Project: IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)

Submission Title: comment and resolution about CID 75,546 and 548

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Abstract: comment and resolution about CID 75,546 and 548

Purpose: Contribution to IEEE 802.15.7 TG-VLC

CID 75

546, 548

CID 75 (Subclause 5.5.1, page 8)

Comment

- Missing a sub-clause

Suggested Remedy

- Add section 5.5.1.4.2 "Coexistence with CSK"
- CID #8 from draft D0 review indicated this was to be added and referenced doc 15-10-0027-00 but this doc had no proposed text.

Resolution/instruction to editor

- My suggestion is Accept.
- Instruction to editor : make subclause 5.5.1.4.2 and please insert doc 539/r0 into 5.5.1.4.2

CID546 (Subclause 6.9.6.3, page 63, line 32)

Comment

- CSK dimming entails color shift because of analog dimming. Need to have a compensation scheme for these color changes due to dimming.

Suggested Remedy

- Need to have compensation schemes for color changes.

Resolution/instruction to editor

- My suggestion is Accept.

- Accept. color stabilization for CSK links(see 262/r3) is compensation method.

- Instruction to editor: Replace 6.9.6.3 CSK Dimming with slide 6 in this contribution.

CID 548 (Subclause 6.9.6.3, page 63, line 34-37)

Comment

- This Clause advocates amplitude dimming (see Claus 5.5.3.2.3) for CSK but does not make this clear

Suggested Remedy

- Replace the paragraph with "In CSK, amplitude dimming as per Clause 5. 5.3.2.3 is used.CSK keeps the center color of the color constellation with required intensity instead of the idle pattern shown in section 5.9.6.1."

Resolution/instruction to editor

- My suggestion Accept in principle.
- But there is not 5.9.6.1.
- Instruction to editor : Replace 6.9.6.3 CSK Dimming with slide 6 in this contribution.

❖In CSK, amplitude dimming as per Clause 5.5.3.2.3 is used. Total power of multiple light sources is constant. For dimming control, the total power of the multiple light sources is changed. CSK keeps the center color of the color constellation with required intensity instead of the idle pattern shown in section 5.5.4 and color stabilization for CSK links(see 6.9.6.4) is used for color shift compensation in CSK.

CID 482 (Subclause 6.8.6, page 55)

Comment

- figure 41 needs to be updated

Suggested Remedy

- The figure 41 (page 56) should be replaced to the figure 34 in '15-10-0036-06-0007'.

Current Resolution

- accept in principle – committee feels we actually do not need to includ this chart; rather, reference the chart source and then give coordinates for the constellations points. Jason will provide coordinates ⋯ TE remove this figure.
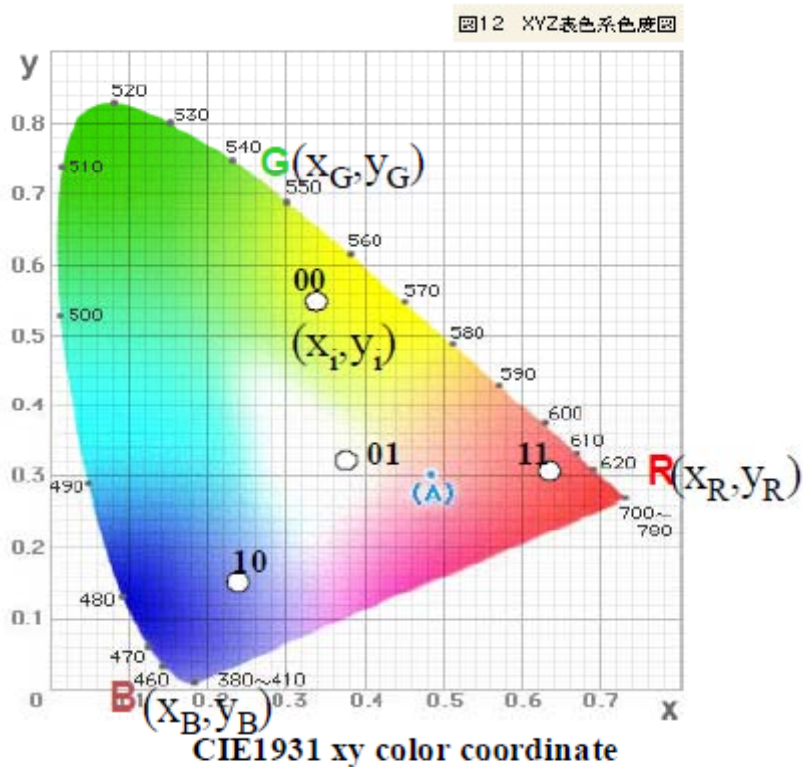
CID 482 (Subclause 6.8.6, page 55)

The points (x_i, y_i), (x_j, y_j), (x_k, y_k) shows the xy coordinates of the 3 light sources. And (x_p, y_p) shows the one of the allocated color point in 4-CSK. The color point (x_p, y_p) is generated by 3 light sources' intensity P_i, P_j and P_k in Figure 40. These xy values are transformed into intensity P_i, P_j and P_k. The relation between (x_R, y_R), (x_G, y_G), (x_B, y_B) , (x_p, y_p) , P_i, P_j and P_k is shown by following simultaneous equations.

$$x_p = P_i \cdot x_i + P_j \cdot x_j + P_k \cdot x_k$$

$$y_p = P_i \cdot y_i + P_j \cdot y_j + P_k \cdot y_k$$

$$P_i + P_j + P_k = 1$$

In these equations, P_i, P_j and P_k show the normalized intensity of each light source.

In the receiver side, xy values are calculated from received light powers of 3 colors, and xy values are decoded into the received data. CSK symbols are provided as the visible colors which are made by 3 light sources.

Figure 41—CIE 1931 xy color coordinate

CID 482 (Subclause 6.8.6, page 55)
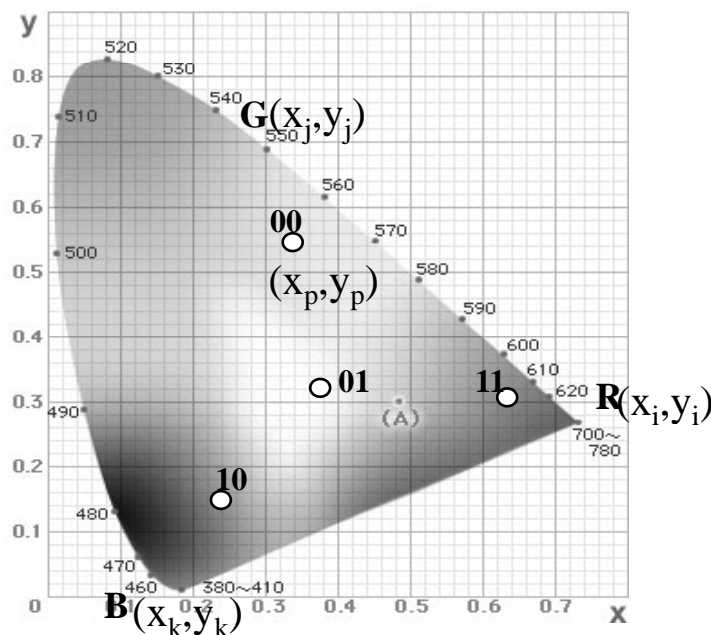
❖Suggestion

Figure 41**[reference number]** shows the CIE1931 xy color coordinates with the color mapping for 4 point CSK (4CSK) . In this case, 4 color points are defined. That means this system can send 2 bits data information per symbol.

Annex B. Reference list

[B xx] CIE (1932). Commission internationale de l'Eclairage proceedings, 1931. Cambridge University Press, Cambridge.

CID 482 (Subclause 6.8.6, page 55)

❖ Instruction editor

- Replace figure 41 with new figure (B&W)

- Insert reference number after "Figure 41" at line 25 page 56

- Insert next reference in reference list in Annex B.

   ◆ CIE (1932). *Commission internationale de l'Ecl airage proceedings, 1931*. Cambridge University Press, Cambridge.