K050590

Appendix C
510(k) Summary of Safety and Effectiveness

Name	**DIESSE Diagnostica Senese SpA**
Address	Via delle Rose 10, 53035 Monteriggioni SI Tel. 39-0577- 587111 Fax 39-0577-318690
Contact Person	Dr. Francesco Cocola
Phone Number	39-0577-587143
Fax Number	39-0577-318379

The Following section is included as required by
the Safe Medical Device Act (SMDA) 1990.
510(k) Summary of Safety and Effectiveness

This summary of 510(k) safety and effectiveness information is being submitted in accordance with the requirements of SMDA 1990 and 21 CFR 807.92.
The Assigned 510(k) Number is: K050590
Applicant

Date Prepared	February 4, 2004
Name	**DIESSE Diagnostica Senese SpA**
Address	Via delle Rose 10, 53035 Monteriggioni SI, Italy Tel. 011-39-0577- 587111 Fax 011-39-0577-318690
Contact Person	Dr. Francesco Cocola
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Device information

Trade Name	ENZY-WELL SYPHILIS IgG
Classification Name	Enzyme linked immunosorbent assay, Treponema pallidum

Equivalent Device
Trinity Biotech CAPTIA Syphilis-G Elisa Test Kit
Device Description
ENZY-WELL SYPHILIS IgG is an immunoenzymatic method for the qualitative detection of IgG antibodies to *Treponema pallidum* in human serum/ plasma. The test may be used in conjunction with non-treponemal testing to provide serological evidence of infection with *T. pallidum.*

Principle of the assay

The ENZY-WELL SYPHILIS IgG test is based on the ELISA technique (Enzyme-linked immunosorbent assay). Diluted patient sample is incubated in microplate wells coated with *T. pallidum.* During this incubation specific immunoglobulins, if present, bind to the antigen on the well. After washing, to eliminate unbound proteins, a second incubation is performed with the conjugate, composed of human IgG monoclonal antibodies labeled with peroxidase. After washing to remove unbound conjugate from the wells, the substrate is added, which will react to produce color in the presence of the peroxidase. An acidic solution is added to stop the reaction and the absorbance of the developed color is read at 450 nm

Performance Characteristic

Comparison studies, precision studies, interference and specificity studies, expected values were performed. Performance was evaluated at Azienda Ospedaliera Umberto I (Ancona).

CLINICAL SAMPLE CORRELATION

A total of 525 samples were collected and tested to study the performance of the ENZY-WELL SYPHILIS IgG kit.
FIRST group: 125 serum samples from both pediatric and adult male and female patients with syphilis.
SECOND group: 300 negative sera; 150 of these serum samples came from clinical sources and/or from a blood donor facility and 150 samples from normal donors.
THIRD group: 100 samples from subjects with no known history or serological evidence of syphilis and suspected for different kinds of infective or clinical pathology.

In the first group of the 125 syphilitic sera there was no disagreement between two comparative testing methods; therefore the reference method FTA-ABS was not used.
In the second group of the 300 syphilis-negative sera there was one sample not in agreement. It was equivocal with the ENZY-WELL SYPHILIS IgG test and negative with the CAPTIA Syphilis - G test. The confirmatory FTA-ABS test was negative (it was also negative with TPHA and VDRL test).
Table n°1
Results obtained with ENZYWELL vs. Captia Syphilis-G, testing 127(First Group) Syphilitic sera:

		CAPTIA Syphilis - G		
		Negative	Equivocal	Positive
ENZY-WEL SYPHILIS IgG	Negative	0	0	0
	Equivocal	0	0	0
	Positive	0	0	125

Results:
Percent agreement positive = 100 %.
95% CI: 100% <Se <100%

Table n°2
Results obtained testing 300 sera(Second Group): 150 sera from clinical source and 150 sera from normal donor, both groups were negative to Syphilis

		CAPTIA Syphilis -G		
		Negative	Equivocal	Positive
ENZY-WELL	Negative	299	0	0
	Equivocal	0	0	0
	Positive	1*	0	0

* The test gave a positive result even after repeat testing. Both the confirmatory tests (FTA-ABS and TPHA) gave negative results.
Percent agreement negative = 99.6 %.
95% CI: 99%<Sp<100%
In the third group of 100 sera with different pathological diseases, two sera gave equivocal results with both methods, also after repeating the test. The confirmatory test gave a positive result with a titer of 1280; the FTA-ABS test also gave positive results.
The Percent agreement negative of ENZY-WELL SYPHILIS IgG kit in this group is 100%

In addition, clinical studies performed at two independent clinical laboratories with a total of three hundred and eighty-seven specimens, comparing the Diesse Enzy-well Syphilis IgG test with two other commercially available tests.

Lab B

	Diesse			Clinical Sensitivity and Specificity	
FTA	Pos	Eqv	Neg	%	95 % C.I.
Reactive	29	3	1	96.7	90.2 to 100
Non-Reactive	5	1	75	88.4	90.3 to 99.0
				94.5	90.3 to 98.8

Lab C

	EIA			% Agreement (Pos. or Neg.)	
EnzyWELI	Pos	Eqv	Neg	%	95 % C.I.
Positive	7	2	2	77.8	50.6 to 100
Equivocal	0	1	0		
Negative	2	2	257	99.2	98.2 to 100
				98.5	97.1 to 99.9

Excluding equivocal results, a total of 10 samples gave discordant results. When these samples were tested by a third commercially available test, the referee test agreed with the Diesse test for 8 of the 10 discordant samples tested.

PRECISION

All samples (Cut-Off Control, Positive Control and Negative Control) were tested in triplicate in two separate runs on three different days. CV lower than 15% are accepted.
Within run Precision

DAY 1	Replicates	RUN 1			RUN 2		
SAMPLES	3	O.D.	S.D.	CV%	O.D.	S.D.	CV%
CutOff	3	353	22	6.2	324	23	7.1
Pos. control.	3	1171	20	1.7	1091	91	8.4
Neg. Control	3	49	1	2.3	49	2	3.5
Pos serum 1	3	1687	28	1.7	1524	137	9.0
Pos serum 2	3	2141	89	4.1	2184	50	2.3
Pos serum 3	3	383	13	3.3	329	32	9.8
Pos serum 4	3	838	18	2.1	766	59	7.7
Neg serum1	3	75	3	4.1	67	5	7.0
Neg serum2	3	86	11	12.4	80	3	4.3
DAY 2	Replicates	RUN 1			RUN 2		
SAMPLES	3	O.D.	S.D.	CV%	O.D.	S.D.	CV%
CutOff	3	386	27	6.9	314	14	4.5
Pos control.	3	1235	83	6.7	1233	60	4.9
Neg. control	3	37	1	2.7	35	0	0.0
Pos serum 1	3	1787	82	4.6	1706	43	2.5
Pos serum 2	3	2408	59	2.4	2351	94	4.0
Pos serum 3	3	360	21	5.7	322	24	7.4
Pos serum 4	3	879	84	9.6	775	57	7.4
Neg serum1	3	68	9	12.7	52	3	5.8
Neg serum2	3	80	4	5.4	76	21	27.4

DAY 3	Replicates	RUN 1			RUN 2		
SAMPLES	3	O.D.	S.D.	CV%	O.D.	S.D.	CV%
Cut-Off	3	342	9	2.7	339	14	4.0
Pos Control.	3	1218	26	2.1	1204	83	6.9
Neg Control	3	34	4	11.2	34	1	3.4
Pos serum 1	3	1613	57	3.6	1633	40	2.4
Pos serum 2	3	1958	228	11.7	2093	176	8.4
Pos serum 3	3	365	19	5.1	370	23	6.3
Pos serum 4	3	769	48	6.2	801	8	1.1
Neg serum1	3	61	3	5.7	101	10	10.0
Neg serum 2	3	66	5	7.2	68	6	8.6

Between run Precision

	INDEX		
SAMPLE	O.D AVERAGE	SD	CV%
CUTOFF	343	18	5.2
Pos. Control.	1192	61	5,1
Neg. Control	40	1	3.9
Positive serum 1	1658	65	4.0
Positive serum 2	2189	116	5.5
Positive serum 3	355	22	6.3
Positive serum 4	805	46	5.7
Negative serum 1	71	5	7.5
Negative serum 2	76	8	10.9

In addition, the kit positive and negative controls, plus six additional samples, including 2 negatives and four positives, were assayed in triplicate, in three different runs, at three independent laboratories, using automated analyzers.

Within Run Precision

Lab A

	Run 1			Run 2			Run 3		
ID	O.D.	S.D.	CV%	O.D.	S.D.	CV%	O.D.	S.D.	CV%
PC	1870	211	11.3	2108	227	10.8	2358	114	4.8
NC	5	2	NA	0	0	NA	0	0	NA
A	52	20	NA	0	0	NA	0	0	NA
B	55	6	NA	0	0	NA	0	0	NA
C	617	44	7.2	398	61	15.2	501	48	9.5
D	603	105	17.4	463	101	21.8	543	60	11.0
E	1013	38	3.7	1004	56	5.5	1222	67	5.5
F	1010	100	9.9	890	53	5.9	1224	74	6.0

Lab B

	Run 1			Run 2			Run 3		
ID	O.D.	S.D.	CV%	O.D.	S.D.	CV%	O.D.	S.D.	CV%
PC	1802	32	1.8	1740	29	1.6	1825	17	0.9
NC	142	104	NA	96	61	NA	136	92	NA
A	138	17	NA	94	28	NA	136	55	NA

B	96	47	NA	67	37	NA	86	73	NA
C	637	81	12.7	597	58	9.7	614	51	8.4
D	782	39	5.0	691	17	2.5	770	48	6.3
E	1202	101	8.4	1050	60	5.8	1177	77	6.6
F	1010	89	8.8	995	94	9.5	981	69	7.0

Lab C

	Run 1			Run 2			Run 3		
ID	O.D.	S.D.	CV%	O.D.	S.D.	CV%	O.D.	S.D.	CV%
PC	2766	30	1.1	2747	116	4.3	2850	49	1.7
NC	0	30	NA	0	0	NA	2	0	NA
A	13	0	NA	14	9	NA	14	8	NA
B	57	10	NA	59	6	NA	54	2	NA
C	824	10	1.3	887	70	7.9	823	74	9.1
D	909	38	4.1	942	19	2.0	937	28	3.0
E	1502	70	4.7	1489	42	2.8	1567	41	2.6
F	1469	28	1.9	1659	63	3.8	1470	65	4.4

Between Run Precision

	Lab A			Lab B			Lab C		
ID	O.D.	S.D.	CV%	O.D.	S.D.	CV%	O.D.	S.D.	CV%
PC	2112	271	12.8	1789	45	2.5	2788	83	3.0
NC	2	3	NA	125	85	NA	1	1	NA
A	17	28	NA	123	43	NA	14	9	NA
B	18	28	NA	83	055	NA	57	7	NA
C	506	106	21.0	616	61	9.9	845	68	8.1
D	536	102	19.0	748	56	7.5	929	043	4.6
E	1080	119	11.0	1143	103	9.0	1520	51	3.3
F	1041	164	15.7	995	078	7.9	1533	113	7.4

Interlaboratory Precision

ID	O.D.	S.D.	CV%
PC	2230	510	23
NC	43	71	NA
A	51	62	NA
B	53	33	NA
C	656	173	26
D	738	197	27
E	1248	238	19
F	1190	298	25

CROSSREACTIVITY & INTERFERENCE STUDIES

In order to demonstrate Analitycal Specificity and Interferences an internal experimentation was performed using a total of 332 sera with known disease. Experimentation was performed in two times. The first time the following 130 sera, collected from seroteque, were tested: 73 sera from adults females, 57 from adult males. All these were characterized as follows:

CATEGORY OF SPECIMENS	n
ALT	20
HCV Positives	21
HCV Ab Reactive	9
Hypergammaglobulinemia	19
Pregnant	50
Total Bilirubine	2
Lipemic	2
Mono test (MT)	8

In a second day 202 sera were tested. Sera summarized below:

CATEGORY OF SPECIMENS	n
HCV Positives	46
Pregnant	110
HBSAg Vaccinated	30
HBSAg Positives	15

Obtained Results:

CATEGORY OF SPECIMENS	n	ENZY-WELL SYPHILIS IgG Reactive
HbsAg Vaccinated	30	0
HBsAg Positives	15	0
ALT	20	0
Sera from HBV Vaccines	11	0
HCV Positives	64	1*
HCV Ab Reactive	9	0
Hypergammaglobulinemia	19	0
Pregnant	160	0
Total Bilirubine	2	0
Lipemic	2	0
Total Specimen	332	

Note: Confirmed positive with TPHA

Conclusion:

Only one sample that results reactive when tested with ENZY- WELL Syphilis IgG was confirmed to be positive with TPHA (Confirmatory test)

Analytical specificity= 100%

No interferences are shown.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

Mr. Raul Alvarez
Consultant
Diesse Inc.
1690 W. 38 Place, Unit B 1
Hialeah, Florida 33012

AUG 10 2006

Re: k050590
Trade/Device Name: ENZY-WELL Syphilis IgG
Regulation Number: 21 CFR § 866.3830
Regulation Name: Treponema pallidum treponemal test reagent
Regulatory Class: II
Product Code: LIP
Dated: May 30, 2006
Received: June 5, 2006

Dear Mr. Alvarez:

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.

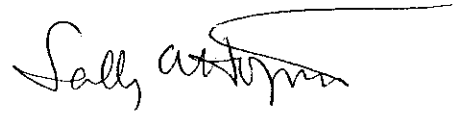
If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to such additional controls. Existing major regulations affecting your device can be found in Title 21, Code of Federal Regulations (CFR), Parts 800 to 895. In addition, FDA may publish 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); and good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820). This letter will allow you to begin marketing your device as described in your Section 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.

This letter will allow you to begin marketing your device as described in your Section 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific information about the application of labeling requirements to your device, or questions on the promotion and advertising of your device, please contact the Office of In Vitro Diagnostic Device Evaluation and Safety at (240)276-0450. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR Part 807.97). Other general information on your responsibilities under the Act may be obtained from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (301) 443-6597 or at its Internet address http://www.fda.gov/cdrh/dsma/dsmamain.html.

Sincerely yours,



Sally A. Hojvat, M.Sc., Ph.D.
Director
Division of Microbiology Devices
Office of *In Vitro* Diagnostic Device
Evaluation and Safety
Center for Devices and
Radiological Health

Enclosure

Indications for Use

510(k) Number : K050590

Device Name: ENZY-WELL Syphilis IgG

Indications For Use:

1. For in vitro diagnostic use only.

2. ENZY-WELL SYPHILIS IgG is an immunoenzymatic method for the qualitative detection of IgG antibodies to *Treponema pallidum* in human serum by a manual technique.

3. The test may be used in conjunction with non-treponemal testing to provide serological evidence of infection with *T. pallidum.*

Prescription Use ___X___ AND/OR Over-The-Counter Use _____
(Part 21 CFR 801 Subpart D) (21 CFR 807 Subpart C)

(PLEASE DO NOT WRITE BELOW THIS LINE-CONTINUE ON ANOTHER PAGE IF NEEDED)

___Concurrence of CDRH, Office of In Vitro Diagnostic Devices (OIVD)

Division Sign-Off

Office of In Vitro Diagnostic Device
Evaluation and Safety

510(k) K050590