Linac 4 Pick-up's

Position, Intensity and Phase

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Overview

	Nb. of Pick-up's	Inner Diameter [mm]	Available length [mm]	E [MeV]	Comments
ML	3	67	108	3	Only pick-up
DTL	3	34	278-678	3 - 40	1 BPM + 1 dipole + EMQ + BCT / SEM-Grid
CCDTL	7	34	410	40 – 90	1 BPM + 1 dipole + EMQ + BCT / SEM-Grid
PIMMS	6	34	~378-430	90 – 160	1 BPM + 1 dipole + EMQ + BCT / SEM-Grid
HEBT	12+17	100mm	-----	160	No Layout
DL	2	?	?	160	No Layout

Specifications

|	Position	Intensity	Phase
Accuracy	0.3mm	1%	1.0°
Resolution	0.1mm	0.1mA	**0.1°??**
Dynamic range	±15mm	10-40mA	180°
Time resolution	2µs?	2µs?	2µs?

The different Booster injection schemes demands a revision of the functional specifications i.e. is TOF measurements needed on all beams?. What is the time resolution needed?

Shorted strip line pick-up

$$V_U(t) = \frac{\phi_{elec} \cdot Z_0}{4 \cdot \pi} \cdot \left[I_B(t) - I_B(t - \frac{2 \cdot l}{c}) \right]$$

45 degrees electrodes

352MHz

Spectre dans la ligne de transfert
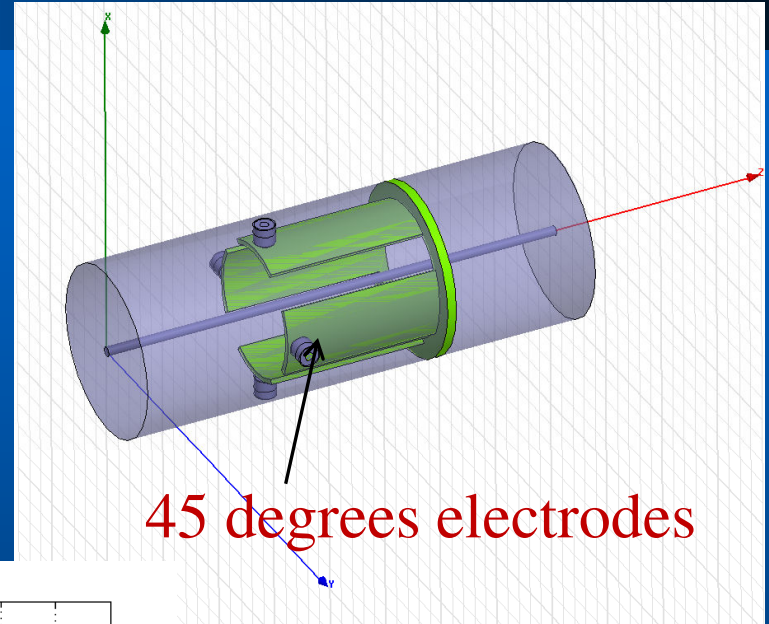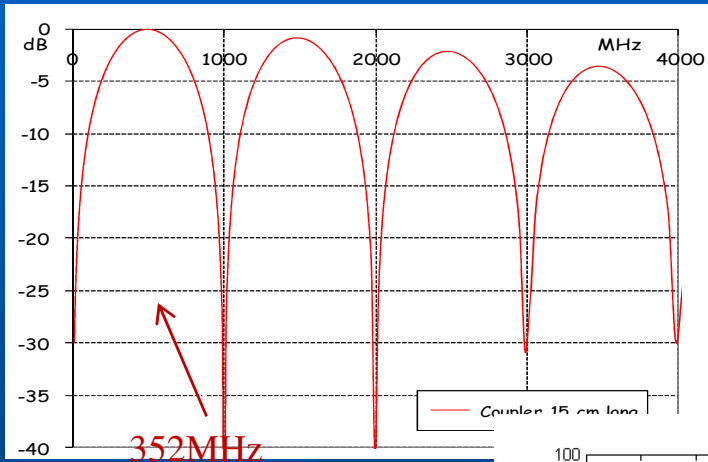
Spectre dans la ligne de transfert
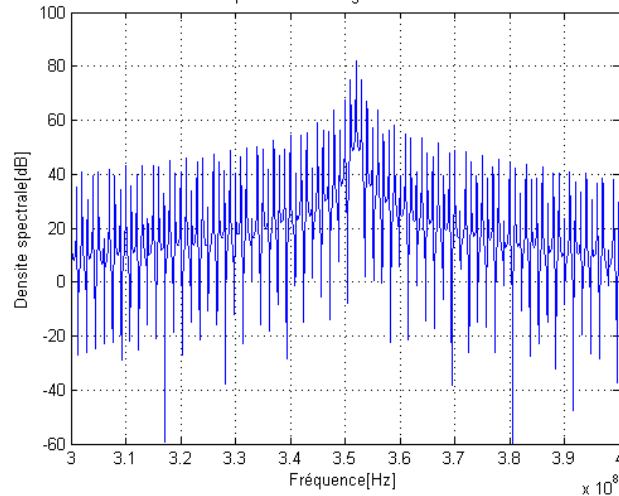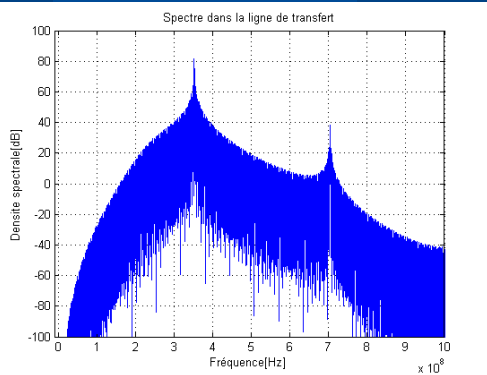
DTL inter tank 1-2
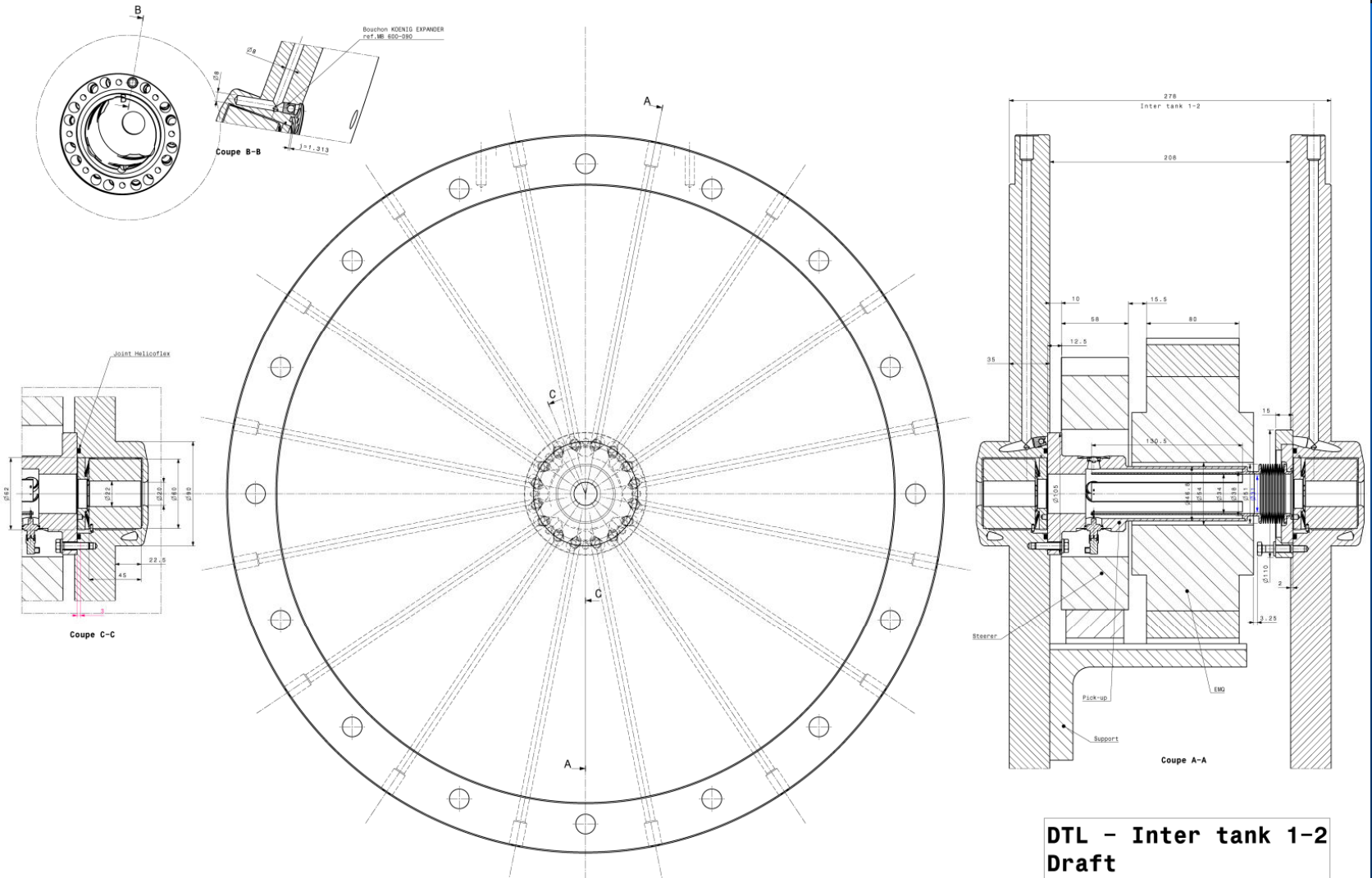
Pick-up for the DTL 1-2
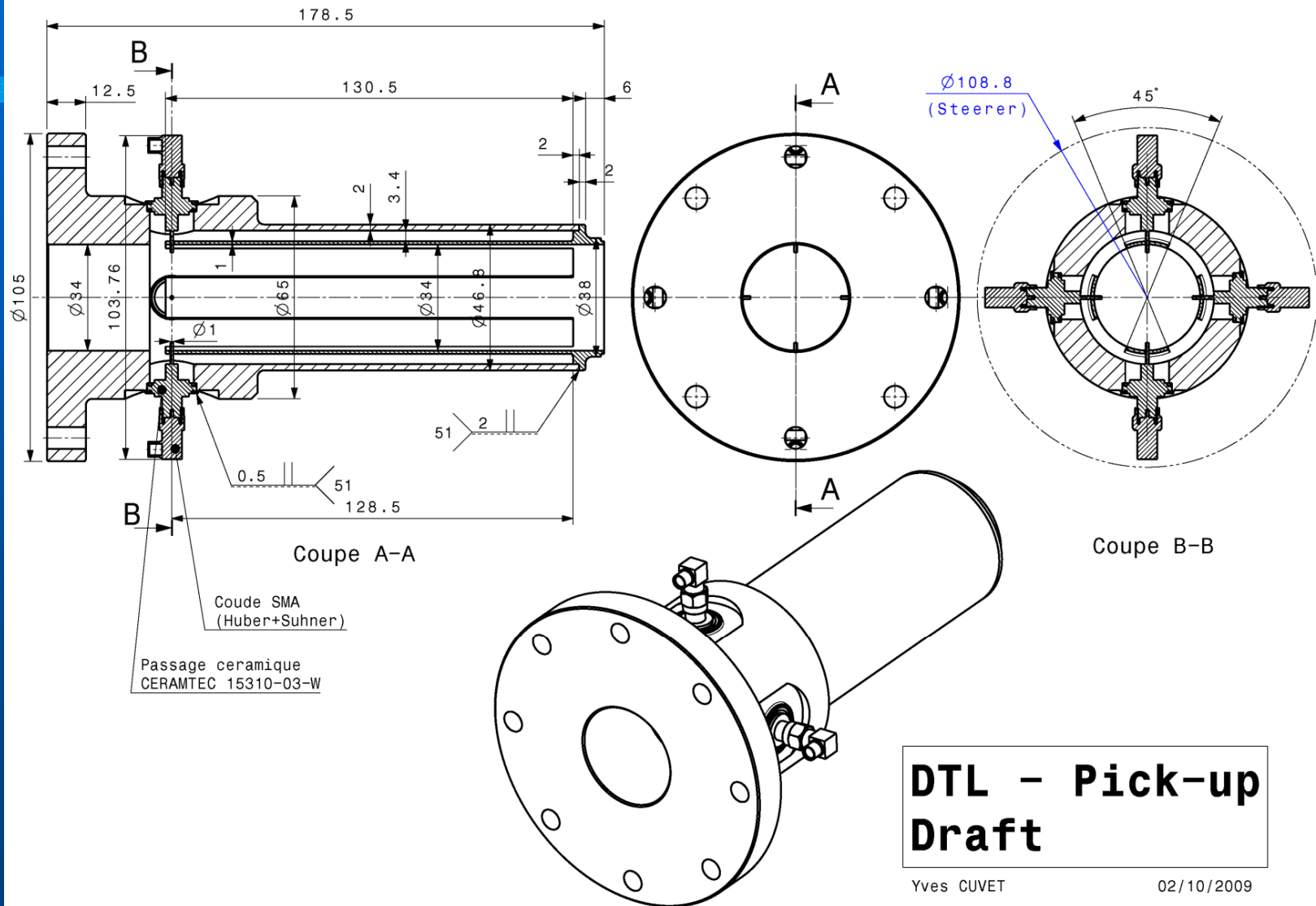
ML pick-up
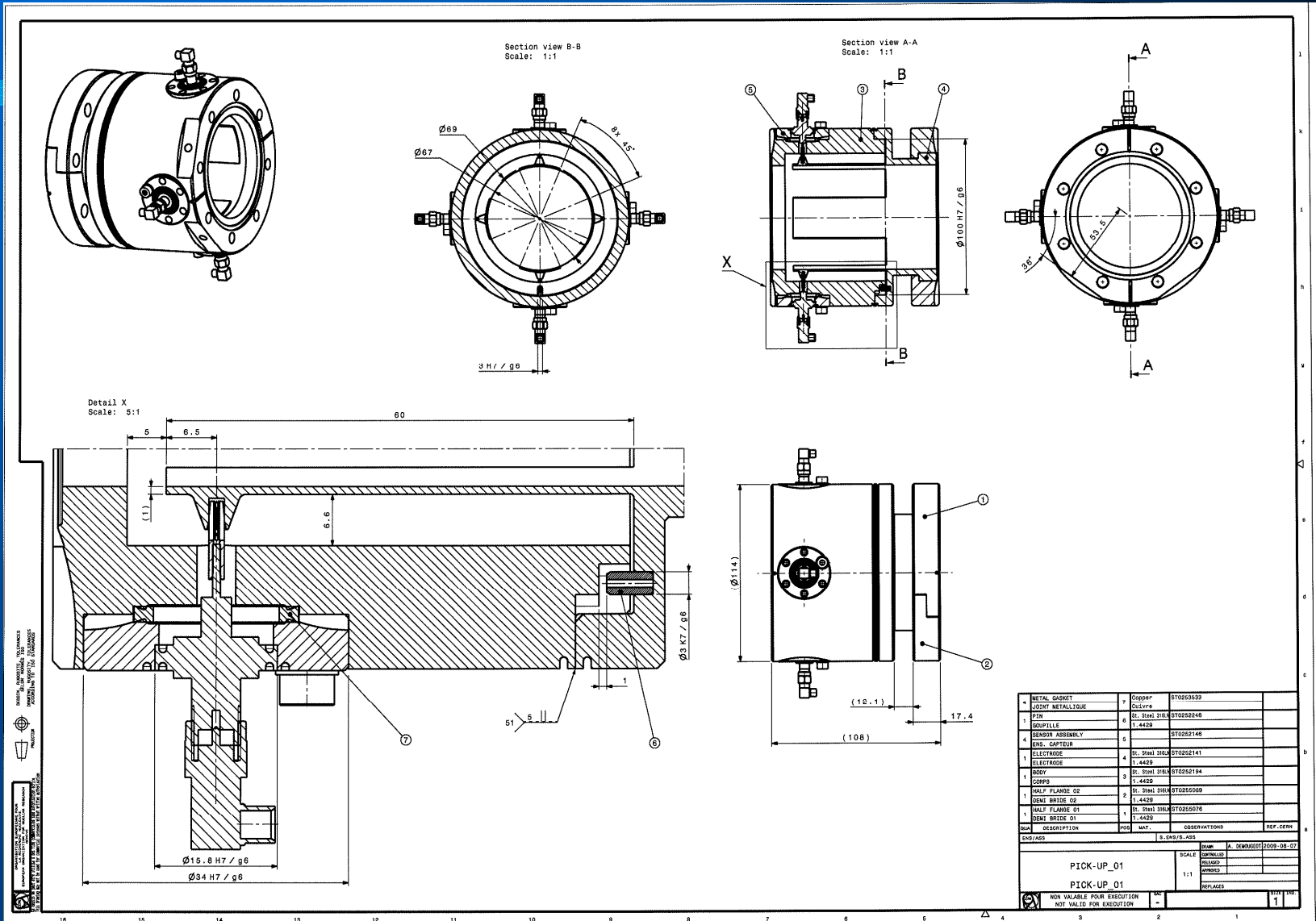
Feed-througs
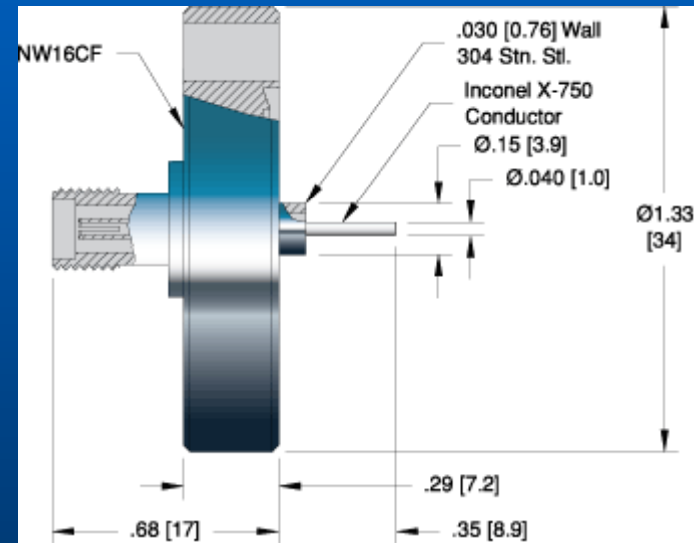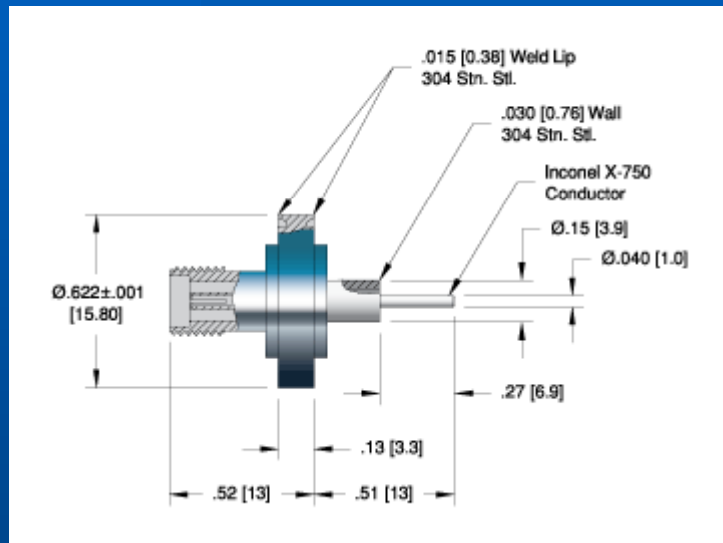
SCT FA10824 Rev. A

Electronics
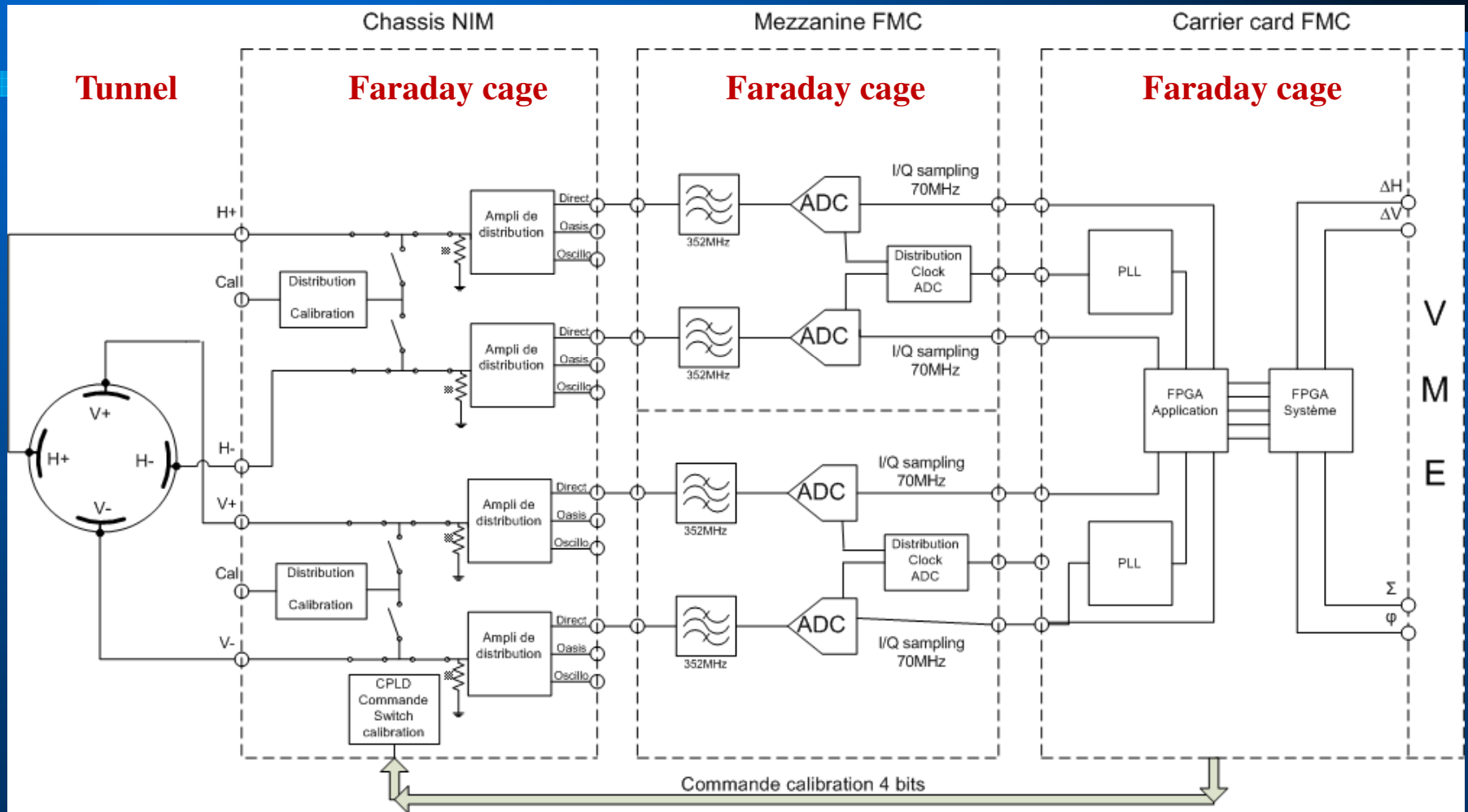
Schedule ML

Fabrication *3

Tests

Installation
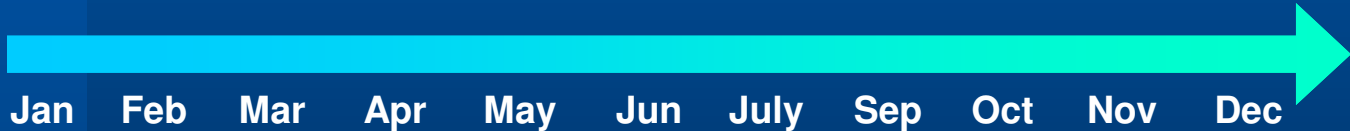
Jan   Feb   Mar   Apr   May   Jun   July   Sep   Oct   Nov   Dec

2010

Current Status

- **ML**
  - **Mechanical design on the way. Still need more low beta simulations**
  - **Electronics defined. PCB design to start.**
- **Linac 4**
  - **Mechanical design on the way.** Still need more low beta simulations.
  - Consensus on BPM layout, this meeting?
  - **Electronic defined. PCB design to start.**

A common file: F. Gerigk

Sheet1

Structure	Element	cavity sections	Length [m]	Wave-guide entry [m]	Total length [m]	Section length [m]	steerer + EMQ	steerer	No. EMQs	No. PMQs	pick-up	trans-former	SEM/ wirescanner	support structures	alignment table	alignment principle	survey targets	horizontal pads	Comment
	LEBT															"clavette"			
	RFQ		3.0000	?	3.000									?					
	Chopper-line		3.7510	-	6.751									1		"clavette"	2		Tbc.
DTL	Tank1	2	3.6184	8.360	10.369					?				1		targets	4	2	
	Drift		0.2900		10.659		✓	1	1		1			1			2	1	
	Tank2	4	7.4170	13.132	18.076					?				1		targets	8	4	
				15.604															
	Drift		0.4328		18.509		✓	1	1		1			1		targets	2	1	
	Tank3	4	7.2817	20.936	25.791					?				1			8	4	ends with mid-quad
				23.364		19.040													
	Drift		0.6460		26.437		✓	1	1		1	1	1	1			4	2	
CCDTL 1	Cavity 1	2	0.6962		27.133									1			4	2	
	Drift		0.2500		27.383				1						1		2	1	
	Cavity 2	2	0.7139	27.540	28.097												4		
	Drift		0.2500		28.347				1						1		2	1	
	Cavity 3	2	0.7332		29.080	2.643											4		
	Drift		0.4100		29.490		✓	1	1		1		1	1			4	2	
CCDTL 2	Cavity 1	2	0.7504		30.241									1			4	2	
	Drift		0.2500		30.491				1						1		2	1	
	Cavity 2	2	0.77014	30.676	31.261												4		
	Drift		0.2500		31.511				1						1		2	1	
	Cavity 3	2	0.78676		32.298	2.807											4		
	Drift		0.4100		32.708		✓	1	1		1		1	1			4	2	
CCDTL 3	Cavity 1	2	0.8061		33.514									1			4	2	
	Drift		0.2500		33.764				1						1		2	1	
	Cavity 2	2	0.8227	33.975	34.586												4		
	Drift		0.2500		34.836				1						1		2	1	
	Cavity 3	2	0.8421		35.678	2.971											4		
	Drift		0.4100		36.088		✓	1	1		1		1	1			4	2	
CCDTL 4	Cavity 1	2	0.8576		36.946									1			4	2	
	Drift		0.2500		37.196				1						1		2	1	
	Cavity 2	2	0.8774	37.435	38.073												4		
	Drift		0.2500		38.323				1						1		2	1	
	Cavity 3	2	0.8924		39.216	3.127											4		
	Drift		0.4100		39.626		✓	1	1		1		1	1			4	2	
CCDTL 5	Cavity 1	2	0.9116		40.537									1			4	2	
	Drift		0.2500		40.787				1						1		2	1	
	Cavity 2	2	0.92752	41.051	41.715												4		
	Drift		0.2500		41.965				1						1		2	1	

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Sheet1

	Cavity 3	2	0.94414			42.909	3.283									4	
	Drift		0.4100			43.319		✓	1	1	1		1	1		4	2
CCDTL 6	Cavity 1	2	0.9579			44.277								1		4	2
	Drift		0.2500			44.527				1					1	2	1
	Cavity 2	2	0.9757	44.815		45.503										4	
	Drift		0.2500			45.753				1					1	2	1
	Cavity 3	2	0.98842			46.741	3.422									4	
	Drift		0.4100			47.151		✓	1	1	1		1	1		4	2
CCDTL 7	Module7	2	1.0061			48.157								1		4	2
	Drift		0.2500			48.407				1					1	2	1
	Cavity 2	2	1.01752	48.716		49.425										4	
	Drift		0.2500			49.675				1					1	2	1
	Cavity 3	2	1.03506			50.710	3.559									4	
	Drift		1.2114			51.921	22.363	✓	1	1	1	1	1	1	?	4	2
PIMS	Cavity1	1	1.2978	52.570		53.219								1		2	1
	Drift		0.3708			53.590		☐		1				1		2	1
	Cavity2	1	1.3225	54.251		54.912								1		2	1
	Drift		0.3779			55.290		✓	1	1	1			1		2	1
	Cavity3	1	1.3464	55.963		56.637								1		2	1
	Drift		0.3847			57.021		☐		1			1	1		4	2
	Cavity4	1	1.3699	57.706		58.391								1		2	1
	Drift		0.3914			58.783		✓	1	1	1			1		2	1
	Cavity5	1	1.3932	59.479		60.176								1		2	1
	Drift		0.3981			60.574		☐		1				1		2	1
	Cavity6	1	1.4161	61.282		61.990								1		2	1
	Drift		0.4046			62.394		✓	1	1	1		2	1		6	3
	Cavity7	1	1.4387	63.114		63.833								1		2	1
	Drift		0.4111			64.244		☐		1				1		2	1
	Cavity8	1	1.4609	64.975		65.705								1		2	1
	Drift		0.4174			66.123		✓	1	1	1			1		2	1
	Cavity9	1	1.4828	66.864		67.605								1		2	1
	Drift		0.4237			68.029		☐		1			1	1		4	2
	Cavity10	1	1.5044	68.781		69.533								1		2	1
	Drift		0.4298			69.963		✓	1	1	1			1		2	1
	Cavity11	1	1.5234	70.725		71.487								1		2	1
	Drift		0.4353			71.922		☐		1				1		2	1
	Cavity12	1	1.5398	72.692		73.462	21.540							1		2	1
	Drift		4.0000			77.462		✓	1		1	1	1	?		2	1
Linac4																	
Total linac length [m]			77.4617			77.462											
Measurement line			5.0000			82.462											

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