

Parkside Laboratories

GLOBAL TESTING, CALIBRATION & CERTIFICATION SERVICES

◆ ELECTRICAL ◆ EMC ◆ ENVIRONMENTAL ◆

Laboratory Test Report

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Report No.: 10594-00
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: Water tightness 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 water tightness 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.


APPROVED BY:


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Signatory

TESTED BY:


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Compliance Engineer

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 Antenna and Low profile GPS/900/1800/3G Antenna 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%.

DATE OF TEST

Testing was completed on 21 February 2006.

DESCRIPTION

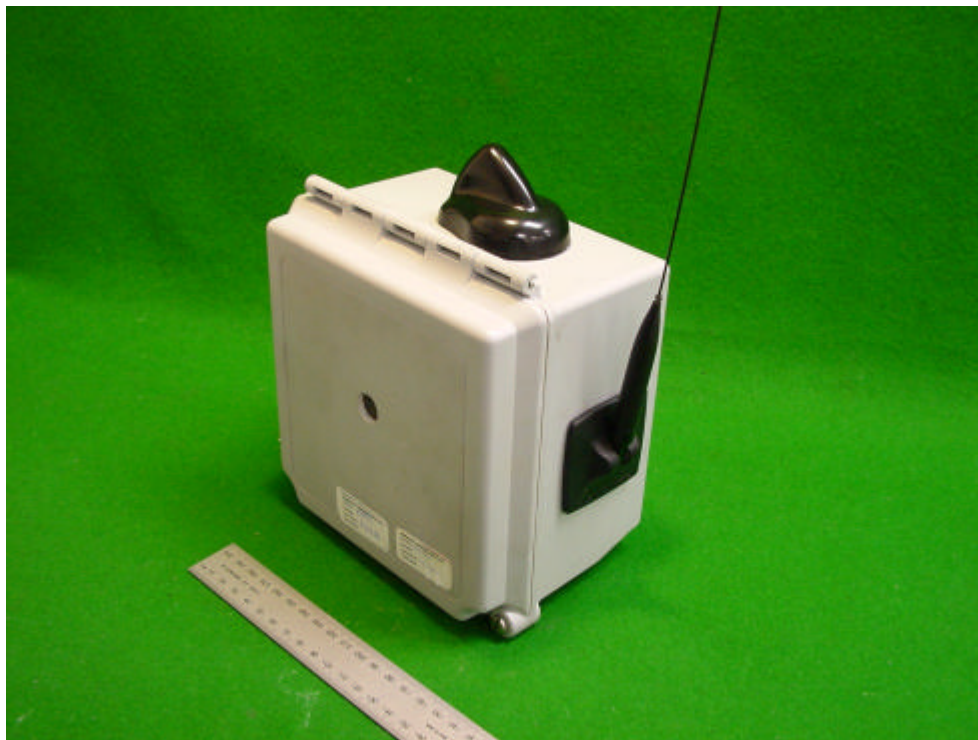
The whip antenna was known as the Glass Mount DAB Band 3 / L Band Antenna (Panorama part number GMDAB3L-5F). It operated in the 224 MHz and L Band (1400 MHz) ranges. The antenna screwed into a pivoting base which was designed to be mounted on a vehicle windscreen.

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



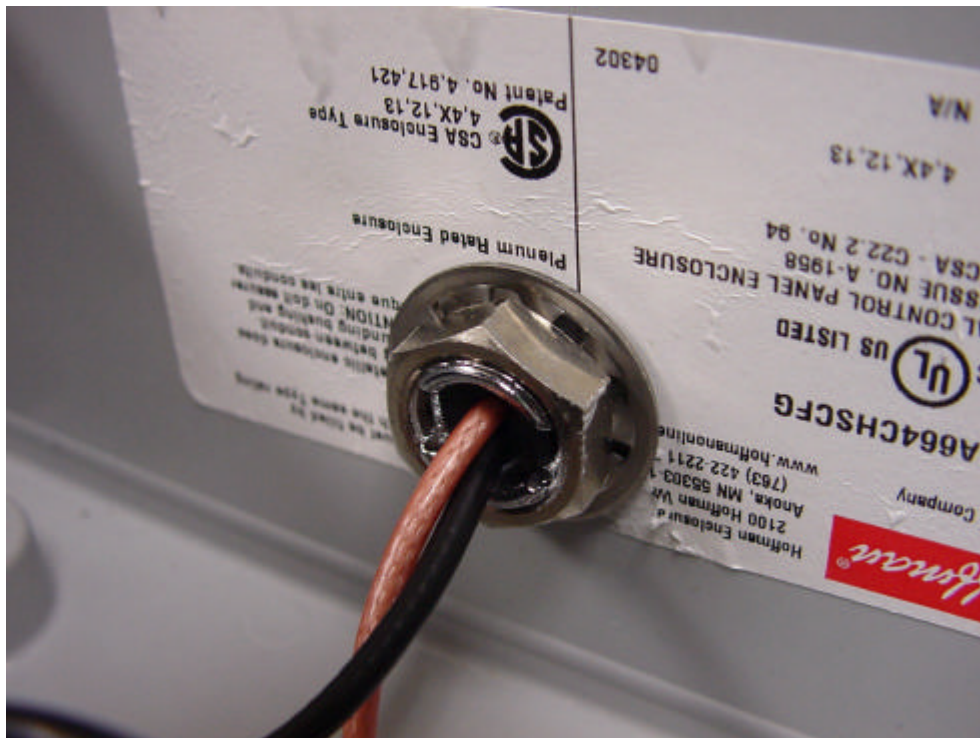
Glass Mount DAB Band 3 / L Band Antenna : Screw Mount on Box



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 submersed in water as follows:

Depth	Duration
1 m	3 hr

The water was not temperature controlled and was between 10 °C and 20 °C during testing.

Test Equipment

Testing was conducted in Parkside Laboratories' immersion tank.

Operational checks

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

TEST EXECUTION

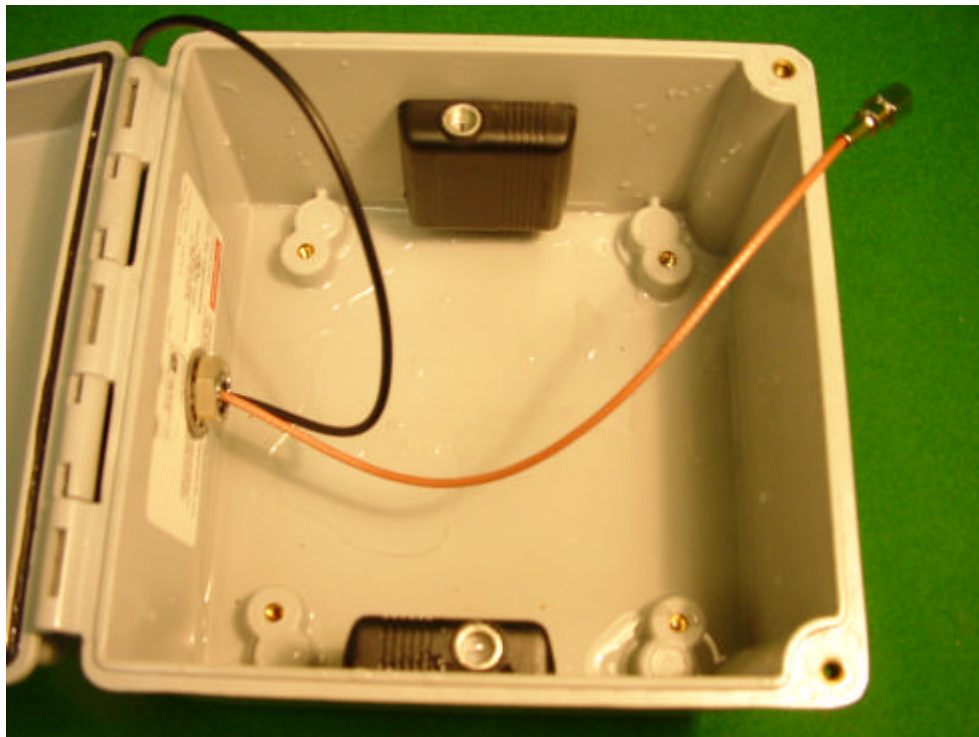
The samples were operationally checked by the customer prior to arrival at Parkside Laboratories.

The mounting box was held in the immersion tank at a depth of 1 m for 3 hours before being removed and wiped dry.

Visual checks were conducted following immersion. The mounting box was opened to investigate the extent (if any) of water ingress.

RESULTS

Significant water ingress was observed in the mounting box (as pictured). It was not thought that the water had entered through the antenna assemblies (box seal not under test). 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 water immersion.



Interior View Showing Water Exposure to Internal Antenna Parts

END OF REPORT