

CIBDS beam dump triggers due to glitches in BIS loop B1-A

diagnosis and mitigation measures

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MPP – 23th Oct 2015



BIS dump trigger 1 (6th October)

- On Tuesday 06th Oct at 04:42:42, the CIBDS triggered a dump due to a loss of Beam Permit frequency detection on Beam 1 Loop A.
- After investigation, the issue may come from the optical link which has a low power margin
- From MPP on 09th Oct:

Proposal of action to take

If no other dump is generated by the link before the EYTS:

- TS3 (9 to 13 Nov):
 - Re-measure this link (TX power/RX sensitivity/fibre attenuation)
 - Clean the optical components, check the plugs
 - Re-measure this link (TX power/RX sensitivity/fibre attenuation)
- EYTS* (from 14th Dec):
 - Replacement of the CIBO could** be done if considered necessary
- 2 other links present a low power margin and could** be treated at the same time

* After changing the optical component, it is necessary to test for a long time that the Beam Permit Loops are effectively working better. A TS looks short to change 1 or several CIBO.

** When replacing a CIBO, we change the power transmitted but also the sensitivity to the previous fibre => To be considered very carefully

S. Gabourin – 9th Oct 2015

No else (yet...)



BIS dump trigger 2 (15th October)

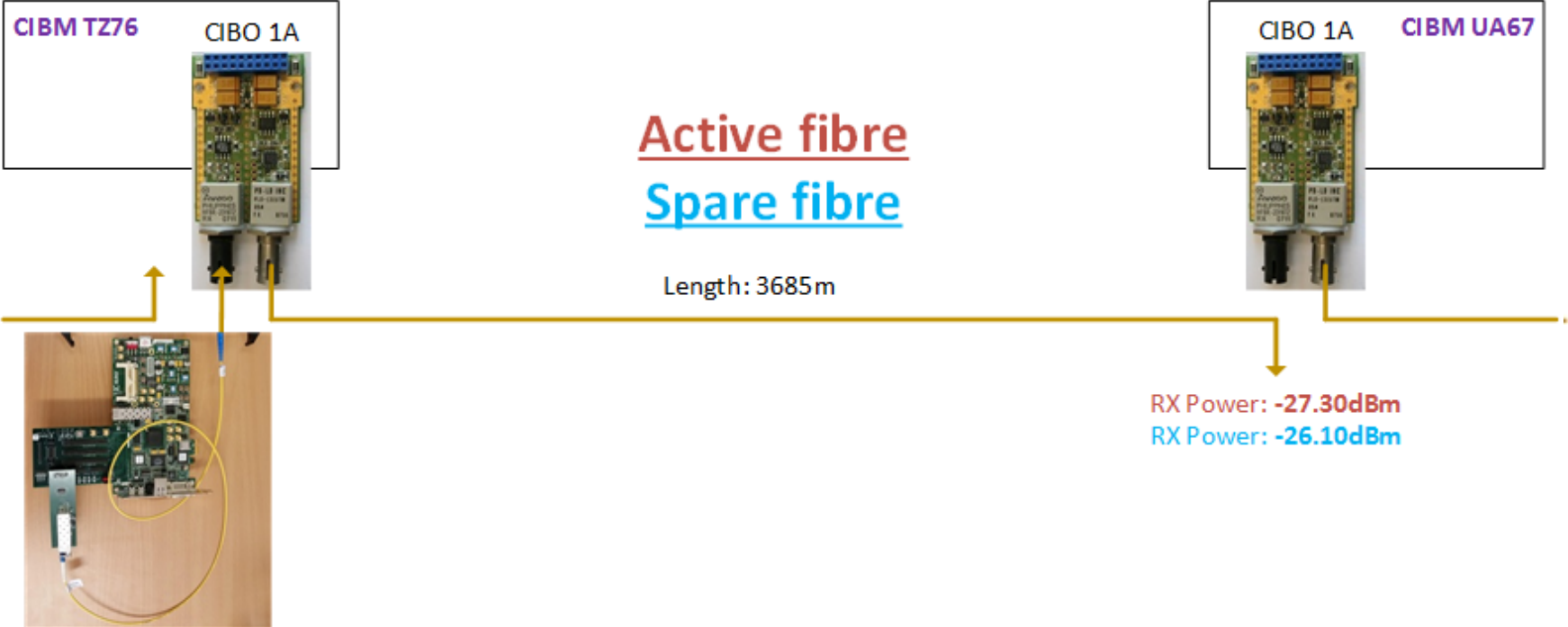
- On **Thursday 15th Oct** at 19:25:56, the CIBDS triggered a second time a dump, still due to a loss of Beam Permit frequency detection on Beam 1 Loop A.

Then comes the “else if another dump occurs”:

- Check the optical link during a (long enough) stop of the LHC
- Opportunity on Monday morning (loss of Cryo in Sect 1-2)
- On **Monday 19th**, the fibre between TZ76 and UA67 on Loop Beam-1 A was re-measured, including the CIBO in TZ76



Action taken (19th October)



- RX power measured higher by 1.2dB => Change the active fiber by spare fiber
- Check the 4 optical loops are properly re-close using the CIBG debug frequencies of 100-200 kHz (not possible to forget the LoopA freq generator...)

Proposal for future action

- EN/EL have replaced the 6 fibers between UA67 and TZ76 during LS1
- Ask EN/EL their fiber attenuation data
- Ask EN/EL to re-measure the fibers with professional equipment (OTDR), as we are using JDSU power source, power meter and attenuator.



Light Source

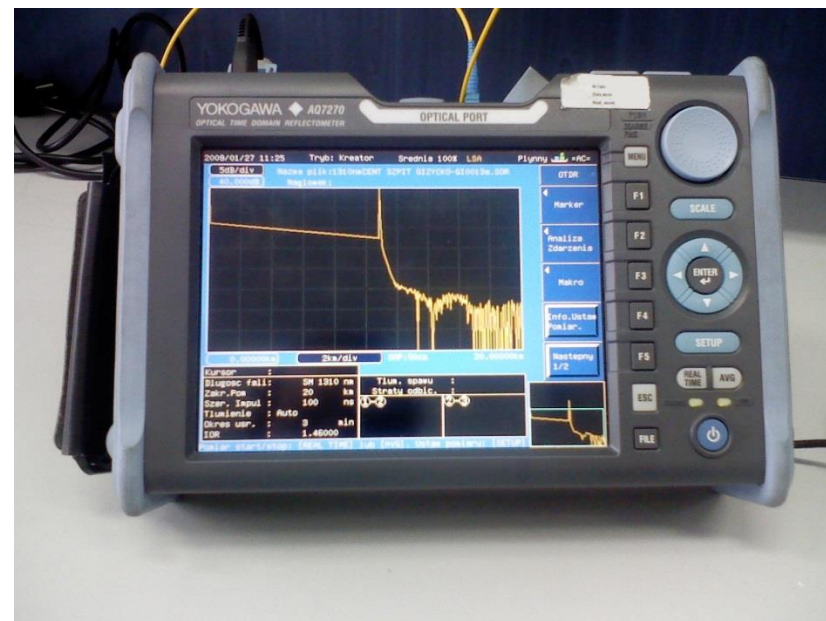


Power Meter



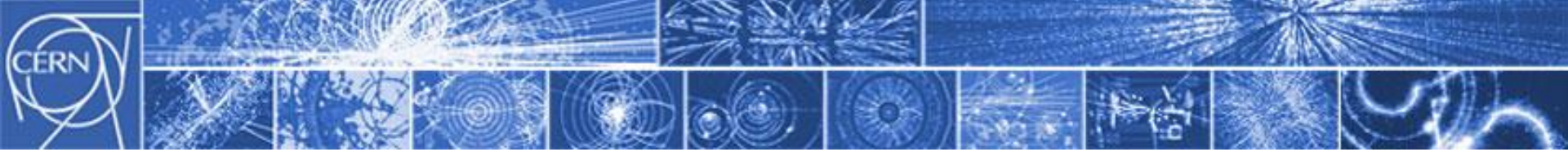
Power attenuator

VS



⇒ Proposed by EN/EL for the EYTS

- Then decide of another action has to be taken



Questions