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

Submission Title: [comment CID 12 and proposed resolution]
Date Submitted: [April 21 2011]
Source: [Taehan Bae, Jaeseung Son] Company [Samsung Electronics Co.,LTD]
Address [Dong Suwon P.O. Box 105, 416 Maetan-3dong, Yeongtong-gu, Suwon-si, Gyeonggi-do, 443-742 Korea]
Voice:[82-31-279-7293], FAX: [82-31-279-5130], E-Mail:[taehan.bae@samsung.com]

Re: []

Abstract: [Proposed resolution about comment CID 12]

Purpose: [Contribution to IEEE 802.15.7 TG-VLC]

Comment CID 12

❖ **Comment 12**

▦ **About the same philosophy of both Blinking notification and color-function support**

Comment #	Name	Page	Subclause	Line	Comment	Proposed Change
12	Lim, Sang-Kyu	61	5.1.10.2	16	1. There is no any description for Table 4 in 5.1.10.2. 2. "Bit: 5" is not clear whether it says 5th bit or the number of bit is 5.	1. Add the description for Table 4 to the text body. 3. Change "Bit :5" in Table 4 to "Bit : b0, b1, b2, b3, b4".

❖ **Agree and Principle and Instruction to Editor in next page**

Instruction to Editor for CID 12

1. Delete the text, figure and table about "hopping" in the draft.
2. Pleaser refer following instruction

- Delete following sentence at line 47 page viii
  - 5.1.10.2Band hopping for interference avoidance..60

- Delete following sentence at line 35 page 3
  - HPhopping pattern

- Delete following sentence at line 23 page 23
  - and band hopping

- Delete subclause 5.1.10.2 at line 50 page 60
  - 5.1.10.2 Band hopping for interference avoidance
    A single coordinator can service multiple cells.
    If interference is being experienced from an adjacent light then hopping can be used to mitigate the interference. When spatial reuse due to direction optics is not present, and when the VLC communications system uses the same time slot between the adjacent light sources or cells with multiple band communication, and when multiple bands are supported by the PHY, band hopping can be used. In order to avoid interference and increase system capacity, pre-assigned hopping patterns should be adopted.
    The hopping pattern should be assigned to the device and then the device should operate and hop based on the assigned hopping pattern.
    If the VLC system does not use multiple bands (Src_multi_info is set to code '0000000'), then the hopping function is not supported. The hopping patterns shall be structured so as not to change the visual perception of the light. For example, the patterns could hop between RGB in the proper time averaged portion so as to appear white.

Table 4—Command frame payload for channel hopping

MAC command frame payload	Bit	Usage/Description	Down/Up Link
H_pattern	5	Band hopping information	D/L

Instruction to Editor for CID 12

1. Pleaser refer following instruction

- Delete following sentence at line 53 page 86

0x10	Band hopping					5.1.10.2

- Delete following sentence at line 22 page 275

An example is shown in Figure D.1 where it is assumed that red, green and blue are available at the optical sources. If a certain optical source uses HP1 (00001) and another optical source in the adjacent cell uses HP2 (00011), then hopping pattern application in the adjacent cell is that HP1 operates R in first frame or time slot, B in second frame or time slot, G in third frame or time slot, but HP2 is operating at G in first frame or time slot, G and R in second frame or time slot, R and B in third frame or time slot. This mechanism can avoid interference between optical sources. Also the hopping pattern application is not limited to one frame or one time slot. A hopping pattern across multiple frames or time slots is fine.

Table D.2 shows a hopping pattern example applicable to VLC. If coordinator assign pattern '00001' to a device by using H_pattern, then the device's frame or time slot moves according to the hopping pattern. Also one hopping pattern or multiple hopping patterns can be assigned to one user.

Instruction to Editor for CID 12

1. Pleaser refer following instruction

- Delete figure Figure D.1—Hopping pattern assignment and Table D.2—Example of hopping pattern assignment at line 21 page 276
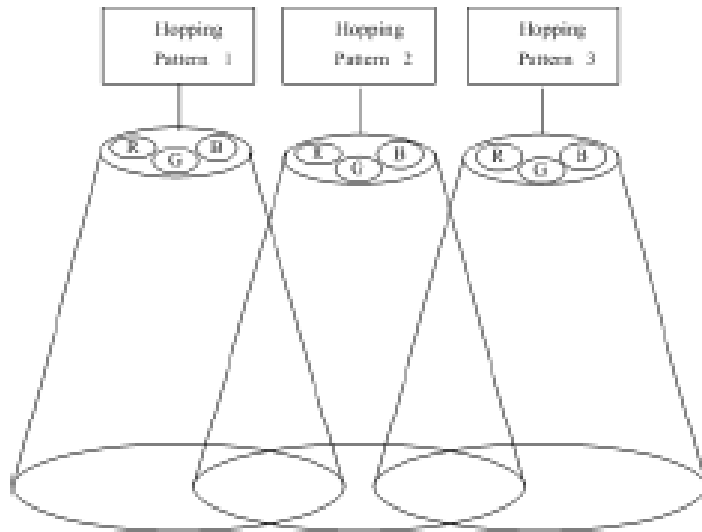

Figure D.1—Hopping pattern assignment

Table D.2—Example of hopping pattern assignment

Pattern	00001	00011	00101
Frame/timeslot	BP1	BP2	BP3
1	R	G	B
2	B	G+R	B
3	G	R+B	G
4	G+R	B	G+R
5	G+R	R	G+B
6	R+B	G	R+B
7	G	B	R
8	B	R	G
9	R	G+B	R