The Latest DisplayPort Ecosystem Introduction

Lexus Lee, Program Manager Allion
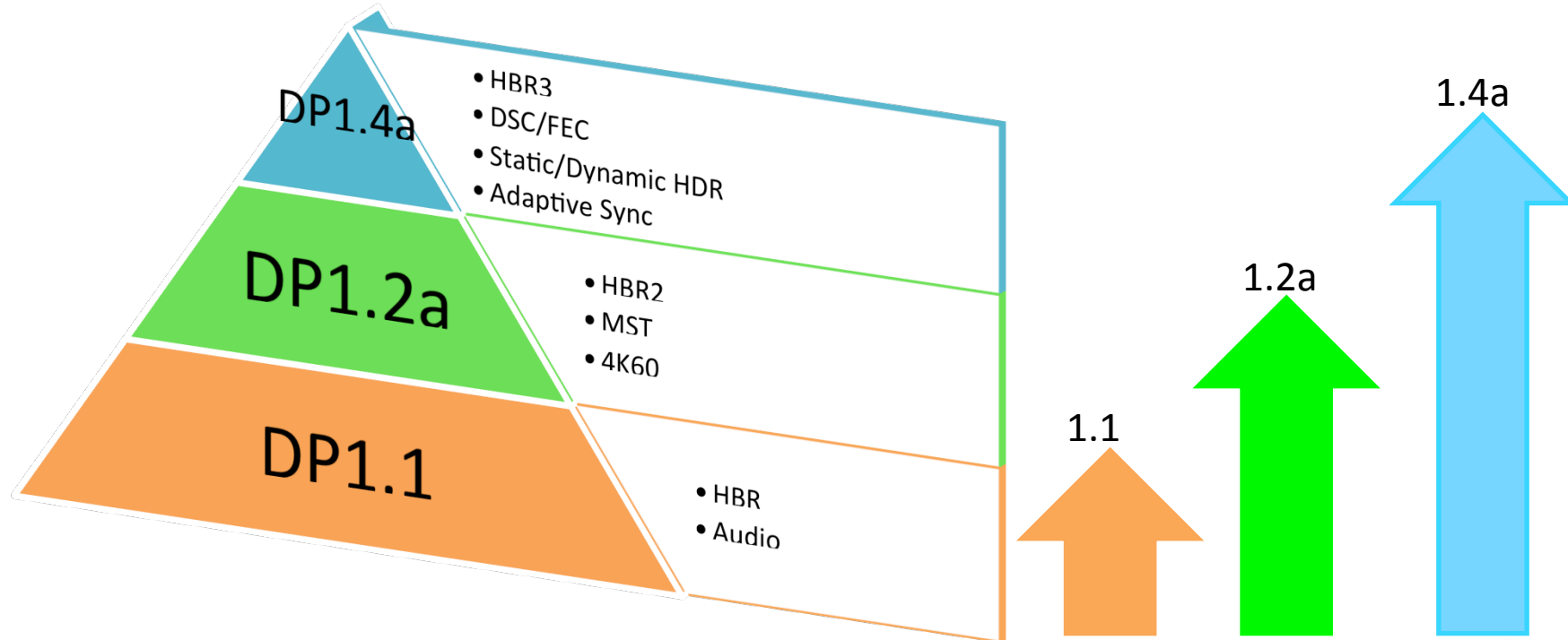
DisplayPort Spec and CTS Evolution

DisplayPort Application

DisplayPort Advanced Test Program

About Allion Labs,Inc

DisplayPort Spec and CTS Evolution

- Spec Evolution

DP1.4a
- HBR3
- DSC/FEC
- Static/Dynamic HDR
- Adaptive Sync

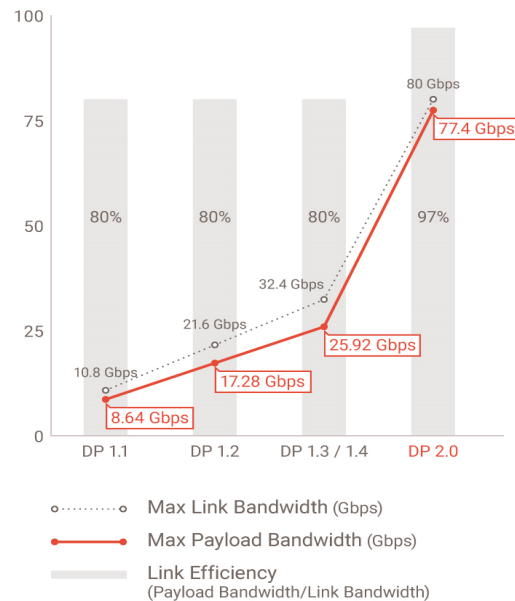DP1.2a
- HBR2
- MST
- 4K60

DP1.1
- HBR
- Audio

1.1

1.2a
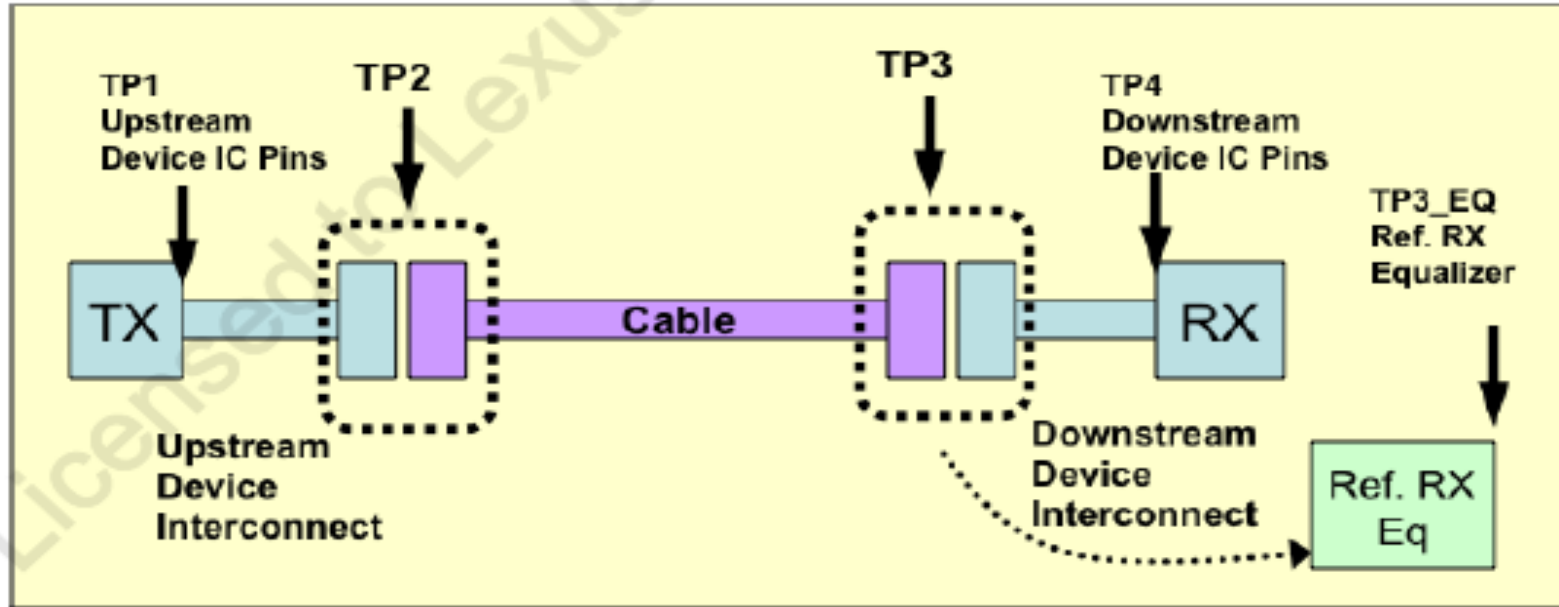
1.4a

DisplayPort Spec Evolution Cont'

- DP 2.0 Spec
  - Released in June
  - Enhanced Data rate
    » UHBR10=10Gb/s
    » UHBR13.5=13.5Gb/s
    » UHBR20=20Gb/s

  - New Channel Coding
    » Added 128b/132b for UHBRX
    » a 3X increase in data bandwidth

EVOLUTION OF DISPLAYPORT DATA BANDWIDTH

Note: the above picture is from VESA website

- DisplayPort Test Point illustration

- DP 2.0 Spec
  - Normative at both TP2 and TP3_EQ for UHBR10

    Table 3-55: UHBR10 DPTX TP3_EQ Metrics System Parameters (Normative)

    Table 3-56: UHBR10 DPTX TP2 Metrics System Parameters (Normative)

    3.5.5.6.4   UHBR10 DPRX Jitter Tolerance Specification at TP3_EQ (Normative)

  - Normative at TP2 only and informative at TP3_EQ for UHBR13.5 and UHBR20

    Table 3-59: UHBR13.5 DPTX TP2' Metrics System Parameters (Normative)[a]

    Table 3-62: UHBR20 DPTX TP2' Metrics System Parameters (Normative)

    Table 3-61: UHBR13.5 TP3_EQ Metrics System Parameters (Informative)

   Table 3-64: UHB20 TP3_EQ Metrics System Parameters (Informative)

- What does it imply by the previous slide for PHY CTS 2.0?
  - For Sink
    - » UHBR10: it would be tested at both TP2 and TP3_EQ

  - For tethered products like USB-C cable dock/ USB-C Display stick
    - » UHBR10/13.5/20: be tested at TP2 only

  - For Source
    - » UHBR10/13.5/20: be tested at TP2
    - » UHBR10: be tested at TP3_EQ

- What does it imply by the previous slide for PHY CTS 2.0?
  - For Passive Cable
    - » Be tested at UHBR10 only
    - » No UHBR13.5/UHBR20 test

  - For Active Cable
    - » Still under development
      - Be tested at UHBR10/13.5/20 at TP2 only

- ## The latest version is 1.4a.
    - Adaptive-Sync test is not included
    - HDR test is covered by DisplayHDR certification program

Test Coverage

EDID | PHY | Link | MST | IOP | DSC | FEC
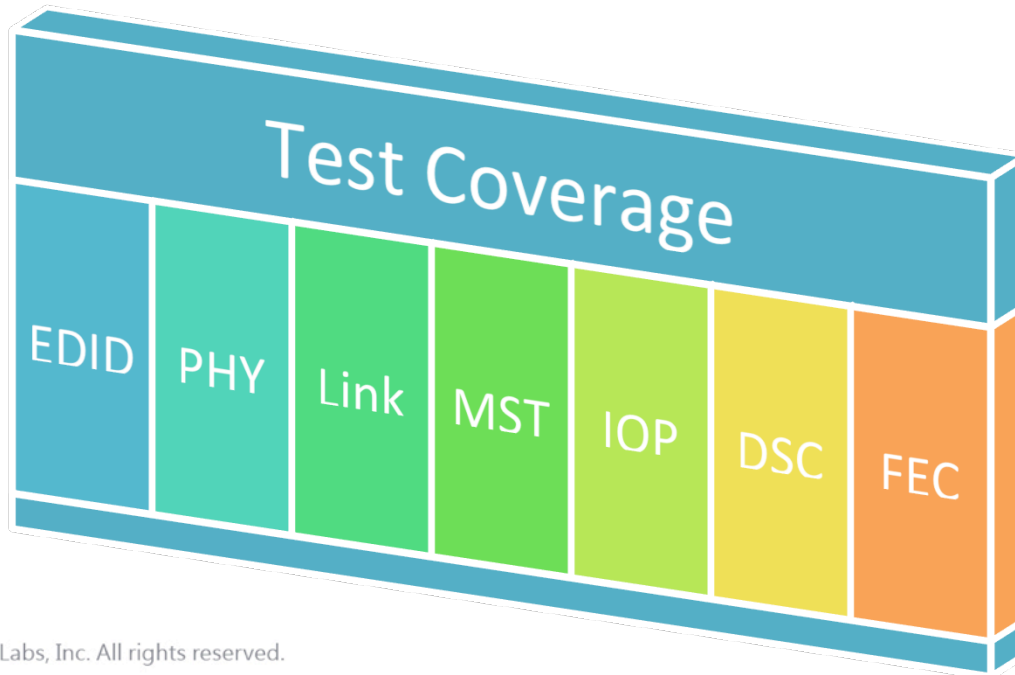
- Where is Allion DP 2.0 PHY CTS testing ?
  - Now ,Providing
    - » Sink JTOL for UHBR10/13.5/20G
      - Traditional DP Jitter test plan (SJ: 0.5/1/2/10/20/100MHz)
      - Current TBT Jitter test plan(SJ:1/2/10/50/100MHz)

    - » Source for UHBR10/13.5/20G
      - Eye Diagram , Jitter measurement , Inter-pair skew, and etc

    - » Cable for UHBR10
      - Eye Diagram , Jitter measurement

Confidential

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DisplayPort Application
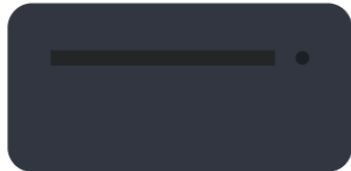
- DP Territories: IT industry, Smart phone, and Tablet
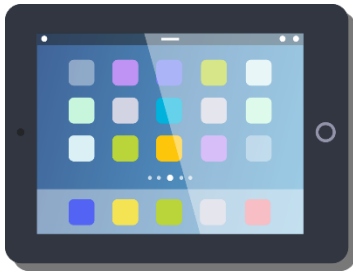
DP to DP connection
C to DP Connection

Monitor/Projector

Laptop/Tablet/Smart phone/
desktop

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ALLIQN®
AIoT EXPERT

- DP Territories: USB-C helps penetrate CE industry (TV/STB)

USB Type-C to HDMI Cable

STB

TV

- HDR 10+ over DisplayPort

Confidential 15
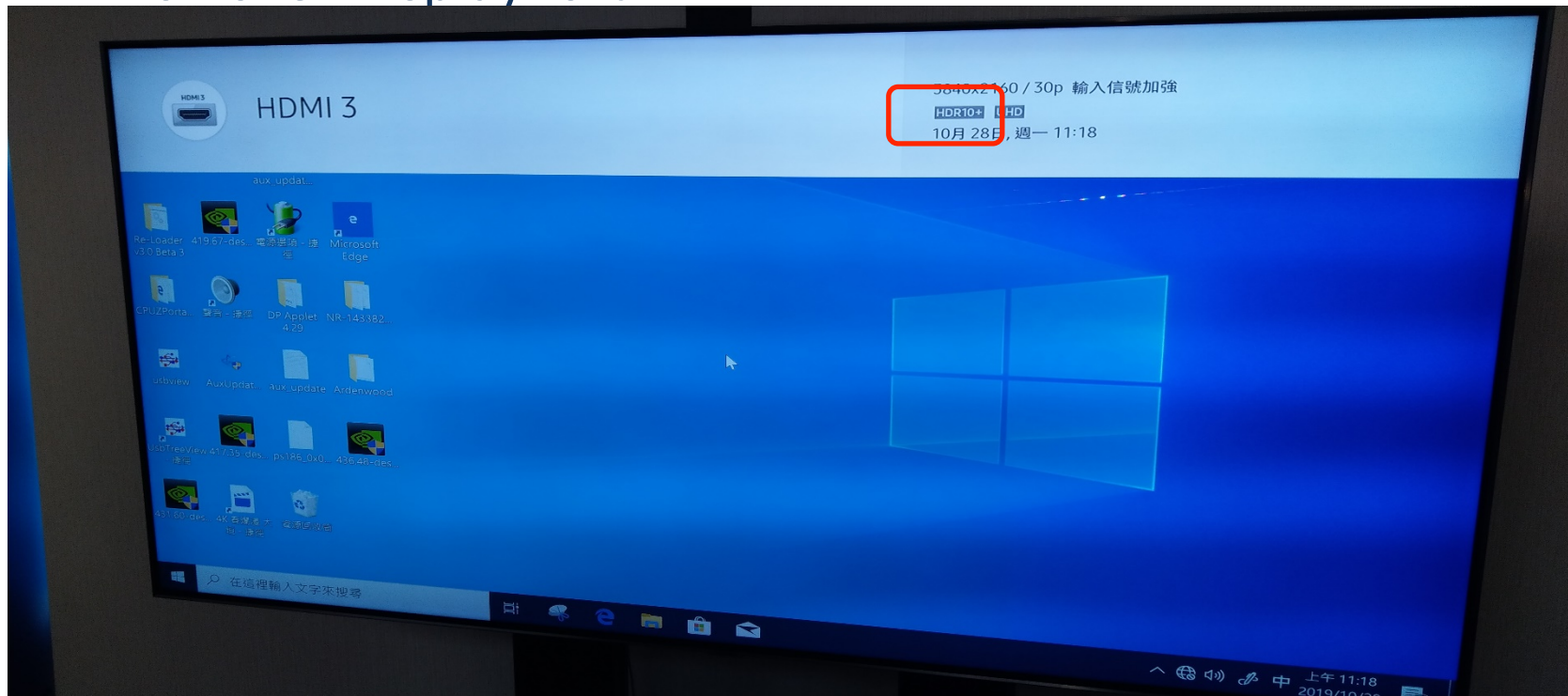
DisplayPort Advanced Test Program

- Objective
  - To check HDR performance of Graphics and DP-HDMI Protocol Converter

- How to Join
  - Prerequisite
    - » DP certification required
      - – certified by other DP ATCs is welcome, too.
  - Apply to
    - » DP/HDMI Source devices
    - » DP-HDMI Protocol Converter

- # Test Category
  - – Static HDR(DisplayHDR)
  - – Dynamic HDR(HDR10+)

- # When you see the certificate
  - – Got VESA DP certification already
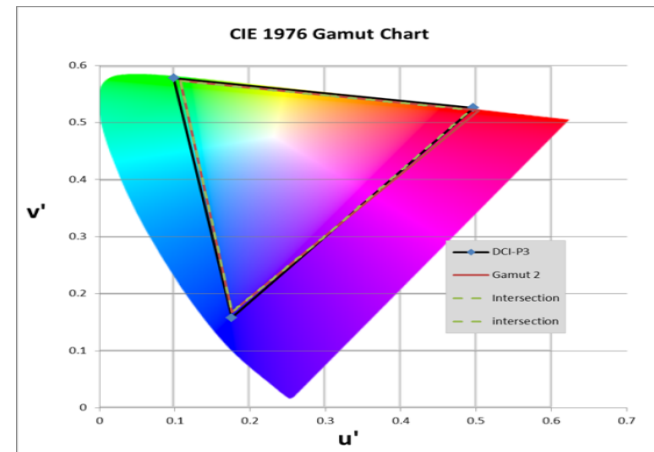 - – Assured HDR performance
  - – Effort to product quality

Test Category   DisplayHDR/HDR10+

Correct colors

1000 nits

Good Luminance

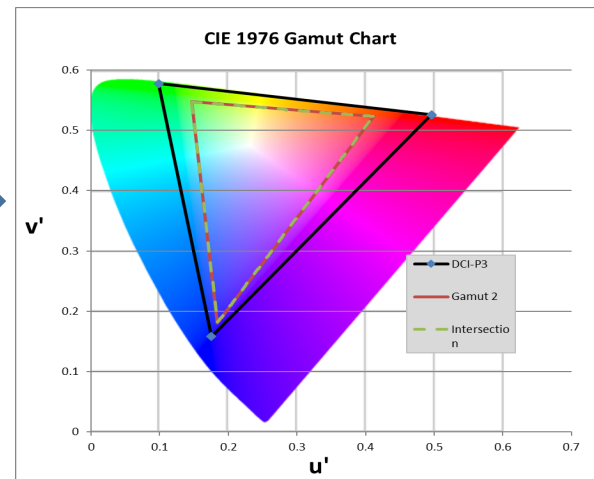A HDR monitor's best Gamut performance, DCI-P3 coverage ration: 95% at least

Incorrect colors

CIE 1976 Gamut Chart

The HDR monitor's best Gamut performance, DCI-P3 coverage ration: 59%
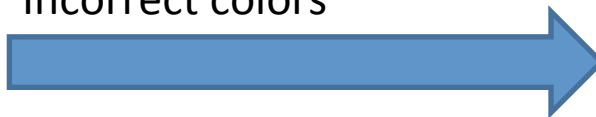
800 nits

Bad Luminance (dropped a lot)

HDR Source:
(Laptop itself ,DP converter IC)

About Allion Labs, Inc.

- Allion is VESA Authorized Test Center for both DisplayHDR and DisplayPort

Global Facilities

ALLION®
AIoT EXPERT

Test Lab
Hungary, Europe

Test Lab
Seoul, Korea

Test Lab
Oregon, USA

Test Lab
Shanghai, China

Test Lab
Tokyo, Japan

Test Lab
Shenzhen, China

Headquarter
Taipei, Taiwan

Test Lab
Dubai, ME

Test Lab
Nantou, Taiwan

ISO 17025
ACCREDITED LABORATORY
TAF CNAS

Founded in 1991
25 +

Qualified Engineers
800 +

Test Equipment & Devices
20000 +

Test Projects Performed
300000 +

Logo King

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

The ultimate goal is to accelerate certifications for customer's products and assist in gaining the competitive advantages in the market.

Design Consulting
- EE Fixture
- ME Fixture
- Product Design

+

Engineering Consulting
- Debugging Consulting
- Logo Usage
- QRS
  (Quality Requirement Specification)

+

Testing
- Test Planning
- Logo Certification
- Problem Report

Allion is the premier resource for all of your third party testing needs. Our services bring products to market more quickly, reliably, and cost effectively to protect your brand quality and that of your suppliers.