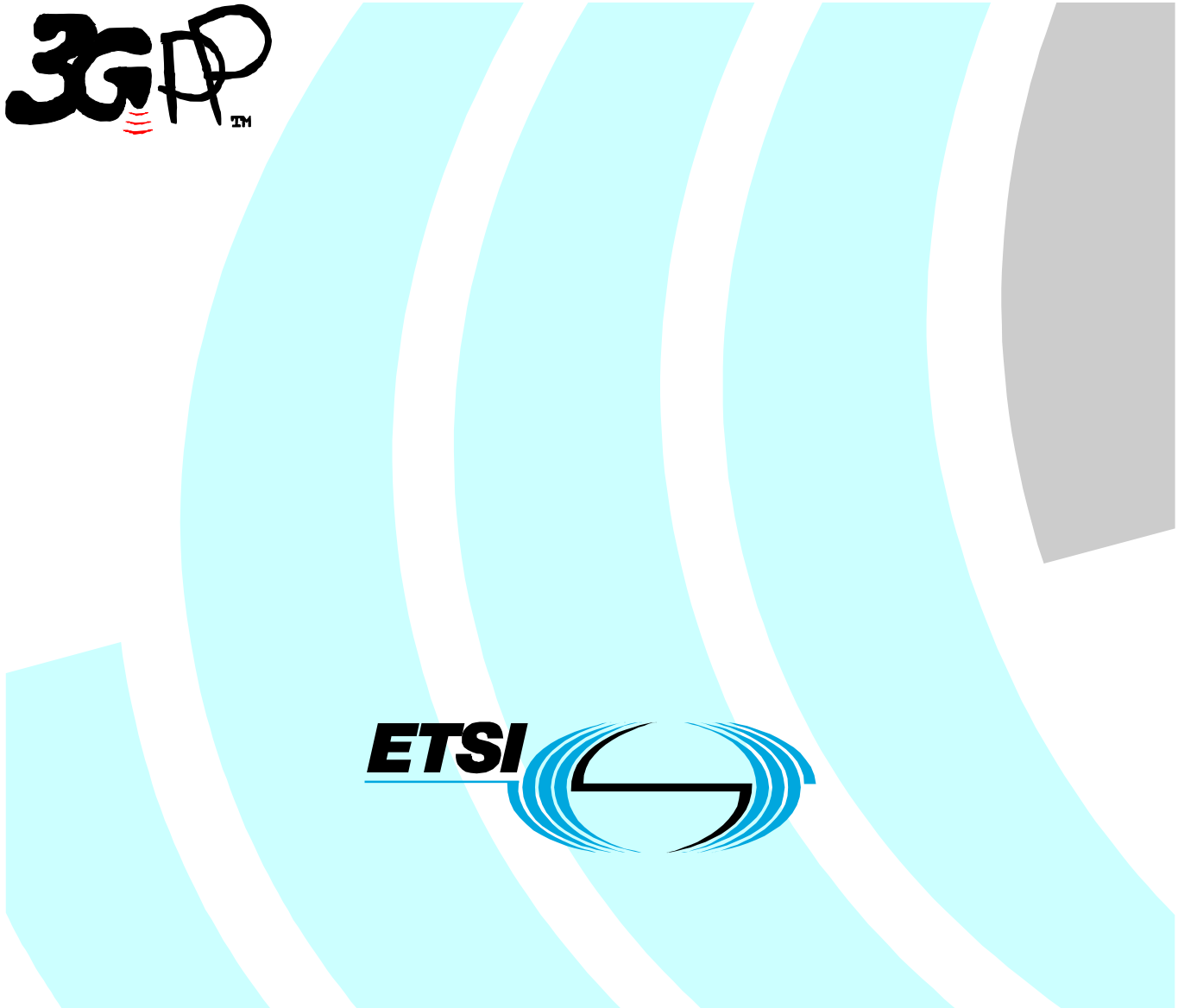
ETSI TS 132 435 V6.0.0 (2004-12)

Technical Specification

Universal Mobile Telecommunications System (UMTS);
Telecommunications management;
Performance measurement:
eXtensible Markup Language (XML) file format definition
(3GPP TS 32.435 version 6.0.0 Release 6)



Reference
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Foreword

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The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under http://webapp.etsi.org/key/queryform.asp .

Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

Introduction

The present document is part of a TS-family covering the 3rd Generation Partnership Project: Technical Specification Group Services and System Aspects; Telecommunication management, as identified below:

TS 32.432: "Performance measurement: File format definition";

TS 32.435: "Performance measurement: eXtensible Markup Language (XML) file format definition";

TS 32.436: "Performance measurement: Abstract Syntax Notation 1 (ASN.1) file format definition".

The present document is part of a set of specifications, which describe the requirements and information model necessary for the standardised Operation, Administration and Maintenance (OA&M) of a multi-vendor 3G PLMN.

During the lifetime of a PLMN, its logical and physical configuration will undergo changes of varying degrees and frequencies in order to optimise the utilisation of the network resources. These changes will be executed through network configuration management activities and/or network engineering, see 3GPP TS 32.600 [4].

Many of the activities involved in the daily operation and future network planning of a PLMN network require data on which to base decisions. This data refers to the load carried by the network and the grade of service offered. In order to produce this data performance measurements are executed in the NEs, which comprise the network. The data can then be transferred to an external system, e.g. an Operations System (OS) in TMN terminology, for further evaluation. The purpose of the present document and the other related 3GPP TSs listed above is to describe the mechanisms involved in the collection of the data.

1 Scope

The present document describes the XML file format of performance measurement results whose semantics is defined in 3GPP TS 32.432 [5].

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

[1] 3GPP TS 32.101: "Telecommunication management; Principles and high level requirements".

[2] 3GPP TS 32.102: "Telecommunication management; Architecture".

[3] 3GPP TS 32.401: "Telecommunication management; Performance Management (PM); Concept and requirements".

[4] 3GPP TS 32.600: "Telecommunication management; Configuration Management (CM); Concept and high-level requirements".

[5] 3GPP TS 32.432: "Telecommunication management; Performance measurement: File format definition ".

[6] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[7] W3C REC-xml-20001006: "Extensible Markup Language (XML) 1.0 (Second Edition)".

[8] W3C REC-xmlschema-0-20010502: "XML Schema Part 0: Primer".

[9] W3C REC-xmlschema-1-20010502: "XML Schema Part 1: Structures".

[10] W3C REC-xmlschema-2-20010502: "XML Schema Part 2: Datatypes".

[11] W3C REC-xml-names-19990114: "Namespaces in XML".

3 Definitions and abbreviations

3.1 Definitions

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

network Element Manager (EM): provides a package of end-user functions for management of a set of closely related types of Network Elements. These functions can be divided into two main categories:

- Element Management Functions for management of Network Elements on an individual basis. These are basically the same functions as supported by the corresponding local terminals.

- Sub-Network Management Functions that are related to a network model for a set of Network Elements constituting a clearly defined sub-network, which may include relations between the Network Elements. This model enables additional functions on the sub-network level (typically in the areas of network topology presentation, alarm correlation, service impact analysis and circuit provisioning).

Network Manager (NM): provides a package of end-user functions with the responsibility for the management of a network, mainly as supported by the EM(s) but it may also involve direct access to the Network Elements. All communication with the network is based on open and well-standardised interfaces supporting management of multi-vendor and multi-technology Network Elements.

Operations System (OS): generic management system, independent of its location level within the management hierarchy.

3.2 Abbreviations

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

3G	3rd Generation
EM	Element Manager
GSM	Global System for Mobile communications
IRP	Integration Reference Point
NE	Network Element
NM	Network Manager
PM	Performance Management

4 XML file format definition

This clause describes the format of measurement result files that can be transferred from the network (NEs or EM) to the NM. The XML file format definition is based on XML schema (see [8], [9], [10] and [11]).

The XML file format definitions implement the measurement result structure and parameters defined in clauses 5.2 and 5.3 of 3GPP TS 32.401 [3].

4.1 Mapping table

Table 4.1 maps the file content items in the 3GPP TS 32.432([5]) document to those used in the XML schema based file format definitions. XML tag attributes are useful where data values bind tightly to its parent element. They have been used where appropriate.

Table 4.1 Mapping of File Content Items to XML tags

File Content Item	XML schema based XML tag	Description
measDataCollection	measCollecFile	
measFileHeader	fileHeader	
measData	measData	
measFileFooter	fileFooter	
fileFormatVersion	fileHeader fileFormatVersion	
senderName	fileHeader dnPrefix and fileSender localDn	For the XML schema based XML format, the DN is split into the DN prefix and the Local DN (LDN) (see 3GPP TS 32.300 [6]). XML attribute specification "dnPrefix" may be absent in case the DN prefix is not configured in the sender. XML attribute specification "localDn" may be absent in case the LDN is not configured in the sender.
senderType	fileSender elementType	For the XML schema based XML format, XML attribute specification "elementType" may be absent in case the "senderType" is not configured in the sender.

File Content Item	XML schema based XML tag	Description
vendorName	fileHeader vendorName	For the XML schema based XML format, XML attribute specification "vendorName" may be absent in case the "vendorName" is not configured in the sender.
collectionBeginTime	measCollec beginTime	
neId	managedElement	
neUserName	managedElement userLabel	For the XML schema based XML format, XML attribute specification "userLabel" may be absent in case the "nEUserName" is not configured in the CM applications.
neDistinguishedName	fileHeader dnPrefix and managedElement localDn	For the XML schema based XML format, the DN is split into the DN prefix and the Local DN (LDN) (see 3GPP TS 32.300 [6]). XML attribute specification "localDn" may be absent in case the LDN is not configured in the CM applications.
neSoftwareVersion	managedElement swVersion	For the XML schema based XML format, XML attribute specification "swVersion" may be absent in case the "nESoftwareVersion" is not configured in the CM applications.
measInfo	measInfo	
measTimeStamp	granPeriod endTime	
jobId	job jobId	
granularityPeriod	granPeriod duration	For the XML schema based XML format, the value of XML attribute specification "duration" shall use the truncated representation "PT*n*S" (see [10]).
reportingPeriod	repPeriod duration	For the XML schema based XML format, the value of XML attribute specification "duration" shall use the truncated representation "PT*n*S" (see [10]).
measTypes	measTypes or measType	For the XML schema based XML format, depending on sender's choice for optional positioning presence, either XML element "measTypes" or XML elements "measType" will be used.
measValues	measValue	
measObjInstId	measValue measObjLdn	
measResults	measResults or r	For the XML schema based XML format, depending on sender's choice for optional positioning presence, either XML element "measResults" or XML elements "r" will be used.
suspectFlag	suspect	
timeStamp	measCollec endTime	
There is no corresponding File Content Item.	measType p	An optional positioning XML attribute specification of XML element "measType" (XML schema based), used to identify a measurement type for the purpose of correlation to a result. The value of this XML attribute specification is expected to be a non-zero, non-negative integer value that is unique for each instance of XML element "measType" that is contained within the measurement data collection file.
There is no corresponding File Content Item.	r p	An optional positioning XML attribute specification of XML element "r", used to correlate a result to a measurement type. The value of this XML attribute specification should match the value of XML attribute specification "p" of the corresponding XML element "measType" (XML schema based).

4.2 XML schema based XML file format definition

4.2.1 Measurement collection data file XML diagram

Figure 4.1 describes the XML element structure of the measurement collection data file.

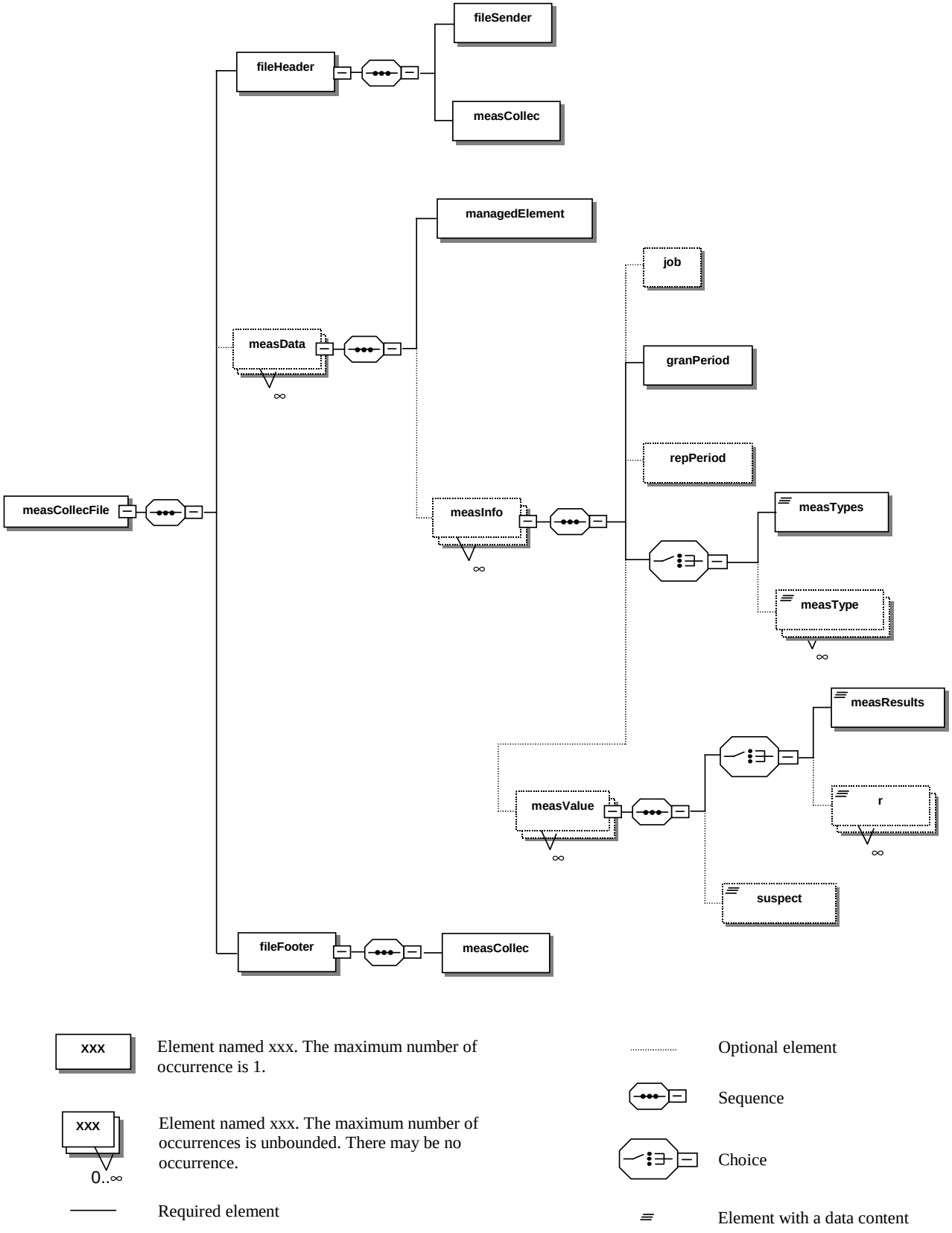

Figure 4.1: XML diagram of the measurement collection data file

4.2.2 Measurement collection data file XML schema

The following XML schema `measCollec.xsd` is the schema for measurement collection data XML files:

```
<?xml version="1.0" encoding="UTF-8"?>

<!--
  3GPP TS 32.435 Performance Measurement XML file format definition
  data file XML schema
  measCollec.xsd
-->

<schema
  targetNamespace=
"http://www.3gpp.org/ftp/specs/archive/32_series/32.435#measCollec"
  elementFormDefault="qualified"
  xmlns="http://www.w3.org/2001/XMLSchema"
  xmlns:mc=
"http://www.3gpp.org/ftp/specs/archive/32_series/32.435#measCollec"
>

  <!-- Measurement collection data file root XML element -->

  <element name="measCollecFile">
    <complexType>
      <sequence>
        <element name="fileHeader">
          <complexType>
            <sequence>
              <element name="fileSender">
                <complexType>
                  <attribute name="localDn" type="string" use="optional"/>
                  <attribute name="elementType" type="string" use="optional"/>
                </complexType>
              </element>
              <element name="measCollec">
                <complexType>
                  <attribute name="beginTime" type="dateTime" use="required"/>
                </complexType>
              </element>
            </sequence>
            <attribute name="fileFormatVersion" type="string" use="required"/>
            <attribute name="vendorName" type="string" use="optional"/>
            <attribute name="dnPrefix" type="string" use="optional"/>
          </complexType>
        </element>
        <element name="measData" minOccurs="0" maxOccurs="unbounded">
          <complexType>
            <sequence>
              <element name="managedElement">
                <complexType>
                  <attribute name="localDn" type="string" use="optional"/>
                  <attribute name="userLabel" type="string" use="optional"/>
                  <attribute name="swVersion" type="string" use="optional"/>
                </complexType>
              </element>
              <element name="measInfo" minOccurs="0" maxOccurs="unbounded">
                <complexType>
                  <sequence>
                    <element name="job" minOccurs="0">
                      <complexType>
                        <attribute name="jobId" type="string" use="required"/>
```

```
  </complexType>
</element>
<element name="granPeriod">
  <complexType>
    <attribute
      name="duration"
      type="duration"
      use="required"
    />
    <attribute
      name="endTime"
      type="dateTime"
      use="required"
    />
  </complexType>
</element>
<element name="repPeriod" minOccurs="0">
  <complexType>
    <attribute name="duration"
               type="duration" use="required"/>
  </complexType>
</element>
<choice>
  <element name="measTypes">
    <simpleType>
      <list itemType="Name"/>
    </simpleType>
  </element>
  <element name="measType"
           minOccurs="0" maxOccurs="unbounded">
    <complexType>
      <simpleContent>
        <extension base="Name">
          <attribute name="p"
                     type="positiveInteger" use="required"/>
        </extension>
      </simpleContent>
    </complexType>
  </element>
</choice>
<element name="measValue"
         minOccurs="0" maxOccurs="unbounded">
  <complexType>
    <sequence>
      <choice>
        <element name="measResults">
          <simpleType>
            <list itemType="mc:measResultType"/>
          </simpleType>
        </element>
        <element name="r"
                 minOccurs="0" maxOccurs="unbounded">
          <complexType>
            <simpleContent>
              <extension base="mc:measResultType">
                <attribute name="p" type="positiveInteger"
                                              use="required"/>
              </extension>
            </simpleContent>
          </complexType>
        </element>
      </choice>
      <element name="suspect" type="boolean" minOccurs="0"/>
```

```
                        </sequence>
                        <attribute name="measObjLdn"
                                   type="string" use="required"/>
                      </complexType>
                    </element>
                  </sequence>
                </complexType>
              </element>
            </sequence>
          </complexType>
        </element>
        <element name="fileFooter">
          <complexType>
            <sequence>
              <element name="measCollec">
                <complexType>
                  <attribute name="endTime" type="dateTime" use="required"/>
                </complexType>
              </element>
            </sequence>
          </complexType>
        </element>
      </sequence>
    </complexType>
  </element>

  <simpleType name="measResultType">
    <union memberTypes="decimal">
      <simpleType>
        <restriction base="string">
          <enumeration value="NIL"/>
        </restriction>
      </simpleType>
    </union>
  </simpleType>

</schema>
```

4.2.3 Measurement collection data file XML header

The following header shall be used in actual XML measurement result files (cf. clause 5 for examples):

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/xsl" href="MeasDataCollection.xsl"?>
<measCollecFile
  xmlns=
" http://www.3gpp.org/ftp/specs/archive/32_series/32.435#measCollec"
>
```

Annex A (informative): Example of XML schema based XML Measurement Report File

The following is an example of a XML schema based XML measurement report file without use of optional positioning attributes on measurement types and results:

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/xsl" href="MeasDataCollection.xsl"?>
<measCollecFile
  xmlns=
"http://www.3gpp.org/ftp/specs/archive/32_series/32.435#measCollec"
>
  <fileHeader fileFormatVersion="32.435 V6.0"
              vendorName="Company NN"
              dnPrefix="DC=a1.companyNN.com,SubNetwork=1,IRPAgent=1">
    <fileSender
      localDn=
        "SubNetwork=CountryNN,MeContext=MEC-Gbg-1,ManagedElement=RNC-Gbg-1"
      elementType="RNC"/>
    <measCollec beginTime="2000-03-01T14:00:00+02:00"/>
  </fileHeader>
  <measData>
    <managedElement
      localDn=
        "SubNetwork=CountryNN,MeContext=MEC-Gbg-1,ManagedElement=RNC-Gbg-1"
      userLabel="RNC Telecomville"/>
    <measInfo>
      <job jobId="1231"/>
      <granPeriod duration="PT900S" endTime="2000-03-01T14:14:30+02:00"/>
      <repPeriod duration="PT1800S"/>
      <measTypes>attTCHSeizures succTCHSeizures attImmediateAssignProcs
        succImmediateAssignProcs</measTypes>
      <measValue measObjLdn="RncFunction=RF-1,UtranCell=Gbg-997">
        <measResults>234 345 567 789</measResults>
      </measValue>
      <measValue measObjLdn="RncFunction=RF-1,UtranCell=Gbg-998">
        <measResults>890 901 123 234</measResults>
      </measValue>
      <measValue measObjLdn="RncFunction=RF-1,UtranCell=Gbg-999">
        <measResults>456 567 678 789</measResults>
        <suspect>true</suspect>
      </measValue>
    </measInfo>
  </measData>
  <fileFooter>
    <measCollec endTime="2000-03-01T14:15:00+02:00"/>
  </fileFooter>
</measCollecFile>
```

The following is an example of a XML schema based XML measurement report file with use of optional positioning attributes on measurement types and results:

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/xsl" href="MeasDataCollection.xsl"?>
<measCollecFile
  xmlns=
"http://www.3gpp.org/ftp/specs/archive/32_series/32.435#measCollec"
```

```
>
  <fileHeader fileFormatVersion="32.435 V6.0"
              vendorName="Company NN"
              dnPrefix="DC=a1.companyNN.com,SubNetwork=1,IRPAgent=1">
    <fileSender
      localDn=
        "SubNetwork=CountryNN,MeContext=MEC-Gbg-1,ManagedElement=RNC-Gbg-1"
      elementType="RNC"/>
    <measCollec beginTime="2000-03-01T14:00:00+02:00"/>
  </fileHeader>
  <measData>
    <managedElement
      localDn=
        "SubNetwork=CountryNN,MeContext=MEC-Gbg-1,ManagedElement=RNC-Gbg-1"
      userLabel="RNC Telecomville"/>
    <measInfo>
      <job jobId="1231"/>
      <granPeriod duration="PT900S" endTime="2000-03-01T14:14:30+02:00"/>
      <repPeriod duration="PT1800S"/>
      <measType p="1">attTCHSeizures</measType>
      <measType p="2">succTCHSeizures</measType>
      <measType p="3">attImmediateAssignProcs</measType>
      <measType p="4">succImmediateAssignProcs</measType>
      <measValue measObjLdn="RncFunction=RF-1,UtranCell=Gbg-997">
        <r p="1">234</r>
        <r p="2">345</r>
        <r p="3">567</r>
        <r p="4">789</r>
      </measValue>
      <measValue measObjLdn="RncFunction=RF-1,UtranCell=Gbg-998">
        <r p="1">890</r>
        <r p="2">901</r>
        <r p="3">123</r>
        <r p="4">234</r>
      </measValue>
      <measValue measObjLdn="RncFunction=RF-1,UtranCell=Gbg-999">
        <r p="1">456</r>
        <r p="2">567</r>
        <r p="3">678</r>
        <r p="4">789</r>
        <suspect>true</suspect>
      </measValue>
    </measInfo>
  </measData>
  <fileFooter>
    <measCollec endTime="2000-03-01T14:15:00+02:00"/>
  </fileFooter>
</measCollecFile>
```

Annex B (informative): XML schema electronic files

The electronic files corresponding to the normative XML schemas defined in the present document are available in native form in the following archive:

http://www.3gpp.org/ftp/specs/archive/32_series/32.435/schema/32435-600-XMLSchema.zip

Annex C (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Sep 2004	S_25	SP-040579	--	--	Draft created based on 32.401 V6.1.0 and submitted to SA#25 for Information	1.0.0	
Dec 2004	S_26	SP-040787	--	--	Submitted to SA#26 for Approval	2.0.0	6.0.0

History

Document history		
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