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CCITT

E.115

THE INTERNATIONAL
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CONSULTATIVE COMMITTEE

**TELEPHONE NETWORK AND ISDN –
OPERATION, NUMBERING, ROUTING
AND MOBILE SERVICE**

**COMPUTERIZED INFORMATION SERVICE
FOR TELEPHONE SUBSCRIBER NUMBERS
IN FOREIGN COUNTRIES
(DIRECTORY ASSISTANCE),
RESERVED FOR OPERATORS**

Recommendation E.115



Geneva, 1991

FOREWORD

The CCITT (the International Telegraph and Telephone Consultative Committee) is the permanent organ of the International Telecommunication Union (ITU). CCITT is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The Plenary Assembly of CCITT which meets every four years, establishes the topics for study and approves Recommendations prepared by its Study Groups. The approval of Recommendations by the members of CCITT between Plenary Assemblies is covered by the procedure laid down in CCITT Resolution No. 2 (Melbourne, 1988).

Recommendation E.115 was prepared by Study Group I and was approved under the Resolution No. 2 procedure on the 11 of March 1991.

CCITT NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication Administration and a recognized private operating agency.

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COMPUTERIZED INFORMATION SERVICE FOR TELEPHONE SUBSCRIBER NUMBERS IN FOREIGN COUNTRIES (DIRECTORY ASSISTANCE), RESERVED FOR OPERATORS

1 Preamble

The method to be followed in providing the customers and operators in one country with information on the national significant telephone numbers (as specified in Recommendation E.160) of subscribers in another country depends on the way the information service is organized in the country of destination, distance between the countries, operating procedures, etc.

2 Methods of obtaining information

The operator in the country of origin dealing with international inquiries should be able to obtain information, depending on the organization of the inquiry service in each country, by one of the following methods:

- a) from telephone directories;
- b) from other information systems sent by the country of destination and kept up-to-date (e.g., microfiches);
- c) by calling the information service operator in the country of destination:
 - outgoing operators in the originating country should, where language and other conditions permit, have direct access to the appropriate foreign information centre(s) which hold, or are able to obtain from other centres up-to-date information;
 - where language and other conditions do not permit the outgoing operator to have direct access to the appropriate foreign information centre, the outgoing operator should call the operator in the international exchange of the country of destination;
 - where access to a number of information centres is possible, provision should be made for access to a centralized international information centre or assistance operator in case the originating operator encounters language or other difficulties;
- d) by having access to foreign information service computers:
 - either via a national computer using appropriate procedures;
 - or, in special circumstances, via direct access using dedicated or switched connections.

3 General principles applicable to the various methods of obtaining information

In any relation, Administrations should abide by the following general principles:

- a) Inquiries from customers concerning foreign subscribers' numbers should normally be addressed to operators in the country of origin who will obtain the required information; it may be useful to keep the customer on line while this information is being sought.

- b) In order to give operators in the country of origin ready access to the international telephone inquiry service in other countries, it is desirable that Administrations, in conformity with Recommendation E.149, provide common routing codes or abbreviated access numbers to the foreign computerized or manual telephone inquiry services.
- c) Technical arrangements should, as far as practicable, prevent access by a subscriber of one country to an operator of the telephone information service of another country. Administrations should not communicate access numbers of telephone information services in foreign countries to their subscribers (except in cases covered in Recommendation E.128).
- d) Exceptionally, however, subscribers in one country may be permitted to have access to the information service in another country subject to bilateral agreement between the Administrations concerned.
- e) An international system should be able to provide:
 - for the desired correspondent: his international number;
 - for the locality in which this correspondent resides: the country code and the trunk code.
- f) No secret numbers should be issued.

4 Principles for the organization of an interconnected computerized international information service

For the organization of an interconnected computerized international information service, Administrations should abide by the following principles:

- a) The international system should be so designed that national systems can be used; each Administration should adapt its system to the international system by means of the appropriate interface procedures.
- b) The operator should be able to supply the most adapted and selective search data in order to avoid a situation in which the number of subscribers matching the search criteria exceeds the maximum capacity of a single response message.
- c) To overcome language difficulties, the questions put to a remote system containing the file to be consulted should be formulated in the language used in the country concerned. This means that the language problems raised by certain inquiry and response features should be resolved by the country making the inquiry.
- d) Where, in a given country, the files have been allocated to different computers integrated in a single system, access to the system from a foreign country should be possible via a designated computer.
- e) Formats for inquiry and response procedures should be standardized.
- f) A question should give rise to only one response message with no dialogue between computers. The response message may cover several subscribers where such subscribers match the search characteristics introduced in the system. The maximum number of subscribers mentioned in a response message depends both on the maximum capacity prescribed for the type of message in question and on the limitations imposed by national systems. Any dialogue concerning all the information provided should be prepared at the national level.
- g) With regard to the management of messages, there is no relationship between the inquiry and the response; where for any reason the response to a particular question has not been obtained, the inquiry must be reiterated by the requesting country and on its initiative.

- h) To realize the interconnection of computers of different countries, the network procedures described in Annex A should be used. The layer 4 will conform to Recommendation X.214 and X.224, class O. The layer 5 follows Recommendations X.215 and X.225 (BCS)¹⁾. Functional units “kernel” and “duplex” are only selected.

For the layer 6, the procedures will be the subject of further study.

- i) The structure and coding of the Entry and Reply formats will use the notation defined in Recommendations X.208 and 209, and are described in Annex B.
- j) Considering the question of correct locality spelling, some countries may want to implement a matching table for synonyms between spelling(s) of a locality in the local country and spelling(s) of the same locality in the remote country, so as to make the search easier for the operator.

To accomplish this, it is necessary to define the content and the format of a locality file for the E.115 service. Each country should put this file at the other countries' disposal, in order to make the implementation of these tables easier.

Procedures to keep the locality file up to date, if other than by bilateral agreement, are for further study.

5 Description of the standards used for inquiry and response

When operator access is given via a national computer to foreign information service computers, unless modified by bilateral agreement, the following *minimum* standards should apply to the inquiry and response process, to permit maximum flexibility in the national information service and compatibility with the international information service.

5.1 *Input information*

5.1.1 The operator should request information using the details supplied by the caller, according to the following format:

- country, locality (geographical area), surname, forename(s) or initial(s), trade or residential address (street name and number), supplementary data (according to bilateral agreement).

5.1.2 Country code, locality (or geographical area) and surname are minimum requirements.

5.1.3 The foreign system should reply to every question asked. If the foreign computer indicates that the information supplied is insufficient, the question should be repeated with more selective information.

5.1.4 Certain specified conditions, i.e. the number is not available (secret number, no listing, etc.) or further information has to be obtained, may be indicated by a standardized coded response.

5.2 *Output information*

The output from the foreign computer system should give the following information as available in the data base, in order to identify the accuracy of the telephone number:

- surname, forename(s) or initial(s), address, locality, country code, national significant number.

1) BCS – Basic combined subset.

5.3 *Alphabet to be used*

5.3.1 The Latin alphabet should be employed for inquiries and responses in communication between computers. The systems must in general be able to use the following characters²⁾:

- 26 capital letters A - Z
- 10 figures 0 - 9
- space, full stop

according to International Telegraph Alphabet No. 2 (Recommendation S.1 [1]).

5.3.2 Special signs associated with letters are not transmitted.

5.4 *Description of standardized inquiry and response messages*

The standard formats for inquiry and response shown in Figures 1/E.115 and 2/E.115 should be used²⁾.

5.4.1 *Inquiry format*

See Figure 1/E.115.

The question contains the following information:

a) *Part 1*

1) Obligatory

- message code identifying a request to the international inquiry service;
- codes identifying the countries of origin and destination; these codes normally consist of the country code (see Recommendation E.163);
- code of the originating terminal. This code should not be used by the receiving country but should be repeated in identical fashion in the response format.

2) Optional

- areas reproduced identically in the response:
 - i) date and time of the origin of the inquiry
Format: YYMMDDHHMMSS
 - ii) message number given by the local country.

b) *Part 2*

1) Basic data

- locality:

The name of the locality should be introduced according to its exact³⁾ spelling. Special signs should be replaced by spaces and each space must be introduced as a space.

Abbreviations are not permitted, except for the words “Sint”, “Saint”, “Sankt”, “San”, . . . , which are abbreviated by the letter “S” followed by a space.

The mandatory minimum number of characters to be input should be fixed by each country and be mentioned in an operator's manual. The system of the outgoing country should check whether this minimum is respected. Each complete word must be terminated with a full stop.

2) The use of punctuation marks will be studied at a later stage.

3) The problem of exact native spelling is subject to further study.

- Surname or trade name of subscriber:

The subscriber's surname should be input according to its exact spelling.

Special signs, including the full stop, should be replaced by spaces and each space must be introduced as a space. Abbreviations should not be allowed. The mandatory minimum number of characters to be input should be fixed by each country and be mentioned in the operator's manual.

The system of the outgoing country should check whether this minimum is respected. Each complete word must be terminated with a full stop. When the subscriber's surname or trade name is replaced by initials, the characters composing the acronym should be introduced successively without being separated by special signs or spaces.

Numbers forming part of names or acronyms should be introduced as numbers.

2) Additional data (for making the search easier)

- Name of street or address:

The name of the street should be input according to its exact spelling, the complete name of the street being retained. Special signs, including the full stop, should be replaced by spaces and each space must be input as a space.

The words "Sint", "Saint", "Sankt", "San", . . . should be abbreviated by the letter "S" followed by a space. The mandatory minimum number of characters to be input should be fixed by each country and be mentioned in the operator's manual. The system of the outgoing country should check whether this minimum is respected. Each complete word must be terminated with a full stop. Numbers forming part of the name of the street should be introduced as numbers.

- House number:

The numerical part of the house number should precede the alphabetical part without separation. Non-significant zeros should be omitted.

- Subscriber's forename:

Entire forenames, initials or a combination of forenames and initials should always be separated by spaces.

- Heading in the guide:

This data should only be introduced after bilateral agreements.

- Profession code:

This data should only be introduced after bilateral agreements.

- Additional information for a selective search:

This data should only be introduced after bilateral agreements.

- County or province:

This data should only be introduced after bilateral agreements.

- Category:

The category to which the required subscriber number belongs: business, residential or public service (government).

This data should only be introduced after bilateral agreements.

On the basis of the above data, the computer of destination searches in its files.

Part 1					Part 2					
Message indicators	International indicators	Originating terminal code	Date and time	Message number	Locality	Subscriber name	Street name or equivalent	House number	Forename	Heading in the Guide

Part 2 (continued)			
Profession code	Additional information for a selective search	Country or Province	Category

Note 1 – Questions entered by the operators.

Note 2 – The national computer recognizes each part of the question and converts it into the standard international format.

FIGURE 1/E.115

International entry format

5.4.2 *Structure of the inquiry*

ENTRY message

1010 0000	Directory message (telephone)
LENGTH	
1010 0000	Telephone (entry)
LENGTH	
0011 0000	Entry
LENGTH	
0110 0000	Part 1
LENGTH	
1000 0000	Message indicators
LENGTH	
Message indicators	
1000 0001	International indicators
LENGTH	
International indicators	
1000 0010	Originating terminal code
LENGTH	
Originating terminal code	
1000 0011	Date and time (optional)
LENGTH	
Date and time	
1000 0100	Message number (optional)
LENGTH	
Message number	
0110 0001	Part 2
LENGTH	
1000 0000	Locality
LENGTH	
Locality	
1000 0001	Subscriber name
LENGTH	
Subscriber name	
1000 0010	Street name (optional)
LENGTH	
Street name	
1000 0011	House number (optional)
LENGTH	
House number	
1000 0100	Forename (optional)
LENGTH	
First name	
1000 0101	Heading in the Guide (optional)
LENGTH	
Heading in the Guide	
1000 0110	Profession code (optional)
LENGTH	
Profession Code	

1000 0111	Additional information for a selective search (optional)
LENGTH	
Additional information for a selective search	
1000 1000	County or province (optional)
LENGTH	
County or province	
1000 1001	Category (optional)
LENGTH	
Category	

5.4.3 *Response format*

See Figure 2/E.115.

The response contains the following information:

a) *Part 1*

1) Obligatory:

- message code identifying an answer to the international inquiry service;
- codes identifying both the answering country and the requesting country; these codes normally consist of the country code (see Recommendation E.163);
- code of the originating terminal.

2) Optional:

- areas generated by the country of the input message:
 - i) date and time
 - ii) message number.

b) *Part 2*

- Message code

Always included and common in all answer messages. The coded message must be converted to text by the calling country.

The following codes have been defined:

- 00 = one or some subscribers have been found
 - 01 = locality insufficiently defined; no subscriber number is forthcoming
 - 02 = street name insufficiently defined; no subscriber number is forthcoming
 - 03 = no subscriber has been found
 - 04 = fault or congestion; no subscriber number is forthcoming
 - 05 = the number of subscribers who correspond to the selection criteria exceeds the maximum capacity for the message. Re-enter the question with more precise information. No subscriber number is forthcoming
 - 06 = partial fault or congestion. The list of subscriber numbers who correspond to the selection criteria is not complete
 - 07 = the number of subscribers who correspond to the selection criteria exceeds the maximum capacity of the message. The list of subscriber numbers answering to the selection criteria is not complete. Re-enter eventually the question using more precise indicators
 - 08 = insufficient search elements have been entered. Re-enter the question with more information. No subscriber number is forthcoming
 - 09 = selection criteria not known (e.g. locality does not exist)
 - 10 = protocol error
- country code (in accordance with the CCITT Recommendations) – 3 characters: aligned from the left (if necessary, supplemented by spaces).

c) *Part 3.1*

- trunk code (in accordance with the CCITT Recommendations) – 5 characters
- zone number: aligned from the left (if necessary, supplemented by spaces);
- zeros if no subscriber has been found or if a subscriber's number is not to be disclosed;
- subscriber's number (in accordance with the CCITT Recommendation) – 8 characters:
 - i) aligned from the left (if necessary, supplemented by spaces);
 - ii) zeros if no subscriber has been found or a series of “x” characters if a subscriber's number is not to be disclosed;
- locality, subscriber's surname or trade name, forename, street name, house number, supplementary data: data concerning the subscriber found. If no subscriber has been found, the zone of the corresponding data in the question format;
- subscriber message:

The coded message which must be converted into text by the calling country.

The following codes have been defined:

 - 0 = no comment
 - 1 = subscriber changed address
 - 2 = refer to distant operator
- heading in the guide;
- profession code;
- additional information for a selective search;
- county or province;
- category.

d) *Part 3.2 to 3.x*

- contains the continuation of the selection if other subscribers have been selected. Each supplementary selection uses the same form as in the layout of Part 3.1.

5.4.4 *Structure of the response*

REPLY message

1010 0000	Directory message (telephone)
LENGTH	
1010 0001	Telephone (reply)
LENGTH	
0011 0000	Reply
LENGTH	
0110 0011	Part 1
LENGTH	
1000 0000	Message indicators
LENGTH	
Message indicators	
1000 0001	International indicators
LENGTH	
International indicators	
1000 0010	Originating terminal code
LENGTH	
Originating terminal code	

	1000 0011	Date and time (optional)
	LENGTH	
	Date and Time	
	1000 0100	Message number (optional)
	LENGTH	
	Message number	
0110 0100	Part 2	
LENGTH		
	1000 0000	Message code
	LENGTH	
	Message code	
	1000 0001	Country code
	LENGTH	
	Country code	
0110 0101	Part 3 (optional)	
LENGTH		
	0011 0001	Selection
	LENGTH	
	1000 0000	Trunk code (optional)
	LENGTH	
	Trunk code	
	1000 0001	Subscriber number
	LENGTH	
	Subscriber number	
	1000 0010	Locality
	LENGTH	
	Locality	
	1000 0011	Subscriber name
	LENGTH	
	Subscriber name	
	1000 0100	Forename (optional)
	LENGTH	
	Forename	
	1000 0101	Street name (optional)
	LENGTH	
	Street name	
	1000 0110	House number (optional)
	LENGTH	
	House number	
	1000 0111	Supplementary data (optional)
	LENGTH	
	Supplementary data	
	1000 1000	Subscriber message (optional)
	LENGTH	
	Subscriber message	
	10000 1001	Heading in the Guide (optional)
	LENGTH	
	Heading in the Guide	

1000 1010 Profession code (optional)
LENGTH
Profession code

1000 1011 Additional information for a selective search (optional)
LENGTH
Additional information for a selective search

1000 1100 County or province (optional)
LENGTH
County or province

1000 1101 Category (optional)
LENGTH
Category

0011 0001 Selection
LENGTH

1000 0000 Trunk code
LENGTH
Trunk code

Part 1					Part 2		Part 3.1			
Message indicators	International indicators	Originating terminal code	Date and time	Message number	Message code	Country code	Trunk code	Subscriber number	Locality	Subscriber name

Part 3.1 (continued)										
Forename	Street name or equivalent	House number	Supplementary data	Subscriber message	Heading in the Guide	Profession code	Additional information for selective search	Country or Province	Category	

	Part 3.2 to 3.x
	In all cases, the same as Part 3.1

Note 1 – The reply is output to the screen.

Note 2 – The distant computer replies to the enquiring computer according to the following standardized international reply format.

Note 3 – Each country can view data on the screen in its national format.

Note 4 – Total length: a maximum of 3,000 characters.

FIGURE 2/E.115

International reply format

5.4.5 The different parts of the inquiry formulated by the operator of the country of origin should be converted by the national computer into the international standard format. The different parts of the response transmitted in the international standard format should be converted by the computer of the country which made the request into its national format.

6 Charges

Note – As specified in Article 106 of the *Instructions for the International Telephone Service* [2], no charge is made for obtaining information in accordance with Article 51 of the *Instructions*, even when this requires the use of an international circuit.

However, some Administrations may reserve the possibility of applying certain charges in the future. The amounts charged would remain a national arrangement.

7 Operator manual

Each country that implements this Recommendation must supply a simple operator manual for remote countries. This manual describes principally the main characteristics of its directory assistance system so as to indicate the best way to inquire for the remote operators.

ANNEX A

(to Recommendation E.115)

Directory services interconnect bearer services

A.1 Introduction

The interconnection of International Directory Databases should be network independent.

The general structure for the arrangement of the physical link (OSI layer 1), link access (OSI layer 2) and network layer (OSI layer 3) are as outlined in Figure A-1/E.115. Where Administrations have provided similar equipment, interconnection may be arranged by bilateral agreement to suit local requirements. This method of interconnection is solely the matter of the Administrations concerned.

A.2 Identification

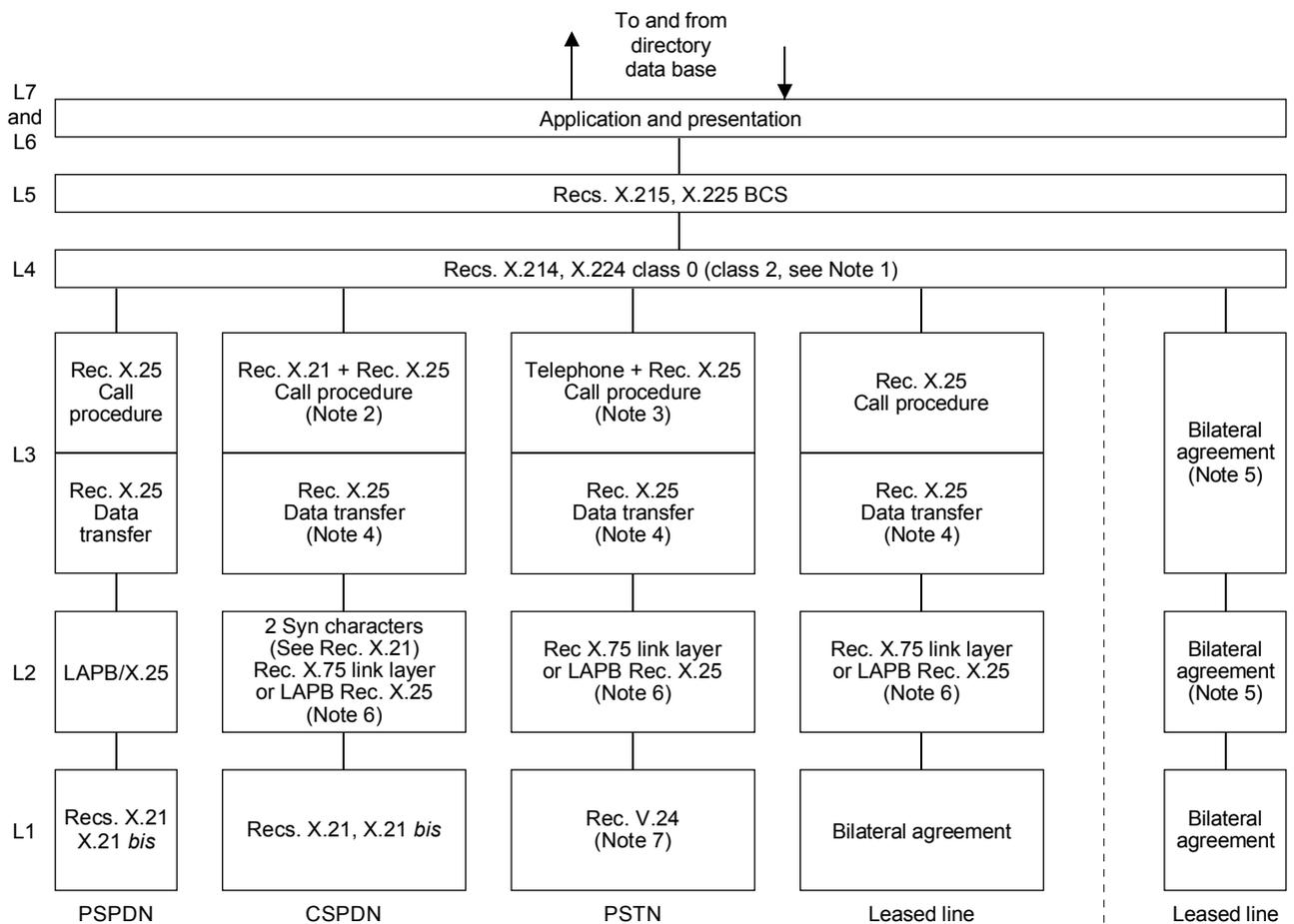
The types of bearer services considered applicable for directory inquiry interconnect are:

- i) packet switched public data network (PSPDN);
- ii) circuit switched public data network (CSPDN);
- iii) public switched telephone network (PSTN);
- iv) Administration leased line (point-to-point).

With possible evolution to ISDN, Signalling System No. 7 includes Message Transfer Part and message handling systems.

A.3 Network interconnection

The choice of network to be used for the interconnection of computer-based directory systems should be agreed bilaterally. However, to achieve commonality across all types of networks, the link, data transfer and call procedures, as specified in the appropriate Recommendations, should be used.



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NOTES

- 1 In all cases, layer 4 must conform to Recommendations X.214 and X.224, class O. However, by bilateral agreement, Recommendations X.214 and X.224, class 2 defaulting to class O, may also be used.
- 2 The network connection is established by a two-stage selection; the first using normal X.21 procedures, and the second using X.25 call control procedures.
- 3 The network connection is established by a two-stage selection; the first using normal telephone network procedures, and the second using X.25 call control procedures.
- 4 The X.25 network layer is introduced in order to ensure a common procedure at layer 3 for all types of network connection.
- 5 Where Administrations have provided similar equipment, they may be interconnected in accordance with bilateral arrangements.
- 6 The link layer procedures are in accordance with Recommendation X.75 for single link operation.
- 7 For automatic calling and/or answering, Recommendation V.25 may be applied. For duplex operation using modems in accordance with the CCITT, Recommendation V.32 is preferred.

FIGURE A.1/E.115
General interconnect structure

ANNEX B

(to Recommendation E.115)

Formal definitions of directory messages

Directory Message ::= CHOICE [[0] Telephone]

Telephone ::= CHOICE [Entry [0], Reply [1]]

Entry ::= SEQUENCE [Part 1, Part 2]

Part 1 ::= [APPLICATION 0] IMPLICIT SET [

MessageIndicators [0] IMPLICIT IA5String,

InternationalIndicators [1] IMPLICIT IA5String,

OriginatingTerminalCode [2] IMPLICIT IA5String,

DataAndTime [3] IMPLICIT IA5String OPTIONAL,

MessageNumber [4] IMPLICIT IA5String OPTIONAL

]

Part 2 ::= [APPLICATION 1] IMPLICIT SET [

Locality [0] IMPLICIT IA5String,

SubscriberName [1] IMPLICIT IA5String,

StreetName [2] IMPLICIT IA5String OPTIONAL,

HouseNumber [3] IMPLICIT IA5String OPTIONAL,

Forename [4] IMPLICIT IA5String OPTIONAL,

HeadingInTheGuide [5] IMPLICIT IA5String OPTIONAL,

ProfessionCode [6] IMPLICIT IA5String OPTIONAL,

AdditionalInformationForASelectiveSearch [7] IMPLICIT IA5String OPTIONAL,

CountyOrProvince [8] IMPLICIT IA5String OPTIONAL,

Category [9] IMPLICIT IA5String OPTIONAL

]

Reply ::= SEQUENCE [Part 1, Part 2, Part 3 OPTIONAL]

Part 1 ::= [APPLICATION 3] IMPLICIT SET [

MessageIndicators [0] IMPLICIT IA5String,

InternationalIndicators [1] IMPLICIT IA5String,

OriginatingTerminalCode [2] IMPLICIT IA5String,

DateAndTime [3] IMPLICIT IA5String OPTIONAL,

MessageNumber [4] IMPLICIT IA5String OPTIONAL

]

Part 2 ::= [APPLICATION 4] IMPLICIT SET [

MessageCode [0] IMPLICIT IA5String,

CountryCode [1] IMPLICIT IA5String

]

Part 3 ::= [APPLICATION 5] IMPLICIT SET of Selection

Selection ::= SET [

TrunkCode [0] IMPLICIT IA5String OPTIONAL,

SubscriberNumber [1] IMPLICIT IA5String,

Locality [2] IMPLICIT IA5String,

SubscriberName [3] IMPLICIT IA5String,

Forename [4] IMPLICIT IA5String OPTIONAL,

StreetName [5] IMPLICIT IA5String OPTIONAL,

HouseNumber [6] IMPLICIT IA5String OPTIONAL,

SupplementaryData [7] IMPLICIT IA5String OPTIONAL,

SubscriberMessage	[8] IMPLICIT IA5String OPTIONAL,
HeadingInTheGuide	[9] IMPLICIT IA5String OPTIONAL,
ProfessionCode	[10] IMPLICIT IA5String OPTIONAL,
AdditionalInformationForASelectiveSearch	[11] IMPLICIT IA5String OPTIONAL,
CountyOrProvince	[12] IMPLICIT IA5String OPTIONAL,
Category	[13] IMPLICIT IA5String OPTIONAL
]	

References

- [1] CCITT Recommendation *International Telegraph Alphabet No. 2 (ITA2)*, Rec. S.1.
- [2] CCITT *Instructions for the International Telephone Service* (1st October 1985), ITU, Geneva, 1985.

