





In general, all UrineCheck Tests are based on the chemical reactions of the indicator reagents on the pads with components in the urine sample affecting color changes. Results are obtained by comparing the color on each of the test pads with the corresponding pad on the color chart provided.

**Creatinine:** Testing for sample dilution. In this assay, Creatinine reacts with a Creatinine indicator in an alkaline condition to form a purplish- brown colour complex. The concentration of Creatinine is directly proportional to the color intensity of the test pad.

**Specific Gravity:** Testing for sample dilution. This test is based on the apparent pKa change of certain pretreated polyelectrolytes in relation to ionic concentration. In the presence of an indicator, the colours range from dark blue or blue-green in urine of low ionic concentration to green and yellow in urine of higher ionic concentration.

**pH:** Testing for the presence of acidic or alkaline adulterants. This test is based on the well-known double pH indicator method that gives distinguishable colors over wide pH range. The colors range from orange (low pH) to yellow and green to blue (high pH).

**Nitrite:** Testing for the presence of exogenous nitrite. Nitrite reacts with an aromatic amine to form a diazonium compound in an acid medium. The diazonium compound in turn couples with an indicator to produce a pink-red/purple colour.

**Oxidants:** Testing for presence of oxidizing reagents. In this reaction, a colour indicator reacts with oxidants such as hydrogen peroxide, ferricyanide, persulfate, or pyridinium chlorochromate to form a blue colour complex. Other colours may indicate the presence of other oxidants.

**Glutaraldehyde:** Testing for the presence of exogenous aldehyde. In this assay, the aldehyde group on the Glutaraldehyde reacts with an indicator to form a pink/purple colour complex.

**Bleach:** Testing for the presence of bleach in urine. In this test, the presence of bleach forms a blue-green, brown, or orange colour complex.

**Pyridinium Chlorochromate:** Testing for the presence of Pyridinium Chlorochromate in urine. In this test, the presence of chromate forms a blue-green colour complex.

#### MATERIALS PROVIDED

##### 1. Instructions for use

##### 2. One Drugs of Matrix Key Cup, including Temperature Strip (with optional Alcohol and/or Adulteration Test)

###### Drugs Of Abuse

The amount of each coated antigen and/or antibody on the strip is less than 1.0 mg for antigen conjugate and is less than 1.0 mg for goat anti-rabbit IgG antibody.

Test zone: contains drug bovine protein antigen conjugates

Control zone: contains Goat anti-rabbit IgG antibody

Conjugate pad: contains anti-drug antibody.

###### Temperature Strip

Use the temperature Validator to verify the freshly collected urine. A visible green indicator shows the temperature detected and indicates the specimen is in a normal temperature range. Conversely, if no green indicator appears within the temperature strip, the temperature is either lower or higher than the normal temperature range (90°F-100°F / 32°C -38°C).

###### Alcohol (optional)

Each Alcohol test contains these materials:

Tetramethylbenzidine (TMB)	0.12 mg
Alcohol oxidase (EC)	0.5 IU
Peroxidase(EC)	35 IU
Proteins	0.15mg

###### Adulteration Test (optional)

##### 3. Alcohol /Adulteration Test Colour Chart (When order Alcohol and/or Adulteration Tests)

#### MATERIAL REQUIRED BUT NOT PROVIDED

##### Timer or clock.

#### STORAGE AND STABILITY

The Matrix Key Cup should be stored at 2 to 30°C and will be effective until the expiration date stated on the package. The product is humidity-sensitive and should be used immediately after being open. Any improperly sealed product should be discarded.

#### PRECAUTIONS

- For in vitro diagnostic and forensic use only.
- Do not use the product beyond the expiration date.
- Handle all specimens as potentially infectious.
- Humidity sensitive product. Do not open foil pouch until it is ready to be tested.
- Use a new urine specimen cup for each sample to avoid cross contamination.

#### SPECIMEN COLLECTION AND PREPARATION

Fresh urine does not require any special handling or pretreatment. Specimens should be collected in a clean, dry, plastic or glass container. If the assay is not performed immediately, urine specimen may be refrigerated at 2-8 °C or frozen for up to 7 days. Specimens should be brought to room temperature before testing. Urine specimens exhibiting a large amount of precipitate or turbidity should be centrifuged or allowed to settle before testing. Avoid contact with skin by wearing gloves and proper laboratory attire.

#### QUALITY CONTROL

Good Laboratory practice recommends the daily use of control materials to validate the reliability of device. Control materials should be assayed as clinical specimen and challenging to the assay cutoff concentration, e.g., 50% above and below cutoff concentration. If control values do not fall within establish range, assay results are invalid. Control materials which are not provided with this test kit are commercially available.

##### Drugs of Abuse

The Matrix Key Cup provides a built-in process control with a different antigen/antibody reaction at the control region (C). This control line should always appear regardless the presence of drug or metabolite. If the control line does not appear, the test device should be discarded and the obtained result is invalid. The presence of this control band in the control region serves as 1) verification that sufficient volume is added, 2) that proper flow is obtained.

##### Alcohol







Alcohol test may be qualitatively verified by using a test solution prepared by adding 0.75 ml of ethanol alcohol into 240 ml of distilled water or negative urine control.

##### UrineCheck: Adulteration Test(s)

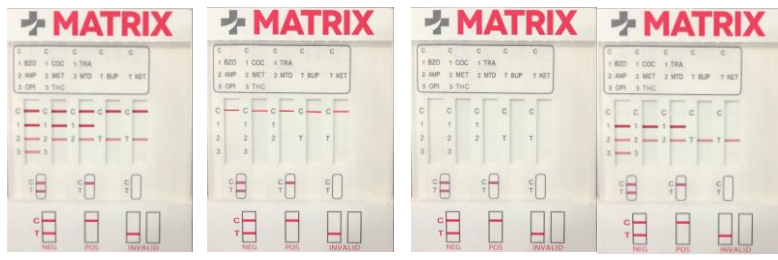
For best results, performance of UrineCheck test should be confirmed by testing known negative and positive specimens.

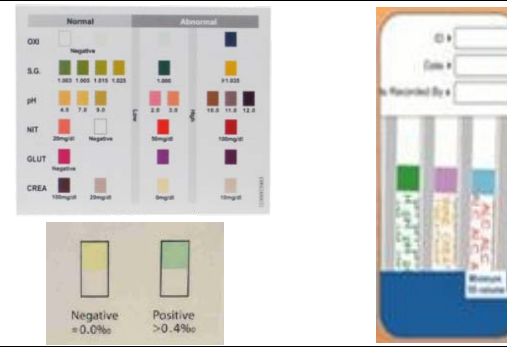
#### PROCEDUR

1
Bring tests, specimens, and/or controls to room temperature (60-86 °F or 15-30 °C) before use.
2
Remove the Matrix Key Cup from sealed foil pouch.
3
Label the device with patient ID.

4	5
Put the key in the keyhole and Remove the lid.	Collect the sample and ensure that the sample is above the minimum fill line.
	
6	7
Close the cap,press firmly until you hear the click,place the Matrix Key Cup on a flat surface.	Use the temperature Validator to verify the freshly collected urine. Green indicator shows the temperature detected.
	
8	9
Read the results at 5 minutes	Remove the result window cover and read the results.
	

**Caution: Results after 10 minutes may not be accurate.**

INTERPRETATION OF RESULTS	
DRUGS OF ABUSE	
	<b>NEGATIVE</b> <b>POSITIVE</b> <b>INVALID</b>
	<b>NEGATIVE</b> Colored bands show on both test line zone and control line zone ( top line). This is an indication of negative result for that (those) particular test(s). The negative result does not indicate the absence of drug(s) in the specimen; it only indicates the level of tested drug in the specimen is less than cut-off level.
	<b>POSITIVE</b> One colored band forms in control line zone (top lines) and no colored band forms in test line zone (bottom lines). This is an indication the level of tested drug(s) in the specimen is above the cut-off level.
	<b>INVALID</b> If there is no colored band in control line zone ( top lines), the test result is invalid. Retest the sample with a new device.

ALCOHOL & ADULTERATION		1. Read Reaction Pads against the Alcohol /Adulteration Test Color Chart provided.  2. Refer to supplied color chart for the level of each index to be tested and check if it is in the normal range.
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**Note: A borderline(+/-) in test line zone should be considered negative result.**

#### LIMITATION OF PROCEDURE

The assay is designed for use with human urine only. A positive result with any of the tests indicates only the presence of a drug/metabolite and does not indicate or measure intoxication. There is a possibility that technical or procedural error as well other substances in certain foods and medicines may interfere with the test and cause false results. Please refer to the "SPECIFICITY" section for lists of substances that will produce either positive results, or that do not interfere with test performance. If a drug/metabolite is found present in the urine specimen, the assay does not indicate frequency of drug use or distinguish between drug of abuse and certain foods and medicines.

#### EXPECTED RESULTS

The Matrix Key Cup is a qualitative assay. It identifies the drug(s) in human urine at its cut-off concentration or higher. The concentration of the drug(s) cannot be determined by this assay. The test is intended to distinguish a negative result from presumptive positive result. All positive results must be confirmed using an alternate method, preferably GC/MS.

#### PERFORMANCE CHARACTERISTICS

##### A. Accuracy

The accuracy of the Matrix Key Cup was evaluated in each component strip and in comparison to GC/MS method at the following concentration: d-amphetamine 100ng/ml (AMP), secobarbital 300 ng/m (BAR), oxazepam, 300 ng/ml (BZO), buprenorphine-3-β-d-glucuronide 10ng/ml (BUP), benzoylcegonine 300ng/ml (COC), EDDP 100ng/ml (EDDP), Ketamine 1000ng/ml (KET), methadone 300 ng/ml (MTD), MDMA 500ng/ml (MDMA), (+)methamphetamine 1000 ng/ml (MET), phencyclidine 25 ng/ml (PCP), morphine 300 ng/ml (OPI), morphine 2000 ng/ml (OPI II ), oxycodone 100ng/ml (OXY), nor-propoxyphene 300 ng/ml (PPX), 11-nor-Δ<sup>9</sup>-THC-9-COOH 50ng/ml (THC), Tramadol 200 ng/ml (TRA), Nortriptyline 1000 ng/ml (TCA),6-Acetylmorphine 10 ng/ml (6-MAM), Zolpidem Phenyl-4-carboxylic acid 50 ng/ml (ZOL), Lysergic acid diethylamide 20 ng/ml (LSD), 7-Aminoclonazepam 300 ng/ml (7-ACL), Pregabalin 500 ng/ml (PGB), Mescaline 300 ng/ml (MES), 3,4-Methylenedioxypropyvalerone 500 ng/ml (MDPV), Methcathinone 500 ng/ml (MCAT), Mephedrone 500 ng/ml (MEP), Gabapentin 2000 ng/ml (GAB), Carfentanil 500 ng/ml (CFYL), AB-PINACA 25 ng/ml (K2-AB),Caffeine 8000 ng/ml (CAF) Ethyl Glucuronide 500/1000 ng/m(ETG), JHW-018 and JWH-073 50 ng/ml(K2) Cotinine 200ng/ml(COT), Fentanyl 10 ng/ml(FYL) and Methaqualone 300 ng/ml(MQL). The results of each component strip are listed below:

1. **Amphetamine** The accuracy of the amphetamine test was evaluated in comparison to GC/MS method and commercial kits at a cut-off of 1000 ng/ml. Three hundred and forty five (345) urine specimens which composed of one hundred thirty three (133) d-amphetamine positive samples and two hundred twelve (212) negative samples were evaluated in this study. The results are summarised and presented below:  
Positive % agreement:98.5, Negative % agreement: 100

2. **Barbiturate** The accuracy of the barbiturate test was evaluated in comparison to GC/MS method and commercial kits at a cut-off of 300 ng/ml of secobarbital. One hundred and thirteen (113) urine specimens which composed of sixty four (64) barbiturate positive samples and forty nine (49) negative samples were evaluated in this study. The results are summarised below:  
Positive % agreement: 100, Negative % agreement: 100.

3. **Benzodiazepine** The accuracy of the benzodiazepine test was evaluated in comparison to GC/MS method and commercial kits at a cut-off of 300 ng/ml of oxazepam. Three hundred and forty four (344) urine specimens which composed of one hundred and eleven (111) benzodiazepine positive samples and two hundred and thirty three (233) negative samples were evaluated in this study. The results are summarised below:  
Positive % agreement: 98, Negative % agreement: 100

4. **Buprenorphine** The accuracy of the buprenorphine test was evaluated in comparison to GC/MS at a cut-off of 10 ng/ml of buprenorphine-3-β-d-glucuronide. One hundred and one (101) urine specimens which composed of forty nine (49) buprenorphine-3-β-d-glucuronide positive samples and fifty two (52) negative samples were evaluated in this study. The results are summarised below:  
Positive % agreement: 96, Negative % agreement: 100.

5. **Cocaine** The accuracy of the cocaine test was evaluated in comparison to GC/MS method and commercial kits at a cut-off of 300 ng/ml of benzoylcegonine. Three hundred and forty four (344) urine specimens which composed of one hundred and twenty one (121) benzoylcegonine positive samples and two hundred and twenty three (223) negative samples were evaluated in this study. The results are summarised below:  
Positive % agreement: 99, Negative % agreement: 99

6. **EDDP** The accuracy of the methadone metabolite (EDDP) test was evaluated in comparison to GC/MS method at a cut-off of 100 ng/ml EDDP. Ninety (99) specimens which composed of forty four (44) positive samples and forty five (45) negative samples were evaluated in this study. The results are summarized as below:  
Positive % agreement: 98, Negative % agreement:100

7. **Ketamine** The accuracy of the ketamine test was evaluated in comparison to GC/MS method and commercial kits at a cut-off of 1000 ng/ml of ketamine. Three hundred and forty four (344) urine specimens which composed of one hundred and twenty seven (127) ketamine positive samples and two hundred and seventeen (217) negative samples were evaluated in this study. The results are summarised below:  
Positive % agreement: 99, Negative % agreement: 100

8. **MDMA** The accuracy of the MDMA test was evaluated in comparison to GC/MS at a cut-off of 500 ng/ml of (+)methylenedioxy-methamphetamine. One hundred and eleven (111) urine specimens with GC/MS confirmed MDMA concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 96, Negative % agreement: 95

9. **Methadone** The accuracy of the methadone test was evaluated in comparison to GC/MS method and commercial kits at a cut-off of 300 ng/ml of methadone. Three hundred and forty four (344) urine specimens which composed of one hundred and eighty seven (187) methadone positive samples and one hundred and fifty seven (157) negative samples were evaluated in this study. The results are summarised as below:  
Positive % agreement: 100, Negative % agreement: 100.

10. **Methamphetamine** The accuracy of the methamphetamine test was evaluated in comparison to GC/MS method and commercial kits at a cut-off of 1000 ng/ml of (+)methamphetamine. Three hundred and forty four (344) urine specimens which composed of one hundred and twenty eight (128) methamphetamine positive samples and two hundred and sixteen (216) negative samples were evaluated in this study. The results are summarized as below:  
Positive % agreement: 98, Negative % agreement: 100

11. **Opiate** The accuracy of the opiate test was evaluated in comparison to GC/MS method and commercial kits at a cut-off of 300 ng/ml of morphine. Three hundred and forty four (344) urine specimens which composed of one hundred and fifty nine (159) opiate positive samples and one hundred and eighty five (185) negative samples were evaluated in this study. The results are summarised as below:  
Positive % agreement:99, Negative % agreement: 99

12. **Opiate II** The accuracy of the opiate II test was evaluated in comparison to GC/MS method and commercial kits at a cut-off of 2000 ng/ml of morphine. One hundred and eight (108) urine specimens which composed of fifty three nine (53) opiate positive samples and fifty five (55) negative samples were evaluated in this study. The results are summarised as below: Positive % agreement: 94, Negative % agreement: 100.0.

13. **Oxycodone** The accuracy of the oxycodone test was evaluated in comparison to GC/MS method and commercial kits at a cut-off of 100

ng/ml of oxycodone. One hundred and forty four (140) urine specimens which composed of fifty eight (58) opiate positive samples and eighty two (82) negative samples were evaluated in this study. The results are summarized below: Positive % agreement: 100, Negative % agreement: 95

14. **Phencyclidine** The accuracy of the PCP test was evaluated in comparison to GC/MS method and commercial kits at a cut-off of 25 ng/ml of phencyclidine. Eighty (80) urine specimens which composed of thirty five (35) phencyclidine positive samples and forty five (45) negative samples were evaluated in this study. The results are summarised below:  
Positive % agreement: 98, Negative % agreement:95

15. **Propoxyphene** The accuracy of the propoxyphene test was evaluated in comparison to GC/MS method at a cut-off of 300 ng/ml of nor-propoxyphene. Ninety one (91) propoxyphene positive specimens with GC/MS confirmed nor-Propoxyphene concentration and forty (40) were evaluated in this study. The results are summarised below:  
Positive % agreement: 100, Negative % agreement:100

16. **THC** The accuracy of the THC test was evaluated in comparison to GC/MS method and commercial kits at a cut-off of 50 ng/ml of 11-nor-Δ<sup>9</sup>-THC-9-COOH. Three hundred and forty four (344) urine specimens which composed of seventy eight (78) THC positive samples and two hundred and sixty six (266) negative samples were evaluated in this study. The results are summarised below:  
Positive % agreement: 100, Negative % agreement: 99

17. **Tramadol** The accuracy of the tramadol test was evaluated in comparison to GC/MS at a cut-off of 200 ng/ml of tramadol. Eighty one (81) urine specimens with GC/MS confirmed tramadol concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 95, Negative % agreement: 98

18. **TCA** The accuracy of the TCA test was evaluated in comparison to GC/MS at a cut-off of 1000 ng/ml of Nortriptyline. One hundred (100) urine specimens with GC/MS confirmed Nortriptyline concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 98, Negative % agreement: 95

19. **6-MAM** The accuracy of the 6-MAM test was evaluated in comparison to GC/MS at a cut-off of 10 ng/ml of 6-Acetylmorphine. One hundred and twenty one (121) urine specimens with GC/MS confirmed 6-Acetylmorphine concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 97, Negative % agreement: 100

20. **ZOL** The accuracy of the ZOL test was evaluated in comparison to GC/MS at a cut-off of 50 ng/ml of Zolpidem Phenyl-4-carboxylic acid. Ninety six (96) urine specimens with GC/MS confirmed Zolpidem Phenyl-4-carboxylic acid concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 98, Negative % agreement: 99

21. **LSD** The accuracy of the LSD test was evaluated in comparison to GC/MS at a cut-off of 20 ng/ml of Lysergic acid diethylamide. Ninety five (95) urine specimens with GC/MS confirmed Lysergic acid diethylamide concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 96, Negative % agreement: 98

22. **7-ACL** The accuracy of the 7-ACL test was evaluated in comparison to GC/MS at a cut-off of 300 ng/ml of 7-Aminoclonazepam. One hundred (100) urine specimens with GC/MS confirmed 7-Aminoclonazepam concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 99, Negative % agreement: 100

23. **PGB** The accuracy of the PGB test was evaluated in comparison to GC/MS at a cut-off of 500 ng/ml of Pregabalin. One hundred and thirty two (132) urine specimens with GC/MS confirmed Pregabalin concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 96, Negative % agreement: 98

24. **MES** The accuracy of the MES test was evaluated in comparison to GC/MS at a cut-off of 300 ng/ml of Mescaline. One hundred and nine (109) urine specimens with GC/MS confirmed Mescaline concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 98, Negative % agreement: 100

25. **MDPV** The accuracy of the MDPV test was evaluated in comparison to GC/MS at a cut-off of 500 ng/ml of 3,4-Methylenedioxypropyvalerone. One hundred and six (106) urine specimens with GC/MS confirmed 3,4-Methylenedioxypropyvalerone concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 99, Negative % agreement: 100

26. **MCAT** The accuracy of the MCAT test was evaluated in comparison to GC/MS at a cut-off of 500 ng/ml of Methcathinone. Eighty eight (88) urine specimens with GC/MS confirmed Methcathinone concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 100, Negative % agreement: 97

27. **MEP** The accuracy of the MEP test was evaluated in comparison to GC/MS at a cut-off of 500 ng/ml of Mephedrone. Two hundred and three (203) urine specimens with GC/MS confirmed Mephedrone concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 97, Negative % agreement: 99

28. **GAB** The accuracy of the GAB test was evaluated in comparison to GC/MS at a cut-off of 2000 ng/ml of Gabapentin. One hundred and fifty nine (159) urine specimens with GC/MS confirmed Gabapentin concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 97, Negative % agreement: 100

29. **CFYL** The accuracy of the CFYL test was evaluated in comparison to GC/MS at a cut-off of 500 ng/ml of Carfentanil. One hundred and seventy eight (178) urine specimens with GC/MS confirmed Carfentanil concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 98, Negative % agreement: 100

30. **K2-AB** The accuracy of the K2-AB test was evaluated in comparison to GC/MS at a cut-off of 25 ng/ml of AB-PINACA. Two hundred and twenty five (225) urine specimens with GC/MS confirmed AB-PINACA concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 99, Negative % agreement: 98

31. **CAF** The accuracy of the CAF test was evaluated in comparison to GC/MS at a cut-off of 8000 ng/ml of Caffeine. One hundred and ninety four (194) urine specimens with GC/MS confirmed Caffeine concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 95, Negative % agreement: 100

32. **ETG** The accuracy of the ETG test was evaluated in comparison to GC/MS at a cut-off of 500/1000 ng/ml of Ethyl-β-D-glucuronide. One hundred and eighty (180) urine specimens with GC/MS confirmed Ethyl-β-D-glucuronide concentration were evaluated in this study. The results are summarised and presented below:  
ETG500 Positive % agreement: 97, Negative % agreement: 100 ETG1000 Positive % agreement: 97, Negative % agreement: 100

33. **K2** The accuracy of the K2 test was evaluated in comparison to GC/MS at a cut-off of 50 ng/ml of JWH-018-5 pentanoic. One hundred and fifty-five (155) urine specimens with GC/MS confirmed JWH-018-5 pentanoic concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 98, Negative % agreement: 98

34. **COT** The accuracy of the COT test was evaluated in comparison to GC/MS at a cut-off of 200 ng/ml of (-)-Cotinine. One hundred and sixty (160) urine specimens with GC/MS confirmed (-)-Cotinine concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 99, Negative % agreement: 100

35. **FYL** The accuracy of the FYL test was evaluated in comparison to GC/MS at a cut-off of 200 ng/ml of Fentanyl. One hundred and seventy-five (175) urine specimens with GC/MS confirmed Fentanyl concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 99, Negative % agreement: 100

36. **MQL** The accuracy of the MQL test was evaluated in comparison to GC/MS at a cut-off of 300 ng/ml of Methaqualone. Two hundred and five (205) urine specimens with GC/MS confirmed Methaqualone concentration were evaluated in this study. The results are summarised and presented below:  
Positive % agreement: 100, Negative % agreement: 98



<b>B. Sensitivity</b> The cut-off concentrations (sensitivity level) of the Matrix Key Cup are determined to be: AMP 1000 ng/ml, BAR, 300 ng/ml, BZO 300 ng/ml, BUP 10 ng/ml, COC 300 ng/ml, EDDP 100 ng/ml, KET 1000 ng/ml, MTD 300 ng/ml, MET 1000 ng/ml, MDMA 500 ng/ml, OPI 300 ng/ml, OPI II 2000 ng/ml, OXY 100 ng/ml, PCP 25 ng/ml , PPX 300 ng/ml, THC 50 ng/ml , 200ng/ml of TRA ,TCA 1000 ng/ml , 6-MAM 10 ng/ml, ZOL 50 ng/ml, LSD 20 ng/ml, 7-ACL 300 ng/ml, PGB 500 ng/ml, MES 300 ng/ml, MDPV 500 ng/ml, MCAT 500 ng/ml, MEP 500 ng/ml, GAB 2000 ng/ml, CFYL 500 ng/ml, K2-AB 25 ng/ml and CAF 8000 ng/ml. ETG 500/1000 ng/ml, K2 50 ng/ml, COT 200 ng/ml, FYL 10 ng/ml and MQL 300 ng/ml.		
<b>C. Precision</b> The precision of the Matrix Key Cup was determined by conducting the test with spiked controls and interpreting the results by three individuals to verify the random error of visual interpretation. The results of 40 samples each of 50% above and 50% below cut-off specimens are 100% agreed by three observers. The test results were found to have no significant differences between these three observers.		
<b>D. Specificity</b> The specificity for the Matrix Key Cup was tested by adding various drugs, drug metabolites, and other compounds that are likely to be present in urine. All compounds were prepared in drug-free normal human urine.		
<b>1. Interference testing</b> The performance of the Matrix Key Cup at cut-off level is not affected when pH and Specific Gravity ranges of urine specimen are at 4.5 to 9.0 and 1.005 to 1.035.		
The following substances were tested and confirmed did not interfere with the Matrix Key Cup at the concentrations listed below.		
Glucose 2000 mg/dl Human albumin 2000 mg/dl Human hemoglobin 10 mg/dl Urea 4000 mg/dl Uric acid 10 mg/dl		
<b>2. Specificity</b> The following table lists compounds that are detected by the Matrix Key Cup which produced positive results when tested at levels equal or greater than the concentrations listed below.		
<b>Tests</b>	<b>Compounds</b>	<b>Cut-off (ng/ml)</b>
Amphetamine	D-Amphetamine	1,000
	l-Amphetamine	>100,000
	d-methamphetamine	>100,000
	l-methamphetamine	>100,000
	3,4-Methylenedioxyamphetamine	1,250
	3,4-Methylenedioxy-methamphetamine	>100,000
	3,4-Methylenedioxyethylamphetamine	>100,000
	Paramethoxyamphetamine	625
	Phentermine	1250
	Tyramine	>100,000
Barbiturate	Secobarbital	300
	Allobarbital	1250
	Alphenal	625
	Amobarbital	625
	Aprobarbital	188
	Butabarbital	94
	Butalbital	2500
	Butethal	200
	Cyclopentobarbital	400
	Pentobarbital	1,000
Buprenorphine	Phenobarbital	300
	Buprenorphine	5
	Buprenorphine–3–β–D–Glucuronide	5
	Norbuprenorphine	25
Benzodiazepines	Norbuprenorphine–3–β–D–Glucuronide	50
	Oxazepam	300
	Alprazolam	125
	Bromazepam	625
	Chlordiazepoxide	2500
	Clobazam	63
	Clonazepam	2500
	Clorazepate	3330
	Desalkflurazepam	250
	Diazepam	250
	Estazolam	5000
	Fentanyl	>100,000
	Flunitrazepam	375
	Flurazepam	>100,000
	Lorazepam	1250
	Lormetazepam	1250
	Medazepam	>100,000
	Midazolam	>100,000
	Nitrazepam	25000
	Norchlordiazepoxide	250
	Nordiazepam	500
	Prazepam	>100,000
	Temazepam	63
	Triazolam	5000
Cocaine	Benzoyllecgonine	300
	Cocaine	1,000
	Ecgonine	100,000
	Ecgonine Methyl Ester	>100,000
EDDP	EDDP	100

	Meperidine	>100,000
	Methadone	>100,000
	Norfentanyl	>100,000
	Phencyclidine	>100,000
	Promazine	50000
	Promethazine	25000
	Prothipendyl	50,000
	Prozine	12500
Ketamine	Ketamine	1,000
	Norketamine	1,000
MDMA	Dextromethorphan	500
	3,4-Methylenedioxy-methamphetamine	500
	d-Amphetamine	>100,000
	l-Amphetamine	>100,000
	d-methamphetamine	>100,000
	l-methamphetamine	>100,000
	3,4-Methylenedioxyamphetamine	2,500
	3,4-Methylenedioxyethylamphetamine	156
	Paramethoxyamphetamine	50,000
	Paramethoxymethamphetamine	>100,000
Methamphetamine	d-Methamphetamine	1,000
	Chloroquine	25,000
	Fenfluramine	12,500
	l-Methamphetamine	1,000
	Mephentermine hemisulfate salt	31250
	3,4-Methylenedioxyethylamphetamine	50000
	3,4-Methylenedioxy-methamphetamine	313
	Paramethoxymethamphetamine	625
	(-)-Ephedrine	4000
Methadone	Methadone	300
	(-)-alpha-methadol	2,000
Opiate	Morphine	300
	Acetylcodeine	150
	Buprenorphine	>10000
	Codeine	250
	Diacetyl Morphin	250
	Dihydrocodeine	586
	Ethylmorphine	200
	Hydrocodone	12500
	Hydromorphone	12500
	6-Monoacetylmorphine	250
	Morphine-3-glucuronid	2500
	Nalorphine	25000
	Thebaine	25000
Opiate II	Morphine	1000
	Acetylcodeine	1000
	Buprenorphine	>10000
	Codeine	1000
	Diacetylmorphine (Heroin)	3000
	Dihydrocodeine	1000
	Ethylmorphine	200
	Hydromorphone	25000
	Hydrocodone	50000
	Merperidine	>100,000
	6-Monoacetylmorphine (6-MAM)	3000
	Morphine-3-β-d-glucuronide	10000
	Nalorphine Hydrochloride	>100,000
	Oxycodone	>100,000
	Oxymorphone	>100,000
	Rifampicine	>100,000
	Thebaine	50000
OXY100	Oxycodone	100
	Hydrocodone	6250
	Hydromorphone	50000
	Naloxone	50000
	Oxymorphone	250
		25
PCP	Phencyclidine	
	Hydrocodone	>100,000
	Hydromorphone	>100,000
	4-hydroxyphencyclidine	75
Propoxyphene	D-Propoxyphene	300
	D-Norpropoxyphene	5000
TCA	Nortriptyline HCl	1000
	Amitriptyline	150
	Clomipramine	>100000
	Cyclobenzaprine	12500


	Desipramine	188
	Doxepin	2000
	Imipramine	2500
	Maprotiline	750
	Nortriptyline	3125
	Nordoxepin	500
	Opipramol	1563
	Promazine	1000
	Promethazine	6250
	Prothipendyl	25000
THC	Protryptiline	6250
	Prozine	1250
	Trimipramine	>100,000
	11-nor-Δ9-THC-9-COOH	25
	11-nor-Δ8-THC-9-COOH	15
	Δ 8-Tetrahydrocannabinol	7500
	Δ 9-Tetrahydrocannabinol	7500
	Cannabinol	10000
	Cis-Tramadol	200
Tramadol	N-Desmethyl-cis tramadol	500
	O-Desmethyl-cis tramadol	20,000
	Netrexone	10,000
	Tetrahydrozoline	10,000
	Dihydrocodeine	50,000
6-MAM	6-Monoacetylmorphine	10
	Acetylcodeine	>10,000
	Buprenorphine	>10,000
	Codeine	>10,000
	Diacetylmorphine	1000
	Dihydrocodeine	>10,000
	Ethylmorphine	>10,000
	Hydrocodone	>10,000
	Hydromorphone	5000
	Morphine	10000
ZOL	Morphine-3-glucuronide	>10,000
	Nalorphine	5000
	Thebaine	>20,000
	Zolpidem Phenyl-4-carboxylic	50
	Zolpidem	>10,000
LSD	Lysergic acid diethylamide	20
7-ACL	7-amine-clonazepam	300
	Oxazepam	>10,000
	Alprazolam	>10,000
	Bromazepam	>10,000
	Chlordiazepoxide	>10,000
	Clobazam	>10,000
	Clonazepam	10,000
	Clorazepate dipotassium	>10,000
	Desalkylflurazepam	>10,000
	Diazepam	>10,000
	Estazolam	>10,000
	Flunitrazepam	>50,000
	(± ) Lorazepam	10,000
	Midazolam	>100,000
	Nitrazepam	>10,000
	Norchlordiazepoxide	>100,000
	Nordiazepam	>100,000
	Temazepam	>10,000
PGB	Pregabalin	500
MES	Mescaline	300
MDPV	MDPV	500
MCAT	Methcathinone	500
	4-MMC ( Mephedrone )	520
	3-MMC (3-methylmethcathinone)	500
	4-MEC (4-methylethcathinone)	550
	Cathinone	>100,000
	MDPV	>10,000
MEP	Mephedrone	500
	Methcathinone	500
GAB	Gabapentin	2000
CFYL	Pregabalin	>100000
	CarFentanyl	500
K2-AB	Fentanyl	100
	AB- PINACA	25
	AB-Fubinaca	40
	UR-144 5-Pentanoic acid metabolite	5,000

CAF	UR-144	>10,000
	AKB48	>10,000
	Caffeine	8,000
ETG	Theophylline	100,000
	Ethyl Glucuronide	500
	Ethanol	>100,000
	D-Glucuronic Acid	>100,000
ETG II*	Morphine-3-b-D-glucuronide	>100,000
	Ethyl Glucuronide	1000
FYL	Fentanyl and Fentanyl metabolites	10
	Fentanyl	100
	Norfentanyl	>10,000
COT	(-)-Cotinine	200
	(-)-Nicotine	6250
MQL	Methaqualone	300
	Amitriptyline	50,000
	Carbamazepine	20,000
	Nortriptyline	50,000
	Phenytoin	40,000
	Theophylline	40,000

The following compounds show no cross-reactivity at concentrations up to100 ug/mL unless specified in the table above.

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- Urine testing for drugs of abuse, NIDA Research Monograph 73 (1986)
- Steven B. Karch, Drugs of abuse hand book, CRC Press, 1<sup>st</sup>. Ed. (1998)
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