



**MODULAR OPEN RF ARCHITECTURE
(MORA)
SPECIFICATION
DRAFT REVISION NOTICE**

VERSION 2.4

MARCH 01, 2021

DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.

TABLE OF REVISIONS

Section in V2.4	Mod Type	Change in V2.4
<i>throughout</i>	Correction	Corrected typographical errors, grammar issues, etc.
<i>throughout</i>	Clarification	Clarified document links by making internal document links blue.
<i>throughout</i>	Correction	Corrected non-regulatory sections that are not contained within a MORA Type Tag (MT#####) or MORA Specification Tag (#####-YYYYMMDD) by removing unintended regulatory verbiage (e.g., shall, may, should, etc.). Corrected non-regulatory notes in regulatory section by removing unintended regulatory verbiage.
<i>throughout</i>	Update	Updated internal and external references to MORA/VICTORY tables and specifications by removing MORA/VICTORY Type Tags and Specification Tags, using only their unique titles instead. The formatting change mitigates specification maintenance and was part of a VICTORY change proposal.
<i>throughout</i>	Update	Updated internal references that used section numbers to use unique section titles instead. This mitigates specification maintenance.
<i>throughout</i>	Clarification	Clarified usage of the term “MORA Device” and capitalization: “MORA Device” formal defined term of the entity “MORA Device” accompanied with “component type” is the component type formal name “MORA Device” complex type “MORA device” as a derivative of the first case but only in the MORA Common Complex Types section for definition lines only
<i>throughout</i>	Clarification	Clarified usage of the term “MORA Signal Resource Manager” accompanied with “component type” in the component type formal name.
<i>throughout</i>	Correction	Corrected usage of the term “layer” by replacing with “resource”, where appropriate, in architectural language. E.g., “signal and processing layers” became “signal and processing resources”.
<i>throughout</i>	Correction	Corrected figure and table captions as many images were maintained as tables and not figures. This affected figure/table numbering.
<i>throughout</i>	Update	Updated formal definition language is no longer bolded. This change was requested by the VICTORY Standard Support Office (VSSO) for consistency with the VICTORY specification.
<i>throughout</i>	Update	Updated all usages of “string” or “unrestricted string” to become “restricted string” in alignment with VICTORY change proposal JW_CP_001.
<i>throughout</i>	Clarification	Clarified all references of V49.2, V49.a and V49.0 to “VITA 49.2”, “VITA 49.a” and “VITA 49.0” respectively.

Section in V2.4	Mod Type	Change in V2.4
<i>throughout</i>	Update	Updated any MORA type/spec tags from V2.3 to V2.4 (or 2020MMDD) if they were impacted in the 2.4 release: RF Layer Command Interface <MT90012-V2.4> RF Layer Context Interface <MT90013-V2.4> RF Layer Digital Data Interface <MT90014-V2.4> RF Layer Operations Interface <MT90015-V2.4> MORA Device Operations Interface <MT90016-V2.4> MORA Signal Resource Manager Operations Interface <MT90017-V2.4> Low Latency Switch <MT91010-V2.4> Low Latency Switch Data Interface <MT91011-V2.4> Low Latency Switch Data Interface Physical and Data-Link Layer Specifications <MT91012-V2.4> Low Latency Copper Data Physical and Data-Link Layer Specification <MT91013-V2.4> MORA Device <MT92010-V2.4> MORA Device Management Interface <MT92011-V2.4> MORA Signal Resource Manager <MT92013-V2.4> MORA Signal Resource Management Interface <MT92014-V2.4> MORA Signal Port Manager <MT92016-V2.4> MDM Protocol Specification <MT96001-V2.4> Jumbo Frame Packet Support Specification <48007-20200707, Exp> MDM Encapsulation Specification <48606-20201002, Exp> MDM VRT Message Structure Specification <48607-20200707, Exp> MDM VRT Signal Data Packet Type Specification <48608-20200707, Exp> MDM VRT Context Packet Type Specification <48609-20200903, Exp> MDM VRT Command Packet Type Specification <48610-20200903, Exp> MDM Signal Port User ID Message (Type 4) Specification <48613-20201002, Exp> MDM Health Message (Type 5) Specification <48614-20200707, Exp> MDM Command Message (Type 6) Specification <48615-20200707, Exp> MDM VRT Context and Command Fields Specification <48616-20210301, Exp> MDM Switch Group User ID Message (Type 7) Specification <48617-20200707, Exp> Radio Frequency Distribution Management Parameters <49005-20201002, Pro> MORA Device Management Parameters <49011-20210301, Pro> Waveform Management Parameters <49012-20201002, Pro> MORA Signal Resource Management Parameters <49014-20201002, Pro> MORA Common Complex Types <49016-20210301, Pro> Waveform Complex Types <49017-20200707, Pro> Radio Frequency Distribution Complex Types <49018-20200707, Pro> Syslog Protocol Data Parameters for MORA <49101-20200707, Pro> Version Information Management Parameters for MORA <49102-20210301, Pro> MORA Schemas and WSDLs <49103-20201002, Pro>

Section in V2.4	Mod Type	Change in V2.4
<i>throughout</i>	Update	Updated MORA spec tag maturity from Experimental (Exp) to Proposed (Pro): Radio Frequency Distribution Management Parameters <49005-20201002, Pro> MORA Device Management Parameters <49011-20201002, Pro> Waveform Management Parameters <49012-20201002, Pro> MORA Signal Resource Management Parameters <49014-20201002, Pro> MORA Common Complex Types <49016-20201002, Pro> Waveform Complex Types <49017-20200707, Pro> Radio Frequency Distribution Complex Types <49018-20200707, Pro> Syslog Protocol Data Parameters for MORA <49101-20200707, Pro> Version Information Management Parameters for MORA <49102-20200707, Pro> MORA Schemas and WSDLs <49103-20201002, Pro>
<i>throughout</i>	Update	Updated any VICTORY type/spec tags to V1.9 (or YYYYMMDD) if they were updated in the VICTORY 1.9 / MORA 2.4 release: Position Service <VT50100-V1.9> GPS Receiver <V61000-V1.9> Orientation Service <VT50200-V1.9> Direction of Travel Service <VT50300-V1.9> Switch <VT50900-V1.9> Authentication Service <VT50401-V1.9> Policy Enforcement Service <VT50600-V1.9> Policy Decision Service <VT50500-V1.9> Policy Store Service <VT50700-V1.9> Attribute Store Service <VT50800-V1.9> Generic End Node Data Interface <VT52101-V1.9> Syslog-Based Health Publishing Interface <VT50103-V1.9> Common Management Interface Specifications <VT59902-V1.9> Device Information Management Parameters <10009-V1_9DATE, Pro> Authentication and Authorization Security Specifications <VT50400-V1.9>
<i>throughout</i>	Update	Updated ATR definition to support full duplex in addition to half duplex and changed “Analog Transmit or Receive” to “Analog Transmit and/or Receive”. Updated DTR definition to support full duplex in addition to half duplex and changed “Digital Transmit or Receive” to “Digital Transmit and/or Receive”.
2	Update	Updated referenced document citation for VICTORY Standard Specifications V1.9.
2	Addition	Added referenced document citation for the IEEE Standard for Ethernet 802.3.
3.1	Correction	Corrected row ordering of abbreviation definition for C5ISR Center to the correct place alphabetically/numerically.
3.1 – Table 2	Addition	Added “MUI” defined as “ML2B Unique Identifier”.
3.2	Addition	Added the caption “MORA Definitions” to the table that comprises this section.
3.2	Clarification	Clarified that the ATR and DTR signal port types are for half or full duplex transmit and/or receive functions

Section in V2.4	Mod Type	Change in V2.4
3.2	Update	Updated section name to “MORA Definitions Table” to deconflict with the table caption. Updated the definition for “RF Conditioning and Distribution (RCD) Device” to now optionally allow processing resources to exist on that MORA Device Type. Updated the formal definition for “Software Defined Radio (SDR) Device” to not mention application resources as they are outside the scope of MORA.
4.1	Correction	Corrected the verbiage “verification toolkit” with “compliance test suite”. Corrected the verbiage “common processing resources” with “common resources” to disambiguate general purpose processors from MORA processing resources.
4.3.1	Clarification	Clarified “Examples of signal resources ...” with “Examples of signal resource hardware ...”. Clarified “... Signal Resource management ...” with “... MORA Signal Resource Manager management ...”.
4.3.2	Clarification	Clarified “Examples of processing resources ...” with “Examples of processing resource hardware ...”
4.3.2	Correction	Corrected paragraph that incorrectly stated that processing resources are reserved and released, when they are managed via tasks.
4.3.3 – Figure 5	Clarification	Clarified to label application, processing, and signal resource examples as hardware examples that the resources may reside on.
4.4 – Figure 6	Update	Updated to rename headers from “Layer” to “Resources” and extended the application block to perform both send and receive actions.
4.4	Update	Updated the verbiage that describes the figure.
4.5 – Figure 7	Update	Updated to remove the “Application Resources” column since it is outside of the intended MORA specification boundary. Updated the RCD row and “Processing Resources” column value from “N/A” to “O”.
4.5.2	Update	Updated RCD verbiage where it “may contain processing resources”.
4.5.3	Update	Updated SDR verbiage to not mention application resources as they are outside of the intended MORA specification boundary.
4.6.2	Correction	Corrected paragraph that incorrectly stated resources (i.e., signal, processing, and application resources) request and are granted resources. Only signal resources accept reservation requests. Verbiage replaced with the more generic term “utilized”.
4.6.3.1.3	Clarification	Clarified that the ATR signal port type is for half or full duplex analog transmit and/or receive functions
4.6.3.2.3	Clarification	Clarified that the DTR signal port type is for half or full duplex digital transmit and/or receive functions
4.6.4.1 – Figure 9	Clarification	Clarified to use formal names consistently. Clarified connections between the MORA Signal Port Manager component type and the MORA Device and MORA Signal Resource Manager component types. Clarified the usage of MDMs generically, instead of listing MDM Type numbers which are subject to change with future MDM Type additions.
4.6.4.2	Correction	Corrected usage of the term “port”, replaced with “resource”.
4.6.5	Clarification	Clarified verbiage about multi-user reservations and any user subscribing to multi-casted signal data and context.
4.6.5 – Figure 10	Correction	Corrected “get Device” operation to the proper name “get Device Description”.
4.7 – Figure 11	Clarification	Clarified that the antennas are a part of the Radiohead (RHD) MORA Device. Clarified communication channel between Processing Resources and Signal Resources.
5.1.1 – Table 4	Update	Updated the header for the first column to be “Interface” instead of “VICTORY Interface” to apply more generically. Updated to prepend “VICTORY” to the VICTORY specific interfaces.
5.1.2	Update	Removed specific versions of the VICTORY Architecture and Standard Specification for maintenance reasons.
5.1.2 – Table 5	Update	Updated to only reference VICTORY component types, removing specific child specifications. Updated to remove the “Spec Title” column. Updated to include additional VICTORY component types that are required to support the existing Policy Enforcement Service entry.

Section in V2.4	Mod Type	Change in V2.4
5.2	Relocated	Relocated verbiage and table related to ML2B Traffic Marking to a new section.
5.2.1	Update	Updated to rename the section from “MORA Low Latency Specifications” to “MORA Low Latency Bus Specifications”.
5.2.1.2	Correction	Corrected verbiage that 9000 bytes applies to the maximum transmission unit and not just the payload.
5.2.1.2	Update	Updated specification verbiage to remove ML2B constraint and add a “shall” regulation.
5.2.1.4	Update	Updated specification to remove ML2B verbiage.
5.2.1.5	Update	Updated specification to remove ML2B verbiage.
5.2.1.6	Addition	Added new MDM Traffic Marking Specification <48008-20200707, Exp>. Verbiage and table relocated from 5.2 non-regulatory section, adjusting the scope from ML2B to MDMs in general.
5.2.1.6 – Table 6	Update	Updated header of first column from “VITA 49.2 Packet Type” to “MDM Packet Type”. Updated first column contents with applicable MDM Packet Types.
5.3	Addition	Added new explanatory verbiage and two new figures (12 and 13) depicting interactions between component types; the first figure illustrates the typical scenario and the second illustrates an alternate proxy scenario.
5.3.1 – Table 7	Update	Updated Spec Title for “MORA Low Latency Bus Performance” to “MORA Low Latency Bus Performance Specification” to match the referenced specification.
5.3.1.1 – Table 8	Update	Updated Spec Title for “Low Latency Switch Physical and Data Link Specifications” to “Low Latency Switch Data Interface Data-Link Layer Specifications” to match the referenced specification table.
5.3.1.2	Update	Updated to rename the specification from “Low Latency Switch Data Interface Physical and Data Link Specifications” to “Low Latency Switch Data Interface Data-Link Layer Specifications”.
5.3.1.2 – Table 9	Update	Updated to rename the specification table from “Low Latency Switch Data Interface Physical and Data Link Specifications” to “Low Latency Switch Data Interface Data-Link Layer Specifications”. Updated applicability conditions to remove spec tag/date to mitigate specification maintenance. Updated row for Jumbo Frame Packet Support Specification applicability from Optional to Required.
5.3.1.2 – Table 9	Addition	Added row for new MDM Traffic Marking Specification. Added footnote to table.
5.3.1.3	Update	Updated to rename the specification from “Low Latency Copper Data Physical and Data-Link Layer Specification” to “Low Latency Copper Data Physical and Data-Link Layer Specifications”.
5.3.1.3 – Table 10	Update	Updated to rename the specification table from “Low Latency Copper Data Physical and Data-Link Layer Specification” to “Low Latency Copper Data Physical and Data-Link Layer Specifications”. Updated applicability conditions to remove spec tag/date to mitigate specification maintenance. Updated row for Copper Auto-Negotiation applicability from Required to Optional because some physical types do not support auto-negotiation.
5.3.1.3 – Table 10	Addition	Added row for 1000BASE-KX. Added row for 100GBASE-KR4. Added footnote to table.
5.3.1.3.1	Update	Updated to rename the specification from “10GBASE-KX4 Specification” to “10GBASE-KX4” for parity with VICTORY specification format. Updated IEEE reference by identifying the applicable clause.
5.3.1.3.2	Update	Updated to rename the specification from “10GBASE-KR Specification” to “10GBASE-KR” for parity with VICTORY specification format. Updated IEEE reference by identifying the applicable clause.

Section in V2.4	Mod Type	Change in V2.4
5.3.1.3.3	Update	Updated to rename the specification from “40GBASE-KR4 Specification” to “40GBASE-KR4” for parity with VICTORY specification format. Updated IEEE reference by identifying the applicable clause.
5.3.1.3.4	Addition	Added new “100GBASE-KR4” specification <48114-20200707, Exp>.
5.3.1.3.5	Addition	Added new “1000BASE-KX” specification <48115-20200707, Exp>.
5.3.1.4	Update	Updated to rename “Low Latency Fiber Data Physical and Data-Link Layer Specification” to “Low Latency Fiber Data Physical and Data-Link Layer Specifications”.
5.3.1.4 – Table 11	Update	Updated to rename the specification table from “Low Latency Fiber Data Physical and Data-Link Layer Specification” to “Low Latency Fiber Data Physical and Data-Link Layer Specifications”. Updated applicability conditions to remove spec tag/date to mitigate specification maintenance.
5.3.1.4 – Table 11	Addition	Added footnote to table.
5.3.1.4.1	Update	Updated to rename the specification from “10GBASE-SR Specification” to “10GBASE-SR” for parity with VICTORY specification format. Updated IEEE reference by identifying the applicable clause.
5.3.1.4.2	Correction	Corrected the specification name from “40GBASE-SR Specification” to “40GBASE-SR4” for parity with VICTORY specification format.
5.3.1.4.2	Update	Updated IEEE reference by identifying the applicable clause.
5.3.2 – Table 12	Deletion	Removed row for the retired “Waveform Management Interface”. Functionality is preserved through the relocated Waveform Management Parameters under MORA Device Management Interface.
5.3.2 – Table 12	Update	Updated row for “Auto-Discovery Interface” applicability from Optional to Recommended.
5.3.2.1 – Table 13	Addition	Added Generic End Node Management Parameters 13003-V1_9DATE, Pro as Required
5.3.2.1 – Table 13	Deletion	Removed “Version Information Management Parameters for MORA” since Common Management Interface Specification’s “Version Information Management Parameters” will reference this specification.
5.3.2.1 – Table 13	Relocated	Relocated “Waveform Management Parameters”, row added to table.
5.3.2.1.1	Addition	Added paragraph with verbiage for VICTORY “Management Interface Error Types” reference. Added paragraph with verbiage for VICTORY “String Bounds” and “URI Bounds” references.
5.3.2.1.1	Update	Updated paragraph verbiage for Appendix B: MORA WSDLs reference. Updated to remove individual references to “Management Interface Error Types” covered by new paragraph that includes validation order for error responses.
5.3.2.1.1 – 3.b.i.3	Addition	Added error condition for “Get File List” to include an OUT_OF_RANGE failure response condition for arguments.
5.3.2.1.1 – 3.b.ii.1	Update	Updated argument for “Pull File” from an “ID” to a “File Name” associated with a “MORA File”.
5.3.2.1.1 – 3.b.ii.3	Update	Updated error conditions for “Pull File” from an “ID” to a “File Name” associated with a “MORA File”.
5.3.2.1.1 – 3.b.ii.3	Addition	Added error condition for “Pull File” to include an OUT_OF_RANGE failure response condition for arguments.
5.3.2.1.1 – 3.b.iii.1	Update	Updated that the optional fields of “Path” and “Date Modified” shall not be included when executing a “Push File”.
5.3.2.1.1 – 3.b.iii.3	Addition	Added error condition for “Push File” to include a GENERIC_FAULT failure response condition if the File Name already exists. Added error condition for “Push File” to include an OUT_OF_RANGE failure response condition for arguments.
5.3.2.1.1 – 3.b.iii.3	Clarification	Clarified that if the “MORA File” argument contains an empty “Content” field, then an error of “GENERIC_FAULT” with error text of “File contains no content” shall be returned.
5.3.2.1.1 – 3.b.iv.1	Update	Updated argument for “Delete File” from an “ID” to a “File Name” associated with a “MORA File”.
5.3.2.1.1 – 3.b.iv.3	Addition	Added error condition for “Delete File” to include an OUT_OF_RANGE failure response condition for arguments.

Section in V2.4	Mod Type	Change in V2.4
5.3.2.1.1 – 4.b.i	Addition	Added new operation for “Get Available MORA Configurations”.
5.3.2.1.1 – 4.b.ii.2	Update	Updated return value for “Get Current MORA Configuration” from an “ID” associated with a “MORA File” to an “ID” associated with a “MORA Configuration” complex type.
5.3.2.1.1 – 4.b.iii.1	Update	Updated argument for “Set Current MORA Configuration” from an “ID” associated with a “MORA File” to an “ID” associated with a “MORA Configuration” complex type.
5.3.2.1.1 – 4.b.iii.3	Update	Updated error condition text for “Set Current MORA Configuration” from “File not found” to “Configuration not found”.
5.3.2.1.1 – 4.b.iii.3	Addition	Added error condition for “Set Current MORA Configuration” for “SPM error”. Added error condition for “Set Current MORA Configuration” to include an OUT_OF_RANGE failure response condition for arguments.
5.3.2.1.1 – 4.b.iii.4	Clarification	Clarified note verbiage for “Set Current MORA Configuration” impacts.
5.3.2.1.1 – 5.b.i.3	Addition	Added error condition for “Run Built-In Test” for “BIT not available”. Added error condition for “Run Built-In Test” for NOT_SUPPORTED.
5.3.2.1.1 – 5.b.ii.3	Addition	Added error condition for “Get Built-In Test Results” for NOT_SUPPORTED.
5.3.2.1.1 – 5.b.ii.2	Clarification	Clarified the return value for “Get Built-In Test Results” shall contain at least one item.
5.3.2.1.1 – 6.b.i.1	Addition	Added “Send Command” enumeration value of “SANITIZE”
5.3.2.1.1 – 6.b.i.4	Addition	Added requirement that “The Send Command (RESTART), Send Command (STANDBY), and Send Command (ZEROIZE) operations shall be respectively equivalent to “Restart Generic End Node”, “Standby Generic End Node” and “Purge Generic End Node” operations as described in the “Generic End Node Management Parameters” section of the VICTORY Standard Specifications.”
5.3.2.1.1 – 6.b.i.3	Addition	Added error condition for “Send Command” for “SPM error”. Added error condition for “Send Command” for NOT_SUPPORTED. Added error condition for “Send Command” to include an OUT_OF_RANGE failure response condition for arguments.
5.3.2.1.1 – 6.b.i.4	Relocated	Relocated the non-regulatory note from 6.b.i.3 regulatory text to a new numbered item.
5.3.2.1.2	Relocated	Relocated “Waveform Management Parameters” from within the retired “Waveform Management Interface” section to within the “MORA Device Management Interface” section.
5.3.2.1.2	Addition	Added paragraph with verbiage for VICTORY “Management Interface Error Types” reference. Added paragraph with verbiage for VICTORY “String Bounds” and “URI Bounds” references.
5.3.2.1.2	Update	Updated paragraph verbiage for Appendix B: MORA WSDLS reference. Updated to remove individual references to “Management Interface Error Types” covered by new paragraph that includes validation order for error responses.
5.3.2.1.2 – 1.b.i.2	Clarification	Clarified return value for “Get Available Waveforms” that if there are no available waveforms, then an empty list shall be returned.
5.3.2.1.2 – 2	Addition	Added new parameter of Waveform Operations.
5.3.2.1.2 – 2	Relocated	Relocated and alphabetized operations involving Waveform Operations beneath the new Waveform Operations parameter.
5.3.2.1.2 – 2.b.i.2	Clarification	Clarified return value for “Get Available Waveform Operations” that if there are no available waveform operations, then an empty list shall be returned.
5.3.2.1.2 – 2.b.ii.3	Clarification	Clarified error condition and error text for “Get Current Waveform Operation” to “No current waveform operation is currently specified”.
5.3.2.1.2 – 2.b.ii.4	Relocation	Relocated, and modified, an informational statement from 2.b.ii.2 to a non-regulatory note.
5.3.2.1.2 – 2.b.ii.5	Clarification	Clarified note verbiage for “Set Current MORA Configuration” impacts.

Section in V2.4	Mod Type	Change in V2.4
5.3.2.1.2 – 2.b.iii.3	Update	Updated error condition for “Set Current Waveform Operation” where an invalid “ID” is specified, to become “Invalid waveform operation”. Updated error condition for “Set Current Waveform Operation” where an incompatible “ID” is specified, to become “Incompatible waveform operation”.
5.3.2.1.2 – 2.b.iii.3	Addition	Added error condition for “Set Current Waveform Operation” for “SPM error”. Added error condition for “Set Current Waveform Operation” to include an OUT_OF_RANGE failure response condition for arguments.
5.3.2.2 – Table 14	Update	Updated specification name from “MDM Protocol Specification” to “MDM Protocol Specifications”. Updated specification name from “MDM Command Message Specification” to “MDM Command Message (Type 6) Specification”. Updated specification name from “MDM Acknowledgement Message Specification” to “MDM Acknowledgement Message (Type 2) Specification”. Updated specification name from “MDM Time of Day Message Specification” to “MDM Time of Day Message (Type 3) Specification”. Updated specification name from “MDM Health Message Specification” to “MDM Health Message (Type 5) Specification”.
5.3.2.2 – Table 14	Addition	Added row for specification “MDM Networking Specifications”. Added footnote to table.
n/a	Deletion	Retired Waveform Management Interface <MT92012-V2.3>.
n/a	Relocated	Relocated Waveform Management Parameters to within “MORA Device Management Interface”.
5.3.3 – Table 15	Deletion	Removed row for the retired “Radio Frequency Distribution Management Interface”. Functionality is preserved through the relocated Radio Frequency Distribution Management Parameters under MORA Signal Resource Management Interface.
5.3.3 – Table 15	Update	Updated row for “Auto-Discovery Interface” applicability from Optional to Recommended.
5.3.3.1 – Table 16	Deletion	Removed “Version Information Management Parameters for MORA” since Common Management Interface Specification’s “Version Information Management Parameters” will reference this specification.
5.3.3.1 – Table 16	Relocated	Relocated “Radio Frequency Distribution Management Parameters”, row added to table.
5.3.3.1.1	Addition	Added paragraph with verbiage for VICTORY “Management Interface Error Types” reference. Added paragraph with verbiage for VICTORY “String Bounds” and “URI Bounds” references.
5.3.3.1.1	Update	Updated paragraph verbiage for Appendix B: MORA WSDLs reference. Updated to remove individual references to “Management Interface Error Types” covered by new paragraph that includes validation order for error responses.
5.3.3.1.1 – 1.b.ii.1	Update	Updated that optional fields which are not applicable in certain use cases that are contained and well-formed within the argument, shall be ignored.
5.3.3.1.1 – 1.b.ii.3	Addition	Added error condition for “Reserve Signal Port” for “Invalid signal port id” if invalid for the device. Added error condition for “Reserve Signal Port” for “Incompatible signal port id” when not compatible with the Current MORA Configuration. Added error condition for “Reserve Signal Port” to include an OUT_OF_RANGE failure response condition for arguments.
5.3.3.1.1 – 1.b.ii.4	Addition	Added note verbiage for “Set Current MORA Configuration” impacts.
5.3.3.1.1 – 1.b.iii.3	Update	Updated error condition for “Release Signal Port” from “Reservation confirmation mismatch” to “Confirmation number mismatch”.

Section in V2.4	Mod Type	Change in V2.4
5.3.3.1.1 – 1.b.iii.3	Addition	Added error condition for “Release Signal Port” for “Invalid signal port id” if invalid for the device. Added error condition for “Release Signal Port” for “Incompatible signal port id” when not compatible with the Current MORA Configuration. Added error condition for “Release Signal Port” to include an OUT_OF_RANGE failure response condition for arguments.
5.3.3.1.1 – 2.b.i.2	Clarification	Clarified “Get Signal Port Reservations” regulation to use the proper term “shall”.
5.3.3.1.1 – 3.b.i.3	Addition	Added error condition for “Get Signal Port Description” for “Invalid signal port id” if invalid for the device. Added error condition for “Get Signal Port Description” to include an OUT_OF_RANGE failure response condition for arguments.
5.3.3.1.1 – 4.b.i.3	Addition	Added error condition for “Get Signal Port Default Performance Data” for “Invalid signal port id” if invalid for the device. Added error condition for “Get Signal Port Default Performance Data” to include an OUT_OF_RANGE failure response condition for arguments.
5.3.3.1.1 – 5.c.i.2	Clarification	Clarified “Get Static External Connection Map” regulation to use the proper term “shall”.
5.3.3.1.1 – 6.b.i.2	Clarification	Clarified “Get Static Internal Connection Map” regulation to use the proper term “shall”.
5.3.3.1.2	Relocated	Relocated “Radio Frequency Distribution Management Parameters” from within the retired “Radio Frequency Distribution Management Interface” section to within the “MORA Signal Resource Management Interface” section.
5.3.3.1.2	Addition	Added paragraph with verbiage for VICTORY “Management Interface Error Types” reference. Added paragraph with verbiage for VICTORY “String Bounds” and “URI Bounds” references.
5.3.3.1.2	Update	Updated paragraph verbiage for Appendix B: MORA WSDLs reference. Updated to remove individual references to “Management Interface Error Types” covered by new paragraph that includes validation order for error responses.
5.3.3.1.2 – 1.b.ii.1	Update	Updated that optional fields which are not applicable in certain use cases that are contained and well-formed within the argument, shall be ignored.
5.3.3.1.2 – 1.b.ii.3	Addition	Added error condition for “Reserve Switch Group” for “Invalid switch group id” if invalid for the device. Added error condition for “Reserve Switch Group” to include an OUT_OF_RANGE failure response condition for arguments.
5.3.3.1.2 – 1.b.iii.3	Update	Updated error condition from “Reservation confirmation mismatch” to “Confirmation number mismatch”.
5.3.3.1.2 – 1.b.iii.3	Addition	Added error condition for “Release Switch Group” for “Invalid switch group id” in invalid for the device. Added error condition for “Release Switch Group” to include an OUT_OF_RANGE failure response condition for arguments.
5.3.3.1.2 – 2.b.i.2	Clarification	Clarified “Get Switch Group Reservations” regulation to use the proper term “shall”.
5.3.3.2 – Table 17	Update	Updated specification name from “MDM Protocol Specification” to “MDM Protocol Specifications”. Updated specification name from “MDM Acknowledgement Message Specification” to “MDM Acknowledgement Message (Type 2) Specification”. Updated specification name from “MDM Time of Day Message Specification” to “MDM Time of Day Message (Type 3) Specification”. Updated specification name from “MDM Signal Port User ID Message Specification” to “MDM Signal Port User ID Message (Type 4) Specification”. Updated specification name from “MDM Health Message Specification” to “MDM Health Message (Type 5) Specification”. Updated specification name from “MDM Switch Group User ID Message Specification” to “MDM Switch Group User ID Message (Type 7) Specification”.
5.3.3.2 – Table 17	Addition	Added row for specification “MDM Networking Specifications”. Added footnote to table.
n/a	Deletion	Retired Radio Frequency Distribution Management Interface <MT92015-V2.3>.

Section in V2.4	Mod Type	Change in V2.4
n/a	Relocated	Relocated Radio Frequency Distribution Management Parameters to within “MORA Signal Resource Management Interface”.
5.3.4 – Table 18	Update	Updated applicability conditions to remove spec tag/date to mitigate specification maintenance.
5.3.4 – Table 18	Addition	Added footnote to table.
5.3.4.2 – Table 20	Update	Updated specification name from “MDM Protocol Specification” to “MDM Protocol Specifications”. Updated specification name from “MDM Acknowledgement Message Specification” to “MDM Acknowledgement Message (Type 2) Specification”.
5.3.4.2 – Table 20	Addition	Added row for “MDM Networking Specifications”. Added row for “MORA Low Latency Bus Performance Specification”.
5.3.4.3 – Table 21	Update	Updated specification name from “MDM Protocol Specification” to “MDM Protocol Specifications”.
5.3.4.3 – Table 21	Addition	Added row for “MDM Networking Specifications”. Added row for “MORA Low Latency Bus Performance Specification”.
5.3.4.4 – Table 22	Update	Updated specification name from “MDM Protocol Specification” to “MDM Protocol Specifications”.
5.3.4.4 – Table 22	Addition	Added row for “MDM Networking Specifications”. Added row for “MORA Low Latency Bus Performance Specification”.
5.3.4.5 – Table 23	Update	Updated specification name from “MDM Protocol Specification” to “MDM Protocol Specifications”. Updated specification name from “MDM Acknowledgement Message Specification” to “MDM Acknowledgement Message (Type 2) Specification”. Updated specification name from “MDM Time of Day Message Specification” to “MDM Time of Day Message (Type 3) Specification”. Updated specification name from “MDM Signal Port User ID Message Specification” to “MDM Signal Port User ID Message (Type 4) Specification”. Updated specification name from “MDM Health Message Specification” to “MDM Health Message (Type 5) Specification”. Updated specification name from “MDM Command Message Specification” to “MDM Command Message (Type 6) Specification”. Updated specification name from “MDM Switch Group User ID Message Specification” to “MDM Switch Group User ID Message (Type 7) Specification”.
5.3.4.5 – Table 23	Addition	Added row for “MDM Networking Specifications”. Added footnote to table.
5.3.5	Relocated	Relocated paragraph to section 5.3.5.1.
5.3.5	Correction	Corrected “id” to be “identifier” in the definitions of complex type fields.
5.3.5.1	Relocated	Relocated paragraph from section 5.3.5.
5.3.5.1	Update	Updated paragraph with “shall” after being moved to a regulatory section.
5.3.5.1	Addition	Added paragraph with verbiage for VICTORY “String Bounds” and “URI Bounds” references.
5.3.5.1 – 1.e.iii	Clarification	Clarified “Elements” in “Antenna Array” with grammar and consistency changes.
5.3.5.1 – 3.c.iii	Clarification	Clarified “Polarizations” in “Array Element” with grammar and consistency changes.
5.3.5.1 – 10	Addition	Added the “Device Specific Status” complex type.
5.3.5.1 – 11.a.ii.7	Addition	Added a new “State” enumeration in “Device Status” with the value “SANITIZED”.
5.3.5.1 – 11.d	Clarification	Clarified element name from “Built-In Test Result” to “Built-In Test Summary Result”
5.3.5.1 – 11.d i.	Clarification	Clarified the element definition from “The result of the last built-in test” to be “The summary result of the last built-in test”
5.3.5.1 – 11.d ii.1	Correction	Corrected the enumeration string from “SUCCESSFUL” to “PASS”

Section in V2.4	Mod Type	Change in V2.4
5.3.5.1 – 11.d ii.3	Correction	Corrected the enumeration string from “FAULT” to “FAIL”
5.3.5.1 – 11.m	Update	Updated “Device Specific Statuses” in “Device Status” to use the new “Device Specific Status” complex type and adjusted regulations.
5.3.5.1 – 11.m	Clarification	Clarified “Device Specific Statuses” in “Device Status” that shall contain at least one item.
5.3.5.1 – 16.b.iii	Correction	Corrected “Filters” list bounds in “Filter Bank” from unbounded to an upper limit of 32 items in its list.
5.3.5.1 – 17.a.ii	Relocated	Relocated the range and resolution of “Start” in “Frequency Range” from the previous “NOTE:” in 17.a.iv, making the statement regulatory.
5.3.5.1 – 17.b.ii	Relocated	Relocated the range and resolution of “Stop” in “Frequency Range” from the previous “NOTE:” in 17.b.iv, making the statement regulatory.
5.3.5.1 – 17.c.ii	Correction	Corrected “Resolution” in “Frequency Range” to be a real number between greater than or equal to 0, rather than greater than 0.
5.3.5.1 – 17.c.ii	Relocated	Relocated the maximum value of “Resolution” in “Frequency Range” from the previous “NOTE:” in 17.c.v, making the statement regulatory.
5.3.5.1 – 18.a.ii	Relocated	Relocated the range and resolution of “IF Center Frequencies” in “Frequency Translation” from the previous “NOTE:” in 18.a.v, making the statement regulatory.
5.3.5.1 – 18.b.ii	Relocated	Relocated the range and resolution of “IF Bandwidths” in “Frequency Translation” from the previous “NOTE:” in 18.b.v, making the statement regulatory.
5.3.5.1 – 18.d.ii	Relocated	Relocated the range and resolution of “RF Bandwidths” in “Frequency Translation” from the previous “NOTE:” in 18.d.v, making the statement regulatory.
5.3.5.1 – 18.e.ii	Correction	Corrected “Tuning Speed” in “Frequency Translation” to be an integer (64-bit) greater than 0, rather than unbounded.
5.3.5.1 – 19.b.ii	Correction	Corrected “Signal Direction” enumerated list in “Gain Stage” to remove the enumerated value “TOR”.
5.3.5.1 – 20.a.ii	Relocated	Relocated the range and resolution of “Min Injected Power” in “Injected Power Range” from the “NOTE:” in 20.a.iv, making the statement regulatory.
5.3.5.1 – 20.a.iv	Update	Updated verbiage in the note to reflect non-regulatory applicability to MDM VRT Type fields.
5.3.5.1 – 20.b.ii	Relocated	Relocated the range and resolution of “Max Injected Power” in “Injected Power Range” from the “NOTE:” in 20.b.iv, making the statement regulatory.
5.3.5.1 – 20.b.iv	Update	Updated verbiage in the note to reflect non-regulatory applicability to MDM VRT Type fields.
5.3.5.1 – 20.c.ii	Relocated	Relocated the range and resolution of “Resolution” in “Injected Power Range” from the “NOTE:” in 20.c.iv, making the statement regulatory.
5.3.5.1 – 20.c.iv	Update	Updated verbiage to remove “Note:” as the section is regulatory.
5.3.5.1 – 21.b.ii	Update	Updated “Spatial Calibration” in “Manifold Band” to require that it shall be a “MORA File” complex type with “Type” value of CALIBRATION.
5.3.5.1 – 21.g.iii	Addition	Added statement to “Beamwidths” in “Manifold Band” that it shall contain at least one item in its list.
5.3.5.1 – 22.a.ii	Relocated	Relocated the range and resolution of “Minimum Gain” in “Manual Gain” from the previous “NOTE:” in 22.a.iv, making the statement regulatory.
5.3.5.1 – 22.b.ii	Relocated	Relocated the range and resolution of “Maximum Gain” in “Manual Gain” from the previous “NOTE:” in 22.b.iv, making the statement regulatory.
5.3.5.1 – 22.c.ii	Relocated	Relocated the maximum value of “Resolution” in “Manual Gain” from the previous “NOTE:” in 22.c.iv, making the statement regulatory.
5.3.5.1 – 23	Addition	Added new “MORA Configuration” complex type.
5.3.5.1 – 24.e.ii	Correction	Corrected “Version Info URL” in “MORA Device” data type to be a restricted URI unique to the system, rather than a string.

Section in V2.4	Mod Type	Change in V2.4
5.3.5.1 – 25.a	Update	Updated “ID” in “MORA File” to be renamed to “File Name”. Updated “File Name” to be within the scope of the device, rather than the VDB.
5.3.5.1 – 25.b.ii	Clarification	Clarified that “Path” in “MORA File” is the path of the file on the resource.
5.3.5.1 – 25.b.iv	Update	Updated the use of “Path” in “MORA File” to optional.
5.3.5.1 – 25.c.ii	Correction	Corrected format of “Size” in “MORA File” to be integer (64 bit) instead of real number.
5.3.5.1 – 25.c.iii	Correction	Corrected units of “Size” in “MORA File” to be bytes instead of kilobytes.
5.3.5.1 – 25.d	Addition	Added new “Type” in “MORA File” with the enumerated value “PROFILE”.
5.3.5.1 – 27.a.ii	Clarification	Clarified “Component ID” in “MORA Transport Configuration” to state there shall not be any zero padding on the “ID” field.
5.3.5.1 – 27 n/a	Deletion	Deleted “Discrete Value” in “MORA Transport Configuration”
5.3.5.1 – 27.d.iv	Addition	Added that Unique Name in the “Data Transport Configuration” shall minimally include the MAC address in the first 17 characters in the restricted string (e.g. 02:C0:ED:12:34:56).
5.3.5.1 – 27.d.v	Addition	Added that URI field in the “Data Transport Configuration” shall minimally include IPv4/6 address, UDP port and MDM port information in the path (e.g. udp://192.168.0.1:50001/50100). The UDP port and MDM port may have the same assigned value.
5.3.5.1 – 27.d.vi	Addition	Added that the optional Network Layer field in the “Data Transport Configuration” shall not be included. If the Network Layer field is included and well formed, it shall be ignored.
5.3.5.1 – 27.e.i	Clarification	Clarified “Control Transport Configuration” in “MORA Transport Configuration” to define “Component ID” instead of “component” and “Signal Port ID” instead of “signal port”. Clarified ambiguous wording using “if provided”, rather than “if identified”.
5.3.5.1 – 27.e.v	Addition	Added that Unique Name in the “Data Transport Configuration” shall minimally include the MAC address in the first 17 characters in the restricted string (e.g. 03:C0:ED:00:00:06).
5.3.5.1 – 27.e.vi	Addition	Added that URI field in the “Data Transport Configuration” shall minimally include IPv4/6 address, UDP port and MDM port information in the path (e.g. multicast://224.0.0.6:50001/50100). The UDP port and MDM port may have the same assigned value.
5.3.5.1 – 27.e.vii	Addition	Added that the optional Network Layer field in the “Data Transport Configuration” shall not be included. If the Network Layer field is included and well formed, it shall be ignored.
5.3.5.1 – 27.f	Update	Updated “Data & Context Transport Configuration” in “MORA Transport Configuration” to be renamed to “Signal Data Transport Configuration”. Updated to define “Component ID” instead of “component” and “Signal Port ID” instead of “signal port”. Updated ambiguous wording using “if provided”, rather than “if identified”. Updated use regulations where Signal Data Transport Configuration shall be provided for digital signal ports use cases and shall not be provided for analog signal ports and switch group uses cases.
5.3.5.1 – 27.f.iv	Addition	Added that Unique Name in the “Data Transport Configuration” shall minimally include the MAC address in the first 17 characters in the restricted string (e.g. 03:C0:ED:00:00:06).
5.3.5.1 – 27.f.v	Addition	Added that URI field in the “Data Transport Configuration” shall minimally include IPv4/6 address, UDP port and MDM port information in the path (e.g. multicast://224.0.0.6:50001/50100). The UDP port and MDM port may have the same assigned value.
5.3.5.1 – 27.f.vi	Addition	Added that the optional Network Layer field in the “Data Transport Configuration” shall not be included. If the Network Layer field is included and well formed, it shall be ignored.
5.3.5.1 – 27.g	Addition	Added “Context Transport Configuration” in “MORA Transport Configuration”.
5.3.5.1 – 28.a.ii	Relocated	Relocated the range and resolution of “Minimum 1dB Compression Point” in “Output Level” from the previous “NOTE:” in 28.a.iv, making the statement regulatory.

Section in V2.4	Mod Type	Change in V2.4
5.3.5.1 – 28.b.ii	Relocated	Relocated the range and resolution of “Maximum 1dB Compression Point” in “Output Level” from the previous “NOTE:” in 28.b.iv, making the statement regulatory.
5.3.5.1 – 28.c.ii	Relocated	Relocated the maximum value of “Resolution” in “Output Level” from the previous “NOTE:” in 28.c.iv, making the statement regulatory.
5.3.5.1 – 35.b.iii	Clarification	Clarified “Signal Port IDs” in “Reference Connection” for grammar and consistency.
5.3.5.1 – 36.a.iii	Addition	Added statement to “Circular Regions” in “Regions” that shall contain at least one item in its list.
5.3.5.1 – 36.b.iii	Addition	Added statement to “Elliptical Regions” in “Regions” that shall contain at least one item in its list.
5.3.5.1 – 36.c.iii	Addition	Added statement to “Polygonal Regions” in “Regions” that shall contain at least one item in its list.
5.3.5.1 – 38.a	Clarification	Clarified statements under “ID” in “Reservation Confirmation” to use “ID” rather than “id”.
5.3.5.1 – 38.b.ii	Updated	Updated “Confirmation” in “Reservation Confirmation” to be unique within an operating session, rather than a MORA Device’s operating session. Mitigates component type vs hardware confusion.
5.3.5.1 – 41.a.ii	Relocated	Relocated the maximum value and resolution of “Sample Bandwidth” in “Sample Bandwidth and Sample Rate” from the previous “NOTE:” in 41.a.iv, making the statement regulatory.
5.3.5.1 – 41.b.ii	Relocated	Relocated the maximum value and resolution of “Sample Rate” in “Sample Bandwidth and Sample Rate” from the previous “NOTE:” in 41.b.iv, making the statement regulatory.
5.3.5.1 – 44.a	Update	Updated “Signal Port Description” in “Signal Domain Conversion” to be renamed to “Signal Port Signal Domain Conversion Description”. Mitigates confusion with the Signal Port Description complex type.
5.3.5.1 – 44.b	Update	Updated “Sub Port Descriptions” in “Signal Domain Conversion” to be renamed to “Sub Port Signal Domain Conversion Descriptions”.
5.3.5.1 – 44.b.iii	Addition	Added statement to “Sub Port Descriptions” in “Signal Domain Conversion” that shall contain at least one item in its list.
5.3.5.1 – 45.d.vi	Addition	Added note to “Sample Sizes” in “Signal Domain Conversion Description” for “NOTE: 16 bit I and Q would be stated as 32 bits for sample size.”
5.3.5.1 – 45.f.ii	Correction	Corrected “TX Buffer Size” in “Signal Domain Conversion Description” to be an integer (64-bit) greater than or equal to 0, rather than unbounded.
5.3.5.1 – 45.g.ii	Correction	Corrected “RX Buffer Size” in “Signal Domain Conversion Description” to be an integer (64-bit) greater than or equal to 0, rather than unbounded.
5.3.5.1 – 46.d	Addition	Added “Role” to “Signal Port”.
5.3.5.1 – 46.m.iii	Clarification	Clarified statement to “Antenna Resources” in “Signal Port” that shall contain at least one item in its list.
5.3.5.1 – 46.p	Addition	Added “Required Control Fields” to “Signal Port”.
5.3.5.1 – 47.e.ii	Clarification	Clarified statement to “Sub Ports” in “Signal Port Description” that shall contain at least one and no more than 65,535 items in its list.
5.3.5.1 – 48.b.ii	Clarification	Clarified “Frequency” in “Signal Port Performance Data” to be a real number (64-bit) greater than 0, rather than unbounded.
5.3.5.1 – 49.b	Deletion	Deleted “MORA Devices” in “Signal Port Reservation”.
5.3.5.1 – 49.b	Addition	Added “Client Component IDs” to “Signal Port Reservation”.
5.3.5.1 – 52.d	Addition	Added “Required Control Fields” to “Sub Port”.
5.3.5.1 – 54.a.ii.3	Addition	Added “File Format” in “Supporting Data File” with enumerated value “OTHER”.
5.3.5.1 – 56.c.ii	Clarification	Clarified “Test Source Waveforms” in “Test Source” to be a list of unique integers from 0 to 63 inclusive, rather than a list of integers.
5.3.5.1 – 56.c.iii	Clarification	Clarified “Test Source Waveforms” in “Test Source” contain at least one and no more than 64 items in its list, rather than contain at least one item in its list.

Section in V2.4	Mod Type	Change in V2.4
5.3.5.2	Addition	Added paragraph addressing data types. Added paragraph with verbiage for VICTORY “String Bounds” and “URI Bounds” references.
5.3.5.2 – 1.c	Addition	Added “RF Function” to “Waveform”.
5.3.5.2 – 1.e.i	Clarification	Clarified “Associated Signal Ports” in “Waveform” to be signal port id(s) within the device.
5.3.5.2 – 1.e.iii	Clarification	Clarified “Associated Signal Ports” in “Waveform” to contain at least one and no more than 127 items in its list, rather than contain at least one item in its list.
5.3.5.2 – 2.b	Update	Updated “Configuration IDs” in “Waveform Operation” to be renamed to “MORA Configuration IDs”. Updated from a list of “ID” associated with “MORA File” complex types to a list of “ID” associated with “MORA Configuration” complex types.
5.3.5.3	Addition	Added paragraph addressing data types. Added paragraph with verbiage for VICTORY “String Bounds” and “URI Bounds” references.
5.3.5.3 – 1.b.iii	Clarification	Clarified “Switch States” in “Switch Group” to contain at least two and no more than 8,191 items in its list, rather than contain at least one item in its list.
5.3.5.3 – 1.c	Addition	Added “Control Transport Configuration” to “Switch Group”.
5.3.5.3 – 1.d	Addition	Added “Context Transport Configuration” to “Switch Group”.
5.3.5.3 – 2.b	Deletion	Deleted “MORA Devices” in “Switch Group Reservation”.
5.3.5.3 – 2.b	Addition	Added “Client Component IDs” to “Switch Group Reservation”.
5.4 – 2.i	Update	Updated SD-PARAM to rename “status” to “deviceState”
5.4 – 2.i.2	Addition	Added state to “deviceState” with enumerated value “SANITIZED”.
5.4 – 2.i.4	Update	Added statement to “deviceState” that shall correlate with the “State” corresponding to the “Device Status” complex type.
5.4 – 2.i.5	Correction	Corrected statement to “deviceState” that shall be included in Syslog messages for faults and status representing a MORA Device component type, rather than applying to all component types.
n/a	Deletion	Deleted “switchState” since no mechanism exists to communicate switch states to the MORA Signal Resource Manager.
5.4 – 2.ii	Update	Updated SD-PARAM to rename “application” to “waveform”
5.4 – 2.ii.2	Addition	Added example of reporting multiple waveform descriptions.
5.4 – 2.ii.3	Update	Updated “waveform” definition as a detailed description of the waveform reflected in the “Description” corresponding to the “Waveform” complex type.
5.4 – 2.iii.1/2.iv.1/2.v.1	Clarification	Clarified that the cumulative totals are for the current operating session.
5.5	Clarification	Clarified that “Version Information Management Parameters” is required by the VICTORY Common Management Interface Specification
5.5 – Table 24	Clarification	Clarified with specific column versioning for VICTORY and MORA Management Interface Types
5.5 – Table 25	Addition	Added “DEVICE_INFORMATION” to the SOAP Component Types for MORA Device. Added “GENERIC_END_NODE” to the SOAP Component Types for MORA Device. Clarified with specific column versioning for VICTORY and MORA SOAP Component Types
6 (throughout)	Clarification	Clarified usage of binary actual values in double quotes and parentheses for decimal actual values.

Section in V2.4	Mod Type	Change in V2.4
6.1 – Table 26	Relocated	Relocated the following specifications from Table 26 to a new specification “MDM Networking Specifications <MT96002-V2.4>” and table to separate the MDM protocol from the MDM networking specifications: “Low Latency Copper Data Physical and Data-Link Layer Specification” “Low Latency Fiber Data Physical and Data-Link Layer Specifications” “Standard for Ethernet Specification” “Virtual LANs Specification” “Standard for Internet Protocol and User Datagram Protocol Specification” “Jumbo Frame Packet Support Specification”
6.1 – Table 26	Deleted	Deleted row for “Multicast Dissemination Over the Network Specification”. This is included in individual Operations Interfaces elsewhere.
6.1.1	Update	Updated to remove ML2B verbiage as it is bus agnostic.
6.1.2	Update	Updated to remove ML2B verbiage as it is bus agnostic. Updated verbiage for maximum transmission unit to apply only when transiting a network.
6.1.2.1.5	Update	Updated verbiage for the Origination ID subfield shall consist of 16 bits containing the ML2B Unique Identifier (MUI) that identifies the message originator. Updated verbiage for the Destination ID subfield shall consist of 16 bits containing the ML2B Unique Identifier (MUI) that identifies the final recipient of a unicast message or set to “0000000000000000” for all multicast messages.
6.1.2.1.6 – Table 30	Update	Updated “Acknowledge” to “Acknowledgement”. Updated Data Message Size for Signal Port User ID MDM to nineteen words. Updated Data Message Size for Command MDM to three words.
6.1.2.2	Clarification	Clarified MDM Type 1 verbiage for variable size for maximum transmission unit for the implementation.
6.2	Addition	Added new specification “MDM Networking Specifications <MT96002-V2.4>”. Added “MDM Traffic Marking Specification” to Table 31. Added footnote to table.
6.2 – Table 31	Relocated	Relocated items from 6.1 Table 26 to Table 31: “Low Latency Copper Data Physical and Data-Link Layer Specifications” “Low Latency Fiber Data Physical and Data-Link Layer Specifications” “Standard for Ethernet Specification” “Virtual LANs Specification” “Standard for Internet Protocol and User Datagram Protocol Specification” “Jumbo Frame Packet Support Specification”
6.3.1.1	Clarification	Clarified MORA VITA 49.2 Definitions within the VRT General Prologue for “Clarified Use of Pad Bit Count” to Class ID.
6.3.1.1	Update	Updated MORA VITA 49.2 Signal Data Packet Limitations/Definitions to note “Timestamp and Trailer Always Required”, rather than “Trailer Always Required”. Updated number of context/control fields utilized by MORA from 32 to 33
6.3.1.1	Addition	Added Buffer Status Field to Context/Control Field Clarifications/Limitations/Definitions, where the field name is clarified and the Level and Status subfields get specific definitions
6.3.1.2.1 – Figure 14	Update	Figure updated for Integer Timestamp and Fractional Timestamp to be “M/O”, rather than “O”.
6.3.1.2.2 – Figure 15	Update	Figure updated for Integer Timestamp and Fractional Timestamp to be “M/O”, rather than “O”.
6.3.1.2.3	Update	Updated definition of Timestamp Integer (TSI) for new 00 (0) value. Updated definition of Timestamp Fractional (TSF) for new 00 (0) value.

Section in V2.4	Mod Type	Change in V2.4
6.3.1.2.3 – Table 35	Addition	Added row for TSI Code Types for 00 (0) “No Integer-seconds Timestamp field included”
6.3.1.2.3 – Table 36	Addition	Added row for TSF Code Types for 00 (0) “No Fractional-seconds Timestamp field included”
6.3.1.2.4	Clarification	Clarified Stream ID definition. Clarified Port ID definition. Clarified Sub Port ID definition.
6.3.1.2.5	Clarification	Clarified Pad Bit Count in VRT Class ID to address ambiguity in VITA 49.2.
6.3.1.2.5 – Table 42	Deletion	Deleted row with example binary bit values.
6.3.1.2.5 – Table 43	Deletion	Deleted row with example binary bit values.
6.3.1.3 – Table 44	Clarification	Clarified that the CIF 1 / Bit 1 field name is “Buffer Status” and not “Buffer Size” to address ambiguity in VITA 49.2
6.3.1.3 – Table 44	Addition	Added MORA use of the CIF 1 / Bit 1 “Buffer Status” field (field color changed from gray to green)
6.3.1.3.2	Update	Updated verbiage to remove mentions of red text in table.
6.3.1.3.2 – Table 47	Update	Updated red text in table to black to match VICTORY standard format.
6.3.1.3.3 – Table 50	Addition	Added row for “01101” (13) IEEE-754 Half Precision (16-bit) Floating Point.
6.3.1.3.7	Update	Updated/moved the individual “Filter # Subfield” sections to combine them under a new “Filter Selection Subfield” section. Updated verbiage in response to VSSO request to denote Filter 1, 2, and 3 as bit fields underneath a new “Filter Selections Subfield”.
6.3.1.3.7 – Table 56	Update	Updated table structure in response to VSSO request to denote Filter 1, 2, and 3 as bit fields under a “Filter Selections Subfield”.
6.3.1.3.7	Clarification	Updated the “Switch Control/Status Subfield” section to clarify how Stream ID represents the Switch Group Identifier.
6.3.1.3.7 – Figure 16	Update	Updated figure to remove leading zeros in numerical identifiers.
6.3.1.3.8	Addition	Added section for the Buffer Status (CIF 1/Bit 1) field for MORA use, clarification of the field name, the table for the Buffer Status field and the MORA definitions for its four subfields including the table for the Status subfield.
6.3.1.4.1	Update	Updated verbiage associated with Figure 17.
6.3.1.4.1 – Figure 17	Update	Updated figure for Integer-seconds Timestamp and Fractional-seconds Timestamp being mandatory.
6.3.1.4.2	Update	Updated stating the TSI field shall be set to “01” for UTC. Updated stating the TSF field shall be set to “10” for Real-Time (Picoseconds) Timestamp.
6.3.1.4.2 – Table 60	Update	Updated table for TSI and TSF to add bit values.
6.3.1.4.2 – Table 60	Correction	Corrected indicator value to “Nd0”, rather than “i”
6.3.1.4.4	Update	Updated verbiage to remove mentions of red text in table.
6.3.1.4.4 – Table 62	Update	Updated red text in table to black to match VICTORY standard format.
6.3.1.5.2	Update	Updated stating the TSI field may be set to “00” only when CIF 0 Bit 31 field is present, and its value is equal to “0”. Updated stating the TSF field may be set to “00” only when CIF 0 Bit 31 field is present, and its value is equal to “0”.
6.3.1.5.4	Addition	Added requirement for periodic context packet generation in support of non-controlling users.
6.3.1.6.4	Update	Updated verbiage to remove mentions of red text in table.
6.3.1.6.4 – Table 66	Update	Updated red text in table to black to match VICTORY standard format.
6.3.1.6.5	Update	Updated verbiage to remove mentions of red text in table.
6.3.1.6.5 – Table 67	Update	Updated red text in table to black to match VICTORY standard format.
6.3.1.6.6	Correction	Corrected verbiage for (CAM) Field for Control Cancellation Packets, rather than (CAM) Field for Acknowledge Packets.
6.3.1.6.6	Update	Updated verbiage to remove mentions of red text in table.
6.3.1.6.6 – Table 68	Update	Updated red text in table to black to match VICTORY standard format.

Section in V2.4	Mod Type	Change in V2.4
6.3.1.6.7 – Table 69	Update	Removed “Y” from “Reference Level” row and “SDC” column. Added “Y” at “Signal Data Packet Payload Format” row and “SDC” column.
6.3.2	Update	Updated to rename “MDM Acknowledge Message (Type 2) Specification” to “MDM Acknowledgement Message (Type 2) Specification”.
6.3.2	Clarification	Clarify the message purpose from “was received” to “was received and validated”.
6.3.2 – Table 70	Update	Updated to rename table “MDM Acknowledge Message Format” to “MDM Acknowledgement Message Format”.
6.3.2 – Table 71	Update	Updated to rename table “MDM Acknowledge Message Response Bit Field” to “MDM Acknowledgement Message Response Bit Field”.
6.3.2 – Table 72	Update	Updated to rename table “MDM Acknowledge Response Meaning” to “MDM Acknowledgement Response Meaning”. Updated the “Response Meaning” column with regulatory shall statements. Updated column header “Behavior” to “Notional Behavior”. Updated footnote to remove “shall” statement.
6.3.3	Update	Updated to rename “MDM Time of Day (ToD) Message (Type 3) Specification” to “MDM Time of Day Message (Type 3) Specification”.
6.3.3	Clarification	Clarified the intended recipient of the MDM Time of Day message as the MORA Signal Port Manager component type.
6.3.4	Update	Updated “User ML2B Data & Context” IP, MAC, and UDP Port to be “User ML2B Signal Data” IP, MAC, and UDP Port.
6.3.4	Clarification	Clarified that all IP, MAC and UDP Ports being conveyed are for the User. Clarified that the User ML2B Signal Data IP Address, MAC and UDP Port fields may be set to zero when not applicable such as analog signal port use cases.
6.3.4	Addition	Added “User ML2B Context” IP, MAC, and UDP Port.
6.3.4 – Table 75	Update	Updated “User ML2B Data & Context” IP, MAC, and UDP Port to be “User ML2B Signal Data” IP, MAC, and UDP Port.
6.3.4 – Table 75	Addition	Added “User ML2B Context” IP, MAC, and UDP Port.
6.3.5	Clarification	Clarified the intended recipients of the MDM Health message as the MORA Device and MORA Signal Resource Manager component types. Clarified to add Port ID to Operational Parameter and Parameter Conditions being set to zero when using Operational State. Clarified the reporting of health for switch groups.
6.3.5 – Figure 24	Correction	Corrected Parameter Condition Bit Legend abbreviations.
6.3.6 – Table 79	Addition	Added two rows to the Command Message Format: Configuration Field Waveform Operation Field
6.3.6	Addition	Added verbiage for Command Message usages for organic state changes (e.g. FAULT), conveying a change to the Current MORA Configuration, and conveying a change to the Current Waveform Operation to the MORA Signal Port Manager component type. Added section for Configuration Field. Added section for Waveform Operation Field.
6.3.6 – Figure 25	Addition	Added Command values of: Sanitize Fault Run BIT
6.3.6 – Figure 26	Addition	Added new figure for the Configuration Field.
6.3.6 – Figure 27	Addition	Added new figure for the Waveform Operation Field.

Section in V2.4	Mod Type	Change in V2.4
6.3.7	Clarification	Clarified that the IP, MAC and UDP Ports being conveyed are for the User.
6.3.7	Update	Updated “User ML2B Data & Context” IP, MAC, and UDP Port to be “User ML2B Context” IP, MAC, and UDP Port.
6.3.7 – Table 80	Update	Updated “User ML2B Data & Context” IP, MAC, and UDP Port to be “User ML2B Context” IP, MAC, and UDP Port.
7.3.1	Clarification	Clarified that the device host is performing the zero-configuration communication.
7.3.2	Clarification	Clarified the entities communicating in the figure.
7.3.2	Relocated	Relocated portions of verbiage from the request section to the response section.
7.3.2 – Figure 30	Correction	Corrected Get Interface SOAP Components arrow by removing the argument in the request.
7.3.3	Clarification	Clarified the entities communicating in the figure.
7.3.3 – Figure 31	Update	Updated example listing of MORA File data. Replaced the request for Get File List of “Type” CONFIGURATION with a new request for Get Available MORA Configurations; and its new response. Updated response of Get Current MORA Configuration from an ID associated with a MORA File to an ID associated with a MORA Configuration. Updated example list of Device Status data.
7.3.3	Update	Updated verbiage to match the updated figure 31.
7.3.4	Clarification	Clarified the entities communicating in the figure.
7.3.5	Update	Updated transport configuration URI IPv4, UDP and MDM port id assignments to be consistent with 5.3.5.1 – 27 updates and to be unique within the system example.
7.4	Update	Updated transport configuration URI IPv4, UDP and MDM port id assignments to be consistent with 5.3.5.1 – 27 updates and to be unique within the system example.
7.4.1	Update	Updated “Data & Context Transport Configurations” to be “Context Transport Configurations”
7.5.2 – Figure 39	Correction	Corrected figure for lines 19 and 31 which terminated on the incorrect vertical.
7.5.2	Update	Updated “Data & Context Transport Configurations” to be “Context Transport Configurations”. Updated transport configuration URI IPv4, UDP and MDM port id assignments to be consistent with 5.3.5.1 – 27 updates and to be unique within the system example.
Appendix B – Table 90	Addition	Added “Generic End Node Management Parameters” “GenericEndNode.wsdl” as required.
Appendix C – Table 91	Addition	Added “MoraDeviceManagementTypes.xsd” and “MorasignalResourceManagementTypes.xsd” to Table 91 MORA Schemas since the complex types defined in the MoraDevice.wsdl and MoraSignalResource.wsdl respectively have been relocated to new schema files for compatibility with non-SOAP XML tools.
Appendix D	Update	Updated to replace device component IDs SPU1 and SPU2 with OTH1 and OTH2.
Appendix D – Figure 40	Update	Updated horizontal “Layers” to be “Resources”. Updated “Processing Resources” to a more purple color for consistency with other figures/documents. Updated to replace device component IDs SPU1 and SPU2 with OTH1 and OTH2.