

Tools for Television

Recording, Playout, Monitoring



ECP ELECTRONIC COUCH POTATO

Post-STB Audio/Video Probe

- ✓ Quality of Experience monitoring from the end-users' perspective
- ✓ Detect freeze frame, blackout, moving image, audio tone, and audio silence
- ✓ Image comparison matches against template image
- ✓ Test only against portion of image using user-defined screen sections
- ✓ Set Top Box control via IR transmitter
- ✓ Automated Test Robot: user-programmable test scripting
- ✓ STB power cycle and reboot

The Electronic Couch Potato™

The ECP is a “programmable test robot” which drives a Set Top Box using an attached IR transmitter and analyzes output audio and video content. Built on a flexible scripting language, the ECP is a flexible and future-proof platform for verifying decoded baseband video and audio from the STB.

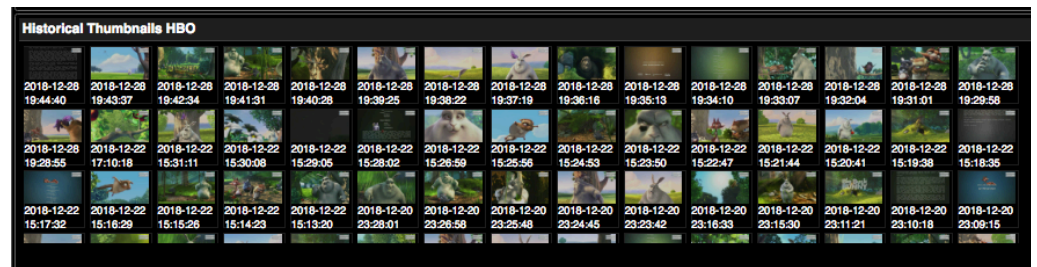
The ability to task different ECPs for well defined, customized, and repeatable operation within the network is a key advantage in today's complex and rapidly changing environment.

Without the ECP, operators have no reliable way of knowing “what the picture looks like” at a remote site without actually dispatching personnel to the site.

Thumbnail Display

As the ECP scans each channel it takes a static, high resolution image capture of the channel being scanned. These image captures are displayed both as a matrix by channel as well as zoomed-in “historical” thumbnails for detailed inspection.

Since the ECP uses any standards-compliant web browser for its GUI, just drag-and-drop any thumbnail image to your desktop for inclusion in trouble reports, etc.



Test Configuration and Alarm Penalty Box

Test items to execute are individually specified for each channel. For example, you can check test for freeze frame on channels that are supposed to be on the air and check for motion on channels that are, in fact, supposed to be off the air.

Channels “in error” are kept front and center in the alarm penalty box until they are cleared.

Test durations and target screen sections can also be uniquely configured for each channel.

Penalty Box		Clear
2018-12-25 21:38:13	Ch 0 Freeze Frame	Ack
2018-12-25 21:38:15	Ch 0 Blank Screen	Ack
2018-12-25 21:38:17	Ch 0 No Audio	Ack
2018-12-25 21:38:19	Ch 0 No Tone	Ack
2018-12-25 21:38:21	Ch 0 Motion Present	Ack
2018-12-25 21:38:23	Ch 0	Ack

Test Assignment										
No	Name	Freeze Frame	Blackout	Audio Silence	Audio Tone	Motion Present	Image Compare	Color Compare	Eas Test	
1	CNN	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 44s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 25s
2	HBO	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 25s
3	ESPN	<input checked="" type="checkbox"/> 44s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 3s	<input checked="" type="checkbox"/> 25s



Alarm History Log

During each channel scan interval, activities, test status, and alarms are recorded in a central log.

Additionally, user-defined messages can be inserted in the log via the test script to record notable events during execution.

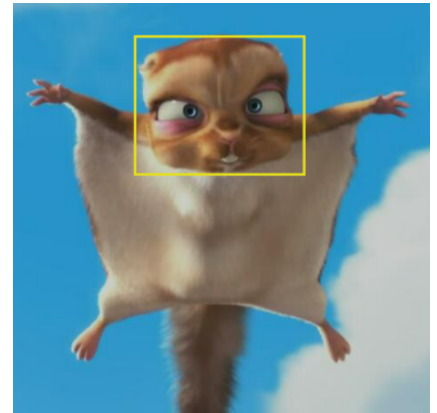
Event Log	
2018-12-25 21:39:27	Test Stop
2018-12-25 21:39:26	Eas Two Tone
2018-12-25 21:39:24	Color Image Compare
2018-12-25 21:39:22	Image Compare
2018-12-25 21:39:20	Motion Present
2018-12-25 21:39:18	No Tone

Screen Section Editor

While most applications will check for video problems on the entire screen area, video tests such as freeze frame and blackout can also be constrained to specific sub-sections of the total screen area.

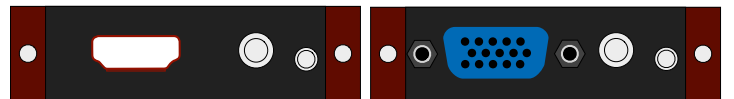
For example, the ECP can be configured to check for a freeze frame on only the stock ticker of a business channel.

Multiple screen sections can be assigned to each channel.



Extensive Interface Support

ECP is available in several different interface configurations, including HDMI, VGA, analog composite, and DVI digital.



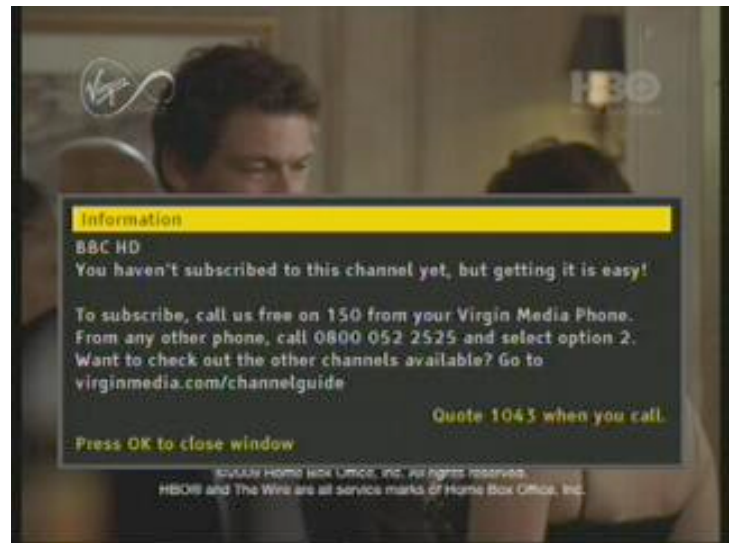
Channel Audit

Continued pressure towards more flexible and discrete channel bundling and *à la carte* offerings makes it increasingly difficult for multi-channel operators to prove to content owners that the correct channels appear in the correct tiers. Additionally, tariff regulations in many countries provide potential penalties for operators offering (and charging for) the wrong channels within a package.

The ECP can eliminate the time consuming and error prone manual scanning by human operators and, instead, provide automatic validation of channel line ups.

In this scenario, an ECP assigned to validate a particular lineup continuously scans through all channels and reports any channels that are there but not supposed to be, as well as channels that are not there but are supposed to be.

Automating this important task frees operations personnel to focus on more pressing responsibilities.



STB Power Control

Complete power control of the STB is possible remotely. The ECP supports both "soft reboot" via IR command and "hard reboot" via an external relay which power cycles the STB.

Both the soft and hard reboot feature can be manually initiated via the user interface or automatically under program control.

Emergency Alert System (EAS) Testing

In addition to checking for silence and tone, the ECP can also identify the unique tone sequence used in the United States to trigger the national Emergency Alert System.

Automated Test Scripts

ECP provides a powerful scripting environment to customize test execution and behavior. TCL (Tool Control Language) is commonly used worldwide as a test language for automation of QA test and verification in telecom and IT labs. Test scripts can perform a wide variety of functions: from sending arbitrary IR commands, to making timing measurements, to providing customized user notifications – the applications of TCL are far reaching and powerful.

```

File: parallelTestScript.tcl      Description: Parallel Test Script
#####
# parallelTestScript.tcl
# - executes A/V tests in parallel.
# - time for one channel equal to longest duration of assigned tests
#####

##### Custom Message Mapping #####
# Currently the mapping is set to null ("") to display the default message
# in the GUI. That is by default a Freeze frame event is displayed as "FREEZE FRAME".
#
# AV_FREEZE_FRAME      "" // FREEZE FRAME event.
# AV_BLANK_SCREEN     "" // BLACKOUT event.
# AV_CHANNEL_ZAP      "" // CHANNEL_ZAP event.
# AV_NO_AUDIO         "" // AUDIO SILENCE event.
# AV_NO_TONE          "" // AUDIO TONE event.
# AV_MOTION_PRESENT   "" // MOTION PRESENT event
#
# If the user wants to display Freeze frame event as "DETECTED FREEZE" instead of
# "FREEZE FRAME" change the mapping in custom_msg_map array to "DETECTED FREEZE"
# instead of null ("") as shown below,

```

Of course, there is a library of existing test scripts for ready, out of the box deployment. Source code for all scripts is provided, so you can customize the behavior to suit your specific requirements.

Additionally, Torque professional services is standing by to help: either to assist you in writing your own scripts or developing them on your behalf.

Flexible IR Command Sequences

More than simple numeric codes to signal channel changes, complex command sequences can be created with a simple on-screen GUI. For example, special button sequences can be defined to access multimedia content, VOD, or even “secret” diagnostic modes in the STB itself.



Test Specifications	
Input Interfaces	<ul style="list-style-type: none"> HDMI VGA DVI Digital Composite
Audio input	<ul style="list-style-type: none"> 3.5mm stereo HDMI embedded
Video Tests	<ul style="list-style-type: none"> Freeze Frame Black/blue screen Motion Image Comparison
Audio Tests	<ul style="list-style-type: none"> Silence Tone
UI	HTML5 via standards-compliant web browser

Platform Specifications	
CPU	Intel® Atom
RAM	4 GB
OS	Enterprise Linux
UI	HTML5 via standards-compliant web browser
Management Interface	10/100/1000 RJ-45 Ethernet
Alarm Outputs	Four Relay Contacts
Other Interfaces	<ul style="list-style-type: none"> Full HD HDMI Video Output Dual GigE Ethernet USB 2.0

Physical Specifications	
Size	185 x 115 x 35 mm
Weight	800 g
Power	12V DC. 88 to 250V AC with provided external power supply.

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Compliance Recording

QoS/QoE Monitoring

Disaster Recovery Playout