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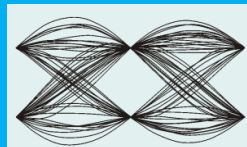
A Software Defined Instrumentation Approach to

Set-Top-Box Testing

Agenda

- Company Overview

- STB Testing Overview

- STB Test Requirements and Challenges

- MaxEye STB Test Solution

- Awards and Recognitions

- Testimonials

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Company Overview

- **Company Incorporation**: August 2011

- **Location**: Bangalore

- **Team**
  - 12+ Engineers
  - 100+ years of industry experience.
  - Employee owned and Self funded Organization.
  - Several IP and Patents (includes approved and pending patents)

- **Specializes in providing system integration and turnkey solutions in**
  - RF Test and Measurement, Wireless Communication, Signal processing
  - Image Processing, Machine Vision

- National Instruments Alliance Partner

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Set-Top-Box Testing Overview

STB Test Requirements and Challenges
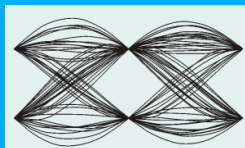
MaxEye STB Test Solution

Set-Top-Box (STB) Testing Overview

- Multimedia devices such as set-top boxes, Blu-ray players, and mobile devices contain several technologies like audio, video, and wireless protocols.

- Require high-performance, automated testing in validation and production to ensure they meet ever-growing consumer expectations.

- STB Testing includes both functional and performance tests depending on whether the tests are performed on design, validation or manufacturing floor

- The signals are broadcasted to the end user via

  - Satellite (DVB-S/S2)

  - Terrestrial (DVB-T/DVB-T2)

  - Cable (DVB-C/C2)

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STB Test Requirements – Basic Functional and Performance Testing

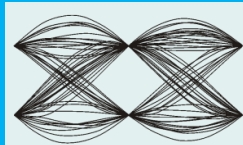| Sl.no	Test Cases	Test Requirement
1	Channel Tuning/Search	DVB-S/S2 signal generation with multiple channels
2	Channel Selection/up/down	DVB-S/S2 signal generation with multiple channels
3	Reception Quality (Receiver Sensitivity, SNR, Signal Strength)	DVB-S/S2 signal generation with various power levels and SNR
4	Audio Quality Tests	Audio quality analyzer hardware and software with measurements
5	Video Quality Tests	Video quality analyzer hardware and software with measurements
6	Audio and Video Interface testing (Composite, Stereo, HDMI Video etc.,)	HDMI Analyzer
7	Display of sub-titles and text in the random location in the screen	Image acquisition hardware with vision software

STB Test Challenges

- Creating an automated scalable and full functional test system with low complexity

- Traditional instruments use separate instruments to test each functionality of the device under test.

- To test the multiple functionalities of the set top box we require multiple test instruments and controlling each instrument requires complex test system architecture and test software development

- STB test engineers need simple test setup with one instrument capable of doing all the functionalities of the test system

- MaxEye STB test solution based on National Instruments PXI platform enables complete test functionalities using one PXI instrument.

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MaxEye STB Test Solution

- MaxEye STB test solution powered by NI LabVIEW and PXI hardware – One box solution for complete STB testing

  - ➤ Hardware
    - ❑ NI PXI Chassis
    - ❑ NI PXI Controller
    - ❑ NI PXI 5673E Vector Signal Generator(VSG)
    - ❑ NI HDMI Analyzer
    - ❑ NI Dynamic Signal Analyzer (DSA)

  - ➤ Software

    - ❑ MaxEye DVB-S/S2 Signal Generation Software
    - ❑ NI Picture Quality Analyzer
    - ❑ MaxEye Audio Quality Analyzer
    - ❑ NI HDMI Analyzer

MaxEye Technologies

Awards & Recognitions

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Awards and Recognitions

- NI Week 2013 – LabVIEW Tools Network Awards
  - [MaxEye Technologies](#) Multi-Carrier Multi Standard DVB RF Test and Measurement product received 2013 LabVIEW Tools Network - Runner up for the test product of the year award at the NI Week 2013 Graphical System Design Conference held at Austin, Texas.

  - MaxEye Technologies is the Only Alliance Partner from India Company represented in the LabVIEW Tools Network Award.

- MaxEye DVB Products received compatible with LabVIEW Certification and available online in NI Website.

http://search.ni.com/nisearch/app/main/p/bot/no/ap/global/lang/en/pg/1/q/maxeye/

- NI Days 2013, Bangalore GSD Award Runner Up – Alliance Partner Category

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Customer Testimonials (1/2)

- "We have worked with **MaxEye Technologies** for RF test and measurement solution in one of our business opportunities. MaxEye delivered the complete turnkey test solution, integrated with NI RF hardware, within the specified delivery time. We were happy with their professional approach to the development and testing of the system. We recommend their skills in the RF, Signal Processing and Communication domain and appreciate their commitment towards the deliverables and support after the delivery"

    ... Jayaram Pillai, Managing Director - IndRA (India, Russia and Arabia) at National Instruments, Bangalore (India)

    *****

- "**MaxEye** delivers on its commitments and provides great after sales support. In retrospect, I am very pleased with our decision to work with them"

    ... Sujeeth Pai, Country Sales Manager, National Instruments, Bangalore (India)

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Customer Testimonials (2/2)

- Simple and easy to use GUI.

- Easy to configure and generate DVB-T signal.

- Easy to convert from .ts to .bin file, through which the memory related issues are reduced.

- Good error handling by which the error are identified very easily and fast.

- Last but not least good support from the MaxEye Technologies has enabled us in completing the project on time.

  – Leading IT Services, consulting and Business Solutions Partner in India (More details can be shared on request)

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Summary

- MaxEye Technologies Provides complete STB test solution using NI Hardware, Software and MaxEye Digital Video and Audio test and measurement solutions software

- Proven solution used by leading manufactures in the world.

- Software defined and scalable solution for future wireless standard evolution.

- LabVIEW and TestStand based powerful programming environment for test automation.

- One Box solution for complete STB test needs

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Thank You

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