Advanced DisplayPort Testing

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Overview

Allion DisplayPort Services

Advanced DisplayPort Testing

About Allion Labs, Inc.

Allion DisplayPort Services

DisplayPort Authorized Test Center

- **Allion has been an DP ATC since 2009**

- **Latest CTS version:**
  DP 1.4 early Certification program

  - ➤ **Link Training Process, Aux Eye@HBR3, AUX Slew rate, HBR3 PHY,HBR3 IOP**

- **Future plan:**
  Official DP 1.4 Certification program in Q3, 2018

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Link Training Lanex_CR_Done Sequence
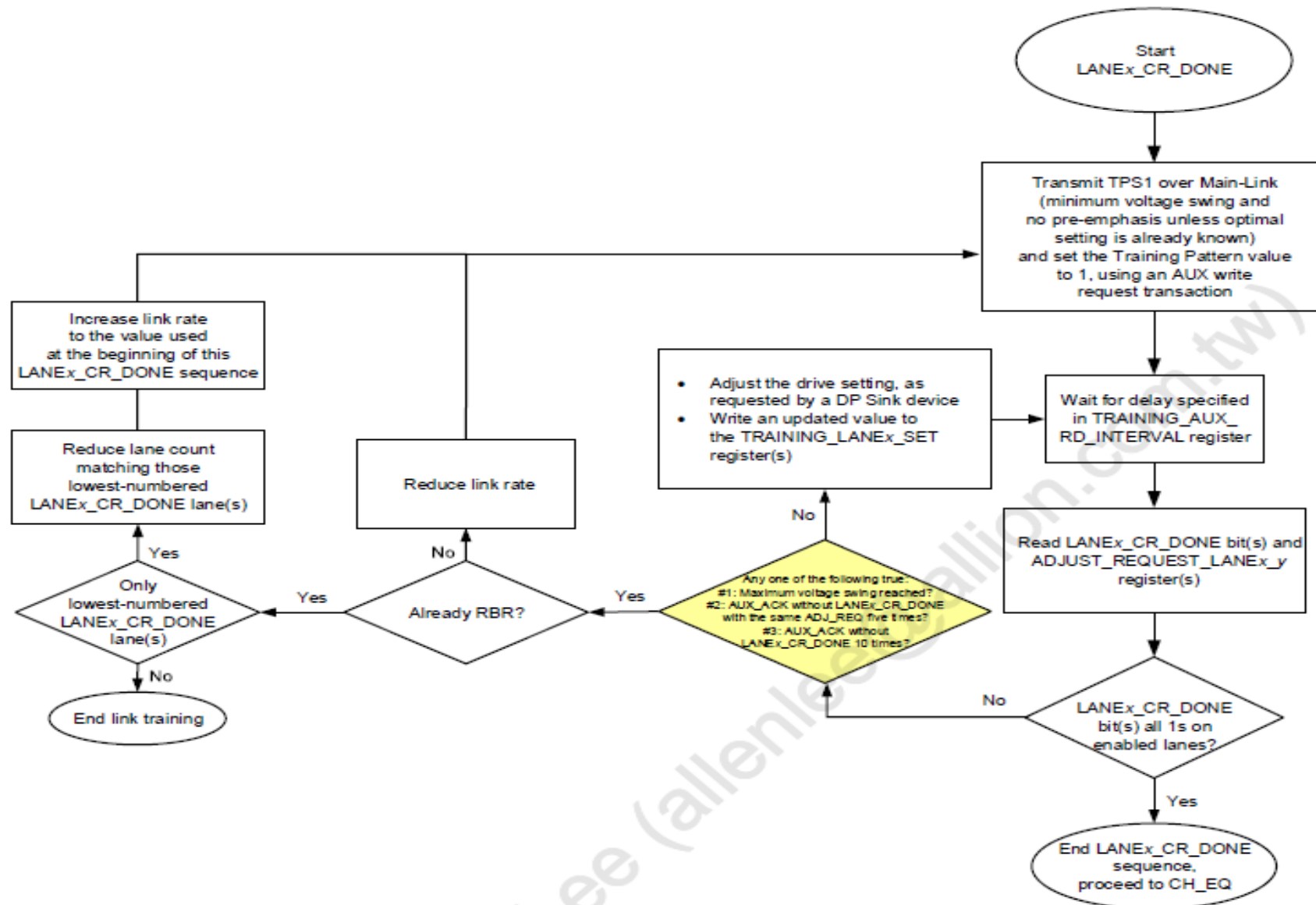
Figure 3-12: Link Training LANEx_CR_DONE Sequence

Figure 3-13: Link Training LANEx_CHANNEL_EQ_DONE Sequence

DisplayPort Certification Services

- **Sink Certification Test (Monitors)**

  - ➢ The world's **first** DP 1.4 8K Monitor Certified by Allion

- **Source Certification Test (Systems\Laptops)**

  - ➢ 2017 & 2018 DP 1.4 **Reference Design Certified** by Allion

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DisplayPort Certification Services

- **Cable** Certification **Test**
  - ➢ The world's **first** DP 8K (DP1.4)Cable Certified by Allion

- **DP over USB-C Certification Test**
  (All USB-C devices that support DP technology)
  - ➢ The world's **first** Bi-direction C to DP Cable Certified by Allion
  - ➢ The world's **first** DP alt mode USB-C cell phone Certified by Allion
  - ➢ The world's **first** DP 1.4 USB-C dock Certified by Allion

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DisplayPort Update

- **DP Certification Test Update**
  - ➢ As of April 1st, HDCP 2.2 testing became part of DP compliance test program
  - ➢ **HDCP 1.4 is not part of DP compliance test program**

  - ➢ **HBR Reference EQ vs Enhanced HBR CTLE EQ**
    - ✓ **ISI =160mUI, <= Set 25% to achieve ,<=Set 65% to achieve**
    - ✓ **Impact the existing Rx IC**

- **New Logo for DP 1.4 Cable**
  - ➢ 8K slogan already surrounds end-user
  - ➢ Help end-user to buy correct cables for home or office

VESA DisplayHDR Test Program

- **Compliance Test Program**
  - Launched in the end of 2017
  - Allion has been an ATC for DisplayHDR since 2017
  - Focus on panel of HDR system performance, including All-in-One, laptops, and desktop monitors

- **LOGO**

VESA CERTIFIED
DisplayHDR™ 400

VESA CERTIFIED
DisplayHDR™ 600

VESA CERTIFIED
DisplayHDR™ 1000

Advanced DisplayPort Testing

Beyond DP 1.4 CTS Testing

HDR Protocol Converter

HDR Capable

USB-C to HDMI / DVI Adapter

Display Data

亮度無法達到應有的流明度

OK   NG

色彩偏差 產生色差

OK   NG
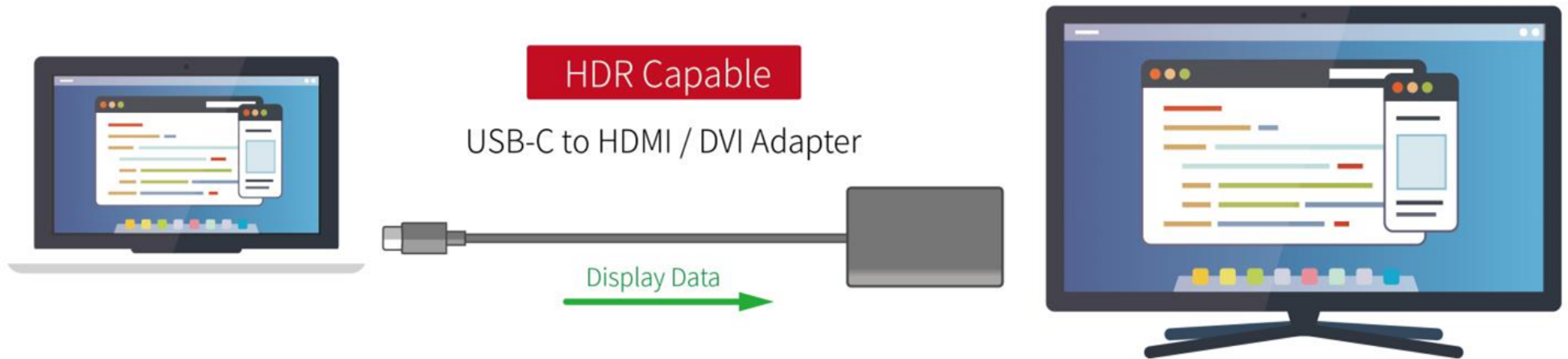
HDR Protocol Converter

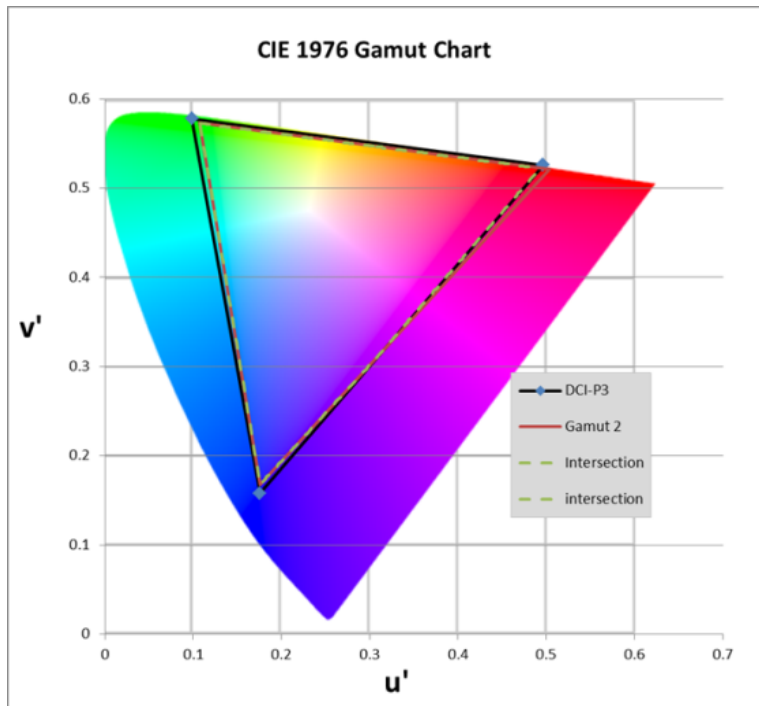- **Poor luminance performance**
  - ➢ With the poor HDR-Capable USB-C protocol converter, the monitor cannot reach to its best luminance

The best luminance
=
600 nits

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HDR Protocol Converter (HDMI/DVI)

Poor Color Gamut performance

The monitor's best Gamut performance (red triangle)
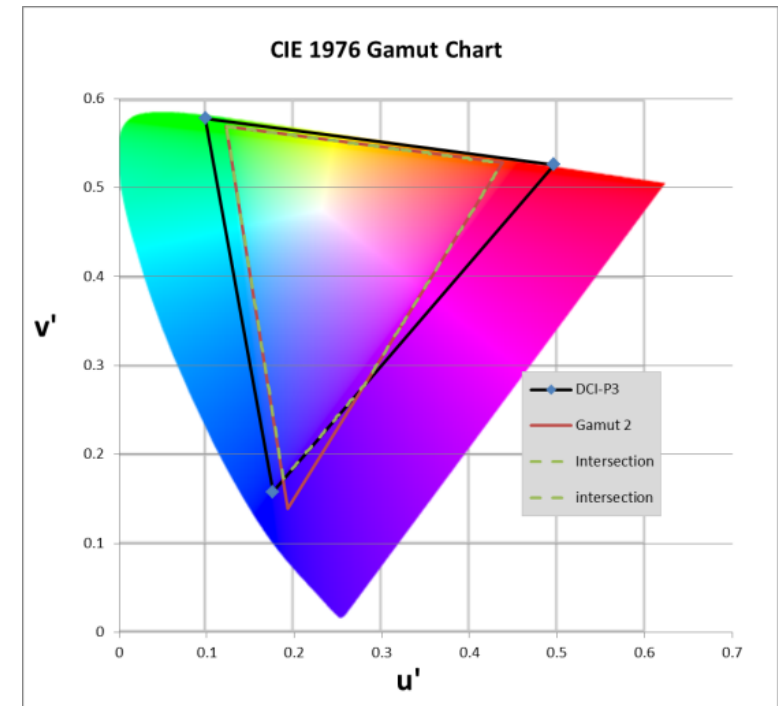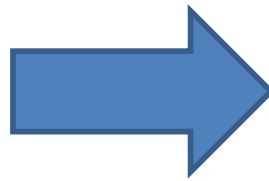
With the poor HDR-Capable USB-C protocol converter, the monitor cannot reach to its best Gamut performance

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Advanced Testing on DP Source

- **HDR function**

  ➢ Enabling process check

  ➢ Packet type check

  ➢ Time interval of HDR packet check

- **15 Meters transmission signal**

  ➢ Perform properly at RBR

  ➢ Data rate confirmation

- **DPCD version interoperability**

  ➢ Flicking , no display ,etc

Source
Cell phone
Graphic card
Laptop

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Advanced Testing on DP Sink

- **HDR function**

  - Panel Performance Check

    - ✓ Color Gamut, Rise time, Maximum nits

  - DPCD Related Register Check

- **15 Meters transmission signal check**

  - Perform properly at RBR

- **Intra-skew tolerance test**

  - 30ps for HBR3

  - 50ps for HBR2

Sink

Monitor

Projector

Allion DP Advanced Test Program can help your products get both VESA DP logo & product quality at the same time

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About Allion Labs, Inc.

Global Facilities

Our global facilities provide localized support to technology suppliers and distributors

Test Lab
Shanghai, China

Test Lab
Shenzhen, China

Headquarter
Taipei, Taiwan

Test Lab
Nantou, Taiwan

Test Lab
Seoul, Korea

Test Lab
Tokyo, Japan

Test Lab
Oregon, USA

Founded in 1991
25 +

Qualified Engineers
800 +

Test Equipment & Devices
20000 +

Test Projects Performed
300000 +

ISO 17025
ACCREDITED LABORATORY
TAF CNAS

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Capacity Overview

As an authority in standards compliance and product validation, Allion provides top-of-the-line test services and consulting engineering solutions

Compliance Test Services

- ☑ Pre-Test
- ☑ Logo Certification
- ☑ Interoperability Test
- ☑ Debugging Support

Bluetooth · WiFi CERTIFIED · HDMI · USB · THUNDERBOLT · DP

Product Validation Services

- ☑ Scenario Simulation
- ☑ User Experience Research
- ☑ Competitive Analysis
- ☑ Interoperability Test
- ☑ Quality Requirement Specification

Consultation Services

- ☑ Risk Evaluation
- ☑ Issue Identification
- ☑ Root Cause Analysis
- ☑ Quality Improvement
- ☑ Test Tool & Fixture Development

EE · ME · SW · FW · RF

Quality & Efficiency

- ☑ Project Manager
- ☑ Lead Engineer
- ☑ Test Engineer
- ☑ Technical Specialists

Marketing Services

- ☑ First-Hand Information
- ☑ Extra Media Exposure
- ☑ Effective Networking & Advertising

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Logo Certification & Compliance Test

ALLION®
Engineering Services

Authorized Third-Party Test Labs of **30+Standard Alliances**

Testing	Consulting	Schedule
■ Pre-Test	■ Root Cause Analysis	■ 24hr Shifts
■ Standard Compliance	■ Debugging Support	■ Schedule Management
■ Issue Identification	■ Logo Usage Right	■ Quick Turn Around Time

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Experience in IoT Validation

Allion can structure **customized conditions** in **various user scenarios**, helping fully validate the functionality, performance, and interoperability of your IoT products.

✓ **Allion is the premier resources for all of your third party testing needs**

✓ **Allion's philosophy provides "reliable, speedy, and cost-effective" services, which can assist your brand equity**