**IEEE P802.15**

**Wireless Personal Area Networks**

|  |  |
| --- | --- |
| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title | Contributuion to section 5 in ARD |
| Date Submitted | [March 9, 2015] |
| Source | Thomas Kürner, Alexander Fricke | E-mail:t.kuerner@tu-bs.de|fricke@ifn.ingtu-bs.de |
| Re: |  |
| Abstract | This contribution contains an additional section for the description on the intra-device use case for TG3d's Applicaton Requirements Document |
| Purpose | Supporting document for the development of the amendment 3d of IEEE 802.15.3 |
| Notice | This document has been prepared to assist the IEEE P802.15. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein. |
| Release | The contributor acknowledges and accepts that this contribution becomes the property of IEEE and may be made publicly available by P802.15. |

# Intra-Device Communication

### Typical transmission rate

To illustrate realistic datarates, let’s consider for instance imaging devices (video-projector or super hi-vision camera). Video-projectors use generally the LCOS (liquid crystal on silicon) technology or the LCD (liquid crystal display) technology. In higher end video-projectors, three LCOS chips or LCD panels are used, each one modulate light in the three primary colors: red, green, and blue. Both LCOS and LCD projectors deliver the red, green, and blue components of the light to the screen simultaneously. The LCOS technology has usually a very high resolution and the system should support very high datarates. There is no spinning color wheel used in these projectors as there is in single-chip Digital Light Processing projectors. Other possible scenario can be super Hi-Vision camera. An example is illustrated in this paper [7]. Figure 5.2 illustrates the Camera head that support 8K4K, 120Hz video format.



Figure 5.2 Camera head of a super Hi-Vision Camera (8K4K/120Hz and 36bits of pixel resolution).

Table 5.3 provides some bitrates (in Gbps) needed to transmit some common video formats:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Pixel resolution | Frame rate | 720x 1280 | 1080x 1920 | 1440x 2560 | 2160x 3840 | 2880x 5120 | 4320x 7680 |
| 24 | 30Hz | 0.664 | 1.494 | 2.654 | 5.971 | 10.610 | 23.887 |
| 24 | 60Hz | 1.327 | 2.985 | 5.304 | 11.934 | 21.206 | 47.774 |
| 24 | 120Hz | 2.654 | 5.971 | 10.610 | 23.872 | 42.420 | 95.548 |
| 36 | 30Hz | 0.995 | 2.238 | 3.977 | 8.948 | 15.900 | 35.830 |
| 36 | 60Hz | 1.990 | 4.477 | 7.955 | 17.898 | 31.804 | 71.660 |
| 36 | 120Hz | 3.980 | 8.955 | 15.913 | 35.804 | 63.623 | 143.320 |
| 48 | 30Hz | 1.327 | 2.985 | 5.304 | 11.934 | 21.206 | 47.774 |
| 48 | 60Hz | 2.654 | 5.971 | 10.610 | 23.872 | 42.420 | 95.548 |
| 48 | 120Hz | 5.308 | 11.943 | 21.222 | 47.749 | 84.887 | 191.096 |

Table 5.3: Bitrates in Gbps versus video format

References

|  |  |
| --- | --- |
| [7] | “120Hz-frame-rate SUPER HI-VISION Capture and Display Devices”, The 2012 Annual Technical Conference & Exhibition.  |