**CDH Software**

**Memory Management Test Document**

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| **Prepared by** | Keenan Burnett |
| **Revision** | 1.0 |
| **Date** | 2016.01.08 |
| **Reference** | Memory Management Test Document |
| **Signed By** | Keenan Burnett |

# Document Change Log

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| **Description of Changes** | | | **Modified Section** | **Revision** | **Date** | |
| Initial Issue | | |  | 1.0 | 2016.01.08 | |
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# Procedures

**(To be used in conjunction with the PUS Service Interfaces document, and the Command Line Interface document)**

1. **Memory Loads**
   1. Attempt to load something small (<= 128B) into the memory of the satellite using the terminal command and the required format (in the CLI document). Try with using the internal memory (memID = 0) and then the SPI memory (memID = 1)
   2. Place the OBC in debug mode and create breakpoints after the load should be stored in memory.
   3. At this point, add in a test array and read from that section of memory. (alternatively fletcher’s checksum could be used)
   4. Verify that what is located in the satellite’s memory matches what was intended to be loaded.
   5. Now attempt load something large (>= 128B) into the satellite’s memory.
   6. Repeat steps (c-e)
   7. Verify that all the correct TC verification packets were received and logged under /telemetry/.
   8. Attempt to write more than is possible at the end of the SPI Memory’s range, ex: 128B to address 0xFFFFE. Verify that the system does not crash when you attempt to do this.
   9. Violate each of the constraints which are checked for in verify\_telecommand( ) in obc\_packet\_router.c (by modifying GSSW code). Verify that these errors are caught.
2. **Memory Dumps**
   1. Now repeat step 1’s loading procedures (without the checking in debug mode) and then enter a DUMP request from the same region that was loaded to. Again, there are 4 cases to check here (memID = 0,1 and size = small, large)
   2. Verify that what is contained in the dump report (located in /memory/dump/) is what you intended to load into the satellite.
   3. Verify that all the correct TC verification packets were received and logged under /telemetry/.
   4. Violate each of the constraints which are checked for in verify\_telecommand( ) in obc\_packet\_router.c (by modifying GSSW code). Verify that these errors are caught.
3. **Memory Checks**
   1. Now repeat step 1’s loading procedures (without the checking in debug mode) and then enter a CHECK\_MEMORY request from the same region that was loaded to. Again, there are 4 cases to check here (memID = 0,1 and size = small, large)
   2. Verify that the checksum which is received matches up with what can be calculated on the ground based on the loaded data. (fletcher32 is used).
   3. Verify that all the correct TC verification packets were received and logged under /telemetry/.
   4. Violate each of the constraints which are checked for in verify\_telecommand( ) in obc\_packet\_router.c (by modifying GSSW code). Verify that these errors are caught.

# Test Results

Report the results of each major test here and the actions that were taken to correct any issues (or simply insert a link to the issue that was opened)