incorrectly charged and those charged for but not implemented.

### 5.1.2.2 Recurring Events:

	<b>Recurring Events</b>	<b>Inaccuracy Limits</b>
<b>a.</b>	Value Overcharged (Billing)	0.01% (£1:£10k)
<b>b.</b>	Count of Events Overcharged	n/a
<b>c.</b>	Events Over Recorded	n/a

#### a. Value Overcharged (Billing)

Is the total calculated value of b & c above, including duplicate, incorrectly charged and those charged for but not implemented within the tolerances specified.

## 5.2 Monitoring Constraints

It is recognised that not all Billing systems can separate charges by type. In these circumstances the sum of the over charged values should be measured against the total revenue stream and shall not exceed the most stringent of the above requirements.

## 5.3 Period of Measurement

The results shall be based on a rolling 12 month average of performance.

## 6. Additional Notes and Exceptions

6.1 Where an item of service usage is completed other than intended, but the charge applied is correct for the service as delivered, this shall not be regarded as an overcharged Event.

Note: Examples include such occurrences as wrong numbers.

# Annex F

## Undercharging Detrimental to End-Users – Voluntary

### 1. Definition of Service

With each of the products and services covered in the Annexes it is possible that a Communications Provider may disadvantage End-Users or **Business Partners** (i.e. a reseller of a product or service supplied by a Communications Provider) by under recording Events, either through temporary loss of, or delays in processing, those Events.

The disadvantage to End-Users arises from the possibility that the under recording may result in Bills that show lower usage than expected, leading to the uncertainty of whether or not the 'missing' charges will follow on a later Bill.

A business partner who is a reseller of a product or service supplied by a Communications Provider derives revenue from the ability to recharge for their Customers Event records and may experience a financial loss as a result of the under recording of Events by the Communications Provider.

Additionally there are services that are specifically designed to be revenue share services, where the failure to capture and invoice Event records represents lost revenue to the revenue share service provider and / or is distressing to the beneficial End-User.

Note: Charities are an example of this.

### 2. Applications for Approval

Because this is a voluntary application the Communications Provider can apply for an extension to Approval provided it already has, or is in the process of gaining, an Approval.

### 3. Description of Service

The description of the service is identical to the description in the appropriate annex for the same product or service e.g. Voice over Internet Protocol, fixed and mobile PATS. Two distinct types of Events are utilised for charging purposes.

#### 3.1 Usage Events

These are Event records generated by a telecommunications switch or high speed internet router to record usage by an End-User.

#### 3.2 Non-Usage Events

These are sub-divided into two categories.

##### 3.2.1 Non-Recurring Events

These include costs for the provision, change, suspension or removal of services, products and equipment. They are likely to be actions that do not result in the creation of a usage Event record.

Note: Provision includes both cease and re-provision processes.

##### 3.2.2 Recurring Events

These include subscriptions and rentals for equipment or availability that are applied on a regular basis to the Bill irrespective of any usage or non-usage Event.

#### 4. Allowable Tolerances

Where undercharging has been included within scope the following overall under and overcharging tolerances and limits shall apply:

##### 4.1 Usage Events

	Variable	Allowable Measurement Tolerance (+/-)
a.	Duration	+/-1 second or +/-0.01% (whichever is less stringent)
b.	Time of Day	+ or -1 second
c.	Count of Charges	+0.004% (1:25K) -0.01% (1:10K)
d.	Value of Charges	+/-0.1p

##### d. Value of Charges

The actual charge per usage Event, e.g. a Call Detail Record, shall be within 0.1p of the expected charge. Where rounding information is publicly available then the tolerance shall be +/- 0.1p of the rounded value for individual call charges. If no rounding is published then the same tolerance shall apply to the recorded value.

##### 4.2 Non-Usage Non-Recurring Events

	Variable	Allowable Measurement Tolerance (+/-)
a.	Duration	n/a
b.	Time of Day	n/a
c.	Count of Events	+0.05% (1:2K) -1.25% (1:80)
d.	Value of Charges	+/-1p

##### 4.3 Non-Usage Recurring Events

	Variable	Allowable Measurement Tolerance (+/-)
a.	Duration	+/-1 day
b.	Time of Day	n/a
c.	Count of Events	+0.01% (1:10K) -0.25% (1:400)
d.	Value of Charges	+/-1p

Notes:

1. Where the Recurring Event charge is based upon whole days, the start of the period is the day on which the service was first provided and the end is the day on which the service was

de-provisioned, irrespective of the time of that provision, unless otherwise stated in the Tariffs.

2. Duration: shall be within +/-1 day on the entire lifetime of the rental or equivalent.

## 5. Measurement Limits

The description of the Events is identical to the description in the appropriate annex for the same product or service.

Performance of the Total Metering and Billing System shall be assessed on the basis of how many errors in charging are made. An error will be defined by tolerance levels being exceeded.

It is not practicable to combine accuracy limits into a single quantity for values (£) and the numbers of Events counted or recorded. This requires that the accuracy requirement is separated into three elements for the purposes of demonstrating compliance with the limits in this section.

The tolerances in 4 above determine Event errors that are to be applied to these limits.

### Value Incorrectly Charged (Billing)

Each Value Incorrectly Charged (Billing) measure has an individual limit because all are significantly material.

A Value Incorrectly Charged (Billing) limit (a) is the total calculated value of the Count of Events Incorrectly Charged (b) and Incorrectly Recorded (c).

### Count of Events Incorrectly Charged and Incorrectly Recorded

There will be several orders of magnitude between the numbers of Usage Events when compared with the number of Non-Usage Events during any specified period. Usage Events are measured with the limits in 5.1.1 b & c below.

As described in 3.2 above Non-Usage Events consist of either Non-Recurring Events or Recurring Events. The type of transaction errors produced by these Events will not be significantly material and for this reason limits are not needed. A Value Incorrectly Charged (Billing) measure of these Events is sufficient and for this reason there are no limits in 5.1.2.1 b & c or 5.1.2.2 b & c below.

## 5.1 Charge consistency

All charges shall be consistent with the Tariffs to the levels specified below:

### 5.1.1 Usage Events

	Usage Events	Inaccuracy Limits +/-
<b>a.</b>	Value Incorrectly Charged (Billing)	+0.002% (£1:£50k) -0.05% (1:2K)
<b>b.</b>	Count of Events Incorrectly Charged	+0.002% (1:50k) -0.01% (1:10K)
<b>c.</b>	Events Incorrectly Recorded	+0.002% (1:50k) -0.01% (1:10K)

a Value Incorrectly Charged (Billing)

This is the total value of the errors from b & c.

**b Count of Events Incorrectly Charged**

Typically includes omitted usage Events, Events charged at the wrong rate and duplicate charged Events.

**c Events Incorrectly Recorded**

Typically includes omitted usage Events, usage Events with start time and / or duration incorrect by more than the allowable tolerances.

**5.1.2 Non-usage Events**

5.1.2.1 Non-Recurring:

	<b>Non-Recurring Events</b>	<b>Inaccuracy Limits +/-</b>
<b>a.</b>	Value Incorrectly Charged (Billing)	+0.04% (£1:£2.5k) -1% (£1:100)
<b>b.</b>	Count of Events Incorrectly Charged	n/a
<b>c.</b>	Events Incorrectly Recorded	n/a

**a. Value Incorrectly Charged (Billing)**

Is the total calculated value of b & c above, including omitted, incorrectly charged and those charged for but not implemented or implemented but not charged for.

5.1.2.2 Recurring Events:

	<b>Recurring Events</b>	<b>Inaccuracy Limits +/-</b>
<b>a.</b>	Value Incorrectly Charged (Billing)	+0.01% (£1:£10k) -0.25% (£1:400)
<b>b.</b>	Count of Events Incorrectly Charged	n/a
<b>c.</b>	Events Incorrectly Recorded	n/a

**a Value Incorrectly Charged (Billing)**

Is the total calculated value of b & c above, including omitted, incorrectly charged and those charged for but not implemented or implemented but not charged for.

**5.2 Monitoring Constraints**

It is recognised that not all Billing systems can separate charges by type, therefore in these circumstances the sum of the incorrectly charged values should be measured against the total revenue stream and shall not exceed the most stringent of the above requirements.

**5.3 Period of Measurement**

The results shall be based on a rolling 12 month average of performance.

## **6. Additional Notes and Exceptions**

### **6.1 Approval restrictions.**

Approval for undercharging is only valid as part of an existing Total Metering and Billing System Approval. That is, should the Communications Provider lose its Total Metering and Billing System Approval, undercharging Approval will be removed automatically. However, failure to achieve or maintain an undercharging Approval will not cause the loss of overall Total Metering and Billing System Approval, provided that it has been satisfactorily maintained, but will result in the removal of undercharging from scope of Approval.

### **6.2 Additional Notes and Exceptions**

The additional notes and exceptions of the product or service are identical to the additional notes and exceptions in the appropriate annex for the same product or service.