IEEE P802.15

**Wireless Personal Area Networks**

|  |  |
| --- | --- |
| Project | IEEE P802.15.7 Task Group Visible-Light Communication (TG-VLC) |
| Title |  **LB 50 - definitions clause** |
| Date Submitted | 7th July 2010 |
| Source | Joachim W. Walewski, Sridhar Rajagopal | Voice: +49-89-636-45850Fax: E-mail: joachim.walewski curly a siemens.com |
| Re: |  |
| Abstract | I provide text for Clause 3 (Definitions) in the forthcoming draft 2 of IEEE 802.15.7.  |
| Purpose | Contribution of standard-text material for the preparation of IEEE 802.15.7 D2 |
| 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. |
| Document # | 15-10-0459-01-0007 |

1. **Definitions**
	1. **Association:** The service used to establish membership for a device in a wireless personal-area network based on visible-light communication.
	2. **Authentication tag:** Information that allows the verification of authenticity of a message.
	3. **Block cipher:** A cryptographic function that operates on strings of fixed size.
	4. **Block size:** The size, in bits, of the strings on which a block cipher operates.
	5. **Clock and Data Recovery (CDR):** Process in which both the data and the clock is derived from the transmitted signal, without the need to send an explicit clock
	6. **Color frame:** A frame that intuitively provides information such as device status and channel quality to the user, via the various colors used in the VLC application.
	7. **Color Shift Keying (CSK):** A modulation scheme for visible light communication involving multiple light sources, which keeps the average emitted optical color and the total optical power constant during communication.
	8. **Color stabilization:** A control loop for the stabilization of the color emitted by color-shift-keying (CSK) transmitters.
	9. **Contention access period (CAP):** The period of time immediately following a beacon frame during which devices wishing to transmit will compete for channel access using a slotted carrier sense multiple access with collision avoidance (CSMA-CA) mechanism.
	10. **Coordinator:** A device capable of relaying messages. If a coordinator is the principal controller of a personal area network (PAN), it is called the coordinator.
	11. **Device:** Any entity containing an implementation of the IEEE 802.15.7 medium access control (MAC) and physical interface to the wireless medium.
	12. **Device Discovery:** A MAC technique for establishing a link and finding new devices in the network for the purposes of potential communication.
	13. **Dimming:** Reducing the radiant power of a transmitter while preserving the color of the transmitted light.
	14. **Encryption:** The transformation of a message into a new representation so that privileged information is required to recover the original representation.
	15. **Field of view (FOV):** The angular extent of coverage for the optical transmitter or receiver.
	16. **Frame:** The format of aggregated bits from a medium access control (MAC) sublayer entity that are transmitted together in time.
	17. **Flicker:** Variation of the radiant optical power that results in a (detrimental) physiological (human) response.
	18. **Group key:** A key that is known only to a set of devices.
	19. **Idle pattern:** A pattern whose duty cycle variation results in a change of brightness for dimming support and is transmitted during idle or receive mode.
	20. **Key:** Privileged information that may be used, for example, to protect information from disclosure to, and/or undetectable modification by, parties that do not have access to this privileged information.
	21. **Keying material:** The combination of a key and associated security information (e.g., a nonce value).
	22. **Key sharing group:** A set of devices that share a key.
	23. **Local clock:** The symbol clock internal to a device.
	24. **Link key:** A secret key that is shared between precisely two devices.
	25. **Nonce:** A non-repeating value, such as an increasing counter, a sufficiently long random string, or a time stamp.
	26. **On-Off Keying (OOK):** A simple modulation technique that represents digital data as the presence (ON) or absence (OFF) of a signal. Note that ON and OFF are simply two logic levels or two distinct amplitude levels for the purposes of communication and does not necessarily require that the signal be turned OFF completely.
	27. **Payload:** The contents of a data message that is being transmitted.
	28. **Personal operating space (POS):** The space about a person or object that is typically about 10 m in all directions and envelops the person or object, whether stationary or in motion.
	29. **Photodetector:** Optical receiver, which is a sensor for light
	30. **Protection:** The combination of security services provided for information in transit, such as confidentiality, data authenticity, and/or replay protection.
	31. **RLL (Run Length Limited) code**: A line coding technique to send data over a communications channel with limited bandwidth, where ‘run-length’ represents the number of bits for which signal remains unchanged,
	32. **Security level:** Indication of purported protection applied to information in transit.
	33. **Synchronization:** A physical layer technique for aligning and locking the receiver to the data transmission, usually accomplished by the use of a preamble in the physical layer.
	34. **Transaction:** The exchange of related, consecutive frames between two peer medium access control (MAC) entities, required for a successful transmission of a MAC command or data frame.
	35. **Transaction queue:** A list of the pending transactions, which are to be sent using indirect transmission, that are initiated by the medium access control (MAC) sublayer of a given coordinator. The transaction queue is maintained by the coordinator while the transactions are in progress, and its length is implementation-dependent but must be at least one.
	36. **Visibility frames:** Frames sent during idle or receive modes of operation for continuous visibility and dimming support. By so doing the device is still emitting light while not communicating, and it is thus able to fulfill its lighting function. The payload of the frame consists of visibility patterns.
	37. **Visibility-light communications personal area network (VPAN) coordinator:** A coordinator that is the principal controller of a PAN. An IEEE 802.15.7 network has exactly one PAN coordinator.
	38. **Visibility pattern:** An in-band idle pattern used in the payload of a visibility frame.
	39. **Variable Pulse Position Modulation (VPPM):** A modulation scheme for visible light communication that acts as 2-PPM for normal communication and allows pulse width control for light dimming support, mitigating intra-frame flicker.