

## Emittance Measurements at 750 keV, 10 MeV and 200 MeV

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An attempt was made to measure the emittance at 50 KeV, 10 MeV and 200 MeV to determine a width of beam through the 200 MeV diaphragm. Successful measurements were made at 750 KeV and 10 MeV but in moving the amplifiers to the 200 KeV location a problem developed and no 200 MeV data was taken by the slit method. SER profiles were taken at 200 MeV and that data is included with the 50 KeV and 10 MeV data for comparison. The results are as follows:-

LOCATION	NORMALIZED 90% EMITTANCE (EPR)		BEAM CURRENT
	HORIZONTAL	VERTICAL	
VB # 5	0.68 cm mRad.	0.50 cm mRad.	75 mA
10 MeV	1.62 cm mRad.	1.13 cm mRad.	50 mA
10 MeV	1.08 cm mRad.	1.40 cm mRad.	50 mA



EMITTANCE UNIT LOCATION	VBS
PLANE OF MEASUREMENT	HDR
EMITTANCE UNIT NUMBER	2
BEAM CURRENT IN MILLI. AMPS.	75
THRESHOLD STEP SIZE IN MILLI. VOLTS.	20
NOISE LEVEL IN MILLI. VOLTS.	5
UPPER LEVEL IN MILLI. VOLTS.	500

XBEAM CURRENT VS. PHASE SPACE AREA

100.00<		* 29.53
		* 21.87
90.00<		* 16.87 at 90%
		* 14.32
80.00<		* 11.99
		* 10.44
70.00<		* 8.658
60.00<		* 7.437
		* 6.327
50.00<		* 5.217
		* 4.662
40.00<		* 3.663
30.00<		* 2.775
		* 2.442
20.00<		* 1.665
		* 1.332
		* 1.110
10.00<		* 0.666
		* 0.555
		* 0.333

750 KeV VBS #5  
 HORIZONTAL  
 BUNCHER #2 ONLY



PLANE OF MEASUREMENT VERT  
 EMITTANCE UNIT NUMBER 2  
 BEAM CURRENT IN MILLI. AMPS. 75  
 THRESHOLD STEP SIZE IN MILLI. VOLTS. 20  
 NOISE LEVEL IN MILLI. VOLTS. 5  
 UPPER LEVEL IN MILLI. VOLTS. 500

XBEAM CURRENT VS. PHASE SPACE AREA

%I .....  
 100.00< ..... \* 24.64

\* 16.98

90.00< ..... \* 13.88  
 - 12.5 at 90%  
 \* 11.77

\* 9.546

70.00< \* 7.548

60.00< \* 6.549

\* 5.772  
 \* 5.439

50.00< ..... \* 4.551  
 ..... \* 4.107  
 ..... \* 3.774  
 ..... \* 3.441  
 ..... \* 2.775  
 ..... \* 2.331  
 ..... \* 2.220

750 KeV VB #5  
 VERTICAL

40.00< \* 3.441

30.00< \* 1.887

\* 1.665  
 \* 1.554

20.00< ..... \* 0.999  
 .....

10.00< .....

RRER 0.500CM. MRADS. PER POINT





PLANE OF MEASUREMENT	VERT
EMITTANCE UNIT NUMBER	3
BEAM CURRENT IN MILLI. AMPS.	50
THRESHOLD STEP SIZE IN MILLI. VOLTS.	20
NOISE LEVEL IN MILLI. VOLTS.	5
UPPER LEVEL IN MILLI. VOLTS.	500

BEAM CURRENT VS. PHASE SPACE AREA

NI .....  
 100.00C \* 10.63

90.00C \* 6.625  
 7.5 at 90%

\* 5.000

80.00C \* 4.125

\* 3.250

70.00C

\* 2.875

\* 2.500

60.00C

\* 2.125

10 MeV VERTICAL  
 BUNCHER #2 ONLY

50.00C

\* 1.625

\* 1.375

40.00C

\* 1.000

30.00C

\* 0.750

\* 0.625

20.00C

\* 0.375

10.00C\*

0.250

ARRR 0.300CM. MRADS. PER POINT



PLANE OF MEASUREMENT ..... HOR  
 EMITTANCE UNIT NUMBER ..... 3  
 BEAM CURRENT IN MILLI. AMPS. .... 50  
 THRESHOLD STEP SIZE IN MILLI. VOLTS. 20  
 NOISE LEVEL IN MILLI. VOLTS. .... 5  
 UPPER LEVEL IN MILLI. VOLTS. .... 500

BEAM CURRENT VS. PHASE SPACE AREA

21 .....  
 100.00K ..... \* 20.00

90.00K ..... \* 11.88  
 10.8 at 90%

..... \* 8.750

80.00K .....  
 ..... \* 6.375

70.00K ..... \* 5.750

..... \* 4.625

60.00K ..... \* 3.875

10 MeV HORIZONTAL  
 BUNCHER # 2 ONLY.

..... \* 3.375

..... \* 3.000

50.00K .....  
 ..... \* 2.750

..... \* 2.250

40.00K

..... \* 1.875

30.00K

..... \* 1.375

..... \* 1.125

20.00K

..... \* 0.750

10.00K

..... \* 0.375

..... \* 0.250

AREA 0.400CM. MRADS. PER POINT