Multi SIM Devices Requirements Test Cases
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1. Introduction

1.1 Overview

The aim of the GSMA Multi SIM DUTs (Device Under Test) work is to ensure all DUTs supporting multiple SIMs behave in a similar way.

This document provides test cases for the Multi SIM requirements detailed in GSMA PRD TS.37 Requirements for Multi SIM devices [1].

1.2 Scope

This document is intended for:

1. Parties which develop test tools and platforms
2. Test Labs / Test Houses which execute the testing
3. Vendors, device & chipset Manufacturers
4. Operators

The Test Book consists of a set of test cases relevant for testing a device supporting multiple SIMs.

The test cases specified within the Test Book are either specified fully, step by step or refer to existing publicly available test standards. For the test cases from other organizations, a unique reference to the specification and test case is provided.

For each test case specified or defined by reference within this Test Book, there is a reference to one or more requirements from the GSMA PRD TS.37 [1].

1.3 Definition of Terms

Term	Definition
SIM	Subscriber Identity Module; a physical entity that contains keys and ID required to authenticate a user on a mobile network. "SIM" is commonly used to refer to the physical entity that is technically called the UICC (see below).This document generally uses "SIM" to refer to the physical entity
UICC	Universal Integrated Circuit Card; the physical entity that contains as a minimum the SIM/USIM application
USIM	An application that runs on the UICC and provides authentication functions similar to those provided by the SIM in pre-3G systems
eUICC	A removable or non-removable UICC which enables the remote and/or local management of Profiles in a secure way
Profile	A specific SIM/USIM application contained within an eUICC. Generally an eUICC will contain multiple SIM profiles, but only one will be active at any given time.
Simulator	A Network Simulator or a Test Network within a test lab.

1.4 Abbreviations

Abbreviation	Definition

APN	Access Point Name
CS	Circuit Switched
DSDA / MSMA	Dual SIM Dual Active / Multi SIM Multi Active
DSDS / MSMS	Dual SIM Dual Standby / Multi SIM Multi Standby
DUT	Device Under Test
EAP	Extensible Authentication Protocol
FFS	For Future Study
IMEI	International Mobile Equipment Identifier
IMS	IP Multimedia Subsystem
ME	Mobile Equipment
MMS	Multimedia Message Service
NFC	Near Field Communications
OS	Operating System
OTA	Over The Air
PDN	Public Data Network
SMS	Short Message Service
USAT	UMTS SIM Application Toolkit
UE	User Equipment
UI	User Interface

1.5 References

Ref	Document Number	Title
[1]	GSMA PRD TS.37	Requirements on Multi SIM devices
[2]	GSMA PRD TS.06	IMEI Allocation and Approval Process
[3]	GSMA PRD TS.26	NFC Handset Requirements
[4]	GSMA PRD TS.32	Technical Adaptation of Devices through Late Customisation
[5]	GSMA PRD TS.36	Device Settings Database
[6]	3GPP TS 24.008	Mobile Radio Interface Layer 3 Specification
[7]	3GPP TS 24.301	Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS)
[8]	3GPP TS 23.122	Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode
[9]	3GPP TS 31.102	Characteristics of the Universal Subscriber Identity Module (USIM) application
[10]	3GPP TS 31.111	Universal Subscriber Identity Module (USIM) Application Toolkit (USAT)
[11]	3GPP TS 25.331	Radio Resource Control (RRC); Protocol specification
[12]	3GPP TS 36.331	E-UTRA Radio Resource Control (RRC); Protocol specification
[13]	3GPP2 C.S0005-F	Upper Layer (Layer 3) Signalling Standard for cdma2000 Spread Spectrum Systems.

Ref	Document Number	Title
[14]	GSMA PRD SGP.21	Remote SIM Provisioning Architecture
[15]	GSMA PRD SGP.22	Remote SIM Provisioning Technical Specification
[16]	GSMA PRD SGP.23	Remote SIM Provisioning Test Book
[17]	MIIT (PRC) YDT 3041-2016	Test Methods for LTE/CDMA/TD-SCDMA/WCDMA/GSM (GPRS) Multi-Mode Dual-SIM Multi-Standby User Equipment An English translation of this document is provided in Annex B
[18]	GSMA PRD TS.27	NFC Test Book
[19]	3GPP TS 31.124	Mobile Equipment (ME) conformance test specification; Universal Subscriber Identity Module Application Toolkit (USAT) conformance test specification

1.6 Conventions

As per IETF Requirements terminology, reference RFC 2119, the following terms have the following meaning.

Term	Description
SHALL	Denotes a mandatory requirement
SHOULD	Denotes a recommendation
MAY	Denotes Optional

2 Applicability

2.1 DUT optional features and feature description

Several requirements in GSMA PRD TS.37 [1] are either optional or depend on the DUT implementing specific technologies. The tables below list the DUT optional features and DUT related implementation values. The “Support” and “Value” columns are intended to be filled by the DUT Vendor.

Item	Optional Feature	Support [Yes/ No]	Mnemonic (short name for the optional feature)
1	Support of 3GPP2 technologies		3GPP2
2	User Interface control of SIM association		UI_SIM_Assoc
3	Hot Swap of SIMs		Hot_Swap
4	Compliance to MIIT “All mode” specification		All_Mode
5	Dual SIM Dual Active		DSDA
6	Dual SIM Dual Standby		DSDS
7	Dual SIM Passive		DSPA
8	Preferred SIM for Voice, SMS, MMS		Pref_Voice
9	Data use display per SIM		Data_Display
10	SMS cell broadcast support		SMSCB
11	All SIM Network Search		All_SIM_Search
12	VoLTE		VoLTE
13	VoWiFi		VoWiFi
14	DUT has a port limited to 2G operation		2G
15	DUT supports automatic association based on hardware		Auto_HW
16	DUT supports automatic association based on discovery protocols		Auto_Discovery
17	Support of eUICC		eUICC
18	Support of UICC based NFC		NFC

DUTs with more than two SIM ports are also possible:

Item	Feature description	Value	Mnemonic (short name for the optional feature)
1	Number of SIM ports supported by the DUT		No_Of_SIM_Ports_N

2.2 Conditional Tests

The table below defines conditions applicable to certain test cases. The conditions below are used in the Applicability Table in the following section.

Conditional item	Condition

Conditional item	Condition
C001	IF UI_SIM_Assoc THEN M ELSE N/A
C002	IF Hot_Swap THEN M ELSE N/A
C003	IF 3GPP2 THEN M ELSE N/A
C004	VOID
C005	IF 3GPP2 AND Hot_Swap THEN M Else N/A
C006	IF All_Mode THEN M Else N/A
C007	IF DSDA THEN M Else N/A
C008	IF DSDS THEN M Else N/A
C009	IF DSPA THEN M Else N/A
C010	IF Pref_Voice THEN M Else N/A
C011	IF Data_Display THEN M Else N/A
C012	IF SMSCB THEN M Else N/A
C013	IF All_SIM_Search THEN M Else N/A
C014	IF VoLTE THEN M Else N/A
C015	IF VoWiFi THEN M Else N/A
C016	IF 2G AND Auto_HW THEN M Else N/A
C017	IF Auto_Discovery THEN M Else N/A
C018	IF eUICC THEN M Else N/A
C019	IF NFC THEN M Else N/A

2.3 Test Applicability Table

The table below specifies the applicability of each test case according to the DUT optional features.

Test case	Test case title	Live Network or Simulator	Applicability
4.1.1	Number of IMEIs	Either	M
4.1.2	Primary IMEI	Either	M
4.1.3	IMEI presentation	Either	M
4.2.1	Blocking of service	Simulator	M
4.2.2.1	Retry following blocking (3GPP) – automatic retry	Simulator	M
4.2.2.2	Retry following blocking (3GPP) – association change	Simulator	C001
4.2.2.3	Retry following blocking (3GPP) – hot swap	Simulator	C002
4.2.3.1	Retry following blocking (3GPP2) – automatic retry	Simulator	C003
4.2.3.2	Retry following blocking (3GPP2) – association change	Simulator	C001 and C003
4.2.3.3	Retry following blocking (3GPP2) – hot swap	Simulator	C005
4.3	All Mode	Either	C006
4.4.1	USAT – Dual SIM Dual Active (DSDA)	Simulator	C007
4.4.2	USAT – Dual SIM Dual Standby (DSDS)	Simulator	C008
4.4.3	USAT – Dual SIM Passive	Simulator	C009
4.5.1	SIM selection via software	Either	C001
4.5.2	Preferred SIM for data	Either	M
4.5.3	Preferred SIM for voice, SMS, MMS	Either	C010
4.5.4	Single SIM operation	Either	M
4.5.5	Change of SIM association	Simulator	C001
4.5.6	Idle screen display	Either	M
4.5.7	Lock screen display	Either	M
4.5.8	Mobile terminated call, SMS, MMS	Either	M
4.5.9	Mobile originated call, SMS, MMS	Either	M
4.5.10	Emergency call	Simulator	M
4.5.11	Voice call logs	Either	M
4.5.12	SMS MMS logs	Either	M
4.5.13	Data use display	Either	C011
4.5.14	Cell broadcast	Either	C012
4.5.15	Priority of services	Either	M

Test case	Test case title	Live Network or Simulator	Applicability
4.5.16	Call forwarding / call waiting	Either	M
4.5.17	Call hold	Either	C007
4.5.18	SIM PIN	Either	M
4.5.19	PUK code	Either	M
4.5.20	Unlock code	Either	M
4.5.21	Network and service provider locks	FFS	FFS
4.5.22.1	Access to contacts	Either	M
4.5.22.2	Presentation of contacts	Either	M
4.5.22.3	Adding contacts	Either	M
4.5.22.4	Deleting contacts	Either	M
4.5.22.5	Copying contacts	Either	M
4.5.23.1	Simple network search	Either	M
4.5.23.2	Simultaneous network search	Either	C013
4.5.24.1	VoLTE user interface	Either	C014
4.5.24.2	VoWiFi user interface	Either	C015
4.6.1	SIM allocation based on hardware	Either	C016
4.6.2	SIM allocation based on discovery protocol	Either	C017
4.7.1	Network specific applications	FFS	FFS
4.8.1	User imposed limitations on applications	FFS	FFS
4.9.1	Auto configuration across all SIMs	FFS	FFS
4.9.2	Auto configuration of one connection	FFS	FFS
4.9.3	Reconfiguration	FFS	FFS
4.9.1	Equivalency of eUICC with SIM	Either	C018
4.10.2	Management of eUICC	Either	C018
4.10.3	eUICC and user interface	FFS	FFS
4.11	NFC	Either	C019
4.12	EAP-SIM	FFS	FFS
4.13.1	Data throughput – secondary SIM idle	Either	C008
4.13.2	Data throughput – secondary SIM idle (dual data / Dual VoLTE)	Either	C007 and C008+C014
4.13.3	Data throughput – secondary SIM in call	Either	C007

Table definitions:

- M – the test case is Mandatory.
- Cxxx – the test case is conditional and the applicability depends on DUT support of optional or conditional features as specified by Cxxx in the previous section.
- FFS – For Future Study; the test case is not yet defined.

3 Test process

3.1 Test Environment

Test cases may be performed in a Laboratory using one or more network simulators or on Live Networks. Most tests can be performed in either environment.

For some of the test cases it is necessary to log the signalling between the DUT and the network. If a network simulator is used all the signalling between the DUT and the network shall be logged and shall be accessible to be used to derive the test case verdict.
If a Live Network is used, other options such as on-DUT logging or live network logging may be used. Such logging will be implementation dependent.

The number of SIMs required for each test case depends on the capability of the DUT. Most current DUTs require two SIMs, but some have more. Each SIM port is identified SIM n.

For each SIM, the DUT will provide a SIM slot or soldered (fix mounted) SIM (UICC). For testing, the SIM(s) can be real physical SIMs or simulated SIMs. The SIMs can be either Test SIMs or real according to the configuration required.

3.2 Pass Criteria

- A test is considered as successful only if the entire test procedure was carried out successfully and the expected results observed.
- A test is considered as failed if the tested feature shows unexpected behaviour.
- A test is considered as non-conclusive when the pass criteria cannot be evaluated due to issues during the setup of the initial conditions.

3.3 Future Study

Some of the test cases described in this Test Book are FFS (For Future Study). This means that some clarifications are expected at the requirement level to conclude on a test method, or that the test cases are low priority and have not yet been defined.

3.4 Tests From Other Sources

This document refers to test specifications developed by other organisations. These organisations define their own requirements for test benches, test applicability and pass criteria.

Changes to all tests in this document may be requested by contacting the GSMA Terminal Steering Group at terminals@gsma.com. If such a request affects a test belonging to an outside organisation then either:

a) The change request will be passed on to the outside organisation for action, or

b) The change request will be actioned by removing the outside reference and drafting a replacement case within this document.

The complete Annex B only applies to handsets being tested for CCSA All Mode certification, and covers only technologies appropriate to that market. A subset of CCSA requirements & test cases are used by GSMA TS.37 & TS.42. The GSMA documents are global specifications wherein choice of technologies is at the discretion of the device vendor. Hence for GSMA testing, references to Annex section 4.8.1 table 1 should be replaced with technology combinations appropriate to the capabilities of the device under test.

3.5 Test Execution Optimisation

Some tests do not require the device to start in a powered off state. These tests may be run directly after another test case, subject to all initial conditions for the test being met,

4 Test Cases

4.1 IMEIs

4.1.1 Number of IMEIs and IMEI SV

Test Purpose

To ensure the DUT has correct number of IMEIs, uses them in the correct manner and has the same SV value for all IMEIs

Referenced requirements

TS37_2.1_REQ_1
TS37_2.1_REQ_2
TS37_2.2_REQ_6

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
	If live network is used, the network shall be configured to request the IMEI of the DUT during the IMSI attach procedure.
SIM	Each SIM is configured to access the configured networks.
DUT	The DUT is powered off. One SIM is inserted in each SIM port available.

Test execution

Step	Direction	Sequence	Expected Result

Step	Direction	Sequence	Expected Result
1	User → DUT	Power on DUT	The DUT attaches to each network. Each connection uses a unique IMEI. One of the connections uses the primary IMEI. SV value is the same for all connections

4.1.2 Primary IMEI

Test Purpose

To ensure the DUT always uses primary IMEI

Referenced requirements

TS37_2.2_REQ_4

TS37_2.2_REQ_5

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator or network configured to allow access by at least one SIM
	If live network is used, the network shall be configured to request the IMEI of the DUT during the IMSI attach procedure.
SIM	A SIM is configured to access the configured networks.
DUT	The DUT is powered off. The DUT has n SIM ports

Test execution:

Step	Direction	Sequence	Expected Result
1	User → DUT	Insert a SIM in SIM port n and power on DUT	The DUT performs attach to the network. The connection uses the Primary IMEI.
2	User → DUT	Power off the DUT	
3		Repeat steps 1 and 2 for each SIM port	

4.1.3 IMEI Presentation

Test Purpose

To ensure the DUT presents IMEIs correctly

Referenced requirements

TS37_2.2_REQ_7

TS37_2.2_REQ_8

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
	If live network is used, the network shall be configured to request the IMEI of the DUT during the IMSI attach procedure.
SIM	Each SIM is configured to access the configured networks.
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.

Test execution:

Step	Direction	Sequence	Expected Result
1	User → DUT	Type *#06# on dialler	Number of IMEIs displayed is equal to number of SIM ports Each IMEI is unique One IMEI is highlighted / listed as the being the Primary IMEI

Note: if the DUT does not have a dialler then a different process may be used to access IMEIs; this is particularly applicable to embedded DUTs.

4.2 Blocking & Recovery of Service

4.2.1 Blocking of Service

Test Purpose

To ensure the DUT handles blocking of service correctly

Referenced requirements

TS37_2.2_REQ_1

TS37_2.2_REQ_2

TS37_2.2_REQ_3

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
	If live network is used, the network shall be configured to request the IMEI of the DUT during the IMSI attach procedure.
SIM	Each SIM is configured to access the configured networks.
DUT	The DUT is powered off. One SIM is inserted in each SIM port available.

Test execution:

Step	Direction	Sequence	Expected Result
1	User → DUT	Power on DUT	The DUT attaches to each network.
2	Network → DUT	At periodic update, connection n sends a reject with a blocking reject cause (reject #6 “Illegal ME” for a 3GPP connection or *Lock until Power-Cycled Order* received over one 3GPP2 connection)	All connections are closed in accordance with standards [6], [11], [13] The UI displays an appropriate message
3	User → DUT	Attempt to: 1. Dial a call 2. Send an SMS 3. Browse the internet	No connection request is initiated from the DUT
4	User → DUT	Power off DUT	
5		Repeat steps 1-4 with the reject sent over a different connection until all connections have been tested.	

4.2.2 Retry Following Blocking (3GPP)

4.2.2.1 Automatic Retry (3GPP)

Test Purpose

To ensure the DUT follows correct 3GPP retry procedure

Referenced requirements

TS37_2.2_REQ_12

TS37_2.2_REQ_16

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
	If live network is used, the network shall be configured to request the IMEI of the DUT during the IMSI attach procedure.
SIM	Each SIM is configured to access the configured networks.
DUT	The DUT is powered off. One SIM is inserted in each SIM port available.

Test execution:

Step	Direction	Sequence	Expected Result
1	User → DUT	Power on DUT	The DUT attaches to each network.
2	Network → DUT	At periodic update, 3GPP connection n sends a reject with a blocking reject cause (reject #6 “Illegal ME”)	All connections are closed in accordance with standards [6], [11], [13] The UI displays an appropriate message
3	DUT → Network	Wait for DUT to retry connection	Interval between retries is greater than 24 hours First retry is always made over the connection that had previously generated the blocking reject.
4	User → DUT	Power cycle DUT	The DUT attempts attach to each network.

4.2.2.2 Change of SIM association to port (3GPP)

Test Purpose

To ensure the DUT correctly retries connection following SIM association change

Referenced requirements

TS37_2.2_REQ_12

TS37_2.2_REQ_14

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.

	If live network is used, the network shall be configured to request the IMEI of the DUT during the IMSI attach procedure.
SIM	Each SIM is configured to access the configured networks.
DUT	The DUT is powered off. One SIM is inserted in each SIM port available.

Test execution:

Step	Direction	Sequence	Expected Result
1	User → DUT	Power on DUT	The DUT attaches to each network.
2	Network → DUT	At periodic update, 3GPP connection n sends a reject with a blocking reject cause (reject #6 “Illegal ME”)	All connections are closed in accordance with standards [6], [11], [13] The UI displays an appropriate message
3	User → DUT	Change SIM association to SIM port through user interface	The DUT attempts attach to each network.

4.2.2.3 Hot Swap of SIMs (3GPP)

Test Purpose

To ensure the DUT correctly retries connection following hot swap of SIMs

Referenced requirements

TS37_2.2_REQ_12

TS37_2.2_REQ_14

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
	If live network is used, the network shall be configured to request the IMEI of the DUT during the IMSI attach procedure.
SIM	Each SIM is configured to access the configured networks.
DUT	The DUT is powered off. One SIM is inserted in each SIM port available.

Test execution:

Step	Direction	Sequence	Expected Result
1	User → DUT	Power on DUT	The DUT attaches to each network.
2	Network → DUT	At periodic update, 3GPP connection n sends a reject with a blocking reject cause (reject #6 “Illegal ME”)	All connections are closed in accordance with standards [6], [11], [13] The UI displays an appropriate message
3	User → DUT	Physically change a SIM in the DUT without powering off.	The DUT attempts attach to each network.

4.2.3 Retry Following Blocking (3GPP2)

4.2.3.1 Automatic Retry (3GPP2)

Test Purpose

To ensure the DUT follows correct 3GPP2 retry procedure

Referenced requirements

TS37_2.2_REQ_13
TS37_2.2_REQ_16

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
	If live network is used, the network shall be configured to request the IMEI of the DUT during the IMSI attach procedure.
SIM	Each SIM is configured to access the configured networks.
DUT	The DUT is powered off. One SIM is inserted in each SIM port available.

Test execution:

Step	Direction	Sequence	Expected Result
1	User → DUT	Power on DUT	The DUT attaches to each network.
2	Network → DUT	At periodic update, 3GPP2 connection n sends a reject with a blocking reject cause (*Lock until Power-Cycled Order)*	All connections are closed in accordance with standards [6], [11], [13] The UI displays an appropriate message

Step	Direction	Sequence	Expected Result
3	DUT → Network	Wait for DUT to retry connection	Interval between retries is greater than 24 hours First retry is always made over the connection that had previously generated the blocking reject.
4	User → DUT	Power cycle DUT	The DUT attempts attach to each network.

4.2.3.2 Change of SIM association to port (3GPP2)

Test Purpose

To ensure the DUT correctly retries connection following SIM association change

Referenced requirements

TS37_2.2_REQ_13
TS37_2.2_REQ_14

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
	If live network is used, the network shall be configured to request the IMEI of the DUT during the IMSI attach procedure.
SIM	Each SIM is configured to access the configured networks.
DUT	The DUT is powered off. One SIM is inserted in each SIM port available.

Test execution:

Step	Direction	Sequence	Expected Result
1	User → DUT	Power on DUT	The DUT attaches to each network.
2	Network → DUT	At periodic update, 3GPP2 connection sends a reject with a blocking reject cause (*Lock until Power-Cycled Order)*	All connections are closed in accordance with standards [6], [11], [13] The UI displays an appropriate message

Step	Direction	Sequence	Expected Result
3	User → DUT	Change SIM association to SIM port through user interface	The DUT attempts attach to each network.

4.2.3.3 Hotswap of SIMs (3GPP2)

Test Purpose

To ensure the DUT correctly retries connection following hot swap of SIMs

Referenced requirements

TS37_2.2_REQ_13
TS37_2.2_REQ_14

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
	If live network is used, the network shall be configured to request the IMEI of the DUT during the IMSI attach procedure.
SIM	Each SIM is configured to access the configured networks.
DUT	The DUT is powered off. One SIM is inserted in each SIM port available.

Test execution:

Step	Direction	Sequence	Expected Result
1	User → DUT	Power on DUT	The DUT attaches to each network.
2	Network → DUT	At periodic update, 3GPP2 connection sends a reject with a blocking reject cause (*Lock until Power-Cycled Order)*	All connections are closed in accordance with standards [6], [11], [13] The UI displays an appropriate message
3	User → DUT	Physically change a SIM in the DUT without powering off.	The DUT attempts attach to each network.

4.3 All Mode

Test Purpose

To ensure the DUT follows China “All Mode” technology and user interface requirements

Note: DUTs which support a subset of the “All Mode” features are acceptable in China BUT these MAY NOT be sold as “All Mode” DUTs.

Referenced requirements

TS37_2.3_REQ_3

Test execution:

Please refer to the following tests in YDT 3041-2016.

GSMA TS.42 Test ID	YTD 3041-2016 referenced test
4.3.1	4.1.2a Only one SIM is inserted
4.3.2	4.1.2b Only one SIM is inserted
4.3.3	4.1.2c Only one SIM is inserted
4.3.4	4.1.3a Two SIMs are inserted
4.3.5	4.1.3b Two SIMs are inserted
4.3.6	4.1.3c Two SIMs are inserted
4.3.7	4.8.2 PIN protection function
4.3.8	4.8.3.1 SMS test
4.3.9	4.8.3.2 Phonebook test
4.3.10	4.8.3.3 Data files test
4.3.11	4.8.3.4 Test for call records
4.3.12	4.8.4.1 MO call in idle state
4.3.13	4.8.4.2 MT call in idle state
4.3.14	4.8.4.3 MO call on SIM1 when using data on SIM2
4.3.15	4.8.4.4 MT call on SIM1 when using data on SIM2
4.3.16	4.8.4.5 Simultaneous MT calls in idle state
4.3.17	4.8.4.6 MT call on SIM1 when SIM2 in call
4.3.18	4.8.5.1 MO SMS in idle state
4.3.19	4.8.5.2 MT SMS in idle state
4.3.20	4.8.5.3 MO SMS on SIM1 when in call on SIM2
4.3.21	4.8.5.4 MT SMS on SIM1 when in call on SIM2
4.3.22	4.8.5.5 MO SMS on SIM1 when using data on SIM2

GSMA TS.42 Test ID	YTD 3041-2016 referenced test
4.3.23	4.8.5.6 MT SMS on SIM1 when using data on SIM2
4.3.24	4.8.6.1 Data service from idle mode
4.3.25	4.8.6.2 Data service on SIM1 when in call on SIM2
4.3.26	4.8.7.2 Selection of network in idle mode

Note: Some of these tests are also called up by the “user interface” section of this document. It is not necessary to run identical tests twice, but be aware that the user interface tests require any test applicable to SMS to be repeated for MMS.

4.4 USAT Operation

4.4.1 Dual SIM Dual Active

Test Purpose

To ensure USAT functions correctly on all SIM ports

When a DUT is DSDA (or MSMA) USAT commands SHALL be supported on all SIM ports.

Referenced requirements

TS37_2.4_REQ_2

Test execution:

1. Perform all USAT tests accordingly to Applicability Table of 3GPP TS 31.124 on each SIM port.

4.4.2 Dual SIM Dual Standby

Test Purpose

To ensure USAT functions correctly on all SIM ports

Referenced requirements

TS37_2.4_REQ_3

Test execution:

1. Perform all USAT tests accordingly to Applicability Table of 3GPP TS 31.124 on the in-call SIM port.
2. For each SIM port that is power on other than the in-call SIM port, call up USAT tests that do not require network access accordingly to the Applicability Table of 3GPP TS 31.124, including tests related to the USAT command Open Channel over a Local Bearer.

3. For each SIM port that is power on other than the in-call SIM port, call up USAT tests that require network access accordingly to the Applicability Table of 3GPP TS 31.124. For these USAT tests when the ME is unable to process the command, the ME SHALL inform the SIM ("ME currently unable to process command" or "Network currently unable to process command") as specified in the USAT specification.

4.4.3 Passive Dual SIM

Test Purpose

To ensure USAT functions correctly on all SIM ports

Referenced requirements

TS37_2.4_REQ_4

Test execution:

1. Perform all USAT tests accordingly to Applicability Table of 3GPP TS 31.124 on the SIM port selected for use.
2. If SIMs other than the SIM selected for use are powered on, perform USAT tests that do not require network access accordingly to the Applicability Table of 3GPP TS 31.124, including tests related to the USAT command Open Channel over a Local Bearer.

4.5 User Interface

4.5.1 SIM Selection via Software

Test Purpose

For DUTs supporting SIM selection through software, to ensure the DUT offers appropriate SIM selection menu(s)

Referenced requirements

TS37_2.5_REQ_1
TS37_2.5_REQ_2

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks.
DUT	The DUT is powered off. One SIM is inserted in each SIM port available.

Test execution

Step	Direction	Sequence	Expected Result

Step	Direction	Sequence	Expected Result
1	User → DUT	Power on DUT and access the menu for SIM selection	The user interface offers a SIM selection menu. Technology restrictions (if any) are indicated and match those declared by the vendor in the proforma in TS.37 section 2.3

4.5.2 Preferred SIM for Data

Test Purpose

To ensure the DUT allows selection of a preferred SIM for data, that this selection is used to direct data traffic, and that the correct default is applied if the user does not make a selection

Referenced requirements

TS37_2.5_REQ_3
TS37_2.5_REQ_4

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks.
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Go to the menu for SIM selection for data traffic	The user interface allows selection of a preferred SIM for data Prior to user selecting a SIM for data service, the device automatically selects a connection with the highest available radio access technology generation.
2	User → DUT	Select a SIM as preferred for data and browse a web page.	All data is routed over the connection associated with the selected SIM
3		Repeat step 2 for each available SIM	

4.5.3 Preferred SIM for Voice, SMS, MMS

Test Purpose

To ensure that, if the DUT allows selection of a preferred SIM for Voice, SMS or MMS, these selections are used to direct traffic accordingly.

Referenced requirements

TS37_2.5_REQ_5

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks.
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Go to the menu for SIM selection for Voice	Prior to user selecting a SIM for voice service, the device automatically selects a connection with voice call capability and clearly shows this in the user interface. The user interface allows selection of a preferred SIM for Voice
2	User → DUT	Select a SIM as preferred for voice and make a voice call.	All mobile originated voice calls are routed over the connection associated with the selected SIM
3		Repeat step 2 for each available SIM	
4	User → DUT	Repeat steps 2 & 3 for SMS and MMS if a preferred SIM for these can be selected independently of Voice.	All mobile originated SMS / MMS are routed over the connection associated with the selected SIM

4.5.4 Single SIM Operation

Test Purpose

To ensure that, if the DUT contains a single SIM, this SIM is automatically chosen as the default SIM for all services.

Referenced requirements

TS37_2.5_REQ_6

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks.
DUT	There are no SIMs inserted. The DUT is powered off

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Insert a single USIM in slot 1, then power on the device.	Device camps onto a network appropriate to inserted SIM and enters standby state
2	User → DUT	Access configuration UI	UI settings relating to multi SIM operation are either hidden or pre set to the inserted SIM and are not changeable
3	User → DUT	Make a voice call; maintain call for 10 seconds and then end the call.	UI only offers one connection for making the call. Call is set up and terminated in accordance with 3GPP/3GPP2 standards. [6], [11], [13]
4	User → DUT	Send an SMS	UI only offers one connection for sending SMS. SMS is sent in accordance with 3GPP/3GPP2 standards. [6], [11], [13]
5	User → DUT	Send an MMS.	UI only offers one connection for sending MMS MMS is sent in accordance with 3GPP/3GPP2 standards. [6], [11], [13]
6	User → DUT	Power down DUT	Device disconnects from network in accordance 3GPP/3GPP2 standards. [6], [11], [13] and powers down
7	User → DUT	Repeat steps 1-6 for each available SIM port.	

Note: this test corresponds to YDT 3041-2016 test 4.1.2(a,b,c).

4.5.5 Change of SIM Association

Test Purpose

To ensure that alteration of SIM association through DUT software results in network connectivity changes that comply with 3GPP / 3GPP2 standards

Referenced requirements

TS37_2.5_REQ_7
TS37_2.5_REQ_8

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks.
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Access the SIM selection menu and associate each SIM with a SIM port	Connections are established according to 3GPP/3GPP2 standards [6], [11], [13]

Step	Direction	Sequence	Expected Result
2	User → DUT	Change SIM association	For connections where association has been changed 1. Connection detaches according to 3GPP/3GPP2 standards and using original IMEI [6], [11], [13] 2. Relevant parameters are synchronised with SIM and higher layers (via modem reset or otherwise) 3. Connection is re-established according to 3GPP/3GPP2 standards and using new IMEI [6], [11], [13] For connections where association has not changed: 1. No detach / re attach is seen.

4.5.6 Idle Mode Display

Test Purpose

To ensure the DUT presents connection status information for each SIM when in idle mode

Referenced requirements

TS37_2.5_REQ_9

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks.
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.

Test execution

Step	Direction	Sequence	Expected Result

Step	Direction	Sequence	Expected Result
1	User → DUT	Check the idle mode UI	The following are visible on the idle mode user interface for each connection: a) Network identifier b) Roaming status c) Radio Access Technology d) Signal strength

4.5.7 Lock Screen Display

Test Purpose

To ensure the DUT presents connection status information for each SIM on the lock screen

Referenced requirements

TS37_2.5_REQ_10

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks.
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Activate lock screen and check the UI.	The following are visible on the lock screen for each connection: 1. Network identifier 2. Roaming status 3. Radio Access Technology 4. Signal strength

4.5.8 Mobile Terminated Calls SMS & MMS

Test Purpose

To ensure that, for mobile terminated calls, SMS and MMS, the user interface SHALL indicate the connection on which the call/SMS/MMS is received.

Referenced requirements

TS37_2.5_REQ_11

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks.
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.
UE_B	A reference device containing a single SIM is powered on and attached to a network appropriate to its SIM

Test execution

Step	Direction	Sequence	Expected Result
1	User → UE_B	Make a call to the number associated with DUT SIM1	Call is routed and causes ringing at DUT with indication of which SIM the call is being received on
2	User → DUT	Answer call	Call is connected
3	User → DUT	After 10 seconds, disconnect call	Call is disconnected at both DUT and UE_B
4	User → UE_B	Send an SMS to the number associated with DUT SIM1	SMS is received at DUT with indication of which SIM the SMS was received on
5	User → UE_B	Send an MMS to the number associated with DUT SIM1	MMS is received at DUT with indication of which SIM the MMS was received on
6		Repeat steps 1-5 for each SIM in DUT.	

Note: this test in part corresponds to YDT 3041-2016 tests 4.8.4.2 (MT Call) and 4.8.5.2 (MT SMS).The MMS case is not covered by YDT specifications.

4.5.9 Mobile Originated Calls SMS & MMS

Test Purpose

To ensure that, for mobile originated calls, SMS and MMS, the user interface SHALL allow the user to select the connection used to make the call.

Referenced requirements

TS37_2.5_REQ_12

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks.
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.
UE_B	A reference device containing a single SIM is powered on and attached to a network appropriate to its SIM

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Make a call to UE_B using DUT SIM1	Call is routed and causes ringing at UE_B with indication of number associated with DUT SIM1
2	User → UE_B	Answer call	Call is connected
3	User → UE_B	After 10 seconds, disconnect call	Call is disconnected at both DUT and UE_B
4	User → DUT	Send an SMS to UE_B using DUT SIM1	SMS is received at UE_B with indication of number associated with DUT SIM1
5	User → DUT	Send an MMS to UE_B using DUT SIM1	MMS is received at UE_B with indication of number associated with DUT SIM1
6		Repeat steps 1-5 for each SIM in DUT.	

Note: this test in part corresponds to YDT 3041-2016 tests 4.8.4.1 (MO Call) and 4.8.5.1 (MO SMS). The MMS case is not covered by YDT specifications.

4.5.10 Emergency Call

Test Purpose

To ensure the DUT initiates emergency calls on all available connections

Referenced requirements

TS37_2.5_REQ_13

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or test network(s) configured to allow access for the number of SIMs supported by the DUT. Some of the network connections shall be configured to reject emergency calls.
SIM	Each SIM is configured to access the configured networks.
DUT	The DUT is powered off. One SIM is inserted in each SIM port available.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Power on DUT.	DUT attaches to each network
2	User → DUT	Dial emergency call through user interface	DUT initiates emergency call with no additional dialog boxes.
3	DUT → Network		Emergency call is initiated in accordance with 3GPP/3GPP2 standards. [6], [11], [13]
4	Network →DUT	Connect emergency call	Call is connected
5	User → DUT	Terminate emergency call at user interface	DUT terminates emergency call with no additional dialog boxes.
6	DUT → Network		Call is terminated in accordance with 3GPP/3GPP2 standards. [6], [11], [13]
7	User → DUT	Dial emergency call through user interface on a network that will reject the call	DUT initiates emergency call with no additional dialog boxes.
8	DUT → Network		Emergency call is initiated in accordance with 3GPP/3GPP2 standards. [6], [11], [13]
9	Network →DUT	Reject emergency call	DUT retries on second connection regardless of voice call routing preferences set in the DUT
10	DUT → Network		Emergency call is initiated on 2nd network in accordance with 3GPP/3GPP2 standards. [6], [11], [13]

Step	Direction	Sequence	Expected Result
11	Network →DUT	Connect emergency call	Call is connected
12	User → DUT	Terminate emergency call at user interface	DUT terminates emergency call with no additional dialog boxes.
13	DUT → Network		Call is terminated in accordance with 3GPP/3GPP2 standards. [6], [11], [13]
14	User → DUT	Dial emergency call through user interface on first network that will reject the call	DUT initiates emergency call with no additional dialog boxes.
15	DUT → Network		Emergency call is initiated in accordance with 3GPP/3GPP2 standards. [6], [11], [13]
16	Network →DUT	Reject emergency call	DUT retries on 2nd connection regardless of voice call routing preferences set in the DUT
17	DUT → Network		Emergency call is initiated on 2nd network in accordance with 3GPP/3GPP2 standards. [6], [11], [13]
18	Network →DUT	Reject emergency call	DUT retries on 3rd connection regardless of voice call routing preferences set in the DUT
19	DUT → Network		Emergency call is initiated on 3rd network in accordance with 3GPP/3GPP2 standards. [6], [11], [13] Note: for a Dual SIM DUT the third connection will be emergency camped-on state through any available network.
20	Network →DUT	Connect emergency call	Call is connected
21	User → DUT	Terminate emergency call at user interface	DUT terminates emergency call with no additional dialog boxes.
22	DUT → Network		Call is terminated in accordance with 3GPP/3GPP2 standards. [6], [11], [13]

If the DUT has more than two SIMs, repeat with 3,4,5…. networks rejecting the call attempt

4.5.11 Call Logs

Test Purpose

To ensure the DUT shows which SIM a call was made / received on

Referenced requirements

TS37_2.5_REQ_14

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks.
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.
UE_B	A reference device containing a single SIM is powered on and attached to a network appropriate to its SIM

Test execution

Step	Direction	Sequence	Expected Result
1	User → UE_B	Make a call to number associated with DUT SIM1	Call is routed and causes ringing at DUT with indication of which SIM the call is being received on
2	User → DUT	Answer call	Call is connected
3	User → DUT	After 10 seconds, disconnect call	Call is disconnected at both DUT and UE_B
4	User → UE_B	Make a call to number associated with DUT SIM1	Call is routed and causes ringing at DUT with indication of which SIM the call is being received on
5	User → DUT	Reject call	Call is rejected at DUT and shown as rejected at UE_B
6	User → DUT	Make a call to UE_B using DUT SIM1	Call is routed and causes ringing at UE_B with indication of number associated with DUT SIM1
7	User → UE_B	Answer call	Call is connected
8	User → UE_B	After 10 seconds, disconnect call	Call is disconnected at both DUT and UE_B
9	User → DUT	Make a call to UE_B using DUT SIM1	Call is routed and causes ringing at UE_B with indication of number associated with DUT SIM1

Step	Direction	Sequence	Expected Result
10	User → UE_B	Reject call	Call is rejected at UE_B and shown as rejected at DUT
11		Repeat steps 1-10 for each SIM in DUT.	
12	User → DUT	Access call records in DUT UI	All calls are shown with indication of the SIM with which they were made (for MO) or received (for MT)

Note: this test corresponds to YDT 3041-2016 test 4.8.3.4 (Call records)

4.5.12 SMS / MMS Logs

Test Purpose

To ensure the DUT shows which SIM an SMS / MMS was made / received on

Referenced requirements

TS37_2.5_REQ_15

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks.
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.
UE_B	A reference device containing a single SIM is powered on and attached to a network appropriate to its SIM

Test execution

Step	Direction	Sequence	Expected Result
1	User → UE_B	Send an SMS to number associated with DUT SIM1	SMS is routed and arrives at indication of which SIM the SMS was received on
2	User → UE_B	Send an MMS to number associated with DUT SIM1	MMS is routed and arrives at indication of which SIM the MMS was received on
3	User → DUT	Send an SMS to UE_B using DUT SIM1	SMS arrives at UE_B with indication of number associated with DUT SIM1

Step	Direction	Sequence	Expected Result
4	User → DUT	Send an MMS to UE_B using DUT SIM1	MMS arrives at UE_B with indication of number associated with DUT SIM1
5		Repeat steps 1-4 for each SIM in DUT.	
6	User → DUT	Access call records in DUT UI	All calls are shown with indication of the SIM with which they were made (for MO) or received (for MT)
7	User → DUT	Reply to a message from SIM 1 using SIM 2	UI offers an option to reply using a different SIM from the SIM associated with the message, and reply is sent using the selected SIM.
8	User → DUT	Forward a message from SIM 1 using SIM 2	UI offers an option to forward message using a different SIM from the SIM associated with the message, and reply is sent using the selected SIM.
9	User → DUT	Make a call in reply to a message from SIM 1 using SIM 2	UI offers an option to make a call in reply to a message using a different SIM from the SIM associated with the message, and reply is sent using the selected SIM.
10	User → DUT	Repeat steps 7-9 for all SIM combinations in DUT.	

Note: This test corresponds in part to YDT 3041-2016 test 4.8.3.1 (SMS records). The MMS case is not covered by YDT specifications. While covered by YDT, the this test omits the case where SMS are physically stored in the SIM as this is not seen in any recent devices.

4.5.13 Data Use Display

Test Purpose

To ensure that, if the DUT has a per-connection data use display, data use is correctly shown.

Referenced requirements

TS37_2.5_REQ_16

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks.

DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Access the UI for data connection	Prior to user selection of a preferred SIM for data, the DUT automatically selects a connection. The automatic selection uses the highest available radio access technology generation and is clearly indicated on the user interface. The user interface allows selection of a preferred SIM for data
2	User → DUT	Select a SIM as preferred for data.	All data is routed over the connection associated with the selected SIM
3	User → DUT	Download a file of known size	User interface shows the correct amount of data traffic for the selected SIM
		Repeat steps 2 & 3 for each available SIM	

4.5.14 Cell Broadcast

Test Purpose

If cell broadcast reception is supported:

To ensure the DUT implements cell broadcast messaging per connection, and that message display includes an indication of the connection over which they were received.

Referenced requirements

TS37_2.5_REQ_17
TS37_2.5_REQ_18
TS37_2.5_REQ_19

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.

Entity	Description of the initial condition
SIM	Each SIM is configured to access the configured networks.
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Access Cell Broadcast configuration in the user interface.	Cell broadcast configuration is offered independently for each connection
2	User → DUT	Enable cell broadcast reception for all connections	User interface shows which connections cell broadcast is enabled for
3	Network → DUT	All networks send cell broadcast messages	DUT displays each message in cell broadcast display and correctly indicates the connection over which it was received.
4		If DUT can display cell broadcast messages in idle or lock screen, repeat step 3 for each screen	

Note: Any user visible cell broadcast message may be used. Details are not defined in this test as messages in use vary considerably between countries / networks.

4.5.15 Priority of Services

Test Purpose

For a DUT that does not offer dual active connection, to ensure that voice, SMS and MMS are prioritised over data

Referenced requirements

TS37_2.5_REQ_20

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks.

DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.
UE_B	A reference device containing a single SIM is powered on and attached to a network appropriate to its SIM

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Using UI, configure device to route data traffic to SIM 1 and start a data download.	Data traffic is routed over the connection associated with SIM 1
2	User → DUT	Make a call to UE_B using SIM 2	Call is routed and causes ringing at UE_B with indication of number associated with DUT SIM 2
3	User → UE_B	Answer call	Call is connected. Data traffic on DUT SIM 1 is suspended for devices types other than DSDA
4	User → UE_B	After 10 seconds, disconnect call	Call is disconnected at both DUT and UE_B. Data traffic at DUT resumes on SIM 1.
5	User → UE_B	Make a call to number associated with DUT SIM 2	Call is routed and causes ringing at DUT with indication of which SIM the call is being received on.
6	User → DUT	Answer call	Call is connected. Data traffic on DUT SIM 1 is suspended for devices types other than DSDA
7	User → DUT	After 10 seconds, disconnect call	Call is disconnected at both DUT and UE_B. Data traffic at DUT resumes on SIM 1.
8		Repeat steps 2-7 using SMS instead of voice calls	
9		Repeat steps 2-7 using MMS instead of voice calls	
10		Repeat steps 1-9 for all other SIM combinations supported by the device	

Note: This test corresponds to YDT 3041-2016 tests 4.8.4.3, 4.8.4.4, 4.8.5.5 & 4.8.5.6 (call & SMS priority over data). The MMS case is not covered by YDT specifications

4.5.16 Call Forwarding / Call Waiting

Test Purpose

To ensure supplementary services operate independently on each connection

Referenced requirements

TS37_2.5_REQ_21
TS37_2.5_REQ_22

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks.
User B	A second device is connected to a network from which it may make call to / receive calls from the DUT
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Access call forwarding configuration in the user interface.	Call forwarding configuration is offered independently for each connection
2	User → DUT	Enable call forwarding on connection n	User interface shows call forwarding is enabled on connection n
3	User B → another DUT	Make a call to connection n of DUT	Call is forwarded in accordance with settings at DUT.
4	User B → another DUT	Terminate call	
5	User B → another DUT	Make call to other connection(s) of DUT	Calls is received by DUT
6	User B → another DUT	Terminate call	
7	User → DUT	Disable call forwarding on connection n	User interface shows call forwarding is disenabled on connection n

Step	Direction	Sequence	Expected Result
8	User B → another DUT	Make a call to connection n of DUT	Call is received by DUT
9		Repeat steps 2-8 for each available connection on DUT	
10	User → DUT	Access call waiting configuration in the user interface.	Call waiting configuration is offered independently for each connection
11	User → DUT	Enable call waiting on connection n	User interface shows call waiting is enabled on connection n
12	User → DUT	Make a call on connection n	Call is connected
13	User B → another DUT	While DUT MO call is still in progress, make a call to connection n of DUT	Call waiting indication is made at DUT Call waiting indication is made to User B
14		Terminate all calls	
15	User → DUT	Make a call on a connection other than n	Call is connected
16	User B → another DUT	While DUT MO call is still in progress, make a call to connection n of DUT	Call waiting indication is not made at DUT Call waiting indication is not made to User B
17		Terminate all calls	
18	User → DUT	Disable call waiting on connection n	User interface shows call waiting is disabled on connection n
19	User → DUT	Make a call on a connection n	Call is connected
20	User B → another DUT	While DUT MO call is still in progress, make a call to connection n of DUT	Call waiting indication is not made at DUT Call waiting indication is not made to User B
21		Terminate all calls	
22		Repeat steps 11-21 for each connection available on the DUT	

4.5.17 Call Hold

Test Purpose

For a DSDA DUT to ensure that an ongoing call can be placed on hold while a call on the other connection is answered or initiated.

Referenced requirements

TS37_2.5_REQ_23

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks.
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.
UE_B	A reference device containing a single SIM is powered on and attached to a network appropriate to its SIM
UE_C	A reference device containing a single SIM is powered on and attached to a network appropriate to its SIM

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Initiate a call to UE_B using SIM1	Call is routed and causes ringing at UE_B with indication of number associated with DUT SIM 1
2	User → UE_B	Answer call from DUT SIM 1	Call is connected.
3	User → DUT	Place call to UE_B on hold. Make a call to UE_C using SIM 2	Call is routed and causes ringing at UE_C with indication of number associated with DUT SIM 2
4	User → UE_C	Answer call from DUT SIM 2	Call is connected.
5	User → DUT	Place call to UE_C on hold. Resume call with UE_B	Call to UE_B is successfully resumed
6	User → DUT	Disconnect call to UE_B. Resume call with UE_C	Call to UE_B is disconnected at both DUT and UE_B. Call to UE_C is successfully resumed
7	User → DUT	Disconnect call to UE_C.	Call is disconnected at both DUT and UE_C.
8	User → UE_B	Initiate a call to DUT SIM1 from UE_B	Call is routed and causes ringing at DUT SIM 1 with indication of number associated with UE_B

Step	Direction	Sequence	Expected Result
9	User → DUT	Answer call from UE_B	Call is connected.
10	User → UE_C	Initiate a call to DUT SIM2 from UE_C	Call is routed and causes ringing at DUT SIM 2 with indication of number associated with UE_C
11	User → DUT	Please call from UE_B on hold. Answer call from UE_C	Call is connected.
12	User → DUT	Place call to UE_C on hold. Resume call with UE_B	Call from UE_B is successfully resumed
13	User → DUT	Disconnect call from UE_B. Resume call from UE_C	Call from UE_B is disconnected at both DUT and UE_B. Call from UE_C is successfully resumed
14	User → DUT	Disconnect call from UE_C.	Call is disconnected at both DUT and UE_C.
15		Repeat steps 1-14 for any other SIM combinations supported by the device	

Note: This test corresponds in part to YDT 3041-2016 test 4.8.4.6 (MT call on SIM1 when in call on SIM2). The MO case is not covered by YDT.

4.5.18 SIM PIN

Test Purpose

To ensure correct operation of SIM PIN and presentation of appropriate information to the user

Referenced requirements

TS37_2.5_REQ_24
TS37_2.5_REQ_25

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks. Each SIM has a PIN code set and activated
DUT	There is a SIM in each SIM port available. The DUT is powered off

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Power on DUT	UI presents SIM PIN entry screen with indication of which SIM the entry relates to
2	User → DUT	Enter PIN for indicated SIM	DUT connects to network associated with the SIM just unlocked. UI presents SIM PIN entry screen for next SIM with indication of which SIM the entry relates to.
3		Repeat step 2 until all SIMs have been unlocked	
4	User → DUT	Power off DUT	DUT shuts down

Note: this test corresponds to YDT 3041-2016 test 4.8.2 (SIM PIN).

4.5.19 PUK Code

Test Purpose

To ensure that when asking for a PUK, the DUT indicates which SIM this relates to

Referenced requirements

TS37_2.5_REQ_26

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks. Each SIM has a PUK code set and activated
DUT	There is a SIM in each SIM port available. The DUT is powered off

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Power on DUT	UI presents SIM PUK entry screen with indication of which SIM the entry relates to

Step	Direction	Sequence	Expected Result
2	User → DUT	Enter PUK for indicated SIM	DUT connects to network associated with the SIM just unlocked. UI presents SIM PUK entry screen for next SIM with indication of which SIM the entry relates to.
3		Repeat step 2 until all SIMs have been unlocked	
4	User → DUT	Power off DUT	DUT shuts down

4.5.20 (Void)

4.5.21 Network & Service Provide Locks (FFS)

Test Purpose

To ensure the Network and service provider locks operate in an easy-to-understand manner

Referenced requirements

TS37_2.5_REQ_27
TS37_2.5_REQ_28
TS37_2.5_REQ_29

Test execution:

Test to be defined

4.5.22 Contact Book Management

4.5.22.1 Access to Contacts

Test Purpose

To ensure the user can access all contacts, whether stored in a SIM, the DUT itself or cloud storage

Referenced requirements

TS37_2.5_REQ_30

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks. SIMs contain stored

Entity	Description of the initial condition
	contacts; some contacts are present in more than one SIM
Cloud account	A cloud account containing contacts is accessible over at least one of the networks. Some contacts stored in this account are the same as on one or more SIMs
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs. No preferred SIM is set for voice call, SMS or MMS.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Log into cloud account (if supported by DUT)	Cloud account successfully accessed.
2	User → DUT	Access the user interface contacts menu, select a contact from SIM1 and perform the following actions: 1. Make a call to contact 2. Send an SMS to contact 3. Send an MMS to contact	The user interface asks which SIM to use for each operation Operation is successfully completed over the selected SIM connection
3		Repeat step 2 for a contact stored on each other SIM in the DUT, stored in the DUT itself, and (if applicable) present in cloud storage	

Note: this test corresponds in part to YDT 3041-2016 test 4.8.3.2 (Phonebook test).

4.5.22.2 Presentation of Contacts

Test Purpose

To ensure the DUT presents contacts correctly

Referenced requirements

TS37_2.5_REQ_31
TS37_2.5_REQ_32
TS37_2.5_REQ_33

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks. SIMs contain stored contacts; some contacts are present in more than one SIM
Cloud account	A cloud account containing contacts is accessible over at least one of the networks. Some contacts stored in this account are the same as on one or more SIMs
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Log into cloud account (if supported by DUT)	Cloud account successfully accessed.
2	User → DUT	Access the user interface contacts menu	Contacts from all sources (DUT, cloud, SIMx, SIMy …) can be accessed within the same user interface menu There is either: – a single contact list consolidating all sources; or – a contact list per source. For a single contact list: – Each contact has an indication of its source – Contacts present in more than source are either displayed multiple times with different source indications, or displayed once with multiple source indications For a contact list per source: – Each list indicates the source it from which it derives.

4.5.22.3 Adding Contacts

Test Purpose

To ensure the DUT adds contacts correctly

Referenced requirements

TS37_2.5_REQ_34
TS37_2.5_REQ_35

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks. SIMs contain stored contacts; some contacts are present in more than one SIM
Cloud account	A cloud account containing contacts is accessible over at least one of the networks. Some contacts stored in this account are the same as on one or more SIMs
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Log into cloud account (if supported by DUT)	Cloud account successfully accessed.
2	User → DUT	Access the user interface contacts menu and enter a new contact	The user interface asks where to save the contact. The contact is saved to the location selected

Note: it is permissible to allow a contact to be saved to multiple locations, but this must be through user selection

4.5.22.4 Deleting Contacts

Test Purpose

To ensure the DUT deletes contacts correctly

Referenced requirements

TS37_2.2_REQ_36
TS37_2.2_REQ_37

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks. SIMs contain stored contacts; some contacts are present in more than one SIM
Cloud account	A cloud account containing contacts is accessible over at least one of the networks. Some contacts stored in this account are the same as on one or more SIMs
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Log into cloud account (if supported by DUT)	Cloud account successfully accessed.
2	User → DUT	Access the user interface contacts menu and delete a contact that is present in more than one source	User interface asks which source to delete the contact from. The contact is deleted only from the source(s) selected

Note: it is permissible to allow a contact to be deleted from multiple locations, but this must be through user selection

4.5.22.5 Copying Contacts

Test Purpose

To ensure the DUT copies contacts correctly

Referenced requirements

TS37_2.5_REQ_38

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks. SIMs contain stored contacts; some contacts are present in more than one SIM

Cloud account	A cloud account containing contacts is accessible over at least one of the networks. Some contacts stored in this account are the same as on one or more SIMs
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Log into cloud account (if supported by DUT)	Cloud account successfully accessed.
2	User → DUT	Access the user interface contacts menu and copy a contact that is present in only one source	User interface asks which source to copy the contact to. The contact is copied only to the location(s) selected

Note: it is permissible to allow a contact to be copied to multiple locations, but this must be through user selection

4.5.23 Network Search

4.5.23.1 Simple network search

Test Purpose

To ensure independent operation of network search for each SIM is available and that the user interface makes appropriate information available

Referenced requirement

TS37_2.5_REQ_39

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks.
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Access user interface manual network search and begin network search for SIM1	DUT presents search results. – User interface shows all found networks. – User interface shows the highest available radio access technology for each network.
2	User → DUT	From the list of networks, select the home network for SIM 1	Device immediately returns to idle mode on the selected network.
3	User → DUT	Access user interface manual network search and begin network search for SIM1	DUT presents search results. – User interface shows all found networks. – User interface shows the highest available radio access technology for each network.
4	User → DUT	Select a network that is forbidden for SIM1	Network selection fails. Device returns to network selection list.
5		Repeat steps 1-4 for all other SIMs in the DUT	

Note: this test corresponds to YDT 3041-2016 test 4.8.7.2 (Network selection in idle).

4.5.23.2 Simultaneous Network Search

Test Purpose

If implemented, to ensure simultaneous multi-SIM network search provides results in a consistent manner

Referenced requirements

TS37_2.5_REQ_40

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks.

DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Access user interface manual network search and select “all SIM” search option	DUT to presents search results – User interface indicates which SIM(s) may be used for each network found. – User interface indicates the highest available radio access technology for each network. – User interface indicates if the highest available radio access technology of a network differs between SIMs – If FPLMNs are included, User interface indicates the SIM(s) for which they are forbidden.
2	User → DUT	Select a network that may be accessed by more than one SIM	User interface asks which source to user interface allows selection of the SIM to be used
3	User → DUT	Select a network / SIM combination	Remaining options are updated appropriately.

Note: there is no naming convention for this search operation. It has been called “all SIM” for convenience; the DUT user interface may use different terminology.

4.5.24 IMS Voice services

Applicable to DUTs supporting IMS services and offering the user options to enable / disable these services.

4.5.24.1 VoLTE

Test Purpose

To ensure user interface controls of VoLTE voice services function correctly

Referenced requirements

TS37_2.5_REQ_41
TS37_2.5_REQ_42
TS37_2.5_REQ_43

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT. VoLTE is supported
SIM	Each SIM is configured to access the configured networks. VoLTE subscription is in place
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Access VoLTE configuration through user interface	User interface offers individual VoLTE enable/disable controls for each connection that supports VoLTE
2	User → DUT	Enable all VoLTE connections Return to home screen	User interface presents VoLTE registration status for each connection.
3	User → DUT	Access VoLTE configuration through user interface Disable VoLTE connection n Return to home screen	User interface reports connection n is no longer VoLTE registered All other connections are unchanged
4		Repeat step 3 for each VoLTE connection available on the DUT	

4.5.24.2 VoWiFi

Test Purpose

To ensure user interface controls of VoWiFi voice services function correctly

Referenced requirements

TS37_2.5_REQ_44
TS37_2.5_REQ_45
TS37_2.5_REQ_46

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT. VoWiFi is supported
Wi-Fi	A Wi-Fi___33 access point with backhaul to the cellular network core.
SIM	Each SIM is configured to access the configured networks. VoWiFi subscription is in place
DUT	There is a SIM in each SIM port available. The DUT is powered on and is attached to networks appropriate to the SIMs.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Access VoWiFi configuration through user interface	User interface offers individual VoWiFi enable/disable controls for each connection that supports VoWiFi
2	User → DUT	Enable all VoWiFi connections Return to home screen	User interface presents VoWiFi registration status for each connection.
3	User → DUT	Access VoWiFi configuration through user interface Disable VoWiFi connection n Return to home screen	User interface reports connection n is no longer VoWiFi registered All other connections are unchanged
4		Repeat step 3 for each VoWiFi connection available on the DUT	

4.6 Automatic SIM Allocation

4.6.1 Based on Hardware

Test Purpose

To ensure Automatic SIM allocation based on physical SIM hardware, and associated user interface functions, operate correctly

Referenced requirements

TS37_2.6_REQ_1
TS37_2.6_REQ_3
TS37_2.6_REQ_4

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks. One SIM is physically a 2G model
DUT	The DUT is powered off. One SIM is inserted in each SIM port available.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Power on DUT	DUT connects to each network
2	User → DUT	Access user interface network search menu	The 2G SIM is associated with the 2G only port. Other SIM(s) are allocated the highest radio access technology available according to the settings of the DUT The user interface clearly indicates that automatic association has been used. The user interface clearly indicates the association in use The user interface offers options to manually change the association
3	User → DUT	Change the SIM association via the UI	Existing connections are closed in accordance with 3GPP / 3GPP2 standards [6], [11], [13] New connections are established in accordance with the new association

4.6.2 Based on Discovery Protocol

Test Purpose

To ensure Automatic SIM allocation based on discovery protocols, and associated user interface functions, operate correctly

Referenced requirements

TS37_2.6_REQ_2
TS37_2.6_REQ_3
TS37_2.6_REQ_4

Initial Conditions

Entity	Description of the initial condition
Network	Network simulator(s) or network(s) configured to allow access for the number of SIMs supported by the DUT.
SIM	Each SIM is configured to access the configured networks. One SIM must have radio access technology access restricted by subscription status (e.g. LTE not allowed)
DUT	The DUT is powered off. One SIM is inserted in each SIM port available.

Test execution

Step	Direction	Sequence	Expected Result
1	User → DUT	Power on DUT	DUT connects to each network
2	User → DUT	Access user interface network search menu	The radio access technology limited SIM is associated with the radio access technology limited port. Other SIM(s) are allocated the highest radio access technology available according to the settings of the DUT The user interface clearly indicates that automatic association has been used. The user interface clearly indicates the association in use The user interface offers options to manually change the association
3	User → DUT	Change the SIM association via the UI	Existing connections are closed in accordance with 3GPP / 3GPP2 standards [6], [11], [13] New connections are established in accordance with the new association

4.7 Network Specific Applications

4.7.1 Applications with Inherent Limitations (FFS)

Test Purpose

To ensure that applications requiring a specific connection are handled gracefully when that connection is not available

Referenced requirement

TS37_2.7_REQ_1

Test execution:

Test to be defined

4.8 User Imposed Limitations (FFS)

Test Purpose

To ensure that applications which the user has limited to using a specific connection are handled gracefully when that connection is not available

Referenced requirement

TS37_2.8_REQ_1

Test execution:

Test to be defined

4.9 Auto Configuration / Late Customisation

4.9.1 Auto Configuration Across All SIMs (FFS)

Test Purpose

If the DUT supports auto configuration across all SIMs, to ensure that automatic configuration settings are correctly applied to all connections

Referenced requirement

TS37_2.9_REQ_1

Test execution:

Test to be defined

4.9.2 Auto Configuration of One Connection (FFS)

Test Purpose

If the DUT only supports one set of auto configuration settings, to ensure that those settings are correctly applied

Referenced requirement

TS37_2.9_REQ_2

Test execution:

Test to be defined

4.9.3 Reconfiguration (FFS)

Test Purpose

In accordance with TS.32 Section 2.12.2 reconfiguration of the items indicated in TS37_2.9_REQ_1 in case of selecting a new SIM using the primary IMEI is optional, but SHALL be documented if implemented.

Referenced requirement

TS37_2.9_REQ_3

Test execution:

Test to be defined

4.10 eUICC

4.10.1 Equivalency of eUICC with SIM

Test Purpose

To ensure that Multi SIM behaviour is the same when one or more of the SIMs is an eUICC

Referenced requirement

TS37_2.10_REQ_1

Test execution:

All earlier tests can be run with an eUICC in place of one or more of the SIMs.

Results SHALL be the same regardless of SIM or eUICC is used.

4.10.2 Management of eUICC

Test Purpose

To ensure that eUICC management in a multi SIM DUT complies with eUICC standards

Referenced requirement

TS37_2.10_REQ_2

Test execution:

Please refer to SGP.21 & SGP.22 and associated test books.

4.10.3 eUICC and User Interface (FFS)

Test Purpose

To ensure that, if eUICC is indicated in user interface, this indication is consistent.

Referenced requirement

TS37_2.10_REQ_3

Test execution:

Test to be defined

4.11 NFC

Test Purpose

To ensure that, if SIM based secure element NFC is supported, operation complies with TS.26 v10 or later

Referenced requirement

TS37_2.11_REQ_1

Test execution:

Please refer to TS.27 NFC Test Book

4.12 EAP-SIM (FFS)

Test Purpose

To ensure that if EAP-SIM is supported by the DUT, it is supported on all SIM ports and that operation can be individually enabled/disabled for each SIM port.

Referenced requirement

TS37_2.12_REQ_1
TS37_2.12_REQ_2
TS37_2.12_REQ_3

Test execution:

This requires the DUT to support EAP-SIM

Test to be defined

4.13 Performance

4.13.1 LTE Data Throughput – non Carrier Aggregation

Test Purpose

To ensure LTE data throughput on preferred SIM for data with secondary SIM in idle is not significantly different from that of the same device operating with a single SIM.

Referenced requirement

TS37_2.13_REQ_1

Initial Conditions

Entity	Description of the initial condition
Device	Device is Dual SIM Dual Standby and supports LTE on at least one connection Device has an FTP client installed
Network	Network simulator(s) configured to allow access by two SIMs Network simulator configured to provide LTE data connection as specified in 3GPP TS37.901 Network simulator configured to provide LTE, WCDMA or GSM idle mode as specified in TS.09
SIM	Each SIM is configured to access the appropriate network simulator.
DUT	The DUT is powered off. One SIM is inserted in each SIM port.

Test execution

Step	Direction	Sequence	Expected Result
1	User → Network Simulator	Configure GSM idle for 2nd network	2nd network is configured for GSM idle
2	User → DUT	Power on DUT	DUT connects to each network
3	User → DUT	Access user interface. Select SIM1 as preferred SIM for data.	Device logically connects to the selected network for data service. Device logically connects to both networks for voice service
4	User → DUT	Use an FTP client to download a file of 100MB and measure throughput	File is downloaded over the connection associated with the preferred SIM for data. Secondary link remains in idle.
5	User → DUT	Disable SIM2. This may be done through user interface or by physical removal of the SIM	Device is logically connected to only the network associated with the enabled SIM.
6	User → DUT	Use an FTP client to download a file of 100MB and measure throughput	File is downloaded over the connection associated with the preferred SIM for data. Throughput seen at step 3 is at least 90% of throughput at step 5.
7	User → DUT	Re-enable the SIM2 and select SIM2 as preferred for data service	Device logically connects to the selected network for data service. Device logically connects to both networks for voice service

Step	Direction	Sequence	Expected Result
8	User → DUT	Use an FTP client to download a file of 100MB and measure throughput	File is downloaded over the connection associated with the preferred SIM for data. Secondary link remains in idle.
9	User → DUT	Disable SIM2. This may be done through user interface or by physical removal of the SIM	Device is logically connected to only the network associated with the enabled SIM.
10	User → DUT	Use an FTP client to download a file of 100MB and measure throughput	File is downloaded over the connection associated with the preferred SIM for data. Throughput seen at step 7 is at least 90% of throughput at step 9.
11		Repeat steps 2-10 for uplink data	
12		Power off DUT	DUT disconnects from networks in accordance with 3GPP standards
13		If device supports WCDMA on the 2nd SIM port, configure WCDMA idle for 2nd network	2nd network is configured for WCDMA idle
14		Repeat steps 2-12.	
15		If device supports LTE on the 2nd SIM port, configure LTE idle for 2nd network	2nd network is configured for LTE idle
16		Repeat steps 2-12.	

Annex A Document Management

Document History

Version	Date	Brief Description of Change	Approval Authority	Editor / Company
1.0	Jan 2018	New PRD TS.42	TSG / TG	Richard Ormson / Hutchison
2.0	14th June 2018	Updated with changes approved in CR1003	TSG#32	Richard Ormson / Hutchison
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Other Information

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It is our intention to provide a quality product for your use. If you find any errors or omissions, please contact us with your comments. You may notify us at prd@gsma.com

Your comments or suggestions & questions are always welcome.

Annex B (Informative) English translation of YDT 3041-2016 [17] test cases

GSMA would like to thank CCSA for providing this translation.

This annex contains an English language translation of section 4 of the Chinese All Mode test cases document (YDT 3041-2016). This defines all test cases for All Mode operation; to avoid duplication of effort, these test cases are extensively referenced in this GSMA document. The English language version of YDT 3041-2016 will be formally issued by CCSA in late 2018 – this annex will be removed once the official English language version is available direct from CCSA. Section numbers from the original document have been retained for clarity – test case numbers align to these.

Note: This section is informative – unless used by a specific test case in the main part of TS.42, items within this annex are only applicable to the Chinese market. Terminology and abbreviations in this Annex may not be aligned with other sections in TS.42.

This complete annex only applies to devices being tested for CCSA All Mode certification, and covers only technologies appropriate to that market. A subset of CCSA requirements & test cases are used by GSMA TS.37 & TS.42. The GSMA documents are global specifications wherein choice of technologies is at the discretion of the device vendor. Hence for GSMA testing, references to Annex section 4.8.1 table 1 should be replaced with technology combinations appropriate to the capabilities of the device under test.

Test methods for LTE/CDMA/TD-SCDMA/WCDMA/GSM (GPRS) multi-mode dual-SIM multi-standby UE

Slot function test configuration

Description of SIM slot test

For SIM slot combination corresponding to mode combination of LTE/CDMA/TD-SCDMA/WCDMA/GSM (GPRS) multi-mode dual-SIM multi-standby UE, refer to section 5.1 in YD/T 3040 Technical Requirements for LTE/CDMA/TD-SCDMA/WCDMA/GSM (GPRS) Multi-Mode Dual-SIM Multi-Standby User Equipment.

Only one SIM is inserted

Test number 4.1.2 a
Test item: SIM slot function test (applies to dual-SIM mode 1)
Sub-item: only one SIM is inserted
Purpose: Verify the SIM slot function when only one SIM is inserted into the dual-SIM multi-standby UE.

Test number 4.1.2 a
Prerequisites: One USIM SIM with access permissions to TD-SCDMA, GSM (GPRS), LTE networks. One SIM SIM with access permissions to TD-SCDMA and GSM (GPRS) networks. One USIM+CSIM SIM with access permissions to CDMA2000 and LTE networks. One UIM SIM with access permission to the CDMA2000 network. One DUT (UE A). One assistance device (UE B). LTE, CDMA, TD-SCDMA, WCDMA and GSM (GPRS) networks are normal.
Steps: Shut down the DUT. Insert the USIM SIM into slot 1, and boot the DUT. Check whether the DUT enters correct standby state and accesses the correct network. Enter the corresponding UI to make a voice call. Keep the call for 10 s, and then end the call. Shut down the DUT. Insert the SIM SIM into slot 1, and boot the DUT. Check whether the DUT enters correct standby state and accesses the correct network. Enter the corresponding UI to make a voice call. Keep the call for 10 s, and then end the call. Shut down the DUT. Insert the USIM SIM into slot 2, and boot the DUT. Check whether the DUT enters correct standby state and accesses the correct network. Enter the corresponding UI to make a voice call. Keep the call for 10 s, and then end the call. Shut down the DUT. Insert the SIM SIM into slot 2, and boot the DUT. Check whether the DUT enters correct standby state and accesses the correct network. Enter the corresponding UI to make a voice call. Keep the call for 10 s, and then end the call. Shut down the DUT. Insert the USIM SIM into slot 2, and boot the DUT. Check whether the DUT enters correct standby state and accesses the correct network. Enter the corresponding UI to make a voice call. Keep the call for 10 s, and then end the call. Shut down the DUT. Insert the USIM+CSIM SIM into slot 2, and boot the DUT. Check whether the DUT enters correct standby state and accesses the correct network. Enter the corresponding UI to make a voice call. Keep the call for 10 s, and then end the call. Shut down the DUT.
Expected results: The primary and secondary slots and their respective supported network modes are marked clearly on the DUT.
Remarks: For UE supporting both SIM 1 and SIM 2, it supports the single-SIM mode that only SIM 1 works.

Test number 4.1.2 b
Test item: SIM slot function test (applies to dual-SIM mode 2)
Sub-item: only one SIM is inserted
Purpose: Verify the SIM slot function when only one SIM is inserted into the dual-SIM multi-standby UE.
Prerequisites: One USIM SIM with access permissions to TD-SCDMA, GSM (GPRS), LTE networks. One SIM SIM with access permissions to TD-SCDMA and GSM (GPRS) networks. One USIM+CSIM SIM with access permissions to CDMA2000 and LTE networks. One UIM SIM with access permission to the CDMA2000 network. One DUT (UE A). One assistance device (UE B). LTE, CDMA, TD-SCDMA, WCDMA and GSM (GPRS) networks are normal.
Steps: Shut down the DUT. Insert the USIM SIM into slot 1, and boot the DUT. Check whether the DUT enters correct standby state and accesses the correct network. Enter the corresponding UI to make a voice call. Keep the call for 10 s, and then end the call. Shut down the DUT. Insert the SIM SIM into slot 1, and boot the DUT. Check whether the DUT enters correct standby state and accesses the correct network. Enter the corresponding UI to make a voice call. Keep the call for 10 s, and then end the call. Shut down the DUT. Insert the USIM+CSIM SIM into slot 1, and boot the DUT. Check whether the DUT enters correct standby state and accesses the correct network. Enter the corresponding UI to make a voice call. Keep the call for 10 s, and then end the call. Shut down the DUT. Insert the USIM SIM into slot 1, and boot the DUT. Check whether the DUT enters correct standby state and accesses the correct network. Enter the corresponding UI to make a voice call. Keep the call for 10 s, and then end the call. Shut down the DUT. Insert the USIM SIM into slot 2, and boot the DUT. Check whether the DUT enters correct standby state and accesses the correct network. Enter the corresponding UI to make a voice call. Keep the call for 10 s, and then end the call. Shut down the DUT. Insert the SIM SIM into slot 2, and boot the DUT. Check whether the DUT enters correct standby state and accesses the correct network. Enter the corresponding UI to make a voice call. Keep the call for 10 s, and then end the call. Shut down the DUT.

Test number 4.1.2 b
Expected results: The primary and secondary slots and their respective supported network modes are marked clearly on the DUT.
Remarks: For UE supporting both SIM 1 and SIM 2, it supports the single-SIM mode that only SIM 1 works.

Test number 4.1.2 c
Test item: SIM slot function test (applies to dual-SIM mode 3)
Sub-item: only one SIM is inserted
Purpose: Verify the SIM slot function when only one SIM is inserted into the dual-SIM multi-standby UE.
Prerequisites: One USIM SIM with access permissions to TD-SCDMA, GSM (GPRS), LTE networks. One SIM SIM with access permissions to TD-SCDMA and GSM (GPRS) networks. One USIM+CSIM SIM with access permissions to CDMA2000 and LTE networks. One UIM SIM with access permission to the CDMA2000 network. One DUT (UE A). One assistance device (UE B). LTE, CDMA, TD-SCDMA, WCDMA and GSM (GPRS) networks are normal.

Test number 4.1.2 c
Steps: Shut down the DUT. Insert the USIM SIM into slot 1, and boot the DUT. Check whether the DUT enters correct standby state and accesses the correct network. Enter the corresponding UI to make a voice call. Keep the call for 10 s, and then end the call. Shut down the DUT. Insert the SIM SIM into slot 1, and boot the DUT. Check whether the DUT enters correct standby state and accesses the correct network. Enter the corresponding UI to make a voice call. Keep the call for 10 s, and then end the call. Shut down the DUT. Insert the USIM+CSIM SIM into slot 2, and boot the DUT. Check whether the DUT enters correct standby state and accesses the correct network. Enter the corresponding UI to make a voice call. Keep the call for 10 s, and then end the call. Shut down the DUT. Insert the USIM SIM into slot 2, and boot the DUT. Check whether the DUT enters correct standby state and accesses the correct network. Enter the corresponding UI to make a voice call. Keep the call for 10 s, and then end the call. Shut down the DUT. Insert the USIM SIM into slot 2, and boot the DUT. Check whether the DUT enters correct standby state and accesses the correct network. Enter the corresponding UI to make a voice call. Keep the call for 10 s, and then end the call. Shut down the DUT. Insert the SIM SIM into slot 2, and boot the DUT. Check whether the DUT enters correct standby state and accesses the correct network. Enter the corresponding UI to make a voice call. Keep the call for 10 s, and then end the call. Shut down the DUT.
Expected results: The primary and secondary slots and their respective supported network modes are marked clearly on the DUT.
Remarks: For UE supporting both SIM 1 and SIM 2, it supports the single-SIM mode that only SIM 1 works.

Two SIMs are inserted

Test number: 4.1.3 a
Test item: SIM slot function test (applies to dual-SIM mode 1)
Sub-item: two SIMs are inserted

Test number: 4.1.3 a
Purpose: Verify the SIM slot function when two SIMs are inserted into the dual-SIM multi-standby UE.
Prerequisites: Two USIM SIMs with access permissions to TD-SCDMA, GSM (GPRS), LTE networks. Two SIM SIMs with access permissions to TD-SCDMA and GSM (GPRS) networks. One USIM+CSIM SIM with access permissions to CDMA2000 and LTE networks. One UIM SIM with access permission to the CDMA2000 network. One DUT (UE A). One assistance device (UE B). LTE, CDMA, TD-SCDMA, WCDMA and GSM (GPRS) networks are normal.
Steps: 1. Shut down the DUT. 2. Insert SIMs into SIM slots according to corresponding SIM combinations, and boot the DUT. 3. Verify that the DUT enters dual-SIM multi-standby status and accesses the correct networks. 4. Shut down the DUT. 5. Repeat steps 3-4, and test all SIM combinations corresponding to dual-SIM mode.
Expected results: The primary and secondary slots and their respective supported network modes are marked clearly on the UE.

Test number 4.1.3 b
Test item: SIM slot function test (applies to dual-SIM mode 2)
Sub-item: two SIMs are inserted
Purpose: Verify the SIM slot function when two SIMs are inserted into the dual-SIM multi-standby UE.
Prerequisites: Two USIM SIMs with access permissions to TD-SCDMA, GSM (GPRS), LTE networks. Two SIM SIMs with access permissions to TD-SCDMA and GSM (GPRS) networks. One USIM+CSIM SIM with access permissions to CDMA2000 and LTE networks. One UIM SIM with access permission to the CDMA2000 network. One DUT (UE A). One assistance device (UE B). LTE, TD-SCDMA, WCDMA and GSM (GPRS) networks are normal.
Steps: 1. Shut down the DUT. 2. Insert SIMs into SIM slots according to corresponding SIM combinations, and boot the DUT. 3. Verify that the DUT enters dual-SIM multi-standby status and accesses the correct networks. 4. Shut down the DUT. 5. Repeat steps 3-4, and test all SIM combinations corresponding to dual-SIM mode.

Test number 4.1.3 b
Expected results: The primary and secondary slots and their respective supported network modes are marked clearly on the UE.

Test number 4.1.3 c
Test item: SIM slot function test (applies to dual-SIM mode 3)
Sub-item: two SIMs are inserted
Purpose: Verify the SIM slot function when two SIMs are inserted into the dual-SIM multi-standby UE.
Prerequisites: Two USIM SIMs with access permissions to TD-SCDMA, GSM (GPRS), LTE networks. Two SIM SIMs with access permissions to TD-SCDMA and GSM (GPRS) networks. One USIM+CSIM SIM with access permissions to CDMA2000 and LTE networks. One UIM SIM with access permission to the CDMA2000 network. One DUT (UE A). One assistance device (UE B). LTE, TD-SCDMA, WCDMA and GSM (GPRS) networks are normal.
Steps: 1. Shut down the DUT. 2. Insert SIMs into SIM slots according to corresponding SIM combinations, and boot the DUT. 3. Verify that the DUT enters dual-SIM multi-standby status and accesses the correct networks. 4. Shut down the DUT. 5. Repeat steps 3-4, and test all SIM combinations corresponding to dual-SIM mode.
Expected results: The primary and secondary slots and their respective supported network modes are marked clearly on the UE.

1. Test method for UEs in GSM (GPRS) single-SIM mode

For test methods on services, function, and performance of UEs working in GSM (GPRS) single-SIM mode, please refer to YD/T 1215.

2. Test method for UEs in CDMA2000 single-SIM mode

For test methods on services, function, and performance of UEs working in CDMA2000 single-SIM mode, please refer to YD/T 1576.

3. Test method for UEs in WCDMA/GSM (GPRS) single-SIM mode

For test methods on services, function, and performance of UEs working in WCDMA/GSM (GPRS) single-SIM mode, please refer to YD/T 2220.

4. Test method for UEs in TD-SCDMA/GSM (GPRS) single-SIM mode

For test methods of UEs working in TD-SCDMA/GSM (GPRS) single-SIM mode, please refer to YD/T 1779.

5. Test method for UEs in LTE/CDMA single-SIM mode

For test methods of UEs working in LTE/CDMA single-SIM mode, please refer to the relevant parts of voice and data UEs in YD/T 2687.

6. Test method for UEs in LTE/TD-SCDMA/WCDMA/GSM (GPRS) single-SIM mode

For test methods of UEs working in LTE/TD-SCDMA/WCDMA/GSM (GPRS) single-SIM mode, please refer to YD/T 2684 and YD/T 2600.

7. Service and function test methods in multi-mode dual-SIM multi-standby mode

1. Notes on test methods for services and functions

The following table lists the default requirements on the SIM combination types for tests on UEs in dual-SIM mode: **Error! Reference source not found.**

Table 1 Requirements on SIM combinations for UEs in dual-SIM state1

UE modes	SIM combinations	Slot 1	Slot 2	Dual-SIM
Mode One	SIM combination 1	UISM	USIM	SIM1 LTE/TD-SCDMA/WCDMA/GSM (GPRS)+SIM2 GSM (GPRS)
	SIM combination 2	USIM	USIM+CSIM	SIM1 LTE/TD-SCDMA/WCDMA/GSM (GPRS)+SIM2 CDMA2000
	SIM combination 3 (Optional)	UISM	USIM	SIM1 LTE/TD-SCDMA/WCDMA/GSM (GPRS)+SIM2 WCDMA/GSM (GPRS)
	SIM combination 2 (Optional)	UISM	USIM	SIM1 LTE/TD-SCDMA/WCDMA/GSM (GPRS)+SIM2 TD-SCDMA/GSM (GPRS)

UE modes	SIM combinations	Slot 1	Slot 2	Dual-SIM
Mode two	SIM combination 1	USIM+CSIM	USIM	SIM1 LTE/CDMA+SIM2 GSM (GPRS)
	SIM combination 2	USIM	USIM	SIM1 LTE/TD-SCDMA/WCDMA/GSM (GPRS)+SIM2 GSM (GPRS)
	SIM combination 3 (Optional)	UISM	USIM	SIM1 LTE/TD-SCDMA/WCDMA/GSM (GPRS)+SIM2 WCDMA/GSM (GPRS)
	SIM combination 4 (Optional)	USIM+CSIM	USIM	SIM1 LTE/CDMA+SIM2 WCDMA/GSM (GPRS)
	SIM combination 5 (Optional)	UISM	USIM	SIM1 LTE/TD-SCDMA/WCDMA/GSM (GPRS)+SIM2 TD-SCDMA/GSM (GPRS)
	SIM combination 6 (Optional)	USIM+CSIM	USIM	SIM1 LTE/CDMA+SIM2 TD-SCDMA/GSM (GPRS)
Mode three	SIM combination 1	UISM	USIM	SIM1 LTE/TD-SCDMA/WCDMA/GSM (GPRS)+SIM2 GSM (GPRS)
	SIM combination 2	USIM	USIM+CSIM	SIM1 LTE/TD-SCDMA/WCDMA/GSM (GPRS)+SIM2 CDMA2000
	SIM combination 3 (Optional)	UISM	USIM	SIM1 LTE/TD-SCDMA/WCDMA/GSM (GPRS)+SIM2 WCDMA/GSM (GPRS)
	SIM combination 2 (Optional)	UISM	USIM	SIM1 LTE/TD-SCDMA/WCDMA/GSM (GPRS)+SIM2 WCDMATD-SCDMA/GSM (GPRS)
	SIM combination 5	USIM+CSIM	USIM	SIM1 LTE/CDMA+SIM2 GSM (GPRS)
	SIM combination 6 (Optional)	USIM+CSIM	USIM	SIM1 LTE/CDMA+SIM2 WCDMA/GSM (GPRS)
	SIM combination 7 (Optional)	USIM+CSIM	USIM	SIM1 LTE/CDMA+SIM2 TD-SCDMA/GSM (GPRS)

In all the test methods:

For UEs that support multiple modes, only one of the duplicate dual-SIM combinations needs to be tested.

For UEs supporting the combination of "SIM1 LTE/TD-SCDMA/WCDMA/GSM (GPRS)+SIM2 GSM (GPRS)" and the combination of "SIM1LTE/TD-SCDMA/WCDMA/GSM (GPRS)+SIM2 WCDMA/GSM (GPRS)", or supporting the combination of SIM1 LTE/CDMA+SIM2 GSM (GPRS) and the combination of SIM1 LTE/CDMA+SIM2 WCDMA/GSM (GPRS), only the combination with SIM2 supporting WCDMA/GSM (GPRS) needs to be tested.

2. Test for PIN protection function

Test number 4.8.2
Test item: test for PIN code protection function
Purpose: Verify the PIN protection function for dual-SIM multi-standby UEs.
Prerequisites: The tested SIMs should meet the requirements of the corresponding SIM combination listed in Table 1. PIN protection has been activated in both SIMs.**Error! Reference source not found.** One DUT is available.
Steps: 1. Shut down the DUT. Insert the two SIMs into the slots of the DUT according to the SIM combination corresponding to the DUT's supporting modes. 2. Switch on the DUT. 3. Enter the PIN code for SIM1 and that for SIM2, respectively. 4. Shut down the DUT.
Expected results: 1. In step 2, the message pops up prompting the subscriber to enter the PIN code. 2. In step 3, if the correct PIN is entered, the DUT performs network selection and enters dual-SIM multi-standby status.

3. Storage test

1. SMS test

Test number 4.8.3.1
Test item: storage test
Sub-item: storage test - SMS
Prerequisites: The tested SIMs should meet the requirements of the corresponding SIM combination listed in Table 1.**Error! Reference source not found.** One DUT (UE A) with multiple short messages stored. One reference device (UE B).

Test number 4.8.3.1
Steps: 1. Shut down UE A. Insert the two SIMs into the slots of the DUT according to the SIM combination corresponding to the DUT's supporting modes. Then, boot up the DUT. 2. Shut down UE B. Then, insert the SIM and boot up UE B. 3. UE A enters the dual-SIM multiple-standby status. 4. On UE A, enter the SMS menu. 5. Check status of SMS in each folder. 6. For the SMS stored on UE A, perform operations including Read, Save number, Forward, Extract number and initiate a call, Delete. 7. For the SMS in the Inbox of UE A, reply messages using SIM1 and SIM2, respectively. 8. Check the SMSs in SIM1 and SIM2 of UE A. 9. Save the SMSs stored in SIM1 and SIM2 into UE A. 10. Use SIM1 of UE A to send and receive SMS respectively. 11. Under each SMS folder, verify that the corresponding SIM of SMS are marked via icon or other methods. 12. Shut down the UE A.
Expected results: 1. The user should be able to operate on SMS on the UE, including Save, Delete, Save number, Send, Reply, Forward, Extract number and initiate a call, etc. 2. For a UE in dual-SIM mode, the user can select SIM1 or SIM2 for replying a particular message in the Inbox. 3. For all the SMSs in the activated SIM, the use should be allowed to read, view, and save them to the UE. 4. For a received SMS, the UE shall clearly mark the corresponding SIM that receives the SMS via icon or other methods. 5. For a sent SMS, the UE shall clearly mark the corresponding SIM that sends the SMS via icon or other methods.

2. Phonebook test

Test number 4.8.3.2
Test item: storage test
Sub-item: storage test - phonebook
Prerequisites: The test SIMs meets the requirements of the corresponding SIM combination listed in Table 1 and there are multiple phone numbers stored in the SIMs.**Error! Reference source not found.** One DUT (UE A) with multiple phone numbers stored. One reference device (UE B).

Test number 4.8.3.2
Steps: 1. Shut down UE A. Insert the two SIMs into the slots of the DUT according to the SIM combination corresponding to the DUT's supporting modes. Then, boot up the DUT. 2. Insert the SIM into UE B and boot up the UE. 3. UE A enters the dual-SIM multiple-standby status. 4. Enter the Contacts UI of UE A. 5. Save, edit, delete, and invoke (initiate a call or send an SMS) the phone numbers saved in the memory of UE A. 6. Save, edit, delete, and invoke (initiate a call or send an SMS) the phone numbers saved in SIM 1 of UE A. 7. Save, edit, delete, and invoke (initiate a call or send an SMS) the phone numbers saved in SIM 2 of UE A. 8. Shut down the UE A.
Expected results: 1. All the phone numbers saved in the UE memory or the SIMs are readable by the subscriber for saving, editing, deleting, invoking (dialing or sending SMS).
Remarks: None

3. Data files test

Test number 4.8.3.3
Test item: storage test
Sub-item: storage test - Data files
Prerequisites: The tested SIMs should meet the requirements of the corresponding SIM combination listed in Table 1.**Error! Reference source not found.** One DUT is available.
Steps: 1. Shut down the DUT. Insert the two SIMs into the slots of the DUT according to the SIM combination corresponding to the DUT's supporting modes. 2. Switch on the DUT. 3. The DUT enters the dual-SIM multiple-standby mode. 4. Create a file and save it, such as creating a ringtone or taking a snapshot using the built-in camera. 5. Read the data file saved on the DUT, and perform operations on it 6. Shut down the DUT.
Expected results: 1. The user should be able to operate on and use the data file (no copyright requirement) saved in the UE.

4. Test for call records

Test number 4.8.3.4
Test item: storage test
Sub-item: storage test - call records
Prerequisites: The tested SIMs should meet the requirements of the corresponding SIM combination listed in Table 1.**Error! Reference source not found.** One DUT (UE A) is available. One reference device (UE B).
Steps: 1. Shut down UE A. Insert the two SIMs into the slots of the DUT according to the SIM combination corresponding to the DUT's supporting modes. 2. Boot DUT A up. 3. UE A enters the dual-SIM multiple-standby status. 4. Use UE B to call the number corresponding to the primary SIM of UE A. On UE A, reject the call. 5. Use UE B to call the number corresponding to SIM1 of UE A. On UE A, answer the call. 6. Use UE B to call the number corresponding to SIM2 of UE A. On UE A, reject the call. 7. Use UE B to call the number corresponding to SIM2 of UE A. On UE A, answer the call. 8. Use SIM1 of DUT A to call UE B. 9. Use SIM2 of DUT A to call UE B. 10. Check call records.
Expected results: 1. Call log should record individual calls and the detailed list should display the call type (outgoing, incoming, missed), time, and number of the peer-end (if the number is saved in as a contact, the corresponding name should be displayed) and the local number (optional). 2. The subscriber can check call records by SIMs. 3. The user shall be capable of categorizing and viewing the call record.

4. Voice service functions in dual-SIM mode

1. Call the reference device when both SIMs are in idle status

Test number 4.8.4.1
Test item: voice service functions in dual-U(SIM) mode
Sub-item: Call the assistance device when both SIMs are idle
Test purpose: Verify that the DUT can call the assistance device when both SIMs are in idle state.

Test number 4.8.4.1
Prerequisites: The tested SIMs should meet the requirements of the corresponding SIM combination listed in Table 1.**Error! Reference source not found.** One DUT (UE A) is available. One reference device (UE B).
Steps: 1. Shut down UE A. Insert the two SIMs into the slots of the DUT according to the SIM combination corresponding to the DUT's supporting modes. 2. Boot DUT A up. 3. UE A enters the dual-SIM multiple-standby status. 4. Use the SIM2 of UE A to call UE B. 5. Hang up after talking for a while and return to the home screen. 6. Use SIM1 of UE A to call UE B. 7. Hang up after talking for a while and return to the home screen. 8. Repeat Step 1 to Step 7 by testing other SIM combinations for the DUT.
Expected results: 1. In dual-SIM state, the user can choose to use SIM1 or SIM2 to dial a non-local number. 2. In dual-SIM state, whether SIM1 or SIM2 is used to dial a non-local number, the user should be able to perform voice call properly. 3. In dual-SIM state, the call connection screen should display the SIM used for the MO call. 4. In dual-SIM state, after the user hangs up, the UE should automatically return to the call-ending screen and then to the dual-SIM standby screen.

2. One SIM has an incoming call when both SIMs are in idle status

Test number 4.8.4.2
Test item: voice service functions in dual-U(SIM) mode
Sub-item: Incoming call to one SIM when both SIM in idle mode
Test purpose: Verify the performance of the LTE multi-mode dual-SIM UE when one SIM has an incoming call when both are in idle mode.
Prerequisites: The tested SIMs should meet the requirements of the corresponding SIM combination listed in Table 1.**Error! Reference source not found.** One DUT (UE A) is available. One reference device (UE B).

Test number 4.8.4.2
Steps: 1. Shut down UE A. Insert the two SIMs into the slots of the DUT according to the SIM combination corresponding to the DUT's supporting modes. 2. Boot DUT A up. 3. Both SIM1 and SIM2 are in idle state. 4. Use UE B to call SIM1 of UE A. On UE A, answer the call. 5. Hang up the phone on either UE. DUT (UE A) return to dual-SIM standby status. 6. Use UE B to call the SIM1 of UE A. On UE A, reject the call so that UE A returns to dual-SIM standby status. 7. Use UE B to call SIM1 of UE A. On UE A, do not perform any operation and wait till UE A returns to dual-SIM standby status. Then, use UE A to call the missed incoming call. 8. Use UE B to call SIM2 of UE A and repeat steps 3 through 7. 9. Repeat Step 1 to Step 8 by testing other SIM combinations for the DUT.
Expected results: 1. In dual-SIM state, SIM1 or SIM2 can be used to receive incoming calls. 2. In dual-SIM state, the calling party and the called SIM can be displayed whether SIM1 or SIM2 receives a call. 3. In dual-SIM state, whether SIM1 or SIM2 receives a call, the UE shall allow the user to reject or answer the call. If the user answers the phone, the voice service is normal; if the user rejects or ignores the call, the DUT indicates the missed call on the screen, including the number of calling party, the SIM corresponding to the dialed number. The user should be able to dial back the missing calls. 4. In dual-SIM state, after the user hangs up, the UE should automatically return to the call-ending screen and then to the dual-SIM standby screen.

3. Using one SIM to Call a Non-Local Number While the Other SIM Is Running Data Services

Test number 4.8.4.3
Test Item: Voice service function requirements in dual-SIM mode
Test Sub-Item: Using one SIM to Call a Non-Local Number While the Other SIM Is Running Data Services
Purpose: Verify the performance of the LTE multi-mode dual-SIM UE in the scenario where the user uses a SIM to call a non-local number while the other SIM is running data services.
Prerequisites: The test SIMs meet the requirements of the SIM combinations listed in Table 1.**Error! Reference source not found.** One DUT (UE A) is available. One assistance UE (UE B) is available.
Steps: 1. Switch off UE A. By referring to SIM combination 1 that corresponds to the mode

of the UE, insert two SIMs into the two slots of UE A and enable the UE to work on the mode combination.

2. Switch on UE A. SIM 1 is registered in the LTE network, and SIM 2 is registered in the network of the corresponding RAT.
3. After two SIMs enter standby state, use SIM 1 to initiate a data service and keep the data service activated.
4. Use SIM 2 to call UE B. Answer the call on UE B. verify that the call is normal.
5. Check the data service status of SIM 1.
6. End the call, and end the data service.
7. Adjust the network so that SIM 1 is registered in a non-LTE network, and SIM 2 keeps registered in the network of the corresponding RAT.
8. After two SIMs enter standby state, use SIM 1 to initiate a data service and keep the data service activated.
9. Use SIM 2 to call UE B. Answer the call on UE B. verify that the call is normal.
10. Check the data service status of SIM 1.
11. End the call, and end the data service.
12. After two SIMs enter standby state, use SIM 2 to initiate a data service and keep the data service activated.
13. Use SIM 1 to call UE B. Answer the call on UE B. verify that the call is normal.
14. Check the data service status of SIM 2.
15. End the call, and end the data service.
16. Refer to other SIM combinations that correspond to the mode of the UE, and repeat steps 1 to 15 for each combination.

Expected Results:
During the data service of one SIM, the user shall be able to use the other SIM to call a non-local number. The voice call should be normal, and the original data service should meet the following requirements:

1. UE type 1 (dual-SIM single-active):

    1. SIM 1 is in LTE/TD-SCDMA/GSM (GPRS) single-SIM dual-standby dual-active mode.

1. In steps 4 and 5, when SIM 1 is running TD-LTE data services, SIM 2 can be used to call a non-local number. The voice call is normal, without interrupting original data services.

2. In steps 9 to 10 and 13 to 14, during the data service of either SIM, the user can use the other SIM to call a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

    1. If SIM 1 is in LTE/WCDMA/GSM (GPRS) single-SIM single-standby single-active mode: In steps 4 and 5, 9 and 10, and 13 and 14, during the data service of either SIM, the user can use the other SIM to call a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

    2. If SIM 1 is in LTE/CDMA single-SIM dual-standby single-active mode: In steps 4 and 5, 9 and 10, and 13 and 14, during the data service of either SIM, the user can use the other SIM to call a non-local number. The voice call is

normal, and the original data service is suspended or uninterrupted.

3. UE type 2 (dual-SIM single-active):

    1. If SIM 1 is in LTE/TD-SCDMA/GSM (GPRS) single-SIM single-standby single-active mode: In steps 4 and 5, 8 and 9, and 13 and 14, during the data service of either SIM, the user can use the other SIM to call a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

    2. If SIM 1 is in LTE/WCDMA/GSM (GPRS) single-SIM single-standby single-active mode: In steps 4 and 5, 8 and 9, and 13 and 14, during the data service of either SIM, the user can use the other SIM to call a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

    3. If SIM 1 is in LTE/CDMA single-SIM dual-standby single-active mode: In steps 4 and 5, 9 and 10, and 13 and 14, during the data service of either SIM, the user can use the other SIM to call a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

4. UE type 3 (dual-SIM dual-active):

    1. If SIM 1 is in LTE/TD-SCDMA/GSM (GPRS) single-SIM dual-standby dual-active mode: In steps 4 and 5, 9 and 10, and 13 and 14, during the data service of either SIM, the user can use the other SIM to call a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

    2. If SIM 1 is in LTE/WCDMA/GSM (GPRS) single-SIM single-standby single-active mode: In steps 4 and 5, 9 and 10, and 13 and 14, during the data service of either SIM, the user can use the other SIM to call a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

    3. If SIM 1 is in LTE/CDMA single-SIM dual-standby dual-active mode:

1. In steps 4 and 5, when SIM 1 is running LTE data services, the user can use SIM 2 to call a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

2. In steps 9 to 10 and 13 to 14, during the data service of either SIM, the user can use the other SIM to call a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

3. UE type 4 (dual-SIM dual-active):

    1. If SIM 1 is in LTE/TD-SCDMA/GSM (GPRS) single-SIM single-standby single-active mode: In steps 4 to 5, 8 to 9, and 13 to 14, during the data service of either SIM, the user can use the other SIM to call a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

    2. If SIM 1 is in LTE/WCDMA/GSM (GPRS) single-SIM single-standby single-active mode: In steps 4 and 5, 8 and 9, and 13 and 14, during the data service of either SIM, the user can use the other SIM to call a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

    3. If SIM 1 is in LTE/CDMA single-SIM dual-standby dual-active mode:

1. In steps 4 and 5, when SIM 1 is running LTE data services, the user can use SIM 2 to call a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

2. In steps 8 to 9 and 13 to 14, during the non-LTE data service of either SIM, the user can use the other SIM to call a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

1. One SIM Receiving a Call When the Other SIM Is Running Data Services

Test number 4.8.4.4
Test Item: Voice service function requirements in dual-SIM mode
Test Sub-Item: One SIM Receiving a Call When the Other SIM Is Running Data Services
Purpose: Verify the function that one SIM can receive incoming calls while the other SIM is running data services.
Prerequisites: The test SIMs meet the requirements of the SIM combinations listed in Table 1.**Error! Reference source not found.** One DUT (UE A) is available.

One assistance UE (UE B) is available.
Steps: 1. Shut down DUT A. Insert the two SIMs into the two slots of DUT A. 2. Switch on UE A. SIM 1 is registered in the LTE network, and SIM 2 is registered in the network of the corresponding RAT. 3. After two SIMs enter standby state, use SIM 1 to initiate a data service and keep the data service activated. 4. Use UE B to call the number of SIM 2. Answer the call. Check whether the voice call is normal. 5. Check the data service status of SIM 1. 6. End the call. 7. Maintain the data service activated state. Use UE B to call the number of SIM 2. On UE A, reject the call. Check the data service state of SIM 1. 8. Dial back the number of the rejected call, and then end the call. 9. Maintain the data service activated state. Use UE B to call the number of SIM 2. On UE A, do not handle the incoming call. Check the data service state of SIM 1. 10. Dial back the number of the call that has not been handled, and then end the call. 11. End the data service; 12. Adjust the network so that SIM 1 is registered in a non-LTE network, and SIM 2 keeps registered in the network of the corresponding RAT. 13. After two SIMs enter standby state, use SIM 1 to initiate a data service and keep the data service activated. 14. Use UE B to call the number of SIM 2. Answer the call. Check whether the voice call is normal. 15. Check the data service status of SIM 1. 16. End the call, and end the data service. 17. After two SIMs enter standby state, use SIM 2 to initiate a data service and keep the data service activated. 18. Use UE B to call the number of SIM 1. Answer the call. Check whether the voice call is normal. 19. Check the data service status of SIM 2.

20. End the call.

21. Maintain the data service activated state. Use UE B to call the number of SIM 1. On UE A, reject the call. Check the data service state of SIM 2.

22. Dial back the number of the rejected call, and then end the call.

23. Maintain the data service activated state. Use UE B to call the number of SIM 1. On UE A, do not handle the incoming call. Check the data service state of SIM 2.

24. Dial back the number of the call that has not been handled, and then end the call.

25. End the data service;

26. Refer to other SIM combinations that correspond to the mode of the UE, and repeat steps 1 to 25 for each combination.

Expected Results:

1. When one SIM is running active data services and the other SIM receives an incoming call, the terminal shall display the information about calling party and indicate the intended SIM.

2. When the data service is implemented on one SIM, the UE shall allow the subscriber to answer or reject the incoming call of the other SIM.

3. If the user chooses to answer a call to the other SIM, the terminal shall conduct the voice call normally and the original data services shall be in the following state:

1. UE type 1 (dual-SIM single-active):

    1. If SIM 1 supports LTE/TD-SCDMA/GSM (GPRS) single-SIM dual-standby dual-active mode:

2. In steps 4 and 5, when SIM 1 is running TD-LTE data services, SIM 2 can be used to receive a call from a non-local number. The voice call is normal, without interrupting original data services.

3. In steps 14 to 15 and 18 to 19, during the non-TD-LTE data service of either SIM, the user can use the other SIM to accept a call from a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

    1. If SIM 1 supports LTE/TD-SCDMA/GSM (GPRS) single-SIM single-standby single-active mode: In steps 4 and 5, 14 and 15, and 18 and 19, during the data service of either SIM, the user can use the other SIM to accept a call from a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted. □

2. If SIM 1 supports LTE/CDMA single-SIM dual-standby single-active mode: In steps 4 and 5, 14 and 15, and 18 and 19, during the data service of either SIM, the user can use the other SIM to accept a call from a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

□

4. UE type 2 (dual-SIM single-active):

    1. If SIM 1 supports LTE/TD-SCDMA/GSM (GPRS) single-SIM single-standby single-active mode: In steps 4 and 5, 14 and 15, and 18 and 19, during the data service of either SIM, the user can use the other SIM to accept a call from a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

    2. If SIM 1 supports LTE/WCDMA/GSM (GPRS) single-SIM single-standby single-active mode: In steps 4 and 5, 14 and 15, and 18 and 19, during the data service of either SIM, the user can use the other SIM to accept a call from a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted. □

    3. UE type 2 (dual-SIM single-active): If SIM 1 supports LTE/CDMA single-SIM dual-standby single-active mode, in steps 4 and 5, 14 and 15, and 18 and 19, during the data service of either SIM, the user can use the other SIM to accept a call from a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

5. UE type 3 (dual-SIM dual-active):

    1. If SIM 1 supports LTE/TD-SCDMA/GSM (GPRS) single-SIM dual-standby dual-active mode: In steps 4 and 5, 14 and 15, and 18 and 19, during the data service of either SIM, the user can use the other SIM to accept a call from a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted. □

    2. If SIM 1 supports LTE/WCDMA/GSM (GPRS) single-SIM single-standby single-active mode: In steps 4 and 5, 14 and 15, and 18 and 19, during the data service of either SIM, the user can use the other SIM to accept a call from a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted. □

    3. If SIM 1 supports LTE/CDMA single-SIM dual-standby dual-active mode:

6. In steps 4 and 5, when SIM 1 is running LTE data services, the user can use SIM 2 to accept a call from a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

7. In steps 14 to 15 and 18 to 19, during the data service of either SIM, the user can use the other SIM to accept a call from a non-local number. The voice call is normal, and the original data service is uninterrupted.

8. UE type 4 (dual-SIM dual-active):

    1. If SIM 1 supports LTE/TD-SCDMA/GSM (GPRS) single-SIM single-standby single-active mode: In steps 4 and 5, 14 and 15, and 18 and 19, during the data service of either SIM, the user can use the other SIM to accept a call from a non-local number. The voice call is normal, and the original data service is uninterrupted. □

    2. If SIM 1 supports LTE/WCDMA/GSM (GPRS) single-SIM single-standby single-active mode: In steps 4 and 5, 14 and 15, and 18 and 19, during the data service of either SIM, the user can use the other SIM to accept a call from a non-local number. The voice call is normal, and the original data service is uninterrupted. □

    3. If SIM 1 supports LTE/CDMA single-SIM dual-standby dual-active mode:

9. In steps 4 and 5, when SIM 1 is running LTE data services, the user can use SIM 2 to accept a call from a non-local number. The voice call is normal, and the original data service is suspended or uninterrupted.

10. In steps 14 to 15 and 18 to 19, during the non-LTE data service of either SIM, the user can use the other SIM to accept a call from a non-local number. The voice call is normal, and the original data service is uninterrupted.

11. If the user does not handle or rejects the incoming call to the other SIM, the UI displays a missed call and the original data service is uninterrupted. Information about the missed call shall include the number of the calling party as well as the SIM corresponding to the number dialed by the calling party. The user can choose to dial back the number of the missed call.

1. Two SIMs Are in Idle Mode and Both Receive Calls at the Same Time

Test number 4.8.4.5
Test item: voice service functions in dual-SIM mode
Test sub-item: Receiving an incoming call at the same time when both SIMs are in idle state (for dual-SIM multi-standby UE 3 and UE 4 only)
Test objective: To verify the function that both SIMs receive an incoming call in idle state.

Test number 4.8.4.5
Prerequisites: The tested SIMs should meet the requirements of the corresponding SIM combination listed in Table 1.**Error! Reference source not found.** One DUT (UE A) is available. Two assistance devices, UE B and UE C, are available.
Steps: Power off UE A. Insert the two SIMs into the two slots of UE A. Power on UE A. Ensure that SIMs 1 and 2 are in idle state. Use the two assistance devices to call the two local numbers of UE A at the same time. Then, UE A starts ringing for both SIMs. Answer the call to SIM 1. A prompt indicating the missed call to SIM 2 is displayed on the screen. Hang up the phone on either UE to end the call to SIM 1. Dial the number of the missed call to SIM 2 back. After the call is established, end the call. Use the two assistance devices to call the two local numbers of UE A at the same time. Answer the call to SIM 2. A prompt indicating the missed call to SIM 1 is displayed on the screen. Hang up the phone on either UE to end the call to SIM 2. Dial the number of the missed call to SIM 1 back. After the call is established, end the call. For other SIM combinations corresponding to the UE mode, repeat steps 1 through 13 in sequence.
Expected results: In step 4, when there are incoming calls for both SIMs, the DUT shall be able to display information about both calling parties. It should also display the SIM corresponding to the number that each calling party has dialed. In steps 5 and 10, when there are incoming calls for both SIMs, the DUT should allow the user to answer the call to either SIM. In steps 6 and 11, when the call to one SIM is answered, the information about the missed call to the other SIM shall be displayed on the screen. Such information shall include the calling party number and the SIM corresponding to the number the calling party has dialed. In steps 7 and 12, after the call ends, the DUT shall automatically return to the UI that the call ends and then to the dual-SIM standby UI. In steps 8 and 13, the calling party number of the missed call shall be displayed on the screen, the SIM corresponding to the number the calling party has dialed shall be displayed, and the user can call back.

1. One SIM Receives an Incoming Call When the Voice Service Is Running on the Other SIM

Test number 4.8.4.6

Test item: voice service functions in dual-SIM mode
Test sub-item: When the voice service is in progress on one SIM, the other SIM receives a call (for dual-SIM multi-standby UE 3 and UE 4 only).
Test objective: To verify the function of call receiving by the other SIM when the voice service is in progress on one SIM.
Prerequisites: 1. The tested SIMs should meet the requirements of the corresponding SIM combination listed in Table 1.**Error! Reference source not found.** 2. One DUT (UE A) is available. 3. Two assistance devices, UE B and UE C, are available.
Steps: Power off UE A. Insert the two SIMs into the two slots of UE A. Power on UE A. When the two SIMs are in standby mode, use UE B to call the number corresponding to SIM 1. Answer the call and keep it. Use UE C to call the number corresponding to SIM 2. Check whether the call to SIM 1 is affected. Answer the call to SIM 2. End the calls. The UE returns to the dual-SIM standby state. Use UE B to call the number corresponding to SIM 1. Answer the call and keep it. Use UE C to call the number corresponding to SIM 2. Reject the call. Check whether the call to SIM 1 is affected. Use UE B to call the number corresponding to SIM 1. Answer the call and keep it. Use UE C to call the number corresponding to SIM 2. Ignore the call, that is, do not answer or reject the call. Check whether the call to SIM 1 is affected. End the call. Dial the number of the missed call back. End the call after the call is set up. When the two SIMs are in standby mode, use UE B to call the number corresponding to SIM 2. Answer the call and keep it. Use UE C to call the number corresponding to SIM 1. Check whether the call to SIM 2 is affected. Answer the call to SIM 1. End the calls. The UE returns to the dual-SIM standby state. Use UE B to call the number corresponding to SIM 2. Answer the call and keep it. Use UE C to call the number corresponding to SIM 1. Reject the call. Check whether the call to SIM 2 is affected. Use UE B to call the number corresponding to SIM 2. Answer the call and keep it. Use UE C to call the number corresponding to SIM 1. Ignore the call, that is, do not answer or reject the call. Check whether the call to SIM 2 is affected. End the call. Dial the number of the missed call back. End the call after the call is set up. For other SIM combinations corresponding to the UE mode, repeat steps 1

through 20 in sequence.
Expected results: 1. In steps 4 and 13, when one SIM receives an incoming call and the other SIM is performing the voice service, the DUT shall give the voice and text prompts, the original call shall be normal, the calling party information shall be displayed, and the SIM corresponding to the number the calling party has dialed shall be displayed too. 2. In steps 5 and 14, when one SIM is performing the voice service and the other SIM is receiving a call, the DUT should allow the user to answer the call to either SIM. If the user chooses to answer the call, the DUT should properly switch to the call to the other SIM and the user can maintain or stop the original call. 3. In steps 8, 10, 17, and 19, if the user rejects or ignores the call to the other SIM, the original call shall not be affected. For the call to the other SIM ignored by the user, there should be a prompt for the missed call on the screen. The prompt should contain the number of the calling party as well as the SIM corresponding to the number of the called party. 4. In steps 11 and 20, the DUT shall allow the user to dial the missed call back after the voice call ends.

2. SMS Functions in Dual-SIM Mode

1. Sending an SMS When Both SIMs Are in Idle State

Test number 4.8.5.1
Test item: SMS functions
Test sub-item: sending SMSs when both SIMs are in idle mode
Test objective: To verify the function of SMS sending when both SIMs of a dual-SIM multi-standby DUT are in idle mode.
Prerequisites: 1. The tested SIMs should meet the requirements of the corresponding SIM combination listed in Table 1.**Error! Reference source not found.** 2. One DUT (UE A) is available. 3. One assistance device (UE B) is available.

Steps: Power off UE A. Insert the two SIMs into the two slots of UE A. Power on UE A. Make UE A enter the dual-SIM multi-standby mode. Power on UE B. Use UE A to send an SMS to UE B via SIM 1. Check whether the SMS is successfully sent. Use UE A to send an SMS to UE B via SIM 2. Check whether the SMS is successfully sent. Power off UE A. For other SIM combinations corresponding to the UE mode, repeat steps 1 through 9 in sequence.
Expected results: 1. In dual-SIM mode, the user is allowed to select SIM 1 or SIM 2 to send SMSs. 2. In dual-SIM mode, the SMS can be sent properly, irrespective of being sent via SIM 1 or SIM 2. After the SMS is sent successfully, the DUT returns to the dual-SIM multi-standby status.

2. Receiving an SMS When Both SIMs Are in Idle State

Test number 4.8.5.2
Test item: SMS functions
Test sub-item: receiving SMS when both SIMs are in idle mode
Test objective: To verify the function of SMS receiving when both SIMs of a dual-SIM multi-standby DUT are in idle mode.
Prerequisites: 1. The tested SIMs should meet the requirements of the corresponding SIM combination listed in Table 1.**Error! Reference source not found.** 2. One DUT (UE A) is available. 3. One assistance device (UE B) is available.

Steps: 1. Power off UE A. Insert the two SIMs into the two slots of UE A. 2. Power on UE A. 3. Make UE A enter the dual-SIM multi-standby mode. 4. Power on DUT B. 5. Use UE B to send an SMS to the number corresponding to SIM 1 of UE A. 6. Check whether SIM 1 successfully receives the SMS and whether it can reply to the SMS. 7. Use UE B to send an SMS to the number corresponding to SIM 2 of UE A. 8. Check whether SIM 2 successfully receives the SMS and whether it can reply to the SMS. 9. Power off UE A. 10. For other SIM combinations corresponding to the UE mode, repeat steps 1 through 9 in sequence.
Expected results: 1. When both SIMs are in idle state, the SMS can be received properly, irrespective of being sent via SIM 1 or SIM 2. 2. The DUT shall clearly indicate an unchecked SMS on the standby UI. 3. The received SMS contains the number of the sender and clearly indicates the SIM that receives the SMS. The SMS content is correct. 4. The DUT can reply to the received SMS.

3. One SIM Performing the Voice Service When the Other SIM Is Sending an SMS

Test number 4.8.5.3
Test item: SMS functions
Test sub-item: One SIM performing the voice service when the other SIM is sending an SMS (for dual-SIM multi-standby UE 3 and UE 4 only)
Test objective: To verify the function of SMS sending by one SIM when the voice service is in progress on the other SIM.
Prerequisites: 1. The tested SIMs should meet the requirements of the corresponding SIM combination listed in Table 1.**Error! Reference source not found.** 2. One DUT (UE A) is available. 3. Two assistance devices, UE B and UE C, are available.

Steps: 1. Power off UE A. Insert the two SIMs into the two slots of UE A. 2. Power on UE A. 3. Make UE A enter the dual-SIM multi-standby mode. 4. Power on DUT B. 5. Power on DUT C. 6. Use UE B to call the number corresponding to SIM 1 of UE A. Keep the call. 7. Use UE A to send an SMS to UE C via SIM 2. 8. Check whether the SMS is successfully sent. 9. Check whether the call to SIM 1 is proper. 10. End the call. 11. Use UE B to call the number corresponding to SIM 2 of UE A. Keep the call. 12. Use UE A to send an SMS to UE C via SIM 1. 13. Check whether the SMS is successfully sent. 14. Check whether the call to SIM 2 is proper. 15. End the call. 16. Power off UE A. 17. For other SIM combinations corresponding to the UE mode, repeat steps 1 through 16 in sequence.
Expected results: 1. In dual-SIM mode, when one SIM is performing the voice service, the other SIM can send the SMS properly. 2. The original call is normal.

4. One SIM Performing the Voice Service When the Other SIM Is Receiving an SMS

Test number 4.8.5.4
Test item: SMS functions
Test sub-item: One SIM performing the voice service when the other SIM is receiving an SMS (for dual-SIM multi-standby UE 3 and UE 4 only)
Test objective: To verify the function of SMS receiving by one SIM when the voice service is in progress on the other SIM.
Prerequisites: 1. The tested SIMs should meet the requirements of the corresponding SIM combination listed in Table 1.**Error! Reference source not found.** 2. One DUT (UE A) is available. 3. Two assistance devices, UE B and UE C, are available.

Steps: 1. Power off UE A. Insert the two SIMs into the two slots of UE A. 2. Power on UE A. 3. Make UE A enter the dual-SIM multi-standby mode. 4. Power on DUT B. 5. Power on DUT C. 6. Use UE B to call the number corresponding to SIM 1 of UE A. Keep the call. 7. Use UE C to send an SMS to the number corresponding to SIM 2 of UE A. 8. Check whether SIM 2 successfully receives the SMS and whether it can reply to the SMS. 9. Check whether the call to SIM 1 is proper. 10. End the call. 11. Use UE B to call the number corresponding to SIM 2 of UE A. Keep the call. 12. Use UE C to send an SMS to the number corresponding to SIM 1 of UE A. 13. Check whether SIM 1 successfully receives the SMS and whether it can reply to the SMS. 14. Check whether the call to SIM 2 is proper. 15. End the call. 16. Power off UE A. 17. For other SIM combinations corresponding to the UE mode, repeat steps 1 through 16 in sequence.
Expected results: 1. In dual-SIM status, when one SIM is implementing the voice service, the other SIM can receive the SMS properly. 2. The DUT clearly indicated the unchecked SMS on the UI. 3. The received SMS contains the number of the sender and indicates the SIM that receives this SMS. The content is correct. 4. The DUT can reply the received SMS. 5. The original call is normal.

5. One SIM sending an SMS when the other SIM is performing the data service

Test number 4.8.5.5
Test item: SMS functions
Test sub-item: when there is data service on one of the SIMs, the other SIM sends SMS
Purpose: Verify the function of SMS sending by the other SIM when there is data service on one of the SIMs

Test number 4.8.5.5
Prerequisites: The tested SIMs should meet the requirements of the corresponding SIM combination listed in Table 1.**Error! Reference source not found.** One DUT (UE A). One assistance device (UE B).
Steps: 1. Shut down UE A. Insert two SIMs into two slots of UE A. 2. Boot up UE A. 3. UE A enters dual-SIM dual-standby state. 4. Boot up UE B. 5. Use SIM 1 of UE A to initiate the data service, and keep the activated state. 6. UE A sends UE B a SMS via SIM 2. 7. Check whether the SMS is successfully sent. 8. Check data service state of SIM 1. 9. End the data service. 10. Use SIM 2 of UE A to initiate the data service, and keep the activated state. 11. UE A sends UE B a SMS via SIM 1. 12. Check whether the SMS is successfully sent. 13. Check data service state of SIM 2. 14. End the data service. 15. Repeat steps 1-14 using other SIM combinations.
Expected results: 1) In dual-SIM mode, when one SIM performs data services in activated state, the user can choose the other SIM to send the SMS. The SMS shall be successfully sent while the original data services are kept. 2. The original data service is continued or suspended.

6. When there is data service on one of the SIMs, the other SIM receives an SMS

Test number 4.8.5.6
Test item: SMS functions
Test sub-item: when there is data service on one of the SIMs, the other SIM receives an SMS
Purpose: Verify the function of SMS receiving by the other SIM when there is data service on one of the SIMs
Prerequisites: The tested SIMs should meet the requirements of the corresponding SIM combination listed in Table 1.**Error! Reference source not found.** One DUT (UE A). One assistance device (UE B).

Test number 4.8.5.6
Steps: 1. Shut down UE A. Insert two SIMs into two slots of UE A. 2. Boot up UE A. 3. UE A enters dual-SIM dual-standby state. 4. Boot up UE B. 5. Use SIM 1 of UE A to initiate the data service, and keep the activated state. 6. Use UE B to send an SMS to SIM 2 of UE A. 7. Check whether SIM 2 of UE A successfully receives the SMS and whether it can reply to the SMS. 8. Check the data service status. 9. End the data service. 10. Use SIM 2 of UE A to initiate the data service, and keep the activated state. 11. Use UE B to send an SMS to SIM 1 of UE A. 12. Check whether SIM 1 of UE A successfully receives the SMS and whether it can reply to the SMS. 13. Check the data service status. 14. End the data service. 15. Repeat steps 1-14 using other SIM combinations.
Expected results: 1. In dual-SIM mode, when one SIM performs data services, the other SIM shall be able to receive and read the SMS. 2. The unread SMS is clearly indicated on the UI. 3. The received SMS contains the sender's number and indicates the SIM that receives this SMS. The content is correct. 4. The original data service is continued or suspended.

3. Data service functions in dual-SIM mode

1. Initiating the data service when both SIMs are in idle state

Test number 4.8.6.1
Test item: data service functions in dual-SIM mode
Test sub-item: initiating data services when both SIMs are in idle mode
Purpose: verify the function of initiating data services when two SIMs of the LTE multi-mode dual-SIM DUT are in idle mode
Prerequisites: The tested SIMs should meet the requirements of the corresponding SIM combination listed in Table 1.**Error! Reference source not found.** One DUT.

Test number 4.8.6.1
Steps: 1. Shut down the DUT. Insert the two SIMs into the slots of the DUT. 2. Switch on the DUT. 3. Initiate the data service using SIM 1 after the DUT enters dual-SIM standby state. Open a webpage and upload the file. Check whether the data service is normally established. 4. End the data service; 5. Initiate the data service using SIM 2 after the DUT enters dual-SIM standby state. Open a webpage and upload the file. Check whether the data service is normally established (for UE that SIM 2 supports CDMA2000, SIM 2 can choose to support data services). 6. End the data service; 7. Repeat steps 1-14 using other SIM combinations.
Expected results: 1. In dual-SIM state, the user is allowed to initiate data services over SIM 1 or SIM 2. 2. In dual-SIM state, no matter SIM 1 or SIM 2 initiates the data service, the data service shall be normally established and the DUT shall automatically return to dual-SIM state after the data service ends.

2. Initiate data service on one SIM while voice service is going on the other SIM

Test number 4.8.6.2
Test item: data service functions in dual-SIM mode
Sub-item: when there is data service on one of the SIMs, the other SIM initiates data service
Purpose: verify the function of receiving data services when two SIMs of the LTE multi-mode dual-SIM DUT are in idle mode
Prerequisites: The tested SIMs should meet the requirements of the corresponding SIM combination listed in Table 1.**Error! Reference source not found.** One DUT (UE A). One assistance device (UE B).
Steps: 1. Shut down DUT A. Insert the two SIMs into the two slots of DUT A. 2. Boot up UE A A, which then enters dual-standby status. 3. Let SIM 1 access the LTE network (if SIM 1 is in LTE/TD-SCDMA/GSM (GPRS) single-SIM mode, then access the TD-LTE network) and SIM 2 access the

corresponding supported network.

4. Use SIM 2 to call UE B. UE B answers the call and keep it.
5. Use SIM 1 to initiate the data service. Open a webpage and upload the file. Keep the activated state for data service. Check whether the call on SIM 2 is affected and whether the data service performed on SIM 1 is normal.
6. End the call, and end the data service.
7. Repeat steps 4-6 using SIM 1 to call UE B and using SIM 2 to initiate data services. Check whether the call on SIM 1 is affected.
8. Repeat steps 1-14 using other SIM combinations.

Expected results:

1. In dual-SIM status, when one SIM is implementing the voice service, data service should be normally initiated on the other SIM and the original call should not be affected.
2. The TD-LTE data service performed on SIM 1 is normal (except UE type 2 and SIM 1 of LTE.CDMA mode) when SIM 2 is using the voice service.
3. The data service performed on SIM 2 is not required when SIM 1 is using the voice service, but the original call shall not be affected. The following requirements shall be met:

    1. UE type 1 (dual-SIM single-active):

    - SIM 1 is in LTE/TD-SCDMA/GSM (GPRS) single-SIM dual-standby dual-active mode:
        1. When SIM 2 is using the voice service, the other SIM shall be able to use the TD-LTE data service.
        2. When SIM 1 is using the voice service, the data service on the other SIM is not required.
    - SIM 1 is in LTE/WCDMA/GSM (GPRS) single-SIM single-standby single-active mode: When SIM 1 or SIM 2 is using the voice service, the data service on the other SIM is not required.
    - SIM 1 is in LTE/WCDMA single-SIM dual-standby single-active mode: When SIM 1 or SIM 2 is using the voice service, the data service on the other SIM is not required.

    3. UE type 2 (dual-SIM single-active):

    - SIM 1 is in LTE/TD-SCDMA/GSM (GPRS) single-SIM single-standby single-active mode: When SIM 1 or SIM 2 is using the voice service, the data service on the other SIM is not required.
    - SIM 1 is in LTE/WCDMA/GSM (GPRS) single-SIM single-standby single-active mode: When SIM 1 or SIM 2 is using the voice service, the data service on the other SIM is not required.
    - SIM 1 is in LTE/WCDMA single-SIM dual-standby single-active mode: When SIM 1 or SIM 2 is using the voice service, the data service on the other SIM is not required.

4. UE type 3 (dual-SIM dual-active):

- SIM 1 is in LTE/TD-SCDMA/GSM (GPRS) single-SIM dual-standby dual-active mode: When SIM 1 or SIM 2 is using the voice service, the other SIM shall be able to use the data service.
- SIM 1 is in LTE/WCDMA/GSM (GPRS) single-SIM single-standby single-active mode: When SIM 1 or SIM 2 is using the voice service, the other SIM shall be able to use the data service.
- SIM 1 is in LTE/CDMA single-SIM dual-standby dual-active mode.

5. When SIM 2 is using the voice service, the LTE data service on the other SIM is not required.

6. When SIM 1 or SIM 2 is using the voice service, the other SIM shall support the non-LTE data service.

7. UE type 4 (dual-SIM dual-active):

- SIM 1 is in LTE/TD-SCDMA/GSM (GPRS) single-SIM single-standby single-active mode: When SIM 1 or SIM 2 is using the voice service, the other SIM shall be able to use the data service.
- SIM 1 is in LTE/WCDMA/GSM (GPRS) single-SIM single-standby single-active mode: When SIM 1 or SIM 2 is using the voice service, the other SIM shall be able to use the data service.
- SIM 1 is in LTE/CDMA single-SIM dual-standby dual-active mode.

8. When SIM 2 is using the voice service, the LTE data service on the other SIM is not required.

9. When SIM 1 or SIM 2 is using the voice service, the other SIM shall support the non-LTE data service.

4. After the data service ends, the DUT should automatically return to the dual-SIM status.

4. Network selection function test

1. Network selection upon boot-up

The UE shall choose the appropriate standby mode and network on which the UE camps according to the type of inserted SIM, home carrier and preset network selection mode.

The network of SIM 1 and SIM 2 shall conform to the corresponding technical requirements of single-SIM working mode. For details, refer to section 5.2, 5.3, 5.4, 5.5, 5.6 and 5.7.

2. Selection of operator's network in standby mode

Test number 4.8.7.2
Test item: network selection function
Test sub-item: selection of operator's network in standby mode
Purpose: verify the function of selecting the operator's network when the DUT is in standby mode
Prerequisites: The tested SIMs should meet the requirements of the corresponding SIM combination listed in Table 1.**Error! Reference source not found.** One DUT that slots and network mode have not been set.
Steps: 1. Shut down the DUT. Insert the two SIMs into the SIM slots of the DUT. 2. Boot the DUT. 3. Enter the operator network selection UI over the shortcut key or menu. 4. The UE can normally be registered with the network selected by SIM 1. 5. Enter the network selection UI, and select the current carrier's network for SIM 1. The UE shall directly return to standby state instead of searching for the network again. 6. Enter the network selection UI, and select other carrier's network for SIM 1. Network selection fails, and the UE shall provide the user with the network list again. 7. Repeat steps 3-6 for SIM 2. 8. Repeat steps 1-8 using other SIM combinations.
Expected results: 1. The DUT displays a list of the available network modes respectively for the two SIMs, which allows the user to reselect the network. 2. If the user selects the current network for either SIM, the UE shall directly return to standby state and shall not perform network re-selection. 3. When the UE fails to find the network operator selected by a user, it shall provide the network list again so that the user can re-select the network. 4. The UE can choose to support manual network selection in LTE/CDMA or cdma2000 mode.