



Food and Drug Administration  
10903 New Hampshire Avenue  
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Silver Spring, MD 20993-0002

May 23, 2016

HEALGEN SCIENTIFIC LLC  
C/O JOE XIA  
BUSINESS DIRECTOR  
504 EAST DIAMOND AVE., SUITE I  
GAITHERSBURG MD 20877

Re: K153597

Trade/Device Name: Healgen Multi-drug Urine Test Cup, Healgen Multi-drug Urine Test  
Dip Card

Regulation Number: 21 CFR 862.3170

Regulation Name: Benzodiazepine test system

Regulatory Class: II

Product Code: JXM, LFG, DJG, DIO, LDJ, LAF, DKZ, DIS, DJR, LCM

Dated: April 18, 2016

Received: April 25, 2016

Dear Mr. Xia:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you, however, that device labeling must be truthful and not misleading.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Parts 801 and 809); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820); and if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

If you desire specific advice for your device on our labeling regulations (21 CFR Parts 801 and 809), please contact the Division of Industry and Consumer Education at its toll-free number (800) 638 2041 or (301) 796-7100 or at its Internet address <http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm>. Also, please note the regulation entitled, “Misbranding by reference to premarket notification” (21 CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to <http://www.fda.gov/MedicalDevices/Safety/ReportaProblem/default.htm> for the CDRH’s Office of Surveillance and Biometrics/Division of Postmarket Surveillance.

You may obtain other general information on your responsibilities under the Act from the Division of Industry and Consumer Education at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address <http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm>.

Sincerely yours,

**Courtney H. Lias -S**

Courtney H. Lias, Ph.D.  
Director  
Division of Chemistry and Toxicology Devices  
Office of In Vitro Diagnostics  
and Radiological Health  
Center for Devices and Radiological Health

Enclosure

## Indications for Use

510(k) Number (if known)  
k153597

Device Name

Healgen Multi-Drug Urine Test Cup  
Healgen Multi-Drug Urine Test Dip Card

Indications for Use (Describe)

The Healgen Multi-Drug Urine Test Cup and Healgen Multi-Drug Urine Test Dip Card are competitive binding, lateral flow immunochromatographic assays for qualitative and simultaneous detection of Amphetamine, Oxazepam, Cocaine, Cannabinoids, Methamphetamine, Morphine, Oxycodone, Secobarbital, Buprenorphine, Methylenedioxymethamphetamine, Phencyclidine, EDDP, Nortriptyline and Methadone in human urine at the cutoff concentrations of:

Drug (identifier)	Cut-off level
Amphetamine	1000 ng/mL
Oxazepam	300 ng/mL
Cocaine	300 ng/mL
Cannabinoids	50 ng/mL
Methamphetamine	1000 ng/mL
Morphine	300 or 2000 ng/mL
Oxycodone	100 ng/mL
Secobarbital	300 ng/mL
Buprenorphine	10 ng/mL
Methylenedioxymethamphetamine	500 ng/mL
Phencyclidine	25 ng/mL
Methadone	300 ng/mL
EDDP	300 ng/mL
Nortriptyline	1000 ng/mL

Configurations of the Healgen Multi-Drug Urine Test Cup and Healgen Multi-Drug Urine Test Dip Card can consist of any combination of the above listed drug analytes up to a maximum of 14 analytes. Only one cutoff concentration will be included per analyte per device.

The test may yield positive results for the prescription drugs Buprenorphine, Oxazepam, Secobarbital, Nortriptyline and Oxycodone when taken at or above prescribed doses. It is not intended to distinguish between prescription use or abuse of these drugs. There are no uniformly recognized drug levels for Buprenorphine, Oxazepam, Secobarbital, Nortriptyline or Oxycodone in urine. Clinical consideration and professional judgment should be exercised with any drug of abuse test result, particularly when the preliminary result is positive. The test provides only preliminary test results. A more specific alternative chemical method must be used in order to obtain a confirmed analytical result. GC/MS or LC/MS is the preferred confirmatory method.

Type of Use (Select one or both, as applicable)

Prescription Use (Part 21 CFR 801 Subpart D)

Over-The-Counter Use (21 CFR 801 Subpart C)

**CONTINUE ON A SEPARATE PAGE IF NEEDED.**

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510(k) SUMMARY

1. Date: May 23, 2016
  
2. Submitter: HEALGEN SCIENTIFIC LLC  
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4. Device Name: Healgen Multi-Drug Urine Test Cup  
Healgen Multi-Drug Urine Test Dip Card

Classification: Class II

Product Code	Regulation Section	Panel
DKZ Amphetamine	21 CFR § 862.3100, Amphetamine Test System	Toxicology
LDJ Cannabinoids	21 CFR § 862.3870, Cannabinoids Test System	Toxicology
DIO Cocaine	21 CFR § 862.3250, Cocaine and Cocaine Metabolites Test System	Toxicology
LAF Methamphetamine	21 CFR § 862.3610, Methamphetamine Test System	Toxicology
DJG Morphine	21 CFR § 862.3650, Opiate Test System	Toxicology
JXM Oxazepam	21 CFR § 862.3170, Benzodiazepine Test System	Toxicology
DJG Oxycodone	21 CFR § 862.3650, Opiate Test System	Toxicology
DIS Secobarbital	21 CFR § 862.3150, Barbiturate Test System	Toxicology
DJG Buprenorphine	21 CFR § 862.3650, Opiate Test System	Toxicology
LAF Methylenedioxy-methamphetamine	21 CFR § 862.3610, Methamphetamine Test System	Toxicology

LCM Phencyclidine	Enzyme Immunoassay Phencyclidine	Toxicology
DJR Methadone	21 CFR § 862.3620, Methadone Test System	Toxicology
DJR EDDP	21 CFR § 862.3620, Methadone Test System	Toxicology
LFG Nortriptyline	21 CFR, 862.3910 Tricyclic antidepressant drugs test system Test System	Toxicology

5. Description of the device:

Healgen Multi-Drug Urine Test Cup and Healgen Multi-Drug Urine Test DipCard are competitive binding, lateral flow immunochromatographic assays for qualitative and simultaneous detection of Amphetamine, Oxazepam, Cocaine, Cannabinoids, Methamphetamine, Morphine, Oxycodone, Secobarbital, Buprenorphine, Methylenedioxy-methamphetamine, Phencyclidine, EDDP, Nortriptyline and Methadone in human urine samples. Healgen Multi-Drug devices detect each of analytes on different strips.

A positive urine sample will not generate a colored-line for the specific drug tested in the designated region. A negative urine specimen or a urine sample containing Amphetamine, Oxazepam, Cocaine, Cannabinoids, Methamphetamine, Morphine, Oxycodone, Secobarbital, Buprenorphine, Methylenedioxy-methamphetamine, Phencyclidine, EDDP, Nortriptyline and Methadone at the concentration below the designated cutoff levels will generate a colored line in the designated test region for the drug. To serve as a test control, a color line will always appear at the control region.

6. Predicate Devices:

K142280; Healgen Oxazepam and Morphine Tests (Dip Card, Cup)

K143187; Healgen Amphetamine and Oxycodone Tests (Dip Card, Cup)

K141647; Healgen Cocaine and Morphine Tests (Dip Card, Cup)

K140546; Healgen Marijuana and Methamphetamine Tests (Dip Card, Cup)

K150791; Healgen Secobarbital, Buprenorphine and Methadone Tests (Cup, Dip Card)

K150096; Healgen Methylenedioxy-methamphetamine and Phencyclidine Tests (Dip Card, Cup)

K151348; Healgen Nortriptyline and EDDP Tests (DipCard, Cup)

7. Intended Use / Indications for Use

Healgen Multi-Drug Urine Test Cup and Healgen Multi-Drug Urine Test Dip Card are competitive binding, lateral flow immunochromatographic assays for qualitative and simultaneous detection of Amphetamine, Oxazepam, Cocaine, Cannabinoids, Methamphetamine, Morphine, Oxycodone, Secobarbital, Buprenorphine, Methylenedioxy-methamphetamine, Phencyclidine, EDDP, Nortriptyline and Methadone in human urine at the cutoff concentrations of:

Drug(Identifier)	Cut-off level
Amphetamine(AMP)	1000 ng/mL

Oxazepam (OXA)	300 ng/mL
Cocaine (COC)	300 ng/mL
Cannabinoids (THC)	50 ng/mL
Methamphetamine (MET)	1000 ng/mL
Morphine (MOR)	300ng/mL or 2000 ng/mL
Oxycodone (OXY)	100 ng/mL
Secobarbital (BAR)	300 ng/mL
Buprenorphine (BUP)	10 ng/mL
Methylenedioxy-methamphetamine (MDMA)	500 ng/mL
Phencyclidine (PCP)	25 ng/mL
Methadone (MTD)	300 ng/mL
EDDP	300 ng/mL
Nortriptyline	1000 ng/mL

Configuration of the Healgen Multi-Drug Urine Test Cup and Healgen Multi-Drug Urine Test Dip Card can consist of any combination of the above listed drug analytes up to a maximum of 14 analytes. Only one cutoff concentration will be included per analyte per device.

The test may yield positive results for the prescription drugs Buprenorphine, Oxazepam, Secobarbital, Nortriptyline and Oxycodone when taken at or above prescribed doses. It is not intended to distinguish between prescription use or abuse of these drugs. There are no uniformly recognized drug levels for Buprenorphine, Oxazepam, Secobarbital, Nortriptyline or Oxycodone in urine. Clinical consideration and professional judgment should be exercised with any drug of abuse test result, particularly when the preliminary result is positive. The test provides only preliminary test results. A more specific alternative chemical method must be used in order to obtain a confirmed analytical result. GC/MS or LC/MS is the preferred confirmatory method.

#### 8. Substantial Equivalence Information

Healgen Multi-Drug Urine Test Cup and Healgen Multi-Drug Urine Test Dip Card are a modified product format derived from the previously FDA-cleared Healgen single DOA Tests. A summary comparison of features of the Healgen Multi-Drug Urine Test Cup and Healgen Multi-Drug Urine Test Dip Card and the predicate devices is provided in the following Table

Item	New Devices	Predicate devices (K142280, K143187, K141647, K140546, K150791, K150096, K151348)
Indication(s) for use	<p>For the qualitative determination of Amphetamine, Oxazepam, Cocaine, Cannabinoids, Methamphetamine, Morphine, Oxycodone, Secobarbital, Buprenorphine, Methylenedioxy-methamphetamine, Phencyclidine, EDDP, Nortriptyline and Methadone in human urine.</p> <p>The configurations of the New Devices are available in any combination of the above tests.</p>	<p>For the qualitative determination of Amphetamine, Oxazepam, Cocaine, Cannabinoids, Methamphetamine, Morphine, Oxycodone, Secobarbital, Buprenorphine, Methylenedioxy-methamphetamine, Phencyclidine, EDDP, Nortriptyline and Methadone in human urine.</p> <p>The configurations of the Predicate devices are only available in single drug test.</p>
Methodology	Competitive binding, lateral flow immunochromatographic assays based on the principle of antigen antibody immunochemistry.	Same
Type Of Test	Immunoassay principles that rely on antigen-antibody interactions to indicate positive or negative result	Same
Results	Qualitative	Same
Specimen Type	Human urine	Same
Cut Off Values	<p>Amphetamine (AMP): 1,000 ng/ml  Oxazepam (OXA):300 ng/ml  Cocaine(COC): 300 ng/ml  Cannabinoids (THC):50 ng/ml  Methamphetamine (MET): 1,000 ng/ml  Morphine (MOR): 300ng/mL or 2000 ng/ml  Oxycodone(OXY) : 100 ng/ml  Secobarbital (BAR): 300 ng/ml  Buprenorphine (BUP): 10 ng/ml  Methylenedioxy-methamphetamine(MDMA): 500 ng/ml  Phencyclidine (PCP): 25 ng/ml  Methadone (MTD): 300 ng/ml  EDDP: 300 ng/ml  Nortriptyline : 1000 ng/ml</p>	Same



Configurations	Cup, Dip Card	Same
Intended Use	OTC Use & Prescription Use	Same

Healgen Multi-Drug Urine Test Cup is a multi-drug test that offers any combination from 2 to 14 drugs of abuse tests while the predicate devices are single-drug test. And the Healgen Multi-Drug Urine Test Dip Card is the same as the test dip card format of the predicate devices except that the Healgen Multi-Drug Urine Test Dip Card is a multi-drug test that offers any combination from 2 to 14 drugs of abuse tests while the predicate devices are single-drug test.

## 9. Performance

Performance data of precision, cut-off, interference, specificity and method comparison of the devices were reported in K142280, K143187, K141647, K140546, K150791, K150096 and K151348.

## 10. Lay User Verification

A lay user study was performed at three intended user sites with 320 lay persons for each format of the device. The lay users had diverse educational and professional backgrounds and ranged in age from 20 to > 50 years. Urine samples were prepared at the following concentrations; negative, +/-75%, +/-50%, +/-25% of the cutoff by spiking drugs into drug free-pooled urine specimens. The concentrations of the samples were confirmed by GC/MS. Each sample was aliquoted into individual containers and blind-labeled. Each participant was provided with the package insert, 1 blind labeled sample and a device. Each device was tested.

### Comparison between GC/MS and Lay Person Results for Dip Card with MOP 300

Drugs	% of Cutoff	Number of samples	Lay person results		The percentage agreement (%)
			No. of Positive	No. of Negative	
Methamphetamine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Cocaine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%

Cannabinoids	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Morphine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	17	3	85%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Oxazepam	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Amphetamine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Oxycodone	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Methadone	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%

	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Secobarbital	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Buprenorphine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Phencyclidine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
MDMA	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
EDDP (Methadone Metabolites)	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Nortriptyline	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%

	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%

**Comparison between GC/MS and Lay Person Results for Dip Card with MOP 2000**

Drugs	% of Cutoff	Number of samples	Lay person results		The percentage agreement (%)
			No. of Positive	No. of Negative	
Methamphetamine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Cocaine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Cannabinoids	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Morphine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Oxazepam	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%

	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Amphetamine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Oxycodone	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Methadone	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Secobarbital	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Buprenorphine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Phencyclidine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%

	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
MDMA	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
EDDP (Methadone Metabolites)	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Nortriptyline	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%

**Comparison between GC/MS and Lay Person Results for Cup with MOP 300**

Drugs	% of Cutoff	Number of samples	Lay person results		The percentage agreement (%)
			No. of Positive	No. of Negative	
Methamphetamine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Cocaine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%

	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Cannabinoids	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Morphine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	20	0	100%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Oxazepam	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	3	17	85%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Amphetamine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Oxycodone	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	17	3	85%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%

Methadone	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
MDMA	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Secobarbital	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Buprenorphine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Phencyclidine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
EDDP (Methadone Metabolites)	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%



	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Nortriptyline	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%

**Comparison between GC/MS and Lay Person Results for Cup with MOP 2000**

Drugs	% of Cutoff	Number of samples	Lay person results		The percentage agreement (%)
			No. of Positive	No. of Negative	
Methamphetamine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Cocaine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Cannabinoids	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Morphine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%

	+75% Cutoff	20	20	0	100%
Oxazepam	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	3	17	85%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Amphetamine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Oxycodone	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	17	3	85%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Methadone	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
MDMA	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Secobarbital	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%

	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Buprenorphine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Phencyclidine	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
EDDP (Methadone Metabolites)	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	1	19	95%
	+25% Cutoff	20	19	1	95%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%
Nortriptyline	-100% Cutoff	20	0	20	100%
	-75% Cutoff	20	0	20	100%
	-50% Cutoff	170	0	170	100%
	-25% Cutoff	20	2	18	90%
	+25% Cutoff	20	18	2	90%
	+50% Cutoff	50	50	0	100%
	+75% Cutoff	20	20	0	100%

Lay-users were also given surveys on the ease of understanding the package insert instructions. All lay users indicated that the device instructions can be easily followed. A Flesch-Kincaid reading analysis was performed on each package insert and the scores revealed a reading Grade Level of 7.

## 11. Conclusion

Verification studies were conducted in support of the modification to have a multi-drug test cup and test card test, including interference studies and a lay-user study. Based on the test principle and acceptable performance characteristics, it's concluded that the Healgen Multi-Drug Urine Test Cup, and Healgen Multi-Drug Urine Test Dip Card are substantially equivalent to the predicates.