

IEEE 802.5v-2001

(Amendment to
IEEE Std 802.5, 1998 Edition and
IEEE Stds 802.5r and 802.5j, 1998 Edition)

IEEE Standards

**IEEE Standard for
Information technology—
Telecommunications and information
exchange between systems—
Local and metropolitan area networks—
Specific requirements**

**Part 5: Token Ring access method and
Physical Layer specifications**

Amendment 5: Gigabit Token Ring operation

IEEE Computer Society

Sponsored by the
LAN/MAN Standards Committee

This amendment is an approved IEEE
Standard. It will be incorporated into the
base standard in a future edition.



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Amendment 5: Gigabit Token Ring operation**

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of the
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Approved 4 May 2001
IEEE-SA Standards Board

Abstract: This amendment specifies the changes required to IEEE 802.5, 1999 Edition (ISO/IEC 8802-5:1998 base standard), IEEE Std 802.5r and 802.5j, 1998 Edition (ISO/IEC 8802-5:1998/Amd. 1:1998), and IEEE Std 802.5t-1999, to support 1000 Mbit/s Dedicated Token Ring (DTR) operation. The base standard together with Amendment 1 specifies shared and dedicated (point-to-point) Token Ring operation at both 4 and 16 Mbit/s using either the TKP Access Protocol or the TXI Access Protocol. IEEE Std 802.5t-2000 extends Token Ring operation to 100 Mbit/s for the DTR C-Port and Station using the TXI Access Protocol. This standard extends Token Ring operation to 1000 Mbit/s for the DTR C-Port and Station using the TXI Access Protocol. Extensions to the Media Access Control have been made to accommodate the requirements for the 1000 Mbit/s media rate.

Keywords: Token Ring operation, TKP Access Protocol, TXI Access Protocol, DTR C-Port and Station

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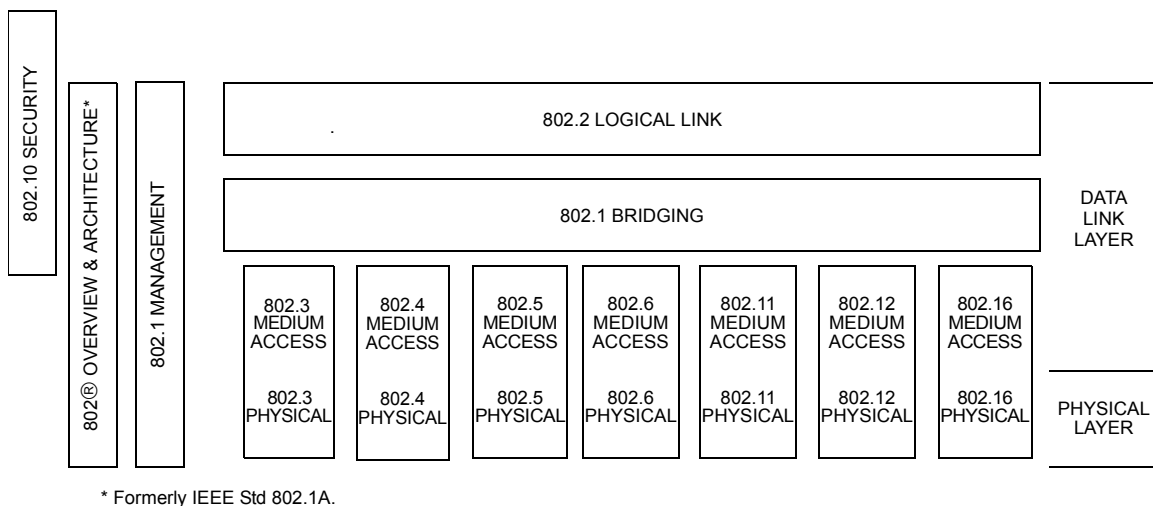
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Introduction

(This introduction is not part of IEEE Std 802.5v-2001, IEEE Standard for Information technology—Telecommunications and information exchange between systems—Local and metropolitan area networks—Specific requirements—Part 5: Token Ring access method and Physical Layer specifications—Amendment 5: Gigabit Token Ring operation.)

This standard is part of a family of standards for local and metropolitan area networks. The relationship between the standard and other members of the family is shown below. (The numbers in the figures refer to IEEE standard numbers.).



This family of standards deals with the Physical and Data Link Layers as defined by the International Organization for Standardization (ISO) Open Systems Interconnection Basic Reference Model (ISO/IEC 7498-1:1994). The access standards define several types of medium access technologies and associated physical media, each appropriate for particular applications or system objectives. Other types are under investigation.

The standards defining the technologies noted above are as follows:

- IEEE Std 802¹: *Overview and Architecture.* This standard provides an overview to the family of IEEE 802® Standards. This document forms part of the IEEE 802.1 scope of work.
- ANSI/IEEE Std 802.1B and 802.1K [ISO/IEC 15802-2]: *LAN/MAN Management.* Defines an Open Systems Interconnection (OSI) management-compatible architecture, and services and protocol elements for use in a LAN/MAN environment for performing remote management.
- ANSI/IEEE Std 802.1D: *Medium Access Control (MAC) Bridges.* Specifies an architecture and protocol for the [ISO/IEC 15802-3]:interconnection of IEEE 802 LANs below the MAC service boundary.
- ANSI/IEEE Std 802.1E [ISO/IEC 15802-4]: *System Load Protocol.* Specifies a set of services and protocol for those aspects of management concerned with the loading of systems on IEEE 802 LANs.

¹The IEEE 802 Architecture and Overview Specification, originally known as IEEE Std 802.1A, has been renumbered as IEEE Std 802. This has been done to accommodate recognition of the base standard in a family of standards. References to IEEE Std 802.1A should be considered as references to IEEE Std 802.

- ANSI/IEEE Std 802.1F *Common Definitions and Procedures for IEEE 802 Management Information.*

- ANSI/IEEE Std 802.1G [ISO/IEC 15802-5]: *Remote Media Access Control (MAC) Bridging.* Specifies extensions for the interconnection, using non-LAN systems communication technologies, of geographically separated IEEE 802 LANs below the level of the logical link control protocol.

- ANSI/IEEE Std 802.1H [ISO/IEC TR 11802-5] *Recommended Practice for Media Access Control (MAC) Bridging of Ethernet V2.0 in IEEE 802 Local Area Networks.*

- ANSI/IEEE Std 802.1Q *Virtual Bridged Local Area Networks.* Defines an architecture for Virtual Bridged LANs, the services provided in Virtual Bridged LANs, and the protocols and algorithms involved in the provision of those services.

- ANSI/IEEE Std 802.2 [ISO/IEC 8802-2]: *Logical Link Control.*

- ANSI/IEEE Std 802.3 [ISO/IEC 8802-3]: *CSMA/CD Access Method and Physical Layer Specifications.*

- ANSI/IEEE Std 802.4 [ISO/IEC 8802-4]: *Token Bus Access Method and Physical Layer Specifications.*

- ANSI/IEEE Std 802.5 [ISO/IEC 8802-5]: *Token Ring Access Method and Physical Layer Specifications.*

- ANSI/IEEE Std 802.6 [ISO/IEC 8802-6]: *Distributed Queue Dual Bus Access Method and Physical Layer Specifications.*

- ANSI/IEEE Std 802.10: *Interoperable LAN/MAN Security.* Currently approved: Secure Data Exchange (SDE).

- ANSI/IEEE Std 802.11: *Wireless LAN Medium Access Control (MAC) Sublayer and [ISO/IEC 8802-11]Physical Layer Specifications.*

- ANSI/IEEE Std 802.12: [ISO/IEC 8802-12] *Demand Priority Access Method, Physical Layer and Repeater Specification.*

- IEEE Std 802.15: *Wireless Medium Access Control (MAC) and Physical Layer (PHY) Specifications for: Wireless Personal Area Networks.*

- IEEE Std 802.16: *Standard Air Interface for Fixed Broadband Wireless Access Systems.*

- IEEE Std 802.17: *Resilient Packet Ring Access Method and Physical Layer Specifications.*

In addition to the family of standards, the following is a recommended practice for a common Physical Layer technology:

- IEEE Std 802.7: *IEEE Recommended Practice for Broadband Local Area Networks.*

The reader of this standard is urged to become familiar with the complete family of standards.

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**Part 5: Token Ring access method and Physical
Layer specifications**

Amendment 5: Gigabit Token Ring operation

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Introduction

This amendment specifies the changes required to IEEE 802.5, 1998 Edition (ISO/IEC 8802-5:1998 base standard), IEEE Std 802.5r and 802.5j, 1998 Edition (ISO/IEC 8802-5:1998/Amd. 1:1998), and IEEE Std 802.5t-2000 to support 1000 Mbit/s Dedicated Token Ring (DTR) operation.

IEEE 802.5, 1998 Edition (base standard) together with Amendment 1 specifies shared and dedicated (point-to-point) Token Ring operation at both 4 and 16 Mbit/s using either the TKP Access Protocol or the TXI Access Protocol. IEEE Std 802.5t-2000 extends Token Ring operation to 100 Mbit/s for the DTR C-Port and Station using the TXI Access Protocol. This standard extends Token Ring operation to 1000 Mbit/s for the DTR C-Port and Station using the TXI Access Protocol. Extensions to the Medium Access Control have been made to accommodate the requirements for the 1000 Mbit/s media rate.

1. Overview

Change the following in Clause 1:

1.1 Scope

Insert the following:

- ii) Defines Dedicated Token Ring operation at 1000 Mbit/s

1.2 Normative references

Insert the following:

ANSI X3.230-1994 Information Technology—Fibre Channel—Physical and Signalling Interface (FC-PH).

IEEE Std 802.3ab-1999 Information Technology—Telecommunications and information exchange between systems—Local and Metropolitan Area Networks—Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications.

1.3 Definitions

Insert the following:

Gigabit Media Independent Interface (GMII). A set of signals defined within [802.3], Clause 35, that provide the interface between the 1000 Mbit/s Reconciliation Sublayer and PHY.

The usage of these signals within this standard to provide the interface between the 1000 Mbit/s Token Ring MAC Reconciliation Sublayer and PHY is defined in 9.8.

Reconciliation Sublayer. A mapping function defined in [802.3], Clause 35.

A new reconciliation sublayer is defined in 9.8 to perform the mapping function that reconciles the signals at the Gigabit Media Independent Interface (GMII) to the 1000 Mbit/s Token Ring Media Access Control (MAC) — Physical Signalling Components (PSC) service definitions.

Ten Bit Interface (TBI). A set of signals defined within [802.3], Clause 36, that provide the interface between the 1000BASE-X PCS and PMA sublayers. The use of these signals within this standard is described in 9.8.

1.5 Acronyms and abbreviations

Insert the following:

GMII	=	gigabit media independent interface
PMC-CX	=	PMC for 1000 Mbit/s over twin-axial copper cabling
PMC-LX	=	PMC (long wavelength laser) for 1000 Mbit/s over optical fibre cabling
PMC-SX	=	PMC (short wavelength laser) for 1000 Mbit/s over optical fibre cabling
PMC-T	=	PMC for 1000 Mbit/s over 4 pairs of Category 5 balanced copper cabling
PSC-T	=	PSC for 1000 Mbit/s over 4 pairs of Category 5 balanced copper cabling
PSC-X	=	PSC for 1000 Mbit/s over optical fibre and twin-axial copper cabling
TBI	=	ten-bit interface

Insert 2.2.3:

2.2.3 1000 Mbit/s C-Port and Station functional organization and data flow

Figure 2.2-3 illustrates the data flow in a C-Port or Station indicating which clauses of this standard address the various functions of a Token Ring C-Port or Station. The figure is applicable to all copper and fibre media. The operation of the Station is specified in 9.2, and operation of the C-Port is specified in 9.3 with an overview of common C-Port and Station functions specified in 9.1. Internal service interfaces have been defined solely for the purpose of specifying operation between the clauses and are not requirements for an externally visible interface for a physical interface. The approximate positions of an optional GMII type interface and its attendant Reconciliation Sublayer are shown in Figure 2.2-3. Although the service primitives shown crossing this interface do not directly correspond to physical GMII signals, it is possible to implement logically equivalent functionality either directly through the Reconciliation Sublayer via the GMII signals, or indirectly via serially accessed PHY management registers.

- a) The PMC/PSC internal service interface (PM_UNITDATA.request, PM_UNITDATA.indication) defines the information exchange between the physical media components (PMC) specified in 9.7 and 9.8 and the physical signalling components (PSC) specified in 9.8.
- b) The PSC/MAC internal service interface (PS_CONTROL.request, PS_STATUS.indication, PS_UNITDATA.indication, PS_UNITDATA.request) defines the control mechanism of, the mechanism for indicating the status of, and the information exchange between the physical signalling components (PSC) specified in 9.8 and the MAC sublayer specified in Clause 9 and Clause 14. Clause 14 defines frame formats and station facilities. Clause 9 specifies the C-Port's PMAC and Station's SMAC protocol that uses the formats and facilities defined in Clause 14 to receive and transmit information. This service interface is defined in 9.8.
- c) The PMAC/SMAC/LLC service interface (MA_UNITDATA.indication, MA_UNITDATA.request) is specified in ISO/IEC 15802-1 and is used as specified in 9.1. It defines the information exchange between the PMAC/SMAC sublayer and the LLC sublayer.
- d) The PMAC/SMAC/Bridge service interface (M_UNITDATA.indication, M_UNITDATA.request, M_UNITDATA.response) is specified in IEEE Std 802.1d-1993 and is used as specified in 9.1 and defines the information exchange between the MAC and the internal bridging sublayer.
- e) The PMAC/SMAC/MGT service interface (MGT_UNITDATA.indication, MGT_UNITDATA.request, MGT_CONTROL.request, MGT_STATUS.indication) defines the control mechanism of, the mechanism for indicating the status of, and the information exchange between the PMAC/SMAC protocol specified in Clause 9 and management (MGT). The managed objects are specified in Clause 11. The MGT_UNITDATA.indication and MGT_UNITDATA.request primitives are specified in Clause 9 and are used to convey MAC management frames between the MAC and the appropriate management function (e.g., RPS, CRS, REM). The Physical Layer (PHY) of the Station and C-Port consists of the physical media components (PMC), specified in 9.7 and 9.8, and the physical signalling components (PSC) specified in 9.8.

Insert Figure 2.2-3:

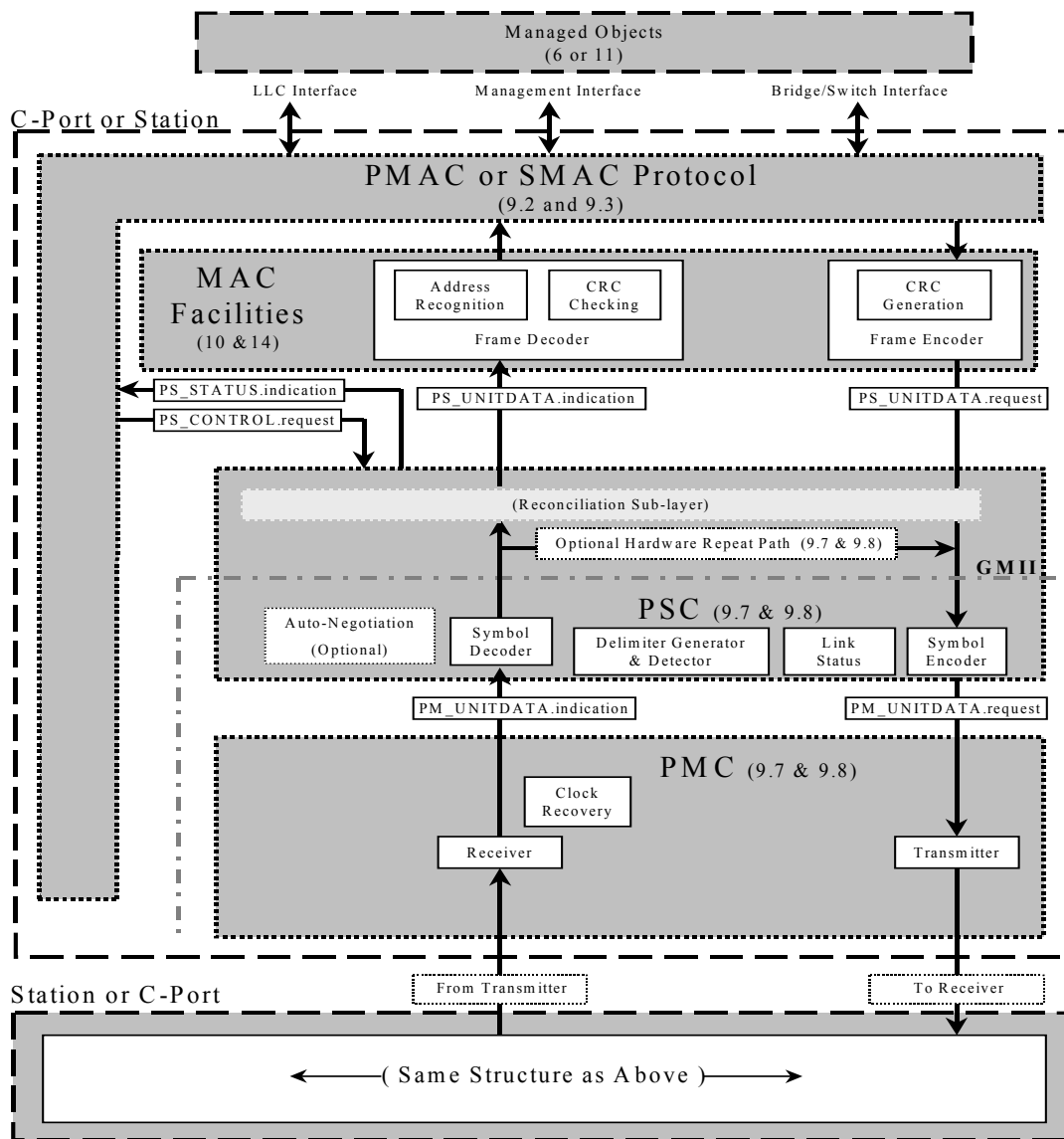


Figure 2.2-3—1000 Mbit/s Operation Overview

9. Dedicated Token Ring

Delete the line in Clause 9 stating:

- FSMRO>2 or FPMRO>2: reserved and not defined by this supplement.

Replace it with the two lines:

- FSMRO=3 or FPMRO=3: 1000 Mbit/s.

- FSMRO>3 or FPMRO>3: reserved and not defined by this supplement.

In 9.1.1.6, change the Properties of a Frame as follows:

Delete the following line:

L — Ends with two valid hexadecimal values (0 through F) followed by a valid ESD signal.

Replace it with the following line:

L — Ends with two valid code-groups representing data (and not frame violation) followed by a valid ESD signal.

Delete the following line:

M — Ends with at least one hexadecimal value (0 through F) in the two code-groups preceding a valid ESD signal.

Replace it with the following line:

M — Ends with at least one valid code-group representing data (and not frame violation) in the two code-groups preceding a valid ESD signal.

Replace 9.2 with the following:

9.2 Station TXI Access Protocol specification

This subclause defines the TXI Access Protocol as follows:

- a) The DTR Station (FIPTXIS=0) in support of Configuration 1 entity (B).
- b) The DTR C-Port in the Station Emulation Mode (FIPTXIS=1) in support of Configuration 2 entity (C).

The decision as to which configuration is being supported is made as follows:

- The DTR Station's Join Station Operation Table specified by Table 9.2-1, or
- The DTR C-Port's Join Port Operation Table specified in 9.3 by Table 9.3-1.

NOTE—For ease of reading, the DTR Station and the DTR C-Port in Station Emulation Mode are referred to as the “Station” in the explanatory portion of this subclause.

Seven Station Operation Tables specify Station support of the TXI Access Protocol as follows:

- 1) The Station Join Station Operation—Table 9.2-1
- 2) The Station Transmit Station Operation—Table 9.2-2
- 3) The Station Monitor Station Operation—Table 9.2-3
- 4) The Station Error Handling Station Operation—Table 9.2-4
- 5) The Station Interface Signals Station Operation—Table 9.2-5
- 6) The Station Miscellaneous Frame Handling Station Operation—Table 9.2-6
- 7) The Station Lobe Media Test when FSLMTO=1 Station Operation—Table 9.2-7

Low-Level FSM diagrams representing the state changes in the Join, Transmit, and Monitor Station Operation Tables are presented in Annex L.

In case of a discrepancy between the Station Operation Tables, the FSM diagrams, or their supporting text, the Station Operation Tables shall take precedence.

9.2.1 FSM Overviews

This subclause provides a functional overview of the Join, Transmit, and Monitor Station Operation Tables using three high-level FSM diagrams.

9.2.1.1 Station Join FSM Overview

The Station Join FSM, shown in Figure 9.2-1, is used to join the Station in the TXI Access Protocol to the C-Port. Table 9.2-1 specifies the Join FSM.

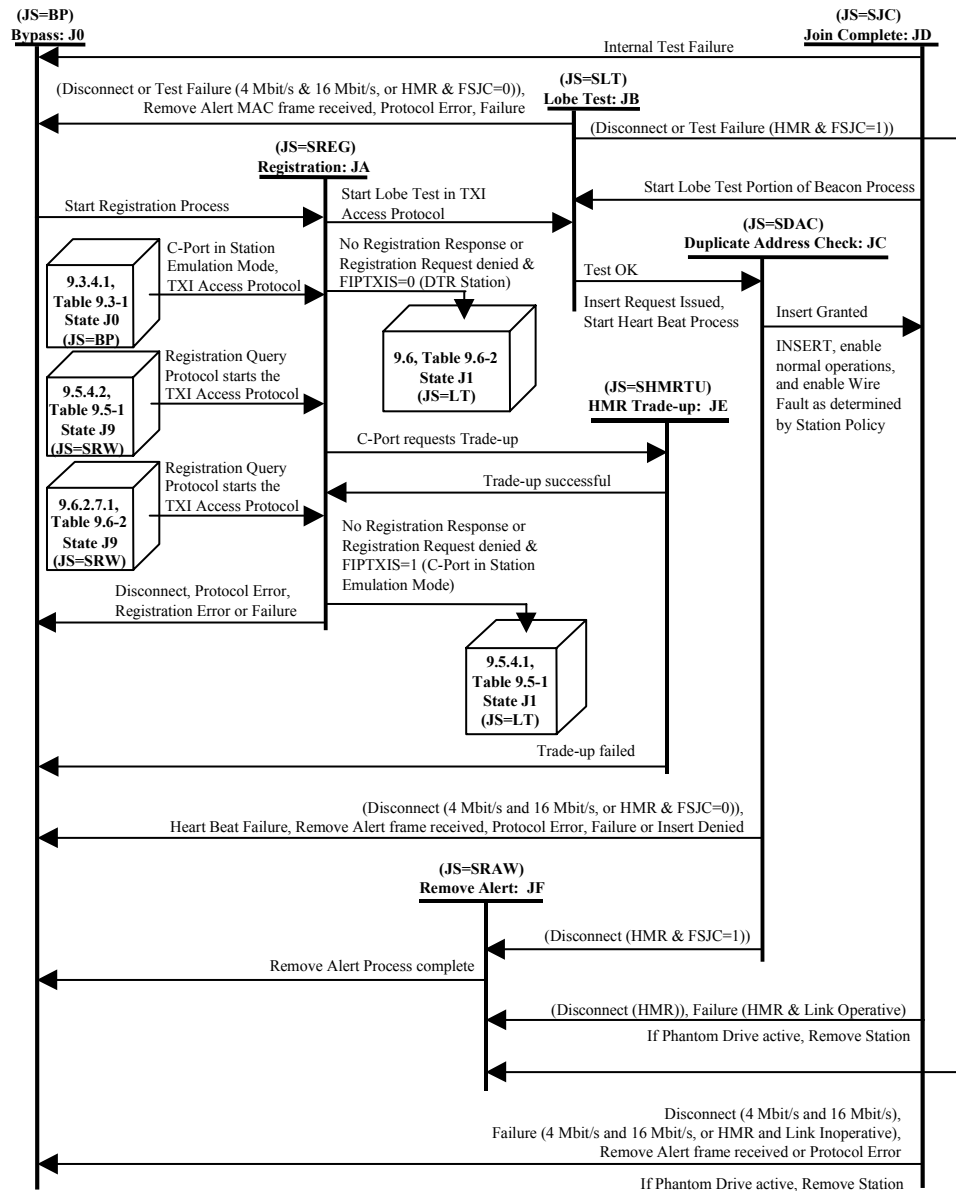
The Station Join FSM enters the Registration state (JA) from

- a) the Bypass state (J0) as the result of this subclause detecting a Connect.SMAC to start the Station's TXI Access Protocol,
- b) the Bypass state (J0) as the result of 9.3 entering the C-Port in Station Emulation Mode using the TXI Access Protocol, or
- c) the Registration Wait state (J9) as the result of the 9.5 or 9.6 Station Operation Tables using the TKP Access Protocol responding to a Registration Query request from the C-Port.

The activation of the TXI Access Protocol is the result of the Registration Process and uses the Station Operation Tables specified in this subclause.

The TKP Access Protocol is activated as the result of the Registration Process as follows:

- For the DTR Station, via an exit to the 9.6 Station Operation Tables.
- For the C-Port in Station Emulation Mode, via an exit to the 9.5 Port Operation Tables.



9.2.1.2 Station Transmit FSM Overview

The Station Transmit FSM, shown in Figure 9.2-2, is used to transmit frames using the TXI Access Protocol. Table 9.2-2 specifies this Transmit FSM.

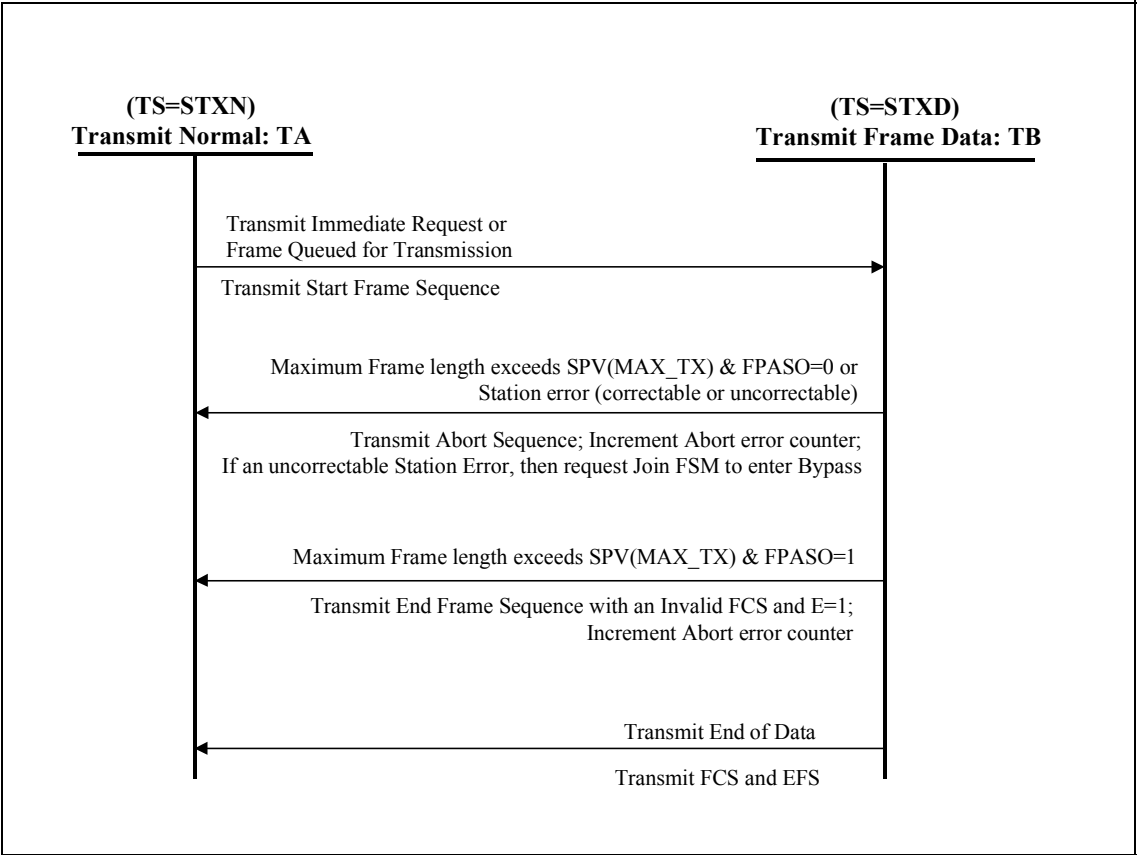


Figure 9.2-2—Station Transmit FSM Overview

9.2.1.3 Station Monitor FSM Overview

The Station Monitor FSM, shown in Figure 9.2-3, supports the Heart Beat and Hard Error Recovery functions. Table 9.2-3 specifies the Monitor FSM.

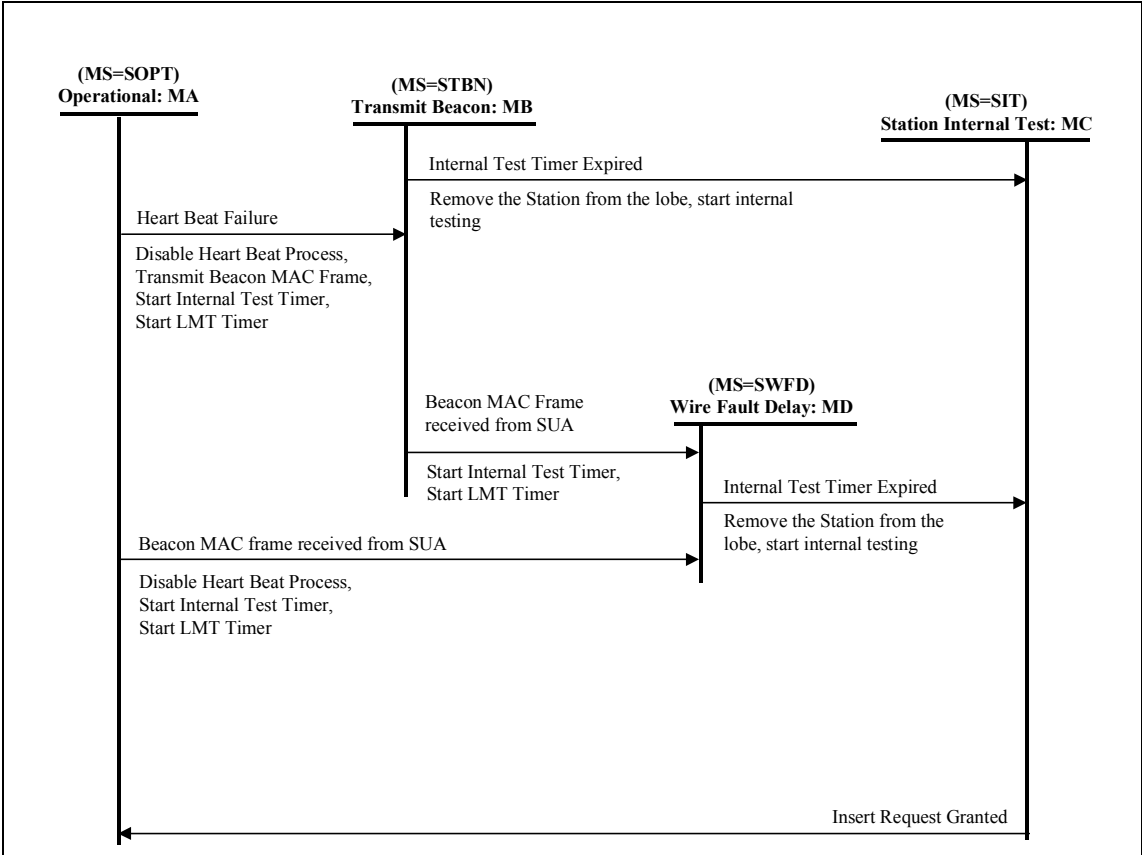


Figure 9.2-3—Station Monitor FSM Overview

9.2.2 Specification—Abbreviations and Notations

The following abbreviations and notations are used in the Station Operational Tables.

PMAC Policy Flag Notations

FPASO = Flag, C-Port abort sequence option
FPMRO = Flag, C-Port media rate option

PMAC Protocol Flag Notations

FPTX_LTH = Flag, C-Port transmit length
FPMR = Flag, C-Port media rate

SMAC Policy Flag Notations

FSASO = Flag, Station abort sequence option
FSECO = Flag, Station error counting option
FSHMRTUO = Flag, Station High Media Rate Trade-up option
FSLMTO = Flag, Station LMT option
FSMRO = Flag, Station medium rate option
FSOPO = Flag, Station open option
FSRDO = Flag, Station registration denied option
FSREGO = Flag, Station registration option
FSRRO = Flag, Station reject remove option

SMAC Station Policy Variables Notations

SPV(AP_MASK) = Access Protocol Mask Station Policy Variable
SPV(IAC) = Individual address count Station Policy Variable
SPV(MAX_TX) = Maximum octets transmit count Station Policy Variable
SPV(PD) = Phantom Drive Station Policy Variable

SMAC C-Port Interface Flag Notations

FIPTKPS = Flag, Interface C-Port TKP Station Emulation
FIPTXIS = Flag, Interface C-Port TXI Station Emulation

SMAC Station Counters

CSBTX = Counter, Station byte transmitted
CSREQ = Counter, Station registration request
CSTFQ = Counter, Station TXI frames queued
CSLTF = Counter, Station lobe test frames
CSRAT = Counter, Station remove alert transmit

SMAC Error Counter Notations

CSABE = Counter, Station abort error
CSBE = Counter, Station burst error
CSFE = Counter, Station frequency error
CSIE = Counter, Station internal error
CSLE = Counter, Station line error
CSRCE = Counter, Station receive congestion error

SMAC Protocol Flag Notations

FSBNT = Flag, Station beacon test
FSBPF = Flag, Station bypass force
FSER = Flag, Station error report
FSHBA = Flag, Station heart beat active
FSHMRTUA = Flag, Station high media rate trade-up active
FSIRD = Flag, Station insert request delay
FSJC = Flag, Station join process complete
FSLMTF = Flag, Station lobe media test failure
FSLMTS = Flag, Station lobe media test success
FSMR = Flag, Station media rate
FSRLMT = Flag, Station request lobe media test
FSLTA = Flag, Station lobe test active
FSLTFE = Flag, Station lobe test frame error
FSOP = Flag, Station operational
FSPDC = Flag, Station phantom drive control
FSPDA = Flag, Station phantom drive active
FSRC = Flag, Station registration complete
FSRRC = Flag, Station return to recovered clock
FSSL = Flag, Station signal loss
FSSLD = Flag, Station signal loss detected
FSSLMT = Flag, Station start lobe media test
FSTAS = Flag, Station Transmit Abort Sequence
FSTI = Flag, Station transmit idles
FSTXC = Flag, Station transmit from crystal
FSWF = Flag, Station wire fault
FSWFA = Flag, Station wire fault active
FTI = Flag, Transmit Idles (from Clause 4)

SMAC Stored Value Notation

SUA = stored upstream address

SMAC Join State Notations

JS = BP: Bypass
 JS = SDAC : Station Duplicate Address Check
 JS = SHMRTU : Station High Media Rate Trade-up
 JS = SJC : Station Join Complete
 JS = SLT : Station Lobe Test
 JS = SRAW : Station Remove Alert wait
 JS = SREG : Station Registration

SMAC Transmit State Notations

TS = STXD : Station Transmit Frame Data
 TS = STXN : Station Transmit Normal

SMAC Monitor State Notations

MS = SIT : Station Internal Test
 MS = SOPT : Station Operational
 MS = STBN : Station Transmit Beacon
 MS = SWFD : Station Wire Fault Delay

SMAC Station Timer Notations

TSHMRW = Timer, Station high media rate wait
 TSER = Timer, Station error report
 TSIP = Timer, Station insert process
 TSIS = Timer, Station initial sequence
 TSIT = Timer, Station internal test
 TSJC = Timer, Station join complete
 TSLMT = Timer, Station lobe media test
 TSLMTNP = Timer, Station lobe media test notification pacing
 TSLMTP = Timer, Station lobe media test pacing
 TSLMTR = Timer, Station lobe media test response
 TSLMTC = Timer, Station lobe media test complete
 TSLMTD = Timer, Station lobe media test delay
 TSQHB = Timer, Station queue heart beat
 TSQP = Timer, Station queue PDU
 TSRAP = Timer, Station remove alert pacing
 TSREQ = Timer, Station registration request
 TSRHB = Timer, Station receive heart beat
 TSSL = Timer, Station signal loss
 TSWF = Timer, Station wire fault
 TSWFD = Timer, Station wire fault delay

9.2.3 State Machine Elements

The state machines use the Error Counters defined in 10.6 as well as the following counters, flags, and states to describe the operation of the Station. These are logical elements used solely to describe the operation and do not specify an implementation. The value of the flags and counters are only meaningful to the Station Operation Tables. Conformance to this standard is based only on externally observable behavior.

9.2.3.1 SMAC Counters

Unless otherwise specified, all counters are set to 0 by the “Set_initial_conditions” action.

A counter may be set to a value, counted up (increment), or counted down (decrement) as a result of an action specified in the Station Operation Table.

Counter, Station Byte Transmitted (CSBTX)

The counter CSBTX is used by the Transmit FSM to limit the number of octets that can be transmitted. This counter shall be used when the C-Port in Station Emulation Mode (Interface flags FIPTKPS=1 or FIPTXIS=1) is supporting the FR_LTH=UNK (frame length unknown) condition. The counter CSBTX is optional if the Station does not support FR_LTH=UNK.

The counter CSBTX is compared against SPV(MAX_TX) and the Station takes one of the following actions:

- a) If $CSBTX > SPV(MAX_TX)$, then the frame being transmitted is larger than allowed by $SPV(MAX_TX)$ and the frame is aborted using an Abort Sequence.
- b) If $CSBTX \leq SPV(MAX_TX)$, the transmission of the frame continues.

The value of $SPV(MAX_TX)$ is specified in 10.5.1.2 when operating at 4 Mbit/s or 16 Mbit/s and 14.5.1.2 when operating at the High Media Rate.

Counter, Station Lobe Test Frames (CSLTF)

The counter CSLTF is used when FSLMTO=1 to count the number of frames to be transmitted as described in 9.1.6. Its initial value is specified in 9.2.5.4 as “n7.”

Counter, Station Remove Alert Transmit (CSRAT), High Media Rate only

The counter CSRAT is used when supporting the High Media Rate (FSMR>1) to determine the number of Remove Alert MAC Frames yet to be transmitted. Its initial value is specified in 9.2.5 as “n8.”

Counter, Station Registration Request (CSREQ)

The counter CSREQ is used to control the number of times the REG_REQ MAC frame will be retransmitted (an assured delivery process) before Registration fails. The Station sets counter CSREQ=n6 (see 9.2.5) when the first REG_REQ MAC frame is transmitted. Each time the Station retransmits the REG_REQ MAC frame it decrements counter CSREQ by one.

When the counter CSREQ=0, the Station has not received a response to its REG_REQ MAC frame and takes one of the following actions.

- a) If the flag FSOPO=0, the Station supports the TKP Access Protocol and enters the Lobe Test state (JS=LT) of the TKP Access Protocol Join FSM defined in 4.3.
- b) If the flag FSOPO=1, the Station does not support the TKP Access Protocol and enters the Bypass state (JS=BP) and notifies management of the error.

Counter, Station TXI Frames Queued (CSTFQ), 4 Mbit/s and 16 Mbit/s only

The counter CSTFQ is used by the Join FSM during JS=SDAC to track the number of frames currently in the TXI_REQ transmit queue (see 9.1.8). During JS=SDAC, this counter is incremented when a Station Heartbeat (TXI_SHB) or Insert Request (TXI_INS_REQ) is added to the TXI_REQ transmit queue. CSTFQ is decremented by the Transmit FSM when the Join FSM state is JS=SDAC and an EOD, a PORT_ERR(correctable) or a STATION_ERR(correctable) event is detected. CSTFQ is set to 1 when the Join FSM enters JS=SDAC.

9.2.3.2 Station Protocol Flags

The following Station protocol flags, listed alphabetically, are defined:

Flag, Station Beacon Test (FSBNT)

The flag FSBNT is used by the Monitor machine to signal the Join Machine to enter the Lobe Test (JS=SLT) state and perform the Lobe Media test function specified in 9.1.6 as part of the Hard Error Recovery Process. The flag is set to 1 by the Monitor machine when TSLMT has expired. The flag is set to 0 by the Join Machine when entering the Lobe Test state (JS=SLT).

Flag, Station Bypass Force (FSBPF)

When the Transmit Data state (TS=STXD) detects a “STATION_ERR(not_correctable)” condition, an Abort Sequence is optionally transmitted and the flag FSBPF is set to 1. The Join Machine enters the Bypass state (JS=BP) upon detecting flag FSBPF=1 and TS=STXN.

Flag, Station Error Report (FSER)

The flag FSER is set to 1 when the first reportable error is detected and indicates that subsequent errors should not reset the error timer TSER. The flag FSER is set to 0 when the error timer expires and the Report Error MAC frame is transmitted.

Flag, Station Heart Beat Active (FSHBA)

The flag FSHBA is set to 1 to activate the Heart Beat process and set to 0 to deactivate the Heart Beat Process. The flag FSHBA is set to 1 when the Station enters the Duplicate Address Check state (JS=SDAC). While the flag FSHBA is set to 1, loss of Heart Beat can be detected and Hard Error Recovery started. The flag FSHBA is set to 0 to deactivate the Heart Beat Process when the Monitor exits the Operational state (MS=SOPT) to enter either the Beacon Transmit state (MS=STBN) or the Wire Fault Delay state (MS=SWFD).

Flag, Station High Media Rate Trade-up Active (FSHMRTUA), 4 Mbit/s and 16 Mbit/s only

The flag FSHMRTUA is set to 1 when the Station has an outstanding HMR trade up registration request. It is used to allow the Station to retry registration without the HMR trade up option, after the C-Port has rejected the request.

Flag, Station Insert Request Delay (FSIRD), 4 Mbit/s and 16 Mbit/s only

The flag FSIRD is used by the Station in the Duplicate Address Check state (JS=SDAC) to delay the changing from recovered clock to crystal clock as the result of the expiration of the timer, Station Insert Process (TSIP). The Station in the JS=SDAC state normally uses recovered clock, but when the expiration of the timer TSIP occurs the Station is required to transmit the Insert Request MAC frame using crystal clock and the Station sets FSIRD=1. When the transmit machine enters the Transmit Normal state (TS=TSXN) and FSIRD=1, the Station sets FSIRD=0, activates crystal clock, and transmits the Insert Request MAC frame.

Flag, Station Join Complete (FSJC)

The flag FSJC indicates whether the Station has completed Join with FSJC=0 meaning Join is not complete and FSJC=1 meaning Join is complete. FSJC is set to 1 upon successful completion of the Station's Duplicate Address Check (JS=SDAC). When FSJC=1, the Station is allowed, for example, to queue frames for transmission, and to activate the Hard Error Recovery and Error Counter functions.

Flag, Station Lobe Media Test Failure (FSLMTF)

The flag FSLMTF is used to indicate that the Station has detected a Lobe Media Test failure. The flag FSLMTF is set to 1 when the Station detects a failure of either the LMT Notification Stage or the LMT Testing Stage and causes the Station to enter the Bypass state. The flag FSLMTF is set to 0 by the Set_initial_conditions action, but the value of 0 is not used.

Flag, Station Lobe Media Test Success (FSLMTS)

The flag FSLMTS is used to indicate the success of the Station's Lobe Media Test. The flag FSLMTS is set to 1 when the Station detects the successful completion of the LMT Testing Stage. FSLMTS is set to 0 when the Station transmits its INS_REQ MAC frame.

Flag, Station Lobe Test Active (FSLTA)

The flag FSLTA is used to indicate that the Station's Lobe Media Test function described in 9.1.6.2 is active. This flag is set to 1 when the Station starts the LMT function specified in Table 9.2-7. This flag is set to 0 when the Station successfully exits the Lobe Media Test state (JS=SLT).

Flag, Station Lobe Test Frame Error (FSLTFE)

The flag FSLTFE is used to indicate that the Station has detected a Lobe Media Test error. The flag FSLTFE is set to 1 when the Station detects an error within its LMT frame, or if it fails to receive its LMT frame. If an error is detected while FSLTFE is set to 1 (indicating more than one LMT error), the station indicates LMT Testing Stage failure.

Flag, Station Media Rate (FSMR)

The flag FSMR is used to control the operation of the Station Operation Tables as it relates to the operational speed of the medium. It has the same definition as the FSMRO flag defined in 14.5.1.1.4 except it is set as needed by the Station Operation Tables.

Flag, Station Operational (FSOP)

The flag FSOP indicates when the Station is operational. The flag FSOP is set to 1 when the Station enters Join Complete (JS=SJC) and becomes active in the network. The flag FSOP is set to 0 when the Station closes (JS=BP). FSOP is set to 0 when the Station enters the Hard Error Recovery Process and is set to 1 when the Station inserts after successful completion of the Hard Error Recovery Process.

Flag, Station Phantom Drive Control (FSPDC), High Media Rate only

The flag FSPDC indicates whether the Station using the High Media Rate has attempted to request the C-Port to use no Phantom after its request to use Phantom Drive during Station Registration (JS=SREG) has been rejected. The flag FSPDC is set to 0 by the Set_initial_conditions action. The flag FSPDC is set to 1 when the Station recognizes that its Registration Request with Phantom Drive was rejected or the first Registration Request is being made without Phantom Drive (SPV(PD)=0002). For Stations using 1000 Mbit/s medium rate, this flag will be set to 1 to indicate that all requests shall be made without Phantom Drive. This flag is not used at 4 Mbit/s or 16 Mbit/s.

Flag, Station Phantom Drive Active (FSPDA)

The flag FSPDA indicates whether the Station is using Phantom Drive. The flag FSPDA is set to 0 when the Station is not using Phantom Drive. The flag FSPDA is set to 1 when the Station is using Phantom Drive.

Flag, Station Registration Complete (FSRC)

The flag FSRC is set to 1 when a valid Registration Response MAC frame is received in the Station Registration state (JS=SREG) to disable the Registration process while waiting for timer, TSLMTD to expire.

Flag, Station Request LMT (FSRLMT)

The flag FSRLMT is used to request the execution of the Station's Lobe Media Test function described in 9.1.6.2. This flag is set to 1 when the Station detects the need to execute the Lobe

Media Test and executes the process defined in the Table 9.2-7. This flag is set to 0 after the Station starts the LMT function specified in Table 9.2-7.

Flag, Station Return to Recovered Clock (FSRRC), 4 Mbit/s and 16 Mbit/s only

The flag FSRRC is used with the counter CSTFQ during JS=SDAC to cause the station to change its clock source from crystal (FSTXC=1) to recovered clock (FSTXC=0). FSRRC is set to 1 when an Insert Request (TXI_INS_REQ) is added to the TXI_REQ transmit queue (see 9.1.8). FSRRC is set to 0 when CSTFQ decrements to 0 and FSRRC is set to 1.

Flag, Station Signal Loss (FSSL), 4 Mbit/s and 16 Mbit/s only

The flag FSSL indicates the presence or absence of a valid signal from the lobe as defined by 5.1.4.1. FSSL is set to 1 to indicate the absence of a valid signal when SMAC detects PM_STATUS.indication(Signal_detected=Signal_loss) for the entire period of timer TSSL (signal loss is filtered). FSSL is set to 0 to indicate the presence of a valid signal whenever SMAC detects PM_STATUS.indication(Signal_detected=Signal_acquired).

Flag, Station Signal Loss Detected (FSSLD), 4 Mbit/s and 16 Mbit/s only

The flag FSSLD is used to determine if the SMAC Signal Loss Filtering process is active or inactive. The Signal Loss Filtering process is used to determine whether or not the PHY signal loss (see 5.1.4.1) event is a steady-state condition. FSSLD is set to 1 to activate the Signal Loss Filtering process, if not already active whenever the SMAC detects PM_STATUS.indication(Signal_detected=Signal_loss). FSSLD is set to 0 to deactivate the Signal Loss Filtering process whenever the SMAC detects PM_STATUS.indication(Signal_detected=Signal_acquired).

Flag, Station Start Lobe Media Test (FSSLMT)

The flag FSSLMT is used to control the Lobe Media Test defined in 9.1.6.2.1 (FSLMTO=1). When FSSLMT=1, the LMT Notification Stage is active. When FSSLMT=0, the LMT Testing Stage is active.

The flag FSSLMT is set to 1 upon entry into the LMT Notification Stage. The flag FSSLMT is set to 0 upon successful completion of the LMT Notification Stage and starts the LMT Testing Stage.

Flag, Station Transmit Abort Sequence (FSTAS)

The flag FSTAS is used to control the counting of Abort Sequences. When the transmitter releases an Abort Sequence, it sets FSTAS to 1. The Error Handling Station Operation Table detects this condition and sets FSTAS to 0 and takes the appropriate action to increment the counter CSABE.

Flag, Station Transmit Idles (FSTI)

The flag FSTI is used to control the transmission of idles (Fill) as follows:

The TXI Access Protocol always has the flag FSTI is set to 1 (which indicates PS_CONTROL.request(Transmit_mode=Fill) — see 5.1.2.4 for 4 Mbit/s and 16 Mbit/s, 9.8.1.1.4 for 100 Mbit/s, and 9.8.2.1.4 for 1000 Mbit/s) causing the Station to source fill except when the Transmit FSM is transmitting frame data (TS=STXD).

When the Station closes or starts the TKP Access Protocol, the flag FSTI is set to 0 (indicates PS_CONTROL.request (Transmit_mode=No_fill) — see 5.1.2.4 for 4 Mbit/s and 16 Mbit/s, 9.8.1.1.4 for 100 Mbit/s and 9.8.2.1.4 for 1000 Mbit/s) to support the TKP Access Protocol.

Flag, Station Transmit from Crystal (FSTXC)

The flag FSTXC is used to select the Station's transmitter timing reference as follows:

4 Mbit/s and 16 Mbit/s

The setting of FSTXC controls the Station's transmit clock and affects the PSC interface as follows:

- When FSTXC is 1, the PS_CONTROL.request(Crystal_transmit=Asserted) signal indicates that the Station's SMAC transmit timing reference is derived from the Station's internal crystal clock. Implementations of this standard may include an Elastic Buffer (5.8.3) and a Fixed Latency Buffer (5.8.2) with a latency of 24 symbols thus allowing ANSI/IEEE Std 802.5-1998 TKP implementations to function without hardware modification.
- When FSTXC is 0, the PS_CONTROL.request(Crystal_transmit=Not_asserted) indicates that the Station's SMAC transmit timing reference is derived from the Station's clock recovery circuit. There shall be no Elastic Buffer (5.8.3) or Fixed Latency Buffer (5.8.2) in the data path.

High Media Rate

FSTXC is set to 1 when the Connect.SMAC or Connect.PMAC (C-Port in Station Emulation Mode) condition occurs. When FSTXC is set to 1, the PS_CONTROL.request(Crystal_transmit=Asserted) (9.8.1.1.4 for 100 Mbit/s and 9.8.2.1.4 for 1000 Mbit/s) indicates that the Station's SMAC is deriving clock from its crystal clock as the transmit timing reference.

FSTXC is never set to 0 when operating at the High Media Rate.

Flag, Station Wire Fault (FSWF), only when Phantom Drive is active (FSPDA=1)

Flag FSWF is set to 1 to indicate wire fault is present and set to 0 to indicate no wire fault is present. [See 5.1.4.1 PM_STATUS.indication(Wire_fault.)]

Flag, Station Wire Fault Active (FSWFA), only when Phantom Drive is active (FSPDA=1)

The flag FSWFA is set to 1 to activate wire fault detection and is set to 0 to deactivate wire fault detection.

Flag, Transmit Idles (FTI), 4 Mbit/s and 16 Mbit/s only

The flag FTI is a TKP Access Protocol flag, defined by ISO/IEC 8802-5:1998 4.2.4.2, used to control the transmission of idles (Fill).

- When the flag FTI is set to 1, the MAC indicates PS_CONTROL.request(Transmit_mode=Fill), which causes the station to source fill rather than repeating the received data.
- When the flag FTI is set to 0, the MAC indicates PS_CONTROL.request(Transmit_mode=No_fill), which causes the station to repeat the received data.

9.2.4 SMAC States

There are a set of states for the Join Ring FSM, the Monitor FSM, and the Transmit FSM. A FSM can be in only one state at any instant in time.

9.2.4.1 Station Join States

The Station Join State (JS=) notation is used to identify the current state of the Station join FSM. The TXI Station's join state values are Bypass, Registration, Lobe Test, Duplicate Address Check, and Join Complete. Join states, listed by state value, are defined as follows:

Join State J0, Bypass (JS=BP)

This state is the rest state of the TXI Station. The only events recognized are the start signals, Connect.SMAC, or Connect.PMAC and FPOTO=0 which causes the Station to examine the flag, FSREGO to determine whether this is a DTR capable Station.

Join State JA, Station Registration (JS=SREG)

This state is entered when the Bypass state (JS=BP) detects a Connect.SMAC and FSREGO=1, or Connect.PMAC and FPOTO=0. This state determines in which mode the Station is to operate, either supporting the TXI or TKP Access Protocols. If the TXI Access Protocol is supported, this state sets certain parameters required by that protocol.

Join State JB, Station Lobe Test (JS=SLT)

This state is entered from either the Station Registration (JS=SREG) or the Station Join Complete (JS=SJC) and performs one of the two lobe test functions described in 9.1.6.

Join State JC, Station Duplicate Address Check (JS=SDAC)

This state is entered when the Lobe Test state (JS=SLT) successfully completes and causes the TXI Station to request insertion and start the TXI Heart Beat function. As a result of the Insert Request, the Station waits for the C-Port to respond with an Insert Response MAC frame. If the insert response indicates the Station's address is a duplicate to another Station within the DTR Concentrator's address domain, then the Station enters the Bypass state (JS=BP). If the insert response indicates the Station's address is unique within the DTR Concentrator's address domain, then the Station enters Join Complete (JS=SJC).

Join State JD, Station Join Complete (JS=SJC)

This state is entered when the Duplicate Address Check state (JS=SDAC) detects the C-Port has determined that the TXI Station has an unique address within the DTR Concentrator's address domain and is the completion of the Join Process.

Join State JE, Station High Media Rate Trade-up (JS=SHMRU)

This state is entered when the Station's Registration state (JS=SREG) detects that the C-Port has agreed to its request to Trade-up from 4 Mbit/s or 16 Mbit/s operation to 100 Mbit/s operation and the Station has activated its 100 Mbit/s PHY.

- If the 100 Mbit/s Link Status becomes active before timer TSHMRW expires, then the Station enters the Registration state (JS=SREG) to restart the Registration state (JS=SREG) at 100 Mbit/s.
- If 100 Mbit/s Link Status fails to become active before the timer TSHMRW expires, then the Station enters the Bypass state (JS=BP).

Join State JF, Station Remove Alert Wait (JS=SRAW), High Media Rate only

This state is entered when the Station in the Join Complete state (JS=SJC) detects that it needs to enter the Bypass state (JS=BP) because of an error condition or a management action. The Remove Alert function allows the Station to notify the C-Port it is entering the Bypass state. The initial Remove Alert MAC frame is transmitted by the detection of any condition causing the Station to enter the Remove Alert Wait state. The counter CSRAT controls the number of Remove Alert MAC frames transmitted while in the Remove Alert Wait state. When counter CSRAT reaches zero, the Station enters the Bypass state.

9.2.4.2 Station Monitor States

The Monitor State (MS=) notation is used to identify the current state of the Station's Monitor FSM. The monitor state values are Operational, Transmit Beacon, Internal Test, and Wire Fault Delay.

The Station's Monitor States, listed by state value, are defined as follows:

Monitor State MA, Station Operational (MS=SOPT)

The Station Operational state is entered when the Join FSM transitions from its Duplicate Address Check state (JS=SDAC) to its Join Complete state (JS=SJC).

If, while in the Station Operational state, the Station detects a Heart Beat function failure and flag station operational (FSOP) is set to 1, then the Station sets FSOP to 0, resets the timers TSIT and TSLMT (synchronization for Hard Error Recovery), disables queued frame transmissions, and enters the Transmit Beacon state (MS=TSBN).

If, while in the Station Operational state, the Station receives a Beacon MAC frame from its C-Port (SA=SUA) and flag station operational (FSOP) is set to 1, the Station sets FSOP to 0, resets the timers TSIT and TSLMT (synchronization for Hard Error Recovery), disables queued frame transmissions, and enters the Wire Fault Delay state.

Monitor State MB, Station Transmit Beacon (MS=STBN)

The Station Transmit Beacon State causes the Station to transmit Beacon MAC frames with a Beacon Type set according to 9.1.10.1 until the timer, TSIT expires, indicating the Station is ready to execute its internal test and enter the Internal Test state (MS=SIT).

If, while in the Station Transmit Beacon state, the Station detects the reception of a Beacon MAC frame from its C-Port (SA=SUA), the Station resets its timers TSIT and TSLMT (synchronization for Hard Error Recovery), and enters the Wire Fault Delay state (MS=SWFD).

Monitor State MC, Station Internal Test (MS=SIT)

The Internal Test state is started when the Monitor's Transmit Beacon state (MS=STBN) or Wire Fault Delay state (MS=SWFD) indicates the Station has not detected a Wire Fault and is ready to execute its internal tests.

This state is not defined by this standard except that the Station shall determine whether it is capable of continuing to operate the TXI Access Protocol. The Internal Test performs the following actions depending on its success or failure:

- a) Upon successful completion of the Internal Test, the Station waits for its timer TSLMT to expire before setting flag FSBNT to 1, causing the Join Machine to execute its Lobe Test (JS=SLT) and Duplicate Address Check (JS=SDAC) states.
- b) Upon failure of the Internal Test, the Station's Join machine returns to the Bypass state (JS=BP).

If the Station's Internal Test was successful, the Internal Test state waits for the reception of the INS_RSP MAC frame indicating the C-Port has detected the successful completion of the Hard Error Recovery LMT and DAC functions, and then enters the Monitor's Operational state (MS=SOPT).

Monitor State MD, Station Wire Fault Delay State (MS=SWFD)

This state allows the Station's Wire-Fault detection process (if supported by the Station) to determine if a Wire Fault condition exists before entering its Internal Test state (MS=SIT). If a Wire Fault condition does exist, the Station removes from the link (JS=BP) and indicates to management the Wire Fault condition.

This state is started when one of the following occurs:

- a) The SMAC in the Monitor Operational state (MS=SOPT) detects the reception of a Beacon MAC frame from its C-Port (SA=SUA) and the flag FSJC=1 (join complete).
- b) The Beacon Transmit state (MS=STBN) detects the reception of a Beacon MAC frame from its C-Port (SA=SUA).

Either of these conditions causes the timers TSIT and TSLMT to be reset. The Station delays entry into the Internal Test state until timer TSIT expires (indicating the Station did not detect a Wire Fault condition).

9.2.4.3 Transmit States

The Transmit State (TS=) notation is used to identify the current state of the transmit FSM. The transmit state values are Transmit Normal and Transmit Frame Data. Transmit states, listed by state value, are defined as follows:

Transmit State TA, Transmit Normal (TS=STXN)

The transmit state TS=STXN is set when the transmit FSM enters its normal state of transmitting idles and is not transmitting (sourcing) frames.

At 100 Mbit/s, the PS_CONTROL.request(Transmit_mode=Fill) signal defined in 9.8.1.1.4 is used to transmit idles in this state.

At 1000 Mbit/s, the PS_CONTROL.request(Transmit_mode=Fill) signal defined in 9.8.2.1.4 is used to transmit idles in this state.

Transmit State TB, Transmit Frame Data (TS=STXD)

The transmit state TS=STXD is entered when the transmit FSM is transmitting the data portion of a frame (FC, DA, SA, RIF if present, INFO if present, and FCS fields).

At 100 Mbit/s, the PS_CONTROL.request(Transmit_mode=No_fill) signal defined in 9.8.1.1.4 turns off the transmission of idles and the frame's data is transmitted, one octet at a time, using the signal PS_UNITDATA.request(Tx_indication=Data_byte) defined in 9.8.1.1.2.

At 1000 Mbit/s, the PS_CONTROL.request(Transmit_mode=No_fill) signal defined in 9.8.2.1.4 turns off the transmission of idles and the frame's data is transmitted, one octet at a time, using the signal PS_UNITDATA.request(Tx_indication=Data_byte) defined in 9.8.2.1.2.

9.2.5 TXI Access Protocol SMAC Specification

This subclause specifies the procedures used in the Station Medium Access Control (SMAC) in support of the Station using the TXI Access Protocol using Station Operation Tables as follows:

- a) The Station Join Station Operation—Table 9.2-1.
- b) The Station Transmit Station Operation—Table 9.2-2.
- c) The Station Monitor Station Operation—Table 9.2-3.
- d) The Station Error Handling Station Operation—Table 9.2-4.
- e) The Station Interface Signals Station Operation—Table 9.2-5.
- f) The Station Miscellaneous Frame Handling Station Operation—Table 9.2-6.
- g) The Station Lobe Media Test when FSLMTO=1 Station Operation—Table 9.2-7.

These Station Operation Tables use the term “Optional” as defined in 9.1.1.2.

Each Station Operation Table starting point has its event/condition shaded and each Station Operation Table exit point has its action/output shaded.

The DTR Station (FIPTXIS=0) supports the Bridge (M_UNITDATA), LLC (MA_UNITDATA), and Management (MGT_UNITDATA) Interfaces defined in 9.1.13.1, but has no access to the DTU (DTU_UNITDATA) or MRI (MRI_UNITDATA) Interfaces defined in 9.1.13.2.

The DTR C-Port in Station Emulation Mode (FIPTXIS=1) supports the DTU and MRI Interfaces defined in 9.1.13.2, but has no access to the Bridge, LLC or Management Interfaces defined in 9.1.13.1.

Parameters n6–n8 represent the initial value of the counters CSREQ, CSLTF, and CSRAT respectively to allow flexibility among station implementations.

Parameter	MIN	MAX	Used With	Description
n6	4	12	CSREQ	n6 is the initial setting of CSREQ which governs the maximum number of Registration Request Frames retransmitted by the Station. The maximum number of frames sent is (n6+1).
n7	1117	1123	CSLTF	n7 is the initial setting of CSLTF which governs the number of TEST MAC Frames transmitted by the Station's LMT function when the policy flag FSLMTO=1 (see 9.1.6.2 for description). This form of LMT, specified by Table 9.2-7, is designed to support any media rate.
n8	5	10	CSRAT	n8 is the initial setting of CSRAT which governs the number of Remove Alert MAC Frames transmitted at the High Media Rate by the Station's Remove Alert state (JS=SRAW) before exiting to the Bypass state (JS=BP).

9.2.5.1 Station Join — Station Operation Table

Table 9.2-1—Station Join Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
J0A	1001	Connect.PMAC & FPMRO<2 & FPOTO=0 & FSREGO=1 & JS=BP << This transition is executed by 9.3.4.1. >> << One of the <u>Starting Points</u> for the C-Port in Station Emulation Mode using the TXI Access Protocol. >> << For Information only. >> << 4 Mbit/s and 16 Mbit/s only >>	JS=SREG; TS=STXN; Set_initial_conditions; FSTXC=FSTI=1;FSMR=FPMRO; FPMR=FPMRO; FIPTXIS=1; TSIS=R
J0A	1007	Connect.PMAC& PS_STATUS.indication(Link_status=Asserted) & FPMRO>1 & FPOTO=0 & FSREGO=1& JS=BP << This transition is executed by 9.3.4.1. >> << This transition requires Link_status to be active <i>before</i> Connect.PMAC operates. >> << One of the <u>Starting Points</u> for the C-Port in Station Emulation Mode using the TXI Access Protocol. >> << For Information only. >> << High Media Rate only >>	JS=SREG; TS=STXN; Set_initial_conditions; FSTXC=FSTI=1;FSMR=FPMRO; FPMR=FPMRO; FIPTXIS=1; TSIS=R
J0A	3108	Connect.SMAC & FSMRO<2 & FSREGO=1 & AND(SPV(AP_MASK),0002)=0002 & JS=BP << One of the <u>Starting Points</u> for the DTR Station using the TXI Access Protocol. >> << 4 Mbit/s and 16 Mbit/s only >>	JS=SREG;TS=STXN; Set_initial_conditions; FSTXC=FSTI=1; FSMR=FSMRO; TSIS=R
J0A	3179	Connect.SMAC & PS_STATUS.indication (Link_status=Asserted)&FSMRO>1& FSREGO=1& AND(SPV(AP_MASK),0002)=0002 & JS=BP << This transition requires Link_status to be active <i>before</i> Connect.SMAC operates. >> << One of the <u>Starting Points</u> for the DTR Station using the TXI Access Protocol. >> << High Media Rate only >>	JS=SREG; TS=STXN; Set_initial_conditions; FSTXC=FSTI=1; FSMR=FSMRO; TSIS=R
	3170	CSTFQ=0 & FSRR=1 & FSMR<2 & JS=SDAC << 4 Mbit/s and 16 Mbit/s only >>	FSRR=CSTXC=0 << Insert Request MAC frame has been transmitted, return to recovered clock. >>

Table 9.2-1—Station Join Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1) (continued)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
JC0	3133	Disconnect.SMAC & FSMR<2 & JS=SDAC << Station told by Station Management to remove from the network. >> << 4 Mbit/s and 16 Mbit/s only >>	JS=BP << Station closed for unknown reason. >>
JC0	3152	Disconnect.SMAC & FSMR>1 & FSJC=0 & JS=SDAC << Station told by Station Management to remove from the network. >> << High Media Rate only >>	JS=BP << OPEN ERROR - Station closed for unknown reason. >>
JCF	3183	Disconnect.SMAC & FSMR>1 & FSJC=1 & JS=SDAC << Station told by Station Management to remove from the network. >> << High Media Rate only >>	JS=SRW; CSRAT=n8; TSRAP=R; TXI_RMV_ALRT << Station closed for unknown reason - start the Remove Alert process. >>
JD0C	3149	Disconnect.SMAC & FSMR<2 & JS=SJC << After Join Complete, Station told by Station Management to remove from the network. >> << 4 Mbit/s and 16 Mbit/s only >>	JS=BP; Remove_station << Station closed for unknown reason. >>
JDFA	3180	Disconnect.SMAC & FSMR>1 & JS=SJC << After Join Complete, Station told by Station Management to remove from the network. >> << High Media Rate only >>	JS=SRW; FSOP=0; CSRAT=n8; TSRAP=R; TXI_RMV_ALRT; If FSPDA=1 then Remove_station << Station closed for unknown reason - start the Remove Alert process and if phantom drive is active, Remove_station. >>
JB0	3123	Disconnect.SMAC & FSMR<2 & JS=SLT << Station told by Station Management to remove from the network. >> << 4 Mbit/s and 16 Mbit/s only >>	JS=BP << Station closed for unknown reason. >>
JB0	3184	Disconnect.SMAC & FSMR>1 & FSJC=0 & JS=SLT << Station told by Station Management to remove from the network. >> << High Media Rate only >>	JS=BP << OPEN ERROR - Station closed for unknown reason. >>
JBF	3193	Disconnect.SMAC & FSMR>1 & FSJC=1 & JS=SLT << Station told by Station Management to remove from the network. >> << High Media Rate only >>	JS=SRW; CSRAT=n8; TSRAP=R; TXI_RMV_ALRT << Station closed for unknown reason - start the Remove Alert process. >>
JA0	3109	Disconnect.SMAC & JS=SREG << Station told by Station Management to remove from the network. >>	JS=BP << Station closed for unknown reason. >>

Table 9.2-1—Station Join Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1) (continued)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
JB0	3164	FR_AMP & JS=SLT << A TXI Access Protocol error has been detected by the reception of a TKP AMP MAC frame prior to the activation of the TXI Heart Beat function. >>	JS=BP << OPEN ERROR = Protocol Error >>
JA0	3160	FR_AMP & JS=SREG << A TXI Access Protocol error has been detected by the reception of a TKP Access Protocol AMP MAC frame prior to the activation of the TXI Heart Beat function. >>	JS=BP << OPEN ERROR = Protocol Error >>
JC0	3134	FR_BN & JS=SDAC << TXI Access Protocol has detected the TKP Access Protocol is active by reception of a Beacon MAC frame. >>	JS=BP << OPEN ERROR = Protocol Error >>
JA0	3110	FR_BN & JS=SREG << TXI Access Protocol has detected TKP Access Protocol is active by premature reception of a Beacon MAC frame. >>	JS=BP << OPEN ERROR = Protocol Error >>
JB0	3124	FR_BN(SA<>MA) & JS=SLT << TXI Access Protocol has detected TKP Access Protocol is active by reception of a Beacon MAC frame. >>	JS=BP << OPEN ERROR = Protocol Error >>
JC0	3135	FR_CT & JS=SDAC << TXI Access Protocol has detected the TKP Access Protocol is active by reception of a Claim Token MAC frame. >>	JS=BP << OPEN ERROR = Protocol Error >>
JD0A	3151	FR_CT & JS=SJC << TXI Access Protocol has detected TKP Access Protocol is active by reception of a Claim Token MAC frame. >>	JS=BP; If FSPDA=1 then Remove_station << Protocol Error >>
JA0	3111	FR_CT & JS=SREG << TXI Access Protocol has detected TKP Access Protocol active by reception of a Claim Token MAC frame. >>	JS=BP << OPEN ERROR = Protocol Error >>
JB0	3125	FR_CT(SA<>MA) & JS=SLT << TXI Access Protocol has detected TKP Access Protocol is active by reception of a Claim Token MAC frame. >>	JS=BP << OPEN ERROR = Protocol Error >>

Table 9.2-1—Station Join Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1) (continued)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
JCD	3145	FR_INS_RSP(DTR_RSP=0000) & JS=SDAC << Response indicates C-Port has given permission for the TXI Station to complete Join. >>	JS=SJC; FSJC=FSOP=1; If FSECO=1 then (FSER=1; TSER=R); If FSPDA=1 then (INSERT; FSWFA=FSWF=0; TSWFD=R) << Start Error Report timer and if Phantom Drive is available then assert Phantom Drive and activate Wire Fault detection. >>
JC0	3138	FR_INS_RSP(DTR_RSP=8020) & JS=SDAC	JS=BP << OPEN ERROR = DAC Failure >>
JJC0	3112	FR_MAC(SA<MA & SA<SUA & VC=00) & JS=SDAC	JS=BP << OPEN ERROR = Protocol Error >>
JB0	3103	FR_MAC(SA<MA & SA<SUA & VC=00) & JS=SLT	JS=BP << OPEN ERROR = Protocol Error >>
JA0	3101	FR_MAC(SA<MA & SA<SUA & VC=00) & SUA<0 & JS=SREG	JS=BP << OPEN ERROR = Protocol Error >>
JD0A	3146	FR_MAC(SA<SUA & VC=00) & JS=SJC	JS=BP; If FSPDA=1 then Remove_station << Protocol Error >>
JC0	3137	FR_MAC(SA<SUA & VC=03) & JS=SDAC	JS=BP << OPEN ERROR = Protocol Error >>
JD0A	3148	FR_MAC(SA<SUA & VC=03) & JS=SJC	JS=BP; If FSPDA=1 then Remove_station << Protocol Error >>
JB0	3107	FR_MAC(SA<SUA & VC=03) & JS=SLT	JS=BP << Protocol Error >>
JA0	3102	FR_MAC(SA<SUA & VC=03) & SUA<0 & JS=SREG	JS=BP << OPEN ERROR = Protocol Error >>
JC0	3136	FR_PHB(SA<SUA) & JS=SDAC << A TXI Access Protocol error has been detected by the reception of a TXI Heart Beat or a TKP AMP MAC frame (SA<SUA of the known C-Port). >>	JS=BP << OPEN ERROR = Protocol Error >>
JA0	3113	FR_REG_RSP(AP_RSP=0000) & FSMR<2 & FSHMRTUA=0 & FSRDO=1 & JS=SREG << Response MAC frame indicates the C-Port has rejected the Station's TXI Access Protocol request. >> << 4 Mbit/s and 16 Mbit/s only >>	JS=BP << OPEN ERROR = Protocol Error >>

Table 9.2-1—Station Join Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1) (continued)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
	3150	FR_REG_RSP(AP_RSP=0000) & FSMR>1 & FSPDC=0 & JS=SREG << Response MAC frame indicates the C-Port has rejected the Station's TXI Access Protocol request to use Phantom Drive. Retry Registration request without Phantom Drive capability. >> << 100 Mbit/s only >>	FSPDC=1; FSPDA=0; CSREQ=n6; TSREQ=R; TXI_REG_REQ (AP_REQ=0002; IAC=SPV(IAC); PD=0002) << Request C-Port to use the TXI Access Protocol using no Phantom Drive. >>
JA0	3167	FR_REG_RSP(AP_RSP=0000) & FSMR>1 & FSPDC=1 & JS=SREG << Response MAC frame indicates the C-Port has rejected the Station's TXI Access Protocol request. >> << High Media Rate only >>	JS=BP << OPEN ERROR = Protocol Error >>
	3182	FR_REG_RSP(AP_RSP=0000) & FSMR<2 & FSHMRTUA=1 & JS=SREG << Response MAC frame indicates the C-Port has rejected the Station's TXI Access Protocol and trade up request. >> << 4 Mbit/s and 16 Mbit/s only >>	CSREQ=n6; TSREQ=R; FSPDA=1; FSHMRTUA=0; TXI_REG_REQ (AP_REQ=0002; IAC=SPV(IAC); PD=SPV(PD)) << Transmit Registration Request with the AP_REQ, IAC, and PD Subvectors setup. >>
JA1A	3105	FR_REG_RSP(AP_RSP=0000) & FSRDO=0 & FSHMRTUA=0 & FIPTXIS=0 & AND(SPV(AP_MASK),0001)=0001 & JS=SREG << The DTR Station's Registration request is denied by the C-Port, but Management has enabled the DTR Station to use the TKP Access Protocol. >> << Note: FSRDO=1 is required for the High Media Rate. >> << 4 Mbit/s and 16 Mbit/s only >>	JS=LT; FSTXC=FSTI=0; FTI=x; Set_initial_conditions; TEST << The DTR Station starts the TKP Access Protocol and exits to 9.6. >>

Table 9.2-1—Station Join Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1) (continued)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
JA1B	3158	FR_REG_RSP(AP_RSP=0000) & FSRDO=0 & FSHMRTUA=0 & FIPTXIS=1 & AND(SPV(AP_MASK),0001)=0001 & JS=SREG << The C-Port in Station Emulation Mode Registration request is denied by the C-Port, but Management has enabled the C-Port in Station Emulation Mode to use the TKP Access Protocol. >> << Note: FSRDO=1 is required for the High Media Rate. >> << 4 Mbit/s and 16 Mbit/s only >>	JS=LT; FSTXC=FSTI=0; FTI=x; FIPTXIS=0; FIPTKPS=1; Set_initial_conditions; TEST << The C-Port in Station Emulation Mode starts the TKP Access Protocol and exits to 9.5. >>
	3106	FR_REG_RSP(AP_RSP=0002) & FSREGO=1 & JS=SREG << Response indicates C-Port is supporting the TXI Access Protocol. Station remains in this state until timer TSLMTD expires. >>	FSRC=1; TSLMTD=R; SUA=SA << Registration complete. >>
JAE	3178	FR_REG_RSP(AP_RSP=0004) & FSREGO=1 & JS=SREG << Response indicates C-Port is supporting 100 Mbit/s and the Station has requested the C-Port to support the 100 Mbit/s operation (FSHMR-TUO=1) if supported. >>	JS=SHMRTU; TSHMRW=R; Flush_transmit_queues; PS_CONTROL.request (Initialize, Media_rate=2) << Station activates the 100 Mbit/s link and enters the High Media Rate Wait state waiting for Link activation as follows: • If Link activation occurs before timer TSHMRW expires, then enter the Registration state (JS=SREG). • If timer TSHMRW expires before Link activation occurs, then enter the Bypass state (JS=BP). >>
JC0	3139	FR_REMOVE(DA=Non_broadcast) & FSMR<2 & FSRRO=0 & JS=SDAC << Station told by Network Management to remove from the network. >> << 4 Mbit/s and 16 Mbit/s only >>	JS=BP << OPEN ERROR = Remove Station Received >>
JC0	3198	FR_REMOVE(DA=Non_broadcast) & FSMR>1 & FSJC=0 & FSRRO=0 & JS=SDAC << Station told by Network Management to remove from the network. >> << High Media Rate only >>	JS=BP << OPEN ERROR—Remove Station Received >>

Table 9.2-1—Station Join Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1) (continued)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
JCF	3196	FR_REMOVE(DA=Non_broadcast) & FSMR>1 & FSJC=1 & FSRRO=0 & JS=SDAC << Station told by Network Management to remove from the network. >> << High Media Rate only >>	JS=SRAW; CSRAT=n8; TSRAP=R; TXI_RMV_ALRT << Remove Station Received — start the Remove Alert process
JD0C	3153	FR_REMOVE(DA=Non_broadcast) & FSMR<2 & FSRRO=0 & JS=SJC << Station told by Network Management to remove from the network after Join Complete. >> << 4 Mbit/s and 16 Mbit/s only >>	JS=BP; Remove_station << Remove Station Received. >>
JDFA	3185	FR_REMOVE(DA=Non_broadcast) & FSMR>1 & FSRRO=0 & JS=SJC << Station told by Network Management to remove from the network after Join Complete. >> << High Media Rate only >>	JS=SRAW; FSOP=0; CSRAT=n8; TSRAP=R; TXI_RMV_ALRT; If FSPDA=1 then Remove_station << Remove Station Received – start the Remove Alert process and if phantom drive is active, Remove_station. >>
JB0	3126	FR_REMOVE(DA=Non_broadcast) & FSMR<2 & FSRRO=0 & JS=SLT << Station told by Network Management to remove from the network. >> << 4 Mbit/s and 16 Mbit/s only >>	JS=BP << OPEN ERROR = Remove Station Received >>
JB0	3199	FR_REMOVE(DA=Non_broadcast) & FSMR>1 & FSJC=0 & FSRRO=0 & JS=SLT << Station told by Network Management to remove from the network. >> << High Media Rate only >>	JS=BP << OPEN ERROR = Remove Station Received. >>
JBF	3197	FR_REMOVE(DA=Non_broadcast) & FSMR>1 & FSJC=1 & FSRRO=0 & JS=SLT << Station told by Network Management to remove from the network. >> << High Media Rate only >>	JS=SRAW; CSRAT=n8; TSRAP=R; TXI_RMV_ALRT << Remove Station Received – start the Remove Alert process. >>
JA0	3115	FR_REMOVE(DA=Non_broadcast) & FSRRO=0 & JS=SREG << Station told by Network Management to remove from the network. >>	JS=BP << OPEN ERROR = Remove Station Received >>
JC0	3186	FR_RMV_ALRT(VC=03 & SA=SUA) & FSMR>1 & JS=SDAC << C-Port signals Station it is entering its Bypass state (JS=BP). >> << High Media Rate only >>	JS=BP << C-Port is not operational. >>

Table 9.2-1—Station Join Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1) (continued)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
JD0A	3171	FR_RMV_ALRT(VC=03 & SA=SUA) & FSMR>1 & JS=SJC << C-Port signals Station it is entering JS=BP. >> << High Media Rate only >>	JS=BP; If FSPDA=1 then Remove_station << C-Port is not operational. >>
JB0	3001	FR_RMV_ALRT(VC=03 & SA=SUA) & FSMR>1 & JS=SLT << C-Port signals Station it is entering its Bypass state (JS=BP). >> << High Media Rate only >>	JS=BP << C-Port is not operational. >>
JC0	3140	FR_RP & JS=SDAC << TXI Access Protocol has detected TKP Access Protocol is active by reception of a Ring Purge MAC frame. >>	JS=BP << OPEN ERROR = Protocol Error >>
JD0A	3154	FR_RP & JS=SJC << TXI Access Protocol has detected TKP Access Protocol is active by reception of a Ring Purge MAC frame. >>	JS=BP; If FSPDA=1 then Remove_station << Protocol Error >>
JA0	3116	FR_RP & JS=SREG << TXI Access Protocol has detected TKP Access Protocol is active by reception of a Ring Purge MAC frame. >>	JS=BP << OPEN ERROR = Protocol Error>>
JB0	3127	FR_RP(SA<>MA) & JS=SLT << TXI Access Protocol has detected TKP Access Protocol is active by reception of a Ring Purge MAC frame. >>	JS=BP << OPEN ERROR = Protocol Error >>
JD0A	3163	FR_SMP & JS=SJC << TXI Access Protocol detects TKP Access Protocol is active by reception of a SMP MAC frame after Join complete. >>	JS=BP; If FSPDA=1 then Remove_station << Protocol Error >>
JA0	3161	FR_SMP & JS=SREG << TXI Access Protocol detects TKP Access Protocol active by reception of a SMP MAC frame. >>	JS=BP << OPEN ERROR = Protocol Error >>
JC0	3162	FR_SMP(SA<>MA) & JS=SDAC << TXI Access Protocol detects TKP Access Protocol active by reception of a SMP MAC frame. >>	JS=BP << OPEN ERROR = Protocol Error>>
JB0	3165	FR_SMP(SA<>MA) & JS=SLT << TXI Access Protocol detects TKP Access Protocol is active by reception of a SMP MAC frame. >>	JS=BP << OPEN ERROR = Protocol Error >>

Table 9.2-1—Station Join Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1) (continued)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
JDB	3114	FSBNT=1 & MS=SIT & JS=SJC << Monitor requests Join to run the Station's LMT and sets Beacon Test request flag inactive. >>	JS=SLT; FSBNT=0; If FSMR<2 then FSTXC=1; TSLMTC=R; If FSLMTO=0 then TXI_TEST; If FSLMTO=1 then FSRLMT=1 << Start the Lobe Media Test Completion Timer and if - FSLMTO=0 then start the Lobe Media Test defined by 9.1.6.1 or - FSLMTO=1 then start the Lobe Media Test defined by 9.1.6.2 and Table 9.2-7. >>
JC0	3142	FSBPF=1 & TS=STXN & JS=SDAC	JS=BP << Station Fault, Transmit Error. >>
JD0A	3156	FSBPF=1 & TS=STXN & JS=SJC	JS=BP; If FSPDA=1 then Remove_station << Station Fault, Transmit Error. >>
JB0	3129	FSBPF=1 & TS=STXN & JS=SLT	JS=BP << Station Fault, Transmit Error. >>
JF0	3002	FSBPF=1 & TS=STXN & JS=SRW	JS=BP << Station Fault, Transmit Error. >>
JA0	3118	FSBPF=1 & TS=STXN & JS=SREG	JS=BP << Station Fault, Transmit Error.>>
	3166	FSIRD=1 & TS=STXN & JS=SDAC << Insert Request MAC frame delayed until transmitter has no frames being transmitted (TS=STXN). >> << 4 Mbit/s and 16 Mbit/s only >>	FSIRD=0; FSRRC=FSTXC=1; CSTFQ=(CSTFQ+1); TSIP=R; TXI_INS_REQ << Transmit an Insert Request MAC frame using crystal transmit. >>
JB0	3189	FSLMTF=1 & FSJC=0 & JS=SLT << Reason for LMT failure is determined when FSLMTF is set to 1 (see Table 9.2-7). >>	JS=BP << OPEN ERROR – Lobe Media Test failure before join has completed. >>
JB0	3191	FSLMTF=1 & FSJC=1 & FSMR<2 & JS=SLT << Reason for LMT failure is determined when FSLMTF is set to 1 (see Table 9.2-7). >> << 4 Mbit/s and 16 Mbit/s only >>	JS=BP << Hard Error Recovery Lobe Media Test failure – enter Bypass. >>
JBF	3188	FSLMTF=1 & FSJC=1 & FSMR>1 & JS=SLT << Reason for LMT failure is determined when FSLMTF is set to 1 (see Table 9.2-7). >> << High Media Rate only >>	JS=SRW; CSRAT=n8; TSRAP=R; TXI_RMV_ALRT << Hard Error Recovery Lobe Media Test failure – start the Remove Alert process. >>

Table 9.2-1—Station Join Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1) (continued)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
JBCB	3190	FSLMTS=1 & JS=SLT << Lobe Media Test function completed successfully, set Station's LMT functional address inactive and request Insertion. >>	JS=SDAC; FA(TEST)=0; If FSJC=0 then MS=SOPT; FSLMTS=0; FSHBA=FSRRC=1; If FSMR<2 then FSTXC=1; CSTFQ=1; TSJC=R; TSQHB=R; TSRHB=R; TSIP=R; TXI_INS_REQ
JC0	3141	INTERNAL_ERR(not_correctable) & JS=SDAC	JS=BP << OPEN ERROR = Station Fault, Internal Station Error. >>
JD0A	3155	INTERNAL_ERR(not_correctable) & JS=SJC	JS=BP; If FSPDA=1 then Remove_station << Station Fault, Internal Station Error. >>
JB0	3128	INTERNAL_ERR(not_correctable) & JS=SLT	JS=BP << OPEN ERROR = Station Fault, Internal Station Error. >>
JA0	3117	INTERNAL_ERR(not_correctable) & JS=SREG	JS=BP << OPEN ERROR = Station Fault, Internal Error. >>
JD0B	3147	INTERNAL_TEST_FAILURE & MS=SIT & JS=SJC	JS=BP << Station Fault, Internal Test failure. >>
JEA	3194	PS_STATUS.indication (Link_status=Asserted) & JS=SHMRTU << Station detects Trade-up to 100 Mbit/s and restarts registration. >>	JS=SREG; TS=STXN; Set_initial_conditions; FSTXC=FSTI=1; FSMR=2; If FIPTXIS=1 then FPMR=2; TSIS=R << Set internal media rate flag(s) to 100 Mbit/s. >>
JC0	3172	PS_STATUS.indication (Link_status=Not_asserted) & JS=SDAC << C-Port link was operational, but is now not operational. >> << High Media Rate only >>	JS=BP << C-Port/Station link not operational. >>
JD0A	3173	PS_STATUS.indication (Link_status=Not_asserted) & JS=SJC << C-Port link was operational, but is now not operational. >> << High Media Rate only >>	JS=BP; If FSPDA=1 then Remove_station << Remove Alert MAC frame is not sent because the C-Port/Station link not operational. >>
JF0	3187	PS_STATUS.indication (Link_status=Not_asserted) & JS=RAW << C-Port link was operational, but is now not operational. >> << High Media Rate only >>	JS=BP << Remove Alert MAC frame is not sent because the C-Port/Station link is not operational. >>

Table 9.2-1—Station Join Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1) (continued)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
JB0	3174	PS_STATUS.indication (Link_status=Not_asserted) & JS=SLT << High Media Rate only >>	JS=BP << C-Port/Station link not operational. >>
JA0	3175	PS_STATUS.indication (Link_status=Not_asserted) & JS=SREG << High Media Rate only >>	JS=BP << C-Port/Station link not operational. >>
JB0	3130	TEST_FAILURE & JS=SLT << 4 Mbit/s and 16 Mbit/s only >>	JS=BP << OPEN ERROR = Lobe Test Failure >>
JBCA	3132	TEST_OK & JS=SLT << TXI Station's LMT completed successfully and causes setup for TXI Station insertion. >> << 4 Mbit/s and 16 Mbit/s only >>	JS=SDAC; If FSJC=0 then MS=SOPT; FSHBA=FSRRC=FSTXC=1; CSTFQ=1; TSJC=R; TSQHB=R; TSRHB=R; TSIP=R; TXI_INS_REQ
JE0	3195	TSHMRW=E & PS_STATUS.indication (Link_status=Not_asserted) & JS=SHMRTU << Station failed to detect Link activation in time allotted. >>	JS=BP << OPEN ERROR – Trade-up failure. >>
	3104	TSIP=E & JS=SDAC & FSMR<2 << 4 Mbit/s and 16 Mbit/s only >>	FSIRD=1 << Remember the TSIP=E event and delay the transmission of the Insert Request MAC frame until crystal clock is available. >>
	3168	TSIP=E & JS=SDAC & FSMR>1 << High Media Rate only >>	TSIP=R; TXI_INS_REQ << No delay is required since crystal clock is available. Transmit Insert Request MAC frame. >>
	3119	TSIS=E & FSMR<2 & JS=SREG << DTR Station makes its first request for TXI Access Protocol setup by setting subvector values for the REG_REQ_MAC frame and then queues the frame for transmission. >> << Request Trade-up to the High Media Rate if the Trade-up policy is enabled. >> << NOTE: 4 Mbit/s and 16 Mbit/s requires Phantom Drive to be active (SPV(PD)=0001). >> << 4 Mbit/s and 16 Mbit/s only >>	CSREQ=n6; TSREQ=R; FSPDA=1; FSHMRTUA=FSHMRTUO; TXI_REG_REQ If FSHMRTUO=0 then AP_REQ=0002; If FSHMRTUO=1 then AP_REQ=0006; IAC=SPV(IAC); PD=SPV(PD)) << Transmit Registration Request with the AP_REQ, IAC and PD Subvectors setup. >>

Table 9.2-1—Station Join Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1) (continued)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
	3177	TSIS=E & FSMR>1 & JS=SREG << DTR Station makes its first request for TXI Access Protocol setup by setting subvector values for the REG_REQ_MAC frame and then queues the frame for transmission. >> << NOTE: 100 Mbit/s allows Phantom Drive to be active (SPV(PD)=0001) or inactive (SPV(PD)=0002). 1000 Mbit/s requires Phantom Drive to be inactive (SPV(PD)=0002). >> << High Media Rate only >>	CSREQ=n6; TSREQ=R; If SPV(PD)=0001 then FSPDA=1; If SPV(PD)=0002 then (FSPDC=1; FSPDA=0); TXI_REG_REQ (AP_REQ=0002; IAC=SPV(IAC); PD=SPV(PD)) << Setup Phantom Drive control and then transmit Registration Request with the AP_REQ, IAC, and PD Subvectors setup. >>
JC0	3143	TSJC=E & JS=SDAC	JS=BP << OPEN ERROR = Join Time-out Error >>
JB0	3131	TSLMTC=E & JS=SLT << Time allotted for Station's TXI LMT has been exceeded. >>	JS=BP << OPEN ERROR = Station Fault, Lobe Test Completion Time Exceeded >>
JAB	3121	TSLMTD=E & JS=SREG << Station's TXI LMT Delay completed. >>	JS=SLT; TSLMTC=R; If FSLMTO=0 then TXI_TEST; If FSLMTO=1 then FSRLMT=1 << Start the Lobe Media Test Completion Timer and if - FSLMTO=0, then start the Lobe Media Test defined by 9.1.6.1 or - FSLMTO=1, then start the Lobe Media Test defined by 9.1.6.2 and Table 9.2-7. >>
	3176	TSRAP=E & CSRAT<>0 & JS=SRAW << Transmission of Remove Alert MAC Frame has not been completed. >> << High Media Rate only >>	CSRAT=(CSRAT-1); TSRAP=R; TXI_RMV_ALRT << Retransmit Remove Alert MAC Frame. >>
JF0	3192	TSRAP=E & CSRAT=0 & JS=SRAW << Transmission of Remove Alert MAC Frame has been completed. >> << High Media Rate only >>	JS=BP << Enter the Bypass state for reason that started timer TSRAP. >>

Table 9.2-1—Station Join Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1) (continued)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
JA1A	3120	TSREQ=E & CSREQ=0 & FSRC=0 & FSOPO=0 & FIPTXIS=0 & AND(SPV(AP_MASK),0001)=0001 & JS=SREG << C-Port has failed to respond to multiple REG_REQ MAC frames and this Station permits the Emulation of the TKP Access Protocol. >> << NOTE: FSOPO=0 is never true for the High Media Rate so a test for FSMR is not required.>> << 4 Mbit/s and 16 Mbit/s only >>	JS=LT; FSTXC=FSTI=0; FTI=x; Set_initial_conditions; TEST << DTR Station starts the TKP Access Protocol and exits to 9.6. >>
JA1B	3159	TSREQ=E & CSREQ=0 & FSRC=0 & FSOPO=0 & FIPTXIS=1 & AND(SPV(AP_MASK),0001)=0001 & JS=SREG << Attached C-Port has failed to respond to multiple REG_REQ MAC frames and the TKP Access Protocol Emulation is permitted by this C-Port. >> << NOTE: FSOPO=0 is never true for the High Media Rate so a test for FSMR is not required.>> << 4 Mbit/s and 16 Mbit/s only >>	JS=LT; FSTXC=FSTI=0; FTI=x; FIPTXIS=0; FIPTKPS=1; Set_initial_conditions; TEST << C-Port in Station Emulation Mode starts the TKP Access Protocol and exits to 9.5. >>
JA0	3169	TSREQ=E & CSREQ=0 & FSRC=0 & FSOPO=1 & JS=SREG << C-Port has failed to respond to multiple REG_REQ MAC frames and TKP Access Protocol Emulation is not permitted by this Station. >>	JS=BP << OPEN ERROR = Protocol Error>>
	3122	TSREQ=E & CSREQ>0 & FSRC=0 & JS=SREG << DTR Station makes <i>another</i> request for TXI Access Protocol setup by setting subvector values for the REG_REQ_MAC frame allowing Phantom Drive (4, 16, or 100 Mbit/s) or no Phantom Drive (100 Mbit/s or 1000 Mbit/s) and then queues the frame for transmission. >> << Request Trade-up to 100 Mbit/s if Station's Trade-up policy is enabled, and Media Rate is 4 Mbit/s or 16 Mbit/s. >>	CSREQ=(CSREQ-1); TSREQ=R; TXI_REG_REQ (If FSMR>1 then AP_REQ=0002; If (FSMR<2 & FSHMRTUA=0 then AP_REQ=0002); If (FSMR<2 & FSHMRTUA=1 then AP_REQ=0006); IAC=SPV(IAC); If FSPDA=0 then PD=0002; If FSPDA=1 then PD=0001) << Transmit Registration Request with the REQ, IAC, and PD Subvector setup. >>
JC0	3144	TSRHB=E & JS=SDAC <<TXI Access Protocol has detected absence of the Heart Beat MAC frame prior to Join complete. >>	JS=BP << OPEN ERROR = Protocol Error >>

Table 9.2-1—Station Join Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1) (continued)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
J9A	6007	TSRW=E & FIPTKPS=0 & FSREGO=1 & JS=SRW << One of the <u>Starting Points</u> for the DTR Station using the TXI Access Protocol. >> << This Transition is executed by 9.6.2.1. >> << DTR Station originally opened using the TKP Access Protocol and then recognizes the attached C-Port's request to use the TXI Access Protocol. >> << Registration Query Protocol. >> << 4 Mbit/s and 16 Mbit/s only >>	JS=SREG; TS=STXN; Set_initial_conditions; FSTXC=FSTI=1; TSIS=R << For Information only. >>
J9A	6006	TSRW=E & FIPTKPS=1 & FSREGO=1 & JS=SRW << One of the <u>Starting Points</u> for the C-Port in Station Emulation Mode using the TXI Access Protocol. >> << This Transition is executed by 9.5.4.2. >> << C-Port in Station Emulation Mode originally opened using the TKP Access Protocol and then recognizes the attached C-Port's request to use the TXI Access Protocol. >> << Registration Query Protocol >> << 4 Mbit/s and 16 Mbit/s only >>	JS=SREG; TS=STXN; Set_initial_conditions; FSTXC=FSTI=1; TSIS=R; FIPTKPS=0; FIPTXIS=1 << For Information only. >>
JD0C	3157	TSWF=E & FSWFA=1 & FSWF=1 & FSMR<2 & JS=SJC << Occurs only when Phantom Drive is active. >> << 4 Mbit/s and 16 Mbit/s only >>	JS=BP; Remove_station << Wire Fault Detected – caused by Station, Lobe, or Port fault. >>
JDFB	3181	TSWF=E & FSWFA=1 & FSWF=1 & FSMR>1 & JS=SJC << Occurs only when Phantom Drive is active. >> << 100 Mbit/s only >>	JS=SRAW; FSOP=0; CSRAT=n8; TSRAP=R; TXI_RMV_ALRT; Remove_station << Wire Fault Detected – caused by Station, Lobe, or Port fault – start the Remove Alert process and remove station. >>

9.2.5.2 Station Transmit—Station Operation Table

Table 9.2-2—Station Transmit Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
TBAA	3207	CSBTX>SPV(MAX_TX) & FSMR<2 & FPASO=0 & FIPTXIS=1 & TS=STXD << C-Port in Station Emulation Mode has detected maximum frame size has been exceeded. >> << 4 Mbit/s and 16 Mbit/s only >>	[TS=STXN; TX_AB; FSTAS=FSTI=1 (optional-unk)] << Terminate the transmission of the frame by transmitting an Abort Sequence. >>
TBAE	3204	CSBTX>SPV(MAX_TX) & FSMR<2 & FPASO=1 & FIPTXIS=1 & TS=STXD << C-Port in Station Emulation Mode has detected maximum frame size has been exceeded. >> << 4 Mbit/s and 16 Mbit/s only >>	[TS=STXN; FSTAS=FSTI=1; TX_INV_FCS; TX_EFS(I=0; E=1) (optional-unk)] << Terminate the transmission of the frame by transmitting an Invalid FCS and setting the E bit to one. >>
TBAJ	3213	CSBTX>SPV(MAX_TX) & FSMR>1 & FIPTXIS=1 & TS=STXD << C-Port in Station Emulation Mode has detected maximum frame size has been exceeded. >> << High Media Rate only >>	TS=STXN; If FPASO=0 then TX_AB; If FPASO=1 then [TX_INV_FCS; TX_EFS(E=1) (optional-unk)]; FSTAS=FSTI=1 << Terminate the transmission of the frame by transmitting either an Abort Sequence or an Invalid FCS and setting the E bit to one. >>
TBAF	3212	DTU_UNITDATA-STATUS.request(Fail) & FSMR<2 & FPTX_LTH=0 & FIPTXIS=1 & TS=STXD << Transmit FSM currently transmitting a frame of unknown length. This is an indication that a Cut-through frame is being transmitted. >> << 4 Mbit/s and 16 Mbit/s only >>	TS=STXN; TX_AB; FSTAS=FSTI=1 << The Cut-through frame has completed with a Fail status and the frame is aborted by transmitting an Abort Sequence. >>
TBAK	3214	DTU_UNITDATA-STATUS.request(Fail) & FSMR>1 & FPTX_LTH=0 & FIPTXIS=1 & TS=STXD << Transmit FSM currently transmitting a frame of unknown length. This is an indication that a Cut-through frame is being transmitted. >> << High Media Rate only >>	TS=STXN; If FPASO=0 then TX_AB; If FPASO=1 then (TX_INV_FCS; TX_EFS(E=1)); FSTAS=FSTI=1 << Terminate the transmission of the frame by transmitting either an Abort Sequence or an Invalid FCS and setting the E bit to one. >>
	3208	EOB & TS=STXD & FIPTXIS=1 << Occurs <i>once</i> for each byte transmitted during the Transmit Data state (TS=STXD). >> << C-Port in Station Emulation Mode support. >>	[CSBTX=(CSBTX+1) (optional-unk)]

Table 9.2-2—Station Transmit Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1) (continued)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
TBAB	3205	EOD & FSMR<2 & TS=STXD << The last octet of the Frame's Information Field has been transmitted. >> << 4 Mbit/s and 16 Mbit/s only >>	TS=STXN; TX_FCS; TX_EFS(I=E=0); FSTI=1; If JS=SDAC then CSTFQ=(CSTFQ-1)
TBAM	3221	EOD & FSMR>1 & TS=STXD << The last octet of the Frame's Information Field has been transmitted. >> << High Media Rate only >>	TS=STXN; TX_FCS; TX_EFS(E=0); FSTI=1
TABA	3203	PDU_QUEUED & FSBPF=0 & FSOP=1 & FIPTXIS=0 & TS=STXN << Queued frame is transmitted by the Station only when FSOP=1. >>	TS=STXD; FSTI=0; TX_SFS(P=x; R=0) << Frame length for a frame in the TXI queue is always known. >>
TABB	3210	PDU_QUEUED & FSBPF=0 & FSOP=1 & FIPTXIS=1 & TS=STXN << Queued frame is transmitted by the C-Port only when FSOP=1. >>	TS=STXD; FSTI=0; If FR_LTH<=PPV(MAX_TX,) then FPTX_LTH=1; If FR_LTH=UNK, then FPTX_LTH=0; If FSMR=0 then CSBTX=9; If FSMR=1 then CSBTX=D; If FSMR=2 then CSBTX=14; If FSMR=3 then CSBTX=18; TX_SFS(P=x; R=0) << The frame length of the queued frame is either unknown or a value less than PPV(MAX_TX). >>
TBAC	3216	PORT_ERR(correctable) & FIPTXIS=1 & FPMR<2 & TS=STXD << C-Port could not complete transmission of frame being transmitted - abort frame. >> << 4 Mbit/s and 16 Mbit/s only >>	TS=STXN; TX_AB; FSTAS=FSTI=1; If JS=SDAC then CSTFQ=(CSTFQ-1) << Transmit Abort sequence. >>
TBAG	3215	PORT_ERR(correctable) & FIPTXIS=1 & FPMR>1 & TS=STXD << C-Port could not complete transmission of frame being transmitted — abort frame. >> << High Media Rate only >>	TS=STXN; If FPASO=0 then TX_AB; If FPASO=1 then (TX_INV_FCS; TX_EFS(E=1)); FSTAS=FSTI=1 << Terminate the transmission of the frame by transmitting either an Abort Sequence or an Invalid FCS and setting the E bit to one. >>
TBAL	3217	PORT_ERR(not_correctable) & FIPTXIS=1 & FPMR<2 & TS=STXD << C-Port could not complete transmission of frame being transmitted. >> << 4 Mbit/s and 16 Mbit/s only >>	TS=STXN; [TX_AB (optional)]; FSBPF=FSTI=1 << Optionally Transmit Abort sequence. >>

Table 9.2-2—Station Transmit Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1) (continued)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
TBAH	3218	PORT_ERR(not_correctable) & FIPTXIS=1 & FPMR>1 & TS=STXD << C-Port could not complete transmission of frame being transmitted. >> << High Media Rate only >>	TS=STXN; If FPASO=0 then TX_AB; If FPASO=1 then (TX_INV_FCS; TX_EFS(E=1)); FSBPF=FSTI=1 << Terminate the transmission of the frame by transmitting either an Abort Sequence or an Invalid FCS and setting the E bit to one and then force C-Port to the Bypass state. >>
TBAC	3206	STATION_ERR(correctable) & FIPTXIS=0 & FSMR<2 & TS=STXD << Station could not complete transmission of frame: enter the Transmit Normal state. >> << 4 Mbit/s and 16 Mbit/s only >>	TS=STXN; TX_AB; FSTAS=FSTI=1; If JS=SDAC then CSTFQ=(CSTFQ-1) << Transmit Abort Sequence. >>
TBAG	3219	STATION_ERR(correctable) & FIPTXIS=0 & FSMR>1 & TS=STXD << Station could not complete transmission of frame: enter the Transmit Normal state. >> << High Media Rate only >>	TS=STXN; If FSASO=0 then TX_AB; If FSASO=1 then (TX_INV_FCS; TX_EFS(E=1)); FSTAS=FSTI=1 << Terminate the transmission of the frame by transmitting either an Abort Sequence or an Invalid FCS and setting the E bit to one. >>
TBAD	3209	STATION_ERR(not_correctable) & FSMR<2 & FIPTXIS=0 & TS=STXD << Station could not complete transmission of frame: enter the Transmit Normal state. >> << 4 Mbit/s and 16 Mbit/s only >>	TS=STXN; [TX_AB (optional-I)]; FSBPF=FSTI=1 << Optionally Transmit Abort Sequence. Force Join to enter the Bypass state. >>
TBAH	3220	STATION_ERR(not_correctable) & FSMR>1 & FIPTXIS=0 & TS=STXD << Station could not complete transmission of frame: enter the Transmit Normal state. >> << High Media Rate only >>	TS=STXN If FSASO=0 then TX_AB; If FSASO=1 then (TX_INV_FCS; TX_EFS(E=1)); FSBPF=FSTI=1 << Terminate the transmission of the frame by transmitting an Invalid FCS and setting the E bit to one and Force Join to enter the Bypass state. >>
TABA	3202	TXI_REQ & FIPTXIS=0 & FSBPF=0 & TS=STXN << SMAC TXI_(frame) is being transmitted. >>	TS=STXD; FSTI=0; TX_SFS(P=x; R=0) << Frame length for a frame in the TXI queue is always known. >>

Table 9.2-2—Station Transmit Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1) (continued)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
TABC	3211	TXI_REQ & FIPTXIS=1 & FPBPF=0 & TS=PTXN << PMAC TXI_(frame) is being transmitted. >>	TS=STXD; FSTI=0; FPTX_LTH=1; If FSMR=0 then CSBTX=9; If FSMR=1 then CSBTX=D; If FSMR=2 then CSBTX=14; If FSMR=3 then CSBTX=18; TX_SFS(P=x; R=0) << Frame length for a frame in the TXI queue is always known. >>

9.2.5.3 Station Monitor—Station Operation Table

Table 9.2-3—Station Monitor Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
MAD	3316	FR_BN(SA=SUA) & FSJC=1 & MS=SOPT << Station received a Beacon MAC frame from its C-Port and starts Hard Error Recovery by entering the Wire Fault Delay state. >>	MS=SWFD; FSHBA=FSOP=0; TSIT=R; TSLMT=R
MBD	3318	FR_BN(SA=SUA) & MS=STBN << Station received a Beacon MAC frame from its C-Port and continues Hard Error Recovery by entering the Wire Fault Delay state. >>	MS=SWFD; TSIT=R; TSLMT=R
MCA	3319	FR_INS_RSP(DTR_RSP=0000) & MS=SIT << The Station's Internal Test was successful and it transmitted an Insert Request. This frame's reception indicates the C-Port has authorized Insertion. >>	MS=SOPT
	3323	FR_PHB(SA=SUA) & FSHBA=1 << C-Port Heart Beat MAC frame received. >>	TSRHB=R << Reset the Heart Beat timer. >>
MBC	3317	TSIT=E & MS=STBN << Station has completed waiting for Wire-Fault Detection. >>	MS=SIT; If FSPDA=1 then Remove_station; INT_TEST
MDC	3320	TSIT=E & MS=SWFD << Station has completed waiting for Wire-Fault Detection. >>	MS=SIT; If FSPDA=1 then Remove_station; INT_TEST
	3322	TSLMT=E & MS=SIT << Lobe Test to be executed by the Station. >>	FSBNT=1 << Request Join to execute JS=SLT. >>

Table 9.2-3—Station Monitor Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1) (continued)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
	3324	TSQHB=E & FSHBA=1 & FSMR<2 << Station's Heart Beat timer causes transmission of SHB_PDU. >> << 4 Mbit/s and 16 Mbit/s only >>	TSQHB=R; TXI_SHB If JS=SDAC then CSTFQ=(CSTFQ+1)
	3303	TSQHB=E & FSHBA=1 & FSMR>1 << Station's Heart Beat timer causes transmission of SHB_PDU. >> << High Media Rate only >>	TSQHB=R; TXI_SHB
	3313	TSQP=E & MS=STBN << Pacing timer for Beacon MAC frames has expired, transmit another Beacon MAC frame. >>	TSQP=R; If FSSL=0 then TXI_BN(BN_TYPE=5); If FSSL=1 then TXI_BN(BN_TYPE=2) << BN_TYPE=5 for High Media Rate. >> << BN_TYPE=(2 or 5) for any media rate. >>
MAB	3314	TSRHB=E & FSJC=1 & MS=SOPT << Heart Beat Failure detected. Station starts Hard Error Recovery by entering the Beacon Transmit state. >>	MS=STBN; FSHBA=FSOP=0; FSTXC=1; TSIT=R; TSLMT=R; TSQP=R; If FSSL=0 then TXI_BN(BN_TYPE=5); If FSSL=1 then TXI_BN(BN_TYPE=2) << BN_TYPE=5 for High Media Rate. >> << BN_TYPE=(2 or 5) for any media rate. >>

9.2.5.4 Station Error Handling—Station Operation Table

Table 9.2-4—Station Error Handling Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
	3401	Burst5_error_event & CSBE<FF & FSJC=1 & FSER=1 & MS=SOPT << 4 Mbit/s and 16 Mbit/s event only. >>	CSBE=(CSBE+1)
	3402	Burst5_error_event & FSJC=1 & FSER=0 & MS=SOPT << 4 Mbit/s and 16 Mbit/s event only. >>	FSER=1; TSER=R; CSBE=(CSBE+1)
	3407	FR_NOT_COPIED & CSRCE<FF & FSJC=1 & FSER=1 & MS=SOPT	CSRCE=(CSRCE+1)
	3408	FR_NOT_COPIED & FSJC=1 & FSER=0 & MS=SOPT	FSER=1; TSER=R; CSRCE=(CSRCE+1)
	3409	FR_WITH_ERR(E=0) & CSLE<FF & FSJC=1 & FSER=1 & MS=SOPT	CSLE=(CSLE+1)
	3410	FR_WITH_ERR(E=0) & FSJC=1 & FSER=0 & MS=SOPT	FSER=1; TSER=R; CSLE=(CSLE+1)
	3417	FSTAS=1 & TS=STXN & CSABE<FF & FSJC=1 & FSER=1 & MS=SOPT << Transmitter has released an Abort Sequence. >>	FSTAS=0; CSABE=(CSABE+1)
	3418	FSTAS=1 & TS=STXN & FSJC=1 & FSER=0 & MS=SOPT	FSTAS=0; FSER=1; TSER=R; CSABE=(CSABE+1)
	3411	INTERNAL_ERR(correctable) & CSIE<FF & FSJC=1 & FSER=1 & MS=SOPT	CSIE=(CSIE+1)
	3412	INTERNAL_ERR(correctable) & FSJC=1 & FSER=0 & MS=SOPT	FSER=1; TSER=R; CSIE=(CSIE+1)
	3426	PM_STATUS.indication (Signal_detection=signal_acquired) & FSSLD=1 << 4 Mbit/s and 16 Mbit/s event only. >>	FSSL=FSSLD=0
	3427	PM_STATUS.indication (Signal_detection=signal_loss) & FSSLD=0 << 4 Mbit/s and 16 Mbit/s event only. >>	FSSLD=1; TSSL=R
	3428	PM_STATUS.indication (Wire_fault=Detected) & FSWFA=1 & FSWF=0 << Occurs only when FSPDA=1. >>	FSWF=1; TSWF=R
	3429	PM_STATUS.indication (Wire_fault=Not_detected) & FSWF=1 << Occurs only when FSPDA=1. >>	FSWF=0

Table 9.2-4—Station Error Handling Station Operation Table for the DTR Station using the TXI Access Protocol (FIPTXIS=0) or the C-Port in Station Emulation Mode using the TXI Access Protocol (FIPTXIS=1) (continued)

S/T	REF	EVENT / EVENT & CONDITIONS	ACTIONS / OUTPUTS
	3431	PS_STATUS.indication(Frequency_error) & CSFE<FF & FSJC=1 & FSER=1 & MS=SOPT << 4 Mbit/s and 16 Mbit/s event only. >>	CSFE=(CSFE+1)
	3430	PS_STATUS.indication(Frequency_error) & FSJC=1 & FSER=0 & MS=SOPT << 4 Mbit/s and 16 Mbit/s event only. >>	FSER=1; TSER=R; CSFE=(CSFE+1)
	3432	TSER=E & ERR_SCNTR<0 & FSJC=1 & FIPTXIS=0 << DTR Station is reporting errors. >>	If FSECO=0 then FSER=0; QUE_RPRT_ERR_PDU; SET ERR_SCNTR=0
	3433	TSER=E & ERR_SCNTR<0 & FSJC=1 & FIPTXIS=1 << DTR C-Port is reporting errors. >>	If FSECO=0 then FSER=0; MRI_UNITDATA.indication (RPRT_ERR); [QUE_RPRT_ERR_PDU (optional-x)]; SET ERR_SCNTR=0
	3425	TSER=E & FSJC=1 & FSECO=1	TSER=R
	3423	TSSL=E & FSSLD=1 << Occurs only when FSPDA=1. >>	FSSL=1
	3424	TSWFD=E & FSJC=1 & FSWFA=0 & MS=SOPT << Occurs only when FSPDA=1. >>	FSWFA=1