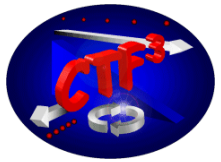


1.5 GHz Sub-Harmonic Bunchers

past – present – perhaps future

L. Timeo on behalf of S. Rey and H. Shaker

some consideration (1)

- from “Proceedings of EPAC 2006, Edinburgh, Scotland” - MOPLS101 - (http://accelconf.web.cern.ch/accelconf/e06/PAPERS/MOPLS101.PDF) we know that: “Since the beam loading is different in each of the three SHBs, the structures are individually detuned [5]. The common parameters for the SHBs are listed in Table 1.”

Quantity	Value
Frequency	1.49928 GHz
Number of cells	6
Iris diameter	66 mm
Cell length	26 mm
Input power	40 kW

some consideration (2)

- from “Proceedings of EPAC 2006, Edinburgh, Scotland” - MOPLS102 - (http://accelconf.web.cern.ch/accelconf/e06/PAPERS/MOPLS102.PDF) we know this is the layout:

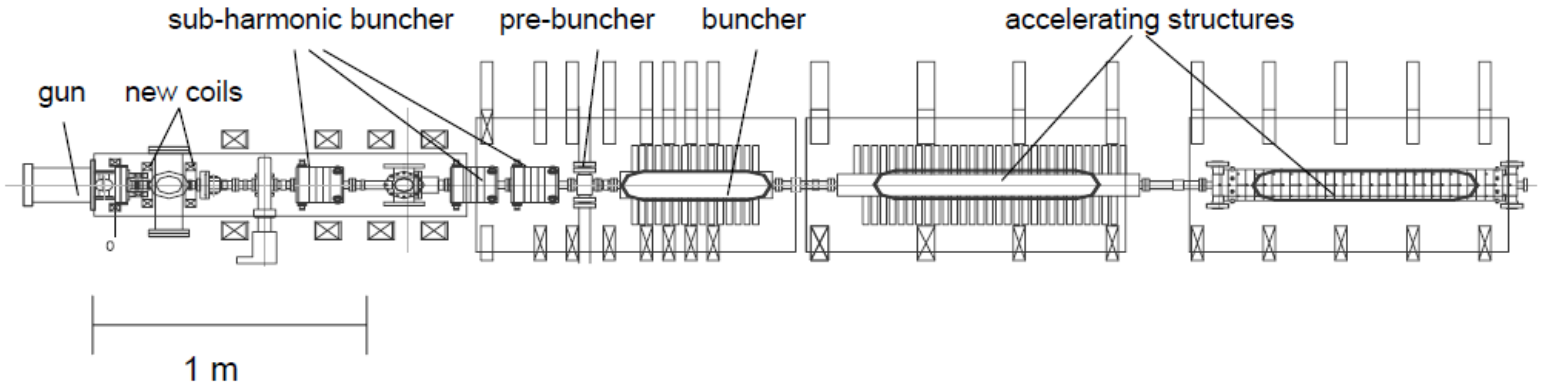
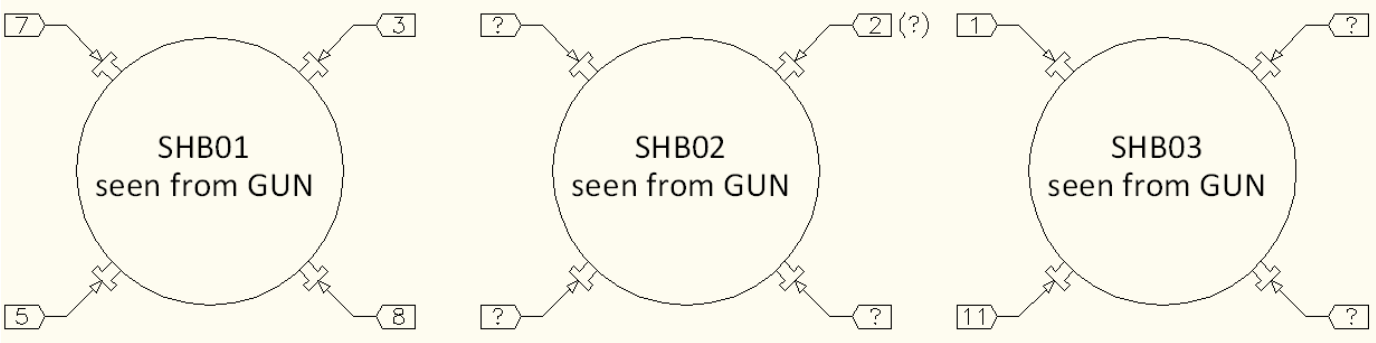


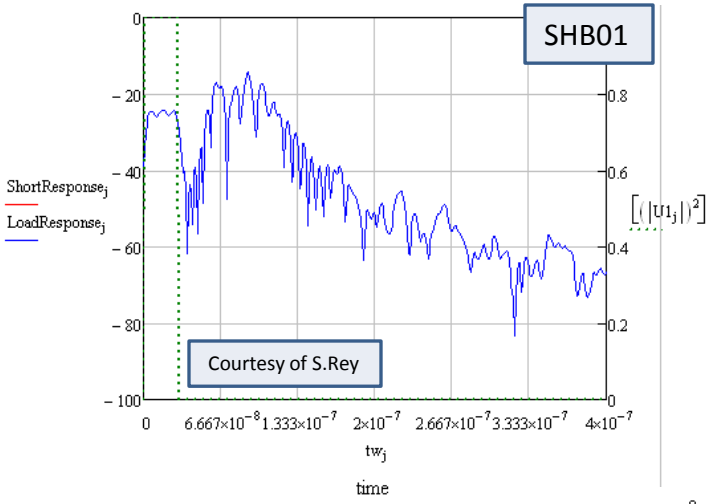
Figure 1: Layout of the CTF3 injector.

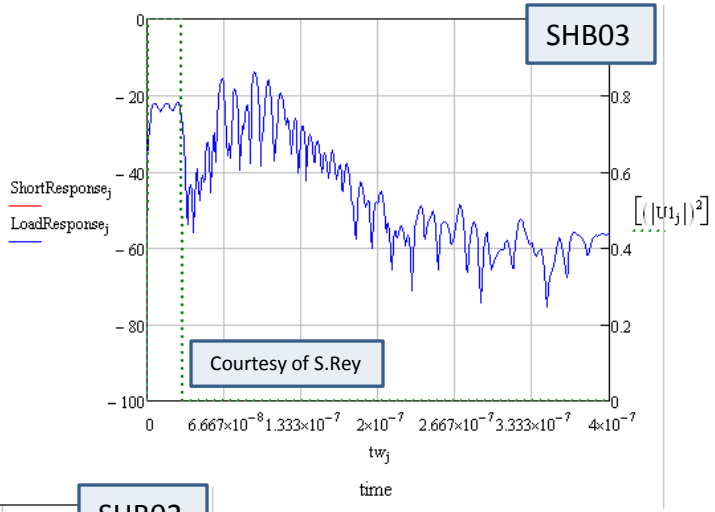
some consideration (3)

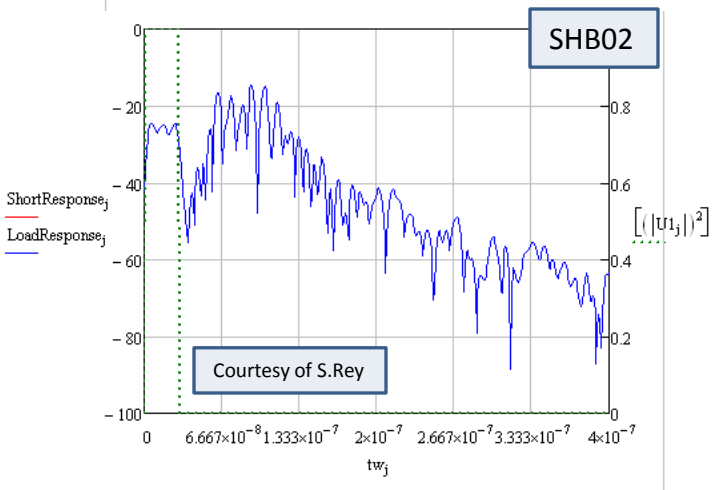
- from [5] “CTF3 Note 071: Parameter list of the CTF3 Linac and the CT line” (http://clic-study.web.cern.ch/CLIC-Study/CTF3/Notes/CTF3_071.pdf) and following the inspection in the tunnel we know that:
  - SHBs are travelling wave cavities (cables are used as loads);
  - PB is a standing wave cavity (fed by wall side);
  - Buncher is a travelling wave structure;
  - ACS03 is a travelling wave structure, as well.



time-domain reflectometry

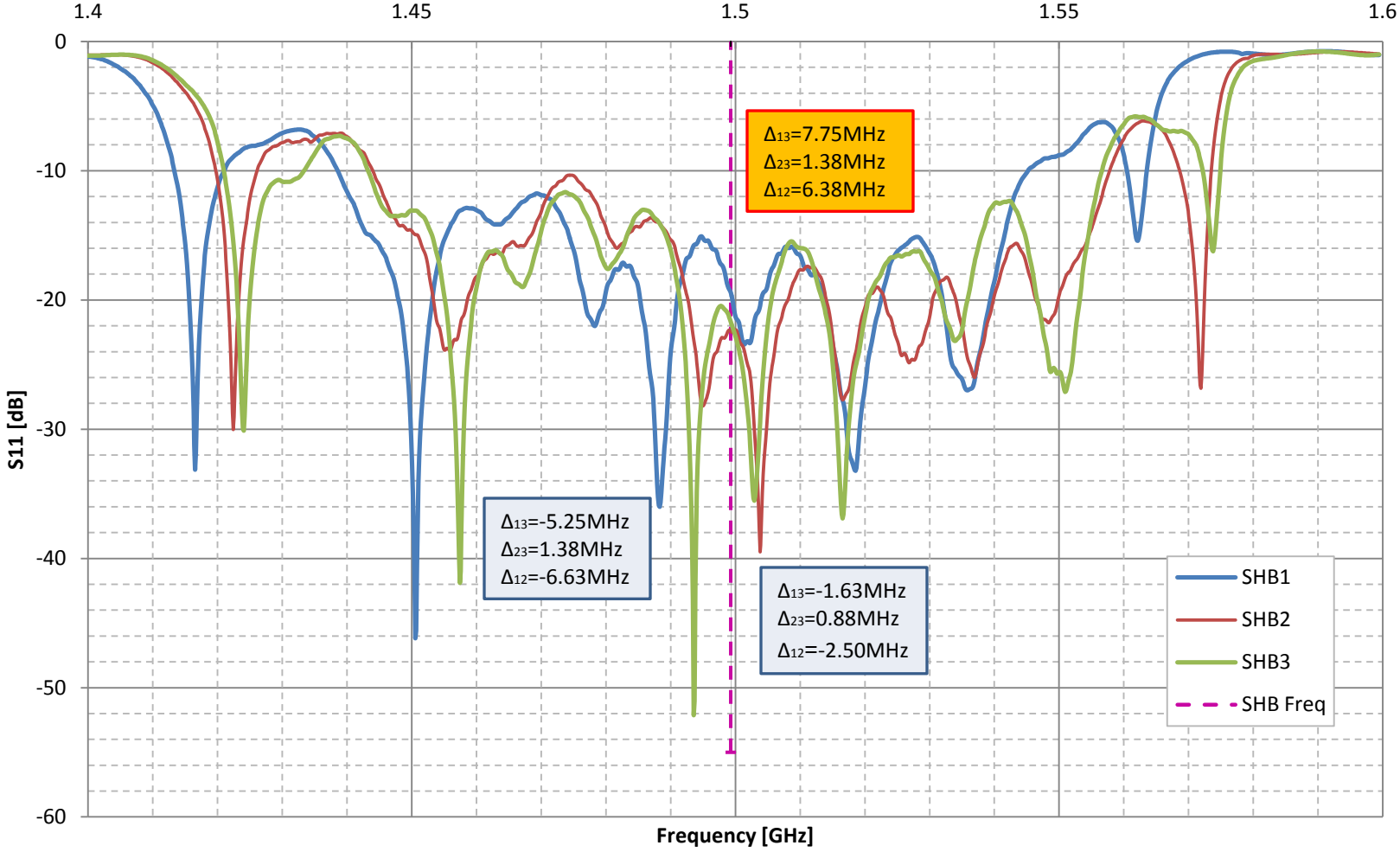




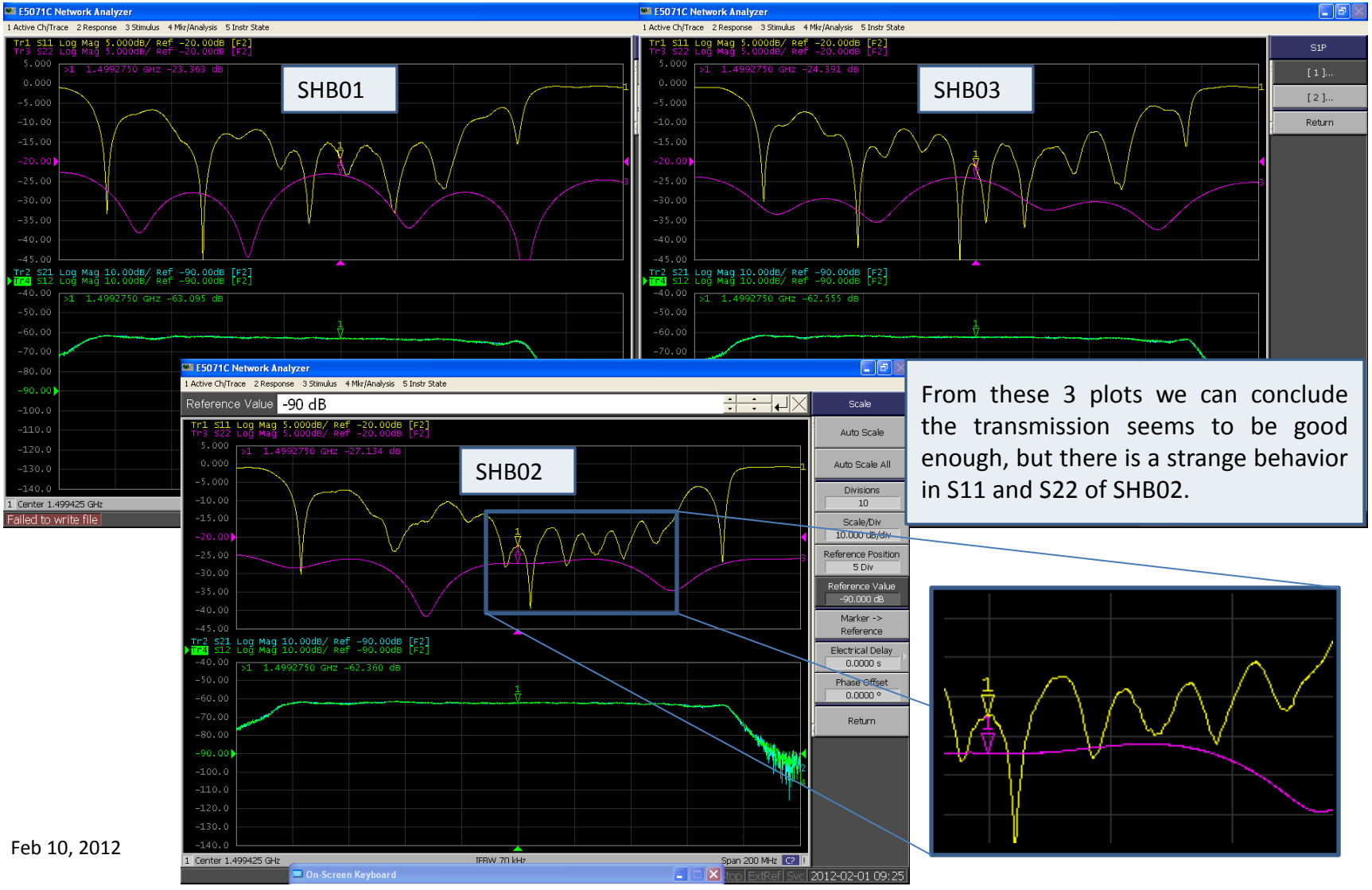


Sub Harmonic Buncher S11 measurement

February 1st, 2012



overview of all S parameters



Feb 10, 2012

conclusion

- Hamed said that theoretically *“the resonant frequencies of SHB1 and SHB2 should be about 10.1 and 3.0 MHz more than SHB3, respectively”,* but this does not really correspond to the measurement.

- we can identify also different behaviors after 1.52GHz, in particular for SHB02 where we can notice some difference especially in its S11, but no final conclusion can be achieved.

- we shall repeat the measurement once the water station will run again and compare new results with theoretical ones.