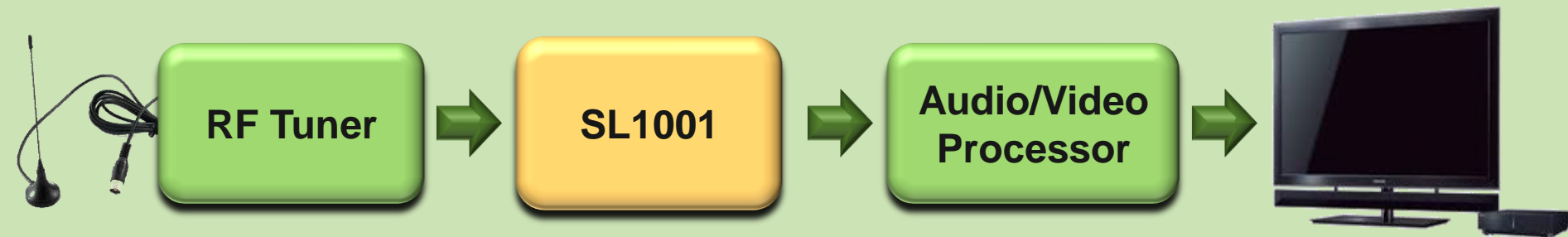


# Universal Demodulator Validation: In partnership with Saankhya Labs





# Validating a DVB Receiver - Challenges

- Involves setting of large number of stimuli
- Manual programming of signal generators is error prone
- Effort/Time consuming
- Report generation
- Quality feedback to the development teams



# Introduction to VAT (Validation Automation Tool)

- Validation tool for tuner/demodulator for different transmission standards
- Web based client interface for test automation and logging

Test case capture - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost/TURBOVAL/processStdSelection.php

Test case capture (Untitled)

Home VAT Help

Choose a file to upload:  Browse...

Upload File Upload Tag Upload Workbook

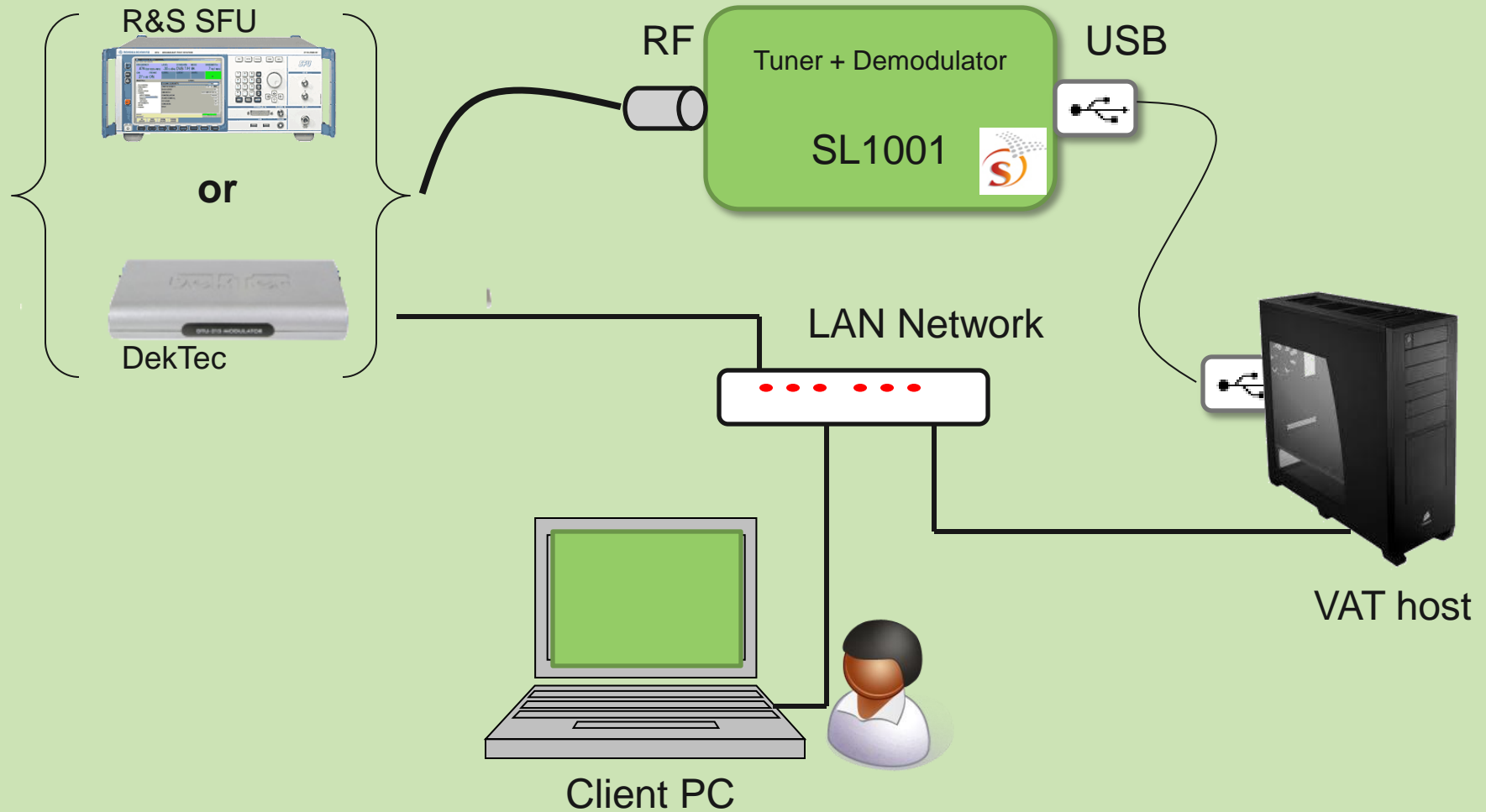
SFU IP address: 192.168.10.32 RefAGC(mv): 80 SFU Delay(h:m:s): 00:01:00 TURBOVAL Delay(secs): 65 Gain: 0

Port: 5025 Num ReRuns: 1

Select view Export Generate Tests Run Tests Generate Report MultiTests

Exe	Rst	Grp Rst #	DVBT #	Mode	Code Rate	Guard Interval	Hierarchy	Modulation	Channel BW	Frequency (MHz)	Offset (MHz)	Level (dBm)	Spectrum	AWGN (dB)	Phase Noise (dBc/Hz)	Frame Duration (ms)	Pulse per-Burst	C/I (dB)	Pa
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1	2K	1/2	1/4	Non-hier	QPSK	6MHz				Normal						
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2	2K	1/2	1/4	Non-hier	QPSK	6MHz				Normal						
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3	2K	1/2	1/4	Non-hier	QPSK	6MHz				Normal						
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	4	2K	1/2	1/4	Non-hier	QPSK	6MHz				Normal						
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5	2K	1/2	1/4	Non-hier	QPSK	6MHz				Normal						

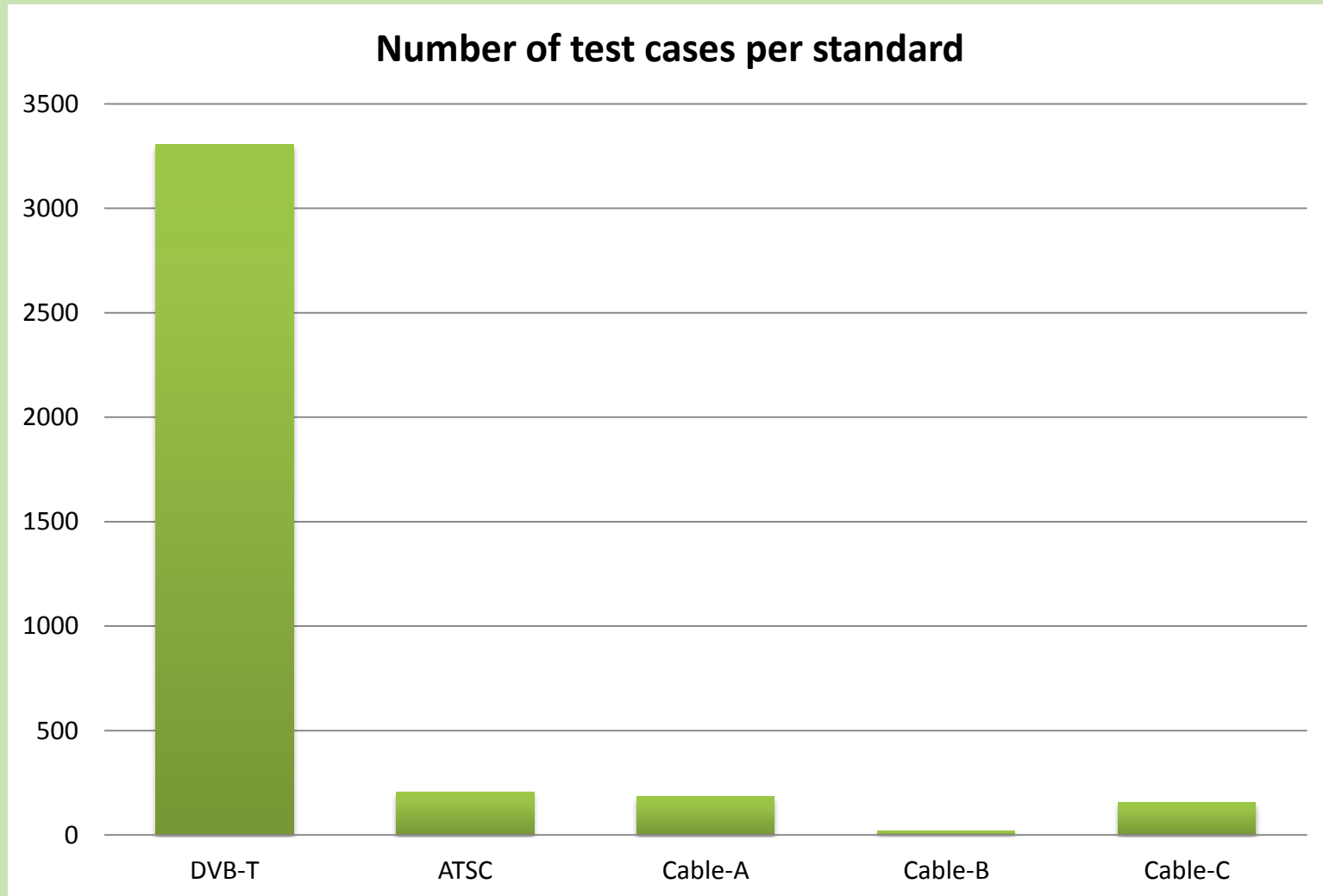
+ Load Snapshot Delete Snapshot Save Snapshot as... Max 31 Characters



# VAT Features

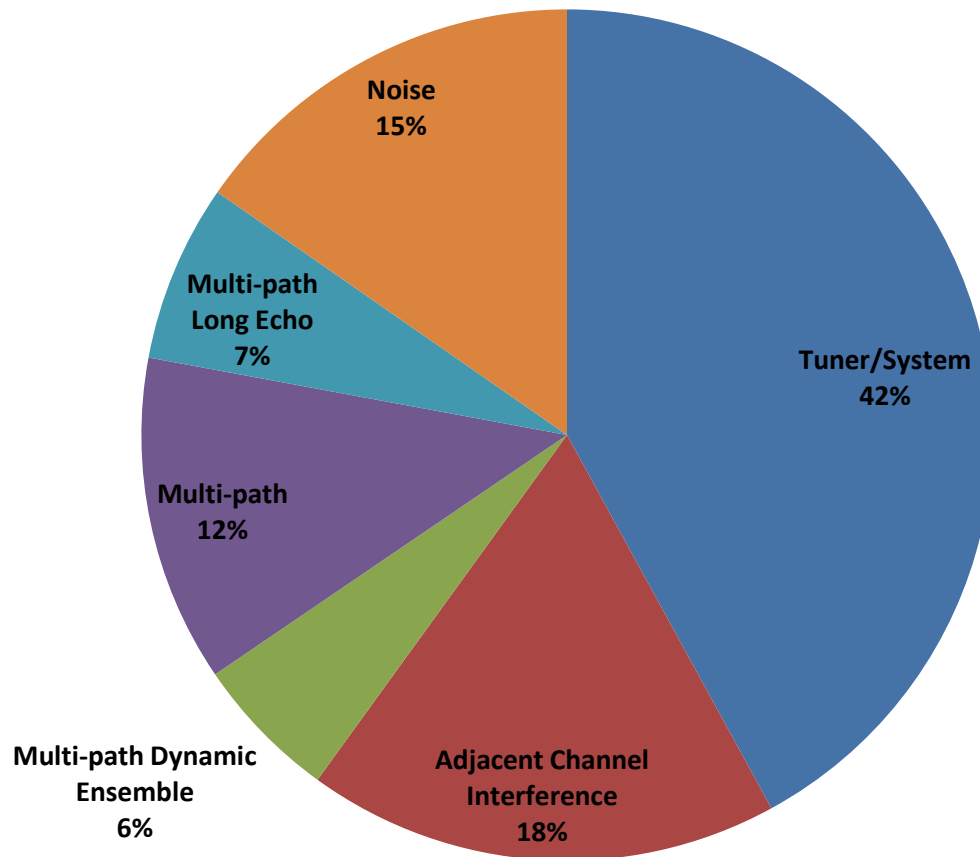
- Supports SFU and DekTec modulators (extensible architecture for supporting other signal generators)
- Supports regression mode and manual mode of validation
- Enables the user to selectively run tests from a group of test cases
- Provides the user with the option to re-run failed tests
- Test cases can be imported from MS Excel format or directly keyed into the tool's web interface. The tool supports export of test cases to MS Excel format.
- Generates a test report and log
- Provides current validation completion status indication in terms of progress bar
- The tool is hosted on Apache server and can be remotely accessed from any PC on the LAN

# VAT Database of Test Cases



Note: ISDBT test cases available, but not compliant to a specification

# Nordig DVB-T Test Case Classification





# VAT Snapshot – Home Page

Standards - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost/TURBOVAL/

Standards

- DVB-T
- DVB-C
- ATSC
- J.83B
- ISDB-T
- DMB-T
- ISDB-C
- DVB-S
- DVB-S2
- DirectTV
- DMB-TH
- MediaFLO

Tuner  Balun

XC-5000

*Tuner Type selection*

SFU

DekTec

RF Recorder

*Signal Generator selection*

Regression

Manual

*VAT mode selection*

[Help](#)

BER  RESYNC  Enable Mem Capture

Select a Modulation Scheme and Tuner/Balun option

# VAT Snapshot – Load Test Case

Test case capture - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost/TURBOVAL/processStdSelection.php

Test case capture (Untitled)

[Home](#) **VAT** [Help](#)

Choose a file to upload:

SFU IP address  RefAGC(mv)  SFU Delay(h:m:s)  TURBOVAL Delay(secs)  Gain

Port  Num ReRuns

Select view

Exe	Rst	Grp Rst	DVBT #	Mode	Code Rate	Guard Interval	Hierarchy	Modulation	Channel BW	Frequency (MHz)	Offset (MHz)	Level (dBm)	Spectrum	AWGN (dB)	Phase Noise (dBc/Hz)	Frame Duration (ms)	Pulse per-Burst	C/I (dB)	Pa
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1	2K	1/2	1/4	Non-hier:	QPSK	6MHz				Normal						
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2	2K	1/2	1/4	Non-hier:	QPSK	6MHz				Normal						
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3	2K	1/2	1/4	Non-hier:	QPSK	6MHz				Normal						
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	4	2K	1/2	1/4	Non-hier:	QPSK	6MHz				Normal						
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5	2K	1/2	1/4	Non-hier:	QPSK	6MHz				Normal						

Max 31 Characters

# VAT Snapshot – Progress Indication

The screenshot shows a Mozilla Firefox browser window with the following details:

- Address bar: localhost:8080/progressesRequest.php
- Page Title: ProgressBar
- Page Content:
  - ISDB Regression**
  - Number of Test Cases = 225, approximate time required 326.25 mins
  - Tests started at : 08:15:00 PM
  - Percentage of Tests Completed**
  - A progress bar (partially visible) with a blue fill.
  - A digital clock display showing **08:19:33 PM**.
  - An **About** button.

The Windows taskbar at the bottom shows the system tray with the date and time: 8:19 PM, 1/2/2012.

# VAT - Summary

- Programming of signal generators is automated, reducing manual errors
- Validation effort is considerable reduced
- VAT generated log, report, manual mode of validation, provide better visibility to the user to isolate the root cause
- Efficient use of test equipments

*Thank You*

<http://www.vayavyalabs.com>

