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**Engineering Statement
FM Translator K280FJ
NIER Study for License Application
September 2010**

Background

FM translator K280FJ has been constructed as authorized in BPFT-20100312AAW on Channel 280D (103.9 MHz) with a maximum lobe effective radiated power of 250 watts. The antenna is installed on a wooden pole on Sevenmile Hill, adjacent to the tower on which the combined operations of KACI-FM and KMSW are located.

The construction permit bears a condition which states:

Warning signs which describe the radiofrequency electromagnetic field radiation hazard must be posted at appropriate intervals. Access must be restricted to prevent the exposure of humans to RF emissions in excess of the FCC guidelines (OET Bulletin 65, Edition 97-01, released August 1997). Permittee shall submit documentation of compliance with this special operating condition when filing FCC Form 350, application for license.

Based on the calculations which are detailed below, it is my considered engineering judgement that no warning signs or site access controls are necessary in the instant case.

NIER Calculations

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.

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

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.

Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the K280FJ antenna system have been made using the manufacturer's vertical plane pattern for the Scala HDCA5-CP antenna to be used. The highest calculated ground level power density occurs at a distance of 11 meters from the base of the antenna support structure. At this point the power density is calculated to be 40.7 $\mu\text{W}/\text{cm}^2$.

The Scala HDCA5-CP antenna utilized for this installation is a single antenna, not an array. Included with this Engineering Statement is a complete tabulation of the Scala HDCA5-CP vertical plane radiation pattern as provided by Scala (the antenna manufacturer) along with the calculated ground-level power density from the antenna at 1 meter increments from the antenna. A sample calculation is provided to demonstrate that these calculations were performed correctly using appropriate mathematical principles and the formula from OET Bulletin No. 65.

Calculations of the power density produced by the KACI-FM and KMSW(FM) antenna systems have been made using the Commission's FMModel software program, and are summarized in the following table:

Call	Avg or Peak ERP Antenna Model	Antenna Height AGL	Calculated Max Exposure	Gen Pub FCC Limit	% of Limit
K280FJ 280D	0.25 kW avg Scala HDCA5-CP	10 m	40.7 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	20.4%
KACI-FM	5.1 kW avg JAM JMPC-2	42 m	39.9 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	20.0%
KMSW(FM)	3.4 kW avg JAM JMPC-2	42 m	26.6 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	13.3%

These calculations show that the maximum calculated power density produced at two meters above ground level by the operation of K280FJ and the operations of the other stations at this site (were their maxima to coincide, which they do not) is 51.7% of the FCC standard for uncontrolled environments. Therefore, no warning signs or site access controls are necessary in the instant case.

Alternative Worst-Case Method

The K280FJ antenna is installed on a wooden pole which is 43 meters horizontally from the tower on which the KACI-FM/KMSW antenna is installed. Even if one assumes use of the "worst case" ring-stub element pattern for the K280FJ antenna, it is clear from review of the power density data calculated by the FMModel software that all of these stations produce their highest calculated ground level power density values at less than 43 meters from their antennas. The highest calculated value from K280FJ is 156.8 $\mu\text{W}/\text{cm}^2$ at 2 meters, and the highest calculated value from the combined KACI-FM/KMSW operation is 66.6 $\mu\text{W}/\text{cm}^2$ at 23 meters.

On the following spreadsheet, the values calculated by FMModel have been summed at 1 meter increments between the two antenna support structures. The maximum total calculated ground level power density along this line is 191.5 $\mu\text{W}/\text{cm}^2$, which is 95.8% of the FCC standard for uncontrolled environments.

In fact, since the K280FJ antenna is highly directional and pointed roughly perpendicular to the line

between the two tower sites, the actual ground level power densities along this line would be expected to be significantly lower than indicated by this worst-case calculation.

**Sum of K280FJ and KACI-FM/KMSW Contributions
Along the Line Between the Antennas
(43 meter distance between tower sites)**

K280FJ 1-bay ring-stub 250W C-pol 10m AGL		KACI-FM + KMSW Jampro JMPC-2 8.5 kW total C-pol 42m AGL		Total Power Density uW/cm ²
Distance From K280FJ (meters)	Power Density uW/cm ²	Distance From KACI/KMSW (meters)	Power Density uW/cm ²	
0	130.5	43	28.3	158.8
1	144.8	42	30.7	175.5
2	156.8	41	33.3	190.1
3	155.7	40	35.8	191.5
4	152.7	39	38.2	190.9
5	142.8	38	40.6	183.4
6	131.1	37	43.0	174.1
7	116.4	36	45.3	161.7
8	103.8	35	47.5	151.3
9	90.7	34	49.6	140.3
10	83.7	33	51.9	135.6
11	80.8	32	54.5	135.3
12	74.6	31	56.9	131.5
13	67.0	30	59.3	126.3
14	60.5	29	61.5	122.0
15	55.2	28	63.5	118.7
16	50.5	27	64.7	115.2
17	46.3	26	65.6	111.9
18	42.0	25	66.2	108.2
19	38.1	24	66.5	104.6
20	34.7	23	66.6	101.3
21	31.7	22	66.5	98.2
22	29.1	21	66.2	95.3
23	26.8	20	65.5	92.3
24	24.8	19	64.5	89.3
25	22.9	18	62.8	85.7
26	21.3	17	60.6	81.9
27	19.8	16	58.2	78.0
28	18.5	15	55.6	74.1
29	17.3	14	53.0	70.3
30	16.2	13	50.5	66.7
31	15.3	12	47.8	63.1
32	14.5	11	45.0	59.5
33	13.7	10	42.3	56.0
34	13.0	9	39.6	52.6
35	12.3	8	36.9	49.2
36	11.7	7	34.2	45.9
37	11.2	6	32.0	43.2
38	10.6	5	29.8	40.4
39	10.1	4	27.5	37.6
40	9.7	3	26.2	35.9
41	9.3	2	25.7	35.0
42	8.9	1	25.3	34.2
43	8.5	0	24.9	33.4

Statement of Engineer

This Engineering Statement, relative to the license application for FM translator K280FJ at The Dalles, Oregon, has been prepared by the undersigned. All representations contained herein are true to the best of my knowledge. I am an experienced radio engineer whose qualifications are a matter of record with the Federal Communications Commission. I am a staff engineer in the firm of Hatfield and Dawson Consulting Engineers and am Registered as a Professional Engineer in the States of Washington and Colorado.

September 30, 2010



Erik C. Swanson, P.E.

Hatfield & Dawson Consulting Engineers

Sample Calculation

At 11 meters from the base of the antenna support structure, the slant distance to a point 2 meters above ground level is 13.6 meters. This is determined by simple trigonometry, determining the length of the hypotenuse for a right triangle which is 11 meters along the base and 8 meters in height:

$$a^2 + b^2 = c^2$$

$$11^2 + 8^2 = c^2$$

$$c = 13.6 \text{ meters} = \text{hypotenuse}$$

The corresponding depression angle is identical to the angle between the base and hypotenuse, and is determined here as the inverse of the sine of the height over the hypotenuse of the right triangle:

$$\sin(\text{angle}) = \text{opposite} / \text{hypotenuse}$$

$$\sin(\text{angle}) = 8 / 13.6$$

$$\sin(\text{angle}) = 0.5882$$

$$\text{angle} = 36.03 \text{ degrees}$$

From the vertical plane pattern tabulation for the Scala HDCA5-CP antenna, the relative field value at a depression angle of 36 degrees is 0.672. We use this relative field value to arrive at the adjusted ERP in watts at the depression angle:

$$\text{adjusted ERP} = (\text{watts H} + \text{watts V}) (\text{relative field squared})$$

$$\text{adjusted ERP} = (250 + 250) (0.672^2)$$

$$\text{adjusted ERP} = 225.8 \text{ watts}$$

By plugging this value into the formula from OET Bulletin 65, we arrive at the calculated ground-level power density:

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

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.

Thus, for an adjusted ERP of 225.8 watts and a distance of 13.6 meters, *S* is calculated to equal 40.8 $\mu\text{W}/\text{cm}^2$. This calculated value is slightly (just 0.1 $\mu\text{W}/\text{cm}^2$) higher than that indicated on the attached spreadsheet, owing to the fact that the spreadsheet takes the extra step of interpolating the relative field value at a depression angle 36.03 degrees.

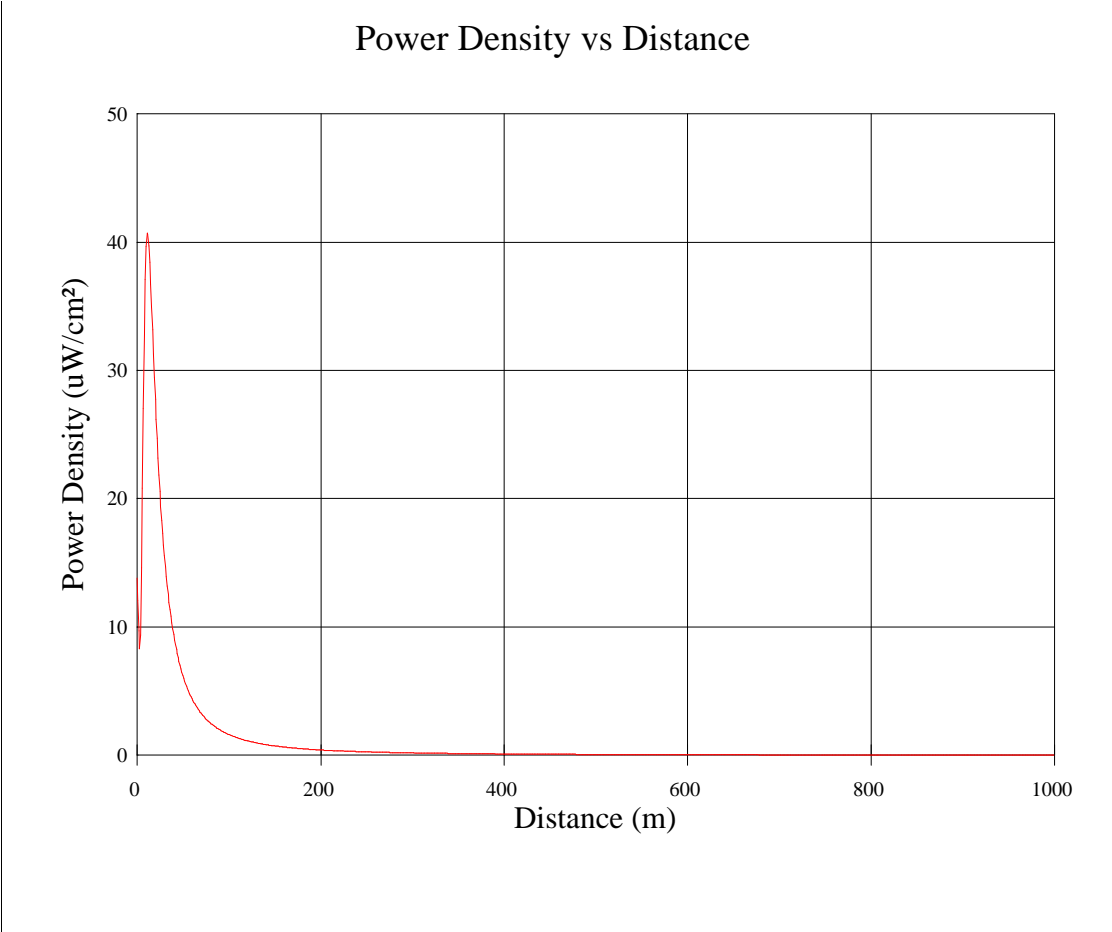
Vertical Plane Radiation Pattern for Scala HDCA5-CP Antenna
Downloaded from Kathrein Scala Pattern & Download Library

Depression Angle	Relative Field		
0	1.000	45	0.458
1	0.997	46	0.439
2	0.994	47	0.420
3	0.992	48	0.401
4	0.989	49	0.382
5	0.986	50	0.363
6	0.982	51	0.346
7	0.978	52	0.329
8	0.974	53	0.312
9	0.971	54	0.295
10	0.966	55	0.278
11	0.958	56	0.263
12	0.951	57	0.248
13	0.943	58	0.233
14	0.935	59	0.218
15	0.928	60	0.203
16	0.916	61	0.193
17	0.905	62	0.182
18	0.894	63	0.171
19	0.882	64	0.161
20	0.871	65	0.150
21	0.857	66	0.148
22	0.843	67	0.145
23	0.830	68	0.143
24	0.816	69	0.141
25	0.802	70	0.138
26	0.787	71	0.138
27	0.772	72	0.137
28	0.757	73	0.136
29	0.742	74	0.135
30	0.727	75	0.134
31	0.710	76	0.136
32	0.693	77	0.137
33	0.677	78	0.138
34	0.660	79	0.140
35	0.643	80	0.141
36	0.625	81	0.143
37	0.607	82	0.146
38	0.589	83	0.148
39	0.571	84	0.150
40	0.553	85	0.153
41	0.534	86	0.153
42	0.515	87	0.154
43	0.496	88	0.155
44	0.477	89	0.156
		90	0.157

Ground-Level Power Density Calculations
K280FJ The Dalles

Antenna HDCA5CP
ERP 250 Watts H (avg)
 250 Watts V (avg)
Antenna AGL 10 meters less 2m is 8 meters above the reference plane

Calculated
Maximum is 40.7 uW/cm² at 11 meters from the tower



Distance From Tower	Hypotenuse	Depression Angle	Interp Rel Field	Adjusted ERP in watts	Power Density uW/cm²
0	8.00	90.00	0.2300	26.5	13.8
1	8.06	82.87	0.2166	23.5	12.1
2	8.25	75.96	0.1989	19.8	9.7
3	8.54	69.44	0.1906	18.2	8.3
4	8.94	63.43	0.2122	22.5	9.4
5	9.43	57.99	0.2791	38.9	14.6
6	10.00	53.13	0.3529	62.3	20.8
7	10.63	48.81	0.4275	91.4	27.0
8	11.31	45.00	0.5010	125.5	32.8
9	12.04	41.63	0.5673	160.9	37.1
10	12.81	38.66	0.6241	194.8	39.7
11	13.60	36.03	0.6715	225.5	40.7
12	14.42	33.69	0.7110	252.7	40.6
13	15.26	31.61	0.7443	277.0	39.7
14	16.12	29.74	0.7736	299.2	38.4
15	17.00	28.07	0.7970	317.6	36.7

16	17.89	26.57	0.8181	334.6	34.9
17	18.79	25.20	0.8372	350.4	33.2
18	19.70	23.96	0.8525	363.3	31.3
19	20.62	22.83	0.8660	375.0	29.5
20	21.54	21.80	0.8784	385.8	27.8
21	22.47	20.85	0.8897	395.8	26.2
22	23.41	19.98	0.9002	405.1	24.7
23	24.35	19.18	0.9074	411.7	23.2
24	25.30	18.43	0.9147	418.3	21.8
25	26.25	17.74	0.9213	424.4	20.6
26	27.20	17.10	0.9271	429.7	19.4
27	28.16	16.50	0.9325	434.7	18.3
28	29.12	15.95	0.9375	439.5	17.3
29	30.08	15.42	0.9428	444.4	16.4
30	31.05	14.93	0.9473	448.7	15.6
31	32.02	14.47	0.9496	450.9	14.7
32	32.98	14.04	0.9518	453.0	13.9
33	33.96	13.63	0.9546	455.6	13.2
34	34.93	13.24	0.9573	458.2	12.5
35	35.90	12.88	0.9597	460.6	11.9
36	36.88	12.53	0.9618	462.6	11.4
37	37.85	12.20	0.9638	464.5	10.8
38	38.83	11.89	0.9656	466.1	10.3
39	39.81	11.59	0.9670	467.6	9.9
40	40.79	11.31	0.9685	468.9	9.4
41	41.77	11.04	0.9698	470.3	9.0
42	42.76	10.78	0.9715	471.9	8.6
43	43.74	10.54	0.9732	473.6	8.3
44	44.72	10.30	0.9749	475.2	7.9
45	45.71	10.08	0.9764	476.7	7.6
46	46.69	9.87	0.9773	477.5	7.3
47	47.68	9.66	0.9777	477.9	7.0
48	48.66	9.46	0.9781	478.3	6.7
49	49.65	9.27	0.9785	478.7	6.5
50	50.64	9.09	0.9788	479.0	6.2
51	51.62	8.91	0.9793	479.5	6.0
52	52.61	8.75	0.9798	480.0	5.8
53	53.60	8.58	0.9802	480.4	5.6
54	54.59	8.43	0.9807	480.9	5.4
55	55.58	8.28	0.9812	481.3	5.2
56	56.57	8.13	0.9816	481.8	5.0
57	57.56	7.99	0.9820	482.2	4.9
58	58.55	7.85	0.9824	482.6	4.7
59	59.54	7.72	0.9828	483.0	4.6
60	60.53	7.59	0.9832	483.4	4.4
61	61.52	7.47	0.9836	483.7	4.3
62	62.51	7.35	0.9839	484.1	4.1
63	63.51	7.24	0.9843	484.4	4.0
64	64.50	7.13	0.9846	484.7	3.9
65	65.49	7.02	0.9850	485.1	3.8
66	66.48	6.91	0.9852	485.3	3.7
67	67.48	6.81	0.9854	485.5	3.6
68	68.47	6.71	0.9856	485.7	3.5
69	69.46	6.61	0.9858	485.9	3.4
70	70.46	6.52	0.9860	486.1	3.3
71	71.45	6.43	0.9861	486.2	3.2
72	72.44	6.34	0.9863	486.4	3.1
73	73.44	6.25	0.9865	486.6	3.0
74	74.43	6.17	0.9867	486.7	2.9
75	75.43	6.09	0.9868	486.9	2.9

76	76.42	6.01	0.9870	487.1	2.8
77	77.41	5.93	0.9872	487.3	2.7
78	78.41	5.86	0.9874	487.5	2.6
79	79.40	5.78	0.9877	487.7	2.6
80	80.40	5.71	0.9879	487.9	2.5
81	81.39	5.64	0.9881	488.1	2.5
82	82.39	5.57	0.9883	488.4	2.4
83	83.38	5.51	0.9885	488.5	2.3
84	84.38	5.44	0.9887	488.7	2.3
85	85.38	5.38	0.9889	488.9	2.2
86	86.37	5.31	0.9891	489.1	2.2
87	87.37	5.25	0.9892	489.3	2.1
88	88.36	5.19	0.9894	489.5	2.1
89	89.36	5.14	0.9896	489.6	2.0
90	90.35	5.08	0.9898	489.8	2.0
91	91.35	5.02	0.9899	490.0	2.0
92	92.35	4.97	0.9901	490.1	1.9
93	93.34	4.92	0.9902	490.2	1.9
94	94.34	4.86	0.9903	490.3	1.8
95	95.34	4.81	0.9904	490.4	1.8
96	96.33	4.76	0.9905	490.5	1.8
97	97.33	4.71	0.9906	490.6	1.7
98	98.33	4.67	0.9907	490.7	1.7
99	99.32	4.62	0.9908	490.8	1.7
100	100.32	4.57	0.9909	490.9	1.6
101	101.32	4.53	0.9909	491.0	1.6
102	102.31	4.48	0.9910	491.1	1.6
103	103.31	4.44	0.9911	491.2	1.5
104	104.31	4.40	0.9912	491.2	1.5
105	105.30	4.36	0.9913	491.3	1.5
106	106.30	4.32	0.9914	491.4	1.5
107	107.30	4.28	0.9914	491.5	1.4
108	108.30	4.24	0.9915	491.6	1.4
109	109.29	4.20	0.9916	491.6	1.4
110	110.29	4.16	0.9917	491.7	1.4
111	111.29	4.12	0.9918	491.8	1.3
112	112.29	4.09	0.9918	491.9	1.3
113	113.28	4.05	0.9919	491.9	1.3
114	114.28	4.01	0.9920	492.0	1.3
115	115.28	3.98	0.9920	492.1	1.2
116	116.28	3.95	0.9921	492.1	1.2
117	117.27	3.91	0.9922	492.2	1.2
118	118.27	3.88	0.9922	492.3	1.2
119	119.27	3.85	0.9923	492.3	1.2
120	120.27	3.81	0.9924	492.4	1.1
121	121.26	3.78	0.9924	492.5	1.1
122	122.26	3.75	0.9925	492.5	1.1
123	123.26	3.72	0.9926	492.6	1.1
124	124.26	3.69	0.9926	492.6	1.1
125	125.26	3.66	0.9927	492.7	1.0
126	126.25	3.63	0.9927	492.8	1.0
127	127.25	3.60	0.9928	492.8	1.0
128	128.25	3.58	0.9928	492.9	1.0
129	129.25	3.55	0.9929	492.9	1.0
130	130.25	3.52	0.9930	493.0	1.0
131	131.24	3.49	0.9930	493.0	1.0
132	132.24	3.47	0.9931	493.1	0.9
133	133.24	3.44	0.9931	493.1	0.9
134	134.24	3.42	0.9932	493.2	0.9
135	135.24	3.39	0.9932	493.2	0.9

136	136.24	3.37	0.9933	493.3	0.9
137	137.23	3.34	0.9933	493.3	0.9
138	138.23	3.32	0.9934	493.4	0.9
139	139.23	3.29	0.9934	493.4	0.9
140	140.23	3.27	0.9935	493.5	0.8
141	141.23	3.25	0.9935	493.5	0.8
142	142.23	3.22	0.9936	493.6	0.8
143	143.22	3.20	0.9936	493.6	0.8
144	144.22	3.18	0.9936	493.7	0.8
145	145.22	3.16	0.9937	493.7	0.8
146	146.22	3.14	0.9937	493.7	0.8
147	147.22	3.12	0.9938	493.8	0.8
148	148.22	3.09	0.9938	493.8	0.8
149	149.21	3.07	0.9939	493.9	0.7
150	150.21	3.05	0.9939	493.9	0.7
151	151.21	3.03	0.9939	494.0	0.7
152	152.21	3.01	0.9940	494.0	0.7
153	153.21	2.99	0.9940	494.0	0.7
154	154.21	2.97	0.9941	494.1	0.7
155	155.21	2.95	0.9941	494.1	0.7
156	156.20	2.94	0.9941	494.1	0.7
157	157.20	2.92	0.9942	494.2	0.7
158	158.20	2.90	0.9942	494.2	0.7
159	159.20	2.88	0.9942	494.3	0.7
160	160.20	2.86	0.9943	494.3	0.6
161	161.20	2.84	0.9943	494.3	0.6
162	162.20	2.83	0.9943	494.4	0.6
163	163.20	2.81	0.9944	494.4	0.6
164	164.20	2.79	0.9944	494.4	0.6
165	165.19	2.78	0.9944	494.5	0.6
166	166.19	2.76	0.9945	494.5	0.6
167	167.19	2.74	0.9945	494.5	0.6
168	168.19	2.73	0.9945	494.6	0.6
169	169.19	2.71	0.9946	494.6	0.6
170	170.19	2.69	0.9946	494.6	0.6
171	171.19	2.68	0.9946	494.7	0.6
172	172.19	2.66	0.9947	494.7	0.6
173	173.18	2.65	0.9947	494.7	0.6
174	174.18	2.63	0.9947	494.7	0.5
175	175.18	2.62	0.9948	494.8	0.5
176	176.18	2.60	0.9948	494.8	0.5
177	177.18	2.59	0.9948	494.8	0.5
178	178.18	2.57	0.9949	494.9	0.5
179	179.18	2.56	0.9949	494.9	0.5
180	180.18	2.54	0.9949	494.9	0.5
181	181.18	2.53	0.9949	495.0	0.5
182	182.18	2.52	0.9950	495.0	0.5
183	183.17	2.50	0.9950	495.0	0.5
184	184.17	2.49	0.9950	495.0	0.5
185	185.17	2.48	0.9950	495.1	0.5
186	186.17	2.46	0.9951	495.1	0.5
187	187.17	2.45	0.9951	495.1	0.5
188	188.17	2.44	0.9951	495.1	0.5
189	189.17	2.42	0.9952	495.2	0.5
190	190.17	2.41	0.9952	495.2	0.5
191	191.17	2.40	0.9952	495.2	0.5
192	192.17	2.39	0.9952	495.2	0.4
193	193.17	2.37	0.9953	495.3	0.4
194	194.16	2.36	0.9953	495.3	0.4
195	195.16	2.35	0.9953	495.3	0.4

196	196.16	2.34	0.9953	495.3	0.4
197	197.16	2.33	0.9953	495.4	0.4
198	198.16	2.31	0.9954	495.4	0.4
199	199.16	2.30	0.9954	495.4	0.4
200	200.16	2.29	0.9954	495.4	0.4
201	201.16	2.28	0.9954	495.5	0.4
202	202.16	2.27	0.9955	495.5	0.4
203	203.16	2.26	0.9955	495.5	0.4
204	204.16	2.25	0.9955	495.5	0.4
205	205.16	2.23	0.9955	495.5	0.4
206	206.16	2.22	0.9956	495.6	0.4
207	207.15	2.21	0.9956	495.6	0.4
208	208.15	2.20	0.9956	495.6	0.4
209	209.15	2.19	0.9956	495.6	0.4
210	210.15	2.18	0.9956	495.6	0.4
211	211.15	2.17	0.9957	495.7	0.4
212	212.15	2.16	0.9957	495.7	0.4
213	213.15	2.15	0.9957	495.7	0.4
214	214.15	2.14	0.9957	495.7	0.4
215	215.15	2.13	0.9957	495.7	0.4
216	216.15	2.12	0.9958	495.8	0.4
217	217.15	2.11	0.9958	495.8	0.4
218	218.15	2.10	0.9958	495.8	0.3
219	219.15	2.09	0.9958	495.8	0.3
220	220.15	2.08	0.9958	495.8	0.3
221	221.14	2.07	0.9959	495.9	0.3
222	222.14	2.06	0.9959	495.9	0.3
223	223.14	2.05	0.9959	495.9	0.3
224	224.14	2.05	0.9959	495.9	0.3
225	225.14	2.04	0.9959	495.9	0.3
226	226.14	2.03	0.9959	496.0	0.3
227	227.14	2.02	0.9960	496.0	0.3
228	228.14	2.01	0.9960	496.0	0.3
229	229.14	2.00	0.9960	496.0	0.3
230	230.14	1.99	0.9960	496.0	0.3
231	231.14	1.98	0.9960	496.0	0.3
232	232.14	1.97	0.9961	496.1	0.3
233	233.14	1.97	0.9961	496.1	0.3
234	234.14	1.96	0.9961	496.1	0.3
235	235.14	1.95	0.9961	496.1	0.3
236	236.14	1.94	0.9961	496.1	0.3
237	237.13	1.93	0.9961	496.1	0.3
238	238.13	1.93	0.9961	496.2	0.3
239	239.13	1.92	0.9962	496.2	0.3
240	240.13	1.91	0.9962	496.2	0.3
241	241.13	1.90	0.9962	496.2	0.3
242	242.13	1.89	0.9962	496.2	0.3
243	243.13	1.89	0.9962	496.2	0.3
244	244.13	1.88	0.9962	496.3	0.3
245	245.13	1.87	0.9963	496.3	0.3
246	246.13	1.86	0.9963	496.3	0.3
247	247.13	1.86	0.9963	496.3	0.3
248	248.13	1.85	0.9963	496.3	0.3
249	249.13	1.84	0.9963	496.3	0.3
250	250.13	1.83	0.9963	496.3	0.3
251	251.13	1.83	0.9963	496.4	0.3
252	252.13	1.82	0.9964	496.4	0.3
253	253.13	1.81	0.9964	496.4	0.3
254	254.13	1.80	0.9964	496.4	0.3
255	255.13	1.80	0.9964	496.4	0.3

256	256.12	1.79	0.9964	496.4	0.3
257	257.12	1.78	0.9964	496.4	0.3
258	258.12	1.78	0.9964	496.5	0.2
259	259.12	1.77	0.9965	496.5	0.2
260	260.12	1.76	0.9965	496.5	0.2
261	261.12	1.76	0.9965	496.5	0.2
262	262.12	1.75	0.9965	496.5	0.2
263	263.12	1.74	0.9965	496.5	0.2
264	264.12	1.74	0.9965	496.5	0.2
265	265.12	1.73	0.9965	496.5	0.2
266	266.12	1.72	0.9966	496.6	0.2
267	267.12	1.72	0.9966	496.6	0.2
268	268.12	1.71	0.9966	496.6	0.2
269	269.12	1.70	0.9966	496.6	0.2
270	270.12	1.70	0.9966	496.6	0.2
271	271.12	1.69	0.9966	496.6	0.2
272	272.12	1.68	0.9966	496.6	0.2
273	273.12	1.68	0.9966	496.6	0.2
274	274.12	1.67	0.9967	496.7	0.2
275	275.12	1.67	0.9967	496.7	0.2
276	276.12	1.66	0.9967	496.7	0.2
277	277.12	1.65	0.9967	496.7	0.2
278	278.12	1.65	0.9967	496.7	0.2
279	279.11	1.64	0.9967	496.7	0.2
280	280.11	1.64	0.9967	496.7	0.2
281	281.11	1.63	0.9967	496.7	0.2
282	282.11	1.62	0.9968	496.8	0.2
283	283.11	1.62	0.9968	496.8	0.2
284	284.11	1.61	0.9968	496.8	0.2
285	285.11	1.61	0.9968	496.8	0.2
286	286.11	1.60	0.9968	496.8	0.2
287	287.11	1.60	0.9968	496.8	0.2
288	288.11	1.59	0.9968	496.8	0.2
289	289.11	1.59	0.9968	496.8	0.2
290	290.11	1.58	0.9968	496.8	0.2
291	291.11	1.57	0.9969	496.9	0.2
292	292.11	1.57	0.9969	496.9	0.2
293	293.11	1.56	0.9969	496.9	0.2
294	294.11	1.56	0.9969	496.9	0.2
295	295.11	1.55	0.9969	496.9	0.2
296	296.11	1.55	0.9969	496.9	0.2
297	297.11	1.54	0.9969	496.9	0.2
298	298.11	1.54	0.9969	496.9	0.2
299	299.11	1.53	0.9969	496.9	0.2
300	300.11	1.53	0.9969	496.9	0.2
301	301.11	1.52	0.9970	497.0	0.2
302	302.11	1.52	0.9970	497.0	0.2
303	303.11	1.51	0.9970	497.0	0.2
304	304.11	1.51	0.9970	497.0	0.2
305	305.10	1.50	0.9970	497.0	0.2
306	306.10	1.50	0.9970	497.0	0.2
307	307.10	1.49	0.9970	497.0	0.2
308	308.10	1.49	0.9970	497.0	0.2
309	309.10	1.48	0.9970	497.0	0.2
310	310.10	1.48	0.9970	497.0	0.2
311	311.10	1.47	0.9971	497.1	0.2
312	312.10	1.47	0.9971	497.1	0.2
313	313.10	1.46	0.9971	497.1	0.2
314	314.10	1.46	0.9971	497.1	0.2
315	315.10	1.45	0.9971	497.1	0.2

316	316.10	1.45	0.9971	497.1	0.2
317	317.10	1.45	0.9971	497.1	0.2
318	318.10	1.44	0.9971	497.1	0.2
319	319.10	1.44	0.9971	497.1	0.2
320	320.10	1.43	0.9971	497.1	0.2
321	321.10	1.43	0.9971	497.1	0.2
322	322.10	1.42	0.9972	497.2	0.2
323	323.10	1.42	0.9972	497.2	0.2
324	324.10	1.41	0.9972	497.2	0.2
325	325.10	1.41	0.9972	497.2	0.2
326	326.10	1.41	0.9972	497.2	0.2
327	327.10	1.40	0.9972	497.2	0.2
328	328.10	1.40	0.9972	497.2	0.2
329	329.10	1.39	0.9972	497.2	0.2
330	330.10	1.39	0.9972	497.2	0.2
331	331.10	1.38	0.9972	497.2	0.2
332	332.10	1.38	0.9972	497.2	0.2
333	333.10	1.38	0.9972	497.3	0.1
334	334.10	1.37	0.9973	497.3	0.1
335	335.10	1.37	0.9973	497.3	0.1
336	336.10	1.36	0.9973	497.3	0.1
337	337.09	1.36	0.9973	497.3	0.1
338	338.09	1.36	0.9973	497.3	0.1
339	339.09	1.35	0.9973	497.3	0.1
340	340.09	1.35	0.9973	497.3	0.1
341	341.09	1.34	0.9973	497.3	0.1
342	342.09	1.34	0.9973	497.3	0.1
343	343.09	1.34	0.9973	497.3	0.1
344	344.09	1.33	0.9973	497.3	0.1
345	345.09	1.33	0.9973	497.3	0.1
346	346.09	1.32	0.9974	497.4	0.1
347	347.09	1.32	0.9974	497.4	0.1
348	348.09	1.32	0.9974	497.4	0.1
349	349.09	1.31	0.9974	497.4	0.1
350	350.09	1.31	0.9974	497.4	0.1
351	351.09	1.31	0.9974	497.4	0.1
352	352.09	1.30	0.9974	497.4	0.1
353	353.09	1.30	0.9974	497.4	0.1
354	354.09	1.29	0.9974	497.4	0.1
355	355.09	1.29	0.9974	497.4	0.1
356	356.09	1.29	0.9974	497.4	0.1
357	357.09	1.28	0.9974	497.4	0.1
358	358.09	1.28	0.9974	497.4	0.1
359	359.09	1.28	0.9974	497.5	0.1
360	360.09	1.27	0.9975	497.5	0.1
361	361.09	1.27	0.9975	497.5	0.1
362	362.09	1.27	0.9975	497.5	0.1
363	363.09	1.26	0.9975	497.5	0.1
364	364.09	1.26	0.9975	497.5	0.1
365	365.09	1.26	0.9975	497.5	0.1
366	366.09	1.25	0.9975	497.5	0.1
367	367.09	1.25	0.9975	497.5	0.1
368	368.09	1.25	0.9975	497.5	0.1
369	369.09	1.24	0.9975	497.5	0.1
370	370.09	1.24	0.9975	497.5	0.1
371	371.09	1.24	0.9975	497.5	0.1
372	372.09	1.23	0.9975	497.5	0.1
373	373.09	1.23	0.9975	497.5	0.1
374	374.09	1.23	0.9975	497.6	0.1
375	375.09	1.22	0.9976	497.6	0.1

376	376.09	1.22	0.9976	497.6	0.1
377	377.08	1.22	0.9976	497.6	0.1
378	378.08	1.21	0.9976	497.6	0.1
379	379.08	1.21	0.9976	497.6	0.1
380	380.08	1.21	0.9976	497.6	0.1
381	381.08	1.20	0.9976	497.6	0.1
382	382.08	1.20	0.9976	497.6	0.1
383	383.08	1.20	0.9976	497.6	0.1
384	384.08	1.19	0.9976	497.6	0.1
385	385.08	1.19	0.9976	497.6	0.1
386	386.08	1.19	0.9976	497.6	0.1
387	387.08	1.18	0.9976	497.6	0.1
388	388.08	1.18	0.9976	497.6	0.1
389	389.08	1.18	0.9976	497.6	0.1
390	390.08	1.18	0.9976	497.7	0.1
391	391.08	1.17	0.9977	497.7	0.1
392	392.08	1.17	0.9977	497.7	0.1
393	393.08	1.17	0.9977	497.7	0.1
394	394.08	1.16	0.9977	497.7	0.1
395	395.08	1.16	0.9977	497.7	0.1
396	396.08	1.16	0.9977	497.7	0.1
397	397.08	1.15	0.9977	497.7	0.1
398	398.08	1.15	0.9977	497.7	0.1
399	399.08	1.15	0.9977	497.7	0.1
400	400.08	1.15	0.9977	497.7	0.1
401	401.08	1.14	0.9977	497.7	0.1
402	402.08	1.14	0.9977	497.7	0.1
403	403.08	1.14	0.9977	497.7	0.1
404	404.08	1.13	0.9977	497.7	0.1
405	405.08	1.13	0.9977	497.7	0.1
406	406.08	1.13	0.9977	497.7	0.1
407	407.08	1.13	0.9977	497.8	0.1
408	408.08	1.12	0.9978	497.8	0.1
409	409.08	1.12	0.9978	497.8	0.1
410	410.08	1.12	0.9978	497.8	0.1
411	411.08	1.12	0.9978	497.8	0.1
412	412.08	1.11	0.9978	497.8	0.1
413	413.08	1.11	0.9978	497.8	0.1
414	414.08	1.11	0.9978	497.8	0.1
415	415.08	1.10	0.9978	497.8	0.1
416	416.08	1.10	0.9978	497.8	0.1
417	417.08	1.10	0.9978	497.8	0.1
418	418.08	1.10	0.9978	497.8	0.1
419	419.08	1.09	0.9978	497.8	0.1
420	420.08	1.09	0.9978	497.8	0.1
421	421.08	1.09	0.9978	497.8	0.1
422	422.08	1.09	0.9978	497.8	0.1
423	423.08	1.08	0.9978	497.8	0.1
424	424.08	1.08	0.9978	497.8	0.1
425	425.08	1.08	0.9978	497.8	0.1
426	426.08	1.08	0.9978	497.9	0.1
427	427.07	1.07	0.9979	497.9	0.1
428	428.07	1.07	0.9979	497.9	0.1
429	429.07	1.07	0.9979	497.9	0.1
430	430.07	1.07	0.9979	497.9	0.1
431	431.07	1.06	0.9979	497.9	0.1
432	432.07	1.06	0.9979	497.9	0.1
433	433.07	1.06	0.9979	497.9	0.1
434	434.07	1.06	0.9979	497.9	0.1
435	435.07	1.05	0.9979	497.9	0.1

436	436.07	1.05	0.9979	497.9	0.1
437	437.07	1.05	0.9979	497.9	0.1
438	438.07	1.05	0.9979	497.9	0.1
439	439.07	1.04	0.9979	497.9	0.1
440	440.07	1.04	0.9979	497.9	0.1
441	441.07	1.04	0.9979	497.9	0.1
442	442.07	1.04	0.9979	497.9	0.1
443	443.07	1.03	0.9979	497.9	0.1
444	444.07	1.03	0.9979	497.9	0.1
445	445.07	1.03	0.9979	497.9	0.1
446	446.07	1.03	0.9979	497.9	0.1
447	447.07	1.03	0.9979	498.0	0.1
448	448.07	1.02	0.9980	498.0	0.1
449	449.07	1.02	0.9980	498.0	0.1
450	450.07	1.02	0.9980	498.0	0.1
451	451.07	1.02	0.9980	498.0	0.1
452	452.07	1.01	0.9980	498.0	0.1
453	453.07	1.01	0.9980	498.0	0.1
454	454.07	1.01	0.9980	498.0	0.1
455	455.07	1.01	0.9980	498.0	0.1
456	456.07	1.01	0.9980	498.0	0.1
457	457.07	1.00	0.9980	498.0	0.1
458	458.07	1.00	0.9980	498.0	0.1
459	459.07	1.00	0.9980	498.0	0.1
460	460.07	1.00	0.9980	498.0	0.1
461	461.07	0.99	0.9980	498.0	0.1
462	462.07	0.99	0.9980	498.0	0.1
463	463.07	0.99	0.9980	498.0	0.1
464	464.07	0.99	0.9980	498.0	0.1
465	465.07	0.99	0.9980	498.0	0.1
466	466.07	0.98	0.9980	498.0	0.1
467	467.07	0.98	0.9980	498.0	0.1
468	468.07	0.98	0.9980	498.0	0.1
469	469.07	0.98	0.9980	498.0	0.1
470	470.07	0.98	0.9980	498.1	0.1
471	471.07	0.97	0.9981	498.1	0.1
472	472.07	0.97	0.9981	498.1	0.1
473	473.07	0.97	0.9981	498.1	0.1
474	474.07	0.97	0.9981	498.1	0.1
475	475.07	0.96	0.9981	498.1	0.1
476	476.07	0.96	0.9981	498.1	0.1
477	477.07	0.96	0.9981	498.1	0.1
478	478.07	0.96	0.9981	498.1	0.1
479	479.07	0.96	0.9981	498.1	0.1
480	480.07	0.95	0.9981	498.1	0.1
481	481.07	0.95	0.9981	498.1	0.1
482	482.07	0.95	0.9981	498.1	0.1
483	483.07	0.95	0.9981	498.1	0.1
484	484.07	0.95	0.9981	498.1	0.1
485	485.07	0.94	0.9981	498.1	0.1
486	486.07	0.94	0.9981	498.1	0.1
487	487.07	0.94	0.9981	498.1	0.1
488	488.07	0.94	0.9981	498.1	0.1
489	489.07	0.94	0.9981	498.1	0.1
490	490.07	0.94	0.9981	498.1	0.1
491	491.07	0.93	0.9981	498.1	0.1
492	492.07	0.93	0.9981	498.1	0.1
493	493.06	0.93	0.9981	498.1	0.1
494	494.06	0.93	0.9981	498.1	0.1
495	495.06	0.93	0.9981	498.1	0.1

496	496.06	0.92	0.9982	498.2	0.1
497	497.06	0.92	0.9982	498.2	0.1
498	498.06	0.92	0.9982	498.2	0.1
499	499.06	0.92	0.9982	498.2	0.1
500	500.06	0.92	0.9982	498.2	0.1
501	501.06	0.91	0.9982	498.2	0.1
502	502.06	0.91	0.9982	498.2	0.1
503	503.06	0.91	0.9982	498.2	0.1
504	504.06	0.91	0.9982	498.2	0.1
505	505.06	0.91	0.9982	498.2	0.1
506	506.06	0.91	0.9982	498.2	0.1
507	507.06	0.90	0.9982	498.2	0.1
508	508.06	0.90	0.9982	498.2	0.1
509	509.06	0.90	0.9982	498.2	0.1
510	510.06	0.90	0.9982	498.2	0.1
511	511.06	0.90	0.9982	498.2	0.1
512	512.06	0.90	0.9982	498.2	0.1
513	513.06	0.89	0.9982	498.2	0.1
514	514.06	0.89	0.9982	498.2	0.1
515	515.06	0.89	0.9982	498.2	0.1
516	516.06	0.89	0.9982	498.2	0.1
517	517.06	0.89	0.9982	498.2	0.1
518	518.06	0.88	0.9982	498.2	0.1
519	519.06	0.88	0.9982	498.2	0.1
520	520.06	0.88	0.9982	498.2	0.1
521	521.06	0.88	0.9982	498.2	0.1
522	522.06	0.88	0.9982	498.2	0.1
523	523.06	0.88	0.9982	498.2	0.1
524	524.06	0.87	0.9983	498.3	0.1
525	525.06	0.87	0.9983	498.3	0.1
526	526.06	0.87	0.9983	498.3	0.1
527	527.06	0.87	0.9983	498.3	0.1
528	528.06	0.87	0.9983	498.3	0.1
529	529.06	0.87	0.9983	498.3	0.1
530	530.06	0.86	0.9983	498.3	0.1
531	531.06	0.86	0.9983	498.3	0.1
532	532.06	0.86	0.9983	498.3	0.1
533	533.06	0.86	0.9983	498.3	0.1
534	534.06	0.86	0.9983	498.3	0.1
535	535.06	0.86	0.9983	498.3	0.1
536	536.06	0.86	0.9983	498.3	0.1
537	537.06	0.85	0.9983	498.3	0.1
538	538.06	0.85	0.9983	498.3	0.1
539	539.06	0.85	0.9983	498.3	0.1
540	540.06	0.85	0.9983	498.3	0.1
541	541.06	0.85	0.9983	498.3	0.1
542	542.06	0.85	0.9983	498.3	0.1
543	543.06	0.84	0.9983	498.3	0.1
544	544.06	0.84	0.9983	498.3	0.1
545	545.06	0.84	0.9983	498.3	0.1
546	546.06	0.84	0.9983	498.3	0.1
547	547.06	0.84	0.9983	498.3	0.1
548	548.06	0.84	0.9983	498.3	0.1
549	549.06	0.83	0.9983	498.3	0.1
550	550.06	0.83	0.9983	498.3	0.1
551	551.06	0.83	0.9983	498.3	0.1
552	552.06	0.83	0.9983	498.3	0.1
553	553.06	0.83	0.9983	498.3	0.1
554	554.06	0.83	0.9983	498.3	0.1
555	555.06	0.83	0.9983	498.3	0.1

556	556.06	0.82	0.9984	498.4	0.1
557	557.06	0.82	0.9984	498.4	0.1
558	558.06	0.82	0.9984	498.4	0.1
559	559.06	0.82	0.9984	498.4	0.1
560	560.06	0.82	0.9984	498.4	0.1
561	561.06	0.82	0.9984	498.4	0.1
562	562.06	0.82	0.9984	498.4	0.1
563	563.06	0.81	0.9984	498.4	0.1
564	564.06	0.81	0.9984	498.4	0.1
565	565.06	0.81	0.9984	498.4	0.1
566	566.06	0.81	0.9984	498.4	0.1
567	567.06	0.81	0.9984	498.4	0.1
568	568.06	0.81	0.9984	498.4	0.1
569	569.06	0.81	0.9984	498.4	0.1
570	570.06	0.80	0.9984	498.4	0.1
571	571.06	0.80	0.9984	498.4	0.1
572	572.06	0.80	0.9984	498.4	0.1
573	573.06	0.80	0.9984	498.4	0.1
574	574.06	0.80	0.9984	498.4	0.1
575	575.06	0.80	0.9984	498.4	0.1
576	576.06	0.80	0.9984	498.4	0.1
577	577.06	0.79	0.9984	498.4	0.1
578	578.06	0.79	0.9984	498.4	0.0
579	579.06	0.79	0.9984	498.4	0.0
580	580.06	0.79	0.9984	498.4	0.0
581	581.06	0.79	0.9984	498.4	0.0
582	582.05	0.79	0.9984	498.4	0.0
583	583.05	0.79	0.9984	498.4	0.0
584	584.05	0.78	0.9984	498.4	0.0
585	585.05	0.78	0.9984	498.4	0.0
586	586.05	0.78	0.9984	498.4	0.0
587	587.05	0.78	0.9984	498.4	0.0
588	588.05	0.78	0.9984	498.4	0.0
589	589.05	0.78	0.9984	498.4	0.0
590	590.05	0.78	0.9984	498.4	0.0
591	591.05	0.78	0.9984	498.5	0.0
592	592.05	0.77	0.9985	498.5	0.0
593	593.05	0.77	0.9985	498.5	0.0
594	594.05	0.77	0.9985	498.5	0.0
595	595.05	0.77	0.9985	498.5	0.0
596	596.05	0.77	0.9985	498.5	0.0
597	597.05	0.77	0.9985	498.5	0.0
598	598.05	0.77	0.9985	498.5	0.0
599	599.05	0.77	0.9985	498.5	0.0
600	600.05	0.76	0.9985	498.5	0.0
601	601.05	0.76	0.9985	498.5	0.0
602	602.05	0.76	0.9985	498.5	0.0
603	603.05	0.76	0.9985	498.5	0.0
604	604.05	0.76	0.9985	498.5	0.0
605	605.05	0.76	0.9985	498.5	0.0
606	606.05	0.76	0.9985	498.5	0.0
607	607.05	0.76	0.9985	498.5	0.0
608	608.05	0.75	0.9985	498.5	0.0
609	609.05	0.75	0.9985	498.5	0.0
610	610.05	0.75	0.9985	498.5	0.0
611	611.05	0.75	0.9985	498.5	0.0
612	612.05	0.75	0.9985	498.5	0.0
613	613.05	0.75	0.9985	498.5	0.0
614	614.05	0.75	0.9985	498.5	0.0
615	615.05	0.75	0.9985	498.5	0.0

616	616.05	0.74	0.9985	498.5	0.0
617	617.05	0.74	0.9985	498.5	0.0
618	618.05	0.74	0.9985	498.5	0.0
619	619.05	0.74	0.9985	498.5	0.0
620	620.05	0.74	0.9985	498.5	0.0
621	621.05	0.74	0.9985	498.5	0.0
622	622.05	0.74	0.9985	498.5	0.0
623	623.05	0.74	0.9985	498.5	0.0
624	624.05	0.73	0.9985	498.5	0.0
625	625.05	0.73	0.9985	498.5	0.0
626	626.05	0.73	0.9985	498.5	0.0
627	627.05	0.73	0.9985	498.5	0.0
628	628.05	0.73	0.9985	498.5	0.0
629	629.05	0.73	0.9985	498.5	0.0
630	630.05	0.73	0.9985	498.5	0.0
631	631.05	0.73	0.9985	498.5	0.0
632	632.05	0.73	0.9985	498.6	0.0
633	633.05	0.72	0.9986	498.6	0.0
634	634.05	0.72	0.9986	498.6	0.0
635	635.05	0.72	0.9986	498.6	0.0
636	636.05	0.72	0.9986	498.6	0.0
637	637.05	0.72	0.9986	498.6	0.0
638	638.05	0.72	0.9986	498.6	0.0
639	639.05	0.72	0.9986	498.6	0.0
640	640.05	0.72	0.9986	498.6	0.0
641	641.05	0.72	0.9986	498.6	0.0
642	642.05	0.71	0.9986	498.6	0.0
643	643.05	0.71	0.9986	498.6	0.0
644	644.05	0.71	0.9986	498.6	0.0
645	645.05	0.71	0.9986	498.6	0.0
646	646.05	0.71	0.9986	498.6	0.0
647	647.05	0.71	0.9986	498.6	0.0
648	648.05	0.71	0.9986	498.6	0.0
649	649.05	0.71	0.9986	498.6	0.0
650	650.05	0.71	0.9986	498.6	0.0
651	651.05	0.70	0.9986	498.6	0.0
652	652.05	0.70	0.9986	498.6	0.0
653	653.05	0.70	0.9986	498.6	0.0
654	654.05	0.70	0.9986	498.6	0.0
655	655.05	0.70	0.9986	498.6	0.0
656	656.05	0.70	0.9986	498.6	0.0
657	657.05	0.70	0.9986	498.6	0.0
658	658.05	0.70	0.9986	498.6	0.0
659	659.05	0.70	0.9986	498.6	0.0
660	660.05	0.69	0.9986	498.6	0.0
661	661.05	0.69	0.9986	498.6	0.0
662	662.05	0.69	0.9986	498.6	0.0
663	663.05	0.69	0.9986	498.6	0.0
664	664.05	0.69	0.9986	498.6	0.0
665	665.05	0.69	0.9986	498.6	0.0
666	666.05	0.69	0.9986	498.6	0.0
667	667.05	0.69	0.9986	498.6	0.0
668	668.05	0.69	0.9986	498.6	0.0
669	669.05	0.69	0.9986	498.6	0.0
670	670.05	0.68	0.9986	498.6	0.0
671	671.05	0.68	0.9986	498.6	0.0
672	672.05	0.68	0.9986	498.6	0.0
673	673.05	0.68	0.9986	498.6	0.0
674	674.05	0.68	0.9986	498.6	0.0
675	675.05	0.68	0.9986	498.6	0.0

676	676.05	0.68	0.9986	498.6	0.0
677	677.05	0.68	0.9986	498.6	0.0
678	678.05	0.68	0.9986	498.6	0.0
679	679.05	0.68	0.9986	498.7	0.0
680	680.05	0.67	0.9987	498.7	0.0
681	681.05	0.67	0.9987	498.7	0.0
682	682.05	0.67	0.9987	498.7	0.0
683	683.05	0.67	0.9987	498.7	0.0
684	684.05	0.67	0.9987	498.7	0.0
685	685.05	0.67	0.9987	498.7	0.0
686	686.05	0.67	0.9987	498.7	0.0
687	687.05	0.67	0.9987	498.7	0.0
688	688.05	0.67	0.9987	498.7	0.0
689	689.05	0.67	0.9987	498.7	0.0
690	690.05	0.66	0.9987	498.7	0.0
691	691.05	0.66	0.9987	498.7	0.0
692	692.05	0.66	0.9987	498.7	0.0
693	693.05	0.66	0.9987	498.7	0.0
694	694.05	0.66	0.9987	498.7	0.0
695	695.05	0.66	0.9987	498.7	0.0
696	696.05	0.66	0.9987	498.7	0.0
697	697.05	0.66	0.9987	498.7	0.0
698	698.05	0.66	0.9987	498.7	0.0
699	699.05	0.66	0.9987	498.7	0.0
700	700.05	0.65	0.9987	498.7	0.0
701	701.05	0.65	0.9987	498.7	0.0
702	702.05	0.65	0.9987	498.7	0.0
703	703.05	0.65	0.9987	498.7	0.0
704	704.05	0.65	0.9987	498.7	0.0
705	705.05	0.65	0.9987	498.7	0.0
706	706.05	0.65	0.9987	498.7	0.0
707	707.05	0.65	0.9987	498.7	0.0
708	708.05	0.65	0.9987	498.7	0.0
709	709.05	0.65	0.9987	498.7	0.0
710	710.05	0.65	0.9987	498.7	0.0
711	711.05	0.64	0.9987	498.7	0.0
712	712.04	0.64	0.9987	498.7	0.0
713	713.04	0.64	0.9987	498.7	0.0
714	714.04	0.64	0.9987	498.7	0.0
715	715.04	0.64	0.9987	498.7	0.0
716	716.04	0.64	0.9987	498.7	0.0
717	717.04	0.64	0.9987	498.7	0.0
718	718.04	0.64	0.9987	498.7	0.0
719	719.04	0.64	0.9987	498.7	0.0
720	720.04	0.64	0.9987	498.7	0.0
721	721.04	0.64	0.9987	498.7	0.0
722	722.04	0.63	0.9987	498.7	0.0
723	723.04	0.63	0.9987	498.7	0.0
724	724.04	0.63	0.9987	498.7	0.0
725	725.04	0.63	0.9987	498.7	0.0
726	726.04	0.63	0.9987	498.7	0.0
727	727.04	0.63	0.9987	498.7	0.0
728	728.04	0.63	0.9987	498.7	0.0
729	729.04	0.63	0.9987	498.7	0.0
730	730.04	0.63	0.9987	498.7	0.0
731	731.04	0.63	0.9987	498.7	0.0
732	732.04	0.63	0.9987	498.7	0.0
733	733.04	0.63	0.9987	498.8	0.0
734	734.04	0.62	0.9988	498.8	0.0
735	735.04	0.62	0.9988	498.8	0.0

736	736.04	0.62	0.9988	498.8	0.0
737	737.04	0.62	0.9988	498.8	0.0
738	738.04	0.62	0.9988	498.8	0.0
739	739.04	0.62	0.9988	498.8	0.0
740	740.04	0.62	0.9988	498.8	0.0
741	741.04	0.62	0.9988	498.8	0.0
742	742.04	0.62	0.9988	498.8	0.0
743	743.04	0.62	0.9988	498.8	0.0
744	744.04	0.62	0.9988	498.8	0.0
745	745.04	0.62	0.9988	498.8	0.0
746	746.04	0.61	0.9988	498.8	0.0
747	747.04	0.61	0.9988	498.8	0.0
748	748.04	0.61	0.9988	498.8	0.0
749	749.04	0.61	0.9988	498.8	0.0
750	750.04	0.61	0.9988	498.8	0.0
751	751.04	0.61	0.9988	498.8	0.0
752	752.04	0.61	0.9988	498.8	0.0
753	753.04	0.61	0.9988	498.8	0.0
754	754.04	0.61	0.9988	498.8	0.0
755	755.04	0.61	0.9988	498.8	0.0
756	756.04	0.61	0.9988	498.8	0.0
757	757.04	0.61	0.9988	498.8	0.0
758	758.04	0.60	0.9988	498.8	0.0
759	759.04	0.60	0.9988	498.8	0.0
760	760.04	0.60	0.9988	498.8	0.0
761	761.04	0.60	0.9988	498.8	0.0
762	762.04	0.60	0.9988	498.8	0.0
763	763.04	0.60	0.9988	498.8	0.0
764	764.04	0.60	0.9988	498.8	0.0
765	765.04	0.60	0.9988	498.8	0.0
766	766.04	0.60	0.9988	498.8	0.0
767	767.04	0.60	0.9988	498.8	0.0
768	768.04	0.60	0.9988	498.8	0.0
769	769.04	0.60	0.9988	498.8	0.0
770	770.04	0.60	0.9988	498.8	0.0
771	771.04	0.59	0.9988	498.8	0.0
772	772.04	0.59	0.9988	498.8	0.0
773	773.04	0.59	0.9988	498.8	0.0
774	774.04	0.59	0.9988	498.8	0.0
775	775.04	0.59	0.9988	498.8	0.0
776	776.04	0.59	0.9988	498.8	0.0
777	777.04	0.59	0.9988	498.8	0.0
778	778.04	0.59	0.9988	498.8	0.0
779	779.04	0.59	0.9988	498.8	0.0
780	780.04	0.59	0.9988	498.8	0.0
781	781.04	0.59	0.9988	498.8	0.0
782	782.04	0.59	0.9988	498.8	0.0
783	783.04	0.59	0.9988	498.8	0.0
784	784.04	0.58	0.9988	498.8	0.0
785	785.04	0.58	0.9988	498.8	0.0
786	786.04	0.58	0.9988	498.8	0.0
787	787.04	0.58	0.9988	498.8	0.0
788	788.04	0.58	0.9988	498.8	0.0
789	789.04	0.58	0.9988	498.8	0.0
790	790.04	0.58	0.9988	498.8	0.0
791	791.04	0.58	0.9988	498.8	0.0
792	792.04	0.58	0.9988	498.8	0.0
793	793.04	0.58	0.9988	498.8	0.0
794	794.04	0.58	0.9988	498.8	0.0
795	795.04	0.58	0.9988	498.8	0.0

796	796.04	0.58	0.9988	498.8	0.0
797	797.04	0.58	0.9988	498.9	0.0
798	798.04	0.57	0.9989	498.9	0.0
799	799.04	0.57	0.9989	498.9	0.0
800	800.04	0.57	0.9989	498.9	0.0
801	801.04	0.57	0.9989	498.9	0.0
802	802.04	0.57	0.9989	498.9	0.0
803	803.04	0.57	0.9989	498.9	0.0
804	804.04	0.57	0.9989	498.9	0.0
805	805.04	0.57	0.9989	498.9	0.0
806	806.04	0.57	0.9989	498.9	0.0
807	807.04	0.57	0.9989	498.9	0.0
808	808.04	0.57	0.9989	498.9	0.0
809	809.04	0.57	0.9989	498.9	0.0
810	810.04	0.57	0.9989	498.9	0.0
811	811.04	0.57	0.9989	498.9	0.0
812	812.04	0.56	0.9989	498.9	0.0
813	813.04	0.56	0.9989	498.9	0.0
814	814.04	0.56	0.9989	498.9	0.0
815	815.04	0.56	0.9989	498.9	0.0
816	816.04	0.56	0.9989	498.9	0.0
817	817.04	0.56	0.9989	498.9	0.0
818	818.04	0.56	0.9989	498.9	0.0
819	819.04	0.56	0.9989	498.9	0.0
820	820.04	0.56	0.9989	498.9	0.0
821	821.04	0.56	0.9989	498.9	0.0
822	822.04	0.56	0.9989	498.9	0.0
823	823.04	0.56	0.9989	498.9	0.0
824	824.04	0.56	0.9989	498.9	0.0
825	825.04	0.56	0.9989	498.9	0.0
826	826.04	0.55	0.9989	498.9	0.0
827	827.04	0.55	0.9989	498.9	0.0
828	828.04	0.55	0.9989	498.9	0.0
829	829.04	0.55	0.9989	498.9	0.0
830	830.04	0.55	0.9989	498.9	0.0
831	831.04	0.55	0.9989	498.9	0.0
832	832.04	0.55	0.9989	498.9	0.0
833	833.04	0.55	0.9989	498.9	0.0
834	834.04	0.55	0.9989	498.9	0.0
835	835.04	0.55	0.9989	498.9	0.0
836	836.04	0.55	0.9989	498.9	0.0
837	837.04	0.55	0.9989	498.9	0.0
838	838.04	0.55	0.9989	498.9	0.0
839	839.04	0.55	0.9989	498.9	0.0
840	840.04	0.55	0.9989	498.9	0.0
841	841.04	0.55	0.9989	498.9	0.0
842	842.04	0.54	0.9989	498.9	0.0
843	843.04	0.54	0.9989	498.9	0.0
844	844.04	0.54	0.9989	498.9	0.0
845	845.04	0.54	0.9989	498.9	0.0
846	846.04	0.54	0.9989	498.9	0.0
847	847.04	0.54	0.9989	498.9	0.0
848	848.04	0.54	0.9989	498.9	0.0
849	849.04	0.54	0.9989	498.9	0.0
850	850.04	0.54	0.9989	498.9	0.0
851	851.04	0.54	0.9989	498.9	0.0
852	852.04	0.54	0.9989	498.9	0.0
853	853.04	0.54	0.9989	498.9	0.0
854	854.04	0.54	0.9989	498.9	0.0
855	855.04	0.54	0.9989	498.9	0.0

856	856.04	0.54	0.9989	498.9	0.0
857	857.04	0.53	0.9989	498.9	0.0
858	858.04	0.53	0.9989	498.9	0.0
859	859.04	0.53	0.9989	498.9	0.0
860	860.04	0.53	0.9989	498.9	0.0
861	861.04	0.53	0.9989	498.9	0.0
862	862.04	0.53	0.9989	498.9	0.0
863	863.04	0.53	0.9989	498.9	0.0
864	864.04	0.53	0.9989	498.9	0.0
865	865.04	0.53	0.9989	498.9	0.0
866	866.04	0.53	0.9989	498.9	0.0
867	867.04	0.53	0.9989	498.9	0.0
868	868.04	0.53	0.9989	498.9	0.0
869	869.04	0.53	0.9989	498.9	0.0
870	870.04	0.53	0.9989	498.9	0.0
871	871.04	0.53	0.9989	498.9	0.0
872	872.04	0.53	0.9989	498.9	0.0
873	873.04	0.53	0.9989	499.0	0.0
874	874.04	0.52	0.9990	499.0	0.0
875	875.04	0.52	0.9990	499.0	0.0
876	876.04	0.52	0.9990	499.0	0.0
877	877.04	0.52	0.9990	499.0	0.0
878	878.04	0.52	0.9990	499.0	0.0
879	879.04	0.52	0.9990	499.0	0.0
880	880.04	0.52	0.9990	499.0	0.0
881	881.04	0.52	0.9990	499.0	0.0
882	882.04	0.52	0.9990	499.0	0.0
883	883.04	0.52	0.9990	499.0	0.0
884	884.04	0.52	0.9990	499.0	0.0
885	885.04	0.52	0.9990	499.0	0.0
886	886.04	0.52	0.9990	499.0	0.0
887	887.04	0.52	0.9990	499.0	0.0
888	888.04	0.52	0.9990	499.0	0.0
889	889.04	0.52	0.9990	499.0	0.0
890	890.04	0.52	0.9990	499.0	0.0
891	891.04	0.51	0.9990	499.0	0.0
892	892.04	0.51	0.9990	499.0	0.0
893	893.04	0.51	0.9990	499.0	0.0
894	894.04	0.51	0.9990	499.0	0.0
895	895.04	0.51	0.9990	499.0	0.0
896	896.04	0.51	0.9990	499.0	0.0
897	897.04	0.51	0.9990	499.0	0.0
898	898.04	0.51	0.9990	499.0	0.0
899	899.04	0.51	0.9990	499.0	0.0
900	900.04	0.51	0.9990	499.0	0.0
901	901.04	0.51	0.9990	499.0	0.0
902	902.04	0.51	0.9990	499.0	0.0
903	903.04	0.51	0.9990	499.0	0.0
904	904.04	0.51	0.9990	499.0	0.0
905	905.04	0.51	0.9990	499.0	0.0
906	906.04	0.51	0.9990	499.0	0.0
907	907.04	0.51	0.9990	499.0	0.0
908	908.04	0.50	0.9990	499.0	0.0
909	909.04	0.50	0.9990	499.0	0.0
910	910.04	0.50	0.9990	499.0	0.0
911	911.04	0.50	0.9990	499.0	0.0
912	912.04	0.50	0.9990	499.0	0.0
913	913.04	0.50	0.9990	499.0	0.0
914	914.04	0.50	0.9990	499.0	0.0
915	915.03	0.50	0.9990	499.0	0.0

916	916.03	0.50	0.9990	499.0	0.0
917	917.03	0.50	0.9990	499.0	0.0
918	918.03	0.50	0.9990	499.0	0.0
919	919.03	0.50	0.9990	499.0	0.0
920	920.03	0.50	0.9990	499.0	0.0
921	921.03	0.50	0.9990	499.0	0.0
922	922.03	0.50	0.9990	499.0	0.0
923	923.03	0.50	0.9990	499.0	0.0
924	924.03	0.50	0.9990	499.0	0.0
925	925.03	0.50	0.9990	499.0	0.0
926	926.03	0.49	0.9990	499.0	0.0
927	927.03	0.49	0.9990	499.0	0.0
928	928.03	0.49	0.9990	499.0	0.0
929	929.03	0.49	0.9990	499.0	0.0
930	930.03	0.49	0.9990	499.0	0.0
931	931.03	0.49	0.9990	499.0	0.0
932	932.03	0.49	0.9990	499.0	0.0
933	933.03	0.49	0.9990	499.0	0.0
934	934.03	0.49	0.9990	499.0	0.0
935	935.03	0.49	0.9990	499.0	0.0
936	936.03	0.49	0.9990	499.0	0.0
937	937.03	0.49	0.9990	499.0	0.0
938	938.03	0.49	0.9990	499.0	0.0
939	939.03	0.49	0.9990	499.0	0.0
940	940.03	0.49	0.9990	499.0	0.0
941	941.03	0.49	0.9990	499.0	0.0
942	942.03	0.49	0.9990	499.0	0.0
943	943.03	0.49	0.9990	499.0	0.0
944	944.03	0.49	0.9990	499.0	0.0
945	945.03	0.49	0.9990	499.0	0.0
946	946.03	0.48	0.9990	499.0	0.0
947	947.03	0.48	0.9990	499.0	0.0
948	948.03	0.48	0.9990	499.0	0.0
949	949.03	0.48	0.9990	499.0	0.0
950	950.03	0.48	0.9990	499.0	0.0
951	951.03	0.48	0.9990	499.0	0.0
952	952.03	0.48	0.9990	499.0	0.0
953	953.03	0.48	0.9990	499.0	0.0
954	954.03	0.48	0.9990	499.0	0.0
955	955.03	0.48	0.9990	499.0	0.0
956	956.03	0.48	0.9990	499.0	0.0
957	957.03	0.48	0.9990	499.0	0.0
958	958.03	0.48	0.9990	499.0	0.0
959	959.03	0.48	0.9990	499.0	0.0
960	960.03	0.48	0.9990	499.0	0.0
961	961.03	0.48	0.9990	499.0	0.0
962	962.03	0.48	0.9990	499.0	0.0
963	963.03	0.48	0.9990	499.0	0.0
964	964.03	0.48	0.9990	499.0	0.0
965	965.03	0.47	0.9991	499.1	0.0
966	966.03	0.47	0.9991	499.1	0.0
967	967.03	0.47	0.9991	499.1	0.0
968	968.03	0.47	0.9991	499.1	0.0
969	969.03	0.47	0.9991	499.1	0.0
970	970.03	0.47	0.9991	499.1	0.0
971	971.03	0.47	0.9991	499.1	0.0
972	972.03	0.47	0.9991	499.1	0.0
973	973.03	0.47	0.9991	499.1	0.0
974	974.03	0.47	0.9991	499.1	0.0
975	975.03	0.47	0.9991	499.1	0.0

976	976.03	0.47	0.9991	499.1	0.0
977	977.03	0.47	0.9991	499.1	0.0
978	978.03	0.47	0.9991	499.1	0.0
979	979.03	0.47	0.9991	499.1	0.0
980	980.03	0.47	0.9991	499.1	0.0
981	981.03	0.47	0.9991	499.1	0.0
982	982.03	0.47	0.9991	499.1	0.0
983	983.03	0.47	0.9991	499.1	0.0
984	984.03	0.47	0.9991	499.1	0.0
985	985.03	0.47	0.9991	499.1	0.0
986	986.03	0.46	0.9991	499.1	0.0
987	987.03	0.46	0.9991	499.1	0.0
988	988.03	0.46	0.9991	499.1	0.0
989	989.03	0.46	0.9991	499.1	0.0
990	990.03	0.46	0.9991	499.1	0.0
991	991.03	0.46	0.9991	499.1	0.0
992	992.03	0.46	0.9991	499.1	0.0
993	993.03	0.46	0.9991	499.1	0.0
994	994.03	0.46	0.9991	499.1	0.0
995	995.03	0.46	0.9991	499.1	0.0
996	996.03	0.46	0.9991	499.1	0.0
997	997.03	0.46	0.9991	499.1	0.0
998	998.03	0.46	0.9991	499.1	0.0
999	999.03	0.46	0.9991	499.1	0.0
1000	1000.03	0.46	0.9991	499.1	0.0