



检测报告

Test Report

报告编号 DY15-K085

REPORT NO.

产品名称 Latching Relay

NAME OF SAMPLE

委托单位 BOLTA ELECTRIC (SHENZHEN) CO., LTD.

CUSTOMER

检测类别 Entrusted Test

TEST CATEGORY

浙江省低压电器产品质量检验中心

Inspection Center of Products' Quality of Low Voltage Electric
Apparatus in Zhejiang Province



声 明

- 一. 本检测报告未盖本中心公章一律无效。
- 二. 受试单位不得自行复制本报告，如确有需要，应持公函或单位介绍信来本中心申请复制。
- 三. 本检测报告无编制、审核及批准人签字无效。
- 四. 本检测报告涂改无效。
- 五. 检测结果只与所试样品有关。
- 六. 对本检测报告若有异议，应于报告收到之日起十五日内向本中心提出，逾期不再受理。

DECLARATION

1. The test report is invalid if it is not stamped by our station.
2. The inspected unit is not allowed to copy the test report. If needed, the test report should be copied at our station under the application by the inspected unit with its official letter or letter of introduction.
3. The test report is invalid if it is not signed by the compiler, the approval person and the check person of our station.
4. The test report is invalid if it is altered.
5. All the inspection results only relate to the samples.
6. If there are any objections against the test report, the objections should be raised within 15 days after the date of receiving the test report. We will not accept them when exceeding the time limit.

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浙江省低压电器产品质量检验中心

Inspection Center of Products' Quality of Low Voltage Electric
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检 测 报 告

TEST REPORT

样品名称 Name of Sample	Latching Relay	检测类别 Test Category	Entrusted test
型号规格 Model 等 级 Grade	BDJ006-100A-009 /	商 标 Trademark	/
额定电流 Rated current	100A	额定电压 Rated voltage	AC250V
技术参数 Technical parameter	Us:12VDC UC3 Single-phase..	频 率 Frequency	50Hz
生产日期 Date of Manufacture	/	批号或编号 Serial No.	/
委托单位(客户) 名 称 Customer 地 址 Address	BOLTA ELECTRIC (SHENZHEN) CO., LTD. 601, 6th Floor, Bldg 150, Guan long Village East, Xili, Nanshan, Shenzhen, Guangdong, P.R.China	受检单位 Inspected Entity	/
		生产单位 Manufacturer	BOLTA ELECTRIC (SHENZHEN) CO., LTD.
抽样者 Sampling Organization	/	抽样基数 Number of Samples	/
抽样地点 Sample Location	/	抽样数量 Number of Sample(s) for Inspection	/
抽样日期 Sampling Date	/	到样数量 Receiving Number of Sample(s)	4 pcs
送样者 Sample(s) Deliverer	BOLTA ELECTRIC (SHENZHEN) CO., LTD.	到样日期 Receiving Date of Sample(s)	November 15, 2015
检测依据 Test Requirements	IEC60947-5-1、IEC62055-31:2005 and the entrusted requirement		
样品描述、状态 Description and Condition of Sample(s)	Be fit for test		
检测日期 Test Date	From December 1, 2015 to December 31, 2015	检测地点 Test location	No. 400 Guangqiong Road, Jiaxing City
检测结论 Test Summary	The entrusted samples have been tested according to IEC60947-5-1、IEC62055-31:2005 and the entrusted requirement The test results of every test item comply with the requirements. Test Seal Date of Approval: February 29, 2016		
备 注 Remarks	/		

批 准: 王同忠
Approved by

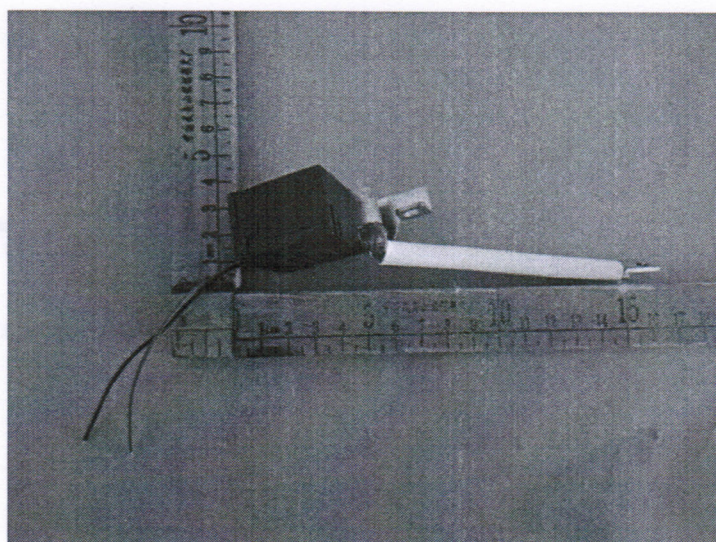
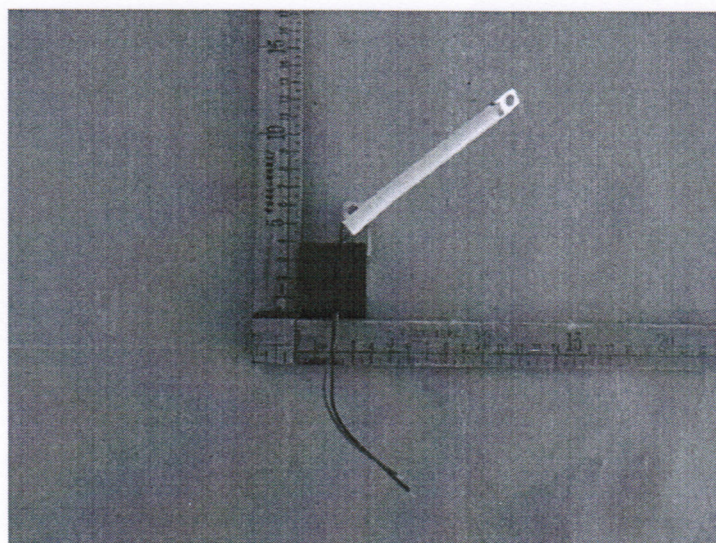
审 核: 王同忠
Verified by

编 制: 朱建超
Complied by

检 测 报 告

TEST REPORT

样品外观及标识照片
(Photo and Nameplate of the Inspected Sample(s))



检测报告的其它说明
(Other Explanation of the Test Report)

Test case verdicts:

Test case does not apply to the test object: N/A
Test item does meet the requirement : P(pass)
Test item does not meet the requirement : F(fail)

检 测 报 告

TEST REPORT

序号 Series Number	检测项目 Test Items	依据标准条款 Clause of standard	样品编号 Serial No. of samples	单项结论 Item Conclusion
1	Electrical endurance	IEC60947-5-1 Annex C IEC62055-31 C.3 and the entrusted requirement	1#	P
2	Minimum switched current	C.7		
3	Power consumption	7.3		
4	Dielectric properties Dielectric strength	IEC60947-5-1 8.3.3.4 IEC62055-31 C.8		
5	Performance under conditional short-circuit current Short-circuit current carrying capacity (Test 1)	IEC60947-5-1 8.3.4 IEC62055-31 C.6	2#	P
	Minimum switched current	C.7		
	Power consumption	7.3		
	Dielectric properties Dielectric strength	IEC60947-5-1 8.3.3.4 IEC62055-31 C.8		
6	Performance under conditional short-circuit current Short-circuit current carrying capacity (Test 2)	IEC60947-5-1 8.3.4 IEC62055-31 C.6	3#	P
7	Minimum switched current	C.7		
8	Power consumption	7.3		
9	Dielectric properties Dielectric strength	IEC60947-5-1 8.3.3.4 IEC62055-31 C.8		
10	Normal operation	C.2	4#	P
11	Line to load voltage surge withstand	C.4		
12	Making and breaking capacities of switching elements under abnormal conditions Fault current making capacity	IEC60947-5-1 8.3.3.5.3 IEC62055-31 C.5		
13	Minimum switched current	C.7		
14	Power consumption	7.3		
15	Dielectric properties Dielectric strength	IEC60947-5-1 8.3.3.4 IEC62055-31 C.8		
	(Blank below)			

Note.: The serial numbers of samples (1#、2#、3#、4#) in this page and in this text report stand for the serial numbers on the tested samples (DY15-K085- 1#、DY15-K085- 2#、DY15-K085- 3#、DY15-K085- 4#).

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Clause	Test items and test requirements	Result of measurement or observation	Conclusion
IEC60947-5 -1 Annex C IEC62055-3 1 C.3 and the entrusted requirement	Electrical endurance Make and break: a sequence Test voltage (r.m.s.): $250^{+5\%}$ (V) Test current (r.m.s.): $100^{+5\%}$ (A) $\cos\phi$: $1.00_{-0.05}$ Number of operating cycles: 5000 Make time: 10s Break time: 20s b sequence Test voltage (r.m.s.): $250^{+5\%}$ (V) Test current (r.m.s.): $100^{+5\%}$ (A) $\cos\phi$: 0.5 ± 0.05 Number of operating cycles: 5000 Make time: 10s Break time: 20s Conductor : 35×1 ($\text{mm}^2 \times \text{m}$) Control voltage: DC12V Acceptance criteria: 1) the sample shall show no signs of malfunction, sticking of contacts or reluctance to latch; 2) the contacts shall open on the first attempt Serial No. of oscillograms:	1#	P
		253 101 1.0 5000 See the oscillograms 20s 253 101 0.50 5000 See the oscillograms 20s 35×1 12 No signs Yes S1511085901 ~ S1511085906	
C.7	Minimum switched current Test voltage (r.m.s.): $250^{+5\%}$ (V) Test current (r.m.s.): $0.25^{+5\%}$ (A) $\cos\phi$: $1.0_{-0.05}$ Number of operating cycles: 10 Make time: $10s+5\%$ Break time: 10s Conductor: 35×1 ($\text{mm}^2 \times \text{m}$) Control voltage: DC12V Acceptance criteria: 1) Test current shall successfully conduct each time the contacts are in the closed position; 2) Test current shall successfully break each time the contacts are in the open position.	253 0.26 1.0 10 10s 10s 35×1 12 Yes Yes	P

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TEST REPORT

Clause	Test items and test requirements	Result of measurement or observation	Conclusion
7.3	Power consumption Test current: 100A Conductor: 35×1 (mm ² ×m) Measurement of power consumption: Test position: main circuit Incoming terminal 、 outgoing terminal Voltage-drop (mV) Power consumption (W) ≤ 20W	1#	P
		100	
		35×1	
		57.3	
		5.73	

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TEST REPORT

Clause	Test items and test requirements	Result of measurement or observation	Conclusion
IEC60947-5-1 8.3.3.4 IEC62055-31 C.8	Dielectric properties	1#	P
	Dielectric strength		
	1). Measuring insulation resistance		
	Test position:		
	In the open position:		
	Between the supply incoming terminal and the outgoing terminal: $\geq 10 \text{ M}\Omega$	$> 500 \text{ M}\Omega$	
	In the closed position:		
	Between the supply incoming terminals connected together and the metal foil in contact with the outer surface of the enclosure: $\geq 10 \text{ M}\Omega$	$> 500 \text{ M}\Omega$	
	2). Impulse withstand voltage test		
	Ambient temperature: $^{\circ}\text{C}$	20.8	
	Impulse voltage:		
	In the open position 1: 1000V	1000	
	In the closed position 2: 1000V	1000	
	Impulse voltage wave : 1.2/50 μs		
	Interval: $\geq 1\text{s}$	10	
	Test times:: 3 times for the positive and negative polarity each.		
	Applied position:		
	In the open position:		
	Between the supply incoming terminal and the outgoing terminal;	No unintentional disruptive discharges	
	In the closed position:		
	Between the supply incoming terminals connected together and the metal foil in contact with the outer surface of the enclosure;	No unintentional disruptive discharges	
	3) Power frequency withstand voltage test		
	Ambient temperature: $^{\circ}\text{C}$	20.8	
	Test voltage:		
	In the open position 1 2000V	2000	
	In the closed position 2 2000V	2000	
	Time of applying voltage: 1min	1	
	Applied position:		
	In the open position:		
	Between the supply incoming terminal and the outgoing terminal;	No flashover or puncture	
	In the closed position:		
	Between the supply incoming terminals connected together and the metal foil in contact with the outer surface of the enclosure;	No flashover or puncture	

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TEST REPORT

Clause	Test items and test requirements	Result of measurement or observation	Conclusion
IEC60947-5-1 8.3.4 IEC62055-31 C.6	Performance under conditional short-circuit current Pre-operation of carrying Test voltage (r.m.s.): $250 \pm 5\%$ (V) Test current (r.m.s.): $100^{+5\%}$ (A) cosφ: 1.0 Conductor: 35×1 (mm ² × m) Number of operating cycles: 3 Make time: 5s , Break time: 5s The sample shall show no signs of malfunction, sticking or welding of contacts or reluctance to latch; Serial No. of the oscillograms: Short-circuit current carrying capacity (Test 1) Test voltage (r.m.s.): $250 \pm 5\%$ (V) Test current (r.m.s.): $6.00^{+5\%}$ (kA) cosφ: $0.70_{-0.05}$ Control voltage: DC12V Conductor: 35×1 (mm ² × m) Electrical angle: 0° Test sequence: O-t-O-t-O Interval: $t \geq 1\text{min}$ Screw: M5 Tightening torque: $2.0\text{N} \cdot \text{m}$ Ip max (kA) I ² t max (kA ² s) Duration: max (ms) Acceptance criteria: (1) It is permissible that the contacts may weld or burn away; (2) The sample shall show no signs of explosion or burning; (3)The surroundings of the payment meter shall not be endangered; Serial No. of the oscillogram of the prospective current: Serial No. of the oscillograms:	2#	P
		253 101 1.0 35 × 1 3 No signs S1511085907 ~ S1511085909 252 6.07 0.68 12 35 × 1 0° 1 M5 2.0 9.30 466 11.6 No No signs No Y1511085001 S1511085001 ~ S1511085003	

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TEST REPORT

Clause	Test items and test requirements	Result of measurement or observation	Conclusion
		2#	
C.7	Minimum switched current Test voltage (r.m.s.): $250^{+5\%}$ (V) Test current (r.m.s.): $0.25^{+5\%}$ (A) $\cos\phi$: $1.0_{-0.05}$ Number of operating cycles: 10 Make time: $10s^{+5\%}$ Break time: 10s Conductor: 35×1 ($\text{mm}^2 \times \text{m}$) Control voltage: DC12V Acceptance criteria: 1) Test current shall successfully conduct each time the contacts are in the closed position; 2) Test current shall successfully break each time the contacts are in the open position.	253 0.26 1.0 10 10s 10s 35×1 12 Yes Yes	P
7.3	Power consumption Test current: 100A Conductor: 35×1 ($\text{mm}^2 \times \text{m}$) Measurement of power consumption: Test position: main circuit Incoming terminal、outgoing terminal Voltage-drop (mV) Power consumption (W) $\leq 20\text{W}$	100 35×1 52.6 5.26	P

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TEST REPORT

Clause	Test items and test requirements	Result of measurement or observation	Conclusion
IEC60947-5-1 8.3.3.4 IEC62055-31 C.8	Dielectric property test	2#	P
	Dielectric strength		
	1). Measuring insulation resistance		
	Test position:		
	In the open position:		
	Between the supply incoming terminal and the outgoing terminal $\geq 10 \text{ M}\Omega$	$> 500 \text{ M}\Omega$	
	In the closed position:		
	Between the supply incoming terminals connected together and the metal foil in contact with the outer surface of the enclosure: $\geq 10 \text{ M}\Omega$	$> 500 \text{ M}\Omega$	
	2). Impulse withstand voltage test		
	Ambient temperature: $^{\circ}\text{C}$	20.8	
	Impulse voltage:		
	In the open position 1 1000V	1000	
	In the closed position 2 1000V	1000	
	Impulse voltage wave: $1.2/50 \mu\text{s}$		
	Interval: $\geq 1\text{s}$	10	
	Test times: 3 times for the positive and negative polarity each.		
	Applied position:		
	In the open position:		
	Between the supply incoming terminal and the outgoing terminal;	No unintentional disruptive discharges	
	In the closed position:		
	Between the supply incoming terminals connected together and the metal foil in contact with the outer surface of the enclosure;	No unintentional disruptive discharges	
	3). Power frequency withstand voltage test		
	Ambient temperature: $^{\circ}\text{C}$	20.8	
	Test voltage:		
	In the open position 1: 2000V	2000	
	In the closed position 2: 2000V	2000	
	Time of applying voltage: 1min	1	
	Applied position:		
	In the open position:		
	Between the supply incoming terminal and the outgoing terminal;	No flashover or puncture	
	In the closed position:		
	Between the supply incoming terminals connected together and the metal foil in contact with the outer surface of the enclosure;	No flashover or puncture	

检测报告

TEST REPORT

Clause	Test items and test requirements	Result of measurement or observation	Conclusion
IEC60947-5-1 8.3.4 IEC62055-31 C.6	Performance under conditional short-circuit current	3#	P
	Pre-operation of carrying		
	Test voltage (r.m.s.): $250 \pm 5\%$ (V)	253	
	Test current (r.m.s.): $100^{+5\%}$ (A)	101	
	$\cos\phi$: 1.0	1.0	
	Conductor: 35×1 (mm ² × m)	35×1	
	Number of operating cycles: 3	3	
	Make time: 5s		
	Break time: 5s		
	The sample shall show no signs of malfunction, sticking or welding of contacts or reluctance to latch;	No signs	
	Serial No. of the oscillograms:	S1511085910 ~ S1511085912	
	Short-circuit current carrying capacity (Test 2)		
	Test voltage (r.m.s.): $250 \pm 5\%$ (V)	252	
	Test current (r.m.s.): $3.00^{+5\%}$ (kA)	3.05	
	$\cos\phi$: $0.90_{-0.05}$	0.87	
	Control voltage: DC12V	12	
	Conductor: 35×1 (mm ² × m)	35×1	
	Electrical angle: 0°	0°	
	Test sequence: O-t-O-t-O		
	Interval: $t \geq 1$ min	1	
	Screw: M5	M5	
	Tightening torque: 2.0N · m	2.0	
	I_p max (kA)	4.29	
	I^2t max (kA ² s)	95.3	
	Duration: max (ms)	10.7	
	Acceptance criteria:		
	1) There shall be no signs of sticking or welding of contacts;	No signs	
	2) There shall be no signs of burning or smoking of the enclosure and the conductors;	No signs	
	3) The surroundings of the payment meter shall not be endangered;	No	
	Cooling the sample for more than 5 min after the test, the sample shall operate normally when applying the control voltage.	Yes	
	Serial No. of the oscillogram of the prospective current:	Y1511085002	
	Serial No. of the oscillograms:	S1511085004 ~ S1511085006	

TEST REPORT

Clause	Test items and test requirements	Result of measurement or observation	Conclusion
		3#	
C.7	Minimum switched current Test voltage (r.m.s.): $250^{+5\%}$ (V) Test current (r.m.s.): $0.25^{-5\%}$ (A) $\cos\phi$: $1.0_{-0.05}$ Number of operating cycles: 10 Make time: $10s^{+5\%}$ Break time: 10s Conductor: 35×1 ($mm^2 \times m$) Control voltage: DC12V Acceptance criteria: 1) Test current shall successfully conduct each time the contacts are in the closed position; 2) Test current shall successfully break each time the contacts are in the open position.	253 0.26 1.0 10 10s 10s 35×1 12 Yes Yes	P
7.3	Power consumption Test current: 100A Conductor: 35×1 ($mm^2 \times m$) Measurement of power consumption: Test position: main circuit Incoming terminal、 outgoing terminal Voltage-drop (mV) Power consumption (W) $\leq 20W$	100 35×1 56.3 5.63	P

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Clause	Test items and test requirements	Result of measurement or observation	Conclusion
IEC60947-5-1 8.3.3.4 IEC62055-31 C.8	Dielectric property test	3#	P
	Dielectric strength 1). Measuring insulation resistance Test position: In the open position: Between the supply incoming terminal and the outgoing terminal $\geq 10 \text{ M}\Omega$ In the closed position: Between the supply incoming terminals connected together and the metal foil in contact with the outer surface of the enclosure: $\geq 10 \text{ M}\Omega$ 2). Impulse withstand voltage test Ambient temperature: $^{\circ}\text{C}$ Impulse voltage: In the open position 1 1000V In the closed position 2 1000V Impulse voltage wave: 1.2/50 μs Interval: $\geq 1\text{s}$ Test times: 3 times for the positive and negative polarity each. Applied position: In the open position: Between the supply incoming terminal and the outgoing terminal; In the closed position: Between the supply incoming terminals connected together and the metal foil in contact with the outer surface of the enclosure; 3). Power frequency withstand voltage test Ambient temperature: $^{\circ}\text{C}$ Test voltage: In the open position 1: 2000V In the closed position 2: 2000V Time of applying voltage: 1min Applied position: In the open position: Between the supply incoming terminal and the outgoing terminal; In the closed position: Between the supply incoming terminals connected together and the metal foil in contact with the outer surface of the enclosure;	$> 500\text{M}\Omega$ $> 500\text{M}\Omega$ 20.8 1000 1000 10 No unintentional disruptive discharges No unintentional disruptive discharges 20.8 2000 2000 1 No flashover or puncture No flashover or puncture	

检测报告

TEST REPORT

Clause	Test items and test requirements	Result of measurement or observation	Conclusion
C.2	Normal operation Test voltage (r.m.s.): $250^{+5\%}$ (V) Test current (r.m.s.): $100^{+5\%}$ (A) $\cos\varphi$: 1.0 Number of operating cycles: 3 Conductor: 35×1 ($\text{mm}^2 \times \text{m}$) Control voltage: DC12V $\times$ 80% The sample shall operate normally. Serial No. of the oscillograms:	4#	P
		253 101 1.0 3 35×1 9.6 Operated normally S1511085913 ~ S1511085915	

检 测 报 告

TEST REPORT

Clause	Test items and test requirements	Result of measurement or observation	Conclusion
C.4	Line to load voltage surge withstand Ambient temperature: $+25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Impulse voltage wave: $1.2/50 \mu\text{s}$ Test voltage: 20.0kV Interval: 60s Test times: Positive and negative poles: 5 times each Applied position: Between the main circuit and the control circuit.	4#	P
		20.6	
		20.1 60	
		No unintentional disruptive discharges	

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TEST REPORT

Clause	Test items and test requirements	Result of measurement or observation	Conclusion
		4#	
IEC60947-5-1 8.3.3.5.3 IEC62055-31 C.5	Making and breaking capacities of switching elements under abnormal conditions Fault current making capacity Test voltage (r.m.s.): $250 \pm 5\%$ (V) Test current (r.m.s.): $3.00^{+5\%}$ (kA) $\cos\phi$: $0.90_{-0.05}$ Control voltage: DC12V Conductor: 35×1 (mm² × m) Test sequence: "CO" 3 times Interval: ≥ 1 min Screw: M5 Tightening torque: $2.0\text{N} \cdot \text{m}$ Duration: max (ms) Arcing time: max (ms) I_p max (kA) I^2t max (kA²s) Acceptance criteria: 1) There shall be no signs of sticking or welding of contacts; 2) There shall be no signs of burning or smoking of the enclosure and the conductors; 3) The surroundings of the payment meter shall not be endangered; Serial No. of the oscillogram of the prospective current: Serial No. of the oscillograms:	252 3.05 0.87 12 35×1 3 1 M5 2.0 8.71 3.78 3.73 50.6 No signs No signs No Y1511085002 S1511085007 ~ S1511085009	P

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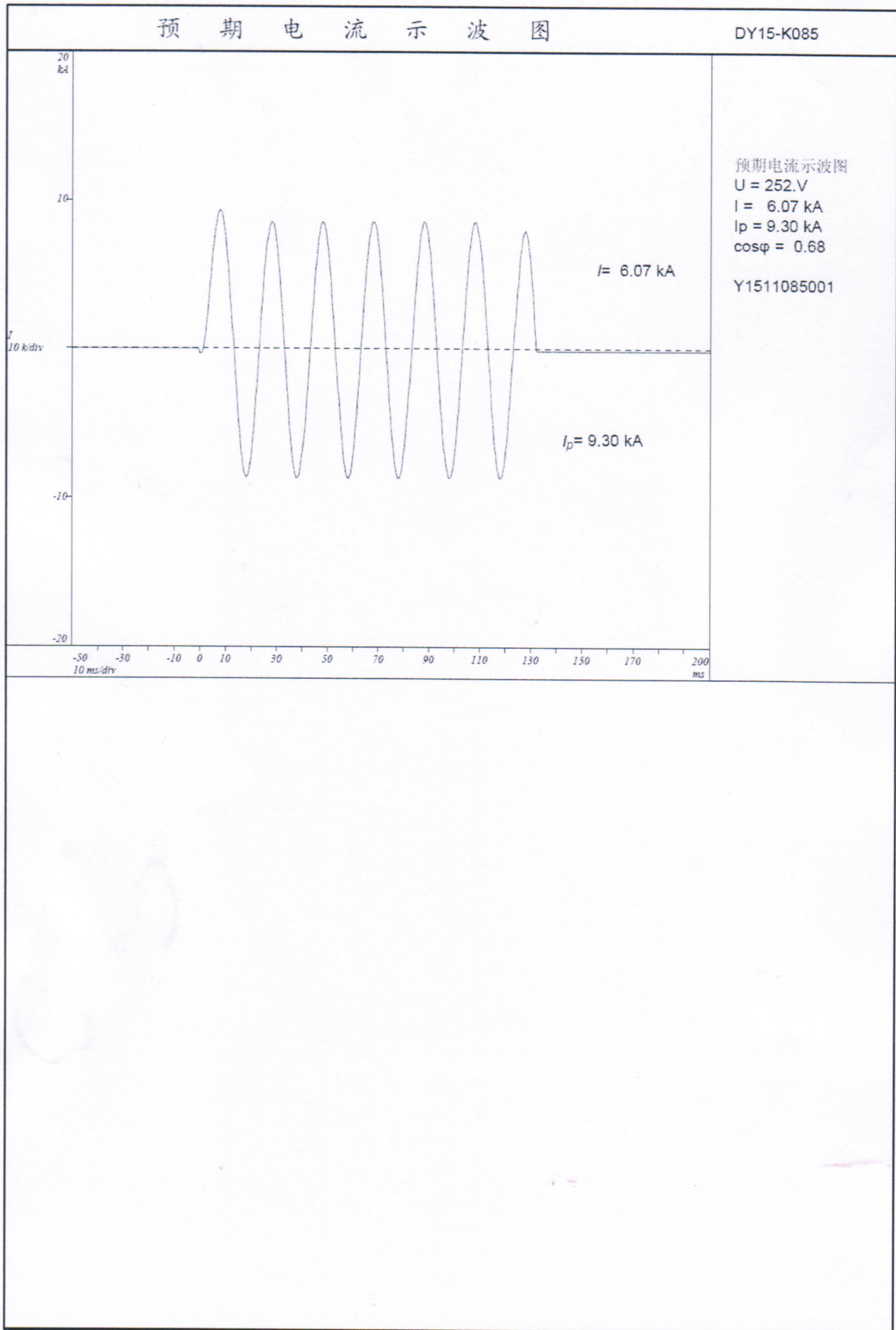
TEST REPORT

Clause	Test items and test requirements	Result of measurement or observation	Conclusion
C.7	Minimum switched current Test voltage (r.m.s.): $250^{+5\%}$ (V) Test current (r.m.s.): $0.25^{+5\%}$ (A) $\cos\varphi$: $1.0_{-0.05}$ Number of operating cycles: 10 Make time: $10s+5\%$ Break time: 10s Conductor: 35×1 ($\text{mm}^2 \times \text{m}$) Control voltage: DC12V Acceptance criteria: 1) Test current shall successfully conduct each time the contacts are in the closed position; 2) Test current shall successfully break each time the contacts are in the open position.	4#	P
		253	
		0.26	
		1.0	
		10	
		10s	
		10s	
		35×1	
		12	
		Yes	
		Yes	
7.3	Power consumption Test current: 100A Conductor: 35×1 ($\text{mm}^2 \times \text{m}$) Measurement of power consumption: Test position: main circuit Incoming terminal、outgoing terminal Voltage-drop (mV) Power consumption (W) $\leq 20\text{W}$	100 35×1 59.2 5.92	P

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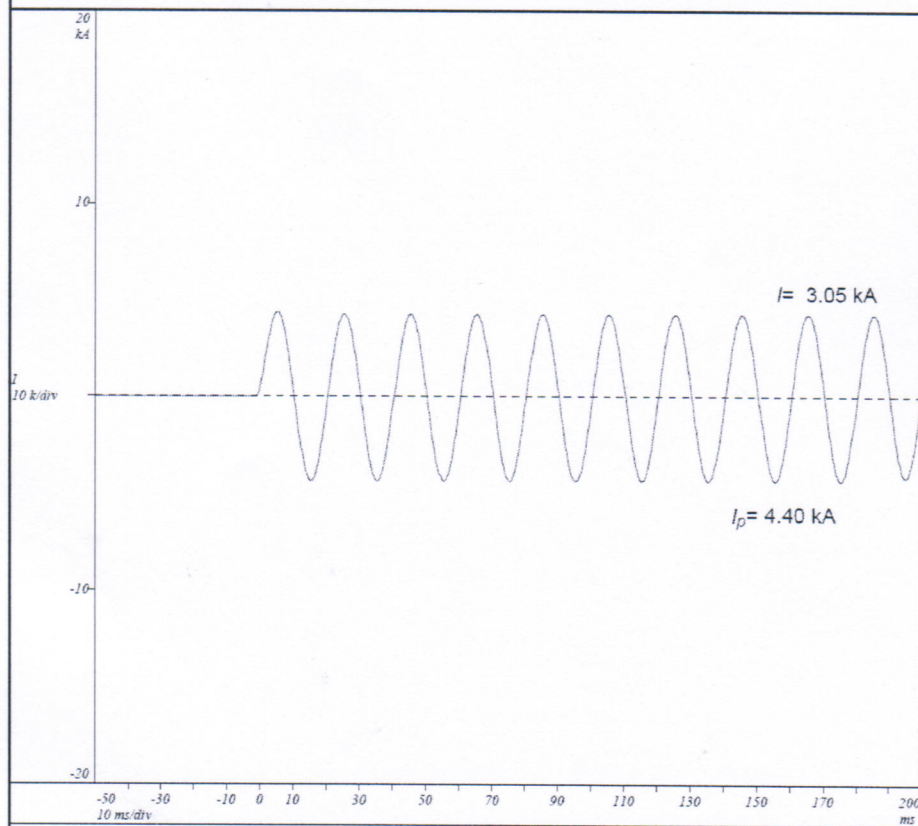
TEST REPORT

Clause	Test items and test requirements	Result of measurement or observation	Conclusion
IEC60947-5-1 8.3.3.4 IEC62055-31 C.8	Dielectric properties	4#	P
	Dielectric strength		
	1). Measuring insulation resistance:		
	Test position:		
	In the open position:		
	Between the supply incoming terminal and the outgoing terminal $\geq 10 \text{ M}\Omega$	$> 500 \text{ M}\Omega$	
	In the closed position:		
	Between the supply incoming terminals connected together and the metal foil in contact with the outer surface of the enclosure $\geq 10 \text{ M}\Omega$	$> 500 \text{ M}\Omega$	
	2). Impulse withstand voltage test		
	Ambient temperature: $^{\circ}\text{C}$	20.8	
	Impulse voltage:		
	In the open position 1: 1000V	1000	
	In the closed position 2: 1000V	1000	
	Impulse voltage wave: $1.2/50 \mu\text{s}$		
	Interval: $\geq 1\text{s}$	10	
	Test times: 3 times for the positive and negative polarity each.		
	Applied position:		
	In the open position:		
	Between the supply incoming terminal and the outgoing terminal;	No unintentional disruptive discharges	
	In the closed position:		
	Between the supply incoming terminals connected together and the metal foil in contact with the outer surface of the enclosure;	No unintentional disruptive discharges	
	3). Power frequency withstand voltage test		
	Ambient temperature: $^{\circ}\text{C}$	20.8	
	Test voltage:		
	In the open position 1: 2000V	2000	
	In the closed position 2: 2000V	2000	
	Time of applying voltage: 1min	1	
	Applied position:		
	In the open position:		
	Between the supply incoming terminal and the outgoing terminal;	No flashover or puncture	
	In the closed position:		
	Between the supply incoming terminals connected together and the metal foil in contact with the outer surface of the enclosure;	No flashover or puncture	
	TEST REPORT END		



预期电流示波图

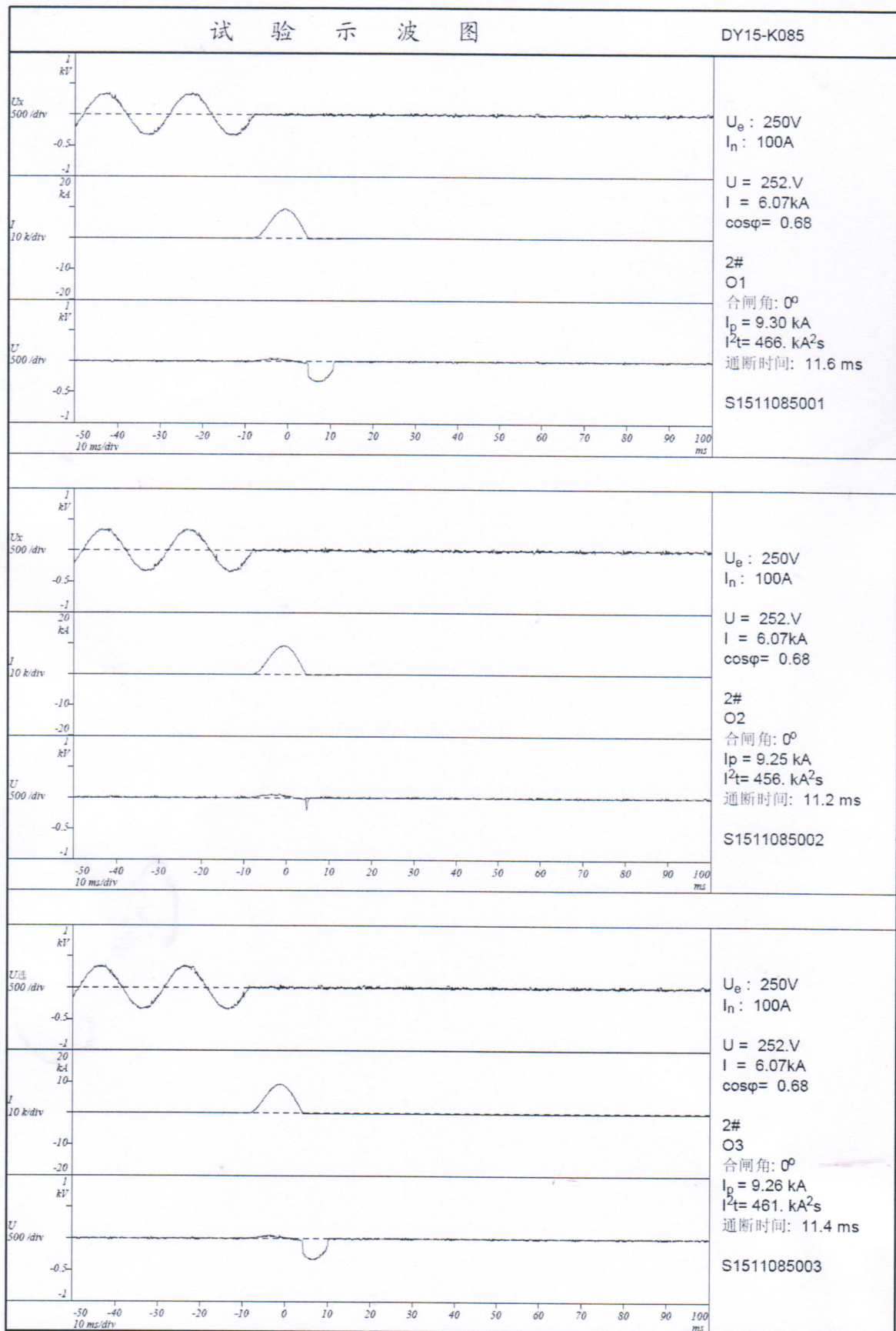
DY15-K085

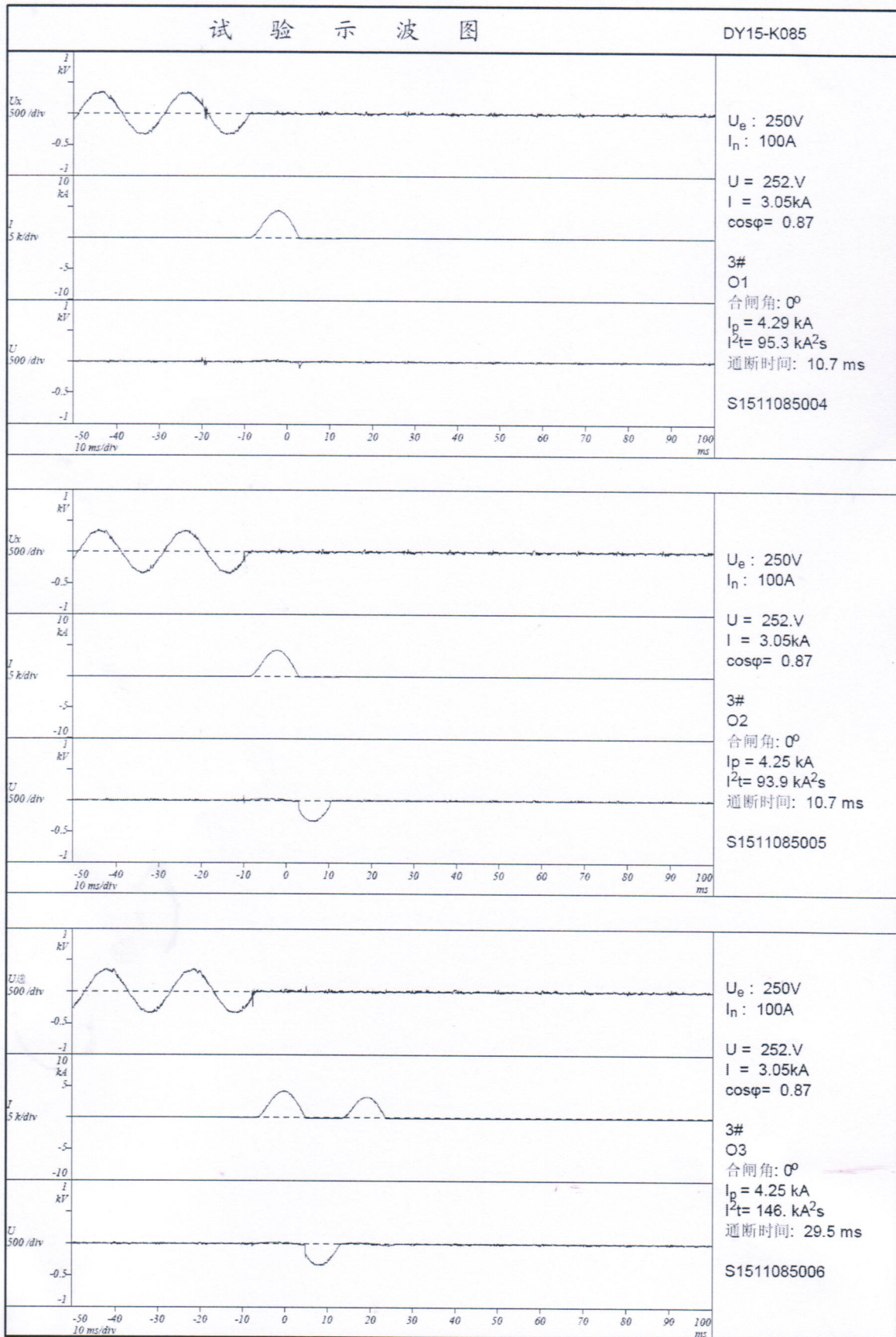


预期电流示波图

 $U = 252$ V $I = 3.05$ kA $I_p = 4.40$ kA $\cos\varphi = 0.87$

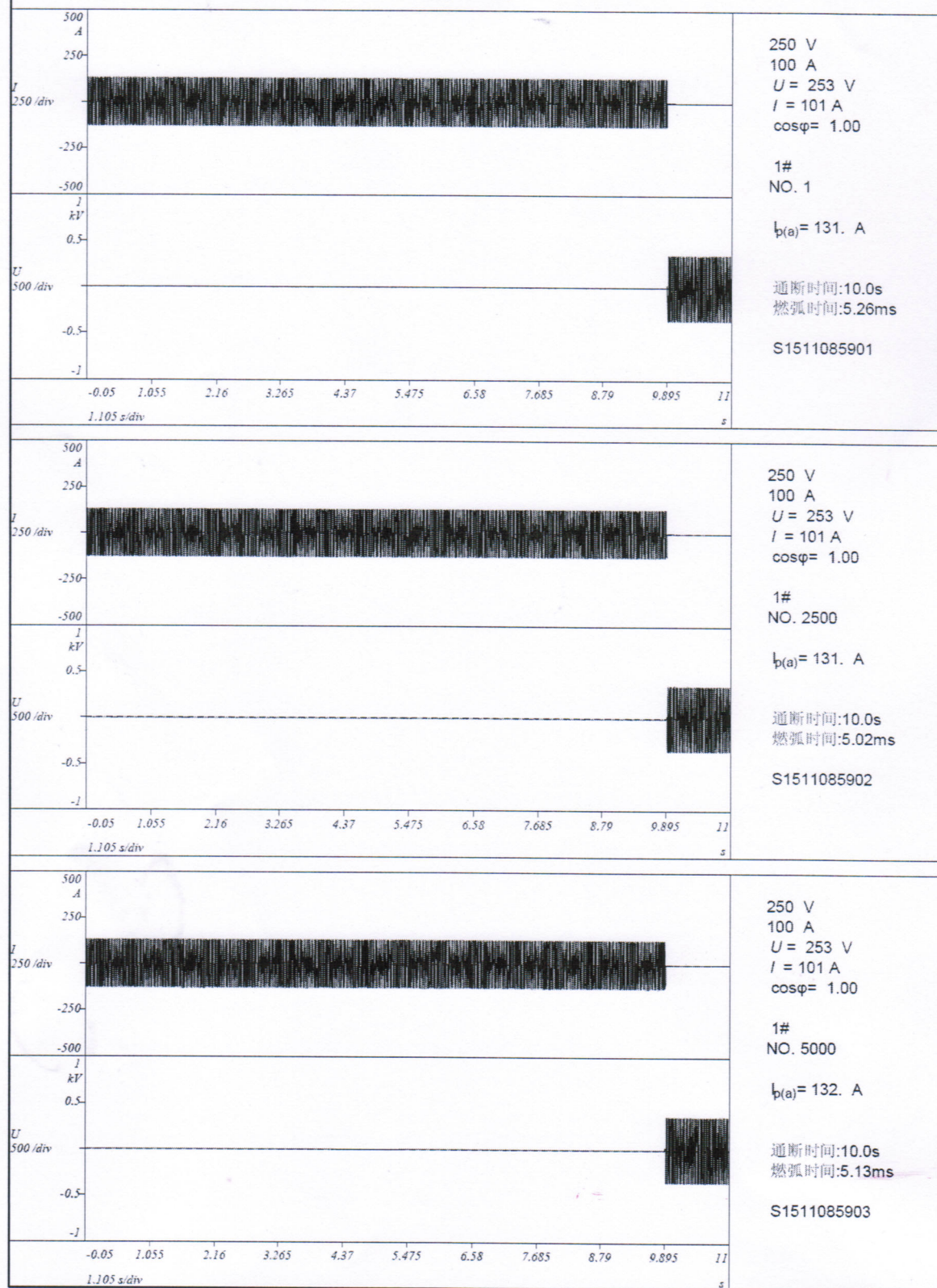
Y1511085002

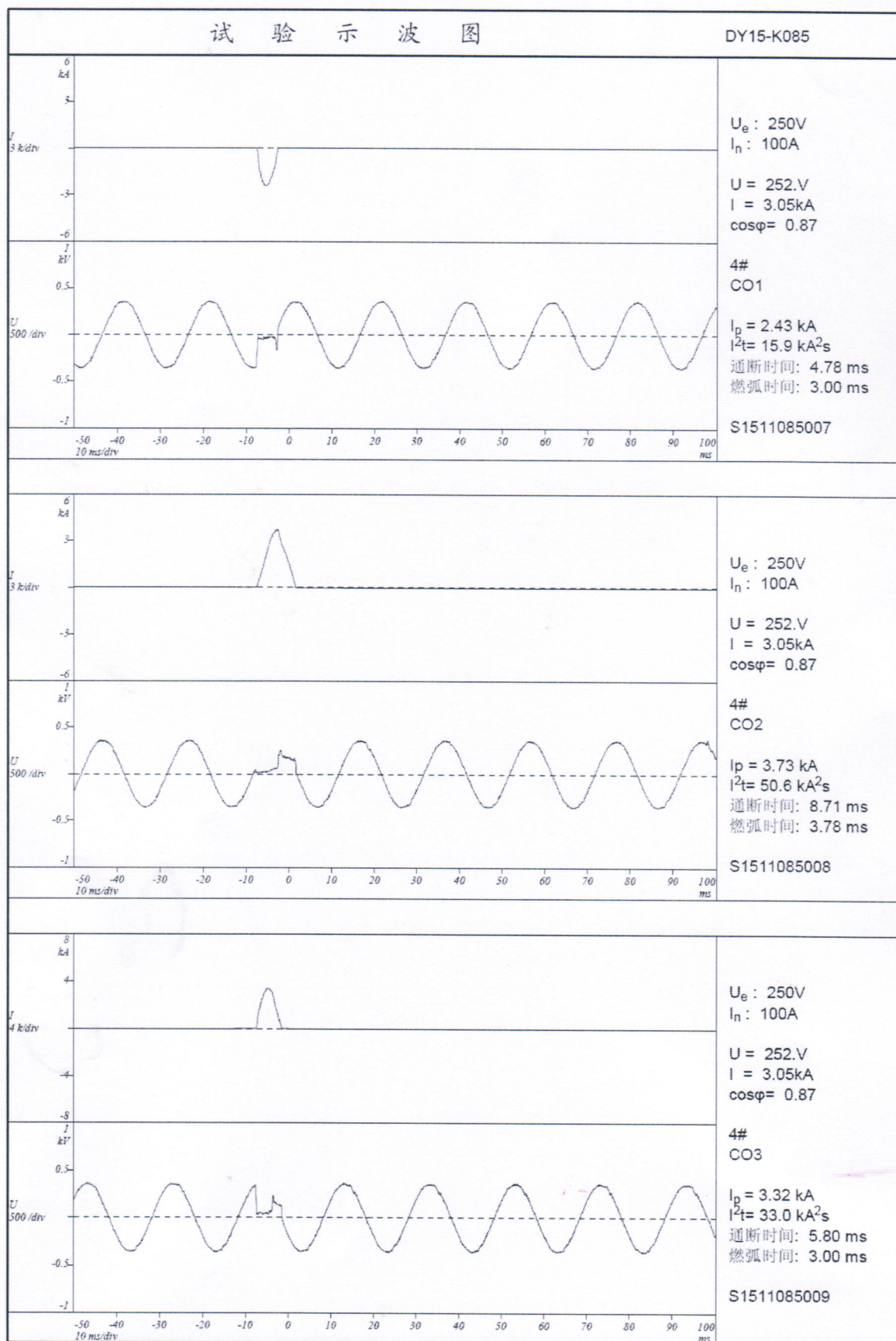


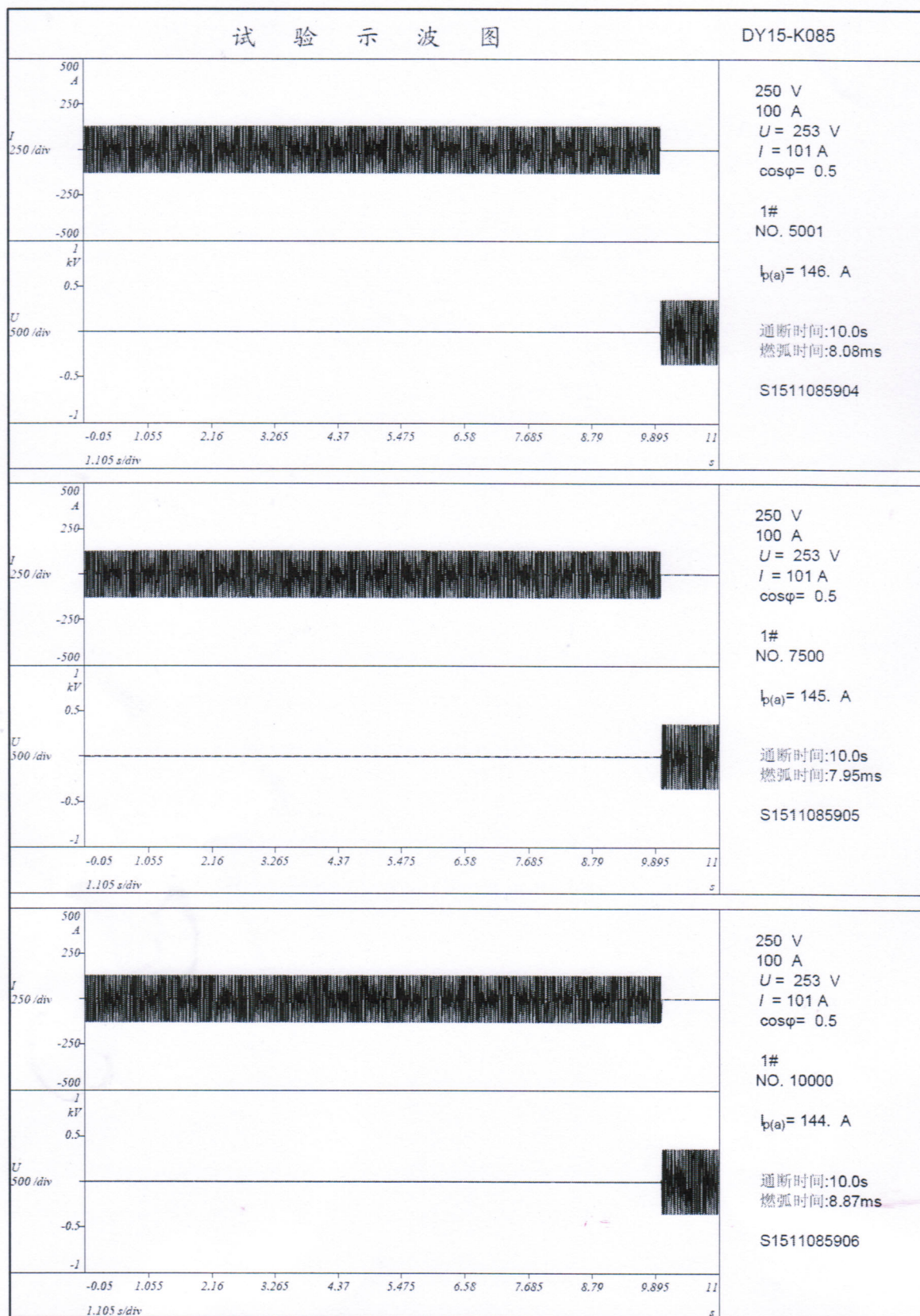


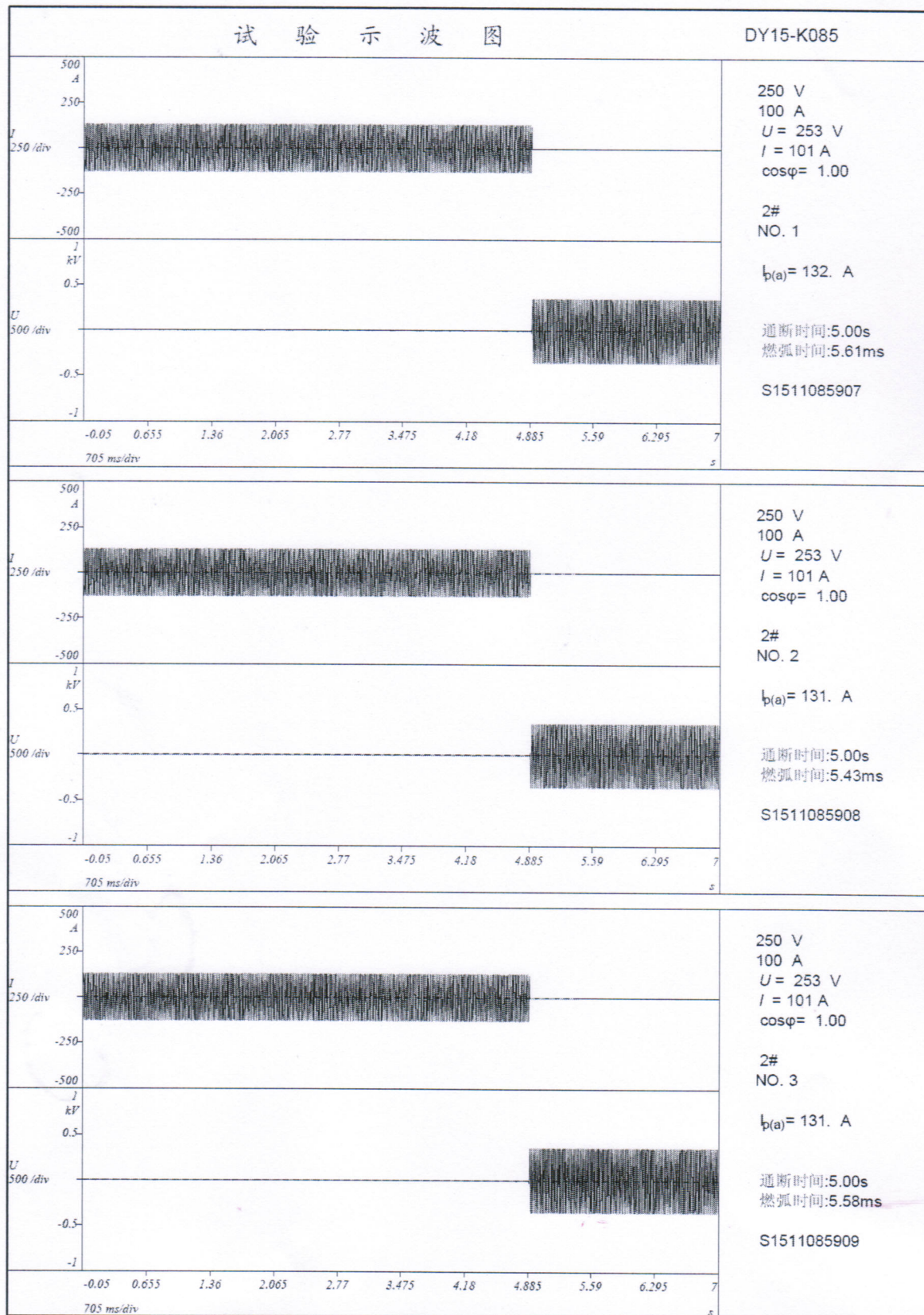
试验示波图

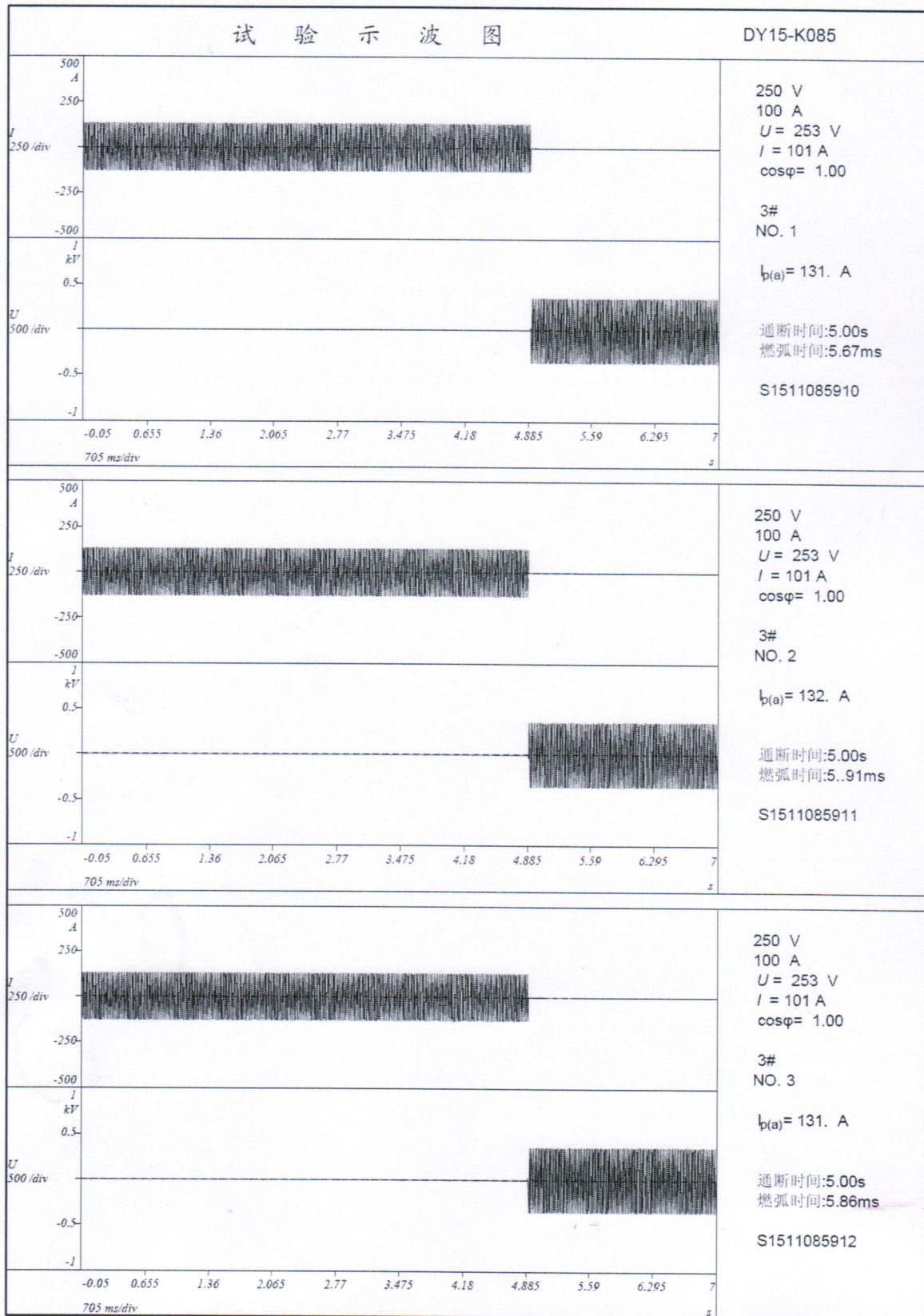
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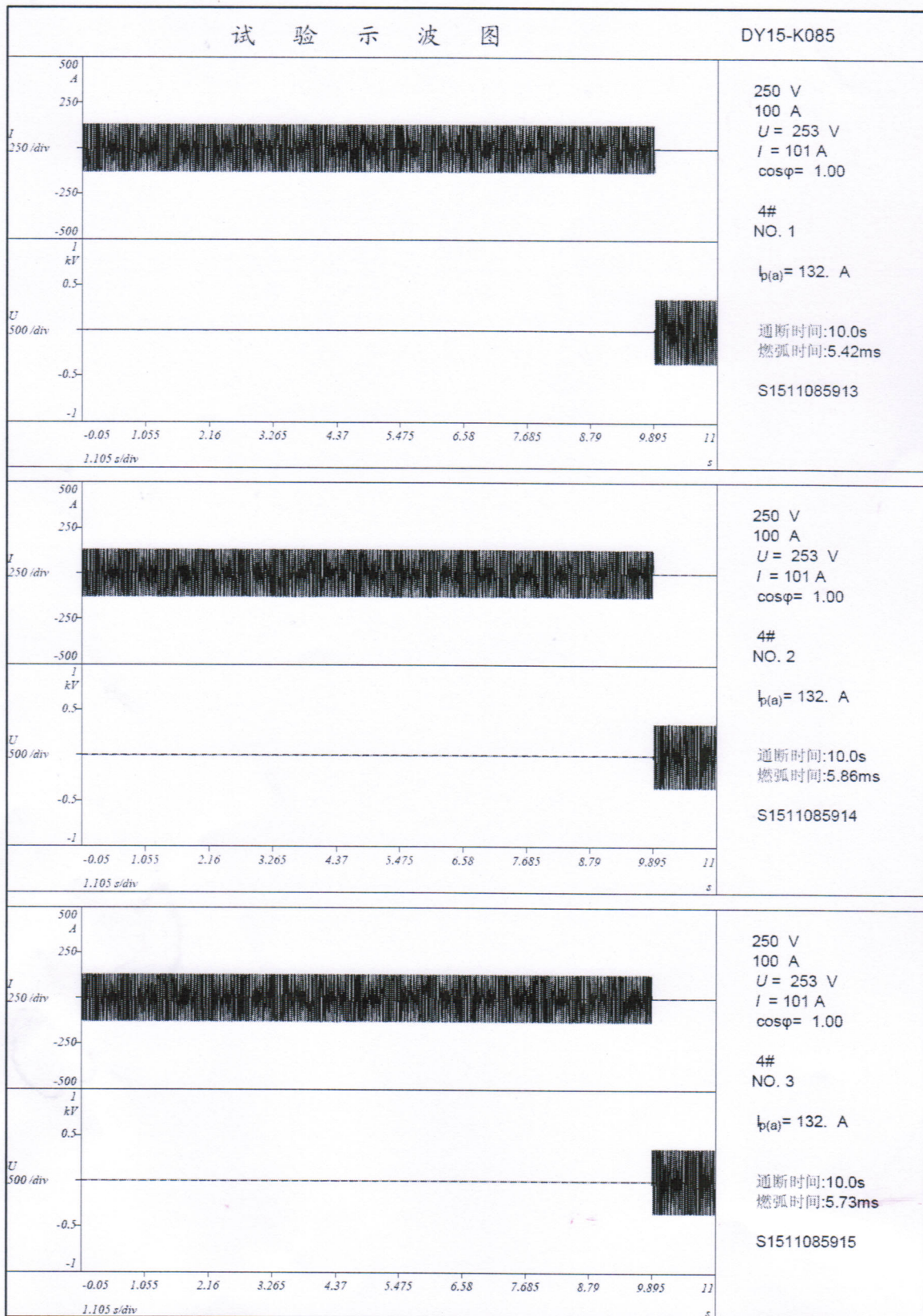












MAIN TEST APPARATUS LIST

[illegible]