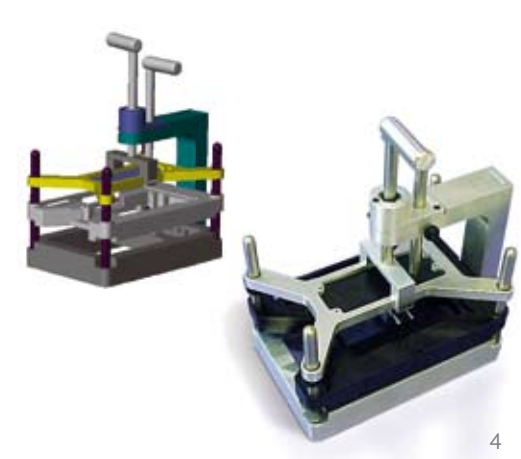


Mechanical engineering and design support

- Reference design mobile handsets
- Industrial design
- Mechanical engineering
- 3D CAD modelling
- 3D illustration and multimedia
- Rapid product development
- Functional prototypes using rapid prototyping
- Integrated electromagnetic shielding
- Bluetooth® optional module
- Development and build of test rigs





DCA acted as the mechanical engineering and design authority for Lucent Technologies over a two-year period. Lucent (now Agere Systems) produce mobile telephone chip sets and their aim was to develop an approved reference design that could be picked up by third parties. This reference design consisted of a fixed electronic hardware design and a fixed internal mechanical layout. This combination was proven functionally and subjected to all the necessary approvals testing. Phone manufacturers could then pick up this fixed internal design and encapsulate it in their own external styling. Using this approach they could guarantee the handset functionality without the normal extended development programme and short cut the lengthy approvals process. Hence they could bring new handset designs to market within very short time frames.

DCA's first task was to advise Lucent's electronics team on PCB layout, fixing positions and component placement in order to

optimise visual design flexibility. The aim was to ensure that the widest possible range of different visual treatments for the casework could be accommodated by the single fixed PCB and internal mechanical design.

Examples included the use of the reference design with a range of display sizes and formats, alternative key mat technologies and layouts, and different battery arrangements.

We then moved on to develop the internal mechanical design. Test rigs were produced to prove the design and gain industry approvals for the commercial use of the reference design.

The mechanical geometry, tolerances and materials were tightly defined in a detailed package of information which was supplied to third party handset manufacturers to allow them to develop new products using the Lucent reference design.

Finally, to prove the principle of this approach, we developed a number of complete handsets based on the reference designs. A total of 75 fully functional, representative prototypes of two selected designs were produced by DCA. These were presented at CeBIT and subsequently used extensively by the Lucent sales team to promote the reference design approach. A number of Far Eastern manufacturers have launched handsets built around the Lucent reference design.

"I would like to take this opportunity, now that the work is all but complete, to say thanks for the hard work that was put in to this project, and that, without exception, everyone who has seen and worked with the design integration has been complimentary."

Marc Hammond, GSM Systems Engineer, Agere Systems

1. Finished handsets as shown at CeBit
2. Prototype parts, allowing build of 75 handsets
3. CAD modelling of assembly, including Bluetooth® module
4. Test rig CAD model and prototype