

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

## MINI-LINK Point-to-point Compact Antennas

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# 1 Introduction

## 1.1 Portfolio Overview

The MINI-LINK point-to-point antenna portfolio range from 0.2 m to 3.7 m and from 6 GHz to 38 GHz. All antennas are ‘compact’, i.e. the design is compact with a low profile<sup>1</sup>. The compact design combines excellent electrical performance with a low visual intrusiveness.

Size [m]	Frequency [GHz]										
	6	7/8	10/11	13	15	18	23	24/26	28	32	38
0.2							X	X	X	X	X
0.3					X	X	X	X	X	X	X
0.6		X	X	X	X	X	X	X	X	X	X
0.9		X	X	X	X	X	X	X			
1.2	X	X	X	X	X	X	X	X	X	X	
1.8	X	X	X	X	X	X	X				
2.4	X	X	X	X	X						
3.0	X	X	X	X							
3.7	X	X									

Depending on frequency and antenna size different versions are available:

- Single polarised and dual polarised antennas
- Integrated antennas and antennas for separate installation

Please see section 2 for a complete list of all different antennas available.

## 1.2 Polarisation

Single polarised antennas radiate in one polarisation, vertical or horizontal polarisation. The polarisation is adjustable and is set at site during the installation.

Dual polarised antennas radiate in two polarisations simultaneously, vertical and horizontal polarisation. The antenna has two ports, one for each polarisation.

## 1.3 Performance

### 1.3.1 Radiation Pattern Envelope (RPE)

High performance antennas fulfil at least RPE class 2 defined in ETSI EN 302 217-4-2 V1.3.1 (2007-10). Usually they even fulfil RPE class 3. The antenna is normally (but not always) shielded and has got an integrated radome. The radome protects the antenna from its physical environment (rain, snow, dirt, wind etc). High performance antennas are used in networks with a high or a very high interference potential.

Please see section 3.9.1 for a detailed list of each antenna’s RPE class.

<sup>1</sup> Please note that ‘compact’ is not the same thing as ‘integrated’.

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### 1.3.2 Return Loss

An antenna return loss of 14 dB is sufficient for all MINI-LINK systems.

## 1.4 Integration

The integrated antennas are installed with the radio unit (RAU) without using any flexible waveguides, i.e. the radio is fitted directly to the rear of the antenna. The integrated antennas are available with different mechanical interfaces to fit the RAU1 or the RAU2 mechanical design of the radio unit. The radio unit can easily be dismantled without affecting the antenna alignment.

To have an integrated installation with the integrated dual polarised antennas an integration kit needs to be ordered separately (see 1301-UPB 901 02+).

All antennas (including the integrated antennas) can be installed separately from the radio unit using a flexible waveguide. The antennas are equipped with a standardised waveguide interface (see section 4.3.2). The 2.4-3.7 m single polarised antennas and 1.2-3.7 m dual polarised antennas are always installed separately from the radio unit.

## 1.5 Kit Form

To reduce transportation and storage volume and cost the antennas are delivered as a kit, which must be assembled at site before the installation. The 2.4-3.7 m antennas are delivered with the reflector split in two pieces.

## 1.6 Direct Delivery

0.2-0.6 m antennas are delivered from the Ericsson factory in Borås Sweden.

To reduce transportation and storage costs the 0.9-3.7 m antennas are delivered directly from the antenna manufacturer. This is indicated in the product number with a "D" at the end. Should delivery from the Ericsson factory in Borås Sweden still be required product numbers without the "D" extension should be used (at a higher price).

Please see section 2.2 for a complete list of all different product numbers available.

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## 2 Product Name and Number

### 2.1 Product Name

The antenna product name is structured in the following way:

ANT*a b c d*

*a* = 0      Antenna for separate installation  
           1      Integrated antenna for RAU1  
           2      Integrated antenna for RAU2

*b* =            Antenna size (in meters)

*c* =            Frequency band (in GHz)

*d* = HP        High performance, single polarised  
           HPX      High performance, dual polarised

Please see section 2.2 for a complete list of all different antennas available.

### 2.2 Product Number

<u>Product Name</u>	<u>Product Number</u>	
ANT1 1.2 6 HP	UKY 220 11/SC11	UKY 220 11/SC11D
ANT2 1.2 6 HP	UKY 220 11/SC15	UKY 220 11/SC15D
ANT0 1.2 6 HPX	UKY 220 11/DC12	UKY 220 11/DC12D
ANT1 1.8 6 HP	UKY 220 12/SC11	UKY 220 12/SC11D
ANT2 1.8 6 HP	UKY 220 12/SC15	UKY 220 12/SC15D
ANT0 1.8 6 HPX	UKY 220 12/DC12	UKY 220 12/DC12D
ANT0 2.4 6 HP	UKY 220 13/SC12	UKY 220 13/SC12D
ANT0 2.4 6 HPX	UKY 220 13/DC12	UKY 220 13/DC12D
ANT0 3.0 6 HP	UKY 220 14/SC12	UKY 220 14/SC12D
ANT0 3.0 6 HPX	UKY 220 14/DC12	UKY 220 14/DC12D
ANT0 3.7 6 HP	UKY 220 15/SC12	UKY 220 15/SC12D
ANT0 3.7 6 HPX	UKY 220 15/DC12	UKY 220 15/DC12D
ANT1 0.6 7/8 HP	UKY 210 95/SC11	UKY 210 95/SC11D
ANT2 0.6 7/8 HP	UKY 210 95/SC15	
ANT2 0.6 7/8 HPX	UKY 210 95/DC15	
ANT2 0.9 7/8 HP	UKY 220 25/SC15	UKY 220 25/SC15D
ANT1 1.2 7/8 HP	UKY 210 40/SC11	UKY 210 40/SC11D
ANT2 1.2 7/8 HP	UKY 210 40/SC15	UKY 210 40/SC15D
ANT0 1.2 7/8 HPX	UKY 210 40/DC12	UKY 210 40/DC12D
ANT1 1.8 7/8 HP	UKY 210 50/SC11	UKY 210 50/SC11D
ANT2 1.8 7/8 HP	UKY 210 50/SC15	UKY 210 50/SC15D
ANT0 1.8 7/8 HPX	UKY 210 50/DC12	UKY 210 50/DC12D
ANT0 2.4 7/8 HP	UKY 220 01/SC12	UKY 220 01/SC12D
ANT0 2.4 7/8 HPX	UKY 220 01/DC12	UKY 220 01/DC12D
ANT0 3.0 7/8 HP	UKY 220 04/SC12	UKY 220 04/SC12D
ANT0 3.0 7/8 HPX	UKY 220 04/DC12	UKY 220 04/DC12D
ANT0 3.7 7/8 HP	UKY 220 06/SC12	UKY 220 06/SC12D
ANT0 3.7 7/8 HPX	UKY 220 06/DC12	UKY 220 06/DC12D

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Product NameProduct Number

ANT2 0.6 10/11 HP	UKY 220 16/SC15	
ANT2 0.6 10/11 HPX	UKY 220 16/DC15	
ANT2 0.9 11 HP	UKY 220 26/SC15	UKY 220 26/SC15D
ANT2 1.2 10/11 HP	UKY 220 17/SC15	UKY 220 17/SC15D
ANT0 1.2 10/11 HPX	UKY 220 17/DC12	UKY 220 17/DC12D
ANT2 1.8 10/11 HP	UKY 220 18/SC15	UKY 220 18/SC15D
ANT0 1.8 10/11 HPX	UKY 220 18/DC12	UKY 220 18/DC12D
ANT0 2.4 10/11 HP	UKY 220 19/SC12	UKY 220 19/SC12D
ANT0 2.4 10/11 HPX	UKY 220 19/DC12	UKY 220 19/DC12D
ANT0 3.0 10/11 HP	UKY 220 20/SC12	UKY 220 20/SC12D
ANT0 3.0 10/11 HPX	UKY 220 20/DC12	UKY 220 20/DC12D
ANT2 0.6 13 HP	UKY 210 89/SC15	
ANT2 0.6 13 HPX	UKY 210 89/DC15	
ANT2 0.9 13 HP	UKY 220 27/SC15	UKY 220 27/SC15D
ANT2 1.2 13 HP	UKY 210 41/SC15	UKY 210 41/SC15D
ANT0 1.2 13 HPX	UKY 210 41/DC12	UKY 210 41/DC12D
ANT2 1.8 13 HP	UKY 210 51/SC15	UKY 210 51/SC15D
ANT0 1.8 13 HPX	UKY 210 51/DC12	UKY 210 51/DC12D
ANT0 2.4 13 HP	UKY 220 02/SC12	UKY 220 02/SC12D
ANT0 2.4 13 HPX	UKY 220 02/DC12	UKY 220 02/DC12D
ANT0 3.0 13 HP	UKY 220 05/SC12	UKY 220 05/SC12D
ANT0 3.0 13 HPX	UKY 220 05/DC12	UKY 220 05/DC12D
ANT2 0.3 15 HP	UKY 210 71/SC15	
ANT2 0.3 15 HPX	UKY 210 71/DC15	
ANT2 0.6 15 HP	UKY 210 76/SC15	
ANT2 0.6 15 HPX	UKY 210 76/DC15	
ANT2 0.9 15 HP	UKY 220 28/SC15	UKY 220 28/SC15D
ANT2 1.2 15 HP	UKY 210 42/SC15	UKY 210 42/SC15D
ANT0 1.2 15 HPX	UKY 210 42/DC12	UKY 210 42/DC12D
ANT2 1.8 15 HP	UKY 210 52/SC15	UKY 210 52/SC15D
ANT0 1.8 15 HPX	UKY 210 52/DC12	UKY 210 52/DC12D
ANT0 2.4 15 HP	UKY 220 03/SC12	UKY 220 03/SC12D
ANT0 2.4 15 HPX	UKY 220 03/DC12	UKY 220 03/DC12D
ANT2 0.3 18 HP	UKY 210 72/SC15	
ANT2 0.3 18 HPX	UKY 210 72/DC15	
ANT2 0.6 18 HP	UKY 210 77/SC15	
ANT2 0.6 18 HPX	UKY 210 77/DC15	
ANT2 0.9 18 HP	UKY 220 29/SC15	UKY 220 29/SC15D
ANT2 1.2 18 HP	UKY 210 43/SC15	UKY 210 43/SC15D
ANT0 1.2 18 HPX	UKY 210 43/DC12	UKY 210 43/DC12D
ANT2 1.8 18 HP	UKY 210 53/SC15	UKY 210 53/SC15D
ANT0 1.8 18 HPX	UKY 210 53/DC12	UKY 210 53/DC12D

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<u>Product Name</u>	<u>Product Number</u>	
ANT2 0.2 23 HP	UKY 210 60/SC15	
ANT2 0.3 23 HP	UKY 210 73/SC15	
ANT2 0.3 23 HPX	UKY 210 73/DC15	
ANT2 0.6 23 HP	UKY 210 78/SC15	
ANT2 0.6 23 HPX	UKY 210 78/DC15	
ANT2 0.9 23 HP	UKY 220 30/SC15	UKY 220 30/SC15D
ANT2 1.2 23 HP	UKY 210 44/SC15	UKY 210 44/SC15D
ANT0 1.2 23 HPX	UKY 210 44/DC12	UKY 210 44/DC12D
ANT2 1.8 23 HP	UKY 210 54/SC15	UKY 210 54/SC15D
ANT0 1.8 23 HPX	UKY 210 54/DC12	UKY 210 54/DC12D
-----		
ANT2 0.2 24/26 HP	UKY 210 68/SC15	
ANT2 0.3 24/26 HP	UKY 210 74/SC15	
ANT2 0.3 24/26 HPX	UKY 210 74/DC15	
ANT2 0.6 24/26 HP	UKY 210 79/SC15	
ANT2 0.6 24/26 HPX	UKY 210 79/DC15	
ANT2 0.9 24/26 HP	UKY 220 31/SC15	UKY 220 31/SC15D
ANT2 1.2 24/26 HP	UKY 210 45/SC15	UKY 210 45/SC15D
ANT0 1.2 24/26 HPX	UKY 210 45/DC12	UKY 210 45/DC12D
-----		
ANT2 0.2 28 HP	UKY 210 69/SC15	
ANT2 0.3 28 HP	UKY 210 57/SC15	
ANT2 0.3 28 HPX	UKY 210 57/DC15	
ANT2 0.6 28 HP	UKY 210 93/SC15	
ANT2 0.6 28 HPX	UKY 210 93/DC15	
ANT2 1.2 28 HP	UKY 210 55/SC15	UKY 210 55/SC15D
ANT0 1.2 28 HPX	UKY 210 55/DC12	UKY 210 55/DC12D
-----		
ANT2 0.2 32 HP	UKY 210 63/SC15	
ANT2 0.3 32 HP	UKY 210 58/SC15	
ANT2 0.3 32 HPX	UKY 210 58/DC15	
ANT2 0.6 32 HP	UKY 210 59/SC15	
ANT2 0.6 32 HPX	UKY 210 59/DC15	
ANT2 1.2 32 HP	UKY 210 56/SC15	UKY 210 56/SC15D
ANT0 1.2 32 HPX	UKY 210 56/DC12	UKY 210 56/DC12D
-----		
ANT2 0.2 38 HP	UKY 210 61/SC15	
ANT2 0.3 38 HP	UKY 210 75/SC15	
ANT2 0.3 38 HPX	UKY 210 75/DC15	
ANT2 0.6 38 HP	UKY 210 80/SC15	
ANT2 0.6 38 HPX	UKY 210 80/DC15	

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### 3 Electrical Data

#### 3.1 Frequency Band

6 GHz	5.925-7.11 GHz
7/8 GHz	7.1-8.5 GHz
10/11 GHz	10.125-11.7 GHz <sup>2</sup>
13 GHz	12.75-13.25 GHz
15 GHz	14.4-15.35 GHz
18 GHz	17.7-19.7 GHz
23 GHz	21.2-23.6 GHz
24/26 GHz	24.25-26.5 GHz
28 GHz	27.35-29.5 GHz
32 GHz	31.0-33.4 GHz
38 GHz	37-40 GHz <sup>3</sup>

<sup>2</sup> The 0.9 m antenna is designed to cover the frequency band 10.7-11.7 GHz.

<sup>3</sup> The 0.6 m antennas are designed to cover the frequency band 37-39.5 GHz. The antennas can be used in the frequency band 39.5-40 GHz with changes in the RPE. Please see section 3.8.62 on page 45.

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### 3.2 Gain

Size [m]	Frequency [GHz]										
	6	7/8	10/11	13	15	18	23	24/26	28	32	38
0.2							30.8	32.9	33.8	35.2	37.3
							31.8	33.8	34.6	35.4	37.5
							32.8	34.4	34.8	35.6	37.7
0.3					31.7	33.9	35.6	36.4	37.5	38.7	40.3
					32.1	34.4	36.2	37.3	38.0	38.7	40.4
					32.8	35.2	36.6	37.8	38.5	39.5	40.5
0.6		30.8/31.0 <sup>4</sup>	34.4	35.8	36.2	38.6	39.6	40.6	41.7	42.5	44.0
		31.8/32.0 <sup>4</sup>	35.2	36.0	36.6	39.2	40.0	41.5	42.4	42.8	44.3
		32.5/32.7 <sup>4</sup>	35.7	36.2	36.8	39.6	40.8	42.2	42.8	43.2	44.3
0.9		33.2	36.9	38.2	39.3	40.5	42.5	43.7			
		33.9	37.4	38.4	39.7	41.0	43.0	44.1			
		34.4	38.3	38.6	40.1	41.4	43.4	44.5			
1.2	35.0	36.4	39.5	41.5	42.6	44.3	45.5	46.7	47.5	48.1	
	35.8	37.0	40.1	41.8	42.7	44.6	46.0	47.1	47.9	48.3	
	36.5	37.9	40.7	42.5	43.2	44.9	46.5	47.4	48.2	48.5	
1.8	38.5	40.1	43.1	45.1	46.1	48.0	49.1				
	39.3	41.0	43.7	45.3	46.4	48.5	49.5				
	40.0	41.7	44.2	45.6	46.6	48.9	50.0				
2.4	41.2	42.9	45.8	47.6	48.2						
	42.1	43.8	46.2	47.7	48.5						
	42.9	44.1	46.8	47.8	48.9						
3.0	42.7	44.2	47.5	49.2							
	43.5	45.0	47.9	49.4							
	44.2	45.8	48.6	49.5							
3.7	44.5	46.0									
	45.4	46.9									
	46.2	47.6									

Gain (in dBi) at low-band, mid-band and high-band. Gain tolerance:  $\pm 1.0$  dB.

<sup>4</sup> Gain for ANT2 / Gain for ANT1.



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### 3.3 Half Power Beamwidth (HPBW)

Size [m]	Frequency [GHz]										
	6	7/8	10/11	13	15	18	23	24/26	28	32	38
0.2							3.8 4.5	3.1 4.0	2.9 3.6	2.6 3.2	2.0 2.5
0.3					3.8 4.7	2.9 3.8	2.4 3.1	2.1 2.6	2.0 2.6	1.8 2.1	1.5 1.9
0.6		3.8/3.8 <sup>5</sup> 5.0/4.6 <sup>5</sup>	2.7 3.6	2.5 3.1	2.2 2.8	1.7 2.2	1.4 1.9	1.2 1.6	1.1 1.5	1.2 1.3	0.9 1.1
0.9		2.9 3.5	2.0 2.2	1.8 2.2	1.7 1.9	1.2 1.6	1.1 1.2	0.9 1.0			
1.2	2.3 3.0	1.9 2.2	1.3 1.7	1.3 1.5	1.1 1.4	0.8 1.1	0.7 1.0	0.6 0.8	0.55 0.66	0.48 0.53	
1.8	1.5 1.9	1.29 1.58	0.9 1.2	0.88 0.94	0.74 0.87	0.58 0.65	0.49 0.51				
2.4	1.2 1.5	1.0 1.2	0.75 0.95	0.65 0.75	0.55 0.65						
3.0	0.98 1.25	0.9 1.1	0.65 0.80	0.55 0.65							
3.7	0.75 0.94	0.7 0.9									

Minimum and maximum HPBW (in degrees) in the azimuthal plane for vertical and horizontal polarisation.

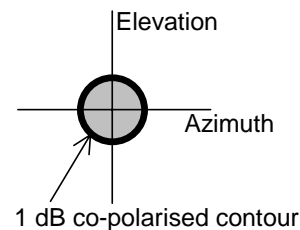
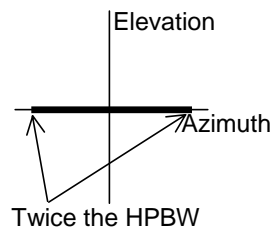
### 3.4 Cross-Polar Discrimination (XPD)

Minimum 30 dB XPD in azimuth over an angle twice the half power beamwidth of the co-polarised main beam.

Minimum XPD within the 1 dB co-polarised contour:

6-13 GHz 30 dB

15-38 GHz 27 dB



<sup>5</sup> HPBW for ANT2 / HPBW for ANT1.

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### 3.5 Return Loss

Size [m]	Frequency [GHz]										
	6	7/8	10/11	13	15	18	23	24/26	28	32	38
0.2							14	14	14	14	14
							14	14	14	14	14
0.3					14	14	14	14	14	14	14
					14	14	14	14	14	14	14
0.6		14	14	14	14	14	14	14	14	14	14
		14	14	14	14	14	14	14	14	14	14
0.9		14	14	14	14	14	14	14			
		14	14	14	14	14	14	14			
1.2	14	14	14	14	14	14	14	14	14	14	
	14	20	14/20 <sup>6</sup>	20	14	14	14	14	14	14	
1.8	14	14	14	14	14	14	14				
	18	20	14/20 <sup>6</sup>	20	14	14	14				
2.4	-	-	-	-	-						
	23	23	14/20 <sup>6</sup>	20	14						
3.0	-	-	-	-							
	23	23	14/20 <sup>6</sup>	20							
3.7	-	-									
	23	23									

Minimum return loss<sup>7</sup> (in dB) for integrated and separate installation.

### 3.6 Front to Back Ratio (F/B)

Size [m]	Frequency [GHz]										
	6	7/8	10/11	13	15	18	23	24/26	28	32	38
0.2							55	59	60	56	55
0.3					52	58	59	62	63	63	61
0.6		57	60	61	64	66	63	67	67	69	63
0.9		60	59	65	68	69	72	72			
1.2	60	63	64/66 <sup>8</sup>	67	72	73	73	73	75	67	
1.8	65	68	70	72	74	77	79				
2.4	69	70	75	75	78						
3.0	70	72	75	76							
3.7	72	75									

Minimum F/B (in dB).

### 3.7 Inter Port Isolation (IPI)

Minimum 35 dB IPI (dual polarised antennas only).

<sup>6</sup> RL for 10.125-10.7 GHz / RL for 10.7-11.7 GHz.

<sup>7</sup> RL 14 dB  $\Leftrightarrow$  VSWR 1.50    RL 18 dB  $\Leftrightarrow$  VSWR 1.29    RL 20 dB  $\Leftrightarrow$  VSWR 1.22    RL 23 dB  $\Leftrightarrow$  VSWR 1.15

<sup>8</sup> F/B for 10.125-10.55 GHz / F/B for 10.55-11.7 GHz.

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### 3.8 Radiation Pattern Envelope (RPE)

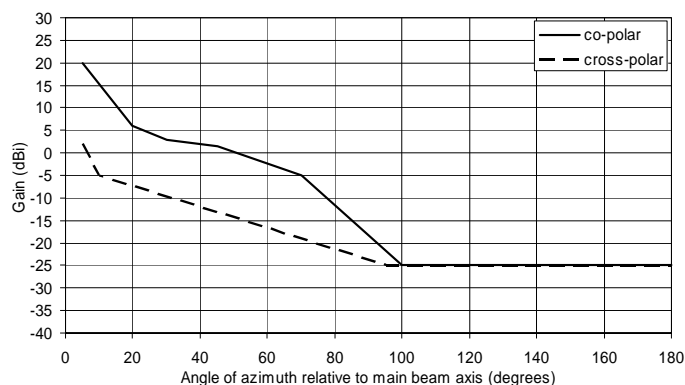
#### 3.8.1 General

The radiation pattern envelopes (RPEs) presented are guaranteed RPEs. No peaks will exceed the RPEs by more than 2 dB.

Since the RPE is an envelope covering the full frequency band and both polarisations the probability is high that the side lobe level at a specific frequency and a specific angle is lower (or even much lower) than the specified RPE.

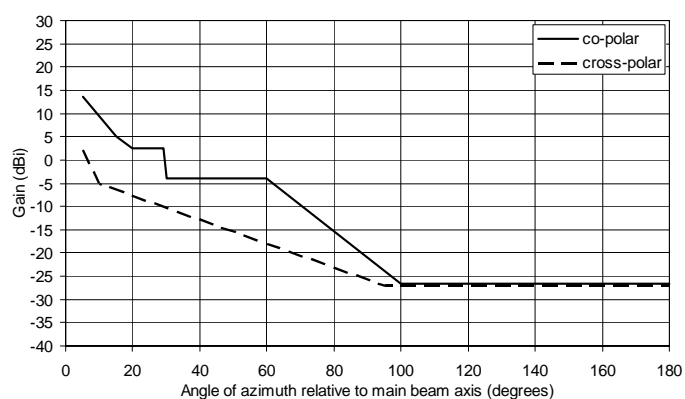
NSMA formatted antenna pattern files can be found in the zip-file 190 09-UKY 210 40+.

#### 3.8.2 ANT1 1.2 6 HP, ANT2 1.2 6 HP and ANT0 1.2 6 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	20	2
10		-5
20	6	
30	3	
40		-12
45	1.5	
70	-5	
95		-25
100	-25	
180	-25	-25

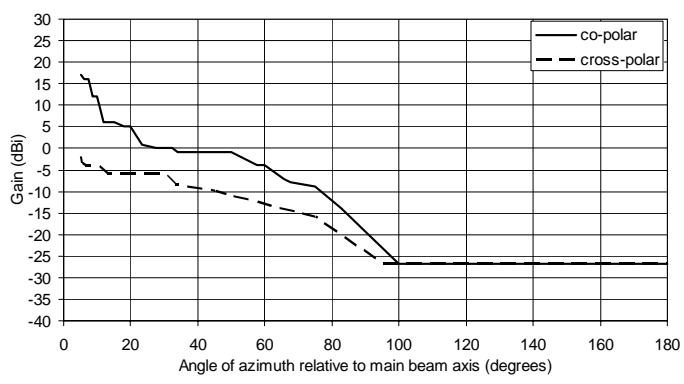
#### 3.8.3 ANT1 1.8 6 HP, ANT2 1.8 6 HP and ANT0 1.8 6 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	13.5	2
10		-5
15	5	
20	2.5	
29	2.5	
30	-4	
60	-4	-18
95		-27
100	-26.5	
180	-26.5	-27

Prepared (also subject responsible if other) <b>EMWJF</b>		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

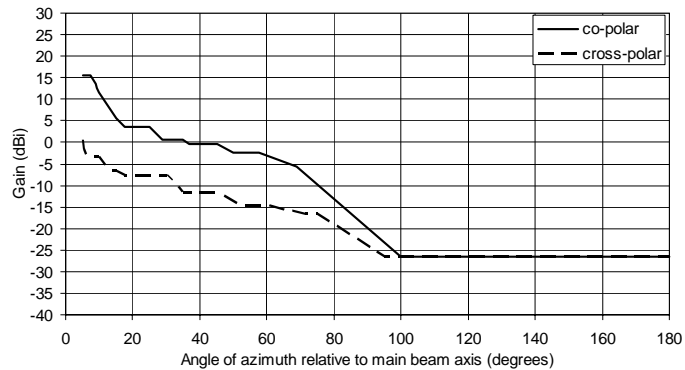
**3.8.4 ANT0 2.4 6 HP and ANT0 2.4 6 HPX**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	17.1	-1.9
5.4		-3.5
6	16.1	
6.5		-3.9
7.5	16.1	
8.5	12.1	
10	12.1	-3.9
10.5	10.1	
12	6.1	
13		-5.9
15	6.1	
18	5.1	
20	5.1	
23.5	0.9	
27.5	0.1	
30		-5.9
32.5	0.1	
33.4		-8.3
33.8	-0.9	
45		-9.9
50	-0.9	
57.5	-3.9	
60	-3.9	
65.8	-7.2	
67.5	-7.9	
75	-8.9	-15.9
82.5	-13.9	
95		-26.9
100	-26.9	
180	-26.9	-26.9

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

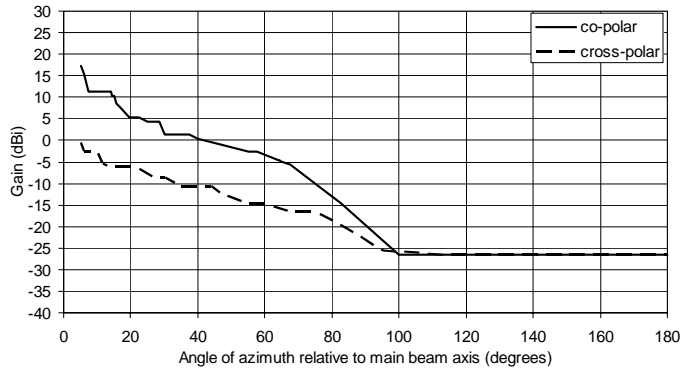
### 3.8.5 ANT0 3.0 6 HP and ANT0 3.0 6 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	15.5	0.6
5.4		-1.7
6.2		-2.8
7.5	15.5	
8		-3.5
9	13.5	
9.4	12.5	
10	11.5	-3.5
13		-6.5
15	5.5	-6.5
17.5	3.5	-7.5
25	3.5	
28.8	0.5	
30		-7.5
35	0.5	-11.5
36.7	-0.5	
45	-0.5	-11.5
50	-2.5	
52.5		-14.5
57.5	-2.5	
60		-14.5
69	-5.5	
71.5		-16.5
75		-16.5
95		-26.5
100	-26.5	
180	-26.5	-26.5

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

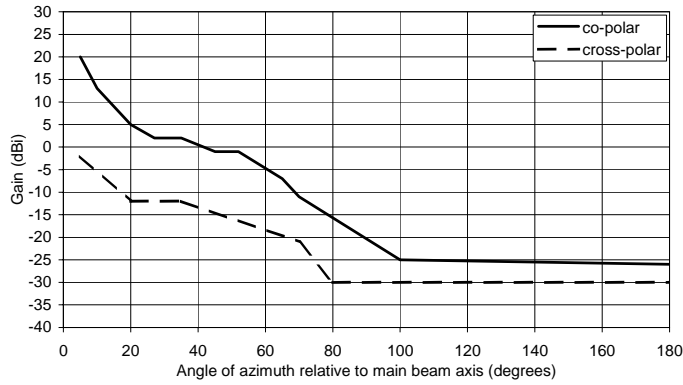
### 3.8.6 ANT0 3.7 6 HP and ANT0 3.7 6 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	17.4	-0.6
6	15.4	-2.6
7	12.4	
7.5	11.4	
10		-2.6
11.4		-5.3
13		-6.1
14	11.4	
14.5	10.4	
15	10.4	
15.7	8.7	
16.5	7.9	
19.5	5.4	
20		-6.1
21		-6.6
22.5	5.4	-6.6
25	4.4	
27		-8.6
28.5	4.4	
30	1.4	-8.6
35		-10.6
37.5	1.4	
40	0.4	
44		-10.6
45	-0.6	
47.5		-12.6
55	-2.6	-14.6
57.5	-2.6	
60		-14.6
64.2	-4.6	
64.5	-4.6	
64.8	-4.8	
67.5	-5.6	-16.6
75		-16.6
76	-10.6	
82.5	-14.6	
84.5		-20.6
95		-25.6
100	-26.6	
115		-26.6
180	-26.6	-26.6

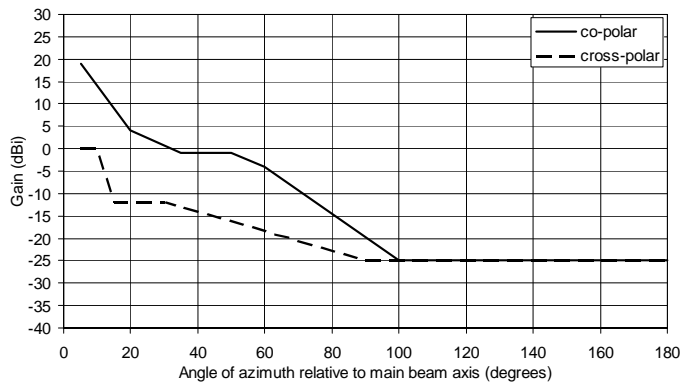
Prepared (also subject responsible if other) <b>EMWJF</b>		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

**3.8.7 ANT1 0.6 7/8 HP**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	20	-2
10	13	
20	5	-12
27	2	
35	2	-12
45	-1	
52	-1	
65	-7	
70	-11	-21
80		-30
100	-25	
180	-26	-30

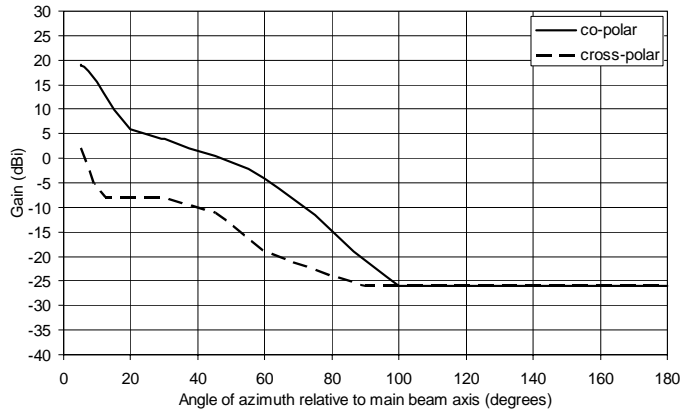
**3.8.8 ANT2 0.6 7/8 HP and ANT2 0.6 7/8 HPX**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	19	0
10		0
15		-12
20	4	
30		-12
35	-1	
50	-1	
60	-4	
90		-25
100	-25	
180	-25	-25

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

### 3.8.9 ANT2 0.9 7/8 HP

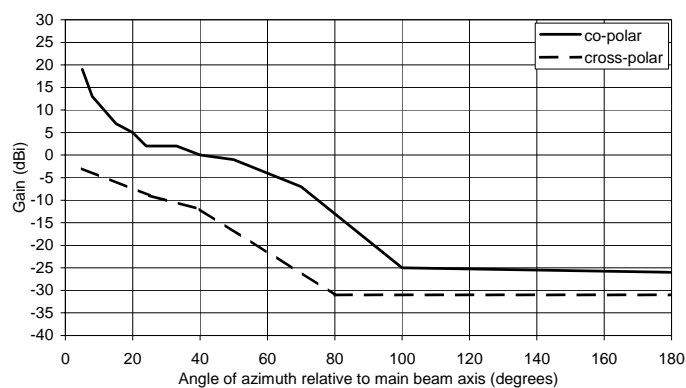


Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	19	1.9
5.15	18.9	
5.5	18.9	
6	18.6	
7.3	17.7	
8.95		-5.2
10	15.65	
12	13.3	
12.5		-8.1
15	9.9	-8.1
20	5.9	
25	4.9	
29	3.9	
30	3.9	-8.1
37.5	1.9	
45	0.4	-11.1
55	-2.1	
60	-4.1	-19.1
64	-6.1	
75	-11.6	
80		-24.1
86.5	-19.1	
90		-26.1
96	-24.1	
100	-26.1	
180	-26.1	-26.1



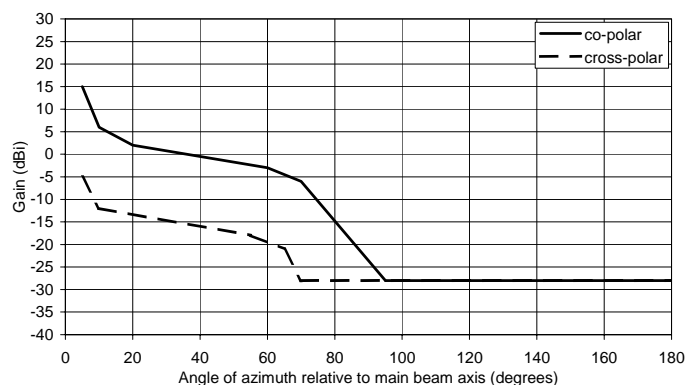
Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

### 3.8.10 ANT1 1.2 7/8 HP, ANT2 1.2 7/8 HP and ANT0 1.2 7/8 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	19	-3
8	13	
15	7	
20	5	
24	2	
25		-9
33	2	
40	0	-12
50	-1	
70	-7	
80		-31
100	-25	
180	-26	-31

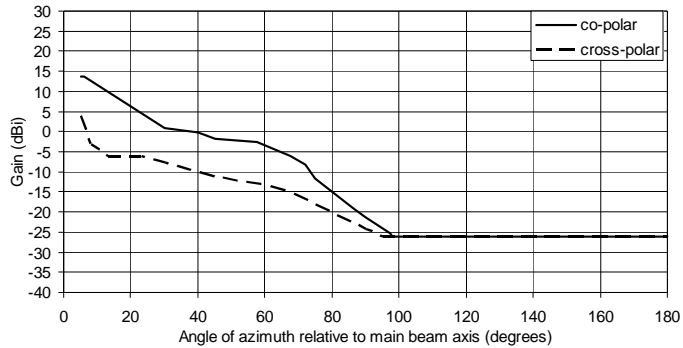
### 3.8.11 ANT1 1.8 7/8 HP, ANT2 1.8 7/8 HP and ANT0 1.8 7/8 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	15	-5
10	6	-12
20	2	
55		-18
60	-3	
65		-21
70	-6	-28
95	-28	
180	-28	-28

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

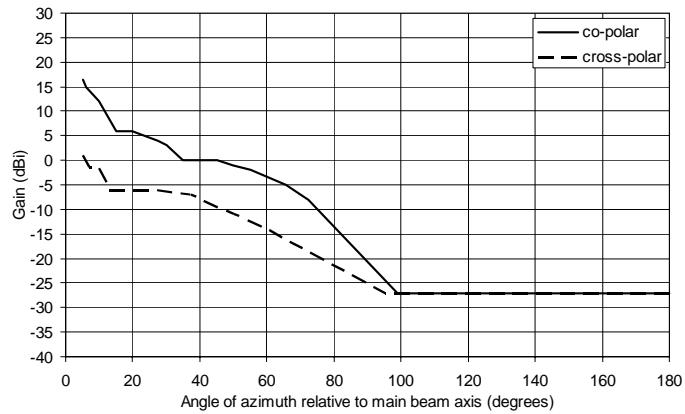
### 3.8.12 ANT0 2.4 7/8 HP and ANT0 2.4 7/8 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	13.8	3.8
6	13.8	
8		-3.2
13		-6.2
23		-6.2
30	0.8	-7.7
40	-0.2	
45	-1.7	-11.2
57.5	-2.7	
60		-13.2
67.5	-6.2	
68		-15.2
72	-8.2	
75	-11.7	-18.2
86.5	-19.2	
90	-21.2	-24.2
95		-26.2
97.5	-25.2	
98	-26.2	
180	-26.2	-26.2

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

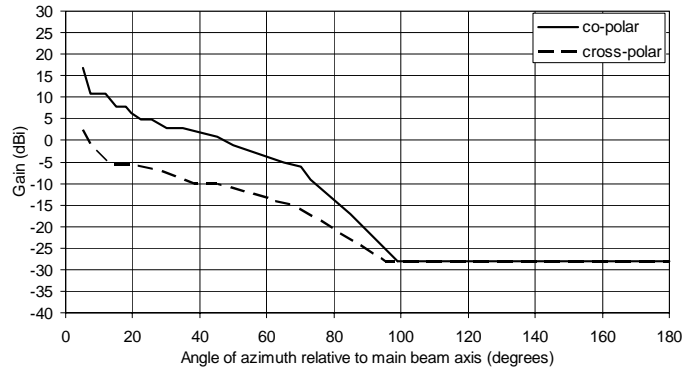
### 3.8.13 ANT0 3.0 7/8 HP and ANT0 3.0 7/8 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	16.5	1
6	15	
7		-1.5
10	12	-1.5
13		-6
15	6	
20	6	
26.5		-6
27.5	4	
30	3	
35	0	
37		-7
45	0	-9.5
50	-1	-11
55	-2	
60		-14
65.5	-5	
72.5	-8	
95		-27
99	-27	
180	-27	-27

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

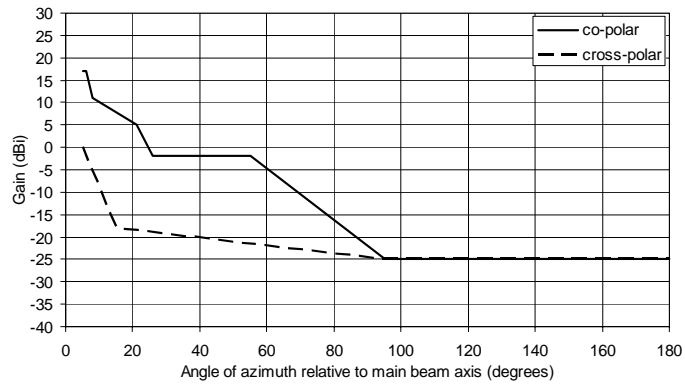
### 3.8.14 ANT0 3.7 7/8 HP and ANT0 3.7 7/8 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	16.9	2.4
7.5	10.9	-1.1
12	10.9	
13		-5.6
15	7.9	
18	7.9	
19.5	6.4	-5.6
22.5	4.9	
25.5	4.9	
28.5		-7.1
30	2.9	
35	2.9	
38.5		-10.1
40	1.9	
45	0.9	-10.1
50	-1.1	
65	-5.1	
67.5		-15.1
70	-6.14	
73	-9.1	
75		-18.1
85	-17.1	
95		-28.1
99	-28.1	
180	-28.1	-28.1

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

### 3.8.15 ANT2 0.6 10/11 HP and ANT2 0.6 10/11 HPX

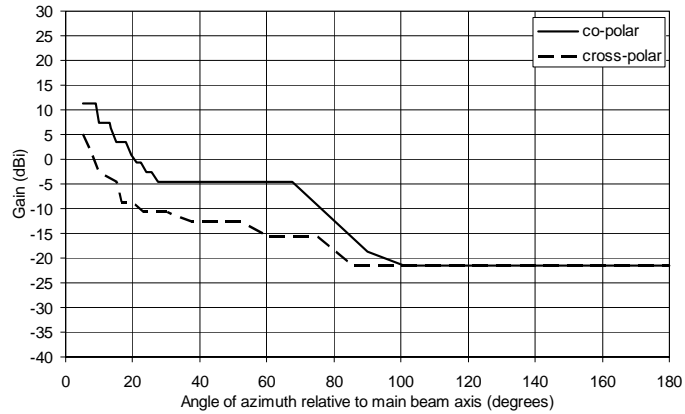


Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	17	0
6	17	
8	11	
15		-18
21	5	
26	-2	
55	-2	
95	-25	-25
180	-25	-25

The RPEs above are valid for the full frequency band 10.125-11.7 GHz. In the band 10.55-11.7 GHz the co-polar RPE is better. Remove the breakpoint at 21°.

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
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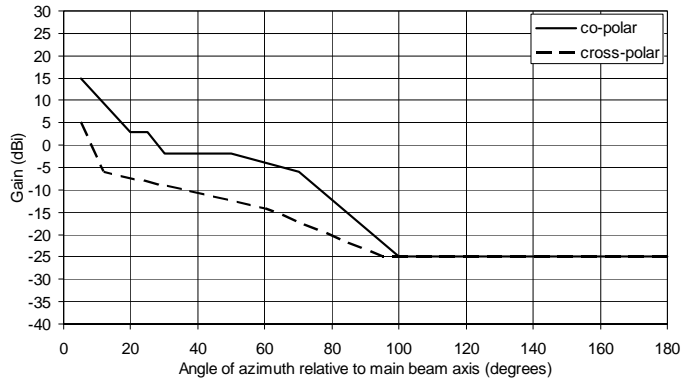
## 3.8.16 ANT2 0.9 11 HP



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	11.4	5
9	11.4	
10	7.4	-2.6
13	7.4	
13.5	6.4	
15	3.4	-4.6
16.5		-8.6
18	3.4	
19.5	0.9	
20.0		-8.6
21	-0.6	
22.5	-0.6	
23.0		-10.6
24	-2.6	
25.5	-2.6	
27.5	-4.6	
30		-10.6
37.5		-12.6
45	-4.6	
52.5		-12.6
60		-15.6
67.5	-4.6	
75		-15.6
85.5		-21.6
90	-18.6	
101	-21.6	
180	-21.6	-21.6

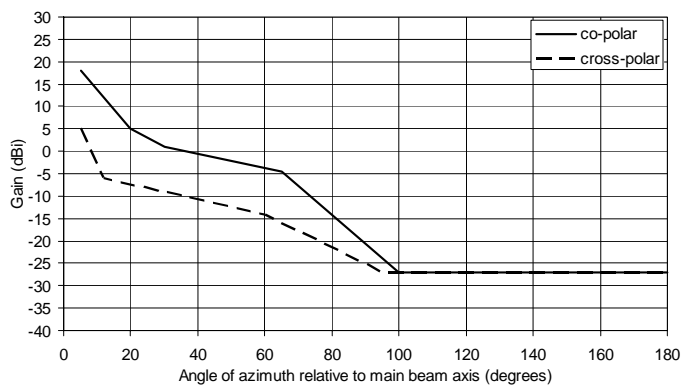
Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

### 3.8.17 ANT2 1.2 10/11 HP and ANT0 1.2 10/11 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	15	5
12		-6
20	3	
25	3	
30	-2	
50	-2	
60		-14
70	-6	
95		-25
100	-25	
180	-25	-25

### 3.8.18 ANT2 1.8 10/11 HP and ANT0 1.8 10/11 HPX

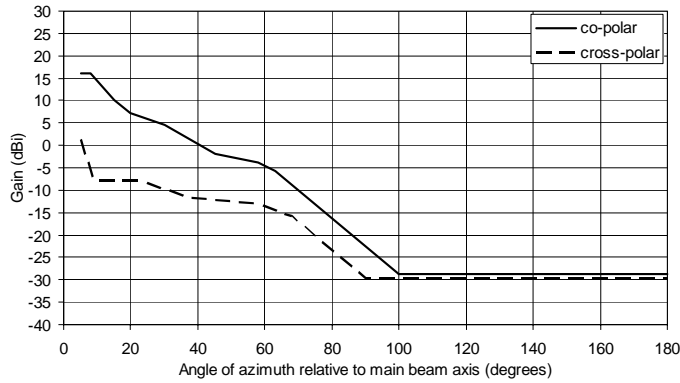


Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	18	5
12		-6
20	5	
30	1	
60		-14
65	-4.5	
95		-27
100	-27	
180	-27	-27

The RPEs above are valid for the full frequency band 10.125-11.7 GHz. In the band 10.7-11.7 GHz the co-polar RPE is better. Add a breakpoint at 50° -2 dBi and remove the breakpoint at 65°.

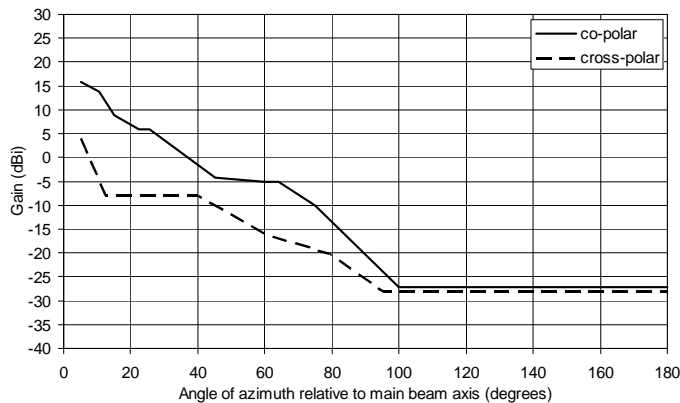
Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

### 3.8.19 ANT0 2.4 10/11 HP and ANT0 2.4 10/11 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	16.2	1.2
8	16.2	
9		-7.8
15	10.2	
20	7.2	
22.5		-7.8
30	4.7	
37.5		-11.8
45	-1.8	
57		-12.8
58	-3.8	
63	-5.8	
68		-15.8
90		-29.8
100	-28.8	
180	-28.8	-29.8

### 3.8.20 ANT0 3.0 10/11 HP and ANT0 3.0 10/11 HPX

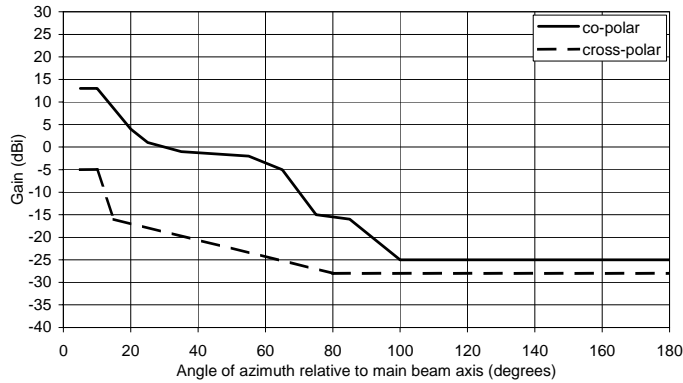


Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	15.9	3.9
6.5		1.9
10.5	13.9	
12.5		-8.1
15	8.9	
22.5	5.9	
25.5	5.9	
40		-8.1
45	-4.1	
60	-5.1	-16.1
64	-5.1	
75	-10.1	
79		-20.1
95		-28.1
100	-27.1	
180	-27.1	-28.1



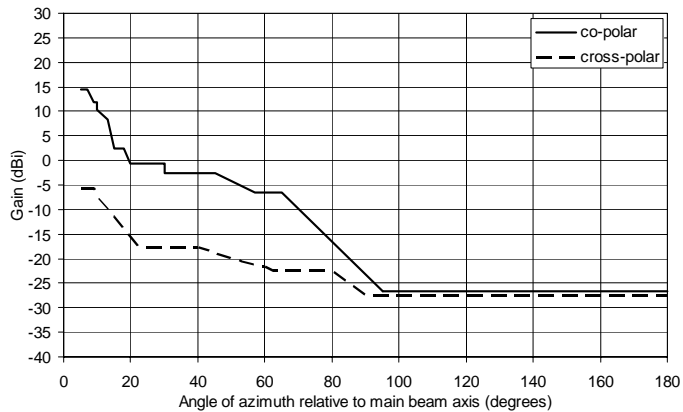
Prepared (also subject responsible if other) <b>EMWJF</b>		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

**3.8.21 ANT2 0.6 13 HP and ANT2 0.6 13 HPX**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	13	-5
10	13	-5
15		-16
20	4	
25	1	
35	-1	
55	-2	
65	-5	
75	-15	
80		-28
85	-16	
100	-25	
180	-25	-28

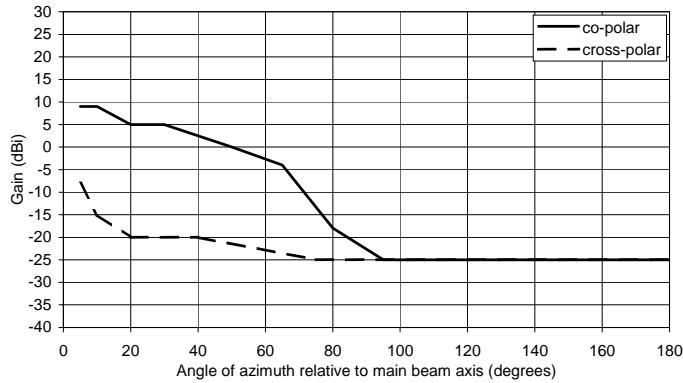
**3.8.22 ANT2 0.9 13 HP**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	14.4	-5.6
7	14.4	
9	11.9	-5.6
9.6		-7.4
9.9	11.9	
10	10.4	-7.6
13	8.4	
15	2.4	-11.6
18	2.4	
20	-0.6	
22.5		-17.6
29.9	-0.6	
30	-2.6	
40		-17.6
45	-2.6	
52.8		-20.6
57	-6.6	
60		-21.6
62.5		-22.6
65	-6.6	
80		-22.6
90		-27.6
95	-26.6	
180	-26.6	-27.6

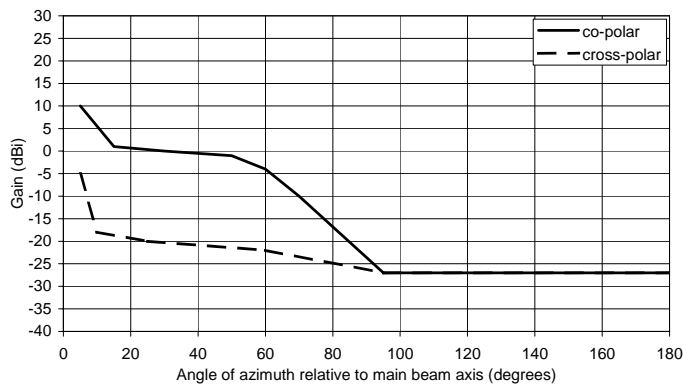
Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

### 3.8.23 ANT2 1.2 13 HP and ANT0 1.2 13 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	9	-8
10	9	-15
20	5	-20
30	5	
40		-20
50	0	
65	-4	
75		-25
80	-18	
95	-25	
180	-25	-25

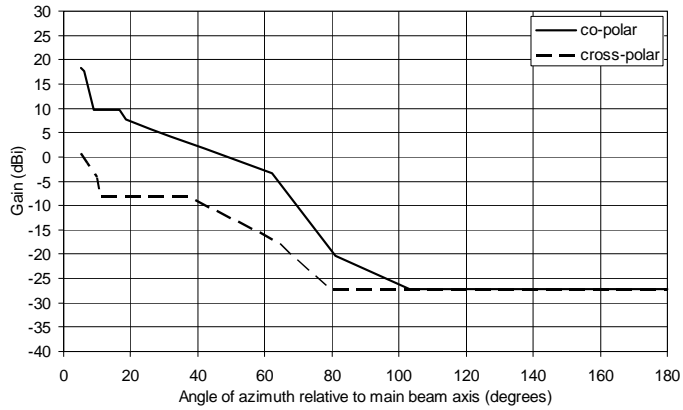
### 3.8.24 ANT2 1.8 13 HP and ANT0 1.8 13 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	10	-5
10		-18
15	1	
25		-20
30	0	
50	-1	
60	-4	-22
70	-10	
95	-27	-27
180	-27	-27

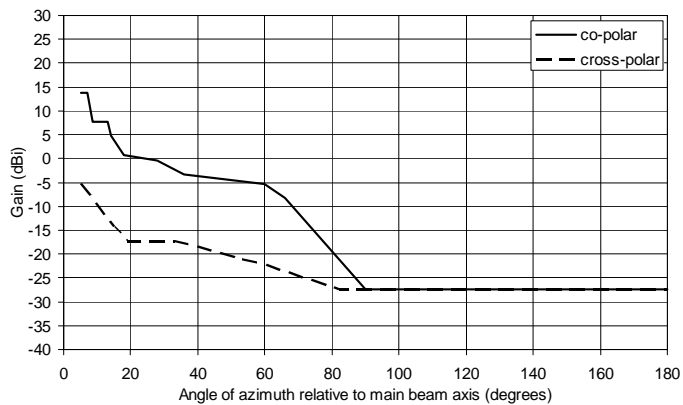
Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

### 3.8.25 ANT0 2.4 13 HP



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	18.2	0.7
6	17.7	
7		-1.3
9	9.7	
10		-4.3
11		-8.3
16.5	9.7	
18.5	7.7	
26	5.7	
32	4.2	
37		-8.3
42	1.7	
62	-3.3	
63		-17.3
79		-27.3
81	-20.3	
103	-27.3	
180	-27.3	-27.3

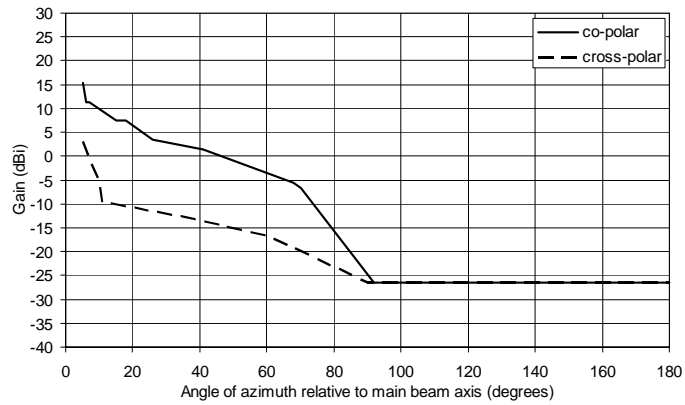
### 3.8.26 ANT0 2.4 13 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	13.7	-5.3
7	13.7	
8.5	7.7	
13	7.7	
14	4.7	
15		-14.3
18	0.7	
19		-17.3
28	-0.3	
33		-17.3
36	-3.3	
60	-5.3	-22.3
66	-8.3	
82		-27.3
90	-27.3	
180	-27.3	-27.3

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

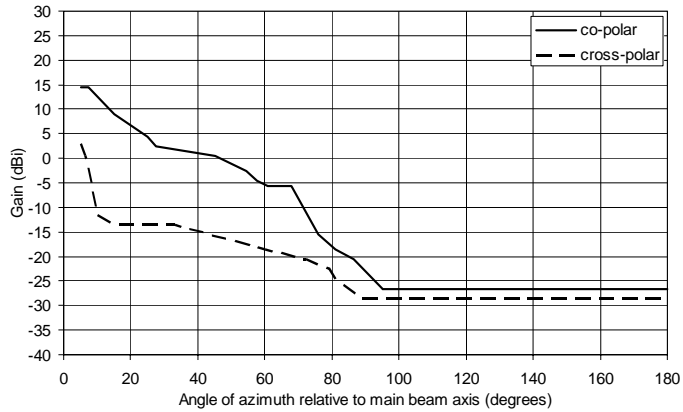
## 3.8.27 ANT0 3.0 13 HP



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	15.4	2.9
6	11.4	
7	11.4	
10		-5.6
11		-9.6
15	7.4	
18	7.4	
26	3.4	
34		-12.6
41	1.4	
60		-16.6
68	-5.6	
70	-6.6	
90		-26.6
92	-26.6	
180	-26.6	-26.6

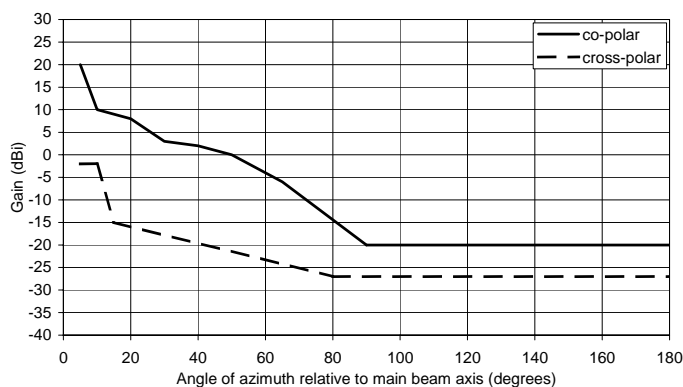
Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

### 3.8.28 ANT0 3.0 13 HPX



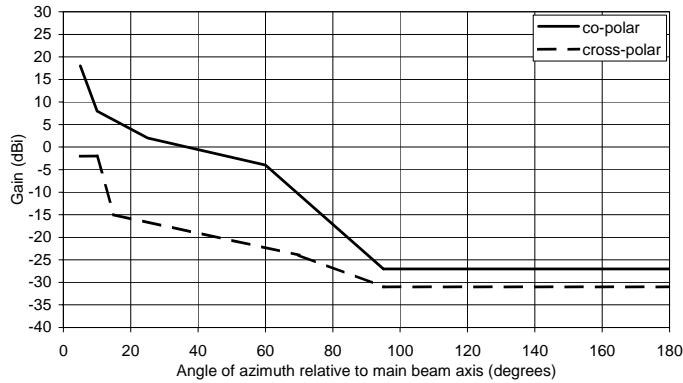
Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	14.4	2.9
6.5		0.4
7.5	14.4	-1.6
10		-11.6
15	8.9	-13.6
25	4.4	
27.5	2.4	
33		-13.6
45	0.4	
54.5	-2.6	
57.5	-4.6	
60		-18.6
61	-5.6	
68	-5.6	
72		-20.6
76	-15.6	
79		-22.6
81	-18.6	-24.6
86.5	-20.6	
89		-28.6
95	-26.6	
180	-26.6	-28.6

### 3.8.29 ANT2 0.3 15 HP and ANT2 0.3 15 HPX

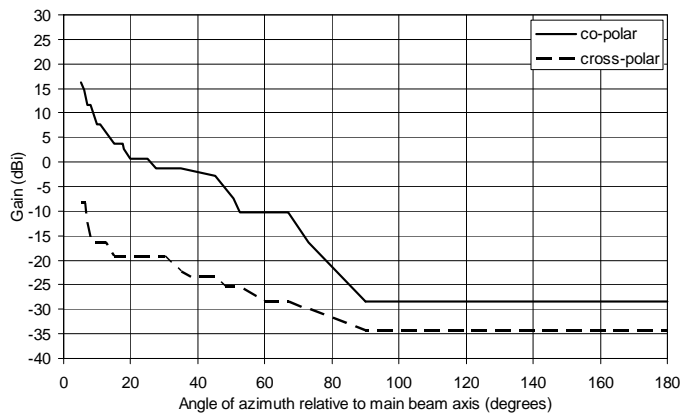


Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	20	-2
10	10	-2
15		-15
20	8	
30	3	
40	2	
50	0	
65	-6	
80		-27
90	-20	
180	-20	-27

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

**3.8.30 ANT2 0.6 15 HP and ANT2 0.6 15 HPX**

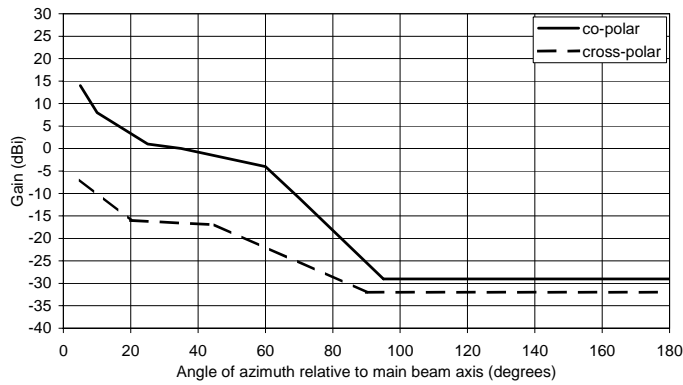
Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	18	-2
10	8	-2
15		-15
25	2	
60	-4	
70		-24
95	-27	-31
180	-27	-31

**3.8.31 ANT2 0.9 15 HP**

Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	16.2	-8.3
6	14.7	
6.5		-8.3
7	11.7	-12.3
8.2		-16.3
8	11.7	
10	7.7	
11	7.7	
12.5	6.2	-16.3
15	3.7	-19.3
17.5	3.7	
18	2.7	
20	0.7	
25	0.7	
27.5	-1.3	
30		-19.3
35	-1.3	-22.3
38		-23.3
45	-2.8	-23.3
48		-25.3
50.5	-7.3	
52.5	-10.3	-25.3
60		-28.3
67	-10.3	-28.3
73	-16.3	
90	-28.3	-34.3
180	-28.3	-34.3

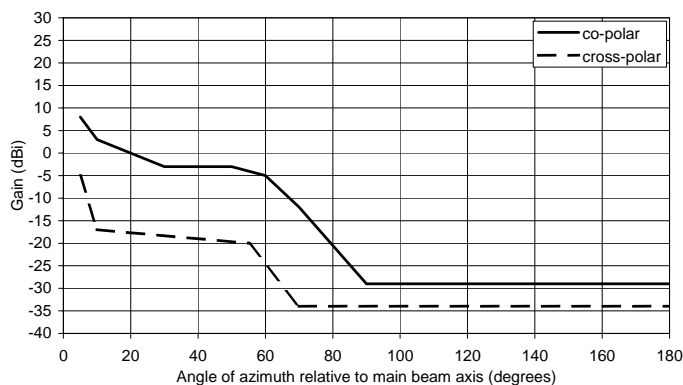
Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

### 3.8.32 ANT2 1.2 15 HP and ANT0 1.2 15 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	14	-7
10	8	
20		-16
25	1	
35	0	
45		-17
60	-4	
70	-11	
90		-32
95	-29	
180	-29	-32

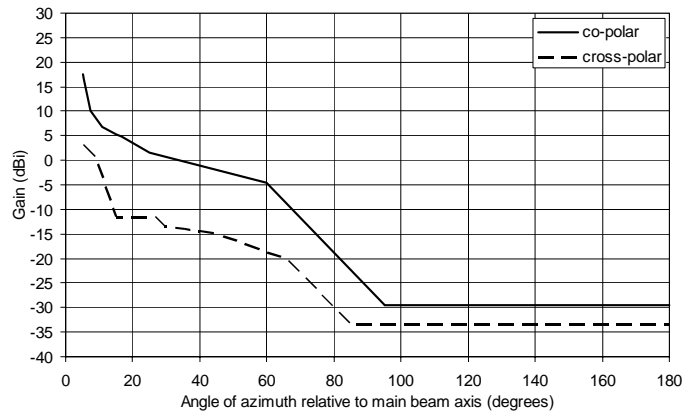
### 3.8.33 ANT2 1.8 15 HP and ANT0 1.8 15 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	8	-5
10	3	-17
30	-3	
50	-3	
55		-20
60	-5	
70	-12	-34
90	-29	
180	-29	-34

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

### 3.8.34 ANT0 2.4 15 HP

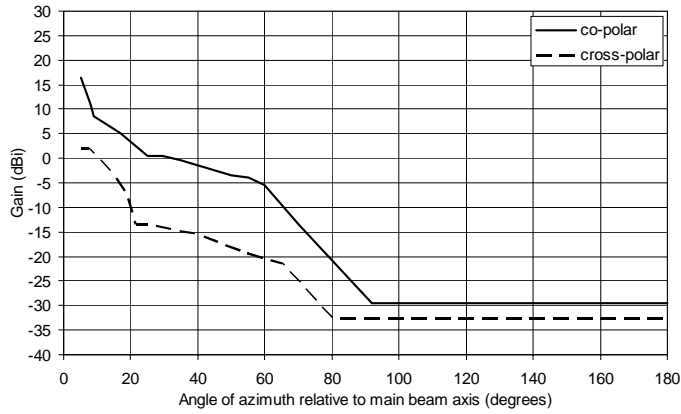


Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	17.5	3
5.5	16.5	
7.5	10	
9		0.5
11	6.8	
15	5.3	-11.5
16.5	4.8	
25	1.5	
26.5		-11.5
29.5		-13.5
35.5		-14
40		-14.5
45		-15
60	-4.5	
65.5		-20
85		-33.5
95	-29.5	
180	-29.5	-33.5



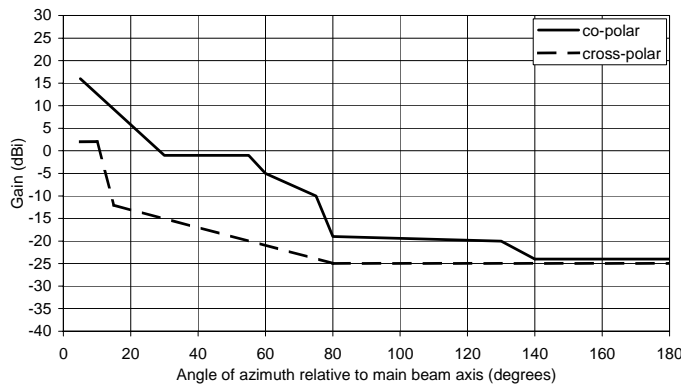
Prepared (also subject responsible if other) <b>EMWJF</b>		No. 1301-UKY 210 40+ Uen		
Approved <b>EAB/FUM/X (Ulrica Wällgren-Malmberg)</b>	Checked	Date 2009-04-06	Rev BC	Reference

**3.8.35 ANT0 2.4 15 HPX**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	16.5	2
7.5		2
8	11	
9	8.5	
15	6	-3.5
17	5	
19		-7.5
21.5		-13.5
25	0.5	
26		-13.5
29.5	0.5	
35	-0.5	
40		-15.5
50	-3.5	
55	-4	-19.5
60	-5.5	
65		-21.5
70	-13.5	
80		-32.5
92	-29.5	
180	-29.5	-32.5

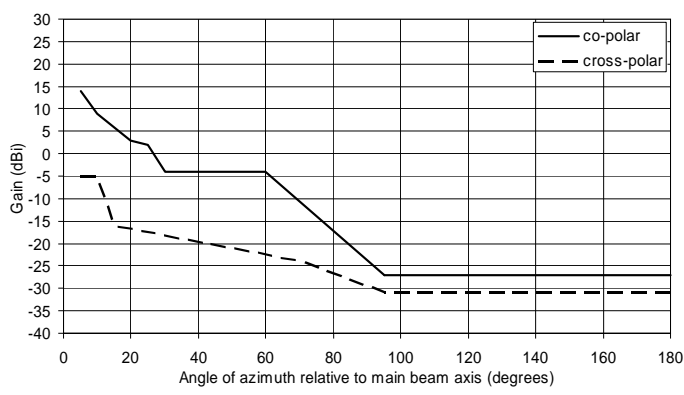
**3.8.36 ANT2 0.3 18 HP and ANT2 0.3 18 HPX**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	16	2
10		2
15		-12
30	-1	
55	-1	
60	-5	
75	-10	
80	-19	-25
130	-20	
140	-24	
180	-24	-25

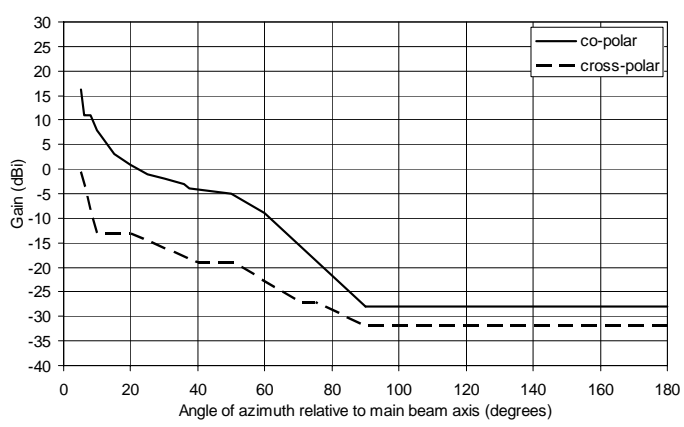
Prepared (also subject responsible if other) <b>EMWJF</b>		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

**3.8.37 ANT2 0.6 18 HP and ANT2 0.6 18 HPX**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	14	-5
10	9	-5
15		-16
20	3	
25	2	
30	-4	
60	-4	
70		-24
95	-27	-31
180	-27	-31

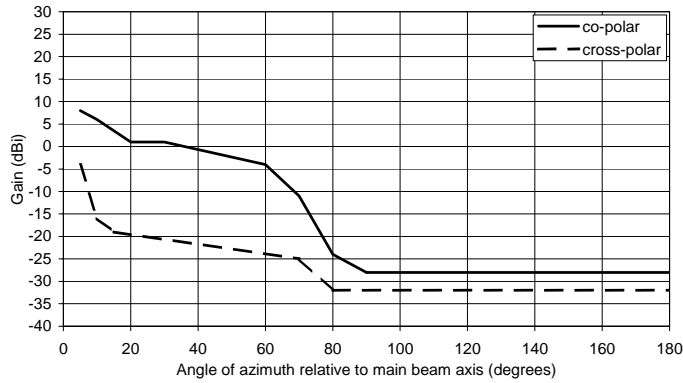
**3.8.38 ANT2 0.9 18 HP**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	16.3	-0.6
6	11	
8	11	
10	8	-13
11	7	
15	3	
20	1	-13
25	-1	
30	-2	
36	-3	
37.5	-3.8	
40		-19
50	-5	
50.5		-19
60	-9	
70		-27
75		-27
90	-28	-32
180	-28	-32

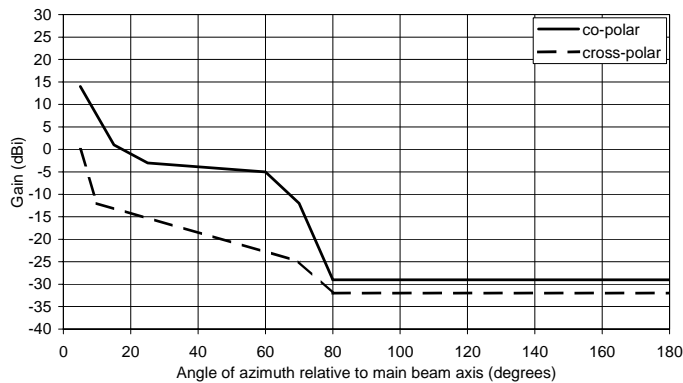
Prepared (also subject responsible if other) <b>EMWJF</b>		No. 1301-UKY 210 40+ Uen		
Approved <b>EAB/FUM/X (Ulrica Wällgren-Malmberg)</b>	Checked	Date 2009-04-06	Rev BC	Reference

**3.8.39 ANT2 1.2 18 HP and ANT0 1.2 18 HPX**



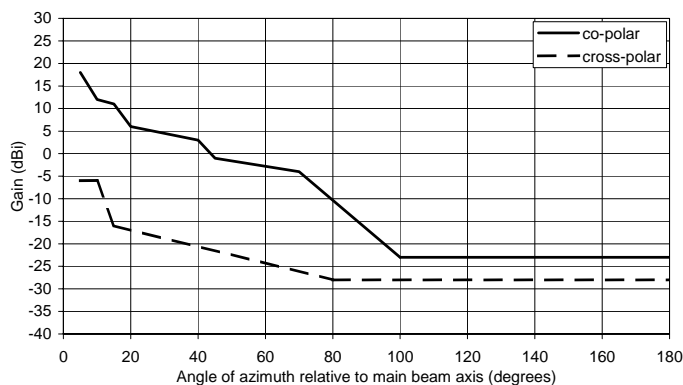
Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	8	-4
10	6	-16
15		-19
20	1	
30	1	
60	-4	
70	-11	-25
80	-24	-32
90	-28	
180	-28	-32

**3.8.40 ANT2 1.8 18 HP and ANT0 1.8 18 HPX**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	14	0
10		-12
15	1	
25	-3	
60	-5	
70	-12	-25
80	-29	-32
180	-29	-32

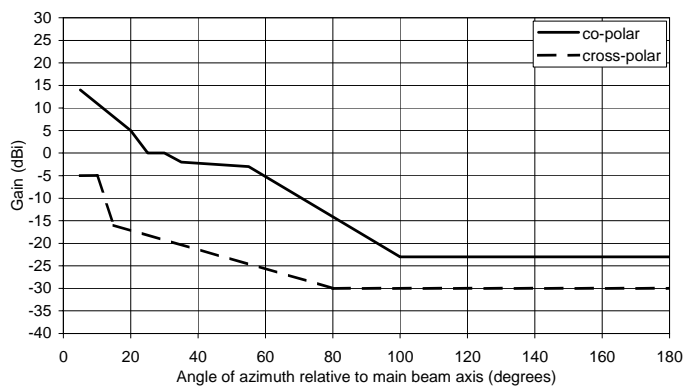
**3.8.41 ANT2 0.2 23 HP**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	18	-6
10	12	-6
15	11	-16
20	6	
40	3	
45	-1	
70	-4	
80		-28
100	-23	
180	-23	-28

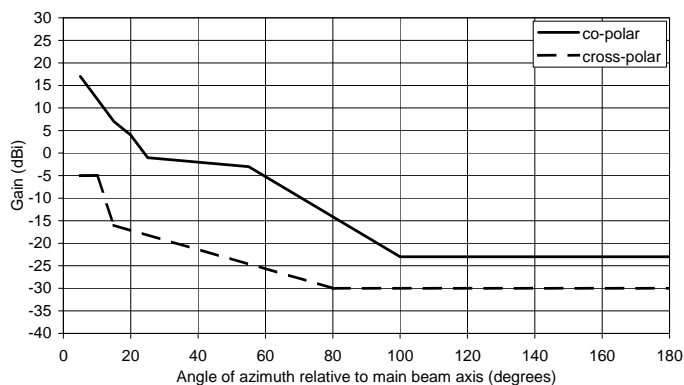
Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

### 3.8.42 ANT2 0.3 23 HP and ANT2 0.3 23 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	14	-5
10		-5
15		-16
20	5	
25	0	
30	0	
35	-2	
55	-3	
80		-30
100	-23	
180	-23	-30

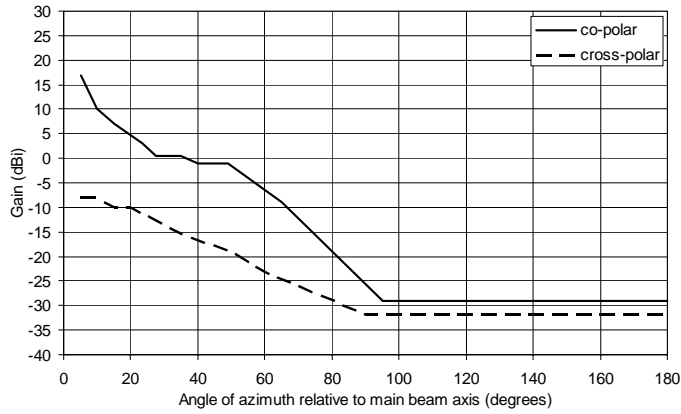
### 3.8.43 ANT2 0.6 23 HP and ANT2 0.6 23 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	17	-5
10		-5
15	7	-16
20	4	
25	-1	
55	-3	
80		-30
100	-23	
180	-23	-30

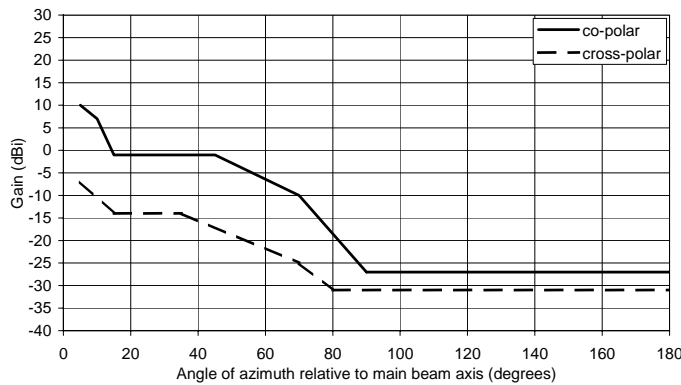
Prepared (also subject responsible if other) <b>EMWJF</b>		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

**3.8.44 ANT2 0.9 23 HP**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	16.9	-8
10	10	-8
15	7	-10
20		-10
23.5	3	
27.5	0.5	
35	0.5	
36.5		-16
40	-1.0	
49	-1.0	
50		-19
60		-23.1
65	-9	
90		-32
95	-29	
180	-29	-32

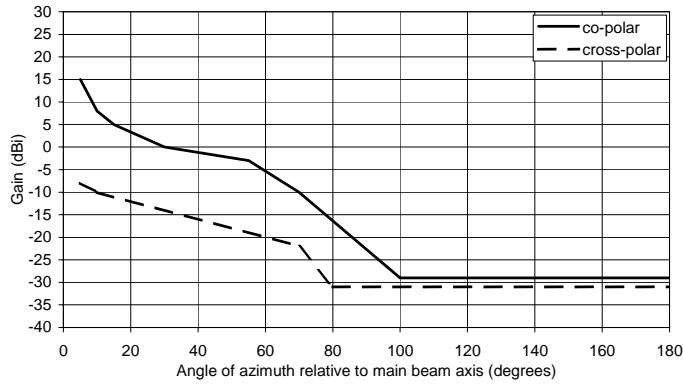
**3.8.45 ANT2 1.2 23 HP and ANT0 1.2 23 HPX**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	10	-7
10	7	
15	-1	-14
35		-14
45	-1	
70	-10	-25
80		-31
90	-27	
180	-27	-31

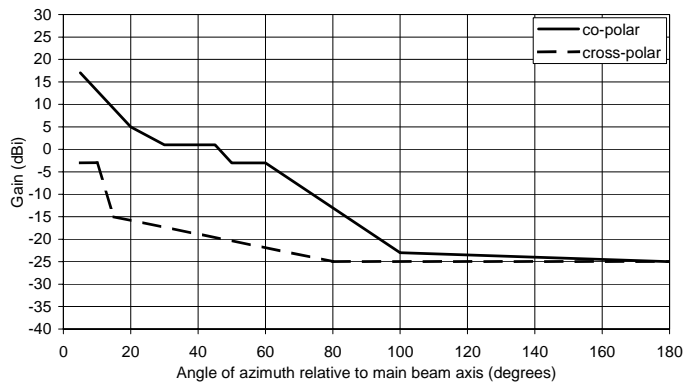
Prepared (also subject responsible if other) <b>EMWJF</b>		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

**3.8.46 ANT2 1.8 23 HP and ANT0 1.8 23 HPX**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	15	-8
10	8	-10
15	5	-12
30	0	-18
55	-3	-22
70	-10	-25
80	-18	-28
100	-29	-31
180	-29	-31

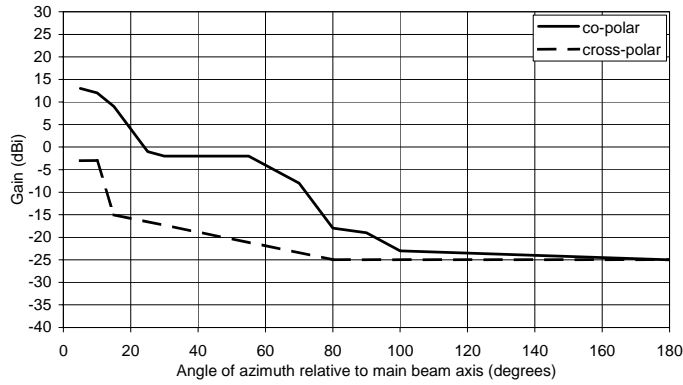
**3.8.47 ANT2 0.2 24/26 HP**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	17	-3
10	10	-5
15	5	-10
20	5	-15
30	1	-18
45	1	-20
50	-3	-22
60	-3	-23
80	-10	-24
100	-23	-25
180	-25	-25

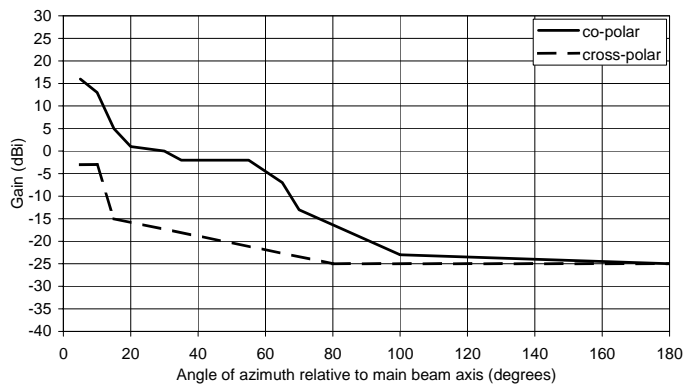
Prepared (also subject responsible if other) <b>EMWJF</b>		No. 1301-UKY 210 40+ Uen		
Approved <b>EAB/FUM/X (Ulrica Wällgren-Malmberg)</b>	Checked	Date 2009-04-06	Rev BC	Reference

**3.8.48 ANT2 0.3 24/26 HP and ANT2 0.3 24/26 HPX**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	13	-3
10	12	-3
15	9	-15
25	-1	
30	-2	
55	-2	
70	-8	
80	-18	-25
90	-19	
100	-23	
180	-25	-25

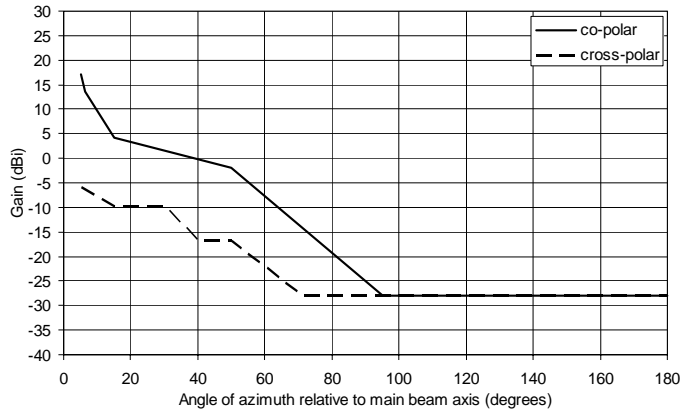
**3.8.49 ANT2 0.6 24/26 HP and ANT2 0.6 24/26 HPX**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	16	-3
10	13	-3
15	5	-15
20	1	
30	0	
35	-2	
55	-2	
65	-7	
70	-13	
80		-25
100	-23	
180	-25	-25

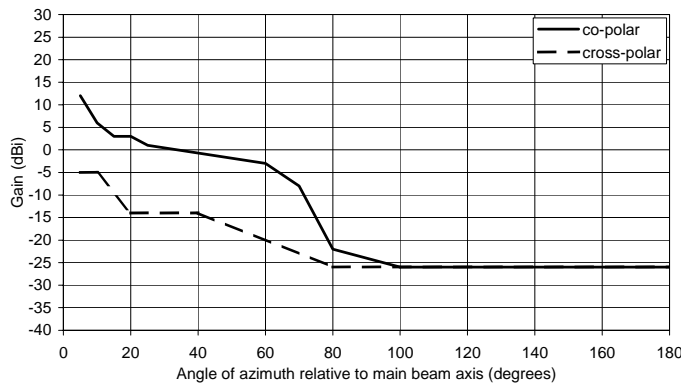
Prepared (also subject responsible if other) <b>EMWJF</b>		No. 1301-UKY 210 40+ Uen		
Approved <b>EAB/FUM/X (Ulrica Wällgren-Malmberg)</b>	Checked	Date 2009-04-06	Rev BC	Reference

**3.8.50 ANT2 0.9 24/26 HP**



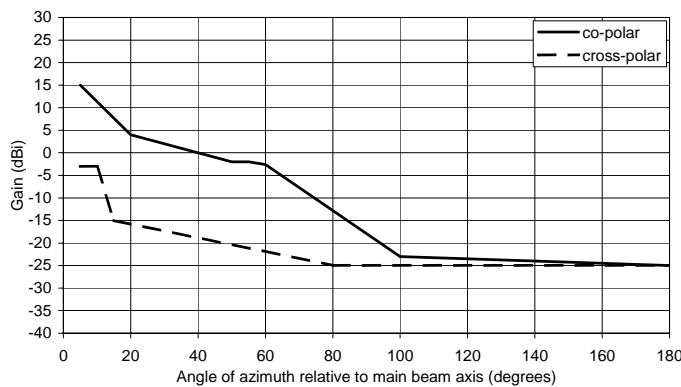
Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	17.1	-5.9
6.4	13.5	
15	4.1	-9.9
30		-9.9
40		-16.9
50	-1.9	-16.9
71		-27.9
95	-27.9	
180	-27.9	-27.9

**3.8.51 ANT2 1.2 24/26 HP and ANT0 1.2 24/26 HPX**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	12	-5
10	6	-5
15	3	
20	3	-14
25	1	
40		-14
60	-3	
70	-8	
80	-22	-26
100	-26	
180	-26	-26

**3.8.52 ANT2 0.2 28 HP**

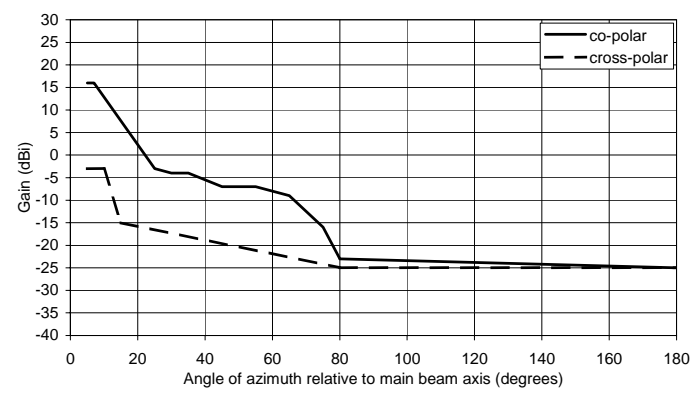


Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	15	-3
10		-3
15		-15
20	4	
50	-2	
55	-2	
60	-2.6	
80		-25
100	-23	
180	-25	-25



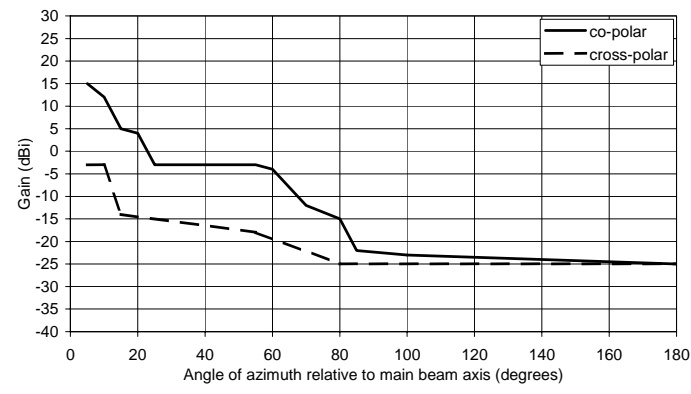
Prepared (also subject responsible if other) <b>EMWJF</b>		No. 1301-UKY 210 40+ Uen		
Approved <b>EAB/FUM/X (Ulrica Wällgren-Malmberg)</b>	Checked	Date 2009-04-06	Rev BC	Reference

**3.8.53 ANT2 0.3 28 HP and ANT2 0.3 28 HPX**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	16	-3
7	16	
10		-3
15		-15
25	-3	
30	-4	
35	-4	
45	-7	
55	-7	
65	-9	
75	-16	
80	-23	-25
180	-25	-25

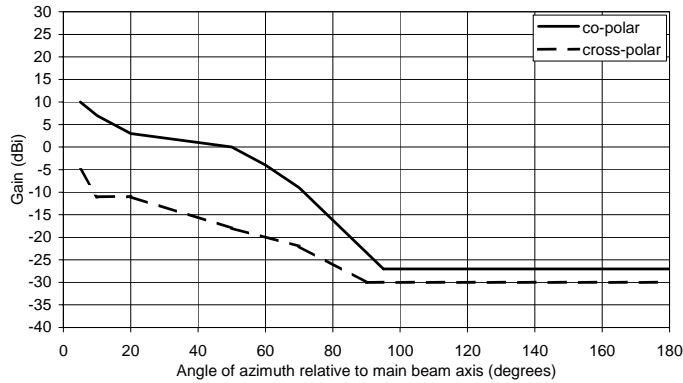
**3.8.54 ANT2 0.6 28 HP and ANT2 0.6 28 HPX**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	15	-3
10	12	-3
15	5	-14
20	4	
25	-3	
55	-3	-18
60	-4	
70	-12	
80	-15	-25
85	-22	
100	-23	
180	-25	-25

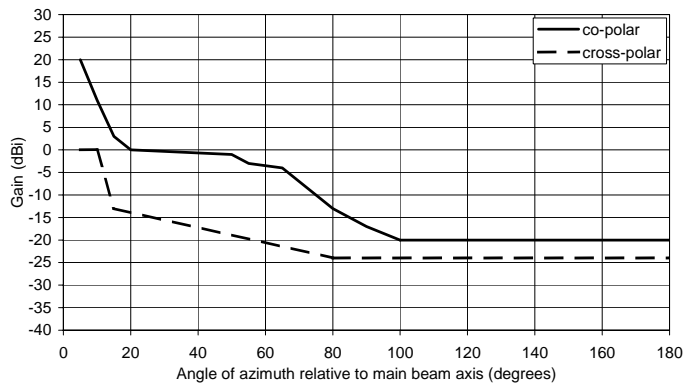
Prepared (also subject responsible if other) <b>EMWJF</b>		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

**3.8.55 ANT2 1.2 28 HP and ANT0 1.2 28 HPX**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	10	-5
10	7	-11
20	3	-11
40	1	-
50	0	-18
60	-4	-
70	-9	-22
90	-	-30
95	-27	-
180	-27	-30

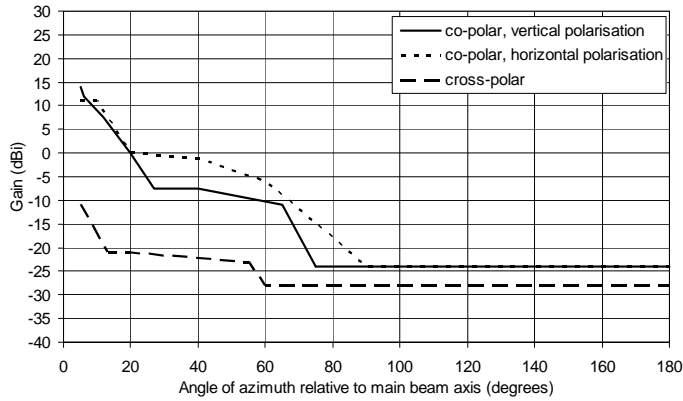
**3.8.56 ANT2 0.2 32 HP**



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	20	0
10	11	0
15	3	-13
20	0	-
50	-1	-
55	-3	-
65	-4	-
80	-13	-24
90	-17	-
100	-20	-
180	-20	-24

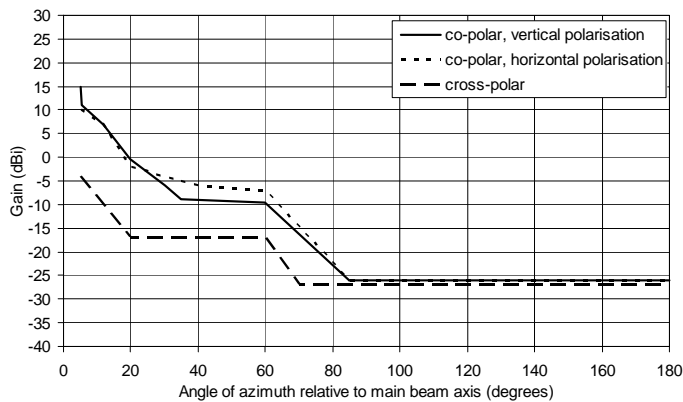
Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

### 3.8.57 ANT2 0.3 32 HP and ANT2 0.3 32 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar V (dBi)	Gain co-polar H (dBi)	Gain cross-polar (dBi)
5	14	11	-11
6	12		
10		11	
12	7.5		
13			-21
20	0	0	-21
27	-7.5		
40	-7.5	-1	
55			-23
60		-6	-28
65	-11		
75	-24		
90		-24	
180	-24	-24	-28

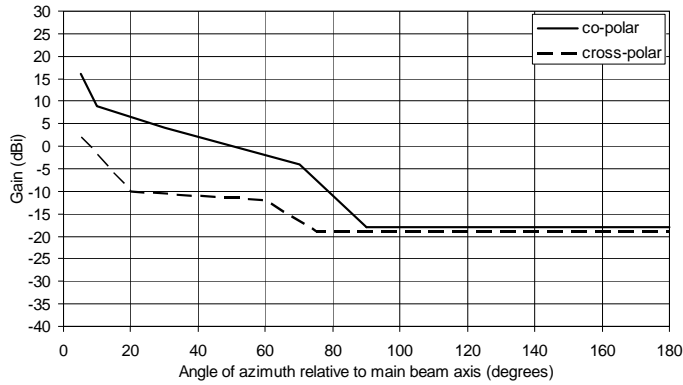
### 3.8.58 ANT2 0.6 32 HP and ANT2 0.6 32 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar V (dBi)	Gain co-polar H (dBi)	Gain cross-polar (dBi)
5	15	10	-4
5.5	11		
12	7	7	
20	-0.5	-2	-17
30	-6		
35	-9		
40		-6	
60	-9.5	-7	-17
70			-27
85	-26	-26	
180	-26	-26	-27

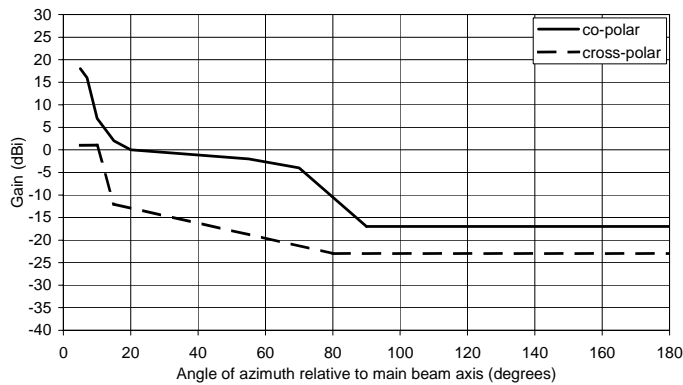
Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

### 3.8.59 ANT2 1.2 32 HP and ANT0 1.2 32 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	16	2
10	9	
20		-10
30	4	
60		-12
70	-4	
75		-19
90	-18	
180	-18	-19

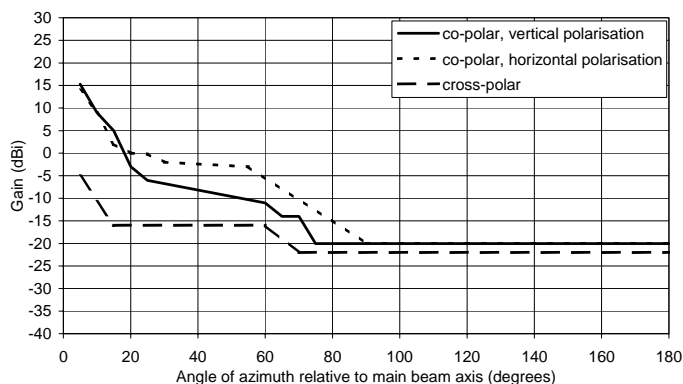
### 3.8.60 ANT2 0.2 38 HP



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar (dBi)	Gain cross-polar (dBi)
5	18	1
7	16	
10	7	1
15	2	-12
20	0	
55	-2	
70	-4	
80		-23
90	-17	
180	-17	-23

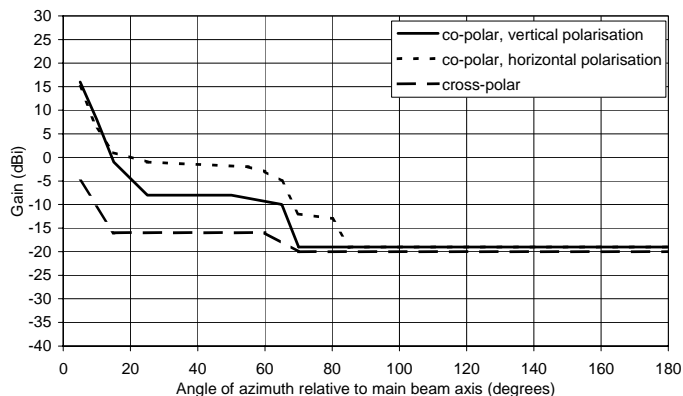
Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

### 3.8.61 ANT2 0.3 38 HP and ANT2 0.3 38 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar V (dBi)	Gain co-polar H (dBi)	Gain cross-polar (dBi)
5	15.3	14	-5
10	9	9	
15	5	2	-16
20	-3	0	
25	-6	-0.2	
30		-2	
55		-3	
60	-11		-16
65	-14		
70	-14		-22
75	-20		
90		-20	
180	-20	-20	-22

### 3.8.62 ANT2 0.6 38 HP and ANT2 0.6 38 HPX



Angle of azimuth relative to main beam axis (degrees)	Gain co-polar V (dBi)	Gain co-polar H (dBi)	Gain cross-polar (dBi)
5	16	15	-5
10	8	6	
15	-1	1	-16
25	-8	-1	
50	-8		
55		-2	
60		-3	-16
65	-10	-5	
70	-19	-12	-20
80		-13	
85		-19	
180	-19	-19	-20

The RPEs above are valid for the frequency band 37-39.5 GHz. The antennas can be used in the frequency band 39.5-40 GHz with changes in the co-polar vertical polarisation RPE. Add breakpoints at 55° -4 dBi and 60° -4 dBi and change the breakpoint at 65° to -6 dBi.

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### 3.9 Compliance With International Standards

#### 3.9.1 Europe, R&TTE Directive 1999/5/EC, ETSI EN 302 217-4-1 V1.3.1 (2009-03) and ETSI EN 302 217-4-2 V1.4.1 (2009-03)

All antennas are compliant with the R&TTE directive 1999/5/EC.

<u>Ericsson</u>		<u>ETSI</u>
6-13 GHz	covered by	Range 1
15-18 GHz	covered by	Range 2
23 GHz	covered by	Range 3
24-28 GHz	covered by	Range 4
32-38 GHz	covered by	Range 5

Size [m]	Frequency [GHz]										
	6	7/8	10/11	13	15	18	23	24/26	28	32	38
0.2							2	3	3	2	2
0.3					2	2	3	3	3	3B	3B
0.6		3	3	3	3	3	3	3	3	3B	3B
0.9		3	2	3	3	3	3	3			
1.2	3	3	3	3	3	3	3	3	3	2	
1.8	3	3	3	3	3	3	3				
2.4	3	3	3	3	3						
3.0	3	3	3	3							
3.7	3	3									

Compliance with RPE classes.

All antennas are compliant with XPD category 1.

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### 3.9.2 USA, FCC 47 CFR Ch. I (10-1-08 Edition) § 101.115

<u>Ericsson</u>		<u>FCC</u>
6 GHz	covers	5.925-6.425 GHz + 6.525-6.875 GHz
10/11 GHz	covers	10.55-10.68 GHz + 10.7-11.7 GHz
18 GHz	covers	17.7-18.82 GHz + 18.92-19.7 GHz
23 GHz	covers	21.2-23.6 GHz
24/26 GHz	covers	24.25-25.25 GHz
38 GHz	covers	38.6-40 GHz

Size [m]	Frequency [GHz]										
	6	7/8	10/11 <sup>9</sup>	13	15	18	23	24/26	28	32	38
0.2							–	–			–
0.3						–	A	B			A
0.6			A/B			A	A	A			A
0.9			–/A			A	A	A			
1.2	–		A/A			A	A	A			
1.8	A		A/A			A	A				
2.4	A		A/A								
3.0	A		A/A								
3.7	A										

Compliance with antenna performance categories.

<sup>9</sup> Category in FCC 10.55-10.68 GHz band / Category in FCC 10.7-11.7 GHz band.

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### 3.9.3 Australia, ACMA RALI FX 3 Appendix 11 (January 2008)

<u>Ericsson</u>		<u>ACMA</u>
6 GHz	covers	6 GHz + 6.7 GHz
7/8 GHz	covers	7.5 GHz + 8 GHz
10/11 GHz	covers	10 GHz + 11 GHz
13 GHz	covers	13 GHz
15 GHz	covers	15 GHz
18 GHz	covers	18 GHz
23 GHz	covers	22 GHz
38 GHz	covers	38 GHz

Size [m]	Frequency [GHz]										
	6 <sup>10</sup>	7/8 <sup>11</sup>	10/11 <sup>12</sup>	13	15	18	23	24/26	28	32	38
0.2							B				B
0.3					C	B	B				B
0.6		B/-	B/B	B	B	A	B				B
0.9		B/B	-/-	B	A	A	A				
1.2	B/-	B/B	A/B	B	A	A	A				
1.8	B/B	B/B	A/B	A	A	A	A				
2.4	B/B	A/B	A/B	A	A						
3.0	B/B	A/B	A/B	A							
3.7	B/B	A/A									

Compliance with antenna grades.

<sup>10</sup> Grade in ACMA 6 GHz band / Grade in ACMA 6.7 GHz band.

<sup>11</sup> Grade in ACMA 7.5 GHz band / Grade in ACMA 8 GHz band.

<sup>12</sup> Grade in ACMA 10 GHz band / Grade in ACMA 11 GHz band.



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### 3.9.4 Canada, Industry Canada

<u>Ericsson</u>		<u>Industry Canada</u>
6 GHz	covers	5.925-6.425 GHz SRSP-305.9, Issue 5, December 2006 6.425-6.930 GHz SRSP-306.4, Issue 6, December 2006
7/8 GHz	covers	7.125-7.725 GHz SRSP-307.1, Issue 5, May 2006 7.725-8.275 GHz SRSP-307.7, Issue 6, December 2006
10/11 GHz	covers	10.55-10.68 GHz SRSP-310.5, Issue 1, September 29, 1990 10.7-11.7 GHz SRSP-310.7, Issue 2, September 29, 2001
15 GHz	covers	14.5-15.35 GHz SRSP-314.5, Issue 2, August 19, 1995
18 GHz	covers	17.8-18.3 GHz + 19.3-19.7 GHz SRSP-317.8, Issue 2, December 2006
23 GHz	covers	21.8-22.4 GHz + 23.0-23.6 GHz SRSP-321.8, Issue 1, July 19, 1997
24/26 GHz	covers	24.25-24.45 + 25.05-25.25 GHz SRSP-324.25, Issue 1, January 1, 2000
38 GHz	covers	38.6-40.0 GHz SRSP-338.6, Issue 3, April 2008

Size [m]	Frequency [GHz]										
	6	7/8 <sup>13 14</sup>	10/11 <sup>13 15</sup>	13	15	18	23	24/26 <sup>16</sup>	28	32	38 <sup>13</sup>
0.2							–	OK			–
0.3					–	–	B	OK			OK
0.6		–/–	–/–		A	A	A	OK			OK
0.9		–/–	–/–		A	A	A	OK			
1.2	–	–/–	OK/B		A	A	A	OK			
1.8	A	OK/B	OK/A		A	A	A				
2.4	A	OK/A	OK/A		A						
3.0	A	OK/A	OK/A								
3.7	A	OK/A									

Compliance with antenna RPE.

## 4 Mechanical Data

### 4.1 Dimensions

<sup>13</sup> Only one RPE, without any name, is defined in SRSP-307.1, SRSP-310.5 and SRSP-338.6.

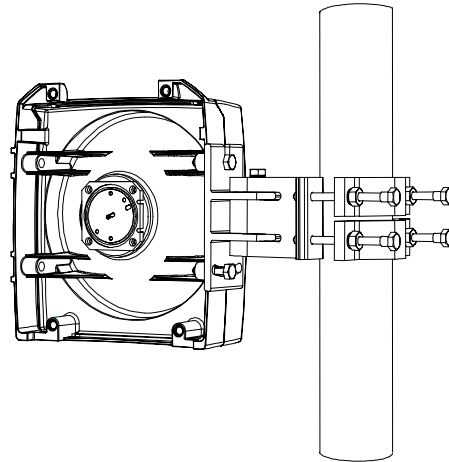
<sup>14</sup> RPE in SRSP-307.1 / RPE in SRSP-307.7.

<sup>15</sup> RPE in SRSP-310.5 / RPE in SRSP-310.7.

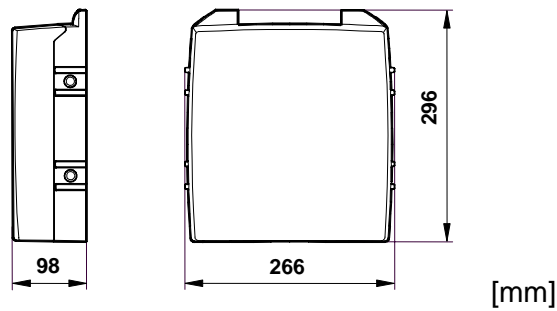
<sup>16</sup> No traditional antenna requirements are defined in SRSP-324.25.

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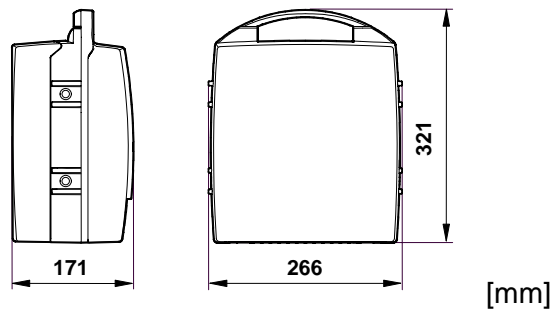
**4.1.1 ANT2 0.2 \* HP**



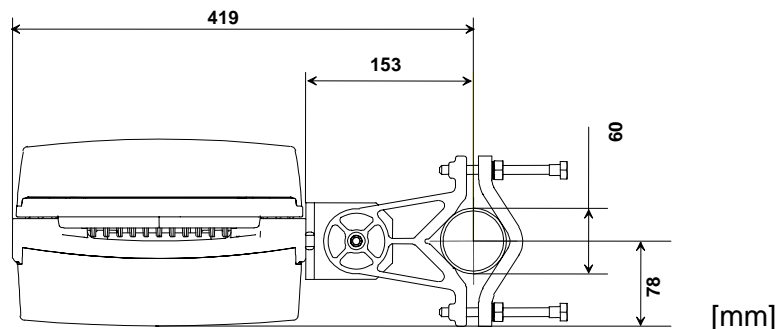
Antenna.



Antenna, side and front view.



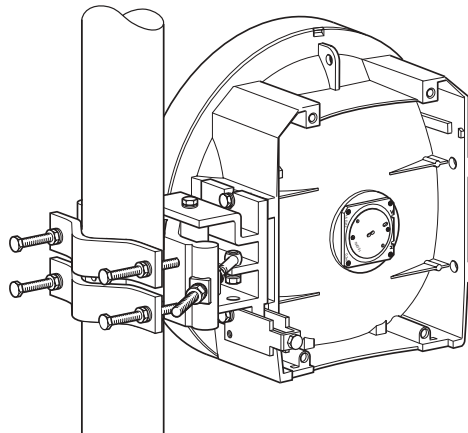
Antenna integrated with radio, side and front view.



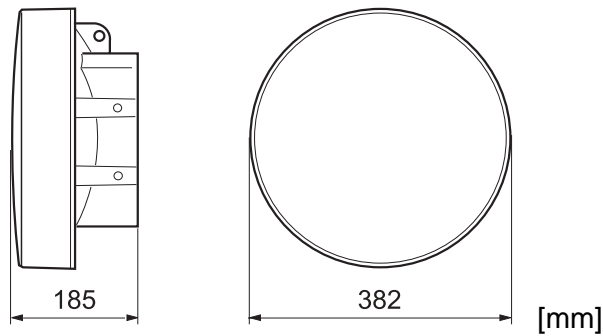
Antenna integrated with radio, top view.

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

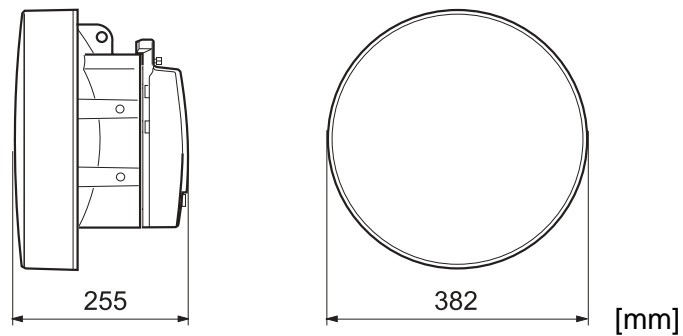
#### 4.1.2 ANT2 0.3 \* HP and ANT2 0.3 \* HPX



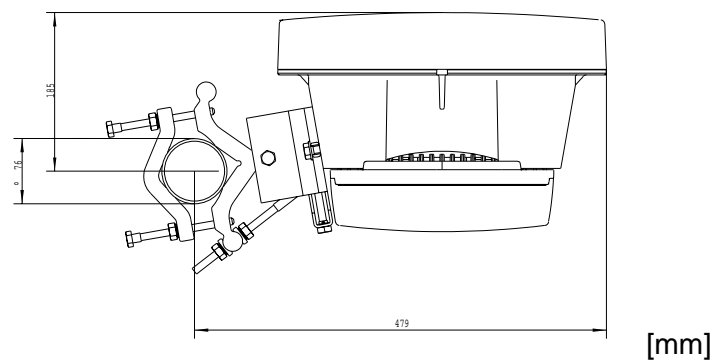
Antenna (HP).



Antenna, side and front view.



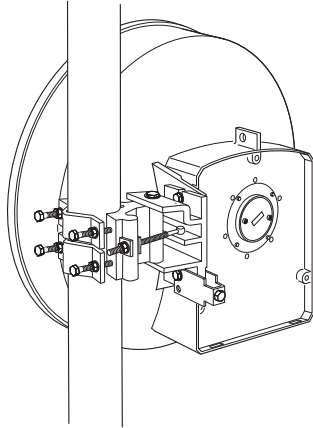
Antenna (HP) integrated with radio, side and front view.



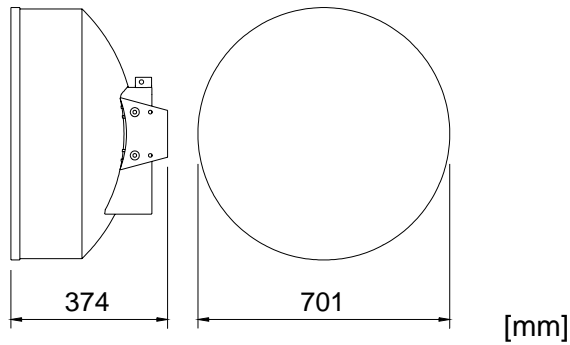
Antenna (HP) integrated with radio, top view.

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

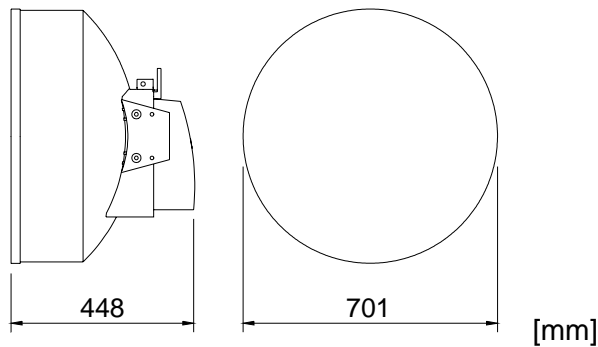
### 4.1.3 ANT1 0.6 7/8 HP



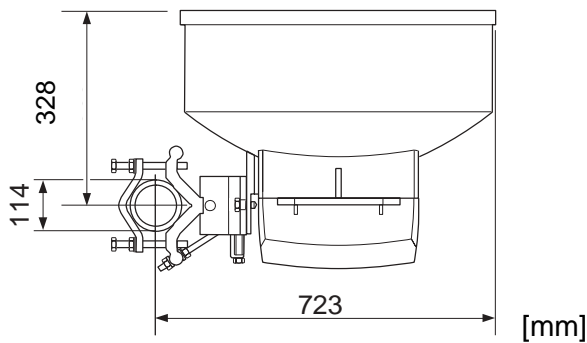
Antenna.



Antenna, side and front view.



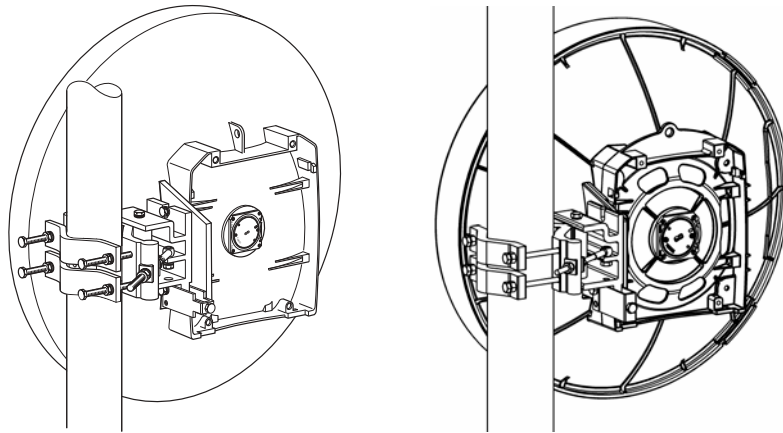
Antenna integrated with radio, side and front view.



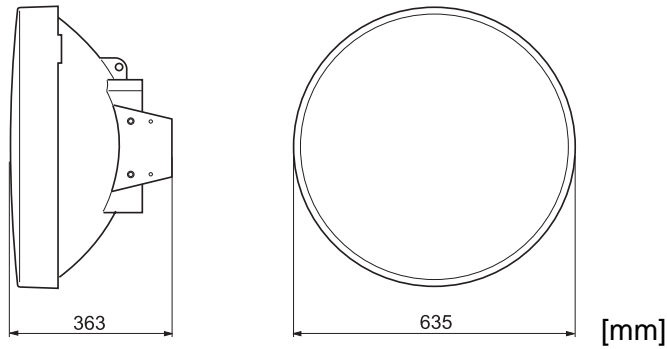
Antenna integrated with radio, top view.

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

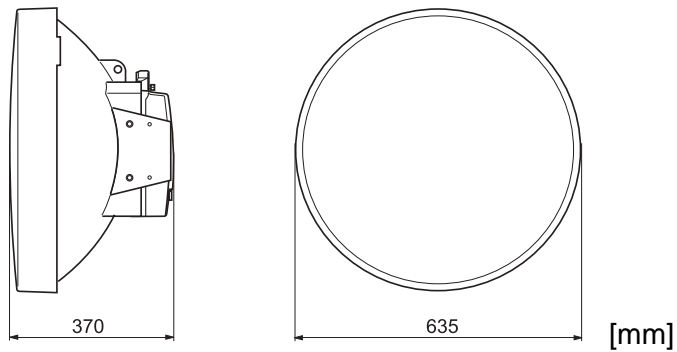
**4.1.4 ANT2 0.6 \* HP and ANT2 0.6 \* HPX**



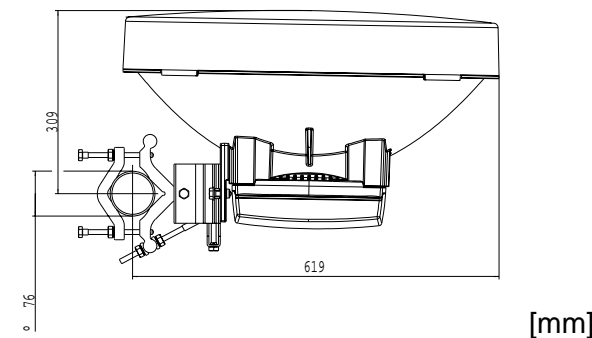
Antenna (HP).



Antenna, side and front view.



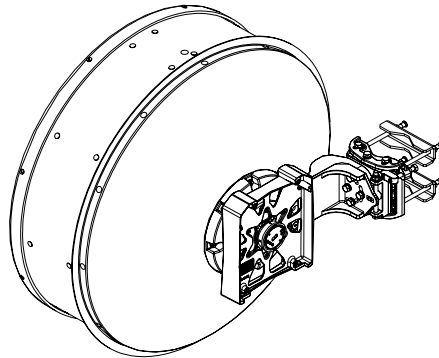
Antenna (HP) integrated with radio, side and front view.



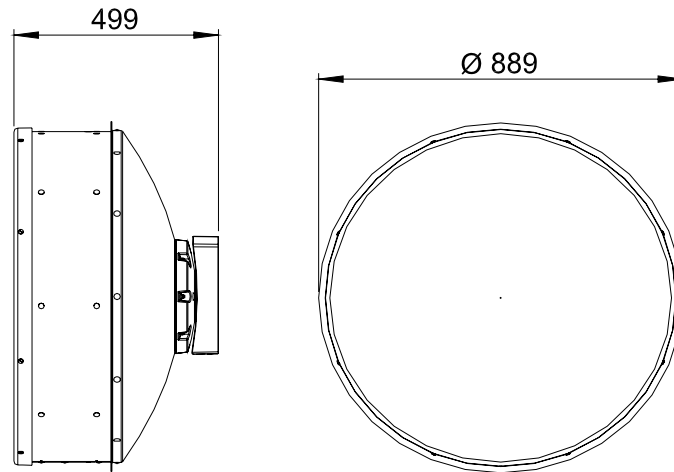
Antenna (HP) integrated with radio, top view.

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

**4.1.5 ANT2 0.9 \* HP**

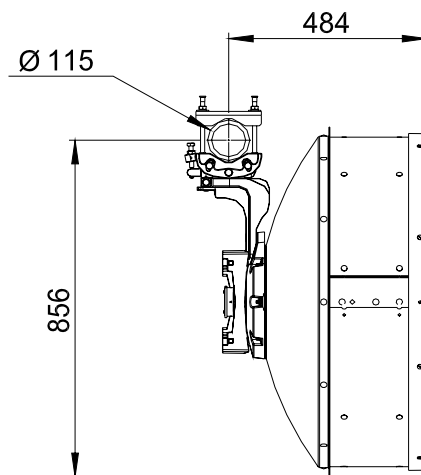


Antenna



[mm]

Antenna, side and front view.

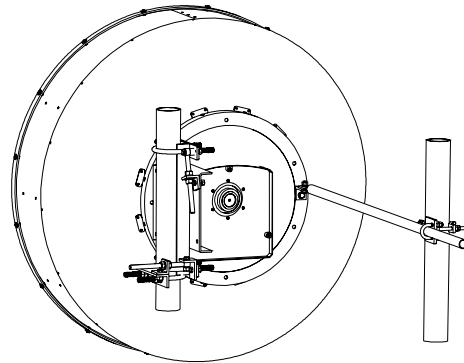


[mm]

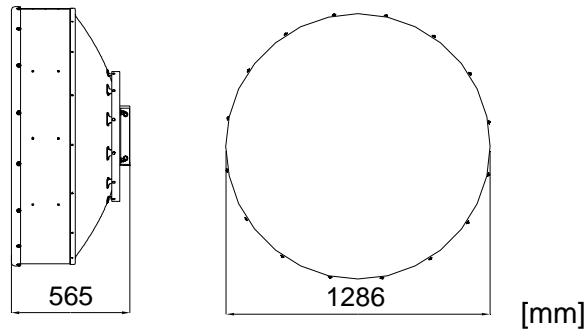
Antenna, top view.

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

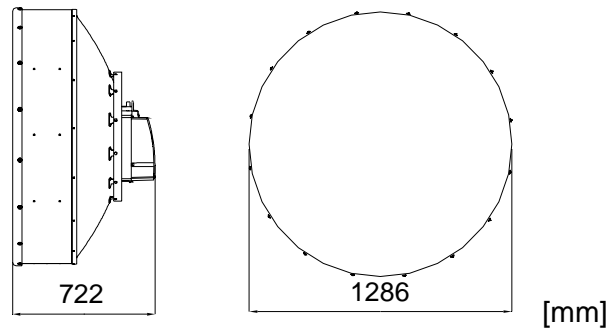
**4.1.6 ANT1 1.2 \* HP**



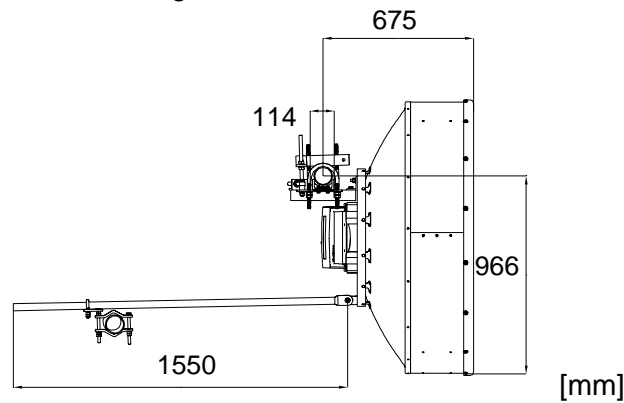
Antenna.



Antenna, side and front view.



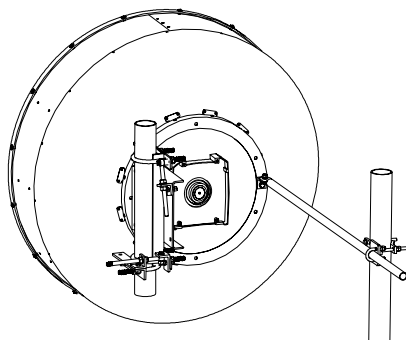
Antenna integrated with radio, side and front view.



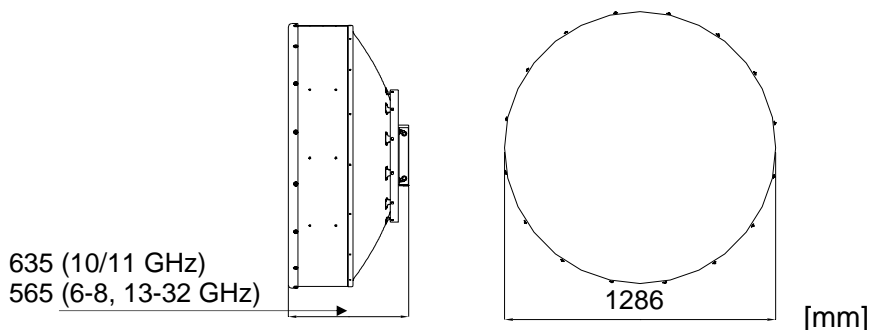
Antenna integrated with radio, top view.

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

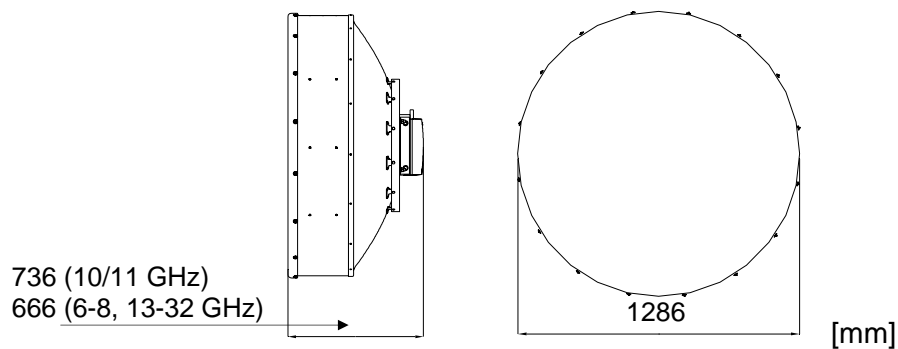
**4.1.7 ANT2 1.2 \* HP**



Antenna.

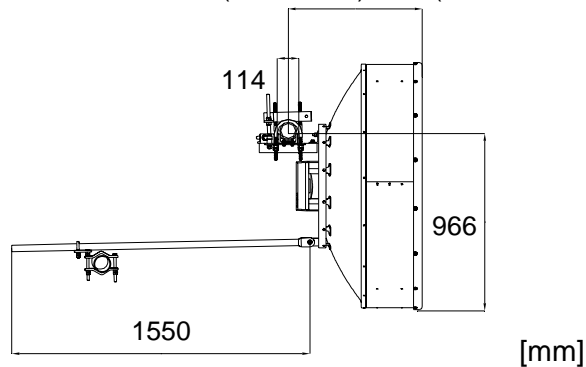


Antenna, side and front view.



Antenna integrated with radio, side and front view.

745 (10/11 GHz), 675 (6-8, 13-32 GHz)

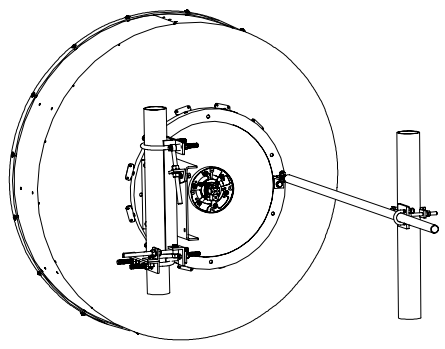


Antenna integrated with radio, top view.

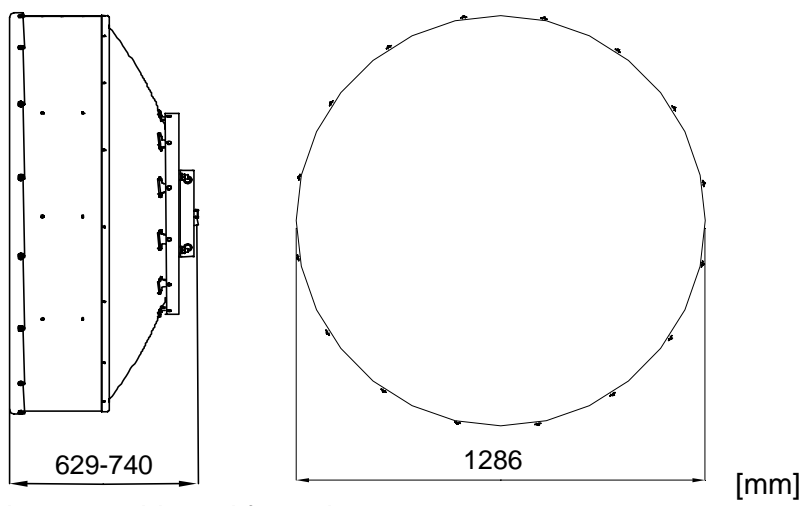


Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

**4.1.8 ANT0 1.2 \* HPX**

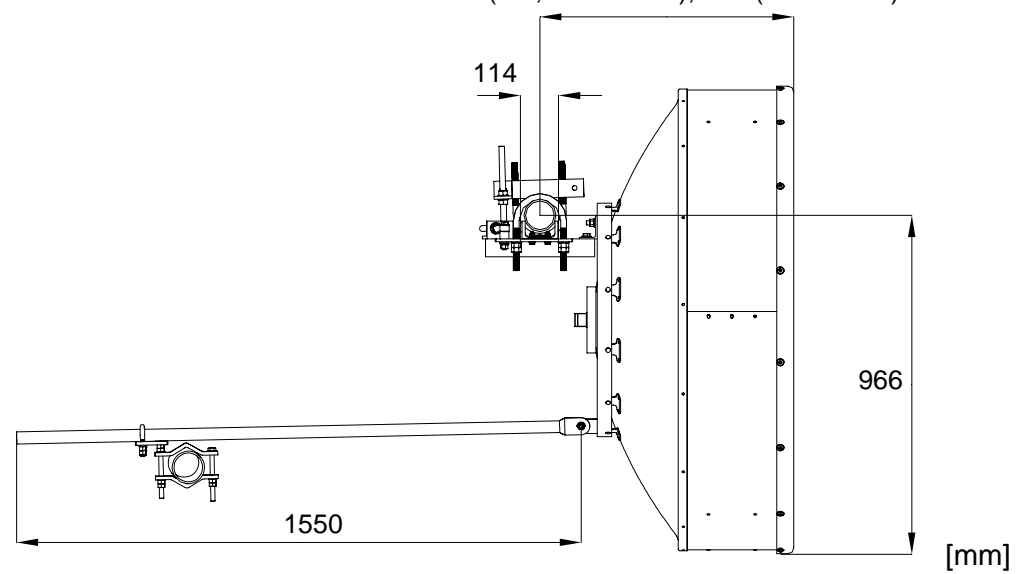


Antenna.



Antenna, side and front view.

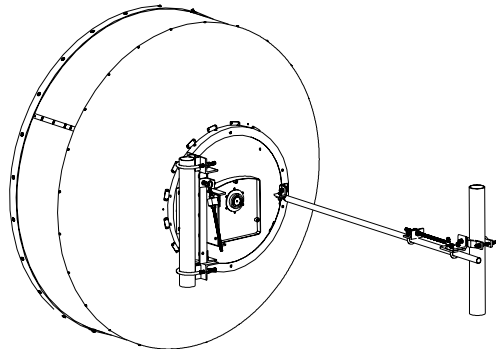
675 (6-8, 13-32 GHz), 745 (10/11 GHz)



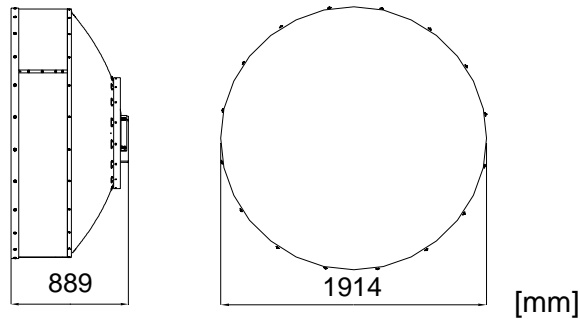
Antenna, top view.

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

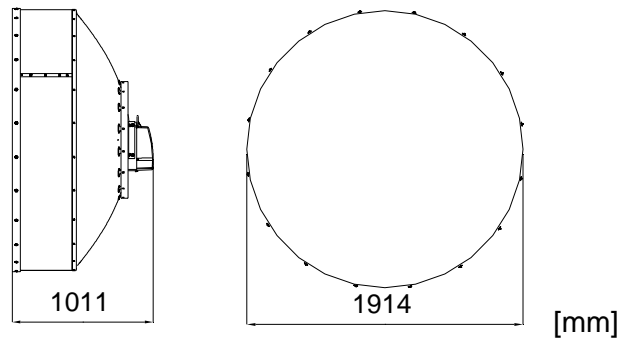
**4.1.9 ANT1 1.8 \* HP**



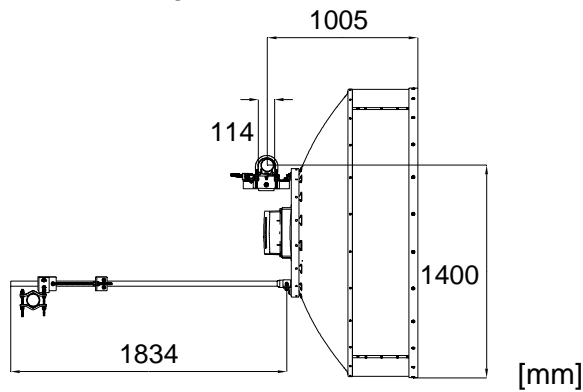
Antenna.



Antenna, side and front view.



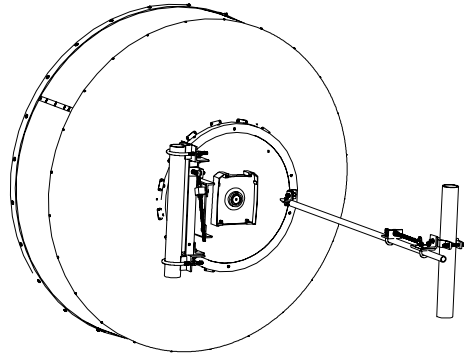
Antenna integrated with radio, side and front view.



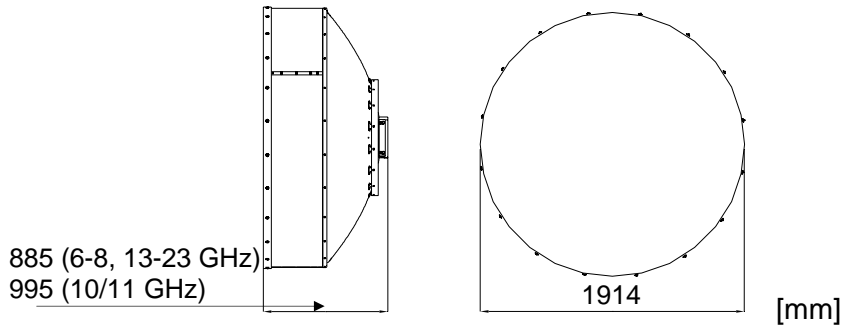
Antenna integrated with radio, top view.

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

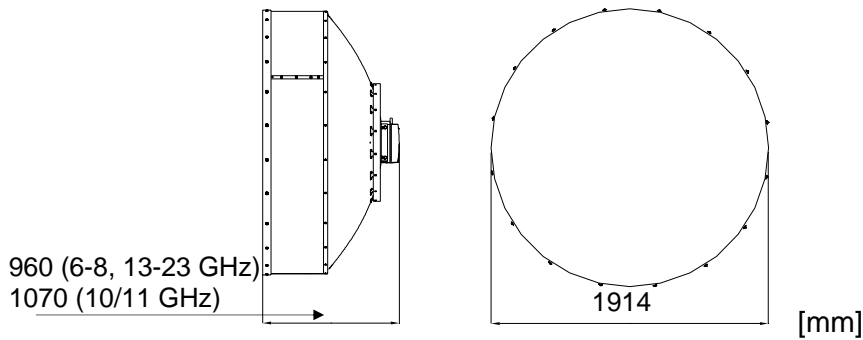
**4.1.10 ANT2 1.8 \* HP**



Antenna.

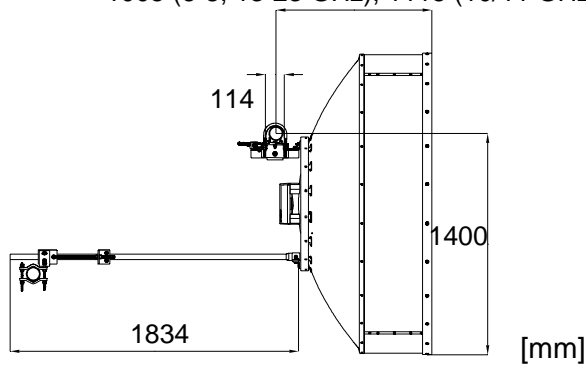


Antenna, side and front view.



Antenna integrated with radio, side and front view.

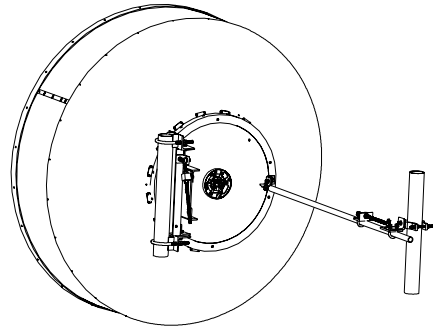
1005 (6-8, 13-23 GHz), 1115 (10/11 GHz)



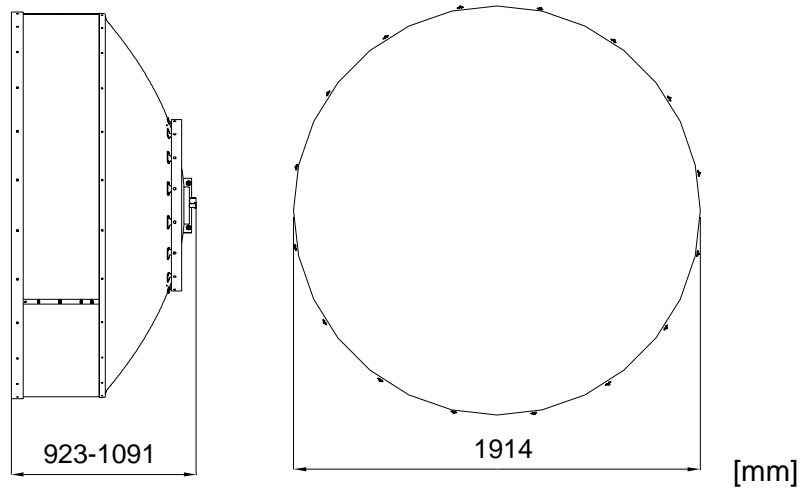
Antenna integrated with radio, top view.

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

**4.1.11 ANT0 1.8 \* HPX**

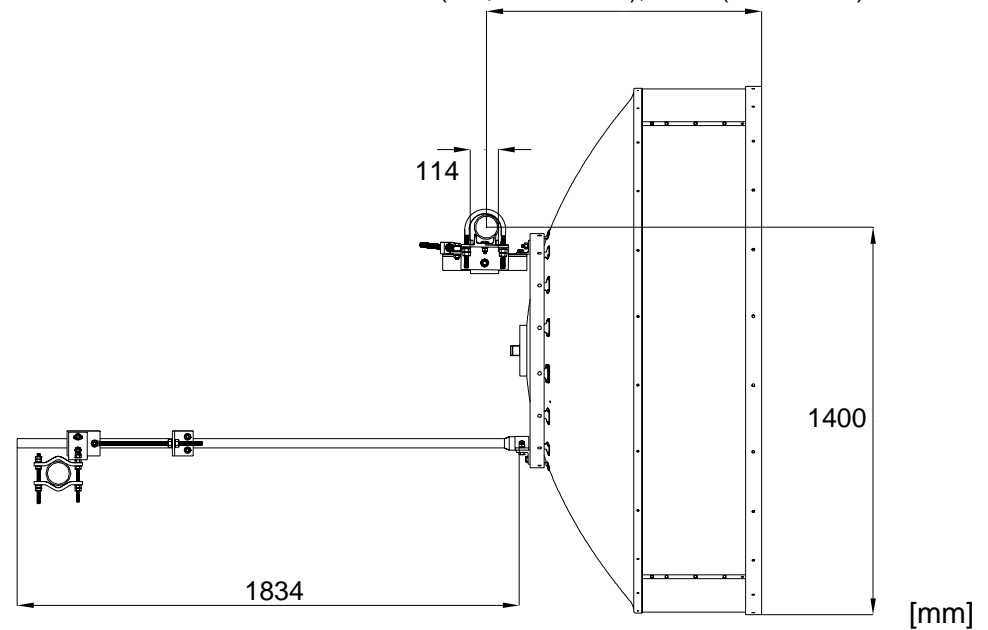


Antenna.



Antenna, side and front view.

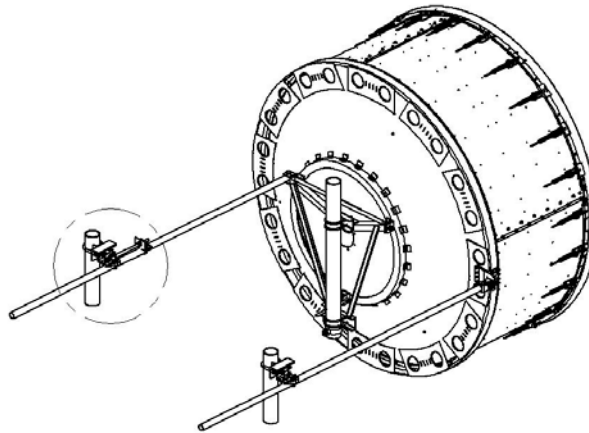
1005 (6-8, 13-23 GHz), 1115 (10/11 GHz)



Antenna, top view.

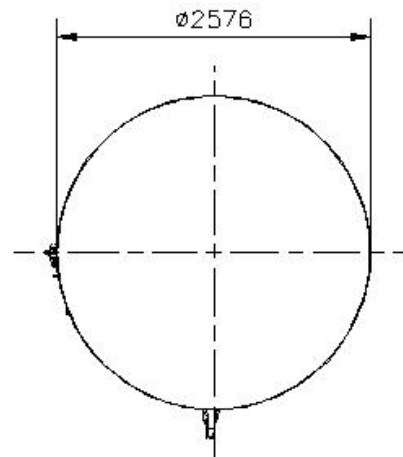
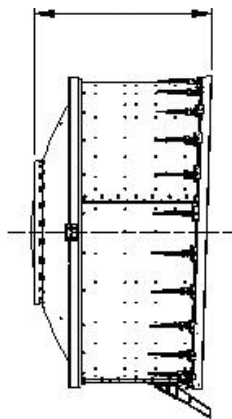
Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

**4.1.12 ANT0 2.4 \* HP and ANT0 2.4 \* HPX**



Antenna.

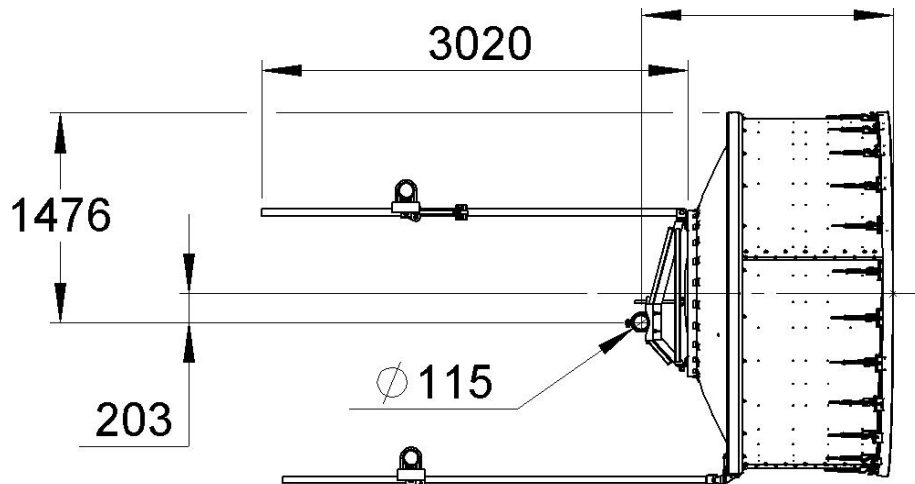
1358 (6-8 GHz), 1459 (10-15 GHz)



[mm]

Antenna, side and front view.

1690 (6-8 GHz), 1790 (10-15 GHz)

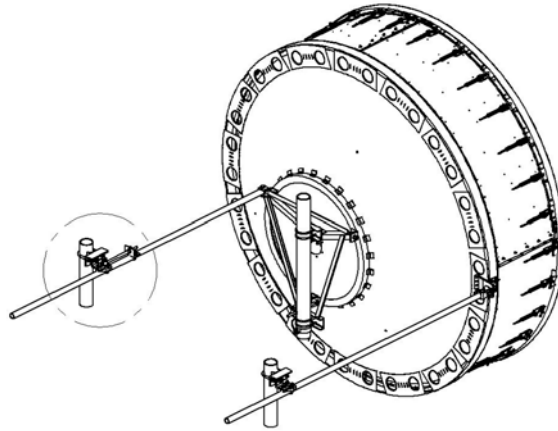


[mm]

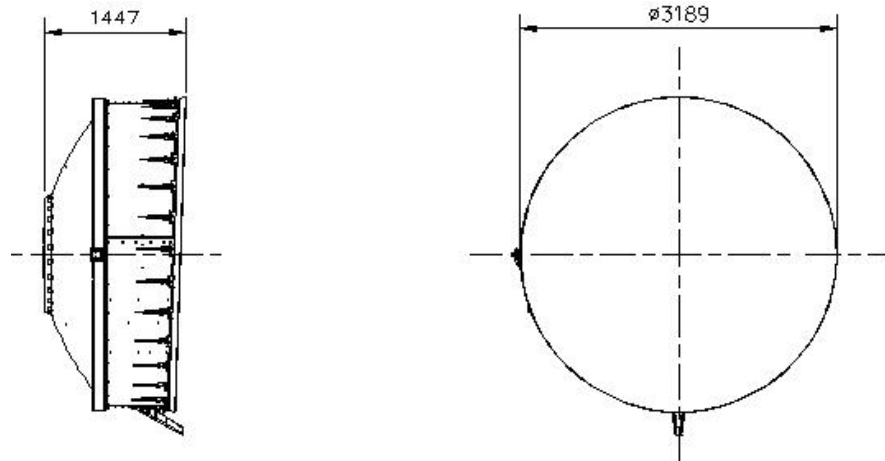
Antenna, top view.

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

**4.1.13 ANT0 3.0 \* HP and ANT0 3.0 \* HPX**

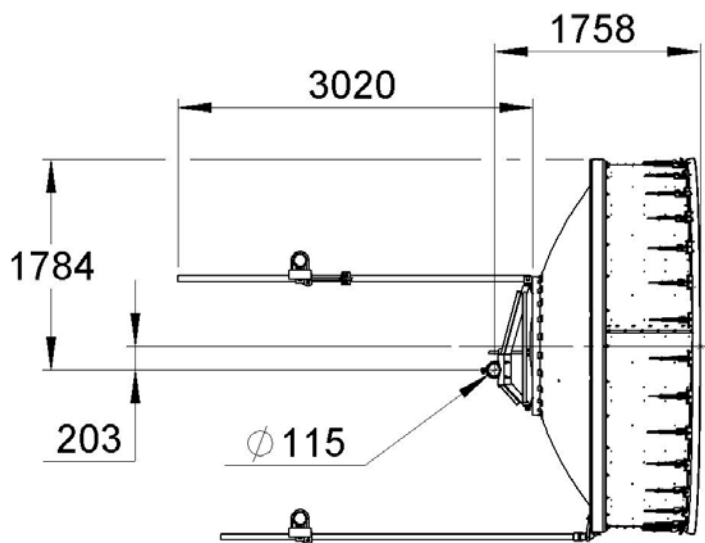


Antenna.



[mm]

Antenna, side and front view.

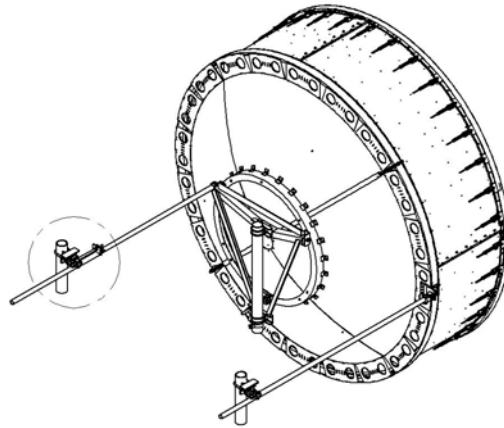


[mm]

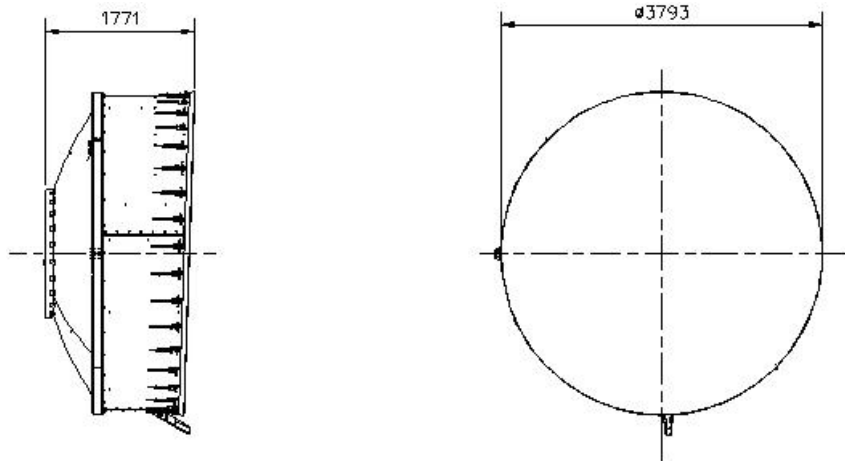
Antenna, top view.

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

**4.1.14 ANT0 3.7 \* HP and ANT0 3.7 \* HPX**

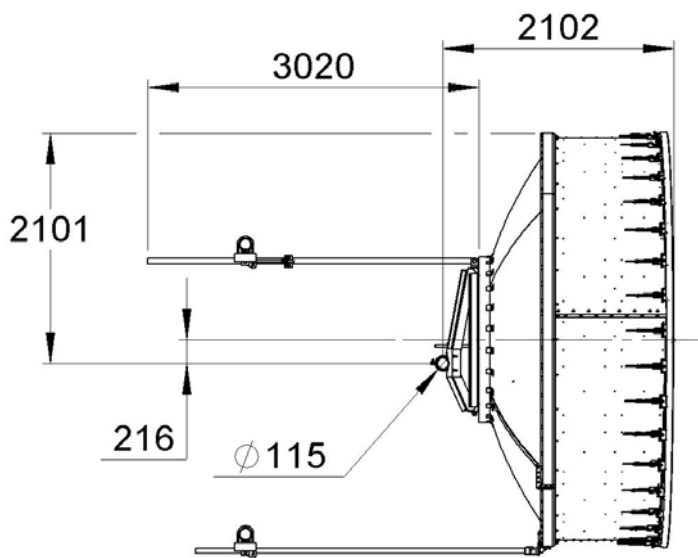


Antenna.



[mm]

Antenna, side and front view.



[mm]

Antenna, top view.

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

## 4.2 Weight

Size [m]	Frequency [GHz]										
	6	7/8	10/11	13	15	18	23	24/26	28	32	38
0.2							4.8	4.8	4.7	4.7	4.7
0.3					9.2	8.9	8.8	8.8	8.8	8.5	8.6
ANT1 0.6 ANT2 0.6 <sup>17</sup>		11.9									
		15.5	14.1	13.7	13.3	12.9	12.5	13.6	13.5	12.6	12.8
0.9		22	25	25	24	23	23	22			
1.2	54	54	63	58	58	57	55	55	58	58	
1.8	93	93	115	104	104	100	99				
2.4	247	247	247	247	247						
3.0	280	280	280	280							
3.7	343	343									

Antenna weight (in kg).

## 4.3 RF Interfaces

### 4.3.1 Integrated Installation

The integrated single polarised antennas have a polarisation plate (waveguide matching section) matching the antenna waveguide port with the radio waveguide port.

To have an integrated installation with the integrated dual polarised antennas an integration kit needs to be ordered separately (see 1301-UPB 901 02+).

### 4.3.2 Separate Installation

All antennas (including the integrated antennas) are equipped with a standardised waveguide interface:

6 GHz	154 IEC-UDR 70
7/8 GHz	154 IEC-UBR 84
10-13 GHz	154 IEC-UBR 120
15 GHz	154 IEC-UBR 140
18-23 GHz	154 IEC-UBR 220
24-28 GHz	154 IEC-UBR 260
32-38 GHz	154 IEC-UBR 320

<sup>17</sup> Weight with composite reflector is 2.1 kg lighter than with aluminium reflector.



Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

## 4.4 Material and Treatment

### 4.4.1 ANT2 0.2, ANT2 0.3 and ANT2 0.6

#### Reflector

Die-cast aluminium with surface treatment and polyester powder paint, min 60 µm, or glass fibre reinforced composite (0.6 m only). Colour light grey, NCS S2502-R.

#### Radome

UV-resistant polycarbonate plastic. Colour light grey, NCS S2502-R.

#### Microwave absorber (0.3-0.6 m only)

Carbon impregnated polyurethane foam.

#### Mounting kit

Natural anodised aluminium profile.

#### Feed

Surface treated aluminium, EPDM rubber gasket and PTFE or PPE plug.

#### Screws, nuts and washers

Stainless steel A4.

### 4.4.2 ANT1 0.6 7/8 HP

#### Reflector (including shield)

Spun aluminium with polyester powder paint, min 60 µm. Colour light grey, NCS S2502-R.

#### Radio interface

Die-cast aluminium with surface treatment and polyester powder paint, min 60 µm. Colour light grey, NCS S2502-R.

#### Radome

UV-resistant polystyrene plastic. Colour light grey, NCS S2502-R.

#### Microwave absorber

Carbon impregnated polyurethane foam.

#### Mounting kit

Natural anodised aluminium profile.

#### Feed

Surface treated aluminium, EPDM rubber gasket and polystyrene dielectric.

#### Screws, nuts and washers

Stainless steel A4.

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

#### 4.4.3 ANT2 0.9

##### Reflector

Spun or pressed aluminium with polyester powder paint, min 60 µm. Colour light grey, NCS S2502-R.

##### Shield

Rolled aluminium with polyester powder paint, min 60 µm. Colour light grey, NCS S2502-R.

##### Radio interface

Die-cast aluminium with surface treatment and polyester powder paint, min 60 µm. Colour light grey, NCS S2502-R.

##### Radome

UV-resistant painted ABS plastic. Colour light grey, NCS S2502-R.

##### Microwave absorber

Carbon impregnated polyurethane foam.

##### Mounting kit

Die-cast aluminium and galvanised steel.

##### Feed

Surface treated aluminium, EPDM rubber gasket and polystyrene dielectric.

##### Screws, nuts and washers

Stainless steel.

#### 4.4.4 1.2-1.8 m

##### Reflector

Spun aluminium, with reinforced back structure, with polyester powder paint, min 60 µm. Colour light grey, NCS S2502-R.

##### Shield

Rolled aluminium with polyester powder paint, min 60 µm. Colour light grey, NCS S2502-R.

##### Radio interface (HP only)

Die-cast aluminium with surface treatment and polyester powder paint, min 60 µm. Colour light grey, NCS S2502-R.

##### Radome

UV-resistant polystyrene plastic. Colour light grey, NCS S2502-R.

##### Microwave absorber

Polyester fibre, impregnated with carbon loaded latex, with UV-resistant fixings.

##### Mounting kit

Galvanised steel.

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

#### Feed (6-15 and 23-32 GHz)

Surface treated aluminium, EPDM rubber gasket (HP only) and polystyrene dielectric.

#### Feed (18 GHz)

Surface treated aluminium, EPDM rubber gasket (HP only) and orgalloy dielectric.

#### OMT (HPX only)

Brass. The interface to the feed is tin plated to prevent galvanic corrosion.

#### Screws, nuts and washers

Stainless steel A4.

### 4.4.5 2.4-3.7 m

#### Reflector

Spun aluminium with integral rim section and reinforced back structure. Colour grey, US Fed. Std. 595-26152.

#### Shield

Rolled aluminium with mechanical UV stabilised absorber fixings. Colour grey, US Fed. Std. 595-26152.

#### Radome

HYPALON (6-8 GHz) or TEGLAR (10-15 GHz), planar spring tensioned, UV-resistant. Colour white.

#### Mounting kit

Galvanised steel.

#### Feed (6-8 GHz)

Surface treated aluminium, nickel plated brass ports and polystyrene dielectric.

#### Feed (10-15 GHz)

Brass and nickel plated brass ports.

#### Screws, nuts and washers

Magnigard 565 coated carbon steel, stainless steel and galvanised steel.

### 4.5 Pressurisation

The maximum allowed antenna feed over pressure is 40 kPa (continuous operation).

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
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## 5 Environmental Data

### 5.1 Compliance With International Standards

#### Storage

ETSI EN 300 019-2-1 v2.1.2 (class 1.2)

#### Transportation

ETSI EN 300 019-2-2 v2.1.2 (class 2.3)

#### Stationary use at non-weather protected locations

ETSI EN 300 019-2-4 v2.2.2 (class 4.1E, IEC class 4M5)

### 5.2 Wind Velocity

Size [m]	Operational [m/s]	Survival [m/s]
0.2-1.8	50	70
2.4-3.7	50	56

Operational Maximum deflection 0.3\*HPBW,  
according to ETSI EN 302 217-4-1 V1.2.1 (2007-10)

Survival No damage to the antenna. Realignment might be needed.

### 5.3 Wind Loading, Force and Torque

Type	Operational 50 m/s		Survival 56 m/s		Survival 70 m/s	
	F [N]	M [Nm]	F [N]	M [Nm]	F [N]	M [Nm]
0.2	170	40			330	80
0.3	190	50			380	100
ANT1 0.6	765	285			1499	558
ANT2 0.6	570	180			1140	360
0.9	1220	502			2402	1004
1.2	2305	744			4507	1458
1.8	4986	2211			9773	4332
2.4	9059	3935	11284	4901		
3.0	14155	6928	17632	8630		
3.7	20383	11345	25390	14132		

Maximum force and torque due to wind from the most critical direction.

### 5.4 Endurance

The antennas are designed to withstand years of exposure to coastal and/or industrial atmosphere without noticeable performance degeneration or significant deterioration in finish, such as corrosion etc.

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

## 6 Mounting Data

### 6.1 Mounting Kit

The mounting kit (including side struts for stabilisation) can be fitted to the following tube diameters and L-profiles.

Size [m]	Mounting kit, tube diameter [mm]	Mounting kit, L-profile [mm]	Side strut, tube diameter [mm]	Number of side struts
0.2-0.6	50-120	40x40-80x80		
0.9	60-115 <sup>18</sup>			
1.2-1.8	90-114		60-114	1
2.4-3.7	114		100-114	2

### 6.2 Alignment

#### 6.2.1 HP

Size [m]	Azimuth [±°]	Elevation [±°]	Polarisation [±°]
0.2	65	13	
0.3-0.6	40	15	
0.9	10	25	
1.2-1.8	15	15	
2.4-3.7	5	5	6

Minimum alignment interval.

#### 6.2.2 HPX

Size [m]	Azimuth [±°]	Elevation [±°]	Polarisation [±°]
0.3-0.6	40	15	5
1.2-1.8	15	15	5
2.4-3.7	5	5	6

Minimum alignment interval.

<sup>18</sup> To fulfil an operational wind velocity of 50 m/s the antenna needs to be installed on a 115 mm tube. For installations on a 60 mm tube the operational wind velocity is 30 m/s.

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

## 6.3 Installation Instruction

ANT2 0.2, ANT2 0.3, ANT1 0.6 and ANT2 0.6  
MINI-LINK Point-to-point, Outdoor Installation Manual  
EN/LZT 712 0015  
Not enclosed with the antenna.

ANT1 1.2 and ANT2 1.2  
1.2 m Compact Antenna, Installation Instruction  
EN/LZT 712 0095  
Enclosed with the antenna.

ANT1 1.8 and ANT2 1.8  
1.8 m Compact Antenna, Installation Instruction  
EN/LZT 712 0101  
Enclosed with the antenna.

ANT2 0.9, ANT0 1.2, ANT0 1.8, ANT0 2.4, ANT0 3.0 and ANT0 3.7  
Enclosed with the antenna.

## 7 Packing Data

### 7.1 Dimensions

Type	Frequency [GHz]	Length [mm]	Width [mm]	Height [mm]	Volume [m <sup>3</sup> ]
0.2		585	365	195	0.042
0.3		425	425	275	0.050
ANT1 0.6		735	735	520	0.281
ANT2 0.6		673	673	272	0.123
0.9		908	908	670	0.552
1.2	6-8, 13-32	1360	406	1526	0.843
1.2	10/11	1380	490	1526	1.032
1.8	6-8, 13-23	1992	547	2148	2.341
1.8	10/11	2004	626	2170	2.722
2.4		2743	1115	1582	4.838
3.0		3404	1168	1931	7.677
3.7		3988	1524	2134	12.970

Packing dimensions.

<sup>19</sup> For a transition period the old box with dimensions 650x450x255 mm (0.075 m<sup>3</sup>) will be used too.

<sup>20</sup> For a transition period the old box with dimensions 715x715x550 mm (0.281 m<sup>3</sup>) will be used too.

<sup>21</sup> Dimensions with composite reflector are 7/8 GHz: 710x698x314 mm (0.156 m<sup>3</sup>) and 15-23 GHz: 691x691x305 mm (0.146 m<sup>3</sup>).

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
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## 7.2 Weight

Type	Frequency [GHz]										
	6	7/8	10/11	13	15	18	23	24/26	28	32	38
0.2							6.4	6.4	6.4	6.3	6.3
0.3					11.4	11.2	11.1	11.0	11.0	10.7	10.8
ANT1 0.6 ANT2 0.6		17.5 20 <sup>22</sup>	18.7	18.3	17.9 <sup>23</sup>	17.5 <sup>23</sup>	17.1 <sup>23</sup>	18.2	18.0	17.2	17.4
0.9		31	34	34	33	32	32	31			
1.2	79	79	98	83	83	82	80	80	83	83	
1.8	147	147	190	158	158	154	153				
2.4	385	385	385	385	385						
3.0	520	520	520	520							
3.7	736	736									

Gross packing weight (in kg).

## 7.3 Compliance With International Standards

1.2-3.7 m antennas are packed in wooden crates. The wood is bark free (DB), heat treated (HT) and marked in accordance with:  
 International standards for phytosanitary measures  
 Guidelines for regulating wood packaging material in international trade  
 ISPM publication No. 15  
 March 2002.

0.2-0.9 m antennas are packed in cardboard boxes and hence the material is considered sufficiently processed to be excluded from the requirements above.

## 8 Marking Data

The antenna is clearly marked with a label including the following information:

- Ericsson logotype
- MINI-LINK
- Product name (e.g. ANT2 0.2 23 HP)
- Product number (e.g. UKY 210 60/SC15)
- R-state (e.g. R1A)
- Manufacturing year and week (e.g. 04w48)
- Serial number, text and bar code
- CE-marking

<sup>22</sup> Weight with composite reflector is 22 kg.

<sup>23</sup> Weight with composite reflector is 0.7 kg heavier than with aluminium reflector.

Prepared (also subject responsible if other) EMWJF		No. 1301-UKY 210 40+ Uen		
Approved EAB/FUM/X (Ulrica Wällgren-Malmberg)	Checked	Date 2009-04-06	Rev BC	Reference

## 9 Document Revision Records

A-AK	See earlier revisions.
AL	0.6 m, 1.2 m and 1.8 m 10/11 GHz, weights and packing dimensions corrected. 1.8 m HP and HPX dimensions corrected.
AM	XPD and IPI harmonized with system requirements. Return loss for 0.3-0.6 m 13-38 GHz HPX harmonized with system requirements.
AN	13-23 GHz 0.3-0.6 m ANT0 HPX replaced by 0.3-0.6 m ANT2 HPX.
AS	24/26-28 GHz 0.3-0.6 m ANT0 HPX replaced by 0.3-0.6 m ANT2 HPX. Frequency bands harmonized with system requirements. Return loss for integrated installation harmonized with system requirements. Return loss for separate installation of 0.6 m 7/8 GHz and 1.2-2.4 m 15-32 GHz harmonized with system requirements. ACMA reference updated.
AT	Introducing "kit form" also for small antennas. Alternative 0.6 m reflector material. 32-38 GHz 0.3-0.6 m ANT0 HPX replaced by 0.3-0.6 m ANT2 HPX. 0.9 m added. 18 GHz ANT1 removed. 6-7/8 GHz ANT2 added.
AU	STD antennas removed.
AV	0.9 m 7/8, 11, 23 and 24/26 GHz data added/corrected.
AX	ANT2 0.6 7/8 data added. 7/8-10/11 GHz 0.6 m ANT0 HPX replaced by 0.6 m ANT2 HPX. Industry Canada 38 GHz reference updated. 0.6 m 10/11 GHz RPE updated.
AY	2.4-3.7 m 6-8 GHz completely updated. New design. Minor RPE modifications to 1.8 m 6 GHz and 0.9 m 13 GHz.
AZ	Minor RPE modification to 3.0 m 7/8 GHz.
BA	2.4-3.7 m images updated.
BB	2.4-3.0 m 10-15 GHz completely updated. New design.
BC	ETSI and FCC references updated.