

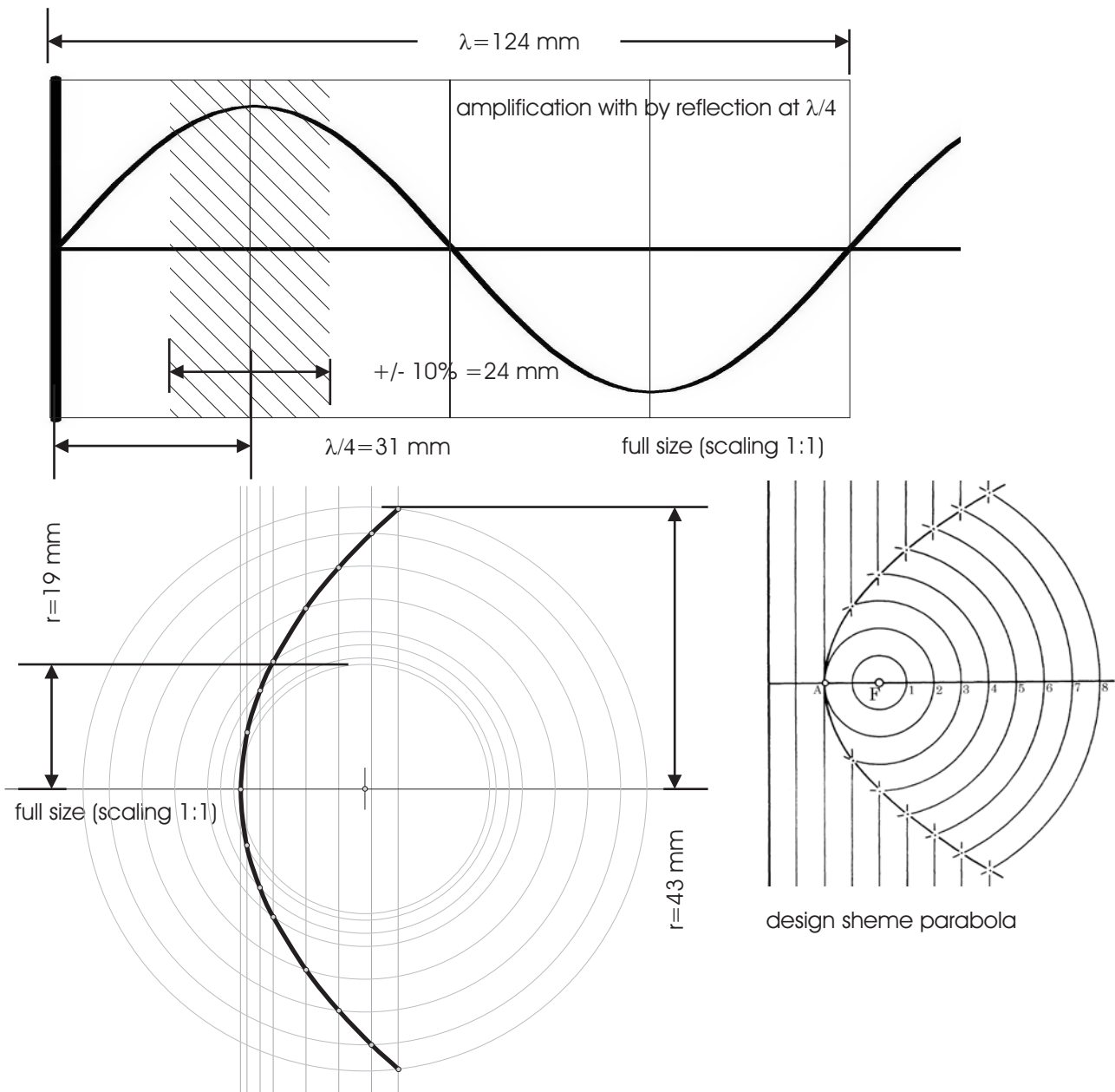
Dimensioning and designing a parabolic reflector for WLAN antenna.

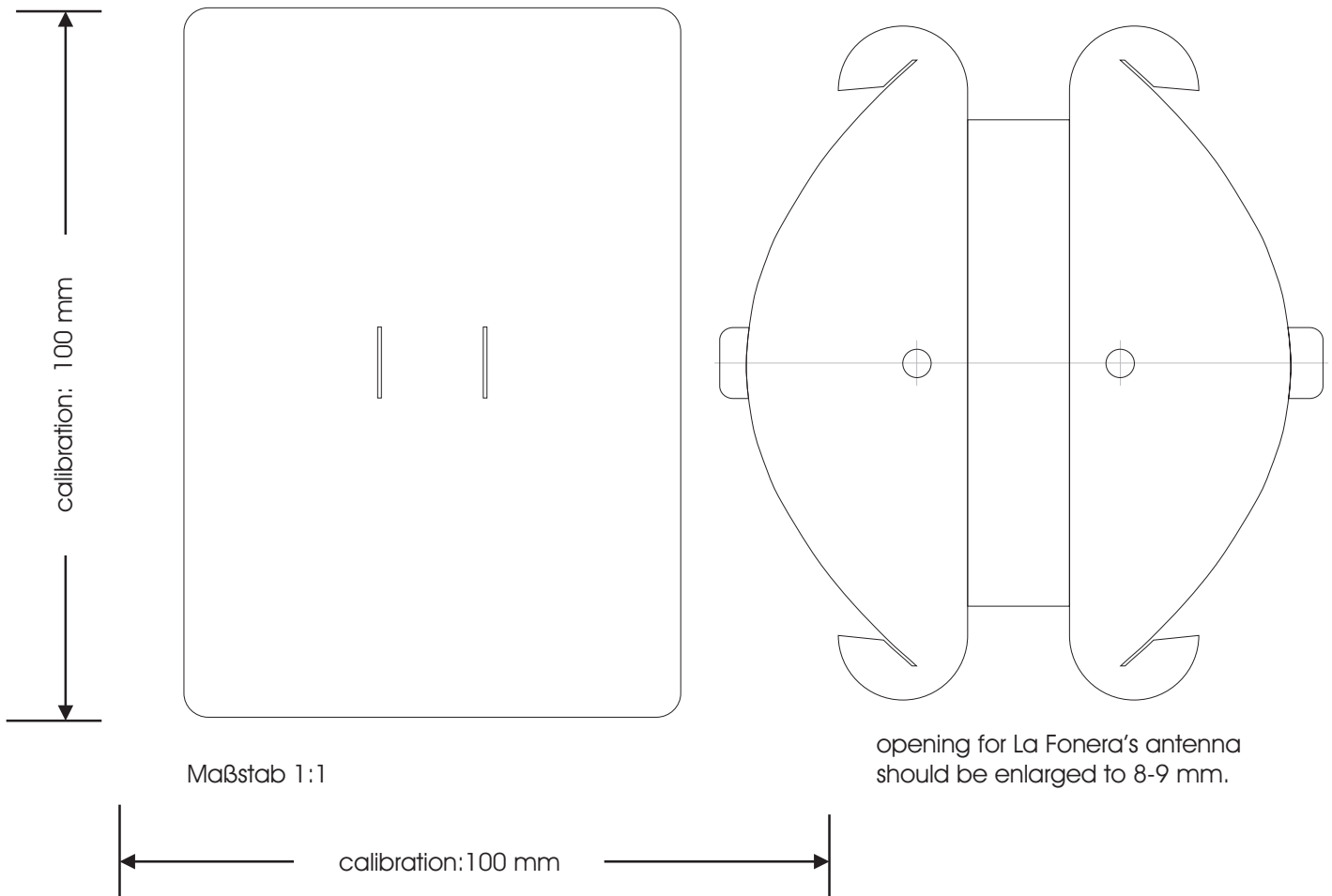
The WLAN frequency of 801.11g is between 2,412 and 2,484 GHz, which is equal to an electromagnetic wave length λ of 121-124 mm. To achieve amplification by wave reflection the reflecting surface should be positioned to the antenna in a $1/4, 3/4, 5/4, \dots$ distance of the wave length λ . For this reflector $1/4 \lambda$ is chosen with a $\pm 10\%$ ige spreading of λ for the distance between antenna and reflector. In this $\pm 10\%$ ige around $1/4 \lambda$ the reflection will achieve good amplification.

After dimensioning this leads to a nearest average distance of appr. 19 mm and a furthest average distance of appr. 43 mm in which the parabolic shape must be designed.

Thus the parabolic shape can be designed exactly.

channel no.	Lamda=c/f			1/4 Lamda	1/4 Lamda -10%	1/4 Lamda +10%
	Lamda cm (10 ⁻³ m)	c m/s	f GHz (10 ⁹ Hz)			
1	124 mm	300.000.000 m/s	2,412 GHz	0,25	0,15	0,35
2	124 mm	300.000.000 m/s	2,417 GHz	31 mm	19 mm	44 mm
3	124 mm	300.000.000 m/s	2,422 GHz	31 mm	19 mm	43 mm
4	124 mm	300.000.000 m/s	2,427 GHz	31 mm	19 mm	43 mm
5	123 mm	300.000.000 m/s	2,432 GHz	31 mm	19 mm	43 mm
6	123 mm	300.000.000 m/s	2,437 GHz	31 mm	18 mm	43 mm
7	123 mm	300.000.000 m/s	2,442 GHz	31 mm	18 mm	43 mm
8	123 mm	300.000.000 m/s	2,447 GHz	31 mm	18 mm	43 mm
9	122 mm	300.000.000 m/s	2,452 GHz	31 mm	18 mm	43 mm
10	122 mm	300.000.000 m/s	2,457 GHz	31 mm	18 mm	43 mm
11	122 mm	300.000.000 m/s	2,462 GHz	30 mm	18 mm	43 mm
12	122 mm	300.000.000 m/s	2,467 GHz	30 mm	18 mm	43 mm
13	121 mm	300.000.000 m/s	2,472 GHz	30 mm	18 mm	42 mm
14	121 mm	300.000.000 m/s	2,484 GHz	30 mm	18 mm	42 mm





Cutting template to build the reflector

The antenna pictured below was built with using the upper templates printed on a overhead film. The rectangle was pasted up with an aluminium foil on the backside before cutting out the shape. After cutting out the shapes and enlarging the antenna's openings (for La Fonera's antenna this should 8-9 mm) the two parts can be assembled without gluing and then attached to the antenna.

