Selecting the right probe type

As a rule of thumb, choose probe so available mean spacing, $\overline{X}$ fulfill:

$$\lambda \leq \overline{X} \leq 5\lambda$$

However, this is also dependent on the R_t/R_b ratio.

The 3 probetypes have the following available mean probe spacings:

Probetype	Min. available mean probe spacing	Max. available mean probe spacing
M12P_004	1.5 µm	8.3 µm
M12P_007	1.5 µm	18.3 µm
M12P_005	3.0 µm	59.0 µm

For RA = 50 Ωµm², MR = 50 % the following probe type is suggested for different R_t/R_b ratios and λ-values:

R_t	R_b	λ	5 *λ	Probetype after thumbrule	Suggested probetype
20	2	1.51	7.54	M12PP_004	M12PP_004
10	2	2.04	10.21	M12PP_007	M12PP_004
5	2	2.67	13.36	M12PP_007	M12PP_007
2	2	3.54	17.68	M12PP_007	M12PP_007

The following figures show CIPTech graphs simulated at different λ-values. The obtainable data points are marked on the graphs for the M12PP_004 probe (green) and for the M12PP_007 probe (blue).

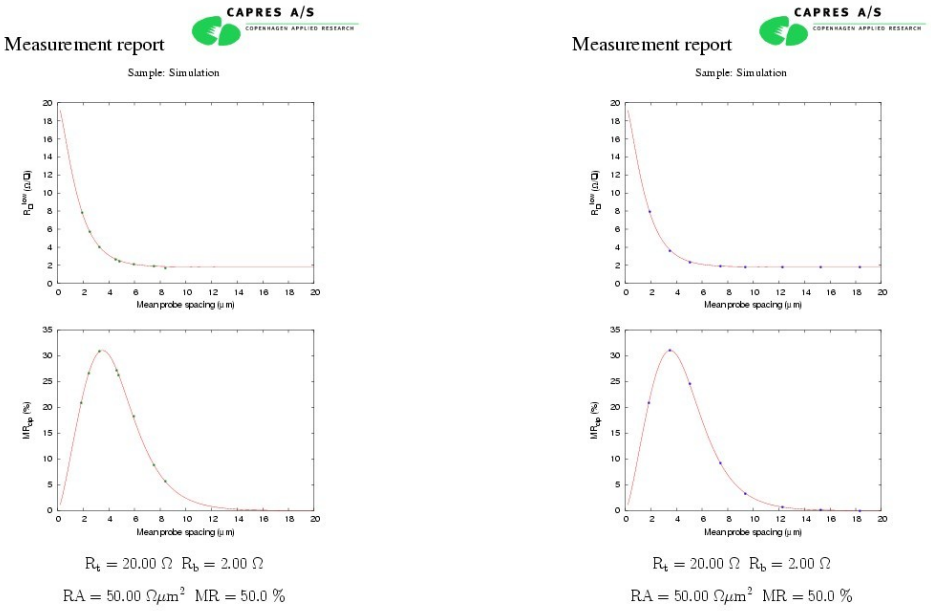


Figure 1: With R_t/R_b = 20 and λ = 1.51 it is evident that the M12PP_004 probe is preferred

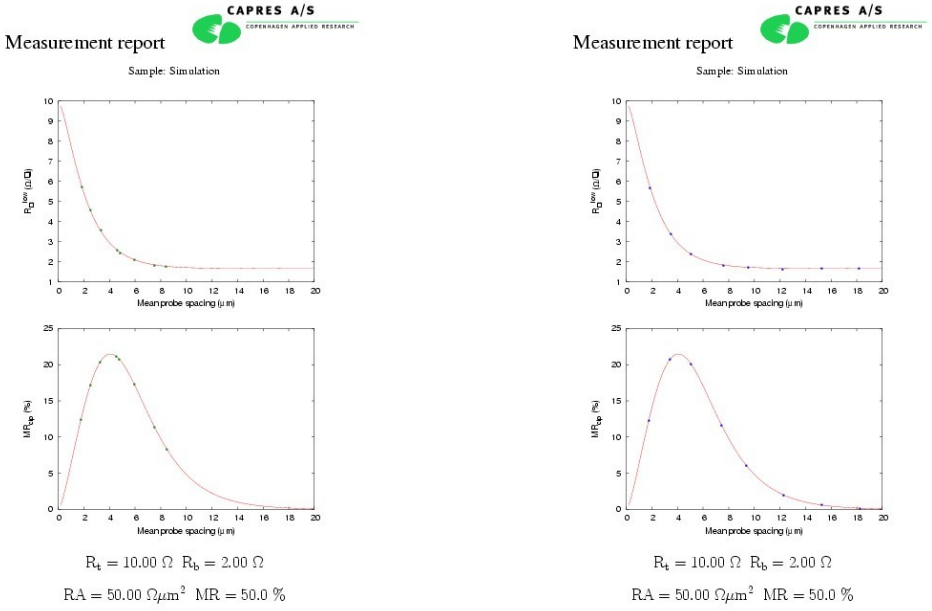
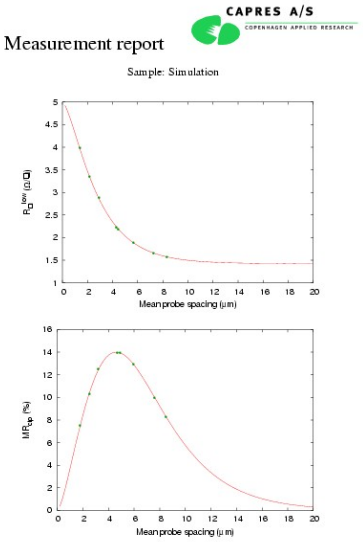
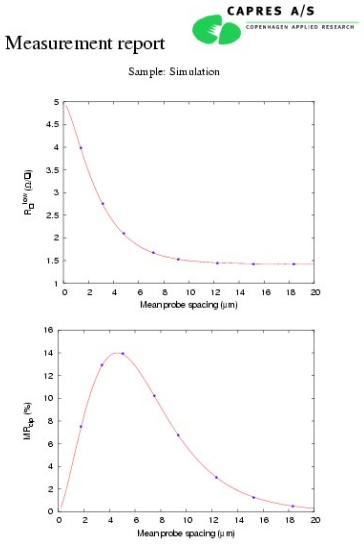


Figure 2: With R_t/R_b = 5 and λ = 2.04, the M12PP_007 probe should be chosen from the rule of thumb. However, almost the entire MRcip curve is enclosed when using the M12PP_004 probe and more data points are on the vertical part of the Rsq curve, leaving the M12PP_004 choice.



$R_t = 5.00\ \Omega \quad R_b = 2.00\ \Omega$

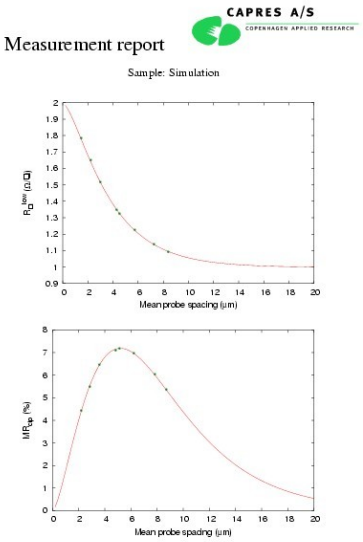
$RA = 50.00\ \Omega\mu m^2 \quad MR = 50.0\ \%$



$R_t = 5.00\ \Omega \quad R_b = 2.00\ \Omega$

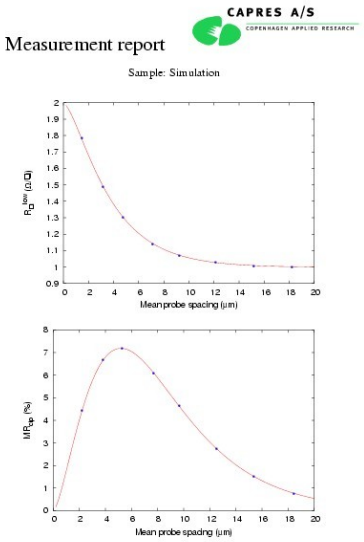
$RA = 50.00\ \Omega\mu m^2 \quad MR = 50.0\ \%$

Figure 3: With R_t/R_b = 2.5 and λ = 2.67 it is evident that the M12PP_007 probe is preferred



$R_t = 2.00\ \Omega \quad R_b = 2.00\ \Omega$

$RA = 50.00\ \Omega\mu m^2 \quad MR = 50.0\ \%$



$R_t = 2.00\ \Omega \quad R_b = 2.00\ \Omega$

$RA = 50.00\ \Omega\mu m^2 \quad MR = 50.0\ \%$

Figure 4: With R_t/R_b = 1 and λ = 3.54 it is evident that the M12PP_007 probe is preferred