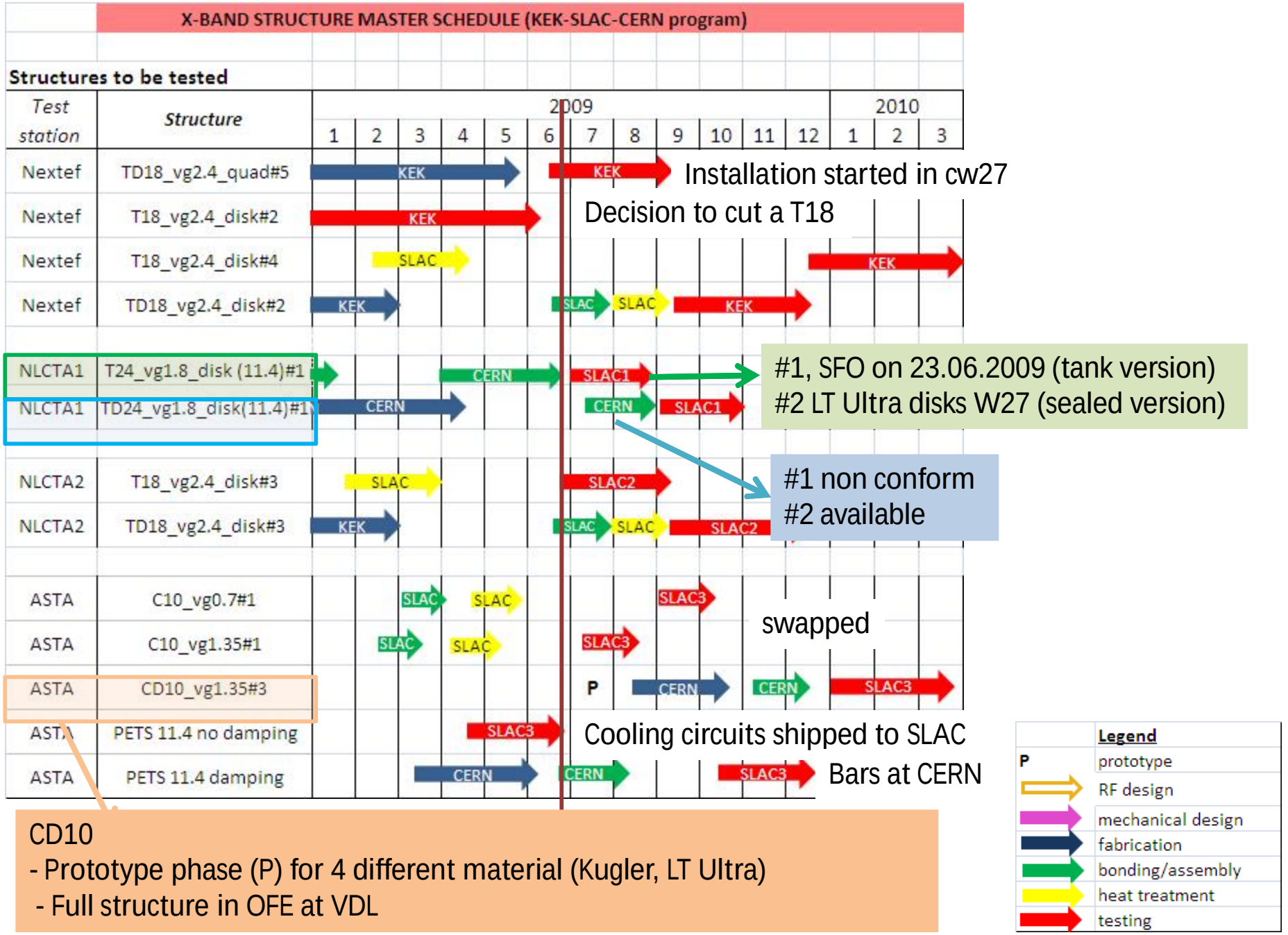
CLIC RF structure master schedule and CERN production

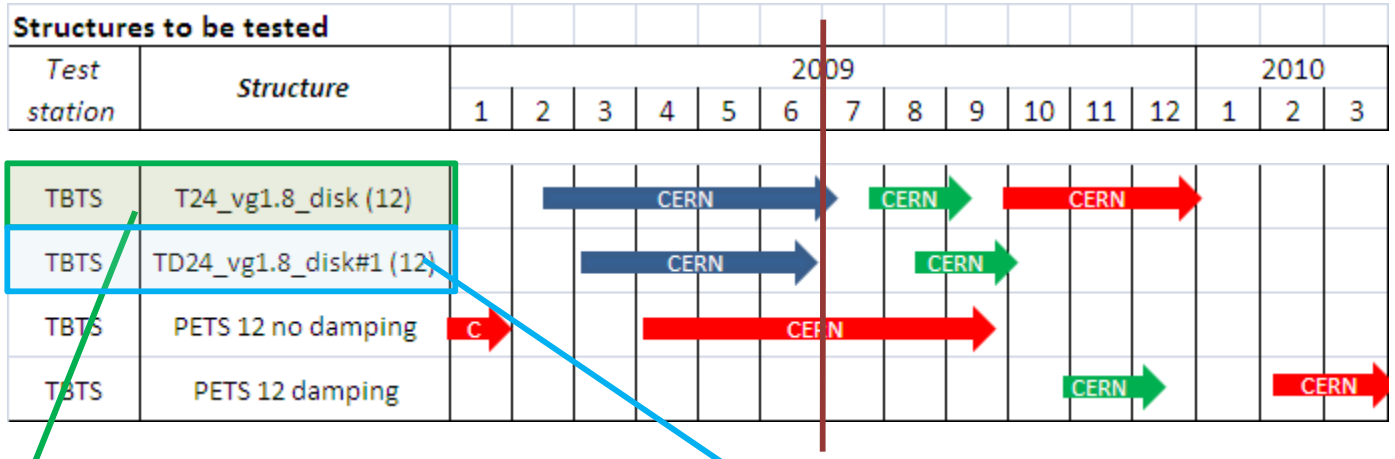
10.07.2010

Structure master schedule



CD10
- Prototype phase (P) for 4 different material (Kugler, LT Ultra)
- Full structure in OFE at VDL

Structure master schedule



Fabrication at Kugler:
- #1 received in April NC,
- #2 required
  - prototype disk OK
  - disks at CERN CW28

Fabrication at VDL:
- #1 and #2 disks finished
- disks at CERN

	Legend
P	prototype
	RF design
	mechanical design
	fabrication
	bonding/assembly
	heat treatment
	testing

Structures in the pipeline

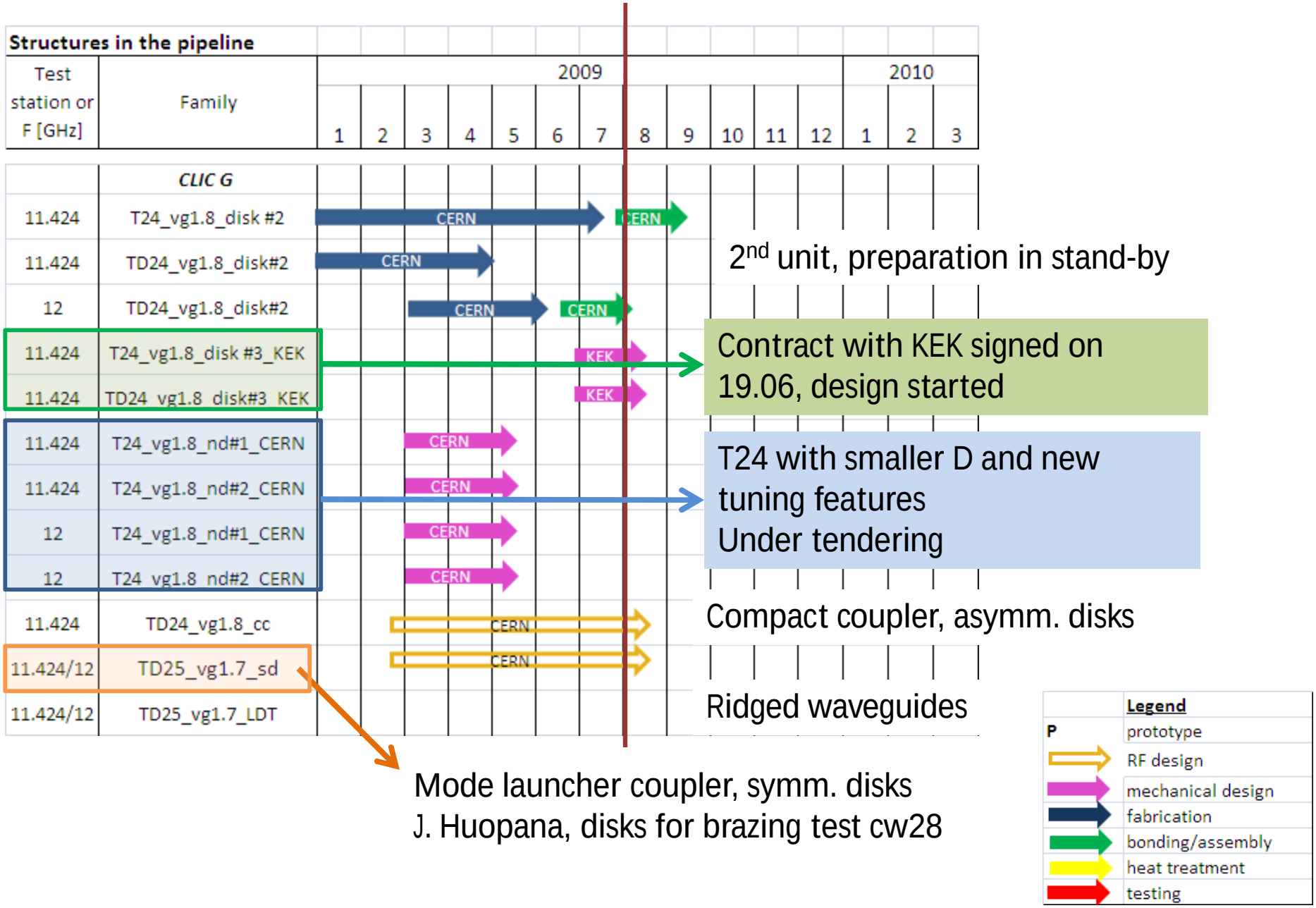
Test station or F [GHz]	Family	2009												2010		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
	CLIC VG1															
ASTA	TD18_vg2.4_quad#3		SL			SLAC3										
11.424	TD18_vg2.4_disk#1		CERN													
11.424	T18_vg1_kst#1_CERN					CERN										
11.424	T18_vg1_kst#2_CERN					CERN										

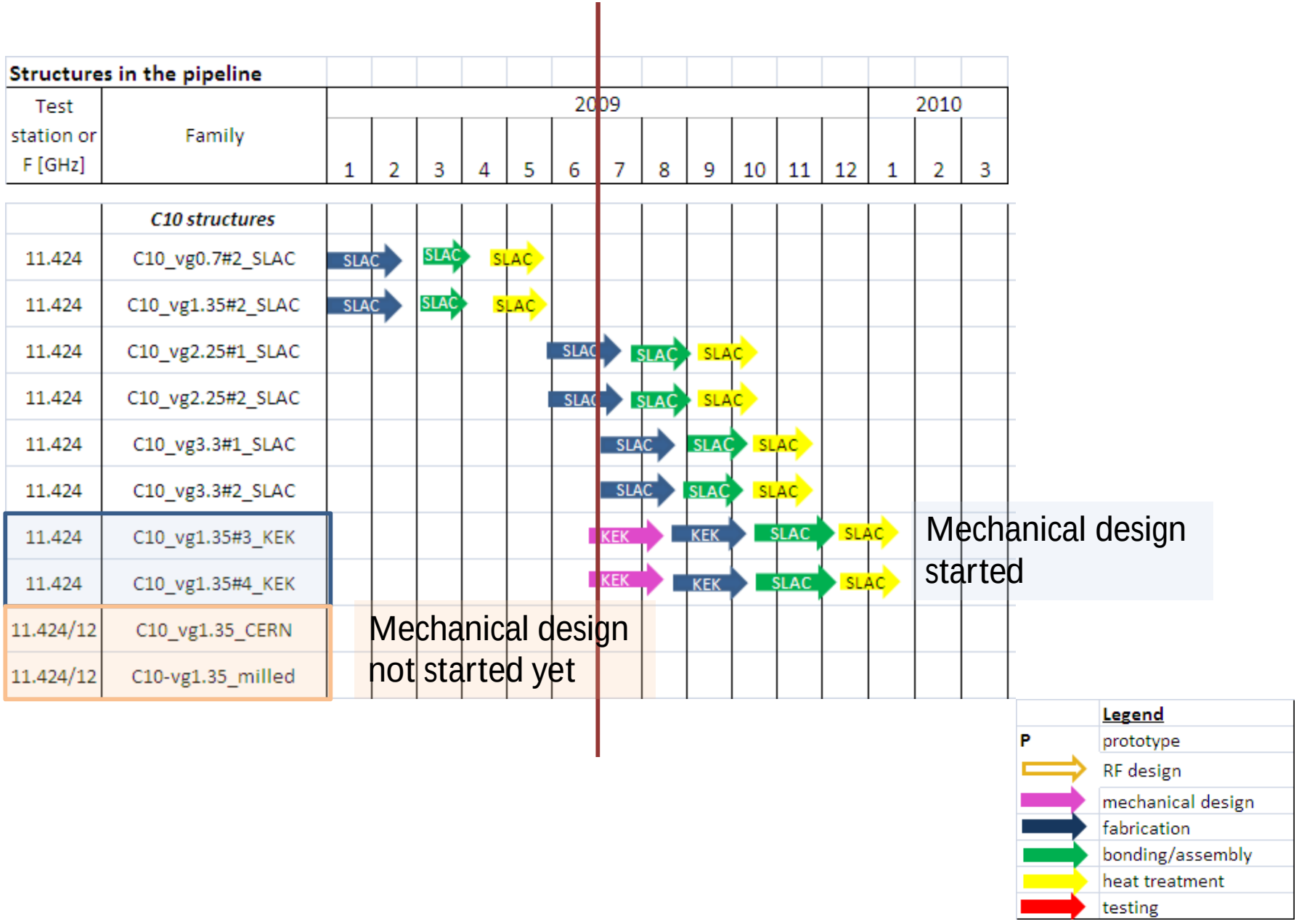
Missed slot in ASTA, back to CERN?

Stand-by

SLAC/KEK technology,
KEK copper disks CW31

	Legend
P	prototype
	RF design
	mechanical design
	fabrication
	bonding/assembly
	heat treatment
	testing


Structures in the pipeline
Test station or F [GHz]
Family
2009
2010
1 2 3 4 5 6 7 8 9 10 11 12 1 2 3
CLIC G
11.424 T24_vg1.8_disk #2
11.424 TD24_vg1.8_disk#2
12 TD24_vg1.8_disk#2
11.424 T24_vg1.8_disk #3_KEK
11.424 TD24_vg1.8_disk#3_KEK
11.424 T24_vg1.8_nd#1_CERN
11.424 T24_vg1.8_nd#2_CERN
12 T24_vg1.8_nd#1_CERN
12 T24_vg1.8_nd#2_CERN
11.424 TD24_vg1.8_cc
11.424/12 TD25_vg1.7_sd
11.424/12 TD25_vg1.7_LDT
CERN
KEK
2nd unit, preparation in stand-by
Contract with KEK signed on 19.06, design started
T24 with smaller D and new tuning features Under tendering
Compact coupler, asymm. disks
Ridged waveguides
Mode launcher coupler, symm. disks
J. Huopana, disks for brazing test cw28
Legend
P prototype
RF design
mechanical design
fabrication
bonding/assembly
heat treatment
testing


Structures in the pipeline
Test station or F [GHz]
Family
2009
2010
1 2 3 4 5 6 7 8 9 10 11 12 1 2 3
C10 structures
11.424 C10_vg0.7#2_SLAC
11.424 C10_vg1.35#2_SLAC
11.424 C10_vg2.25#1_SLAC
11.424 C10_vg2.25#2_SLAC
11.424 C10_vg3.3#1_SLAC
11.424 C10_vg3.3#2_SLAC
11.424 C10_vg1.35#3_KEK
11.424 C10_vg1.35#4_KEK
11.424/12 C10_vg1.35_CERN
11.424/12 C10-vg1.35_milled
SLAC
KEK
Mechanical design started
Mechanical design not started yet
Legend
P prototype
RF design
mechanical design
fabrication
bonding/assembly
heat treatment
testing

Structures in the pipeline

Test station or F [GHz]	Family	2009 1	2	3	4	5	6	7	8	9	10	11	12	2010 1	2	3
	CD10 structures															
11.424	CD10_vg1.35#1_KEK							KEK			KEK	SLAC		SLAC		
11.424	CD10_vg1.35#2_KEK							KEK			KEK	SLAC		SLAC		
11.424	CD10_vg1.35#4_CERN								CERN			CERN				
11.424/12	CD10_vg1.16_Choke				CERN											
11.424/12	CD10_vg1.32															

Lower ΔT

Radial choke damping

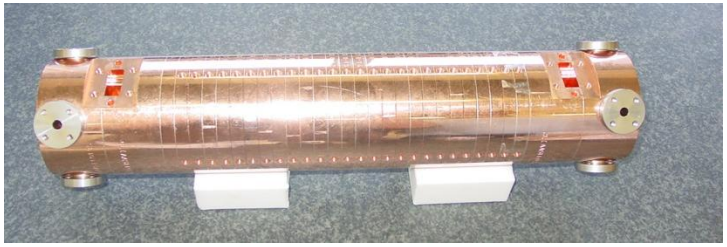
Other structures:
- x-band speed bump structure
- CLIC K structures
- 500 GeV structures

	Legend
P	prototype
	RF design
	mechanical design
	fabrication
	bonding/assembly
	heat treatment
	testing

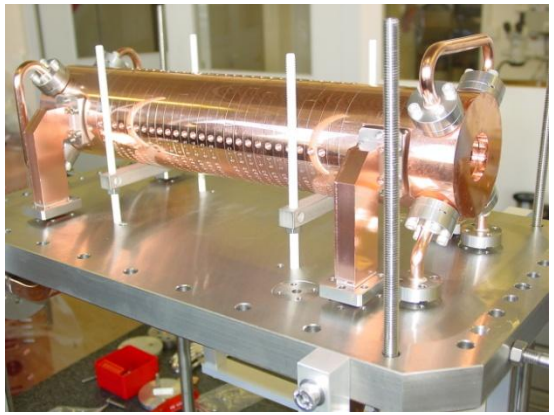
T24#1 (tank version)

QC
(dim. control: shape and flatness
SEM: for each step)

Cleaning (New CERN procedure: etching)



Pre-fire of disks (Ar, 1000 °C)
➔ to increase grain size and/or dissolve S-particles



Vacuum brazing of couplers (850 °C, Ag/Cu/Pd 58.5/31.5/10)

Vacuum brazing (815 °C, Ag/Cu/Pd 68.4/26.6/5) of couplers to disk stack

Vacuum brazing (790 °C, Ag/Cu 72/28) of cooling circuits, tuning studs

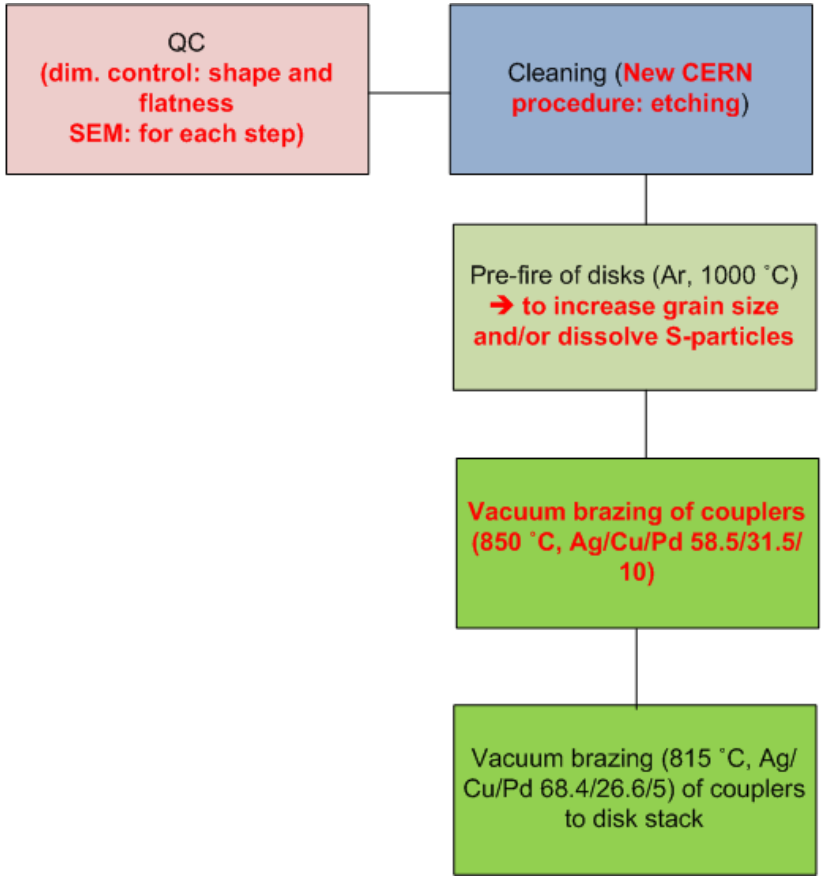
Vacuum baking
4 h at 650 °C

Installation on cover plate/tank (clean room)

Packaging

Red: changes wrto previous assembly procedure

TD24 #1



RF check ➔ non conform

Inspection of all disks (see EDMS report: 10006094
Brazing material inside the disks

Launched program to qualify assembly procedure (aim bonding at 1000 C)

First results with pure bonding on two samples of 5 disks each seem to be promising