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IEEE 802.15-10-0872-01-004g

**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

This document resolves the comments with CID as below:

78,80,81,82,83,84,85,86,87,88,89,90,92,145,285,286,287,288,289,290,291,292,293,294,  
,295,297,862,864,865,866,867,868,869,870,871,872,873,874,875,922,1057,1071,1081,  
1140

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 <sup><i>n</i></sup> ] 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>aBaseSlotDuration</i> * <i>n</i> ] symbols, where <i>n</i> is a parameter to specify the scan duration
<u>IsSUNFrequencyHopping</u>	Boolean	<u>TRUE</u> or <u>FALSE</u>	<u>To determine whether the network is a SUN frequency hopping network</u>

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<u>ScanDurationFHPAN</u>	Integer	0-16383	The maximum time spent to scan for enhanced beacon of a frequency hopping PAN in the channel is $[aFrequencyHoppingTimeUnitDuration * n]$ symbols, where $n$ is a parameter to specify the scan duration
<u>MPMScanChannels</u>	Bitmap	<i>phyMaxSUNC</i> <i>hannelSupport</i> <i>ed + 1 bits</i>	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.

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*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	1-15	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.