

## CERTIFICATE OF ANALYSIS

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**Product Description:** V-PLEX® and V-PLEX Plus Cytokine Panel 1 (human) Kit

**Kit Catalog Numbers:** K15050-Series

**Kit Lot Number:** K0080902

**Expiration Date:** 31 Jul 2019

### Acceptance Data/ Percent Recovery Specifications:

Spot	Name	Calibrator		Cytokine Panel 1 (human) Control 1		Cytokine Panel 1 (human) Control 2		Cytokine Panel 1 (human) Control 3	
		Recovery	CV	Recovery	CV	Recovery	CV	Recovery	CV
1	hu GM-CSF	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%
2	hu IL-1 $\alpha$	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%
3	hu IL-5	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%
4	hu IL-7	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%
5	hu IL-12/23p40	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%
6	hu IL-15	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%
7	hu IL-16	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%
8	hu IL-17A	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%
9	hu TNF- $\beta$	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%
10	hu VEGF	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%	80% - 120%	< 20%

Spot	Name	LLOQ			ULOQ		
		Value	Recovery	CV	Value	Recovery	CV
1	hu GM-CSF	1.90	80% - 120%	< 20%	750	80% - 120%	< 20%
2	hu IL-1 $\alpha$	2.85	80% - 120%	< 20%	278	80% - 120%	< 20%
3	hu IL-5	6.28	80% - 120%	< 20%	562	80% - 120%	< 20%
4	hu IL-7	1.37	80% - 120%	< 20%	563	80% - 120%	< 20%
5	hu IL-12/23p40	5.68	80% - 120%	< 20%	2250	80% - 120%	< 20%
6	hu IL-15	1.40	80% - 120%	< 20%	525	80% - 120%	< 20%
7	hu IL-16	19.1	80% - 120%	< 20%	1870	80% - 120%	< 20%
8	hu IL-17A	9.32	80% - 120%	< 20%	3650	80% - 120%	< 20%
9	hu TNF- $\beta$	1.15	80% - 120%	< 20%	458	80% - 120%	< 20%
10	hu VEGF	7.70	80% - 120%	< 20%	562	80% - 120%	< 20%

### Acceptance Data/ Non Specific Binding Specifications:

Spot	Name	NSB Spec
1	hu GM-CSF	< 1.0%
2	hu IL-1 $\alpha$	< 1.0%
3	hu IL-5	< 1.0%
4	hu IL-7	< 1.0%
5	hu IL-12/23p40	< 1.0%
6	hu IL-15	< 1.0%
7	hu IL-16	< 1.0%
8	hu IL-17A	< 1.0%
9	hu TNF- $\beta$	< 1.0%
10	hu VEGF	< 1.0%

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### Stock Concentration of Material Tested :

Spot	Name	Item	Conc	Units
1	hu GM-CSF	Calibrator	1100	pg/mL
		Cytokine Panel 1 (human) Control 1	362	pg/mL
		Cytokine Panel 1 (human) Control 2	55.8	pg/mL
		Cytokine Panel 1 (human) Control 3	9.8	pg/mL
2	hu IL-1 $\alpha$	Calibrator	452	pg/mL
		Cytokine Panel 1 (human) Control 1	167	pg/mL
		Cytokine Panel 1 (human) Control 2	57.8	pg/mL
		Cytokine Panel 1 (human) Control 3	19.3	pg/mL
3	hu IL-5	Calibrator	844	pg/mL
		Cytokine Panel 1 (human) Control 1	371	pg/mL
		Cytokine Panel 1 (human) Control 2	123	pg/mL
		Cytokine Panel 1 (human) Control 3	33.7	pg/mL
4	hu IL-7	Calibrator	844	pg/mL
		Cytokine Panel 1 (human) Control 1	241	pg/mL
		Cytokine Panel 1 (human) Control 2	42	pg/mL
		Cytokine Panel 1 (human) Control 3	7.3	pg/mL
5	hu IL-12/23p40	Calibrator	3400	pg/mL
		Cytokine Panel 1 (human) Control 1	1290	pg/mL
		Cytokine Panel 1 (human) Control 2	208	pg/mL
		Cytokine Panel 1 (human) Control 3	35.5	pg/mL
6	hu IL-15	Calibrator	789	pg/mL
		Cytokine Panel 1 (human) Control 1	241	pg/mL
		Cytokine Panel 1 (human) Control 2	36.5	pg/mL
		Cytokine Panel 1 (human) Control 3	8	pg/mL
7	hu IL-16	Calibrator	2800	pg/mL
		Cytokine Panel 1 (human) Control 1	1160	pg/mL
		Cytokine Panel 1 (human) Control 2	328	pg/mL
		Cytokine Panel 1 (human) Control 3	126	pg/mL
8	hu IL-17A	Calibrator	6100	pg/mL
		Cytokine Panel 1 (human) Control 1	2590	pg/mL
		Cytokine Panel 1 (human) Control 2	327	pg/mL
		Cytokine Panel 1 (human) Control 3	57.5	pg/mL
9	hu TNF- $\beta$	Calibrator	714	pg/mL
		Cytokine Panel 1 (human) Control 1	196	pg/mL
		Cytokine Panel 1 (human) Control 2	31.7	pg/mL
		Cytokine Panel 1 (human) Control 3	5.4	pg/mL
10	hu VEGF	Calibrator	1400	pg/mL
		Cytokine Panel 1 (human) Control 1	373	pg/mL
		Cytokine Panel 1 (human) Control 2	127	pg/mL
		Cytokine Panel 1 (human) Control 3	56.1	pg/mL

Controls tested may not be the same lot as shipped.

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## Standard Curve Data:

hu GM-CSF - Spot 1		
Conc. pg/mL	ECL Signal	%CV
1100	428,000	2.3
275	127,000	2.8
68.8	33,500	2.0
17.2	8,450	3.5
4.30	2,160	3.1
1.07	676	4.2
0.269	304	5.6
0.00	184	14.0

hu IL-1 $\alpha$ - Spot 2		
Conc. pg/mL	ECL Signal	%CV
452	343,000	4.3
113	96,500	2.3
28.3	25,100	3.6
7.06	6,270	3.4
1.77	1,850	5.0
0.441	700	5.0
0.110	428	5.7
0.00	340	7.3

hu IL-5 - Spot 3		
Conc. pg/mL	ECL Signal	%CV
844	826,000	3.1
211	232,000	3.5
52.8	61,000	2.7
13.2	15,200	1.6
3.30	4,370	3.2
0.824	1,550	4.1
0.206	908	5.5
0.00	617	12.0

hu IL-7 - Spot 4		
Conc. pg/mL	ECL Signal	%CV
844	501,000	3.7
211	123,000	4.1
52.8	30,900	2.5
13.2	7,500	2.7
3.30	1,940	2.5
0.824	600	3.8
0.206	260	8.5
0.00	151	12.0

hu IL-12/23p40 - Spot 5		
Conc. pg/mL	ECL Signal	%CV
3400	594,000	2.3
850	168,000	1.8
213	43,300	1.8
53.1	10,700	1.1
13.3	2,750	2.0
3.32	787	3.0
0.830	317	5.3
0.00	161	8.3

hu IL-15 - Spot 6		
Conc. pg/mL	ECL Signal	%CV
789	644,000	2.5
197	118,000	2.5
49.3	27,800	2.3
12.3	6,660	1.5
3.08	1,750	3.1
0.771	508	4.3
0.193	217	9.1
0.00	118	11.0

hu IL-16 - Spot 7		
Conc. pg/mL	ECL Signal	%CV
2800	844,000	7.1
700	184,000	3.1
175	36,800	4.9
43.8	7,850	3.0
10.9	2,150	5.1
2.73	743	2.5
0.684	415	7.3
0.00	312	7.4

hu IL-17A - Spot 8		
Conc. pg/mL	ECL Signal	%CV
6100	1,300,000	3.9
1530	346,000	2.5
381	86,000	1.7
95.3	21,900	2.6
23.8	5,750	2.7
5.96	2,030	3.2
1.49	1,060	2.2
0.00	775	4.3

hu TNF- $\beta$ - Spot 9		
Conc. pg/mL	ECL Signal	%CV
714	756,000	1.5
179	168,000	2.0
44.6	39,200	1.1
11.2	9,290	2.4
2.79	2,870	1.5
0.697	844	3.3
0.174	364	3.1
0.00	200	8.4

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hu VEGF - Spot 10		
Conc. pg/mL	ECL Signal	%CV
1400	1,150,000	2.1
350	245,000	1.9
87.5	47,800	2.3
21.9	10,100	2.7
5.47	2,730	1.9
1.37	783	3.3
0.342	355	5.3
0.00	203	15.0

### Components:

Description	Lot Number	Storage Temperature	Expiration Date
Cytokine Panel 1 (human) Plate	Z0046672	2-8°C	31 Mar 2020
Anti-hu GM-CSF Antibody	D0080885	2-8°C	31 Jul 2019
Anti-hu IL-1 $\alpha$ Antibody	D0080886	2-8°C	31 Jul 2019
Anti-hu IL-5 Antibody	D0080887	2-8°C	31 Jul 2019
Anti-hu IL-7 Antibody	D0080888	2-8°C	31 Jul 2019
Anti-hu IL-12/23p40 Antibody	D0081040	2-8°C	31 Mar 2020
Anti-hu IL-15 Antibody	D0080890	2-8°C	31 Jul 2019
Anti-hu IL-16 Antibody	D0080891	2-8°C	31 Jul 2019
Anti-hu IL-17A Antibody	D0080984	2-8°C	31 Oct 2019
Anti-hu TNF- $\beta$ Antibody	D0080893	2-8°C	31 Jul 2019
Anti-hu VEGF Antibody	D0080894	2-8°C	31 Jul 2019
Cytokine Panel 1 (human) Calibrator Blend	A0080121	2-8°C	28 Feb 2022
Diluent 43	M0430024	$\leq$ -10°C	31 Jan 2020
Diluent 3	M0030078	$\leq$ -10°C	31 Jan 2020
MSD Read Buffer T	Not Kit Specific	Not Kit Specific	N/A

Additional Components Included in V-PLEX Plus	
Plate Seals	Not Kit Specific
Wash Buffer (20X)	Not Kit Specific
Cytokine Panel 1 (human) Control 1	Not Kit Specific
Cytokine Panel 1 (human) Control 2	Not Kit Specific
Cytokine Panel 1 (human) Control 3	Not Kit Specific

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**Additional Comments:**

	Assay	Spot	Specification	Comment
1	hu IL-17A	8	Background	Background signal of 775 is greater than the Specification of 408.

**Statement:**

The above product is intended for Research Use Only. Not for use in Diagnostic Procedures.

	Name	Function	Signature	Date
<b>Review/Approval</b>	Dawn Stollar	Quality Assurance	<i>Dawn Stollar</i>	10 NOV 2017