Laboratory	**ITC Life Sciences & Technology Centre, No. 3, 1st Main Road, Peenya Industrial Area, 1st Phase, Bangalore, Karnataka**		
Accreditation Standard	**ISO/IEC 17025: 2005**		
Discipline	**Chemical Testing**	**Issue Date**	**08.03.2014**
Certificate Number	**T-0822**	**Valid Until**	**07.03.2016**
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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I.	**FOOD & AGRICULTURAL PRODUCTS**			
1.	**TOBACCO AND BY-PRODUCTS**			
a.	**Cigarette Smoke**	pH	Health Canada –Method, T-113	4.00 to 9.00
		Total and nicotine free dry particulate matter	ISO 4387:2000 /Amd 1:2008	0.5 to 30.0/0.1 mg/cig
		Carbon Monoxide	ISO 8454:2007/Amd1:2009	0.5 to 30/0.1 mg/cig
		Nicotine	ISO 10315:2000/Amd1:2011	0.05 to 4.0/0.02 mg/cig
		Phenols	In-house method, TTP/VAL/HA 41-12, Issue No. 00, Revision No. 01, Dated : 1st Oct. 2013	
		Catechol		0.4 to 100 / 0.13 µg/cig
		Phenol		1 to 200 / 0.04 µg/cig
		m and p –Cresol		0.3 to 70 / 0.03 µg/cig
		O-Cresol		0.2 to 40/0.02 µg/cig
		Ammonia	In-house method, TTP/VAL/HA 44-12 Issue No. 01, Revision No. 01, Dated : 2nd April 2013	1.2 to 66/0.6 µg/cig
		Tobacco specific Nitosoamines (TSNAs)	In-house method, TTP/VAL/HA 46-12 Issue No. 01, Revision No. 01, Dated : 1st Aug. 2012	
		N-Nitroso Nornicotine [NNN]		4 to 500/0.6 ng/cig
		N-Nitroso Anatabine [NAT]		4 to 500/0.6 ng/cig
		N-Nitroso Anabasine [NAB]		1 to 500/0.6 ng/cig

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	Cigarette Smoke	4-(Methylnitrosamino)-1-(3-pyridyl)-1-butanol [NNK]	In-house method, TTP/VAL/HA 46-12 Issue No. 01, Revision No. 01, Dated : 1st Aug. 2012	4 to 500/0.6 ng/cig
		Carbonyls	Health Canada method T - 104	
		Formaldehyde		12 to 60/11 ng/cig
		Acetaldehyde		205 to 950/200 ng/cig
		Acetone		88 to 450/85 ng/cig
		Acrolein		20 to 90/20 ng/cig
		Propionaldehyde		18 to 90/15 ng/cig
		Crotonaldehyde		12 to 50/11 ng/cig
		Methyl ethyl Ketone		30 to 80/29 ng/cig
		Butyraldehyde		14 to 70/13 ng/cig
		Hydrogen Cyanide	Health Canada method T - 107	14 to 210/0.504 ng/cig
		Heterocyclic Amines and Tobacco specific nitrosamines	In-house method TTP/VAL/HPHC/2-12 Issue No. 01, Revision No. 01, Dated: 10th Oct. 2012	
		A-Alpha-C. 2-Amino-9H-Pyrido[2,3-]indole)		2 to 500 / 0.04 ng/cig
		Glu-P1. 2- Amino-6-methyldipyrido [1,2-a:3'2'-d]imidazole		2 to 500 / 0.04 ng/cig
		Glu-P2.2-Aminodipyrido [1,2-a:3'2'- d]imidazole		2 to 500 / 0.04 ng/cig

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	Cigarette Smoke	IQ. 2-Amino-3-methylimidazo[4,5-f]quinolone	In-house method TTP/VAL/HPHC/2-12 Issue No. 01, Revision No. 01, Dated: 10th Oct. 2012	2 to 500 / 0.04 ng/cig
		MeA-Alpha-C. 2-Amino-3-methyl)-9-H-Pyrido[2,3-b]indole		2 to 500 / 0.04 ng/cig
		PhIP. 2-Amino-1-methyl-6-phenylimidazo[4,5-b]pyridine		2 to 500 / 0.04 ng/cig
		Trp-P1. 3-Amino-1,4-dimethyl-5H-Pyrido[4,3-b]indole		2 to 500 / 0.04 ng/cig
		Trp-P2. 1-Methyl-3-Amino-5H-Pyrido[4,3-b]indole		2 to 500 / 0.04 ng/cig
		NNK. 4-methylnitrosoamino) 1-(3-pyridyl)-1-butanone)		2 to 500 / 0.04 ng/cig
		NNN. N-Nitrosonornicotine		2 to 500 / 0.04 ng/cig
		Hydrazine	In-house method TTP/VAL/HPHC/2-12 Issue No. 00, Revision No. 00, Dated: 12th Feb. 2013	0.025 to 10 / 0.02 µg/cig
		Volatiles and Semi volatiles -1	In-house method TTP/VAL/HPHC/4-13 Issue No. 01, Revision No. 00, Dated: 18th Mar. 2013	
		Propylene Oxide		0.9 to 40/0.1 µg/cig
		Vinyl Chloride		0.4 to 20/0.1 µg/cig
		1,3-Butadiene		9.5 to 400/0.1 µg/cig
		Acrylonitrile		2.0 to 100/0.1 µg/cig
		Vinyl Acetate		0.5 to 20/0.1 µg/cig
		Benzene		7.6 to 320/0.1 µg/cig

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	Cigarette Smoke	Toluene	In-house method TTP/VAL/HPHC/4-13 Issue No. 01, Revision No. 00, Dated: 18th Mar. 2013	8.5 to 320/0.1 µg/cig
		Ethyl Benzene		1.0 to 40/0.1 µg/cig
		Styrene		0.9 to 40/0.1 µg/cig
		Quinoline		0.8 to 20/0.1 µg/cig
		Ethylene Oxide		10.9 to 400/3.0 µg/cig
		Isoprene		83.5 to 3200/0.1 µg/cig
		Ethyl carbamate	In-house method TTP/VAL/HPHC/9-13 Issue No. 01, Revision No. 01, Dated: 15th Feb. 2013	40 to 800 / 20.0 µg/cig
		Polycyclic aromatic hydrocarbons (PAH)	In-house method TTP/VAL/HPHC/1-13 Issue No. 01, Revision No. 01, Dated: 15th Feb. 2013	
		Benzofuran		1.0 to 200 /0.5 ng/cig
		Benzo (c) phenanthrene		1.0 to 200 /0.5 ng/cig
		5-Methyl chrysene		1.0 to 200 /0.5 ng/cig
		Benz (a) anthracene		1.0 to 200 /0.5 ng/cig
		Cyclopenta (c,d) pyrene		1.0 to 200 /0.5 ng/cig
		Chyrsene		1.0 to 200 /0.5 ng/cig
		Benzo (b) fluoranthene		1.0 to 200 /0.5 ng/cig
		Benzo (k) fluroranthene		1.0 to 200 /0.5 ng/cig
		Benzo (j) aceanthrylene		1.0 to 200 /0.5 ng/cig
		Benzo (a) pyrene		1.0 to 200 /0.5 ng/cig

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	Cigarette Smoke	Dibenz (a,h) anthracene	In-house method TTP/VAL/HPHC/1-13 Issue No. 01, Revision No. 01, Dated: 15th Feb. 2013	1.0 to 200 /0.5 ng/cig
		Indeno (1,2,3-cd) pyrene		1.0 to 200 /0.5 ng/cig
		Dibenzo (a,l) pyrene	In-house method TTP/VAL/HPHC/11-13 Issue No. 01, Revision No. 01, Dated: 4th April 2013	5.0 to 200 /2.50 ng/cig
		Dibenzo (a,e) pyrene		5.0 to 200 /2.50 ng/cig
		Dibenzo (a,i) pyrene		5.0 to 200 /2.50 ng/cig
		Dibenzo (a,h) pyrene		5.0 to 200 /2.50 ng/cig
		Naphthalene		5.0 to 2000 /2.50 ng/cig
		Caffeic Acid		0.05 to 100 / 0.01 ng/cig
		Volatiles/Semi volatiles -2	In-house method TTTP/VAL/HPHC/18-13 Issue No. 01, Revision No. 00, Dated: 7th Nov. 2013	
		Furan		3.0 - 60 /0.1 µg/cig
		2-Nitropropane		0.2 - 40 /0.1 µg/cig
		Nitro methane		0.3 - 40 /0.1 µg/cig
		Nitrobenzene		0.2 - 40 /0.1 µg/cig
		Acetamide		0.4 - 20 /0.1 µg/cig
		Acrylamide		0.2 - 20 /0.1 µg/cig
		Quinoline		0.2 - 20 /0.1 µg/cig
		Benzofuran		0.05 – 48/0.03 µg/cig
		Volatile Nitrosamines	In-house method TTP/VAL/HPHC/16-13 Issue No. 01, Revision No. 01, Dated: 29th July 2013	
		N-Nitrosodiethanolamine		10-100/0.25 ng/cig
		N-Nitrosopiperidine		10-100/0.21 ng/cig
		N-Nitrosopyrolidine		10-100/0.23 ng/cig
		O-Toluidine		1-100/0.05 ng/cig
		O-Anisidine		1-100/0.04 ng/cig
		Acrylamide		1-5/0.002 ng/cig
		2,6,Dimethyl aniline		1-100/0.16 ng/cig

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	Cigarette Smoke	N-Nitrosodimethylamine	In-house method	5-100/0.5 ng/cig
		N-Nitrosodiethylamine	TTP/VAL/HPHC/16-13	1-100/0.4 ng/cig
		N-Nitrosoethylmethylamine	Issue No. 01, Revision No. 01, Dated: 29th July 2013	50-500/0.04 ng/cig
		Aromatic Amines	In-house method,	
		1-Aminonapthalene	TTP/VAL/HPHC/21-13	1-80/0.02 ng/cig
		2-Aminonapthalene	Issue No. 01, Revision No. 01,	1-80/0.01 ng/cig
		4-Aminobiphenyl	Dated: 9th Oct 2013	0.2-16/0.01 ng/cig
		Metals	In- house method	
		Beryllium	TTP/VAL/HPHC/17-13	0.2 - 20 / 0.2 ng/cig
		Chromium	Issue No. 00, Revision No. 00,	2 - 100 / 3.00 ng/cig
		Cobalt	Dated: 14th Aug 2013	0.15 – 20 / 0.20 ng/cig
		Nickel		5 – 100 / 8.0 ng/cig
		Arsenic		0.25 – 40 /0.15 ng/cig
		Selenium		0.5 – 40 / 0.5 ng/cig
		Cadmium		1.00 – 100 / 0.50 ng/cig
		Lead		5.00 – 100 / 3 ng/cig
		Phenols	In- house method	
		Catechol	TTP/VAL/HPHC/22-14	2.00-14.00/0.32 µg/cig
		Phenol	Issue No. 01, Revision No. 01,	1.60-56.0/0.08 µg/cig
		m- cresol	Dated: 11th Jan 2014	0.40-14.0/0.04 µg/cig
		p-cresol		0.40-14.0/0.04 µg/cig
		o-cresol		0.40-14.0/0.03 µg/cig
		Resorcinol		0.40-14.0/0.08 µg/cig
		Hydroquinone		3.20-112/0.26 µg/cig

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b.	**Tobacco**	Total Alkaloids As Nicotine	ISO-15152:2003 In-house method TTP/VAL/CHEM/8-12 Issue No. 01, Revision No. 00, Dated: 6th Feb. 2013	0.20 to 4.00/0.09 %
		Reducing Sugars	In-house method TTP/VAL/CHEM/02-10 Issue No. 01, Revision No. 00, Dated: 1st Dec. 2010	0.1 to 25/0.03 %
		Total Sugars	In-house method TTP/VAL/CHEM/03-10 Issue No. 01, Revision No. 00, Dated: 1st Dec. 2010	0.2 to 25/0.06 %
		Chloride	In-house method TTP/VAL/CHEM/04-10 Issue No. 01, Revision No. 00, Dated: 1st Dec. 2010	0.1 to 2.50/0.03 %
		Moisture Content	In-house method TTP/VAL/PHY/01-10 Issue No. 01, Revision No. 00, Dated: 1st May 2010 In-house method TTP/VAL/PHY/05-10 Issue No. 01, Revision No. 00, Dated: 1st May 2010	8.0 to 18.0 %
		Nitrate	ISO:15517:2003	0.10 to 2.00 %
		pH	Health Canada method No.T-310	4 to 14

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	Tobacco	RECON content	In-house method TTP/VAL/CHEM/07-10 Issue No. 00, Revision No. 00, Dated: 1st May 2009	0.1 to 10/0.05 %
		Organochlorine Pesticides	In-house Method TTP/VAL/AL/01-12 Issue No. 01, Revision No. 01 Dated: 1st Oct. 2013	
		α - HCH		0.05 to 1.00 / 0.01mg/kg
		β - HCH		0.05 to 1.00 / 0.01mg/kg
		γ - HCH (Lindane)		0.05 to 1.00 / 0.01mg/kg
		δ - HCH		0.05 to 1.00 / 0.01mg/kg
		Heptachlor		0.05 to 1.00 / 0.01mg/kg
		Aldrin		0.05 to 1.00 / 0.01mg/kg
		Chlordane		0.05 to 1.00 / 0.01mg/kg
		Alpha Endosulphan		0.05 to 1.00 / 0.01mg/kg
		Dieldrin		0.05 to 1.00 / 0.01mg/kg
		2,4-DDD		0.05 to 1.00 / 0.01mg/kg
		4,4-DDD		0.05 to 1.00 / 0.01mg/kg
		2,4-DDE		0.05 to 1.00 / 0.01mg/kg
		4,4 -DDE		0.05 to 1.00 / 0.01mg/kg
		2,4 –DDT		0.05 to 1.00 / 0.01mg/kg
		4,4 –DDT		0.05 to 1.00 / 0.01mg/kg
		Heptachlor Epoxide		0.05 to 1.00 / 0.01mg/kg
		Endrin		0.05 to 1.00 / 0.01mg/kg

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	Tobacco	**Organophosphate Pesticides**	In-house method	
		Phorate	TTP/VAL/AL/03-12 Issue No. 01, Revision No. 01, Dated: 1st Oct. 2013	0.1 to 1.0 / 0.05 mg/kg
		Methyl Parathion		0.1 to 1.0 / 0.05 mg/kg
		Malathion		0.1 to 1.0 / 0.05 mg/kg
		Chloropyriphos		0.1 to 1.0 / 0.05 mg/kg
		Primiphos Ethyl		0.1 to 1.0 / 0.05 mg/kg
		Phenthoate		0.1 to 1.0 / 0.05 mg/kg
		Ethion		0.1 to 1.0 / 0.05 mg/kg
		Formothion		0.1 to 1.0 / 0.05 mg/kg
		Pyrithroid	In-house method	
		Total Permethrin	TTP/VAL/AL/04-12 Issue No. 01, Revision No. 01, Dated: 1st Oct. 2013	0.1 to 1.0 / 0.05 mg/kg
		Total Cypermethrin		0.1 to 1.0 / 0.05 mg/kg
		Total Fenvalerate		0.1 to 1.0 / 0.05 mg/kg
		Deltamethrin		0.1 to 1.0 / 0.05 mg/kg
		Herbicides	In house Method	
		Dicamba	TTP/VAL/AL/07-12 Issue No. 01, Revision No. 01, Dated: 1st Oct. 2013	0.4 to 5.0 / 0.4 mg/kg
		2,4-D		0.4 to 5.0 / 0.4 mg/kg
		2,4,5-T		0.4 to 5.0 / 0.4 mg/kg
		Ash	In house Method	0.1 to 18 / 0.1%
		Acid insoluble ash as Silica	TTP/VAL/AL/06-12 Issue No. 01, Revision No. 01, Dated: 1st Oct. 2013	0.1 to 5 / 0.1%

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	Tobacco	Toxaphene	In house Method TTP/VAL/AL/08-12 Issue No. 01, Revision No. 01, Dated: 1st Oct. 2013	1.0 to 5.0/0.1 mg/kg
		Metals	In- house method	
		Beryllium	TTP/VAL/HPHC/5-12	0.01 to 0.5 / 0.01 µg/g
		Chromium	Issue No. 00, Revision No. 00,	0.2 to 12.5 / 0.1 µg/g
		Cobalt	Dated: 5th Dec. 2012	0.15 to 8 / 0.01 µg/g
		Nickel		0.2 to 12.5 / 0.1 µg/g
		Arsenic		0.05 to 5 / 0.01 µg/g
		Selenium		0.05 to 5 / 0.01 µg/g
		Cadmium		0.2 to 12.5 / 0.01 µg/g
		Mercury		0.005 to 0.5 / 0.01 µg/g
		Lead		0.2 to 10 / 0.1 µg/g
		Carbonyls	In - house method	
		Formaldehyde	TTP/VAL/HPHC/13-12	1.6 to 166 / 1.0 µg/g
		Acetaldehyde	Issue No. 00, Revision No. 00, Dated: 12th Feb. 2013	3 to 500 /1.0 µg/g
		Crotonaldehyde		1 to 200/1 µg/g
		Benzo(a)Pyrene	In-house method TTP/VAL/HPHC/ 7-12 Issue No. 01, Revision No. 01, Dated: 31st Oct. 2012	3.00 to 150 / 1.50 ng/g
		Caffeic Acid	In-house method TTP/VAL/HPHC/10-12 Issue No. 01, Revision No. 01, Dated: 10th April 2013	20 to 500 / 0.2 µg/g

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	Tobacco	Coumarin	In-house method TTP/VAL/HPHC/12-13 Issue No. 01, Revision No. 01, Dated: 25th Mar. 2013	0.2 to 70 /0.1 µg/g
		Ethyl carbamate	In-house method TTP/VAL/HPHC/8-12 Issue No. 01, Revision No. 01, Dated: 31st Oct. 2012	100 to 2000 / 50.0 µg/g
		Polycyclic Aromatic Hydrocarbons	In-house method TTP/VAL/HPHC/20-13 Issue No. 01, Revision No. 01, Dated: 15th July 2013	
		Benz(a)anthracene		0.83-333 / 0.5 ng/g
		Chrysene		0.83-333 / 0.5 ng/g
		Benzo(b)fluoranthene		0.83-333 / 0.5 ng/g
		Benzo(k)fluoranthene		0.83-333 / 0.5 ng/g
		Benzo(a)pyrene		0.83-333 / 0.5 ng/g
		Dibenz(a,h)anthracene		0.83-333 / 0.5 ng/g
		Indeno(1,2,3-cd)pyrene		0.83-333 / 0.5 ng/g
		Napthalene		0.83-667 / 0.5
		Minor Alkaloids	In-house method TTP/VAL/HPHC/19-13 Issue No. 01, Revision No. 01, Dated: 15th July 2013	
		Nornicotine		94.0 - 2500 /1.0 µg/g
		Anabasine		26.0 - 2500 /1.0 µg/g

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	Tobacco	**Volatile Nitrosamines**	In-house method	
		N-Nitrosodimethylamine	TTP/VAL/HPHC/15-13 Issue No. 00, Revision No. 01, Dated: 8th Aug. 2013	12.5-250/1.1 µg/g
		N-Nitrosopiperidine		0.1-2/0.01 µg/g
		N-Nitrosopyrolidine		0.1-2/0.01 µg/g
		N-Nitrosomorpholine		0.1-2/0.02 µg/g
		N-Nitrososarcosine		0.1-5/ 0.3 µg/g
		N-Nitrosodiethanolamine		0.5-5/0.01 µg/g
		Aflatoxin-B1	In-house method TTP/VAL/HPHC/14-13 Issue No. 00, Revision No. 01, Dated: 15th July 2013	0.5-40/ 0.1 µg/g
		Ammonia	TTP/VAL/HPHC/6-12 Issue No. 00, Revision No. 01, Dated: 28th Jan 2014	100-5000/20 µg/g
c.	**Tobacco & Tobacco Products**	Menthol content in Bobbins	In house Method TTP/VAL/AL/10-12 Issue No. 01, Revision No. 01, Dated: 4th Nov. 2013	100 to 1000 / 15 mg/m
		Menthol content in Cigarettes		1.0 to 7.0 / 0.2 mg/cig
		Propylene glycol	In house Method TTP/VAL/AL/11-12 Issue No. 01, Revision No. 01, Dated: 8th Oct. 2013	0.25 to 5% / 0.1%
		Glycerine		0.5 to 5% / 0.25%

Laboratory	**ITC Life Sciences & Technology Centre, No. 3, 1st Main Road, Peenya Industrial Area, 1st Phase, Bangalore, Karnataka**		
Accreditation Standard	**ISO/IEC 17025: 2005**		
Discipline	**Chemical Testing**	**Issue Date**	**08.03.2014**
Certificate Number	**T-0822**	**Valid Until**	**07.03.2016**
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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Tobacco & Tobacco Products	Sodium benzoate	In house Method TTP/VAL/AL/11-12 Issue No. 01, Revision No. 01, Dated: 8th Oct. 2013	0.01 to 5% / 0.001%
		Tobacco specific nitrosoamines N-Nitroso Nornicotine [NNN] N-Nitroso Anatabine [NAT] N-Nitroso Anabasine [NAB] 4-(Methylnitrosamino)-1-(3-pyridyl)-111-butanol [NNK]	In house Method TTP/VAL/AL/11-12 Issue No. 01, Revision No. 01, Dated: 1st Aug. 2012	0.05 to 10/0.01 µg/kg

-X-X-X-X-X-X-X-X-X-X-X-X-X-X-