PNG WG Meeting Minutes

Nov 14th, 2022

Attendees:

(Alphabetical order, black text means attended, red text means missed.)
Chris Blume
Chris Lilley
Chris Seeger
Leonard Rosenthol
Pierre-Anthony Lemieux

Topics & Minutes:

- HDR mastering metadata
    - Apparently PQ (ie ST.2084) and HLG (ie BT.2100) usually have no metadata, but HDR10 (ie BT.2020) does?
    - ST.2086
        - Mastering display primaries, 3*4 bytes, x & y in units of 0.00002
            - For example, (0.6800, 0.3200) is stored as {34000, 16000}
            - ST.2086 precision requires four decimal places like 0.0001, which means a multiple of 5 (0.0001 = 0.00002 * 5)
            - NOTE: This is different from other x & y usage in PNG. For example, the cHRM chunk stores 0.3127 as 31270.
            - IMF & HEVC use a form that is units of 0.00002, let's use that.
        - Mastering display white point, 4 bytes
        - Mastering display maximum luminance, 4 bytes, units of 0.0001 cd/m^2
            - Maximum sustained full screen luminance, not small area
            - Perhaps we shouldn't get into the details ourselves and just refer to the other spec
            - Perhaps some ITU docs can be mimicked in how they say it (specific or vague)
        - Mastering display minimum luminance, 4 bytes, units of 0.0001 cd/m^2
    - CTA-861-G
        - MaxCLL (content light level), unsigned 16-bit, 1 cd/m^2
        - MaxFALL (frame average light level), unsigned 16-bit, 1 cd/m^2
            - If unknown, zero? ST.2067 carves out the unknown use case. Do we need to as well?
            - Dolby outright says "MaxFALL/MaxCLL is metadata required for HDR10 content."

        - Note: CTA-861-G defines metadata type 1 which includes the same as ST 2086 plus MaxCLL & MaxFALL, but with different units like 1 cd/m^2 instead of 0.0001 cd/m^2
        - CTA-861-G Annex P claims to be the normative way to calculate MaxCLL & MaxFALL (clause 6.9.1)
        - HDR10 apparently has static MaxCLL & MaxFALL, but HDR10+ is dynamic (per frame?) as per ST.2094-40 (?)
            - Totally different, can define regions for highlights
        - Apparently in some places it is the 99.9%tile instead of absolute max.
            - https://github.com/HDRWCG/HDRStaticMetadata
    - We agree on two chunks (for ST.2086 and CTA-861-G) that must come before the IDAT chunk

Action Items:

- CB to start WPT, carried over from the last meeting
- CB to create GitHub issue for if we want to mimic ITU on the precision of ST.2086 definition
- PAL and/or CS to create definitions for the two chunks