

ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

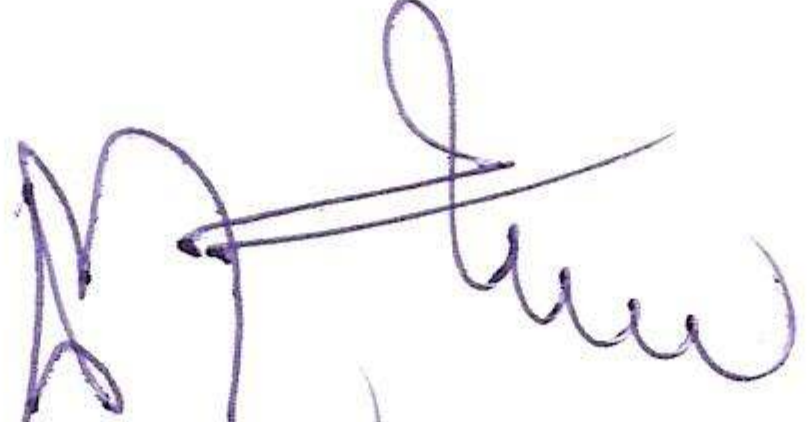
P. B. No. 760, Makarpura Road, Vadodara-390 010. India. Gram : ELECSEARCH

EPABX : 642942, 642964, 642377, 642557 Fax : +91 (0265) 643182,

E-mail : erda@wilnetonline.net

**TEST REPORT**

SHEET : 1 OF 4

NAME & ADDRESS OF CUSTOMER FITWELL TECHNOLOGIES PVT. LTD. G/1047, GIDC, METODA TAL : LODHIKA DIST. RAJKOT : 360 005.	REPORT NO. : PHV/05/1377-2	
	DATE : 30.03.2002	
	CUSTOMER REF.NO: FTPL/215	DATE : 09.05.2001
	DATE OF SAMPLE RECEIPT	08.05.2001
	DATE OF TESTING	22.05.2001 to 13.09.2001
SAMPLE DESCRIPTION / IDENTIFICATION : CABLE TERMINATION KIT MFD. BY : A-1ELECTRICALS HEAT SHRINKABLE OUTDOOR TYPE VOLTAGE GRADE : 6.35/11 kV TYPE OF INSULATION : XLPE SIZE : 3 x 185 SQ.MM		
TEST DETAILS :		TEST SPECIFICATION : IS : 13573-1992
[1] CONDUCTOR RESISTANCE MEASUREMENT (Cl.No.6.12) [2] AC VOLTAGE WITHSTAND TEST (Cl.No. 6.2) [3] AC VOLTAGE WITHSTAND TEST(Under wet condition) (Cl.No. 6.2) [4] PARTIAL DISCHARGE TEST (Cl.No. 6.3) [5] IMPULSE WITHSTAND TEST (Cl.No. 6.4) [6] AC VOLTAGE LIFE TEST WITH CYCLIC CURRENT LOADING (Cl.No. 6.5.1) [7] PARTIAL DISCHARGE TEST (Cl.No. 6.3) [8] AC VOLTAGE LIFE TEST WITH CYCLIC CURRENT LOADING (Cl.No. 6.5.1) [9] THERMAL SHORT CIRCUIT TEST (Cl.No. 6.6)		
TEST RESULTS : AS PER SHEET 2 TO 4.		
ENCLOSURES : Annexure - I & II		
WITNESSED BY : Mr. Harish Gandhi, Fitwell Technologies Pvt. Ltd.		
NOTE : ONLY THE TESTS ASKED FOR BY THE CLIENT HAVE BEEN CARRIED OUT.		
 PREPARED BY	 CHECKED BY	 APPROVED BY

- Note: 1. This report relates only to the particular sample received for testing at ERDA.
2. This report can not be reproduced in part under any circumstances.
3. Publication of this report requires prior permission in from writing Director, ERDA
4. Only the tests asked for by the party have been carried out.

Nº 1020113

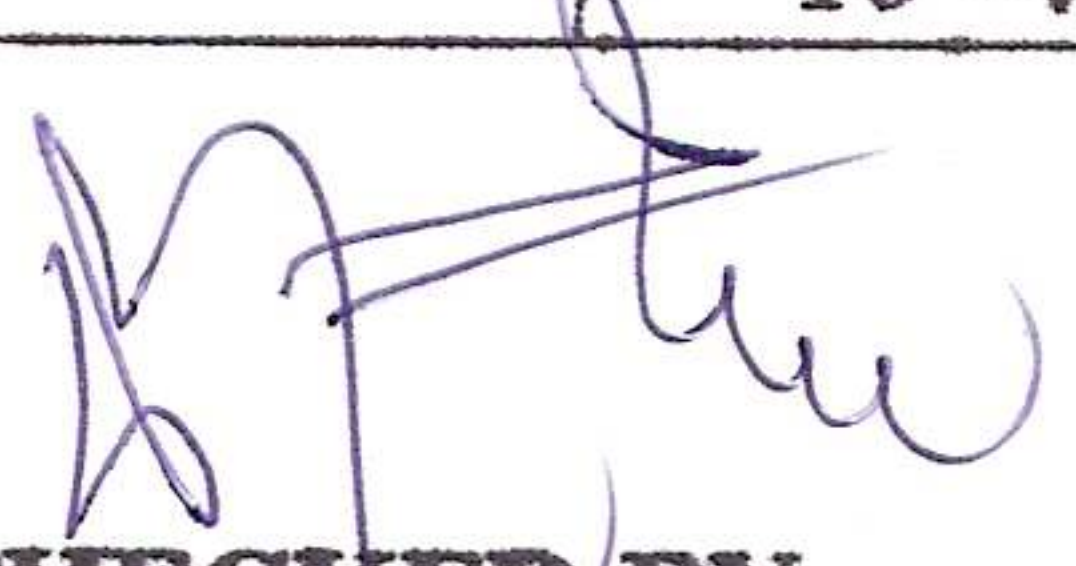
ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

P. B. No. 760, Makarpura Road, Vadodara-390 010. India. Gram.: ELECSEARCH

EPABX : 642942, 642964, 642377, 642557 Fax : +91 (0265) 643182,

E-mail : erda@wilnetonline.net

**REPORT NO. : PHV/05/1377-2****SHEET : 2 OF 4****DATE : 30.03.2002**

SR. NO.	CLNO	TESTS	SPECIFIED LIMIT	OBTAINED VALUE	REMARKS
1.	6.12	<u>CONDUCTOR RESISTANCE</u> Conductor resistance at 20°C, ohm/km	----	R : 0.155 Y : 0.157 B : 0.158	----
2.	6.2	<u>AC VOLTAGE WITHSTAND TEST</u>	The sample shall withstand ac voltage of 35 kV for the duration of one minute without breakdown.	The sample withstood the applied voltage satisfactorily for the specified duration.	Conforms
3.	--	<u>AC VOLTAGE WITHSTAND TEST (UNDER WET CONDITION)</u>	The sample shall withstand ac voltage of 28 kV for the duration of one minute without breakdown	The sample withstood the applied voltage satisfactorily for the specified duration	Conforms
4.	6.3	<u>PARTIAL DISCHARGE TEST</u> Partial Discharge at 2U ₀ , pC	Max. 20	R : <1 Y : 1.5 B : 1.5	Conforms
5.	6.4	<u>IMPULSE WITHSTAND TEST</u>	Sample shall withstand 75kV without breakdown for 10 +ve & 10 -ve shots	Please refer Annexure - I for detailed results	Conforms
 PREPARED BY  CHECKED BY					

ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

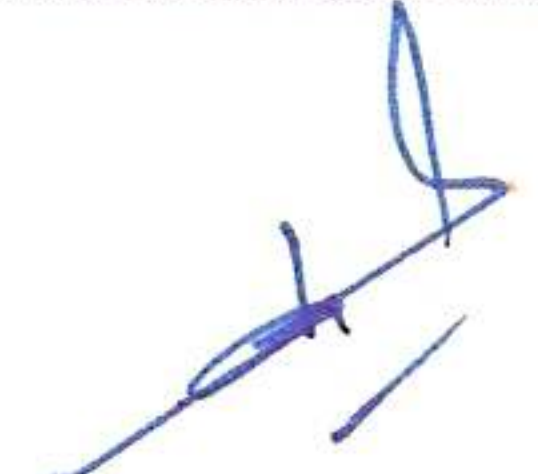
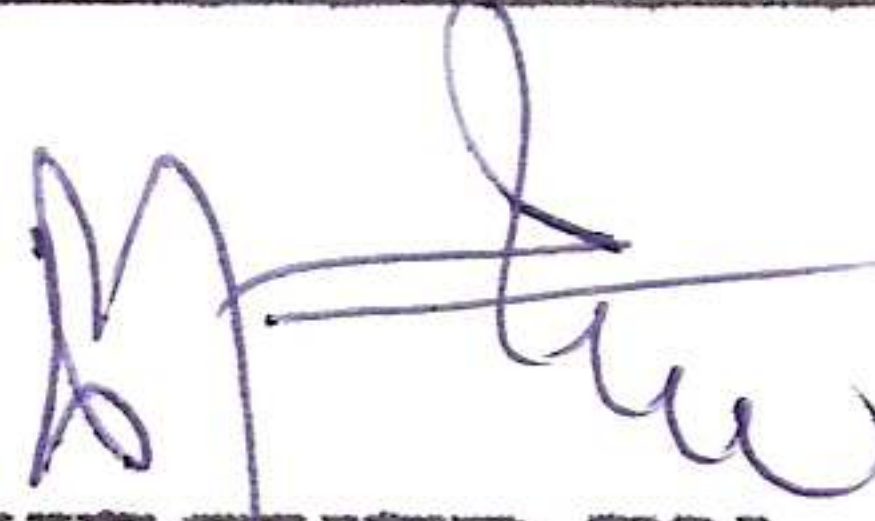
P. B. No. 760, Makarpura Road, Vadodara-390 010. India. Gram.: ELECSEARCH

EPABX : 642942, 642964, 642377, 642557 Fax : +91 (0265) 643182,

E-mail : erda@wilnetonline.net

**REPORT NO. : PHV/05/1377-2****SHEET : 3 OF 4****DATE : 30.03.2002**

SR. NO.	CI.NO	TESTS	SPECIFIED LIMIT	OBTAINED VALUE	REMARKS
6.	6.5.1	<u>AC VOLTAGE LIFE TEST WITH CYCLIC CURRENT LOADING</u>	The sample shall be subjected to three cycle consists of five hour heating period & three hour cooling period. The specified voltage of $2.5U_0$ shall be applied continuously during heating & cooling period. There shall be no breakdown or flashover during this period.	No breakdown or flashover was observed during the specified three cycles.	Conforms
7.	6.3	<u>PARTIAL DISCHARGE TEST</u> Partial Discharge at $2U_0$, pC	Max. 20	R : 2.0 Y : 2.0 B : 2.0	Conforms


PREPARED BY
CHECKED BY

ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

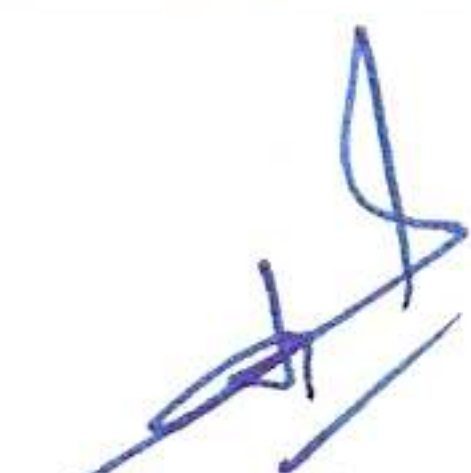
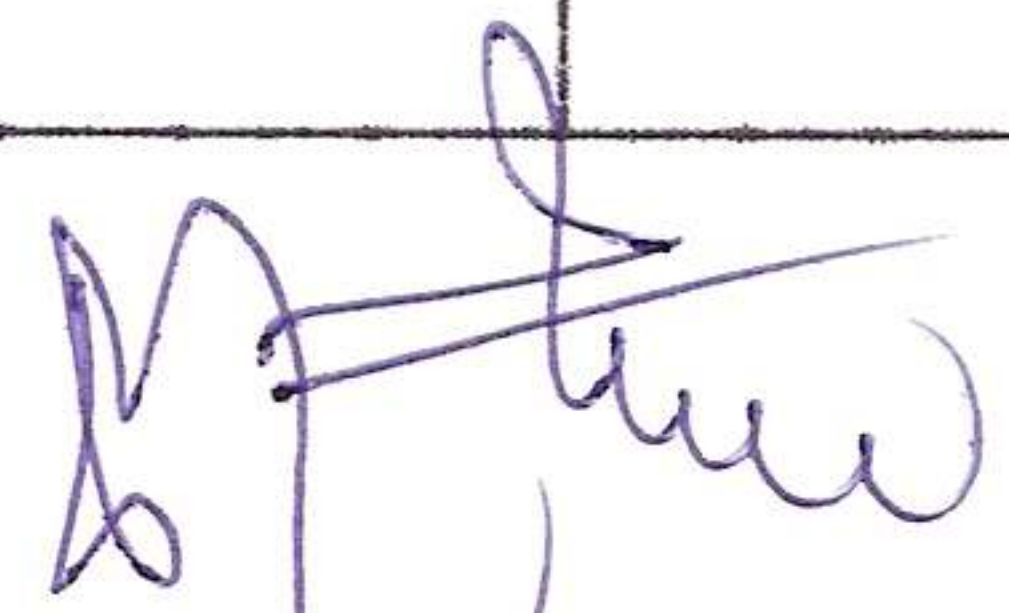
P. B. No. 760, Makarpura Road, Vadodara-390 010. India. Gram : ELECSEARCH

EPABX : 642942, 642964, 642377, 642557 Fax : +91 (0265) 643182,

E-mail : erda@wilnetonline.net

**REPORT NO. : PHV/05/1377-2****SHEET : 4 OF 4****DATE : 30.03.2002**

SR. NO.	CLNO	TESTS	SPECIFIED LIMIT	OBTAINED VALUE	REMARKS
8.	6.5.1	<u>AC VOLTAGE LIFE TEST WITH CYCLIC CURRENT LOADING</u>	The sample shall be subjected to sixty cycle consists of five hour heating period & three hour cooling period. The specified voltage of $2.5U_0$ shall be applied continuously during heating & cooling period. There shall be no breakdown or flashover during this period.	No breakdown or flashover was observed during the specified sixty cycles.	Conforms
9.	6.6	<u>THERMAL SHORT CIRCUIT TEST</u>	There shall be no visible damage. The temperature of the conductor shall not exceed the maximum short circuit temperature i.e. 250°C .	Short circuit current (Avg.) : 17.83 kA Duration : 1.003 second Temperature after the shot : 107°C Please refer Annexure – II for short circuit waveforms	No abnormalities were observed. Conforms


PREPARED BY
CHECKED BY



ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

ERDA Road, GIDC, Makarpura, Vadodara - 390 010. India Gram : ELECSEARCH
EPABX : 642942, 642964, 642377, 642557 Fax : +91 (0265) 643182
E-mail : erda@wilnetonline.net



ANNEXURE-I

TEST REPORT NO.: PHV/05/1377-2

Sheet No.: 1 of 4

DATE : 30/03/2002

LIGHTNING IMPULSE VOLTAGE WITHSTAND TEST ON HT CABLE TERMINATION (IS : 13573-192, CL. NO. 6.4)

TEST PARAMETERS :

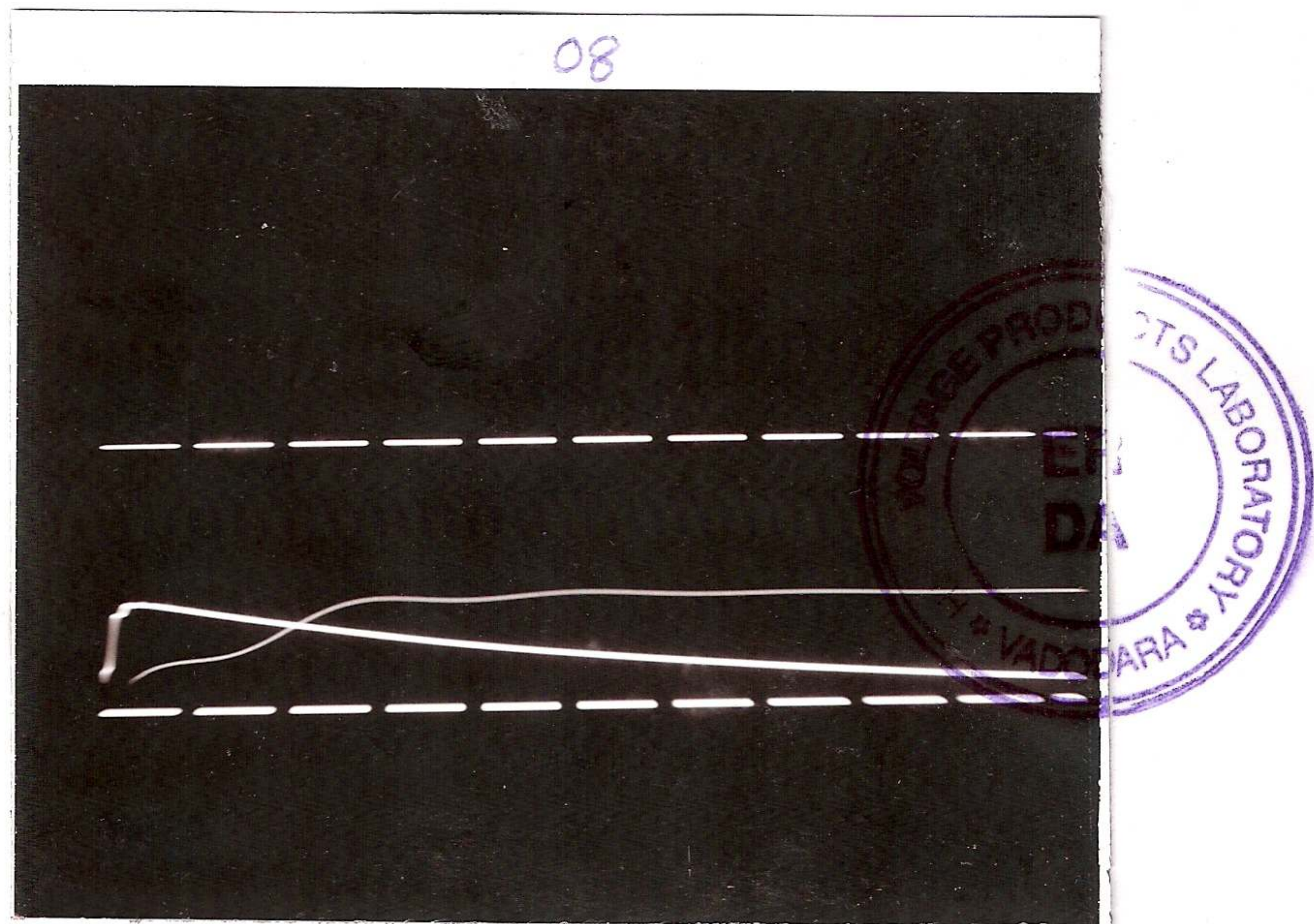
RATED VOLTAGE : 6.35/11 KV

TEST VOLTAGE : 75 kVp

WAVE SHAPE : 1.31/47 μ S

NOS. OF SHOTS APPLIED : 10 POSITIVE & 10 NEGATIVE POLARITY SHOTS.

MAKE : FITWELL TECHNOLOGIES P. LTD.



CALIBRATION PULSE

WAVE FORM NO. : 08
TIME/DIV. FOR FRONT WAVE : 0.5 μ S
TIME/DIV. FOR TAIL WAVE : 10 μ S
PEAK MAGNITUDE : 51 kVp
ATTENUATION FACTOR : 2.00
DIVIDER RATIO : 200
REFERENCE VOLTAGE OF CRO : 300 Volts

PREPARED BY,

CHECKED BY,

No 1095778



ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

ERDA Road, GIDC, Makarpura, Vadodara - 390 010. India Gram : ELECSEARCH

EPABX : 642942, 642964, 642377, 642557 Fax : +91 (0265) 643182

E-mail : erda@wilnetonline.net



TEST REPORT NO.: PHV/05/1377-2

Sheet No. 2 of 4

DATE : 30/03/2002

IMPULSE VOLTAGE APPLIED ON R - PHASE

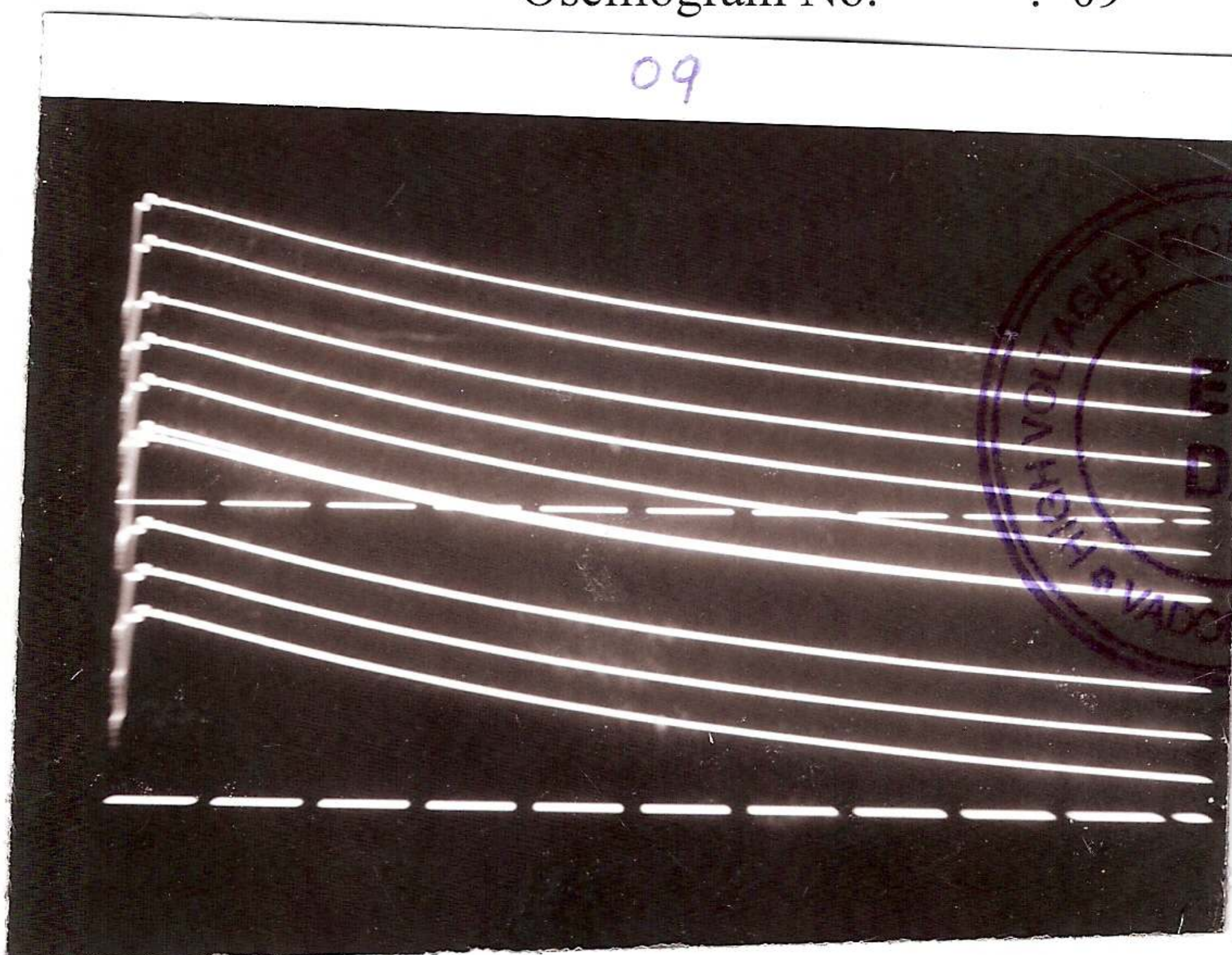
POSITIVE POLARITY :

No. of Shots Applied : 10

Atenuation Factor : 2.00

Time/Div for Voltage : 10 μ S

Oscillogram No. : 09



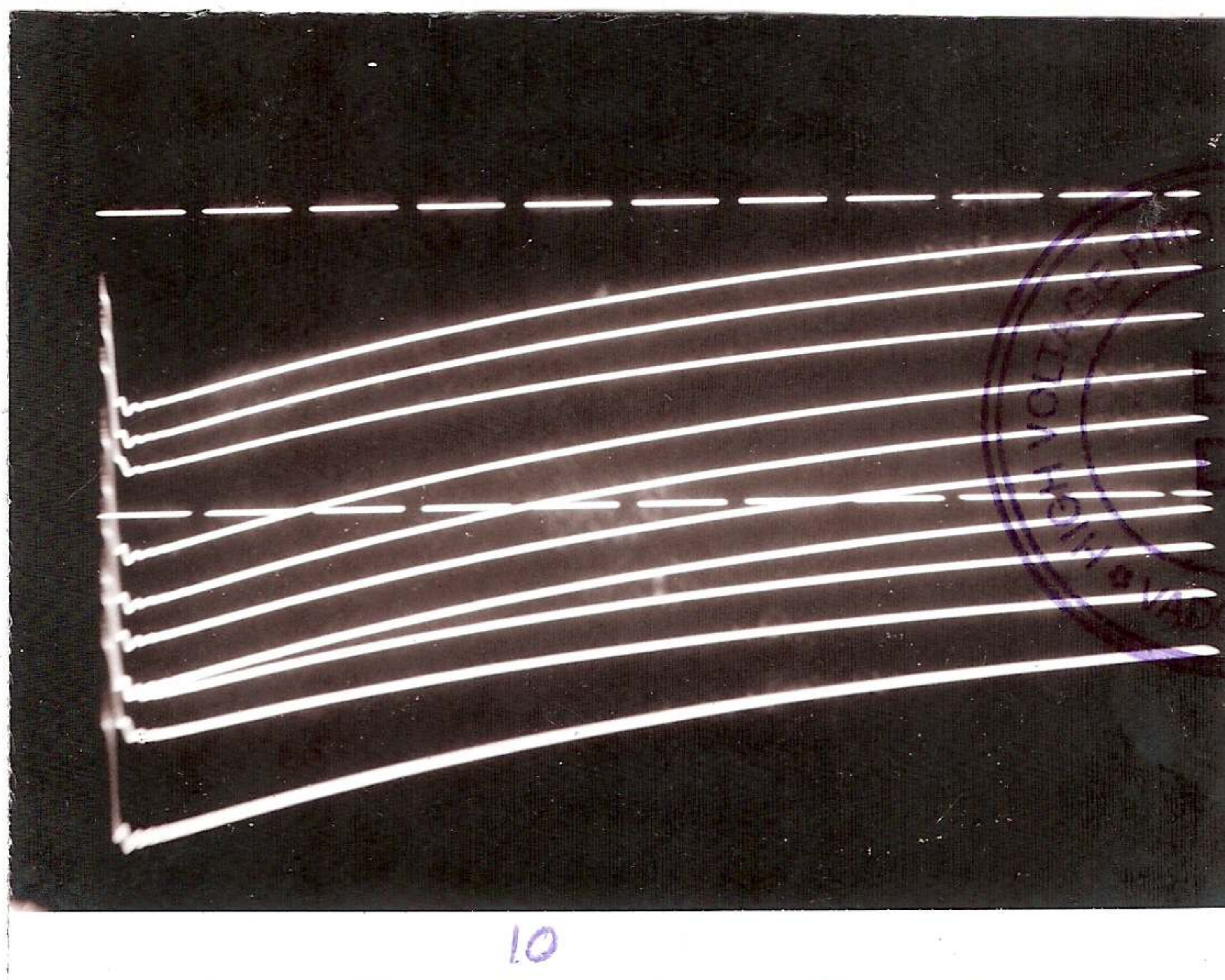
NEGATIVE POLARITY :

No. of Shots Applied : 10

Atenuation Factor : 2.00

Time/Div for Voltage : 10 μ S

Oscillogram No. : 10



A. S. Chopkar
PREPARED BY,

Arumy
CHECKED BY,



ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

ERDA Road, GIDC, Makarpura, Vadodara - 390 010. India Gram : ELECSEARCH

EPABX : 642942, 642964, 642377, 642557 Fax : +91 (0265) 643182

E-mail : erda@wilnetonline.net



TEST REPORT NO.: PHV/05/1377-2

Sheet No. 3 of 4

DATE : 30/03/2002

IMPULSE VOLTAGE APPLIED ON Y - PHASE

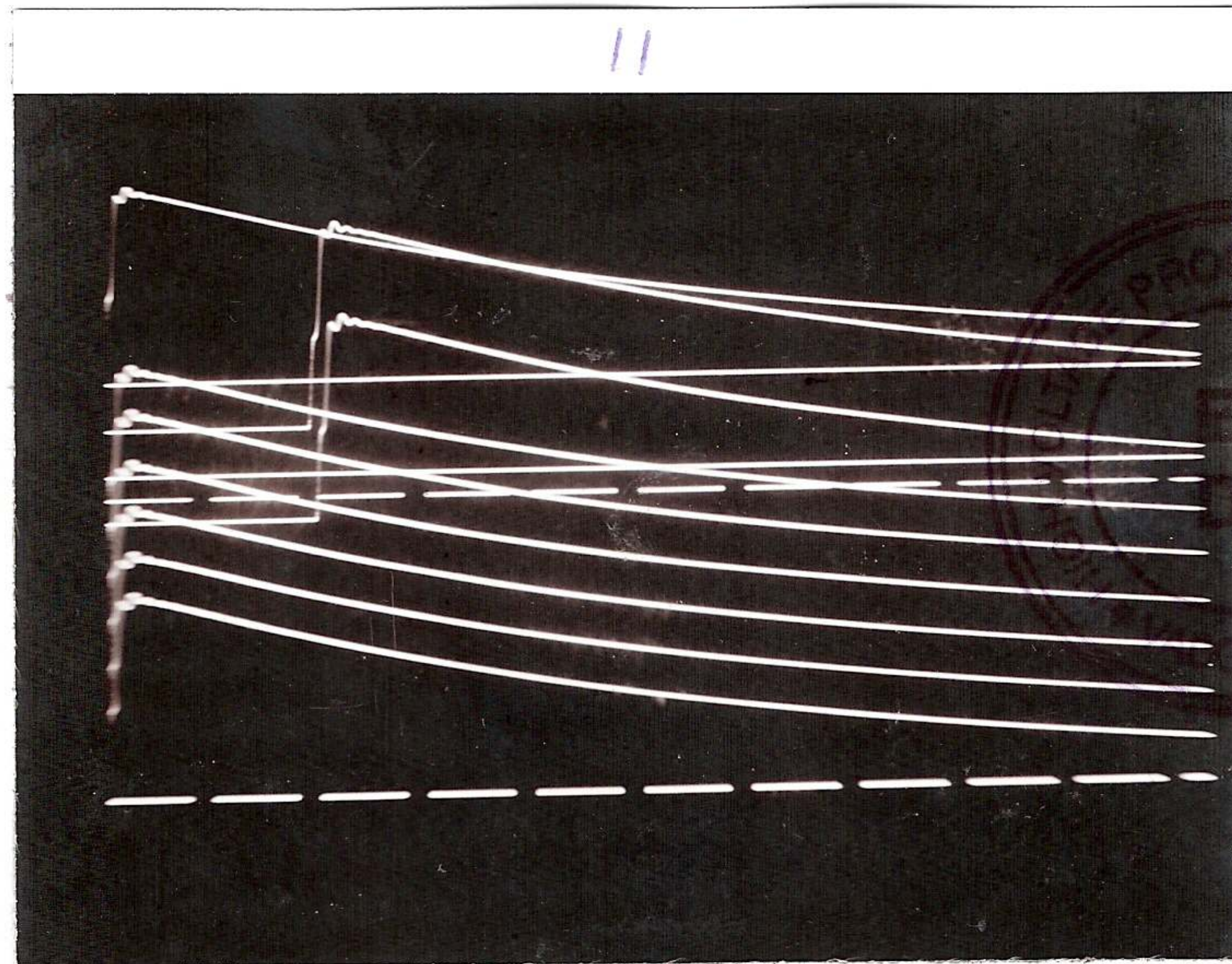
POSITIVE POLARITY :

No. of Shots Applied : 10

Attenuation Factor : 2.00

Time/Div for Voltage : 10 μ S

Oscillogram No. : 11



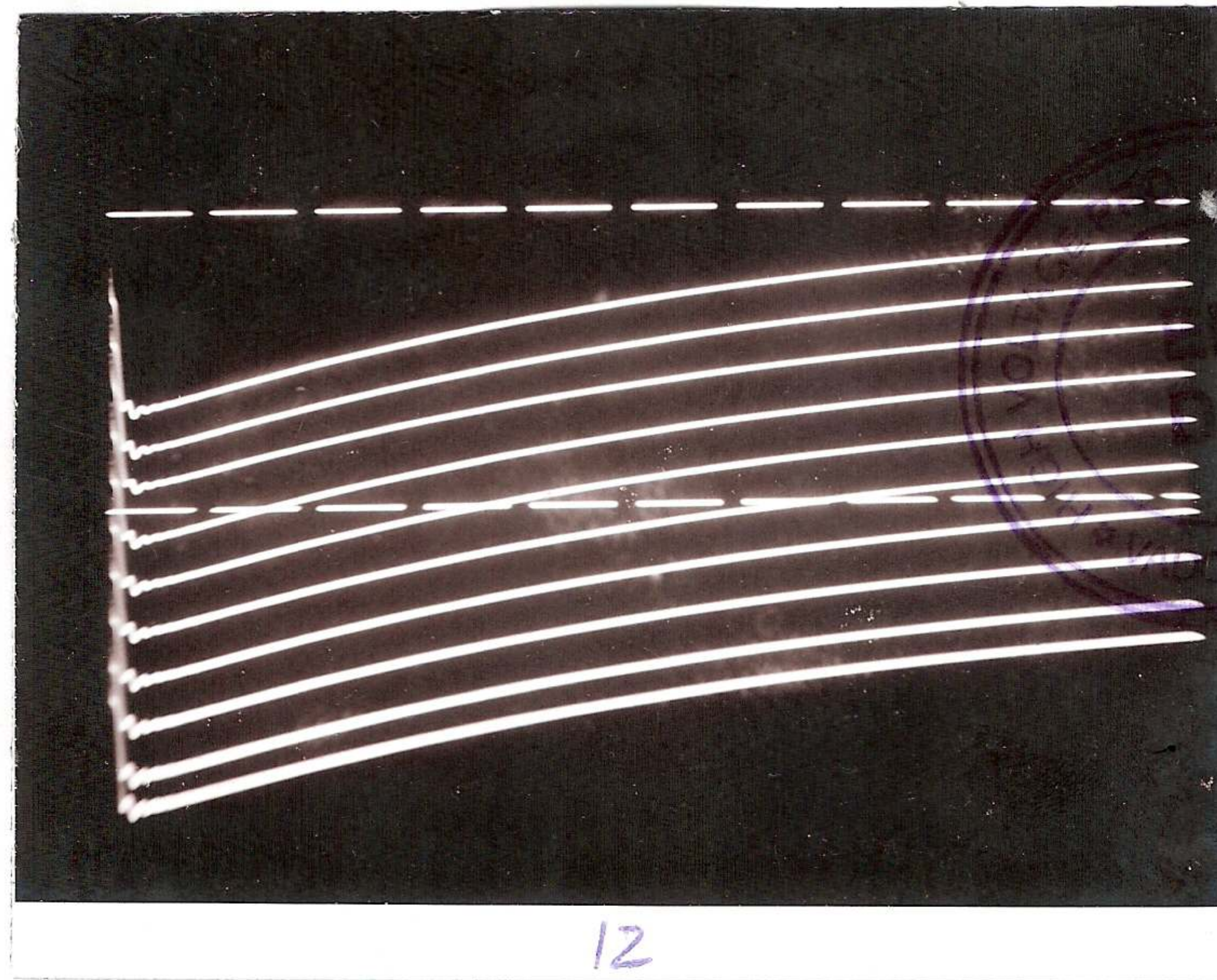
NEGATIVE POLARITY :

No. of Shots Applied : 10

Attenuation Factor : 2.00

Time/Div for Voltage : 10 μ S

Oscillogram No. : 12



A. S. Chopra
PREPARED BY,

H. M. J.
CHECKED BY,

No: 1095780



ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

ERDA Road, GIDC, Makarpura, Vadodara - 390 010. India Gram : ELECSEARCH

EPABX : 642942, 642964, 642377, 642557 Fax : +91 (0265) 643182

E-mail : erda@wilnetonline.net



TEST REPORT NO.: PHV/05/1377-2

Sheet No.4 of 4

DATE : 30/03/2002

IMPULSE VOLTAGE APLLIED ON B - PHASE

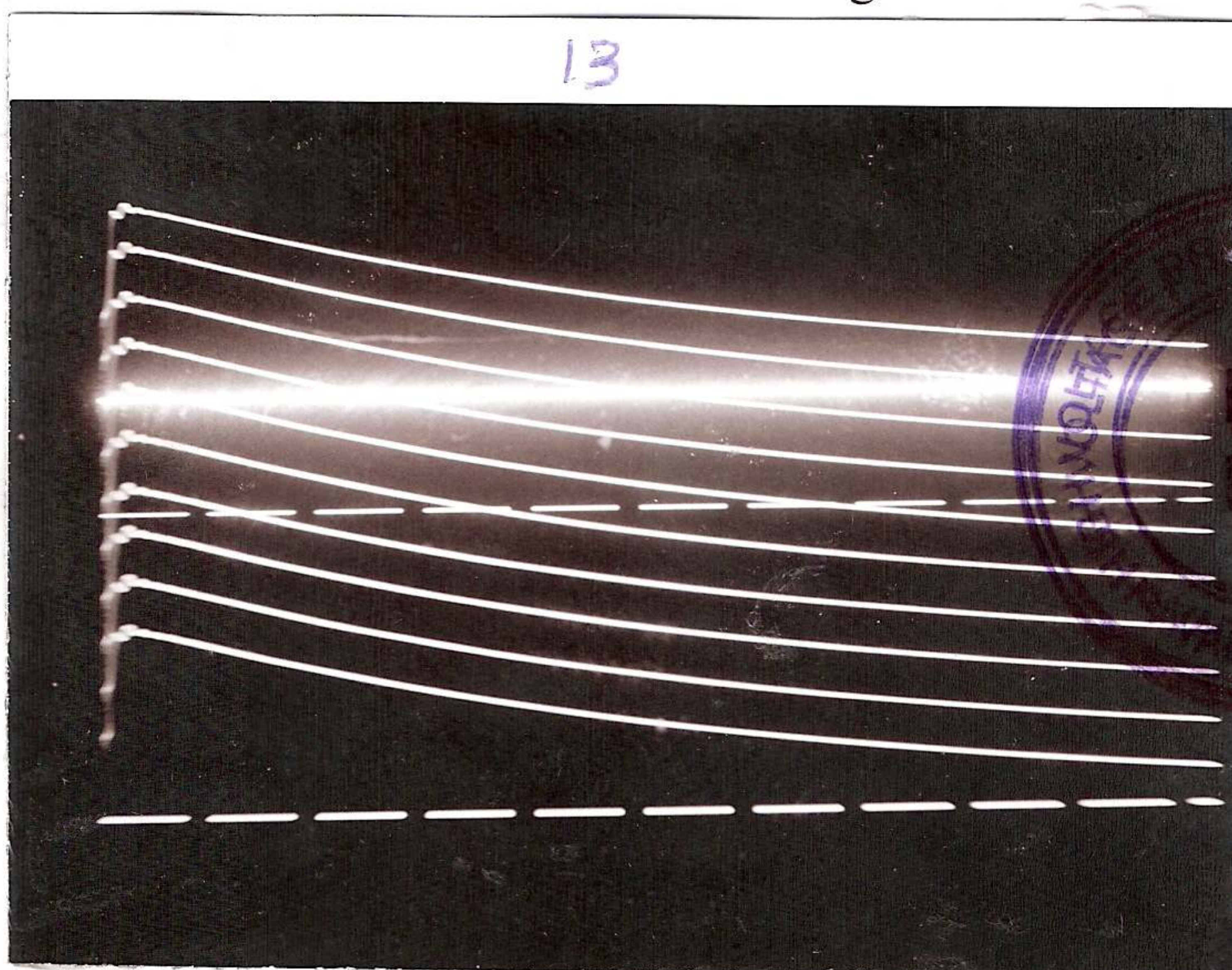
POSITIVE POLARITY :

No. of Shots Applied : 10

Atenuation Factor : 2.00

Time/Div for Voltage : 10 μ S

Oscillogram No. : 13



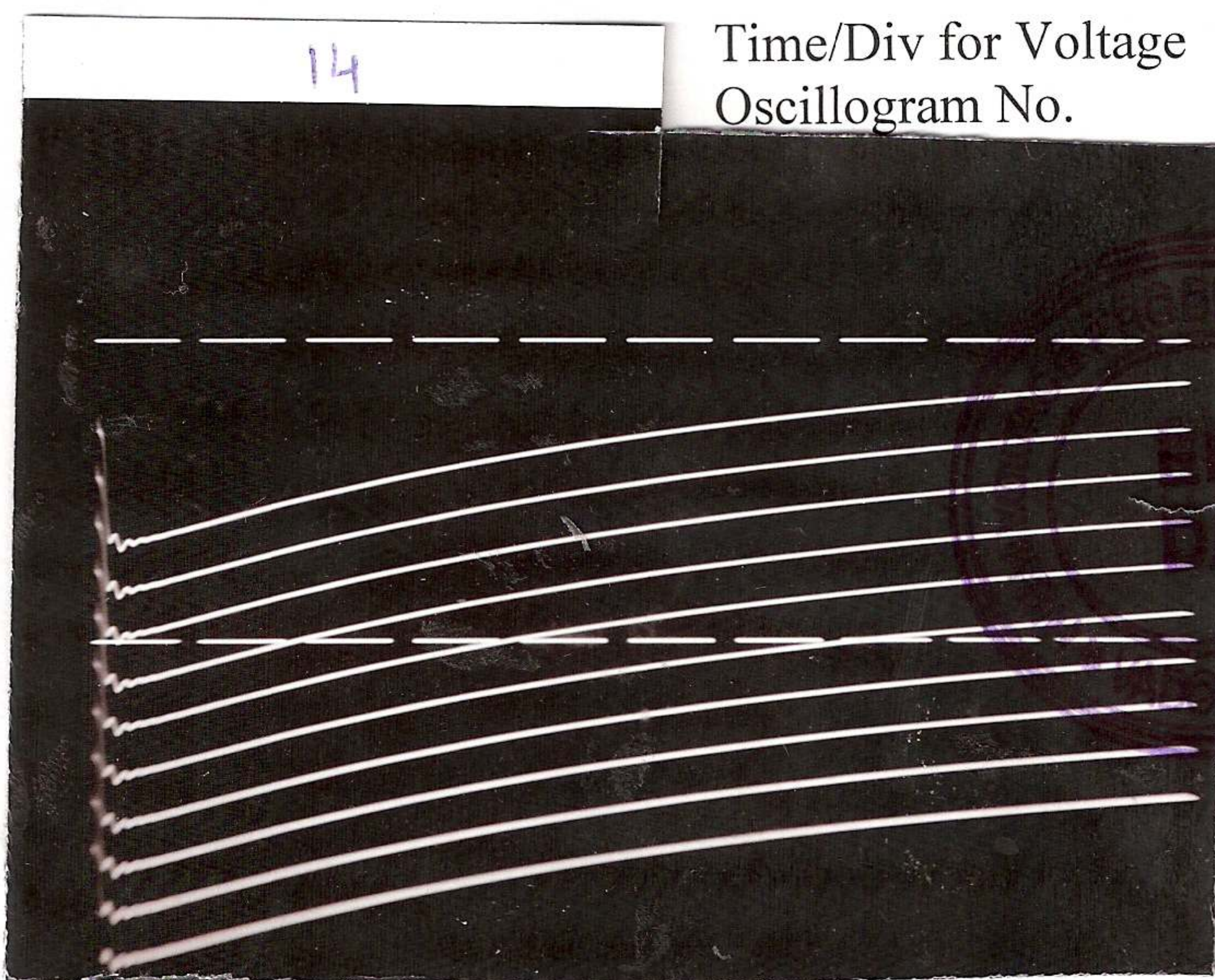
NEGATIVE POLARITY :

No. of Shots Applied : 10

Atenuation Factor : 2.00

Time/Div for Voltage : 10 μ S

Oscillogram No. : 14



REMARKS : The cable termination CONFORMS to the requirements of above mentioned standard with respect to the test carried out.

PREPARED BY,

CHECKED BY,

Nº 1095784



ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

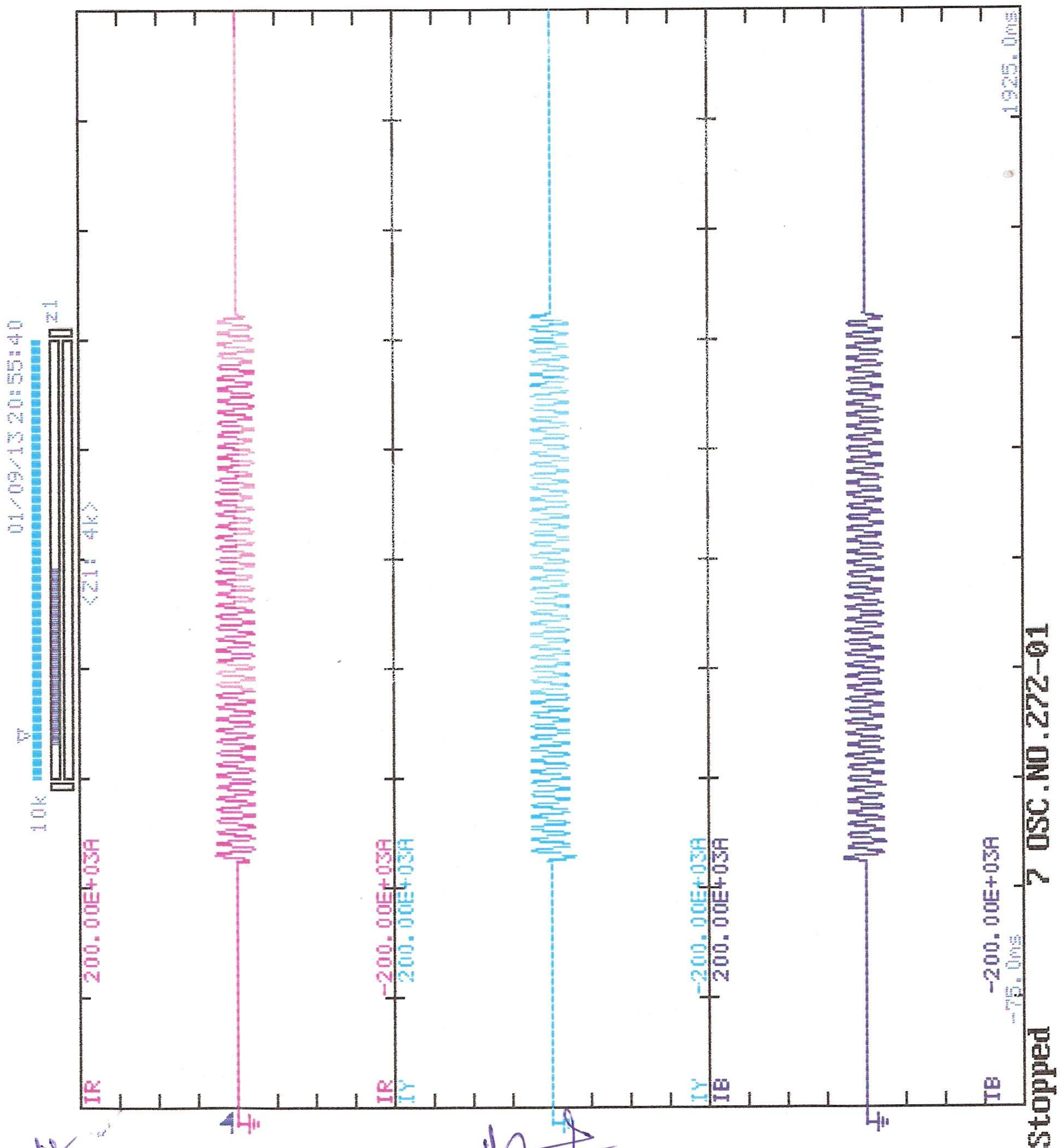
ERDA Road, GIDC, Makarpura, Vadodara - 390 010. India Gram : ELECSEARCH
EPABX : 642942, 642964, 642377, 642557 Fax : +91 (0265) 643182
E-mail : erda@wilnetonline.net



ANNEXURE - II

REPORT NO. : PHV/05/1377-2
DATE : 30.03 2002

SHEET : 1 OF 1



No: 1051462

PREPARED BY

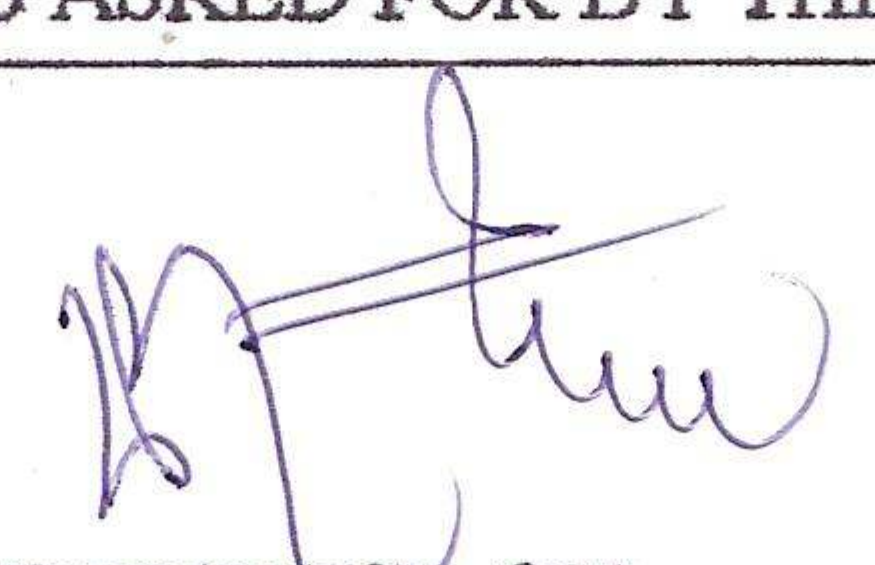
CHECKED BY

ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

P. B. No. 760, Makarpura Road, Vadodara-390 010. India. Gram : ELECSEARCH
EPABX : 642942, 642964, 642377, 642557 Fax : +91 (0265) 643182,
E-mail : erda@wilnetonline.net

**TEST REPORT**

SHEET : 1 OF 2

NAME & ADDRESS OF CUSTOMER FITWELL TECHNOLOGIES PVT. LTD. G/1047, GIDC, METODA TAL : LODHIKA DIST. RAJKOT : 360 005.	REPORT NO. : PHV/05/1378-2	
	DATE : 30.03.2002	
	CUSTOMER REF.NO: Nil	DATE : ----
	DATE OF SAMPLE RECEIPT	11.10.2001
	DATE OF TESTING	20.10.2001
SAMPLE DESCRIPTION / IDENTIFICATION : CABLE TERMINATION KIT MFD.BY : A-1ELECTRICALS HEAT SHRINKABLE OUTDOOR TYPE VOLTAGE GRADE : 6.35/11 kV TYPE OF INSULATION : XLPE SIZE : 3 x 240 SQ.MM		
TEST DETAILS :		TEST SPECIFICATION : IS : 13573-1992
[1] DYNAMIC SHORT CIRCUIT TEST (Cl.No.6.11).....Series 2		
TEST RESULTS : AS PER SHEET 2 of 2.		
ENCLOSURES : Annexure- I & II.		
WITNESSED BY : Mr. Harish Gandhi, Fitwell Technologies Pvt. Ltd.		
NOTE : ONLY THE TESTS ASKED FOR BY THE CLIENT HAVE BEEN CARRIED OUT.		
 PREPARED BY	 CHECKED BY	 APPROVED BY

- Note: 1. This report relates only to the particular sample received for testing at ERDA.
2. This report can not be reproduced in part under any circumstances.
3. Publication of this report requires prior permission in from writing Director, ERDA
4. Only the tests asked for by the party have been carried out.

Nº 1020125

ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

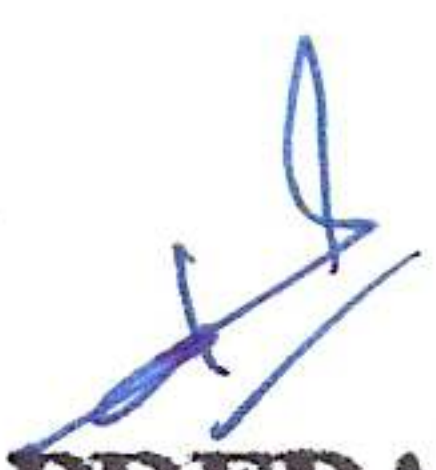
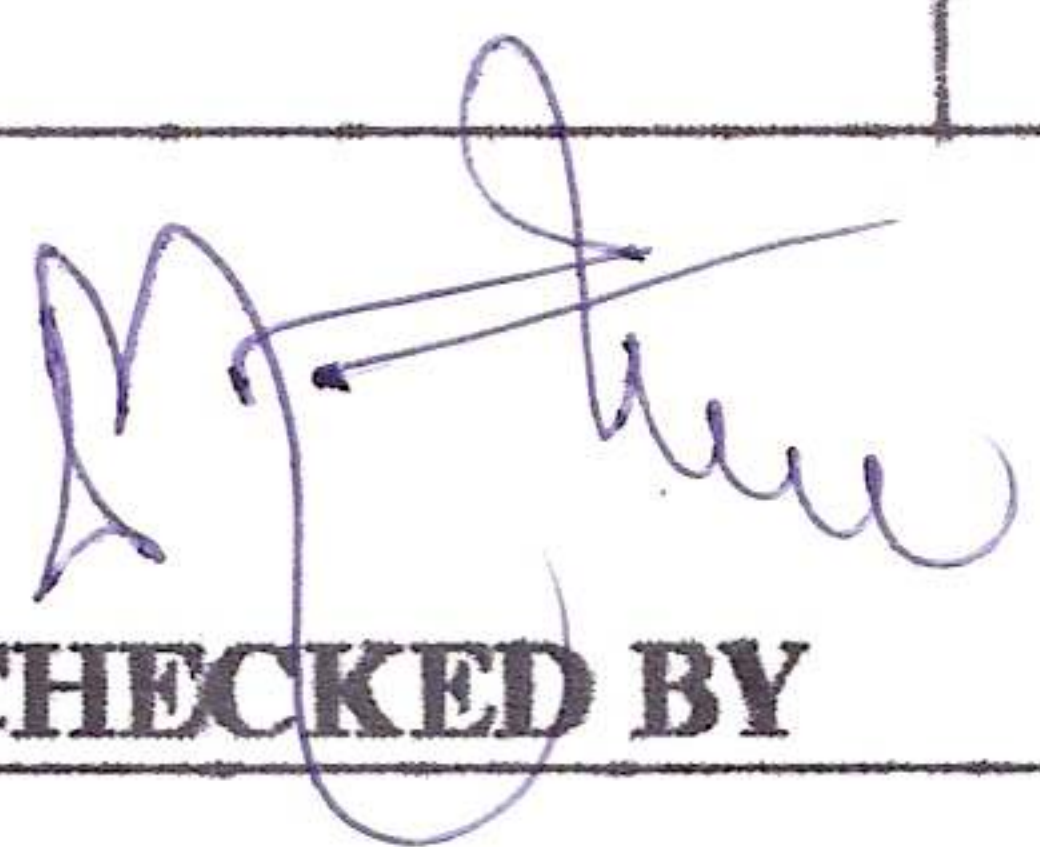
P. B. No. 760, Makarpura Road, Vadodara-390 010. India. Gram : ELECSEARCH

EPABX : 642942, 642964, 642377, 642557 Fax : +91 (0265) 643182,

E-mail : erda@wilnetonline.net

**REPORT NO. : PHV/05/1378-2****SHEET : 2 OF 2****DATE : 30.03.2002**

SR. NO.	CLNO	TESTS	SPECIFIED LIMIT	OBTAINED VALUE	REMARKS
1.	6.11	<u>DYNAMIC SHORT CIRCUIT TEST</u>	No mechanical damage shall be observed.	<u>Loop : 1</u> <u>Loop : 2</u> <u>Short circuit current (Peak):</u> 57.0 kA 50.0 kA 58.8 kA 54.5 kA 47.9 kA 58.6 kA <u>Duration (milliseconds) :</u> 21.5 21.5 21.5 21.5 21.5 21.5 <u>Temperature after the shot :</u> 94.8°C 92.0°C Please refer Annexure – I & II for short circuit waveforms	No abnormalities were observed. Conforms


PREPARED BY
CHECKED BY

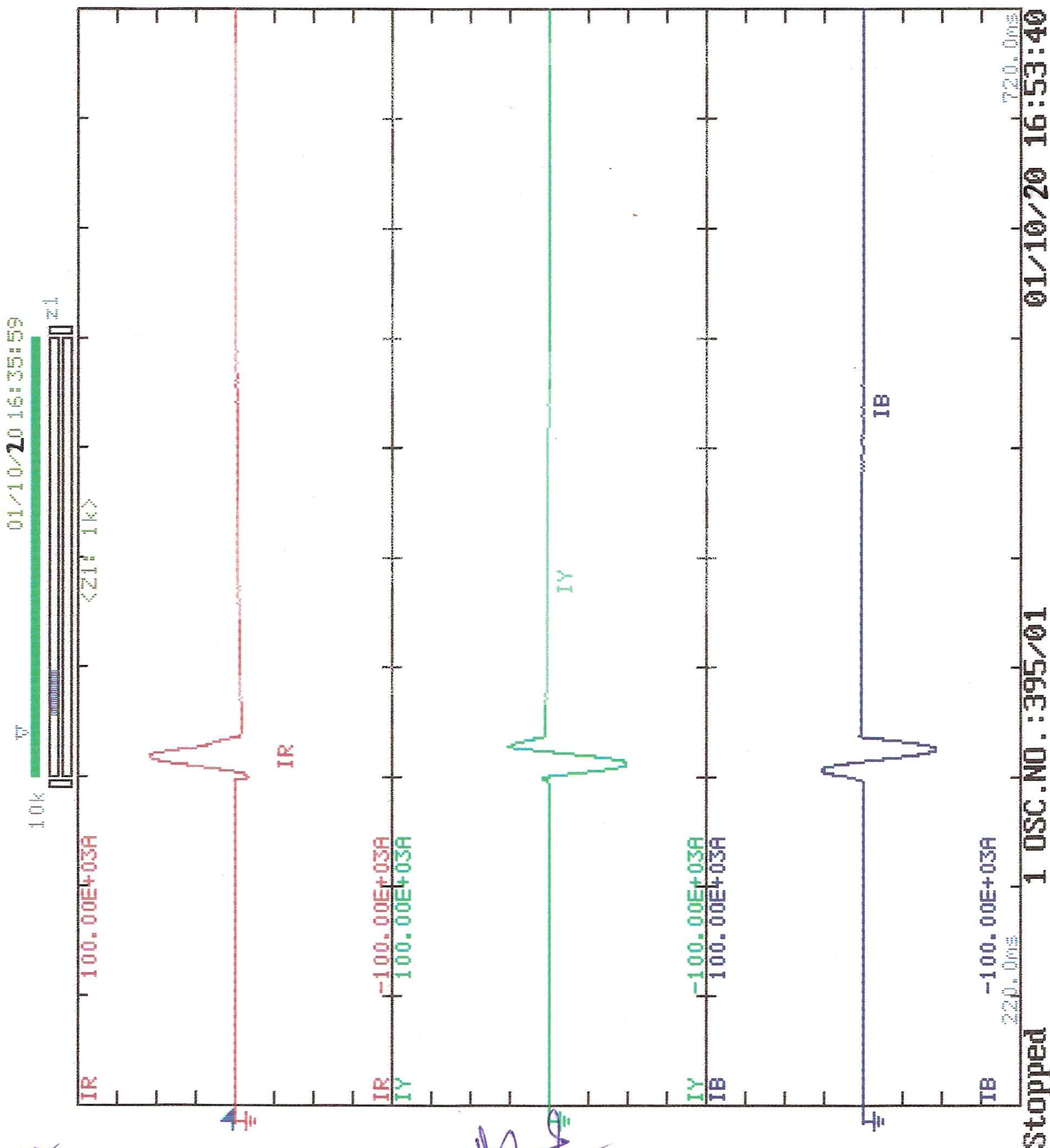
Nº 1020128



ANNEXURE - I

REPORT NO. : PHV/05/1378-2
DATE : 30.03 2002

SHEET : 1 OF 1



No 1061891

PREPARED BY

CHECKED BY



ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

ERDA Road, GIDC, Makarpura, Vadodara - 390 010. India Gram : ELECSEARCH

EPABX : 642942, 642964, 642377, 642557 Fax : +91 (0265) 643182

E-mail : erda@wilnetonline.net

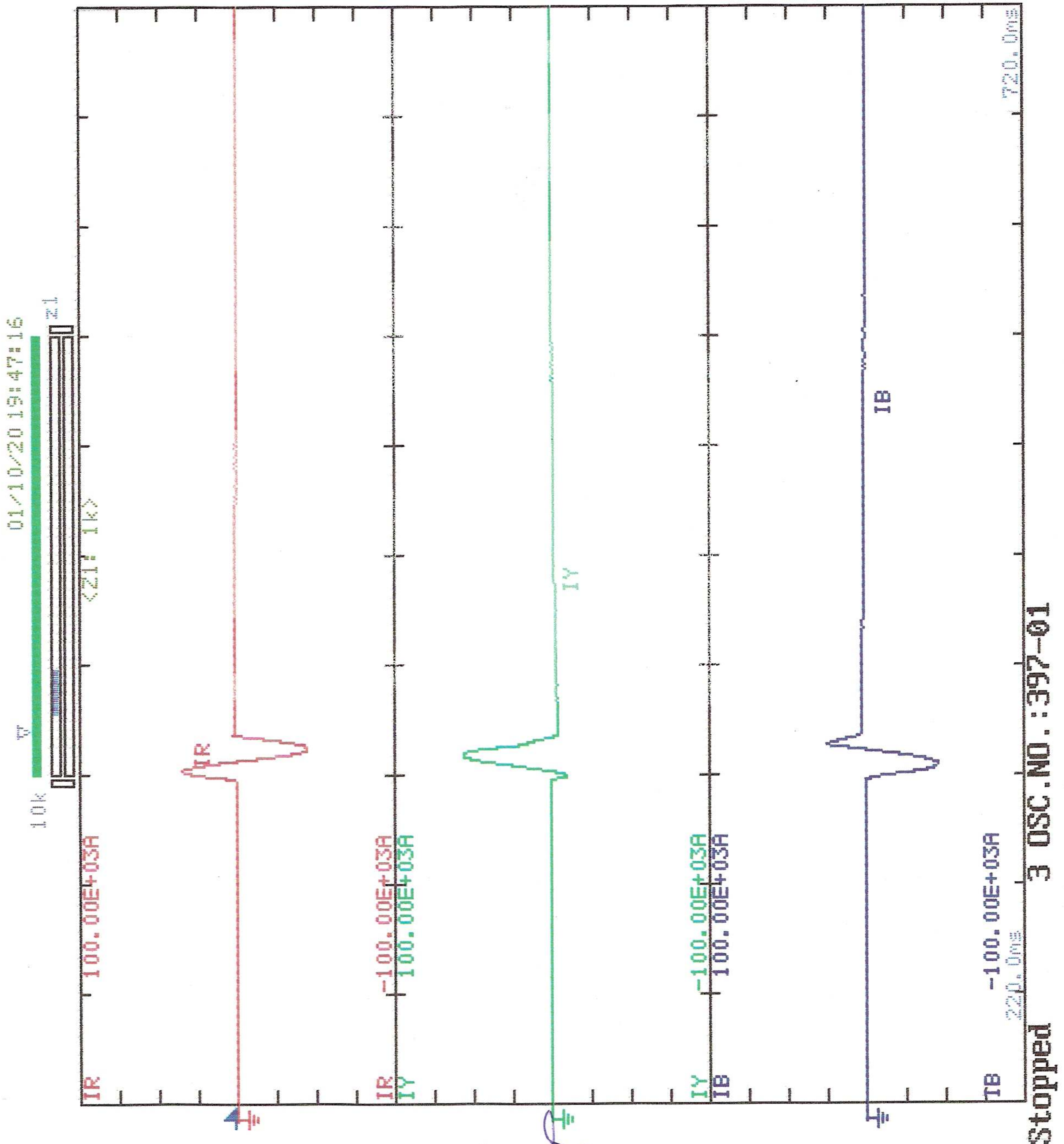


ANNEXURE - II

REPORT NO. : PHV/05/1378-2

SHEET : 1 OF 1

DATE : 30.03 2002



No 1061887

PREPARED BY

CHECKED BY

(Recognised by the National Accreditation Board for Testing and Calibration Laboratories, Government of India.)