# APPLICATION FOR A MINOR MODIFICATION OF CONSTRUCTION PERMIT

## FCC FORM 349

**File Number BNPFT-20030828BBT**

**(PRIMARY STATION - WGIB(FM), Facility Number - 24256)**

**W237CG (Facility ID 141767)**

**Odenville, Alabama**

**CHANNEL 237 – 95.3 MHz**

**ERP: 0.01kW (H&V)**

**APPLICANT: Glen Iris Baptist School**

**February, 2006**

**Prepared by:**

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**Engineering Statement**

**In Support of a Application for a**
**FM Translator Construction Permit**

**W237CG(Facility ID 141767), Odenville, Alabama**

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**ENGINEERING STATEMENT**

**Of**

**Lee S. Reynolds**

**And**

**Virgle Leon Strickland**

**In Support of an**

**Minor Modification of a**

**Construction Permit**

**W237CG (Facility ID 141767)**

**Odenville, Alabama**

**Channel 237 – 95.3 MHz**

**ERP: 0.01kW(H&V)**

**February, 2006**

## General

As broadcast technical consultants doing business as Reynolds Technical Associates (RTA), we have been authorized by Glen Iris Baptist School (herein referred to as "The Applicant"), to conduct engineering studies and prepare the engineering portion of an application to modify a construction permit for a new FM translator station (File Number BNPFT-20030828BBT).

The requested modification is to change transmitter location and all elevations.

The W237CG facility is to broadcast the programming of WGIB(FM) of Birmingham, Alabama, by receiving the programming from the main studio of WGIB(FM) by off-air method.

**The Proposed Site**
**(No Exhibits)**

A study was performed for the proposed site to determine the maximum effective radiated power (MERP) of 0.01 kilowatts. The antenna supporting structure has an antenna structure registration number of 1242201.

**Directional Antenna**
**(Exhibit E, Figure 1)**

The Applicant proposes to use a off shelf directional antenna manufactured by Kathrein. Exhibit E, Figure 1 is the specification for the proposed antenna (Model FMV Dipole).

**Protected and Interfering Contours**
**(Exhibits E, Figure 2)**

FM overlap studies where performed for the proposed facility and Exhibit E, Figure 2 is a map displaying the protected and interfering contours.

Exhibit E, Figure 2 & 3 shows the lack of prohibited contour overlap with all pertinent stations and application, except 2nd adjacent channel station WBHJ (FM), Midfield, Alabama, which can be satisfied by using the provisions of §74.1204d of the Commission's Rules and Regulations. WBHJ (FM) produces a signal level of 61.45 dBu F(50,50) at the proposed site. Using the appropriate U/D ratio or 40 dBu for 2nd adjacent channel stations, the interfering contour of the proposed translator becomes 101.45 dBu, which extends to a radius of 180 meters (in the maximum lobe). Since the entire area within the proposed 101.45 dBu is fenced with a locked gate making it in assessable to the general public as displayed in Exhibit E, Figure 4. There would be no contour overlap with WBHJ (FM) over populated areas and no interference to the reception of any station is expected. If a waiver of §74.1204a is required in the case, it is hereby respectfully requested.

**Human Exposure**
**(No Exhibits)**

The proposed FM facility was evaluated in terms of potential radiofrequency radiation exposure at ground level in accordance with FCC guidelines for maximum permissible exposure.

Should anyone be required to climb the tower, the facilities located on the tower have an agreement to either reduce power or cease operation, whichever is necessary, to prevent hazardous exposure to radiofrequency radiation.

**Environmental Impact**
**(No Exhibits)**

A grant of the proposed construction would not constitute a major action as defined in the Commission's Rules and Regulations since the proposed antenna will be using an existing structure.

**Conclusion**

This statement/application has been prepared for The Applicant by utilizing the latest available information, cross-checked with the Federal Communications Commission and other sources. Therefore, it is submitted that the engineering data compiled and demonstrated herein for the proposed is in compliance with Commission's Rules and Regulations at the time of this application's filing date. We welcome the opportunity to discuss with the staff of the FCC the engineering data contained in this application. Should any questions arise concerning the information, please contact us.

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**Statement of the Consultants**

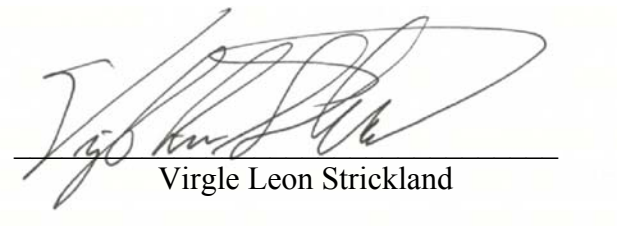
The instant engineering statement was prepared for The Applicant and supports an application to modify the construction permit of W237CG. It was developed by RTA and may not be used for purposes other than submission to the Commission by the applicant.

It may not be reproduced in its entirety, or in part, by anyone (other than from the Commission) without the written consent of RTA.

It is prepared for The Applicant under contractual agreement, and its certification by RTA is used accordingly. If The Applicant fails in its contractual obligation, RTA reserves the right to withdraw its certification.

The information in this application is compiled from the most recent Commission and outside data. RTA is not responsible for errors resulting from incorrect data or unpublished rule and procedure changes.

For RTA:



Virgle Leon Strickland

February 16th, 2006

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The following pages are exhibits prepared and assembled in support of the proposed.

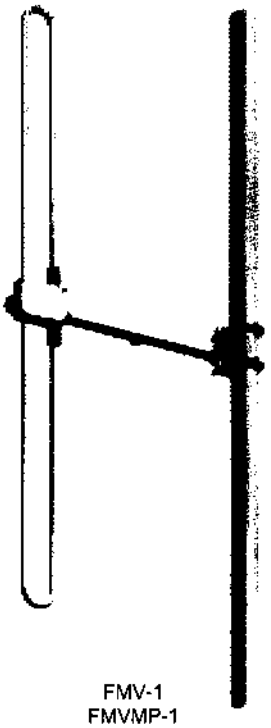
KATHREIN
SCALA DIVISION

# FMV
# FMVMP
## FM DIPOLE ANTENNA
1 dBd gain
88 to 108 MHz

Kathrein Scala Division FMV and FMVMP dipole antennas for FM radio transmission offer high performance, easy installation, and application flexibility. Dipoles may be stacked for more gain and higher power handling capacity as required. Arrays include power dividers and coax feeders, plus installation hardware.

Like all Kathrein Scala Division antennas, the FMV and FMVMP are made of the finest materials using state of the art electrical and mechanical designs, resulting in superior performance and long service life. All FMV and FMVMP antennas feature:

- Triple laminated dipole for superior strength.
- Anodized aluminum and stainless steel construction designed to survive extreme weather.
- Internal balun is sealed in a cast aluminum housing to prevent moisture ingress and ice damage.
- Entire antenna is at DC ground potential for superior resistance to lightning.

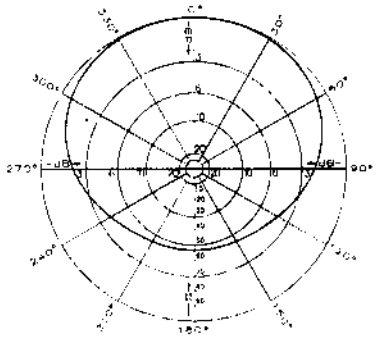


FMV-1
FMVMP-1

**General Specifications:**

| | |
|---|---|
| Frequency | 88 to 108 MHz |
| Bandwidth | 88–98 MHz, 93–103 MHz, or 98–108 MHz |
| Impedance | 50 ohms |
| VSWR | < 1.5:1 |
| Polarization | Vertical |
| Maximum input power<br>FMV<br>FMVMP | <br>100 watts (at 50° C)<br>500 watts (at 50° C) |
| Connector | N female (other terminations are available for stacked arrays) |
| Wind survival rating* | 120 mph (200 kph) |
| Mounting | For masts of 2.375 inch (60 mm) OD (using supplied hardware). |

*Mechanical design is based on environmental conditions as stipulated in EIA-222-F (June 1996) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details



Azimuth pattern

**Exhibit E, Figure 1**

10480-C

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KATHREIN
SCALA DIVISION

# FMV
# FMVMP

## FM DIPOLE ANTENNA

1 dBd gain

88 to 108 MHz

**Specifications:**

| Model | Frequency MHz | Gain dBd | Weight lb (kg) | Power Gain | Equivalent Dimensions | Flat Plate Area | Number of Antennas |
|---|---|---|---|---|---|---|---|
| FMV-1 | 88–98 | 1 | 6 (2.7) | 1.26 | 56 x 25 inches (1422 x 635 mm) | 0.69 $ft^2$ (0.0646 $m^2$) | 1 |
| | 93–103 | 1 | 6 (2.7) | 1.26 | 53 x 24 inches (1347 x 610 mm) | 0.66 $ft^2$ (0.061 $m^2$) | 1 |
| | 98–108 | 1 | 6 (2.7) | 1.26 | 51 x 23 inches (1422 x 585 mm) | 0.64 $ft^2$ (0.059 $m^2$) | 1 |
| FMV-2 | 88–98 | 3.5 | 18 (8.2) | 2.24 | 166 x 25 inches (4216 x 635 mm) | 1.64 $ft^2$ (0.153 $m^2$) | 2 |
| | 93–103 | 3.5 | 18 (8.2) | 2.24 | 158 x 24 inches (4014 x 610 mm) | 1.58 $ft^2$ (0.146 $m^2$) | 2 |
| | 98–108 | 3.5 | 18 (8.2) | 2.24 | 151 x 23 inches (3836 x 585 mm) | 1.51 $ft^2$ (0.14 $m^2$) | 2 |
| FMV-3 | 88–98 | 4.9 | 29 (13.2) | 2.82 | 276 x 25 inches (7010 x 635 mm) | 2.56 $ft^2$ (0.237 $m^2$) | 3 |
| | 93–103 | 4.9 | 29 (13.2) | 2.82 | 263 x 24 inches (6681 x 610 mm) | 2.35 $ft^2$ (0.218 $m^2$) | 3 |
| | 98–108 | 4.9 | 29 (13.2) | 2.82 | 251 x 23 inches (6376 x 585 mm) | 2.34 $ft^2$ (0.217 $m^2$) | 3 |
| FMV-4 | 88–98 | 6 | 43 (19.5) | 3.98 | 386 x 25 inches (9804 x 635 mm) | 3.48 $ft^2$ (0.323 $m^2$) | 4 |
| | 93–103 | 6 | 43 (19.5) | 3.98 | 368 x 24 inches (9348 x 610 mm) | 3.32 $ft^2$ (0.308 $m^2$) | 4 |
| | 98–108 | 6 | 43 (19.5) | 3.98 | 351 x 23 inches (8916 x 585 mm) | 3.18 $ft^2$ (0.295 $m^2$) | 4 |
| FMVMP-1 | 88–98 | 1 | 6 (2.7) | 1.26 | 56 x 33 inches (1422 x 838 mm) | 0.69 $ft^2$ (0.064 $m^2$) | 1 |
| | 93–103 | 1 | 6 (2.7) | 1.26 | 53 x 27.5 inches (1347 x 699 mm) | 0.72 $ft^2$ (0.067 $m^2$) | 1 |
| | 98–108 | 1 | 6 (2.7) | 1.26 | 51 x 26 inches (1422 x 661 mm) | 0.66 $ft^2$ (0.061 $m^2$) | 1 |
| FMVMP-2 | 88–98 | 3.5 | 23 (10.5) | 2.24 | 166 x 33 inches (4216 x 838 mm) | 1.7 $ft^2$ (0.157 $m^2$) | 2 |
| | 93–103 | 3.5 | 23 (10.5) | 2.24 | 158 x 31.5 inches (4014 x 800 mm) | 1.62 $ft^2$ (0.15 $m^2$) | 2 |
| | 98–108 | 3.5 | 23 (10.5) | 2.24 | 151 x 30 inches (3836 x 762 mm) | 1.55 $ft^2$ (0.144 $m^2$) | 2 |
| FMVMP-3 | 88–98 | 4.9 | 34 (15.5) | 2.82 | 276 x 33 inches (7010 x 838 mm) | 2.61 $ft^2$ (0.243 $m^2$) | 3 |
| | 93–103 | 4.9 | 34 (15.5) | 2.82 | 263 x 31.5 inches (6681 x 800 mm) | 2.49 $ft^2$ (0.232 $m^2$) | 3 |
| | 98–108 | 4.9 | 34 (15.5) | 2.82 | 251 x 30 inches (6376 x 762 mm) | 2.39 $ft^2$ (0.222 $m^2$) | 3 |
| FMVMP-4 | 88–98 | 6 | 48 (21.8) | 3.98 | 386 x 33 inches (9804 x 838 mm) | 3.52 $ft^2$ (0.328 $m^2$) | 4 |
| | 93–103 | 6 | 48 (21.8) | 3.98 | 368 x 31.5 inches (9348 x 800 mm) | 3.37 $ft^2$ (0.313 $m^2$) | 4 |
| | 98–108 | 6 | 48 (21.8) | 3.98 | 351 x 30 inches (8916 x 762 mm) | 3.22 $ft^2$ (0.299 $m^2$) | 4 |



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KATHREIN
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# FMV
# FMVMP

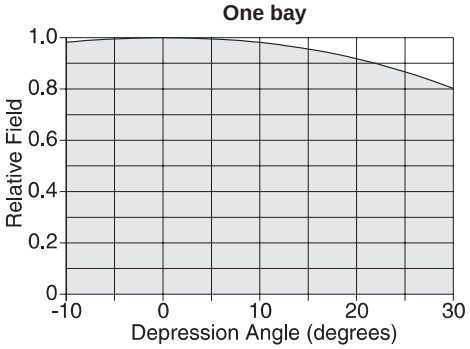
## FM DIPOLE ANTENNA

1 dBd gain

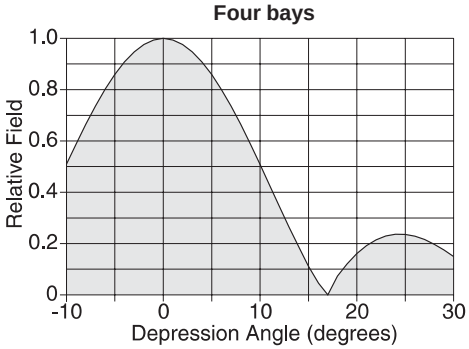
88 to 108 MHz

Elevation patterns

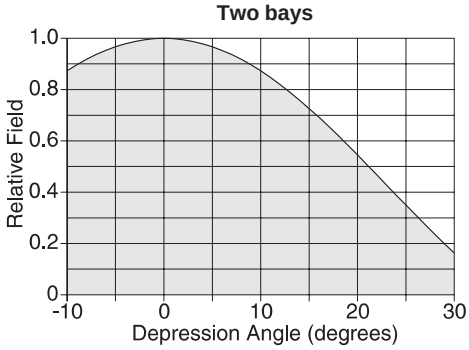
**One bay**




**Four bays**




**Two bays**




**Order Information:**

| Model | Description |
|---|---|
| FMV | 88–98 MHz antenna |
| FMV | 93–103 MHz antenna |
| FMV | 98–108 MHz antenna |
| FMVMP | 88–98 MHz antenna |
| FMVMP | 93–103 MHz antenna |
| FMVMP | 98–108 MHz antenna |



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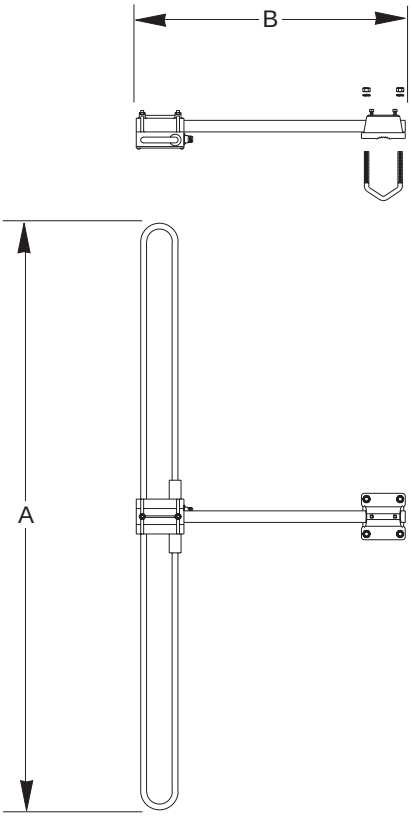
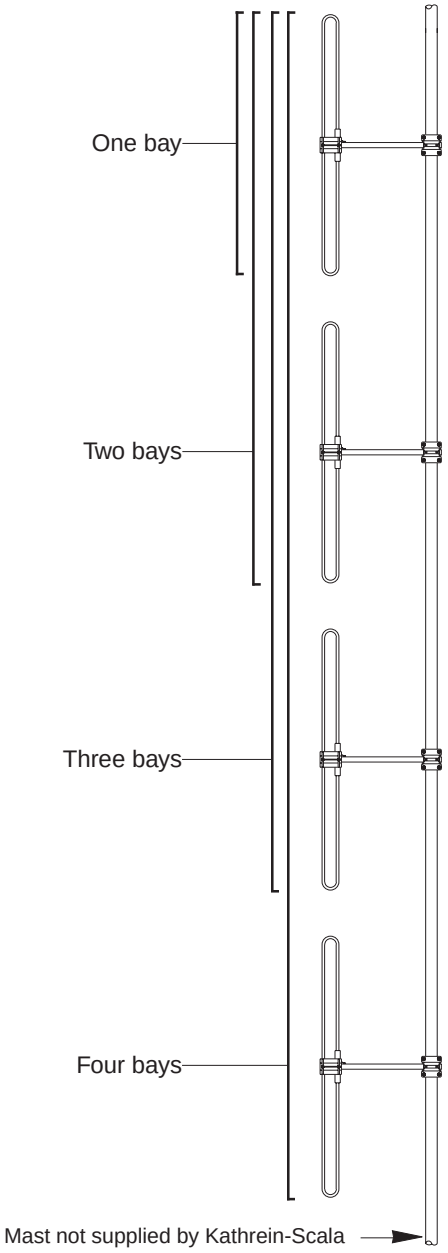
# FMV
# FMVMP

## FM DIPOLE ANTENNA

1 dBd gain

88 to 108 MHz




| Dimensions: | | A | B |
|---|---|---|---|
| FMV | 88–98 MHz | 56 inches (1422 mm) | 25 inches (635 mm) |
| | 93–103 MHz | 53 inches (1347 mm) | 24 inches (610 mm) |
| | 98–108 MHz | 51 inches (1422 mm) | 23 inches (585 mm) |
| FMVMP | 88–98 MHz | 56 inches (1422 mm) | 33 inches (838 mm) |
| | 93–103 MHz | 53 inches (1347 mm) | 31.5 inches (800 mm) |
| | 98–108 MHz | 51 inches (1422 mm) | 30 inches (762 mm) |

**Installation note:**

In order to obtain proper impedance matching (minimum VSWR) and radiation patterns as shown the FMV and FMVMP antennas must be attached to a 2.375 inch (60 mm) OD mast that extends at least 12 inches (305 mm) above and below the antenna dipoles.



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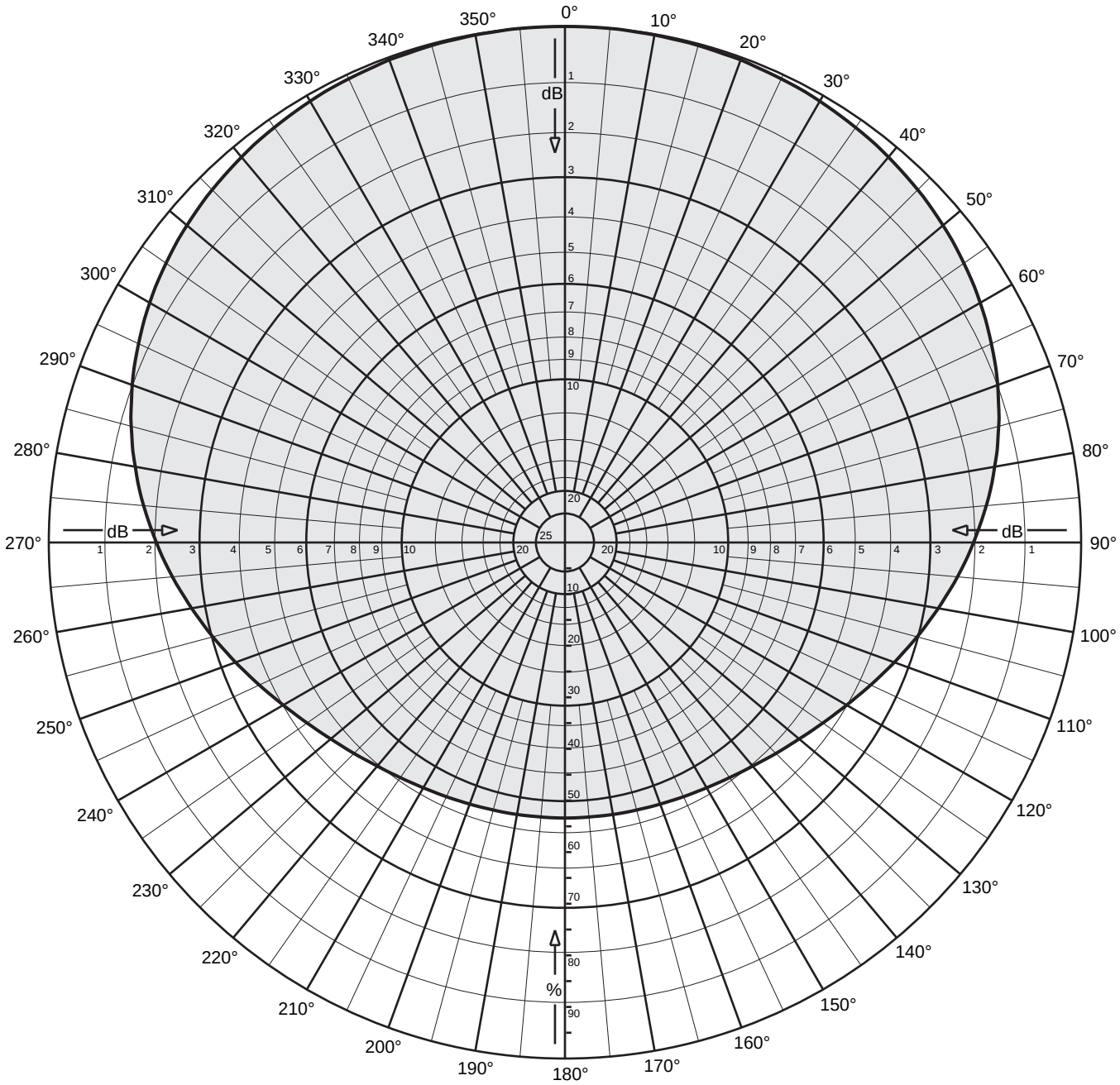


FMV Dipole
FM
1.0 dBd (3.15 dBi)
Vertical polarization
Horizontal radiation pattern

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FMV Dipole
FM
1.0 dBd (3.15 dBi )
Vertical polarization

Horizontal radiation pattern

| Angle | Field | Rel.dB | dBd | PwrMult | Angle | Field | Rel.dB | dBd | PwrMult |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 1.000 | 0.00 | 1.00 | 1.26 | 45 | 0.967 | -0.29 | 0.71 | 1.18 |
| 1 | 1.000 | 0.00 | 1.00 | 1.26 | 46 | 0.965 | -0.31 | 0.69 | 1.17 |
| 2 | 1.000 | 0.00 | 1.00 | 1.26 | 47 | 0.963 | -0.33 | 0.67 | 1.17 |
| 3 | 1.000 | 0.00 | 1.00 | 1.26 | 48 | 0.961 | -0.35 | 0.65 | 1.16 |
| 4 | 1.000 | 0.00 | 1.00 | 1.26 | 49 | 0.958 | -0.37 | 0.63 | 1.16 |
| 5 | 1.000 | 0.00 | 1.00 | 1.26 | 50 | 0.956 | -0.39 | 0.61 | 1.15 |
| 6 | 1.000 | 0.00 | 1.00 | 1.26 | 51 | 0.954 | -0.41 | 0.59 | 1.15 |
| 7 | 0.999 | -0.00 | 1.00 | 1.26 | 52 | 0.952 | -0.43 | 0.57 | 1.14 |
| 8 | 0.999 | -0.01 | 0.99 | 1.26 | 53 | 0.949 | -0.45 | 0.55 | 1.13 |
| 9 | 0.999 | -0.01 | 0.99 | 1.26 | 54 | 0.946 | -0.48 | 0.52 | 1.13 |
| 10 | 0.999 | -0.01 | 0.99 | 1.26 | 55 | 0.944 | -0.50 | 0.50 | 1.12 |
| 11 | 0.998 | -0.01 | 0.99 | 1.25 | 56 | 0.941 | -0.53 | 0.47 | 1.11 |
| 12 | 0.998 | -0.02 | 0.98 | 1.25 | 57 | 0.938 | -0.55 | 0.45 | 1.11 |
| 13 | 0.998 | -0.02 | 0.98 | 1.25 | 58 | 0.935 | -0.58 | 0.42 | 1.10 |
| 14 | 0.998 | -0.02 | 0.98 | 1.25 | 59 | 0.932 | -0.61 | 0.39 | 1.09 |
| 15 | 0.997 | -0.02 | 0.98 | 1.25 | 60 | 0.929 | -0.64 | 0.36 | 1.09 |
| 16 | 0.997 | -0.03 | 0.97 | 1.25 | 61 | 0.926 | -0.67 | 0.33 | 1.08 |
| 17 | 0.996 | -0.03 | 0.97 | 1.25 | 62 | 0.923 | -0.70 | 0.30 | 1.07 |
| 18 | 0.995 | -0.04 | 0.96 | 1.25 | 63 | 0.919 | -0.73 | 0.27 | 1.06 |
| 19 | 0.995 | -0.04 | 0.96 | 1.25 | 64 | 0.915 | -0.77 | 0.23 | 1.05 |
| 20 | 0.995 | -0.04 | 0.96 | 1.25 | 65 | 0.911 | -0.80 | 0.20 | 1.05 |
| 21 | 0.994 | -0.05 | 0.95 | 1.24 | 66 | 0.908 | -0.84 | 0.16 | 1.04 |
| 22 | 0.993 | -0.06 | 0.94 | 1.24 | 67 | 0.904 | -0.87 | 0.13 | 1.03 |
| 23 | 0.993 | -0.06 | 0.94 | 1.24 | 68 | 0.901 | -0.91 | 0.09 | 1.02 |
| 24 | 0.992 | -0.07 | 0.93 | 1.24 | 69 | 0.896 | -0.95 | 0.05 | 1.01 |
| 25 | 0.991 | -0.07 | 0.93 | 1.24 | 70 | 0.892 | -0.99 | 0.01 | 1.00 |
| 26 | 0.991 | -0.08 | 0.92 | 1.24 | 71 | 0.888 | -1.03 | -0.03 | 0.99 |
| 27 | 0.990 | -0.08 | 0.92 | 1.23 | 72 | 0.883 | -1.08 | -0.08 | 0.98 |
| 28 | 0.990 | -0.09 | 0.91 | 1.23 | 73 | 0.879 | -1.12 | -0.12 | 0.97 |
| 29 | 0.989 | -0.10 | 0.90 | 1.23 | 74 | 0.875 | -1.16 | -0.16 | 0.96 |
| 30 | 0.987 | -0.11 | 0.89 | 1.23 | 75 | 0.870 | -1.21 | -0.21 | 0.95 |
| 31 | 0.986 | -0.12 | 0.88 | 1.22 | 76 | 0.865 | -1.26 | -0.26 | 0.94 |
| 32 | 0.985 | -0.13 | 0.87 | 1.22 | 77 | 0.861 | -1.30 | -0.30 | 0.93 |
| 33 | 0.984 | -0.14 | 0.86 | 1.22 | 78 | 0.856 | -1.35 | -0.35 | 0.92 |
| 34 | 0.983 | -0.15 | 0.85 | 1.22 | 79 | 0.851 | -1.40 | -0.40 | 0.91 |
| 35 | 0.982 | -0.16 | 0.84 | 1.21 | 80 | 0.845 | -1.46 | -0.46 | 0.90 |
| 36 | 0.981 | -0.17 | 0.83 | 1.21 | 81 | 0.840 | -1.51 | -0.51 | 0.89 |
| 37 | 0.979 | -0.18 | 0.82 | 1.21 | 82 | 0.836 | -1.56 | -0.56 | 0.88 |
| 38 | 0.978 | -0.19 | 0.81 | 1.21 | 83 | 0.830 | -1.61 | -0.61 | 0.87 |
| 39 | 0.977 | -0.20 | 0.80 | 1.20 | 84 | 0.825 | -1.67 | -0.67 | 0.86 |
| 40 | 0.975 | -0.22 | 0.78 | 1.20 | 85 | 0.819 | -1.73 | -0.73 | 0.85 |
| 41 | 0.973 | -0.23 | 0.77 | 1.19 | 86 | 0.814 | -1.79 | -0.79 | 0.83 |
| 42 | 0.972 | -0.25 | 0.75 | 1.19 | 87 | 0.808 | -1.85 | -0.85 | 0.82 |
| 43 | 0.970 | -0.26 | 0.74 | 1.18 | 88 | 0.803 | -1.91 | -0.91 | 0.81 |
| 44 | 0.968 | -0.28 | 0.72 | 1.18 | 89 | 0.797 | -1.97 | -0.97 | 0.80 |

KATHREIN
SCALA DIVISION

FMV Dipole
FM
1.0 dBd (3.15 dBi )
Vertical polarization

Horizontal radiation pattern

| Angle | Field | Rel.dB | dBd | PwrMult | Angle | Field | Rel.dB | dBd | PwrMult |
|---|---|---|---|---|---|---|---|---|---|
| 90 | 0.792 | -2.03 | -1.03 | 0.79 | 135 | 0.578 | -4.76 | -3.76 | 0.42 |
| 91 | 0.786 | -2.09 | -1.09 | 0.78 | 136 | 0.575 | -4.80 | -3.80 | 0.42 |
| 92 | 0.781 | -2.15 | -1.15 | 0.77 | 137 | 0.573 | -4.84 | -3.84 | 0.41 |
| 93 | 0.775 | -2.21 | -1.21 | 0.76 | 138 | 0.570 | -4.88 | -3.88 | 0.41 |
| 94 | 0.769 | -2.28 | -1.28 | 0.74 | 139 | 0.568 | -4.91 | -3.91 | 0.41 |
| 95 | 0.763 | -2.34 | -1.34 | 0.73 | 140 | 0.566 | -4.95 | -3.95 | 0.40 |
| 96 | 0.758 | -2.41 | -1.41 | 0.72 | 141 | 0.564 | -4.98 | -3.98 | 0.40 |
| 97 | 0.752 | -2.48 | -1.48 | 0.71 | 142 | 0.562 | -5.01 | -4.01 | 0.40 |
| 98 | 0.746 | -2.55 | -1.55 | 0.70 | 143 | 0.560 | -5.04 | -4.04 | 0.39 |
| 99 | 0.740 | -2.61 | -1.61 | 0.69 | 144 | 0.558 | -5.07 | -4.07 | 0.39 |
| 100 | 0.735 | -2.68 | -1.68 | 0.68 | 145 | 0.556 | -5.09 | -4.09 | 0.39 |
| 101 | 0.729 | -2.75 | -1.75 | 0.67 | 146 | 0.555 | -5.12 | -4.12 | 0.39 |
| 102 | 0.723 | -2.82 | -1.82 | 0.66 | 147 | 0.553 | -5.14 | -4.14 | 0.39 |
| 103 | 0.717 | -2.88 | -1.88 | 0.65 | 148 | 0.551 | -5.17 | -4.17 | 0.38 |
| 104 | 0.712 | -2.95 | -1.95 | 0.64 | 149 | 0.550 | -5.19 | -4.19 | 0.38 |
| 105 | 0.706 | -3.02 | -2.02 | 0.63 | 150 | 0.549 | -5.21 | -4.21 | 0.38 |
| 106 | 0.701 | -3.09 | -2.09 | 0.62 | 151 | 0.548 | -5.23 | -4.23 | 0.38 |
| 107 | 0.695 | -3.16 | -2.16 | 0.61 | 152 | 0.546 | -5.25 | -4.25 | 0.38 |
| 108 | 0.689 | -3.23 | -2.23 | 0.60 | 153 | 0.545 | -5.26 | -4.26 | 0.37 |
| 109 | 0.684 | -3.29 | -2.29 | 0.59 | 154 | 0.545 | -5.28 | -4.28 | 0.37 |
| 110 | 0.679 | -3.36 | -2.36 | 0.58 | 155 | 0.544 | -5.29 | -4.29 | 0.37 |
| 111 | 0.674 | -3.43 | -2.43 | 0.57 | 156 | 0.543 | -5.31 | -4.31 | 0.37 |
| 112 | 0.668 | -3.50 | -2.50 | 0.56 | 157 | 0.542 | -5.32 | -4.32 | 0.37 |
| 113 | 0.663 | -3.56 | -2.56 | 0.55 | 158 | 0.541 | -5.34 | -4.34 | 0.37 |
| 114 | 0.658 | -3.63 | -2.63 | 0.55 | 159 | 0.540 | -5.35 | -4.35 | 0.37 |
| 115 | 0.654 | -3.69 | -2.69 | 0.54 | 160 | 0.540 | -5.36 | -4.36 | 0.37 |
| 116 | 0.649 | -3.76 | -2.76 | 0.53 | 161 | 0.539 | -5.37 | -4.37 | 0.37 |
| 117 | 0.644 | -3.82 | -2.82 | 0.52 | 162 | 0.538 | -5.38 | -4.38 | 0.36 |
| 118 | 0.639 | -3.89 | -2.89 | 0.51 | 163 | 0.538 | -5.39 | -4.39 | 0.36 |
| 119 | 0.635 | -3.95 | -2.95 | 0.51 | 164 | 0.537 | -5.40 | -4.40 | 0.36 |
| 120 | 0.630 | -4.01 | -3.01 | 0.50 | 165 | 0.537 | -5.40 | -4.40 | 0.36 |
| 121 | 0.626 | -4.07 | -3.07 | 0.49 | 166 | 0.536 | -5.41 | -4.41 | 0.36 |
| 122 | 0.622 | -4.13 | -3.13 | 0.49 | 167 | 0.536 | -5.41 | -4.41 | 0.36 |
| 123 | 0.618 | -4.18 | -3.18 | 0.48 | 168 | 0.536 | -5.42 | -4.42 | 0.36 |
| 124 | 0.614 | -4.24 | -3.24 | 0.47 | 169 | 0.535 | -5.42 | -4.42 | 0.36 |
| 125 | 0.610 | -4.29 | -3.29 | 0.47 | 170 | 0.535 | -5.43 | -4.43 | 0.36 |
| 126 | 0.606 | -4.35 | -3.35 | 0.46 | 171 | 0.535 | -5.43 | -4.43 | 0.36 |
| 127 | 0.603 | -4.40 | -3.40 | 0.46 | 172 | 0.535 | -5.44 | -4.44 | 0.36 |
| 128 | 0.599 | -4.45 | -3.45 | 0.45 | 173 | 0.534 | -5.44 | -4.44 | 0.36 |
| 129 | 0.596 | -4.50 | -3.50 | 0.45 | 174 | 0.534 | -5.45 | -4.45 | 0.36 |
| 130 | 0.592 | -4.55 | -3.55 | 0.44 | 175 | 0.534 | -5.45 | -4.45 | 0.36 |
| 131 | 0.589 | -4.59 | -3.59 | 0.44 | 176 | 0.534 | -5.45 | -4.45 | 0.36 |
| 132 | 0.586 | -4.64 | -3.64 | 0.43 | 177 | 0.534 | -5.45 | -4.45 | 0.36 |
| 133 | 0.583 | -4.68 | -3.68 | 0.43 | 178 | 0.534 | -5.45 | -4.45 | 0.36 |
| 134 | 0.581 | -4.72 | -3.72 | 0.42 | 179 | 0.534 | -5.45 | -4.45 | 0.36 |

KATHREIN
SCALA DIVISION

FMV Dipole
FM
1.0 dBd (3.15 dBi )
Vertical polarization

Horizontal radiation pattern

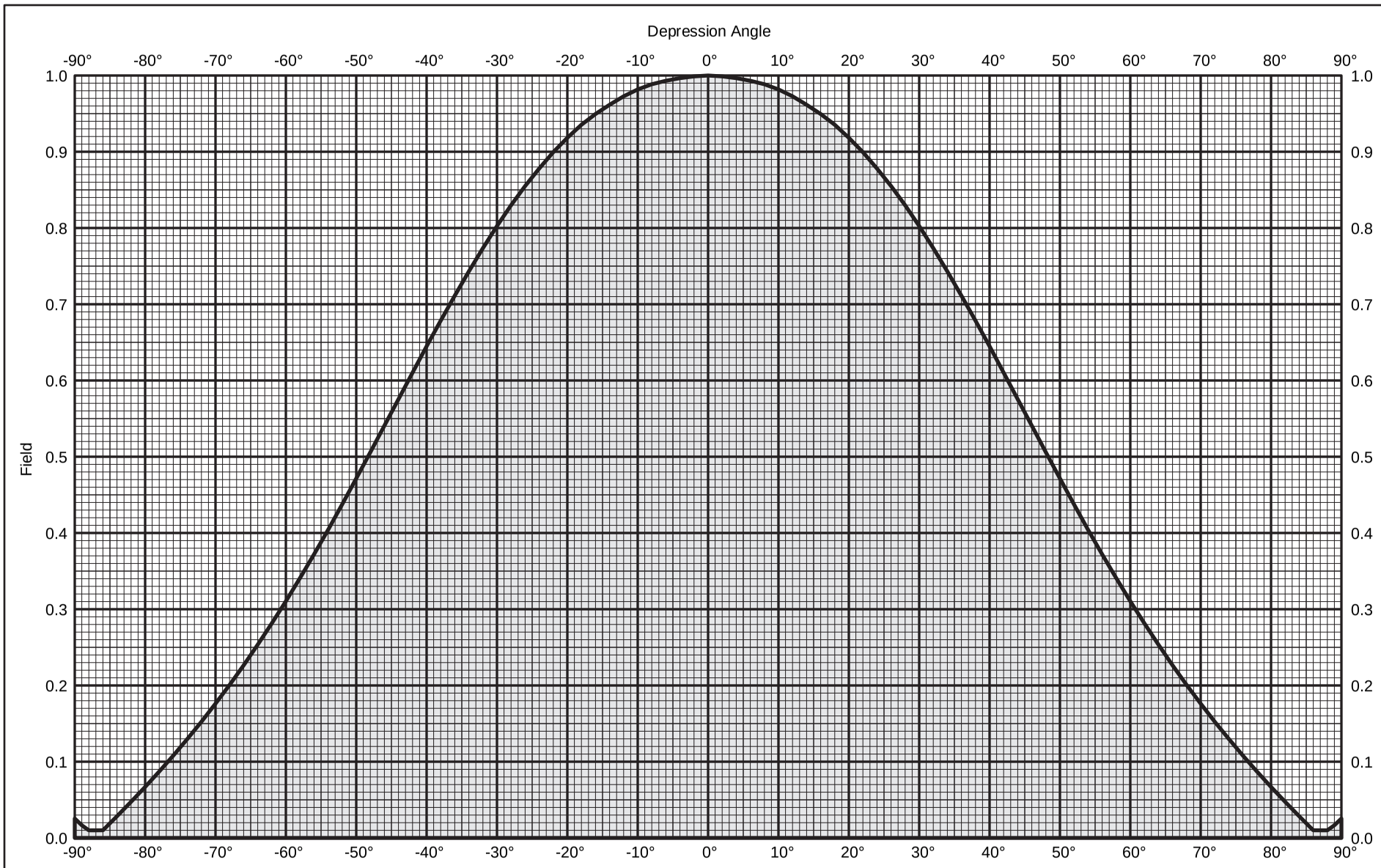
| Angle | Field | Rel.dB | dBd | PwrMult | Angle | Field | Rel.dB | dBd | PwrMult |
|---|---|---|---|---|---|---|---|---|---|
| 180 | 0.534 | -5.45 | -4.45 | 0.36 | 225 | 0.578 | -4.76 | -3.76 | 0.42 |
| 181 | 0.534 | -5.45 | -4.45 | 0.36 | 226 | 0.581 | -4.72 | -3.72 | 0.42 |
| 182 | 0.534 | -5.45 | -4.45 | 0.36 | 227 | 0.583 | -4.68 | -3.68 | 0.43 |
| 183 | 0.534 | -5.45 | -4.45 | 0.36 | 228 | 0.586 | -4.64 | -3.64 | 0.43 |
| 184 | 0.534 | -5.45 | -4.45 | 0.36 | 229 | 0.589 | -4.59 | -3.59 | 0.44 |
| 185 | 0.534 | -5.45 | -4.45 | 0.36 | 230 | 0.592 | -4.55 | -3.55 | 0.44 |
| 186 | 0.534 | -5.45 | -4.45 | 0.36 | 231 | 0.596 | -4.50 | -3.50 | 0.45 |
| 187 | 0.534 | -5.44 | -4.44 | 0.36 | 232 | 0.599 | -4.45 | -3.45 | 0.45 |
| 188 | 0.535 | -5.44 | -4.44 | 0.36 | 233 | 0.603 | -4.40 | -3.40 | 0.46 |
| 189 | 0.535 | -5.43 | -4.43 | 0.36 | 234 | 0.606 | -4.35 | -3.35 | 0.46 |
| 190 | 0.535 | -5.43 | -4.43 | 0.36 | 235 | 0.610 | -4.29 | -3.29 | 0.47 |
| 191 | 0.535 | -5.42 | -4.42 | 0.36 | 236 | 0.614 | -4.24 | -3.24 | 0.47 |
| 192 | 0.536 | -5.42 | -4.42 | 0.36 | 237 | 0.618 | -4.18 | -3.18 | 0.48 |
| 193 | 0.536 | -5.41 | -4.41 | 0.36 | 238 | 0.622 | -4.13 | -3.13 | 0.49 |
| 194 | 0.536 | -5.41 | -4.41 | 0.36 | 239 | 0.626 | -4.07 | -3.07 | 0.49 |
| 195 | 0.537 | -5.40 | -4.40 | 0.36 | 240 | 0.630 | -4.01 | -3.01 | 0.50 |
| 196 | 0.537 | -5.40 | -4.40 | 0.36 | 241 | 0.635 | -3.95 | -2.95 | 0.51 |
| 197 | 0.538 | -5.39 | -4.39 | 0.36 | 242 | 0.639 | -3.89 | -2.89 | 0.51 |
| 198 | 0.538 | -5.38 | -4.38 | 0.36 | 243 | 0.644 | -3.82 | -2.82 | 0.52 |
| 199 | 0.539 | -5.37 | -4.37 | 0.37 | 244 | 0.649 | -3.76 | -2.76 | 0.53 |
| 200 | 0.540 | -5.36 | -4.36 | 0.37 | 245 | 0.654 | -3.69 | -2.69 | 0.54 |
| 201 | 0.540 | -5.35 | -4.35 | 0.37 | 246 | 0.658 | -3.63 | -2.63 | 0.55 |
| 202 | 0.541 | -5.34 | -4.34 | 0.37 | 247 | 0.663 | -3.56 | -2.56 | 0.55 |
| 203 | 0.542 | -5.32 | -4.32 | 0.37 | 248 | 0.668 | -3.50 | -2.50 | 0.56 |
| 204 | 0.543 | -5.31 | -4.31 | 0.37 | 249 | 0.674 | -3.43 | -2.43 | 0.57 |
| 205 | 0.544 | -5.29 | -4.29 | 0.37 | 250 | 0.679 | -3.36 | -2.36 | 0.58 |
| 206 | 0.545 | -5.28 | -4.28 | 0.37 | 251 | 0.684 | -3.29 | -2.29 | 0.59 |
| 207 | 0.545 | -5.26 | -4.26 | 0.37 | 252 | 0.689 | -3.23 | -2.23 | 0.60 |
| 208 | 0.546 | -5.25 | -4.25 | 0.38 | 253 | 0.695 | -3.16 | -2.16 | 0.61 |
| 209 | 0.548 | -5.23 | -4.23 | 0.38 | 254 | 0.701 | -3.09 | -2.09 | 0.62 |
| 210 | 0.549 | -5.21 | -4.21 | 0.38 | 255 | 0.706 | -3.02 | -2.02 | 0.63 |
| 211 | 0.550 | -5.19 | -4.19 | 0.38 | 256 | 0.712 | -2.95 | -1.95 | 0.64 |
| 212 | 0.551 | -5.17 | -4.17 | 0.38 | 257 | 0.717 | -2.88 | -1.88 | 0.65 |
| 213 | 0.553 | -5.14 | -4.14 | 0.39 | 258 | 0.723 | -2.82 | -1.82 | 0.66 |
| 214 | 0.555 | -5.12 | -4.12 | 0.39 | 259 | 0.729 | -2.75 | -1.75 | 0.67 |
| 215 | 0.556 | -5.09 | -4.09 | 0.39 | 260 | 0.735 | -2.68 | -1.68 | 0.68 |
| 216 | 0.558 | -5.07 | -4.07 | 0.39 | 261 | 0.740 | -2.61 | -1.61 | 0.69 |
| 217 | 0.560 | -5.04 | -4.04 | 0.39 | 262 | 0.746 | -2.55 | -1.55 | 0.70 |
| 218 | 0.562 | -5.01 | -4.01 | 0.40 | 263 | 0.752 | -2.48 | -1.48 | 0.71 |
| 219 | 0.564 | -4.98 | -3.98 | 0.40 | 264 | 0.758 | -2.41 | -1.41 | 0.72 |
| 220 | 0.566 | -4.95 | -3.95 | 0.40 | 265 | 0.763 | -2.34 | -1.34 | 0.73 |
| 221 | 0.568 | -4.91 | -3.91 | 0.41 | 266 | 0.769 | -2.28 | -1.28 | 0.74 |
| 222 | 0.570 | -4.88 | -3.88 | 0.41 | 267 | 0.775 | -2.21 | -1.21 | 0.76 |
| 223 | 0.573 | -4.84 | -3.84 | 0.41 | 268 | 0.781 | -2.15 | -1.15 | 0.77 |
| 224 | 0.575 | -4.80 | -3.80 | 0.42 | 269 | 0.786 | -2.09 | -1.09 | 0.78 |

KATHREIN
SCALA DIVISION

FMV Dipole
FM
1.0 dBd (3.15 dBi )
Vertical polarization

Horizontal radiation pattern

| Angle | Field | Rel.dB | dBd | PwrMult | Angle | Field | Rel.dB | dBd | PwrMult |
|---|---|---|---|---|---|---|---|---|---|
| 270 | 0.792 | -2.03 | -1.03 | 0.79 | 315 | 0.967 | -0.29 | 0.71 | 1.18 |
| 271 | 0.797 | -1.97 | -0.97 | 0.80 | 316 | 0.968 | -0.28 | 0.72 | 1.18 |
| 272 | 0.803 | -1.91 | -0.91 | 0.81 | 317 | 0.970 | -0.26 | 0.74 | 1.18 |
| 273 | 0.808 | -1.85 | -0.85 | 0.82 | 318 | 0.972 | -0.25 | 0.75 | 1.19 |
| 274 | 0.814 | -1.79 | -0.79 | 0.83 | 319 | 0.973 | -0.23 | 0.77 | 1.19 |
| 275 | 0.819 | -1.73 | -0.73 | 0.85 | 320 | 0.975 | -0.22 | 0.78 | 1.20 |
| 276 | 0.825 | -1.67 | -0.67 | 0.86 | 321 | 0.977 | -0.20 | 0.80 | 1.20 |
| 277 | 0.830 | -1.61 | -0.61 | 0.87 | 322 | 0.978 | -0.19 | 0.81 | 1.21 |
| 278 | 0.836 | -1.56 | -0.56 | 0.88 | 323 | 0.979 | -0.18 | 0.82 | 1.21 |
| 279 | 0.840 | -1.51 | -0.51 | 0.89 | 324 | 0.981 | -0.17 | 0.83 | 1.21 |
| 280 | 0.845 | -1.46 | -0.46 | 0.90 | 325 | 0.982 | -0.16 | 0.84 | 1.21 |
| 281 | 0.851 | -1.40 | -0.40 | 0.91 | 326 | 0.983 | -0.15 | 0.85 | 1.22 |
| 282 | 0.856 | -1.35 | -0.35 | 0.92 | 327 | 0.984 | -0.14 | 0.86 | 1.22 |
| 283 | 0.861 | -1.30 | -0.30 | 0.93 | 328 | 0.985 | -0.13 | 0.87 | 1.22 |
| 284 | 0.865 | -1.26 | -0.26 | 0.94 | 329 | 0.986 | -0.12 | 0.88 | 1.22 |
| 285 | 0.870 | -1.21 | -0.21 | 0.95 | 330 | 0.987 | -0.11 | 0.89 | 1.23 |
| 286 | 0.875 | -1.16 | -0.16 | 0.96 | 331 | 0.989 | -0.10 | 0.90 | 1.23 |
| 287 | 0.879 | -1.12 | -0.12 | 0.97 | 332 | 0.990 | -0.09 | 0.91 | 1.23 |
| 288 | 0.883 | -1.08 | -0.08 | 0.98 | 333 | 0.990 | -0.08 | 0.92 | 1.23 |
| 289 | 0.888 | -1.03 | -0.03 | 0.99 | 334 | 0.991 | -0.08 | 0.92 | 1.24 |
| 290 | 0.892 | -0.99 | 0.01 | 1.00 | 335 | 0.991 | -0.07 | 0.93 | 1.24 |
| 291 | 0.896 | -0.95 | 0.05 | 1.01 | 336 | 0.992 | -0.07 | 0.93 | 1.24 |
| 292 | 0.901 | -0.91 | 0.09 | 1.02 | 337 | 0.993 | -0.06 | 0.94 | 1.24 |
| 293 | 0.904 | -0.87 | 0.13 | 1.03 | 338 | 0.993 | -0.06 | 0.94 | 1.24 |
| 294 | 0.908 | -0.84 | 0.16 | 1.04 | 339 | 0.994 | -0.05 | 0.95 | 1.24 |
| 295 | 0.911 | -0.80 | 0.20 | 1.05 | 340 | 0.995 | -0.04 | 0.96 | 1.25 |
| 296 | 0.915 | -0.77 | 0.23 | 1.05 | 341 | 0.995 | -0.04 | 0.96 | 1.25 |
| 297 | 0.919 | -0.73 | 0.27 | 1.06 | 342 | 0.995 | -0.04 | 0.96 | 1.25 |
| 298 | 0.923 | -0.70 | 0.30 | 1.07 | 343 | 0.996 | -0.03 | 0.97 | 1.25 |
| 299 | 0.926 | -0.67 | 0.33 | 1.08 | 344 | 0.997 | -0.03 | 0.97 | 1.25 |
| 300 | 0.929 | -0.64 | 0.36 | 1.09 | 345 | 0.997 | -0.02 | 0.98 | 1.25 |
| 301 | 0.932 | -0.61 | 0.39 | 1.09 | 346 | 0.998 | -0.02 | 0.98 | 1.25 |
| 302 | 0.935 | -0.58 | 0.42 | 1.10 | 347 | 0.998 | -0.02 | 0.98 | 1.25 |
| 303 | 0.938 | -0.55 | 0.45 | 1.11 | 348 | 0.998 | -0.02 | 0.98 | 1.25 |
| 304 | 0.941 | -0.53 | 0.47 | 1.11 | 349 | 0.998 | -0.01 | 0.99 | 1.25 |
| 305 | 0.944 | -0.50 | 0.50 | 1.12 | 350 | 0.999 | -0.01 | 0.99 | 1.26 |
| 306 | 0.946 | -0.48 | 0.52 | 1.13 | 351 | 0.999 | -0.01 | 0.99 | 1.26 |
| 307 | 0.949 | -0.45 | 0.55 | 1.13 | 352 | 0.999 | -0.01 | 0.99 | 1.26 |
| 308 | 0.952 | -0.43 | 0.57 | 1.14 | 353 | 0.999 | -0.00 | 1.00 | 1.26 |
| 309 | 0.954 | -0.41 | 0.59 | 1.15 | 354 | 1.000 | 0.00 | 1.00 | 1.26 |
| 310 | 0.956 | -0.39 | 0.61 | 1.15 | 355 | 1.000 | 0.00 | 1.00 | 1.26 |
| 311 | 0.958 | -0.37 | 0.63 | 1.16 | 356 | 1.000 | 0.00 | 1.00 | 1.26 |
| 312 | 0.961 | -0.35 | 0.65 | 1.16 | 357 | 1.000 | 0.00 | 1.00 | 1.26 |
| 313 | 0.963 | -0.33 | 0.67 | 1.17 | 358 | 1.000 | 0.00 | 1.00 | 1.26 |
| 314 | 0.965 | -0.31 | 0.69 | 1.17 | 359 | 1.000 | 0.00 | 1.00 | 1.26 |




FMV Dipole

FM

1.0 dBd (3.15 dBi)

Vertical polarization

Vertical radiation pattern

KATHREIN
SCALA DIVISION
Post Office Box 4580
Medford, OR 97501 (USA)
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Fax:(541)779-3991
http://www.kathrein-scala.com

18-Jun-2004

KATHREIN
SCALA DIVISION

FMV Dipole
FM
1.0 dBd (3.15 dBi )
Vertical polarization

Vertical radiation pattern

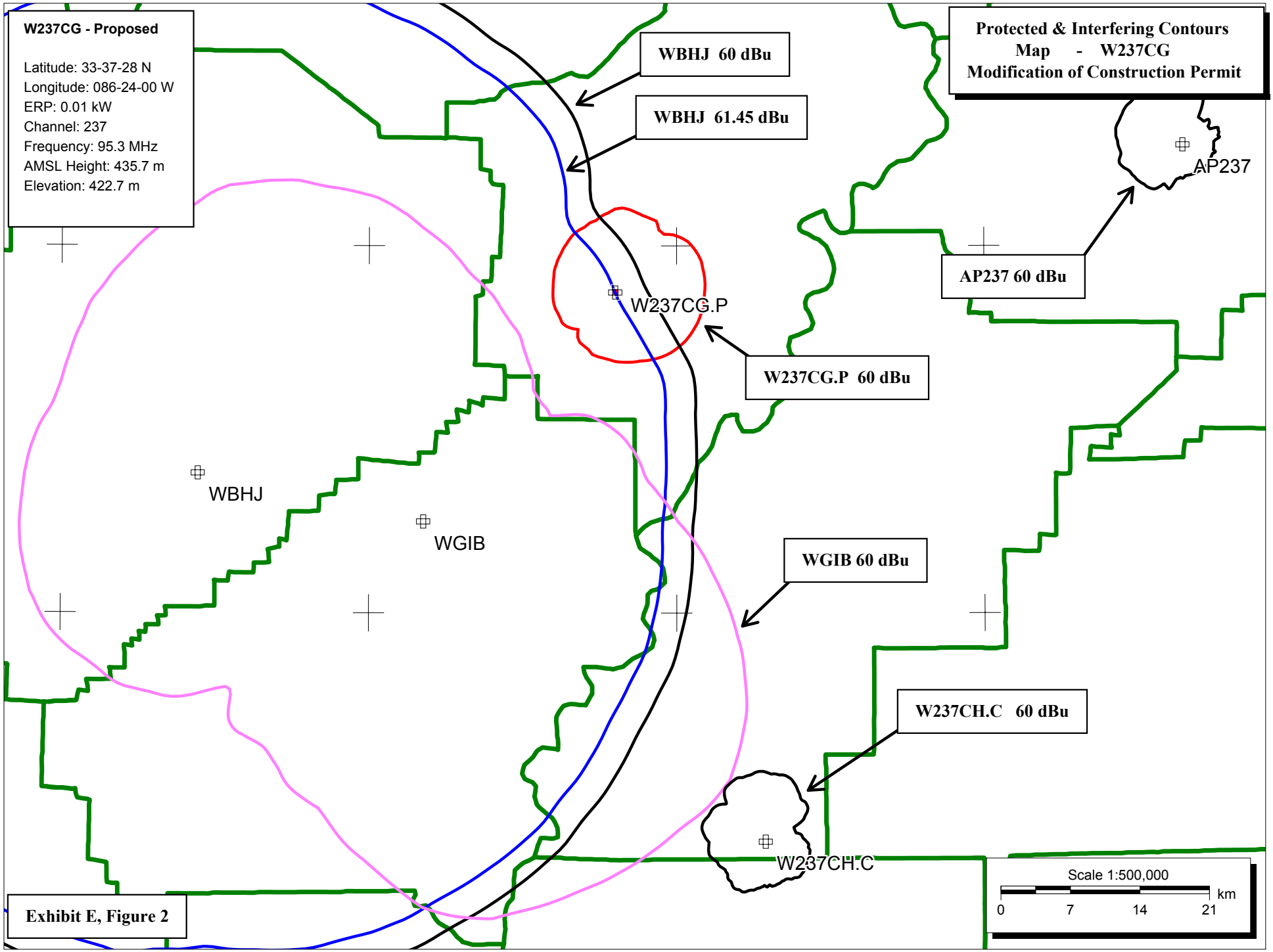
| Angle | Field | Rel.dB | dBd | PwrMult | Angle | Field | Rel.dB | dBd | PwrMult |
|---|---|---|---|---|---|---|---|---|---|
| -90 | 0.025 | -31.89 | -30.89 | 0.00 | -45 | 0.558 | -5.07 | -4.07 | 0.39 |
| -89 | 0.017 | -35.56 | -34.56 | 0.00 | -44 | 0.575 | -4.80 | -3.80 | 0.42 |
| -88 | 0.010 | -40.00 | -39.00 | 0.00 | -43 | 0.593 | -4.54 | -3.54 | 0.44 |
| -87 | 0.010 | -40.00 | -39.00 | 0.00 | -42 | 0.610 | -4.29 | -3.29 | 0.47 |
| -86 | 0.010 | -39.94 | -38.94 | 0.00 | -41 | 0.628 | -4.05 | -3.05 | 0.50 |
| -85 | 0.019 | -34.30 | -33.30 | 0.00 | -40 | 0.645 | -3.81 | -2.81 | 0.52 |
| -84 | 0.028 | -30.91 | -29.91 | 0.00 | -39 | 0.662 | -3.59 | -2.59 | 0.55 |
| -83 | 0.038 | -28.42 | -27.42 | 0.00 | -38 | 0.678 | -3.37 | -2.37 | 0.58 |
| -82 | 0.047 | -26.48 | -25.48 | 0.00 | -37 | 0.695 | -3.16 | -2.16 | 0.61 |
| -81 | 0.057 | -24.86 | -23.86 | 0.00 | -36 | 0.711 | -2.96 | -1.96 | 0.64 |
| -80 | 0.067 | -23.49 | -22.49 | 0.01 | -35 | 0.727 | -2.77 | -1.77 | 0.67 |
| -79 | 0.077 | -22.27 | -21.27 | 0.01 | -34 | 0.743 | -2.58 | -1.58 | 0.70 |
| -78 | 0.087 | -21.20 | -20.20 | 0.01 | -33 | 0.758 | -2.40 | -1.40 | 0.72 |
| -77 | 0.098 | -20.21 | -19.21 | 0.01 | -32 | 0.774 | -2.23 | -1.23 | 0.75 |
| -76 | 0.108 | -19.33 | -18.33 | 0.01 | -31 | 0.788 | -2.07 | -1.07 | 0.78 |
| -75 | 0.119 | -18.49 | -17.49 | 0.02 | -30 | 0.803 | -1.91 | -0.91 | 0.81 |
| -74 | 0.130 | -17.73 | -16.73 | 0.02 | -29 | 0.816 | -1.76 | -0.76 | 0.84 |
| -73 | 0.141 | -17.01 | -16.01 | 0.03 | -28 | 0.830 | -1.62 | -0.62 | 0.87 |
| -72 | 0.152 | -16.34 | -15.34 | 0.03 | -27 | 0.842 | -1.49 | -0.49 | 0.89 |
| -71 | 0.164 | -15.69 | -14.69 | 0.03 | -26 | 0.855 | -1.36 | -0.36 | 0.92 |
| -70 | 0.176 | -15.08 | -14.08 | 0.04 | -25 | 0.867 | -1.24 | -0.24 | 0.95 |
| -69 | 0.188 | -14.50 | -13.50 | 0.04 | -24 | 0.878 | -1.13 | -0.13 | 0.97 |
| -68 | 0.201 | -13.95 | -12.95 | 0.05 | -23 | 0.889 | -1.02 | -0.02 | 0.99 |
| -67 | 0.214 | -13.41 | -12.41 | 0.06 | -22 | 0.899 | -0.92 | 0.08 | 1.02 |
| -66 | 0.226 | -12.90 | -11.90 | 0.06 | -21 | 0.909 | -0.83 | 0.17 | 1.04 |
| -65 | 0.240 | -12.40 | -11.40 | 0.07 | -20 | 0.918 | -0.74 | 0.26 | 1.06 |
| -64 | 0.254 | -11.92 | -10.92 | 0.08 | -19 | 0.927 | -0.66 | 0.34 | 1.08 |
| -63 | 0.268 | -11.45 | -10.45 | 0.09 | -18 | 0.935 | -0.58 | 0.42 | 1.10 |
| -62 | 0.282 | -11.01 | -10.01 | 0.10 | -17 | 0.942 | -0.51 | 0.49 | 1.12 |
| -61 | 0.296 | -10.57 | -9.57 | 0.11 | -16 | 0.950 | -0.45 | 0.55 | 1.14 |
| -60 | 0.310 | -10.16 | -9.16 | 0.12 | -15 | 0.956 | -0.39 | 0.61 | 1.15 |
| -59 | 0.326 | -9.75 | -8.75 | 0.13 | -14 | 0.962 | -0.34 | 0.66 | 1.16 |
| -58 | 0.341 | -9.35 | -8.35 | 0.15 | -13 | 0.967 | -0.29 | 0.71 | 1.18 |
| -57 | 0.356 | -8.96 | -7.96 | 0.16 | -12 | 0.973 | -0.24 | 0.76 | 1.19 |
| -56 | 0.372 | -8.59 | -7.59 | 0.17 | -11 | 0.977 | -0.20 | 0.80 | 1.20 |
| -55 | 0.388 | -8.22 | -7.22 | 0.19 | -10 | 0.982 | -0.16 | 0.84 | 1.21 |
| -54 | 0.404 | -7.87 | -6.87 | 0.21 | -9 | 0.985 | -0.13 | 0.87 | 1.22 |
| -53 | 0.421 | -7.52 | -6.52 | 0.22 | -8 | 0.989 | -0.10 | 0.90 | 1.23 |
| -52 | 0.438 | -7.18 | -6.18 | 0.24 | -7 | 0.991 | -0.08 | 0.92 | 1.24 |
| -51 | 0.455 | -6.85 | -5.85 | 0.26 | -6 | 0.993 | -0.06 | 0.94 | 1.24 |
| -50 | 0.472 | -6.53 | -5.53 | 0.28 | -5 | 0.995 | -0.04 | 0.96 | 1.25 |
| -49 | 0.489 | -6.22 | -5.22 | 0.30 | -4 | 0.997 | -0.03 | 0.97 | 1.25 |
| -48 | 0.506 | -5.92 | -4.92 | 0.32 | -3 | 0.998 | -0.02 | 0.98 | 1.25 |
| -47 | 0.523 | -5.63 | -4.63 | 0.34 | -2 | 0.999 | -0.01 | 0.99 | 1.26 |
| -46 | 0.541 | -5.34 | -4.34 | 0.37 | -1 | 0.999 | -0.00 | 1.00 | 1.26 |
| | | | | | 0 | 1.000 | 0.00 | 1.00 | 1.26 |

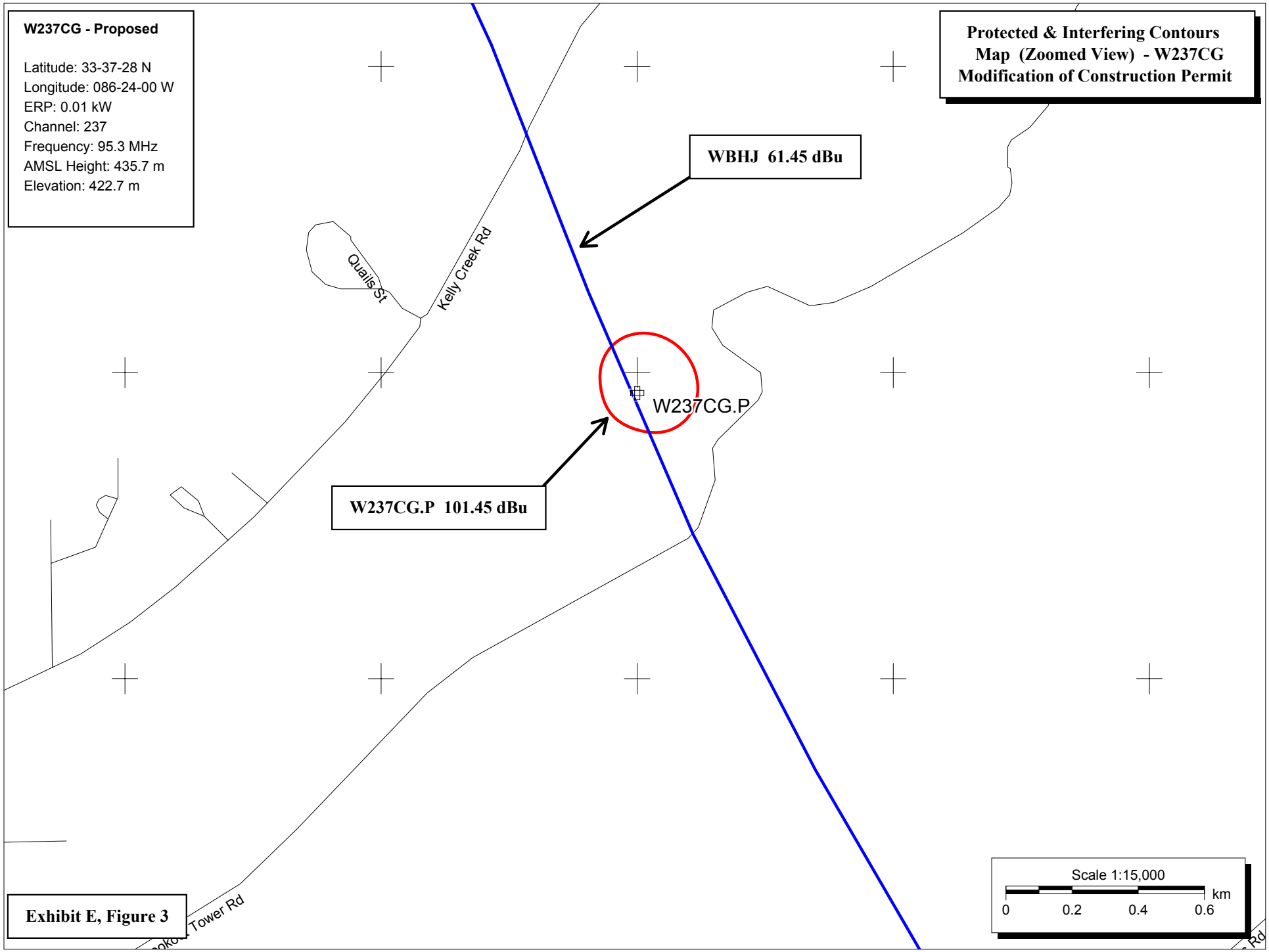
KATHREIN
SCALA DIVISION

FMV Dipole
FM
1.0 dBd (3.15 dBi )
Vertical polarization

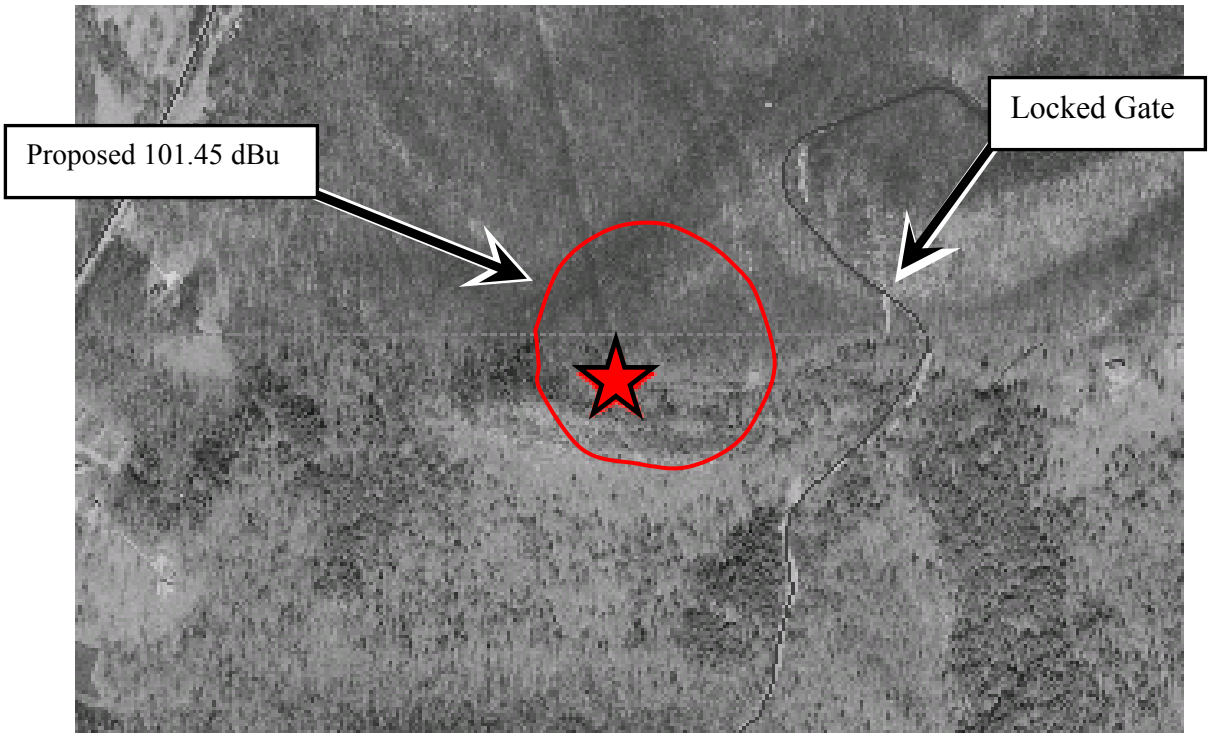
Vertical radiation pattern

| Angle | Field | Rel.dB | dBd | PwrMult | Angle | Field | Rel.dB | dBd | PwrMult |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 1.000 | 0.00 | 1.00 | 1.26 | 45 | 0.558 | -5.07 | -4.07 | 0.39 |
| 1 | 0.999 | -0.00 | 1.00 | 1.26 | 46 | 0.541 | -5.34 | -4.34 | 0.37 |
| 2 | 0.999 | -0.01 | 0.99 | 1.26 | 47 | 0.523 | -5.63 | -4.63 | 0.34 |
| 3 | 0.998 | -0.02 | 0.98 | 1.25 | 48 | 0.506 | -5.92 | -4.92 | 0.32 |
| 4 | 0.997 | -0.03 | 0.97 | 1.25 | 49 | 0.489 | -6.22 | -5.22 | 0.30 |
| 5 | 0.995 | -0.04 | 0.96 | 1.25 | 50 | 0.472 | -6.53 | -5.53 | 0.28 |
| 6 | 0.993 | -0.06 | 0.94 | 1.24 | 51 | 0.455 | -6.85 | -5.85 | 0.26 |
| 7 | 0.991 | -0.08 | 0.92 | 1.24 | 52 | 0.438 | -7.18 | -6.18 | 0.24 |
| 8 | 0.989 | -0.10 | 0.90 | 1.23 | 53 | 0.421 | -7.52 | -6.52 | 0.22 |
| 9 | 0.985 | -0.13 | 0.87 | 1.22 | 54 | 0.404 | -7.87 | -6.87 | 0.21 |
| 10 | 0.982 | -0.16 | 0.84 | 1.21 | 55 | 0.388 | -8.22 | -7.22 | 0.19 |
| 11 | 0.977 | -0.20 | 0.80 | 1.20 | 56 | 0.372 | -8.59 | -7.59 | 0.17 |
| 12 | 0.973 | -0.24 | 0.76 | 1.19 | 57 | 0.356 | -8.96 | -7.96 | 0.16 |
| 13 | 0.967 | -0.29 | 0.71 | 1.18 | 58 | 0.341 | -9.35 | -8.35 | 0.15 |
| 14 | 0.962 | -0.34 | 0.66 | 1.16 | 59 | 0.326 | -9.75 | -8.75 | 0.13 |
| 15 | 0.956 | -0.39 | 0.61 | 1.15 | 60 | 0.310 | -10.16 | -9.16 | 0.12 |
| 16 | 0.950 | -0.45 | 0.55 | 1.14 | 61 | 0.296 | -10.57 | -9.57 | 0.11 |
| 17 | 0.942 | -0.51 | 0.49 | 1.12 | 62 | 0.282 | -11.01 | -10.01 | 0.10 |
| 18 | 0.935 | -0.58 | 0.42 | 1.10 | 63 | 0.268 | -11.45 | -10.45 | 0.09 |
| 19 | 0.927 | -0.66 | 0.34 | 1.08 | 64 | 0.254 | -11.92 | -10.92 | 0.08 |
| 20 | 0.918 | -0.74 | 0.26 | 1.06 | 65 | 0.240 | -12.40 | -11.40 | 0.07 |
| 21 | 0.909 | -0.83 | 0.17 | 1.04 | 66 | 0.226 | -12.90 | -11.90 | 0.06 |
| 22 | 0.899 | -0.92 | 0.08 | 1.02 | 67 | 0.214 | -13.41 | -12.41 | 0.06 |
| 23 | 0.889 | -1.02 | -0.02 | 0.99 | 68 | 0.201 | -13.95 | -12.95 | 0.05 |
| 24 | 0.878 | -1.13 | -0.13 | 0.97 | 69 | 0.188 | -14.50 | -13.50 | 0.04 |
| 25 | 0.867 | -1.24 | -0.24 | 0.95 | 70 | 0.176 | -15.08 | -14.08 | 0.04 |
| 26 | 0.855 | -1.36 | -0.36 | 0.92 | 71 | 0.164 | -15.69 | -14.69 | 0.03 |
| 27 | 0.842 | -1.49 | -0.49 | 0.89 | 72 | 0.152 | -16.34 | -15.34 | 0.03 |
| 28 | 0.830 | -1.62 | -0.62 | 0.87 | 73 | 0.141 | -17.01 | -16.01 | 0.03 |
| 29 | 0.816 | -1.76 | -0.76 | 0.84 | 74 | 0.130 | -17.73 | -16.73 | 0.02 |
| 30 | 0.803 | -1.91 | -0.91 | 0.81 | 75 | 0.119 | -18.49 | -17.49 | 0.02 |
| 31 | 0.788 | -2.07 | -1.07 | 0.78 | 76 | 0.108 | -19.33 | -18.33 | 0.01 |
| 32 | 0.774 | -2.23 | -1.23 | 0.75 | 77 | 0.098 | -20.21 | -19.21 | 0.01 |
| 33 | 0.758 | -2.40 | -1.40 | 0.72 | 78 | 0.087 | -21.20 | -20.20 | 0.01 |
| 34 | 0.743 | -2.58 | -1.58 | 0.70 | 79 | 0.077 | -22.27 | -21.27 | 0.01 |
| 35 | 0.727 | -2.77 | -1.77 | 0.67 | 80 | 0.067 | -23.49 | -22.49 | 0.01 |
| 36 | 0.711 | -2.96 | -1.96 | 0.64 | 81 | 0.057 | -24.86 | -23.86 | 0.00 |
| 37 | 0.695 | -3.16 | -2.16 | 0.61 | 82 | 0.047 | -26.48 | -25.48 | 0.00 |
| 38 | 0.678 | -3.37 | -2.37 | 0.58 | 83 | 0.038 | -28.42 | -27.42 | 0.00 |
| 39 | 0.662 | -3.59 | -2.59 | 0.55 | 84 | 0.028 | -30.91 | -29.91 | 0.00 |
| 40 | 0.645 | -3.81 | -2.81 | 0.52 | 85 | 0.019 | -34.30 | -33.30 | 0.00 |
| 41 | 0.628 | -4.05 | -3.05 | 0.50 | 86 | 0.010 | -39.94 | -38.94 | 0.00 |
| 42 | 0.610 | -4.29 | -3.29 | 0.47 | 87 | 0.010 | -40.00 | -39.00 | 0.00 |
| 43 | 0.593 | -4.54 | -3.54 | 0.44 | 88 | 0.010 | -40.00 | -39.00 | 0.00 |
| 44 | 0.575 | -4.80 | -3.80 | 0.42 | 89 | 0.017 | -35.56 | -34.56 | 0.00 |
| | | | | | 90 | 0.025 | -31.89 | -30.89 | 0.00 |

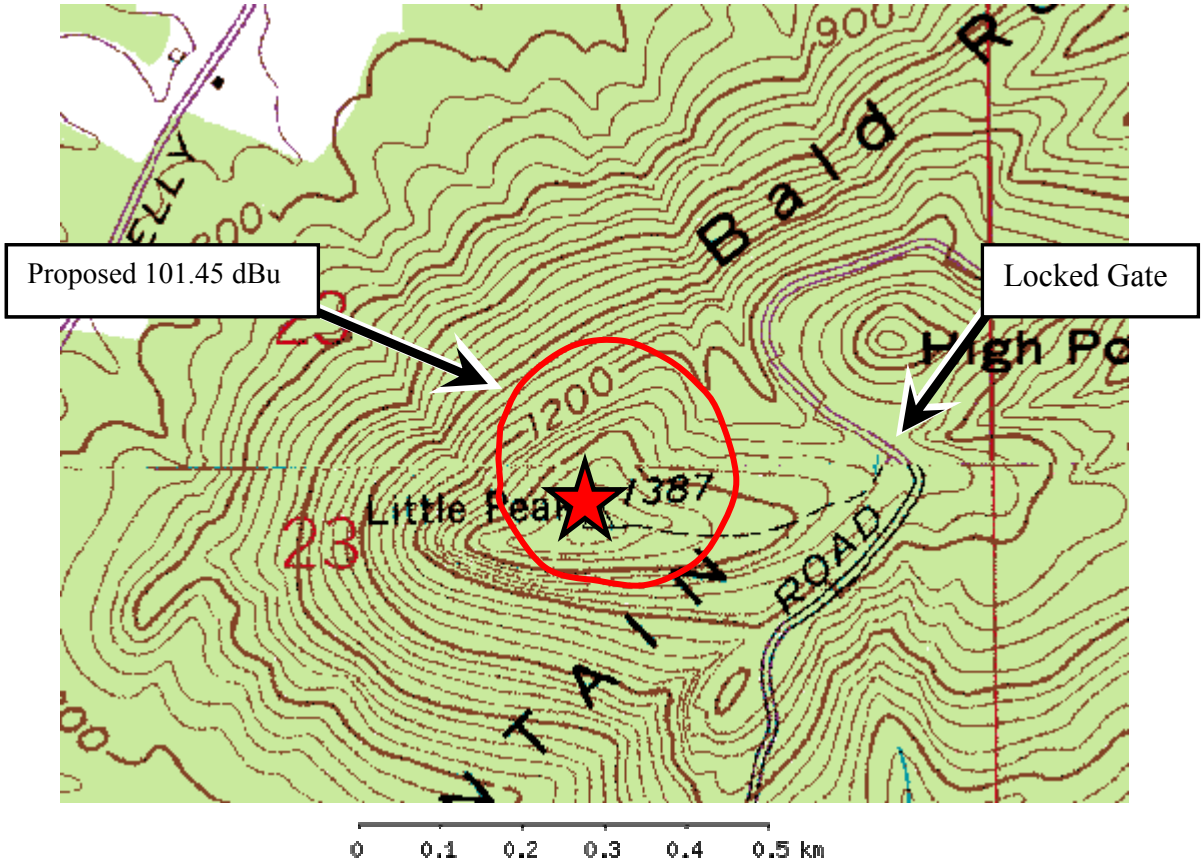

W237CG - Proposed
Latitude: 33-37-28 N
Longitude: 086-24-00 W
ERP: 0.01 kW
Channel: 237
Frequency: 95.3 MHz
AMSL Height: 435.7 m
Elevation: 422.7 m
Protected & Interfering Contours
Map - W237CG
Modification of Construction Permit
WBHJ 60 dBu
WBHJ 61.45 dBu
AP237
AP237 60 dBu
W237CG.P
W237CG.P 60 dBu
WBHJ
WGIB
WGIB 60 dBu
W237CH.C 60 dBu
W237CH.C
Scale 1:500,000
km
0
7
14
21
Exhibit E, Figure 2


W237CG - Proposed
Latitude: 33-37-28 N
Longitude: 086-24-00 W
ERP: 0.01 kW
Channel: 237
Frequency: 95.3 MHz
AMSL Height: 435.7 m
Elevation: 422.7 m
Protected & Interfering Contours Map (Zoomed View) - W237CG Modification of Construction Permit
WBHJ 61.45 dBu
Quails St
Kelly Creek Rd
W237CG.P
W237CG.P 101.45 dBu
Exhibit E, Figure 3
Tower Rd
Scale 1:15,000
km
0
0.2
0.4
0.6

**W237CG – Modification of Construction Permit**




**Aerial Photo**




Portion of Cooks Springs, AL USGS Topographic Quadrangle Map

**Exhibit, E, Figure 4**