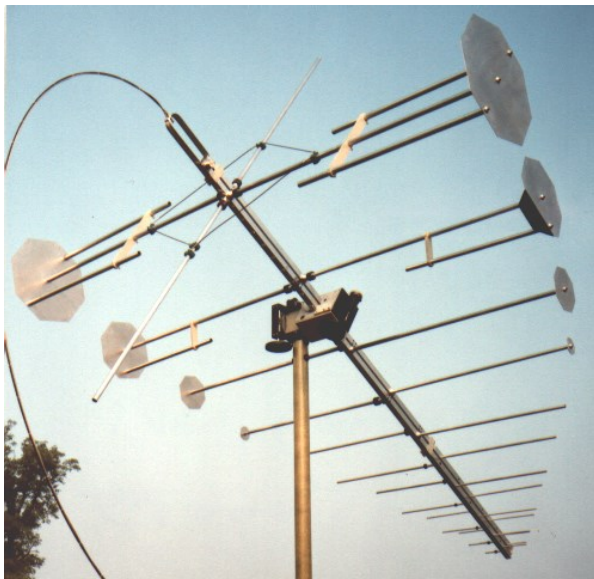


## Log. Periodic Directional Antenna

### S12014/5

20 – 220 MHz



The antenna S12014/5 is a linear polarized log.-periodic antenna with foreshortened radiators used for indoor EMC testing.

This is an exceptionally compact antenna for this frequency range, ideally suited for use in anechoic EMC chambers.

Antenna polarization (horizontal or vertical) and elevation angle ( $0^\circ$  to  $-40^\circ$ ) can be manually or remotely adjusted.

The antenna is installed on a dolly with rollers for ease of positioning. Manual or automatic change of polarisation, height and elevation is available as option. An optional remote control unit allows automatic operation of the antenna axes.

#### Technical Data

<b>Electrical</b>	Frequency range	20 – 220 MHz
	Gain	Typ. 3 - 5 dBi (20 - 60 MHz) Typ. 5 - 6 dBi (60 - 220 MHz)
	Polarization	linear, adjustable
	Input impedance	50 $\Omega$
	VSWR typ.	< 3.5 : 1 (20 - 30 MHz)
	max.	< 2.5 : 1 (30 - 220 MHz)
	RF input power	10 kW (20 - 100 MHz) 5 kW (100 - 220 MHz)
<b>Mechanical</b>	RF connector	13 - 30
	Dimensions (approx.)	3.86m (L) x 3,4m (B) x 3.18m (H)
	Weight	50 kg
<b>Options</b>	Remote Control Unit	S42056/01
	Detachable Radiators	

The RF connector is the interface for the customer.

**Mechanical Data**

Fig. 1 shows the antenna on the standard mast. The mast is installed on a dolly with four rollers. The axes for elevation and polarization are situated at the top of the mast. Both axes can be changed manually by a hand wheel.

Polarization	0° – 90°
Elevation	0° – -40°
Height of Antenna Boom	2.3 m
Weight of Dolly with Mast	approx. 100 kg

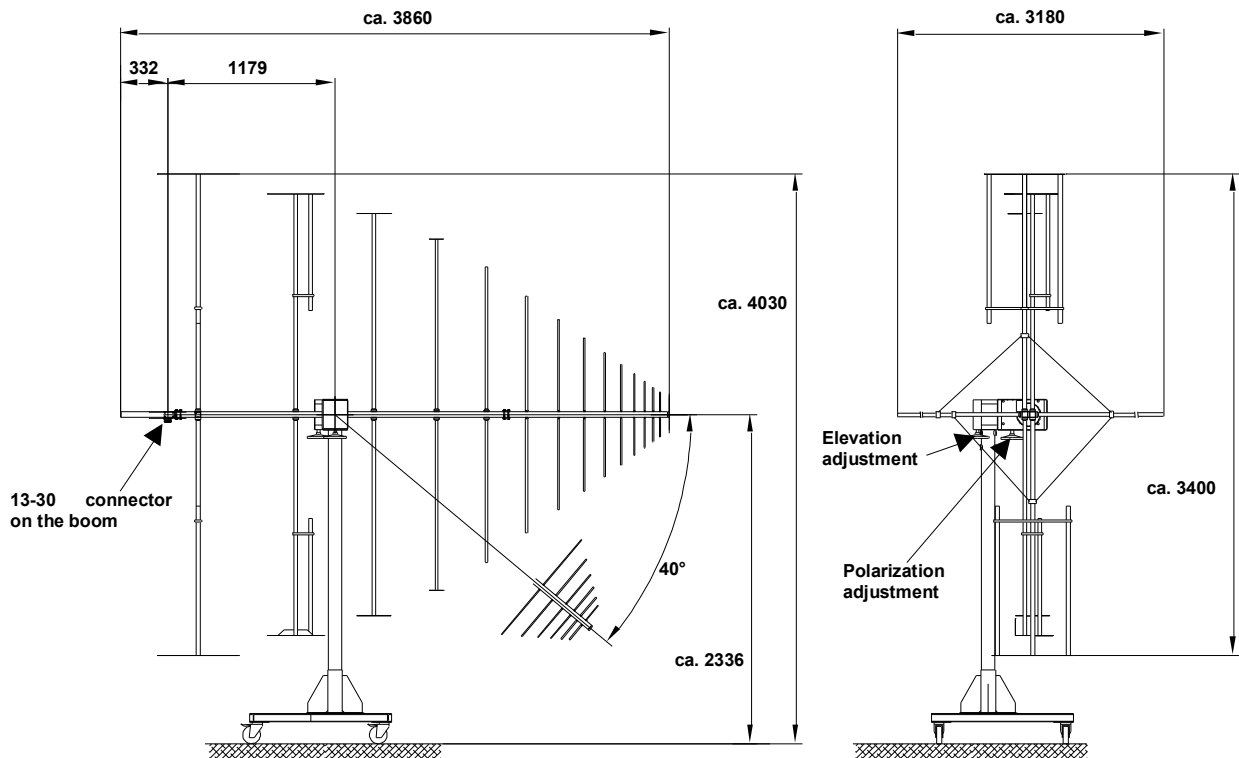


Figure 1: S12014/54 with standard mast

Manually or remotely height adjustment is optional available. The RF-interface to the customer is the 13-30 connector at the rear of the boom

## Measured Field Strengths

The diagrams show measured field strengths made in various anechoic chambers. The measuring sensor was placed 4 m from the tip of the antenna. The RF input power was 2 kW, the height of the sensor was about 1.5 m. For comparison the calculated values assuming a reflecting ground are also shown. The spread of the measured values is due to the effects of the different chambers and the accuracy of the used sensors.

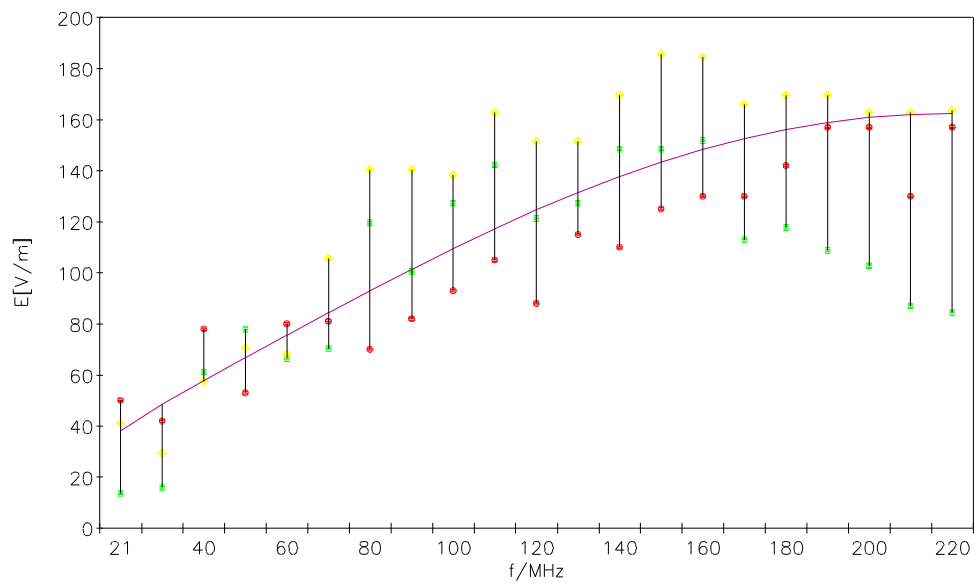


Figure 2: Measured field strengths for horizontal polarization

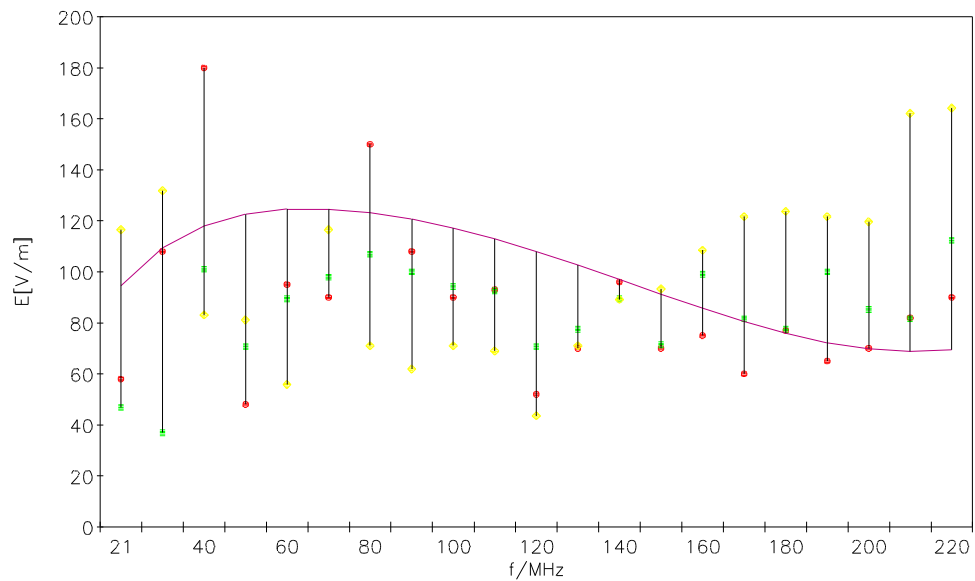


Figure 3: Measured field strengths for vertical polarization

### Measured field strength distribution

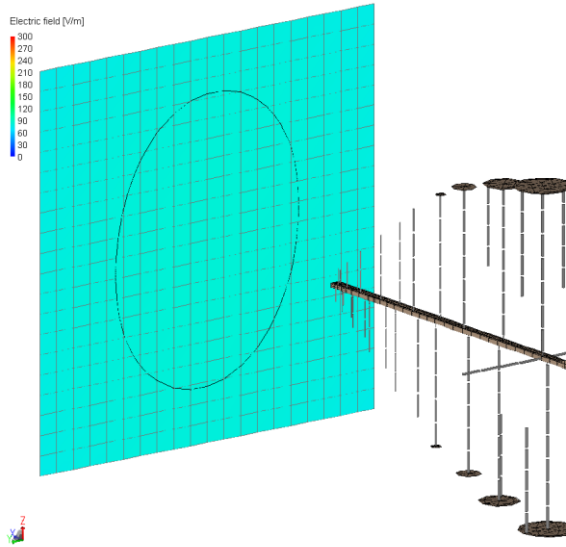
Measured field strength distribution at 3 m distance from the antenna tip (vertically polarized). The covered area has dimensions of 1.75m (H) x 2.25 m (W); the antenna height is 1.6 m, the antenna elevation  $-12^\circ$ . All measured values are given in dB relative to the beam center. 20 MHz (1st value) 220 MHz (2nd value).

z[m]	+1.0										
					-0.6 -7.2						
+0.5			-1.2 -0.4		-0.2 -4.2		-1.4 -4.1		-1.4 -4.1		
					0 -1.4						
0.0		-0.4 -0.4		-0.4 -0.2		<b>Ref.</b> <b>0 db</b>	-0.4 -0.4	-0.4 -0.7	-0.4 -0.9	-0.5 -1.1	-0.6 -1.2
						+0.6 -0.4					
-0.5						+0.3 -3.8					
			-4.5 -4.4								
-1.0						+0.5 -5.7					
			+0.6 -6.1		+0.6 -6.8		+0.5 -6.0		0.0 -5.2		
		-1.0	-0.5	0.0	0.5	1.0	x[m]				

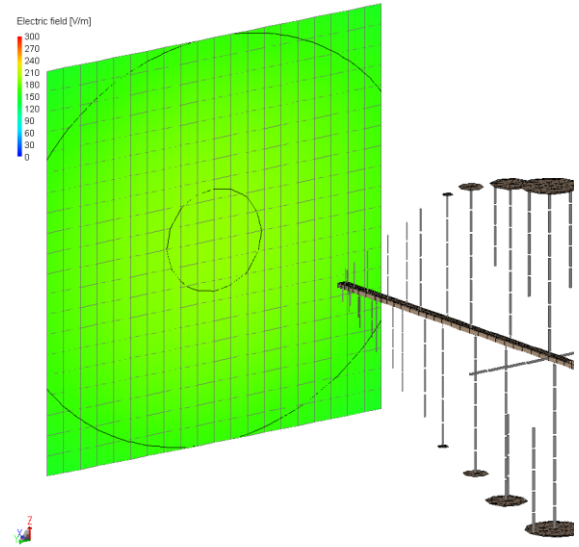
Figure 4: Measured field strength

**Simulated electric field uniformity**

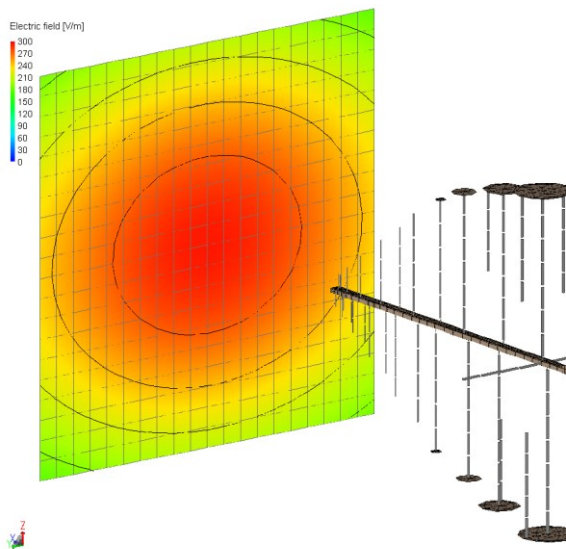
Simulated electric field uniformity for the log.-periodic antenna array S12014/5 at 2 m distance with vertical antenna polarization. The antenna was placed in free space without ground influences. The input power was considered to be 10 kW. The covered area has the dimension 4 m x 4 m. The grid-distance is 0.2 m.



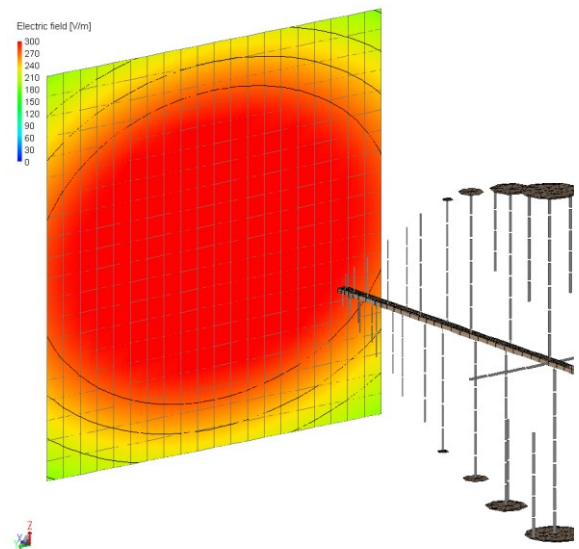
20 MHz



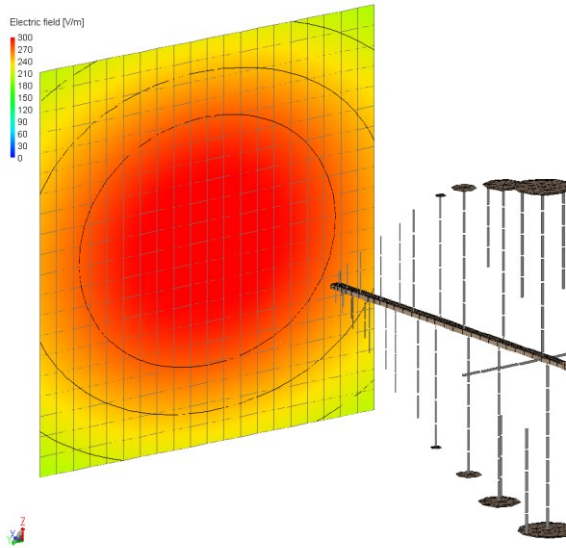
40 MHz



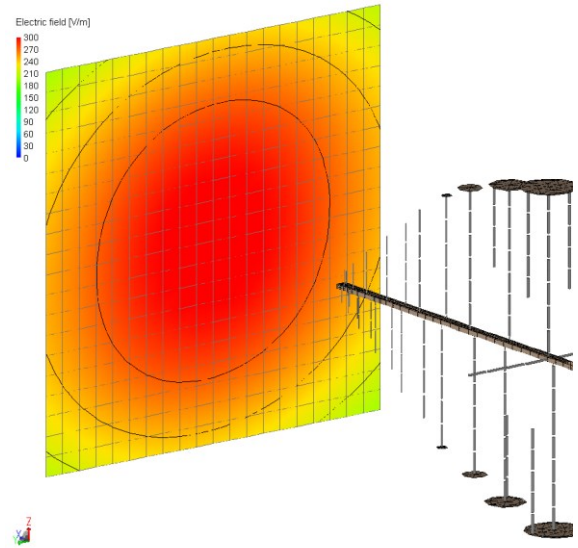
70 MHz



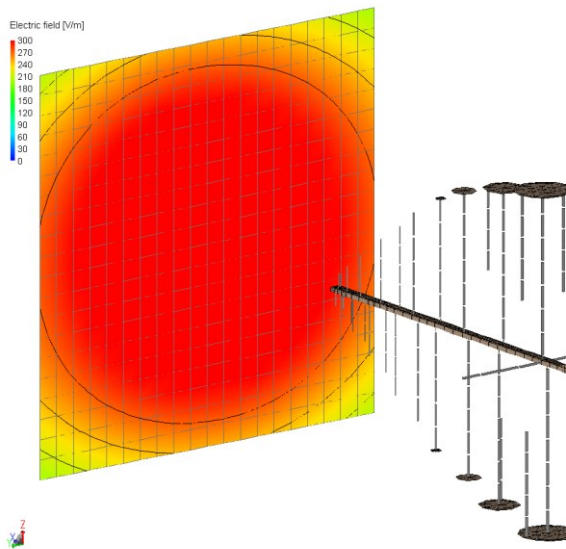
90 MHz



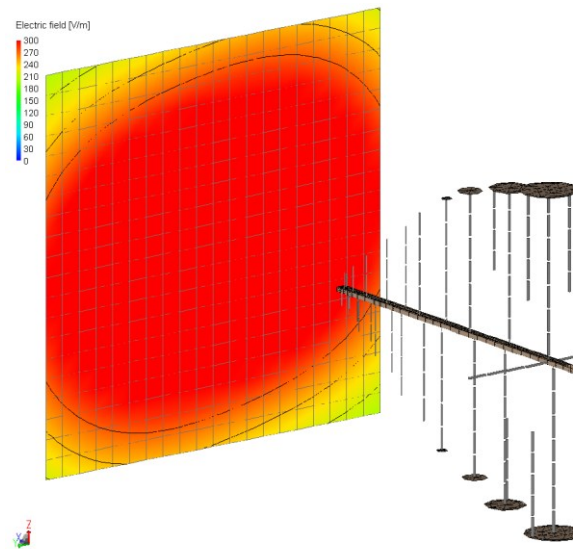
110 MHz



130 MHz



170 MHz



220 MHz

Figure 5: Field distribution at 2 m distance for 10 kW input power

**Frequency Range 20-100 MHz, Input Power 8 kW**

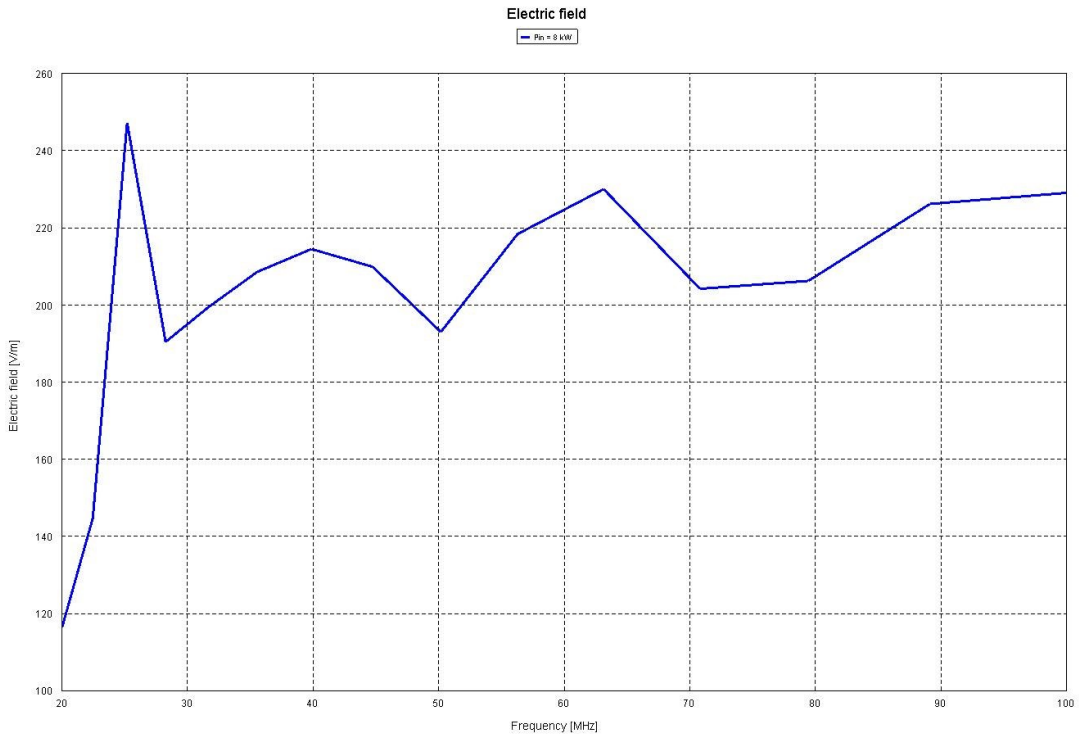


Figure 6: Electric Field 2m. away from antenna, 8 kW input power, vertical polarisation

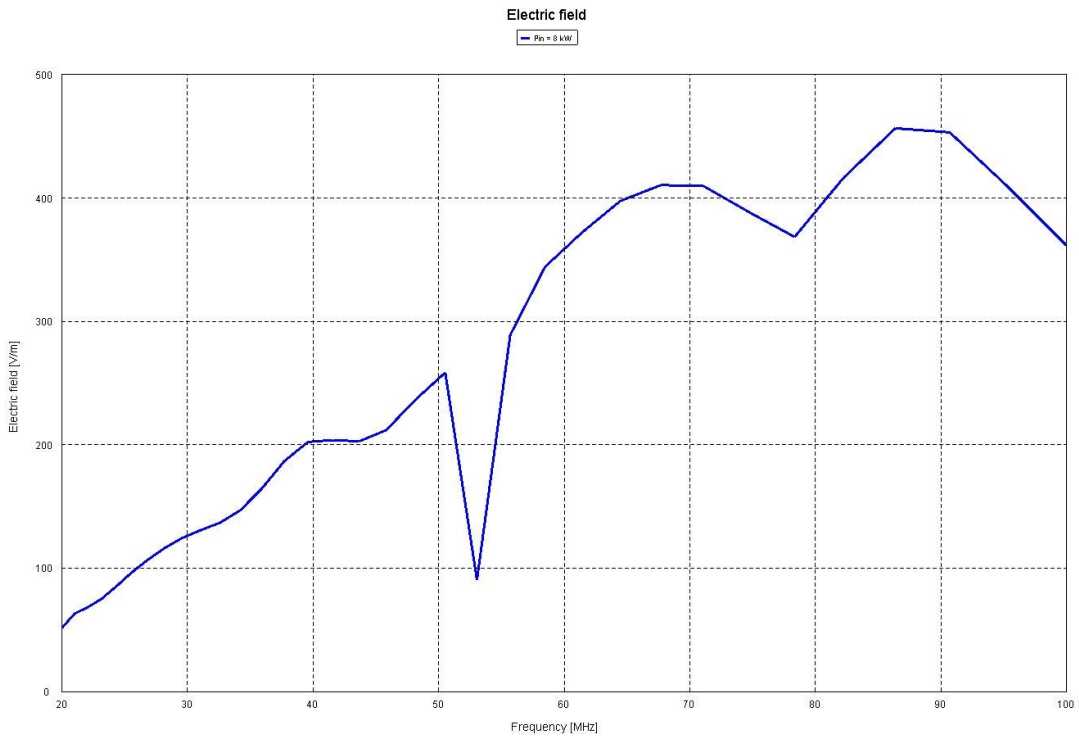


Figure 7: Electric Field 2m. away from antenna, 8 kW input power, horizontal polarisation

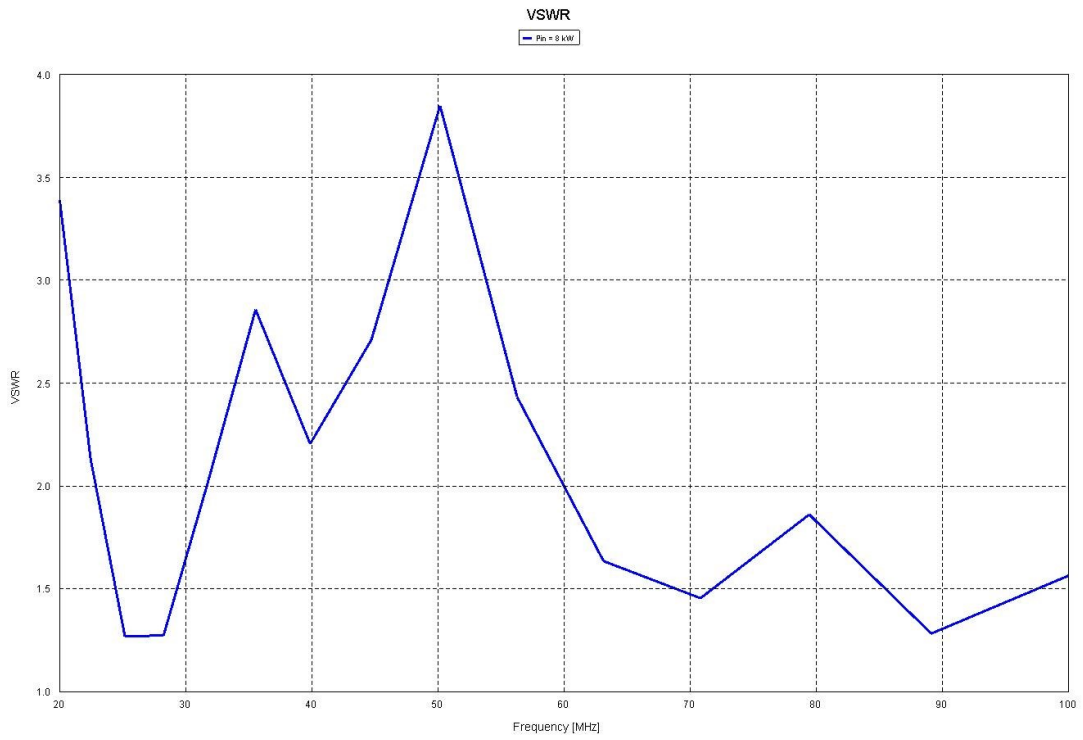


Figure 8: VSWR



**Frequency Range 20-220 MHz, Input Power 2,5 kW**

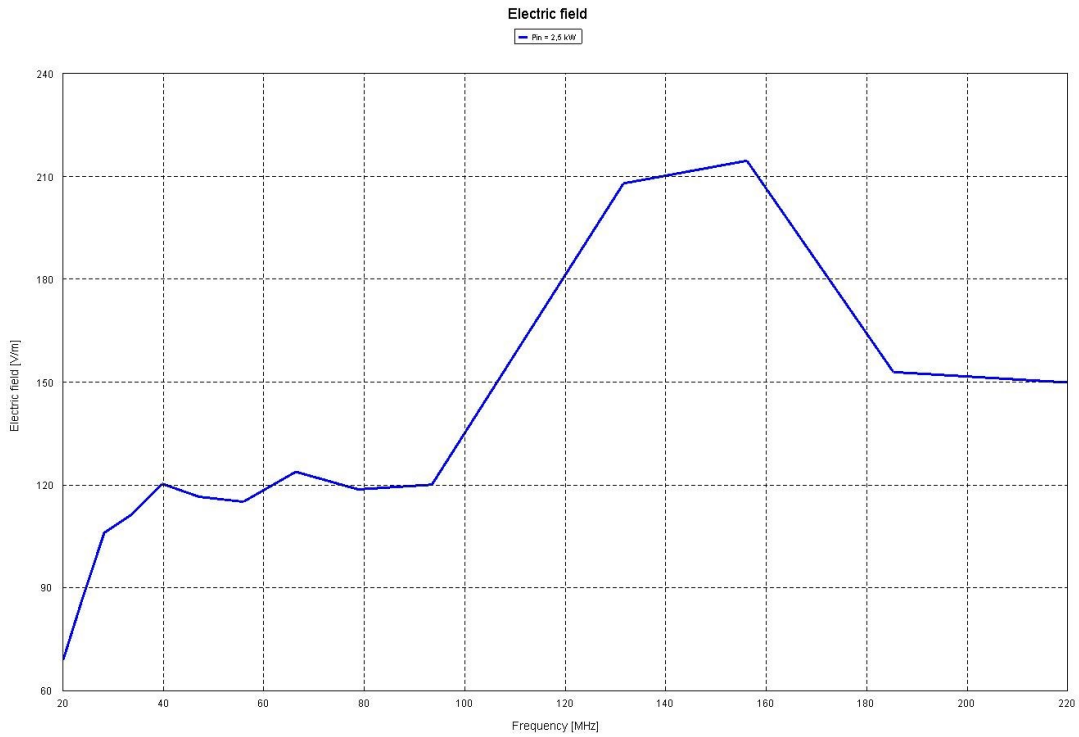


Figure 9: Electric Field 2m. away from antenna, 2,5 kW input power, vertical polarisation

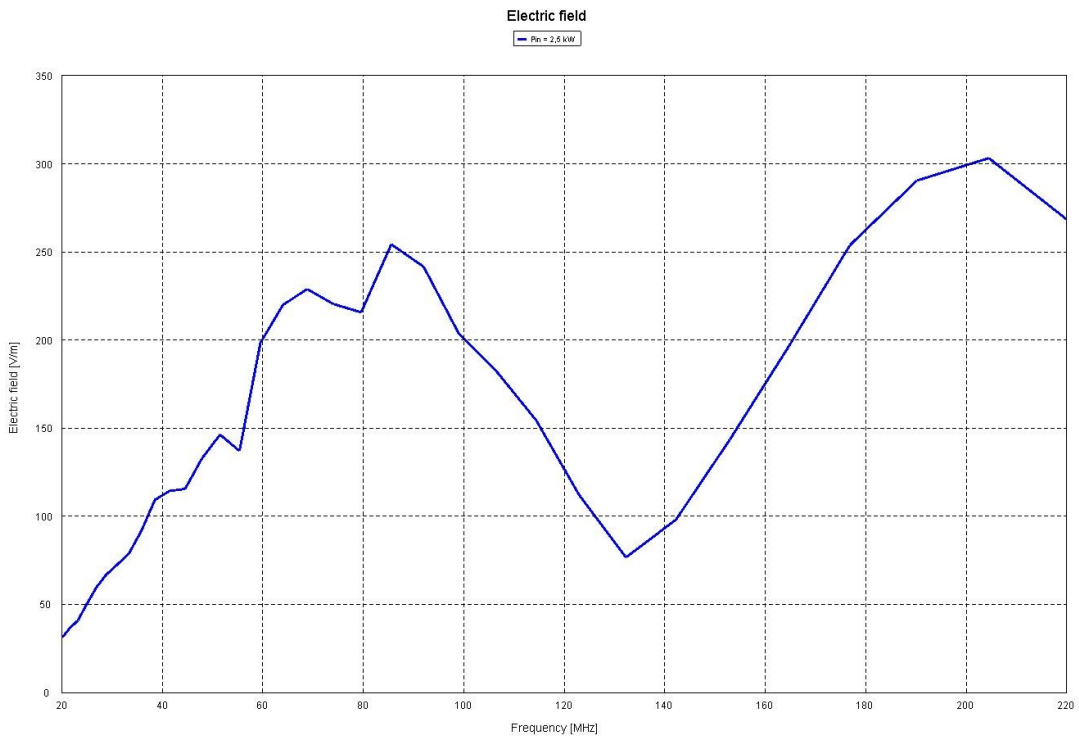


Figure 10: Electric Field 2m. away from antenna, 2,5 kW input power, horizontal polarisation

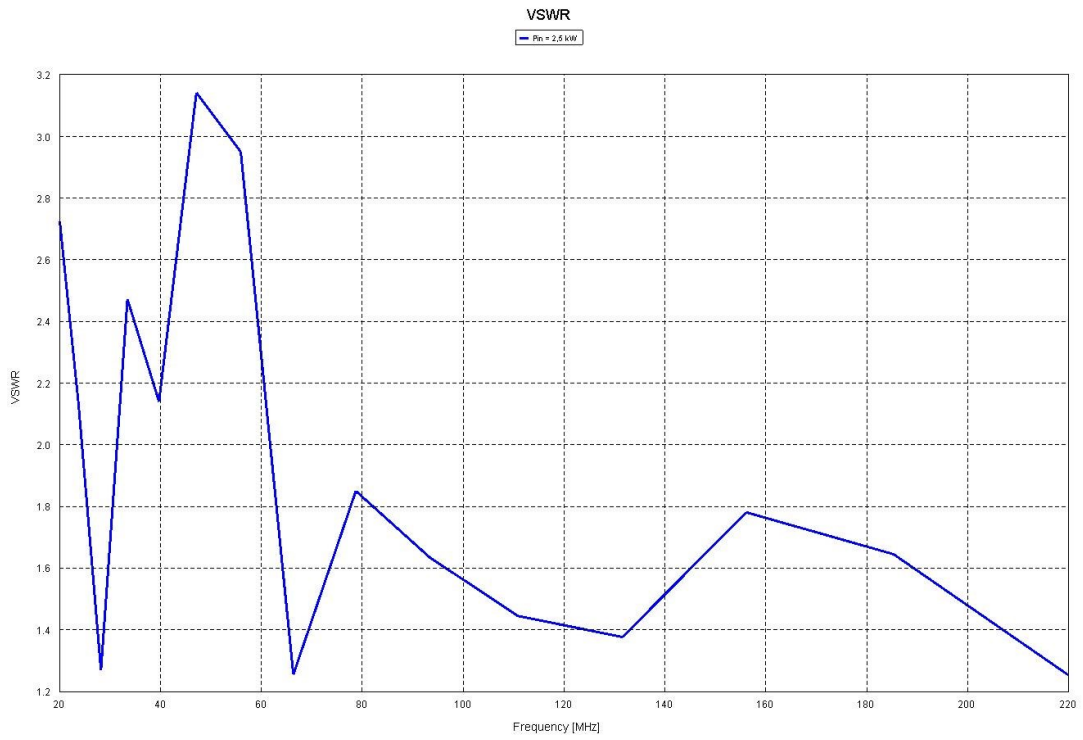


Figure 11: VSWR

Gain Flatness 20-220 MHz

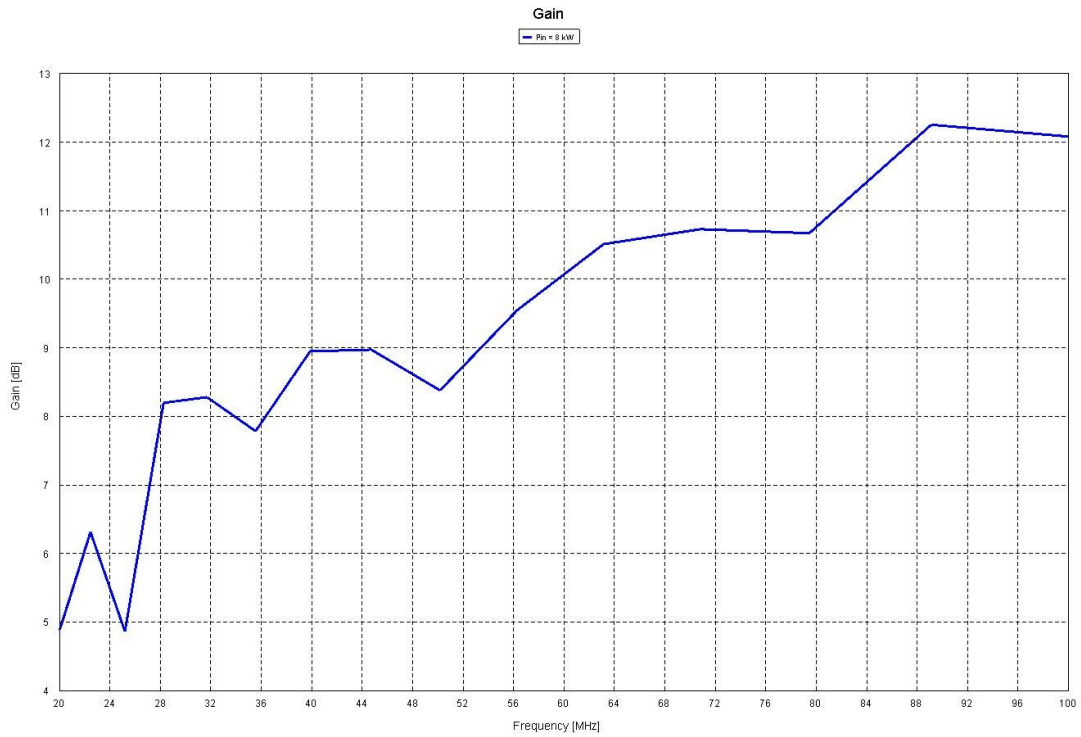


Figure 12: Gain Flatness 20-100 MHz, Input Power 8 kW

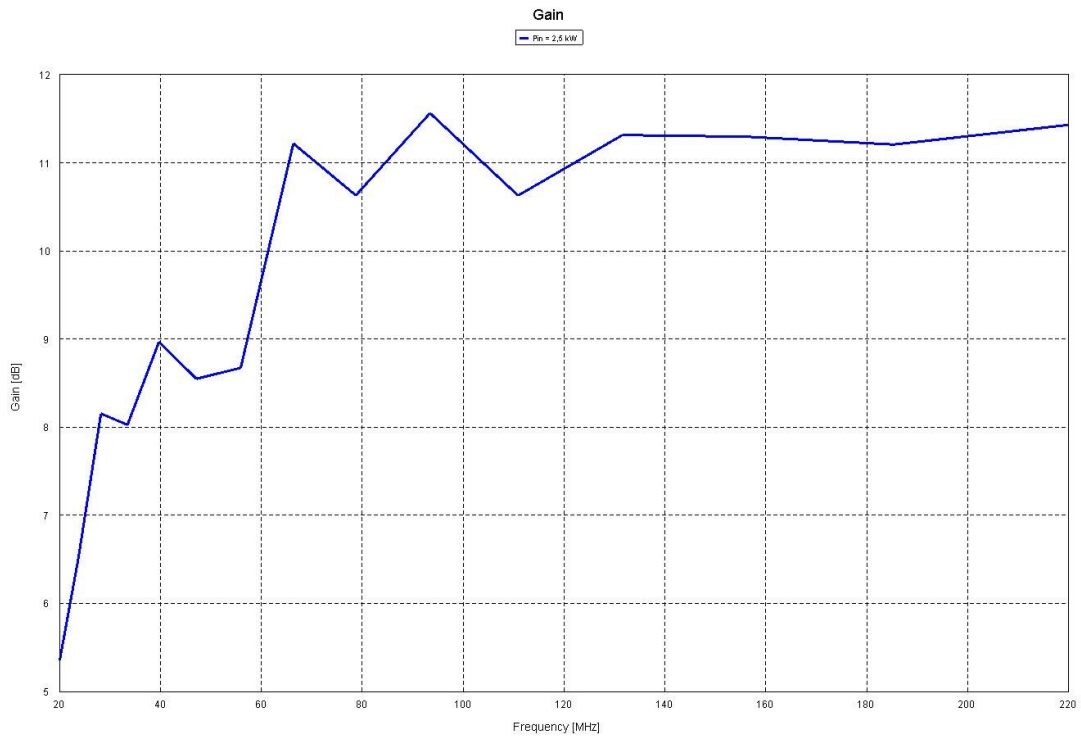


Figure 13: Gain Flatness 20-220 MHz, Input Power 2,5 kW

## Options

### Remote adjustments

A remote control unit S42056/01 is needed. The remote control unit itself can be controlled as a device via RS-232 serial interface or graphical user interface.

The remote control unit is connected to the antenna via fibre optic cables. The control box at the antenna controls the motor for the polarization axis. The remote control unit continuously monitors the actual value of the polarization.

Mains Connector	Souriau 8.47.25F547N002 (shielded)
Mains Voltage:	230 V / 50 Hz
Connector for FOC:	2 x ST 62.5/125 µm Multimode

FOC and mains cable with connector are not part of the scope of delivery but available on request.

### Detachable Radiators

The overall height of the antenna may require the user to remove the last radiators to enable the antenna to pass through the chamber door, or to minimize storage space required. Optionally the longest radiators can be manufactured to be removable.