ENGINEERING MEMO

Initiated by:	Andrew Williams
Project Manager:	Tom Booler

Proposed Priority: ☐ Fast Track ☒ Normal

Title:	BFIF BL233 crashes, power cycle fixes it

Affected item(s):

A small number of the 56 deployed BFIF boxes at the MRO on long baseline tiles.

Technical description of problem:

On a total of four occasions, three long baseline tiles at the MRO have seen a complete loss of communication between the Raspberry Pi on the BFIF board and the BL233 chip (a custom PIC microcontroller) on the SPIU. Tiles LBC7 and LBD3 failed at the same instant on November 15th, 2017. Tiles LBE2 and LBC7 (again) failed at the same instant on Feb 6th, 2018. In all cases (four failures on three tiles), the symptoms were the same – no communication on the serial port to the BL233 chip. In one of those four failures (LBC7 on Nov 15th), the fault disappeared after power to the BFIF/SPIU was removed and restored, rebooting the BL233. Tile LBD3 had the boards serviced before a power cycle was attempted. For now, we are assuming that LBE2 and LBC7 can be fixed by a simple power cycle.

Reason for change and expected benefits:

The goal is to either prevent the BL233 from crashing (by reproducing the problem in the lab and changing the circuit), or to modify the system to be able to power cycle the BL233 chip if necessary using a GPIO output from the Raspberry Pi.

Effective Date: (dd-mm-yyyy)	
Reason for given effective date:	
Expected impact on cost ($AUD):	
Impact on schedule:	Minimal, faults seem to occur rarely, during lightning storms.
Other impacts:	

Attached Document(s):

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