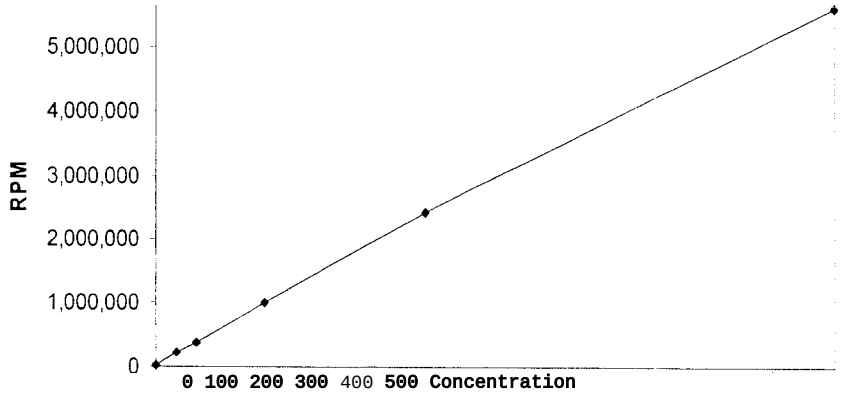
510(K) SUMMARY OF SAFETY AND EFFECTIVENESS		
1. Applicant/Laboratory Information		
A	**Name**	Bayer Business Group Diagnostics
B	**Mailing address**	511 Benedict Avenue, Tarrytown, NY 10591
C	**Phone number**	914-631-8000
D	**Fax number**	914-524-2132
E	**E-mail/internet address**	http://www.bayerdiag.com
F	**Contact**	Kenneth T. Edds, Ph.D., Regulatory Affairs Manager
2. Regulatory Information		
A	**Class**	II (assay), I (calibrator)
B	**Product code**	82 LTK (assay), 75 JIT (calibrator)
C	**Classification Names**	Tumor-associated Antigen Immunological test system §866.6010 Calibrator §862.1150
D	**Common name**	Tumor-associated antigen immunological test system
E	**Proprietary name**	CA 125 II Assay for the Bayer ADVIA Integrated Module System
3. Intended Use(s)/Indication Statement		
The BAYER ADVIA IMS CA 125 II Assay is an in vitro diagnostic device intended to quantitatively measure OC 125 reactive determinants associated with a high molecular weight) glycoprotein in serum of women with primary epithelial invasive ovarian cancer. The CA 125 II Assay is indicated as an aid in the management (monitoring) of ovarian cancer patients when used in conjunction with other diagnostic procedures. The CA 125 II Assay is also indicated as a onetime test for use as an aid in the detection of residual ovarian carcinoma in patients who have undergone first-line therapy and would be considered diagnostic second-look procedures. An assay value of greater than 35 U mL is predictive of residual disease, provided that alternate causes of elevated CA 125 II Assay values can be excluded. It is recommended that the assessment and treatment of patients with ovarian cancer and the use of this CA 125 II Assay be under the order of a physician trained and experienced in the management of gynecologic cancers. This assay is not intended for screening or diagnosis of ovarian cancer or for use on any other system.		
4. Substantial Equivalence Information		
A	**Predicate device**	Bayer Immuno 1 CA 125 II Test
B	**K number**	K983715
C	**Comparison with predicate**	• Correlation (Y = ADVIA IMS, X = Immuno 1) [N=45] • Regression equation = 1.074 (X) – 3.94 = y • Syx (U/mL) = 13.74 • R = 0.994 • Sample Range (U/mL) = 5.1 – 509.2
5. Procedure		
The ADVIA® IMS CA125 II Assay is an *in vitro* heterogeneous sandwich immunoassay using magnetic separation. Reagent 1 (R1) contains a monoclonal antibody to OC 125 labeled with FITC and Reagent 2 (R2) contains a monoclonal antibody to OC 125 conjugated to the enzyme alkaline phosphatase (ALP). The sandwich complex formed by the analyte and the antibody conjugates is captured by the magnetic particles so that the CA 125 11 concentration in the sample can be measured in terms of enzyme activity. The substrate used for this assay is a dioxetane phosphate derivative, which is dephosphorylated by ALP resulting in photon emission. A photomultiplier tube measures luminescence. The dose response curve is proportional to the analyte concentration in sample.		
6. Reagents		
A	**Material**	• M11 Antibody Conjugate (R1) (Source: Mouse) • Alkaline Phosphate-labeled antibody (R2) • Monoclonal ImmunoMagnetic Particle (mIMP™) • Serum • OC 125 determinants [Calibrators] (Source: Mouse)
B	**Amount**	**As shipped Concentrations**: R1 = 1.5 mg/L; monoclonal OC 125 ALP conjugate = 25.0 mg/L; Sodium Azide = 0.095 % (in each reagent prep), Other (Buffer, surfactant, preservative) **Post Assay Concentrations**: R1 = 0.08 mg/L; monoclonal OC 125 ALP conjugate = 1.28 mg/L; Sodium Azide = 0.01 %, Other (Buffer, surfactant, preservative)

7. Performance Characteristics

A — Standard Curve

A typical standard curve is shown below:



B — Imprecision

ADVIA IMS		IMMUNO 1	
Level (U/mL)	Total CV (%)	Level (U/mL)	Total CV (%)
26.8	3	30.2	2.4
74.1	1.9	80.6	2.5
109.8	2.5	200.2	2.6

D — Sensitivity: 94.7 %

E — Specificity: 22.2 %

F — PPV: 72.0 %

G — NPV: 66.7 %

H — Concordance: 71.4 %

I — Accuracy

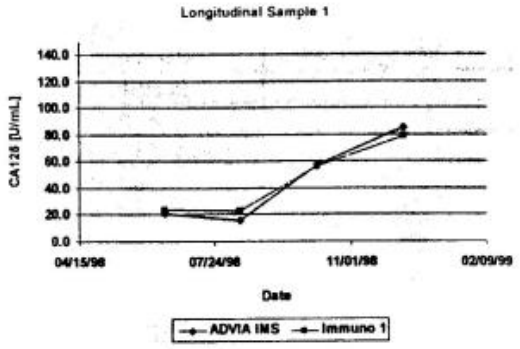
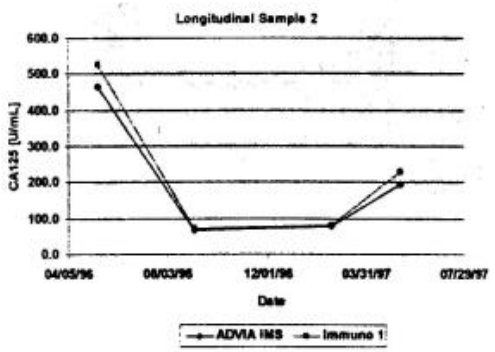
Linearity:
Linearity was evaluated by diluting a high CA 125 II serum sample with a serum pool containing low CA 125 II level. Recovery was acceptable ranging from 96.7% to 106.2%, meeting specifications and in concordance with the Immuno I (predicate).

Parallelism:
Parallelism was evaluated by diluting a high CA 125 II serum sample with a high CA 125 II level, with Immuno I Sample Diluent B. Recovery was acceptable ranging from 95.6% to 109.7% in concordance with the Immuno I (predicate).

Interfering Substances:
Separate low serum pools were spiked with the following materials: Triglycerides (1000 mg/dL), hemoglobin (1000 mg/dL), bilirubin (25 mg/dL), albumin (6.5 g/dL), immunoglobulin (6.0 g/dL), over the counter medications, vitamins, caffeine, and drug pools (two times lethal dose). In all cases the observed recovery bias was found of no clinical significance.

Interfering Substance	Interfering Substance Concentration µg/mL (* = mg/dL)	CA 125 Concentration (U/mL)	Effect (% Change)
Hemoglobin	1000 *	19.9	-2.3
Lipids (Triglycerides)	1000 *	18.5	0.9
Bilirubin	25 *	22.5	-2.6
IgG	6000 *	35.1	-4.0
Albumin	6500 *	22.2	4.3
Acetaminophen	200	30.9	-0.5
Aspirin	500	23.8	-2.2
Ibuprofen	400	23.8	-0.8
Caffeine	100	24.5	1.2
Vitamin A	10 (U/mL)	21.6	0.1
Vitamin B_1	3	23.4	-1.2
Vitamin B_2	3.4	21.6	-1.3
Vitamin B_6	4	20.6	-0.4
Vitamin B_{12}	12 (ng/mL)	21.6	9.5

Vitamin C	30	24.5	1.4
Vitamin D_2	0.8 (U/mL)	20.6	3.7
Vitamin E	0.06 (U/mL)	20.6	2.5
Folic Acid	0.8	21.6	7.0
Niacin	40	21.6	4.4
Vincristine Sulfate	13.5 *	20.6	4.1
Vinblastine	5.11 *	20.6	4.1
Mitomycin C	73 *	21.6	0.9
Tamoxifen – Free	60 *	20.6	4.1
Tamoxifen – Citrate	60 *	20.6	4.1
Etoposide	415 *	22.5	4.1
5-Fluorouracil	1600 *	21.6	3.5
Cyclophoshamide Monohydrate	800*	21.6	0.9
Doxorubicin HCl	51.8 *	21.6	0.9
Diethylstiberol	23 *	20.6	4.1
Methotrexate	450 *	22.5	5.6
Cis-Platinum	173 *	20.6	4.1
Lupron	15 *	25.9	-5.8
Megesterol Acetate	243 *	21.6	0.9

Hook Effect:
On the ADVIA IMS the concentration of up to 80,000 U/mL did not produce a signal lower than the highest calibrator rate (level 6).

J	**Cut-off**	32.0 U/Ml
K	**Analytical Range**	0.5 - 550 U/mL
L	**Minimum Detectable Concentration**	ADVIA IMS = 0.5 U/mL Immuno 1 = 0.9 U/mL
M	**Clinical Results**	**Longitudinal Samples:** Two examples of serial patient monitoring studies using Bayer ADVIA IMS assay results in comparison to results obtained for another marketed device are shown in the following figures:
N	**Conclusion**	Performance of the ADVIA IMS CA 125 II Assay on a Bayer *ADVIA*® IMS™ is equivalent to the performance of the CA 125 II on he predicate device (Immuno I) and is within proposed specifications. No safety and effectiveness issues have been raised.