ETSI TS 186 017-2 V6.1.1 (2018-07)

TECHNICAL SPECIFICATION

**Core Network and Interoperability Testing (INT);
Anonymous Communication Rejection (ACR) and
Communication Barring (CB) using IP Multimedia (IM)
Core Network (CN) subsystem;
Conformance Test Specification (3GPP^{TM} Release 12);
Part 2: Test Suite Structure and Test Purposes (TSS&TP)**

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Core Network and Interoperability Testing (INT).

The present document is part 2 of a multi-part deliverable covering the Anonymous Communication Rejection (ACR) and Communication Barring (CB) simulation services, as identified below:

Part 1: "Protocol Implementation Conformance Statement (PICS)";

Part 2: "Test Suite Structure and Test Purposes (TSS&TP)";

Part 3: "Abstract Test Suite (ATS) and partial Protocol Implementation eXtra Information for Testing (PIXIT) proforma specification".

Modal verbs terminology

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Introduction

The IP Multimedia core network Subsystem (IMS) consists of multiple functional entities and interfaces. The goal of this work is to provide the conformance tests for Anonymous Communication Rejection (ACR) and Communication Barring (CB) using IP Multimedia (IM) Core Network (CN) subsystem that are based on SIP messages. Test purposes defined in the present document have been developed based on the requirements stated in the 3GPP IMS Release 12.

1 Scope

The present document provides the Test Suite Structure and Test Purposes (TSS&TP) specification for the Anonymous Communication Rejection (ACR) and Communication Barring (CB) using IP Multimedia (IM) Core Network (CN) subsystem defined in [1].

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at https://docbox.etsi.org/Reference.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

[1] ETSI TS 124 611: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Anonymous Communication Rejection (ACR) and Communication Barring (CB) using IP Multimedia (IM) Core Network (CN) subsystem; Protocol specification (3GPP TS 24.611 Release 12)".

[2] ETSI TS 186 017-1 (V6.1.1) "Core Network and Interoperability Testing (INT); Anonymous Communication Rejection (ACR) and Communication Barring (CB) using IP Multimedia (IM) Core Network (CN) subsystem; Conformance Test Specification (3GPP™ Release 12); Part 1: Protocol Implementation Conformance Statement (PICS)".

[3] Void.

[4] ETSI TS 124 623: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Extensible Markup Language (XML) Configuration Access Protocol (XCAP) over the Ut interface for Manipulating Supplementary Services (3GPP TS 24.623 Release 12)".

[5] ETSI TS 124 238: "Universal Mobile Telecommunications System (UMTS); LTE; Session Initiation Protocol (SIP) based user configuration; Stage 3 (3GPP TS 24.238 Release 12)".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] IETF RFC 3261: "SIP: Session Initiation Protocol".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ETSI TS 124 611 [1] and the following apply:

escaped character: See IETF RFC 3261 [i.1].

NOTE: This may contain additional information.

3.2 Symbols

For the purposes of the present document, the symbols given in ETSI TS 124 611 [1] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI TS 124 611 [1] and the following apply:

ACR	Anonymous Communication Rejection
AS	Application Server
CB	Communication Barring
CDIV	Communication DIVersion services
CN	Core Network
ICB	Incoming Communication Barring
IM	IP Multimedia
IMS	IP Multimedia Subsystem
IP	Internet Protocol
ISC	IMS Service Control
NNI	Network to Network Interface
OCB	Outgoing Communication Barring
OIP	Originating Identification Presentation
PICS	Protocol Implementation Conformance Statement
SIP	Session Initiation Protocol
SUT	System Under Test
TP	Test Purposes
TSS	Test Suite Structure
UA	User Agent
XCAP	eXtensible Markup Language Configuration Access Protocol
XML	eXtensible Markup Language

4   Test Suite Structure (TSS)

4.0   Table of Test suite Structure

Table 0: Test suite structure

ACR-CB			
	Network	OCB_originating_AS	ACR-CB_N01_xxx
	OCB	ICB_terminating_AS	ACR-CB_N02_xxx
	ICB	ACR_terminating_AS	ACR-CB_N03_xxx
		interaction_OIP	ACR-CB_N04_xxx
		interaction_CONF	ACR-CB_N05_xxx
		interaction_CDIV	ACR-CB_N06_xxx
	User	Destination_UE	ACR-CB_U01_xxx

4.1   Configuration

4.1.0   Introduction

The scope of the present document is to test the signalling and procedural aspects of the stage 3 requirements as described in ETSI TS 124 611 [1]. The stage 3 description describes the requirements for several network entities and also the requirements regarding for terminal devices. Therefore, several interfaces (reference points) are addressed to satisfy the test of the different entities.

Therefore, to test the appropriate entities the configurations below are applicable.

4.1.1   Testing of the AS

The AS entity is responsible for performing and managing the services. The ISC interface is the appropriate access point for testing as indicated in figure 1.
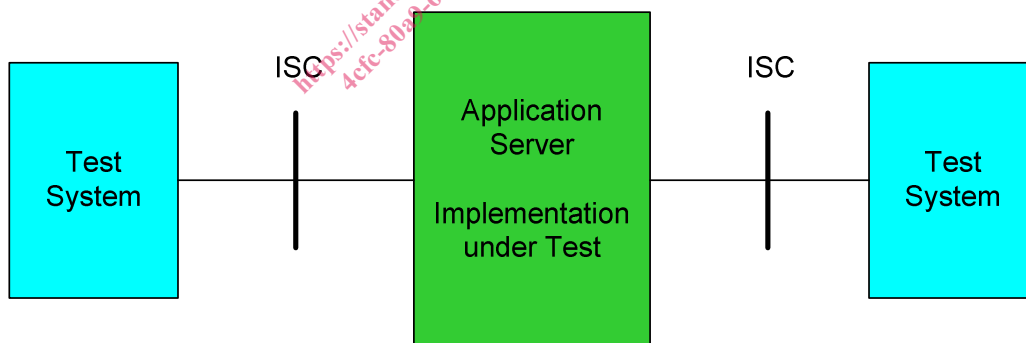
Figure 1: Applicable interface to test AS functionalities

If the ISC interface is not accessible it is also possible to perform the test of the AS using any NNI (Mw, Mg, Mx) interface (see figure 2). In case only the Gm interface is accessible this interface can be used instead for testing, but the verification of all requirements may not be possible.
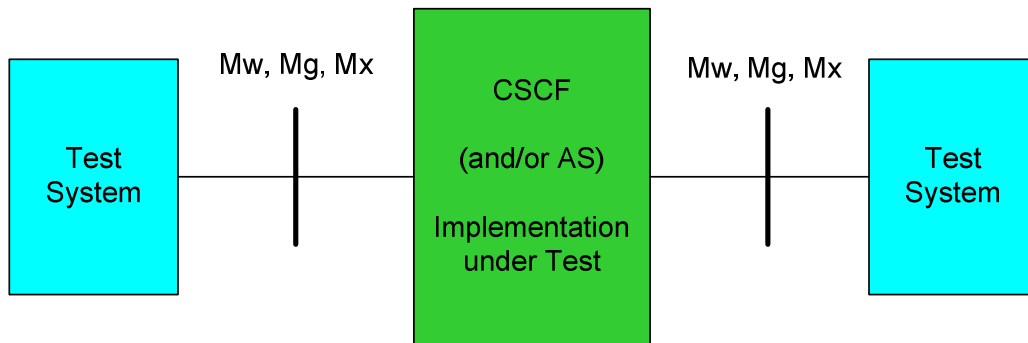
Figure 2: Applicable interfaces for tests using a (generic) NNI interface

4.1.2 Testing of the UE

There are special clauses in the protocol standard describing the procedures that apply at the originating and terminating user equipment. Therefore, the test configuration in figure 3 has been chosen.
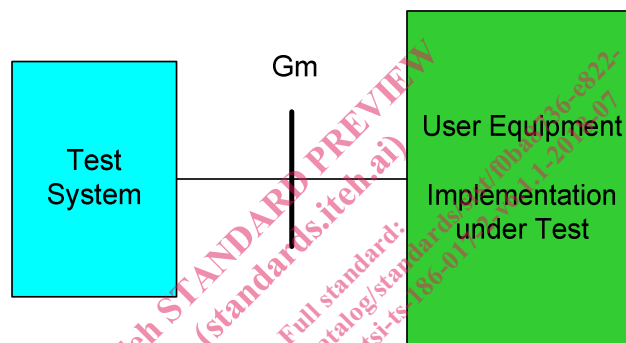

Figure 3: Applicable configuration to test UE functionalities

5 Test Purposes (TP)

5.1 Introduction

5.1.1 TP naming convention

TPs are numbered, starting at 001, within each group. Groups are organized according to the TSS. Additional references are added to identify the actual test suite and whether it applies to the network or the user (see table 1).

Table 1: TP identifier naming convention scheme

Identifier:	**<ss>_<iut><group>_<nnn>**			
<ss>	=	supplementary service:	e.g. "ACR-CB"	
<iut>	=	type of IUT:	U N	User – equipment Network
<group>	=	group	2 digit field representing group reference according to TSS	
<nnn>	=	sequential number	(001-999)	

5.1.2   Test strategy

As the base standard ETSI TS 124 611 [1] contains no explicit requirements for testing, the TPs were generated as a result of an analysis of the base standard and the PICS specification ETSI TS 186 017-1 [2]. The criteria applied include the following:

- whether or not a test case can be built from the TP is not considered.

5.2   TPs for Communication Barring (CB) and Anonymous Communication Rejection (ACR)

5.2.1   Actions for OCB at the originating AS

TSS ACR-CB/Network/OCB_originating_AS	TP ACR-CB_N01_001	CB reference 4.5.2.4.1 4.9.1.4	Selection expression PICS 4.5.1/2 AND PICS 4.7.1/3 AND NOT PICS 4.7.1/4 AND PICS 4.7.1/6
Test purpose *Outgoing communication barring evaluates **'identity'** with one item. Configuration over Ut interface.* Ensure that an outgoing communication is rejected when the evaluation of the called number matches in one of the served user's outgoing communication barring rules (Black list). Ensure that the SUT is sending a 603 (Decline) final response when the communication is rejected. The service configuration takes place over the Ut interface using XCAP.			
XML abstract <outgoing-communication-barring active="true"> <ruleset> <rule id="<any identifier>"> <conditions> <identity> <one id="*[any URI (PIXIT)]*"></one> </identity> </conditions> <actions> <allow>false</allow> </actions> </rule> </ruleset> </outgoing-communication-barring>			
Comments: UA C SUT UA S HTTP Request (activate outgoing communication barring "identity") INVITE → 100 Trying ← 603 Decline ← ACK → HTTP Request (deactivate outgoing communication barring "identity")			

TSS ACR-CB/Network**/**OCB_originating_AS	TP ACR-CB_N01_002	CB reference 4.5.2.4.1 4.9.1.4	Selection expression PICS 4.5.1/2 AND PICS 4.7.1/3 AND PICS 4.7.1/4 AND PICS 4.7.1/6
Test purpose _Outgoing communication barring evaluates '**identity**' with one item. Configuration over Ut interface. An announcement is provided._ Ensure that an outgoing communication is rejected when the evaluation of the called number matches in one of the served user's outgoing communication barring rules (Black list). Ensure that the SUT provides an announcement to the originating user before sending a 603 (Decline) final response when the communication is rejected. The service configuration takes place over the Ut interface using XCAP.			
XML abstract <outgoing-communication-barring active="true"> <ruleset> <rule id="<any identifier>"> <conditions> <identity> **<one id="_[any URI (PIXIT)]_"></one>** </identity> </conditions> <actions> <allow>false</allow> </actions> </rule> </ruleset> </outgoing-communication-barring>			
Comments: **UA C** **SUT** **UA S** HTTP Request (activate outgoing communication barring "identity") INVITE → 183 Session Progress ← **Announcement** 603 Decline ← ACK → HTTP Request (deactivate outgoing communication barring "identity")			

TSS ACR-CB/Network**/**OCB_originating_AS	TP ACR-CB_N01_003	CB reference 4.5.2.4.1 4.3.2/[4] 4.3.3/[4]	Selection expression PICS 4.5.1/2 AND PICS 4.7.1/3 AND NOT PICS 4.7.1/4 AND PICS 4.7.1/7

Test purpose
*Outgoing communication barring evaluates **'identity'** with one item. Configuration using SIP based user configuration.*
Ensure that an outgoing communication is rejected when the evaluation of the called number matches in one of the served user's outgoing communication barring rules (Black list).
Ensure that the SUT is sending a 603 (Decline) final response when the communication is rejected.
The service configuration takes place using SIP based user configuration.

SIP header values:
INVITE 1: Request line sip:<service code>;phone-context=<any domain>;user=dialstring SIP/2.0

Comments:

UA C		SUT	UA S
INVITE 1	→		
200 OK INVITE	←		
ACK	→		
Result announcement activation			
BYE	→		
200 OK BYE	←		
INVITE 2	→		
100 Trying	←		
603 Decline	←		
ACK	→		
INVITE 1	→		
200 OK INVITE	←		
ACK	→		
Result announcement deactivation			
BYE	→		
200 OK BYE	←		

TSS ACR-CB/Network**/**OCB_originating_AS	TP ACR-CB_N01_004	CB reference 4.5.2.4.1 4.3.2/[4] 4.3.3/[4]	Selection expression PICS 4.5.1/2 AND PICS 4.7.1/2 AND PICS 4.7.1/4 AND PICS 4.7.1/7

Test purpose

*Outgoing communication barring evaluates '**identity**' with one item. Configuration using SIP based user configuration. An announcement is provided.*

Ensure that an outgoing communication is rejected when the evaluation of the called number matches in one of the served user's outgoing communication barring rules (Black list).

Ensure that the SUT provides an announcement to the originating user before sending a 603 (Decline) final response when the communication is rejected.

The service configuration takes place using SIP based user configuration.

SIP header values:

INVITE 1: Request line sip:<service code>;phone-context=<any domain>;user=dialstring SIP/2.0

Comments:

UA C		SUT	UA S
INVITE 1	→		
200 OK INVITE	←		
ACK	→		
Result announcement activation			
BYE	→		
200 OK BYE	←		
INVITE 2	→		
183 Session Progress	←		
Announcement			
603 Decline	←		
ACK	→		
INVITE 1	→		
200 OK INVITE	←		
ACK	→		
Result announcement deactivation			
BYE	→		
200 OK BYE	←		

TSS ACR-CB/Network**/**OCB_originating_AS	TP ACR-CB_N01_005	CB reference 4.5.2.4.1 4.9.1.4	Selection expression PICS 4.5.1/2 AND PICS 4.7.1/3 AND NOT PICS 4.7.1/4 AND PICS 4.7.1/6

Test purpose
*Outgoing communication barring evaluates '**identity**' in a list of items. Configuration over Ut interface.*
Ensure that an outgoing communication is rejected when the evaluation of the called number matches not in the list (White list) of the served user's outgoing communication barring rules.
Ensure that the SUT is sending a 603 (Decline) final response when the communication is rejected.
The service configuration takes place over the Ut interface using XCAP.

XML abstract
```
<outgoing-communication-barring active="true">
  <ruleset>
    <rule id="<any identifier>">
        <conditions>
            <identity>
                <many> <except id="[any URI (PIXIT)]"/></many>
            </identity>
        </conditions>
        <actions>
            <allow>false</allow>
        </actions>
    </rule>
  </ruleset>
</outgoing-communication-barring>
```

Comments:

UA C	SUT	UA S
HTTP Request (activate outgoing communication barring "identity")		
INVITE	→	
100 Trying	←	
603 Decline	←	
ACK	→	
HTTP Request (deactivate outgoing communication barring "identity")		