DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
10903 New Hampshire Avenue
Document Control Center – WO66-G609
Silver Spring, MD 20993-0002

November 9, 2015

W.H.P.M., INC.
C/O JOE SHIA
REGULATORY CONSULTANT
504E DIAMOND AVE., SUITE I
GAITHERSBURG MD 20877

Re: K152551
Trade/Device Name: First Sign® Drug of Abuse Buprenorphine Cup Test
First Sign® Drug of Abuse Buprenorphine Dip Card Test
First Sign® Drug of Abuse Butalbital Cup Test
First Sign® Drug of Abuse Butalbital Dip Card Test
First Sign® Drug of Abuse Morphine Cup Test
First Sign® Drug of Abuse Morphine Dip Card Test
Regulation Number: 21 CFR 862.3650
Regulation Name: Opiate test system
Regulatory Class: II
Product Code: DJG, DIS
Dated: September 1, 2015
Received: September 8, 2015

Dear Mr. Joe Shia:

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

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Food and Drug Administration

Indications for Use

Form Approved: OMB No. 0910-0120
Expiration Date: January 31, 2017
See PRA Statement below.

510(k) Number *(if known)*
K152551

Device Name
First Sign® Drug of Abuse Buprenorphine Cup Test; First Sign® Drug of Abuse Buprenorphine Dip Card Test
First Sign® Drug of Abuse Butalbital Cup Test; First Sign® Drug of Abuse Butalbital Dip Card Test
First Sign® Drug of Abuse Morphine Cup Test; First Sign® Drug of Abuse Morphine Dip Card Test

Indications for Use *(Describe)*

First Sign® Drug of Abuse Buprenorphine Cup Test
First Sign® Drug of Abuse Buprenorphine Dip Card Test
First Sign™ Drug of Abuse Buprenorphine Tests are immunochromatographic assays for the qualitative determination of Buprenorphine, in human urine at cut-off concentration of 10 ng/mL. The tests are available in a Cup format and a Dip Card format.

The tests may yield preliminary positive results even when prescription drug Buprenorphine is ingested, at prescribed doses; it is not intended to distinguish between prescription use or abuse of this drug. There is no uniformly recognized cutoff concentration level for Buprenorphine in urine. The tests provide only preliminary test results. A more specific alternative chemical method must be used in order to obtain a confirmed analytical result. Gas Chromatography/Mass Spectrometry is the preferred confirmatory method. Clinical consideration and professional judgment should be exercised with any drug of abuse test result, particularly when the preliminary result is positive.
For in vitro diagnostic use only. The tests are intended for over-the-counter and for prescription use.

First Sign® Drug of Abuse Butalbital Cup Test
First Sign® Drug of Abuse Butalbital Dip Card Test
First Sign™ Drug of Abuse Butalbital Tests are immunochromatographic assays for the qualitative determination of Butalbital in human urine at cut-off concentration of 300 ng/mL. The tests are available in a Cup format and a Dip Card format.

The tests may yield preliminary positive results even when prescription drug Butalbital is ingested, at prescribed doses; it is not intended to distinguish between prescription use or abuse of this drug. There is no uniformly recognized cutoff concentration level for Butalbital in urine. The tests provide only preliminary test results. A more specific alternative chemical method must be used in order to obtain a confirmed analytical result. Gas Chromatography/Mass Spectrometry is the preferred confirmatory method. Clinical consideration and professional judgment should be exercised with any drug of abuse test result, particularly when the preliminary result is positive.
For in vitro diagnostic use only. The tests are intended for over-the-counter and for prescription use.

First Sign® Drug of Abuse Morphine Cup Test
First Sign® Drug of Abuse Morphine Dip Card Test
First Sign™ Drug of Abuse Morphine Tests are immunochromatographic assays for the qualitative determination of Morphine in human urine at cut-off concentration of 300 ng/mL. The tests are available in a Cup format and a Dip Card format.

The tests provide only preliminary test results. A more specific alternative chemical method must be used in order to obtain a confirmed analytical result. Gas Chromatography/Mass Spectrometry is the preferred confirmatory method. Clinical consideration and professional judgment should be exercised with any drug of abuse test result, particularly when the preliminary result is positive.
For in vitro diagnostic use only. The tests are intended for over-the-counter and for prescription use.

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: November 6, 2015

2. Submitter
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3. Contact person:
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4. Device Name: First Sign® Drug of Abuse Buprenorphine Cup Test
First Sign® Drug of Abuse Buprenorphine Dip Card Test
First Sign® Drug of Abuse Butalbital Cup Test
First Sign® Drug of Abuse Butalbital Dip Card Test
First Sign® Drug of Abuse Morphine Cup Test
First Sign® Drug of Abuse Morphine Dip Card Test

Common Name: Buprenorphine Urine Test
Butalbital Urine Test
Morphine Urine Test

Product Code	Class	CFR #	Panel
DJG	Class II	21 CFR, 862.3650 Opiate Test System	Toxicology
DIS	Class II	21 CFR, 862.3150 Barbiturate Test System	Toxicology
DJG	Class II	21 CFR, 862.3650 Opiate Test System	Toxicology

This 510(k) summary is for three drug tests namely. BUP, Butalbital and MOP tests. The performance studies including the lay user study were performed on each of the three durg tests (BUP, Butalbital and MOP tests) separately.

5. Predicate Devices:
K122809, Advin Multi Drug Screen Test
K041712 RapidTec 4

6. Intended Use

First Sign® Drug of Abuse Buprenorphine Cup Test
First Sign® Drug of Abuse Buprenorphine Dip Card Test
First Sign® Drug of Abuse Buprenorphine Tests are immunochromatographic assays for the qualitative determination of Buprenorphine, in human urine at cut-off concentration of 10 ng/mL. The tests are available in a Cup format and a Dip Card format.

The tests may yield preliminary positive results even when prescription drug Buprenorphine is ingested, at prescribed doses; it is not intended to distinguish between prescription use or abuse of this drug. There is no uniformly recognized cutoff concentration level for Buprenorphine in urine. The tests provide only preliminary test results. A more specific alternative chemical method must be used in order to obtain a confirmed analytical result. Gas Chromatography/Mass Spectrometry is the preferred confirmatory method. Clinical consideration and professional judgment should be exercised with any drug of abuse test result, particularly when the preliminary result is positive.
For in vitro diagnostic use only. The tests are intended for over-the-counter and for prescription use.

First Sign® Drug of Abuse Butalbital Cup Test
First Sign® Drug of Abuse Butalbital Dip Card Test
First Sign® Drug of Abuse Butalbital Tests are immunochromatographic assays for the qualitative determination of Butalbital in human urine at cut-off concentration of 300 ng/mL. The tests are available in a Cup format and a Dip Card format.

The tests may yield preliminary positive results even when prescription drug Butalbital is ingested, at prescribed doses; it is not intended to distinguish between prescription use or abuse of this drug. There is no uniformly recognized cutoff concentration level for Butalbital in urine. The tests provide only preliminary test results. A more specific alternative chemical method must be used in order to obtain a confirmed analytical result. Gas Chromatography/Mass Spectrometry is the preferred confirmatory method. Clinical consideration and professional judgment should be exercised with any drug of abuse test result, particularly when the preliminary result is positive.
For in vitro diagnostic use only. The tests are intended for over-the-counter and for prescription use.

First Sign® Drug of Abuse Morphine Cup Test
First Sign® Drug of Abuse Morphine Dip Card Test
First Sign® Drug of Abuse Morphine Tests are immunochromatographic assays for the qualitative determination of Morphine in human urine at cut-off concentration of 300 ng/mL. The tests are available in a Cup format and a Dip Card format.

The tests provide only preliminary test results. A more specific alternative chemical method must be used in order to obtain a confirmed analytical result. Gas Chromatography/Mass Spectrometry is the

preferred confirmatory method. Clinical consideration and professional judgment should be exercised with any drug of abuse test result, particularly when the preliminary result is positive.
For in vitro diagnostic use only. The tests are intended for over-the-counter and for prescription use.

7. Device Description

First Sign™ Drug of Abuse Buprenorphine Test, First Sign™ Drug of Abuse Butalbital Test and First Sign™ Drug of Abuse Morphine Test are immunochromatographic assays. Each assay test is a lateral flow system for the qualitative detection of Buprenorphine, or Butalbital or Morphine in human urine. The products are single-use in vitro diagnostic devices, which come in the formats of Dip Cards or Cups. Each test kit contains a Test Device (in one of the two formats), a package insert and a urine cup for sample collection. Each test device is sealed with a desiccant in an aluminum pouch.

8. Substantial Equivalence Information

A summary comparison of features of the candidate device and the predicate device is provided in Table 1, Table 2 & Table 3.

Table 1: Features Comparison of First Sign® Drug of Abuse Buprenorphine Test and the Predicate Device

Item	**Candidate Device** First Sign® Drug of Abuse Buprenorphine Test	**Predicate Device (k122809)** Advin Multi Drug Screen Test
Indication(s) for Use	For the qualitative determination of Buprenorphine in human urine.	Same
Calibrator	Buprenorphine	Same
Methodology	Competitive binding, lateral flow immunochromatographic assays based on the principle of antigen antibody immunochemistry.	Same
Specimen Type	Human urine	Same
Cut-Off Values	10 ng/mL	Same
Intended Population	For over-the-counter and prescription uses.	For over-the-counter use.
Configurations	Cup, Dip Card	Cup, Dip Card, Cassette

Table 2: Features Comparison of First Sign® Drug of Abuse Butalbital Test and the Predicate Device

Item	Candidate Device First Sign® Drug of Abuse Butalbital Test	Predicate Device (k041712) RapidTec 4
Indication(s) for Use	For the qualitative determination of Butalbital in human urine.	For the qualitative determination of Barbiturates in human urine.
Calibrator	Butalbital	Same
Methodology	Competitive binding, lateral flow immunochromatographic assays based on the principle of antigen antibody immunochemistry.	Same
Specimen Type	Human urine	Same
Cut-Off Values	300 ng/mL	Same
Intended Population	For over-the-counter and prescription uses.	For prescription use.
Configurations	Cup, Dip Card	Strip

Table 3: Features Comparison of First Sign® Drug of Abuse Morphine Test and the Predicate Device

Item	Candidate Device First Sign® Drug of Abuse Morphine Test	Predicate Device (k122809) Advin Multi Drug Screen Test
Indication(s) for Use	For the qualitative determination of Morphine in human urine.	Same
Calibrator	Morphine	Same
Methodology	Competitive binding, lateral flow immunochromatographic assays based on the principle of antigen antibody immunochemistry.	Same
Specimen Type	Human Urine	Same
Cut-Off Values	300 ng/mL	Same
Intended Population	For over-the-counter and prescription uses.	For over-the-counter use.

Item	Candidate Device First Sign® Drug of Abuse Morphine Test	Predicate Device (k122809) Advin Multi Drug Screen Test
Configurations	Cup, Dip Card	Cup, Dip Card, Cassette

9. Test Principle

Each assay test is a lateral flow chromatographic immunoassay. During testing, a urine specimen migrates upward by capillary action. If target drugs are present in the urine specimen below its cut-off concentration, it will not saturate the binding sites of its specific antibody (monoclonal mouse antibody) coated on the particles. The antibody-coated particles will then be captured by immobilized drug-conjugate and a visible colored line will show up in the test line region. The colored line will not form in the test line region if the target drug level exceeds its cut-off concentration because it will saturate all the binding sites of the antibody coated on the particles. A band should form in the control region of the devices regardless of the presence of drug or metabolite in the sample.

10. Performance Characteristics

First Sign® Drug of Abuse Buprenorphine Test

Analytical Performance

a. Precision

Precision studies were carried out for samples with concentrations of -100% cut-off, -75% cut-off, -50% cut-off, -25% cut-off, at the cut-off, +25% cut-off, +50% cut-off, +75% cut-off and +100% cut-off. These samples were prepared by spiking drug in negative urine samples. Each drug concentration was confirmed by GC/MS. All sample aliquots were blind-labeled and randomized by the person who prepared samples and did not take part in the sample testing. For each concentration, tests were performed two runs per day for 25 days by three different operators for each format of devices. Different set of operators tested each format. The results obtained are summarized in the following tables:

Buprenorphine Dip Card Format

Result / Drug	-100% Cut-off	-75% Cut-off	-50% Cut-off	-25% Cut-off	Cut-off	+25% Cut-off	+50% Cut-off	+75% Cut-off	+100% Cut-off
Lot 1	**50-/0+**	**50-/0+**	**50-/0+**	**50-/0+**	**3-/47+**	**50+/0-**	**50+/0-**	**50+/0-**	**50+/0-**
Lot 2	**50-/0+**	**50-/0+**	**50-/0+**	**50-/0+**	**3-/47+**	**50+/0-**	**50+/0-**	**50+/0-**	**50+/0-**
Lot 3	**50-/0+**	**50-/0+**	**50-/0+**	**50-/0+**	**3-/47+**	**50+/0-**	**50+/0-**	**50+/0-**	**50+/0-**

Buprenorphine Cup Format

Result / Drug	-100% Cut-off	-75% Cut-off	-50% Cut-off	-25% Cut-off	Cut-off	+25% Cut-off	+50% Cut-off	+75% Cut-off	+100% Cut-off
Lot 4	**50-/0+**	**50-/0+**	**50-/0+**	**50-/0+**	**3-/47+**	**50+/0-**	**50+/0-**	**50+/0-**	**50+/0-**

Result / Drug	-100% Cut-off	-75% Cut-off	-50% Cut-off	-25% Cut-off	Cut-off	+25% Cut-off	+50% Cut-off	+75% Cut-off	+100% Cut-off
Lot 5	**50-/0+**	**50-/0+**	**50-/0+**	**50-/0+**	**2-/48+**	**50+/0-**	**50+/0-**	**50+/0-**	**50+/0-**
Lot 6	**50-/0+**	**50-/0+**	**50-/0+**	**50-/0+**	**3-/47+**	**50+/0-**	**50+/0-**	**50+/0-**	**50+/0-**

b. Linearity

Not applicable.

c. Stability

The devices are stable at 39-86^{o}F (4-30℃) for 24 months based on the accelerated stability study at 50℃. Control materials are not provided with the device. The labeling provides information on how to obtain control materials.

d. Cut-off

A total of 150 samples equally distributed at concentrations of -50% cut-off; -25% cut-off; cut-off; +25% cut-off; +50% cut-off were tested using three different lots of each device by three different operators. Results were all positive at and above +25% cut-off and all negative at and below -25% cut-off for Buprenorphine. The following cut-off value for the test devices have been verified.

Test	Calibrator	Cut-off (ng/mL)
First Sign® Drug of Abuse Buprenorphine Test	Buprenorphine	10

e. Interference

Potential interfering substances found in human urine of physiological or pathological conditions were added to drug-free urine and to urine containing target drugs at 25% below and 25% above cut-off levels. These urine samples were tested using three lots of each device for all formats.

Compounds that showed no interference at a concentration of 100μg/mL are summarized in the following tables. There were no differences observed for different formats.

4-Acetamidophenol	β-Estradiol	Oxolinic acid
Acetophenetidin	Estrone-3-sulfate	Oxycodone
N-Acetylprocainamide	Ethyl-p-aminobenzoate	Oxymetazoline
Acetylsalicylic acid	2-ethylidene-1,5-dimethyl-3,3 - diphenylpyrrolidine	Papaverine
Aminopyrine	Fenoprofen	Penicillin-G
Amobarbital	Furosemide	Pentazocine hydrochloride

Amoxicillin	Gentisic acid	Pentobarbital
Amphetamine	Hemoglobin	Perphenazine
Ampicillin	Hydralazine	Phencyclidine
L-Ascorbic acid	Hydrochlorothiazide	Phenelzine
Apomorphine	Hydrocodone	Phenobarbital
Aspartame	Hydrocortisone	Phentermine
Atropine	O-Hydroxyhippuric acid	β-Phenylethylamine
Benzilic acid	p-Hydroxyamphetamine	Trans-2-phenylcyclopropylamine hydrochloride
Benzoic acid	p-Hydroxy-methamphetamine	L-Phenylephrine
Benzoylecgonine	3-Hydroxytyramine	Phenylpropanolamine
Benzphetamine	Ibuprofen	Prednisolone
Bilirubin	Iprazid	Prednisone
(±) - Brompheniramine	(±) - Isoproterenol	Procaine
Butalbital	Isoxsuprine	DL-Propranolol
Caffeine	Ketamine	D-Propoxyphene
Cannabidiol	Ketoprofen	D-Pseudoephedrine
Cannabinol	Labetalol	Quinacrine
Chloralhydrate	Loperamide	Quinidine
Chloramphenicol	Methylenedioxyethylamphetamine	Quinine
Chlorothiazide	Meperidine	Ranitidine
(±) Chlorpheniramine	Meprobamate	Salicylic acid
Chlorpromazine	Methadone	Secobarbital
Chlorquine	Methamphetamine	Serotonin
Cholesterol	Methoxyphenamine	Sulfamethazine
Clonidine	(±)-3,4-Methylenedioxyamphetamine hydrochloride	Sulindac
Cocaethylene	Methylenedioxymethamphetamine	Tetracycline
Cocaine hydrochloride	Morphine-3-β-Dglucuronide	Tetrahydrocortisone3-(β-D-glucuronide)
Codeine	Morphine	Tetrahydrozoline
Cortisone	Morphine sulfate	Thiamine
(-) Cotinine	11-nor-Δ9-THC-9-COOH	Thioridazine
Creatinine	Nalidixic acid	DL-Tyrosine
Deoxycorticosterone	Naloxone	Tolbutamide
Dextromethorphan	Naltrexone	Triamterene
Diclofenac	Naproxen	Trifluoperazine

Diflunisal	Niacinamide	Trimethoprim
Digoxin	Nifedipine	Tryptamine
Diphenhydramine	Norcodeine	DL-Tryptophan
Doxylamine	Norethindrone	Tyramine
Ecgonine hydrochloride	D-Norpropoxyphene	Uric acid
Ecgonine methyl ester	Nortriptyline	Verapamil
Ephedrine	Noscapine	Zomepirac
(L) - Epinephrine	Oxalic acid	
Erythromycin	Oxazepam	

f. Specificity

To test the specificity, drug metabolites and other components that are likely to interfere in urine samples were tested using three lots of each device for all formats. The obtained lowest detectable concentration was used to calculate the cross-reactivity. There were no differences observed for different formats.

Buprenorphine Cut-off=10 ng/mL	**Result**	**% Cross-Reactivity**
Buprenorphine	Positive at 10 ng/mL	100%
Buprenorphine -3-D-Glucuronide	Positive at 15 ng/mL	67%
Norbuprenorphine	Positive at 40 ng/mL	25%
Norbuprenorphine-3-D-Glucuronide	Positive at 500 ng/mL	2%
Morphine	Negative at 100000 ng/mL	Not Detected
Oxymorphone	Negative at 100000 ng/mL	Not Detected
Hydromorphone	Negative at 100000 ng/mL	Not Detected

g. Effect of Urine Specific Gravity and Urine pH

To investigate the effect of urine specific gravity and urine pH, urine samples with a range of 1.000 to 1.035 specific gravity or urine samples with a range of pH 4 to 9 were spiked with target drugs at 25% below and 25% above cut-off levels. These samples were tested using three lots of each device for all formats. Results were all positive for samples at and above +25% Cut-Off and all negative for samples at and below -25% Cut-Off. There were no differences observed for different formats.

h. Comparison Studies

The method comparison studies for the First Sign® Drug of Abuse Buprenorphine Test was performed in-house with three different laboratory assistants for each format of the device. Operators ran 80 (40 negative and 40 positive) unaltered clinical samples. The samples were blind labeled and compared to GC/MS results. The results are presented in the tables below:

Dip Card format		Negative	Low Negative by GC/MS (less than -50%)	Near Cutoff Negative by GC/MS (Between -50% and cut-off)	Near Cutoff Positive by GC/MS (Between the cut-off and +50%)	High Positive by GC/MS (greater than +50%)
Viewer A	Positive	0	0	1	13	26
	Negative	10	10	19	1	0
Viewer B	Positive	0	0	1	13	26
	Negative	10	10	19	1	0
Viewer C	Positive	0	0	0	13	26
	Negative	10	10	20	1	0

Discordant Results

Viewer	Sample Number	GC/MS (ng/mL) Result	Dipcard Format Viewer Results
Viewer A	2014122568	9.5	Positive
Viewer A	2014122575	10.5	Negative
Viewer B	2014122505	10.8	Negative
Viewer B	2014122327	9.4	Positive
Viewer C	2014122561	10.7	Negative

Cup format		Negative	Low Negative by GC/MS (less than -50%)	Near Cutoff Negative by GC/MS (Between -50% and cut-off)	Near Cutoff Positive by GC/MS (Between the cut-off and +50%)	High Positive by GC/MS (greater than +50%)
Viewer A	Positive	0	0	0	13	26
	Negative	10	10	20	1	0
Viewer B	Positive	0	0	1	13	26
	Negative	10	10	19	1	0
Viewer C	Positive	0	0	1	13	26
	Negative	10	10	19	1	0

Discordant Results

Viewer	Sample Number	GC/MS (ng/mL) Result	Cup Format Viewer Results
Viewer A	2014122575	10.5	Negative
Viewer B	2014122764	9	Positive

Viewer	Sample Number	GC/MS (ng/mL) Result	Cup Format Viewer Results
Viewer B	2014122561	10.7	Negative
Viewer C	2014122568	9.5	Positive
Viewer C	2014122505	10.8	Negative

i. Lay-user study

A lay user study was performed at three intended user sites with 280 lay persons testing the Buprenorphine devices. A total of 142 females and 138 males tested the Buprenorphine samples. They had diverse educational and professional backgrounds and ranged in age from 21 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. The results are summarized below.

Comparison between GC/MS and Lay Person Results (Buprenorphine DipCard)

% of Cutoff	Number of samples	Buprenorphine Concentration by GC/MS (ng/mL)	Lay person results		The percentage of correct results (%)
			No. of Positive	No. of Negative	
-100%Cutoff	20	0	0	20	100%
-75%Cutoff	20	2.6	0	20	100%
-50% Cutoff	20	5.2	0	20	100%
-25% Cutoff	20	7.8	0	20	100%
+25% Cutoff	20	13	19	1	95%
+50% Cutoff	20	15.7	20	0	100%
+75% Cutoff	20	18.3	20	0	100%

Comparison between GC/MS and Lay Person Results (Buprenorphine Cup)

% of Cutoff	Number of samples	Buprenorphine Concentration by GC/MS (ng/mL)	Lay person results		The percentage of correct results (%)
			No. of Positive	No. of Negative	
-100%Cutoff	20	0	0	20	100%
-75%Cutoff	20	2.6	0	20	100%
-50% Cutoff	20	5.2	0	20	100%
-25% Cutoff	20	7.8	1	19	95%
+25% Cutoff	20	13	19	1	95%
+50% Cutoff	20	15.7	20	0	100%
+75% Cutoff	20	18.3	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.

j. Clinical Studies

Not applicable.

First Sign® Drug of Abuse Butalbital Test

Analytical Performance

a. Precision

Precision studies were carried out for samples with concentrations of -100% cut-off, -75% cut-off, -50% cut-off, -25% cut-off, at the cut-off, +25% cut-off, +50% cut-off, +75% cut-off and +100% cut-off. These samples were prepared by spiking drug in negative urine samples. Each drug concentration was confirmed by GC/MS. All sample aliquots were blind-labeled and randomized by the person who prepared samples and did not take part in the sample testing. For each concentration, tests were performed two runs per day for 25 days by three different operators for each format of devices. Different set of operators tested each format. The results obtained are summarized in the following tables:

Butalbital Dip Card Format

Drug \ Result	-100% Cut-off	-75% Cut-off	-50% Cut-off	-25% Cut-off	Cut-off	+25% Cut-off	+50% Cut-off	+75% Cut-off	+100% Cut-off
Lot 1	**50-/0+**	**50-/0+**	**50-/0+**	**50-/0+**	**3-/47+**	**50+/0-**	**50+/0-**	**50+/0-**	**50+/0-**
Lot 2	**50-/0+**	**50-/0+**	**50-/0+**	**50-/0+**	**4-/46+**	**50+/0-**	**50+/0-**	**50+/0-**	**50+/0-**
Lot 3	**50-/0+**	**50-/0+**	**50-/0+**	**50-/0+**	**3-/47+**	**50+/0-**	**50+/0-**	**50+/0-**	**50+/0-**

Butalbital Cup Format

Drug \ Result	-100% Cut-off	-75% Cut-off	-50% Cut-off	-25% Cut-off	Cut-off	+25% Cut-off	+50% Cut-off	+75% Cut-off	+100% Cut-off
Lot 4	**50-/0+**	**50-/0+**	**50-/0+**	**50-/0+**	**3-/47+**	**50+/0-**	**50+/0-**	**50+/0-**	**50+/0-**
Lot 5	**50-/0+**	**50-/0+**	**50-/0+**	**50-/0+**	**3-/47+**	**50+/0-**	**50+/0-**	**50+/0-**	**50+/0-**
Lot 6	**50-/0+**	**50-/0+**	**50-/0+**	**50-/0+**	**3-/47+**	**50+/0-**	**50+/0-**	**50+/0-**	**50+/0-**

b. Linearity

Not applicable.

c. Stability

The devices are stable at 39-86°F (4-30℃) for 24 months based on the accelerated stability study at 50℃. Control materials are not provided with the device. The labeling provides information on how to obtain control materials.

d. Cut-off

A total of 150 samples equally distributed at concentrations of -50% cut-off; -25% cut-off; cut-off; +25% cut-off; +50% cut-off were tested using three different lots of each device by three different operators. Results were all positive at and above +25% cut-off and all negative at and below -25% cut-off for Butalbital. The following cut-off value for the test devices have been verified.

Test	Calibrator	Cut-off (ng/mL)
First Sign® Drug of Abuse Butalbital Test	Butalbital	300

e. Interference

Potential interfering substances found in human urine of physiological or pathological conditions were added to drug-free urine and to urine containing target drugs at 25% below and 25% above cut-off levels. These urine samples were tested using three lots of each device for all formats.

Compounds that showed no interference at a concentration of 100μg/mL are summarized in the following tables. There were no differences observed for different formats.

Acetaminophen	Erythromycin	11-nor-Δ9-THC-9-COOH
Acetophenetidin	β-Estradiol	O-Hydroxyhippuric acid
Acetylsalicylic acid	Estrone-3-sulfate	D,L-Octopamine
Aminopyrine	Ethyl-p-aminobenzoate	Oxalic acid
Amitryptyline	Fenoprofen	Oxazepam
Amoxicillin	Furosemide	Oxolinic acid
Amphetamine	Gentisic acid	Oxycodone
Ampicillin	Hemoglobin	Oxymetazoline
Apomorphine	Hydralazine	Papaverine
Ascorbic acid	Hydrochlorothiazide	Penicillin-G
Aspartame	Hydrocodone	Pentazocaine
Atropine	Hydrocortisone	Perphenazine
Benzilic acid	p-Hydroxyamphetamine	Phencyclidine
Benzoic acid	p-Hydroxymethamphetamine	Phenelzine
Benzoylecgonine	3-Hydroxytyramine	β-Phenylethlamine
Bilirubin	Ibuprofen	Phenylpropanolamine

Brompheniramine	Imipramine	Prednisolone
Buprenorphine	(-) Isoproterenol	Prednisone
Caffeine	Isoxsuprine	Procaine
Cannabidiol	Ketamine	Promazine
Cannabinol	Ketoprofen	Promethazine
Chloralhydrate	Labetalol	D,L-Propanolol
Chloramphenicol	Levorphanol	D-Propoxyphene
Chlorothiazide	Loperamide	Quinidine
(±)Chlorpheniramine	L-Phenylephrine	Quinine
Chlorpromazine	Maprotiline	Ranitidine
Chlorquine	Meperidine	Salicylic acid
Cholesterol	Meprobamate	Serotonin
Clomipramine	Morphine-3-β-D glucuronide	Sulfamethazine
Clonidine	Methadone	Sulindac
Cocaine hydrochloride	Methamphetamine	Temazepam
Codeine	(±)-3,4-Methylenedioxy-amphetamine hydrochloride	Tetracycline
Cortisone	Methylenedioxy-methamphetamine	Tetrahydrozoline
(-) Cotinine	Morphine	Thebaine
Creatinine	Morphine Sulfate	Thiamine
Deoxycorticosterone	N-Acetylprocainamide	Thioridazine
Dextromethorphan	Nalidixic acid	Triamterene
Diazepam	Naloxone	Trifluoperazine
Diclofenac	Naltrexone	Trimethoprim
Diflunisal	Naproxen	Trimipramine
Digoxin	Niacinamide	Tryptamine
Diphenhydramine	Nifedipine	D, L-Tyrosine
Doxylamine	Norcodein	Uric acid
Ecgonine hydrochloride	Norethindrone	Verapamil
Ecgonine methylester	D-Norpropoxyphene	Zomepirac
(IR,2S)(-)Ephedrine	Noscapine	
2-ethylidene-1,5-dimethyl-3, 3- diphenylpyrrolidine	Nortriptyline	

f. Specificity

To test the specificity, drug metabolites and other components that are likely to interfere in urine samples were tested using three lots of each device for all formats. The obtained lowest detectable concentration was used to calculate the cross-reactivity. There were no differences observed for different formats.

Butalbital Cut-off=300 ng/mL)	**Result**	**% Cross-Reactivity**
Butalbital	Positive at 300 ng/mL	100%
Secobarbital	Positive at 300 ng/mL	100%
Amobarbital	Positive at 3000 ng/mL	10%
Alphenal	Positive at 250 ng/mL	120%
Aprobarbital	Positive at 200 ng/mL	150%
Allobarbital	Positive at 500 ng/mL	60%
Butabarbital	Positive at 1000 ng/mL	30%
Butethal	Positive at 500 ng/mL	60%
Cyclopentobarbital	Positive at 300 ng/mL	100%
Pentobarbital	Positive at 1300 ng/mL	23%
Phenobarbital	Positive at 1900 ng/mL	16%

g. Effect of Urine Specific Gravity and Urine pH

To investigate the effect of urine specific gravity and urine pH, urine samples with a range of 1.000 to 1.035 specific gravity or urine samples with a range of pH 4 to 9 were spiked with target drugs at 25% below and 25% above cut-off levels. These samples were tested using three lots of each device for all formats. Results were all positive for samples at and above +25% Cut-Off and all negative for samples at and below -25% Cut-Off. There were no differences observed for different formats.

h. Comparison Studies

The method comparison studies for the First Sign® Drug of Abuse Butalbital Test was performed in-house with three different laboratory assistants for each format of the device. Operators ran 80 (40 negative and 40 positive) unaltered clinical samples. The samples were blind labeled and compared to GC/MS results. The results are presented in the tables below:

Dip Card format		Negative	Low Negative by GC/MS (less than -50%)	Near Cutoff Negative by GC/MS (Between -50% and cut-off)	Near Cutoff Positive by GC/MS (Between the cut-off and +50%)	High Positive by GC/MS (greater than +50%)
Viewer A	Positive	0	0	0	13	26
	Negative	10	10	20	1	0
Viewer B	Positive	0	0	0	13	26
	Negative	10	10	20	1	0
Viewer C	Positive	0	0	0	13	26
	Negative	10	10	20	1	0

Discordant Results

Viewer	Sample Number	GC/MS (ng/mL) Result	DipCard Format Viewer Results
Viewer A	94910807	334	Negative
Viewer B	94910628	352	Negative
Viewer C	94910445	341	Negative

Cup format		Negative	Low Negative by GC/MS (less than -50%)	Near Cutoff Negative by GC/MS (Between -50% and cut-off)	Near Cutoff Positive by GC/MS (Between the cut-off and +50%)	High Positive by GC/MS (greater than +50%)
Viewer A	Positive	0	0	0	13	26
	Negative	10	10	20	1	0
Viewer B	Positive	0	0	0	13	26
	Negative	10	10	20	1	0
Viewer C	Positive	0	0	1	13	26
	Negative	10	10	19	1	0

Discordant Results

Viewer	Sample Number	GC/MS (ng/mL) Result	Cup Format Viewer Results
Viewer A	94910807	334	Negative
Viewer B	94910095	339	Negative
Viewer C	94910628	352	Negative
Viewer C	94910808	270	Positive

i. Lay-user study

A lay user study was performed at three intended user sites with 280 lay persons testing the Butalbital devices. A total of 141 females and 139 males tested the Butalbital samples. They had diverse educational and professional backgrounds and ranged in age from 21 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. The results are summarized below.

Comparison between GC/MS and Lay Person Results (Butalbital DipCard)

% of Cutoff	Number	Butalbital Concentration	Lay person results	The percentage

	of samples	by GC/MS (ng/mL)	No. of Positive	No. of Negative	of correct results (%)
-100%Cutoff	20	0	0	20	100%
-75%Cutoff	20	77	0	20	100%
-50% Cutoff	20	156	0	20	100%
-25% Cutoff	20	234	1	19	95%
+25% Cutoff	20	390	19	1	95%
+50% Cutoff	20	468	20	0	100%
+75% Cutoff	20	547	20	0	100%

Comparison between GC/MS and Lay Person Results (Butalbital Cup)

% of Cutoff	Number of samples	Butalbital Concentration by GC/MS (ng/mL)	Lay person results		The percentage of correct results (%)
			No. of Positive	No. of Negative	
-100%Cutoff	20	0	0	20	100%
-75%Cutoff	20	77	0	20	100%
-50% Cutoff	20	156	0	20	100%
-25% Cutoff	20	234	1	19	95%
+25% Cutoff	20	390	20	0	100%
+50% Cutoff	20	468	20	0	100%
+75% Cutoff	20	547	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.

j. Clinical Studies

Not applicable.

First Sign® Drug of Abuse Morphine Test

Analytical Performance

a. Precision

Precision studies were carried out for samples with concentrations of -100% cut-off, -75% cut-off, -50% cut-off, -25% cut-off, at the cut-off, +25% cut-off, +50% cut-off, +75% cut-off and +100% cut-off. These samples were prepared by spiking drug in negative urine samples. Each drug concentration was confirmed by GC/MS. All sample aliquots were blind-labeled and randomized by the person who prepared samples and did not take part in the sample testing. For each concentration, tests were performed two runs per day for 25 days by three different operators for

each format of devices. Different set of operators tested each format. The results obtained are summarized in the following tables:

Morphine Dip Card Format

Result / Drug	-100% Cut-off	-75% Cut-off	-50% Cut-off	-25% Cut-off	Cut-off	+25% Cut-off	+50% Cut-off	+75% Cut-off	+100% Cut-off
Lot 1	**50-/0+**	**50-/0+**	**50-/0+**	**50-/0+**	**2-/48+**	**50+/0-**	**50+/0-**	**50+/0-**	**50+/0-**
Lot 2	**50-/0+**	**50-/0+**	**50-/0+**	**50-/0+**	**1-/49+**	**50+/0-**	**50+/0-**	**50+/0-**	**50+/0-**
Lot 3	**50-/0+**	**50-/0+**	**50-/0+**	**50-/0+**	**2-/48+**	**50+/0-**	**50+/0-**	**50+/0-**	**50+/0-**

Morphine Cup Format

Result / Drug	-100% Cut-off	-75% Cut-off	-50% Cut-off	-25% Cut-off	Cut-off	+25% Cut-off	+50% Cut-off	+75% Cut-off	+100% Cut-off
Lot 4	**50-/0+**	**50-/0+**	**50-/0+**	**50-/0+**	**2-/48+**	**50+/0-**	**50+/0-**	**50+/0-**	**50+/0-**
Lot 5	**50-/0+**	**50-/0+**	**50-/0+**	**50-/0+**	**3-/47+**	**50+/0-**	**50+/0-**	**50+/0-**	**50+/0-**
Lot 6	**50-/0+**	**50-/0+**	**50-/0+**	**50-/0+**	**2-/48+**	**50+/0-**	**50+/0-**	**50+/0-**	**50+/0-**

b. Linearity

Not applicable.

c. Stability

The devices are stable at 39-86^{o}F (4-30℃) for 24 months based on the accelerated stability study at 50℃. Control materials are not provided with the device. The labeling provides information on how to obtain control materials.

d. Cut-off

A total of 150 samples equally distributed at concentrations of -50% cut-off; -25% cut-off; cut-off; +25% cut-off; +50% cut-off were tested using three different lots of each device by three different operators. Results were all positive at and above +25% cut-off and all negative at and below -25% cut-off for Morphine. The following cut-off value for the test devices have been verified.

Test	Calibrator	Cut-off (ng/mL)
First Sign® Drug of Abuse Morphine Test	Morphine	300

e. Interference

Potential interfering substances found in human urine of physiological or pathological conditions were added to drug-free urine and to urine containing target drugs at 25% below and 25% above cut-off levels. These urine samples were tested using three lots of each device for all formats.

Compounds that showed no interference at a concentration of 100µg/mL are summarized in the following tables. There were no differences observed for different formats.

Acebutolol	Ecgonine methylester	p-Hydroxymethamphetamine
Acetopromazine	(-) Y Ephedrine	Papaverine
4-Acetamidophenol	Erythromycin	Penicillin-G
Acetophenetidin	β-Estradiol	Pentazocine
N-Acetylprocainamide	Estrone-3-sulfate	Pentobarbital
Acetylsalicylic acid	Ethyl-p-aminobenzoate	Perphenazine
Aminopyrine	Fenoprofen	Phencyclidine
Amitryptyline	Furosemide	Phenelzine
Amobarbital	Gentisic acid	Phenobarbital
Amoxicillin	Hemoglobin	Phentermine
Ampicillin	Hydralazine	L-Phenylephrine
Ascorbic acid	Hydrochlorothiazide	β-Phenylethlamine
Amphetamine	Hydrocortisone	β-Phenyllethylamine
L-Amphetamine	O-Hydroxyhippuric acid	Phenylpropanolamine
Apomorphine	3-Hydroxytyramine	Prednisolone
Aspartame	Ibuprofen	Prednisone
Atropine	Imipramine	Promazine
Benzilic acid	Iprazid	Promethazine
Benzoic acid	(-) -Isoproterenol	D,L-Propanolol
Benzoylecgonine	Isoxsuprine	D-Propoxyphene
Benzphetamine	Ketamine	D-Pseudoephedrine
Bilirubin	Ketoprofen	Quinidine
Brompheniramine	Labetalol	Quinine
Buprenorphine	Loperamide	Ranitidine
Butalbital	Maprotiline	Salicylic acid
Caffeine	Meprobamate	Secobarbital
Chloralhydrate	Methadone	Serotonin (5-Hydroxytyramine)
Chloramphenicol	Methamphetamine	Sulfamethazine
Chlordiazepoxide	Methoxyphenamine	Sulindac
Chlorothiazide	(+)3,4-Methylenedioxyamphetamine	Temazepam
(±) Chlorpheniramine	Methylenedioxymethamphetamine	Tetracycline
Chlorpromazine	Methylphenidate	Tetrahydrocortisone3(5-D glucuronide)
Chlorquine	Nalorphine	Tetrahydrozoline

Cholesterol	Naloxone	Thiamine
Clomipramine	Nalidixic acid	Thioridazine
Clonidine	Naltrexone	D, L-Thyroxine
Cocaine hydrochloride	Naproxen	Tolbutamine
Cortisone	Niacinamide	Triamterene
(-) Cotinine	Nifedipine	Trifluoperazine
Creatinine	Norcodein	Trimethoprim
Deoxycorticosterone	Norethindrone	Trimipramine
Dextromethorphan	D-Norpropoxyphene	Tryptamine
Diazepam	11-nor-Δ9-THC-9-COOH	D, L-Tryptophan
Diclofenac	Noscapine	Tyramine
Diflunisal	Nortriptyline	Tyrosine
Digoxin	D,L-Octopamine	Uric acid
Diphenhydramine	Oxalic acid	Verapamil
Doxylamine	Oxazepam	Zomepirac
2-ethylidene-1,5-dimethyl-3, 3- diphenylpyrrolidine	Oxolinic acid	
Ecgonine hydrochloride	Oxymetazoline	

f. Specificity

To test the specificity, drug metabolites and other components that are likely to interfere in urine samples were tested using three lots of each device for all formats. The obtained lowest detectable concentration was used to calculate the cross-reactivity. There were no differences observed for different formats.

Morphine **Cut-off=300 ng/mL**	**Result**	**% Cross-Reactivity**
Morphine	Positive at 300 ng/mL	100%
6-Acetylmorphine	Positive at 750 ng/mL	40%
Codeine	Positive at 300 ng/mL	100%
Morphine-3- β-glucuronide	Positive at 450 ng/mL	67%
EthylMorphine	Positive at 200 ng/mL	150%
Heroin	Positive at 700 ng/mL	43%
Hydromorphone	Positive at 4000 ng/mL	8%
Hydrocodone	Positive at 2000 ng/mL	15%
Levorphanol	Positive at 12000 ng/mL	3%
Thebaine	Positive at 90000 ng/mL	0.3%
Oxycodone	Negative at 100000 ng/mL	Not Detected
Procaine	Negative at 100000 ng/mL	Not Detected

g. Effect of Urine Specific Gravity and Urine pH

To investigate the effect of urine specific gravity and urine pH, urine samples with a range of 1.000 to 1.035 specific gravity or urine samples with a range of pH 4 to 9 were spiked with target drugs at 25% below and 25% above cut-off levels. These samples were tested using three lots of each device for all formats. Results were all positive for samples at and above +25% Cut-Off and all negative for samples at and below -25% Cut-Off. There were no differences observed for different formats.

h. Comparison Studies

The method comparison studies for the First Sign® Drug of Abuse Morphine Test was performed in-house with three different laboratory assistants for each format of the device. Operators ran 80 (40 negative and 40 positive) unaltered clinical samples. The samples were blind labeled and compared to GC/MS results. The results are presented in the tables below:

DipCard format		Negative	Low Negative by GC/MS (less than -50%)	Near Cutoff Negative by GC/MS (Between -50% and cut-off)	Near Cutoff Positive by GC/MS (Between the cut-off and +50%)	High Positive by GC/MS (greater than +50%)
Viewer A	Positive	0	0	0	13	26
	Negative	10	10	20	1	0
Viewer B	Positive	0	0	1	13	26
	Negative	10	10	19	1	0
Viewer C	Positive	0	0	0	13	26
	Negative	10	10	20	1	0

Discordant Results

Viewer	Sample Number	GC/MS (ng/mL) Result	DipCard Format Viewer Results
Viewer A	94911987	338	Negative
Viewer B	94911597	270	Positive
Viewer B	94911984	320	Negative
Viewer C	94911253	340	Negative

Cup format		Negative	Low Negative by GC/MS (less than -50%)	Near Cutoff Negative by GC/MS (Between -50% and cut-off)	Near Cutoff Positive by GC/MS (Between the cut-off and +50%)	High Positive by GC/MS (greater than +50%)
Viewer A	Positive	0	0	1	13	26
	Negative	10	10	19	1	0
Viewer B	Positive	0	0	0	13	26
	Negative	10	10	20	1	0
Viewer C	Positive	0	0	0	14	26
	Negative	10	10	20	0	0

Discordant Results

Viewer	Sample Number	GC/MS (ng/mL) Result	Cup Format Viewer Results
Viewer A	94911119	268	Positive
Viewer A	94911984	320	Negative
Viewer B	94911976	345	Negative

i. Lay-user study

A lay user study was performed at three intended user sites with 280 lay persons testing the Morphine devices. A total of 143 females and 137 males tested the Morphine samples. They had diverse educational and professional backgrounds and ranged in age from 21 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. The results are summarized below.

Comparison between GC/MS and Lay Person Results (Morphine DipCard)

% of Cutoff	Number of samples	Morphine Concentration by GC/MS (ng/mL)	Lay person results		The percentage of correct results (%)
			No. of Positive	No. of Negative	
-100%Cutoff	20	0	0	20	100%
-75%Cutoff	20	74	0	20	100%
-50% Cutoff	20	148	0	20	100%
-25% Cutoff	20	228	1	19	95%
+25% Cutoff	20	379	20	0	100%
+50% Cutoff	20	443	20	0	100%
+75% Cutoff	20	516	20	0	100%

Comparison between GC/MS and Lay Person Results (Morphine Cup)

% of Cutoff	Number of samples	Morphine Concentration by GC/MS (ng/mL)	Lay person results		The percentage of correct results (%)
			No. of Positive	No. of Negative	
-100%Cutoff	20	0	0	20	100%
-75%Cutoff	20	74	0	20	100%
-50% Cutoff	20	148	0	20	100%
-25% Cutoff	20	228	0	20	100%
+25% Cutoff	20	379	19	1	95%
+50% Cutoff	20	443	20	0	100%
+75% Cutoff	20	516	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.

j. Clinical Studies

Not applicable.

11. Conclusion

Based on the test principle and acceptable performance characteristics including precision, cut-off, interference, specificity and method comparison of the devices, it's concluded that the First Sign® Drug of Abuse Buprenorphine Test and First Sign® Drug of Abuse Butalbital Test and First Sign® Drug of Abuse Morphine Test are substantially equivalent to the predicate.