



گواهینامه تایید صلاحیت آزمایشگاه Laboratory Accreditation Certificate

The National Accreditation Center of Iran (NACI)
herewith confirms that:

مرکز ملی تایید صلاحیت ایران بدینوسیله تایید می نماید که :

Laboratory Sanjeshgaran Niroo Energy

آزمایشگاه سنجشگران نیرو انرژی

Address: first stage, number 150, Taleghani
Street, Tehran, I.R.IRAN.

نشانی: تهران طالقانی، روبروی بیمارستان ۲۵۰ مارتش، ساختمان
۱۵- طبقه اول

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دورنگار: ۰۲۱- ۸۸۸۲۶۱۰۹

Web Site: www.sanjeshgaran.org

سایت اینترنتی : www.sanjeshgaran.org

Has fulfilled the ISIRI-ISO/IEC 17025.

And is competent to carry out □ Test ■ Calibration services according to accreditation scope are listed in 18 page/s of annex.

NACI Registration No.: NACI/Lab/335

NACI/Lab/۳۴۵

Initial Accreditation Date and Place: 2012.10.27-Tehran

تاریخ و محل صدور اولیه گواهینامه: ۱۳۹۱/۰۸/۰۶- تهران

Renewal Date : 2017.09.02

تاریخ صدور مجدد گواهینامه: ۱۳۹۶/۰۶/۱۱

Expiry Date : 2018.11.27

تاریخ خاتمه اعتبار گواهینامه: ۱۳۹۷/۰۹/۰۶

Validity of Accreditation Certificate depends on continuity of compliance with the relevant requirements and obtaining the approval based on the annual surveillance assessment.

حفظ اعتبار در طول دوره منوط به استمرار انطباق با ضوابط مربوطه و
أخذ تاییدیه در ارزیابی های مراقبتی سالانه است.

N.P. N. Pirouzbakht
PRESIDENT, IRAN ACCREDITATION COUNCIL

نیره پیروزبخت

رئیس شورای تایید صلاحیت ایران

A.R. Khakifirooz
NACI PRESIDENT

علیرضا خاکی فیروز

رئیس مرکز ملی تایید صلاحیت ایران



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National Accreditation Center of Iran

مرکز ملی تایید صلاحیت ایران
گواهینامه تایید صلاحیت از مایشگاه

Laboratory Accreditation Certificate

Annex

Accreditation Scope of Laboratory Sanjeshgaran Niroo Energy

1- Temperature

No.	Quantity, Measuring Instrument, Material Measure	Range	Best Measurement Capability lab(±)
1	Glass in liquid, bi-metal and filled thermometers	(-40 to 300)°C	0.04°C
		(300 to 650)°C	0.06°C
2	Resistance thermometer	(-40 to 300) °C	0.04°C
		(300 to 650) °C	0.06°C
3	Thermocouple, thermostat, transmitter, transducer	(-40 to 300)°C	0.04°C
		(300 to 650)°C	0.06°C
		(650 to 800)°C	0.8°C
		(800 to 1000)°C	1.2°C
		(100 to 1200)°C	2.4°C
4	Dry block, thermal and cryogenic bath (oven, incubator, refrigerator, freezer, stove, Bain Marie, Four)	(-40 to 650)°C	0.04°C
		(650 to 800)°C	0.6°C
		(800 to 1000)°C	1.1°C
		(1000 to 1200)°C	2.35°C
		up to 250°C	0.3°C
5	Autoclaves	Pressure	Up to 20 bar
		PT, RTD SERIES	0.1% F.S
6	Temperature indicator and controller, RTD and TC simulation	Type J,K,R,S,...	(-200 to 850)°C
			(-270 to 1820)°C
7	Soldering iron	Up to 700°C	1.9°C

A.R. Khakifirooz

NACI PRESIDENT

A.R. Khakifirooz

Page 2 of 19

N. Pirouzbakht

PRESIDENT, IRAN ACCREDITATION COUNCIL

Laboratory Accreditation Certificate

Annex

Accreditation Scope of Laboratory Sanjeshgaran Niroo Energy

2- pressure

No.	Quantity, Measuring Instrument, Material Measure	Range	Best Measurement Capability lab(±)
1	Vacuum and pressure gauge (switch, transmitter, transducer) (Pneumatic)	(-0.85 to 1) bar	0.018% rdg
		Up to 120bar	0.018% rdg
2	Vacuum and pressure gauge (switch, transmitter, transducer) (hydraulic)	(-0.85 to 1) bar	0.018% rdg
		Up to 1200 bar	0.018% rdg
3	Safety and control valve	(-0.85 to 1) bar	0.05% rdg
		Up to 400 bar	0.025% F.S
		Up to 700 bar	0.05% F.S
4	Pressure balance with acc. More than 0.015%rdg	(-0.85 to 1) bar	0.018% rdg
		Up to 120 bar	0.018% rdg
		Up to 1200 bar	0.018% rdg

3- Torque

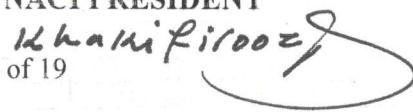
No.	Quantity, Measuring Instrument, Material Measure	Range	Best Measurement Capability lab(±)
1	Torque meter	Up to 40 N.m	0.2% rdg
		(40 to 1500) N.m	0.35% rdg
2	Torque tester	Up to 1500 N.m	0.02% rdg
3	Torque transmitter and transducer	Up to 1500 N.m	0.02% rdg

4-Chemical

No.	Quantity, Measuring Instrument, Material Measure	Range	Best Measurement Capability lab(±)
1	PH meter calibration	Up to 14	0.01
		(40 to 1500) N.m	0.35% rdg

A.R. Khakifirooz

NACI PRESIDENT



Page 3 of 19

N. Pirouzbakht

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جمهوری اسلامی ایران

Islamic Republic of Iran



National Accreditation Center of Iran

مرکز ملی تایید صلاحیت ایران
گواهینامه تایید صلاحیت از مایشگاه

Laboratory Accreditation Certificate

Annex

Accreditation Scope of Laboratory Sanjeshgaran Niroo Energy

5-Dimantinal

No.	Quantity, Measuring Instrument, Material Measure	Range	Best Measurement Capability lab(±)
1	outside caliper	Up to 100mm	(0.08+0.01L) µm, L:mm
		(100 to 1000) mm	(0.1+0.01L) µm, L:mm
2	inside caliper	Up to 100mm	(0.07+0.01L) µm, L:mm
		(100 to 500) mm	(0.08+0.01L) µm, L:mm
3	Depth caliper	Up to 100mm	(0.9+0.01L) µm, L:mm
		(100 to 300) mm	(0.4+0.01L) µm, L:mm
4	Height gauge	Up to 100mm	(0.9+0.01L) µm, L:mm
		(100 to 1000) mm	(0.4+0.01L) µm, L:mm
5	External micrometer	Up to 100mm	(0.07+0.01L) µm, L:mm
		(100 to 500) mm	(0.1+0.01L) µm, L:mm
6	Internal micrometer	Up to 100mm	(0.08+0.01L) µm, L:mm
		(100 to 500) mm	(0.1+0.01L) µm, L:mm
7	Depth micrometer	Up to 100mm	(0.9+0.01L) µm, L:mm
		(100 to 300) mm	(0.4+0.01L) µm, L:mm
8	Dial indicator (0.01mm resolution)	Up to 25 mm	(0.7+0.004L) µm, L:mm

6-Electric

No.	Quantity, Measuring Instrument, Material Measure	Range	Best Measurement Capability lab(±)
1	DC Voltage Generation	(0 to 320) mV	0.006% +4.16 µV
		(0.320 to 3.2) V	0.006% +41.6 µV
		(3.2 to 32) V	0.0065% +416 µV
		(32 to 320) V	0.0065% +4.48 mV
		(320 to 1050) V	0.006% +19.95 mV

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N. Pirouzbakht

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Laboratory Accreditation Certificate

Annex

Accreditation Scope of Laboratory Sanjeshgaran Niroo Energy

No.	Quantity, Measuring Instrument, Material Measure	Range	Best Measurement Capability lab(±)
2	DC Voltage Measurement – Low Voltage	0 to 200 mV	4.5ppm of rdg + 0.1 μV
		0.200 V to 2 V	3.0 ppm of rdg+ 0.4 μV
		2 V to 20 V	3.0ppm of rdg + 4 μV
		20 V to 200 V	4.5ppm of rdg + 40 μV
		200 V to 1000 V	4.5ppm of rdg+0.5 mV
	DC Voltage Measurement – High Voltage	(1 to 40) kV	1%rdg
		(10 to 140) kV	0.2 %rdg
3	DC Current Generation	0μA to 320μA	0.014% + 11nA
		0.32mA to 3.2mA	0.014% + 83nA
		03.2mA to 32 mA	0.014% + 900nA
		32mA to 320mA	0.016% + 9.6μA
		0.32A to 3.2A	0.060% + 118μA
		03.2A to 10 A	0.055% + 940μA
		10A to 20A	0.055% + 4.50mA
4	DC Current Generation (via current coil)	03.2A to 32A	0.260% + 1.18mA
		32A to 105A	0.255% + 9.40mA
		105A to 200A	0.255% + 45.0mA
		16A to 160A	0.260% + 5.9mA
		160A to 525A	0.255% + 47mA
		525A -- 1000A	0.255% + 225mA

A.R. Khakifirooz

NACI PRESIDENT

Khakifirooz

Page 5 of 19

N. Pironzbakht

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Laboratory Accreditation Certificate

Annex

Accreditation Scope of Laboratory Sanjeshgaran Niroo Energy

No.	Quantity, Measuring Instrument, Material Measure	Range	Best Measurement Capability lab(±)
5	DC Current Measurement	200 μA	12ppm of rdg+ 2.0ppm of range
		2 mA	12ppm of rdg+ 2.0ppm of range
		20 mA	13ppm of rdg+ 2.0ppm of range
		200 mA	36 ppm of rdg+ 4.0ppm of range
		2 A	170ppm of rdg+ 8.0ppm of range
		20 A	380 ppm of rdg+ 20ppm of range
6	DC Current Measurement (via current shunt)	20A to 1000 A	0.1%rdg
7	DC Current Measurement (via current clamp)	Up to 1000 A	1.5%rdg
8	AC Voltage Generation	10Hz to 3kHz	0.04% + 384μV
		3kHz to 10kHz	0.04% + 512μV
		10kHz to 3kHz	0.06% + 960μV
		30kHz to 50kHz	0.09% + 1.92mV
		50kHz to 100kHz	0.20% + 5.12mV
		10Hz to 3kHz	0.04% + 96.0 μV
		3kHz to 10kHz	0.04% + 128 μV
		10kHz to 30kHz	0.06% + 240 μV
		30kHz to 50kHz	0.09% + 480 μV
		50kHz to 100kHz	0.20% + 1.28 mV

A.R. Khakifirooz

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A.R. Khakifirooz

Page 6 of 19

N. Pirouzbakht

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جمهوری اسلامی ایران

Islamic Republic of Iran



National Accreditation Center of Iran

مرکز ملی تایید صلاحیت ایران

گواهینامه تایید صلاحیت آزمایشگاه

Laboratory Accreditation Certificate

Annex

Accreditation Scope of Laboratory Sanjeshgaran Niroo Energy

No.	Quantity, Measuring Instrument, Material Measure	Range	Best Measurement Capability lab(±)	
8	AC Voltage Generation	(32 to 320) mV	10Hz to 3kHz	0.04% + 19.2 µV
			3kHz to 10kHz	0.04% + 25.6 µV
			10kHz to 30kHz	0.06% + 48.0 µV
			30kHz to 50kHz	0.09% + 96.0 µV
			50kHz to 100kHz	0.20% + 256 µV
		(0.32 to 3.2) V	10Hz to 3kHz	0.04% + 192 µV
			3kHz to 10kHz	0.04% + 256 µV
			10kHz to 30kHz	0.06% + 480 µV
			30kHz to 50kHz	0.09% + 960 µV
			50kHz to 100kHz	0.20% + 2.56 mV
		(3.2 to 32) V	10Hz to 3kHz	0.04% + 1.92 mV
			3kHz to 10kHz	0.04% + 2.56 mV
			10kHz to 30kHz	0.06% + 4.80 mV
			30kHz to 50kHz	0.15% + 9.60 mV
			50kHz to 100kHz	0.35% + 32.0 mV

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N. Pirouzbakht

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جمهوری اسلامی ایران

Islamic Republic of Iran



National Accreditation Center of Iran

مرکز ملی تایید صلاحیت ایران

گواهینامه تایید صلاحیت آزمایشگاه

Laboratory Accreditation Certificate

Annex

Accreditation Scope of Laboratory Sanjeshgaran Niroo Energy

No.	Quantity, Measuring Instrument, Material Measure	Range	Best Measurement Capability lab(±)	
8	AC Voltage Generation	(32 to 105) V	10Hz to 3kHz	0.04% + 6.30 mV
			3kHz to 10kHz	0.04% + 8.40 mV
			10kHz to 30kHz	0.06% + 15.8 mV
			30kHz to 50kHz	0.15% + 31.5 mV
			50kHz to 100kHz	0.35% + 105 mV
		(105 to 320) V	40Hz to 100Hz	0.05% + 19.2 mV
			100Hz to 1kHz	0.05% + 19.2 mV
			1kHz to 3kHz	0.08% + 19.2 mV
			3kHz to 10kHz	0.08% + 32.0 mV
			10kHz to 20kHz	0.12% + 48.0 mV
		(320 to 800) V	20kHz to 30kHz	0.15% + 64.0 mV
			40Hz to 100Hz	0.05% + 63.0 mV
			100Hz to 1kHz	0.05% + 63.0 mV
			1kHz to 3kHz	0.08% + 63.0 mV
			3kHz to 10kHz	0.08% + 105 mV
		(800 to 1050) V	10kHz to 20kHz	0.12% + 158 mV
			20kHz to 30kHz	0.15% + 210 mV
			40Hz to 100Hz	0.05% + 126 mV
			100Hz to 1kHz	0.05% + 126 mV
			1kHz to 3kHz	0.08% + 126 mV
			3kHz to 10kHz	0.08% + 210 mV
			10kHz to 20kHz	0.12% + 315 mV

A.R. Khakifirooz

NACI PRESIDENT

A.R. Khakifirooz

Page 8 of 19

N. Pirouzbakht

PRESIDENT, IRAN ACCREDITATION COUNCIL



جمهوری اسلامی ایران

Islamic Republic of Iran



National Accreditation Center of Iran

مرکز ملی تایید صلاحیت ایران

گواهینامه تایید صلاحیت آزمایشگاه

Laboratory Accreditation Certificate

Annex

Accreditation Scope of Laboratory Sanjeshgaran Niroo Energy

No.	Quantity, Measuring Instrument, Material Measure	Range	Best Measurement Capability lab(±)
9	AC Voltage Measurement	200 mV	1Hz to 10Hz 160 ppm of rdg+ 70ppm of range
			10Hz to 40Hz 130ppm of rdg+ 20 ppm of range
			40Hz to 100Hz 110ppm of rdg+ 20ppm of range
			100Hz to 2kHz 105ppm of rdg+ 10ppm of range
			2kHz to 10kHz 105ppm of rdg+ 20ppm of range
			10k Hz to 30kHz 305ppm of rdg+ 40ppm of range
		2, 20 & 200 V	30kHz to100kHz 705ppm of rdg+ 100ppm of range
			1Hz to 10Hz 140ppm of rdg+ 60ppm of range
			10Hz to 40Hz 105ppm of rdg+ 10ppm of range
			40Hz to 100Hz 85ppm of rdg+ 10ppm of range
			100Hz to 2kHz 65ppm of rdg+ 10ppm of range
			2kHz to 10kHz 85ppm of rdg+ 10ppm of range
		1000 V AC	10k Hz to 30kHz 205ppm of rdg+ 20ppm of range
			30kHz to100kHz 505ppm of rdg+ 100ppm of range
			100kHz to 300kHz 0.3%rdg+ 0.1%range
		1000 V AC	300kHz to1MHz 1% rdg+ 1%range
			1Hz to 10Hz 140 ppm of rdg+ 70ppm of range
			10Hz to 40Hz 110ppm of rdg+ 20ppm of range
			40Hz to 10kHz 95ppm of rdg+ 20ppm of range
			10k Hz to 30k Hz 205ppm of rdg+ 40ppm of range
			30kHz to 100kHz 510ppm of rdg+ 200ppm of range

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NACI PRESIDENT

Khakifirooz

N. Pirouzbakht

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جمهوری اسلامی ایران

Islamic Republic of Iran



National Accreditation Center of Iran

مرکز ملی تایید صلاحیت ایران

گواهینامه تایید صلاحیت آزمایشگاه

Laboratory Accreditation Certificate

Annex

Accreditation Scope of Laboratory Sanjeshgaran Niroo Energy

No.	Quantity, Measuring Instrument, Material Measure	Range	Best Measurement Capability lab(±)	
10	AC Voltage Measurement – High Voltage	(1 to 6) kV	DC to 1kHz	1.2% rdg
		(6 to 28) kV	50/60 Hz	5.2%rdg
		(10 to 140) kV	50 / 60 Hz	0.72%rdg
11	AC Current Generation	0µA to 32µA	10Hz to 3kHz	0.07% + 900nA
			3kHz to 10kHz	0.10% + 1.8µA
			10kHz to 20kHz	0.20% + 6.0µA
			20kHz to 30kHz	0.25% + 9.0µA
		32µA to 320µA	10Hz to 3kHz	0.07% + 300nA
			3kHz to 10kHz	0.10% + 600nA
			10kHz to 20kHz	0.20% + 2.0µA
			20kHz to 30kHz	0.25% + 3.0µA
		0.32mA to 3.2mA	10Hz to 3kHz	0.07% + 300nA
			3kHz to 10kHz	0.10% + 600nA
			10kHz to 20kHz	0.20% + 2.0µA
			20kHz to 30kHz	0.25% + 3.0µA
		3.2mA to 32mA	10Hz to 3kHz	0.07% + 3.2µA
			3kHz to 10kHz	0.10% + 6.4µA
			10kHz to 20kHz	0.20% + 12.8µA
			20kHz to 30kHz	0.25% + 22.4µA

A.R. Khakifirooz

NACI PRESIDENT

R.Khakifirooz

Page 10 of 19

N. Pirouzbakht

PRESIDENT, IRAN ACCREDITATION COUNCIL



جمهوری اسلامی ایران

Islamic Republic of Iran



National Accreditation Center of Iran

مرکز ملی تایید صلاحیت ایران

گواهینامه تایید صلاحیت آزمایشگاه

Laboratory Accreditation Certificate

Annex

Accreditation Scope of Laboratory Sanjeshgaran Niroo Energy

No.	Quantity, Measuring Instrument, Material Measure	Range	Best Measurement Capability lab(±)
11	AC Current Generation	32mA,to 320mA	10Hz to 3kHz 0.08% + 32.0µA
			3kHz to 10kHz 0.10% + 48.0µA
			10kHz to 20kHz 0.20% + 64.0µA
			20kHz to 30kHz 0.25% + 96.0µA
		0.32A to 3.2A	10Hz to 3kHz 0.10% + 480µA
			3kHz to 10kHz 0.25% + 2.56mA
		3.2A to 10.5A	10Hz to 3kHz 0.20% + 3mA
			3kHz to 10kHz 0.50% + 10mA
		10.5A to 20A	10Hz to 3kHz 0.20% + 6.9mA
			3kHz to 10 kHz 0.50% + 23.0mA
11	AC Current Generation (via current coil)	03.2A to 32A	10Hz to 100Hz 0.40%+5.5mA
			100Hz to 440Hz 0.98%+27mA
		32 A to 200A	10Hz to 100Hz 0.41%+90mA
			100Hz to 440Hz 0.87% +0.25A
		16A to 160A	10Hz to 100Hz 0.40% + 28mA
		160A to 1000A	10Hz to 100Hz 0.41% + 0.45A

A.R. Khakifirooz

NACI PRESIDENT

A.R. Khakifirooz

Page 11 of 19

N. Pirouzbakht

PRESIDENT, IRAN ACCREDITATION COUNCIL



جمهوری اسلامی ایران

Islamic Republic of Iran



National Accreditation Center of Iran

مرکز ملی تایید صلاحیت ایران

گواهینامه تایید صلاحیت آزمایشگاه

Laboratory Accreditation Certificate

Annex

Accreditation Scope of Laboratory Sanjeshgaran Niroo Energy

No.	Quantity, Measuring Instrument, Material Measure	Range	Best Measurement Capability lab(±)
12	AC Current Measurement	200µA, 2mA & 20mA	1Hz to 10Hz 290 ppm of rdg +100ppm of range
			10Hz to 10kHz 280 ppm of rdg +100ppm of range
			10kHz to 30kHz 650 ppm of rdg +100ppm of range
			30kHz to 100kHz 0.4%
		200 mA	1Hz to 10Hz 290 ppm of rdg +100ppm of range
			10Hz to 10kHz 250 ppm of rdg +100ppm of range
			10kHz to 30kHz 600 ppm of rdg +100ppm of range
		2 A	10Hz to 2kHz 600 ppm of rdg +100ppm of range
			2kHz to 10kHz 700 ppm of rdg +100ppm of range
			10kHz to 30kHz 0.3%+100ppm of range
13	AC Current Measurement (via current shunts)	20A to 1000A	10Hz to 2kHz 800 ppm of rdg +100ppm of range
			2kHz to 10kHz 0.25%+100ppm of range
14	AC Current Measurement (via current clamp)	Up to 1000A	DC to 65Hz 0.1%rdg
15	DC Power Generation	Up to 1000A	Up to 1kHz 1.5%rdg
16	AC Power Generation (via current coil)	Up to 1000A	Up to 1MW 0.03%
17	AC Power Generation	Up to 1000A	Up to 1MW 0.3%
18	AC Power Generation (via current coil)	Up to 1000A	10Hz to 440Hz 0.1%
			Up to 1000A 0.4%

A.R. Khakifirooz

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N. Pirouzbakht

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جمهوری اسلامی ایران

Islamic Republic of Iran



National Accreditation Center of Iran

مرکز ملی تایید صلاحیت ایران

گواهینامه تایید صلاحیت آزمایشگاه

Laboratory Accreditation Certificate

Annex

Accreditation Scope of Laboratory Sanjeshgaran Niroo Energy

No.	Quantity, Measuring Instrument, Material Measure	Range	Best Measurement Capability lab(±)
19	Power factor generation	-1.00 to +1.00 10Hz to 440Hz	0.02
20	Phase generation	-180° to 180°	0.07°
21	Active power measurement	Up to 600kW	3%
22	Apparent power measurement	Up to 600kVA	3%
23	Reactive power measurement	Up to 600kVAr	4%
24	Active energy measurement	1 to 9999 kWh	3%
25	Power factor measurement	0.3 cap to 0.3 ind	0.02
26	Power measurement (Direct)	15mW to 30 kW (45 to 66Hz)	0.1%rdg+0.1%fs
27	Power factor measurement	-1.00 (lead) to 0.00 to 1.00 (lag) (45 to 66Hz)	0.02
28	Phase Measurement	-180° to +180° (45 to 66Hz)	0.1%rdg+0.1%fs
29	Resistance Generation	0 to 40Ω	0.025%+10mΩ
		40Ω to 400Ω	0.02%+20mΩ
		0.4kΩ to 4kΩ	0.015%+80mΩ
		4kΩ to 40kΩ	0.02%+800mΩ
		40kΩ to 400kΩ	0.02%+8Ω
		0.4MΩ to 4MΩ	0.05%+100Ω
		4MΩ to 40MΩ	0.15%+2kΩ
		40MΩ to 400MΩ	0.26%+40kΩ

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گواهینامه تایید صلاحیت آزمایشگاه

Laboratory Accreditation Certificate

Annex

Accreditation Scope of Laboratory Sanjeshgaran Niroo Energy

No.	Quantity, Measuring Instrument, Material Measure	Range	Best Measurement Capability lab(±)
30	Decade Resistance generation	1mΩ to 10MΩ	0.01%
		10MΩ to 100MΩ	0.03%
31	Insulation Resistance Generation	10Ω to 10MΩ	0.03%
		10MΩ to 100MΩ	0.1%
		100MΩ to 1GΩ	0.2%
		1GΩ to 10GΩ	1%
		10GΩ to 100GΩ	1%
		100GΩ to 1TΩ	5%
		7.5MΩ	0.1%
32	Fix value, via current shunts	150μΩ	0.1%
		200μΩ	0.1%
		250μΩ	0.1%
		400μΩ	0.1%
		500μΩ	0.1%
		1mΩ	0.1%
		1.5mΩ	0.1%
		2.5mΩ	0.1%
		3.75mΩ	0.1%
		15mΩ	0.1%

A.R. Khakifirooz

NACI PRESIDENT

Khakifirooz

Page 14 of 19

N. Pirouzbakht

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گواهینامه تایید صلاحیت آزمایشگاه
Laboratory Accreditation Certificate

Annex

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33.	Resistance Measurement	0 to 2Ω	15 ppm of rdg + 2.0 ppm of range
		2Ω to 20Ω	9.0 ppm of rdg + 0.7 ppm of range
		20Ω to 200Ω	7.5 ppm of rdg + 0.25 ppm of range
		200Ω to 2kΩ	7.5 ppm of rdg + 0.25 ppm of range
		2kΩ to 20kΩ	7.5 ppm of rdg + 0.25 ppm of range
		20kΩ to 200kΩ	7.5 ppm of rdg + 0.25 ppm of range
		200kΩ to 2MΩ	8.5 ppm of rdg + 0.5 ppm of range
		2MΩ to 20MΩ	15 ppm of rdg + 5.0 ppm of range
		20MΩ to 200MΩ	60 ppm of rdg + 50 ppm of range
34	Insulation Resistance Measurement	200MΩ to 2GΩ	525 ppm of rdg + 500 ppm of range
		2GΩ to 20GΩ	525 ppm of rdg + 500 ppm of range
		0kΩ to 1MΩ	5% rdg+3digits
		1MΩ to 10MΩ	5% rdg+3digits
		10MΩ to 100MΩ	5% rdg+3digits
		100MΩ to 1GΩ	5% rdg+3digits
		1GΩ to 10GΩ	5% rdg+3digits
		10GΩ to 100GΩ	5% rdg+3digits
		100GΩ to 1TΩ	5% rdg+3digits
		1TΩ to 5TΩ	5% rdg+3digits

A.R. Khakifirooz

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A.R. Khakifirooz

Page 15 of 19

N. Pirouzbakht

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گواهینامه تایید صلاحیت آزمایشگاه
Laboratory Accreditation Certificate

Annex

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35	Shunts	0.1μΩ to 3mΩ	0.03%rdg+0.02%F.S
		3mΩ to 30mΩ	0.03%rdg+0.01%F.S
		30mΩ to 300mΩ	0.03%rdg+0.01%F.S
		300mΩ to 3Ω	0.03%rdg+0.01%F.S
		3Ω to 30Ω	0.03%rdg+0.01%F.S
		30Ω to 300Ω	0.03%rdg+0.01%F.S
		300Ω to 3kΩ	0.03%rdg+0.01%F.S
		3kΩ to 30kΩ	0.03%rdg+0.02%F.S
36	Capacitance Generation	0.5 nF to 4 nF	0.3% + 15pF
		4 nF to 40 nF	0.3% + 30pF
		40 nF to 400 nF	0.3% + 160pF
		400 nF to 4 μF	0.4% + 1.6nF
		4 μF to 40 μF	0.5% + 16.0nF
		40 μF to 400 μF	0.5% + 160nF
		400 μF to 4 mF	0.5% + 1.6μF
		4 mF to 40 mF	1.0% + 60μF
		1 pF to 1μF	0.064%+0.6 pF
		1 μF, 10 μF, 100 μF, 1 mF, 10 mF, 100 mF	0.1%
		1F	0.25%

A.R. Khakifirooz

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A.R. Khakifirooz

Page 16 of 19

N. Pirouzbakht

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گواهینامه تایید صلاحیت آزمایشگاه
Laboratory Accreditation Certificate

Annex

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37	Capacitance Measureme	0.00001 to 99999μF	0.1%
38	Inductance Generation	(100 to 900) μH	2%
		(1 to 9) mH	2%
		(10 to 90) mH	1.6%
		(100 to 900) mH	0.8%
		(1 to 10) H	0.8%
39	Inductance Measurement	0.00001 to 99999H	0.1%
40	Frequency Generation	0.1mHz to 10MHz	10ppm
		0.5Hz to 250MHz	0.25ppm
41	Frequency Measurement	DC to 300MHz	0.25ppm
42	Time Measurement	0.1μs and above	14ppm
43	Rotation calibration	Up to 100000 rpm	0.25ppm
44	Rotation Measurement	Contact	(0.05%rdg +1digit
		Photo	(0.05%rdg +1digit
45	Oscilloscope	Square wave	1mV/div to 20V/div (4.4400mV to 133.44)V. 0.25%
		DC Voltage	4.44mV to +133.44V 0.2%+40μV
		Sine Wave, Freq. Response	10 Hz to 250 MHz 3%

A.R. Khakifirooz

NACI PRESIDENT

Khakifirooz

Page 17 of 19

N. Pirouzbakht

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مرکز ملی تایید صلاحیت ایران

گواهینامه تایید صلاحیت آزمایشگاه

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No.	Quantity, Measuring Instrument, Material Measure	Range	Best Measurement Capability lab(±)	
45	Oscilloscope	Time Marker Rise / Fall Time	2ns to 5s 100ns to 10ms	0.25ppm ≤ 1ns
		B	0500.0°C to 0800.0°C 0800.0°C to 1000.0°C 1000.0°C to 1400.0°C 1400.0°C to 1820.0°C	0.55°C 0.41°C 0.34°C 0.37°C
		C	0000.0°C to 0600.0°C 0600.0°C to 1000.0°C 1000.0°C to 1800.0°C 1800.0°C to 2320.0°C	0.29°C 0.27°C 0.40°C 0.41°C
46	Simulation	E	-0250.0°C to -0200.0°C -0200.0°C to -0100.0°C -0100.0°C to +0100.0°C +0100.0°C to +1000.0°C	0.45°C 0.22°C 0.17°C 0.21°C
		J,K	-0250.0°C to -0100.0°C -0100.0°C to +0800.0°C +0800.0°C to +1000.0°C +1000.0°C to +1372.0°C	0.25°C 0.19°C 0.21°C 0.23°C

A.R. Khakifirooz

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Khakifirooz

Page 18 of 19

N. Pirouzbakht

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مرکز ملی تایید صلاحیت ایران
گواهینامه تایید صلاحیت از ماشگاه
Laboratory Accreditation Certificate

Annex

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46	Simulation	L	-0200.0°C to -0050.0°C -0050.0°C to 0200.0°C 0200.0°C to 0700.0°C 0700.0°C to +0900.0°C
		N	-0200.0°C to -0100.0°C -0100.0°C to 0900.0°C 0900.0°C to 1100.0°C 1100.0°C to 1300.0°C
		T	-0250.0°C to -0200.0°C -0200.0°C to -0100.0°C -0100.0°C to 0000.0°C 0000.0°C to +0400.0°C
		S, R	0000.0°C to 0100.0°C 0100.0°C to 0200.0°C 0200.0°C to 1600.0°C 1600.0°C to 1767.0°C
		RTD, PT	-200.00°C to 850.00°C

A.R. Khakifirooz

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Khakifirooz

Page 19 of 19

N. Pirouzbakht

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