JT-G961 Digital Transmission System on Metallic Local Lines for ISDN Basic Rate Access

1. Relation with the international standards

This standard is based on ITU-T Recommendation G.961 (WTSC-93).

2. Difference from ITU-T Recommendations / international standards

(1) In this standard, the following items are deleted from the above mentioned ITU-T Recommendation.

(a) APPENDICES I through Ⅳ except Ⅲ

Reason : TCM method is adopted as standard.

(b) ECH in the abbreviation list in §1.4 is deleted.

Reason : TCM method is adopted as standard.

(c) The description of power feeding under normal condition described in §1.3 and §8

Reason : Power feeding under restricted condition is only adopted in TTC standard JT-I430.

(d) The description of regenerator in §2 and §8

Reason : Regenerator is not used for TCM method.

(e) The description of ECH method in §5

Reason : TCM method is adopted as standard.

(2) As it is technically important to define TCM method, the contents of APPENDIX Ⅲ, ANNEX A of APPENDIX Ⅲ is redefined in the body of this standard as §10 Electrical characteristics.

(3) In this standard, the following items are modified.

(a) §8.6 "LT aspects", §8.7 "Condition of power requirements of NT1"

・Power feeding of NT1 from the network is specified and described as "Type A"

・C.O.Powered (Type A) and Selectably Locally Powered/C.O.Powered (Type B) are specified.

(b) FIGURE 10-3/JT-G961 "Frame and multiframe structure and CL channel bits assignment", §10.8.3.2 (9) "Indication bit of loopback2 type (ID1)"

The definition of ID1 bits in CL channel is specified.

(c) FIGURE 10-7/JT-G961 "Scrambling"

The scrambling patterns are added.

(d) §10.10.1 "Signals used for activation", TABLE 10-1/JT-G961 "Signals in direction LT-NT1 conforming to the frame structure", TABLE 10-2/JT-G961 "Signals in direction NT1-LT conforming to the frame structure"

The treatment of ID1 and AP bits in the CL channel related with optional loopback2 type is specified.

(e) §10.10.3 "Detail of activation procedure"

・The activation procedure and the related procedures are specified.

・NT1(Type B) FIGURE 10-17/JT-G961 "Activation of the subscriber line test" is specified

・Activation procedure of Type B is specified.

(f) §10.10.4 "State transition table of NT1"

・Type A is added in TABLE 10-4/JT-G961 NT1 "State transition table of C.O.Powered", and state transition table of NT1(Type B) are specified in TABLE 10-8/JT-G961, TABLE 10-8A /JT-G961 and TABLE 10-8B/JT-G961.

・The end of Timer T1 is specified, and Type A/Type B are specified at SIG2b in matter column of TABLE 10-5/JT-G961 "State transition table LT".

(g) §10.10.7 "State transition table of NT1(Type B) explanation of symbol"

・This item was added due to the addition of NT1(TypeB).

(h) §10.13.4 "Input impedance of NT1 in the metallic local line test"

Input impedance of NT1 in the metallic local line test is defined.

(4) In this standard, the following items modified in the above Recommendation, when applied to a leased line service. This standard is applicable to a leased line basic rate user-network interface compliance to TTC standard JT-I430-a under the following conditions.

(a) The descriptions of D channel in §1.1, FIGURE 2-1/JT-G961, §2.2, §10.3, §10.4, §10.8.3. 1(3), §10.9 and §10.10.1 do not apply.

(b) The descriptions of D channel in FIGURE 10-1/JT-G961, FIGURE 10-2/JT-G961 and FIGURE 10-3/JT-G961 do not apply.

(c) In the CRC check range of FIGURE 10-3/JT-G961, time slots of D channel are part of the original data.

(d) In the scrambling range of FIGURE 10-7/JT-G961, time slots of D channel are part of the original data.

(e) The interfaces for JT-I430-a user-network interface are fully active.
Activation/deactivation procedures do not apply at all times.
SIG1 and SIG2 in the case of the activation from the user side in §10.10.1, timer T2 in §10.10.2, and FE1, FE2, FE5, and FE6 in TABLE 10-3/JT-G961 do not apply.
The activation from the user side in FIGURE 10-11/JT-G961, the deactivation from the network side in FIGURE 10-12/JT-G961, and from FIGURE 10-13/JT-G961 to FIGURE 10-16/JT-G961 do not apply.
TABLE 10-6/JT-G961 is applied instead of TABLE 10-4/JT-G961, TABLE 10-9/JT-G961 is applied instead of TABLE 10-8/JT-G961, and TABLE 10-9A/JT-G961 is applied instead of TABLE 10-8A/JT-G961 as the state transition table of NT1.TABLE 10-7/JT-G961 is applied instead of TABLE 10-5/JT-G961 as the state transition table of LT.

(5) Structural modification from ITU-T Recommendation G.961

(a) Deleted all of APPENDIX with the exception of APPENDIXⅢ, which was moved to Chapter 10.

3. History of revised versions

Version	Date	Outline
Version 1	November 28, 1990	Published
Version 2	November 26, 1993	Revised
Version 2.1	November 24, 1994	・Added “option” description regarding LT loopback 2 signal from SIG10 NT1. ・Corrected clerical errors of Figure 10-16.
Version 3	April 23, 1997	・Deletion of Electric Magnetic Interference (EMI) Regulation since EMI regulation is to be separately prescribed.
Version 3.1	July 22, 1997	・Corrected clerical errors of Figure 10-3/JT-G961 and Figure 10-16/JT-G961.
Version 4	November 25, 1999	・Revised: Added specifications for NT1 that is not powered by local lines.
Version 5	April 19, 2001	・Revised: A part of LPM (local power module) regulation about locally powered NT1 (type B) was changed.
Version 5.1	September 5, 2001	・Corrected clerical errors of Table 10-8/JT-G961 and Table 10-9/JT-G961.

4. Others

(1) The following items are for further study.

(a) Characteristics of noise sources to be used for the measurement of immunity to the impulse noise (§ 4.2.3.2)

(b) Specification of data sequences to be used for dynamic range measurement (§ 4.2.4.1)

(c) Specification of data sequences to be used for the measurement of the immunity to the echoes due to BTs and diameter charge (§ 4.2.4.2)

(d) Specification of data sequences to be used for intrasystem crosstalk measurement (§ 4.2.4.3)

(e) Impulse noise (§ 4.2.4.4)

(f) Longitudinal voltages induced from power lines (§ 4.2.4.5)

(g) CL channel requirements (§ 7.2.2)

(h) Transfer mode of operation and maintenance links (§ 7.3)

(i) Minimum wet current (§ 8.5)

(2) References:

TTC standards : JT-I411, JT-G960 and JT-I430

ITU-T Recommendations : G.961, I.603, K.12, K.20, K.21, I.112, I.412, G.701 and K.23

IEC Publications : 721-3, 950, 105 and 449

Others: EMI regulation, prescribed in appendices of this standard up to version 2.1, has been deleted for version 3. Please refer to TTC technical literature and TTC standards to be separately prescribed.

5. Section that developed this standard

Technical Committee 2, Working Group1

〈Note〉

This standard (JT-G961) does not include documentation regarding patents. However, the party named below has stated that, "For applications conforming to the TTC standards, this recommendation shall be open to the public for no compensation. However, this will not apply to users of this standard who lay claim to patents indispensable to this standard.

Nippon Telegraph and Telephone Corp., NEC Corp., Hitachi, Ltd., Oki Electric Industry Co., Ltd., FUJITSU, Ltd.