Charity Water Pre-Production Board Testing

10/24/18 R. Lieb

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Board# | IMEI | SW | GPS  Test | Water  Test | Temp  Test | Prod’n FW | Modem Test | Notes | Mods |
| 8 | 861508039416912 | Yes | ok |  | ok |  |  | Thermistor cracked | Replaced Thermistor |
| 9 | 861508039382056 | Yes | ok |  | ok |  |  | Thermistor dropped off | Replaced Thermistor |
| 10 | 861508039419577 | Yes | fail |  |  |  |  | GPS fail to connect: Retry 2 state repeats |  |
| 11 | 861508039384169 | Yes | ok | Ok | ok |  |  |  |  |
| 12 | 861508039381983 | Yes | ok | Ok | ok |  |  |  |  |
| 13 | 861508039419106 | Yes | ok | Ok | fail |  |  | Thermistor sheared/missing |  |
| 14 | 861508039384136 | Yes | ok | Ok | ok |  |  |  | Water detect unknowns (thin pad) |
| 15 | 861508039416342 | yes | ok | Ok | ok |  |  |  |  |
| 16 | 861508039417977 | Yes | ok | Ok | ok |  |  |  |  |
| 17 | 861508039384144 | Yes | ok | ok | ok |  |  |  | Resistor removed |
| 18 | 861508039387444 | Yes | ok |  |  |  |  | Good, then Boot loader hang | ICE voltage problems, not recovered |
| 19 | 861508039416888 | Yes | ok | Ok | ok |  |  |  |  |
| 20 | 861508039383583 | Yes | ok | Ok | ok |  |  |  |  |
| 21 | 861508039378880 | Yes | ok | Ok | fail |  |  | Thermistor failure |  |
| 22 | 861508039427687 | Yes | ok | Ok | fail |  |  | Thermistor failure |  |

Defects:

1. Boot Loader intermittently hangs in SOS state:

Problem:

* Half of the 15 boards were locking up in the boot loaded and the SOS message was being sent

Fix:

* Boot code had a coding error that was lucky enough to work half the time.
* Linkaddr.h: added ampersand to make the definitions the same as the others
* The address of the proxy vector table rather than what it was pointing to was more proper in this instance

|  |
| --- |
| static inline uint16\_t getAppVectorTableAddr(void) {  return (uint16\_t)&\_\_App\_Proxy\_Vector\_Start;  }  static inline uint16\_t getAppResetVector(void) {  return (uint16\_t)&\_\_App\_Reset\_Vector;  } |

* Main.c boot loader version: added asterisks to indirect the pointer set in linkaddr.h

|  |
| --- |
| uint16\_t \*app\_reset\_vector = (uint16\_t \*)getAppResetVector();  uint16\_t app\_flash\_start = getAppImageStartAddr();  uint16\_t app\_vector\_table = getAppVectorTableAddr();  // Verify that the location stored at the application reset vector falls into a legal range  if ((\*app\_reset\_vector >= app\_flash\_start) && (\*app\_reset\_vector < app\_vector\_table)) |

1. Preferred state of NTC enable was not set in boot code as in application code:

Problem:

* This enables the measurement of the temperature near the cap sense pads. While this is not measured in boot code, the default starting case was not set.

FIx:

* Set the hal.c code to set it similar to the application code

|  |
| --- |
| P3OUT |= NTC\_ENABLE; |

1. Factory Process requires SEND\_TEST command to modem to facilitate Provisioning

Problem:

* The code has support for this message, but the format of the message is not known

Fix:

* Requested David L. to make code segment to send this message to Modem
* Rob to make entry in INFOD segment to indicate that this message was sent. If not, the code will send it