TYPE TEST CERTIFICATE OF LIGHTNING IMPULSE TEST

APARATUS:	Dry voltage transformer, 24kV, indoor type
DESIGNATION:	RU12
SERIAL NO.:	842321500
Rated voltage (Um):	24kV
Basic Insulation Level:	**125 kV**
MANUFACTURER:	PARS SHAR B.C. CO. Bolvare Aghaghiya, Yazd Industrial Zone, Yazd, Iran
TESTED FOR:	PARS SHAR B.C. CO. Vanak Sq., Shad St., Baghsara St., No. 6, 3 Floor, Tehran, Iran
TESTED BY:	High Voltage Lab., Faculty of Engineering, University of Tehran, St. Kargare Shomali, Tehran, Iran
DATE OF TEST:	7th Feb. 2006

The object, constructed in accordance with the description, drawings and photographs attached to this certificate, has been subjected to lightning impulse withstand test in accordance with

IEC 60044-2

This Type Test Certificate has been issued by High Voltage Lab., Faculty of Engineering, University of Tehran following exclusively the STL guides.

The result was OK with the following observations :

- No disruptive discharge occurred in the nonself restoring internal insulation .
- No flashover occurred along the selforestoring external insulation .
- No other evidence of insulation failure was detceted .

The values obtained and the general performace are considered to comply with the above Standard and to justify the ratings assigned by the manufacturer .

No. of Pages including this Page : 14

Test Witnessed by :
Mr. Chitsaz

Shayegani

Dr. A.A. Shayegani
7th Feb. 2006

University of Tehran
High Voltage Laboratory

PT 24 kV Pars Shar

project : parssharpt24b

LI lightning-impulse

no.	Up	T1[µs]	T2[µs]	Tc[µs]	remark
1	78.68	1.03	51.8		
2	78.68	1.03	51.8		Check Curve
3	124.1	1.04	51.5		
4	124.7	1.02	51.9		
5	125.9	1.03	51.6		
6	124.1	1.02	51.9		
7	125.8	1.02	51.7		
8	124.7	1.03	51.6		
9	125.4	1.03	51.5		
10	124.7	1.04	51.6		
11	125.5	1.02	51.5		
12	124.8	1.03	51.6		
13	124.8	1.03	51.6		
14	124.8	1.02	51.6		
15	124.1	1.02	51.9		
16	125.1	1.02	51.9		
17	126	1.03	51.6		
18	-80.25	1.04	51.4		
19	-124.3	1.04	51.6		
20	-124.9	1.03	51.4		
21	-125	1.03	51.4		
22	-124.9	1.05	51.5		
23	-124.8	1.02	51.4		
24	-124.9	1.02	51.4		
25	-124.9	1.03	51.5		
26	-124.8	1.02	51.6		
27	-124.9	1.03	51.5		
28	-124.8	1.02	51.5		
29	-125.1	1.03	51.5		
30	-124.9	1.02	51.5		
31	-125	1.04	51.4		
32	-125	1.03	51.5		
33	-124.9	1.03	51.5		

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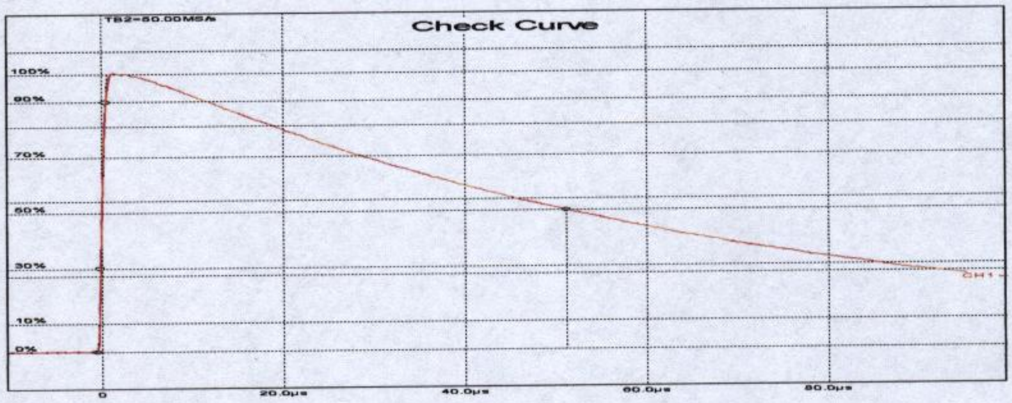
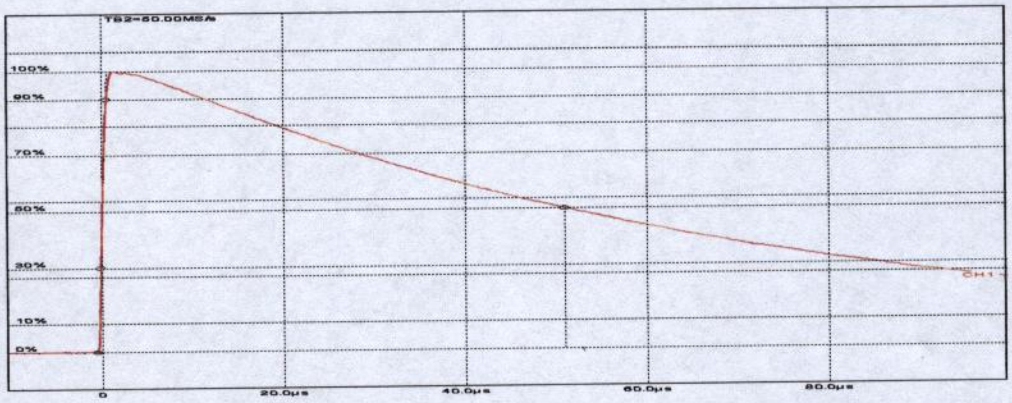
No.: 1
CH1 No. 1
Yp= 78.68kv
beta= 0.6%
T1= 1.03µs
T2= 51.8µs

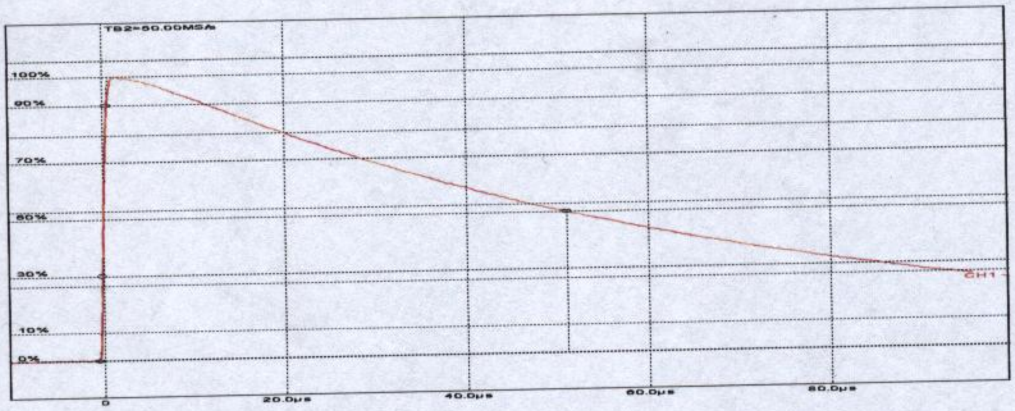


No.: 2
CH1 No. 2
Yp= 78.68kv
beta= 0.6%
T1= 1.03µs
T2= 51.8µs



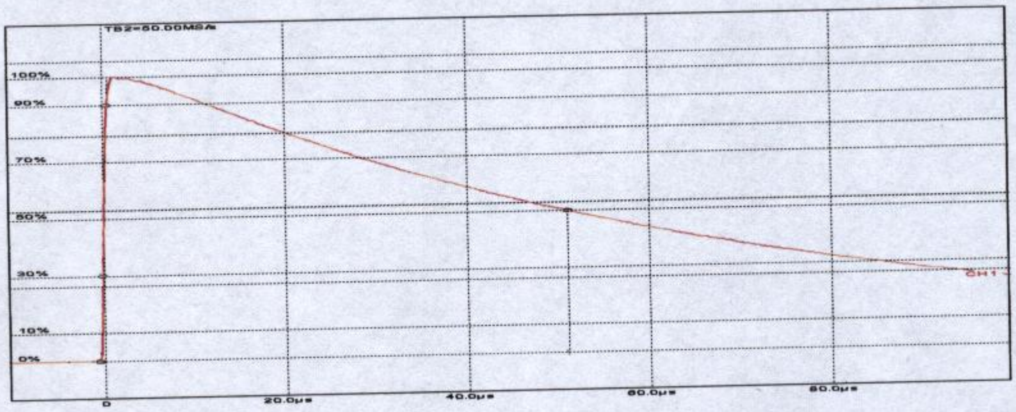
No.: 3
CH1 No. 3
Yp= 124.1kv
T1= 1.04µs
T2= 51.5µs

No.: 4
CH1 No. 4
Yp= 124.7kv
beta= 0.7%
T1= 1.02µs
T2= 51.9µs

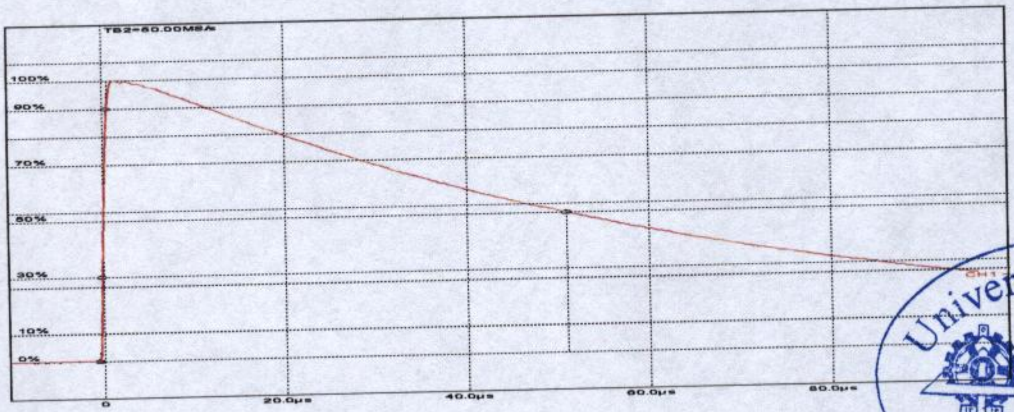


No.: 5
CH1 No. 5
Yp= 125.9kv
T1= 1.03µs
T2= 51.6µs

No.: 6
CH1 No. 6
Yp= 124.1kv
beta= 0.6%
T1= 1.02µs
T2= 51.9µs



No.: 7
CH1 No. 7
Yp= 125.8kv
beta= 0.1%
T1= 1.02µs
T2= 51.7µs



No.: 8
CH1 No. 8
Yp= 124.7kv
beta= 0.1%
T1= 1.03µs
T2= 51.6µs

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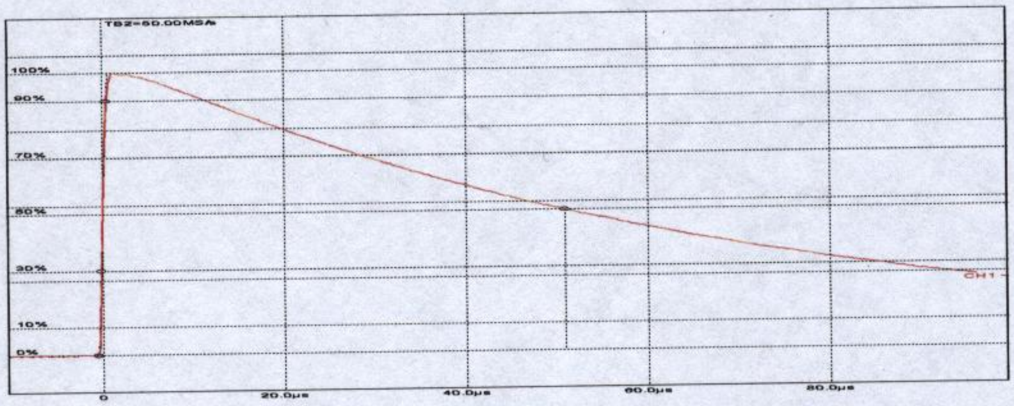
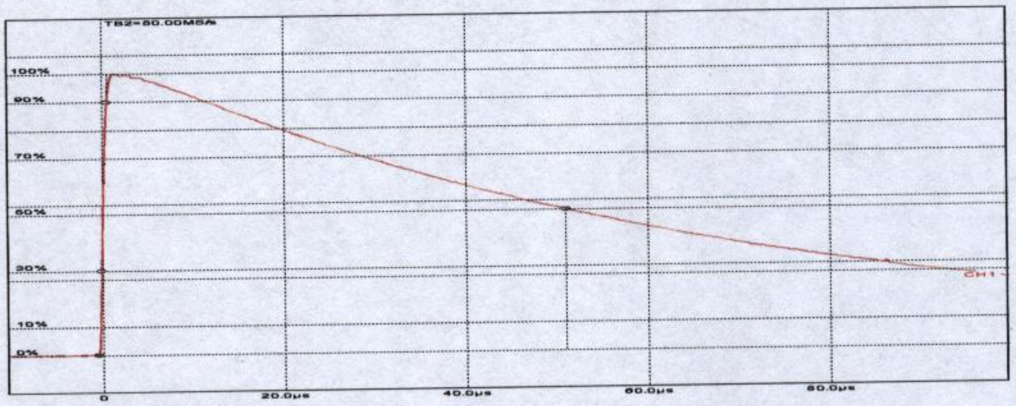


No.: 9
CH1 No. 9
Yp= 125.4kv
T1= 1.03µs
T2= 51.5µs



No.: 10
CH1 No. 10
Yp= 124.7kv
T1= 1.04µs
T2= 51.6µs

No.: 11
CH1 No. 11
Yp= 125.5kv
T1= 1.02µs
T2= 51.5µs

No.: 12
CH1 No. 12
Yp= 124.8kv
T1= 1.03µs
T2= 51.6µs

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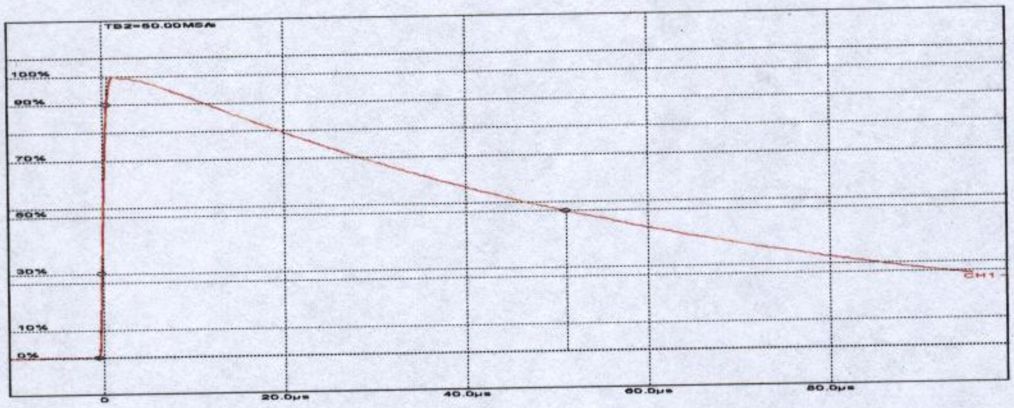


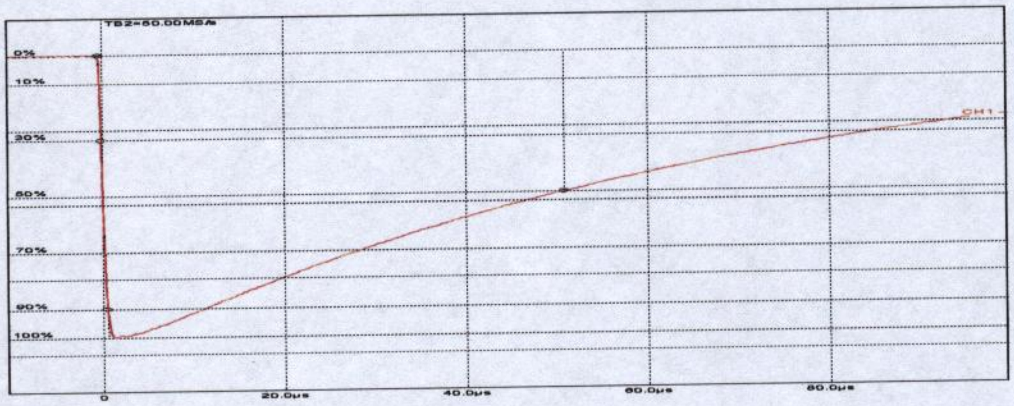
No.: 13
CH1 No. 13
Yp= 124.8kv
beta= 0.2%
T1= 1.03µs
T2= 51.6µs

No.: 14
CH1 No. 14
Yp= 124.8kv
T1= 1.02µs
T2= 51.6µs

No.: 15
CH1 No. 15
Yp= 124.1kv
beta= 0.6%
T1= 1.02µs
T2= 51.9µs

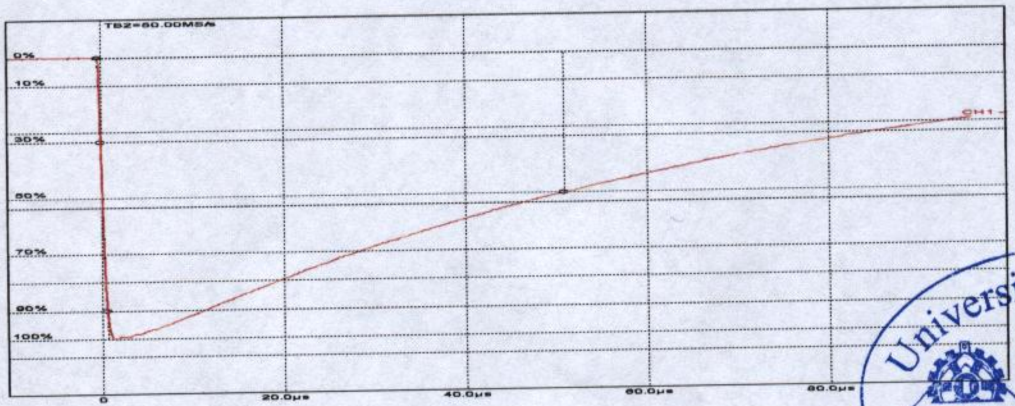
No.: 16
CH1 No. 16
Yp= 125.1kv
beta= 0.9%
T1= 1.02µs
T2= 51.9µs

No.: 17
CH1 No. 17
Yp= 126kv
T1= 1.03µs
T2= 51.6µs



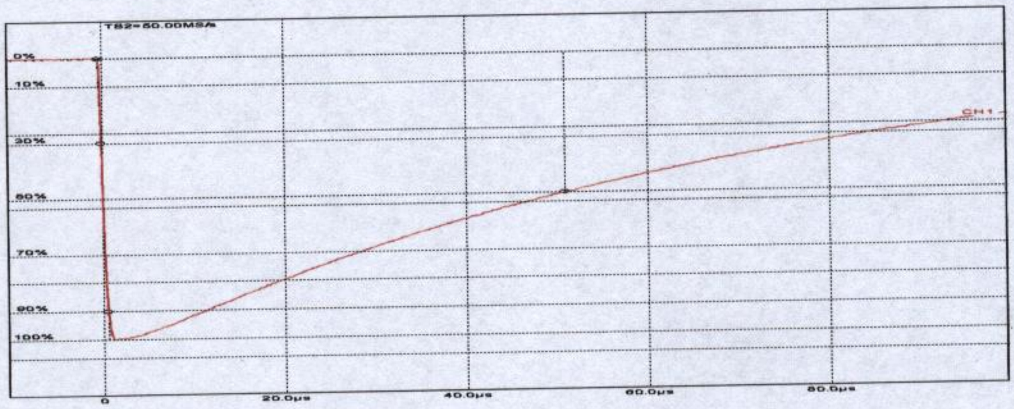
No.: 18
CH1 No. 18
Yp= -80.25kv
beta= 0.2%
T1= 1.04µs
T2= 51.4µs

No.: 19
CH1 No. 19
Yp= -124.3kv
T1= 1.04µs
T2= 51.6µs



No.: 20
CH1 No. 20
Yp= -124.9kv
T1= 1.03µs
T2= 51.4µs

No.: 21
CH1 No. 21
Yp= -125kv
T1= 1.03µs
T2= 51.4µs



No.: 22
CH1 No. 22
Yp= -124.9kv
beta= 0.1%
T1= 1.05µs
T2= 51.5µs

No.: 23
CH1 No. 23
Yp= -124.8kv
T1= 1.02µs
T2= 51.4µs

No.: 24
CH1 No. 24
Yp= -124.9kv
beta= 0.1%
T1= 1.02µs
T2= 51.4µs

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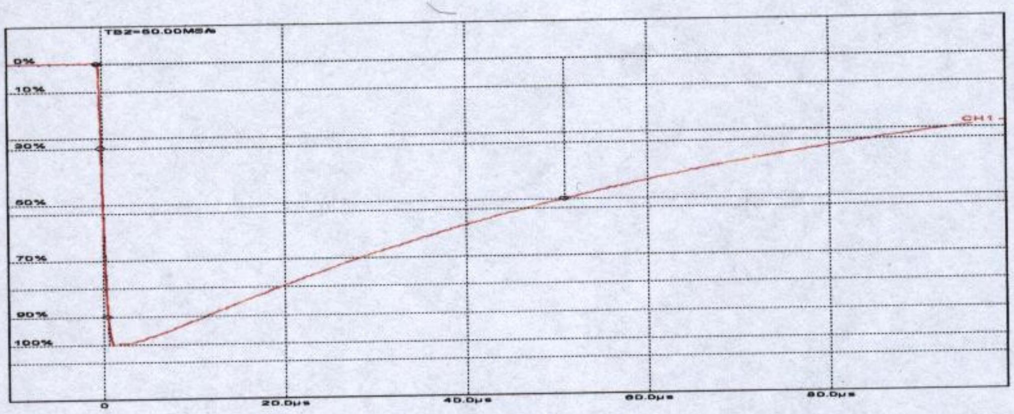
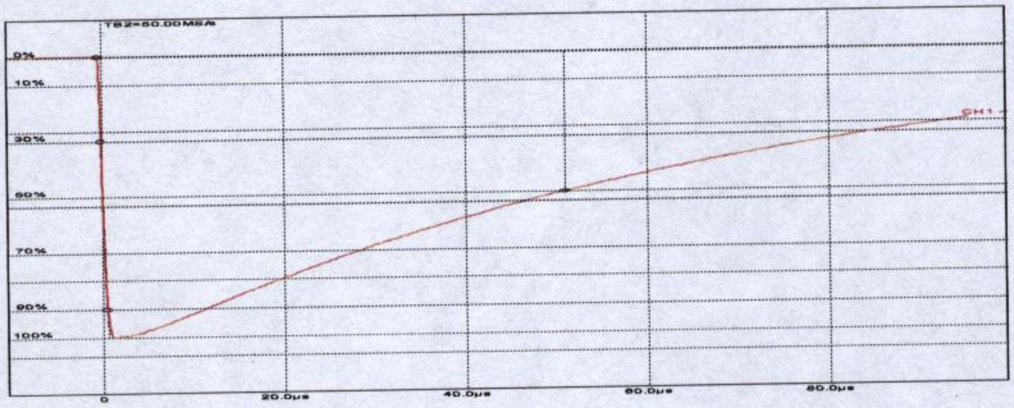


No.: 25
CH1 No. 25
Yp= -124.9kv
T1= 1.03µs
T2= 51.5µs

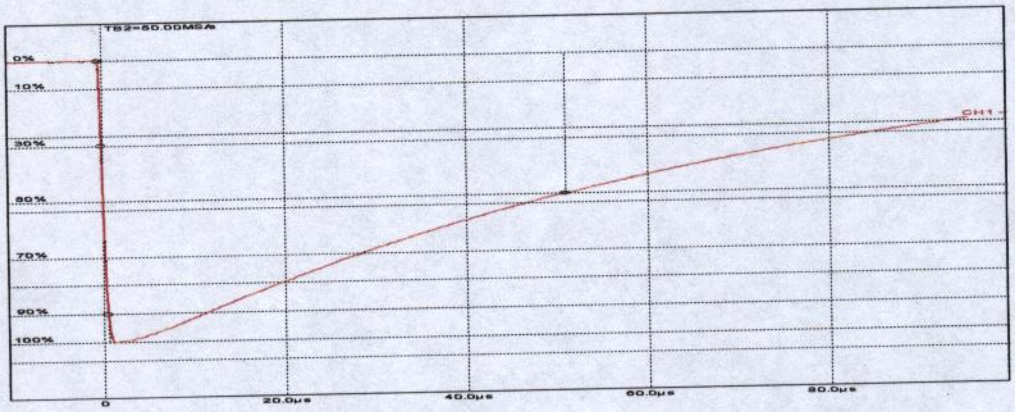


No.: 26
CH1 No. 26
Yp= -124.8kv
beta= 0.1%
T1= 1.02µs
T2= 51.6µs

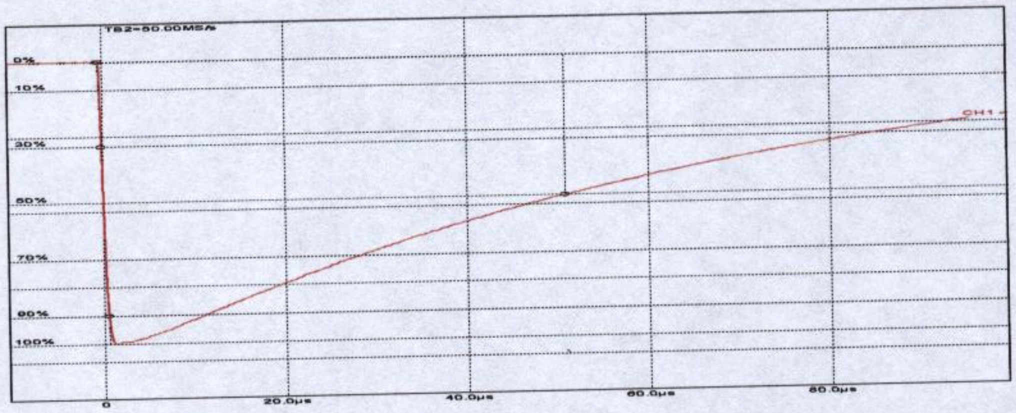
No.: 27
CH1 No. 27
Yp= -124.9kv
T1= 1.03µs
T2= 51.5µs

No.: 28
CH1 No. 28
Yp= -124.8kv
T1= 1.02µs
T2= 51.5µs

No.: 29
CH1 No. 29
Yp= -125.1kv
beta= 0.1%
T1= 1.03µs
T2= 51.5µs



No.: 30
CH1 No. 30
Yp= -124.9kv
T1= 1.02µs
T2= 51.5µs



No.: 31
CH1 No. 31
Yp= -125kv
T1= 1.04µs
T2= 51.4µs

No.: 32
CH1 No. 32
Yp= -125kv
beta= 0.1%
T1= 1.03µs
T2= 51.5µs

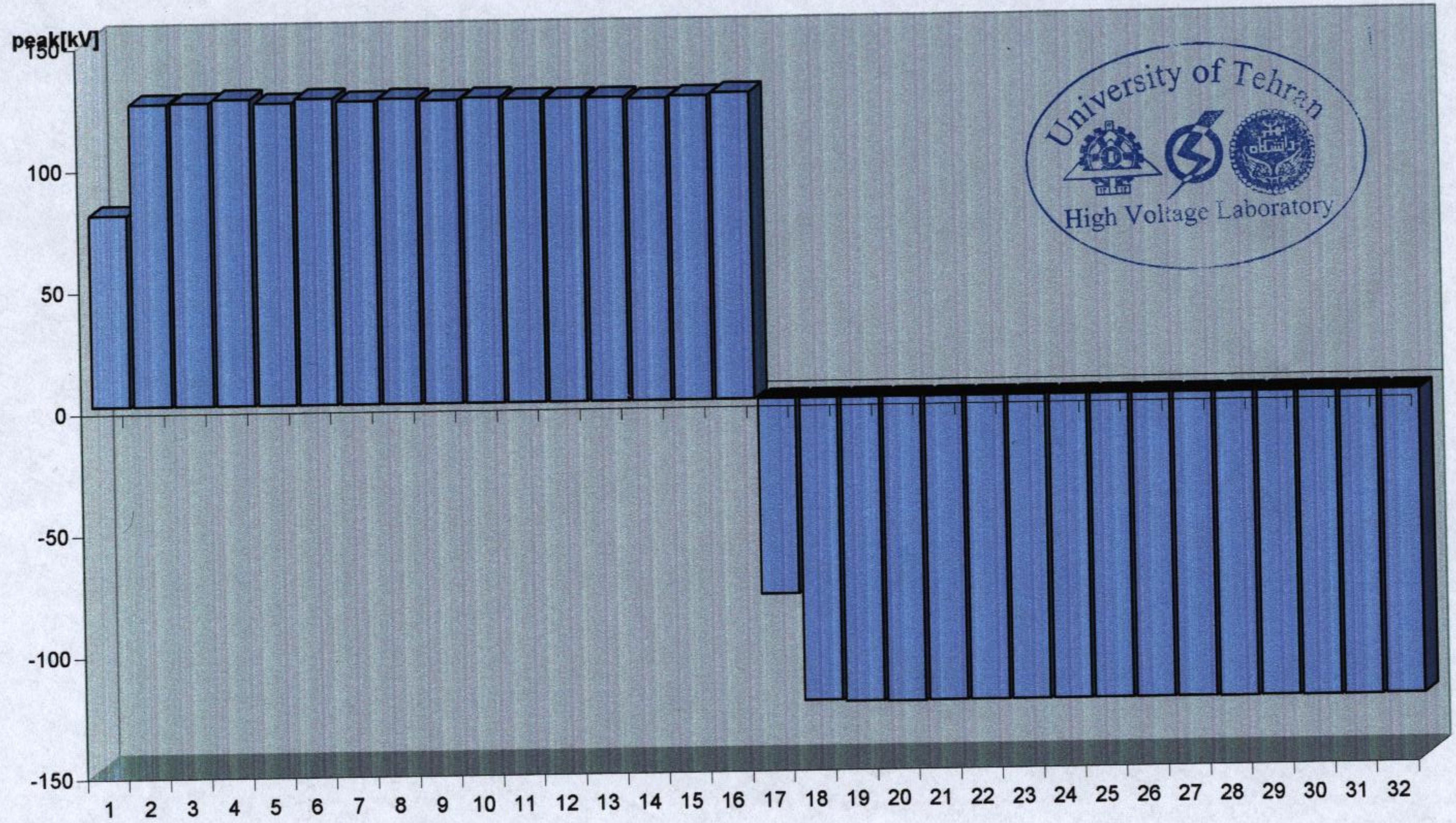
PT 24 kV Pars Shar

project : parssharpt24b

No.: 33

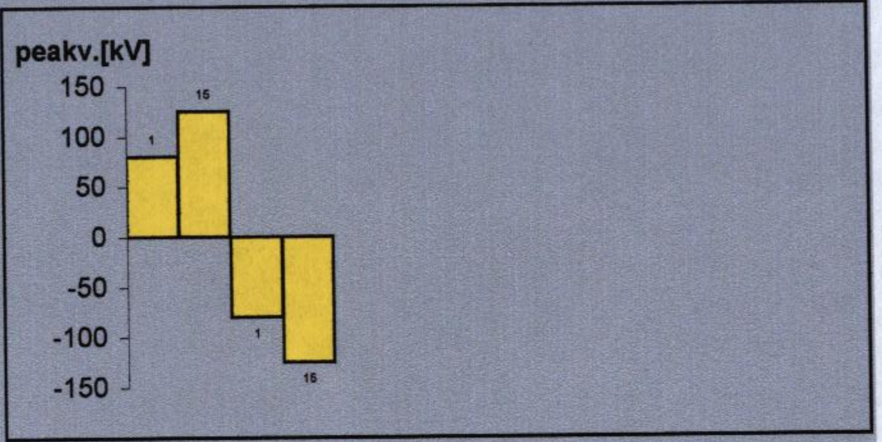
CH1 No.	33
Yp=	-124.9kv
beta=	0.1%
T1=	1.03µs
T2=	51.5µs

Test_Results



Operator:	*Shayegani*	Act.-No.:		Date:	
Testobject	*PT 24 kV*				
Remarks:	*Pars Shar*				
Charging time[s]:	*60*	back	forward	*steps set.* 15	*steps act.* 15

peakvoltage [kV]	steps
80	1
125	15
-80	1
-125	15



Act.no.	Uset [kV]	Upeak [kV]	Wintras no.	time evaluation		state of test	Eta	charging v.[kV]
1	80.0	78.7	20074	T1= 1.03µs	T2= 51.80µs	o.k.	0.98	16.0
2	125.0	124.1	20075	T1= 1.04µs	T2= 51.50µs	o.k.	0.98	25.4
3	125.0	124.7	20076	T1= 1.02µs	T2= 51.90µs	o.k.	0.97	25.6
4	125.0	125.9	20077	T1= 1.03µs	T2= 51.60µs	o.k.	0.98	25.7
5	125.0	124.1	20078	T1= 1.02µs	T2= 51.90µs	o.k.	0.97	25.5
6	125.0	125.8	20079	T1= 1.02µs	T2= 51.70µs	o.k.	0.98	25.7
7	125.0	124.7	20080	T1= 1.03µs	T2= 51.60µs	o.k.	0.98	25.5
8	125.0	125.4	20081	T1= 1.03µs	T2= 51.50µs	o.k.	0.98	25.6
9	125.0	124.7	20082	T1= 1.04µs	T2= 51.60µs	o.k.	0.98	25.5
10	125.0	125.5	20083	T1= 1.02µs	T2= 51.50µs	o.k.	0.98	25.6
11	125.0	124.8	20084	T1= 1.03µs	T2= 51.60µs	o.k.	0.98	25.5
12	125.0	124.8	20085	T1= 1.03µs	T2= 51.60µs	o.k.	0.98	25.5
13	125.0	124.8	20086	T1= 1.02µs	T2= 51.60µs	o.k.	0.98	25.5
14	125.0	124.1	20087	T1= 1.02µs	T2= 51.90µs	o.k.	0.97	25.5
15	125.0	125.1	20088	T1= 1.02µs	T2= 51.90µs	o.k.	0.97	25.7
16	125.0	126.0	20089	T1= 1.03µs	T2= 51.60µs	o.k.	0.98	25.7
17	-80.0	-80.3	20090	T1= 1.04µs	T2= 51.40µs	o.k.	0.98	-16.3
18	-125.0	-124.3	20091	T1= 1.04µs	T2= 51.60µs	o.k.	0.98	-25.4
19	-125.0	-124.9	20092	T1= 1.03µs	T2= 51.40µs	o.k.	0.98	-25.5
20	-125.0	-125.0	20093	T1= 1.03µs	T2= 51.40µs	o.k.	0.98	-25.5
21	-125.0	-124.9	20094	T1= 1.05µs	T2= 51.50µs	o.k.	0.98	-25.5
22	-125.0	-124.8	20095	T1= 1.02µs	T2= 51.40µs	o.k.	0.98	-25.5
23	-125.0	-124.9	20096	T1= 1.02µs	T2= 51.40µs	o.k.	0.98	-25.5
24	-125.0	-124.9	20097	T1= 1.03µs	T2= 51.50µs	o.k.	0.98	-25.5
25	-125.0	-124.8	20098	T1= 1.02µs	T2= 51.60µs	o.k.	0.98	-25.5
26	-125.0	-124.9	20099	T1= 1.03µs	T2= 51.50µs	o.k.	0.98	-25.5
27	-125.0	-124.8	20100	T1= 1.02µs	T2= 51.50µs	o.k.	0.98	-25.5
28	-125.0	-125.1	20101	T1= 1.03µs	T2= 51.50µs	o.k.	0.98	-25.5
29	-125.0	-124.9	20102	T1= 1.02µs	T2= 51.50µs	o.k.	0.98	-25.5
30	-125.0	-125.0	20103	T1= 1.04µs	T2= 51.40µs	o.k.	0.98	-25.5
31	-125.0	-125.0	20104	T1= 1.03µs	T2= 51.50µs	o.k.	0.98	-25.5
32	-125.0	-124.9	20105	T1= 1.03µs	T2= 51.50µs	o.k.	0.98	-25.5