

COMPREHENSIVE TECHNICAL EXHIBIT

In regard to the application of:

Sonia Broadcasting Company, LLC

WVIB-DT, FID 27387,

Channel 12, Key West, FL

For minor modification to construction permit, FCC File number BPCDT-19991029AHR

Engineer's statement:

The within application proposes to move the facility from its present transmitter site on tower #1029778, Key West, to tower #1030880, an established communications site on Southard Street, Key West, FL. The proposed move is 6.5 km westward. to a site which provides the opportunity for the center of radiation to be increased in height to 53 meters above mean sea level. Along with these changes, antenna pattern and ERP will be changed as described.

The exhibit deals with the following matters raised from FCC Form 301:

- 1. Detailed description of antenna system and its performance in accordance with §73.625(c).**
- 2. Statement regarding exclusion from environmental processing per §1.1306.**

J. R. McDonald
April 19, 2004

B. W. St. Clair

**Sonia Broadcasting Company, LLC
WVIB-DT, FID 27387,
Channel 12, Key West, FL**

1. Detailed description of antenna system and its performance in accordance with §73.625(c).

The antenna system is a standard directional broadcast antenna supplied by Kathrein's Scala Division of Medford, OR. It is a type DRV 1/1 broadband panel. It is oriented at 60° and will share service with WVIB, channel 8, using a power combiner and shared feedline. No mechanical or electrical beamtilt is employed. Subsequent pages in this exhibit provide full technical details on the antenna to include horizontal and vertical patterns, tabulations and technical details sufficient for full engineering analysis. The power, location and orientation of the antenna system provides F(50, 90) coverage of not less than 43 dBu over the entire principal community of Key West, FL. See *attachments*, following.

2. Statement regarding exclusion from environmental processing per §1.1306.

This proposal for minor modification construction permit BPCDT-19991029AHR for WVIB-DT, FID 27387, was subjected to the analysis set forth in OET Bulletin 65. In accordance with the EPA formula used for determining the power density in $\mu\text{w}/\text{cm}^2$ in the region of the tower base, it was determined that the proposal radiates less than 5% of the allowable amount of either the occupational or the general public limit and is therefore exempt from processing per §1.1306 of the Rules. Full supporting calculation data is on file in this office.

The antenna site is a well-established communication site used by a number of licensees. Accordingly, it is fenced some distance from any towers or equipment buildings. Extensive use is made of warning signage. The applicant certifies that it will cooperate with other licensees at the site in using RF power turndown or interruption methods as required to protect technical personnel working at the site.

**Sonia Broadcasting Company, LLC
WVIB-DT, FID 27387,
Channel 12, Key West, FL**

DIRECTORY OF ATTACHMENTS

- 1. Map showing 43 dBu contour over principal community.**
- 2. Legal map of principal community, annotated.**
- 3. Profile path from tower location over principal community.**
- 4. Antenna detail group, pages as listed:**

Page 1...Introduction

Pages 2 - 9...Pattern diagrams and tabulations

Showing of 43 dBu coverage over entire principal community.

WVIB-DT.CP moved
per Minor Modification of
BPCDT19991029AHR
Latitude: 24-33-18 N
Longitude: 081-48-07 W
ERP: 0.206 kW
Channel: 12
Frequency: 207.0 MHz
AMSL Height: 52.94 m
Elevation: 0.44 m
Horiz. Pattern: Directional
Vert. Pattern: Yes
Elec Tilt: 0.0
Prop Model:

Community limits of Key West

Key West

WVIB-D.C moved

43 dBu F(50, 90) contour

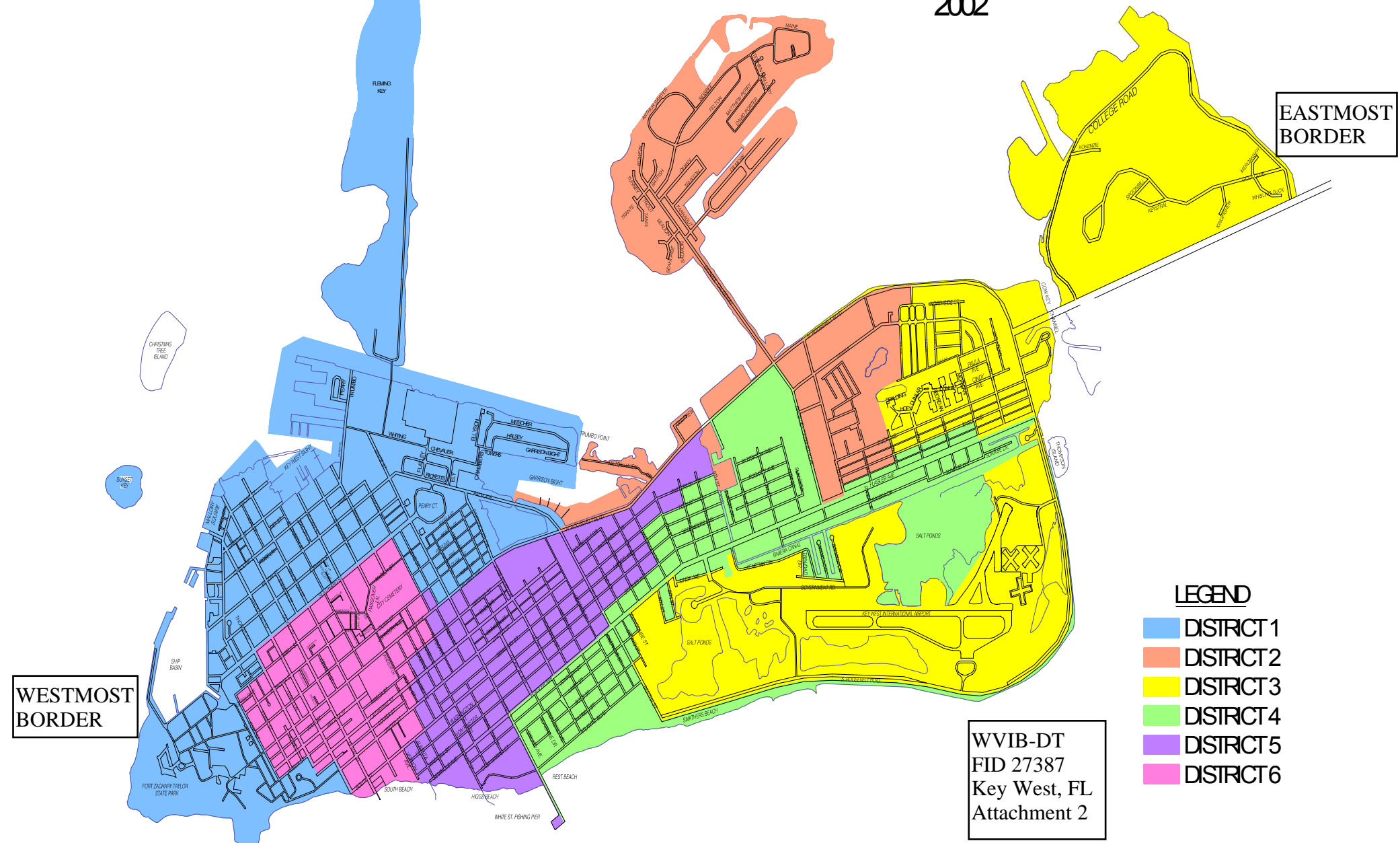
---OCEAN---

Scale 1:200,000

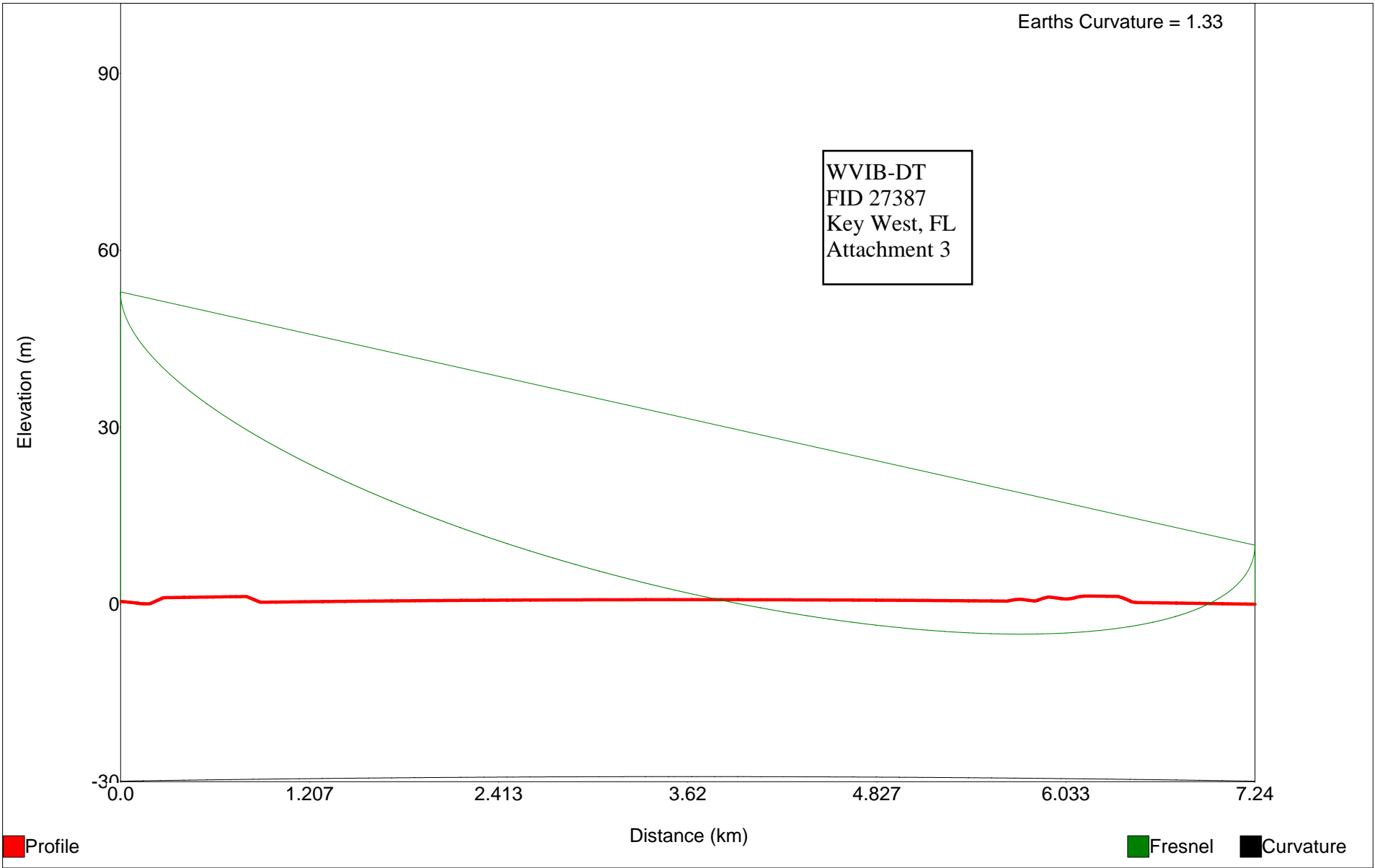
0 2 4 6 km

WVIB-DT
FID 27387
Key West, FL
Attachment 1

SINGLE MEMBER DISTRICT MAP CITY OF KEY WEST, FLORIDA 2002



Profile path from new WVIB-DT site to far edge of Key West



Starting Latitude: 24-33-18 N
Starting Longitude: 081-48-07 W

End Latitude: 24-34-26.61 N
End Longitude: 081-44-00.91 W

Distance: 7.24 km
Bearing: 73.03 deg

Transmitter Height (AG) = 52.5 m
Receiver Height (AG) = 10.0 m

Transmitter Elevation = 0.4 m
Receiver Elevation = 0.0 m

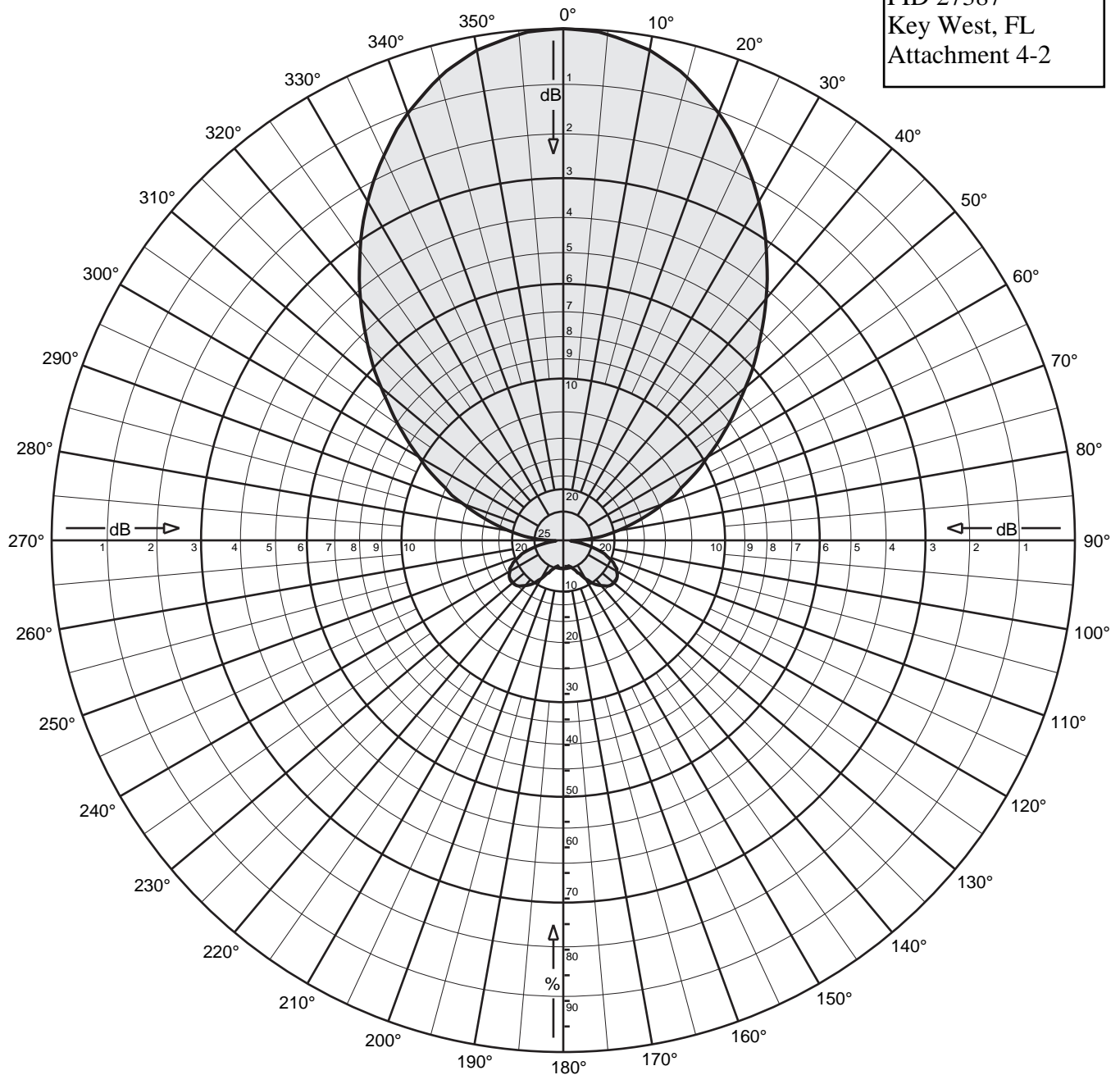
Frequency = 207.0 MHz
Fresnel Zone: 0.6

**Sonia Broadcasting Company, LLC
WVIB-DT, FID 27387,
Channel 12, Key West, FL**

ANTENNA INTRODUCTORY INFORMATION

1. The antenna to be used for the proposed facility is a standard Kathrein/Scala DRV-1/1 VHF antenna. It is one piece (one unit high, one unit wide). Its orientation is 60° True. It is mounted in the horizontally polarized position and it has a gain of 7.0 dBd (power multiplier of 5.01).
2. ERP in the maximum lobe is 0.206 kW, or -6.86 dBk. This figure, when used together with those in the "Rel. dB" column on the azimuth tabulation pages following, will yield the proposal's absolute ERP at any rotation.
3. No electrical or mechanical downtilt is employed.

WVIB-DT
FID 27387
Key West, FL
Attachment 4-2



SINGLE DRV
ORIENTED AT 0 DEGREES
GAIN: 7.0 dBd
HORIZONTAL POLARIZATION
HORIZONTAL RADIATION PATTERN



WVIB-DT
FID 27387
Key West, FL
Attachment 4-3

SINGLE DRV

HORIZONTAL RADIATION PATTERN

ORIENTED AT 0 DEGREES

GAIN: 7.0 dBd

HORIZONTAL POLARIZATION

| Angle | Field | Rel.dB | dBd | PwrMult | Angle | Field | Rel.dB | dBd | PwrMult |
|-------|-------|--------|------|---------|-------|-------|--------|--------|---------|
| 0 | 1.000 | 0.00 | 7.00 | 5.01 | 45 | 0.541 | -5.34 | 1.66 | 1.46 |
| 1 | 0.999 | -0.01 | 6.99 | 5.00 | 46 | 0.526 | -5.58 | 1.42 | 1.39 |
| 2 | 0.998 | -0.02 | 6.98 | 4.99 | 47 | 0.511 | -5.83 | 1.17 | 1.31 |
| 3 | 0.997 | -0.03 | 6.97 | 4.98 | 48 | 0.497 | -6.08 | 0.92 | 1.24 |
| 4 | 0.996 | -0.03 | 6.97 | 4.97 | 49 | 0.481 | -6.36 | 0.64 | 1.16 |
| 5 | 0.992 | -0.07 | 6.93 | 4.94 | 50 | 0.465 | -6.66 | 0.34 | 1.08 |
| 6 | 0.989 | -0.10 | 6.90 | 4.90 | 51 | 0.450 | -6.94 | 0.06 | 1.01 |
| 7 | 0.984 | -0.14 | 6.86 | 4.86 | 52 | 0.435 | -7.24 | -0.24 | 0.95 |
| 8 | 0.980 | -0.17 | 6.83 | 4.82 | 53 | 0.421 | -7.51 | -0.51 | 0.89 |
| 9 | 0.976 | -0.21 | 6.79 | 4.78 | 54 | 0.408 | -7.79 | -0.79 | 0.83 |
| 10 | 0.973 | -0.24 | 6.76 | 4.74 | 55 | 0.394 | -8.10 | -1.10 | 0.78 |
| 11 | 0.966 | -0.30 | 6.70 | 4.67 | 56 | 0.379 | -8.42 | -1.42 | 0.72 |
| 12 | 0.959 | -0.37 | 6.63 | 4.61 | 57 | 0.366 | -8.73 | -1.73 | 0.67 |
| 13 | 0.952 | -0.43 | 6.57 | 4.54 | 58 | 0.353 | -9.05 | -2.05 | 0.62 |
| 14 | 0.945 | -0.49 | 6.51 | 4.48 | 59 | 0.339 | -9.40 | -2.40 | 0.58 |
| 15 | 0.936 | -0.57 | 6.43 | 4.39 | 60 | 0.325 | -9.76 | -2.76 | 0.53 |
| 16 | 0.927 | -0.66 | 6.34 | 4.31 | 61 | 0.314 | -10.06 | -3.06 | 0.49 |
| 17 | 0.917 | -0.75 | 6.25 | 4.22 | 62 | 0.303 | -10.36 | -3.36 | 0.46 |
| 18 | 0.907 | -0.84 | 6.16 | 4.13 | 63 | 0.290 | -10.74 | -3.74 | 0.42 |
| 19 | 0.898 | -0.94 | 6.06 | 4.04 | 64 | 0.277 | -11.14 | -4.14 | 0.39 |
| 20 | 0.888 | -1.03 | 5.97 | 3.96 | 65 | 0.265 | -11.54 | -4.54 | 0.35 |
| 21 | 0.878 | -1.13 | 5.87 | 3.86 | 66 | 0.252 | -11.96 | -4.96 | 0.32 |
| 22 | 0.867 | -1.24 | 5.76 | 3.77 | 67 | 0.244 | -12.27 | -5.27 | 0.30 |
| 23 | 0.855 | -1.36 | 5.64 | 3.66 | 68 | 0.235 | -12.58 | -5.58 | 0.28 |
| 24 | 0.842 | -1.50 | 5.50 | 3.55 | 69 | 0.221 | -13.10 | -6.10 | 0.25 |
| 25 | 0.830 | -1.62 | 5.38 | 3.45 | 70 | 0.208 | -13.64 | -6.64 | 0.22 |
| 26 | 0.817 | -1.75 | 5.25 | 3.35 | 71 | 0.197 | -14.10 | -7.10 | 0.19 |
| 27 | 0.805 | -1.89 | 5.11 | 3.24 | 72 | 0.186 | -14.59 | -7.59 | 0.17 |
| 28 | 0.792 | -2.03 | 4.97 | 3.14 | 73 | 0.175 | -15.12 | -8.12 | 0.15 |
| 29 | 0.778 | -2.18 | 4.82 | 3.03 | 74 | 0.164 | -15.68 | -8.68 | 0.14 |
| 30 | 0.764 | -2.33 | 4.67 | 2.93 | 75 | 0.154 | -16.23 | -9.23 | 0.12 |
| 31 | 0.751 | -2.49 | 4.51 | 2.82 | 76 | 0.144 | -16.81 | -9.81 | 0.10 |
| 32 | 0.737 | -2.65 | 4.35 | 2.72 | 77 | 0.135 | -17.40 | -10.40 | 0.09 |
| 33 | 0.722 | -2.82 | 4.18 | 2.62 | 78 | 0.125 | -18.04 | -11.04 | 0.08 |
| 34 | 0.708 | -3.00 | 4.00 | 2.51 | 79 | 0.116 | -18.68 | -11.68 | 0.07 |
| 35 | 0.692 | -3.20 | 3.80 | 2.40 | 80 | 0.108 | -19.36 | -12.36 | 0.06 |
| 36 | 0.677 | -3.39 | 3.61 | 2.29 | 81 | 0.099 | -20.05 | -13.05 | 0.05 |
| 37 | 0.662 | -3.58 | 3.42 | 2.20 | 82 | 0.091 | -20.80 | -13.80 | 0.04 |
| 38 | 0.648 | -3.77 | 3.23 | 2.10 | 83 | 0.084 | -21.54 | -14.54 | 0.04 |
| 39 | 0.632 | -3.98 | 3.02 | 2.00 | 84 | 0.076 | -22.34 | -15.34 | 0.03 |
| 40 | 0.617 | -4.20 | 2.80 | 1.91 | 85 | 0.067 | -23.46 | -16.46 | 0.02 |
| 41 | 0.602 | -4.41 | 2.59 | 1.81 | 86 | 0.058 | -24.74 | -17.74 | 0.02 |
| 42 | 0.586 | -4.64 | 2.36 | 1.72 | 87 | 0.050 | -25.97 | -18.97 | 0.01 |
| 43 | 0.571 | -4.87 | 2.13 | 1.63 | 88 | 0.043 | -27.40 | -20.40 | 0.01 |
| 44 | 0.555 | -5.11 | 1.89 | 1.55 | 89 | 0.035 | -29.06 | -22.06 | 0.01 |



WVIB-DT
FID 27387
Key West, FL
Attachment 4-4

SINGLE DRV

HORIZONTAL RADIATION PATTERN

ORIENTED AT 0 DEGREES

GAIN: 7.0 dBd

HORIZONTAL POLARIZATION

| Angle | Field | Rel.dB | dBd | PwrMult | Angle | Field | Rel.dB | dBd | PwrMult |
|-------|-------|--------|--------|---------|-------|-------|--------|--------|---------|
| 90 | 0.028 | -31.12 | -24.12 | 0.00 | 135 | 0.126 | -18.02 | -11.02 | 0.08 |
| 91 | 0.023 | -32.76 | -25.76 | 0.00 | 136 | 0.124 | -18.11 | -11.11 | 0.08 |
| 92 | 0.018 | -34.78 | -27.78 | 0.00 | 137 | 0.122 | -18.28 | -11.28 | 0.07 |
| 93 | 0.016 | -35.76 | -28.76 | 0.00 | 138 | 0.119 | -18.45 | -11.45 | 0.07 |
| 94 | 0.014 | -36.86 | -29.86 | 0.00 | 139 | 0.117 | -18.60 | -11.60 | 0.07 |
| 95 | 0.017 | -35.48 | -28.48 | 0.00 | 140 | 0.115 | -18.76 | -11.76 | 0.07 |
| 96 | 0.019 | -34.29 | -27.29 | 0.00 | 141 | 0.113 | -18.92 | -11.92 | 0.06 |
| 97 | 0.025 | -32.18 | -25.18 | 0.00 | 142 | 0.111 | -19.09 | -12.09 | 0.06 |
| 98 | 0.030 | -30.49 | -23.49 | 0.00 | 143 | 0.109 | -19.28 | -12.28 | 0.06 |
| 99 | 0.035 | -29.11 | -22.11 | 0.01 | 144 | 0.106 | -19.47 | -12.47 | 0.06 |
| 100 | 0.040 | -27.92 | -20.92 | 0.01 | 145 | 0.103 | -19.72 | -12.72 | 0.05 |
| 101 | 0.046 | -26.67 | -19.67 | 0.01 | 146 | 0.100 | -19.98 | -12.98 | 0.05 |
| 102 | 0.053 | -25.59 | -18.59 | 0.01 | 147 | 0.096 | -20.35 | -13.35 | 0.05 |
| 103 | 0.057 | -24.86 | -17.86 | 0.02 | 148 | 0.092 | -20.73 | -13.73 | 0.04 |
| 104 | 0.062 | -24.18 | -17.18 | 0.02 | 149 | 0.089 | -20.97 | -13.97 | 0.04 |
| 105 | 0.068 | -23.39 | -16.39 | 0.02 | 150 | 0.087 | -21.22 | -14.22 | 0.04 |
| 106 | 0.074 | -22.67 | -15.67 | 0.03 | 151 | 0.083 | -21.60 | -14.60 | 0.03 |
| 107 | 0.079 | -22.02 | -15.02 | 0.03 | 152 | 0.079 | -22.00 | -15.00 | 0.03 |
| 108 | 0.085 | -21.42 | -14.42 | 0.04 | 153 | 0.076 | -22.42 | -15.42 | 0.03 |
| 109 | 0.088 | -21.12 | -14.12 | 0.04 | 154 | 0.072 | -22.86 | -15.86 | 0.03 |
| 110 | 0.091 | -20.82 | -13.82 | 0.04 | 155 | 0.071 | -23.01 | -16.01 | 0.03 |
| 111 | 0.095 | -20.44 | -13.44 | 0.05 | 156 | 0.070 | -23.15 | -16.15 | 0.02 |
| 112 | 0.099 | -20.07 | -13.07 | 0.05 | 157 | 0.066 | -23.56 | -16.56 | 0.02 |
| 113 | 0.103 | -19.72 | -12.72 | 0.05 | 158 | 0.063 | -24.00 | -17.00 | 0.02 |
| 114 | 0.107 | -19.38 | -12.38 | 0.06 | 159 | 0.062 | -24.22 | -17.22 | 0.02 |
| 115 | 0.110 | -19.20 | -12.20 | 0.06 | 160 | 0.060 | -24.45 | -17.45 | 0.02 |
| 116 | 0.112 | -19.02 | -12.02 | 0.06 | 161 | 0.058 | -24.66 | -17.66 | 0.02 |
| 117 | 0.115 | -18.76 | -11.76 | 0.07 | 162 | 0.057 | -24.88 | -17.88 | 0.02 |
| 118 | 0.119 | -18.50 | -11.50 | 0.07 | 163 | 0.055 | -25.12 | -18.12 | 0.02 |
| 119 | 0.120 | -18.45 | -11.45 | 0.07 | 164 | 0.054 | -25.37 | -18.37 | 0.01 |
| 120 | 0.120 | -18.40 | -11.40 | 0.07 | 165 | 0.054 | -25.43 | -18.43 | 0.01 |
| 121 | 0.122 | -18.25 | -11.25 | 0.07 | 166 | 0.053 | -25.49 | -18.49 | 0.01 |
| 122 | 0.124 | -18.10 | -11.10 | 0.08 | 167 | 0.052 | -25.68 | -18.68 | 0.01 |
| 123 | 0.126 | -18.00 | -11.00 | 0.08 | 168 | 0.051 | -25.86 | -18.86 | 0.01 |
| 124 | 0.127 | -17.91 | -10.91 | 0.08 | 169 | 0.052 | -25.66 | -18.66 | 0.01 |
| 125 | 0.128 | -17.85 | -10.85 | 0.08 | 170 | 0.053 | -25.45 | -18.45 | 0.01 |
| 126 | 0.129 | -17.79 | -10.79 | 0.08 | 171 | 0.054 | -25.38 | -18.38 | 0.01 |
| 127 | 0.129 | -17.77 | -10.77 | 0.08 | 172 | 0.054 | -25.30 | -18.30 | 0.01 |
| 128 | 0.130 | -17.74 | -10.74 | 0.08 | 173 | 0.054 | -25.28 | -18.28 | 0.01 |
| 129 | 0.129 | -17.77 | -10.77 | 0.08 | 174 | 0.055 | -25.26 | -18.26 | 0.01 |
| 130 | 0.129 | -17.79 | -10.79 | 0.08 | 175 | 0.055 | -25.26 | -18.26 | 0.01 |
| 131 | 0.129 | -17.81 | -10.81 | 0.08 | 176 | 0.055 | -25.25 | -18.25 | 0.01 |
| 132 | 0.128 | -17.82 | -10.82 | 0.08 | 177 | 0.055 | -25.25 | -18.25 | 0.01 |
| 133 | 0.128 | -17.87 | -10.87 | 0.08 | 178 | 0.055 | -25.24 | -18.24 | 0.01 |
| 134 | 0.127 | -17.92 | -10.92 | 0.08 | 179 | 0.055 | -25.18 | -18.18 | 0.02 |



WVIB-DT
FID 27387
Key West, FL
Attachment 4-5

SINGLE DRV

HORIZONTAL RADIATION PATTERN

ORIENTED AT 0 DEGREES

GAIN: 7.0 dBd

HORIZONTAL POLARIZATION

| Angle | Field | Rel.dB | dBd | PwrMult | Angle | Field | Rel.dB | dBd | PwrMult |
|-------|-------|--------|--------|---------|-------|-------|--------|--------|---------|
| 180 | 0.056 | -25.11 | -18.11 | 0.02 | 225 | 0.126 | -18.02 | -11.02 | 0.08 |
| 181 | 0.055 | -25.18 | -18.18 | 0.02 | 226 | 0.127 | -17.92 | -10.92 | 0.08 |
| 182 | 0.055 | -25.24 | -18.24 | 0.01 | 227 | 0.128 | -17.87 | -10.87 | 0.08 |
| 183 | 0.055 | -25.25 | -18.25 | 0.01 | 228 | 0.128 | -17.82 | -10.82 | 0.08 |
| 184 | 0.055 | -25.25 | -18.25 | 0.01 | 229 | 0.129 | -17.81 | -10.81 | 0.08 |
| 185 | 0.055 | -25.26 | -18.26 | 0.01 | 230 | 0.129 | -17.79 | -10.79 | 0.08 |
| 186 | 0.055 | -25.26 | -18.26 | 0.01 | 231 | 0.129 | -17.77 | -10.77 | 0.08 |
| 187 | 0.054 | -25.28 | -18.28 | 0.01 | 232 | 0.130 | -17.74 | -10.74 | 0.08 |
| 188 | 0.054 | -25.30 | -18.30 | 0.01 | 233 | 0.129 | -17.77 | -10.77 | 0.08 |
| 189 | 0.054 | -25.38 | -18.38 | 0.01 | 234 | 0.129 | -17.79 | -10.79 | 0.08 |
| 190 | 0.053 | -25.45 | -18.45 | 0.01 | 235 | 0.128 | -17.85 | -10.85 | 0.08 |
| 191 | 0.052 | -25.66 | -18.66 | 0.01 | 236 | 0.127 | -17.91 | -10.91 | 0.08 |
| 192 | 0.051 | -25.86 | -18.86 | 0.01 | 237 | 0.126 | -18.00 | -11.00 | 0.08 |
| 193 | 0.052 | -25.68 | -18.68 | 0.01 | 238 | 0.124 | -18.10 | -11.10 | 0.08 |
| 194 | 0.053 | -25.49 | -18.49 | 0.01 | 239 | 0.122 | -18.25 | -11.25 | 0.07 |
| 195 | 0.054 | -25.43 | -18.43 | 0.01 | 240 | 0.120 | -18.40 | -11.40 | 0.07 |
| 196 | 0.054 | -25.37 | -18.37 | 0.01 | 241 | 0.120 | -18.45 | -11.45 | 0.07 |
| 197 | 0.055 | -25.12 | -18.12 | 0.02 | 242 | 0.119 | -18.50 | -11.50 | 0.07 |
| 198 | 0.057 | -24.88 | -17.88 | 0.02 | 243 | 0.115 | -18.76 | -11.76 | 0.07 |
| 199 | 0.058 | -24.66 | -17.66 | 0.02 | 244 | 0.112 | -19.02 | -12.02 | 0.06 |
| 200 | 0.060 | -24.45 | -17.45 | 0.02 | 245 | 0.110 | -19.20 | -12.20 | 0.06 |
| 201 | 0.062 | -24.22 | -17.22 | 0.02 | 246 | 0.107 | -19.38 | -12.38 | 0.06 |
| 202 | 0.063 | -24.00 | -17.00 | 0.02 | 247 | 0.103 | -19.72 | -12.72 | 0.05 |
| 203 | 0.066 | -23.56 | -16.56 | 0.02 | 248 | 0.099 | -20.07 | -13.07 | 0.05 |
| 204 | 0.070 | -23.15 | -16.15 | 0.02 | 249 | 0.095 | -20.44 | -13.44 | 0.05 |
| 205 | 0.071 | -23.01 | -16.01 | 0.03 | 250 | 0.091 | -20.82 | -13.82 | 0.04 |
| 206 | 0.072 | -22.86 | -15.86 | 0.03 | 251 | 0.088 | -21.12 | -14.12 | 0.04 |
| 207 | 0.076 | -22.42 | -15.42 | 0.03 | 252 | 0.085 | -21.42 | -14.42 | 0.04 |
| 208 | 0.079 | -22.00 | -15.00 | 0.03 | 253 | 0.079 | -22.02 | -15.02 | 0.03 |
| 209 | 0.083 | -21.60 | -14.60 | 0.03 | 254 | 0.074 | -22.67 | -15.67 | 0.03 |
| 210 | 0.087 | -21.22 | -14.22 | 0.04 | 255 | 0.068 | -23.39 | -16.39 | 0.02 |
| 211 | 0.089 | -20.97 | -13.97 | 0.04 | 256 | 0.062 | -24.18 | -17.18 | 0.02 |
| 212 | 0.092 | -20.73 | -13.73 | 0.04 | 257 | 0.057 | -24.86 | -17.86 | 0.02 |
| 213 | 0.096 | -20.35 | -13.35 | 0.05 | 258 | 0.053 | -25.59 | -18.59 | 0.01 |
| 214 | 0.100 | -19.98 | -12.98 | 0.05 | 259 | 0.046 | -26.67 | -19.67 | 0.01 |
| 215 | 0.103 | -19.72 | -12.72 | 0.05 | 260 | 0.040 | -27.92 | -20.92 | 0.01 |
| 216 | 0.106 | -19.47 | -12.47 | 0.06 | 261 | 0.035 | -29.11 | -22.11 | 0.01 |
| 217 | 0.109 | -19.28 | -12.28 | 0.06 | 262 | 0.030 | -30.49 | -23.49 | 0.00 |
| 218 | 0.111 | -19.09 | -12.09 | 0.06 | 263 | 0.025 | -32.18 | -25.18 | 0.00 |
| 219 | 0.113 | -18.92 | -11.92 | 0.06 | 264 | 0.019 | -34.29 | -27.29 | 0.00 |
| 220 | 0.115 | -18.76 | -11.76 | 0.07 | 265 | 0.017 | -35.48 | -28.48 | 0.00 |
| 221 | 0.117 | -18.60 | -11.60 | 0.07 | 266 | 0.014 | -36.86 | -29.86 | 0.00 |
| 222 | 0.119 | -18.45 | -11.45 | 0.07 | 267 | 0.016 | -35.76 | -28.76 | 0.00 |
| 223 | 0.122 | -18.28 | -11.28 | 0.07 | 268 | 0.018 | -34.78 | -27.78 | 0.00 |
| 224 | 0.124 | -18.11 | -11.11 | 0.08 | 269 | 0.023 | -32.76 | -25.76 | 0.00 |



SINGLE DRV

HORIZONTAL RADIATION PATTERN

ORIENTED AT 0 DEGREES

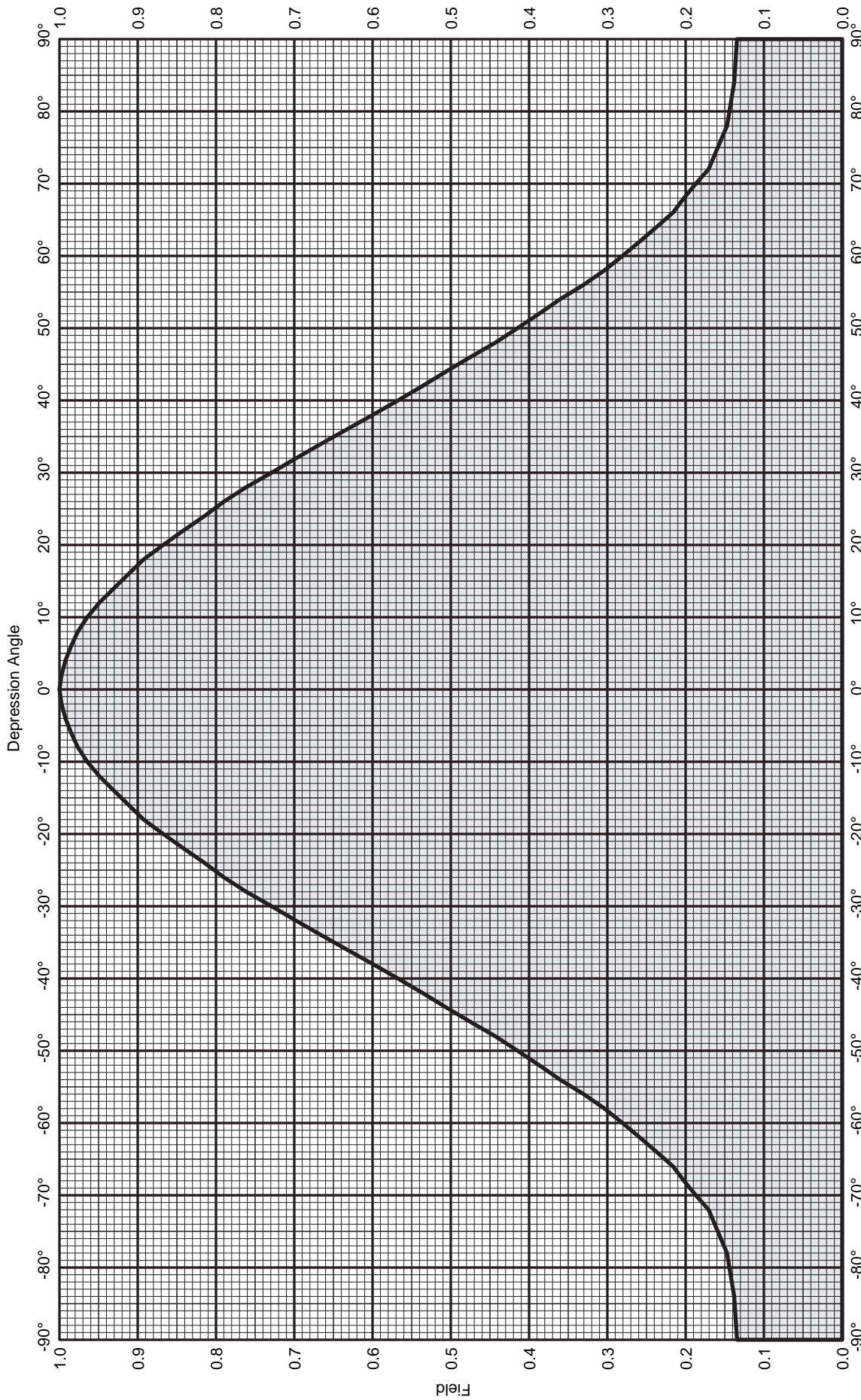
GAIN: 7.0 dBd

HORIZONTAL POLARIZATION

| Angle | Field | Rel.dB | dBd | PwrMult | Angle | Field | Rel.dB | dBd | PwrMult |
|-------|-------|--------|--------|---------|-------|-------|--------|------|---------|
| 270 | 0.028 | -31.12 | -24.12 | 0.00 | 315 | 0.541 | -5.34 | 1.66 | 1.46 |
| 271 | 0.035 | -29.06 | -22.06 | 0.01 | 316 | 0.555 | -5.11 | 1.89 | 1.55 |
| 272 | 0.043 | -27.40 | -20.40 | 0.01 | 317 | 0.571 | -4.87 | 2.13 | 1.63 |
| 273 | 0.050 | -25.97 | -18.97 | 0.01 | 318 | 0.586 | -4.64 | 2.36 | 1.72 |
| 274 | 0.058 | -24.74 | -17.74 | 0.02 | 319 | 0.602 | -4.41 | 2.59 | 1.81 |
| 275 | 0.067 | -23.46 | -16.46 | 0.02 | 320 | 0.617 | -4.20 | 2.80 | 1.91 |
| 276 | 0.076 | -22.34 | -15.34 | 0.03 | 321 | 0.632 | -3.98 | 3.02 | 2.00 |
| 277 | 0.084 | -21.54 | -14.54 | 0.04 | 322 | 0.648 | -3.77 | 3.23 | 2.10 |
| 278 | 0.091 | -20.80 | -13.80 | 0.04 | 323 | 0.662 | -3.58 | 3.42 | 2.20 |
| 279 | 0.099 | -20.05 | -13.05 | 0.05 | 324 | 0.677 | -3.39 | 3.61 | 2.29 |
| 280 | 0.108 | -19.36 | -12.36 | 0.06 | 325 | 0.692 | -3.20 | 3.80 | 2.40 |
| 281 | 0.116 | -18.68 | -11.68 | 0.07 | 326 | 0.708 | -3.00 | 4.00 | 2.51 |
| 282 | 0.125 | -18.04 | -11.04 | 0.08 | 327 | 0.722 | -2.82 | 4.18 | 2.62 |
| 283 | 0.135 | -17.40 | -10.40 | 0.09 | 328 | 0.737 | -2.65 | 4.35 | 2.72 |
| 284 | 0.144 | -16.81 | -9.81 | 0.10 | 329 | 0.751 | -2.49 | 4.51 | 2.82 |
| 285 | 0.154 | -16.23 | -9.23 | 0.12 | 330 | 0.764 | -2.33 | 4.67 | 2.93 |
| 286 | 0.164 | -15.68 | -8.68 | 0.14 | 331 | 0.778 | -2.18 | 4.82 | 3.03 |
| 287 | 0.175 | -15.12 | -8.12 | 0.15 | 332 | 0.792 | -2.03 | 4.97 | 3.14 |
| 288 | 0.186 | -14.59 | -7.59 | 0.17 | 333 | 0.805 | -1.89 | 5.11 | 3.24 |
| 289 | 0.197 | -14.10 | -7.10 | 0.19 | 334 | 0.817 | -1.75 | 5.25 | 3.35 |
| 290 | 0.208 | -13.64 | -6.64 | 0.22 | 335 | 0.830 | -1.62 | 5.38 | 3.45 |
| 291 | 0.221 | -13.10 | -6.10 | 0.25 | 336 | 0.842 | -1.50 | 5.50 | 3.55 |
| 292 | 0.235 | -12.58 | -5.58 | 0.28 | 337 | 0.855 | -1.36 | 5.64 | 3.66 |
| 293 | 0.244 | -12.27 | -5.27 | 0.30 | 338 | 0.867 | -1.24 | 5.76 | 3.77 |
| 294 | 0.252 | -11.96 | -4.96 | 0.32 | 339 | 0.878 | -1.13 | 5.87 | 3.86 |
| 295 | 0.265 | -11.54 | -4.54 | 0.35 | 340 | 0.888 | -1.03 | 5.97 | 3.96 |
| 296 | 0.277 | -11.14 | -4.14 | 0.39 | 341 | 0.898 | -0.94 | 6.06 | 4.04 |
| 297 | 0.290 | -10.74 | -3.74 | 0.42 | 342 | 0.907 | -0.84 | 6.16 | 4.13 |
| 298 | 0.303 | -10.36 | -3.36 | 0.46 | 343 | 0.917 | -0.75 | 6.25 | 4.22 |
| 299 | 0.314 | -10.06 | -3.06 | 0.49 | 344 | 0.927 | -0.66 | 6.34 | 4.31 |
| 300 | 0.325 | -9.76 | -2.76 | 0.53 | 345 | 0.936 | -0.57 | 6.43 | 4.39 |
| 301 | 0.339 | -9.40 | -2.40 | 0.58 | 346 | 0.945 | -0.49 | 6.51 | 4.48 |
| 302 | 0.353 | -9.05 | -2.05 | 0.62 | 347 | 0.952 | -0.43 | 6.57 | 4.54 |
| 303 | 0.366 | -8.73 | -1.73 | 0.67 | 348 | 0.959 | -0.37 | 6.63 | 4.61 |
| 304 | 0.379 | -8.42 | -1.42 | 0.72 | 349 | 0.966 | -0.30 | 6.70 | 4.67 |
| 305 | 0.394 | -8.10 | -1.10 | 0.78 | 350 | 0.973 | -0.24 | 6.76 | 4.74 |
| 306 | 0.408 | -7.79 | -0.79 | 0.83 | 351 | 0.976 | -0.21 | 6.79 | 4.78 |
| 307 | 0.421 | -7.51 | -0.51 | 0.89 | 352 | 0.980 | -0.17 | 6.83 | 4.82 |
| 308 | 0.435 | -7.24 | -0.24 | 0.95 | 353 | 0.984 | -0.14 | 6.86 | 4.86 |
| 309 | 0.450 | -6.94 | 0.06 | 1.01 | 354 | 0.989 | -0.10 | 6.90 | 4.90 |
| 310 | 0.465 | -6.66 | 0.34 | 1.08 | 355 | 0.992 | -0.07 | 6.93 | 4.94 |
| 311 | 0.481 | -6.36 | 0.64 | 1.16 | 356 | 0.996 | -0.03 | 6.97 | 4.97 |
| 312 | 0.497 | -6.08 | 0.92 | 1.24 | 357 | 0.997 | -0.03 | 6.97 | 4.98 |
| 313 | 0.511 | -5.83 | 1.17 | 1.31 | 358 | 0.998 | -0.02 | 6.98 | 4.99 |
| 314 | 0.526 | -5.58 | 1.42 | 1.39 | 359 | 0.999 | -0.01 | 6.99 | 5.00 |

WVIB-DT
FID 27387
Key West, FL
Attachment 4-7

VERTICAL RADIATION PATTERN



SINGLE DRV

ORIENTED AT HORIZON

GAIN: 7.0 dBd

HORIZONTAL POLARIZATION



KATHREIN
SCALA DIVISION

Post Office Box 4580
Medford, OR 97501 (USA)
Phone: (541) 779-6500
Fax: (541) 779-3991
<http://www.kathrein-scala.com>



SINGLE DRV

VERTICAL RADIATION PATTERN

ORIENTED AT HORIZON

GAIN: 7.0 dBd

HORIZONTAL POLARIZATION

| Angle | Field | Rel.dB | dBd | PwrMult | Angle | Field | Rel.dB | dBd | PwrMult |
|-------|-------|--------|--------|---------|-------|-------|--------|------|---------|
| -90 | 0.134 | -17.43 | -10.43 | 0.09 | -45 | 0.491 | -6.19 | 0.81 | 1.21 |
| -89 | 0.135 | -17.39 | -10.39 | 0.09 | -44 | 0.506 | -5.92 | 1.08 | 1.28 |
| -88 | 0.136 | -17.36 | -10.36 | 0.09 | -43 | 0.521 | -5.66 | 1.34 | 1.36 |
| -87 | 0.136 | -17.32 | -10.32 | 0.09 | -42 | 0.536 | -5.41 | 1.59 | 1.44 |
| -86 | 0.137 | -17.28 | -10.28 | 0.09 | -41 | 0.552 | -5.16 | 1.84 | 1.53 |
| -85 | 0.137 | -17.24 | -10.24 | 0.09 | -40 | 0.567 | -4.92 | 2.08 | 1.61 |
| -84 | 0.138 | -17.20 | -10.20 | 0.10 | -39 | 0.584 | -4.68 | 2.32 | 1.71 |
| -83 | 0.140 | -17.11 | -10.11 | 0.10 | -38 | 0.600 | -4.44 | 2.56 | 1.80 |
| -82 | 0.141 | -17.01 | -10.01 | 0.10 | -37 | 0.616 | -4.21 | 2.79 | 1.90 |
| -81 | 0.143 | -16.92 | -9.92 | 0.10 | -36 | 0.633 | -3.98 | 3.02 | 2.01 |
| -80 | 0.144 | -16.83 | -9.83 | 0.10 | -35 | 0.649 | -3.75 | 3.25 | 2.11 |
| -79 | 0.146 | -16.74 | -9.74 | 0.11 | -34 | 0.666 | -3.54 | 3.46 | 2.22 |
| -78 | 0.147 | -16.64 | -9.64 | 0.11 | -33 | 0.682 | -3.33 | 3.67 | 2.33 |
| -77 | 0.151 | -16.41 | -9.41 | 0.11 | -32 | 0.698 | -3.13 | 3.87 | 2.44 |
| -76 | 0.155 | -16.19 | -9.19 | 0.12 | -31 | 0.713 | -2.93 | 4.07 | 2.55 |
| -75 | 0.159 | -15.97 | -8.97 | 0.13 | -30 | 0.729 | -2.75 | 4.25 | 2.66 |
| -74 | 0.163 | -15.76 | -8.76 | 0.13 | -29 | 0.745 | -2.56 | 4.44 | 2.78 |
| -73 | 0.167 | -15.56 | -8.56 | 0.14 | -28 | 0.761 | -2.37 | 4.63 | 2.91 |
| -72 | 0.171 | -15.36 | -8.36 | 0.15 | -27 | 0.776 | -2.21 | 4.79 | 3.02 |
| -71 | 0.179 | -14.95 | -7.95 | 0.16 | -26 | 0.790 | -2.05 | 4.95 | 3.13 |
| -70 | 0.187 | -14.56 | -7.56 | 0.18 | -25 | 0.802 | -1.91 | 5.09 | 3.23 |
| -69 | 0.195 | -14.22 | -7.22 | 0.19 | -24 | 0.815 | -1.78 | 5.22 | 3.33 |
| -68 | 0.202 | -13.89 | -6.89 | 0.20 | -23 | 0.828 | -1.64 | 5.36 | 3.44 |
| -67 | 0.209 | -13.59 | -6.59 | 0.22 | -22 | 0.842 | -1.50 | 5.50 | 3.55 |
| -66 | 0.216 | -13.31 | -6.31 | 0.23 | -21 | 0.854 | -1.37 | 5.63 | 3.66 |
| -65 | 0.227 | -12.89 | -5.89 | 0.26 | -20 | 0.867 | -1.24 | 5.76 | 3.77 |
| -64 | 0.237 | -12.50 | -5.50 | 0.28 | -19 | 0.880 | -1.11 | 5.89 | 3.88 |
| -63 | 0.248 | -12.12 | -5.12 | 0.31 | -18 | 0.892 | -0.99 | 6.01 | 3.99 |
| -62 | 0.259 | -11.75 | -4.75 | 0.34 | -17 | 0.902 | -0.90 | 6.10 | 4.08 |
| -61 | 0.270 | -11.38 | -4.38 | 0.36 | -16 | 0.912 | -0.80 | 6.20 | 4.16 |
| -60 | 0.281 | -11.04 | -4.04 | 0.39 | -15 | 0.921 | -0.72 | 6.28 | 4.25 |
| -59 | 0.292 | -10.69 | -3.69 | 0.43 | -14 | 0.930 | -0.63 | 6.37 | 4.34 |
| -58 | 0.304 | -10.35 | -3.35 | 0.46 | -13 | 0.940 | -0.54 | 6.46 | 4.43 |
| -57 | 0.317 | -9.98 | -2.98 | 0.50 | -12 | 0.949 | -0.45 | 6.55 | 4.51 |
| -56 | 0.330 | -9.62 | -2.62 | 0.55 | -11 | 0.957 | -0.38 | 6.62 | 4.59 |
| -55 | 0.345 | -9.23 | -2.23 | 0.60 | -10 | 0.964 | -0.31 | 6.69 | 4.66 |
| -54 | 0.360 | -8.86 | -1.86 | 0.65 | -9 | 0.971 | -0.26 | 6.74 | 4.72 |
| -53 | 0.374 | -8.55 | -1.55 | 0.70 | -8 | 0.977 | -0.21 | 6.79 | 4.78 |
| -52 | 0.387 | -8.24 | -1.24 | 0.75 | -7 | 0.981 | -0.17 | 6.83 | 4.82 |
| -51 | 0.401 | -7.94 | -0.94 | 0.81 | -6 | 0.985 | -0.13 | 6.87 | 4.86 |
| -50 | 0.415 | -7.64 | -0.64 | 0.86 | -5 | 0.989 | -0.10 | 6.90 | 4.90 |
| -49 | 0.429 | -7.35 | -0.35 | 0.92 | -4 | 0.992 | -0.07 | 6.93 | 4.94 |
| -48 | 0.443 | -7.07 | -0.07 | 0.98 | -3 | 0.995 | -0.04 | 6.96 | 4.96 |
| -47 | 0.459 | -6.76 | 0.24 | 1.06 | -2 | 0.997 | -0.02 | 6.98 | 4.99 |
| -46 | 0.475 | -6.47 | 0.53 | 1.13 | -1 | 0.999 | -0.01 | 6.99 | 5.00 |
| | | | | | 0 | 1.000 | 0.00 | 7.00 | 5.01 |



SINGLE DRV

VERTICAL RADIATION PATTERN

ORIENTED AT HORIZON

GAIN: 7.0 dBd

HORIZONTAL POLARIZATION

| Angle | Field | Rel.dB | dBd | PwrMult | Angle | Field | Rel.dB | dBd | PwrMult |
|-------|-------|--------|------|---------|-------|-------|--------|--------|---------|
| 0 | 1.000 | 0.00 | 7.00 | 5.01 | 45 | 0.491 | -6.19 | 0.81 | 1.21 |
| 1 | 0.999 | -0.01 | 6.99 | 5.00 | 46 | 0.475 | -6.47 | 0.53 | 1.13 |
| 2 | 0.997 | -0.02 | 6.98 | 4.99 | 47 | 0.459 | -6.76 | 0.24 | 1.06 |
| 3 | 0.995 | -0.04 | 6.96 | 4.96 | 48 | 0.443 | -7.07 | -0.07 | 0.98 |
| 4 | 0.992 | -0.07 | 6.93 | 4.94 | 49 | 0.429 | -7.35 | -0.35 | 0.92 |
| 5 | 0.989 | -0.10 | 6.90 | 4.90 | 50 | 0.415 | -7.64 | -0.64 | 0.86 |
| 6 | 0.985 | -0.13 | 6.87 | 4.86 | 51 | 0.401 | -7.94 | -0.94 | 0.81 |
| 7 | 0.981 | -0.17 | 6.83 | 4.82 | 52 | 0.387 | -8.24 | -1.24 | 0.75 |
| 8 | 0.977 | -0.21 | 6.79 | 4.78 | 53 | 0.374 | -8.55 | -1.55 | 0.70 |
| 9 | 0.971 | -0.26 | 6.74 | 4.72 | 54 | 0.360 | -8.86 | -1.86 | 0.65 |
| 10 | 0.964 | -0.31 | 6.69 | 4.66 | 55 | 0.345 | -9.23 | -2.23 | 0.60 |
| 11 | 0.957 | -0.38 | 6.62 | 4.59 | 56 | 0.330 | -9.62 | -2.62 | 0.55 |
| 12 | 0.949 | -0.45 | 6.55 | 4.51 | 57 | 0.317 | -9.98 | -2.98 | 0.50 |
| 13 | 0.940 | -0.54 | 6.46 | 4.43 | 58 | 0.304 | -10.35 | -3.35 | 0.46 |
| 14 | 0.930 | -0.63 | 6.37 | 4.34 | 59 | 0.292 | -10.69 | -3.69 | 0.43 |
| 15 | 0.921 | -0.72 | 6.28 | 4.25 | 60 | 0.281 | -11.04 | -4.04 | 0.39 |
| 16 | 0.912 | -0.80 | 6.20 | 4.16 | 61 | 0.270 | -11.38 | -4.38 | 0.36 |
| 17 | 0.902 | -0.90 | 6.10 | 4.08 | 62 | 0.259 | -11.75 | -4.75 | 0.34 |
| 18 | 0.892 | -0.99 | 6.01 | 3.99 | 63 | 0.248 | -12.12 | -5.12 | 0.31 |
| 19 | 0.880 | -1.11 | 5.89 | 3.88 | 64 | 0.237 | -12.50 | -5.50 | 0.28 |
| 20 | 0.867 | -1.24 | 5.76 | 3.77 | 65 | 0.227 | -12.89 | -5.89 | 0.26 |
| 21 | 0.854 | -1.37 | 5.63 | 3.66 | 66 | 0.216 | -13.31 | -6.31 | 0.23 |
| 22 | 0.842 | -1.50 | 5.50 | 3.55 | 67 | 0.209 | -13.59 | -6.59 | 0.22 |
| 23 | 0.828 | -1.64 | 5.36 | 3.44 | 68 | 0.202 | -13.89 | -6.89 | 0.20 |
| 24 | 0.815 | -1.78 | 5.22 | 3.33 | 69 | 0.195 | -14.22 | -7.22 | 0.19 |
| 25 | 0.802 | -1.91 | 5.09 | 3.23 | 70 | 0.187 | -14.56 | -7.56 | 0.18 |
| 26 | 0.790 | -2.05 | 4.95 | 3.13 | 71 | 0.179 | -14.95 | -7.95 | 0.16 |
| 27 | 0.776 | -2.21 | 4.79 | 3.02 | 72 | 0.171 | -15.36 | -8.36 | 0.15 |
| 28 | 0.761 | -2.37 | 4.63 | 2.91 | 73 | 0.167 | -15.56 | -8.56 | 0.14 |
| 29 | 0.745 | -2.56 | 4.44 | 2.78 | 74 | 0.163 | -15.76 | -8.76 | 0.13 |
| 30 | 0.729 | -2.75 | 4.25 | 2.66 | 75 | 0.159 | -15.97 | -8.97 | 0.13 |
| 31 | 0.713 | -2.93 | 4.07 | 2.55 | 76 | 0.155 | -16.19 | -9.19 | 0.12 |
| 32 | 0.698 | -3.13 | 3.87 | 2.44 | 77 | 0.151 | -16.41 | -9.41 | 0.11 |
| 33 | 0.682 | -3.33 | 3.67 | 2.33 | 78 | 0.147 | -16.64 | -9.64 | 0.11 |
| 34 | 0.666 | -3.54 | 3.46 | 2.22 | 79 | 0.146 | -16.74 | -9.74 | 0.11 |
| 35 | 0.649 | -3.75 | 3.25 | 2.11 | 80 | 0.144 | -16.83 | -9.83 | 0.10 |
| 36 | 0.633 | -3.98 | 3.02 | 2.01 | 81 | 0.143 | -16.92 | -9.92 | 0.10 |
| 37 | 0.616 | -4.21 | 2.79 | 1.90 | 82 | 0.141 | -17.01 | -10.01 | 0.10 |
| 38 | 0.600 | -4.44 | 2.56 | 1.80 | 83 | 0.140 | -17.11 | -10.11 | 0.10 |
| 39 | 0.584 | -4.68 | 2.32 | 1.71 | 84 | 0.138 | -17.20 | -10.20 | 0.10 |
| 40 | 0.567 | -4.92 | 2.08 | 1.61 | 85 | 0.137 | -17.24 | -10.24 | 0.09 |
| 41 | 0.552 | -5.16 | 1.84 | 1.53 | 86 | 0.137 | -17.28 | -10.28 | 0.09 |
| 42 | 0.536 | -5.41 | 1.59 | 1.44 | 87 | 0.136 | -17.32 | -10.32 | 0.09 |
| 43 | 0.521 | -5.66 | 1.34 | 1.36 | 88 | 0.136 | -17.36 | -10.36 | 0.09 |
| 44 | 0.506 | -5.92 | 1.08 | 1.28 | 89 | 0.135 | -17.39 | -10.39 | 0.09 |
| | | | | | 90 | 0.134 | -17.43 | -10.43 | 0.09 |