केन्द्रीय विद्युत अनुसंधान संस्थान
(भारत सरकार की सोसाइटी, विद्युत मंत्रालय)
यू एच वी अनुसंधान प्रयोगशाला
वारंगल हाईवे, मेडिपल्ली पोस्ट, हैदराबाद - ५०००९८, भारत
CENTRAL POWER RESEARCH INSTITUTE
(A Govt of India Society, Ministry of Power)
UHV Research Laboratory
Warangal Highway, Medipally P.O.,Hyderabad - 500098, INDIA
वेब साइट Website: http// www.cpri.res.in, इ - मेल E-mail: uhvrl@cpri.in
दूरभाष / Telephone: +91 80 – 22072051 / 2052
CPRI

पत्र सं / L. No: Pollution test

दिनांक: 17. 9. 2024

सेवा मे, / To.

एम/ एस. सीजी पावर एंड इंडस्ट्रियल सॉल्यूशंस लिमिटेड,
डी-2, एमआईडीसी, वालुज, औरंगाबाद-431136,
महाराष्ट्र राज्य, भारत

M/s. CG Power and Industrial Solutions Limited,
D-2, MIDC, Waluj, Aurangabad-431136,
Maharashtra State, India

Kind Attn:

श्री गजानन खड़के	Mr. Gajanan Khadke

विषय / Sub: - 132 केवी प्रेरक वोल्टेज ट्रांसफार्मर - टेस्ट रिपोर्ट्स

Test reports of 132 kV Inductive Voltage Transformer - Reg

सम्बन्धित / Ref: - **शून्य** / Nil

महोदय / Sir,

उपरोक्त विषय पर पत्र / परिक्षण रिपोर्ट सं CPRIHYDUHV24T0115 & CPRIHYDUHVMISC24T0079, दिनांक: 1 April 2024 इसके साथ संलग्न है I

We are enclosing herewith ~~letter~~ / Test report No. CPRIHYDUHV24T0115 & CPRIHYDUHVMISC24T0079, dated: 1 April 2024 on the subject mentioned above.

संलग्न उपरोक्त
Encl: As above.

भवदीय,
Yours faithfully,

संयुक्त निदेशक
Joint Director
संयुक्त निदेशक JOINT DIRECTOR
केन्द्रीय विद्युत अनुसंधान संस्थान
CENTRAL POWER RESEARCH INSTITUTE
यू एच वी आर एल / UHVRL
हैदराबाद / HYDERABAD - 500 098

CPRI

TEST REPORT

Central Power Research Institute
(A Govt. of India Society)
Medipally P.O., Warangal Road,
Hyderabad – 500 098 (INDIA)

CENTRAL POWER RESEARCH INSTITUTE

CPRI

TEST REPORT

Test Report Number	:	**CPRIHYDUHV24T0115** **Date: 01 April 2024**
Name and Address of the Customer	:	M/s. CG Power and Industrial Solutions Limited, D-2, MIDC, Waluj, Aurangabad-431136, Maharashtra State, India
Name and Address of the Manufacturer	:	M/s. CG Power and Industrial Solutions Limited, D-2, MIDC, Waluj, Aurangabad-431136, Maharashtra State, India
Particulars of sample tested	:	132 kV Inductive Voltage Transformer
Type	:	VEOT:145/650/50
Description of test sample	:	132 kV Inductive Voltage Transformer
Serial Number	:	234656
Number of samples tested	:	One
Date(s) of test(s)	:	19 March 2024 to 23 March 2024
CPRI Sample Code number(s)	:	UHV24S0073
Particulars of test conducted	:	Refer sheet 3 of 12
Test in accordance with Standard/ Specification	:	IEC 61869-1: 2007 and IEC 61869-3: 2011
Sampling plan	:	Not applicable
Customer's requirement	:	1. Temperature rise test shall be performed at 1.2 U_{pr} 2. During temperature rise test the secondary winding terminals 1a-1n, 2a-2n and 3a-3n shall be loaded with unity power factor burden equivalent to 200VA, 50VA & 50VA respectively. 3. Temperature rise at bellow top, top and bottom flange, middle of insulator housing and two sides of bottom tank shall be measured and recorded and during temperature rise test. 4. Test voltages for impulse withstand voltage test indicated by the customer.
Deviations, if any	:	Nil
Name of the witnessing persons Customer representatives	:	Mr. Gajanan Khadke
Other than customer's representatives	:	Nil
Test subcontracted with address of the laboratory	:	None

Documents constituting this report (in words)

Number of Sheets(s)	:	Twelve
Number of Oscillogram(s)	:	Thirty four
Number of Graph(s)	:	Nil
Number of Photograph(s)	:	Nil
Number of Test circuit diagram(s)	:	Five
Number of Drawing(s)	:	Two

(Dr. P. Rajamani)
Test Engineer

(K. Devender Rao)
Joint Director
Reviewed and Authorized by

UHV RESEARCH LABORATORY
MEDIPALLY P.O., WARANGAL HIGHWAY, HYDERABAD – 500098
PHONE: 080-2207 2051, 080-2207 2052, e-mail: uhvrl@cpri.in

CENTRAL POWER RESEARCH INSTITUTE

CPRI

TEST REPORT

Test Report Number: CPRIHYDUHV24T0115 **Dated: 01 April 2024**

DESCRIPTION OF SAMPLE TESTED
(As assigned by the manufacturer)

145 kV Inductive Voltage Transformer

Rated primary voltage (U_{pr})	:	132 / √3 kV_{rms}
Highest system voltage (HSV)	:	145 kV_{rms}
Frequency	:	50 Hz
Insulation Level	:	275 kV_{rms} / 650 kV_p
Voltage factor	:	1.2 continuous and 1.5 for 30 seconds

Rated secondary voltage (V)	Terminal marking	Burden (VA)	Accuracy class
110 / √3	1a – 1n	200	3P
110 / √3	2a – 2n	50	3P
110 / √3	3a – 3n	50	0.5

(Dr. P. Rajamani)
Test Engineer

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MEDIPALLY P.O., WARANGAL HIGHWAY, HYDERABAD – 500098
PHONE: 080-2207 2051, 080-2207 2052, e-mail: uhvrl@cpri.in

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TEST REPORT

Test Report Number : CPRIHYDUHV24T0115 **Date: 01 April 2024**

SUMMARY OF TEST CONDUCTED

1. Tests conducted : Type and special tests
2. Rating for which tested : 132 kV_{rms}
3. Schedule of test results

Tests conducted	Clause Number and Standard	Sheet Number
Temperature rise test	7.2.2 of IEC 61869-3:2011 and customer request	4 & 5 of 12
Impulse voltage withstand test on primary terminal	7.2.3 of IEC 61869-3:2011 and customer request	6 of 12
Electro Magnetic Compatibility (EMC) tests	7.2.5 of IEC: 61869-3:2011	7 of 12
Test for Accuracy	7.2.6 of IEC: 61869-3:2011	8 & 9 of 12
Chopped impulse voltage withstand test on primary terminal	7.4.1 of IEC 61869-3:2011 and customer request	10 of 12
Capacitance and dielectric dissipation factor measurement at power frequency after dielectric tests	7.4.3 of IEC 61869-3:2011	11 of 12

4. Oscillogram Numbers : Refer Sheets 6 & 10 of 12
5. Graph Numbers : Nil
6. Photograph Numbers : Nil
7. Test Circuit Diagram Numbers : CPRIHYDUHV24T0115TCD01, CPRIHYDUHV24T0115TCD02, CPRIHYDUHV24T0115TCD03, CPRIHYDUHV24T0115TCD04 and CPRIHYDUHV24T0115TCD05

Drawing Numbers

The manufacturer has guaranteed that the sample submitted for the test(s) has been manufactured in accordance with the following drawings:

Sl. No.	Drawing Number	Sheet Number	Revision Number
1	413695829 IVT4900 GA/R0	---	---
2	413695829 IVT4900 RS_R0	---	---

It is verified that these drawings adequately represent the sample tested. Verification of these drawings by CPRI is limited to dimensional check only wherever possible.

(Dr. P. Rajamani)
Test Engineer

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MEDIPALLY P.O., WARANGAL HIGHWAY, HYDERABAD – 500098
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CENTRAL POWER RESEARCH INSTITUTE

CPRI

TEST REPORT

Test Report Number : CPRIHYDUHV24T0115 **Date: 01 April 2024**

TEST RESULTS

Test: Temperature rise test (7.2.2 of IEC 61869-3:2011 and customer request)

Test condition	:	Under dry condition
Test frequency	:	50 Hz
Ambient conditions	:	
Dry bulb temperature	:	29°C
Wet bulb temperature	:	24°C
Atmospheric pressure	:	94.79 kPa

Test procedure: The High voltage AC source connected to primary terminal of IVT. The secondary terminals 1a – 1n, 2a – 2n and 3a – 3n, are loaded with unity power factor burden equivalent to 200 VA, 50 VA & 50 VA respectively.

Resistance of secondary windings measured before start of the test at ambient temperature. The IVT excited to 120% of rated primary voltage (i.e., 1.2 × 132 kV / √3 = 91.5 kV_{rms}) The temperature at various points on IVT as specified by the customer, viz. top bellow, top flange, middle of the porcelain insulator, bottom flange and two sides of bottom tank are recorded by using thermocouple. After reaching steady state, i.e., when temperature rise of 1°C per hour is reached. Then, the voltage increased to 150% of the rated voltage (i.e. 1.5 × 132 kV / √3 = 114.3 kV_{rms}) and maintained for 30 seconds. The temperature of secondary windings also calculated by resistance method. All temperature measurements were repeated.

Time (Hr)	Ambient Temperature (°C)	Temperature rise of IVT (°C)					
		Top bellow	Top flange	Middle of insulator	Bottom flange	Tank side-1	Tank side-2
		T1	T2	T3	T4	T5	T6
11:00	28.7	28.9	28.7	28.8	28.9	28.7	28.7
12:00	29.0	29.8	29.6	29.8	29.6	29.8	29.7
13:00	29.2	31.0	31.2	31.0	31.3	31.2	31.2
14:00	29.3	32.2	32.6	32.5	32.8	32.5	32.5
15:00	29.8	33.4	33.6	33.5	33.1	33.6	33.6
16:00	30.0	34.6	34.6	34.6	34.6	34.6	34.2
17:00	30.1	35.4	34.8	34.9	35.4	35.1	34.8
18:00	30.2	35.5	35.0	35.1	36.2	35.4	35.6
After 30 s at 150% of rated voltage							
18:05	30.3	35.6	35.1	35.2	36.8	36.9	36.1
Rise in Temperature Observed		5.3	4.8	4.9	6.5	6.6	5.8

(Dr. P. Rajamani)
Test Engineer

UHV RESEARCH LABORATORY
MEDIPALLY P.O., WARANGAL HIGHWAY, HYDERABAD – 500098
PHONE: 080-2207 2051, 080-2207 2052, e-mail: uhvrl@cpri.in

CENTRAL POWER RESEARCH INSTITUTE

CPRI

TEST REPORT

Test Report Number : CPRIHYDUHV24T0115 **Date: 01 April 2024**

TEST RESULTS

Measured resistance of secondary windings:

Sl. No	Winding under test	Before start of the test corrected to 75°C (mΩ)	After steady state at 120% of rated voltage corrected to 75°C (mΩ)	After 150% of rated voltage for 30 s corrected to 75°C (mΩ)
1	1a – 1n	69.309	71.448	71.532
2	2a – 2n	70.985	72.613	72.676
3	3a – 3n	54.350	56.008	56.455

Temperature rises of secondary windings by resistance method:

S. No	Winding under test	After steady state at 120% of rated voltage (°C)	After 150% of rated voltage for 30 s (°C)
1	1a – 1n	6.621	6.841
2	2a – 2n	4.637	4.773
3	3a – 3n	6.426	8.487

Test Result: Temperature rise on IVT by thermocouple method and by resistance method are within the specified limits for insulation class A.

(Dr. P. Rajamani)
Test Engineer

UHV RESEARCH LABORATORY
MEDIPALLY P.O., WARANGAL HIGHWAY, HYDERABAD – 500098
PHONE: 080-2207 2051, 080-2207 2052, e-mail: uhvrl@cpri.in

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CPRI

TEST REPORT

Test Report Number. CPRIHYDUHV24T0115 **Date: 01 April 2024**

TEST RESULTS

Test: Lightning impulse voltage withstand test on primary terminal
(As per cl. 7.2.3 of IEC 61869-3:2011 and customer request)

Test condition : Under dry condition

Ambient conditions:

Dry bulb temperature	:	30 °C
Wet bulb temperature	:	25 °C
Atmospheric pressure	:	95.59 kPa
Specified Basic Impulse Level (BIL) by customer	:	± 650 kV_{peak}

The specified test voltage was applied under the ambient conditions mentioned above.

Test arrangement		Test voltage	Result	Ref. Oscillogram nos.	Remarks
Voltage applied to	Earthed	kV, peak	No. of impulses applied / No of Disruptive discharges observed		
Primary terminal of IVT	Terminal 'N' connected to earth along with base tank	-446.8 (RFW)	01 / 0	01	Withstood
		-650 (FW)	15 / 0	02, 05 to 18	Withstood
		+451.4 (RFW)	01 / 0	19	Withstood
		+650 (FW)	15 / 0	20 to 34	Withstood
Note: Secondary winding terminals 1n, 2n and 3n were shorted and connected to earth through shunt					

RFW: Reduced Full Wave (50% to 75% of BIL)
FW: Full Wave (100% of BIL)

(Dr. P. Rajamani)
Test Engineer

CENTRAL POWER RESEARCH INSTITUTE

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TEST REPORT

Test Report Number. CPRIHYDUHV24T0115 **Date: 01 April 2024**

TEST RESULTS

Test: Electromagnetic Compatibility (EMC) test (As per cl. 7.2.5.1 of IEC: 61869-3:2011)

Test condition	:	Under dry condition
Ambient conditions:		
Dry bulb temperature	:	29 °C
Wet bulb temperature	:	24 °C
Atmospheric pressure	:	94.79 kPa
Applicable additional technical specification	:	CISPR 18 – 2: 2017
Detector	:	Quasi Peak
Measuring frequency	:	1 MHz
Permissible RIV Limits	:	2500 µV
Ambient RIV level across 300 Ω	:	13.6 µV

The sample was pre-stressed at 125.5 kV_{rms} for 30 s and reduced to measuring voltage 92.1 kV_{rms} within 10 s and maintained at this test voltage for 30 s

Test arrangement		Specified test voltage (kV_{rms})	Measured RIV level across 300 Ω (µV)	Remarks
HV AC applied to	Earthed			
Primary terminal of IVT	Terminal 'N' along with base tank	92.1	106	Measured RIV is less than 2500 µV
Note: One end of Secondary winding terminals 1n, 2n and 3n were shorted and connected to earth along with base tank.				

(Dr. P. Rajamani)
Test Engineer

UHV RESEARCH LABORATORY
MEDIPALLY P.O., WARANGAL HIGHWAY, HYDERABAD – 500098
PHONE: 080-2207 2051, 080-2207 2052, e-mail: uhvrl@cpri.in

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TEST REPORT

Test Report Number : CPRIHYDUHV24T0115 **Date: 01 April 2024**

TEST RESULTS

Test: Test for Accuracy (7.2.6 of IEC 61869-3: 2011)

Test condition : Under dry condition
Test frequency : 50 Hz

Ambient conditions :
Dry bulb temperature : 29°C
Wet bulb temperature : 24°C
Atmospheric pressure : 94.92 kPa
1. Primary voltage : 132 / √3 kV_{rms}
2. Secondary voltage : 110 / √3 V_{rms}

Secondary winding under test	Burden (VA)	Test Voltage in percentage of primary voltage (%)	Voltage (Ratio) Error (%)	Phase Displacement (Minutes)	Remarks
1a – 1n Accuracy class: 3P PF: 0.8 (lag)	200	150	-0.413	10.05	The winding is within limits of voltage ratio error (±3%) and phase displacement (± 120 minutes) as specified in the standard
		120	-0.257	4.53	
		100	-0.1933	2.25	
		5	-0.210	2.39	
		2	-0.219	1.89	
	50	150	-0.0966	8.94	
		120	0.0807	2.81	
		100	0.1378	0.789	
		5	0.1267	0.410	
		2	0.1298	0.389	

Secondary winding under test	Burden (VA)	Test Voltage in percentage of primary voltage (%)	Voltage (Ratio) Error (%)	Phase Displacement (Minutes)	Remarks
2a – 2n Accuracy class: 3P PF: 0.8 (lag)	50	150	-0.0626	9.15	The winding is within limits of voltage ratio error (±3%) and phase displacement (± 120 minutes) as specified in the standard
		120	0.0841	3.4	
		100	0.1332	1.259	
		5	0.1296	0.731	
		2	0.1239	0.568	
	12.5	150	0.0177	8.86	
		120	0.1698	2.70	
		100	0.217	0.493	
		5	0.216	-0.188	
		2	0.223	-0.210	

(Dr. P. Rajamani)
Test Engineer

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TEST REPORT

Test Report Number : CPRIHYDUHV24T0115 **Date: 01 April 2024**

TEST RESULTS

1. Primary voltage : $132 / \sqrt{3}$ kV_{rms}
2. Secondary voltage : $110 / \sqrt{3}$ V_{rms}

Secondary winding under test	Burden (VA)	Test Voltage in percentage of primary voltage (%)	Voltage (Ratio) Error (%)	Phase Displacement (Minutes)	Remarks
3a – 3n Accuracy class: 0.5 PF: 0.8 (lag)	50	120	0.1296	2.96	The winding is within limits of voltage ratio error (±0.5%) and phase displacement (± 20 minutes) as specified in the standard
		100	0.1725	0.775	
		80	0.1842	0.300	
	12.5	120	0.179	3.05	
		100	0.230	0.587	
		80	0.239	0.174	

(Dr. P. Rajamani)
Test Engineer

CENTRAL POWER RESEARCH INSTITUTE

CPRI

TEST REPORT

Test Report Number. CPRIHYDUHV24T0115 **Date: 01 April 2024**

TEST RESULTS

Test: Chopped impulse voltage withstand test on primary terminal
(As per cl. 7.4.1 of IEC 61860-3:2011 and customer request)

Test condition : Under dry condition

Ambient conditions:

Dry bulb temperature	:	29 °C
Wet bulb temperature	:	25 °C
Atmospheric pressure	:	94.79 kPa
Basic Impulse Level (BIL) specified by customer	:	650 kV_{peak}

The specified test voltage was applied under the ambient conditions mentioned above.

Test arrangement		Test voltage	Result	Ref. Oscillogram nos.	Remarks
Impulse Voltage applied to	Earthed	kV, peak	No. of impulses applied / No of Disruptive discharges observe		
Primary terminal of IVT	Terminal 'N' connected to earth along with base tank	-446.8 (RFW)	01 / 0	01	Withstood
		-650 (FW)	01 / 0	02	Withstood
		-747.5 (CFW)	02 / 0	03 & 04	Withstood
		-650 (FW)	14 / 0	05 to 18	Withstood
Note: Secondary winding terminals 1n, 2n and 3n were shorted and connected to earth through shunt.					

RFW: Reduced Full Wave (50% to 75% of BIL)
FW: Full Wave (100% of BIL)
CFW: Chopped Full Wave (121% of BIL)

(Dr. P. Rajamani)
Test Engineer

CENTRAL POWER RESEARCH INSTITUTE

CPRI

TEST REPORT

Test Report Number. CPRIHYDUHV24T0115 **Date: 01 April 2024**

TEST RESULTS

Test: Capacitance and dielectric dissipation factor measurement (7.4.3 of IEC 61869-3:2011)

Test condition	:	Under dry condition
Test frequency	:	50 Hz
Ambient conditions	:	
Dry bulb temperature	:	29°C
Wet bulb temperature	:	24°C
Atmospheric pressure	:	94.92 kPa
Specified test voltage	:	76.2 kV_{rms}

Test arrangement		Test voltage	Result.	
HV AC applied to	**Earthed**	**kV_{rms}**	**Measured Capacitance (pF)**	**Dielectric dissipation factor**
Primary terminal of IVT	1n. 2n & 3n along with base tank	76.2	303.96	0.00201
Note: Terminal 'N' connected to Capacitance and tan δ measuring bridge.				

Conclusion: Test sample tested complies with the requirement of clause no. 7.2.2, 7.2.3, 7.2.5, 7.2.6, 7.4.1 and 7.4.3 of 61869-3: 2011 and customer request for the tests conducted.

(Dr. P. Rajamani)
Test Engineer

CENTRAL POWER RESEARCH INSTITUTE

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TEST REPORT

Test Report Number. CPRIHYDUHV24T0115 **Date: 01 April 2024**

NOTE

a) The Test results relate only to the sample(s) tested.

b) Publication or reproduction of this Test Report /Test Certificate in any form other than by complete set of the whole Test Report /Test Certificate and in the language written is not permitted without the written consent of CPRI.

c) Any Corrections/erasure invalidates the Test Report/Test Certificate

d) NABL has Accredited this laboratory as per ISO/IEC17025:2017, vide certificate no.TC-6198 for the tests carried out.

e) Any anomaly/discrepancy in the Test Report / Test Certificate should be brought to the notice of CPRI within 45 days from the date of issue.

TC-6198

(Dr. P. Rajamani)
Test Engineer

----------End of Test Report----------

CENTRAL POWER RESEARCH INSTITUTE

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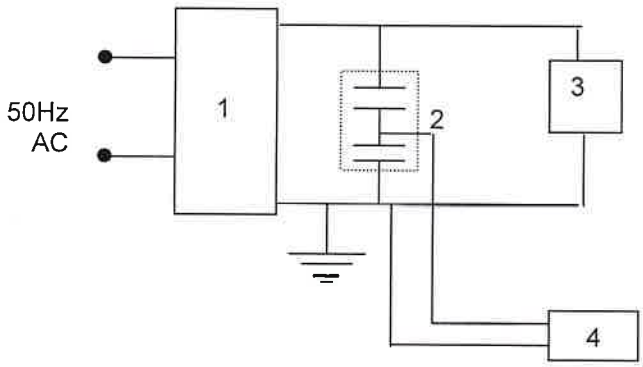
TEST REPORT

Test Report Number. CPRIHYDUHV24T0115 **Date: 01 April 2024**

TEST CIRCUIT DIAGRAMS

1. Temperature rise test

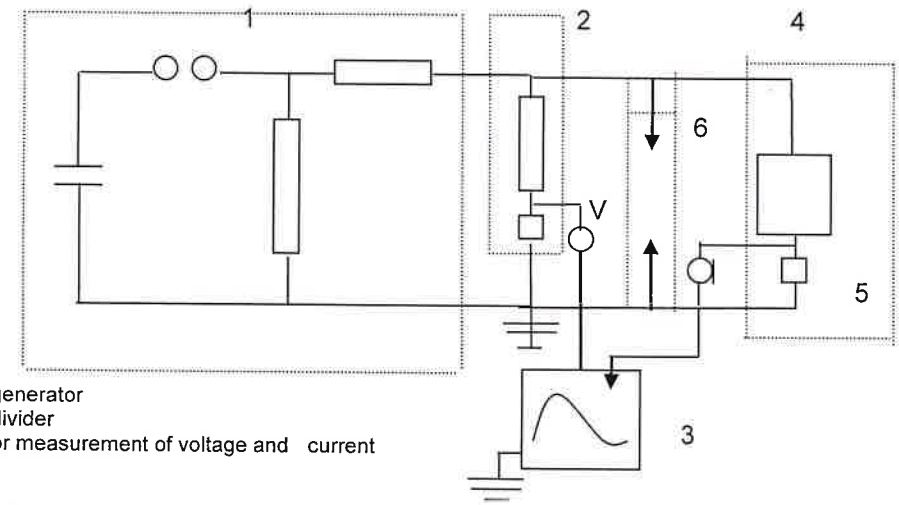


Legend:

1: HV AC source
2: Voltage Divider
3: Test Sample
4: RMS Voltmeter

Test Circuit Diagram Number. CPRIHYDUHV24T0115TCD01

2. Impulse & Chopped lightning impulse voltage withstand test on primary terminals



Legend:

1: Impulse voltage generator
2: Impulse voltage divider
3: Digital recorder for measurement of voltage and current
4: Test object
5: Shunt
6: Chopping device (During chopped test)
V: Voltage I: Current

Test Circuit Diagram Number. CPRIHYDUHV24T0115TCD02

(Dr. P. Rajamani)
Test Engineer

UHV RESEARCH LABORATORY
MEDIPALLY P.O., WARANGAL HIGH WAY, HYDERABAD – 500098.
Phone: 080-22072051, 080-22072052, E-mail: uhvrl@cpri.in

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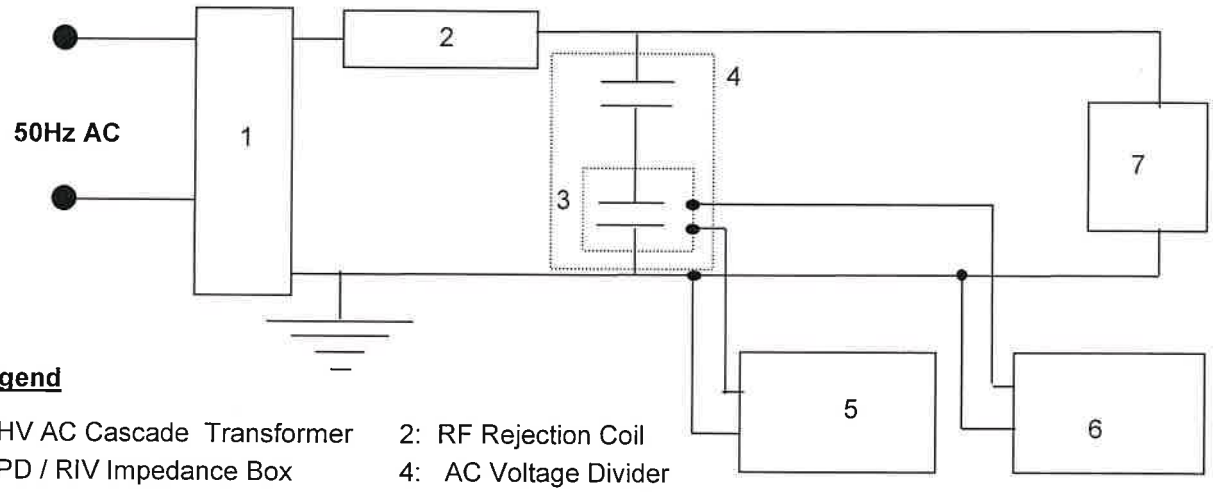
TEST REPORT

Test Report Number. CPRIHYDUHV24T0115 **Date: 1 April 2024**

3. Electromagnetic Compatibility (EMC) test

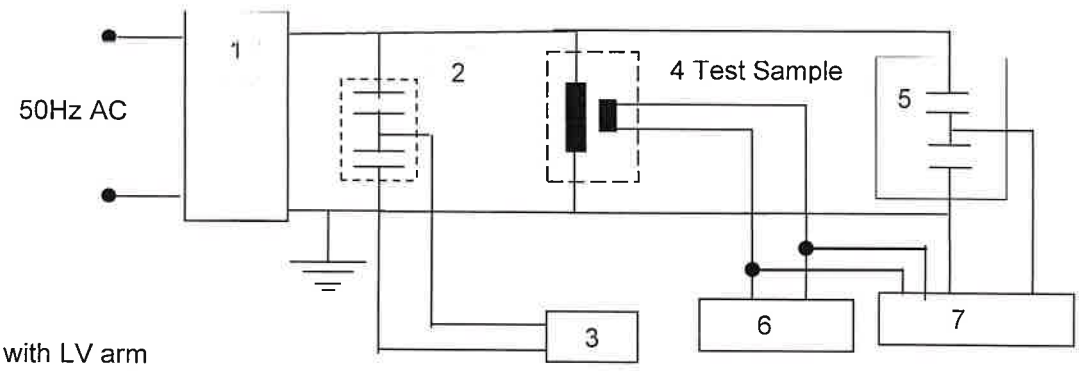


Legend

1: HV AC Cascade Transformer
2: RF Rejection Coil
3: PD / RIV Impedance Box
4: AC Voltage Divider measuring impedance
5: Peak Voltmeter
6: PD / RIV Processing unit
7: Test Sample

Test Circuit Diagram Number. CPRIHYDUHV24T0115TCD03

4. Accuracy test



Legend:

1: HV AC Source
2: HV Divider
3: Voltmeter
4: IVT under test
5. Standard Capacitor with LV arm
6. Burden
7. Automatic instrument transformer test set with electronic potential divider

Test Circuit Diagram Number: CPRIHYDUHV24T0115TCD04

(Dr. P. Rajamani)
Test Engineer

UHV RESEARCH LABORATORY
MEDIPALLY P.O., WARANGAL HIGH WAY, HYDERABAD – 500098.
Phone: 080-22072051, 080-22072052, E-mail: uhvrl@cpri.in

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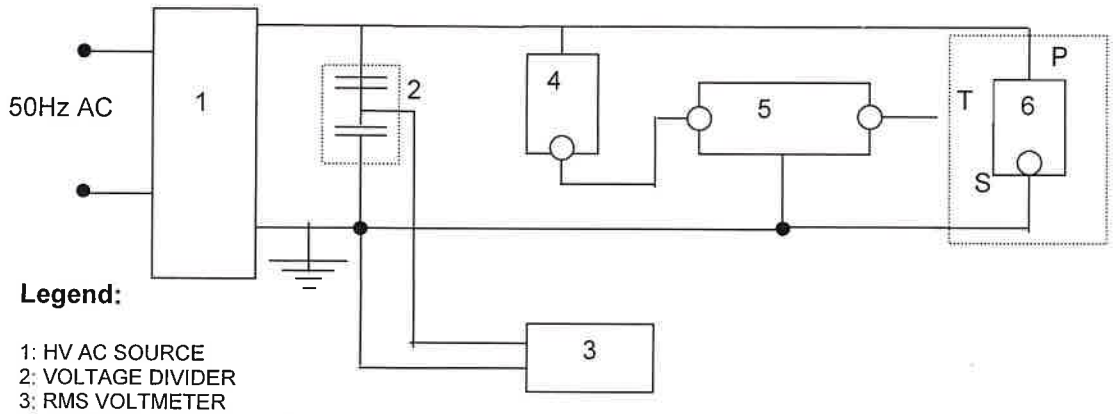
TEST REPORT

Test Report Number. CPRIHYDUHV24T0115 **Date: 1 April 2024**

5. Capacitance and dielectric dissipation measurement test



Legend:

1: HV AC SOURCE
2: VOLTAGE DIVIDER
3: RMS VOLTMETER
4: STANDARD CAPACITOR
5: CAPACITANCE & TAN-DELTA MEASURING BRIDGE
6:TEST SAMPLE
T: N TERMINAL OF IVT
P: HV TERMINAL OF IVT
S: BOTTOM FLANGE OF PORCELAIN HOUSING

Test Circuit Diagram Number. CPRIHYDUHV24T0115TCD05

(Dr. P. Rajamani)
Test Engineer

UHV RESEARCH LABORATORY
MEDIPALLY P.O., WARANGAL HIGH WAY, HYDERABAD – 500098.
Phone: 080-22072051, 080-22072052, E-mail: uhvrl@cpri.in

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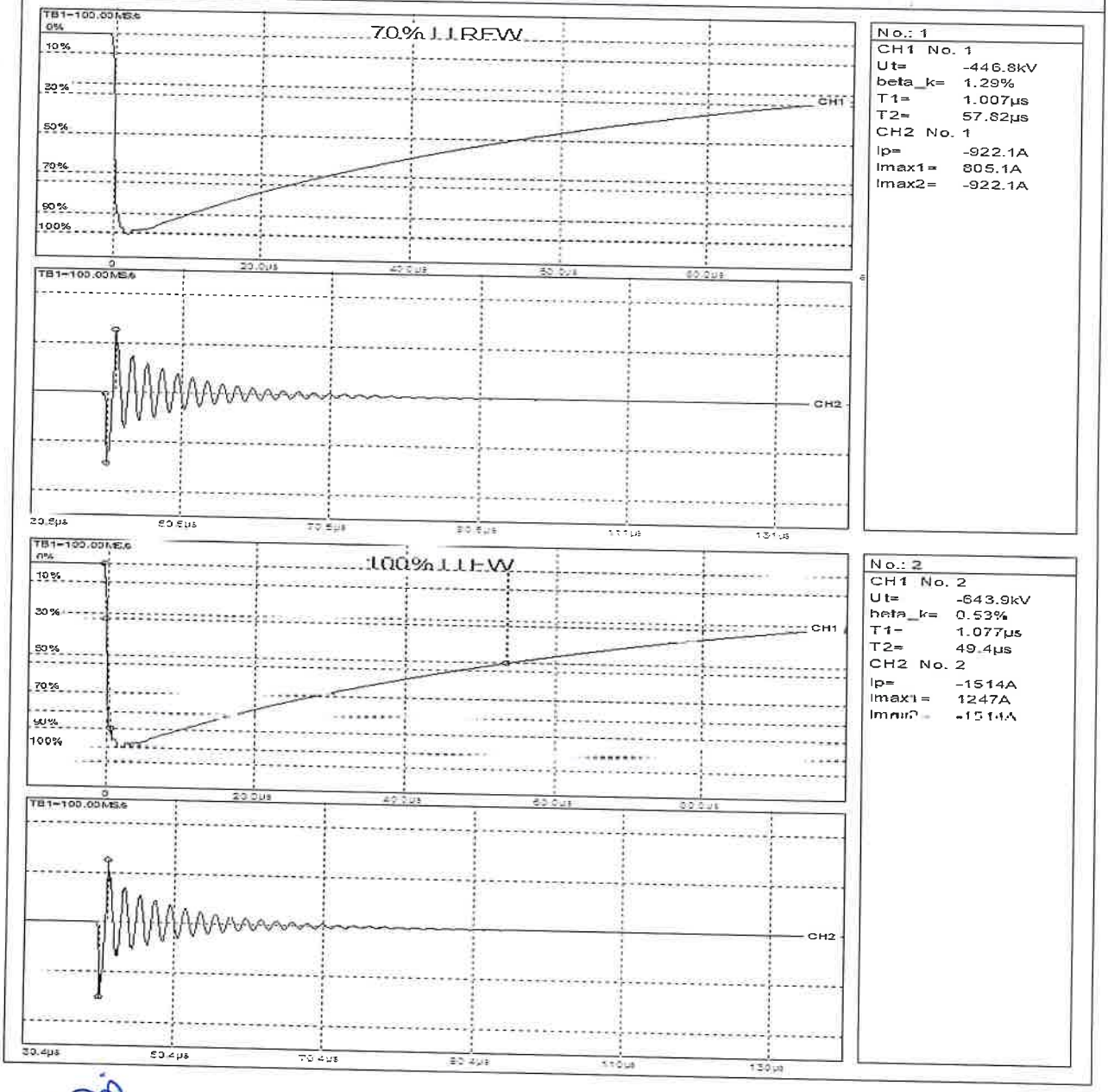
TEST REPORT

Test Report Number: CPRIHYDUHV24T0115 **Date: 01 April 2024**

OSCILLOGRAMS



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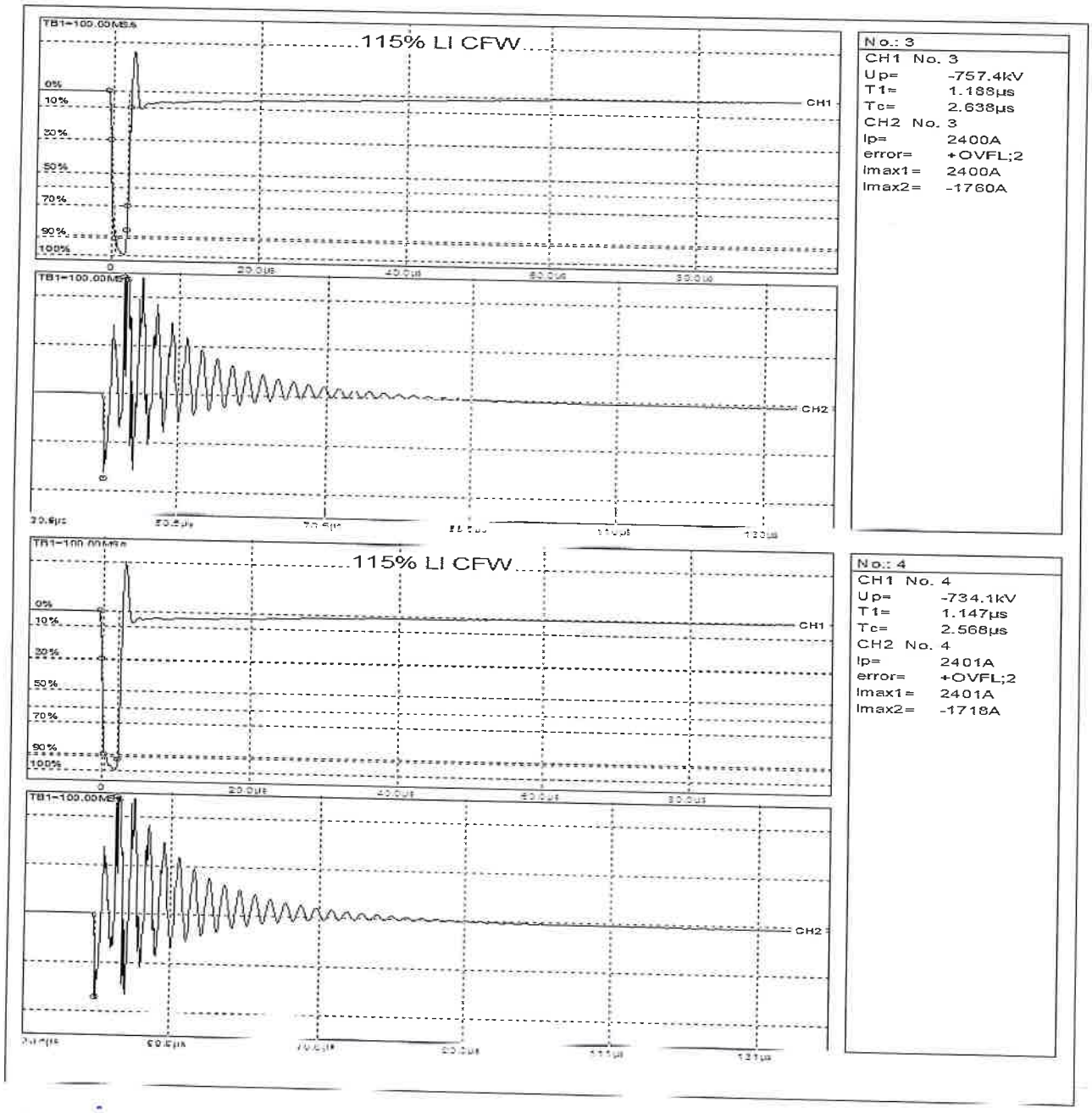

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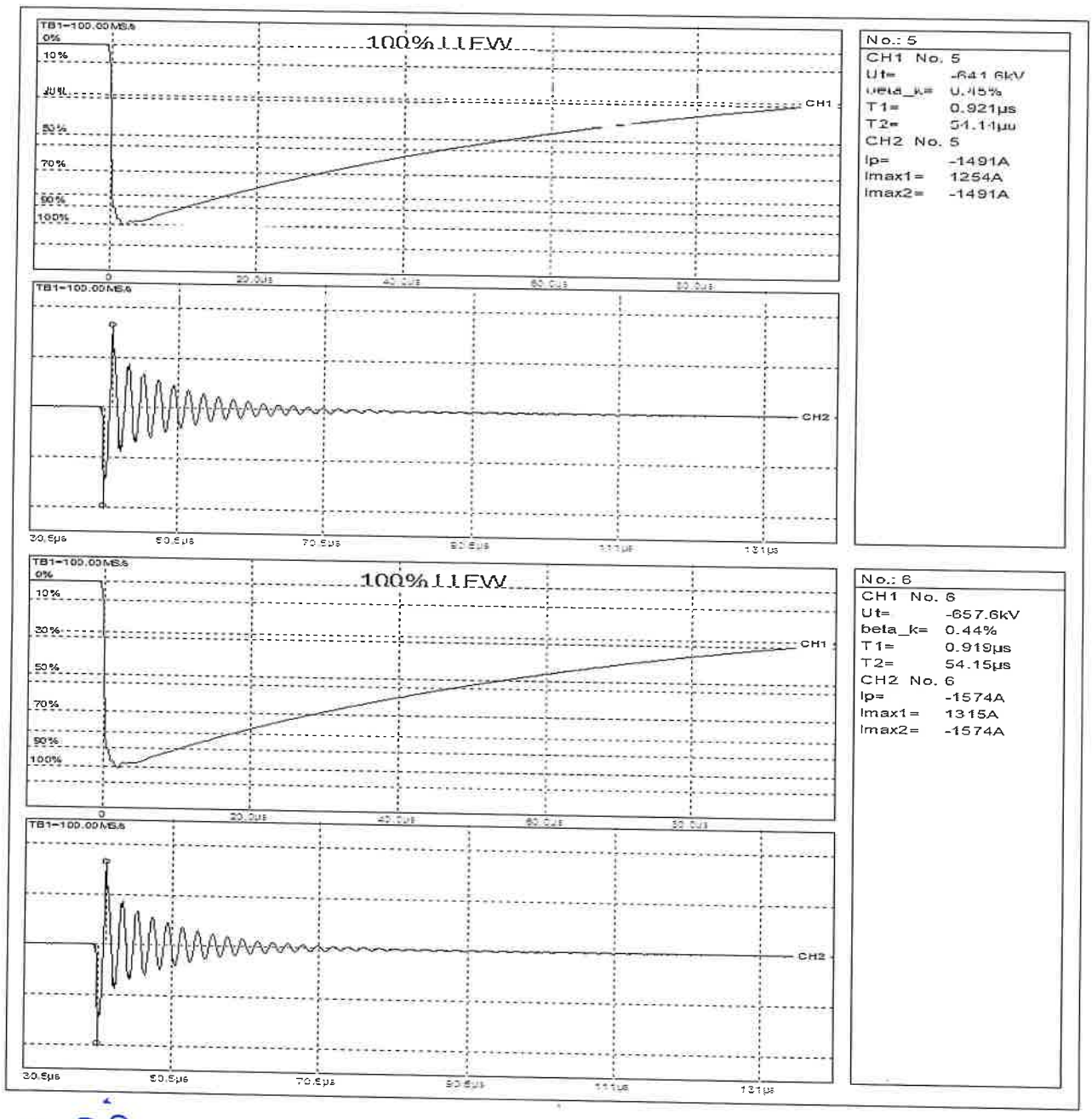

(Dr. P. Rajamani)
Toot Engineer

ULR-TC6198240UHVT0115F
Discipline: Electrical Testing
Group: Transmission line equipment and accessories

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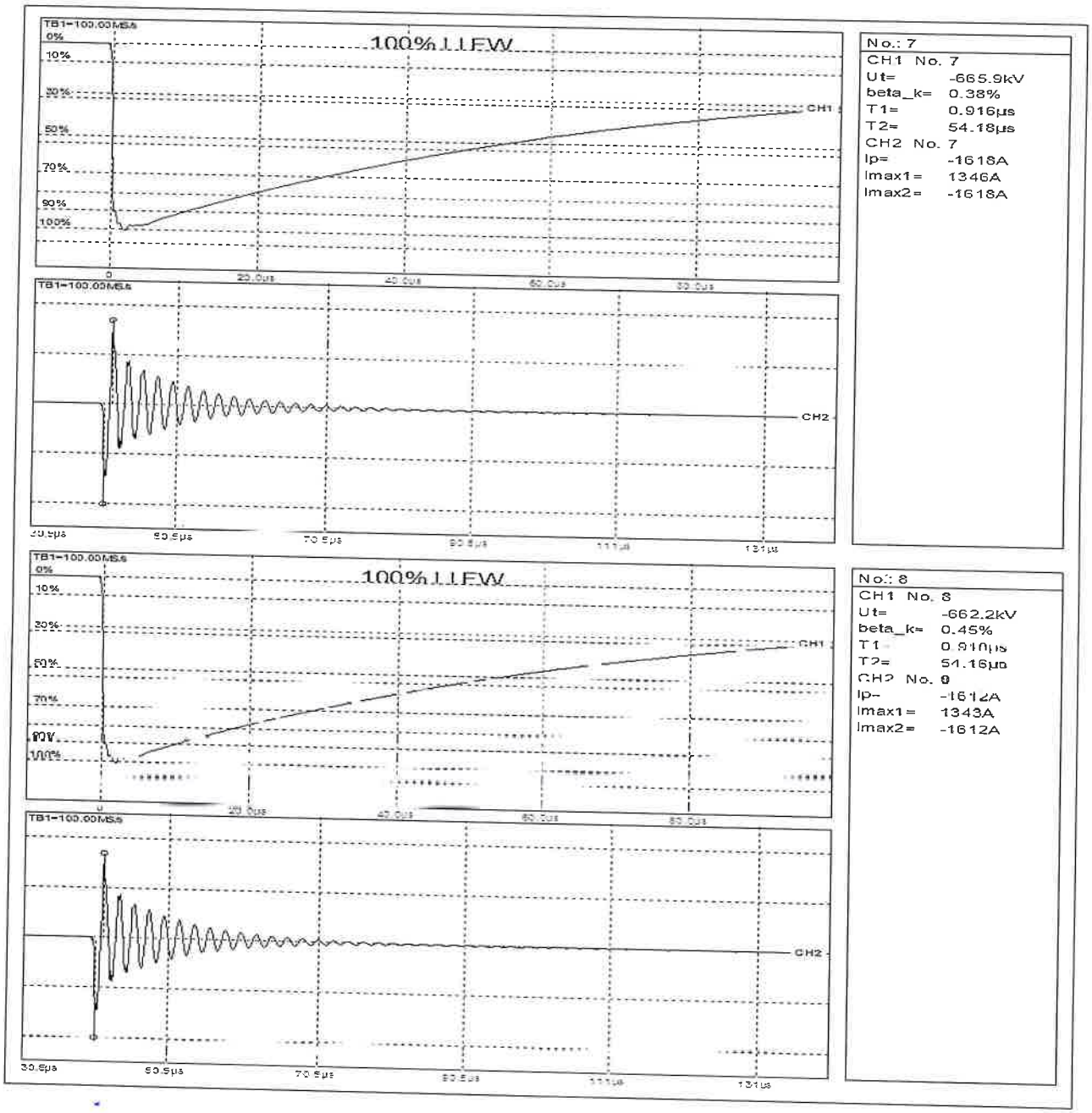

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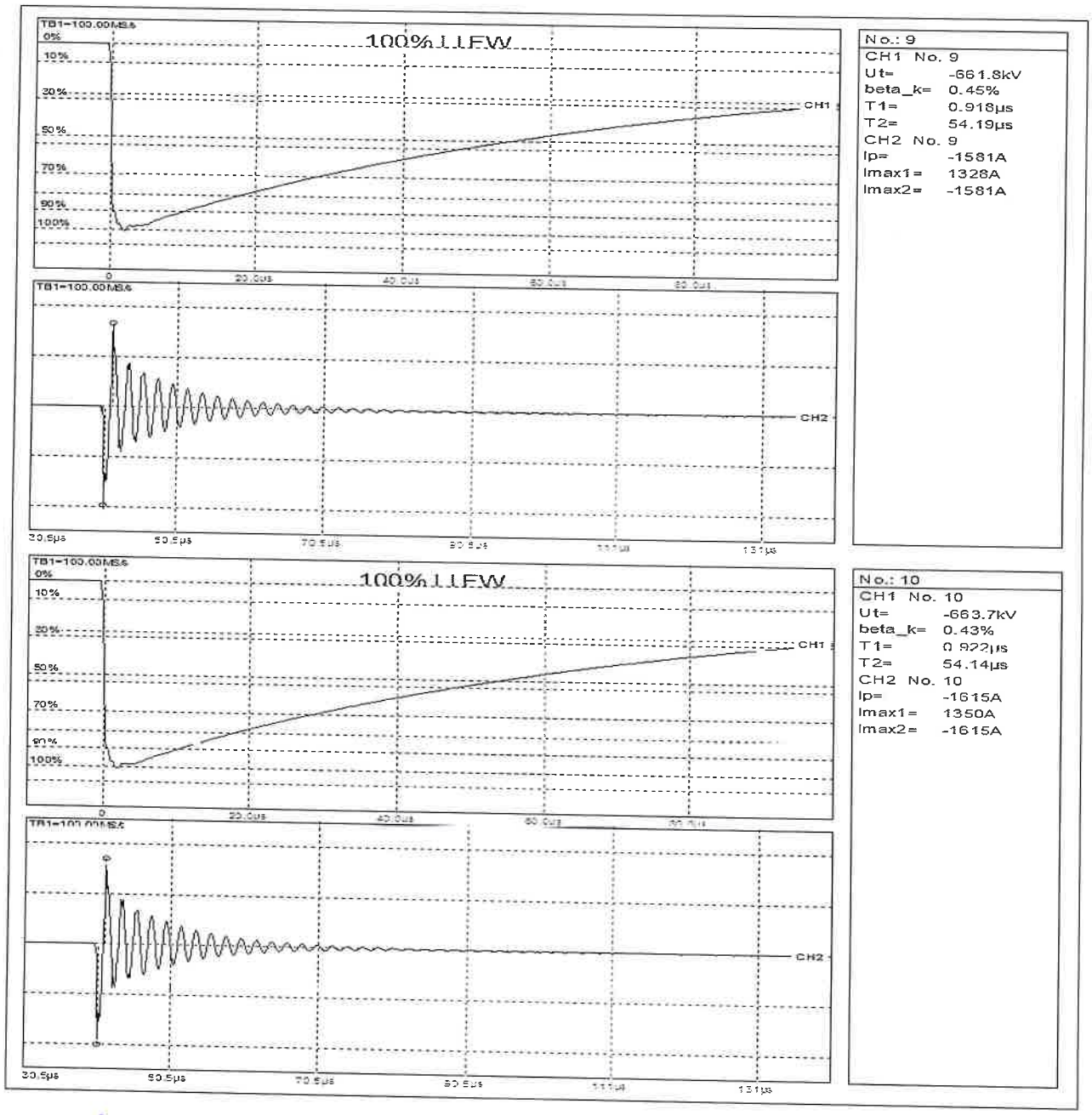

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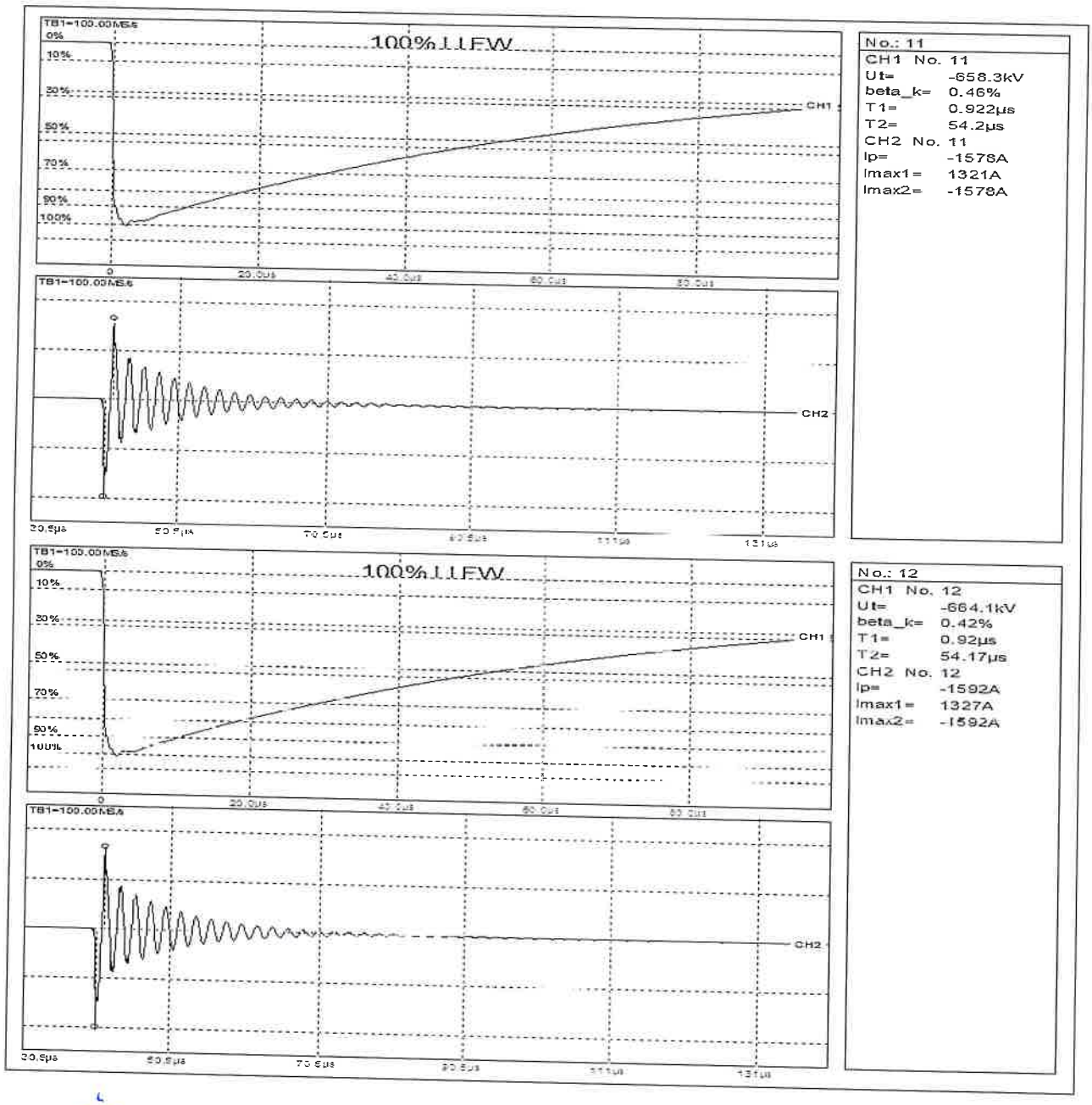

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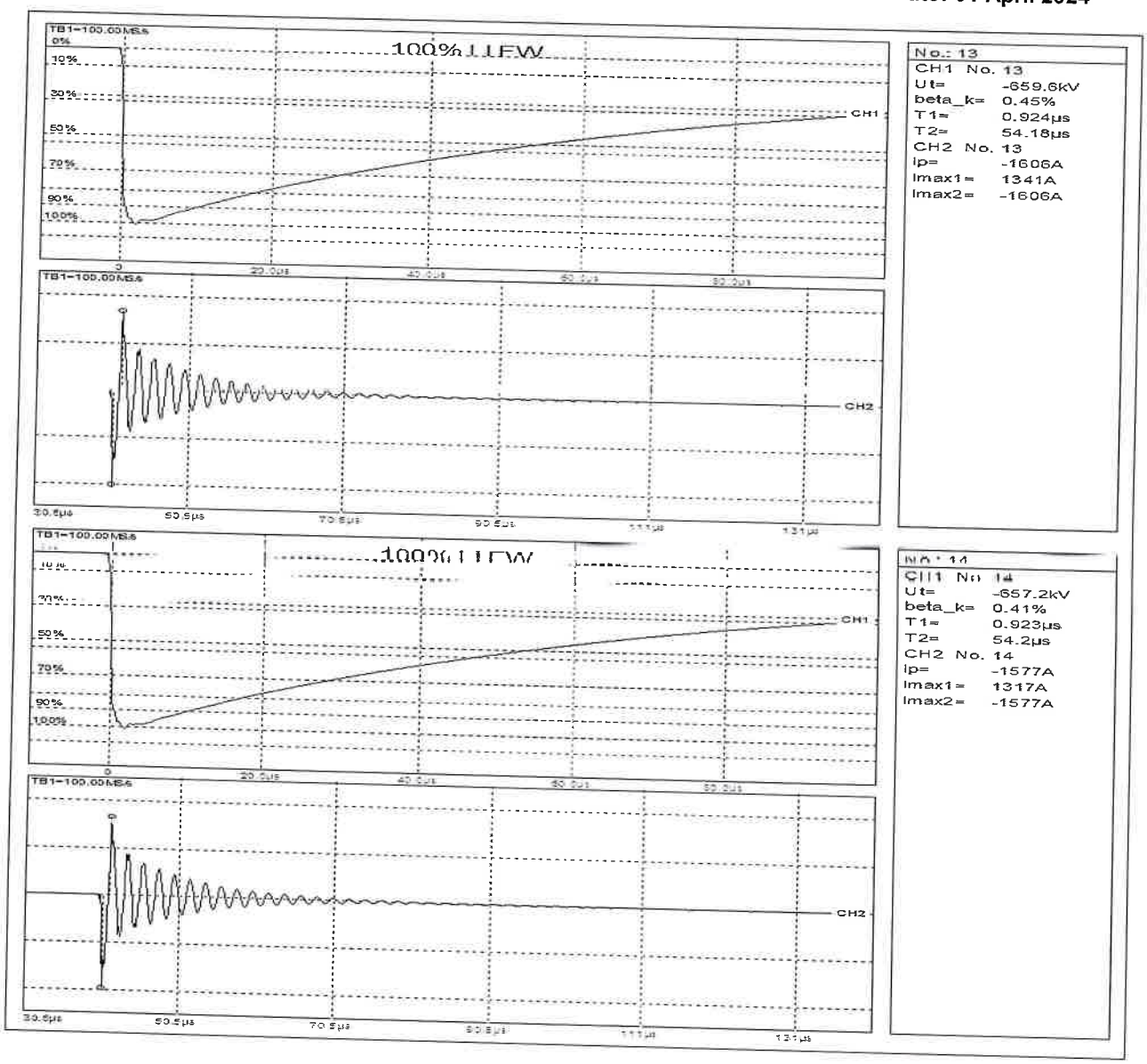

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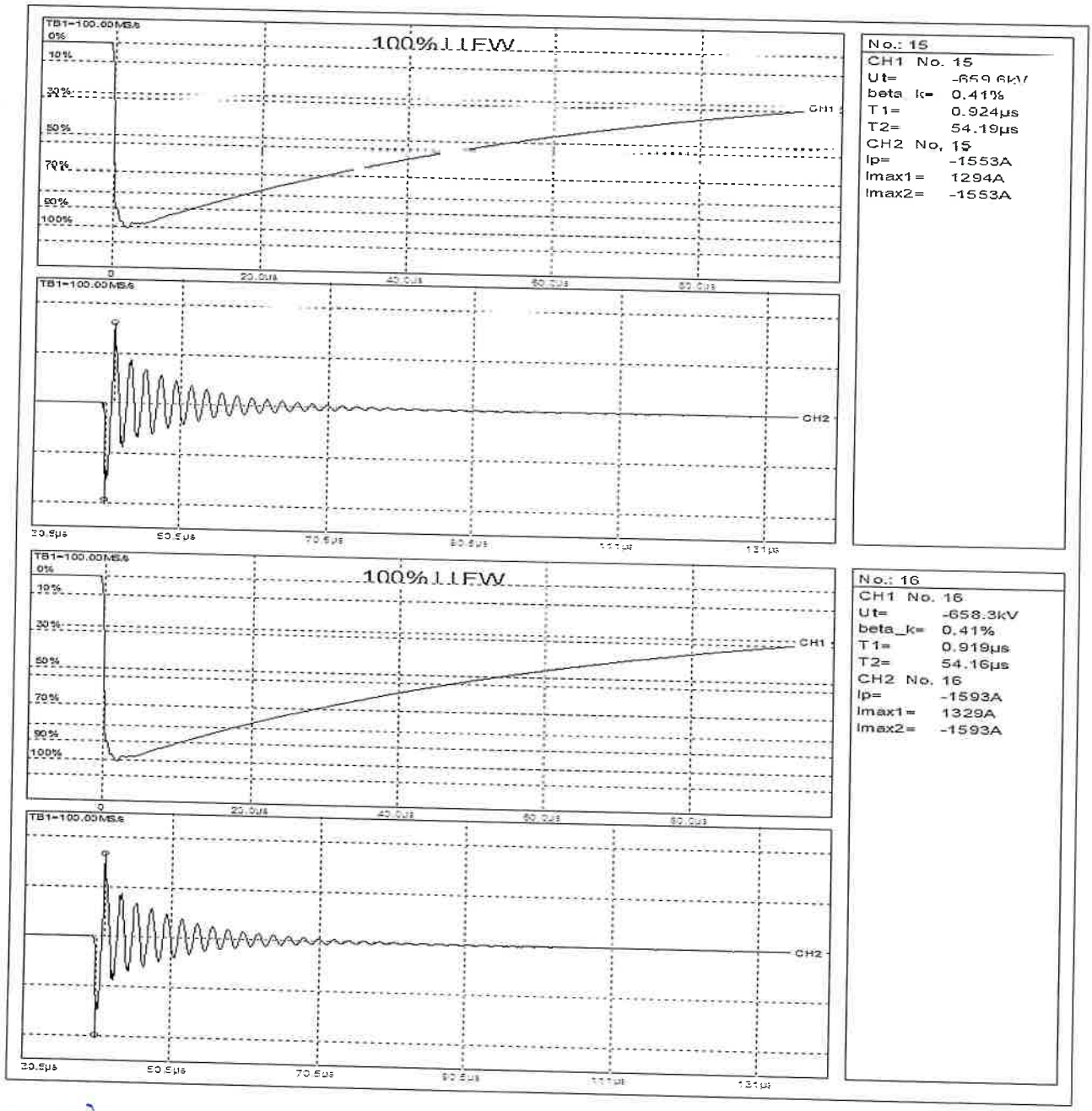

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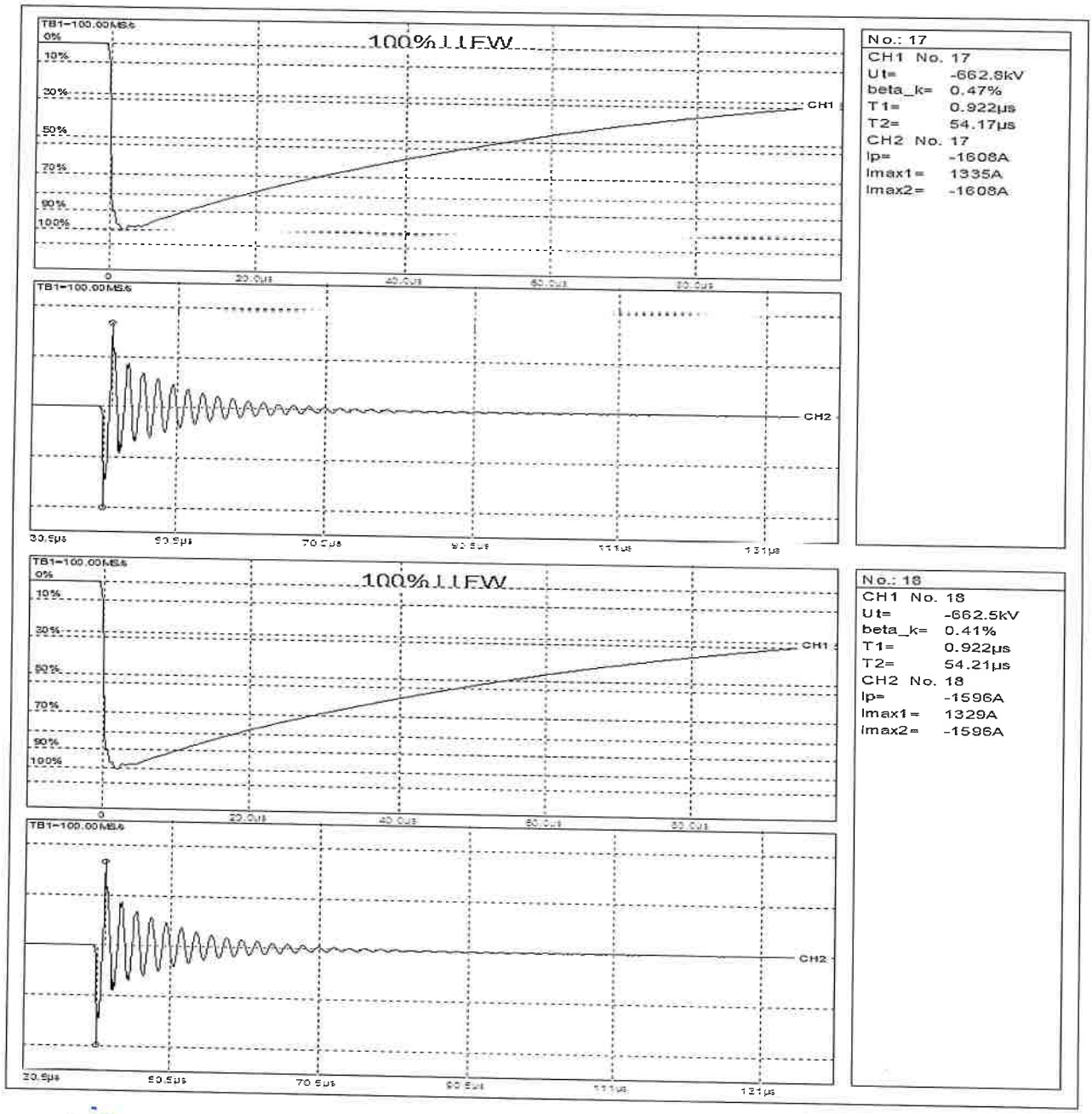

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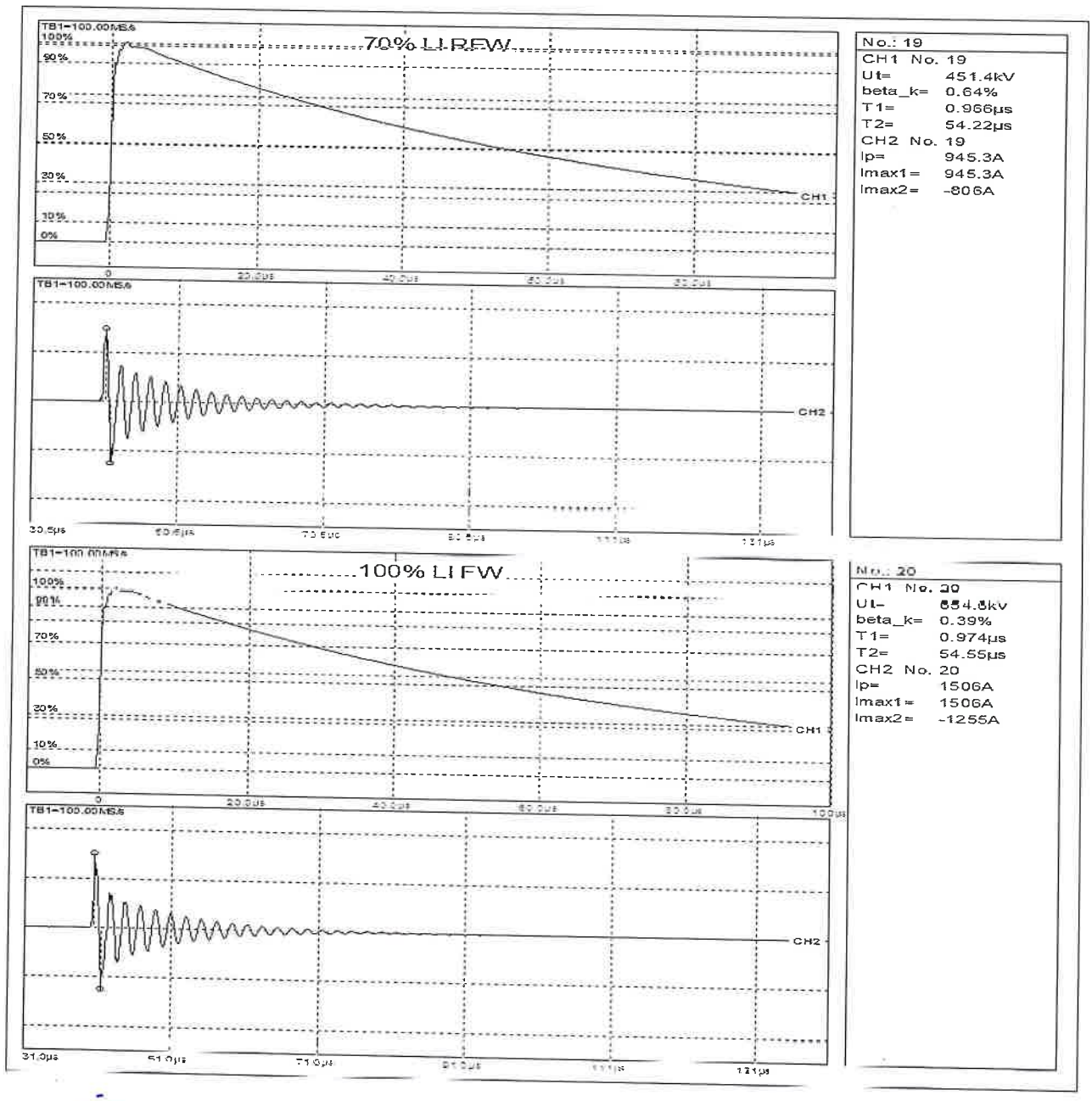

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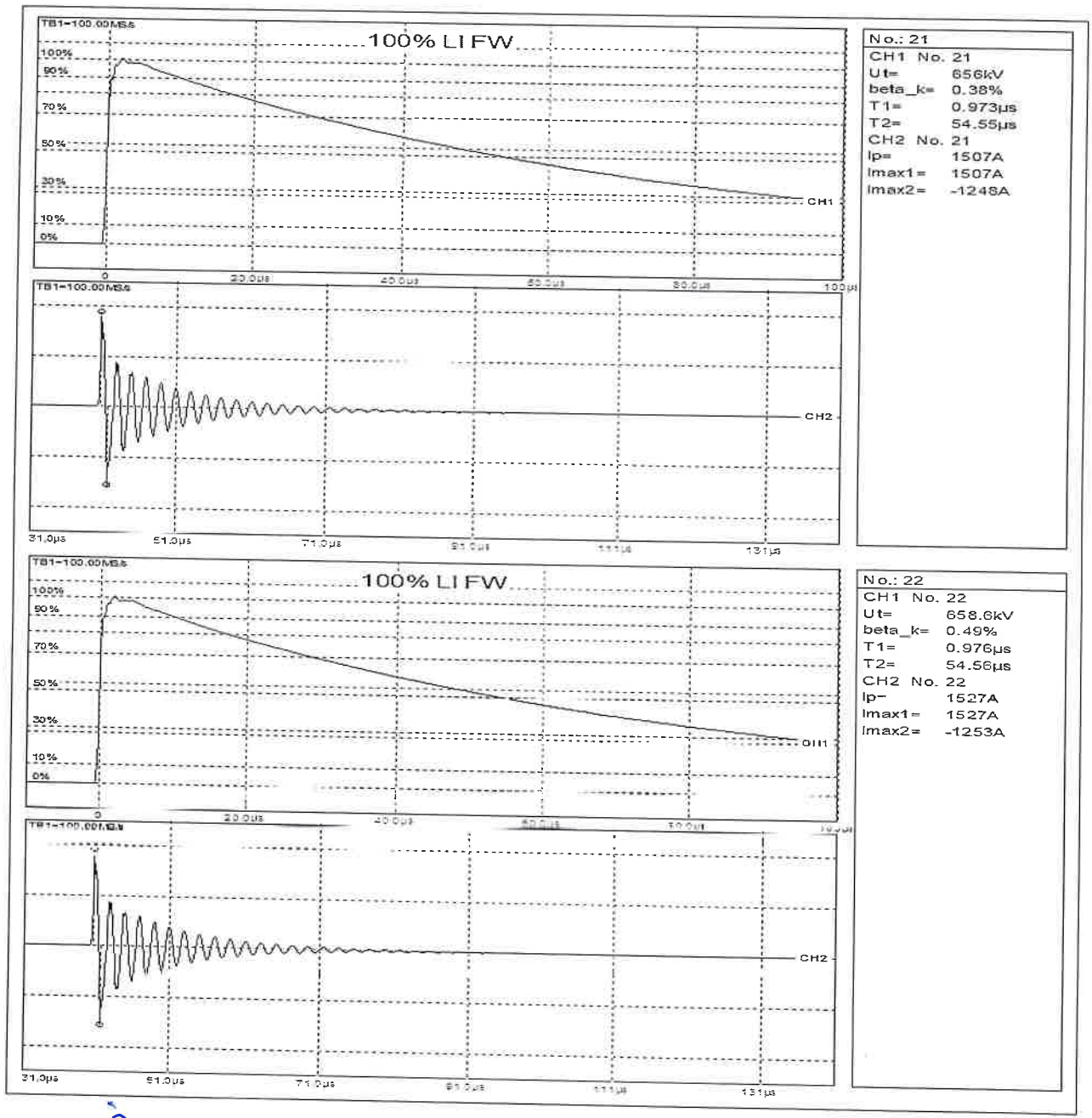

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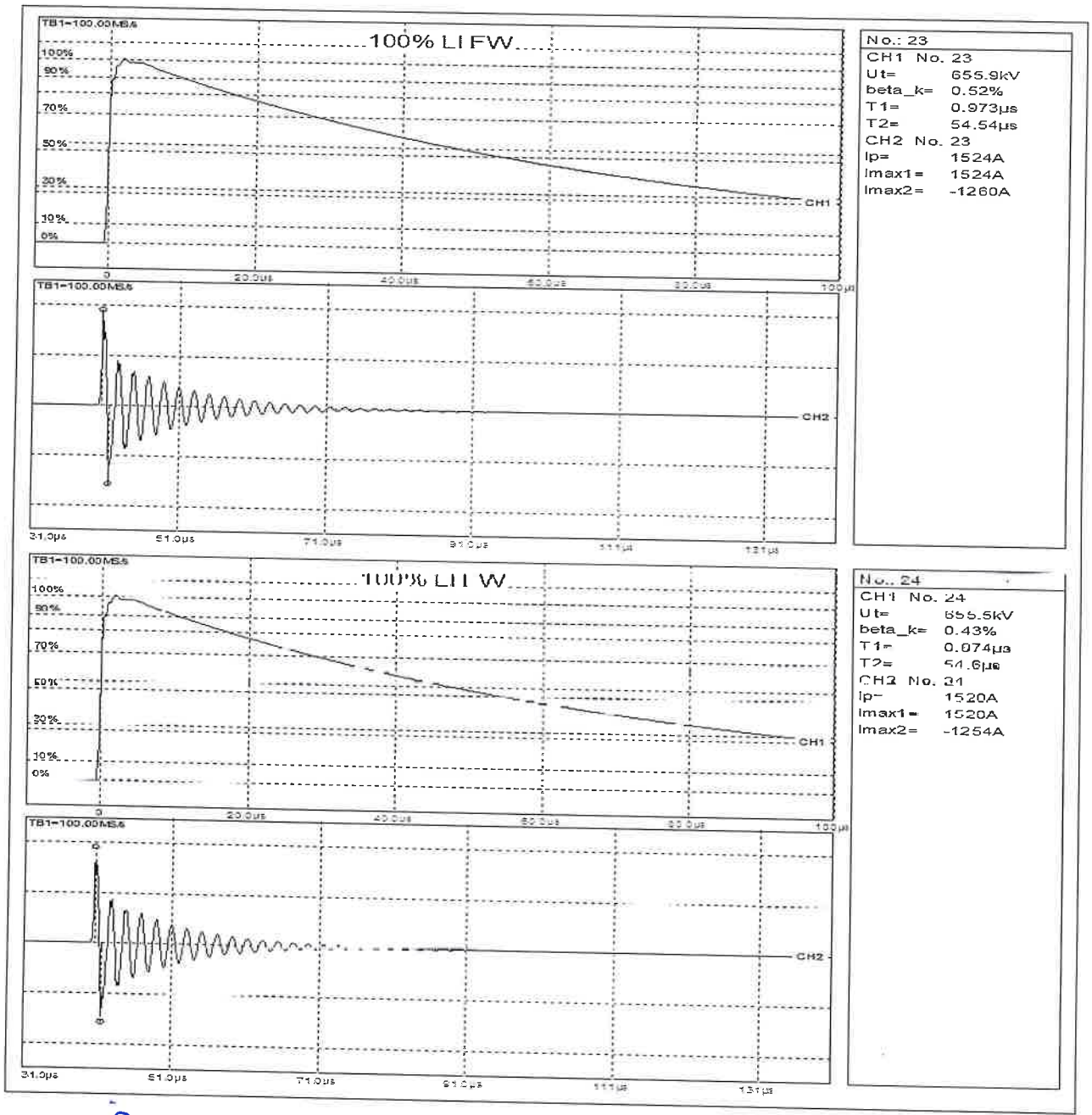

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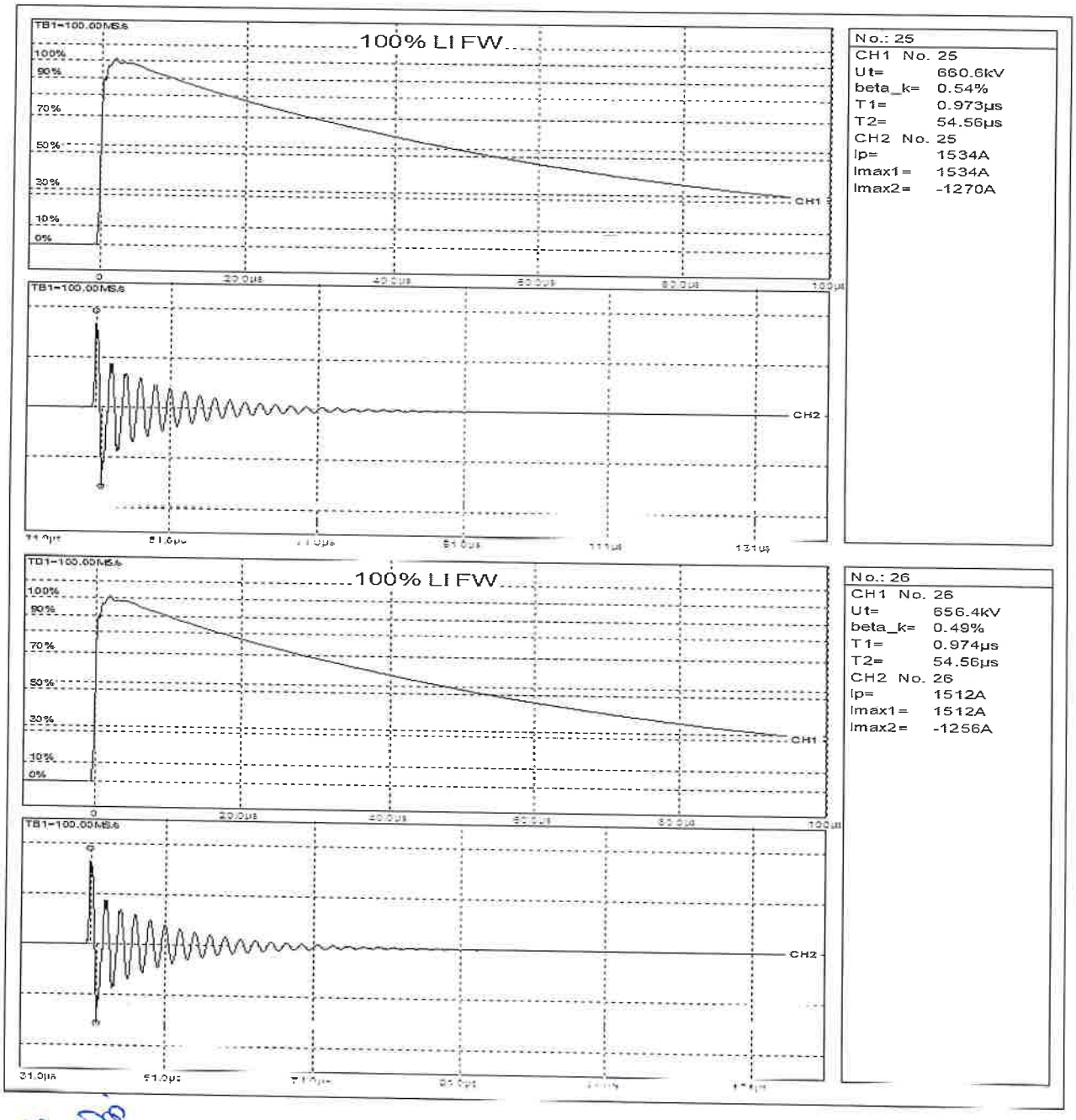

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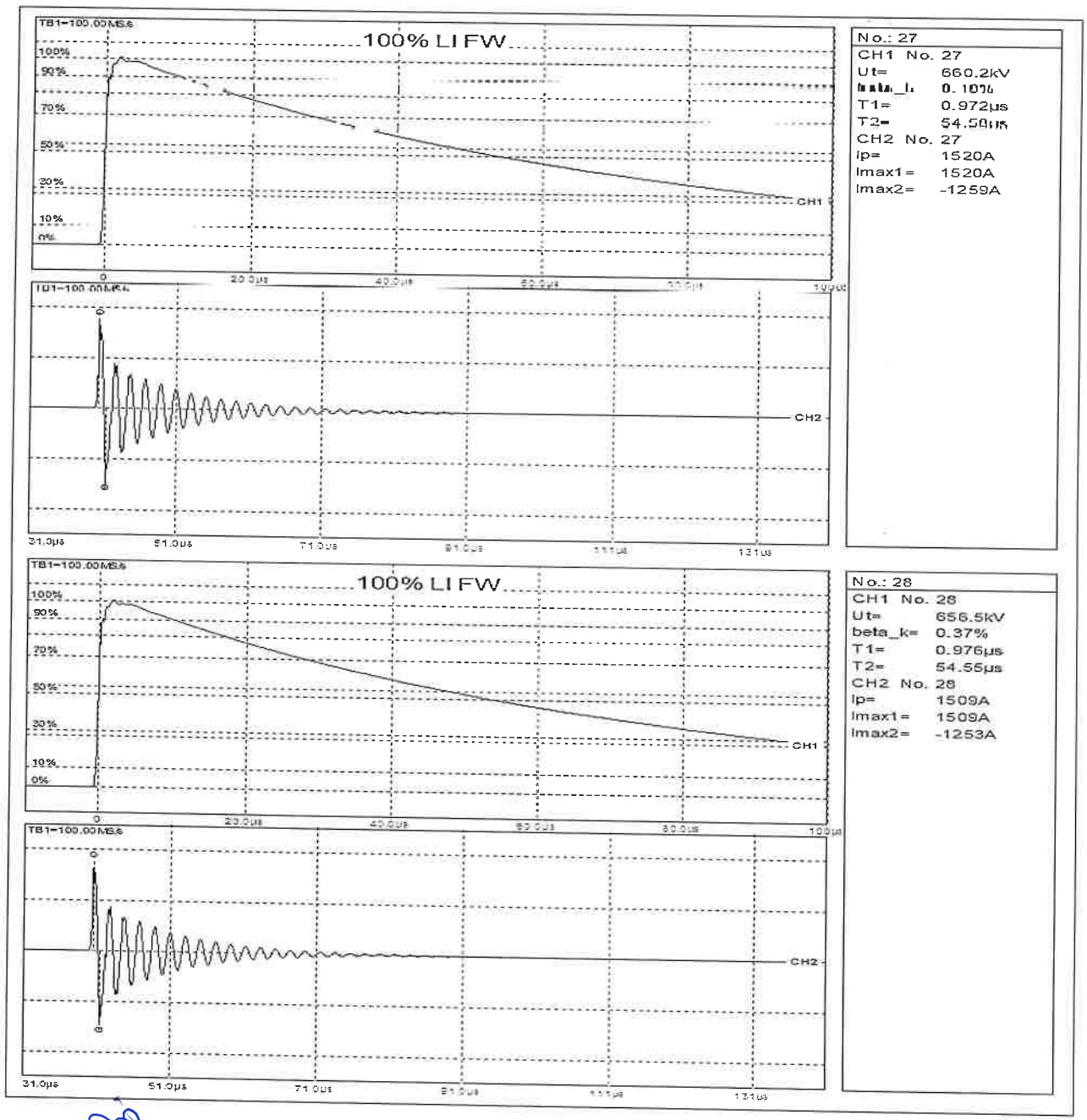

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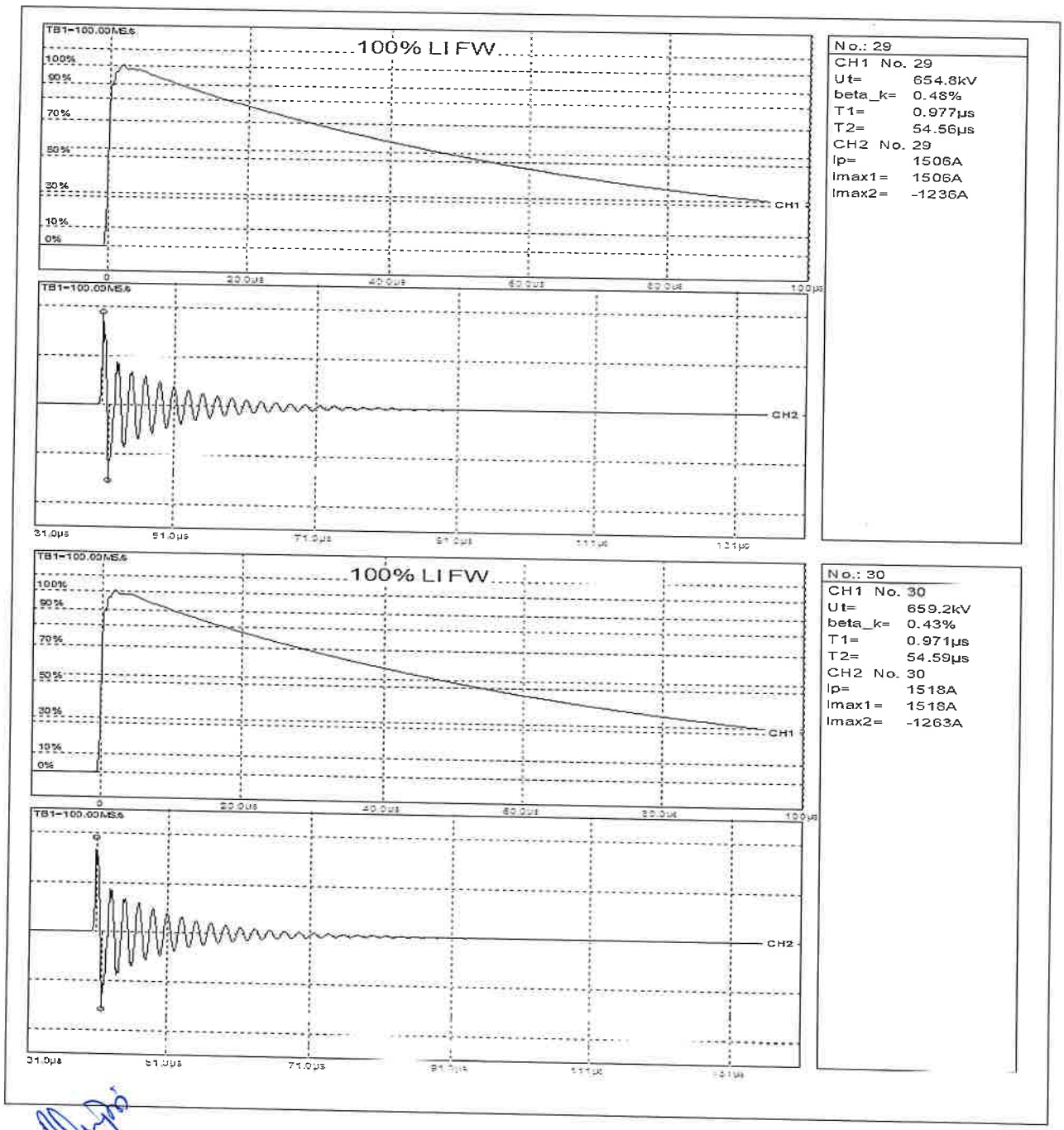

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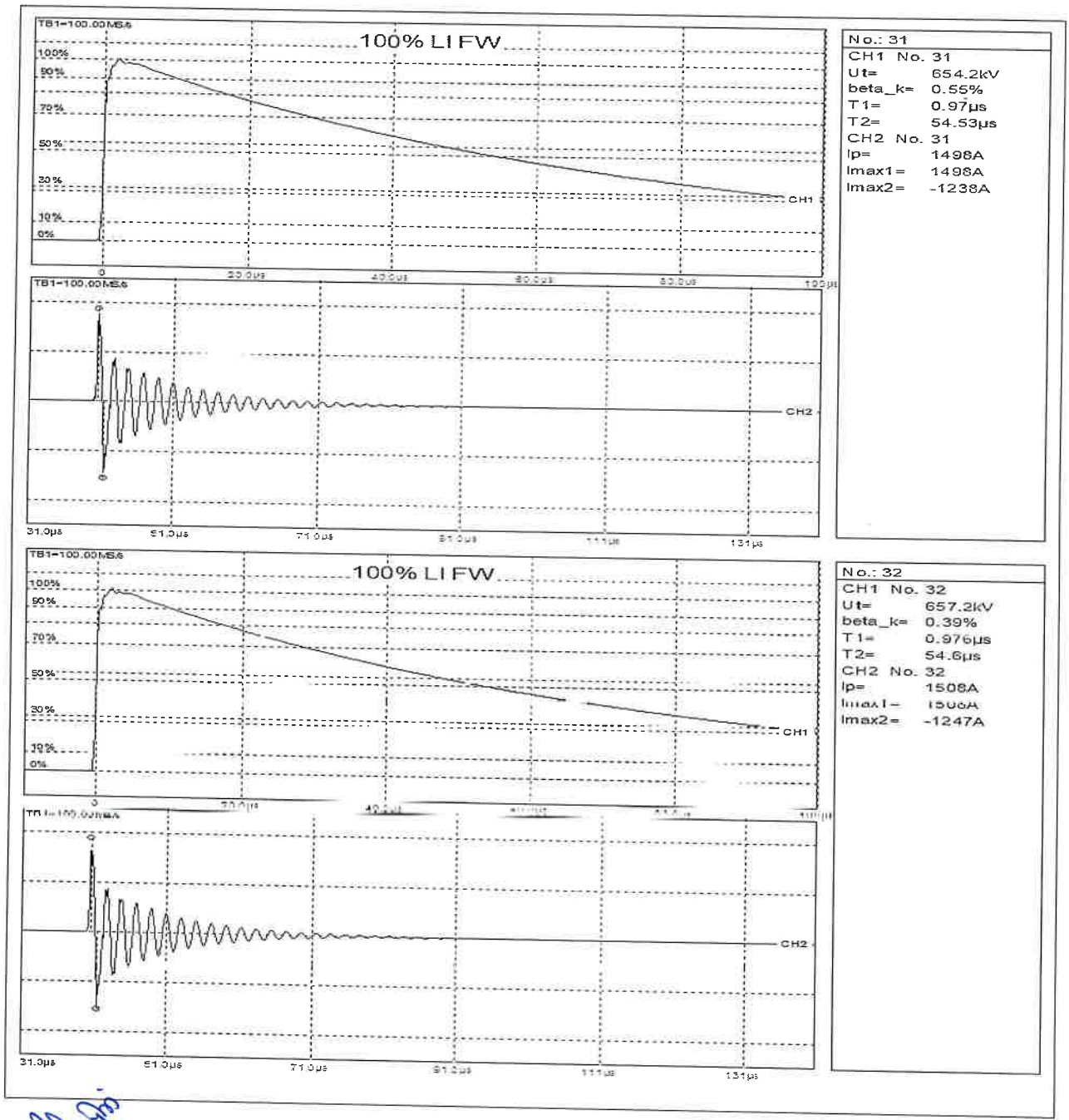

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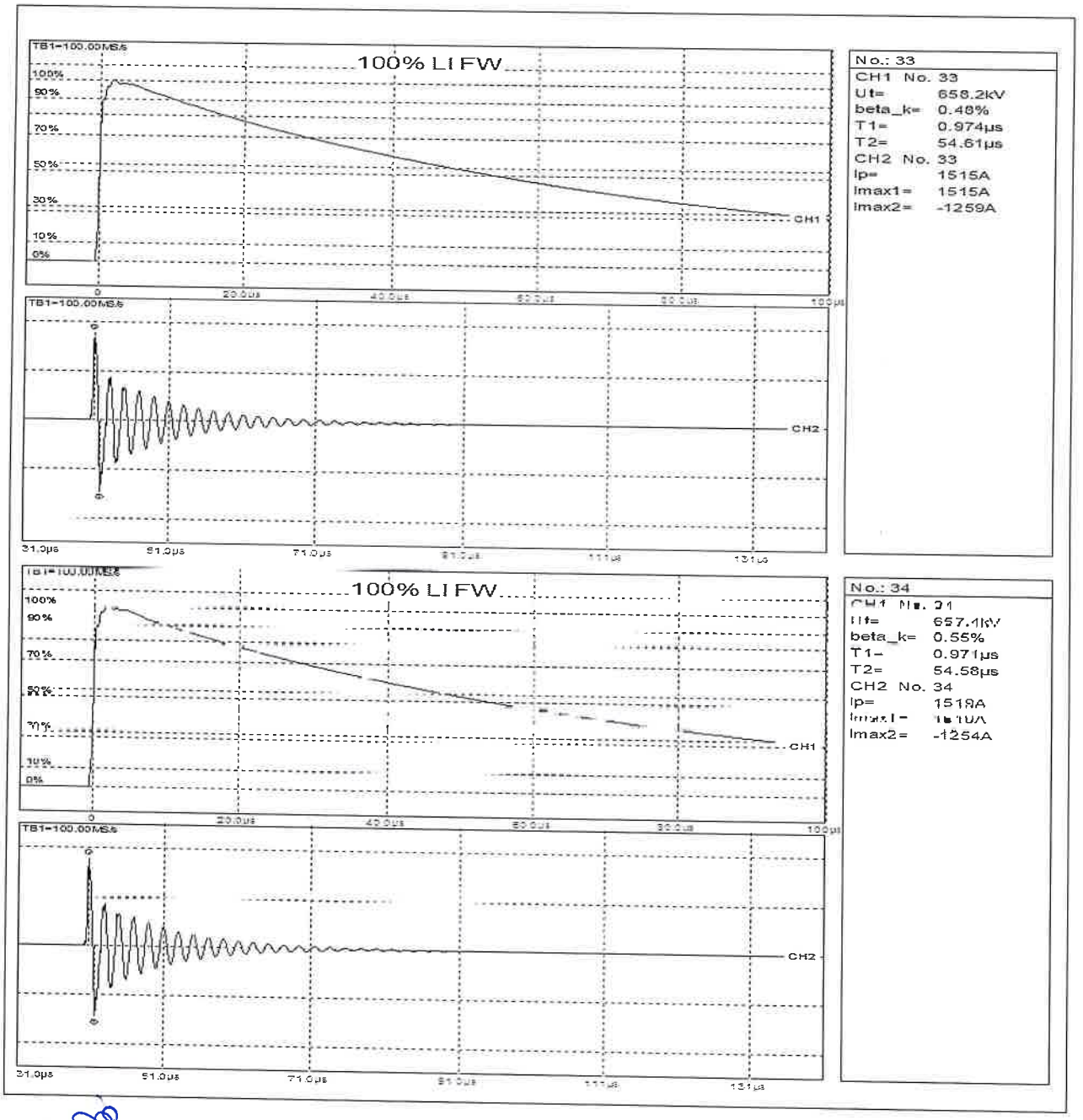

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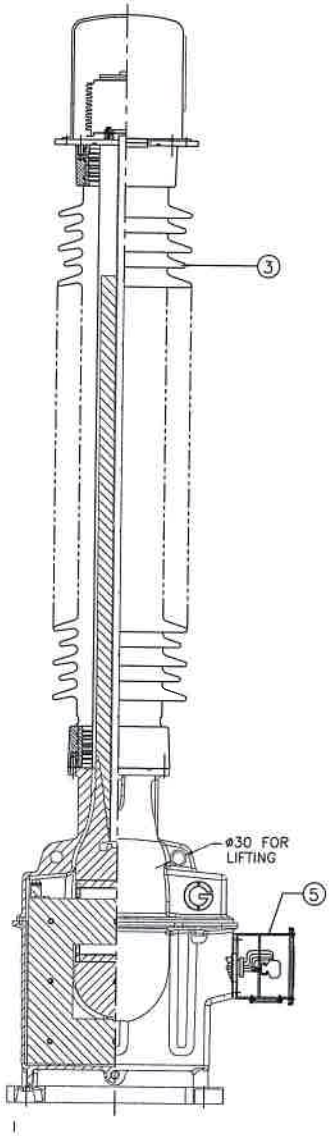
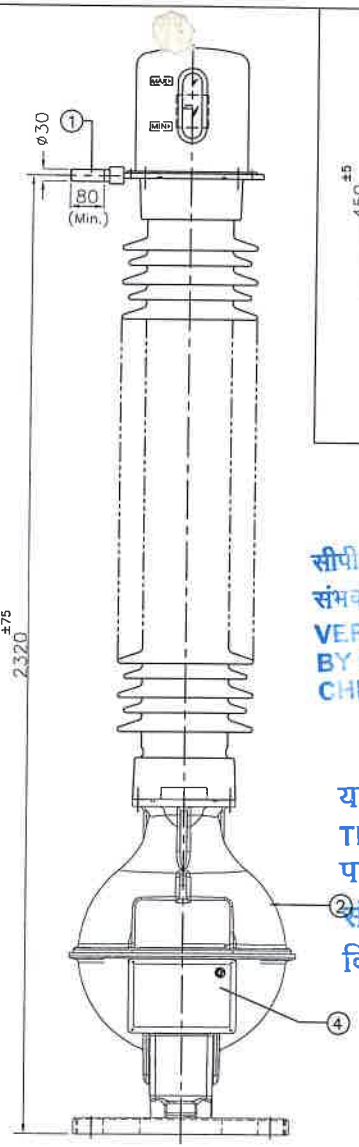
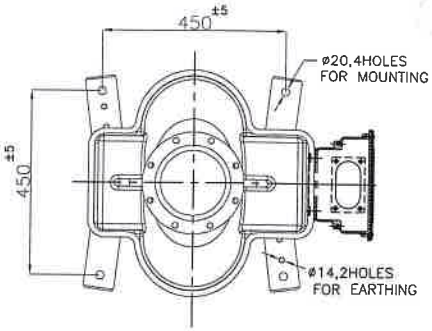
IF IN DOUBT ASK



SECTIONAL SIDE VIEW



FRONT VIEW



MOUNTING DETAILS

TOP VIEW

ITEM NO.	QTY.	DESCRIPTION	MATERIAL
1	1	PRIMARY TERMINAL-ø30x80L(Min.)	COPPER
2	1	TANK	ALUMINIUM CAST
3	1	PORCELAIN INSULATOR	PORCELAIN BROWN COLOUR
4	1	RATING & SCHEMATIC DIAGRAM	ALUMINIUM
5	1	SECONDARY TERMINAL BOX	ALUMINIUM CAST

TECHNICAL SPECIFICATIONS
132 kV INDUCTIVE VOLTAGE TRANSFORMER

SPECIFICATION	UNIT	RATING
HIGHEST SYSTEM VOLTAGE (Ph-Ph)	Kilo Volts	145
HIGHEST SYSTEM VOLTAGE (Ph-E)	Kilo Volts	145/√3
1 MIN. AC WITHSTAND VOLTAGE	Kilo Volts	275
LIGHTNING IMPULSE WITHSTAND VOLTAGE	Kilo Volts(Peak)	650
TOTAL CREEPAGE DISTANCE(MINIMUM)	Milimeter	3625
TOTAL WEIGHT (±10%)	Kilogram	400
OIL VOLUME (±10%)	Litre	90
APPLICABLE STANDARDS	-	IEC:61869-1&3
VOLTAGE FACTOR	= 1.2 CONTINUOUS/1.5-30SEC.	
INSULATION CLASS	A	

NOTE :

1) PRIMARY WINDING NO OF TURNS : 37120
2) CROSS SECTION AREA OF PRIMARY WIDING : 38 SWG. (0.01824 Sq.mm)
3) SECONDARY WINDING :

NO.OF WINDING	NUMBER OF TURNS	SWG/Sq.mm
WINDING-I	31	(14x2)/6.48
WINDING-II	31	(14x2)/6.48
WINDING-III	31	(14x4)/12.97

4) CORE MATERIAL : CRGO M4

सीपीआरआई के इस आरेख का सत्यापन जहाँ भी संभव हो, केवल आयाम जाँच तक ही सीमित है।
VERIFICATION OF THIS DRAWING BY CPRI IS LIMITED TO DIMENSIONAL CHECK ONLY WHEREVER POSSIBLE

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परीक्षण रिपोर्ट / TEST REPORT सं / NUMBER : CPRIHYDUHV24T0115
दिनांक / Date : 01.04.2024

परीक्षण इंजीनियर
यूएचवीआरएल, सीपीआरआई
हैदराबाद
Test Engineer
UHVRL, CPRI,
HYDERABAD

NOTE : PLEASE REFER INSTRUCTION MANUAL FOR HANDLING & TRANSPORTATION OF IVT.

Dimensions shown are tentative and may change during detailed design/engineering.

NO	REVISION	SIGN	DATE	NO	REVISION	SIGN	DATE	NO	REVISION	SIGN	DATE
R6				R4				R2			
R5				R3				R1			

	SIGN	NAME
DRN		STJ
CHD		SDS
APPD		SDS

GENERAL ARRANGEMENT DRAWING FOR 132 kV INDUCTIVE VOLTAGE TRANSFORMER

SCALE N.T.S. | DATE : 14.12.2023 | ALL DIMENSIONS ARE IN mm

CG Power and Industrial Solutions Limited, Aurangabad

DRG.NO:-413695829 IVT4900 GA/R0

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सं / NUMBER : CPRI/UHV/24701S
दिनांक / Date : 01.04.2024

IF IN DOUBT ASK

परीक्षण इंजीनियर
यूएचवीआरएल, सीपीआरआई
हैदराबाद
Test Engineer
UHVRL, CPRI,
HYDERABAD

±1
175
±0.2
160

132 kV INDUCTIVE VOLTAGE TRANSFORMER

RATING & SCHEMATIC DIAGRAM

MFG. BY :- CG Power and Industrial Solutions Limited, D2 MIDC Waluj, Aurangabad

MADE IN INDIA

Customer : CG Power and Industrial Solutions Limited, Aurangabad (MSETCL)

PO NO. : -

TYPE	VEOT:145/√3/50	S.O.NO.	413695829	YEAR	2024
SPEC.	IS : 16227-1&3/ IEC : 61869-1&3	RATED FREQ.	50 Hz	IVT SR.NO	

	A N	WINDING-I 1a - 1n	WINDING-II 2a - 2n	WINDING-III 3a - 3n
VOLTS	132000/√3	110/√3	110/√3	110/√3
BURDEN (VA)	-	200	50	50
ACCURACY CLASS	-	3P	3P	0.5

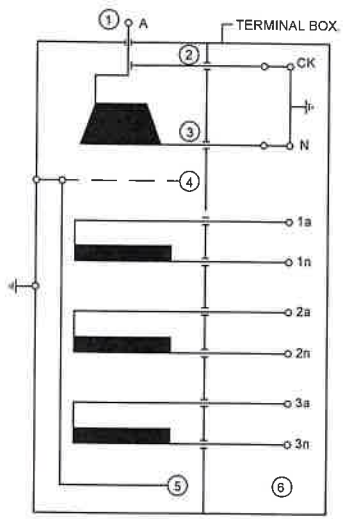
HIGHEST SYSTEM VOLTAGE	145 kV	INSULATION LEVEL	275 kV/ 650 kVp
VOLTAGE FACTOR	1.2 CONT./1.5-30SEC.	CREEPAGE DISTANCE	3625 mm
TOTAL WEIGHT	400 ±10% Kg	OIL VOLUME	90 ±10% Litre

1. PRIMARY TERMINAL (H.V.)
2. CAPACITANCE TAN DELTA LEADOUT FROM BUSHING ACTIVE PART.
3. NEUTRAL END OF HV WINDING.
4. EARTH SHIELD BETWEEN HV & LV. (CONNECTED TO EARTH INSIDE HOUSING.)
5. CORE EARTHING LEAD (CONNECTED TO EARTH INSIDE HOUSING)
6. SECONDARY LEADOUT.

CAUTION:

-ENSURE LV TERMINALS ARE NOT SHORTED IN OPERATION.

-ENSURE Ck AND N ARE CONNECTED TO EARTH BEFORE CHARGING IVT.



R0

80 ±0.2

95 ±1

4 HOLES OF ø4.5 mm

MATERIAL : AL.(PHOTO METALLIC)

IVT SR.NOs. : 234656

NO	REVISION	SIGN	DATE
R6			
R5			
R4			
R3			
R2			
R1			

	SIGN	NAME
DRN		KSH
CHD		STJ
APPD		SDS

RATING & SCHEMATIC DIAGRAM
132 KV INDUCTIVE VOLTAGE TRANSFORMER

SCALE 1:1 DATE : 15.12.2023 ALL DIMENSIONS ARE IN mm

CG Power and Industrial Solutions Limited, Aurangabad

DRG.NO:-413695829 IVT4900 RS_R0