

EXHIBIT A

ENGINEERING STATEMENT

The engineering data contained herein have been prepared on behalf of TV-49, INC., permittee of a new digital television station Channel 31 in Shawano, WI, in support of its application for modification of Construction Permit LMS-0000195584 to specify a new transmitter site, antenna azimuth pattern, effective radiated power and antenna radiation center above ground level.

It is proposed to mount a Dielectric TFU-22DSB/VP-SP-R OS directional, elliptically polarized slotted cylinder antenna at the 312-meter level of an existing 352.3-meter tower. Exhibit B is a map upon which the predicted service contours of the proposed facility are plotted. As shown, the entire community of license, Shawano, Wisconsin, is encompassed by the proposed 48 dBu city-grade service contour. Exhibit C is a map on which the authorized and proposed noise-limited, dipole-adjusted service contours are plotted. Since this facility has not been constructed, no "loss-area" will be created by this proposal.

Azimuth and elevation pattern data for the Dielectric directional antenna is included in Exhibit D. Exhibit E contains the summary results from a TVStudy interference study, which was conducted using a cell size of 1.0 kilometers and increment spacing of 0.1 kilometer. It concludes that the proposed facility meets the Commission's de minimis interference criteria to all co-channel and adjacent-channel full-power and Class A television facilities. A detailed power density calculation is provided in Exhibit F.

Since no change in the overall height or location of the existing tower is proposed herein, the Federal Aviation Administration has not been notified of this application. In addition, the Commission has assigned Antenna Structure Registration Number 1224036 to this tower.

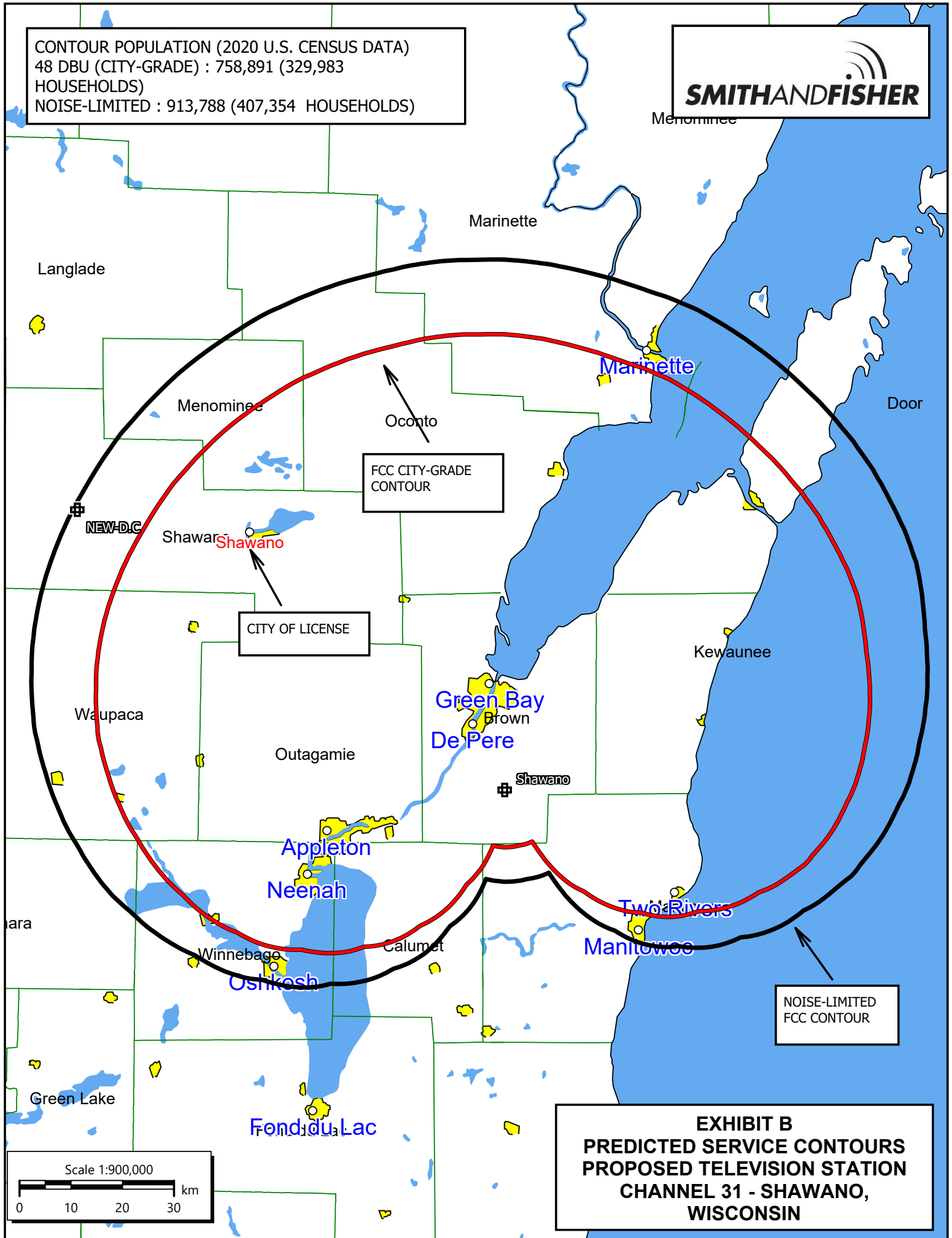
I declare under penalty of perjury that the foregoing statements and the attached exhibits, which were prepared by me or under my immediate supervision, are true and correct to the best of my knowledge and belief.

A handwritten signature in blue ink, appearing to read "Kyle T. Fisher", with a stylized flourish at the end.

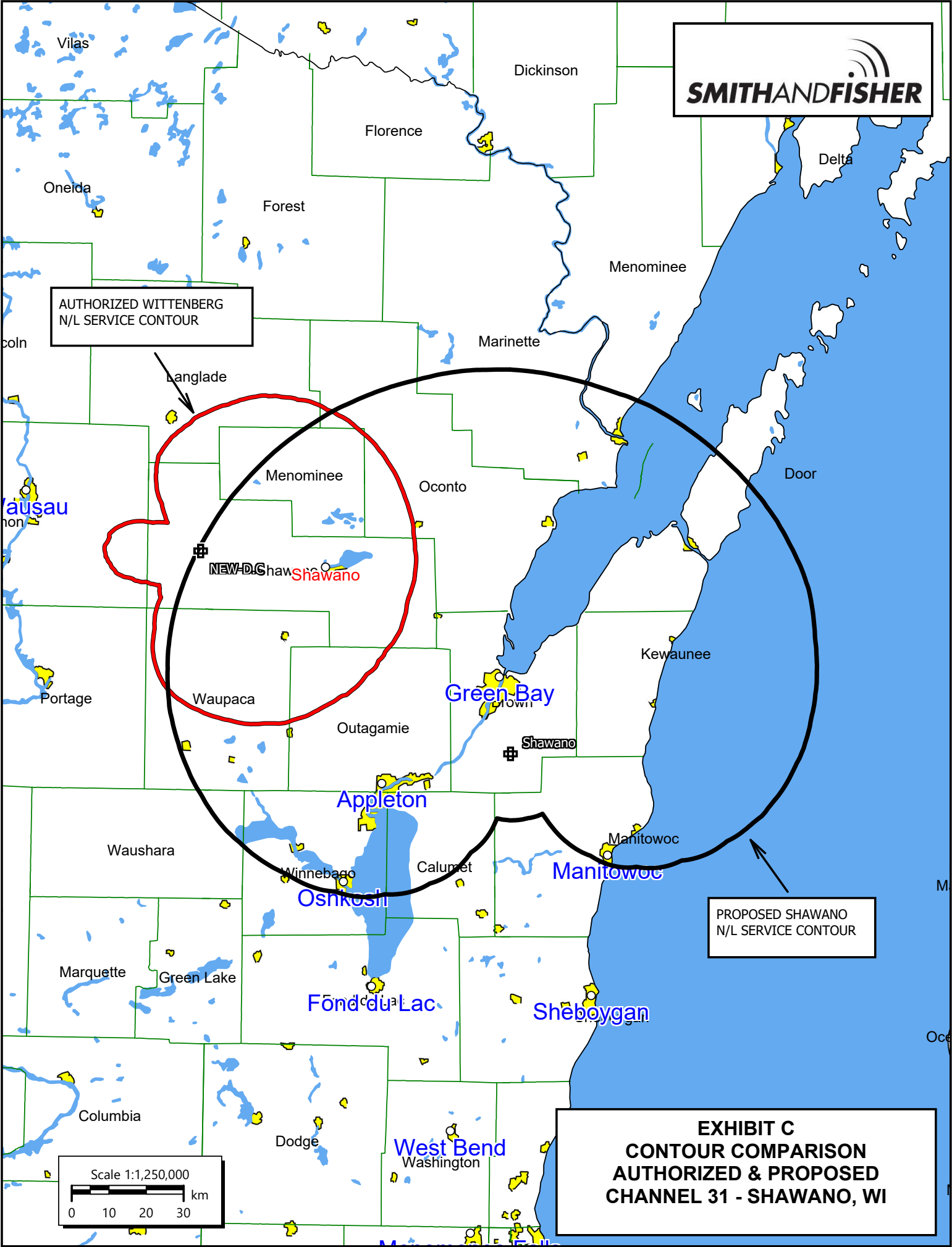
KYLE T. FISHER

March 1, 2024

CONTOUR POPULATION (2020 U.S. CENSUS DATA)  
48 DBU (CITY-GRADE) : 758,891 (329,983  
HOUSEHOLDS)  
NOISE-LIMITED : 913,788 (407,354 HOUSEHOLDS)



**EXHIBIT B**  
**PREDICTED SERVICE CONTOURS**  
**PROPOSED TELEVISION STATION**  
**CHANNEL 31 - SHAWANO,**  
**WISCONSIN**





**Antenna Model: TFU-22DSB/VP-SP-R OS**

Proposal Number: **C-71947-1**  
 Date: **29-Feb-24**  
 Customer: **Weigel**  
 Location: **Shawano, WI**

### Electrical Specifications

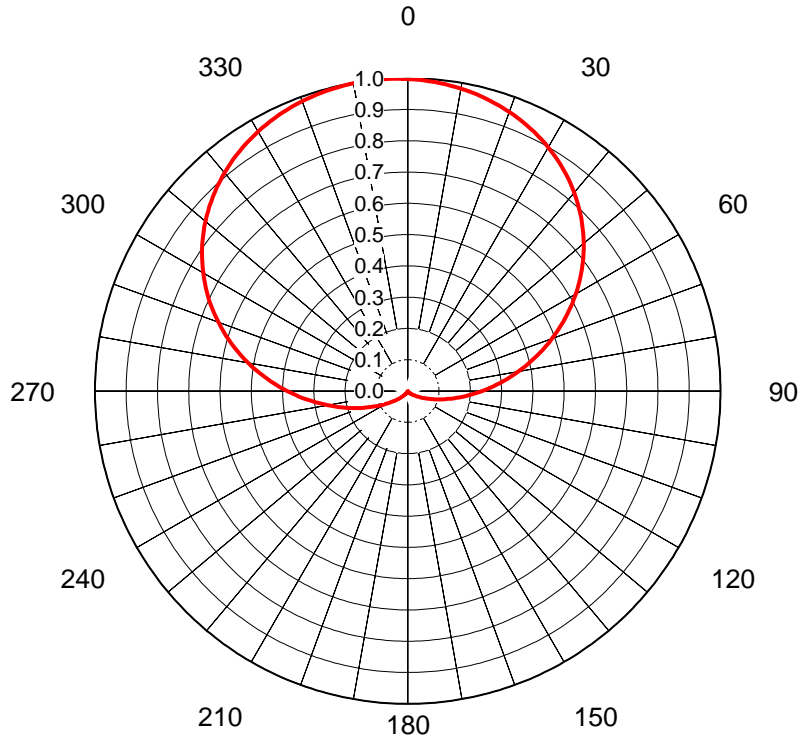
Polarization: **Elliptical**  
 Azimuth Pattern: **Directional**  
 Antenna Input: **4-1/16"** **50 Ohm** **EIA/DCA**  
 VSWR: **Channel** **1.08 : 1**  
 Bandwidth: **MHz**  
 Rated Input Power: **20 kW** **(13.01 dBk)** **Maximum Average Power**

### Mechanical Specifications

Mounting: **Side Mounted**  
 Environmental Protection: **Full Radome**  
 Height: **41.6 ft (12.7m)**  
 Weight: **700 lb (0.3t)** **Excludes Mounts**  
 Effective Projected Area: **42 ft² (3.9m²)** **TIA-222-G** **Basic Wind Speed: 90 m/h (144.8 km/h)**

### Channel Specifications

| Call | CH | Freq    | Hpol ERP                | Vpol ERP              | TPO                    | Peak<br>Main Lobe<br>Hpol Gain | Peak<br>Main Lobe<br>Vpol Gain | Peak<br>at Horizontal<br>Hpol Gain | Peak<br>at Horizontal<br>Vpol Gain |
|------|----|---------|-------------------------|-----------------------|------------------------|--------------------------------|--------------------------------|------------------------------------|------------------------------------|
| NEW  | 31 | 575 MHz | 1,000 kW<br>(30.00 dBk) | 300 kW<br>(24.77 dBk) | 30.3 kW<br>(14.82 dBk) | 52.51<br>(17.20dB)             | 15.75<br>(11.97dB)             | 28.83<br>(14.60dB)                 | 8.65<br>(9.37dB)                   |



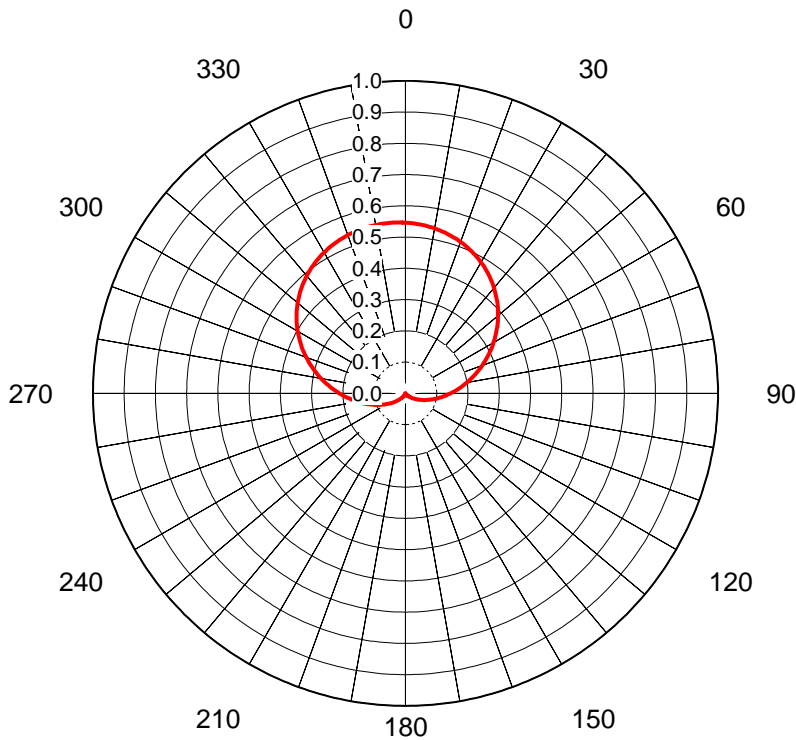
### AZIMUTH PATTERN Horizontal Polarization

In Free Space

Proposal No. **C-71947-1**  
Date **29-Feb-24**  
Call Letters **NEW**  
Channel **31**  
Frequency **575 MHz**  
Antenna Type **TFU-22DSB/VP-SP-R OS**  
Gain **3.09 (4.89dB)**  
Calculated

| Deg | Value | Deg | Value | Deg | Value | Deg | Value | Deg | Value | Deg | Value | Deg | Value | Deg | Value | Deg | Value |
|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|
| 0   | 0.998 | 36  | 0.859 | 72  | 0.465 | 108 | 0.084 | 144 | 0.004 | 180 | 0.000 | 216 | 0.013 | 252 | 0.176 | 288 | 0.620 |
| 1   | 0.997 | 37  | 0.852 | 73  | 0.451 | 109 | 0.079 | 145 | 0.004 | 181 | 0.000 | 217 | 0.014 | 253 | 0.186 | 289 | 0.633 |
| 2   | 0.996 | 38  | 0.844 | 74  | 0.438 | 110 | 0.073 | 146 | 0.003 | 182 | 0.000 | 218 | 0.015 | 254 | 0.196 | 290 | 0.645 |
| 3   | 0.994 | 39  | 0.836 | 75  | 0.425 | 111 | 0.068 | 147 | 0.003 | 183 | 0.000 | 219 | 0.016 | 255 | 0.206 | 291 | 0.656 |
| 4   | 0.993 | 40  | 0.828 | 76  | 0.412 | 112 | 0.063 | 148 | 0.002 | 184 | 0.000 | 220 | 0.018 | 256 | 0.216 | 292 | 0.668 |
| 5   | 0.991 | 41  | 0.820 | 77  | 0.398 | 113 | 0.059 | 149 | 0.002 | 185 | 0.000 | 221 | 0.020 | 257 | 0.227 | 293 | 0.680 |
| 6   | 0.990 | 42  | 0.811 | 78  | 0.385 | 114 | 0.055 | 150 | 0.002 | 186 | 0.000 | 222 | 0.021 | 258 | 0.238 | 294 | 0.691 |
| 7   | 0.988 | 43  | 0.802 | 79  | 0.372 | 115 | 0.051 | 151 | 0.002 | 187 | 0.000 | 223 | 0.023 | 259 | 0.249 | 295 | 0.702 |
| 8   | 0.986 | 44  | 0.793 | 80  | 0.359 | 116 | 0.047 | 152 | 0.001 | 188 | 0.000 | 224 | 0.025 | 260 | 0.261 | 296 | 0.713 |
| 9   | 0.984 | 45  | 0.784 | 81  | 0.347 | 117 | 0.043 | 153 | 0.001 | 189 | 0.000 | 225 | 0.027 | 261 | 0.272 | 297 | 0.724 |
| 10  | 0.981 | 46  | 0.775 | 82  | 0.334 | 118 | 0.040 | 154 | 0.001 | 190 | 0.000 | 226 | 0.029 | 262 | 0.284 | 298 | 0.735 |
| 11  | 0.979 | 47  | 0.765 | 83  | 0.321 | 119 | 0.037 | 155 | 0.001 | 191 | 0.001 | 227 | 0.032 | 263 | 0.296 | 299 | 0.745 |
| 12  | 0.976 | 48  | 0.755 | 84  | 0.309 | 120 | 0.034 | 156 | 0.001 | 192 | 0.001 | 228 | 0.034 | 264 | 0.309 | 300 | 0.755 |
| 13  | 0.974 | 49  | 0.745 | 85  | 0.296 | 121 | 0.032 | 157 | 0.001 | 193 | 0.001 | 229 | 0.037 | 265 | 0.321 | 301 | 0.765 |
| 14  | 0.971 | 50  | 0.735 | 86  | 0.284 | 122 | 0.029 | 158 | 0.000 | 194 | 0.001 | 230 | 0.040 | 266 | 0.334 | 302 | 0.775 |
| 15  | 0.968 | 51  | 0.724 | 87  | 0.272 | 123 | 0.027 | 159 | 0.000 | 195 | 0.001 | 231 | 0.043 | 267 | 0.347 | 303 | 0.784 |
| 16  | 0.964 | 52  | 0.713 | 88  | 0.261 | 124 | 0.025 | 160 | 0.000 | 196 | 0.001 | 232 | 0.047 | 268 | 0.359 | 304 | 0.793 |
| 17  | 0.961 | 53  | 0.702 | 89  | 0.249 | 125 | 0.023 | 161 | 0.000 | 197 | 0.002 | 233 | 0.051 | 269 | 0.372 | 305 | 0.802 |
| 18  | 0.957 | 54  | 0.691 | 90  | 0.238 | 126 | 0.021 | 162 | 0.000 | 198 | 0.002 | 234 | 0.055 | 270 | 0.385 | 306 | 0.811 |
| 19  | 0.953 | 55  | 0.680 | 91  | 0.227 | 127 | 0.020 | 163 | 0.000 | 199 | 0.002 | 235 | 0.059 | 271 | 0.398 | 307 | 0.820 |
| 20  | 0.950 | 56  | 0.668 | 92  | 0.216 | 128 | 0.018 | 164 | 0.000 | 200 | 0.002 | 236 | 0.063 | 272 | 0.412 | 308 | 0.828 |
| 21  | 0.945 | 57  | 0.656 | 93  | 0.206 | 129 | 0.016 | 165 | 0.000 | 201 | 0.003 | 237 | 0.068 | 273 | 0.425 | 309 | 0.836 |
| 22  | 0.941 | 58  | 0.645 | 94  | 0.196 | 130 | 0.015 | 166 | 0.000 | 202 | 0.003 | 238 | 0.073 | 274 | 0.438 | 310 | 0.844 |
| 23  | 0.937 | 59  | 0.633 | 95  | 0.186 | 131 | 0.014 | 167 | 0.000 | 203 | 0.004 | 239 | 0.079 | 275 | 0.451 | 311 | 0.852 |
| 24  | 0.932 | 60  | 0.620 | 96  | 0.176 | 132 | 0.013 | 168 | 0.000 | 204 | 0.004 | 240 | 0.084 | 276 | 0.465 | 312 | 0.859 |
| 25  | 0.927 | 61  | 0.608 | 97  | 0.167 | 133 | 0.012 | 169 | 0.000 | 205 | 0.004 | 241 | 0.090 | 277 | 0.478 | 313 | 0.866 |
| 26  | 0.922 | 62  | 0.595 | 98  | 0.158 | 134 | 0.011 | 170 | 0.000 | 206 | 0.005 | 242 | 0.096 | 278 | 0.491 | 314 | 0.873 |
| 27  | 0.916 | 63  | 0.583 | 99  | 0.149 | 135 | 0.010 | 171 | 0.000 | 207 | 0.005 | 243 | 0.103 | 279 | 0.505 | 315 | 0.880 |
| 28  | 0.911 | 64  | 0.570 | 100 | 0.140 | 136 | 0.009 | 172 | 0.000 | 208 | 0.006 | 244 | 0.110 | 280 | 0.518 | 316 | 0.887 |
| 29  | 0.905 | 65  | 0.557 | 101 | 0.132 | 137 | 0.008 | 173 | 0.000 | 209 | 0.007 | 245 | 0.117 | 281 | 0.531 | 317 | 0.893 |
| 30  | 0.899 | 66  | 0.544 | 102 | 0.124 | 138 | 0.007 | 174 | 0.000 | 210 | 0.007 | 246 | 0.124 | 282 | 0.544 | 318 | 0.899 |
| 31  | 0.893 | 67  | 0.531 | 103 | 0.117 | 139 | 0.007 | 175 | 0.000 | 211 | 0.008 | 247 | 0.132 | 283 | 0.557 | 319 | 0.905 |
| 32  | 0.887 | 68  | 0.518 | 104 | 0.110 | 140 | 0.006 | 176 | 0.000 | 212 | 0.009 | 248 | 0.140 | 284 | 0.570 | 320 | 0.911 |
| 33  | 0.880 | 69  | 0.505 | 105 | 0.103 | 141 | 0.005 | 177 | 0.000 | 213 | 0.010 | 249 | 0.149 | 285 | 0.583 | 321 | 0.916 |
| 34  | 0.873 | 70  | 0.491 | 106 | 0.096 | 142 | 0.005 | 178 | 0.000 | 214 | 0.011 | 250 | 0.158 | 286 | 0.595 | 322 | 0.922 |
| 35  | 0.866 | 71  | 0.478 | 107 | 0.090 | 143 | 0.004 | 179 | 0.000 | 215 | 0.012 | 251 | 0.167 | 287 | 0.608 | 323 | 0.927 |

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### AZIMUTH PATTERN Vertical Polarization

In Free Space

Proposal No. **C-71947-1**  
 Date **29-Feb-24**  
 Call Letters **NEW**  
 Channel **31**  
 Frequency **575 MHz**  
 Antenna Type **TFU-22DSB/VP-SP-R OS**  
 Gain **3.16 (5dB)**  
 Calculated

| Deg | Value | Deg | Value | Deg | Value | Deg | Value | Deg | Value | Deg | Value | Deg | Value | Deg | Value | Deg | Value | Deg | Value |
|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|
| 0   | 0.546 | 36  | 0.459 | 72  | 0.249 | 108 | 0.069 | 144 | 0.006 | 180 | 0.000 | 216 | 0.016 | 252 | 0.116 | 288 | 0.325 | 324 | 0.504 |
| 1   | 0.546 | 37  | 0.455 | 73  | 0.242 | 109 | 0.066 | 145 | 0.005 | 181 | 0.000 | 217 | 0.017 | 253 | 0.120 | 289 | 0.332 | 325 | 0.507 |
| 2   | 0.545 | 38  | 0.450 | 74  | 0.236 | 110 | 0.062 | 146 | 0.005 | 182 | 0.000 | 218 | 0.018 | 254 | 0.125 | 290 | 0.338 | 326 | 0.510 |
| 3   | 0.544 | 39  | 0.445 | 75  | 0.230 | 111 | 0.059 | 147 | 0.004 | 183 | 0.001 | 219 | 0.019 | 255 | 0.130 | 291 | 0.344 | 327 | 0.513 |
| 4   | 0.543 | 40  | 0.441 | 76  | 0.224 | 112 | 0.056 | 148 | 0.004 | 184 | 0.001 | 220 | 0.021 | 256 | 0.135 | 292 | 0.350 | 328 | 0.516 |
| 5   | 0.542 | 41  | 0.436 | 77  | 0.218 | 113 | 0.053 | 149 | 0.004 | 185 | 0.001 | 221 | 0.023 | 257 | 0.140 | 293 | 0.357 | 329 | 0.518 |
| 6   | 0.541 | 42  | 0.431 | 78  | 0.212 | 114 | 0.051 | 150 | 0.003 | 186 | 0.001 | 222 | 0.024 | 258 | 0.145 | 294 | 0.363 | 330 | 0.521 |
| 7   | 0.540 | 43  | 0.425 | 79  | 0.206 | 115 | 0.048 | 151 | 0.003 | 187 | 0.001 | 223 | 0.026 | 259 | 0.150 | 295 | 0.369 | 331 | 0.523 |
| 8   | 0.539 | 44  | 0.420 | 80  | 0.200 | 116 | 0.045 | 152 | 0.003 | 188 | 0.001 | 224 | 0.028 | 260 | 0.155 | 296 | 0.375 | 332 | 0.525 |
| 9   | 0.537 | 45  | 0.415 | 81  | 0.194 | 117 | 0.043 | 153 | 0.003 | 189 | 0.001 | 225 | 0.030 | 261 | 0.160 | 297 | 0.381 | 333 | 0.527 |
| 10  | 0.536 | 46  | 0.409 | 82  | 0.188 | 118 | 0.040 | 154 | 0.002 | 190 | 0.002 | 226 | 0.032 | 262 | 0.166 | 298 | 0.387 | 334 | 0.529 |
| 11  | 0.534 | 47  | 0.404 | 83  | 0.182 | 119 | 0.038 | 155 | 0.002 | 191 | 0.002 | 227 | 0.034 | 263 | 0.171 | 299 | 0.392 | 335 | 0.531 |
| 12  | 0.533 | 48  | 0.398 | 84  | 0.177 | 120 | 0.036 | 156 | 0.002 | 192 | 0.002 | 228 | 0.036 | 264 | 0.177 | 300 | 0.398 | 336 | 0.533 |
| 13  | 0.531 | 49  | 0.392 | 85  | 0.171 | 121 | 0.034 | 157 | 0.002 | 193 | 0.002 | 229 | 0.038 | 265 | 0.182 | 301 | 0.404 | 337 | 0.534 |
| 14  | 0.529 | 50  | 0.387 | 86  | 0.166 | 122 | 0.032 | 158 | 0.002 | 194 | 0.002 | 230 | 0.040 | 266 | 0.188 | 302 | 0.409 | 338 | 0.536 |
| 15  | 0.527 | 51  | 0.381 | 87  | 0.160 | 123 | 0.030 | 159 | 0.001 | 195 | 0.003 | 231 | 0.043 | 267 | 0.194 | 303 | 0.415 | 339 | 0.537 |
| 16  | 0.525 | 52  | 0.375 | 88  | 0.155 | 124 | 0.028 | 160 | 0.001 | 196 | 0.003 | 232 | 0.045 | 268 | 0.200 | 304 | 0.420 | 340 | 0.539 |
| 17  | 0.523 | 53  | 0.369 | 89  | 0.150 | 125 | 0.026 | 161 | 0.001 | 197 | 0.003 | 233 | 0.048 | 269 | 0.206 | 305 | 0.425 | 341 | 0.540 |
| 18  | 0.521 | 54  | 0.363 | 90  | 0.145 | 126 | 0.024 | 162 | 0.001 | 198 | 0.003 | 234 | 0.051 | 270 | 0.212 | 306 | 0.431 | 342 | 0.541 |
| 19  | 0.518 | 55  | 0.357 | 91  | 0.140 | 127 | 0.023 | 163 | 0.001 | 199 | 0.004 | 235 | 0.053 | 271 | 0.218 | 307 | 0.436 | 343 | 0.542 |
| 20  | 0.516 | 56  | 0.350 | 92  | 0.135 | 128 | 0.021 | 164 | 0.001 | 200 | 0.004 | 236 | 0.056 | 272 | 0.224 | 308 | 0.441 | 344 | 0.543 |
| 21  | 0.513 | 57  | 0.344 | 93  | 0.130 | 129 | 0.019 | 165 | 0.001 | 201 | 0.004 | 237 | 0.059 | 273 | 0.230 | 309 | 0.445 | 345 | 0.544 |
| 22  | 0.510 | 58  | 0.338 | 94  | 0.125 | 130 | 0.018 | 166 | 0.000 | 202 | 0.005 | 238 | 0.062 | 274 | 0.236 | 310 | 0.450 | 346 | 0.545 |
| 23  | 0.507 | 59  | 0.332 | 95  | 0.120 | 131 | 0.017 | 167 | 0.000 | 203 | 0.005 | 239 | 0.066 | 275 | 0.242 | 311 | 0.455 | 347 | 0.546 |
| 24  | 0.504 | 60  | 0.325 | 96  | 0.116 | 132 | 0.016 | 168 | 0.000 | 204 | 0.006 | 240 | 0.069 | 276 | 0.249 | 312 | 0.459 | 348 | 0.546 |
| 25  | 0.501 | 61  | 0.319 | 97  | 0.111 | 133 | 0.014 | 169 | 0.000 | 205 | 0.006 | 241 | 0.072 | 277 | 0.255 | 313 | 0.464 | 349 | 0.547 |
| 26  | 0.498 | 62  | 0.313 | 98  | 0.107 | 134 | 0.013 | 170 | 0.000 | 206 | 0.007 | 242 | 0.076 | 278 | 0.261 | 314 | 0.468 | 350 | 0.547 |
| 27  | 0.495 | 63  | 0.306 | 99  | 0.103 | 135 | 0.012 | 171 | 0.000 | 207 | 0.007 | 243 | 0.079 | 279 | 0.268 | 315 | 0.472 | 351 | 0.547 |
| 28  | 0.491 | 64  | 0.300 | 100 | 0.098 | 136 | 0.011 | 172 | 0.000 | 208 | 0.008 | 244 | 0.083 | 280 | 0.274 | 316 | 0.476 | 352 | 0.548 |
| 29  | 0.488 | 65  | 0.293 | 101 | 0.094 | 137 | 0.010 | 173 | 0.000 | 209 | 0.009 | 245 | 0.087 | 281 | 0.280 | 317 | 0.480 | 353 | 0.548 |
| 30  | 0.484 | 66  | 0.287 | 102 | 0.090 | 138 | 0.010 | 174 | 0.000 | 210 | 0.010 | 246 | 0.090 | 282 | 0.287 | 318 | 0.484 | 354 | 0.548 |
| 31  | 0.480 | 67  | 0.280 | 103 | 0.087 | 139 | 0.009 | 175 | 0.000 | 211 | 0.010 | 247 | 0.094 | 283 | 0.293 | 319 | 0.488 | 355 | 0.548 |
| 32  | 0.476 | 68  | 0.274 | 104 | 0.083 | 140 | 0.008 | 176 | 0.000 | 212 | 0.011 | 248 | 0.098 | 284 | 0.300 | 320 | 0.491 | 356 | 0.548 |
| 33  | 0.472 | 69  | 0.268 | 105 | 0.079 | 141 | 0.007 | 177 | 0.000 | 213 | 0.012 | 249 | 0.103 | 285 | 0.306 | 321 | 0.495 | 357 | 0.547 |
| 34  | 0.468 | 70  | 0.261 | 106 | 0.076 | 142 | 0.007 | 178 | 0.000 | 214 | 0.013 | 250 | 0.107 | 286 | 0.313 | 322 | 0.498 | 358 | 0.547 |
| 35  | 0.464 | 71  | 0.255 | 107 | 0.072 | 143 | 0.006 | 179 | 0.000 | 215 | 0.014 | 251 | 0.111 | 287 | 0.319 | 323 | 0.501 | 359 | 0.547 |

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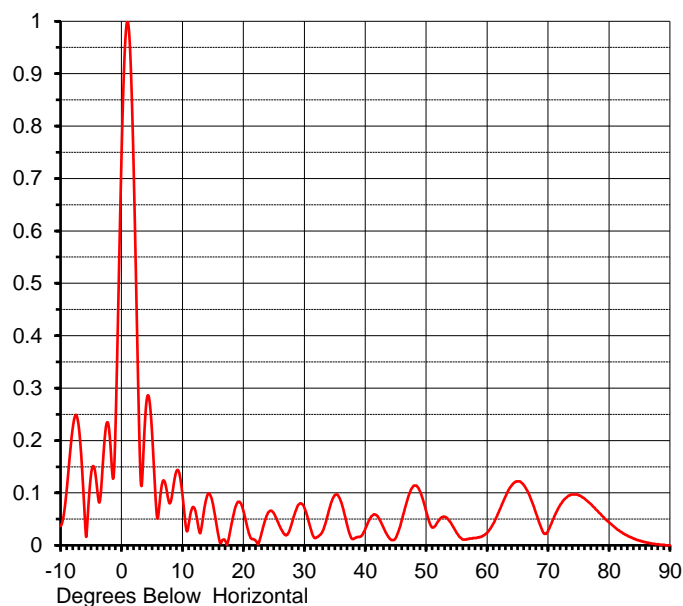
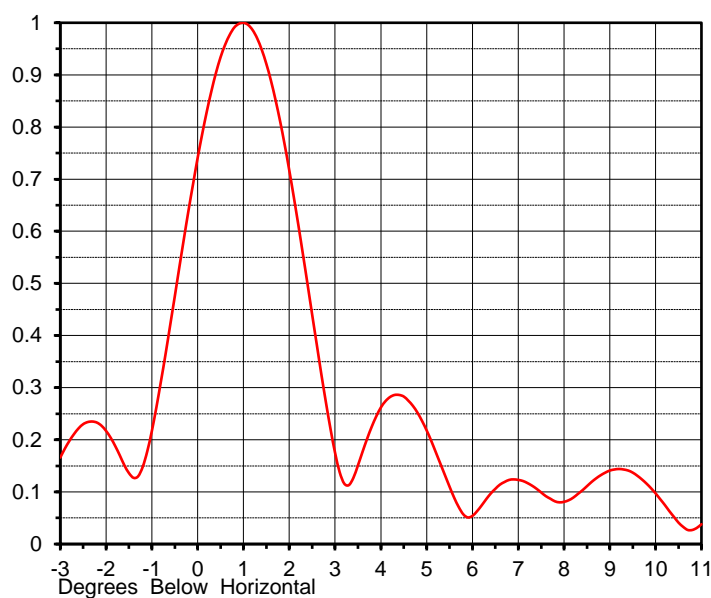


### ELEVATION PATTERN

Proposal No. **C-71947-1**  
 Date **29-Feb-24**  
 Call Letters **NEW**  
 Channel **31**  
 Frequency **575 MHz**  
 Antenna Type **TFU-22DSB/VP-SP-R OS**

RMS Directivity at Main Lobe **22.0 ( 13.42 dB )**  
 RMS Directivity at Horizontal **12.1 ( 10.83 dB )**  
**Calculated**

Beam Tilt **1.00 deg**  
 Pattern Number **22D220100**

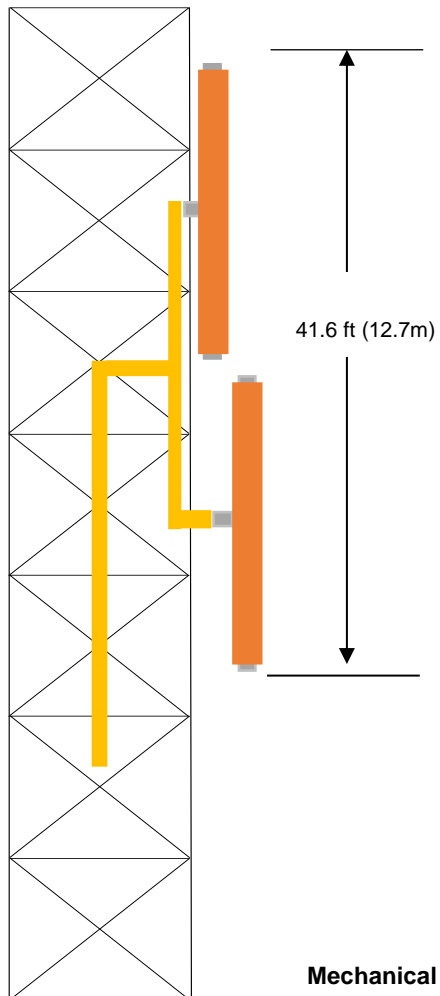


| Angle | Field | Angle | Field | Angle | Field | Angle | Field | Angle | Field |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| -10.0 | 0.037 | 10.0  | 0.097 | 30.0  | 0.072 | 50.0  | 0.065 | 70.0  | 0.027 |
| -9.0  | 0.105 | 11.0  | 0.038 | 31.0  | 0.034 | 51.0  | 0.034 | 71.0  | 0.054 |
| -8.0  | 0.224 | 12.0  | 0.070 | 32.0  | 0.015 | 52.0  | 0.046 | 72.0  | 0.077 |
| -7.0  | 0.225 | 13.0  | 0.026 | 33.0  | 0.027 | 53.0  | 0.054 | 73.0  | 0.091 |
| -6.0  | 0.048 | 14.0  | 0.092 | 34.0  | 0.065 | 54.0  | 0.044 | 74.0  | 0.097 |
| -5.0  | 0.135 | 15.0  | 0.079 | 35.0  | 0.096 | 55.0  | 0.024 | 75.0  | 0.096 |
| -4.0  | 0.108 | 16.0  | 0.013 | 36.0  | 0.084 | 56.0  | 0.011 | 76.0  | 0.089 |
| -3.0  | 0.166 | 17.0  | 0.009 | 37.0  | 0.040 | 57.0  | 0.012 | 77.0  | 0.079 |
| -2.0  | 0.217 | 18.0  | 0.037 | 38.0  | 0.012 | 58.0  | 0.014 | 78.0  | 0.067 |
| -1.0  | 0.217 | 19.0  | 0.081 | 39.0  | 0.016 | 59.0  | 0.016 | 79.0  | 0.055 |
| 0.0   | 0.741 | 20.0  | 0.066 | 40.0  | 0.031 | 60.0  | 0.024 | 80.0  | 0.044 |
| 1.0   | 1.000 | 21.0  | 0.020 | 41.0  | 0.055 | 61.0  | 0.041 | 81.0  | 0.034 |
| 2.0   | 0.717 | 22.0  | 0.009 | 42.0  | 0.056 | 62.0  | 0.066 | 82.0  | 0.025 |
| 3.0   | 0.175 | 23.0  | 0.024 | 43.0  | 0.034 | 63.0  | 0.093 | 83.0  | 0.019 |
| 4.0   | 0.262 | 24.0  | 0.061 | 44.0  | 0.013 | 64.0  | 0.114 | 84.0  | 0.013 |
| 5.0   | 0.218 | 25.0  | 0.061 | 45.0  | 0.014 | 65.0  | 0.122 | 85.0  | 0.009 |
| 6.0   | 0.054 | 26.0  | 0.036 | 46.0  | 0.048 | 66.0  | 0.115 | 86.0  | 0.006 |
| 7.0   | 0.123 | 27.0  | 0.019 | 47.0  | 0.090 | 67.0  | 0.094 | 87.0  | 0.003 |
| 8.0   | 0.081 | 28.0  | 0.044 | 48.0  | 0.114 | 68.0  | 0.062 | 88.0  | 0.002 |
| 9.0   | 0.141 | 29.0  | 0.077 | 49.0  | 0.103 | 69.0  | 0.030 | 89.0  | 0.001 |
|       |       |       |       |       |       |       |       | 90.0  | 0.000 |

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### MECHANICAL SPECIFICATIONS



Proposal No. **C-71947-1**  
 Date **29-Feb-24**  
 Call Letters **NEW**  
 Channel **31**  
 Frequency **575 MHz**  
 Antenna Type **TFU-22DSB/VP-SP-R OS**

#### Preliminary Specifications

#### Side Mounted

#### With ice TIA-222-G

Basic Wind Speed 90 m/h (144.8 km/h)

Structure Class II

Exposure Category C

Topography Category 1

Design Ice 0.5 in  $t_{iz} = 1.31$  in

Wind Speed w/Ice 40 m/h (64.4 km/h)

#### Mechanical Specifications

|                               |                    | without ice                             | with ice                                  |                 |
|-------------------------------|--------------------|---|---|-----------------|
| Height                        | H2                 | 41.6 ft (12.7m)                         |   |                 |
| Height of Center of Radiation | H3                 | 20.8 ft (6.3m)                          |   |                 |
| Effective Projected Area      | (EPA) <sub>A</sub> | 42 ft <sup>2</sup> (3.9m <sup>2</sup> ) | 87.9 ft <sup>2</sup> (8.2m <sup>2</sup> ) | Mounts Excluded |
| Weight                        | W                  | 700 lb (0.3t)                           | 1900 lb (0.9t)                            | Mounts Excluded |

Antenna designed in accordance with AISC specifications for design of structural steel as prescribed by TIA-222-G

Prepared by: CAB

Date: 11-Oct-23

ME:

EE:

Rev. No.1 by: CAB

Date: 29-Feb-24

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### Summary

|              |                             |
|--------------|-----------------------------|
| Proposal No. | <b>C-71947-1</b>            |
| Date         | <b>29-Feb-24</b>            |
| Call Letters | <b>NEW</b>                  |
| Channel      | <b>31</b>                   |
| Frequency    | <b>575 MHz</b>              |
| Antenna Type | <b>TFU-22DSB/VP-SP-R OS</b> |

### Antenna

|            | Hpol            |                      | Vpol          |                      |
|------------|-----------------|----------------------|---------------|----------------------|
| ERP:       | <b>1,000 kW</b> | <b>( 30.00 dBk )</b> | <b>300 kW</b> | <b>( 24.77 dBk )</b> |
| Peak Gain* | 52.51           | ( 17.20 dB )         | 15.75         | ( 11.97 dB )         |

|                            |                |                      |
|----------------------------|----------------|----------------------|
| <b>Antenna Input Power</b> | <b>19.0 kW</b> | <b>( 12.80 dBk )</b> |
|----------------------------|----------------|----------------------|

### Transmission Line

|            |                |                |                    |
|------------|----------------|----------------|--------------------|
| Type:      | <b>Rigid</b>   | Attenuation:   | <b>( 2.02 dB )</b> |
| Size:      | <b>4-1/16"</b> | Efficiency:    | <b>62.8%</b>       |
| Impedance: | <b>50 Ohm</b>  |                |                    |
| Length:    | <b>1250 ft</b> | <b>381.0 m</b> |                    |

### Transmitter Output

|                |                      |
|----------------|----------------------|
| <b>30.3 kW</b> | <b>( 14.82 dBk )</b> |
|----------------|----------------------|

Transmitter filter losses not included

\* Directivity and Gain are with respect to half wave dipole. The gain includes feed system losses

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TVSTUDY INTERFERENCE ANALYSIS RESULTS  
PROPOSED TELEVISION STATION  
CHANNEL 31 – SHAWANO, WISCONSIN  
[MODIFICATION OF LMS-0000195584]

Study created: 2024.02.28 12:57:00

Study build station data: LMS TV 2024-02-28

Proposal: SHAWANO D31 DT CP SHAWANO, WI

File number: BLANK0000195584

Facility ID: 776266

Station data: User record

Record ID: 85

Country: U.S.

Zone: II

Stations potentially affected by proposal:

| IX  | Call    | Chan | Svc | Status | City, State     | File Number     | Distance |
|-----|---------|------|-----|--------|-----------------|-----------------|----------|
| No  | WPXE-TV | D30  | DT  | LIC    | KENOSHA, WI     | BLANK0000087614 | 138.3    |
| km  |         |      |     |        |                 |                 |          |
| No  | WQAD-TV | D31  | DT  | LIC    | MOLINE, IL      | BLANK0000120809 | 388.5    |
| No  | WNIT    | D31  | DT  | LIC    | SOUTH BEND, IN  | BLANK0000215059 | 335.6    |
| No  | WMYD    | D31  | DT  | LIC    | DETROIT, MI     | BLANK0000227624 | 441.3    |
| No  | WMKG-CD | D31  | DC  | LIC    | MUSKEGON, MI    | BLANK0000107817 | 191.7    |
| Yes | KARE    | D31  | DT  | LIC    | MINNEAPOLIS, MN | BLANK0000218442 | 415.4    |
| Yes | WITI    | D31  | DT  | LIC    | MILWAUKEE, WI   | BLANK0000086971 | 138.3    |

## SMITH AND FISHER

|    |         |     |    |     |               |                  |       |
|----|---------|-----|----|-----|---------------|------------------|-------|
| No | WFQX-TV | D32 | DT | LIC | CADILLAC, MI  | BLCDT20091217ACU | 211.3 |
| No | WFQX-TV | D32 | DT | CP  | CADILLAC, MI  | BLANK0000035809  | 211.3 |
| No | WJMN-TV | D32 | DT | LIC | ESCANABA, MI  | BLANK0000063727  | 215.9 |
| No | WTMJ-TV | D32 | DT | LIC | MILWAUKEE, WI | BLANK0000086939  | 138.2 |

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D31

Latitude: 44 20 0.10 N (NAD83)

Longitude: 87 58 55.70 W

Height AMSL: 583.8 m

HAAT: 332.7 m

Peak ERP: 1000 kW

Antenna: Dielectric TFU-22DSB/VP-SP-R OS 352.0 deg

Elev Pattn: Generic

Elec Tilt: 1.00

40.4 dBu contour:

| Azimuth | ERP    | HAAT    | Distance |
|---------|--------|---------|----------|
| 0.0 deg | 994 kW | 349.1 m | 102.8 km |
| 45.0    | 611    | 318.3   | 95.7     |
| 90.0    | 57.4   | 322.7   | 78.0     |
| 135.0   | 0.112  | 318.8   | 43.0     |
| 180.0   | 0.001  | 314.5   | 17.8     |
| 225.0   | 0.829  | 319.2   | 54.0     |
| 270.0   | 149    | 357.0   | 88.0     |
| 315.0   | 771    | 362.2   | 101.7    |

Proposal 25.42 dBu contour does not cross Canadian border

Distance to Canadian border: 356.8 km

Distance to Mexican border: 2003.4 km

Conditions at FCC monitoring station: Allegan MI

Bearing: 138.9 degrees Distance: 252.2 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:

Bearing: 257.8 degrees Distance: 1489.6 km

Study cell size: 1.00 km

Profile point spacing: 0.10 km

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

Maximum new IX to LPTV: 2.00%

---- Below is IX received by proposal BLANK0000195584 ----

Proposal receives 4.18% interference from scenario 1

No IX check failures found.

POWER DENSITY CALCULATION  
PROPOSED TELEVISION STATION  
CHANNEL 31 – SHAWANO, WI  
[MODIFICATION OF LMS-0000195584]

Since the FCC considers the possible biological effects of RF transmissions in its environmental determinations, we have studied the matter with respect to this Shawano facility. Employing the methods set forth in *OET Bulletin No. 65* and considering a main-lobe effective radiated power of 1,000 kW (H, V) an antenna radiation center 312 meters above ground, and the specific elevation pattern of the proposed Dielectric TFU-22DSB/VP-SP-R OS antenna, a maximum power density value two meters above ground of 0.0043 mW/cm<sup>2</sup> is calculated to occur north of the base of the tower. Since this is 1.1 percent of the 0.385 mW/cm<sup>2</sup> reference for uncontrolled environments (areas with public access) surrounding a facility operating on Channel 31 (572-578 MHz), a grant of this proposal may be considered a minor environmental action with respect to public exposure to non-ionizing electromagnetic radiation.

Further, the station owner will take whatever precautionary steps are necessary, such as reducing power or leaving the air temporarily, to ensure that workers operating in the vicinity of the antenna are not exposed to excessive non-ionizing radiation.