Interpretation Number: 1-03/98
Topic: Clause 28 Auto-Negotiation
Relevant Clause: 28.2.3.3
Classification: Ambiguous

Interpretation Request

Pertinent Documents:
IEEE Standard 802.3u-1995 edition.
Clause 28:
   Subsections:
      28.2.3   Arbitration function requirement,
      28.2.3.1 Parallel detection function, and
      28.2.3.3 Priority resolution function
   PICS proforma subsections:
      28.5.3.5 Arbitration functions:
            Item 7: Priority resolution
            Item 9: Effect of parallel detection on priority resolution

Scenario:
The local device is enable to Auto-Negotiate. The far-end device is only
capable of either 10BASE-T or 100BASE-TX, and is incapable of Auto-
Negotiation. Therefore, the local device will have to Parallel Detect the far-
end device.

Question:
In the process of Parallel Detection, should the local device take into
account the advertised "Technology Ability" bits 4,12:5 of the Advertisement
register, or should it establish a link with the far-end non-negotiating
device regardless of what abilities are advertised in its register 4?

There doesn't seem to be an explicit statement in the standard to answer the
above question.

Interpretation for IEEE802.3u-1995

The pertinent subclause from the standard is reproduced below:-

28.2.3.3 Priority Resolution function
Since a Local Device and a Link Partner may have multiple common abilities, a
mechanism to resolve which mode to configure is required. The mechanism used
by Auto-Negotiation is a Priority Resolution function that predefines the
hierarchy of supported technologies. The single PMA enabled to connect to the
MDI by Auto-Negotiation shall be the technology corresponding to the bit in
the Technology Ability Field common to the Local Device and Link Partner that
has the highest priority as defined in annex 28B. This technology is referred
to as the Highest Common Denominator, or HCD, technology. If the Local Device
receives a Technology Ability Field with a bit set that is reserved, the Local
Device shall ignore that bit for priority resolution. Determination of the HCD
technology occurs on entrance to the FLP LINK GOOD CHECK state. In the event
that a technology is chosen through the Parallel Detection function, that
technology shall be considered the highest common denominator (HCD)
technology. In the event that there is no common technology, HCD shall have a

value of "NULL," indicating that no PMA receives link_control=ENABLE, and link_status_[HCD]=FAIL.

While the standard clearly states how priority resolution occurs in the case of a Link Partner that supplies a Technology Ability Field the text 'In the event that a technology is chosen through the Parallel Detection function' makes it unclear if last sentence is connected with the text above it or if it is a orthogonal requirement. It is therefore unclear if the Local Technology Ability, configured through the Advertisement Register, should be considered during the determination of the Highest Common Denominator (HCD).

The standard is therefore unclear on this issue, and no distinction can be made between two alternative implementations based on this. This is being brought to the attention of the Working Group with the possibility of action in a future revision or Maintenance change.