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Quality Assurance Tools
• Post Installation
• Self-Compliance

DCinema Compliance

The DCinemaCompliance Group, is pleased to announce the availability of the **Digital eXperience Guardian** (DXG) system for OEMs that require an integrated Post-Installation Client Assurance System.

Designed for a wide variety of applications— theme parks, museums, boardrooms, auditoriums, and cinema spaces, The Guardian provides programmed Maintenance testing, logging and notification functions with a high degree of accuracy and repeatability. These network accessible *Digital Eyes and Ears*™ systems test actual (*in-auditorium)* performance of projectors and audio systems.

The DXG input consists of 5 microphones and 1 or more colorimeters. Using common database interfaces (e.g.: SQL, .NET, xml), the readings and calculations can be integrated into the vendor's SNMP stream, or through sftp packets, in addition to the DXG's own GUI.

Customer defined levels trigger warning or urgent notifications upon deviation of parameters include: Picture White Point, Luminance, Bulb Flicker and RGB / Grey Scale Colorimetry, and Audio THD, Directionality, Level and Phase.

"Digital equipment is stable, but not perfect – unfortunately the trained technical staff is now commonly a remote team waiting for equipment feedback, not a report from what is reflected from the screen or heard in the room. This makes your customer's patron the quality control advisor, telling the ticket-taker that they hear rattles or distortion or see bulb flicker or muted colors," explains group CEO C J Flynn.

"Experience tells us that maintaining a picture and sound system has more nuanced requirements than setup, with its refined 2° spot readings. It needs security and detailed, consistently distributed records, all which ends up being more honored in the absence when it can't be automated. The DXG conquers those challenges, and at a low price per room."

Designed under the associated corporate banner of Digital Test Tools, LLC, comprised of industry experts with decades of expertise spanning high end audio and automation designs that were implemented in the mix rooms of most every major studio, and digital cinema installation and training from Sligo to Shēnzhèn (深圳).

Triggered by light and sound, the DXG can also interface with satellite, cable and Blu Ray feeds. Optional tools can be added to the data stream, including cameras, loudness meters, temperature/humidity gauges, and where legal, telephone blocking cards.

Further information and demonstrations are available from Charles 'CJ' Flynn at +1 818 877-6149 or cjflynn@dcinemacompliance.com.

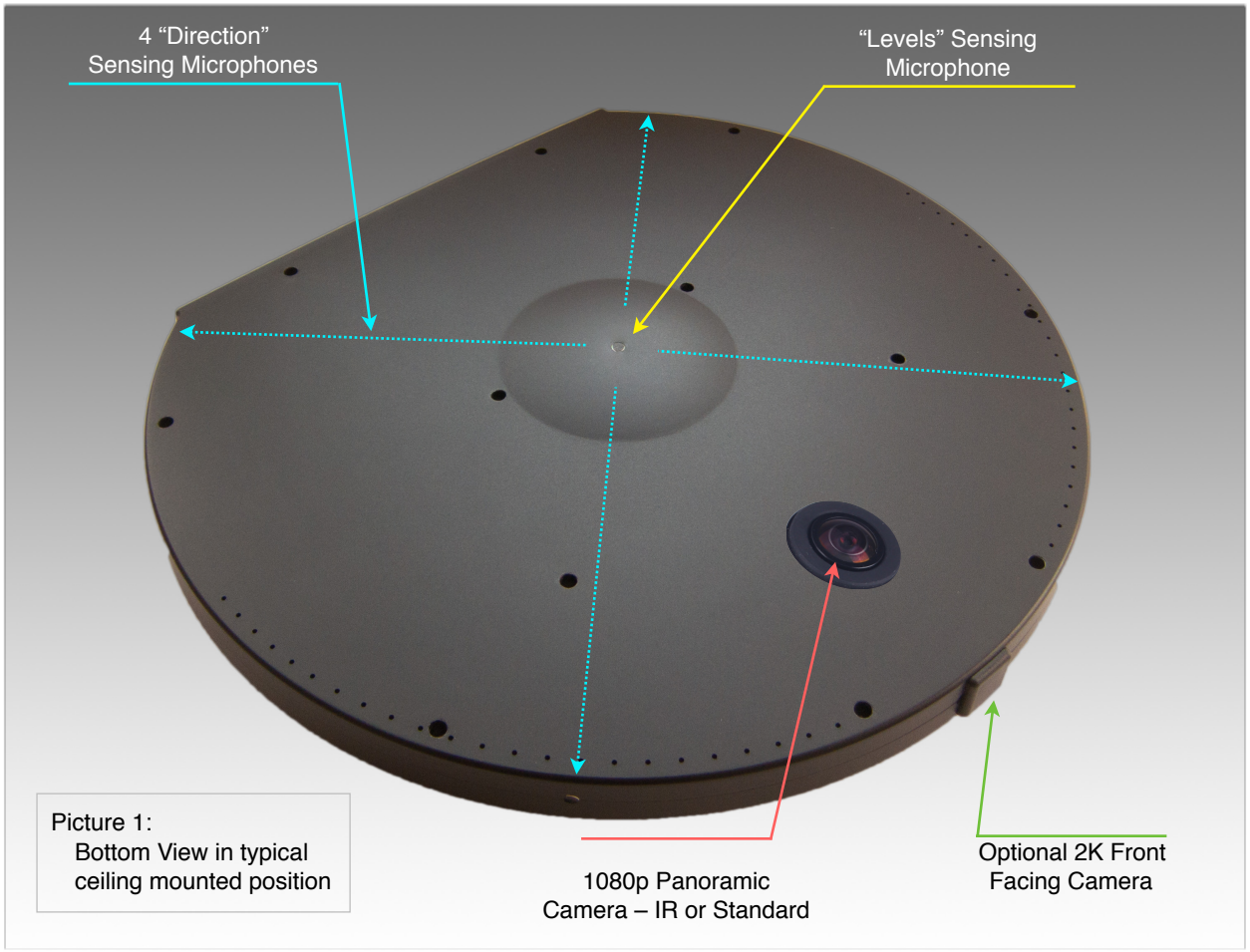
ISO 9000
Quality Management Principles

- Customer focus
- Leadership
- Involvement of people
- Process approach
- System approach to management
- Continual improvement
- Factual approach to decision making
- Mutually beneficial supplier relationships

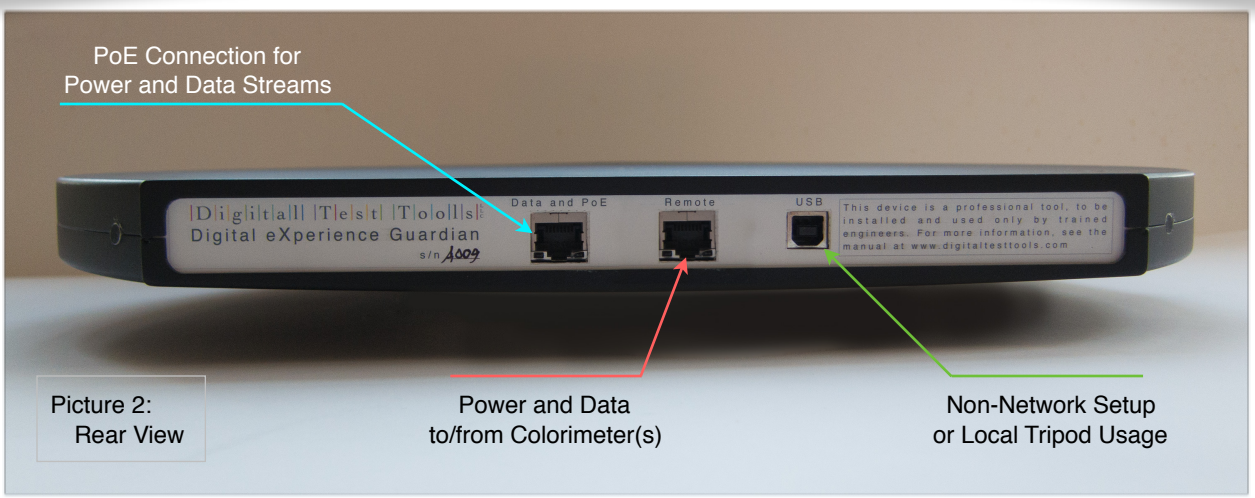
The central “saucer” section of the Digital eXperience Guardian houses the central processing circuit board, 5 microphones, as well as an optional IP router and other sensing and processing devices. It is powered and connected to the facility’s network with Power over Ethernet.

The saucer section is 3.8cm tall and 43cm in diameter – which positions the 4 “Direction” sensing microphones located around the edge at the proper distances from each other.

The “Levels” sensing microphone in the center faces up if the engineer mounts the unit on a tripod in the room, and faces down in the typical situation, when the unit is hung from the ceiling.



Picture 1:
Bottom View in typical ceiling mounted position



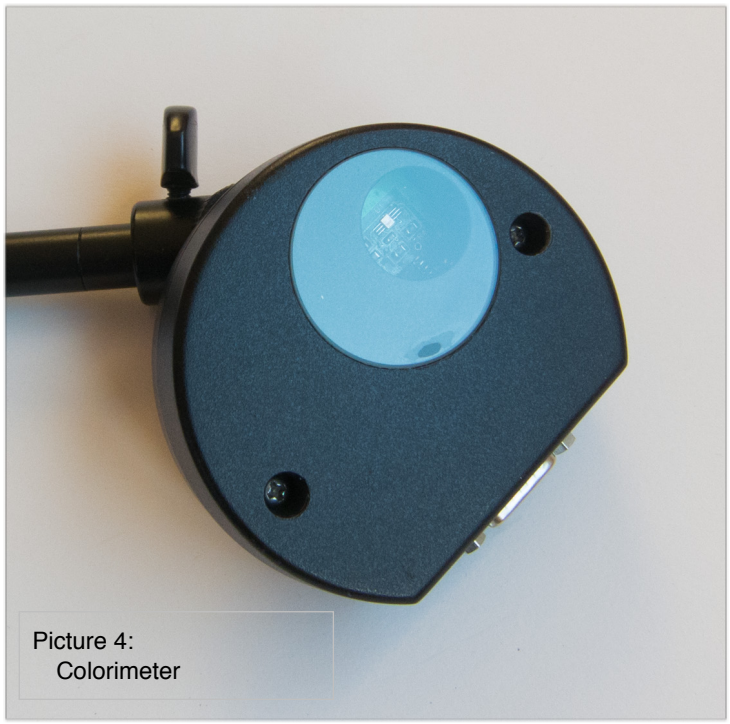
Picture 2:
Rear View

Picture 3:
Mounting “Top” View

The 16-bit colorimeter can be used from any angle, above, below, and/or from either left or right side of the screen under observation. It can be used individually, or several can be daisy-chained to cover the space to be measured in a variety of ways, depending on the installation.

The colorimeters are connected via an RJ-45 cable from the Saucer section from the Remote connector and internally addressed if more than one unit is used.

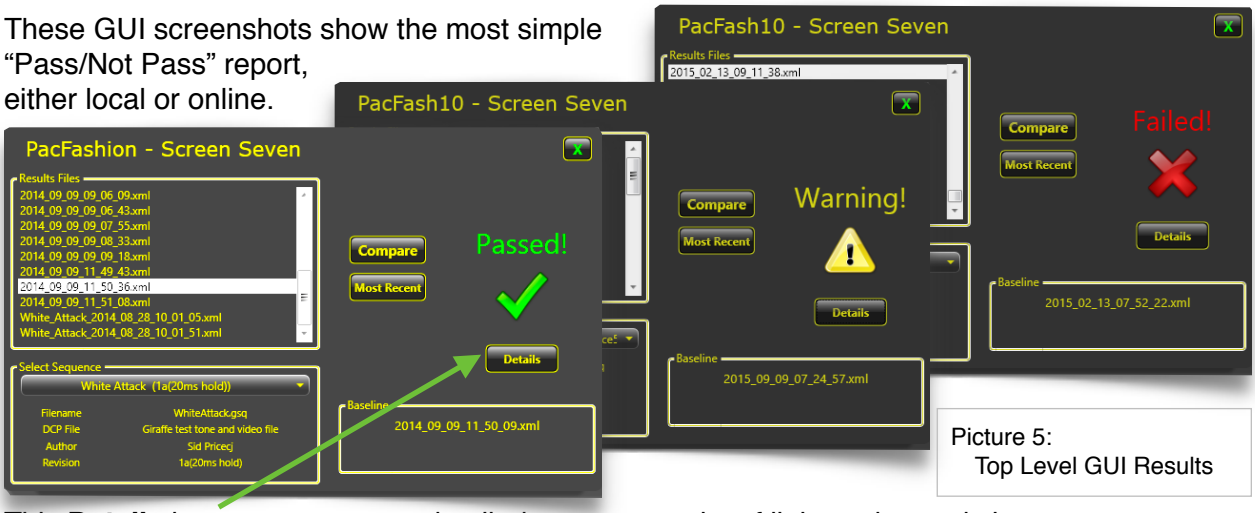
The colorimeter and sound sensors can only record data, never a video picture or audio signal. This ensures privacy, security for copyrighted materials, and maintains low build costs.



Picture 4:
Colorimeter

Over 50,000 lines of code are designed to capture and compare the calibrated baseline reading against new readings, then create and send reports to an external server and the local GUI.

These GUI screenshots show the most simple "Pass/Not Pass" report, either local or online.



Picture 5:
Top Level GUI Results

This **Details** button opens more detailed reports, results of light and sound changes.

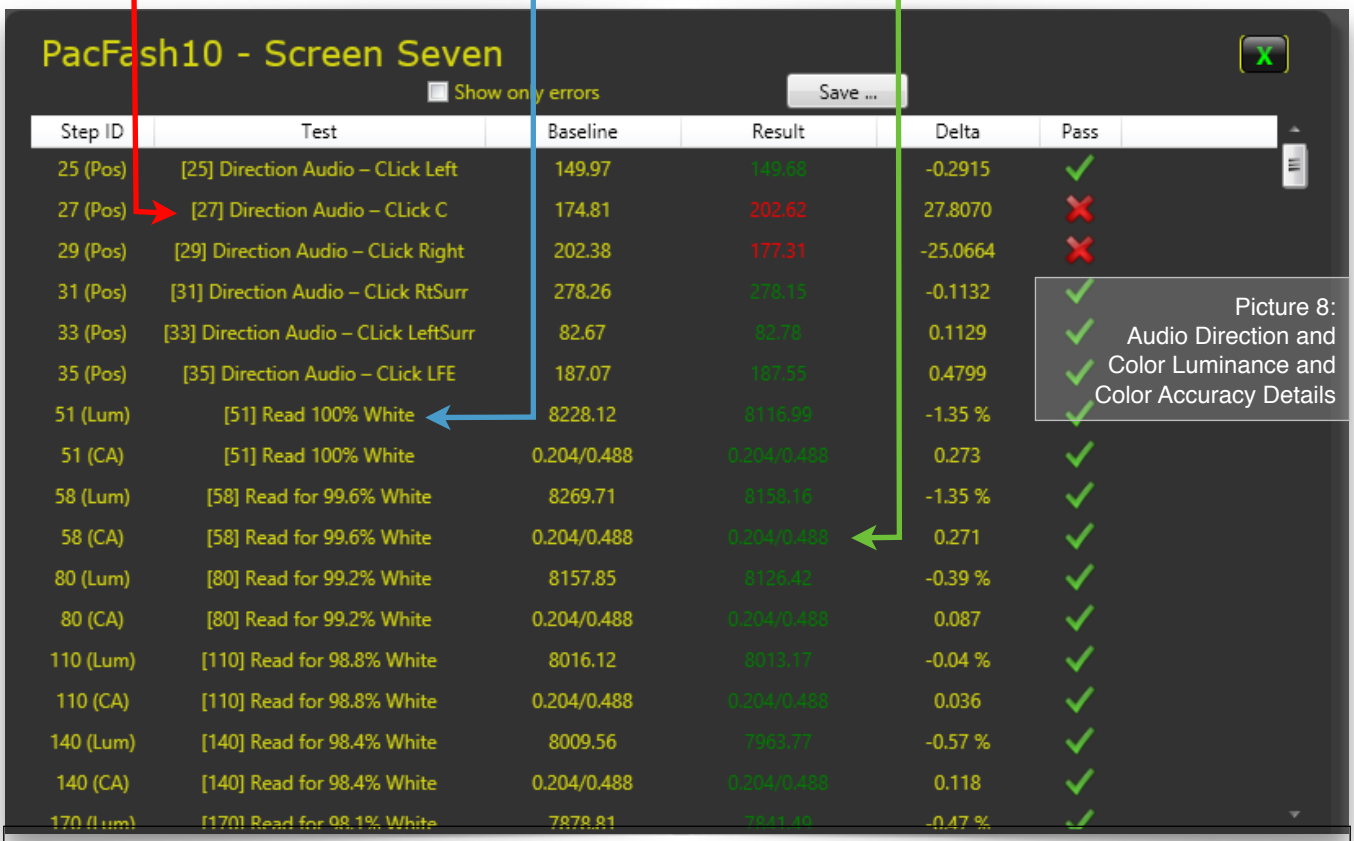
Picture 6 shows Luminance changes in .5% steps.

Picture 6:
Luminance Details

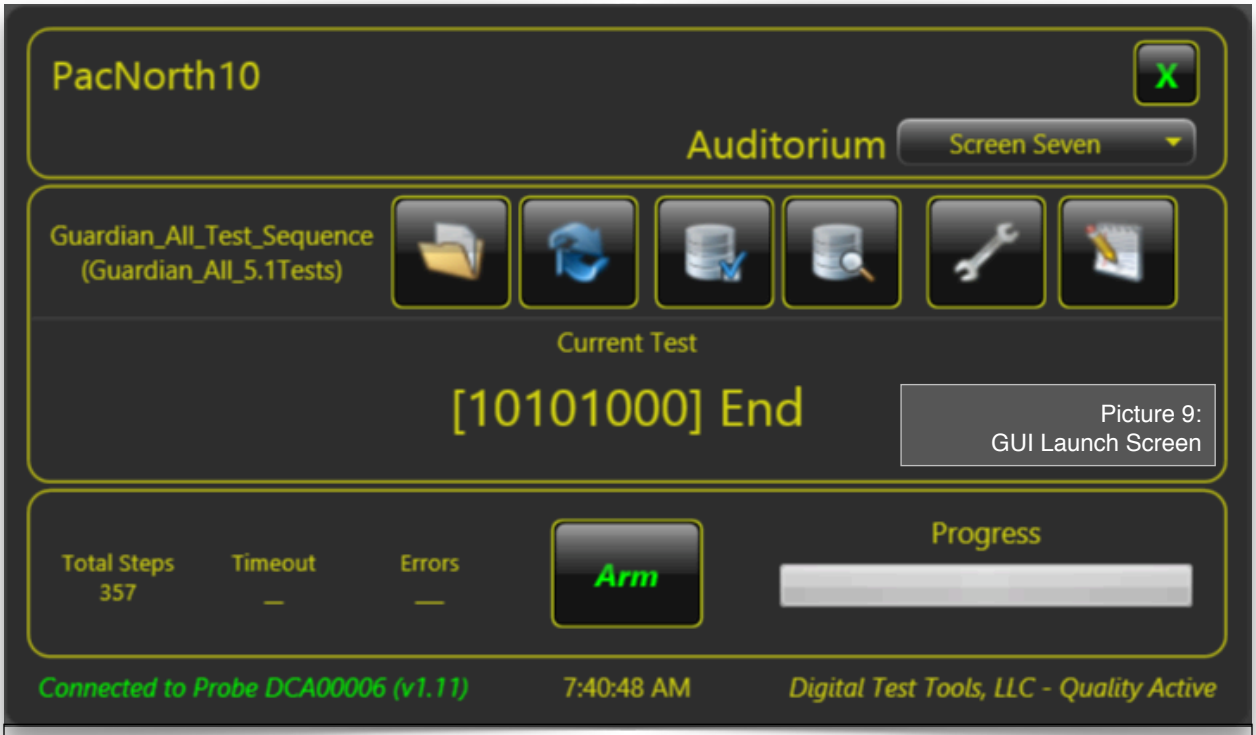
Picture 7 shows 3 audio tests: Direction Sensing, and Amplitude and THD from 8k tones.

Picture 7:
Audio Details

Picture 8: Direction Sensing error catch, Gray Scale Luminosity and Color Accuracy



Oops~! Someone swapped the cables on the Center and Right Channels; The DXG found it.



GUI Launch Screen after Picture/Sound Check.

Network accessible•
Semi-automated•
Modular•Affordable•

Digital eXperience Guardian (DXG)™

Audio and Colorimetry Monitoring System
…with room for expansion

Digital Test Tools LLC
More Ideas One Vision

Specialists In Post-Installation Compliance

The Digital eXperience Guardian features an internet accessible GUI and common database interfaces (e.g.: xml, SQL, .NET). It therefore integrates well as the reality-based maintenance component of every Network Managed Audio/Visual Quality Assurance System. It is your **Digital Eyes and Ears**™.

To meet security concerns, the output of the audio and color sensors are always data, never picture or sound. *The DXG is specifically designed to not function as a substitute for a calibration tool.* Instead, a baseline sample is captured by the DXG after an auditorium is calibrated. Then the 'delta', that is, "changes from" the sound and picture baselines, are sent to the technical and quality control personnel.

The audio component is suspended in the sound field, just above the projector's light, 1/2 – 2/3rds the distance from the screen (the standard distance for measuring audio, away from complicating room nodes). The colorimeter(s) is placed 3 – 5 meters from the screen, connected by RJ-45 cables to the audio case.

The Guardian's microprocessor resides with the 5 microphones in the audio case, which monitor THD, Directionality, Level, and Phase. One (or several) remote colorimeters monitor R, G, B, Grey and Luminance changes, White Point, and Bulb Flicker. Unlike calibration-based tools, these tools monitor broad segments of the screen.

The DXG uses Power over Ethernet (PoE), or USB when used with a portable computer and tripod.

The system takes readings using DCPs full of colors and sounds. Because it is a slave to the sound and light, it can be interfaced to monitor input devices such as satellite, cable, and blu-ray feeds.

A few items on the roadmap are:

Option 1 – Forensic Marking Verification Tool™, AES-encrypted, VPN networked, Secure multi-stream feeds including ultra-low-quality (CCTV-style) monitoring capability.

Option 2 – HI / VI Signal Verification Tool™

Option 3 – Phone Blocking system (where legal.)

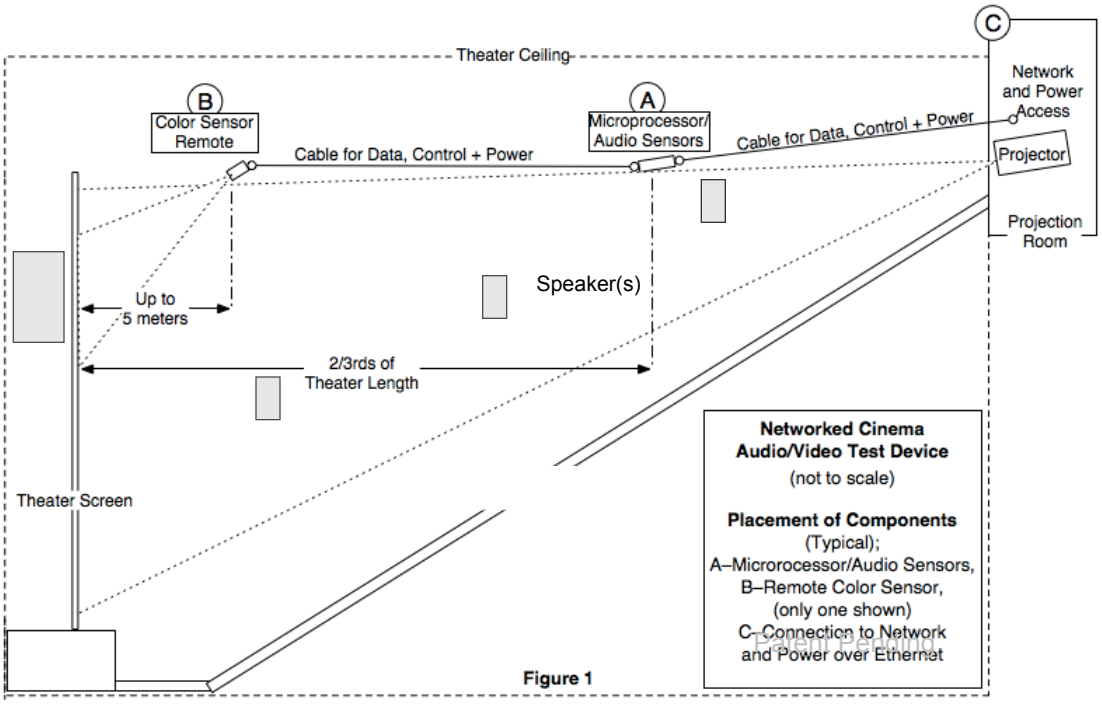


Figure 1

Digital Test Tools, LLC
For further information, contact Charles 'C J' Flynn

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