

ACCREDITATION SCOPE

limited liability company "LLC S 7 Engineering"

name of legal entity

RA.RU.311916

unique number of the accreditation record in the register of accredited persons

Domodedovo airport, building 9, LERM building, 3rd floor, Domodedovsky district, Moskovskaya oblast,

Russia, 142015,

place of business

Check-Calibration of Measuring equipment

III

verification pressmark

№ п/п	Measurements, measuring equipment type (group)	Metrological requirements		Notes
		Measurements range	Accuracy and (or) ambiguity (class, category)	
1	2	3	4	5
Pressure measurement, vacuum measurement				
1	Manometers, vacuum gauges, combined pressure and vacuum gauges with indication	(-1...0) MPa (0...60) MPa	U = 0,000029 MPa U = 0,00014 MPa	
2	Oxygen manometers	(0...40) MPa	U = 0,00014 MPa	
3	Pressure Generators GD Air pressure gauges APG absolute pressure overpressure Special Pressure Gauges SPG-2-1 for absolute pressure Digital pressure gauges DPG Precision digital pressure gauge МПП-2-03	(5...2250) mm Hg	U = 0,056 mm Hg	
4	Verification and checkout equipment KPA- CCOC ZCV	760 mm Hg 526 mm Hg 180 c	U = 0,056 mm Hg U = 0,56 c	
5	Verification and checkout equipment KPA- PVD	(1...1317,41) mm Hg (0...2,5) min	U = 0,1056 mm Hg U = 0,075 min	
6	Pressure calibrators ADTS, MPS, DPS	(0...250) kPa	U = 0,006 kPa	
7	Pressure tester Vent Valve Tester DC600	(0...1) bar	U = 0,0002 bar	
8	Pressure generator Vacuum Generator HCS2025-03	(-100...0) kPa	U = 0,029 kPa	
9	Pressure regulator Pressure regulator F72928-55	(0...10) psi	U = 0,0022 psi	
Time and frequency measurements				
10	Counting frequency meter	0,1 Гц...1,3 GHz	U = 0,12 Hz	

11	Analog frequency meters	45 Гц...1000 Hz	U = 0,12 Hz	
12	Analog stopwatch	(0...60) min	U = 0,0077 min	
13	Digital stopwatch	(1...10) s	U = $1,3 \cdot 10^{-8}$ sec	
14	Electronic digital stopwatch	(0...10000) s	U = $1,2 \cdot 10^{-8}$ sec	
15	Low frequency signal generators	0,1 Гц...30 MHz 50 V (0...100) dB; Kr(0,0015...5)%	U = 0,12 Hz U = 0,00046 V U = 0,025 % U = 0,023 db	
16	Standard signal generators (periodic check)	0,1 МГц...10,5 GHz 2 W AM (0...100) % ЧМ (10...500) GHz	U = $1,2 \cdot 10^{-7}$ Hz U = 0,00000039 W U = 0,025 % U = 0,00004 Hz	
Electrical and magnetic values measurements				
17	Direct current ammeters	($1 \cdot 10^{-5}$... 2) A ($1 \cdot 10^{-6}$...30) A	U = 0,00000015 A	
18	Alternating current ammeters	(10^{-1} ...2) A (20...1000) Hz (10^{-1} ...20) A 50 Hz	U = 0,00000023 A	
19	Direct current voltmeters	(0,06...1000) B	U = 0,000007 V	
20	Alternating current voltmeters	(15... 600) B 50 Hz	U = 0,000015 V	
21	Direct current digital ammeters	($1 \cdot 10^{-5}$... 2), a	U = 0,00000046 A U = 0,00000015 A	
22	Alternating current digital ammeters	($1 \cdot 10^{-4}$... 2) A (20... $1,2 \cdot 10^3$) Hz	U = 0,00000023 A	
23	Alternating current digital voltmeters	(10^{-4} ... 10^3) V (20... $1 \cdot 10^5$) Hz	U = 0,000000023	
24	Direct current digital voltmeters	($1 \cdot 10^{-4}$...1000) V	U = 0,000007 V	
25	Clamp meters	(0... 600) V (0...1000) A 50 Hz	U = 0,000015 V U = 0,00023 A	
26	Resistance meters, ohmmeters	(10^{-3} ... 10^9) Ohm	U = 0,0026 Ohm	
27	Direct current resistance box	(0,1...99999,9) Ohm	U = 0,0026 Ohm	
28	Capacity meters	($5 \cdot 10^{-4}$...40) mF	U = 0,00000017 mF	
29	Verification and checkout equipment КПА-АБСУ-134/154 Measuring bench СИ-5 Console ПБ-3, ПБ-4, ПБ-5, ПБ-105 Console ПП-25	(0...250) V (0...10) A 100 μ A 13500 Ohm	U = 0,0035 V U = 0,00069 A U = 0,023 μ A U = 0,0026 Ohm	
30	Consoles БДГ and ДГ	(0...50) V (0...2,0) A (380...420) Hz	U = 0,0035 V U = 0,00023 A U = 0,12 Hz	
31	Verification and checkout equipment КПА-АП-6Е Console ЦГВ with an adapter	(0...50) V (1...0...1) mA (0...50) V (50...400) Hz (0...3) A 600 Ohm 1200 Ohm (380...420) Hz	U = 0,0035 V U = 0,023 μ A U = 0,017 V U = 0,00023 A U = 0,0025 Ohm U = 0,12 Hz	
32	Output meter ИБП	(10...150) V (1...300) Ohm	U = 0,000007 V U = 0,0026 Ohm	
33	Sensor simulator	(105...900;) Ohm	U = 0,0026 Ohm	

	ИД-3 ИД-4 ИД-5	(1,25...25) V	U = 0,00046 V	
34	Altitude corrector testing instrument KB-11	(10...50) V	U = 0,00035 V	
35	Control panel КПА-23P	(0...120) V 1000 Ohm	U = 0,000007 V U = 0,0026 Ohm	
36	Regulated stand rectifier BCC-10; BCC-20	(0...50) V (0...20) A	U = 0,0035 B U = 0,00069 A	
37	Console F72917-20	1,86 A; 5,44 A	U = 0,057 A	
38	Console TEST BOX F80229-16	5,89 Ohm	U = 0,0026 Ohm	
39	Tester TS-420 TEST SET	(0...10) V (100...1000) mA (22,6...90,9) Ohm	U = 0,000007 V U = 0,00046 A U = 0,0026 Ohm	
40	Tester TS-200	(0,1...3) V	U = 0,00007 V	
41	Tester T-477	(0,001...2) Ohm	U = 0,00000023 Ohm	
42	Tester TEST SET 42A12D	(10...170) mA (30...45) KHz	U = 0,00046 mA U = $1,2 \cdot 10^{-4}$ KHz	
43	Tester HCS 2047	(3...900) Ohm	U = 0,0026 Ohm	
44	Tester VKGA-755 Tester HZR-171	6 V; 717 kOhm 764 kOhm 34,6 MOhm	U = 0,000007 V U = 0,0026 Ohm	
45	Tester LOOP CONTROLLER	(0...60) Ohm (0,8...2000) kOhm	U = 0,0026 Ohm	
46	Tester C27007-27 (31) Tester C26002-21 Tester C26006-1	28,0 V (100...11000) Ohm (1...100) ms	U = 0,000007 V U = 0,0026 Ohm U = $1,3 \cdot 10^{-5}$ ms	
47	Charger: UL-10; RF-80; AB3000; CA-1550; DC-CA605ED; SUPERSEDER	(6...36) V (1...40) A	U = 0,000007 V U = 0,00000046 A	
48	Testing equipment КПА-ИС-1; КПА-ИС-2	(21...8020) pF (2,9...975,4) Ohm	U = 0,00017 pF U = 0,0026 Ohm	
49	Testing equipment КПА-ПАА-28А: Console 63689/023; Console 63689/024А; Console 63689/025А; Console 63689/026А; Console 63689/044; Console 63689/050; Console 63689/051	(0...60) V (0...25) mA	U = 0,000007 V U = 0,046 mA	
50	Testing equipment КПА-ТПР1Т	(40...4100) Ohm	U = 0,0026 Ohm	
51	Testing equipment КПА-ЭСУД-86 (ПИ-182)	(50...0...100) μ A (0...150) V (35...60) Ohm 1000 kHz; 800 Hz	U = 0,023 μ A U = 0,000007 V U = 0,0026 Ohm U = 0,12 Hz	
52	Testing equipment ПА-АГД-1	(0,5...3) A (10...40) V	U = 0,0023 A U = 0,017 V	
53	Console ПАП-22	(3...15) V (100...300) μ A	U = 0,00046 V U = 0,023 μ A	
54	Console ПДГМ	(0...5) A	U = 0,00069 A	

		(5...25) V	U = 0,0035 V	
55	Console ПКР-24 set 3	(0...213,0) V (0,4...2) A (5...100) Hz	U = 0,017 V U = 0,00069 A U = 0,12 Hz	
56	Console ПКРТ-27	(0...30) V (0,4...2,0) A (20...250) μ A (5... 25) Hz	U = 0,00046 V U = 0,0144 A U = 0,023 μ A U = 0,12 Hz	
57	Tuning panel ПН-8	(1...50) V	U = 0,000007 V	
58	Testing equipment panel ППБ-86, Remote console ППБ-77	(0...50) V (0...3) A 1040 Ohm 1890 Ohm	U = 0,00046 V U = 0,00069 A U = 0,0025 Ohm	
59	Console ПП-ССП	(0...30) V	U = 0,00046 V	
60	Console ПП-СЭУ3	(0,15...30) V 130 Ohm	U = 0,00046 V U = 0,0026 Ohm	
61	Testing panel ППБ-23	(10...50) V (0...3,0) A	U = 0,00046 V U = 0,00023 A	
62	Testing panel ППБ-101	(1...50) V (0...2) A	U = 0,00046 V U = 0,014 A	
63	Testing panel ППБ-123	(0...30) V (0...1000) mA	U = 0,00046 V U = 0,0017 mA	
64	Testing panel ППП-9	(0...30) V	U = 0,00046 V	
65	Plant ППУР-42	(3...150) V (0...20) A	U = 0,0035 V U = 0,00069 A	
66	Routine control panel ПРК-3	(0...1,25) V	U = 0,00046 V	
67	Console ПЭ-11	(0...600) Ohm	U = 0,0026 Ohm	
68	Tester ТПС-3	(10...250) V	U = 0,00346 V	
69	Sampling, displaying and transferring device УБОП-1	(0,0672...8,723) V	U = 0,000007 V	
70	Testing units УП - АОС-М УПЗ - АОС-81М	(100...10000) Ohm	U = 0,0026 Ohm	
71	Vibration meter УПИБ-41	(40...500) mV 205 Hz 48 μ A	U = 0,00046 V U = 0,12 Hz U = 0,023 μ A	
72	Vibration meter УПИБ-П-1	(100...99900) Hz (0...10) B (40...198) μ A	U = 0,12 Hz U = 0,00046 V U = 0,023 μ A	
73	Vibration meter УПИБ-200	(0,2...2,0) V 50 Hz; 120 Hz	U = 0,00046 V U = 0,12 Hz	
74	Verification Plant УПК-3	(10...50) V (0,5...2) A 10 c	U = 0,0035 U = 0,00069 A U = 0,46 s	
75	Verification Plant УПМ-1	(0...1803,6) mV	U = 0,007 mV	
76	Verification Plant УП-МСРП	(0,63...6,3) V 100 kHz	U = 0,00046 V U = $1,2 \cdot 10^{-4}$ Hz	
77	Measuring Plant УПТ-1М	(0...30) V (0...153,1) Ohm	U _p = 0,0035 B U _p = 0,0026 Ohm	
78	Fuel level gauge УПТ-48М	(2...330) Ohm (10...30) V	U = 0,012 Ohm; U = 0,0035 V	

79	Digital gyro machines testing unit УЭГП-1	(10...50) V (0,3...1) A	U = 0,0035 V U = 0,00023 A	
80	Manometers testing unit ЭУИМ-2М	(10...30) B (45...302) Ohm	U = 0,000007 V U = 0,0026 Ohm	
81	Reference selsyn indicator ЭУС-7	(0...300) ° (0...330) °	U = 8,1'	
82	Test equipment КПА-3: Mount УПП-7 Пульс ПКП-5	(0...50) V (10...0...10) mA (0...1) A	U = 0,0035 V U = 0,028 mA U = 0,0029 A	
83	Test equipment КПА-134М: Console-134М Console ППА-134М Console ПКП-21 Console ПКП-41 Console ПКП-32 Console ПКП-37	(0...50) V (0...10) A (0...500) mA	U = 0,0035 V U = 0,00069 A U = 0,0086 mA	
84	Verification Unit УПАС-1М	(0,05...5) A (10; 20; 30) V	U = 0,00069 A U = 0,0035 V	
85	Portable verification unit УПП-ГМК	(0...200) s	U = 0,46 s	
86	Portable verification unit УП-ТКС-П	(10...50) V (0...10) A (0...330) °	U = 0,0035 V U = 0,00069 A U = 8,1'	
87	Verification Plant УПКС line 3	(0...50) B (0...20) A (0...335) °	U = 0,00346 V U _p = 0,00069 A U = 8,1'	
88	Console УПП-1 (ПП-1)	(0...250) B (0...20) A (350...450) Hz	U = 0,00046 V U _p = 0,00069 A U = 0,12 Hz	
89	Console ПП-125	(0...50) V (25...239,0) Ohm	U = 0,0035 V U = 0,0026 Ohm	
90	Console ПАП-32 Console ПАП-33	(0...50) V (0...1) A	U = 0,0035 V U = 0,00069 A	
91	Ground control panel ПНК-10	(0...7,3) V (0...200) μA	U = 0,000007 V U = 0,023 μA	
92	DC power source	(0,1...300) V (0,01...10) A	U = 0,000007 V U = 0,00069 A	
Radio technical and radio electronic measurements				
93	Digital AC voltmeters	1 mV...300 V 10 Hz ...1 GHz	U = 0,00000002 V U = 0,12 Hz	
94	Single and multi-channel oscilloscopes	200 μV...300 V (0... 350) MHz	U = 0,0000017 V U = 0,12 Hz	
95	Measuring pulse generators	(7·10 ⁻⁹ ...1) s 1 mB...100 V 0,1 Гц ...10 MHz	U = 1,2·10 ⁻⁸ s U = 0,000046 V U = 0,12 Hz	
96	Coded signals generator ГКС	(0,6...10,0) μs 1,0 MHz	U = 0,012 μs U = 1,2·10 ⁻⁷ MHz	
97	Digital signal-generator C77002-21 C77002-20	>1,65 V (1,5 kHz) <1,65 V (10; 20; 100) kHz	U = 0,0046 V	
98	Weather radar control console «Groza» ГР-11А	(0,1...165) V 50 μA	U = 0,000007 V U = 0,046 μA	

99	Impulse power meter ИМО-65М	(0,8...23,5) dB (0,4...5000) W	U = 0,0577 db U = 0,00000039 W	
100	Radio compass tester ИРК-3 ИРК-2	(1,6...4000) μ V (100...1300) kHz (0...300) B (0...300) μ A 10 ohm...1 МОм	U = 34,64 μ V U = $1,2 \cdot 10^{-4}$ kHz U = 0,00046 V U = 0,046 μ A U = 0,0012 Ohm	
101	Azimuth and range calibrator КАД	81760 Hz (1,8...218,5) μ s (50...60) B	U = 0,12 Hz U = 0,012 μ s U = 0,0012 V	
102	Airborne transponders testing equipment КАСО	1,0 MHz; 1030 MHz 1090 MHz 0,5 mW (1,45...20,3) μ s	U = $1,2 \cdot 10^{-7}$ MHz U = 0,00039 mW U = 0,006 ms	
103	Range calibrator КД-Л	(1,5...3427,8) μ s (0...250) B	U = 0,012 μ s U = 0,000007 V	
104	КП-РБ-3: Testing equipment set Console СКП-П1 Testing Instrument ТП-1	(0...200) V 0,133 μ s; 0,533 μ s (0...60) dB	U = 0,000007 V U = 0,012 μ s U = 0,058 dB	
105	Kit КП-РБ-5: Testing instrument И-5 Testing instrument К-5	(115; 27; 18) B (7,5 37,5) B (0...50) dB (0,2...0,3) μ s	U = 0,00046 V U = 0,000007 V U = 0,058 dB U = 0,012 μ s	
106	Landing signals calibrator КСП-80	(3888,8...111111,1) μ s	U = 0,012 μ s	
107	Test Instrument П12-МК	(0,2...21,5) MHz 100 mV; 500 mV	U = $1,2 \cdot 10^{-7}$ Hz U = 0,012	
108	Range scope controller ПКД	(962...1213) MHz (50...2717,85) μ s	U = $1,2 \cdot 10^{-7}$ MHz U = 0,007 ms	
109	ADC-b receiver controller ПК0-2 (М, П)	1000 Hz; 668 MHz (0,6...9) μ s 40 μ W; 400 μ W (15...290) V	U = 0,12 Hz U = 0,012 μ s U = 0,00039 mW U = 0,000007	
110	Aircraft equipment test instrument ПКСО-69	(873600...1000500) kHz (5...50) dB	U = $1,2 \cdot 10^{-4}$ kHz U = 0,058 дБ	
111	Device ПС16-521	0,5 V 65 mW (3...23) μ s (837,5...9370) MHz	U = 0,00028 V U = 0,00039 W U = 0,012 μ s U = $1,2 \cdot 10^{-7}$ MHz	
112	Tester Т-1	(30...100) ns (30...70) dB	U = 1,2 ns U = 0,00039 mW	
113	Current and modulation meter ИТМ-5	(0,1...1) A (20...100) %	U = 0,00069 A U = 0,04 %	
114	Radio beacon signal simulator ПСО4-315И	(873,6...1000,5) MHz (16666,66...17142,8 5) μ s (10; 13; 40) dB	U = $1,2 \cdot 10^{-7}$ MHz U = 0,012 μ s U = 0,0577 dB	

115	Device ПС18-333	1,0 MHz 0,4 V; 2,1 V (0,2...100000) μ s	U = $1,2 \cdot 10^{-7}$ MHz U = 0,00028 V U = 0,012 μ s	
116	Console КТУ-1 (ПН-1М)	60 V (10,9...120) ms	U = 0,000007 V U = $1,2 \cdot 10^{-5}$ μ s	
117	Light-sized swiveling stand МПУ-1	(30...1800) s	U = 0,46 c	
118	Gyro instruments checking and testing plant УПГ- 48(56)	(0...360) ° (10...30) V	U = 34,6" U = 0,000007 V	
Mechanical quantities measurement				
119	Adhesive capacity measuring cart АТТ-2, Unit БИО-ВПП Adhesion coefficient value check and measure unit БРПЗ-КС	(10...100) kgf	U = 0,07 %	
120	Special Dynamometers	(10...5000) H (1,0...500,0) kgf	U = 0,07 %	
121	Strain gauge	(10...5000) H (1,0...500,0) kgf	U _p = 0,07 %	
122	Torque wrench. Click-type and torque setting type	(0,4...1000) Hm	U = 0,0046 Hm	
Nondestructive inspection aids measurements				
123	Roentgenospectrographic nondifraction analyzer БАРС-3	(2...10) g/t Fe (1...5) g/t Cu	U = 0,046 г/т	
124	nondestructive testing eddy-current flaw detector Д-5 (ВД-05НХ-ШУ)	0,2 mm (Al) 0,5 mm (Ti) 0,2 mm (Fe)	U = 0,0023 mm	
125	nondestructive testing magnetic particle instru ment МПД-1	5 A 75 mV	U = 0,014 A U = 0,46 V	
126	eddy current flaw detector ТВД-А	0,2 mm (Al) 0,5 mm (Ti) 0,2 mm (Fe)	U = 0,0023 mm	
127	Portable magnetic flaw detector ПМД-70	1100 A	U = 5,77 A	
128	eddy current flaw detector ВДУ-20КМ-1	0,2 mm	U = 0,0023 mm	
129	eddy current flaw detector константа ВД1	0,2 mm (Al) 0,5 mm (Ti) 0,2 mm (Fe)	U _p = 0,0023 mm	
130	Impedance acoustic flaw detector ИАД-3	(1,0...8) kHz (100...200) μ V 20 dB	U = $1,2 \cdot 10^{-4}$ Hz U = 1,38 μ V U = 0,35 db	
131	Ultrasonic flaw detector УД2В-П45, УД2В-П46	(1...10) MHz 80 mV	U = $1,2 \cdot 10^{-7}$ MHz U = 1,15 mV	

General manager
authorized position

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authorized signature

V.V. Perekrestov
paraph