

Test Report Issued To:

TEST REPORT

OKAYA POWER LTD

H - 19, UDYOG NAGAR, ROHTAK ROAD, DELHI, NEW
DELHI, 110041,

Test Report No: 170331035/170331035-1

Date of Issue: 27-Apr-2017



Sample Receipt Date: 31-Mar-2017

Date of Start of Testing: 01-Apr-2017

Date of Completion of Test: 27-Apr-2017

Customer Relationship Number

21972

Sample Description :

WATER PURIFIER



Sample as Received

Customer Reference No

WO/PO No:

Kind Attention

MR. JITESH GUPTA

E-Mail:

rndstaff@okayapowerltd.com

Contact No:

9999715215

Sample Condition

Sample Quantity (Approx) :

Sample Size (Approx) :

Analyst Signature

Authorised Signatory

Authenticity of report can be verified by mail at verification@spectrolab.in

This is Computer Generated Report and doesn't required Physical Signature.

STUDY

OF

RO WATER PURIFIER

(NASA KA LOTUS S1 Water Purifier with RO+UF+UV)

Model - NASA KA LOTUS S1

SUBMITTED TO:

NASA KA

Okaya Power Pvt. Ltd.

D-7 Udyog Nagar, Rohtak Road

New Delhi-110041

Report No.- TRA 306252

PREPARED BY:

SPECTRO ANALYTICAL LABS LTD, E-41, PHASE-II, OKHLA INDUSTRIAL AREA

NEW DELHI-110020



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Abhishek Roy

TEST CERTIFICATE

Issued To:

NASAKA Okaya Power Pvt Ltd.

D-7 Udyog Nagar, Rohtak Road,

New Delhi-110041

Report No -TRA 306252

Client ID No-170331035-1

Date - 27-04-2017

Kind Attn: Dr. Khursheed Fatma

Sample Particulars:

One Sample of NASAKA LOTUS S1 Water Purifier with RO+UF+UV was received.

TEST RESULTS

As per annexure

A sixteen pages study report of the product is enclosed

DOR: 31-03-2017

DOC: 27-04-2017



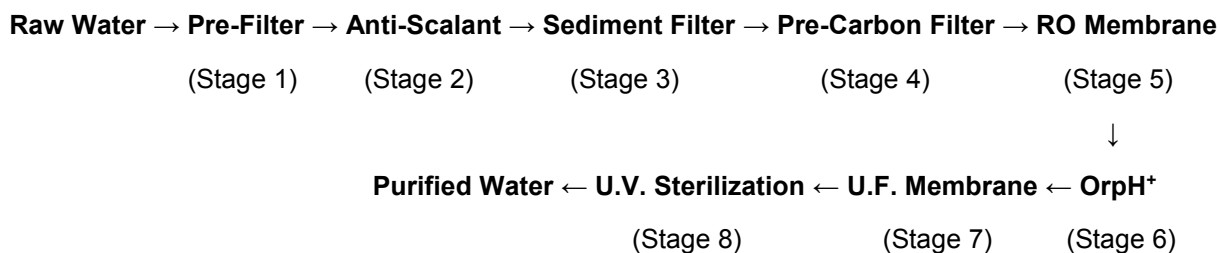
Study title - NASAKA LOTUS S1 Water Purifier with RO+UF+UV

1.0 INTRODUCTION

NASAKA LOTUS S1 Water Purifier with RO+UF+UV purifies the raw water which removes insoluble, soluble and chemical as well as biological impurities to give pure and safe drinking water. The special features of the purifier are as follows.

- 8 Stages purification with a combination of Reverse Osmosis, Ultraviolet and Ultrafiltration technology.
- Suitable for any feed water like tap, borewell or tank water.
- 15 LPH purifying capacity with a 13 litre storage tank capacity.
- Fully automatic controls.
- It has a special feature of OrpH⁺ technology which balances the Orp and pH of water to make it suitable for drinking purpose.

Filtration Process :



Study title- NASAKA LOTUS S1 Water Purifier with RO+UF+UV

2.0 SCOPE OF WORK

Synthetic samples of water were prepared having following composition as per IS 10500-2012 requirement.

<u>S.NO</u>	<u>DESCRIPTION</u>	<u>COMPOSITION</u>
1	Sample No. I	Water having TDS - 882 mg/l.
2	Sample No. II	Water having TPC
3	Sample No. III	Water having E.coli, S. aureus, P.aeruginosa, Yeast &Mold, S.feacalis, Salmonella, Shigella, V.cholrae &V.para, Sulphite reducing anaerobes.
4	Sample No. IV	Water having Pesticide
5	Sample No. V	Water having Heavy metal

All the above five samples were passed through NASAKA Lotus S1 Water Purifier with RO+UF+UV with flow control on TDS and the following water sample water sample were drawn.

One sample of outlet water from Sample no.I.

One sample of outlet water from Sample no. II.

One sample of outlet water from Sample no.III.

One sample of outlet water from Sample no. IV.

One sample of outlet water from Sample no.V.

In addition to above study, one sample of tap water passed through the said purifier and analyzed for the drinking water specification (IS-10500-2012)



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3.0 METHODOLOGY

- 3.1 **MICROBIOLOGICAL TEST** - Estimation was carried out by collecting the water sample from outlet and analyzed by the membrane filtration technique. Method followed as per IS-10500-2012.
- 3.2 **PHYSICAL PARAMETERS**- Estimation was carried out by collecting the water sample from outlet and analyzed by the chemical procedure. Method followed as per IS-10500-2012.
- 3.3 **CONCERNING SUBSTANCES**- Estimation was carried out by collecting the water sample from outlet and analyzed by the chemical procedure. Method followed as per IS-10500-2012.
- 3.4 **TOXIC SUBSTANCES**-Estimation was carried out by collecting the water sample from outlet and analyzed by the chemical procedure. Method followed as per IS-10500-2012
- 3.5 **PESTICIDE**- Estimation was carried out by collecting the water sample from outlet and analyzed by GC-MS MS Method followed as per IS-10500-2012.



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4.0 ANALYSIS OF SYNTHETIC WATER

SAMPLE-I (Total Dissolved Solids)

<u>Sample description</u>	<u>TDS, mg/l</u>
Raw water (Inlet)	882

SAMPLE-II (Total Plate Count)

<u>Sample description</u>	<u>Sample inoculation (cfu/ml)</u>
Raw water (Inlet)	2500 cfu/ml (target value)

SAMPLE-III (Microbiological Parameters)

<u>S.No</u>	<u>Name of micro-organisms for inoculation</u>	<u>Synthetic water(Inlet)</u> <u>Sample inoculation in cfu/250ml</u>
1.	E.coli (MTCC-41)	6.5 x 10 ⁵
2.	S. aureus (MTCC-96)	6.8 x 10 ⁵
3.	P. aeruginosa (MTCC-741)	7.0 x 10 ⁵
4.	A. niger (MTCC-282)	6.3x 10 ⁵
5.	Faecal streptococci (MTCC-439)	6.5 x 10 ⁵
6.	Salmonella typhimurium (MTCC-125I)	6.7 x 10 ⁵
7.	Shigella flexneri (MTCC-1457)	7.3 x 10 ⁵
8.	V. cholerae (MTCC-3906)	7.2 x 10 ⁵
9.	V. parahaemolyticus (MTCC-451)	6.6 x 10 ⁵
10.	Clostridium perfringens(MTCC-450)	1.4 x 10 ⁵

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SAMPLE-IV (PESTICIDES)

<u>S.NO.</u>	<u>TESTS PARAMETERS</u>	<u>SYNTHETIC WATER (INLET)</u>
1.	Total HCH (a,b,d-isomers)	ND
2.	g-HCH (Lindane)	ND
3.	Total DDT (o,p &p,p-isomers of DDT,DDE,DDT)	ND
4.	Total Endosulfan (a,b and sulfate)	ND
5.	Aldrin	ND
6.	Dieldrin	ND
7.	Monocrotophos	ND
8.	Phorate	ND
9.	Malathion	ND
10.	Methyl-parathion	ND
11.	Chlorpyrifos	ND
12.	Ethion	98.6 µg/l
13.	Alachlor	86.9 µg/l
14.	Butachlor	ND
15.	Atrazine	94.78 µg/l
16.	2-4-D	ND
17.	Isoproturon	ND
18.	Total Pesticide Content	280.28 µg/l

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SAMPLE-V (HEAVY METAL)

S.NO.	TESTS PARAMETERS	SYNTHETIC WATER (INLET)
1.	Total Iron (as Fe), mg/l	0.2
2.	Manganese (as Mn), mg/l	<0.01
3.	Copper (as Cu), mg/l	<0.01
4.	Selenium (Se), mg/l	<0.01
5.	Chromium (as Cr ⁺⁶), mg/l	<0.01
6.	Mercury (as Hg), mg/l	0.008
7.	Cadmium (as Cd), mg/l	0.088
8.	Arsenic (as As), mg/l	0.49
9.	Cyanide (as CN), mg/l	<0.05
10.	Lead (as Pb), mg/l	0.48
11.	Zinc (as Zn), mg/l	0.1
12.	Anionic Detergent (as MBAS), mg/l	1.96
13.	Aluminium (as Al), mg/l	0.1
14.	Boron (as B), mg/l	0.17

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5.0 ANALYSIS REPORT (SYNTHETIC & PURIFIED WATER)

Bacteriological Analysis of sample as per IS-10500-2012.

S.No	PARAMETERS	RESULTS		REQUIREMENT	METHOD
		SYNTHETIC INLET	PURIFIED WATER		
1	Coliform organisms/250ml	6.5 x 10 ⁵	Absent	Absent	IS-5401-I/IS-15185
2	E.coli/250ml	6.5 x 10 ⁵	Absent	Absent	IS-5887-I/IS-15185
3	S.aureus/250ml	6.8 x 10 ⁵	Absent	Absent	IS-5887-VIII- SEC-I
4	Pseudomonas aeruginosa/250ml	7.0 x 10 ⁵	Absent	Absent	ANNEX-D of IS-13428
5	Yeast & Mould/250ml	6.3 x 10 ⁵	Absent	Absent	IS-5403
6	Faecal streptococci/250ml	6.5 x 10 ⁵	Absent	Absent	IS-15186
7	Salmonella/250ml	6.7 x 10 ⁵	Absent	Absent	IS-5887-III
8	Shigella/250ml	7.3 x 10 ⁵	Absent	Absent	IS-5887-VII
9	Vibrio cholerae/250ml	7.2 x 10 ⁵	Absent	Absent	IS-5887-V
10	Vibrio parahaemolyticus/250ml	6.6 x 10 ⁵	Absent	Absent	IS-5887-V
11	Sulphite reducing anaerobes/50ml	1.4 x 10 ⁵	Absent	Absent	ANNEX-C of IS-13428
12	Aerobic bacterial count, cfu/ml at 37°C for 24 hrs.	2250	0	20 (max.)	IS-5402
	Aerobic microbial count at 22°C for 72 hrs.	2250	0	100 (max.)	IS-5402

NOTE- Inoculation was done by membrane filtration technique IS-15188-2002.

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Pesticide Analysis of sample as per IS-10500-2012

S. No	PESTICIDES	TEST METHOD	RESULTS		MDL (mg/l)	REQUIREMENT
			SYNTHETIC INLET	PURIFIED WATER		
1.	Total HCH (α, β, δ -isomers)	EPA 525.2/EPA 508	ND	ND	0.025	1.0 $\mu\text{g/l}$ (max)
2.	γ -HCH (Lindane)	EPA 525.2/EPA 508	ND	ND	0.025	1.0 $\mu\text{g/l}$ (max)
3.	Total DDT (o,p & p,p-isomers of DDT, DDE, DDT)	EPA 525.2/EPA 508	ND	ND	0.025	1.0 $\mu\text{g/l}$ (max)
4.	Total Endosulfan (α, β and sulfate)	EPA 525.2 /EPA 508	ND	ND	0.025	1.0 $\mu\text{g/l}$ (max)
5.	Aldrin	EPA 525.2/EPA 508	ND	ND	0.025	1.0 $\mu\text{g/l}$ (max)
6.	Dieldrin	EPA 525.2/EPA 508	ND	ND	0.025	1.0 $\mu\text{g/l}$ (max)
7.	Monocrotophos	EPA 525.2/EPA 8141A	ND	ND	0.05	1.0 $\mu\text{g/l}$ (max)
8.	Phorate	EPA 525.2/EPA 8141A	ND	ND	0.05	1.0 $\mu\text{g/l}$ (max)
9.	Malathion	EPA 525.2/EPA 8141A	ND	ND	0.05	1.0 $\mu\text{g/l}$ (max)
10.	Methyl-parathion	EPA 525.2/EPA 8141A	ND	ND	0.05	1.0 $\mu\text{g/l}$ (max)
11.	Chlorpyrifos	EPA 525.2/EPA 8141A	ND	ND	0.05	1.0 $\mu\text{g/l}$ (max)
12.	Ethion	EPA 525.2/EPA 8141A	98.6	ND	0.05	1.0 $\mu\text{g/l}$ (max)
13.	Alachlor	EPA 525.2/EPA 507	86.9	ND	0.05	1.0 $\mu\text{g/l}$ (max)
14.	Butachlor	EPA 525.2/EPA 8141A	ND	ND	0.05	1.0 $\mu\text{g/l}$ (max)
15.	Atrazine	EPA 525.2/EPA 508	94.78	ND	0.05	1.0 $\mu\text{g/l}$ (max)
16.	2-4-D	EPA 525.2/EPA 515.3	N D	ND	0.05	1.0 $\mu\text{g/l}$ (max)
17.	Isoproturon	EPA 532	ND	ND	0.05	1.0 $\mu\text{g/l}$ (max)
18.	Total Pesticide Content	-	280.28	ND		5.0 $\mu\text{g/l}$ (max)

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6.0 REMOVAL RETENTION

S. No.	TEST PARAMETER	RESULT		RETENTION .%
		Tap Water Inlet	Purified Water Outlet	
1	Coliform organisms/250ml	6.5 x 10 ⁵	Absent	100
2	E.coli/250ml	6.5 x 10 ⁵	Absent	100
3	S.aureus/250ml	6.8 x 10 ⁵	Absent	100
4	Pseudomonas aeruginosa/250ml	7.0 x 10 ⁵	Absent	100
5	Yeast & Mould/250ml	6.3 x 10 ⁵	Absent	100
6	Faecal streptococci/250ml	6.5 x 10 ⁵	Absent	100
7	Salmonella/250ml	6.7 x 10 ⁵	Absent	100
8	Shigella/250ml	7.3 x 10 ⁵	Absent	100
9	Vibrio cholrae/250ml	7.2 x 10 ⁵	Absent	100
10	Vibrio parahaemolyticus/250ml	6.6 x 10 ⁵	Absent	100
11	Sulphite reducing anaerobes/50ml	1.4 x 10 ⁵	Absent	100
12	Aerobic bacterial count,cfu/ml at 37°C for 24 hrs	2250	0	100
	Aerobic microbial count at 22°C for 72 hrs.	2250	0	100
13	Total HCH (α,β,δ-isomers)	ND	ND	100
14	γ-HCH (Lindane)	ND	ND	100
15	Total DDT (o,p &p,p-isomers of DDT,DDE,DDT)	ND	ND	100
16	Total Endosulfan (α,β and sulfate)	ND	ND	100
17	Aldrin	ND	ND	100
18	Dieldrin	ND	ND	100
19	Monocrotophos	ND	ND	100

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S. No.	TEST PARAMETER	RESULTS		RETENTION ,%
		Tap Water Inlet	Purified Water Outlet	
20	Phorate	ND	ND	100
21	Malathion	ND	ND	100
22	Methyl-parathion	ND	ND	100
23	Chlorpyrifos	ND	ND	100
24	Ethion	ND	ND	100
25	Alachlor	98.6	ND	100
26	Butachlor	86.9	ND	100
27	Atrazine	ND	ND	100
28	2-4-D	94.78	ND	100
29	Isoproturon	ND	ND	100

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ANALYSIS AS PER IS:10500-2012

S.N o	TESTPARAMETERS	OBSERVED RESULTS		LIMITS (MAX)		TEST METHODS
		Tap Water Inlet	Purified Water Outlet	Acceptable Limit	Permissible limit in the absence of Alternate Source	
1.	Color, Hazen units	<5.0	<5.0	5	15	IS:3025 (Pt -4): 1983(CI.2)
2.	Odour	Agreeable	Agreeable	Agreeable		IS: 3025 (Pt- 5): 1983
3.	Taste	Disagreeable	Agreeable	Agreeable		IS: 3025 (Pt- 8): 1984
4.	pH value	7.18	7.10	6.50 to 8.5	No relaxation	IS: 3025 (Pt-11): 1983
5.	Turbidity, NTU	<1.0	<1.0	1	5	IS: 3025 (Pt-10): 1984
6.	Total Dissolved Solids, mg/l	882	58	500	2000	IS: 3025 (Pt-16): 1984
7.	Total Hardness (as CaCO ₃), mg/l	556.0	28	200	600	IS: 3025 (Pt-21): 2009
8.	Residual Free Chlorine, mg/l	Nil	Nil	0.2	1.0	IS:3025 (Pt-26):1986(CI.4)
9.	Chlorides (as Cl), mg/l	204.83	4.02	250	1000	IS:3025 (Pt-32):1988(CI.2)
10.	Sulphate (as SO ₄), mg/l	165.96	<0.01	200	400	IS:3025 (Pt-24):1986(CI.4)
11.	Nitrate (as NO ₃), mg/l	22.56	0.04	45	No relaxation	IS:3025 (Pt-34):1988(CI.3)
12.	Total Iron (as Fe), mg/l	0.2	0.02	0.3	No relaxation	IS:3025 (Pt-53):2003(CI.6)
13.	Fluorides (F), mg/l	0.93	<0.01	1.0	1.5	IS:3025 (Pt-60):2008(CI.5)
14.	Manganese (as Mn), mg/l	<0.01	<0.01	0.1	0.3	IS: 3025 (Pt-2):2004
15.	Copper (as Cu), mg/l	<0.01	<0.01	0.05	1.5	IS: 3025 (Pt-2):2004
16.	Selenium (Se), mg/l	<0.01	<0.01	0.01	No relaxation	IS:3025 (Pt-56):2003(CI.7)
17.	Total Chromium (as Cr), mg/l	<0.01	<0.01	0.05	No relaxation	IS: 3025 (Pt-2):2004
18.	Calcium (as Ca), mg/l	131.46	8.01	75	200	IS:3025(Pt-40):1991 (CI.4)
19.	Magnesium (as Mg), mg/l	55.40	1.94	30	100	IS:3025(Pt-46):1994 (CI.6)
20.	Phenolic Compounds (as C ₆ H ₅ OH),mg/l	0.009	<0.001	0.001	0.002	IS:3025(Pt-43):1992 (CI.6)

Cont..

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S.N o	TESTPARAMETERS	OBSERVED RESULTS		LIMITS (MAX)		TEST METHODS
		Tap Water Inlet	Purified Water Outlet	Acceptable Limit	Permissible limit in the absence of Alternate Source	
21.	Mercury (as Hg), mg/l	0.008	<0.001	0.001	No relaxation	IS: 3025(Pt-48):1994 (Cl.5)
22.	Cadmium (as Cd), mg/l	0.088	<0.001	0.003	No relaxation	IS: 3025 (Pt-2):2004
23.	Arsenic (as As), mg/l	0.49	<0.01	0.01	0.05	IS:3025(Pt-37):1988 (Cl.2)
24.	Cyanide (as CN), mg/l	<0.05	<0.05	0.05	No relaxation	IS:3025(Pt-27):1986
25.	Lead (as Pb), mg/l	0.48	<0.01	0.01	No relaxation	IS: 3025 (Pt-2): 2004
26.	Zinc (as Zn), mg/l	0.1	<0.01	05	15	IS: 3025 (Pt-2): 2004
27.	Anionic Detergent (as MBAS), mg/l	1.96	<0.01	0.2	1.0	APHA 5540-C
28.	Alkalinity, mg/l	316.50	36.18	200	600	IS: 3025 (Pt-23):1986
29.	Aluminium (as Al), mg/l	0.1	<0.01	0.03	0.2	IS: 3025 (Pt-2): 2004
30.	Boron (as B), mg/l	0.17	<0.10	0.5	1.0	IS: 3025 (Pt-2): 2004
31.	Mineral Oil, mg/l	0.97	<0.01	0.5	No relaxation	IS:3025 (Pt-39): 1991

7.0 REMARKS

The sample of purified water drawn from NASAKA Lotus S1 Water Purifier with RO+UF+UV water purifier meets drinking water specification as per IS 10500-2012.

Abhishek Roy