



Directional Antennas FM 87.5 ... 108 MHz

ORDER NUMBER	TYPE
WS U02 02 .1 7	2 element yagi, without radome
WS U02 03 .1 8	2 element yagi, heavy duty with radome
WS U03 02 .1 8	3 element yagi, without radome
WS U03 03 .1 8	3 element yagi, heavy duty with radome
WS U03 03 21 8/2x	radiation patterns of two coupled 3 element yagi antennas
WS U04 02 .1 8	4 element yagi, without radome
WS U04 03 .1 8	4 element yagi, heavy duty with radome
WS U04 03 21 8/2x	radiation patterns of two coupled 4 element yagi antennas
WS U06 02 .1 8	6 element yagi, without radome
WS U06 03 .1 8	6 element yagi, heavy duty with radome
WS U42 03 19 8	bidirectional antenna for wall mounting
WS U51 03 11	3 dB kleewi antenna
WS U52 03 11	6 dB kleewi antenna
WS U5. ...	radiation patterns no. 7-10 of kleewi antennas
WS U53 03 13	3 dB bidirectional antenna, heavy duty with radome
WS U55 03 13	6 dB bidirectional antenna, heavy duty with radome
WS U57 03 13	9 dB bidirectional antenna, heavy duty with radome
WS .80 22 31 1	loperiodic, boadband antennas

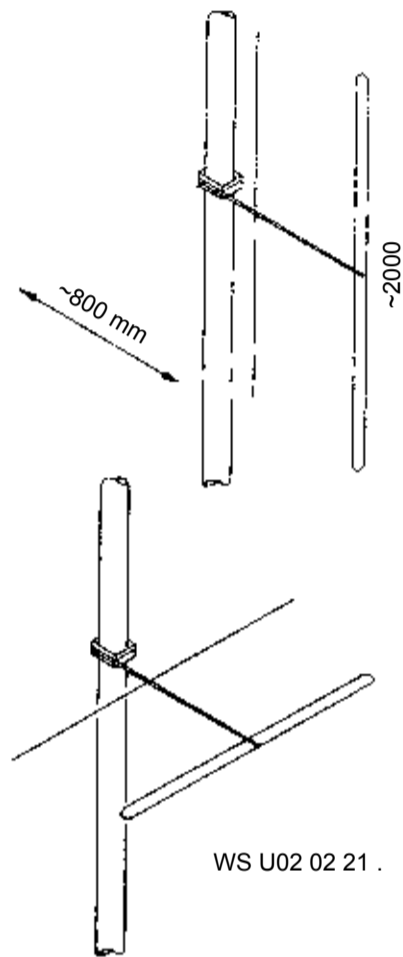
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Section 8.2. 1/19

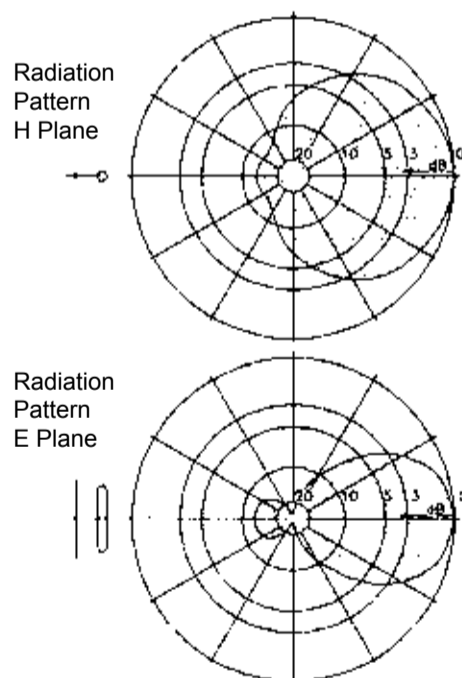


2 ELEMENT YAGI ANTENNA
WS U02 02 .1 7
87.5 ... 108 MHz

WS U02 02 11 .



TYPE NO.W	WS U02 02 11 7: 87.5 - 108 MHz vertical polarization WS U02 02 21 7: 87.5 - 108 MHz horizontal polarization further frequencies on request
IMPEDANCE	50 Ω
GAIN	3.5 dB (ref. to λ/2 dipole)
VSWR	< 1.3, at the limits of the band <1.7
POWER	max. 250 watts
3 dB BEAMWIDTH	in polarization, E-plane: 70° vertical to pol. H-plane: 127°
TERMINATION	2 m cable RG 213/U ending with N male
GROUNDING	all metal parts are DC grounded
MOUNTING	<i>mast ø</i> <i>clamp (see chapt. 10)</i> 30 - 80 mm WG 11 (standard) 50 - 104 mm WG 12 (option)
MATERIAL	aluminium, bolts of stainless steel, weather-resistant plastic
WEIGHT	2.4 kg
WIND AREA	0.07 m ²
WIND LOAD	90 N 150 km/h 67 N 130 km/h



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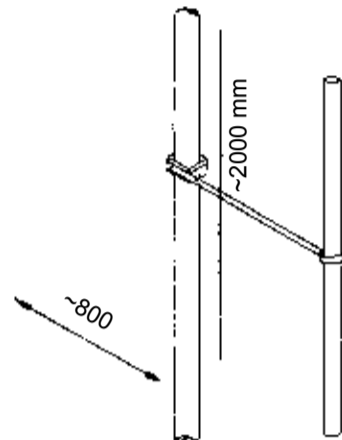
2 ELEMENT YAGI ANTENNA

WS U02 03 .1 8
87.5 ... 108 MHz

WS U02 03 11 .

TYPE NO.

WS U02 03 11 8: 87.5 - 108 MHz vertical polarization
WS U02 03 21 8: 87.5 - 108 MHz horizontal polarization
further frequencies on request



DESCRIPTION

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

IMPEDANCE

50 Ω

GAIN

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

VSWR

< 1.3 at the limits of the band < 1.7

POWER

600 watts, higher ratings on request

3 dB BEAMWIDTH

in polarization, E-plane: 70°
 vertical to pol. H-plane: 127°

TERMINATION

2 m cable RG 213/U with N male

GROUNDING

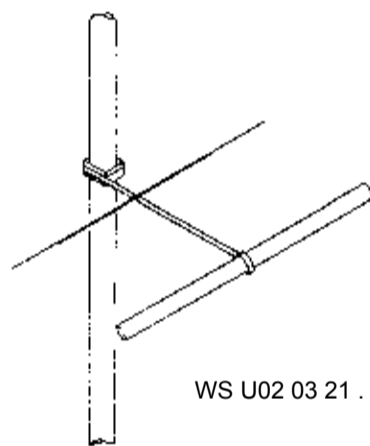
all metal parts are DC grounded

MOUNTING

mast \varnothing *clamp (see chapt. 10)*
 30 - 80 mm WG 15 (standard)
 50 - 104 mm WG 16 (option)

MATERIAL

aluminium, bolts of stainless steel, radom of UV-stabilized polyethylene



WS U02 03 21 .

WEIGHT

4 kg

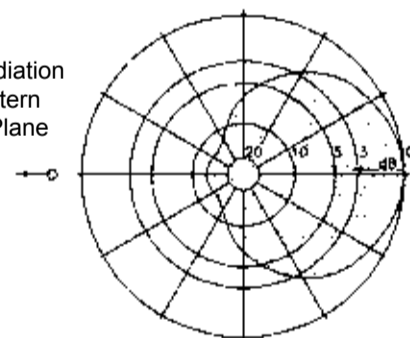
WIND AREA

0.16 m²

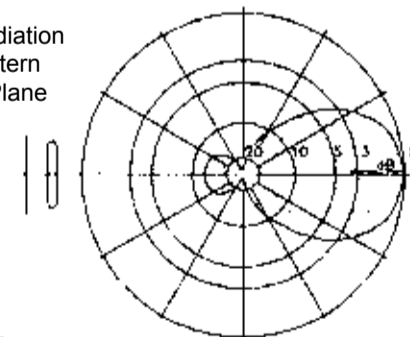
WIND LOAD

204 N 150 km/h
 153 N 130 km/h

Radiation
 Pattern
 H Plane



Radiation
 Pattern
 E Plane



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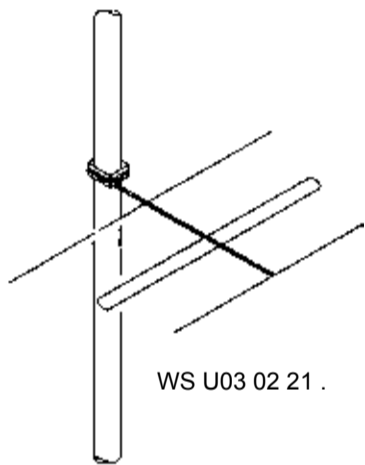
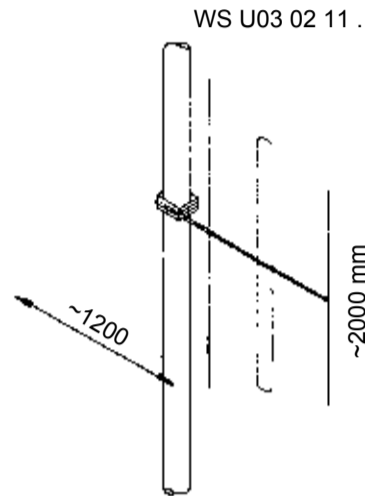
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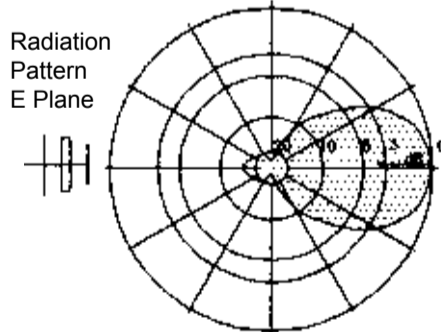
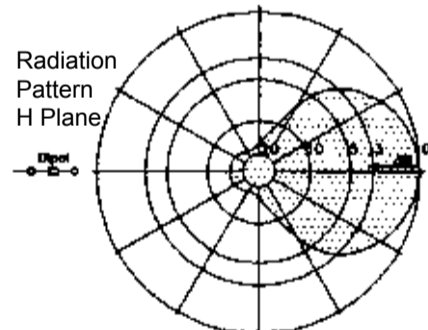
3 ELEMENT YAGI ANTENNA

WS U03 02 .1 8

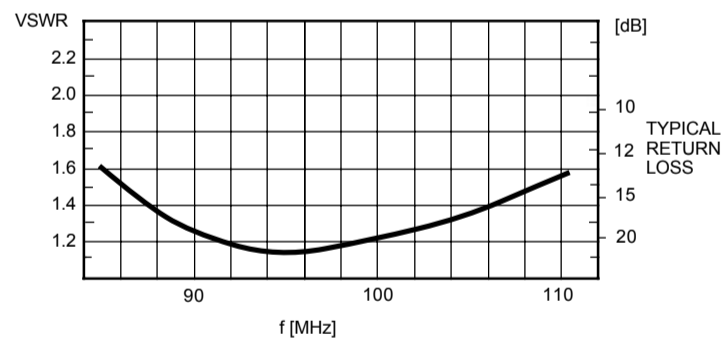
87.5 - 108 MHz



TYPE NO.	WS U03 02 11 8: 87.5 - 108 MHz vertical polarization WS U03 02 21 8: 87.5 - 108 MHz horizontal polarization further frequencies on request
IMPEDANCE	50 Ω
GAIN	5 dB (ref. to λ/2 dipole)
VSWR	< 1.3, at the limits of the band <1.5
POWER	max. 250 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	<i>mast ø</i> <i>clamp (see chapt. 10)</i> 30 - 80 mm WG 11 (standard) 50 - 104 mm WG 12 (option)
MATERIAL	aluminium, bolts of stainless steel, weather-resistant plastic
WEIGHT	2.5 kg
WIND AREA	0.13 m ²
WIND LOAD	166 N 150 km/h 124 N 130 km/h



KW 1-08



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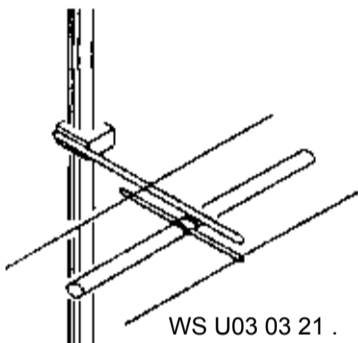
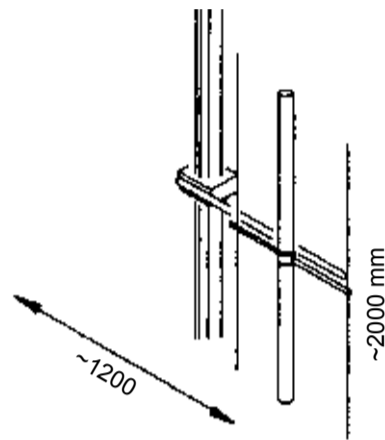
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3 ELEMENT YAGI ANTENNA

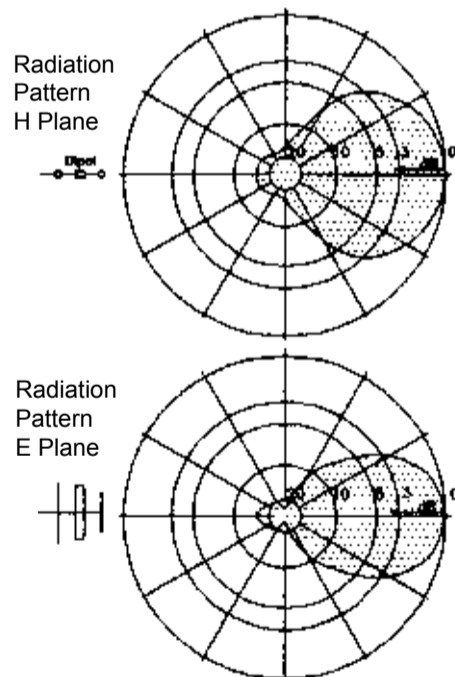
WS U03 03 .1 8

87.5 - 108 MHz

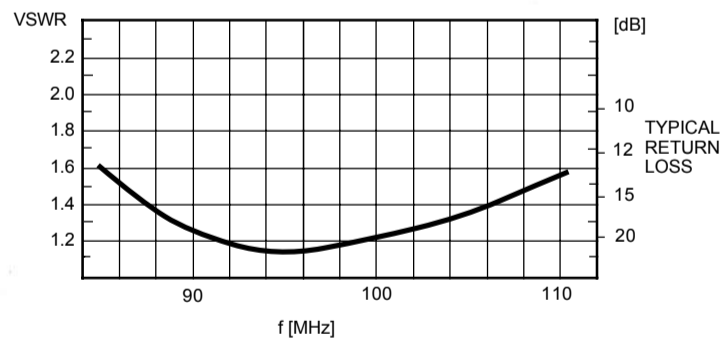
WS U03 03 11 .



WS U03 03 21 .



TYPE NO.	WS U03 03 11 8: 87.5 - 108 MHz vertical polarization WS U03 03 21 8: 87.5 - 108 MHz horizontal polarization further frequencies on request
DESCRIPTION	heavy duty, with radome The radome protects the antenna dipole against environmental influences, icing, and increases the lightning protection.
IMPEDANCE	50 Ω
GAIN	5 dB (ref. to λ/2 dipole)
VSWR	< 1.3, at the limits of the band < 1.5
POWER	600 watts, higher ratings on request
3 dB BEAMWIDTH	in polarization, E-plane: 66° vertical to pol. H-plane: 110°
TERMINATION	2 m cable RG 213/U with N male other termination on request
GROUNDING	all metal parts are DC grounded
MOUNTING	<i>mast ø</i> <i>clamp (see chapt. 10)</i> 30 - 80 mm WG 17 (standard) 50 - 104 mm WG 18 (option)
MATERIAL	aluminium, bolts of stainless steel, radome of UV-stabilized polyethylene
WEIGHT	5.7 kg
WIND AREA	0.25 m ²
WIND LOAD	320 N 150 km/h 240 N 130 km/h



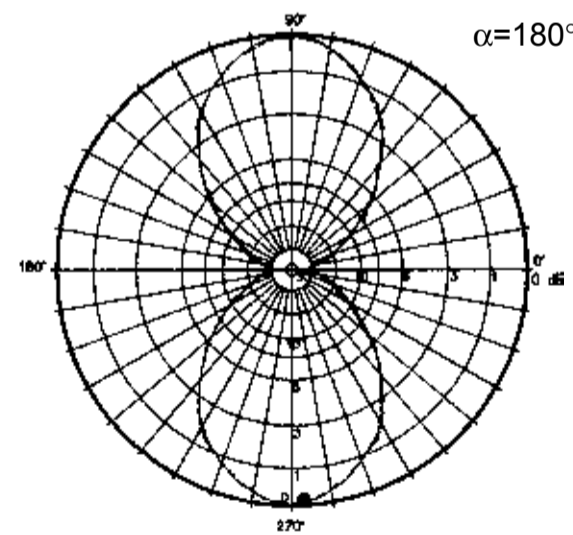
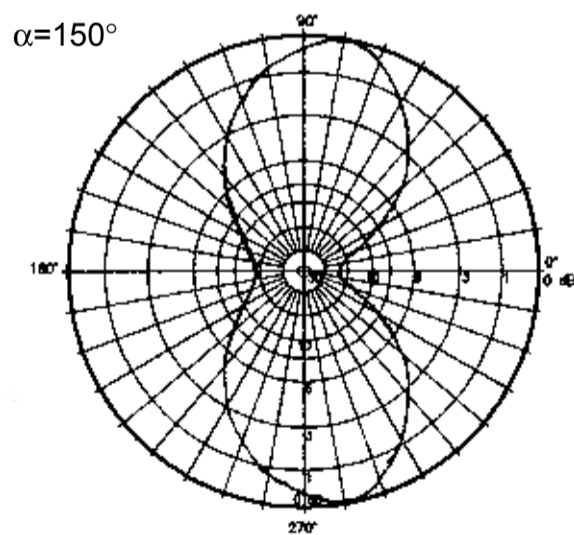
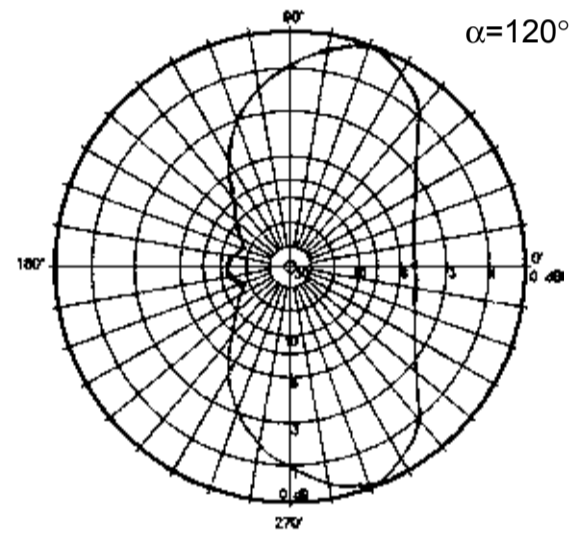
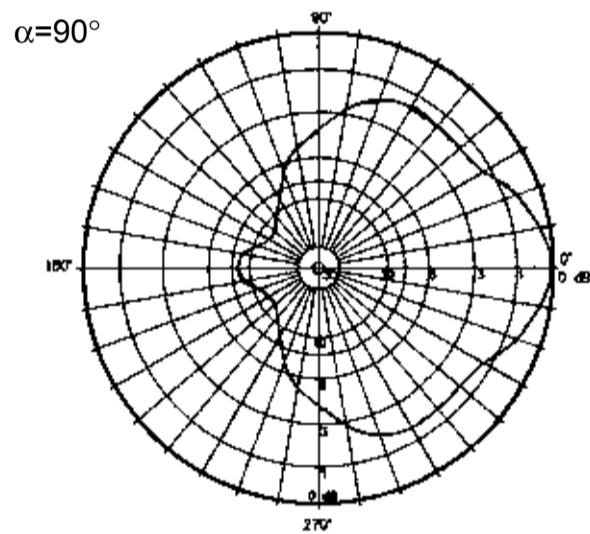
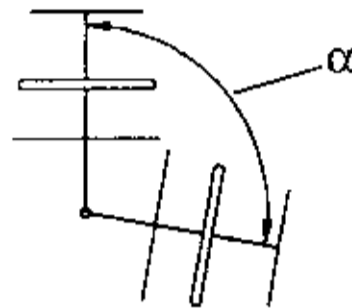
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**Horizontal radiation patterns of two coupled
3-element Yagi-antennas WS U03 03 21 8
87.5 - 108 MHz**

By changing the angle α between the antennas
different radiation patterns can be realised

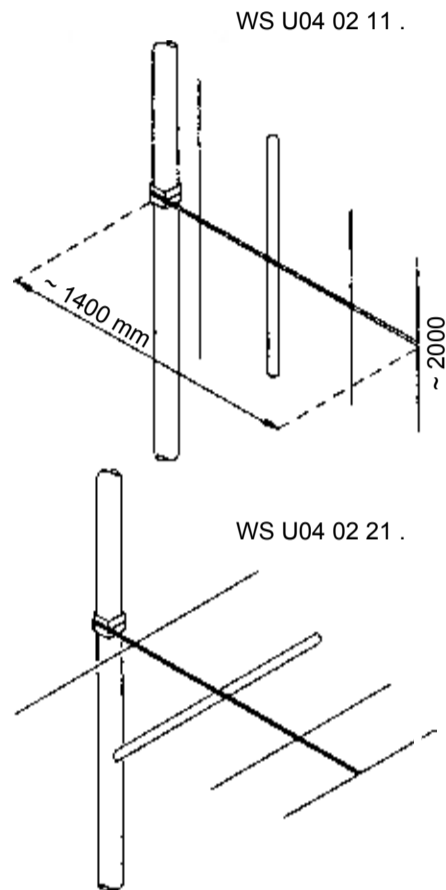


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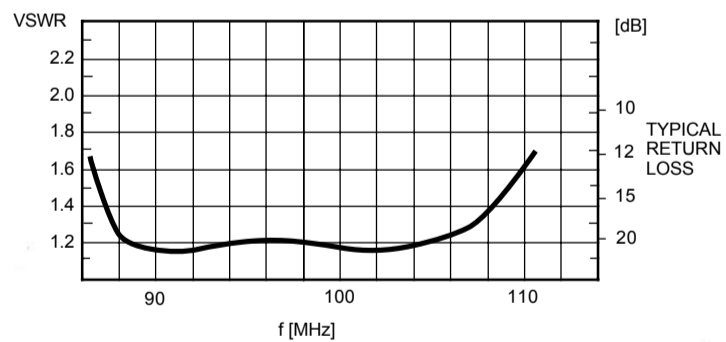
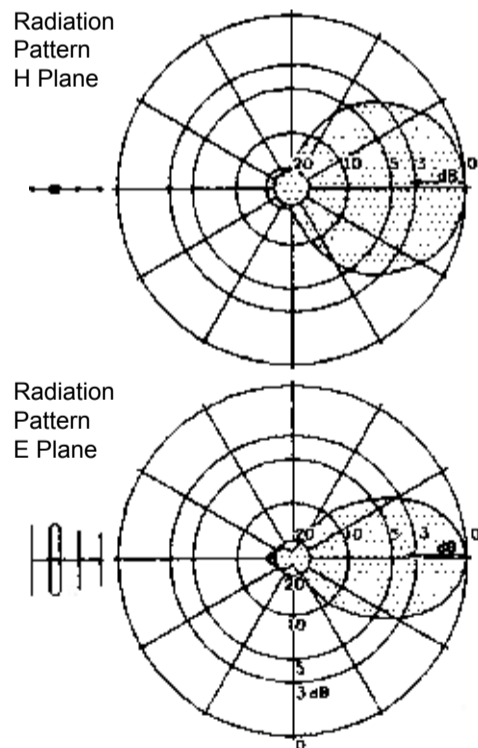
WIPIC reserves the right to amend specifications in the light of continuing development.

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4 ELEMENT YAGI ANTENNA
WS U04 02 .1 8
87.5 - 108 MHz



TYPE NO.	WS U04 02 11 8: 87.5 - 108 MHz vertical polarization WS U04 02 21 8: 87.5 - 108 MHz horizontal polariz. further frequencies on request
IMPEDANCE	50 Ω
GAIN	6 dB (ref. to $\lambda/2$ dipol)
VSWR	< 1.3, at the limits of the band <1.5
POWER	max. 250 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	<i>mast \varnothing</i> <i>clamp (see chapt. 10)</i> 30 - 80 mm WG 11 (standard) 50 - 104 mm WG 12 (option)
MATERIAL	aluminium, bolts of stainless steel, weather-resistant plastic
WEIGHT	3.2 kg
WIND AREA	0.13 m ²
WIND LOAD	166 N 150 km/h 124 N 130 km/h

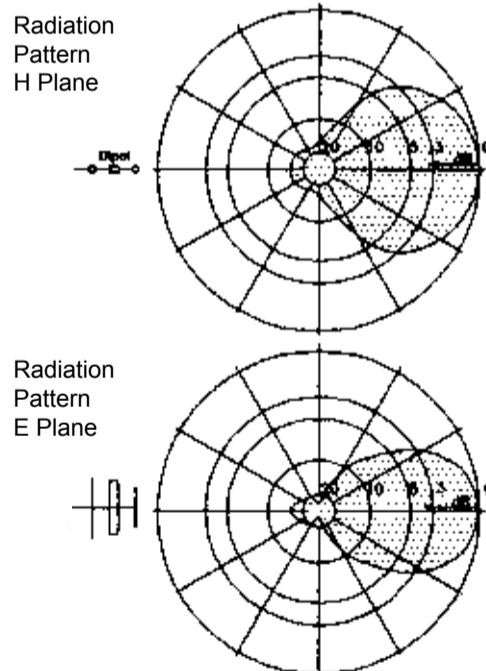
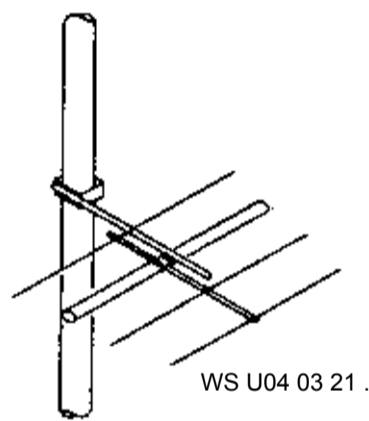
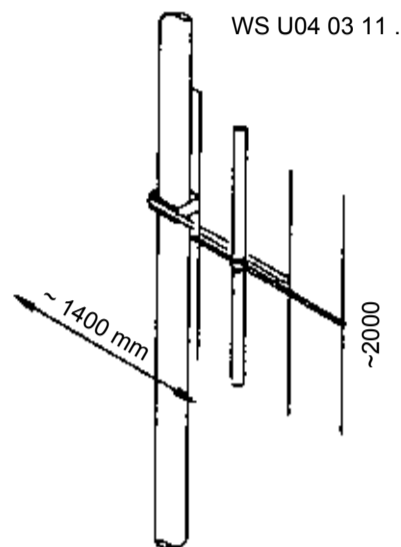


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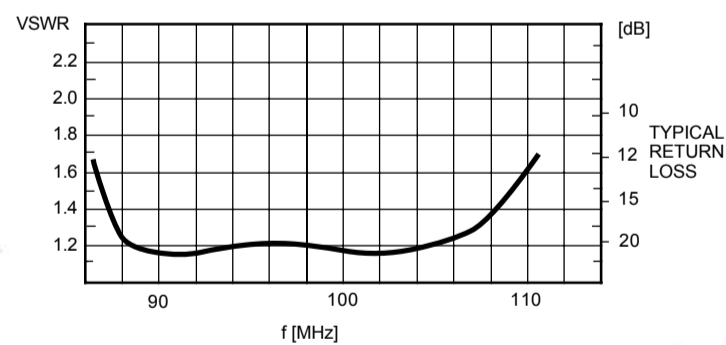
WIPIC reserves the right to amend specifications in the light of continuing development.

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**4 ELEMENT YAGI ANTENNA
WS U04 03 .1 8
87.5 - 108 MHz**



TYPE NO.	WS U04 03 11 8: 87.5 - 108 MHz vertical polarization WS U04 03 21 8: 87.5 - 108 MHz horizontal polarization further frequencies on request
DESCRIPTION	heavy duty, with radome The radome protects the antenna dipole against environmental influences, icing, and increases the lightning protection.
IMPEDANCE	50 Ω
GAIN	6.5 dB (ref. to λ/2 dipole)
VSWR	< 1.3, at the limits of the band < 1.5
POWER	600 watts, higher ratings on request
3 dB BEAMWIDTH	in polarization, E-plane: 58° vertical to pol. H-plane: 90°
TERMINATION	2 m cable RG 213/U with N male other termination on request
GROUNDING	all metal parts are DC grounded
MOUNTING	<i>mast</i> ∅ <i>clamp (see chapt. 10)</i> 30 - 80 mm WG 17 (standard) 50 - 104 mm WG 18 (option)
MATERIAL	aluminium, bolts of stainless steel, radome of UV-stabilized polyethylene
WEIGHT	6.4 kg
WIND AREA	0.26 m ²
WIND LOAD	330 N 150 km/h 250 N 130 km/h



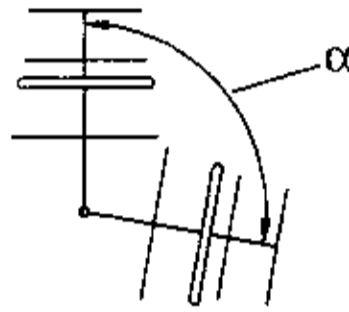
KW 1-08

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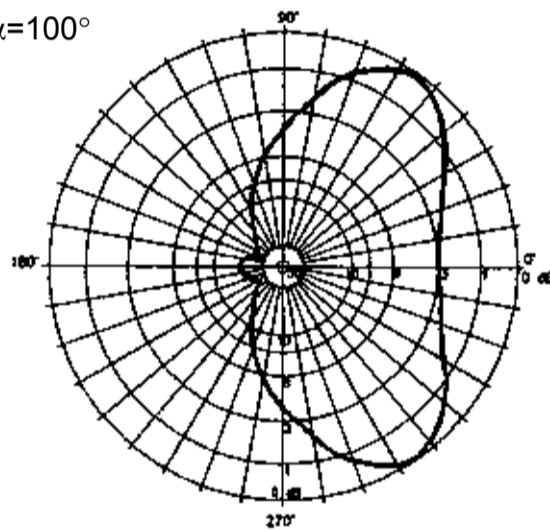


Horizontal radiation patterns of two coupled
4-element Yagi-antennas WS U04 03 21 8
87.5 - 108 MHz

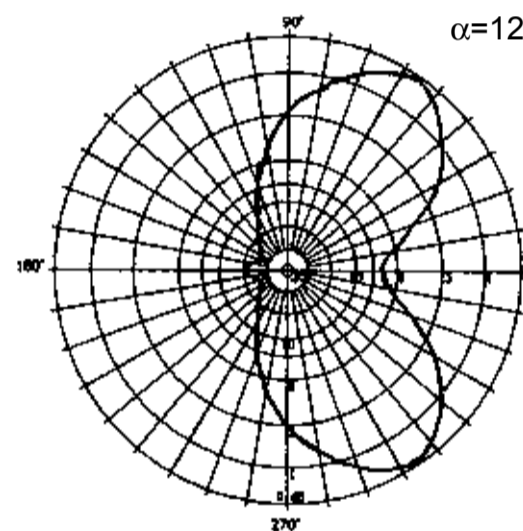
By changing the angle α between the antennas
you can get different radiation patterns.



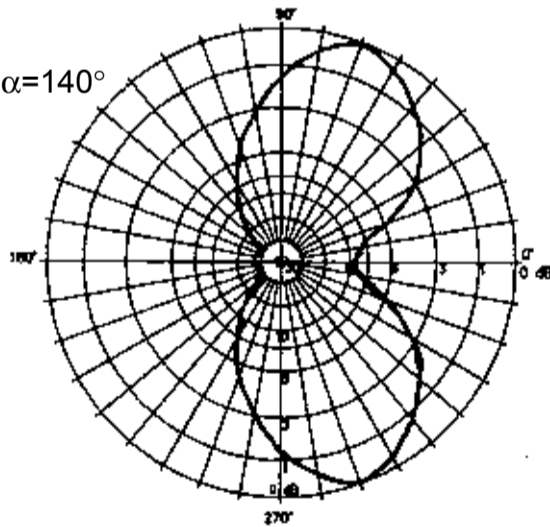
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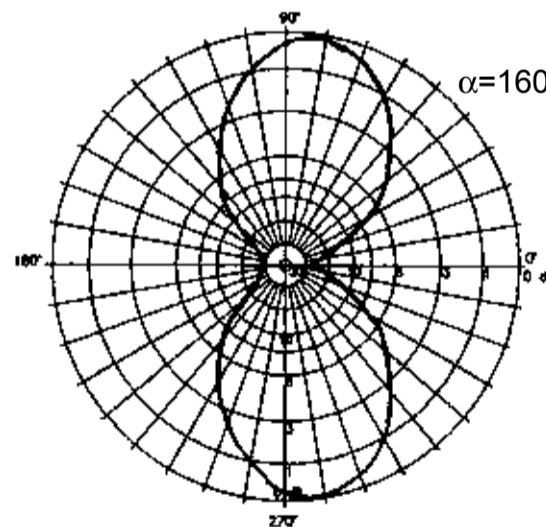
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$\alpha=140^\circ$



$\alpha=160^\circ$

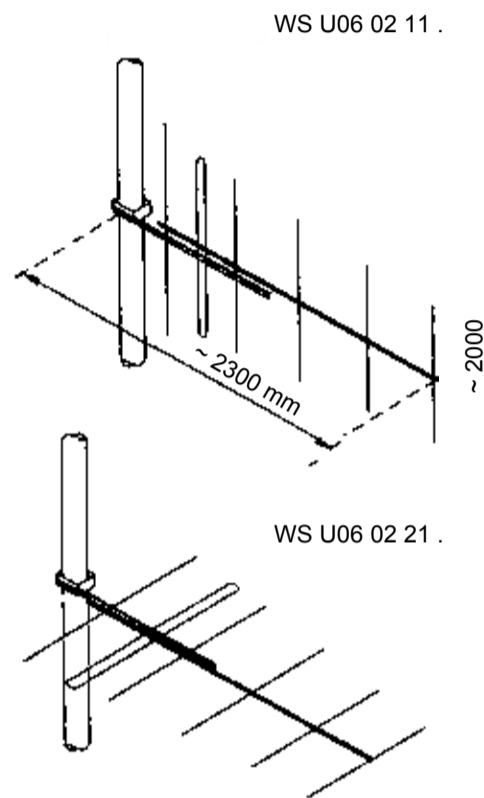


KW 1-08

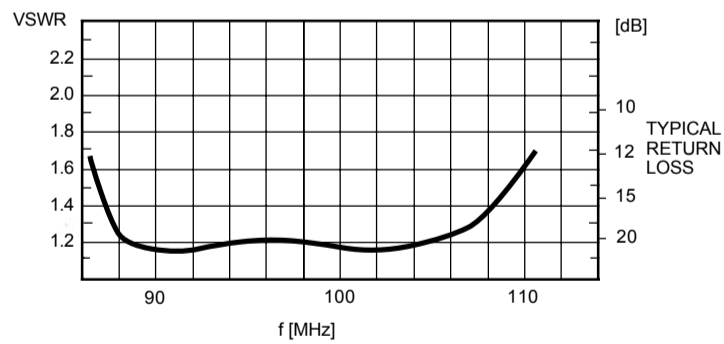
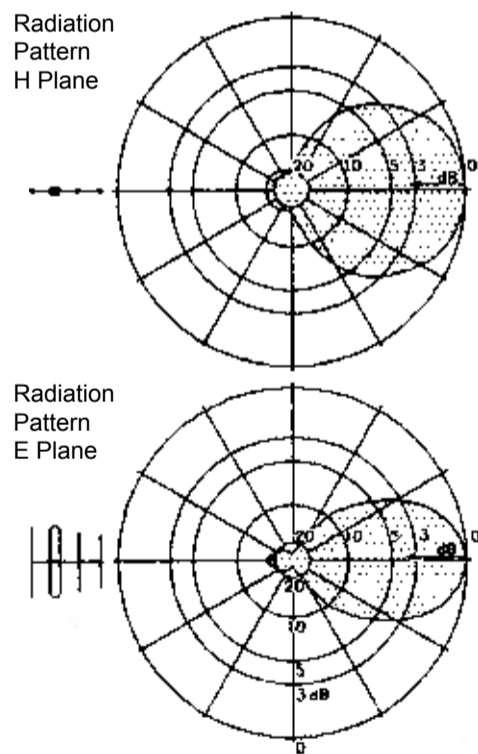
WIPIC reserves the right to amend specifications in the light of continuing development.

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**6 ELEMENT YAGI ANTENNA
WS U06 02 .1 8
87.5 - 108 MHz**



TYPE NO	WS U06 02 11 8: 87.5 - 108 MHz vertical polariz. WS U06 02 21 8: 87.5 - 108 MHz horiz. polarization further frequencies on request
IMPEDANCE	50 Ω
GAIN	8.5 dB (ref. to λ/2 dipole)
VSWR	< 1.3, at the limits of the band < 1.5
POWER	600 watts, higher ratings on request
3 dB BEAMWIDTH	in polarization, E-plane: 48° vertical to pol. H-plane: 70°
TERMINATION	2 m cable RG 213/U with N male other termination on request
GROUNDING	all metal parts are DC grounded
MOUNTING	<i>mast</i> ∅ <i>clamp</i> (see chapt. 10) 30 - 80 mm WG 15 (standard) 50 - 104 mm WG 16 (option) clamps for other ∅ on request
MATERIAL	aluminium, bolts of stainless steel, weather resistant plastics
WEIGHT	3.3 kg
WIND AREA	0.13 m ²
WIND LOAD	166 N bei 150 km/h 124 N bei 130 km/h



KW 1-08

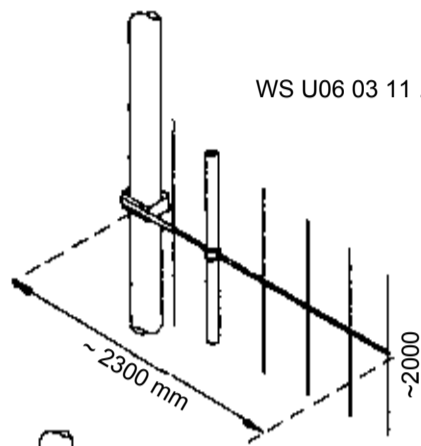
WIPIC reserves the right to amend specifications in the light of continuing development.

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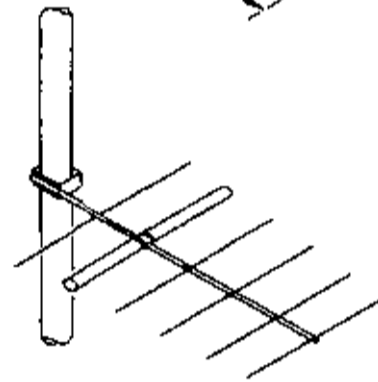
6 ELEMENT YAGI ANTENNA

WS U06 03 .1 8

87.5 - 108 MHz



WS U06 03 11 .



WS U06 03 21 .

TYPE NO. WS U06 03 11 8: 87.5 - 108 MHz vertical polariz.
WS U06 03 21 8: 87.5 - 108 MHz horiz. polarization
further frequencies on request

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

IMPEDANCE 50 Ω

GAIN 8.5 dB (ref. to λ/2 dipole)

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

POWER 600 watts, higher ratings on request

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

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

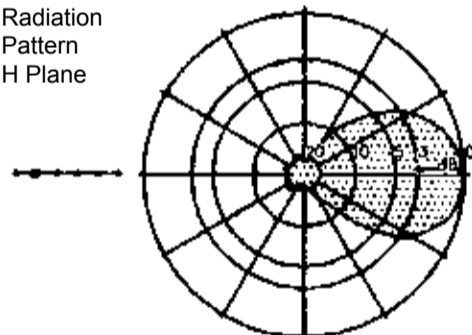
GROUNDING all metal parts are DC grounded

MOUNTING mast ø clamp (see chapt. 10)
30 - 80 mm WG 17 (standard)
50 - 104 mm WG 18 (option)
clamps for other ø on request

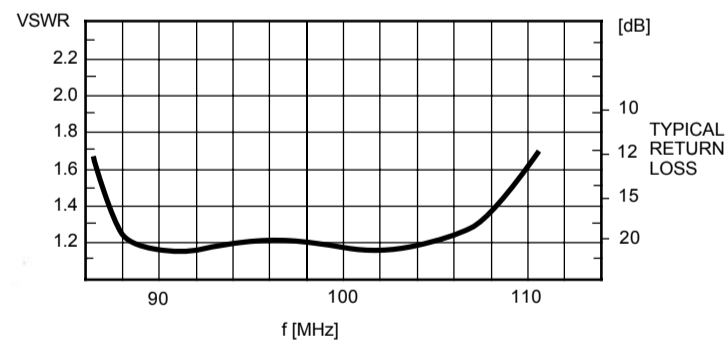
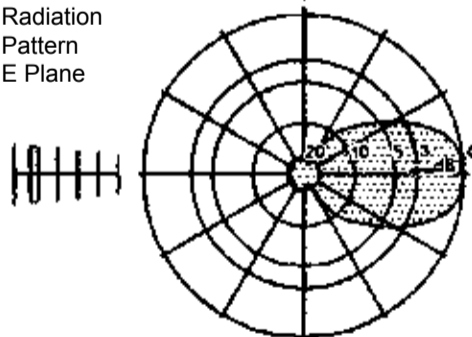
MATERIAL aluminium, bolts of stainless steel, radome of UV-stabilized polyethylene

WEIGHT 7.5 kg
WIND AREA 0.37 m²
WIND LOAD 470 N 150 km/h
355 N 130 km/h

Radiation
Pattern
H Plane



Radiation
Pattern
E Plane

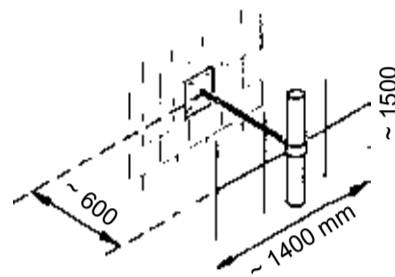


KW 1-08

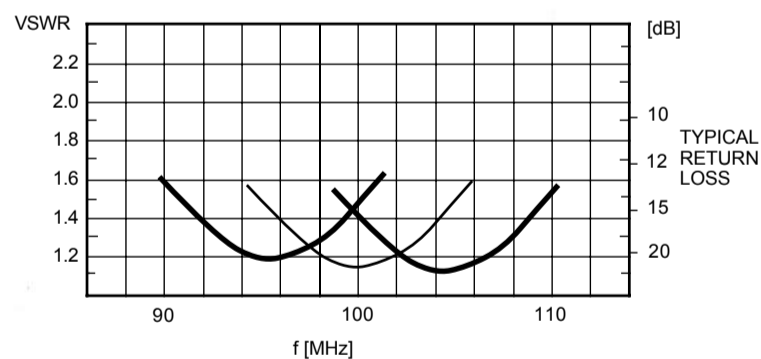
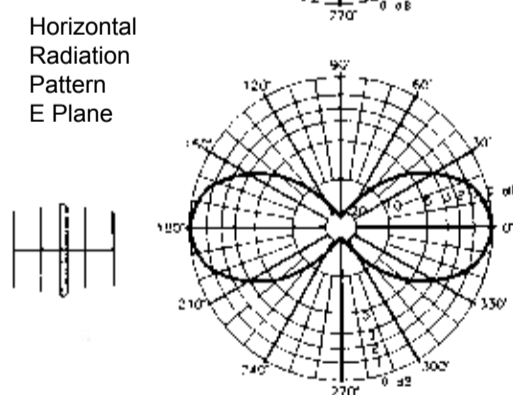
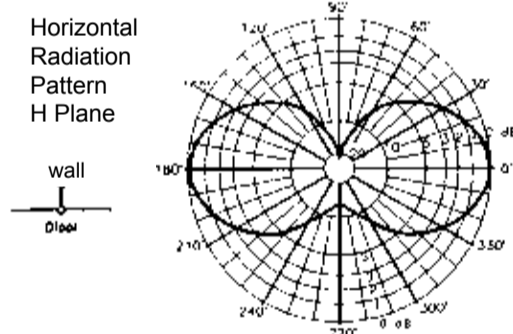
WIPIC reserves the right to amend specifications in the light of continuing development.



BIDIRECTIONAL ANTENNA FOR WALL MOUNTING
WS U42 03 19 8
87.5 - 108 MHz



TYPE NO.	WS U42 03 19 8: 87.5 - 108 MHz further frequencies and mast mounting 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 3 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 120x120x10 mm (flange Nr 23) on walls	
MATERIAL	anodized aluminium, bolts of stainless steel, radome of UV-stabilized polyethylene	
WEIGHT	8 kg	
WIND AREA	0.19 m ²	
WIND LOAD	242 N (150 km/h) 182 N (130 km/h)	

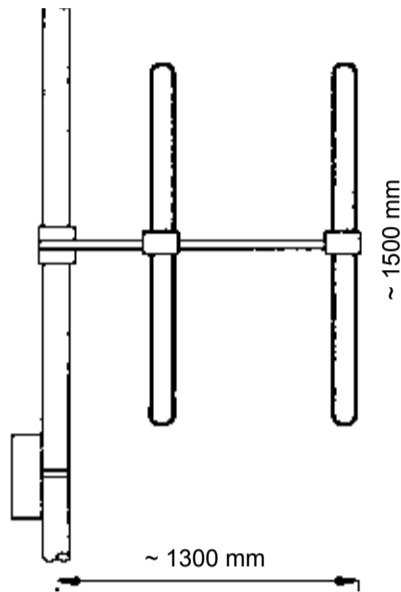


KW 1-08

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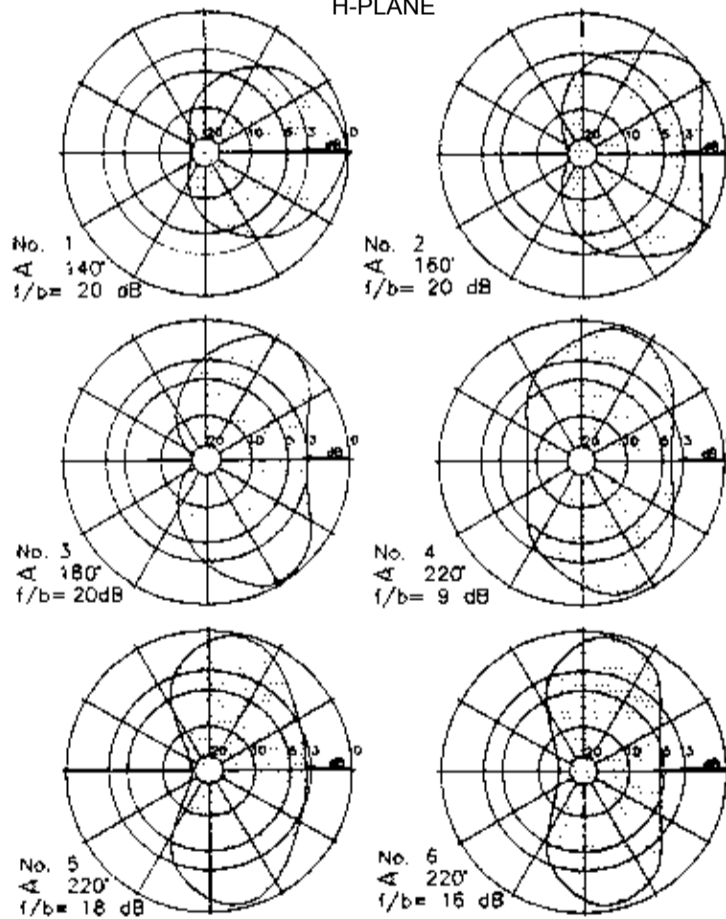


DIRECTIONAL ANTENNA TYPE KLEEWI
WS U51 03 11
87.5 ... 108 MHz



TYPE NO.	WS U51 03 11 (desired frequency)
DESCRIPTION	This antenna produces different radiation patterns and F/B ratios (see illustrations). The antenna is tuned to the desired frequency (bandwidth ± 3 MHz, other bandwidth 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	3 dB (ref. $\lambda/2$ dipole) in the main beam directions
VSWR	< 1.2 on tuned frequency
POWER	max. 600 watts, higher ratings on request
3 dB BEAMWIDTH	horizontal: see illustrations vertical: $\sim 78^\circ$

TYPICAL RADIATION PATTERNS
H-PLANE



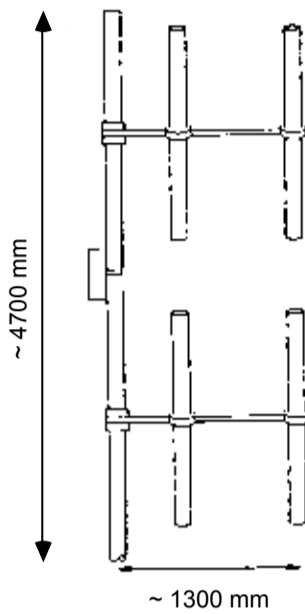
TERMINATION	in the junction box WAK 1 ending with N male other termination on request
GROUNDING	all metal parts are DC grounded
MOUNTING	<i>mast-\emptyset</i> <i>clamp</i> 30 - 80 mm WG 17 (standard) 50 - 104 mm WG 18 (option) other clamps on request
MATERIAL	aluminium, bolts of stainless steel, radome of UV-stabilized polyethylene
WEIGHT	7 kg
WIND AREA	0.2 m ²
WIND LOAD	255 N at 150 km/h 190 N at 130 km/h

KW 1-08

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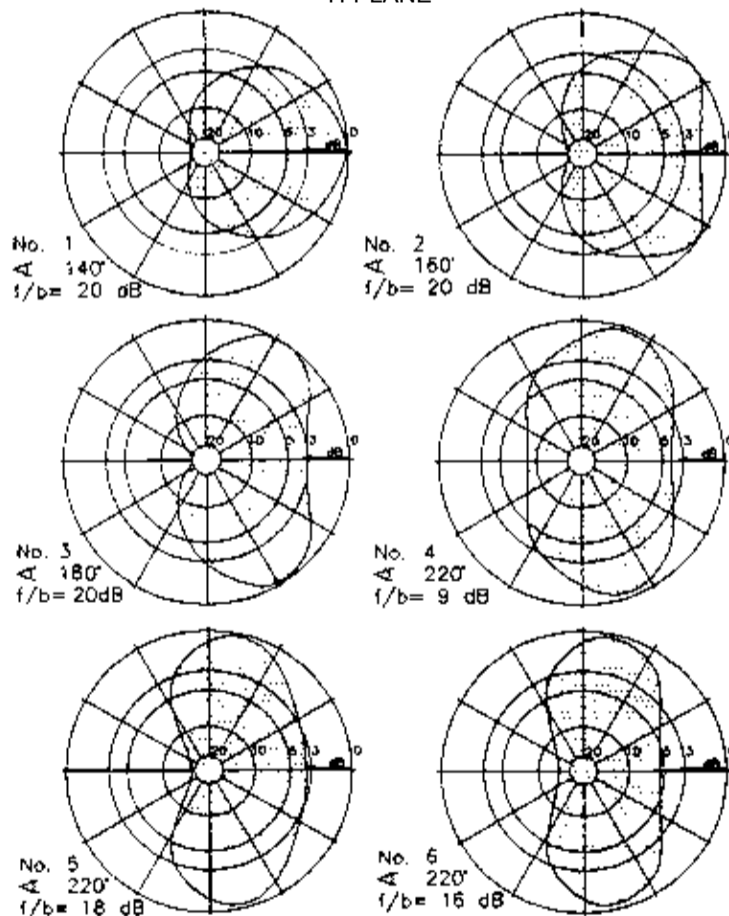
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**DIRECTIONAL ANTENNA TYPE KLEEWI
WS U52 03 11
87.5 ... 108 MHz**



TYPE NO.	WS U52 03 11 (desired frequency)
DESCRIPTION	This antenna produces different radiation patterns and F/B ratios (see illustrations). The antenna is tuned to the desired frequency (bandwidth ± 3 MHz, other bandwidth on request). heavy duty, with radome, down(up)tilt on request The radome protects the antenna dipole against environmental influences, icing, and increases the lightning protection.
POLARIZATION	vertical
IMPEDANCE	50 Ω
GAIN	6 dB (ref. $\lambda/2$ dipole) in the main beam directions
VSWR	< 1.2 on tuned frequency
POWER	max. 600 watts, higher ratings on request
3 dB BEAMWIDTH	horizontal: see illustrations vertical: $\sim 40^\circ$

TYPICAL RADIATION PATTERNS
H-PLANE



TERMINATION in the junction box WAK 1 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)
other clamps on request

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

WEIGHT 13 kg
WIND AREA 0.4 m²
WIND LOAD 510 N
380 N

KW 1-08

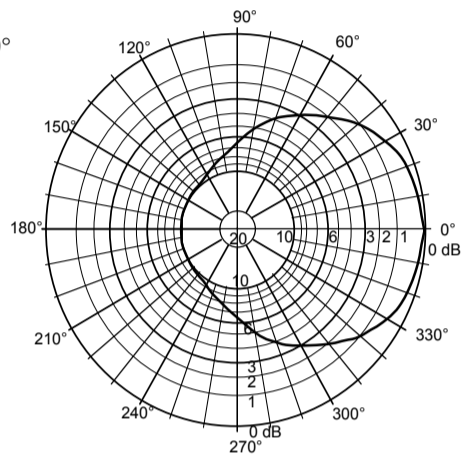
WIPIC reserves the right to amend specifications in the light of continuing development.



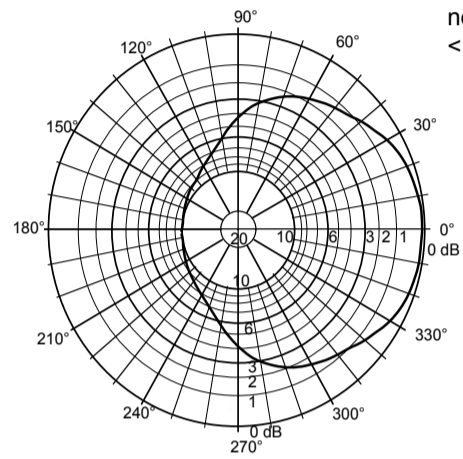
**DIRECTIONAL ANTENNA TYPE KLEEWI
WS U5. 02/3 11
87.5 ... 108 MHz (tuned on requested frequency)**

Typical Horizontal Radiation Patterns

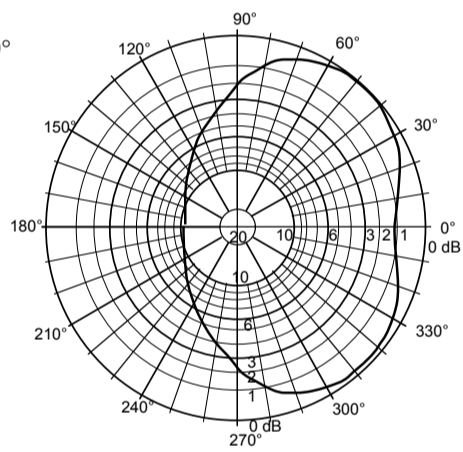
no. 7
< ~130°



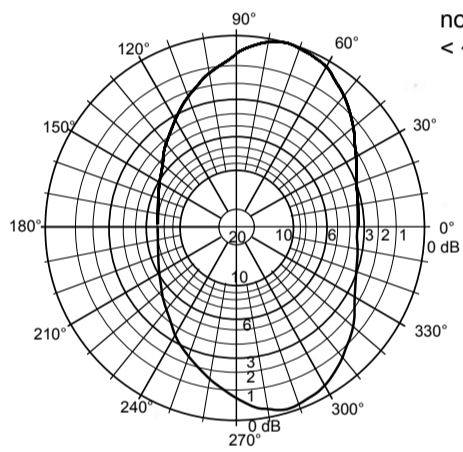
no. 8
< ~160°



no. 9
< ~200°



no. 10
< ~250°

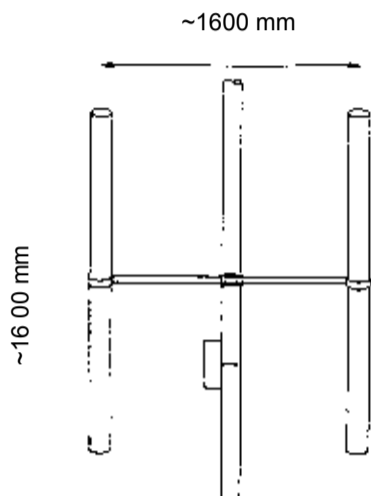


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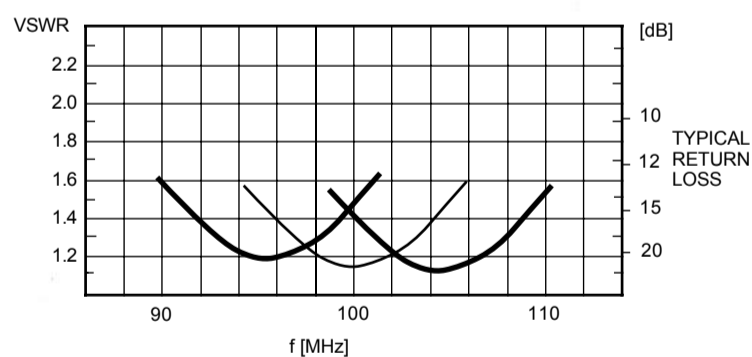
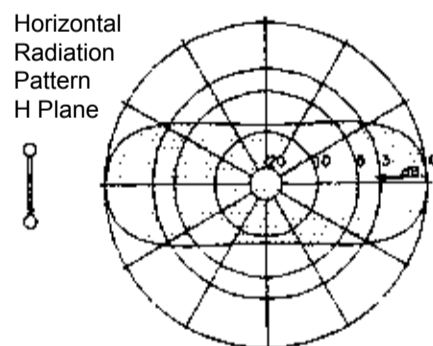
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**BIDIRECTIONAL ANTENNA
WS U53 03 13
87.5 ... 108 MHz**



TYPE NO.	WS U53 03 13: (desired frequency band) further frequencies on request
DESCRIPTION	heavy duty, with radom The radom protects the antenna dipole against environmental influences, icing, and increases the lightning protection.
POLARIZATION	vertical
IMPEDANCE	50 Ω
GAIN	3 dB (ref. to λ/2 dipole)
VSWR	< 1.3, at the limits of the band < 1.5
POWER	350 watts, higher power on request
3 dB BEAMWIDTH	horizontal, H-plane: 65° vertical, E-plane: 70°
TERMINATION	in the junction box WAK 1 ending with N male other termination on request
GROUNDING	all metal parts are DC grounded
MOUNTING	<i>mast</i> ∅ <i>clamp</i> (see <i>chapt. 10</i>) 30 - 80 mm WG 17 (standard) 50 - 104 mm WG 18 (option) other clamp on request
MATERIAL	aluminium, bolts of stainless steel, radom of UV-stabilized polyethylene
WEIGHT	11 kg
WIND AREA	0.27 m ²
WIND LOAD	345 N 150 km/h 260 N 130 km/h

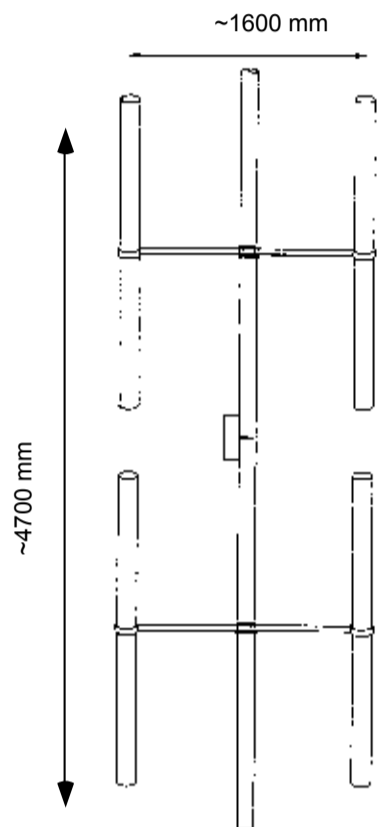


KW 1-08

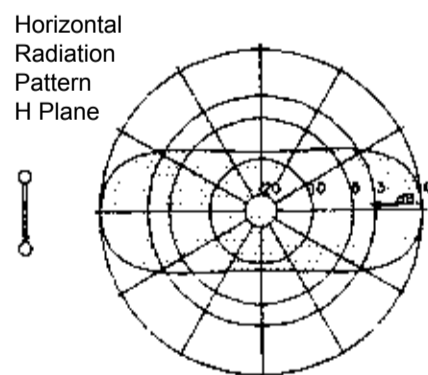
WIPIC reserves the right to amend specifications in the light of continuing development.

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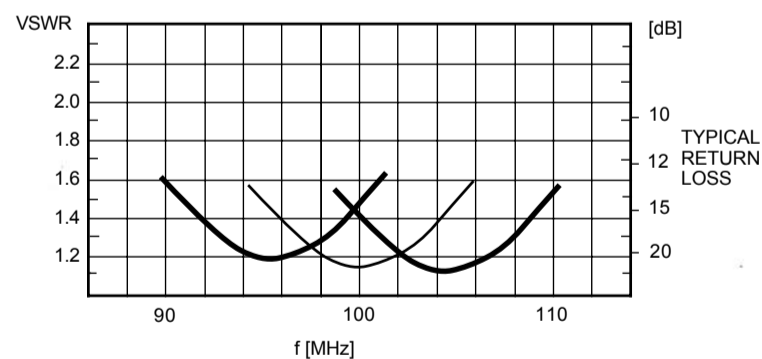
**BIDIRECTIONAL ANTENNA
WS U55 03 13
87.5 ... 108 MHz**



TYPE NO.	WS U55 03 13: (desired frequency band) further frequencies and tilt on request
DESCRIPTION	heavy duty, with radom The radom protects the antenna dipole against environmental influences, icing, and increases the lightning protection. bandwidth: ± 3 MHz
POLARIZATION	vertical
IMPEDANCE	50 Ω
GAIN	6 dB (ref. to $\lambda/2$ dipole)
VSWR	< 1.3, at the limits of the band < 1.5
POWER	600 watts, higher power on request
3 dB BEAMWIDTH	horizontal, H-plane: 2x65° vertical, E-plane: 2x39°
TERMINATION	in the junction box WAK 1 ending with N male other termination on request
GROUNDING	all metal parts are DC grounded
MOUNTING	<i>mast \varnothing</i> <i>clamp (see chapt. 10)</i> 30 - 80 mm WG 17 (standard) 50 - 104 mm WG 18 (option) other clamp on request
MATERIAL	aluminium, bolts of stainless steel, radom of UV-stabilized polyethylene
WEIGHT	17 kg
WIND AREA	0.3 m ²
WIND LOAD	383 N 287 N



KW 1-08



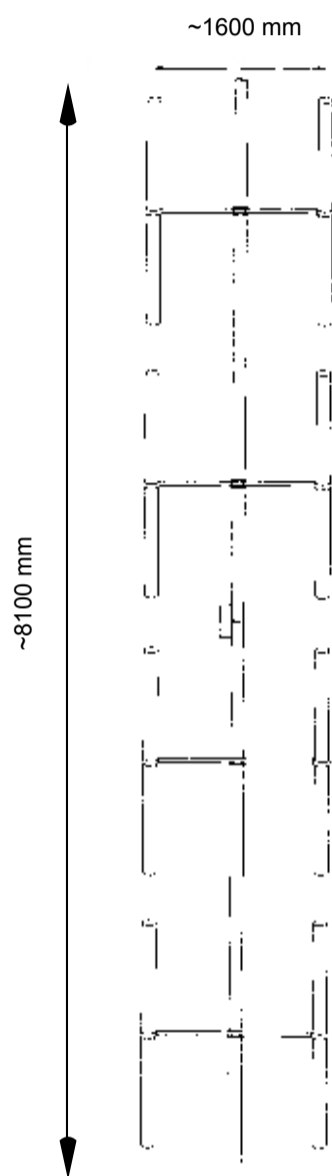
WIPIC reserves the right to amend specifications in the light of continuing development.

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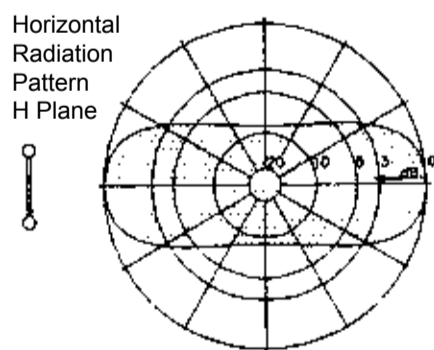
BIDIRECTIONAL ANTENNA

WS U57 03 13

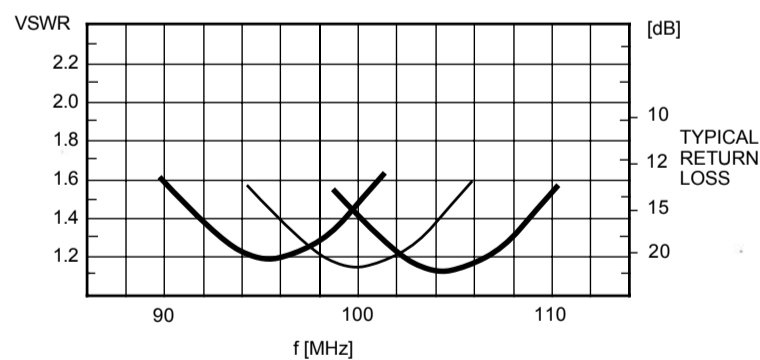
87.5 ... 108 MHz



TYPE NO.	WS U57 03 13: (desired frequency band) further frequencies and tilt on request
DESCRIPTION	heavy duty, with radom The radom protects the antenna dipole against environmental influences, icing, and increases the lightning protection. bandwidth: ± 3 MHz
POLARIZATION	vertical
IMPEDANCE	50 Ω
GAIN	9 dB (ref. to $\lambda/2$ dipole)
VSWR	< 1.3, at the limits of the band < 1.5
POWER	600 watts, higher power on request
3 dB BEAMWIDTH	horizontal, H-plane: 2x65° vertical, E-plane: 2x20°
TERMINATION	in the junction box WAK 1 ending with N male other termination on request
GROUNDING	all metal parts are DC grounded
MOUNTING	<i>mast \varnothing</i> <i>clamp (see chapt. 10)</i> 30 - 80 mm WG 17 (standard) 50 - 104 mm WG 18 (option) other clamp on request
MATERIAL	aluminium, bolts of stainless steel, radom of UV-stabilized polyethylene
WEIGHT	<i>without mast</i> 33 kg
WIND AREA	0.6 m ²
WIND LOAD	383 N 287 N



KW 1-08



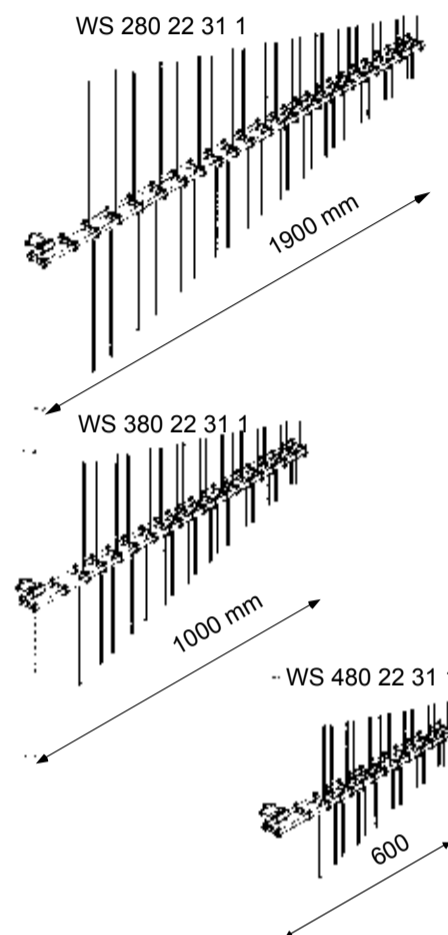
WIPIC reserves the right to amend specifications in the light of continuing development.

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LOG PERIODIC ANTENNAS

WS .80 22 31 1

87 ... 1000 MHz



TYPE NO.	WS 280 22 31 1: 87.5 - 1000 MHz WS 380 22 31 1: 146 - 1000 MHz WS 480 22 31 1: 380 - 1000 MHz other bands on request
POLARIZATION	vertical or horizontal on request
IMPEDANCE	50 or 75 Ω
GAIN	5-6dB ref. λ/2 Dipol 7-8 dBi F/B 20 - 25 dB
VSWR	≤ 2.5 preferred < 1.5
POWER	300 - 1000 watts (depending on frequency)
3 dB BEAMWIDTH	E-plane: 60 - 70° H-plane: 110 - 130°
TERMINATION	2 m cable RG 213/U or RG 11 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	280 .. 380 .. 480 ..
WIND AREA	3.9 kg 2.3 kg 1.4 kg
WIND LOAD	0.21 m ² 0.093 m ² 0.052 m ²
	270 N 120 N 66 N at 150 km/h
	200 N 90 N 50 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.