

## 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:** K0081073  
**Expiration Date:** 30 Apr 2020

**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	0.842	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	4.41	80% - 120%	< 20%	562	80% - 120%	< 20%
4	hu IL-7	0.546	80% - 120%	< 20%	563	80% - 120%	< 20%
5	hu IL-12/23 p40	1.32	80% - 120%	< 20%	2250	80% - 120%	< 20%
6	hu IL-15	0.774	80% - 120%	< 20%	525	80% - 120%	< 20%
7	hu IL-16	19.1	80% - 120%	< 20%	1870	80% - 120%	< 20%
8	hu IL-17A	3.19	80% - 120%	< 20%	3650	80% - 120%	< 20%
9	hu TNF- $\beta$	0.465	80% - 120%	< 20%	458	80% - 120%	< 20%
10	hu VEGF	7.70	80% - 120%	< 20%	562	80% - 120%	< 20%

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	1070	pg/mL
		Cytokine Panel 1 (human) Control 1	408	pg/mL
		Cytokine Panel 1 (human) Control 2	64.1	pg/mL
		Cytokine Panel 1 (human) Control 3	9.7	pg/mL
2	hu IL-1 $\alpha$	Calibrator	454	pg/mL
		Cytokine Panel 1 (human) Control 1	183	pg/mL
		Cytokine Panel 1 (human) Control 2	58.1	pg/mL
		Cytokine Panel 1 (human) Control 3	16.3	pg/mL
3	hu IL-5	Calibrator	830	pg/mL
		Cytokine Panel 1 (human) Control 1	343	pg/mL
		Cytokine Panel 1 (human) Control 2	109	pg/mL
		Cytokine Panel 1 (human) Control 3	32.7	pg/mL
4	hu IL-7	Calibrator	846	pg/mL
		Cytokine Panel 1 (human) Control 1	346	pg/mL
		Cytokine Panel 1 (human) Control 2	58	pg/mL
		Cytokine Panel 1 (human) Control 3	7.79	pg/mL
5	hu IL-12/23 p40	Calibrator	3650	pg/mL
		Cytokine Panel 1 (human) Control 1	1430	pg/mL
		Cytokine Panel 1 (human) Control 2	204	pg/mL
		Cytokine Panel 1 (human) Control 3	32.6	pg/mL
6	hu IL-15	Calibrator	829	pg/mL
		Cytokine Panel 1 (human) Control 1	286	pg/mL
		Cytokine Panel 1 (human) Control 2	45	pg/mL
		Cytokine Panel 1 (human) Control 3	8	pg/mL
7	hu IL-16	Calibrator	2640	pg/mL
		Cytokine Panel 1 (human) Control 1	1200	pg/mL
		Cytokine Panel 1 (human) Control 2	334	pg/mL
		Cytokine Panel 1 (human) Control 3	100	pg/mL
8	hu IL-17A	Calibrator	6240	pg/mL
		Cytokine Panel 1 (human) Control 1	2020	pg/mL
		Cytokine Panel 1 (human) Control 2	277	pg/mL
		Cytokine Panel 1 (human) Control 3	42.9	pg/mL
9	hu TNF- $\beta$	Calibrator	711	pg/mL
		Cytokine Panel 1 (human) Control 1	247	pg/mL
		Cytokine Panel 1 (human) Control 2	37.9	pg/mL
		Cytokine Panel 1 (human) Control 3	5.75	pg/mL
10	hu VEGF	Calibrator	1120	pg/mL
		Cytokine Panel 1 (human) Control 1	384	pg/mL
		Cytokine Panel 1 (human) Control 2	114	pg/mL
		Cytokine Panel 1 (human) Control 3	37.5	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
1070	392,000	2.3
268	109,000	3.6
66.9	28,000	2.0
16.7	7,050	3.6
4.18	1,860	2.1
1.04	587	4.7
0.261	260	7.0
0.00	151	12.0

hu IL-1 $\alpha$ - Spot 2		
Conc. pg/mL	ECL Signal	%CV
454	283,000	8.0
114	79,700	5.9
28.4	20,600	7.7
7.09	5,500	5.9
1.77	1,720	6.3
0.443	782	5.1
0.111	551	5.4
0.00	469	9.2

hu IL-5 - Spot 3		
Conc. pg/mL	ECL Signal	%CV
830	613,000	8.9
208	164,000	2.4
51.9	41,000	4.4
13.0	10,300	4.9
3.24	2,930	4.6
0.811	1,030	3.5
0.203	588	5.6
0.00	438	7.6

hu IL-7 - Spot 4		
Conc. pg/mL	ECL Signal	%CV
846	611,000	1.9
212	146,000	1.9
52.9	35,300	2.5
13.2	8,610	3.2
3.30	2,200	1.8
0.826	651	4.7
0.207	253	9.8
0.00	120	17.0

hu IL-12/23 p40 - Spot 5		
Conc. pg/mL	ECL Signal	%CV
3650	684,000	2.9
913	197,000	1.3
228	50,500	2.3
57.0	12,700	3.1
14.3	3,220	1.6
3.56	926	2.5
0.891	341	5.4
0.00	152	18.0

hu IL-15 - Spot 6		
Conc. pg/mL	ECL Signal	%CV
829	671,000	4.4
207	132,000	3.3
51.8	31,500	3.2
13.0	7,830	4.0
3.24	2,000	2.7
0.810	588	3.8
0.202	225	8.2
0.00	113	11.0

hu IL-16 - Spot 7		
Conc. pg/mL	ECL Signal	%CV
2640	938,000	2.7
660	199,000	2.0
165	34,900	2.9
41.3	6,770	4.6
10.3	1,700	2.2
2.58	507	6.0
0.645	218	13.0
0.00	128	16.0

hu IL-17A - Spot 8		
Conc. pg/mL	ECL Signal	%CV
6240	1,580,000	2.9
1560	457,000	2.0
390	116,000	2.7
97.5	29,000	4.4
24.4	7,100	2.3
6.09	1,900	3.5
1.52	549	5.7
0.00	117	19.0

hu TNF- $\beta$ - Spot 9		
Conc. pg/mL	ECL Signal	%CV
711	1,110,000	4.7
178	249,000	3.3
44.4	58,200	1.7
11.1	13,900	3.4
2.78	3,920	1.8
0.694	1,130	3.3
0.174	437	5.2
0.00	203	11.0

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hu VEGF - Spot 10		
Conc. pg/mL	ECL Signal	%CV
1120	902,000	4.0
280	173,000	2.2
70.0	30,100	7.2
17.5	6,460	8.9
4.38	1,710	3.9
1.09	573	6.8
0.273	272	11.0
0.00	191	15.0


**Components:**

Description	Lot Number	Storage Temperature	Expiration Date
Cytokine Panel 1 (human) Plate	Z0046959	2-8°C	30 Apr 2021
Anti-hu GM-CSF Antibody	D0081205	2-8°C	30 Jun 2022
Anti-hu IL-1 $\alpha$ Antibody	D0081144	2-8°C	28 Feb 2022
Anti-hu IL-5 Antibody	D0081054	2-8°C	30 Apr 2020
Anti-hu IL-7 Antibody	D0081079	2-8°C	30 Sep 2021
Anti-hu IL-12/23p40 Antibody	D0081080	2-8°C	30 Sep 2021
Anti-hu IL-15 Antibody	D0081081	2-8°C	30 Sep 2021
Anti-hu IL-16 Antibody	D0081207	2-8°C	31 May 2022
Anti-hu IL-17A Antibody	D0081187	2-8°C	30 Apr 2022
Anti-hu TNF- $\beta$ Antibody	D0081057	2-8°C	30 Apr 2020
Anti-hu VEGF Antibody	D0081148	2-8°C	28 Feb 2022
Cytokine Panel 1 (human) Calibrator Blend	A0080170	2-8°C	30 Jun 2023
Diluent 43	M0430028	$\leq$ -10°C	31 Jan 2021
Diluent 3	M0030085	$\leq$ -10°C	28 Feb 2021
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), 100 mL	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		28 JAN 2019