

Case Studies

Media Delivery Solutions

South Africa: DVB-T2 Conformance Lab

Preparations for digital switchover are well underway in South Africa with plans for an official launch of its digital terrestrial television (DTT) platform in 2015.

However, to guarantee that only reliable and conformant receivers enter the market, the Department of Communications (DOC) appointed the South African Bureau (SABS) to set up a receiver conformance facility at their labs in Pretoria. Following a competitive tender, Digital TV Labs was selected as the prime contractor to provide a complete DVB-T2 conformance receiver solution. This included setting up a DVB-T2 receiver testing facility, building test suites and providing test tools to SABS to ensure that DTT receivers entering the market comply with the South African receiver specification, SANS862.

Digital TV Labs advised the DOC and the SABS with the planning and execution of a successful conformance regime. To ensure success, the advisory services covered a full range of topics including; communication with manufacturers; logistic planning; use of logos; trademark agreements; white lists, as well as commercial advice.



"We understand the extensive challenges faced by broadcast regulators and we can help."

The customised version of Digital TV Labs' Evora iSuite served as the cornerstone of the receiver testing regime. Evora is a unique solution consisting of a vast relational database of test cases and custom MPEG test streams packaged into a user-friendly test framework and test manager. Following analysis, we were quickly able to develop a test suite profile covering the SANS862 specification based on our huge range of existing DVB test cases and streams. Additionally, we wrote the test procedures for RF testing, over-air-download and interactive MHEG-5 services including assisting with procurement and commissioning of specialised test equipment and test suites.



Cyprus

Eurofins Digital Testing has been working with the Cyprus regulator OCECPR, providing a range of professional services covering strategy and implementation in advance of their DTT roll out. We liaised with local broadcasters to help with the selection of appropriate technologies and authoring of the receiver specification. Being a small country, Cyprus has to take into account the potential influx of receivers from adjacent countries into the retail market. They needed to ensure consumers were able to purchase the correct receivers with minimum interoperability issues. We were able to assist OCECPR with all aspects of supply chain handling, including selecting an appropriate receiver conformance strategy, building test materials and creating long-lasting processes.

Eurofins Digital Testing was able to provide detailed, in-depth knowledge of receiver

specifications, imported from adjacent markets based on years of experience with DVB specifications. We worked closely with local stakeholders including public and private broadcasters to understand their specific network requirements and deployment characteristics. We provided a complete test strategy, which included:

- Evaluation of conformance regime options for the Cyprus FTA market
- Analysis of regulatory requirements and receiver supply chain
- Recommendations on conformance lab operations
- Setup of the conformance lab
- Personnel skills/qualifications needed
- Hardware and software requirements
- Test materials requirements
- Test results guidelines
- On-going support and training requirements



Lattelecom

Lattelecom is Latvia's largest telecommunications and TV operator, providing Pay-TV services via DVB-T and IPTV networks. Lattelecom approached Eurofins Digital Testing for assistance in procuring, testing and certifying digital TV receivers so as to ensure a good level of customer satisfaction and therefore minimise support costs.

Eurofins Digital Testing organised a mini-workshop for Lattelecom and jointly developed a structure and plan for specifying and certifying receivers. Working closely with their technical team, we authored a bespoke receiver specification that built upon existing European specifications and reflected Latvia's specific network requirements. The next step was to author a test specification that reflected the relatively small size of the market and the consequential costs for receiver manufacturers, whilst still providing sufficient test coverage for a good quality receiver.

Eurofins Digital Testing has many years experience of global receiver specifications and an in-depth understanding of the supply chain's adoption and implementation. The end result was an adaptation of our unique flagship product, Evora iSuite, which was fully customised to Lattelecom's requirements.

French HD Forum: HbbTV and DRM Test Suite

The French HD Forum is driving the introduction of hybrid services on the DVB-T system known as TNT2.0. Using the HbbTV standard to deliver IP-based OTT services, the TNT2.0 platform was rolled out in 2013.

The HD Forum approached Eurofins Digital Testing as the experts in HbbTV and DVB-T test suites, as well as services to provide test materials, test harnesses and test services for receiver manufacturers. Working in close partnership, Eurofins Digital Testing helped the HD Forum author test specifications for the new profile, which includes new features such as DASH adaptive streaming. We authored new test cases and upgraded the Ligada iSuite HbbTV Test Harness to provide extensive test coverage of the TNT2.0 specification, and also provided DRM test cases and test servers for Marlin and Playready. With the help of Eurofins Digital Testing, receiver manufacturers are now able to utilise the new TNT2.0 test suite and run automated HbbTV, DVB-T and DRM tests on the Ligada iSuite test harness, allowing them to apply for the new TNT2.0 logo certification scheme.



TDT Hibrida: Abertis HbbTV Test Lab

Abertis is the technical platform operator for the new Spanish HbbTV based hybrid platform called TDT Hibrida running over the DTT DVB network. Abertis needed a test suite and test tool to operate a HbbTV receiver test facility in Barcelona, to ensure compliance to the requirements and specifications set out by Foro Técnico de la Televisión.

Eurofins Digital Testing' experienced HbbTV development team wrote a test suite profile comprising of test cases covering; device certification validation; supported audio codecs including 5.1 surround sound; aspect ratio conformance, and; video seeking. The new TDT Hibrida test suite is implemented within Eurofins Digital Testing's Ligada iSuite test harness that supports a wide range of HbbTV test cases.

Abertis Telecom, is using the Ligada iSuite test harness and test suite to ensure uniform HbbTV receiver conformance for the new Spanish TDT Hibrida platform. Ligada iSuite is a complete HbbTV test/certification solution, providing manufacturers and broadcast platform operators with a universal tool for all HbbTV testing and conformance requirements. Abertis Telecom will use the Ligada test tool along with the Ligada test suite (including DRM and DASH adaptive bitrate video technology), as a key part in the deployment of a connected TV standard, with the aim of ensuring compliance with TDT Hibrida HbbTV-based specifications.

In addition to Ligada iSuite, we are currently providing TDT Hibrida test services to receiver manufacturers who wish to comply with the specification. Manufacturers seeking certification for the TDT Hibrida platform will have to illustrate conformance by using the TDT Hibrida test suite, as well as components of the French TNT2.0 and HbbTV1.52.1 test suites, all available within the Ligada iSuite.



Freeview Australia: Test Lab

Freeview Australia is a free to air service, which provides an advanced EPG service for a complex and highly regionalised high definition DVB-T terrestrial service. The Freeview platform uses HbbTV technology to provide interactive services and in particular the platform EPG. Australia has very different PSI/SI signalling requirements to most of Europe and uses both MPEG-2 HD transmissions and MPEG-4 services. The platform's key differentiator is the use of the EPG to provide reliable PVR recordings.



Freeview Australia recognised the need for device testing to ensure that the specifically the EPG worked correctly along with the associated PVR features along with the general core receiver functionality.

Eurofins Digital Testing was appointed as the approved test house for certifying receivers for the award of the official logo. We authored a receiver test specification and produced a custom version of our flagship product, Evora iSuite. This work included over-air-download, RF and PVR tests. After running a series of pilot tests on lead manufacturer receivers to optimise the test processes and test materials, we then provided a complete certification, hosting and debug service from our Hong Kong facilities.

Open IPTV Forum (OIPF):



The Open IPTV Forum (OIPF) commissioned Eurofins Digital Testing to develop a test suite and associated test harness to enable the certification of OIPF conformant IPTV, OTT and hybrid devices. As a result, we leveraged our extensive experience and products for HbbTV and applied our world-class test tool engineering services develop a comprehensive test solution on time. HbbTV is widely adopted by broadcasters across Europe, and based on the specifications created by the Open IPTV Forum.

OIPF enables and accelerates the creation of a mass market for IPTV by defining and publishing free-of-charge standards-based specifications for the end-to-end IPTV services of the future. This is both for "open" (OTT) services and "managed" IPTV systems, with the tests commissioned from Eurofins Digital Testing being designed for both.

OIPF has since merged with the HbbTV Association and the OIPF tests are available as part of the official HbbTV test suite.



CI+: Certification Regime

The CI+ standard is an enhanced security system that allows operators and broadcasters to secure content on digital TV receivers via the Common Interface (CI) and Conditional Access Module (CAM). Its key benefit is enabling Pay-TV operators to directly deliver high value content such as HD onto retail receivers in a secure environment. The CI+ standard is adopted and being developed by the DVB organisation, but the trust authority responsible for ensuring the provision of certificates and ensuring devices are secure through a certification program is run by the CI+ Plus LLP - a consortium including Samsung, Panasonic, Sony, SmarDTV, SMIT, Neotion and TPVision.

The Challenge - The CI+ LLP required the provision of a test centre to execute compliance testing on CI+ receivers and CI+ CAMS in a very quick timescale. In addition, the consortium required a test tool to be made available to manufacturers and other parts of the CE supply chain, enabling efficient development of CI+ compliant platforms.

The test centre needed to be able to handle the variable demand characteristics of the annual cyclical nature of the TV industry, so that the waiting time to use the test centre was strictly controlled in a Service Level Agreement (SLA). The value of the content secured by the CI+ system and the potential damages afforded if security was compromised is significant, so the quality of the security certification service was paramount.

The Solution - Eurofins Digital Testing was selected by the CI+ LLP after submitting a competitive tender. We worked closely with the CI+ LLP to develop the Approved Test Process (ATP) from the CI+ Test Requirements and subsequently developed the first release of the test cases and test regime. Working alongside hardware partners, we then developed a CI+ CAM Test Tool and CI+ Host Test Tool as the basis of the regime.

Eurofins Digital Testing has tested 100's of iDTVs and set-top-boxes to date and several million CI+ receivers have now been shipped. We provide a unique competence as both a highly capable developer of test tools and the provider of a CE device testing service. Both our labs in the UK and Hong Kong were commissioned to provide CI+ certification services, thereby allowing manufacturers to choose the most convenient and low-cost location. The dual location also allows us to maximise flexibility to minimise lab waiting time and enable the optimum timing for manufacturers. Additionally, comprehensive support services are provided in our hosting facilities which allow manufacturers to recreate, understand and fix failures in a secure and supported environment. This reduces the number of re-tests required and minimises costs as well as time to market.

In 2011 Eurofins Digital Testing embarked on a major new development program to support the new 1.3 version of the standard. The new standard was a major upgrade and required over 3 years (man hours) of engineering to develop a new set of test tools and upgrade the test regime. Despite the tight timescales, a CI+ 1.3 Test Lab was successfully opened in time for the August 2012 deadline.

Throughout the provision of the CI+ Test Regime, Eurofins Digital Testing has worked very closely with the CI+ LLP Technical Committee to develop enhancements and ensure that any issues in the Test Tool and ATP are addressed quickly and rectified.



YouView: UK DTT Hybrid Platform Backed By BBC, ITV, C4, Channel 5, Arqiva, BT & TalkTalk

On demand TV service YouView, has over 70 live free-to-air digital TV and radio channels. It seamlessly combines seven day catch-up on BBC iPlayer, ITV Player, 4oD and Demand 5 with a library of on demand television programmes, films and radio. YouView also has record, pause and rewind TV functionality as well as a simple search feature.

Eurofins Digital Testing was involved in a project across a two year period, to deliver key testing infrastructure and services for YouView. Eurofins Digital Testing built an automated test tool and test suite used by manufacturers and YouView to validate conformance of the set-top-box software.

The automated test suite consisted of over 1200 Python tests that validated the system API between the YouView authored UI software and the manufacturer authored set-top-box middleware. This allowed YouView to test the device manufacturer's software and check it was conformant with the YouView technical specifications, prior to integrating their own higher level software. The test suite was delivered with an Automated Test Environment (ATE) that allowed the tests to be executed and reported on a nightly basis. A test management system was used which allowed test cases to be tracked and managed efficiently. The ability to regularly and cost effectively execute tests on the manufacturer software was critical to ensuring the success of a project that had many development cycles and multiple manufacturers.

Eurofins Digital Testing additionally offered testing services to YouView's leading device manufacturers, helping them to execute the test suite, interpret the results and run DTG free-to-air HD tests.

Marlin Trust Management Organisation (MTMO)

From March 2013 to January 2014, Eurofins Digital Testing created a security test tool for the Marlin Trust Management Organisation (MTMO). As part of this work, Eurofins Digital Testing was contracted to deliver both the Python and C source code for the tool itself and a comprehensive test suite for the tool to verify cryptographic instances. This test suite included unit level, module/integration level and end-to-end system tests, all of which were fully automated.

The unit tests were written using nose, which is an extension of the PyUnit unit test framework built into the Python programming language. These tests were incorporated into a continuous integration system, Jenkins, allowing all the tests to be run automatically when the source code was changed and on a nightly basis.



Freeview New Zealand

In July 2015, Freeview New Zealand appointed Eurofins Digital Testing to provide a manufacturer conformance service utilising the world's leading HbbTV test harness – Ligada iSuite for HbbTV.

FreeviewPlus enhances the successful MyFreeview and FreeviewHD DVB-T services by adding on-demand channels, 8-days forward/8-days catch up TV guide and comprehensive search facilities.

Eurofins Digital Testing's Ligada iSuite for HbbTV is arguably the world's most widely used HbbTV test product, providing extended coverage for a number of national operator profiles. It also now has additional test cases to support the FreeviewPlus requirements. Supporting MPEG-DASH adaptive streaming, Digital Rights Management (DRM) and enhanced automation capability to minimise test times, Ligada iSuite for HbbTV has full coverage of HbbTV v1.1, v1.5 and the HbbTV2.0 features of the UK FreeviewPlay profile.

Due to the versatility of the Ligada iSuite test harness, Eurofins Digital Testing were able to add extra test cases to meet Freeview New Zealand's requirements quickly and efficiently. This new test service augments Eurofin's existing Freeview UK and Freeview Australia conformance testing offering – providing a one-stop shop for manufacturers in the future.



About Eurofins Digital Testing

Eurofins Digital Testing is the world's leading end-to-end Quality Assurance (QA) service provider for Digital TV Operators and device testing specialists, operating globally with test lab facilities in the UK, Belgium and Hong Kong. We provide specialised on-site test resources, testing tools and services to validate digital media delivery systems and device conformance for multiple standards and operators across the world. Eurofins Digital Testing was formed from the merger of Digital TV Labs and Testronic Labs Belgium and is part of the Eurofins Group. Eurofins has a network of more than 200 laboratories in 36 countries and has over 17,000 employees worldwide. Eurofins Digital Testing delivers complete testing solutions to manufacturers, broadcasters, operators and related media and device supply chains, covering terrestrial, satellite, cable, OTT and IPTV delivery.

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