Customer Interface Publication: KCOM (Hull) CIP007

Technical Characteristics of the 2048 kbit/s (2Mbit/s) or “Megaline” and n x 64kbit/s or “Kiloline N (Data or Voice)” digital leased line services

Issue: 1.2

April 2016

The information in this document is provided in accordance with the requirements of the Radio Equipment and Telecommunications Terminal Equipment Regulations 2000 (Statutory Instrument 2000 No. 730) to publish (in accordance with the EC Radio and Telecommunications Terminal Equipment Directive 99/05/EC) technical characteristics of interfaces to the public fixed telephone network.

Users of this document should not rely solely on the information in this document, but should carry out their own tests to satisfy themselves that terminal equipment will work with the networks of KCOM Group PLC.

This document does not form a part of any contract with KCOM Group PLC customers or suppliers. KCOM Group PLC shall have no liability in contract tort or otherwise for any loss or damage, howsoever arising from use of, or reliance upon, the information in this document by any person.

Publication of this Customer Interface Information Document does not give or imply any licence to any intellectual property rights belonging to KCOM Group PLC or others

37 Carr Lane Kingston Upon Hull HU1 3RE

Contents

Note: this document replaces 3 previous publications KCL CIP 006, KCL CIP 012 and TCH CIP 007 on this subject – see document history.

1. Scope

This document specifies the technical characteristics of a 2048kbit/s (2Mbit/s) or Megaline and n x 64kbit/s "Kiloline N" digital leased line interface operated by KCOM Group PLC delivered to a customer at the Network Terminating Point (NTP). This interface is part of the KCOM Group PLC service offerings.

Much of the information contained in this document has been published previously in various documents such as ITU-T, ETSI and BSI standards.

Changes to the network that affect the correct working of approved terminal equipment will be published by KCOM Group PLC in various documents made available from the address below. If the changes impact on this document then it will be updated.

Enquiries relating to the technical content of this document and the availability of other publications should be directed to:

KCOM Group PLC
Regulatory Affairs and Technology Development
37 Carr Lane,
Kingston Upon Hull.
HU1 3RE

Telephone: 01482 602100
E-mail: regulatory@kcom.com

2. General

The KCOM Group PLC 2048 kbit/s (2Mbit/s) digital leased line service is presented to the customer via both the ITU-T recommendation G.703 75ohm and 120ohm interface. The Data service (maximum 1024kbit/s) is presented to the customer via an ITU-T recommendation X.21 interface. The n x 64kbit/s voice service will be presented using the G.703 75ohm presentation.

3. The Network Termination Point

3.1 ITU-T recommendation G.703

For unstructured 2048 kbit/s services, the network termination point shall be either two unbalanced 75ohm BNC sockets labelled TFC IN and TFC OUT or one balanced 120 ohm pair terminated on an RJ45 socket. The sockets shall be mounted on the Network Terminating and Test Apparatus (NTTA) / Network Terminating Equipment (NTE).

For structured services, the network termination point shall be two unbalanced 75ohm BNC

sockets labelled TFC IN and TFC OUT. For the avoidance of doubt “Kiloline N Voice” services shall have this network termination point.

3.2 ITU-T recommendation X.21

The network termination point shall be a 15-way ‘d’ connector (as defined in ISO 4903) mounted on the Network Terminating and Test Apparatus (NTTA)/Network Terminating Equipment (NTE) based on the customer premises.

4. Electrical Characteristics of the Interface

4.1 ITU-T recommendation G.703

KCOM Group PLC unstructured 2048 kbit/s (2Mbit/s) digital leased line interface service is delivered using a digital bearer in accordance with clause 9 of ITU-T recommendation G.703 [2]

KCOM Group PLC structured 2048kbit/s (2Mbit/s) digital leased line interface service is delivered using a digital bearer in accordance with clause 9 of ITU-T recommendation G.703 [2] and will support a frame structure in accordance with ITU-T recommendation G.704 [4]. Timeslot 16 signalling is not required to be provided by the TE and therefore does not require multiframe alignment. Timeslot 16 will be treated as a data timeslot.

4.2 ITU-T recommendation X.21

The interchange circuits used are as follows:

ITU-T Circuit designation	Direction of signalling	Circuit Description	Pin A	Pin B
G	To DCE	Ground / Common Return	8	-
T	To DCE	Transmitted data	2	9
R	From DCE	Received data	4	11
C	To DCE	Control	3	10
I	From DCE	Indication	5	12
S	From DCE	Signal element	6	13
B	From DCE	Byte timing	7	14

A full description of the circuits can be found in ITU-T recommendation X.24[6].

The electrical characteristics of the interface are compatible with ITU-T recommendation X.27 (V.11)[7]
with cable termination in the load. This condition also applies to the DTE.

The data rate is pre-configurable in integer multiples (n=1,2..) of 64 kbit/s up to a maximum of 1024kbit/s
(n=16).

---

5. Safety & EMC Information

5.1 Safety

The normal working voltages of the ITU-T recommendation G.703 [2] 2048 kbit/s (2Mbit/s) digital leased line interface are defined in clause 9 of ITU-T recommendation G.703 [2]. The normal working voltages of the ITU-T recommendation X.21 [5] 2048 kbit/s digital leased line interface are defined in ITU-T recommendation X.27 (V.11)[7].

The interfaces presented to the customer is classified as exposed as defined in the CENELEC Report/ETSI Guide ROBT-002/EG 201 212 [3] .

5.2 EMC

The network equipment and network terminating equipment related to the provision of the interface comply with the current EMC regulations.

Whilst predominantly installed in commercial and light industrial environments, this does not preclude the interface being installed in other environments e.g. residential, industrial. This should be taken into account by the terminal equipment manufacturer when determining the limits of compliance relevant to their equipment in relation to the protection requirements of the EMC directive.

6. Terminal Equipment Specifications

The minimum recommended terminal equipment performance specifications are:

ITU-T G.703 service : BS PD 7024[1] (unstructured 75 ohm) TBR12 [10] (unstructured 120 ohm)

ITU-T X.21 service : TBR 1 [9]

The minimum recommended terminal equipment EMC specifications are listed in the Official Journal of the European Communities for use under the Electromagnetic Compatibility Directive (89/336). The lists are updated regularly and the terminal manufacturer is recommended to comply with the listed standards applicable to their equipment and the target electromagnetic environment.

The minimum recommended terminal equipment electrical safety specifications are listed in the Official Journal of the European Communities for use under the Low Voltage Directive (73/23/EEC). The lists are updated regularly and the terminal manufacturer is recommended to comply with the l i s t e d standards applicable to their equipment.

7. Glossary

BSI British Standards Institute

BS	British Standard
DCE	Data Circuit-terminating Equipment
DTE	Data Terminal Equipment
EC	European Community
EMC	Electromagnetic Compatibility
ETS	European Telecommunication Standard
ETSI	European Telecommunications Standards Institute
ITU-T Sector	International Telecommunications Union - Telecommunications
NTE	Network Termination Equipment
NTP	Network Terminating Point
NTTA	Network Terminating and Test Apparatus
PD TFC OUT	Published Document TE Terminal equipment TFC IN Traffic In Traffic Out

8. References

Ref	Standard	Title	Date
[1]	PD 7024: 1995	Essential requirements for Terminal Equipment intended for connection to digital leased lines with 75 ohm G.703 interfaces and rates of 2Mbit/s unstructured	1995
[2]	ITU-T Recommendation G.703	Physical/Electrical Characteristics of hierarchical digital interfaces	2001
[3]	R0BT-002/EG 201 212 V.1.2.1 (1998-11)	Electrical Safety ; Classification of interfaces for equipment to be connected to telecommunications networks	1998
[4]	ITU-T Recommendation G.704	Synchronous Frame Structures Used at Primary and Secondary Hierarchical Levels	1998
[5]	ITU-T Recommendation X.21	Interface Between Data Terminal Equipment (DTE) and Data Circuit Terminating Equipment (DCE) for Synchronous Operation on Public Data Networks	1992
[6]	ITU-T Recommendation X.24	List of definitions for interchange circuits between data terminal equipment and data circuit-terminating equipment on public data networks	1993
[7]	ITU-T Recommendation X.27	Electrical Characteristics for Balanced Double Current Interchange Circuits for general use with Integrated Circuit Equipment in the field of Data Communication	1988

[8]	ISO 4903	15 pole DTE/DCE Interface Connector and Contact Number Assignments	1989
[9]	ETSI TBR 1	Attachment Requirements for terminal equipment to be connected to circuit switched data networks and leased circuits using a CCITT X.21 interface	1995
[10]	ETSI TBR 12 inc. amendment 1	Open Network Provision Technical Requirements: 2048kbit/s digital unstructured leased line (D2048U). Attachment requirements for terminal equipment	1996

The above documents may be obtained from:

British Standards Institution
Customer Services, Sales Department
389 Chiswick High Road, London W4 4AL
Telephone: 0208 996 9001

Facsimile : 0208 996 7001

9. History

Date	Issue	Comments	Author
Precursor documentation: • Technical Characteristics of the 2Mbit/s and n x 64kbit/s digital leased lines [Issue 1.0 May 2000] TCH CIP007 • Technical Characteristics of the 2048kbit/s (2Mbit/s) digital leased line [Issue 1.0 May 2000] KCL CIP006 • Technical Characteristics of the Kiloline N n x 64kbit/s interface [Issue 1.0 May 2000] KCL CIP012			
December 2003	Issue 1.0	KCOM Group PLC publication to replace the above	M. D. Crowther
August 2007	Issue 1.1	KCOM Group PLC publication to replace the above and change of contact information	M. D. Crowther
April 2016	Issue 1.2	KC name change to KCOM and document formatting changes	Amanda Woodard