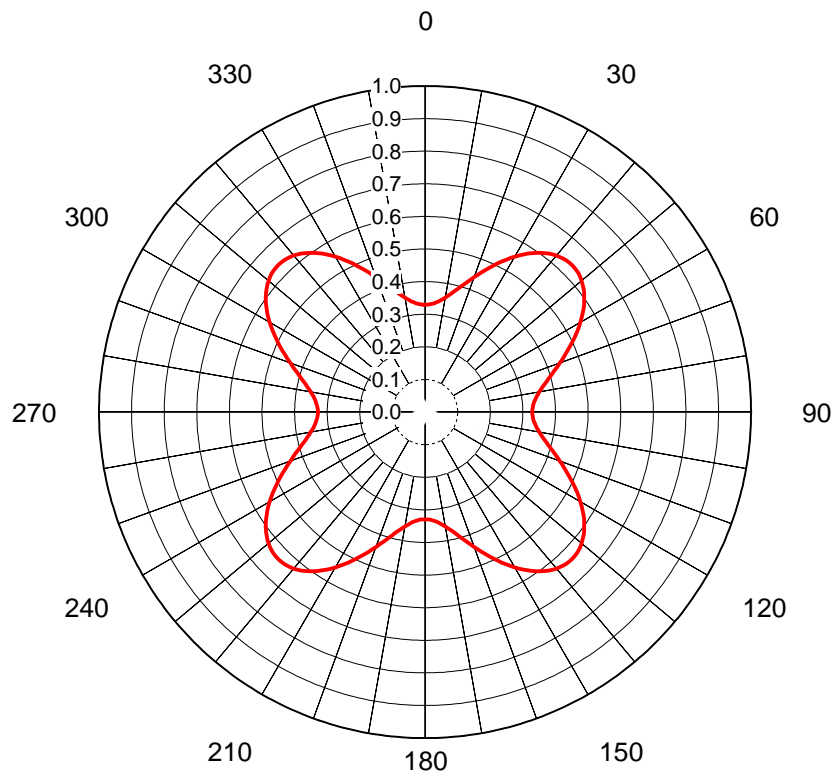


AZIMUTH PATTERN Vertical Polarization

Proposal No. **C-70169-9**
 Date **16-Jul-18**
 Call Letters **WWHO**
 Channel **23**
 Frequency **527 MHz**
 Antenna Type **TFU-28GTH/VP-R 04 DC**
 Gain **1.71 (2.33dB)**
 Calculated
 Circularity **+/- 3.0 dB**



| Deg | Value | Deg | Value | Deg | Value | Deg | Value | Deg | Value | Deg | Value | Deg | Value | Deg | Value | Deg | Value |
|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|
| 0 | 0.329 | 36 | 0.604 | 72 | 0.419 | 108 | 0.419 | 144 | 0.604 | 180 | 0.329 | 216 | 0.604 | 252 | 0.419 | 288 | 0.419 |
| 1 | 0.329 | 37 | 0.611 | 73 | 0.410 | 109 | 0.430 | 145 | 0.596 | 181 | 0.329 | 217 | 0.611 | 253 | 0.410 | 289 | 0.430 |
| 2 | 0.330 | 38 | 0.617 | 74 | 0.400 | 110 | 0.440 | 146 | 0.588 | 182 | 0.330 | 218 | 0.617 | 254 | 0.400 | 290 | 0.440 |
| 3 | 0.331 | 39 | 0.622 | 75 | 0.392 | 111 | 0.451 | 147 | 0.579 | 183 | 0.331 | 219 | 0.622 | 255 | 0.392 | 291 | 0.451 |
| 4 | 0.333 | 40 | 0.627 | 76 | 0.383 | 112 | 0.462 | 148 | 0.570 | 184 | 0.333 | 220 | 0.627 | 256 | 0.383 | 292 | 0.462 |
| 5 | 0.336 | 41 | 0.631 | 77 | 0.376 | 113 | 0.473 | 149 | 0.560 | 185 | 0.336 | 221 | 0.631 | 257 | 0.376 | 293 | 0.473 |
| 6 | 0.338 | 42 | 0.634 | 78 | 0.369 | 114 | 0.484 | 150 | 0.550 | 186 | 0.338 | 222 | 0.634 | 258 | 0.369 | 294 | 0.484 |
| 7 | 0.342 | 43 | 0.636 | 79 | 0.362 | 115 | 0.495 | 151 | 0.540 | 187 | 0.342 | 223 | 0.636 | 259 | 0.362 | 295 | 0.495 |
| 8 | 0.346 | 44 | 0.637 | 80 | 0.356 | 116 | 0.507 | 152 | 0.529 | 188 | 0.346 | 224 | 0.637 | 260 | 0.356 | 296 | 0.507 |
| 9 | 0.351 | 45 | 0.637 | 81 | 0.351 | 117 | 0.518 | 153 | 0.518 | 189 | 0.351 | 225 | 0.637 | 261 | 0.351 | 297 | 0.518 |
| 10 | 0.356 | 46 | 0.637 | 82 | 0.346 | 118 | 0.529 | 154 | 0.507 | 190 | 0.356 | 226 | 0.637 | 262 | 0.346 | 298 | 0.529 |
| 11 | 0.362 | 47 | 0.636 | 83 | 0.342 | 119 | 0.540 | 155 | 0.495 | 191 | 0.362 | 227 | 0.636 | 263 | 0.342 | 299 | 0.540 |
| 12 | 0.369 | 48 | 0.634 | 84 | 0.338 | 120 | 0.550 | 156 | 0.484 | 192 | 0.369 | 228 | 0.634 | 264 | 0.338 | 300 | 0.550 |
| 13 | 0.376 | 49 | 0.631 | 85 | 0.336 | 121 | 0.560 | 157 | 0.473 | 193 | 0.376 | 229 | 0.631 | 265 | 0.336 | 301 | 0.560 |
| 14 | 0.383 | 50 | 0.627 | 86 | 0.333 | 122 | 0.570 | 158 | 0.462 | 194 | 0.383 | 230 | 0.627 | 266 | 0.333 | 302 | 0.570 |
| 15 | 0.392 | 51 | 0.622 | 87 | 0.331 | 123 | 0.579 | 159 | 0.451 | 195 | 0.392 | 231 | 0.622 | 267 | 0.331 | 303 | 0.579 |
| 16 | 0.400 | 52 | 0.617 | 88 | 0.330 | 124 | 0.588 | 160 | 0.440 | 196 | 0.400 | 232 | 0.617 | 268 | 0.330 | 304 | 0.588 |
| 17 | 0.410 | 53 | 0.611 | 89 | 0.329 | 125 | 0.596 | 161 | 0.430 | 197 | 0.410 | 233 | 0.611 | 269 | 0.329 | 305 | 0.596 |
| 18 | 0.419 | 54 | 0.604 | 90 | 0.329 | 126 | 0.604 | 162 | 0.419 | 198 | 0.419 | 234 | 0.604 | 270 | 0.329 | 306 | 0.604 |
| 19 | 0.430 | 55 | 0.596 | 91 | 0.329 | 127 | 0.611 | 163 | 0.410 | 199 | 0.430 | 235 | 0.596 | 271 | 0.329 | 307 | 0.611 |
| 20 | 0.440 | 56 | 0.588 | 92 | 0.330 | 128 | 0.617 | 164 | 0.400 | 200 | 0.440 | 236 | 0.588 | 272 | 0.330 | 308 | 0.617 |
| 21 | 0.451 | 57 | 0.579 | 93 | 0.331 | 129 | 0.622 | 165 | 0.392 | 201 | 0.451 | 237 | 0.579 | 273 | 0.331 | 309 | 0.622 |
| 22 | 0.462 | 58 | 0.570 | 94 | 0.333 | 130 | 0.627 | 166 | 0.383 | 202 | 0.462 | 238 | 0.570 | 274 | 0.333 | 310 | 0.627 |
| 23 | 0.473 | 59 | 0.560 | 95 | 0.336 | 131 | 0.631 | 167 | 0.376 | 203 | 0.473 | 239 | 0.560 | 275 | 0.336 | 311 | 0.631 |
| 24 | 0.484 | 60 | 0.550 | 96 | 0.338 | 132 | 0.634 | 168 | 0.369 | 204 | 0.484 | 240 | 0.550 | 276 | 0.338 | 312 | 0.634 |
| 25 | 0.495 | 61 | 0.540 | 97 | 0.342 | 133 | 0.636 | 169 | 0.362 | 205 | 0.495 | 241 | 0.540 | 277 | 0.342 | 313 | 0.636 |
| 26 | 0.507 | 62 | 0.529 | 98 | 0.346 | 134 | 0.637 | 170 | 0.356 | 206 | 0.507 | 242 | 0.529 | 278 | 0.346 | 314 | 0.637 |
| 27 | 0.518 | 63 | 0.518 | 99 | 0.351 | 135 | 0.637 | 171 | 0.351 | 207 | 0.518 | 243 | 0.518 | 279 | 0.351 | 315 | 0.637 |
| 28 | 0.529 | 64 | 0.507 | 100 | 0.356 | 136 | 0.637 | 172 | 0.346 | 208 | 0.529 | 244 | 0.507 | 280 | 0.356 | 316 | 0.637 |
| 29 | 0.540 | 65 | 0.495 | 101 | 0.362 | 137 | 0.636 | 173 | 0.342 | 209 | 0.540 | 245 | 0.495 | 281 | 0.362 | 317 | 0.636 |
| 30 | 0.550 | 66 | 0.484 | 102 | 0.369 | 138 | 0.634 | 174 | 0.338 | 210 | 0.550 | 246 | 0.484 | 282 | 0.369 | 318 | 0.634 |
| 31 | 0.560 | 67 | 0.473 | 103 | 0.376 | 139 | 0.631 | 175 | 0.336 | 211 | 0.560 | 247 | 0.473 | 283 | 0.376 | 319 | 0.631 |
| 32 | 0.570 | 68 | 0.462 | 104 | 0.383 | 140 | 0.627 | 176 | 0.333 | 212 | 0.570 | 248 | 0.462 | 284 | 0.383 | 320 | 0.627 |
| 33 | 0.579 | 69 | 0.451 | 105 | 0.392 | 141 | 0.622 | 177 | 0.331 | 213 | 0.579 | 249 | 0.451 | 285 | 0.392 | 321 | 0.622 |
| 34 | 0.588 | 70 | 0.440 | 106 | 0.400 | 142 | 0.617 | 178 | 0.330 | 214 | 0.588 | 250 | 0.440 | 286 | 0.400 | 322 | 0.617 |
| 35 | 0.596 | 71 | 0.430 | 107 | 0.410 | 143 | 0.611 | 179 | 0.329 | 215 | 0.596 | 251 | 0.430 | 287 | 0.410 | 323 | 0.611 |

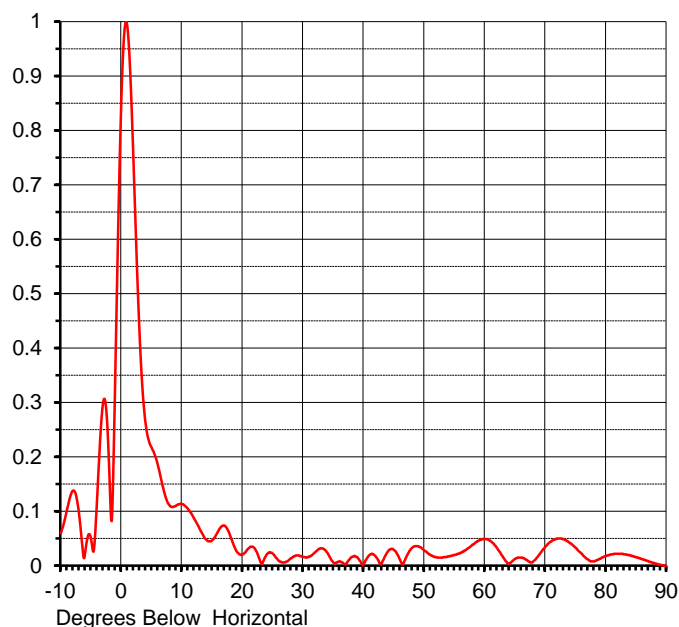
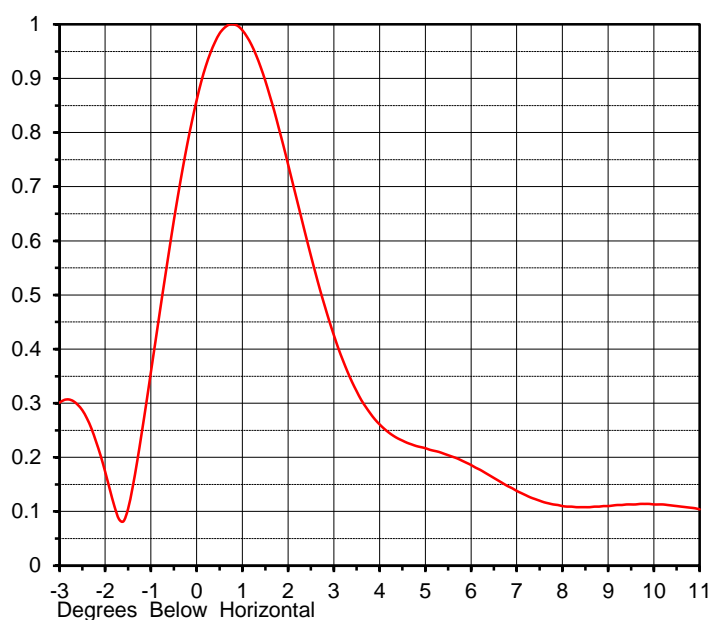
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ELEVATION PATTERN

Proposal No. **C-70169-9**
 Date **16-Jul-18**
 Call Letters **WWHO**
 Channel **23**
 Frequency **527 MHz**
 Antenna Type **TFU-28GTH/VP-R 04 DC**

RMS Directivity at Main Lobe **21.7 (13.36 dB)**
 RMS Directivity at Horizontal **16.0 (12.04 dB)**
Calculated

Beam Tilt **0.80 deg**
 Pattern Number **28G217080**



| Angle | Field | Angle | Field | Angle | Field | Angle | Field | Angle | Field |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| -10.0 | 0.060 | 10.0 | 0.113 | 30.0 | 0.016 | 50.0 | 0.028 | 70.0 | 0.035 |
| -9.0 | 0.102 | 11.0 | 0.104 | 31.0 | 0.017 | 51.0 | 0.020 | 71.0 | 0.045 |
| -8.0 | 0.138 | 12.0 | 0.087 | 32.0 | 0.025 | 52.0 | 0.016 | 72.0 | 0.050 |
| -7.0 | 0.096 | 13.0 | 0.066 | 33.0 | 0.032 | 53.0 | 0.015 | 73.0 | 0.049 |
| -6.0 | 0.023 | 14.0 | 0.048 | 34.0 | 0.024 | 54.0 | 0.017 | 74.0 | 0.042 |
| -5.0 | 0.048 | 15.0 | 0.047 | 35.0 | 0.006 | 55.0 | 0.020 | 75.0 | 0.033 |
| -4.0 | 0.126 | 16.0 | 0.064 | 36.0 | 0.008 | 56.0 | 0.024 | 76.0 | 0.022 |
| -3.0 | 0.301 | 17.0 | 0.074 | 37.0 | 0.003 | 57.0 | 0.030 | 77.0 | 0.012 |
| -2.0 | 0.173 | 18.0 | 0.054 | 38.0 | 0.016 | 58.0 | 0.039 | 78.0 | 0.008 |
| -1.0 | 0.358 | 19.0 | 0.027 | 39.0 | 0.015 | 59.0 | 0.046 | 79.0 | 0.013 |
| 0.0 | 0.860 | 20.0 | 0.021 | 40.0 | 0.003 | 60.0 | 0.049 | 80.0 | 0.018 |
| 1.0 | 0.989 | 21.0 | 0.032 | 41.0 | 0.020 | 61.0 | 0.045 | 81.0 | 0.021 |
| 2.0 | 0.741 | 22.0 | 0.032 | 42.0 | 0.017 | 62.0 | 0.033 | 82.0 | 0.022 |
| 3.0 | 0.426 | 23.0 | 0.006 | 43.0 | 0.005 | 63.0 | 0.016 | 83.0 | 0.021 |
| 4.0 | 0.261 | 24.0 | 0.021 | 44.0 | 0.026 | 64.0 | 0.004 | 84.0 | 0.019 |
| 5.0 | 0.217 | 25.0 | 0.022 | 45.0 | 0.029 | 65.0 | 0.013 | 85.0 | 0.016 |
| 6.0 | 0.186 | 26.0 | 0.009 | 46.0 | 0.011 | 66.0 | 0.015 | 86.0 | 0.012 |
| 7.0 | 0.138 | 27.0 | 0.006 | 47.0 | 0.015 | 67.0 | 0.010 | 87.0 | 0.008 |
| 8.0 | 0.110 | 28.0 | 0.014 | 48.0 | 0.033 | 68.0 | 0.008 | 88.0 | 0.005 |
| 9.0 | 0.110 | 29.0 | 0.019 | 49.0 | 0.036 | 69.0 | 0.021 | 89.0 | 0.002 |
| | | | | | | | | 90.0 | 0.000 |

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