

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE77\_N05  
**Group** : Common/DLLE/MFOEstablished/S7/S77/Invalid/  
**Purpose** : Verify that the IUT on receipt of an out of sequence I-FRAME (P=0) (which causes a new selective reject condition to occur), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R) < N(S) < V(R)+k$  (new frame, not the next expected frame)

DISCARDS the content of the I-FRAME and updates its V(A) with N(R) (of the received I-FRAME).

The IUT is expected to remain in the MFE substate (7.7 —Peer Receiver Busy—SREJ Recovery and Own Receiver Busy).

**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S77			
2		MDLP!frame (NSError:= (VS+3) MOD ModVal)	_JFrame1( SndCmd, P0, NSError, VR)		(1)
3		START T200			
4	L1	+UNEXPECTED_S77			
5		GOTO L1			
6		?TIMEOUT T200			(2)
7		MDLP! RR	RR_V( SndCmd, P1, VR)		(3)
8		START T200			
9	L2	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)	(P)	(4)
10		+POST_S1			
11		+UNEXPECTED_S77			
12		GOTO L2			
13		MDLP?OTHERWISE CANCEL T200			(F)
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL T200			(F)
16		+POST_S1			

**Detailed Comments** : (1) Cause a new selective reject condition. Note that the IUT is already in the SREJ Recovery state. E.g. I (P=0) with NS=VS+1 already transmitted. Transmitting the same frame would not cause a new selective reject condition to occur, the IUT should treat such a frame as a duplicate frame and simply discard it.

(2) Wait T200 to verify that the IUT does not transmit anything.

(3) Verify that the IUT has not changed its NR.

(4) IUTs NR must be equal to the Tester's VS.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE77_N06					
<b>Group</b> : Common/DLLE/MFOEstablished/S7/S77/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an out of sequence I-FRAME (P=0), where the following conditions hold:					
$V(A) \leq N(R) = V(S)$ (acknowledges no new frames or all frames sent to date), and $V(R)+k \leq N(S) < V(R)-k$ (outside the receive window)					
transmits a SABME (P=1) frame.					
The IUT is expected to enter the Awaiting Establishment state (5.1 --Re-Establish).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S77			
2		(NSErr:= (VS+ rxK +1) MOD ModVal)			
3		MDLP!frame	IjFrame1( SndCmd, P0, NSErr, VR)		(1)
4		START T200			
5	L1	MDLP?SABME CANCEL T200	SABME_V( RcvCmd, P1)	(P)	(2)
6		+VER_S51			
7		+POST_S1			
8		+UNEXPECTED_S77			
9		GOTO L1			
10		?TIMEOUT T200		(F)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			
<b>Detailed Comments</b> : (1) Send an I-frame whose N(S) value is outside the receive window size. The upper bound was selected. One could also write a test using $NS = VR - k - 1$ instead. This would be covered in a full conformance test suite.					
(2) The IUT is expected to Re-Establish the link.					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE77_N07a					
<b>Group</b> : Common/DLLE/MFOEstablished/S7/S77/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an I-FRAME (P=0) with an N(R) error, where the following condition holds: $V(S) < N(R) < V(A)$ (N(R) error) transmits a FRMR (F=1) with the Z bit set to 1 followed by a SABME (P=1) frame.  The IUT is expected to enter the Awaiting establishment state (5.1 Re-Establish).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S77			
2		(NRErr := (VR + 1) MOD ModVal)			
3		MDLP?Iframe	I_Frame1(SndCmd, P0, VS, NRErr)		(1)
4		START T200			
5	L1	MDLP?FRMR CANCEL T200	FRMR_I_NRErr(Cmd, RcvRsp, F0, NRErr, VS, VR)		(2)
6		START Twait			
7	L2	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
8		+VER_S51			
9		+POST_S1 _			
10		+UNEXPECTED_S77			
11		GOTO L2			
12		?TIMEOUT T200		(F)	
13		+POST_S1			
14		MDLP?OTHERWISE CANCEL Twait		(F)	
15		+POST_S1			
16		+UNEXPECTED_S77			
17		GOTO L1			
18		?TIMEOUT T200		(F)	
19		+POST_S1			
20		MDLP?OTHERWISE CANCEL T200		(F)	
21		+POST_S1			
<b>Detailed Comments</b> : (1) Inject an NR error.  (2) IUT has identified the NR error.  (3) The IUT is expected to Re-Establish the link.					

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE77\_N07b  
**Group** : Common/DLLE/MFOEstablished/S7/S77/Invalid/  
**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0) with an N(R) error, where the following condition hold:  $V(S) < N(R) < V(A)$  (N(R) error) transmits a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establish state ( 5.1 ---Re-Establish).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S77			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!lframe	I_iFrame1(SndCmd, P0, VS, NRError)		
4		START T200			
5	L1	MDLP?SABME CANCEL T200	SABME_V(RcvCmd ,P1)	(P)	
6		+VER_S51			
7		+POST_S1			
8		+UNEXPECTED_S77			(1)
9		GOTO L1			
10		?TIMEOUT T200		(F)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) IUT has identified the NR error and is expected to Re-Establish the link.



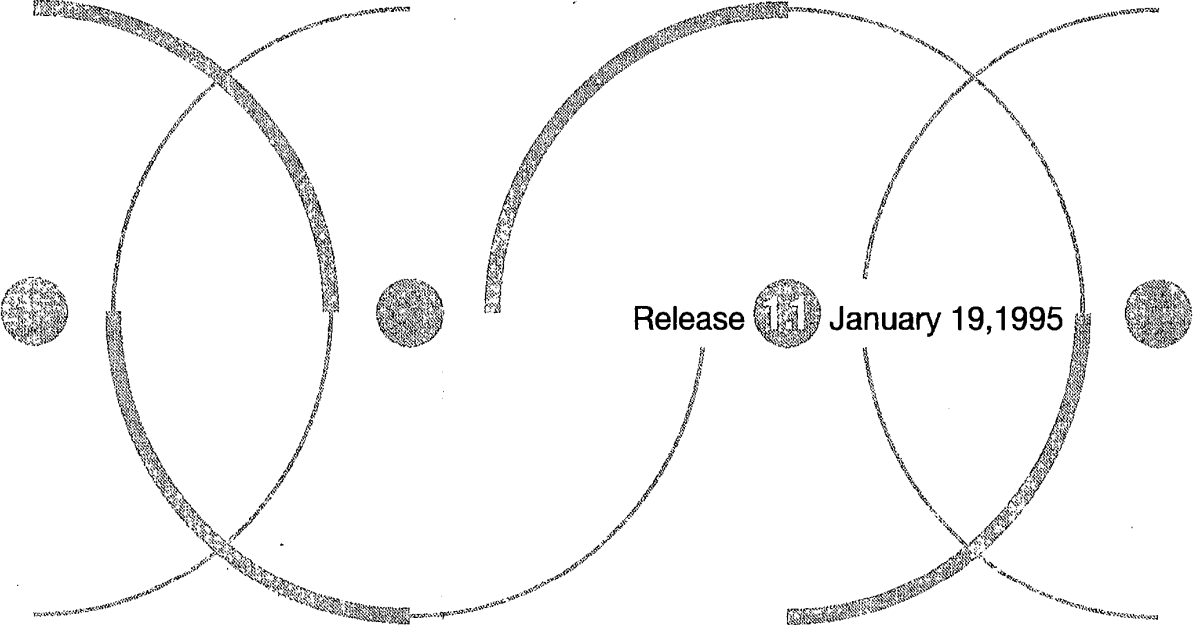
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# Cellular Digital Packet Data System Specification



Book **8**  
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Release **1.1** January 19, 1995

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QBB224843

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE80\_V01

**Group** : Common/DLLE/MFOEstablished/S8/S80/Valid/

**Purpose** : Verify that the IUT can transmit a SABME (P=1) .

The IUT is expected to enter the Awaiting Establishment state (5.0 Establish).

**Default** :

**Configuration** :

**Comments** : IUT must be able to send a SABME (P=1) on demand.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			
2		<IUTISABME>	SABME_V(RcvCmd , P1)		(1)
3		START Toper			
4	L1	MDLP?SABME CANCEL Toper	SABME_V(RcvCmd , P1)	(P)	
5		+VER_S50			(2)
6		+POST_S1			(3)
7		+UNEXPECTED_S80			(3a)
8		GOTO L1			
9		?TIMEOUT Toper		(I)	(4)
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Toper		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Request the IUT to transmit a SABME (P=1) command frame. This simulates the reception of a DL-ESTABLISH request at the IUT's upper MDLP service interface.

(2) Verify that the IUT has changed to state S50. Side effect that IUT enters S80 upon successful completion.

(3) Return the IUT to a stable state.

(3a) IUT might retransmit

(4) Operator was unable to transmit the requested frame on time. This test should be re-executed in this case.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE80_V02					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S80/Valid/					
<b>Purpose</b> : Verify that the IUT transmits a UA (F=1) frame in response to a SABME (P=1) frame The IUT is expected to enter the MFE substate (7.0.1 --not in sleep mode).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			
2		MDLPISABME	SABME_V ( SndCmd, P1)		
3		START T200			
4	L1	MDLP?UA ( RC:=0, VS:=0, VR:=0, VA:=0) CANCEL T200	UA_V ( RcvRsp, F1)	(P)	(1)
5		+VER_S701			(2)
6		+POST_S1			(3)
7		+UNEXPECTED_S80			
8		GOTO L1			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			
<b>Detailed Comments</b> : (1) Initialize State variables. (2) Ensure that the IUT is in MFE S80. (3) Return IUT to a known stable state.  Note: In practice, the IUT is expected to respond to the first transmission of the SABME frame.					



### Test Case Dynamic Behaviour

**Test Case Name** : MFOE80\_V03

**Group** : Common/DLLE/MFOEstablished/S8/S80/Valid/

**Purpose** : Verify that the IUT, on receipt of a DISC(P=1) frame, transmits a UA (F=1) frame.

The IUT is expected to enter the TEI Unassigned state (1).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		MDLPIDISC (RC :=0) START T200	DISC_V (SndCmd, P1)		
3	L1	MDLP?UA CANCEL T200	UA_V (RcvRsp, F1)	(P)	
4		+VER_S10			(2)
5		+POST_S1			
6		+UNEXPECTED_S80			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.0 --Normal--Normal). This is done by putting the IUT in S74, waiting for a T200 Timeout and receipt of an RR(P=1) command and responded to with an RR(F=0).

(2) Verify that the IUT has returned to TEI Unassigned state.

Note: In practice the IUT is expected to respond to the first transmission of the DISC frame.

Caveat: An M-ES should not attempt to deregister it's NEIs by transmitting ESBs encapsulated in MDLP I-frames prior to sending the UA. The MD-IS after transmitting a DISC command will be in the Awaiting Release state and will simply ignore these frame. Sending an I-frame in response to the DISC will result in test case failure.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE80_V04 <b>Group</b> : Common/DLLE/MFOEstablished/S8/S80/Valid/ <b>Purpose</b> : Verify that the IUT on receipt of a DM(F=0) frame transmits a SABME(P=1) frame. <p style="margin-left: 40px;">The IUT is expected to enter the Re-Establish substate (5.1).</p> <b>Default</b> : <b>Configuration</b> : <b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			
2		MDLPIDM START T200	DM_V (SndRsp, F0)		(1)
3	L1	MDLP?SABME CANCEL T200	SABME_V (RcvCmd, P1)	(P)	(2)
4		+VER_S51			
5		+POST_S1			
6		+UNEXPECTED_S80			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			
<b>Detailed Comments</b> : (1) Indicate to the IUT that the Tester is in Disconnected Mode (DM). <p style="margin-left: 40px;">(2) The IUT is expected to Re-Establish the link.</p>					

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE80\_V05  
**Group** : Common/DLLE/MFOEstablished/S8/S80/Valid/  
**Purpose** : Verify that the IUT on receipt of a TEST (P=0) frame responds with TEST (F=0) frame.  
 The IUT is expected to remain in the Timer Recovery state (8.0 —Normal—Normal)  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			
2		MDLPITEST	TEST_Frame1( SndCmd, P0)		(1)
3		START Twait			
4	L1	MDLP?TEST CANCEL Twait	TEST_Frame1( RcvRsp, F0)	(P)	(1)
5		+VER_S80			(2)
6		+POST_S1			
7		+UNEXPECTED_S80			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Exchange of TEST frames should not modify any of the state variables.

(2) The IUT should still be in the same state as prior to the TEST frame exchange.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE80\_V06  
**Group** : Common/DLLE/MFOEstablished/S8/S80/Valid/  
**Purpose** : Verify that the IUT on receipt of a FRMR response frame rejecting a UA frame transmits a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 —Re—Establish).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		MDLP FRMR	FRMR_UA(Cmd, SndRsp, F1, VR, VS)		(2)
3		START T200			
4	L1	MDLP?SABME CANCEL T200	SABME_V (RcvCmd, P1)	(P)	(3)
5		+VER_S51			
6		+POST_S1			
7		+UNEXPECTED_S80			
8		GOTO L1			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.0 --Normal--Normal). This is done by putting the IUT in S74, waiting for a T200 Timeout and receipt of an RR(P=1) command and responded to with an RR(F=0).  
 (2) Reject a UA frame. Note that the IUT should respond according to the protocol in spite of the fact that a valid UA frame was received during the connection establishment.  
 (3) The IUT is expected to Re—Establish the link.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE80\_V07  
**Group** : Common/DLLE/MFOEstablished/S8/S80/Valid/  
**Purpose** : Verify that the IUT on receipt of an RR (P=1) frame where  $V(A) \leq N(R) \leq V(S)$  transmits a RR (F=1) frame.  
 The IUT is expected to remain in the Timer Recovery state (8.0 —Normal—Normal)  
**Default** :  
**Configuration** :  
**Comments** : Acknowledges all frames sent by the IUT.

Nr	Label	Behaviour Description	Constraints Ref	Verdl	Comments
1		+PRE_S80			(1)
2		MDLPIRR	RR_V( SndCmd, P1, VR)		(2)
3		START T200			
4	L1	MDLP?RR CANCEL T200	RR_V( RcvRsp, F1, VS)	(P)	(3)
5		+POST_S1			
6		+UNEXPECTED_S80			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.0 —Normal—Normal). This is done by putting the IUT in S74, waiting for a T200 Timeout and receipt of an RR(P=1) command and responded to with an RR(F=0).

(2) Request the IUT's current NR value. The IUT must respond as poll bit is set.  $V(A) \leq N(R)$  means that new I frames may or may not have been acknowledged.  $N(R) \leq V(S)$  means that some or all of the transmitted I frames may be acknowledged.

(3) Receipt of the RR frame implies that we are still in S80.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE80_V08					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S80/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of RR (F=1) frame where $V(A) \leq N(R) < V(S)$ , requeues all I frames where $V(A) \leq N(S) < V(S)$ and sets its V(S) equal to N(R).					
The IUT is expected to enter the MFE substate (7.0.1 —not in sleep mode).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		(CurVR:=VR)			(2)
3		+RequestNIFrames(2)			(3)
4		MDLP!RR	RR_V(SndRsp,F1, CurVR)		(4)
5		<IUT!lframe>			(5)
6		START Toper			
7	L1	MDLP?lframe CANCEL Toper	L_V(RcvCmd, P0, CurVR, VS)	(P)	(6)
8		+POST_S1			
9		+UNEXPECTED_S80			
10		GOTO L1			
11		?TIMEOUT Toper		(I)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Toper		(F)	
14		+POST_S1			
<p><b>Detailed Comments</b> : (1) Place the IUT in the Timer Recovery state (8.0 —Normal—Normal).</p> <p>(2) Save the current VR value.</p> <p>(3) Request the Test Operator to transmit 2 frames. These frames are not acknowledged.</p> <p>(4) Tx an unsolicited RR(F=1). The IUT should rewind its queue transmit queue, then set <math>V(S)=N(R)</math>.</p> <p>(5) Request another I frame. Note that no constraint is provided here.</p> <p>(6) Contents of I frame data field is not important, only NS, NR values are of concern. It is expected that the IUT's <math>NS=CurVR</math> as queue was rewind.</p> <p>E.g. In this test:</p> <p>IUT: VA=0, VR=0, VS=0            TESTER: VA=0, VR=0, VS=0</p> <pre>           IUT           Tester           ---           ---           I(NS=0, NR=0) ----&gt; VA=0, VS=0, VR=1           I(NS=1, NR=0) ----&gt; VA=0, VS=0, VR=2           </pre>					

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**Test Case Dynamic Behaviour**

Detailed Comments : ...

← RR(F=1) (NR=0)

Note: Although I frames were received, indicate to the IUT that nothing has yet been received. A RR (F=1) with NR=2 would be used if acking received frames.

The IUT rewinds the queue using  $V(A) < N(S) < V(S)$  constraint.

VA=0, VR=0, VS=0 (e.g. VS=NR in received RR).

The next I frame to be received should be:

I(NS=0, NR=0) → VA=0, VS=0, VR=1

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE80\_V09

**Group** : Common/DLLE/MFOEstablished/S8/S80/Valid/

**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame where  $V(A) \leq N(R) < V(S)$  (N(R) does not acknowledge frames), resends the I-FRAME(s) indicated by the N(R) contained in the SREJ frame.

The IUT is expected to remain in the Timer Recovery state (8.0 ---Normal---Normal).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		+RequestNIFrames (2)			(2)
3		( NRRResend := (VR - 1) MOD ModVal)			(3)
4		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRRResend )		(4)
5	L1	MDLP?Iframe CANCEL Twait	I_V (RcvCmd, P0, NRRResend, VS )	(P)	(5)
6		+POST_S1			
7		+UNEXPECTED_S80			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.0 ---Normal---Normal). This is done by putting the IUT in S74, waiting for a T200 Timeout and receipt of an RR(P=1) command and responded to with an RR(F=0).

(2) IUT sends 2 I frame.

(3) Set NR to request the last transmitted I-frame.

(4) Tester requests that the IUT retransmit the VR-1 frame (last transmitted I-frame as VR is incremented by 1 each time the tester receives an I frame

(5) The requested I frame was received.

Note: The following test assumes that once an I frame has been transmitted (by operator intervention), that it is stored internally and will be retransmitted automatically without any further operator intervention.



**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE80\_V10  
**Group** : Common/DLLE/MFOEstablished/S8/S80/Valid/  
**Purpose** : Verify that the IUT on receipt of an RNR (P=1) frame where  $V(A) \leq N(R) \leq V(S)$ , transmits an RR (F=1) frame.  
 The IUT is expected to enter the Timer Recover state (8.4 —Peer Receiver Busy —Normal).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		MDLPI RNR START T200	RNR_V(SndCmd, P1, VR)		(2)
3	L1	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)	(P)	(3)
4		+VER_S84			
5		+POST_S1			
6		+UNEXPECTED_S80			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.0 —Normal—Normal). This is done by putting the IUT in S74, waiting for a T200 Timeout and receipt of an RR(P=1) command and responded to with an RR(F=0).  
 (2) Indicate to IUT that tester is in own receiver busy. Poll bit set (P=1), therefore IUT must respond. Note that tester acknowledges all I-frames that have been sent. E.g.  $N(R) \leq V(S)$ .  
 (3) IUT's NR= Tester's VS.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE80\_V11  
**Group** : Common/DLLE/MFOEstablished/S8/S80/Valid/  
**Purpose** : Verify that the IUT on receipt of RNR (F=1) frame where  $V(A) \leq N(R) < V(S)$ , requeues all I frames where  $V(A) \leq N(S) < V(S)$  and sets its  $V(S)$  equal to  $N(R)$ .  
 The IUT is expected to enter the MFE substate (7.4 —Peer Receiver Busy—Normal).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		(CurVR:=VR)			(2)
3		+RequestNIFrames(2)			(3)
4		MDLPIRNR	RNR_V(SndRsp,F1, CurVR)		(4)
5		MDLPIRR	RR_V(SndCmd,P0, CurVR)		(4a)
6		START T200			
7	L1	+UNEXPECTED_S701			
8		GOTO L1			
9		?TIMEOUT T200			
10		<IUTIframe>			(5)
11		START Toper			
12	L2	MDLP?Iframe CANCEL Toper	L_V(RcvCmd, P0, CurVR, VS)	(P)	(6)
13		+POST_S1			
14		+UNEXPECTED_S80			
15		GOTO L2			
16		?TIMEOUT Toper			(I)
17		+POST_S1			
18		MDLP?OTHERWISE CANCEL Toper			(F)
19		+POST_S1			
20		MDLP?OTHERWISE CANCEL T200			(F)
21		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.0 —Normal—Normal).  
 (2) Save the current VR value.  
 (3) Request the Test Operator to transmit 2 frames. These frames are not acknowledged.  
 (4) Tx an unsolicited RR(F=1). The IUT should rewind its queue transmit queue, then set  $V(S)=N(R)$ .  
 (4a) Tx an RR frame to allow the IUT to transmit an I frame to the tester. Otherwise, by definition whe the tester is in Busy condition, the IUT would refuse to transmit an I frame.  
 (5) Request another I frame. Note that no constraint is provided here.  
 (6) Contents of I frame data field is not important, only NS, NR values are of concern. It is expected that the IUT's  $NS=CurVR$  as queue was rewound.

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## Test Case Dynamic Behaviour

Detailed Comments : ...

E.g. In this test:

IUT: VA=0, VR=0, VS=0  
 TESTER: VA=0, VR=0, VS=0

IUT	Tester
---	---
I(NS=0, NR=0) ----->	VA=0, VS=0, VR=1
I(NS=1, NR=0) ----->	VA=0, VS=0, VR=2
	←----- RR(F=1) (NR=0)

Note: Although I frames were received, indicate to the IUT that nothing has yet been received.  
 A RR (F=1) with NR=2 would be used if acking received frames.

The IUT rewinds the queue using  $V(A) < N(S) < V(S)$  constraint.

VA=0, VR=0, VS=0 (e.g. VS=NR in received RR).

The next I frame to be received should be:

I(NS=0, NR=0) ----->	VA=0, VS=0, VR=1
----------------------	------------------

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE80\_V12

**Group** : Common/DLLE/MFOEstablished/S8/S80/Valid/

**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all of them), and  
 $N(S) = V(R)$  (IUTs next to send is the tester's next expected frame to be received)

increments its V(R) by one and updates its V(A) with the N(R) contained in the received frame.

The IUT is expected to remain in the Timer Recovery state ( 8.0 --Normal--Normal)

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		MDLP  frame	I_iFrame1( SndCmd, P0, VS, TempVR)		(2)
3		( VS:=(VS+1) MOD ModVal)			
4		MDLP  RR	RR_V( SndCmd, P1, VR)		(42)
5		START T200			
6	L1	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)	(P)	(3)
7		+POST_S1			
8		+UNEXPECTED_S80			
9		GOTO L1			
10		?TIMEOUT T200		(F)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.0 --Normal--Normal). This is done by putting the IUT in S74, waiting for a T200 Timeout and receipt of an RR(P=1) command and responded to with an RR(F=0. All I frames oreceived to date are acknowledged.

(2) Send I frame.

(4) Request the IUT's current NR. Poll bit set (P=1), therefore IUT must respond. Note that the RR

(5) IUTs NR must be equal to the Tester's VS.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE80\_V13  
**Group** : Common/DLLE/MFOEstablished/S8/S80/Valid/  
**Purpose** : Verify that the IUT upon T200 expiry and retransmission count (RC) is less than the Max. Retransmissions Counter (N200) with  $V(A) < V(S)$  ( Not all transmitted frames have been acknowledged) either retransmits an I-FRAME (P=1) or transmits an RR (P=1).  
 The IUT is expected to enter the Timer Recovery substate (8.0 --Normal--Normal).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		(CurVR:= VR)			(2)
3		+RequestNIFrames (1)			(3)
4		START Twait			(4)
5	L1	MDLP?Iframe	I_V(RcvCmd, P1, CurVR, VS)	(P)	(4)
6		+POST_S1			
7		MDLP?RR	RR_V(RcvCmd, P1, VS)	(P)	(4)
8		+POST_S1			
9		+UNEXPECTED_S80			
10		GOTO L1			
11		?TIMEOUT Twait		(I)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(I)	
14		+POST_S1			

**Detailed Comments** : (1) Save current VR value.

(2) Request the IUT to transmit one I frame. VR is incremented by 1. The I frame is not acknowledged.

(3) The IUT should be in timer recovery. Twait > T200. This is to ensure that the IUTs T200 expires and is placed in timer recovery state.

(4) The IUT is expected to either retransmit the I frame or transmit a RR (P=1) frame following expiry of its T200 timer. Wait for a period of time larger than T200.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE80\_V13a  
**Group** : Common/DLLE/MFOEstablished/S8/S80/Valid/  
**Purpose** : Verify that the IUT, upon T200 expiry where RC=N200 (the retransmission count equals the Max. Retransmission Counter (N200) Re-Establishes the link by transmitting a SABME (P=1) command frame.  
 The IUT is expected to enter the Awaiting Establishment state ( 5.1 —Re-Establish).  
**Default** :  
**Configuration** :  
**Comments** : CHECK: Is I frame transmission necessary? IUT is already in Timer Recovery state

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		(CurVR:= VR)			(1a)
3		+RequestNIFrames (1)			(2)
4	L1	START Twait			(3)
5		MDLP?Iframe	L_V(RcvCmd, P1, CurVR, VS)	(P)	(4)
6		[ RC < n200Value] (RC:= RC +1)			
7		GOTO L1			
8		[ RC = n200Value]			
9		START Twait			
10	L2	MDLP?SABME	SABME_V(RcvCmd , P1)	(P)	
11		+VER_S51			
12		+POST_S1			
13		+UNEXPECTED_S80			
14		GOTO L2			
15		?TIMEOUT Twait		(I)	
16		+POST_S1			
17		MDLP?OTHERWISE CANCEL Twait		(I)	
18		+POST_S1			
19		MDLP?RR	RR_V(RcvCmd, P1, VS)	(P)	(4)
20		[ RC < n200Value] (RC:= RC +1)			
21		GOTO L1			
22		[ RC = n200Value]			
23		START Twait			
24	L3	MDLP?SABME	SABME_V(RcvCmd , P1)	(P)	
25		+VER_S51			
26		+POST_S1			
27		+UNEXPECTED_S80			
28		GOTO L3			
29		?TIMEOUT Twait		(I)	
30		+POST_S1			
31		MDLP?OTHERWISE CANCEL Twait		(I)	

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Test Case Dynamic Behaviour					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
32		+POST_S1			
33		+UNEXPECTED_S80			
34		GOTO L1			
35		?TIMEOUT Twait		(I)	
36		+POST_S1			
37		MDLP?OTHERWISE CANCEL Twait		(I)	
38		+POST_S1			

**Detailed Comments :** (1) Place the IUT in the Timer Recovery state (8.0 ---Normal-Normal). At this point RC=1.

(1a) Save current VR value.

(2) Request the IUT to transmit one I frame. VR is incremented by 1. The I frame is not acknowledged.

(3) The IUT should be in timer recovery. Twait > T200. This is to ensure that the IUTs T200 expires and is placed in timer recovery state.

(4) The IUT is expected to either retransmit the I frame or transmit a RR (P=1) frame following expiry of its T200 timer. Wait for a period of time larger than T200.

Note: the RR and I frames are ignored so that the number of retransmissions will eventually exceed N200. This should cause the IUT to reset the link.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE80\_V14  
**Group** : Common/DLLE/MFOEstablished/S8/S80/Valid/  
**Purpose** : Verify that the IUT on expiry of the T205 timer transmits a RR (F=0) frame.  
 The IUT is expected to remain in the Timer Recovery state ( 8.0 ---Normal-Normal)  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		MDLPIframe	I_iFrame1(SndCmd, P0, VS,VR)		(3)
3		( VS := (VS+1) MOD ModVal)			
4		START T205 (t205Value + delta)			
5	L2	+UNEXPECTED_S80			
6		GOTO L2			
7		?TIMEOUT T205			(4)
8		START T200			
9	L3	MDLP?RR CANCEL T200	RR_V(RcvRsp, F0, VS)	(P)	
10		+POST_S1			
11		+UNEXPECTED_S80			
12		GOTO L3			
13		?TIMEOUT T200		(F)	(4a)
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL T200		(F)	
16		+POST_S1			
17		MDLP?OTHERWISE CANCEL T205		(F)	(5)
18		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.0 ---Normal-Normal). This is done by putting the IUT in S74, waiting for a T200 Timeout and receipt of an RR(P=1) command and responded to with an RR(F=0).

(2) Wait for T200 to timeout. At this point the IUT should be in a steady stable state.

(3) I/P=0 should cause T205 to be started on the IUT side.

(4) Tester should not receive anything from the IUT at least until T205 has expired.

(4a) IUT did not respond with an RR (P0) frame. Note this test assumes that the IUT does not have any I frames to transmit. Test are supposed to be executed in a controlled environment.

(5) some frame received before T205 timeout. If this is the case, one should examine time stamps of the transmitted I frame and the received frame. It may be a borderline case where RR is received only milliseconds prior to expiry of T205.

Note: T205 is the minimum amount of time that an IUT must wait before it can transmit a response. Nothing prevents an IUT to transmit something after expiry of T205, but the IUT should however transmit something prior to expiry of the T200 retransmission timer. T205 << T200.



## Test Case Dynamic Behaviour

**Test Case Name** : MFOE80\_V15

**Group** : Common/DLLE/MFOEstablished/S8/S80/Valid/

**Purpose** : Verify that the IUT, transmits an RNR (F=0) when it enters the own receiver busy condition.

The IUT is expected to enter the Timer Recovery state ( 8.2 --Normal--Own Receiver Busy).

**Default** :

**Configuration** :

**Comments** : The IUT must be able to cause an own receiver busy condition.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			
2		<IUTIRNR>	RNR_V(RcvRsp, F0, VS)		(1)
3		START Toper			
4	L1	MDLP?RNR CANCEL Toper	RNR_V(RcvRsp, F0, VS)	(P)	
5		+VER_S82			
6		+POST_S1			
7		+UNEXPECTED_RR			
8		GOTO L1			
9		+UNEXPECTED_S80			
10		GOTO L1			
11		?TIMEOUT Toper		(I)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Toper		(F)	
14		+POST_S1			

**Detailed Comments** : (1) Test Operator is requested to transmit an RNR. How this is done is IUT dependent.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE80_N01a					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S80/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an RR (P=1) frame containing an N(R) error, transmits an RR(F=1), followed by an FRMR (F=1) followed immediately by a SABME (P=1) frame.					
The IUT is expected to enter the Re-Establish substate (5.1).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : The IUT must tx a FRMR before a SABME					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP?RR START T200	RR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?FRMR CANCEL Twait	FRMR_RR(Cmd, RcvRsp, F1, NRError, VS, VR)		(2a)
7		START Twait			
8	L3	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(2b)
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S80			
12		GOTO L3			
13		?TIMEOUT Twait			(F)
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL Twait			(F)
16		+POST_S1			
17		+UNEXPECTED_S80			
18		GOTO L2			
19		?TIMEOUT Twait			(F)
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Twait			(F)
22		+POST_S1			
23		+UNEXPECTED_S80			
24		GOTO L1			
25		?TIMEOUT T200			(F)
26		+POST_S1			
27		MDLP?OTHERWISE CANCEL T200			(F)
28		+POST_S1			
<b>Detailed Comments</b> : (1) Inject an NR error.					
(2) IUT's NR = Tester's VS.					

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**Test Case Dynamic Behaviour**

**Detailed Comments : ...**

(2a) The IUT correctly identified the erroneous RR frame.

(2b) The IUT attempts to Re-Establish the link.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE80\_N01b  
**Group** : Common/DLLE/MFOEstablished/S8/S80/Invalid/  
**Purpose** : Verify that the IUT on receipt of an RR (P=1) frame containing an N(R) error, transmits an RR (F=1) followed immediately by a SABME (P=1) frame.  
 The IUT is expected to enter the Re-Establish substate (5.1).  
**Default** :  
**Configuration** :  
**Comments** : The IUT does not transmit the optional FRMR.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!RR START T200	RR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S80			
10		GOTO L2			
11		?TIMEOUT Twait			(F)
12		+POST_S1			(F)
13		MDLP?OTHERWISE CANCEL Twait			
14		+POST_S1			
15		+UNEXPECTED_S80			
16		GOTO L1			(F)
17		?TIMEOUT T200			
18		+POST_S1			(F)
19		MDLP?OTHERWISE CANCEL T200			
20		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.  
 (2) The IUT's NR should be equal to the Tester's VS  
 (3) IUT attempts to Re-Establish the link as expected. This indicates that it has identified the NR error.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE80\_N02a  
**Group** : Common/DLLE/MFOEstablished/S8/S80/Invalid/  
**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame containing an N(R) error, transmits an FRMR (F=0) frame with the Z bit set and transmits a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 —Re—Establish)  
**Default** :  
**Configuration** :  
**Comments** : The IUT must send an FRMR prior to transmitting the SABME if this test is selected. Note: A full conformance ATS would also verify this behaviour for SREJ (F=0).

=1)

ments

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRError)		(1)
4	L1	MDLP?FRMR CANCEL Twait	FRMR_SREJ(Cmd, RcvRsp, F1, NRError, VS, VR)		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S80			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S80			
16		GOTO L1			
17		?TIMEOUT Twait		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL Twait		(F)	
20		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.  
 (2) The IUT has recognized the invalid NR value.  
 (3) The IUT attempts to Re—Establish the link.

NR

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE80_N02b					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S80/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an SREJ (P=0) frame containing an N(R) error, transmits a SABME (P=1) frame.  The IUT is expected to enter the Awaiting Establishment state (5.1 --Re-Establish)					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : IUT does not transmit the optional FRMR frame but immediately attempts to Re-Establish the link.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRError)		(1)
4	L1	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(2)
5		+VER_S51			
6		+POST_S1			(3)
7		+UNEXPECTED_S80			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	(4)
12		+POST_S1			
<b>Detailed Comments</b> : (1) Inject an NR error which should be rejected by the IUT.  (2) IUT correctly attempts to Re-Establish the link.  (3) Return the IUT to TEI Unassigned state.  (4) If an FRMR frame causes the test case failure, the test operator should have indicated in the PIXIT that the IUT DOES transmit the optional FRMR frame.					

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE80\_N03a  
**Group** : Common/DLLE/MFOEstablished/S8/S80/Invalid/  
**Purpose** : Verify that the IUT on receipt of an RNR (P=1) frame containing an N(R) error transmits a RR(F=1), followed by an FRMR (F=1) and a SABME (P=1) frame.  
 The IUT is expected to enter Awaiting Establishment state (5.1 --Re-Establish substate).  
**Default** :  
**Configuration** :  
**Comments** : The IUT must tx a FRMR before a SABME (P=1)

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPIRNR START T200	RNR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)		
5		START Twait			
6	L2	MDLP?FRMR CANCEL Twait	FRMR_RNR(Cmd, RcvRsp, F1, NRError, VS, VR)		(2)
7		START Twait			
8	L3	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S80			
12		GOTO L3			
13		?TIMEOUT Twait		(F)	
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL Twait		(F)	
16		+POST_S1			
17		+UNEXPECTED_S80			
18		GOTO L2			
19		?TIMEOUT Twait		(F)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Twait		(F)	
22		+POST_S1			
23		+UNEXPECTED_S80			
24		GOTO L1			
25		?TIMEOUT T200		(F)	
26		+POST_S1			
27		MDLP?OTHERWISE CANCEL T200		(F)	
28		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.  
 (2) IUT has recognized the erroneous frame.

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**MDLP Abstract Test Suite**

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Test Case Dynamic Behaviour	
Detailed Comments : ...	
(3) IUT should attempt to Re-Establish the link after transmitting the FRMR.	

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE80_N03b					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S80/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an RNR (P=1) frame containing an N(R) error, transmits a RR (F=1) followed immediately by a SABME (P=1) frame.					
The IUT is expected to enter Awaiting Establishment state (5.1 —Re-Establish substate).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : The IUT does not transmit the optional FRMR.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPIRNR START T200	RNR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RR CANCEL T200	RR_V (RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S80			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S80			
16		GOTO L1			
17		?TIMEOUT T200		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL T200		(F)	
20		+POST_S1			
<b>Detailed Comments</b> : (1) Inject an NR error.					
(2) IUT's NR = Tester's VS.					
(3) IUT should attempt to Re-Establish the link. This indicates that it has recognized the erroneous RNR frame.					



**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE80\_N04  
**Group** : Common/DLLE/MFOEstablished/S8/S80/Invalid/  
**Purpose** : Verify that the IUT on receipt of a duplicate I-FRAME (P=0), where the following conditions hold:  
 $V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R) - k \leq N(S) < V(R)$  (duplicate frame)  
 DISCARDS the I-FRAME data after updating its V(A) with the N(R) in the received frame.  
 The IUT is expected to remain in the Timer Recovery state (8.0 ---Normal-Normal)  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		(DupVS := VS)			(1a)
3		MDLP!lframe	I_jFrame1( SndCmd, P0, VS, VR)		
4		( VS:= (VS+1) MOD ModVal)			
5		MDLP!lframe	I_jFrame1( SndCmd, P0, DupVS, VR)		(2)
6		START T200			
7	L1	+UNEXPECTED_S80			
8		GOTO L1			
9		?TIMEOUT T200			
10		MDLP!RR	RR_V( SndCmd, P1, VR)		(3)
11		START T200			
12	L2	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)	(P)	(4)
13		+POST_S1			
14		+UNEXPECTED_S80			
15		GOTO L2			
16		?TIMEOUT T200			(F)
17		+POST_S1			
18		MDLP?OTHERWISE CANCEL T200			(F)
19		+POST_S1			
20		MDLP?OTHERWISE CANCEL T200			(F)
21		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.0 ---Normal-Normal). This is done by putting the IUT in S74, waiting for a T200 Timeout and receipt of an RR(P=1) command and responded to with an RR(F=0).

(1a) Set up VS value for duplicate frame.

(2) VS is not incremented as this is a duplicate frame. The IUT should not increment its NR on receipt of this duplicate frame.

(3) Verify that the IUT discarded the duplicate I-frame by requesting the IUT's current NR.

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Test Case Dynamic Behaviour	
Detailed Comments : ...	
(4) The IUT's NR must equal the tester's VS.	

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE80_N05					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S80/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an out of sequence I-FRAME (P=0) (which causes a new selective reject condition to occur), where the following conditions hold:					
$V(A) \leq N(R) = V(S)$ (acknowledges no new frames or all frames sent to date), and $V(R) < N(S) < V(R)+k$ (new frame, not the next expected frame)					
transmit one or more SREJ (P=0) or SREJ (F=0) frames for the missing I-FRAME(s) and updates its V(A) with the N(R) contained in the received frame.					
The IUT is expected to enter the MFE state ( 7.1 --Normal-SREJ Recovery substate).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		MDLP!frame (NSError:= (VS+1) MOD ModVal)	I_Frame1( SndCmd, P0, NSError, VR)		(1a)
3		START T200			
4	L1	MDLP?SREJ CANCEL T200	SREJ_V( RcvCmd, P0, VS)	(P)	(2)
5		+VER_S71			
6		+POST_S1			
7		MDLP?SREJ CANCEL T200	SREJ_V( RcvRsp, F0, VS)	(P)	(2)
8		+VER_S71			
9		+POST_S1			
10		+UNEXPECTED_S80			
11		GOTO L1			
12		?TIMEOUT T200		(F)	
13		+POST_S1			
14		MDLP?OTHERWISE CANCEL T200		(F)	
15		+POST_S1			
<b>Detailed Comments</b> : (1) Place the IUT in the Timer Recovery state (8.0 --Normal-Normal).					
(1a) Cause a selective reject condition.					
(2) Expecting either a SREJ (P=0) or SREJ (F=0) requesting the tester to transmit the skipped I frame.					

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE80\_N06

**Group** : Common/DLLE/MFOEstablished/S8/S80/Invalid/

**Purpose** : Verify that the IUT on receipt of an out of sequence I-FRAME (P=0), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R)+k \leq N(S) < V(R)-k$  (outside the receive window)

transmits a SABME (P=1) frame.

The IUT is expected to enter the Awaiting Establishment state ( 5.1 --Re-Establish).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			
2		(NSErr:= (VS+ rK +1) MOD ModVal)			(1)
3		MDLPIframe	I_jFrame1( SndCmd, P0, NSErr, VR)		(1)
4		START T200			
5	L1	MDLP?SABME CANCEL T200	SABME_V( RcvCmd, P1)	(P)	(2)
6		+VER_S51			
7		+POST_S1			
8		+UNEXPECTED_S80			
9		GOTO L1			
10		?TIMEOUT T200		(F)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			

**Detailed Comments** : (1) Send an I frame whose N(S) value is outside the receive window size. The upper bound was selected. One could also write a test using  $(NS = VR - rK - 1)$  instead. This would be covered in a full conformance test suite. See Part 403 for details regarding rK.

(2) The IUT is expected to Re-Establish the link.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE80_N07a					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S80/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an I-FRAME (P=0) with an N(R) error, where the following condition holds: $V(S) < N(R) < V(A)$ indicating an N(R) error, transmits a FRMR (F=0) with the Z bit set to 1 followed by a SABME (P=1) frame.					
The IUT shall enter the Awaiting Establishment state (5.1 Re-Establish).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			
2		(NRErr := (VR + 1) MOD ModVal)			
3		MDLP?Iframe	I_Frame1(SndCmd, P0, VS, NRErr)		(1)
4		START T200			
5	L1	MDLP?FRMR CANCEL T200	FRMR_L_NRErr(Cmd, RcvRsp, F0, NRErr, VS, VR)		(2)
6		START T200			
7	L2	MDLP?SABME CANCEL T200	SABME_V(RcvCmd, P1)	(P)	(3)
8		+VER_S51			
9		+POST_S1			
10		+UNEXPECTED_S80			
11		GOTO L2			
12		?TIMEOUT T200		(F)	
13		+POST_S1			
14		MDLP?OTHERWISE CANCEL T200		(F)	
15		+POST_S1			
16		+UNEXPECTED_S80			
17		GOTO L1			
18		?TIMEOUT T200		(F)	
19		+POST_S1			
20		MDLP?OTHERWISE CANCEL T200		(F)	
21		+POST_S1			
<b>Detailed Comments</b> : (1) Inject an NR error.					
(2) IUT has identified the NR error.					
(3) The IUT is expected to Re-Establish the link.					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE80_N07b					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S80/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an I-FRAME (P=0) with an N(R) error, where the following condition hold: $V(S) < N(R) < V(A)$ (N(R) error) and transmits a SABME (P=1) frame.  The IUT is expected to enter the Awaiting Establishment state (5.1 —Re—Establish).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!frame	I_iFrame1(SndCmd, P0, VS, NRError)		(1a)
4		START T200			
5	L1	MDLP?SABME CANCEL T200	SABME_V(RcvCmd, P1)	(P)	(2)
6		+VER_S51			
7		+POST_S1			
8		+UNEXPECTED_S80			
9		GOTO L1			
10		?TIMEOUT T200		(F)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			
<b>Detailed Comments</b> : (1) Place the IUT in the Timer Recovery state (8.0 —Normal—Normal). This is done by putting the IUT in S74, waiting for a T200 Timeout and receipt of an RR(P=1) command and responded to with an RR(F=0).  (1a) Inject an NR error.  (2) The IUT is expected to Re—Establish the link.					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE81_V01 <b>Group</b> : Common/DLLE/MFOEstablished/S8/S81/Valid/ <b>Purpose</b> : Verify that the IUT can transmit a SABME (P=1) . <p style="text-align: center;">The IUT is expected to enter the Awaiting Establishment state (5.0 Establish).</p> <b>Default</b> : <b>Configuration</b> : <b>Comments</b> : IUT must be able to send a SABME (P=1) on demand.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			
2		<IUTISABME>	SABME_V(RcvCmd , P1)		(1)
3		START Toper			
4	L1	MDLP?SABME CANCEL Toper	SABME_V(RcvCmd , P1)	(P)	
5		+VER_S50			(2)
6		+POST_S1			(3)
7		+UNEXPECTED_S81			
8		GOTO L1			
9		?TIMEOUT Toper		(I)	(4)
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Toper		(F)	
12		+POST_S1			
<b>Detailed Comments</b> : (1) Request the IUT to transmit a SABME (P=1) command frame This simulates the reception of a DL-ESTABLISH request at the IUT's upper MDLP service interface. (2) Verify that the IUT has changed to state S50. Side effect that IUT enters S81 upon successful completion. (3) Return the IUT to a stable state. (4) Operator was unable to transmit the requested frame on time. This test should be re-executed in this case.					

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE81\_V02  
**Group** : Common/DLLE/MFOEstablished/S8/S81/Valid/  
**Purpose** : Verify that the IUT transmits a UA (F=1) frame in response to a SABME (P=1) frame  
 The IUT is expected to enter the MFE substate (7.0.1 --not in sleep mode).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			
2		MDLPISABME	SABME_V ( SndCmd, P1)		
3		START T200			
4	L1	MDLP?UA ( RC:=0, VS:=0, VR:=0, VA:=0) CANCEL T200	UA_V ( RcvRsp, F1)	(P)	(1)
5		+VER_S701			(2)
6		+POST_S1			(3)
7		+UNEXPECTED_S81			
8		GOTO L1			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Initialize State variables.

(2) Ensure that the IUT is in MFE S81.

(3) Return IUT to a known stable state.

Note: In practice, the IUT is expected to respond to the first transmission of the SABME frame.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE81_V03					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S81/Valid/					
<b>Purpose</b> : Verify that the IUT, on receipt of a DISC(P=1) frame, transmits a UA (F=1) frame.					
The IUT is expected to enter the TEI Unassigned state (1).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			(1)
2		MDLPIDISC START T200	DISC_V (SndCmd, P1)		
3	L1	MDLP?UA CANCEL T200	UA_V (RcvRsp, F1)	(P)	
4		+VER_S10			(2)
5		+POST_S1			
6		+UNEXPECTED_S81			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			
<p><b>Detailed Comments</b> : (1) Place the IUT in the Timer Recovery state (8.1 —Normal—SREJ Recovery). This is done by putting the IUT in S75, waiting for a T200 Timeout and receipt of an RR(P=1) command and responded to with an RR(F=0).</p> <p>(2) Verify that the IUT has returned to TEI Unassigned state.</p> <p>Note: In practice the IUT is expected to respond to the first transmission of the DISC frame.</p> <p>Caveat: An M-ES should not attempt to deregister it's NEIs by transmitting ESBs encapsulated in MDLP I frames prior to sending the UA. The MD-IS after transmitting a DISC command will be in the Awaiting Release state and will simply ignore these frame. Sending an I-frame in response to the DISC will result in test case failure.</p>					



### Test Case Dynamic Behaviour

**Test Case Name** : MFOE81\_V04

**Group** : Common/DLLE/MFOEstablished/S8/S81/Valid/

**Purpose** : Verify that the IUT on receipt of a DM(F=0) frame transmits a SABME(P=1) frame.

The IUT is expected to enter the Re-Establish substate (5.1).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			
2		MDLPIDM START T200	DM_V (SndRsp, F0)		(1)
3	L1	MDLP?SABME CANCEL T200	SABME_V (RcvCmd, P1)	(P)	(2)
4		+VER_S51			
5		+POST_S1			
6		+UNEXPECTED_S81			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Indicate to the IUT that the Tester is in Disconnected Mode (DM).

(2) The IUT is expected to Re-Establish the link.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE81_V05					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S81/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of a TEST (P=0) frame responds with TEST (F=0) frame. The IUT is expected to remain in the Timer Recovery state (8.0 ---Normal---SREJ Recovery).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			
2		MDLP!TEST	TEST_Frame1(SndCmd, P0)		(1)
3		START Twait			
4	L1	MDLP?TEST CANCEL Twait	TEST_Frame1(RcvRsp, F0)	(P)	(1)
5		+VER_S81			(2)
6		+POST_S1			
7		+UNEXPECTED_S81			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	
12		+POST_S1			
<b>Detailed Comments</b> : (1) Exchange of TEST frames should not modify any of the state variables. (2) The IUT should still be in the same state as prior to the TEST frame exchange.					

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE81\_V06  
**Group** : Common/DLLE/MFOEstablished/S8/S81/Valid/  
**Purpose** : Verify that the IUT on receipt of a FRMR response frame rejecting a UA frame transmits a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 —Re-Establish).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			(1)
2		MDLP?FRMR	FRMR_UA(Cmd, SndRsp, F1, VR, VS)		(2)
3		START T200			
4	L1	MDLP?SABME CANCEL T200	SABME_V (RcvCmd, P1)	(P)	(3)
5		+VER_S51			
6		+POST_S1			
7		+UNEXPECTED_S81			
8		GOTO L1			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.1 —Normal—SREJ Recovery). This is done by putting the IUT in S75, waiting for a T200 Timeout and receipt of an RR(P=1) command and responded to with an RR(F=0).

(2) Reject a UA frame. Note that the IUT should respond according to the protocol in spite of the fact that a valid UA frame was received during the connection establishment.

(3) The IUT is expected to Re-Establish the link.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE81_V07					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S81/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of an RR (P=1) frame where $V(A) \leq N(R) \leq V(S)$ transmits a RR (F=1) frame.  The IUT is expected to remain in the Timer Recovery state (8.1 ---Normal--SREJ Recovery)					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : Acknowledges all frames sent by the IUT.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			(1)
2		MDLPIRR	RR_V( SndCmd, P1, VR)		(2)
3		START T200			
4	L1	MDLP?RR CANCEL T200	RR_V (RcvResp, F1, VS)	(P)	(3)
5		+POST_S1			
6		+UNEXPECTED_S81			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			
<b>Detailed Comments</b> : (1) Place the IUT in the Timer Recovery state (8.1 ---Normal--SREJ Recovery). This is done by putting the IUT in S75, waiting for a T200 Timeout and receipt of an RR(P=1) command and responded to with an RR(F=0).  (2) Request the IUT's current NR value. The IUT must respond as poll bit is set. $V(A) \leq N(R)$ means that new I frames may or may not have been acknowledged. $N(R) \leq V(S)$ means that some or all of the transmitted I frames may be acknowledged.  (3) Receipt of the RR frame implies that we are still in S81.					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE81_V08					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S81/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of RR (F=1) frame where $V(A) \leq N(R) < V(S)$ , requeues all I frames where $V(A) \leq N(S) < V(S)$ and sets its V(S) equal to N(R).  The IUT is expected to enter the MFE substate (7.1 ---Normal-- SREJ Recovery).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : REWRITE TEST:					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			(1)
<b>Detailed Comments</b> :					

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE81\_V09  
**Group** : Common/DLLE/MFOEstablished/S8/S81/Valid/  
**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame where  $V(A) \leq N(R) < V(S)$  (N(R) does not acknowledge frames), resends the I-FRAME(s) indicated by the N(R) contained in the SREJ frame.  
 The IUT is expected to remain in the Timer Recovery state (8.1 --Normal-SREJ Recovery).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			(1)
2		+RequestNIFrames (2)			(2)
3		( NRRResend := (VR - 1) MOD ModVal)			(3)
4		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRRResend )		(4)
5	L1	MDLP?Iframe CANCEL Twait	I_V (RcvCmd, P0, NRRResend, VS )	(P)	(5)
6		+POST_S1			
7		+UNEXPECTED_S81			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.1 --Normal-SREJ Recovery). This is done by putting the IUT in S75, waiting for a T200 Timeout and receipt of an RR(P=1) command and responded to with an RR(F=0).

(2) IUT sends 2 I frame.

(3) Set NR to request the last transmitted I-frame.

(4) Tester requests that the IUT retransmit the VR-1 frame (last transmitted I-frame as VR is incremented by 1 each time the tester receives an I frame

(5) The requested I frame was received.

Note: The following test assumes that once an I frame has been transmitted (by operator intervention), that it is stored internally and will be retransmitted automatically without any further operator intervention.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE81_V10					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S81/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of an RNR (P=1) frame where $V(A) \leq N(R) \leq V(S)$ , transmits an RR (F=1) frame.  The IUT is expected to enter the Timer Recover state (8.5—Peer Receiver Busy—SREJ Recovery).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			(1)
2		MDLP! RNR START T200	RNR_V(SndCmd, P1, VR)		(2)
3	L1	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)	(P)	(3)
4		+VER_S84			
5		+POST_S1			
6		+UNEXPECTED_S81			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			
<p><b>Detailed Comments</b> : (1) Place the IUT in the Timer Recovery state (8.1 —Normal—SREJ Recovery). This is done by putting the IUT in S75, waiting for a T200 Timeout and receipt of an RR(P=1) command and responded to with an RR(F=0).</p> <p>(2) Indicate to IUT that tester is in own receiver busy. Poll bit set (P=1), therefore IUT must respond. Note that tester acknowledges all I-frames that have been sent. E.g. <math>N(R) \leq V(S)</math>.</p> <p>(3) IUT's NR= Tester's VS.</p>					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE81_V11					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S81/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of RNR (F=1) frame where $V(A) \leq N(R) < V(S)$ , requeues all I frames where $V(A) \leq N(S) < V(S)$ and sets its V(S) equal to N(R).  The IUT is expected to enter the MFE substate (7.5 —Peer Receiver Busy—SREJ Recovery).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : REWRITE TEST:					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			(1)
<b>Detailed Comments</b> :					

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE81\_V12  
**Group** : Common/DLLE/MFOEstablished/S8/S81/Valid/  
**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0), where the following conditions hold:  
 $V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $N(S) = V(R)$  (IUTs next to send is the tester's next expected frame to be received)  
 increments its V(R) by one and updates its V(A) with the N(R) contained in the received frame.  
 The IUT is expected to remain in the Timer Recovery state ( 8.1 —Normal—SREJ)  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			(1)
2		MDLPIframe	LjFrame1( SndCmd, P0, VS, VR)		
3		( VS:=(VS+1) MOD ModVal)			
4		MDLPI RR	RR_V( SndCmd, P1, VR)		(2)
5		START T200			
6	L2	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)	(P)	(3)
7		+POST_S1			
8		+UNEXPECTED_S81			
9		GOTO L2			
10		?TIMEOUT T200		(F)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.1 —Normal—SREJ Recovery). This is done by putting the IUT in S75, waiting for a T200 Timeout and receipt of an RR(P=1) command and responded to with an RR(F=0). All I frames oreceived to date are acknowledged.  
 (2) Request the IUT's current NR. Poll bit set (P=1), therefore IUT must respond.  
 (3) IUTs NR must be equal to the Tester's VS.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE81_V13					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S81/Valid/					
<b>Purpose</b> : Verify that the IUT upon T200 expiry and retransmission count (RC) is less than the Max. Retransmissions Counter (N200) with $V(A) < V(S)$ ( Not all transmitted frames have been acknowledged). either transmits an I-FRAME (P=1) or transmits an RR (P=1).  The IUT is expected to enter the Timer Recovery substate (8.1 —Normal—SREJ Recovery).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : CHECK: Is I frame transmission necessary? IUT is already in Timer Recovery state					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			
2		(CurVR:= VR)			(1)
3		+RequestNIFrames (1)			(2)
4		START Twait			(3)
5	L1	MDLP?Iframe	I_V(RcvCmd, P1, CurVR, VS)	(P)	(4)
6		+POST_S1			
7		MDLP?RR	RR_V(RcvCmd, P1, VS)	(P)	(4)
8		+POST_S1			
9		+UNEXPECTED_S81			
10		GOTO L1			
11		?TIMEOUT Twait			(I)
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait			(I)
14		+POST_S1			
<b>Detailed Comments</b> : (1) Save current VR value.  (2) Request the IUT to transmit one I frame. VR is incremented by 1. The I frame is not acknowledged.  (3) The IUT should be in timer recovery. Twait > T200. This is to ensure that the IUTs T200 expires and is placed in timer recovery state.  (4) The IUT is expected to either retransmit the I frame or transmit a RR (P=1) frame following expiry of its T200 timer. Wait for a period of time larger than T200.					



Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE81_V13a					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S81/Valid/					
<b>Purpose</b> : Verify that the IUT, upon T200 expiry where RC=N200 (the retransmission count equals the Max. Retransmission Counter (N200) Re-Establishes the link by transmitting a SABME (P=1) command frame.					
The IUT is expected to enter the Awaiting Establishment state ( 5.1 --Re-Establish).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : CHECK: Is I frame transmission necessary? IUT is already in Timer Recovery state					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			(1)
2		(CurVR:= VR)			(1a)
3		+RequestNIFrames (1)			(2)
4	L1	START Twait			(3)
5		MDLP?Iframe	L_V(RcvCmd, P1, CurVR, VS)		(4)
6		[ RC < n200Value] (RC:= RC +1)			
7		GOTO L1			
8		[ RC = n200Value]			
9		START Twait			
10	L2	MDLP?SABME	SABME_V(RcvCmd, P1)	(P)	
11		+VER_S51			
12		+POST_S1			
13		+UNEXPECTED_S81			
14		GOTO L2			
15		?TIMEOUT Twait		(I)	
16		+POST_S1			
17		MDLP?OTHERWISE CANCEL Twait		(I)	
18		+POST_S1			
19		MDLP?RR	RR_V(RcvCmd, P1, VS)		(4)
20		[ RC < n200Value] (RC:= RC +1)			
21		GOTO L1			
22		[ RC = n200Value]			
23		START Twait			
24	L3	MDLP?SABME	SABME_V(RcvCmd, P1)	(P)	
25		+VER_S51			
26		+POST_S1			
27		+UNEXPECTED_S81			
28		GOTO L3			
29		?TIMEOUT Twait		(I)	
30		+POST_S1			
31		MDLP?OTHERWISE CANCEL Twait		(I)	

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Test Case Dynamic Behaviour					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
32		+POST_S1			
33		+UNEXPECTED_S81			
34		GOTO L1			
35		?TIMEOUT Twait		(I)	
36		+POST_S1			
37		MDLP?OTHERWISE CANCEL Twait		(I)	
38		+POST_S1			

**Detailed Comments :** (1) Place the IUT in the Timer Recovery state (8.1 --Normal--SREJ Recovery). At this point RC=1.

(1a) Save current VR value.

(2) Request the IUT to transmit one I frame. VR is incremented by 1. The I frame is not acknowledged.

(3) The IUT should be in timer recovery. Twait > T200. This is to ensure that the IUT's T200 expires and is placed in timer recovery state.

(4) The IUT is expected to either retransmit the I frame or transmit a RR (P=1) frame following expiry of its T200 timer. Wait for a period of time larger than T200.

Note: the RR and I frames are ignored so that the number of retransmissions will eventually exceed N200. This should cause the IUT to reset the link.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE81\_V14

**Group** : Common/DLLE/MFOEstablished/S8/S81/Valid/

**Purpose** : Verify that the IUT on expiry of the T205 timer transmits a RR (F=0) frame.

The IUT is expected to remain in the Timer Recovery state ( 8.1 ---Normal-SREJ Recovery).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			(1)
2		MDLP  frame	I_iFrame1(SndCmd, P0, VS,VR)		(2)
3		( VS := (VS+1) MOD ModVal)			
4		START T205 (t205Value + delta)			
5	L2	+UNEXPECTED_S81			
6		GOTO L2			
7		?TIMEOUT T205			(3)
8		START T200			
9	L3	MDLP?RR CANCEL T200	RR_V(RcvRsp, F0, VS)	(P)	
10		+POST_S1			
11		+UNEXPECTED_S81			
12		GOTO L3			
13		?TIMEOUT T200		(F)	(4)
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL T200		(F)	
16		+POST_S1			
17		MDLP?OTHERWISE CANCEL T205		(F)	(5)
18		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.1 ---Normal-SREJ Recovery). This is done by putting the IUT in S75, waiting for a T200 Timeout and receipt of an RR(P=1) command and responded to with an RR(F=0).

(2) I/P=0 should cause T205 to be started on the IUT side.

(3) Tester should not receive anything from the IUT at least until T205 has expired.

(4) IUT did not respond with an RR (P0) frame. Note this test assumes that the IUT does not have any I frames to transmit. Test are supposed to be executed in a controlled environment.

(5) some frame received before T205 timeout. If this is the case, one should examine time stamps of the transmitted I frame and the received frame. It may be a borderline case where RR is received only milliseconds prior to expiry of T205.

Note: T205 is the minimum amount of time that an IUT must wait before it can transmit a response. Nothing prevents an IUT to transmit something after expiry of T205, but the IUT should however transmit something prior to expiry of the T200 retransmission timer.  $T205 \ll T200$ .

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE81_V15					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S81/Valid/					
<b>Purpose</b> : Verify that the IUT, transmits an RNR (F=0) when it enters the own receiver busy condition. The IUT is expected to enter the Timer Recovery state ( 8.3 ---Normal---SREJ and Own Receiver Busy).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : The IUT must be able to cause an own receiver busy condition.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			
2		<IUTIRNR>	RNR_V(RcvRsp, F0, VS)		(1)
3		START Toper			
4	L1	MDLP?RNR CANCEL Toper	RNR_V(RcvRsp, F0, VS)	(P)	
5		+VER_S83			
6		+POST_S1			
7		+UNEXPECTED_RR			
8		GOTO L1			
9		+UNEXPECTED_S81			
10		GOTO L1			
11		?TIMEOUT Toper		(I)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Toper		(F)	
14		+POST_S1			
<b>Detailed Comments</b> : (1) Test Operator is requested to transmit an RNR. How this is done is IUT dependent.					

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE81\_N01a  
**Group** : Common/DLLE/MFOEstablished/S8/S81/Invalid/  
**Purpose** : Verify that the IUT on receipt of an RR (P=1) frame containing an N(R) error, transmits an RR(F=1), followed by an FRMR (F=1) followed immediately by a SABME (P=1) frame.  
 The IUT is expected to enter the Re-Establish substate (5.1).  
**Default** :  
**Configuration** :  
**Comments** : The IUT must tx a FRMR before a SABME

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP?RR START T200	RR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RR CANCEL T200	RR_V (RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?FRMR CANCEL Twait	FRMR_RR(Cmd, RcvRsp, F1, NRError, VS, VR)		(2a)
7		START Twait			
8	L3	MDLP?SABME CANCEL Twait	SABME_V( RcvCmd, P1)	(P)	(2b)
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S81			
12		GOTO L3			
13		?TIMEOUT Twait		(F)	
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL Twait		(F)	
16		+POST_S1			
17		+UNEXPECTED_S81			
18		GOTO L2			
19		?TIMEOUT Twait		(F)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Twait		(F)	
22		+POST_S1			
23		+UNEXPECTED_S81			
24		GOTO L1			
25		?TIMEOUT T200		(F)	
26		+POST_S1			
27		MDLP?OTHERWISE CANCEL T200		(F)	
28		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) IUT's NR = Tester's VS.

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**Test Case Dynamic Behaviour**

**Detailed Comments : ...**

(2a) The IUT correctly identified the erroneous RR frame.

(2b) The IUT attempts to Re-Establish the link.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE81\_N01b  
**Group** : Common/DLLE/MFOEstablished/S8/S81/Invalid/  
**Purpose** : Verify that the IUT on receipt of an RR (P=1) frame containing an N(R) error, transmits an RR (F=1) followed immediately by a SABME (P=1) frame.  
 The IUT is expected to enter the Re-Establish substate (5.1).  
**Default** :  
**Configuration** :  
**Comments** : The IUT does not transmit the optional FRMR.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPIRR START T200	RR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S81			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S81			
16		GOTO L1			
17		?TIMEOUT T200		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL T200		(F)	
20		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) The IUT's NR should be equal to the Tester's VS

(3) IUT attempts to Re-Establish the link as expected. This indicates that it has identified the NR error.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE81_N02a					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S81/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an SREJ (P=0) frame containing an N(R) error, transmits an FRMR (F=0) frame with the Z bit set and transmits a SABME (P=1) frame. The IUT is expected to enter the Awaiting Establishment state (5.1 —Re-Establish)					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : The IUT must send an FRMR prior to transmitting the SABME if this test is selected. Note: A full conformance ATS would also verify this behaviour for SREJ (F=0).					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRError)		(1)
4	L1	MDLP?FRMR CANCEL Twait	FRMR_SREJ(Cmd, RcvRsp, F1, NRError, VS, VR)		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S81			
10		GOTO L2			
11		?TIMEOUT Twait			(F)
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait			(F)
14		+POST_S1			
15		+UNEXPECTED_S81			
16		GOTO L1			
17		?TIMEOUT Twait			(F)
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL Twait			(F)
20		+POST_S1			
<b>Detailed Comments</b> : (1) Inject an NR error. (2) The IUT has recognized the invalid NR value. (3) The IUT attempts to Re-Establish the link.					



## Test Case Dynamic Behaviour

**Test Case Name** : MFOE81\_N02b  
**Group** : Common/DLLE/MFOEstablished/S8/S81/Invalid/  
**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame containing an N(R) error, transmits a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 —Re-Establish)  
**Default** :  
**Configuration** :  
**Comments** : IUT does not transmit the optional FRMR frame but immediately attempts to Re-Establish the link.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRError)		(1)
4	L1	MDLP?SABME CANCEL Twait	SABME_V(RevCmd, P1)	(P)	(2)
5		+VER_S51			
6		+POST_S1			(3)
7		+UNEXPECTED_S81			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	(4)
12		+POST_S1			

**Detailed Comments** : (1) Create an NR error which should be rejected by the IUT.

(2) IUT correctly attempts to Re-Establish the link.

(3) Return the IUT to TEI Unassigned state.

(4) If the FRMR frame causes the test case failure, the test operator should have indicated in the PIXIT that the IUT DOES transmit the optional FRMR frame.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE81\_N03a  
**Group** : Common/DLLE/MFOEstablished/S8/S81/Invalid/  
**Purpose** : Verify that the IUT on receipt of an RNR (P=1) frame containing an N(R) error transmits a RR(F=1), followed by an FRMR (F=1) and a SABME (P=1) frame.  
 The IUT is expected to enter Awaiting Establishment state (5.1 —Re—Establish substate).  
**Default** :  
**Configuration** :  
**Comments** : The IUT must tx a FRMR before a SABME (P=1)

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP?RNR START T200	RNR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)		
5		START Twait			
6	L2	MDLP?FRMR CANCEL Twait	FRMR_RNR(Cmd, RcvRsp, F1, NRError, VS, VR)		(2)
7		START Twait			
8	L3	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S81			
12		GOTO L3			
13		?TIMEOUT Twait		(F)	
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL Twait		(F)	
16		+POST_S1			
17		+UNEXPECTED_S81			
18		GOTO L2			
19		?TIMEOUT Twait		(F)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Twait		(F)	
22		+POST_S1			
23		+UNEXPECTED_S81			
24		GOTO L1			
25		?TIMEOUT T200		(F)	
26		+POST_S1			
27		MDLP?OTHERWISE CANCEL T200		(F)	
28		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.  
 (2) IUT has recognized the erroneous frame.

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<b>Test Case Dynamic Behaviour</b>
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Detailed Comments : ...

(3) IUT should attempt to Re-Establish the link after transmitting the FRMR.

<b>Test Case Dynamic Behaviour</b>
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Test Case Name : MFOE81\_N03b

Group : Common/DLLE/MFOEstablished/S8/S81/Invalid/

Purpose : Verify that the IUT on receipt of an RNR (P=1) frame containing an N(R) error, transmits a RR (F=1) followed immediately by a SABME (P=1) frame.

The IUT is expected to enter Awaiting Establishment state (5.1 —Re-Establish substate).

Default :

Configuration :

Comments : The IUT does not transmit the optional FRMR.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP?RNR START T200	RNR_V(SndCmd, P1, NRError)	(1)	
4	L1	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)	(2)	
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V( RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S81			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S81			
16		GOTO L1			
17		?TIMEOUT T200		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL T200		(F)	
20		+POST_S1			

Detailed Comments : (1) Inject an NR error.

(2) IUT's NR = Tester's VS.

(3) IUT should attempt to Re-Establish the link. This indicates that it has recognized the erroneous RNR frame.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE81\_N04

**Group** : Common/DLLE/MFOEstablished/S8/S81/Invalid/

**Purpose** : Verify that the IUT on receipt of a duplicate I-FRAME (P=0), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R) - k \leq N(S) < V(R)$  (duplicate frame)

DISCARDS the I-FRAME data after updating its V(A) with the N(R) in the received frame.

The IUT is expected to remain Timer Recovery state (8.1 ---Normal-SREJ Recovery).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			
2		(DupVS := VS)			(1)
3		MDLP!frame	I_iFrame1( SndCmd, P0, VS, VR)		-
4		(VS := (VS+1) MOD ModVal)			
5		MDLP!frame	I_iFrame1( SndCmd, P0, DupVS, VR)		(2)
6		START T200			
7	L1	+UNEXPECTED_S81			
8		GOTO L1			
9		?TIMEOUT T200			
10		MDLP!RR	RR_V( SndCmd, P1, VR)		(3)
11		START T200			
12	L2	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)	(P)	(4)
13		+POST_S1			
14		+UNEXPECTED_S81			
15		GOTO L2			
16		?TIMEOUT T200			(F)
17		+POST_S1			
18		MDLP?OTHERWISE CANCEL T200			(F)
19		+POST_S1			
20		MDLP?OTHERWISE CANCEL T200			(F)
21		+POST_S1			

**Detailed Comments** : (1) Set up VS value for duplicate frame.

(2) VS is not incremented as this is a duplicate frame. The IUT should not increment its NR on receipt of this duplicate frame.

(3) Verify that the IUT discarded the duplicate I-frame by requesting the IUT's current NR.

(4) The IUT's NR must equal the tester's VS.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE81\_N05  
**Group** : Common/DLLE/MFOEstablished/S8/S81/Invalid/  
**Purpose** : Verify that the IUT on receipt of an out of sequence I-FRAME (P=0) (which causes a new selective reject condition to occur), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R) < N(S) < V(R)+k$  (new frame, not the next expected frame)

transmit one or more SREJ (P=0) or SREJ (F=0) frames for the missing I-FRAME(s) and updates its V(A) with the N(R) contained in the received frame.

The IUT is expected to enter the Timer Recovery state (7.1 —Normal—SREJ Recovery).

**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			
2		MDLPIframe (NError:= (VS+3) MOD ModVal, MissingIFrame:= (NError -1) MOD ModVal)	L_iFrame1( SndCmd, P0, NSError, VR)		(1)
3		START T200			
4	L1	MDLP?SREJ CANCEL T200	SREJ_V( RcvCmd, P0, MissingIFrame)	(P)	(2)
5		+VER_S81			(3)
6		+POST_S1			
7		MDLP?SREJ CANCEL T200	SREJ_V( RcvRsp, F0, MissingIFrame)	(P)	(2)
8		+VER_S81			(3)
9		+POST_S1			
10		+UNEXPECTED_S81			
11		GOTO L1			
12		?TIMEOUT T200		(F)	
13		+POST_S1			
14		MDLP?OTHERWISE CANCEL T200		(F)	
15		+POST_S1			

**Detailed Comments** : (1) Cause a selective reject condition.

(2) Expecting either a SREJ (P=0) or SREJ (F=0) requesting the tester to transmit the skipped I frame.

(3) Only one SREJ frame is expected (i.e. VS+1 used).

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE81\_N06  
**Group** : Common/DLLE/MFOEstablished/S8/S81/Invalid/  
**Purpose** : Verify that the IUT on receipt of an out of sequence I-FRAME (P=0), where the following conditions hold:  
 $V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R)+k \leq N(S) < V(R)-k$  (outside the receive window)  
 transmits a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state ( 5.1 --Re-Establish).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			
2		(NError:= (VS+ rK +1) MOD ModVal)			(1)
3		MDLP!lframe	I_Frame1( SndCmd, P0, NError, VR)		(1)
4		START T200			
5	L1	MDLP?SABME CANCEL T200	SABME_V( RcvCmd, P1)	(P)	(2)
6		+VER_S51			
7		+POST_S1			
8		+UNEXPECTED_S81			
9		GOTO L1			
10		?TIMEOUT T200		(F)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			

**Detailed Comments** : (1) Send an I frame whose N(S) value is outside the receive window size. The upper bound was selected. One could also write a test using  $(NS = VR - rK - 1)$  instead. This would be covered in a full conformance test suite. See Part 403 for details regarding rK.

(2) The IUT is expected to Re-Establish the link.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE81\_N07a  
**Group** : Common/DLLE/MFOEstablished/S8/S81/Invalid/  
**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0) with an N(R) error, where the following condition holds:  $V(S) < N(R) < V(A)$  indicating an N(R) error, transmits a FRMR (F=0) with the Z bit set to 1 followed by a SABME (P=1) frame.  
 The IUT shall enter the Awaiting establishment state (5.1 Re-Establish).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPIframe	I_iFrame1(SndCmd, P0, VS, NRError)		(1)
4		START T200			
5	L1	MDLP?FRMR CANCEL T200	FRMR_I_NRErr(Cmd, RcvRsp, F0, NRError, VS, VR)		(2)
6		START T200			
7	L2	MDLP?SABME CANCEL T200	SABME_V(RcvCmd, P1)	(P)	(3)
8		+VER_S51			
9		+POST_S1			
10		+UNEXPECTED_S81			
11		GOTO L2			
12		?TIMEOUT T200		(F)	
13		+POST_S1			
14		MDLP?OTHERWISE CANCEL T200		(F)	
15		+POST_S1			
16		+UNEXPECTED_S81			
17		GOTO L1			
18		?TIMEOUT T200		(F)	
19		+POST_S1			
20		MDLP?OTHERWISE CANCEL T200		(F)	
21		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.  
 (2) IUT has identified the NR error.  
 (3) The IUT is expected to Re-Establish the link.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE81_N07b					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S81/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an I-FRAME (P=0) with an N(R) error, where the following condition hold: $V(S) < N(R) < V(A)$ (N(R) error) and transmits a SABME (P=1) frame.  The IUT is expected to enter the Re-Establish substate (5.1).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!lframe	I_iFrame1(SndCmd, P0, VS, NRError)		(1)
4		START T200			
5	L1	MDLP?SABME CANCEL T200	SABME_V(RcvCmd ,P1)	(P)	(2)
6		+VER_S51			
7		+POST_S1			
8		+UNEXPECTED_S81			
9		GOTO L1			
10		?TIMEOUT T200		(F)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			
<b>Detailed Comments</b> : (1) Inject an NR error.  (2) The IUT is expected to Re-Establish the link.					



### Test Case Dynamic Behaviour

**Test Case Name** : MFOE82\_V01

**Group** : Common/DLLE/MFOEstablished/S8/S82/Valid/

**Purpose** : Verify that the IUT can transmit a SABME (P=1).

The IUT is expected to enter the Awaiting Establishment state (5.0 —Establish).

**Default** :

**Configuration** :

**Comments** : IUT must be able to send a SABME (P=1) on demand.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		<IUTISABME>	SABME_V(RcvCmd , P1)		(1)
3		START Toper			
4	L1	MDLP?SABME CANCEL Toper	SABME_V(RcvCmd , P1)	(P)	
5		+VER_S50			(2)
6		+POST_S1			(3)
7		+UNEXPECTED_S82			
8		GOTO L1			
9		?TIMEOUT Toper		(I)	(4)
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Toper		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Request the IUT to transmit a SABME (P=1) command frame.

(2) Verify that the IUT has changed to state S5.0.

(3) Return the IUT to a stable state.

(4) Operator was unable to transmit the requested frame on time.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE82\_V02  
**Group** : Common/DLLE/MFOEstablished/S8/S82/Valid/  
**Purpose** : Verify that the IUT transmits a UA (F=1) frame in response to a SABME (P=1) frame  
 The IUT is expected to enter the MFE substate (7.0.1 —not in sleep mode).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		MDLPISABME	SABME_V ( SndCmd, P1)		
3		START T200			
4	L1	MDLP?UA ( RC:=0, VS:=0, VR:=0, VA:=0) CANCEL T200	UA_V ( RcvResp, F1)	(P)	(1)
5		+VER_S701			(2)
6		+POST_S1			(3)
7		+UNEXPECTED_S82			
8		GOTO L1			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Initialize State variables.  
 (2) Ensure that the IUT is in MFE S82.  
 (3) Return IUT to a known stable state.  
 Note: In practice, the IUT is expected to respond to the first transmission of the SABME frame.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE82\_V03  
**Group** : Common/DLLE/MFOEstablished/S8/S82/Valid/  
**Purpose** : Verify that the IUT, on receipt of a DISC(P=1) frame, transmits a UA (F=1) frame.  
 The IUT is expected to enter the TEI Unassigned state (1).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		MDLPIDISC START T200	DISC_V (SndCmd, P1)		(1)
3	L1	MDLP?UA CANCEL T200	UA_V (RcvRsp, F1)	(P)	
4		+VER_S10			
5		+POST_S1			
6		+UNEXPECTED_S82			
7		GOTO L1			
8		?TIMEOUT T200		(F)	(2)
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Force a disconnect to occur.

(2) In practice the IUT is expected to respond to the first transmission of the DISC frame. The DISC may be transmitted up to N200 times before an implementation should attempt to Re-Establish the link.

Caveat: An M-ES should not attempt to deregister it's NEIs by transmitting ESBs encapsulated in MDLP I frames prior to sending the UA. The MD-IS after transmitting a DISC command will be in the Awaiting Release state and will simply ignore these frame. Sending an I-frame in response to the DISC will result in test case failure.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE82_V04					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S82/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of a DM(F=0) frame transmits a SABME(P=1) frame.					
The IUT is expected to enter the Re-Establish substate (5.1).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		MDLPIDM START T200	DM_V (SndRsp, F0)		(1)
3	L1	MDLP?SABME CANCEL T200	SABME_V (RcvCmd, P1)	(P)	(2)
4		+VER_S51			
5		+POST_S1			
6		+UNEXPECTED_S82			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			
<b>Detailed Comments</b> : (1) Indicate to the IUT that the Tester is in Disconnected Mode (DM).					
(2) The IUT is expected to Re-Establish the link.					

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE82\_V05

**Group** : Common/DLLE/MFOEstablished/S8/S82/Valid/

**Purpose** : Verify that the IUT on receipt of a TEST (P=0) frame responds with TEST (F=0) frame.

The IUT is expected to remain in the Timer Recovery state (8.2 —Normal—Own Receiver Busy)

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		MDLPITEST	TEST_Frame1( SndCmd, P0)		(1)
3		START Twait			
4	L1	MDLP?TEST CANCEL Twait	TEST_Frame1( RcvRsp, F0)	(P)	(1)
5		+VER_S82			(2)
6		+POST_S1			
7		+UNEXPECTED_S82			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Exchange of TEST frames should not modify any of the state variables.

(2) The IUT should still be in the same state as prior to the TEST frame exchange.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE82_V06					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S82/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of an FRMR response frame rejecting a UA frame, transmits SABME (P=1) frame.  The IUT is expected to enter the Awaiting Establish state (5.1 —Re-Establish)					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		MDLP FRMR	FRMR_UA(Cmd, SndRsp, F1, VR, VS)		(1)
3		START T200			
4	L1	MDLP?SABME CANCEL T200	SABME_V (RcvCmd, P1)	(P)	(2)
5		+VER_S51			
6		+POST_S1			
7		+UNEXPECTED_S82			
8		GOTO L1			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			
<b>Detailed Comments</b> : (1) Reject a UA frame. Note that the IUT should respond according to the protocol in spite of the fact that a valid UA frame was received during the connection establishment.  (2) The IUT is expected to Re-Establish the link.					

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE82\_V07  
**Group** : Common/DLLE/MFOEstablished/S8/S82/Valid/  
**Purpose** : Verify that the IUT on receipt of an RR (P=1) frame where  $V(A) \leq N(R) \leq V(S)$  transmits an RNR (F=1) frame.  
 The IUT is expected to remain in the Timer Recovery state (8.2 ---Normal-Own Receiver Busy).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		MDLPIRR	RR_V( SndCmd, P1, VR)		(1)
3		START T200			
4	L1	MDLP?RNR CANCEL T200	RNR_V (RcvRsp, F1, VS)	(P)	(2)
5		+POST_S1			
6		+UNEXPECTED_S82			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Request the IUT's current NR value. The IUT must respond as poll bit is set.  
 (2) Receipt of the RR frame implies that we are still in S82

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE82\_V08  
**Group** : Common/DLLE/MFOEstablished/S8/S82/Valid/  
**Purpose** : Verify that the IUT on receipt of RR (F=1) frame where  $V(A) \leq N(R) < V(S)$ , requeues all l frames where  $V(A) \leq N(S) < V(S)$  and sets its V(S) equal to N(R).  
 The IUT is expected to enter the MFE substate (7.2 ---Normal- Own Receiver Busy).  
**Default** :  
**Configuration** :  
**Comments** : REWRITE TEST:

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			(1)

**Detailed Comments** :

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE82\_V09

**Group** : Common/DLLE/MFOEstablished/S8/S82/Valid/

**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame where  $V(A) \leq N(R) < V(S)$  (N(R) does not acknowledge any frames) resends the I frame indicated by the N(R) contained in the received SREJ frame.

The IUT is expected to remain in the Timer Recovery state (8.2 ---Normal-Own Receiver Busy).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		+RequestNIFrames (2)			(1)
3		( NRRResend := (VR - 1) MOD ModVal)			(2)
4		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRRResend )		(3)
5	L1	MDLP?Iframe	I_V (RcvCmd, P0, NRRResend, VS )	(P)	(4)
6		+POST_S1			
7		+UNEXPECTED_S82			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	
12		+POST_S1			

**Detailed Comments** : (1) IUT sends 2 I frame.

(2) Set the NR value. This will be used to request the I frame to be retransmitted (see constraints Ref).

(3) Tester requests that the IUT retransmit the VR-1 frame. The following test assumes that once an I frame has been transmitted (by operator intervention), that it is stored internally and will be retransmitted automatically without any further operator intervention required.

(4) The requested I frame was received.



### Test Case Dynamic Behaviour

**Test Case Name** : MFOE82\_V10  
**Group** : Common/DLLE/MFOEstablished/S8/S82/Valid/  
**Purpose** : Verify that the IUT on receipt of an RNR (P=1) frame where  $V(A) \leq N(R) \leq V(S)$  transmits an RNR (F=1) frame.  
 The IUT is expected to enter the Timer Recovery state (8.6 Peer Receiver Busy—Own Receiver Busy).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		MDLPI RNR START T200	RNR_V(SndCmd, P1, VR)		
3	L1	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)	(P)	
4		+VER_S86			
5		+POST_S1			
6		+UNEXPECTED_S82			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** :

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE82\_V11  
**Group** : Common/DLLE/MFOEstablished/S8/S82/Valid/  
**Purpose** : Verify that the IUT on receipt of RNR (F=1) frame where  $V(A) \leq N(R) < V(S)$ , queues all I frames where  $V(A) \leq N(S) < V(S)$  and sets its  $V(S)$  equal to  $N(R)$ .  
 The IUT is expected to enter the MFE substate (7.6 --Peer Receiver Busy—Own Receiver Busy).  
**Default** :  
**Configuration** :  
**Comments** : REWRITE TEST:

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			(1)

**Detailed Comments** :

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE82\_V12

**Group** : Common/DLLE/MFOEstablished/S8/S82/Valid/

**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0), where the following conditions hold:

V(A) <= N(R) =V(S) (acknowledges no new frame or all frames sent to date), and  
 N(S) = V(R) (next frame to send is the next expected frame to be received)

DISCARDS the content of the I-FRAME (E.g. IUT does not increment its V(R)).

The IUT is expected to remain in the Timer Recovery state (8.2 --Normal-Own Receiver Busy).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		MDLP!lframe	I_lFrame1( SndCmd, P0, VS, VR)		(1)
3		MDLP!RR	RR_V( SndCmd, P1, VR)		(2)
4		START T200			
5	L2	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)	(P)	(3)
6		+POST_S1			
7		+UNEXPECTED_S82			
8		GOTO L2			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Tester's VS is not incremented. The IUT should not update its VR (i.e. it discards the I frame contents). Only its VA is updated. Note that a device should not transmit I frames to another device which is in Peer Receiver Busy unless it is an I-frame meant to clear a SREJ condition.

(2) Force the IUT to respond using RR (P=1)

(3) IUT's NR must be equal to the Tester's VS.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE82\_V13  
**Group** : Common/DLLE/MFOEstablished/S8/S82/Valid/  
**Purpose** : Verify that the IUT, when the retransmission timer T200 expires, and the retransmission count (RC) is less than the Max. Retransmissions Counter (N200) either transmits an I-FRAME (P=1) or transmits an RNR (P=1).  
 The IUT is expected to enter the Timer Recovery substate (8.2 —Normal—Own Receiver Busy).  
**Default** :  
**Configuration** :  
**Comments** : CHECK:  
 Is I frame transmission necessary? Yes—This allows retransmission of either I-frame or RR/RNR frame.  
 If I frame is not transmitted, can I frame retransmission occur? —Sounds silly, but NO.  
 When must the initial I frame transmission occur? Before entering the Timer Recovery state, otherwise an I frame should not be received. A special preamble must be used to accomplish this.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		(CurVR:= VR)			
3		+RequestNIFrames (1)			(1)
4		START Twait			(2)
5	L1	MDLP?Iframe	I_V(RcvCmd, P1, CurVR, VS)	(P)	(3)
6		+POST_S1			
7		MDLP?RNR	RNR_V(RcvCmd, P1, VS)	(P)	(3)
8		+POST_S1			
9		+UNEXPECTED_S82			
10		GOTO L1			
11		?TIMEOUT Twait		(I)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(I)	
14		+POST_S1			

**Detailed Comments** : (1) Request the IUT to transmit one I frame. VR is incremented by 1, the I frame is not acknowledged in RequestNIFrames!  
 (2) The IUT should either retransmit an I (P=1) or RNR (P=1) frame following expiry of its T200 timer. Wait for a period of time known to be larger than T200.  
 (3) The IUT should be in timer recovery. The IUT will exit timer recovery when it receives an appropriate RR or RNR (F=1) response frame.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE82_V13a					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S82/Valid/					
<b>Purpose</b> : Verify that the IUT, upon T200 expiry where RC=N200 (the retransmission count equals the Max. Retransmission Counter (N200) Re-Establishes the link by transmitting a SABME (P=1) command frame.  The IUT is expected to enter the Awaiting Establishment state ( 5.1 ---Re-Establish).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : CHECK: Is I frame transmission necessary? IUT is already in Timer Recovery state					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			(1)
2		(CurVR:= VR)			(1a)
3		+RequestNIFrames (1)			(2)
4	L1	START Twait			(3)
5		MDLP?Iframe	I_V(RcvCmd, P1, CurVR, VS)		(4)
6		[ RC < n200Value] (RC:= RC +1)			
7		GOTO L1			
8		[ RC = n200Value]			
9		START Twait			
10	L2	MDLP?SABME	SABME_V(RcvCmd , P1)	(P)	
11		+VER_S51			
12		+POST_S1			
13		+UNEXPECTED_S82			
14		GOTO L2			
15		?TIMEOUT Twait		(I)	
16		+POST_S1			
17		MDLP?OTHERWISE CANCEL Twait		(I)	
18		+POST_S1			
19		MDLP?RR	RR_V(RcvCmd, P1, VS)		(4)
20		[ RC < n200Value] (RC:= RC +1)			
21		GOTO L1			
22		[ RC = n200Value]			
23		START Twait			
24	L3	MDLP?SABME	SABME_V(RcvCmd , P1)	(P)	
25		+VER_S51			
26		+POST_S1			
27		+UNEXPECTED_S82			
28		GOTO L3			
29		?TIMEOUT Twait		(I)	
30		+POST_S1			
31		MDLP?OTHERWISE CANCEL Twait		(I)	

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Test Case Dynamic Behaviour					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
32		+POST_S1			
33		+UNEXPECTED_S82			
34		GOTO L1			
35		?TIMEOUT Twait		(I)	
36		+POST_S1			
37		MDLP?OTHERWISE CANCEL Twait		(I)	
38		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.1 --Normal--SREJ Recovery). At this point RC=1.

(1a) Save current VR value.

(2) Request the IUT to transmit one I frame. VR is incremented by 1. The I frame is not acknowledged.

(3) The IUT should be in timer recovery. Twait > T200. This is to ensure that the IUTs T200 expires and is placed in timer recovery state.

(4) The IUT is expected to either retransmit the I frame or transmit a RR (P=1) frame following expiry of its T200 timer. Wait for a period of time larger than T200.  
Note: the RR and I frames are ignored so that the number of retransmissions will eventually exceed N200. This should cause the IUT to reset the link.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE82_V14					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S82/Valid/					
<b>Purpose</b> : Verify that the IUT on expiry of the T205 timer, transmits a RNR (F=0) frame.					
The IUT is expected to remain in the Timer Recovery state (8.2 ---Normal---Own Receiver Busy).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : REWRITE or DROP. May not make sense to test this for BIT. How do you get T205 started before entering S82? Start it in another state then move to S82. Easier said than done...					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		MDLP!frame	I_iFrame1(SndCmd, P0, VS,VR)		(2)
3		START T205 (t205Value + delta)			
4	L2	?TIMEOUT T205			(3)
5		START T200			
6	L3	MDLP?RR CANCEL T200	RR_V( RcvRsp, F0, VS)	(P)	
7		+POST_S1			
8		+UNEXPECTED_S82			
9		GOTO L3			
10		?TIMEOUT T200		(F)	(4a)
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			
14		+UNEXPECTED_S82			
15		GOTO L2			
16		MDLP?OTHERWISE CANCEL T205		(F)	(4)
17		+POST_S1			
<b>Detailed Comments</b> : (1) Wait for T200 to timeout. At this point the IUT should be in a steady stable state.					
(2) I/P=0 should cause T205 to be started on the IUT side. Note that VS is not incremented as the IUT should discard the frame as it is in Own Receiver Busy.					
(3) Tester should not receive anything from the IUT at least until T205 has expired but before expiry of the T200 timer.					
(4) some frame received before T205 timeout. If this is the case, one should examine time stamps of the transmitted I frame and the received frame. It may be a borderline case where RR is received only milliseconds prior to expiry of T205.					
(4a) IUT did not respond with an RR (P0) frame. Note this test assumes that the IUT does not have any I frames.o transmit. Test are supposed to be executed in a controlled environment.					
Note: T205 is the minimum amount of time that an IUT must wait before it can transmit a response. Nothing prevents an IUT to transmit something after expiry of T205, but the IUT should however transmit something prior to expiry of the T200 retransmission timer. T205 << T200.					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE82_V15					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S82/Valid/					
<b>Purpose</b> : Verify that the IUT transmits an RR (P=0) when clearing an own receiver busy condition.					
The IUT is expected to enter the Timer Recovery state (8.0 —Normal—Normal).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		<IUTIRR>	RR_V(RcvRsp, P0, VS)		(1)
3		START Toper			
4	L1	MDLP?RR CANCEL Toper	RR_V(RcvRsp, P0, VS)	(P)	
5		+VER_S80			(2)
6		+POST_S1			
7		+UNEXPECTED_S82			
8		GOTO L1			
9		?TIMEOUT Toper		(I)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Toper		(F)	
12		+POST_S1			
<b>Detailed Comments</b> : (1) Test Operator causes IUT to clear own receiver busy condition.					
(2) Verify that the IUT is in MFO.					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE82_N01a					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S82/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an RR (P=1) frame containing an N(R) error, transmits a RNR(F=1) followed by an FRMR (F=1) with the Z bit set to 1 and a SABME (P=1) frame.					
The IUT is expected to enter the Re-Establish substate (5.1).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : The IUT must tx a FRMR before a SABME					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!RR START T200	RR_V(SndCmd, P1, NRError)	(1)	
4	L1	MDLP?RNR CANCEL T200	RNR_V (RcvRsp, F1, VS)	(2)	
5		START Twait			
6	L2	MDLP?FRMR CANCEL Twait	FRMR_RR(Cmd, RcvRsp, F1, NRError, VS, VR)	(2a)	
7		START Twait			
8	L3	MDLP?SABME CANCEL Twait	SABME_V( RcvCmd, P1)	(P) (2b)	
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S82			
12		GOTO L3			
13		?TIMEOUT Twait		(F)	
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL Twait		(F)	
16		+POST_S1			
17		+UNEXPECTED_S82			
18		GOTO L2			
19		?TIMEOUT Twait		(F)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Twait		(F)	
22		+POST_S1			
23		+UNEXPECTED_S82			
24		GOTO L1			
25		?TIMEOUT T200		(F)	
26		+POST_S1			
27		MDLP?OTHERWISE CANCEL T200		(F)	
28		+POST_S1			
<b>Detailed Comments</b> : (1) Inject an NR error.					
(2) IUT's NR = Tester's VS.					

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**Test Case Dynamic Behaviour**

Detailed Comments : ...

(2a) The IUT correctly identified the erroneous RR frame.

(2b) The IUT attempts to Re-Establish the link.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE82_N01b					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S82/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an RR (P=1) frame containing an N(R) error, transmits a RNR (F=1) followed immediately by SABME (P=1) frame.					
The IUT is expected to enter the Re-Establish substate (5.1).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : The IUT does not transmit the optional FRMR.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPIRR START T200	RR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S82			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S82			
16		GOTO L1			
17		?TIMEOUT T200		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL T200		(F)	
20		+POST_S1			
<b>Detailed Comments</b> : (1) Inject an NR error.					
(2) The IUT's NR should be equal to the Tester's VS					
(3) IUT attempts to Re-Establish the link as expected. This indicates that it has identified the NR error.					

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE82\_N02a

**Group** : Common/DLLE/MFOEstablished/S8/S82/Invalid/

**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame containing an N(R) error, transmits an FRMR (F=1) with the Z bit set to 1 followed immediately by a SABME (P=1) frame.

The IUT is expected to enter the Awaiting Establishment state (5.1 --Re-Establish)

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRError)		(1)
4	L1	MDLP?FRMR CANCEL Twait	FRMR_SREJ(Cmd, RcvRsp, F1, NRError, VS, VR)		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S82			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S82			
16		GOTO L1			
17		?TIMEOUT Twait		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL Twait		(F)	
20		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) The IUT has recognized the invalid NR value.

(3) The IUT attempts to Re-Establish the link.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE82\_N02b  
**Group** : Common/DLLE/MFOEstablished/S8/S82/Invalid/  
**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame containing an N(R) error, transmits a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 ---Re-Establish)  
**Default** :  
**Configuration** :  
**Comments** : IUT does not transmit the optional FRMR frame but immediately attempts to Re-Establish the link.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		(NRError := (VR + 1) MOD ModVal)			(1)
3		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRError)		
4	L1	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(2)
5		+VER_S51			
6		+POST_S1			(3)
7		+UNEXPECTED_S82			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	(4)
12		+POST_S1			

**Detailed Comments** : (1) Create an NR error which should be rejected by the IUT.  
 (2) IUT correctly attempts to Re-Establish the link.  
 (3) Return the IUT to TEI Unassigned state.  
 (4) If an FRMR frame cause the test case failure, the test operator should have indicated in the PICS that the IUT DOES transmit the optional FRMR frame.

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE82\_N03a  
**Group** : Common/DLLE/MFOEstablished/S8/S82/Invalid/  
**Purpose** : Verify that the IUT on receipt of an RNR (P=1) frame containing an N(R) error, transmits an RNR (F=1) followed by an FRMR (F=1) with the Z bit set to 1 and a SABME (P=1) frame.  
 The IUT is expected to enter the Re-Establish substate (5.1).  
**Default** :  
**Configuration** :  
**Comments** : The IUT must tx a FRMR before a SABME

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPIRNR START T200	RNR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)		
5		START Twait			
6	L2	MDLP?FRMR CANCEL Twait	FRMR_RNR(Cmd, RcvRsp, F1, NRError, VS, VR)		(2)
7		START Twait			
8	L3	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S82			
12		GOTO L3			
13		?TIMEOUT Twait		(F)	
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL Twait		(F)	
16		+POST_S1			
17		+UNEXPECTED_S82			
18		GOTO L2			
19		?TIMEOUT Twait		(F)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Twait		(F)	
22		+POST_S1			
23		+UNEXPECTED_S82			
24		GOTO L1			
25		?TIMEOUT T200		(F)	
26		+POST_S1			
27		MDLP?OTHERWISE CANCEL T200		(F)	
28		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) IUT has recognized the erroneous frame.

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Test Case Dynamic Behaviour	
Detailed Comments : ...	
(3) IUT should attempt to Re-Establish the link after transmitting the FRMR.	

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE82_N03b <b>Group</b> : Common/DLLE/MFOEstablished/S8/S82/Invalid/ <b>Purpose</b> : Verify that the IUT on receipt of an RNR (P=1) frame containing an N(R) error, transmits a RNR (F=1) frame followed by a SABME (P=1) frame. The IUT is expected to enter the Re-Establish substate (5.1). <b>Default</b> : <b>Configuration</b> : <b>Comments</b> : The IUT does not transmit the optional FRMR.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!RNR START T200	RNR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S82			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S82			
16		GOTO L1		(F)	
17		?TIMEOUT T200		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL T200		(F)	
20		+POST_S1			
<b>Detailed Comments</b> : (1) Inject an NR error. (2) IUT's NR = Tester's VS. (3) IUT should attempt to Re-Establish the link. This indicates that it has recognized the erroneous RNR frame.					

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE82\_N04  
**Group** : Common/DLLE/MFOEstablished/S8/S82/Invalid/  
**Purpose** : Verify that the IUT on receipt of a duplicate I-FRAME (P=0), where the following conditions hold:  
 $V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R) - k \leq N(S) < V(R)$  (duplicate frame)  
 DISCARDS the I-FRAME data after updating its V(A) with the N(R) in the received frame.  
 The IUT is expected to remain in the Timer Recovery state (8.2 —Normal—Own Receiver Busy).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		MDLPIframe START T200	I_iFrame1(SndCmd, P0, VS, CurVR)		(2)
3		<IUTIRNR>	RNR_V(RcvCmd, P0, VS)		(3)
4		START Toper			
5	L1	MDLP?RNR CANCEL Toper	RNR_V(RcvCmd, P0, VS)		(4)
6		MDLPIframe	I_iFrame1(SndCmd, P0, VS, CurVR)		(5)
7		MDLPI RR	RR_V(SndCmd, P1, CurVR)		(6)
8		START T200			
9	L2	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)	(P)	(7)
10		+POST_S1			
11		+UNEXPECTED_S82			(8)
12		GOTO L2			
13		?TIMEOUT T200		(F)	
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL T200		(F)	
16		+POST_S1			
17		+UNEXPECTED_S80			(9)
18		GOTO L1			
19		?TIMEOUT Toper		(I)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Toper		(F)	
22		+POST_S1			

**Detailed Comments** : (1) Place the IUT in Timer recovery state.  
 (2) Send one I-frame. Note that VS is not incremented. This same frame will be retransmitted.  
 (3) Request that the operator cause a RNR (P=0) be sent by the IUT.  
 (4) IUT is in own receiver busy condition.

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**Test Case Dynamic Behaviour**

**Detailed Comments : ...**

- (5) Send the duplicate frame. VS was not incremented see (2).
- (6) Verify that the IUT discarded the duplicate I-frame by requesting the IUT's current NR. Use CurVR in th RR transmission, otherwise this will cause the IUT to exit the Timer Recovery state.
- (7) The IUT's NR must equal the tester's VS. The duplicate frame should not have caused the IUT to increment its VR by 1.
- (8) (9) consume retransmitted RR (P=1) or I (P=1) frames.



## Test Case Dynamic Behaviour

**Test Case Name** : MFOE82\_N05

**Group** : Common/DLLE/MFOEstablished/S8/S82/Invalid/

**Purpose** : Verify that the IUT on receipt of an out of sequence I-FRAME (P=0) (which causes a new selective reject condition to occur), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R) < N(S) < V(R)+k$  (new frame, not the next expected frame)

DISCARDS the content of the I-FRAME and updates its V(A) with N(R) (of the received I-FRAME).

The IUT is expected to enter the MFE state (7.2 —Normal—Own Receiver Busy).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		MDLP!frame (NSError=(VS+1) MOD ModVal)	I_iFrame1( SndCmd, P0, NSError, VR)		(1)
3		START T200			
4	L1	+UNEXPECTED_S82			
5		GOTO L1			
6		?TIMEOUT T200			(2)
7		MDLP! RR	RR_V( SndCmd, P1, VR)		(3)
8		START T200			
9	L2	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)	(P)	(4)
10		+POST_S1			
11		+UNEXPECTED_S72			
12		GOTO L2			
13		MDLP?OTHERWISE CANCEL T200			(F)
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL T200			(F)
16		+POST_S1			

**Detailed Comments** : (1) Cause a new selective reject condition.

(2) Wait T200 to verify that the IUT does not transmit anything.

(3) Verify that the IUT has not changed its NR.

(4) IUTs N(R) must be equal to the Tester's V(S).

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE82\_N06

**Group** : Common/DLLE/MFOEstablished/S8/S82/Invalid/

**Purpose** : Verify that the IUT on receipt of an out of sequence I-FRAME (P=0), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R)+k \leq N(S) < V(R)-k$  (outside the receive window)

transmits a SABME (P=1) frame.

The IUT is expected to enter the Awaiting Establishment state (5.1 —Re-Establish).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		(NSError:= (VS+ rK +1) MOD ModVal)			
3		MDLP!frame	_iFrame1( SndCmd, P0, NSError, VR)		(1)
4		START T200			
5	L1	MDLP?SABME CANCEL T200	SABME_V( RcvCmd, P1)	(P)	(2)
6		+VER_S51			
7		+POST_S1			
8		+UNEXPECTED_S82			
9		GOTO L1			
10		?TIMEOUT T200		(F)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			

**Detailed Comments** : (1) Send an I frame whose N(S) value is outside the receive window size. The upper bound was selected. One could also write a test using  $NS = VR - k - 1$  instead. This would be covered in a full conformance test suite.

(2) The IUT is expected to Re-Establish the link.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE82\_N07a  
**Group** : Common/DLLE/MFOEstablished/S8/S82/Invalid/  
**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0) with an N(R) error, where the following condition holds:  $V(S) < N(R) < V(A)$  (N(R) error) transmits a FRMR (F=1) with the Z bit set followed immediately by a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting establishment state (5.1 Re-Establish).

**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!lframe	I_lFrame1(SndCmd, P0, VS, NRError)		(1)
4		START T200			
5	L1	MDLP?FRMR CANCEL T200	FRMR_I_NRErr(Cmd, RcvRsp, F0, NRError, VS, VR)		(2)
6		START T200			
7	L2	MDLP?SABME CANCEL T200	SABME_V(RcvCmd, P1)	(P)	(3)
8		+VER_S51			
9		+POST_S1			
10		+UNEXPECTED_S82			
11		GOTO L2			
12		?TIMEOUT T200		(F)	
13		+POST_S1			
14		MDLP?OTHERWISE CANCEL T200		(F)	
15		+POST_S1			
16		+UNEXPECTED_S82			
17		GOTO L1			
18		?TIMEOUT T200		(F)	
19		+POST_S1			
20		MDLP?OTHERWISE CANCEL T200		(F)	
21		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) IUT has identified the NR error.

(3) The IUT is expected to Re-Establish the link.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE82\_N07b  
**Group** : Common/DLLE/MFOEstablished/S8/S82/Invalid/  
**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0) with an N(R) error, where the following condition hold:  $V(S) < N(R) < V(A)$  (N(R) error) and transmits a SABME (P=1) frame.  
 The IUT is expected to enter the Re-Establish substate (5.1).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!lframe	I_lFrame1(SndCmd, P0, VS, NRError)		(1)
4		START T200			
5	L1	MDLP?SABME CANCEL T200	SABME_V(RcvCmd ,P1)	(P)	(2)
6		+VER_S51			
7		+POST_S1			
8		+UNEXPECTED_S82			
9		GOTO L1			
10		?TIMEOUT T200			(F)
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200			(F)
13		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.  
 (2) IUT has identified the NR error and is expected to Re-Establish the link.

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE83\_V01  
**Group** : Common/DLLE/MFOEstablished/S8/S83/Valid/  
**Purpose** : Verify that the IUT can transmit a SABME (P=1).  
  
 The IUT is expected to enter the Awaiting Establishment state (5.0 —Establish).  
**Default** :  
**Configuration** :  
**Comments** : IUT must be able to send a SABME (P=1) on demand.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		<IUTISABME>	SABME_V(RcvCmd, P1)		(1)
3		START Toper			
4	L1	MDLP?SABME CANCEL Toper	SABME_V(RcvCmd, P1)	(P)	
5		+VER_S50			(2)
6		+POST_S1			(3)
7		+UNEXPECTED_S83			
8		GOTO L1			
9		?TIMEOUT Toper		(I)	(4)
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Toper		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Request the IUT to transmit a SABME (P=1) command frame.

(2) Verify that the IUT has changed to state S5.0.

(3) Return the IUT to a stable state.

(4) Operator was unable to transmit the requested frame on time.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE83\_V02

**Group** : Common/DLLE/MFOEstablished/S8/S83/Valid/

**Purpose** : Verify that the IUT transmits a UA (F=1) frame in response to a SABME (P=1) frame

The IUT is expected to enter the MFE substate (7.0.1 ---not in sleep mode).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		MDLPISABME	SABME_V ( SndCmd, P1)		
3		START T200			
4	L1	MDLP?UA ( RC:=0, VS:=0, VR:=0, VA:=0) CANCEL T200	UA_V ( RcvRsp, F1)	(P)	(1)
5		+VER_S701			(2)
6		+POST_S1			(3)
7		+UNEXPECTED_S83			
8		GOTO L1			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Initialize State variables.

(2) Ensure that the IUT is in MFE S83.

(3) Return IUT to a known stable state.

Note: In practice, the IUT is expected to respond to the first transmission of the SABME frame.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE83\_V03

**Group** : Common/DLLE/MFOEstablished/S8/S83/Valid/

**Purpose** : Verify that the IUT, on receipt of a DISC(P=1) frame, transmits a UA (F=1) frame.

The IUT is expected to enter the TEI Unassigned state (1).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		MDLPIDISC START T200	DISC_V (SndCmd, P1)		(1)
3	L1	MDLP?UA CANCEL T200	UA_V (RcvRsp, F1)	(P)	
4		+VER_S10			
5		+POST_S1			
6		+UNEXPECTED_S83			
7		GOTO L1			
8		?TIMEOUT T200		(F)	(2)
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Force a disconnect to occur.

(2) In practice the IUT is expected to respond to the first transmission of the DISC frame. The DISC may be transmitted up to N200 times before an implementation should attempt to Re-Establish the link.

Caveat: An M-ES should not attempt to deregister it's NEIs by transmitting ESBs encapsulated in MDLP I frames prior to sending the UA. The MD-IS after transmitting a DISC command will be in the Awaiting Release state and will simply ignore these frame. Sending an I-frame in response to the DISC will result in test case failure.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE83_V04					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S83/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of a DM(F=0) frame transmits a SABME(P=1) frame.					
The IUT is expected to enter the Re-Establish substate (5.1).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		MDLPIDM START T200	DM_V (SndRsp, F0)		(1)
3	L1	MDLP?SABME CANCEL T200	SABME_V (RcvCmd, P1)	(P)	(2)
4		+VER_S51			
5		+POST_S1			
6		+UNEXPECTED_S83			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			
<b>Detailed Comments</b> : (1) Indicate to the IUT that the Tester is in Disconnected Mode (DM).					
(2) The IUT is expected to Re-Establish the link.					



### Test Case Dynamic Behaviour

**Test Case Name** : MFOE83\_V05  
**Group** : Common/DLLE/MFOEstablished/S8/S83/Valid/  
**Purpose** : Verify that the IUT on receipt of a TEST (P=0) frame responds with TEST (F=0) frame.  
 The IUT is expected to remain in the Timer Recovery state (8.3 ---Normal-SREJ Recovery and Own Receiver Busy)  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		MDLPITEST	TEST_Frame1( SndCmd, P0)		(1)
3		START Twait			
4	L1	MDLP?TEST CANCEL Twait	TEST_Frame1( RcvRsp, F0)	(P)	(1)
5		+VER_S83			(2)
6		+POST_S1			
7		+UNEXPECTED_S83			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Exchange of TEST frames should not modify any of the state variables.

(2) The IUT should still be in the same state as prior to the TEST frame exchange.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE83\_V06  
**Group** : Common/DLLE/MFOEstablished/S8/S83/Valid/  
**Purpose** : Verify that the IUT on receipt of an FRMR response frame rejecting a UA frame, transmits SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establish state (5.1 --Re-Establish)  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		MDLP FRMR	FRMR_UA(Cmd, SndRsp, F1, VR, VS)		(1)
3		START T200			
4	L1	MDLP?SABME CANCEL T200	SABME_V (RcvCmd, P1)	(P)	(2)
5		+VER_S51			
6		+POST_S1			
7		+UNEXPECTED_S83			
8		GOTO L1			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Reject a UA frame. Note that the IUT should respond according to the protocol in spite of the fact that a valid UA frame was received during the connection establishment.

(2) The IUT is expected to Re-Establish the link.

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE83\_V07  
**Group** : Common/DLLE/MFOEstablished/S8/S83/Valid/  
**Purpose** : Verify that the IUT on receipt of an RR (P=1) frame where  $V(A) \leq N(R) \leq V(S)$  transmits an RNR (F=1) frame.  
 The IUT is expected to remain in the Timer Recovery state (8.3 ---Normal--SREJ Recovery and Own Receiver Busy).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		MDLPIRR	RR_V( SndCmd, P1, VR)		(1)
3		START T200			
4	L1	MDLP?RNR CANCEL T200	RNR_V (RcvRsp, F1, VS)	(P)	(2)
5		+POST_S1			
6		+UNEXPECTED_S83			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Request the IUT's current NR value. The IUT must respond as poll bit is set.

(2) Receipt of the RR frame implies that we are still in S83

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE83\_V08  
**Group** : Common/DLLE/MFOEstablished/S8/S83/Valid/  
**Purpose** : Verify that the IUT on receipt of RR (F=1) frame where  $V(A) \leq N(R) < V(S)$ , requeues all I frames where  $V(A) \leq N(S) < V(S)$  and sets its  $V(S)$  equal to  $N(R)$ .  
 The IUT is expected to enter the MFE substate (7.3 ---Normal-- SREJ Recovery and Own Receiver Busy).  
**Default** :  
**Configuration** :  
**Comments** : REWRITE TEST:

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			(1)

**Detailed Comments** :

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE83\_V09

**Group** : Common/DLLE/MFOEstablished/S8/S83/Valid/

**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame where  $V(A) \leq N(R) < V(S)$  (N(R) does not acknowledge any frames) resends the I frame indicated by the N(R) contained in the received SREJ frame.

The IUT is expected to remain in the Timer Recovery state (8.3 ---Normal-SREJ Recovery and Own Receiver Busy).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		+RequestNIFrames (2)			(1)
3		( NRResend := (VR - 1) MOD ModVal)			(2)
4		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRResend )		(3)
5	L1	MDLP?Iframe	I_V (RcvCmd, P0, NRResend, VS )	(P)	(4)
6		+POST_S1			
7		+UNEXPECTED_S83			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	
12		+POST_S1			

**Detailed Comments** : (1) IUT sends 2 I frame.

(2) Set the NR value. This will be used to request the I frame to be retransmitted (see constraints Ref).

(3) Tester requests that the IUT retransmit the VR-1 frame. The following test assumes that once an I frame has been transmitted (by operator intervention), that it is stored internally and will be retransmitted automatically without any further operator intervention required.

(4) The requested I frame was received.

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE83\_V10  
**Group** : Common/DLLE/MFOEstablished/S8/S83/Valid/  
**Purpose** : Verify that the IUT on receipt of an RNR (P=1) frame where  $V(A) \leq N(R) \leq V(S)$  transmits an RNR (F=1) frame.  
 The IUT is expected to enter the Timer Recovery state (8.7 Peer Receiver Busy—SREJ Recovery and Own Receiver Busy.).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		MDLPI RNR START T200	RNR_V(SndCmd, P1, VR)		
3	L1	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)	(P)	
4		+VER_S87			
5		+POST_S1			
6		+UNEXPECTED_S83			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** :

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE83\_V11  
**Group** : Common/DLLE/MFOEstablished/S8/S83/Valid/  
**Purpose** : Verify that the IUT on receipt of RNR (F=1) frame where  $V(A) \leq N(R) < V(S)$ , requeues all I frames where  $V(A) \leq N(S) < V(S)$  and sets its  $V(S)$  equal to  $N(R)$ .  
 The IUT is expected to enter the MFE substate (7.5 --Peer Receiver Busy—SREJ Recovery).  
**Default** :  
**Configuration** :  
**Comments** : REWRITE TEST:

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			(1)

**Detailed Comments** :

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE83\_V12

**Group** : Common/DLLE/MFOEstablished/S8/S83/Valid/

**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0), where the following conditions hold:

V(A) <= N(R) =V(S) (acknowledges no new frame or all frames sent to date), and  
 N(S) = V(R) (next frame to send is the next expected frame to be received)

DISCARDS the content of the I-FRAME (e.g. IUT does not increment its V(R)).

The IUT is expected to remain in the Timer Recovery state (8.3 --Normal-SREJ Recovery and Own Receiver Busy).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		MDLP Iframe	I_iFrame1( SndCmd, P0, VS, VR)		(1)
3		MDLP RR	RR_V( SndCmd, P1, VR)		(2)
4		START T200			
5	L2	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)	(P)	(3)
6		+POST_S1			
7		+UNEXPECTED_S83			
8		GOTO L2			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Tester's VS is not incremented. The IUT should not update its VR (i.e. it discards the I frame contents). Only its VA is updated. Note that a device should not transmit I frames.o another device which is in Peer Receiver Busy unless it is an I-frame meant to clear a SREJ condition.

(2) Force the IUT to respond using RR (P=1)

(3) IUTs NR must be equal to the Tester's VS.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE83\_V13  
**Group** : Common/DLLE/MFOEstablished/S8/S83/Valid/  
**Purpose** : Verify that the IUT, when the retransmission timer T200 expires, and the retransmission count (RC) is less than the Max. Retransmissions Counter (N200) either transmits an I-FRAME (P=1) or transmits an RNR (P=1).  
 The IUT is expected to enter the Timer Recovery substate (8.2 —Normal—Own Receiver Busy).  
**Default** :  
**Configuration** :  
**Comments** : CHECK:  
 Is I frame transmission necessary? Yes—This allows retransmission of either I-frame or RR/RNR frame.  
 If I frame is not transmitted, can I frame retransmission occur? —Sounds silly, but NO.  
 When must the initial I frame transmission occur? Before entering the Timer Recovery state, otherwise an I frame should not be received. A special preamble must be used to accomplish this.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		(CurVR:= VR)			
3		+RequestNIFrames (1)			(1)
4		START Twait			(2)
5	L1	MDLP?Iframe	I_V(RcvCmd, P1, CurVR, VS)	(P)	(3)
6		+POST_S1			
7		MDLP?RNR	RNR_V(RcvCmd, P1, VS)	(P)	(3)
8		+POST_S1			
9		+UNEXPECTED_S83			
10		GOTO L1			
11		?TIMEOUT Twait			(I)
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait			(I)
14		+POST_S1			

**Detailed Comments** : (1) Request the IUT to transmit one I frame. VR is incremented by 1, the I frame is not acknowledged in RequestNIFrames!  
 (2) The IUT should either retransmit an I (P=1) or RNR (P=1) frame following expiry of its T200 timer. Wait for a period of time known to be larger than T200.  
 (3) The IUT should be in timer recovery. The IUT will exit timer recovery when it receives an appropriate RR or RNR (F=1) response frame.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE83\_V13a  
**Group** : Common/DLLE/MFOEstablished/S8/S83/Valid/  
**Purpose** : Verify that the IUT, upon T200 expiry where RC=N200 (the retransmission count equals the Max. Retransmission Counter (N200) Re-Establishes the link by transmitting a SABME (P=1) command frame.  
 The IUT is expected to enter the Awaiting Establishment state ( 5.1 —Re-Establish).  
**Default** :  
**Configuration** :  
**Comments** : CHECK: Is I frame transmission necessary? IUT is already in Timer Recovery state. Should I frame be transmitted prior to entering the Timer Recovery state. This probably makes more sense.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			(1)
2		(CurVR:= VR)			(1a)
3		+RequestNIFrames (1)			(2)
4	L1	START Twait			(3)
5		MDLP?Iframe	I_V(RcvCmd, P1, CurVR, VS)		(4)
6		[ RC < n200Value] (RC:= RC +1)			
7		GOTO L1			
8		[ RC = n200Value]			
9		START Twait			
10	L2	MDLP?SABME	SABME_V(RcvCmd , P1)	(P)	
11		+VER_S51			
12		+POST_S1			
13		+UNEXPECTED_S83			
14		GOTO L2			
15		?TIMEOUT Twait		(I)	
16		+POST_S1			
17		MDLP?OTHERWISE CANCEL Twait		(I)	
18		+POST_S1			
19		MDLP?RR	RR_V(RcvCmd, P1, VS)		(4)
20		[ RC < n200Value] (RC:= RC +1)			
21		GOTO L1			
22		[ RC = n200Value]			
23		START Twait			
24	L3	MDLP?SABME	SABME_V(RcvCmd , P1)	(P)	
25		+VER_S51			
26		+POST_S1			
27		+UNEXPECTED_S83			
28		GOTO L3			
29		?TIMEOUT Twait		(I)	
30		+POST_S1			
31		MDLP?OTHERWISE CANCEL Twait		(I)	

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Test Case Dynamic Behaviour					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
32		+POST_S1			
33		+UNEXPECTED_S83			
34		GOTO L1			
35		?TIMEOUT Twait		(I)	
36		+POST_S1			
37		MDLP?OTHERWISE CANCEL Twait		(I)	
38		+POST_S1			

**Detailed Comments :** (1) Place the IUT in the Timer Recovery state (8.1 --Normal--SREJ Recovery). At this point RC=1.

(1a) Save current VR value.

(2) Request the IUT to transmit one I frame. VR is incremented by 1. The I frame is not acknowledged.

(3) The IUT should be in timer recovery. Twait > T200. This is to ensure that the IUT's T200 expires and is placed in timer recovery state.

(4) The IUT is expected to either retransmit the I frame or transmit a RR (P=1) frame following expiry of its T200 timer. Wait for a period of time larger than T200.

Note: the RR and I frames are ignored so that the number of retransmissions will eventually exceed N200. This should cause the IUT to reset the link.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE83_V14 <b>Group</b> : Common/DLLE/MFOEstablished/S8/S83/Valid/ <b>Purpose</b> : Verify that the IUT on expiry of the T205 timer, transmits a RNR (F=0) frame. <p style="margin-left: 40px;">The IUT is expected to remain in the Timer Recovery state (8.3 ---Normal-SREJ recovery and Own Receiver Busy).</p> <b>Default</b> : <b>Configuration</b> : <b>Comments</b> : REWRITE or DROP. May not make sense to test this for BIT. How do you get T205 started before entering S83? Start it in another state then move to S83. Easier said than done...					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		MDLP!lframe	I_lFrame1(SndCmd, P0, VS, VR)		(2)
3		START T205 (t205Value + delta)			
4	L2	?TIMEOUT T205			(3)
5		START T200			
6	L3	MDLP?RR CANCEL T200	RR_V( RcvRsp, F0, VS)	(P)	
7		+POST_S1			
8		+UNEXPECTED_S83			
9		GOTO L3			
10		?TIMEOUT T200		(F)	(4a)
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			
14		+UNEXPECTED_S83			
15		GOTO L2			
16		MDLP?OTHERWISE CANCEL T205		(F)	(4)
17		+POST_S1			
<b>Detailed Comments</b> : (1) Wait for T200 to timeout. At this point the IUT should be in a steady stable state. <p>(2) I/P=0 should cause T205 to be started on the IUT side. Note that VS is not incremented as the IUT should discard the frame as it is in Own Receiver Busy.</p> <p>(3) Tester should not receive anything from the IUT at least until T205 has expired but before expiry of the T200 timer.</p> <p>(4) some frame received before T205 timeout. If this is the case, one should examine time stamps of the transmitted l frame and the received frame. It may be a borderline case where RR is received only milliseconds prior to expiry of T205.</p> <p>(4a) IUT did not respond with an RR (P0) frame. Note this test assumes that the IUT does not have any l frames.o transmit. Test are supposed to be executed in a controlled environment.</p> <p>Note: T205 is the minimum amount of time that an IUT must wait before it can transmit a response. Nothing prevents an IUT to transmit something after expiry of T205, but the IUT should however transmit something prior to expiry of the T200 retransmission timer. T205 &lt;&lt; T200.</p>					

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE83\_V15  
**Group** : Common/DLLE/MFOEstablished/S8/S83/Valid/  
**Purpose** : Verify that the IUT transmits an RR (P=0) when clearing an own receiver busy condition.  
 The IUT is expected to enter the Timer Recovery state (8.1--Normal--SREJ Recovery).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		<IUTIRR>	RR_V(RcvRsp, P0, VS)		(1)
3		START Toper			
4	L1	MDLP?RR CANCEL Toper	RR_V(RcvRsp, P0, VS)	(P)	
5		+VER_S81			(2)
6		+POST_S1			
7		+UNEXPECTED_S83			
8		GOTO L1			
9		?TIMEOUT Toper		(I)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Toper		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Test Operator causes IUT to clear own receiver busy condition.

(2) Verify that the IUT is in MFO.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE83_N01a					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S83/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an RR (P=1) frame containing an N(R) error, transmits a RNR(F=1) followed by an FRMR (F=1) with the Z bit set to 1 and a SABME (P=1) frame.					
The IUT is expected to enter the Re-Establish substate (5.1).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : The IUT must tx a FRMR before a SABME					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!RR START T200	RR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RNR CANCEL T200	RNR_V(RcvResp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?FRMR CANCEL Twait	FRMR_RR(Cmd, RcvResp, F1, NRError, VS, VR)		(2a)
7		START Twait			
8	L3	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(2b)
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S83			
12		GOTO L3			
13		?TIMEOUT Twait		(F)	
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL Twait		(F)	
16		+POST_S1			
17		+UNEXPECTED_S83			
18		GOTO L2			
19		?TIMEOUT Twait		(F)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Twait		(F)	
22		+POST_S1			
23		+UNEXPECTED_S83			
24		GOTO L1			
25		?TIMEOUT T200		(F)	
26		+POST_S1			
27		MDLP?OTHERWISE CANCEL T200		(F)	
28		+POST_S1			
<b>Detailed Comments</b> : (1) Inject an NR error.					
(2) IUT's NR = Tester's VS.					

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**Test Case Dynamic Behaviour**

**Detailed Comments :** ...

(2a) The IUT correctly identified the erroneous RR frame.

(2b) The IUT attempts to Re-Establish the link.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE83_N01b					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S83/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an RR (P=1) frame containing an N(R) error, transmits a RNR (F=1) followed immediately by SABME (P=1) frame.					
The IUT is expected to enter the Re-Establish substate (5.1).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : The IUT does not transmit the optional FRMR.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP?IRR START T200	RR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S83			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S83			
16		GOTO L1			
17		?TIMEOUT T200		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL T200		(F)	
20		+POST_S1			
<b>Detailed Comments</b> : (1) Inject an NR error.					
(2) The IUT's NR should be equal to the Tester's VS					
(3) IUT attempts to Re-Establish the link as expected. This indicates that it has identified the NR error.					

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE83\_N02a

**Group** : Common/DLLE/MFOEstablished/S8/S83/Invalid/

**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame containing an N(R) error, transmits an FRMR (F=1) with the Z bit set to 1 followed immediately by a SABME (P=1) frame.

The IUT is expected to enter the Awaiting Establishment state (5.1 -- Re-Establish)

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRError)		(1)
4	L1	MDLP?FRMR CANCEL Twait	FRMR_SREJ(Cmd, RcvRsp, F1, NRError, VS, VR)		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S83			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S83			
16		GOTO L1			
17		?TIMEOUT Twait		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL Twait		(F)	
20		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) The IUT has recognized the invalid NR value.

(3) The IUT attempts to Re-Establish the link.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE83\_N02b  
**Group** : Common/DLLE/MFOEstablished/S8/S83/Invalid/  
**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame containing an N(R) error, transmits a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 --Re-Establish)  
**Default** :  
**Configuration** :  
**Comments** : IUT does not transmit the optional FRMR frame but immediately attempts to Re-Establish the link.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		(NRError := (VR + 1) MOD ModVal)			(1)
3		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRError)		
4	L1	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(2)
5		+VER_S51			
6		+POST_S1			(3)
7		+UNEXPECTED_S83			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	(4)
12		+POST_S1			

**Detailed Comments** : (1) Create an NR error which should be rejected by the IUT.  
 (2) IUT correctly attempts to Re-Establish the link.  
 (3) Return the IUT to TEI Unassigned state.  
 (4) If an FRMR frame cause the test case failure, the test operator should have indicated in the PICS that the IUT DOES transmit the optional FRMR frame.



## Test Case Dynamic Behaviour

**Test Case Name** : MFOE83\_N03a  
**Group** : Common/DLLE/MFOEstablished/S8/S83/Invalid/  
**Purpose** : Verify that the IUT on receipt of an RNR (P=1) frame containing an N(R) error, transmits an RNR (F=1) followed by an FRMR (F=1) with the Z bit set to 1 and a SABME (P=1) frame.  
 The IUT is expected to enter the Re-Establish substate (5.1).  
**Default** :  
**Configuration** :  
**Comments** : The IUT must tx a FRMR before a SABME

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPIRNR START T200	RNR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RNR CANCEL T200	RNR_V (RcvRsp, F1, VS)		
5		START Twait			
6	L2	MDLP?FRMR CANCEL Twait	FRMR_RNR(Cmd, RcvRsp,F1, NRError, VS, VR )		(2)
7		START Twait			
8	L3	MDLP?SABME CANCEL Twait	SABME_V( RcvCmd, P1)	(P)	(3)
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S83			
12		GOTO L3			
13		?TIMEOUT Twait		(F)	
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL Twait		(F)	
16		+POST_S1			
17		+UNEXPECTED_S83			
18		GOTO L2			
19		?TIMEOUT Twait		(F)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Twait		(F)	
22		+POST_S1			
23		+UNEXPECTED_S83			
24		GOTO L1			
25		?TIMEOUT T200		(F)	
26		+POST_S1			
27		MDLP?OTHERWISE CANCEL T200		(F)	
28		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) IUT has recognized the erroneous frame.

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Test Case Dynamic Behaviour	
Detailed Comments : ...	
(3) IUT should attempt to Re-Establish the link after transmitting the FRMR.	

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE83_N03b					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S83/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an RNR (P=1) frame containing an N(R) error, transmits a RNR (F=1) frame followed by a SABME (P=1) frame.					
The IUT is expected to enter the Re-Establish substate (5.1).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : The IUT does not transmit the optional FRMR.					
Nr	Label	Behaviour Description	Constralnts Ref	Verdi	Comments
1		+PRE_S83			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPIRNR START T200	RNR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V( RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S83			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S83			
16		GOTO L1			
17		?TIMEOUT T200		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL T200		(F)	
20		+POST_S1			
<b>Detailed Comments</b> : (1) Inject an NR error.					
(2) IUT's NR = Tester's VS.					
(3) IUT should attempt to Re-Establish the link. This indicates that it has recognized the erroneous RNR frame.					

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE83\_N04  
**Group** : Common/DLLE/MFOEstablished/S8/S83/Invalid/  
**Purpose** : Verify that the IUT on receipt of a duplicate I-FRAME (P=0), where the following conditions hold:  
 $V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R)-k \leq N(S) < V(R)$  (duplicate frame)  
 DISCARDS the I-FRAME data after updating its V(A) with the N(R) in the received frame.  
 The IUT is expected to remain in the Timer Recovery state (8.3 --Normal--SREJ and Own Receiver Busy).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		(DupVS:=VS)			
3		MDLPIframe (VS:= (VS+1) MOD ModVal)	I_iFrame1(SndCmd, P0, VS, CurVR)		(2)
4		+CauseSREJCond(CurVR)			(2a)
5		<IUTIRNR>	RNR_V(RcvCmd, P0, VS)		(3)
6		START Toper			
7	L1	MDLP?RNR CANCEL Toper	RNR_V(RcvCmd, P0, VS)		(4)
8		+SendDupl(CurVR, DupVS)			(4a)
9		+UNEXPECTED_S80			(5)
10		GOTO L1			
11		?TIMEOUT Toper		(I)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Toper		(F)	
14		+POST_S1			
15		CauseSREJCond( VRVal:SEQUENCType) MDLPIframe ( NSErr := (VS + 1) MOD ModVal)	I_iFrame1( SndCmd, P0, NSErr, VRVal)		(SC1)
16		START T200			
17	T1	MDLP?SREJ CANCEL T200	SREJ_V ( RcvCmd, P0, VS)		(SC2)
18		MDLP?SREJ CANCEL T200	SREJ_V ( RcvRsp, F0, VS)		(SC3)
19		+UNEXPECTED_S80			(SC4)
20		GOTO T1			
21		?TIMEOUT T200		(I)	
22		+POST_S1			
23		MDLP?OTHERWISE CANCEL T200		(I)	
24		+POST_S1			
		SendDupl(VRVal, VSVal : SEQUENCType)			

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Test Case Dynamic Behaviour					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
25		MDLP!lframe	l_iFrame1( SndCmd, P0, VSVal, VRVal)		(SD1)
26		MDLP! RR	RR_V( SndCmd, P1, VRVal)		(SD2)
27		START T200			
28	T2	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)	(P)	(SD3)
29		+POST_S1			
30		+UNEXPECTED_S82			(SD4)
31		GOTO T2			
32		?TIMEOUT T200		(F)	
33		+POST_S1			
34		MDLP?OTHERWISE CANCEL T200		(F)	
35		+POST_S1			

**Detailed Comments :** (1) Place the IUT in Timer recovery state.

(2) Send one I-frame. This same frame will be retransmitted. CurVR was set in PRE\_S80.

(2a) Call local tree which causes a selective reject condition to occur.

(3) Request that the operator cause a RNR (P=0) be sent by the IUT.

(4) IUT is in own receiver busy condition.

(4a) send the duplicate I frame is the test case body.

(5) consume retransmitted RR (P=1) or I (P=1) frames.

(SC1) Transmit an I frame with a VS error. This will cause a selective reject condition. Note that CurVR and not VR is used. Using VR would acknowledge an I frame and cause the IUT to exit the Timer Recovery state.

(SC2) (SC3) Wait for the SREJ frame confirming that the IUT has caught the out of sequence error.

(SC4) The Tester should ignore retransmitted RR (P=1) or I (P=1) frame.

(SD1) Send the duplicate frame.

(SD2) Verify that the IUT discarded the duplicate I-frame by requesting the IUT's current NR. Use CurVR in th RR transmission, otherwise this will cause the IUT to exit the Timer Recovery state.

(SD3) The IUT's NR must equal the tester's VS. The duplicate frame should not have caused the IUT to increment its VR by 1.

(SD4) consume retransmitted RR (P=1) or I (P=1) frames.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE83\_N05  
**Group** : Common/DLLE/MFOEstablished/S8/S83/Invalid/  
**Purpose** : Verify that the IUT on receipt of an out of sequence I-FRAME (P=0) (which causes a new selective reject condition to occur), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R) < N(S) < V(R)+k$  (new frame, not the next expected frame)

DISCARDS the content of the I-FRAME and updates its V(A) with N(R) (of the received I-FRAME).

The IUT is expected to enter the MFE state (7.3 —Normal-SREJ Recovery and Own Receiver Busy).

**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		MDLPIframe (NSErr:= (VS+3) MOD ModVal)	I_Frame1( SndCmd, P0, NSErr, VR)		(1)
3		START T200			
4	L1	+UNEXPECTED_S83			
5		GOTO L1			
6		?TIMEOUT T200			(2)
7		MDLP!RR	RR_V( SndCmd, P1, VR)		(3)
8		START T200			
9	L2	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)	(P)	(4)
10		+POST_S1			
11		+UNEXPECTED_S73			
12		GOTO L2			
13		MDLP?OTHERWISE CANCEL T200			(F)
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL T200			(F)
16		+POST_S1			

**Detailed Comments** : (1) Cause a new selective reject condition. Note that the IUT is already in the SREJ Recovery state. E.g. I (P=0) with NS=VS+1 already transmitted. Transmitting the same frame would not cause a new selective reject condition to occur, the IUT should treat such a frame as a duplicate frame and simply discard it.(1) Send an I-FRAME with an invalid NS( IUTs VR). Note that VS has not changed.

(2) Wait T200 to verify that the IUT does not transmit anything.

(3) Verify that the IUT has not changed its NR.

(4) IUTs N(R) must be equal to the Tester's V(S).

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE83\_N06

**Group** : Common/DLLE/MFOEstablished/S8/S83/Invalid/

**Purpose** : Verify that the IUT on receipt of an out of sequence I-FRAME (P=0), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R)+k \leq N(S) < V(R)-k$  (outside the receive window)

transmits a SABME (P=1) frame.

The IUT is expected to enter the Awaiting Establishment state (5.1 —Re-Establish).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		(NSErr:= (VS+ rxK +1) MOD ModVal)			
3		MDLP!lframe	I_iFrame1( SndCmd, P0, NSErr, VR)		(1)
4		START T200			
5	L1	MDLP?SABME CANCEL T200	SABME_V( RcvCmd, P1)	(P)	(2)
6		+VER_S51			
7		+POST_S1			
8		+UNEXPECTED_S83			
9		GOTO L1			
10		?TIMEOUT T200		(F)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			

**Detailed Comments** : (1) Send an I frame whose N(S) value is outside the receive window size. The upper bound was selected. One could also write a test using  $NS = VR - k - 1$  instead. This would be covered in a full conformance test suite.

(2) The IUT is expected to Re-Establish the link.

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE83\_N07a  
**Group** : Common/DLLE/MFOEstablished/S8/S83/Invalid/  
**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0) with an N(R) error, where the following condition holds:  $V(S) < N(R) < V(A)$  (N(R) error) transmits a FRMR (F=1) with the Z bit set followed immediately by a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting establishment state (5.1 Re-Establish).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP?IFRAME	I_iFrame1(SndCmd, P0, VS, NRError)		(1)
4		START T200			
5	L1	MDLP?FRMR CANCEL T200	FRMR_I_NRErr(Cmd, RcvRsp, F0, NRError, VS, VR)		(2)
6		START T200			
7	L2	MDLP?SABME CANCEL T200	SABME_V(RcvCmd, P1)	(P)	(3)
8		+VER_S51			
9		+POST_S1			
10		+UNEXPECTED_S83			
11		GOTO L2			
12		?TIMEOUT T200		(F)	
13		+POST_S1			
14		MDLP?OTHERWISE CANCEL T200		(F)	
15		+POST_S1			
16		+UNEXPECTED_S83			
17		GOTO L1			
18		?TIMEOUT T200		(F)	
19		+POST_S1			
20		MDLP?OTHERWISE CANCEL T200		(F)	
21		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) IUT has identified the NR error.

(3) The IUT is expected to Re-Establish the link.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE83\_N07b  
**Group** : Common/DLLE/MFOEstablished/S8/S83/Invalid/  
**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0) with an N(R) error, where the following condition hold:  $V(S) < N(R) < V(A)$  (N(R) error) and transmits a SABME (P=1) frame.  
 The IUT is expected to enter the Re-Establish substate (5.1).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!lframe	L_iFrame1(SndCmd, P0, VS, NRError)		(1)
4		START T200			
5	L1	MDLP?SABME CANCEL T200	SABME_V(RcvCmd ,P1)	(P)	(2)
6		+VER_S51			
7		+POST_S1			
8		+UNEXPECTED_S83			
9		GOTO L1			
10		?TIMEOUT T200		(F)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) IUT has identified the NR error and is expected to Re-Establish the link.



### Test Case Dynamic Behaviour

**Test Case Name** : MFOE84\_V01

**Group** : Common/DLLE/MFOEstablished/S8/S84/Valid/

**Purpose** : Verify that the IUT can transmit a SABME (P=1) .

The IUT is expected to enter the Awaiting Establishment state (5.0 Establish).

**Default** :

**Configuration** :

**Comments** : IUT must be able to send a SABME (P=1) on demand.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			
2		<IUTISABME>	SABME_V(RcvCmd , P1)		(1)
3		START Toper			
4	L1	MDLP?SABME CANCEL Toper	SABME_V(RcvCmd , P1)	(P)	
5		+VER_S50			(2)
6		+POST_S1			(3)
7		+UNEXPECTED_S84			
8		GOTO L1			
9		?TIMEOUT Toper		(I)	(4)
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Toper		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Request the IUT to transmit a SABME (P=1) command frame. This simulates the reception of a DL-ESTABLISH request at the IUT's upper MDLP service interface.

(2) Verify that the IUT has changed to state S50. Side effect that IUT enters S84 upon successful completion.

(3) Return the IUT to a stable state.

(4) Operator was unable to transmit the requested frame on time. This test should be re-executed in this case.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE84\_V02  
**Group** : Common/DLLE/MFOEstablished/S8/S84/Valid/  
**Purpose** : Verify that the IUT transmits a UA (F=1) frame in response to a SABME (P=1) frame  
 The IUT is expected to enter the MFE substate (7.0.1 --not in sleep mode).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			
2		MDLPISABME	SABME_V ( SndCmd, P1)		
3		START T200			
4	L1	MDLP?UA ( RC:=0, VS:=0, VR:=0, VA:=0) CANCEL T200	UA_V ( RcvRsp, F1)	(P)	(1)
5		+VER_S701			(2)
6		+POST_S1			(3)
7		+UNEXPECTED_S84			
8		GOTO L1			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Initialize State variables.  
 (2) Ensure that the IUT is in MFE S84.  
 (3) Return IUT to a known stable state.  
 Note: In practice, the IUT is expected to respond to the first transmission of the SABME frame.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE84\_V03  
**Group** : Common/DLLE/MFOEstablished/S8/S84/Valid/  
**Purpose** : Verify that the IUT, on receipt of a DISC(P=1) frame, transmits a UA (F=1) frame.  
 The IUT is expected to enter the TEI Unassigned state (1).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			(1)
2		MDLPIDISC START T200	DISC_V (SndCmd, P1)		
3	L1	MDLP?UA CANCEL T200	UA_V (RcvRsp, F1)	(P)	
4		+VER_S10			(2)
5		+POST_S1			
6		+UNEXPECTED_S84			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.4 ---Peer Receiver Busy-Normal).

(2) Verify that the IUT has returned to TEI Unassigned state.

Caveat: An M-ES should not attempt to deregister it's NEIs by transmitting ESBs encapsulated in MDLP I frames prior to sending the UA. The MD-IS after transmitting a DISC command will be in the Awaiting Release state and will simply ignore these frame. Sending an I-frame in response to the DISC will result in test case failure.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE84\_V04  
**Group** : Common/DLLE/MFOEstablished/S8/S84/Valid/  
**Purpose** : Verify that the IUT on receipt of a DM(F=0) frame transmits a SABME(P=1) frame.  
 The IUT is expected to enter the Re-Establish substate (5.1).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			
2		MDLPIDM START T200	DM_V (SndRsp, F0)		(1)
3	L1	MDLP?SABME CANCEL T200	SABME_V (RcvCmd, P1)	(P)	(2)
4		+VER_S51			
5		+POST_S1			
6		+UNEXPECTED_S84			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Indicate to the IUT that the Tester is in Disconnected Mode (DM).

(2) The IUT is expected to Re-Establish the link.

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE84\_V05  
**Group** : Common/DLLE/MFOEstablished/S8/S84/Valid/  
**Purpose** : Verify that the IUT on receipt of a TEST (P=0) frame responds with TEST (F=0) frame.  
 The IUT is expected to remain in the Timer Recovery state (8.4 ---Peer Receiver Busy--Normal).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			
2		MDLPITEST	TEST_Frame1( SndCmd, P0)		(1)
3		START Twait			
4	L1	MDLP?TEST CANCEL Twait	TEST_Frame1( RcvRsp, F0)	(P)	(1)
5		+VER_S84			(2)
6		+POST_S1			
7		+UNEXPECTED_S84			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Exchange of TEST frames should not modify any of the state variables.

(2) The IUT should still be in the same state as prior to the TEST frame exchange.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE84\_V06  
**Group** : Common/DLLE/MFOEstablished/S8/S84/Valid/  
**Purpose** : Verify that the IUT on receipt of a FRMR response frame rejecting a UA frame transmits a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 —Re-Establish).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			(1)
2		MDLP!FRMR	FRMR_UA(Cmd, SndRsp, F1, VR, VS)		(2)
3		START T200			
4	L1	MDLP?SABME CANCEL T200	SABME_V (RcvCmd, P1)	(P)	(3)
5		+VER_S51			
6		+POST_S1			
7		+UNEXPECTED_S84			
8		GOTO L1			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.4 --Peer Receiver Busy--Normal).  
 (2) Reject a UA frame. Note that the IUT should respond according to the protocol in spite of the fact that a valid UA frame was received during the connection establishment.  
 (3) The IUT is expected to Re-Establish the link.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE84_V07					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S84/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of an RR (P=1) frame where $V(A) \leq N(R) \leq V(S)$ transmits a RR (F=1) frame. The IUT is expected to enter the Timer Recovery state (8.0—Normal—Normal).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : Acknowledges all frames sent by the IUT.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			
2		MDLPIRR	RR_V( SndCmd, P1, VR)		(1)
3		START T200			(2)
4	L1	MDLP?RR CANCEL T200	RR_V (RcvRsp, F1, VS)	(P)	(3)
5		+VER_S80			
6		+POST_S1			
7		+UNEXPECTED_S84			
8		GOTO L1			
9		?TIMEOUT T200			
10		+POST_S1		(F)	
11		MDLP?OTHERWISE CANCEL T200			
12		+POST_S1		(F)	
<b>Detailed Comments</b> : (1) Place the IUT in the Timer Recovery state (8.4 —Peer Receiver Busy—Normal). By sending an RR (P=1) clears the Peer Receiver Busy condition. (2) Request the IUT's current NR value. The IUT must respond as poll bit is set. $V(A) \leq N(R)$ means that new I frames may or may not have been acknowledged. $N(R) \leq V(S)$ means that some or all of the transmitted I frames may be acknowledged. (3) Receipt of the RR frame implies that we are still in S84.					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE84_V08					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S84/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of RR (F=1) frame where $V(A) \leq N(R) < V(S)$ , requeues all I frames where $V(A) < N(S) < V(S)$ and sets its V(S) equal to N(R). The IUT is expected to enter the MFE substate (7.0.1 —Not in Sleep Mode).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : REWRITE TEST:					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			(1)
<b>Detailed Comments</b> :					

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE84\_V09  
**Group** : Common/DLLE/MFOEstablished/S8/S84/Valid/  
**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame where  $V(A) \leq N(R) < V(S)$  (N(R) does not acknowledge frames), resends the I-FRAME(s) indicated by the N(R) contained in the SREJ frame.  
 The IUT is expected to remain in the Timer Recovery state (8.0 ---Normal-Normal).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84_RequestNIFrames(2)			(1)
2		( NRRResend := (VR - 2) MOD ModVal)			(3)
3		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRRResend)		(4)
4	L1	MDLP?Iframe CANCEL Twait	I_V (RcvCmd, P0, NRRResend, VS)	(P)	(5)
5		+POST_S1			
6		+UNEXPECTED_S80			(4)
7		GOTO L1			
8		?TIMEOUT Twait		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL Twait		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.4 ---Peer Receiver Busy-Normal), further request the IUT to send 2 I frames.

(3) Set NR to request the last transmitted I-frame.

(4) Tester requests that the IUT retransmits the last I-frame. By sending an SREJ frame, this clears the Peer Receiver Busy condition.

(5) The requested I frame was received.

Note: The following test assumes that once an I frame has been transmitted (by operator intervention), that it is stored internally and will be retransmitted automatically without any further operator intervention.



**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE84\_V10  
**Group** : Common/DLLE/MFOEstablished/S8/S84/Valid/  
**Purpose** : Verify that the IUT on receipt of an RNR (P=1) frame where  $V(A) \leq N(R) \leq V(S)$ , transmits an RR (F=1) frame.  
 The IUT is expected to remain in the Timer Recover state (8.4—Peer Receiver Busy—Normal).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			(1)
2		MDLPI RNR START T200	RNR_V(SndCmd, P1, VR)		(2)
3	L1	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)	(P)	(3)
4		+VER_S84			
5		+POST_S1			
6		+UNEXPECTED_S84			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.4 —Peer Receiver Busy—Normal).  
 (2) Indicate to IUT that tester is in own receiver busy. Poll bit set (P=1), therefore IUT must respond. Note that tester acknowledges all I-frames that have been sent. E.g.  $N(R) \leq V(S)$ .  
 (3) IUT's NR= Tester's VS.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE84\_V11  
**Group** : Common/DLLE/MFOEstablished/S8/S84/Valid/  
**Purpose** : Verify that the IUT on receipt of RNR (F=1) frame where  $V(A) \leq N(R) < V(S)$ , requeues all I frames where  $V(A) \leq N(S) < V(S)$  and sets its V(S) equal to N(R).  
 The IUT is expected to enter the MFE substate (7.4—Peer Receiver Busy—Normal)  
**Default** :  
**Configuration** :  
**Comments** : REWRITE TEST:

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			(1)

**Detailed Comments** :

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE84\_V12

**Group** : Common/DLLE/MFOEstablished/S8/S84/Valid/

**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $N(S) = V(R)$  (IUT's next to send is the tester's next expected frame to be received)

increments its  $V(R)$  by one and  $V(A)$  with the  $N(R)$  contained in the received frame.

The IUT is expected to remain in the Timer Recovery state ( 8.4 —Peer Receiver Busy–Normal)

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			(1)
2		MDLP!lframe	I_iFrame1( SndCmd, P0, VS, VR)		(1a)
3		(VS:=(VS+1) MOD ModVal)			
4		MDLP! RNR	RNR_V( SndCmd, P1, VR)		(2)
5		START T200			
6	L2	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)	(P)	(3)
7		+POST_S1			
8		+UNEXPECTED_S84			
9		GOTO L2			
10		?TIMEOUT T200		(F)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.4 —Peer Receiver Busy–Normal). All I frames oreceived to date are acknowledged.

(1a) If the IUT receives the I frame, it increments  $V(R)$  by one.

(2) Request the IUT's current NR. Poll bit set (P=1), therefore IUT must respond.

(3) On transmitting the response the IUT places its current  $V(R)$  into the RR's  $N(R)$  field. The IUT's NR must be equal to the Tester's VS.

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE84\_V13

**Group** : Common/DLLE/MFOEstablished/S8/S84/Valid/

**Purpose** : Verify that the IUT upon T200 expiry and retransmission count (RC) is less than the Max. Retransmissions Counter (N200) transmits an RR (P=1).

The IUT is expected to remain in the Timer Recovery state (8.4 —Peer Receiver Busy—Normal).

**Default** :

**Configuration** :

**Comments** : Even if the Timer Recovery state is entered because T200 expired because no response was sent on reception of an I frame the IUT should only be transmitting an RR.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			
2		START Twait			
3	L1	MDLP?RR	RR_V(RcvCmd, P1, VS)	(P)	
4		+POST_S1			
5		+UNEXPECTED_S74			
6		GOTO L1			
7		?TIMEOUT Twait		(I)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL Twait		(I)	
10		+POST_S1			

**Detailed Comments** : (1) Request the IUT to transmit one I frame. VR is incremented by 1.

(2) Do not acknowledge the I frame. The IUT should RR (P=1) frame following expiry of its T200 timer. Wait for a period of time known to be larger than T200.

(3) The IUT should be in timer recovery. The IUT will exit timer recovery if it has received an appropriate RR or RNR (F=1) response frame.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE84\_V13a

**Group** : Common/DLLE/MFOEstablished/S8/S84/Valid/

**Purpose** : Verify that the IUT, upon T200 expiry where RC=N200 (the retransmission count equals the Max. Retransmission Counter (N200) Re-Establishes the link by transmitting a SABME (P=1) command frame.

The IUT is expected to enter the Awaiting Establishment state ( 5.1 ---Re-Establish).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			(1)
2	L1	START Twait			(2)
3		MDLP?RR	RR_V(RcvCmd, P1, VS)		(3)
4		[ RC < n200Value] (RC:= RC +1)			(4)
5		GOTO L1			
6		[ RC = n200Value]			(4)
7		START Twait			
8	L3	MDLP?SABME	SABME_V(RcvCmd, P1)	(P)	
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S84			
12		GOTO L3			
13		?TIMEOUT Twait		(I)	
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL Twait		(I)	
16		+POST_S1			
17		+UNEXPECTED_S84			
18		GOTO L1			
19		?TIMEOUT Twait		(I)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Twait		(I)	
22		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.0 ---Normal-Normal). At this point RC=0.

(2) The IUT is already in Timer Recovery state, therefore simply keep waiting for an RR (P=1).

(3) The IUT is expected to transmit a RR (P=1) frame following expiry of its T200 timer. Twait is larger than T200.

(4) The RR frames are ignored until the retransmission count reaches N200. At this point, the IUT should reset the link.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE84\_V14

**Group** : Common/DLLE/MFOEstablished/S8/S84/Valid/

**Purpose** : Verify that the IUT on expiry of the T205 timer transmits a RR (F=0) frame.

The IUT is expected to remain in the Timer Recovery state ( 8.4 —Peer Receiver Busy–Normal).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			(1)
2		MDLP  frame	L_iFrame1(SndCmd, P0, VS,VR)		(2)
3		( VS := (VS+1) MOD ModVal)			
4		START T205 (t205Value + delta)			
5	L1	+UNEXPECTED_S84			
6		GOTO L1			
7		?TIMEOUT T205			(3)
8		START T200			
9	L2	MDLP?RR CANCEL T200	RR_V(RcvRsp, F0, VS)	(P)	
10		+POST_S1			
11		+UNEXPECTED_S84			
12		GOTO L2			
13		?TIMEOUT T200		(F)	(4)
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL T200		(F)	
16		+POST_S1			
17		MDLP?OTHERWISE CANCEL T205		(F)	(5)
18		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.4 —Peer Receiver Busy–Normal).

(2) I/P=0 should cause T205 to be started on the IUT side.

(3) Tester should not receive anything from the IUT at least until T205 has expired.

(4) IUT did not respond with an RR (P0) frame. Note this test assumes that the IUT does not have any I frames to transmit. Test are supposed to be executed in a controlled environment.

(5) some frame received before T205 timeout. If this is the case, one should examine time stamps of the transmitted I frame and the received frame. It may be a borderline case where RR is received only milliseconds prior to expiry of T205.

Note: T205 is the minimum amount of time that an IUT must wait before it can transmit a response. Nothing prevents an IUT to transmit something after expiry of T205, but the IUT should however transmit something prior to expiry of the T200 retransmission timer. T205 << T200.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE84\_V15  
**Group** : Common/DLLE/MFOEstablished/S8/S84/Valid/  
**Purpose** : Verify that the IUT, transmits an RNR (F=0) when it enters the own receiver busy condition.  
 The IUT is expected to enter the Timer Recovery state ( 8.6 —Peer Receiver Busy—Own Receiver Busy).  
**Default** :  
**Configuration** :  
**Comments** : The IUT must be able to cause an own receiver busy condition.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			
2		<IUT RNR>	RNR_V(RcvRsp, F0, VS)		(1)
3		START Toper			
4	L1	MDLP?RNR CANCEL Toper	RNR_V(RcvRsp, F0, VS)	(P)	
5		+VER_S86			
6		+POST_S1			
7		+UNEXPECTED_RR			
8		GOTO L1			
9		+UNEXPECTED_S84			
10		GOTO L1			
11		?TIMEOUT Toper		(I)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Toper		(F)	
14		+POST_S1			

**Detailed Comments** : (1) Test Operator is requested to transmit an RNR. How this is done is IUT dependent.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE84\_N01a  
**Group** : Common/DLLE/MFOEstablished/S8/S84/Invalid/  
**Purpose** : Verify that the IUT on receipt of an RR (P=1) frame containing an N(R) error, transmits an RR(F=1), followed by an FRMR (F=1) followed immediately by a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 —Re—Establish)  
**Default** :  
**Configuration** :  
**Comments** : The IUT must tx a FRMR before a SABME

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!RR START T200	RR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RR CANCEL T200	RR_V (RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?FRMR CANCEL Twait	FRMR_RR(Cmd, RcvRsp,F1, NRError, VS, VR )		(2a)
7		START Twait			
8	L3	MDLP?SABME CANCEL Twait	SABME_V( RcvCmd, P1)	(P)	(2b)
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S84			
12		GOTO L3			
13		?TIMEOUT Twait		(F)	
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL Twait		(F)	
16		+POST_S1			
17		+UNEXPECTED_S84			
18		GOTO L2			
19		?TIMEOUT Twait.		(F)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Twait		(F)	
22		+POST_S1			
23		+UNEXPECTED_S84			
24		GOTO L1			
25		?TIMEOUT T200		(F)	
26		+POST_S1			
27		MDLP?OTHERWISE CANCEL T200		(F)	
28		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) IUT's NR = Tester's VS.

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**Test Case Dynamic Behaviour**

**Detailed Comments : ...**

(2a) The IUT correctly identified the erroneous RR frame.

(2b) The IUT attempts to Re-Establish the link.



Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE84_N01b					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S84/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an RR (P=1) frame containing an N(R) error, transmits an RR (F=1) followed immediately by a SABME (P=1) frame.					
The IUT is expected to enter the Awaiting Establishment state (5.1 —Re—Establish)					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : The IUT does not transmit the optional FRMR.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!RR START T200	RR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S84			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S84			
16		GOTO L1			
17		?TIMEOUT T200		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL T200		(F)	
20		+POST_S1			
<b>Detailed Comments</b> : (1) Inject an NR error.					
(2) The IUT's NR should be equal to the Tester's VS					
(3) IUT attempts to Re—Establish the link as expected. This indicates that it has identified the NR error.					

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE84\_N02a  
**Group** : Common/DLLE/MFOEstablished/S8/S84/Invalid/  
**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame containing an N(R) error, transmits an FRMR (F=0) frame with the Z bit set and transmits a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 --Re-Establish)  
**Default** :  
**Configuration** :  
**Comments** : The IUT must send an FRMR prior to transmitting the SABME if this test is selected. Note: A full conformance ATS would also verify this behaviour for SREJ (F=0).

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRError)		(1)
4	L1	MDLP?FRMR CANCEL Twait	FRMR_SREJ(Cmd, RcvRsp, F1, NRError, VS, VR )		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd , P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S84			
10		GOTO L2			
11		?TIMEOUT Twait			(F)
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait			(F)
14		+POST_S1			
15		+UNEXPECTED_S84			
16		GOTO L1			
17		?TIMEOUT Twait			(F)
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL Twait			(F)
20		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.  
 (2) The IUT has recognized the invalid NR value.  
 (3) The IUT attempts to Re-Establish the link.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE84\_N02b  
**Group** : Common/DLLE/MFOEstablished/S8/S84/Invalid/  
**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame containing an N(R) error, transmits a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 --Re-Establish)  
**Default** :  
**Configuration** :  
**Comments** : IUT does not transmit the optional FRMR frame but immediately attempts to Re-Establish the link.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!SREJ START Twait	SREJ_V(SndCmd, P0, NRError)		(1)
4	L1	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(2)
5		+VER_S51			
6		+POST_S1			(3)
7		+UNEXPECTED_S84			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	(4)
12		+POST_S1			

**Detailed Comments** : (1) Create an NR error which should be rejected by the IUT.

(2) IUT correctly attempts to Re-Establish the link.

(3) Return the IUT to TEI Unassigned state.

(4) If an FRMR frame causes the test case failure, the test operator should have indicated in the PIXIT that the IUT DOES transmit the optional FRMR frame.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE84_N03a					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S84/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an RNR (P=1) frame containing an N(R) error transmits a RR(F=1), followed by an FRMR (F=1) and a SABME (P=1) frame.					
The IUT is expected to enter Awaiting Establishment state (5.1 —Re—Establish).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : The IUT must tx a FRMR before a SABME (P=1)					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP?RNR START T200	RNR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RR CANCEL T200	RR_V (RcvRsp, F1, VS)		
5		START Twait			
6	L2	MDLP?FRMR CANCEL Twait	FRMR_RNR(Cmd, RcvRsp,F1, NRError, VS, VR)		(2)
7		START Twait			
8	L3	MDLP?SABME CANCEL Twait	SABME_V( RcvCmd, P1)	(P)	(3)
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S84			
12		GOTO L3			
13		?TIMEOUT Twait		(F)	
14		+POST_S1			
15		MDLP?OTMHERWISE CANCEL Twait		(F)	
16		+POST_S1			
17		+UNEXPECTED_S84			
18		GOTO L2			
19		?TIMEOUT Twait		(F)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Twait		(F)	
22		+POST_S1			
23		+UNEXPECTED_S84			
24		GOTO L1			
25		?TIMEOUT T200		(F)	
26		+POST_S1			
27		MDLP?OTHERWISE CANCEL T200		(F)	
28		+POST_S1			
<b>Detailed Comments</b> : (1) Inject an NR error.					
(2) IUT has recognized the erroneous frame.					

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Test Case Dynamic Behaviour	
Detailed Comments : ...	
(3) IUT should attempt to Re-Establish the link after transmitting the FRMR.	

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE84_N03b					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S84/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an RNR (P=1) frame containing an N(R) error, transmits a RR (F=1) followed immediately by a SABME (P=1) frame.					
The IUT is expected to enter Awaiting Establishment state (5.1 --Re-Establish).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : The IUT does not transmit the optional FRMR.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPIRNR START T200	RNR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RR CANCEL T200	RR_V (RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V( RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S84			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S84			
16		GOTO L1			
17		?TIMEOUT T200		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL T200		(F)	
20		+POST_S1			
<b>Detailed Comments</b> : (1) Inject an NR error.					
(2) IUT's NR = Tester's VS.					
(3) IUT should attempt to Re-Establish the link. This indicates that it has recognized the erroneous RNR frame.					

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE84\_N04  
**Group** : Common/DLLE/MFOEstablished/S8/S84/Invalid/  
**Purpose** : Verify that the IUT on receipt of a duplicate I-FRAME (P=0), where the following conditions hold:  
 $V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R) - k \leq N(S) < V(R)$  (duplicate frame)  
 DISCARDS the I-FRAME data after updating its V(A) with the N(R) in the received frame.  
 The IUT is expected to remain in the Timer Recovery state (8.4 —Peer Receiver Busy-Normal).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			
2		(DupVS := VS)			(1)
3		MDLP!lframe	L_iFrame1( SndCmd, P0, VS, VR)		
4		( VS:= (VS+1) MOD ModVal)			
5		MDLP!lframe	L_iFrame1( SndCmd, P0, DupVS, VR)		(2)
6		START T200			
7	L1	+UNEXPECTED_S84			
8		GOTO L1			
9		?TIMEOUT T200			
10		MDLP!RNR	RNR_V( SndCmd, P1, VR)		(3)
11		START T200			
12	L2	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)	(P)	(4)
13		+POST_S1			
14		+UNEXPECTED_S84			
15		GOTO L2			
16		MDLP?OTHERWISE CANCEL T200			(F)
17		+POST_S1			
18		MDLP?OTHERWISE CANCEL T200			(F)
19		+POST_S1			

**Detailed Comments** : (1) Set up VS value for duplicate frame.

(2) VS is not incremented as this is a duplicate frame. The IUT should not increment its NR on receipt of this duplicate frame.

(3) Verify that the IUT discarded the duplicate I-frame by requesting the IUT's current NR.

(4) The IUT's NR must equal the tester's VS.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE84\_N05  
**Group** : Common/DLLE/MFOEstablished/S8/S84/Invalid/  
**Purpose** : Verify that the IUT on receipt of an out of sequence I-FRAME (P=0) (which causes a new selective reject condition to occur), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R) < N(S) < V(R)+k$  (new frame, not the next expected frame)

transmit one or more SREJ (P=0) or SREJ (F=0) frames for the missing I-FRAME(s) and updates its V(A) with the N(R) contained in the received frame.

The IUT is expected to enter the MFE state ( 7.5 —Peer Receiver Busy—SREJ Recovery).

**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			
2		MDLPIIframe (NSErr:= (VS+1) MOD ModVal)	I_jFrame1( SndCmd, P0, NSErr, VR)		(1)
3		START T200			
4	L1	MDLP?SREJ CANCEL T200	SREJ_V( RcvCmd, P0, VS)	(P)	(2)
5		+VER_S75			(3)
6		+POST_S1			
7		MDLP?SREJ CANCEL T200	SREJ_V( RcvRsp, F0, VS)	(P)	(2)
8		+VER_S74			(3)
9		+POST_S1			
10		+UNEXPECTED_S84			
11		GOTO L1			
12		?TIMEOUT T200		(F)	
13		+POST_S1			
14		MDLP?OTHERWISE CANCEL T200		(F)	
15		+POST_S1			

**Detailed Comments** : (1) Cause a selective reject condition.

(2) Expecting either a SREJ (P=0) or SREJ (F=0) requesting the tester to transmit the skipped I frame.

(3) Only one SREJ frame is expected (i.e. VS+1 used).

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE84\_N06

**Group** : Common/DLLE/MFOEstablished/S8/S84/Invalid/

**Purpose** : Verify that the IUT on receipt of an out of sequence I-FRAME (P=0), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R)+k \leq N(S) < V(R)-k$  (outside the receive window)

transmits a SABME (P=1) frame.

The IUT is expected to enter the Awaiting Establishment state ( 5.1 --Re-Establish).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			
2		(NSError=(VS+ rxK +1) MOD ModVal)			(1)
3		MDLP!frame	I_iFrame1( SndCmd, P0, NSError, VR)		(1)
4		START T200			
5	L1	MDLP?SABME CANCEL T200	SABME_V( RcvCmd, P1)	(P)	(2)
6		+VER_S51			
7		+POST_S1			
8		+UNEXPECTED_S84			
9		GOTO L1			
10		?TIMEOUT T200		(F)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			

**Detailed Comments** : (1) Send an I frame whose N(S) value is outside the receive window size. The upper bound was selected. One could also write a test using  $(NS = VR - rxK - 1)$  instead. This would be covered in a full conformance test suite. See Part 403 for details regarding rxK.

(2) The IUT is expected to Re-Establish the link.



**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE84\_N07a  
**Group** : Common/DLLE/MFOEstablished/S8/S84/Invalid/  
**Purpose** : Verify that the IUT on receipt of an I-FFRAME (P=0) with an N(R) error, where the following condition holds:  $V(S) < N(R) < V(A)$  indicating an N(R) error, transmits a FRMR (F=0) with the Z bit set to 1 followed by a SABME (P=1) frame.  
 The IUT shall enter the Awaiting Establishment state (5.1 Re-Establish).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			
2		(NRErr := (VR + 1) MOD ModVal)			
3		MDLP!lframe	L_iFrame1(SndCmd, P0, VS, NRErr)		(1)
4		START T200			
5	L1	MDLP?FRMR CANCEL T200	FRMR_l_NRErr(Cmd, RcvRsp, F0, NRErr, VS, VR)		(2)
6		START T200			
7	L2	MDLP?SABME CANCEL T200	SABME_V(RcvCmd, P1)	(P)	(3)
8		+VER_S51			
9		+POST_S1			
10		+UNEXPECTED_S84			
11		GOTO L2			
12		?TIMEOUT T200			(F)
13		+POST_S1			
14		MDLP?OTHERWISE CANCEL T200			(F)
15		+POST_S1			
16		+UNEXPECTED_S84			
17		GOTO L1			(F)
18		?TIMEOUT T200			(F)
19		+POST_S1			
20		MDLP?OTHERWISE CANCEL T200			(F)
21		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.  
 (2) IUT has identified the NR error.  
 (3) The IUT is expected to Re-Establish the link.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE84\_N07b

**Group** : Common/DLLE/MFOEstablished/S8/S84/Invalid/

**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0) with an N(R) error, where the following condition hold:  $V(S) < N(R) < V(A)$  (N(R) error) and transmits a SABME (P=1) frame.

The IUT is expected to enter the Awaiting Establishment state (5.1 —Re-Establish)

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S84			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!frame	L_iFrame1(SndCmd, P0, VS, NRError)		(1)
4		START T200			
5	L1	MDLP?SABME CANCEL T200	SABME_V(RcvCmd ,P1)	(P)	(2)
6		+VER_S51			
7		+POST_S1			
8		+UNEXPECTED_S84			
9		GOTO L1			
10		?TIMEOUT T200		(F)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) The IUT is expected to Re-Establish the link.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE85\_V01

**Group** : Common/DLLE/MFOEstablished/S8/S85/Valid/

**Purpose** : Verify that the IUT can transmit a SABME (P=1) .

The IUT is expected to enter the Awaiting Establishment state (5.0 Establish).

**Default** :

**Configuration** :

**Comments** : IUT must be able to send a SABME (P=1) on demand.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			
2		<IUTISABME>	SABME_V(RcvCmd , P1)		(1)
3		START Toper			
4	L1	MDLP?SABME CANCEL Toper	SABME_V(RcvCmd , P1)	(P)	
5		+VER_S50			(2)
6		+POST_S1			(3)
7		+UNEXPECTED_S85			
8		GOTO L1			
9		?TIMEOUT Toper		(I)	(4)
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Toper		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Request the IUT to transmit a SABME (P=1) command frame. This simulates the reception of a DL-ESTABLISH request at the IUT's upper MDLP service interface.

(2) Verify that the IUT has changed to state S50. Side effect that IUT enters S85 upon successful completion.

(3) Return the IUT to a stable state.

(4) Operator was unable to transmit the requested frame on time. This test should be re-executed in this case.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE85\_V02  
**Group** : Common/DLLE/MFOEstablished/S8/S85/Valid/  
**Purpose** : Verify that the IUT transmits a UA (F=1) frame in response to a SABME (P=1) frame  
 The IUT is expected to enter the MFE substate (7.0.1 ---not in sleep mode).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			
2		MDLPISABME	SABME_V ( SndCmd, P1)		
3		START T200			
4	L1	MDLP?UA ( RC:=0, VS:=0, VR:=0, VA:=0) CANCEL T200	UA_V ( RcvRsp, F1)	(P)	(1)
5		+VER_S701			(2)
6		+POST_S1			(3)
7		+UNEXPECTED_S85			
8		GOTO L1			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Initialize State variables.

(2) Ensure that the IUT is in MFE S85.

(3) Return IUT to a known stable state.

Note: In practice, the IUT is expected to respond to the first transmission of the SABME frame.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE85\_V03  
**Group** : Common/DLLE/MFOEstablished/S8/S85/Valid/  
**Purpose** : Verify that the IUT, on receipt of a DISC(P=1) frame, transmits a UA (F=1) frame.  
 The IUT is expected to enter the TEI Unassigned state (1).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			(1)
2		MDLPIDISC START T200	DISC_V (SndCmd, P1)		
3	L1	MDLP?UA CANCEL T200	UA_V (RcvRsp, F1)	(P)	
4		+VER_S10			(2)
5		+POST_S1			
6		+UNEXPECTED_S85			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.5 —Peer Receiver Busy—SREJ Recovery).

(2) Verify that the IUT has returned to TEI Unassigned state.

Caveat: An M-ES should not attempt to deregister it's NEIs by transmitting ESBs encapsulated in MDLP I frames prior to sending the UA. The MD-IS after transmitting a DISC command will be in the Awaiting Release state and will simply ignore these frame. Sending an I-frame in response to the DISC will result in test case failure.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE85\_V04

**Group** : Common/DLLE/MFOEstablished/S8/S85/Valid/

**Purpose** : Verify that the IUT on receipt of a DM(F=0) frame transmits a SABME(P=1) frame.

The IUT is expected to enter the Re-Establish substate (5.1).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			
2		MDLPIDM START T200	DM_V (SndRsp, F0)		(1)
3	L1	MDLP?SABME CANCEL T200	SABME_V (RcvCmd, P1)	(P)	(2)
4		+VER_S51			
5		+POST_S1			
6		+UNEXPECTED_S85			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Indicate to the IUT that the Tester is in Disconnected Mode (DM).

(2) The IUT is expected to Re-Establish the link.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE85\_V05  
**Group** : Common/DLLE/MFOEstablished/S8/S85/Valid/  
**Purpose** : Verify that the IUT on receipt of a TEST (P=0) frame responds with TEST (F=0) frame.  
 The IUT is expected to remain in the Timer Recovery state (8.5 ---Peer Receiver Busy--SREJ Recovery).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			
2		MDLPITEST	TEST_Frame1( SndCmd, P0)		(1)
3		START Twait			
4	L1	MDLP?TEST CANCEL Twait	TEST_Frame1( RcvRsp, F0)	(P)	(1)
5		+VER_S85			(2)
6		+POST_S1			
7		+UNEXPECTED_S85			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Exchange of TEST frames should not modify any of the state variables.

(2) The IUT should still be in the same state as prior to the TEST frame exchange.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE85\_V06  
**Group** : Common/DLLE/MFOEstablished/S8/S85/Valid/  
**Purpose** : Verify that the IUT on receipt of a FRMR response frame rejecting a UA frame transmits a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 —Re-Establish).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			(1)
2		MDLP?FRMR	FRMR_UA(Cmd, SndRsp, F1, VR, VS)		(2)
3		START T200			
4	L1	MDLP?SABME CANCEL T200	SABME_V (RcvCmd, P1)	(P)	(3)
5		+VER_S51			
6		+POST_S1			
7		+UNEXPECTED_S85			
8		GOTO L1			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.5 —Peer Receiver Busy—SREJ Recovery).

(2) Reject a UA frame. Note that the IUT should respond according to the protocol in spite of the fact that a valid UA frame was received during the connection establishment.

(3) The IUT is expected to Re-Establish the link.



Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE85_V07					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S85/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of an RR (P=1) frame where $V(A) \leq N(R) \leq V(S)$ transmits a RR (F=1) frame.  The IUT is expected to enter the Timer Recovery state (8.1—Normal—SREJ Recovery).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : Acknowledges all frames sent by the IUT.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			(1)
2		MDLPIRR	RR_V( SndCmd, P1, VR)		(2)
3		START T200			
4	L1	MDLP?RR CANCEL T200	RR_V( RcvRsp, F1, VS)	(P)	(3)
5		+VER_S81			
6		+POST_S1			
7		+UNEXPECTED_S85			
8		GOTO L1			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			
<p><b>Detailed Comments</b> : (1) Place the IUT in the Timer Recovery state (8.5 ---Peer Receiver Busy—SREJ Recovery). By sending an RR (P=1) clears the Peer Receiver Busy condition.</p> <p>(2) Request the IUT's current NR value. The IUT must respond as poll bit is set. <math>V(A) \leq N(R)</math> means that new I frames may or may not have been acknowledged. <math>N(R) \leq V(S)</math> means that some or all of the transmitted I frames may be acknowledged.</p> <p>(3) Receipt of the RR frame implies that we are still in S85.</p>					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE85_V08					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S85/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of RR (F=1) frame where $V(A) \leq N(R) < V(S)$ , requeues all I frames where $V(A) \leq N(S) < V(S)$ and sets its V(S) equal to N(R).  The IUT is expected to enter the MFE substate (7.1 ---Normal—SREJ Recovery).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : REWRITE TEST:					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			(1)
<b>Detailed Comments</b> :					

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE85\_V09  
**Group** : Common/DLLE/MFOEstablished/S8/S85/Valid/  
**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame where  $V(A) \leq N(R) < V(S)$  (N(R) does not acknowledge frames), resends the I-FRAME(s) indicated by the N(R) contained in the SREJ frame.  
 The IUT is expected to remain in the Timer Recovery state (8.1 —Normal-SREJ Recovery).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85_RequestNIFrames(2)			(1)
2		( NRResend := (VR - 1) MOD ModVal)			(3)
3		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRResend )		(4)
4	L1	MDLP?lframe CANCEL Twait	L_V(RcvCmd, P0, NRResend, VS )	(P)	(5)
5		+POST_S1			
6		+UNEXPECTED_S80			(4)
7		GOTO L1			
8		?TIMEOUT Twait		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL Twait		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.5 —Peer Receiver Busy-SREJ Recovery), further request the IUT to send 2 I frames.  
 (3) Set NR to request the last transmitted I-frame.  
 (4) Tester requests that the IUT retransmits the last I-frame. By sending a SREJ frame, this clears the Peer Receiver Busy condition.  
 (5) The requested I frame was received.  
 Note: The following test assumes that once an I frame has been transmitted (by operator intervention), that it is stored internally and will be retransmitted automatically without any further operator intervention.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE85_V10					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S85/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of an RNR (P=1) frame where $V(A) \leq N(R) \leq V(S)$ , transmits an RR (F=1) frame.  The IUT is expected to remain in the Timer Recover state (8.5—Peer Receiver Busy—SREJ Recovery).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			(1)
2		MDLP! RNR START T200	RNR_V(SndCmd, P1, VR)		(2)
3	L1	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)	(P)	(3)
4		+VER_S85			
5		+POST_S1			
6		+UNEXPECTED_S85			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			
<b>Detailed Comments</b> : (1) Place the IUT in the Timer Recovery state (8.4 —Peer Receiver Busy—Normal).					
(2) Indicate to IUT that tester is in own receiver busy. Poll bit set (P=1), therefore IUT must respond. Note that tester acknowledges all I-frames that have been sent. E.g. $N(R) \leq V(S)$ .					
(3) IUT's NR= Tester's VS.					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE85_V11					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S85/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of RNR (F=1) frame where $V(A) \leq N(R) < V(S)$ , requeues all I frames where $V(A) \leq N(S) < V(S)$ and sets its $V(S)$ equal to $N(R)$ .  The IUT is expected to enter the MFE substate (7.5—Peer Receiver Busy—SREJ Recovery)					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : REWRITE TEST:					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			(1)
<b>Detailed Comments</b> :					

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE85\_V12  
**Group** : Common/DLLE/MFOEstablished/S8/S85/Valid/  
**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0), where the following conditions hold:  
 $V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $N(S) = V(R)$  (IUTs next to send is the tester's next expected frame to be received)  
 increments its V(R) by one and V(A) with the N(R) contained in the received frame.  
 The IUT is expected to remain in the Timer Recovery state ( 8.5 —Peer Receiver Busy—SREJ Recovery).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			(1)
2		MDLPIframe	I_iFrame1( SndCmd, P0, VS, VR)		(1a)
3		( VS=(VS+1) MOD ModVal)			
4		MDLPI RNR	RNR_V( SndCmd, P1, VR)		(2)
5		START T200			
6	L2	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)	(P)	(3)
7		+POST_S1			
8		+UNEXPECTED_S85			
9		GOTO L2			
10		?TIMEOUT T200			(F)
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200			(F)
13		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.5 —Peer Receiver Busy—SREJ Recovery). All I frames received to date are acknowledged.  
 (1a) If the IUT receives the I frame, it increments V(R) by one.  
 (2) Request the IUT's current NR. Poll bit set (P=1), therefore IUT must respond.  
 (3) On transmitting the response the IUT places its current V(R) into the RR's N(R) field. The IUTs NR must be equal to the Tester's VS.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE85\_V13  
**Group** : Common/DLLE/MFOEstablished/S8/S85/Valid/  
**Purpose** : Verify that the IUT upon T200 expiry and retransmission count (RC) is less than the Max. Retransmissions Counter (N200) transmits an RR (P=1).  
 The IUT is expected to remain in the Timer Recovery state (8.5 --Peer Receiver Busy-SREJ Recovery).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			
2		START Twait			
3	L1	MDLP?RR	RR_V(RcvCmd, P1, VS)	(P)	
4		+POST_S1			
5		+UNEXPECTED_S74			
6		GOTO L1			
7		?TIMEOUT Twait		(F)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL Twait		(F)	
10		+POST_S1			

**Detailed Comments** :  
 (2) Do not acknowledge the l frame. The IUT should RR (P=1) frame following expiry of its T200 timer. Wait for a period of time known to be larger than T200.  
 (3) The IUT should be in timer recovery. The IUT will exit timer recovery it has received an appropriate RR or RNR (F=1) response frame.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE85\_V13a  
**Group** : Common/DLLE/MFOEstablished/S8/S85/Valid/  
**Purpose** : Verify that the IUT, upon T200 expiry where RC=N200 (the retransmission count equals the Max. Retransmission Counter (N200) Re-Establishes the link by transmitting a SABME (P=1) command frame.  
 The IUT is expected to enter the Awaiting Establishment state ( 5.1 --Re-Establish).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			(1)
2	L1	START Twait			(2)
3		MDLP?RR	RR_V(RcvCmd, P1, VS)		(3)
4		[ RC < n200Value] (RC:= RC +1)			(4)
5		GOTO L1			(4)
6		[ RC = n200Value]			(4)
7		START Twait			
8	L3	MDLP?SABME	SABME_V(RcvCmd , P1)	(P)	
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S85			
12		GOTO L3			
13		?TIMEOUT Twait		(I)	
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL Twait		(I)	
16		+POST_S1			
17		+UNEXPECTED_S85			
18		GOTO L1			
19		?TIMEOUT Twait		(F)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Twait		(F)	
22		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.0 --Normal-Normal). At this point RC=0.  
 (2) The IUT is already in Timer Recovery state, therefore simply keep waiting for an RR (P=1).  
 (3) The IUT is expected to transmit a RR (P=1) frame following expiry of its T200 timer. Twait is larger than T200.  
 (4) The RR frames are ignored until the retransmission count reaches N200. At this point, the IUT should reset the link.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE85\_V14  
**Group** : Common/DLLE/MFOEstablished/S8/S85/Valid/  
**Purpose** : Verify that the IUT on expiry of the T205 timer transmits a RR (F=0) frame.  
 The IUT is expected to remain in the Timer Recovery state ( 8.5 ---Peer Receiver Busy--SREJ Recovery).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			(1)
2		MDLP!frame	L_iFrame1(SndCmd, P0, VS,VR)		(2)
3		( VS := (VS+1) MOD ModVal)			
4		START T205 (t205Value + delta)			
5	L1	+UNEXPECTED_S85			
6		GOTO L1			
7		?TIMEOUT T205			(3)
8		START T200			
9	L2	MDLP?RR CANCEL T200	RR_V(RcvRsp, F0, VS)	(P)	
10		+POST_S1			
11		+UNEXPECTED_S85			
12		GOTO L2			
13		?TIMEOUT T200		(F)	(4)
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL T200		(F)	
16		+POST_S1			
17		MDLP?OTHERWISE CANCEL T205		(F)	(5)
18		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.4 ---Peer Receiver Busy--Normal).

(2) I/P=0 should cause T205 to be started on the IUT side.

(3) Tester should not receive anything from the IUT at least until T205 has expired.

(4) IUT did not respond with an RR (P0) frame. Note this test assumes that the IUT does not have any I frames to transmit. Test are supposed to be executed in a controlled environment.

(5) some frame received before T205 timeout. If this is the case, one should examine time stamps of the transmitted I frame and the received frame. It may be a borderline case where RR is received only milliseconds prior to expiry of T205.

Note: T205 is the minimum amount of time that an IUT must wait before it can transmit a response. Nothing prevents an IUT to transmit something after expiry of T205, but the IUT should however transmit something prior to expiry of the T200 retransmission timer. T205 << T200.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE85\_V15

**Group** : Common/DLLE/MFOEstablished/S8/S85/Valid/

**Purpose** : Verify that the IUT, transmits an RNR (F=0) when it enters the own receiver busy condition.

The IUT is expected to enter the Timer Recovery state ( 8.7 —Peer Receiver Busy—SREJ and Own Receiver Busy).

**Default** :

**Configuration** :

**Comments** : The IUT must be able to cause an own receiver busy condition.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			
2		<IUTIRNR>	RNR_V(RcvRsp, F0, VS)		(1)
3		START Toper			
4	L1	MDLP?RNR CANCEL Toper	RNR_V(RcvRsp, F0, VS)	(P)	
5		+VER_S86			
6		+POST_S1			
7		+UNEXPECTED_RR			
8		GOTO L1			
9		+UNEXPECTED_S85			
10		GOTO L1			
11		?TIMEOUT Toper		(I)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Toper		(F)	
14		+POST_S1			

**Detailed Comments** : (1) Test Operator is requested to transmit an RNR. How this is done is IUT dependent.



## Test Case Dynamic Behaviour

**Test Case Name** : MFOE85\_N01a  
**Group** : Common/DLLE/MFOEstablished/S8/S85/Invalid/  
**Purpose** : Verify that the IUT on receipt of an RR (P=1) frame containing an N(R) error, transmits an RR(F=1), followed by an FRMR (F=1) followed immediately by a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 —Re—Establish)  
**Default** :  
**Configuration** :  
**Comments** : The IUT must tx a FRMR before a SABME

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPIRR START T200	RR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?FRMR CANCEL Twait	FRMR_RR(Cmd, RcvRsp, F1, NRError, VS, VR)		(2a)
7		START Twait			
8	L3	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(2b)
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S85			
12		GOTO L3			
13		?TIMEOUT Twait		(F)	
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL Twait		(F)	
16		+POST_S1			
17		+UNEXPECTED_S85			
18		GOTO L2			
19		?TIMEOUT Twait		(F)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Twait		(F)	
22		+POST_S1			
23		+UNEXPECTED_S85			
24		GOTO L1			
25		?TIMEOUT T200		(F)	
26		+POST_S1			
27		MDLP?OTHERWISE CANCEL T200		(F)	
28		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) IUT's NR = Tester's VS.

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**Test Case Dynamic Behaviour**

**Detailed Comments : ...**

(2a) The IUT correctly identified the erroneous RR frame.

(2b) The IUT attempts to Re-Establish the link.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE85\_N01b  
**Group** : Common/DLLE/MFOEstablished/S8/S85/Invalid/  
**Purpose** : Verify that the IUT on receipt of an RR (P=1) frame containing an N(R) error, transmits an RR (F=1) followed immediately by a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 —Re-Establish)  
**Default** :  
**Configuration** :  
**Comments** : The IUT does not transmit the optional FRMR.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!RR START T200	RR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RR CANCEL T200	RR_V (RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S85			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S85			
16		GOTO L1			
17		?TIMEOUT T200		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL T200		(F)	
20		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) The IUT's NR should be equal to the Tester's VS

(3) IUT attempts to Re-Establish the link as expected. This indicates that it has identified the NR error.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE85\_N02a

**Group** : Common/DLLE/MFOEstablished/S8/S85/Invalid/

**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame containing an N(R) error, transmits an FRMR (F=0) frame with the Z bit set and transmits a SABME (P=1) frame.

The IUT is expected to enter the Awaiting Establishment state (5.1 --Re-Establish)

**Default** :

**Configuration** :

**Comments** : The IUT must send an FRMR prior to transmitting the SABME if this test is selected. Note: A full conformance ATS would also verify this behaviour for SREJ (F=0).

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!SREJ START Twait	SREJ_V(SndCmd, P0, NRError)	(1)	
4	L1	MDLP?FRMR CANCEL Twait	FRMR_SREJ(Cmd, RcvRsp, F1, NRError, VS, VR)	(2)	
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S85			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S85			
16		GOTO L1			
17		?TIMEOUT Twait		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL Twait		(F)	
20		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) The IUT has recognized the invalid NR value.

(3) The IUT attempts to Re-Establish the link.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE85\_N02b  
**Group** : Common/DLLE/MFOEstablished/S8/S85/Invalid/  
**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame containing an N(R) error, transmits a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 — Re-Establish)  
**Default** :  
**Configuration** :  
**Comments** : IUT does not transmit the optional FRMR frame but immediately attempts to Re-Establish the link.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRError)		(1)
4	L1	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(2)
5		+VER_S51			
6		+POST_S1			(3)
7		+UNEXPECTED_S85			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	(4)
12		+POST_S1			

**Detailed Comments** : (1) Create an NR error which should be rejected by the IUT.  
 (2) IUT correctly attempts to Re-Establish the link.  
 (3) Return the IUT to TEI Unassigned state.  
 (4) If an FRMR frame causes the test case failure, the test operator should have indicated in the PIXIT that the IUT DOES transmit the optional FRMR frame.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE85_N03a					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S85/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an RNR (P=1) frame containing an N(R) error transmits a RR(F=1), followed by an FRMR (F=1) and a SABME (P=1) frame.					
The IUT is expected to enter Awaiting Establishment state (5.1 — Re-Establish).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : The IUT must tx a FRMR before a SABME (P=1)					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP?RNR START T200	RNR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RR CANCEL T200	RR_V (RcvRsp, F1, VS)		
5		START Twait			
6	L2	MDLP?FRMR CANCEL Twait	FRMR_RNR(Cmd, RcvRsp, F1, NRError, VS, VR)		(2)
7		START Twait			
8	L3	MDLP?SABME CANCEL Twait	SABME_V( RcvCmd, P1)	(P)	(3)
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S85			
12		GOTO L3			
13		?TIMEOUT Twait		(F)	
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL Twait		(F)	
16		+POST_S1			
17		+UNEXPECTED_S85			
18		GOTO L2			
19		?TIMEOUT Twait		(F)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Twait		(F)	
22		+POST_S1			
23		+UNEXPECTED_S85			
24		GOTO L1			
25		?TIMEOUT T200		(F)	
26		+POST_S1			
27		MDLP?OTHERWISE CANCEL T200		(F)	
28		+POST_S1			
<b>Detailed Comments</b> : (1) Inject an NR error.					
(2) IUT has recognized the erroneous frame.					

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<b>Test Case Dynamic Behaviour</b>
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<b>Detailed Comments</b> : ...
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(3) IUT should attempt to Re-Establish the link after transmitting the FRMR.
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<b>Test Case Dynamic Behaviour</b>
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<b>Test Case Name</b> : MFOE85_N03b
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<b>Group</b> : Common/DLLE/MFOEstablished/S8/S85/Invalid/
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<b>Purpose</b> : Verify that the IUT on receipt of an RNR (P=1) frame containing an N(R) error, transmits a RR (F=1) followed immediately by a SABME (P=1) frame.
---

The IUT is expected to enter Awaiting Establishment state (5.1 --Re-Establish).

<b>Default</b> :
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<b>Configuration</b> :
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<b>Comments</b> : The IUT does not transmit the optional FRMR.
--

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPIRNR START T200	RNR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S85			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S85			
16		GOTO L1			
17		?TIMEOUT T200		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL T200		(F)	
20		+POST_S1			

<b>Detailed Comments</b> : (1) Inject an NR error.
--

(2) IUT's NR = Tester's VS.
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(3) IUT should attempt to Re-Establish the link. This indicates that it has recognized the erroneous RNR frame.
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**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE85\_N04

**Group** : Common/DLLE/MFOEstablished/S8/S85/Invalid/

**Purpose** : Verify that the IUT on receipt of a duplicate I-FRAME (P=0), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R)-k \leq N(S) < V(R)$  (duplicate frame)

DISCARDS the I-FRAME data after updating its V(A) with the N(R) in the received frame.

The IUT is expected to remain in the Timer Recovery state (8.4 —Peer Receiver Busy—Normal).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			
2		(DupVS := VS)			(1)
3		MDLPIIframe	I_iFrame1( SndCmd, P0, VS, VR)		
4		( VS:= (VS+1) MOD ModVal)			
5		MDLPIIframe	I_iFrame1( SndCmd, P0, DupVS, VR)		(2)
6		START T200			
7	L1	+UNEXPECTED_S85			
8		GOTO L1			
9		?TIMEOUT T200			
10		MDLPIRNR	RNR_V( SndCmd, P1, VR)		(3)
11		START T200			
12	L2	MDLP?RR CANCEL T200	RR_V(RcvRsp, F1, VS)	(P)	(4)
13		+POST_S1			
14		+UNEXPECTED_S85			
15		GOTO L2			
16		?TIMEOUT T200		(F)	
17		+POST_S1			
18		MDLP?OTHERWISE CANCEL T200		(F)	
19		+POST_S1			
20		MDLP?OTHERWISE CANCEL T200		(F)	
21		+POST_S1			

**Detailed Comments** : (1) Set up VS value for duplicate frame.

(2) VS is not incremented as this is a duplicate frame. The IUT should not increment its NR on receipt of this duplicate frame.

(3) Verify that the IUT discarded the duplicate I-frame by requesting the IUT's current NR.

(4) The IUT's NR must equal the tester's VS.



**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE85\_N05  
**Group** : Common/DLLE/MFOEstablished/S8/S85/Invalid/  
**Purpose** : Verify that the IUT on receipt of an out of sequence I-FRAME (P=0) (which causes a new selective reject condition to occur), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R) < N(S) < V(R)+k$  (new frame, not the next expected frame)

transmit one or more SREJ (P=0) or SREJ (F=0) frames for the missing I-FRAME(s) and updates its V(A) with the N(R) contained in the received frame.

The IUT is expected to enter the MFE state ( 7.5 --Peer Receiver Busy-SREJ Recovery).

**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			
2		MDLP!lframe (NSErr:= (VS+3) MOD ModVal, MissinglFrame:= ( NSErr -1) MOD ModVal)	l_lFrame1( SndCmd, P0, NSErr, VR)		(1)
3		START T200			
4	L1	MDLP?SREJ CANCEL T200	SREJ_V( RcvCmd, P0, MissinglFrame)	(P)	(2)
5		+VER_S85			(3)
6		+POST_S1			
7		MDLP?SREJ CANCEL T200	SREJ_V( RcvRsp, F0, MissinglFrame)	(P)	(2)
8		+VER_S85			(3)
9		+POST_S1			
10		+UNEXPECTED_S85			
11		GOTO L1			
12		?TIMEOUT T200		(F)	
13		+POST_S1			
14		MDLP?OTHERWISE CANCEL T200		(F)	
15		+POST_S1			

**Detailed Comments** : (1) Cause a selective reject condition.

(2) Expecting either a SREJ (P=0) or SREJ (F=0) requesting the tester to transmit the skipped l frame.

(3) Only one SREJ frame is expected (i.e. VS+1 used).

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE85\_N06

**Group** : Common/DLLE/MFOEstablished/S8/S85/Invalid/

**Purpose** : Verify that the IUT on receipt of an out of sequence I-FRAME (P=0), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R)+k \leq N(S) < V(R)-k$  (outside the receive window)

transmits a SABME (P=1) frame.

The IUT is expected to enter the Awaiting Establishment state ( 5.1 --Re-Establish).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			
2		(NSerror:= (VS+ rxK +1) MOD ModVal)			(1)
3		MDLP!lframe	L_iFrame1( SndCmd, P0, NSerror, VR)		(1)
4		START T200			
5	L1	MDLP?SABME CANCEL T200	SABME_V( RcvCmd, P1)	(P)	(2)
6		+VER_S51			
7		+POST_S1			
8		+UNEXPECTED_S85			
9		GOTO L1			
10		?TIMEOUT T200		(F)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			

**Detailed Comments** : (1) Send an I frame whose N(S) value is outside the receive window size. The upper bound was selected. One could also write a test using  $(NS = VR - rxK - 1)$  instead. This would be covered in a full conformance test suite. See Part 403 for details regarding rxK.

(2) The IUT is expected to Re-Establish the link.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE85\_N07a

**Group** : Common/DLLE/MFOEstablished/S8/S85/Invalid/

**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0) with an N(R) error, where the following condition holds:  $V(S) < N(R) < V(A)$  indicating an N(R) error, transmits a FRMR (F=0) with the Z bit set to 1 followed by a SABME (P=1) frame.

The IUT shall enter the Awaiting Establishment state (5.1 Re-Establish).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			
2		(NRErr := (VR + 1) MOD ModVal)			
3		MDLP?Iframe	I_iFrame1(SndCmd, P0, VS, NRErr)		(1)
4		START T200			
5	L1	MDLP?FRMR CANCEL T200	FRMR_I_NRErr(Cmd, RcvRsp, F0, NRErr, VS, VR)		(2)
6		START T200			
7	L2	MDLP?SABME CANCEL T200	SABME_V(RcvCmd, P1)	(P)	(3)
8		+VER_S51			
9		+POST_S1			
10		+UNEXPECTED_S85			
11		GOTO L2			
12		?TIMEOUT T200		(F)	
13		+POST_S1			
14		MDLP?OTHERWISE CANCEL T200		(F)	
15		+POST_S1			
16		+UNEXPECTED_S85			
17		GOTO L1			
18		?TIMEOUT T200		(F)	
19		+POST_S1			
20		MDLP?OTHERWISE CANCEL T200		(F)	
21		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) IUT has identified the NR error.

(3) The IUT is expected to Re-Establish the link.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE85\_N07b

**Group** : Common/DLLE/MFOEstablished/S8/S85/Invalid/

**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0) with an N(R) error, where the following condition hold:  $V(S) < N(R) < V(A)$  (N(R) error) and transmits a SABME (P=1) frame.

The IUT is expected to enter the Awaiting Establishment state (5.1 —Re—Establish)

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S85			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!lframe	I_iFrame1(SndCmd, P0, VS, NRError)		(1)
4		START T200			
5	L1	MDLP?SABME CANCEL T200	SABME_V(RcvCmd ,P1)	(P)	(2)
6		+VER_S51			
7		+POST_S1			
8		+UNEXPECTED_S85			
9		GOTO L1			
10		?TIMEOUT T200		(F)	
11		+POST_S1		(F)	
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1		(F)	

**Detailed Comments** : (1) Inject an NR error.

(2) The IUT is expected to Re—Establish the link.

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE86\_V01

**Group** : Common/DLLE/MFOEstablished/S8/S86/Valid/

**Purpose** : Verify that the IUT can transmit a SABME (P=1).

The IUT is expected to enter the Awaiting Establishment state (5.0 -- Establish).

**Default** :

**Configuration** :

**Comments** : IUT must be able to send a SABME (P=1) on demand.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		<IUTISABME>	SABME_V(RcvCmd , P1)		(1)
3		START Toper			
4	L1	MDLP?SABME CANCEL Toper	SABME_V(RcvCmd , P1)	(P)	
5		+VER_S50			(2)
6		+POST_S1			(3)
7		+UNEXPECTED_S86			
8		GOTO L1			
9		?TIMEOUT Toper		(I)	(4)
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Toper		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Request the IUT to transmit a SABME (P=1) command frame.

(2) Verify that the IUT has changed to state S5.0.

(3) Return the IUT to a stable state.

(4) Operator was unable to transmit the requested frame on time.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE86\_V02  
**Group** : Common/DLLE/MFOEstablished/S8/S86/Valid/  
**Purpose** : Verify that the IUT transmits a UA (F=1) frame in response to a SABME (P=1) frame  
 The IUT is expected to enter the MFE substate (7.0.1 ---not in sleep mode).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		MDLPISABME	SABME_V ( SndCmd, P1)		
3		START T200			
4	L1	MDLP?UA ( RC:=0, VS:=0, VR:=0, VA:=0) CANCEL T200	UA_V ( RcvRsp, F1)	(P)	(1)
5		+VER_S701			(2)
6		+POST_S1			(3)
7		+UNEXPECTED_S86			
8		GOTO L1			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Initialize State variables.  
 (2) Ensure that the IUT is in MFE S86.  
 (3) Return IUT to a known stable state.  
 Note: In practice, the IUT is expected to respond to the first transmission of the SABME frame.

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE86\_V03  
**Group** : Common/DLLE/MFOEstablished/S8/S86/Valid/  
**Purpose** : Verify that the IUT, on receipt of a DISC(P=1) frame, transmits a UA (F=1) frame.  
 The IUT is expected to enter the TEI Unassigned state (1).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdl	Comments
1		+PRE_S86			
2		MDLPIDISC START T200	DISC_V (SndCmd, P1)		(1)
3	L1	MDLP?UA CANCEL T200	UA_V (RcvRsp, F1)	(P)	
4		+VER_S10			
5		+POST_S1			
6		+UNEXPECTED_S86			
7		GOTO L1			
8		?TIMEOUT T200		(F)	(2)
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Force a disconnect to occur.

(2) In practice the IUT is expected to respond to the first transmission of the DISC frame. The DISC may be transmitted up to N200 times before an implementation should attempt to Re-Establish the link.

Caveat: An M-ES should not attempt to deregister it's NEIs by transmitting ESBs encapsulated in MDLP I frames orior to sending the UA. The MD-IS after transmitting a DISC command will be in the Awaiting Release state and will simply ignore these frame. Sending an I-frame in response to the DISC will result in test case failure.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE86\_V04

**Group** : Common/DLLE/MFOEstablished/S8/S86/Valid/

**Purpose** : Verify that the IUT on receipt of a DM(F=0) frame transmits a SABME(P=1) frame.

The IUT is expected to enter the Re-Establish substate (5.1).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		MDLPIDM START T200	DM_V (SndRsp, F0)		(1)
3	L1	MDLP?SABME CANCEL T200	SABME_V (RcvCmd, P1)	(P)	(2)
4		+VER_S51			
5		+POST_S1			
6		+UNEXPECTED_S86			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Indicate to the IUT that the Tester is in Disconnected Mode (DM).

(2) The IUT is expected to Re-Establish the link.



Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE86_V05 <b>Group</b> : Common/DLLE/MFOEstablished/S8/S86/Valid/ <b>Purpose</b> : Verify that the IUT on receipt of a TEST (P=0) frame responds with TEST (F=0) frame. <p style="margin-left: 40px;">The IUT is expected to remain in the Timer Recovery state (8.6 —Peer Receiver Busy—Own Receiver Busy)</p> <b>Default</b> : <b>Configuration</b> : <b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		MDLPITEST	TEST_Frame1(SndCmd, P0)		(1)
3		START Twait			
4	L1	MDLP?TEST CANCEL Twait	TEST_Frame1(RcvResp, F0)	(P)	(1)
5		+VER_S86			(2)
6		+POST_S1			
7		+UNEXPECTED_S86			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	
12		+POST_S1			
<b>Detailed Comments</b> : (1) Exchange of TEST frames should not modify any of the state variables. (2) The IUT should still be in the same state as prior to the TEST frame exchange.					

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE86\_V06  
**Group** : Common/DLLE/MFOEstablished/S8/S86/Valid/  
**Purpose** : Verify that the IUT on receipt of an FRMR response frame rejecting a UA frame, transmits SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establish state (5.1 —Re—Establish)  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		MDLP!FRMR	FRMR_UA(Cmd, SndRsp, F1, VR, VS)		(1)
3		START T200			
4	L1	MDLP?SABME CANCEL T200	SABME_V (RcvCmd, P1)	(P)	(2)
5		+VER_S51			
6		+POST_S1			
7		+UNEXPECTED_S86			
8		GOTO L1			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Reject a UA frame. Note that the IUT should respond according to the protocol in spite of the fact that a valid UA frame was received during the connection establishment.

(2) The IUT is expected to Re—Establish the link.

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE86\_V07

**Group** : Common/DLLE/MFOEstablished/S8/S86/Valid/

**Purpose** : Verify that the IUT on receipt of an RR (P=1) frame where  $V(A) \leq N(R) \leq V(S)$  transmits an RNR (F=1) frame.

The IUT is expected to enter the Timer Recovery state (8.2 --Normal--Own Receiver Busy).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		MDLP!RR	RR_V( SndCmd, P1, VR)		(1)
3		START T200			
4	L1	MDLP?RNR CANCEL T200	RNR_V (RcvRsp, F1, VS)	(P)	(2)
5		+POST_S1			
6		+UNEXPECTED_S86			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Request the IUT's current NR value. The IUT must respond as poll bit is set.

(2) Receipt of the RR frame implies that we are still in S86

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE86\_V08

**Group** : Common/DLLE/MFOEstablished/S8/S86/Valid/

**Purpose** : Verify that the IUT on receipt of RR (F=1) frame where  $V(A) \leq N(R) < V(S)$ , requeues all I frames where  $V(A) \leq N(S) < V(S)$  and sets its  $V(S)$  equal to  $N(R)$ .

The IUT is expected to enter the MFE substate (7.2 --Normal-- Own Receiver Busy).

**Default** :

**Configuration** :

**Comments** : REWRITE TEST:

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			(1)

**Detailed Comments** :

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE86\_V09

**Group** : Common/DLLE/MFOEstablished/S8/S86/Valid/

**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame where  $V(A) \leq N(R) < V(S)$  (N(R) does not acknowledge any frames) resends the I frame indicated by the N(R) contained in the received SREJ frame.

The IUT is expected to remain in the Timer Recovery state (8.2 --Normal--Own Receiver Busy).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86_RequestNIFrames(2)			
2		( NRRResend := (VR - 1) MOD ModVal)			(2)
3		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRRResend )		(3)
4	L1	MDLP?Iframe	I_V (RcvCmd, P0, NRRResend, VS )	(P)	(4)
5		+POST_S1			
6		+UNEXPECTED_S86			
7		GOTO L1			
8		?TIMEOUT Twait		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL Twait		(F)	
11		+POST_S1			

**Detailed Comments** : (1) IUT sends 2 I frame.

(2) Set the NR value. This will be used to request the I frame to be retransmitted (see constraints Ref).

(3) Tester requests that the IUT retransmit the VR-1 frame. The following test assumes that once an I frame has been transmitted (by operator intervention), that it is stored internally and will be retransmitted automatically without any further operator intervention required.

(4) The requested I frame was received.

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE86\_V10

**Group** : Common/DLLE/MFOEstablished/S8/S86/Valid/

**Purpose** : Verify that the IUT on receipt of an RNR (P=1) frame where  $V(A) \leq N(R) \leq V(S)$  transmits an RNR (F=1) frame.

The IUT is expected to remain in the Timer Recovery state (8.6 Peer Receiver Busy—Own Receiver Busy.).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		MDLPI RNR START T200	RNR_V(SndCmd, P1, VR)		(1)
3	L1	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)	(P)	
4		+VER_S86			
5		+POST_S1			
6		+UNEXPECTED_S86			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** : (1) The IUT should respond as the Poll bit is set (P=1).

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE86\_V11

**Group** : Common/DLLE/MFOEstablished/S8/S86/Valid/

**Purpose** : Verify that the IUT on receipt of RNR (F=1) frame where  $V(A) \leq N(R) < V(S)$ , requeues all I frames where  $V(A) \leq N(S) < V(S)$  and sets its  $V(S)$  equal to  $N(R)$ .

The IUT is expected to enter the MFE substate (7.6 --Peer Receiver Busy--SREJ Recovery).

**Default** :

**Configuration** :

**Comments** : REWRITE TEST:

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			(1)

**Detailed Comments** :

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE86\_V12

**Group** : Common/DLLE/MFOEstablished/S8/S86/Valid/

**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0), where the following conditions hold:

V(A) <= N(R) =V(S) (acknowledges none or all frames sent to date), and  
 N(S) = V(R) (next frame to send is the next expected frame to be received)

DISCARDs the content of the I-FRAME (E.g. the IUT does not increment its V(R)).

The IUT is expected to remain in the Timer Recovery state (8.6 ---Peer Receiver Busy--Own Receiver Busy).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		MDLPiIframe	I_iFrame1( SndCmd, P0, VS, VR)		(1)
3		MDLPiRR	RR_V( SndCmd, P1, VR)		(2)
4		START T200			
5	L2	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)	(P)	(3)
6		+POST_S1			
7		+UNEXPECTED_S86			
8		GOTO L2			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Tester's VS is not incremented. The IUT should not update its VR (i.e. it discards the I frame contents). Only its VA is updated. Note that a device should not transmit I frames.o another device which is in Peer Receiver Busy unless it is an I-frame meant to clear a SREJ condition.

(2) Force the IUT to respond using RR (P=1)

(3) IUTs NR must be equal to the Tester's VS.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE86\_V13

**Group** : Common/DLLE/MFOEstablished/S8/S86/Valid/

**Purpose** : Verify that the IUT, when the retransmission timer T200 expires, and the retransmission count (RC) is less than the Max. Retransmissions Counter (N200) transmits an RNR (P=1).

The IUT is expected to remain in the Timer Recovery substate (8.6 —Peer Receiver Busy—Own Receiver Busy).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			(1)
2		START Twait			(2)
3	L1	MDLP?RNR	RNR_V(RcvCmd, P1, VS)	(P)	(3)
4		+POST_S1			
5		+UNEXPECTED_S86			
6		GOTO L1			
7		?TIMEOUT Twait		(I)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL Twait		(I)	
10		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.6 —Peer Receiver Busy—Own Receiver busy).

(2) The IUT should either retransmit RNR (P=1) frame following expiry of its T200 timer. Wait for a period of time known to be larger than T200.

(3) The IUT should be in timer recovery. The IUT will exit timer recovery when it receives an appropriate RR or RNR (F=1) response frame.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE86\_V13a  
**Group** : Common/DLLE/MFOEstablished/S8/S86/Valid/  
**Purpose** : Verify that the IUT, upon T200 expiry where RC=N200 (the retransmission count equals the Max. Retransmission Counter (N200) Re-Establishes the link by transmitting a SABME (P=1) command frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 --Re-Establish).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			(1)
2	L1	START Twait			(3)
3		MDLP?RNR	RNR_V(RcvCmd, P1, VS)		(4)
4		[ RC < n200Value] (RC:= RC +1)			
5		GOTO L1			
6		[ RC = n200Value]			
7		START Twait			
8	L3	MDLP?SABME	SABME_V(RcvCmd , P1)	(P)	
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S86			
12		GOTO L3			
13		?TIMEOUT Twait		(I)	
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL Twait		(I)	
16		+POST_S1			
17		+UNEXPECTED_S86			
18		GOTO L1			
19		?TIMEOUT Twait		(I)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Twait		(I)	
22		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.1 --Normal-SREJ Recovery). At this point RC=1.  
 (1a) Save current VR value.  
 (2) Request the IUT to transmit one I frame. VR is incremented by 1. The I frame is not acknowledged.  
 (3) The IUT should be in timer recovery. Twait > T200. This is to ensure that the IUTs T200 expires and is placed in timer recovery state.  
 (4) The IUT is expected to either retransmit the I frame or transmit a RR (P=1) frame following expiry of its T200 timer. Wait for a period of time larger than T200.  
 Note: the RR and I frames are ignored so that the number of retransmissions will eventually exceed N200. This should cause the IUT to reset the link.



## Test Case Dynamic Behaviour

**Test Case Name** : MFOE86\_V14  
**Group** : Common/DLLE/MFOEstablished/S8/S86/Valid/  
**Purpose** : Verify that the IUT on expiry of the T205 timer, transmits a RNR (F=0) frame.  
 The IUT is expected to remain in the Timer Recovery state (8.6—Peer Receiver Busy—Own Receivory Busy).  
**Default** :  
**Configuration** :  
**Comments** : REWRITE or DROP. May not make sense to test this for BIT. How do you get T205 started before entering S86? Start it in another state then move to S86. Easier said than done...

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		START T205 (t205Value + delta)			
3	L1	?TIMEOUT T205			(3)
4		START T200			
5	L2	MDLP?RNR CANCEL T200	RNR_V( RcvResp, F0, VS)	(P)	
6		+POST_S1			
7		+UNEXPECTED_S86			
8		GOTO L2			
9		?TIMEOUT T200		(F)	(4a)
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			
13		+UNEXPECTED_S86			
14		GOTO L1			
15		MDLP?OTHERWISE CANCEL T205		(F)	(4)
16		+POST_S1			

**Detailed Comments :**

(2) I/P=0 should cause T205 to be started on the IUT side. Note that VS is not incremented as the IUT should discard the frame as it is in Own Receiver Busy.

(3) Tester should not receive anything from the IUT at least until T205 has expired but before expiry of the T200 timer.

(4) some frame received before T205 timeout. If this is the case, one should examine time stamps of the transmitted l frame and the received frame. It may be a borderline case where RR is received only milliseconds prior to expiry of T205.

(4a) IUT did not respond with an RR (P0) frame. Note this test assumes that the IUT does not have any l frames.o transmit. Test are supposed to be executed in a controlled environment.

Note: T205 is the minimum amount of time that an IUT must wait before it can transmit a response. Nothing prevents an IUT to transmit something after expiry of T205, but the IUT should however transmit something prior to expiry of the T200 retransmission timer. T205 << T200.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE86_V15					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S86/Valid/					
<b>Purpose</b> : Verify that the IUT transmits an RR (P=0) when clearing an own receiver busy condition. The IUT is expected to enter in the Timer Recovery state (8.4 --Peer Receiver Busy-Normal).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		<IUT!RR>	RR_V(RcvRsp, P0, VS)		(1)
3		START Toper			
4	L1	MDLP?RR CANCEL Toper	RR_V(RcvRsp, P0, VS)	(P)	
5		+VER_S701			(2)
6		+POST_S1			
7		+UNEXPECTED_S86			
8		GOTO L1			
9		?TIMEOUT Toper		(I)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Toper		(F)	
12		+POST_S1			
<b>Detailed Comments</b> : (1) Test Operator causes IUT to clear own receiver busy condition. (2) Verify that the IUT is in MFO.					

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE86\_N01a

**Group** : Common/DLLE/MFOEstablished/S8/S86/Invalid/

**Purpose** : Verify that the IUT on receipt of an RR (P=1) frame containing an N(R) error, transmits a RNR(F=1) followed by an FRMR (F=1) with the Z bit set to 1 and a SABME (P=1) frame.

The IUT is expected to enter the Re-Establish substate (5.1).

**Default** :

**Configuration** :

**Comments** : The IUT must tx a FRMR before a SABME

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!RR START T200	RR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?FRMR CANCEL Twait	FRMR_RR(Cmd, RcvRsp, F1, NRError, VS, VR)		(2a)
7		START Twait			
8	L3	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(2b)
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S86			
12		GOTO L3			
13		?TIMEOUT Twait		(F)	
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL Twait		(F)	
16		+POST_S1			
17		+UNEXPECTED_S86			
18		GOTO L2			
19		?TIMEOUT Twait		(F)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Twait		(F)	
22		+POST_S1			
23		+UNEXPECTED_S86			
24		GOTO L1			
25		?TIMEOUT T200		(F)	
26		+POST_S1			
27		MDLP?OTHERWISE CANCEL T200		(F)	
28		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) IUT's NR = Tester's VS.

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**Test Case Dynamic Behaviour**

Detailed Comments : ...

(2a) The IUT correctly identified the erroneous RR frame.

(2b) The IUT attempts to Re-Establish the link.

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE86\_N01b  
**Group** : Common/DLLE/MFOEstablished/S8/S86/Invalid/  
**Purpose** : Verify that the IUT on receipt of an RR (P=1) frame containing an N(R) error, transmits a RNR (F=1) followed immediately by SABME (P=1) frame.  
 The IUT is expected to enter the Re-Establish substate (5.1).  
**Default** :  
**Configuration** :  
**Comments** : The IUT does not transmit the optional FRMR.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPIRR START T200	RR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RNR CANCEL T200	RNR_V (RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V( RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S86			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S86			
16		GOTO L1			
17		?TIMEOUT T200		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL T200		(F)	
20		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) The IUT's NR should be equal to the Tester's VS

(3) IUT attempts to Re-Establish the link as expected. This indicates that it has identified the NR error.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE86\_N02a  
**Group** : Common/DLLE/MFOEstablished/S8/S86/Invalid/  
**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame containing an N(R) error, transmits an FRMR (F=1) with the Z bit set to 1 followed immediately by a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 —Re—Establish)  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRError)		(1)
4	L1	MDLP?FRMR CANCEL Twait	FRMR_SREJ(Cmd, RcvRsp, F1, NRError, VS, VR )		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd , P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S86			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S86			
16		GOTO L1			
17		?TIMEOUT Twait		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL Twait		(F)	
20		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.  
 (2) The IUT has recognized the invalid NR value.  
 (3) The IUT attempts to Re—Establish the link.

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE86\_N02b  
**Group** : Common/DLLE/MFOEstablished/S8/S86/Invalid/  
**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame containing an N(R) error, transmits a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 —Re—Establish)  
**Default** :  
**Configuration** :  
**Comments** : IUT does not transmit the optional FRMR frame but immediately attempts to Re—Establish the link.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		(NRError := (VR + 1) MOD ModVal)			(1)
3		MDLPISREJ START Twait	SREJ_V(SndCmd, PO, NRError)		
4	L1	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(2)
5		+VER_S51			
6		+POST_S1			(3)
7		+UNEXPECTED_S86			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	(4)
12		+POST_S1			

**Detailed Comments** : (1) Create an NR error which should be rejected by the IUT.  
 (2) IUT correctly attempts to Re—Establish the link.  
 (3) Return the IUT to TEI Unassigned state.  
 (4) If an FRMR frame cause the test case failure, the test operator should have indicated in the PICS that the IUT DOES transmit the optional FRMR frame.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE86\_N03a  
**Group** : Common/DLLE/MFOEstablished/S8/S86/Invalid/  
**Purpose** : Verify that the IUT on receipt of an RNR (P=1) frame containing an N(R) error, transmits an RNR (F=1) followed by an FRMR (F=1) with the Z bit set to 1 and a SABME (P=1) frame.  
 The IUT is expected to enter the Re-Establish substate (5.1).  
**Default** :  
**Configuration** :  
**Comments** : The IUT must tx a FRMR before a SABME

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP?RNR START T200	RNR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RNR CANCEL T200	RNR_V (RcvRsp, F1, VS)		
5		START Twait			
6	L2	MDLP?FRMR CANCEL Twait	FRMR_RNR(Cmd, RcvRsp, F1, NRError, VS, VR)		(2)
7		START Twait			
8	L3	MDLP?SABME CANCEL Twait	SABME_V( RcvCmd, P1)	(P)	(3)
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S86			
12		GOTO L3			
13		?TIMEOUT Twait			(F)
14		+POST_S1			(F)
15		MDLP?OTHERWISE CANCEL Twait			(F)
16		+POST_S1			
17		+UNEXPECTED_S86			
18		GOTO L2			
19		?TIMEOUT Twait			(F)
20		+POST_S1			(F)
21		MDLP?OTHERWISE CANCEL Twait			(F)
22		+POST_S1			
23		+UNEXPECTED_S86			
24		GOTO L1			
25		?TIMEOUT T200			(F)
26		+POST_S1			(F)
27		MDLP?OTHERWISE CANCEL T200			(F)
28		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.  
 (2) IUT has recognized the erroneous frame.

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<b>Test Case Dynamic Behaviour</b>
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Detailed Comments : ...

(3) IUT should attempt to Re-Establish the link after transmitting the FRMR.

<b>Test Case Dynamic Behaviour</b>
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Test Case Name : MFOE86\_N03b

Group : Common/DLLE/MFOEstablished/S8/S86/Invalid/

Purpose : Verify that the IUT on receipt of an RNR (P=1) frame containing an N(R) error, transmits a RNR (F=1) frame followed by a SABME (P=1) frame.

The IUT is expected to enter the Re-Establish substate (5.1).

Default :

Configuration :

Comments : The IUT does not transmit the optional FRMR.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!RNR START T200	RNR_V(SndCmd, P1, NRError)	(1)	
4	L1	MDLP?RNR CANCEL T200	RNR_V (RcvRsp, F1, VS)	(2)	
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V( RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S86			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S86			
16		GOTO L1			
17		?TIMEOUT T200		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL T200		(F)	
20		+POST_S1			

Detailed Comments : (1) Inject an NR error.

(2) IUT's NR = Tester's VS.

(3) IUT should attempt to Re-Establish the link. This indicates that it has recognized the erroneous RNR frame.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE86\_N04

**Group** : Common/DLLE/MFOEstablished/S8/S86/Invalid/

**Purpose** : Verify that the IUT on receipt of a duplicate I-FRAME (P=0), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R) - k \leq N(S) < V(R)$  (duplicate frame)

DISCARDS the I-FRAME data after updating its V(A) with the N(R) in the received frame.

The IUT is expected to remain in the Timer Recovery state (8.6 ---Peer Receivry Busy -Own Receiver Busy).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86_SendNIFrames(1, VR)			
2		(DupVS := (VS-1) MOD ModVal)			(1)
3		MDLP!lframe	I_iFrame1( SndCmd, P0, DupVS, VR)		(2)
4		START T200			
5	L1	+UNEXPECTED_S86			
6		GOTO L1			
7		?TIMEOUT T200			
8		MDLP! RR	RR_V( SndCmd, P1, VR)		(3)
9		START T200			
10	L2	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)	(P)	(4)
11		+POST_S1			
12		+UNEXPECTED_S86			
13		GOTO L2			
14		?TIMEOUT T200		(F)	
15		+POST_S1			
16		MDLP?OTHERWISE CANCEL T200		(F)	
17		+POST_S1			
18		MDLP?OTHERWISE CANCEL T200		(F)	
19		+POST_S1			

**Detailed Comments** : (1) Set up VS value for duplicate frame.

(2) Send the duplicate frame which should be discarded by the IUT in any case.

(3) Verify that the IUT discarded the duplicate I-frame by requesting the IUT's current NR.

(4) The IUT's NR must equal the tester's VS. The duplicate frame should not have caused the IUT to increment its VR by 1.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE86_N05					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S86/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an out of sequence I-FRAME (P=0) (which causes a new selective reject condition to occur), where the following conditions hold:					
$V(A) \leq N(R) = V(S)$ (acknowledges no new frames or all frames sent to date), and $V(R) < N(S) < V(R)+k$ (new frame, not the next expected frame)					
DISCARDS the content of the I-FRAME and updates its V(A) with N(R) (of the received I-FRAME).					
The IUT is expected to enter the MFE state (7.6—Peer Receiver Busy—Own Receiver Busy).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		MDLP!lframe (NSErr:= (VS+1) MOD ModVal)	L_Iframe1( SndCmd, P0, NSErr, VR)		(1)
3		START T200			
4	L1	+UNEXPECTED_S86			
5		GOTO L1			
6		?TIMEOUT T200			(2)
7		MDLP!RR	RR_V( SndCmd, P1, VR)		(3)
8		START T200			
9	L2	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)	(P)	(4)
10		+POST_S1			
11		+UNEXPECTED_S76			
12		GOTO L2			
13		MDLP?OTHERWISE CANCEL T200			(F)
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL T200			(F)
16		+POST_S1			
<b>Detailed Comments</b> : (1) Cause a new selective reject condition. Note that the IUT is already in the SREJ Recovery state. E.g. I (P=0) with NS=VS+1 already transmitted. Transmitting the same frame would not cause a new selective reject condition to occur, the IUT should treat such a frame as a duplicate frame and simply discard it.(1) Send an I-FRAME with an invalid NS( IUTs VR). Note that VS has not changed.  (2) Wait T200 to verify that the IUT does not transmit anything.  (3) Verify that the IUT has not changed its NR.  (4) IUTs N(R) must be equal to the Tester's V(S).					

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE86\_N06

**Group** : Common/DLLE/MFOEstablished/S8/S86/Invalid/

**Purpose** : Verify that the IUT on receipt of an out of sequence I-FRAME (P=0), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R)+k \leq N(S) < V(R)-k$  (outside the receive window)

transmits a SABME (P=1) frame.

The IUT is expected to enter the Awaiting Establishment state (5.1 --Re-Establish).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		(NError=(VS+ rxK +1) MOD ModVal)			
3		MDLP!frame	I_Frame1( SndCmd, P0, NError, VR)		(1)
4		START T200			
5	L1	MDLP?SABME CANCEL T200	SABME_V( RcvCmd, P1)	(P)	(2)
6		+VER_S51			
7		+POST_S1			
8		+UNEXPECTED_S86			
9		GOTO L1			
10		?TIMEOUT T200		(F)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			

**Detailed Comments** : (1) Send an I frame whose N(S) value is outside the receive window size. The upper bound was selected. One could also write a test using  $NS = VR - k - 1$  instead. This would be covered in a full conformance test suite.

(2) The IUT is expected to Re-Establish the link.

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE86\_N07a  
**Group** : Common/DLLE/MFOEstablished/S8/S86/Invalid/  
**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0) with an N(R) error, where the following condition holds:  $V(S) < N(R) < V(A)$  (N(R) error) transmits a FRMR (F=1) with the Z bit set followed immediately by a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting establishment state (5.1 Re-Establish).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		(NRErr := (VR + 1) MOD ModVal)			
3		MDLP?Iframe	I_Iframe1(SndCmd, P0, VS, NRErr)		(1)
4		START T200			
5	L1	MDLP?FRMR CANCEL T200	FRMR_I_NRErr(Cmd, RcvRsp, F0, NRErr, VS, VR)		(2)
6		START T200			
7	L2	MDLP?SABME CANCEL T200	SABME_V(RcvCmd, P1)	(P)	(3)
8		+VER_S51			
9		+POST_S1			
10		+UNEXPECTED_S86			
11		GOTO L2			
12		?TIMEOUT T200		(F)	
13		+POST_S1			
14		MDLP?OTHERWISE CANCEL T200		(F)	
15		+POST_S1			
16		+UNEXPECTED_S86			
17		GOTO L1			
18		?TIMEOUT T200		(F)	
19		+POST_S1			
20		MDLP?OTHERWISE CANCEL T200		(F)	
21		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) IUT has identified the NR error.

(3) The IUT is expected to Re-Establish the link.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE86\_N07b

**Group** : Common/DLLE/MFOEstablished/S8/S86/Invalid/

**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0) with an N(R) error, where the following condition hold:  $V(S) < N(R) < V(A)$  (N(R) error) and transmits a SABME (P=1) frame.

The IUT is expected to enter the Re-Establish substate (5.1).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S86			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!lframe			
4		START T200			
5	L1	MDLP?SABME CANCEL T200	I_lFrame1(SndCmd, P0, VS, NRError)	(P)	(1)
6		+VER_S51			
7		+POST_S1			
8		+UNEXPECTED_S86			
9		GOTO L1			
10		?TIMEOUT T200			
11		+POST_S1		(F)	
12		MDLP?OTHERWISE CANCEL T200			
13		+POST_S1		(F)	

**Detailed Comments** : (1) Inject an NR error.

(2) IUT has identified the NR error and is expected to Re-Establish the link.

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE87\_V01

**Group** : Common/DLLE/MFOEstablished/S8/S87/Valid/

**Purpose** : Verify that the IUT can transmit a SABME (P=1).

The IUT is expected to enter the Awaiting Establishment state (5.0 — Establish).

**Default** :

**Configuration** :

**Comments** : IUT must be able to send a SABME (P=1) on demand.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		<IUTISABME>	SABME_V(RcvCmd , P1)		(1)
3		START Toper			
4	L1	MDLP?SABME CANCEL Toper	SABME_V(RcvCmd , P1)	(P)	
5		+VER_S50			(2)
6		+POST_S1			(3)
7		+UNEXPECTED_S87			
8		GOTO L1			
9		?TIMEOUT Toper		(I)	(4)
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Toper		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Request the IUT to transmit a SABME (P=1) command frame.

(2) Verify that the IUT has changed to state S5.0.

(3) Return the IUT to a stable state.

(4) Operator was unable to transmit the requested frame on time.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE87_V02					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S87/Valid/					
<b>Purpose</b> : Verify that the IUT transmits a UA (F=1) frame in response to a SABME (P=1) frame					
The IUT is expected to enter the MFE substate (7.0.1 --not in sleep mode).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		MDLPISABME	SABME_V ( SndCmd, P1)		
3		START T200			
4	L1	MDLP?UA ( RC:=0, VS:=0, VR:=0, VA:=0) CANCEL T200	UA_V ( RcvRsp, F1)	(P)	(1)
5		+VER_S701			(2)
6		+POST_S1			(3)
7		+UNEXPECTED_S87			
8		GOTO L1			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			
<b>Detailed Comments</b> : (1) Initialize State variables.					
(2) Ensure that the IUT is in MFE S87.					
(3) Return IUT to a known stable state.					
Note: In practice, the IUT is expected to respond to the first transmission of the SABME frame.					



Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE87_V03					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S87/Valid/					
<b>Purpose</b> : Verify that the IUT, on receipt of a DISC(P=1) frame, transmits a UA (F=1) frame.					
The IUT is expected to enter the TEI Unassigned state (1).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		MDLPIDISC START T200	DISC_V (SndCmd, P1)		(1)
3	L1	MDLP?UA CANCEL T200	UA_V (RcvRsp, F1)	(P)	
4		+VER_S10			
5		+POST_S1			
6		+UNEXPECTED_S87			
7		GOTO L1			
8		?TIMEOUT T200		(F)	(2)
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			
<b>Detailed Comments</b> : (1) Force a disconnect to occur.					
(2) In practice the IUT is expected to respond to the first transmission of the DISC frame. The DISC may be transmitted up to N200 times before an implementation should attempt to Re-Establish the link.					
Caveat: An M-ES should not attempt to deregister it's NEIs by transmitting ESBs encapsulated in MDLP I frames prior to sending the UA. The MD-IS after transmitting a DISC command will be in the Awaiting Release state and will simply ignore these frame. Sending an I-frame in response to the DISC will result in test case failure.					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE87_V04					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S87/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of a DM(F=0) frame transmits a SABME(P=1) frame.					
The IUT is expected to enter the Re-Establish substate (5.1).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		MDLPIDM START T200	DM_V (SndRsp, F0)		(1)
3	L1	MDLP?SABME CANCEL T200	SABME_V (RcvCmd, P1)	(P)	(2)
4		+VER_S51			
5		+POST_S1			
6		+UNEXPECTED_S87			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			
<b>Detailed Comments</b> : (1) Indicate to the IUT that the Tester is in Disconnected Mode (DM).					
(2) The IUT is expected to Re-Establish the link.					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE87_V05 <b>Group</b> : Common/DLLE/MFOEstablished/S8/S87/Valid/ <b>Purpose</b> : Verify that the IUT on receipt of a TEST (P=0) frame responds with TEST (F=0) frame. <p style="text-align: center;">The IUT is expected to remain in the Timer Recovery state (8.7 —Peer Receiver Busy–SREJ Recovery and Own Receiver Busy)</p> <b>Default</b> : <b>Configuration</b> : <b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		MDLPITEST	TEST_Frame1(SndCmd, P0)		(1)
3		START Twait			
4	L1	MDLP?TEST CANCEL Twait	TEST_Frame1(RcvRsp, F0)	(P)	(1)
5		+VER_S87			(2)
6		+POST_S1			
7		+UNEXPECTED_S87			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	
12		+POST_S1			
<b>Detailed Comments</b> : (1) Exchange of TEST frames should not modify any of the state variables. (2) The IUT should still be in the same state as prior to the TEST frame exchange.					

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE87\_V06  
**Group** : Common/DLLE/MFOEstablished/S8/S87/Valid/  
**Purpose** : Verify that the IUT on receipt of an FRMR response frame rejecting a UA frame, transmits SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establish state (5.1 —Re-Establish)  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		MDLP!FRMR	FRMR_UA(Cmd, SndRsp, F1, VR, VS)		(1)
3		START T200			
4	L1	MDLP?SABME CANCEL T200	SABME_V (RcvCmd, P1)	(P)	(2)
5		+VER_S51			
6		+POST_S1			
7		+UNEXPECTED_S87			
8		GOTO L1			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Reject a UA frame. Note that the IUT should respond according to the protocol in spite of the fact that a valid UA frame was received during the connection establishment.  
 (2) The IUT is expected to Re-Establish the link.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE87_V07					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S87/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of an RR (P=1) frame where $V(A) \leq N(R) \leq V(S)$ transmits an RNR (F=1) frame.  The IUT is expected to enter the Timer Recovery state (8.3—Normal—Own Receiver Busy).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		MDLP!RR	RR_V( SndCmd, P1, VR)		(1)
3		START T200			
4	L1	MDLP?RNR CANCEL T200	RNR_V( RcvRsp, F1, VS)	(P)	(2)
5		+POST_S1			
6		+UNEXPECTED_S87			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			
<b>Detailed Comments</b> : (1) Request the IUT's current NR value. The IUT must respond as poll bit is set.  (2) Receipt of the RR frame implies that we are still in S87					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE87_V08					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S87/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of RR (F=1) frame where $V(A) \leq N(R) < V(S)$ , requeues all I frames where $V(A) \leq N(S) < V(S)$ and sets its $V(S)$ equal to $N(R)$ .  The IUT is expected to enter the MFE substate (7.3 --Normal-- SREJ Recovery and Own Receiver Busy).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			(1)
<b>Detailed Comments</b> :					

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE87\_V09

**Group** : Common/DLLE/MFOEstablished/S8/S87/Valid/

**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame where  $V(A) \leq N(R) < V(S)$  (N(R) does not acknowledge any frames) resends the I frame indicated by the N(R) contained in the received SREJ frame.

The IUT is expected to remain in the Timer Recovery state (8.3 ---Normal- SREJ Recovery and Own Receiver Busy).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87_RequestNiFrames(2)			
2		( NRResend := (VR - 1) MOD ModVal)			(2)
3		MDLPISREJ START Twait			(3)
4	L1	MDLP?Iframe	SREJ_V(SndCmd, P0, NRResend ) I_V (RcvCmd, P0, NRResend, VS )	(P)	(4)
5		+POST_S1			
6		+UNEXPECTED_S87			
7		GOTO L1			
8		?TIMEOUT Twait		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL Twait		(F)	
11		+POST_S1			

**Detailed Comments** : (1) IUT sends 2 I frame.

(2) Set the NR value. This will be used to request the I frame to be retransmitted (see constraints Ref).

(3) Tester requests that the IUT retransmit the VR-1 frame. The following test assumes that once an I frame has been transmitted (by operator intervention), that it is stored internally and will be retransmitted automatically without any further operator intervention required.

(4) The requested I frame was received.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE87\_V10

**Group** : Common/DLLE/MFOEstablished/S8/S87/Valid/

**Purpose** : Verify that the IUT on receipt of an RNR (P=1) frame where  $V(A) \leq N(R) \leq V(S)$  transmits an RNR (F=1) frame.

The IUT is expected to remain in the Timer Recovery state (8.7 Peer Receiver Busy—SREJ Recovery and Own Receiver Busy.).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		MDLPI RNR START T200	RNR_V(SndCmd, P1, VR)		(1)
3	L1	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)	(P)	
4		+VER_S87			
5		+POST_S1			
6		+UNEXPECTED_S87			
7		GOTO L1			
8		?TIMEOUT T200		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		+POST_S1			

**Detailed Comments** : (1) The IUT should respond as the Poll bit is set (P=1).

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE87\_V11

**Group** : Common/DLLE/MFOEstablished/S8/S87/Valid/

**Purpose** : Verify that the IUT on receipt of RNR (F=1) frame where  $V(A) \leq N(R) < V(S)$ , requeues all I frames where  $V(A) \leq N(S) < V(S)$  and sets its  $V(S)$  equal to  $N(R)$ .

The IUT is expected to enter the MFE substate (7.7 —Peer Receiver Busy—SREJ Recovery and Own Receiver Busy).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			(1)

**Detailed Comments** :

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE87_V12					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S87/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of an I-FRAME (P=0), where the following conditions hold:					
$V(A) \leq N(R) = V(S)$ (acknowledges none or all frames sent to date), and $N(S) = V(R)$ (next frame to send is the next expected frame to be received)					
DISCARDS the content of the I-FRAME (E.g. IUT's VR not incremented).					
The IUT is expected to remain in the Timer Recovery state (8.7 —Peer Receiver Busy—SREJ Recovery and Own Receiver Busy).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		MDLP  frame	I_iFrame1( SndCmd, P0, VS, VR)		(1)
3		MDLP RR	RR_V( SndCmd, P1, VR)		(2)
4		START T200			
5	L2	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)	(P)	(3)
6		+POST_S1			
7		+UNEXPECTED_S87			
8		GOTO L2			
9		?TIMEOUT T200		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			
<b>Detailed Comments</b> : (1) Tester's VS is not incremented. The IUT should not update its VR (i.e. it discards the I frame contents). Only its VA is updated. Note that a device should not transmit I frames to another device which is in Peer Receiver Busy unless it is an I-frame meant to clear a SREJ condition.  (2) Force the IUT to respond using RR (P=1)  (3) IUTs NR must be equal to the Tester's VS.					



### Test Case Dynamic Behaviour

**Test Case Name** : MFOE87\_V13  
**Group** : Common/DLLE/MFOEstablished/S8/S87/Valid/  
**Purpose** : Verify that the IUT, when the retransmission timer T200 expires, and the retransmission count (RC) is less than the Max. Retransmissions Counter (N200) transmits an RNR (P=1).  
 The IUT is expected to remain in the Timer Recovery substate (8.7 —Peer Receiver Busy —Own Receiver Busy).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			(1)
2		START Twait			(2)
3	L1	MDLP?RNR	RNR_V(RcvCmd, P1, VS)	(P)	(3)
4		+POST_S1			
5		+UNEXPECTED_S87			
6		GOTO L1			
7		?TIMEOUT Twait		(I)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL Twait		(I)	
10		+POST_S1			

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.6 —Peer Receiver Busy—Own Receiver busy).

(2) The IUT should either retransmit RNR (P=1) frame following expiry of its T200 timer. Wait for a period of time known to be larger than T200.

(3) The IUT should be in timer recovery. The IUT will exit timer recovery when it receives an appropriate RR or RNR (F=1) response frame.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE87\_V13a

**Group** : Common/DLLE/MFOEstablished/S8/S87/Valid/

**Purpose** : Verify that the IUT, upon T200 expiry where RC=N200 (the retransmission count equals the Max. Retransmission Counter (N200) Re-Establishes the link by transmitting a SABME (P=1) command frame.

The IUT is expected to enter the Awaiting Establishment state (5.1 ---Re-Establish).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2	L1	START Twait			(1)
3		MDLP?RNR	RNR_V(RcvCmd, P1, VS)		(3) (4)
4		[ RC < n200Value] (RC:= RC +1)			
5		GOTO L1			
6		[ RC = n200Value]			
7		START Twait			
8	L3	MDLP?SABME	SABME_V(RcvCmd , P1)	(P)	
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S87			
12		GOTO L3			
13		?TIMEOUT Twait			(l)
14		+POST_S1			(l)
15		MDLP?OTHERWISE CANCEL Twait			(l)
16		+POST_S1			(l)
17		+UNEXPECTED_S87			
18		GOTO L1			
19		?TIMEOUT Twait			(l)
20		+POST_S1			(l)
21		MDLP?OTHERWISE CANCEL Twait			(l)
22		+POST_S1			(l)

**Detailed Comments** : (1) Place the IUT in the Timer Recovery state (8.1 ---Normal-SREJ Recovery). At this point RC=1.

(1a) Save current VR value.

(2) Request the IUT to transmit one I frame. VR is incremented by 1. The I frame is not acknowledged.

(3) The IUT should be in timer recovery. Twait > T200. This is to ensure that the IUTs T200 expires and is placed in timer recovery state.

(4) The IUT is expected to either retransmit the I frame or transmit a RR (P=1) frame following expiry of its T200 timer. Wait for a period of time larger than T200.

Note: the RR and I frames are ignored so that the number of retransmissions will eventually exceed N200. This should cause the IUT to reset the link.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE87_V14					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S87/Valid/					
<b>Purpose</b> : Verify that the IUT on expiry of the T205 timer, transmits a RNR (F=0) frame.					
The IUT is expected to remain in the Timer Recovery state (8.7 --Peer Receiver Busy--SREJ Recovery and Own Receiver Busy).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : REWRITE or DROP. May not make sense to test this for BIT. How do you get T205 started before entering S87? Start it in another state then move to S87. Easier said than done...					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		START T205 (t205Value + delta)			
3	L1	?TIMEOUT T205			(3)
4		START T200			
5	L2	MDLP?RNR CANCEL T200	RNR_V( RcvRsp, F0, VS)	(P)	
6		+POST_S1			
7		+UNEXPECTED_S87			
8		GOTO L2			
9		?TIMEOUT T200		(F)	(4a)
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			
13		+UNEXPECTED_S87			
14		GOTO L1			
15		MDLP?OTHERWISE CANCEL T205		(F)	(4)
16		+POST_S1			
<b>Detailed Comments</b> :					
(2) I/P=0 should cause T205 to be started on the IUT side. Note that VS is not incremented as the IUT should discard the frame as it is in Own Receiver Busy.					
(3) Tester should not receive anything from the IUT at least until T205 has expired but before expiry of the T200 timer.					
(4) some frame received before T205 timeout. If this is the case, one should examine time stamps of the transmitted I frame and the received frame. It may be a borderline case where RR is received only milliseconds prior to expiry of T205.					
(4a) IUT did not respond with an RR (P0) frame. Note this test assumes that the IUT does not have any I frames.o transmit. Test are supposed to be executed in a controlled environment.					
Note: T205 is the minimum amount of time that an IUT must wait before it can transmit a response. Nothing prevents an IUT to transmit something after expiry of T205, but the IUT should however transmit something prior to expiry of the T200 retransmission timer. T205 << T200.					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE87_V15					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S87/Valid/					
<b>Purpose</b> : Verify that the IUT transmits an RR (P=0) when clearing an own receiver busy condition. The IUT is expected to enter in the Timer Recovery state (8.4 --Peer Receiver Busy--Normal).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		<IUTIRR>	RR_V(RcvRsp, P0, VS)		(1)
3		START Toper			
4	L1	MDLP?RR CANCEL Toper	RR_V(RcvRsp, P0, VS)	(P)	
5		+VER_S701			(2)
6		+POST_S1			
7		+UNEXPECTED_S87			
8		GOTO L1			
9		?TIMEOUT Toper		(I)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Toper		(F)	
12		+POST_S1			
<b>Detailed Comments</b> : (1) Test Operator causes IUT to clear own receiver busy condition. (2) Verify that the IUT is in MFO.					

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE87\_N01a  
**Group** : Common/DLLE/MFOEstablished/S8/S87/Invalid/  
**Purpose** : Verify that the IUT on receipt of an RR (P=1) frame containing an N(R) error, transmits a RNR(F=1) followed by an FRMR (F=1) with the Z bit set to 1 and a SABME (P=1) frame.  
 The IUT is expected to enter the Re-Establish substate (5.1).  
**Default** :  
**Configuration** :  
**Comments** : The IUT must tx a FRMR before a SABME

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPIRR START T200	RR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RNR CANCEL T200	RNR_V (RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?FRMR CANCEL Twait	FRMR_RR(Cmd, RcvRsp, F1, NRError, VS, VR)		(2a)
7		START Twait			
8	L3	MDLP?SABME CANCEL Twait	SABME_V( RcvCmd, P1)	(P)	(2b)
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S87			
12		GOTO L3			
13		?TIMEOUT Twait		(F)	
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL Twait		(F)	
16		+POST_S1			
17		+UNEXPECTED_S87			
18		GOTO L2			
19		?TIMEOUT Twait		(F)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Twait		(F)	
22		+POST_S1			
23		+UNEXPECTED_S87			
24		GOTO L1			
25		?TIMEOUT T200		(F)	
26		+POST_S1			
27		MDLP?OTHERWISE CANCEL T200		(F)	
28		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) IUT's NR = Tester's VS.

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**Test Case Dynamic Behaviour**

Detailed Comments : ...

(2a) The IUT correctly identified the erroneous RR frame.

(2b) The IUT attempts to Re-Establish the link.

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE87\_N01b  
**Group** : Common/DLLE/MFOEstablished/S8/S87/Invalid/  
**Purpose** : Verify that the IUT on receipt of an RR (P=1) frame containing an N(R) error, transmits a RNR (F=1) followed immediately by SABME (P=1) frame.  
 The IUT is expected to enter the Re-Establish substate (5.1).  
**Default** :  
**Configuration** :  
**Comments** : The IUT does not transmit the optional FRMR.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPIRR START T200	RR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RNR CANCEL T200	RNR_V (RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V( RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S87			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S87			
16		GOTO L1			
17		?TIMEOUT T200		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL T200		(F)	
20		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) The IUT's NR should be equal to the Tester's VS

(3) IUT attempts to Re-Establish the link as expected. This indicates that it has identified the NR error.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE87\_N02a

**Group** : Common/DLLE/MFOEstablished/S8/S87/Invalid/

**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame containing an N(R) error, transmits an FRMR (F=1) with the Z bit set to 1 followed immediately by a SABME (P=1) frame.

The IUT is expected to enter the Awaiting Establishment state (5.1 ---Re-Establish)

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPISREJ START Twait			
4	L1	MDLP?FRMR CANCEL Twait	SREJ_V(SndCmd, PO, NRError)		(1)
5		START Twait	FRMR_SREJ(Cmd, RcvRsp, F1, NRError, VS, VR)		(2)
6	L2	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S87			
10		GOTO L2			
11		?TIMEOUT Twait			
12		+POST_S1			(F)
13		MDLP?OTHERWISE CANCEL Twait			
14		+POST_S1			(F)
15		+UNEXPECTED_S87			
16		GOTO L1			
17		?TIMEOUT Twait			
18		+POST_S1			(F)
19		MDLP?OTHERWISE CANCEL Twait			
20		+POST_S1			(F)

**Detailed Comments** : (1) Inject an NR error.

(2) The IUT has recognized the invalid NR value.

(3) The IUT attempts to Re-Establish the link.



**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE87\_N02b  
**Group** : Common/DLLE/MFOEstablished/S8/S87/Invalid/  
**Purpose** : Verify that the IUT on receipt of an SREJ (P=0) frame containing an N(R) error, transmits a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 —Re—Establish)  
**Default** :  
**Configuration** :  
**Comments** : IUT does not transmit the optional FRMR frame but immediately attempts to Re—Establish the link.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		(NRError := (VR + 1) MOD ModVal)			(1)
3		MDLPISREJ START Twait	SREJ_V(SndCmd, P0, NRError)		
4	L1	MDLP?SABME CANCEL Twait	SABME_V(RcvCmd, P1)	(P)	(2)
5		+VER_S51			
6		+POST_S1			(3)
7		+UNEXPECTED_S87			
8		GOTO L1			
9		?TIMEOUT Twait		(F)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Twait		(F)	(4)
12		+POST_S1			

**Detailed Comments** : (1) Create an NR error which should be rejected by the IUT.  
 (2) IUT correctly attempts to Re—Establish the link.  
 (3) Return the IUT to TEI Unassigned state.  
 (4) If an FRMR frame cause the test case failure, the test operator should have indicated in the PICS that the IUT DOES transmit the optional FRMR frame.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE87\_N03a  
**Group** : Common/DLLE/MFOEstablished/S8/S87/Invalid/  
**Purpose** : Verify that the IUT on receipt of an RNR (P=1) frame containing an N(R) error, transmits an RNR (F=1) followed by an FRMR (F=1) with the Z bit set to 1 and a SABME (P=1) frame.  
 The IUT is expected to enter the Re-Establish substate (5.1).  
**Default** :  
**Configuration** :  
**Comments** : The IUT must tx a FRMR before a SABME

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!RNR START T200	RNR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RNR CANCEL T200	RNR_V (RcvRsp, F1, VS)		
5		START Twait			
6	L2	MDLP?FRMR CANCEL Twait	FRMR_RNR(Cmd, RcvRsp, F1, NRError, VS, VR)		(2)
7		START Twait			
8	L3	MDLP?SABME CANCEL Twait	SABME_V( RcvCmd, P1)	(P)	(3)
9		+VER_S51			
10		+POST_S1			
11		+UNEXPECTED_S87			
12		GOTO L3			
13		?TIMEOUT Twait		(F)	
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL Twait		(F)	
16		+POST_S1			
17		+UNEXPECTED_S87			
18		GOTO L2			
19		?TIMEOUT Twait		(F)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL Twait		(F)	
22		+POST_S1			
23		+UNEXPECTED_S87			
24		GOTO L1			
25		?TIMEOUT T200		(F)	
26		+POST_S1			
27		MDLP?OTHERWISE CANCEL T200		(F)	
28		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) IUT has recognized the erroneous frame.

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<b>Test Case Dynamic Behaviour</b>
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Detailed Comments : ...

(3) IUT should attempt to Re-Establish the link after transmitting the FRMR.

<b>Test Case Dynamic Behaviour</b>
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Test Case Name : MFOE87\_N03b

Group : Common/DLLE/MFOEstablished/S8/S87/Invalid/

Purpose : Verify that the IUT on receipt of an RNR (P=1) frame containing an N(R) error, transmits a RNR (F=1) frame followed by a SABME (P=1) frame.

The IUT is expected to enter the Re-Establish substate (5.1).

Default :

Configuration :

Comments : The IUT does not transmit the optional FRMR.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLPIRNR START T200	RNR_V(SndCmd, P1, NRError)		(1)
4	L1	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)		(2)
5		START Twait			
6	L2	MDLP?SABME CANCEL Twait	SABME_V( RcvCmd, P1)	(P)	(3)
7		+VER_S51			
8		+POST_S1			
9		+UNEXPECTED_S87			
10		GOTO L2			
11		?TIMEOUT Twait		(F)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL Twait		(F)	
14		+POST_S1			
15		+UNEXPECTED_S87			
16		GOTO L1			
17		?TIMEOUT T200		(F)	
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL T200		(F)	
20		+POST_S1			

Detailed Comments : (1) Inject an NR error.

(2) IUT's NR = Tester's VS.

(3) IUT should attempt to Re-Establish the link. This indicates that it has recognized the erroneous RNR frame.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE87\_N04

**Group** : Common/DLLE/MFOEstablished/S8/S87/Invalid/

**Purpose** : Verify that the IUT on receipt of a duplicate I-FRAME (P=0), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R) - k \leq N(S) < V(R)$  (duplicate frame)

DISCARDS the I-FRAME data after updating its V(A) with the N(R) in the received frame.

The IUT is expected to remain in the Timer Recovery state (8.7 —Peer Receivory Busy —Own Receiver Busy).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87_SendNIFrames(1, VR)			
2		(DupVS := (VS-1) MOD ModVal)			(1)
3		MDLPllframe	I_iFrame1( SndCmd, P0, DupVS, VR)		(2)
4		START T200			
5	L1	+UNEXPECTED_S87			
6		GOTO L1			
7		?TIMEOUT T200			
8		MDLP RR	RR_V( SndCmd, P1, VR)		(3)
9		START T200			
10	L2	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)	(P)	(4)
11		+POST_S1			
12		+UNEXPECTED_S87			
13		GOTO L2			
14		?TIMEOUT T200			
15		+POST_S1		(F)	
16		MDLP?OTHERWISE CANCEL T200			
17		+POST_S1		(F)	
18		MDLP?OTHERWISE CANCEL T200			
19		+POST_S1		(F)	

**Detailed Comments** : (1) Set up VS value for duplicate frame.

(2) Send the duplicate frame which should be discarded by the IUT in any case.

(3) Verify that the IUT discarded the duplicate I-frame by requesting the IUT's current NR.

(4) The IUT's NR must equal the tester's VS. The duplicate frame should not have caused the IUT to increment its VR by 1.

### Test Case Dynamic Behaviour

**Test Case Name** : MFOE87\_N05  
**Group** : Common/DLLE/MFOEstablished/S8/S87/Invalid/  
**Purpose** : Verify that the IUT on receipt of an out of sequence I-FRAME (P=0) (which causes a new selective reject condition to occur), where the following conditions hold:

$V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R) < N(S) < V(R)+k$  (new frame, not the next expected frame)

DISCARDS the content of the I-FRAME and updates its V(A) with N(R) (of the received I-FRAME).

The IUT is expected to enter the MFE state (7.7---Peer Receiver Busy--SREJ Recovery and Own Receiver Busy).

**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		MDLP!lframe (NSErr:= (VS+3) MOD ModVal)	I_lFrame1( SndCmd, P0, NSErr, VR)		(1)
3		START T200			
4	L1	+UNEXPECTED_S87			
5		GOTO L1			
6		?TIMEOUT T200			(2)
7		MDLP!RR	RR_V( SndCmd, P1, VR)		(3)
8		START T200			
9	L2	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)	(P)	(4)
10		+POST_S1			
11		+UNEXPECTED_S77			
12		GOTO L2			
13		MDLP?OTHERWISE CANCEL T200			(F)
14		+POST_S1			
15		MDLP?OTHERWISE CANCEL T200			(F)
16		+POST_S1			

**Detailed Comments** : (1) Cause a new selective reject condition. Note that the IUT is already in the SREJ Recovery state. E.g. I (P=0) with NS=VS+1 already transmitted. Transmitting the same frame would not cause a new selective reject condition to occur, the IUT would treat such a frame as a duplicate frame and simply discard it. Send an I-FRAME with an invalid NS( IUT's VR). Note that VS has not changed.

(2) Wait T200 to verify that the IUT does not transmit anything.

(3) Verify that the IUT has not changed its NR.

Note: By sending an RR frame, this will place the IUT in S83. No verification that the IUT is in S87 is made.

(4) IUTs N(R) must be equal to the Tester's V(S).

**Test Case Dynamic Behaviour**

**Test Case Name** : MFOE87\_N06  
**Group** : Common/DLLE/MFOEstablished/S8/S87/Invalid/  
**Purpose** : Verify that the IUT on receipt of an out of sequence I-FRAME (P=0), where the following conditions hold:  
 $V(A) \leq N(R) = V(S)$  (acknowledges no new frames or all frames sent to date), and  
 $V(R)+k \leq N(S) < V(R)-k$  (outside the receive window)  
 transmits a SABME (P=1) frame.  
 The IUT is expected to enter the Awaiting Establishment state (5.1 --Re-Establish).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		(NError:= (VS+ rXK +1) MOD ModVal)			
3		MDLPIframe	I_Frame1( SndCmd, P0, NError, VR)		(1)
4		START T200			
5	L1	MDLP?SABME CANCEL T200	SABME_V( RcvCmd, P1)	(P)	(2)
6		+VER_S51			
7		+POST_S1			
8		+UNEXPECTED_S87			
9		GOTO L1			
10		?TIMEOUT T200		(F)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_S1			

**Detailed Comments** : (1) Send an I frame whose N(S) value is outside the receive window size. The upper bound was selected. One could also write a test using  $NS = VR - k - 1$  instead. This would be covered in a full conformance test suite.

(2) The IUT is expected to Re-Establish the link.

## Test Case Dynamic Behaviour

**Test Case Name** : MFOE87\_N07a

**Group** : Common/DLLE/MFOEstablished/S8/S87/Invalid/

**Purpose** : Verify that the IUT on receipt of an I-FRAME (P=0) with an N(R) error, where the following condition holds:  $V(S) < N(R) < V(A)$  (N(R) error) transmits a FRMR (F=1) with the Z bit set followed immediately by a SABME (P=1) frame.

The IUT is expected to enter the Awaiting establishment state (5.1 Re-Establish).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		(NRErr := (VR + 1) MOD ModVal)			
3		MDLP!frame	I_iFrame1(SndCmd, P0, VS, NRErr)		(1)
4		START T200			
5	L1	MDLP?FRMR CANCEL T200	FRMR_I_NRErr(Cmd, RcvRsp, F0, NRErr, VS, VR)		(2)
6		START T200			
7	L2	MDLP?SABME CANCEL T200	SABME_V(RcvCmd, P1)	(P)	(3)
8		+VER_S51			
9		+POST_S1			
10		+UNEXPECTED_S87			
11		GOTO L2			
12		?TIMEOUT T200		(F)	
13		+POST_S1			
14		MDLP?OTHERWISE CANCEL T200		(F)	
15		+POST_S1			
16		+UNEXPECTED_S87			
17		GOTO L1			
18		?TIMEOUT T200		(F)	
19		+POST_S1			
20		MDLP?OTHERWISE CANCEL T200		(F)	
21		+POST_S1			

**Detailed Comments** : (1) Inject an NR error.

(2) IUT has identified the NR error.

(3) The IUT is expected to Re-Establish the link.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFOE87_N07b					
<b>Group</b> : Common/DLLE/MFOEstablished/S8/S87/Invalid/					
<b>Purpose</b> : Verify that the IUT on receipt of an I-FRAME (P=0) with an N(R) error, where the following condition hold: $V(S) < N(R) < V(A)$ (N(R) error) and transmits a SABME (P=1) frame.  The IUT is expected to enter the Re-Establish substate (5.1).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S87			
2		(NRError := (VR + 1) MOD ModVal)			
3		MDLP!lframe			
4		START T200			
5	L1	MDLP?SABME CANCEL T200	L_iFrame1(SndCmd, P0, VS, NRError)		(1)
6		+VER_S51			
7		+POST_S1			
8		+UNEXPECTED_S87			
9		GOTO L1			
10		?TIMEOUT T200			
11		+POST_S1			(F)
12		MDLP?OTHERWISE CANCEL T200			
13		+POST_S1			(F)
<b>Detailed Comments</b> : (1) Inject an NR error.  (2) IUT has identified the NR error and is expected to Re-Establish the link.					



## Test Case Dynamic Behaviour

**Test Case Name** : TM1\_Vu01  
**Group** : User/TEIMgmt/S1/Valid/  
**Purpose** : Verify that the IUT takes no action on receipt of a TEI Identity Assign message where the IUT's Equipment Identifier (EID) is not equal to the EID value contained in the received TEI Identity Assign message.  
 The IUT TEI Management Entity is expected to remain in the Unassigned state (1).  
**Default** :  
**Configuration** :  
**Comments** : A TEI ID Assign message is transmitted to the IUT. The IUT is not expected to transmit a message for atleast T202 seconds. If the IUT transmits a TEI ID Request message, it is assumed that the state of the IUT TEI Management Entity is not longer Unassigned (1), so the verdict is set to inconclusive. The TEI Identity Assign message should be ignored not only because the EID is not the same, but also because there are no outstanding TEI Identity Request messages.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U1			(1)
2		( tempEID := IntToEID( EIDToInt( iutEID ) + 1 ) )			
3		MDLP?TEI_IDAssign	TEI_ID_ASN_EID( SndCmd, P0, tempEID )		(2)
4		START T202			(3)
5		MDLP?TEI_IDRequest CANCEL T202	TEI_ID_REQ_V( RcvCmd, P0 )	(I)	(4)
6		+POST_U1			
7	L1	?TIMEOUT T202		(P)	
8		+VER_TEI_U1U2			(5)
9		+POST_U1			
10		+UNEXPECTED_S1_TEI			(6)
11		GOTO L1			
12		MDLP?OTHERWISE CANCEL T202		(F)	
13		+POST_U1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in Unassigned (1) state.  
 (2) Send the IUT the TEI ID Assign message with a EID which does not match the IUT EID.  
 (3) No response is expected from the IUT.  
 (4) Receive the TEI ID Request message from the IUT. The IUT is not in the Unassigned (1) state. The test must be stopped and an INCONCLUSIVE verdict must be assigned.  
 (5) Verify the IUT TEI Management Entity is not in the Assigned (3) state.  
 (6) Handle any unexpected messages.

## Test Case Dynamic Behaviour

**Test Case Name** : TM1\_VU02

**Group** : User/TEIMgmt/S1/Valid/

**Purpose** : Verify that the IUT takes no action on receipt of a TEI Identity Check Request message .

The IUT TEI Management Entity is expected to remain in the Unassigned state (1).

**Default** :

**Configuration** :

**Comments** : A TEI ID Check Request message is transmitted to the IUT. The IUT is not expected to transmit a message for atleast T202 seconds. If the IUT transmits a TEI ID Request message, it is assumed that the state of the IUT is not longer Unassigned (1), so the verdict is set to inconclusive.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U1			(1)
2		MDLP?TEI_IDCheckRequest	TEI_ID_CHK_REQ_V( SndCmd, P0, teiVal )		(2)
3		START T202			(3)
4		MDLP?TEI_IDRequest CANCEL T202	TEI_ID_REQ_V( RcvCmd, P0 )	(I)	(4)
5		+POST_U1			
6	L1	?TIMEOUT T202		(P)	
7		+VER_TEI_U1U2			(5)
8		+POST_U1			
9		+UNEXPECTED_S1_TEI			(6)
10		GOTO L1			
11		MDLP?OTHERWISE CANCEL T202			
12		+POST_U1		(F)	

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the Unassigned (1) state.  
 (2) Send the IUT the TEI ID Check Request message.  
 (3) No response is expected from the IUT.  
 (4) Receive the TEI ID Request message from the IUT. The IUT is not in the Unassigned (1) state. The test must be stopped and an INCONCLUSIVE verdict must be assigned.  
 (5) Verify that the IUT TEI Management Entity is not in the Assigned (3) state.  
 (6) Handle any unexpected messages.

## Test Case Dynamic Behaviour

**Test Case Name** : TM1\_VU03

**Group** : User/TEIMgmt/S1/Valid/

**Purpose** : Verify that the IUT takes no action on receipt of a TEI Identity Remove message.

The IUT TEI Management Entity is expected to remain in the Unassigned state (1).

**Default** :

**Configuration** :

**Comments** : A TEI ID Remove message is transmitted to the IUT. The IUT is not expected to transmit a message for atleast T202 seconds. If the IUT transmits a TEI ID Request message, it is assumed that the state of the IUT is not longer Unassigned (1), so the verdict is set to inconclusive.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U1			(1)
2		MDLPITEI_IDRemove	TEI_ID_RMV_V( SndCmd, P0, teiVal )		(2)
3		START T202			(3)
4		MDLP?TEI_IDRequest CANCEL T202	TEI_ID_REQ_V( RcvCmd, P0)	(I)	(4)
5		+POST_U1			
6	L1	?TIMEOUT T202		(P)	
7		+VER_TEI_U1U2			(5)
8		+POST_U1			
9		+UNEXPECTED_S1_TEI			(6)
10		GOTO L1			
11		MDLP?OTHERWISE CANCEL T202		(F)	
12		+POST_U1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in Unassigned (1) state.  
 (2) Send the IUT the TEI ID Remove message.  
 (3) No response is expected from the IUT.  
 (4) Receive the TEI ID Request message from the IUT. The IUT is not in the Unassigned (1) state. The test must be stopped and an INCONCLUSIVE verdict must be assigned.  
 (5) Verify the IUT TEI Management Entity is not in the Assigned (3) state.  
 (6) Handle any unexpected messages.

**Test Case Dynamic Behaviour**

**Test Case Name** : TM2\_VU01  
**Group** : User/TEIMgmt/S2/Valid/  
**Purpose** : Verify that the IUT, on expiry of the Identity Request Timer T202, retransmits the TEI ID Request message.  
 The IUT TEI Management Entity is expected to remain in the Requested (2) state.  
**Default** :  
**Configuration** :  
**Comments** : The test will pass if the IUT transmits a second TEI ID Request message after a delay of T202 seconds. The IUT, however, should transmit the TEI ID Request message N202 times before (possibly) starting the procedure over again with another N202 transmissions of the TEI ID Request messages.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U2			(1)
2		START T202			(4)
3	L1	MDLP?TEI_IDRequest CANCEL T202			(5)
4		START T202			(4)
5		MDLP?TEI_IDRequest CANCEL T202		(P)	(5)
6		+POST_U1			
7		+UNEXPECTED_S2_TEI			
8		GOTO L1			
9		?TIMEOUT T202		(F)	
10		+POST_U1			
11		MDLP?OTHERWISE CANCEL T202		(F)	
12		+POST_U1			
13		+UNEXPECTED_S2_TEI			
14		GOTO L1			
15		?TIMEOUT T202		(F)	
16		+POST_U1			
17		MDLP?OTHERWISE CANCEL T202		(F)	
18		+POST_U1			

**Detailed Comments** : (1) Place the Mgmt Entity state machine in the Requested state. One TEI ID Request message has already been received at this point.  
 (2) Set the counter which counts the number of times a TEI\_IDRequest message is received. At this point, one TEI\_IDRequest has been received.  
 (3) If less than n202Value TEI\_IDRequest messages have been received, another is expected. If exactly n202Value have been received, a T202ProcDelay timeout is expected before the procedure starts again.  
 (4) The next TEI\_IDRequest message should arrive T202 seconds after the previous.  
 (5) A TEI\_IDRequest message was received. Cancel the timer.

## Test Case Dynamic Behaviour

**Test Case Name** : TM2\_VU02  
**Group** : User/TEIMgmt/S2/Valid/  
**Purpose** : Verify that the IUT takes no action on receipt of a TEI Identity Assign message where the IUT's Equipment Identifier (EID) is not equal to the EID value contained in the received TEI Identity Assign message.  
 The IUT TEI Management Entity is expected to remain in the Requested state (2).  
**Default** :  
**Configuration** :  
**Comments** : The IUT is expected to send the tester a TEI ID Request message. The tester then responds with a TEI ID Assign message with the incorrect EID parameter. The IUT is then expected to retransmit the TEI ID Request message. The tester will then respond with the correct TEI ID Assign message. The IUT is then expected to be in the Assigned (3) state.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U2			(1)
2		MDLP?TEI_IDAssign	TEI_ID_ASN_EID(SndCmd, P0, iutEID+1)		(2)
3		START T202			(3)
4	L1	MDLP?TEI_IDRequest CANCEL T202	TEI_ID_REQ_V(RcvCmd, P0)		(4)
5		MDLP?TEI_IDAssign	TEI_ID_ASN_V(SndCmd, P0)	(P)	(5)
6		+VER_TEI_U3			(6)
7		+POST_U1			
8		?TIMEOUT T202		(F)	(7)
9		+UNEXPECTED_S2_TEI			(8)
10		GOTO L1			
11		MDLP?OTHERWISE CANCEL T202		(F)	(9)
12		+POST_U1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the Requested (2) state.  
 (2) Transmit a TEI ID Assign message with an EID value which is one greater than the value received in the TEI\_IDRequest message.  
 (3) Another TEI ID Request message is expected.  
 (4) A valid TEI ID Request message was received.  
 (5) Transmit back to the IUT a TEI ID Assign message with the proper EID value.  
 (6) Verify that the IUT TEI Management Entity is in the Assigned (3) state.  
 (7) The TEI\_IDRequest message was not received on time. The test has failed.  
 (8) Handle an unexpected message.  
 (9) An invalid message was received. The test has failed.

**Test Case Dynamic Behaviour**

**Test Case Name** : TM2\_VU03  
**Group** : User/TEIMgmt/S2/Valid/  
**Purpose** : Verify that the IUT, on receipt of a TEI Identity Assign frame where:  
 a) the IUT's Equipment Identifier (EID) is equal to the EID value contained in the received frame  
 b) the version and parameter octets are acceptable,  
 enters the TEI Management Assigned state (3).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U2			(1)
2		MDLPITEL_IDAssign	TEL_ID_ASN_V( SndCmd, P0)	(P)	(2)
3		+VER_TEI_U3			(3)
4		+POST_U1			

**Detailed Comments** : (1) Place the IUT in the Requested (2) state. This includes receiving a valid TEI\_IDRequest message.  
 (2) Respond with a TEI\_IDAssign message with acceptable parameters.  
 (3) Verify the IUT TEI Management Entity is in the Assigned (3) state.

### Test Case Dynamic Behaviour

**Test Case Name** : TM2\_VU04a

**Group** : User/TEIMgmt/S2/Valid/

**Purpose** : Verify that the IUT, on receipt of a TEI Identity Assign frame where:

- a) the IUT's Equipment Identifier (EID) is equal to the EID value contained in the received frame
- b) the Transmit Window Size ( k ) is below the minimum acceptable value,

enters the TEI Management Unassigned state (1).

**Default** :

**Configuration** :

**Comments** : The IUT is expected to send the tester a TEI ID Request message. The tester then responds with a TEI ID Assign message with the incorrect transmit window size parameter. The IUT is then expected to execute an implementation specific error recovery mechanism and NOT enter the Assigned (3) state. If the IUT then sends another TEI ID Request message, the tester responds with a TEI ID Assign message with acceptable parameters. The IUT is then expected to enter the Assigned (3) state.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U2			(1)
2		MDLP?TEI_IDAssign	TEI_ID_ASN_TXWI N(SndCmd, P0 , 0 )		(2)
3		START T202			(3)
4	L1	MDLP?TEI_IDRequest CANCEL T202	TEI_ID_REQ_V( RcvCmd, P0 )		(4)
5		MDLP?TEI_IDAssign	TEI_ID_ASN_V(Snd Cmd, P0 )	(P)	(5)
6		+VER_TEI_U3			(6)
7		+POST_U1			
8		?TIMEOUT T202		(P)	
9		+VER_TEI_U1U2			(7)
10		+POST_U1			
11		+UNEXPECTED_S2_TEI			(8)
12		GOTO L1			
13		MDLP?OTHERWISE CANCEL T202		(F)	(9)
14		+POST_U1			

**Detailed Comments** :

- (1) Place the IUT TEI Management Entity in the Requested (2) state.
- (2) Transmit a TEI ID Assign message with a transmit window size of 0.
- (3) The IUT is not expected to transmit any messages.
- (4) Receive the TEI ID Request message from the IUT.
- (5) Transmit a TEI ID Assign message with acceptable parameters.
- (6) Verify the IUT is in the Assigned (3) state.
- (7) Verify the IUT TEI Management Entity is not in the Assigned (3) state.
- (8) Handle an unexpected message.
- (9) An invalid message was received. The test has failed.

**Test Case Dynamic Behaviour**

**Test Case Name** : TM2\_VU04b  
**Group** : User/TEIMgmt/S2/Valid/  
**Purpose** : Verify that the IUT, on receipt of a TEI Identity Assign frame where:  
 a) the IUT's Equipment Identifier (EID) is equal to the EID value contained in the received frame  
 b) the Transmit Window Size ( k ) octet exceeds the maximum acceptable value,  
 enters the TEI Management Unassigned state (1).  
**Default** :  
**Configuration** :  
**Comments** : The IUT is expected to send the tester a TEI ID Request message. The tester then responds with a TEI ID Assign message with the incorrect transmit window size parameter. The IUT is then expected to execute an implementation specific error recovery mechanism and NOT enter the Assigned (3) state. If the IUT then sends another TEI ID Request message, the tester responds with a TEI ID Assign message with acceptable parameters. The IUT is then expected to enter the Assigned (3) state.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U2			(1)
2		MDLP?TEI_IDAssign	TEI_ID_ASN_TXWIN(SndCmd, P0 , 64 )		(2)
3		START T202			(3)
4	L1	MDLP?TEI_IDRequest CANCEL T202	TEI_ID_REQ_V(RcvCmd, P0 )		(4)
5		MDLP?TEI_IDAssign	TEI_ID_ASN_V(SndCmd, P0 )	(P)	(5)
6		+VER_TEI_U3			(6)
7		+POST_U1			
8		?TIMEOUT T202		(P)	
9		+VER_TEI_U1U2			(7)
10		+POST_U1			
11		+UNEXPECTED_S2_TEI			(8)
12		GOTO L1			
13		MDLP?OTHERWISE CANCEL T202		(F)	(9)
14		+POST_U1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the Requested (2) state.  
 (2) Transmit a TEI ID Assign message with a transmit window size of 64.  
 (3) The IUT is not expected to transmit any messages.  
 (4) Receive the TEI ID Request message from the IUT.  
 (5) Transmit a TEI ID Assign message with acceptable parameters.  
 (6) Verify the IUT is in the Assigned (3) state.  
 (7) Verify the IUT TEI Management Entity is not in the Assigned (3) state.  
 (8) Handle an unexpected message.  
 (9) An invalid message was received. The test has failed.



## Test Case Dynamic Behaviour

**Test Case Name** : TM2\_VU04c

**Group** : User/TEIMgmt/S2/Valid/

**Purpose** : Verify that the IUT, on receipt of a TEI Identity Assign frame where:

- a) the IUT's Equipment Identifier (EID) is equal to the EID value contained in the received frame
- b) the Receive Window Size ( k ) octet is below the minimum acceptable value,

enters the TEI Management Unassigned state (1).

**Default** :

**Configuration** :

**Comments** : The IUT is expected to send the tester a TEI ID Request message. The tester then responds with a TEI ID Assign message with the incorrect receive window size parameter. The IUT is then expected to execute an implementation specific error recovery mechanism and NOT enter the Assigned (3) state. If the IUT then sends another TEI ID Request message, the tester responds with a TEI ID Assign message with acceptable parameters. The IUT is then expected to enter the Assigned (3) state.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U2			(1)
2		MDLPITEI_IDAssign	TEI_ID_ASN_RXWI N(SndCmd, P0 , 0 )		(2)
3		START T202			(3)
4	L1	MDLP?TEI_IDRequest CANCEL T202	TEI_ID_REQ_V( RcvCmd, P0 )		(4)
5		MDLPITEI_IDAssign	TEI_ID_ASN_V(Snd Cmd, P0 )	(P)	(5)
6		+VER_TEI_U3			(6)
7		+POST_U1			
8		?TIMEOUT T202		(P)	
9		+VER_TEI_U1U2			(7)
10		+POST_U1			
11		+UNEXPECTED_S2_TEI			(8)
12		GOTO L1			
13		MDLP?OTHERWISE CANCEL T202		(F)	(9)
14		+POST_U1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the Requested (2) state.  
 (2) Transmit a TEI ID Assign message with a receive window size of 0.  
 (3) The IUT is not expected to transmit any messages.  
 (4) Receive the TEI ID Request message from the IUT.  
 (5) Transmit a TEI ID Assign message with acceptable parameters.  
 (6) Verify the IUT is in the Assigned (3) state.  
 (7) Verify the IUT TEI Management Entity is not in the Assigned (3) state.  
 (8) Handle an unexpected message.  
 (9) An invalid message was received. The test has failed.

**Test Case Dynamic Behaviour**

**Test Case Name** : TM2\_VU04d

**Group** : User/TEIMgmt/S2/Valid/

**Purpose** : Verify that the IUT, on receipt of a TEI Identity Assign frame where:

- a) the IUT's Equipment Identifier (EID) is equal to the EID value contained in the received frame
- b) the Receive Window Size.( k ) octet exceeds the maximum acceptable value,

enters the TEI Management Unassigned state (1).

**Default** :

**Configuration** :

**Comments** : The IUT is expected to send the tester a TEI ID Request message. The tester then responds with a TEI ID Assign message with the incorrect receive window size parameter. The IUT is then expected to execute an implementation specific error recovery mechanism and NOT enter the Assigned (3) state. If the IUT then sends another TEI ID Request message, the tester responds with a TEI ID Assign message with acceptable parameters. The IUT is then expected to enter the Assigned (3) state.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U2			(1)
2		MDLP?TEI_IDAssign	TEI_ID_ASN_RXWIN(SndCmd, P0, 64)		(2)
3		START T202			(3)
4	L1	MDLP?TEI_IDRequest CANCEL T202	TEI_ID_REQ_V(RcvCmd, P0)		(4)
5		MDLP?TEI_IDAssign	TEI_ID_ASN_V(SndCmd, P0)	(P)	(5)
6		+VER_TEI_U3			(6)
7		+POST_U1			
8		?TIMEOUT T202		(P)	
9		+VER_TEI_U1U2			(7)
10		+POST_U1			
11		+UNEXPECTED_S2_TEI			(8)
12		GOTO L1			
13		MDLP?OTHERWISE CANCEL T202		(F)	(9)
14		+POST_U1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the Requested (2) state.  
 (2) Transmit a TEI ID Assign message with a receive window size of 64.  
 (3) The IUT is not expected to transmit any messages.  
 (4) Receive the TEI ID Request message from the IUT.  
 (5) Transmit a TEI ID Assign message with acceptable parameters.  
 (6) Verify the IUT is in the Assigned (3) state.  
 (7) Verify the IUT TEI Management Entity is not in the Assigned (3) state.  
 (8) Handle an unexpected message.  
 (9) An invalid message was received. The test has failed.

## Test Case Dynamic Behaviour

**Test Case Name** : TM2\_VU04e

**Group** : User/TEIMgmt/S2/Valid/

**Purpose** : Verify that the IUT, on receipt of a TEI Identity Assign frame where:

- a) the IUT's Equipment Identifier (EID) is equal to the EID value contained in the received frame
- b) the T200 value is below the minimum acceptable value,

enters the TEI Management Unassigned state (1).

**Default** :

**Configuration** :

**Comments** : The IUT is expected to send the tester a TEI ID Request message. The tester then responds with a TEI ID Assign message with the incorrect T200 parameter. The IUT is then expected to execute an implementation specific error recovery mechanism and NOT enter the Assigned (3) state. If the IUT then sends another TEI ID Request message, the tester responds with a TEI ID Assign message with acceptable parameters. The IUT is then expected to enter the Assigned (3) state.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U2			(1)
2		MDLPITEI_IDAssign	TEI_ID_ASN_T200( SndCmd, P0 , 9 )		(2)
3		START T202			(3)
4	L1	MDLP?TEI_IDRequest CANCEL T202	TEI_ID_REQ_V( RcvCmd, P0 )		(4)
5		MDLPITEI_IDAssign	TEI_ID_ASN_V(Snd Cmd, P0 )	(P)	(5)
6		+VER_TEI_U3			(6)
7		+POST_U1			
8		?TIMEOUT T202		(P)	
9		+VER_TEI_U1U2			(7)
10		+POST_U1			
11		+UNEXPECTED_S2_TEI			(8)
12		GOTO L1			
13		MDLP?OTHERWISE CANCEL T202		(F)	(9)
14		+POST_U1			

**Detailed Comments** :

- (1) Place the IUT TEI Management Entity in the Requested (2) state.
- (2) Transmit a TEI ID Assign message with a T200 value of 0.9 seconds.
- (3) The IUT is not expected to transmit any messages.
- (4) Receive the TEI ID Request message from the IUT.
- (5) Transmit a TEI ID Assign message with acceptable parameters.
- (6) Verify the IUT is in the Assigned (3) state.
- (7) Verify the IUT TEI Management Entity is not in the Assigned (3) state.
- (8) Handle an unexpected message.
- (9) An invalid message was received. The test has failed.

### Test Case Dynamic Behaviour

**Test Case Name** : TM2\_VU04f

**Group** : User/TEIMgmt/S2/Valid/

**Purpose** : Verify that the IUT, on receipt of a TEI Identity Assign frame where:

- a) the IUT's Equipment Identifier (EID) is equal to the EID value contained in the received frame
- b) the T200 value exceeds the maximum acceptable value,

enters the TEI Management Unassigned state (1).

**Default** :

**Configuration** :

**Comments** : The IUT is expected to send the tester a TEI ID Request message. The tester then responds with a TEI ID Assign message with the incorrect T200 parameter. The IUT is then expected to execute an implementation specific error recovery mechanism and NOT enter the Assigned (3) state. If the IUT then sends another TEI ID Request message, the tester responds with a TEI ID Assign message with acceptable parameters. The IUT is then expected to enter the Assigned (3) state.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U2			(1)
2		MDLPITEI_IDAssign	TEI_ID_ASN_T200( SndCmd, P0 , 601 )		(2)
3		START T202			(3)
4	L1	MDLP?TEI_IDRequest CANCEL T202	TEI_ID_REQ_V( RcvCmd, P0 )		(4)
5		MDLPITEI_IDAssign	TEI_ID_ASN_V(Snd Cmd, P0 )	(P)	(5)
6		+VER_TEI_U3			(6)
7		+POST_U1			
8		?TIMEOUT T202		(P)	
9		+VER_TEI_U1U2			(7)
10		+POST_U1			
11		+UNEXPECTED_S2_TEI			(8)
12		GOTO L1			
13		MDLP?OTHERWISE CANCEL T202		(F)	(9)
14		+POST_U1			

**Detailed Comments** :

- (1) Place the IUT TEI Management Entity in the Requested (2) state.
- (2) Transmit a TEI ID Assign message with a T200 value of 60.1 seconds.
- (3) The IUT is not expected to transmit any messages.
- (4) Receive the TEI ID Request message from the IUT.
- (5) Transmit a TEI ID Assign message with acceptable parameters.
- (6) Verify the IUT is in the Assigned (3) state.
- (7) Verify the IUT TEI Management Entity is not in the Assigned (3) state.
- (8) Handle an unexpected message.
- (9) An invalid message was received. The test has failed.

### Test Case Dynamic Behaviour

**Test Case Name** : TM2\_VU04g  
**Group** : User/TEIMgmt/S2/Valid/  
**Purpose** : Verify that the IUT, on receipt of a TEI Identity Assign frame where:

a) the IUT's Equipment Identifier (EID) is equal to the EID value contained in the received frame  
 b) the N200 value is below the minimum acceptable value,

enters the TEI Management Unassigned state (1).

**Default** :  
**Configuration** :  
**Comments** : The IUT is expected to send the tester a TEI ID Request message. The tester then responds with a TEI ID Assign message with the incorrect N200 parameter. The IUT is then expected to execute an implementation specific error recovery mechanism and NOT enter the Assigned (3) state. If the IUT then sends another TEI ID Request message, the tester responds with a TEI ID Assign message with acceptable parameters. The IUT is then expected to enter the Assigned (3) state.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U2			(1)
2		MDLP?TEI_IDAssign	TEI_ID_ASN_N200( SndCmd, P0 , 1 )		(2)
3		START T202			(3)
4	L1	MDLP?TEI_IDRequest CANCEL T202	TEI_ID_REQ_V( RcvCmd, P0 )		(4)
5		MDLP?TEI_IDAssign	TEI_ID_ASN_V(Snd Cmd, P0 )	(P)	(5)
6		+VER_TEI_U3			(6)
7		+POST_U1			
8		?TIMEOUT T202		(P)	
9		+VER_TEI_U1U2			(7)
10		+POST_U1			
11		+UNEXPECTED_S2_TEI			(8)
12		GOTO L1			
13		MDLP?OTHERWISE CANCEL T202		(F)	(9)
14		+POST_U1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the Requested (2) state.  
 (2) Transmit a TEI ID Assign message with a N200 of 1.  
 (3) The IUT is not expected to transmit any messages.  
 (4) Receive the TEI ID Request message from the IUT.  
 (5) Transmit a TEI ID Assign message with acceptable parameters.  
 (6) Verify the IUT is in the Assigned (3) state.  
 (7) Verify the IUT TEI Management Entity is not in the Assigned (3) state.  
 (8) Handle an unexpected message.  
 (9) An invalid message was received. The test has failed.

**Test Case Dynamic Behaviour**

**Test Case Name** : TM2\_VU04h  
**Group** : User/TEIMgmt/S2/Valid/  
**Purpose** : Verify that the IUT, on receipt of a TEI Identity Assign frame where:  
 a) the IUT's Equipment Identifier (EID) is equal to the EID value contained in the received frame  
 b) the N200 value exceeds the maximum acceptable value,  
 enters the TEI Management Unassigned state (1).  
**Default** :  
**Configuration** :  
**Comments** : The IUT is expected to send the tester a TEI ID Request message. The tester then responds with a TEI ID Assign message with the incorrect N200 parameter. The IUT is then expected to execute an implementation specific error recovery mechanism and NOT enter the Assigned (3) state. If the IUT then sends another TEI ID Request message, the tester responds with a TEI ID Assign message with acceptable parameters. The IUT is then expected to enter the Assigned (3) state.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U2			(1)
2		MDLPITEI_IDAssign	TEI_ID_ASN_N200( SndCmd, P0 , 11 )		(2)
3		START T202			(3)
4	L1	MDLP?TEI_IDRequest CANCEL T202	TEI_ID_REQ_V( RcvCmd, P0 )		(4)
5		MDLPITEI_IDAssign	TEI_ID_ASN_V(Snd Cmd, P0 )	(P)	(5)
6		+VER_TEI_U3			(6)
7		+POST_U1			
8		?TIMEOUT T202		(P)	
9		+VER_TEI_U1U2			(7)
10		+POST_U1			
11		+UNEXPECTED_S2_TEI			(8)
12		GOTO L1			
13		MDLP?OTHERWISE CANCEL T202		(F)	(9)
14		+POST_U1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the Requested (2) state.  
 (2) Transmit a TEI ID Assign message with a N200 value of 11.  
 (3) The IUT is not expected to transmit any messages.  
 (4) Receive the TEI ID Request message from the IUT.  
 (5) Transmit a TEI ID Assign message with acceptable parameters.  
 (6) Verify the IUT is in the Assigned (3) state.  
 (7) Verify the IUT TEI Management Entity is not in the Assigned (3) state.  
 (8) Handle an unexpected message.  
 (9) An invalid message was received. The test has failed.

## Test Case Dynamic Behaviour

**Test Case Name** : TM2\_VU04i

**Group** : User/TEIMgmt/S2/Valid/

**Purpose** : Verify that the IUT, on receipt of a TEI Identity Assign frame where:

- a) the IUT's Equipment Identifier (EID) is equal to the EID value contained in the received frame
- b) the T203 value is below the minimum acceptable value ( except zero ),

enters the TEI Management Unassigned state (1).

**Default** :

**Configuration** :

**Comments** : The IUT is expected to send the tester a TEI ID Request message. The tester then responds with a TEI ID Assign message with the incorrect T203 paramater. The IUT is then expected to execute an implementation specific error recovery mechanism and NOT enter the Assigned (3) state. If the IUT then sends another TEI ID Request message, the tester responds with a TEI ID Assign message with acceptable parameters. The IUT is then expected to enter the Assigned (3) state.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U2			(1)
2		MDLP?TEI_IDAssign	TEI_ID_ASN_T203( SndCmd, P0 , 9 )		(2)
3		START T202			(3)
4	L1	MDLP?TEI_IDRequest CANCEL T202	TEI_ID_REQ_V( RcvCmd, P0 )		(4)
5		MDLP?TEI_IDAssign	TEI_ID_ASN_V(Snd Cmd, P0 )	(P)	(5)
6		+VER_TEI_U3			(6)
7		+POST_U1			
8		?TIMEOUT T202		(P)	
9		+VER_TEI_U1U2			(7)
10		+POST_U1			
11		+UNEXPECTED_S2_TEI			(8)
12		GOTO L1			
13		MDLP?OTHERWISE CANCEL T202		(F)	(9)
14		+POST_U1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the Requested (2) state.  
 (2) Transmit a TEI ID Assign message with a T203 value of 9 seconds.  
 (3) The IUT is not expected to transmit any messages.  
 (4) Receive the TEI ID Request message from the IUT.  
 (5) Transmit a TEI ID Assign message with acceptable parameters.  
 (6) Verify the IUT is in the Assigned (3) state.  
 (7) Verify the IUT TEI Management Entity is not in the Assigned (3) state.  
 (8) Handle an unexpected message.  
 (9) An invalid message was received. The test has failed.

### Test Case Dynamic Behaviour

**Test Case Name** : TM2\_VU04j

**Group** : User/TEIMgmt/S2/Valid/

**Purpose** : Verify that the IUT, on receipt of a TEI Identity Assign frame where:

- a) the IUT's Equipment Identifier (EID) is equal to the EID value contained in the received frame
- b) the T203 value exceeds the maximum acceptable value,

enters the TEI Management Unassigned state (1).

**Default** :

**Configuration** :

**Comments** : The IUT is expected to send the tester a TEI ID Request message. The tester then responds with a TEI ID Assign message with the incorrect T203 parameter. The IUT is then expected to execute an implementation specific error recovery mechanism and NOT enter the Assigned (3) state. If the IUT then sends another TEI ID Request message, the tester responds with a TEI ID Assign message with acceptable parameters. The IUT is then expected to enter the Assigned (3) state.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U2			(1)
2		MDLP?TEI_IDAssign	TEI_ID_ASN_T203( SndCmd, P0 , 3601 )		(2)
3		START T202			(3)
4	L1	MDLP?TEI_IDRequest CANCEL T202	TEI_ID_REQ_V( RcvCmd, P0 )		(4)
5		MDLP?TEI_IDAssign	TEI_ID_ASN_V(Snd Cmd, P0 )	(P)	(5)
6		+VER_TEI_U3			(6)
7		+POST_U1			
8		?TIMEOUT T202		(P)	
9		+VER_TEI_U1U2			(7)
10		+POST_U1			
11		+UNEXPECTED_S2_TEI			(8)
12		GOTO L1			
13		MDLP?OTHERWISE CANCEL T202		(F)	(9)
14		+POST_U1			

**Detailed Comments** :

- (1) Place the IUT TEI Management Entity in the Requested (2) state.
- (2) Transmit a TEI ID Assign message with a T203 value of 3601 seconds.
- (3) The IUT is not expected to transmit any messages.
- (4) Receive the TEI ID Request message from the IUT.
- (5) Transmit a TEI ID Assign message with acceptable parameters.
- (6) Verify the IUT is in the Assigned (3) state.
- (7) Verify the IUT TEI Management Entity is not in the Assigned (3) state.
- (8) Handle an unexpected message.
- (9) An invalid message was received. The test has failed.



### Test Case Dynamic Behaviour

**Test Case Name** : TM2\_VU04k  
**Group** : User/TEIMgmt/S2/Valid/  
**Purpose** : Verify that the IUT, on receipt of a TEI Identity Assign frame where:

a) the IUT's Equipment Identifier (EID) is equal to the EID value contained in the received frame  
 b) the N204 value is below the minimum acceptable value,

enters the TEI Management Unassigned state (1).

**Default** :  
**Configuration** :  
**Comments** : The IUT is expected to send the tester a TEI ID Request message. The tester then responds with a TEI ID Assign message with the incorrect N204 parameter. The IUT is then expected to execute an implementation specific error recovery mechanism and NOT enter the Assigned (3) state. If the IUT then sends another TEI ID Request message, the tester responds with a TEI ID Assign message with acceptable parameters. The IUT is then expected to enter the Assigned (3) state.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U2			(1)
2		MDLP?TEI_IDAssign	TEI_ID_ASN_N204( SndCmd, P0, 0)		(2)
3		START T202			(3)
4	L1	MDLP?TEI_IDRequest CANCEL T202	TEI_ID_REQ_V( RcvCmd, P0)		(4)
5		MDLP?TEI_IDAssign	TEI_ID_ASN_V(Snd Cmd, P0)	(P)	(5)
6		+VER_TEI_U3			(6)
7		+POST_U1			
8		?TIMEOUT T202		(P)	
9		+VER_TEI_U1U2			(7)
10		+POST_U1			
11		+UNEXPECTED_S2_TEI			(8)
12		GOTO L1			
13		MDLP?OTHERWISE CANCEL T202		(F)	(9)
14		+POST_U1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the Requested (2) state.  
 (2) Transmit a TEI ID Assign message with a N204 value of 0.  
 (3) The IUT is not expected to transmit any messages.  
 (4) Receive the TEI ID Request message from the IUT.  
 (5) Transmit a TEI ID Assign message with acceptable parameters.  
 (6) Verify the IUT is in the Assigned (3) state.  
 (7) Verify the IUT TEI Management Entity is not in the Assigned (3) state.  
 (8) Handle an unexpected message.  
 (9) An invalid message was received. The test has failed.

**Test Case Dynamic Behaviour**

**Test Case Name** : TM2\_VU05  
**Group** : User/TEIMgmt/S2/Valid/  
**Purpose** : Verify that the IUT takes no action on receipt of a TEI Identity Check Request message.  
 The IUT TEI Management Entity is expected to remain in the Requested state (2).  
**Default** :  
**Configuration** :  
**Comments** : To confirm that, upon receipt of the TEI Identity Check Request message, the IUT takes no action, the TEI Identity Check Request message is transmitted to the IUT after the IUT transmits the TEI ID Request message. The IUT is then expected to retry TEI ID Request, at which point the tester responds with TEI ID Assign. If the IUT remains in the Assigned (3) state, it is assumed that the TEI ID Check Request message had no effect.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U2			(1)
2		MDLP!TEI_IDCheckRequest	TEI_ID_CHK_REQ_V( SndCmd, P0, teiVal )		(2)
3		START T202			
4	L1	MDLP?TEI_IDRequest CANCEL T202	TEI_ID_REQ_V( RcvCmd, P0)	(P)	(3)
5		MDLP!TEI_IDAssign	TEI_ID_ASN_V( SndRsp, P0)		(4)
6		+VER_TEI_U3			(5)
7		+POST_U1			
8		?TIMEOUT T202		(F)	(6)
9		+POST_U1			
10		+UNEXPECTED_S2_TEI			(7)
11		GOTO L1			
12		MDLP?OTHERWISE CANCEL T202		(F)	
13		+POST_U1			

**Detailed Comments** : (1) Cause the IUT to transmit a TEI ID Request message and cause the IUT TEI Management Entity to enter the Requested (2) state.  
 (2) The TEI ID Request message has been received. Now send the IUT the TEI ID Check Request message.  
 (3) The IUT is expected to retry the TEI ID Request message, since it did not receive a TEI ID Assign message in response to its first TEI ID Request message.  
 (4) Now respond with the TEI ID Assign message. The IUT TEI Management Entity is expected to advance to the Assigned (3) state.  
 (5) Verify the IUT TEI Management Entity is in the Assigned (3) state.  
 (6) The IUT did not retransmit the TEI Request message. The test has failed.  
 (7) Handle any unexpected messages.

## Test Case Dynamic Behaviour

**Test Case Name** : TM2\_VU06

**Group** : User/TEIMgmt/S2/Valid/

**Purpose** : Verify that the IUT takes no action on receipt of a TEI Identity Remove message.

The IUT TEI Management Entity is expected to remain in the Requested state (2).

**Default** :

**Configuration** :

**Comments** : A TEI ID Remove message is transmitted to the IUT. If the IUT responds with a TEI ID Request message, a TEI ID Assign message is transmitted to the IUT. If the IUT appears to be in the Assigned (3) state at this point, it is assumed that the TEI ID Remove message had no effect.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U2			(1)
2		MDLPITEL_IDRemove	TEL_ID_RMV_V( SndCmd, P0, teiVal )		(2)
3		START T202			
4	L1	MDLP?TEI_IDRequest CANCEL T202	TEL_ID_REQ_V(Rcv Cmd, P0)	(P)	(3)
5		MDLPITEL_IDAssign	TEL_ID_ASN_V( SndRsp, P0)		(4)
6		+VER_TEI_U3			(5)
7		+POST_U1			
8		?TIMEOUT T202		(P)	
9		+POST_U1			
10		+UNEXPECTED_S1_TEI			(6)
11		GOTO L1			
12		MDLP?OTHERWISE CANCEL T202		(F)	
13		+POST_U1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in Requested (2) state.  
 (2) Send the IUT the TEI ID Remove message.  
 (3) The IUT is expected to re-transmit the TEI ID Request message.  
 (4) The TEI ID Assign message is transmitted to the IUT.  
 (5) Verify the IUT TEI Management Entity is in the Assigned (3) state.  
 (6) Handle any unexpected messages.

**Test Case Dynamic Behaviour**

**Test Case Name** : TM3\_VU01

**Group** : User/TEIMgm/S3/Valid/

**Purpose** : Verify that the IUT transmits a TEI ID Request message to request a new TEI, given that a TEI has already been acquired, and that the already acquired TEI is discarded.

The IUT TEI Management Entity is expected to enter the Requested state (2).

**Default** :

**Configuration** :

**Comments** : After a second TEI value is assigned to the IUT, the IUT is expected to discard the first TEI value. To verify that the IUT has discarded the original TEI, a TEI ID Check Request is sent to the IUT. A response to this message is not expected. Any SABME (P=1) messages transmitted by the IUT are absorbed.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U3			
2		( counter := 0 )			(1)
3		[ sabmeOnDemand = TRUE]			
4		<IUTITEI_IDRequest>			(2)
5		START Toper			(3)
6	L3	MDLP?SABME CANCEL Toper	SABME_V( RcvCmd, P1 )		(4)
7		GOTO L3			
8	L1	MDLP?TEI_IDRequest CANCEL Toper	TEI_ID_REQ_V(Rcv Cmd, P0)		(5)
9		MDLPITEI_IDAssign	TEI_ID_ASN_TEI(S ndCmd, P0, teiVal+1 )		(6)
10		MDLPITEI_IDCheckRequest	TEI_ID_CHK_REQ_V( SndCmd, P0, teiVal )		(7)
11		START T202			
12	L2	?TIMEOUT T202		(P)	(8)
13		+VER <sub>g</sub> TEI_U3			(9)
14		+POST_U1			
15		+UNEXPECTED_S3_TEI			(10)
16		GOTO L2			
17		MDLP?OTHERWISE CANCEL T202		(F)	(11)
18		+POST_U1			
19		?TIMEOUT Toper		(F)	(12)
20		+POST_U1			
21		+UNEXPECTED_S3_TEI			
22		GOTO L1			
23		MDLP?OTHERWISE CANCEL Toper		(F)	
24		+POST_U1			
25		[ sabmeOnDemand = FALSE]		(I)	(13)

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the Assigned (3) state.  
 (2) Ensure that the IUT is capable of transmitting a TEI ID Request message on demand.  
 (3) Request the operator to take appropriate action to cause the IUT to send the TEI ID Request message.  
 (4) Receive the SABME message from the IUT. This message was expected. Just absorb it and

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Test Case Dynamic Behaviour	
<p><b>Detailed Comments :</b> ...</p> <p>continue waiting for the TEI ID Request.</p> <p>(5) Receive the TEI ID Request message from the IUT.</p> <p>(6) Send to the IUT the TEI ID Assign message. Send a TEI value one greater than the original TEI assigned. The IUT is expected to discard the original TEI.</p> <p>(7) Send to the IUT the TEI ID Check Request message for the original TEI value. A response from the IUT would cause this test to fail.</p> <p>(8) There was no response from the IUT.</p> <p>(9) Verify the IUT TEI Management Entity is in the Assigned (3) state.</p> <p>(10) Handle unexpected messages.</p> <p>(11) An invalid message was received.</p> <p>(12) A TEI ID Request message was not received from the IUT.</p> <p>(13) The IUT is not capable of connecting to the network in demand. This test can not be executed.</p>	

Test Case Dynamic Behaviour					
<p><b>Test Case Name :</b> TM3_VU02</p> <p><b>Group :</b> User/TEIMgm/S3/Valid/</p> <p><b>Purpose :</b> Verify that the IUT takes no action on receipt of a TEI Identity Assign message where:</p> <p>a) the IUT's EID is not equal to the EID value contained in the received message</p> <p>b) the IUT's assigned TEI value is not equal to the TEI value contained in the received message.</p> <p>The IUT TEI Management Entity is expected to remain in the Assigned state (3).</p> <p><b>Default :</b></p> <p><b>Configuration :</b></p> <p><b>Comments :</b> If the EIDs do not match, then the fact that the TEIs do not match is irrelevant.</p>					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U3			(1)
2		MDLPITEL_IDAssign	TEI_ID_ASN_EID_T EI( SndCmd, P0, iutEID+1, teiVal+1 )		(2)
3		START T202			(3)
4	L2	MDLP?SABME CANCEL T202	SABME_V( RcvCmd, P1 )		(4)
5		GOTO L2			
6	L1	?TIMEOUT T202		(P)	
7		+VER_TEI_U3			
8		+POST_U1			
9		+UNEXPECTED_S3_TEI			(5)
10		GOTO L1			
11		?OTHERWISE CANCEL T202		(F)	
12		+POST_U1			
<p><b>Detailed Comments :</b> (1) Place the IUT in the Assigned (3) state.</p> <p>(2) Send a TEI ID Assign message to the IUT with the incorrect EID and TEI.</p> <p>(3) No response is expected.</p> <p>(4) Receive from the IUT the SABME message. This is an expected message which is to be absorbed by the tester with no response.</p> <p>(5) Handle unexpected responses.</p>					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : TM3_VU03 <b>Group</b> : User/TEIMgmt/S3/Valid/ <b>Purpose</b> : Verify that the IUT takes no action on receipt of a TEI Identity Check Request message, where the IUT's assigned TEI value is not equal to the TEI value contained in the received message. <p style="margin-left: 40px;">The IUT TEI Management Entity is expected to remain in the Assigned state (3).</p> <b>Default</b> : <b>Configuration</b> : <b>Comments</b> : To confirm that upon receipt of the TEI Identity Check Request message the IUT takes no action, the TEI Identity Check Request message is transmitted to the IUT after the tester responds with TEI ID Assign. If the IUT remains in the Assigned (3) state, it is assumed that the TEI ID Check Request message had no effect.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U3			(1)
2		MDLP?TEI_IDCheckRequest	TEI_ID_CHK_REQ_V( SndCmd, P0 , teiVal + 1 )		(2)
3		START T202			
4	L2	MDLP?SABME CANCEL T202	SABME_V( RcvCmd, P1 )		(3)
5		GOTO L2			
6	L1	?TIMEOUT T202		(P)	(4)
7		+VER_TEI_U3			(5)
8		+POST_U1			
9		+UNEXPECTED_S2_TEI			(6)
10		GOTO L1			
11		MDLP?OTHERWISE CANCEL T202		(F)	
12		+POST_U1			
<b>Detailed Comments</b> : (1) Cause the IUT to transmit a TEI ID Request message and cause the IUT TEI Management Entity to enter the Requested (2) state. (2) The TEI ID Request message has been received. Now send the IUT the TEI ID Check Request message with the wrong TEI value. (3) Receive the SABME message from the IUT. Absorb this expected message and continue to wait for any incoming messages. (4) The IUT did not transmit any messages within given time period. The test has passed so far. (5) Verify the IUT TEI Management Entity is in the Assigned (3) state. (6) Handle any unexpected messages.					

### Test Case Dynamic Behaviour

**Test Case Name** : TM3\_VU04  
**Group** : User/TEIMgmt/S3/Valid/  
**Purpose** : Verify that on receipt of a TEI Identity Check Request message, where the IUT's assigned TEI value is equal to the TEI value contained in the received message, the IUT responds with a TEI ID Check Response message.  
 The IUT TEI Management Entity is expected to remain in the Assigned state (3).  
**Default** :  
**Configuration** :  
**Comments** : A TEI ID Check Request message is sent to the IUT. Any SABME messages transmitted by the IUT are absorbed.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U3			(1)
2		MDLP?TEI_IDCheckRequest	TEI_ID_CHK_REQ_V( SndCmd, P0, teiVal )		(2)
3		START T202			
4	L2	MDLP?SABME CANCEL T202	SABME_V( RcvCmd, P1 )		(3)
5		GOTO L2			
6	L1	MDLP?TEI_IDCheckResponse CANCEL T202	TEI_ID_CHK_RSP_V( RcvRsp, P0 )	(P)	(4)
7		+VER_TEI_U3			(5)
8		+POST_U1			
9		?TIMEOUT T202		(F)	
10		+POST_U1			
11		+UNEXPECTED_S3_TEI			(6)
12		GOTO L1			
13		?OTHERWISE CANCEL T202		(F)	
14		+POST_U1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the Assigned (3) state.  
 (2) Send to the IUT the TEI ID Check Request message.  
 (3) Receive the SABME message from the IUT. This expected message is absorbed and a TEI ID Check Response message is expected.  
 (4) Receive TEI ID Check Response.  
 (5) Verify that the IUT is in the Assigned (3) state.  
 (6) Handle any unexpected messages.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : TM3_VU05					
<b>Group</b> : User/TEIMgmt/S3/Valid/					
<b>Purpose</b> : Verify that the IUT takes no action on receipt of a TEI Identity Remove message, where the IUT's assigned TEI value is not equal to the TEI value contained in the received message.  The IUT TEI Management Entity is expected to remain in the Assigned state (3).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U3			(1)
2		MDLP?TEI_IDRemove	TEI_ID_RMV_V( SndCmd, P0, teiVal+1 )		(2)
3		START T202			
4	L2	MDLP?SABME CANCEL T202	SABME_V( RcvCmd, P1 )		(3)
5		GOTO L2			
6	L1	?TIMEOUT T202		(P)	
7		+VER_TEI_U3			(4)
8		+POST_U1			
9		+UNEXPECTED_S1_TEI			(5)
10		GOTO L1			
11		MDLP?OTHERWISE CANCEL T202		(F)	
12		+POST_U1			
<b>Detailed Comments</b> : (1) Place the IUT TEI Management Entity in Assigned (3) state. (2) Send the IUT the TEI ID Remove message. (3) Receive the SABME message from the IUT. Do not respond to this message and continue to wait for any further messages from the IUT. (4) Verify the IUT TEI Management Entity is in the Assigned (3) state. (5) Handle any unexpected messages.					



**Test Case Dynamic Behaviour**

**Test Case Name** : TM3\_VU06  
**Group** : User/TEIMgmt/S3/Valid/  
**Purpose** : Verify that the IUT on receipt of a TEI Identity Remove message, where the IUT's assigned TEI value is equal to the TEI value contained in the received message, discards its currently assigned TEI value.  
 The IUT TEI Management Entity is expected to enter the Unassigned state (1).  
**Default** :  
**Configuration** :  
**Comments** : After the TEI Management Entity is placed in the Assigned (3) state, a SABME (P=1) message may be transmitted by the IUT. The tester will ignore this message and transmit the TEI ID Remove message to the IUT. The DLLE then, may be either in the TEI Assigned (4) state or the Establish substate (5.0) when the TEI ID Remove message is received.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U3			(1)
2		MDLPITEI_IDRemove	TEI_ID_RMV_V( SndCmd, PO, teiVal )	(P)	(2)
3		+VER_TEI_U1U2			(3)
4		+POST_U1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the Assigned (3) state.  
 (2) Send to the IUT the TEI ID Remove message.  
 (3) Confirm that the IUT TEI Management Entity is not in the Assigned (3) state.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : SM1_V01 <b>Group</b> : User/SleepMgmt/Awake/Valid/ <b>Purpose</b> : Verify that the IUT is able to enter the TEI sleep mode. <p style="margin-left: 40px;">The IUT is expected to enter the Sleeping state (2).</p> <b>Default</b> : <b>Configuration</b> : <b>Comments</b> : The receipt of an MDL-SLEEP indication primitive is not directly observable using the RSL testing. Power conservation measures should occur when the IUT's T203 timer expires and the IUT goes into sleep mode. A probe (ampmeter or other) would be required to actually verify that power conservation measures are in effect.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_U701			(1)
2		START T203			
3		?TIMEOUT T203			(2)
4		+VER_IsAsleep			
5		[ R = none]		(P)	(3)
6		+POST_S1			
7		[ R <> none]			(4)
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL T203		(F)	(5)
10		+POST_S1			
<b>Detailed Comments</b> : (1) Put IUT in S701 <p style="margin-left: 40px;">(2) IUT is now assumed to be in sleep mode since nothing has been received from it.</p> <p style="margin-left: 40px;">(3) R is a predefined identifier and none is the initial verdict assigned to a test case when it starts up.</p> <p style="margin-left: 40px;">(4) This statement is included to ensure correct test case termination.</p> <p style="margin-left: 40px;">(5) A frame was received. Since the IUT is in a stable state (all outstanding frames have been acknowledged), the IUT should not transmit any frame.</p>					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : SM1_V03 <b>Group</b> : User/SleepMgmt/Awake/Valid/ <b>Purpose</b> : Verify that the IUT on receipt of a TEI NOTIFY message whose TEI value is not found in the TEI NOTIFY list contained in the TEI NOTIFY message correctly recomputes its T204 timer value. <p style="margin-left: 40px;">The IUT shall remain in the Awake State (1).</p> <b>Default</b> : <b>Configuration</b> : <b>Comments</b> : Will not be included in BIT but would be part of a Full conformance ATS.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
<b>Detailed Comments</b> :					

### Test Case Dynamic Behaviour

**Test Case Name** : SM1\_N01

**Group** : User/SleepMgmt/Awake/Invalid/

**Purpose** : Verify that the IUT discards an unrecognized Sleep Management message.

The Local Management Entity Identifier (LMEI) =1.

The IUT shall remain in the Awake State (1).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_U701			
2		MDLPI TEI_NOTIFY			
3		START Tignore			
4	T70 11	?TIMEOUT Tignore	TEI_NOTIFY_N(Snd Cmd,P0)	(P)	
5		+POST_S1			
6		+UNEXPECTED_S701			
7		GOTO T7011			
8		MDLP?OTHERWISE CANCEL Tignore		(F)	
9		+POST_S1			

**Detailed Comments** :

**Test Case Dynamic Behaviour**

**Test Case Name** : SM1\_N02

**Group** : User/SleepMgmt/Awake/Invalid/

**Purpose** : Verify that the IUT discards a broadcast management message containing an invalid LMEI value (LMEI !=1 and LMEI !=15)

The Local Management Entity Identifier (LMEI) =1.

The IUT shall remain in the Awake State (1).

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_U701			
2		MDLP! BcastMsg	BCASTMSG_N_LM EI(SndCmd,P0)		
3		START Tignore			
4	T70 11	?TIMEOUT Tignore		(P)	
5		+POST_S1			
6		+UNEXPECTED_S701			
7		GOTO T7011			
8		MDLP?OTHERWISE CANCEL Tignore		(F)	
9		+POST_S1			

**Detailed Comments** :

## Test Case Dynamic Behaviour

**Test Case Name** : SM2\_V01

**Group** : User/SleepMgmt/Sleeping/Valid/

**Purpose** : Verify that the IUT on expiry of the T204 TEI NOTIFY timer is able to receive a TEI NOTIFY message.

The IUT is expected enter the Awake State (2).

**Default** :

**Configuration** :

**Comments** : Note: The IUTs forward channel receiver will remain active until it has received a TEI NOTIFY message.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_SleepState			(1)
2		+VER_IsAsleep			
3		(try :=0)			
4	L1	START T204			
5		?TIMEOUT T204			(1)
6		MDLPITEI_NOTIFY	TEI_NOTIFY_InList( SndCmd, P0, t204Value)		
7		START T200			
8		MDLP?RR (VA:= RR.n_r) CANCEL T200	RR_V(RcvCmd,P1, VS)	(P)	
9		MDLP!RR	RR_V( SndRsp, F1,VR)		
10		+POST_S1			
11		MDLP?RNR (VA:= RNR.nr) CANCEL T200	RNR_V(RcvCmd,P1 , VS)	(P)	
12		MDLP!RR	RR_V( SndRsp, F1,VR)		
13		+POST_S1			
14		?TIMEOUT T200			
15		[try = 1]		(F)	
16		+POST_S1			
17		[try =0 ] (try:=1)			
18		GOTO L1			
19		MDLP?OTHERWISE CANCEL T200		(F)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL T204		(F)	
22		+POST_S1			

**Detailed Comments** : (1) Places the IUT in sleep state. Must first acquire a TEI, do key exchange, and NEI registration, then IUT must not transmit anything for T203 time.

(2) Once the IUT is presumed asleep. Attempt to wake it up.

(3) No verdict yet assigned, therefore test passes.

**Test Case Dynamic Behaviour**

**Test Case Name** : SM2\_V02  
**Group** : User/SleepMgmt/Sleeping/Valid/  
**Purpose** : Verify that the IUT on receipt of a TEI NOTIFY message whose TEI value is not found in the TEI NOTIFY list contained in the TEI NOTIFY message, correctly recomputes its T204 value.  
 The IUT shall remain in the Sleeping state (2).  
**Default** :  
**Configuration** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_SleepState			
2		+VER_IsAsleep			
3		START T204			
4		?TIMEOUT T204			
5		MDLPITEI_NOTIFY	TEI_NOTIFY_NotInList(SndCmd, P0, t204Value)		(1)
6		START T204			
7		?TIMEOUT T204			(1a)
8		MDLPITEI_NOTIFY	TEI_NOTIFY_NotInList(SndCmd, P0, NewT204Val)		(2)
9		START T204(NewT204Val)			(3)
10		?TIMEOUT T204			
11		MDLPITEI_NOTIFY	TEI_NOTIFY_InList(SndCmd, P0, NewT204Val)		(4)
12		START Tignore			(4a)
13		MDLP?RR	RR_V(RcvCmd,P1, VS)	(P)	(5)
14		MDLP?RR	RR_V(SndRsp, F1, VR)		
15		MDLP?RNR	RNR_V(RcvCmd, P1, VS)	(P)	
16		MDLP?RR	RR_V(SndRsp, F1, VR)		(5)
17		?TIMEOUT Tignore			(F)
18		+POST_S1			
19		MDLP?OTHERWISE CANCEL Tignore			(F)
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL T204			(I)
22		+POST_S1			
23		MDLP?OTHERWISE CANCEL T204			(I)
24		+POST_S1			
25		MDLP?OTHERWISE CANCEL T204			(I)

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Test Case Dynamic Behaviour																																																		
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments																																													
26		+POST_S1																																																
<p><b>Detailed Comments :</b> (1) The default TEI NOTIFY timer value specified in the PIXIT.</p> <p>(1a) Because the IUT is still asleep, the IUT should not transmit anything. If it does, the test is inconclusive.</p> <p>(2) New T204 timer value: 6 times less than the default value.</p> <p>(3) After waiting the new T204 amount of time. transmit a TEI NOTIFY message with the IUTs TEI value in the TEI NOTIFY list and expect an RR or RNR for the IUT.</p> <p>(4) The IUT is expected to respond within T200 seconds with an RR or RNR. A non conformant IUT will transmit a frame other than RR or RNR or nothing at all. If the IUT does not transmit anything, this is an indication that the new T204 value has not been recomputed correctly(or the sent frame was lost).</p> <p>(4a) Give the IUT ample time</p> <p>(5) VA is normally updated with the NR value. This is not relevant to the test case and has been left out.</p> <p>Test cast logic:</p> <p>IUT is in sleep mode:</p> <p>Default T204 value used by M-ES</p> <table style="margin-left: 40px;"> <tr> <td style="text-align: center;">Tester</td> <td style="width: 100px;"></td> <td style="text-align: center;">M-ES</td> </tr> <tr> <td style="text-align: center;">-----</td> <td></td> <td style="text-align: center;">-----</td> </tr> <tr> <td>TEI Not.(T204=def val*) -----&gt;</td> <td></td> <td>TEI not in list</td> </tr> <tr> <td> </td> <td></td> <td></td> </tr> <tr> <td>  def val</td> <td></td> <td></td> </tr> <tr> <td>v</td> <td></td> <td></td> </tr> <tr> <td>TEI Not.(T204=new val*) -----&gt;</td> <td></td> <td>TEI not in list</td> </tr> <tr> <td> </td> <td></td> <td></td> </tr> <tr> <td>  new val.</td> <td></td> <td>M-ES checks if TEI in list.</td> </tr> <tr> <td>v</td> <td></td> <td>Recomputes its T204 value.</td> </tr> <tr> <td>TEI Not.(T204=new val.) -----&gt;</td> <td></td> <td>TEI in list</td> </tr> <tr> <td> </td> <td></td> <td></td> </tr> <tr> <td> </td> <td style="text-align: center;">&lt;-----</td> <td>RR / RNR (P=1)</td> </tr> <tr> <td> </td> <td></td> <td></td> </tr> <tr> <td>v</td> <td></td> <td></td> </tr> </table> <p>*new val is much shorter than the default value. (If def=60 secs. new val=10secs.)</p>						Tester		M-ES	-----		-----	TEI Not.(T204=def val*) ----->		TEI not in list				def val			v			TEI Not.(T204=new val*) ----->		TEI not in list				new val.		M-ES checks if TEI in list.	v		Recomputes its T204 value.	TEI Not.(T204=new val.) ----->		TEI in list					<-----	RR / RNR (P=1)				v		
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Test Case Dynamic Behaviour					
<b>Test Case Name</b> : SM2_V03					
<b>Group</b> : User/SleepMgmt/Sleeping/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of a TEI NOTIFY message whose TEI value is not found in the TEI NOTIFY list contained in the TEI NOTIFY message, remains in the TEI sleep state (2).  The IUT shall re-initiate power conservation measures after having determined that its TEI is not in the TEI NOTIFY list.					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : During power conservation, an IUT will have its receiver off. Transmitting a frame to the IUT while it is in power conservation should not result in any response from the IUT.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_SleepState			
2		+VER_IsAsleep			
3		(try :=0 )			
4	L2	START T204			
5		?TIMEOUT T204			
6		MDLPITEI_NOTIFY	TEI_NOTIFY_NotIn List(SndCmd, PO, t204Value)		(1)
7		[try =0] (try :=1)			
8		GOTO L2			
9		[ try = 1]			
10		+VER_IsAsleep			
11		[ R = none]		(P)	
12		+POST_S1			
13		MDLP?OTHERWISE CANCEL T204			
14		+POST_S1		(F)	
<b>Detailed Comments</b> : Repeat this process 2 times to verify that the IUT does not respond to the TEI message. To convince ourselves that the IUT is really in sleep mode.					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : SM2_V04					
<b>Group</b> : User/SleepMgmt/Sleeping/Valid/					
<b>Purpose</b> : Verify that the IUT on receipt of a TEI NOTIFY message whose TEI value is found in the TEI NOTIFY list contained in the TEI NOTIFY message, correctly recomputes its T204 value.  The IUT is expected to enter the Awake state (1).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : This test would be included in a full conformance ATS.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
<b>Detailed Comments</b> : This test degenerates to a test similar to SM_V02. The difference: The IUT must be awakened, put to sleep and awakened again to verify that T204 was correctly recomputed.					



**Test Case Dynamic Behaviour**

**Test Case Name** : SM2\_V05  
**Group** : User/SleepMgmt/Sleeping/Valid/  
**Purpose** : Verify that the IUT on receipt of a TEI NOTIFY message whose TEI value is found in the TEI NOTIFY list contained in the TEI NOTIFY message responds with either an RR (P=1) or an RNR (P=1).  
 The IUT is expected to enter the Awake state (1).  
**Default** :  
**Configuration** :  
**Comments** : This test is similar to SM2\_V01

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_SleepState			(1)
2		+VER_IsAsleep			
3		(try :=0)			
4	L1	START T204			
5		?TIMEOUT T204			
6		MDLPITEI_NOTIFY	TEI_NOTIFY_InList( SndCmd, P0, t204Value)		
7		START T200			
8		MDLP?RR (VA:= RR.n_r) CANCEL T200	RR_V(RcvCmd,P1, VS)	(P)	
9		MDLPIRR	RR_V( SndRsp, F1,VR)		
10		+POST_S1			
11		MDLP?RNR (VA:= RNR.nr) CANCEL T200	RNR_V(RcvCmd,P1 , VS)	(P)	
12		MDLPIRR	RR_V( SndRsp, F1,VR)		
13		+POST_S1			
14		?TIMEOUT T200			
15		[try = 1]		(F)	
16		+POST_S1			
17		[try =0 ] (try:=1)			
18		GOTO L1			
19		MDLP?OTHERWISE CANCEL T200		(F)	
20		+POST_S1			
21		MDLP?OTHERWISE CANCEL T204		(F)	
22		+POST_S1			

**Detailed Comments** : (1) Place the IUT in Sleep state.

Note: A call to the tree attachment VER\_IsAwake after the transmission of the RR response frame could be added to verify that the IUT is in the awake state. This is redundant though as receipt of the RR command frame indicates that the IUT is awake.

**Test Case Dynamic Behaviour**

**Test Case Name** : MFONE01\_VU01

**Group** : User/DLLE/MFONotEstablished/S1/Valid/

**Purpose** : Verify that the IUT can transmit a SABME (P=1).

The IUT DLLE is expected to enter the Establish substate (5.0).

**Default** :

**Configuration** :

**Comments** : The IUT is expected to transmit a TEI ID Request message to which the tester will respond with the TEI ID Assign message. The IUT is expected to transmit a SABME (P=1) frame.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U3			(1)
2		START T200			(2)
3	L1	MDLP?SABME CANCEL T200	SABME_V( RcvCmd, P1 )	(P)	(3)
4		+POST_U1			
5		+UNEXPECTED_S50			
6		GOTO L1			
7		?TIMEOUT T200		(F)	
8		+POST_U1			
9		MDLP?OTHERWISE CANCEL T200		(F)	
10		+POST_U1			

**Detailed Comments** : (1) Place the IUT DLLE in the Establish substate of the AWAITING ESTABLISHMENT (5.0) state.  
 (2) Wait for the SABME message.  
 (3) Receive the SABME message from the IUT.

## Test Case Dynamic Behaviour

**Test Case Name** : MFONE01\_VU02  
**Group** : User/DLLE/MFONotEstablished/S1/Valid/  
**Purpose** : Verify that the IUT can transmit a UI frame, given that a TEI has not yet been acquired, without establishing a connection to the network.  
**Default** :  
**Configuration** :  
**Comments** : The IUT DLLE is expected to attempt to acquire a TEI before transmitting the UI frame. The IUT is then expected to either remain in the TEI Assigned (4) state or transmit a SABME (P=1) to establish a connection. If the IUT transmits the SABME (P=1) frame before the UI frame, the test will fail. If the IUT transmits the SABME (P=1) frame after the UI frame, the SABME (P=1) frame will be ignored, but the test will pass.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U1			(1)
2		+PRE_SendTEIReq( FALSE )			(2)
3		MDLPITEI_IDAssign	TEI_ID_ASN_V( SndCmd, P0)		(3)
4		START T200			(4)
5		MDLP?UI CANCEL T200	UI_V( RcvCmd, P0 )	(P)	
6		+POST_U1			
7		?TIMEOUT T200		(F)	
8		+POST_U1			
9		MDLP?OTHERWISE CANCEL T200		(F)	
10		+POST_U1			

**Detailed Comments** : (1) Try to place the IUT TEI Management Entity in the Unassigned (1) state. The DLLE Entity is expected to enter the TEI Unassigned (1) state also.  
(2) Cause the IUT to send the TEI ID Request message to acquire a TEI, but not send a SABME immediately after the reception of the TEI ID Assign message.  
(3) Transmit the TEI ID Assign message to the IUT.  
(4) Wait for the UI frame.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFONE50_VU01					
<b>Group</b> : User/DLLE/MFONotEstablished/S50/Valid/					
<b>Purpose</b> : Verify that the IUT can receive the TEI ID Remove message and discard the TEI after having transmitted a SABME (P=1) frame but before receiving the UA (F=1) response.  The IUT is expected to enter the TEI Unassigned (1) state.					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_U50			(1)
2		MDLPITEI_IDRemove	TEI_ID_RMV_V( SndCmd, P0, teiVal )	(P)	(2)
3		+VER_TEI_U1U2			(3)
4		+POST_S1			
<b>Detailed Comments</b> : (1) Place the IUT DLLE in the Establish substate (5.0). (2) Transmit the TEI ID Remove message to the IUT. (3) Verify that the IUT TEI Management Entity is in either the Unassigned (1) state or the Requested (2) state.					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : MFONE51_VU01					
<b>Group</b> : User/DLLE/MFONotEstablished/S51/Valid/					
<b>Purpose</b> : Verify that the IUT can receive the TEI ID Remove message and discard the TEI after having transmitted a SABME (P=1) frame but before receiving the UA (F=1) response.  The IUT DLLE is expected to enter the TEI Unassigned (1) state.					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_U51			(1)
2		MDLPITEI_IDRemove	TEI_ID_RMV_V( SndCmd, P0, teiVal )	(P)	(2)
3		+VER_TEI_U1U2			(3)
4		+POST_U1			
<b>Detailed Comments</b> : (1) Place the IUT DLLE in the Re-establish substate (5.1). (2) Transmit the TEI ID Remove message to the IUT. (3) Verify that the IUT TEI Management Entity is in either the Unassigned (1) state or the Requested (2) state.					

### Test Case Dynamic Behaviour

**Test Case Name** : MFONE52\_VU01

**Group** : User/DLLE/MFONotEstablished/S52/Valid/

**Purpose** : Verify that the IUT can receive the TEI ID Remove message and discard the TEI after having transmitted a SABME (P=1) frame but before receiving the UA (F=1) response.

The IUT is expected to enter the TEI Unassigned (1) state.

**Default** :

**Configuration** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_U52			(1)
2		MDLPITEI_IDRemove	TEI_ID_RMV_V( SndCmd, P0, teiVal )	(P)	(2)
3		+VER_TEI_U1U2			(3)
4		+POST_U1			

**Detailed Comments** : (1) Place the IUT DLLE in the Pending Release substate (5.2).  
 (2) Transmit the TEI ID Remove message to the IUT.  
 (3) Verify that the IUT TEI Management Entity is in either the Unassigned (1) state or the Requested (2) state.

**Test Case Dynamic Behaviour**

**Test Case Name** : TM1\_VN01

**Group** : Network/TEIMgmt/S1/Valid/

**Purpose** : To verify that the IUT, upon receipt of a TEI ID Request message and having assigned a TEI to the EID, discards the current TEI, assigns a new TEI and transmits a TEI ID Assign message.

The IUT TEI Management Entity is expected to remain in the Normal state (1).

**Default** :

**Configuration** :

**Comments** : After the IUT has acquired the original TEI, the TEI ID Request message is transmitted to the IUT. The IUT is then expected to respond with the TEI ID Assign message and discard the original TEI.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N1			(1)
2		MDLP?TEI_IDRequest	TEI_ID_REQ_V( SndCmd, P0)		(2)
3		START T202			
4	L1	MDLP?TEI_IDAssign CANCEL T202	TEI_ID_ASN_V( RcvCmd, P0)	(P)	(3)
5		+CHECK_TEI( currentTEI )			(4)
6		+UNEXPECTED_N1_TEI			
7		GOTO L1			
8		?TIMEOUT T202		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T202		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the Normal state (1) and acquire a TEI.  
 (2) Transmit a TEI ID Request message to the IUT to acquire a new TEI.  
 (3) Receive the TEI ID Assign message from the IUT.  
 (4) Verify the old TEI is not assigned.

### Test Case Dynamic Behaviour

**Test Case Name** : TM21\_VN01  
**Group** : Network/TEIMgmt/S21/Valid/  
**Purpose** : To verify that the IUT, upon receipt of a TEI ID Request message and having transmitted a TEI ID Check Request, discards the TEI, assigns a new TEI and transmits a TEI ID Assign message.  
 The IUT TEI Management Entity is expected to remain in the First substate (2.1).  
**Default** :  
**Configuration** :  
**Comments** : The IUT is placed in the First substate (2.1). The TEI ID Request message is transmitted to the IUT. The IUT is then expected to respond with the TEI ID Assign message and discard the original TEI.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N21			(1)
2		MDLP?TEI_IDRequest	TEI_ID_REQ_V( SndCmd, P0)		(2)
3		START T202			
4	L1	MDLP?TEI_IDAssign CANCEL T202	TEI_ID_ASN_V( RcvCmd, P0)	(P)	(3)
5		+CHECK_TEI( currentTEI )			(4)
6		+UNEXPECTED_N21_TEI			
7		GOTO L1			
8		?TIMEOUT T202		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T202		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the First substate (2.1) and acquire a TEI.  
 (2) Transmit a TEI ID Request message to the IUT to acquire a new TEI.  
 (3) Receive the TEI ID Assign message from the IUT.  
 (4) Verify the old TEI is not assigned.

**Test Case Dynamic Behaviour**

**Test Case Name** : TM21\_VN02

**Group** : Network/TEIMgmt/S21/Valid/

**Purpose** : To verify that the IUT, upon receipt of a TEI ID Check Response message and having transmitted a TEI ID Check Request message, does not transmit a second TEI ID Check Request message.

The IUT TEI Management Entity is expected to enter the Normal state (1).

**Default** :

**Configuration** :

**Comments** : The IUT is placed in the First substate (2.1). The TEI ID Check Response message is then transmitted to the IUT.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N21			(1)
2		MDLPITeI_IDCheckResponse	TEI_ID_CHK_RSP_V( SndCmd, P0 )		(2)
3	L1	START Twait			
4		+UNEXPECTED_N21_TEI			
5		GOTO L1			
6		?TIMEOUT Twait		(P)	(3)
7		+POST_S1			
8		MDLP?OTHERWISE CANCEL Twait		(F)	
9		+POST_S1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the First substate (2.1) and acquire a TEI.  
 (2) Transmit the TEI ID Check Response to the IUT.  
 (3) A message was not received from the IUT.



### Test Case Dynamic Behaviour

**Test Case Name** : TM21\_VN03  
**Group** : Network/TEIMgmt/S21/Valid/  
**Purpose** : To verify that the IUT, having transmitted a TEI ID Check Request message, transmits a second TEI ID Check Request message after a T201 timeout.  
 The IUT TEI Management Entity is expected to enter the Second substate (2.2).  
**Default** :  
**Configuration** :  
**Comments** : The IUT is placed in the First substate (2.1). The TEI ID Check Response message is not transmitted to the IUT. A second TEI ID Check Request is expected.

Nr	Label	Behaviour Description	Constraints Ref	Verdict	Comments
1		+PRE_TEI_N21			(1)
2		START T201			
3	L1	MDLP?TEI_IDCheckRequest	TEI_ID_CHK_REQ_V( RcvCmd, P0, currentTEI )	(P)	(2)
4		+POST_S1			
5		+UNEXPECTED_N21_TEI			
6		GOTO L1			
7		?TIMEOUT T201		(F)	(3)
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL T201		(F)	
10		+POST_S1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the First substate (2.1) and acquire a TEI.  
 (2) Receive the 2nd transmission of the TEI ID Check Request message.  
 (3) A message was not received from the IUT.

### Test Case Dynamic Behaviour

**Test Case Name** : TM22\_VN01

**Group** : Network/TEIMgmt/S22/Valid/

**Purpose** : To verify that the IUT, upon receipt of a TEI ID Request message, having transmitted two TEI ID Check Request messages, discards the TEI, assigns a new TEI and transmits a TEI ID Assign message.

The IUT TEI Management Entity is expected to remain in the Second substate (2.2).

**Default** :

**Configuration** :

**Comments** : The IUT is placed in the Second substate (2.2). The TEI ID Request message is transmitted to the IUT. The IUT is then expected to respond with the TEI ID Assign message and discard the original TEI.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N22			(1)
2		MDLP?TEI_IDRequest	TEI_ID_REQ_V( SndCmd, P0)		(2)
3		START T202			
4	L1	MDLP?TEI_IDAssign CANCEL T202	TEI_ID_ASN_V( RcvCmd, P0)	(P)	(3)
5		+CHECK_TEI( currentTEI )			(4)
6		+UNEXPECTED_N21_TEI			
7		GOTO L1			
8		?TIMEOUT T202		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T202		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the Second substate (2.2) and acquire a TEI.  
 (2) Transmit a TEI ID Request message to the IUT to acquire a new TEI.  
 (3) Receive the TEI ID Assign message from the IUT.  
 (4) Verify the old TEI is not assigned.

### Test Case Dynamic Behaviour

**Test Case Name** : TM22\_VN02  
**Group** : Network/TEIMgmt/S22/Valid/  
**Purpose** : To verify that the IUT, upon receipt of a TEI ID Check Response message and having transmitted two TEI ID Check Request messages, does not transmit another TEI ID Check Request message.  
 The IUT TEI Management Entity is expected to enter the Normal state (1).  
**Default** :  
**Configuration** :  
**Comments** : The IUT is first placed in the First substate (2.2). The TEI ID Check Response message is then transmitted to the IUT.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N22			(1)
2		MDLPITEI_IDCheckResponse	TEI_ID_CHK_RSP_V( SndCmd, P0 )		(2)
3	L1	START Twait			
4		+UNEXPECTED_N21_TEI			
5		GOTO L1			
6		?TIMEOUT Twait		(P)	(3)
7		+POST_S1			
8		MDLP?OTHERWISE CANCEL Twait		(F)	
9		+POST_S1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the First substate (2.2) and acquire a TEI.  
 (2) Transmit the TEI ID Check Response to the IUT.  
 (3) A message was not received from the IUT.

### Test Case Dynamic Behaviour

**Test Case Name** : TM22\_VN03  
**Group** : Network/TEIMgmt/S22/Valid/  
**Purpose** : To verify that the IUT, having transmitted two TEI ID Check Request messages with two T201 timeouts, does not transmit a further TEI ID Check Request message.  
 The IUT TEI Management Entity is expected to return to the Normal state (1).  
**Default** :  
**Configuration** :  
**Comments** : The IUT is first placed in the Second substate (2.2). It is expected that the IUT will not transmit any further messages before a T201 timeout.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N22			(1)
2		START T201			
3		?TIMEOUT T201		(P)	(2)
4		MDLP?OTHERWISE CANCEL T201		(F)	
5		+POST_S1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the Second substate (2.2).  
 (2) No messages were received from the IUT.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : TM31_VN01					
<b>Group</b> : Network/TEIMgmt/S31/Valid/					
<b>Purpose</b> : To verify that the IUT, upon receipt of a TEI ID Request message after having transmitted a TEI ID Check Request, discards the TEI, assigns a new TEI and transmits a TEI ID Assign message.  The IUT TEI Management Entity is expected to remain in the First substate (3.1).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : The IUT is placed in the First substate (3.1). The TEI ID Request message is transmitted to the IUT. The IUT is then expected to respond with the TEI ID Assign message and discard the original TEI.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N31			(1)
2		MDLP?TEI_IDRequest	TEI_ID_REQ_V( SndCmd, P0 )		(2)
3		START T202			
4	L1	MDLP?TEI_IDAssign CANCEL T202	TEI_ID_ASN_V( RcvCmd, P0 )	(P)	(3)
5		+CHECK_TEI( currentTEI )			(4)
6		+UNEXPECTED_N21_TEI			
7		GOTO L1			
8		?TIMEOUT T202		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T202		(F)	
11		+POST_S1			
<b>Detailed Comments</b> : (1) Place the IUT TEI Management Entity in the First substate (3.1) and acquire a TEI. (2) Transmit a TEI ID Request message to the IUT to acquire a new TEI. (3) Receive the TEI ID Assign message from the IUT. (4) Verify the old TEI is not assigned.					

### Test Case Dynamic Behaviour

**Test Case Name** : TM31\_VN02  
**Group** : Network/TEIMgmt/S31/Valid/  
**Purpose** : To verify that the IUT, upon receipt of a TEI ID Check Response message after having transmitted a TEI ID Check Request message, does not transmit a second TEI ID Check Request message.  
 The IUT TEI Management Entity is expected to remain in the First substate (3.1).  
**Default** :  
**Configuration** :  
**Comments** : The IUT is placed in the First substate (3.1). The TEI ID Check Response message is then transmitted to the IUT.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N31			(1)
2		MDLPITEI_IDCheckResponse	TEI_ID_CHK_RSP_ V( SndCmd, P0 )		(2)
3		START Twait			
4		?TIMEOUT Twait		(P)	(3)
5		+POST_S1			
6		MDLP?OTHERWISE CANCEL Twait		(F)	
7		+POST_S1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the First substate (3.1) and acquire a TEI.  
 (2) Transmit the TEI ID Check Response to the IUT.  
 (3) A message was not received from the IUT.

**Test Case Dynamic Behaviour**

**Test Case Name** : TM31\_VN03

**Group** : Network/TEIMgmt/S31/Valid/

**Purpose** : To verify that the IUT, having transmitted a TEI ID Check Request message, transmits a second TEI ID Check Request message after a T201 timeout.

The IUT TEI Management Entity is expected to enter the Second substate (3.2).

**Default** :

**Configuration** :

**Comments** : The IUT is placed in the First substate (3.1). The TEI ID Check Response message is not transmitted to the IUT. A second TEI ID Check Request is expected.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N31			(1)
2		START T201			
3	L1	MDLP?TEI_IDCheckRequest	TEI_ID_CHK_REQ_V( RcvCmd, P0, currentTEI )	(P)	(2)
4		+POST_S1			
5		+UNEXPECTED_N21_TEI			
6		GOTO L1			
7		?TIMEOUT T201		(F)	(3)
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL T201		(F)	
10		+POST_S1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the First substate (3.1).  
 (2) Receive the 2nd transmission of the TEI ID Check Request message.  
 (3) A message was not received from the IUT.

### Test Case Dynamic Behaviour

**Test Case Name** : TM31\_VN04

**Group** : Network/TEIMgmt/S31/Valid/

**Purpose** : To verify that the IUT, having transmitted a TEI ID Check Request message and receiving one TEI ID Check Response message, transmits a second TEI ID Check Request message after a T201 timeout.

The IUT TEI Management Entity is expected to enter the Second substate (3.2).

**Default** :

**Configuration** :

**Comments** : The IUT is placed in the First substate (3.1). The TEI ID Check Response message is not transmitted to the IUT. A second TEI ID Check Request is expected.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N31			(1)
2		MDLP?TEI_IDCheckResponse	TEI_ID_CHK_RSP_V( SndCmd, P0 )		
3		START T201			
4	L1	MDLP?TEI_IDCheckRequest	TEI_ID_CHK_REQ_V( RcvCmd, P0, currentTEI )	(P)	(2)
5		+POST_S1			
6		+UNEXPECTED_N21_TEI			
7		GOTO L1			
8		?TIMEOUT T201		(F)	(3)
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T201		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the First substate (3.1).  
 (2) Receive the 2nd transmission of the TEI ID Check Request message.  
 (3) A message was not received from the IUT.

**Test Case Dynamic Behaviour**

**Test Case Name** : TM31\_VN05  
**Group** : Network/TEIMgmt/S31/Valid/  
**Purpose** : To verify that the IUT, having transmitted a TEI ID Check Request message and receiving multiple TEI ID Check Response messages with different EID values, does not transmit a second TEI ID Check Request message after a T201 timeout .  
 The IUT TEI Management Entity is expected to return to the Normal state (1).  
**Default** :  
**Configuration** :  
**Comments** : The IUT is placed in the First substate (3.1). Two TEI ID Check Response messages are sent to the IUT each with different EID values.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N31			(1)
2		MDLPITEL_IDCheckResponse	TEI_ID_CHK_RSP_EID( SndCmd, P0, currentEID )		(2)
3		MDLPITEL_IDCheckResponse	TEI_ID_CHK_RSP_EID( SndCmd, P0, currentEID+1 )		(3)
4		START T201			
5		?TIMEOUT T201		(P)	(4)
6		+POST_S1			
7		MDLP?OTHERWISE CANCEL T201		(F)	
8		+POST_S1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the First substate (3.1).  
 (2) Transmit a TEI ID Check Response message with EID = IUT EID  
 (3) Transmit a TEI ID Check Response message with EID = IUT EID + 1.  
 (4) A message was not received from the IUT.



### Test Case Dynamic Behaviour

**Test Case Name** : TM32\_VN01  
**Group** : Network/TEIMgmt/S32/Valid/  
**Purpose** : To verify that the IUT, upon receipt of a TEI ID Request message and having transmitted two TEI ID Check Request messages, discards the TEI, assigns a new TEI and transmits a TEI ID Assign message.  
 The IUT TEI Management Entity is expected to remain in the Second substate (3.2).  
**Default** :  
**Configuration** :  
**Comments** : The IUT is placed in the Second substate (3.2). The TEI ID Request message is transmitted to the IUT. The IUT is then expected to respond with the TEI ID Assign message and discard the original TEI.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N32			(1)
2		MDLP?TEI_IDRequest	TEI_ID_REQ_V( SndCmd, P0)		(2)
3		START T202			
4	L1	MDLP?TEI_IDAssign CANCEL T202	TEI_ID_ASN_V( RcvCmd, P0)	(P)	(3)
5		+CHECK_TEI( currentTEI )			(4)
6		+UNEXPECTED_N21_TEI			
7		GOTO L1			
8		?TIMEOUT T202		(F)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T202		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the Second substate (3.2) and acquire a TEI.  
 (2) Transmit a TEI ID Request message to the IUT to acquire a new TEI.  
 (3) Receive the TEI ID Assign message from the IUT.  
 (4) Verify the old TEI is not assigned.

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : TM32_VN02					
<b>Group</b> : Network/TEIMgmt/S32/Valid/					
<b>Purpose</b> : To verify that the IUT, upon receipt of a TEI ID Check Response message and having transmitted two TEI ID Check Request messages, does not transmit another TEI ID Check Request message.  The IUT TEI Management Entity is expected to remain in the Second substate (3.2).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : The IUT is first placed in the Second substate (3.2). The TEI ID Check Response message is then transmitted to the IUT.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N32			(1)
2		MDLPITEI_IDCheckResponse	TEI_ID_CHK_RSP_V(SndCmd, P0)		(2)
3		START Twait			
4		?TIMEOUT Twait		(P)	(3)
5		+POST_S1			
6		MDLP?OTHERWISE CANCEL Twait		(F)	
7		+POST_S1			
<b>Detailed Comments</b> : (1) Place the IUT TEI Management Entity in the Second substate (3.2). (2) Transmit the TEI ID Check Response to the IUT. (3) A message was not received from the IUT.					

Test Case Dynamic Behaviour					
<b>Test Case Name</b> : TM32_VN03					
<b>Group</b> : Network/TEIMgmt/S32/Valid/					
<b>Purpose</b> : To verify that the IUT, having transmitted two TEI ID Check Request messages, does not transmit a further TEI ID Check Request message.  The IUT TEI Management Entity is expected to return to the Normal state (1).					
<b>Default</b> :					
<b>Configuration</b> :					
<b>Comments</b> : The IUT is first placed in the Second substate (3.2). It is expected that the IUT will not transmit any further messages after the second T201 timeout.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N32			(1)
2		START T201			
3		?TIMEOUT T201		(P)	(2)
4		MDLP?OTHERWISE CANCEL T201		(F)	
5		+POST_S1			
<b>Detailed Comments</b> : (1) Place the IUT TEI Management Entity in the Second substate (3.2). (2) No messages were received from the IUT.					

### Test Case Dynamic Behaviour

**Test Case Name** : TM32\_VN04  
**Group** : Network/TEIMgmt/S32/Valid/  
**Purpose** : To verify that the IUT, having transmitted two TEI ID Check Request messages and receiving one TEI ID Check Response message, does not transmit a further TEI ID Check Request message.  
 The IUT TEI Management Entity is expected to return to the Normal (1) state.  
**Default** :  
**Configuration** :  
**Comments** : The IUT is placed in the Second substate (3.2). The TEI ID Check Response message is not transmitted to the IUT.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N32			(1)
2		MDLP?TEI_IDCheckResponse	TEI_ID_CHK_RSP_V( SndCmd, P0 )		
3		START T201			
4	L1	MDLP?TEI_IDCheckRequest	TEI_ID_CHK_REQ_V( RcvCmd, P0, currentTEI )	(P)	(2)
5		+POST_S1			
6		+UNEXPECTED_N21_TEI			
7		GOTO L1			
8		?TIMEOUT T201		(F)	(3)
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T201		(F)	
11		+POST_S1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the Second substate (3.2).  
 (2) Receive the 2nd transmission of the TEI ID Check Request message.  
 (3) A message was not received from the IUT.

**Test Case Dynamic Behaviour**

**Test Case Name** : TM32\_VN05  
**Group** : Network/TEIMgm/S32/Valid/  
**Purpose** : To verify that the IUT, having transmitted a TEI ID Check Request message and receiving multiple TEI ID Check Response messages with different EID values, does not transmit a second TEI ID Check Request message after a T201 timeout .  
 The IUT TEI Management Entity is expected to return to the Normal state (1).  
**Default** :  
**Configuration** :  
**Comments** : The IUT is placed in the Second substate (3.2). Two TEI ID Check Response messages are sent to the IUT each with different EID values.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N31			(1)
2		MDLPITEL_IDCheckResponse	TEI_ID_CHK_RSP_EID( SndCmd, P0, currentEID )		(2)
3		MDLPITEL_IDCheckResponse	TEI_ID_CHK_RSP_EID( SndCmd, P0, currentEID+1 )		(3)
4		START T201			
5		?TIMEOUT T201		(P)	(4)
6		+POST_S1			
7		MDLP?OTHERWISE CANCEL T201		(F)	
8		+POST_S1			

**Detailed Comments** : (1) Place the IUT TEI Management Entity in the Second substate (3.2).  
 (2) Transmit a TEI ID Check Response message with EID = IUT EID  
 (3) Transmit a TEI ID Check Response message with EID = IUT EID + 1.  
 (4) A message was not received from the IUT.

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_TEI_S1					
<b>Group</b> : Common/Preamble/TeiMgmt/					
<b>Objective</b> :					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		[USER = TRUE]			
2		+PRE_TEI_U1			
3		[USER = FALSE]			
4		+PRE_TEI_N1			
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_TEIAssign					
<b>Group</b> : Common/Preamble/TeiMgmt/					
<b>Objective</b> : Assign a TEI to the IUT. It is expected that the IUT will establish a connection to the network ( advance to state 7.0.1 ).					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		[ USER = TRUE ]			
2		+PRE_TEIAssign_U			
3		[ USER = FALSE ]			
4		+PRE_TEIAssign_N			
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S4					
<b>Group</b> : Common/Preamble/DLLE/MFONotEstablished/S4/					
<b>Objective</b> :					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		[ USER = TRUE ]			
2		+PRE_U4			
3		[ USER = FALSE ]			
4		+PRE_N4			
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S701					
<b>Group</b> : Common/Preamble/DLLE/MFOEstablished/					
<b>Objective</b> : To place the IUT in the MFO not in sleep mode state ( 7.0.1 — Not in sleep mode ).					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		[NETWORK = FALSE]			(1)
2		+PRE_U701			
3		[NETWORK = TRUE]			(1)
4		+PRE_N701			
<b>Detailed Comments</b> : (1) IUT is an M-ES. (2) IUT is an MD-IS.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S71					
<b>Group</b> : Common/Preamble/DLLE/MFOEstablished/					
<b>Objective</b> : To place the IUT in the MFO state ( 7.1 Normal- SREJ Recovery ).					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S701			
2		+SetSREJRecovery			
<b>Detailed Comments</b> : (1) Cause an NS error to occur. E.g. $V(R) < N(S) < V(R) +k$ (2) IUT has transmitted a selective reject, we can infer that the IUT is now in S71.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S72					
<b>Group</b> : Common/Preamble/DLLE/MFOEstablished/					
<b>Objective</b> : To place the IUT in the MFO state (7.2 —Normal-Own Receiver Busy ).					
<b>Default</b> :					
<b>Comments</b> : The IUT must be able to send an RNR (P=0) command frame to indicate that it is in the Own Receiver Busy state.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S701			(1)
2		+SetOwnReceiverBusy			
<b>Detailed Comments</b> : (1) Place the IUT in MFO. This implies that TEI is assigned, SABME/UA exchange has taken place, key exchange and NEI registration has occurred. (2) After receiving the RNR it is assumed that the IUT is in own receiver busy. Note					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S72_SendNIFrames(numIFrames:INTEGER)					
<b>Group</b> : Common/Preamble/DLLE/MFOEstablished/					
<b>Objective</b> : To place the IUT in the MFO state ( 7.2 Normal- Own Receiver Busy ).					
<b>Default</b> :					
<b>Comments</b> : The IUT must be able to send an RNR (P=0) command frame to indicate that it is in the Own Receiver Busy state.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S701			(1)
2		+SendNIFrames(numIFrames, VR)			(2)
3		+SetOwnReceiverBusy			(3)
<b>Detailed Comments</b> : (1) Place the IUT in MFO. This implies that TEI is assigned, SABME/UA exchange has taken place, key exchange and NEI registration has occurred.					
(2) Send the requested number of I frames. Preambles should always transmit I frames (when required) while in state S701.					
(3) Place the IUT in Own Receiver Busy state.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S73_SendNIFrames(numIFrames:INTEGER; VRVal: SEQUENCETYPE)					
<b>Group</b> : Common/Preamble/DLLE/MFOEstablished/					
<b>Objective</b> : To place the IUT in the MFO state ( 7.3 Normal- SREJ and Own Receiver Busy ).					
<b>Default</b> :					
<b>Comments</b> : The IUT must be able to send an RNR (P=0) command frame to indicate that it is in the Own Receiver Busy state.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S701			(1)
2		+SendNIFrames(numIFrames, VRVal )			(2)
3		+SetSREJRecovery			(3)
4		<IUTIRNR>	RNR_V(RcvCmd, P0, VS)		(1)
5		START Toper			
6	P1	MDLP?RNR CANCEL Toper	RNR_V ( RcvCmd, P0, VS)		(2)
7		+UNEXPECTED_S71			
8		GOTO P1			
9		?TIMEOUT Toper		(I)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL Toper		(I)	
12		+POST_S1			
<b>Detailed Comments</b> : (1) Place the IUT in MFO. This implies that TEI is assigned, SABME/UA exchange has taken place, key exchange and NEI registration has occurred.					
(2) Send the requested number of I frames. Preambles should always transmit I frames (when required) while in state S701.					
(3) Place the IUT in Own Receiver Busy state.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S73					
<b>Group</b> : Common/Preamble/DLLE/MFOEstablished/					
<b>Objective</b> : To place the IUT in the MFO state ( 7.3 Normal- SREJ Recovery and Own Receiver Busy).					
<b>Default</b> :					
<b>Comments</b> : To execute this test case, an IUT must be able to place itself in the own receiver busy state on demand.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S71			(1)
2		<IUTIRNR>	RNR_V(RcvCmd, P0, VS)		(1)
3		START Toper			
4	P1	MDLP?RNR CANCEL Toper	RNR_V ( RcvCmd, P0, VS)		(2)
5		+UNEXPECTED_S71			
6		GOTO P1			
7		?TIMEOUT Toper		(I)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL Toper		(I)	
10		+POST_S1			
<b>Detailed Comments</b> : (1) Place the IUT in SREJ Recovery State.					
(2) Request the IUT to enter the busy state. The IUT should now be in S7.3					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S74					
<b>Group</b> : Common/Preamble/DLLE/MFOEstablished/					
<b>Objective</b> : To place the IUT in the MFO state (7.4 Peer Receiver Busy- Normal)					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S701			
2		MDLPIRNR	RNR_V(SndCmd, P1, VR)		(1)
3		START T200			
4	P1	MDLP?RR CANCEL T200	RR_V ( RcvRsp, F1, VS)		(2)
5		+UNEXPECTED_S701			
6		GOTO P1			
7		?TIMEOUT T200		(I)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL T200		(I)	
10		+POST_S1			
<b>Detailed Comments</b> : (1) Indicates to the IUT that the tester is busy and cannot receive I-frames.					
(2) RR received: IUT is presumed to be in the normal state and able to receive I frames.					



**Test Step Dynamic Behaviour**

**Test Step Name** : PRE\_S74\_RequestNIFrames( NumIFrames: SEQUENCETYPE)  
**Group** : Common/Preamble/DLLE/MFOEstablished/  
**Objective** : To place the IUT in the MFO state (7.4 Peer Receiver Busy- Normal) after requesting that the IUT transmit an I Frame.  
**Default** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S701			(1)
2		(TempVR:=VR)			(2)
3		+RequestNIFrames(NumIFrames)			(3)
4		+SetPeerReceiverBusy(TempVR)			(4)

**Detailed Comments** : (1) Place the IUT in MFO S701.  
 (2) Store current VR value.  
 (3) Request that the IUT transmit NumIFrames I frame. VR is incremented by 1 for each I frame received. All I frames remains unacknowledged.  
 (3) The tester is then placed in busy condition. At this point the IUT should be in S74. The RNR transmitted acknowledges the received I-frame. TempVR is passed here because we do not wish to acknowledge any of the received I-frames to date. This is required for test cases where retransmission of I frames occur on expiry of the T200 timer.

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S75					
<b>Group</b> : Common/Preamble/DLLE/MFOEstablished/					
<b>Objective</b> : To place the IUT in the MFO state (7.5 Peer Receiver Busy- SREJ Recovery)					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S74			(1)
2		MDLP!lframe ( NSErr := (VS +1) MOD ModVal)	!lFrame1( SndCmd, P0, NSErr, VR)		(2)
3		START T200			
4	P1	MDLP?SREJ CANCEL T200	SREJ_V ( RcvCmd, P0, VS)		(3)
5		MDLP?SREJ CANCEL T200	SREJ_V ( RcvRsp, F0, VS)		(3)
6		+UNEXPECTED_S74			
7		GOTO P1			
8		?TIMEOUT T200		(I)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(I)	
11		+POST_S1			
<b>Detailed Comments</b> : (1) Place the IUT the MFO state (7.4 --Normal--SREJ Recovery).					
(2) Cause a selective rejective condition to occur in the IUT by sending an erroneous NS value.					
(3) The IUT recognized the SREJ condition and should now be in S75.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S75_RequestsNIFrames( NumIFrames: INTEGER)					
<b>Group</b> : Common/Preamble/DLLE/MFOEstablished/					
<b>Objective</b> : To place the IUT in the MFO state (7.4 Peer Receiver Busy- Normal) after requesting that the IUT transmit an I Frame.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S701			(1)
2		(TempVR:=VR)			
3		+RequestNIFrames(NumIFrames)			(2)
4		+SetSREJRecovery			(3)
5		+SetPeerReceiverBusy(TempVR)			(4)
<b>Detailed Comments</b> : (1) Place the IUT in MFO S701.					
(2) Request that the IUT transmit 1 I frame. VR is incremented by 1 and the I frame remains unacknowledged.					
(3) Place the IUT in Selective Reject Recovery state S71.					
(4) The tester is then placed in busy condition. At this point the IUT should be in S75.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S76					
<b>Group</b> : Common/Preamble/DLLE/MFOEstablished/					
<b>Objective</b> : To place the IUT in the MFO state (7.6 Peer Receiver Busy– Own Receiver Busy)					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S74			
2		<IUTIRNR>	RNR_V(RcvCmd, P0, VS)		(1)
3		START Toper			
4	P1	MDLP?RNR CANCEL Toper	RNR_V ( RcvCmd, P0, VS)		(2)
5		+UNEXPECTED_S74			
6		GOTO P1			
7		?TIMEOUT Toper		(I)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL Toper		(I)	
10		+POST_S1			
<b>Detailed Comments</b> : (1) Indicates to the IUT that the tester is busy and cannot receive I-frames.					
(2) RNR received: IUT is presumed to be in the own receiver busy state. Not able to receive I Frames.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S76_RequestNIFrames(numIFrames:INTEGER)					
<b>Group</b> : Common/Preamble/DLLE/MFOEstablished/					
<b>Objective</b> : To place the IUT in the MFO state ( 7.6 —Peer Receiver Busy– Own Receiver Busy ).					
<b>Default</b> :					
<b>Comments</b> : The IUT must be able to send an RNR (P=0) command frame to indicate that it is in the Own Receiver Busy state.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S701			
2		(TempVR:=VR)			(1)
3		+RequestNIFrames(numIFrames)			(2)
4		+SetOwnReceiverBusy			(3)
5		+SetPeerReceiverBusy(TempVR)			(4)
<b>Detailed Comments</b> : (1) Place the IUT in MFO. This implies that TEI is assigned, SABME/UA exchange has taken place, key exchange and NEI registration has occurred.					
(2) Send the requested number of I frames. Preambles should always transmit I frames (when required) while in state S701.					
(3) Place the IUT in Own Receiver Busy state.					
(4) Place the Tester in busy condition which places the IUT in the MFO state ( 7.6 —Peer Receiver Busy– Own Receiver Busy ). Note that VR is passed as a parameter. This will acknowledge all I frames received from the IUT to date.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S76_SendNIFrames(numIframes:INTEGER; VRVal: SEQUENCETYPE)					
<b>Group</b> : Common/Preamble/DLLE/MFOEstablished/					
<b>Objective</b> : To place the IUT in the MFO state ( 7.6 —Peer Receiver Busy– Own Receiver Busy ).					
<b>Default</b> :					
<b>Comments</b> : The IUT must be able to send an RNR (P=0) command frame to indicate that it is in the Own Receiver Busy state.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S701			(1)
2		+SendNIFrames(numIframes, VRVal)			(2)
3		+SetOwnReceiverBusy			(3)
4		+SetPeerReceiverBusy(VRVal)			(4)
<p><b>Detailed Comments</b> : (1) Place the IUT in MFO. This implies that TEI is assigned, SABME/UA exchange has taken place, key exchange and NEI registration has occurred.</p> <p>(2) Send the requested number of I frames. Preambles should always transmit I frames (when required) while in state S701.</p> <p>(3) Place the IUT in Own Receiver Busy state.</p> <p>(4) Place the Tester in busy condition which places the IUT in the MFO state ( 7.6 —Peer Receiver Busy– Own Receiver Busy ). Note that VR is passed as a parameter. This will acknowledge all I frames received from the IUT to date.</p>					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S77					
<b>Group</b> : Common/Preamble/DLLE/MFOEstablished/					
<b>Objective</b> : To place the IUT in the MFO state (7.7 Peer Receiver Busy–SREJ and Own Receiver Busy)					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S73			(1)
2		MDLPIRNR	RNR_V(SndCmd, P1, VR)		(1)
3		START T200			
4	P1	MDLP?RNR CANCEL T200	RR_V ( RcvRsp, F1, VS)		(2)
5		+UNEXPECTED_S73			
6		GOTO P1			
7		?TIMEOUT T200		(I)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL T200		(I)	
10		+POST_S1			
<p><b>Detailed Comments</b> : (1) Place the IUT in the MFE state ( 7.3 —Normal–SREJ and Own Receiver Busy).</p> <p>(2) Indicates to the IUT that the tester is busy and cannot receive I-frames.</p> <p>(3) RNR received: IUT is presumed to be in the own receiver busy state. Not able to receive I Frames.</p>					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S77_RequestNIFrames(numIFrames:INTEGER)					
<b>Group</b> : Common/Preamble/DLLE/MFOEstablished/					
<b>Objective</b> : To place the IUT in the MFO state ( 7.6 ---Peer Receiver Busy- Own Receiver Busy ).					
<b>Default</b> :					
<b>Comments</b> : The IUT must be able to send an RNR (P=0) command frame to indicate that it is in the Own Receiver Busy state.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S701			(1)
2		(TempVR:=VR)			
3		+RequestNIFrames(numIFrames)			(2)
4		+SetOwnReceiverBusy			(3)
5		+SetSREJRecovery			
6		+SetPeerReceiverBusy(TempVR)			(4)
<p><b>Detailed Comments</b> : (1) Place the IUT in MFO. This implies that TEI is assigned, SABME/UA exchange has taken place, key exchange and NEI registration has occurred.</p> <p>(2) Send the requested number of I frames. Preambles should always transmit I frames (when required) while in state S701.</p> <p>(3) Place the IUT in Own Receiver Busy state.</p> <p>(4) Place the Tester in busy condition which places the IUT in the MFO state ( 7.6 ---Peer Receiver Busy- Own Receiver Busy ). Note that VR is passed as a parameter. This will acknowledge all I frames received from the IUT to date.</p>					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S77_SendNIFrames(numIFrames:INTEGER; VRVal: SEQUENCETYPE)					
<b>Group</b> : Common/Preamble/DLLE/MFOEstablished/					
<b>Objective</b> : To place the IUT in the MFO state ( 7.7 Normal- Own Receiver Busy ).					
<b>Default</b> :					
<b>Comments</b> : The IUT must be able to send an RNR (P=0) command frame to indicate that it is in the Own Receiver Busy state.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S701			(1)
2		+SendNIFrames(numIFrames, VRVal)			(2)
3		+SetSREJRecovery			(3)
4		+SetPeerReceiverBusy(VRVal)			(4)
5		<IUTIRNR>	RNR_V(RcvCmd, P0, VS)		(5)
6		START Toper			
7	P1	MDLP?RNR CANCEL Toper	RNR_V ( RcvCmd, P0, VS)		(6)
8		+UNEXPECTED_S75			
9		GOTO P1			
10		?TIMEOUT Toper		(I)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL Toper		(I)	
13		+POST_S1			
<p><b>Detailed Comments</b> :</p> <p>(1) Place the IUT in MFO. This implies that TEI is assigned, SABME/UA exchange has taken place, key exchange and NEI registration has occurred.</p> <p>(2) Send the requested number of I frames. Preambles should always transmit I frames (when required) while in state S701. Note that I frames have not been acknowledged.</p> <p>(3) Place the IUT in SREJ recover state</p> <p>(4) Place the tester in busy condition.</p> <p>(5) Request that the test Operator place the IUT Own Receiver Busy state.</p> <p>(6) IUT is now in S77,</p>					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : POST_S1					
<b>Group</b> : Common/Postamble/DLLE/MFONotEstablished/S1/					
<b>Objective</b> :					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		[ USER = TRUE ]			
2		+POST_U1			
3		[ USER = FALSE ]			
4		+POST_N1			
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_RR					
<b>Group</b> : Common/Unexpected/DLLE/					
<b>Objective</b> : Handle unsolicited RR command and response frame.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP?RR (VA:= RR.n_r)	RR_V(RcvCmd, P0, VS)		
2		MDLP?RR (VA := RR.n_r)	RR_V(RcvCmd, P1, VS)		6.4.3.2
3		MDLPIRR	RR_V(SndRsp, F1, VR)		
<b>Detailed Comments</b> : What about receiving an RR F0/F1?					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_RNR					
<b>Group</b> : Common/Unexpected/DLLE/					
<b>Objective</b> : Handle unsolicited RNR command and response frames					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP?RNR ( VA := RNR.nr)	RNR_V(RcvCmd, P0, ?)		
2		MDLP?RNR (VA := RNR.nr)	RNR_V(RcvCmd, P1, ?)		Ref 6.4.5
3		MDLPIRR	RR_V(SndRsp, F1, VR)		
4		MDLP?RNR ( VS:= RNR.nr)	RNR_V(RcvRsp, F1, ?)		(1)
<b>Detailed Comments</b> : (1) an RNR/F1 should only be received when in timer recover mode. The NR contained in RNR frame is used to update VS.					

Test Step Dynamic Behaviour					
Test Step Name : UNEXPECTED_S10					
Group : Common/Unexpected/DLLE/					
Objective : Handle valid but unexpected frames while in the Multiple Frame Not Established state (1.0 TEI Unassigned).					
Default :					
Comments : XID frame					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
Detailed Comments :					

Test Step Dynamic Behaviour					
Test Step Name : UNEXPECTED_S51					
Group : Common/Unexpected/DLLE/					
Objective : Handle valid but unexpected frames while in the Awaiting establishment state (5.1 Re-Establish).					
Default :					
Comments : XID frame so far.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
Detailed Comments :					

Test Step Dynamic Behaviour					
Test Step Name : UNEXPECTED_S50					
Group : Common/Unexpected/DLLE/					
Objective : Handle valid but unexpected frames while in the Awaiting establishment state (5.0 Establish).					
Default :					
Comments :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
Detailed Comments :					

Test Step Dynamic Behaviour					
Test Step Name : UNEXPECTED_S701					
Group : Common/Unexpected/DLLE/					
Objective : Handle unexpected frames while in the S701 state.					
Default :					
Comments :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
Detailed Comments :					



Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_S71					
<b>Group</b> : Common/Unexpected/DLLE/					
<b>Objective</b> : Handle unexpected frames while in the S71 state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_S72					
<b>Group</b> : Common/Unexpected/DLLE/					
<b>Objective</b> : Handle unexpected frames while in the S72 state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_S73					
<b>Group</b> : Common/Unexpected/DLLE/					
<b>Objective</b> : Handle unexpected frames while in the S73 state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_S74					
<b>Group</b> : Common/Unexpected/DLLE/					
<b>Objective</b> : Handle unexpected frames while in the S74 state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
Test Step Name : UNEXPECTED_S75					
Group : Common/Unexpected/DLLE/					
Objective : Handle unexpected frames while in the S75 state.					
Default :					
Comments :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
Detailed Comments :					

Test Step Dynamic Behaviour					
Test Step Name : UNEXPECTED_S76					
Group : Common/Unexpected/DLLE/					
Objective : Handle unexpected frames while in the S76 state.					
Default :					
Comments :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
Detailed Comments :					

Test Step Dynamic Behaviour					
Test Step Name : UNEXPECTED_S77					
Group : Common/Unexpected/DLLE/					
Objective : Handle unexpected frames while in the S77 state.					
Default :					
Comments :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
Detailed Comments :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_S80					
<b>Group</b> : Common/Unexpected/DLLE/					
<b>Objective</b> : Handle unexpected frames while in the S80 state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP?RR (VA:= RR.nr)	RR_V(RcvRsp,F0,VS)		(1)
2		MDLP?Iframe(VA:=Iframe.nr)	I_V(RcvCmd, P1, CurVR, VS)		(2)
3		MDLP?RR(VA:=RR.nr)	RR_V(RcvCmd,P1, VS)		(3)
<p><b>Detailed Comments</b> : (1) Because of possible T205 timer expiry, an RR (F=0) must be handled. The tester's V(A) is updated with the received N(R) value.</p> <p>(2) Ignore retransmitted I (P=1) frame.</p> <p>(3) Ignore retransmitted RR (P=1) frame.</p> <p>NOTE:the retransmission count is ignored. If too many retransmissions occur, e.g. N200 limit reached, the IUT will reset the link by transmitting a SABME (P=1) frame. This assumes that the IUT has properly implemented the N200 retransmission counter.</p>					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_S81					
<b>Group</b> : Common/Unexpected/DLLE/					
<b>Objective</b> : Handle unexpected frames while in the S81 state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP?RR (VA:= RR.nr)	RR_V(RcvRsp,F0,VS)		(1)
2		MDLP?Iframe(VA:=Iframe.nr)	I_V(RcvCmd, P1, CurVR, VS)		(2)
3		MDLP?RR(VA:=RR.nr)	RR_V(RcvCmd,P1, VS)		(3)
<p><b>Detailed Comments</b> : (1) Because of possible T205 timer expiry, an RR (F=0) must be handled. The tester's V(A) is updated with the received N(R) value.</p> <p>(2) Ignore retransmitted I (P=1) frame Note use of CurVR as opposed to VR.</p> <p>(3) Ignore retransmitted RR (P=1) frame.</p> <p>NOTE:the retransmission count is ignored. If too many retransmissions occur, e.g. N200 limit reached, the IUT will reset the link by transmitting a SABME (P=1) frame. This assumes that the IUT has properly implemented the N200 retransmission counter.</p>					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_S82					
<b>Group</b> : Common/Unexpected/DLLE/					
<b>Objective</b> : Handle unexpected frames while in the S82 state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP?RNR (VA:= RR.nr)	RNR_V(RcvRsp,F0,VS)		(1)
2		MDLP?Iframe(VA:=Iframe.nr)	I_V(RcvCmd, P1, CurVR, VS)		(2)
3		MDLP?RNR(VA:=RR.nr)	RNR_V(RcvCmd,P1, VS)		(3)
<p><b>Detailed Comments</b> : (1) Because of possible T205 timer expiry, an RR (F=0) must be handled. The tester's V(A) is updated with the received N(R) value.</p> <p>(2) Ignore retransmitted I (P=1) frame.</p> <p>(3) Ignore retransmitted RNR (P=1) frame.</p> <p>NOTE:the retransmission count is ignored. If too many retransmissions occur, e.g. N200 limit reached, the IUT will reset the link by transmitting a SABME (P=1) frame. This assumes that the IUT has properly implemented the N200 retransmission counter.</p>					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_S83					
<b>Group</b> : Common/Unexpected/DLLE/					
<b>Objective</b> : Handle unexpected frames while in the S83 state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP?RNR (VA:= RR.nr)	RNR_V(RcvRsp,F0,VS)		(1)
2		MDLP?Iframe(VA:=Iframe.nr)	I_V(RcvCmd, P1, CurVR, VS)		(2)
3		MDLP?RNR(VA:=RR.nr)	RNR_V(RcvCmd,P1, VS)		(3)
<p><b>Detailed Comments</b> : (1) Because of possible T205 timer expiry, an RR (F=0) must be handled. The tester's V(A) is updated with the received N(R) value.</p> <p>(2) Ignore retransmitted I (P=1) frame.</p> <p>(3) Ignore retransmitted RNR (P=1) frame.</p> <p>NOTE:the retransmission count is ignored. If too many retransmissions occur, e.g. N200 limit reached, the IUT will reset the link by transmitting a SABME (P=1) frame. This assumes that the IUT has properly implemented the N200 retransmission counter.</p>					

### Test Step Dynamic Behaviour

**Test Step Name** : UNEXPECTED\_S84  
**Group** : Common/Unexpected/DLLE/  
**Objective** : Handle unexpected frames while in the S84 state.  
**Default** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP?RR (VA:= RR.nr)	RR_V(RcvRsp,F0,VS)		(1)
2		MDLP?RR(VA:=RR.nr)	RR_V(RcvCmd,P1, VS)		(2)

**Detailed Comments** : (1) Because of possible T205 timer expiry, an RR (F=0) must be handled. The tester's V(A) is updated with the received N(R) value.

(2) Ignore retransmitted RR (P=1) frame. The IUT is not expected to retransmit an I (P=1) frame as the Tester has indicated that it is Peer Receiver Busy condition.

NOTE:the retransmission count is ignored. If too many retransmissions occur, e.g. N200 limit reached, the IUT will reset the link by transmitting a SABME (P=1) frame. This assumes that the IUT has properly implemented the N200 retransmission counter.

### Test Step Dynamic Behaviour

**Test Step Name** : UNEXPECTED\_S85  
**Group** : Common/Unexpected/DLLE/  
**Objective** : Handle unexpected frames while in the S85 state.  
**Default** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP?RR (VA:= RR.nr)	RR_V(RcvRsp,F0,VS)		(1)
2		MDLP?RR (VA:=RR.nr)	RR_V(RcvCmd,P1, VS)		(2)

**Detailed Comments** : (1) Because of possible T205 timer expiry, an RR (F=0) must be handled. The tester's V(A) is updated with the received N(R) value.

(2) Ignore retransmitted RR (P=1) frame. The IUT is not expected to retransmit an I (P=1) frame as the Tester has indicated that it is Peer Receiver Busy condition.

NOTE:the retransmission count is ignored. If too many retransmissions occur, e.g. N200 limit reached, the IUT will reset the link by transmitting a SABME (P=1) frame. This assumes that the IUT has properly implemented the N200 retransmission counter.

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_S86					
<b>Group</b> : Common/Unexpected/DLLE/					
<b>Objective</b> : Handle unexpected frames while in the S86 state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP?RNR (VA:= RR.nr)	RNR_V(RcvRsp,F0, VS)		(1)
2		MDLP?RNR(VA:=RR.nr)	RNR_V(RcvCmd,P1, VS)		(2)
<p><b>Detailed Comments</b> : (1) Because of possible T205 timer expiry, an RNR (F=0) must be handled. The tester's V(A) is updated with the received N(R) value.</p> <p>(2) Ignore retransmitted RNR (P=1) frame. The IUT is not expected to retransmit an I (P=1) frame as the Tester has indicated that it is Peer Receiver Busy condition.</p> <p>NOTE:the retransmission count is ignored. If too many retransmissions occur, e.g. N200 limit reached, the IUT will reset the link by transmitting a SABME (P=1) frame. This assumes that the IUT has properly implemented the N200 retransmission counter.</p>					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_S87					
<b>Group</b> : Common/Unexpected/DLLE/					
<b>Objective</b> : Handle unexpected frames while in the S87 state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP?RNR (VA:= RR.nr)	RNR_V(RcvRsp,F0,VS)		(1)
2		MDLP?RNR(VA:=RR.nr)	RNR_V(RcvCmd,P1, VS)		(2)
<p><b>Detailed Comments</b> : (1) Because of possible T205 timer expiry, an RNR (F=0) must be handled. The tester's V(A) is updated with the received N(R) value.</p> <p>(2) Ignore retransmitted RNR (P=1) frame. The IUT is not expected to retransmit an I (P=1) frame as the Tester has indicated that it is Peer Receiver Busy condition.</p> <p>NOTE:the retransmission count is ignored. If too many retransmissions occur, e.g. N200 limit reached, the IUT will reset the link by transmitting a SABME (P=1) frame. This assumes that the IUT has properly implemented the N200 retransmission counter.</p>					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : VER_IsAsleep					
<b>Group</b> : Common/Verification/SleepMgmt/					
<b>Objective</b> : Verify that they IUT is in the sleep state.					
<b>Default</b> :					
<b>Comments</b> : This verification routine cannot guarantee that an IUT is in Sleep mode. Another method for verifying that an IUT is indeed in power conservation mode, is to measure it. Power consumption should be dramatically less than when it's receiver is active.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		(try := 0)			
2	L1	MDLP!RR	RR_V(SndCmd, P1, VR)		(1)
3		START T200			
4		?TIMEOUT T200			(2)
5		[ try = 0]			
6		(try:= 1)			
7		GOTO L1			
8		[ try = 1]			(3)
9		MDLP?OTHERWISE CANCEL T200		(F)	
10		+POST_S1			
<b>Detailed Comments</b> : (1) Since the IUT is presumed to be in Sleep mode it should not respond to the RR.					
(2) Wait for T200 secs. Resend the RR frame once, the IUT should not respond while it is in sleep mode.					
(3) Nothing received. We can infer one of the following: that the IUT is in sleep mode, has it's receiver powered down, is not responding to the RR or is malfunctioning in some other way.					
Note: If this verify routine succeeds, the IUT remains in the sleep state. This implies that the Data Link Layer Entity State Machine (if one exist) is expected to have returned to the MFO state S7.0.1. T200*2 must be less than T204					

**Test Step Dynamic Behaviour**

**Test Step Name** : VER\_IsAwake

**Group** : Common/Verification/SleepMgmt/

**Objective** : Verify that they IUT is in the sleep state.

**Default** :

**Comments** : This test step verifies that an IUT is indeed in the awake state. An IUT should always be able to respond to an RR (P=1) command.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1	L1	MDLP!RR	RR_V(SndCmd, P1, VR)		(1)
2		START T200			
3		MDLP?RR CANCEL T200	RR_V(RcvRsp,F1,VS)		
4		MDLP?RNR CANCEL T200			
5		?TIMEOUT T200			
6		(try :=try +1)			
7		[ try < n200Value ]			
8		GOTO L1			
9		[ try =n200Value]	(F)		
10		MDLP?OTHERWISE CANCEL T200	(F)		

**Detailed Comments** : (1) If the IUT is in the AWAKE state it should immediately respond to the RR command frame. The RR frame is transmitted n200 times to allow the IUT time to respond. Note that n200\*T200 must be less than T203.

(2) Wait for T204, this ensures that the IUT's T204 has expired and is now waiting for a TEI Notification message.

(3) Something is received from the IUT. therefore it is not in sleep mode.

Note: If this verify routine succeeds, the IUT will be in the awake state. This implies that the Data Link Layer Entity State Machine (if one exist) is expected to have returned to the MFO state S7.0.1.



## Test Step Dynamic Behaviour

Test Step Name : VER\_S10

Group : Common/Verification/DLLE/MFONotEstablished/

Objective : To verify that the IUT is in the TEI Unassigned state S1.

Default :

Comments : Should only be used when a TEI was previously assigned to an IUT.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		[ USER = TRUE ]			(1)
2		(try :=0)			
3	V10 1	MDLP?TEI_IDCheckRequest	TEI_ID_CHK_REQ_V( SndCmd, P0, teiVal)		(2)
4		START T201			
5	V10 2	MDLP?TEI_IDCheckResponse CANCEL T201	TEI_ID_CHK_RSP_V(RcvC md, P0)	(F)	
6		MDLP ?TEI_IDRequest	TEI_ID_REQ_V(RcvCmd,P0)		
7		+UNEXPECTED_S10			
8		GOTO V102			
9		MDLP?TEI_IDRequest	TEI_ID_REQ_V( RcvCmd, P0)		(3)
10		?TIMEOUT T201			
11		[try =0] (try:=1)			
12		GOTO V102			
13		[try = 1]			
14		MDLP?OTHERWISE CANCEL T200		(F)	

**Detailed Comments** : Note: To verify that the previously used TEI is not being used, a TEI Check procedure is initiated by the Network side.

(1) IUT is an M-ES.

(2) If the M-ES is in TEI Unassigned state, then it should not respond to a TEI Check Request. See 6.7.3.2 Operation of the TEI Check Procedure (TEI in use related text). of Part 403.

(3) Some devices may automatically and immediately send a TEI ID Request upon entering TEI Unassigned state.

**Test Step Dynamic Behaviour**

**Test Step Name** : VER\_S50

**Group** : Common/Verification/DLLE/MFONotEstablished/

**Objective** : Verify that the IUT is in the Awaiting Establishment state (S5.0 Establish) . Side-effect: IUT is placed in S701 upon successful completion of this verification routine.

**Default** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLPIDM	DM_V (SndRsp, F0)		(1)
2		START T200 ( t200Value - delta )			(2)
3	V1	?TIMEOUT T200			
4		MDLPIUA (VS:=0, VR:=0, VA:=0)	UA_V(SndRsp, F1)		(3)
5		START Tignore			
6	V2	?TIMEOUT Tignore			
7		MDLPIRR	RR_V( SndCmd, P1, VS)		
8		START T200			
9	V3	MDLP?RR CANCEL T200	RR_V( RcvRsp, F1, VR)		
10		+UNEXPECTED_S701			
11		GOTO V3			
12		MDLP?OTHERWISE		(F)	
13		?TIMEOUT T200		(F)	
14		+UNEXPECTED_S50			
15		GOTO V2			
16		MDLP?OTHERWISE CANCEL T200		(F)	
17		+UNEXPECTED_S50			
18		GOTO V1			
19		MDLP?OTHERWISE CANCEL T200		(F)	

**Detailed Comments** : (1) The IUT should ignore this unsolicited frame while in S5.0

(2) IUT should send UA before expiry of T200 timer on the IUT side, otherwise the SABME should be resent by the IUT.

(3) This returns both sides

## Test Step Dynamic Behaviour

Test Step Name : VER\_S51

Group : Common/Verification/DLLE/MFONotEstablished/

Objective : Verify that the IUT is in the Awaiting Establishment state (5.0 re-establish) . Side-effect: IUT is placed in S701 upon successful completion of this verification routine.

Default :

Comments :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLPIDM	DM_V (SndRsp, F0)		(1)
2		START T200 ( t200Value - delta )			(2)
3	V1	?TIMEOUT T200			
4		MDLPIUA (VS:=0, VR:=0, VA:=0)	UA_V(SndRsp, F1)		(3)
5		START Tignore			
6	V2	?TIMEOUT Tignore			
7		MDLPIRR	RR_V( SndCmd, P1, VS)		
8		START T200			
9	V3	MDLP?RR CANCEL T200	RR_V( RcvRsp, F1, VR)		
10		+UNEXPECTED_S701			
11		GOTO V3			
12		MDLP?OTHERWISE		(F)	
13		?TIMEOUT T200		(F)	
14		+UNEXPECTED_S51			
15		GOTO V2			
16		MDLP?OTHERWISE CANCEL T200		(F)	
17		+UNEXPECTED_S51			
18		GOTO V1			
19		MDLP?OTHERWISE CANCEL T200		(F)	

Detailed Comments : (1) The IUT should ignore this unsolicited frame while in S5.1

(2) IUT should send UA before expiry of T200 timer on the IUT side, otherwise the SABME should be resent by the IUT.

(3) This returns both sides to MFE substate (S7.0.1 Not in sleep mode).

Note: A fail verdict should always cause the next test case to start with TEI assignment, key exchange and NEI registration.

**Test Step Dynamic Behaviour**

**Test Step Name** : VER\_S701  
**Group** : Common/Verification/DLLE/MFOEstablished/S7/  
**Objective** : Verify that the IUT is in MFE state (S7.0.1 Not in sleep mode).  
**Default** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		(NS:= VS+1)			
2		MDLPllframe	I_iFrame1( SndCmd, P0, NS, VR)		(1)
3		START T200			
4	V1	MDLP?SREJ CANCEL T200	SREJ_V( RcvRsp, F0, VS)		(2)
5		MDLPllframe	I_iFrame2( SndCmd, P1, VS, VR)		(3)
6		START T200			
7	V2	MDLP?RR CANCEL T200	RR_V(RcvCmd, F1, NS)		(4)
8		+UNEXPECTED_S701			
9		GOTO V2			
10		MDLP?OTHERWISE CANCEL T200		(F)	
11		MDLP?SREJ CANCEL T200	SREJ_V( RcvCmd, P0, VS)		(2)
12		MDLPllframe	I_iFrame2( SndCmd, P1, VS, VR)		(3)
13		START T200			
14	V3	MDLP?RR CANCEL T200	RR_V(RcvCmd, F1, NS)		
15		+UNEXPECTED_S701			
16		GOTO V3			
17		MDLP?OTHERWISE CANCEL T200		(F)	
18		+UNEXPECTED_S71			
19		GOTO V1			
20		?TIMEOUT T200		(F)	
21		MDLP?OTHERWISE CANCEL T200		(F)	

**Detailed Comments** : (1) Cause selective reject condition. The IUT should place the contents of this l-frame's data field (NS) into its receive queue.

(2) Wait for SREJ P/F=0 requesting missing/skipped l frame (must be VS). E.g. IUT's NR= tester's VS.

(3) Respond with desired frame. Force a response from the IUT using (P=1) At this point IUT is in S71.

Because an l/P=1 frame is sent to the IUT it should respond with RR/F=1. Since it responded with an RR we can infer that the IUT has returned to S701 (where it was in the first place).

(4) The RR should acknowledge up to and including NS=VS+1.

Question: Does this really verify that an IUT is indeed is S701?No.

The above verifies that a selective reject condition is handled. This behaviour is not unique to S701, it also applies to S71, S74 and S75. So executing this code could imply that the IUT is either, in S701,

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Test Step Dynamic Behaviour	
<b>Detailed Comments</b> : ... S71, S74 or S75, or	

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : VER_S71 <b>Group</b> : Common/Verification/DLLE/MFOEstablished/S7/ <b>Objective</b> : Verify that the IUT is in the Multiple Frame Established state (7.1 Normal- Selective Reject Recovery) <b>Default</b> : <b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLPllframe (NSError:= VS+1)	l_iFrame1( SndCmd, P1, NSError, VR)		(1)
2		START T200			
3	V1	MDLP?RR CANCEL T200	RR_V( RcvRsp, F1, VS)		
4		START T200			
5	V2	+UNEXPECTED_S71			
6		GOTO V2			
7		?TIMEOUT T200			
8		MDLP?OTHERWISE CANCEL T200		(F)	
9		+UNEXPECTED_S71			
10		GOTO V1			
11		?TIMEOUT T200			
12		MDLP?OTHERWISE CANCEL T200		(F)	
<b>Detailed Comments</b> : (1) Cause an NS error. E.g. VR < NS < VR+k. This prompts the IUT to transmit an RR. The IUT is still in S71 at this point. The behaviour is similar for S701, S74 and S75?					

**Test Step Dynamic Behaviour**

**Test Step Name** : VER\_S72

**Group** : Common/Verification/DLLE/MFOEstablished/S7/

**Objective** : Verify that the IUT is in the Multiple Frame Established state (7.2 Normal-Own Receiver Busy)

**Default** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP!RR	RR_V(SndCmd, P1, VR)		(1)
2		START T200			
3	V1	MDLP?RNR CANCEL T200	RNR_V(RcvRsp, F1, VS)		(2)
4		+UNEXPECTED_S72			
5		GOTO V1			
6		?TIMEOUT T200		(F)	
7		+POST_S1			
8		MDLP?OTHERWISE CANCEL T200		(F)	
9		+POST_S1			

**Detailed Comments** : (1) The IUT must respond as the poll bit is set.

(2) Since the IUT should be in the MFE state (7.2 ---Normal-Own Receiver Busy), it is expected to respond with an RNR(F1).

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : VER_S74					
<b>Group</b> : Common/Verification/DLLE/MFOEstablished/S7/					
<b>Objective</b> : Verify that the IUT is in the MFE state (7.4 Peer Receiver Busy – Normal).					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLPllframe (NSErr:= VS+1)	L_iFrame1( SndCmd, P0, NSError, VR)		(1)
2		START T200			
3	V70 11	MDLP?SREJ CANCEL T200	SREJ_V( RcvRsp, F0, VS)		
4		MDLPllframe	L_iFrame2( SndCmd, P0, VS, VR)		(2)
5		START T200			
6	V70 12	MDLP?RR CANCEL T200	RR_V(RcvCmd, F0, VS)		
7		+UNEXPECTED_S75			
8		GOTO V7012			
9		MDLP?OTHERWISE CANCEL T200		(F)	
10		+UNEXPECTED_S74			
11		GOTO V7011			
12		?TIMEOUT T200		(F)	
13		MDLP?OTHERWISE CANCEL T200		(F)	
<b>Detailed Comments</b> : (1) Cause a selective reject condition so that IUT changes to S7.5. (Skip current VR).					
(2)					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : VER_S75					
<b>Group</b> : Common/Verification/DLLE/MFOEstablished/S7/					
<b>Objective</b> : Verify that the IUT is in the MFE state ( 7.5 Peer Receiver Busy – SREJ Recovery).					
<b>Default</b> :					
<b>Comments</b> : NOTE: Revise. Not sure how to verify/confirm that an IUT is indeed in S75....					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLPllframe (NSErrors= VS+1)	l_iFrame1( SndCmd, P0, NSErrors, VR)		(1)
2		START T200			
3	V70 11	MDLP?SREJ CANCEL T200	SREJ_V( RcvRsp, F0, VS)		
4		MDLPllframe	l_iFrame2( SndCmd, P0, VS, VR)		(2)
5		START T200			
6	V70 12	MDLP?RR CANCEL T200	RR_V(RcvCmd, F0, VS)		
7		+UNEXPECTED_S75			
8		GOTO V7012			
9		MDLP?OTHERWISE CANCEL T200		(F)	
10		+UNEXPECTED_S75			
11		GOTO V7011			
12		?TIMEOUT T200		(F)	
13		MDLP?OTHERWISE CANCEL T200		(F)	
<b>Detailed Comments</b> : (1) Cause a selective reject condition so that IUT changes to S7.5. (Skip current VR).					
(2)					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : VER_S76					
<b>Group</b> : Common/Verification/DLLE/MFOEstablished/S7/					
<b>Objective</b> : Verify that the IUT is in the MFE state ( 7.7 Peer Receiver Busy – SREJ and Own Receiver Busy).					
<b>Default</b> :					
<b>Comments</b> : NOTE: Revise. Not sure how to verify/confirm that an IUT is indeed in S77....					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
<b>Detailed Comments</b> :					



Test Step Dynamic Behaviour					
<b>Test Step Name</b> : VER_S77					
<b>Group</b> : Common/Verification/DLLE/MFOEstablished/S7/					
<b>Objective</b> : Verify that the IUT is in the MFE state ( 7.5 Peer Receiver Busy – Own Receiver Busy).					
<b>Default</b> :					
<b>Comments</b> : NOTE: Revise. Not sure how to verify/confirm that an IUT is indeed in S76....					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP!lframe (NSError:= VS+1)	I_lFrame1( SndCmd, P0, NSError, VR)		(1)
2		START T200			
3	V1	MDLP?SREJ CANCEL T200	SREJ_V( RcvRsp, F0, VS)		
4		MDLP!lframe	I_lFrame2( SndCmd, P0, VS, VR)		(2)
5		START T200			
6	V2	MDLP?RNR CANCEL T200	RNR_V(RcvCmd, F0, VS)		
7		+UNEXPECTED_S76			
8		GOTO V2			
9		MDLP?OTHERWISE CANCEL T200		(F)	
10		+UNEXPECTED_S75			
11		GOTO V1			
12		?TIMEOUT T200		(F)	
13		MDLP?OTHERWISE CANCEL T200		(F)	
<b>Detailed Comments</b> : (1) Cause a selective reject condition so that IUT changes to S7.5. (Skip current VR).					
(2)					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : VER_S80					
<b>Group</b> : Common/Verification/DLLE/MFOEstablished/S8/					
<b>Objective</b> : Verify that the IUT is in the Timer Recover state (8.0 Normal–Normal).					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
Test Step Name : VER_S81					
Group : Common/Verification/DLLE/MFOEstablished/S8/					
Objective : Verify that the IUT is in the Timer Recover state (8.1 Normal-SREJ Recovery).					
Default :					
Comments :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
Detailed Comments :					

Test Step Dynamic Behaviour					
Test Step Name : VER_S82					
Group : Common/Verification/DLLE/MFOEstablished/S8/					
Objective : Verify that the IUT is in the Timer Recover state (8.2 Normal-Own Receiver Busy).					
Default :					
Comments :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
Detailed Comments :					

Test Step Dynamic Behaviour					
Test Step Name : VER_S83					
Group : Common/Verification/DLLE/MFOEstablished/S8/					
Objective : Verify that the IUT is in the Timer Recover state (8.3 ---Normal-SREJ and Own Receiver Busy)					
Default :					
Comments :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
Detailed Comments :					

Test Step Dynamic Behaviour					
Test Step Name : VER_S84					
Group : Common/Verification/DLLE/MFOEstablished/S8/					
Objective : Verify that the IUT is in the Timer Recover state (S8.4 ---Peer Receiver Busy-Normal).					
Default :					
Comments :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
Detailed Comments :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : VER_S85					
<b>Group</b> : Common/Verification/DLLE/MFOEstablished/S8/					
<b>Objective</b> : Verify that the IUT is in the Timer Recover state (S8.5 ---Peer Receiver Busy-SREJ Recovery).					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : VER_S86					
<b>Group</b> : Common/Verification/DLLE/MFOEstablished/S8/					
<b>Objective</b> : Verify that the IUT is in the Timer Recover state (S8.6 ---Peer Receiver Busy-Own Receiver Busy).					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : VER_S87					
<b>Group</b> : Common/Verification/DLLE/MFOEstablished/S8/					
<b>Objective</b> : Verify that the IUT is in the Timer Recover state (S8.7---Peer Receiver Busy-Own Receiver Busy).					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
<b>Detailed Comments</b> :					

### Test Step Dynamic Behaviour

**Test Step Name** : RequestNIFrames (NumIFrames: INTEGER)

**Group** : Common/Misc/

**Objective** : Request the IUT to transmit numframes l frame(s). The tester does not acknowledge any of the received l frames, therefore to operate correctly numframes cannot exceed V(A) + bx\_k.

**Default** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		[NumIFrames >0] (count:=0)			(1)
2	L1	<IUTlframe>	I_lFrame1( RcvCmd, P0, VR,VS)		(1a)
3		START Toper			
4	L2	MDLP?lframe (VR := VR +1 MOD ModVal, VA:= lframe.n_r, count :=count +1 ) CANCEL Toper	I_V (RcvCmd, P0, VR, VS)		(2)
5		[count < NumIFrames]			(3)
6		GOTO L1			
7		[count = NumIFrames]			(4)
8		MDLP?RR	RR_V(RcvCmd, P1, VS)	(I)	(5)
9		+POST_S1			
10		?TIMEOUT Toper		(I)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL Toper		(I)	
13		+POST_S1			
14		[NumIFrames <=0]			(F)
15		+POST_S1			

**Detailed Comments** : (1) Save the current VR value. This is required so that an appropriate RR response can be sent to the IUT such that none of the received lframes are acknowledged. Note that the IUT should continue to transmit l frames until Numframes is reached. NumIFrames should be specified such that the IUT is never requested to transmit a number of frames which is greater than the tester's receive window size.

(1a) Ask test operator to transmit one l frame.

(2) Local (tester's) VR incremented by 1, the number of frames acknowledged by the IUT is indicated by the received nr value in the received l-frame (6.4.3.2 of Part403). count tracks the number of l-frames received by the tester.

(3) More l frames to solicit from IUT.

(4) Number of requested l frames have been received by the IUT. Return to calling subtree.

(5) If the IUT sends an RR(P=1) we must stop executing. Responding with the expected RR(F=1) causes rewinding of the l frame queue when the IUT is in timer recovery states as well as an undesired state change and a simple state change if the IUT is in one of the MFO states. Because most test cases request 1 or 2 l-frames from the IUT, transmission of an RR(P=1) frame from the IUT may not be a problem. Transmission of an RR(P=1) is highly probable in cases where an attempt is made to fill the IUTs transmit window. THERE IS NO EASY SOLUTION...

### Test Step Dynamic Behaviour

**Test Step Name** : SendNIFrames (NumIFrames: INTEGER; VRVal: SEQUENCEType)  
**Group** : Common/Misc/  
**Objective** : Request the IUT to transmit numIFrames I frame(s). Care should be taken not to transmit more frames than allowed by the IUTs receive window size (ie.V(A) + tx\_k.  
**Default** :  
**Comments** : NumIFrames: Number of I frames to transmit.  
 VRVal: VR value. Useful as in some case (especially in Timer Recovery) we may not wish to acknowledge all frames received to date.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		[NumIFrames >0] (count:=0)			(1)
2	L1	MDLP!lframe START T200	I_Frame1(SndCmd, P0, VS,VRVal)		(2)
3		( VS := (VS+1) MOD ModVal, count:= count + 1)			
4		[count < NumIFrames]			(3)
5		MDLP?RR (VA:= RR.n_r) CANCEL T200	RR_V(RcvCmd, F0, VS)		(3a)
6		GOTO L1			
7		?TIMEOUT T200		(I)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL T200		(F)	
10		+POST_S1			
11		GOTO L1			(3b)
12		[count = NumIFrames] CANCEL T200			(4)
13		[NumIFrames <=0]		(F)	(5)
14		+POST_S1			

**Detailed Comments** : (1) Ensure that a valid number of frames is specified. In practice that number should be >0 and less or equal to the number of frames before the IUT's receive window is closed. Note that this may not be a problem if the IUT acknowledges received I frames.

(2) Send one I frame. Note that the contents of the I frame is always the same. If the Airlink security protocol allowed encryption to be turned off then it's contents is not encrypted. Otherwise it is encrypted. For the purpose of testing, only the contents of the NEI registration messages are important.

(3) If there are still some frames to transmit, check the receive queue for acknowledgments.

(3a) The IUT's T205 timer may have expired (if it was running) and an RR (F=0) is expected.

(3b) If there are no acks or timeout events, then proceed with the transmission of the next I frame. The tester should have time to cycle through this snapshot prior to T200 expiry.

(4) The right number of I frames have now been transmitted. Stop the T200 timer and exit to the test case or calling test step.

(5) Invalid number of frames requested.

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : SetOwnReceiverBusy					
<b>Group</b> : Common/Misc/					
<b>Objective</b> : To Place the IUT in Own Receiver Busy state. The IUT must be able to send an RNR on demand to indicate that it is in Own Receiver Busy state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		<IUT RNR>	RNR_V(RcvCmd, P0, VS)		(1)
2		START Toper			
3		MDLP?RNR CANCEL Toper	RNR_V ( RcvCmd, P0, VS)		(2)
4		?TIMEOUT Toper		(I)	
5		+POST_S1			
6		MDLP?OTHERWISE CANCEL Toper		(I)	
7		+POST_S1			
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : SetPeerReceiverBusy(VRVal: SEQUENCETYPE)					
<b>Group</b> : Common/Misc/					
<b>Objective</b> : To place the tester in busy condition. This means that the IUT will be in Peer Receiver Busy condition 7.4-7.7 or 8.4-8.7.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP RNR	RNR_V(SndCmd, P1, VRVal)		(1)
2		START T200			
3	P1	MDLP?RR (VA:= RR.nr) CANCEL T200	RR_V ( RcvRsp, F1, VS)		(2)
4		MDLP?RNR (VA:= RNR.nr) CANCEL T200	RNR_V ( RcvRsp, F1, VS)		(2)
5		+UNEXPECTED_S701			
6		GOTO P1			
7		?TIMEOUT T200		(I)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL T200		(I)	
10		+POST_S1			
<b>Detailed Comments</b> : (1) Indicate to IUT that tester is in busy condition. From this point on (or until RR or SABME frame is received) the IUT should not transmit I-frames to it.					
(2) Depending on whether the IUT is in own receiver busy condition or not, the IUT will either respond with an RR (not busy) or an RNR (busy).					

## Test Step Dynamic Behaviour

**Test Step Name** : SetSREJRecovery  
**Group** : Common/Misc/  
**Objective** : Used to place the IUT in SREJ Recovery state.  
**Default** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLPIframe ( NSError := (VS +1) MOD ModVal)	I_jFrame1( SndCmd, P0, NSError, VR)		(1)
2		START T200			
3	P1	MDLP?SREJ CANCEL T200	SREJ_V ( RcvCmd, P0, VS)		(2)
4		MDLP?SREJ CANCEL T200	SREJ_V ( RcvRsp, F0, VS)		(2)
5		+UNEXPECTED_S701			
6		GOTO P1			
7		?TIMEOUT T200		(!)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL T200		(!)	
10		+POST_S1			

**Detailed Comments** :

## Test Step Dynamic Behaviour

**Test Step Name** : KEY\_EXCH  
**Group** : Common/Misc/  
**Objective** : Common preamble used for key exchange. Appropriate preamble is called based on whether an M-ES or an MD-IS is being tested.  
  
Note: MDLP I frames encapsulate SMP (Airlink Security protocol) IKE and EKE messages containing the base a, modulus p and the x, y parameters.  
Following this exchange all acknowledged information transfers will contain encrypted data.  
**Default** :  
**Comments** : Preamble should also allow for devices which have a test mode and do not require NEI registration or key exchange for an MDLP connection to be established.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		[ NETWORK = FALSE]			(1)
2		+WAKEUP_U			
3		[NETWORK=TRUE]		(!)	(2)

**Detailed Comments** : (1) IUT is an M-ES

(2) IUT is an MD-IS

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : NEI_REG					
<b>Group</b> : Common/Misc/					
<b>Objective</b> : Used to register one NEI. It is assumed that the MNRP messages ESH and ISC each fit into single MDLP I-frames. The User(M-ES) and Network (MD-IS) registration procedures differ.					
<b>Default</b> :					
<b>Comments</b> : Preamble should also allow for devices which have a test mode and do not require NEI registration or key exchange for an MDLP connection to be established. This is not likely though.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		[ NETWORK = FALSE]			(1)
2		+NEI_REG_U			
3		[NETWORK = TRUE]			(2)
4		+NEI_REG_N			
<b>Detailed Comments</b> : (1) IUT is an M-ES (2) IUT is an MD-IS					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : WAKEUP					
<b>Group</b> : Common/Misc/					
<b>Objective</b> : Common preamble used to WAKEUP an M-ES.					
<b>Default</b> :					
<b>Comments</b> : Preamble should also allow for devices which have a test mode and do not require NEI registration or key exchange for an MDLP connection to be established.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		[ NETWORK = FALSE]			(1)
2		+WAKEUP_U			
3		[NETWORK=TRUE]		(1)	(2)
<b>Detailed Comments</b> : (1) IUT is an M-ES (2) IUT is an MD-IS					



Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_TEI_U1					
<b>Group</b> : User/Preamble/TEIMgmt/					
<b>Objective</b> : Place the IUT TEI Management Entity in the Unassigned (1) state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLPITEL_IDRemove	TEI_ID_RMV_V( SndCmd, P0, teiVal )		(1)
<b>Detailed Comments</b> : (1) Transmit the TEI ID Remove message to the IUT. If the TEI was not assigned, it is expected that the IUT shall ignore the TEI ID Remove message.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_TEI_U2					
<b>Group</b> : User/Preamble/TEIMgmt/					
<b>Objective</b> : Place the IUT TEI Management Entity in the Requested (2) state.					
<b>Default</b> :					
<b>Comments</b> : First try to place the IUT in Unassigned (1) state.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U1			(1)
2		+PRE_SendTEIReq( TRUE )			(2)
<b>Detailed Comments</b> : (1) Place the IUT in the Unassigned (1) state. (2) Request the IUT operator to take appropriate action to cause a TEI ID Request message to be transmitted. A parameter of TRUE indicates a connection is to be established.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_TEI_U3					
<b>Group</b> : User/Preamble/TEIMgmt/					
<b>Objective</b> : Place the IUT TEI Management Entity in the Assigned (3) state.					
<b>Default</b> :					
<b>Comments</b> : First place the IUT in Requested (2) state. Then, respond to the first TEI ID Request message with a TEI ID Assign message.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U2			(1)
2		MDLPITEL_IDAssign	TEI_ID_ASN_V( SndCmd, P0 )		(2)
<b>Detailed Comments</b> : (1) Place the IUT in the Requested state (2). (2) Respond to the TEI ID Request message with the TEI ID Assign message.					

### Test Step Dynamic Behaviour

**Test Step Name** : PRE\_SendTEIReq( establishConnection : BOOLEAN )

**Group** : User/Preamble/TEIMgmt/

**Objective** : Cause the IUT to transmit a TEI ID Request message ( with operator assistance ). The parameter indicates whether the IUT is establishing a connection ( IUT advances to state 7.0.1 ) or whether the IUT only acquires a TEI ( IUT advances to state 4.0 ).

**Default** :

**Comments** : The TEI ID Request message must be transmitted within Toper seconds.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		[(acquireTEIOnDemand = FALSE) AND (sabmeOnDemand = FALSE)]		(I)	(1)
2		+POST_U1			
3		[(establishConnection = TRUE) AND (sabmeOnDemand = FALSE)]		(I)	(2)
4		+POST_U1			
5		[(establishConnection = FALSE) AND (acquireTEIOnDemand = FALSE)]		(I)	(3)
6		+POST_U1			
7		[(establishConnection = FALSE) AND (acquireTEIOnDemand = TRUE)]			
8		<IUTIDL_UNITDATA_request>	TEI_ID_REQ_V( RcvCmd, P0 )		(4)
9		START Toper			
10	L1	MDLP?TEI_IDRequest CANCEL Toper	TEI_ID_REQ_V( RcvCmd, P0 )		(5)
11		?TIMEOUT Toper		(I)	(6)
12		+POST_U1			
13		+UNEXPECTED_S2_TEI			
14		GOTO L1			
15		MDLP?OTHERWISE CANCEL Toper		(F)	(6)
16		+POST_U1			
17		[(establishConnection = TRUE) AND (sabmeOnDemand = TRUE)]			
18		+PRE_SendTEIReqConnect			(7)

**Detailed Comments** :

- (1) The IUT is not capable of establishing a connection on demand ( advancing to state 7.0.1 ) or transmitting a UI frame on demand ( from layer 3 ) ( advancing to state 4.0 ).
- (2) The IUT is not capable of establishing a connection on demand ( advancing to state 7.0.1 on demand ).
- (3) The IUT is not capable of transmitting a UI frame on demand ( advancing to state 4.0 on demand ).
- (4) Request that the IUT operator take appropriate action to cause the IUT layer 3 to transmit a UI frame.
- (5) Receive the TEI ID Request message.
- (6) The TEI ID Request message was not received on time.
- (6) An invalid message was received.
- (7) Establish a connection ( advance to state 7.0.1 ).

## Test Step Dynamic Behaviour

**Test Step Name** : PRE\_SendTEIReqConnect

**Group** : User/Preamble/TEIMgmt/

**Objective** : Cause the IUT to try to establish a connection to the network ( advance to state 7.0.1 ).

**Default** :

**Comments** : The TEI ID Request message is expected within Toper seconds.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		[ sabmeOnDemand = FALSE ]		(I)	(1)
2		+POST_U1			
3		[ sabmeOnDemand = TRUE ]			(2)
4		<IUTIDL_ESTABLISH_request>	TEI_ID_REQ_V( RcvCmd, P0)		(3)
5		START Toper			
6	L1	MDLP?TEI_IDRequest CANCEL Toper	TEI_ID_REQ_V( RcvCmd, P0)		(4)
7		?TIMEOUT Toper		(I)	(5)
8		+POST_U1			
9		+UNEXPECTED_S2_TEI			
10		GOTO L1			
11		MDLP?OTHERWISE CANCEL Toper		(F)	(6)
12		+POST_U1			

**Detailed Comments** : (1) The IUT is incapable of establishing a connection on demand.  
 (2) Is the IUT capable of establishing a connection on demand ?  
 (3) Request that the IUT operator take appropriate action to cause the IUT to establish a connection.  
 (4) The TEI\_IDRequest message was received on time.  
 (5) The TEI\_IDRequest message was not received on time.  
 (6) An invalid message was received.

## Test Step Dynamic Behaviour

**Test Step Name** : PRE\_TEIAssign\_U

**Group** : User/Preamble/TEIMgmt/

**Objective** : Assign a TEI to the IUT. It is expected that the IUT will establish a connection to the network ( advance to state 7.0.1 ).

**Default** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_SendTEIReq( TRUE )			
2		MDLPITEL_IDAssign	TEI_ID_ASN_V(SndCmd, P0)		

**Detailed Comments** :

### Test Step Dynamic Behaviour

**Test Step Name** : PRE\_SleepState

**Group** : User/Preamble/SleepMgmt/

**Objective** : Place the IUT in Sleep Mode. Should only be used for test cases verifying the proper behaviour of the MDLP Sleep Mode Procedures.

**Default** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S701			
2		START T203			
3		?TIMEOUT T203			
4		MDLP?OTHERWISE CANCEL T203		(I)	
5		+POST_S1			(1)

**Detailed Comments** : (1) The test can never be successful, therefore, return the IUT to a stable state and gracefully terminate the test case.

### Test Step Dynamic Behaviour

**Test Step Name** : PRE\_U4

**Group** : User/Preamble/DLLE/MFONotEstablished/S4/

**Objective** : Place the IUT DLLE in the TEI Assigned (4) state.

**Default** :

**Comments** : Cause the IUT to send a TEI ID Request message to request a TEI. The IUT is not expected to transmit a SABME frame. The IUT is expected to maintain the TEI for atleast 30 seconds without establishing a connection or discarding the TEI. This routine will absorb one UI frame after the TEI has been acquired in case it was the transmission of a UI frame from layer 3 which caused the TEI to be requested.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_U1			(1)
2		+PRE_SendTEIReq( FALSE )			(2)
3		MDLPTEI_IDAssign	TEI_ID_ASN_V( SndCmd, P0)		(3)
4		START Twait			
5		MDLP?UI CANCEL Twait	UI_V( RcvCmd, P0 )		(4)
6		?TIMEOUT Twait			(5)
7		MDLP?OTHERWISE CANCEL Twait		(F)	(6)
8		+POST_U1			

**Detailed Comments** : (1) First, try to put the IUT TEI Management Entity in the Unassigned (1) state.  
 (2) Cause the IUT to transmit the TEI ID Request message to obtain a TEI only, but NOT establish a connection.  
 (3) Respond to the TEI ID Request message with the TEI ID Assign message.  
 (4) Wait for a UI frame. If a UI frame is received, continue on with the test case. The IUT is expected to be in the TEI Assigned (4) state. The IUT may expect a response to the UI frame. a response will NOT be transmitted to the IUT.  
 (5) No message was received from the IUT. That OK.  
 (6) An invalid message was received from the IUT. Fail the test.

### Test Step Dynamic Behaviour

**Test Step Name** : PRE\_U50  
**Group** : User/Preamble/DLLE/MFONotEstablished/S5/  
**Objective** : Place the IUT DLLE in the Establish substate of the Awaiting Establishment (5.0) state.  
**Default** :  
**Comments** : The IUT TEI Management Entity is placed in the Assigned (3) state. The IUT is then expected to transmit a SABME (P=1).

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEL_U3			(1)
2		START Twait			
3	L1	MDLP?SABME CANCEL Twait	SABME_V( RcvCmd, P1 )		(2)
4		+UNEXPECTED_S50			
5		GOTO L1			
6		?TIMEOUT Twait		(F)	
7		+POST_U1			
8		MDLP?OTHERWISE CANCEL Twait		(F)	
9		+POST_U1			

**Detailed Comments** : (1) Call the preamble routine to place the TEI Management Entity into the Assigned (3) state. The DLLE is expected to enter the Establish substate (5.0). At this point, the DLLE will have transmitted a SABME frame.  
(2) Receive the SABME frame.

### Test Step Dynamic Behaviour

**Test Step Name** : PRE\_U51  
**Group** : User/Preamble/DLLE/MFONotEstablished/S5/  
**Objective** : Place the IUT DLLE in the Establish substate (5.1).  
**Default** :  
**Comments** : The IUT DLLE is put in the Normal substate (7.0.1), before it is sent a DM (F=0) frame. Upon receipt of the DM (F=0) frame, the IUT is expected to transmit a SABME (P=1) frame and enter the Re-establish (5.1) substate.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_U701			(1)
2		MDLPIDM	DM_V( SndCmd, F0 )		(2)
3		START Twait			
4	L1	MDLP?SABME CANCEL Twait	SABME_V( RcvCmd, P1 )		(3)
5		+UNEXPECTED_S51			
6		GOTO L1			
7		?TIMEOUT Twait		(F)	
8		+POST_U1			
9		MDLP?OTHERWISE CANCEL Twait		(F)	
10		+POST_U1			

**Detailed Comments** : (1) Place the IUT DLLE in the Normal substate (7.0.1).  
(2) Transmit a DM frame to the IUT.  
(3) Receive a SABME frame from the IUT. The IUT is expected to be in state 5.1.

**Test Step Dynamic Behaviour**

**Test Step Name** : PRE\_U52  
**Group** : User/Preamble/DLLE/MFONotEstablished/S5/  
**Objective** : Put the IUT in the Pending Release substate of the Awaiting Establishment state (5.2).  
**Default** :  
**Comments** : First, the IUT DLLE is placed in the Establish substate (5.0). Then the operator is requested to initiate a release request from the IUT, and the IUT is allowed to transmit two more SABME (P=1) messages to allow time for the operator to initiate the disconnect request. After the tester receives the third SABME (P=1), control is returned to the test case. The test body must execute before a IUT T200 timeout occurs. It is recommended that T200 be defined to allow enough time for this test case to execute properly.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_U50			(1)
2		<IUTIDL_RELEASE_request>	TEL_ID_REQ_V( RcvCmd, P0 )		(2)
3		( counter := 1 )			
4	L1	START T200			
5	L2	MDLP?SABME CANCEL T200	SABME_V( RcvCmd, P1 )		(3)
6		( counter := counter + 1 )			
7		[ counter < 3 ]			
8		GOTO L1			
9		[ counter >= 3 ]			(4)
10		+UNEXPECTED_S50			
11		GOTO L2			
12		?TIMEOUT Twait			(F)
13		+POST_U1			
14		MDLP?OTHERWISE CANCEL Twait			(F)
15		+POST_U1			

**Detailed Comments** : (1) Place the IUT DLLE in the Establish substate (5.0).  
(2) Cause the IUT to initiate a disconnection.  
(3) Receive the SABME, but do not respond.  
(4) Three SABME messages have been transmitted by the IUT. The IUT is expected to be in the Pending Release substate (5.2).

## Test Step Dynamic Behaviour

**Test Step Name** : PRE\_U6

**Group** : User/Preamble/DLLE/MFONotEstablished/S6/

**Objective** : Place the IUT DLLE in the Awaiting Release (6) state.

**Default** :

**Comments** : After entering the Establish substate (5.0) and transmitting the SABME (P=1) frame, the UA (F=1) frame is transmitted to the IUT. The IUT is then expected to enter the Normal substate (7.0.1). The operator is then instructed to cause the IUT to disconnect from the network, after which the IUT is expected to transmit the DISC (P=1) frame. The IUT DLLE is then expected to be in the Awaiting Release (6) state.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_U50			(1)
2		MDLPIUA	UA_V( SndRsp, F1 )		(2)
3		<IUTIDL_RELEASE_request>	TEL_ID_REQ_V( RcvCmd, P0 )		(3)
4		START Toper			
5	L1	MDLP?DISC CANCEL Toper	DISC_V( RcvCmd, P1 )		(4)
6		+UNEXPECTED_S50			
7		GOTO L1			
8		?TIMEOUT Twait		(F)	
9		+POST_U1			
10		MDLP?OTHERWISE CANCEL Twait		(F)	
11		+POST_U1			

**Detailed Comments** : (1) Place the IUT DLLE in the Establish substate of the Awaiting Establishment state (5.0).  
 (2) Transmit a UA frame to the IUT. The IUT is expected to enter state 7.0.1.  
 (3) Cause the IUT to initiate a disconnection.  
 (4) Receive the DISC frame. The IUT is expected to enter state 6.

**Test Step Dynamic Behaviour**

**Test Step Name** : PRE\_U701  
**Group** : User/Preamble/DLLE/MFOEstablished/S7/  
**Objective** : To place the IUT in the MFO not in sleep mode state ( 7.0.1 ).  
**Default** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEIAssign			(1)
2		START Twait			
3		MDLP?SABME	SABME_V(RcvCmd, P1)		(2)
4		MDLPIUA (VA:=0, VR:=0, VS:=0, RC:=0)	UA_V(SndRsp, F1)		
5		+KEY_EXCH			(3)
6		+NEI_REG			(4)
7		?TIMEOUT Twait		(F)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL Twait		(F)	
10		+POST_S1			

**Detailed Comments** : (1) Obtain a TEI (TEI ID Request and TEI ID Assign exchanged).

(2) The IUT should immediately transmit a SABME after obtaining a TEI.

(3) Initiate the Key exchange. Note that if the MDLP layer is decoupled, there is no key exchange. The key exchange is initiated by the MD-IS ( IKE/EKE exchange)

(4) Initiate the NEI registration. Note that if the MDLP layer is decoupled, there is no NEI registration that takes place. The NEI registration is always initiated by the M-ES(ESH/ISC exchange).



### Test Step Dynamic Behaviour

**Test Step Name** : PRE\_S80

**Group** : User/Preamble/DLLE/MFOEstablished/S8/

**Objective** : To place the IUT in the Timer Recovery state (8.0 ---Normal- Normal)

**Default** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S701			(1)
2		(CurVR:=VR)			(2)
3		+RequestNIFrames(1)			(3)
4		START T200			
5	P1	MDLP?Iframe (RC:=0) CANCEL T200	L_V(RcvCmd, P1, CurVR, VS)		(4)
6		MDLP?RR (RC:=0) CANCEL T200	RR_V ( RcvCmd, P1, VS)		(4)
7		+UNEXPECTED_S701			
8		GOTO P1			
9		?TIMEOUT T200		(I)	
10		+POST_S1			
11		MDLP?OTHERWISE CANCEL T200		(F)	
12		+POST_S1			

**Detailed Comments** : (1) Place IUT in MFO state (7.0.1 ---Not in Sleep State) .

(2) Save the current VR value. This is required as RequestNIFrames increments VR by one every time an I frame is received from the IUT.

(3) Request the IUT to transmit one I frame. RequestNIFrames increments VR on receipt of an I frame, but does not acknowledge I frames.

(4) Receipt of an RR (P=1) or an I (P=1) frame confirms that the IUT's T200 timer has expired and is now in state S80.

**Test Step Dynamic Behaviour**

**Test Step Name** : PRE\_S81  
**Group** : User/Preamble/DLLE/MFOEstablished/S8/  
**Objective** : To place the IUT in the Timer Recovery state (8.1 Normal- SREJ Recovery).  
**Default** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		MDLP!frame (NSErr := (VS +1) MOD ModVal)	I_Frame1( SndCmd, P0, NSErr, CurVR)		(2)
3		START T200			
4	P1	MDLP?SREJ CANCEL T200	SREJ_V ( RcvCmd, P0, VS)		(3)
5		MDLP?SREJ CANCEL T200	SREJ_V ( RcvRsp, F0, VS)		(3)
6		+UNEXPECTED_S80			
7		GOTO P1			
8		?TIMEOUT T200		(I)	
9		+POST_S1			
10		MDLP?OTHERWISE CANCEL T200		(I)	(4)
11		+POST_S1			

**Detailed Comments** : (1) Place IUT in Timer Recovery state (8.0 ---Normal-Normal) IUT will retransmit either an RR(P=1) or I (P=1) every T200 seconds, until an event causing T200 to be stopped occurs.

(2) Transmit an I frame which causes a Selective Reject condition( E.g. I(P=0) where:

$$V(A) \leq N(R) < V(S) \text{ and } V(R) < N(S) < V(R) + k$$

See notes below.

(3) IUT should respond with a SREJ (P/F=0) confirming that the IUT is in S81.

(4) It is possible that an RR(P=1) or I(P=1) is received

NOTE 1: CurVR is set in PRE\_S80.

NOTE 2: The constraint uses CurVR, and not VR. Using CurVR ensures that the frame requested in PRE\_S80 remains unacknowledged. Using VR would acknowledge the I frame and return the IUT to state 7.1 ---Normal-SREJ Recovery.

## Test Step Dynamic Behaviour

Test Step Name : PRE\_S82

Group : User/Preamble/DLLE/MFOEstablished/S8/

Objective : To place the IUT in the MFO, Timer Recovery state (8.2 Normal- Own Receiver Busy)

Default :

Comments :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		<IUT RNR>	RNR_V(RcvCmd, P0, VS)		(2)
3		START Toper			
4	P1	MDLP?RNR CANCEL Toper	RNR_V(RcvCmd, P0, VS)		
5		+UNEXPECTED_S80			(3)
6		GOTO P1			
7		?TIMEOUT Toper		(I)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL Toper		(I)	(4)
10		+POST_S1			

**Detailed Comments :** (1) Place IUT in Timer Recovery state (8.0 —Normal-Normal). The IUT will retransmit either an RR (P=1) or I (P=1) every T200 seconds, until an event causing T200 to be stopped occurs.

(2) Request the IUT to transmit an RNR (P=0). This will place the IUT in Own Receiver Busy state. Only IUTs that are able to transmit RNR frames on demand will be able to execute tests in this test group.

(3) Since the IUT is still in timer recovery it will retransmit either an RR(P=1) or I (P=1) frames up to N200 times after which it will reset the link. These frames are consumed by the UNEXPECTED\_S80 tree attachment.

NOTE: Because operator intervention is required and the operator may require more than T200 time (3 seconds=M-ES, 5 seconds=MD-IS) to prepare an RNR frame to be transmitted, the T200 and or N200 parameters should be adjusted such that Toper < N200\*T200. The amount of time required to cause an RNR frame to be transmitted is implementation and test operator dependant.

(4) Should a SABME (P=1) frame be received, this indicates that T200 is too short, and too many RR(P=1) or I (P=1) frames were received (causing the link to be reset).

**Test Step Dynamic Behaviour**

**Test Step Name** : PRE\_S83  
**Group** : User/Preamble/DLLE/MFOEstablished/S8/  
**Objective** : To place the IUT in the MFO Timer Recovery state (8.3 Normal- SREJ and Own Receiver Busy)  
**Default** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			(1)
2		<IUTIRNR>	RNR_V(RcvCmd, P0, VS)		(2)
3		START Toper			
4	P1	MDLP?RNR CANCEL Toper	RNR_V(RcvCmd, P0, VS)		(3)
5		+UNEXPECTED_S81			(4)
6		GOTO P1			
7		?TIMEOUT Toper		(I)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL Toper		(I)	
10		+POST_S1			

**Detailed Comments** : (1) Place IUT in the Timer Recovery state (8.1 ---Normal - SREJ Recovery)  
(2) Request that the IUT transmit an RNR frame to place the IUT in Own receiver busy condition.  
(3) This confirms that the IUT is in Own Receiver Busy condition.  
(4) Consume RR (P=1) and I (P=1) frames. If more than N200 of these are received, the M-ES is expected to transmit a SABME (P=1).

### Test Step Dynamic Behaviour

**Test Step Name** : PRE\_S84

**Group** : User/Preamble/DLLE/MFOEstablished/S8/

**Objective** : To place the IUT in the MFO Timer Recovery state (8.4 --Peer Receiver Busy-Normal).

**Default** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		MDLPIRNR	RNR_V(SndCmd, P1, CurVR)		(2)
3		START T200			
4	P1	MDLP?RR CANCEL T200	RR_V ( RcvRsp, F1, VS)		(3)
5		+UNEXPECTED_S80			
6		GOTO P1			
7		?TIMEOUT T200		(!)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL T200		(!)	
10		+POST_S1			

**Detailed Comments** : (1) Place IUT into the Timer Recovery state (8.0 --Normal - Normal).

(2) Indicate to the IUT that the tester is now in busy condition.

(3) Receipt of an RR (F=1) indicates that the IUT is in the Timer Recovery state ( 8.4 --Peer Receiver Busy -Normal).

**Test Step Dynamic Behaviour**

**Test Step Name** : PRE\_S84\_RequestNIFrames( NumIFrames: SEQUENCETYPE)  
**Group** : User/Preamble/DLLE/MFOEstablished/S8/  
**Objective** : To place the IUT in the MFO state (7.4 Peer Receiver Busy- Normal) after requesting that the IUT transmit an I Frame.  
**Default** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		(TempVR:=VR)			(2)
3		+RequestNIFrames(NumIFrames)			(3)
4		+SetPeerReceiverBusy(TempVR)			(4)

**Detailed Comments** : (1) Place the IUT in Timer Recovery state (8.0 --Normal--Normal)..

(2) Store current VR value.

(3) Request that the IUT transmit NumIFrames I frame. VR is incremented by 1 for each I frame that is received. and the I frames remains unacknowledged.

(3) The tester is then placed in busy condition. At this point the IUT should be in S74. The RNR transmitted acknowledges the received I-frame. TempVR is passed here because we do not wish to acknowledge any of the received I-frames to date. This is required for test cases where retransmission of I frames occur on expiry of the T200 timer.

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S85					
<b>Group</b> : User/Preamble/DLLE/MFOEstablished/S8/					
<b>Objective</b> : To place the IUT in the MFO Timer Recovery state (8.5 ---Peer Receiver Busy-SREJ Recovery).					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S81			(1)
2		MDLPIRNR	RNR_V(SndCmd, P1, CurVR)		(2)
3		START T200			
4	P1	MDLP?RR CANCEL T200	RR_V ( RcvRsp, F1, VS)		(3)
5		+UNEXPECTED_S81			
6		GOTO P1			
7		?TIMEOUT T200		(I)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL T200		(I)	
10		+POST_S1			
<b>Detailed Comments</b> : (1) Place IUT into the Timer Recovery state (8.1 ---Normal - SREJ Recovery).					
(2) Indicate to the IUT that the tester is now in busy condition.					
(3) Receipt of an RR (F=1) indicates that the IUT is in the Timer Recovery state ( 8.5 ---Peer Receiver Busy -SREJ Recovery).					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S85_RequestNIFrames( NumIFrames: INTEGER)					
<b>Group</b> : User/Preamble/DLLE/MFOEstablished/S8/					
<b>Objective</b> : To place the IUT in the MFO state (7.4 Peer Receiver Busy- Normal) after requesting that the IUT transmit an I Frame.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		(TempVR:=VR)			
3		+RequestNIFrames(NumIFrames)			(2)
4		+SetSREJRecovery			(3)
5		+SetPeerReceiverBusy(TempVR)			(4)
<b>Detailed Comments</b> : (1) Place the IUT in MFO S701.					
(2) Request that the IUT transmit 1 I frame. VR is incremented by 1 and the I frame remains unacknowledged.					
(3) Place the IUT in Selective Reject Recovery state S71.					
(4) The tester is then placed in busy condition. At this point the IUT should be in S75.					

**Test Step Dynamic Behaviour**

**Test Step Name** : PRE\_S86  
**Group** : User/Preamble/DLLE/MFOEstablished/S8/  
**Objective** : To place the IUT in the MFO Timer Recovery state (8.6 ---Peer Receiver Busy--Own Receiver Busy).  
**Default** :  
**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S82			(1)
2		MDLPIRNR	RNR_V(SndCmd, P1, CurVR)		(2)
3		START T200			
4	P1	MDLP?RNR CANCEL T200	RNR_V ( RcvRsp, F1, VS)		(3)
5		+UNEXPECTED_S82			(4)
6		GOTO P1			
7		?TIMEOUT T200		(I)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL T200		(I)	
10		+POST_S1			

**Detailed Comments** : (1) Place IUT into the Timer Recovery state (8.2 ---Normal - Own Receiver Busy).  
(2) Indicate to the IUT that the tester is now in busy condition. Note use of CurVR which is set in PRE\_S82.  
(3) Receipt of an RNR (F=1) indicates that the IUT is in the Timer Recovery state ( 8.6 ---Peer Receiver Busy - Own Receiver Busy).  
(4) Consume RNR (P=1) frames caused by Timer recovery procedure.



Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S86_RequestNIFrames(numIFrames:INTEGER)					
<b>Group</b> : User/Preamble/DLLE/MFOEstablished/S8/					
<b>Objective</b> : To place the IUT in the MFO state ( 7.6 ---Peer Receiver Busy- Own Receiver Busy ).					
<b>Default</b> :					
<b>Comments</b> : The IUT must be able to send an RNR (P=0) command frame to indicate that it is in the Own Receiver Busy state.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		(TempVR:=VR)			
3		+RequestNIFrames(numIFrames)			(2)
4		+SetOwnReceiverBusy			(3)
5		+SetPeerReceiverBusy(TempVR)			(4)
<b>Detailed Comments</b> : (1) Place the IUT in the Timer Recovery State.					
(2) Send the requested number of I frames. Preambles should always transmit I frames (when required) while in state S701.					
(3) Place the IUT in Own Receiver Busy state.					
(4) Place the Tester in busy condition which places the IUT in the MFO state ( 7.6 ---Peer Receiver Busy- Own Receiver Busy ). Note that VR is passed as a parameter. This will acknowledge all I frames received from the IUT to date.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_S86_SendNIFrames(numIFrames:INTEGER; VRVal: SEQUENCEType)					
<b>Group</b> : User/Preamble/DLLE/MFOEstablished/S8/					
<b>Objective</b> : To place the IUT in the MFO state ( 7.6 ---Peer Receiver Busy- Own Receiver Busy ).					
<b>Default</b> :					
<b>Comments</b> : The IUT must be able to send an RNR (P=0) command frame to indicate that it is in the Own Receiver Busy state.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		+SendNIFrames(numIFrames, VRVal)			(2)
3		+SetOwnReceiverBusy			(3)
4		+SetPeerReceiverBusy(VRVal)			(4)
<b>Detailed Comments</b> : (1) Place the IUT into the Timer recovery state.					
(2) Send the requested number of I frames. Preambles should always transmit I frames (when required) while in state S701.					
(3) Place the IUT in Own Receiver Busy state.					
(4) Place the Tester in busy condition which places the IUT in the MFO state ( 7.6 ---Peer Receiver Busy- Own Receiver Busy ). Note that VR is passed as a parameter. This will acknowledge all I frames received from the IUT to date.					

**Test Step Dynamic Behaviour**

**Test Step Name** : PRE\_S87

**Group** : User/Preamble/DLLE/MFOEstablished/S8/

**Objective** : To place the IUT in the MFO Timer Recovery state (8.7—Peer Receiver Busy- SREJ and Own Receiver Busy).

**Default** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S83			(1)
2		MDLPIRNR	RNR_V(SndCmd, P1, CurVR)		(2)
3		START T200			
4	P1	MDLP?RNR CANCEL T200	RNR_V ( RcvRsp, F1, VS)		(3)
5		+UNEXPECTED_S83			(4)
6		GOTO P1			
7		?TIMEOUT T200		(I)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL T200		(I)	
10		+POST_S1			

**Detailed Comments** : (1) Place IUT into the Timer Recovery state (8.3—Normal - SREJ Recovery and Own Receiver Busy).

(2) Indicate to the IUT that the tester is now in busy condition. Note use of CurVR which is set in PRE\_S83 .

(3) Receipt of an RNR (F=1) indicates that the IUT is in the Timer Recovery state ( 8.6 —Peer Receiver Busy - Own Receiver Busy).

(4) Consume RNR (P=1) frames caused by Timer recovery procedure.

### Test Step Dynamic Behaviour

**Test Step Name** : PRE\_S87\_RequestNIFrames(numIFrames:INTEGER)  
**Group** : User/Preamble/DLLE/MFOEstablished/S8/  
**Objective** : To place the IUT in the MFO state ( 7.6 —Peer Receiver Busy– Own Receiver Busy ).  
**Default** :  
**Comments** : The IUT must be able to send an RNR (P=0) command frame to indicate that it is in the Own Receiver Busy state.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		(TempVR:=VR)			
3		+RequestNIFrames(numIFrames)			(2)
4		+SetOwnReceiverBusy			(3)
5		+SetSREJRecovery			
6		+SetPeerReceiverBusy(TempVR)			(4)

**Detailed Comments** : (1) Place the IUT in MFO. This implies that TEI is assigned, SABME/UA exchange has taken place, key exchange and NEI registration has occurred.

(2) Send the requested number of I frames. Preambles should always transmit I frames (when required) while in state S701.

(3) Place the IUT in Own Receiver Busy state.

(4) Place the Tester in busy condition which places the IUT in the MFO state ( 7.6 —Peer Receiver Busy– Own Receiver Busy ). Note that VR is passed as a parameter. This will acknowledge all I frames received from the IUT to date.

**Test Step Dynamic Behaviour**

**Test Step Name** : PRE\_S87\_SendNIFrames(numIFrames:INTEGER; VRVal: SEQUENCETYPE)  
**Group** : User/Preamble/DLLE/MFOEstablished/S8/  
**Objective** : To send numIFrames to the IUT the place it in the Timer Recovery state ( 8.7 —Peer Receiver Busy– Own Receiver Busy ).  
**Default** :  
**Comments** : The IUT must be able to send an RNR (P=0) command frame to indicate that it is in the Own Receiver Busy state.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_S80			(1)
2		+SendNIFrames(numIFrames, VRVal)			(2)
3		+SetSREJRecovery			(3)
4		+SetPeerReceiverBusy(VRVal)			(4)
5		<IUTIRNR>	RNR_V(RcvCmd, P0, VS)		(5)
6		START Toper			
7	P1	MDLP?RNR CANCEL Toper	RNR_V ( RcvCmd, P0, VS)		(6)
8		+UNEXPECTED_S85			
9		GOTO P1			
10		?TIMEOUT Toper		(I)	
11		+POST_S1			
12		MDLP?OTHERWISE CANCEL Toper		(I)	
13		+POST_S1			

**Detailed Comments** : (1) Place the IUT in MFO. This implies that TEI is assigned, SABME/UA exchange has taken place, key exchange and NEI registration has occurred.

(2) Send the requested number of I frames. Preambles should always transmit I frames (when required) while in state S701. Note that I frames have not been acknowledged.

(3) Place the IUT in SREJ recover state

(4) Place the tester in busy condition.

(5) Request that the test Operator place the IUT Own Receiver Busy state.

(6) IUT is now in S77,

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : POST_TEIUnassigned					
<b>Group</b> : User/Postamble/					
<b>Objective</b> : Places the IUT into the TEI Unassigned state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
<b>Detailed Comments</b> : (1) take into consideration propagation delay.					
(2) Disconnect the link. Because of crypto-synch problems the IUT returns to TEI Unassigned, and key exchange and NEI registration must be done anew. Normally We would return to S4.0 and continue with a SABME UA exchange					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : POST_U10					
<b>Group</b> : User/Postamble/					
<b>Objective</b> : Places the IUT into the Multiple Frame Not Established state (S1.0 TEI Unassigned). This postamble is executed at the end of every test case.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		[TRUE]		R	
<b>Detailed Comments</b> :					
<p>Note: Do a TEI ID Remove 2 times.</p> <p>Design Note: Because of crypto-synch idiosyncracies the IUT returns to TEI Unassigned instead of the TEI Assigned state. This implies that the next test case must execute the key exchange and NEI registration procedures before any user data can be exchanged. This will only be required when testing states S7, S8 and Sleep Management Procedures.</p> <p>To return the IUT to TEI Unassigned state, simply transmit a TEI ID Remove using the IUTs TEI connection identifier. Depending on whether the TEI Unassigned state is a stable state or not, the IUT may immediately begin to transmit TEI ID Request messages in an attempt to require a TEI and establish a new connection.</p>					

**Test Step Dynamic Behaviour**

**Test Step Name** : POST\_U1

**Group** : User/Postamble/

**Objective** : Place the IUT Management Entity in the Unassigned (1) state.

**Default** :

**Comments** : Try to place the IUT Management Entity in the Unassigned (1) state by transmitting to the IUT the TEI ID Remove message followed by the TEI ID Check Request message up to three times. It is expected that the IUT is in the correct state if a TEI ID Check Response message is not received in response to the TEI ID Check Request message. If a TEI ID Request message is received from the IUT, the IUT is expected to be in the Requested (2) state.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		( counter := 0 )			
2		MDLPITeI_IDRemove	TEI_ID_RMV_V(SndCmd, P0, teiVal )		(1)
3	L1	MDLPITeI_IDCheckRequest	TEI_ID_CHK_REQ_V( SndCmd, P0, teiVal )		(2)
4		START T202			
5	L2	MDLP?TEI_IDRequest CANCEL T202	TEI_ID_REQ_V( RcvCmd, P0 )	R	(3)
6		MDLP?TEI_IDCheckResponse CANCEL T202	TEI_ID_CHK_RSP_V( RcvCmd, P0 )		(4)
7		[ counter = 3 ]		F	(5)
8		MDLPITeI_IDRemove	TEI_ID_RMV_V(SndCmd, P0, teiVal )		
9		( counter := counter + 1 )			
10		GOTO L1			
11		?TIMEOUT T202		R	(6)
12		+UNEXPECTED_S1_TEI			
13		GOTO L2			
14		MDLP?OTHERWISE CANCEL T202		F	

**Detailed Comments** : (1) Transmit the TEI ID Remove message to the IUT.  
 (2) Transmit the TEI ID Check Request message to the IUT.  
 (3) Receive the TEI ID Request message from the IUT. The IUT has been in the Unassigned (1) state temporarily.  
 (4) Receive the TEI ID Check Response message from the IUT. It is expected that the IUT is in the Assigned (3) state.  
 (5) Try at most three times to change the state of the IUT.  
 (6) A TEI ID Check Response message was not received from the IUT. The IUT is expected to be in the Normal (1) state.

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_S1_TEI					
<b>Group</b> : User/Unexpected/TEIMgmt/					
<b>Objective</b> : Handle valid but unexpected frames while the TEI Management Entity is in the Unassigned ( 1 ) state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_S2_TEI					
<b>Group</b> : User/Unexpected/TEIMgmt/					
<b>Objective</b> : Handle valid but unexpected frames while the TEI Management Entity is in the Requested ( 2 ) state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_S3_TEI					
<b>Group</b> : User/Unexpected/TEIMgmt/					
<b>Objective</b> : Handle valid but unexpected frames while the TEI Management Entity is in the Assigned ( 3 ) state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
<b>Detailed Comments</b> :					

### Test Step Dynamic Behaviour

**Test Step Name** : VER\_TEL\_U3

**Group** : User/Verification/TEIMgmt/

**Objective** : Verify the IUT Management Entity is in the Assigned ( 3 ) state.

**Default** :

**Comments** : Send a TEI ID Check Request to the IUT. If the IUT responds with a TEI ID Check Response message, the IUT is assumed to be in the Assigned ( 3 ) state.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP?TEI_IDCheckRequest	TEI_ID_CHK_REQ_V( SndCmd, P0, teiVal )		(1)
2		START T202			
3	L1	MDLP?TEI_IDCheckResponse CANCEL T202	TEI_ID_CHK_RSP_V( RcvRsp, F1 )		(2)
4		?TIMEOUT T202		(F)	(3)
5		+UNEXPECTED_S2_TEI			(4)
6		GOTO L1			
7		?OTHERWISE CANCEL T202		(F)	(5)

**Detailed Comments** :

- (1) Transmit to the IUT the TEI ID Check Request message.
- (2) Receive from the IUT the TEI ID Check Response message.
- (3) The TEI ID Check Response message was not received. It is assumed the IUT is not in the Assigned ( 3 ) state.
- (4) Handle any unexpected messages.
- (5) An invalid message was received. The IUT is assumed to be in an invalid state.



### Test Step Dynamic Behaviour

**Test Step Name** : VER\_TEI\_U1U2  
**Group** : User/Verification/TEIMgmt/  
**Objective** : Verify the IUT Management Entity is not in the Assigned ( 3 ) state.  
**Default** :  
**Comments** : This routine determines if the IUT DLLE is in the Unassigned (1) state or the Requested (2) state. The variable iutMgmtState is set accordingly.

Nr	Label	Behaviour Description	Constralnts Ref	Verdi	Comments
1		MDLPITEL_IDCheckRequest	TEI_ID_CHK_REQ_V( SndCmd, P0, teiVal )		(1)
2		START T202			
3	L1	MDLP?TEI_IDRequest	TEI_ID_REQ_V( RcvCmd, P0 )		(2)
4		MDLP?TEI_IDCheckResponse CANCEL T202	TEI_ID_CHK_RSP_V( RcvRsp, P0 )	(F)	(3)
5		+POST_U1			
6		?TIMEOUT T202			(4)
7		+UNEXPECTED_S1_TEI			
8		GOTO L1			
9		?OTHERWISE CANCEL T202		(F)	(5)
10		+POST_U1			

**Detailed Comments** : (1) Transmit to the IUT the TEI ID Check Request message.  
(2) Absorb a TEI ID Request message. If the IUT is not in Assigned ( 3 ) state, it is expected to transmit TEI ID Request messages. But, continue waiting for the TEI ID Check Response message.  
(3) Receive from the IUT the TEI ID Check Response message.  
(4) The TEI ID Check Response message was not received. The state of the IUT is unknown.  
(5) An invalid message was received from the IUT. The state of the IUT is unknown.

**Test Step Dynamic Behaviour**

**Test Step Name** : VER\_MFO

**Group** : User/Misc/

**Objective** : Verify that the IUT has established a connection to the network, and that the state variables V(R) and V(S) have been reset to zero.

**Default** :

**Comments** :

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLPiIframe	I_IKE(SndCmd, P0, VS, VR)		(1)
2		START T200			
3	L1	MDLP?Iframe CANCEL T200	I_EKE(RcvCmd, P0, VR, VS)		(2)
4		[ (VR = 1) AND (VS = 0) ]		(P)	(3)
5		+UNEXPECTED_RR			(4)
6		GOTO L1			
7		+UNEXPECTED_RNR			(5)
8		GOTO L1			
9		?TIMEOUT T200		(F)	(6)
10		+POST_U1			
11		?OTHERWISE CANCEL T200		(F)	(7)
12		+POST_U1			

**Detailed Comments** : (1) Transmit an I frame to the IUT containing a IKE message. It is expected that the IUT will respond with a EKE frame.  
 (2) Receive the EKE frame from the IUT.  
 (3) If VR = 1 and VS = 0 in the received I frame, the test has passed.  
 (4) Handle an unexpected RR frame.  
 (5) Handle an unexpected RNR frame.  
 (6) The EKE frame was not received on time.  
 (7) An invalid message was received.

### Test Step Dynamic Behaviour

**Test Step Name** : KEY\_EXCH\_U

**Group** : User/Misc/

**Objective** : User Specific preamble used for key exchange.

Note: MDLP I frames encapsulate SMP (Airlink Security protocol) IKE and EKE messages containing the base a, modulus p and the x, y parameters.

Following this exchange all acknowledged information transfers will contain encrypted data.

**Default** :

**Comments** : Preamble should also allow for devices which have a test mode and do not require NEI registration or key exchange for an MDLP connection to be established.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP!iframe	I_IKE(SndCmd, P0, VS, VR)		(2)
2		(VS:= (VS+1) MOD ModVal)			
3		START T200			
4	L1	MDLP?iframe (VA := iframe.nr, VR := (VR + 1) MOD ModVal) CANCEL T200	I_EKE(RcvCmd, P0, VR, VS)		(3)
5		+UNEXPECTED_RR			
6		GOTO L1			
7		?TIMEOUT T200		(F)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL T200		(F)	
10		+POST_S1			

**Detailed Comments** : (1) Tester(MD-IS) transmits an SMP IKE frame. This is encapsulated in a single MDLP I-frame. The contents of the I frame is not encrypted. The contents of the IKE frame must be specified by the test operator.

(2) The M-ES shall will respond with an SMP EKE frame. This is encapsulated in a single MDLP I-frame. The contents of the EKE frame must be specified by the test operator.

**Test Step Dynamic Behaviour**

**Test Step Name** : NEI\_REG\_U

**Group** : User/Misc/

**Objective** : User specific preamble used to register one NEI.

Note: It is assumed that the MNRP messages ESH and ISC each fit into single MDLP I-frames. The User(M-ES) and Network (MD-IS) registration procedures differ.

**Default** :

**Comments** : Preamble should also allow for devices which have a test mode and do not require NEI registration or key exchange for an MDLP connection to be established. This is not likely though.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		START T200			
2	P1	MDLP?Iframe ( VA:= lframe.nr, VR := (VR + 1) MOD ModVal) CANCEL T203	I_ESH(RcvCmd, P0, VR, VS)		(1)
3	P2	MDLP?Iframe	I_ISC(SndCmd, P0, VS, VR)		(2)
4		(VS:= (VS+1) MOD ModVal)			
5		START T200			
6	P3	+UNEXPECTED_RR			
7		GOTO P3			
8		?TIMEOUT T200			
9		MDLP?RR	RR_V(SndCmd, P1, VR)		(3)
10		START T200			
11		MDLP?RR CANCEL T200	RR_V(RcvRsp,F1,VS)		
12		?TIMEOUT T200		(F)	
13		+POST_S1			
14		MDLP?OTHERWISE CANCEL T200		(F)	
15		+POST_S1			
16		MDLP?OTHERWISE CANCEL T200		(I)	
17		+POST_S1			
18		+UNEXPECTED_RR			
19		GOTO P1			
20		?TIMEOUT T200		(I)	
21		+POST_S1			
22		MDLP?OTHERWISE CANCEL T203		(I)	
23		+POST_S1			

**Detailed Comments** : (1) An MNRP ESH message should be received encapsulated in an MDLP I frame. Note that the ESH should follow immediately after the EKE transmitted during the key exchange procedure.

(2) An MNRP ISC response message is sent. It is encapsulated in an MDLP I frame.

Note: The encapsulated ESH and ISC messages are encrypted to protect the NEI value. To achieve this, the tester must be able to construct an ISC message and encrypt it. Note that encryption is not an MDLP function but rather an SNDCP function.

(3) Send out an RR to ensure that all transmitted I frames are acknowledged. This is a basic requirement for all MFO types tests, ie. that all I frames sent to date are acknowledged.

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : WAKEUP_U					
<b>Group</b> : User/Misc/					
<b>Objective</b> : To Wakeup an IUT which is known to be asleep.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		(try :=0)			
2	L1	START T204			(1)
3		?TIMEOUT T204			
4		MDLP?TEI_NOTIFY	TEI_NOTIFY_InList(SndCmd, P0, t204Value)		
5		START T200			
6		MDLP?RR (VA:= RR.n_r) CANCEL T200	RR_V(RcvCmd,P1, VS)		
7		MDLP?RR	RR_V( SndRsp, F1,VR)		
8		MDLP?RNR (VA:= RNR.nr) CANCEL T200	RNR_V(RcvCmd,P1, VS)		
9		MDLP?RR	RR_V( SndRsp, F1,VR)		
10		?TIMEOUT T200			
11		[try = 1]		(F)	
12		+POST_S1			
13		[try =0 ]			
14		(try := 1)			
15		GOTO L1			
16		MDLP?OTHERWISE CANCEL T200		(F)	
17		+POST_S1			
18		MDLP?OTHERWISE CANCEL T204		(F)	
19		+POST_S1			
<b>Detailed Comments</b> : (1) Wait T204 seconds before transmitting the TEI Notification message. Repeat this cycle 2 times in case the IUT's T204 timer expires after the Tester has transmitted the TEI Notification message. has expired prior to the expiry of the T204 timer used in the test case here, remain awake (or in the Waiting for TEI Notification state (S7.0.3) until it receives the TEI Notification message.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_TEIAssign_N					
<b>Group</b> : Network/Preamble/TEIMgmt/					
<b>Objective</b> : Assign a TEI to the IUT. It is expected that the IUT will establish a connection to the network ( advance to state 7.0.1 ).					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP?TEI_IDRequest	TEI_ID_REQ_V(SndCmd, P0)		
2		START T202			
3		MDLP?TEI_IDAssign CANCEL T202	TEI_ID_ASN_V(RcvCmd, P0 )		
4		?TIMEOUT T202		(F)	
5		+POST_N1			
6		MDLP?OTHERWISE CANCEL T202		(F)	
7		+POST_N1			
<b>Detailed Comments</b> : (1)(currentTEI := DecodeAddress(TEI_IDAssign.address ))					
(2)(currentEID := TEI_IDAssign.iutEID)					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_TEI_N1					
<b>Group</b> : Network/Preamble/TEIMgmt/					
<b>Objective</b> : Place the IUT TEI Management Entity in the Normal (1) state and acquire a TEI.					
<b>Default</b> :					
<b>Comments</b> : A TEI is assigned. The TEI value is stored in the Test Case Variable currentTEI. Any TEIs previously assigned by the IUT are expected to be removed by the IUT, eventually, after a Check in Use procedure.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEIAssign_N			
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_TEI_N21					
<b>Group</b> : Network/Preamble/TEIMgmt/					
<b>Objective</b> : Place the IUT TEI Management Entity in the First substate of the Verify TEI In Use state (2.1).					
<b>Default</b> :					
<b>Comments</b> : To place the IUT into the desired state, a TEI is first requested. Then, no messages are exchanged on the assigned TEI for an implementation specific period of time, after which the IUT is expected to transmit a TEI ID Check Request message.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N1			(1)
2		START TIdleTEI			
3	L1	MDLP?TEI_IDCheckRequest	TEI_ID_CHK_REQ_V( RcvCmd, P0, currentTEI )		(2)
4		+UNEXPECTED_N21_TEI			
5		GOTO L1			
6		?TIMEOUT TIdleTEI		(F)	(3)
7		+POST_N1			
8		MDLP?OTHERWISE CANCEL TIdleTEI		(F)	
9		+POST_N1			
<b>Detailed Comments</b> : (1) Place the IUT in the Normal state (1). (2) Receive the TEI ID Check Request message from the IUT. (3) The TEI ID Check Request message was not received on time. The state of the IUT is unknown.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_TEI_N22					
<b>Group</b> : Network/Preamble/TEIMgmt/					
<b>Objective</b> : Place the IUT Management Entity in the Second substate of the Verify TEI In Use state (2.2).					
<b>Default</b> :					
<b>Comments</b> : To place the IUT into the desired state, first place the IUT into the First substate (2.1). Then, do not respond with the TEI ID Check Response message and wait for a further TEI ID Check Request message to be transmitted by the IUT.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N21			(1)
2		START T201			
3	L1	MDLP?TEI_IDCheckRequest	TEI_ID_CHK_REQ_V( RcvCmd, P0, teiVal )		(2)
4		+UNEXPECTED_N21_TEI			
5		GOTO L1			
6		?TIMEOUT T201		(F)	(3)
7		+POST_N1			
8		MDLP?OTHERWISE CANCEL T201		(F)	
9		+POST_N1			
<b>Detailed Comments</b> : (1) Place the IUT in the First substate (2.1). (2) Receive the TEI ID Check Request message from the IUT. (3) The TEI ID Check Request message was not received on time. The state of the IUT is unknown.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_TEI_N31					
<b>Group</b> : Network/Preamble/TEIMgmt/					
<b>Objective</b> : Place the IUT TEI Management Entity in the First substate of the Verify Multiple TEI Assignment state (3.1).					
<b>Default</b> :					
<b>Comments</b> : To place the IUT TEI Management Entity into the First substate (3.1), the DLLE is placed into state 7.0.1 and a UA (F=1) frame is transmitted to the IUT. Then the TEI ID Check Request message is received.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_N701			(1)
2		MDLPIUA	UA_V( SndRsp, F1 )		(2)
3		START T201			
4	L1	MDLP?TEI_IDCheckRequest	TEI_ID_CHK_REQ_V( RcvCmd, P0, teiVal )		(3)
5		+UNEXPECTED_N31_TEI			
6		GOTO L1			
7		?TIMEOUT T201		(F)	
8		+POST_N1			
9		MDLP?OTHERWISE CANCEL T201		(F)	
10		+POST_N1			
<b>Detailed Comments</b> : (1) Place the IUT in the Normal state (7.0.1) (2) Transmit a UA frame to the IUT. (3) Receive the TEI ID Check Request message from the IUT.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_TEI_N32					
<b>Group</b> : Network/Preamble/TEIMgmt/					
<b>Objective</b> : Place the IUT TEI Management Entity in the Second substate of the Verify Multiple TEI Assignment state (3.2).					
<b>Default</b> :					
<b>Comments</b> : To place the IUT TEI Management Entity into the Second substate, the Mangement Entity is first placed into the First substate. After a second TEI ID Check Request message, the IUT is assumed to be in the proper state.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEI_N31			(1)
2		START T201			
3	L1	MDLP?TEI_IDCheckRequest	TEI_ID_CHK_REQ_V( RcvCmd, P0, teiVal )		(2)
4		+UNEXPECTED_N31_TEI			
5		GOTO L1			
6		?TIMEOUT T201		(F)	
7		+POST_N1			
8		MDLP?OTHERWISE CANCEL T201		(F)	
9		+POST_N1			
<b>Detailed Comments</b> : (1) Place the IUT in the First substate (3.1). (2) Receive a TEI ID Check Request message from the IUT.					



Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_N4					
<b>Group</b> : Network/Preamble/DLLE/MFONotEstablished/S4/					
<b>Objective</b> : Place the IUT DLLE in the TEI Assigned state (4).					
<b>Default</b> :					
<b>Comments</b> : To place the IUT into the desired state, transmit the TEI ID Request message and expect a TEI ID Assign message in response.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP?TEI_IDRequest	TEI_ID_REQ_V( SndCmd, P0)		(1)
2		START T202			
3	L1	MDLP?TEI_IDAssign CANCEL T202	TEI_ID_ASN_V( RcvCmd, P0)		(2)
4		+UNEXPECTED_N4			
5		GOTO L1			
6		?TIMEOUT T202		(F)	
7		+POST_N1			
8		MDLP?OTHERWISE CANCEL T202		(F)	
9		+POST_N1			
<b>Detailed Comments</b> : (1) Transmit the TEI ID Request message to the IUT. (2) Receive the TEI ID Assign message from the IUT.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_N50					
<b>Group</b> : Network/Preamble/DLLE/MFONotEstablished/S5/					
<b>Objective</b> : Place the IUT DLLE in the Establish substate (5.0).					
<b>Default</b> :					
<b>Comments</b> : To place the IUT into the desired state, cause the IUT to transmit a SABME (P=1) frame with operator assistance.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_N4			
2		<IUTISABME>	SABME_V( SndCmd, P1)		(1)
3		START Toper			
4	L1	MDLP?SABME CANCEL Toper	SABME_V( SndCmd, P1)		(2)
5		+UNEXPECTED_N50			
6		GOTO L1			
7		?TIMEOUT Toper		(F)	
8		+POST_N1			
9		MDLP?OTHERWISE CANCEL Toper		(F)	
10		+POST_N1			
<b>Detailed Comments</b> : (1) Cause the IUT to transmit a SABME frame. (2) Receive the SABME frame from the IUT.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_N51					
<b>Group</b> : Network/Preamble/DLLE/MFONotEstablished/S5/					
<b>Objective</b> : Place the IUT DLLE in the Re-establish substate (5.1).					
<b>Default</b> :					
<b>Comments</b> : To place the IUT into the desired state, transmit a DM (F=0) frame to the IUT. The IUT is then expected to transmit a SABME (P=1) frame.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_N4			
2		MDLPIDM	DM_V( SndRsp, F0 )		(1)
3		START Twait			
4	L1	MDLP?SABME CANCEL Twait	SABME_V( SndCmd, P1 )		(2)
5		+UNEXPECTED_N50			
6		GOTO L1			
7		?TIMEOUT Twait		(F)	
8		+POST_N1			
9		MDLP?OTHERWISE CANCEL Twait		(F)	
10		+POST_N1			
<b>Detailed Comments</b> : (1) Transmit a DM (F=0) frame to the IUT. (2) Receive the SABME frame from the IUT.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_N52					
<b>Group</b> : Network/Preamble/DLLE/MFONotEstablished/S5/					
<b>Objective</b> : Place the IUT DLLE in the Pending Release substate (5.2).					
<b>Default</b> :					
<b>Comments</b> : To place the IUT into the desired state, transmit a DM (F=0) frame to the IUT. The IUT is then expected to transmit a SABME (P=1) frame and enter the Re-establish state (5.1). Then cause the IUT to release the connection with operator assistance. The IUT is then expected to enter the desired state. It is recommended that the IUT T200 timer be increased to a period of time which allows the operator to cause the IUT to release the connection before a T200 timeout. The IUT is expected to advance from state 5.1 to 5.2 after the SABME (P=1) frame is received and before a T200 timeout.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_N4			(1)
2		MDLPIDM	DM_V( SndRsp, F0 )		(2)
3		START Twait			
4	L1	MDLP?SABME CANCEL Twait	SABME_V( SndCmd, P1 )		(3)
5		<IUTIDL_RELEASE_request>			(4)
6		START T200			
7	L2	MDLP?SABME CANCEL T200	SABME_V( SndCmd, P1 )		(5)
8		+UNEXPECTED_N52			
9		GOTO L2			
10		?TIMEOUT T200		(F)	
11		+POST_N1			
12		MDLP?OTHERWISE CANCEL T200		(F)	
13		+POST_N1			
14		+UNEXPECTED_N50			
15		GOTO L1			
16		?TIMEOUT Twait		(F)	
17		+POST_N1			
18		MDLP?OTHERWISE CANCEL Twait		(F)	
19		+POST_N1			
<b>Detailed Comments</b> : (1) Place the IUT into the TEI Assigned state (4). (2) Transmit a DM (F=0) frame to the IUT. (3) Receive the SABME frame from the IUT. (4) Cause the IUT to release the connection. The IUT is expected to advance to the Pending Release state (5.2). (5) Receive the retransmitted SABME frame. The IUT is expected to be in the Pending Release state (5.2) by now.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_N6					
<b>Group</b> : Network/Preamble/DLLE/MFONotEstablished/S6/					
<b>Objective</b> : Place the IUT DLLE in the Awaiting Release substate (6).					
<b>Default</b> :					
<b>Comments</b> : To place the IUT into the desired state, first put the IUT into the Pending Release (5.2) state, then transmit the UA (F=1) frame to the IUT.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_N52			(1)
2		MDLPIUA	UA_V( SndRsp, F1 )		(2)
3		START Twait			
4	L1	MDLP?DISC CANCEL Twait	DISC_V( RcvCmd, P1 )		(3)
5		+UNEXPECTED_N50			
6		GOTO L1			
7		?TIMEOUT Twait		(F)	
8		+POST_N1			
9		MDLP?OTHERWISE CANCEL Twait		(F)	
10		+POST_N1			
<b>Detailed Comments</b> : (1) Place the IUT into the Pending Release state (5.2). (2) Transmit a UA (F=1) frame to the IUT. (3) Receive the DISC (P=1) frame from the IUT.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : PRE_N701					
<b>Group</b> : Network/Preamble/DLLE/MFOEstablished/					
<b>Objective</b> : To place an MD-IS in the MFO not in sleep mode state ( 7.0.1 ).					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+PRE_TEIAssign			(1)
2		MDLPISABME START T200	SABME_V(RcvCmd, P1)		(2)
3		MDLP? UA (VA:=0, VR:=0, VS:=0, RC:=0)	UA_V(SndRsp, F1)		(3)
4		+KEY_EXCH			(4)
5		+NEI_REG			(4)
6		?TIMEOUT Twait		(F)	
7		+POST_S1			
8		MDLP?OTHERWISE CANCEL Twait		(F)	
9		+POST_S1			
<b>Detailed Comments</b> : (1) Obtain a TEI (TEI ID Request and TEI ID Assign exchanged).					
(2) The IUT should immediately transmit a SABME after obtaining a TEI.					
(3) Initiate the Key exchange. Note that if the MDLP layer is decoupled, there is no key exchange. The key exchange is initiated by the MD-IS ( IKE/EKE exchange)					
(4) Initiate the NEI registration. Note that if the MDLP layer is decoupled, there is no NEI registration that takes place. The NEI registration is always initiated by the M-ES(ESH/ISC exchange).					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : POST_N1					
<b>Group</b> : Network/Postamble/					
<b>Objective</b> : Place the IUT Management Entity in the Normal (1) state.					
<b>Default</b> :					
<b>Comments</b> : A DM (F=0) frame is transmitted to the IUT. The IUT is expected to respond with a SABME frame unless the TEI is not assigned, in which case no response is expected. If the IUT transmits a SABME, a DM (F=1) frame is transmitted to the IUT. The IUT is then expected to be in the Normal state (1) and the TEI is not expected to be assigned.					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLPIDM	DM_V( SndCmd, F0 )		(1)
2		START T200			
3	L1	MDLP?SABME CANCEL T200	SABME_V( RcvCmd, P1 )		(2)
4		MDLPIDM	DM_V( SndCmd, F1 )		(3)
5		+UNEXPECTED_N1_TEI			
6		GOTO L1			
7		?TIMEOUT T200		R	
8		MDLP?OTHERWISE CANCEL T200		F	
<b>Detailed Comments</b> : (1) Transmit a DM (F=0) frame to the IUT. (2) Receive a SABME frame from the IUT. (3) Transmit a DM (F=1) frame to the IUT.					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_N1_TEI					
<b>Group</b> : Network/Unexpected/					
<b>Objective</b> : Handle valid but unexpected frames while the TEI Management Entity is in the Unassigned ( 1 ) state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+IGNORE_TEICHKREQ			
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_N21_TEI					
<b>Group</b> : Network/Unexpected/					
<b>Objective</b> : Handle valid but unexpected frames while the TEI Management Entity is in the Unassigned ( 1 ) state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+IGNORE_TEICHKREQ			
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_N31_TEI					
<b>Group</b> : Network/Unexpected/					
<b>Objective</b> : Handle valid but unexpected frames while the TEI Management Entity is in the Unassigned ( 1 ) state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+IGNORE_TEICHKREQ			
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_N50					
<b>Group</b> : Network/Unexpected/					
<b>Objective</b> : Handle valid but unexpected frames while the TEI Management Entity is in the Unassigned ( 1 ) state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+IGNORE_TEICHKREQ			
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_N52					
<b>Group</b> : Network/Unexpected/					
<b>Objective</b> : Handle valid but unexpected frames while the TEI Management Entity is in the Unassigned ( 1 ) state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+IGNORE_TEICHKREQ			
<b>Detailed Comments</b> :					

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Test Step Dynamic Behaviour					
<b>Test Step Name</b> : UNEXPECTED_N4					
<b>Group</b> : Network/Unexpected/					
<b>Objective</b> : Handle valid but unexpected frames while the TEI Management Entity is in the Unassigned ( 1 ) state.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		+IGNORE_TEICHKREQ			
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour					
<b>Test Step Name</b> : IGNORE_TEICHKREQ					
<b>Group</b> : Network/Misc/					
<b>Objective</b> : Ignore all TEI ID Check Request messages.					
<b>Default</b> :					
<b>Comments</b> :					
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP?TEI_IDCheckRequest	TEI_ID_CHK_REQ_V( RcvCmd, P0, ?)		
<b>Detailed Comments</b> :					

Test Step Dynamic Behaviour						
<b>Test Step Name</b> : CHECK_TEI( theTEI : INTEGER )						
<b>Group</b> : Network/Misc/						
<b>Objective</b> : Check the network side IUT if a TEI has been assigned.						
<b>Default</b> :						
<b>Comments</b> : A SABME (P=1) frame is transmitted to the IUT on the given TEI. If the IUT responds, it is assumed that the TEI is assigned. If the IUT does not respond, it is assumed that the IUT is not assigned.						
Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments	
1		MDLPISABME	SABME_TEI( SndCmd, P1, theTEI )		(1)	
2		START T200				
3		?TIMEOUT T200				
4		MDLP?OTHERWISE CANCEL T200				(2)
5		+POST_N1		(F)		(3)
<b>Detailed Comments</b> : (1) Transmit a SABME message to the IUT on the old TEI. (2) No response from the IUT. This is good. (3) Received a message from the TEI. A message was not expected.						



**Test Step Dynamic Behaviour**

**Test Step Name** : KEY\_EXCH\_N

**Group** : Network/Misc/

**Objective** : Network specific preamble used for key exchange.

Note: MDLP I frames encapsulate SMP (Airlink Security protocol) IKE and EKE messages containing the base a, modulus p and the x, y parameters.

Following this exchange all acknowledged information transfers will contain encrypted data.

**Default** :

**Comments** : Preamble should also allow for devices which have a test mode and do not require NEI registration or key exchange for an MDLP connection to be established.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		START Twait			
2	L1	MDLP?Iframe (VA := Iframe.nr, VR := (VR + 1) MOD ModVal) CANCEL Twait	I_IKE(SndCmd, P0, VR, VS)		(1)
3		MDLP?Iframe	I_EKE(RcvCmd, P0, VS, VR)		(2)
4		(VS := (VS + 1) MOD ModVal)			
5		+UNEXPECTED_RR			
6		GOTO L1			
7		?TIMEOUT Twait		(F)	
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL T200		(F)	
10		+POST_S1			

**Detailed Comments** : (1) wait for the reception of an IKE frame from the MD-IS. This is encapsulated in a single MDLP I-frame. The contents of the I frame is not encrypted. The contents of the IKE frame must be specified by the test operator.

(2) The M-ES (tester) shall will respond with an SMP EKE frame. This is encapsulated in a single MDLP I-frame. The contents of the EKE frame must be specified by the test operator.

Note: Key exchange should always be followed by NEI registration.

**Test Step Dynamic Behaviour**

**Test Step Name** : NEI\_REG\_N

**Group** : Network/Misc/

**Objective** : User specific preamble used to register one NEI.

Note: It is assumed that the MNRP messages ESH and ISC each fit into single MDLP I-frames. The User(M-ES) and Network (MD-IS) registration procedures differ.

**Default** :

**Comments** : Preamble should also allow for devices which have a test mode and do not require NEI registration or key exchange for an MDLP connection to be established. This is not likely though.

Nr	Label	Behaviour Description	Constraints Ref	Verdi	Comments
1		MDLP?Iframe	I_ESH(RcvCmd, P0, VR, VS)		(1)
2		(VS:=( VS+1) MOD ModVal)			
3		START T200			
4		MDLP?Iframe ( VA:= Iframe.nr, VR := (VR + 1) MOD ModVal) CANCEL T200	I_ISC(SndCmd, P0, VS, VR)		(2)
5	P3	+UNEXPECTED_RR			
6		GOTO P3			
7		?TIMEOUT T200			
8		+POST_S1			
9		MDLP?OTHERWISE CANCEL T200		(I)	
10		+POST_S1			

**Detailed Comments** : (1) An MNRP ESH message should be received encapsulated in an MDLP I frame. Note that the ESH should follow immediately after the EKE transmitted during the key exchange procedure.

(2) An MNRP ISC response message is sent. It is encapsulated in an MDLP I frame.

Note: The encapsulated ESH and ISC messages are encrypted to protect the NEI value. To achieve this, the tester must be able to construct an ISC message and encrypt it. Note that encryption is not an MDLP function but rather an SNDPCP function.

(3) Send out an RR to ensure that all transmitted I frames are acknowledged. This is a basic requirement for all MFO types tests, ie. that all I frames sent to date are acknowledged.