TECHNICAL REPORT

Prepared by Marie Fransson	Approved by Anders Sunesson	Date (last revision) 2005-01-29	Doc. No. AA050004	Rev A
Distribution EA, The customer				

Rufa antenna for Connectblue

1 Background

Connectblue has sent us 2 test pcbs for making a good matching of the Rufa antenna. Both return loss and efficiency are measured.

2 Test object

Two pcbs were sent to use. For this matching we have used the pcb with the most components. Figure 1 and 2 show the pcb. A cable is soldered to the point before the matching network to be used for matching and measurements. The "extra" connector on the backside are used for all measurements.
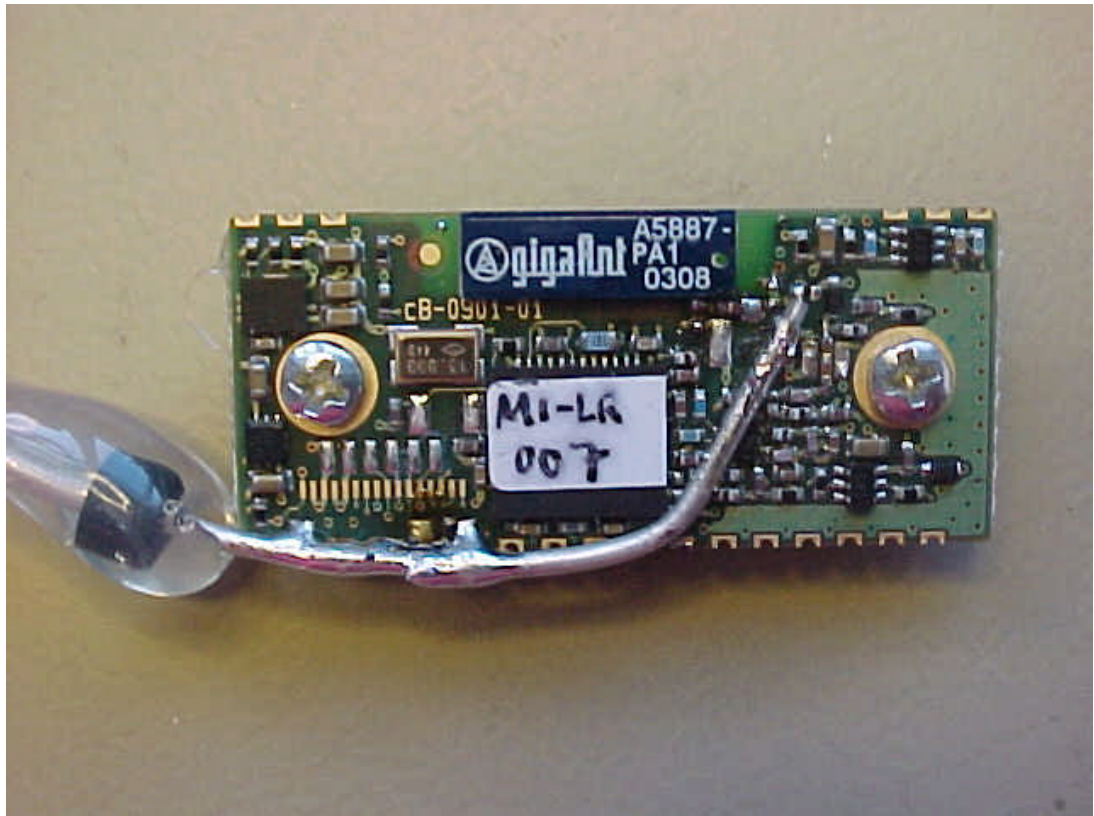

Figure 1, front side of pcb

TECHNICAL REPORT

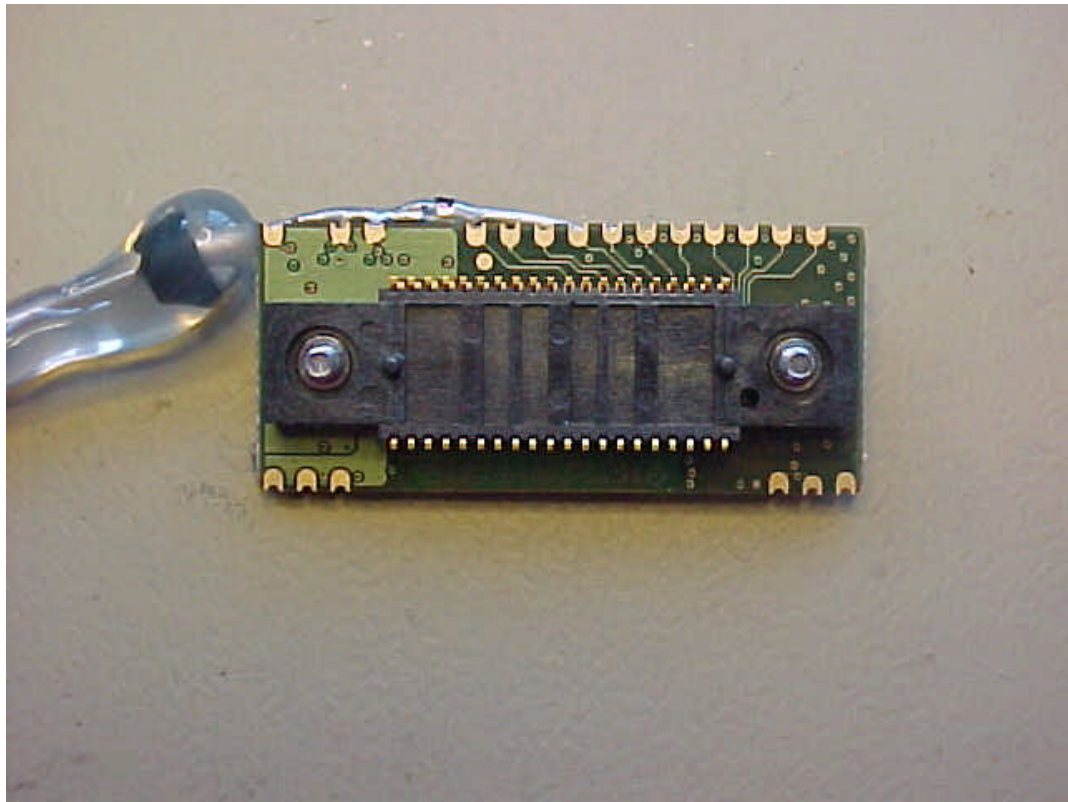| Prepared by	Approved by	Date (last revision)	Doc. No.	Rev
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2

Figure 2, backside of pcb

2.1   Matching network used

The matching network proposed for this product is seen in figure 3.

This is a 1.2 pF capacitor in series and a 2.2 nH inductor in shunt on the feed side.

TECHNICAL REPORT

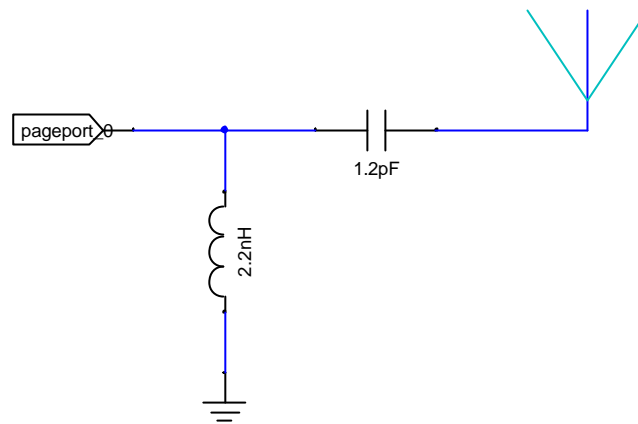| Prepared by	Approved by	Date (last revision)	Doc. No.	Rev
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Figure 3, optimal matching network for the Rufa antenna

3   Return loss measurement

Return loss is measured with a calibrated network analyser from Advantest.
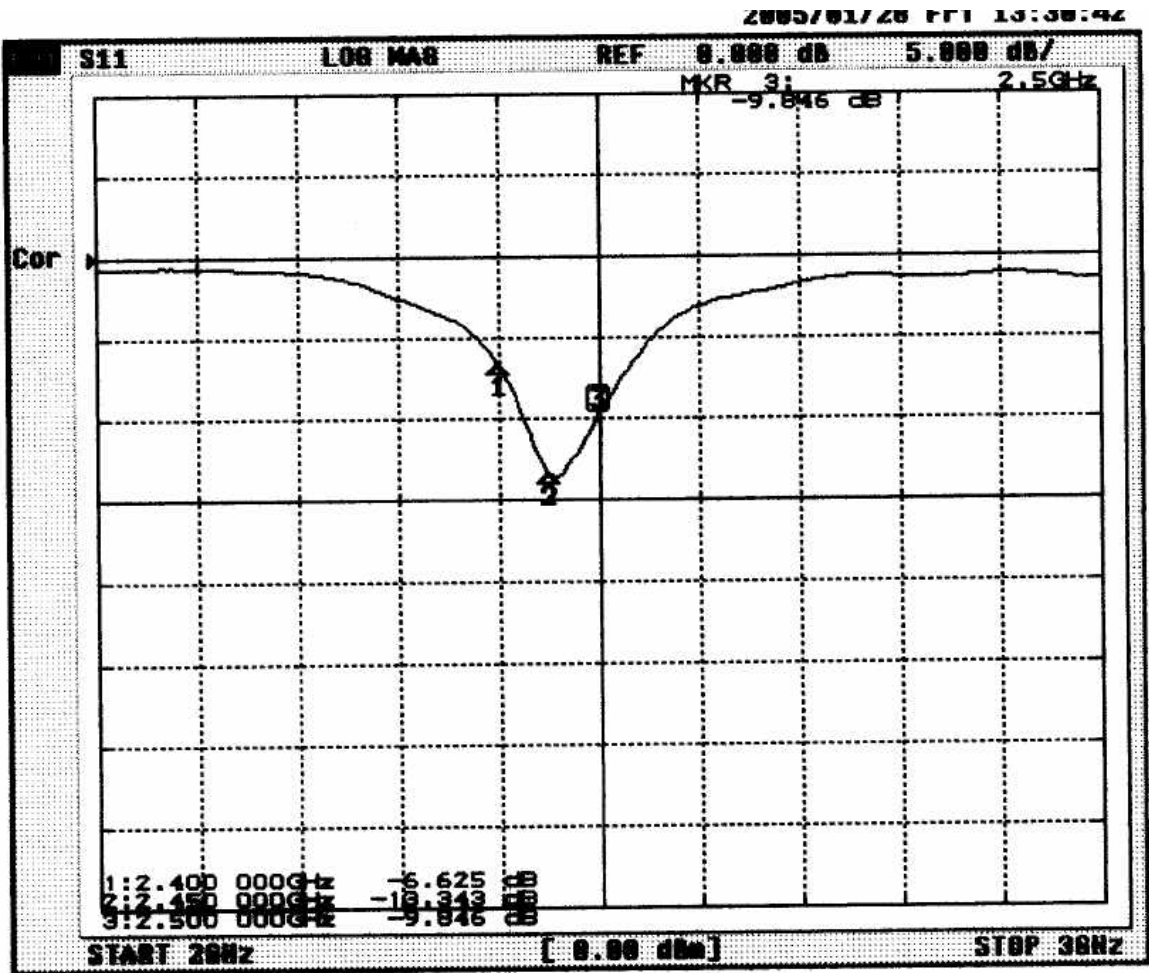
Figure 4, return loss for PCB with antenna and matching network.

TECHNICAL REPORT

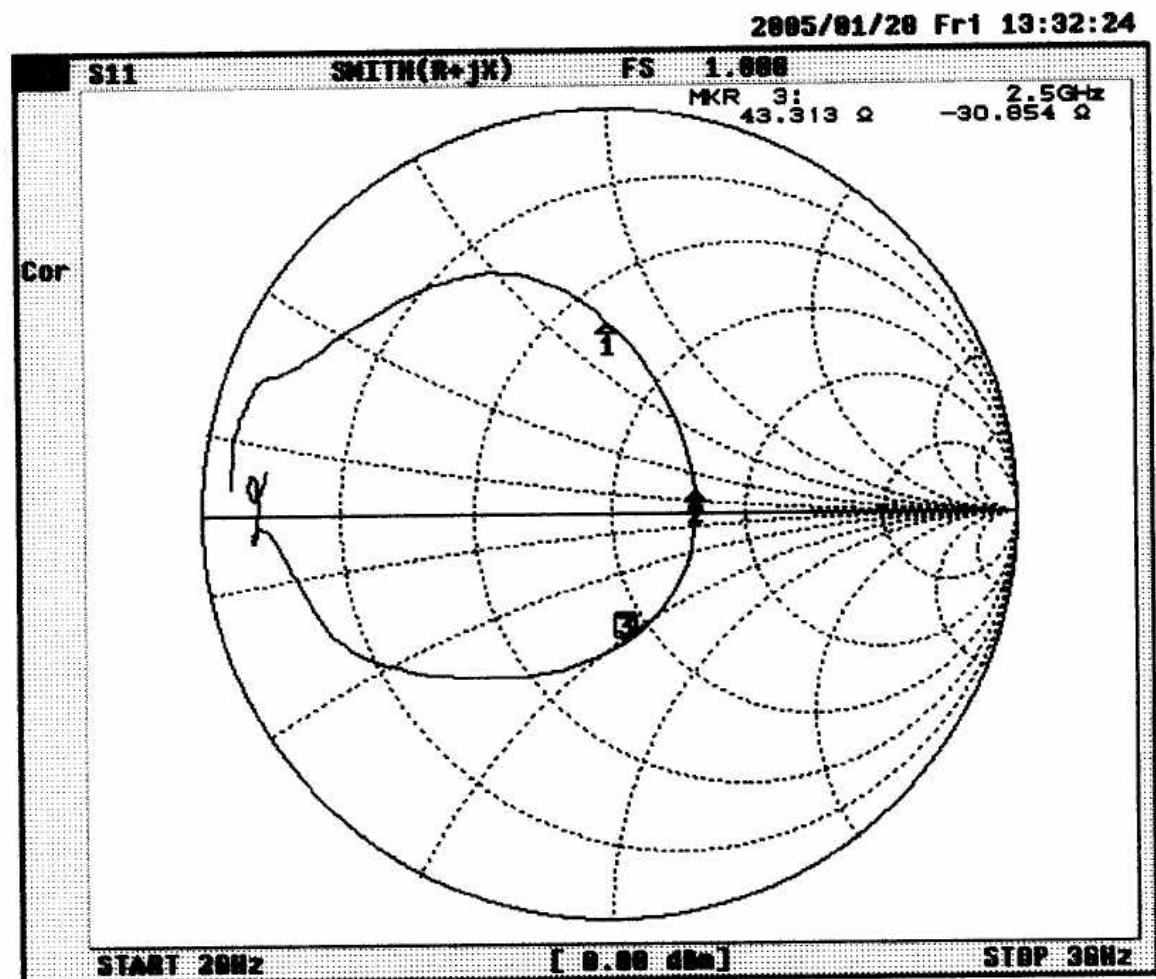| Prepared by	Approved by	Date (last revision)	Doc. No.	Rev
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Figure 5, Smith chart for PCB and antenna with matching network.

4 Efficiency measurement

4.1 Test set-up and antenna orientation

The efficiency are measured in the Perlos 3D near field chamber from Orbit/FR. Please find a schematic view of the chamber in figure 6. The pcb is mounted in the middle of the chamber and then the pcb and antenna are rotating in the phi direction and the two measurement probes are sliding in the theta axis. The efficiency of the test PC board is measured.

TECHNICAL REPORT

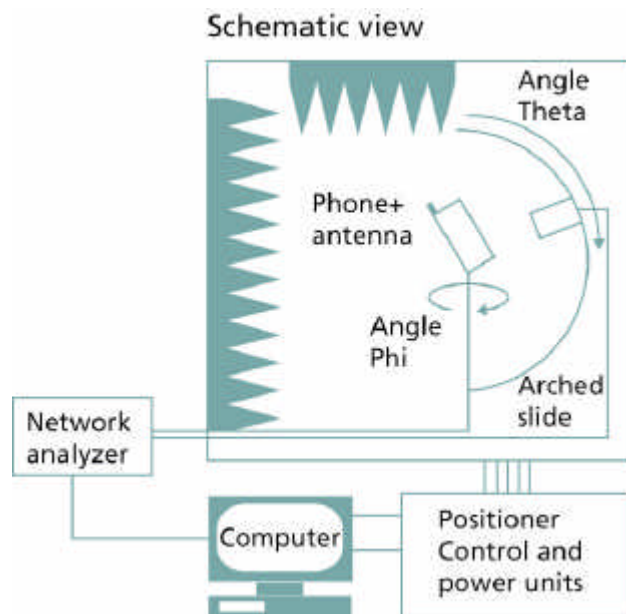| Prepared by Marie Fransson	Approved by Anders Sunesson	Date (last revision) 2005-01-29	Doc. No. AA050004	Rev A
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Figure 6, Schematic view of the Perlos 3D chamber.

4.2 Measurement results

Please find the results in table 1.

Frequency (GHz)	Efficiency (%)	Gain (dBi)	Return loss (dB)
2.40	20	-1.6	-6
2.45	28	0.5	-13
2.50	25	-1.2	-10

Table 1, Measurement results

5 Conclusions

A matching network is done for the Connectblue pcb together with the gigaAnt Rufa antenna. A 1.2 pF in series and a 2.2 nH in shunt on the feed side is used. The efficiency for this pcb+antenna is between 20-30 %. Gain values are between –1.5 and +0.5 dBi.