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

Submission Title: Classification of low-rate communications techniques

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Source: Hideki Aoyama
Panasonic Corporation
contact: aoyama.hideki@jp.panasonic.com

Abstract: Classification of low-rate communications techniques

Purpose: Support drafting the standard document

Tx-based Classification

A) Image sensor (Low-rate) communications
   a. Point light source communications
      1. UFSOOK (Intel, 16/0006r1)
      2. Twinkle VPPM (Intel, 16/0006r1)
      3. Offset VPPM (SNUST, 16/0026r2)

Tx is just required to have a function to control light intensity/color.

   b. Surface light source communications
      1. CM-FSK/PSK (Kookmin U., 16/0014r1)
      2. Compatible On-Off Keying (Kookmin U., 16/0013r2)
      3. Surface PWM/PPM (Panasonic, 16/0027r1)
      4. RS-FSK (NTU, 16/0018r0)

Tx is required to have **a certain size** of light as well as a function to control light intensity/color.

   c. 2D source communications
      1. Compatible Color Shift Keying (Kookmin U., 16/0012r1)
      2. Spatial M-PSK (Kookmin U., 16/0015r1)
      3. VCAM (SNUST, 16/0024r3)
      4. Steganographic solution (SNUST, 16/0025r1)

Tx is required to have a function to control light intensity/color **spatially separately** as well as a certain size.

B) High rate communications
   a. …
   b. …

Reasons of Tx-based Classification

1. Most of techniques can be received by multiple types of receivers.
   ex) global/rolling shutter camera, high-speed camera, ROI camera, PD, …
2. The standard defines only what shape of light signal is sent and does not care receiving method
3. Rx is replaced quickly and can be updated by software, but Tx requires 20-year maintenance. So Tx is more important for users.

Proposal

- All techniques of Low-rate communications on the list in the page 2 will be included to 15.7r1 standard because all of them have each usage and advantage and no reason to be rejected