

AlphaFox Systems

The *Crystal Chip* Identification Tag System

Crystal Chip is a patented 'tagging' and reader system, developed by AlphaFox Systems Ltd, which is uniquely able to identify the authenticity of an object to which a tag is attached or incorporated *without* the need to refer to central databases.

Crystal Chip readers are able to automatically verify the authenticity of the tags without any reader prior knowledge of the tags or a need to access databases, etc. Hence reading of the tags can be covert in the sense that no communications links or radio signals are required which may alert those being investigated. Should the application require access to a central database, this can be made additionally at the time of reading the tag and/or later when the hand held reader is returned to base, depending on chosen product options.

The stand-alone capability of the reader is an important practical user feature which makes operational deployment of the system time- and cost-effective.

Crystal Chip is an optical-based system that normally requires close contact to the tag being read. It relies on the creation of a *different* non-reproducible pseudo-random array of 'particles' in each tag which can be illuminated by a reader which detects reflected, refracted, and diffracted components of the multi-wavelength complex 'pattern' and then verifies that the digitised pattern is what it should be. The different patterns look something like a starry sky at night – but with added colour features. It is statistically unlikely that such unique patterns could be accidentally reproduced (typically less likely than a random DNA match) or copied and forged.

The tag 'particles' can be chosen from a variety of materials designed to suit the chosen application, such as:

- ◆ holographic polyester 'jewels'
- ◆ geological materials
- ◆ features within the material of the tagged object itself including voids, etc., and
- ◆ production artefacts which leave a tell-tale 'fingerprint' on the object.

Depending on the application, the tags can be attached to objects being 'protected' or incorporated in them during manufacture. For example, the tags can be included on ID cards, credit cards, etc., along with photographs, biometric data, etc., in order to prove that the cards are genuine. The tags can be a few mm in area and have as many as a billion different 'signatures'. The cost of incorporation can be under a penny per tag.

Crystal Chip provides a unique means to counter fraud and counterfeiting. It has the potential to be used across a wide spectrum of industries including combating identity fraud, product branding in the retail and pharmaceuticals sectors, marking of CDs and the like, tickets, banking cards and banknotes, security printing including official documents, genuine OEM components for aircraft etc., and military applications.

For further information, please contact:

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