



# Interference Cancellation

**Command and Control depends on complex communications  
and monitoring systems**

**Chelton miniaturised Interference Cancellation (mINCAN™)  
eliminates mutual interference when radio systems are  
integrated into tactical platforms**

## The Problem

The complexity of modern communications and monitoring systems combines with the compactness of the platforms they are installed on to create a major co-site interference problem. This is made much worse when frequency agile radios and broadband monitoring receivers are involved.



The result is that many receivers will receive levels of interference from co-sited transmitters that cause unacceptable noise levels and some receivers may be driven into blocking.

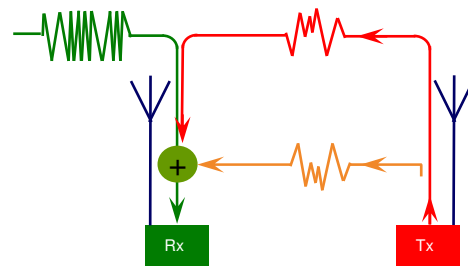
The Chelton **mINCAN**<sup>TM</sup> system has been successfully integrated into Electronic Warfare systems for the US Army, US Navy, Royal Navy and other armed forces. This includes ground, sea and air platforms in the most demanding of tactical deployments.

## The Solution

The principle of Chelton's Interference Cancellation system is deceptively simple:- **the removal of interference by injecting an accurately scaled anti-phase version of the interfering signal.**

The principle is similar to acoustic noise cancellation systems in car phones and hearing aids.

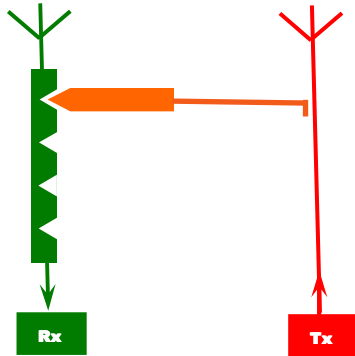
However, **mINCAN**<sup>TM</sup> can handle very high levels of received interference as well as the high speeds of modern frequency agile transmitters.



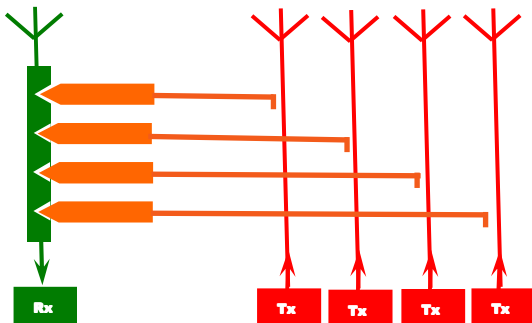
A sample of the signal from the co-sited transmitter is taken using a directional coupler in the transmit antenna feed. It is then scaled in phase and amplitude before being algebraically added to the receive path to cancel out the co-sited interference.

## Modular

The functions of **mINCAN™** are built into self contained modules. This enables systems to be configured for the widest possible range of applications.



The injection into the receive path is carried out by a module that uses only passive components in order to optimise the levels of linearity and noise performance.



Multiple interfering transmitters can be cancelled by allocating a module to each transmitter. This example shows four modules and such a system can be supplied in an enclosure as small as a ¼ ATR equipment case.

## Adaptable

**mINCAN™** is fully adaptive, it does not need a direct interface to the transmitter or receiver. By interfacing only with the antenna feed cables it ensures that installation on new build or legacy platforms is a straight forward process.



The speed of cancellation is extremely high, enabling modern frequency agile waveforms to be handled effectively by **mINCAN™**.



The benefits of high speed cancellation means that cancellation is effective before the interfering signal reaches its full amplitude. This ensures that receiver blocking does not occur.

## mINCAN™ – State of the Art

### The Heritage

The Chelton Interference Cancellation system (Classic INCAN) has been developed and continuously upgraded for more than fifteen years. It has proved itself in both civil and military applications ranging from telemetry systems operating continuously for many years to tactical military systems using high speed frequency hopping.

### The Future

Chelton's new miniaturised Interference Cancellation (**mINCAN™**) system has been achieved through the development of customised silicon chip modules and advanced miniaturisation.



## mINCAN™ – the Benefits

**mINCAN™** reduces interference inside the receive band. Filters have no effect on in-band interference

**mINCAN™** provides a highly linear and broadband receive path which enables broadband receivers and Direction Finders to be protected

**The receive path** is totally passive, which means optimum noise performance and phase linearity

**mINCAN™** is fully adaptive, it does not require an interface with the receiver or transmitter

**High speed** response ensures that receivers are protected against agile and exotic signals

## No other technology provides all these benefits



For further information please contact:-

**Chelton Ltd**  
**Fourth Avenue, Marlow, Bucks**  
**England SL7 1TF**

Tel:- +44(0) 1628 472072  
Fax:- +44(0)1628 482255  
E-mail:- [mk@chelton.co.uk](mailto:mk@chelton.co.uk)