

Professional Radio Development



Cambridge Consultants has specialist expertise in the design and development of professional radio systems. With a world-renowned wireless design team based in Cambridge UK, Cambridge Consultants has a long track record in implementing professional radio systems that have been based both on standardised radio protocols such as GSM, PCS, WCDMA and DECT, as well as proprietary protocols developed for custom applications.

Combining a capability spanning from initial concept definition through to introduction to manufacture, with a rigorous ISO9001 registered design process and state-of-the-art design and development facilities, Cambridge Consultants' designs meet the demanding performance, reliability and quality requirements that are essential in a professional environment.

Cellular Communications

3G Basestation Power Amplifier Design

Wishing to increase performance whilst reducing the cost of an existing 3G power amplifier solution, a tier 1 cellular infrastructure client employed Cambridge Consultants to inject new ideas into their development. The solution needed to consider new architecture and technology options whilst fitting within various system-level constraints of the existing transceiver. The project resulted in a solution that provided our client with significant efficiency improvements with no compromise in linearity performance, as well as an overall cost reduction.

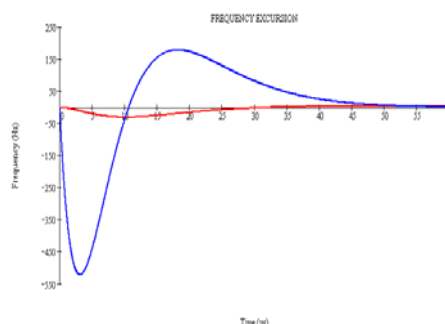
Basestation Architecture Design

Given the high cost of basestation hardware and site acquisition, a Tier 1 infrastructure manufacturer wished to reduce the cost of their solution by separating the basestation transceiver and antenna from the remainder of the system. By way of this separation, common basestation units could be used with remote transceiver modules at the antenna site, thus reducing infrastructure cost in areas of dense subscriber traffic. Cambridge Consultants established the optimum point of division for the new system and then developed

the necessary hardware and software to enable the link. Incorporating fibre optic technology, the solution provided a 50Mbit/s data rate over a 0.5km cell size and provided our client with significant competitive advantage.

Power Amplifier Technology

In partnership with a leading power transistor semiconductor manufacturer, Cambridge Consultants is contributing to the development of next generation power transistor technology that will exhibit higher efficiency, linearity and operating impedances than existing technologies. Through Cambridge Consultants' significant power amplifier design expertise and by performing extensive performance analysis versus other technologies, our client is able to make informed decisions regarding the technology development.



Fast-Hopping Synthesisers

Our client, a leading manufacturer of ASICs and sub-systems for wireless handsets and infrastructure, wished to cost reduce their existing fast-hopping synthesiser solution. Their existing 'ping-pong' solution incorporated a pair of synthesisers, of which one output was used whilst the other was being switched. Building upon previous work in this area, Cambridge Consultants were able to initiate a rapid development that replaced this paired arrangement with a single fast-hopping synthesiser that met the stringent switching time and phase error specifications, whilst reducing the solution cost and circuit area by more than half.

Air Traffic Control



Over a twelve year partnership, Cambridge Consultants has been developing high performance radio technology for Park Air Electronics (PAE). Meeting some of the highest performance and quality requirements in the professional radio industry, initial designs included low-phase-noise fast-hopping synthesisers and high

selectivity tuneable filters that enabled PAE to demonstrate the world's first analogue multi-mode air traffic control radio in the world.



Cambridge Consultants then helped PAE enter the digital era by designing the world's first radio to meet newly created digital air traffic control standards. Incorporating state-of-the-art software radio and patented Cartesian Loop technology, the Cambridge Consultants/PAE design was subsequently selected by ITT to be supplied to the FAA as part of their NEXCOM radio system that will provide the air traffic control infrastructure for the whole of the USA.



Medical Telemetry

Following the reservation of a new frequency band in the USA for medical telemetry applications, our client wished to develop an addition to their product portfolio that took advantage of the reduced radio interference that this protected band would provide. Furthermore,

the new solution needed to improve system capacity and scalability and reduce size and battery life, compared to the existing product range. Cambridge Consultants began by determining the most effective way of using the available frequency spectrum within the program constraints and then identifying the optimum wireless technology to implement this solution. Cambridge Consultants then developed the complete transceiver system and supported the design into volume manufacture. Achieving a very rapid time-to-market and cost-effective solution meant that our client maintained their market leading position.



Digital Intercom

Following a rapid product development, Cambridge Consultants helped Drake Electronics, a leader in the development of high performance VCS solutions for ATC and related applications, to develop the world's first fully-featured, license free, digital wireless intercom. The intercom is intended for

professional applications in the broadcast, theatre, air traffic and other 'command and control' environments, and is poised to set the new standard in communication within these fields. Based on customised DECT technology, the new intercom, marketed by Drake as FreeSpeak®, provides users with digital-audio-quality sound. The device offers all the functions found on a traditional desk mounted intercom, but delivers the benefits of mobility associated with a wireless application. The system also benefits in allowing greater security and safety for those working in vital or sensitive areas such as air traffic control.



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