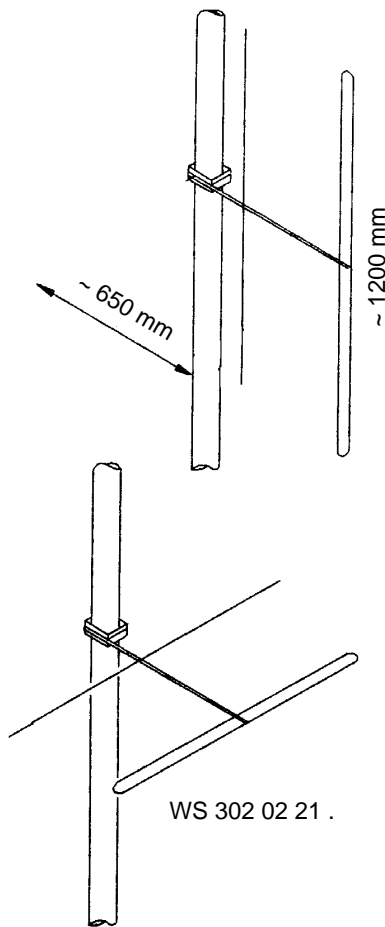


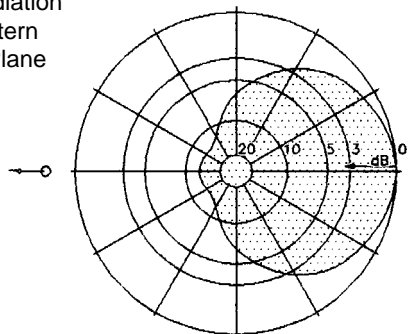
ORDER NUMBER	TYPE
WS 302 02 .1 8	2 element yagi
WS 302 03 .1 8	2 element yagi, heavy duty with radome
WS 303 02 .1 8	3 element yagi
WS 303 03 .1 8	3 element yagi, heavy duty with radome
WS 304 02 .1 8	4 element yagi
WS 304 03 .1 8	4 element yagi, heavy duty with radome
WS 305 02 .1 8	5 element yagi
WS 306 02 .1 8	6 element yagi
WS 306 03 .1 8	6 element yagi, heavy duty with radome
WS 306 02 12 8	6 element yagi
WS 306 03 12 8	6 element yagi, heavy duty with radome
WS 306 02 23 8	6 element yagi
WS 306 03 23 8	6 element yagi, heavy duty with radome
WS 309 02 12 8	9 element yagi
WS 309 03 12 8	9 element yagi, heavy duty with radome
WS 309 02 23 8	9 element yagi
WS 309 03 23 8	9 element yagi, heavy duty with radome
WS 312 02 12 8	12 element yagi
WS 312 03 12 8	12 element yagi, heavy duty with radome
WS 312 02 23 8	12 element yagi
WS 312 03 23 8	12 element yagi, heavy duty with radome
WS 342 02 12 9	3 dB bidirectional antenna
WS 342 03 12 9	3 dB bidirectional antenna, heavy duty with radome
WS 343/5 02/3 12 9	bidirectional antennas, combined types
WS 344/6 02/3 12 9	bidirectional antennas, combined types
WS 348 02 12 9	4.5 dB bidirectional antenna
WS 348 03 12 9	4.5 dB bidirectional antenna, heavy duty with radome
WS 351 02 11	directional antenna kleewi
WS 351 03 11	directional antenna kleewi, heavy duty with radome
WS 352 02/3 11	6 dB directional antenna kleewi
WS .80 22 31 1	log periodics

WS 302 02 11 .

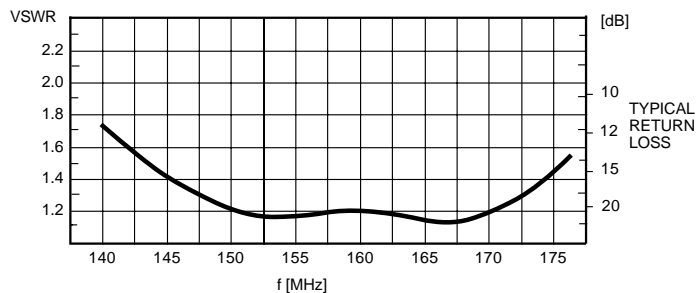
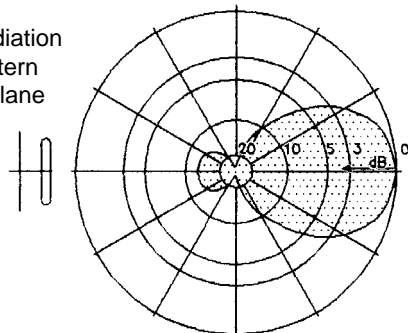


TYPE NO.	vertical polarization WS 302 02 11 8: 146 - 174 MHz horizontal polarization WS 302 02 21 8: 146 - 174 MHz further frequencies on request
IMPEDANCE	50 Ω
GAIN	3.5 dB (ref. λ/2 dipole)
VSWR	< 1.3, at the limits of the band <1.4
POWER	max. 150 watts, higher power on request
3 dB BEAMWIDTH	in polarization, 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	<i>mast-ø</i> <i>clamp</i> 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	1.8 kg
WIND AREA	0.05 m ²
WIND LOAD	65 N (150 km/h) 50 N (130 km/h)

Radiation
Pattern
H Plane



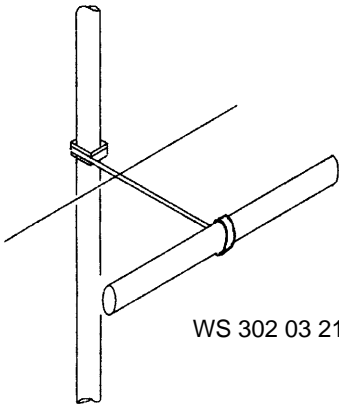
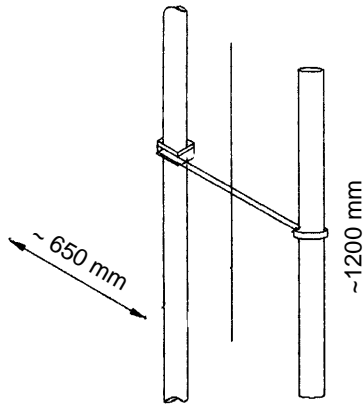
Radiation
Pattern
E Plane



KW 1-08

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

WS 302 03 11 . TYPE NO.



WS 302 03 21 .

vertical polarization
WS 302 03 11 8: 146 - 174 MHz
 horizontal polarization
WS 302 03 21 8: 146 - 174 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, higher power on request

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

<i>mast-ø</i>	<i>clamp</i>
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

4.1 kg

WIND AREA

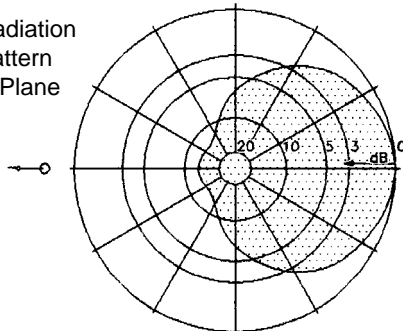
0.13 m²

WIND LOAD

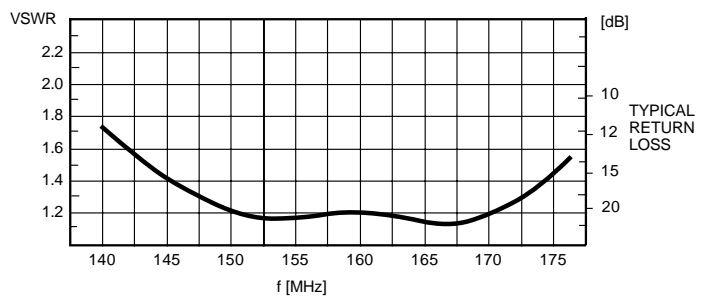
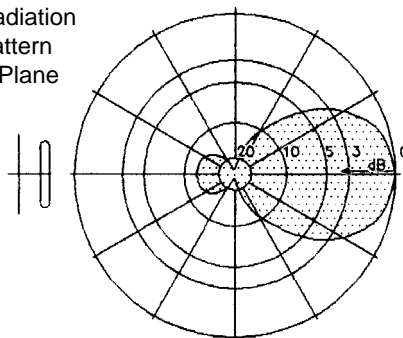
166 N (150 km/h)

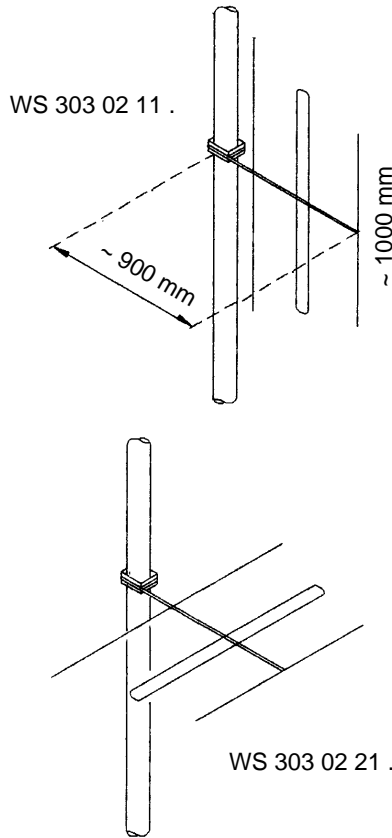
124 N (130 km/h)

Radiation Pattern H Plane



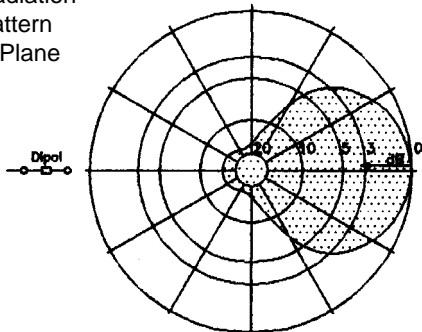
Radiation Pattern E Plane



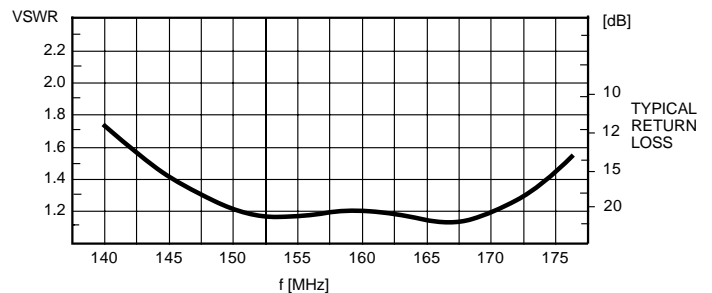
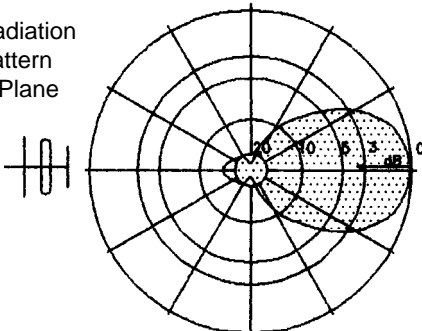


TYPE NO.	WS 303 02 11 8: 146 - 174 MHz vertical polarization WS 303 02 21 8: 146 - 174 MHz horizontal polarization further frequencies on request
IMPEDANCE	50 Ω
GAIN	5 dB (ref. $\lambda/2$ dipole)
VSWR	< 1.3, at the limits of the band < 1.4
POWER	max. 150 watts
3 dB BEAMWIDTH	vertical to pol., H-plane: 110° in polarization, E-plane: 66°
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-\emptyset</i> <i>clamp</i> 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	2.0 kg
WIND AREA	0.07 m ²
WIND LOAD	90 N (150 km/h) 67 N (130 km/h)

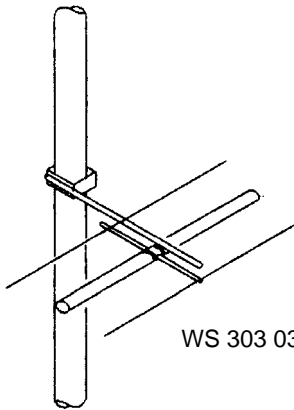
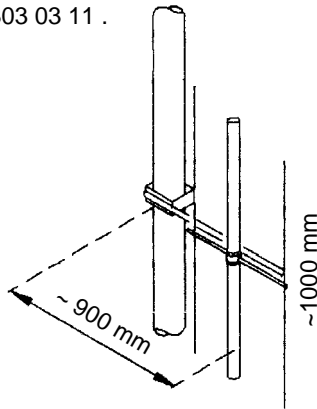
Radiation
Pattern
H Plane



Radiation
Pattern
E Plane



WS 303 03 11 .



WS 303 03 21 .

TYPE NO.

WS 303 03 11 8: 146 - 174 MHz vertical polarization
WS 303 03 21 8: 146 - 174 MHz horizontal polarization
 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 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

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

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</i>
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

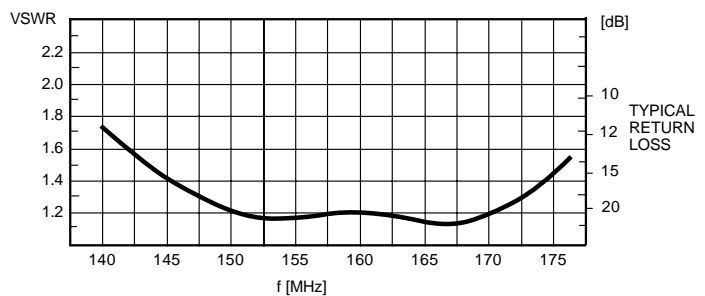
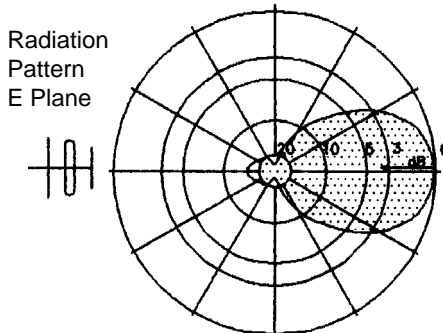
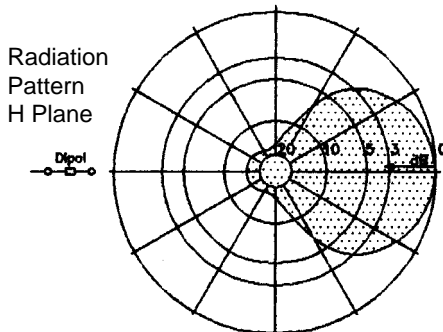
4.3 kg

WIND AREA

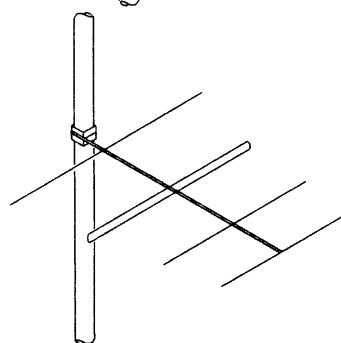
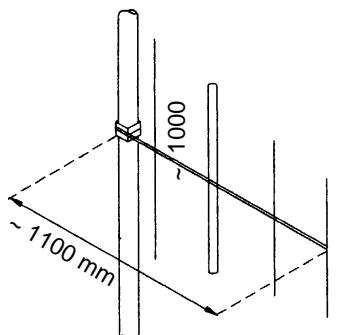
0.14 m²

WIND LOAD

180 N (150 km/h)
 135 N (130 km/h)



WS 304 02 11 8



WS 304 02 21 .

TYPE NO. WS 304 02 11 8: 146 - 174 MHz vertical polarization
 WS 304 02 21 8: 146 - 174 MHz horizontal polarization
 further frequencies on request

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 vertical to pol., H-plane: 90°
 in polarization, E-plane: 58°

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

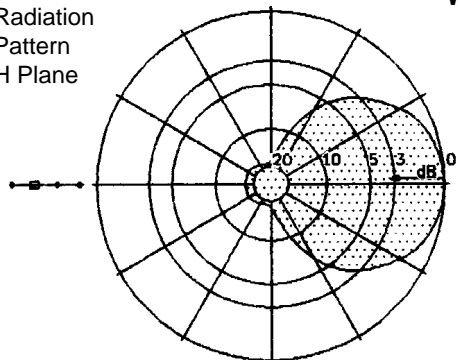
GROUNDING all metal parts are DC grounded

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

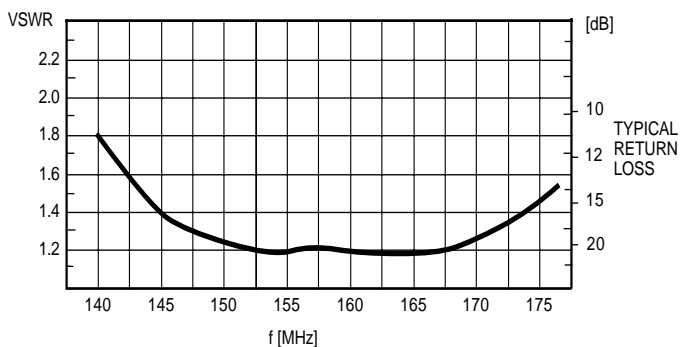
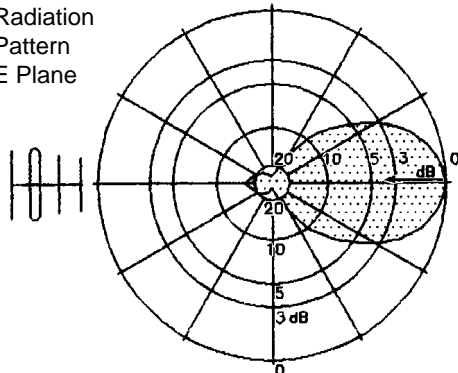
MATERIAL aluminium, bolts of stainless steel, weather-resistant
 plastics

WEIGHT 2.1 kg
WIND AREA 0.08 m²
WIND LOAD 100 N (150 km/h)
 75 N (130 km/h)

Radiation
 Pattern
 H Plane



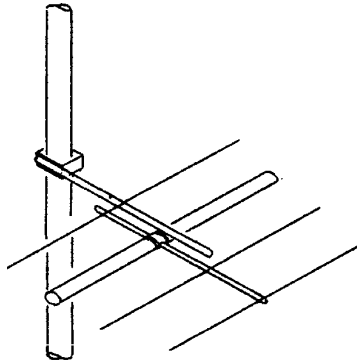
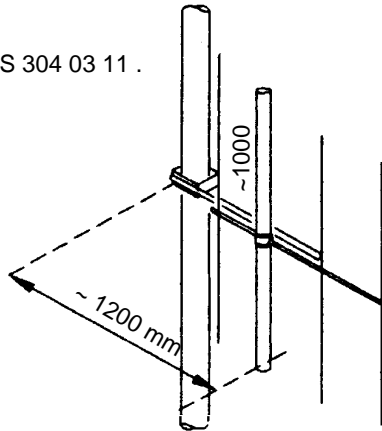
Radiation
 Pattern
 E Plane



KW 1-08

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

WS 304 03 11 .



WS 304 03 21 .

TYPE NO.

vertical polarization
WS 304 03 11 8: 146 - 174 MHz
horizontal polarization
WS 304 03 21 8: 146 - 174 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 Ω

GAIN

6.5 dB (ref. λ/2 dipole)

VSWR

< 1.2, 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

<i>mast-ø</i>	<i>clamp</i>
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

6.4 kg

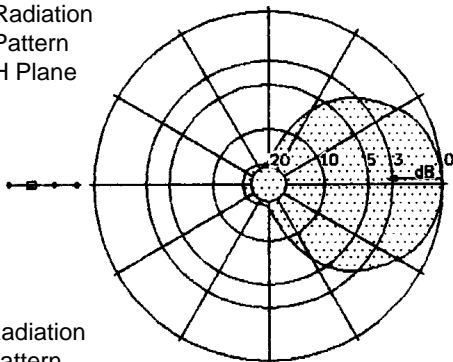
WIND AREA

0.26 m²

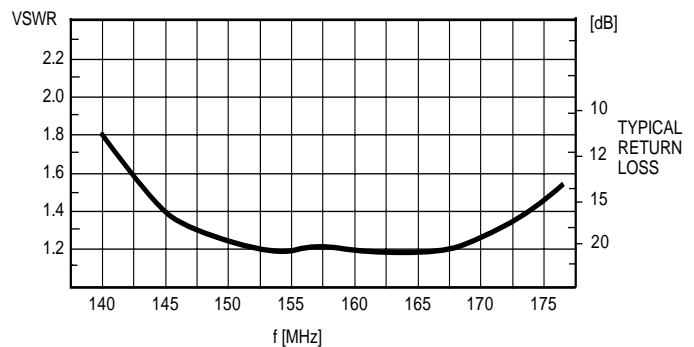
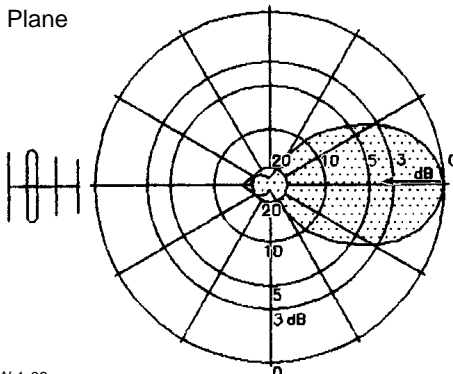
WIND LOAD

330 N (150 km/h)
250 N (130 km/h)

Radiation Pattern H Plane



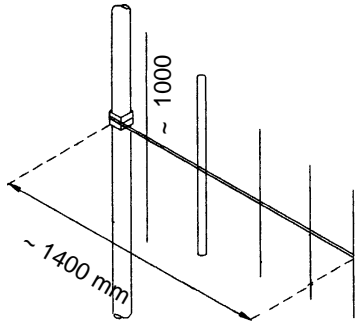
Radiation Pattern E Plane



KW 1-08

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

WS 305 02 11 .



TYPE NO. WS 305 02 11 8: 146 - 174 MHz vertical polarization
 WS 305 02 21 8: 146 - 174 MHz horizontal polarization
 further frequencies on request

IMPEDANCE 50 Ω

GAIN 7.5 dB (ref. $\lambda/2$ dipole)

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

POWER max. 150 watts

3 dB BEAMWIDTH vertical to pol., H-plane: 70°
 in polarization, E-plane: 53°

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

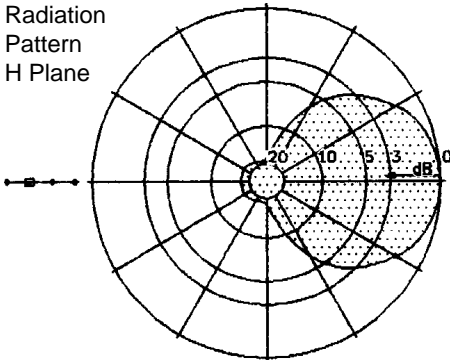
GROUNDING all metal parts are DC grounded

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

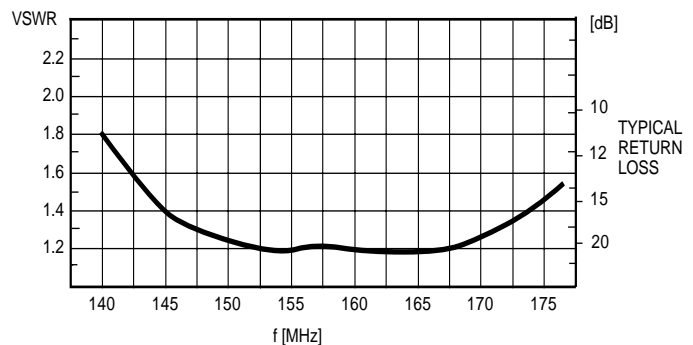
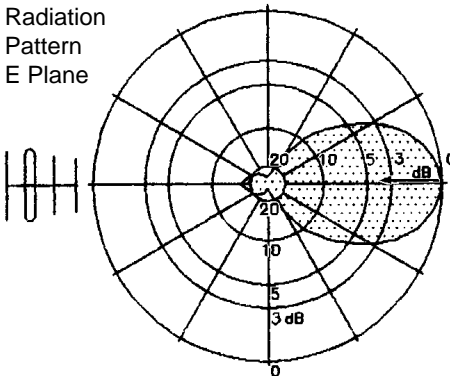
MATERIAL aluminium, bolts of stainless steel, weather-resistant
 plastics

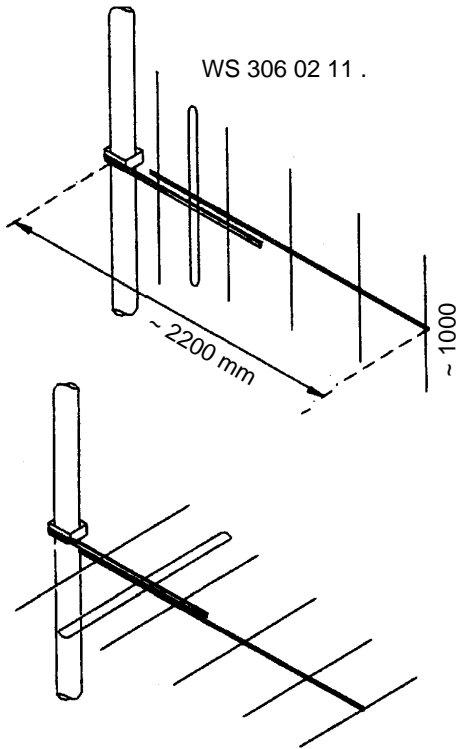
WEIGHT 2.2 kg
WIND AREA 0.09 m²
WIND LOAD 114 N (150 km/h)
 86 N (130 km/h)

Radiation
 Pattern
 H Plane



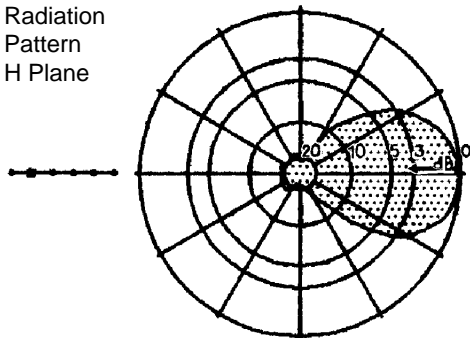
Radiation
 Pattern
 E Plane



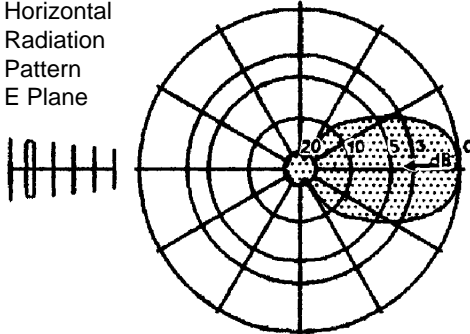


WS 306 03 21 .

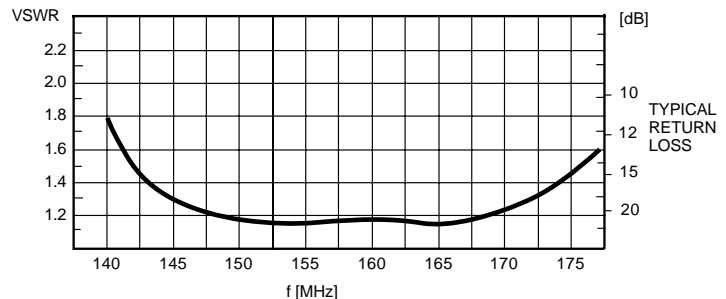
Vertical
Radiation
Pattern
H Plane

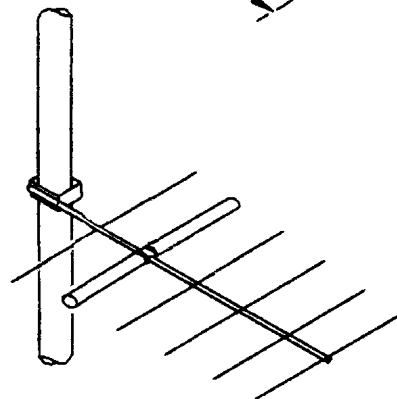
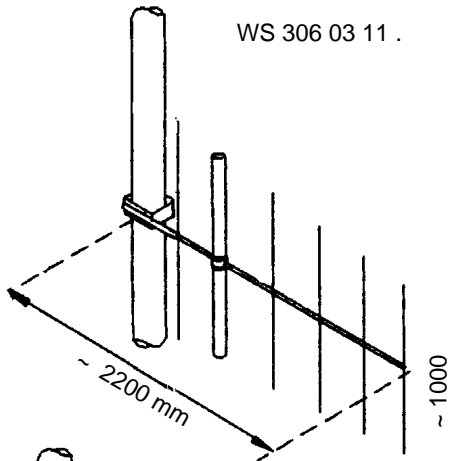


Horizontal
Radiation
Pattern
E Plane



TYPE NO.	WS 306 02 11 8: 146 - 174 MHz vertical polarization WS 306 02 21 8: 146 - 174 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	<i>mast</i> ∅ <i>clamp</i> (see <i>chapt. 10</i>) 30 - 80 mm WG 15 (standard) 50 - 104 mm WG 16 (option) clamp for other mast ∅ on request
MATERIAL	aluminium, bolts of stainless steel, weather-resistant plastics
WEIGHT	3.5 kg
WIND AREA	0.13 m ²
WIND LOAD	166 N 150 km/h 125 N 130 km/h





TYPE NO. WS 306 03 11 8: 146 - 174 MHz vertical polarization
 WS 306 03 21 8: 146 - 174 MHz horizontal polarization
 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 Ω

GAIN 8.5 dB (ref. to λ/2 dipol)
 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

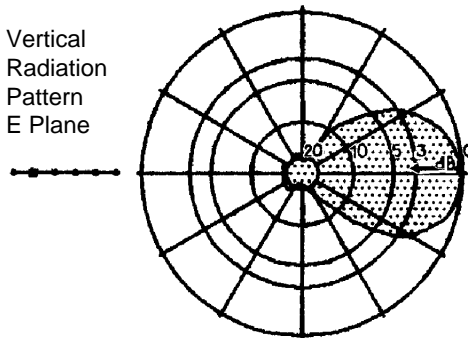
GROUNDING all metal parts are DC grounded

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

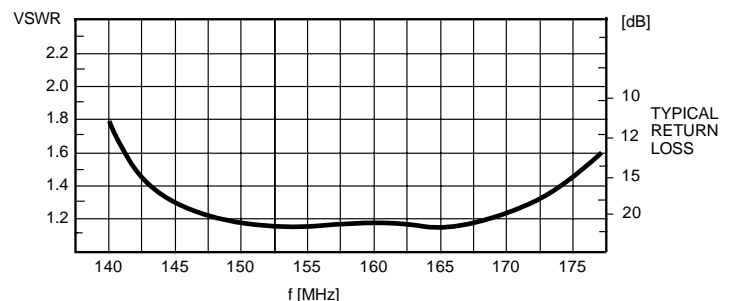
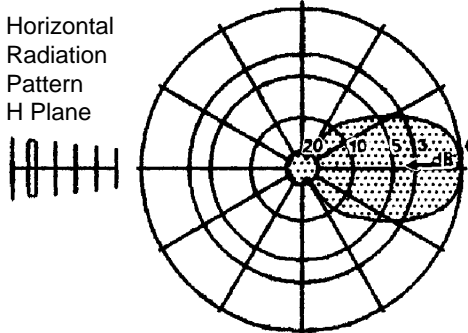
MATERIAL aluminium, bolts of stainless steel, weather-resistant
 plastics, radome of UV-stabilized polyethylene

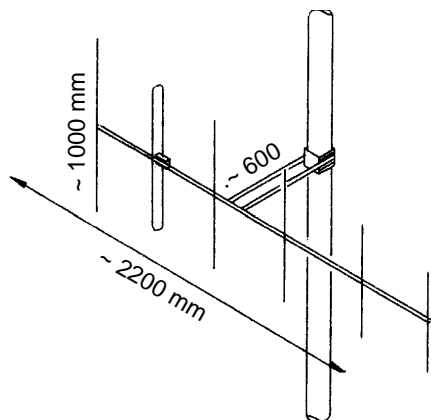
WEIGHT 7.2 kg
WIND AREA 0.26 m²
WIND LOAD 330 N 150 km/h
 250 N 130 km/h

Vertical
 Radiation
 Pattern
 E Plane



Horizontal
 Radiation
 Pattern
 H Plane





TYPE NO. WS 306 02 12 8: 146 - 174 MHz
further frequencies on request

POLARIZATION vertical

IMPEDANCE 50 Ω

GAIN 8.5 dB (ref. λ/2 dipole)
10.5 dB (ref. isotropic radiator)
F/B: ~ 18 dB

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

POWER max. 150 watts

3 dB BEAMWIDTH horizontal, H plane: 70°
vertica, E plane: 48°

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

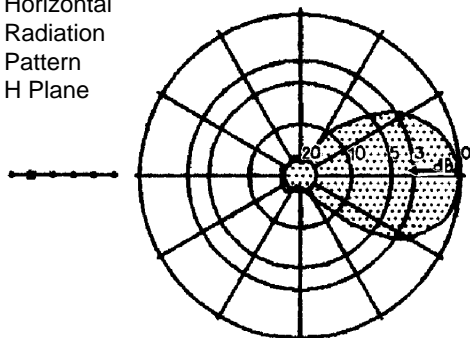
GROUNDING all metal parts are DC grounded

MOUNTING mast-∅ clamp (see chapt. 10)
30 - 80 mm WG 55 (standard)
50 - 104 mm WG 56 (option)
clamp for other mast-∅ on request

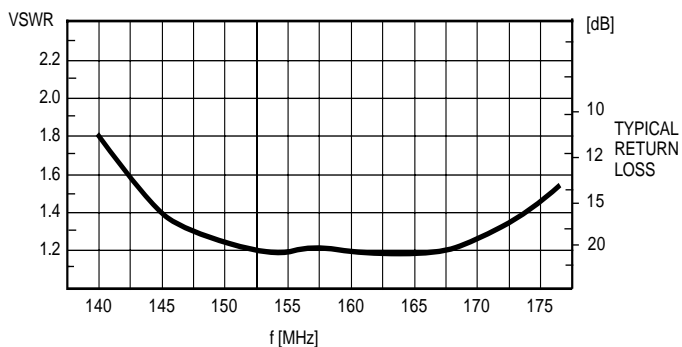
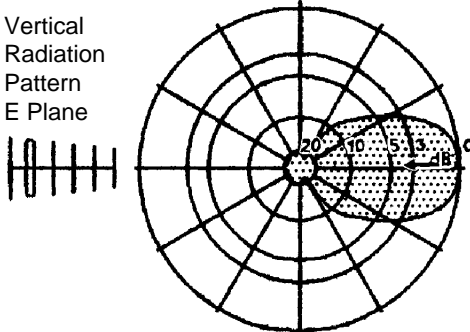
MATERIAL aluminium, bolts of stainless steel, weather-resistant
plastics

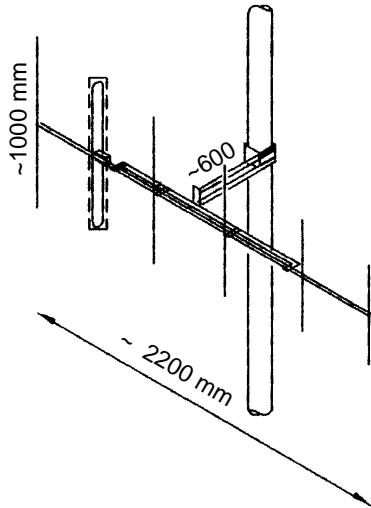
WEIGHT 3.6 kg
WIND AREA 0.13 m²
WIND LOAD 166 N (150 km/h)
124 N (130 km/h)

Horizontal
Radiation
Pattern
H Plane



Vertical
Radiation
Pattern
E Plane





TYPE NO.	WS 306 03 12 8: 146 - 174 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	8.5 dB (ref. $\lambda/2$ dipole) 10.5 dB (ref. isotropic radiator) F/B: ~ 18 dB
VSWR	< 1.3, at the limits of the band < 1.4
POWER	max. 150 watts
3 dB BEAMWIDTH	horizontal, H plane: 70° vertical, E plane: 48°

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

GROUNDING all metal parts are DC grounded

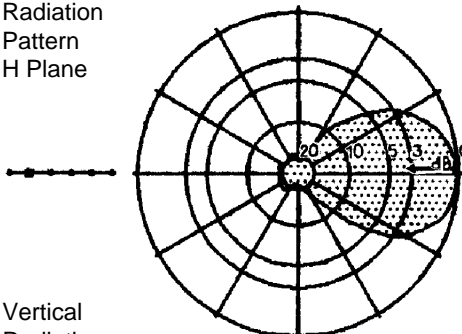
MOUNTING *mast- \emptyset* *clamp (see chapt. 10)*
30 - 80 mm WG 63 (standard)
50 - 104 mm WG 64 (option)
clamp for other mast- \emptyset on request

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

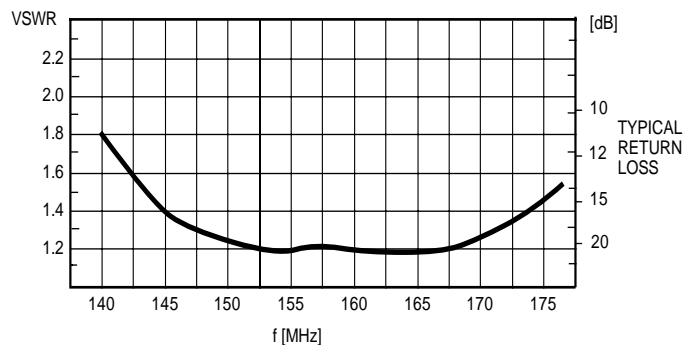
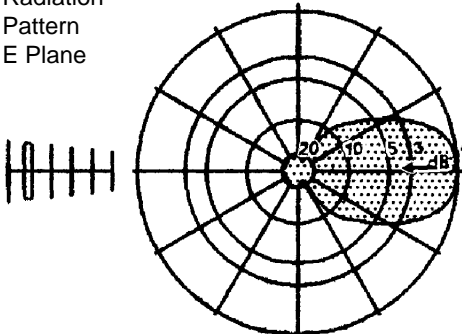
WEIGHT 7.4 kg
WIND AREA 0.26 m²
WIND LOAD 330 N (150 km/h)
250 N (130 km/h)

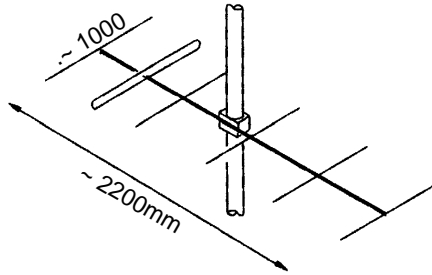
max. wind velocity 200 km/h with icing conditions

Horizontal Radiation Pattern H Plane



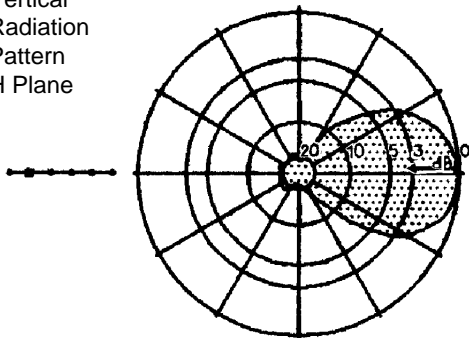
Vertical Radiation Pattern E Plane



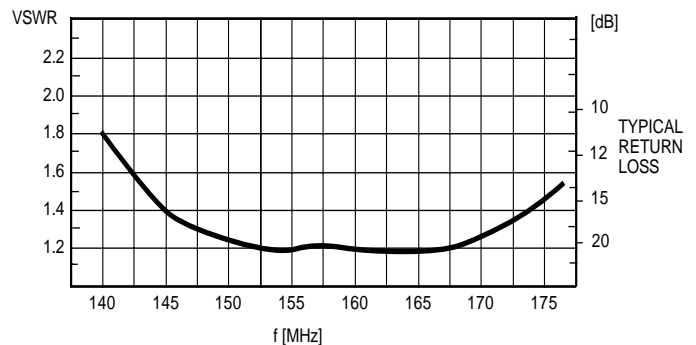
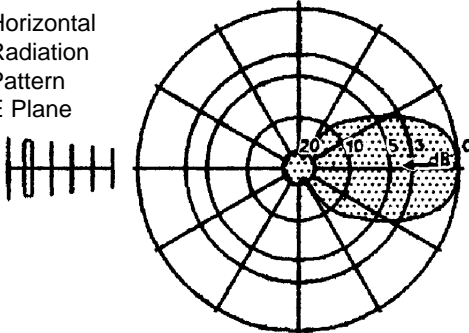


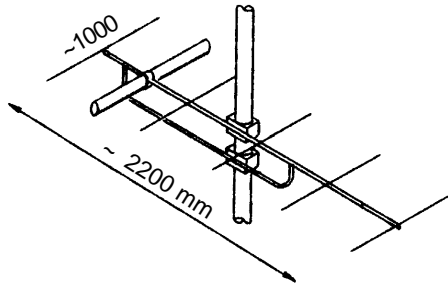
TYPE NO.	WS 306 02 23 8: 146 - 174 MHz further frequencies on request
POLARIZATION	horizontal
IMPEDANCE	50 Ω
GAIN	8.5 dB (ref. λ/2 dipole)
VSWR	< 1.3, at the limits of the band <1.4
POWER	max. 150 watts
3 dB BEAMWIDTH	horizontal, E-plane: 48° vertical, H-plane: 70°
TERMINATION	2 m cable RG 213/U ending with N male other termination on request
GROUNDING	all metal parts are DC grounded
MOUNTING	<i>mast-ø</i> <i>clamp</i> 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	2.6 kg
WIND AREA	0.08 m ²
WIND LOAD	100 N (150 km/h) 75 N (130 km/h)

Vertical
Radiation
Pattern
H Plane



Horizontal
Radiation
Pattern
E Plane





TYPE NO. WS 306 03 23 8: 146 - 174 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 horizontal

IMPEDANCE 50 Ω

GAIN 8.5 dB (ref. λ/2 dipole)

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

POWER max. 150 watts

3 dB BEAMWIDTH horizontal, E-plane: 48°
vertical, 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

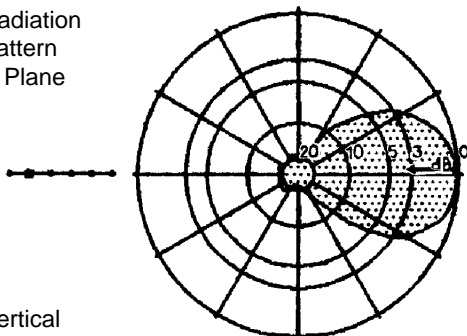
MOUNTING *mast-ø* *clamp*
30 - 80 mm 2xWG 13 (standard)
50 - 104 mm 2xWG 14 (option)
clamp for other mast-ø on request

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

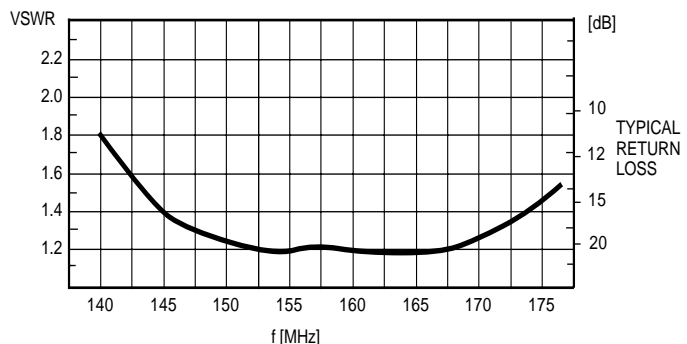
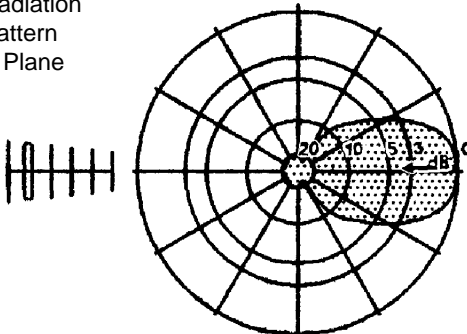
WEIGHT 5.2 kg
WIND AREA 0.14 m²
WIND LOAD 180 N (150 km/h)
135 N (130 km/h)

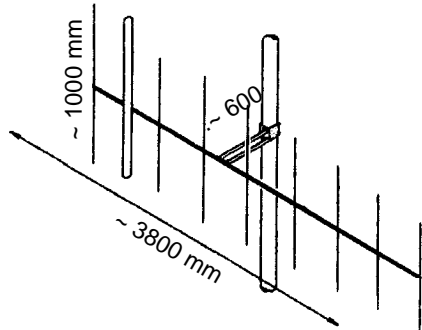
max. Wind velocity 200 km/h with icing conditions

Horizontal
Radiation
Pattern
H Plane



Vertical
Radiation
Pattern
E Plane

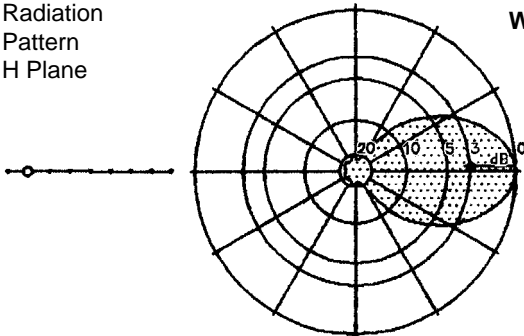




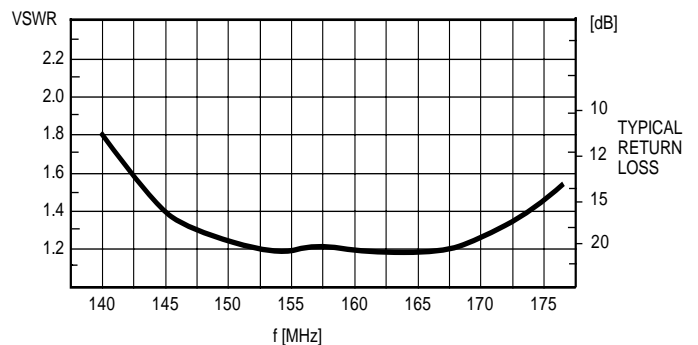
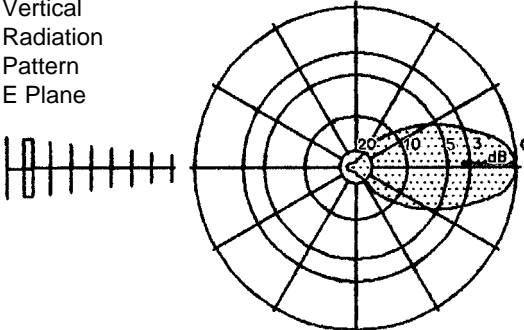
TYPE NO.	WS 309 02 12 8: 146 - 174 MHz further frequencies on request
POLARIZATION	vertical
IMPEDANCE	50 Ω
GAIN	10 dB (ref. λ/2 dipole) F/B: ≥ 20 dB
VSWR	< 1.3, at the limits of the band < 1.4
POWER	max. 150 watts
3 dB BEAMWIDTH	horizontal, H-plane: 56° vertical, E-plane: 40°
TERMINATION	2 m cable RG 213/U ending with N male other termination on request
GROUNDING	all metal parts are DC grounded
MOUNTING	<i>mast-∅</i> <i>clamp</i> 30 - 80 mm WG 55 (standard) 50 - 104 mm WG 56 (option) clamp for other mast-∅ on request
MATERIAL	aluminium, bolts of stainless steel, weather-resistant plastics

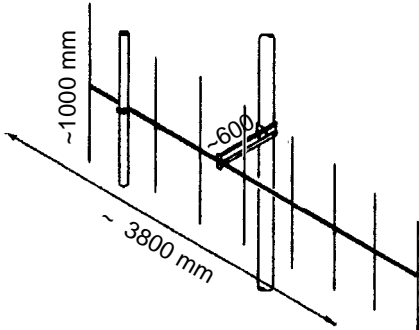
WEIGHT	6.1 kg
WIND AREA	0.29 m ²
WIND LOAD	370 N (150 km/h) 280 N (130 km/h)

Horizontal
Radiation
Pattern
H Plane



Vertical
Radiation
Pattern
E Plane

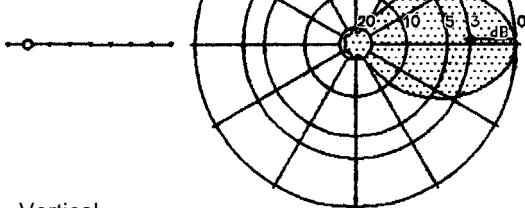




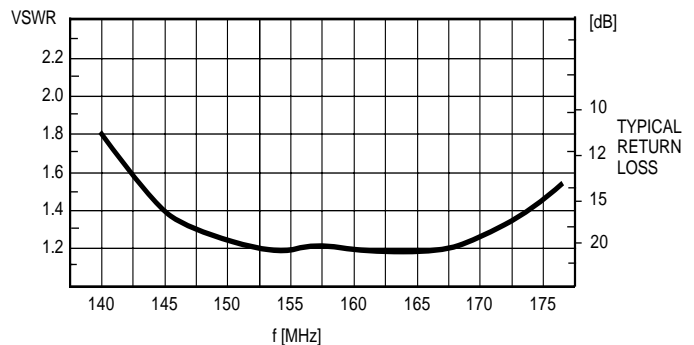
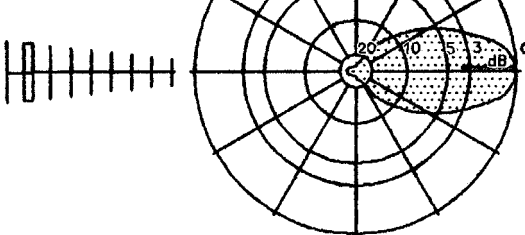
TYPE NO.	WS 309 03 12 8: 146 - 174 MHz further frequencies on request
DESCRIPTION	heavy duty, with radome The radome protects the antenna dipole from environmental influences, icing, and increases the lightning protection.
POLARIZATION	vertical
IMPEDANCE	50 Ω
GAIN	10 dB (ref. λ/2 dipole) F/B: ≥ 20 dB
VSWR	< 1.3, at the limits of the band < 1.4
POWER	max. 150 watts
3 dB BEAMWIDTH	horizontal, H-plane: 56° vertical, E-plane: 40°
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-∅</i> <i>clamp</i> 30 - 80 mm WG 63 (standard) 50 - 104 mm WG 64 (option) clamp for other mast-∅ on request
MATERIAL	aluminium, bolts of stainless steel, weather-resistant plastics, radome of UV-stabilized polyethylene

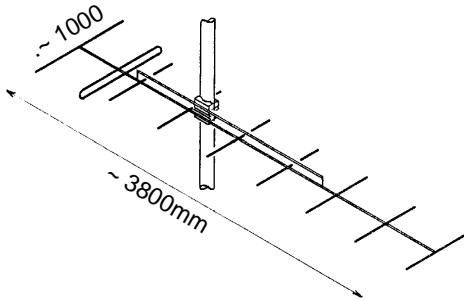
WEIGHT	11.5 kg
WIND AREA	0.41 m ²
WIND LOAD	525 N (150 km/h) 395 N (130 km/h)

Horizontal
Radiation
Pattern
H Plane



Vertical
Radiation
Pattern
E Plane

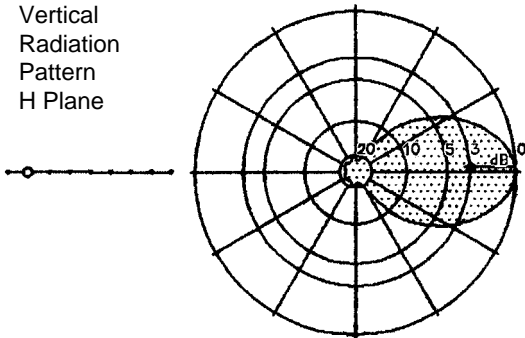




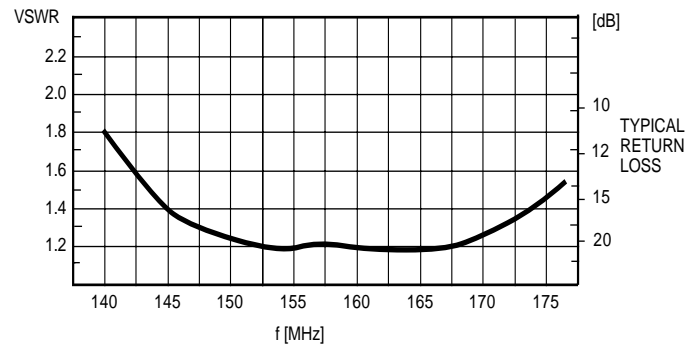
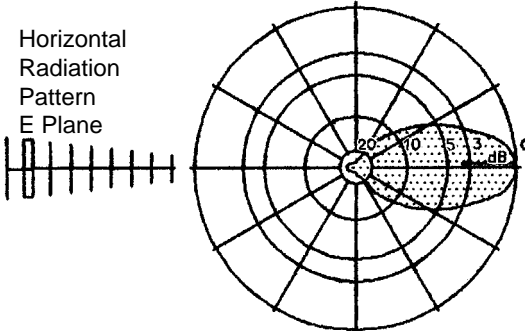
TYPE NO.	WS 309 02 23 8: 146 - 174 MHz further frequencies on request
POLARIZATION	horizontal
IMPEDANCE	50 Ω
GAIN	10 dB (ref. λ/2 dipole) F/B: ≥ 20 dB
VSWR	< 1.3, at the limits of the band < 1.4
POWER	max. 150 watts
3 dB BEAMWIDTH	horizontal, E-plane: 40° vertical, H-plane: 56°
TERMINATION	2 m cable RG 213/U ending with N male other termination on request
GROUNDING	all metal parts are DC grounded
MOUNTING	<i>mast-∅</i> <i>clamp</i> 30 - 80 mm 2xWG 11 (standard) 50 - 104 mm 2xWG 12 (option) clamp for other mast-∅ on request
MATERIAL	aluminium, bolts of stainless steel, weather-resistant plastics

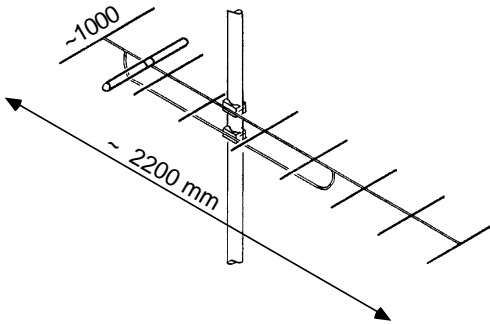
WEIGHT	4.4 kg
WIND AREA	0.15 m ²
WIND LOAD	192 N (150 km/h) 145 N (130 km/h)

Vertical
Radiation
Pattern
H Plane



Horizontal
Radiation
Pattern
E Plane

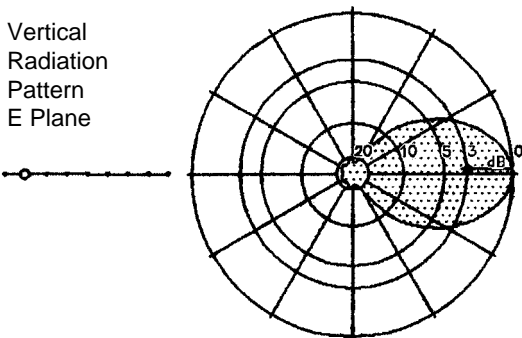




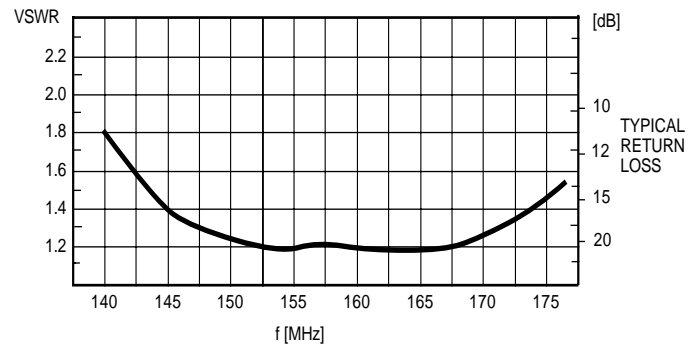
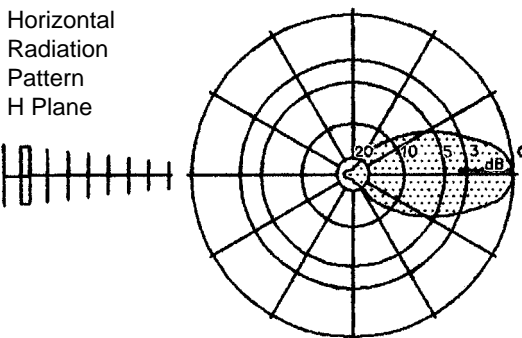
TYPE NO.	WS 309 03 23 8: 146 - 174 MHz further frequencies on request
DESCRIPTION	heavy duty, with radome The radome protects the antenna dipole from environmental influences, icing, and increases the lightning protection.
POLARIZATION	horizontal
IMPEDANCE	50 Ω
GAIN	10 dB (ref. λ/2 dipole) F/B: ≥ 20 dB
VSWR	< 1.3, at the limits of the band <1.4
POWER	max. 150 watts
3 dB BEAMWIDTH	horizontal, E-plane: 40° vertical, H-plane: 56°
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</i> 30 - 80 mm 2xWG 13 (standard) 50 - 104 mm 2xWG 14 (option) clamp for other mast-ø on request
MATERIAL	aluminium, bolts of stainless steel, weather-resistant plastics, radome of UV-stabilized polyethylene

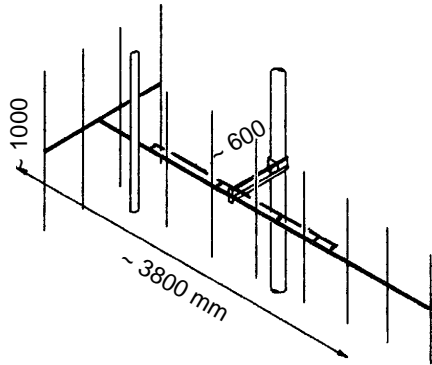
WEIGHT	7.5 kg
WIND AREA	0.24 m ²
WIND LOAD	310 N (150 km/h) 230 N (130 km/h)

Vertical Radiation Pattern E Plane



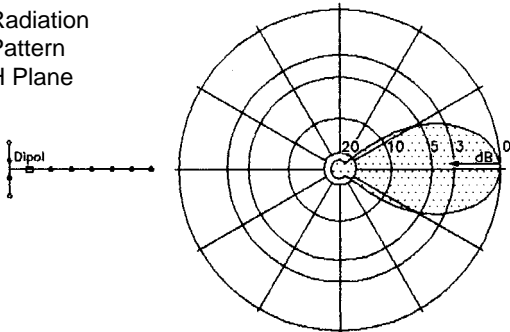
Horizontal Radiation Pattern H Plane



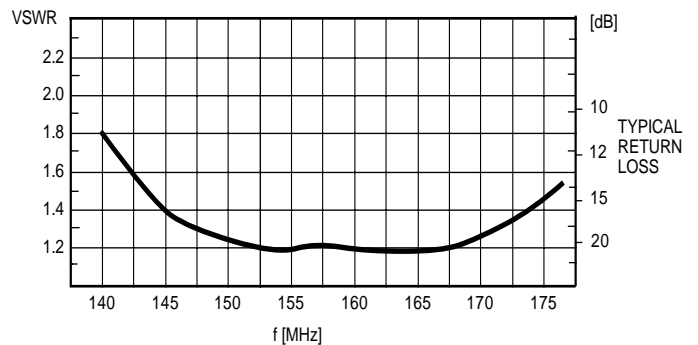
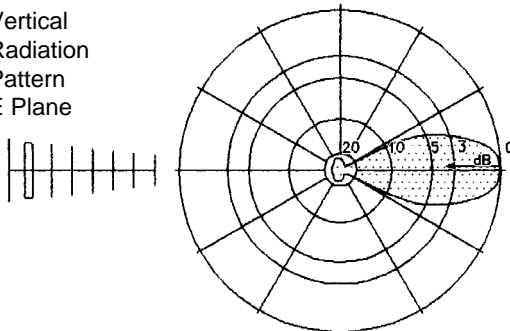


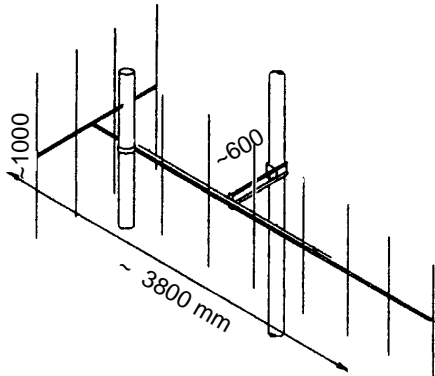
TYPE NO.	WS 312 02 12 8: 146 - 174 MHz further frequencies on request
POLARIZATION	vertical
IMPEDANCE	50 Ω
GAIN	11 dB (ref. λ/2 dipole) F/B: ≥ 25 dB
VSWR	< 1.3, at the limits of the band < 1.4
POWER	max. 150 watts
3 dB BEAMWIDTH	horizontal, H-plane: 48° vertical, E-plane: 36°
TERMINATION	2 m cable RG 213/U ending with N male other termination on request
GROUNDING	all metal parts are DC grounded
MOUNTING	<i>mast-∅</i> <i>clamp</i> 30 - 80 mm WG 63 (standard) 50 - 104 mm WG 64 (option) clamp for other mast-∅ on request
MATERIAL	aluminium, bolts of stainless steel, weather-resistant plastics
WEIGHT	6.8 kg
WIND AREA	0.33 m ²
WIND LOAD	420 N (150 km/h) 315 N (130 km/h)

Horizontal
Radiation
Pattern
H Plane



Vertical
Radiation
Pattern
E Plane





TYPE NO. WS 312 03 12 8: 146 - 174 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 11 dB (ref. λ/2 dipole)
F/B: ≥ 25 dB

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

POWER max. 150 watts

3 dB BEAMWIDTH horizontal, H-plane: 48°
vertical, E-plane: 36°

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

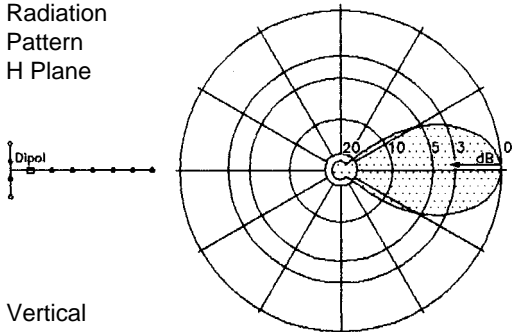
GROUNDING all metal parts are DC grounded

MOUNTING mast-ø clamp
30 - 80 mm WG 63 (standard)
50 - 104 mm WG 64 (option)
clamp for other mast-ø on request

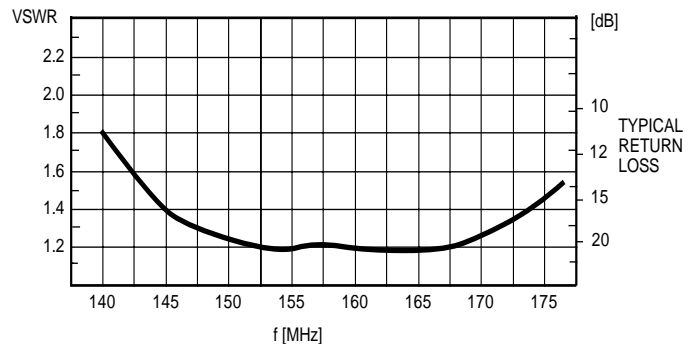
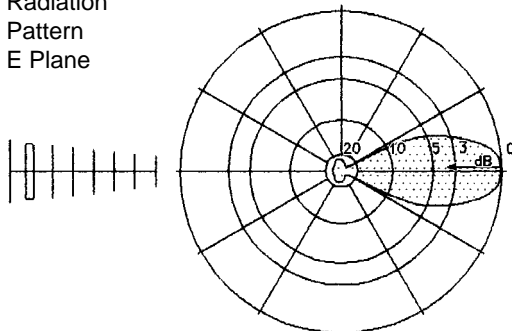
MATERIAL aluminium, bolts of stainless steel, weather-resistant plastics, radome of UV-stabilized polyethylene

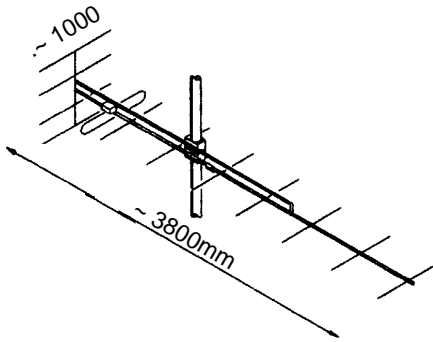
WEIGHT 12.5 kg
WIND AREA 0.44 m²
WIND LOAD 560 N (150 km/h)
420 N (130 km/h)

Horizontal Radiation Pattern H Plane



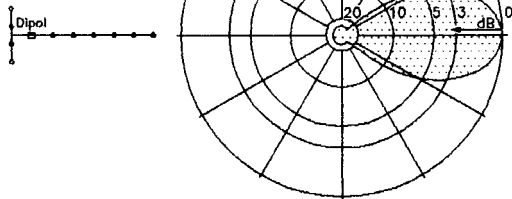
Vertical Radiation Pattern E Plane



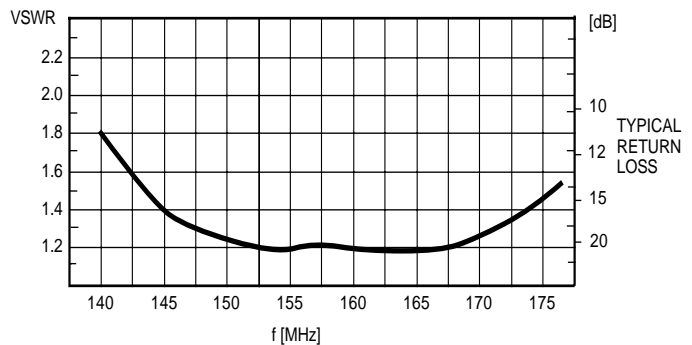
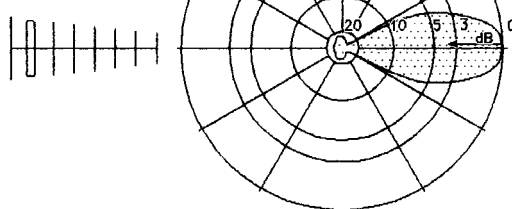


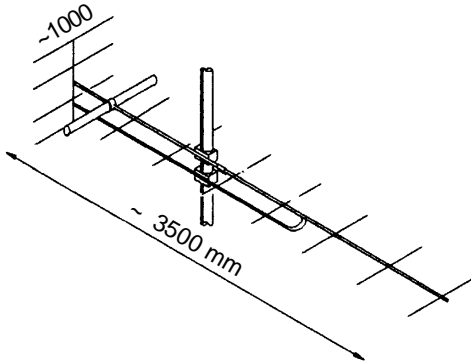
TYPE NO.	WS 312 02 23 8: 146 - 174 MHz further frequencies on request	
POLARIZATION	horizontal	
IMPEDANCE	50 Ω	
GAIN	11 dB (ref. $\lambda/2$ dipole) F/B: ≥ 25 dB	
VSWR	< 1.3, at the limits of the band <1.4	
POWER	max. 150 watts	
3 dB BEAMWIDTH	horizontal, E-plane:	36°
	vertical, H-plane:	48°
TERMINATION	2 m cable RG 213/U ending with N male other termination on request	
GROUNDING	all metal parts are DC grounded	
MOUNTING	<i>mast-\emptyset</i>	<i>clamp</i>
	30 - 80 mm	2xWG 11 (standard)
	50 - 104 mm	2xWG 12 (option)
	clamp for other mast- \emptyset on request	
MATERIAL	aluminium, bolts of stainless steel, weather-resistant plastics	
WEIGHT	5.2 kg	
WIND AREA	0.18 m ²	
WIND LOAD	230 N (150 km/h) 173 N (130 km/h)	

Vertical
Radiation
Pattern
H Plane



Horizontal
Radiation
Pattern
E Plane





TYPE NO. WS 312 03 23 8: 146 - 174 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 horizontal

IMPEDANCE 50 Ω

GAIN 11 dB (ref. λ/2 dipole)
F/B: ≥ 25 dB

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

POWER max. 150 watts

3 dB BEAMWIDTH horizontal, E-plane: 36°
vertical, H-plane: 48°

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

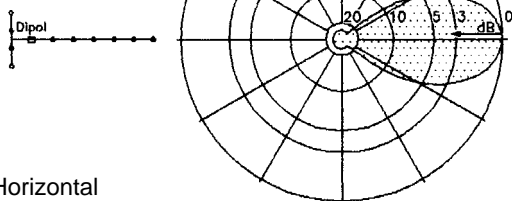
GROUNDING all metal parts are DC grounded

MOUNTING mast-∅ clamp
30 - 80 mm 2xWG 13 (standard)
50 - 104 mm 2xWG 14 (option)
clamp for other mast-∅ on request

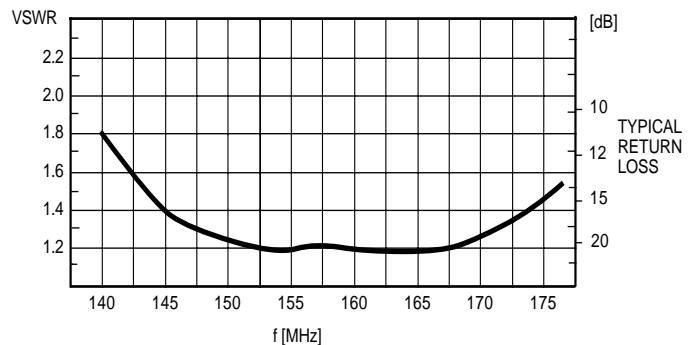
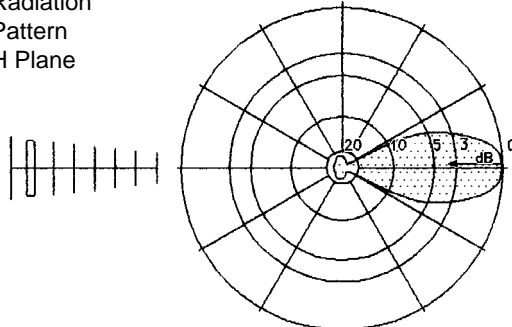
MATERIAL aluminium, bolts of stainless steel, weather-resistant
plastics, radome of UV-stabilized polyethylene

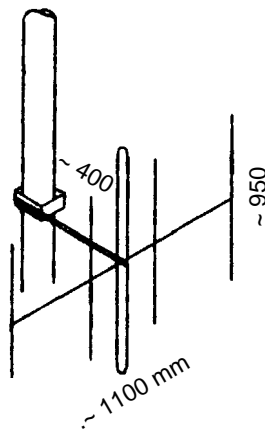
WEIGHT 8.8 kg
WIND AREA 0.28 m²
WIND LOAD 355 N (150 km/h)
270 N (130 km/h)

Vertical
Radiation
Pattern
E Plane



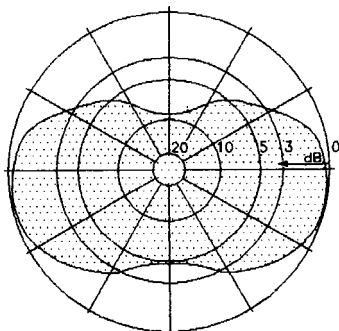
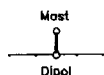
Horizontal
Radiation
Pattern
H Plane



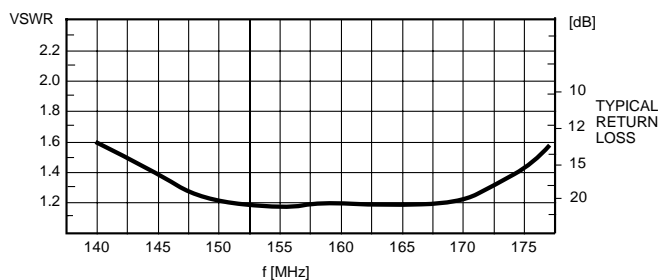
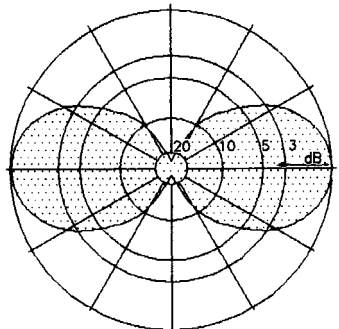


TYPE NO.	WS 342 02 12 9: 146 - 174 MHz further frequencies or wall mounting on request	
POLARIZATION	vertical	
IMPEDANCE	50 Ω	
GAIN	3 dB (ref. $\lambda/2$ dipole)	
VSWR	< 1.3, at the limits of the band < 1.4	
POWER	max. 150 watts	
3 dB BEAMWIDTH	horizontal, H-plane:	2x 100°
	vertical, E-plane:	2x 60°
TERMINATION	2 m cable RG 213/U ending with N male other termination on request	
GROUNDING	all metal parts are DC grounded	
MOUNTING	<i>mast-\varnothing</i>	<i>clamp</i>
	30 - 80 mm	WG 15 (standard)
	50 - 104 mm	WG 16 (option)
	clamp for other mast- \varnothing on request	
MATERIAL	aluminium, bolts of stainless steel, weather-resistant plastics	
WEIGHT	2.8 kg	
WIND AREA	0.09 m ²	
WIND LOAD	115 N (150 km/h) 87 N (130 km/h)	

Horizontal
Radiation
Pattern
H Plane



Vertical
Radiation
Pattern
E Plane



TYPE NO. **WS 342 03 12 9: 146 - 174 MHz**
further frequencies or wall mounting on request

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

POLARIZATION vertical

IMPEDANCE 50 Ω

GAIN 3 dB (ref. $\lambda/2$ dipole)

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

POWER max. 150 watts

3 dB BEAMWIDTH horizontal, H-plane: 2x 100°
vertical, E-plane: 2x 60°

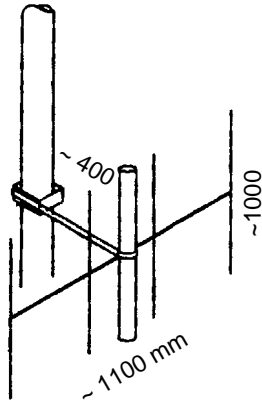
TERMINATION 2 m cable RG 213/U ending with N male
other termination on request

GROUNDING all metal parts are DC grounded

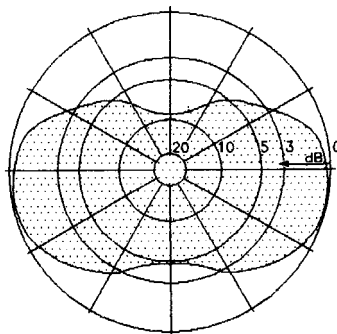
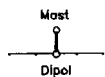
MOUNTING *mast- \emptyset* *clamp*
30 - 80 mm WG 17 (standard)
50 - 104 mm WG 18 (option)
clamp for other mast- \emptyset on request

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

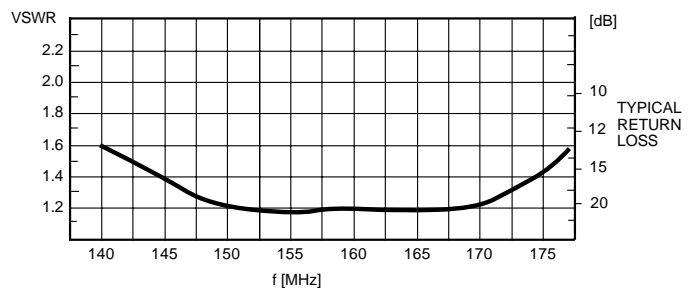
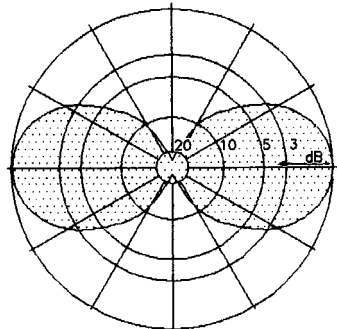
WEIGHT 5.4 kg
WIND AREA 0.15 m²
WIND LOAD 190 N (150 km/h)
145 N (130 km/h)

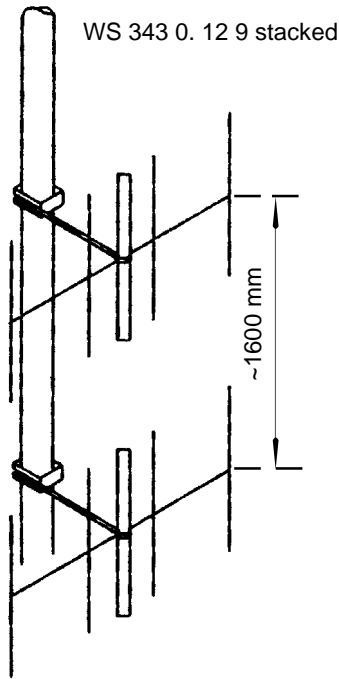


Horizontal
Radiation
Pattern
H Plane



Vertical
Radiation
Pattern
E Plane



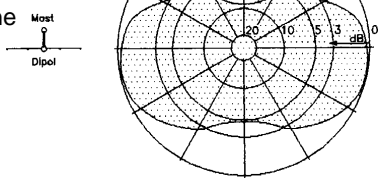


TYPES NO. without radome
WS 343 02 12 9
heavy duty, with radome
WS 343 03 12 9
The antennas are tuned to the requested frequency

GAIN 5.5 dB
3 dB BEAMWIDTH horizontal (H-plane): 2x 103°
vertical (E-plane): 2x 30°

Further technical information see **WS 342 02..** or **WS 342 03 ..**

Horizontal
Radiation
Pattern
H Plane



TYPE NO. **WS 345 02 12 9 146 ... 174 MHz:** without radome
WS 345 03 12 9 146 ... 174 MHz: with radome
The antennas are tuned to the requested frequency.

VSWR <1.5
GAIN 5.5 dB (ref. $\lambda/2$ dipole)
3 dB BEAMWIDTH horizontal (H plane): 2x 44°
vertical (E plane): 2x 60°

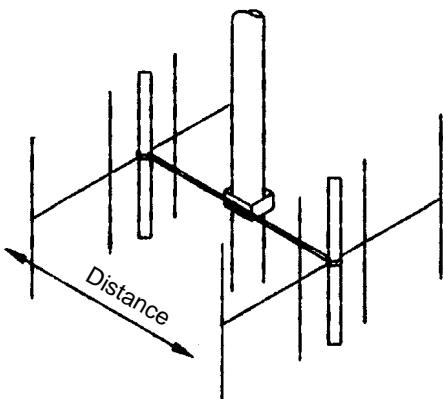
POWER 500 watts

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

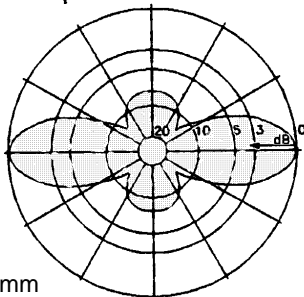
WEIGHT	345 02.	345 03 ..
WIND AREA	6 kg	12 kg
WIND LOAD	0.2 m ²	0.32 m ²
	255 N	410 N (150 km/h)
	190 N	310 N (130 km/h)

Further technical information see **WS 342 0.**

WS 345 0. 12 9 DUO

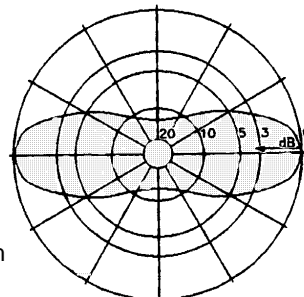


Horizontal
Radiation
Pattern
H Plane



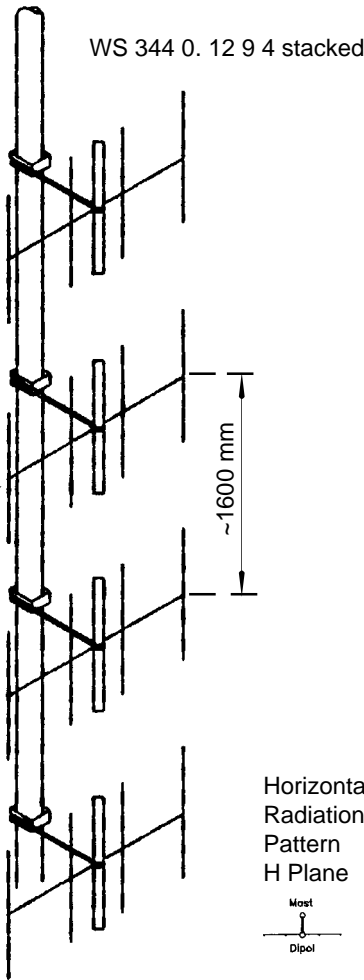
Distance 1400 mm

Horizontal
Radiation
Pattern
H Plane



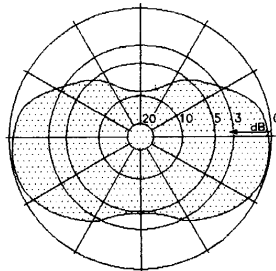
Distance 1400 mm

BIDIRECTIONAL ANTENNAS WS 344/346 0. 12 9 146 - 174 MHz

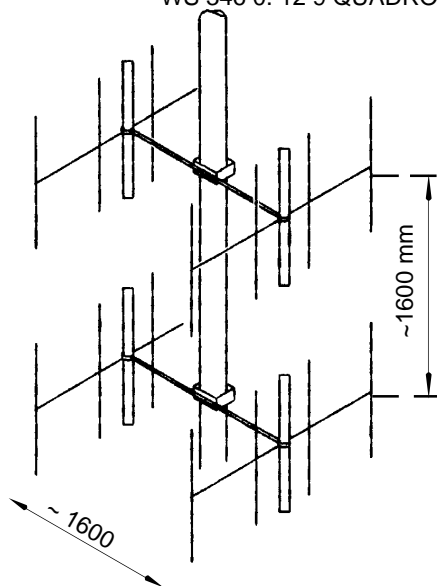


TYPE NO.	without radome:	WS 344 02 12 9: 146 - 174 MHz
	with radome:	WS 344 03 12 9: 146 - 174 MHz
GAIN	8 dB (ref. to $\lambda/2$ dipole)	
3 dB BEAMWIDTH	horizontal (H plane): 2x 103° vertical (E plane): 2x 20°	
POWER	300 watts	
TERMINATION	in the junction box WAK 1 ending with N male other termination on request	
WEIGHT	343 02..	343 03..
WIND AREA	12 kg	22 kg
WIND LOAD	0.4 m ²	0.65 m ²
	510 N	510 N (150 km/h)
	380 N	380 N (130 km/h)

Horizontal
Radiation
Pattern
H Plane

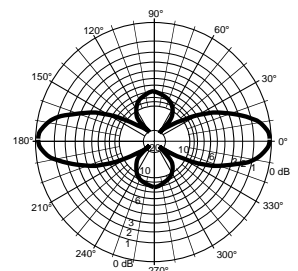


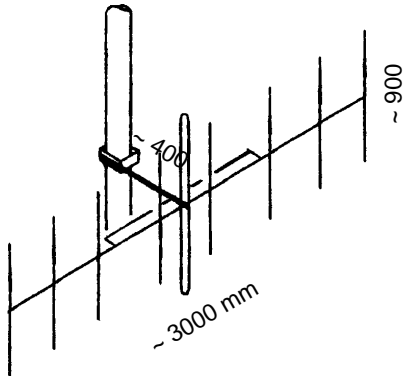
WS 346 0. 12 9 QUADRO



TYPES NO.	The antennas are tuned to the requested frequency in the band 146 - 174 MHz. WS 346 02 12 9 QUADRO: without radome WS 346 03 12 9 QUADRO: heavy duty, with radome
GAIN	8 dB (ref. to $\lambda/2$ dipole)
3 dB BEAMWIDTH	horizontal (H-plane): 2x 40° vertical (E-plane): 2x 30°
	Further technical information see WS 342 02.. or WS 342 03 ..

Horizontal
Radiation
Pattern
H Plane

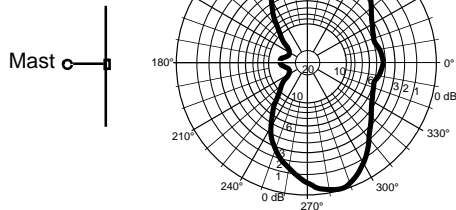




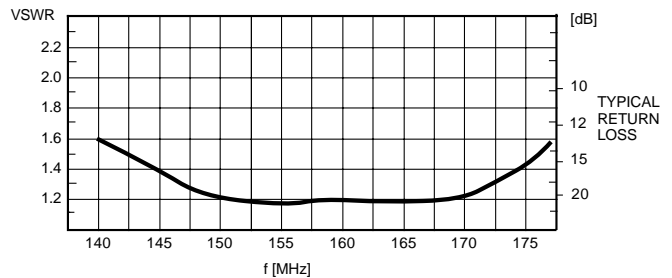
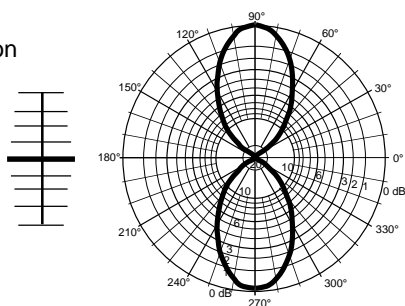
TYPE NO.	WS 348 02 12 9: 146 - 174 MHz further frequencies on request	
POLARIZATION	vertical	
IMPEDANCE	50 Ω	
GAIN	4.5 dB (ref. $\lambda/2$ dipole)	
VSWR	< 1.3, at the limits of the band < 1.4	
POWER	max. 150 watts	
3 dB BEAMWIDTH	horizontal, H-plane:	2x 72°
	vertical, E-plane:	2x 49°
TERMINATION	2 m 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</i>
	30 - 80 mm	WG 15 (standard)
	50 - 104 mm	WG 16 (option)
	clamp for other mast- \varnothing on request	
MATERIAL	aluminium, bolts of stainless steel, weather-resistant plastics	
WEIGHT	3.8 kg	
WIND AREA	0.18 m ²	
WIND LOAD	229 N (150 km/h) 172 N (130 km/h)	

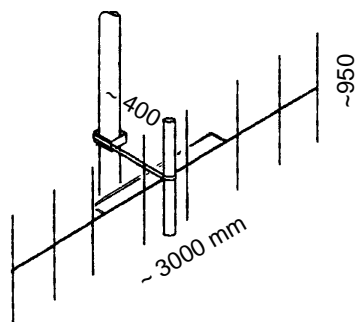
2727

Horizontal
Radiation
Pattern
H Plane



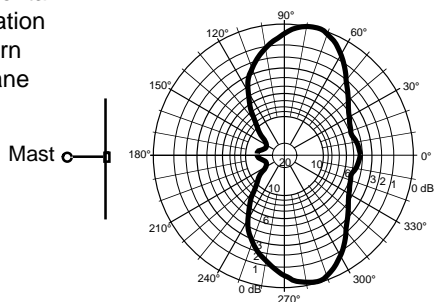
Vertical
Radiation
Pattern
E Plane



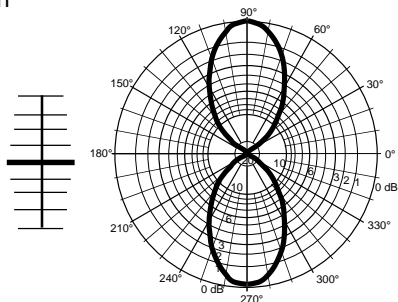


TYPE NO.	WS 348 03 12 9: 146 - 174 MHz further frequencies on request	
DESCRIPTION	heavy duty, with radome The radome protects the antenna dipole from environmental influences, icing, and increases the lightning protection.	
POLARIZATION	vertical	
IMPEDANCE	50 Ω	
GAIN	4.5 dB (ref. λ/2 dipole)	
VSWR	< 1.3, at the limits of the band <1.4	
POWER	max. 150 watts	
3 dB BEAMWIDTH	horizontal, H-plane:	2x 72°
	vertical , E-plane:	2x 49°
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</i>
	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	

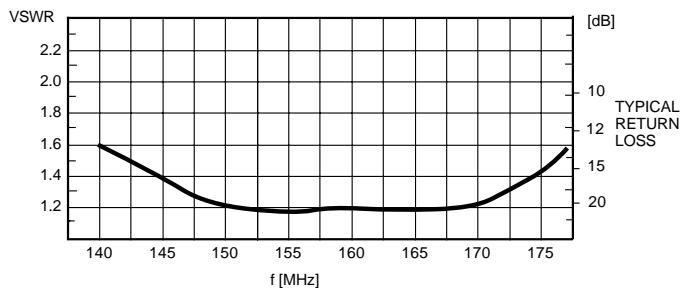
Horizontal
Radiation
Pattern
H Plane

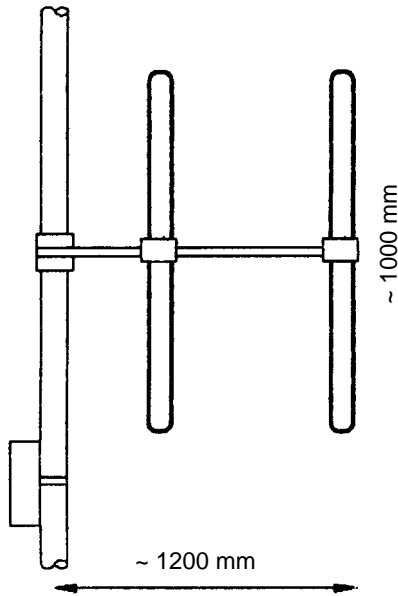


Vertical
Radiation
Pattern
E Plane



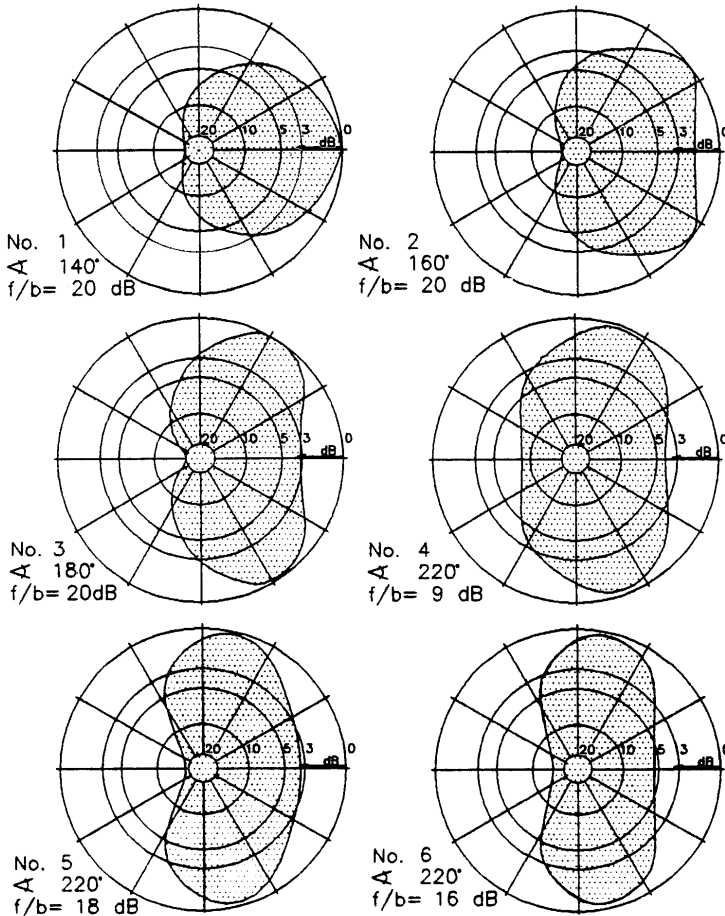
WEIGHT	7.5 kg
WIND AREA	0.3 m ²
WIND LOAD	383 N (150 km/h)
	287 N (130 km/h)



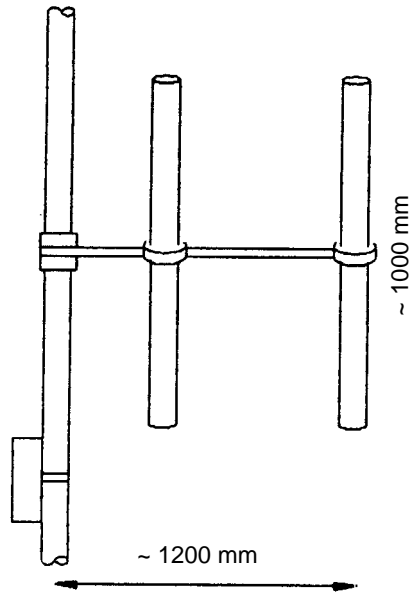


TYPE NO.	WS 351 02 11 (and the desired frequency) The antenna is tuned to the requested frequency in the band 146 - 174 MHz further frequencies on request
POLARIZATION	vertical
IMPEDANCE	50 Ω
GAIN	3 dB (ref. λ/2 dipole)
VSWR	< 1.2, on tuned frequency
POWER	max. 300 watts
BEAMWIDTH	horizontal (H-plane): see radiation patterns vertical (E-plane): ~ 70° in main beam directions
TERMINATION	in the junction box WAK 1 ending mit N male, other termination on request
GROUNDING	all metal parts are DC grounded

TYPICAL RADIATION PATTERNS
H PLANE

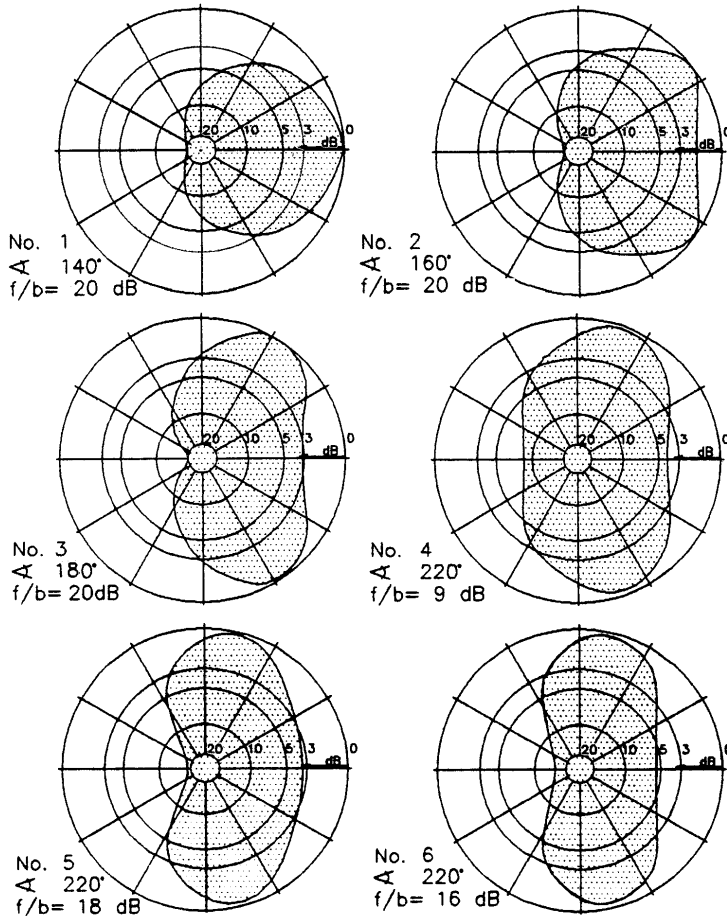


MOUNTING	<i>mast-ø</i> <i>clamp</i> 30 - 80 mm WG 15 (standard) 50 - 104 mm WG 16 (option) clamp for other mast-ø on request
MATERIAL	aluminium, bolts of stainless steel, weather-resistant plastics
WEIGHT	7 kg
WIND AREA	0.14 m ²
WIND LOAD	180 N (150 km/h) 135 N (130 km/h)



TYPE NO.	WS 351 03 11 (and the desired frequency) The antenna is tuned to the requested frequency in the band 146 - 174 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	3 dB (ref. λ/2 dipole)
VSWR	< 1.2, on tuned frequency
POWER	max. 300 watts
3 dB BEAMWIDTH	horizontal (H-plane): see radiation patterns vertical (E-plane): ~ 70° in main beam directions

TYPICAL RADIATION PATTERNS
H PLANE



TERMINATION in the junction box WAK 1 ending mit N male, other termination on request

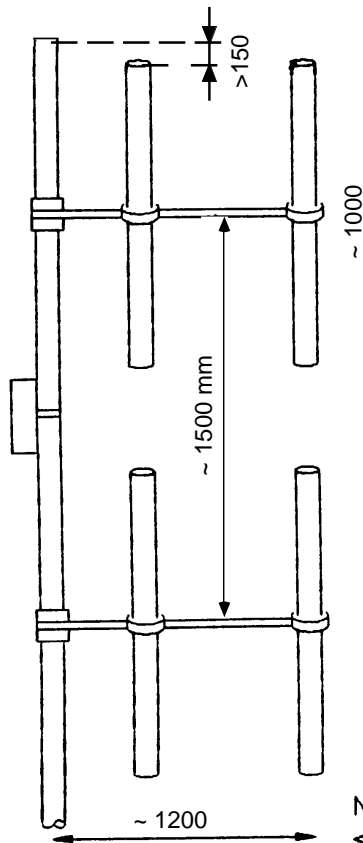
GROUNDING all metal parts are DC grounded

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 10 kg
WIND AREA 0.26 m²
WIND LOAD 330 N (150 km/h)
250 N (130 km/h)

STACKED DIRECTIONAL ANTENNA TYPE KLEEWI WS 352 02/3 11 146 ... 174 MHz



TYPE NO. **WS 352 02 11** : without radome
WS 352 03 11 : heavy duty, with radome
 The radome protects the antenna dipole from environmental influences, icing, and increases the lightning protection.

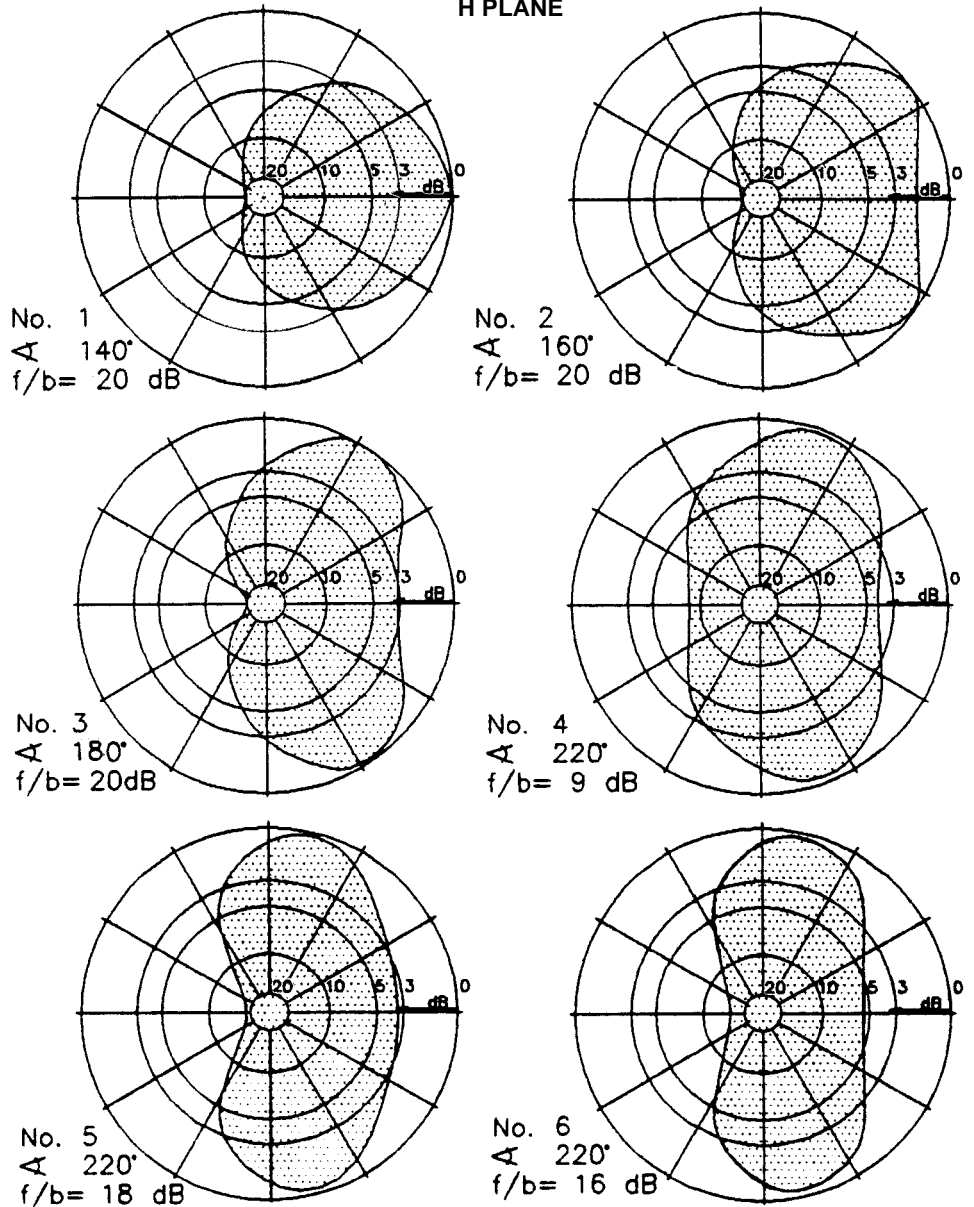
GAIN 6 dB (ref. $\lambda/2$ dipole)

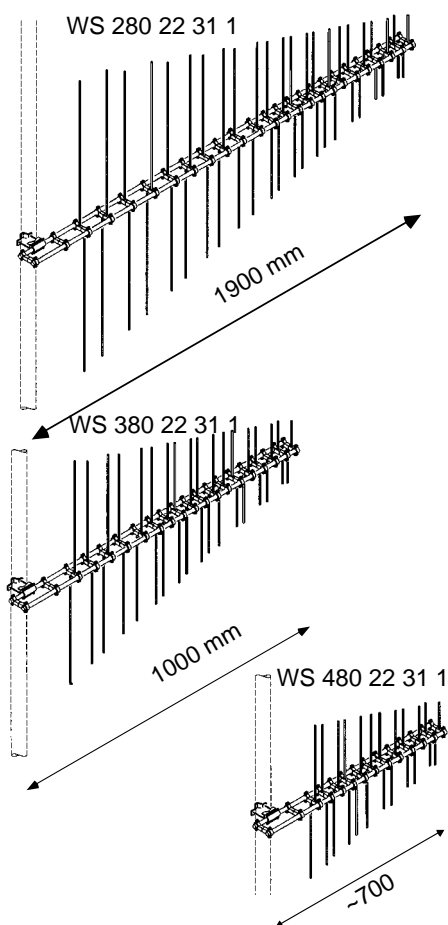
POWER max. 400 watts

3 dB BEAMWIDTH horizontal, H-plane: see radiation patterns
 vertical, E-plane: ~ 32°

Further technical information see WS 351 0. 11

TYPICAL RADIATION PATTERNS H PLANE





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	vertikal or horizontal on request	
IMPEDANCE	50 or 75 Ω	
GAIN	5-6dB ref. $\lambda/2$ dipole 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- \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	280 ..	380 ..
WIND AREA	3.9 kg	2.3 kg
WIND LOAD	0.21 m ²	1.6 kg
	270 N	0.093 m ²
	200 N	120 N
		90 N
		76 N at 150 km/h
		57 N at 130 km/h

WS 280 22 31 1

