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Medford OR 97501
(541) 499-6300
License: 1008606C050

Certificate of Analysis

Testing for Compliance

Sample ID: HC27292
Report ID: TR-HC27292

Report Date: 02/24/2019

Source RFID: 1A4010300008B11000027280

Test RFID: 1A4010300008B11000027292

Client Name:
Halo Canna
Contact:
Chad Yearsley
Chad.or@halocnna.com
Phone: (541) 821-5205

***License No*:**
1004164663A
Control Study Certificate: MJ760
Control Study Expiration Date: 25 April 2019
***Address*:**
130 W Clark St. Medford, OR 97501

Date Sampled: 02/22/2019
Sampled by: Yujing Wen
Sample Name: Extract I Sunshine Darkness LR
Sample Type: Cannabinoid Extract
Sample Weight: 12.27 g

Description of the sample, sampling condition. Environmental conditions that may impact interpretation of the test result:

Cannabinoid extract. Sample appeared normal. There were no any environmental conditions that may impact interpretation of the test result.

Summary of Test Results

Item	Value, %
Total THC	79.2
Total CBD	7.8
Total Terpenes	2.08

RPD for THC, %	State limit for RPD, %	Pass/Fail
1.1	15.0	Pass

Items	Results, ppm	Pass/Fail
Pesticide	< LOQ	Pass
Residual Solvent	< LOQ	Pass

LOQ: the limit of quantitation, which is the lowest amount of analyte in a sample that can be quantitatively determined by an analytical method with a suitable precision and accuracy. N/A: not applicable.

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Report Date: 02/24/2019

Source RFID: 1A4010300008B11000027280 **Test RFID:** 1A4010300008B11000027292

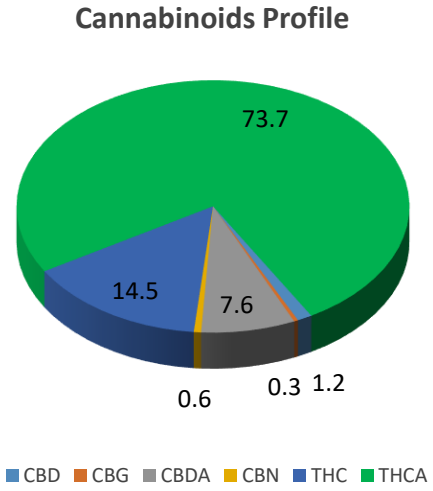
Potency Analysis

Testing method: SOP-002 **Analyzed by:** Yujing Wen **Analyzed date:** 02/22/2019

Batch ID: PO022219

Sample ID: HC27292PS

Analyte	Result, %	LOQ, %
THCV	<LOQ	0.1
CBD	1.2	0.1
CBG	0.3	0.1
CBDA	7.6	0.1
CBN	0.6	0.1
Delta-9 THC	14.5	0.1
Delta-8 THC	<LOQ	0.1
CBC	<LOQ	0.1
THCA	73.7	0.1
Total THC: Δ9+0.877×THCA	79.2	N/A
Total CBD: CBD+0.877×CBDA	7.8	N/A
Total Cannabinoids:	97.9	N/A



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Sample ID: HC27292
Report ID: TR-HC27292

Report Date: 02/24/2019

Source RFID: 1A4010300008B11000027280

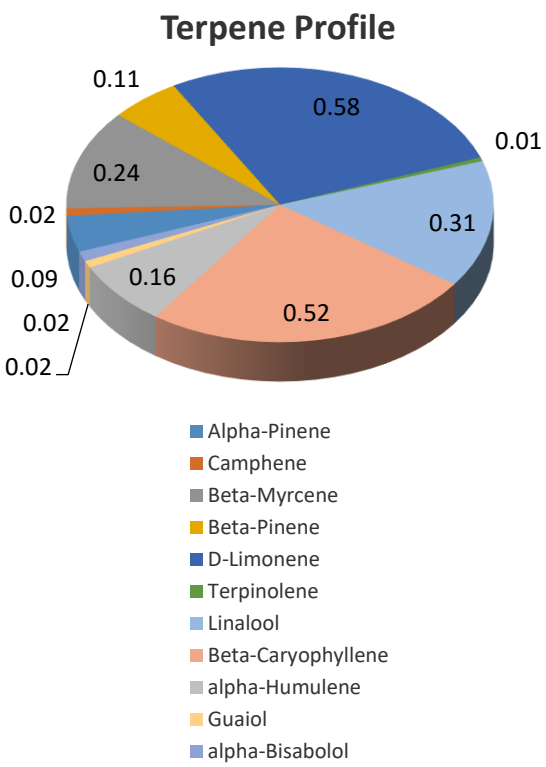
Test RFID: 1A4010300008B11000027292

Terpene Analysis

Testing method: SOP-011 **Analyzed by:** Yujing Wen **Analyzed date:** 02/22/2019

Batch ID: TP022219

Analyte	Result, %	LOQ, %
Monotepenes		
Alpha-Pinene	0.09	0.01
Camphene	0.02	0.01
Beta-Myrcene	0.24	0.01
Beta-Pinene	0.11	0.01
3-Carene	< LOQ	0.01
alpha-Terpinene	< LOQ	0.01
D-Limonene	0.58	0.01
P-Cymene	< LOQ	0.01
Ocimene	< LOQ	0.01
gamma-Terpinene	< LOQ	0.01
Terpinolene	0.01	0.01
Linalool	0.31	0.01
Isopulegol	< LOQ	0.01
Geraniol	< LOQ	0.01
Sesquiterpenes		
Beta-Caryophyllene	0.52	0.01
alpha-Humulene	0.16	0.01
Nerolidol	< LOQ	0.01
Guaiol	0.02	0.01
alpha-Bisabolol	0.02	0.01
Total Terpenes	2.08	N/A



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Testing for Compliance

Sample ID: HC27292
Report ID: TR-HC27292

Report Date: 02/24/2019

Source RFID: 1A4010300008B11000027280 **Test RFID:** 1A4010300008B11000027292

Pesticide Analysis for Primary and Duplicate Samples (Unit: ppm)

Testing method: SOP-010 **Analyzed by:** Yujing Wen **Analyzed date:** 02/23/2019

Batch ID PE022319

Analyte	Result	LOQ	State Action Level
Abamectin	< LOQ	0.25	0.5
Acephate	< LOQ	0.20	0.4
Acequinocyl	< LOQ	1.00	2.0
Acetamiprid	< LOQ	0.10	0.2
Aldicarb	< LOQ	0.20	0.4
Azoxystrobin	< LOQ	0.10	0.2
Bifenazate	< LOQ	0.10	0.2
Bifenthrin	< LOQ	0.10	0.2
Boscalid	< LOQ	0.20	0.4
Carbaryl	< LOQ	0.10	0.2
Carbofuran	< LOQ	0.10	0.2
Chloranthraniliprole	< LOQ	0.10	0.2
Chlorfenapyr	< LOQ	1.00	1.0
Chlorpyrifos	< LOQ	0.10	0.2
Clofentezine	< LOQ	0.10	0.2
Cyfluthrin	< LOQ	0.50	1.0
Cypermethrin	< LOQ	0.50	1.0
Daminozide	< LOQ	0.50	1.0
DDVP (Dichlorvos)	< LOQ	0.50	1.0
Diazinon	< LOQ	0.10	0.2
Dimethoate	< LOQ	0.10	0.2
Ethoprophos	< LOQ	0.10	0.2
Etofenprox	< LOQ	0.20	0.4
Etoxazole	< LOQ	0.10	0.2
Fenoxycarb	< LOQ	0.10	0.2
Fenpyroximate	< LOQ	0.20	0.4
Fipronil	< LOQ	0.20	0.4
Flonicamid	< LOQ	0.50	1.0
Fludioxonil	< LOQ	0.20	0.4
Hexythiazox	< LOQ	0.50	1.0

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Imazalil	< LOQ	0.10	0.2
Imidacloprid	< LOQ	0.20	0.4
Kresoxim-Methyl	< LOQ	0.20	0.4
Malathion	< LOQ	0.10	0.2
Metalaxyl	< LOQ	0.10	0.2
Methiocarb	< LOQ	0.10	0.2
Methomyl	< LOQ	0.20	0.4
Methyl_Parathion	< LOQ	0.20	0.2
MGK-264	< LOQ	0.10	0.2
Myclobutanil	< LOQ	0.10	0.2
NALED (Dibrom)	< LOQ	0.25	0.5
Oxamyl	< LOQ	0.50	1.0
Paclobutrazol	< LOQ	0.20	0.4
Permethrins	< LOQ	0.10	0.2
Phosmet	< LOQ	0.10	0.2
Piperonyl_Butoxide	< LOQ	1.00	2.0
Prallethrin	< LOQ	0.10	0.2
Propiconazole	< LOQ	0.20	0.4
Propoxur	< LOQ	0.10	0.2
Pyrethrin	< LOQ	0.50	1.0
Pyridaben	< LOQ	0.10	0.2
Spinosad	< LOQ	0.10	0.2
Spiromesifen	< LOQ	0.10	0.2
Spirotetramat	< LOQ	0.10	0.2
Spiroxamine	< LOQ	0.20	0.4
Tebuconazole	< LOQ	0.20	0.4
Thiacloprid	< LOQ	0.10	0.2
Thiamethoxam	< LOQ	0.10	0.2
Trifloxystrobin	< LOQ	0.10	0.2

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Report Date: 02/24/2019

Source RFID: 1A4010300008B11000027280 **Test RFID:** 1A4010300008B11000027292

Residual Solvent Analysis for Primary and Duplicate Samples (Unit: ppm)

Testing method: SOP-001 **Analyzed by:** Yujing Wen **Analyzed date:** 02/23/2019

Batch ID: RS022319

Analyte	Result	LOQ	State Action Level
1,4-Dioxane	< LOQ	190	380
2-Butanol	< LOQ	2500	5000
2-Ethoxyethanol	< LOQ	80	160
2-Propanol (IPA)	< LOQ	2500	5000
Acetone	< LOQ	2500	5000
Acetonitrile	< LOQ	205	410
Benzene	< LOQ	2	2
Butanes	< LOQ	2500	5000
Cumene	< LOQ	35	70
Cyclohexane	< LOQ	1940	3880
Dichloromethane	< LOQ	300	600
Ethyl Acetate	< LOQ	2500	5000
Ethyl Ether	< LOQ	2500	5000
Ethylene glycol	< LOQ	310	620
Ethylene Oxide	< LOQ	40	50
Heptane	< LOQ	2500	5000
Hexanes	< LOQ	145	290
Isopropyl Acetate	< LOQ	2500	5000
Methanol	< LOQ	1500	3000
Pentanes	< LOQ	2500	5000
Propane	< LOQ	2513	5000
Tetrahydrofuran (THF)	< LOQ	360	720
Toluene	< LOQ	445	890
Xylenes	< LOQ	1085	2170

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Certificate of Analysis

Sample ID: HC27292
Report ID: TR-HC27292

Testing for Compliance

Report Date: 02/24/2019

Source RFID: 1A4010300008B11000027280 **Test RFID:** 1A4010300008B11000027292

Quality Control Results

Potency Analysis

Test Method: SOP-002 by LC/MS/MS

Field duplicate: HC27292FD **Date analyzed:** 02/22/2019

Analyte	Result, %	RPD, %	State Criteria for RPD, %	Pass/Fail
THCV	<LOQ	N/A	N/A	N/A
CBD	1.2	N/A	N/A	N/A
CBG	0.4	N/A	N/A	N/A
CBDA	8.2	N/A	N/A	N/A
CBN	0.6	N/A	N/A	N/A
Delta-9 THC	15.1	N/A	N/A	N/A
Delta-8 THC	<LOQ	N/A	N/A	N/A
CBC	<LOQ	N/A	N/A	N/A
THCA	74.1	N/A	N/A	N/A
Total THC: $\Delta 9+0.877\times THCA$	80.1	**1.1**	**15.0**	**Pass**
Total CBD: $CBD+0.877\times CBDA$	8.4	N/A	N/A	N/A
Total Cannabinoids	99.7	N/A	N/A	N/A

LOQ: the limit of quantitation, which is the lowest amount of analyte in a sample that can be quantitatively determined by an analytical method with a suitable precision and accuracy. N/A: not applicable.

Blank: MBLK-PO022219		Date analyzed: 02/22/2019
Analyte	**Result, %**	**LOQ, %**
THCV	< LOQ	0.1
CBD	< LOQ	0.1
CBG	< LOQ	0.1
CBDA	< LOQ	0.1
CBN	< LOQ	0.1
Delta-9 THC	< LOQ	0.1
Delta-8 THC	< LOQ	0.1
CBC	< LOQ	0.1
THCA	< LOQ	0.1

LCS: LCS- PO022219		Date analyzed: 02/22/2019
Analyte	**% Recovery**	**% Recovery Criteria**
THCV	101	70-130
CBD	116	70-130
CBG	102	70-130
CBDA	90	70-130
CBN	115	70-130
Delta-9 THC	99	70-130
Delta-8 THC	87	70-130
CBC	114	70-130
THCA	88	70-130

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Report Date: 02/24/2019

Source RFID: 1A4010300008B11000027280 **Test RFID:** 1A4010300008B11000027292

Quality Control Results

Pesticide Analysis (Unit: ppm)

Testing method: SOP-010 by LC/MS/MS

Blank: MBLK-PE022319 **Date analyzed:** 02/23/2019

Analyte	Result	LOQ	State Action Level
Abamectin	< LOQ	0.25	0.5
Acephate	< LOQ	0.20	0.4
Acequinocyl	< LOQ	1.00	2.0
Acetamiprid	< LOQ	0.10	0.2
Aldicarb	< LOQ	0.20	0.4
Azoxystrobin	< LOQ	0.10	0.2
Bifenazate	< LOQ	0.10	0.2
Bifenthrin	< LOQ	0.10	0.2
Boscalid	< LOQ	0.20	0.4
Carbaryl	< LOQ	0.10	0.2
Carbofuran	< LOQ	0.10	0.2
Chloranthraniliprole	< LOQ	0.10	0.2
Chlorfenapyr	< LOQ	1.00	1.0
Chlorpyrifos	< LOQ	0.10	0.2
Clofentezine	< LOQ	0.10	0.2
Cyfluthrin	< LOQ	0.50	1.0
Cypermethrin	< LOQ	0.50	1.0
Daminozide	< LOQ	0.50	1.0
DDVP (Dichlorvos)	< LOQ	0.50	1.0
Diazinon	< LOQ	0.10	0.2
Dimethoate	< LOQ	0.10	0.2
Ethoprophos	< LOQ	0.10	0.2
Etofenprox	< LOQ	0.20	0.4
Etoxazole	< LOQ	0.10	0.2
Fenoxycarb	< LOQ	0.10	0.2
Fenpyroximate	< LOQ	0.20	0.4

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Fipronil	< LOQ	0.20	0.4
Flonicamid	< LOQ	0.50	1.0
Fludioxonil	< LOQ	0.20	0.4
Hexythiazox	< LOQ	0.50	1.0
Imazalil	< LOQ	0.10	0.2
Imidacloprid	< LOQ	0.20	0.4
Kresoxim-Methyl	< LOQ	0.20	0.4
Malathion	< LOQ	0.10	0.2
Metalaxyl	< LOQ	0.10	0.2
Methiocarb	< LOQ	0.10	0.2
Methomyl	< LOQ	0.20	0.4
Methyl_Parathion	< LOQ	0.20	0.2
MGK-264	< LOQ	0.10	0.2
Myclobutanil	< LOQ	0.10	0.2
NALED (Dibrom)	< LOQ	0.25	0.5
Oxamyl	< LOQ	0.50	1.0
Paclobutrazol	< LOQ	0.20	0.4
Permethrins	< LOQ	0.10	0.2
Phosmet	< LOQ	0.10	0.2
Piperonyl_Butoxide	< LOQ	1.00	2.0
Prallethrin	< LOQ	0.10	0.2
Propiconazole	< LOQ	0.20	0.4
Propoxur	< LOQ	0.10	0.2
Pyrethrin	< LOQ	0.50	1.0
Pyridaben	< LOQ	0.10	0.2
Spinosad	< LOQ	0.10	0.2
Spiromesifen	< LOQ	0.10	0.2
Spirotetramat	< LOQ	0.10	0.2
Spiroxamine	< LOQ	0.20	0.4
Tebuconazole	< LOQ	0.20	0.4
Thiacloprid	< LOQ	0.10	0.2
Thiamethoxam	< LOQ	0.10	0.2
Trifloxystrobin	< LOQ	0.10	0.2

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Report ID: TR-HC27292

Report Date: 02/24/2019

Source RFID: 1A4010300008B11000027280 **Test RFID:** 1A4010300008B11000027292

LCS: LCS- PE022319 **Date analyzed:** 02/23/2019

Analyte	% Recovery	% Recovery Criteria	LOQ	State Action Level
Abamectin	74	10-190	0.25	0.5
Acephate	137	30-170	0.20	0.4
Acequinocyl	67	10-190	1.00	2.0
Acetamiprid	112	30-170	0.10	0.2
Aldicarb	104	30-170	0.20	0.4
Azoxystrobin	61	30-170	0.10	0.2
Bifenazate	88	10-190	0.10	0.2
Bifenthrin	63	30-170	0.10	0.2
Boscalid	124	30-170	0.20	0.4
Carbaryl	84	30-170	0.10	0.2
Carbofuran	95	30-170	0.10	0.2
Chloranthraniliprole	74	30-170	0.10	0.2
Chlorfenapyr	54	10-190	1.00	1.0
Chlorpyrifos	72	30-170	0.10	0.2
Clofentezine	127	30-170	0.10	0.2
Cyfluthrin	88	30-170	0.50	1.0
Cypermethrin	82	30-170	0.50	1.0
Daminozide	83	30-170	0.50	1.0
DDVP (Dichlorvos)	56	30-170	0.50	1.0
Diazinon	61	30-170	0.10	0.2
Dimethoate	89	30-170	0.10	0.2
Ethoprophos	60	30-170	0.10	0.2
Etofenprox	50	30-170	0.20	0.4
Etoxazole	65	30-170	0.10	0.2
Fenoxycarb	76	30-170	0.10	0.2
Fenpyroximate	89	30-170	0.20	0.4
Fipronil	127	10-190	0.20	0.4
Flonicamid	74	10-190	0.50	1.0
Fludioxonil	53	10-190	0.20	0.4
Hexythiazox	106	10-190	0.50	1.0
Imazalil	90	10-190	0.10	0.2
Imidacloprid	120	30-170	0.20	0.4

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Kresoxim-Methyl	54	30-170	0.20	0.4
Malathion	62	30-170	0.10	0.2
Metalaxyl	74	30-170	0.10	0.2
Methiocarb	62	30-170	0.10	0.2
Methomyl	74	30-170	0.20	0.4
Methyl_Parathion	85	10-190	0.20	0.2
MGK-264	142	10-190	0.10	0.2
Myclobutanil	80	30-170	0.10	0.2
NALED (Dibrom)	131	30-170	0.25	0.5
Oxamyl	107	10-190	0.50	1.0
Paclobutrazol	101	30-170	0.20	0.4
Permethrins	38	30-170	0.10	0.2
Phosmet	85	30-170	0.10	0.2
Piperonyl_Butoxide	64	30-170	1.00	2.0
Prallethrin	86	30-170	0.10	0.2
Propiconazole	82	30-170	0.20	0.4
Propoxur	85	30-170	0.10	0.2
Pyrethrin	78	30-170	0.50	1.0
Pyridaben	64	30-170	0.10	0.2
Spinosad	89	10-190	0.10	0.2
Spiromesifen	47	30-170	0.10	0.2
Spirotetramat	94	30-170	0.10	0.2
Spiroxamine	92	30-170	0.20	0.4
Tebuconazole	103	30-170	0.20	0.4
Thiacloprid	124	30-170	0.10	0.2
Thiamethoxam	109	30-170	0.10	0.2
Trifloxystrobin	59	30-170	0.10	0.2

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Report Date: 02/24/2019

Source RFID: 1A4010300008B11000027280 **Test RFID:** 1A4010300008B11000027292

Quality Control Results

Residual Solvent Analysis (Unit: ppm)

Testing method: SOP-001 by GC/MS

Blank: MBLK-RS022319 **Date analyzed:** 02/23/2019

Analyte	Result	LOQ	State Action Level
PROPANE	< LOQ	2500	5000
ISOBUTANE	< LOQ	2500	5000
BUTANE	< LOQ	2500	5000
MEOH	< LOQ	1500	3000
ETHYLENE OXIDE	< LOQ	25	50
ISOPENTANE	< LOQ	2500	5000
PENTANE	< LOQ	2500	5000
ETHYL ETHER	< LOQ	2500	5000
ACETONE	< LOQ	2500	5000
2,2 DIMETHYLBUTANE	< LOQ	145	290
IPA	< LOQ	2500	5000
ACN	< LOQ	205	410
DICHLOROMETHANE	< LOQ	300	600
2,3DIMETHYLBUTANE	< LOQ	145	290
3-METHYLPENTANE	< LOQ	145	290
HEXANE	< LOQ	145	290
ETHYLACETATE	< LOQ	2500	5000
2-BUTANOL	< LOQ	2500	5000
THF	< LOQ	360	720
CYCLOHEXANE	< LOQ	1940	3880
ISOPROPYL ACETATE	< LOQ	2500	5000
BENZENE	< LOQ	1	2
HEPTANE	< LOQ	2500	5000
1,4 DIOXANE	< LOQ	190	380
2-ETHOXY ETHANOL	< LOQ	80	160
ETHYLENE GLYCOL	< LOQ	310	620
TOLUENE	< LOQ	445	890

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ETHYL BENZENE	< LOQ	1085	2170
M/P XYLENE	< LOQ	1085	2170
O-XYLENE	< LOQ	1085	2170
CUMENE	< LOQ	35	70

LCS: LCS- RS022319 **Date analyzed:** 02/23/2019

Analyte	% Recovery	% Recovery Criteria
PROPANE	90	10-190
ISOBUTANE	115	10-190
BUTANE	103	10-190
MEOH	79	30-170
ETHYLENE OXIDE	85	30-170
ISOPENTANE	78	30-170
PENTANE	81	30-170
ETHYL ETHER	88	30-170
ACETONE	95	30-170
2,2 DIMETHYLBUTANE	85	30-170
IPA	103	30-170
ACN	113	30-170
DICHLOROMETHANE	100	30-170
2,3DIMETHYLBUTANE	85	30-170
3-METHYLPENTANE	86	30-170
HEXANE	88	30-170
ETHYLACETATE	105	30-170
2-BUTANOL	106	30-170
THF	108	30-170
CYCLOHEXANE	91	30-170
ISOPROPYL ACETATE	109	30-170
BENZENE	104	30-170
HEPTANE	95	30-170
1,4 DIOXANE	105	30-170
2-ETHOXY ETHANOL	110	30-170
ETHYLENE GLYCOL	107	10-190

LOQ: the limit of quantitation, which is the lowest amount of analyte in a sample that can be quantitatively determined by an analytical method with a suitable precision and accuracy. N/A: not applicable.

TOLUENE	108	30-170
ETHYL BENZENE	109	30-170
M/P XYLENE	110	30-170
O-XYLENE	109	30-170
CUMENE	109	30-170

Attachments:

Note: *if answer is Yes for following items, statement is attached. Otherwise, no attachment.*

Deviation occurred in test?	Opinion and interpretation provided?
Answer:	**Answer:**
No	No

Comments: *"N/A" if there is no comment made*
N/A

Shuguo Ma, Ph.D, Quality Manager

Signature: 

Date: 24Feb2019