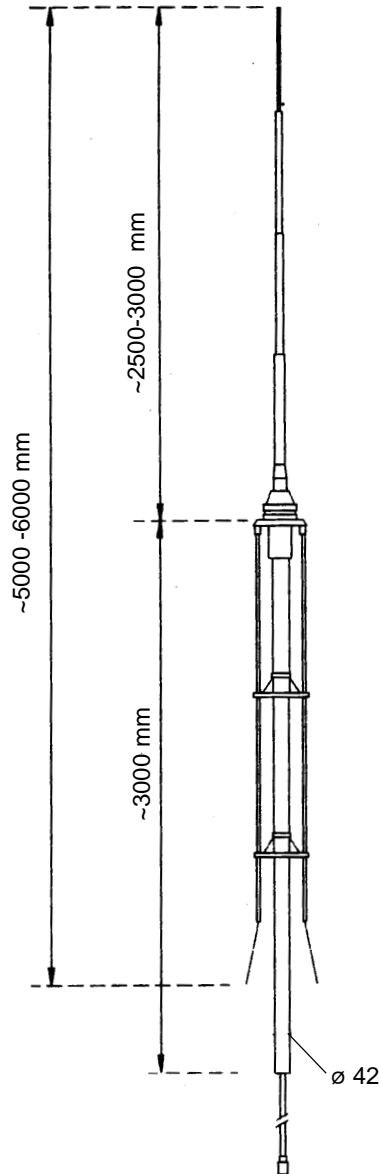
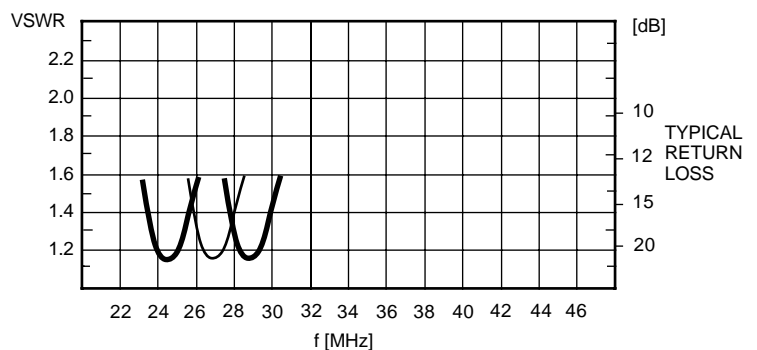
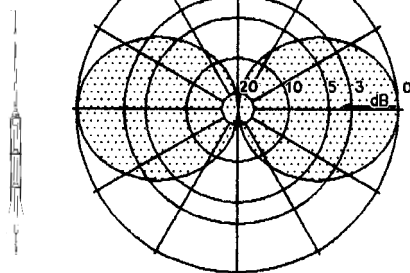


| ORDER NUMBER     | TYPE                                    |
|------------------|---|
| WS 100 31 11     | omnidirectional                         |
| WS 100 31 12     | omnidirectional                         |
| WS 100 61 4      | omnidirectional, heavy duty             |
| WS 100 62 4      | omnidirectional, heavy duty             |
| WS 100 86 1      | omnidirectional, adjustable             |
| WS 100 92 1      | discone                                 |
| WS 101 05 10 .   | 3 dB offset pattern antenna             |
| WS 101 32 1. .   | short dipole for wall and mast mounting |
| WS 102 05 11 .   | 2 element yagi                          |
| WS 151/3 05 13 . | directional antenna type Kleewi         |
| WS 180 22 31 6   | logper 30 -1100 MHz                     |
| WS 186 21 23 2   | logper 13 - 24 MHz, low weight          |



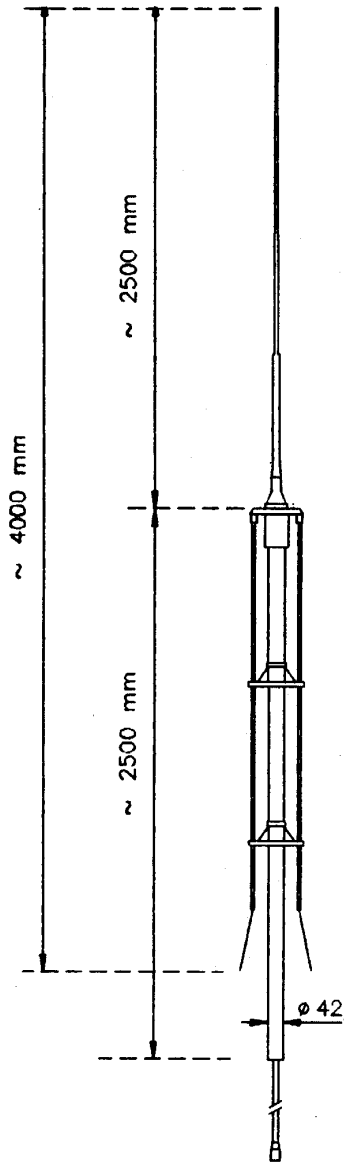
|                       |   |
|-----------------------|---|
| <b>TYPE NO.</b>       | WS 100 31 11 (requested frequency)  |
|                       | tuned on the requested frequency between 25 and 30 MHz                          |
| <b>POLARIZATION</b>   | vertical  |
| <b>IMPEDANCE</b>      | 50 Ω  |
| <b>GAIN</b>           | 0 dB (ref. to λ/2 dipole)   |
| <b>VSWR</b>           | < 1.3 on tuned freq.  |
| <b>POWER</b>          | 500 watts   |
| <b>3 dB BEAMWIDTH</b> | horizontal (H-plane) 360°<br>vertical (E-plane) 78°                             |
| <b>TERMINATION</b>    | N male, cable must not be shortened<br>(impedance transformer)                  |
| <b>GROUNDING</b>      | radiator not grounded   |
| <b>MOUNTING</b>       | on mast with inner diameter 42 mm,<br>reductions for other diameters on request |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel   |
| <b>WEIGHT</b>         | 4.2 kg  |
| <b>WIND AREA</b>      | 0.31 m <sup>2</sup>   |
| <b>WIND LOAD</b>      | 400 N (150 km/h)<br>300 N (130 km/h)  |

Vertical  
Radiation  
Pattern  
E Plane



KW 1-08

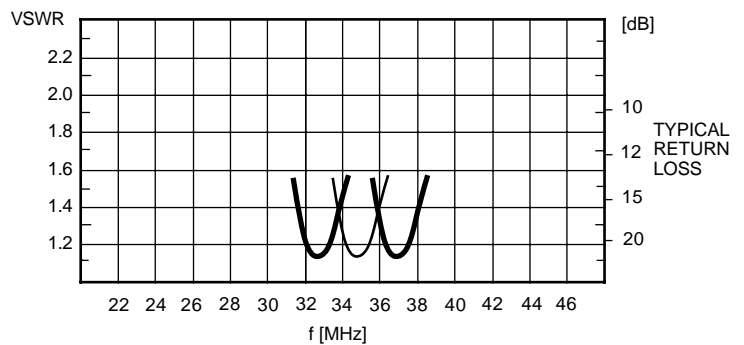
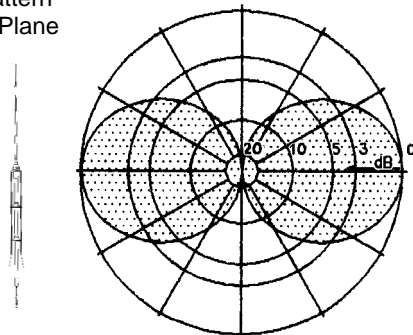
WIPIC reserves the right to amend specifications in the light of continuing development.



WS 100 31 12 (tuned to the requested frequency)

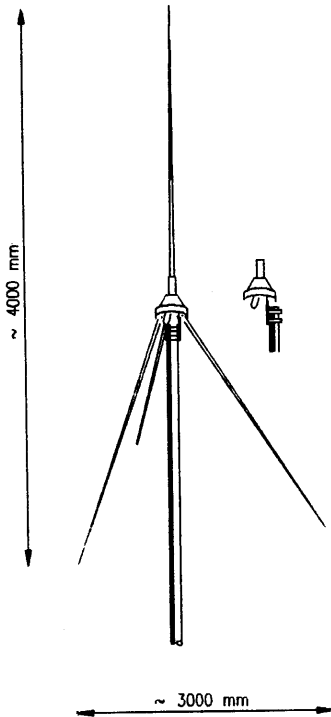
|                       |   |
|-----------------------|---|
| <b>POLARIZATION</b>   | vertical  |
| <b>IMPEDANCE</b>      | 50 Ω  |
| <b>GAIN</b>           | 0 dB (ref. λ/2 dipole)  |
| <b>VSWR</b>           | < 1.3 on tuned frequency  |
| <b>POWER</b>          | 500 watts   |
| <b>3 dB BEAMWIDTH</b> | horizontal (H-plane) 360°<br>vertical (E-plane) 78°                             |
| <b>TERMINATION</b>    | UHF-male, cable must not be shortened (impedance transformer)                   |
| <b>MOUNTING</b>       | on mast with inner diameter 42 mm.<br>reductions for other diameters on request |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel   |
| <b>WEIGHT</b>         | 4.2 kg  |
| <b>WIND AREA</b>      | 0.31 m <sup>2</sup>   |
| <b>WIND LOAD</b>      | 400 N (150 km/h)<br>300 N (130 km/h)  |

Vertical Radiation Pattern E Plane



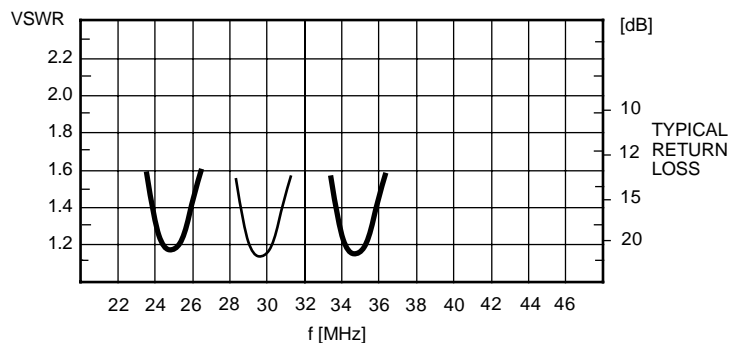
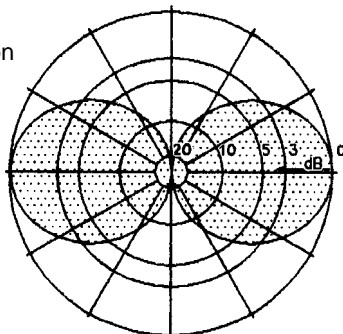
KW 1-08

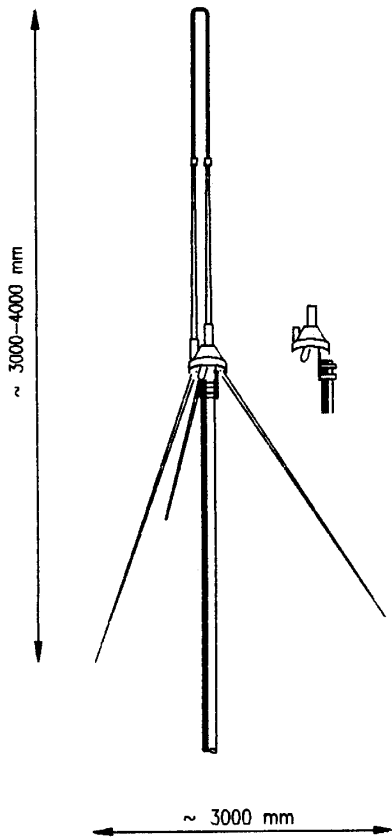
WIPIC reserves the right to amend specifications in the light of continuing development.



|                       |  |
|-----------------------|--|
| <b>TYPE NO.</b>       | <b>WS 100 61 4 (and requested frequency)</b>   |
| <b>DESCRIPTION</b>    | heavy duty, tuned on desired frequency   |
| <b>POLARIZATION</b>   | vertical   |
| <b>IMPEDANCE</b>      | 50 Ω   |
| <b>GAIN</b>           | 0 dB (ref. λ/2 dipole)   |
| <b>VSWR</b>           | < 1.3, on tuned frequency  |
| <b>POWER</b>          | max. 500 watts   |
| <b>3 dB BEAMWIDTH</b> | horizontal, H plane: 360°<br>vertical, E plane: 78°  |
| <b>TERMINATION</b>    | N female (other termination on request)  |
| <b>GROUNDING</b>      | radiator not grounded grounded   |
| <b>MOUNTING</b>       | to 40 - 80 mm ø mast<br>cable running inside or outside the mast                           |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, weather-resistant<br>plastics, UV-stabilized plastics |
| <b>WEIGHT</b>         | 3.4 kg   |
| <b>WIND AREA</b>      | 0.15 m <sup>2</sup>  |
| <b>WIND LOAD</b>      | 190 N (150 km/h)<br>145 N (130 km/h)   |

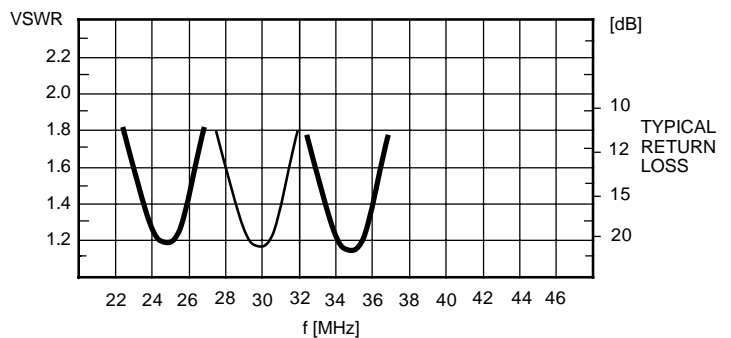
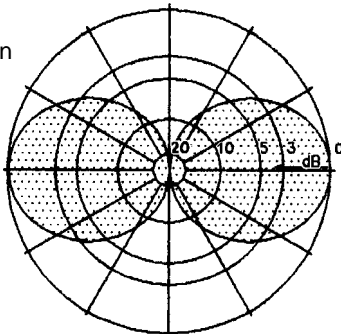
Vertical  
Radiation  
Pattern  
E Plane



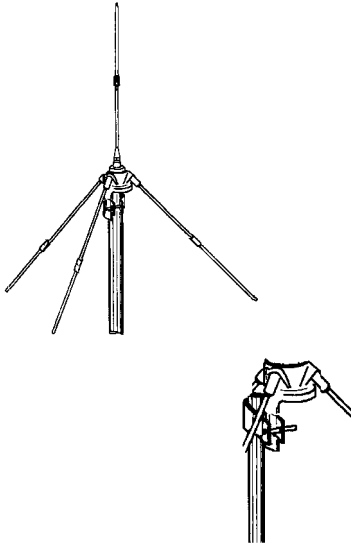


|                       |   |
|-----------------------|---|
| <b>TYPE NO.</b>       | <b>WS 100 62 4 (and requested frequency)</b><br>further frequencies on request                                  |
| <b>DESCRIPTION</b>    | heavy duty, tuned on the requested frequency  |
| <b>POLARIZATION</b>   | vertical  |
| <b>IMPEDANCE</b>      | 50 Ω  |
| <b>GAIN</b>           | 0 dB (ref. λ/2 dipole)  |
| <b>VSWR</b>           | < 1.3, on tuned frequency   |
| <b>POWER</b>          | max. 500 watts  |
| <b>3 dB BEAMWIDTH</b> | horizontal, H plane: 360°<br>vertical, E plane: 78°   |
| <b>TERMINATION</b>    | ~ 2 m cable ending with N male<br>the cable must NOT be shortened (transformer)<br>other termination on request |
| <b>GROUNDING</b>      | all metal parts are DC grounded   |
| <b>MOUNTING</b>       | to 40 - 80 mm ø mast<br>cable running inside or outside the mast  |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, weather-resistant<br>plastics, UV-stabilized plastics                      |
| <b>WEIGHT</b>         | 3.8 kg  |
| <b>WIND AREA</b>      | 0.18 m <sup>2</sup>   |
| <b>WIND LOAD</b>      | 240 N (150 km/h)<br>180 N (130 km/h)  |

Vertical  
Radiation  
Pattern  
E Plane

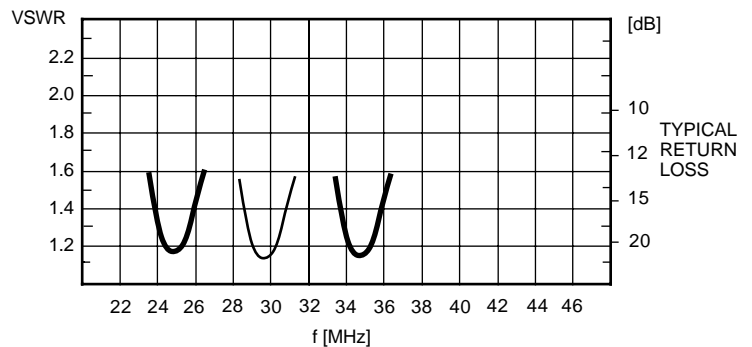
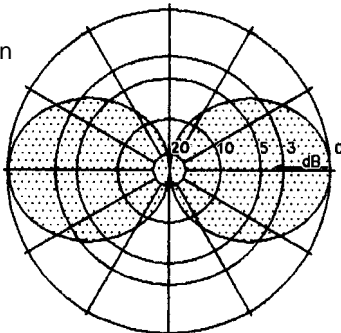


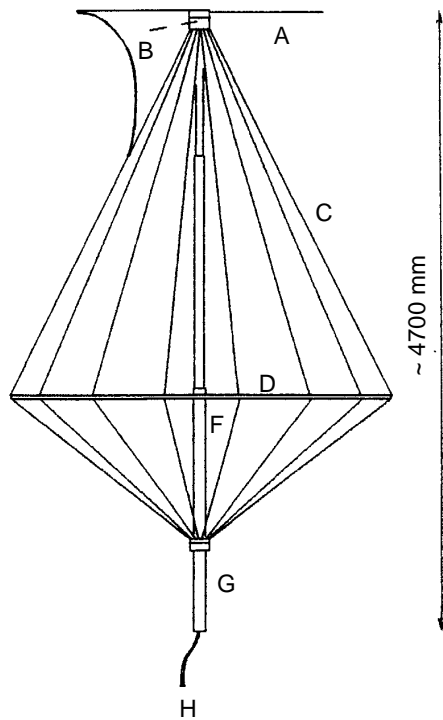
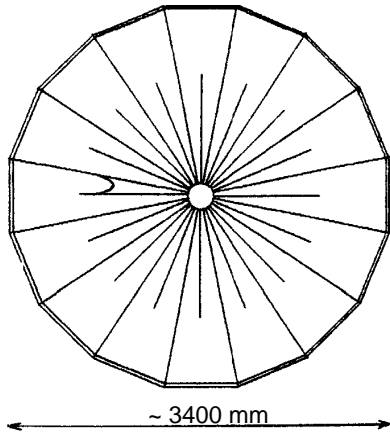
## OMNIDIRECTIONAL ANTENNA WS 100 86 1 adjustable 30 ... 42 MHz



|                       |  |
|-----------------------|--|
| <b>TYPE NO.</b>       | <b>WS 100 86 1: 30 ... 42 MHz</b><br>frequency adjustable according to table |
| <b>DESCRIPTION</b>    | ground-plane antenna with adjustable radiator                                |
| <b>POLARIZATION</b>   | vertical   |
| <b>IMPEDANCE</b>      | 50 $\Omega$  |
| <b>GAIN</b>           | 0 dB (ref. $\lambda/2$ dipole)   |
| <b>VSWR</b>           | < 1.3 in tuned frequency   |
| <b>POWER</b>          | max. 150 watts   |
| <b>3 dB BEAMWIDTH</b> | horizontal, H plane: 360°<br>vertical, E plane: 78°                          |
| <b>TERMINATION</b>    | 1 m cable RG 213/U ending with N male<br>other termination on request        |
| <b>GROUNDING</b>      | radiator not grounded  |
| <b>MOUNTING</b>       | to 40 - 66 mm $\varnothing$ mast<br>cable runs inside or outside the mast    |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, weather-resistant<br>plastics           |
| <b>WEIGHT</b>         | 2.4 kg   |
| <b>WIND AREA</b>      | 0.13 m <sup>2</sup>  |
| <b>WIND LOAD</b>      | 166 N (150 km/h)<br>125 N (130 km/h)   |

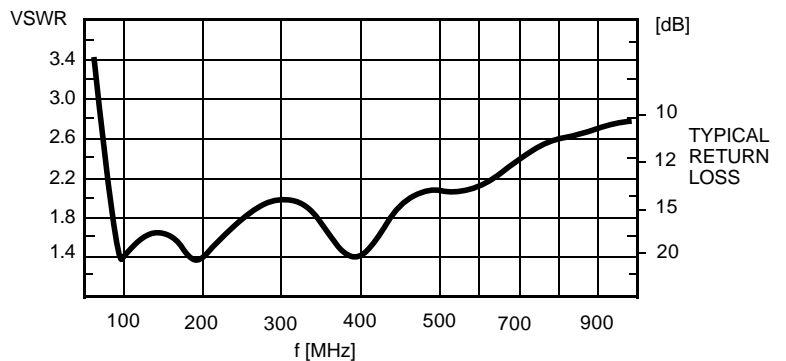
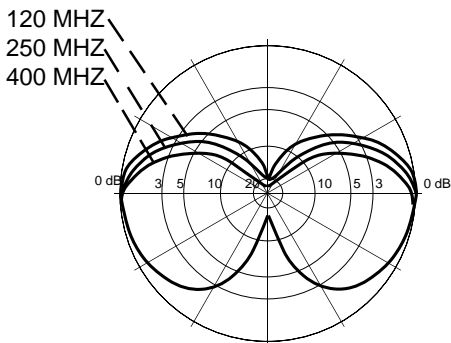
Vertical  
Radiation  
Pattern  
E Plane

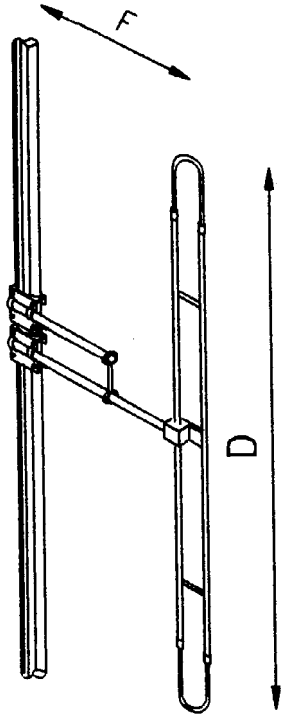




|                       |   |
|-----------------------|---|
| <b>TYPE NO.</b>       | <b>WS 100 92 1: 30 -1000 MHz</b>  |
| <b>POLARISATION</b>   | vertical  |
| <b>IMPEDANCE</b>      | 50 Ω  |
| <b>GAIN</b>           | 0 dB (ref. λ/2 dipole)  |
| <b>VSWR</b>           | < 2.2 (30 - 500 MHz)<br>< 2.8 (30 - 1000 MHz)   |
| <b>POWER</b>          | max. 500 watts (depending on frequency)   |
| <b>3 dB BEAMWIDTH</b> | horizontal, E plane: omnidirectional  |
| <b>TERMINATION</b>    | ~ 1 m cable RG 213/U ending with N male<br>other termination on request   |
| <b>GROUNDING</b>      | all metal parts are DC grounded   |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, weather-resistant<br>plastics, uv-stabilized plastics<br>A radiators alu<br>B insulator weather-resistant plastics<br>C cable stainless steel<br>D polygon alu<br>E cable aramid (Kevlar)<br>F tube ø 71 alu<br>G tube ø 80 alu<br>H cable RG 213/U ending with N male |
| <b>WEIGHT</b>         | 30 kg   |
| <b>WIND AREA</b>      | 0.74 m <sup>2</sup>   |
| <b>WIND LOAD</b>      | 950 N (150 km/h)<br>710 N (130 km/h)  |

VERTICAL RADIATION PATTERN  
(E PLANE)





|                       |  |
|-----------------------|--|
| <b>TYPE NO.</b>       | <b>WS 101 05 10 6 : 35 - 37 MHz</b><br><b>WS 101 05 10 7 : 37 - 39 MHz</b><br><b>WS 101 05 10 8 : 39 - 41 MHz</b><br><b>WS 101 05 10 9 : 41 - 43 MHz</b><br>further frequencies on request |
| <b>DESCRIPTION</b>    | heavy duty   |
| <b>POLARIZATION</b>   | vertical   |
| <b>IMPEDANCE</b>      | 50 Ω   |
| <b>GAIN</b>           | 3 dB (ref. λ/2 dipole)   |
| <b>VSWR</b>           | < 1.3, at the limits of the band < 1.4   |
| <b>POWER</b>          | max. 500 watts   |
| <b>3 dB BEAMWIDTH</b> | horizontal, H plane: 180°<br>vertical, E plane: 75°  |
| <b>TERMINATION</b>    | 6 m cable RG 213/U ending with N female<br>other termination on request  |
| <b>GROUNDING</b>      | all metal parts are DC grounded  |
| <b>MOUNTING</b>       | mast-ø                    mounting clamps<br>30 - 80 mm            2xWG 17 (standard)<br>50 - 104 mm          2xWG 18 (option)<br>clamp for other mast-ø on request                        |

**MATERIAL**                    aluminium, bolts of stainless steel, weather-resistant plastics

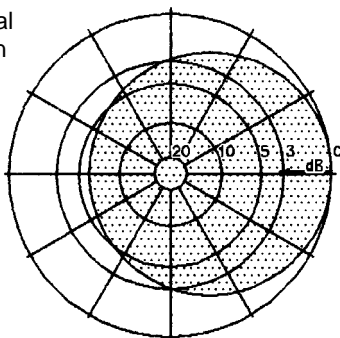
**WEIGHT**                        12 kg

**WIND AREA  
WIND LOAD**

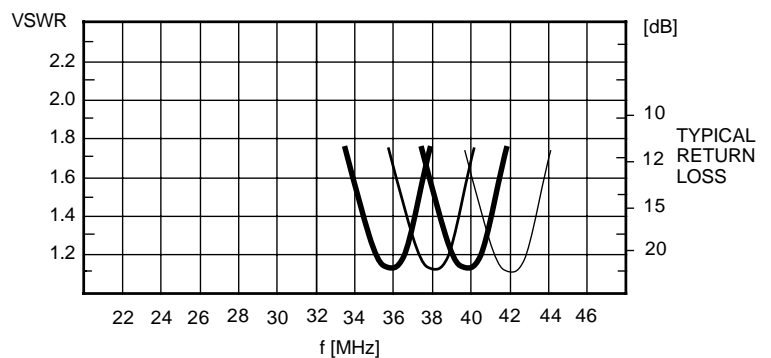
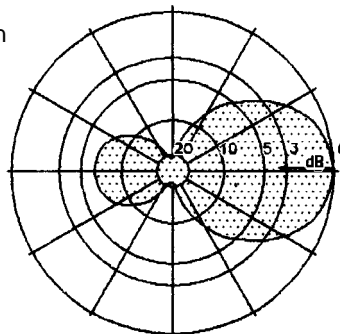
| TYPE          | dimensios<br>D            F | wind area<br>m <sup>2</sup> | wind load<br>150 km/h |
|---------------|-----------------------------|-----------------------------|-----------------------|
| WS..6         | 3800      1100              | 0.38                        | 485 N                 |
| WS..7         | 3600      1020              | 0.35                        | 450 N                 |
| WS..8         | 3400      960               | 0.33                        | 410 N                 |
| WS..9         | 3200      900               | 0.29                        | 370 N                 |
| (appr. datas) |                             |                             |                       |

Horizontal  
Radiation  
Pattern  
H Plane

MAST DIPOL  
○—○

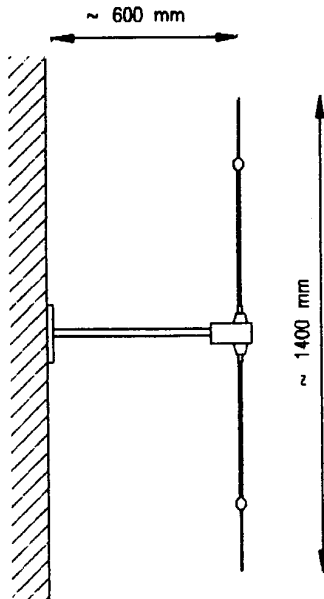


Vertical  
Radiation  
Pattern  
E Plane

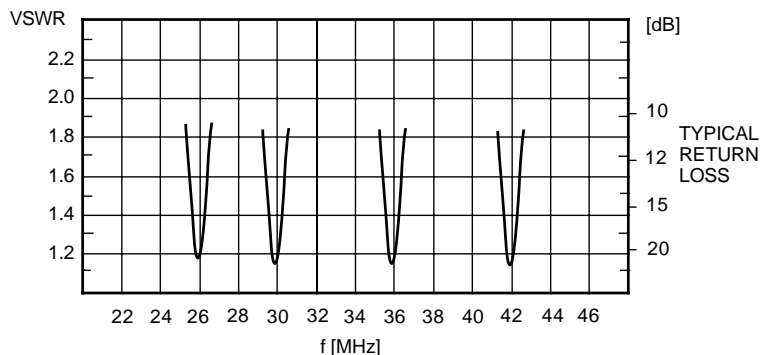


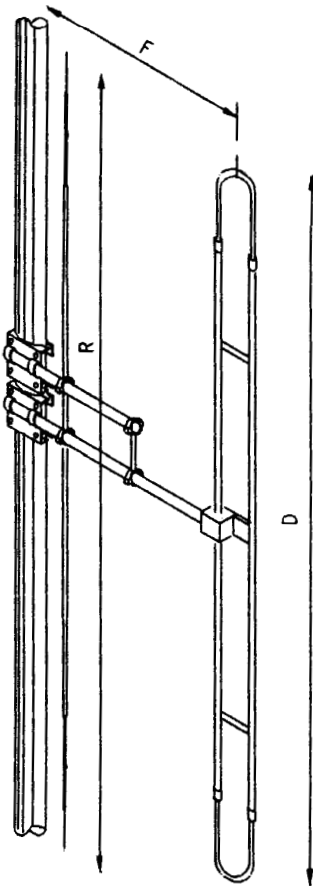
KW 1-08

WIPIC reserves the right to amend specifications in the light of continuing development.



|                     |  |
|---------------------|--|
| <b>TYPE NO.</b>     | <b>WS 101 32 10 8:</b> 26 - 32 MHz (mast mounting)<br><b>WS 101 32 10 9:</b> 35 - 44 MHz (mast mounting)<br><b>WS 101 32 19 8:</b> 25 - 32 MHz (wall mounting)<br><b>WS 101 32 19 9:</b> 35 - 44 MHz (wall mounting)<br>further frequencies on request |
| <b>POLARIZATION</b> | vertical   |
| <b>IMPEDANCE</b>    | 50 Ω   |
| <b>GAIN</b>         | 0-3 dB (ref. λ/2 dipole)<br>depending on wall material   |
| <b>VSWR</b>         | < 1.3 on tuned frequency<br>tuning by customer   |
| <b>POWER</b>        | max. 15 watts  |
| <b>TERMINATION</b>  | 2 m cable RG 213/U ending with UHF male<br>other termination on request  |
| <b>GROUNDING</b>    | dipole not grounded  |
| <b>MOUNTING</b>     | mast mounting with WG 15 or WG16 (see chapter 10)<br>wall mounting<br>mast mounting on request   |
| <b>MATERIAL</b>     | aluminium, bolts of stainless steel, weather-resistant<br>plastics   |
| <b>WEIGHT</b>       | 1.3 kg   |
| <b>WIND AREA</b>    | 0.04 m <sup>2</sup>  |
| <b>WIND LOAD</b>    | 50 N bei 150 km/h<br>38 N bei 130 km/h   |





**TYPE NO.**

- WS 102 05 11 4 : 30 - 31 MHz
- WS 102 05 11 5 : 31 - 33 MHz
- WS 102 05 11 6 : 33 - 35 MHz
- WS 102 05 11 7 : 35 - 37 MHz
- WS 102 05 11 8 : 37 - 39 MHz
- WS 102 05 11 9 : 39 - 42 MHz

further frequencies on request

**DESCRIPTION** heavy duty

**POLARIZATION** vertical

**IMPEDANCE** 50 Ω

**GAIN** 3.5 dB (ref. λ/2 dipole)

**VSWR** <1.4

**POWER** max. 500 watts

**3 dB BEAMWIDTH** horizontal, H-plane: 130°  
vertical, E-plane: 74°

**TERMINATION** 6 m cable RG 213/U ending with N female  
other termination on request

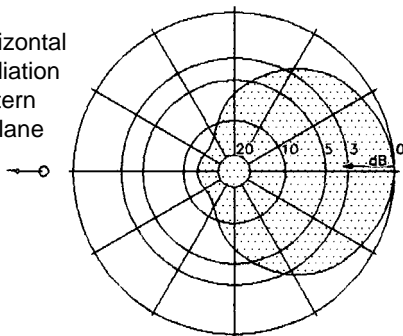
**GROUNDING** all metal parts are DC grounded

**MOUNTING** mast-ø clamp  
30 - 80 mm WG 17 (standard)  
50 - 104 mm WG 18 (option)  
clamp for other mast-ø on request

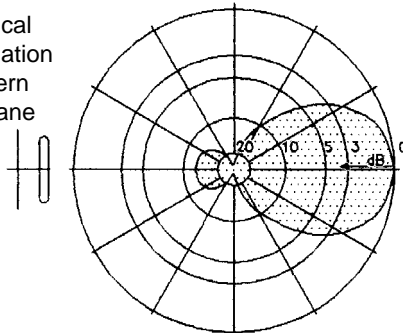
**MATERIAL** aluminium, bolts of stainless steel, weather-resistant plastics

**WEIGHT** ~ 15 kg

Horizontal Radiation Pattern H Plane



Vertical Radiation Pattern E Plane

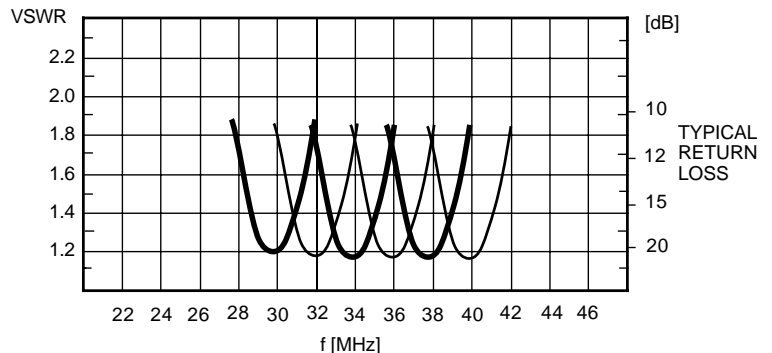


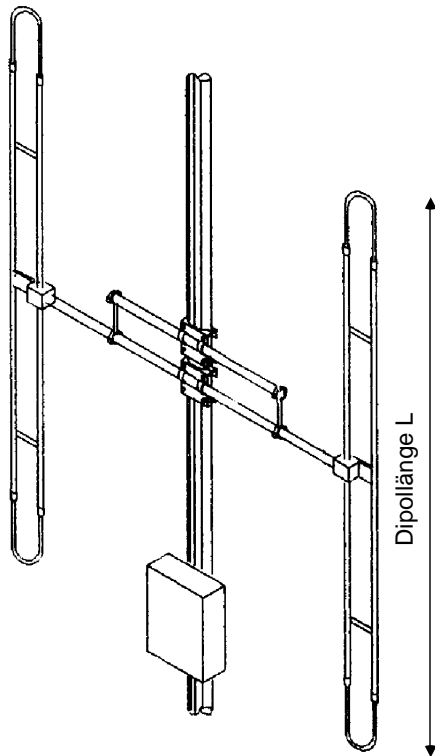
**WIND AREA WIND LOAD**

| TYPE | dimensions<br>D R F | wind area<br>m <sup>2</sup> | windload<br>150 km/h |
|------|---------------------|-----------------------------|----------------------|
|------|---------------------|-----------------------------|----------------------|

|       |                |      |       |
|-------|----------------|------|-------|
| WS..4 | 4500 5400 1850 | 0.48 | 620 N |
| WS..5 | 4200 4900 1700 | 0.45 | 580 N |
| WS..7 | 3800 4500 1600 | 0.42 | 540 N |
| WS..9 | 3400 4000 1450 | 0.30 | 500 N |

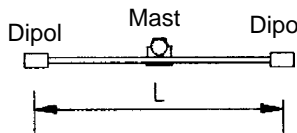
(approx. datas)





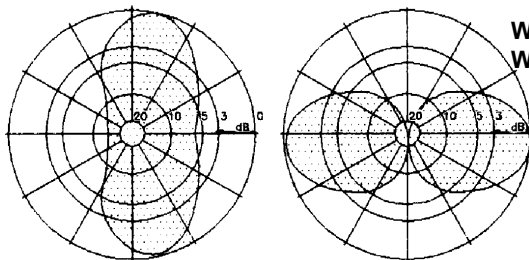
|                        |  |                    |
|------------------------|--|--------------------|
| <b>TYPE NO.</b>        | <b>WS 151 05 13 6, WS 153 05 13 6:</b>   | <b>34 - 36 MHz</b> |
|                        | <b>WS 151 05 13 7, WS 153 05 13 7:</b>   | <b>36 - 38 MHz</b> |
|                        | <b>WS 151 05 13 8, WS 153 05 13 8:</b>   | <b>38 - 40 MHz</b> |
|                        | <b>WS 151 05 13 9, WS 153 05 13 9:</b>   | <b>40 - 42 MHz</b> |
| <b>DESCRIPTION</b>     | heavy duty   |                    |
| <b>POLARIZATION</b>    | vertical   |                    |
| <b>IMPEDANCE</b>       | 50 Ω   |                    |
| <b>GAIN</b>            | 3 dB (ref λ/2 dipole)  |                    |
| <b>VSWR</b>            | ≤ 1.3  |                    |
| <b>POWER</b>           | 600 watts  |                    |
| <b>3 dB BEAM WIDTH</b> | horizontal (H plane): see radiation patterns<br>vertical (E plane): ~ 78°<br>please give pattern no. when ordering |                    |
| <b>TERMINATION</b>     | in the junction box WAK 1 ending with N female<br>other termination on request                                     |                    |
| <b>GROUNDING</b>       | all metal parts are DC grounded  |                    |
| <b>MOUNTING</b>        | <i>mast-ø</i>  | <i>clamp</i>       |
|                        | 30 - 80 mm   | 2xWG 17 (standard) |
|                        | 50 - 104 mm  | 2xWG 18 (option)   |
|                        | other clamps on request  |                    |

HORIZONTAL RADIATION PATTERN  
H PLANE

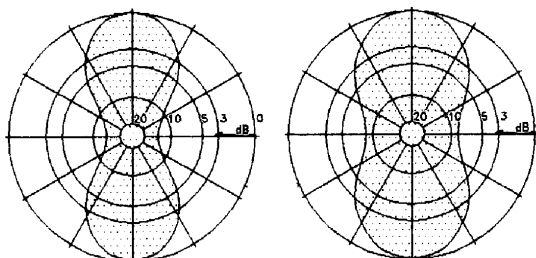


**MATERIAL** aluminium, bolts of stainless steel, weather-proof plastics

**WEIGHT** 20 kg

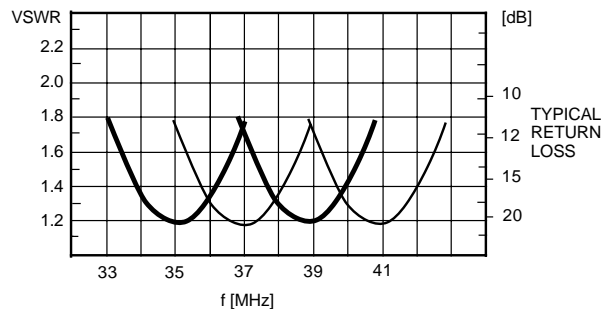


WS 151 ... Diagramm No. 3 WS 151 ... Diagramm No. 4  
L ~ 3300 mm L ~ 2300 mm



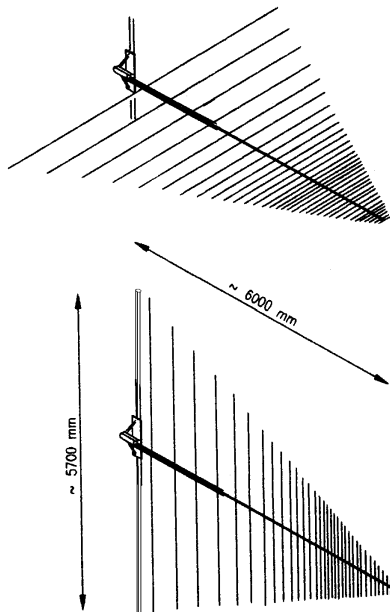
WS 153 ... Diagramm No. 1 WS 153 ... Diagramm No. 2  
L ~ 4200 mm L ~ 3300 mm

| TYPE    | wind area<br>in mm <sup>2</sup> | windload<br>150 km/h | length of<br>dipole in mm |
|---------|---------------------------------|----------------------|---------------------------|
| WS .. 6 | 0.76                            | 970 N                | 3900                      |
| WS .. 7 | 0.7                             | 895 N                | 3800                      |
| WS .. 8 | 0.62                            | 790 N                | 3500                      |
| WS .. 9 | 0.58                            | 740 N                | 3300                      |

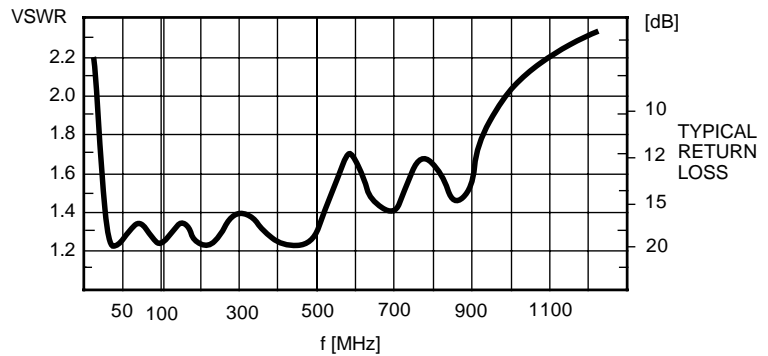


KW 1-08

WIPIC reserves the right to amend specifications in the light of continuing development.



|                       |   |
|-----------------------|---|
| <b>TYPE NO.</b>       | <b>WS 180 22 31 6: 30 - 1100 MHz</b>  |
| <b>POLARIZATION</b>   | vertikal or horizontal  |
| <b>IMPEDANCE</b>      | 50 $\Omega$   |
| <b>GAIN</b>           | 5-6 dB ref. $\lambda/2$ Dipol<br>F/B = 16 - 25 dB   |
| <b>VSWR</b>           | < 1.8 30 - 500 MHz<br>< 2.4 500 - 1100 MHz  |
| <b>POWER</b>          | max. 150 watts (depending on frequency)   |
| <b>3 dB BEAMWIDTH</b> | E-plane: 70 - 80°<br>H-plane: 90 - 100°   |
| <b>TERMINATION</b>    | 2 m cable RG 213/U ending with N male<br>other termination on request                                 |
| <b>GROUNDING</b>      | all metal parts are DC grounded   |
| <b>MOUNTING</b>       | mast- $\emptyset$ clamp<br>50 - 104 mm WG 51 - 50-104<br>clamp for other mast- $\emptyset$ on request |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, weather-resistant<br>plastics                                    |
| <b>WEIGHT</b>         | 27 kg   |
| <b>WIND AREA</b>      | 0.65 m <sup>2</sup>   |
| <b>WIND LOAD</b>      | 830 N 150 km/h<br>620 N 130 km/h  |





|                       |  |
|-----------------------|--|
| <b>TYPE NO.</b>       | <b>WS 186 21 23 2: 13 - 24 MHz</b>   |
| <b>DESCRIPTION</b>    | small size, low weight, high performance, designet for shipping by air   |
| <b>POLARIZATION</b>   | horizontal   |
| <b>IMPEDANCE</b>      | 50 $\Omega$  |
| <b>GAIN</b>           | 5 - 6 dB (ref. $\lambda/2$ dipole)   |
| <b>VSWR</b>           | 1.3 - 1.9  |
| <b>POWER</b>          | max. 5000 watts  |
| <b>3 dB BEAMWIDTH</b> | horizontal: 70 - 80°   |
| <b>TERMINATION</b>    | UHF chassis female (SO 239)<br>other termination on request  |
| <b>BALUN</b>          | coil with 5 turns in the feeding cable near the termination<br>(not included)  |
| <b>GROUNDING</b>      | all metal parts are DC grounded  |
| <b>MOUNTING</b>       | mast- $\emptyset$ clamp<br>50 - 104 mm                  WG 51 - 50-104<br>clamp for other mast- $\emptyset$ on request |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, Delrin  |
| <b>DIMESIONS</b>      | length over all:              6.2 m<br>longest element:              11.5 m<br>shortest element:              4.3 m    |
|                       | <b>longest element for shipping:    2.5 m</b>  |
| <b>WEIGHT</b>         | 16 kg  |
| <b>WIND AREA</b>      | 0.94 m <sup>2</sup>  |
| <b>WIND LOAD</b>      | 1200 N at 150 km/h<br>900 N at 130 km/h  |

WS186 21 23 2

