Proposal for C-Port hardware repeat path usage at High Media Rate.

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7. August, 1998

Change comments:

REF 1108: Normal transmit mode used in PREG state at High Media Rate.

REF 1110: Repeat path not enabled after transmission.

REF 1072: 4/16 only.

REF 1105: 4/16 only, FPRPTO defined for High Media Rate only.

REF 1101: 4/16 only.

REF 1073 and 1121: Combined this two. (As done in REF 1023).

REF 1003: Removed Phantom and Media Rate dependence.

REF 1113 and 1114: Repeat Path enabled after reception of the FR_LMTN frame (REF 1407, 1109)

REF 1091 and 1024: Repeat at 4/16 Mbit/s, and normal transmit at High Media Rate.

REF 1137: Normal transmit at High Media Rate

REF 1094: Option flag FPRPTO used at 4/16 Mbit/s.

Flag, C-Port Repeat Path Enabled (FPRPT)

If FPRPTO=1 *or* the C-Port is supporting only 4 Mbit/s and 16 Mbit/s (the C-Port has a PHY path), then the flag FPRPT is used to signal the Transmit FSM to configure into a repeat path. When FPRPT is set to 1, the Transmit FSM sets FPTI=0 for all media rates and FPTXC=0 for the 4 Mbit/s and 16 Mbit/s media rates, creating a repeat path for use by the Station during a Lobe Media Test. When FPRPT is set to 0, the Transmit FSM will set FPTI=1 for all media rates and FPTXC=1 for the 4 Mbit/s and 16 Mbit/s media rates, returning the Transmit FSM to its normal operating mode for the TXI Access Protocol.

If FPRPTO=0 (there is a C-Port PMAC lobe test repeat mechanism), then the flag FPRPT has no effect upon the C-Port operation.

FPRPT is set and reset only by the Join FSM.

C-Port Join Port Operation Table

S/T	REF	EVENT /EVENT & CONDITIONS	ACTIONS / OUTPUTS
J0K	1108	**Connect.PMAC** & PM_STATUS.indication(Link_status=Asserted) & FPMR>1 & FPANO=0 & FPOTO=1 & JS=BP << This transition requires Link_status to be active before Connect.PMAC operates. >> << Starting Point for C-Port Operation using the TXI Access Protocol without Auto-Negotiation. >> << High Media Rate only >>	JS=PREG; TS=~~PRPT~~PTXN; Set_initial_conditions; FPTXC=1; FPMR=FPMRO~~; FPRPT=1~~

S/T	REF	EVENT /EVENT & CONDITIONS	ACTIONS / OUTPUTS
JPL	1109	**FPBNT=1** & FPMR>1 & JS=PJCI << High Media Rate only >>	JS=PLT; FPBNT=0; FPRPT=1; **If** FPRPTO=0 then FA(TEST)=1; TPLMTR=R << Prepare for Station's LMT by providing either a PHY repeat path (FPRPTO=1) or a PMAC repeat path (FPRPTO=0) and start LMT duration timer >>
	~~1110~~	~~**FPEFS=1** & FPMR>1 & FPBPW=0 & FPRPT=0 & FPRPTO=1 & JS=PLT~~ ~~<< Signaling from Transmit FSM that data has been transmitted >>~~ ~~<< High Media Rate only >>~~	~~FPRPT=1~~ ~~<< Signal Transmit FSM to enter Repeat state to support the Station's LMT>>~~
	1072	**FPEFS=1** **& FPMR<2** & FPRPT=0 & JS=PREG	FPRPT=1 << Re-establish repeat path after transmitting frame >>
	1105	**FR_AC** & AND(PPV(AP_MASK),0001)=0000 **& FPMR<2** & ~~FPRPTO=1~~ & FPBLT=0 & JS=PREG	FPBLT=1; TPBLT=R << Start sequence to break attached station's lobe test>>
	1101	**FR_AC** **& FPMR<2** & FPDLT=1 & JS=PREG	TPDLT=R << Frame detected during lobe test disruption, extend disruption period by restarting TPDLT. >>
JLMa	1023	**FR_INS_REQ(SA=SUA)** & FPJC=0 & JS=PLT << End of LMT - Success! >>	JS=PDAC; MS=POPT; FPRPT=0; **If** FPMR<2 then FPTXC=1; **If** FPRPTO=0 then FA(TEST)=0 << Clock change for 4 Mbit/s and 16 Mbit/s only >>
JLM B	1073	**FR_INS_REQ(SA=SUA)** ~~& FPMRO<2~~ & FPJC=1 & JS=PLT <<Successful completion of LMT after Hard Error Recovery>> ~~<< 4 Mbit/s and 16 Mbit/s only >>~~	JS=PDAC; FPHBA=~~FPTXC=~~1; FPRPT=0; TPRHB=R; TPIRD=R; TPQHB=R **If** FPMR<2 then FPTXC=1; **If** FPRPTO=0 then FA(TEST)=0 << Clock change for 4 Mbit/s and 16 Mbit/s only, Heart Beat started, start timer to transmit INS_RSP >>
~~JLMc~~	~~1121~~	~~**FR_INS_REQ(SA=SUA)** & FPMR>1 & FPJC=1 & JS=PLT~~ ~~<<Successful completion of LMT after Hard Error Recovery>>~~ ~~<< High Media Rate only >>~~	~~JS=PDAC; FPHBA=1; FPRPT=0;~~ ~~**If** FPRPTO=0 then FA(TEST)=0; TPRHB=R; TPIRD=R; TPQHB=R;~~ ~~<< If PHY repeat path is active set inactive, if LMT FA is active set inactive, Heart Beat started, start timer to transmit INS_RSP >>~~
	1142	**FR_LMTN(DA=broadcast)** & FPRPTO=0 & JS=PLT << PMAC Repeat path is being supported. Station requests the PMAC to support its LMT test function. >>	TXI_LMTN_PDU << Return LMT Notification Frame to the Station. >>
JLK	1034	**FR_REG_REQ(AP_REQ<>S_AP)** & FPJC=0 & JS=PLT	JS=PREG; MS=x; TS=PRPT; Set_initial_conditions; FPRPT=1; SUA=0

S/T	REF	EVENT /EVENT & CONDITIONS	ACTIONS / OUTPUTS
JKLA	1003	**FR_REG_REQ(AP_REQ=0002 & PD=0001)** & ~~FPMR<2 &~~ AND(PPV(AP_MASK),AP_REQ)=0002 & AND(PPV(PD_MASK),PD)=0001 & JS=PREG <<Station requesting TXI Access Protocol which is supported by this C-Port *with* Phantom Drive >> ~~<< 4 Mbit/s and 16 Mbit/s only >>~~	JS=PLT; FPDTUREQ=1; FPBLT=FPEFS=FPRPT=0; TPLMTR=R; SPD=PD; S_AP=AP_REQ; SIAC=IAC; SUA=SA; TXI_REG_RSP_PDU(AP_RSP=0002); DTU_DAC.request(SA, SIAC)
~~JKLB~~	~~1113~~	~~**FR_REG_REQ(AP_REQ=0002 & PD=0001) & FPMR>1 & AND(PPV(AP_MASK),AP_REQ)=0002 & AND(PPV(PD_MASK),PD)=0001 & JS=PREG**~~ ~~<<Station requesting TXI Access Protocol which is supported by this C-Port *with* Phantom Drive >>~~ ~~<< High Media Rate only >>~~	~~JS=PLT; FPDTUREQ=1; FPBLT=FPEFS=FPRPT=0; TPLMTR=R; SPD=PD; S_AP=AP_REQ; SIAC=IAC; SUA=SA;~~ ~~**If** FPRPTO=0 then FA(TEST)=1;~~ ~~TXI_REG_RSP_PDU(AP_RSP=0002); DTU_DAC.request(SA, SIAC)~~ ~~<< FPRPTO=0: PMAC Repeat path supported >>~~
JKL	1114	**FR_REG_REQ(AP_REQ=0002 & PD=0002)** & FPMR>1 & AND(PPV(AP_MASK),AP_REQ)=0002 & AND(PPV(PD_MASK),PD)=0002 & JS=PREG <<Station requesting TXI Access Protocol which is supported by this C-Port *without* Phantom Drive >> << High Media Rate only >>	JS=PLT; FPDTUREQ=1; FPBLT=FPEFS=FPRPT=0; TPLMTR=R; SPD=PD; S_AP=AP_REQ; SIAC=IAC; SUA=SA; ~~**If** FPRPTO=0 then FA(TEST)=1;~~ TXI_REG_RSP_PDU(AP_RSP=0002); DTU_DAC.request(SA, SIAC) ~~<< FPRPTO=0: PMAC Repeat path supported >>~~
JLK	1115	**FR_REG_REQ(PD<>SPD)** & FPMR>1 & FPRPTO=0 & FPJC=0 & JS=PLT << High Media Rate only >>	JS=PREG; MS=x; Set_initial_conditions; SUA=0; FA(TEST)=0
JLK	1116	**FR_REG_REQ(PD<>SPD)** & FPMR>1 & FPRPTO=1 & FPJC=0 & JS=PLT << High Media Rate only >>	JS=PREG; MS=x; TS=PRPT; Set_initial_conditions; FPRPT=1; SUA=0; FA(TEST)=0
JLK	1091a	**FR_REG_REQ(PD<>SPD) & FPMR<2** & FPJC=0 & JS=PLT	JS=PREG; MS=x; TS=PRPT; Set_initial_conditions; FPRPT=1; SUA=0
JLK	1091b	**FR_REG_REQ(PD<>SPD) & FPMR>1** & FPJC=0 & JS=PLT	JS=PREG; MS=x; TS=~~PRPT~~PTRN; Set_initial_conditions; ~~FPRPT=1;~~ SUA=0
	1143	**FR_TEST(DA=FA(TEST))** & FPRPTO=0 & JS=PLT << PMAC Repeat path being supported. >>	TXI_LMT_PDU << Return TEST Frame to the Station. >>
JKU	1137	**PM_STATUS.indication (Link_status=Asserted)** & JS=PHMRTU << The High Media Rate link has become active after C-Port and Station Trade-up agreement. >>	JS=PREG; TS=~~PRPT~~PTRN; Set_initial_conditions; FPTXC=1; ~~FRPT=1~~ << Restart registration as if this is initial entry>>
	1094	**TK_AC** & AND(PPV(AP_MASK),0001)=0000 & FPBLT=0 & ~~FPRPTO=1 &~~ JS=PREG << 4 Mbit/s and 16 Mbit/s only >>	[FPBLT=1; TPBLT=R (optional-i)] << Start sequence to break attached station's lobe test>>
JLK	1024a	**TPLMTR=E** & FPMR<2 & FPJC=0 & JS=PLT <<End of TXI Join LMT – Test Failed!!>>	JS=PREG; MS=x; TS=PRPT; Set_initial_conditions; FPRPT=1; SUA=0
JLK	1024b	**TPLMTR=E** & FPMR>1 & FPJC=0 & JS=PLT <<End of TXI Join LMT – Test Failed!!>>	JS=PREG; MS=x; TS=~~PRPT~~PTRN; Set_initial_conditions; ~~FPRPT=1;~~ SUA=0

C-Port Transmit Port Operation Table for the TXI Access Protocol

S/T	REF	EVENT /EVENT & CONDITIONS	ACTIONS / OUTPUTS
TFD	1213	**FPRPT=0** & FPMR>1 & TS=PRPT << High Media Rate only >>	TS=PTXN; FPTI=1
TDF	1214	**FPRPT=1** & FPMR>1 & FPRPTO=1 & TS=PTXN << High Media Rate only >> << Port supporting a Repeat Path >>	TS=PRPT; FPTI=0

C-Port Monitor Port Operation Table for the TXI Access Protocol

S/T	REF	EVENT /EVENT & CONDITIONS	ACTIONS / OUTPUTS
	1407	**FR_LMTN(DA=broadcast)** & SPD=0002 & MS=PIT &JS=PJCI << The C-Port will establish the repeat path after reception of the first FR_LMTN, if not already established. >>	**If** FPRPTO=0 then TXI_LMTN_PDU; FPBNT=1 << Return this frame only if PMAC repeat path is being used. >>