

# Mobile GPS Antenna with LNA

## MODEL: GA-25

Compact & Sensitive GPS antenna with Excellent Signal Amplification for Mobile Applications



- High performance
- Out-band filtering & rejection
- Fully waterproof
- Voltage: 2.5 V ~5.5 V DC
- Provides excellent signal amplification

**GA-25** is the integration of a high performance GPS patch antenna and a state-of-the-art low noise amplifier into a very low profile/ extremely compact/ fully waterproof enclosure which, when connected to a GPS receiver with 2.3~5.5V DC antenna power, provides excellent signal amplification and out-band filtering & rejection, provide 3V or 5V input Voltage is available.

### FEATURES:

- Compact Construction/ Low Profile/ Fully Waterproof
- Magnet and Screw Mount Base
- Excellent Temperature Stability
- Low Noise Figure
- High Sensitivity

### APPLICATIONS:

- Automobile GPS
- Bluetooth Receiver
- Car Tracking Navigation System
- AVL / Fleet Management Systems
- External Antenna for Handheld GPS
- External Antenna for PDA Navigator

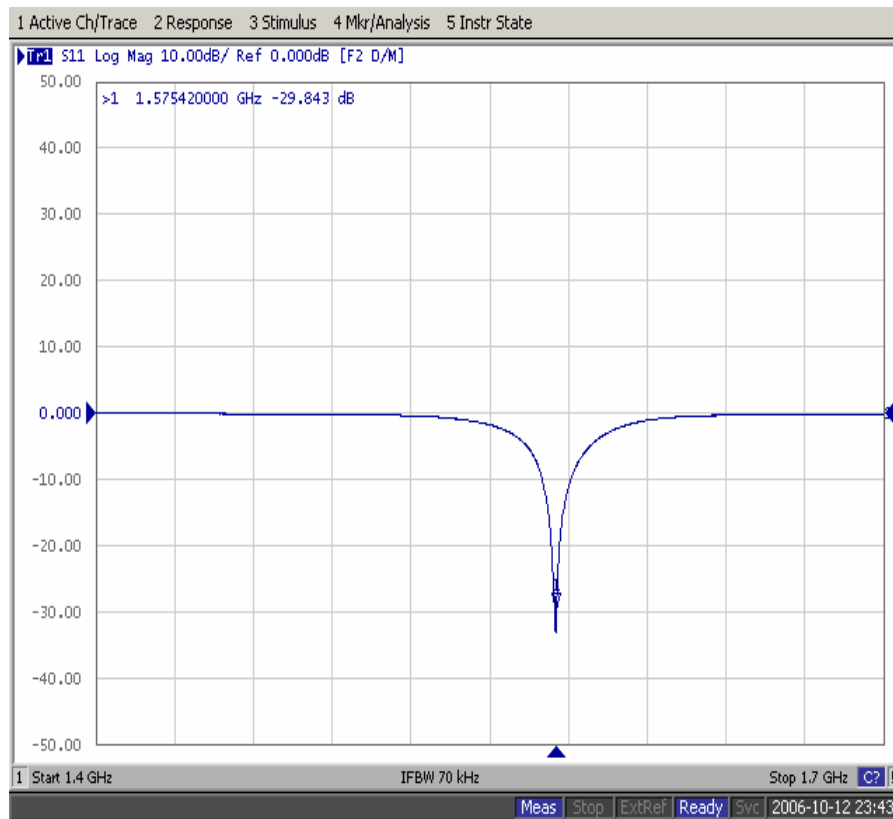
### SPECIFICATIONS:

Physical Condition	
Construction	Polycarbonate- radome at top, die-cast shell at bottom/ rubber gasket for water seal in between
Dimension	45.5mm (L) x 34.2mm (W) x 15mm (H)
Weight	80 grams (excluding cable & connector)
Standard Mounting	3M / Magnet mount (Optional)
Optional Mounting Plate	customized metal sheet
Environmental Conditions	
Operation temperature	-40°C to +85°C
Storage temperature	-40°C to +100°C
Relative Humidity	95% non-condensing
Cable & Connector	
Cable	5 meter RG174/U (standard) cable, other length available

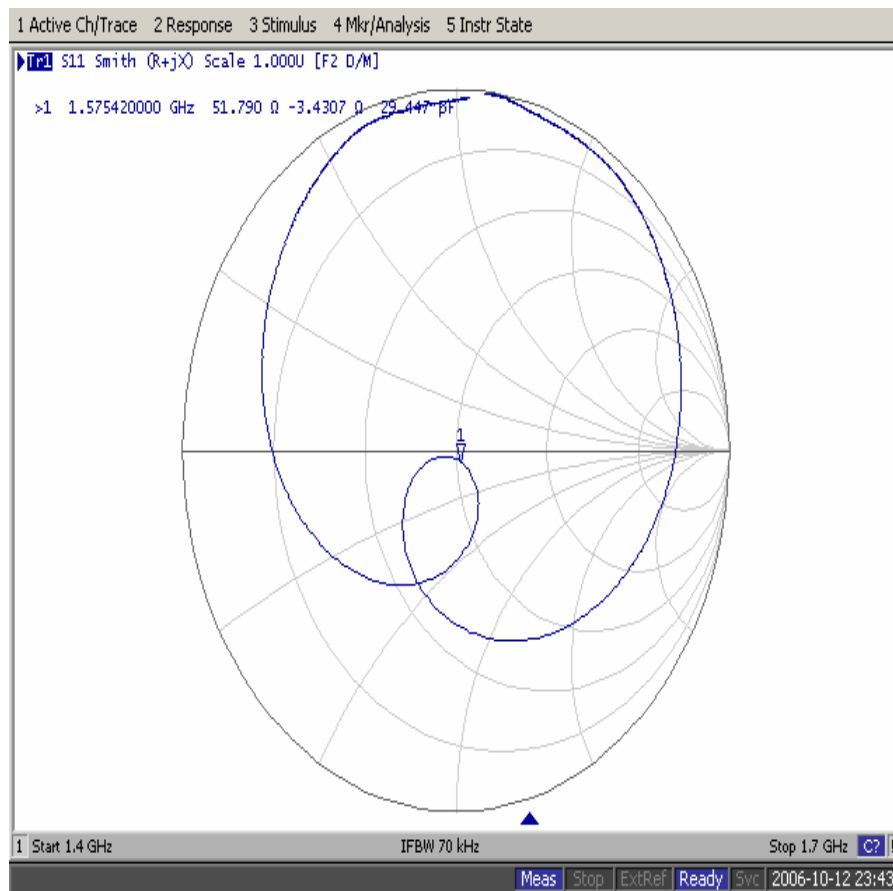


# Return loss and Smith Chart for Ceramic Path:

## 1. Return loss

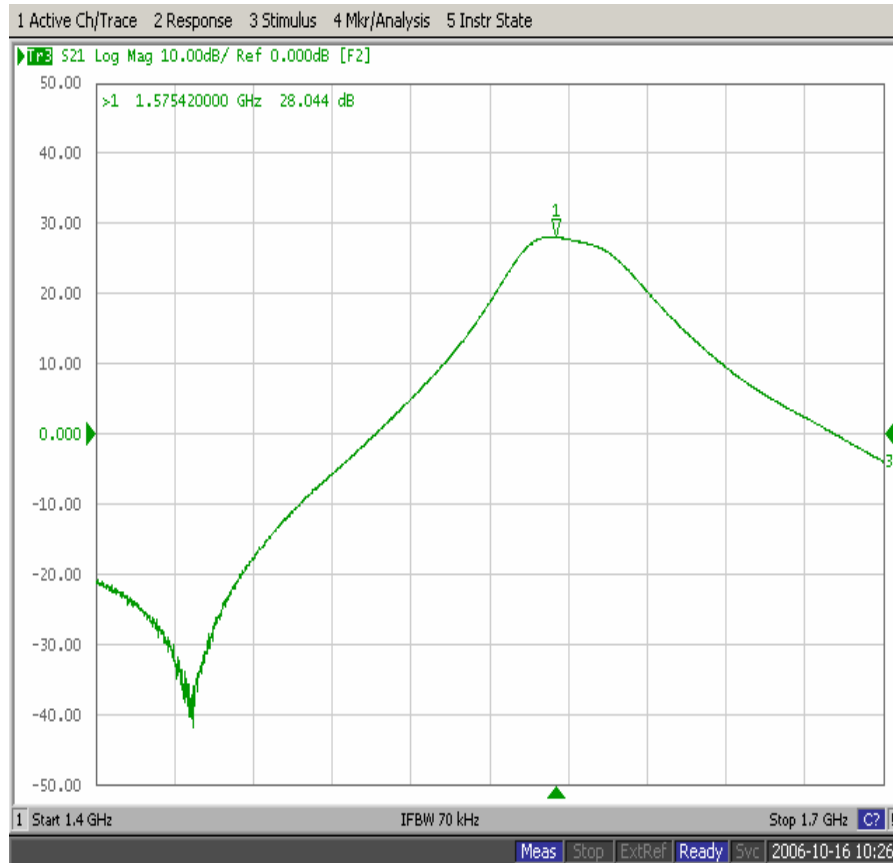


## 2. Smith Chart

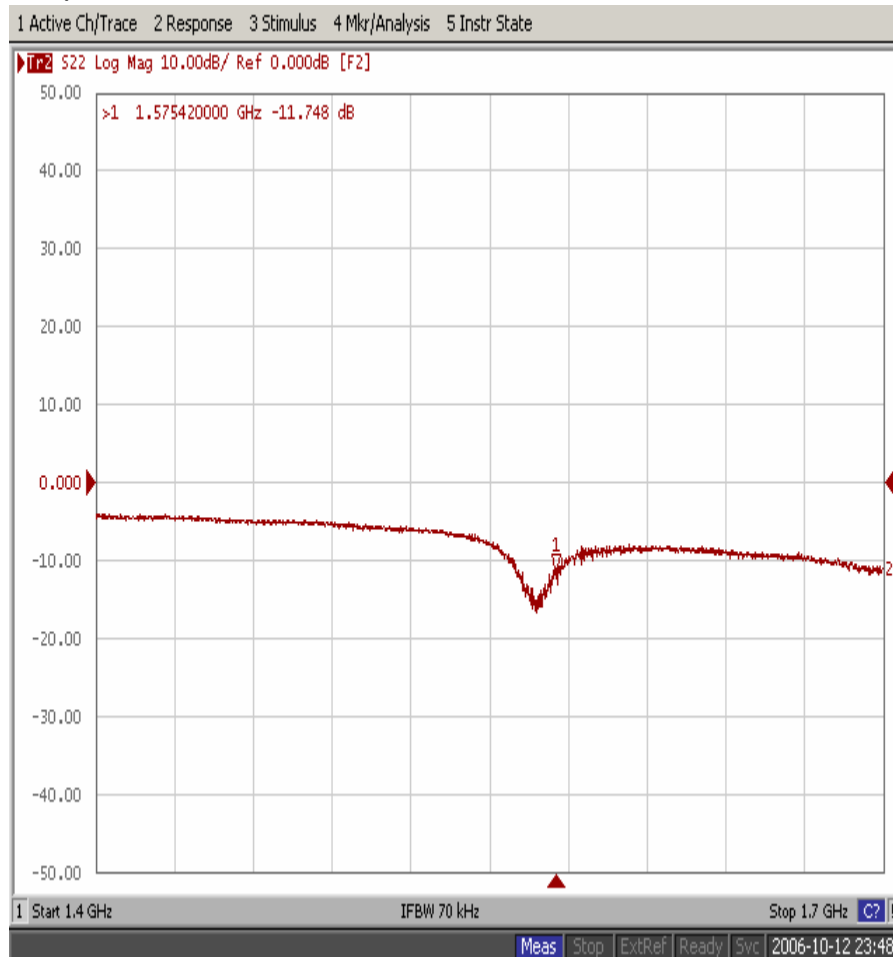


# Insertion Gain and I/O Reflection Coefficient for LNA:

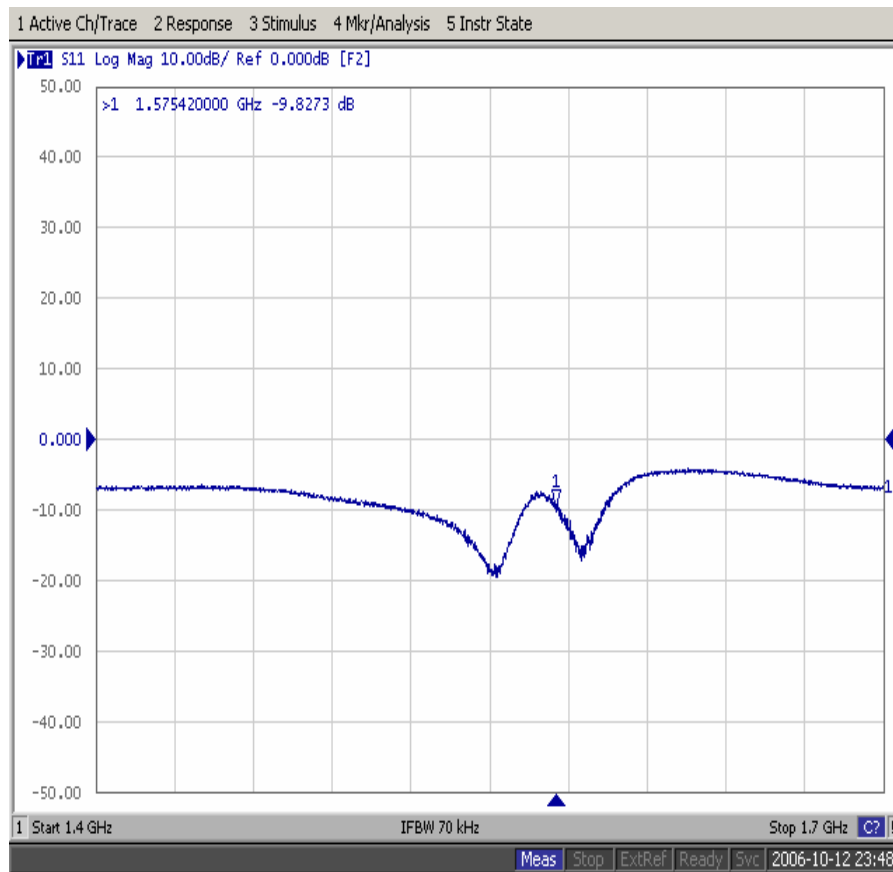
## 1. LNA Insertion Gain



## 2. LNA Input reflection Coefficient

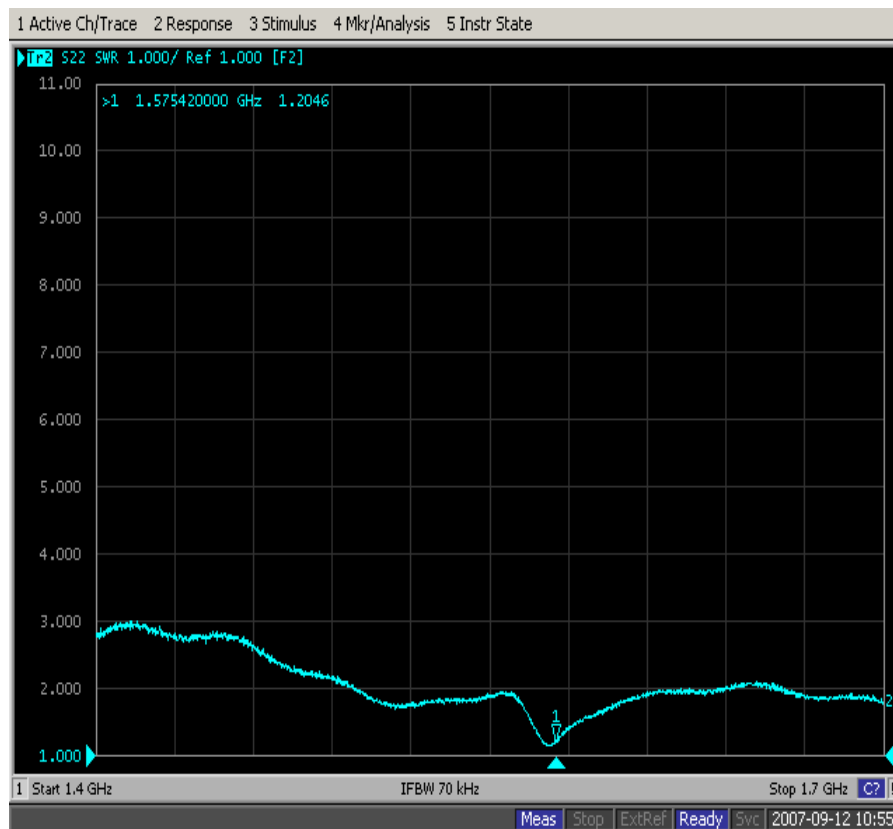


### 3. LNA Output reflection Coefficient

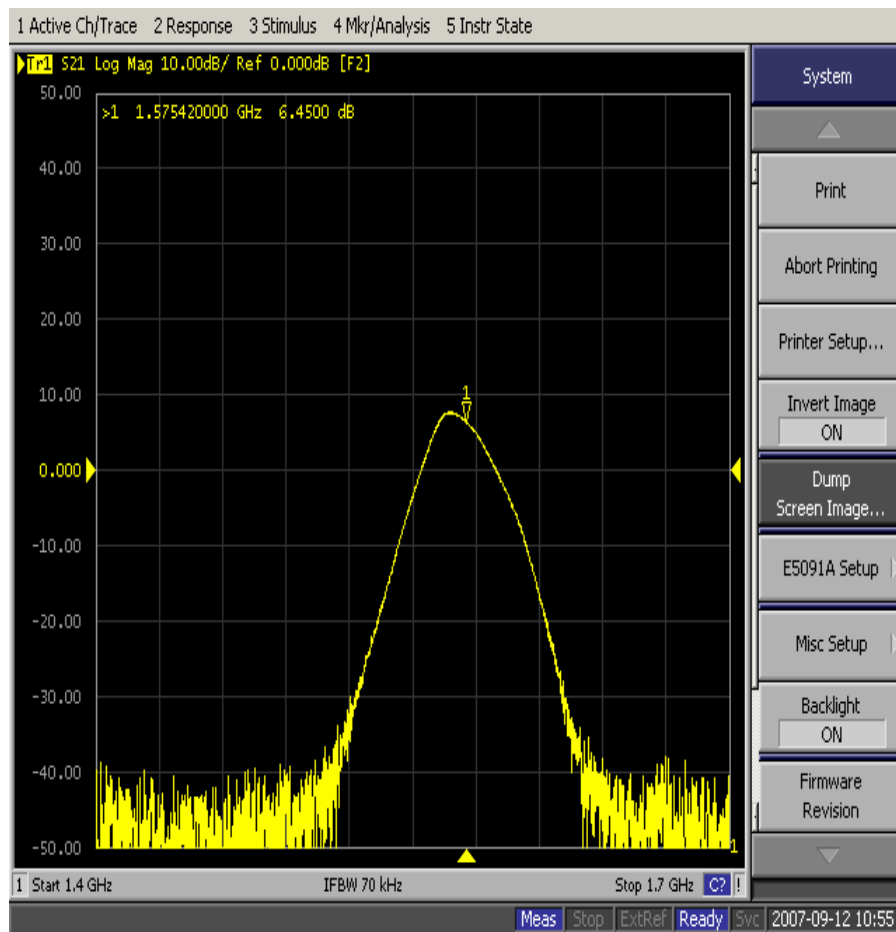


## Active Antenna Module:

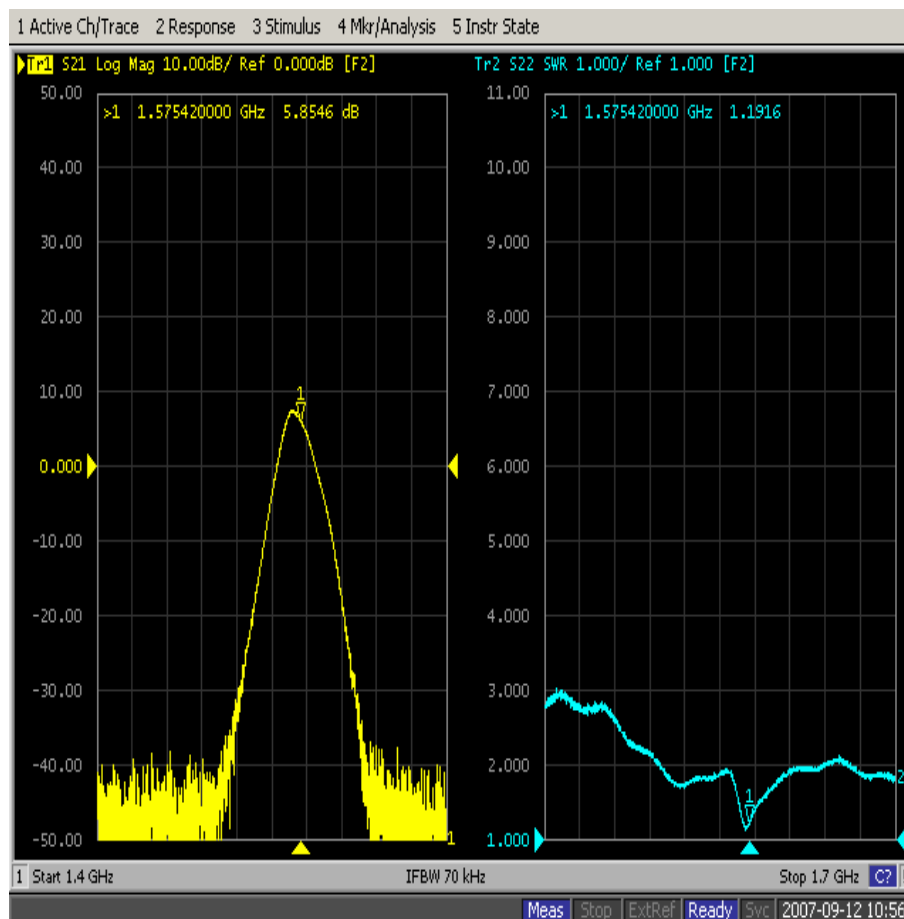
### 1. Output VSWR



## 2. Active antenna Gain



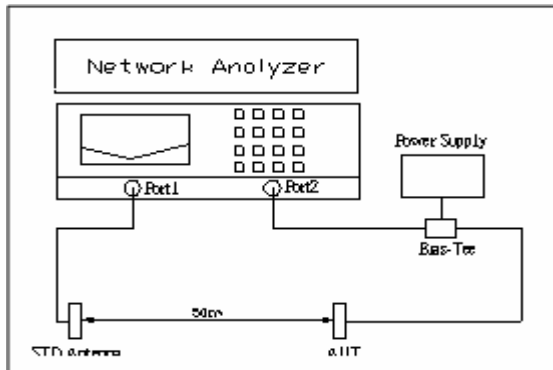
電性檢驗量測定義 (用 70x70 金屬平面作為地時測試)



S-parameter	Highest	Lowest
S21(dB)	11	5

Note: 50 cm measurement S21 > 5dB Pass

VSWR	$\leq 2$
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**Network Analyzer:**

**Power: -40Db**

**Power Supply:**

**Voltage: 5V Current: 100mA**

✳AUT: Antenna on 70x70mm metal pillar

## IEC/EN 60529 IPX8 continuous :

 <p style="text-align: right;">Report No. : HS101201 Version : A</p> <h3 style="text-align: center;">CONTINUOUS IMMERSION TEST REPORT</h3> <p>Company : Falcon International Technology Co., Ltd. Address : No.127,Cyong Lin S.Rd, Sinihuang City,Taipei Taiwan Model Name : GPS Antenna Date Received : DEC 09, 2010 Date Tested : DEC 09, 2010</p> <p><u>TESTING LABORATORY IS ACCREDITED BY:</u> IEC/IECQ 17025 certificate of independent test laboratory approval Certificate No. : T1091 ISO 17025 accredited in respect of laboratory is approved by TAF Certificate No. : L0835-090819 ISO 9001 certificate is approved by TUV CERT certification body of TUV NORD Cert Gr</p> <p><u>WE HEREBY CERTIFY THAT:</u> The test(s) shown in the attachment were conducted according to the indic procedures. We assume full responsibility for the accuracy and completeness of f tests and vouch for the qualifications of all personnel performing them.</p> <table border="1" style="width: 100%;"> <thead> <tr> <th></th> <th>Name</th> <th>Signature</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>Test Engineer</td> <td>Ethan Chen</td> <td><i>Ethan Chen</i></td> <td>Dec 10, 2010</td> </tr> <tr> <td>Manager</td> <td>General Lee</td> <td><i>General Lee</i></td> <td>Dec 10, 2010</td> </tr> </tbody> </table>		Name	Signature	Date	Test Engineer	Ethan Chen	<i>Ethan Chen</i>	Dec 10, 2010	Manager	General Lee	<i>General Lee</i>	Dec 10, 2010	 <p style="text-align: right;">Report No. : HS1012 Page 3 of 5</p> <h3>2. CONTINUOUS IMMERSION TEST</h3> <h4>2.1 TEST EQUIPMENT</h4> <table border="1" style="width: 100%;"> <thead> <tr> <th>Model</th> <th>Calibration Date</th> </tr> </thead> <tbody> <tr> <td>ETL-L180 Water Leakage Test Chamber</td> <td>NCR</td> </tr> </tbody> </table> <h4>2.2 LABORATORY AMBIENCE CONDITION</h4> <p>Temperature : 23±3°C Relative humidity : 66%±3% (RH)</p> <h4>2.3 REFERENCE DOCUMENT</h4> <p>The test refers to IEC/EN 60529 IPX8 continuous immersion Test Protected.</p> <h4>2.4 TEST CONDITION</h4> <p>Units are non-operating. The water temperature is +25°C The lowest point of unit is locating 1000mm below surface of the water. The duration of test is 1 hour.</p> <h4>2.5 SUMMARY OF TEST</h4> <p>After testing, visual inspection showed the inner unit was dry (no water permeated into unit) and no functions check requested from customer.</p>	Model	Calibration Date	ETL-L180 Water Leakage Test Chamber	NCR
	Name	Signature	Date														
Test Engineer	Ethan Chen	<i>Ethan Chen</i>	Dec 10, 2010														
Manager	General Lee	<i>General Lee</i>	Dec 10, 2010														
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ETL-L180 Water Leakage Test Chamber	NCR																
 <p style="text-align: right;">Report No. : HS1012 Page 4 of 5</p> <p>Attachment 1 : Photo of units</p> <table border="1" style="width: 100%;"> <tr> <td style="text-align: center;">#1</td> <td style="text-align: center;">#2</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">Front</td> <td style="text-align: center;">Rear</td> </tr> <tr> <td></td> <td></td> </tr> </table>	#1	#2			Front	Rear			 <p style="text-align: right;">Report No. : HS1012 Page 5 of 5</p> <p>Attachment 2 : Photo of continuous immersion test setup</p> 								
#1	#2																
																	
Front	Rear																
																	

# CE/FCC :

## EC DECLARATION OF CONFORMITY - EMC DIRECTIVE -

THINKSTAR TECHNOLOGY CO., LTD.  
3F., No.53, MINQUAN RD., YONGHE CITY,  
TAIPEI COUNTY 234, TAIWAN (R.O.C.)  
(Name / Address)

We herewith declares that the following designated product  
GPS ANTENNA

Model Type: TSAT25, TS615  
(Product identification)

Conform with the essential requirement of the relevant European Directive:  
- EMC Directive: 2004/108/EC

Mounting and connecting instructions defined in catalogues and technical construction files must be respected by the user.  
They are based on the following standards :

- EN 55022: 2006 - Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement.
- EN 55024: 1998+A1: 2001+A2: 2003 - Information technology equipment - Immunity characteristics - Limits and methods of measurement.

MANUFACTURER / IMPORTER

(Surname, forename)  
(Company Stamp)

(Date)



ADVANCED SAFETY PRODUCT  
ASP TECHNOLOGY CORP

No.439, Jhen Clan St., Shulin City, Taipei Hsien, Taiwan 238, R.O.C.  
TEL:886-2-86841136, FAX:886-2-86841142, E-mail: ASPlab@so-net.net.tw, ASP.twn@gmail.com

## VERIFICATION OF CONFORMITY

We Hereby Certify that  
ASP Reference: 10121550

The following mentioned Products have been test in typical configuration by ASP.

Product Type: GPS ANTENNA  
Module Name: TSAT25, TS615  
Applicant: THINKSTAR TECHNOLOGY CO., LTD.  
3F., No.53, MINQUAN RD., YONGHE CITY,  
TAIPEI COUNTY 234, TAIWAN (R.O.C.)

Is in compliance to the European Council Directive 2004/108/EC.

This is to certify on the basis of the tests undertaken. The submitted samples of the above item is considered to comply with:

EN 55022: 2006, EN 55024: 1998+A1: 2000+A2: 2003



Based on the description of the EMC (2004/108/EC) directive, manufacturer or his authorized representative within EC shall affix the CE marking to the products if he ensure the products complies with the relevant standards and draws up a declaration of conformity.

Signed for and on behalf of ASP Technology Corp.

Kevin Ku/ Manager.  
ASP Technology Corp.

Dec 23, 2010  
Date.

The technical report issued by ASP will support you affix the FCC marking.

## FCC DECLARATION OF CONFORMITY - FCC RULE -

We herewith declares that the following designated product

GPS ANTENNA

TSAT25, TS615

(Product identification)

Complies with the requirement of the Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interfaced, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Assessment of compliance of the product with the requirements relating to the FCC Rules was based on the following standards:

FCC Part 15B  
(Identification of regulations standards)

This declaration is the responsibility of the manufacturer / importer

THINKSTAR TECHNOLOGY CO., LTD.  
3F., No.53, MINQUAN RD., YONGHE CITY,  
TAIPEI COUNTY 234, TAIWAN (R.O.C.)  
(Name / Address)

MANUFACTURER / IMPORTER

(Date)

(Surname, forename)  
(Company Stamp)



ADVANCED SAFETY PRODUCT  
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No.439, Jhen Clan St., Shulin City, Taipei Hsien, Taiwan 238, R.O.C.  
TEL:886-2-86841136, FAX:886-2-86841142, E-mail: ASPlab@so-net.net.tw, ASP.twn@gmail.com

## VERIFICATION OF CONFORMITY

We Hereby Certify that  
ASP Reference: 10121551

The following mentioned Products have been test in typical configuration by ASP.

Product Type: GPS ANTENNA  
Module Name: TSAT25, TS615  
Applicant: THINKSTAR TECHNOLOGY CO., LTD.  
3F., No.53, MINQUAN RD., YONGHE CITY,  
TAIPEI COUNTY 234, TAIWAN (R.O.C.)

Is in compliance to the FCC Part 15B/ICES-003

This is to certify on the basis of the tests undertaken. The submitted samples of the above item is considered to comply with:

FCC Part 15B, Subpart B Class B ITE



We assume full responsibility for the accuracy of these data measured. Manufacturer or his authorized representative shall affix the FCC marking to the products if he ensure the products complies with the relevant standards and draws up a declaration of conformity.

Signed for and on behalf of ASP Technology Corp.

Kevin Ku/ Manager.  
ASP Technology Corp.

Dec 23, 2010  
Date.

The technical report issued by ASP will support you affix the FCC marking.