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| Re: | Sponsor Ballot Recirculation on P802.16.1b/D3 | |
| Abstract | This contribution provides clarification on inclusion of parameters in MAC control messages. | |
| Purpose | For discussion in M2M TG and adoption into 16.1b draft | |
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**Clarification on Conditions for Parameters included in MAC Control Messages**

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# Introduction

This contribution is a response to some comments submitted by a Sponsor Member to indicate errors in the current MAC control message format. According to the commenter, the current description included in MAC control message format is ambiguous and not consistent with one another.

The purpose of this contribution is to change the current texts to make the texts in condition fields consistent and correct the indicated ambiguity.

# Proposed Texts

----------------- Start of the text proposal --------------------------------------------------------------------------------------

[***Remedy 1: Change Table 27 on page 10 as follows***]

Table 27 – AAI-RNG-REQ message field description

|  |  |  |  |
| --- | --- | --- | --- |
| **Fields** | **Size (bits)** | **Value** | **Condition** |
| Ranging Purpose Indi­cation | 4 | 0b0000 = Initial network entry  0b0001 = HO reentry  0b0010 = Network reentry from idle mode  ...  0b1101 = NS/EP call setup  0b1110 = Abnormal power down indication  0b1110 - 0b1111 = *Reserved* |  |
| ... | ... |  | ... |
| } else if (Ranging Pur­pose Indication == 0b0010) { |  | // Network reentry from idle mode |  |
| if (S-SFH Network Configuration bit == 0b1 or AMSID privacy is disabled){ |  |  |  |
| AMS MAC address | 48 | AMS’s real MAC address |  |
| } else{ |  |  |  |
| Deregistration Identi­fier (DID) | 18 | The ID that the AMS is assigned for idle mode and currently main­tains. | If the Localized-Idle-Mode-flag is set to 1 in AAI-DREG-REQ/RSP message, DID shall not be included in this message. |
| Fixed M2M Deregistra­tion ID (FMDID) | 16 | Used to indicate Fixed M2M Deregistration ID used to identify the fixed M2M device in idle mode  0..216-1 | ~~Only present~~Shall be present if the Local­ized-Idle-Mode-flag is set to 1 in AAI-DREG-REQ/RSP message. |
| } |  |  |  |
| MFM-bitmap | 2 | Bitmap to indicate the MFM (MIMO Feedback Mode)s for which the M2M device is sending feedback as described in Table 878. Maximum of 2 distinct concurrent MFM are allowed with MFM-bit­map.  LSB #0: MFM 0  LSB #1: MFM 4 | ~~Present~~Shall be present if MFM 0 or MFM 4 are supported by a fixed M2M device and an M2M device is configured to report MIMO feedback during network reentry |
| If (LSB#0 in MFM-bit­map == 1){ |  |  |  |
| Wideband CQI | 4 |  |  |
| Wideband STC rate | 3 | ‘STC rate - 1’ mapped to 3-bit unsigned integer (i.e., STC rate=1 as 0b000 ~ STC rate=8 as 0b111) |  |
| } |  |  |  |
| If (LSB#1 in MFM-bit­map == 1){ |  |  |  |
| Wideband CQI | 4 |  |  |
| Wideband STC | 3 | ‘STC rate - 1’ mapped to 3-bit unsigned integer (i.e., STC rate=1 as 0b000 ~ STC rate=8 as 0b111) |  |
| Wideband PMI | 6 | Wideband preferred matrix index (PMI), size of which is number of PMI bits (‘NB’) used, mapped to NB LSB bits of this field, while the remaining MSB bit(s) set to zero(0) |  |
| } |  |  |  |
| Paging Controller ID | 48 | The Paging Controller ID that the AMS currently maintains in idle mode. | If the Localized-Idle-Mode-flag is set to 1 in AAI-DREG-REQ/RSP message, Paging Control­ler ID shall not be included in this message. |
| ... |  |  |  |
| Bandwidth Request Size | 11 | Amount of bandwidth requested in bytes | ~~Optional~~  Shall be present when M2M device which performs network reentry requests bandwidth for UL data to be transmitted after completion of the current network reentry |
| } else if (Ranging Pur­pose Indication == 0b0011 |0b0110|0b0111| 0b1011) { |  | // Idle mode location update (and with other additional purposes) |  |
| ... | ... | ... | ... |
| M2M short data burst encryption indicator | 1 | Indicate that the included M2M short data burst is encrypted.  0b0: not encrypted  0b1: encrypted | ~~Present~~Shall be present if M2M device includes M2M short data burst in this message |
| Current-M2M-GROUP-ZONE-D | 12 | M2M-GROUP-ZONE-ID for the current MGID | ~~Present~~ Shall be present when an M2M device requests MGID update during location update or network reentry if the M2M device does not have the information of new M2M Group Zone. |
| For(i=0;i<Num-MGID;i++){ |  |  |  |
| Current-MGID | 12 | Current MGID | ~~Present~~Shall be present when an M2M device requests MGID update during location update or network reentry if the M2M device does not have the information of new M2M Group Zone. |
| } |  |  |  |
| }//end of Ranging Pur­pose Indication else if (Ranging Purpose Indi­cation == 0b1110) { |  | //Abnormal or involuntary power down |  |
|  |  |  |  |
| } |  |  |  |
| ... | ... | ... | ... |
| Retrials | 2 | The number of failed trials in this ranging process  Bits 0-1: Indicates the number of retrials in the channel ranging access as follows:  00 - Success in the first attempt  01 - Success in the second attempt  10 - Success in the third attempt  11 - Success in the 4th or later attempt | ~~May be included by M2M devices after initial ranging during network entry or re-entry, periodic ranging, or HO ranging.~~  Shall be present when an M2M device is configured to report statistics of initial ranging during network entry or re-entry, periodic ranging, or HO ranging. |
| ... | ... | ... | ... |

[***Remedy 2: Change Table 28 on page 12 as follows***]

Table 28 – AAI-RNG-RSP message field description

|  |  |  |  |
| --- | --- | --- | --- |
| **Fields** | **Size (bits)** | **Value** | **Condition** |
| ... |  | ... | ... |
| bandwidth grant indica­tor | 1 | 0b0: accept bandwidth request, and the M2M device does not need to do bandwidth request after network re-entry  0b1: reject bandwidth request, and the M2M device needs to do band­width request after network re-entry | Shall be included if AAI-RNG-RSP message is transmitted in response to AAI-RNG-REQ message that includes bandwidth request size during net­work reentry from idle mode. |
| M2M-Group-Zone-Index | 2 | M2M-Group-Zone-Index of the corresponding M2M-GROUP-ZONE-ID that the New-MGID belongs to. It is derived based on the implicit ordering of the M2M- GROUP-ZONE-IDs in the AAI-SCD message transmitted by the ABS. | ~~Present~~Shall be present when MGID needs to be updated during location update or network reentry if ABS is part of more than one M2M Group Zone |
| For(*i*=0;*i*<Num-MGID;*i*++){ |  | Number of MGID (Num-MGID) to update | ~~Presented~~Shall be present if MGID needs to be updated |
| Current-MGID | 12 |  |  |
| New-MGID | 12 |  |  |
| New-MGSS | 64 |  | Shall be included only in encrypted AAI-RNG-REQ message when the MGID is updated. |
| } |  |  |  |
| ... |  | ... | ... |
| If (Location Update Response== 0x0){ |  |  |  |
| ... | ... | ... | ... |
| New Fixed M2M Deregistration ID | 16 | New FMDID that the fixed M2M device shall maintain in idle mode. | ~~Only~~Shall be present if the Local­ized-Idle-Mode-flag is set to 1 in AAI-DREG-REQ/RSP message. |
| ... | ... | ... | ... |
| } |  |  |  |
| ... | ... | ... | ... |

[***Remedy 3: Change Table 34 on page 14 as follows***]

Table 34 – AAI-REG-REQ message field description

|  |  |  |  |
| --- | --- | --- | --- |
| **Fields** | **Size (bits)** | **Value** | **Condition** |
| ... | ... | ... | ... |
| Support of STID Sharing | 1 | 0: STID sharing is not supported  1: STID sharing is supported | Shall be included when an M2M device is perform­ing initial network entry. |
| Ranging backoff mechanism | 1 | 0b0: indicates decreasing ranging backoff mecha­nism defined in 6.2.18.7.2 ~~associated with ranging backoff window indicator of 0b1~~ is supported  0b1: indicates decreasing ranging backoff mecha­nism defined in 6.2.18.7.2 ~~associated with ranging backoff window indicator of 0b1~~ is not sup­ported | ~~Present as needed for M2M devices~~  Shall be present when an M2M device is perform­ing initial network entry. |

[***Remedy 4: Change Table 35 on page 15 as follows***]

Table 35 – AAI-REG-RSP message field description

|  |  |  |  |
| --- | --- | --- | --- |
| **Fields** | **Size (bits)** | **Value** | **Condition** |
| ... | ... | ... | ... |
| Support of STID Sharing | 1 | 0: STID sharing is not supported  1: STID sharing is supported | Shall be included when an M2M device is perform­ing initial network entry. |
| STID-Valid-Periodicity | 3 | The STID-Valid-Periodicity together with STID-Valid-Offset indicates at which frames the assigned STID is valid for the M2M device | If support of STID shar­ing is supported by M2M device and ABS, this parameter shall be included when an M2M device is performing initial network entry or an M2M device has no STID pre-assigned when it is performing network reentry proce­dure (see 6.2.15) |
| STID-Valid-Offset | 3 | The STID-Valid-Offset together with STID-Valid-Periodicity indicates at which frames the assigned STID is valid for the M2M device | If support of STID shar­ing is supported by M2M device and ABS, this parameter shall be included when an M2M device is performing initial network entry or an M2M device has no STID pre-assigned when it is performing network reentry proce­dure (see 6.2.15) |
| Ranging backoff mecha­nism | 1 | 0b0: indicates decreasing ranging backoff mecha­nism defined in 6.2.18.7.2 ~~associated with ranging backoff window indicator of 0b1~~ is supported  0b1: indicates decreasing ranging backoff mecha­nism defined in 6.2.18.7.2 ~~associated with ranging backoff window indicator of 0b1~~ is not sup­ported | ~~Present as needed for M2M devices~~  Shall be present when an M2M device is perform­ing initial network entry. |
| Indication of GD scheme | 1 | 0b00: Not support GD scheme  0b01: Support GD scheme | Present when an ABS supports M2M feature |

[***Remedy 5: Change Table 39 on page 15 as follows***]

Table 39 – AAI-NBR-ADV message field description

|  |  |  |  |
| --- | --- | --- | --- |
| **Fields** | **Size (bits)** | **Value** | **Condition** |
| ... |  |  |  |
| }//end of for N-NBR-ABSs |  |  |  |
| For (j=0;j<N-NBR-ABSs; j++){ | 6 | N-NBR-ABSs denotes the number of neighboring ABSs |  |
| For (n=0; n<N-M2M-GROUP-ZONE; n++){ | 2 | N-M2M-GROUP-ZONE denotes the number of M2M Group Zones that the neighbor ABS belongs to. | ~~Present~~Shall be present when N-M2M-GROUP-ZONE > 1 |
| M2M-GROUP-ZONE-ID | 12 |  |  |
| } |  |  |  |
| } |  |  |  |
| For (i-0; i<Num-M2M-Zones; i++) { | 2 | Num-M2M-Zones denotes the num­ber of neighboring M2M Zones |  |
| M2M-GROUP-ZONE-ID | 12 | Denotes the neighbor M2M-GROUP-ZONE-ID |  |
| For (m=0; m<Num-MGID-Mapping; m++) { | 12 | Num-MGID-Mapping is the number of mappings of current MGID and new MGID between the serving M2M Zone and the neighbor M2M Zone, where the current MGID is not the same as the new MGID. | ~~Present~~Shall be present when the map­ping of M2M Service IDs to MGIDs is differ­ent in the neighboring M2M Zone |
| Current MGID to New MGID mapping | 24 | The 12 LSBs denote the MGID in cur­rent M2M Zone and the 12 MSBs denote the corresponding MGID in the associated neighboring M2M Zone.  A value of 0 for 12 MSBs denotes that the associated service is not supported in the corresponding neighboring M2M Zone. |  |
| For (i=0; i<N-NBR-R1-BSs; i++) { |  |  |  |

[***Remedy 6: Change Table 47 on page 17 as follows***]

Table 47 – AAI-DREG-REQ message field description

|  |  |  |  |
| --- | --- | --- | --- |
| **Fields** | **Size (bits)** | **Value** | **Condition** |
| Deregistration\_Request\_Code | 3 | Used to indicate the purpose of this mes­sage  0x00: AMS deregistration request from ABS and network  0x01: request for AMS deregistration from S-ABS and initiation of AMS idle mode.  0x02: response for the unsolicited AAI­DREG-RSP message with action code 0x05 by the ABS.  0x03: reject for the unsolicited AAI-DREG-RSP message with action code 0x05 by the ABS. This code is applicable only when an AMS has a pending UL data to transmit.  0x04: request for AMS deregistration from S-ABS to enter DCR mode  0x05: response for the unsolicited AAI­DREG-RSP message with action code 0x00, 0x01, 0x02 or 0x03  0x06-0x07: *Reserved* |  |
| If (Deregistration\_Request\_Code == 0x01) { |  |  |  |
| Localized-Idle-Mode-flag | 1 | 0: The M2M device enters the normal idle mode.  1: The M2M device enters the localized idle mode. | This parameter shall be ~~presented~~present when the fixed M2M device enters the idle mode and localized idle mode is supported by the M2M device. |
| ... |  |  |  |
| } |  |  |  |
| If (Deregistration\_Request\_Code == 0x02) { |  |  |  |
| Localized-Idle-Mode-flag | 1 | 0: The M2M device enters the normal idle mode.  1: The M2M device enters the localized idle mode. | This parameter shall be ~~presented~~present when the fixed M2M device enters the idle mode and localized idle mode is supported by the M2M device. |
| } |  |  |  |
| ... | ... | ... | ... |

[***Remedy 7: Change Table 48 on page 18 as follows***]

Table 47 – AAI-DREG-RSP message field description

|  |  |  |  |
| --- | --- | --- | --- |
| **Fields** | **Size (bits)** | **Value** | **Condition** |
| Action Code | 4 | Used to indicate the purpose of this message  0x00: AMS shall immediately termi­nate service with the ABS and should attempt network entry at another ABS  0x01: AMS shall listen to the current ABS but shall not transmit until a RES-CMD message or AAI-DREG-RSP message with action code 0x02 or 0x03 is received.  0x02: AMS shall listen to the current ABS but only transmit on the control connection.  0x03: AMS shall return to normal oper­ation and may transmit on any of its active connections.  0x04: This option is valid in response to an AAI-DREG-REQ message with De-registration\_Request\_Code=0x00. The AMS shall terminate current Connected State with the ABS.  0x05: AMS shall begin idle mode initi­ation: a) to signal AMS to begin idle mode in unsolicited manner or b) to allow AMS to transmit AMS-initiated idle mode request at the REQ-Duration expiration  0x06: This option is valid only in response to an AAI-DREG-REQ mes­sage with De-registration\_Request\_Code 0x01: a) to reject AMS-initiated idle mode request or b) to allow AMS to transmit AMS-initiated idle mode request at the REQ-Duration expiration  0x07: This option is valid in response to an AAI-DREG-REQ message with De-registration\_Request\_Code= 0x01 to allow AMS-initiated idle mode request.  0x08: This option is valid only in response to an AAI-DREG-REQ mes­sage with De-registration\_Request\_Code 0x04 to allow retention of the AMS's connec­tion information  0x09: This option is valid only in response to an AAI-DREG-REQ mes­sage with De-registration\_Request\_Code 0x04 to reject retention of the AMS's connec­tion information.  0x10-0x15: *Reserved* |  |
| If (Action Code == 0x05) { |  |  |  |
| Localized-Idle-Mode-flag | 1 | 0: The M2M device enters the normal idle mode.  1: The M2M device enters the localized idle mode. | This parameter shall be ~~presented~~present when the fixed M2M device enters the idle mode and when localized idle mode is supported by the ABS. |
| Paging cycle | 4 | Used to indicate Paging cycle for the AMS 0x00: 4 superframes  0x01: 8 superframes  0x02: 16 superframes  0x03: 32 superframes  0x04: 64 superframes  0x05: 128 superframes  0x06: 256 superframes  0x07: 512 superframes  0x08: 32768 superframes  0x09: 262144 superframes  0x10: 4194304 superframes  0x1108-0x15: *Reserved* | ~~Values 0x08-0x10 may be applied to M2M devices only.~~  Values 0x08-0x10 shall be applied to M2M devices only. |
| Paging offset | 12 | Used to indicate Paging offset for the AMS. Determines the superframe within the paging cycle from which the paging listening interval starts.  Shall be smaller than Paging cycle value. |  |
| M2M paging offset | 10 | Used to indicate the superframe within the paging cycle at which the M2M device’s paging listening interval starts. The superframe is determined by con­catenating the M2M paging offset field and the Paging offset field. M2M pag­ing offset shall be interpreted as the MSB.  Shall be smaller than Paging cycle value. | Shall~~May~~ be present when the Paging cycle value is set to 0x08, 0x09, or 0x10 and ABS set a value longer than 2048 superframe to paging offset of an M2M device. |
| Paging controller ID | 48 | Used to indicate Paging controller that manages and retains the AMS's idle mode information  0..248-1 | For fixed M2M devices, this parameter is ~~presented~~present only when the Localized-Idle-Mode-flag == 0b0 |
| Paging group ID | 16 | Used to indicate Paging group that the AMS is located in  0..216-1 | For fixed M2M devices, this parameter is ~~presented~~present only when the Localized-Idle-Mode-flag == 0b0 |
| Deregistration ID | 18 | Used to indicate Deregistration ID used to identify the AMS in idle mode  0..218-1 | Present when the S-SFH Network Configuration bit == 0b0.  For fixed M2M devices, this parameter is ~~presented~~present only when the Localized-Idle-Mode-flag == 0b0. |
| Fixed M2M Deregistra­tion ID (FMDID) | 16 | Fixed M2M Deregistration ID | For fixed M2M devices, this parameter is ~~presented~~present only when the Localized-Idle-Mode-flag == 0b1. |
| Idle Mode Retain Infor­mation element | 5 | Provided as part of this message indica­tive only. Network reentry from idle mode process requirements may change at time of actual reentry. For each bit location, a value of 0 indicates the information for the associated reentry control messages shall not be retained and managed; a value of 1 indicates the information for the associated reentry control message shall be retained and managed.  Bit 0: Retain AMS service and opera­tional information associated with AAI-SBC-REQ/RSP messages.  Bit 1: Retain AMS service and opera­tional information associated with AAI-PKM-REQ/RSP messages.  Bit 2: Retain AMS service and opera­tional information associated with AAI-REG-REQ/RSP messages.  Bit 3: Retain AMS service and opera­tional information associated with net­work address.  Bit 4: Retain AMS state information. The information retained by setting bit 4 includes configuration of all Service Flows in the AMS as set by successful AAI-DSA and AAI-DSC transactions. In particular it includes FIDs and related description (QoS descriptors and CS classifier information) |  |
| REQ-Duration | 8 | Used to indicate waiting value for the AAI-DREG-REQ message with De-registration\_Request\_Code=0x01  0..28-1: measured in frames | present if needed |
| M2M device-specific Idle Mode Timer | 24 | Length in seconds of the maximum interval between two consecutive loca­tion updates while the M2M device is in idle mode | ~~May~~Shall be present when the M2M device enters idle mode and ABS assigns a long interval for timer based location update |
| } |  |  |  |
| If (Action Code == 0x06) { |  |  |  |
| REQ-Duration | 8 | Used to indicate waiting value for the AAI-DREG-REQ message with De-registration\_Request\_Code=0x01  0..28-1: measured in frames | present if needed |
| } |  |  |  |
| If (Action Code == 0x07) { |  |  |  |
| Localized-Idle-Mode-flag | 1 | 0: The M2M device enters the normal idle mode.  1: The M2M device enters the localized idle mode. | This parameter shall be ~~presented~~present when the fixed M2M device enters the idle mode and when localized idle mode is supported by the ABS. |
| Paging cycle | 4 | Used to indicate Paging cycle for the AMS  0x00: 4 superframes  0x01: 8 superframes  0x02: 16 superframes  0x03: 32 superframes  0x04: 64 superframes  0x05: 128 superframes  0x06: 256 superframes  0x07: 512 superframes  0x08: 32768 superframes  0x09: 262144 superframes  0x10: 4194304 superframes  0x1108-0x15: *Reserved* | ~~Values 0x08-0x10 may be applied to M2M devices only.~~  Values 0x08-0x10 shall be applied to M2M devices only. |
| Paging offset | 12 | Used to indicate Paging offset for the AMS. Determines the superframe within the paging cycle from which the paging listening interval starts.  Shall be smaller than Paging cycle value. |  |
| Second paging offset | 12 | Used to indicate additional paging off­set for the M2M device. | ~~Optional~~  Shall be present when the ABS assign additional paging offset to the M2M device |
| M2M paging offset | 10 | Used to indicate the superframe within the paging cycle at which the M2M device's paging listening interval starts. The superframe is determined by con­catenating the M2M paging offset field and the Paging offset/Second paging offset field. M2M paging offset shall be interpreted as the MSB.  Shall be smaller than Paging cycle value. | Shall~~May~~ be present when the Paging cycle value is set to 0x08, 0x09, or 0x10 and ABS set a value longer than 2048 superframe to paging offset of an M2M device |
| Paging controller ID | 48 | Used to indicate Paging controller that manages and retains the AMS's idle mode information  0..248-1 | For fixed M2M devices, this parameter is ~~presented~~present only when the Localized-Idle-Mode-flag == 0b0 |
| Paging group ID | 16 | Used to indicate Paging group that the AMS is located in  0..216-1 | For fixed M2M devices, this parameter is ~~presented~~present only when the Localized-Idle-Mode-flag == 0b0 |
| Deregistration ID | 18 | Used to indicate Deregistration ID used to identify the AMS in idle mode  0..218-1 | Present when the S-SFH Network Configuration bit == 0b0.  For fixed M2M devices, this parameter is ~~presented~~present only when the Localized-Idle-Mode-flag == 0b0. |
| Fixed M2M Deregistra­tion ID (FMDID) | 16 | Fixed M2M Deregistration ID | For fixed M2M devices, this parameter is ~~presented~~present only when the Localized-Idle-Mode-flag == 0b1. |
| Idle Mode Retain Infor­mation element | 5 | Provided as part of this message indica­tive only. Network reentry from idle mode process requirements may change at time of actual reentry. For each bit location, a value of 0 indicates the information for the associated reentry control messages shall not be retained and managed; a value of 1 indicates the information for the associated reentry control message shall be retained and managed.  Bit 0: Retain AMS service and opera­tional information associated with AAI-SBC-REQ/RSP messages.  Bit 1: Retain AMS service and opera­tional information associated with AAI-PKM-REQ/RSP messages.  Bit 2: Retain AMS service and opera­tional information associated with AAI-REG-REQ/RSP messages.  Bit 3: Retain AMS service and opera­tional information associated with net­work address.  Bit 4: Retain AMS state information. The information retained by setting bit 4 includes configuration of all Service Flows in the AMS as set by successful AAI-DSA and AAI-DSC transactions. In particular it includes FIDs and related description (QoS descriptors and CS classifier information) |  |
| M2M device-specific Idle Mode Timer | 24 | Length in seconds of the maximum interval between two consecutive loca­tion updates while the M2M device is in idle mode | ~~May~~Shall be present when the M2M device enters idle mode and ABS assigns a long interval for timer based location update |
| Transmission Type | 1 | 0: *Reserved*  1: Allowed to send data only after receiving paging message with M2M report code 0b1 | ~~Present if needed~~  Shall be present when the ABS request an M2M device to send data only after receiving paging message with M2M report code set to 0b01 (See 6.2.18.7.1) |
| Max number of paging cycle | 16 | This is for M2M device to wait for AAI-PAG-ADV with M2M report code 0b1. See 6.2.18.7.1. The unit is the duration of the paging cycle. | ~~Present~~Shall be present if Transmission Type is set to 1 |
| } |  |  |  |

[***Remedy 8: Change Table 49 on page 23 as follows***]

Table 49 – AAI-PAG-ADV message field description

|  |  |  |  |
| --- | --- | --- | --- |
| **Fields** | **Size (bits)** | **Value** | **Condition** |
| ... | ... | ... | ... |
| For (*i*=0; *i*<M; *i*++) { |  | M equals the number of bits in Paging\_Group\_IDs bit­map whose bit is set to 1. | Present only for M2M devices |
| For (*j*=0; *j*<Num-devices; *j*++) { |  | Num-devices indicates the number of paged M2M devices in a corresponding paging group 1..32 |  |
| Deregistration Identifier | 18 | Used to indicate Deregistra­tion ID for the M2M device to be paged (Deregistration Identifier and Paging Cycle are used to identify each paged M2M device)  0..218- 1 | ~~Present~~Shall be present if the S-SFH Net­work Configuration bit == 0b0 |
| MAC Address Hash | 24 | Used to identify the M2M device to be paged | ~~Present~~Shall be present if the S-SFH  Network Configuration  bit == 0b1 |
| Paging Cycle | 4 | Used to indicate Paging cycle for the M2M device to be paged  0x00: 4 superframes  0x01: 8 superframes  0x02: 16 superframes  0x03: 32 superframes  0x04: 64 superframes  0x05: 128 superframes  0x06: 256 superframes  0x07: 512 superframes  0x08: 32768 superframes  0x09: 262144 superframes  0x10: 4194304 superframes  0x11-0x15: *Reserved* | ~~Present~~Shall be present if the S-SFH  Network Configuration  bit == 0b0 |
| Action Code | 1 | Used to indicate the purpose of the AAI-PAG-ADV mes­sage  0b0: perform network reen­try  0b1: perform ranging for location update |  |
| M2M network access type | 2 | Indicate the network access type for M2M device;  0b00: Resource allocation (i.e., Fixed M2M Ranging Assignment A-MAP offset) for AAI-RNG-REQ  0b01: dedicated ranging channel allocation in AAI-PAG-ADV  0b10: dedicated ranging channel allocation in broad­cast assignment A-MAP IE  0b11: No dedicated ranging channel |  |
| If (M2M network access type == 0b00) { |  |  |  |
| Fixed M2M Ranging Assignment A-MAP offset for AAI-RNG-REQ |  | Indicates the offset in units of frames of the Fixed M2M Ranging Assignment A-MAP IE for AAI-RNG-REQ message, where the reference point of this offset value is the frame in which the AAI-PAG-ADV is transmitted. |  |
| } |  |  |  |
| M2M Report code | 1 | Indication for the M2M device to send the uplink report  0b0: *Reserved*  0b1: Send uplink report | ~~Present if M2M is sup­ported~~  Shall be present if polling of UL report is supported by M2M device and ABS |
| } // End of for (j=0;j<Num-devices;j++) |  |  |  |
| } // End of for (i=0; i<M; i++) { |  |  |  |
| Initial ranging backoff start | 4 | Indicate the initial backoff window size for M2M devices. This parameter is applied for all M2M devices that are individually instructed to perform net­work reentry or location update by this message. | ~~May~~Shall be present if there is at least one M2M device that is individually instructed to perform net­work reentry or location update by this message and ABS assigns a new initial ranging backoff start which is different from one assigned by S-SFH SP2. |
| Ranging backoff window indica­tor | 1 | 0b0: increasing the ranging backoff window size by a factor of 2 per every rang­ing retry  0b1: decreasing the ranging backoff window size by a factor of 2 per every rang­ing retry as described in 6.2.18.7.2 | ~~If~~Shall be present if Initial ranging backoff start field for individual paging is present |
| For (*i*=0; *i*<Num-MGID; *i*++) { |  | Num-MGID indicates the number of MGIDs included in this paging message [0..63] | ~~Shall be included if the ABS sends DL multicast data for M2M after trans­mission of the AAI-PAG-ADV message.~~  Shall be present if there is at least one M2M group that is instructed to perform net­work reentry, location update, reception of multicast traffic or MGID re-assignment by this message. |
| MGID | 12 | M2M Group ID |  |
| M2M-Group-Zone-Index | 2 | Zone Index corresponding to an M2M-GROUP-ZONE-ID based on the implicit ordering of the M2M-GROUP-ZONE-IDs in the broadcasted message.  It is derived based on the implicit ordering of the M2M-GROUP-ZONE-IDs in the AAI-SCD message transmitted by the ABS. | ~~Present~~Shall be present if ABS is part of more than one M2M Group Zone. |
| Action Code | 2 | 0b00: Performing network reentry  0b01: Performing location update  0b10: Receiving multicast traffic without requiring network reentry  0b11: MGID re-assignment |  |
| If (Action Code == 0b00 or 0b01) { |  |  |  |
| Initial ranging backoff start | 4 | Indicate the initial backoff window size for M2M devices included in this group | Shall be present if there is at least one M2M device group that is instructed to perform net­work reentry or location update by this message and ABS assigns a new initial ranging backoff start which is different from one assigned by S-SFH SP2. |
| Ranging backoff window indi­cator | 1 | 0b0: increasing the ranging backoff window size by a factor of 2 per every rang­ing reentry  0b1: decreasing the ranging backoff window size by a factor of 2 per every rang­ing reentry as described in 6.2.18.7.2 | Shall be present if Initial ranging backoff start field for group paging is present |
| M2M network access type | 2 | Indicate the network access scheme for M2M device  0b00: Resource allocation (i.e., Fixed M2M Ranging Assignment A-MAP offset) for AAI-RNG-REQ, This type is only applicable to fixed M2M device (i.e., Localized\_Idle\_Mode flag was set to 1 at the idle mode initiation). Except fixed M2M device, mobile M2M device shall perform the contention-based ranging.  0b01: dedicated ranging channel allocation, S-RCH  0b10: dedicated ranging channel allocation, NS-RCH  0b11: No dedicated ranging channel |  |
| If (M2M network access type == 0b01 | 0b10) { |  |  |  |
| Group paging change count | 2 | Group paging change count  The value is increased whenever the whole M2M group is paged in a new round, the value rolls over from 0 to 3. | ~~May be present if M2M feature is supported~~  Shall be present if iterative group paging based on Group Access Probability is supported (See 6.2.18.7.2) |
| Group access probability | 2 | 0b00:25%  0b01:50%  0b10:100%  0b11: *Reserved* | ~~May be present if M2M feature is supported~~  Shall be present if iterative group paging based on Group Access Probability is supported (See 6.2.18.7.2) |
| M2M ranging opportunity sub­frame index | 3 | Indicates the subframe index of the allocated rang­ing opportunity dedicated for M2M devices. | Shall be present if the ABS allocates ranging resource dedicated for M2M devices using this message. |
| Periodicity of the M2M ranging | 3 | Indicates the periodicity of the ranging dedicated for M2M devices.  0b000: transmission in every frame  0b001: transmission in the first frame in every super­frame  0b010: transmission in the first frame in every even numbered superframe, i.e., mod (superframe number, 2) = 0  0b011: transmission in the first frame in every 4th superframe, i.e., mod (superframe number, 4) = 0  0b100~0b111: *Reserved* | Shall be present if the ABS allocates ranging resource dedicated for M2M devices using this message. |
| Dedicated Channel Allocation Timer | TBD | Time duration in which dedicated channel alloca­tion (i.e., M2M ranging opportunity subframe index, Periodicity of the M2M ranging) is valid. | Shall be included if the ABS allocates dedicated ranging channels in addi­tion to the ranging chan­nels allocated by the SCD to the M2M devices paged through the AAI-PAG-ADV message. |
| } |  |  |  |
| If (M2M network access type == 0b00) { |  |  |  |
| Fixed M2M Ranging Assign­ment A-MAP start offset for AAI-RNG-REQ |  | This parameter indicates the offset in units of frames that M2M device starts to moni­tor the resource (i.e., Fixed M2M Ranging Assignment A-MAP IE) for the AAI-RNG-REQ message, where the reference point of this offset value is the frame in which the AAI-PAG-ADV is transmitted. |  |
| Resource monitor timer |  | Time duration that M2M device monitors the resource (i.e., Fixed M2M Ranging Assignment A-MAP IE) for AAI-RNG-REQ message. |  |
| } |  |  |  |
| } // End of if (Action code ==0b00 or Action code ==0b01) { |  |  |  |
| If (Action Code == 0b10) { |  |  |  |
| Multicast transmission start time (MTST) | 8 | Least significant 8 bits of the frame number in which the ABS starts sending DL multicast data. | Shall be present when the ABS is aware of when to start sending DL multi­cast data |
| } |  |  |  |
| If (Action Code == 0b11) { |  |  |  |
| New-MGID | 12 | New MGID |  |
| M2M-Group-Zone-Index | 2 | M2M-Group-Zone-Index of the corresponding M2M-GROUP-ZONE-ID that the MGID belongs to. It is derived based on the implicit ordering of the M2M-GROUP-ZONE-IDs in the AAI-SCD message transmitted by the ABS. | ~~Present~~Shall be present if ABS is part of more than one M2M Group Zone. |
| } |  |  |  |
| } |  |  |  |
| For (*j*=0; *j*<Num-FMDID; *j*++) { |  | Num\_FMDID indicates the number of FMDIDs included in this paging mes­sage [1..32] | Shall be included when the ABS pages the fixed M2M devices in localized idle mode. |
| Fixed M2M Deregistration ID (FMDID) | 16 | Fixed M2M Deregistration ID |  |
| Action Code | 1 | 0: Performing network re entry  1: Performing location update |  |
| M2M report code | 1 | Indication for the M2M device to send the uplink report  0b1: send uplink report | ~~Present if needed~~  Shall be present if polling of UL report is supported by M2M device and ABS (See 6.2.18.7.1) |
| M2M network access type | 2 | Indicate the network access type for M2M device;  0b00: Resource allocation (i.e., Fixed M2M Ranging Assignment A-MAP offset) for AAI-RNG-REQ  0b01: dedicated ranging channel allocation in AAI-PAG-ADV  0b10: dedicated ranging channel allocation in broad­cast assignment A-MAP IE  0b11: No dedicated ranging channel |  |
| If (M2M network access type == 0b00) { |  |  |  |
| Fixed M2M Ranging Assignment A-MAP offset for AAI-RNG-REQ |  | Indicate the offset in units of frames that M2M device starts to monitor the resource (i.e., Fixed M2M Ranging Assignment A-MAP IE for AAI-RNG-REQ message is transmit­ted, where the reference point of this offset value is the frame in which the AAI-PAG-ADV is transmitted. |  |
| } |  |  |  |
| } // End of for (j=0; j<Num-FMDID; j++) |  |  |  |
| M2M ranging opportunity sub­frame index | 3 | Indicates the subframe index of the allocated rang­ing opportunity dedicated for M2M devices. | Optional,  This parameter shall be present if the M2M net­work access type of indi­vidually paged M2M devices is set to 0b01. |
| Periodicity of the M2M ranging | 3 | Indicates the periodicity of the ranging dedicated for M2M devices.  0b000: transmission in every frame  0b001: transmission in the first frame in every super­frame  0b010: transmission in the first frame in every even numbered superframe, i.e., mod (superframe number, 2) = 0  0b011: transmission in the first frame in every 4th superframe, i.e., mod (superframe number, 4) = 0  0b100~0b111: *Reserved* | Optional,  This parameter shall be present if the M2M net­work access type of indi­vidually paged M2M devices is set to 0b01. |
| Dedicated Channel Allocation Timer | TBD | Time duration in which dedicated channel alloca­tion (i.e., M2M ranging opportunity subframe index, Periodicity of the M2M ranging) is valid. | Shall be included if the ABS allocates dedicated ranging channels in addi­tion to the ranging chan­nels allocated by the AAI-SCD to the M2M devices paged through the AAI-PAG-ADV message and if the M2M network access type is set to 0b01 (i.e., dedicated ranging channel allocation in AAI-PAG-ADV). |
| Extension Flag | 1 | Used to indicate the remain­ing part of the AAI-PAG-ADV message exists  0b0: This is the last frag­ment of the AAI-PAG-ADV message  0b1: This is not the last fragment of the AAI-PAG-ADV message; the remain­ing fragments of the mes­sage will be transmitted in the subsequent subframes or frames.  If there are remaining seg­ments and the remaining segments include only M2M device’s paging, this flag is set to 0b0.  If this flag is set to 0b0, AMS enters the paging unavailable interval and M2M device checks the M2M extension flag.  If this flag is set to 0b1, AMS and M2M device shall remain awake and monitor the subsequent AAI sub­frame unless their identifi­ers are found in the received segments. |  |
| Emergency Alert Indication | 1 | Used to indicate the pres­ence of emergency informa­tion  0b0: *Reserved*  0b1: There is emergency information | Optional  Present if there is emer­gency information |
| M2M extension flag | 1 | Used to indicate exists of the remaining part of the AAI-PAG-ADV message for M2M device.  0b0: This is the last segment of the AAI-PAG-ADV mes­sage  0b1: This is not the last seg­ment of the AAI-PAG-ADV message; the remaining seg­ments of the message will be transmitted in the subse­quent subframes or frames. | Optional,  Shall be present if the Extension Flag is set to 0b0 and if there are remaining segments for paging M2M devices only. |

[***Remedy 9: Change Table 57 on page 31 as follows***]

Table 49 – AAI-SCD message field description

|  |  |  |  |
| --- | --- | --- | --- |
| **Fields** | **Size (bits)** | **Value** | **Condition** |
| Configuration Change Count | 4 | The value is increased whenever the contents of this message except the dedicated ranging information for M2M devices are changed.  The value rolls over from 0 to 15 |  |
| ... |  |  |  |
| MSB of the extended super­frame number for M2M | 10 | The 10 MSB of the extended super­frame number, which is a 22-bit number obtained by concatenating this value with the superframe number as signaled by the P-SFH and S-SFH SP1. |  |
| M2M Configuration Change Count | 4 | The value is increased whenever the contents of the dedicated raging information for M2M devices are changed. The value rolls over from 0 to 15.  The operation of this field is same with Configuration Change Count as defined in 6.2.3.31. |  |
| M2M ranging indicator | 2 | Indicate the ranging configuration for M2M devices.  0b00: normal ranging as defined in Table 182 in 6.3.5.5.1.2  0b01: dedicated ranging for M2M devices  0b10: M2M devices are not allowed to perform network reentry (M2M cell bar)  0b11: *Reserved* |  |
| If (M2M ranging indica­tor=0b00) { |  |  |  |
| restriction of Access class (i) | 1 | INTEGER (0..1) | ~~Optional~~  Shall be present if access restriction of ranging channels is supported by ABS and M2M device (see 6.2.15.7) |
| restriction of Access class (i+1) | 1 | INTEGER (0..1) | ~~Optional~~  Shall be present if access restriction of ranging channels is supported by ABS and M2M device (see 6.2.15.7) |
| restriction of Access class (i+2) | 1 | INTEGER (0..1) | ~~Optional~~  Shall be present if access restriction of ranging channels is supported by ABS and M2M device (see 6.2.15.7) |
| restriction of Access class (i+3) | 1 | INTEGER (0..1) | ~~Optional~~  Shall be present if access restriction of ranging channels is supported by ABS and M2M device (see 6.2.15.7) |
| } |  |  |  |
| If ((M2M ranging indicator == 0b01) { |  |  |  |
| M2M ranging opportunity subframe index | 3 | Indicates the subframe index of the allocated ranging opportunity dedi­cated for M2M devices. | ~~Present~~Shall be present if an ABS assigns ranging resources dedicated for M2M devices |
| Periodicity of the M2M rang­ing | [3] | Indicates the periodicity of the ranging dedicated for M2M devices.  0b000: transmission in every frame  0b001: transmission in the first frame in every superframe  0b010: transmission in the first frame in every even numbered superframe, i.e., mod (superframe number, 2) = 0  0b011: transmission in the first frame in every 4th superframe, i.e., mod (superframe number, 4) = 0  [0b100~0b111: *Reserved*] | ~~Present~~Shall be present if an ABS assigns ranging resources dedicated for M2M devices |
| } |  |  |  |
| Probability threshold of M2M device group delegate selec­tion | 10 | Probability threshold Value of quantized in 0.001 steps as from 0 to 1. | ~~Present~~Shall be present when an ABS supports M2M GD Operation |
| For(i=0; i<N-M2M-GROUP-ZONE; i++) { |  | N-M2M-GROUP-ZONE is the number of M2M-GROUP-ZONE-ID(s) that is assigned to the ABS [1..4]. | Shall be included if one or more M2M-GROUP-ZONE-ID(s) are assigned to the ABS. |
| M2M-GROUP-ZONE-ID | 12 | M2M-GROUP-ZONE-ID that is assigned to the ABS. |  |
| } // End of for (i=0; i<N-M2M-GROUP-ZONE; i++) |  |  |  |

[***Remedy 10: Change Table 83 on page 35 as follows***]

Table 83 – AAI-DSA-REQ message field description

|  |  |  |  |
| --- | --- | --- | --- |
| **Fields** | **Size (bits)** | **Value** | **Condition** |
| ... |  |  |  |
| For(*i* =1; *i*<=N-Predefined-BR-indices; *i*++) { |  | The mapping of predefined BR index used in quick access message to BR size and BR actions N-Predefined-BR-indices is the number of predefined BR indices [1..15] |  |
| Predefined BR index | 4 | Predefined BR index | Present if N-Predefined-BR-indices is not zero |
| BR action | 2 | 0b00: ertPS service flow requests to resume to maxi­mum sustained rate  0b01: aGP service flow requests to switch to Primary QoS parameters  0b10: BR  0b11: *Reserved*Abnormal Power Down Indication | Present if N-Predefined-BR-indices is not zero |
| ... |  |  |  |
| } |  |  |  |
| ... |  |  |  |
| Minimal Access Window Size | 10 | The minimal size of a win­dow within which the M2M device shall select the start time for the network entry procedure in units of 1 sec­ond. | ~~May~~Shall be present if this mes­sage is sent by the ABS to assign an Access Window to control initial ranging ~~and is~~ for an uplink service flow related with M2M |
| If (Multicast service flow for M2M device){ |  |  |  |
| SFID | 32 | Service flow identifier | Shall be present if this ser­vice flow is related with M2M multicast service and when an ABS initiates AAI-DSA-REQ. |
| MGID | 12 | MGID to be added | Shall be present if this ser­vice flow is related with M2M multicast service and when an ABS initiates AAI-DSA-REQ. |
| M2M-Group-Zone-Index | 2 | M2M-Group-Zone-Index of the corresponding M2M-GROUP-ZONE-ID that the MGID belongs to. It is derived based on the implicit ordering of the M2M-GROUP-ZONE-IDs in the AAI-SCD message transmit­ted by the ABS. | ~~Present~~Shall be present if ABS is part of more than one M2M Group Zone. |
| MGSS | 64 | MGSS (M2M service Group Security Seed) for an M2M device group | ~~May~~Shall be present when an ABS initiates AAI-DSA-REQ for this service flow that is related with M2M multicast service and multicast SA for the associated service flow is supported |
| } |  |  |  |

[***Remedy 11: Change Table 84 on page 35 as follows***]

Table 84 – AAI-DSA-RSP message field description

|  |  |  |  |
| --- | --- | --- | --- |
| **Fields** | **Size (bits)** | **Value** | **Condition** |
| ... | ... | ... | ... |
| Minimal Access Window Size | 10 | The minimal size of a window within which the M2M device shall select the start time for the network entry proce­dure in units of 1 second. | ~~May~~Shall be present if this mes­sage is sent by the ABS to assign an Access Window to control initial ranging ~~and is~~ for an uplink service flow related with M2M |
| If (Multicast service flow for M2M device) |  |  |  |
| { |  |  |  |
| MGID | 12 | MGID to be added | Shall be present if this service flow is related with M2M multicast service and when an M2M device initiates AAI-DSA-REQ. |
| M2M-Group-Zone-Index | 2 | M2M-Group-Zone-Index of the corre­sponding M2M-GROUP-ZONE-ID that the MGID belongs to. It is derived based on the implicit ordering of the M2M-GROUP-ZONE-IDs in the AAI-SCD message transmitted by the ABS. | ~~Present~~Shall be present if ABS is part of more than one M2M Group Zone. |
| } |  |  |  |

[***Remedy 12: Change Table 86 on page 37 as follows***]

Table 86 – AAI-DSC-REQ message field description

|  |  |  |  |
| --- | --- | --- | --- |
| **Fields** | **Size (bits)** | **Value** | **Condition** |
| ... | ... | ... | ... |
| MGID | 12 | MGID to be changed to | Shall be included by an ABS if MGID needs to be changed |
| M2M-Group-Zone-Index | 2 | M2M-Group-Zone-Index of the corresponding M2M-GROUP-ZONE-ID that the MGID belongs to. It is derived based on the implicit ordering of the M2M-GROUP-ZONE-IDs in the AAI-SCD message transmit­ted by the ABS. | ~~Present~~Shall be present if ABS is part of more than one M2M Group Zone. |
| Minimal Access Win­dow Size | 10 | The minimal size of a win­dow within which the M2M device shall select the start time for the network entry procedure in units of 1 sec­ond. | ~~May~~Shall be present if this mes­sage is sent by the ABS to assign an Access Window to control initial ranging ~~and is~~ for an uplink service flow related with M2M |

[***Remedy 13: Change Table 106b on page 39 as follows***]

Table 106b – AAI-MAMC message field description

|  |  |  |  |
| --- | --- | --- | --- |
| **Fields** | **Size (bits)** | **Value** | **Condition** |
| Action Code | 2 | Use to identify the purpose if this message  0b00: re-assignment of MGID value  0b01-0b11: *Reserved* |  |
| If (Action Code == 0x00) { |  |  |  |
| for(i=1; i<=Num-MGID; i++) { |  | Number of MGID to be updated [1..TBD] | ~~Presented if a MGID needs to be updated~~ |
| Current-MGID | 12 | Current MGID value |  |
| New-MGID | 12 | New MGID value to be assigned |  |
| M2M-Group-Zone-Index | 2 | M2M-Group-Zone-Index of the corresponding M2M-GROUP-ZONE-ID that the MGID belongs to. |  |
| } |  |  |  |
| } |  |  |  |

[***Remedy 14: Change Table 69 on page 32 as follows***]

Table 106b – AAI-PKM-REQ message field description

|  |  |  |  |
| --- | --- | --- | --- |
| **Fields** | **Size (bits)** | **Value** | **Condition** |
| PKM v3 message type code | 4 | - PKMv3 Reauth-Request; PKM v3 message code = 1  - PKMv3 EAP-Transfer; PKM v3 message code = 2  -PKMv3 Key\_Agreement-MSG#2; PKM v3 message code = 4  - PKMv3 TEK-Request; PKM v3 message code = 6  - PKMv3 TEK-Invalid; PKM v3 mes­sage code =8  - PKMv3 MGTEK-Request; PKM v3 message code = 10  912-16: *Reserved* |  |
| ... | ... | ... | ... |
| If (PKM v3 message code == 10) { |  |  |  |
| MGID | 15 | Multicast group identifier that the M2M device subscribes. | ~~May~~Shall be present when an M2M device is regis­tered for M2M multicast ser­vice of the M2M device group and multicast SA for the associated multicast service is supported |
| } |  |  |  |

[***Remedy 15: Change Table 70 on page 33 as follows***]

Table 106b – AAI-PKM-RSP message field description

|  |  |  |  |
| --- | --- | --- | --- |
| **Fields** | **Size (bits)** | **Value** | **Condition** |
| PKM v3 message type code | 4 | - PKMv3 EAP-Transfer; PKM v3 message code =2  - PKMv3 Key\_Agreement-MSG#1; PKM v3 message code =3  - PKMv3 Key\_Agreement-MSG#3; PKM v3 message code =5  - PKMv3 TEK-Reply; PKM v3 message code =7  - PKMv3 TEK-Invalid; PKM v3 message code =8  - PKMv3 MGTEK-Update; PKM v3 message code = 9  - PKMv3 MGTEK-Reply; PKM v3 message code = 11  912-16: *Reserved* |  |
| ... |  |  |  |
| If (PKM v3 message code == 9) { |  |  |  |
| New-MGSS | 64 | A newly provided MGSS (M2M service Group Security Seed) for an M2M device group | ~~May~~Shall be present when an M2M device is registered for M2M multicast service of the M2M device group and multicast SA for the associated multicast service is supported |
| } |  |  |  |
| If (PKM v3 message code == 11) { |  |  |  |
| MGID | 15 | Multicast group identifier | ~~May~~Shall be present when an M2M device is registered for M2M multicast service of the M2M device group and multicast SA for the associated multicast service is supported |
| MGSS | 64 | MGSS of the currently used MGTEK | ~~May~~Shall be present when an M2M device is registered for M2M multicast service of the M2M device group and multicast SA for the associated multicast service is supported |
| M2MGTEK-COUNT |  | The index of the currently used MGTEK | ~~May~~Shall be present when an M2M device is registered for M2M multicast service of the M2M device group and multicast SA for the associated multicast service is supported |
| } |  |  |  |

----------------- End of the text proposal ---------------------------------------------------------------------------------------