DTT Receiver Specifications Development and Conformance Processes

_Perspectives from Europe_

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About us

Digital TV Group and DTG Testing provides world-leading specification, test and conformance services on behalf of the digital TV industry.

- Industry association for digital television in the UK, established in 1995
- Over 130 members: broadcasters, platforms, manufacturers, technology providers, government departments, regulators, not-for-profit organisations and consumer groups
- Publishes and maintains the D-Book: the technical specification for digital terrestrial television
- DTG Testing is entirely independent and not for profit
- The only ISO/IEC 17025 accredited TV testing laboratory in the UK
- Provides complete conformance solutions for Freeview HD, Freesat HD and at800 (LTE)
- International testing services: FreeviewNZ, Freeview Australia and Hong Kong
- Houses the UK’s largest collection of DTT and DSAT receivers
- Runs the UK’s largest GTEM cell for 4G testing
The DTG’s international focus

We work regularly with European and International Standards organisations including ISO, ETSI, HbbTV, MPEG and the Open IPTV Forum.

D-book is copied under license for the ISO/IEC 62216 E-book and is referenced in a number of platform specifications around the world:

- Australia, New Zealand, Hong Kong, South Africa, Ireland

DTG provides consultancy on platform specification in countries such as Malaysia and Serbia

DTG Testing has developed conformance test suites for a number of countries:

- New Zealand, Australia, Hong Kong, South Africa, Ireland

And provides conformance services for UK and New Zealand

In addition we are able to perform conformance testing services for any country, such as the new IDA/MDA specification in Singapore
The variety of our technical work reflects that of our members including...

<table>
<thead>
<tr>
<th>Industry Knowledge Base</th>
<th>Ultra-HD SO5a</th>
<th>Spectrum SO5c</th>
<th>Mobile Devices SO5b</th>
<th>DTT Platform SO1</th>
<th>Connected / IP SO5d</th>
<th>Radio</th>
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|---------------------------|------------------------|------------------------|------------------------|------------------|------------------|------------------------|

| Accessibility | e-Accessibility. | U-Book maintenance. | Access services over IP. Control APIs. | Radio |

| International Harmonisation | FAME, EBU, SMPTE, DVB, Digital Europe. | WRC 2015, DigiTAG. | 3GPP | DVB | HbbTV, OIPF, W3C, DASH-IF. | World DMB. |
DTG manages the technical specification for Freeview and Freeview HD platforms (the D-book)

**MPEG**
- International standardisation for adaptive streaming
- Common encryption
- Multiple DRM support
- Adaptive Streaming (MP4)

**W3C**
- HTML 5
- CSS3

**DTG Digital TV Group**
- D-Book 7 Part A
- D-Book 7 Part B (CTV)

**DVB® Digital Video Broadcasting**
- ETSI standard for Hybrid TV launching in France and Germany

**ISO IEC**

**ITU**

**ETSI**
- World Class Standards

**Open IPTV Forum (OIPF)**
- International standardisation for IPTV

**Browser profile**
- Interactive application handling

**Metadata**
- Basic IP Streaming
Examples of UK receivers

All HD receivers have return path capability
A typical conformance test process in stages

TECHNICAL SPECIFICATION:
D-Book © DTG
Industry Working Groups Narrow International Standards for Deployment in the UK
Recommended by: DTG Technical Council
Ratified by: DTG Council
Industry Authored

TEST SPECIFICATION:
written by DTG © DTG
Industry approved

Peer review
DTG industry Working Groups
Industry reviewed

TEST SUITE
Authored by DTG Testing
IPR DTG Testing

Launch Partner Feedback / Reference Receiver
Industry Reviewed

CONFORMANCE TEST REGIME
New mandatory tests are introduced to the existing
Results for new mandatory tests are for information only

Industry feedback in to the development through Squish List
Industry Reviewed

TESTING
New mandatory tests become a formal part of the Conformance Test Regime
Devices under the test must pass

Test Suite defects raised via Squish List

6 months  6 months
The conformance test process underpins the issuing of TMLs

How to obtain the Freeview HD and Freeview+HD logos

1. **Specification**
   - Pre-compliance testing with DTG Test Suites

2. **DTG Testing**
   - DTG run conformance test and produce test report

3. **Freeview**
   - Freeview Platform Management Committee considers concessions if requested

4. **DTG Approved Test House**
   - Manufacturer provides model and chassis information to DTG Zoo
   - Test House uses DTG Test Suites and produces test report
A degree of flexibility is required, and so there exists a process to agree exemptions and concessions

Logo applications are made on a representative chassis. Manufacturers then provide a schedule of related models which are covered by the same licence.

During TML application the manufacturer can apply for concessions (short term) and exemptions (for the lifetime of the chassis). These are agreed in consultation with technical experts.

Concession will normally last for 3 months and proof of update in the field will be required.

Exemptions will normally require a change in the platform specification to ensure consistency for all manufacturers.
Manufacturer self-certification is not recommended because of the complexity of conformance and the risk to the platform.

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<th>Models (Names Removed)</th>
<th>AV</th>
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<th>SUBT</th>
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17 Models Tested

Passed
Failed
Not supported
Not tested

BIS Compliance Audit 2008
This is further supported by evidence that 25% of chassis need 2+ retests to achieve conformance.

66% of SD and 100% of HD devices fail first time.

Data from Jan 2012 – Dec 2012
The cost of brand damage and the associated customer support impact can’t be underestimated

- Damage to brand reputation: platform and manufacturer
- Examples from the UK:
  - Split NIT
  - 2k/8k
  - Other DSO Malfunctions
Building a representative receiver collection (Zoo) proved invaluable for multiple projects including...

• Typical uses:
  • to support digital switchover scenario testing.
  • By public service broadcasters such as the BBC, ITV, CH 4 and
  • by developers of interactive applications for pre-transmission testing.
• Flexible control of signal content and quality
• Provides traceability back to conformance test results
• Supplemented by market sales data, the impact on the receiver population of a problem can be estimated.
• We house the industry’s largest collection of DTT and DSAT receivers, which represents 95% of all free to air devices in the UK market (currently over 370 devices).
• Adding new devices is a requirement of the Freeview TML
Creating an update path for all receivers – DTG Engineering Channel

- Ensures there is an update path for all receivers in the market to provide emergency fixes for technical and platform requirements changes.
- DTG Testing operates the Engineering Channel service for the Freeview and Freesat platforms, providing pre-transmission validation and testing.
- Combination of data and object carousel used in the UK, based on DVB-SSU simple profile.
- We offer a complete facility to manufacturers:
  - Validation of device image files.
  - Creation of carousel files from binary images, creating custom transport streams which carry the over-air-download.
  - Play out transport stream on both target and non-target receivers to check robustness.
In summary...

Digital TV Group and DTG Testing are experts in creating and managing specification, conformance and logo licensing regimes. We are happy to help ECOWAS achieve a world-class DTT platform.

- Conformance is vital to provide a good quality platform for your customers
- It needs to be linked to the platform requirements
- It should be independent of manufacturers and service providers
- Maintaining a zoo allows you to model changes in the platform and make changes before it’s too late
- Always ensure there is a way to update receivers in the field
  - The platform will not remain static, make sure you have the ability to handle change
Any Questions?

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