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Title	**Clarifications for the Interaction Between Sleep Mode and Scanning**	
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Re:	P 802.16 / Corrigendum 2 / Draft 2	
Abstract	The contributors believe that the existing scan period requirements have an undesirable impact on sleep mode functionality. This contribution proposes amendments to preserve sleep mode functionality.	
Purpose	Review and adopt	
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Clarifications for the Interaction Between Sleep Mode and Scanning

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Introduction

The existing text requires that the power saving class (PSC) associated with the basic CID should be deactivate d when the BS receives the MOB_SCN-
REQ. A side effect of this requirement is that during this time, the scan mode may not start until the frame indic ated in the MOB_SCN-
RSP (sent to the MS by the BS). The effect is that an interval is forced on the MS where it must remain “awake ” (i.e., not in sleep mode) and on-
channel even though this interval is unlikely to be useful for exchanging data with the MS. This requirement un necessarily constrains MS operation during this interval. The disruption of BS unavailability intervals during sw itching from sleep to scan and scan to sleep also causes unnecessary power drain and results in reduced active s ession battery life for an MS that must engage in regular scan operations for mobility purposes. Therefore, it sh ould be made possible for the switching from sleep mode (PSC associated with the Basic CID) to Scan mode, a nd vice-
versa to be seamless such that switching from Scan to Sleep and Sleep to Scan occurs with no interruptions to u navailability intervals. The proposed change attempts to resolve this problem while still preserving the original i ntent of the original proposal that sleep and scan mode are mutually exclusive.
As this proposal changes the instant when the PSC is deactivated when scan mode starts from the instant define d in CR #76 (07-
013r5), it really should be used with traffic triggered wakening flag set to 0 since if traffic triggered wakening fl ag was set to 1, the PSC would have been deactivated before the MOB_SCN-REQ by a Bandwidth Request.

Proposed Text Changes

[Add the following text to section 6.3.2.3.48:]

The MOB_SCN-REQ message may include the following parameters encoded as TLV tuples:

Sleep Mode Reactivation Information (See 11.20.2)

The MOB_SCN-REQ message shall include the following parameters encoded as TLV tuples:

HMAC/CMAC Tuple (See 11.1.2.)

[Add the following text to section 6.3.2.3.49:]

The MOB_SCN-RSP message may include the following parameters encoded as TLV tuples:

Sleep Mode Reactivation Information (See 11.20.2)

The MOB_SCN-RSP message shall include the following parameters encoded as TLV tuples:

HMAC/CMAC Tuple (See 11.1.2.)

[Change the following text in section 6.3.21.1:]

MS in sleep mode may request BS to allocate scan duration by sending MOB_SCN-REQ in case trigger action for sending MOB_SCN-REQ message is enabled by Enabled-Action-Triggered TLV. ~~In this case, MS shall deactivate the PSC associated to basic CID before sending MOB_SCN-REQ, and the BS shall regard the MS as deactivating the PSC associated to basic CID after reception of the MOB_SCN-REQ message.~~ When the PSC associated with the Basic CID has Traffic_triggered_wakening_flag set to 0, the MS's PSC associated with the Basic CID shall be regarded as deactivated from the start frame of the scanning procedure specified by the BS's MOB_SCN-RSP. However, if the MOB_SCN-RSP scan duration field indicates the denial of scanning interval allocation, the PSC shall remain activated.

The PSC associated with the Basic CID shall not be activated during scanning.

The MS may include the Sleep Mode Reactivation Information TLV (See 11.20.2) in its MOB_SCN-REQ to request automatic reactivation of the PSC associated with its Basic CID that has Traffic_triggered_wakening_flag set to 0. The BS may then include the Sleep Mode Reactivation Information TLV in its MOB_SCN-RSP to confirm the automatic reactivation and specify the frame offset from the end of the scanning procedure (i.e. end of the last scanning interval) to the start of the reactivated sleep mode operation. If the BS wants to deny the MS request for automatic PSC reactivation, the BS shall not include the Sleep Mode Reactivation Information TLV in the MOB_SCN-RSP. When this PSC is reactivated, the sleep window shall be initialized by the original PSC definition. If the MS terminates the scanning procedure abnormally, it shall consider the PSC associated with its Basic CID as deactivated.

[Modify the texts in section 11.20 on page 436:]

11.20 MOB_SCN-REQ/RSP message encodings

11.20.1 Recommended Start Frame

Name	Type	Length	Value	Scope
Recommend start frame	1	1	Represents the 8 least significant bits of the absolute frame number for which the MS recommends the first Scanning Interval to start.	MOB_SCN-REQ

[Insert new section 11.20.2 as indicated:]

11.20.2 Sleep Mode Reactivation Information

When the start of the scanning procedure deactivates the Power Saving Class of Type I associated with the MS's Basic CID, the MS may request the BS to automatically reactivate the PSC after completion of the scanning procedure, and the BS shall specify the frame offset from the end of the scanning procedure to the start of the reactivated sleep mode operation. The BS shall not include Sleep Mode Reactivation Information TLV in the MOB_SCN-RSP if the MS has not requested it. Also, if the BS wants to deny the MS request for automatic PSC reactivation, the BS shall not include the Sleep Mode Reactivation Information TLV in the MOB_SCN-RSP.

Type	Length	Value	Scope
2	2	Bit#0-15: The frame offset from the end of the last scanning interval in scan mode to the start frame of the reactivated PSC as recommended by the MS or configured by the BS.	MOB_SCN-REQ MOB_SCN-RSP