ENHANCED INTERNATIONAL DIALING,
CALLING NUMBER IDENTIFICATION & CALLBACK,
CALLING PARTY CATEGORY IDENTIFICATION

CONTENTS

REVISION HISTORY

Version	Date	
0	April 2001	Initial Publication

INTRODUCTION

This document presents a recommended plan for the implementation of enhanced international dialing, calling number identification and callback, and calling party category identification for use in the Wireless Radiotelephone Service.

1 GENERAL

This document describes the enhanced international dialing and calling number identification and callback network capabilities and the intersystem operations to enable a wireless system to these capabilities. This document also describes the intersystem operations that enable identification of the calling party category.

2 REFERENCES

This Interim Standard builds on the following standards:

- *ANSI/TIA/EIA-664-A*, Wireless Features Description; Telecommunications Industry Association; July 2000
- *ANSI/TIA/EIA-41-D*, Cellular Radiotelecommunications Intersystem Operations; Telecommunications Industry Association; 1997
- *ITU-T Q.763*, Signalling System No. 7 – ISDN user part formats and codes; September 1997.

3 ORGANIZATION

This document is organized as follows:

- The *TIA/EIA-664-508-A* Modifications section provides the modifications and additions to the Calling Number Identification Presentation (CNIP) wireless feature description for calling number identification and callback.
- The *TIA/EIA-664-701-A* Modifications section provides the modifications and additions to the Mobile Station Functionality wireless feature description for enhanced international dialing, calling number identification and callback.
- The *TIA/EIA-664-801-A* Modifications section provides the modifications and additions to the System Functionality wireless feature description for enhanced international dialing and calling number identification.
- The *TIA/EIA-41.1-D* Modifications section provides the modifications and additions to *TIA/EIA-41-D* Chapter 1 for calling party category.
- The *TIA/EIA-41.5-D* Modifications section provides the modifications and additions to *TIA/EIA-41-D* Chapter 5 for calling party category.
- The *TIA/EIA-41.6-D* Modifications section provides the modifications and additions to *TIA/EIA-41-D* Chapter 6 for enhanced international dialing, calling number identification and callback.

4 EDITORIAL CONVENTIONS

The following editorial conventions are used for this Interim Standard:

- underline: addition
- ~~cross out~~: deletion
- change bar: indicates additions or deletions
- new sub-sections are identified in the sub-section heading
- for clarity, new sub-sections are shown with vertical change bars but are not underlined

TIA/EIA-664-508-A MODIFICATIONS

This section describes modifications and additions to *TIA/EIA-664-508-A*, Calling Number Identification Presentation (CNIP), for enhanced international dialing, calling number identification and callback, and calling party category identification.

1 Calling Number Identification Presentation (CNIP)

Calling Number Identification Presentation (CNIP) provides the number identification of the calling party to the called subscriber. One or two numbers may be presented to identify the calling party.

Omitted text is retained unchanged.

Normal Operation With Successful Outcome

When the CNIP service is applicable and active, the destination network provides the called subscriber with CNI during alerting on incoming calls.

For Network Validated Numbers, the calling party's network should transmit enough numbering plan digits to allow other networks and parties to identify the calling number. The number presented should be the same as would be used to reach the calling party ~~(at least for numbers within World Zone 1)~~. For purpose of automatic callback, the number presented shall not require editing while the called subscriber is located in the country in which the call was received.

It is assumed that the originating network is capable of transmitting up to 15 digits of CPN. It is also assumed that the originating network is capable of transmitting a subaddress, if provided by the calling party.

It is assumed that the redirecting network is capable of transmitting up to 15 digits of redirecting number (RN) information. It is also assumed that the redirecting network is capable of transmitting a redirecting subaddress, if provided by the redirecting party.

For Network Validated Numbers, the redirecting network should transmit enough numbering plan digits to allow other networks and parties to identify the redirecting party.

The called subscriber, by the CNIP subscription option, may select either the single number delivery option (CNIP1) or the two number delivery option (CNIP2). For CNIP1, the "User Provided, Screening Passed" number shall be presented, if available, otherwise the "Network Provided" number shall be presented, if available. If CNIP2 is specified and two numbers are available, both the "Network Provided" number and the "User Provided" number shall be presented.

If a CPN is known to be an international number, the international nature of the incoming call may be indicated by pre-pending an international indicator (e.g., +) to the digit string being presented to the subscriber.

If CNIP is not subscribed (i.e., the No delivery option applies), no CPN value shall be presented.

When two numbers are presented to a subscriber, indications should be provided to the subscriber to signify whether each Calling Party Number is *user provided* or *network provided*, and, if *user provided*, whether the number is *unscreened*, *verified and passed*, or *verified and failed*. These indications should eliminate subscriber confusion.

The remaining text is retained unchanged.

TIA/EIA-664-701-A MODIFICATIONS

This section describes modifications and additions to *TIA/EIA-664-701-A*, Mobile Station Functionality, for enhanced international dialing, calling number identification and callback, and calling party category identification.

1 Mobile Station Functionality

This section describes the characteristics of a Mobile Station (MS) model to define the services and features in this Standard. It includes all external interfaces within the MS including external devices, audible annunciators, visual indications, and subscriber interaction devices. Not all of these interfaces are electrical in nature.

1.1 Digit Entry Keys

The MS shall have a key pad with the following keys for digit entry: [1], [2], [3], [4], [5], [6], [7], [8], [9], [0], [*], and [#]. A [+] key (or equivalent user interface convention) may be included to indicate international dialing. The digit keys should also include the letters ~~two, three, or four letters as~~ indicated in the following table (NOTE: See *ITU-T Recommendation E.161*):

Table 1: Letter to Digit Key Mapping

Key Digit	Letters	Notes
1		
2	ABC	
3	DEF	
4	GHI	
5	JKL	
6	MNO	
7	PQRS	
8	TUV	
9	WXYZ	
*		
0	OPER	Should be distinctive from alphabet designations on the other keys.
#		
+		

Omitted text is retained unchanged.

1.2 Function Keys

Omitted text is retained unchanged.

Plus (Optional)

The [+] key (or functional equivalent) is used to indicate an international number. When the Plus function is invoked, the MS user should not have to enter international access digits.

Omitted text is retained unchanged.

1.7 Numeric Display

The MS shall have a numeric display to allow the subscriber to enter digits and review them before sending them to the base station. The display shall have at least 10 digits. The display should be capable of displaying the following characters: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, *, ~~and~~ #, and +.

The numeric display may be used for local features and for some of the applicable alphanumeric display features at the discretion of the MS manufacturer.

1.8 Alphanumeric Display

A mobile station (MS) may provide a display for alphanumeric messages. Such messages may be generated by the network to indicate call progress, caller identifications, or other interactive services. The initial uses of the display include Calling Number Identification Presentation, Call Waiting Identification Presentation, and Message Waiting Notification. The display is also available for local MS functional messages, such as subscriber prompts, pre-specified number retrieval, stored message retrieval, time and date display, etc. The Short Message Services may also use the display to generate and display messages.

Omitted text is retained unchanged.

The alphanumeric display may support any or all of the following character sets:

- *ITU T.50 International Reference Alphabet* (IRA) (formerly International Alphabet No. 5, or IA5)
- *ISO 8859 Information Processing* - 8-bit single octet coded graphic character sets
- *ISO 10646 Universal Multiple-Octet Coded Character Set* (UCS), Basic Multilingual Plane only
- *IS-90 Extended Protocol Message* (TIA/EIA/IS-90 Section 3.7.1 and TIA/EIA/IS-90 Appendix B)

- *Shift-JIS* — variable 1-2 byte nonmodal encoding for Kanji, Kana, and Latin character sets defined in *JIS X0201 (1997) 7-bit and 8-bit coded character sets for information interchange* and *JIS X0208 (1997) 7-bit and 8-bit double byte coded KANJI set for information interchange ~~X0206~~*
- *KS X 1001:1998* — variable 1-2 byte encoding method used in Korea

If the alphanumeric display supports multiple character sets, then the alphanumeric display should be able to accommodate more than one character set in a message.

Omitted text is retained unchanged.

1.8.3 Interactions with Other Wireless Services

Omitted text is retained unchanged.

Calling Number Identification Presentation

The Alphanumeric Display may be used to identify the calling party of an incoming call to the called MS. The identification may be one or two numbers. Each number also has the following information:

Number:	Up to 15 digits. International numbers should be displayed in *E.164* number format (i.e., including the country code). The MS may pre-pend an international indicator (e.g., +) to the international number displayed.
Presentation Indicator:	*Presentation allowed*. This is usually indicated by presenting the number.
	Presentation restricted. This may be indicated by a single letter "P" for "Private."
	Number not available. This may be indicated with a single letter "O" for "Out of Area."
Screening Indicator:	*Network provided* (N), *user provided not screened* (U), *user provided screening passed* (V), *user provided screening failed* (F).
Type of Number:	*National*, *international*, *subscriber number* indicator.
Numbering Plan:	Public telephony (~~CCITT~~ *E.164*) or private.

Presentation of the calling party name using a reverse Directory Number service is for further study.

Presentation of the called number is for further study.

Presentation of the first redirecting number (or original called number) is for further study.

Presentation of the last redirection number is for further study.

Presentation of the connected number is for further study.

Omitted text is retained unchanged.

1.17 Call Back

The MS may be capable of calling back a number from an incoming call list.

It is desirable to allow the subscriber to review the call back number on the numeric or alphanumeric display before actually making the call. However, the call back number shall not require editing before use while the subscriber is located within the country in which the call was received.

1.18 Storage of Phone Numbers

When phone numbers are stored in the MS's memory that were entered by a user with the '+' indication or were received via CNIP with the international indicator set, the international indication should be preserved for future display and for setting the international indicator on callback, whether as a new call origination or as a flash request (e.g., to initiate a 3-way call).

TIA/EIA-664-801-A MODIFICATIONS

This section describes modifications and additions to *TIA/EIA-664-801-A*, System Functionality, for enhanced international dialing, calling number identification and callback, and calling party category identification.

1 System Functionality

The purpose of this section is to define the characteristics of the system with respect to messaging and indications to the Mobile Station (MS) and to the calling party.

Omitted text is retained unchanged.

1.5 Indications Received from the Mobile Station

The system should be able to receive and process an indication from the MS of the international nature of the called number.

1.6 Indications Applied Toward the Mobile Station

The following indications may be applied by the system toward the mobile station during normal operation and in providing the features in this Standard, as:

a. The MSC may indicate the international nature of an incoming call.

b. Calling number identification should be presented to international roamers in the international format, whether the calling number is from the country of the serving system, the country of the home system or any other country[1].

[1] This will enable the calling number to be stored and later retrieved in the subscriber's home country.

TIA/EIA-41.1-D Modifications

This section provides modifications and additions to *TIA/EIA-41-D* Chapter 1 needed for calling party category identification.

2 REFERENCES

2.1 NORMATIVE REFERENCES

ITU-T Q.763 (Signalling System No. 7 – ISDN user part formats and codes); September 1997.

4 SYMBOLS AND ABBREVIATIONS

CPC	CallingPartyCategory parameter

TIA/EIA-41.5-D Modifications

This section describes modifications and additions to *TIA/EIA-41.5-D* for enhanced international dialing, calling number identification and callback, and calling party category identification.

6.4 MAP OPERATIONS

6.4.2.27 LocationRequest

(TIA/EIA-41.5-D, page 5-77)

The LocationRequest operation is used by an Originating MSC to obtain call treatment instructions from the HLR. The call is identified by the dialed MS address digits received by the Originating MSC.

The LocationRequest operation is initiated with a TCAP INVOKE (LAST). This is carried by a TCAP QUERY WITH PERMISSION package. The Parameter Set is encoded as follows:

LocationRequest INVOKE Parameters				**Timer: LRT**
Field	**Value**	**Type**	**Reference**	**Notes**
Identifier	SET [NATIONAL 18]	M	6.3.2.1	
Length	variable octets	M	6.3.2.1	
Comments				
• • • •				
CallingPartyCategory		O	6.5.2.gl	x

Notes:

• • •

x. Include to indicate the *Calling Party's Category*, based on national requirements.

6.4.2.30 OriginationRequest

(TIA/EIA-41.5-D, page 5-81)

The OriginationRequest operation success is reported with a TCAP RETURN RESULT (LAST). This is carried by a TCAP RESPONSE package. The Parameter Set is encoded as follows:

OriginationRequest RETURN RESULT Parameters				
Field	**Value**	**Type**	**Reference**	**Notes**
Identifier	SET [NATIONAL 18]	M	6.3.2.1	
Length	variable octets	M	6.3.2.1	
Comments				
• • • •				
CallingPartyCategory		O	6.5.2.gl	y

Notes:

• • •

y. Include to indicate the *Calling Party's Category* for this call, if received in the MS's profile.

6.5 MAP PARAMETERS

6.5.1 General

6.5.1.2 Parameter Identifiers

(TIA/EIA-41.5-D, page 5-119)

***Table 112 TIA/EIA-41* MAP Parameter Identifiers**

Parameter Identifier Name	Parameter Identifier Code								Reference
	H	G	F	E	D	C	B	A	
CallingPartyCategory	1	0	0	1	1	1	1	1	6.5.2.gl
	1	0	0	0	0	0	1	0	
	0	1	1	0	0	0	1	1	

6.5.2 Parameter Definitions

6.5.2.97 Profile

(TIA/EIA-41.5-D, page 5-234)

The Profile is a collection of the subscriber's calling profile information. This information is a list of optional parameters. The Profile macro has been defined solely for editorial convenience, and does not affect the encoding in any way.

Profile				
Field	**Value**	**Type**	**Reference**	**Notes**
Comments				
• • • •				
CallingPartyCategory		O	6.5.2.gl	z

Notes:

• • •

z. Include to indicate the subscriber's *Calling Party Category*, based on national requirements.

6.5.2.gl CallingPartyCategory

(New for TIA/EIA-41.5-D, Section 6.5.2)

The CallingPartyCategory (CPC) parameter identifies the Calling Party's Category. This parameter is based on the Calling Party's Category parameter defined in Section 3.11 of *ITU-T Q.763-1997* and includes the "reserved for national use" values.

Field	Value	Type	Reference	Notes
Identifier	CallingPartyCategory	M	6.5.1.2	
	one octet	M	6.5.1.1	
Comments				

H	G	F	E	D	C	B	A	Octet	Notes
Calling Party's Category								1	a, b

Notes:

a. Refer to *ITU-T Q.763* (Signalling System No. 7 – ISDN user part formats and codes) for encoding of this parameter.

b. Refer to national ISDN user part specifications for definitions and encoding of the "reserved for national use" values.

TIA/EIA-41.6-D MODIFICATIONS

This section describes modifications and additions to *TIA/EIA-41.6-D* for enhanced international dialing, calling number identification and callback, and calling party category identification.

3 BASIC CALL PROCESSING

3.2 Origination Call Tasks

3.2.3 MSC Analyze MS Dialed Number

Upon demand the Anchor MSC shall do the following:

1 IF flash privileges are suspended (by the *Flash Privileges* in the OneTimeFeatureIndicator parameter e.g., Call Transfer, Call Waiting, Three-Way Calling):

1-1 Include the TransactionCapability parameter with the number of multiple terminations set to 0.

2 ELSEIF Call Transfer, Three-Way Calling or similar feature is being invoked:

2-1 Include the TransactionCapability parameter with the number of multiple terminations set to 1.

3 ELSE:

3-1 Include the TransactionCapability parameter with the number of multiple terminations set appropriately.

4 ENDIF.

5 IF the NatureOfNumber field in the dialed digits has the value *National* AND IF the digit string begins with the international access digits that are relevant to the area of operation:

5-1 Remove the international access digits from the dialed digit string.

5-2 Set the NatureOfNumber field in the dialed digits to *International*.

6 ENDIF.

7 IF the NatureOfNumber field in the dialed digits has the value *International* AND IF the digit string begins with the country code of the current serving system:

7-1 Remove the country code from the dialed digit string.

7-2 Set the NatureOfNumber field in the dialed digits to *National*.

8 ENDIF.

9 IF the MS dialed a locally allowed number (e.g., 9-1-1, *9-1-1, *N11):

The remaining steps of Section 3.2.3 are retained unchanged.

5 VOICE FEATURE PROCEDURES

5.8 Calling Number Identification Presentation (CNIP)

5.8.1 HLR CNIP Terminating Call Invocation

Upon CNIP invocation, the HLR shall do the following:

1 IF the CallingPartyNumberDigits1 parameter is received:

1-1 Include the CallingPartyNumberString1 parameter set to indicate the identity of the calling party.

1-2 IF the NatureOfNumber field in the CallingPartyNumberString1 parameter has the value *National* AND IF the MS user is roaming outside the subscriber's home *E.164* country:

1-2-1 Prepend the *E.164* country code of the country of the HLR associated with the subscriber to the CallingPartyNumberString1 digits and set the NatureOfNumber field to *International*.

1-3 ENDIF.

2 ENDIF.

3 IF the CallingPartyNumberDigits2 parameter is received:

3-1 IF the NatureOfNumber field in the CallingPartyNumberString2 parameter has the value *National* AND IF the MS user is roaming outside the subscriber's home *E.164* country:

3-1-1 Prepend the *E.164* country code of the country of the HLR associated with the subscriber to the CallingPartyNumberString2 digits and set the NatureOfNumber field to *International*.

3-2 ENDIF.

4 ENDIF.

5 IF the CallingPartySubaddress parameter is received:

5-1 Include the CallingPartySubaddress parameter set to indicate the subaddress of the calling party.

6 ENDIF.

7 IF the call is being redirected by the HLR (e.g., CFB, CFD, CFNA, CFU, FA, or MAH, PCA, or SCA):

7-1 Include the RedirectingNumberString parameter set to indicate the identity of the last redirecting party (i.e., called mobile directory number or pilot directory number, except for Call Delivery).

7-2 IF the redirecting party has a subaddress:

7-2-1 Include the RedirectingSubaddress parameter set to indicate the subaddress of the last redirecting party.

7-3 ENDIF.

8 ELSEIF the RedirectingNumberDigits parameter is received:

8-1 Include the RedirectingNumberString parameter set to indicate the identity of the last redirecting party.

8-2 IF the RedirectingSubaddress parameter is received:

8-2-1 Include the RedirectingSubaddress parameter set to indicate the subaddress of the last redirecting party.

8-3 ENDIF.

9 ENDIF.

10 Return to the calling task.