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NETWORK CONNECTION SPECIFICATION FOR CONNECTION OF CUSTOMER PREMISES EQUIPMENT (CPE) TO THE PUBLIC TELECOMMUNICATIONS NETWORK (PTN) IN HONG KONG BY DIRECT EXCHANGE LINE (DEL) WITH DATA INTERFACE TO SUPPORT ANALOGUE DISPLAY SERVICES (ADS)

TELECOMMUNICATIONS AUTHORITY
HONG KONG

FOREWORD

1. This specification is issued pursuant to Section 32D of the Telecommunications Ordinance (Cap. 106). This specification sets out the technical requirements for customer premises equipment (CPE) to be connected to the public telecommunication network (PTN) in Hong Kong over direct exchange line (DEL) which supports a defined set of data communication protocols for analogue display services -- advanced screen-based telephony services which may be accessed by means of CPE equipped with screens to display information sent over the telephone network using voice-band data communication.

2. DEL may be provided by any one of the Fixed Telecommunications Network Services (FTNS) operators in Hong Kong. The general technical characteristics of the FTNS networks are given in HKTA 2201. Supplementary information on network characteristics and services of the FTNS networks may be obtained direct from the operators. Contact information of the FTNS operators can be found in the information note OFTA I 412.

3. At present, the Office of the Telecommunications Authority (OFTA) operates a **H**ong **K**ong **T**elecommunications Equipment **E**valuation and **C**ertification ("HKTEC") scheme. Details of the scheme can be found in the information note OFTA I 421. Under the scheme, suppliers or manufacturers may apply to OFTA for certification of their customer premises equipment against this specification. The application procedures for certification of customer premises equipment can be found in the information note OFTA I 412. A prescribed label may be affixed to the equipment which has been certified by the Telecommunications Authority (TA). Details of the labelling arrangement can be found in the Standardisation Guide HKTA 3211.

4. The TA may amend any part of this specification as and when he deems necessary.

5. In case of doubt about the interpretation of this specification, the methods of carrying out the test and the validity of statements made by the manufacturers of the equipment, the decision of the TA shall be final.

6. The TA accepts no responsibility for the satisfactory performance of the CPE connected to the public telecommunications networks. The CPE is not normally evaluated against performance, reliability or quality-of-service parameters.

7. The HKTA specifications and information notes issued by the TA can be obtained through one of the following methods:-

- Downloading direct through the OFTA's Internet Home Page. The Home Page address is http://www.ofta.gov.hk;

- Making a request for hard copies to:-

  Senior Telecommunications Engineer
  Standards Section
  Office of the Telecommunications Authority
  29/F Wu Chung House
  213 Queen's Road East
  Wanchai
  Hong Kong

  Fax: +852 2838 5004
  Email: standards@ofta.gov.hk

8. Enquiries about this specification may be directed to:-

  Senior Telecommunications Engineer
  Standards Section
  Office of the Telecommunications Authority
  29/F Wu Chung House
  213 Queen's Road East
  Wanchai
  Hong Kong

  Fax: +852 2838 5004
  Email: standards@ofta.gov.hk

AMENDMENT TABLE

Item	Issue No.	Paragraph	Descriptions
1.	Issue 2	Foreword	Certification and labelling requirements are updated.

CONTENTS

1. SCOPE

This network connection specification covers the technical requirements for connection of customer premises equipment (CPE) to the public telecommunication network (PTN) in Hong Kong over direct exchange line (DEL) which supports a standard data interface for analogue display services (ADS).

2. TECHNICAL REQUIREMENTS

CPE designed to work with DELs supporting ADS protocols in Hong Kong shall comply with the following specifications:-

1. HKTA 2001 - Compliance Test Specification - Safety and Electrical Protection Requirements for Subscriber Equipment Connected to the Public Telecommunication Networks in Hong Kong;

2. HKTA 2011 - Network Connection Specification for Connection of Customer Premises Equipment (CPE) To Direct Exchange Lines (DEL) of the Public Switched Telephone Network (PSTN) In Hong Kong;

3. Bellcore technical reference TR-NWT-001273 - Generic Requirements for an SPCS to Customer Premises Equipment Data Interface for Analog Display Services , Issue 1, December 1992 ;

4. Bellcore technical document SR-INS-002461 - Customer Premises Equipment Compatibility Considerations for the Analog Display Services Interface, Issue 1, December 1992 (refer to Appendix 1 for detailed compatibility information).

3. HOW TO OBTAIN THE TECHNICAL SPECIFICATIONS

3.1 The HKTA series specifications are issued by the Telecommunications Authority. The documents can be obtained through the following method:-

- download direct through the OFTA's Internet Home Page. The Home Page address is http://www.ofta.gov.hk;

- Hard copies will be provided on request and the contact address is as follows:-

  Office of the Telecommunications Authority,
  29/F, Wu Chung House,
  213 Queen's Road East, Wanchai,
  Hong Kong.

  (Attn. Senior Telecommunications Engineer (Standards))

3.2 The Bellcore's technical references are available from the following address:-

Bellcore
Customer Service
8 Corporate Place, PYA 3C - 184
Piscataway,
NJ 08854-4156
USA

Tel: 908-699-5800
Fax: 908-336-2559

- END -

APPENDIX 1

COMPATIBILITY LIST TO SR-INS-002461 ISSUE 1, DECEMBER 1992

CUSTOMER PREMISES EQUIPMENT COMPATIBILITY CONSIDERATIONS FOR ANALOG DISPLAY SERVICES INTERFACE

Item No.	Compatibility						Descriptions / Notes
	A	B	C	D	E	F	
1						O	Introduction
1.1						O	Purpose
1.2						O	Definitions
1.3						O	Background
1.4		O					Related Documents The CPE must meet the requirements in HKTA 2012 for Calling Identity Delivery on Call Waiting.
1.5						O	Scope
2	O						Abstract CPE
2.1	O						Virtual Display Management
2.1.1	O						Information Display Page
2.1.2	O						Communication Display Page
2.1.3	O						Formatting Virtual Display Pages
2.1.4	O						Soft Key Tuple Information
2.1.5	O						Display Character Attributes
2.1.6	O						Global Prompt
2.2	O						Feature Key Management (FKM)

Item No.	Compatibility	Descriptions / Notes

	A	B	C	D	E	F	
2.2.1	O						Soft Keys
2.2.1.1	O						Soft Key Definers
2.2.1.2	O						Soft Key Definer Number
2.2.1.3	O						Soft Key Label String
2.2.1.4		O					Soft Key Return String - If CPE performs the action of sending DTMF tones to the SPCS, the minimum interdigit pause shall be 50ms, exclusive of any rise and fall times (please refer to HKTA 2011 as latest reference). - If CPE performs the action of flashing the switch-hook to the SPCS, the flash signal is recommended to have a duration of 128 to 800 ms including equipment tolerance (please refer to HKTA 2011 as latest reference if the flash signal is specified in future). - If CPE performs the action of sending a dial pulse one to the SPCS, the dial pulse one shall follow HKTA 2011 for sending the dial pulse digits where the on-hook period shall be 52-80ms (please refer to HKTA 2011 as latest reference).
2.2.2	O						Page/Line Up and Down Keys
2.2.3	O						Line Soft Key Tuples
2.3	O						Terminal Control Management (TCM)
2.3.1	O						Display
2.3.2	O						Call Reference Buffers
2.3.3	O						Current Line Number Buffer
2.3.4	O						Active Line

Item No.	Compatibility						Descriptions / Notes
	A	B	C	D	E	F	
2.3.5	O						Input Format Table
2.3.6	O						Input Buffer
2.3.7	O						CPE ID and CPE Configuration
2.4	O						Modem Management (MM)
2.5	O						Feature Download Management (FDM)
2.5.1		O					FDM Security CPE is recommended (i.e. not mandatory) to support on-hook security.
2.5.2	O						Feature Download Management (FDM) Page
2.5.2.1	O						FDM Maintenance
2.5.2.2	O						FDM Display
2.5.2.3	O						Default Service
2.5.3	O						Downloadable Data
2.5.3.1		O					Service Script - Please refer to HKTA 2201 for the specification of ringing patterns and audible tones adopted in Hong Kong. - CPE is recommended (i.e. not mandatory) to be able to support Event 24 (CPE ID parameter received) .
2.5.3.2	O						Tables
2.5.4	O						Service-Script Interpreter

Item No.	Compatibility						Descriptions / Notes
	A	B	C	D	E	F	
2.5.5	O						Starting and Ending a Service Script
2.5.6						O	Service Script Example
2.6	O						Hanging Up
2.7	O						Idle State Settings
2.8	O						Off-hook CPE Modes
2.9	O						Summary of the abstract CPE
3	O						Minimum Requirements for Physical CPE
3.1	O						Signalling Capabilities
3.1.1	O						Signal Detection and Generation - Physical Layer
3.1.1.1		O					FSK Data Transmission Interface Wherever applicable, HKTA 2011 should be referred for the electrical characteristics other than those for the CPE Alerting Signal, Acknowledgement Signal and Data Signal.
3.1.1.2	O						Server-CPE Handshaking Signals
3.1.1.3	O						Timers
3.1.1.4	O						Signal Detection and Generation
3.1.1.4.1	O						Signal Detection
3.1.1.4.1.1	O						CPE Alerting Signal

Item No.	Compatibility	Descriptions / Notes

	A	B	C	D	E	F	
3.1.1.4.1.2		O					Call Progress Tones Refer to HKTA 2201 for the specification of the audible tones adopted.
3.1.1.4.1.3		O					Power Ringing Refer to HKTA 2201 for the specification of the ringing signal adopted.
3.1.1.4.1.4	O						On-Hook/Off-Hook
3.1.1.4.1.5	O						Extension in Use
3.1.1.4.2	O						Signal Generation
3.1.1.4.2.1		O					Dual-Tone Multifrequency (DTMF) Refer to HKTA 2011 for the specification of the DTMF signals adopted.
3.1.1.4.2.2		O					Dial Pulse One Refer to HKTA 2011 for the specification of the dial pulse signals adopted.
3.1.1.4.2.3		O					Disconnect and Switch-hook Flash Refer to HKTA 2011 for the specification of the disconnect and switch-hook signals (if applicable) adopted.
3.1.2	O						Signalling Protocol - Link Layer
3.1.3	O						Message Layer
3.1.3.1	O						Non-ADSI Messages
3.1.3.1.1	O						Existing non-ADSI Messages

Item No.	Compatibility						Descriptions / Notes
	A	B	C	D	E	F	

A : Compatible B : Compatible with additional notes C : Partially compatible D : Not compatible E : Under study F : Descriptive text only

3.1.3.1.2		O					Future TR-NWT-000030 MDMF Parameter CPE is recommended (i.e. not mandatory) to be able to interpret and process the future TR-NWT-000030 MDMF parameter mentioned in this paragraph and in future TR-NWT-000030 related features.
3.1.3.2	O						ADSI Messages
3.2						O	Display
3.2.1	O						Display Size
3.2.2	O						Displaying Virtual Display Pages
3.2.2.1	O						Wrapping Indicator
3.2.2.2	O						Formatted Virtual Pages
3.2.3	O						Display Character Attributes
3.2.4	O						Cursor
3.2.5	O						Active Line
3.2.6	O						Display in Alphanumeric Mode
3.2.7	O						Interaction between Server Display Control and Feature Download Applications
3.3	O						Soft Keys
3.4	O						Size of the FDM page

Item No.	Compatibility	Descriptions / Notes

	A	B	C	D	E	F	
3.5							Local Scrolling
3.5.1	O						Active Logical Section Buffer
3.5.2	O						Active Soft Key Definer Buffer
3.5.3	O						Local Global Prompt Copy
3.5.4	O						Scrolling or Page Up/Down
3.6	O						Information Automatic Select (INAS)
3.7	O						Assigning CPE ID
3.8	O						Manual Operation
3.9	O						Memory Requirement
3.9.1	O						Virtual Display Pages
3.9.2	O						Soft Key Definer Table
3.9.3	O						Call Reference Buffers
3.9.4	O						Input Buffer
3.9.5	O						Input Format Table
3.9.6	O						Default Soft Key Tuple
3.9.7	O						Current Line Number Buffer

Item No.	Compatibility						Descriptions / Notes
	A	B	C	D	E	F	
3.9.8	O						Service Script and associated Tables
3.9.8.1	O						Flags
3.9.8.2	O						CPE Script Soft Key Table
3.9.8.3	O						Predefined Display Table
3.9.8.4	O						Service Script
3.9.9	O						Summary of Memory Requirement
3.10	O						Data Preservation
3.11	O						Extension Phones
4						O	Error Treatment
4.1	O						User Input
4.2	O						Data Structures
4.3	O						Undefined Lines in Virtual Display Pages
4.4	O						Data Transmission
4.5	O						Message Sequence
4.6	O						Network-CPE Signal Detection

Item No.	Compatibility						Descriptions / Notes
	A	B	C	D	E	F	
4.7	O						Network-CPE Signal Generation
5							Other CPE Considerations
5.1	O						CPE-based Functions
5.2	O						CPE Functionality and the Impact on Services
5.2.1	O						Downloading the initial Service Script
5.2.2	O						On-hook CPE Display
5.3	O						Interaction between a Server Display Control Session and Call Waiting/CIDCW
5.4							Industry Standards and FCC Regulations Not applicable in Hong Kong. The CPE must adhere to the specifications in HKTA 2011 to ensure proper network operation.