510(k) SUBSTANTIAL EQUIVALENCE DETERMINATION
DECISION SUMMARY
ASSAY ONLY TEMPLATE

A. 510(k) Number:

k062204

B. Purpose for Submission:

New device

C. Measurand:

Cortisol

D. Type of Test:

Quantitative, Chemiluminescent Immunoassay

E. Applicant:

Seradyn, Inc.

F. Proprietary and Established Names:

ARCHITECT Cortisol

ARCHITECT Cortisol Calibrators

G. Regulatory Information:

1. Regulation section:

   21CFR §862.1205
   21CFR §862.1150

2. Classification: Class II

3. Product code: JFT and JIX

4. Panel: 75 (Chemistry)

H. Intended Use:

1. Intended use(s):
   The ARCHITECT Cortisol is a chemiluminescent microparticle immunoassay (CIMA) for the quantitative determination of cortisol in human serum, plasma or urine on the ARCHITECT *i* System. The ARCHITECT Cortisol assay is intended for use as an aid in the diagnosis and treatment of adrenal disorders.

   The ARCHITECT Cortisol Calibrators are for the calibration of the ARCHITECT *i* System when used for the quantitative determination of Cortisol in human serum, plasma or urine.

2. Indication(s) for use:
   See Intended Use above

3. Special conditions for use statement(s):
   Prescription use only

4. Special instrument requirements:
   The ARCHITECT Cortisol assay is intended for use with the ARCHITECT *i* System
   instruments only (*i* 2000, *i* 2000SR*).

I. Device Description:

The ARCHITECT Cortisol reagent kit (100 tests/500 tests) contains the following reagents:

- 1 bottle (6.6 mL/27.0 mL) Microparticle Reagent with Anti-Cortisol (mouse) coated
  Microparticles in buffer with protein stabilizer, Proclin 300 and sodium azide.

- 1 bottle (5.9 mL/26.3 mL) Conjugate Reagent with Cortisol acridinium labeled conjugate
  in buffer with surfactant stabilizer and Proclin 300.

Other reagents:

- Pre-Trigger solution containing 1.32% (w/v) hydrogen peroxide.

- Trigger solution containing 0.35N sodium hydroxide.

- Wash buffer containing phosphate buffered saline solution. Preservative: antimicrobial
  agent.

The ARCHITECT Cortisol calibrators contain 6 bottles of 4 mL of calibrators A to F, six
different concentrations of purified human Cortisol, with preservatives.

J. Substantial Equivalence Information:

1. Predicate device name(s):

   AXSYM Cortisol reagents and calibrators

2. Predicate 510(k) number(s):

   k033731

3. Comparison with predicate:

Similarities for Cortisol		
Item	**Device** ARCHITECT Cortisol	**Predicate** AxSYM Cortisol
Intended Use	ARCHITECT Cortisol is a chemiluminescent microparticle immunoassay (CMIA) for the quantitative determination of cortisol in human serum, plasma or urine on the ARCHITECT *i* System. It is intended for use as an aid in the diagnosis and treatment of adrenal disorders.	The Cortisol assay is a Fluorescence Polarization Immunoassay (FPIA) for the quantitative measurement of cortisol in human serum, plasma and urine on the AxSYM System to aid in the diagnosis and treatment of adrenal disorders.
Calibrator Material	Six levels	Six levels
Sample types	Serum, plasma and urine	Serum, plasma and urine

Differences for Cortisol		
Item	**Device** ARCHITECT Cortisol	**Predicate** AxSYM Cortisol
Methodology	Heterogeneous chemiluminescent microparticle immunoassay (CMIA).	Fluorescence Polarization Immunoassay (FPIA) technology.
Expected range	Serum, before 10 am: 3.7-19.4 µg/dL Serum, after 5 pm: 2.9-17.3 µg/dL Urine (24 hr): 4.3-176 µg/24 hr	Serum, before 10 am: 4.2-38.4 µg/dL Serum, after 5 pm: 1.7-16.6 µg/dL Urine (24 hr): 32-243 µg/24 hr
Functional Sensitivity	1 µg/dL	1.1 µg/dL
Reportable range	Serum and urine: 0.8 to 59.8 µg/dL	Serum and urine: 1.1 to 60 µg/dL

K. Standard/Guidance Document Referenced (if applicable):

STANDARDS
Title and Reference Number

1. CSLI Guideline, EP5-A *Evaluation of Precision Performance of Clinical Chemistry Device*; *Approved Guideline.*

2. CSLI Guideline, EP6-A *Evaluation of the Linearity of Quantitative Analytical Methods*; *Approved Guideline.*

3. CSLI Guideline, EP7-A *Interference Testing in Clinical Chemistry*; *Approved Guideline.*

4. CSLI Guideline, EP9-A2 *Method Comparison and Bias Estimation Using Patient Samples*; *Approved Guideline, Second Edition.*

5. CSLI Guideline, EP17-A *Protocols for Demonstration, Verification, and Evaluation of Limits of Detection and Quantitation; Approved Guideline.*

L. Test Principle:

Cortisol in the sample and anti-cortisol coated paramagnetic microparticles are combined to create a reaction mixture. Cortisol present in the sample binds to the anti-cortisol coated microparticles. After incubation, cortisol acridinium-labeled conjugate is added to the reaction mixture. The cortisol acridinium-labeled conjugate competes for the available binding sites on the anti-cortisol coated microparticles. Following a second incubation, the microparticles are washed, and pre-trigger and trigger solutions are added to the reaction mixture. The resulting chemiluminescent reaction is measured as relative light units (RLUs). An inverse relationship exists between the amount of cortisol in the sample and the RLUs detected by the ARCHITECT i system optics.

M. Performance Characteristics (if/when applicable):

1. Analytical performance:

   a. Precision/Reproducibility:

   A precision study was performed using CLSI guideline NCCLS *EP5-A2: Evaluation of Precision Performance of Quantitative Measurement Methods.* Precision was run on one ARCHITECT i2000 analyzer, and one ARCHITECT i2000SR analyzer, using ARCHITECT Cortisol calibrators, Abbott MCC Controls and patient sample pools. For 20 non-consecutive days, each sample was run in duplicate. After a minimum of two hours within the same day, the samples were re-run in duplicate, resulting in a total of 80 replicates for each control or patient pool. Calibration was performed on day one; no recalibration was needed.

   The data show that total %CV is less than 10% for both serum and urine samples. A summary of the precision data is shown in the table below:

Sample	Instr.	Reagent Lot	n	Mean Conc. ug/dL	Within Run		Between Day		Total	
					SD	%CV	SD	%CV	SD	%CV
MCC 1	I2000	A	80	3.8	0.1369	3.6	0.1315	3.4	0.1898	5.0
	I2000SR	B	80	4.0	0.1924	4.8	0.0000	0.0	0.2321	5.8
MCC 2	I2000	A	80	16.6	0.4300	2.6	0.4071	2.5	0.6184	3.7
	I2000SR	B	80	17.3	0.4000	2.3	0.5459	3.2	1.3228	7.7
MCC 3	I2000	A	80	30.3	0.8739	2.9	0.6784	2.2	1.1695	3.9
	I2000SR	B	80	31.0	0.6344	2.1	1.1223	3.6	1.3178	4.3
Serum panel 1	I2000	A	80	2.9	0.0829	2.9	0.0000	0.0	0.1140	4.0
	I2000SR	B	80	2.9	0.1601	5.5	0.0835	2.9	0.1806	6.2
Serum panel 2	I2000	A	80	39.8	0.9526	2.4	0.0000	0.0	1.0065	2.5
	I2000SR	B	80	41.0	1.0822	2.6	0.4470	1.2	1.2947	3.2
Serum panel 3	I2000	A	80	53.3	1.7061	3.2	0.2887	0.5	1.7303	3.3
	I2000SR	B	80	55.8	1.5047	2.7	0.9540	1.7	1.8730	3.4
Urine panel 1	I2000	A	80	2.4	0.1270	5.3	0.0545	2.3	0.1482	6.2
	I2000SR	B	80	2.7	0.1636	6.1	0.0463	1.7	0.1700	6.4
Urine panel 2	I2000	A	80	14.5	0.3927	2.7	0.0000	0.0	0.5875	4.1
	I2000SR	B	80	15.9	0.6039	3.8	0.3916	2.5	0.7198	4.5
Urine panel 3	I2000	A	80	36.8	1.0509	2.9	0.5742	1.6	1.3916	3.8
	I2000SR	B	80	40.6	1.5605	3.9	0.3012	0.7	1.5893	3.9
Urine panel 4	I2000	A	80	49.0	2.8402	5.8	0.0000	0.0	2.8402	5.8
	I2000SR	B	80	53.7	3.1812	5.9	0.0000	0.0	3.1812	5.9

Manufacturer's Acceptance Criteria

< 10% total CV serum

<20% total CV urine

An accuracy by recovery study was performed by spiking a series of each of three human serum samples and three human urine samples with USP Cortisol. The spiked samples were analyzed in triplicate with the ARCHITECT Cortisol assay. Results are shown in the tables below.

Serum	Donor 1			Donor 2			Donor 3		
	Observed	Expected	% Recovery	Observed	Expected	% Recovery	Observed	Expected	% Recovery
Unspiked	8.1	N/A	N/A	13.7	N/A	N/A	12.6	N/A	N/A
Spiked 5 ug/dL	12.5	12.7	98.5	17.8	18.2	97.6	16.4	17.1	95.7
Spiked 10 ug/dL	15.7	17.3	90.9	21.2	22.8	93.2	20.4	21.7	94.1
Spiked 20 ug/dL	23.7	26.4	89.6	28.7	31.8	90.2	28.4	30.8	92.3
Spiked 40 ug/dL	39.5	44.8	88.2	43.0	49.9	86.1	43.2	48.9	88.3

Manufacturer's acceptance criteria:100 $\pm$ 15%

	Donor 1			Donor 2			Donor 3		
Urine	Observed	Expected	% Recovery	Observed	Expected	% Recovery	Observed	Expected	% Recovery
Unspiked	5.7	N/A	N/A	22.0	N/A	N/A	11.9	N/A	N/A
Spiked 5 ug/dL	10.4	10.3	100.9	25.1	26.4	94.9	16.1	16.4	97.9
Spiked 10 ug/dL	14.0	14.9	93.8	29.5	30.9	95.5	19.3	21.0	91.9
Spiked 20 ug/dL	22.2	24.1	92.0	34.6	39.8	87.0	27.6	30.1	91.7
Spiked 40 ug/dL	36.0	42.6	84.6	52.0	57.6	90.3	41.2	48.3	85.3

b. Linearity/assay reportable range:

i.) Linearity by dilution was determined by a study based on the CLSI Guideline *EP6-A: Evaluation of the Linearity of Quantitative Measurement*. Two serum pools were prepared, one at approximately 65µg/dL and the other at approximately 8µg/dL cortisol. A series of dilutions was made with both pools using cortisol free serum at 10% increments. Samples were run in replicates of five using ARCHITECT Cortisol reagents.

A regression analysis plot of recovered Cortisol against dilution factor was constructed. The percent deviation from linearity (%DLP) for each pool was calculated. Results are shown in the tables below.

65ug/dL Serum Pool

Dilution	Result ug/dL	Predicted 1st ug/dL	Predicted 2nd ug/dL	difference ug/dL	% DLP
100%	N/A	N/A	N/A	N/A	N/A
90%	65.85	64.60	66.17	-1.6	-2%
80%	58.41	57.28	57.80	-0.5	-1%
70%	49.69	49.96	49.70	0.3	1%
60%	41.92	42.64	41.85	0.8	2%
50%	33.69	35.31	34.27	1.0	3%
40%	26.74	27.99	26.95	1.0	4%
30%	19.72	20.67	19.89	0.8	4%
20%	14.02	13.35	13.09	0.3	2%
10%	6.53	6.03	6.55	-0.5	-8%
0%	-0.04	-1.30	0.27	-1.6	

8ug/dL Serum Pool

Dilution	Result ug/dL	Predicted 1st ug/dL	Predicted 2nd ug/dL	difference ug/dL	% DLP
100%	7.79	7.66	7.81	-0.2	-2%
90%	7.01	6.86	6.92	-0.1	-1%
80%	5.87	6.07	6.06	0.0	0%
70%	5.27	5.27	5.21	0.1	1%
60%	4.43	4.48	4.39	0.1	2%
50%	3.68	3.69	3.58	0.1	3%
40%	2.83	2.89	2.80	0.1	3%
30%	2.03	2.10	2.04	0.1	3%
20%	1.16	1.30	1.29	0.0	1%
10%	0.49	0.51	0.57	-0.1	-12%
0%	-0.01	-0.28	-0.13	-0.2	

The data demonstrate that the assay is linear between 0.49 and 65.9 µg/dL and supports the claimed reportable range of 0.8 to 59.8 µg/dL for both serum and urine samples. (See Functional Sensitivity section below.) This linearity evaluation was performed using serum pools. Urine was evaluated independently as part of the imprecision (random error), correlation (bias) and auto-dilution verifications.

ii.) A dilution/recovery study was performed for both the serum and urine samples using manual and automatic dilution by the instrument. Five serum samples ranged from 25.4 to 49.0 µg/dL and six urine samples ranged from 4.8 to 40.8 µg/dL were used in the study. A 1:2 dilution recovery study was performed using the manual procedure and the instrument's automated procedure.

The dilution recovery study met the manufacturer's acceptance criteria of differences in recoveries of ≤ 15%. The serum and urine samples met the manufacturer's design goals with grand mean % recoveries of 99.0% and 93.9% for the manual procedure and the automated procedure respectively.

c. *Traceability, Stability, Expected values (controls, calibrators, or methods):*

Traceability
The ARCHITECT Cortisol calibrators are matched to internal reference standards that are manufactured gravimetrically using cortisol (USP Reference Standard). The concentration values for these internal reference standards are assigned using LC-MS/MS method. The LC-MS/MS calibration is verified by the Community Bureau of Reference (BCR) 192 and 193 certified reference materials.

Stability
The ARCHITECT Cortisol calibrators are stable until the expiration date when stored and handled as directed. The calibrators are supplied in liquid form, for storage at 2-8°C, and ready to use.

Close-vial stability studies:
Real-time stability data supports a shelf life of 8 months. Real time studies remain ongoing and shelf life may be lengthened based on the results obtained.

Open-vial stability studies:
Real time open-vial stability studies are ongoing.

d. Detection limit:

Limit of Blank and the Limit of Detection:

The ARCHITECT Cortisol assay is designed to have a limit of detection (LoD) of $\leq 0.8\mu g/dL$. The limit of blank (LoB) and the LoD were determined based on the CLSI guideline NCCLS *EP17-A: Protocols for Determination of Limits of Detection and Limits of Quantitation; Approved Guideline* using proportions of false positives (α) less than 5% and false negatives (β) less than 5%. These determinations were performed using 60 blank and 120 low level samples on both the ARCHITECT i2000 and ARCHITECT i2000 SR analyzers.

Results:

> ARCHITECT i2000   LoB= 0.234 $\mu g/dL$ and   LoD= 0.401ug/dL

> ARCHITECT i2000SR   LoB= 0.125 $\mu g/dL$ and   LoD= 0.255ug/dL

> An assay claim of LoD=0.8ug/dL is supported by the data.

Based on the Linearity and LOD, the package insert claim for the reportable range for the assay will be 0.81 to 59.8 $\mu g/dL$.

Functional Sensitivity:

The functional sensitivity of the ARCHITECT Cortisol assay was determined based on the CLSI Guideline NCCLS EP17-A *Protocols for Demonstration, Verification, and Evaluation of Limits of Detection and Quantitation; Approved Guideline.* Serum and urine panels ranging in concentration from 0.1 to 2.1$\mu g/dL$ were tested in duplicate over 10 days on both ARCHITECT i2000 and ARCHITECT i2000 SR analyzers using two reagent lots and two calibrations for a total of 40 replicates per panel. The total % CVs were calculated and plotted against the mean concentration. A reciprocal curve was fitted through the data and the functional sensitivity value was calculated as the concentration corresponding to the 20% CV level of the fitted curve.

Results: At the upper 95% confidence limit, the lowest serum value exhibiting a 20% CV was calculated to be 0.8$\mu g/dL$. At the upper 95% confidence limit, the lowest urine value exhibiting a 20% CV was calculated to be 1$\mu g/dL$.

e. Analytical specificity:

i.) An interference study was performed following the CLSI Guideline EP7-A2, *Interference Testing in Clinical Chemistry* for the ARCHITECT Cortisol assay using serum specimens with Cortisol levels between 5.1 and 34.2 µg/dL and urine samples between 4.6 and 37.9µg/dL. The interference from the following compounds was observed to be ≤ 15% at the levels indicated.

Specimen Type	Potential interference substance	Potential interference substance Concentration
Serum	Bilirubin	20 mg/dL
	Hemoglobin	500 mg/dL
	Total Protein (Low)	3 g/dL
	Total Protein (High)	10 g/dL
	Triglycerides	2000 mg/dL
Urine	Creatinine	5 mmol/L
	Urea	350 mmol/L
	Glucose	5 mmol/L
	Sodium Chloride	1000 mmol/L
	Total Protein (High)	1000 mg/dL
	Boric Acid	1 %

ii.)   The specificity of the ARCHITECT Cortisol assay was determined by studying the cross-reactivity of compounds whose chemical structure or concurrent usage may potentially interfere with the assay. Specificity of the assay was determined by spiking each compound into hum serum specimens with Cortisol levels of approximately 12 µg/dL. The % cross-reactivity results are shown in the following table.

Cross Reactant	Test conc ug/dL	% Cross Reactivity	Cross Reactant	Test conc ug/dL	% Cross Reactivity
11-beta-OH-progesterone	1000	0.2	Pregnanediol	1000	0.0
11-deoxycorticosterone	100	0.1	Pregnanetriol	1000	0.0
11-deoxycortisol	100	2.1	Pregnenolone	1000	0.0
17-alpha-OH Pregnenolone	1000	0.1	Progesterone	1000	0.1
17-OH-progesterone	1000	0.6	Spironolactone	1000	0.0
6-beta-OH cortisol	1000	0.2	Testosterone	1000	0.1
6-methyl- prednisolone	1000	0.1	Tetracycline	1000	0.0
Aldosterone	1000	0.0	Tetrahydrocortisol	1000	0.6
Beclomethasone	1000	0.0	Triamcinolone	1000	0.4
beta-cortol	1000	0.0	Dexamethasone	1000	0.0
beta-cortolone	1000	0.0	DHEA	1000	0.0
Beta-Estradiol	1000	0.0	DHEA-S	1000	0.0
beta-Sitosterol	1000	0.0	Estriol	1000	0.0
Budesonide	1000	0.0	Estrone	1000	0.0
Canrenone	1000	0.1	Fludrocortisone	100	36.8
Corticosterone	1000	0.9	Fluticasone Propionate	1000	0.0
Cortisol-21-glucuronide	1000	0.2	Medroxy Progesterone Acetate	1000	0.0
Cortisone	1000	2.8	Mometasone	1000	0.0
Prednisone	1000	0.6	Prednisolone	100	12.5

iii.) The ARCHITECT Cortisol assay was evaluated by testing specimens with HAMA (Human anti-mouse antibodies) and RF (Rheumatioid Factor) to further assess the

clinical specificity. Ten specimens positive for HAMA and ten specimens positive for RF were evaluated for interference with Cortisol levels spiked between 9.0 to 41.8 µg/dL. The acceptance criteria are ≤ 15% for the average mean% difference. The mean absolute % interference is summarized in the following table.

Other potential interferents	N	Mean absolute % interference
HAMA positive	10	1.0
RF positive	10	5.9

f. Assay cut-off:

Not applicable.

2. Comparison studies:

a. *Method comparison studies:*

The correlation studies for the ARCHITECT Cortisol assay were performed with both LC-MS/MS and the Predicate Device (AxSYM Cortisol) to support the performance of the ARCHITECT assay. The studies were conducted according to CLSI Guideline EP9, *Method Comparison and Bias Estimation Using Patient Samples.* Serum samples, ranging from 1.5 to 52.5µg/dL of Cortisol, were tested comparing the ARCHITECT Cortisol assay to the AxSYM Cortisol assay and LC-MS/MS. Urine samples, ranging from 0.8 to 46.8µg/dL of Cortisol, were tested comparing the ARCHITECT Cortisol assay to the AxSYm Cortisol Assay. Urine samples, ranging from 0.8 to 51.1µg/dL Cortisol, were tested comparing the ARCHITECT Cortisol assay to LC-MS/MS. All serum samples were purchased clinical samples, none of which were spiked. All urine samples were also purchased clinical samples; however, some were spiked in order to obtain high concentration samples.

Results are shown in the following tables:

Serum samples	AxSYM vs. Architect	AxSYM vs. Architect i2000	AxSYM vs. Architect i2000SR	LC-MS/MS vs. Architect	LC-MS/MS vs. Architect i2000	LC-MS/MS vs. Architect i2000SR
# of Specimens	121	121	121	125	125	125
Slope	0.909	0.922	0.902	1.077	1.104	1.068
Intercept	0.92	0.81	0.88	-0.02	-0.29	0.07
r value	0.983	0.984	0.98	0.996	0.994	0.995

Urine samples	AxSYM vs. Architect	AxSYM vs. Architect i2000	AxSYM vs. Architect i2000SR	LC-MS/MS vs. Architect	LC-MS/MS vs. Architect i2000	LC-MS/MS vs. Architect i2000SR
# of Specimens	74	70	74	81	78	81
Slope	0.537	0.557	0.523	1.056	1.092	1.009
Intercept	-1.14	-1.24	-1.02	0.84	0.88	0.8
R value	0.98	0.978	0.981	0.997	0.996	0.996

Only samples that fell outside the reportable assay range on the Architect were excluded from analysis.

A summary of the data analyzed using Passing-Bablok regression method are shown in the table below.

	ARCHITECT VS				
	AxSYM		*LC-MS/MS*		
Specimen	*Serum*	*Urine*	*Serum*	*Urine*	
r value	≥ 0.90**	≥ 0.80 ***	≥ 0.95	≥ 0.85	
Slope	$NA^{\#}$	$NA^{\#}$	1.0 ± 0.1	1.0 ± 0.2	

b. Matrix comparison:

Anticoagulants studies were conducted to determine the performance characteristics of the assay for both serum and plasma samples containing Cortisol. All tubes were processed per the manufacturers instructions and analyzed on the ARCHITECT analyzer in triplicate. Blood was drawn from ten healthy donors for each tube type listed below:

- plastic K2 EDTA tube
- glass K3 EDTA tube
- plastic Plasma separator lithium heparin tube
- plastic sodium heparin tube
- plastic lithium heparin tube
- plastic serum separator tube
- glass tube; no additive (served as the control)

Results are shown in the table below:

Donor	Rep	Tube type						
		No anticoagulant glass	SST plastic	Lithium heparin plastic	PST plastic	Sodium heparin plastic	K₃ EDTA glass	K₂ EDTA plastic
A	Rep 1	8.60	8.60	8.90	9.10	8.80	8.30	9.30
	Rep 2	8.90	8.60	9.00	8.40	8.70	8.40	8.90
	Rep 3	8.70	9.00	8.80	8.80	8.70	8.20	8.70
	Mean	**8.73**	**8.73**	**8.90**	**8.77**	**8.73**	**8.30**	**8.97**

	% recovery	100.00	100.00	101.91	100.38	100.00	95.04	102.67
B	Rep 1	12.70	12.80	11.50	12.40	12.10	12.00	12.60
	Rep 2	12.90	12.60	12.70	12.10	13.00	12.90	13.40
	Rep 3	11.90	13.20	12.20	12.60	13.00	11.90	12.60
	Mean	**12.50**	**12.87**	**12.13**	**12.37**	**12.70**	**12.27**	**12.87**
	% recovery	100.00	102.93	97.07	98.93	101.60	98.13	102.93
C	Rep 1	6.70	6.80	7.10	6.80	6.80	6.90	6.50
	Rep 2	6.50	7.10	6.80	6.50	6.80	6.70	6.70
	Rep 3	6.50	7.00	6.90	6.90	7.20	6.20	6.90
	Mean	**6.57**	**6.97**	**6.93**	**6.73**	**6.93**	**6.60**	**6.70**
	% recovery	100.00	106.09	105.58	102.54	105.58	100.51	102.03
D	Rep 1	6.70	7.30	7.20	7.40	7.40	7.00	7.50
	Rep 2	7.10	7.00	7.20	7.10	7.40	7.10	6.90
	Rep 3	7.00	7.00	7.20	6.80	7.60	7.10	7.10
	Mean	**6.93**	**7.10**	**7.20**	**7.10**	**7.47**	**7.07**	**7.17**
	% recovery	100.00	102.40	103.85	102.40	107.69	101.92	103.37
E	Rep 1	10.40	10.00	10.00	9.80	9.80	10.50	10.80
	Rep 2	10.00	9.80	10.10	10.20	10.10	10.00	10.20
	Rep 3	10.30	10.10	9.30	10.80	10.50	10.00	10.40
	Mean	**10.23**	**9.97**	**9.80**	**10.27**	**10.13**	**10.17**	**10.47**
	% recovery	100.00	97.39	95.77	100.33	99.02	99.35	102.28
F	Rep 1	18.40	18.80	18.50	19.20	18.70	18.10	18.00
	Rep 2	18.20	19.20	19.10	18.00	19.00	17.30	18.60
	Rep 3	17.70	17.80	18.50	18.00	18.60	18.80	17.90
	Mean	**18.10**	**18.60**	**18.70**	**18.40**	**18.77**	**18.07**	**18.17**
	% recovery	100.00	102.76	103.31	101.66	103.68	99.82	100.37
G	Rep 1	12.00	12.30	11.90	11.80	11.70	11.30	12.10
	Rep 2	11.80	11.90	12.00	11.80	12.50	11.70	12.10
	Rep 3	12.20	12.70	11.80	12.40	12.50	11.80	12.80
	Mean	**12.00**	**12.30**	**11.90**	**12.00**	**12.23**	**11.60**	**12.33**
	% recovery	100.00	102.50	99.17	100.00	101.94	96.67	102.78
H	Rep 1	8.00	7.90	7.70	7.90	7.80	7.40	8.30
	Rep 2	7.60	7.70	7.60	7.60	7.70	7.90	7.70
	Rep 3	7.60	8.00	7.70	8.00	7.60	7.40	7.50
	Mean	**7.73**	**7.87**	**7.67**	**7.83**	**7.70**	**7.57**	**7.83**
	% recovery	100.00	101.72	99.14	101.29	99.57	97.84	101.29
I	Rep 1	8.10	8.50	8.10	8.40	8.30	8.20	8.00
	Rep 2	8.20	9.00	8.00	8.70	8.90	8.10	8.70
	Rep 3	8.70	9.10	7.90	9.00	8.90	8.40	8.40
	Mean	**8.33**	**8.87**	**8.00**	**8.70**	**8.70**	**8.23**	**8.37**
	% recovery	100.00	106.40	96.00	104.40	104.40	98.80	100.40
J	Rep 1	10.70	10.10	10.00	9.80	10.50	10.10	10.00
	Rep 2	10.40	10.20	10.10	10.10	10.20	11.20	10.60
	Rep 3	10.10	9.70	9.60	10.70	10.40	9.90	10.40
	Mean	**10.40**	**10.00**	**9.90**	**10.20**	**10.37**	**10.40**	**10.33**
	% recovery	100.00	96.15	95.19	98.08	99.68	100.00	99.36
Grand mean		**10.15**	**10.33**	**10.11**	**10.24**	**10.37**	**10.03**	**10.32**
Grand % recovery		**100.00**	**101.71**	**99.61**	**100.82**	**102.17**	**98.75**	**101.64**

c. Instruments evaluations between ARCHITECT Cortisol i2000 and i2000SR:

The *i*2000 and *i*2000SR systems are in the ARCHITECT family of instruments differing only by inclusion on the *i*2000SR of a) STAT sampling hardware and software, b) composition and positioning of the RV loader and c) Auto Retesting software.
To confirm acceptable ARCHITECT Cortisol assay performance on the two related systems, the following were tested on both platforms: a) precision, b) limit of detection, c) functional sensitivity, d) method comparison. These characteristics were selected as they are fitting indicators of overall performance.

3. Clinical studies:

   a. Clinical Sensitivity:

   Not applicable.

   b. Clinical specificity:

   Not applicable.

   c. Other clinical supportive data (when a. and b. are not applicable):

   None

4. Clinical cut-off:

   Not applicable.

5. Expected values/Reference range:

   Serum cortisol levels were determined by assaying samples drawn from 150 apparently healthy individuals collected before 10am and after 5pm. Cortisol levels in urine were determined by assaying 24-hour urine samples from 128 apparently healthy individuals. The 95% reference interval was determined for each. The data is summarized in the table below.

Specimen	N	Normal Range ug/dL	Normal Range nmol/L
Serum Before 10am	150	3.7 - 19.4	101.2 - 535.7
Serum After 5pm	150	2.9 - 17.3	79.0 - 477.8

Specimen	N	Normal Range ug/24 hours	Normal Range nmol/ 24 hours
24 hour Urine	128	4.3 - 176.0	11.8 - 485.6

N. Proposed Labeling:

The labeling is sufficient and it satisfies the requirements of 21 CFR Part 809.10.

O. Conclusion:

The submitted information in this premarket notification is complete and supports a substantial equivalence decision.