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**Engineering Statement
Amendment to Application for
CP Modification for KIUA-LD
Channel 15 at Lincoln, NE
March 2021**

I. Background

This Engineering Statement has been prepared on behalf of DTV America Corporation (“DTVA”), the permittee of low power digital station KIUA-LD at Lincoln, NE. This material has been prepared in connection with an amendment to an application for minor modification of construction permit. This amendment makes an adjustment in the pattern rotation, to ensure that the proposed noise limited contour overlaps the corresponding contour of the original construction permit facility.

II. Interference Study

Study has been made of all cochannel and adjacent-channel facilities in the vicinity of the proposed operation, including a detailed Longley-Rice interference study to demonstrate that the proposed operation will not cause interference to any authorized or pending proposed facilities. This study was performed using the Commission’s TVStudy software.

The results of this study indicate that the proposed facility is predicted to cause zero additional interference to any of the listed stations. Based on the foregoing interference study, it is believed that the proposed facility can operate without risk of interference to other stations.

Study created: 2021.03.15 09:26:46

Study build station data: LMS TV 2021-02-27

Proposal: KIUA-LD D15 LD APP LINCOLN, NE
File number: KIUA-M-DA280W-15-STR
Facility ID: 183625
Station data: User record
Record ID: 1183
Country: U.S.

Build options:
Protect pre-transition records not on baseline channel

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	KTIV	D14	DT	LIC	SIOUX CITY, IA	BLANK0000063868	245.2 km
No	KOCW	D14	DT	LIC	HOISINGTON, KS	BLCDT20090622AFO	254.6
No	K14SY-D	D14	LD	CP	COLUMBUS, NE	BLANK0000071775	85.1
No	K15FD-D	D15	LD	LIC	HOLYOKE, CO	BLDTT20110502ABF	368.5
No	K15MD-D	D15	LD	LIC	WRAY, CO	BLANK0000072277	367.0
No	K26PI-D	N15z	TX	LIC	SALINA, KS	BLTTL19880714IH	224.3
No	KSNW	D15	DT	LIC	WICHITA, KS	BLANK0000107924	342.2
No	K15DD-D	D15	LD	LIC	WICHITA, KS	BLDTL20110331AHX	353.0
No	KSMN	D15	DT	LIC	WORTHINGTON, MN	BLEDT20051219AGX	380.7
No	K45IO-D	D15	LD	CP	KANSAS CITY, MO	BLANK0000130642	359.2
No	KNPN-LD	D15	LD	LIC	SAINT JOSEPH, MO	BLANK0000064322	294.1
Yes	KFXL-TV	D15	DT	LIC	LINCOLN, NE	BLANK0000105938	117.9
No	K15JW-D	D15	LD	CP	PLANKINTON, SD	BNPDTL20100510AJD	322.3
No	KOOD	D16	DT	LIC	HAYS, KS	BLEDT20030423ABE	237.1
No	KTKA-TV	D16	DT	LIC	TOPEKA, KS	BLANK0000122453	268.2
No	K16NO-D	D16	LD	CP	BEATRICE / FAIRBURY, NE	BLANK0000071827	113.0
No	KMJF-LD	D16	LD	LIC	COLUMBUS, NE	BLANK0000055199	93.8

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D15
Mask: Stringent
Latitude: 40 49 44.80 N (NAD83)
Longitude: 98 0 30.60 W
Height AMSL: 643.7 m
HAAT: 0.0 m
Peak ERP: 15.0 kW
Antenna: ERI ALP-W 280.0 deg
Elev Pattnr: Generic

48.8 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	14.3 kW	94.1 m	44.2 km
45.0	6.19	110.1	41.9
90.0	0.960	108.8	32.3
135.0	3.08	109.8	38.4
180.0	10.7	105.6	44.2
225.0	14.2	95.7	44.4
270.0	14.6	86.1	43.3
315.0	12.9	85.7	42.6

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m Computed HAAT: 99 m

Distance to Canadian border: 908.2 km

Distance to Mexican border: 1257.7 km

Conditions at FCC monitoring station: Grand Island NE
Bearing: 286.5 degrees Distance: 36.8 km

Hatfield & Dawson Consulting Engineers

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 265.3 degrees Distance: 614.5 km

No land mobile station failures found

Proposal is not within the Offshore Radio Service protected area

Study cell size: 1.00 km
Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%
Maximum new IX to LPTV: 2.00%

No IX check failures found.

III. RF Exposure Study

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\mu W / cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

D is the distance in meters from the center of radiation to the calculation point.

Power density levels produced by the proposed facility were calculated for an elevation of 2 meters above ground using the manufacturer's vertical plane pattern for the circularly-polarized ERI ALP8L3 antenna proposed in this application. The highest calculated power density from the proposed antenna alone occurs at a point 38 meters from the base of the antenna support structure. At this point the power density from the proposed facility is calculated to be 5.2 $\mu W/cm^2$, which is 1.6% of 317.3 $\mu W/cm^2$ (the FCC maximum for uncontrolled environments at the Channel 15 frequency).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 500 meters from the base of the antenna support structure. Section

1.1307(b)(3) of the Commission's Rules excludes applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicant's proposed facility are predicted to be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 *et seq* and no further analysis of RF exposure at this site is required in this application.

Pursuant to OET Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken. The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency exposure in excess of FCC guidelines.

March 15, 2021

Erik C. Swanson, P.E.

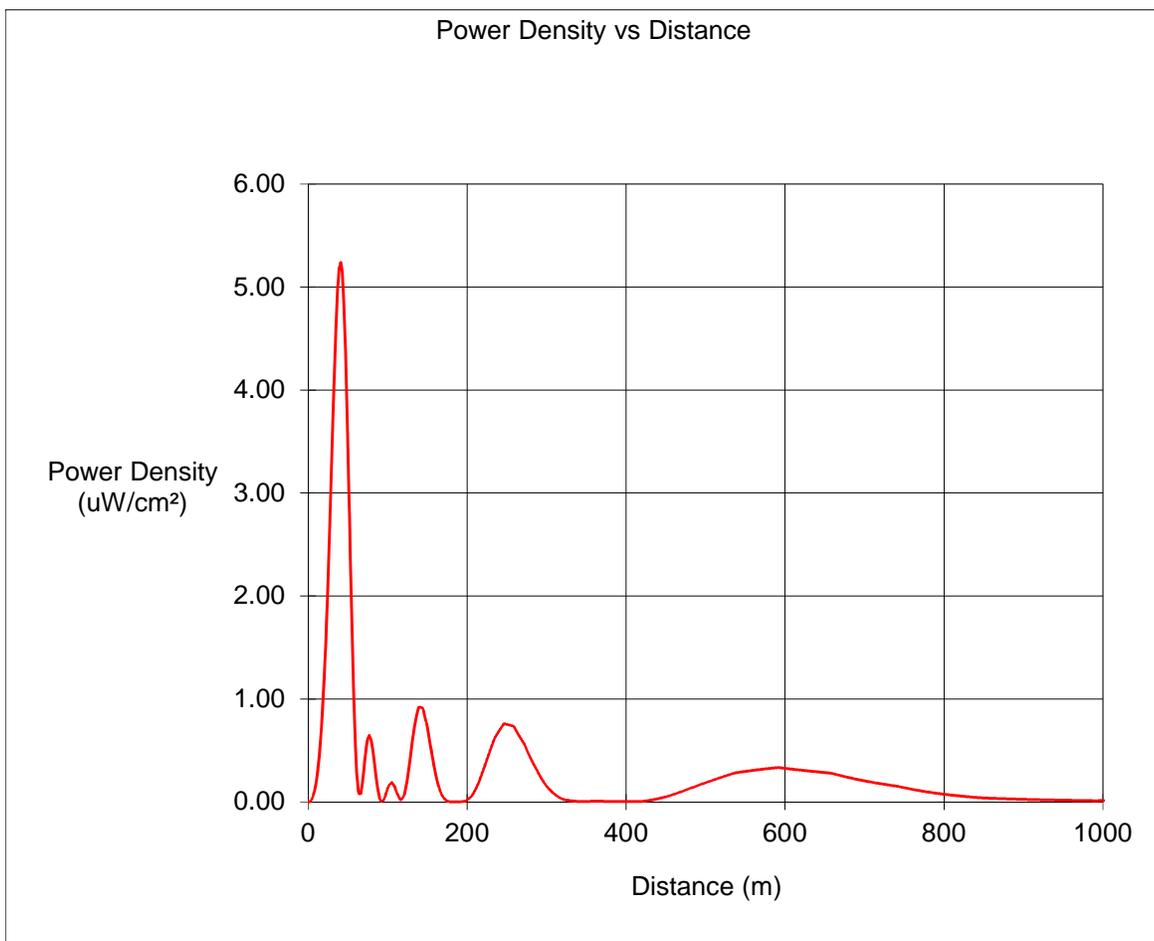
KIUA-LD Ch15 Lincoln

Ground-Level Power Density Calculations

Using Manufacturer's Vertical Plane Pattern

Antenna	ERI ALP8L3		
ERP	15,000	Watts H (avg)	
	15,000	Watts V (avg)	
Antenna AGL	106.1	meters less 2m is	104.1 meters above the reference plane
MBT	0	degrees	

Calculated Maximum is 5.2 uW/cm² at 40 meters from the tower



**KIUA-LD Ch15 Lincoln
Ground-Level Power Density Calculations
Using Manufacturer's Vertical Plane Pattern**

Distance From Tower (meters)	Hypotenuse (meters)	Depression Angle (with MBT adjust) (degrees)	Interpolated Rel Field	Adjusted ERP (watts)	Power Density uW/cm ²
0	104.10	90.00	0.000	0.0	0.00
1	104.10	89.45	0.005	0.7	0.00
2	104.12	88.90	0.010	2.9	0.01
3	104.14	88.35	0.014	6.1	0.02
4	104.18	87.80	0.019	10.8	0.03
5	104.22	87.25	0.024	18.0	0.06
6	104.27	86.70	0.030	26.4	0.08
7	104.34	86.15	0.035	36.0	0.11
8	104.41	85.61	0.040	47.9	0.15
9	104.49	85.06	0.045	61.9	0.19
10	104.58	84.51	0.051	79.1	0.24
11	104.68	83.97	0.057	98.8	0.30
12	104.79	83.42	0.064	122.5	0.37
13	104.91	82.88	0.071	149.3	0.45
14	105.04	82.34	0.078	180.5	0.55
15	105.18	81.80	0.085	215.7	0.65
16	105.32	81.26	0.092	255.7	0.77
17	105.48	80.73	0.100	299.1	0.90
18	105.64	80.19	0.107	345.7	1.03
19	105.82	79.66	0.115	397.8	1.19
20	106.00	79.12	0.123	454.8	1.35
21	106.20	78.59	0.131	518.6	1.54
22	106.40	78.07	0.140	587.4	1.73
23	106.61	77.54	0.149	664.2	1.95
24	106.83	77.02	0.158	746.1	2.18
25	107.06	76.50	0.167	832.4	2.43
26	107.30	75.98	0.175	922.7	2.68
27	107.54	75.46	0.184	1011.7	2.92
28	107.80	74.95	0.192	1104.5	3.18
29	108.06	74.43	0.200	1200.8	3.44
30	108.34	73.92	0.208	1299.7	3.70
31	108.62	73.42	0.216	1396.4	3.95
32	108.91	72.91	0.223	1493.7	4.21
33	109.21	72.41	0.230	1582.2	4.43
34	109.51	71.91	0.236	1669.1	4.65
35	109.83	71.42	0.241	1740.0	4.82
36	110.15	70.92	0.246	1808.6	4.98
37	110.48	70.43	0.249	1859.5	5.09
38	110.82	69.95	0.252	1907.6	5.19
39	111.17	69.46	0.254	1929.6	5.22
40	111.52	68.98	0.255	1950.5	5.24
41	111.88	68.50	0.255	1943.2	5.19
42	112.25	68.03	0.254	1935.9	5.13
43	112.63	67.56	0.251	1888.4	4.97
44	113.02	67.09	0.248	1839.4	4.81

45	113.41	66.62	0.242	1763.7	4.58
46	113.81	66.16	0.237	1684.0	4.34
47	114.22	65.70	0.230	1581.8	4.05
48	114.63	65.25	0.221	1470.9	3.74
49	115.06	64.79	0.212	1351.5	3.41
50	115.49	64.34	0.202	1223.2	3.06
51	115.92	63.90	0.191	1096.4	2.73
52	116.36	63.46	0.179	959.0	2.37
53	116.82	63.02	0.167	831.8	2.04
54	117.27	62.58	0.152	695.2	1.69
55	117.74	62.15	0.138	571.1	1.38
56	118.21	61.72	0.123	455.9	1.09
57	118.68	61.30	0.108	352.5	0.84
58	119.17	60.88	0.094	262.3	0.62
59	119.66	60.46	0.078	184.7	0.43
60	120.15	60.04	0.064	121.0	0.28
61	120.66	59.63	0.052	80.1	0.18
62	121.16	59.22	0.040	48.6	0.11
63	121.68	58.82	0.034	35.1	0.08
64	122.20	58.42	0.035	35.9	0.08
65	122.73	58.02	0.035	36.7	0.08
66	123.26	57.63	0.044	57.1	0.13
67	123.80	57.23	0.053	83.0	0.18
68	124.34	56.85	0.062	113.6	0.25
69	124.89	56.46	0.070	148.5	0.32
70	125.45	56.08	0.079	187.8	0.40
71	126.01	55.70	0.086	220.5	0.46
72	126.57	55.33	0.092	252.3	0.53
73	127.14	54.96	0.097	283.9	0.59
74	127.72	54.59	0.100	299.1	0.61
75	128.30	54.23	0.102	314.6	0.64
76	128.89	53.87	0.104	322.0	0.65
77	129.48	53.51	0.103	315.4	0.63
78	130.08	53.16	0.101	308.9	0.61
79	130.68	52.81	0.099	292.1	0.57
80	131.29	52.46	0.094	267.9	0.52
81	131.90	52.11	0.090	245.0	0.47
82	132.52	51.77	0.084	212.8	0.40
83	133.14	51.43	0.077	178.4	0.34
84	133.76	51.10	0.070	147.4	0.28
85	134.39	50.77	0.062	115.2	0.21
86	135.03	50.44	0.053	85.6	0.16
87	135.67	50.11	0.045	60.6	0.11
88	136.31	49.79	0.036	38.3	0.07
89	136.96	49.47	0.026	20.5	0.04
90	137.61	49.15	0.017	8.3	0.01
91	138.27	48.84	0.013	4.9	0.01
92	138.93	48.53	0.014	6.2	0.01
93	139.59	48.22	0.016	7.6	0.01
94	140.26	47.92	0.019	10.9	0.02
95	140.93	47.62	0.027	21.2	0.04
96	141.61	47.32	0.034	34.8	0.06

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File number: KIUA-M-DA280W-15-STR
Facility ID: 183625
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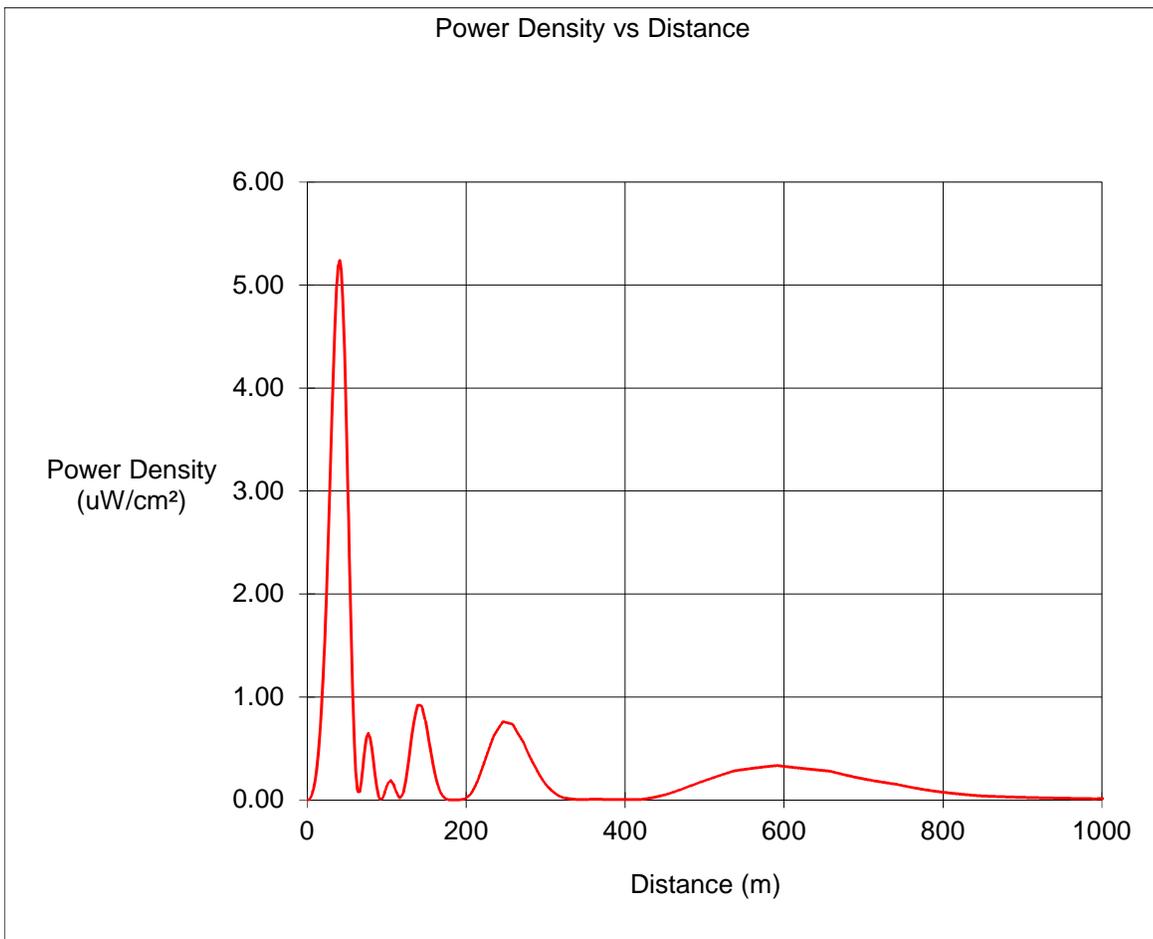
KIUA-LD Ch15 Lincoln

Ground-Level Power Density Calculations

Using Manufacturer's Vertical Plane Pattern

Antenna	ERI ALP8L3		
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	15,000	Watts V (avg)	
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**KIUA-LD Ch15 Lincoln
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Using Manufacturer's Vertical Plane Pattern**

Distance From Tower (meters)	Hypotenuse (meters)	Depression Angle (with MBT adjust) (degrees)	Interpolated Rel Field	Adjusted ERP (watts)	Power Density uW/cm ²
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1	104.10	89.45	0.005	0.7	0.00
2	104.12	88.90	0.010	2.9	0.01
3	104.14	88.35	0.014	6.1	0.02
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21	106.20	78.59	0.131	518.6	1.54
22	106.40	78.07	0.140	587.4	1.73
23	106.61	77.54	0.149	664.2	1.95
24	106.83	77.02	0.158	746.1	2.18
25	107.06	76.50	0.167	832.4	2.43
26	107.30	75.98	0.175	922.7	2.68
27	107.54	75.46	0.184	1011.7	2.92
28	107.80	74.95	0.192	1104.5	3.18
29	108.06	74.43	0.200	1200.8	3.44
30	108.34	73.92	0.208	1299.7	3.70
31	108.62	73.42	0.216	1396.4	3.95
32	108.91	72.91	0.223	1493.7	4.21
33	109.21	72.41	0.230	1582.2	4.43
34	109.51	71.91	0.236	1669.1	4.65
35	109.83	71.42	0.241	1740.0	4.82
36	110.15	70.92	0.246	1808.6	4.98
37	110.48	70.43	0.249	1859.5	5.09
38	110.82	69.95	0.252	1907.6	5.19
39	111.17	69.46	0.254	1929.6	5.22
40	111.52	68.98	0.255	1950.5	5.24
41	111.88	68.50	0.255	1943.2	5.19
42	112.25	68.03	0.254	1935.9	5.13
43	112.63	67.56	0.251	1888.4	4.97
44	113.02	67.09	0.248	1839.4	4.81

45	113.41	66.62	0.242	1763.7	4.58
46	113.81	66.16	0.237	1684.0	4.34
47	114.22	65.70	0.230	1581.8	4.05
48	114.63	65.25	0.221	1470.9	3.74
49	115.06	64.79	0.212	1351.5	3.41
50	115.49	64.34	0.202	1223.2	3.06
51	115.92	63.90	0.191	1096.4	2.73
52	116.36	63.46	0.179	959.0	2.37
53	116.82	63.02	0.167	831.8	2.04
54	117.27	62.58	0.152	695.2	1.69
55	117.74	62.15	0.138	571.1	1.38
56	118.21	61.72	0.123	455.9	1.09
57	118.68	61.30	0.108	352.5	0.84
58	119.17	60.88	0.094	262.3	0.62
59	119.66	60.46	0.078	184.7	0.43
60	120.15	60.04	0.064	121.0	0.28
61	120.66	59.63	0.052	80.1	0.18
62	121.16	59.22	0.040	48.6	0.11
63	121.68	58.82	0.034	35.1	0.08
64	122.20	58.42	0.035	35.9	0.08
65	122.73	58.02	0.035	36.7	0.08
66	123.26	57.63	0.044	57.1	0.13
67	123.80	57.23	0.053	83.0	0.18
68	124.34	56.85	0.062	113.6	0.25
69	124.89	56.46	0.070	148.5	0.32
70	125.45	56.08	0.079	187.8	0.40
71	126.01	55.70	0.086	220.5	0.46
72	126.57	55.33	0.092	252.3	0.53
73	127.14	54.96	0.097	283.9	0.59
74	127.72	54.59	0.100	299.1	0.61
75	128.30	54.23	0.102	314.6	0.64
76	128.89	53.87	0.104	322.0	0.65
77	129.48	53.51	0.103	315.4	0.63
78	130.08	53.16	0.101	308.9	0.61
79	130.68	52.81	0.099	292.1	0.57
80	131.29	52.46	0.094	267.9	0.52
81	131.90	52.11	0.090	245.0	0.47
82	132.52	51.77	0.084	212.8	0.40
83	133.14	51.43	0.077	178.4	0.34
84	133.76	51.10	0.070	147.4	0.28
85	134.39	50.77	0.062	115.2	0.21
86	135.03	50.44	0.053	85.6	0.16
87	135.67	50.11	0.045	60.6	0.11
88	136.31	49.79	0.036	38.3	0.07
89	136.96	49.47	0.026	20.5	0.04
90	137.61	49.15	0.017	8.3	0.01
91	138.27	48.84	0.013	4.9	0.01
92	138.93	48.53	0.014	6.2	0.01
93	139.59	48.22	0.016	7.6	0.01
94	140.26	47.92	0.019	10.9	0.02
95	140.93	47.62	0.027	21.2	0.04
96	141.61	47.32	0.034	34.8	0.06