

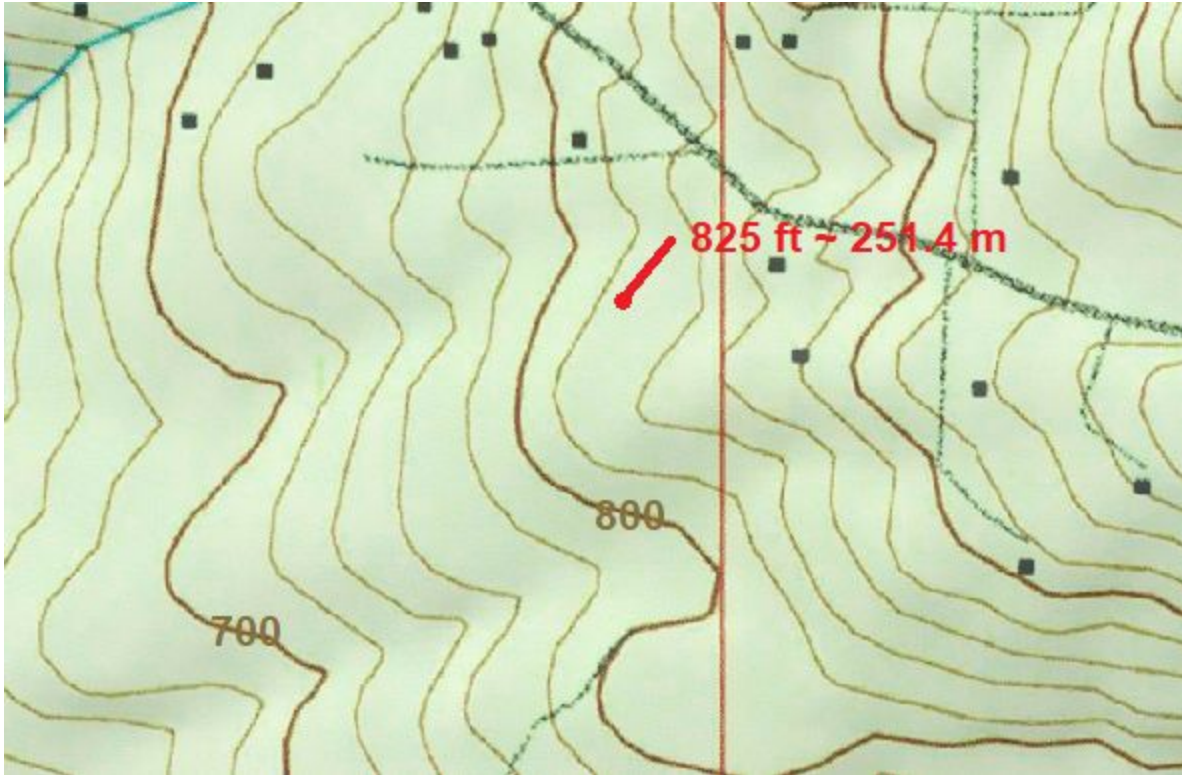
RUSTING SPROCKET ARTS
KVNX-LP 97.5 FM VANCOUVER, WASHINGTON
FAC ID NO. 196313

MINOR CHANGE OF LICENSED FACILITY

Channel 248
New Location: 45° 39' 36.6" N 122° 23' 39.3" W-- NAD 83
45° 39' 37.2" N 122° 23' 35.0" W -- NAD 27
Antenna AGL 11.7 m (co-location/combined)
Tower Total 14.6 m
Antenna Ground 251 m
Antenna COR 262.7 m
HAAT 30 m*
Power 100 w

*FCC HAAT Calculation:

Antenna Height Above Average Terrain Calculations -- Results	
Input Data	
Latitude	45° 39' 36.6" North
Longitude	122° 23' 39.3" West (NAD 83)
Height of antenna radiation center above mean sea level: 262.7 meters AMSL	
Number of Evenly Spaced Radials = 8 0° is referenced to True North	
Results	
Calculated HAAT = 30 meters	
Antenna Height Above Average Terrain calculated using 1 km GLOBE terrain data	
Individual "Radial HAAT" Values, in meters	
0°	-102.0 m
45°	-400.6 m
90°	-62.4 m
135°	94.9 m
180°	189.1 m
225°	199.2 m
270°	177.9 m
315°	147.3 m



Rusting Sprocket Art

REFERENCE

45 39 27.2 N.

CLASS = L1

DISPLAY DATES

DATA 08-24-18

122 23 35.0 W.

Current Spacings to 2nd Adj.

SEARCH 09-15-18

----- Channel 248 - 97.5 MHz -----

Call	Channel	Location	Azi	Dist	FCC	Margin
*KYCH-FM	LIC 246C	Portland	OR 231.5	30.08	92.5	-62.4
*KLVP	LIC 250C1	Aloha	OR 231.5	30.08	72.5	-42.4
KVNX-LP	LIC 248L1	Vancouver	WA 277.5	5.93	23.5	-17.6
**K248DD	LIC-D 248D	Portland	OR 207.8	25.66	38.5	-12.8
K248CN	LIC 248D	Ariel	WA 323.6	49.68	31.5	18.2
K248BS	LIC 248D	Newberg	OR 234.3	57.49	38.5	19.0

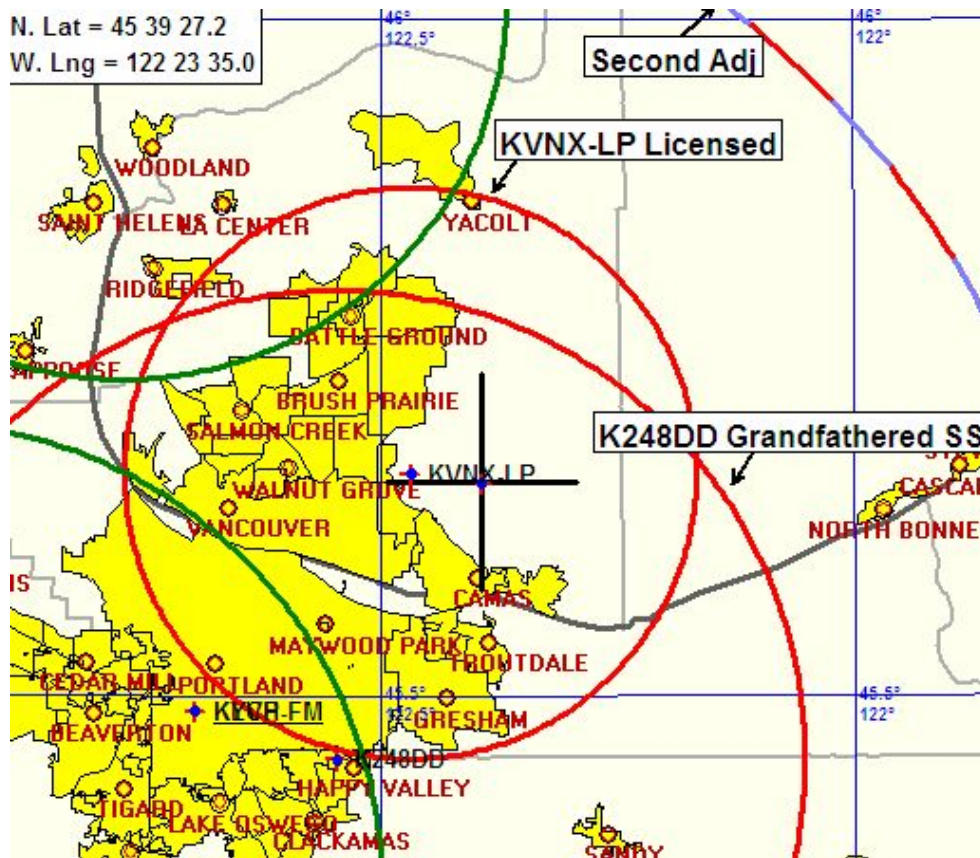
Reference station has protected zone issue: Canada

All separation margins include rounding

*See Second Adjacent Waiver

**BMPL-20140623AAH (KVNX-LP) was granted 07/17/2014 followed by BMPFT-20160729ABV (K248DD) granted 08/18/2016, establishing grandfathered short space at 23.1 km.

Proposed is 25.66 km from K238DD. 25.66 km > 23.1 km; passes.



Minor Change Move

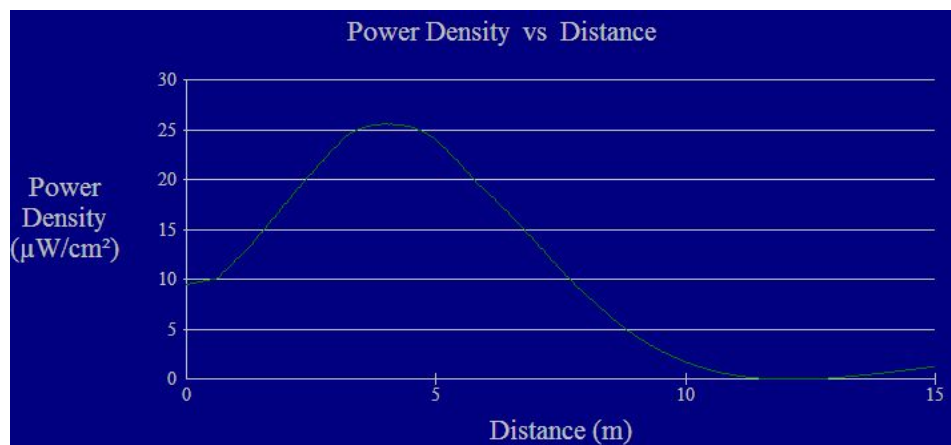
Facility proposes 5.9 km move from licensed facility, which is considered a minor change. The prescribed minor change move of up to 5.6 km in Section 73.870(a) rounds to 6.0 km, for which covers moves up to 6.499 km considering rounding.¹ Similar LPFM moves have been approved without waiver (e.g., BMPL-20150205ABP, The Rock FM Communications, Inc, LPFM, St. Cloud, MN, BMPL-20170602AAA, KOUV-LP, Recording NW, LPFM for Vancouver, WA).

60 dBu FCC Contour

¹ Rounding is used FM station distance calculation from § 73.208(c)(8). See Calvary Chapel of Costa Mesa, Inc., 27 FCC 557 (2012), where "The issue is whether a licensee filing a corrective modification of license application under Section 73.1690 may use the rounding methodology of Section 73.208", reflecting on In Leonard S. Joyce, Esq. (13 FCC Rcd at 19605) for decision, where "The staff found that rigid application of the spacing requirements in such circumstances might have a deterrent effect."

Environmental Compliance

A two bay double-v antenna was used to gauge the maximum RF for the proposal in OET program FM Model for Windows demonstrating a peak exposure of $25.6 \mu\text{W}/\text{cm}^2$ 3.7 from the antenna for a person 1.7 meters standing under the antenna considering full wave spacing. This is 13% of the FCC Maximum Permissible Exposure (MPR) for $200 \mu\text{W}/\text{cm}^2$ for Unrestricted Areas so the proposal passes compliance.



Second Adjacent Waiver Request

License respectfully requests a "second adjacent channel waiver" with regards to Section 47 C.F.R. Section 73.807 of the FCC rules based upon the "Living Way" precedence (Living Way Ministries, Inc., Memorandum Opinion and Order, 17 FCC Red 17054, 17056, ¶ 5 (2002), recon. denied 23 FCC Red 15070 (2008)). This will be accomplished by used Free Space methodology of calculation.

Using U/D methodology, at the proposed KVNXP-LP transmitter location KYCH has a signal strength of 83.6 dBu and KLVP has a signal strength of 80.9 dBu. Interference will occur when the smaller of two station's (KLVP) signal strength's interfering signal exceeds the desired signal by 40 dbu. So the area of predicted interference would then be bounded by the 120.9 dBu contour.

The distance to this contour, using free space method:

$$D = (7.01 \cdot P^{1/2}) / E,$$

where P is power (watts), E is field strength (v/m), and D is distance to contour (meters):

$$P = 100 \text{ w}, E = 120.9 \text{ dBu } D = 63.1 \text{ meters}$$

However, the field strength of the proposed LPFM's antenna system falls quickly at depression angles below the horizon. Using elevation pattern data provided by Scala for a vertical dipole antenna setup (Model FMVP3 - <https://www.kathreinusa.com/patterns/product-number-fmvmp/>), the distance to the 120.9 dBu contour at various depression angles is tabulated below. The data shows that the lowest point at which the signal strength rises to 120.9 dBu is 8.7 meters below the center of radiation of the antenna system, or 3 meter above the ground. Therefore, this is sufficient clearance, and the interference area encompasses zero population. The table below show that the lowest elevation point of the 120.9 F(50,10) interfering contour is 3 meters above ground. The antenna is located in a rural area on private property. 3 m feet is sufficient to clear the one-story private residence on the property.

Due to zero population within this radiation radius, this meets the "Living Way" Criteria to qualify for a Waiver of 47 C.F.R. Section 73.807.

Thus, the applicant requests second adjacent waiver based upon evidence no interference is proposed.

A MAX ERP
B DEPRESSION ANGLE
C RELATIVE FIELD
D dB FROM RELATIVE
E ERP
F ANGULAR DISTANCE TO 120.9 dBu CONTOUR
G VERTICAL DISTANCE (below antenna)
H HORIZONTAL DISTANCE TO 120.9 dBu CONTOUR
I CLEARANCE OF CONTOUR ABOVE GROUND

A	B	C	D	E	F	G	H	I
100	-90	0.02	-33.94	0.04	1.2	1.1	0	10.6
100	-89	0.013	-37.62	0.02	0.8	0.7	0	11
100	-88	0.01	-40	0.01	0.6	0.5	0	11.2
100	-87	0.01	-40	0.01	0.6	0.5	0	11.2
100	-86	0.01	-40	0.01	0.6	0.5	0	11.2
100	-85	0.015	-36.47	0.02	0.9	0.8	0	10.9
100	-84	0.022	-33.13	0.05	1.3	1.2	0.1	10.5
100	-83	0.029	-30.69	0.09	1.8	1.7	0.2	10
100	-82	0.036	-28.83	0.13	2.2	2.1	0.3	9.6
100	-81	0.043	-27.29	0.19	2.7	2.6	0.4	9.1
100	-80	0.05	-26.02	0.25	3.1	3	0.5	8.7

100	-79	0.057	-24.9	0.32	3.5	3.4	0.6	8.3
100	-78	0.063	-23.95	0.40	4	3.9	0.8	7.8
100	-77	0.07	-23.1	0.49	4.4	4.2	0.9	7.5
100	-76	0.076	-22.37	0.58	4.8	4.6	1.1	7.1
100	-75	0.082	-21.69	0.68	5.2	5	1.3	6.7
100	-74	0.088	-21.11	0.77	5.5	5.2	1.5	6.5
100	-73	0.093	-20.59	0.87	5.9	5.6	1.7	6.1
100	-72	0.098	-20.15	0.97	6.2	5.8	1.9	5.9
100	-71	0.103	-19.74	1.06	6.5	6.1	2.1	5.6
100	-70	0.107	-19.41	1.15	6.7	6.2	2.2	5.5
100	-69	0.111	-19.12	1.22	6.9	6.4	2.4	5.3
100	-68	0.113	-18.9	1.29	7.1	6.5	2.6	5.2
100	-67	0.116	-18.72	1.34	7.3	6.7	2.8	5
100	-66	0.117	-18.61	1.38	7.4	6.7	3	5
100	-65	0.118	-18.54	1.40	7.4	6.7	3.1	5
100	-64	0.118	-18.55	1.40	7.4	6.6	3.2	5.1
100	-63	0.117	-18.62	1.37	7.4	6.5	3.3	5.2
100	-62	0.115	-18.77	1.33	7.2	6.3	3.3	5.4
100	-61	0.112	-19	1.26	7	6.1	3.3	5.6
100	-60	0.108	-19.34	1.16	6.8	5.8	3.4	5.9
100	-59	0.103	-19.77	1.05	6.4	5.4	3.2	6.3
100	-58	0.096	-20.34	0.92	6	5	3.1	6.7
100	-57	0.088	-21.07	0.78	5.5	4.6	2.9	7.1
100	-56	0.079	-22	0.63	5	4.1	2.7	7.6
100	-55	0.069	-23.2	0.48	4.3	3.5	2.4	8.2
100	-54	0.058	-24.79	0.33	3.6	2.9	2.1	8.8
100	-53	0.045	-26.96	0.20	2.8	2.2	1.6	9.5
100	-52	0.031	-30.19	0.10	1.9	1.4	1.1	10.3
100	-51	0.016	-36.02	0.03	0.9	0.6	0.5	11.1
100	-50	0.01	-40	0.01	0.6	0.4	0.3	11.3
100	-49	0.018	-35.12	0.03	1.1	0.8	0.7	10.9
100	-48	0.036	-28.99	0.13	2.2	1.6	1.4	10.1
100	-47	0.054	-25.32	0.29	3.4	2.4	2.3	9.3
100	-46	0.073	-22.69	0.54	4.6	3.3	3.1	8.4

100	-45	0.093	-20.65	0.86	5.8	4	4.1	7.7
100	-44	0.112	-18.99	1.26	7	4.8	5	6.9
100	-43	0.132	-17.62	1.73	8.3	5.6	6	6.1
100	-42	0.15	-16.45	2.26	9.5	6.3	7	5.4
100	-41	0.169	-15.47	2.84	10.6	6.9	8	4.8
100	-40	0.186	-14.63	3.44	11.7	7.5	8.9	4.2
100	-39	0.201	-13.93	4.05	12.7	7.9	9.8	3.8
100	-38	0.215	-13.36	4.61	13.5	8.3	10.6	3.4
100	-37	0.227	-12.9	5.13	14.3	8.6	11.4	3.1
100	-36	0.236	-12.55	5.56	14.9	8.7	12	3
100	-35	0.242	-12.31	5.87	15.3	8.7	12.5	3
100	-34	0.246	-12.19	6.04	15.5	8.6	12.8	3.1
100	-33	0.246	-12.18	6.05	15.5	8.4	13	3.3
100	-32	0.242	-12.31	5.87	15.3	8.1	12.9	3.6
100	-31	0.235	-12.58	5.52	14.8	7.6	12.6	4.1
100	-30	0.224	-13.01	5.00	14.1	7	12.2	4.7
100	-29	0.208	-13.65	4.32	13.1	6.3	11.4	5.4
100	-28	0.188	-14.54	3.52	11.8	5.5	10.4	6.2
100	-27	0.163	-15.76	2.65	10.2	4.6	9	7.1
100	-26	0.134	-17.47	1.79	8.4	3.6	7.5	8.1
100	-25	0.1	-19.96	1.01	6.3	2.6	5.7	9.1
100	-24	0.063	-24.05	0.39	3.9	1.5	3.5	10.2
100	-23	0.021	-33.55	0.04	1.3	0.5	1.1	11.2
100	-22	0.025	-32.19	0.06	1.5	0.5	1.3	11.2
100	-21	0.074	-22.66	0.54	4.6	1.6	4.2	10.1
100	-20	0.126	-18	1.58	7.9	2.7	7.4	9
100	-19	0.181	-14.85	3.27	11.4	3.7	10.7	8
100	-18	0.238	-12.46	5.68	15	4.6	14.2	7.1
100	-17	0.297	-10.55	8.81	18.7	5.4	17.8	6.3
100	-16	0.357	-8.95	12.74	22.5	6.1	21.6	5.6
100	-15	0.418	-7.59	17.42	26.3	6.8	25.4	4.9
100	-14	0.478	-6.41	22.86	30.2	7.3	29.3	4.4
100	-13	0.538	-5.38	28.97	34	7.6	33.1	4.1
100	-12	0.597	-4.48	35.65	37.7	7.8	36.8	3.9

100	-11	0.654	-3.69	42.76	41.3	7.8	40.5	3.9
100	-10	0.708	-2.99	50.23	44.7	7.7	44	4
100	-9	0.759	-2.39	57.68	47.9	7.4	47.3	4.3
100	-8	0.807	-1.86	65.16	51	7	50.5	4.7
100	-7	0.85	-1.42	72.11	53.6	6.5	53.2	5.2
100	-6	0.888	-1.03	78.89	56.1	5.8	55.7	5.9
100	-5	0.921	-0.72	84.72	58.1	5	57.8	6.7
100	-4	0.949	-0.46	89.95	59.9	4.1	59.7	7.6
100	-3	0.971	-0.26	94.19	61.3	3.2	61.2	8.5
100	-2	0.987	-0.12	97.27	62.3	2.1	62.2	9.6
100	-1	0.996	-0.03	99.31	62.9	1	62.8	10.7
100	0	1	0	100.00	63.2	0	63.2	11.7
100	1	0.996	-0.03	99.31	62.9	1	62.8	10.7
100	2	0.987	-0.12	97.27	62.3	2.1	62.2	9.6
100	3	0.971	-0.26	94.19	61.3	3.2	61.2	8.5
100	4	0.949	-0.46	89.95	59.9	4.1	59.7	7.6
100	5	0.921	-0.71	84.92	58.2	5	57.9	6.7
100	6	0.888	-1.03	78.89	56.1	5.8	55.7	5.9
100	7	0.85	-1.42	72.11	53.6	6.5	53.2	5.2
100	8	0.807	-1.86	65.16	51	7	50.5	4.7
100	9	0.759	-2.39	57.68	47.9	7.4	47.3	4.3
100	10	0.708	-2.99	50.23	44.7	7.7	44	4
100	11	0.654	-3.69	42.76	41.3	7.8	40.5	3.9
100	12	0.597	-4.48	35.65	37.7	7.8	36.8	3.9
100	13	0.538	-5.38	28.97	34	7.6	33.1	4.1
100	14	0.478	-6.41	22.86	30.2	7.3	29.3	4.4
100	15	0.418	-7.59	17.42	26.3	6.8	25.4	4.9
100	16	0.357	-8.95	12.74	22.5	6.1	21.6	5.6
100	17	0.297	-10.55	8.81	18.7	5.4	17.8	6.3
100	18	0.238	-12.46	5.68	15	4.6	14.2	7.1
100	19	0.181	-14.85	3.27	11.4	3.7	10.7	8
100	20	0.126	-18	1.58	7.9	2.7	7.4	9
100	21	0.074	-22.66	0.54	4.6	1.6	4.2	10.1
100	22	0.025	-32.19	0.06	1.5	0.5	1.3	11.2

100	23	0.021	-33.56	0.04	1.3	0.5	1.1	11.2
100	24	0.063	-24.05	0.39	3.9	1.5	3.5	10.2
100	25	0.1	-19.97	1.01	6.3	2.6	5.7	9.1
100	26	0.134	-17.47	1.79	8.4	3.6	7.5	8.1
100	27	0.163	-15.76	2.65	10.2	4.6	9	7.1
100	28	0.188	-14.54	3.52	11.8	5.5	10.4	6.2
100	29	0.208	-13.65	4.32	13.1	6.3	11.4	5.4
100	30	0.224	-13.01	5.00	14.1	7	12.2	4.7
100	31	0.235	-12.58	5.52	14.8	7.6	12.6	4.1
100	32	0.242	-12.31	5.87	15.3	8.1	12.9	3.6
100	33	0.246	-12.18	6.05	15.5	8.4	13	3.3
100	34	0.246	-12.19	6.04	15.5	8.6	12.8	3.1
100	35	0.242	-12.31	5.87	15.3	8.7	12.5	3
100	36	0.236	-12.55	5.56	14.9	8.7	12	3
100	37	0.227	-12.9	5.13	14.3	8.6	11.4	3.1
100	38	0.215	-13.36	4.61	13.5	8.3	10.6	3.4
100	39	0.201	-13.93	4.05	12.7	7.9	9.8	3.8
100	40	0.186	-14.63	3.44	11.7	7.5	8.9	4.2
100	41	0.169	-15.47	2.84	10.6	6.9	8	4.8
100	42	0.15	-16.45	2.26	9.5	6.3	7	5.4
100	43	0.132	-17.62	1.73	8.3	5.6	6	6.1
100	44	0.112	-18.99	1.26	7	4.8	5	6.9
100	45	0.093	-20.65	0.86	5.8	4	4.1	7.7
100	46	0.073	-22.69	0.54	4.6	3.3	3.1	8.4
100	47	0.054	-25.32	0.29	3.4	2.4	2.3	9.3
100	48	0.036	-28.99	0.13	2.2	1.6	1.4	10.1
100	49	0.018	-35.12	0.03	1.1	0.8	0.7	10.9
100	50	0.01	-40	0.01	0.6	0.4	0.3	11.3
100	51	0.016	-36.03	0.02	0.9	0.6	0.5	11.1
100	52	0.031	-30.19	0.10	1.9	1.4	1.1	10.3
100	53	0.045	-26.96	0.20	2.8	2.2	1.6	9.5
100	54	0.058	-24.79	0.33	3.6	2.9	2.1	8.8
100	55	0.069	-23.2	0.48	4.3	3.5	2.4	8.2
100	56	0.079	-22	0.63	5	4.1	2.7	7.6

100	57	0.088	-21.07	0.78	5.5	4.6	2.9	7.1
100	58	0.096	-20.34	0.92	6	5	3.1	6.7
100	59	0.103	-19.77	1.05	6.4	5.4	3.2	6.3
100	60	0.108	-19.34	1.16	6.8	5.8	3.4	5.9
100	61	0.112	-19	1.26	7	6.1	3.3	5.6
100	62	0.115	-18.77	1.33	7.2	6.3	3.3	5.4
100	63	0.117	-18.62	1.37	7.4	6.5	3.3	5.2
100	64	0.118	-18.55	1.40	7.4	6.6	3.2	5.1
100	65	0.118	-18.54	1.40	7.4	6.7	3.1	5
100	66	0.117	-18.61	1.38	7.4	6.7	3	5
100	67	0.116	-18.72	1.34	7.3	6.7	2.8	5
100	68	0.113	-18.9	1.29	7.1	6.5	2.6	5.2
100	69	0.111	-19.12	1.22	6.9	6.4	2.4	5.3
100	70	0.107	-19.41	1.15	6.7	6.2	2.2	5.5
100	71	0.103	-19.74	1.06	6.5	6.1	2.1	5.6
100	72	0.098	-20.15	0.97	6.2	5.8	1.9	5.9
100	73	0.093	-20.59	0.87	5.9	5.6	1.7	6.1
100	74	0.088	-21.11	0.77	5.5	5.2	1.5	6.5
100	75	0.082	-21.69	0.68	5.2	5	1.3	6.7
100	76	0.076	-22.37	0.58	4.8	4.6	1.1	7.1
100	77	0.07	-23.1	0.49	4.4	4.2	0.9	7.5
100	78	0.063	-23.95	0.40	4	3.9	0.8	7.8
100	79	0.057	-24.9	0.32	3.5	3.4	0.6	8.3
100	80	0.05	-26.02	0.25	3.1	3	0.5	8.7
100	81	0.043	-27.29	0.19	2.7	2.6	0.4	9.1
100	82	0.036	-28.83	0.13	2.2	2.1	0.3	9.6
100	83	0.029	-30.69	0.09	1.8	1.7	0.2	10
100	84	0.022	-33.13	0.05	1.3	1.2	0.1	10.5
100	85	0.015	-36.47	0.02	0.9	0.8	0	10.9
100	86	0.01	-40	0.01	0.6	0.5	0	11.2
100	87	0.01	-40	0.01	0.6	0.5	0	11.2
100	88	0.01	-40	0.01	0.6	0.5	0	11.2
100	89	0.013	-37.62	0.02	0.8	0.7	0	11
100	90	0.02	-33.94	0.04	1.2	1.1	0	10.6

