October 2004
25 ns run

Here follow the description of the signals sent to experiments via TTC during the 25ns run (week 41).

1. 40 MHz

The 40 MHz signal transmitted by the TTC system is generated by the RF. It is the green line drawn on fig. 1. It is fixed to Ftop= 40.078834 MHz, which is the equivalent frequency of the RF of the LHC, on flat top, at the energy of 400GeV.
This frequency is fixed and does not vary during the 25ns run.

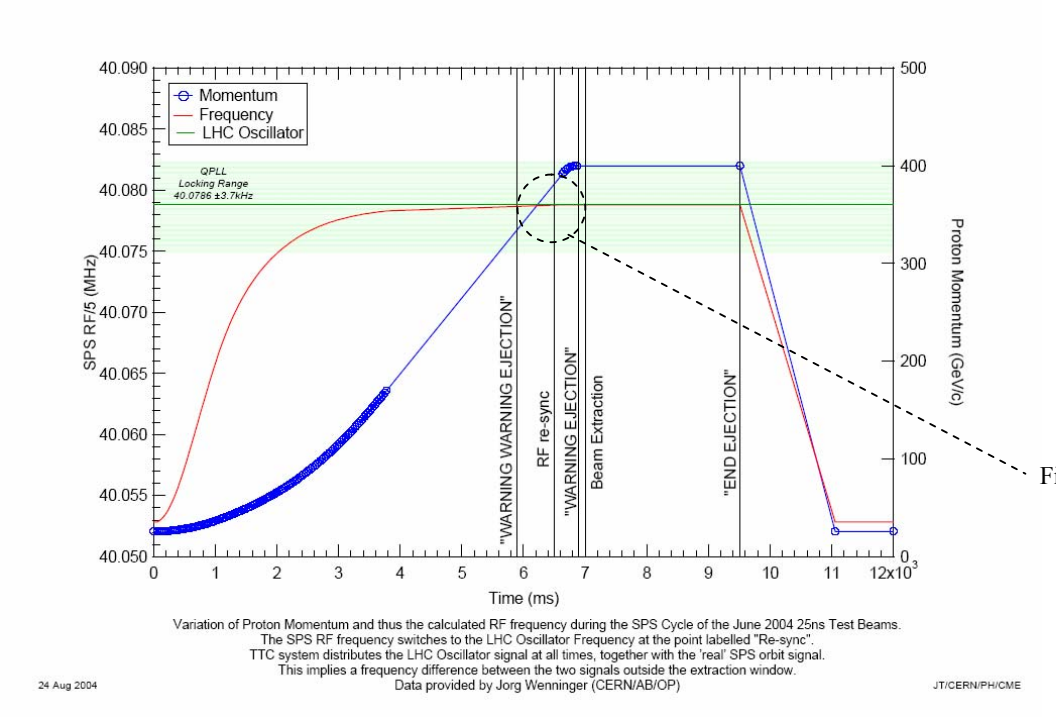

Fig. 2

Figure 1

During a complete cycle (12 seconds), the SPS RF varies from 40.053MHz up to Ftop. At the “RF re-sync” timing, the RF is “re-phased” to Ftop. This happens about 6.5s after the beginning of the cycle. This means that, a few ms after this re-phasing, there is no difference between the 2 clocks, generated by the same source. This re-phasing is done as in fig. 2:

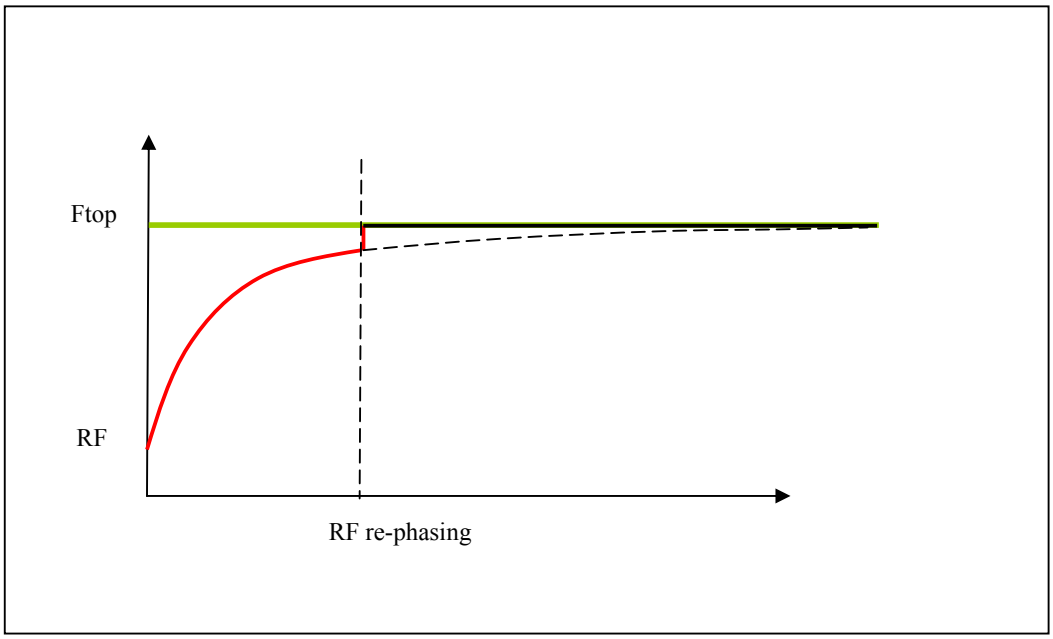

Figure 2

2. Orbit

The orbit is a 40ns pulse synchronized to the RF.
Orbit Frequency = RF/924
That means that on the flat top, orbit and 40 MHz are theoretically perfectly synchronized.