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IEEE 802.15-10-0872-00-004g

IEEE P802.15
Wireless Personal Area Networks

Project	IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)	
Title	Enhanced Beacon Related MAC Primitives	
Date Submitted	Nov., 2010	
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Re:		
Abstract	IEEE 802.15 Task Group TG4g Comment Resolution	
Purpose	To modify the primitives according to the modifications in the enhanced beacon and enhanced beacon request frame formats	
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Release	The contributor acknowledges and accepts that this contribution becomes the property of IEEE and may be made publicly available by P802.15.	

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Text – General Idea of this document

Text – Frequency hopping related

Not Part of the Draft Modification

General Idea:

This purpose of this document is to add/modify the primitives in accordance to the changes made in EB/EBR frame formats and the addition of frequency hopping mechanism.

The basic changes in this document:

1 MCPS-DATA.request

1.1 For the transmission of EBR

2 MCPS-BEACON-NOTIFY.indication

2.1 For the convey of all information to upper layer upon receiving the EB

3 MLME-SCAN.request

3.1 For the control of scanning process including selecting channels to scan and etc.

4 MLME-START.request

4.1 For the control of transmitting the outgoing EB for potential incoming networks

Instructions to the editors are given in *Editorial Notes* in red font.

Editorial note: Remove sub-clauses 7.1.5a, 7.1.11, 7.1.14.1 and all corresponding sub-sub-clauses. Replace with the following text.

Editorial note: Add 7.1.1.1 as the following

7.1.1.1 MCPS-DATA.request

7.1.1.1.1 Semantics of the service primitive

Add additional parameters to primitive:

MCPS-DATA.request

```
(
  ...
  SUNattributeID
)
```

Add element in Table 41 as follows:

Table 41 – MCPS-DATA.request parameters

Name	Type	Valid Range	Description
...			
SUNattributeID	Integer	See Table 120a	Determines which IEs are sent in the enhanced beacon. Otherwise set to zero.

Editorial note: Add 7.1.5.1 as the following

7.1.5.1 MCPS-BEACON-NOTIFY.indication

7.1.5.1.1 Semantics of the service primitive

Add additional parameters to primitive:

MCPS-BEACON-NOTIFY.indication

```
(
...
CoexSpecification
FrequencyHoppingSpecification
)
```

Add element in Table 54 as follows:

Table 54 – MLME-BEACON-NOTIFY.indication parameters

Name	Type	Valid Range	Description
...			
CoexSpecification	Sets of octets	See 7.2.2.4a.2	The Coex Specification contains the information on multi-PHY management
FrequencyHoppingSpecification	Sets of octets	See 7.2.2.4a.3	The Frequency Hopping Specification contains the information on frequency hopping network

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Editorial note: Add 7.1.11.1 as the following

7.1.11.1 MLME-SCAN.request

7.1.11.1.1 Semantics of the service primitive

Add additional parameters to primitive:

MLME-SCAN.request

```

(
  ...
  ScanDurationBPAN
  ScanDurationNBPAN
  IsSUNFrequencyHopping
  ScanDurationFHPAN
  MPMScanChannels
)

```

Add element in Table 67 as follows:

Table 67 – MLME-SCAN.request parameters

Name	Type	Valid Range	Description
...			
ScanDurationBPAN	Integer	0-14	The maximum time spent to scan for enhanced beacon of a beacon-enabled PAN in the channel is [<i>aBaseSuperframeDuration</i> * 2 ^{<i>n</i>}] symbols, where <i>n</i> is a parameter to specify the scan duration
ScanDurationNBPAN	Integer	0-16383	The maximum time spent to scan for enhanced beacon of a non-beacon-enabled PAN in the channel is [<i>aNBPANSlotDuration</i> * <i>n</i>] symbols, where <i>n</i> is a parameter to specify the scan duration
<u>IsSUNFrequencyHopping</u>	Boolean	TRUE or	To determine whether the network is a

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		FALSE	SUN frequency hopping network
ScanDurationFHPAN	Integer	0-16383	The maximum time spent to scan for enhanced beacon of a frequency hopping PAN in the channel is [<i>aFrequencyHoppingTimeUnitDuration</i> * <i>n</i>] symbols, where <i>n</i> is a parameter to specify the scan duration
MPMScanChannels	Bitmap	<i>phyMaxSUNChannelSupported</i> + 1 bits	The specific channels where enhanced beacon is transmitted and scanned in a multi-PHY PAN, including a frequency hopping PAN. MPMScanChannels is a subset of parameter ScanChannels. This parameter facilitates selected channels for EB to be sent and scanned. Further scanning may be avoided when an EB is received.

Editorial note: Add 7.1.14.1 as the following

7.1.14.1 MLME-START.request

7.1.14.1.1 Semantics of the service primitive

Add additional parameters to primitive:

MLME-START.request

```
(
...
SUNattributeID
EnhancedBeaconOrder
OffsetTimeSlot
NBPANEnhancedBeaconOrder
DwellTimeOrder
FrequencyHoppingEnhancedBeaconOrder
HoppingChannelSwitchOrder
)
```

Add element in Table 108 as follows:

Table 108 – MLME-START.request parameters

Name	Type	Valid Range	Description
...			
<u>SUNattributeID</u>	Integer	See Table 120a	Determines which IEs are sent in the EB. Otherwise set to zero.
<u>EnhancedBeaconOrder</u>	Integer	0-15	Indicates how often the EB is to be transmitted in a beacon-enabled PAN. A value of 15 indicates that no enhanced beacon will be transmitted.
<u>OffsetTimeSlot</u>	Integer	1-63	Indicates the time difference between the EB and the preceding periodic beacon.
<u>NBPANEnhancedBeaconOrder</u>	Integer	0-16383	Indicates how often the EB is to be

			transmitted in a non-beacon-enabled PAN (<i>i.e.</i> BeaconOrder = 15). A value of 16384 indicates that no enhanced beacon will be transmitted.
<u>DwellTimeOrder</u>	Integer	0-16383	Indicates the dwell time for occupancy in one channel (<i>i.e.</i> one hop) in the frequency hopping sequence
<u>FrequencyHoppingEnhancedBeaconOrder</u>	Integer	0-16383	Indicates how often the EB is transmitted in a frequency hopping network. A value of 16384 indicates that no EB will be transmitted.
<u>HoppingChannelSwitchOrder</u>	Integer	0-16383	Indicates the duration between the EB and the starting time boundary of that particular channel.