G4S Technology Limited
Challenge House
International Drive
Tewkesbury
Gloucestershire GL20 8UQ

Telephone: 01684 850977
Fax: 01684 294845
www.g4stechnology.co.uk

Audit Report – G4S 874 Reader Surveillance

Problem / Issue Identified

An FCC surveillance audit on this product indicated a field strength reading that was in excess of the original test result by 7dB.

History

A batch of 18 prototype, 874 reader, Printed Circuit Assemblies (PCAs), at issue X2, was produced on 17-11-2011.

One of the PCAs was fitted into a reader enclosure and the unit was formally tested on 1-12-2011 with two changes being required. Two 56pF tuning capacitors were required to be changed to 100pF.

Following modification, another PCA from the prototype batch was fitted into an enclosure and submitted for formal testing.

Successful FCC testing was carried out between 11-1-2012 and 18-1-2012 resulting in a report dated 23-02-2012. The FCC submission was made resulting in an FCC Grant dated 26-3-2012

There were some minor changes to the PCA to accommodate manufacturing and mechanical issues.
The changes consisted of small positional changes to 4 components to clear two enclosure back plate support pips and the reset capacitor being changed from an electrolytic to a ceramic to provide extra clearance in the area of a back plate slot in the enclosure.

This PCA was released at issue 3. None of these changes affect the RF transmitter.

The reader submitted for surveillance testing was an issue 3 PCA from Manufacturing.

Investigation

Looking again at the original FCC report, there are no emissions within 20dB of the limits. This does not tie up with pre-compliance scans and leads to the conclusion that there was a fault in the test sample hardware.

The test sample was sent to TRAC Watford for Safety Testing but was subsequently not used for that purpose. It was returned on 30-11-12.

The PCA was examined on 3-12-12 and found not to have been modified accurately. The reader originally submitted was, therefore, not optimally tuned and would have been operating at lower field strength than that intended.

There was an error made in the submission documentation pack in that the original issue X2 BOM was submitted which shows the capacitor as still being 56pF. Normally changes found during test are included in the next release of the BOM which in this case would have been issue P2 and the P2 BOM would have been submitted. Issue P2 was not raised as slots had to be included in the enclosure back plate and this resulted in a move directly to issue X3 of the PCA and the capacitor change was made in the X3 BOM.

Resolution Action

Carry out full FCC testing on the surveillance sample to check if the increased field strength has caused problems elsewhere. A quotation for this work was requested on 26-11-12 and an order placed on 29-11-12.

Testing was carried out between 29-11-12 and 3-12-12 and the sample was found to be compliant as described in the test report TRA-008148-CO029-W-US-2.

Statement

The manufacturer accepts full responsibility for having reviewed the original and the revised test reports for the 874 Reader.

Yours faithfully,

P. A. Cain

Peter Cain
Development Director