सी एस आई आर-राष्ट्रीय भौतिक प्रयोगशाला
CSIR-NATIONAL PHYSICAL LABORATORY
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद्)
(Council of Scientific and Industrial Research)
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दूरभाष /Phone: 91 - 11 - 4560 8441, 8589, 8610, 9447, फैक्स/Fax: 91-11-4560 8448
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CIPM MRA

अंशांकन प्रमाण पत्र
CALIBRATION CERTIFICATE

A SET OF WEIGHTS

प्रमाण पत्र संख्या / Certificate No.

13080544/D5.01/C-293

दिनांक /Date	अगले अंशांकन हेतु अनुशंसित तिथि Recommended date for the next calibration	पृष्ठ /Page	पृष्ठों की संख्या / No. of Pages
03.12.2013	03.12.2016	1	2

1. **Calibrated for** : M/s Weightronics
9C, Apparel Park cum Industrial Area
Katha Bhatolikalan
Baddi – 173 205
District::Solan, Himachal Pradesh, India

Customer's Ref. No. WT/BADDI/CAL/NPL/2013-2014
Dated : 15th August 2013

2. **Description and Identification of Instrument**

50 kg to 1 g (19 Nos.)	:	Integral knob cylindrical austenitic stainless steel weights.
500 mg to 1 mg (12 Nos.)	:	Austenitic stainless steel wire weights.
Assumed density (d)	:	(7 950 ± 50) kg/m^3; k=2
Make	:	Weightronics

3. **Environmental conditions** : Temperature : (23.0 ± 1.5) °C
Relative humidity : (50.0 ± 10.0) %
[Change in temperature and relative humidity during the calibration were less than ± 0.3 °C per hour and ± 5.0 % per 4 hours respectively]

4. **Standard (s) used and associated uncertainty** : NPL transfer standard(s) of mass with uncertainty better than one-third of the reported uncertainty of measurement.

5. **Traceability of standard (s) used** : The transfer standard(s) used for calibration is(are) traceable to the National Standard which realize the physical units of mass accordjng to the International System of units(SI).

6. **Principle/Methodology of Calibration & Calibration Procedures No.** : NPL Calibration Procedures No.Sub.Div#5.01/Doc.3/CP#WT/M-02
Method of comparison with the NPL transfer standard using subdivision weighing. The reported mass value(s) is (are) the conventional mass value(s) (M_c) related to the true mass value (s) (M_t) by formula :- $M_c = M_t[1-1.2(1/d - 1/8\ 000)]$.

अंशांकनकर्त्ता :
Calibrated by:
D. C. SHARMA

जाँचकर्त्ता :
Checked by:
GOUTAM MANDAL

प्रभारी वैज्ञानिक
Scientist-in-charge:
ANIL KUMAR

जारीकर्त्ता :
Issued by:
Director's Nominee
डा. के. के. सैनी
Dr. K. K. Saini

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7. Results :

Denomination	Mass Value (g)	Uncertainty (g)
50 kg	50 000.005	±0.001 5
20 kg	19 999.997 6	±0.000 6
10 kg	9 999.999 0	±0.002 6
5 kg	5 000.001 4	±0.001 4
2 kg	2 000.000 6	±0.000 6
. 2 kg	2 000.000 6	±0.000 6
1 kg	1 000.000 28	±0.000 16
500 g	500.000 145	±0.000 080
200 g	200.000 006	±0.000 030
. 200 g	200.000 005	±0.000 030
100 g	99.999 970	±0.000 016
50 g	50.000 020	±0.000 010
20 g	20.000 001	±0.000 008
. 20 g	20.000 001	±0.000 008
10 g	10.000 004	±0.000 006
5 g	4.999 998	±0.000 005
2 g	2.000 003	±0.000 004
. 2 g	2.000 000	±0.000 004
1 g	1.000 000	±0.000 003
500 mg	0.500 000	±0.000 002
200 mg	0.200 002	±0.000 002
. 200 mg	0.200 001	±0.000 002
100 mg	0.100 001	±0.000 002
50 mg	0.050 002	±0.000 002
20 mg	0.020 001	±0.000 002
. 20 mg	0.020 001	±0.000 002
10 mg	0.010 000	±0.000 002
5 mg	0.005 001	±0.000 002
2 mg	0.002 001	±0.000 002
.2 mg	0.002 001	±0.000 002
1 mg	0.001 001	±0.000 002

The reported uncertainty is at coverage factor k=2 which corresponds to a coverage probability of approximately 95% for a normal distribution. The contribution of uncertainty, originating from the standard(s) & balance(s) used, the weighing process and the air buoyancy correction, are taken into account.

8. Date(s) of Calibration : (11th to 29th) November & 3rd December 2013

9. Remarks : Mass value(s) of the weight(s) is(are) within the maximum permissible errors in E_1 accuracy class of weights as per OIML R111-1:2004.

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