December 23, 2022

Diagnostica Stago SAS
% Anthony Dennis
US Market Access Director
Diagnostica Stago Inc.
5 Century Drive
Parsippany, New Jersey 07054

Re: K211485
Trade/Device Name: STA - NeoPTimal
Regulation Number: 21 CFR 864.7750
Regulation Name: Prothrombin Time Test
Regulatory Class: Class II
Product Code: GJS
Dated: September 2, 2022
Received: September 6, 2022

Dear Anthony Dennis:

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. Although this letter refers to your product as a device, please be aware that some cleared products may instead be combination products. The 510(k) Premarket Notification Database located at https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm identifies combination product submissions. 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 Part 801 and Part 809); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803) for devices or postmarketing safety reporting (21 CFR 4, Subpart B) for combination products (see https://www.fda.gov/combination-products/guidance-regulatory-information/postmarketing-safety-reporting-combination-products); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820) for devices or current good manufacturing practices (21 CFR 4, Subpart A) for combination products; and, if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

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 https://www.fda.gov/medical-devices/medical-device-safety/medical-device-reporting-mdr-how-report-medical-device-problems.

For comprehensive regulatory information about medical devices and radiation-emitting products, including information about labeling regulations, please see Device Advice (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance) and CDRH Learn (https://www.fda.gov/training-and-continuing-education/cdrh-learn). Additionally, you may contact the Division of Industry and Consumer Education (DICE) to ask a question about a specific regulatory topic. See the DICE website (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance/contact-us-division-industry-and-consumer-education-dice) for more information or contact DICE by email (DICE@fda.hhs.gov) or phone (1-800-638-2041 or 301-796-7100).

Sincerely,

Min Wu -S

Min Wu
Branch Chief
Division of Immunology and Hematology Devices
OHT7: Office of In Vitro Diagnostics
Office of Product Evaluation and Quality
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: 06/30/2020
See PRA Statement below.

510(k) Number *(if known)*

K211485

Device Name
STA - NeoPTimal

Indications for Use *(Describe)*

The STA- NeoPTimal kits provide thromboplastin reagents from rabbit brain extract, for the quantitative determination, in human citrated plasma (3.2% sodium citrate), of Prothrombin Time (PT) on STA-R family, STA Compact family and STA Satellite family instruments. STA- NeoPTimal is a coagulation screening test intended to be used by professional laboratory personnel for the evaluation of the extrinsic coagulation pathway and the monitoring of oral vitamin K antagonist therapy using the International Normalized Ratio (INR).

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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5. 510(k) SUMMARY

General Information

Submitter Information: Diagnostica Stago, Inc.
5 Century Drive
Parsippany, NJ 07054
Primary Contact: Anthony Dennis, MBA, RAC, CBA (ASQ)
Director, US Market Access
Phone: 1 – (973) – 775-1200 x4162

On Behalf of: Diagnostica Stago SAS

Date of Submission: 12 May 2021; Revised 22 October 2022

Device Information

Device Trade Name: STA® - NeoPTimal

Regulatory Information

Classification Name: Test, Time, Prothrombin
Regulatory Class: Class II
Panel: Hematology
Product Code: GJS
Regulation Number 21 CFR 864.7750
Predicate Device: Thromborel® S (K003870)

Device Intended Use

The STA®- NeoPTimal kits provide thromboplastin reagents from rabbit brain extract, for the quantitative determination, in human citrated plasma (3.2% sodium citrate), of Prothrombin Time (PT) on STA-R® family, STA Compact® family and STA Satellite® family instruments. STA®- NeoPTimal is a coagulation screening test intended to be used by professional laboratory personnel for the evaluation of the extrinsic coagulation pathway and the monitoring of oral vitamin K antagonist therapy using the International Normalized Ratio (INR).

Device Description

The in-vitro diagnostic STA® - NeoPTimal kits are available in two sizes and contains:

Table 1 – Description of STA® – NeoPTimal Kits

STA® - NeoPTimal 5	STA® - NeoPTimal 10
6 x 5 ml vials of Reagent 1	12 x 10 ml vials of Reagent 1
6 x 5 ml vials of Reagent 2	12 x 10 ml vials of Reagent 2

Reagent 1 is STA® - NeoPTimal, lyophilized thromboplastin prepared from rabbit brain extract. The STA® - NeoPTimal reagent contains a specific heparin inhibitor. Any prolongation of the prothrombin time is, therefore, related to a real deficiency of factor II, V, VII, X and/or fibrinogen.

Reagent 2 is a solvent containing calcium.
The test consists of the use of calcium thromboplastin to measure the clotting time of the patient's plasma and to compare it with that of a normal standard. The test measures, as a whole, the activities of the coagulation factor II (prothrombin), factor V (proaccelerin), factor VII (proconvertin), factor X (Stuart factor) and factor I (fibrinogen).

The PT value is expressed in seconds or INR. The result has to be interpreted according to the patient's clinical and biological states. The INR value corresponds to the value of the ratio of the patient's PT to that of the standard PT raised to the ISI (International Sensitivity Index) power of the thromboplastin used:

$$INR = (\text{Patient's PT} / \text{Mean Normal PT}) * ISI$$

The ISI value of a given thromboplastin is determined by testing normal plasma and VKA (vitamin K antagonist)-treated patient plasma with that thromboplastin and with the International Reference preparation (RBT) for thromboplastin.

Substantial Equivalence

Table 2 – Comparison of the STA® - NeoPTimal to the Predicate Device

Attributes or characteristics	**Dade Behring, Thromborel® S (Predicate device** (K003870))	**Diagnostica Stago, STA® - NeoPTimal (Subject device)**
Indications for use	Thromborel S Reagent is used for the determination of the Prothrombin Time (PT) according to Quick and, in conjunction with the relevant deficient plasmas, for the determination of the coagulation factor II, V, VII and X.	The STA®- NeoPTimal kits provide thromboplastin reagents from rabbit brain extract, for the quantitative determination, in human citrated plasma (3.2% sodium citrate), of Prothrombin Time (PT) on STA-R® Family, STA Compact® Family and STA Satellite® Family. STA®- NeoPTimal is a coagulation screening test intended to be used by professional laboratory personnel for the evaluation of the extrinsic coagulation pathway and the monitoring of oral vitamin K antagonist therapy using the International Normalized Ratio (INR).
Contents of the Kit	Reagent 1: Lyophilized thromboplastin extracted from human placenta Reagent 2: solvent with calcium Packaging sizes: 4 mL 10 mL	Reagent 1: Lyophilized thromboplastin extracted from rabbit brain Reagent 2: solvent with calcium Packaging sizes: 5 mL 10 mL
Assay Method	Clotting Time	Same
Test Principle	The Thromborel® S test is a coagulation process triggered by incubation of plasma with the optimal amount of thromboplastin and calcium. The time to formation of a fibrin clot is then measured.	The STA® - NeoPTimal test consists of the use of calcium thromboplastin to measure the clotting time of the patient's plasma and to compare it with that of a normal standard. The test measures, as a whole, the activity of the coagulation factor II (prothrombin), factor V (proaccelerin), factor VII (proconvertin), factor X (Stuart factor) and factor I (fibrinogen).
Anatomical Sites	Not applicable. No direct patient contact.	Same
Where Used: hospital, home, ambulance, etc.	Hospital Laboratory or other Health Care Laboratory.	Same
Sterility	No sterility requirements. No direct patient contact	Same
Biocompatibility	No biocompatibility requirements. No direct patient contact.	Same

Attributes or characteristics	Dade Behring, Thromborel® S (Predicate device (K003870))	Diagnostica Stago, STA® - NeoPTimal (Subject device)
Chemical Safety	No issues regarding chemical safety due to no direct patient contact	Same
Analyzers	Sysmex® CA series and Siemens BCS series	STA-R® Family, STA Compact® Family and STA Satellite® Family

STA® - NeoPTimal is substantially equivalent to the predicate device, Thromborel® S (K003870) in indication/intended use, test principle, assay method and performance; thus yielding no new questions in safety and effectiveness.

Standards/Guidance Documents Referenced:

- CLSI EP25-A – Evaluation of Stability of In Vitro Diagnostic Reagents. Approved Guideline
- CLSI EP09c, Method Comparison and Bias Estimation Using Patient Samples; Approved Guideline
- CLSI H47-A2, One-Stage Prothrombin Time (PT) Test and Activated Partial Thromboplastin Time (APTT) Test, 2nd Edition
- CLSI EP5-A3, Evaluation of Precision of Quantitative Measurement Procedures; Approved Guideline – Third Edition.
- CLSI H48-2ed, Determination of Coagulation Factor Activities Using the One-Stage Clotting Assay – Second Edition
- EP07-A2 Interference Testing in Clinical Chemistry; Approved Guideline
- CLSI H54-A Procedures for Validation of INR and Local Calibration of PT/INR Systems; Approved Guideline
- EP28-A3c Defining, Establishing, and Verifying Reference Intervals in the Clinical Laboratory; Approved Guideline - 3rd Edition

Performance Characteristics

Precision/Reproducibility

Single-site precision testing was performed over 20 days at one external site on the STA R Max, STA Compact Max, and STA Satellite. 11 samples were tested across the measuring range, with two runs per day and two replicates per day. Each run was at least two hours apart. The acceptance criteria were met for all samples in the studies.

STA R Max - All lots (seconds)			Repeatability		Between-run		Between-day		Within-lab		Between_lot		Total	
Sample	N	Mean	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
1	240	14.270	0.119	0.83	0.140	0.98	0.081	0.57	0.201	1.41	0.000	0.00	0.201	1.41
2	240	13.861	0.126	0.91	0.132	0.95	0.104	0.75	0.210	1.52	0.000	0.00	0.210	1.52
3	240	30.888	0.341	1.10	0.700	2.27	0.309	1.00	0.838	2.71	0.248	0.80	0.874	2.83
4	240	45.502	0.416	0.91	0.951	2.09	0.000	0.00	1.038	2.28	0.364	0.80	1.100	2.42
5	240	62.892	0.527	0.84	1.413	2.25	0.517	0.82	1.594	2.53	0.471	0.75	1.662	2.64
6	240	70.665	0.783	1.11	2.062	2.92	0.000	0.00	2.206	3.12	0.456	0.65	2.253	3.19
7	240	26.270	0.339	1.29	0.520	1.98	0.000	0.00	0.621	2.36	0.190	0.72	0.649	2.47
8	240	14.831	0.138	0.93	0.138	0.93	0.052	0.35	0.202	1.36	0.028	0.19	0.204	1.38
9	240	26.111	0.256	0.98	0.656	2.51	0.108	0.41	0.712	2.73	0.000	0.00	0.712	2.73
10	240	14.908	0.125	0.84	0.184	1.23	0.000	0.00	0.222	1.49	0.000	0.00	0.223	1.50
11	240	38.953	0.307	0.79	1.056	2.71	0.000	0.00	1.100	2.82	0.000	0.00	1.100	2.82

STA R Max - All lots (INR)			Repeatability		Between-run		Between-day		Within-lab		Between_lot		Total	
Sample	N	Mean	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
1	240	1.0422	0.010	0.96	0.010	0.96	0.006	0.58	0.015	1.47	0.014	1.34	0.021	2.01
2	240	1.0120	0.009	0.89	0.010	0.99	0.007	0.69	0.015	1.50	0.015	1.48	0.021	2.08
3	240	2.3171	0.027	1.17	0.054	2.33	0.023	0.99	0.065	2.79	0.050	2.16	0.082	3.54
4	240	3.4577	0.032	0.93	0.075	2.17	0.000	0.00	0.082	2.36	0.095	2.75	0.125	3.62
5	240	4.8318	0.042	0.87	0.114	2.36	0.040	0.83	0.128	2.65	0.151	3.13	0.198	4.10
6	240	5.4507	0.062	1.14	0.164	3.01	0.000	0.00	0.175	3.22	0.170	3.12	0.244	4.48
10	240	1.0913	0.010	0.92	0.014	1.28	0.000	0.00	0.017	1.58	0.016	1.47	0.024	2.20

STA Compact Max - All lots (seconds)			Repeatability		Between-run		Between-day		Within-lab		Between_lot		Total	
Sample	N	Mean	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
1	240	14.401	0.191	1.33	0.159	1.10	0.075	0.52	0.260	1.80	0.000	0.00	0.259	1.80
2	240	14.132	0.209	1.48	0.246	1.74	0.142	1.00	0.353	2.50	0.000	0.00	0.353	2.50
3	240	29.531	0.589	1.99	1.053	3.57	0.000	0.00	1.207	4.09	0.136	0.46	1.214	4.11
4	240	44.070	0.870	1.97	1.635	3.71	0.000	0.00	1.852	4.20	0.478	1.08	1.913	4.34
5	240	61.342	0.974	1.59	2.791	4.55	0.000	0.00	2.956	4.82	0.474	0.77	2.994	4.88
6	240	69.433	1.444	2.08	3.209	4.62	0.000	0.00	3.519	5.07	0.289	0.42	3.531	5.09
7	240	25.510	0.420	1.65	0.924	3.62	0.000	0.00	1.015	3.98	0.177	0.69	1.030	4.04
8	240	14.865	0.236	1.59	0.203	1.37	0.091	0.61	0.324	2.18	0.000	0.00	0.324	2.18
9	240	25.030	0.402	1.61	0.890	3.56	0.000	0.00	0.977	3.90	0.196	0.78	0.996	3.98
10	240	14.929	0.263	1.76	0.139	0.93	0.148	0.99	0.332	2.23	0.000	0.00	0.332	2.22
11	240	37.850	0.625	1.65	1.188	3.14	0.000	0.00	1.342	3.55	0.408	1.08	1.403	3.71

STA Compact Max - All lots (INR)			Repeatability		Between-run		Between-day		Within-lab		Between_lot		Total	
Sample	N	Mean	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
1	240	1.0527	0.014	1.33	0.012	1.14	0.006	0.57	0.019	1.84	0.018	1.71	0.027	2.56
2	240	1.0321	0.016	1.55	0.019	1.84	0.010	0.97	0.027	2.59	0.016	1.55	0.032	3.10
3	240	2.2125	0.046	2.08	0.082	3.71	0.000	0.00	0.094	4.25	0.067	3.03	0.115	5.20
4	240	3.3475	0.067	2.00	0.129	3.85	0.000	0.00	0.145	4.34	0.144	4.30	0.204	6.09
5	240	4.7113	0.078	1.66	0.222	4.71	0.000	0.00	0.235	4.99	0.204	4.33	0.312	6.62
6	240	5.3553	0.115	2.15	0.257	4.80	0.000	0.00	0.282	5.26	0.237	4.43	0.368	6.87
10	240	1.0925	0.020	1.83	0.011	1.01	0.011	1.01	0.025	2.32	0.019	1.74	0.032	2.93

STA Satellite - All lots (seconds)			Repeatability		Between-run		Between-day		Within-lab		Between_lot		Total	
Sample	N	Mean	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
1	240	14.108	0.139	0.99	0.218	1.55	0.000	0.00	0.259	1.83	0.112	0.79	0.282	2.00
2	240	13.639	0.165	1.21	0.202	1.48	0.000	0.00	0.261	1.91	0.136	1.00	0.294	2.16
3	240	29.791	0.439	1.47	0.731	2.45	0.000	0.00	0.853	2.86	0.000	0.00	0.853	2.86
4	240	44.366	0.695	1.57	0.983	2.22	0.313	0.71	1.244	2.80	0.563	1.27	1.366	3.08
5	240	64.173	0.688	1.07	2.063	3.21	0.227	0.35	2.187	3.41	0.666	1.04	2.286	3.56
6	240	71.376	1.334	1.87	2.307	3.23	0.000	0.00	2.665	3.73	0.590	0.83	2.730	3.82
7	240	24.988	0.267	1.07	0.505	2.02	0.000	0.00	0.571	2.29	0.000	0.00	0.571	2.29
8	240	14.557	0.221	1.52	0.242	1.66	0.081	0.56	0.338	2.32	0.025	0.17	0.339	2.33
9	240	25.170	0.345	1.37	0.709	2.82	0.000	0.00	0.788	3.13	0.000	0.00	0.789	3.13
10	240	14.665	0.140	0.95	0.172	1.17	0.070	0.48	0.233	1.59	0.074	0.50	0.244	1.66
11	240	38.025	0.559	1.47	1.211	3.18	0.000	0.00	1.334	3.51	0.266	0.70	1.360	3.58

STA Satellite - All lots (INR)			Repeatability		Between-run		Between-day		Within-lab		Between_lot		Total	
Sample	N	Mean	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
1	240	1.0383	0.011	1.06	0.016	1.54	0.000	0.00	0.019	1.87	0.009	0.87	0.022	2.12
2	240	1.0032	0.013	1.30	0.016	1.59	0.000	0.00	0.021	2.05	0.009	0.90	0.022	2.19
3	240	2.2549	0.034	1.51	0.057	2.53	0.000	0.00	0.066	2.94	0.042	1.86	0.079	3.50
4	240	3.4083	0.055	1.61	0.080	2.35	0.026	0.76	0.101	2.95	0.103	3.02	0.144	4.22
5	240	4.9968	0.055	1.10	0.166	3.32	0.014	0.28	0.175	3.51	0.163	3.26	0.240	4.80
6	240	5.5795	0.108	1.94	0.190	3.41	0.000	0.00	0.219	3.92	0.181	3.24	0.284	5.09
10	240	1.0812	0.012	1.11	0.013	1.20	0.006	0.55	0.019	1.73	0.013	1.20	0.022	2.03

Multi-site precision testing was performed over five days at three external sites per analyzer (STA R Max, STA Compact Max, and STA Satellite). 11 samples were tested across the measuring range, with two runs per day and three replicates per day. Each run was at least two hours apart. The acceptance criteria were met for all samples in the studies.

STA R Max - All sites - All lots (seconds)			Repeatability		Between-run		Between-day		Within-lab		Between_lot		Between_site		Total	
Sample	N	Mean	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
1	270	14.662	0.139	0.95	0.153	1.04	0.000	0.00	0.207	1.41	0.016	0.11	0.396	2.70	0.447	3.05
2	270	14.272	0.137	0.96	0.142	0.99	0.000	0.00	0.197	1.38	0.005	0.04	0.420	2.94	0.464	3.25
3	270	31.279	0.298	0.95	0.584	1.87	0.000	0.00	0.656	2.10	0.242	0.77	0.837	2.68	1.090	3.48
4	270	46.034	0.358	0.78	0.905	1.97	0.000	0.00	0.973	2.11	0.359	0.78	0.999	2.17	1.440	3.13
5	270	63.011	0.505	0.80	1.251	1.99	0.000	0.00	1.349	2.14	0.753	1.20	1.288	2.04	2.011	3.19
6	270	71.215	0.727	1.02	1.393	1.96	0.000	0.00	1.571	2.21	0.796	1.12	1.895	2.66	2.587	3.63
7	270	26.671	0.241	0.90	0.508	1.90	0.000	0.00	0.562	2.11	0.244	0.91	0.605	2.27	0.861	3.23
8	270	15.267	0.159	1.04	0.192	1.26	0.000	0.00	0.249	1.63	0.000	0.00	0.358	2.34	0.436	2.86
9	270	26.298	0.235	0.89	0.503	1.91	0.000	0.00	0.555	2.11	0.181	0.69	0.435	1.65	0.728	2.77
10	270	15.269	0.174	1.14	0.138	0.90	0.000	0.00	0.222	1.45	0.040	0.26	0.384	2.51	0.446	2.92
11	270	39.033	0.335	0.86	1.007	2.58	0.000	0.00	1.061	2.72	0.219	0.56	0.672	1.72	1.275	3.27

STA R Max - All sites - All lots (INR)			Repeatability		Between-run		Between-day		Within-lab		Between_lot		Between_site		Total	
Sample	N	Mean	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
1	270	1.0724	0.010	0.93	0.012	1.12	0.000	0.00	0.016	1.46	0.016	1.49	0.029	2.70	0.036	3.36
2	270	1.0434	0.010	0.96	0.012	1.15	0.000	0.00	0.016	1.50	0.016	1.53	0.030	2.88	0.037	3.55
3	270	2.3474	0.023	0.98	0.046	1.96	0.000	0.00	0.051	2.19	0.048	2.04	0.059	2.51	0.092	3.92
4	270	3.5000	0.028	0.80	0.072	2.06	0.000	0.00	0.077	2.21	0.086	2.46	0.063	1.80	0.132	3.77
5	270	4.8404	0.041	0.85	0.100	2.07	0.000	0.00	0.108	2.23	0.116	2.40	0.084	1.74	0.180	3.72
6	270	5.4936	0.057	1.04	0.112	2.04	0.000	0.00	0.126	2.29	0.149	2.71	0.129	2.35	0.234	4.26
10	270	1.1189	0.013	1.16	0.011	0.98	0.000	0.00	0.017	1.52	0.015	1.34	0.028	2.50	0.036	3.22

STA Compact Max - All sites - All lots (seconds)			Repeatability		Between-run		Between-day		Within-lab		Between_lot		Between_site		Total	
Sample	N	Mean	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
1	270	14.622	0.182	1.24	0.186	1.27	0.094	0.64	0.277	1.89	0.126	0.86	0.276	1.89	0.411	2.81
2	270	14.291	0.182	1.27	0.242	1.69	0.000	0.00	0.303	2.12	0.138	0.97	0.171	1.20	0.374	2.62
3	270	30.786	0.604	1.96	0.645	2.10	0.107	0.35	0.890	2.89	0.294	0.95	1.283	4.17	1.589	5.16
4	270	45.475	0.627	1.38	1.098	2.41	0.414	0.91	1.330	2.93	0.292	0.64	1.241	2.73	1.843	4.05
5	270	62.711	0.917	1.46	1.773	2.83	0.582	0.93	2.079	3.32	0.000	0.00	1.665	2.66	2.664	4.25
6	270	70.780	1.379	1.95	2.379	3.36	0.000	0.00	2.750	3.88	0.621	0.88	2.317	3.27	3.649	5.16
7	270	26.370	0.411	1.56	0.563	2.14	0.000	0.00	0.697	2.64	0.500	1.90	0.850	3.22	1.207	4.58
8	270	15.233	0.182	1.19	0.237	1.56	0.000	0.00	0.299	1.96	0.113	0.74	0.323	2.12	0.454	2.98
9	270	26.111	0.436	1.67	0.558	2.14	0.000	0.00	0.708	2.71	0.229	0.88	0.902	3.45	1.170	4.48
10	270	15.190	0.174	1.15	0.266	1.75	0.000	0.00	0.318	2.09	0.103	0.68	0.248	1.63	0.416	2.74
11	270	39.131	0.544	1.39	0.926	2.37	0.000	0.00	1.074	2.74	0.381	0.97	1.199	3.06	1.654	4.23

STA Compact Max - All sites - All lots (INR)			Repeatability		Between-run		Between-day		Within-lab		Between_lot		Between_site		Total	
Sample	N	Mean	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
1	270	1.0695	0.014	1.31	0.014	1.31	0.008	0.75	0.021	2.00	0.026	2.43	0.016	1.50	0.038	3.55
2	270	1.0444	0.014	1.34	0.018	1.72	0.000	0.00	0.023	2.18	0.027	2.59	0.000	0.00	0.035	3.35
3	270	2.3103	0.046	1.99	0.050	2.16	0.007	0.30	0.068	2.96	0.085	3.68	0.088	3.81	0.140	6.06
4	270	3.4573	0.050	1.45	0.087	2.52	0.030	0.87	0.105	3.03	0.139	4.02	0.057	1.65	0.183	5.29
5	270	4.8191	0.073	1.51	0.143	2.97	0.043	0.89	0.166	3.45	0.189	3.92	0.074	1.54	0.262	5.44
6	270	5.4617	0.111	2.03	0.193	3.53	0.000	0.00	0.223	4.08	0.236	4.32	0.131	2.40	0.350	6.41
10	270	1.1126	0.014	1.26	0.021	1.89	0.000	0.00	0.025	2.27	0.026	2.34	0.013	1.17	0.038	3.42

STA Satellite - All sites - All lots (seconds)			Repeatability		Between-run		Between-day		Within-lab		Between_lot		Between_site		Total	
Sample	N	Mean	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
1	270	14.370	0.166	1.16	0.203	1.41	0.000	0.00	0.262	1.82	0.196	1.36	0.225	1.57	0.397	2.76
2	270	13.957	0.130	0.93	0.216	1.55	0.000	0.00	0.252	1.81	0.200	1.43	0.223	1.60	0.392	2.81
3	270	31.016	0.510	1.64	1.039	3.35	0.000	0.00	1.157	3.73	0.534	1.72	1.251	4.03	1.786	5.76
4	270	46.346	0.600	1.29	1.110	2.40	0.000	0.00	1.262	2.72	0.744	1.61	1.484	3.20	2.085	4.50
5	270	66.456	0.829	1.25	1.457	2.19	0.212	0.32	1.690	2.54	0.836	1.26	1.893	2.85	2.672	4.02
6	270	74.733	1.331	1.78	2.262	3.03	0.000	0.00	2.625	3.51	1.455	1.95	3.260	4.36	4.432	5.93
7	270	25.763	0.387	1.50	0.532	2.06	0.000	0.00	0.658	2.55	0.180	0.70	0.776	3.01	1.033	4.01
8	270	14.878	0.220	1.48	0.241	1.62	0.000	0.00	0.326	2.19	0.229	1.54	0.385	2.59	0.554	3.72
9	270	25.845	0.372	1.44	0.573	2.22	0.000	0.00	0.683	2.64	0.375	1.45	0.741	2.87	1.075	4.16
10	270	14.926	0.154	1.03	0.229	1.53	0.000	0.00	0.276	1.85	0.180	1.21	0.309	2.07	0.452	3.03
11	270	39.160	0.618	1.58	1.013	2.59	0.000	0.00	1.187	3.03	0.848	2.17	1.130	2.89	1.845	4.71

STA Satellite - All sites - All lots (INR)			Repeatability		Between-run		Between-day		Within-lab		Between_lot		Between_site		Total	
Sample	N	Mean	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
1	270	1.0587	0.012	1.13	0.016	1.51	0.000	0.00	0.020	1.89	0.020	1.89	0.015	1.42	0.032	3.02
2	270	1.0275	0.010	0.97	0.016	1.56	0.000	0.00	0.019	1.84	0.020	1.95	0.015	1.46	0.032	3.11
3	270	2.3522	0.039	1.66	0.082	3.49	0.000	0.00	0.091	3.86	0.088	3.74	0.088	3.74	0.154	6.55
4	270	3.5671	0.048	1.35	0.088	2.47	0.000	0.00	0.100	2.81	0.145	4.06	0.091	2.55	0.198	5.55
5	270	5.1826	0.068	1.31	0.117	2.26	0.014	0.27	0.136	2.63	0.204	3.94	0.105	2.03	0.267	5.15
6	270	5.8552	0.108	1.84	0.183	3.13	0.000	0.00	0.212	3.63	0.293	5.00	0.215	3.67	0.421	7.19
10	270	1.1012	0.012	1.09	0.018	1.63	0.000	0.00	0.022	1.96	0.023	2.09	0.021	1.91	0.038	3.45

Analytical Specificity/Interference

Extrinsic Factor Sensitivity

The study was performed to determine at which clinically significant abnormal extrinsic factor levels (Factor II, V, VII and X) the STA® - NeoPTimal gives abnormal results for PT. The study was performed using three lots on the STA-R family of analyzers.

	STA NeoPTimal
Factor II	46 %
Factor V	59 %
Factor VII	55 %
Factor X	65 %

Interferences

This study was performed to evaluate the effect of (endogenous or exogenous) potentially interfering substances in the STA - NeoPTimal assay on four samples;

- Patient sample included in the normal reference range
- VKA patient sample with an INR between 2.0 and 3.0
- VKA patient sample with an INR between 3.1 and 4.5
- Deficient V patient sample

Molecule	**No interference up to**
Triglycerides	3270 mg/dL
Hemoglobin	4000 mg/dL
Conjugated Bilirubin	29 mg/dL
Unconjugated Bilirubin	20 mg/dL
UFH	1.0 IU/mL
LMWH	1.5 IU Anti-Xa/mL
Apixaban	13 ng/mL
Dabigatran	3 ng/mL
Edoxaban	6 ng/mL
Rivaroxaban	7 ng/mL

Daptomycin

Note: According to the drug manufacturer, Daptomycin may artificially prolong PT and INR in patients with normal renal function for up to nine hours and for patients with renal impairment up to 28 hours[1]. Therefore, PT or INR monitoring of patients on Daptomycin may be affected for up to 28 hours after dosing.

Stability

Sample Stability – Room Temperature

A study of sample stability at room temperature was performed to demonstrate plasma remains stable for 24 hours if stored at room temperature. Four normal samples and eight VKA samples with INR between 1.5 to 5.5 were used along with one lot of STA NeoPTimal. Samples were testing in triplicate for each sample across different time points. All results met the acceptance criteria and support a plasma stability claim of 24 hours at room temperature.

1 PATEL S., SAW S. Daptomycin. [Updated 2020 Apr 13]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2020 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK470407

Sample Stability - Long-term Frozen
The study was performed across two lots of STA® - NeoPTimal on a STA-R family analyzer. Testing was performed on 53 samples stored at ≤ -70°C;

- Patient samples included in the normal reference range (Normal)
- VKA patient samples with INR between 1.5 and 5.0

All samples were tested in triplicate at different time points. All results met the acceptance criteria and support a long-term frozen plasma stability claim of 12 months at ≤ -70°C.

Shelf-life Stability
The study was performed on three lots of each STA® - NeoPTimal configuration on a STA-R family analyzer. Testing was performed on 10 samples;

- Patient samples included in the normal reference range (Normal)
- VKA patient samples with INR between 2 and 4.5
- Deficient V patient samples
- Quality controls

All samples were tested in triplicate at different time points. The results support the following shelf-life when stored at 2-8°C:

Product	Shelf-Life Stability Claim
STA – NeoPTimal ⑤	24 months
STA – NeoPTimal ⑩	

In-Use Stability
The study was performed on three lots of STA – NeoPTimal representing the two different volume configurations (5ml and 10ml) on the STA-R family, STA Compact family and STA Satellite instrumentation. Testing was performed on six samples:

- Patient sample included in the normal reference range (Normal)
- VKA patient sample with an INR between 2.0 and 3.0 (VKA 2-3)
- VKA patient sample with an INR between 3.1 and 4.5 (VKA 3-4.5)
- Deficient patient sample (Def V)
- Two controls

All the samples were tested after reconstitution (T0h) in triplicate at different time points. The result support the following:

	STA® - NeoPTimal 5	STA® - NeoPTimal 10
STA-R® family **STA Compact® family**	48h on board	
STA Satellite® family	4 days on board	
2-8 °C	8 days	

Detection Limit
Not applicable

Assay Cut-off
Not applicable

Comparison Studies

Method Comparison

Four sites were involved in the external method comparison study for STA – NeoPTimal to validate the performance of the STA - NeoPTimal kit via method comparison with the predicate device, Thromborel S across one STA R Max, STA Satellite, STA Compact Max, and three Siemens CA-1500s. The STA NeoPTimal performed comparably to the Thromborel S. All acceptance criteria were met.

Slope (95% CI)	Intercept (95% CI)	$r_{Pearson}$
0.93 (0.92 to 0.95)	0.04 (0.02 to 0.06)	0.965

Bias at 2.5 INR (95% CI)	Bias at 3.5 INR (95% CI)
-5.3% (-6.2% to -4.3%)	-5.7% (-6.9% to -4.6%)

Clinical Studies

Clinical Sensitivity

Not applicable

Clinical Specificity

Not applicable

Clinical Cut-off

Not applicable

Reference Interval

The adult reference interval was based on calculations established within CLSI guideline EP28-A3c using 137 patients across three external sites. The reference interval for STA® – NeoPTimal was determined to be 11.8 to 14.9 seconds, and 0.89 to 1.11 INR.

CONCLUSION

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