

**NETWORK CONNECTION SPECIFICATION
FOR CONNECTION OF
CUSTOMER PREMISES EQUIPMENT (CPE)
TO THE PUBLIC TELECOMMUNICATION
NETWORK (PTN) IN HONG KONG
BY ISDN BASIC RATE ACCESS (BRA)
INTERFACE USING METALLIC LOOPS ON
THE NETWORK SIDE OF THE NETWORK
TERMINATION (NT)
- LAYER ONE SPECIFICATION**



**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 of customer premises equipment (CPE) which uses Integrated Services Digital Network (ISDN) Basic Rate Access (BRA) for connection to the public telecommunication network (PTN) by metallic loops on the network side of the network termination (NT).
2. This network connection specification does not cover the technical requirements for the higher layer protocols (data link layer and network layer) other than the physical layer for user access to the ISDN. For the higher layer protocols, compliance information should be referred to other network connection specifications issued by the Telecommunications Authority on ISDN.
3. At present, the Office of the Telecommunications Authority (OFTA) operates a **Hong Kong Telecommunications Equipment Evaluation and Certification** (“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
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AMENDMENT TABLE

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

CONTENTS

- 1. SCOPE**
- 2. TECHNICAL REQUIREMENTS**
- 3. HOW TO OBTAIN THE TECHNICAL SPECIFICATIONS**
- 4. REFERENCES DOCUMENT**

APPENDIX

- 1. Compliance list to ANSI T1.601-1988 - Integrated Service Digital Network (ISDN)
- Basic Access Interface for use on Metallic Loops for Application on the Network
Side of the NT (Layer 1 Specification)**

1. SCOPE

This network connection specification covers the technical requirements of customer premises equipment (CPE) which uses ISDN Basic Rate Access (BRA) for connection to the public telecommunication network (PTN) by metallic loops on the network side of the network termination (NT), i.e. at the U reference point. ISDN terminal equipment intended to be connected to the ISDN by BRA in Hong Kong at the U reference point shall comply with this specification.

This Specification only stipulates the technical requirements on the physical layer. Access protocols for the data link layer and network layer should be referred to other network connection specifications issued by the Telecommunications Authority.

2. TECHNICAL REQUIREMENTS

ISDN CPEs designed to connect to ISDN BRA Interface provided by FTNS operators using metallic loops at the U reference point shall comply with the following specifications:-

1. HKTA 2001 - Compliance Test Specification - Safety and Electrical Protection Requirements for Subscriber Equipment Connected to the Public Telecommunications Networks in Hong Kong; and
2. ANSI Standard T1.601-1988 "Integrated Service Digital Network (ISDN) - Basic Access Interface for use on Metallic Loops for Application on the Network Side of the NT (Layer 1 Specification)"², 1988 published by the American National Standards Institute (refer to Appendix 1 for detailed compliance).

3. HOW TO OBTAIN THE TECHNICAL SPECIFICATIONS

3.1 To obtain the HKTA series of specifications issued by the Telecommunications Authority, please refer to paragraph 10 in the Foreword of this document.

3.2 The ANSI technical references are available from the following address:-

American National Standards Institute
11 West 42nd Street,
New York, New York 10036,
USA.

Tel: 212-642-4900
Fax: 212-302-1286

⁽²⁾ ANSI T1.601-1988 is a subset of ANSI T1.601-1992, FTNS operators and CPE manufacturers may choose either one of these two standards to support the service.

4. REFERENCES DOCUMENTS

- [1] ITU-T Recommendation I.411 ISDN user-network interface reference configurations.
- [2] ITU-T Recommendation I.412 ISDN user-network interfaces - Basic interface structure.
- [3] ITU-T Recommendation I.430 Basic user-network interface layer 1 specification.
- [4] ITU-T Recommendation G.960 Digital section for ISDN basic rate access.
- [5] ITU-T Recommendation G.961 Digital transmission system on metallic local lines for ISDN basic rate access.
- [6] HKTA 2014 Network Connection Specification for Connection of Customer Premises Equipment (CPE) to the Public Telecommunication Network (PTN) In Hong Kong using ISDN Basic Rate Access based on ITU-T Recommendations.

- END -

**APPENDIX 1 - TECHNICAL REQUIREMENTS AT U-INTERFACE POINT OF
ISDN BASIC RATE ACCESS**

**COMPLIANCE LIST TO ANSI T1.601-1988 - INTEGRATED SERVICE DIGITAL NETWORK (ISDN) -
BASIC ACCESS INTERFACE FOR USE ON METALLIC LOOPS FOR APPLICATION ON THE NETWORK SIDE OF
THE NT (LAYER 1 SPECIFICATION)**

Item No.	Compliance						Descriptions / Notes
	A	B	C	D	E	F	
1.						O	<u>PURPOSE SCOPE AND STRUCTURE</u>
2.						O	<u>REFERENCED PUBLICATIONS</u>
3.						O	<u>DEFINITIONS</u>
4.						O	<u>PHYSICAL CHARACTERISTICS</u>
4.1	O						<u>Wiring Polarity Integrity</u>
4.2	O						<u>Connector</u>
5.							<u>TRANSMISSION METHOD</u>
5.1		O					<u>General</u> 19kft, 1300 Ohm resistance, 40 dB loss at 40kHz.
5.2	O						<u>Line Code</u>
5.3	O						<u>Pulses Originating at the NT</u>
5.4	O						<u>Received Line Signal Characteristics</u>
6							<u>FUNCTION CHARACTERISTICS</u>
6.1		O					<u>Baud Rate, Timing and Synchronization</u> Received signal baud rate is 80k baud
6.2	O						<u>Frame Structure</u>
6.3	O						<u>Scrambling</u>
6.4	O						<u>Start-up Procedure</u>

A : Complied to ANSI

B : Complied to ANSI with additional notes

C : Partially complied to ANSI

D : Not supported

E : Under study

F : Descriptive text only

Item No.	Compliance						Descriptions / Notes
	A	B	C	D	E	F	
7							<u>ELECTRICAL CHARACTERISTICS</u>
7.1	O						<u>Impedance and Return Loss</u>
7.2	O						<u>Longitudinal Output Voltage</u>
7.3	O						<u>Longitudinal Balance</u>
7.4	O						<u>Jitter</u>
7.5	O						<u>DC Characteristics</u>
8						O	<u>M-CHANNEL BIT FUNCTIONS</u>
8.1				O			<u>Error Monitoring Function</u> Error monitoring function has been provided by layer 2.
8.2	O						<u>Overhead Bit Function</u>
8.3	O						<u>Embedded Operations Channel Functions</u>
9.							<u>ENVIRONMENT CONDITIONS</u>
9.1		O					<u>Protection</u> Refer to HKTA 2001
9.2						O	<u>Electromagnetic Compatibility</u> CPE shall make reference to electrical operating environment for Hong Kong.

A : Complied to ANSI

B : Complied to ANSI with additional notes

C : Partially complied to ANSI

D : Not supported

E : Under study

F : Descriptive text only