Technical Specification

Description
of the interface
in Vodafone mobile networks

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The amendments of this document are listed and briefly described in the following table of amendments. This document will be only published as a complete version. Single pages, sections and appendixes will not be published as amendments.

Date	Issue	Editor	Reason of amendment / kind of amendment
21.05.2025	1	n/a	Initial version

System description of the mobile interface in Vodafone networks

1 Introduction

1.1 Document Purpose

This document specifies the mobile interface where users get access to the Vodafone mobile network.

Customers using mobile devices that are not approved by Vodafone still need to comply to this document. Vodafone has the will and obligation to provide a stable mobile network and therefore mobile devices not being compliant and/or causing network disturbances can and will be excluded from access to Vodafone's networks. Especially in the event of severe network disturbance caused by a customer's mobile device, Vodafone will enforce this by disconnecting – either physically or virtually – the mobile device from the network.

1.2 Document Scope

This document is applicable to the air interface interconnecting the customer's mobile device and Vodafone's mobile network.

2 Technical Description

The requirements applicable to mobile devices in order to fully use the Vodafone services while maintaining network integrity are laid out in this chapter.

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TS 35.208	3G Security; Specification of the MILENAGE algorithm set: An example algorithm set for the 3GPP authentication and key generation functions f1, f1*, f2, f3, f4, f5 and f5*; Document 4: Design conformance test data	3G,LTE
TS 35.215	Specification of the 3GPP Confidentiality and Integrity Algorithms UEA2 & UIA2; Document 1: UEA2 and UIA2 specifications	2G,3G,LTE
TS 35.216	Specification of the 3GPP Confidentiality and Integrity Algorithms UEA2 & UIA2; Document 2: SNOW 3G specification	2G,3G,LTE
TS 35.217	Specification of the 3GPP Confidentiality and Integrity Algorithms UEA2 & UIA2; Document 3: Implementors' test data	2G,3G,LTE
TS 35.218	Specification of the 3GPP Confidentiality and Integrity Algorithms UEA2 & UIA2; Document 4: Design conformance test data	2G,3G,LTE
TS 35.221	Specification of the 3GPP Confidentiality and Integrity Algorithms EEA3 & EIA3; Document 1: EEA3 and EIA3 specifications	3G,LTE
TS 35.222	Specification of the 3GPP Confidentiality and Integrity Algorithms EEA3 & EIA3; Document 2: ZUC specification	3G,LTE
TS 35.223	Specification of the 3GPP Confidentiality and Integrity Algorithms EEA3 & EIA3; Document 3: Implementors' test data	3G,LTE

TS 35.231	Specification of the TUAK algorithm set: A second example algorithm set for the 3GPP authentication and key generation functions f1, f1*, f2, f3, f4, f5 and f5*; Document 1: Algorithm specification	3G,LTE
TS 35.232	Specification of the TUAK algorithm set: A second example algorithm set for the 3GPP authentication and key generation functions f1, f1*, f2, f3, f4, f5 and f5*; Document 2: Implementers' test data	3G,LTE
TS 35.233	Specification of the TUAK algorithm set: A second example algorithm set for the 3GPP authentication and key generation functions f1, f1*, f2, f3, f4, f5 and f5*; Document 3: Design conformance test data	3G,LTE

2.6 *Specifications for the radio technology of LTE (Evolved UTRA), LTE-Advanced and LTE-Advanced Pro*

TS 36.101	Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception
TS 36.102	Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception for satellite access
TS 36.104	Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception
TS 36.106	Evolved Universal Terrestrial Radio Access (E-UTRA); FDD repeater radio transmission and reception
TS 36.108	Evolved Universal Terrestrial Radio Access (E-UTRA); Satellite Access Node radio transmission and reception
TS 36.124	Evolved Universal Terrestrial Radio Access (E-UTRA); Electromagnetic compatibility (EMC) requirements for mobile terminals and ancillary equipment
TS 36.133	Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for support of radio resource management
TS 36.171	Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for Support of Assisted Global Navigation Satellite System (A-GNSS)
TS 36.201	Evolved Universal Terrestrial Radio Access (E-UTRA); LTE physical layer; General description
TS 36.211	Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation
TS 36.212	Evolved Universal Terrestrial Radio Access (E-UTRA); Multiplexing and channel coding
TS 36.213	Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures
TS 36.214	Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer; Measurements

TS 36.216	Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer for relaying operation
TS 36.300	Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2
TS 36.302	Evolved Universal Terrestrial Radio Access (E-UTRA); Services provided by the physical layer
TS 36.304	Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) procedures in idle mode
TS 36.305	Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Stage 2 functional specification of User Equipment (UE) positioning in E-UTRAN
TS 36.306	Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio access capabilities
TS 36.307	Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements on User Equipments (UEs) supporting a release-independent frequency band
TS 36.314	Evolved Universal Terrestrial Radio Access (E-UTRA); Layer 2 - Measurements
TS 36.321	Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification
TS 36.322	Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Link Control (RLC) protocol specification
TS 36.323	Evolved Universal Terrestrial Radio Access (E-UTRA); Packet Data Convergence Protocol (PDCP) specification
TS 36.331	Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification
TS 36.355	Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol (LPP)
TS 36.360	Evolved Universal Terrestrial Radio Access (E-UTRA); LTE-WLAN Aggregation Adaptation Protocol (LWAAP) specification
TS 36.361	Evolved Universal Terrestrial Radio Access (E-UTRA); LTE-WLAN Radio Level Integration Using Ipsec Tunnel (LWIP) encapsulation; Protocol specification
TS 36.401	Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Architecture description
TS 36.440	Evolved Universal Terrestrial Radio Access Network (E-UTRAN); General aspects and principles for interfaces supporting Multimedia Broadcast Multicast Service (MBMS) within E-UTRAN
TS 36.441	Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Layer 1 for interfaces supporting Multimedia Broadcast Multicast Service (MBMS) within E-UTRAN
TS 36.455	Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol A (LPPa)
TS 36.508	Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); Common test environments for User Equipment (UE) conformance testing

TS 36.509	Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); Special conformance testing functions for User Equipment (UE)
TS 36.521-1	Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Conformance testing
TS 36.521-2	Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 2: Implementation Conformance Statement (ICS)
TS 36.521-3	Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 3: Radio Resource Management (RRM) conformance testing
TS 36.521-4	Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 4: Satellite access Radio Frequency (RF) and performance Conformance Testing
TS 36.523-1	Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part 1: Protocol conformance specification
TS 36.523-2	Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part 2: Implementation Conformance Statement (ICS) proforma specification
TS 36.523-3	Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part 3: Test suites
TS 36.579-1	Mission Critical (MC) services over LTE; Part 1: Common test environment
TS 36.579-2	Mission Critical (MC) services over LTE; Part 2: Mission Critical Push To Talk (MCPTT) User Equipment (UE) Protocol conformance specification
TS 36.579-3	Mission Critical (MC) services over LTE; Part 3: Mission Critical Push To Talk (MCPTT) Server Application conformance specification
TS 36.579-4	Mission Critical (MC) services over LTE; Part 4: Test Applicability and Implementation Conformance Statement (ICS) proforma specification
TS 36.579-5	Mission Critical (MC) services over LTE; Part 5: Abstract test suite (ATS)
TS 36.579-6	Mission Critical (MC) services over LTE; Part 6: Mission Critical Video (MCVideo) User Equipment (UE) Protocol conformance specification
TS 36.579-7	Mission Critical (MC) services over LTE; Part 7: Mission Critical Data (MCData) User Equipment (UE) Protocol conformance specification

2.7 *Specifications for certain aspects of multiple radio access technologies*

TS 37.106	User Equipment (UE) requirements for shared spectrum channel access
TS 37.144	User Equipment (UE) and Mobile Station (MS) GSM, UTRA and E-UTRA over the air performance requirements

TS 37.171	Universal Terrestrial Radio Access (UTRA) and Evolved UTRA (E-UTRA); User Equipment (UE) performance requirements for Radio Access Technology (RAT) Independent Positioning Enhancements
TS 37.544	Universal Terrestrial Radio Access (UTRA) and Evolved UTRA (E-UTRA); User Equipment (UE) Over The Air (OTA) performance; Conformance testing
TS 37.571-1	User Equipment (UE) conformance specification for UE positioning; Part 1: Conformance test specification
TS 37.571-2	User Equipment (UE) conformance specification for UE positioning; Part 2: Protocol conformance
TS 37.571-3	User Equipment (UE) conformance specification for UE positioning; Part 3: Implementation Conformance Statement (ICS)
TS 37.571-4	User Equipment (UE) conformance specification for UE positioning; Part 4: Test suites
TS 37.571-5	User Equipment (UE) conformance specification for UE positioning; Part 5: Test scenarios and assistance data
TS 37.579-2	Mission Critical (MC) services; Part 2: Mission Critical Push To Talk (MCPTT) User Equipment (UE) Protocol conformance specification
TS 37.579-6	Mission Critical (MC) services; Part 6: Mission Critical Video (MCVideo) User Equipment (UE) Protocol conformance specification
TS 37.579-7	Mission Critical (MC) services; Part 7: Mission Critical Data (MCData) User Equipment (UE) Protocol conformance specification
TS 37.355	LTE Positioning Protocol (LPP)

2.8 *Specifications for radio technology beyond LTE*

TS 38.101	User Equipment (UE) radio transmission and reception (parts 1 to 5)
TS 38.104	Base Station (BS) radio transmission and reception
TS 38.106	NR repeater radio transmission and reception
TS 38.113	NR; Base Station (BS) ElectroMagnetic Compatibility (EMC)
TS 38.114	NR; Repeaters ElectroMagnetic Compatibility (EMC)
TS 38.115	NR; Repeater conformance testing - Part 1: Conducted conformance testing
TS 38.124	NR; Electromagnetic compatibility (EMC) requirements for mobile terminals and ancillary equipment's
TS 38.133	NR; Requirements for support of radio resource management
TS 38.151	User Equipment (UE) Multiple Input Multiple Output (MIMO) Over-the-Air (OTA) performance requirements
TS 38.161	User Equipment (UE) TRP (Total Radiated Power) and TRS (Total Radiated Sensitivity) requirements; Range 1 Standalone and Range 1 Interworking operation with other radios

TS 38.171	NR; Requirements for support of Assisted Global Navigation Satellite System (A-GNSS)
TS 38.201	NR; Physical layer; General description
TS 38.202	NR; Services provided by the physical layer
TS 38.211	NR;Physical channels and modulation
TS 38.212	NR;Multiplexing and channel coding
TS 38.213	NR; Physical layer procedures for control
TS 38.214	NR; Physical layer procedures for data
TS 38.215	NR; Physical layer measurements
TS 38.300	Overall description; Stage 2
TS 38.304	User Equipment (UE) procedures in idle mode and procedures for cell reselection in connected mode
TS 38.305	NG Radio Access Network (NG-RAN); Stage 2 functional specification of User Equipment (UE) positioning in NG-RAN
TS 38.306	NR; User Equipment (UE) radio access capabilities
TS 38.307	NR; Requirements on User Equipments (UEs) supporting a release-independent frequency band
TS 38.314	NR; Layer 2 measurements
TS 38.321	NR; Medium Access Control (MAC) protocol specification
TS 38.322	NR; Radio Link Control (RLC) protocol specification
TS 38.323	NR;Packet Data Convergence Protocol (PDCP) specification
TS 38.331	NR;Radio Resource Control (RRC) protocol specification
TS 38.508-1	5GS; User Equipment (UE) conformance specification; Part 1: Common test environment
TS 38.508-2	5GS; User Equipment (UE) conformance specification; Part 2: Common Implementation Conformance Statement (ICS) proforma
TS 38.509	5GS; Special conformance testing functions for User Equipment (UE)
TS 38.521-1	NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Range 1 standalone
TS 38.521-2	NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 2: Range 2 standalone
TS 38.521-3	NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 3: Range 1 and Range 2 Interworking operation with other radios
TS 38.521-4	NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 4: Performance
TS 38.521-5	NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 5: Satellite access Radio Frequency (RF) and performance

TS 38.522	NR; User Equipment (UE) conformance specification; Applicability of radio transmission, radio reception and radio resource management test cases
TS 38.523-1	5GS; User Equipment (UE) conformance specification; Part 1: Protocol
TS 38.523-2	5GS; User Equipment (UE) conformance specification; Part 2: Applicability of protocol test cases
TS 38.523-3	5GS; User Equipment (UE) conformance specification; Part 3: Protocol Test Suites
TS 38.533	NR; User Equipment (UE) conformance specification; Radio Resource Management (RRM)
TS 38.551	NR; User Equipment (UE) Multiple Input Multiple Output (MIMO) Over-the-Air (OTA) performance; Conformance testing
TS 38.561	NR; User Equipment (UE) conformance specification; UE TRP (Total Radiated Power) and TRS (Total Radiated Sensitivity) requirements and test methodologies for FR1 (NR SA and EN-DC)

3 References:

In order to ensure the greatest possible up-to-dateness and consistency, it is strongly recommended that the latest versions of the reference specifications are always available on the ETSI and 3GPP websites:

https://www.etsi.org

https://www.3gpp.org