



## Directional Antennas 220 - 480 MHz

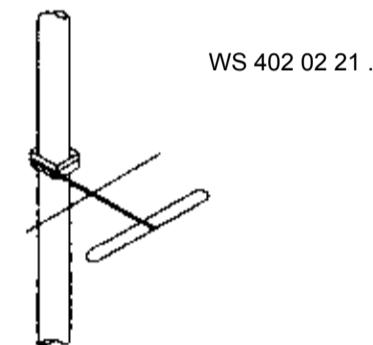
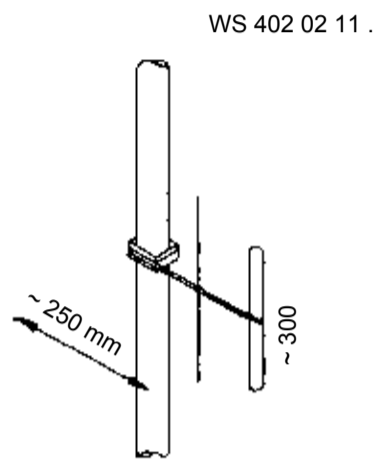
| ORDER NUMBER               | TYPE                                                   |
|----------------------------|--------------------------------------------------------|
| WS 402 02 .18              | 2 element yagi                                         |
| WS 402 03 .18              | 2 element yagi, heavy duty with radome                 |
| WS 403 02 .1.              | 3 element yagi                                         |
| WS 403 03 .1.              | 3 element yagi, heavy duty with radome                 |
| WS 404 02 .1 .             | 4 element yagi                                         |
| WS 404 03 .1 .             | 4 element yagi, heavy duty with radome                 |
| WS 406 02 .1 .             | 6 element yagi                                         |
| WS 406 03 .1 .             | 6 element yagi, heavy duty with radome                 |
| WS 409 02 .1 .             | 9 element yagi                                         |
| WS 409 03 .1 .             | 9 element yagi, heavy duty with radome                 |
| WS 412 02 .1 .             | 12 element yagi                                        |
| WS 412 03 .1 .             | 12 element yagi, heavy duty with radome                |
| WS 419 03 .1 9             | 19 element yagi, heavy duty with radome                |
| WS 419 03 .1 . duo, quadro | combined 19 element yagi, heavy duty with radome       |
| WS 421 02 22 .             | 21 element yagi                                        |
| WS 421 03 22 .             | 21 element yagi, heavy duty with radome                |
| WS 441 03 12 9             | bidirectional antenna, 4 dB , heavy duty with radome   |
| WS 442 02 12 9             | bidirectional antenna, 5 dB                            |
| WS 442 03 12 .             | bidirectional antenna, 5 dB , heavy duty with radome   |
| WS 442 02 19 9             | bidirectional antenna for wall mounting                |
| WS 442 03 19 .             | bidirectional antenna for wall, heavy duty with radome |
| WS 443/4 02/3 12 .         | bidirectional antennas, stacked                        |
| WS 445/6 02/3 12 .         | bidirectional antennas, duo, quadro                    |
| WS 448 02 12 9             | bidirectional antenna 7 dB                             |
| WS 448 03 12 9             | bidirectional antenna 7 dB , heavy duty with radome    |
| WS 451 02 11               | directional antenna kleewi                             |
| WS 451/2 03 11             | directional antenna kleewi, heavy duty with radome     |
| WS 471 02 .1 9             | corner reflector                                       |
| WS 471 03 .1 9             | corner reflector, heavy duty                           |
| WS 472 03 11 .             | 2 stacked corner reflector, heavy duty                 |
| WS 473 03 11 .             | 4 stacked corner reflector, heavy duty                 |
| WS .80 22 31 1             | log periodic antennas                                  |
| WS 380 22 31 2 sp          | log periodic 200 - 500 MHz                             |
| WS 480 22 31 1 sp          | log periodic 500 - 1000 MHz                            |
| WS 780 22 31 3             | log periodic 800 - 3000 MHz                            |

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**2-ELEMENT YAGI ANTENNA**

**WS 402 02 .1 8**

**390 - 470 MHz**



**TYPE NO.** vertical polarization  
**WS 402 02 11 8:** 390 - 470 MHz  
 horizontal polarization  
**WS 402 02 21 8:** 390 - 470 MHz  
 further frequencies on request

**IMPEDANCE** 50 Ω  
**GAIN** 3.5 dB (ref. λ/2 dipole)  
**VSWR** < 1.3, at the limits of the band <1.4  
**POWER** max. 150 watts  
**3 dB BEAMWIDTH** in polarization, E-plane: 74°  
 in H-plane: 130°

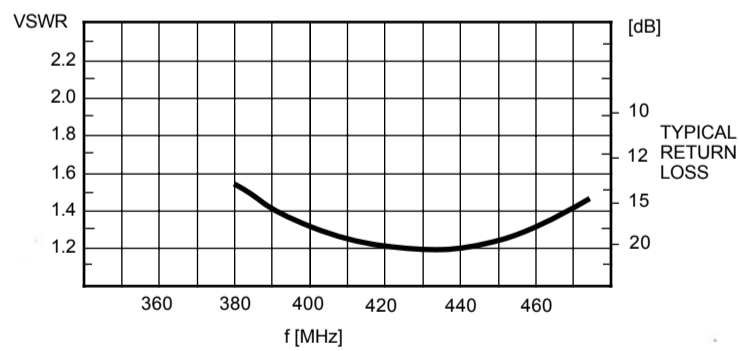
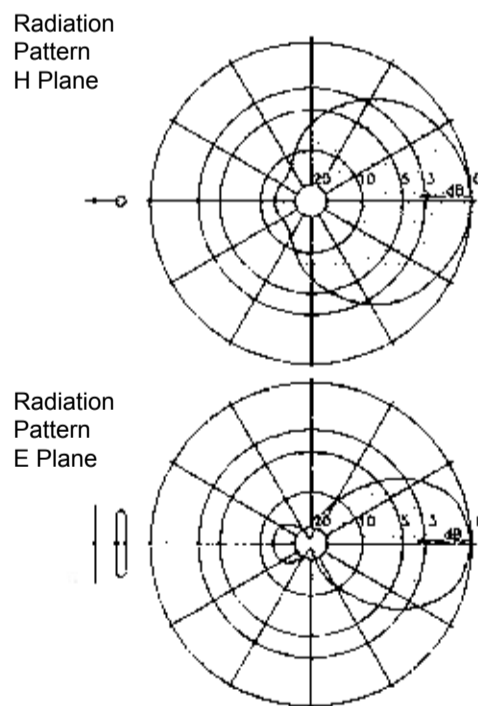
**TERMINATION** 2 m cable RG 213/U ending with N male  
 other termination on request

**GROUNDING** all metal parts are DC grounded

**MOUNTING** mast-∅ clamp  
 30 - 80 mm WG 11 (standard)  
 50 - 104 mm WG 12 (option)  
 clamp for other mast-∅ on request

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

**WEIGHT** 1.2 kg  
**WIND AREA** 0.024 m<sup>2</sup>  
**WIND LOAD** 31 N (150 km/h)  
 23 N (130 km/h)



KW 1-08

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



**2-ELEMENT YAGI ANTENNA**  
**WS 402 03 .1 8**  
**390 - 470 MHz**

**TYPE NO.** vertical polarization  
**WS 402 03 11 8: 390 - 470 MHz**  
 horizontal polarization  
**WS 402 03 21 8: 390 - 470 MHz**

**DESCRIPTION** heavy duty, with radome  
 The radome protects the antenna dipole from environmental influences, icing, and increases the lightning protection.

**IMPEDANCE** 50 Ω

**GAIN** 3.5 dB (ref. λ/2 dipole)

**VSWR** < 1.3, at the limits of the band <1.4

**POWER** max. 150 watts

**3 dB BEAMWIDTH** in polarization, E-plane: 74°  
 vertical to pol., H-plane: 130°

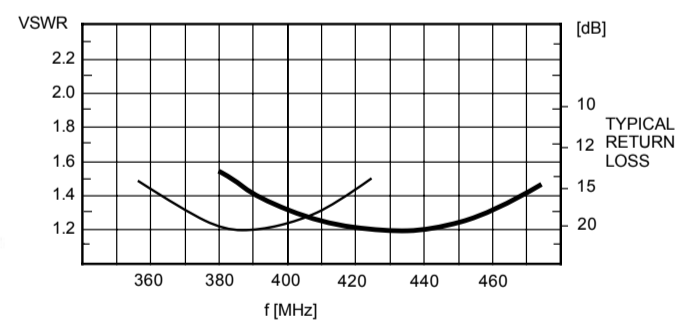
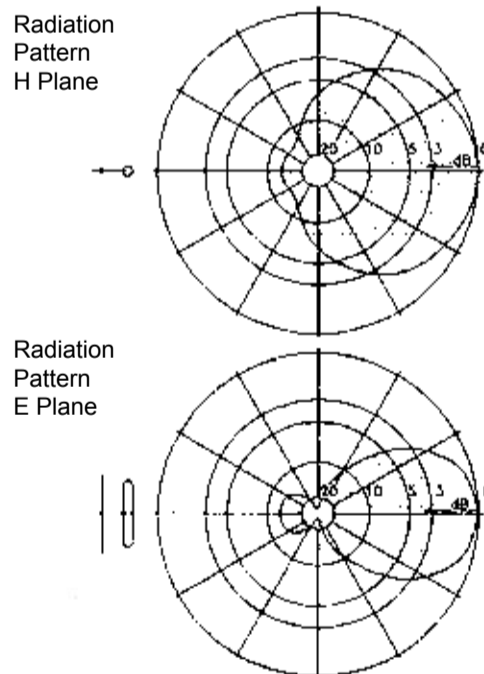
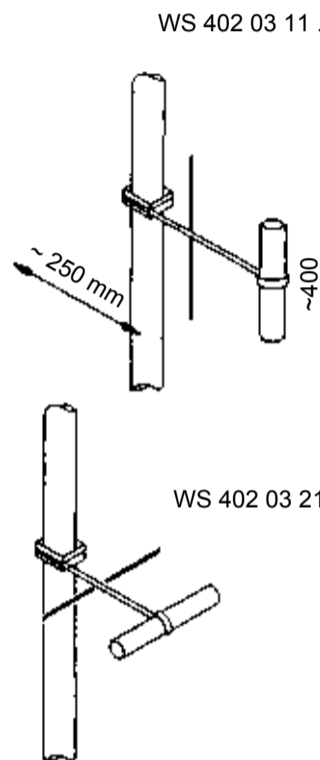
**TERMINATION** 2 m cable RG 213/U ending with N male  
 other termination on request

**GROUNDING** all metal parts are DC grounded

**MOUNTING** mast-ø clamp  
 30 - 80 mm WG 13 (standard)  
 50 - 104 mm WG 14 (option)  
 clamp for other mast-ø on request

**MATERIAL** aluminium, bolts of stainless steel, weather-resistant  
 plastics, radome of UV-stabilized polyethylene

**WEIGHT** 3.3 kg  
**WIND AREA** 0.07 m<sup>2</sup>  
**WIND LOAD** 90 N (150 km/h)  
 70 N (130 km/h)



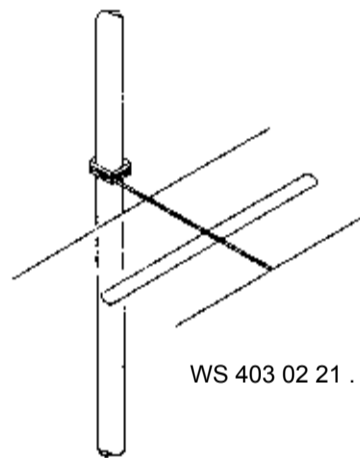
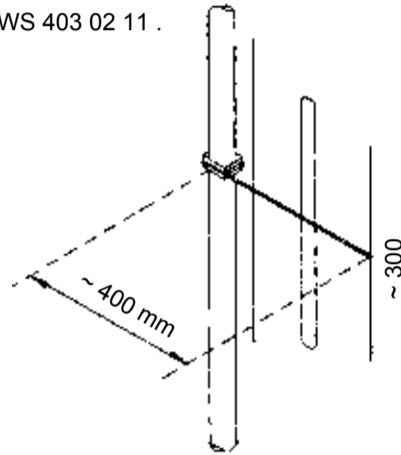
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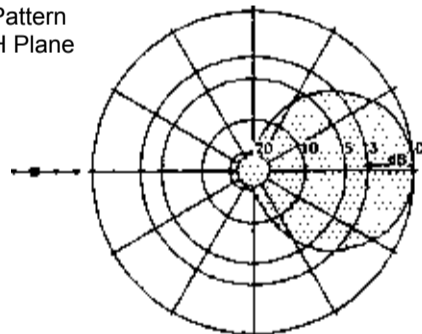
**3-ELEMENT YAGI ANTENNA**  
**WS 403 02 .1 .**  
**225 ... 470 MHz**

WS 403 02 11 .

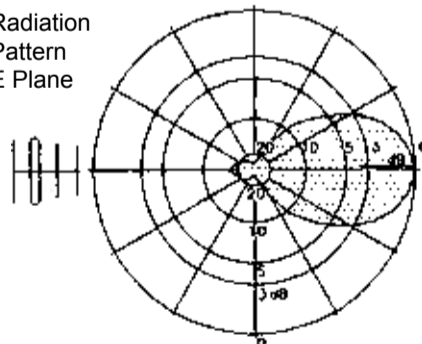


WS 403 02 21 .

Radiation Pattern H Plane



Radiation Pattern E Plane



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**TYPE NO.**

vertical polarization  
**WS 403 02 11 5: 225 - 270 MHz**  
**WS 403 02 11 6: 260 - 310 MHz**  
**WS 403 02 11 7: 310 - 370 MHz**  
**WS 403 02 11 8: 350 - 400 MHz**  
**WS 403 02 11 9: 400 - 470 MHz**  
horizontal polarization  
**WS 403 02 21 5: 225 - 270 MHz**  
**WS 403 02 21 6: 260 - 310 MHz**  
**WS 403 02 21 7: 310 - 370 MHz**  
**WS 403 02 21 8: 350 - 400 MHz**  
**WS 403 02 21 9: 400 - 470 MHz**

**IMPEDANCE**

50 Ω

**GAIN**

5 dB (ref. λ/2 dipole)

**VSWR**

< 1.3, at the limits of the band <1.4

**POWER**

max. 150 watts

**3 dB BEAMWIDTH**

in polarization, E-plane: 66°  
vertical to pol., H-plane: 110°

**TERMINATION**

2 m cable RG 213/U ending with N male  
other termination on request

**GROUNDING**

all metal parts are DC grounded

**MOUNTING**

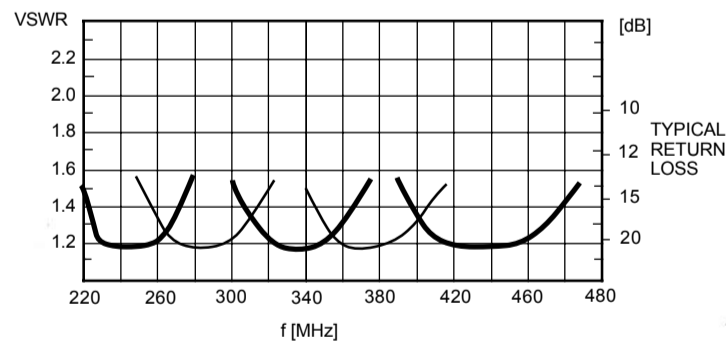
*mast-ø*                      *clamp*  
30 - 80 mm                  WG 11 (standard)  
50 - 104 mm                WG 12 (option)  
clamp for other mast-ø on request

**MATERIAL**

aluminium, bolts of stainless steel, weather-resistant plastics

**WEIGHT**  
**WIND AREA**  
**WIND LOAD**

~2 kg  
0.04 m<sup>2</sup>  
51 N (150 km/h)  
38 N (130 km/h)

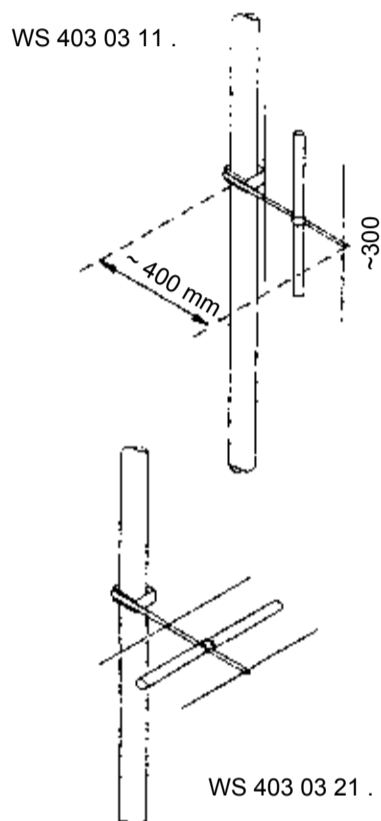


WIPIC reserves the right to amend specifications in the light of continuing development.

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**3-ELEMENT YAGI ANTENNA**

**WS 403 03 .1 .  
225 ... 470 MHz**



**TYPE NO.** vertical polarization  
**WS 403 03 11 5:** 225 - 270 MHz  
**WS 403 03 11 6:** 260 - 310 MHz  
**WS 403 03 11 7:** 310 - 370 MHz  
**WS 403 03 11 8:** 350 - 400 MHz  
**WS 403 03 11 9:** 400 - 470 MHz  
 horizontal polarization  
**WS 403 03 21 5:** 225 - 270 MHz  
**WS 403 03 21 6:** 260 - 310 MHz  
**WS 403 03 21 7:** 310 - 370 MHz  
**WS 403 03 21 8:** 350 - 400 MHz  
**WS 403 03 21 9:** 400 - 470 MHz

**DESCRIPTION** heavy duty, with radome  
 The radome protects the antenna dipole from environmental influences, icing, and increases the lightning protection.

**IMPEDANCE** 50 Ω

**GAIN** 5 dB (ref. λ/2 dipole)

**VSWR** < 1.3, at the limits of the band <1.4

**POWER** max. 150 watts

**3 dB BEAMWIDTH** in polarization, E-plane: 66°  
 vertical to pol., H-plane: 110°

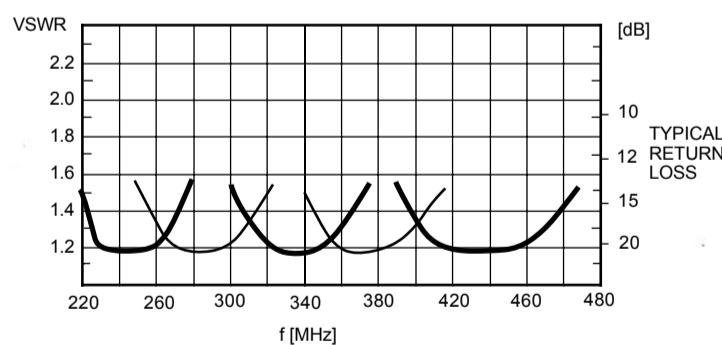
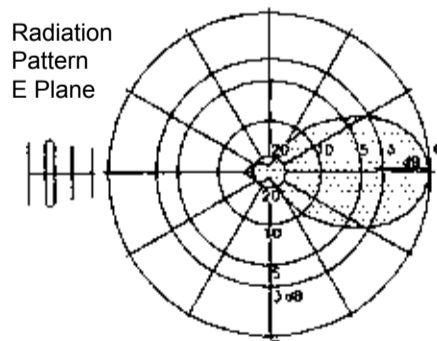
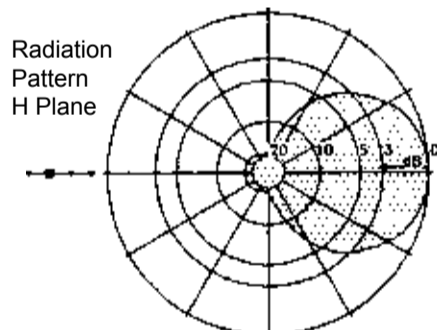
**TERMINATION** 2 m cable RG 213/U ending with N male  
 other termination on request

**GROUNDING** all metal parts are DC grounded

**MOUNTING** mast-ø clamp  
 30 - 80 mm WG 13 (standard)  
 50 - 104 mm WG 14 (option)  
 clamp for other mast-ø on request

**MATERIAL** aluminium, bolts of stainless steel, weather-resistant  
 plastics, radome of UV-stabilized polyethylene

**WEIGHT** ~3.5 kg  
**WIND AREA** ~.07 m<sup>2</sup>  
**WIND LOAD** 90 N (150 km/h)  
 70 N (130 km/h)

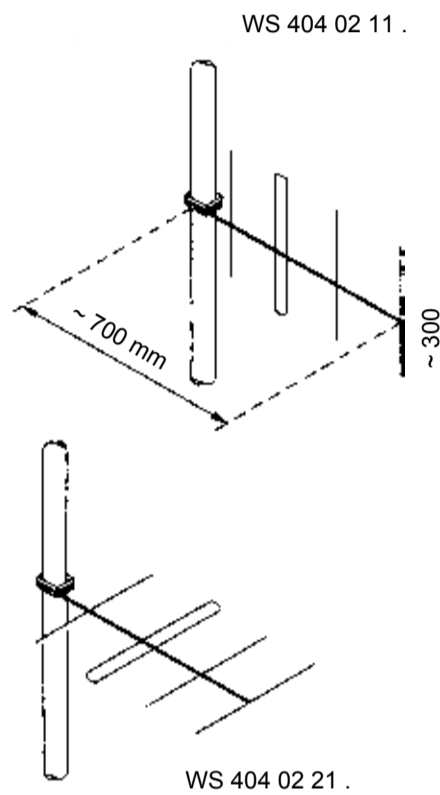


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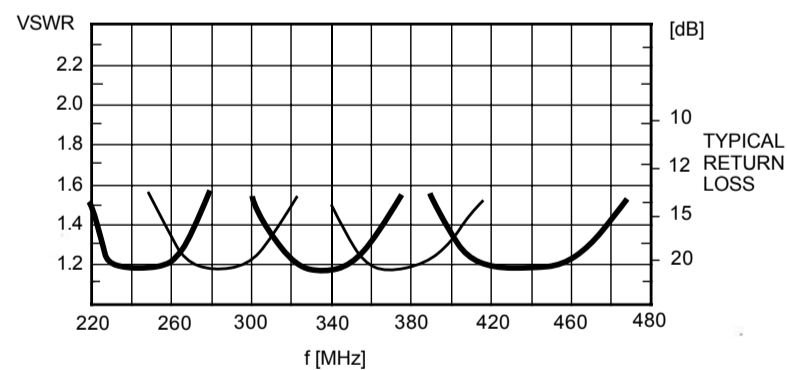
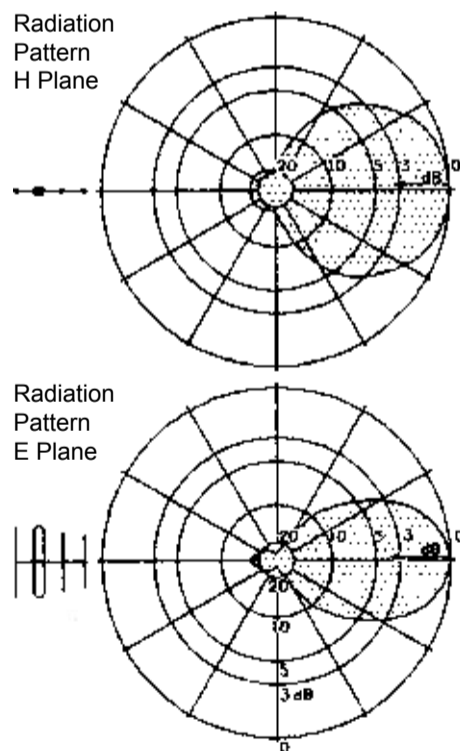
**4-ELEMENT YAGI ANTENNA**  
**WS 404 02 .1 .**  
**225 ... 470 MHz**



**TYPE NO.** vertical polarization  
**WS 404 02 11 5:** 225 - 270 MHz  
**WS 404 02 11 6:** 260 - 310 MHz  
**WS 404 02 11 7:** 310 - 370 MHz  
**WS 404 02 11 8:** 350 - 400 MHz  
**WS 404 02 11 9:** 400 - 470 MHz  
 horizontal polarization  
**WS 404 02 21 5:** 225 - 270 MHz  
**WS 404 02 21 6:** 260 - 310 MHz  
**WS 404 02 21 7:** 310 - 370 MHz  
**WS 404 02 21 8:** 350 - 400 MHz  
**WS 404 02 21 9:** 400 - 470 MHz

**IMPEDANCE** 50  $\Omega$   
**GAIN** 6.5 dB (ref.  $\lambda/2$  dipole)  
**VSWR** < 1.3, at the limits of the band < 1.4  
**POWER** max. 150 watts  
**3 dB BEAMWIDTH** in polarization, E-plane: 58°  
 vertical to pol., H-plane: 90°  
**TERMINATION** 2 m cable RG 213/U ending with N male  
 other termination on request  
**GROUNDING** all metal parts are DC grounded  
**MOUNTING** *mast- $\emptyset$*  *clamp*  
 30 - 80 mm WG 11 (standard)  
 50 - 104 mm WG 12 (option)  
 clamp for other mast- $\emptyset$  on request

**MATERIAL** aluminium, bolts of stainless steel, weather-resistant plastics  
**WEIGHT** 1.5 kg  
**WIND AREA** 0.04 m<sup>2</sup>  
**WIND LOAD** 51 N (150 km/h)  
 38 N (130 km/h)

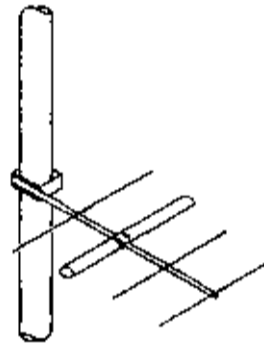
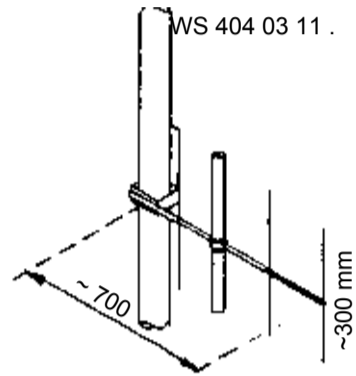


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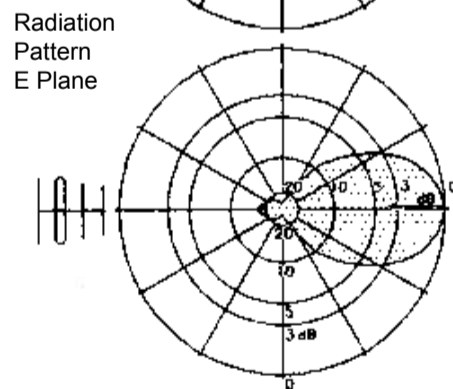
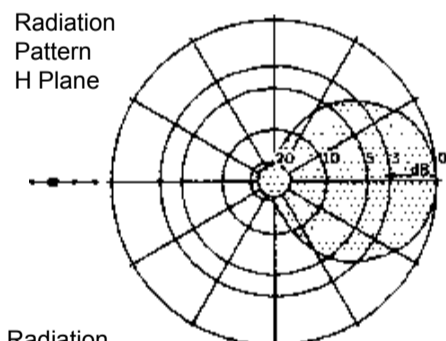
WIPIC reserves the right to amend specifications in the light of continuing development.

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**4-ELEMENT YAGI ANTENNA**  
**WS 404 03 .1 .**  
**225 ... 470 MHz**



WS 404 03 21 .



**TYPE NO.** vertical polarization  
**WS 404 03 11 5: 225 - 270 MHz**  
**WS 404 03 11 6: 260 - 310 MHz**  
**WS 404 03 11 7: 310 - 370 MHz**  
**WS 404 03 11 8: 350 - 400 MHz**  
**WS 404 03 11 9: 400 - 470 MHz**  
 horizontal polarization  
**WS 404 03 21 5: 225 - 270 MHz**  
**WS 404 03 21 6: 260 - 310 MHz**  
**WS 404 03 21 7: 310 - 370 MHz**  
**WS 404 03 21 8: 350 - 400 MHz**  
**WS 404 03 21 9: 400 - 470 MHz**

**DESCRIPTION** heavy duty, with radome  
 The radome protects the antenna dipole from environmental influences, icing, and increases the lightning protection.

**IMPEDANCE** 50 Ω

**GAIN** 6.5 dB (ref. λ/2 dipole)

**VSWR** < 1.3, at the limits of the band <1.4

**POWER** max. 150 watts

**3 dB BEAMWIDTH** in polarization, E-plane: 58°  
 vertical to pol., H-plane: 90°

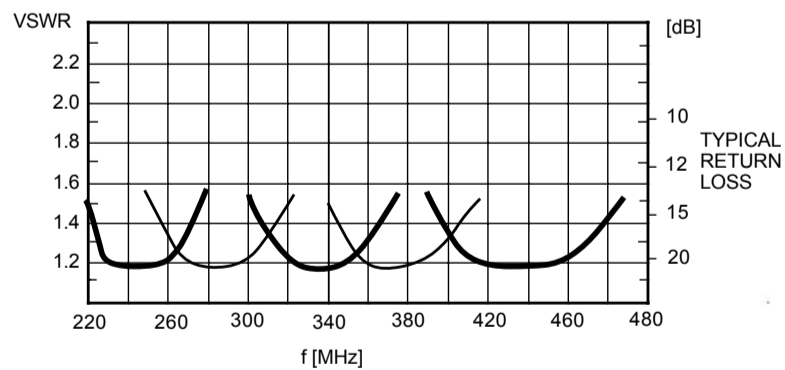
**TERMINATION** 2 m cable RG 213/U ending with N male  
 other termination on request

**GROUNDING** all metal parts are DC grounded

**MOUNTING** mast-ø clamp  
 30 - 80 mm WG 15 (standard)  
 50 - 104 mm WG 16 (option)  
 clamp for other mast-ø on request

**MATERIAL** aluminium, bolts of stainless steel, weather-resistant  
 plastics, radome of UV-stabilized polyethylene

**WEIGHT** 4 kg  
**WIND AREA** 0.1 m<sup>2</sup>  
**WIND LOAD** 128 N (150 km/h)  
 96 N (130 km/h)



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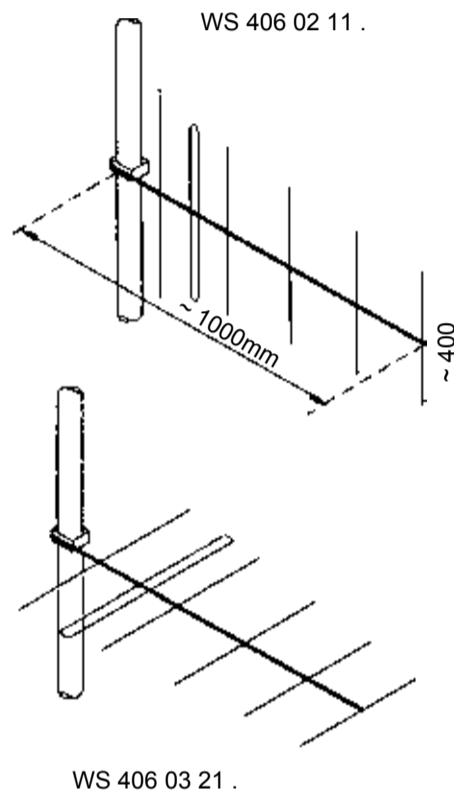
WIPIC reserves the right to amend specifications in the light of continuing development.



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**6-ELEMENT YAGI ANTENNA**

**WS 406 02 .1 .  
220 ... 470 MHz**



**TYPE NO.** WS 406 02 11 6: 220 - 290 MHz vertical polarization  
 WS 406 02 11 7: 270 - 350 MHz vertical polarization  
 WS 406 02 11 8: 320 - 390 MHz vertical polarization  
 WS 406 02 11 9: 380 - 470 MHz vertical polarization

WS 406 02 21 6: 220 - 290 MHz horizontal polarization  
 WS 406 02 21 7: 270 - 350 MHz horizontal polarization  
 WS 406 02 21 8: 320 - 390 MHz horizontal polarization  
 WS 406 02 21 9: 380 - 470 MHz horizontal polarization  
 further frequencies on request

**IMPEDANCE** 50 Ω

**GAIN** 8.5 dB (ref. to λ/2 dipole)  
 F/B: ~ 20 dB

**VSWR** < 1.3, at the limits of the band < 1.4

**POWER** max. 150 watts, higher power on request

**3 dB BEAMWIDTH** in polarization, E-plane: 48°  
 vertical to pol. H-plane: 70°

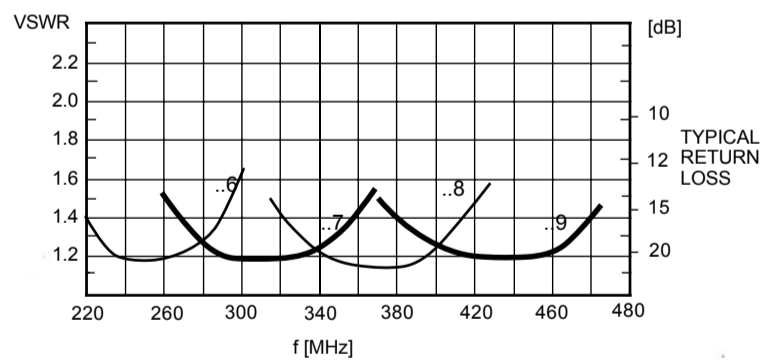
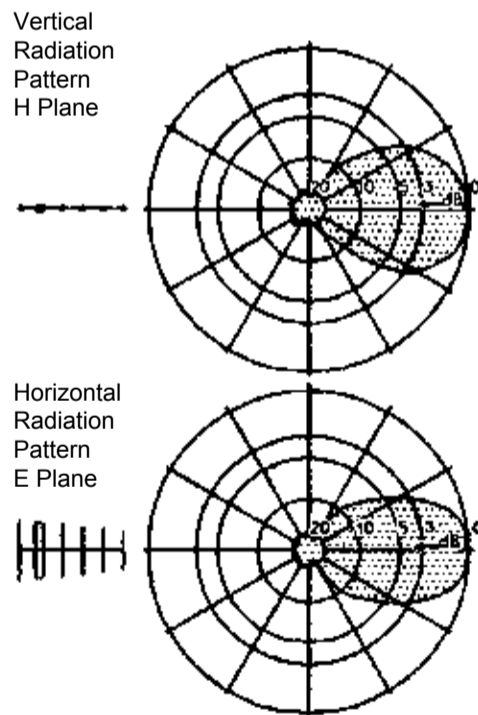
**TERMINATION** 2 m cable RG 213/U ending with N male  
 other termination on request

**GROUNDING** all metal parts are DC grounded

**MOUNTING** mast ø clamp (see chapt. 10)  
 30 - 80 mm WG 11 (standard)  
 50 - 104 mm WG 12 (option)  
 clamp for other mast ø on request

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

**WEIGHT** 1.6 kg  
**WIND AREA** 0.05 m²  
**WIND LOAD** 65 N 150 km/h  
 47 N 130 km/h



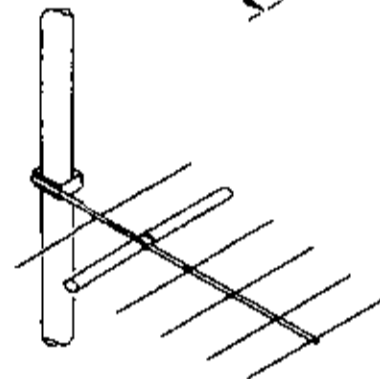
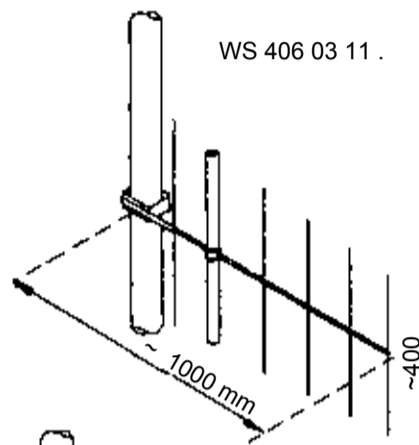
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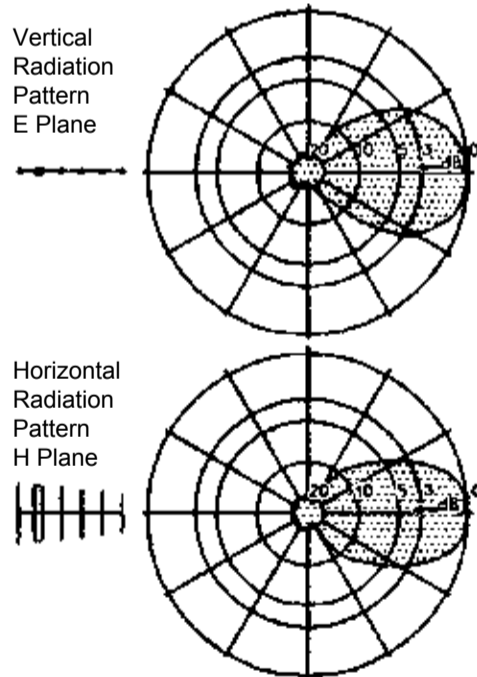


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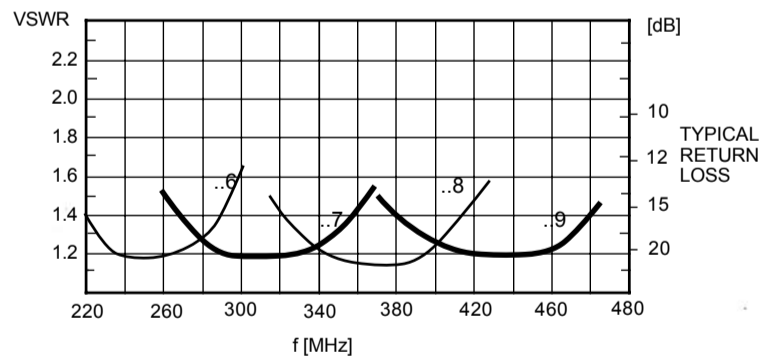
**6-ELEMENT YAGI ANTENNA  
WS 406 03 .1 .  
220 ... 470 MHz**



WS 406 03 21 .



|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               |                                      |            |                  |             |                |  |                                   |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------------------|------------|------------------|-------------|----------------|--|-----------------------------------|
| <b>TYPE NO.</b>       | <p>WS 406 03 11 6: 220 - 290 MHz vertical polarization<br/>                 WS 406 03 11 7: 270 - 350 MHz vertical polarization<br/>                 WS 406 03 11 8: 320 - 390 MHz vertical polarization<br/>                 WS 406 03 11 9: 380 - 470 MHz vertical polarization</p> <p>WS 406 03 21 6: 220 - 290 MHz horizontal polarization<br/>                 WS 406 03 21 7: 270 - 350 MHz horizontal polarization<br/>                 WS 406 03 21 8: 320 - 390 MHz horizontal polarization<br/>                 WS 406 03 21 9: 380 - 470 MHz horizontal polarization<br/>                 further frequencies on request</p> |               |                                      |            |                  |             |                |  |                                   |
| <b>DESCRIPTION</b>    | heavy duty, with radome<br>The radome protects the antenna dipole from environmental influences, icing, and increases the lightning protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                                      |            |                  |             |                |  |                                   |
| <b>IMPEDANCE</b>      | 50 Ω                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |                                      |            |                  |             |                |  |                                   |
| <b>GAIN</b>           | 8.5 dB (ref. to λ/2 dipol)<br>F/B: ~ 20 dB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |               |                                      |            |                  |             |                |  |                                   |
| <b>VSWR</b>           | < 1.3, at the limits of the band < 1.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |                                      |            |                  |             |                |  |                                   |
| <b>POWER</b>          | max. 150 watts, higher power on request                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |               |                                      |            |                  |             |                |  |                                   |
| <b>3 dB BEAMWIDTH</b> | in polarization, E-plane: 48°<br>vertical to pol. H-plane: 70°                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                                      |            |                  |             |                |  |                                   |
| <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>       | <table border="0"> <tr> <td><i>mast</i> ø</td> <td><i>clamp</i> (see <i>chapt. 10</i>)</td> </tr> <tr> <td>30 - 80 mm</td> <td>WG 15 (standard)</td> </tr> <tr> <td>50 - 104 mm</td> <td>WG 16 (option)</td> </tr> <tr> <td></td> <td>clamp for other mast ø on request</td> </tr> </table>                                                                                                                                                                                                                                                                                                                                             | <i>mast</i> ø | <i>clamp</i> (see <i>chapt. 10</i> ) | 30 - 80 mm | WG 15 (standard) | 50 - 104 mm | WG 16 (option) |  | clamp for other mast ø on request |
| <i>mast</i> ø         | <i>clamp</i> (see <i>chapt. 10</i> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |                                      |            |                  |             |                |  |                                   |
| 30 - 80 mm            | WG 15 (standard)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |                                      |            |                  |             |                |  |                                   |
| 50 - 104 mm           | WG 16 (option)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                                      |            |                  |             |                |  |                                   |
|                       | clamp for other mast ø on request                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |               |                                      |            |                  |             |                |  |                                   |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, weather-resistant plastics , radome of UV-stabilized polyethylene                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |                                      |            |                  |             |                |  |                                   |
| <b>WEIGHT</b>         | 4.5 kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |                                      |            |                  |             |                |  |                                   |
| <b>WIND AREA</b>      | 0.12 m <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               |                                      |            |                  |             |                |  |                                   |
| <b>WIND LOAD</b>      | 155 N 150 km/h<br>115 N 130 km/h                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |                                      |            |                  |             |                |  |                                   |



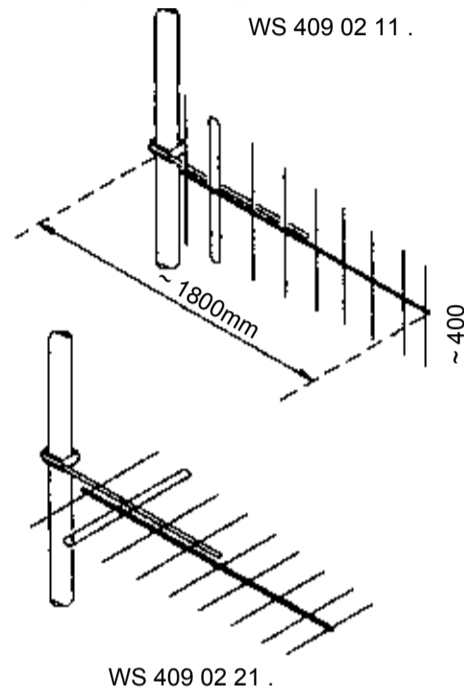
KW 1-08

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

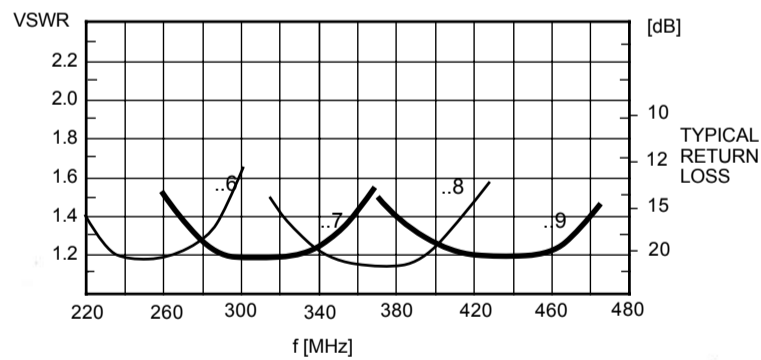
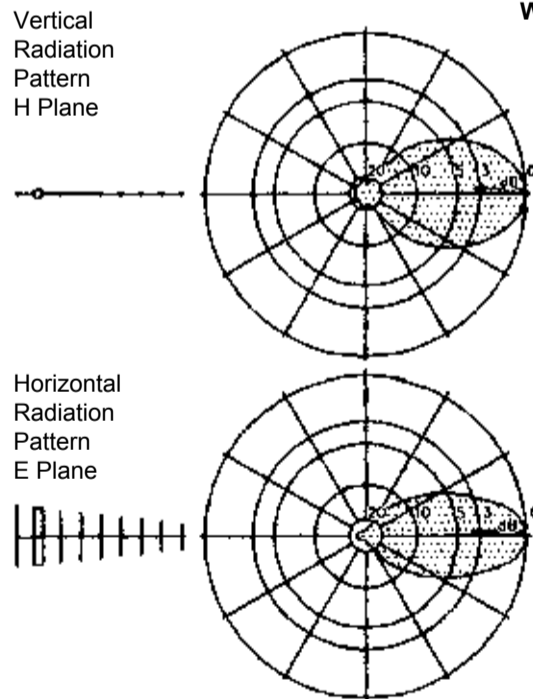
**wipic**

**9-ELEMENT YAGI ANTENNA**

**WS 409 02 .1 .  
335 ... 470 MHz**



|                       |                                                                                                                                                                                                                                                                            |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE NO.</b>       | <b>WS 409 02 11 8: 335 - 385 MHz vertical polaris.</b><br><b>WS 409 02 11 9: 385 - 470 MHz vertical polaris.</b><br><b>WS 409 02 21 8: 335 - 385 MHz horizontal polaris.</b><br><b>WS 409 02 21 9: 385 - 470 MHz horizontal polaris.</b><br>further frequencies on request |
| <b>IMPEDANCE</b>      | 50 Ω                                                                                                                                                                                                                                                                       |
| <b>GAIN</b>           | 10 dB (ref. to λ/2 dipol)<br>F/B: ~20 dB                                                                                                                                                                                                                                   |
| <b>VSWR</b>           | < 1.3, at the limits of the band < 1.5                                                                                                                                                                                                                                     |
| <b>POWER</b>          | max. 150 watts, higher power on request                                                                                                                                                                                                                                    |
| <b>3 dB BEAMWIDTH</b> | in polarization, E-plane: 40°<br>vertical to pol. H-plane: 56°                                                                                                                                                                                                             |
| <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>       | <i>mast</i> ∅ <i>clamp (see chapt. 10)</i><br>30 - 80 mm    WG 15 (standard)<br>50 - 104 mm   WG 16 (option)<br>clamp for other mast ∅ on request                                                                                                                          |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, weather-resistant plastics                                                                                                                                                                                                            |
| <b>WEIGHT</b>         | 2 kg                                                                                                                                                                                                                                                                       |
| <b>WIND AREA</b>      | 0.08 m <sup>2</sup>                                                                                                                                                                                                                                                        |
| <b>WIND LOAD</b>      | 100 N 150 km/h<br>75 N 130 km/h                                                                                                                                                                                                                                            |



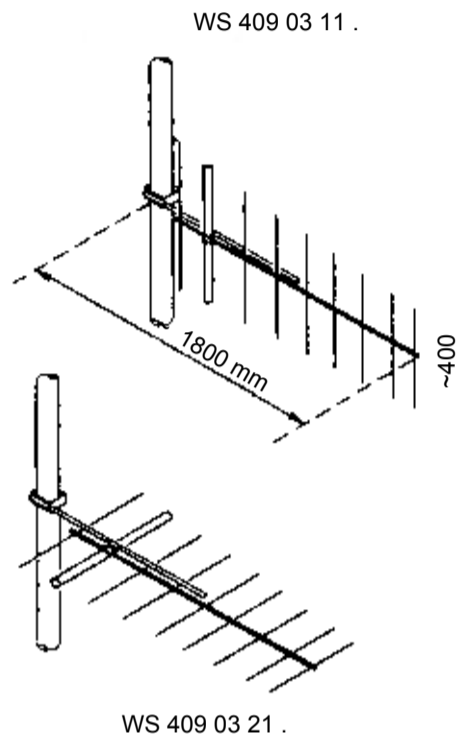
KW 1-08

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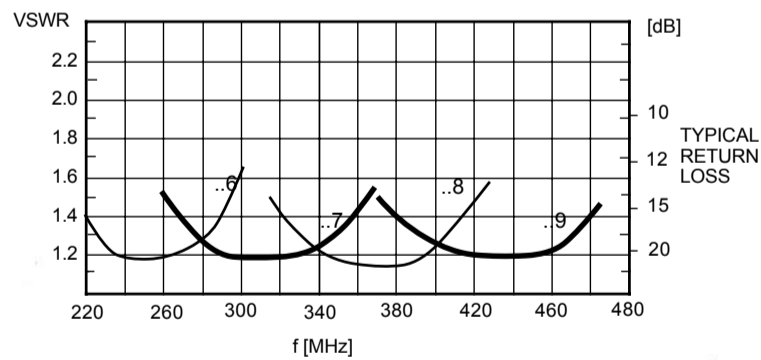
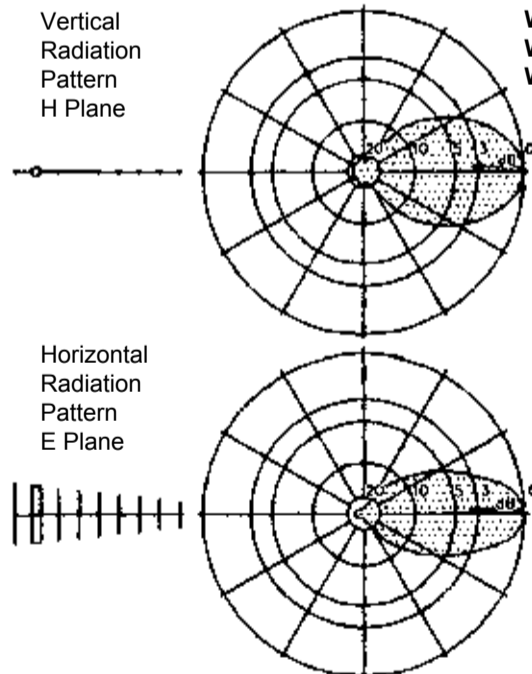
**9-ELEMENT YAGI ANTENNA**

**WS 409 03 .1 .  
335 ... 470 MHz**



WS 409 03 21 .

|                       |                                                                                                                                                                                                                                                                                    |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE NO.</b>       | <b>WS 409 03 11 8: 335 - 385 MHz</b> vertical polarization<br><b>WS 409 03 11 9: 386 - 470 MHz</b> vertical polarization<br><b>WS 409 03 21 8: 335 - 385 MHz</b> horizontal polaris.<br><b>WS 409 03 21 9: 390 - 470 MHz</b> horizontal polaris.<br>further frequencies on request |
| <b>DESCRIPTION</b>    | heavy duty, with radome<br>The radome protects the antenna dipole against environmental influences, icing, and increases the lightning protection.                                                                                                                                 |
| <b>IMPEDANCE</b>      | 50 Ω                                                                                                                                                                                                                                                                               |
| <b>GAIN</b>           | 10 dB (ref. to λ/2 dipole)<br>F/B: ~ 20 dB                                                                                                                                                                                                                                         |
| <b>VSWR</b>           | < 1.3, at the limits of the band < 1.5                                                                                                                                                                                                                                             |
| <b>POWER</b>          | max. 150 watts, higher power on request                                                                                                                                                                                                                                            |
| <b>3 dB BEAMWIDTH</b> | in polarization, E-plane: 40°<br>vertical to pol. H-plane: 56°                                                                                                                                                                                                                     |
| <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>       | <i>mast ø</i> <i>clamp (see chapt. 10)</i><br>30 - 80 mm    WG 17 (standard)<br>50 - 104 mm    WG 18 (option)<br>clamp for other mast ø on request                                                                                                                                 |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, weather-resistant plastics, radome of UV-stabilized polyethylene                                                                                                                                                                              |
| <b>WEIGHT</b>         | 4.5 kg                                                                                                                                                                                                                                                                             |
| <b>WIND AREA</b>      | 0.13 m <sup>2</sup> 0.58 m <sup>2</sup>                                                                                                                                                                                                                                            |
| <b>WIND LOAD</b>      | 165 N (150 km/h)<br>125 N (130 km/h)                                                                                                                                                                                                                                               |

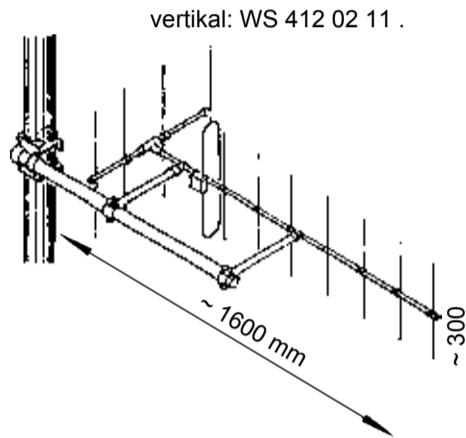


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**wipic**

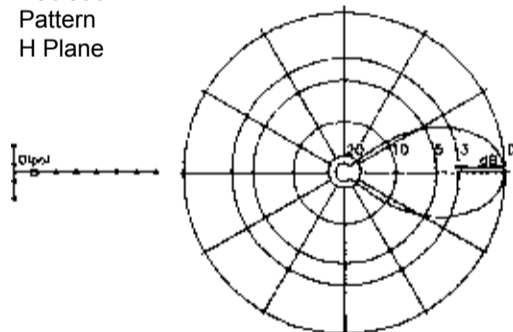
**12 ELEMENT YAGI ANTENNA**  
**WS 412 02 1. .**  
**350 ... 470 MHz**



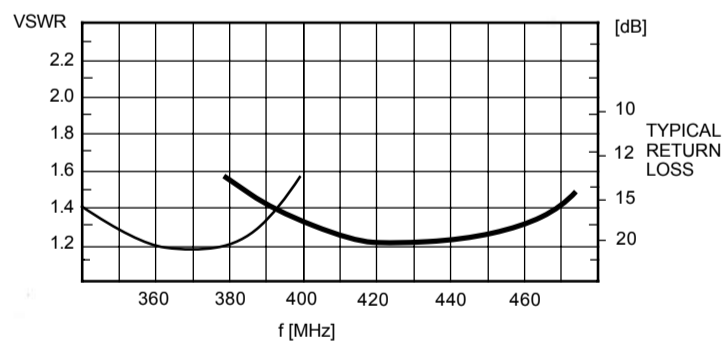
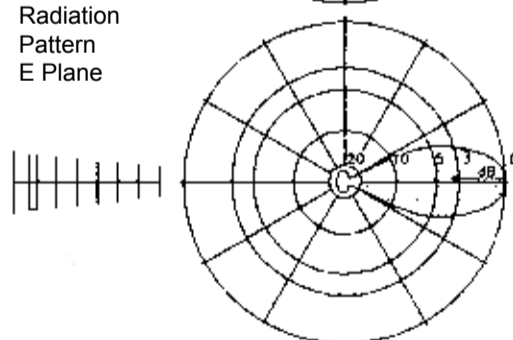
horizontale Polarisation: WS 412 02 21 .  
 durch Drehung um Ausleger

|                       |                                                                                                                                                                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE NO.</b>       | vertical polarization<br><b>WS 412 02 11 8: 350 - 390 MHz</b><br><b>WS 412 02 11 9: 390 - 470 MHz</b><br>horizontal polarization<br><b>WS 412 02 21 8: 350 - 390 MHz</b><br><b>WS 412 02 21 9: 390 - 470 MHz</b><br>further frequencies on request |
| <b>IMPEDANCE</b>      | 50 Ω                                                                                                                                                                                                                                               |
| <b>GAIN</b>           | 11 dB (ref. λ/2 dipole)<br>F/B : ≥ 22 dB                                                                                                                                                                                                           |
| <b>VSWR</b>           | < 1.3, at the limits of the band <1.4                                                                                                                                                                                                              |
| <b>POWER</b>          | max. 150 watts                                                                                                                                                                                                                                     |
| <b>3 dB BEAMWIDTH</b> | in polarization, E-plane: 36°<br>vertical to pol., H-plane: 48°                                                                                                                                                                                    |
| <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>       | <i>mast-ø</i> <i>clamp</i><br>30 - 80 mm                WG 17 (standard)<br>50 - 104 mm              WG 18 (option)<br>clamp for other mast-ø on request                                                                                           |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, weather-resistant<br>plastics                                                                                                                                                                                 |
| <b>WEIGHT</b>         | 3.2 kg                                                                                                                                                                                                                                             |
| <b>WIND AREA</b>      | 0.1 m <sup>2</sup>                                                                                                                                                                                                                                 |
| <b>WIND LOAD</b>      | 128 N (150 km/h)<br>96 N (130 km/h)                                                                                                                                                                                                                |

Radiation  
 Pattern  
 H Plane



Radiation  
 Pattern  
 E Plane

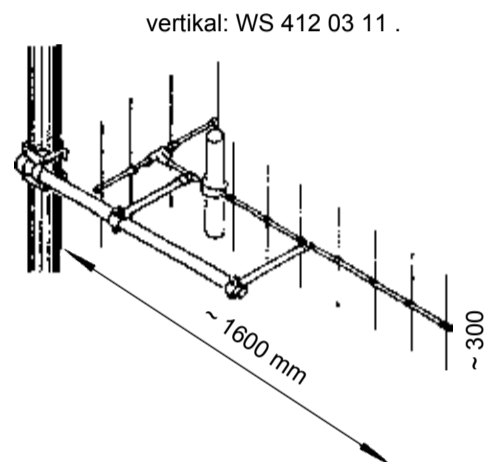


KW 1-08

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



**12 ELEMENT YAGI ANTENNA**  
**WS 412 03 1. .**  
**340 ... 470 MHz**



horizontale Polarisation: WS 412 03 21 .  
 durch Drehung um Ausleger

**TYPE NO.** vertical polarization  
**WS 412 03 11 8: 340 - 390 MHz**  
**WS 412 03 11 9: 390 - 470 MHz**  
 horizontal polarization  
**WS 412 03 21 8: 340 - 390 MHz**  
**WS 412 03 21 9: 390 - 470 MHz**  
 further frequencies on request

**DESCRIPTION** heavy duty, with radome  
 The radome protects the antenna dipole from environmental influences, icing, and increases the lightning protection.

**IMPEDANCE** 50  $\Omega$

**GAIN** 11 dB (ref.  $\lambda/2$  dipole)  
 F/B :  $\geq 22$  dB

**VSWR** < 1.3, at the limits of the band < 1.4

**POWER** max. 150 watts

**3 dB BEAMWIDTH** in polarization, E-plane: 36°  
 vertical to pol., H-plane: 48°

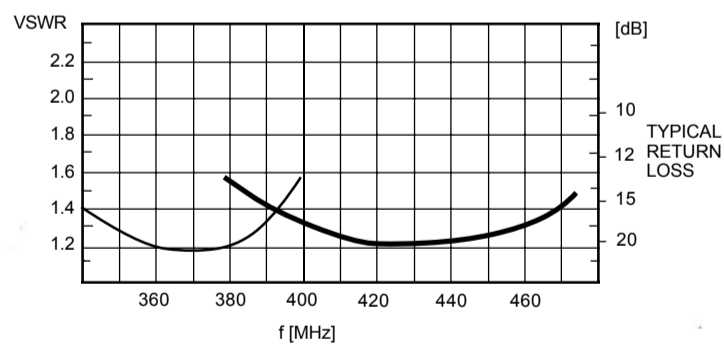
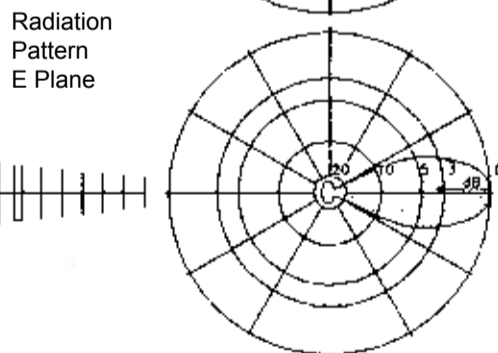
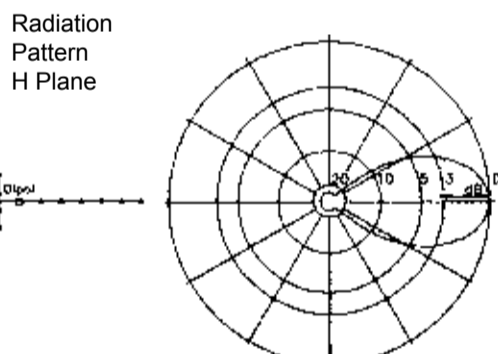
**TERMINATION** 2 m cable RG 213/U ending with N male  
 other termination on request

**GROUNDING** all metal parts are DC grounded

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

**MATERIAL** aluminium, bolts of stainless steel, weather-resistant plastics, radome of UV-stabilized polyethylene

**WEIGHT** 5.6 kg  
**WIND AREA** 0.155 m<sup>2</sup>  
**WIND LOAD** 197 N (150 km/h)  
 148 N (130 km/h)



KW 1-08

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

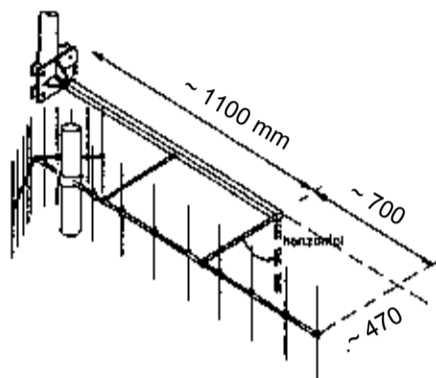
**wipic**

**19-ELEMENT YAGI ANTENNA**

**WS 419 03 .1 9**

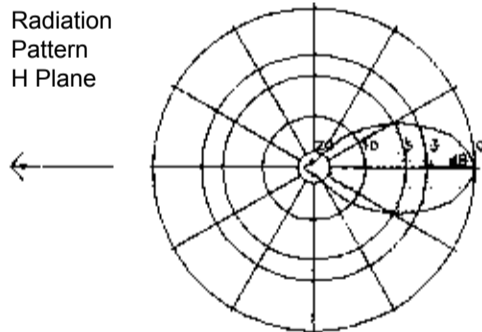
**380 - 470 MHz**

WS 419 03 11 9

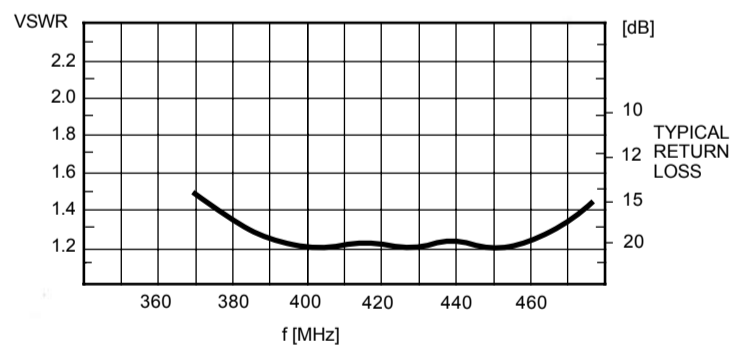
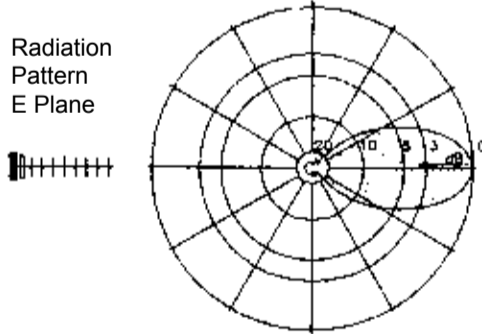


|                       |                                                                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE NO.</b>       | <b>WS 419 03 11 9: 380 - 470 MHz vertical polariz.</b><br><b>WS 419 03 21 9: 380 - 470 MHz horizontal polariz.</b><br>further frequencies on request |
| <b>DESCRIPTION</b>    | heavy duty, with radome<br>The radome protects the antenna dipole against environmental influences, icing, and increases the lightning protection.   |
| <b>IMPEDANCE</b>      | 50 Ω                                                                                                                                                 |
| <b>GAIN</b>           | 11.5 dB (ref. to λ/2 dipole)<br>F/B: ~ 25 dB                                                                                                         |
| <b>VSWR</b>           | < 1.3, at the limits of the band < 1.5                                                                                                               |
| <b>POWER</b>          | max. 250 watts, higher power on request                                                                                                              |
| <b>3 dB BEAMWIDTH</b> | in polarization, E-plane: 39°<br>vertical to pol. H-plane: 45°                                                                                       |
| <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>       | <i>mast</i> ∅ <i>clamp</i> (see chapt. 10)<br>50 - 104 mm    WG 52 (standard)<br>clamps for other mast ∅ on request                                  |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, radome of UV-stabilized polyethylene                                                                            |
| <b>WEIGHT</b>         | 14.5 kg                                                                                                                                              |
| <b>WIND AREA</b>      | 0.15 m <sup>2</sup>                                                                                                                                  |
| <b>WIND LOAD</b>      | 192 N (150 km/h)<br>145 N (130 km/h)<br>340 N (200 km/h)                                                                                             |

Radiation  
Pattern  
H Plane



Radiation  
Pattern  
E Plane



KW 1-08

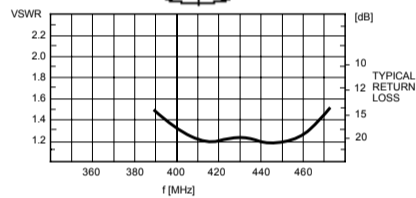
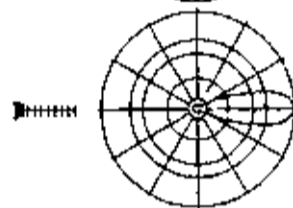
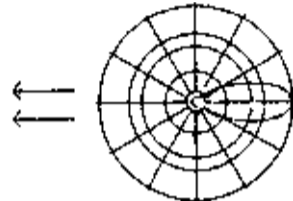
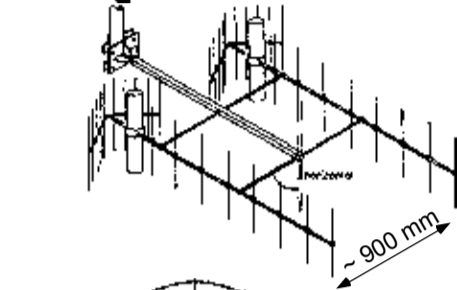
WIPIC reserves the right to amend specifications in the light of continuing development.



**wipic**

**19-ELEMENT YAGI ANTENNA DUO/QUADRO**

**WS 419 03 .1 .  
380 ... 470 MHz**



**TYPE NO.** WS 419 03 11 9 DUO: 380 - 470 MHz vertical polarization  
WS 419 03 21 9 DUO: 380 - 470 MHz horizontal pol.  
further frequencies on request

**IMPEDANCE** 50 Ω

**GAIN** 14 dB (ref. to λ/2 dipole)  
F/B: ~25 dB

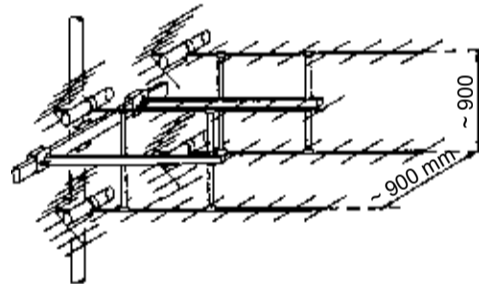
**VSWR** < 1.3

**POWER** max. 250 watts, higher power on request

**3 dB BEAMWIDTH** in polarization, E-plane: 39°  
vertical to pol. H-plane: 22°

**TERMINATION** in the junction box WAK 1 ending with N female  
other termination on request

**WEIGHT** 20 kg  
**WIND AREA** 0.38 m<sup>2</sup>  
**WIND LOAD** 860 N (200 km/h)  
480 N (150 km/h)  
360 N (130 km/h)



**TYPE NO.** WS 419 03 .1 6 Quadro: 365 - 395 MHz  
WS 419 03 .1 7 Quadro: 395 - 425 MHz  
WS 419 03 .1 8 Quadro: 425 - 455 MHz  
WS 419 03 .1 9 Quadro: 455 - 475 MHz  
further frequencies on request

**GAIN** 16.5 dB (ref. to λ/2 dipole)  
F/B: min. 25 dB

**POWER** max. 300 watts, higher power on request

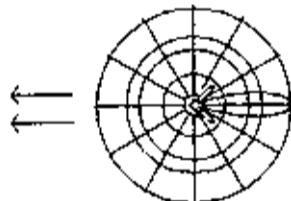
**3 dB BEAMWIDTH** in polarization, E-plane: 20°  
vertical to pol. H-plane: 22°

**TERMINATION** in the junction box WAK 1 ending with N female

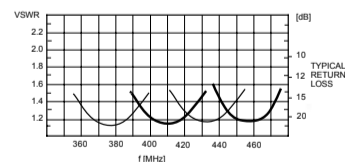
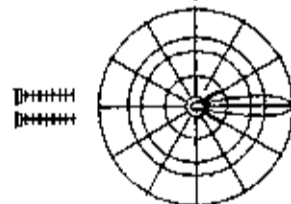
all metal parts are DC grounded

**WEIGHT** 59 kg  
**WIND AREA** 0.68 m<sup>2</sup>  
**WIND LOAD** 1550 N (200 km/h)  
870 N (150 km/h)  
650 N (130 km/h)

Radiation  
Pattern  
H Plane



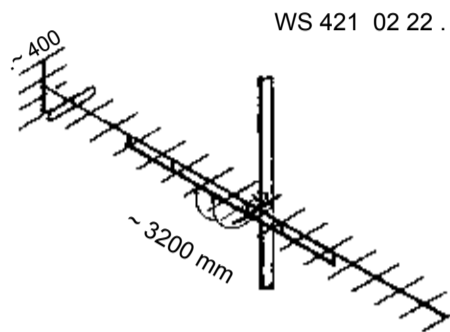
Radiation  
Pattern  
E Plane



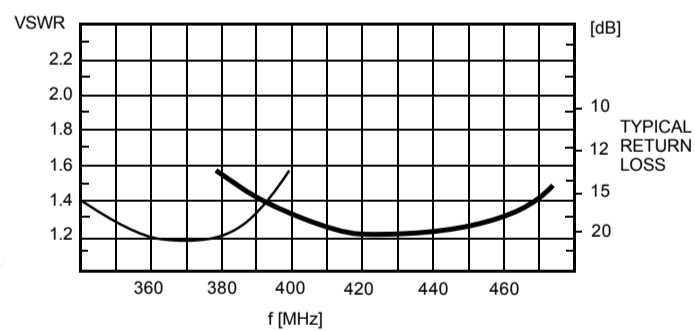
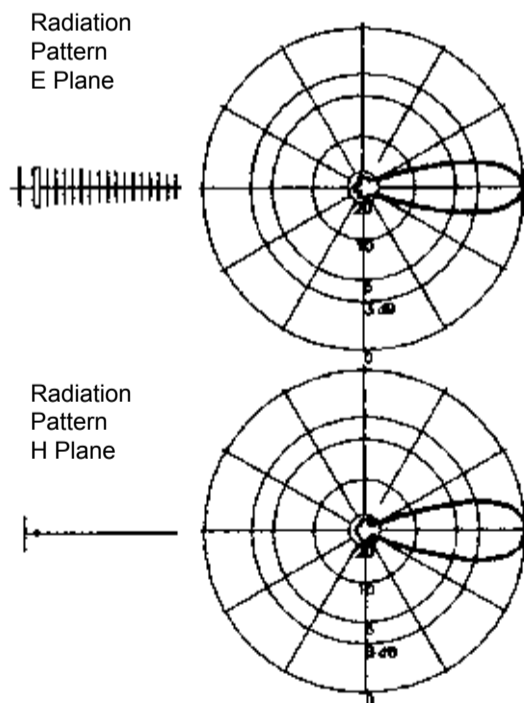
KW 1-08

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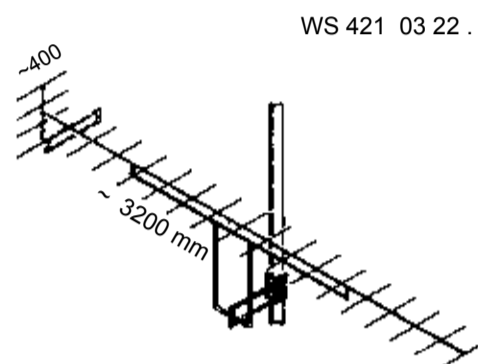

**21 ELEMENT YAGI ANTENNA**  
**WS 421 02 22 .**  
**335 ... 470 MHz**


|                       |                                                                                                                                                              |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE NO.</b>       | <b>WS 421 02 22 8: 335 - 385 MHz</b><br><b>WS 421 02 22 9: 380 - 470 MHz</b><br>further frequencies on request                                               |
| <b>POLARISATION</b>   | horizontal                                                                                                                                                   |
| <b>IMPEDANCE</b>      | 50 Ω                                                                                                                                                         |
| <b>GAIN</b>           | 14 dB (ref. λ/2 dipole)                                                                                                                                      |
| <b>VSWR</b>           | < 1.3, at the limits of the band <1.4                                                                                                                        |
| <b>POWER</b>          | max. 150 watts                                                                                                                                               |
| <b>3 dB BEAMWIDTH</b> | in polarization, E-plane: 26°<br>vertical to pol., H-plane: 31°                                                                                              |
| <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>       | <i>mast-∅</i> <i>clamp</i><br>30 - 80 mm                  WG 57 (standard)<br>50 - 104 mm                WG 58 (option)<br>clamp for other mast-∅ on request |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, weather-resistant<br>plastics                                                                                           |
| <b>WEIGHT</b>         | 5.4 kg                                                                                                                                                       |
| <b>WIND AREA</b>      | 0.22 m <sup>2</sup>                                                                                                                                          |
| <b>WIND LOAD</b>      | 280 N (150 km/h)<br>210 N (130 km/h)                                                                                                                         |

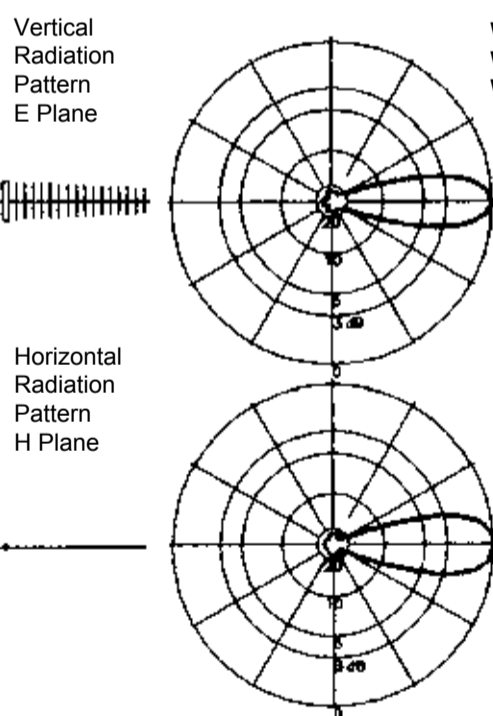


KW 1-08

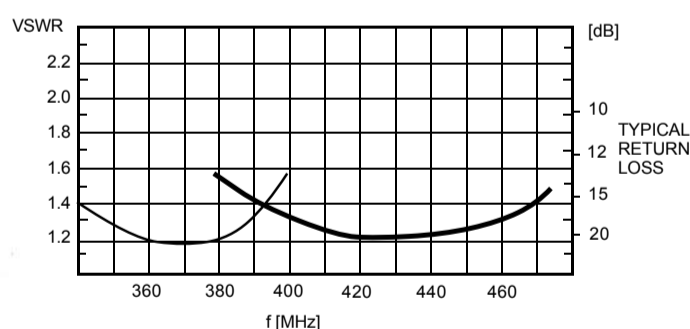
WIPIC reserves the right to amend specifications in the light of continuing development.


**21 ELEMENT YAGI ANTENNA**
**WS 421 03 22 .**  
**335 ... 470 MHz**


|                       |                                                                                                                                                            |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE NO.</b>       | <b>WS 421 03 22 8: 335 - 385 MHz</b><br><b>WS 421 03 22 9: 380 - 470 MHz</b><br>further frequencies on request                                             |
| <b>DESCRIPTION</b>    | The radome protects the antenna dipole from environmental influences, icing, and increases the lightning protection.                                       |
| <b>POLARISATION</b>   | horizontal                                                                                                                                                 |
| <b>IMPEDANCE</b>      | 50 Ω                                                                                                                                                       |
| <b>GAIN</b>           | 14 dB (ref. λ/2 dipole)                                                                                                                                    |
| <b>VSWR</b>           | < 1.3, at the limits of the band <1.4                                                                                                                      |
| <b>POWER</b>          | max. 150 watts                                                                                                                                             |
| <b>3 dB BEAMWIDTH</b> | in polarization, E-plane: 26°<br>vertical to pol., H-plane: 31°                                                                                            |
| <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>       | <i>mast-ø</i> <i>clamp</i><br>30 - 80 mm                WG 57 (standard)<br>50 - 104 mm                WG 58 (option)<br>clamp for other mast-ø on request |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, weather-resistant plastics, radome of UV-stabilized polyethylene                                                      |



|                  |                                      |
|------------------|--------------------------------------|
| <b>WEIGHT</b>    | 9 kg                                 |
| <b>WIND AREA</b> | 0.28 m <sup>2</sup>                  |
| <b>WIND LOAD</b> | 358 N (150 km/h)<br>270 N (130 km/h) |

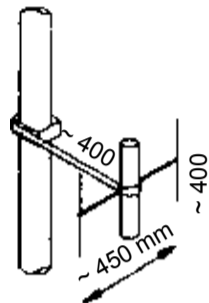


KW 1-08

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

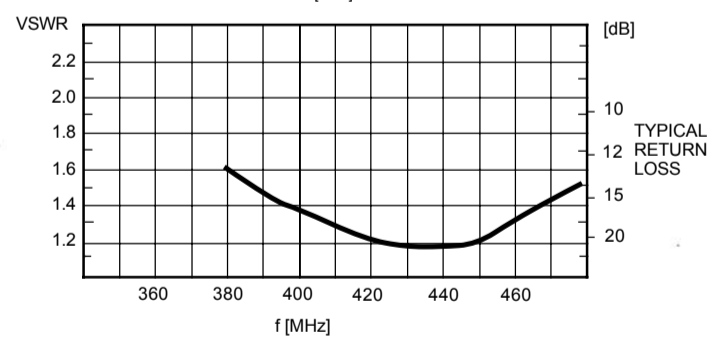
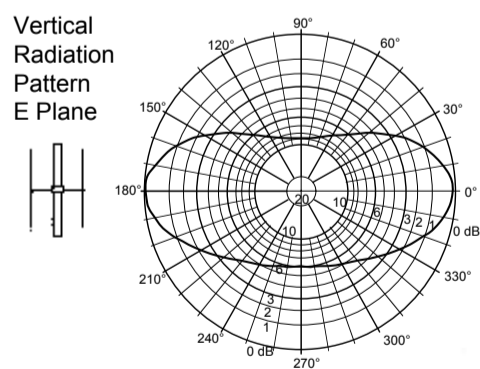
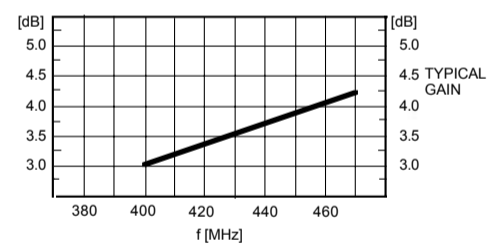
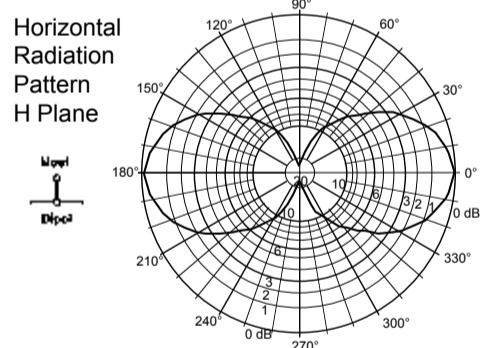
**wipic**

**BIDIRECTIONAL ANTENNA**  
**WS 441 03 12 9**  
**400 - 470 MHz**



|                       |                                                                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE NO.</b>       | <b>WS 441 03 12 9: 400 - 470 MHz</b><br>further frequencies on request                                                                                   |
| <b>DESCRIPTION</b>    | heavy duty, with radome<br>The radome protects the antenna dipole from environmental influences, icing, and increases the lightning protection.          |
| <b>POLARIZATION</b>   | vertical                                                                                                                                                 |
| <b>IMPEDANCE</b>      | 50 Ω                                                                                                                                                     |
| <b>GAIN</b>           | 2x 4 dB (ref. λ/2 dipole)                                                                                                                                |
| <b>VSWR</b>           | < 1.3, at the limits of the band <1.4                                                                                                                    |
| <b>POWER</b>          | max. 150 watts                                                                                                                                           |
| <b>3 dB BEAMWIDTH</b> | horizontal, H-plane: 2x 71°<br>vertical, E-plane: 2x 70°                                                                                                 |
| <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>       | <i>mast-ø</i> <i>clamp</i><br>30 - 80 mm                WG 17 (standard)<br>50 - 104 mm              WG 18 (option)<br>clamp for other mast-ø on request |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, radome of uv-stabilized polyethylene                                                                                |

|                  |                                     |
|------------------|-------------------------------------|
| <b>WEIGHT</b>    | 4.5 kg                              |
| <b>WIND AREA</b> | 0.08 m <sup>2</sup>                 |
| <b>WIND LOAD</b> | 105 N (150 km/h)<br>80 N (130 km/h) |

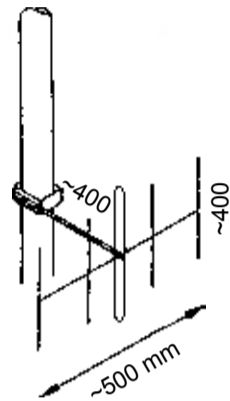


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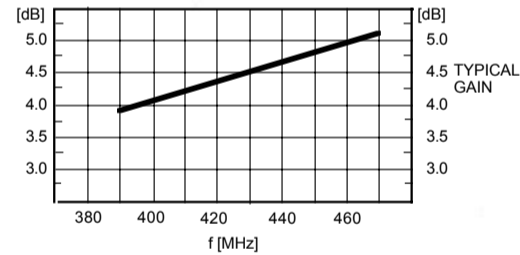
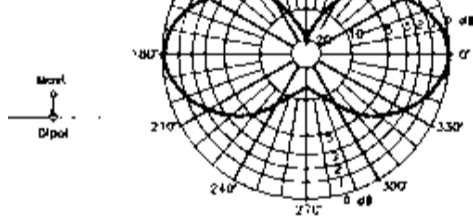
**wipic**

**BIDIRECTIONAL ANTENNA  
WS 442 02 12 9  
380 - 480 MHz**

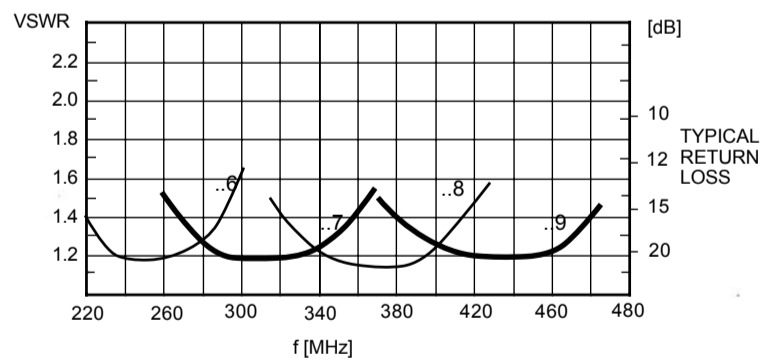
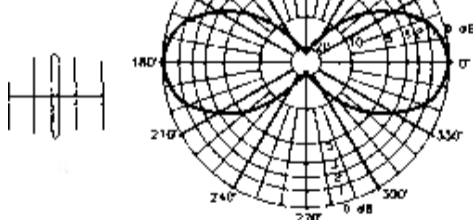


|                       |                                                                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE NO.</b>       | <b>WS 442 02 12 9: 380 - 480 MHz</b><br>further frequencies on request                                                                                   |
| <b>POLARIZATION</b>   | vertical                                                                                                                                                 |
| <b>IMPEDANCE</b>      | 50 Ω                                                                                                                                                     |
| <b>GAIN</b>           | 2x 4-5 dB (ref. λ/2 dipole)                                                                                                                              |
| <b>VSWR</b>           | < 1.3, at the limits of the band <1.4                                                                                                                    |
| <b>POWER</b>          | max. 150 watts                                                                                                                                           |
| <b>3 dB BEAMWIDTH</b> | horizontal, H-plane: 2x 103°<br>vertical, E-plane: 2x 60°                                                                                                |
| <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>       | <i>mast-ø</i> <i>clamp</i><br>30 - 80 mm                WG 13 (standard)<br>50 - 104 mm              WG 14 (option)<br>clamp for other mast-ø on request |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, weather-resistant<br>plastics                                                                                       |
| <b>WEIGHT</b>         | 2.6 kg                                                                                                                                                   |
| <b>WIND AREA</b>      | 0.08 m <sup>2</sup>                                                                                                                                      |
| <b>WIND LOAD</b>      | 102 N (150 km/h)<br>77 N (130 km/h)                                                                                                                      |

HORIZONTAL  
RADIATION  
PATTERN  
H PLANE



VERTICAL  
RADIATION  
PATTERN  
E PLANE



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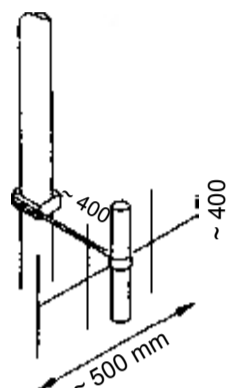
WIPIC reserves the right to amend specifications in the light of continuing development.

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**BIDIRECTIONAL ANTENNA**

**WS 442 03 12 .**

**220 ... 470 MHz**



**TYPE NO.** WS 442 03 12 6: 220 - 290 MHz  
 WS 442 03 12 7: 270 - 350 MHz  
 WS 442 03 12 8: 340 - 400 MHz  
 WS 442 03 12 9: 380 - 480 MHz  
 further frequencies on request

**DESCRIPTION** heavy duty, with radome  
 The radome protects the antenna dipole from environmental influences, icing, and increases the lightning protection.

**POLARIZATION** vertical

**IMPEDANCE** 50 Ω

**GAIN** 2x 4.5 dB (ref. λ/2 dipole)

**VSWR** < 1.3, at the limits of the band <1.4

**POWER** max. 150 watts

**3 dB BEAMWIDTH** horizontal, H-plane: 2x 103°  
 vertical, E-plane: 2x 60°

**TERMINATION** 2 m cable RG 213/U ending with N male  
 other termination on request

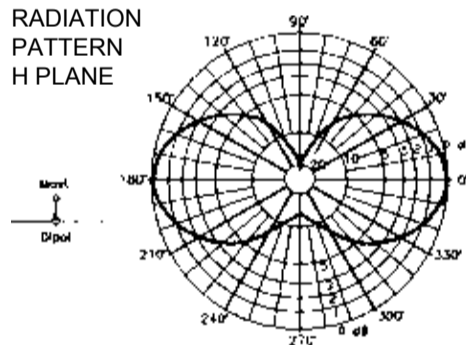
**GROUNDING** all metal parts are DC grounded

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

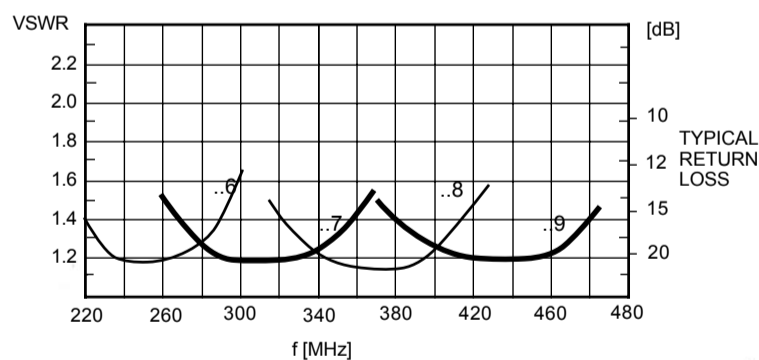
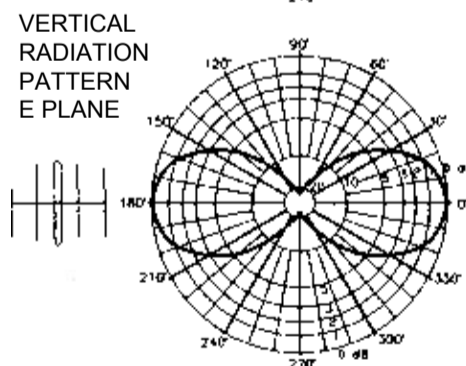
**MATERIAL** aluminium, bolts of stainless steel, radome of uv-stabilized polyethylene

**WEIGHT** 5 kg  
**WIND AREA** 0.12 m<sup>2</sup>  
**WIND LOAD** 155 N (150 km/h)  
 115 N (130 km/h)

HORIZONTAL RADIATION PATTERN H PLANE



VERTICAL RADIATION PATTERN E PLANE

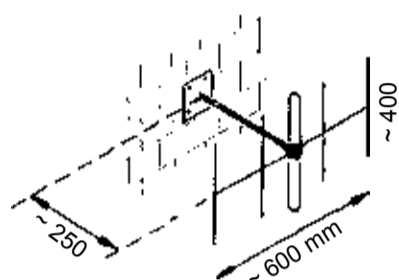


KW 1-08

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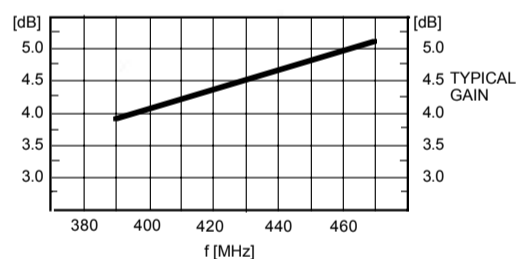
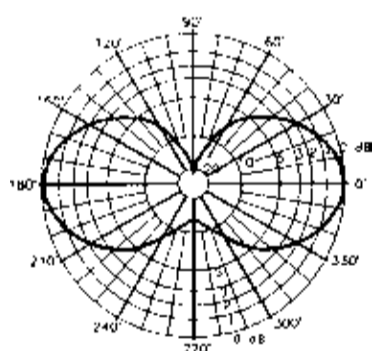
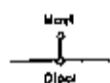


**BIDIRECTIONAL ANTENNA FOR WALL MOUNTING**  
**WS 442 02 19 9**  
**380 - 480 MHz**

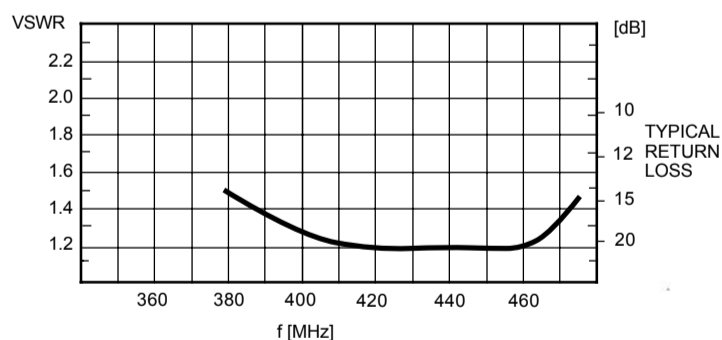
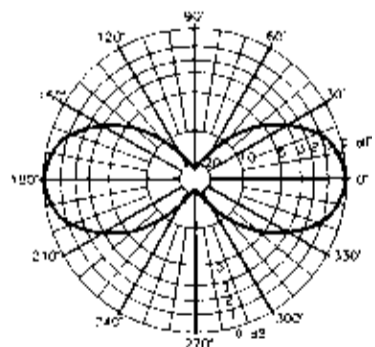


|                       |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| <b>TYPE NO.</b>       | <b>WS 442 02 19 9: 380 - 480 MHz</b><br>further frequencies on request |
| <b>POLARIZATION</b>   | vertical                                                               |
| <b>IMPEDANCE</b>      | 50 Ω                                                                   |
| <b>GAIN</b>           | 2x 4-5 dB (ref. λ/2 dipole)                                            |
| <b>VSWR</b>           | < 1.3, at the limits of the band <1.4                                  |
| <b>POWER</b>          | max. 150 watts                                                         |
| <b>3 dB BEAMWIDTH</b> | horizontal, H-plane: 2x 103°<br>vertical, E-plane: 2x 60°              |
| <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>       | mounting plate 120x120x5 mm<br>on walls with four bolts or dowels      |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, weather-resistant<br>plastics     |
| <b>WEIGHT</b>         | 2.6 kg                                                                 |
| <b>WIND AREA</b>      | 0.08 m <sup>2</sup>                                                    |
| <b>WIND LOAD</b>      | 102 N (150 km/h)<br>77 N (130 km/h)                                    |

Horizontal  
Radiation  
Pattern  
H Plane



Vertical  
Radiation  
Pattern  
E Plane

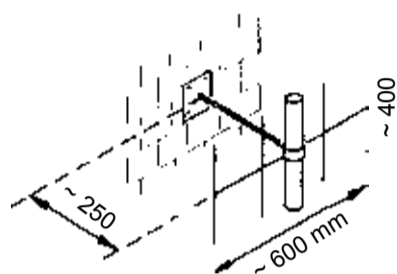


KW 1-08

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**BIDIRECTIONAL ANTENNA  
WS 442 03 19 .  
220 ... 470 MHz**



**TYPE NO.** WS 442 03 19 6: 220 - 290 MHz  
WS 442 03 19 7: 270 - 350 MHz  
WS 442 03 19 8: 340 - 400 MHz  
WS 442 03 19 9: 380 - 480 MHz  
further frequencies on request

**DESCRIPTION** heavy duty, with radome  
The radome protects the antenna dipole from environmental influences, icing, and increases the lightning protection.

**POLARIZATION** vertical

**IMPEDANCE** 50 Ω

**GAIN** 2x 4.5 dB (ref. λ/2 dipole)

**VSWR** < 1.3, at the limits of the band <1.4

**POWER** max. 150 watts

**3 dB BEAMWIDTH** horizontal, H-plane: 2x 103°  
vertical, E-plane: 2x 60°

**TERMINATION** 2 m cable RG 213/U ending with N male  
other termination on request

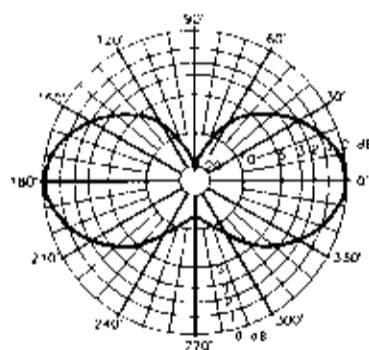
**GROUNDING** all metal parts are DC grounded

**MOUNTING** mounting plate 120x120x5 mm  
on walls with four bolts or dowels

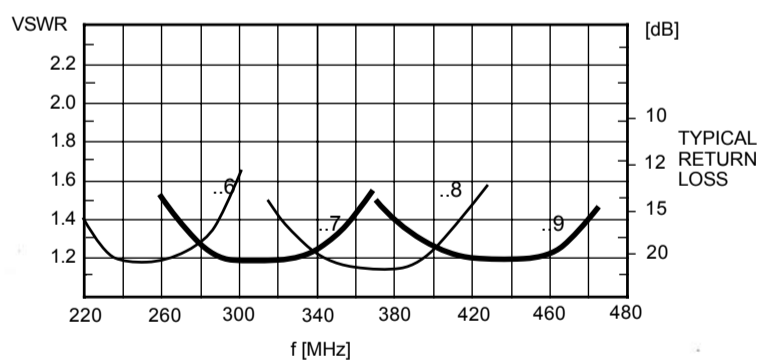
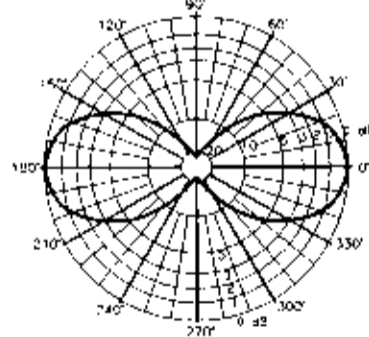
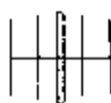
**MATERIAL** aluminium, bolts of stainless steel, radome of UV-stabilized polyethylene

**WEIGHT** 5 kg  
**WIND AREA** 0.12 m<sup>2</sup>  
**WIND LOAD** 155 N (150 km/h)  
115 N (130 km/h)

Horizontal Radiation Pattern H Plane



Horizontal Radiation Pattern E Plane



KW 1-08

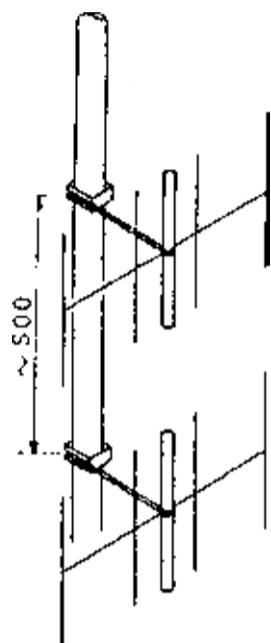
WIPIC reserves the right to amend specifications in the light of continuing development.



**wipic**

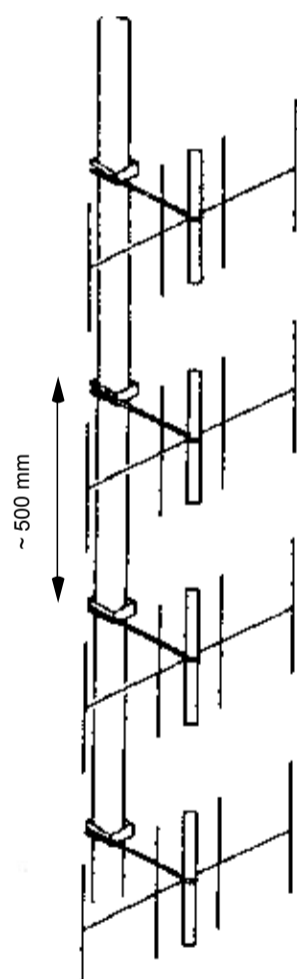
**STACKED BIDIRECTIONAL ANTENNAS**

**WS 443/4 0. 12 .  
380 ... 470 MHz**



|                       |                                                                                                                                                                |                     |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| <b>TYPE NO.</b>       | without radome: <b>WS 443 02 12 8: 380 ... 470 MHz</b><br>with radome: <b>WS 443 03 12 8: 380 ... 470 MHz</b><br>The antennas are tuned to the requested band. |                     |
| <b>GAIN</b>           | 5.5 dB (ref. to $\lambda/2$ dipole)                                                                                                                            |                     |
| <b>3 dB BEAMWIDTH</b> | horizontal (H plane): 2x 103°<br>vertical (E plane): 2x 30°                                                                                                    |                     |
| <b>POWER</b>          | 300 watts                                                                                                                                                      |                     |
| <b>TERMINATION</b>    | in the junction box WAK 1 ending with N male<br>other termination on request                                                                                   |                     |
| <b>WEIGHT</b>         | 343 02..                                                                                                                                                       | 343 03 ..           |
| <b>WIND AREA</b>      | 6 kg                                                                                                                                                           | 10 kg               |
| <b>WIND LOAD</b>      | 0.3 m <sup>2</sup>                                                                                                                                             | 0.38 m <sup>2</sup> |
|                       | 380 N                                                                                                                                                          | 490 N (150 km/h)    |
|                       | 290 N                                                                                                                                                          | 360 N (130 km/h)    |

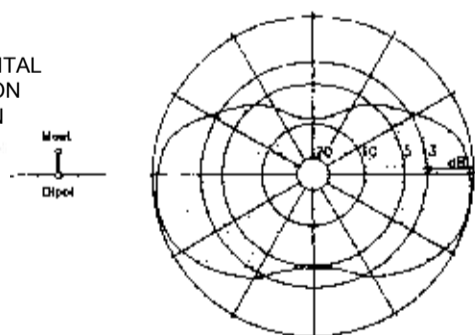
|                 |                                                                                                                                                              |  |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>TYPE NO.</b> | <b>WS 444 02 12 9 380 ... 470 MHz:</b> without radome<br><b>WS 444 03 12 9 380 ... 470 MHz:</b> with radome<br>The antennas are tuned to the requested band. |  |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--|



|                       |                                                                              |                    |
|-----------------------|------------------------------------------------------------------------------|--------------------|
| <b>VSWR</b>           | <1.5                                                                         |                    |
| <b>GAIN</b>           | 8 dB (ref. $\lambda/2$ dipole)                                               |                    |
| <b>3 dB BEAMWIDTH</b> | horizontal (H plane): 2x 103°<br>vertical (E plane): 2x 20°                  |                    |
| <b>POWER</b>          | 500 watts                                                                    |                    |
| <b>TERMINATION</b>    | in the junction box WAK 1 ending with N male<br>other termination on request |                    |
| <b>WEIGHT</b>         | 344 02..                                                                     | 344 03 ..          |
| <b>WIND AREA</b>      | 12 kg                                                                        | 22 kg              |
| <b>WIND LOAD</b>      | 0.42 m <sup>2</sup>                                                          | 0.6 m <sup>2</sup> |
|                       | 536 N                                                                        | 766 N (150 km/h)   |
|                       | 402 N                                                                        | 575 N (130 km/h)   |

Further technical information see WS 442 0.

HORIZONTAL  
RADIATION  
PATTERN  
H PLANE



KW 1-08

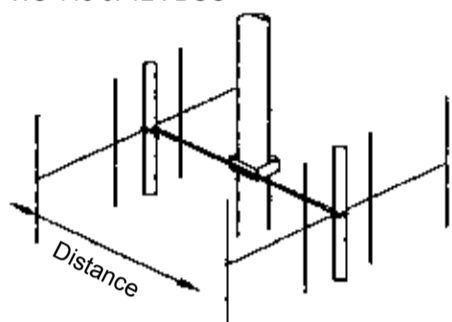
WIPIC reserves the right to amend specifications in the light of continuing development.

**wipic**

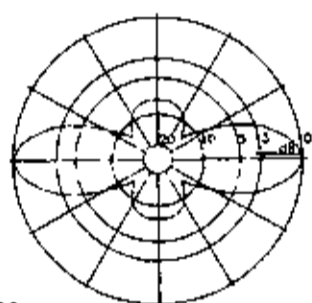
**BIDIRECTIONAL ANTENNAS**

**WS 445/6 02/3 12 .  
390 ... 470 MHz**

WS 445 0. 12 . DUO



Horizontal  
Radiation  
Pattern  
H Plane



Distance 700 mm

**TYPES NO.**

without radome  
**WS 445 02 12 8:** 390 - 420 MHz  
**WS 445 02 12 9:** 420 - 470 MHz  
 heavy duty, with radome  
**WS 445 03 12 8 stacked:** 390 - 420 MHz  
**WS 445 03 12 9 stacked:** 420 - 470 MHz  
 The radome protects the antenna dipole against environmental influences, icing, and increases the lightning protection.

**GAIN**

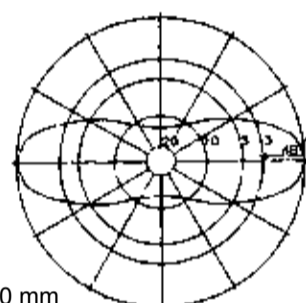
5.5 dB

**3 dB BEAMWIDTH**

horizontal ( H-plane): 2x 44°  
 vertical (E-plane): 2x 60°

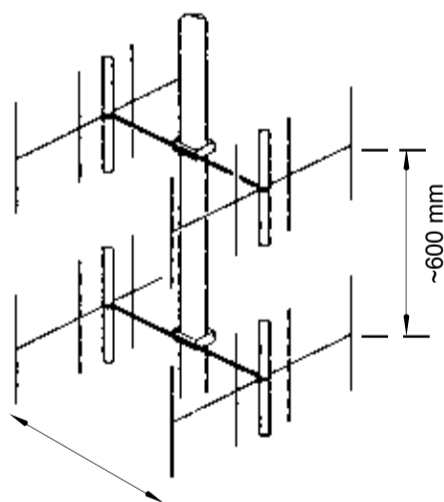
Further technical information see **WS 442 02..** ,  
**WS 442 03 ..** or **WS 443 ..**

Horizontal  
Radiation  
Pattern  
H Plane



Distance 500 mm

WS 446 0. 12 9 QUADRO



**TYPES NO.**

The antennas are tuned to the requested frequency in the band 390 - 470 MHz.  
**WS 446 02 12 9 QUADRO:** without radome  
**WS 446 03 12 9 QUADRO:** heavy duty, with radome  
 The radome protects the antenna dipole against environmental influences, icing, and increases the lightning protection.

**GAIN**

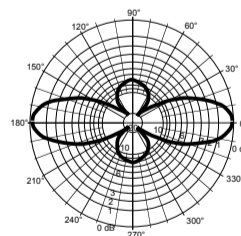
8 dB (ref. to  $\lambda/2$  dipole)

**3 dB BEAMWIDTH**

horizontal (H-plane): 2x 44°  
 vertical (E-plane): 2x 30°

Further technical information see **WS 442 02..** ,  
**WS 442 03 ..** or **WS 444 ..**

Horizontal  
Radiation  
Pattern  
H Plane

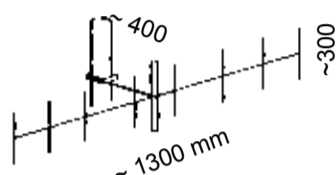


KW 1-08

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



**BIDIRECTIONAL ANTENNA**  
**WS 448 02 12 9**  
**380 - 470 MHz**

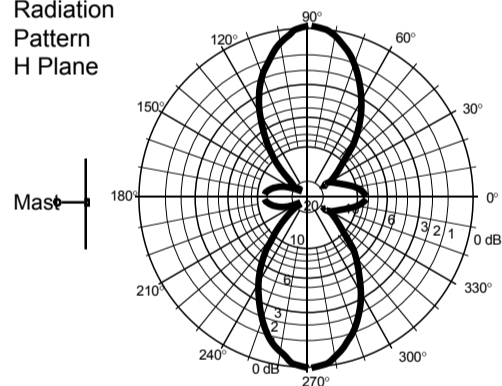


|                       |                                                                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE NO.</b>       | <b>WS 448 02 12 9: 380 - 470 MHz</b><br>further frequencies on request                                                                                   |
| <b>POLARIZATION</b>   | vertical                                                                                                                                                 |
| <b>IMPEDANCE</b>      | 50 Ω                                                                                                                                                     |
| <b>GAIN</b>           | 5.2 dB at 390 MHz<br>6.0 dB at 430 MHz<br>6.8 dB at 460 MHz (ref. λ/2 dipole)<br>in the two main lobes                                                   |
| <b>VSWR</b>           | < 1.3, at the limits of the band <1.5                                                                                                                    |
| <b>POWER</b>          | max. 150 watts                                                                                                                                           |
| <b>3 dB BEAMWIDTH</b> | horizontal, H-plane: 2x 56°<br>vertical, E-plane: 2x 46°                                                                                                 |
| <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>       | <i>mast-ø</i> <i>clamp</i><br>30 - 80 mm                WG 15 (standard)<br>50 - 104 mm              WG 16 (option)<br>clamp for other mast-ø on request |

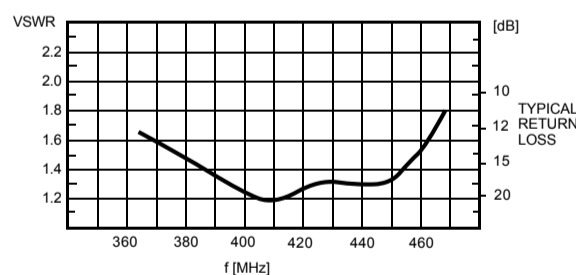
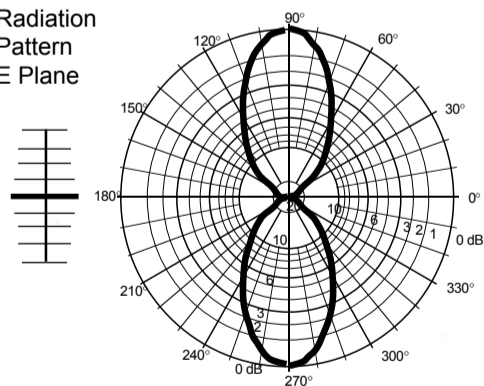
**MATERIAL**                      aluminium, bolts of stainless steel, weather-resistant plastics

**WEIGHT**                            4.8 kg  
**WIND AREA**                        0.07 m<sup>2</sup>  
**WIND LOAD**                        90 N (150 km/h)  
                                               67 N (130 km/h)

Horizontal Radiation Pattern H Plane



Vertical Radiation Pattern E Plane

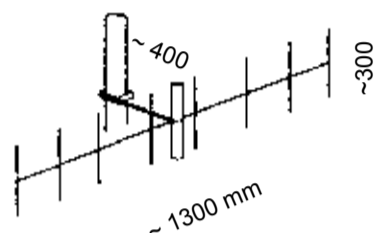


WIPIC reserves the right to amend specifications in the light of continuing development.

KW 1-08



**BIDIRECTIONAL ANTENNA**  
**WS 448 03 12 9**  
**380 - 470 MHz**



**TYPE NO.** **WS 448 03 12 9: 380 - 470 MHz**  
 further frequencies on request

**DESCRIPTION** heavy duty, with radome  
 The radome protects the antenna dipole from environmental influences, icing, and increases the lightning protection.

**POLARIZATION** vertical

**IMPEDANCE** 50 Ω

**GAIN** 5.2 dB at 390 MHz  
 6.0 dB at 430 MHz  
 6.8 dB at 460 MHz (ref. λ/2 dipole)  
 in the two main lobes

**VSWR** < 1.3, at the limits of the band <1.5

**POWER** max. 150 watts

**3 dB BEAMWIDTH** horizontal, H-plane: 2x 56°  
 vertical, E-plane: 2x 46°

**TERMINATION** 2 m cable RG 213/U ending with N male  
 other termination on request

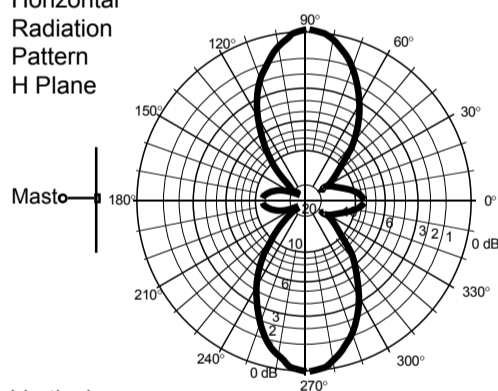
**GROUNDING** all metal parts are DC grounded

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

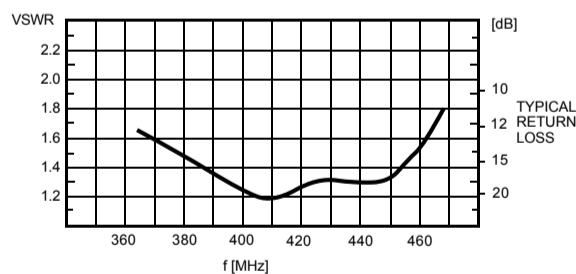
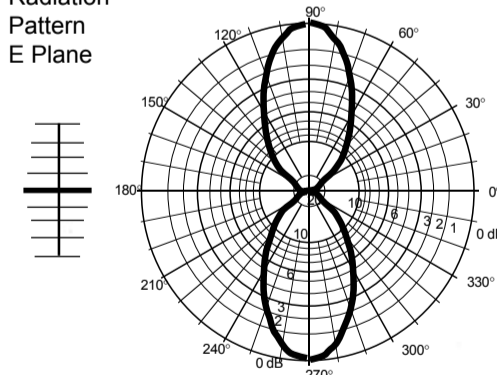
**MATERIAL** aluminium, bolts of stainless steel, weather-resistant  
 plastics, radome of UV-stabilized polyethylene

**WEIGHT** 4.8 kg  
**WIND AREA** 0.07 m<sup>2</sup>  
**WIND LOAD** 90 N (150 km/h)  
 67 N (130 km/h)

Horizontal  
 Radiation  
 Pattern  
 H Plane



Vertical  
 Radiation  
 Pattern  
 E Plane

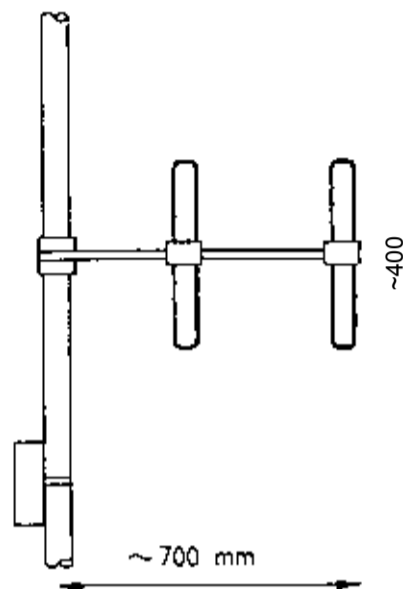


KW 1-08

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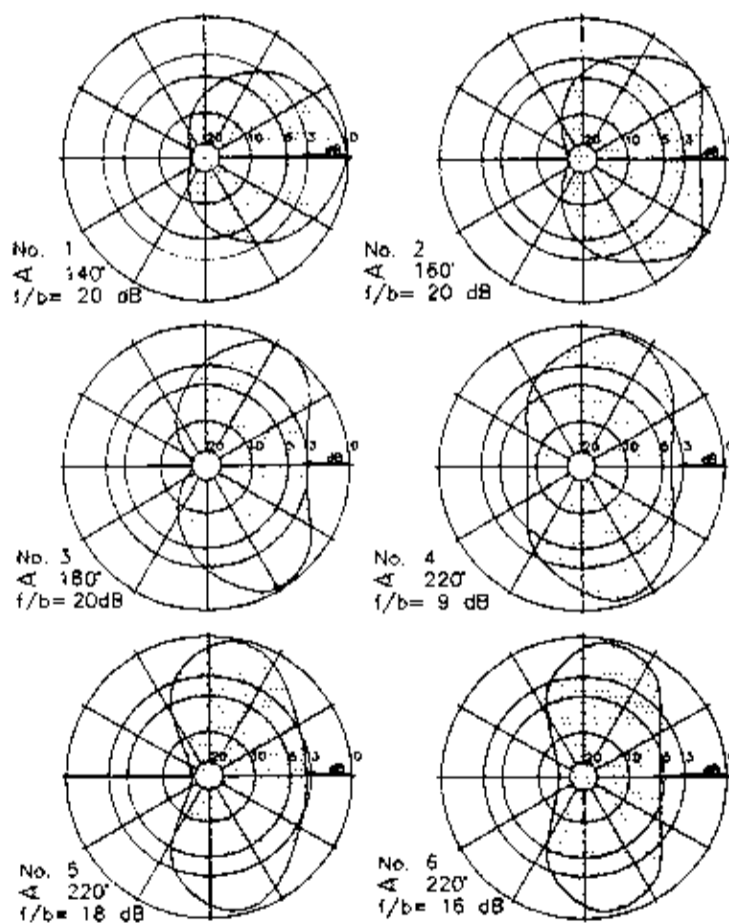
**wipic**

**DIRECTIONAL ANTENNA TYPE KLEEWI  
WS 451 02 11  
225 - 470 MHz**



|                       |                                                                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE NO.</b>       | <b>WS 451 02 11</b> (on requested frequency)                                                                                                        |
| <b>DESCRIPTION</b>    | This antenna can be made for different radiation patterns and F/B ratios. The antenna is tuned in the requested frequency in the band 225 - 470 MHz |
| <b>POLARIZATION</b>   | vertical                                                                                                                                            |
| <b>IMPEDANCE</b>      | 50 Ω                                                                                                                                                |
| <b>GAIN</b>           | 3 dB (ref. to λ/2 dipole) in main beam directions                                                                                                   |
| <b>VSWR</b>           | < 1.2 on tuned frequency                                                                                                                            |
| <b>POWER</b>          | max. 250 watts, higher ratings on request                                                                                                           |
| <b>3 dB BEAMWIDTH</b> | see radiation patterns                                                                                                                              |

TYPICAL RADIATION PATTERN  
H Plane



KW 1-08

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

**TERMINATION** in the junction box WAK 1 ending with N female  
other terminations on request

**GROUNDING** all metal parts are DC grounded

**MOUNTING** mast ø clamp (chapt. 10)  
30 - 80 mm WG 15 (standard)  
50 - 104 mm WG 16 (option)  
clamp for other mast-ø on request

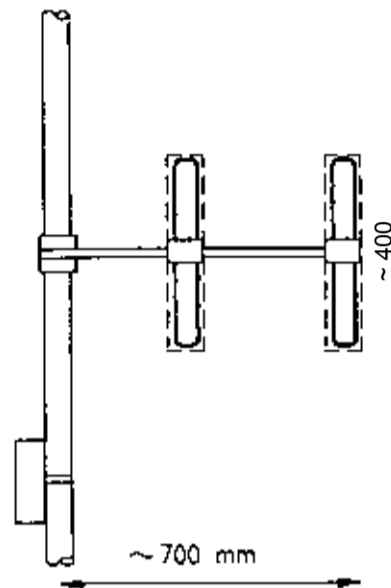
**MATERIAL** aluminium, bolts of stainless steel,  
weather-resistant plastics

**WEIGHT** 4.2 kg  
**WIND AREA** 0.11 m<sup>2</sup>  
**WIND LOAD** 140 N (150 km/h)  
106 N (130 km/h)



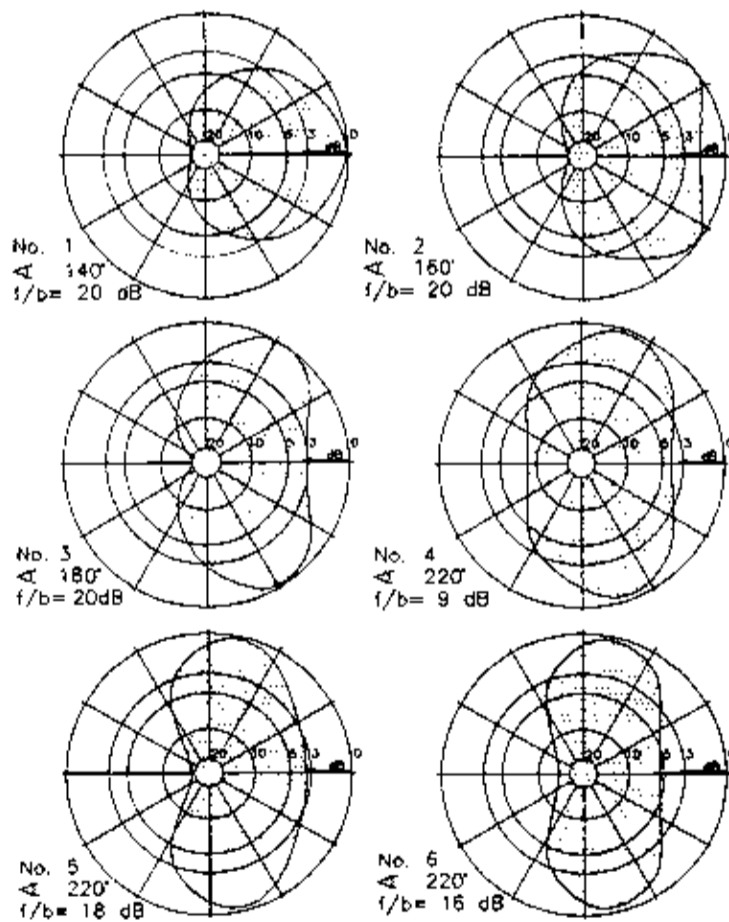
### DIRECTIONAL ANTENNA TYPE KLEEWI

**WS 451 03 11**  
**225 ... 470 MHz**



|                       |                                                                                                                                                                                                                                                                                                               |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE NO.</b>       | <b>WS 451 03 11</b> (on requested frequency)                                                                                                                                                                                                                                                                  |
| <b>DESCRIPTION</b>    | This antenna can be made for different radiation patterns and F/B ratios. The antenna is tuned in the requested frequency in the band 225 - 470 MHz<br><br>heavy duty, with radome<br>The radome protects the antenna dipole against environmental influences, icing, and increases the lightning protection. |
| <b>POLARIZATION</b>   | vertical                                                                                                                                                                                                                                                                                                      |
| <b>IMPEDANCE</b>      | 50 Ω                                                                                                                                                                                                                                                                                                          |
| <b>GAIN</b>           | 3 dB (ref. to λ/2 dipole) in main beam directions                                                                                                                                                                                                                                                             |
| <b>VSWR</b>           | < 1.2 in tuned frequency                                                                                                                                                                                                                                                                                      |
| <b>POWER</b>          | max. 200 watts, higher ratings on request                                                                                                                                                                                                                                                                     |
| <b>3 dB BEAMWIDTH</b> | see radiation patterns                                                                                                                                                                                                                                                                                        |

TYPICAL RADIATION PATTERN  
H Plane



|                                   |                                                                                                                                                                                                                                                                                    |               |                          |            |                  |             |                |                                   |  |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------|------------|------------------|-------------|----------------|-----------------------------------|--|
| <b>TERMINATION</b>                | in the junction box WAK 1 ending with N male<br>other terminations on request                                                                                                                                                                                                      |               |                          |            |                  |             |                |                                   |  |
| <b>GROUNDING</b>                  | all metal parts are DC grounded                                                                                                                                                                                                                                                    |               |                          |            |                  |             |                |                                   |  |
| <b>MOUNTING</b>                   | <table border="0"> <tr> <td><i>mast</i> ∅</td> <td><i>clamp (chapt. 10)</i></td> </tr> <tr> <td>30 - 80 mm</td> <td>WG 15 (standard)</td> </tr> <tr> <td>50 - 104 mm</td> <td>WG 16 (option)</td> </tr> <tr> <td colspan="2">clamp for other mast-∅ on request</td> </tr> </table> | <i>mast</i> ∅ | <i>clamp (chapt. 10)</i> | 30 - 80 mm | WG 15 (standard) | 50 - 104 mm | WG 16 (option) | clamp for other mast-∅ on request |  |
| <i>mast</i> ∅                     | <i>clamp (chapt. 10)</i>                                                                                                                                                                                                                                                           |               |                          |            |                  |             |                |                                   |  |
| 30 - 80 mm                        | WG 15 (standard)                                                                                                                                                                                                                                                                   |               |                          |            |                  |             |                |                                   |  |
| 50 - 104 mm                       | WG 16 (option)                                                                                                                                                                                                                                                                     |               |                          |            |                  |             |                |                                   |  |
| clamp for other mast-∅ on request |                                                                                                                                                                                                                                                                                    |               |                          |            |                  |             |                |                                   |  |
| <b>MATERIAL</b>                   | aluminium, bolts of stainless steel,<br>radome of UV-stabilized polyethylene                                                                                                                                                                                                       |               |                          |            |                  |             |                |                                   |  |
| <b>WEIGHT</b>                     | 7.5 kg                                                                                                                                                                                                                                                                             |               |                          |            |                  |             |                |                                   |  |
| <b>WIND AREA</b>                  | 0.16 m <sup>2</sup>                                                                                                                                                                                                                                                                |               |                          |            |                  |             |                |                                   |  |
| <b>WIND LOAD</b>                  | 205 N (150 km/h)<br>155 N (130 km/h)                                                                                                                                                                                                                                               |               |                          |            |                  |             |                |                                   |  |

KW 1-08

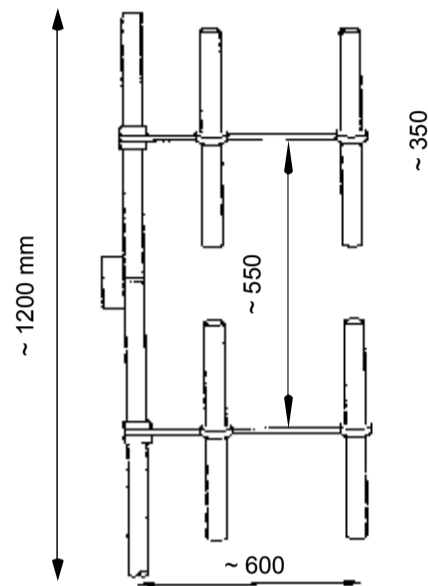
WIPIC reserves the right to amend specifications in the light of continuing development.





### DIRECTIONAL ANTENNA TYPE KLEEWI

**WS 452 03 11**  
225 ... 470 MHz



**TYPE NO.** WS 452 03 11 (on requested frequency)

**DESCRIPTION** This antenna can be made for different radiation patterns and F/B ratios. The antenna is tuned on the requested frequency in the band 225 - 470 MHz. Downtilt on request.

heavy duty, with radome  
The radome protects the antenna dipole against environmental influences, icing, and increases the lightning protection.

**POLARIZATION** vertical

**IMPEDANCE** 50 Ω

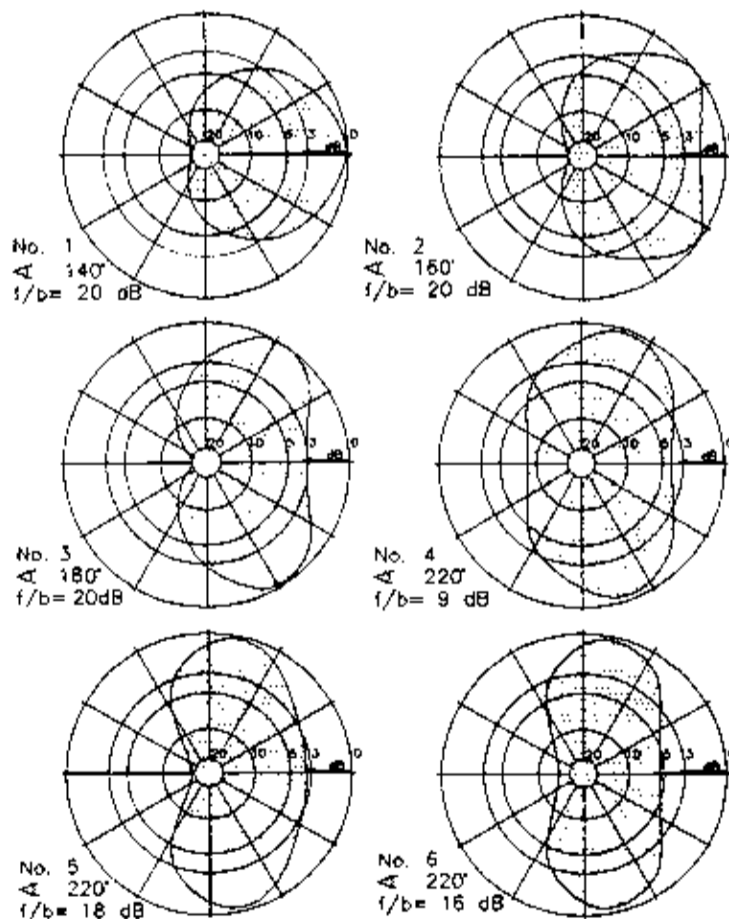
**GAIN** 6 dB (ref. to λ/2 dipole) in main beam directions

**VSWR** < 1.2 on tuned frequency

**POWER** max. 200 watts, higher ratings on request

**3 dB BEAMWIDTH** horizontal: see radiation patterns  
vertical: 32° (in main beam directions)

TYPICAL RADIATION PATTERN  
H Plane



**TERMINATION** in the junction box WAK 1 ending with N female  
other terminations on request

**GROUNDING** all metal parts are DC grounded

**MOUNTING** mast ø                      clamp (chapt. 10)  
30 - 80 mm                  WG 15 (standard)  
50 - 104 mm                WG 16 (option)  
clamp for other mast-ø on request

**MATERIAL** aluminium, bolts of stainless steel,  
radome of UV-stabilized polyethylene

**WEIGHT** 15 kg  
**WIND AREA** 0.32 m<sup>2</sup>  
**WIND LOAD** 408 N (150 km/h)  
307 N (130 km/h)

**DIMENSIONS** the given values are valid  
for 400 - 470 MHz

KW 1-08

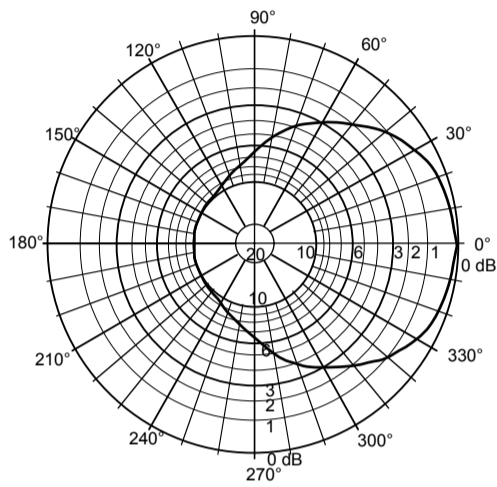
WIPIC reserves the right to amend specifications in the light of continuing development.



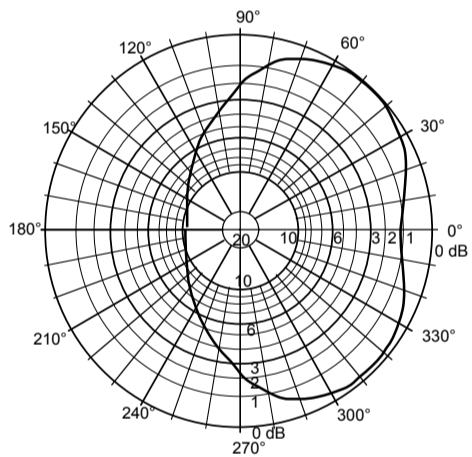
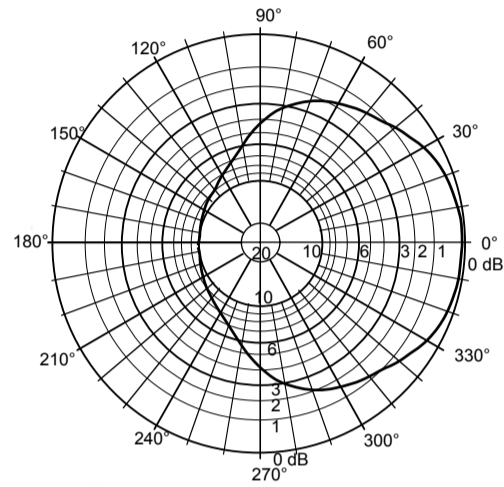


Further typical horizontal radiation patterns  
of WS 45. 0. ..

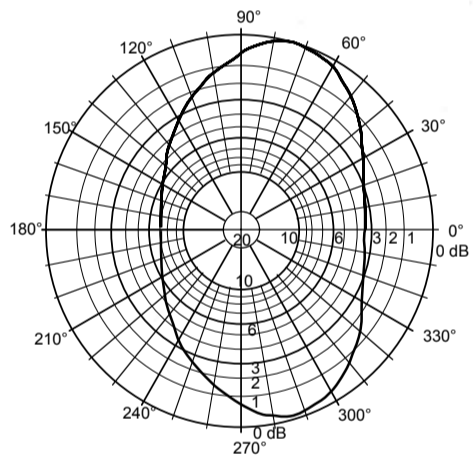
pattern no 7



pattern no 8



pattern no 9



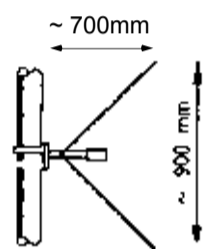
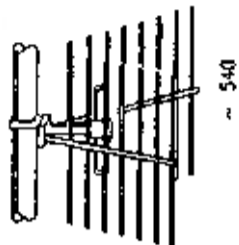
pattern no 10

KW 1-08

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**wipic**

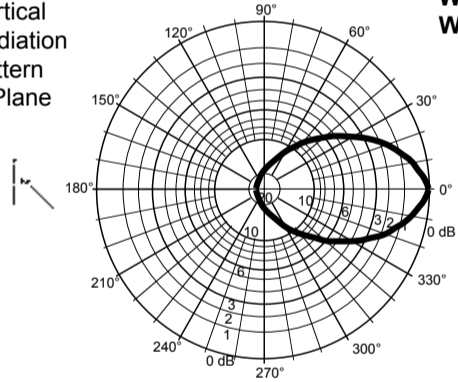
**CORNER REFLECTOR**  
**WS 471 02 .1 9**  
**400 ... 470 MHz**



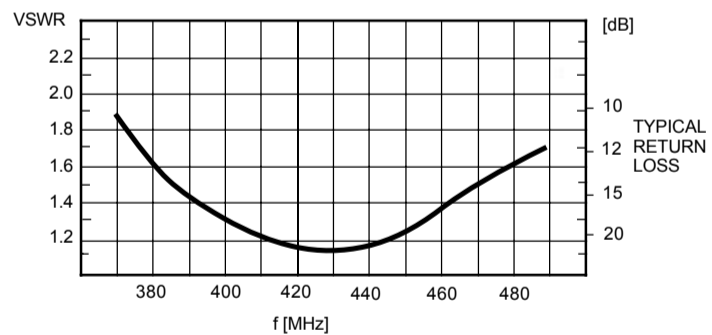
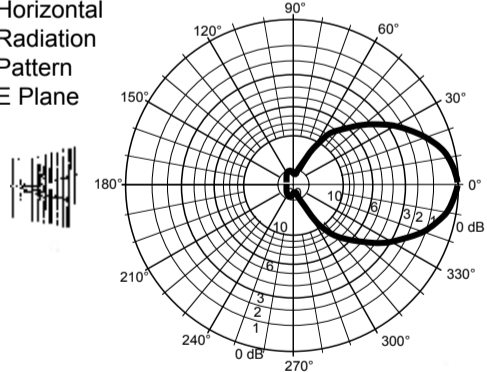
|                       |                                                                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE NO.</b>       | vertical polarization<br><b>WS 471 02 11 9 : 400 - 470 MHz</b><br>horizontal polarization<br><b>WS 471 02 21 9 : 400 - 470 MHz</b>                       |
| <b>IMPEDANCE</b>      | 50 Ω                                                                                                                                                     |
| <b>GAIN</b>           | 9 dB (ref. λ/2 dipole)<br>f/b ratio: 25 dB                                                                                                               |
| <b>VSWR</b>           | < 1.25, at the limits of the band <1.4                                                                                                                   |
| <b>POWER</b>          | max. 150 watts                                                                                                                                           |
| <b>3 dB BEAMWIDTH</b> | in polarization, E-plane: 67°<br>vertical to pol., H-plane: 50°                                                                                          |
| <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>       | <i>mast-ø</i> <i>clamp</i><br>30 - 80 mm                WG 51 (standard)<br>50 - 104 mm              WG 52 (option)<br>clamp for other mast-ø on request |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, weather-resistant<br>plastics                                                                                       |

|                  |                                      |
|------------------|--------------------------------------|
| <b>WEIGHT</b>    | 2.5 kg                               |
| <b>WIND AREA</b> | 0.18 m <sup>2</sup>                  |
| <b>WIND LOAD</b> | 230 N (150 km/h)<br>170 N (130 km/h) |

Vertical  
 Radiation  
 Pattern  
 H Plane



Horizontal  
 Radiation  
 Pattern  
 E Plane

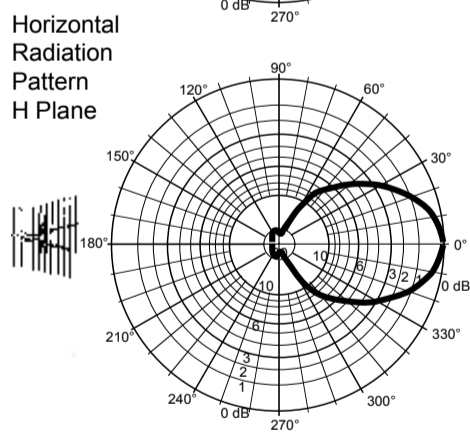
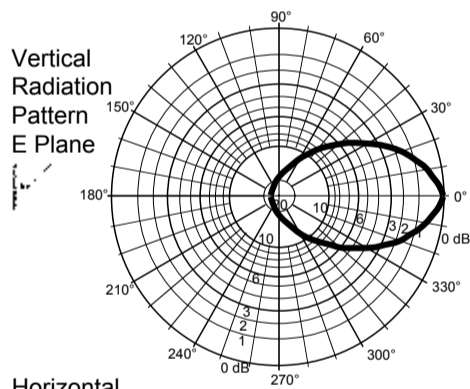
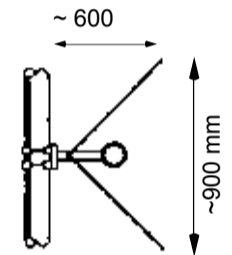
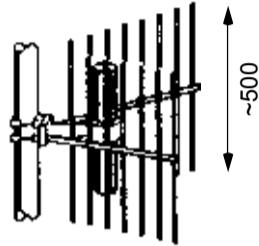


KW 1-08

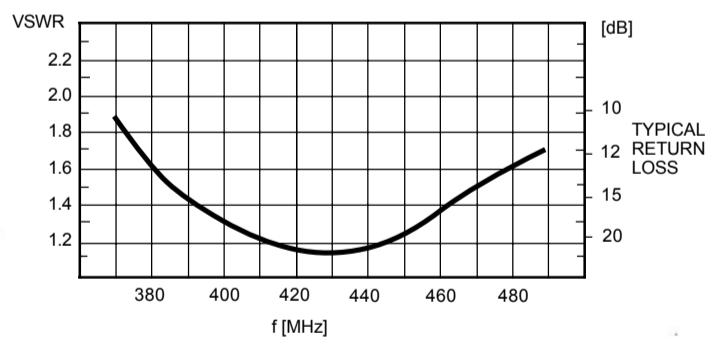
WIPIC reserves the right to amend specifications in the light of continuing development.

**wipic**

**CORNER REFLECTOR**  
**WS 471 03 .1 9**  
**400 - 470 MHz**



|                       |                                                                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE NO.</b>       | vertical polarization<br><b>WS 471 03 11 9 : 400 - 470 MHz</b><br>horizontal polarization<br><b>WS 471 03 21 9 : 400 - 470 MHz</b>                       |
| <b>DESCRIPTION</b>    | heavy duty, with radome<br>The radome protects the antenna dipole from environmental influences, icing, and increases the lightning protection.          |
| <b>IMPEDANCE</b>      | 50 Ω                                                                                                                                                     |
| <b>GAIN</b>           | 9 dB (ref. λ/2 dipole)<br>F/B : 25 dB                                                                                                                    |
| <b>VSWR</b>           | < 1.25, at the limits of the band <1.4                                                                                                                   |
| <b>POWER</b>          | max. 150 watts                                                                                                                                           |
| <b>3 dB BEAMWIDTH</b> | in polarization, E-plane: 67°<br>vertical to pol., H-plane: 50°                                                                                          |
| <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>       | <i>mast-ø</i> <i>clamp</i><br>30 - 80 mm                WG 51 (standard)<br>50 - 104 mm              WG 52 (option)<br>clamp for other mast-ø on request |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, weather-resistant plastics, radome of UV-stabilized polyethylene                                                    |
| <b>WEIGHT</b>         | 5 kg                                                                                                                                                     |
| <b>WIND AREA</b>      | 0.22 m <sup>2</sup>                                                                                                                                      |
| <b>WIND LOAD</b>      | 280 N (150 km/h)<br>210 N (130 km/h)                                                                                                                     |



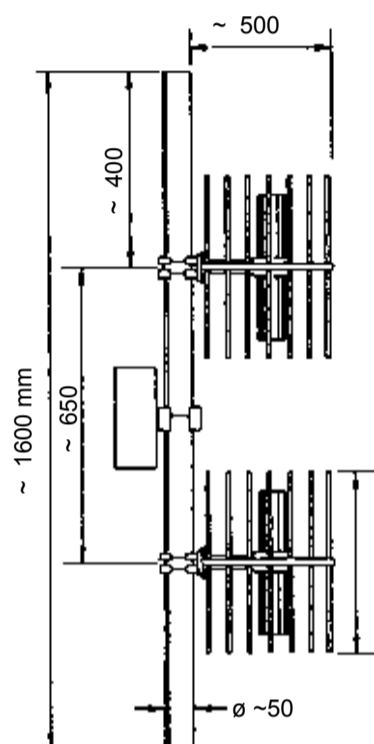
KW 1-08

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

**wipic**

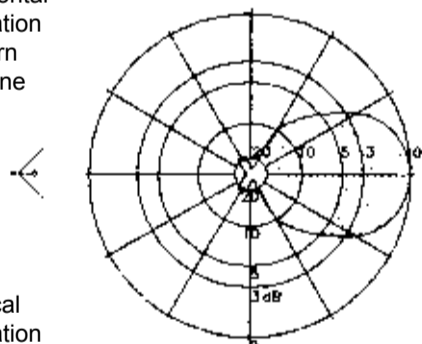
**TWO STACKED CORNERREFLECTORS**

**WS 472 03 11 .  
390 ... 470 MHz**

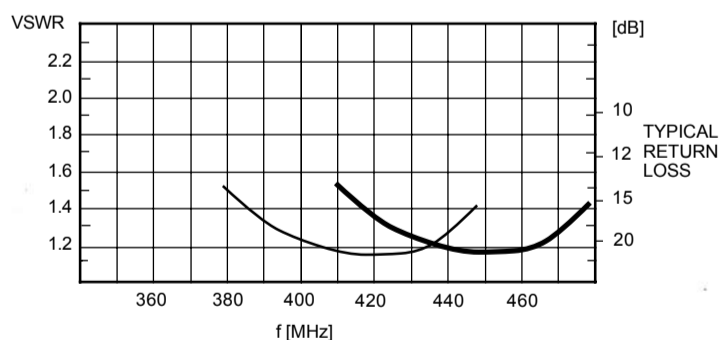
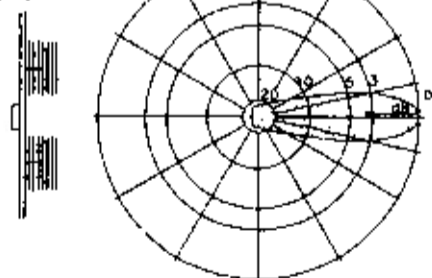


|                       |                                                                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE NO.</b>       | <b>WS 472 03 11 8: 390 - 435 MHz</b><br><b>WS 472 03 11 9: 425 - 470 MHz</b><br>further frequencies or tilt on request                             |
| <b>DESCRIPTION</b>    | heavy duty, with radome<br>The radome protects the antenna dipole against environmental influences, icing, and increases the lightning protection. |
| <b>POLARIZATION</b>   | vertical                                                                                                                                           |
| <b>IMPEDANCE</b>      | 50 Ω                                                                                                                                               |
| <b>GAIN</b>           | 12.5 dB (ref. to λ/2 dipole)                                                                                                                       |
| <b>VSWR</b>           | < 1.3                                                                                                                                              |
| <b>POWER</b>          | max. 200 watts, higher power on request                                                                                                            |
| <b>3 dB BEAMWIDTH</b> | horizontal (H-plane) 64°<br>vertical (E-plane) 24°                                                                                                 |
| <b>TERMINATION</b>    | in the junction box WAK 1 ending with N female                                                                                                     |
| <b>GROUNDING</b>      | all metal parts are DC grounded                                                                                                                    |
| <b>MASTPART</b>       | (option) aluminium alloy mast, length ~2 m, ø ~50 mm                                                                                               |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, radome of UV-stabilized polyethylene                                                                          |
| <b>WEIGHT</b>         | 13 kg                                                                                                                                              |
| <b>WIND AREA</b>      | 0.5 m²                                                                                                                                             |
| <b>WIND LOAD</b>      | 640 N 150 km/h<br>480 N 130 km/h                                                                                                                   |

Horizontal Radiation Pattern H Plane



Vertical Radiation Pattern E Plane



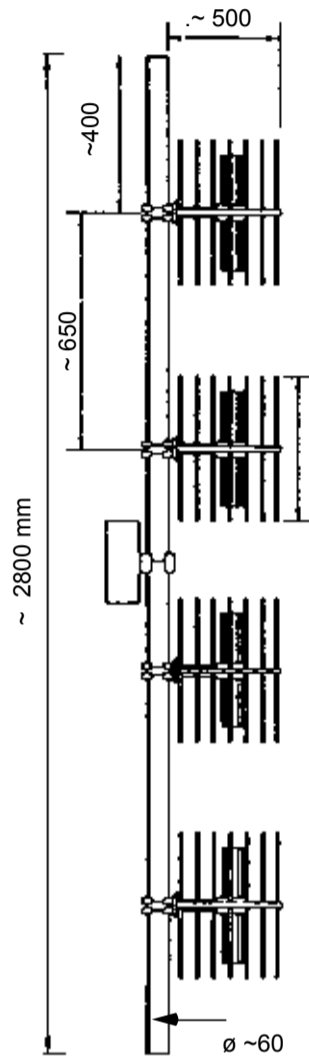
KW 1-08

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

**wipic**

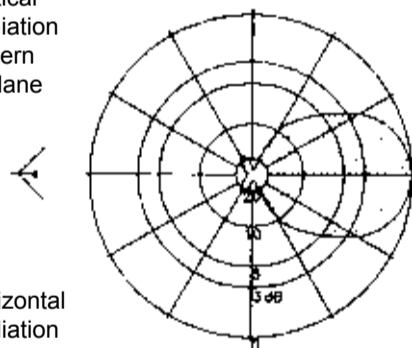
**FOUR STACKED CORNERREFLECTORS**

**WS 473 03 11 .  
390 ... 470 MHz**

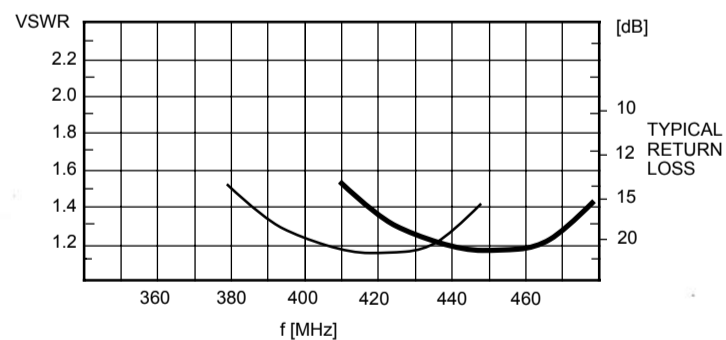
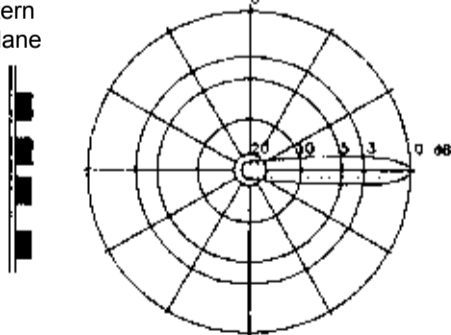


|                       |                                                                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE NO.</b>       | <b>WS 473 03 11 8: 400 - 435 MHz</b><br><b>WS 473 03 11 9: 435 - 470 MHz</b><br>further frequencies or tilt on request                             |
| <b>DESCRIPTION</b>    | heavy duty, with radome<br>The radome protects the antenna dipole against environmental influences, icing, and increases the lightning protection. |
| <b>POLARIZATION</b>   | vertical                                                                                                                                           |
| <b>IMPEDANCE</b>      | 50 Ω                                                                                                                                               |
| <b>GAIN</b>           | 15 dB (ref. to λ/2 dipole)                                                                                                                         |
| <b>VSWR</b>           | < 1.3                                                                                                                                              |
| <b>POWER</b>          | max. 200 watts, higher power on request                                                                                                            |
| <b>3 dB BEAMWIDTH</b> | horizontal (H-plane) 64°<br>vertical (E-plane) 12°                                                                                                 |
| <b>TERMINATION</b>    | in the junction box WAK 1 ending with N female                                                                                                     |
| <b>GROUNDING</b>      | all metal parts are DC grounded                                                                                                                    |
| <b>MASTPART</b>       | (option) aluminium alloy mast, length ~3 m, ø 60/55 mm                                                                                             |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, radome of uv-stabilized polyethylene                                                                          |
| <b>WEIGHT</b>         | 23 kg                                                                                                                                              |
| <b>WIND AREA</b>      | 1.1 m <sup>2</sup>                                                                                                                                 |
| <b>WIND LOAD</b>      | 1400 N 150 km/h<br>1050 N 130 km/h                                                                                                                 |

Vertical Radiation Pattern H Plane



Horizontal Radiation Pattern E Plane



KW 1-08

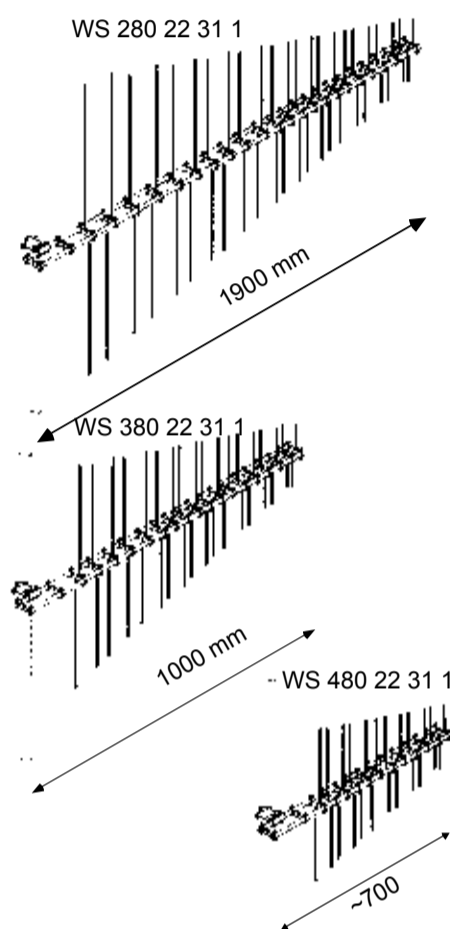
WIPIC reserves the right to amend specifications in the light of continuing development.



### LOG PERIODIC ANTENNAS

**WS .80 22 31 1**

**87 ... 1000 MHz**



|                       |                                                                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE NO.</b>       | <b>WS 280 22 31 1:</b> 87.5 - 1000 MHz<br><b>WS 380 22 31 1:</b> 146 - 1000 MHz<br><b>WS 480 22 31 1:</b> 380 - 1000 MHz<br>other bands on request              |
| <b>POLARIZATION</b>   | vertical or horizontal on request                                                                                                                               |
| <b>IMPEDANCE</b>      | 50 or 75 Ω                                                                                                                                                      |
| <b>GAIN</b>           | 5-6dB ref. λ/2 dipole<br>7-8 dBi<br>F/B 20 - 25 dB                                                                                                              |
| <b>VSWR</b>           | ≤ 2.5<br>preferred < 1.5                                                                                                                                        |
| <b>POWER</b>          | 300 - 1000 watts                                                                                                                                                |
| <b>3 dB BEAMWIDTH</b> | E-plane: 60 - 70°<br>H-plane: 110 - 130°                                                                                                                        |
| <b>TERMINATION</b>    | 2 m cable RG 213/U or RG 11 ending with N male<br>other termination on request                                                                                  |
| <b>GROUNDING</b>      | all metal parts are DC grounded                                                                                                                                 |
| <b>MOUNTING</b>       | mast-ø                      clamp<br>30 - 80 mm                WG 11 (standard)<br>50 - 104 mm              WG 12 (option)<br>clamp for other mast-ø on request |
| <b>MATERIAL</b>       | aluminium, bolts of stainless steel, weather-resistant<br>plastics                                                                                              |
| <b>WEIGHT</b>         | 280 ..                      380 ..                      480 ..                                                                                                  |
| <b>WIND AREA</b>      | 3.9 kg                      2.3 kg                      1.6 kg                                                                                                  |
| <b>WIND LOAD</b>      | 0.21 m <sup>2</sup> 0.093 m <sup>2</sup> 0.06 m <sup>2</sup>                                                                                                    |
|                       | 270 N                      120 N                      76 N at 150 km/h                                                                                          |
|                       | 200 N                      90 N                        57 N at 130 km/h                                                                                         |

WS 280 22 31 1



KW 1-08

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



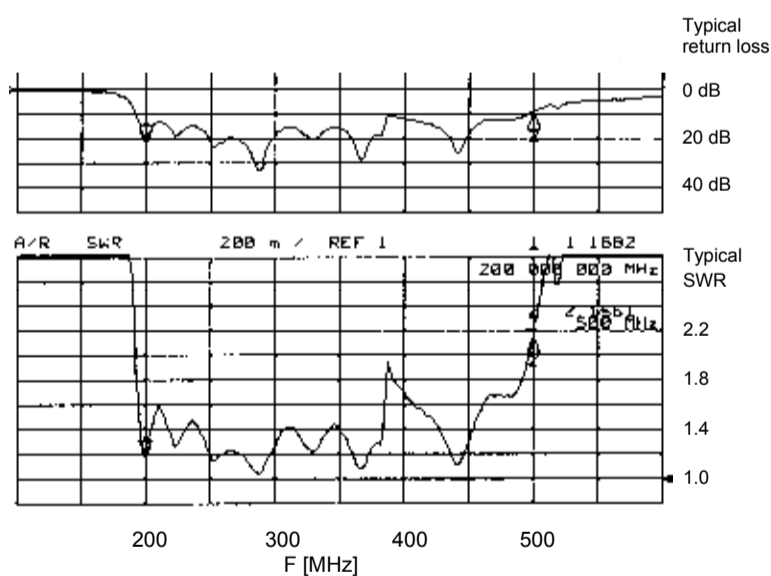
**10-Element Log-Periodic Antenna**  
**WS 380 22 31 2 SP**  
**200 - 500 MHz**

|                         |                                                          |                              |            |                  |                |
|-------------------------|----------------------------------------------------------|------------------------------|------------|------------------|----------------|
| <b>TYPE NO.</b>         | WS 380 22 31 2 SP: 200 - 500 MHz                         |                              |            |                  |                |
| <b>POLARIZATION</b>     | horizontal / vertical                                    |                              |            |                  |                |
| <b>IMPEDANCE</b>        | 50 Ω                                                     |                              |            |                  |                |
| <b>GAIN / BEAMWIDTH</b> | <i>MHz</i>                                               | <i>gain</i>                  |            | <i>beamwidth</i> |                |
|                         |                                                          | <i>dBd</i>                   | <i>dBi</i> | <i>E plane</i>   | <i>H plane</i> |
|                         | 200                                                      | 4.5                          | 6.7        | 69°              | 131°           |
|                         | 350                                                      | 5.0                          | 7.2        | 64°              | 115°           |
|                         | 500                                                      | 3.4                          | 5.6        | 66°              | 133°           |
| <b>VSWR</b>             | ≤ 2                                                      |                              |            |                  |                |
| <b>POWER</b>            | 200 MHz                                                  | 500 W                        |            |                  |                |
|                         | 500 MHz                                                  | 300 W                        |            |                  |                |
| <b>TERMINATION</b>      | 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 (see chapt. 10)</i> |            |                  |                |
|                         | 30 - 80 mm                                               | WG 11 (standard)             |            |                  |                |
|                         | 50 - 104 mm                                              | WG 12 (option)               |            |                  |                |
| <b>MATERIALS</b>        | aluminium, stainless steel<br>weather resistant plastics |                              |            |                  |                |
| <b>WEIGHT</b>           | 1.8 kg                                                   |                              |            |                  |                |
| <b>WIND AREA</b>        | 0.09 m <sup>2</sup>                                      |                              |            |                  |                |
| <b>WIND LOAD</b>        | 86 N at 130 km/h<br>114 N at 150 km/h                    |                              |            |                  |                |
| <b>DIMENSIONS (LxW)</b> | 810 x 760 mm                                             |                              |            |                  |                |



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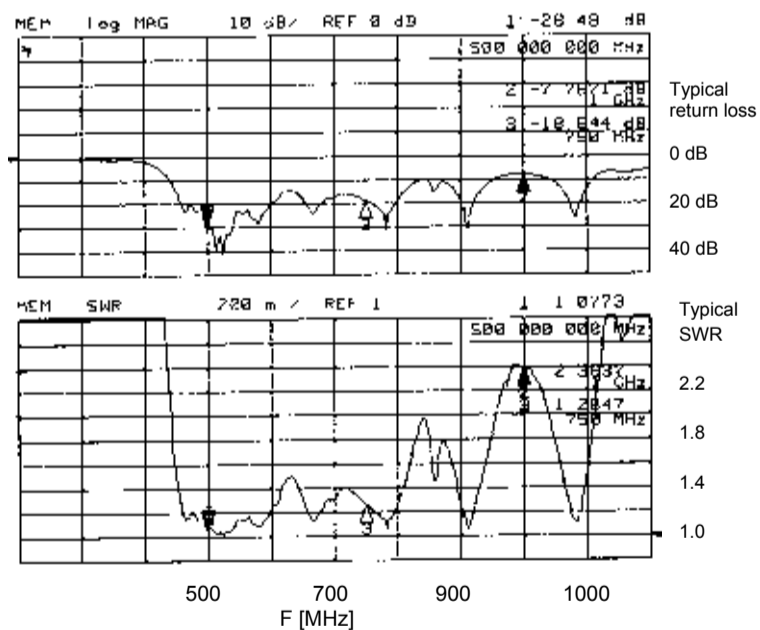
**9-Element Log-Periodic Antenna  
WS 480 22 31 1 SP  
500 - 1000 MHz**

|                         |                                                          |             |            |                  |                              |
|-------------------------|----------------------------------------------------------|-------------|------------|------------------|------------------------------|
| <b>TYPE NO.</b>         | WS 480 22 31 1 SP: 500 - 1000 MHz                        |             |            |                  |                              |
| <b>POLARIZATION</b>     | horizontal / vertical                                    |             |            |                  |                              |
| <b>IMPEDANCE</b>        | 50 Ω                                                     |             |            |                  |                              |
| <b>GAIN / BEAMWIDTH</b> | <i>MHz</i>                                               | <i>gain</i> |            | <i>beamwidth</i> |                              |
|                         |                                                          | <i>dBd</i>  | <i>dBi</i> | <i>E plane</i>   | <i>H plane</i>               |
|                         | 500                                                      | 5.1         | 7.3        | 64°              | 106°                         |
|                         | 700                                                      | 5.5         | 7.7        | 60°              | 96°                          |
|                         | 1000                                                     | 5.0         | 7.2        | 59°              | 102°                         |
| <b>VSWR</b>             | ≤2,4                                                     |             |            |                  |                              |
| <b>POWER</b>            | 300 - 400W                                               |             |            |                  |                              |
| <b>TERMINATION</b>      | 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 (see chapt. 10)</i> |
|                         | 20 - 80 mm                                               |             |            |                  | WG 11 (standard)             |
|                         | 50 - 104 mm                                              |             |            |                  | WG 12 (option)               |
| <b>MATERIALS</b>        | aluminium, stainless steel<br>weather resistant plastics |             |            |                  |                              |
| <b>WEIGHT</b>           | 1.2 kg                                                   |             |            |                  |                              |
| <b>WIND AREA</b>        | 0.035 m <sup>2</sup>                                     |             |            |                  |                              |
| <b>WIND LOAD</b>        | 44 N at 130 km/h<br>33 N at 150 km/h                     |             |            |                  |                              |
| <b>DIMENSIONS (LxW)</b> | 470 x 340 mm                                             |             |            |                  |                              |



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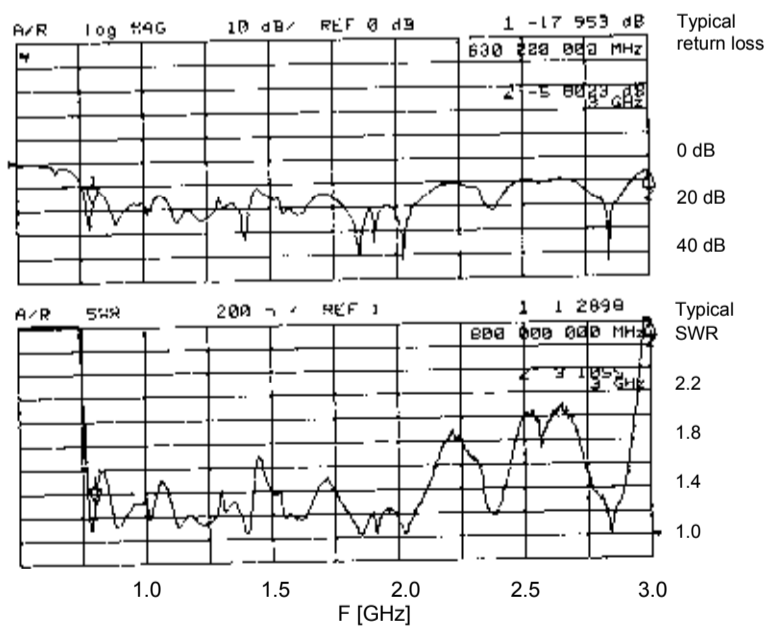
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**14-Element Log-Periodic Antenna**  
**WS 780 22 31 3**  
**0.8 - 3 GHz**

|                                   |                                                                  |                                                                    |
|-----------------------------------|------------------------------------------------------------------|--------------------------------------------------------------------|
| <b>TYPE NO</b>                    | WS 780 22 31 3 : 0.8 - 3 GHz                                     |                                                                    |
| <b>POLARIZATION</b>               | horizontal / vertical                                            |                                                                    |
| <b>IMPEDANCE</b>                  | 50 Ω                                                             |                                                                    |
| <b>GAIN</b>                       | 6.4 dBi, 4.2 dBd at 1 and 2 GHz                                  |                                                                    |
| <b>VSWR</b>                       | < 2.2 (0.8 - 2.8 GHz)                                            |                                                                    |
| <b>POWER</b>                      | 100 W                                                            |                                                                    |
| <b>3 dB BEAMWIDTH</b><br>mid-band | in polarization, E plane: 63°<br>vertical to pol., H plane: 103° |                                                                    |
| <b>TERMINATION</b>                | N female<br>other termination on request                         |                                                                    |
| <b>GROUNDING</b>                  | all metal parts are DC grounded                                  |                                                                    |
| <b>MOUNTING</b>                   | <i>mast</i> Ø<br>20 - 80 mm<br>50 - 104 mm                       | <i>clamp (see chapt. 10)</i><br>WG 11 (standard)<br>WG 12 (option) |
| <b>MATERIALS</b>                  | aluminium, stainless steel<br>weather resistant plastics         |                                                                    |
| <b>WEIGHT</b>                     | 710 g                                                            |                                                                    |
| <b>WIND AREA</b>                  | 0.01 m <sup>2</sup>                                              |                                                                    |
| <b>WIND LOAD</b>                  | 9 N at 130 km/h<br>12 N at 150 km/h                              |                                                                    |
| <b>DIMENSIONS (LxW)</b>           | 400 x 196 mm                                                     |                                                                    |



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