

| Test Item         | Req. Level | Description   |
|-------------------|------------|---|
| DDP.4.1-3         |            | Proper use of tagged buffer bit when 0  |
| DDP.4.1-3::a      | mandatory  | Proper use of tagged buffer field bit in the DDP header when set to 0   |
| DDP.4.1-3::a:1    |            |   |
| RDMAP.4-2         |            | RDMA Message length passed to RDMAP by DDP layer in Untagged Buffer transfers   |
| RDMAP.4-2::a      | mandatory  | RDMA Message length passed to RDMAP by DDP layer in Untagged Buffer transfers   |
| RDMAP.4-2::a:1    |            |   |
| RDMAP.5.3-3       |            | RDMA Send payload less than or equal to Untagged Buffer size are allowed.   |
| RDMAP.5.3-3::a    | mandatory  | RDMA SEND payload smaller than untagged buffer size delivered   |
| RDMAP.5.3-3::a:1  |            |   |
| RDMAP.5.3-3::b    | mandatory  | RDMA SEND payload equal to untagged buffer size delivered   |
| RDMAP.5.3-3::b:1  |            |   |
| DDP.4.1-10        |            | DDP version field must be 1 for IETF and 0 for RDMAC devices  |
| DDP.4.1-10::a     | mandatory  | DDP version field must be 1 for IETF and 0 for RDMAC devices  |
| DDP.4.1-10::a:1   |            |   |
| DDP.4.1-9         |            | DDP control reserved field zero on transmit, ignored on receive.  |
| DDP.4.1-9::a      | mandatory  | Rsvd field of DDP header set to zero  |
| DDP.4.1-9::a:1    |            |   |
| DDP.4.3-11        |            | The MO=0 for first segment of DDP message   |
| DDP.4.3-11::a     | mandatory  | The MO referencing the first octet of message must be 0 - this is untagged  |
| DDP.4.3-11::a:1   |            |   |
| DDP.4.3-8         |            | The initial value for MSN MUST be one.  |
| DDP.4.3-8::a      | mandatory  | initial value generated for MSN should be 1 - this is untagged  |
| DDP.4.3-8::a:1    |            |   |
| RDMAP.3.1-6       |            | DDP must insert the RsvdULP field provided by RDMAP into the associated DDP Message   |
| RDMAP.3.1-6::a    | mandatory  | DDP must insert the RsvdULP field provided by RDMAP into the associated DDP Message   |
| RDMAP.3.1-6::a:1  |            |   |
| RDMAP.3.1-7       |            | DDP RsvdULP is 1 octet for tagged and 5 octets untagged messages.   |
| RDMAP.3.1-7::b    | mandatory  | The RsvdULP field is 5 octets in untagged messages  |
| RDMAP.3.1-7::b:1  |            |   |
| RDMAP.4-4         |            | First octet of RsvdULP Field used by RDMAP to carry RDMAP Opcode and version.   |
| RDMAP.4-4::a      | mandatory  | First octet of RsvdULP Field used by RDMAP to carry RDMAP Opcode.   |
| RDMAP.4-4::a:1    |            |   |
| RDMAP.4.1-10      |            | Bits 24-25; RDMA Version field  |
| RDMAP.4.1-10::a   | mandatory  | Version must be 01b for IETF and 00b for RDMAC  |
| RDMAP.4.1-10::a:1 |            |   |
| RDMAP.4.1-12      |            | Invalidate STag field set to zero on transmit and ignored by receiver in all but the 2 RDMA Send with invalidate STag type operations |
| RDMAP.4.1-12::a   | mandatory  | Set STag to zero on RDMA send/solicited, read, and terminate  |
| RDMAP.4.1-12::a:1 |            |   |
| RDMAP.4.1-6       |            | Reservev bit set to zero by sender, ignored by receiver   |
| RDMAP.4.1-6::a    | mandatory  | Reserved MUST be set to zero by sender  |
| RDMAP.4.1-6::a:1  |            |   |
| RDMAP.4.1-8       |            | Figure 4 defines RDMA Opcodes.  |
| RDMAP.4.1-8::a    | mandatory  | Opcode values defined by figure 4   |
| RDMAP.4.1-8::a:1  |            |   |
| RDMAP.4.2-1       |            | Figure 5 (RDMA message definitions) indicates which RDMA messages use Headers and can carry ULP payloads                              |
| RDMAP.4.2-1::a    | mandatory  | When RDMA Header not used   |
| RDMAP.4.2-1::a:1  |            |   |
| RDMAP.4.2-1::b    | mandatory  | ULP message allowed in certain RDMA message   |
| RDMAP.4.2-1::b:1  |            |   |
| RDMAP.5.3-1       |            | RDMAP requests that the DDP layer marks RDMA Send Message as Untagged.  |
| RDMAP.5.3-1::a    | mandatory  | RDMA Send operations use untagged buffer  |
| RDMAP.5.3-1::a:1  |            |   |
| RDMAP.5.3-8       |            | Queue Number = 0 for RDMA Send type messages.   |
| RDMAP.5.3-8::a    | mandatory  | Queue Number Field zero for RDMA SEND type messages   |
| RDMAP.5.3-8::a:1  |            |   |

| Test Item          | Req. Level | Description   |
|--------------------|------------|---|
| DDP.4.1-3          |            | Proper use of tagged buffer bit when 0  |
| DDP.4.1-3::a       | mandatory  | Proper use of tagged buffer field bit in the DDP header when set to 0   |
| DDP.4.1-3::a::2    |            |   |
| RDMAP.4-2          |            | RDMA Message length passed to RDMAP by DDP layer in Untagged Buffer transfers   |
| RDMAP.4-2::a       | mandatory  | RDMA Message length passed to RDMAP by DDP layer in Untagged Buffer transfers   |
| RDMAP.4-2::a::2    |            |   |
| RDMAP.5.3-3        |            | RDMA Send payload less than or equal to Untagged Buffer size are allowed.   |
| RDMAP.5.3-3::a     | mandatory  | RDMA SEND payload smaller than untagged buffer size delivered   |
| RDMAP.5.3-3::a::2  |            |   |
| RDMAP.5.3-3::b     | mandatory  | RDMA SEND payload equal to untagged buffer size delivered   |
| RDMAP.5.3-3::b::2  |            |   |
| RDMAP.5.3-6        |            | RDMAP MAY generate an Event if configured so upon receipt of RDMA Send with SE type operations  |
| RDMAP.5.3-6::a     | optional   | Event on RDMA SEND with SE type message delivery when configured so   |
| RDMAP.5.3-6::a::1  |            |   |
| DDP.4.1-10         |            | DDP version field must be 1 for IETF and 0 for RDMAC devices  |
| DDP.4.1-10::a      | mandatory  | DDP version field must be 1 for IETF and 0 for RDMAC devices  |
| DDP.4.1-10::a::2   |            |   |
| DDP.4.1-9          |            | DDP control reserved field zero on transmit, ignored on receive.  |
| DDP.4.1-9::a       | mandatory  | Rsvd field of DDP header set to zero  |
| DDP.4.1-9::a::2    |            |   |
| DDP.4.3-11         |            | The MO=0 for first segment of DDP message   |
| DDP.4.3-11::a      | mandatory  | The MO referencing the first octet of message must be 0 - this is untagged  |
| DDP.4.3-11::a::2   |            |   |
| DDP.4.3-8          |            | The initial value for MSN MUST be one.  |
| DDP.4.3-8::a       | mandatory  | initial value generated for MSN should be 1 - this is untagged  |
| DDP.4.3-8::a::2    |            |   |
| RDMAP.3.1-6        |            | DDP must insert the RsvdULP field provided by RDMAP into the associated DDP Message   |
| RDMAP.3.1-6::a     | mandatory  | DDP must insert the RsvdULP field provided by RDMAP into the associated DDP Message   |
| RDMAP.3.1-6::a::2  |            |   |
| RDMAP.3.1-7        |            | DDP RsvdULP is 1 octet for tagged and 5 octets untagged messages.   |
| RDMAP.3.1-7::b     | mandatory  | The RsvdULP field is 5 octets in untagged messages  |
| RDMAP.3.1-7::b::2  |            |   |
| RDMAP.4-4          |            | First octet of RsvdULP Field used by RDMAP to carry RDMAP Opcode and version.   |
| RDMAP.4-4::a       | mandatory  | First octet of RsvdULP Field used by RDMAP to carry RDMAP Opcode.   |
| RDMAP.4-4::a::2    |            |   |
| RDMAP.4.1-10       |            | Bits 24-25; RDMA Version field  |
| RDMAP.4.1-10::a    | mandatory  | Version must be 01b for IETF and 00b for RDMAC  |
| RDMAP.4.1-10::a::2 |            |   |
| RDMAP.4.1-12       |            | Invalidate STag field set to zero on transmit and ignored by receiver in all but the 2 RDMA Send with invalidate STag type operations |
| RDMAP.4.1-12::a    | mandatory  | Set STag to zero on RDMA send/solicited, read, and terminate  |
| RDMAP.4.1-12::a::2 |            |   |
| RDMAP.4.1-6        |            | Reservev bit set to zero by sender, ignored by receiver   |
| RDMAP.4.1-6::a     | mandatory  | Reserved MUST be set to zero by sender  |
| RDMAP.4.1-6::a::2  |            |   |
| RDMAP.4.1-8        |            | Figure 4 defines RDMA Opcodes.  |
| RDMAP.4.1-8::a     | mandatory  | Opcode values defined by figure 4   |
| RDMAP.4.1-8::a::2  |            |   |
| RDMAP.4.2-1        |            | Figure 5 (RDMA message definitions) indicates which RDMA messages use Headers and can carry ULP payloads                              |
| RDMAP.4.2-1::a     | mandatory  | When RDMA Header not used   |
| RDMAP.4.2-1::a::2  |            |   |
| RDMAP.5.3-1        |            | RDMAP requests that the DDP layer marks RDMA Send Message as Untagged.  |
| RDMAP.5.3-1::a     | mandatory  | RDMA Send operations use untagged buffer  |
| RDMAP.5.3-1::a::2  |            |   |
| RDMAP.5.3-8        |            | Queue Number = 0 for RDMA Send type messages.   |

| Test Item          | Req. Level | Description  |
|--------------------|------------|--|
| RDMAP.5.3-8::a     | mandatory  | Queue Number Field zero for RDMA SEND type messages  |
| RDMAP.5.3-8::a::2  |            |  |
| DDP.4.1-3          |            | Proper use of tagged buffer bit when 0   |
| DDP.4.1-3::a       | mandatory  | Proper use of tagged buffer field bit in the DDP header when set to 0  |
| DDP.4.1-3::a::3    |            |  |
| RDMAP.4-2          |            | RDMA Message length passed to RDMAP by DDP layer in Untagged Buffer transfers  |
| RDMAP.4-2::a       | mandatory  | RDMA Message length passed to RDMAP by DDP layer in Untagged Buffer transfers  |
| RDMAP.4-2::a::3    |            |  |
| RDMAP.5.3-13       |            | Invalidate STag if associated with RDMAP Stream;   |
| RDMAP.5.3-13::a    | mandatory  | RDMA Send with invalidate STag invalidates said STag   |
| RDMAP.5.3-13::a::1 |            |  |
| RDMAP.5.3-3        |            | RDMA Send payload less than or equal to Untagged Buffer size are allowed.  |
| RDMAP.5.3-3::a     | mandatory  | RDMA SEND payload smaller than untagged buffer size delivered  |
| RDMAP.5.3-3::a::3  |            |  |
| RDMAP.5.3-3::b     | mandatory  | RDMA SEND payload equal to untagged buffer size delivered  |
| RDMAP.5.3-3::b::3  |            |  |
| DDP.4.1-10         |            | DDP version field must be 1 for IETF and 0 for RDMAC devices   |
| DDP.4.1-10::a      | mandatory  | DDP version field must be 1 for IETF and 0 for RDMAC devices   |
| DDP.4.1-10::a::3   |            |  |
| DDP.4.1-9          |            | DDP control reserved field zero on transmit, ignored on receive.   |
| DDP.4.1-9::a       | mandatory  | Rsvd field of DDP header set to zero   |
| DDP.4.1-9::a::3    |            |  |
| DDP.4.3-11         |            | The MO=0 for first segment of DDP message  |
| DDP.4.3-11::a      | mandatory  | The MO referencing the first octet of message must be 0 - this is untagged   |
| DDP.4.3-11::a::3   |            |  |
| DDP.4.3-8          |            | The initial value for MSN MUST be one.   |
| DDP.4.3-8::a       | mandatory  | initial value generated for MSN should be 1 - this is untagged   |
| DDP.4.3-8::a::3    |            |  |
| RDMAP.3.1-6        |            | DDP must insert the RsvdULP field provided by RDMAP into the associated DDP Message  |
| RDMAP.3.1-6::a     | mandatory  | DDP must insert the RsvdULP field provided by RDMAP into the associated DDP Message  |
| RDMAP.3.1-6::a::3  |            |  |
| RDMAP.3.1-7        |            | DDP RsvdULP is 1 octet for tagged and 5 octets untagged messages.  |
| RDMAP.3.1-7::b     | mandatory  | The RsvdULP field is 5 octets in untagged messages   |
| RDMAP.3.1-7::b::3  |            |  |
| RDMAP.4-4          |            | First octet of RsvdULP Field used by RDMAP to carry RDMAP Opcode and version.  |
| RDMAP.4-4::a       | mandatory  | First octet of RsvdULP Field used by RDMAP to carry RDMAP Opcode.  |
| RDMAP.4-4::a::3    |            |  |
| RDMAP.4-5          |            | RDMA Send with Invalidate and RDMA Send with Solicited Event and Invalidate uses 2nd through 5th octets for STag to invalidate |
| RDMAP.4-5::a       | mandatory  | RDMA Send with Invalidate and RDMA Send with Solicited Event and Invalidate uses 2nd through 5th octets for STag to invalidate |
| RDMAP.4-5::a::1    |            |  |
| RDMAP.4.1-10       |            | Bits 24-25; RDMA Version field   |
| RDMAP.4.1-10::a    | mandatory  | Version must be 01b for IETF and 00b for RDMAC   |
| RDMAP.4.1-10::a::3 |            |  |
| RDMAP.4.1-6        |            | Reservev bit set to zero by sender, ignored by receiver  |
| RDMAP.4.1-6::a     | mandatory  | Reserved MUST be set to zero by sender   |
| RDMAP.4.1-6::a::3  |            |  |
| RDMAP.4.1-8        |            | Figure 4 defines RDMA Opcodes.   |
| RDMAP.4.1-8::a     | mandatory  | Opcode values defined by figure 4  |
| RDMAP.4.1-8::a::3  |            |  |
| RDMAP.4.2-1        |            | Figure 5 (RDMA message definitions) indicates which RDMA messages use Headers and can carry ULP payloads                       |
| RDMAP.4.2-1::a     | mandatory  | When RDMA Header not used  |
| RDMAP.4.2-1::a::3  |            |  |
| RDMAP.4.2-1::b     | mandatory  | ULP message allowed in certain RDMA message  |
| RDMAP.4.2-1::b::3  |            |  |

| Test Item          | Req. Level | Description  |
|--------------------|------------|--|
| RDMAP.5.3-1        |            | RDMAP requests that the DDP layer marks RDMA Send Message as Untagged.   |
| RDMAP.5.3-1::a     | mandatory  | RDMA Send operations use untagged buffer   |
| RDMAP.5.3-1::a::3  |            |  |
| RDMAP.5.3-11       |            | RDMA Send with invalidate STag type operations set STag to be invalidated field in DDP layer                                   |
| RDMAP.5.3-11::a    | mandatory  | RDMA Send with invalidate STag gives DDP layer STag to be invalidated  |
| RDMAP.5.3-11::a::1 |            |  |
| RDMAP.5.3-8        |            | Queue Number = 0 for RDMA Send type messages.  |
| RDMAP.5.3-8::a     | mandatory  | Queue Number Field zero for RDMA SEND type messages  |
| RDMAP.5.3-8::a::3  |            |  |
| DDP.4.1-3          |            | Proper use of tagged buffer bit when 0   |
| DDP.4.1-3::a       | mandatory  | Proper use of tagged buffer field bit in the DDP header when set to 0  |
| DDP.4.1-3::a::4    |            |  |
| RDMAP.4-2          |            | RDMA Message length passed to RDMAP by DDP layer in Untagged Buffer transfers  |
| RDMAP.4-2::a       | mandatory  | RDMA Message length passed to RDMAP by DDP layer in Untagged Buffer transfers  |
| RDMAP.4-2::a::4    |            |  |
| RDMAP.5.3-13       |            | Invalidate STag if associated with RDMAP Stream;   |
| RDMAP.5.3-13::a    | mandatory  | RDMA Send with invalidate STag invalidates said STag   |
| RDMAP.5.3-13::a::2 |            |  |
| RDMAP.5.3-3        |            | RDMA Send payload less than or equal to Untagged Buffer size are allowed.  |
| RDMAP.5.3-3::a     | mandatory  | RDMA SEND payload smaller than untagged buffer size delivered  |
| RDMAP.5.3-3::a::4  |            |  |
| RDMAP.5.3-3::b     | mandatory  | RDMA SEND payload equal to untagged buffer size delivered  |
| RDMAP.5.3-3::b::4  |            |  |
| RDMAP.5.3-13       |            | Invalidate STag if associated with RDMAP Stream;   |
| RDMAP.5.3-13::a    | mandatory  | RDMA Send with invalidate STag invalidates said STag   |
| RDMAP.5.3-13::a::3 |            |  |
| RDMAP.5.3-6        |            | RDMAP MAY generate an Event if configured so upon receipt of RDMA Send with SE type operations                                 |
| RDMAP.5.3-6::a     | optional   | Event on RDMA SEND with SE type message delivery when configured so  |
| RDMAP.5.3-6::a::2  |            |  |
| RDMAP.5.3-6::b     | mandatory  | No event on RDMA SEND without solicited event message delivery   |
| RDMAP.5.3-6::b::2  |            |  |
| DDP.4.1-10         |            | DDP version field must be 1 for IETF and 0 for RDMAC devices   |
| DDP.4.1-10::a      | mandatory  | DDP version field must be 1 for IETF and 0 for RDMAC devices   |
| DDP.4.1-10::a::4   |            |  |
| DDP.4.1-9          |            | DDP control reserved field zero on transmit, ignored on receive.   |
| DDP.4.1-9::a       | mandatory  | Rsvd field of DDP header set to zero   |
| DDP.4.1-9::a::4    |            |  |
| DDP.4.3-11         |            | The MO=0 for first segment of DDP message  |
| DDP.4.3-11::a      | mandatory  | The MO referencing the first octet of message must be 0 - this is untagged   |
| DDP.4.3-11::a::4   |            |  |
| DDP.4.3-8          |            | The initial value for MSN MUST be one.   |
| DDP.4.3-8::a       | mandatory  | initial value generated for MSN should be 1 - this is untagged   |
| DDP.4.3-8::a::4    |            |  |
| RDMAP.3.1-6        |            | DDP must insert the RsvdULP field provided by RDMAP into the associated DDP Message  |
| RDMAP.3.1-6::a     | mandatory  | DDP must insert the RsvdULP field provided by RDMAP into the associated DDP Message  |
| RDMAP.3.1-6::a::4  |            |  |
| RDMAP.3.1-7        |            | DDP RsvdULP is 1 octet for tagged and 5 octets untagged messages.  |
| RDMAP.3.1-7::b     | mandatory  | The RsvdULP field is 5 octets in untagged messages   |
| RDMAP.3.1-7::b::4  |            |  |
| RDMAP.4-4          |            | First octet of RsvdULP Field used by RDMAP to carry RDMAP Opcode and version.  |
| RDMAP.4-4::a       | mandatory  | First octet of RsvdULP Field used by RDMAP to carry RDMAP Opcode.  |
| RDMAP.4-4::a::4    |            |  |
| RDMAP.4-5          |            | RDMA Send with Invalidate and RDMA Send with Solicited Event and Invalidate uses 2nd through 5th octets for STag to invalidate |

| Test Item         | Req. Level | Description  |
|-------------------|------------|--|
| RDMAP.4-5::a      | mandatory  | RDMA Send with Invalidate and RDMA Send with Solicited Event and Invalidate uses 2nd through 5th octets for STag to invalidate |
| RDMAP.4-5::a:2    |            |  |
| RDMAP.4.1-10      |            | Bits 24-25; RDMA Version field   |
| RDMAP.4.1-10::a   | mandatory  | Version must be 01b for IETF and 00b for RDMAC   |
| RDMAP.4.1-10::a:4 |            |  |
| RDMAP.4.1-6       |            | Reservev bit set to zero by sender, ignored by receiver  |
| RDMAP.4.1-6::a    | mandatory  | Reserved MUST be set to zero by sender   |
| RDMAP.4.1-6::a:4  |            |  |
| RDMAP.4.1-8       |            | Figure 4 defines RDMA Opcodes.   |
| RDMAP.4.1-8::a    | mandatory  | Opcode values defined by figure 4  |
| RDMAP.4.1-8::a:4  |            |  |
| RDMAP.4.2-1       |            | Figure 5 (RDMA message definitions) indicates which RDMA messages use Headers and can carry ULP payloads                       |
| RDMAP.4.2-1::a    | mandatory  | When RDMA Header not used  |
| RDMAP.4.2-1::a:4  |            |  |
| RDMAP.4.2-1::b    | mandatory  | ULP message allowed in certain RDMA message  |
| RDMAP.4.2-1::b:4  |            |  |
| RDMAP.5.3-1       |            | RDMA requests that the DDP layer marks RDMA Send Message as Untagged.  |
| RDMAP.5.3-1::a    | mandatory  | RDMA Send operations use untagged buffer   |
| RDMAP.5.3-1::a:4  |            |  |
| RDMAP.5.3-11      |            | RDMA Send with invalidate STag type operations set STag to be invalidated field in DDP layer                                   |
| RDMAP.5.3-11::a   | mandatory  | RDMA Send with invalidate STag gives DDP layer STag to be invalidated  |
| RDMAP.5.3-11::a:2 |            |  |
| RDMAP.5.3-8       |            | Queue Number = 0 for RDMA Send type messages.  |
| RDMAP.5.3-8::a    | mandatory  | Queue Number Field zero for RDMA SEND type messages  |
| RDMAP.5.3-8::a:4  |            |  |
| DDP.4.1-10        |            | DDP version field must be 1 for IETF and 0 for RDMAC devices   |
| DDP.4.1-10::a     | mandatory  | DDP version field must be 1 for IETF and 0 for RDMAC devices   |
| DDP.4.1-10::a:5   |            |  |
| DDP.4.1-3         |            | Proper use of tagged buffer bit when 0   |
| DDP.4.1-3::a      | mandatory  | Proper use of tagged buffer field bit in the DDP header when set to 0  |
| DDP.4.1-3::a:5    |            |  |
| DDP.4.1-9         |            | DDP control reserved field zero on transmit, ignored on receive.   |
| DDP.4.1-9::a      | mandatory  | Rsvd field of DDP header set to zero   |
| DDP.4.1-9::a:5    |            |  |
| DDP.4.3-11        |            | The MO=0 for first segment of DDP message  |
| DDP.4.3-11::a     | mandatory  | The MO referencing the first octet of message must be 0 - this is untagged   |
| DDP.4.3-11::a:5   |            |  |
| DDP.4.3-8         |            | The initial value for MSN MUST be one.   |
| DDP.4.3-8::a      | mandatory  | initial value generated for MSN should be 1 - this is untagged   |
| DDP.4.3-8::a:5    |            |  |
| RDMAP.3.1-4       |            | Queue Number 1 (used by RDMAP for RDMA Read operations)  |
| RDMAP.3.1-4::a    | mandatory  | RDMAP uses Queue Number 1 for RDMA Read operations   |
| RDMAP.3.1-4::a:1  |            |  |
| RDMAP.3.1-6       |            | DDP must insert the RsvdULP field provided by RDMAP into the associated DDP Message  |
| RDMAP.3.1-6::a    | mandatory  | DDP must insert the RsvdULP field provided by RDMAP into the associated DDP Message  |
| RDMAP.3.1-6::a:5  |            |  |
| RDMAP.3.1-7       |            | DDP RsvdULP is 1 octet for tagged and 5 octets untagged messages.  |
| RDMAP.3.1-7::b    | mandatory  | The RsvdULP field is 5 octets in untagged messages   |
| RDMAP.3.1-7::b:5  |            |  |
| RDMAP.4-4         |            | First octet of RsvdULP Field used by RDMAP to carry RDMA Opcode and version.   |
| RDMAP.4-4::a      | mandatory  | First octet of RsvdULP Field used by RDMAP to carry RDMA Opcode.   |
| RDMAP.4-4::a:5    |            |  |
| RDMAP.4.1-10      |            | Bits 24-25; RDMA Version field   |
| RDMAP.4.1-10::a   | mandatory  | Version must be 01b for IETF and 00b for RDMAC   |

| Test Item           | Req. Level | Description   |
|---------------------|------------|---|
| RDMAP.4.1-10::a::5  |            |   |
| RDMAP.4.1-12        |            | Invalidate STag field set to zero on transmit and ignored by receiver in all but the 2 RDMA Send with invalidate STag type operations                                     |
| RDMAP.4.1-12::a     | mandatory  | Set STag to zero on RDMA send/solicited, read, and terminate  |
| RDMAP.4.1-12::a::3  |            |   |
| RDMAP.4.1-6         |            | Reservev bit set to zero by sender, ignored by receiver   |
| RDMAP.4.1-6::a      | mandatory  | Reserved MUST be set to zero by sender  |
| RDMAP.4.1-6::a::5   |            |   |
| RDMAP.4.1-8         |            | Figure 4 defines RDMA Opcodes.  |
| RDMAP.4.1-8::a      | mandatory  | Opcode values defined by figure 4   |
| RDMAP.4.1-8::a::5   |            |   |
| RDMAP.4.2-1         |            | Figure 5 (RDMA message definitions) indicates which RDMA messages use Headers and can carry ULP payloads  |
| RDMAP.4.2-1::a      | mandatory  | When RDMA Header not used   |
| RDMAP.4.2-1::a::5   |            |   |
| RDMAP.4.4-1         |            | Figure 6 depicts the RDMA Read request Header   |
| RDMAP.4.4-1::a      | mandatory  | RDMA Read Request format defined by figure 6  |
| RDMAP.4.4-1::a::1   |            |   |
| RDMAP.4.4-10        |            | The data source steering tag.   |
| RDMAP.4.4-10::a     | mandatory  | RDMA Read Request data source Stag field  |
| RDMAP.4.4-10::a::1  |            |   |
| RDMAP.4.4-11        |            | The Data [Source]Tagged Offset specifies the starting offset, in octets, that is to be read from the Data Source's Tagged Buffer.   |
| RDMAP.4.4-11::a     | mandatory  | RDMA Read Request data source Stag field  |
| RDMAP.4.4-11::a::1  |            |   |
| RDMAP.4.4-5         |            | Read Message Size ranges from 0 to 2 <sup>32</sup> -1 octets from Source  |
| RDMAP.4.4-5::e      | mandatory  | RDMA Read Request message size  |
| RDMAP.4.4-5::e::1   |            |   |
| RDMAP.4.4-8         |            | The Data Sink Steering Tag identifies the Data Sink's Tagged Buffer.  |
| RDMAP.4.4-8::a      | mandatory  | The Data Sink Steering Tag identifies the Data Sink's Tagged Buffer.  |
| RDMAP.4.4-8::a::1   |            |   |
| RDMAP.4.4-9         |            | The Data Sink Tagged Offset specifies the starting offset, in octets, from the base of the Data Sink's Tagged Buffer, where the data is to be written by the Data Source. |
| RDMAP.4.4-9::a      | mandatory  | The Data Sink Tagged Offset identifies offset in Data Sink's Tagged Buffer.   |
| RDMAP.4.4-9::a::1   |            |   |
| RDMAP.5.2.1-6       |            | RDMA Read Request reference the RDMA Read Request Queue; DDP layer sets the Queue Number field to one.  |
| RDMAP.5.2.1-6::a    | mandatory  | RDMA read request to use proper QN  |
| RDMAP.5.2.1-6::a::1 |            |   |
| RDMAP.4.4-5         |            | Read Message Size ranges from 0 to 2 <sup>32</sup> -1 octets from Source  |
| RDMAP.4.4-5::a      | mandatory  | Read message size of 0  |
| RDMAP.4.4-5::a::1   |            |   |
| RDMAP.4.4-5::c      | mandatory  | Read message size greater than 0  |
| RDMAP.4.4-5::c::1   |            |   |
| RDMAP.4.4-3         |            | The Data Sink Tagged Offset MAY start at an arbitrary offset.   |
| RDMAP.4.4-3::a      | mandatory  | Data sink TO can point to buffer start  |
| RDMAP.4.4-3::a::1   |            |   |
| RDMAP.4.4-3::b      | mandatory  | Data sink TO can point to offsets in first half of buffer   |
| RDMAP.4.4-3::b::1   |            |   |
| RDMAP.4.4-3::c      | mandatory  | Sink TO points to offsets near the end of buffer  |
| RDMAP.4.4-3::c::1   |            |   |
| RDMAP.4.4-6         |            | Source Tagged Offset MAY start at arbitrary offset  |
| RDMAP.4.4-6::a      | mandatory  | Source TO points to buffer start (relative offset 0)  |
| RDMAP.4.4-6::a::1   |            |   |
| RDMAP.4.4-6::b      | mandatory  | Source TO points to first half of buffer  |
| RDMAP.4.4-6::b::1   |            |   |
| RDMAP.4.4-6::c      | mandatory  | Source TO points to locations near the end of buffer  |
| RDMAP.4.4-6::c::1   |            |   |
| RDMAP.5.2.1-8       |            | RDMA Read Request allowed to target all or part of a previously Advertised buffer.  |



| Test Item           | Req. Level | Description  |
|---------------------|------------|--|
| RDMAP.5.2.1-8::a    | mandatory  | RDMA message may READ from any part of buffer  |
| RDMAP.5.2.1-8::a::1 |            |  |
| DDP.4.1-10          |            | DDP version field must be 1 for IETF and 0 for RDMAC devices   |
| DDP.4.1-10::a       | mandatory  | DDP version field must be 1 for IETF and 0 for RDMAC devices   |
| DDP.4.1-10::a::6    |            |  |
| DDP.4.1-2           |            | Proper use of Tagged Buffer bit when 1   |
| DDP.4.1-2::a        | mandatory  | Tagged buffer flag   |
| DDP.4.1-2::a::1     |            |  |
| DDP.4.1-9           |            | DDP control reserved field zero on transmit, ignored on receive.   |
| DDP.4.1-9::a        | mandatory  | Rsvd field of DDP header set to zero   |
| DDP.4.1-9::a::6     |            |  |
| RDMAP.3.1-12        |            | DDP uses STag and Tagged Offset from RDMAP for Tagged messages.  |
| RDMAP.3.1-12::a     | mandatory  | DDP uses the STag and Tagged offset provided in tagged messages  |
| RDMAP.3.1-12::a::1  |            |  |
| RDMAP.3.1-6         |            | DDP must insert the RsvdULP field provided by RDMAP into the associated DDP Message                                    |
| RDMAP.3.1-6::a      | mandatory  | DDP must insert the RsvdULP field provided by RDMAP into the associated DDP Message                                    |
| RDMAP.3.1-6::a::6   |            |  |
| RDMAP.3.1-7         |            | DDP RsvdULP is 1 octet for tagged and 5 octets untagged messages.  |
| RDMAP.3.1-7::a      | mandatory  | The RsvdULP field 1 octet in tagged messages   |
| RDMAP.3.1-7::a::1   |            |  |
| RDMAP.4-4           |            | First octet of RsvdULP Field used by RDMAP to carry RDMAP Opcode and version.  |
| RDMAP.4-4::a        | mandatory  | First octet of RsvdULP Field used by RDMAP to carry RDMAP Opcode.  |
| RDMAP.4-4::a::6     |            |  |
| RDMAP.4.1-10        |            | Bits 24-25; RDMA Version field   |
| RDMAP.4.1-10::a     | mandatory  | Version must be 01b for IETF and 00b for RDMAC   |
| RDMAP.4.1-10::a::6  |            |  |
| RDMAP.4.1-6         |            | Reservev bit set to zero by sender, ignored by receiver  |
| RDMAP.4.1-6::a      | mandatory  | Reserved MUST be set to zero by sender   |
| RDMAP.4.1-6::a::6   |            |  |
| RDMAP.4.1-8         |            | Figure 4 defines RDMA Opcodes.   |
| RDMAP.4.1-8::a      | mandatory  | Opcode values defined by figure 4  |
| RDMAP.4.1-8::a::6   |            |  |
| RDMAP.4.2-1         |            | Figure 5 (RDMA message definitions) indicates which RDMA messages use Headers and can carry ULP payloads               |
| RDMAP.4.2-1::a      | mandatory  | When RDMA Header not used  |
| RDMAP.4.2-1::a::6   |            |  |
| RDMAP.4.2-1::b      | mandatory  | ULP message allowed in certain RDMA message  |
| RDMAP.4.2-1::b::6   |            |  |
| RDMAP.4.4-2         |            | Data Sink Steering Tag is copied from RDMA Read Request to corresponding RDMA Read Response.                           |
| RDMAP.4.4-2::a      | mandatory  | Data Sink Steering Tag is copied from RDMA Read Request to corresponding RDMA Read Response                            |
| RDMAP.4.4-2::a::1   |            |  |
| RDMAP.4.4-7         |            | This [The data sink tagged offset] field is copied from the RDMA Read Request into the corresponding RDMA Read request |
| RDMAP.4.4-7::a      | mandatory  | Must copy data sink tagged offset from read request to read response   |
| RDMAP.4.4-7::a::1   |            |  |
| RDMAP.4.4-5         |            | Read Message Size ranges from 0 to 2 <sup>32</sup> -1 octets from Source   |
| RDMAP.4.4-5::a      | mandatory  | Read message size of 0   |
| RDMAP.4.4-5::a::2   |            |  |
| RDMAP.4.4-5::c      | mandatory  | Read message size greater than 0   |
| RDMAP.4.4-5::c::2   |            |  |
| RDMAP.4.4-3         |            | The Data Sink Tagged Offset MAY start at an arbitrary offset.  |
| RDMAP.4.4-3::a      | mandatory  | Data sink TO can point to buffer start   |
| RDMAP.4.4-3::a::2   |            |  |
| RDMAP.4.4-3::b      | mandatory  | Data sink TO can point to offsets in first half of buffer  |
| RDMAP.4.4-3::b::2   |            |  |

| Test Item         | Req. Level | Description  |
|-------------------|------------|--|
| RDMAP.4.4-3::c    | mandatory  | Sink TO points to offsets near the end of buffer   |
| RDMAP.4.4-3::c:2  |            |  |
| RDMAP.4.4-6       |            | Source Tagged Offset MAY start at arbitrary offset   |
| RDMAP.4.4-6::a    | mandatory  | Source TO points to buffer start (relative offset 0)   |
| RDMAP.4.4-6::a:2  |            |  |
| RDMAP.4.4-6::b    | mandatory  | Source TO points to first half of buffer   |
| RDMAP.4.4-6::b:2  |            |  |
| RDMAP.4.4-6::c    | mandatory  | Source TO points to locations near the end of buffer   |
| RDMAP.4.4-6::c:2  |            |  |
| DDP.4.1-2         |            | Proper use of Tagged Buffer bit when 1   |
| DDP.4.1-2::a      | mandatory  | Tagged buffer flag   |
| DDP.4.1-2::a:3    |            |  |
| RDMAP.5.1-5       |            | Tagged Offset MAY start at a non-zero relative offset  |
| RDMAP.5.1-5::a    | mandatory  | Tagged offset can point to buffer start (relative offset 0)  |
| RDMAP.5.1-5::a:2  |            |  |
| RDMAP.5.1-5::b    | mandatory  | Arbitrary Offset: - Non zero relative offsets in the first half of the buffer                            |
| RDMAP.5.1-5::b:2  |            |  |
| RDMAP.5.1-5::c    | mandatory  | Arbitrary Offset: - Relative offsets near the end of the buffer.   |
| RDMAP.5.1-5::c:2  |            |  |
| DDP.4.1-10        |            | DDP version field must be 1 for IETF and 0 for RDMAC devices   |
| DDP.4.1-10::a     | mandatory  | DDP version field must be 1 for IETF and 0 for RDMAC devices   |
| DDP.4.1-10::a:7   |            |  |
| DDP.4.1-2         |            | Proper use of Tagged Buffer bit when 1   |
| DDP.4.1-2::a      | mandatory  | Tagged buffer flag   |
| DDP.4.1-2::a:2    |            |  |
| DDP.4.1-9         |            | DDP control reserved field zero on transmit, ignored on receive.   |
| DDP.4.1-9::a      | mandatory  | Rsvd field of DDP header set to zero   |
| DDP.4.1-9::a:7    |            |  |
| RDMAP.3.1-12      |            | DDP uses STag and Tagged Offset from RDMAP for Tagged messages.  |
| RDMAP.3.1-12::a   | mandatory  | DDP uses the STag and Tagged offset provided in tagged messages  |
| RDMAP.3.1-12::a:2 |            |  |
| RDMAP.3.1-6       |            | DDP must insert the RsvdULP field provided by RDMAP into the associated DDP Message                      |
| RDMAP.3.1-6::a    | mandatory  | DDP must insert the RsvdULP field provided by RDMAP into the associated DDP Message                      |
| RDMAP.3.1-6::a:7  |            |  |
| RDMAP.3.1-7       |            | DDP RsvdULP is 1 octet for tagged and 5 octets untagged messages.  |
| RDMAP.3.1-7::a    | mandatory  | The RsvdULP field 1 octet in tagged messages   |
| RDMAP.3.1-7::a:2  |            |  |
| RDMAP.4-4         |            | First octet of RsvdULP Field used by RDMAP to carry RDMAP Opcode and version.                            |
| RDMAP.4-4::a      | mandatory  | First octet of RsvdULP Field used by RDMAP to carry RDMAP Opcode.  |
| RDMAP.4-4::a:7    |            |  |
| RDMAP.4.1-10      |            | Bits 24-25; RDMA Version field   |
| RDMAP.4.1-10::a   | mandatory  | Version must be 01b for IETF and 00b for RDMAC   |
| RDMAP.4.1-10::a:7 |            |  |
| RDMAP.4.1-6       |            | Reservev bit set to zero by sender, ignored by receiver  |
| RDMAP.4.1-6::a    | mandatory  | Reserved MUST be set to zero by sender   |
| RDMAP.4.1-6::a:7  |            |  |
| RDMAP.4.1-8       |            | Figure 4 defines RDMA Opcodes.   |
| RDMAP.4.1-8::a    | mandatory  | Opcode values defined by figure 4  |
| RDMAP.4.1-8::a:7  |            |  |
| RDMAP.4.2-1       |            | Figure 5 (RDMA message definitions) indicates which RDMA messages use Headers and can carry ULP payloads |
| RDMAP.4.2-1::a    | mandatory  | When RDMA Header not used  |
| RDMAP.4.2-1::a:7  |            |  |
| RDMAP.5.1-1       |            | RDMAP Layer requests that DDP layer mark RDMA Write messages as Tagged                                   |
| RDMAP.5.1-1::a    | mandatory  | RDMA Write must use Tagged buffer model  |
| RDMAP.5.1-1::a:1  |            |  |



| Test Item         | Req. Level | Description   |
|-------------------|------------|---|
| RDMAP.5.1-5       |            | Tagged Offset MAY start at a non-zero relative offset   |
| RDMAP.5.1-5::a    | mandatory  | Tagged offset can point to buffer start (relative offset 0)   |
| RDMAP.5.1-5::a:1  |            |   |
| RDMAP.5.1-5::b    | mandatory  | Arbitrary Offset: - Non zero relative offsets in the first half of the buffer   |
| RDMAP.5.1-5::b:1  |            |   |
| RDMAP.5.1-5::c    | mandatory  | Arbitrary Offset: - Relative offsets near the end of the buffer.  |
| RDMAP.5.1-5::c:1  |            |   |
| DDP.4.1-3         |            | Proper use of tagged buffer bit when 0  |
| DDP.4.1-3::a      | mandatory  | Proper use of tagged buffer field bit in the DDP header when set to 0   |
| DDP.4.1-3::a:6    |            |   |
| DDP.4.1-10        |            | DDP version field must be 1 for IETF and 0 for RDMAC devices  |
| DDP.4.1-10::a     | mandatory  | DDP version field must be 1 for IETF and 0 for RDMAC devices  |
| DDP.4.1-10::a:8   |            |   |
| DDP.4.1-9         |            | DDP control reserved field zero on transmit, ignored on receive.  |
| DDP.4.1-9::a      | mandatory  | Rsvd field of DDP header set to zero  |
| DDP.4.1-9::a:8    |            |   |
| DDP.4.3-11        |            | The MO=0 for first segment of DDP message   |
| DDP.4.3-11::a     | mandatory  | The MO referencing the first octet of message must be 0 - this is untagged  |
| DDP.4.3-11::a:6   |            |   |
| DDP.4.3-8         |            | The initial value for MSN MUST be one.  |
| DDP.4.3-8::a      | mandatory  | initial value generated for MSN should be 1 - this is untagged  |
| DDP.4.3-8::a:6    |            |   |
| RDMAP.3.1-6       |            | DDP must insert the RsvdULP field provided by RDMAP into the associated DDP Message   |
| RDMAP.3.1-6::a    | mandatory  | DDP must insert the RsvdULP field provided by RDMAP into the associated DDP Message   |
| RDMAP.3.1-6::a:8  |            |   |
| RDMAP.3.1-7       |            | DDP RsvdULP is 1 octet for tagged and 5 octets untagged messages.   |
| RDMAP.3.1-7::b    | mandatory  | The RsvdULP field is 5 octets in untagged messages  |
| RDMAP.3.1-7::b:6  |            |   |
| RDMAP.4-4         |            | First octet of RsvdULP Field used by RDMAP to carry RDMAP Opcode and version.   |
| RDMAP.4-4::a      | mandatory  | First octet of RsvdULP Field used by RDMAP to carry RDMAP Opcode.   |
| RDMAP.4-4::a:8    |            |   |
| RDMAP.4.1-10      |            | Bits 24-25; RDMA Version field  |
| RDMAP.4.1-10::a   | mandatory  | Version must be 01b for IETF and 00b for RDMAC  |
| RDMAP.4.1-10::a:8 |            |   |
| RDMAP.4.1-12      |            | Invalidate STag field set to zero on transmit and ignored by receiver in all but the 2 RDMA Send with invalidate STag type operations |
| RDMAP.4.1-12::a   | mandatory  | Set STag to zero on RDMA send/solicited, read, and terminate  |
| RDMAP.4.1-12::a:4 |            |   |
| RDMAP.4.1-6       |            | Reserve bit set to zero by sender, ignored by receiver  |
| RDMAP.4.1-6::a    | mandatory  | Reserved MUST be set to zero by sender  |
| RDMAP.4.1-6::a:8  |            |   |
| RDMAP.4.1-8       |            | Figure 4 defines RDMA Opcodes.  |
| RDMAP.4.1-8::a    | mandatory  | Opcode values defined by figure 4   |
| RDMAP.4.1-8::a:8  |            |   |
| RDMAP.5.4-1       |            | DDP layer marks RDMA Terminate message as untagged.   |
| RDMAP.5.4-1::a    | mandatory  | RDMA Terminate must use untagged buffer   |
| RDMAP.5.4-1::a:1  |            |   |
| RDMAP.5.4-2       |            | DDP layer set QN field to 2 for RDMA Terminate messages   |
| RDMAP.5.4-2::a    | mandatory  | RDMA Terminate must use QN 2  |
| RDMAP.5.4-2::a:1  |            |   |
| MPA.7.1.1-1       |            | Key field authenticates that the sender is MPA.   |
| MPA.7.1.1-1::a    | mandatory  | Request frame key value   |
| MPA.7.1.1-1::a:1  |            |   |
| MPA.7.1.1-10      |            | In MPA Request frame R-bit set to zero, ignored on reception.   |
| MPA.7.1.1-10::a   | mandatory  | In MPA Request frame R-bit set to zero, ignored on reception  |
| MPA.7.1.1-10::a:1 |            |   |

| Test Item          | Req. Level | Description   |
|--------------------|------------|---|
| MPA.7.1.1-12       |            | MPA startup frame reserved field zero when sending, ignored on reception  |
| MPA.7.1.1-12::a    | mandatory  | MPA startup frame reserved bits must be set to zero   |
| MPA.7.1.1-12::a::1 |            |   |
| MPA.7.1.1-13       |            | For this version of the specification senders MUST set this field to one  |
| MPA.7.1.1-13::a    | mandatory  | Revision field zero   |
| MPA.7.1.1-13::a::1 |            |   |
| MPA.7.1.1-15       |            | PD length contains size of Private Data   |
| MPA.7.1.1-15::a    | mandatory  | PD_length is size of private data   |
| MPA.7.1.1-15::a::1 |            |   |
| MPA.7.1.1-17       |            | PD_length of 0 means no private data. Maximum PD_length is 512 Octets.  |
| MPA.7.1.1-17::a    | mandatory  | PD_lengths range from 0 to 512  |
| MPA.7.1.1-17::a::1 |            |   |
| MPA.7.1.1-18       |            | This field may contain any value defined by ULPs or may not be present. ULPs define how to set and validate this field. |
| MPA.7.1.1-18::a    | mandatory  | Any value is allowed in Private Data  |
| MPA.7.1.1-18::a::1 |            |   |
| MPA.7.1.1-14       |            | MPA receivers check revision field for 1. If not, report local error and close connection, otherwise report to ULP.     |
| MPA.7.1.1-14::a    | mandatory  | Revision field checked by receiver  |
| MPA.7.1.1-14::a::1 |            |   |
| MPA.7.1.2-11       |            | If received "Key" does not match the expected value, connection is closed and an error returned to the ULP.             |
| MPA.7.1.2-11::a    | mandatory  | Close connection on received MPA Key error  |
| MPA.7.1.2-11::a::1 |            |   |
| MPA.7.1.1-12       |            | MPA startup frame reserved field zero when sending, ignored on reception  |
| MPA.7.1.1-12::b    | mandatory  | MPA startup frame reserved field ignored  |
| MPA.7.1.1-12::b::1 |            |   |
| MPA.7.1.2-15       |            | MPA uses difference between MPA Request and Reply frames to check inconsistencies                                       |
| MPA.7.1.2-15::a    | mandatory  | Detection of MPA startup problems   |
| MPA.7.1.2-15::a::1 |            |   |
| MPA.7.1.2-1        |            | When MPA is started in the "Initiator" mode, the MPA implementation MUST send a valid "MPA Request Frame".              |
| MPA.7.1.2-1::a     | mandatory  | MPA Request frame must be valid   |
| MPA.7.1.2-1::a::1  |            |   |
| MPA.7.1.2-6        |            | MPA initiators must process MPA Reply frame prior to sending FPDU   |
| MPA.7.1.2-6::a     | mandatory  | MPA initiators must process MPA Reply frame prior to sending FPDU   |
| MPA.7.1.2-6::a::1  |            |   |
| MPA.7.1.2-6        |            | MPA initiators must process MPA Reply frame prior to sending FPDU   |
| MPA.7.1.2-6::b     | mandatory  | MPA initiators must not process FPDUs before Reply  |
| MPA.7.1.2-6::b::1  |            |   |
| MPA.7.1.2-17       |            | MPA validates PD_Length field.  |
| MPA.7.1.2-17::a    | mandatory  | MPA MUST validate PD_Length field.  |
| MPA.7.1.2-17::a::1 |            |   |
| MPA.7.1.2-19       |            | "Private Data" length cant exceed the PD_Length, or buffer; otherwise startup frame format error.                       |
| MPA.7.1.2-19::a    | mandatory  | Close connection if amount of "Private Data" exceeds PD_Length  |
| MPA.7.1.2-19::a::1 |            |   |
| MPA.7.1.2-7        |            | If "MPA Reply Frame" is improperly formatted, close the TCP connection and exit MPA.                                    |
| MPA.7.1.2-7::a     | mandatory  | If the "MPA Reply Frame" is improperly formatted, close the TCP connection and exit MPA.                                |
| MPA.7.1.2-7::a::1  |            |   |
| MPA.7.1.2-20       |            | MPA SHOULD implement timeout while waiting for startup frames   |
| MPA.7.1.2-20::a    | suggested  | MPA SHOULD implement timeout while waiting for startup frames   |
| MPA.7.1.2-20::a::1 |            |   |
| MPA.7.1.2-8        |            | If "Private Data" is not acceptable, or the "Rejected Connection" bit = '1', exit MPA, leaving TCP connection open.     |
| MPA.7.1.2-8::a     | mandatory  | If "Private Data" is not acceptable, or the "Rejected Connection" bit = '1', exit MPA, leaving TCP connection open.     |
| MPA.7.1.2-8::a::1  |            |   |
| MPA.7.1.1-12       |            | MPA startup frame reserved field zero when sending, ignored on reception  |

| Test Item         | Req. Level | Description   |
|-------------------|------------|---|
| MPA.7.1.1-12::a   | mandatory  | MPA startup frame reserved bits must be set to zero   |
| MPA.7.1.1-12::a:2 |            |   |
| MPA.7.1.1-13      |            | For this version of the specification senders MUST set this field to one  |
| MPA.7.1.1-13::a   | mandatory  | Revision field zero   |
| MPA.7.1.1-13::a:2 |            |   |
| MPA.7.1.1-15      |            | PD length contains size of Private Data   |
| MPA.7.1.1-15::a   | mandatory  | PD_length is size of private data   |
| MPA.7.1.1-15::a:2 |            |   |
| MPA.7.1.1-3       |            | Responder frame key value   |
| MPA.7.1.1-3::a    | mandatory  | MPA Response frame key value  |
| MPA.7.1.1-3::a:1  |            |   |
| MPA.7.1.1-5       |            | When received M bit = '0', markers MUST NOT be added by sender.   |
| MPA.7.1.1-5::a    | mandatory  | No markers if received startup frame has M bit 0  |
| MPA.7.1.1-5::a:2  |            |   |
| MPA.7.1.2-5       |            | If "Private Data" is acceptable, "Rejected Connection" is cleared and all is well                                       |
| MPA.7.1.2-5::a    | suggested  | If "Private Data" is acceptable, "Rejected Connection" is cleared and all is well                                       |
| MPA.7.1.2-5::a:1  |            |   |
| MPA.7.1.1-17      |            | PD_length of 0 means no private data. Maximum PD_length is 512 Octets.  |
| MPA.7.1.1-17::a   | mandatory  | PD_lengths range from 0 to 512  |
| MPA.7.1.1-17::a:2 |            |   |
| MPA.7.1.1-18      |            | This field may contain any value defined by ULPs or may not be present. ULPs define how to set and validate this field. |
| MPA.7.1.1-18::a   | mandatory  | Any value is allowed in Private Data  |
| MPA.7.1.1-18::a:2 |            |   |
| MPA.7.1.1-14      |            | MPA receivers check revision field for 1. If not, report local error and close connection, otherwise report to ULP.     |
| MPA.7.1.1-14::a   | mandatory  | Revision field checked by receiver  |
| MPA.7.1.1-14::a:2 |            |   |
| MPA.7.1.2-11      |            | If received "Key" does not match the expected value, connection is closed and an error returned to the ULP.             |
| MPA.7.1.2-11::a   | mandatory  | Close connection on received MPA Key error  |
| MPA.7.1.2-11::a:2 |            |   |
| MPA.7.1.2-2       |            | MPA responder must wait for FPDU  |
| MPA.7.1.2-2::a    | mandatory  | Process prior to sending  |
| MPA.7.1.2-2::a:1  |            |   |
| MPA.7.1.2-2       |            | MPA responder must wait for FPDU  |
| MPA.7.1.2-2::b    | mandatory  | DUT as MPA Responder not to issue FPDU prior to MPA Request   |
| MPA.7.1.2-2::b:1  |            |   |
| MPA.7.1.2-15      |            | MPA uses difference between MPA Request and Reply frames to check inconsistencies                                       |
| MPA.7.1.2-15::a   | mandatory  | Detection of MPA startup problems   |
| MPA.7.1.2-15::a:2 |            |   |
| MPA.7.1.1-12      |            | MPA startup frame reserved field zero when sending, ignored on reception  |
| MPA.7.1.1-12::b   | mandatory  | MPA startup frame reserved field ignored  |
| MPA.7.1.1-12::b:2 |            |   |
| MPA.7.1.2-17      |            | MPA validates PD_Length field.  |
| MPA.7.1.2-17::a   | mandatory  | MPA MUST validate PD_Length field.  |
| MPA.7.1.2-17::a:2 |            |   |
| MPA.7.1.2-19      |            | "Private Data" length cant exceed the PD_Length, or buffer; otherwise startup frame format error.                       |
| MPA.7.1.2-19::a   | mandatory  | Close connection if amount of "Private Data" exceeds PD_Length  |
| MPA.7.1.2-19::a:2 |            |   |
| MPA.7.1.2-20      |            | MPA SHOULD implement timeout while waiting for startup frames   |
| MPA.7.1.2-20::a   | suggested  | MPA SHOULD implement timeout while waiting for startup frames   |
| MPA.7.1.2-20::a:2 |            |   |
| MPA.7.1.1-11      |            | In "MPA Reply Frame", R='0' indicates acceptance, R='1' rejection of "Private Data".                                    |
| MPA.7.1.1-11::a   | mandatory  | In "MPA Reply Frame", R='1' indicates rejection of "Private Data".  |
| MPA.7.1.1-11::a:1 |            |   |
| MPA.7.1.2-4       |            | If "Private Data" not acceptable, set "Rejected Connection" bit to '1', exit MPA, and leave the TCP open.               |

| Test Item          | Req. Level | Description  |
|--------------------|------------|--|
| MPA.7.1.2-4::a     | suggested  | "MPA Request Frame" "Private Data" not acceptable  |
| MPA.7.1.2-4::a::1  |            |  |
| MPA.7.1.1-10       |            | In MPA Request frame R-bit set to zero, ignored on reception.                              |
| MPA.7.1.1-10::a    | mandatory  | In MPA Request frame R-bit set to zero, ignored on reception                               |
| MPA.7.1.1-10::a::2 |            |  |
| MPA.3-9            |            | MPA MUST provide the protocol version negotiated with its peer to DDP.                     |
| MPA.3-9::a         | mandatory  | MPA provides negotiated version to DDP   |
| MPA.3-9::a::1      |            |  |
| DDP.4.3-7          |            | Message Sequence number increases by one for every message on a given queue                |
| DDP.4.3-7::b       | mandatory  | The responder should expect incrementing value of MSN - this is untagged                   |
| DDP.4.3-7::b::1    |            |  |
| DDP.4.3-7::b::2    |            |  |
| DDP.4.1-4          |            | L=1 means last DDP segment of message  |
| DDP.4.1-4::a       | mandatory  | Use of last bit  |
| DDP.4.1-4::a::1    |            |  |
| DDP.4.3-7          |            | Message Sequence number increases by one for every message on a given queue                |
| DDP.4.3-7::a       | mandatory  | DUT increments of MSN for every message on a queue   |
| DDP.4.3-7::a::1    |            |  |
| DDP.4.3-7::a::2    |            |  |
| MPA.4.2-1          |            | Marker is 32 bits, 16 MSB are 0, 16 LSB are ULPDU length pointer                           |
| MPA.4.2-1::a       | mandatory  | Basic marker generation. Checking length of Marker   |
| MPA.4.2-1::a::1    |            |  |
| MPA.4.2-1::a::2    |            |  |
| MPA.4.2-1::a::3    |            |  |
| MPA.4.2-1::a::4    |            |  |
| MPA.4.2-2          |            | Reserved field zero on transmit, ignored on receive (except for CRC calculation)           |
| MPA.4.2-2::a       | mandatory  | Reserved portion of marker set to zero by transmitter                                      |
| MPA.4.2-2::a::1    |            |  |
| MPA.4.2-2::a::2    |            |  |
| MPA.4.2-3          |            | ULPDU length pointer of marker is bytes from marker to start of ULPDU length field in FPDU |
| MPA.4.2-3::a       | mandatory  | Basic marker generation. Checking FPDUPTR field is correct                                 |
| MPA.4.2-3::a::1    |            |  |
| MPA.4.3-1          |            | MPA senders must generate markers when requested   |
| MPA.4.3-1::a       | mandatory  | DUT generates markers when requested   |
| MPA.4.3-1::a::2    |            |  |
| MPA.7.1.1-6        |            | When received M-bit '1' markers be used  |
| MPA.7.1.1-6::a     | mandatory  | M bit 1 in received startup frame  |
| MPA.7.1.1-6::a::1  |            |  |
| MPA.7.1.2-13       |            | If markers are enabled, first octets sent are special marker 0x00000000                    |
| MPA.7.1.2-13::a    | mandatory  | First value in MPA enabled stream with markers is special marker                           |
| MPA.7.1.2-13::a::1 |            |  |
| MPA.7.1.1-5        |            | When received M bit = '0', markers MUST NOT be added by sender.                            |
| MPA.7.1.1-5::a     | mandatory  | No markers if received startup frame has M bit 0   |
| MPA.7.1.1-5::a::1  |            |  |
| MPA.7.1.2-14       |            | If markers are not enabled, first octets sent are ULPDU Length field                       |
| MPA.7.1.2-14::a    | mandatory  | First value in MPA enabled stream without markers  |
| MPA.7.1.2-14::a::1 |            |  |
| MPA.4.3-1          |            | MPA senders must generate markers when requested   |
| MPA.4.3-1::a       | mandatory  | DUT generates markers when requested   |
| MPA.4.3-1::a::1    |            |  |
| MPA.7.1.1-5        |            | When received M bit = '0', markers MUST NOT be added by sender.                            |
| MPA.7.1.1-5::a     | mandatory  | No markers if received startup frame has M bit 0   |
| MPA.7.1.1-5::a::3  |            |  |
| MPA.4.2-1          |            | Marker is 32 bits, 16 MSB are 0, 16 LSB are ULPDU length pointer                           |
| MPA.4.2-1::b       | mandatory  | DUT recognizes markers and removes them from the data stream.                              |
| MPA.4.2-1::b::1    |            |  |

| Test Item         | Req. Level | Description  |
|-------------------|------------|--|
| MPA.7.1.1-8       |            | C-bit '1' in either/both Request and Reply Frame CRCs both generated and checked by both endpoints   |
| MPA.7.1.1-8::a    | mandatory  | Any C bit set to one must cause sender to generate CRC   |
| MPA.7.1.1-8::a::1 |            |  |
| MPA.7.1.1-8       |            | C-bit '1' in either/both Request and Reply Frame CRCs both generated and checked by both endpoints   |
| MPA.7.1.1-8::a    | mandatory  | Any C bit set to one must cause sender to generate CRC   |
| MPA.7.1.1-8::a::2 |            |  |
| MPA.4.1-3         |            | The MPA FPDU CRC field is the last 32 bits of the FPDU.  |
| MPA.4.1-3::a      | mandatory  | Proper generation of CRCs  |
| MPA.4.1-3::a::1   |            |  |
| MPA.4.4-3         |            | Any received startup frame with CRC set results in connection using CRCs                             |
| MPA.4.4-3::a      | mandatory  | If CRCs requested, DUT Generates CRCs for duration of connection                                     |
| MPA.4.4-3::a::1   |            |  |
| MPA.7.1.1-8       |            | C-bit '1' in either/both Request and Reply Frame CRCs both generated and checked by both endpoints   |
| MPA.7.1.1-8::a    | mandatory  | Any C bit set to one must cause sender to generate CRC   |
| MPA.7.1.1-8::a::3 |            |  |
| MPA.7.1.1-8       |            | C-bit '1' in either/both Request and Reply Frame CRCs both generated and checked by both endpoints   |
| MPA.7.1.1-8::a    | mandatory  | Any C bit set to one must cause sender to generate CRC   |
| MPA.7.1.1-8::a::4 |            |  |
| MPA.7.1.1-8       |            | C-bit '1' in either/both Request and Reply Frame CRCs both generated and checked by both endpoints   |
| MPA.7.1.1-8::a    | mandatory  | Any C bit set to one must cause sender to generate CRC   |
| MPA.7.1.1-8::a::5 |            |  |
| MPA.7.1.1-8       |            | C-bit '1' in either/both Request and Reply Frame CRCs both generated and checked by both endpoints   |
| MPA.7.1.1-8::a    | mandatory  | Any C bit set to one must cause sender to generate CRC   |
| MPA.7.1.1-8::a::6 |            |  |
| MPA.7.1.1-8       |            | C-bit '1' in either/both Request and Reply Frame CRCs both generated and checked by both endpoints   |
| MPA.7.1.1-8::b    | mandatory  | Any C bit set to one must cause receiver to check CRC  |
| MPA.7.1.1-8::b::1 |            |  |
| MPA.7.1.1-8       |            | C-bit '1' in either/both Request and Reply Frame CRCs both generated and checked by both endpoints   |
| MPA.7.1.1-8::b    | mandatory  | Any C bit set to one must cause receiver to check CRC  |
| MPA.7.1.1-8::b::2 |            |  |
| MPA.4.1-3         |            | The MPA FPDU CRC field is the last 32 bits of the FPDU.  |
| MPA.4.1-3::b      | mandatory  | DUT processes received CRCs correctly  |
| MPA.4.1-3::b::1   |            |  |
| MPA.4.4-3         |            | Any received startup frame with CRC set results in connection using CRCs                             |
| MPA.4.4-3::b      | mandatory  | If CRCs requested, DUT checks CRCs for duration of connection  |
| MPA.4.4-3::b::1   |            |  |
| MPA.7.1.1-8       |            | C-bit '1' in either/both Request and Reply Frame CRCs both generated and checked by both endpoints   |
| MPA.7.1.1-8::b    | mandatory  | Any C bit set to one must cause receiver to check CRC  |
| MPA.7.1.1-8::b::3 |            |  |
| MPA.7.1.1-8       |            | C-bit '1' in either/both Request and Reply Frame CRCs both generated and checked by both endpoints   |
| MPA.7.1.1-8::b    | mandatory  | Any C bit set to one must cause receiver to check CRC  |
| MPA.7.1.1-8::b::4 |            |  |
| MPA.7.1.1-8       |            | C-bit '1' in either/both Request and Reply Frame CRCs both generated and checked by both endpoints   |
| MPA.7.1.1-8::b    | mandatory  | Any C bit set to one must cause receiver to check CRC  |
| MPA.7.1.1-8::b::5 |            |  |
| MPA.7.1.1-8       |            | C-bit '1' in either/both Request and Reply Frame CRCs both generated and checked by both endpoints   |
| MPA.7.1.1-8::b    | mandatory  | Any C bit set to one must cause receiver to check CRC  |
| MPA.7.1.1-8::b::6 |            |  |
| MPA.7.1.1-7       |            | C-bit '0' in both Request and Reply Frame CRCs ignored and need not be generated by either endpoint. |

| Test Item        | Req. Level | Description  |
|------------------|------------|--|
| MPA.7.1.1-7::b   | mandatory  | C bit zero in both Request and Reply frames. CRC not checked.  |
| MPA.7.1.1-7::b:1 |            |  |
| MPA.7.1.1-9      |            | Ignore CRC on receive when negotiated off  |
| MPA.7.1.1-9::a   | mandatory  | CRCs are ignored when negotiated off   |
| MPA.7.1.1-9::a:1 |            |  |
| MPA.7.1.1-7      |            | C-bit '0' in both Request and Reply Frame CRCs ignored and need not be generated by either endpoint.           |
| MPA.7.1.1-7::b   | mandatory  | C bit zero in both Request and Reply frames. CRC not checked.  |
| MPA.7.1.1-7::b:2 |            |  |
| MPA.4.3-3        |            | FPDUPTR is the number of octets from 1st octet of ULDPDU length field to 1st octet of the marker               |
| MPA.4.3-3::a     | mandatory  | FPDUPTR is 16 bit back pointer if non zero - Transmitter   |
| MPA.4.3-3::a:1   |            |  |
| MPA.4.3-3::a:2   |            |  |
| MPA.4.3-3::a:3   |            |  |
| MPA.4.3-3::a:4   |            |  |
| MPA.4.3-3::a:5   |            |  |
| MPA.4.3-6        |            | FPDUPTR's last two bits must be assumed zero by receiver   |
| MPA.4.3-6::a     | mandatory  | FPDUPTR last two bits must be set to zero  |
| MPA.4.3-6::a:1   |            |  |
| MPA.4.3-8        |            | Multiple markers in a FPDU must point to same place  |
| MPA.4.3-8::a     | mandatory  | Multiple markers in FPDU   |
| MPA.4.3-8::a:1   |            |  |
| MPA.4.3-9        |            | FPDUPTRs always point to ULDPDU length field in the FPDUs in which they are contained, even when FPDU is small |
| MPA.4.3-9::a     | mandatory  | Generated marker must point to current FPDU, multiple FPDUs between markers                                    |
| MPA.4.3-9::a:1   |            |  |
| MPA.4.3-9::b     | mandatory  | Generated Marker value zero when between FPDUs, multiple FPDUs between markers                                 |
| MPA.4.3-9::b:1   |            |  |
| MPA.4.4-7        |            | CRC calculation with markers at start of FPDU  |
| MPA.4.4-7::a     | mandatory  | CRC for marker at start of FPDU - Transmitter  |
| MPA.4.4-7::a:1   |            |  |
| MPA.4.3-3        |            | FPDUPTR is the number of octets from 1st octet of ULDPDU length field to 1st octet of the marker               |
| MPA.4.3-3::b     | mandatory  | DUT utilizes received markers: FPDUPTR is 16 bit back pointer if non zero - otherwise it precedes FPDU         |
| MPA.4.3-3::b:1   |            |  |
| MPA.4.3-3::b:2   |            |  |
| MPA.4.3-3::b:3   |            |  |
| MPA.4.3-3::b:4   |            |  |
| MPA.4.3-3::b:5   |            |  |
| MPA.4.3-3::b:6   |            |  |
| MPA.4.3-3::b:7   |            |  |
| MPA.4.3-3::b:8   |            |  |
| MPA.4.3-6        |            | FPDUPTR's last two bits must be assumed zero by receiver   |
| MPA.4.3-6::b     | mandatory  | FPDUPTR last two bits must be ignored  |
| MPA.4.3-6::b:1   |            |  |
| MPA.4.4-7        |            | CRC calculation with markers at start of FPDU  |
| MPA.4.4-7::b     | mandatory  | CRC computed correctly when FPDU falls between FPDUs - Receiver  |
| MPA.4.4-7::b:1   |            |  |
| MPA.4.3-9        |            | FPDUPTRs always point to ULDPDU length field in the FPDUs in which they are contained, even when FPDU is small |
| MPA.4.3-9::c     | mandatory  | Interprets non-zero valued marker correctly regardless of the number of FPDUs between markers                  |
| MPA.4.3-9::c:1   |            |  |
| MPA.4.3-9::d     | mandatory  | Interprets zero valued marker correctly regardless of the number of FPDUs between markers                      |
| MPA.4.3-9::d:1   |            |  |
| MPA.6-3          |            | Recoveromg alignment by using markers  |
| MPA.6-3::a       | suggested  | Use of ULDPDU length after location of marker within an FPDU   |



| Test Item       | Req. Level | Description   |
|-----------------|------------|---|
| MPA.6-3::a::1   |            |   |
| MPA.6-3::b      | suggested  | Use of ULDPDU length after location of marker between FPDUs                           |
| MPA.6-3::b::1   |            |   |
| MPA.5.1-1       |            | MPA transmitters should use whatever available in TCP to align FPDUs to TCP segments. |
| MPA.5.1-1::a    | suggested  | MPA should align start of FPDU with start of TCP segment                              |
| MPA.5.1-1::a::1 |            |   |
| MPA.5.1-1::a::2 |            |   |
| MPA.5.1-1::a::3 |            |   |
| MPA.5.1-1::a::4 |            |   |
| MPA.5.1-1::a::5 |            |   |
| MPA.5.1-1::a::6 |            |   |
| MPA.5.1-1::a::7 |            |   |
| MPA.5.1-2       |            | Multiple FPDUs MAY be packed into a single TCP segment.                               |
| MPA.5.1-2::a    | mandatory  | An MPA receiver MUST be able to handle multiple FPDUs in a TCP segment                |
| MPA.5.1-2::a::1 |            |   |
| MPA.5.1-2::a::2 |            |   |
| MPA.5.1-2::a::3 |            |   |
| MPA.5.1-2::a::4 |            |   |
| MPA.5.1-2::a::5 |            |   |
| MPA.4.4-6       |            | Fields FPDU CRC computation covers  |
| MPA.4.4-6::a    | mandatory  | DUT generates CRC when marker after PAD   |
| MPA.4.4-6::a::1 |            |   |
| MPA.4.4-6       |            | Fields FPDU CRC computation covers  |
| MPA.4.4-6::b    | mandatory  | DUT handles CRC check when marker comes after PAD                                     |
| MPA.4.4-6::b::1 |            |   |
| MPA.4.1-2       |            | PAD makes FPDUs an integral multiple of four.   |
| MPA.4.1-2::a    | mandatory  | Send proper FPDU Pad field - Transmitter  |
| MPA.4.1-2::a::1 |            |   |
| MPA.4.1-2::a::2 |            |   |
| MPA.4.1-2::a::3 |            |   |
| MPA.4.1-2::a::4 |            |   |
| MPA.4.1-2       |            | PAD makes FPDUs an integral multiple of four.   |
| MPA.4.1-2::b    | mandatory  | DUT handles PADS of all possible sizes  |
| MPA.4.1-2::b::1 |            |   |
| MPA.4.1-2::b::2 |            |   |
| MPA.4.1-2::b::3 |            |   |
| MPA.4.1-2::b::4 |            |   |
| MPA.4.1-2::b::5 |            |   |
| MPA.4.1-1       |            | ULPDU_Length is the number of octets in ULDPDU.                                       |
| MPA.4.1-1::a    | mandatory  | DUT generates FPDUs with correct ULPDU_Length for different cases                     |
| MPA.4.1-1::a::1 |            |   |
| MPA.4.1-1::a::2 |            |   |
| MPA.4.1-1::a::3 |            |   |
| MPA.4.1-1::a::4 |            |   |
| MPA.4.1-1       |            | ULPDU_Length is the number of octets in ULDPDU.                                       |
| MPA.4.1-1::b    | mandatory  | DUT handles FPDUs with ULDPDU lengths in different cases                              |
| MPA.4.1-1::b::1 |            |   |
| MPA.4.1-1::b::2 |            |   |
| MPA.4.1-1::b::3 |            |   |
| MPA.4.1-1::b::4 |            |   |
| MPA.A.3-1       |            | The TCP layer MUST perform all TCP checks before it can be passed to the MPA.         |
| MPA.A.3-1::a    | mandatory  | TCP must check for LLC CRC errors   |
| MPA.A.3-1::a::1 |            |   |
| MPA.A.3-1::b    | mandatory  | TCP must check for IP checksum errors   |
| MPA.A.3-1::b::1 |            |   |
| MPA.A.3-1::c    | mandatory  | TCP checks for TCP checksum error   |

| Test Item        | Req. Level | Description  |
|------------------|------------|--|
| MPA.A.3-1::c::1  |            |  |
| MPA.A.3-1::d     | mandatory  | TCP segment must be in same EPOCH  |
| MPA.A.3-1::d::1  |            |  |
| MPA.A.3-2        |            | The segment MUST NOT be passed to MPA more than once unless explicitly requested [(see Section 7)?].                         |
| MPA.A.3-2::a     | mandatory  | TCP: Must not pass duplicate to MPA  |
| MPA.A.3-2::a::1  |            |  |
| MPA.6-4          |            | ULPDU Length field used to determine entire FPDU is present before forwarding to DDP.  |
| MPA.6-4::a       | mandatory  | No data is placed before the entire FPDU has arrived.  |
| MPA.6-4::a::1    |            |  |
| MPA.6-4::b       | mandatory  | Data is placed when entire FPDU has arrived.   |
| MPA.6-4::b::1    |            |  |
| MPA.4.1-4        |            | When CRCs are not enabled, the field is present, contains any value, and is ignored  |
| MPA.4.1-4::a     | mandatory  | CRC field present when CRCs not being used   |
| MPA.4.1-4::a::1  |            |  |
| MPA.4.1-4::a::2  |            |  |
| DDP.5.3-5        |            | DDP Message delivered to the ULP at most once  |
| DDP.5.3-5::a     | mandatory  | DDP Message delivered to the ULP at most once  |
| DDP.5.3-5::a::1  |            |  |
| DDP.5.3-6        |            | DDP Messages delivered in the order sent   |
| DDP.5.3-6::a     | mandatory  | In order delivery when messages are completed error free   |
| DDP.5.3-6::a::1  |            |  |
| DDP.5.3-6::a::2  |            |  |
| DDP.5.3-6::b     | mandatory  | No delivery until prior Messages are delivered   |
| DDP.5.3-6::b::1  |            |  |
| DDP.5.3-6::b::2  |            |  |
| DDP.5.4-1        |            | Message not delivered until a set of conditions is met   |
| DDP.5.4-1::a     | mandatory  | No delivery until all segments received  |
| DDP.5.4-1::a::1  |            |  |
| DDP.5.4-1::a::2  |            |  |
| DDP.5.4-1::a::3  |            |  |
| DDP.4.1-8        |            | If L=1, payload is delivered to ULP after: Placement of all segments of this message and delivery of each prior DDP message. |
| DDP.4.1-8::a     | mandatory  | Conditions of placement and delivery   |
| DDP.4.1-8::a::1  |            |  |
| DDP.4.1-8::a::3  |            |  |
| DDP.4.1-8::a::5  |            |  |
| DDP.4.1-8::a::6  |            |  |
| DDP.4.1-8::a::8  |            |  |
| DDP.3-1          |            | LLPs MUST expose MULPDU and MULPDU changes so DDP can align segmentation   |
| DDP.3-1::a       | mandatory  | LLPs expose MULPDU and MULPDU changes  |
| DDP.3-1::a::1    |            |  |
| DDP.3-1::a::2    |            |  |
| DDP.5.2-1        |            | DDP segments must be no larger than MULPDU   |
| DDP.5.2-1::a     | mandatory  | DDP segments must be no larger than the MULPDU   |
| DDP.5.2-1::a::1  |            |  |
| DDP.4.3-5        |            | The Queue Number must be same in all DDP segments  |
| DDP.4.3-5::b     | mandatory  | The value of QN used in header same as given to DDP  |
| DDP.4.3-5::b::1  |            |  |
| DDP.4.1-11       |            | DDP version same on all DDP segments in DDP stream.  |
| DDP.4.1-11::a    | mandatory  | DDP version same on all DDP segments in DDP stream.  |
| DDP.4.1-11::a::1 |            |  |
| DDP.4.1-11::a::2 |            |  |
| DDP.4.1-7        |            | Untagged DDP segment with L=1 must have highest MO   |
| DDP.4.1-7::a     | mandatory  | Segment with L bit set must carry highest MO   |
| DDP.4.1-7::a::1  |            |  |
| DDP.4.2-9        |            | Each DDP Segment of a DDP Message must contain same RsvdULP field  |
| DDP.4.2-9::a     | mandatory  | DDP RsvdULP field same in all DDP segments   |

| Test Item           | Req. Level | Description   |
|---------------------|------------|---|
| DDP.4.2-9::a:1      |            |   |
| DDP.4.2-9::a:2      |            |   |
| DDP.4.3-10          |            | Each DDP segment of a DDP message MUST contain same MSN   |
| DDP.4.3-10::a       | mandatory  | All segments of DDP message must have same value of MSN   |
| DDP.4.3-10::a:1     |            |   |
| DDP.4.3-5           |            | The Queue Number must be same in all DDP segments   |
| DDP.4.3-5::a        | mandatory  | The value of QN same on all segments of DDP message   |
| DDP.4.3-5::a:1      |            |   |
| DDP.4.4-2           |            | Each DDP Segment may also contain ULP Payload   |
| DDP.4.4-2::a        | mandatory  | DDP segment allowed to contain a ULP payload  |
| DDP.4.4-2::a:1      |            |   |
| DDP.4.4-2::a:2      |            |   |
| DDP.5.3-3           |            | DDP may place out-of-order segments   |
| DDP.5.3-3::a        | optional   | The receiver may place segment out of order   |
| DDP.5.3-3::a:1      |            |   |
| DDP.5.3-3::a:2      |            |   |
| DDP.4.3-4           |            | Each DDP Segment within a specific DDP Message MUST contain the same value for the RsvdULP field.             |
| DDP.4.3-4::a        | mandatory  | The value of RsvdULP must be same in all segments of DDP message  |
| DDP.4.3-4::a:1      |            |   |
| DDP.4.3-4::a:2      |            |   |
| DDP.5.2-7           |            | TO must be offset to first octet of ULP message payload plus segment offset                                   |
| DDP.5.2-7::a        | mandatory  | TO must be offset to first octet of ULP message payload plus segment offset                                   |
| DDP.5.2-7::a:1      |            |   |
| DDP.5.2-10          |            | The STag and TO fields ignored for a zero-length Tagged message.  |
| DDP.5.2-10::a       | mandatory  | Zero length DDP segment receiver ignores STag and TO  |
| DDP.5.2-10::a:1     |            |   |
| DDP.5.2-10::a:2     |            |   |
| DDP.5.2-8           |            | 0-length DDP Message is allowed and consumes one DDP Segment.   |
| DDP.5.2-8::a        | mandatory  | Zero length DDP segment consumes one DDP segment  |
| DDP.5.2-8::a:1      |            |   |
| DDP.5.2-8::a:2      |            |   |
| DDP.5.2-9           |            | Zero length DDP segment only requires valid Control and RsvdULP   |
| DDP.5.2-9::a        | mandatory  | Zero length DDP segment only requires valid Control and RsvdULP   |
| DDP.5.2-9::a:1      |            |   |
| DDP.5.2-9::a:2      |            |   |
| RDMAP.5.2.1-11      |            | Zero length RDMA Read requests source STag and tagged offsets not validated at remote peer                    |
| RDMAP.5.2.1-11::a   | mandatory  | Zero length read with invalid STag and offset   |
| RDMAP.5.2.1-11::a:1 |            |   |
| RDMAP.5.2.1-12      |            | MUST respond with a zero length RDMA Read Response Message.   |
| RDMAP.5.2.1-12::a   | mandatory  | Responds to 0-length RDMA Read request with 0-length RDMA read response                                       |
| RDMAP.5.2.1-12::a:1 |            |   |
| DDP.5.3-4           |            | DDP Segment may be placed more than once  |
| DDP.5.3-4::a        | optional   | May place DDP segment more than once  |
| DDP.5.3-4::a:1      |            |   |
| DDP.5.3-4::a:2      |            |   |
| RDMAP.4.2-1         |            | Figure 5 (RDMA message definitions) indicates which RDMA messages use Headers and can carry ULP payloads      |
| RDMAP.4.2-1::c      | mandatory  | Terminate Header used on RDMA Terminate message   |
| RDMAP.4.2-1::c:1    |            |   |
| RDMAP.4.8-5         |            | If terminate occurs before 1st RDMA Read Request byte is processed, original RDMA Read Request Header is sent |
| RDMAP.4.8-5::a      | mandatory  | RDMA Header sent back if Terminate occurs before first RDMA Read Request byte                                 |
| RDMAP.4.8-5::a:1    |            |   |
| DDP.4.1-9           |            | DDP control reserved field zero on transmit, ignored on receive.  |
| DDP.4.1-9::b        | mandatory  | Ignore rsvd field in DDP header   |
| DDP.4.1-9::b:1      |            |   |

| Test Item           | Req. Level | Description   |
|---------------------|------------|---|
| RDMAP.4.1-12        |            | Invalidate STag field set to zero on transmit and ignored by receiver in all but the 2 RDMA Send with invalidate STag type operations |
| RDMAP.4.1-12::b     | mandatory  | Ignore STAG on Send/solicited, RDMA Read and Terminated   |
| RDMAP.4.1-12::b::1  |            |   |
| RDMAP.4.1-6         |            | Reservev bit set to zero by sender, ignored by receiver   |
| RDMAP.4.1-6::b      | mandatory  | Reserved bits ignored by the receiver   |
| RDMAP.4.1-6::b::1   |            |   |
| RDMAP.4.8-2         |            | Terminate CF: 13 reserved bits. Zero on transmit, ignored on receive  |
| RDMAP.4.8-2::b      | mandatory  | TCF - Reserved field is ignored - responder   |
| RDMAP.4.8-2::b::1   |            |   |
| RDMAP.4.8-1         |            | Figure 9 defines Terminate Control Field Values   |
| RDMAP.4.8-1::c      | mandatory  | TCF - Remote Protection Error - Invalid STag - init   |
| RDMAP.4.8-1::c::1   |            |   |
| RDMAP.4.8-1::e      | mandatory  | TCF - RPE - Base or Bounds violation - initiator  |
| RDMAP.4.8-1::e::1   |            |   |
| RDMAP.4.8-1::i      | mandatory  | TCF - RPE - STag for wrong stream - initiator   |
| RDMAP.4.8-1::i::1   |            |   |
| RDMAP.4.8-1::m      | mandatory  | TCF - RPE - STag can not be invalidated - Initiator   |
| RDMAP.4.8-1::m::1   |            |   |
| RDMAP.4.8-13        |            | R bit determines if RDMAP Header is Included. Figure 10 shows when used.  |
| RDMAP.4.8-13::b     | mandatory  | R bit in RDMA Layer - Remote Protection Error RDMA Terminates   |
| RDMAP.4.8-13::b::1  |            |   |
| RDMAP.4.8-13::b::2  |            |   |
| RDMAP.4.8-2         |            | Terminate CF: 13 reserved bits. Zero on transmit, ignored on receive  |
| RDMAP.4.8-2::a      | mandatory  | TCF - Reserved field is zero - initiator  |
| RDMAP.4.8-2::a::1   |            |   |
| RDMAP.4.8-3         |            | DDP segment length must be present if D=1 and valid if M=1  |
| RDMAP.4.8-3::a      | mandatory  | Terminate DDP Segment Length  |
| RDMAP.4.8-3::a::1   |            |   |
| RDMAP.4.8-4         |            | Terminated RDMA Header only present if terminate is associated with an RDMA Read Request Message then R=1                             |
| RDMAP.4.8-4::a      | mandatory  | The RDMA Header present on RDMA Read requests that cause Remote protection errors   |
| RDMAP.4.8-4::a::1   |            |   |
| RDMAP.4.8-4::b      | mandatory  | No RDMA Header in RDMA Terminate on RDMA operations (except RDMA Read request) that cause Remote protection errors                    |
| RDMAP.4.8-4::b::1   |            |   |
| RDMAP.4.8-6         |            | DDP header MUST be present if the D bit is set  |
| RDMAP.4.8-6::a      | mandatory  | RDMA Terminate DDP Header presence and validity   |
| RDMAP.4.8-6::a::1   |            |   |
| RDMAP.5.1-4         |            | Invalid RDMA Write Message delivered to Remote Peer's RDMAP Layer, an error is surfaced   |
| RDMAP.5.1-4::a      | mandatory  | Invalid RDMA write causes error to be surfaced  |
| RDMAP.5.1-4::a::1   |            |   |
| RDMAP.5.2.1-5       |            | Invalid RDMA Read Request Message surfaces an error (see section 9.1 RDMAP Error Surfacing)   |
| RDMAP.5.2.1-5::a    | mandatory  | Invalid RDMA read causes error to be surfaced   |
| RDMAP.5.2.1-5::a::1 |            |   |
| RDMAP.5.2.1-5::a::2 |            |   |
| RDMAP.5.2.1-5::a::3 |            |   |
| RDMAP.5.2.1-5::a::4 |            |   |
| RDMAP.5.3-7         |            | Invalid RDMA Send Message Type surfaces an error  |
| RDMAP.5.3-7::a      | mandatory  | Error surfaced on invalid RDMA SEND message   |
| RDMAP.5.3-7::a::1   |            |   |
| RDMAP.8.1.1-6       |            | An RNIC MUST ensure advertised buffer cant be accessed without access rights.   |
| RDMAP.8.1.1-6::a    | mandatory  | RNIC can no longer modify an advertised buffer after the ULP revokes remote access rights   |
| RDMAP.8.1.1-6::a::1 |            |   |
| RDMAP.8.1.1-6::a::2 |            |   |
| RDMAP.8.1.1-6::a::3 |            |   |

| Test Item          | Req. Level | Description   |
|--------------------|------------|---|
| RDMAP.4.8-1        |            | Figure 9 defines Terminate Control Field Values   |
| RDMAP.4.8-1::q     | mandatory  | TCF - ROE - Invalid RDMAP version - Initiator   |
| RDMAP.4.8-1::q::1  |            |   |
| RDMAP.4.8-1::s     | mandatory  | TCF - ROE - Unexpected Opcode - Initiator   |
| RDMAP.4.8-1::s::1  |            |   |
| RDMAP.4.8-1::y     | mandatory  | TCF - ROE - STag cannot be invalidated - Initiator  |
| RDMAP.4.8-1::y::1  |            |   |
| RDMAP.4.8-13       |            | R bit determines if RDMAP Header is Included. Figure 10 shows when used.                                  |
| RDMAP.4.8-13::c    | mandatory  | R=0 in all RDMA Layer - Remote Operation Error RDMA Terminates  |
| RDMAP.4.8-13::c::1 |            |   |
| RDMAP.4.8-2        |            | Terminate CF: 13 reserved bits. Zero on transmit, ignored on receive                                      |
| RDMAP.4.8-2::a     | mandatory  | TCF - Reserved field is zero - initiator  |
| RDMAP.4.8-2::a::2  |            |   |
| RDMAP.4.8-3        |            | DDP segment length must be present if D=1 and valid if M=1  |
| RDMAP.4.8-3::a     | mandatory  | Terminate DDP Segment Length  |
| RDMAP.4.8-3::a::2  |            |   |
| RDMAP.4.8-4        |            | Terminated RDMA Header only present if terminate is associated with an RDMA Read Request Message then R=1 |
| RDMAP.4.8-4::c     | mandatory  | No RDMA Header on RDMA Send operations that cause Remote operation errors                                 |
| RDMAP.4.8-4::c::1  |            |   |
| RDMAP.4.8-6        |            | DDP header MUST be present if the D bit is set  |
| RDMAP.4.8-6::a     | mandatory  | RDMA Terminate DDP Header presence and validity   |
| RDMAP.4.8-6::a::2  |            |   |
| RDMAP.5.3-7        |            | Invalid RDMA Send Message Type surfaces an error  |
| RDMAP.5.3-7::a     | mandatory  | Error surfaced on invalid RDMA SEND message   |
| RDMAP.5.3-7::a::2  |            |   |
| RDMAP.4.8-1        |            | Figure 9 defines Terminate Control Field Values   |
| RDMAP.4.8-1::b     | mandatory  | TCF - Local Catastrophic Error reception  |
| RDMAP.4.8-1::b::1  |            |   |
| RDMAP.4.8-1        |            | Figure 9 defines Terminate Control Field Values   |
| RDMAP.4.8-1::d     | mandatory  | TCF - RPE - Invalid STag - responder  |
| RDMAP.4.8-1::d::1  |            |   |
| RDMAP.4.8-1::f     | mandatory  | TCF - RPE - Base or Bounds violation - responder  |
| RDMAP.4.8-1::f::1  |            |   |
| RDMAP.4.8-1::h     | mandatory  | TCF - RPE - Access rights violation - responder   |
| RDMAP.4.8-1::h::1  |            |   |
| RDMAP.4.8-1::j     | mandatory  | TCF - RPE - STag for wrong stream - responder   |
| RDMAP.4.8-1::j::1  |            |   |
| RDMAP.4.8-1::l     | mandatory  | TCF - RPE - TO wrap - responder   |
| RDMAP.4.8-1::l::1  |            |   |
| RDMAP.4.8-1::n     | mandatory  | TCF - RPE - STag can not be invalidated - responder   |
| RDMAP.4.8-1::n::1  |            |   |
| RDMAP.4.8-1::p     | mandatory  | TCF - RPE - Miscellaneous - responder   |
| RDMAP.4.8-1::p::1  |            |   |
| RDMAP.4.8-1        |            | Figure 9 defines Terminate Control Field Values   |
| RDMAP.4.8-1::ab    | mandatory  | TCF - ROE - Miscellaneous - responder   |
| RDMAP.4.8-1::ab::1 |            |   |
| RDMAP.4.8-1::r     | mandatory  | TCF - ROE - Invalid RDMAP version - responder   |
| RDMAP.4.8-1::r::1  |            |   |
| RDMAP.4.8-1::t     | mandatory  | TCF - ROE - Unexpected Opcode - responder   |
| RDMAP.4.8-1::t::1  |            |   |
| RDMAP.4.8-1::v     | mandatory  | TCF - ROE - Local Catastrophic error on RDMAP stream - responder  |
| RDMAP.4.8-1::v::1  |            |   |
| RDMAP.4.8-1::x     | mandatory  | TCF - ROE - Global catastrophic error on RDMAP stream- responder  |
| RDMAP.4.8-1::x::1  |            |   |
| RDMAP.4.8-1::z     | mandatory  | TCF - ROE - STag cannot be invalidated - responder  |
| RDMAP.4.8-1::z::1  |            |   |

| Test Item           | Req. Level | Description   |
|---------------------|------------|---|
| RDMAP.8.1.1-7       |            | An RNIC MUST not allow remote peers to invalidate an STag shared on multiple streams enabled for remote access.   |
| RDMAP.8.1.1-7::a    | mandatory  | DUT must not allow the remote peer to invalidate an Stag shared by multiple streams.  |
| RDMAP.8.1.1-7::a::1 |            |   |
| RDMAP.5.3-4         |            | RDMA Send Message Type payload larger than sink Untagged Buffer surfaces error.   |
| RDMAP.5.3-4::a      | mandatory  | RDMA SEND too big for untagged buffer at sink surfaces error  |
| RDMAP.5.3-4::a::1   |            |   |
| RDMAP.6.2.1-3       |            | When a peer sends or receives a Terminate Message, it MAY immediately teardown the LLP Stream. The peer SHOULD perform a graceful LLP teardown to ensure the Terminate Message is successfully Delivered.             |
| RDMAP.6.2.1-3::a    | optional   | Graceful teardown on TERMINATE  |
| RDMAP.6.2.1-3::a::1 |            |   |
| RDMAP.6.2.1-3::a::2 |            |   |
| RDMAP.7.2-12        |            | The sum of Source Tagged Offset and message size MUST fall in the range associated with Source STag.  |
| RDMAP.7.2-12::a     | mandatory  | Source tagged offset plus message size must be inside buffer  |
| RDMAP.7.2-12::a::1  |            |   |
| RDMAP.5.4-7         |            | RDMA finishes all RDMA operations after error that have not gone to DDP   |
| RDMAP.5.4-7::a      | mandatory  | RDMA completes in error all operations not given to DDP   |
| RDMAP.5.4-7::a::1   |            |   |
| RDMAP.5.4-8         |            | After sending Terminate on RDMA Stream, Local Peer MUST NOT send any more Messages on that RDMA Stream.   |
| RDMAP.5.4-8::a      | mandatory  | Stop xmit after TERMINATE message   |
| RDMAP.5.4-8::a::1   |            |   |
| RDMAP.6.2.1-2       |            | When a Terminate Message is received it is impossible to tell which RDMA messages were Completed at the Remote Peer. Thus the state of all outstanding Messages is considered indeterminate and some data may be lost |
| RDMAP.6.2.1-2::a    | mandatory  | On abortive terminate all outstanding messages should be completed in error   |
| RDMAP.6.2.1-2::a::1 |            |   |
| RDMAP.7.1-3         |            | RDMA Terminate on RDMA Read requests reference first error detected   |
| RDMAP.7.1-3::a      | mandatory  | RDMA Terminate refers to first error in two bad RDMA Reads  |
| RDMAP.7.1-3::a::1   |            |   |
| RDMAP.7.1-4         |            | RDMA Terminate references first error detected in received RDMA Messages  |
| RDMAP.7.1-4::a      | mandatory  | RDMA Terminate refers to first error in two bad RDMA Sends  |
| RDMAP.7.1-4::a::1   |            |   |
| RDMAP.4.8-1         |            | Figure 9 defines Terminate Control Field Values   |
| RDMAP.4.8-1::s      | mandatory  | TCF - ROE - Unexpected Opcode - Initiator   |
| RDMAP.4.8-1::s::2   |            |   |
| RDMAP.4.8-1::s::3   |            |   |
| RDMAP.5.2.2-4       |            | Invalid RDMA Read Response at RDMA layer surfaces error   |
| RDMAP.5.2.2-4::a    | mandatory  | Error surfaced on invalid read response   |
| RDMAP.5.2.2-4::a::1 |            |   |
| RDMAP.5.4-6         |            | An invalid Terminate Message surfaces an error  |
| RDMAP.5.4-6::a      | mandatory  | An invalid Terminate Message surfaces an error  |
| RDMAP.5.4-6::a::1   |            |   |
| RDMAP.7.2-7         |            | The RDMA OpCode MUST be valid.  |
| RDMAP.7.2-7::a      | mandatory  | Arriving RDMA OpCode MUST be valid.   |
| RDMAP.7.2-7::a::1   |            |   |
| RDMAP.7.2-7::a::2   |            |   |
| RDMAP.7.2-7::a::3   |            |   |
| RDMAP.7.2-7::a::4   |            |   |
| RDMAP.7.2-7::a::5   |            |   |
| RDMAP.7.2-7::a::6   |            |   |
| RDMAP.7.2-7::a::7   |            |   |
| RDMAP.7.2-7::a::8   |            |   |
| RDMAP.5.4-6         |            | An invalid Terminate Message surfaces an error  |
| RDMAP.5.4-6::a      | mandatory  | An invalid Terminate Message surfaces an error  |
| RDMAP.5.4-6::a::2   |            |   |
| RDMAP.7.2-8         |            | The RDMA Version MUST be valid.   |



| Test Item         | Req. Level | Description   |
|-------------------|------------|---|
| RDMAP.7.2-8::a    | mandatory  | Arriving RDMA Version MUST be valid.  |
| RDMAP.7.2-8::a:1  |            |   |
| RDMAP.7.2-8::a:2  |            |   |
| RDMAP.7.2-8::a:3  |            |   |
| RDMAP.7.2-8::a:4  |            |   |
| RDMAP.7.2-8::a:5  |            |   |
| RDMAP.7.2-8::a:6  |            |   |
| RDMAP.7.2-8::a:7  |            |   |
| RDMAP.7.2-8::a:8  |            |   |
| DDP.6.2.2-3       |            | If LLP Stream is still intact, DDP SHOULD allow ULP to send messages after the fatal receive error was signalled  |
| DDP.6.2.2-3::a    | optional   | Keep transmit half alive after fatal receive half error   |
| DDP.6.2.2-3::a:1  |            |   |
| DDP.7.2-1         |            | DDP error numbers to be used are in section 7.2.  |
| DDP.7.2-1::c      | mandatory  | RDMA Terminate with DDP layer Base or Bounds violation  |
| DDP.7.2-1::c:1    |            |   |
| DDP.7.2-1::e      | mandatory  | DDP layer error codes for invalid DDP version in tagged segment   |
| DDP.7.2-1::e:3    |            |   |
| DDP.7.2-1::f      | mandatory  | DDP layer error codes for Invalid QN in untagged DDP segment  |
| DDP.7.2-1::f:1    |            |   |
| DDP.7.2-1::g      | mandatory  | DDP layer error codes for Invalid MSN in untagged DDP segment   |
| DDP.7.2-1::g:1    |            |   |
| DDP.7.2-1::g:2    |            |   |
| DDP.7.2-1::g:3    |            |   |
| DDP.7.2-1::g:4    |            |   |
| DDP.7.2-1::g:5    |            |   |
| DDP.7.2-1::g:6    |            |   |
| DDP.7.2-1::g:7    |            |   |
| DDP.7.2-1::i      | mandatory  | DDP layer codes for 'Too long untagged DDP message'   |
| DDP.7.2-1::i:1    |            |   |
| DDP.7.2-1::j      | mandatory  | DDP layer codes for Invalid version in untagged DDP segment   |
| DDP.7.2-1::j:1    |            |   |
| DDP.7.2-1::k      | mandatory  | DDP layer codes for MSN error, no buffer available  |
| DDP.7.2-1::k:1    |            |   |
| RDMAP.4.8-11      |            | M-bit determines if DDP Segment Length valid. Figure 10 shows when used.  |
| RDMAP.4.8-11::e   | mandatory  | DDP Layer errors in RDMA Terminates   |
| RDMAP.4.8-11::e:1 |            |   |
| RDMAP.4.8-12      |            | D bit determines if DDP Header is Included. Figure 10 shows when used.  |
| RDMAP.4.8-12::e   | mandatory  | D=1 in DDP Layer RDMA Terminates  |
| RDMAP.4.8-12::e:1 |            |   |
| RDMAP.4.8-13      |            | R bit determines if RDMAP Header is Included. Figure 10 shows when used.  |
| RDMAP.4.8-13::d   | mandatory  | R=0 in DDP Layer Error RDMA Terminates  |
| RDMAP.4.8-13::d:1 |            |   |
| RDMAP.4.8-2       |            | Terminate CF: 13 reserved bits. Zero on transmit, ignored on receive  |
| RDMAP.4.8-2::a    | mandatory  | TCF - Reserved field is zero - initiator  |
| RDMAP.4.8-2::a:3  |            |   |
| RDMAP.4.8-3       |            | DDP segment length must be present if D=1 and valid if M=1  |
| RDMAP.4.8-3::a    | mandatory  | Terminate DDP Segment Length  |
| RDMAP.4.8-3::a:3  |            |   |
| RDMAP.4.8-4       |            | Terminated RDMA Header only present if terminate is associated with an RDMA Read Request Message then R=1   |
| RDMAP.4.8-4::d    | mandatory  | No RDMA Header in RDMA Terminate on RDMA operations that cause DDP layer errors   |
| RDMAP.4.8-4::d:1  |            |   |
| RDMAP.4.8-6       |            | DDP header MUST be present if the D bit is set  |
| RDMAP.4.8-6::a    | mandatory  | RDMA Terminate DDP Header presence and validity   |
| RDMAP.4.8-6::a:3  |            |   |
| DDP.6.2.1-1       |            | If the Local Peer ULP indicates graceful teardown, the DDP layer on the Local Peer SHOULD ensure that all ULP data would be transferred before the underlying LLP |

| Test Item         | Req. Level | Description  |
|-------------------|------------|--|
|                   |            | Stream and Connection are torn down, and any further data transfer requests by the Local Peer ULP MUST return an error.              |
| DDP.6.2.1-1::a    | suggested  | xmit all data on graceful teardown   |
| DDP.6.2.1-1::a::1 |            |  |
| DDP.6.2.1-1::b    | mandatory  | Further local ULP transfer requests return error   |
| DDP.6.2.1-1::b::1 |            |  |
| DDP.6.2.1-2       |            | On graceful teardown request to DDP from LLP, subsequent received data is considered an error and shall cause DDP abortive teardown. |
| DDP.6.2.1-2::a    | mandatory  | Data after graceful teardown request causes abortive teardown  |
| DDP.6.2.1-2::a::1 |            |  |
| DDP.6.2.1-3       |            | If LLP signals teardown, DDP shall close receive half and if possible, maintain transmit half and signal ULP of half-closed state    |
| DDP.6.2.1-3::a    | suggested  | If LLP signals teardown, DDP SHOULD signal ULP of half-state   |
| DDP.6.2.1-3::a::1 |            |  |
| DDP.6.2.1-3::b    | suggested  | If LLP signals teardown, DDP continues to process outbound data normally   |
| DDP.6.2.1-3::b::1 |            |  |
| DDP.6.2.1-4       |            | Following shutdown of the receive half, when Local ULP requests graceful teardown, DDP indicates to LLP to shutdown transmit half    |
| DDP.6.2.1-4::a    | mandatory  | Initiate transmit close if receive half closed on ULP request  |
| DDP.6.2.1-4::a::1 |            |  |
| DDP.6.2.1-4::b    | mandatory  | LLP completes transmit close if receive half closed on DDP request   |
| DDP.6.2.1-4::b::1 |            |  |
| DDP.7.1-14        |            | If the DDP layer detects any of the errors listed in section 7.1, it MUST cease placing data and report error(s) to the ULP.         |
| DDP.7.1-14::a     | mandatory  | Stop data placement and report error to ULP on any section 7.1 errors  |
| DDP.7.1-14::a::1  |            |  |
| DDP.7.1-16        |            | Upon receive error DDP silently drops any incoming DDP Segments and keeps transmit half open.  |
| DDP.7.1-16::a     | mandatory  | DDP silently drops subsequent packets after receive error  |
| DDP.7.1-16::a::1  |            |  |
| DDP.7.1-10        |            | DDP checks that STag has an associated buffer  |
| DDP.7.1-10::a     | mandatory  | DDP checks that STag associated with a buffer  |
| DDP.7.1-10::a::1  |            |  |
| DDP.7.1-9         |            | DDP must check that STag is valid for stream.  |
| DDP.7.1-9::a      | mandatory  | DDP checks that STag valid for the stream  |
| DDP.7.1-9::a::1   |            |  |
| DDP.7.2-1         |            | DDP error numbers to be used are in section 7.2.   |
| DDP.7.2-1::b      | mandatory  | DDP error codes for Invalid STag Error in tagged DDP segment   |
| DDP.7.2-1::b::1   |            |  |
| DDP.7.1-11        |            | DDP checks that TO falls in range of legal offsets for the STag.   |
| DDP.7.1-11::a     | mandatory  | DDP checks that TO has legal offset  |
| DDP.7.1-11::a::1  |            |  |
| DDP.7.1-12        |            | DDP checks that sum of payload length and TO falls in range of legal offsets for STag.   |
| DDP.7.1-12::a     | mandatory  | DDP checks that TO + size is legal   |
| DDP.7.1-12::a::1  |            |  |
| DDP.6.2.1-5       |            | If ULP request teardown of DDP Stream, if possible DDP should keep receive half open   |
| DDP.6.2.1-5::a    | suggested  | Receipt after half close   |
| DDP.6.2.1-5::a::1 |            |  |
| DDP.7.2-1         |            | DDP error numbers to be used are in section 7.2.   |
| DDP.7.2-1::e      | mandatory  | DDP layer error codes for invalid DDP version in tagged segment  |
| DDP.7.2-1::e::2   |            |  |
| DDP.7.1-6         |            | DDP must check that MO falls in range of Buffer.   |
| DDP.7.1-6::a      | mandatory  | DDP must check that MO is valid  |
| DDP.7.1-6::a::1   |            |  |
| DDP.7.1-7         |            | DDP must check that sum segment payload length and MO falls within untagged buffer.  |
| DDP.7.1-7::a      | mandatory  | DDP must check MO + size valid   |
| DDP.7.1-7::a::1   |            |  |
| MPA.8-3           |            | The DUT should deliver an error if the markers, ULPDU length fields, and FPDUs are inconsistent when CRCs are okay.                  |
| MPA.8-3::a        | mandatory  | marker and ULPDU_length mismatch   |

| Test Item         | Req. Level | Description  |
|-------------------|------------|--|
| MPA.8-3::a::1     |            |  |
| MPA.8-5           |            | OPTIONAL to check each marker, if multiple markers in an FPDU, or segment received in order  |
| MPA.8-5::a        | optional   | Optional marker check if segments in order one marker bad  |
| MPA.8-5::a::1     |            |  |
| MPA.8-5::b        | optional   | Optional marker check if segments in order, one segment has multiple markers with one bad  |
| MPA.8-5::b::1     |            |  |
| MPA.8-7           |            | When conditions 2 or 3 (Section 8 page 40) are detected, TCP segment MAY be silently dropped (and no error to ULP)                             |
| MPA.8-7::b        | mandatory  | MPA Error code 3   |
| MPA.8-7::b::1     |            |  |
| MPA.8-7::c        | optional   | Optional marker check: MPA Error code 3; silently drop packet  |
| MPA.8-7::c::1     |            |  |
| MPA.8-7::c::2     |            |  |
| MPA.8-8           |            | DDP's ULP closes connection, not MPA   |
| MPA.8-8::b        | mandatory  | If MPA opts not do drop packet, MPA notifies DDP of inconsistencies between FPDU, markers, and ULPDU length type errors                        |
| MPA.8-8::b::1     |            |  |
| MPA.8-8::c        | optional   | Optional marker check: If MPA opts not do drop packet, MPA notifies DDP of inconsistencies between FPDU, markers, and ULPDU length type errors |
| MPA.8-8::c::1     |            |  |
| MPA.8-8::c::2     |            |  |
| MPA.4.2-2         |            | Reserved field zero on transmit, ignored on receive (except for CRC calculation)   |
| MPA.4.2-2::b      | mandatory  | Reserved portion of marker ignored by receiver   |
| MPA.4.2-2::b::1   |            |  |
| MPA.4.2-2::b::2   |            |  |
| MPA.8-1           |            | Connection teardown  |
| MPA.8-1::a        | mandatory  | TCP connection teardown on received RST  |
| MPA.8-1::a::1     |            |  |
| DDP.5.3-1         |            | DDP Messages transmitted in order submitted  |
| DDP.5.3-1::a      | mandatory  | DDP initiator must send message in order submitted   |
| DDP.5.3-1::a::1   |            |  |
| DDP.5.3-2         |            | DDP should transmits segments in increasing MO (untagged) and TO (tagged) order  |
| DDP.5.3-2::a      | suggested  | SHOULD transmit in increasing MO order   |
| DDP.5.3-2::a::1   |            |  |
| DDP.5.3-2::b      | suggested  | SHOULD transmit in increasing TO order   |
| DDP.5.3-2::b::1   |            |  |
| DDP.8.3.1-4       |            | An RNIC MUST provide a mechanism for ULP to associate/disassociate a ULP Buffer to an STag and TO range.                                       |
| DDP.8.3.1-4::a    | mandatory  | DUT must terminate the stream if remote peer is trying to access a revoked buffer.   |
| DDP.8.3.1-4::a::1 |            |  |
| DDP.5.1.1-1       |            | A DDP Message can start at an arbitrary TO within a Tagged Buffer.   |
| DDP.5.1.1-1::a    | mandatory  | Arbitrary TO in tagged RDMA operation  |
| DDP.5.1.1-1::a::1 |            |  |
| DDP.5.3-2         |            | DDP should transmits segments in increasing MO (untagged) and TO (tagged) order  |
| DDP.5.3-2::c      | mandatory  | MUST receive DDP segments when MO is out of order  |
| DDP.5.3-2::c::1   |            |  |
| MPA.3.1.1-3       |            | Optimized DDP/MPA/TCP must be interoperable with un-optimized TCP  |
| MPA.3.1.1-3::a    | mandatory  | TCP must use normal segmentation for non MPA aware TCP   |
| MPA.3.1.1-3::a::1 |            |  |
| MPA.3-3           |            | Maximum ULPDU is 64768 octets  |
| MPA.3-3::a        | mandatory  | DDP must not generate a segment larger than 64768  |
| MPA.3-3::a::1     |            |  |
| MPA.4.5-2         |            | MULPDUs must always be less than 128   |
| MPA.4.5-2::a      | mandatory  | The MULPDU must not shrink below 128 octets  |
| MPA.4.5-2::a::1   |            |  |
| MPA.4.5-3         |            | FPDUs not packed into TCP segment with less than 128 bytes left  |
| MPA.4.5-3::a      | mandatory  | When filling segment MULPDU must not drop below 128  |

| Test Item           | Req. Level | Description  |
|---------------------|------------|--|
| MPA.4.5-3::a:1      |            |  |
| MPA.A.1-4           |            | An MPA-aware TCP sender SHOULD try to preserve original TCP segmentation boundaries on a retransmission  |
| MPA.A.1-4::a        | suggested  | MPA should try to preserve alignment during retransmission   |
| MPA.A.1-4::a:1      |            |  |
| MPA.A.1-4::a:2      |            |  |
| MPA.A.1-3           |            | FPDUs may be unaligned at a receiver   |
| MPA.A.1-3::a        | mandatory  | MPA receiver must be able to receive unaligned FPDUs   |
| MPA.A.1-3::a:1      |            |  |
| MPA.A.1-3::a:2      |            |  |
| MPA.A.1-3::a:3      |            |  |
| MPA.7.1.2-10        |            | MPA "Responder" received an FPDU before sending an FPDUs.  |
| MPA.7.1.2-10::a     | mandatory  | MPA responder must get FPDU before sending FPDU  |
| MPA.7.1.2-10::a:1   |            |  |
| MPA.4.1-3           |            | The MPA FPDU CRC field is the last 32 bits of the FPDU.  |
| MPA.4.1-3::c        | mandatory  | Proper processing of invalid CRCs  |
| MPA.4.1-3::c:1      |            |  |
| MPA.8-8             |            | DDP's ULP closes connection, not MPA   |
| MPA.8-8::a          | mandatory  | If MPA opts not to drop packet with CRC error, it notifies DDP of error  |
| MPA.8-8::a:1        |            |  |
| RDMAP.6.1-2         |            | For outbound RDMA Read Requests, the RDMAP Layer MUST NOT exceed the maximum number of outstanding, outbound RDMA Read Requests that were negotiated between the ULP and the Local Peer's RDMAP Layer. |
| RDMAP.6.1-2::a      | mandatory  | Outbound max outstanding RDMA Read Requests  |
| RDMAP.6.1-2::a:1    |            |  |
| RDMAP.8.1.1-8       |            | An RNIC MUST choose the value of STags in a way difficult to predict. It is RECOMMENDED to sparsely populate them over the full range available.   |
| RDMAP.8.1.1-8::a    | mandatory  | STags are not issued by simple arithmetic sequence   |
| RDMAP.8.1.1-8::a:1  |            |  |
| RDMAP.5.5-5         |            | RDMA Operations MUST Completed in the order submitted by the ULP   |
| RDMAP.5.5-5::a      | mandatory  | RDMA operation complete in order of submission   |
| RDMAP.5.5-5::a:1    |            |  |
| RDMAP.5.1-2         |            | A valid RDMA Write Message is not delivered to Data Sink's ULP (its just placed)   |
| RDMAP.5.1-2::a      | mandatory  | Write message not delivered to ULP   |
| RDMAP.5.1-2::a:1    |            |  |
| RDMAP.5.2.1-4       |            | RDMA Read Request Message is processed by the RDMAP layer, not the ULP.  |
| RDMAP.5.2.1-4::a    | mandatory  | Valid RDMA read request not delivered to ULP   |
| RDMAP.5.2.1-4::a:1  |            |  |
| RDMAP.5.2.1-13      |            | Remote Peer processes the RDMA Read Requests in the order sent.  |
| RDMAP.5.2.1-13::a   | mandatory  | DUT Processes RDMA read requests in order sent   |
| RDMAP.5.2.1-13::a:1 |            |  |
| RDMAP.5.5-9         |            | RDMA Read Responses MUST be issued in the same order as Requests were recieved   |
| RDMAP.5.5-9::a      | mandatory  | In order delivery of multiple outstanding READ REQUEST messages  |
| RDMAP.5.5-9::a:1    |            |  |
| RDMAP.5.2.2-2       |            | Data Source MUST ensure asufficient number of Untagged Buffers for RDMA Read Request Queue to support the maximum number of RDMA Read Requests negotiated by the ULP                                   |
| RDMAP.5.2.2-2::a    | mandatory  | Must have sufficient untagged buffers for Read Requests  |
| RDMAP.5.2.2-2::a:1  |            |  |
| RDMAP.5.2.2-7       |            | RDMA Read Response writes to one Tagged Buffer.  |
| RDMAP.5.2.2-7::a    | mandatory  | READ RESPONSE must reference single tagged buffer  |
| RDMAP.5.2.2-7::a:1  |            |  |
| RDMAP.5.3-10        |            | 0-size RDMA Sends allowed and consume an untagged buffer.  |
| RDMAP.5.3-10::a     | mandatory  | Zero length RDMA SEND must consume untagged buffer at sink   |
| RDMAP.5.3-10::a:1   |            |  |
| RDMAP.5.5-7         |            | RDMA Read Response starts after all other previous RDMA messages complete.   |
| RDMAP.5.5-7::a      | mandatory  | READ Response only after READ Request delivered  |
| RDMAP.5.5-7::a:1    |            |  |