Conformance test introduction

CTTL-Terminal GTE
Zhong Nan
Content

• General
• GCF and PTECRB Certification
• Conformance Test Content and specification
General

- Operator/CARRIER
- INDUSTRY
- GOVERNMENT

GCF
PTCRB
This process is recommended for all manufacturers who wish to have their devices operating within the areas served by registered Operators, as all registered Operator full members require Certification.
• Certification procedure of GCF
A voluntary process by which all products are technically evaluated to meet the minimum requirements for registered Operators' networks.
Certification procedure of PTCRB

- Manufacture
  - Certification Request Submission
    - Required information
  - Selection of Accredited Test Lab
  - Declarations
- Accredited Test Laboratory
  - Execute Test
  - Report
Certification Technical Requirement

Description for the technical requirements for Device Certification.
Intended to advise accredited laboratories and administrations on how to establish terminal equipment conformity with the reference specifications.

NAPRD03  GCF-CC
Certification Technical Requirement

**NAPRD03**  
**GCF-CC**

**Version**
- Format
- Applicability

- UEs submitted for certification are required to complete the execution of all applicable tests approved and published in one of the two most recent versions of NAPRD03 as of the date the mobile is to complete certification.

- **V x.y.z**
  - The first number indicates the main version number
  - The middle number is the major revision number
  - The last number is the minor revision number
## PTCRB/GCF technical requirements

### Test cases

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;A&quot;:</td>
<td>Test fully available and fully validated, testing at an accredited test laboratory required</td>
</tr>
<tr>
<td>&quot;B&quot;:</td>
<td>Testing at an accredited test laboratory with exceptions</td>
</tr>
<tr>
<td>&quot;D&quot;:</td>
<td>Test is downgraded and is not a certification requirement</td>
</tr>
<tr>
<td>&quot;E&quot;</td>
<td>Test case is validated and results are provided to CTIA. Failure of DUT to pass test case will not cause loss of certification.</td>
</tr>
<tr>
<td>&quot;N&quot;</td>
<td>Not applicable</td>
</tr>
<tr>
<td>&quot;P&quot;</td>
<td>New test case not yet validated or a test case that has been downgraded for more than 45 days.</td>
</tr>
</tbody>
</table>
PTCRB/GCF technical requirements

Test Frequency Band

<table>
<thead>
<tr>
<th>Category</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td>- the mobile shall be tested in all required Bands</td>
</tr>
<tr>
<td>Single</td>
<td>- that the applicable test case (e.g. protocol testing) must be tested according to the rules</td>
</tr>
<tr>
<td>I-RAT Single</td>
<td>- shall be tested in a single band combination.</td>
</tr>
<tr>
<td>Multi</td>
<td>- that a band combination is required</td>
</tr>
<tr>
<td>Blank</td>
<td>- the test does not require a bearer</td>
</tr>
<tr>
<td>RAT All</td>
<td>- that the applicable test case must be tested once in each supported RAT and in accordance with the rules</td>
</tr>
</tbody>
</table>
Frequency Band Selection

Begin

Is Test Case Validated for GSM1900?

NO

Does DUT Support GSM1900?

YES

Execute TC in GSM1900 Band

NO

Is Test Case Validated for GSM850?

YES

Execute TC in GSM850 Band

NO

Does DUT Support GSM850?

YES

Execute TC in GSM850 Band

NO

Does DUT Support GSM850?

YES

Execute TC in GSM850 Band

NO

Does DUT Support FDD Band #1?

YES

Execute TC in FDD Band 1

NO

Does DUT Support FDD Band #7?

YES

Execute TC in FDD Band 7

NO

Does DUT Support FDD Band #3?

YES

Execute TC in FDD Band 3

NO

Does DUT Support FDD Band #5?

YES

Execute TC in FDD Band 5

NO

Does DUT Support FDD Band #9?

YES

Execute TC in FDD Band 9

NO

Does DUT Support FDD Band #11?

YES

Execute TC in FDD Band 11

NO

Does DUT Support FDD Band #17?

YES

Execute TC in FDD Band 17

NO

Does DUT Support FDD Band #25?

YES

Execute TC in FDD Band 25

NO
PTCRB/GCF technical requirements

Test Platform

• Accredited labs must use approved test platforms as listed on TC Database
Content

• General
• GCF and PTECRB Certification
• Conformance Test Content and specification
General

- Operator/Carrier
- Industry
- Government

GCF

PTCRB

Conformance Test
OTA
Performance Test
Field Trail

Conformance Test
OTA
RSE
Test Content
PICS and Test Plan

PICS- Protocol Implementation Conformance Statement

• Contents of the UE capability Information Elements

Test Plan

• List of all the test cases need to be reported
Test Content

RF

- transmission and reception
  - Phase error
  - Frequency error
  - Power
  - Channel rejection
  - Blocking

- Radio resource management
  - Cell Re-selection
  - Handover
  - Re-establishment
  - Random Access

<table>
<thead>
<tr>
<th>GSM</th>
<th>WCDMA</th>
<th>LTE</th>
</tr>
</thead>
</table>
| • 3GPP TS 51.010-1  
  • Chapter 12-14, 16, 21,22 | • 3GPP TS34.121-1 | • 3GPP TS36.521-1 – RF  
  • 3GPP TS36.521-3 – RRM |
Test Content

UICC

- Physical characteristic
- Electrical characteristic
-Logical test

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<td>• 3GPP TS 51.010-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Chapter 27</td>
<td>• ETSI TS102 230/102 384</td>
<td></td>
</tr>
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<td></td>
<td>• ETSI TS102 230/102 384</td>
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</table>
Test Content

PROTOCOL

- Idle mode operations
- Layer2 signaling Procedure
- RRC connection management procedures
- EPS mobility management
- Circuit Switched Call Control (CC)
- EPS session management
- SMS
- E-call, ETWS

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</table>
Test Content

SIM

- Subscription related tests (IMSI/ TMSI, Access Control - identification)
- Security (PIN, FDN, AoC)
- PLMN
- Subscription independent tests (phonebook, SMS, MMS)

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| • 3GPP TS 51.010-1  
  • Chapter 27 | • 3GPP TS 31.121  
  USIM | • 3GPP TS 31.121 |
Test Content

STK/ USIM APPLICATION

- Initialization
- Terminal profile
- SIM command (display test, get inkey, get input)
- Data download
- Call control/ SMS control

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<tr>
<td></td>
<td>3GPP TS 51.010-4 - STK</td>
<td>3GPP TS 31.124 – USIM APPLICATION</td>
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</tr>
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</table>
## Test Content

**AE**
- MMS
- VT
- NFC
- DM

<table>
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<tr>
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<th></th>
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<tbody>
<tr>
<td>• OMA-ETS-MMS-1_3</td>
<td>• OMA-ETS-DM-V1_2</td>
</tr>
<tr>
<td>• PoC</td>
<td>• OMA-ETS-SUPL-V1_0/V2_0</td>
</tr>
<tr>
<td>• IMTC-3G 324M VT</td>
<td>• ETSI TS 102 694/102 695 SWP/HCI</td>
</tr>
</tbody>
</table>
Questions:
1. Which part of all the conformance test content have the longest test duration?
2. What rules does the test lab follow to decide the test frequency and test cases?
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THANK YOU!