```
IEEE8023-EFM-CU-MIB DEFINITIONS ::= BEGIN

  IMPORTS
    MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE, Integer32,
    Unsigned32, Counter32, org
      FROM SNMPv2-SMI         -- [RFC2578]
    TEXTUAL-CONVENTION, TruthValue, RowStatus, PhysAddress
      FROM SNMPv2-TC          -- [RFC2579]
    MODULE-COMPLIANCE, OBJECT-GROUP, NOTIFICATION-GROUP
      FROM SNMPv2-CONF        -- [RFC2580]
    SnmpAdminString
      FROM SNMP-FRAMEWORK-MIB -- [RFC3411]
    ifIndex, ifSpeed
      FROM IF-MIB             -- [RFC2863]
    ;

  ieee8023efmCuMIB MODULE-IDENTITY
     LAST-UPDATED "201304110000Z" -- April 11, 2013
     ORGANIZATION
       "IEEE 802.3 working group"
     CONTACT-INFO
         "WG-URL: http://www.ieee802.org/3/index.html
         WG-EMail: STDS-802-3-MIB@LISTSERV.IEEE.ORG

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                  San Jose, CA 95134
                  USA
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         E-mail:  hfrazier@broadcom.com"

     DESCRIPTION
       "The objects in this MIB module are used to manage
       the Ethernet in the First Mile (EFM) Copper (EFMCu) Interfaces
       2BASE-TL and 10PASS-TS, defined in IEEE Std 802.3.

       Of particular interest are Clause 61, 'Physical Coding
       Sublayer (PCS) and common specifications, type 10PASS-TS and
       type 2BASE-TL', Clause 30, 'Management', Clause 45,
       'Management Data Input/Output (MDIO) Interface', Annex 62A,
       'PMD profiles for 10PASS-TS' and Annex 63A, 'PMD profiles for
       2BASE-TL'."

     REVISION    "201304110000Z" -- April 11, 2013
     DESCRIPTION
           "Revision, based on an earlier version in IEEE Std 802.3.1-2011."

     REVISION    "201102020000Z" -- February 2, 2011
     DESCRIPTION
           "Initial version, based on an earlier version published
            as RFC 5066."

          ::= { org ieee(111) standards-association-numbers-series-standards(2)
               lan-man-stds(802) ieee802dot3(3) ieee802dot3dot1mibs(1)
               ieee8023efmcu(11) 2 }


    -- Sections of the module

    efmCuObjects     OBJECT IDENTIFIER ::= { ieee8023efmCuMIB 1 }

    efmCuConformance OBJECT IDENTIFIER ::= { ieee8023efmCuMIB 2 }

    -- Groups in the module

    efmCuPort        OBJECT IDENTIFIER ::= { efmCuObjects 1 }

    efmCuPme         OBJECT IDENTIFIER ::= { efmCuObjects 2 }

    -- Textual Conventions

    EfmProfileIndex ::= TEXTUAL-CONVENTION
      DISPLAY-HINT "d"
```

```
    STATUS       current
    DESCRIPTION
      "A unique value, greater than zero, for each PME configuration
       profile in the managed EFMCu port. Values should be assigned
       contiguously starting from 1. The value for each profile shall
       remain constant at least from one re-initialization of the
       entity's network management system to the next re-initialization."
    SYNTAX       Unsigned32 (1..255)

  EfmProfileIndexOrZero ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "d"
    STATUS       current
    DESCRIPTION
      "This textual convention is an extension of the
      EfmProfileIndex convention. The latter defines a greater than
      zero value used to identify a PME profile in the managed EFMCu
      port. This extension permits the additional value of zero.
      The value of zero is object-specific and shall therefore be
      defined as part of the description of any object that uses
      this syntax.
      Examples of the usage of zero value might include situations
      where the current operational profile is unknown."
    SYNTAX       Unsigned32 (0..255)

  EfmProfileIndexList ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "1d:"

    STATUS       current
    DESCRIPTION
      "This textual convention represents a list of up to 6
      EfmProfileIndex values, any of which can be chosen for
      configuration of a PME in a managed EFMCu port.
      The EfmProfileIndex textual convention defines a greater than
      zero value used to identify a PME profile.
      The value of this object is a concatenation of zero or
      more (up to 6) octets, where each octet contains an 8-bit
      EfmProfileIndex value.
      A zero-length octet string is object-specific and shall
      therefore be defined as part of the description of any object
      that uses this syntax. Examples of the usage of a zero-length
      value might include situations where an object using this
      textual convention is irrelevant for a specific EFMCu port
      type."
    SYNTAX       OCTET STRING (SIZE(0..6))

  EfmTruthValueOrUnknown ::= TEXTUAL-CONVENTION
    STATUS       current
    DESCRIPTION
      "This textual convention is an extension of the TruthValue
      convention. The latter defines a Boolean value with possible
      values of true(1) and false(2). This extension permits the
      additional value of unknown(0), which can be returned as the
      result of a GET operation when an exact true or false value
      of the object cannot be determined."
    SYNTAX       INTEGER { unknown(0), true(1), false(2) }

 -- Port Notifications Group

  efmCuPortNotifications OBJECT IDENTIFIER ::= { efmCuPort 0 }

  efmCuLowRateCrossing NOTIFICATION-TYPE
    OBJECTS {
      ifSpeed,
      efmCuThreshLowRate
    }
    STATUS      current
    DESCRIPTION
      "This notification indicates that the EFMCu port's data rate
      has reached/dropped below or exceeded the low rate threshold,
      specified by efmCuThreshLowRate.

      This notification may be sent for the -O subtype ports
      (2BaseTL-O/10PassTS-O) while the port is Up, on the crossing
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    event in both directions: from normal (rate is above the
    threshold) to low (rate equals the threshold or below it) and
    from low to normal. This notification is not applicable to
    the -R subtypes.

    A small debouncing period of 2.5 sec, between the detection
    of the condition and the notification, should be implemented to
    prevent simultaneous LinkUp/LinkDown and efmCuLowRateCrossing
    notifications to be sent.

    The adaptive nature of the EFMCu technology allows the port to
    adapt itself to the changes in the copper environment, e.g.,
    an impulse noise, alien crosstalk, or a micro-interruption may
    temporarily drop one or more PMEs in the aggregation group,
    causing a rate degradation of the aggregated EFMCu link.
    The dropped PMEs would then try to re-initialize, possibly at
    a lower rate than before, adjusting the rate to provide
    required target SNR margin.

    Generation of this notification is controlled by the
    efmCuLowRateCrossingEnable object."
  ::= { efmCuPortNotifications 1 }

-- PCS Port group

efmCuPortConfTable OBJECT-TYPE
  SYNTAX      SEQUENCE OF EfmCuPortConfEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "Table for Configuration of EFMCu 2BASE-TL/10PASS-TS (PCS)
    Ports. Entries in this table shall be maintained in a
    persistent manner."
  ::= { efmCuPort 1 }

efmCuPortConfEntry OBJECT-TYPE
  SYNTAX      EfmCuPortConfEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "An entry in the EFMCu Port Configuration table.
    Each entry represents an EFMCu port indexed by the ifIndex.
    Note that an EFMCu PCS port runs on top of a single
    or multiple PME port(s), which are also indexed by ifIndex."
  INDEX  { ifIndex }
  ::= { efmCuPortConfTable 1 }

EfmCuPortConfEntry ::=
  SEQUENCE {
    efmCuPAFAdminState              INTEGER,
    efmCuPAFDiscoveryCode           PhysAddress,
    efmCuAdminProfile               EfmProfileIndexList,
    efmCuTargetDataRate             Unsigned32,
    efmCuTargetSnrMgn               Unsigned32,
    efmCuAdaptiveSpectra            TruthValue,
    efmCuThreshLowRate              Unsigned32,
    efmCuLowRateCrossingEnable      TruthValue
  }

efmCuPAFAdminState  OBJECT-TYPE
  SYNTAX      INTEGER {
    enabled(1),
    disabled(2)
  }
  MAX-ACCESS  read-write
  STATUS      current
  DESCRIPTION
    "Administrative (desired) state of the PAF of the EFMCu port
    (PCS).
    When 'disabled', PME aggregation will not be performed by the
    PCS. No more than a single PME can be assigned to this PCS in
    this case.
    When 'enabled', PAF will be performed by the PCS when the link
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            is Up, even on a single attached PME, if PAF is supported.

            PCS ports incapable of supporting PAF shall return a value of
            'disabled'. Attempts to 'enable' such ports shall be
            rejected.

            A PAF 'enabled' port with multiple PMEs assigned cannot be
            'disabled'. Attempts to 'disable' such port shall be
            rejected, until at most one PME is left assigned.

            Changing PAFAdminState is a traffic-disruptive operation and
            as such shall be done when the link is Down. Attempts to
            change this object shall be rejected if the link is Up or
            Initializing.

            This object maps to ~~the~~ IEEE Std 802.3, Clause 30 attribute aPAFAdminState.

            ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PCS is present, then
this
            object maps to the PAF enable bit in the 10P/2B PCS control
            register.

            This object shall be maintained in a persistent manner."
          REFERENCE
            "IEEE Std 802.3, 61.2.2, 45.2.3.26.3"
          ::= { efmCuPortConfEntry 1 }
        efmCuPAFDiscoveryCode  OBJECT-TYPE
          SYNTAX      PhysAddress (SIZE(0|6))
          MAX-ACCESS  read-write
          STATUS      current
          DESCRIPTION
            "PAF Discovery Code of the EFMCu port (PCS).
            A unique 6-octet code used by the Discovery function,
            when PAF is supported.
            PCS ports incapable of supporting PAF shall return a
            zero-length octet string on an attempt to read this object.
            An attempt to write to this object shall be rejected for such
            ports.
            This object shall be instantiated for the -O subtype PCS before
            writing operations on the efmCuPAFRemoteDiscoveryCode
            (Set_if_Clear and Clear_if_Same) are performed by PMEs
            associated with the PCS.
            The initial value of this object for -R subtype ports after
            reset is all zeros. For -R subtype ports, the value of this
            object cannot be changed directly. This value may be changed
            as a result of writing operation on the
            efmCuPAFRemoteDiscoveryCode object of remote PME of -O
            subtype, connected to one of the local PMEs associated with
            the PCS.

            Discovery shall be performed when the link is Down.
            Attempts to change this object shall be rejected (in case of
            SNMP with the error inconsistentValue), if the link is Up or
            Initializing.

            The PAF Discovery Code maps to the local Discovery code
            variable in PAF (note that it does not have a corresponding
            Clause 45 register)."
          REFERENCE
            "IEEE Std 802.3, 61.2.2.8.3, 61.2.2.8.4, 45.2.6.6.1, 45.2.6.8,
            61A.2"
          ::= { efmCuPortConfEntry 2 }

        efmCuAdminProfile  OBJECT-TYPE
          SYNTAX      EfmProfileIndexList
          MAX-ACCESS  read-write
          STATUS      current
          DESCRIPTION
            "Desired configuration profile(s), common for all PMEs in the
            EFMCu port. This object is a list of pointers to entries in
            either efmCuPme2BProfileTable or
            efmCuPme10PProfileTable, depending on the current
            operating SubType of the EFMCu port as indicated by
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      efmCuPortSide.
      The value of this object is a list of up to 6 indices of
      profiles. If this list consists of a single profile index,
      then all PMEs assigned to this EFMCu port shall be configured
      according to the profile referenced by that index, unless it
      is overwritten by a corresponding non-zero
      efmCuPmeAdminProfile instance, which takes precedence over
      efmCuAdminProfile.
      A list consisting of more than one index allows each PME
      in the port to be configured according to any profile
      specified in the list.
      By default, this object has a value of 0x01, referencing the
      1st entry in efmCuPme2BProfileTable or
      efmCuPme10PProfileTable.

      This object is writeable and readable for the -O subtype
      (2BaseTL-O or 10PassTS-O) EFMCu ports. It is irrelevant for
      the -R  subtype (2BaseTL-R or 10PassTS-R) ports -- a
      zero-length octet string shall be returned on an attempt to
      read this object and an attempt to change this object shall be
      rejected in this case.

      Note that the current operational profile value is available
      via the efmCuPmeOperProfile object.

      Any modification of this object shall be performed when the
      link is Down. Attempts to change this object shall be
      rejected, if the link is Up or Initializing.
      Attempts to set this object to a list with a member value that
      is not the value of the index for an active entry in the
      corresponding profile table shall be rejected.

      This object maps ~~to the Clause 30~~ to IEEE Std 802.3, Clause 30 attribute aProfileSelect.

      This object shall be maintained in a persistent manner."
    REFERENCE
      "IEEE Std 802.3, 30.11.2.1.6"
    DEFVAL { '01'H }
    ::= { efmCuPortConfEntry 3 }

  efmCuTargetDataRate  OBJECT-TYPE
    SYNTAX      Unsigned32(1..100000|999999)
    UNITS       "Kbps"
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
      "Desired EFMCu port 'net' (as seen across MII) Data Rate in
      kb/s, to be achieved during initialization, under spectral
      restrictions placed on each PME via efmCuAdminProfile or
      efmCuPmeAdminProfile, with the desired SNR margin specified by
      efmCuTargetSnrMgn.
      In case of PAF, this object represents a sum of individual PME
      data rates, modified to compensate for fragmentation and
      64/65-octet encapsulation overhead (e.g., target data rate of
      10 Mb/s shall allow lossless transmission of a full-duplex
      10 Mb/s Ethernet frame stream with minimal inter-frame gap).

      The value is limited above by 100 Mb/s as this is the max
      burst rate across MII for EFMCu ports.

      The value between 1 and 100000 indicates that the total data
      rate (ifSpeed) of the EFMCu port after initialization shall be
      equal to the target data rate or less, if the target data rate
      cannot be achieved under spectral restrictions specified by
      efmCuAdminProfile/efmCuPmeAdminProfile and with the desired
      SNR margin. In case the copper environment allows a higher
      total data rate to be achieved than that specified by the
      target, the excess capability shall be either converted to
      additional SNR margin or reclaimed by minimizing transmit
      power as controlled by efmCuAdaptiveSpectra.

      The value of 999999 means that the target data rate is not
      fixed and shall be set to the maximum attainable rate during
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      initialization (Best Effort), under specified spectral
      restrictions and with the desired SNR margin.

      This object is read-write for the -O subtype EFMCu ports
      (2BaseTL-O/10PassTS-O) and not available for the -R subtypes.

      Changing of the Target Data Rate shall be performed when the
      link is Down. Attempts to change this object shall be rejected
      (in case of SNMP with the error inconsistentValue), if the
      link is Up or Initializing.

      Note that the current Data Rate of the EFMCu port is
      represented by the ifSpeed object of IF-MIB.

      This object shall be maintained in a persistent manner."
    ::= { efmCuPortConfEntry 4 }

  efmCuTargetSnrMgn  OBJECT-TYPE
    SYNTAX      Unsigned32(0..21)
    UNITS       "dB"
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
      "Desired EFMCu port SNR margin to be achieved on all PMEs
      assigned to the port, during initialization. (The SNR margin
      is the difference between the desired SNR and the actual SNR.)

      Note that IEEE Std 802.3 recommends using a default target SNR margin
      of 5 dB for 2BASE-TL ports and 6 dB for 10PASS-TS ports in
      order to achieve a mean bit error ratio (BER) of 10^-7 at the
      PMA service interface.

      This object is read-write for the -O subtype EFMCu ports
      (2BaseTL-O/10PassTS-O) and not available for the -R subtypes.

      Changing of the target SNR margin shall be performed when the
      link is Down. Attempts to change this object shall be rejected
      (in case of SNMP with the error inconsistentValue), if the
      link is Up or Initializing.

      Note that the current SNR margin of the PMEs comprising the
      EFMCu port is represented by efmCuPmeSnrMgn.

      This object shall be maintained in a persistent manner."
    REFERENCE
      "IEEE Std 802.3, 61.1.2"
    ::= { efmCuPortConfEntry 5 }

  efmCuAdaptiveSpectra  OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
      "Indicates how to utilize excess capacity when the copper
      environment allows a higher total data rate to be achieved
      than that specified by the efmCuTargetDataRate.

      A value of true(1) indicates that the excess capability shall
      be reclaimed by minimizing transmit power, e.g., using higher
      constellations and Power Back-Off, in order to reduce
      interference to other copper pairs in the binder and the
      adverse impact to link/system performance.

      A value of false(2) indicates that the excess capability shall
      be converted to additional SNR margin and spread evenly across
      all active PMEs assigned to the (PCS) port, to increase link
      robustness.

      This object is read-write for the -O subtype EFMCu ports
      (2BaseTL-O/10PassTS-O) and not available for the -R subtypes.

      Changing of this object shall be performed when the link is
      Down. Attempts to change this object shall be rejected (in
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```
    case of SNMP with the error inconsistentValue), if the link
    is Up or Initializing.

    This object shall be maintained in a persistent manner."
  ::= { efmCuPortConfEntry 6 }

efmCuThreshLowRate  OBJECT-TYPE
  SYNTAX      Unsigned32(1..100000)
  UNITS       "Kbps"
  MAX-ACCESS  read-write
  STATUS      current
  DESCRIPTION
    "This object configures the EFMCu port low-rate crossing alarm
    threshold. When the current value of ifSpeed for this port
    reaches/drops below or exceeds this threshold, an
    efmCuLowRateCrossing notification may be generated if enabled
    by efmCuLowRateCrossingEnable.

    This object is read-write for the -O subtype EFMCu ports
    (2BaseTL-O/10PassTS-O) and not available for the -R subtypes.

    This object shall be maintained in a persistent manner."
  ::= { efmCuPortConfEntry 7 }

efmCuLowRateCrossingEnable  OBJECT-TYPE
  SYNTAX      TruthValue
  MAX-ACCESS  read-write
  STATUS      current
  DESCRIPTION
    "Indicates whether efmCuLowRateCrossing notifications should
    be generated for this interface.

    A value of true(1) indicates that efmCuLowRateCrossing
    notification is enabled. A value of false(2) indicates that
    the notification is disabled.

    This object is read-write for the -O subtype EFMCu ports
    (2BaseTL-O/10PassTS-O) and not available for the -R subtypes.

    This object shall be maintained in a persistent manner."
  ::= { efmCuPortConfEntry 8 }


efmCuPortCapabilityTable OBJECT-TYPE
  SYNTAX      SEQUENCE OF EfmCuPortCapabilityEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "Table for Capabilities of EFMCu 2BASE-TL/10PASS-TS (PCS)
    Ports. Entries in this table shall be maintained in a
    persistent manner"
  ::= { efmCuPort 2 }

efmCuPortCapabilityEntry OBJECT-TYPE
  SYNTAX      EfmCuPortCapabilityEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "An entry in the EFMCu Port Capability table.
    Each entry represents an EFMCu port indexed by the ifIndex.
    Note that an EFMCu PCS port runs on top of a single
    or multiple PME port(s), which are also indexed by ifIndex."
  INDEX  { ifIndex }
  ::= { efmCuPortCapabilityTable 1 }

EfmCuPortCapabilityEntry ::=
  SEQUENCE {
    efmCuPAFSupported               TruthValue,
    efmCuPeerPAFSupported           EfmTruthValueOrUnknown,
    efmCuPAFCapacity                Unsigned32,
    efmCuPeerPAFCapacity            Unsigned32
  }
```

```
efmCuPAFSupported  OBJECT-TYPE
  SYNTAX      TruthValue
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "PME Aggregation Function (PAF) capability of the EFMCu port
    (PCS).
    This object has a value of true(1) when the PCS can perform
    PME aggregation on the available PMEs.
    Ports incapable of PAF shall return a value of false(2).

    This object maps ~~to the Clause 30~~ to IEEE Std 802.3, Clause 30 attribute aPAFSupported.

    ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PCS is present,
    then this object maps to the PAF available bit in the
    10P/2B capability register."
  REFERENCE
    "IEEE Std 802.3, 61.2.2, 30.11.1.1.4, 45.2.3.25.1"
  ::= { efmCuPortCapabilityEntry 1 }

efmCuPeerPAFSupported  OBJECT-TYPE
  SYNTAX      EfmTruthValueOrUnknown
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "PME Aggregation Function (PAF) capability of the EFMCu port
    (PCS) link partner.
    This object has a value of true(1) when the remote PCS can
    perform PME aggregation on its available PMEs.
    Ports whose peers are incapable of PAF shall return a value
    of false(2).
    Ports whose peers cannot be reached because of the link
    state shall return a value of unknown(0).

    This object maps ~~to the Clause 30~~ to IEEE Std 802.3, Clause 30 attribute
    aRemotePAFSupported.

    ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PCS is present, then
    this object maps to the Remote PAF supported bit in the
    10P/2B capability register."
  REFERENCE
    "IEEE Std 802.3, 61.2.2, 30.11.1.1.9, 45.2.3.25.2"
  ::= { efmCuPortCapabilityEntry 2 }

efmCuPAFCapacity  OBJECT-TYPE
  SYNTAX      Unsigned32 (1..32)
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "Number of PMEs that can be aggregated by the local PAF.
    The number of PMEs currently assigned to a particular
    EFMCu port (efmCuNumPMEs) is never greater than
    efmCuPAFCapacity.

    This object maps ~~to the Clause 30~~ to IEEE Std 802.3, Clause 30 attribute
    aLocalPAFCapacity."
  REFERENCE
    "IEEE Std 802.3, 61.2.2, 30.11.1.1.6"
  ::= { efmCuPortCapabilityEntry 3 }

efmCuPeerPAFCapacity  OBJECT-TYPE
  SYNTAX      Unsigned32 (0|1..32)
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "Number of PMEs that can be aggregated by the PAF of the peer
    PHY (PCS port).
    A value of 0 is returned when peer PAF capacity is unknown
    (peer cannot be reached).
    This object maps ~~to the Clause 30~~ to IEEE Std 802.3, Clause 30 attribute
    aRemotePAFCapacity."
  REFERENCE
    "IEEE Std 802.3, 61.2.2, 30.11.1.1.10"
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  ::= { efmCuPortCapabilityEntry 4 }

efmCuPortStatusTable OBJECT-TYPE
  SYNTAX      SEQUENCE OF EfmCuPortStatusEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "This table provides overall status information of EFMCu
    2BASE-TL/10PASS-TS ports, complementing the generic status
    information from the ifTable of IF-MIB and ifMauTable of the
    MAU-MIB module. Additional status information about connected PMEs
    is available from the efmCuPmeStatusTable.

    This table contains live data from the equipment. As such,
    it is not persistent."
  ::= { efmCuPort 3 }

efmCuPortStatusEntry OBJECT-TYPE
  SYNTAX      EfmCuPortStatusEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "An entry in the EFMCu Port Status table.
    Each entry represents an EFMCu port indexed by the ifIndex.
    Note that an EFMCu PCS port runs on top of a single
    or multiple PME port(s), which are also indexed by ifIndex."
  INDEX  { ifIndex }
  ::= { efmCuPortStatusTable 1 }

EfmCuPortStatusEntry ::=
  SEQUENCE {
    efmCuFltStatus                  BITS,
    efmCuPortSide                   INTEGER,
    efmCuNumPMEs                    Unsigned32,
    efmCuPAFInErrors                Counter32,
    efmCuPAFInSmallFragments        Counter32,
    efmCuPAFInLargeFragments        Counter32,
    efmCuPAFInBadFragments          Counter32,
    efmCuPAFInLostFragments         Counter32,
    efmCuPAFInLostStarts            Counter32,
    efmCuPAFInLostEnds              Counter32,
    efmCuPAFInOverflows             Counter32
  }

efmCuFltStatus  OBJECT-TYPE
  SYNTAX      BITS {
    noPeer(0),
    peerPowerLoss(1),
    pmeSubTypeMismatch(2),
    lowRate(3)
  }
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "EFMCu (PCS) port Fault Status. This is a bitmap of possible
    conditions. The various bit positions are:
      noPeer              - the peer PHY cannot be reached (e.g.,
                            no PMEs attached, all PMEs are Down,
                            etc.). More info is available in
                            efmCuPmeFltStatus.
      peerPowerLoss       - the peer PHY has indicated impending
                            unit failure due to loss of local
                            power ('Dying Gasp').
      pmeSubTypeMismatch  - local PMEs in the aggregation group
                            are not of the same subtype, e.g.,
                            some PMEs in the local device are -O
                            while others are -R subtype.
      lowRate             - ifSpeed of the port reached or dropped
                            below efmCuThreshLowRate.

    This object is intended to supplement the ifOperStatus object
    in IF-MIB and ifMauMediaAvailable in the MAU-MIB module.
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    Additional information is available via the efmCuPmeFltStatus
    object for each PME in the aggregation group (single PME if
    PAF is disabled)."
  REFERENCE
    "IF-MIB, ifOperStatus; MAU-MIB, ifMauMediaAvailable;
     efmCuPmeFltStatus"
  ::= { efmCuPortStatusEntry 1 }

efmCuPortSide  OBJECT-TYPE
  SYNTAX      INTEGER {
    subscriber(1),
    office(2),
    unknown(3)
  }
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "EFM port mode of operation (subtype).
    The value of 'subscriber' indicates that the port is
    designated as '-R' subtype (all PMEs assigned to this port are
    of subtype '-R').
    The value of the 'office' indicates that the port is
    designated as '-O' subtype (all PMEs assigned to this port are
    of subtype '-O').
    The value of 'unknown' indicates that the port has no assigned
    PMEs yet or that the assigned PMEs are not of the same side
    (subTypePMEMismatch).

    This object partially maps ~~to the Clause 30~~ to IEEE Std 802.3, Clause 30 attribute
    aPhyEnd."
  REFERENCE
     "IEEE Std 802.3, 61.1, 30.11.1.1.2"
  ::= { efmCuPortStatusEntry 2 }

efmCuNumPMEs  OBJECT-TYPE
  SYNTAX      Unsigned32 (0..32)
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "The number of PMEs that is currently aggregated by the local
    PAF (assigned to the EFMCu port using the ifStackTable).
    This number is never greater than efmCuPAFCapacity.

    This object shall be automatically incremented or decremented
    when a PME is added or deleted to/from the EFMCu port using
    the ifStackTable."
  REFERENCE
    "IEEE Std 802.3, 61.2.2, 30.11.1.1.6"
  ::= { efmCuPortStatusEntry 3 }

efmCuPAFInErrors OBJECT-TYPE
  SYNTAX      Counter32
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "The number of fragments that have been received across the
    gamma interface with RxErr asserted and discarded.
    This read-only counter is inactive (not incremented) when the
    PAF is unsupported or disabled. Upon disabling the PAF, the
    counter retains its previous value.

    ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PCS is present, then
    this object maps to the 10P/2B PAF RX error register.

    Discontinuities in the value of this counter can occur at
    re-initialization of the management system, and at other times
    as indicated by the value of ifCounterDiscontinuityTime,
    defined in IF-MIB."
  REFERENCE
    "IEEE Std 802.3, 45.2.3.29"
  ::= { efmCuPortStatusEntry 4 }

efmCuPAFInSmallFragments OBJECT-TYPE
```

```
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
      "The number of fragments smaller than minFragmentSize
      (64 bytes) that have been received across the gamma interface
      and discarded.
      This read-only counter is inactive when the PAF is
      unsupported or disabled. Upon disabling the PAF, the counter
      retains its previous value.

      ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PCS is present, then
      this object maps to the 10P/2B PAF small fragments register.

      Discontinuities in the value of this counter can occur at
      re-initialization of the management system, and at other times
      as indicated by the value of ifCounterDiscontinuityTime,
      defined in IF-MIB."
    REFERENCE
      "IEEE Std 802.3, 45.2.3.30"
    ::= { efmCuPortStatusEntry 5 }

  efmCuPAFInLargeFragments OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
      "The number of fragments larger than maxFragmentSize
      (512 bytes) that have been received across the gamma interface
      and discarded.
      This read-only counter is inactive when the PAF is
      unsupported or disabled. Upon disabling the PAF, the counter
      retains its previous value.

      ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PCS is present, then
      this object maps to the 10P/2B PAF large fragments register.

      Discontinuities in the value of this counter can occur at
      re-initialization of the management system, and at other times
      as indicated by the value of ifCounterDiscontinuityTime,
      defined in IF-MIB."
    REFERENCE
      "IEEE Std 802.3, 45.2.3.31"
    ::= { efmCuPortStatusEntry 6 }

  efmCuPAFInBadFragments OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
      "The number of fragments that do not fit into the sequence
      expected by the frame assembly function and that have been
      received across the gamma interface and discarded (the
      frame buffer is flushed to the next valid frame start).
      This read-only counter is inactive when the PAF is
      unsupported or disabled. Upon disabling the PAF, the counter
      retains its previous value.

      ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PCS is present, then
      this object maps to the 10P/2B PAF bad fragments register.

      Discontinuities in the value of this counter can occur at
      re-initialization of the management system, and at other times
      as indicated by the value of ifCounterDiscontinuityTime,
      defined in IF-MIB."
    REFERENCE
      "IEEE Std 802.3, 45.2.3.33"
    ::= { efmCuPortStatusEntry 7 }

  efmCuPAFInLostFragments OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
```

```
    DESCRIPTION
      "The number of gaps in the sequence of fragments that have
      been received across the gamma interface (the frame buffer is
      flushed to the next valid frame start, when fragment/fragments
      expected by the frame assembly function is/are not received).
      This read-only counter is inactive when the PAF is
      unsupported or disabled. Upon disabling the PAF, the counter
      retains its previous value.

      If a Clause 45 MDIO Interface If IEEE Std 802.3, Clause 45 MDIO Interface to the PCS is present, then
      this object maps to the 10P/2B PAF lost fragment register.

      Discontinuities in the value of this counter can occur at
      re-initialization of the management system, and at other times
      as indicated by the value of ifCounterDiscontinuityTime,
      defined in IF-MIB."
    REFERENCE
      "IEEE Std 802.3, 45.2.3.34"
    ::= { efmCuPortStatusEntry 8 }

  efmCuPAFInLostStarts OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
      "The number of missing StartOfPacket indicators expected by
      the frame assembly function.
      This read-only counter is inactive when the PAF is
      unsupported or disabled. Upon disabling the PAF, the counter
      retains its previous value.

      If a Clause 45 MDIO Interface If IEEE Std 802.3, Clause 45 MDIO Interface to the PCS is present, then
      this object maps to the 10P/2B PAF lost start of fragment
      register.

      Discontinuities in the value of this counter can occur at
      re-initialization of the management system, and at other times
      as indicated by the value of ifCounterDiscontinuityTime,
      defined in IF-MIB."
    REFERENCE
      "IEEE Std 802.3, 45.2.3.35"
    ::= { efmCuPortStatusEntry 9 }

  efmCuPAFInLostEnds OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
      "The number of missing EndOfPacket indicators expected by the
      frame assembly function.
      This read-only counter is inactive when the PAF is
      unsupported or disabled. Upon disabling the PAF, the counter
      retains its previous value.

      If a Clause 45 MDIO Interface If IEEE Std 802.3, Clause 45 MDIO Interface to the PCS is present, then
      this object maps to the 10P/2B PAF lost ends of fragments
      register.

      Discontinuities in the value of this counter can occur at
      re-initialization of the management system, and at other times
      as indicated by the value of ifCounterDiscontinuityTime,
      defined in IF-MIB."
    REFERENCE
      "IEEE Std 802.3, 45.2.3.36"
    ::= { efmCuPortStatusEntry 10 }
  efmCuPAFInOverflows OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
      "The number of fragments, received across the gamma interface
      and discarded, which would have caused the frame assembly
      buffer to overflow.
```

```
      This read-only counter is inactive when the PAF is
      unsupported or disabled. Upon disabling the PAF, the counter
      retains its previous value.

      If a Clause 45 MDIO Interface If IEEE Std 802.3, Clause 45 MDIO Interface to the PCS is present, then
      this object maps to the 10P/2B PAF overflow register.

      Discontinuities in the value of this counter can occur at
      re-initialization of the management system, and at other times
      as indicated by the value of ifCounterDiscontinuityTime,
      defined in IF-MIB."
    REFERENCE
      "IEEE Std 802.3, 45.2.3.32"
    ::= { efmCuPortStatusEntry 11 }

-- PME Notifications Group

 efmCuPmeNotifications OBJECT IDENTIFIER ::= { efmCuPme 0 }

 efmCuPmeLineAtnCrossing NOTIFICATION-TYPE
    OBJECTS {
      efmCuPmeLineAtn,
      efmCuPmeThreshLineAtn
    }
    STATUS      current
    DESCRIPTION
      "This notification indicates that the loop attenuation
      threshold (as per the efmCuPmeThreshLineAtn
      value) has been reached/exceeded for the 2BASE-TL/10PASS-TS
      PME. This notification may be sent on the crossing event in
      both directions: from normal to exceeded and from exceeded
      to normal.

      A small debouncing period of 2.5 sec, between the detection
      of the condition and the notification, should be implemented
      to prevent intermittent notifications from being sent.

      Generation of this notification is controlled by the
      efmCuPmeLineAtnCrossingEnable object."
    ::= { efmCuPmeNotifications 1 }

 efmCuPmeSnrMgnCrossing NOTIFICATION-TYPE
    OBJECTS {
      efmCuPmeSnrMgn,
      efmCuPmeThreshSnrMgn
    }
    STATUS      current
    DESCRIPTION
      "This notification indicates that the SNR margin threshold
      (as per the efmCuPmeThreshSnrMgn value) has been
      reached/exceeded for the 2BASE-TL/10PASS-TS PME.
      This notification may be sent on the crossing event in
      both directions: from normal to exceeded and from exceeded
      to normal.

      A small debouncing period of 2.5 sec, between the detection
      of the condition and the notification, should be implemented
      to prevent intermittent notifications from being sent.

      Generation of this notification is controlled by the
      efmCuPmeSnrMgnCrossingEnable object."
    ::= { efmCuPmeNotifications 2 }

 efmCuPmeDeviceFault NOTIFICATION-TYPE
    OBJECTS {
      efmCuPmeFltStatus
    }
    STATUS      current
    DESCRIPTION
      "This notification indicates that a fault in the PME has been
      detected by a vendor-specific diagnostic or a self-test.

      Generation of this notification is controlled by the
```

```
    efmCuPmeDeviceFaultEnable object."
  ::= { efmCuPmeNotifications 3 }

efmCuPmeConfigInitFailure NOTIFICATION-TYPE
  OBJECTS {
    efmCuPmeFltStatus,
    efmCuAdminProfile,
    efmCuPmeAdminProfile
  }
  STATUS      current
  DESCRIPTION
    "This notification indicates that PME initialization has
    failed, due to inability of the PME link to achieve the
    requested configuration profile.

    Generation of this notification is controlled by the
    efmCuPmeConfigInitFailEnable object."
  ::= { efmCuPmeNotifications 4 }

efmCuPmeProtocolInitFailure NOTIFICATION-TYPE
  OBJECTS {
    efmCuPmeFltStatus,
    efmCuPmeOperSubType
  }
  STATUS     current
  DESCRIPTION
    "This notification indicates that the peer PME was using
    an incompatible protocol during initialization.

    Generation of this notification is controlled by the
    efmCuPmeProtocolInitFailEnable object."
  ::= { efmCuPmeNotifications 5 }

-- The PME group

efmCuPmeConfTable OBJECT-TYPE
  SYNTAX      SEQUENCE OF EfmCuPmeConfEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "Table for Configuration of common aspects for EFMCu
    2BASE-TL/10PASS-TS PME ports (modems). Configuration of
    aspects specific to 2BASE-TL or 10PASS-TS PME types is
    represented in efmCuPme2BConfTable and efmCuPme10PConfTable,
    respectively.

    Entries in this table shall be maintained in a persistent
    manner."
  ::= { efmCuPme 1 }

efmCuPmeConfEntry OBJECT-TYPE
  SYNTAX      EfmCuPmeConfEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "An entry in the EFMCu PME Configuration table.
    Each entry represents common aspects of an EFMCu PME port
    indexed by the ifIndex. Note that an EFMCu PME port can be
    stacked below a single PCS port, also indexed by ifIndex,
    possibly together with other PME ports if PAF is enabled."
  INDEX  { ifIndex }
  ::= { efmCuPmeConfTable 1 }

EfmCuPmeConfEntry ::=
  SEQUENCE {
    efmCuPmeAdminSubType           INTEGER,
    efmCuPmeAdminProfile           EfmProfileIndexOrZero,
    efmCuPAFRemoteDiscoveryCode    PhysAddress,
    efmCuPmeThreshLineAtn          Integer32,
    efmCuPmeThreshSnrMgn           Integer32,
    efmCuPmeLineAtnCrossingEnable  TruthValue,
    efmCuPmeSnrMgnCrossingEnable   TruthValue,
    efmCuPmeDeviceFaultEnable      TruthValue,
```

```
      efmCuPmeConfigInitFailEnable   TruthValue,
      efmCuPmeProtocolInitFailEnable TruthValue
    }

  efmCuPmeAdminSubType  OBJECT-TYPE
    SYNTAX      INTEGER {
      ieee2BaseTLO(1),
      ieee2BaseTLR(2),
      ieee10PassTSO(3),
      ieee10PassTSR(4),
      ieee2BaseTLor10PassTSR(5),
      ieee2BaseTLor10PassTSO(6),
      ieee10PassTSor2BaseTLO(7)
    }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
      "Administrative (desired) subtype of the PME.
      Possible values are:
        ieee2BaseTLO           - PME shall operate as 2BaseTL-O
        ieee2BaseTLR           - PME shall operate as 2BaseTL-R
        ieee10PassTSO          - PME shall operate as 10PassTS-O
        ieee10PassTSR          - PME shall operate as 10PassTS-R
        ieee2BaseTLor10PassTSR - PME shall operate as 2BaseTL-R or
                                 10PassTS-R. The actual value will
                                 be set by the -O link partner
                                 during initialization (handshake).
        ieee2BaseTLor10PassTSO - PME shall operate as 2BaseTL-O
                                 (preferred) or 10PassTS-O. The
                                 actual value will be set during
                                 initialization depending on the -R
                                 link partner capability (i.e., if
                                 -R is incapable of the preferred
                                 2BaseTL mode, 10PassTS will be
                                 used).
        ieee10PassTSor2BaseTLO - PME shall operate as 10PassTS-O
                                 (preferred) or 2BaseTL-O. The
                                 actual value will be set during
                                 initialization depending on the -R
                                 link partner capability (i.e., if
                                 -R is incapable of the preferred
                                 10PassTS mode, 2BaseTL will be
                                 used).

      Changing efmCuPmeAdminSubType is a traffic-disruptive
      operation and as such shall be done when the link is Down.
      Attempts to change this object shall be rejected if the link
      is Up or Initializing.
      Attempts to change this object to an unsupported subtype
      (see efmCuPmeSubTypesSupported) shall be rejected.

      The current operational subtype is indicated by the
      efmCuPmeOperSubType variable.

      ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PMA/PMD is present,
then
      this object combines values of the Port subtype select bits
      and the PMA/PMD type selection bits in the 10P/2B PMA/PMD
      control register."
    REFERENCE
      "IEEE Std 802.3, 61.1, 45.2.1.14.4, 45.2.1.14.7"
    ::= { efmCuPmeConfEntry 1 }

  efmCuPmeAdminProfile  OBJECT-TYPE
    SYNTAX      EfmProfileIndexOrZero
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
      "Desired PME configuration profile. This object is a pointer
      to an entry in either the efmCuPme2BProfileTable or the
      efmCuPme10PProfileTable, depending on the current operating
      SubType of the PME. The value of this object is the index of
      the referenced profile.
```

```
            The value of zero (default) indicates that the PME is
            configured via the efmCuAdminProfile object for the PCS port
            to which this PME is assigned. That is, the profile
            referenced by efmCuPmeAdminProfile takes precedence
            over the profile(s) referenced by efmCuAdminProfile.

            This object is writeable and readable for the CO subtype PMEs
            (2BaseTL-O or 10PassTS-O). It is irrelevant for the CPE
            subtype (2BaseTL-R or 10PassTS-R) -- a zero value shall be
            returned on an attempt to read this object and any attempt
            to change this object shall be rejected in this case.
            Note that the current operational profile value is available
            via efmCuPmeOperProfile object.

            Any modification of this object shall be performed when the
            link is Down. Attempts to change this object shall be
            rejected, if the link is Up or Initializing.

            Attempts to set this object to a value that is not the value
            of the index for an active entry in the corresponding profile
            table shall be rejected.

            This object maps ~~to the Clause 30~~ to IEEE Std 802.3, Clause 30 attribute aProfileSelect.

            This object shall be maintained in a persistent manner."
          REFERENCE
            "IEEE Std 802.3, 30.11.2.1.6"
          DEFVAL { 0 }
          ::= { efmCuPmeConfEntry 2 }

        efmCuPAFRemoteDiscoveryCode  OBJECT-TYPE
          SYNTAX      PhysAddress (SIZE(0|6))
          MAX-ACCESS  read-write
          STATUS      current
          DESCRIPTION
            "PAF Remote Discovery Code of the PME port at the CO.
            The 6-octet Discovery Code of the peer PCS connected via
            the PME.
            Reading this object results in a Discovery Get operation.
            Setting this object to all zeros results in a Discovery
            Clear_if_Same operation (the value of efmCuPAFDiscoveryCode
            at the peer PCS shall be the same as efmCuPAFDiscoveryCode of
            the local PCS associated with the PME for the operation to
            succeed).
            Writing a non-zero value to this object results in a
            Discovery Set_if_Clear operation.
            A zero-length octet string shall be returned on an attempt to
            read this object when PAF aggregation is not enabled.

            This object is irrelevant in CPE port (-R) subtypes: in this
            case, a zero-length octet string shall be returned on an
            attempt to read this object; writing to this object shall
            be rejected.

            Discovery shall be performed when the link is Down.
            Attempts to change this object shall be rejected (in case of
            SNMP with the error inconsistentValue), if the link is Up or
            Initializing.

            ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PMA/PMD is present,
    then
            this object is a function of 10P/2B aggregation discovery
            control register, Discovery operation result bits in 10P/2B
            aggregation and discovery status register and
            10P/2B aggregation discovery code register."
          REFERENCE
            "IEEE Std 802.3, 61.2.2.8.4, 45.2.6.6 to 45.2.6.8"
          ::= { efmCuPmeConfEntry 3 }

        efmCuPmeThreshLineAtn  OBJECT-TYPE
          SYNTAX  Integer32(-127..128)
          UNITS       "dB"
          MAX-ACCESS  read-write
```

```
        STATUS      current
        DESCRIPTION
          "Desired Line Attenuation threshold for the 2B/10P PME.
          This object configures the line attenuation alarm threshold.
          When the current value of Line Attenuation reaches or
          exceeds this threshold, an efmCuPmeLineAtnCrossing
          notification may be generated, if enabled by
          efmCuPmeLineAtnCrossingEnable.

          This object is writeable for the CO subtype PMEs (-O).
          It is read-only for the CPE subtype (-R).

          Changing of the Line Attenuation threshold shall be performed
          when the link is Down. Attempts to change this object shall be
          rejected (in case of SNMP with the error inconsistentValue),
          if the link is Up or Initializing.

          If a Clause 45 MDIO Interface If IEEE Std 802.3, Clause 45 MDIO Interface to the PME is present, then
this
          object maps to the loop attenuation threshold bits in
          the 2B PMD line quality thresholds register."
        REFERENCE
          "IEEE Std 802.3, 45.2.1.23"
        ::= { efmCuPmeConfEntry 4 }

      efmCuPmeThreshSnrMgn  OBJECT-TYPE
        SYNTAX      Integer32(-127..128)
        UNITS       "dB"
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
          "Desired SNR margin threshold for the 2B/10P PME.
          This object configures the SNR margin alarm threshold.
          When the current value of SNR margin reaches or exceeds this
          threshold, an efmCuPmeSnrMgnCrossing notification may be
          generated, if enabled by efmCuPmeSnrMgnCrossingEnable.
          This object is writeable for the CO subtype PMEs
          (2BaseTL-O/10PassTS-O). It is read-only for the CPE subtype
          (2BaseTL-R/10PassTS-R).

          Changing of the SNR margin threshold shall be performed when
          the link is Down. Attempts to change this object shall be
          rejected (in case of SNMP with the error inconsistentValue),
          if the link is Up or Initializing.

          If a Clause 45 MDIO Interface If IEEE Std 802.3, Clause 45 MDIO Interface to the PME is present, then
this
          object maps to the SNR margin threshold bits in the 2B PMD
          line quality thresholds register."
        REFERENCE
          "IEEE Std 802.3, 45.2.1.23"
        ::= { efmCuPmeConfEntry 5 }

      efmCuPmeLineAtnCrossingEnable  OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
          "Indicates whether efmCuPmeLineAtnCrossing notifications
          should be generated for this interface.

          A value of true(1) indicates that efmCuPmeLineAtnCrossing
          notification is enabled. A value of false(2) indicates that
          the notification is disabled."
        ::= { efmCuPmeConfEntry 6 }

      efmCuPmeSnrMgnCrossingEnable  OBJECT-TYPE
        SYNTAX      TruthValue
        MAX-ACCESS  read-write
        STATUS      current
        DESCRIPTION
          "Indicates whether efmCuPmeSnrMgnCrossing notifications
          should be generated for this interface.
```

```
    A value of true(1) indicates that efmCuPmeSnrMgnCrossing
    notification is enabled. A value of false(2) indicates that
    the notification is disabled."
  ::= { efmCuPmeConfEntry 7 }

efmCuPmeDeviceFaultEnable  OBJECT-TYPE
  SYNTAX      TruthValue
  MAX-ACCESS  read-write
  STATUS      current
  DESCRIPTION
    "Indicates whether efmCuPmeDeviceFault notifications
    should be generated for this interface.

    A value of true(1) indicates that efmCuPmeDeviceFault
    notification is enabled. A value of false(2) indicates that
    the notification is disabled."
  ::= { efmCuPmeConfEntry 8 }

efmCuPmeConfigInitFailEnable  OBJECT-TYPE
  SYNTAX      TruthValue
  MAX-ACCESS  read-write
  STATUS      current
  DESCRIPTION
    "Indicates whether efmCuPmeConfigInitFailure notifications
    should be generated for this interface.

    A value of true(1) indicates that efmCuPmeConfigInitFailure
    notification is enabled. A value of false(2) indicates that
    the notification is disabled."
  ::= { efmCuPmeConfEntry 9 }

efmCuPmeProtocolInitFailEnable  OBJECT-TYPE
  SYNTAX      TruthValue
  MAX-ACCESS  read-write
  STATUS      current
  DESCRIPTION
    "Indicates whether efmCuPmeProtocolInitFailure notifications
    should be generated for this interface.

    A value of true(1) indicates that efmCuPmeProtocolInitFailure
    notification is enabled. A value of false(2) indicates that
    the notification is disabled."
  ::= { efmCuPmeConfEntry 10 }


efmCuPmeCapabilityTable OBJECT-TYPE
  SYNTAX      SEQUENCE OF EfmCuPmeCapabilityEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "Table for the configuration of common aspects for EFMCu
    2BASE-TL/10PASS-TS PME ports (modems). The configuration of
    aspects specific to 2BASE-TL or 10PASS-TS PME types is
    represented in the efmCuPme2BConfTable and the
    efmCuPme10PConfTable, respectively.

    Entries in this table shall be maintained in a persistent
    manner."
  ::= { efmCuPme 2 }
efmCuPmeCapabilityEntry OBJECT-TYPE
  SYNTAX      EfmCuPmeCapabilityEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "An entry in the EFMCu PME Capability table.
    Each entry represents common aspects of an EFMCu PME port
    indexed by the ifIndex. Note that an EFMCu PME port can be
    stacked below a single PCS port, also indexed by ifIndex,
    possibly together with other PME ports if PAF is enabled."
  INDEX  { ifIndex }
  ::= { efmCuPmeCapabilityTable 1 }
```

```
EfmCuPmeCapabilityEntry ::=
  SEQUENCE {
    efmCuPmeSubTypesSupported     BITS
  }

efmCuPmeSubTypesSupported  OBJECT-TYPE
  SYNTAX      BITS {
    ieee2BaseTLO(0),
    ieee2BaseTLR(1),
    ieee10PassTSO(2),
    ieee10PassTSR(3)
  }
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "PME supported subtypes. This is a bitmap of possible
    subtypes. The various bit positions are:
      ieee2BaseTLO    - PME is capable of operating as 2BaseTL-O
      ieee2BaseTLR    - PME is capable of operating as 2BaseTL-R
      ieee10PassTSO   - PME is capable of operating as 10PassTS-O
      ieee10PassTSR   - PME is capable of operating as 10PassTS-R

    The desired mode of operation is determined by
    efmCuPmeAdminSubType, while efmCuPmeOperSubType reflects the
    current operating mode.

    If a Clause 45 MDIO Interface If IEEE Std 802.3, Clause 45 MDIO Interface to the PCS is present, then
this
    object combines the 10PASS-TS capable and 2BASE-TL capable
    bits in the 10P/2B PMA/PMD speed ability register and the
    CO supported and CPE supported bits in the 10P/2B PMA/PMD
    status register."
  REFERENCE
    "IEEE Std 802.3, 61.1, 45.2.1.4.7, 45.2.1.4.8, 45.2.1.15.2,
    45.2.1.15.3"
  ::= { efmCuPmeCapabilityEntry 1 }
efmCuPmeStatusTable OBJECT-TYPE
  SYNTAX      SEQUENCE OF EfmCuPmeStatusEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "This table provides common status information of EFMCu
    2BASE-TL/10PASS-TS PME ports. Status information specific
    to 10PASS-TS PME is represented in efmCuPme10PStatusTable.

    This table contains live data from the equipment. As such,
    it is not persistent."
  ::= { efmCuPme 3 }

efmCuPmeStatusEntry OBJECT-TYPE
  SYNTAX      EfmCuPmeStatusEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "An entry in the EFMCu PME Status table.
    Each entry represents common aspects of an EFMCu PME port
    indexed by the ifIndex. Note that an EFMCu PME port can be
    stacked below a single PCS port, also indexed by ifIndex,
    possibly together with other PME ports if PAF is enabled."
  INDEX  { ifIndex }
  ::= { efmCuPmeStatusTable 1 }

EfmCuPmeStatusEntry ::=
  SEQUENCE {
    efmCuPmeOperStatus            INTEGER,
    efmCuPmeFltStatus             BITS,
    efmCuPmeOperSubType           INTEGER,
    efmCuPmeOperProfile           EfmProfileIndexOrZero,
    efmCuPmeSnrMgn                Integer32,
    efmCuPmePeerSnrMgn            Integer32,
    efmCuPmeLineAtn               Integer32,
    efmCuPmePeerLineAtn           Integer32,
    efmCuPmeEquivalentLength      Unsigned32,
```

```
        efmCuPmeTCCodingErrors        Counter32,
        efmCuPmeTCCrcErrors           Counter32
      }

    efmCuPmeOperStatus  OBJECT-TYPE
      SYNTAX      INTEGER {
        up(1),
        downNotReady(2),
        downReady(3),
        init(4)
      }

      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
        "Current PME link Operational Status. Possible values are:
          up(1)           - The link is Up and ready to pass
                            64/65-octet encoded frames or fragments.
          downNotReady(2) - The link is Down and the PME does not
                            detect Handshake tones from its peer.
                            This value may indicate a possible
                            problem with the peer PME.
          downReady(3)    - The link is Down and the PME detects
                            Handshake tones from its peer.
          init(4)         - The link is Initializing, as a result of
                            ifAdminStatus being set to 'up' for a
                            particular PME or a PCS to which the PME
                            is connected.

        This object is intended to supplement the Down(2) state of
        ifOperStatus.

        This object partially maps ~~to the Clause 30~~ to IEEE Std 802.3, Clause 30 attribute
        aPMEStatus.

        ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PME is present, then
this
        object partially maps to PMA/PMD link status bits in 10P/2B
        PMA/PMD status register."
      REFERENCE
        "IEEE Std 802.3, 30.11.2.1.3, 45.2.1.15.4"
      ::= { efmCuPmeStatusEntry 1 }

    efmCuPmeFltStatus  OBJECT-TYPE
      SYNTAX      BITS {
        lossOfFraming(0),
        snrMgnDefect(1),
        lineAtnDefect(2),
        deviceFault(3),
        configInitFailure(4),
        protocolInitFailure(5)
      }
      MAX-ACCESS  read-only
      STATUS      current
      DESCRIPTION
        "Current/Last PME link Fault Status. This is a bitmap of
        possible conditions. The various bit positions are:

          lossOfFraming       - Loss of Framing for 10P or
                                Loss of Sync word for 2B PMD or
                                Loss of 64/65-octet framing.
          snrMgnDefect        - SNR margin dropped below the
                                threshold.
          lineAtnDefect       - Line Attenuation exceeds the
                                threshold.
          deviceFault         - Indicates a vendor-dependent
                                diagnostic or self-test fault
                                has been detected.
          configInitFailure   - Configuration initialization failure,
                                due to inability of the PME link to
                                support the configuration profile,
                                requested during initialization.
          protocolInitFailure - Protocol initialization failure, due
```

```
                                to an incompatible protocol used by
                                the peer PME during init (that could
                                happen if a peer PMD is a regular
                                G.SDHSL/VDSL modem instead of a
                                2BASE-TL/10PASS-TS PME).

            This object is intended to supplement ifOperStatus in IF-MIB.

            This object holds information about the last fault.
            efmCuPmeFltStatus is cleared by the device restart.
            In addition, lossOfFraming, configInitFailure, and
            protocolInitFailure are cleared by PME init;
            deviceFault is cleared by successful diagnostics/test;
            snrMgnDefect and lineAtnDefect are cleared by SNR margin
            and Line attenuation, respectively, returning to norm and by
            PME init.

            This object partially maps ~~to the Clause 30~~ to IEEE Std 802.3, Clause 30 attribute
            aPMEStatus.

            ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PME is present, then
this
            object consolidates information from various PMA/PMD
            registers, namely: Fault bit in PMA/PMD status 1 register,
            10P/2B PMA/PMD link loss register,
            10P outgoing indicator bits status register,
            10P incoming indicator bits status register,
            2B state defects register."
          REFERENCE
            "IEEE Std 802.3, 30.11.2.1.3, 45.2.1.2.1, 45.2.1.41,
            45.2.1.42, 45.2.1.57"
          ::= { efmCuPmeStatusEntry 2 }

        efmCuPmeOperSubType  OBJECT-TYPE
          SYNTAX      INTEGER {
            ieee2BaseTLO(1),
            ieee2BaseTLR(2),
            ieee10PassTSO(3),
            ieee10PassTSR(4)
          }
          MAX-ACCESS  read-only
          STATUS      current
          DESCRIPTION
            "Current operational subtype of the PME.
            Possible values are:
              ieee2BaseTLO           - PME operates as 2BaseTL-O
              ieee2BaseTLR           - PME operates as 2BaseTL-R
              ieee10PassTSO          - PME operates as 10PassTS-O
              ieee10PassTSR          - PME operates as 10PassTS-R

            The desired operational subtype of the PME can be configured
            via the efmCuPmeAdminSubType variable.

            ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PMA/PMD is present,
then
            this object combines values of the Port subtype select
            bits, the PMA/PMD type selection bits in the 10P/2B
            PMA/PMD control register, and the PMA/PMD link status bits in
            the 10P/2B PMA/PMD status register."
          REFERENCE
            "IEEE Std 802.3, 61.1, 45.2.1.14.4, 45.2.1.14.7, 45.2.1.15.4"
          ::= { efmCuPmeStatusEntry 3 }

        efmCuPmeOperProfile  OBJECT-TYPE
          SYNTAX      EfmProfileIndexOrZero
          MAX-ACCESS  read-only
          STATUS      current
          DESCRIPTION
            "PME current operating profile. This object is a pointer to
            an entry in either the efmCuPme2BProfileTable or the
            efmCuPme10PProfileTable, depending on the current operating
            SubType of the PME as indicated by efmCuPmeOperSubType.
            Note that a profile entry to which efmCuPmeOperProfile is
```

```
      pointing can be created automatically to reflect achieved
      parameters in adaptive (not fixed) initialization,
      i.e., values of efmCuPmeOperProfile and efmCuAdminProfile or
      efmCuPmeAdminProfile may differ.
      The value of zero indicates that the PME is Down or
      Initializing.

      This object partially maps to the aOperatingProfile attribute
      in Clause 30."
    REFERENCE
      "IEEE Std 802.3, 30.11.2.1.7"
    ::= { efmCuPmeStatusEntry 4 }
  efmCuPmeSnrMgn OBJECT-TYPE
    SYNTAX      Integer32(-127..128|65535)
    UNITS       "dB"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
      "The current signal-to-noise ratio (SNR) margin with respect
      to the received signal as perceived by the local PME.
      The value of 65535 is returned when the PME is Down or
      Initializing.

      This object maps to the aPMESNRMgn attribute in Clause 30.

      ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface is present, then this
      object maps to the 10P/2B RX SNR margin register."
    REFERENCE
      "IEEE Std 802.3, 30.11.2.1.4, 45.2.1.19"
    ::= { efmCuPmeStatusEntry 5 }

  efmCuPmePeerSnrMgn OBJECT-TYPE
    SYNTAX      Integer32(-127..128|65535)
    UNITS       "dB"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
      "The current SNR margin in dB with respect to the received
      signal, as perceived by the remote (link partner) PME.
      The value of 65535 is returned when the PME is Down or
      Initializing.

      This object is irrelevant for the -R PME subtypes. The value
      of 65535 shall be returned in this case.

      ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface is present, then this
      object maps to the 10P/2B link partner RX SNR margin
      register."
    REFERENCE
      "IEEE Std 802.3, 45.2.1.20"
    ::= { efmCuPmeStatusEntry 6}

  efmCuPmeLineAtn OBJECT-TYPE
    SYNTAX      Integer32(-127..128|65535)
    UNITS       "dB"
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
      "The current Line Attenuation in dB as perceived by the local
      PME.
      The value of 65535 is returned when the PME is Down or
      Initializing.

      ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface is present, then this
      object maps to the Line Attenuation register."
    REFERENCE
      "IEEE Std 802.3, 45.2.1.21"
    ::= { efmCuPmeStatusEntry 7 }

  efmCuPmePeerLineAtn OBJECT-TYPE
    SYNTAX      Integer32(-127..128|65535)
    UNITS       "dB"
    MAX-ACCESS  read-only
```

```
        STATUS      current
        DESCRIPTION
          "The current Line Attenuation in dB as perceived by the remote
          (link partner) PME.
          The value of 65535 is returned when the PME is Down or
          Initializing.

          This object is irrelevant for the -R PME subtypes. The value
          of 65535 shall be returned in this case.

          ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface is present, then this
          object maps to the 20P/2B link partner Line Attenuation
          register."
        REFERENCE
          "IEEE Std 802.3, 45.2.1.22"
        ::= { efmCuPmeStatusEntry 8 }

      efmCuPmeEquivalentLength  OBJECT-TYPE
        SYNTAX      Unsigned32(0..8192|65535)
        UNITS       "m"
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
          "An estimate of the equivalent loop's physical length in
          meters, as perceived by the PME after the link is established.
          An equivalent loop is a hypothetical 26AWG (0.4mm) loop with a
          perfect square root attenuation characteristic, without any
          bridged taps.
          The value of 65535 is returned if the link is Down or
          Initializing or the PME is unable to estimate the equivalent
          length.

          For a 10BASE-TL PME, ~~if a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the
PME
          is present, then this object maps to the 10P Electrical Length
          register."
        REFERENCE
          "IEEE Std 802.3, 45.2.1.29"
        ::= { efmCuPmeStatusEntry 9 }

      efmCuPmeTCCodingErrors OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
          "The number of 64/65-octet encapsulation errors. This counter
          is incremented for each 64/65-octet encapsulation error
          detected by the 64/65-octet receive function.

          This object maps to aTCCodingViolations attribute in
          Clause 30.

          ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PME TC is present,
then
          this object maps to the TC coding violations register
          (see IEEE Std 802.3 45.2.6.12).

          Discontinuities in the value of this counter can occur at
          re-initialization of the management system, and at other times
          as indicated by the value of ifCounterDiscontinuityTime,
          defined in IF-MIB."
        REFERENCE
          "IEEE Std 802.3, 61.3.3.1, 30.11.2.1.5, 45.2.6.12"
        ::= { efmCuPmeStatusEntry 10 }

      efmCuPmeTCCrcErrors OBJECT-TYPE
        SYNTAX      Counter32
        MAX-ACCESS  read-only
        STATUS      current
        DESCRIPTION
          "The number of TC-CRC errors. This counter is incremented for
          each TC-CRC error detected by the 64/65-octet receive function
          (see IEEE Std 802.3 61.3.3.3 and IEEE Std 802.3 Figure 61-19).
```

```
          This object maps to aTCCRCErrors attribute in
          Clause 30.

          ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PME TC is present,
then
          this object maps to the TC CRC error register
          (see IEEE Std 802.3 45.2.6.11).

          Discontinuities in the value of this counter can occur at
          re-initialization of the management system, and at other times
          as indicated by the value of ifCounterDiscontinuityTime,
          defined in IF-MIB."
        REFERENCE
          "IEEE Std 802.3, 61.3.3.3, 30.11.2.1.10, 45.2.6.11"
        ::= { efmCuPmeStatusEntry 11 }

      -- 2BASE-TL specific PME group

       efmCuPme2B      OBJECT IDENTIFIER ::= { efmCuPme 5 }

       efmCuPme2BProfileTable OBJECT-TYPE
         SYNTAX      SEQUENCE OF EfmCuPme2BProfileEntry
         MAX-ACCESS  not-accessible
         STATUS      current
         DESCRIPTION
           "This table supports definitions of administrative and
           operating profiles for 2BASE-TL PMEs.
           The first 14 entries in this table shall be defined as
           follows (see IEEE Std 802.3 Annex 63A):
           -------+-------+-------+-----+------+-------------+-----------
           Profile MinRate MaxRate Power Region Constellation Comment
            index  (kb/s)  (kb/s)  (dBm)
           -------+-------+-------+-----+------+-------------+-----------
              1     5696    5696    13.5    1   32-TCPAM      default
              2     3072    3072    13.5    1   32-TCPAM
              3     2048    2048    13.5    1   16-TCPAM
              4     1024    1024    13.5    1   16-TCPAM
              5      704     704    13.5    1   16-TCPAM
              6      512     512    13.5    1   16-TCPAM
              7     5696    5696    14.5    2   32-TCPAM
              8     3072    3072    14.5    2   32-TCPAM
              9     2048    2048    14.5    2   16-TCPAM
             10     1024    1024    13.5    2   16-TCPAM
             11      704     704    13.5    2   16-TCPAM
             12      512     512    13.5    2   16-TCPAM
             13      192    5696       0    1   0             best effort
             14      192    5696       0    2   0             best effort
           -------+-------+-------+-----+------+-------------+-----------

           These default entries shall be created during agent
           initialization and shall not be deleted.

           Entries following the first 14 can be dynamically created and
           deleted to provide custom administrative (configuration)
           profiles and automatic operating profiles.

           This table shall be maintained in a persistent manner."
         REFERENCE
           "IEEE Std 802.3, Annex 63A, 30.11.2.1.6"
         ::= { efmCuPme2B  2 }
       efmCuPme2BProfileEntry OBJECT-TYPE
         SYNTAX      EfmCuPme2BProfileEntry
         MAX-ACCESS  not-accessible
         STATUS      current
         DESCRIPTION
           "Each entry corresponds to a single 2BASE-TL PME profile.
           Each profile contains a set of parameters, used either for
           configuration or representation of a 2BASE-TL PME.
           In case a particular profile is referenced via the
           efmCuPmeAdminProfile object (or efmCuAdminProfile if
           efmCuPmeAdminProfile is zero), it represents the desired
           parameters for the 2BaseTL-O PME initialization.
```

```
      If a profile is referenced via an efmCuPmeOperProfile object,
      it represents the current operating parameters of an
      operational PME.

      Profiles may be created/deleted using the row creation/
      deletion mechanism via efmCuPme2BProfileRowStatus. If an
      active entry is referenced, the entry shall remain 'active'
      until all references are removed.
      Default entries shall not be removed."
    INDEX { efmCuPme2BProfileIndex }
    ::= { efmCuPme2BProfileTable 1 }

  EfmCuPme2BProfileEntry ::=
    SEQUENCE {
      efmCuPme2BProfileIndex          EfmProfileIndex,
      efmCuPme2BProfileDescr          SnmpAdminString,
      efmCuPme2BRegion                INTEGER,
      efmCuPme2BsMode                 EfmProfileIndexOrZero,
      efmCuPme2BMinDataRate           Unsigned32,
      efmCuPme2BMaxDataRate           Unsigned32,
      efmCuPme2BPower                 Unsigned32,
      efmCuPme2BConstellation         INTEGER,
      efmCuPme2BProfileRowStatus      RowStatus
    }

  efmCuPme2BProfileIndex OBJECT-TYPE
    SYNTAX      EfmProfileIndex
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
      "2BASE-TL PME profile index.
      This object is the unique index associated with this profile.
      Entries in this table are referenced via efmCuAdminProfile or
      efmCuPmeAdminProfile objects."
    ::= { efmCuPme2BProfileEntry 1 }
  efmCuPme2BProfileDescr OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
      "A textual string containing information about a 2BASE-TL PME
      profile. The string may include information about the data
      rate and spectral limitations of this particular profile."
    ::= { efmCuPme2BProfileEntry 2 }

  efmCuPme2BRegion  OBJECT-TYPE
    SYNTAX      INTEGER {
      region1(1),
      region2(2)
    }
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
      "Regional settings for a 2BASE-TL PME, as specified in the
      relevant Regional Annex of ITU-T Recommendation G.991.2.
      Regional settings specify the Power Spectral Density (PSD)
      mask and the Power Back-Off (PBO) values, and place
      limitations on the max allowed data rate, power, and
      constellation.

      Possible values for this object are:
        region1      - Annexes A and F (e.g., North America)
        region2      - Annexes B and G (e.g., Europe)

      Annex A/B specify regional settings for data rates from
      192 kb/s to 2304 kb/s using 16-TCPAM encoding.
      Annex F/G specify regional settings for rates from
      2320 kb/s to 3840 kb/s using 16-TCPAM encoding and from
      768 kb/s to 5696 kb/s using 32-TCPAM encoding.

      ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PME is present, then
this
      object partially maps to the Region bits in the 2B general
```

```
          parameter register."
        REFERENCE
          "IEEE Std 802.3, 45.2.1.45; ITU-T Recommendation G.991.2,
           Annexes A, B, F and G"
        ::= { efmCuPme2BProfileEntry 3 }

      efmCuPme2BsMode  OBJECT-TYPE
        SYNTAX      EfmProfileIndexOrZero
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
          "Desired custom Spectral Mode for a 2BASE-TL PME. This object
          is a pointer to an entry in efmCuPme2BsModeTable and a block
          of entries in efmCuPme2BRateReachTable, which together define
          (country-specific) reach-dependent rate limitations in
          addition to those defined by efmCuPme2BRegion.

          The value of this object is the index of the referenced
          spectral mode.
          The value of zero (default) indicates that no specific
          spectral mode is applicable.

          Attempts to set this object to a value that is not the value
          of the index for an active entry in the corresponding spectral
          mode table shall be rejected."
        REFERENCE
          "efmCuPme2BsModeTable, efmCuPme2BRateReachTable"
        DEFVAL { 0 }
        ::= { efmCuPme2BProfileEntry 4 }

      efmCuPme2BMinDataRate  OBJECT-TYPE
        SYNTAX  Unsigned32(192..5696)
        UNITS       "Kbps"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
          "Minimum Data Rate for the 2BASE-TL PME.
          This object can take values of (n x 64)kb/s,
          where n=3..60 for 16-TCPAM and n=12..89 for 32-TCPAM encoding.

          The data rate of the 2BASE-TL PME is considered 'fixed' when
          the value of this object equals that of efmCuPme2BMaxDataRate.
          If efmCuPme2BMinDataRate is less than efmCuPme2BMaxDataRate in
          the administrative profile, the data rate is considered
          'adaptive', and shall be set to the maximum attainable rate
          not exceeding efmCuPme2BMaxDataRate, under the spectral
          limitations placed by the efmCuPme2BRegion and
          efmCuPme2BsMode.

          Note that the current operational data rate of the PME is
          represented by the ifSpeed object of IF-MIB.

          ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PME is present, then
this
          object maps to the Min Data Rate1 bits in the 2B PMD
          parameters register.

          This object shall be maintained in a persistent manner."
        REFERENCE
          "IEEE Std 802.3, 45.2.1.46"
        ::= { efmCuPme2BProfileEntry 5 }
      efmCuPme2BMaxDataRate  OBJECT-TYPE
        SYNTAX  Unsigned32(192..5696)
        UNITS       "Kbps"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
          "Maximum Data Rate for the 2BASE-TL PME.
          This object can take values of (n x 64)kb/s,
          where n=3..60 for 16-TCPAM and n=12..89 for 32-TCPAM encoding.

          The data rate of the 2BASE-TL PME is considered 'fixed' when
          the value of this object equals that of efmCuPme2BMinDataRate.
```

```
          If efmCuPme2BMinDataRate is less than efmCuPme2BMaxDataRate in
          the administrative profile, the data rate is considered
          'adaptive', and shall be set to the maximum attainable rate
          not exceeding efmCuPme2BMaxDataRate, under the spectral
          limitations placed by the efmCuPme2BRegion and
          efmCuPme2BsMode.

          Note that the current operational data rate of the PME is
          represented by the ifSpeed object of IF-MIB.

          ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PME is present, then
this
          object maps to the Max Data Rate1 bits in the 2B PMD
          parameters register.

          This object shall be maintained in a persistent manner."
        REFERENCE
          "IEEE Std 802.3, 45.2.1.46"
        ::= { efmCuPme2BProfileEntry 6 }

      efmCuPme2BPower  OBJECT-TYPE
        SYNTAX      Unsigned32(0|10..42)
        UNITS       "0.5 dBm"
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
          "Signal Transmit Power. Multiple of 0.5 dBm.
          The value of 0 in the administrative profile means that the
          signal transmit power is not fixed and shall be set to
          maximize the attainable rate, under the spectral limitations
          placed by the efmCuPme2BRegion and efmCuPme2BsMode.

          ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PME is present, then
this
          object maps to the Power1 bits in the 2B PMD parameters
          register."
        REFERENCE
          "IEEE Std 802.3, 45.2.1.46"
        ::= { efmCuPme2BProfileEntry 7 }

      efmCuPme2BConstellation  OBJECT-TYPE
        SYNTAX      INTEGER {
          adaptive(0),
          tcpam16(1),
          tcpam32(2)
        }
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
          "TCPAM Constellation of the 2BASE-TL PME.
          The possible values are:
            adaptive(0)    - either 16- or 32-TCPAM
            tcpam16(1)     - 16-TCPAM
            tcpam32(2)     - 32-TCPAM

          The value of adaptive(0) in the administrative profile means
          that the constellation is not fixed and shall be set to
          maximize the attainable rate, under the spectral limitations
          placed by the efmCuPme2BRegion and efmCuPme2BsMode.

          ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PME is present, then
this
          object maps to the Constellation1 bits in the 2B general
          parameter register."
        REFERENCE
           "IEEE Std 802.3, 45.2.1.46"
        ::= { efmCuPme2BProfileEntry 8 }

      efmCuPme2BProfileRowStatus OBJECT-TYPE
        SYNTAX      RowStatus
        MAX-ACCESS  read-create
        STATUS      current
        DESCRIPTION
```

```
    "This object controls the creation, modification, or deletion
    of the associated entry in the efmCuPme2BProfileTable per the
    semantics of RowStatus.

    If an 'active' entry is referenced via efmCuAdminProfile or
    efmCuPmeAdminProfile instance(s), the entry shall remain
    'active'.

    An 'active' entry shall not be modified. In order to modify
    an existing entry, it shall be taken out of service (by setting
    this object to 'notInService'), modified, and set 'active'
    again."
  ::= { efmCuPme2BProfileEntry 9 }
efmCuPme2BsModeTable OBJECT-TYPE
  SYNTAX      SEQUENCE OF EfmCuPme2BsModeEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "This table, together with efmCu2BReachRateTable, supports
    definition of administrative custom spectral modes for
    2BASE-TL PMEs, describing spectral limitations in addition to
    those specified by efmCuPme2BRegion.

    In some countries, spectral regulations (e.g., UK ANFP) limit
    the length of the loops for certain data rates. This table
    allows these country-specific limitations to be specified.

    Entries in this table referenced by the efmCuPme2BsMode
    shall not be deleted until all the active references are
    removed.

    This table shall be maintained in a persistent manner."
  REFERENCE
    "efmCu2BReachRateTable"
  ::= { efmCuPme2B  3 }

efmCuPme2BsModeEntry OBJECT-TYPE
  SYNTAX      EfmCuPme2BsModeEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "Each entry specifies a spectral mode description and its
    index, which is used to reference corresponding entries in the
    efmCu2BReachRateTable.

    Entries may be created/deleted using the row creation/
    deletion mechanism via efmCuPme2BsModeRowStatus."
  INDEX { efmCuPme2BsModeIndex }
  ::= { efmCuPme2BsModeTable 1 }

EfmCuPme2BsModeEntry ::=
  SEQUENCE {
    efmCuPme2BsModeIndex             EfmProfileIndex,
    efmCuPme2BsModeDescr             SnmpAdminString,
    efmCuPme2BsModeRowStatus         RowStatus
  }

efmCuPme2BsModeIndex OBJECT-TYPE
  SYNTAX      EfmProfileIndex
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "2BASE-TL PME Spectral Mode index.
    This object is the unique index associated with this spectral
    mode.
    Entries in this table are referenced via the efmCuPme2BsMode
    object."
  ::= { efmCuPme2BsModeEntry 1 }

efmCuPme2BsModeDescr OBJECT-TYPE
  SYNTAX      SnmpAdminString
  MAX-ACCESS  read-create
  STATUS      current
```

```
  DESCRIPTION
    "A textual string containing information about a 2BASE-TL PME
    spectral mode. The string may include information about
    corresponding (country-specific) spectral regulations
    and rate/reach limitations of this particular spectral mode."
  ::= { efmCuPme2BsModeEntry 2 }

efmCuPme2BsModeRowStatus OBJECT-TYPE
  SYNTAX      RowStatus
  MAX-ACCESS  read-create
  STATUS      current
  DESCRIPTION
    "This object controls creation, modification, or deletion of
    the associated entry in efmCuPme2BsModeTable per the semantics
    of RowStatus.

    If an 'active' entry is referenced via efmCuPme2BsMode
    instance(s), the entry shall remain 'active'.

    An 'active' entry shall not be modified. In order to modify
    an existing entry, it shall be taken out of service (by setting
    this object to 'notInService'), modified, and set 'active'
    again."
  ::= { efmCuPme2BsModeEntry 3 }


efmCuPme2BReachRateTable OBJECT-TYPE
  SYNTAX      SEQUENCE OF EfmCuPme2BReachRateEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "This table supports the definition of administrative custom
    spectral modes for 2BASE-TL PMEs, providing spectral
    limitations in addition to those specified by
    efmCuPme2BRegion.
    The spectral regulations in some countries (e.g., UK ANFP)
    limit the length of the loops for certain data rates.
    This table allows these country-specific limitations to be
    specified.

    Below is an example of this table for NICC Document ND1602:2005/08:
    ----------+-------+-------
    Equivalent MaxRate MaxRate
      Length    PAM16   PAM32
        (m)     (kb/s)  (kb/s)
    ----------+-------+-------
        975      2304    5696
       1125      2304    5504
       1275      2304    5120
       1350      2304    4864
       1425      2304    4544
       1500      2304    4288
       1575      2304    3968
       1650      2304    3776
       1725      2304    3520
       1800      2304    3264
       1875      2304    3072
       1950      2048    2688
       2100      1792    2368
       2250      1536       0
       2400      1408       0
       2550      1280       0
       2775      1152       0
       2925      1152       0
       3150      1088       0
       3375      1024       0
    ----------+-------+-------

    Entries in this table referenced by an efmCuPme2BsMode
    instance shall not be deleted.

    This table shall be maintained in a persistent manner."
  REFERENCE
```

```
    "NICC Document ND1602:2005/08"
  ::= { efmCuPme2B  4 }

efmCuPme2BReachRateEntry OBJECT-TYPE
  SYNTAX      EfmCuPme2BReachRateEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "Each entry specifies maximum 2BASE-TL PME data rates
    allowed for a certain equivalent loop length, when using
    16-TCPAM or 32-TCPAM encoding.

    When a 2BASE-TL PME is initialized, its data rate shall not
    exceed the following limitations:
    - the value of efmCuPme2BMaxDataRate
    - maximum data rate allowed by efmCuPme2BRegion and
      efmCuPme2BPower
    - maximum data rate for a given encoding specified in the
      efmCuPme2BsModeEntry, corresponding to the equivalent loop
      length, estimated by the PME

    efmCuPme2BEquivalentLength values should be assigned
    in increasing order, starting from the minimum value.

    Entries may be created/deleted using the row creation/
    deletion mechanism via efmCuPme2ReachRateRowStatus."
  INDEX { efmCuPme2BsModeIndex, efmCuPme2BReachRateIndex }
  ::= { efmCuPme2BReachRateTable 1 }

EfmCuPme2BReachRateEntry ::=
  SEQUENCE {
    efmCuPme2BReachRateIndex         EfmProfileIndex,
    efmCuPme2BEquivalentLength       Unsigned32,
    efmCuPme2BMaxDataRatePam16       Unsigned32,
    efmCuPme2BMaxDataRatePam32       Unsigned32,
    efmCuPme2BReachRateRowStatus     RowStatus
  }

efmCuPme2BReachRateIndex OBJECT-TYPE
  SYNTAX      EfmProfileIndex
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "2BASE-TL custom spectral mode Reach-Rate table index.
    This object is the unique index associated with each entry."
  ::= { efmCuPme2BReachRateEntry 1 }

efmCuPme2BEquivalentLength  OBJECT-TYPE
  SYNTAX      Unsigned32(0..8192)
  UNITS       "m"
  MAX-ACCESS  read-create
  STATUS      current
  DESCRIPTION
    "Maximum allowed equivalent loop's physical length in meters
    for the specified data rates.
    An equivalent loop is a hypothetical 26AWG (0.4mm) loop with a
    perfect square root attenuation characteristic, without any
    bridged taps."
  ::= { efmCuPme2BReachRateEntry 2 }

efmCuPme2BMaxDataRatePam16  OBJECT-TYPE
  SYNTAX      Unsigned32(0|192..5696)
  UNITS       "Kbps"
  MAX-ACCESS  read-create
  STATUS      current
  DESCRIPTION
    "Maximum data rate for a 2BASE-TL PME at the specified
    equivalent loop's length using TC-PAM16 encoding.
    The value of zero means that TC-PAM16 encoding should not be
    used at this distance."
  ::= { efmCuPme2BReachRateEntry 3 }

efmCuPme2BMaxDataRatePam32  OBJECT-TYPE
```

```
    SYNTAX      Unsigned32(0|192..5696)
    UNITS       "Kbps"
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
      "Maximum data rate for a 2BASE-TL PME at the specified
      equivalent loop's length using TC-PAM32 encoding.
      The value of zero means that TC-PAM32 encoding should not be
      used at this distance."
    ::= { efmCuPme2BReachRateEntry 4 }

  efmCuPme2BReachRateRowStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS  read-create
    STATUS      current
    DESCRIPTION
      "This object controls the creation, modification, or deletion
      of the associated entry in the efmCuPme2BReachRateTable per
      the semantics of RowStatus.

      If an 'active' entry is referenced via efmCuPme2BsMode
      instance(s), the entry shall remain 'active'.

      An 'active' entry shall not be modified. In order to modify
      an existing entry, it shall be taken out of service (by setting
      this object to 'notInService'), modified, and set 'active'
      again."
    ::= { efmCuPme2BReachRateEntry 5 }


-- 10PASS-TS specific PME group
  efmCuPme10P      OBJECT IDENTIFIER ::= { efmCuPme 6 }

  efmCuPme10PProfileTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF EfmCuPme10PProfileEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
      "This table supports definitions of configuration profiles for
      10PASS-TS PMEs.
      The first 22 entries in this table shall be defined as
      follows (see IEEE Std 802.3 Annex 62B.3, Table 62B-1):
      -------+--------+----+---------+-----+-----+---------------
      Profile Bandplan UPBO BandNotch DRate URate Comment
       Index  PSDMask#  p#    p#        p#    p#
      -------+--------+----+---------+-----+-----+---------------
         1      1      3    2,6,10,11    20    20 default profile
         2     13      5    0            20    20
         3      1      1    0            20    20
         4     16      0    0           100   100
         5     16      0    0            70    50
         6      6      0    0            50    10
         7     17      0    0            30    30
         8      8      0    0            30     5
         9      4      0    0            25    25
        10      4      0    0            15    15
        11     23      0    0            10    10
        12     23      0    0             5     5
        13     16      0    2,5,9,11    100   100
        14     16      0    2,5,9,11     70    50
        15      6      0    2,6,10,11    50    10
        16     17      0    2,5,9,11     30    30
        17      8      0    2,6,10,11    30     5
        18      4      0    2,6,10,11    25    25
        19      4      0    2,6,10,11    15    15
        20     23      0    2,5,9,11     10    10
        21     23      0    2,5,9,11      5     5
        22     30      0    0           200    50
      -------+--------+----+---------+-----+-----+---------------

      These default entries shall be created during agent
      initialization and shall not be deleted.
```

```
    Entries following the first 22 can be dynamically created and
    deleted to provide custom administrative (configuration)
    profiles and automatic operating profiles.

    This table shall be maintained in a persistent manner."
  REFERENCE
    "IEEE Std 802.3, Annex 62B.3, 30.11.2.1.6"
  ::= { efmCuPme10P  1 }

efmCuPme10PProfileEntry OBJECT-TYPE
  SYNTAX      EfmCuPme10PProfileEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "Each entry corresponds to a single 10PASS-TS PME profile.

    Each profile contains a set of parameters, used either for
    configuration or representation of a 10PASS-TS PME.
    In case a particular profile is referenced via the
    efmCuPmeAdminProfile object (or efmCuAdminProfile if
    efmCuPmeAdminProfile is zero), it represents the desired
    parameters for the 10PassTS-O PME initialization.
    If a profile is referenced via an efmCuPmeOperProfile object,
    it represents the current operating parameters of the PME.

    Profiles may be created/deleted using the row creation/
    deletion mechanism via efmCuPme10PProfileRowStatus. If an
    'active' entry is referenced, the entry shall remain 'active'
    until all references are removed.
    Default entries shall not be removed."
  INDEX { efmCuPme10PProfileIndex }
  ::= { efmCuPme10PProfileTable 1 }

EfmCuPme10PProfileEntry ::=
  SEQUENCE {
    efmCuPme10PProfileIndex           EfmProfileIndex,
    efmCuPme10PProfileDescr           SnmpAdminString,
    efmCuPme10PBandplanPSDMskProfile  INTEGER,
    efmCuPme10PUPBOReferenceProfile   INTEGER,
    efmCuPme10PBandNotchProfiles      BITS,
    efmCuPme10PPayloadDRateProfile    INTEGER,
    efmCuPme10PPayloadURateProfile    INTEGER,
    efmCuPme10PProfileRowStatus       RowStatus
  }

efmCuPme10PProfileIndex OBJECT-TYPE
  SYNTAX      EfmProfileIndex
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "10PASS-TS PME profile index.
    This object is the unique index associated with this profile.
    Entries in this table are referenced via efmCuAdminProfile or
    efmCuPmeAdminProfile."
  ::= { efmCuPme10PProfileEntry 1 }

efmCuPme10PProfileDescr OBJECT-TYPE
  SYNTAX      SnmpAdminString
  MAX-ACCESS  read-create
  STATUS      current
  DESCRIPTION
    "A textual string containing information about a 10PASS-TS PME
    profile. The string may include information about data rate
    and spectral limitations of this particular profile."
  ::= { efmCuPme10PProfileEntry 2 }

efmCuPme10PBandplanPSDMskProfile  OBJECT-TYPE
  SYNTAX  INTEGER {
    profile1(1),
    profile2(2),
    profile3(3),
    profile4(4),
    profile5(5),
```

```
    profile6(6),
    profile7(7),
    profile8(8),
    profile9(9),
    profile10(10),
    profile11(11),
    profile12(12),
    profile13(13),
    profile14(14),
    profile15(15),
    profile16(16),
    profile17(17),
    profile18(18),
    profile19(19),
    profile20(20),
    profile21(21),
    profile22(22),
    profile23(23),
    profile24(24),
    profile25(25),
    profile26(26),
    profile27(27),
    profile28(28),
    profile29(29),
    profile30(30)
  }
  MAX-ACCESS  read-create
  STATUS      current
  DESCRIPTION
    "The 10PASS-TS PME Bandplan and PSD Mask Profile, as specified
    in IEEE Std 802.3 Annex 62A, table 62A-1. Possible values are:
    --------------+------------------------+------------+--------
    Profile Name    PSD Mask                      Bands      ITU-T G.993.1
                                                 0/1/2/3/4/5  Bandplan
    --------------+------------------------+------------+--------
    profile1(1)     ANSI T1.424 FTTCab.M1         x/D/U/D/U    A
    profile2(2)     ANSI T1.424 FTTEx.M1          x/D/U/D/U    A
    profile3(3)     ANSI T1.424 FTTCab.M2         x/D/U/D/U    A
    profile4(4)     ANSI T1.424 FTTEx.M2          x/D/U/D/U    A
    profile5(5)     ANSI T1.424 FTTCab.M1         D/D/U/D/U    A
    profile6(6)     ANSI T1.424 FTTEx.M1          D/D/U/D/U    A
    profile7(7)     ANSI T1.424 FTTCab.M2         D/D/U/D/U    A
    profile8(8)     ANSI T1.424 FTTEx.M2          D/D/U/D/U    A
    profile9(9)     ANSI T1.424 FTTCab.M1         U/D/U/D/x    A
    profile10(10)   ANSI T1.424 FTTEx.M1          U/D/U/D/x    A
    profile11(11)   ANSI T1.424 FTTCab.M2         U/D/U/D/x    A
    profile12(12)   ANSI T1.424 FTTEx.M2          U/D/U/D/x    A
    profile13(13)   ETSI TS 101 270-1 Pcab.M1.A   x/D/U/D/U    B
    profile14(14)   ETSI TS 101 270-1 Pcab.M1.B   x/D/U/D/U    B
    profile15(15)   ETSI TS 101 270-1 Pex.P1.M1   x/D/U/D/U    B
    profile16(16)   ETSI TS 101 270-1 Pex.P2.M1   x/D/U/D/U    B
    profile17(17)   ETSI TS 101 270-1 Pcab.M2     x/D/U/D/U    B
    profile18(18)   ETSI TS 101 270-1 Pex.P1.M2   x/D/U/D/U    B
    profile19(19)   ETSI TS 101 270-1 Pex.P2.M2   x/D/U/D/U    B
    profile20(20)   ETSI TS 101 270-1 Pcab.M1.A   U/D/U/D/x    B
    profile21(21)   ETSI TS 101 270-1 Pcab.M1.B   U/D/U/D/x    B
    profile22(22)   ETSI TS 101 270-1 Pex.P1.M1   U/D/U/D/x    B
    profile23(23)   ETSI TS 101 270-1 Pex.P2.M1   U/D/U/D/x    B
    profile24(24)   ETSI TS 101 270-1 Pcab.M2     U/D/U/D/x    B
    profile25(25)   ETSI TS 101 270-1 Pex.P1.M2   U/D/U/D/x    B
    profile26(26)   ETSI TS 101 270-1 Pex.P2.M2   U/D/U/D/x    B
    profile27(27)   ITU-T G.993.1 F.1.2.1         x/D/U/D/U    Annex F
    profile28(28)   ITU-T G.993.1 F.1.2.2         x/D/U/D/U    Annex F
    profile29(29)   ITU-T G.993.1 F.1.2.3         x/D/U/D/U    Annex F
    profile30(30)   ANSI T1.424 FTTCab.M1 (ext.)  x/D/U/D/U/D  Annex A
    --------------+------------------------+------------+--------
    "
  REFERENCE
    "IEEE Std 802.3, Annex 62A"
  ::= { efmCuPme10PProfileEntry 3 }

efmCuPme10PUPBOReferenceProfile  OBJECT-TYPE
  SYNTAX  INTEGER {
```

```
    profile0(0),
    profile1(1),
    profile2(2),
    profile3(3),
    profile4(4),
    profile5(5),
    profile6(6),
    profile7(7),
    profile8(8),
    profile9(9)
  }
  MAX-ACCESS  read-create
  STATUS      current
  DESCRIPTION
    "The 10PASS-TS PME Upstream Power Back-Off (UPBO) Reference
    PSD Profile, as specified in 802.3 Annex 62A, table 62A-3.
    Possible values are:
    ------------+------------------------------
    Profile Name   Reference        PSD
    ------------+------------------------------
    profile0(0)  no profile
    profile1(1)  ANSI T1.424        Noise A    M1
    profile2(2)  ANSI T1.424        Noise A    M2
    profile3(3)  ANSI T1.424        Noise F    M1
    profile4(4)  ANSI T1.424        Noise F    M2
    profile5(5)  ETSI TS 101 270-1  Noise A&B
    profile6(6)  ETSI TS 101 270-1  Noise C
    profile7(7)  ETSI TS 101 270-1  Noise D
    profile8(8)  ETSI TS 101 270-1  Noise E
    profile9(9)  ETSI TS 101 270-1  Noise F
    ------------+------------------------------
    "
  REFERENCE
    "IEEE Std 802.3, Annex 62A.3.5"
  ::= { efmCuPme10PProfileEntry 4 }

efmCuPme10PBandNotchProfiles  OBJECT-TYPE
  SYNTAX  BITS {
    profile0(0),
    profile1(1),
    profile2(2),
    profile3(3),
    profile4(4),
    profile5(5),
    profile6(6),
    profile7(7),
    profile8(8),
    profile9(9),
    profile10(10),
    profile11(11)
  }
  MAX-ACCESS  read-create
  STATUS      current
  DESCRIPTION
    "The 10PASS-TS PME Egress Control Band Notch Profile bitmap,
    as specified in IEEE Std 802.3 Annex 62A, table 62A-4. Possible
    values are:
    --------------+--------+------+------------+------+------
    Profile Name   G.991.3  T1.424 TS 101 270-1 StartF EndF
                   table    table  table        (MHz)  (MHz)
    --------------+--------+------+------------+------+------
    profile0(0)    no profile
    profile1(1)    F-5 #01  -      -            1.810  1.825
    profile2(2)    6-2      15-1   17           1.810  2.000
    profile3(3)    F-5 #02  -      -            1.907  1.912
    profile4(4)    F-5 #03  -      -            3.500  3.575
    profile5(5)    6-2      -      17           3.500  3.800
    profile6(6)    -        15-1   -            3.500  4.000
    profile7(7)    F-5 #04  -      -            3.747  3.754
    profile8(8)    F-5 #05  -      -            3.791  3.805
    profile9(9)    6-2      -      17           7.000  7.100
    profile10(10)  F-5 #06  15-1   -            7.000  7.300
    profile11(11)  6-2      15-1   1            10.100 10.150
```

```
    --------------+--------+------+------------+------+------

    Any combination of profiles can be specified by ORing
    individual profiles, for example, a value of 0x2230 selects
    profiles 2, 6, 10, and 11."
  REFERENCE
    "IEEE Std 802.3, Annex 62A.3.5"
  ::= { efmCuPme10PProfileEntry 5 }

efmCuPme10PPayloadDRateProfile  OBJECT-TYPE
  SYNTAX      INTEGER {
    profile5(5),
    profile10(10),
    profile15(15),
    profile20(20),
    profile25(25),
    profile30(30),
    profile50(50),
    profile70(70),
    profile100(100),
    profile140(140),
    profile200(200)
  }
  MAX-ACCESS  read-create
  STATUS      current
  DESCRIPTION
    "The 10PASS-TS PME Downstream Payload Rate Profile, as
    specified in IEEE Std 802.3 Annex 62A. Possible values are:
      profile5(5)      - 2.5 Mb/s
      profile10(10)    - 5 Mb/s
      profile15(15)    - 7.5 Mb/s
      profile20(20)    - 10 Mb/s
      profile25(25)    - 12.5 Mb/s
      profile30(30)    - 15 Mb/s
      profile50(50)    - 25 Mb/s
      profile70(70)    - 35 Mb/s
      profile100(100)  - 50 Mb/s
      profile140(140)  - 70 Mb/s
      profile200(200)  - 100 Mb/s

    Each value represents a target for the PME's Downstream
    Payload Bitrate as seen at the MII. If the payload rate of
    the selected profile cannot be achieved based on the loop
    environment, bandplan, and PSD mask, the PME initialization
    shall fail."
  REFERENCE
    "IEEE Std 802.3, Annex 62A.3.6"
  ::= { efmCuPme10PProfileEntry 6 }

efmCuPme10PPayloadURateProfile  OBJECT-TYPE
  SYNTAX      INTEGER {
    profile5(5),
    profile10(10),
    profile15(15),
    profile20(20),
    profile25(25),
    profile30(30),
    profile50(50),
    profile70(70),
    profile100(100)
  }
  MAX-ACCESS  read-create
  STATUS      current
  DESCRIPTION
    "The 10PASS-TS PME Upstream Payload Rate Profile, as specified
     in 802.3 Annex 62A. Possible values are:
      profile5(5)       - 2.5 Mb/s
      profile10(10)     - 5 Mb/s
      profile15(15)     - 7.5 Mb/s
      profile20(20)     - 10 Mb/s
      profile25(25)     - 12.5 Mb/s
      profile30(30)     - 15 Mb/s
      profile50(50)     - 25 Mb/s
```

```
      profile70(70)     - 35 Mb/s
      profile100(100)   - 50 Mb/s
    Each value represents a target for the PME's Upstream Payload
    Bitrate as seen at the MII. If the payload rate of the
    selected profile cannot be achieved based on the loop
    environment, bandplan, and PSD mask, the PME initialization
    shall fail."
  REFERENCE
    "IEEE Std 802.3, Annex 62A.3.6"
  ::= { efmCuPme10PProfileEntry 7 }

efmCuPme10PProfileRowStatus OBJECT-TYPE
  SYNTAX      RowStatus
  MAX-ACCESS  read-create
  STATUS      current
  DESCRIPTION
    "This object controls creation, modification, or deletion of
    the associated entry in efmCuPme10PProfileTable per the
    semantics of RowStatus.

    If an active entry is referenced via efmCuAdminProfile or
    efmCuPmeAdminProfile, the entry shall remain 'active' until
    all references are removed.

    An 'active' entry shall not be modified. In order to modify
    an existing entry, it shall be taken out of service (by setting
    this object to 'notInService'), modified, and set 'active'
    again."
  ::= { efmCuPme10PProfileEntry 8 }


efmCuPme10PStatusTable OBJECT-TYPE
  SYNTAX      SEQUENCE OF EfmCuPme10PStatusEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "This table provides status information of EFMCu 10PASS-TS
    PMEs (modems).

    This table contains live data from the equipment. As such,
    it is not persistent."
  ::= { efmCuPme10P 2 }

efmCuPme10PStatusEntry OBJECT-TYPE
  SYNTAX      EfmCuPme10PStatusEntry
  MAX-ACCESS  not-accessible
  STATUS      current
  DESCRIPTION
    "An entry in the EFMCu 10PASS-TS PME Status table."
  INDEX  { ifIndex }
  ::= { efmCuPme10PStatusTable 1 }

EfmCuPme10PStatusEntry ::=
  SEQUENCE {
    efmCuPme10PFECCorrectedBlocks     Counter32,
    efmCuPme10PFECUncorrectedBlocks   Counter32
  }

efmCuPme10PFECCorrectedBlocks  OBJECT-TYPE
  SYNTAX      Counter32
  MAX-ACCESS  read-only
  STATUS      current
  DESCRIPTION
    "The number of received and corrected Forward Error Correction
    (FEC) codewords in this 10PASS-TS PME.

    This object maps to the aPMEFECCorrectedBlocks attribute in
    Clause 30.

    ~~If a Clause 45 MDIO Interface~~ If IEEE Std 802.3, Clause 45 MDIO Interface to the PMA/PMD is present,
    then this object maps to the 10P FEC correctable errors
    register.
```

```
      Discontinuities in the value of this counter can occur at
      re-initialization of the management system, and at other times
      as indicated by the value of ifCounterDiscontinuityTime,
      defined in IF-MIB."
    REFERENCE
      "IEEE Std 802.3, 45.2.1.25, 30.11.2.1.8"
    ::= { efmCuPme10PStatusEntry 1 }

  efmCuPme10PFECUncorrectedBlocks  OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
      "The number of received uncorrectable FEC codewords in this
      10PASS-TS PME.

      This object maps to the aPMEFECUncorrectableBlocks attribute
      in Clause 30.

      If a Clause 45 MDIO Interface If IEEE Std 802.3, Clause 45 MDIO Interface to the PMA/PMD is present,
      then this object maps to the 10P FEC uncorrectable errors
      register.

      Discontinuities in the value of this counter can occur at
      re-initialization of the management system, and at other times
      as indicated by the value of ifCounterDiscontinuityTime,
      defined in IF-MIB."
    REFERENCE
      "IEEE Std 802.3, 45.2.1.26, 30.11.2.1.9"
    ::= { efmCuPme10PStatusEntry 2 }

--
-- Conformance statements
--

  efmCuGroups      OBJECT IDENTIFIER ::= { efmCuConformance 1 }

  efmCuCompliances OBJECT IDENTIFIER ::= { efmCuConformance 2 }

  -- Object Groups

  efmCuBasicGroup OBJECT-GROUP
    OBJECTS {
      efmCuPAFSupported,
      efmCuAdminProfile,
      efmCuTargetDataRate,
      efmCuTargetSnrMgn,
      efmCuAdaptiveSpectra,
      efmCuPortSide,
      efmCuFltStatus
    }
    STATUS      current
    DESCRIPTION
      "A collection of objects representing management information
      common for all types of EFMCu ports."
    ::= { efmCuGroups 1 }

  efmCuPAFGroup OBJECT-GROUP
    OBJECTS {
      efmCuPeerPAFSupported,
      efmCuPAFCapacity,
      efmCuPeerPAFCapacity,
      efmCuPAFAdminState,
      efmCuPAFDiscoveryCode,
      efmCuPAFRemoteDiscoveryCode,
      efmCuNumPMEs
    }
    STATUS      current
    DESCRIPTION
      "A collection of objects supporting optional PME
      Aggregation Function (PAF) and PAF discovery in EFMCu ports."
    ::= { efmCuGroups 2 }
  efmCuPAFErrorsGroup OBJECT-GROUP
```

```
  OBJECTS {
    efmCuPAFInErrors,
    efmCuPAFInSmallFragments,
    efmCuPAFInLargeFragments,
    efmCuPAFInBadFragments,
    efmCuPAFInLostFragments,
    efmCuPAFInLostStarts,
    efmCuPAFInLostEnds,
    efmCuPAFInOverflows
  }
  STATUS      current
  DESCRIPTION
    "A collection of objects supporting optional error counters
    of PAF on EFMCu ports."
  ::= { efmCuGroups 3 }

efmCuPmeGroup OBJECT-GROUP
  OBJECTS {
    efmCuPmeAdminProfile,
    efmCuPmeOperStatus,
    efmCuPmeFltStatus,
    efmCuPmeSubTypesSupported,
    efmCuPmeAdminSubType,
    efmCuPmeOperSubType,
    efmCuPAFRemoteDiscoveryCode,
    efmCuPmeOperProfile,
    efmCuPmeSnrMgn,
    efmCuPmePeerSnrMgn,
    efmCuPmeLineAtn,
    efmCuPmePeerLineAtn,
    efmCuPmeEquivalentLength,
    efmCuPmeTCCodingErrors,
    efmCuPmeTCCrcErrors,
    efmCuPmeThreshLineAtn,
    efmCuPmeThreshSnrMgn
  }
  STATUS      current
  DESCRIPTION
    "A collection of objects providing information about
    a 2BASE-TL/10PASS-TS PME."
  ::= { efmCuGroups 4 }

efmCuAlarmConfGroup OBJECT-GROUP
  OBJECTS {
    efmCuThreshLowRate,
    efmCuLowRateCrossingEnable,
    efmCuPmeThreshLineAtn,
    efmCuPmeLineAtnCrossingEnable,
    efmCuPmeThreshSnrMgn,
    efmCuPmeSnrMgnCrossingEnable,
    efmCuPmeDeviceFaultEnable,
    efmCuPmeConfigInitFailEnable,
    efmCuPmeProtocolInitFailEnable
  }
  STATUS      current
  DESCRIPTION
    "A collection of objects supporting configuration of alarm
    thresholds and notifications in EFMCu ports."
  ::= { efmCuGroups 5 }

efmCuNotificationGroup NOTIFICATION-GROUP
  NOTIFICATIONS {
    efmCuLowRateCrossing,
    efmCuPmeLineAtnCrossing,
    efmCuPmeSnrMgnCrossing,
    efmCuPmeDeviceFault,
    efmCuPmeConfigInitFailure,
    efmCuPmeProtocolInitFailure
  }
  STATUS      current
  DESCRIPTION
    "This group supports notifications of significant conditions
    associated with EFMCu ports."
```

```
    ::= { efmCuGroups 6 }

  efmCuPme2BProfileGroup OBJECT-GROUP
    OBJECTS {
      efmCuPme2BProfileDescr,
      efmCuPme2BRegion,
      efmCuPme2BsMode,
      efmCuPme2BMinDataRate,
      efmCuPme2BMaxDataRate,
      efmCuPme2BPower,
      efmCuPme2BConstellation,
      efmCuPme2BProfileRowStatus,
      efmCuPme2BsModeDescr,
      efmCuPme2BsModeRowStatus,
      efmCuPme2BEquivalentLength,
      efmCuPme2BMaxDataRatePam16,
      efmCuPme2BMaxDataRatePam32,
      efmCuPme2BReachRateRowStatus
    }
    STATUS      current
    DESCRIPTION
      "A collection of objects that constitute a configuration
      profile for configuration of 2BASE-TL ports."
    ::= { efmCuGroups 7}

  efmCuPme10PProfileGroup OBJECT-GROUP
    OBJECTS {
      efmCuPme10PProfileDescr,
      efmCuPme10PBandplanPSDMskProfile,
      efmCuPme10PUPBOReferenceProfile,
      efmCuPme10PBandNotchProfiles,
      efmCuPme10PPayloadDRateProfile,
      efmCuPme10PPayloadURateProfile,
      efmCuPme10PProfileRowStatus
    }
    STATUS  current
    DESCRIPTION
      "A collection of objects that constitute a configuration
      profile for configuration of 10PASS-TS ports."
    ::= { efmCuGroups 8 }

  efmCuPme10PStatusGroup OBJECT-GROUP
    OBJECTS {
      efmCuPme10PFECCorrectedBlocks,
      efmCuPme10PFECUncorrectedBlocks
    }
    STATUS  current
    DESCRIPTION
      "A collection of objects providing status information
      specific to 10PASS-TS PMEs."
    ::= { efmCuGroups 9 }

--  Compliance statements

  efmCuCompliance MODULE-COMPLIANCE
    STATUS      current
    DESCRIPTION
      "The compliance statement for 2BASE-TL/10PASS-TS interfaces.
      Compliance with the following external compliance statements
      is required:

      MIB module             Compliance Statement
      ----------             --------------------
      IF-MIB                 ifCompliance3
      IEEE8023-EtherLike-MIB dot3Compliance2
      MAU-MIB                mauModIfCompl3

      Compliance with the following external compliance statements
      is optional for implementations supporting PME Aggregation
      Function (PAF) with flexible cross-connect between the PCS
      and PME ports:

      MIB module             Compliance Statement
```

```
    ----------              --------------------
    IF-INVERTED-STACK-MIB  ifInvCompliance
    IF-CAP-STACK-MIB       ifCapStackCompliance"

  MODULE  -- this module
    MANDATORY-GROUPS {
      efmCuBasicGroup,
      efmCuPmeGroup,
      efmCuAlarmConfGroup,
      efmCuNotificationGroup
    }

    GROUP       efmCuPme2BProfileGroup
    DESCRIPTION
      "Support for this group is only required for implementations
      supporting 2BASE-TL PHY."

    GROUP       efmCuPme10PProfileGroup
    DESCRIPTION
      "Support for this group is only required for implementations
      supporting 10PASS-TS PHY."

    GROUP       efmCuPAFGroup
    DESCRIPTION
      "Support for this group is only required for
      implementations supporting PME Aggregation Function (PAF)."

    GROUP       efmCuPAFErrorsGroup
    DESCRIPTION
      "Support for this group is optional for implementations
      supporting PME Aggregation Function (PAF)."

    GROUP       efmCuPme10PStatusGroup
    DESCRIPTION
      "Support for this group is optional for implementations
      supporting 10PASS-TS PHY."

    OBJECT      efmCuPmeSubTypesSupported
    SYNTAX      BITS {
      ieee2BaseTLO(0),
      ieee2BaseTLR(1),
      ieee10PassTSO(2),
      ieee10PassTSR(3)
    }
    DESCRIPTION
      "Support for all subtypes is not required. However, at
      least one value shall be supported."

    OBJECT      efmCuPmeAdminSubType
    MIN-ACCESS  read-only
    DESCRIPTION
      "Write access is not required (needed only for PMEs
      supporting more than a single subtype, e.g.,
      ieee2BaseTLO and ieee2BaseTLR or ieee10PassTSO and
      ieee10PassTSR)."

    OBJECT      efmCuTargetSnrMgn
    MIN-ACCESS  read-only
    DESCRIPTION
      "Write access is optional. For PHYs without write access,
      the target SNR margin shall be fixed at 5dB for 2BASE-TL
      and 6dB for 10PASS-TS."

    OBJECT      efmCuAdaptiveSpectra
    MIN-ACCESS  read-only
    DESCRIPTION
      "Write access is optional. For PHYs without write access,
      the default value should be false."

  ::= { efmCuCompliances 1 }
END
```