

MM Requirements to Design Traceability

MM Version 2.5.0

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| **Requirement Number** | **Requirement Text** | **Software Design Element** | **Applicable Software Functions** |
| MM1000 | Upon receipt of a No-Op command, MM shall increment the MM Valid Command Counter and generate an event message. | Operation | MM\_AppPipe  MM\_NoopCmd |
| MM1001 | Upon receipt of a Reset command, MM shall reset the following housekeeping variables to a value of zero:   a) MM Valid Command Counter  b) MM Command Rejected Counter | Operation | MM\_AppPipe  MM\_ResetCmd |
| MM1006 | For all MM commands, if the length contained in the message header is not equal to the expected length, MM shall reject the command. | Operation | MM\_NoopCmd  MM\_ResetCmd  MM\_PeekCmd  MM\_PokeCmd  MM\_LoadMemWIDCmd  MM\_LoadMemFromFileCmd  MM\_DumpMemToFileCmd  MM\_DumpInEventCmd  MM\_FillMemCmd  MM\_LookupSymbolCmd  MM\_SymTblToFileCmd  MM\_EepromWriteEnaCmd  MM\_EepromWriteDisCmd  MM\_VerifyCmdLength |
| MM1007 | If the address specified in any MM command fails validation, MM shall reject the command | Operation | MM\_PeekCmd  CFS\_ResolveSymAddr  MM\_VerifyPeekPokeParams |
| MM1008 | If the filename specified in any MM command is not valid, MM shall reject the command | Operation | MM\_DumpMemToFileCmd  MM\_LoadMemFromFileCmd  MM\_SymTblToFileCmd  CFS\_IsValidFilename |
| MM1009 | If MM accepts any command as valid, MM shall execute the command, increment the MM Valid Command Counter and issue an event message | Operation | MM\_AppPipe  MM\_NoopCmd  MM\_ResetCmd  MM\_PeekCmd  MM\_PokeCmd  MM\_LoadMemWIDCmd  MM\_LoadMemFromFileCmd  MM\_DumpMemToFileCmd  MM\_DumpInEventCmd  MM\_FillMemCmd  MM\_LookupSymbolCmd  MM\_SymTblToFileCmd  MM\_EepromWriteEnaCmd  MM\_EepromWriteDisCmd |
| MM1010 | If MM rejects any command, MM shall abort the command execution, increment the MM Command Rejected Counter and issue an error event message | Operation | MM\_AppPipe |
| MM1011 | <OPTIONAL> Symbol Name and offset can be used in lieu an absolute address in any RAM command | Operation | MM\_PeekCmd  MM\_PokeCmd  MM\_LoadMemWIDCmd  MM\_LoadMemFromFileCmd  MM\_DumpMemToFileCmd  MM\_DumpInEventCmd  MM\_FillMemCmd |
| MM1012 | <OPTIONAL> Symbol Name and offset can be used in lieu an absolute address in any EEPROM command | Operation | MM\_PeekCmd  MM\_PokeCmd  MM\_LoadMemWIDCmd  MM\_LoadMemFromFileCmd  MM\_DumpMemToFileCmd  MM\_DumpInEventCmd  MM\_FillMemCmd |
| MM1013 | The MM application shall generate an error event message if symbol table operations are initiated but not supported in the current target environment. | Operation | MM\_LookupSymbolCmd  MM\_SymTblToFileCmd |
| MM2000 | Upon receipt of a Poke command , MM shall write 8, 16, or 32 bits of data to the command-specified RAM address | Operation | MM\_PokeCmd  MM\_PokeMem |
| MM2000.1 | MM shall confirm a write to the RAM address by issuing an event message which includes:  a) address written  b) length of data written  c) value of the data written | Operation | MM\_PokeMem  MM\_VerifyPeekPokeParams |
| MM2002 | Upon receipt of a Peek command, MM shall read 8, 16, or 32 bits of data from the command-specified RAM address and generate an event message containing the following data:  a) address read  b) length of data read  c) value of the data rea | Operation | MM\_PeekCmd  MM\_PeekMem  CFE\_PSP\_MemRead8  CFE\_PSP\_MemRead16  CFE\_PSP\_MemRead32 |
| MM2003 | Upon receipt of a Write With Interrupts Disable command, MM shall write up to <PLATFORM\_DEFINED, TBD> bytes to the command-specified RAM memory address with interrupts disabled. | Operation | MM\_LoadMemWIDCmd |
| MM2003.1 | MM shall verify that the command-specified <MISSION\_DEFINED> CRC matches the computed CRC of the data | Operation | MM\_LoadMemWIDCmd |
| MM2003.2 | If the command-specified CRC fails validation, MM shall reject the command | Operation | MM\_LoadMemWIDCmd |
| MM2004 | Upon receipt of a Read command, MM shall read the command-specified number of consecutive bytes from the command-specified RAM memory address and generate an event message containing the data. | Operation | MM\_DumpInEventCmd  MM\_FillDumpInEventBuffer |
| MM2004.1 | If the number of bytes exceeds the maximum event message size then the command shall be rejected. | Operation | MM\_VerifyLoadDumpParams |
| MM2100 | Upon receipt of a Load From File command, MM shall load RAM, with interrupts enabled during the actual load, based on the following information contained in the command-specified "file:"   a) Destination Address  b) Destination Memory Type  c) <MISSION\_DEFINED> CRC (data only)  d) Number of Bytes to Load | Operation | MM\_LoadMemFromFileCmd  MM\_LoadMemFromFile |
| MM2100.1 | If the CRC contained in the file fails validation, MM shall reject the command | Operation | MM\_LoadMemFromFileCmd |
| MM2100.2 | If the number of bytes exceeds <PLATFORM\_DEFINED, TBD> then the command shall be rejected. | Operation | MM\_VerifyLoadFileSize  MM\_VerifyLoadDumpParams |
| MM2104 | Upon receipt of a Dump to File command, MM shall write the data associated with the command-specified RAM address , command-specified number of bytes and calculated <MISSION\_DEFINED> CRC to the command-specified file. | Operation | MM\_DumpMemToFileCmd  MM\_DumpMemToFile |
| MM2104.1 | If the command-specified number of bytes exceeds <PLATFORM\_DEFINED, TBD> then the command shall be rejected. | Operation | MM\_VerifyLoadDumpParams |
| MM2300 | Upon receipt of a Fill command, MM shall fill RAM with the contents based on the following command-specified parameters:  a) Destination Address   b) Destination Memory Type  c) Number of Bytes to Fill  d) 32-bit Fill Pattern | Operation | MM\_FillMemCmd  MM\_VerifyLoadDumpParams  MM\_FillMem |
| MM2300.1 | If the command-specified number of bytes exceeds <PLATFORM\_DEFINED, TBD> then the command shall be rejected. | Operation | MM\_VerifyLoadDumpParams |
| MM2500 | When writing data to RAM memory, MM shall write a maximum of <PLATFORM\_DEFINED, TBD> bytes per execution cycle | Operation | MM\_FillMem |
| MM2501 | When writing RAM data to a file, MM shall write a maximum of <PLATFORM\_DEFINED, TBD> bytes per execution cycle | Operation | MM\_DumpMemToFile  MM\_SegmentBreak |
| MM3000 | Upon receipt of a Poke command , MM shall write 8, 16, or 32 bits of data to the command-specified EEPROM address | Operation | MM\_PokeCmd  MM\_PokeEeprom |
| MM3000.1 | MM shall confirm a write to the EEPROM address by issuing an event message which includes:  a) address written  b) length of data written  c) value of the data written | Operation | MM\_PokeEeprom  MM\_VerifyPeekPokeParams |
| MM3001 | Upon receipt of a Peek command, MM shall read 8, 16, or 32 bits of data from the command-specified EEPROM address and generate an event message containing the following data:  a) address read  b) length of data read  c) value of the data read | Operation | MM\_PeekCmd  MM\_PeekMem  CFE\_PSP\_MemRead8  CFE\_PSP\_MemRead16  CFE\_PSP\_MemRead32 |
| MM3002 | Upon receipt of a Read command, MM shall read the command-specified number of consecutive bytes from the command-specified EEPROM memory address and generate an event message containing the data. | Operation | MM\_DumpInEventCmd  MM\_FillDumpInEventBuffer |
| MM3002.1 | If the number of bytes exceeds the maximum event message size then the command shall be rejected. | Operation | MM\_VerifyLoadDumpParams |
| MM3100 | Upon receipt of a Load from File command, MM shall load EEPROM memory based on the following information contained in the command-specified "file:"  a) Destination Address  b) Destination Memory Type  c) <MISSION\_DEFINED> CRC (data only)  d) Number of Bytes to Load | Operation | MM\_LoadMemFromFileCmd  MM\_LoadMemFromFile |
| MM3100.1 | If the CRC contained in the file fails validation, MM shall reject the command | Operation | MM\_LoadMemFromFileCmd |
| MM3100.2 | If the number of bytes exceeds <PLATFORM\_DEFINED, TBD> then the command shall be rejected. | Operation | MM\_VerifyLoadFileSize  MM\_VerifyLoadDumpParams |
| MM3104 | Upon receipt of a Dump to File command, MM shall write the data associated with the command-specified EEPROM address ,command-specified number of bytes and calculated <MISSION\_DEFINED> CRC to the command-specified file. | Operation | MM\_DumpMemToFileCmd  MM\_DumpMemToFile |
| MM3104.1 | If the command-specified number of bytes exceeds <PLATFORM\_DEFINED, TBD> then the command shall be rejected. | Operation | MM\_VerifyLoadDumpParams |
| MM3200 | Upon receipt of a Fill command, MM shall fill EEPROM memory with the contents based on the following command-specified parameters:   a) Destination Address  b) Destination Memory Type  c) Number of Bytes to Fill  d) 32-bit Fill Pattern | Operation | MM\_FillMemCmd  MM\_VerifyLoadDumpParams  MM\_FillMem |
| MM3200.1 | If the command-specified number of bytes exceeds <PLATFORM\_DEFINED, TBD> then the command shall be rejected. | Operation | MM\_VerifyLoadDumpParams |
| MM3300 | When writing data to EEPROM memory, MM shall write a maximum of <PLATFORM\_DEFINED, TBD> bytes per execution cycle | Operation | MM\_FillMem |
| MM3301 | When writing EEPROM data to a file, MM shall write a maximum of <PLATFORM\_DEFINED, TBD> bytes per execution cycle | Operation | MM\_DumpMemToFile  MM\_SegmentBreak |
| MM3400 | Upon receipt of an Enable EEPROM command, MM shall enable the command specified bank of EEPROM for writing. | Operation | MM\_EepromWriteEnaCmd |
| MM3500 | Upon receipt of a Disable EEPROM command, MM shall disable/lock the command specified bank of EEPROM from being written to. | Operation | MM\_EepromWriteDisCmd |
| MM5000 | Upon receipt of a Poke command , MM shall write <PLATFORM\_DEFINED> bytes of data to the command-specified Memory Mapped I/O address | Operation | MM\_PokeCmd  MM\_PokeMem |
| MM5000.1 | MM shall confirm a write to the Memory Mapped I/O address by issuing an event message which includes:  a) address written  b) length of data written  c) value of the data writte | Operation | MM\_PokeMem  MM\_VerifyPeekPokeParams |
| MM5002 | Upon receipt of a Peek command, MM shall read <PLATFORM\_DEFINED> bytes of data from the command-specified Memory Mapped I/O address and generate an event message containing the following data:  a) address read  b) length of data read  c) value of the data read | Operation | MM\_PeekCmd  MM\_PeekMem  CFE\_PSP\_MemRead8  CFE\_PSP\_MemRead16  CFE\_PSP\_MemRead32 |
| MM5004 | Upon receipt of a Read command, MM shall read the command-specified number of consecutive bytes from the command-specified Memory Mapped I/O memory address and generate an event message containing the data. | Operation | MM\_DumpInEventCmd  MM\_FillDumpInEventBuffer |
| MM5004.1 | If the number of bytes exceeds the maximum event message size then the command shall be rejected. | Operation | MM\_VerifyLoadDumpParams |
| MM5100 | Upon receipt of a Load from File command, MM shall load Memory mapped I/O, with interrupts enabled during the actual load, based on the following information contained in the command-specified "file:"  a) Destination Address  b) Destination Memory Type  c) <MISSION\_DEFINED> CRC (data only)  d) Number of Bytes to Load | Operation | MM\_LoadMemFromFileCmd  MM\_LoadMem32FromFile  MM\_LoadMem16FromFile  MM\_LoadMem8FromFile |
| MM5100.1 | If the command-specified CRC fails validation, MM shall reject the command | Operation | MM\_LoadMemFromFileCmd |
| MM5100.2 | If the number of bytes exceeds <PLATFORM\_DEFINED, TBD> then the command shall be rejected. | Operation | MM\_VerifyLoadFileSize  MM\_VerifyLoadDumpParams |
| MM5104 | Upon receipt of a Dump to File command, MM shall write the data associated with the command-specified Memory mapped I/O address, command-specified number of bytes and calculated <MISSION\_DEFINED> CRC to the command-specified file. | Operation | MM\_DumpMemToFileCmd  MM\_DumpMem32ToFile  MM\_DumpMem16ToFile  MM\_DumpMem8ToFile |
| MM5104.1 | If the command-specified number of bytes exceeds <PLATFORM\_DEFINED, TBD> then the command shall be rejected. | Operation | MM\_VerifyLoadDumpParams |
| MM5300 | Upon receipt of a Fill command, MM shall fill Memory mapped I/O with the contents based on the following command-specified parameters:  a) Destination Address  b) Destination Memory Type  c) Number of Bytes to Fill  d) 32-bit Fill Pattern | Operation | MM\_FillMemCmd  MM\_VerifyLoadDumpParams  MM\_FillMem32  MM\_FillMem16  MM\_FillMem8 |
| MM5300.1 | If the command-specified number of bytes exceeds <PLATFORM\_DEFINED, TBD> then the command shall be rejected. | Operation | MM\_VerifyLoadDumpParams |
| MM7001 | Upon receipt of a Write Symbol Table command, MM shall save the system symbol table to an onboard data file | Operation | MM\_SymTblToFileCmd |
| MM7002 | Upon receipt of a Symbol-to-Address command, MM shall report the resolved address in telemetry for the command-specified symbol name | Operation | MM\_LookupSymbolCmd |
| MM7004 | The MM application shall generate an error event and abort the current operation if any symbolic name argument cannot be resolved to a valid address | Operation | MM\_LookupSymbolCmd |
| MM8000 | MM shall generate a housekeeping message containing the following:  a) Valid Command Counter  b) Command Rejected Counter  c) Last command executed  d) Address for last command  e) Memory Type for last command  f) Number of bytes specified by last command  g) Filename used in last command  h) Data Value for last command (may be fill pattern or peek/poke value) | Operation | MM\_HousekeepingCmd |
| MM9000 | Upon initialization of the MM Application, MM shall initialize the following data to Zero   a) Valid Command Counter  b) Command Rejected Counter  c) Last command executed  d) address for last command  e) Memory Type for last command  f) Number of bytes processed by last command  g) filename used in last command  h) fill pattern specified in last command (if command was a fill command) | Initialization | MM\_AppInit  MM\_ResetHk |