



WorldFIP RadTest CNGS Repeater 1 : look at results

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Julien Palluel BE/CO/FE

Slots History

- Slot1 and slot2 :
 - Repeater1 on the wall
 - Dose : $5.3\text{E-}18$ Gy/pot
 - 1MeVeq : $1.3\text{E-}7$ cm⁻²/pot
- Slot3 :
 - Repeater1 on the floor
 - Dose : $1.17\text{E-}17$ Gy/pot
 - 1MeVeq : $2.8\text{E-}7$ cm⁻²/pot
- Slot4 :
 - NEW repeater2 on the wall
 - Dose : $5.3\text{E-}18$ Gy/pot
 - 1MeVeq : $1.3\text{E-}7$ cm⁻²/pot

Radiation status

- WorldFip repeater stopped working 25-26 July 09 during slot3
- No event since this failure
- The integrated dose = 69 Gy
- The logging shows (since Monday 14:02PM) datas errors followed by a lost of the communication

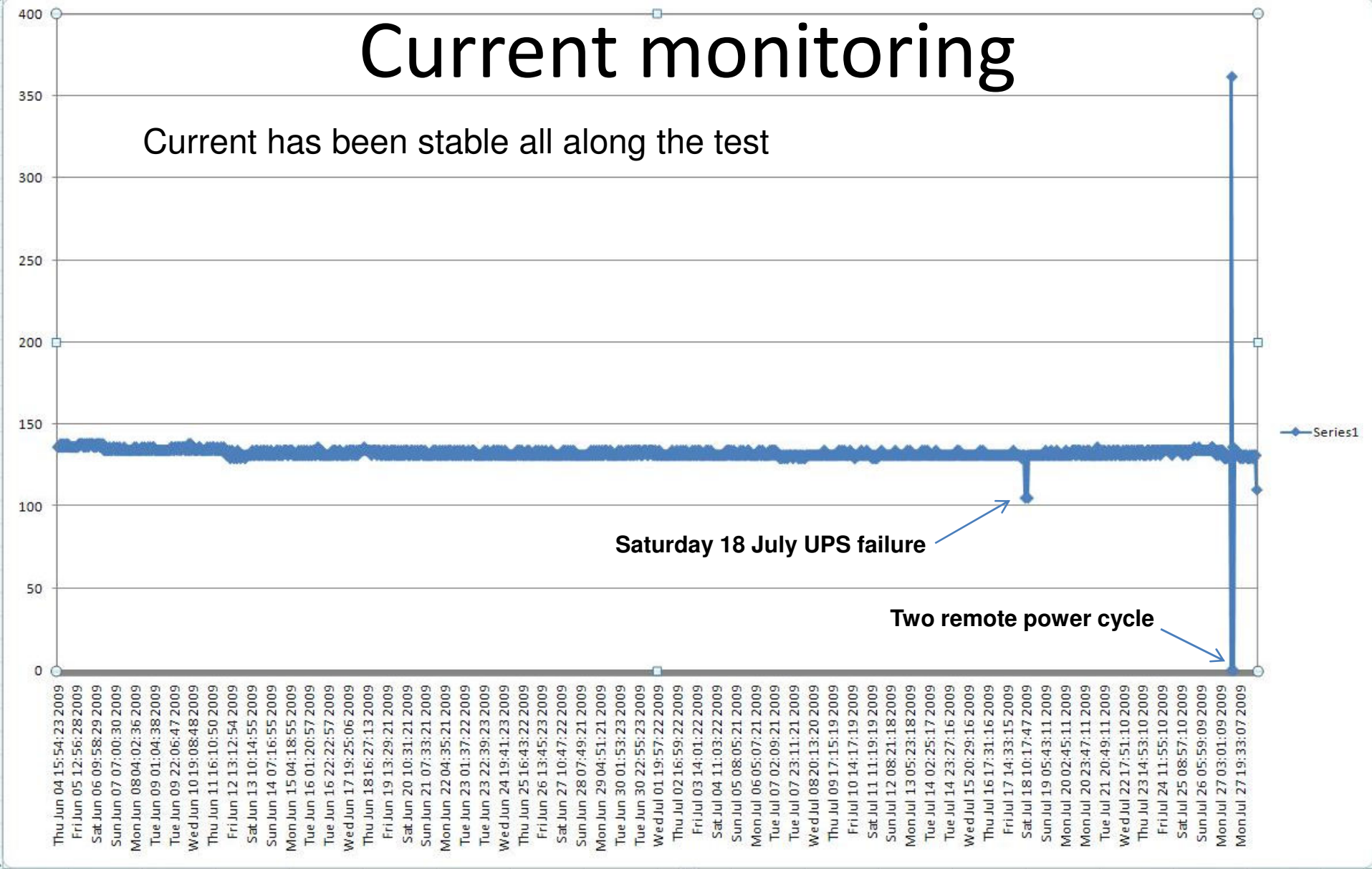
Cycle number	Write Value	Read Value	Status	Date
7848760	113	112	Data Error	2009-07-27-14:02:35
7848761	115	112	Data Error	2009-07-27-14:02:35
7848762	116	112	No Response	2009-07-27-14:02:35
7848764	116	112	No Response	2009-07-27-14:02:35
7848768	120	120	Data Error	2009-07-27-14:02:36

Radiation status

- Despite 2 remote power cycle, there is still many errors
- In Louvain radiation test, once testing was completed, after 5 minutes of rest, the module was working normally. Possible reason : the supply current has drained the trapped charges in MOS thresholds and allowed them to re-operate properly
- During the shutdown, we quickly tried to restart the communication, but the return channel of the repeater seemed to not working anymore (FIELDRIIVE??).

Current monitoring

Current has been stable all along the test



Next ?

- We want to test the second repeater at this maximum total dose on the wall : Dose : 5.3 Gy/week.
- Investigate the irradiated repeater. When ?
- End of september, normally we received the RadHard DerivFIP in order to test it.

Conclusion

- 69Gy is a good enough result
- Precautions for installing repeaters in areas under irradiation (1 to 10Gy year)
- Worse case : lifetime -> 7 years
- Need to confirm this result with a second repeater
- Analysis of the defective repeater and replacement of critical components (if possible) to increase lifetime.