

SNS Diagnostics AP Requirements (3/23/2001)

Device	Location	Intensity [ppp]	Pulse length [msec]	Range	Accuracy	Resolution	Data structure
BPM (position)	MEBT	5e10 - 2e14	.3 - 1000	+/- 0.5*apert	+/- .5mm	.05mm	inside mini pulse
	DTL	2e10 - 2e14	.3 - 1000		+/- 1% of a	0.1% of a	
	CCL-SCL	2e10 - 2e14	.3 - 1000		+/- 1% of a	0.1% of a	
	HEBT	5e10 - 2e14	.3 - 1000	+/- 20mm	+/-1mm	0.15mm	
	Ring-RTBT	5e10 - 2e14		+/- 100 mm	+/-1 mm	0.15 mm	turn-by-turn
BPM (phase)	MEBT	5e10 - 2e14	.3 - 1000	+/- 180 deg	+/-2 deg	0.1 deg	
	DTL	2e10 - 2e14	.3 - 1000	+/- 180 deg	+/-2 deg	0.2 deg	
	CCL-SCL	2e10 - 2e14	.3 - 1000	+/- 180 deg	+/-2 deg	0.2 deg	
	HEBT	5e10 - 2e14	.3 - 1000	+/- 180 deg	+/-2 deg	0.1 deg	
IPM	Ring	5e10 - 2e14		+/- 64 mm	2 mm	2 mm	few per turn
Wire	MEBT		.3 - 100	+/- 15mm		0.2mm	
	DTL						
	CCL-SCL		.3 - 100	+/- 15mm		0.2mm	
	HEBT		.3 - 1000	+/- 50mm		0.2mm	
	Ring-RTBT	5e10 - 2e14		+/- 100mm		0.2mm	turn-by-turn steps
Harp	DTL		.3 - 50	+/- 10 mm		1mm	
	HEBT,RTBT	3e11-2e14		+/- aperture	1mm p.	.5mm	single shot
	Misc. profile		.3 - 1000				
	D-plate						
	Ring						
BLM(10 Hz)	Linac-Ring	1e7 - 2e14	.3 - 1000	1-1000 rem/h	1%	0.6%, .5r/h	average at 10Hz
BLM(35 kHz)	Linac-Ring	6e8 - 2e14	.3 - 1000	30-2.5e5 rem/h		30r/h	once /10 turns
FBLM	DTL-to-CCL		.3 - 1000	1-1000 rem/h			inside mini pulse
	SCL-to-HEBT		.3 - 1000	1-1000 rem/h			inside mini pulse
	Ring			1-1000 rem/h			intra turn
	MEBT-to-HEBT		.3 - 1000	15mA - 52 mA	+/- 1%	.1%	inside mini pulse
Current	Ring-RTBT	5e10 - 2e14		15mA-100A	+/- 1%	.1%	turn-by-turn
Phase width	HEBT		.3 - 1000	0 - 600ps	15ps (5deg)	15ps (5deg)	
	Ring				+/- 0.001		
Tune	HEBT		.3 - 1000	0 - 0.1mA	20%	.5mkA	each midi pulse
	Ring			0 - 0.1 A	20%		
Beam-in-gap	HEBT		.3 - 1000	0 - 0.1mA	20%	.5mkA	each midi pulse
	Ring			0 - 0.1 A	20%		
Emitance	MEBT		.3 - 10		10%		
	D-plate		.3 - 50		10%		
e - detectors	Ring			2e8 - 2e11 (e-)	5%	1e8 (e-)	turn-by-turn
WB BPM	Ring			+/- 1-60 mm?	+/-1 mm	0.5 mm	turn-by-turn

Comments

6, dual plane
?, dual plane

20/38 each quad, dual plane, 402.5MH;
each quad/doublet, dual plane,402.5M
6, 805MHz
?, 805MHz
?, 402.5MHz
2?, 402.5MHz
three planes (H, V, 45 deg.)
three planes

three planes; each cryo.
three planes
three planes
after tank #3,#6; comissioning

video fluorescence
foil video
of 1W/m

fast; not calibrated
fast; not calibrated
fast; not calibrated

??? LANL
tune kicker/pick-up+PLL
laser neutralization
BIG kicker/monitor
H & V
H & V

conspicuous locations
100MHz BW