

Memo concerning CTF3 hardware for AWAKE

The AWAKE experiment at CERN will use the PHIN photo injector and some selected hardware from CTF3 to create an electron source which can probe the plasma wake fields. The design and integration studies have started in 2014 and are ongoing. The integration studies arrive at a phase where it is necessary to fix large parts of the design and therefore a definite commitment to provide this material is needed from the CLIC/CTF3 collaboration. The hardware listed below will be needed from January 2017 according to the AWAKE planning.

List of CTF3 hardware desired for AWAKE:

- PHIN photo injector: rf gun, solenoids, diagnostics, vacuum equipment as installed right now in CTF2 up to the spectrometer dipole.
- PPT modulator including a suitable 35-42 MW klystron (currently MKS30). The modulator consists of a transformer tank housing the klystron the solenoid and lead shielding, a PFN cabinet, a control rack and a HV charger rack including power supplies for the heater and solenoid.
- 300 W drive amplifier
- A high power (10-20 MW) phase shifter and attenuator from spinner (for example as installed at MKS14).
- A high power circulator, for example the one used for PHIN right now
- Two MTV tanks used for time being in TBL
- 40 'SMILE' power converters $\pm 20\text{A}/50\text{V}$
- Diverse waveguide elements like straight section, bends, windows, pump-tees, loads...
These elements will be used if available but are not critical since they can be produced with a reasonable delay and cost. The detailed design of the waveguide system for AWAKE is not yet finished.
- In addition it is agreed that AWAKE can use the CTF3 streak camera during their running periods in coordination with the CTF3 operation if applicable.

This contribution of the CLIC collaboration to the AWAKE experiment represents roughly a value of 2.7 MCHF if bought new.

The AWAKE collaboration will be responsible for dismantling and transporting the above mentioned equipment. Contributing this equipment might generate some cost for the CLIC collaboration due to necessary modifications in case some of the CTF3 installations will continue to operate after 2016. A contribution to this cost might be asked from AWAKE.