



**Publication of
specifications for the
mobile network
interfaces offered by Wind**

NW.ID.IT GEN 04-411, Rev.0.1
**Specifications for the mobile network
 interfaces offered by Wind**

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1. INTRODUCTION

Wind's Mobile Network Services currently on the market are based on the GSM international standard developed first in a European environment through the ETSI Institute, and therefore merged with the 3GPP International Working Group, which advances the standardisation of the most recent developments, including working within the new UMTS system. The creation of this standard has already, by its nature, been conceived to allow the creation of an interface which has been universally agreed and made publicly available so that, among others, any designer can produce mobile terminals capable of working with all worldwide GSM networks. (www.ETSI.org and www.3gpp.org)

2. SCOPE

The aim of this document is to supply the standard specifications of the network interfaces provided by Wind for access to telecommunication services, in compliance with the Legislative Decree no. 269 of May 9, 2001, which applies Directive 1999/5/CE in Italy and which includes article 4.2, which states that the operators of public telecommunication networks must publish the technical specifications of the interfaces offered to the public.

The interfaces are briefly described following the guidelines indicated by ETSI through the document ETSI EG 201 838 V1.1.1 (2000-10), which reports the reference standards that interfaces comply with.

3. REFERENCES

The following document represents the standard specifications in the most recent version available from standardisation authorities. The current state of compliance of Wind's network is described in paragraph 4. Network release.

3.1 ETSI and 3GPP specifications applicable to the radio interfaces and protocols between the mobile handset (MS) and the network

ETSI TS 100 550 V8.0.0 (2000-03) - Digital cellular telecommunications system (Phase 2+) (GSM); Mobile Station – Base Station System (MS - BSS) interface; General aspects and principles (GSM 04.01 version 8.0.0 Release 1999)

ETSI TS 100 551 V7.0.0 (1999-08) - Digital cellular telecommunications system (Phase 2+) (GSM); GSM Public Land Mobile Network (PLMN) access reference configuration (GSM 04.02 version 7.0.0 Release 1998)

ETSI TS 100 552 V8.0.2 (2002-05) - Digital cellular telecommunications system (Phase 2+); Mobile Station – Base Station System (MS - BSS) Interface Channel Structures and Access Capabilities (3GPP TS 04.03 version 8.0.2 Release 1999)

ETSI TS 100 936 V8.1.2 (2002-05) - Digital cellular telecommunications system (Phase 2+); Layer 1 – General Requirements (3GPP TS 04.04 version 8.1.2 Release 1999)

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- ETSI TS 100 937 V8.0.2 (2002-05)** - Digital cellular telecommunications system (Phase 2+); Data Link (DL) Layer General Aspects (3GPP TS 04.05 version 8.0.2 Release 1999)
- ETSI TS 100 938 V8.2.1 (2002-05)** - Digital cellular telecommunications system (Phase 2+); Mobile Station - Base Stations System (MS - BSS) Interface Data Link (DL) Layer Specification (3GPP TS 04.06 version 8.2.1 Release 1999)
- ETSI TS 100 939 V7.3.0 (1999-12)** - Digital cellular telecommunications system (Phase 2+) (GSM); Mobile radio interface signaling layer 3; General aspects (GSM 04.07 version 7.3.0 Release 1998)
- ETSI TS 100 940 V7.9.1 (2001-08)** - Digital cellular telecommunications system (Phase 2+); Mobile radio interface; Layer 3 specification (3GPP TS 04.08 version 7.9.1 Release 1998)
- ETSI TS 100 557 V4.25.0 (2003-07)** - Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification (3GPP TS 04.08 version 4.25.0 Phase 2)
- ETSI TS 100 941 V7.1.0 (2001-12)** - Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3; Supplementary services specification; General aspects (3GPP TS 04.10 version 7.1.0 Release 1998)
- ETSI TS 100 942 V7.1.0 (2002-08)** - Digital cellular telecommunications system (Phase 2+); Point-to-Point (PP) Short Message Service (SMS) Support on Mobile Radio Interface (3GPP TS 04.11 version 7.1.0 Release 1998)
- ETSI TS 100 943 V8.0.0 (2001-08)** - Digital cellular telecommunications system (Phase 2+); Short Message Service Cell Broadcast (SMSCB) Support on the Mobile Radio Interface (3GPP TS 04.12 version 8.0.0 Release 1999)
- ETSI TS 100 945 V8.3.0 (2000-12)** - Digital cellular telecommunications system (Phase 2+) (GSM); Rate adaption on the Mobile Station - Base Station System (MS - BSS) Interface (3GPP TS 04.21 version 8.3.0 Release 1999)
- ETSI TS 100 946 V7.1.0 (2000-01)** - Digital cellular telecommunications system (Phase 2+) (GSM); Radio Link Protocol (RLP) for data and telematic services on the Mobile Station - Base Station System (MS - BSS) interface and the Base Station System - Mobile-services Switching Centre (BSS - MSC) interface (GSM 04.22 version 7.1.0 Release 1998)
- ETSI TS 100 950 V7.4.1 (2003-09)** - Digital cellular telecommunications system (Phase 2+); Mobile Radio Interface Layer 3 - Supplementary services specification formats and coding (3GPP TS 04.80 version 7.4.1 Release 1998)
- ETSI EN 300 952 V7.0.2 (1999-12)** - Digital cellular telecommunications system (Phase 2+) (GSM); Call Forwarding (CF) supplementary services; Stage 3 (GSM 04.82 version 7.0.2 Release 1998)
- ETSI TS 100 956 V7.0.0 (1999-08)** - Digital cellular telecommunications system (Phase 2+) (GSM); Call Barring (CB) supplementary services; Stage 3 (GSM 04.88 version 7.0.0 Release 1998)

3.2 ETSI / 3GPP specifications applicable to the Physical Layer of Radio section

- ETSI TS 100 573 V8.8.0 (2003-11)** - Digital cellular telecommunications system (Phase 2+); Physical Layer on the Radio Path (General Description) (3GPP TS 05.01 version 8.8.0 Release 1999)
- ETSI TS 100 908 V8.9.0 (2001-04)** - Digital cellular telecommunications system (Phase 2+); Multiplexing and multiple access on the radio path (3GPP TS 05.02 version 8.9.0 Release 1999)
- ETSI TS 100 909 V8.7.0 (2003-04)** - Digital cellular telecommunications system (Phase 2+); Channel coding (3GPP TS 05.03 version 8.7.0 Release 1999)
- ETSI TS 100 959 V8.4.0 (2001-11)** - Digital cellular telecommunications system (Phase 2+); Modulation (3GPP TS 05.04 version 8.4.0 Release 1999)
- ETSI TS 100 910 V8.9.0 (2001-04)** - Digital cellular telecommunications system (Phase 2+); Radio transmission and reception (3GPP TS 05.05 version 8.9.0 Release 1999)
- ETSI TS 100 911 V8.19.0 (2003-11)** - Digital cellular telecommunications system (Phase 2+); Radio Subsystem Link Control (3GPP TS 05.08 version 8.19.0 Release 1999)

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ETSI TS 100 912 V8.12.0 (2003-08) - Digital cellular telecommunications system (Phase 2+); Radio subsystem synchronization (3GPP TS 05.10 version 8.12.0 Release 1999)

3.3 ETSI/3GPP specifications relative to the Voice code

ETSI EN 300 960 V8.0.1 (2000-11) - Digital cellular telecommunications system (Phase 2+) (GSM); Full rate speech; Processing functions (GSM 06.01 version 8.0.1 Release 1999)

ETSI TS 100 580-2 V4.3.0 (2001-09) - Digital cellular telecommunications system (Phase 2); Full rate speech; Part 2: Transcoding (GSM 06.10 version 4.3.0)

ETSI TS 100 580-2 V4.3.0 (2001-09) - Digital cellular telecommunications system (Phase 2); Full rate speech; Part 2: Transcoding (GSM 06.10 version 4.3.0)

ETSI EN 300 964 V8.0.1 (2000-11) - Digital cellular telecommunications system (Phase 2+) (GSM); Full rate speech; Discontinuous Transmission (DTX) for full rate speech traffic channels (GSM 06.31 version 8.0.1 Release 1999)

ETSI EN 300 965 V8.0.1 (2000-11) - Digital cellular telecommunications system (Phase 2+) (GSM); Full rate speech; Voice Activity Detector (VAD) for full rate speech traffic channels (GSM 06.32 version 8.0.1 Release 1999)

3.4 ETSI / 3GPP specifications relative to the GPRS data service (General packet radio service)

ETSI TS 101 113 V7.5.0 (2000-07) - Digital cellular telecommunications system (Phase 2+) (GSM); General Packet Radio Service (GPRS); Service description; Stage 1 (GSM 02.60 version 7.5.0 Release 1998)

ETSI TS 101 344 V6.11.0 (2002-09) - Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS) Service description; Stage 2 (3GPP TS 03.60 version 6.11.0 Release 1997)

ETSI TS 101 636 V8.0.0 (2000-03) - Digital cellular telecommunications system (Phase 2+) (GSM); Packet Data on Signaling channels service (PDS); Stage 2 (GSM 03.63 version 8.0.0 Release 1999)

ETSI TS 101 350 V8.11.0 (2003-04) - Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Overall description of the GPRS radio interface; Stage 2 (3GPP TS 03.64 version 8.11.0 Release 1999)

ETSI TS 101 349 V8.20.0 (2003-09) - Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Mobile Station (MS) - Base Station System (BSS) interface; Radio Link Control/ Medium Access Control (RLC/MAC) protocol (3GPP TS 04.60 version 8.20.0 Release 1999)

ETSI TS 101 351 V8.7.0 (2001-12) - Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Mobile Station - Serving GPRS Support Node (MS-SGSN) Logical Link Control (LLC) layer specification (3GPP TS 04.64 version 8.7.0 Release 1999)

ETSI TS 101 297 V8.2.0 (2001-10) - Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Mobile Station (MS) - Serving GPRS Support Node (SGSN); Sub network Dependent Convergence Protocol (SNDCP) (3GPP TS 04.65 version 8.2.0 Release 1999)

ETSI TS 100 911 V8.18.0 (2003-08) - Digital cellular telecommunications system (Phase 2+); Radio subsystem link control (3GPP TS 05.08 version 8.18.0 Release 1999)

4. NETWORK RELEASE

Wind's current standard network release, as far as the interface for the NTP mobile network is concerned (radio interface between the user's terminal and the network) is represented by the following main releases of ETSI/3GPP specifications. Naturally network releases are subject to continuous updating to keep pace with developments in technology and adjustments to standard updates.

TS 04.01 v8.0.0	Mobile Station – Base Station System (MS-BSS) Interface: General Aspects and Principles
TS 04.03 v8.0.0	Mobile Station – Base Station System (MS-BSS) Interface: Channel Structures and Access Capabilities
TS 04.13.v8.0.0	Performance Requirements on Mobile Radio Interface
TS 04.18 v8.10.0	Mobile Radio Interface Layer3 Specifications: Radio Resource Control Protocol
TS 04.60.v8.10.0	General Packet Radio Service (GPRS): Mobile Station (MS) – Base Station System (BSS) Interface: RLC/MAC Protocol
TS 05.05 v8.8.0	Radio Transmission and reception
TS 11.21 v8.6.0	Base Station System (BSS) Equipment Specifications: Radio Aspects

5. TRANSMISSION AND RECEPTION

WIND currently operates on the following bands according to different allocations across the country, as regulated by the Communications Ministry:

GSM 900:

Frequency bands 900.5-905.3 MHz, 945.5-950.3 MHz

DCS1800:

Frequency bands 1760.1-1769.9 MHz and 1855.1-1869.9 MHz

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6. DEFINITIONS AND ABBREVIATIONS

Abbreviation	Meaning
BSS	Base Station Subsystem
BTS	Base Transceiver Station
FR	Full Rate
EFR	Enhanced Full Rate
GSM	Global System for Mobile communication
DCS	Extension of GSM system in the 1800 MHz band
GPRS	General Packet Radio Service
HR	Half Rate
HW	Hardware
MS	Mobile Station
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
WAP	Wireless Application Protocol
MMS	Multimedia Messaging System
SMS	Short Message System

7. INFORMATION AND CONTACTS

This document is not binding for Wind, which reserves the right to update it in the event of the development of new services that could require modification of the interfaces described or the supply of new interfaces, or in the event of developments in the reported reference standards.

For more information and more details of Interface Specifications, go to the following reference contacts:

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Wind contact:

Wind Telecomunicazioni SpA

Regulatory Affairs

Via C.G.Viola 48

00148 Roma

7.1 Revisions and Updates

This document will be updated periodically following developments to the network or in the event of the introduction of new interfaces and new network technology for interfaces, in accordance with the procedures indicated in the reference standards in Legislative Decree no. 269 of May 9, 2001 and Directive 1999/5/CE.

8. DESCRIPTION

8.1 General

The mobile telecommunications system adopted by Wind adhere to the GSM standard operating in the 900 MHz radio range and from its DCS derivation operating in the 1800 MHz radio band published by the European body ETSI and subsequently transferred to the 3GPP body, which supervises its evolution at worldwide level. This standard currently represents the most widespread standard for mobile communication throughout the world in terms of the number of users.

8.2 Network Termination Point (NTP)

This document applies to the user termination interface of the GSM/DCS mobile network, represented by the user's mobile handset. The relevant interface described is therefore the radio interface seen from the handset.

8.3 Characteristics of the Transmission Layer

The characteristics of the transmission layer are standardized and are referred to in the paragraph:

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“ 3.2 ETSI and 3GPP specifications applicable to radio interfaces and protocols between the mobile handset (MS) and the network ”

8.4 Management Supervision Procedures for Mobility and Radio Resources

The characteristics of the layered protocol structure make reference to the paragraphs:

“3.1 ETSI and 3GPP specifications applicable to radio interfaces and protocols between the mobile handset (MS) and the network ”

“3.4 ETSI/3GPP specifications relative to the GPRS data service (General Packet Radio Service)”

8.5 Bearer Services

Bearer for data services to the asynchronous circuit 9.6 Kbs

Bearer GPRS data services with support up to Class 10 (4TCH in downlink and 2TCH in uplink)

Standard specification for GSM Bearer Services: GSM 02 02

8.6 Supplementary Services

Standard GSM ETSI, CLIP, CLIR services

Call transferal. The reference specification is GSM 02 82

Call limits. The reference specification is GSM 02 88

Call waiting. The reference specification is GSM 02 83

Call identification and number display. The reference specification is GSM 02 81

Multi Party. The reference specification is GSM 02 84

8.7 Teleservices

EFR, FR, and HR voice telephony

Emergency Calls:

Wind allows emergency calls to the following numbers (from abroad the call is limited to just the 112 number):

112;113;115;117;118;1515;1530

Short Message Service MT/PP (Mobile Terminated) and MO/PP (Mobile Originated) according to Standard 3GPP TS 23.040 Technical realization of Short Message Service (SMS) (GSM phase 2)

Standard specification for GSM Teleservices: GSM 02 03

8.8 Other Characteristics

Support of the OMA Standard WAP Protocol, version 1.2.1 and version 2.0

MMS support according to Standard 3GPP TS 23.140 Multimedia Messaging Service (MMS);

Functional description; Stage 2 and according to 3GPP TS 22.140 Multimedia Messaging Service (MMS); Stage 1