NMT DOC 900-2, Annex 3-III
Nordic Mobile Telephone group

Edition 3,
August 1994

NORDIC MOBILE TELEPHONE

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TELEDANMARK MOBIL

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Technical Specification for Signalling System no. 7 SCCP

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Automatic Cellular Mobile Telephone System

NORDIC

NMT - 900

Technical specification for signalling system no. 7

SCCP SPECIFICATION FOR THE MOBILE USER PART

CONTENTS

1. MUP-SCCP INTERFACE

1.1 Transfer of MUP information

1.1.1 Definitions

MUP functions are the information exchange needed for the functions outlined in the MUP specification and they are related to the possibility for a mobile station to roam. A MUP relation (national or international) is defined as the interexchange of messages between two nodes equipped with MUP functions. The origination MUP node and the destination MUP node are either an MTXH, MTXV or an MTXG.

1.1.2 Signalling point code assignment

When Signalling System number 7 is introduced in the NMT-system, the MTXs will be connected to the signalling network of each country and assigned a signalling point code from the country's signalling point code scheme. The NMT network covers several countries and provides roaming between them. This implies that international MUP relations must be possible, where at least a part of the of the relation takes place in the international signalling network.

To manage a translation between the two signalling point code schemes, international SCCP nodes are introduced. These are assigned both an international and a national signalling point code. In the long term an international SCCP gateway will be an international switching centre. However, during the first years of service some MTXs may constitute the international SCCP node.

A national MTX shall be able to store all signalling point codes of its country MTXs. An MTX acting as international SCCP node shall be able to store the point codes of the ISCCP nodes of the other countries and the point codes of the MTXs of its country.

1.2 The use of Signalling Connection Control Part (SCCP)

The SCCP used in the NMT network shall fulfil the requirement of Q.711-714 of 1988 years CCITT recommendations (blue book). Since connectionless service is assumed only a small part of the specification applies. In the following comments are made regarding the use of the specification.

The comments are directed against the appropriate part of the CCITT specification.

2 SCCP FORMATS AND CODES Q.713

Q.713 para 1 General

Applicable

Q.713 para 2 Coding of general parts

Applicable

Q.713 para 3 SCCP Parameters

Q.713 para 3.1 End of optional parameters

Not applicable

Q.713 para 3.2 Destination local reference

Not applicable

Q.713 para 3.3 Source local reference

Not applicable

Q.713 para 3.4 Called party address

Q.713 para 3.4.1 Address indicator

The following elements are used:

a) Point code indication:
   Applicable

b) Sub-system number included:
   Is always set to 1 (Sub-system included).

c) Global title included:
   Two codings apply:
   0 0 0 0: No global title included
   0 1 0 0: Global title includes translation type, numbering plan, encoding scheme, and nature of address indicator.

d) Routing indicator:
   Both values apply. Routing on global title applies both for national and international MUP relations. Routing on SSN applies for a national MUP relation.

Q.713 para 3.4.2 Address

Q.713 para 3.4.2.1 Signalling point code

For a national MUP relation a signalling point code may be included in the calling party address.

Q.713 para 3.4.2.2 Sub-system number

Always included. Set to 11111000 (NMT-MUP).

Q.713 para 3.4.2.3 Global title

Q.713 para 3.4.2.3.4 Global tittle indicator

Global tittle indicator = 0 1 0 0

a) Translation type

Translation type is always coded 00000000 (which means Not used).

b) The numbering plan

The numbering plan is always set to 0001 (Telephony/ ISDN numbering plan).

c) Encoding scheme

Two values apply:

0001 BCD, odd number of digits

0010 BCD, even number of digits

d) Nature of address indicator

Two values apply:

0000011 National significant number

0000100 International number

e) Address information

The following address signals apply:

0000 digit 0

0001 digit 1

0010 digit 2

0011 digit 3

0100 digit 4

0101 digit 5

0110 digit 6

0111 digit 7

1000 digit 8

1001 digit 9

1010 spare

1011 reserved

1100 reserved

1101 spare

1111 ST

Note: 1111 is used as end of address indication. In Appendix 1 the coding of the called party address for different MUP relations is shown.

Q.713 para 3.5 Calling party address

Applicable.

Note: For an international MUP relation the calling party address just consists of the address indicator where bits 1-7 are coded zero.

Q.713 para 3.6 Protocol class
Class 1 and return option are applicable.
Class 0 is applied for SCCP network management messages.

Q.713 para 3.7 Segmenting/reassembling
Not applicable.

Q.713 para 3.8 Receive sequence number
Not applicable

Q.713 para 3.9 Sequencing/segmenting
Not applicable

Q.713 para 3.10 Credit
Not applicable

Q.713 para 3.11 Release cause
Not applicable

Q.713 para 3.12 Diagnostics
Not applicable

Q.713 para 3.13 Reset cause
Not applicable

Q.713 para 3.14 Error cause
Not applicable

Q.713 para 3.15 Refusal cause
Not applicable

Q.713 para 3.16 Data
Applicable

Q.713 para 4 SCCP messages and codes
Q.713 para 4.1 General
Applicable

Q.713 para 4.2 - 4.9
Not applicable

Q.713 para 4.10 Unit data message
Applicable

Q.713 paras 4.11 - 4.17
Not applicable

Q.713 para 5 SCCP management messages and codes
Q.713 para 5.1 General
An MTX shall have the capability to receive and take action on some of the SCCP management messages received. Below a more detailed description of the capabilities required is outlined.

Q.713 para 5.1.1 SCMG format identifier

a) Subsystem allowed:
The MTX shall have the capability to receive and take action in accordance with section 5.3.3 in Q.714 on Subsystem allowed message. The broadcast option, see section 5.3.7 in Q.714, shall be possible. However to most of the MTXs the number of concerned node will be 0.

b) Subsystem prohibited:
The MTX shall have the capability to receive and take action in accordance with section 5.3.2 in Q.714 on Subsystem prohibited message. The broadcast option, see section 5.3.7 in Q.714, shall be possible. However to most of the MTXs the number of concerned node will be 0. This means that the broadcast option 5.7 in Q.714 is not applicable.

c) Subsystem-status-test:
Section 5.3.4. Q.714 apply

d) Subsystem out-of-service-request
Not applicable for an MTX.

e) Subsystem out-of-service grant
Not applicable for an MTX

Q.713 para 5.1.2 Formatting principles
Applicable

Q.713 para 5.2 SCMG message parameters
Q.713 para 5.2.1 End of optional parameters
Applicable

Q.713 para 5.2.2 Affected SSN
Applicable

Q.713 para 5.2.3 Affected PC
Applicable

Q.713 para 5.2.4 Subsystem multiplicity indicator
Applicable

Q.713 para 5.3 SCCP Management messages
Applicable

3. SIGNALLING PROCEDURES Q.714

Below the different parts of the signalling procedures for the SCCP used in the NMT network is outlined.

Q.714 para 1 Introduction
Q.714 para 1.1.1 Purpose
Q.714 para 1.1.2 Protocol class
Protocol classes 0 and 1 are applicable

Q.714 para 1.1.3 Signalling connections
Not applicable

Q.714 para 1.2 Overview of procedures for connection-oriented procedures
Not applicable

Q.714 para 1.3 Overview of procedures for connectionless procedures
Applicable

Q.714 para 2 Addressing and routing
All chapters, with the exception for 2.4 routing failure, is applicable where references are made to the connectionless service. Message return is not applicable.

Q.714 para 3 Connection-oriented procedures
Not applicable

Q.714 para 4 Connectionless procedures
Q.714 para 4.1 Message transfer
Applicable

Q.714 para 4.2 Message return
Not applicable

Q.714 para 4.3 Syntax error
Applicable

Q.714 para 5 SCCP Management procedure
There are two different types of configurations foreseen in the future. Both solitary and duplicated mode are applicable. In the case of duplicated system, duplicated in a dominant mode is applicable.

Broadcast method in accordance with Q.714 para 5.3.7 is applicable for the subsystem prohibited and subsystem allowed procedure. To an MTX node the number of concerned nodes are equal to zero.

Q.714 para 5.2 Signalling point management
Q.714 para 5.2.1 General
Applicable.

Q.714 para 5.2.2 Signalling point prohibited
Applicable

Q.714 para 5.2.3 Signalling point allowed
Applicable

Q.714 para 5.3 Subsystem status management
Applicable

Q.714 para 5.3.1 General
Applicable

Q.714 para 5.3.2 Subsystem prohibited
Applicable

Q.714 para 5.3.3 Subsystem allowed
Applicable

Q.714 para 5.3.4 Subsystem status test
Applicable

Q.714 para 5.3.5 Coordinated state change
Not applicable for an MTX

Q.714 para 5.3.6 Local broadcast
Not applicable

Q.714 para 5.3.7 Broadcast
Applicable

APPENDIX 1. SCCP ADDRESSES TO BE USED IN THE NMT SYSTEM

Abbreviations

The following abbreviations are used:

a) Point code indication = PCI
b) Sub-system number included = SSI
c) Global title included = GTI
d) Routing indicator = RI

(Included in address indicator)

e) Nature of address indicator = NAI
f) National significant number = Nsn
g) International number = In
h) Subsystem number = SSN
i) Global title = GT
j) Point code = PC
k) Address information (AI)
l) M_1 M_2 = Access code
m) Z (X_1)' X_2' = Identifies an MTX
n) I_1 I_2 (I_3) = Country code

Called and Calling Party Address

The called and calling address are coded as below for the different MUP relations.

a) For a national MUP relation:

There are two possibilities to code the called party address.

i) Use of global title:

PCI = 0,
SSI = 1,
GTI = 0100,
RI = 0 (route on global title),
NI = Nsn,

AI = M_1 M_2 (X_1)' X_2' ST.

ii) MTP routing:

PCI = 0,
SSI = 1,
GTI = 0000,
RI = 1 (route on subsystem number),
AI = SSN.

There are three possibilities to code the calling party address.

i) Use of global title:

PCI = 0,
SSI = 1,
GTI = 0100,
RI = 0 (route on global title),
NI = Nsn,
AI = M_1 M_2 (X_1)' X_2' ST.

ii) MTP routing:

PCI = 1,
SSI = 1,
GTI = 0000,
RI = 1 (route on subsystem number)
AI = PC, SSN.

iii) No address information

PCI = 0,
SSI = 0,
GTI = 0000,
RI = 0.

b) For an international MUP relation

There is only one way to code the called party address for an international MUP relation.

PCI = 0,
SSI = 1,
GTI = 0100,
RI = 0,
NI = In,
AI = I_1 I_2 (I_3) M_1 M_2 (X_1)' X_2' ST.

There are two ways to code the calling party address for an international MUP relation.

i) No address information (GMTX not used in the target country):

PCI = 0,
SSI = 0,
GTI = 0000,
RI = 0

ii) Use of global title (GMTX used in the target country):

PCI = 0,

SSI = 1,

GTI = 0100,

RI = 0,

NI = In

AI = I_1 I_2 (I_3) M_1 M_2 (X_1)' X_2'X_3' .