SAMARTHA SERVICES

• Laboratory : 169/4, Mahatma Nagar Water Tank, MIDC Link Road, Nashik-7. Tel. : (0253) 3208307, Fax : (0253) 2350545 SS/CAL/02

TEST CERTIFICATE / REPORT

REPORT NO :	40555	REPORT DATE :	30.06.2011
CALIBRATED ON :	28.06.2011	DUE ON (RECOM.):	--

1. Service Request Details :

1.1 SRF No. and Date : 1217/24.06.2011

1.2 Name and Address of Organisation M/s.RISHABH INSTRUMENTS
M.I.D.C; SATPUR, NASHIK -07

2. Item Details :

2.1 Nomenclature : CURRENT TRANSFORMER

2.2 Range : 200A / 5 A AC @ 5 VA

2.5 Make / Model : RISHABH INSTRUMENTS

2.6 Serial No. : 50130130

2.7 Item Received On : 24.06.2011 **Physical Cond. of Item & Location:** OK/LAB

3. Calibration Specifications of the Item :

3.1 Requested Parameters & Accuracy : Class 1.0

4. Standard Calibrators Used :

NOMENCLATURE	MAKE / MODEL	Uncertainty	TRACEABILITY / VALIDITY
AUTOMATIC INSTRUMENT TRANSFORMER TEST SET	AITTS-98	±0.02% RE, ±0.02° PE	ERTL (W)/2010 S&C 1122
	DEM-1002		21.09.2011
STD,CURRENT TRANSFORMER	HILBERT	±0.08% FSD	IDEMI CC/ETL/056/10-11
	SET-011		11.07.2011
8 ½ DIGIT DIGITAL MULTIMETER	AGILENT	± 0.006 %	ERTL(W)/2010 S&C 858
	MY45045204		17.08.2011

Room Temp : 22°C **RH:** 43%

Note : The standards / calibrators used are traceable to national standards. The Reported expanded UNCERTAINTY is at coverage factor k=2 which corresponds to a coverage probability of approximately 95% for a normal distribution.

CHECKED BY
Engr.
(Rakesh Kasar)

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CHECKED BY
Quality Manager
(Manohar M.G.)

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QUALITY CHARACTERISTICS	REPORT NO :	40555
	CAL. DATE :	28.06.2011
REQUESTED PARAMETERS AND ACCURACY :	Class 1.0	

SPECIFICATIONS :-

Table - 1

1	CLASS	1
2	RANGE	200 A / 5 A AC @ 50 Hz
3	BURDEN	5 VA @ 0.8 PF LAG
4	INSULATION CLASS	E (Max 70 K)
5	PRIMARY LOADING	Through pass

1) TEST OF R.E. AND P.E. BEFORE THERMAL TESTING :-

1.1. The reading of ratio error (R.E.) and phase error (P.E.) were noted down at 120%, 100%, 20%, and 5% of the full scale reading of 200A current. (Refer Table 1.1.1 & Table 1.1.2)

2) THERMAL TEST : -

2.1. The CT was kept for soaking for 1 hour period at an ambient temperature maintained at 22ºC.The resistance of secondary of CT was measured on the highly precise 8.5 digit DMM by 4-wire system.

2.2. Then 120% of 200A , that is, 240A(rms) AC at 50Hz current was passed through the primary by loading the secondary with 5VA burden at 0.8PF lagging.

2.3. The resistance of the secondary was measured immediately after shutting off the system on the very precise 8.5 digit DMM.

2.4. The resistance – temperature coefficient of copper is 0.00393.(near room temperature)
Therefore, per degree Celsius change in temperature is equivalent to 0.00393 ohms
So, as per the following calculations, we get the required temperature T2.

2.5. At T1=22ºC, absolute resistance=0.056945
Therefore, when abs.R=0.11198 ohms, T2=?
Therefore, change in the resistance=(0.11198-0.056945) / 0.00393=14.0038
Therefore T2=14.0038+22=36.0038ºC

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3) TEST OF R.E. AND P.E. AFTER THERMAL TESTING :

3.1. The readings of R.E. and P.E. were noted down after the thermal testing at 120%, 100%, 20%, and 5% of the full scale reading of 200A (Refer Table 3.1.1 & Table 3.1.2)

RESULT TABLE OF R.E. AND P.E. :-

For Ambient temperature of 22°C :-

200 A/ 5 A AC @ 0 VA

Table 1.1.1

Sr.No.	Current	R.E.(%)	P.E.(min)	Burden	Acc.Class
1	120%	0.489	8.39	0	1.0
2	100%	0.501	9.55	0	1.0
3	20%	0.551	14.00	0	0.5
4	5%	0.667	15.29	0	0.2

200 A/ 5 A AC @ 5 VA 0.8pf lag

Table 1.1.2

Sr.No.	Current	R.E.(%)	P.E.(min)	Burden	Acc.Class
1	120%	-2.421	134.98	4.792	3
2	100%	-0.331	9.1	4.978	0.5
3	20%	-0.255	17.01	4.859	0.5
4	5%	-0.256	19.86	4.776	--

For hot temperature of 36.0038°C:

200 A/ 5 A AC @ 0 VA

Table 3.1.1.

Sr.No.	Current	R.E.(%)	P.E.(min)	Burden	Acc.Class
1	120%	0.506	8.44	0	1.0
2	100%	0.522	9.6	0	1.0
3	20%	0.582	14.02	0	0.5
4	5%	0.674	15.31	0	0.2

200 A/ 5 A AC @ 5 VA 0.8pf lag

Table 3.1.2.

Sr.No.	Current	R.E.(%)	P.E.(min)	Burden	Acc.Class
1	120%	-2.424	135.1	4.794	3
2	100%	-0.338	9.12	4.981	0.5
3	20%	-0.266	17.05	4.862	0.5
4	5%	-0.261	19.90	4.780	--

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CONCLUSIONS : -

1.1. The temperature rise obtained :14.0038K

1.2. Complying with the standards IS 2705 (Part I): 1992, under the clause 7.2.1, table 2.

Remarks :-

* Expanded Uncertainty in measurement at 95 % CL at coverage factor k = 1.96 for ratio measurement is ± 0.20 % & Phase Angle is ± 7.85 min.

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