

## 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:** K0080949

**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-12/23 p40	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-12/23 p40	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-12/23 p40	< 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	370	pg/mL
		Cytokine Panel 1 (human) Control 2	70	pg/mL
		Cytokine Panel 1 (human) Control 3	10	pg/mL
2	hu IL-1 $\alpha$	Calibrator	459	pg/mL
		Cytokine Panel 1 (human) Control 1	170	pg/mL
		Cytokine Panel 1 (human) Control 2	60	pg/mL
		Cytokine Panel 1 (human) Control 3	20	pg/mL
3	hu IL-5	Calibrator	877	pg/mL
		Cytokine Panel 1 (human) Control 1	310	pg/mL
		Cytokine Panel 1 (human) Control 2	110	pg/mL
		Cytokine Panel 1 (human) Control 3	34	pg/mL
4	hu IL-7	Calibrator	881	pg/mL
		Cytokine Panel 1 (human) Control 1	330	pg/mL
		Cytokine Panel 1 (human) Control 2	60	pg/mL
		Cytokine Panel 1 (human) Control 3	10	pg/mL
5	hu IL-12/23 p40	Calibrator	3690	pg/mL
		Cytokine Panel 1 (human) Control 1	1360	pg/mL
		Cytokine Panel 1 (human) Control 2	235	pg/mL
		Cytokine Panel 1 (human) Control 3	40	pg/mL
6	hu IL-15	Calibrator	842	pg/mL
		Cytokine Panel 1 (human) Control 1	280	pg/mL
		Cytokine Panel 1 (human) Control 2	50	pg/mL
		Cytokine Panel 1 (human) Control 3	10	pg/mL
7	hu IL-16	Calibrator	2800	pg/mL
		Cytokine Panel 1 (human) Control 1	1180	pg/mL
		Cytokine Panel 1 (human) Control 2	335	pg/mL
		Cytokine Panel 1 (human) Control 3	110	pg/mL
8	hu IL-17A	Calibrator	6480	pg/mL
		Cytokine Panel 1 (human) Control 1	2210	pg/mL
		Cytokine Panel 1 (human) Control 2	310	pg/mL
		Cytokine Panel 1 (human) Control 3	50	pg/mL
9	hu TNF- $\beta$	Calibrator	733	pg/mL
		Cytokine Panel 1 (human) Control 1	230	pg/mL
		Cytokine Panel 1 (human) Control 2	42	pg/mL
		Cytokine Panel 1 (human) Control 3	6.4	pg/mL
10	hu VEGF	Calibrator	1490	pg/mL
		Cytokine Panel 1 (human) Control 1	410	pg/mL
		Cytokine Panel 1 (human) Control 2	140	pg/mL
		Cytokine Panel 1 (human) Control 3	50	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	446,000	2.0
275	130,000	3.0
68.8	33,300	2.8
17.2	8,650	3.9
4.30	2,290	3.6
1.07	739	4.8
0.269	319	8.5
0.00	197	17.0

hu IL-1 $\alpha$ - Spot 2		
Conc. pg/mL	ECL Signal	%CV
459	293,000	3.2
115	77,100	2.7
28.7	19,600	2.9
7.17	4,860	1.9
1.79	1,420	6.7
0.448	527	15.0
0.112	265	10.0
0.00	192	14.0

hu IL-5 - Spot 3		
Conc. pg/mL	ECL Signal	%CV
877	866,000	2.1
219	250,000	2.4
54.8	66,400	1.4
13.7	16,700	2.7
3.43	4,630	2.4
0.856	1,520	3.3
0.214	775	5.8
0.00	503	13.0

hu IL-7 - Spot 4		
Conc. pg/mL	ECL Signal	%CV
881	545,000	2.4
220	133,000	2.2
55.1	32,300	1.7
13.8	8,140	2.5
3.44	2,140	2.3
0.860	669	4.6
0.215	275	7.0
0.00	148	16.0

hu IL-12/23 p40 - Spot 5		
Conc. pg/mL	ECL Signal	%CV
3690	722,000	2.6
923	204,000	2.2
231	52,000	4.2
57.7	13,200	2.3
14.4	3,470	1.6
3.60	1,040	2.8
0.901	396	5.4
0.00	177	7.3

hu IL-15 - Spot 6		
Conc. pg/mL	ECL Signal	%CV
842	681,000	2.3
211	130,000	3.1
52.6	29,700	3.3
13.2	7,200	3.5
3.29	1,900	3.0
0.822	546	6.4
0.206	216	8.2
0.00	108	11.0

hu IL-16 - Spot 7		
Conc. pg/mL	ECL Signal	%CV
2800	785,000	2.2
700	161,000	2.1
175	28,400	1.5
43.8	5,720	2.6
10.9	1,500	4.1
2.73	470	3.7
0.684	240	17.0
0.00	146	13.0

hu IL-17A - Spot 8		
Conc. pg/mL	ECL Signal	%CV
6480	1,630,000	3.6
1620	459,000	1.7
405	118,000	1.6
101	29,400	1.7
25.3	7,600	2.5
6.33	2,080	4.8
1.58	631	4.7
0.00	189	20.0

hu TNF- $\beta$ - Spot 9		
Conc. pg/mL	ECL Signal	%CV
733	965,000	2.3
183	216,000	1.8
45.8	48,600	1.1
11.5	11,800	1.8
2.86	3,490	1.7
0.716	1,010	2.6
0.179	396	5.7
0.00	201	11.0

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hu VEGF - Spot 10		
Conc. pg/mL	ECL Signal	%CV
1490	1,410,000	2.2
373	310,000	2.2
93.1	56,700	2.0
23.3	11,800	3.5
5.82	3,020	2.3
1.46	857	3.3
0.364	344	9.1
0.00	149	12.0


**Components:**

Description	Lot Number	Storage Temperature	Expiration Date
Cytokine Panel 1 (human) Plate	Z0046750	2-8°C	31 Jul 2020
Anti-hu GM-CSF Antibody	D0081052	2-8°C	30 Apr 2020
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	D0080889	2-8°C	31 Jul 2019
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	D0081066	2-8°C	31 Jul 2020
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	A0080144	2-8°C	31 Aug 2022
Diluent 43	M0430024	$\leq -10^{\circ}\text{C}$	31 Jan 2020
Diluent 3	M0030080	$\leq -10^{\circ}\text{C}$	31 May 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), 100mL	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

**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		03 APR 2018