

HK Requirements to Design Traceability

HK Version 2.5.0

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| **Requirement Number** | **Requirement Text** | **Software Design Element** | **Applicable Software Functions** |
| HK1000 | Upon receipt of a No-Op command, HK shall increment the HK Valid Command Counter and generate an event message. | Operation | CFE\_EVS\_SendEvent()  HK\_NoopCmd() |
| HK1001 | Upon receipt of a Reset command, HK shall reset the following housekeeping variables to a value of zero:   a) HK Valid Command Counter  b) HK Command Rejected Counter  c) Number of Output Messages Sent  d) Missing Data Counter | Operation | HK\_ResetCtrsCmd()  HK\_ResetHkData() |
| HK1002 | For all HK commands, if the length contained in the message header is not equal to the expected length, HK shall reject the command. | Operation | HK\_VerifyCmdLength()  HK\_NoopCmd()  HK\_ResetCtrsCmd() |
| HK1003 | If HK accepts any command as valid, HK shall execute the command, increment the HK Valid Command Counter and issue an event message. | Operation | CFE\_EVS\_SendEvent()  HK\_VerifyCmdLength()  HK\_NoopCmd()  HK\_ResetCtrsCmd() |
| HK1004 | If HK rejects any command, HK shall abort the command execution, increment the HK Command Rejected Counter and issue an error event message. | Operation | CFE\_EVS\_SendEvent()  HK\_VerifyCmdLength()  HK\_NoopCmd()  HK\_ResetCtrsCmd() |
| HK2000 | HK shall collect flight software housekeeping data from table-specified input messages. | Operation | HK\_TableInit()  HK\_ProcessIncomingHkData() |
| HK2001 | HK shall output table-defined messages, at the scheduled rate, by combining input message data starting at the table-defined offset and table-defined number of bytes to the table-defined offset in the output message. | Operation | HK\_TableInit()  HK\_SendCombinedHkPacket() |
| HK2001.1 | Upon a table update, HK shall update the output message formats specified in the table during normal execution. | Operation | HK\_CheckStatusOfTables()  HK\_CheckStatusOfCopyTable()  HK\_CheckStatusOfDumpTable() |
| HK2001.2 | If the <PLATFORM\_DEFINED> parameter Discard Combo Packets is set to NO and HK does not receive a message from an application, HK shall use all values associated with last received message for that application in the combined message for that telemetry collection period. | Operation | HK\_CheckForMissingData()  HK\_SendCombinedHkPacket() |
| HK2001.3 | If HK does not receive a message from an application, HK app shall increment the missing data counter and send an event specifying the message ID for the missing message. | Operation | CFE\_EVS\_SendEvent()  HK\_CheckForMissingData() |
| HK2001.5 | If the <PLATFORM\_DEFINED> parameter Discard Combo Packets is set to NO and the input message offset + bytes for any input message specified in the HK table is greater than the received message length then HK shall use the last received data associated with that message and issue no more than one event message per input message. | Operation | CFE\_EVS\_SendEvent()  HK\_CheckForMissingData()  HK\_SendCombinedHkPacket() |
| HK2001.6 | If the <PLATFORM\_DEFINED> parameter Discard Combo Packets is set to YES and HK does not receive a message from an application, HK shall discard the combined message containing the values associated with the missing application message for that telemetry collection period. | Operation | HK\_CheckForMissingData()  HK\_SendCombinedHkPacket() |
| HK2001.7 | If the <PLATFORM\_DEFINED> parameter Discard Combo Packets is set to YES and the input message offset + bytes for any input message specified in the HK table is greater than the received message length then HK shall discard the combined message containing the values associated with the illegal length application message for that telemetry collection period. | Operation | HK\_ProcessIncomingHkData() |
| HK3000 | HK shall generate a housekeeping message containing the following:  a) Valid Command Counter b) Command Rejected Counter c) Number of Output Messages Sent d) Missing Data Counter | Operation | HK\_HousekeepingCmd() |
| HK4000 | Upon initialization of the HK Application, HK shall initialize the following data to Zero   a) Valid Command Counter  b) Command Rejected Counter  c) Number of Output Messages Sent  d) Missing Data Counter | Initialization | HK\_AppInit() |