

Andy Fierman, Richard Knight, Simon Harrison and Max Povse,

It is our intention to put the attached document on the P802.5 reflector, but wanted to give you an opportunity to comment first.

This is Ken Wilson of IBM.

I am documenting changes that Neil Jarvis, Ivar Jeppesen and myself have put together to resolve two problems found at UNH testing. We have also included a proposed solution to the activation of the 100 Mbit/s PHY (talked about at the last meeting, but no action was taken).

Please review as soon as possible and get back to us.

We will be inputting all of these problems and solutions into the Draft 2.1B Comment Database using the abbreviation: IKN.

Ken, Neil and Ivar

All,

We have found two problems that require changes to the Draft 2.1B standard. We also have made a proposal to allow a signal defined in 9.8 be used by 9.2 and 9.3 for the activation the 100 Mbit/s link.

Problems:

The following **two** problems were identified.

Problem 1:

An unexpected expiration of the timer TPPLD caused the C-Port to enter Bypass instead of continuing Ring Recovery.

Problem 2:

The C-Port timer TPPD is not conditioned by C-Port support of phantom drive detection. This was not found during test, but rather in trying to resolve the above problem. Neither IBM nor Olicom have C-Port's that support phantom drive (therefore, TPPD not implemented), thus this error not detectable using these implementations.

Proposal:

The Draft 2.1B standard does not directly provide a way to activate the 100 Mbit/s PHY when entering the Trade-up function. It is proposed that 9.2 and 9.3 be changed to use the PS_CONTROL.request function defined in 9.8.1.1.4 on page 9.8-5.

===== **Start Problem 1 Solution** =====

Problem 1 Solution

The solution requires changes in the subclause 9.3 Join and Monitor Port Operation Tables.

Overview of Solution

Draft 2.1B uses TPPLD only to detect the absence of Phantom loss. However, the purpose of this detection is to determine whether C-Port Ring Recovery should proceed. At 100 Mbit/s, phantom detection may or may not be supported by the C-Port. When the C-Port does not support phantom detection, another mechanism must be used. It has been assumed (but missing from Draft 2.1B) this mechanism would be the absence of the LMTN MAC frame. Further, it was determined the timer duration needed to be extended to handle the various forms of failure.

Solution Details

The solution makes the following changes.

1. One technical change by adding new REF 1410 to the Monitor Port Operation Table on page 9.3-27.
2. Several editorial changes to the Port Operation Tables (REFs 1403, 1401, 1404 on page 9.3-27 and 1130 on page 9.3-24).
3. Redefines the clause 14 definition of the timer TPPLD on pages 14-10 and 14-11.

All changes detailed below are underlined.

• **Subclause 9.3 changes**

The following *technical* change is made to the Monitor Port Operation Table on page 9.3-27: New transition.

	<u>1410</u>	<u>FR_LMTN(DA=broadcast) & MS=PIT & JS=PJCI</u>	<u>FPPLD=0</u> <u><< Reset protocol loss detection function. >></u>
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The following *editorial* change is made to the Join Port Operation Table page 9.3-24.

JPW	1130	<u>TPPLD=E & FPPLD=1 & JS=PJCI</u>	JS=PRAW; CPRAT=n9; TPRAP=R; TXI_RMV_ALERT <u><< Expected Phantom loss or LMTN MAC frame is not detected. Attempt to notify Station C-Port is returning to Bypass. >></u>
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The following *editorial* changes are made to the Monitor Port Operation Table page 9.3-27.

MJL	1401	<u>FR_BN(SA=SUA) & FPJC=1 & MS=POPT</u> <u><< Attached station in Beacon Transmit, execute Internal Test >></u>	MS=PIT; FPHBA=FPOP=0; TPPLD=R; FPPLD=1; INTERNAL_PTEST <u><< Start protocol loss detect function (TPPLD=R) >></u>
MKL	1404	<u>FR_BN(SA=SUA) & MS=PTBN</u> <u><< Attached station Beacon received, execute Internal Test >></u>	MS=PIT; TPPLD=R; FPPLD=1; INTERNAL_PTEST <u><< Start protocol loss detect function (TPPLD=R) >></u>
MKL	1403	<u>TPIT=E & MS=PTBN</u>	MS=PIT; TPPLD=R; FPPLD=1; INTERNAL_PTEST <u><< Start protocol loss detect function (TPPLD=R) >></u>

- **Clause 14 change**

The following *technical* change to the timer TPPLD is made: modified definition and time duration change.

14.4.2.3 Timer, C-Port Protocol Loss Detect (TPPLD).

Each C-Port shall have a timer TPPLD. This timer is used during error recovery to ensure that the protocol is operating correctly. The timer expiring indicates that the protocol is not operating correctly, and the C-Port should return to bypass. The error conditions this timer catches are either phantom, if supported, not being deasserted, or the start of lobe media test not being detected. The value of TPPLD shall be between 15.8s and 16.2s. A value of 16s is recommended.

- **Other clause changes**

Clauses 9.2 and 9.3 will need to be updated as to name of timers and flags.

===== End of Problem 1 Solution =====

===== Start Problem 2 Solution =====

Problem 2 Solution

The solution to problem 2 requires changes in the subclause 9.3 Join Port Operation Table.

Overview of Solution

Draft 2.1B uses TPPD only to detect the failure of phantom presence. However, at 100 Mbit/s, phantom detection may or may not be supported by the C-Port. Draft 2.1B fails to take this into account and starts timer TPPD whether or not the C-Port supports phantom detection.

Solution Details

The solution makes the following changes to the Join Port Operation Table.

1. Three technical changes by changing REFs 1039, 1047 and 1076 on page 9.3-23.
2. One editorial change to the Port Operation Tables (REF 1129 on page 9.3-24).
3. Redefinition of the timer TPPD (page 14-10).

- **Subclause 9.3 changes**

The following *technical* changes are made to the Join Port Operation Table on page 9.3-23 and 9.3-24: Modified transitions.

JMPA	1039	TPIRD=E & FPJC=0 & SDAC_RC=0000 & JS=PDAC	JS=PJCI; FPINSLE=0; FPJC=FPOP=1; <u>If SPD=0001 then TPPD=R;</u> TXI_INS_RSP_PDU(DTR_RSP=0000); If FPECO=1 then (FPER=1; TPER=R) << Station accepted by C-Port >>
JMPB	1047	TPIRD=E & FPJC=1 & JS=PDAC << Hard Error Recovery >>	JS=PJCI; FPOP=1; FPINSLE=0; <u>If SPD=0001 then TPPD=R;</u> TXI_INS_RSP_PDU(DTR_RSP=0000)
	1076	TPIRD=E & JS=PJCI	<u>If SPD=0001 then TPPD=R;</u> TXI_INS_RSP_PDU(DTR_RSP=0000)

The following *editorial* change is made to the Join Port Operation Table on page 9.3-24:

JPO	1129	TPPD=E & FPINSLE=0 & JS=PJCI << Station has approval to insert <u>and C-Port supports phantom drive detection</u> , but the Station has failed to provide Phantom in allotted time. >>	JS=BP << Phantom not detected >>
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• **Clause 14 Change**

14.4.2.2 Timer, C-Port Phantom Detect (TPPD).

Each C-Port shall have a timer TPPD. This timer is used to ascertain if a C-Port fails to detect phantom being raised by the Station after the two entities have entered their Join complete states. The value of TPPD shall be between 1.8s and 2.2s. A value of 2s is recommended. This timer is only used when phantom detection is supported by the C-Port.

===== End of Problem 2 Solution =====

===== Start of Proposal =====

Proposal Solution:

All changes are underlined.

The proposed solution is to use the "PS_CONTROL.request(Initialize, Media_rate=2)" signal to inform the 100 Mbit/s PHY that the C-Port and Station want their PHY activated. Media_rate is defined equal to 2 (same as FPMRO value for 100 Mbit/s).

• **Subclause 9.2 Changes**

The following *technical* change is made to the 9.2 Join Station Operation Table on page 9.2-19: Modified transition.

JAE	3178	FR_REG_RSP(AP_RSP=0004) & FSREGO=1 & JS=SREG << Response indicates C-Port is supporting High Media Rate and the Station is allowed to support the High Media Rate operation. >>	JS=SHMRTU; TSHMRW=R; <u>PS_CONTROL.request</u> <u>(Initialize, Media_rate=2)</u> << Station activates the 100 Mbit/s link and enters High Media Rate Wait state to wait for Link activation as follows. <ul style="list-style-type: none"> • If Link activation occurs before TSHMRW timer expires, then enter the Registration state (JS=SREG). • If Link activation does not occur, then enter the Bypass state (JS=BP). >>
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The following *technical* change is made to the 9.3 Join Port Operation Table on page 9.3-17: Modified transition.

	1141	FPEFS=1 & JS=PHMRTU	<u>PS_CONTROL.request</u> <u>(Initialize, Medium_rate=2)</u> << C-Port activates the High Media Rate link >>
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• **Subclause 9.8 Changes**

The current 9.8.1.1.4 on page 9.8-5 defines PS_CONTROL.request with Initialize and Medium_rate. As can be seen from above, we want a change from "Medium_rate" to Media_rate" and that it have this form:

- Media_rate=2 is for 100 Mbit/s,
- Media_rate=3 is for 1000 Mbit/s

Thus, both 9.8.1.1.4 and Richard Knight's proposed Gigabit starter, 9.8.2.1.6 need changes.

===== End of Proposal =====