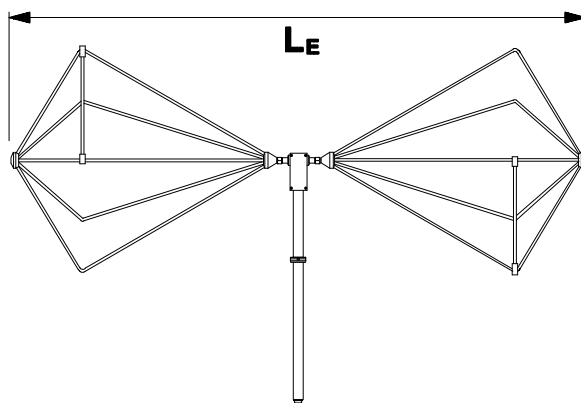


VHBA 9123 4:1 100 W-Balun mit Bikonus-Elementen BBA 9106
VHBA 9123 4:1 100 W-Balun with Biconical Elements BBA 9106



Beschreibung:

Der Antennenhalter / Balun VHBA 9123 mit verlustarmem Leitungsübertrager ist für die Verwendung mit Bikonus-Elementen wie BBA 9106 oder BBAL 9136 gedacht, kann aber auch als Dipol mit erweiterter Bandbreite mit Teleskopelementen oder Faltbikonuselementen wie zum Beispiel FBAB 9177 oder FBAL 9178 verwendet werden.

Description:

The antenna holder / balun VHBA 9123 with low loss transmission line transformer are primarily designed for the use with biconical elements such as BBA 9106 or BBAL 9136. It may also be used with rod elements as a dipole with improved bandwidth or collapsible biconical elements like FBAB 9177 or FBAL 9178.

| Technische Daten: | | Specifications: | |
|------------------------------------|----------------|----------------------------------|--|
| Frequenzbereich: | 30-300 MHz | Frequency range: | |
| Anschluss: | 50 Ω N | Connector: | |
| Eingangsleistung: | 100 W | Input Power: | |
| Elementlänge LE mit BBA 9106: | 1.36 m | Element length LE with BBA 9106: | |
| Länge / Durchmesser der Halterung: | 0.58 m / 22 mm | Holder length / diameter: | |
| Elementaufnahme: | 10 mm | Element fixture: | |
| Gewicht des Halters / Balun: | 1.1 kg | Holder / balun weight: | |
| Gewicht eines Elements: | 0.6 kg | Weight of one element: | |

Der VHBA 9123 stellt ein Bindeglied zwischen den hoch symmetrischen Antennenhaltern VHA 9103, VHBB 9124 und den Hochleistungs-Antennenhaltern VHBC 9133 und VHBD 9134 dar.

Der VHBA 9123-Balun ist als 4:1 Übertrager mit mittlerer Leistungsbelastbarkeit ausgeführt. Die häufigsten Anwendungen sind Schirmdämpfungsmessungen und Immunitätsprüfungen. Insbesondere bei der problematischen Feldstärkeerzeugung bei tiefen Frequenzen kann eine enorme Leistungseinsparnis erzielt werden.

Im unteren Frequenzbereich sind Bikonusantennen, aufgrund ihrer Abmessungen, generell stark fehlangepaßt und haben negativen Gewinn. Der weltweit verbreitete 1:1 Dipol VHA 9103 mit BBA 9106-Bikonus hat bei 30 MHz einen Antennenfaktor von 19 dB/m. Die gleichen Bikonuselemente haben im 200:50 Ω Balun der VHBA 9123 einen 6 dB höheren Gewinn und einen Antennenfaktor von knapp 13 dB/m

The VHBA 9123 represents a binding link between the high symmetrical antenna holder VHA 9103, VHBB 9124 and the high power antenna holder VHBC 9133 and VHBD 9134.

The VHBA 9123 4:1 balun provides an optimized solution for immunity testing and the measurement of shielding effectiveness. Especially at low frequencies the power requirement is dramatically reduced thanks to the nearly lossless 4:1 balun.

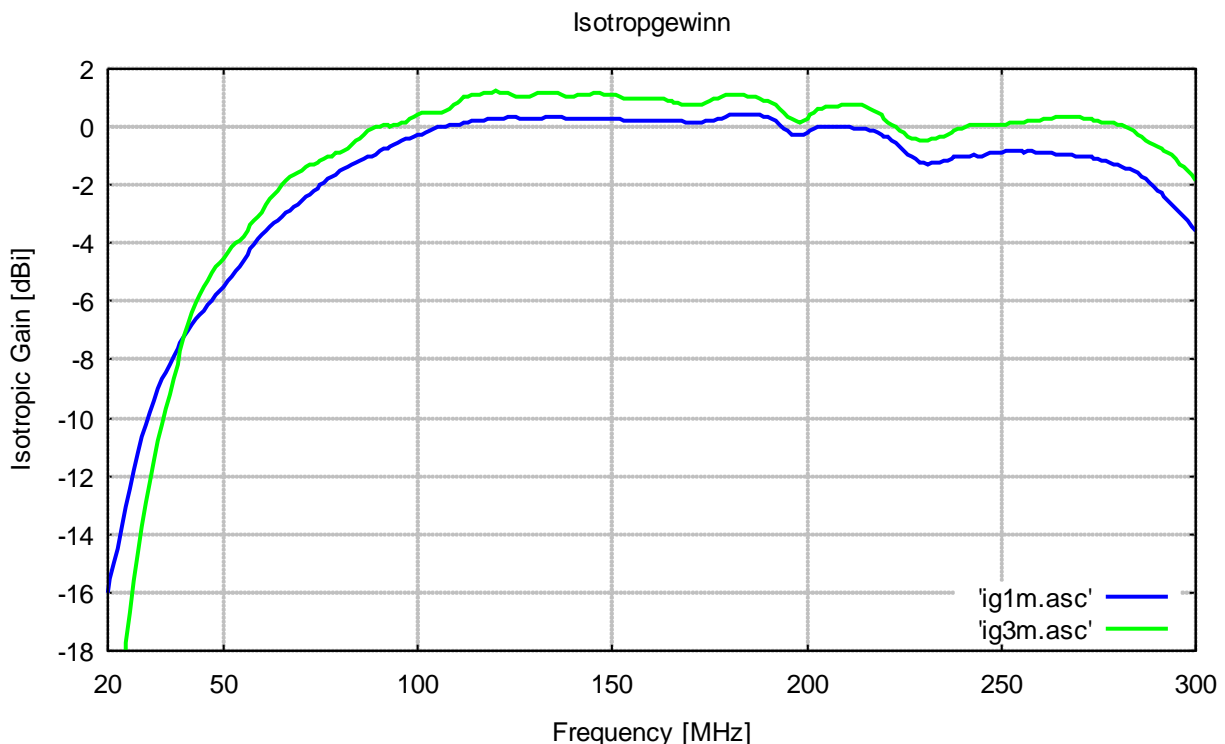
Biconical antennas are generally mismatched at low frequencies and show negative gain. The worldwide popular dipole VHA 9103 with BBA 9106 bicones provides at 30 MHz an antenna factor of 19 dB/m. The same biconical elements in this 200:50 Ω VHBA-Balun is 6 dB better in gain and shows a "more sensitive" antenna factor of less than 13 dB/m.

Typische Anwendung:

- Immunitätsprüfung bis 100 W
- Schirmdämpfungsmessung

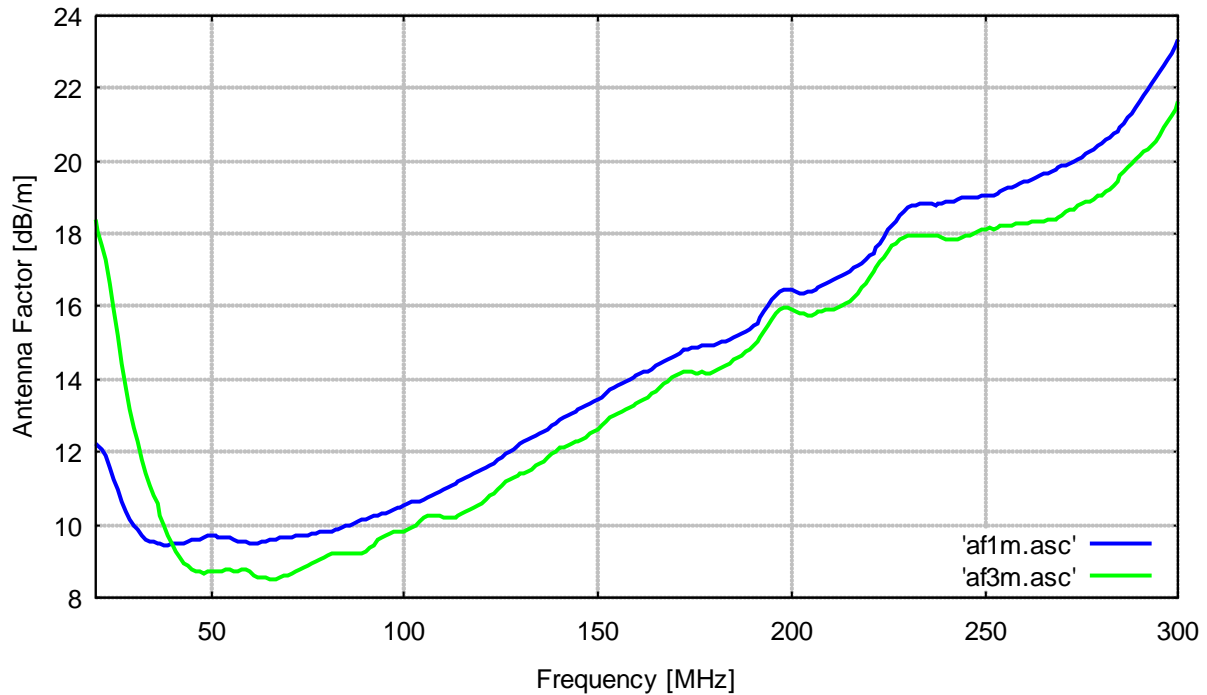
Typical Application:

- Immunity testing up to 100 W
- shielding effectiveness measurements





Antennen-Wandlungsmaß



| Frequency | Isotropic gain | Antenna factor | Isotropic gain | Antenna factor |
|-----------|------------------|-------------------|------------------|-------------------|
| [MHz] | 1 m Center [dBi] | 1 m Center [dB/m] | 3 m Center [dBi] | 3 m Center [dB/m] |
| 20.00 | -16.00 | 12.24 | -22.17 | 18.41 |
| 21.00 | -15.51 | 12.17 | -21.37 | 18.03 |
| 22.00 | -15.00 | 12.07 | -20.60 | 17.67 |
| 23.00 | -14.47 | 11.92 | -19.82 | 17.27 |
| 24.00 | -13.72 | 11.54 | -18.82 | 16.64 |
| 25.00 | -13.05 | 11.23 | -17.76 | 15.94 |
| 26.00 | -12.45 | 10.97 | -16.68 | 15.20 |
| 27.00 | -11.81 | 10.66 | -15.59 | 14.44 |
| 28.00 | -11.20 | 10.36 | -14.62 | 13.78 |
| 29.00 | -10.67 | 10.14 | -13.72 | 13.19 |
| 30.00 | -10.23 | 9.99 | -12.92 | 12.68 |
| 31.00 | -9.80 | 9.85 | -12.21 | 12.26 |
| 32.00 | -9.39 | 9.71 | -11.49 | 11.81 |
| 33.00 | -9.00 | 9.59 | -10.82 | 11.41 |
| 34.00 | -8.68 | 9.53 | -10.24 | 11.09 |
| 35.00 | -8.42 | 9.52 | -9.72 | 10.82 |
| 36.00 | -8.16 | 9.51 | -9.21 | 10.56 |
| 37.00 | -7.87 | 9.45 | -8.66 | 10.24 |
| 38.00 | -7.62 | 9.44 | -8.15 | 9.97 |
| 39.00 | -7.41 | 9.45 | -7.67 | 9.71 |
| 40.00 | -7.23 | 9.49 | -7.24 | 9.50 |
| 41.00 | -7.02 | 9.50 | -6.81 | 9.29 |
| 42.00 | -6.80 | 9.48 | -6.41 | 9.09 |
| 43.00 | -6.61 | 9.50 | -6.04 | 8.93 |
| 44.00 | -6.47 | 9.56 | -5.76 | 8.85 |
| 45.00 | -6.32 | 9.60 | -5.50 | 8.78 |



| Frequency | Isotropic gain 1 m Center | Antenna factor 1 m Center | Isotropic gain 3 m Center | Antenna factor 3 m Center |
|-----------|------------------------------|------------------------------|------------------------------|------------------------------|
| [MHz] | [dBi] | [dB/m] | [dBi] | [dB/m] |
| 46.00 | -6.14 | 9.62 | -5.26 | 8.74 |
| 47.00 | -5.95 | 9.61 | -5.03 | 8.69 |
| 48.00 | -5.79 | 9.63 | -4.83 | 8.67 |
| 49.00 | -5.66 | 9.68 | -4.69 | 8.71 |
| 50.00 | -5.51 | 9.71 | -4.52 | 8.72 |
| 51.00 | -5.32 | 9.69 | -4.33 | 8.70 |
| 52.00 | -5.12 | 9.66 | -4.15 | 8.69 |
| 53.00 | -4.95 | 9.66 | -4.01 | 8.72 |
| 54.00 | -4.80 | 9.67 | -3.90 | 8.77 |
| 55.00 | -4.61 | 9.64 | -3.75 | 8.78 |
| 56.00 | -4.39 | 9.57 | -3.55 | 8.73 |
| 57.00 | -4.19 | 9.53 | -3.39 | 8.73 |
| 58.00 | -4.03 | 9.52 | -3.26 | 8.75 |
| 59.00 | -3.88 | 9.52 | -3.12 | 8.76 |
| 60.00 | -3.71 | 9.49 | -2.92 | 8.70 |
| 61.00 | -3.55 | 9.48 | -2.69 | 8.62 |
| 62.00 | -3.41 | 9.48 | -2.49 | 8.56 |
| 63.00 | -3.32 | 9.53 | -2.34 | 8.55 |
| 64.00 | -3.21 | 9.55 | -2.19 | 8.53 |
| 65.00 | -3.09 | 9.57 | -2.02 | 8.50 |
| 66.00 | -2.97 | 9.58 | -1.86 | 8.47 |
| 67.00 | -2.87 | 9.61 | -1.75 | 8.49 |
| 68.00 | -2.76 | 9.63 | -1.67 | 8.54 |
| 69.00 | -2.66 | 9.66 | -1.60 | 8.60 |
| 70.00 | -2.53 | 9.65 | -1.50 | 8.62 |
| 71.00 | -2.42 | 9.67 | -1.40 | 8.65 |
| 72.00 | -2.33 | 9.70 | -1.32 | 8.69 |
| 73.00 | -2.22 | 9.71 | -1.29 | 8.78 |
| 74.00 | -2.11 | 9.71 | -1.22 | 8.82 |
| 75.00 | -2.00 | 9.72 | -1.15 | 8.87 |
| 76.00 | -1.90 | 9.74 | -1.07 | 8.91 |
| 77.00 | -1.80 | 9.75 | -1.04 | 8.99 |
| 78.00 | -1.72 | 9.78 | -1.00 | 9.06 |
| 79.00 | -1.63 | 9.80 | -0.92 | 9.09 |
| 80.00 | -1.52 | 9.80 | -0.87 | 9.15 |
| 81.00 | -1.42 | 9.81 | -0.81 | 9.20 |
| 82.00 | -1.36 | 9.86 | -0.73 | 9.23 |
| 83.00 | -1.29 | 9.89 | -0.62 | 9.22 |
| 84.00 | -1.23 | 9.94 | -0.49 | 9.20 |
| 85.00 | -1.16 | 9.97 | -0.39 | 9.20 |
| 86.00 | -1.08 | 9.99 | -0.28 | 9.19 |
| 87.00 | -1.04 | 10.05 | -0.17 | 9.18 |
| 88.00 | -1.00 | 10.11 | -0.08 | 9.19 |
| 89.00 | -0.93 | 10.14 | -0.02 | 9.23 |
| 90.00 | -0.85 | 10.15 | 0.02 | 9.28 |
| 91.00 | -0.78 | 10.18 | 0.04 | 9.36 |
| 92.00 | -0.74 | 10.24 | 0.05 | 9.45 |
| 93.00 | -0.67 | 10.26 | 0.02 | 9.57 |
| 94.00 | -0.60 | 10.28 | 0.04 | 9.64 |
| 95.00 | -0.53 | 10.30 | 0.06 | 9.71 |
| 96.00 | -0.48 | 10.35 | 0.11 | 9.76 |
| 97.00 | -0.44 | 10.40 | 0.15 | 9.81 |
| 98.00 | -0.41 | 10.45 | 0.26 | 9.78 |

| Frequency | Isotropic gain 1 m Center | Antenna factor 1 m Center | Isotropic gain 3 m Center | Antenna factor 3 m Center |
|-----------|------------------------------|------------------------------|------------------------------|------------------------------|
| [MHz] | [dBi] | [dB/m] | [dBi] | [dB/m] |
| 99.00 | -0.36 | 10.49 | 0.35 | 9.78 |
| 100.00 | -0.30 | 10.52 | 0.42 | 9.80 |
| 101.00 | -0.27 | 10.58 | 0.46 | 9.85 |
| 102.00 | -0.22 | 10.61 | 0.49 | 9.90 |
| 103.00 | -0.16 | 10.64 | 0.51 | 9.97 |
| 104.00 | -0.09 | 10.65 | 0.49 | 10.07 |
| 105.00 | -0.02 | 10.66 | 0.47 | 10.17 |
| 106.00 | -0.00 | 10.73 | 0.50 | 10.23 |
| 107.00 | 0.03 | 10.78 | 0.56 | 10.25 |
| 108.00 | 0.06 | 10.83 | 0.64 | 10.25 |
| 109.00 | 0.07 | 10.90 | 0.74 | 10.23 |
| 110.00 | 0.09 | 10.96 | 0.85 | 10.20 |
| 111.00 | 0.10 | 11.03 | 0.93 | 10.20 |
| 112.00 | 0.13 | 11.07 | 1.01 | 10.19 |
| 113.00 | 0.15 | 11.13 | 1.06 | 10.22 |
| 114.00 | 0.19 | 11.17 | 1.10 | 10.26 |
| 115.00 | 0.21 | 11.22 | 1.12 | 10.31 |
| 116.00 | 0.23 | 11.28 | 1.13 | 10.38 |
| 117.00 | 0.24 | 11.34 | 1.15 | 10.43 |
| 118.00 | 0.25 | 11.41 | 1.17 | 10.49 |
| 119.00 | 0.27 | 11.46 | 1.19 | 10.54 |
| 120.00 | 0.29 | 11.51 | 1.21 | 10.59 |
| 121.00 | 0.29 | 11.59 | 1.19 | 10.69 |
| 122.00 | 0.30 | 11.65 | 1.17 | 10.78 |
| 123.00 | 0.32 | 11.70 | 1.14 | 10.88 |
| 124.00 | 0.32 | 11.77 | 1.10 | 10.99 |
| 125.00 | 0.32 | 11.84 | 1.06 | 11.10 |
| 126.00 | 0.29 | 11.94 | 1.05 | 11.18 |
| 127.00 | 0.29 | 12.01 | 1.05 | 11.25 |
| 128.00 | 0.29 | 12.07 | 1.05 | 11.31 |
| 129.00 | 0.28 | 12.15 | 1.06 | 11.37 |
| 130.00 | 0.29 | 12.21 | 1.10 | 11.40 |
| 131.00 | 0.29 | 12.28 | 1.14 | 11.43 |
| 132.00 | 0.30 | 12.33 | 1.17 | 11.46 |
| 133.00 | 0.32 | 12.38 | 1.16 | 11.54 |
| 134.00 | 0.33 | 12.43 | 1.16 | 11.60 |
| 135.00 | 0.34 | 12.49 | 1.17 | 11.66 |
| 136.00 | 0.33 | 12.56 | 1.14 | 11.75 |
| 137.00 | 0.32 | 12.63 | 1.10 | 11.85 |
| 138.00 | 0.31 | 12.71 | 1.06 | 11.96 |
| 139.00 | 0.30 | 12.78 | 1.05 | 12.03 |
| 140.00 | 0.28 | 12.86 | 1.05 | 12.09 |
| 141.00 | 0.27 | 12.93 | 1.07 | 12.13 |
| 142.00 | 0.27 | 13.00 | 1.09 | 12.18 |
| 143.00 | 0.27 | 13.06 | 1.11 | 12.22 |
| 144.00 | 0.28 | 13.11 | 1.12 | 12.27 |
| 145.00 | 0.28 | 13.17 | 1.16 | 12.29 |
| 146.00 | 0.28 | 13.23 | 1.18 | 12.33 |
| 147.00 | 0.29 | 13.28 | 1.18 | 12.39 |
| 148.00 | 0.28 | 13.35 | 1.13 | 12.50 |
| 149.00 | 0.28 | 13.40 | 1.12 | 12.56 |
| 150.00 | 0.28 | 13.46 | 1.11 | 12.63 |
| 151.00 | 0.28 | 13.52 | 1.08 | 12.72 |



| Frequency | Isotropic gain 1 m Center | Antenna factor 1 m Center | Isotropic gain 3 m Center | Antenna factor 3 m Center |
|-----------|------------------------------|------------------------------|------------------------------|------------------------------|
| [MHz] | [dBi] | [dB/m] | [dBi] | [dB/m] |
| 152.00 | 0.26 | 13.60 | 1.05 | 12.81 |
| 153.00 | 0.22 | 13.69 | 0.99 | 12.92 |
| 154.00 | 0.21 | 13.76 | 0.98 | 12.99 |
| 155.00 | 0.20 | 13.83 | 0.98 | 13.05 |
| 156.00 | 0.19 | 13.89 | 0.96 | 13.12 |
| 157.00 | 0.20 | 13.94 | 0.95 | 13.19 |
| 158.00 | 0.20 | 13.99 | 0.95 | 13.24 |
| 159.00 | 0.21 | 14.04 | 0.97 | 13.28 |
| 160.00 | 0.21 | 14.09 | 0.99 | 13.31 |
| 161.00 | 0.22 | 14.14 | 0.97 | 13.39 |
| 162.00 | 0.22 | 14.19 | 0.96 | 13.45 |
| 163.00 | 0.23 | 14.23 | 0.95 | 13.51 |
| 164.00 | 0.23 | 14.29 | 0.92 | 13.60 |
| 165.00 | 0.22 | 14.35 | 0.90 | 13.67 |
| 166.00 | 0.21 | 14.41 | 0.86 | 13.76 |
| 167.00 | 0.19 | 14.48 | 0.81 | 13.86 |
| 168.00 | 0.18 | 14.55 | 0.79 | 13.94 |
| 169.00 | 0.16 | 14.62 | 0.76 | 14.02 |
| 170.00 | 0.16 | 14.67 | 0.75 | 14.08 |
| 171.00 | 0.16 | 14.72 | 0.75 | 14.13 |
| 172.00 | 0.14 | 14.79 | 0.74 | 14.19 |
| 173.00 | 0.17 | 14.81 | 0.77 | 14.21 |
| 174.00 | 0.18 | 14.85 | 0.84 | 14.19 |
| 175.00 | 0.22 | 14.86 | 0.90 | 14.18 |
| 176.00 | 0.24 | 14.89 | 0.95 | 14.18 |
| 177.00 | 0.27 | 14.91 | 0.99 | 14.19 |
| 178.00 | 0.31 | 14.92 | 1.05 | 14.18 |
| 179.00 | 0.34 | 14.94 | 1.10 | 14.18 |
| 180.00 | 0.38 | 14.95 | 1.12 | 14.21 |
| 181.00 | 0.38 | 14.99 | 1.13 | 14.24 |
| 182.00 | 0.40 | 15.02 | 1.13 | 14.29 |
| 183.00 | 0.42 | 15.05 | 1.11 | 14.36 |
| 184.00 | 0.42 | 15.10 | 1.07 | 14.45 |
| 185.00 | 0.43 | 15.13 | 1.05 | 14.51 |
| 186.00 | 0.42 | 15.19 | 1.03 | 14.58 |
| 187.00 | 0.41 | 15.25 | 1.00 | 14.66 |
| 188.00 | 0.39 | 15.31 | 0.95 | 14.75 |
| 189.00 | 0.37 | 15.38 | 0.91 | 14.84 |
| 190.00 | 0.34 | 15.46 | 0.87 | 14.93 |
| 191.00 | 0.30 | 15.54 | 0.83 | 15.01 |
| 192.00 | 0.21 | 15.68 | 0.74 | 15.15 |
| 193.00 | 0.09 | 15.84 | 0.61 | 15.32 |
| 194.00 | -0.04 | 16.02 | 0.48 | 15.50 |
| 195.00 | -0.15 | 16.17 | 0.37 | 15.65 |
| 196.00 | -0.24 | 16.31 | 0.28 | 15.79 |
| 197.00 | -0.29 | 16.40 | 0.18 | 15.93 |
| 198.00 | -0.30 | 16.45 | 0.17 | 15.98 |
| 199.00 | -0.28 | 16.48 | 0.21 | 15.99 |
| 200.00 | -0.21 | 16.45 | 0.30 | 15.94 |
| 201.00 | -0.12 | 16.40 | 0.42 | 15.86 |
| 202.00 | -0.05 | 16.38 | 0.50 | 15.83 |
| 203.00 | -0.01 | 16.38 | 0.59 | 15.78 |
| 204.00 | 0.02 | 16.39 | 0.65 | 15.76 |



| Frequency | Isotropic gain 1 m Center | Antenna factor 1 m Center | Isotropic gain 3 m Center | Antenna factor 3 m Center |
|-----------|------------------------------|------------------------------|------------------------------|------------------------------|
| [MHz] | [dBi] | [dB/m] | [dBi] | [dB/m] |
| 205.00 | 0.03 | 16.43 | 0.69 | 15.77 |
| 206.00 | 0.02 | 16.48 | 0.70 | 15.80 |
| 207.00 | 0.02 | 16.52 | 0.70 | 15.84 |
| 208.00 | 0.00 | 16.58 | 0.70 | 15.88 |
| 209.00 | -0.01 | 16.63 | 0.73 | 15.89 |
| 210.00 | -0.02 | 16.68 | 0.74 | 15.92 |
| 211.00 | -0.03 | 16.74 | 0.77 | 15.94 |
| 212.00 | -0.05 | 16.80 | 0.77 | 15.98 |
| 213.00 | -0.08 | 16.87 | 0.74 | 16.05 |
| 214.00 | -0.10 | 16.93 | 0.73 | 16.10 |
| 215.00 | -0.10 | 16.97 | 0.72 | 16.15 |
| 216.00 | -0.14 | 17.05 | 0.65 | 16.26 |
| 217.00 | -0.16 | 17.11 | 0.58 | 16.37 |
| 218.00 | -0.19 | 17.18 | 0.47 | 16.52 |
| 219.00 | -0.24 | 17.27 | 0.38 | 16.65 |
| 220.00 | -0.33 | 17.40 | 0.26 | 16.81 |
| 221.00 | -0.35 | 17.46 | 0.17 | 16.94 |
| 222.00 | -0.45 | 17.60 | 0.08 | 17.07 |
| 223.00 | -0.54 | 17.73 | -0.02 | 17.21 |
| 224.00 | -0.69 | 17.91 | -0.14 | 17.36 |
| 225.00 | -0.83 | 18.09 | -0.23 | 17.49 |
| 226.00 | -0.94 | 18.24 | -0.36 | 17.66 |
| 227.00 | -1.01 | 18.35 | -0.40 | 17.74 |
| 228.00 | -1.13 | 18.51 | -0.44 | 17.82 |
| 229.00 | -1.21 | 18.63 | -0.50 | 17.92 |
| 230.00 | -1.26 | 18.71 | -0.50 | 17.95 |
| 231.00 | -1.28 | 18.77 | -0.46 | 17.95 |
| 232.00 | -1.26 | 18.79 | -0.44 | 17.97 |
| 233.00 | -1.24 | 18.81 | -0.39 | 17.96 |
| 234.00 | -1.22 | 18.82 | -0.33 | 17.93 |
| 235.00 | -1.19 | 18.83 | -0.31 | 17.95 |
| 236.00 | -1.14 | 18.82 | -0.28 | 17.96 |
| 237.00 | -1.08 | 18.79 | -0.22 | 17.93 |
| 238.00 | -1.06 | 18.81 | -0.17 | 17.92 |
| 239.00 | -1.05 | 18.84 | -0.10 | 17.89 |
| 240.00 | -1.04 | 18.86 | -0.04 | 17.86 |
| 241.00 | -1.02 | 18.88 | 0.00 | 17.86 |
| 242.00 | -1.00 | 18.90 | 0.05 | 17.85 |
| 243.00 | -0.99 | 18.92 | 0.08 | 17.85 |
| 244.00 | -1.00 | 18.97 | 0.09 | 17.88 |
| 245.00 | -1.00 | 19.00 | 0.08 | 17.92 |
| 246.00 | -0.97 | 19.01 | 0.07 | 17.97 |
| 247.00 | -0.91 | 18.98 | 0.06 | 18.01 |
| 248.00 | -0.90 | 19.01 | 0.06 | 18.05 |
| 249.00 | -0.88 | 19.02 | 0.05 | 18.09 |
| 250.00 | -0.86 | 19.04 | 0.06 | 18.12 |
| 251.00 | -0.83 | 19.04 | 0.07 | 18.14 |
| 252.00 | -0.81 | 19.06 | 0.11 | 18.14 |
| 253.00 | -0.81 | 19.09 | 0.11 | 18.17 |
| 254.00 | -0.82 | 19.14 | 0.11 | 18.21 |
| 255.00 | -0.85 | 19.20 | 0.11 | 18.24 |
| 256.00 | -0.86 | 19.24 | 0.14 | 18.24 |
| 257.00 | -0.85 | 19.27 | 0.18 | 18.24 |



| Frequency | Isotropic gain 1 m Center | Antenna factor 1 m Center | Isotropic gain 3 m Center | Antenna factor 3 m Center |
|-----------|------------------------------|------------------------------|------------------------------|------------------------------|
| [MHz] | [dBi] | [dB/m] | [dBi] | [dB/m] |
| 258.00 | -0.85 | 19.30 | 0.19 | 18.26 |
| 259.00 | -0.88 | 19.37 | 0.22 | 18.27 |
| 260.00 | -0.90 | 19.42 | 0.24 | 18.28 |
| 261.00 | -0.90 | 19.45 | 0.25 | 18.30 |
| 262.00 | -0.88 | 19.47 | 0.28 | 18.31 |
| 263.00 | -0.90 | 19.52 | 0.31 | 18.31 |
| 264.00 | -0.93 | 19.58 | 0.34 | 18.31 |
| 265.00 | -0.95 | 19.63 | 0.34 | 18.34 |
| 266.00 | -0.96 | 19.68 | 0.34 | 18.38 |
| 267.00 | -0.97 | 19.72 | 0.36 | 18.39 |
| 268.00 | -0.98 | 19.76 | 0.37 | 18.41 |
| 269.00 | -1.00 | 19.82 | 0.36 | 18.46 |
| 270.00 | -1.02 | 19.87 | 0.33 | 18.52 |
| 271.00 | -1.02 | 19.90 | 0.29 | 18.59 |
| 272.00 | -1.04 | 19.95 | 0.27 | 18.64 |
| 273.00 | -1.05 | 19.99 | 0.26 | 18.68 |
| 274.00 | -1.08 | 20.06 | 0.22 | 18.76 |
| 275.00 | -1.11 | 20.12 | 0.18 | 18.83 |
| 276.00 | -1.15 | 20.19 | 0.17 | 18.87 |
| 277.00 | -1.18 | 20.25 | 0.16 | 18.91 |
| 278.00 | -1.23 | 20.33 | 0.14 | 18.96 |
| 279.00 | -1.28 | 20.41 | 0.11 | 19.02 |
| 280.00 | -1.32 | 20.48 | 0.09 | 19.07 |
| 281.00 | -1.37 | 20.56 | 0.04 | 19.15 |
| 282.00 | -1.41 | 20.63 | -0.01 | 19.23 |
| 283.00 | -1.47 | 20.73 | -0.07 | 19.33 |
| 284.00 | -1.54 | 20.83 | -0.17 | 19.46 |
| 285.00 | -1.60 | 20.92 | -0.26 | 19.58 |
| 286.00 | -1.70 | 21.05 | -0.36 | 19.71 |
| 287.00 | -1.79 | 21.17 | -0.45 | 19.83 |
| 288.00 | -1.91 | 21.32 | -0.53 | 19.94 |
| 289.00 | -2.03 | 21.47 | -0.59 | 20.03 |
| 290.00 | -2.18 | 21.65 | -0.68 | 20.15 |
| 291.00 | -2.30 | 21.80 | -0.74 | 20.24 |
| 292.00 | -2.42 | 21.95 | -0.81 | 20.34 |
| 293.00 | -2.56 | 22.12 | -0.87 | 20.43 |
| 294.00 | -2.69 | 22.28 | -0.97 | 20.56 |
| 295.00 | -2.82 | 22.44 | -1.10 | 20.72 |
| 296.00 | -2.97 | 22.62 | -1.27 | 20.92 |
| 297.00 | -3.12 | 22.80 | -1.39 | 21.07 |
| 298.00 | -3.26 | 22.96 | -1.53 | 21.23 |
| 299.00 | -3.42 | 23.15 | -1.68 | 21.41 |
| 300.00 | -3.58 | 23.34 | -1.88 | 21.64 |

