IEEE P802.15
Wireless Personal Area Networks

Project	IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)	
Title	Proposed Text on Common Mode and MMC-PNC	
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Re:	802.15.3c Teleconference Meeting	
Abstract	IEEE 802.15 Task Group TG3c Comment Resolution	
Purpose	Resolutions for the Comments on Common Mode and MMC-PNC	
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12.1.7 Requirements for mmWave PNCs

To enable interoperability and coexistence among DEVs from different PHY modes, Common Mode Signaling (CMS) shall be supported by all PNC-capable devices. The following PNC rules have been defined:

- An AV PNC-capable DEV, when operating as a PNC, shall transmit an AV beacon and a CMS beacon in every superframe. If the AV beacon is transmitted in the beginning of the superframe, then the CMS beacon shall be transmitted in the CTAP, and vice versa.
- An HSI PNC-capable DEV, when operating as a PNC, shall transmit an HSI beacon and a CMS beacon in every superframe. If the HSI beacon is transmitted in the beginning of the superframe, then the CMS beacon shall be transmitted in the CTAP, and vice versa.
- An AV PNC-capable DEV shall be able to receive the CMS beacon and command frames.
- An HSI PNC-capable DEV shall be able to receive the CMS beacon and command frames.

12.1.7.1 CP operation

The CPs in a piconet shall all be conducted using the same mmWave PHY mode, one of SC, HSI and or AV, as the beacon. Any MCS that is supported by both the source and destination and which is in the same PHY mode as the beacon may be used in a CP, with the exception of the AV HRP modes, which shall not be used in a CP.

12.1.8 Common Mode

The Common Mode Signaling (CMS) is a common signaling that shall be supported by all PNC-capable DEVs in all PHY modes. The role of CMS is to enable interoperability among different PHY modes. CMS may be used for both interference mitigation and data transmission purposes.

12.1.8.1 MCS dependant parameters for CMS

The MCS dependant parameters for CMS shall be set according to Table 99. The chip rate shall be 1728Mchip/s. The CMS shall be modulated with π/2-BPSK and employ RS(255,239) as the FEC. The burst length shall be 256, with pilot word length of 0.

Table 99 MCS Dependant Parameters for CMS

MCS Identifier	PHY-SAP (Mb/s)	Modulation Scheme	Spreading factor	FEC type	FEC rate
CMS	50.6	π/2-BPSK/(G)MSK	32	RS(255,239)	0.937

12.1.8.2 Header rate dependant parameters for CMS

The header rate dependant parameters for CMS shall be set according to Table 100. The chip rate for the CMS header shall be 1728Mchip/s. The burst length shall be 256, with pilot word length of 0.

Table 100 MCS Dependant Parameters for CMS

Header Rate (Mb/s)	Modulation Scheme	Spreading factor	FEC type	FEC rate
27.8	π/2-BPSK/(G)MSK	32	RS(33,17)	0.515

12.1.8.3 Modulation and Coding for CMS

Editorial notes: Partially copy 12.2.2.1 Modulation 12.2.2.2 Forward error correction to this subclause.

12.1.8.4 Preamble for CMS

Editorial notes: Partially copy 12.2.3 PHY preamble, 12.2.3.1 Frame Synchronization, 12.2.3.3 Frame SFD, 12.2.3.3 Channel estimation sequence to this subclause.

12.1.8.5 PHY Header for CMS

Editorial notes: Partially copy 12.2.4 Frame header, 12.2.4.1 PHY header to this subclause.

12.1.8.6 Frame payload for CMS

Editorial notes: Partially copy 12.2.5 Frame payload to this subclause.

12.1.9 Multi-mode-capable PNC

A multi-mode-capable (MMC) PNC is a PNC-capable DEV that supports multiple mmWave PHY modes. The MMC-PNC is an optional advanced PNC feature that enables and manages communication among DEVs operating in different PHY modes within one piconet.

An MMC-PNC shall be able to transmit and receive CMS beacon and command frames. CMS shall be mandatory for beaconing and CP.

The MMC-PNC shall first transmit CMS beacon and reserve multiple CTAs for the PHY modes it supports. Any device which supports CMS may join the piconet by using the CMS in CP by using the association procedure defined in 8.3. In each CTA, the MMC-PNC transmits the beacon in the corresponding PHY mode. DEVs of that PHY mode may then join the piconet using the association procedure, and conduct communication with the MMC-PNC. Furthermore, communication between DEVs with different PHY modes is also supported through MMC-PNC bridging. The bridging function is implementation-dependant.