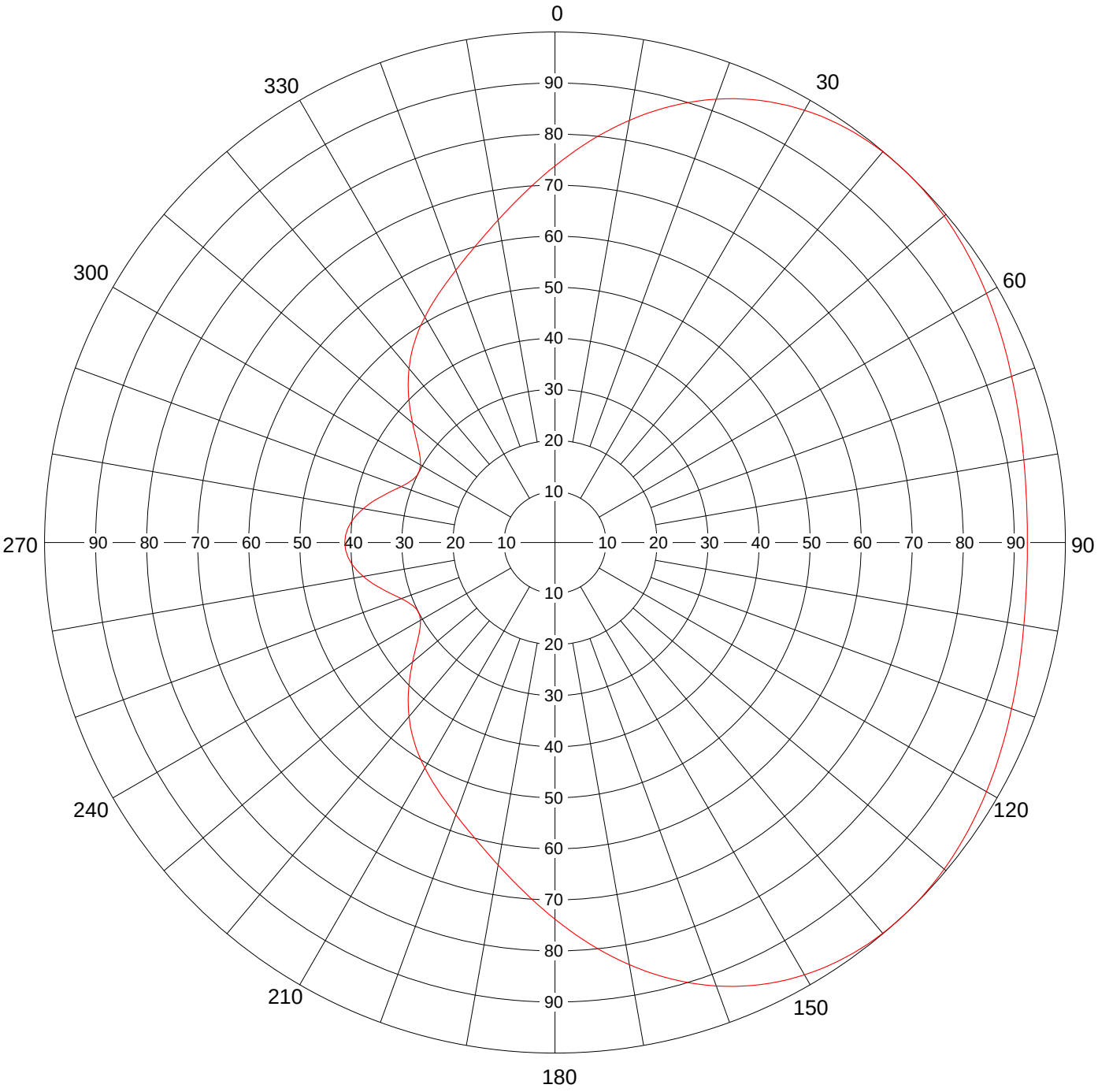
| | | | |
|---|---|---|---|
| Proposal Number | | Revision | |
| Date | **16 Jan 2007** | | |
| Call Letters | **KBWB** | Channel | **19** |
| Location | **San Francisco** | | |
| Customer | | | |
| Antenna Type | **TFU-24WB-R C180** | | |

## AZIMUTH PATTERN

| | | | |
|---|---|---|---|
| Gain | **1.80 (2.55 dB)** | Frequency | **503 MHz** |
| Calculated / Measured | **Calculated** | Drawing # | **TFU-WB-C180-5030** |




Remarks:

Dielectric

| | | | |
|---|---|---|---|
| Proposal Number | | Revision | |
| Date | **16 Jan 2007** | | |
| Call Letters | **KBWB** | Channel | **19** |
| Location | **San Francisco** | | |
| Customer | | | |
| Antenna Type | **TFU-24WB-R C180** | | |

## TABULATION OF AZIMUTH PATTERN

Azimuth Pattern Drawing # **TFU-WB-C180-5030**

| Angle | Field | Angle | Field | Angle | Field | Angle | Field | Angle | Field | Angle | Field | Angle | Field | Angle | Field |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.738 | 45 | 1.000 | 90 | 0.925 | 135 | 1.000 | 180 | 0.738 | 225 | 0.405 | 270 | 0.412 | 315 | 0.405 |
| 1 | 0.748 | 46 | 0.999 | 91 | 0.926 | 136 | 1.000 | 181 | 0.727 | 226 | 0.397 | 271 | 0.411 | 316 | 0.414 |
| 2 | 0.758 | 47 | 0.998 | 92 | 0.926 | 137 | 1.000 | 182 | 0.717 | 227 | 0.389 | 272 | 0.411 | 317 | 0.422 |
| 3 | 0.769 | 48 | 0.997 | 93 | 0.926 | 138 | 1.000 | 183 | 0.707 | 228 | 0.381 | 273 | 0.409 | 318 | 0.430 |
| 4 | 0.779 | 49 | 0.996 | 94 | 0.927 | 139 | 1.000 | 184 | 0.697 | 229 | 0.372 | 274 | 0.407 | 319 | 0.437 |
| 5 | 0.790 | 50 | 0.995 | 95 | 0.927 | 140 | 0.999 | 185 | 0.687 | 230 | 0.364 | 275 | 0.404 | 320 | 0.445 |
| 6 | 0.800 | 51 | 0.994 | 96 | 0.928 | 141 | 0.998 | 186 | 0.678 | 231 | 0.356 | 276 | 0.400 | 321 | 0.452 |
| 7 | 0.810 | 52 | 0.992 | 97 | 0.929 | 142 | 0.997 | 187 | 0.668 | 232 | 0.349 | 277 | 0.396 | 322 | 0.459 |
| 8 | 0.820 | 53 | 0.990 | 98 | 0.930 | 143 | 0.996 | 188 | 0.659 | 233 | 0.341 | 278 | 0.392 | 323 | 0.466 |
| 9 | 0.830 | 54 | 0.989 | 99 | 0.931 | 144 | 0.994 | 189 | 0.650 | 234 | 0.334 | 279 | 0.387 | 324 | 0.473 |
| 10 | 0.840 | 55 | 0.987 | 100 | 0.933 | 145 | 0.992 | 190 | 0.641 | 235 | 0.328 | 280 | 0.382 | 325 | 0.480 |
| 11 | 0.849 | 56 | 0.985 | 101 | 0.934 | 146 | 0.990 | 191 | 0.633 | 236 | 0.321 | 281 | 0.376 | 326 | 0.486 |
| 12 | 0.859 | 57 | 0.983 | 102 | 0.936 | 147 | 0.987 | 192 | 0.625 | 237 | 0.316 | 282 | 0.370 | 327 | 0.492 |
| 13 | 0.868 | 58 | 0.981 | 103 | 0.938 | 148 | 0.984 | 193 | 0.617 | 238 | 0.311 | 283 | 0.364 | 328 | 0.498 |
| 14 | 0.877 | 59 | 0.978 | 104 | 0.939 | 149 | 0.981 | 194 | 0.609 | 239 | 0.308 | 284 | 0.357 | 329 | 0.504 |
| 15 | 0.885 | 60 | 0.976 | 105 | 0.941 | 150 | 0.978 | 195 | 0.602 | 240 | 0.304 | 285 | 0.351 | 330 | 0.510 |
| 16 | 0.894 | 61 | 0.974 | 106 | 0.943 | 151 | 0.974 | 196 | 0.594 | 241 | 0.302 | 286 | 0.345 | 331 | 0.516 |
| 17 | 0.902 | 62 | 0.971 | 107 | 0.945 | 152 | 0.970 | 197 | 0.587 | 242 | 0.301 | 287 | 0.338 | 332 | 0.521 |
| 18 | 0.910 | 63 | 0.969 | 108 | 0.948 | 153 | 0.965 | 198 | 0.580 | 243 | 0.301 | 288 | 0.332 | 333 | 0.527 |
| 19 | 0.917 | 64 | 0.966 | 109 | 0.950 | 154 | 0.960 | 199 | 0.574 | 244 | 0.301 | 289 | 0.326 | 334 | 0.533 |
| 20 | 0.924 | 65 | 0.964 | 110 | 0.952 | 155 | 0.955 | 200 | 0.568 | 245 | 0.303 | 290 | 0.321 | 335 | 0.538 |
| 21 | 0.931 | 66 | 0.962 | 111 | 0.954 | 156 | 0.950 | 201 | 0.562 | 246 | 0.304 | 291 | 0.316 | 336 | 0.544 |
| 22 | 0.938 | 67 | 0.959 | 112 | 0.957 | 157 | 0.944 | 202 | 0.555 | 247 | 0.308 | 292 | 0.311 | 337 | 0.550 |
| 23 | 0.944 | 68 | 0.957 | 113 | 0.959 | 158 | 0.938 | 203 | 0.550 | 248 | 0.311 | 293 | 0.308 | 338 | 0.555 |
| 24 | 0.950 | 69 | 0.954 | 114 | 0.962 | 159 | 0.931 | 204 | 0.544 | 249 | 0.316 | 294 | 0.304 | 339 | 0.562 |
| 25 | 0.955 | 70 | 0.952 | 115 | 0.964 | 160 | 0.924 | 205 | 0.538 | 250 | 0.321 | 295 | 0.303 | 340 | 0.568 |
| 26 | 0.960 | 71 | 0.950 | 116 | 0.966 | 161 | 0.917 | 206 | 0.533 | 251 | 0.326 | 296 | 0.301 | 341 | 0.574 |
| 27 | 0.965 | 72 | 0.948 | 117 | 0.969 | 162 | 0.910 | 207 | 0.527 | 252 | 0.332 | 297 | 0.301 | 342 | 0.580 |
| 28 | 0.970 | 73 | 0.945 | 118 | 0.971 | 163 | 0.902 | 208 | 0.521 | 253 | 0.338 | 298 | 0.301 | 343 | 0.587 |
| 29 | 0.974 | 74 | 0.943 | 119 | 0.974 | 164 | 0.894 | 209 | 0.516 | 254 | 0.345 | 299 | 0.302 | 344 | 0.594 |
| 30 | 0.978 | 75 | 0.941 | 120 | 0.976 | 165 | 0.885 | 210 | 0.510 | 255 | 0.351 | 300 | 0.304 | 345 | 0.602 |
| 31 | 0.981 | 76 | 0.939 | 121 | 0.978 | 166 | 0.877 | 211 | 0.504 | 256 | 0.357 | 301 | 0.308 | 346 | 0.609 |
| 32 | 0.984 | 77 | 0.938 | 122 | 0.981 | 167 | 0.868 | 212 | 0.498 | 257 | 0.364 | 302 | 0.311 | 347 | 0.617 |
| 33 | 0.987 | 78 | 0.936 | 123 | 0.983 | 168 | 0.859 | 213 | 0.492 | 258 | 0.370 | 303 | 0.316 | 348 | 0.625 |
| 34 | 0.990 | 79 | 0.934 | 124 | 0.985 | 169 | 0.849 | 214 | 0.486 | 259 | 0.376 | 304 | 0.321 | 349 | 0.633 |
| 35 | 0.992 | 80 | 0.933 | 125 | 0.987 | 170 | 0.840 | 215 | 0.480 | 260 | 0.382 | 305 | 0.328 | 350 | 0.641 |
| 36 | 0.994 | 81 | 0.931 | 126 | 0.989 | 171 | 0.830 | 216 | 0.473 | 261 | 0.387 | 306 | 0.334 | 351 | 0.650 |
| 37 | 0.996 | 82 | 0.930 | 127 | 0.990 | 172 | 0.820 | 217 | 0.466 | 262 | 0.392 | 307 | 0.341 | 352 | 0.659 |
| 38 | 0.997 | 83 | 0.929 | 128 | 0.992 | 173 | 0.810 | 218 | 0.459 | 263 | 0.396 | 308 | 0.349 | 353 | 0.668 |
| 39 | 0.998 | 84 | 0.928 | 129 | 0.994 | 174 | 0.800 | 219 | 0.452 | 264 | 0.400 | 309 | 0.356 | 354 | 0.678 |
| 40 | 0.999 | 85 | 0.927 | 130 | 0.995 | 175 | 0.790 | 220 | 0.445 | 265 | 0.404 | 310 | 0.364 | 355 | 0.687 |
| 41 | 1.000 | 86 | 0.927 | 131 | 0.996 | 176 | 0.779 | 221 | 0.437 | 266 | 0.407 | 311 | 0.372 | 356 | 0.697 |
| 42 | 1.000 | 87 | 0.926 | 132 | 0.997 | 177 | 0.769 | 222 | 0.430 | 267 | 0.409 | 312 | 0.381 | 357 | 0.707 |
| 43 | 1.000 | 88 | 0.926 | 133 | 0.998 | 178 | 0.758 | 223 | 0.422 | 268 | 0.411 | 313 | 0.389 | 358 | 0.717 |
| 44 | 1.000 | 89 | 0.926 | 134 | 0.999 | 179 | 0.748 | 224 | 0.414 | 269 | 0.411 | 314 | 0.397 | 359 | 0.727 |

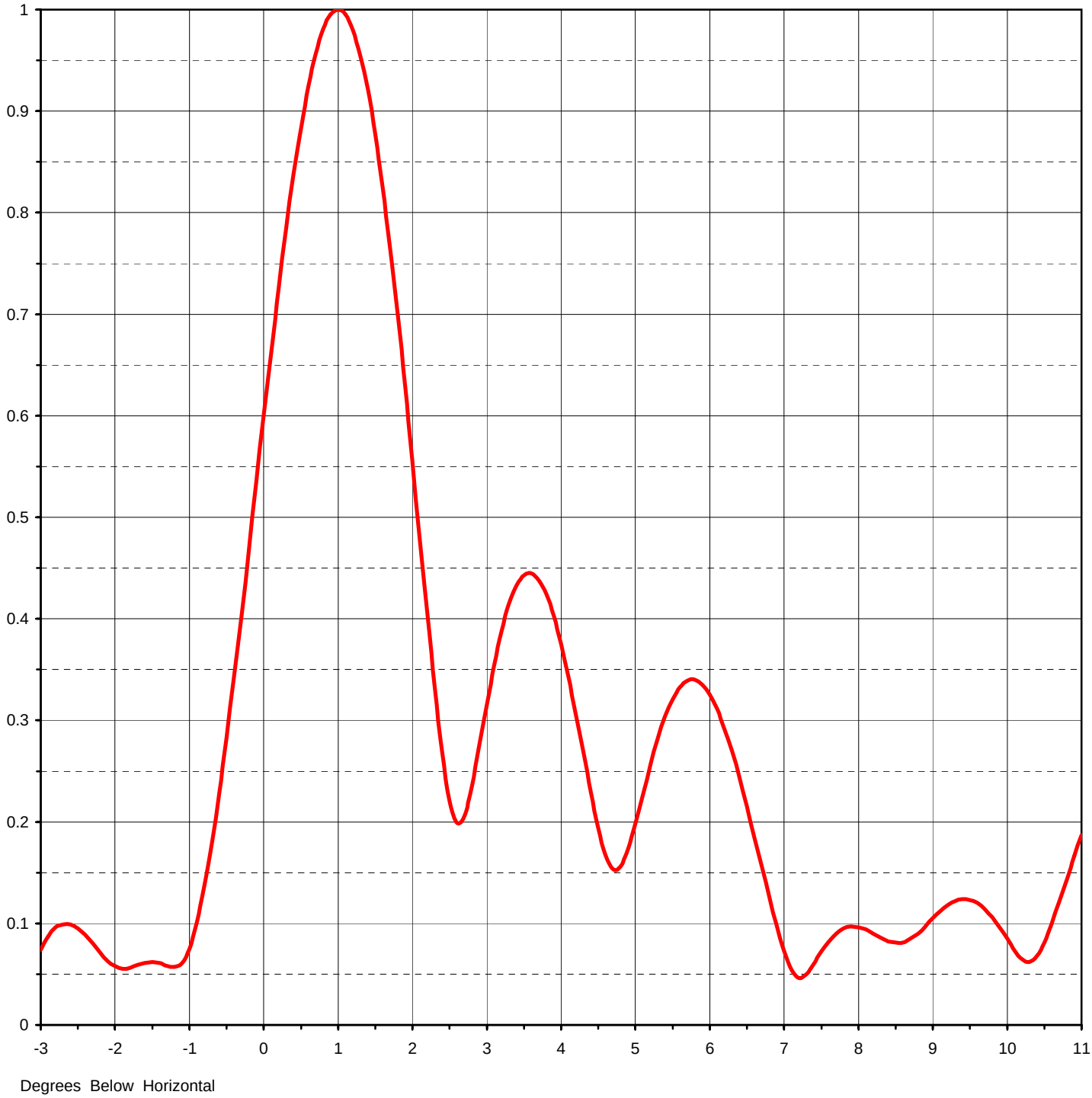
Remarks:

Dielectric

| | | | |
|---|---|---|---|
| Proposal Number | | | |
| Date | **8-Feb-07** | | |
| Call Letters | **KBWB** | Channel | **19** |
| Location | **San Francisco, CA** | | |
| Customer | | | |
| Antenna Type | **TFU-24WB-R C180** | | |

# ELEVATION PATTERN

| | | | |
|---|---|---|---|
| RMS Gain at Main Lobe | **19.50 ( 12.90 dB )** | Beam Tilt | **1.00 deg** |
| RMS Gain at Horizontal | **7.00 ( 8.45 dB )** | Frequency | **503.00 MHz** |
| Calculated / Measured | **Calculated** | Drawing # | **24H195100** |

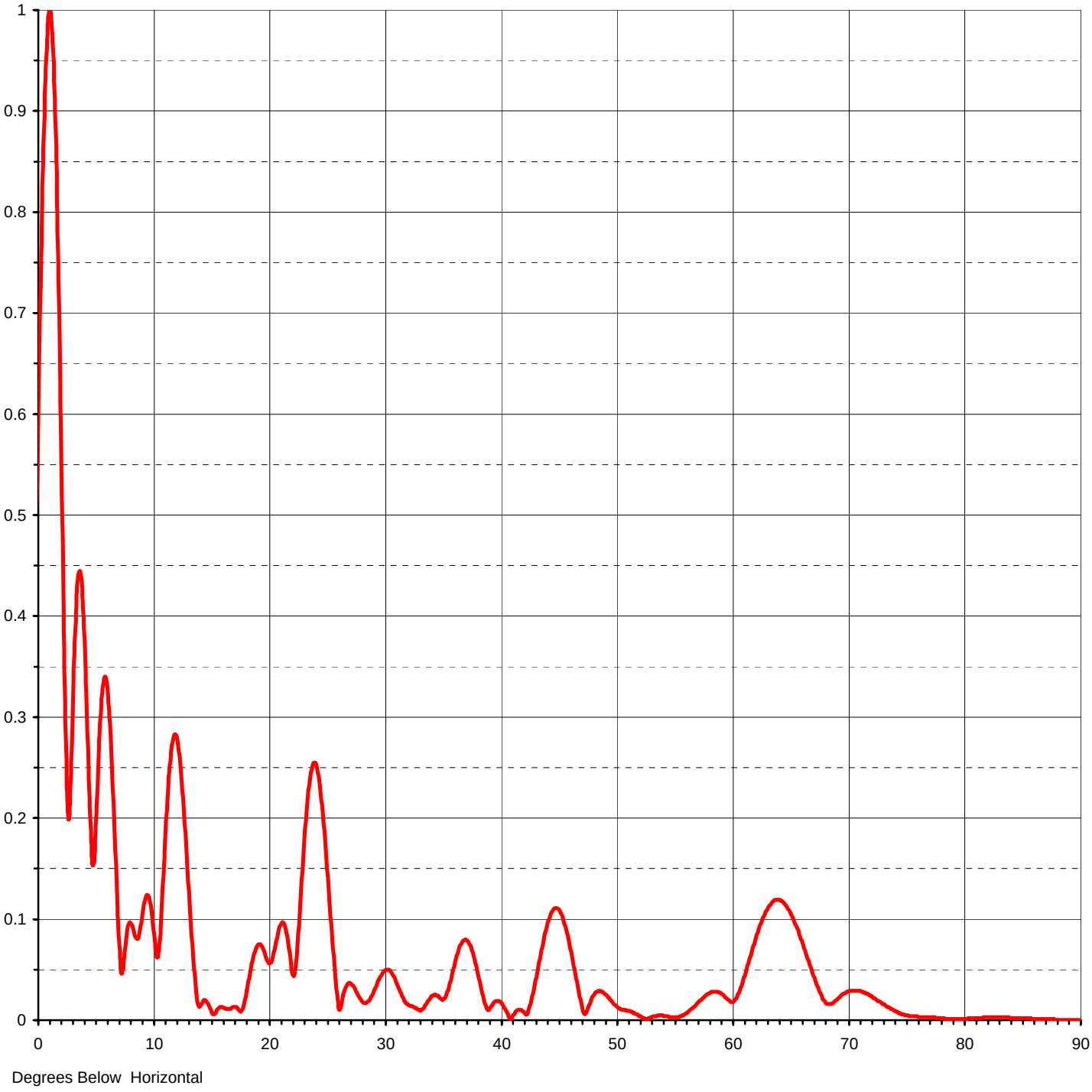


Dielectric

| | | | |
|---|---|---|---|
| Proposal Number | | | |
| Date | **8-Feb-07** | | |
| Call Letters | **KBWB** | Channel | **19** |
| Location | **San Francisco, CA** | | |
| Customer | | | |
| Antenna Type | **TFU-24WB-R C180** | | |

# ELEVATION PATTERN

| | | | |
|---|---|---|---|
| RMS Gain at Main Lobe | **19.50 ( 12.90 dB )** | Beam Tilt | **1.00 deg** |
| RMS Gain at Horizontal | **7.00 ( 8.45 dB )** | Frequency | **503.00 MHz** |
| Calculated / Measured | **Calculated** | Drawing # | **24H195100-90** |



Dielectric

Proposal Number
Date **8-Feb-07**
Call Letters **KBWB** Channel **19**
Location **San Francisco, CA**
Customer
Antenna Type **TFU-24WB-R C180**

# TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **24H195100-90**

| Angle | Field | Angle | Field | Angle | Field | Angle | Field | Angle | Field | Angle | Field |
|---|---|---|---|---|---|---|---|---|---|---|---|
| -10.0 | 0.304 | 2.4 | 0.269 | 10.6 | 0.081 | 30.5 | 0.049 | 51.0 | 0.009 | 71.5 | 0.026 |
| -9.5 | 0.285 | 2.6 | 0.199 | 10.8 | 0.121 | 31.0 | 0.038 | 51.5 | 0.007 | 72.0 | 0.023 |
| -9.0 | 0.183 | 2.8 | 0.235 | 11.0 | 0.166 | 31.5 | 0.024 | 52.0 | 0.004 | 72.5 | 0.019 |
| -8.5 | 0.136 | 3.0 | 0.316 | 11.5 | 0.256 | 32.0 | 0.016 | 52.5 | 0.001 | 73.0 | 0.016 |
| -8.0 | 0.257 | 3.2 | 0.388 | 12.0 | 0.282 | 32.5 | 0.013 | 53.0 | 0.003 | 73.5 | 0.012 |
| -7.5 | 0.315 | 3.4 | 0.433 | 12.5 | 0.236 | 33.0 | 0.010 | 53.5 | 0.004 | 74.0 | 0.009 |
| -7.0 | 0.235 | 3.6 | 0.445 | 13.0 | 0.147 | 33.5 | 0.014 | 54.0 | 0.005 | 74.5 | 0.006 |
| -6.5 | 0.161 | 3.8 | 0.424 | 13.5 | 0.059 | 34.0 | 0.023 | 54.5 | 0.004 | 75.0 | 0.005 |
| -6.0 | 0.383 | 4.0 | 0.375 | 14.0 | 0.013 | 34.5 | 0.024 | 55.0 | 0.003 | 75.5 | 0.004 |
| -5.5 | 0.601 | 4.2 | 0.306 | 14.5 | 0.020 | 35.0 | 0.020 | 55.5 | 0.004 | 76.0 | 0.003 |
| -5.0 | 0.669 | 4.4 | 0.229 | 15.0 | 0.010 | 35.5 | 0.030 | 56.0 | 0.007 | 76.5 | 0.003 |
| -4.5 | 0.559 | 4.6 | 0.167 | 15.5 | 0.009 | 36.0 | 0.053 | 56.5 | 0.011 | 77.0 | 0.003 |
| -4.0 | 0.329 | 4.8 | 0.156 | 16.0 | 0.013 | 36.5 | 0.073 | 57.0 | 0.017 | 77.5 | 0.002 |
| -3.5 | 0.093 | 5.0 | 0.198 | 16.5 | 0.011 | 37.0 | 0.080 | 57.5 | 0.022 | 78.0 | 0.002 |
| -3.0 | 0.074 | 5.2 | 0.256 | 17.0 | 0.013 | 37.5 | 0.071 | 58.0 | 0.026 | 78.5 | 0.001 |
| -2.8 | 0.096 | 5.4 | 0.304 | 17.5 | 0.009 | 38.0 | 0.049 | 58.5 | 0.028 | 79.0 | 0.001 |
| -2.6 | 0.099 | 5.6 | 0.333 | 18.0 | 0.023 | 38.5 | 0.024 | 59.0 | 0.027 | 79.5 | 0.001 |
| -2.4 | 0.089 | 5.8 | 0.340 | 18.5 | 0.053 | 39.0 | 0.010 | 59.5 | 0.022 | 80.0 | 0.001 |
| -2.2 | 0.071 | 6.0 | 0.325 | 19.0 | 0.073 | 39.5 | 0.018 | 60.0 | 0.018 | 80.5 | 0.002 |
| -2.0 | 0.058 | 6.2 | 0.291 | 19.5 | 0.071 | 40.0 | 0.018 | 60.5 | 0.025 | 81.0 | 0.002 |
| -1.8 | 0.056 | 6.4 | 0.243 | 20.0 | 0.056 | 40.5 | 0.009 | 61.0 | 0.041 | 81.5 | 0.002 |
| -1.6 | 0.061 | 6.6 | 0.185 | 20.5 | 0.070 | 41.0 | 0.003 | 61.5 | 0.060 | 82.0 | 0.003 |
| -1.4 | 0.061 | 6.8 | 0.126 | 21.0 | 0.094 | 41.5 | 0.010 | 62.0 | 0.079 | 82.5 | 0.003 |
| -1.2 | 0.057 | 7.0 | 0.073 | 21.5 | 0.089 | 42.0 | 0.008 | 62.5 | 0.096 | 83.0 | 0.003 |
| -1.0 | 0.075 | 7.2 | 0.046 | 22.0 | 0.049 | 42.5 | 0.012 | 63.0 | 0.109 | 83.5 | 0.003 |
| -0.8 | 0.136 | 7.4 | 0.060 | 22.5 | 0.077 | 43.0 | 0.037 | 63.5 | 0.117 | 84.0 | 0.002 |
| -0.6 | 0.228 | 7.6 | 0.082 | 23.0 | 0.165 | 43.5 | 0.066 | 64.0 | 0.119 | 84.5 | 0.002 |
| -0.4 | 0.342 | 7.8 | 0.095 | 23.5 | 0.233 | 44.0 | 0.092 | 64.5 | 0.114 | 85.0 | 0.002 |
| -0.2 | 0.469 | 8.0 | 0.096 | 24.0 | 0.255 | 44.5 | 0.108 | 65.0 | 0.105 | 85.5 | 0.002 |
| 0.0 | 0.600 | 8.2 | 0.090 | 24.5 | 0.224 | 45.0 | 0.110 | 65.5 | 0.092 | 86.0 | 0.001 |
| 0.2 | 0.726 | 8.4 | 0.082 | 25.0 | 0.157 | 45.5 | 0.097 | 66.0 | 0.076 | 86.5 | 0.001 |
| 0.4 | 0.837 | 8.6 | 0.081 | 25.5 | 0.078 | 46.0 | 0.073 | 66.5 | 0.059 | 87.0 | 0.001 |
| 0.6 | 0.925 | 8.8 | 0.090 | 26.0 | 0.015 | 46.5 | 0.044 | 67.0 | 0.042 | 87.5 | 0.001 |
| 0.8 | 0.981 | 9.0 | 0.105 | 26.5 | 0.028 | 47.0 | 0.016 | 67.5 | 0.027 | 88.0 | 0.000 |
| 1.0 | 1.000 | 9.2 | 0.118 | 27.0 | 0.037 | 47.5 | 0.010 | 68.0 | 0.017 | 88.5 | 0.000 |
| 1.2 | 0.980 | 9.4 | 0.124 | 27.5 | 0.030 | 48.0 | 0.024 | 68.5 | 0.016 | 89.0 | 0.000 |
| 1.4 | 0.921 | 9.6 | 0.120 | 28.0 | 0.020 | 48.5 | 0.029 | 69.0 | 0.021 | 89.5 | 0.000 |
| 1.6 | 0.825 | 9.8 | 0.114 | 28.5 | 0.018 | 49.0 | 0.026 | 69.5 | 0.026 | 90.0 | 0.000 |
| 1.8 | 0.700 | 10.0 | 0.096 | 29.0 | 0.026 | 49.5 | 0.020 | 70.0 | 0.029 | | |
| 2.0 | 0.555 | 10.2 | 0.073 | 29.5 | 0.040 | 50.0 | 0.014 | 70.5 | 0.029 | | |
| 2.2 | 0.404 | 10.4 | 0.062 | 30.0 | 0.049 | 50.5 | 0.010 | 71.0 | 0.029 | | |