

# Parkside Laboratories

GLOBAL TESTING, CALIBRATION & CERTIFICATION SERVICES

◆ ELECTRICAL ◆ EMC ◆ ENVIRONMENTAL ◆

## Laboratory Test Report

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Report No.: 10593-00  
Date Issued: 12 April 2006

**SUBJECT:** Glass mount DAB Band 3 / L Band Antenna  
Low profile GPS/900/1800/3G Antenna


**REQUESTED BY:** Panorama Antennas Limited  
Frogmore  
London  
UK  
SW18 1HF

**INSTRUCTIONS:** Temperature shock testing based on the customer's specifications. For details of the specification used refer to the Results section of this report.


**CONTENTS:** General  
Test Specification  
Date of test  
Description  
Results

**SUMMARY:** The Antennas were subjected to temperature shock testing at Parkside Laboratories and were operationally checked by Smartwave NZ Ltd. Test results in this report in relation to the Glass mount DAB Band 3 / L Band Antenna and Low profile GPS/900/1800/3G Antenna confirmed that the specimens Passed the relevant provisions of the customer's specifications.


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Signatory

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PREPARED BY:

  
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## GENERAL

- a) As detailed in this report, one specimen each of the Glass mount DAB Band 3 / L Band and Low profile GPS/900/1800/3G Antennas was received for testing.
- b) The results detailed in this report are based on the specimens submitted by the customer under Purchase Order Number 283357.
- c) The specimens were tested based on the specifications submitted by the customer.
- d) All testing was carried out under the following environmental conditions, unless otherwise noted:

Ambient temperature	15 °C to 25 °C
Relative humidity	30 % to 60 %
Atmospheric pressure	86 kPa to 106 kPa.

- e) Note: N/R = Not Relevant to design assessed, N/T = Not Tested at manufacturer's request, EUT = Equipment Under Test, DNC = Did Not Comply.
- f) The reported expanded uncertainties ( $U$ ) listed below are based on standard uncertainties multiplied by a coverage factor  $k = 2$ , and define an interval  $\pm U$  providing a level of confidence of approximately 95%.
  - i. Temperature                      -50 – 350 °C                       $\pm 2$  °C

## DATE OF TEST

Testing was completed on 7 March 2006.

## DESCRIPTION

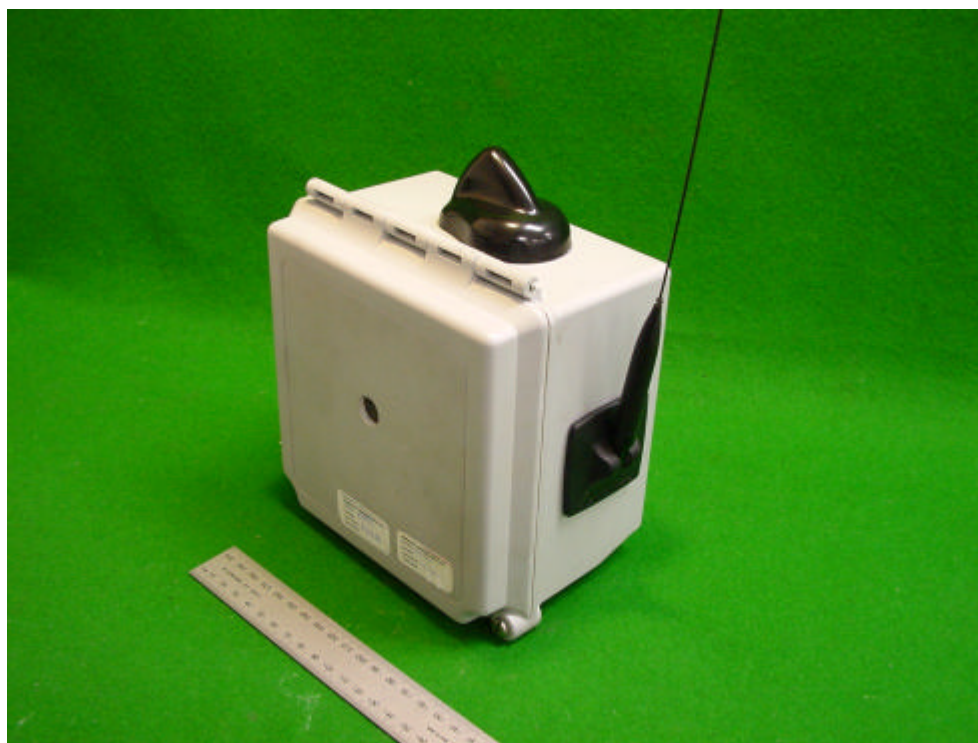
The whip antenna was known as the Glass Mount DAB Band 3 / L Band Antenna (Panorama part number GMDAB3L-5F). It operated in the 224 MHz and L Band (1400 MHz) ranges. The antenna screwed into a pivoting base which was designed to be mounted on a vehicle windscreen.

The Low Profile GPS/900/1800/3G Antenna (Panorama part number GPSF-FF) was a multiband antenna which was also for vehicle use. The unit was enclosed in a plastic case and was fixed directly to the mounting surface.

The antennas were mounted on a grey plastic box for the purposes of testing.

Approximate dimensions [mm]:

Glass Mount DAB Band 3 / L Band Antenna:	L 450 × D 11
Low Profile GPS/900/1800/3G Antenna:	L 70 × W 50 × H 40



**Antenna Mounting Box**



**Glass Mount DAB Band 3 / L Band Antenna**



**Glass Mount DAB Band 3 / L Band Antenna : Screw Mount End**



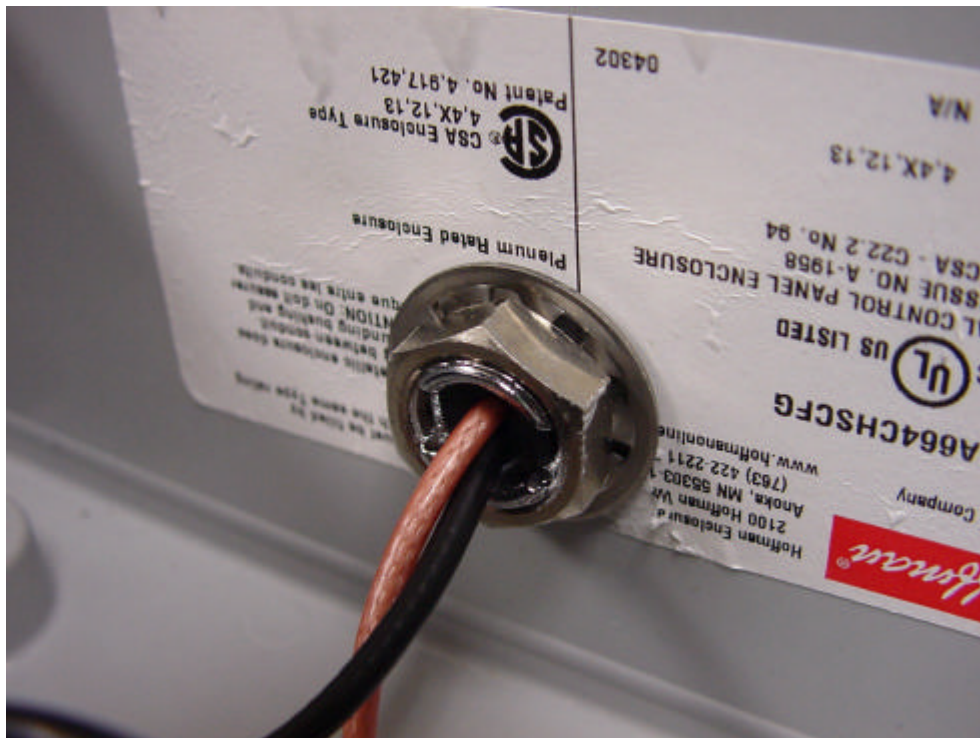
**Glass Mount DAB Band 3 / L Band Antenna : Screw Mount on Box**



**Glass Mount DAB Band 3 / L Band Antenna : Internal Component**



**Low Profile GPS/900/1800/3G Antenna on Mounting Box**



**Low Profile GPS/900/1800/3G Antenna : Internal Component**

## RESULTS: Environmental Test Results

*This testing was performed to the customer specification, which was not known to relate directly to any published standard.*

### SAMPLE CONFIGURATION

The Glass mount DAB Band 3 / L Band Antenna and Low profile GPS/900/1800/3G Antenna were mounted as in use but were not connected to any signal receiving devices.

### TEST LEVELS AND CONDITIONS

#### Test Cycle

The EUT was subjected to the following temperature conditions.

Parameter	Severity
Upper temperature	90 °C
Low temperature	-40 °C
Number of High/low shocks	50
Number of Low/High shocks	50

The chamber air temperature was maintained at the required level (-40 °C or 90 °C) for 30 min to ensure temperature stabilisation of the samples.

#### Test Equipment

Testing was conducted in Parkside Laboratories' Sanyo oven (low temperature) and Thermotron environmental chamber (high temperature).

#### Operational checks

No operational checks were carried out at Parkside Laboratories. Following testing the samples were returned to the customer for a full check.

#### Pre-test conditioning

The mounting box was placed in the Sanyo Oven and the temperature was increased to 90 °C.

## Post-test conditioning

Following testing, the mounting box was removed from the chamber and allowed to stabilise at ambient conditions.

## TEST EXECUTION

The samples were operationally checked by the customer prior to arrival at Parkside Laboratories.

The Antennas were placed in the chamber at ambient conditions, then heated to 90 °C. The temperature was maintained for 30 min before transferring the samples from the oven to the Thermotron chamber (at -40 °C).

The samples were transferred back to the Sanyo oven (90 °C) after a further 30 min and the process was repeated for 49 further cycles. A total of 50 hot/cold and 50 cold/hot thermal shocks were performed in three batches. The mounting box was returned to ambient conditions overnight following the 25<sup>th</sup> and 36<sup>th</sup> cycles. Sample temperature was stabilised at 90 °C each time before continuing.

The time taken to transfer between the two chambers was typically less than 15 seconds. Following temperature shock testing, the Antennas were returned to ambient conditions.

Visual checks were conducted following a return to ambient conditions and no physical damage was observed.

## RESULTS

Following testing, the samples were returned to the customer for a full operational check. The customer confirmed that the Glass mount DAB Band 3 / L Band Antenna and Low profile GPS/900/1800/3G Antenna operated satisfactorily and no detrimental effects were observed as a result of the temperature shock testing.

## **END OF REPORT**