

SPK ELECTRONICS CO., LTD.

SPECIFICATION

PRODUCT NAME : GPS Board/SPK-CM-A31/without housing

DESCRIPTION : RG174/6M/3~5V/SMA/NO SR

SPK ELECTRONICS CO., LTD.
ADD. :10F, NO. 510, SEC. 5 CHUNG HSIAO E. RD.,
TAIPIE TAIWAN
TEL : 886-2-2346-2323
FAX : 886-1-2346-3939
WEB SITE : <http://www.spkecl.com>
E-MAIL : spk@spkecl.com
spktw@ms34.hinet.net

SPECIFICATION FOR GPS ANTENNA WITH LOW NOISE AMPLIFIER

1.0 CONFIGURATION

1.1	RF Cable	RG174 , $\phi 2.7 \pm 0.1\text{mm}$, Black	
		Cable Length	$6\text{m} \pm 5\text{cm}$ NO SR
1.2	RF Connector	SMA(M)	

2.0 SYSTEM

This antenna system consists of two functional blocks, the LNA portion and the patch antenna.

3.0 GENERAL

3.1 ENVIRONMENTAL CONDITIONS

3.1.1	Operation Temperature	-30°C to $+80^{\circ}\text{C}$	
3.1.2	Storage Temperatur	-40°C to $+100^{\circ}\text{C}$	
3.1.3	Relative Humidity	40% to 95%	

3.2 ELECTRICAL SPECIFICATIONS

3.2.1	Input Voltage	Min:2.5V	Max:5.5V
3.2.2	Power Consumption	At 3.0 V	Typ: 13mA. Max: 16mA.
		At 5.0 V	Typ: 18mA. Max: 22mA.

4.0 ANTENNA

4.1	Frequency Range	$1575.42 \pm 1.023\text{ MHz}$.
4.2	Gain	90° : 2.0 dBi Min. 20° : -5.0 dBi Min. Mounted on the 60mm*60mm ground plane.
4.3	Polarization	RHCP
4.4	Axial Ratio	90° : Max 3.0dB Mounted on the 60mm*60mm ground plane.
4.5	Patch Size	$25 * 25\text{mm}$ t = 4mm

6.0 LNA

5.1	Frequency Range	1575.42 ± 1.023 MHz
5.2	Gain	Min:28dB Typ:30dB (+ 25 °C ± 5°C)
5.3	Noise Figure	1.5 dB Max. (+25 °C ± 5°C) 2.2 dB Max. (+85 °C)
5.4	Out Band Rejection	f _o = 1575.42MHz f _o ± 20 MHz 7dB MIN f _o ± 30 MHz 12dB MIN f _o ± 50 MHz 20dB MIN f _o ± 100 MHz 30dB MIN
5.5	Output Impedance	50 Ω
5.6	Output VSWR	2.0 Max

7.0 TOTAL SPECIFICATIONS (Through Antenna, LNA, Cable and Connector)

6.1	Frequency Range	1575.42 ± 1.023MHz
6.2	Gain	At 90° 30 ± 4.5dBi – (cable loss) Note:1 mounted on the the 60mm*60m ground plane
6.3	Output Impedance	50 Ω
6.4	VSWR	2.0 Max

Note 1: Cable Loss = Max.(–1.2dB / m)

8.0 BLOCK DIAGRAM

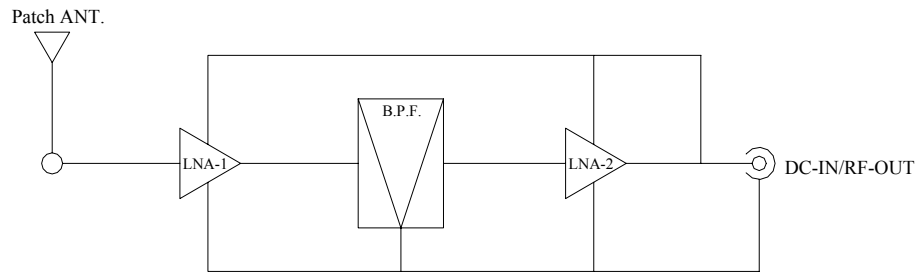


Fig.1

9.0 CAUTIONS

GPS (Global Positioning System) is a satellite-based navigation system. In an unobstructed clear view of the sky, GPS works anywhere in the world, 24 hours a day.

GPS is developed and operated by the government of United States. Under the policy of the government, the degradation in accuracy shall occur without prior warnings, and sometimes satellites don't transmit signal due to adjustment, test, and orbital revision.

Also, please note:

1. products such as motors, computer, and RF devices, which emit high levels of magnetic field and interference, that may cause the performance of the GPS unit to drop.
2. the optimal position during automobile applications is on the roof top of the vehicles. If the GPS antenna unit is to be placed inside the car, be certain to avoid coverage by metal objects for optimal performance.

10.0 OUTLINE

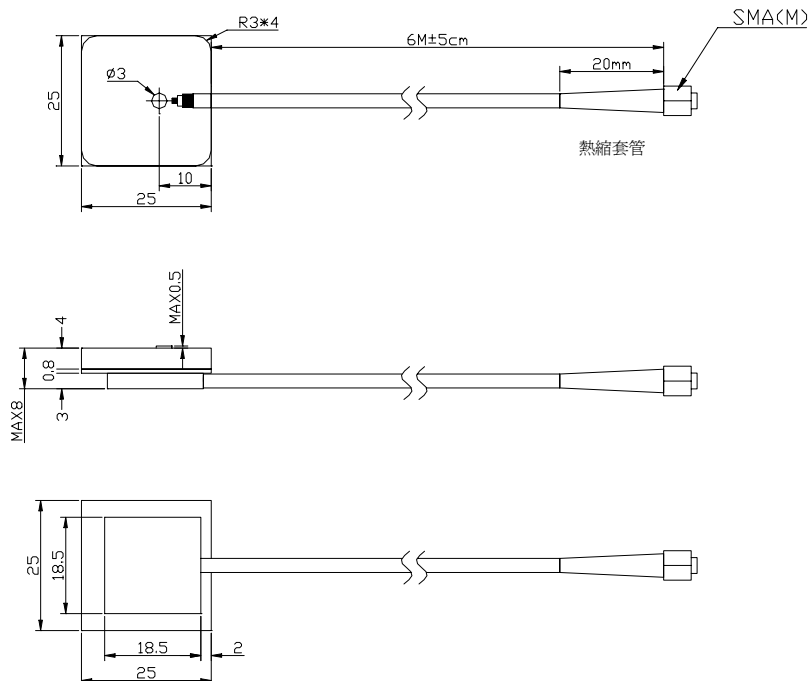


Fig. 2

it:mm

11.0 ANTENNA PATTERN

11.1 H-Plan

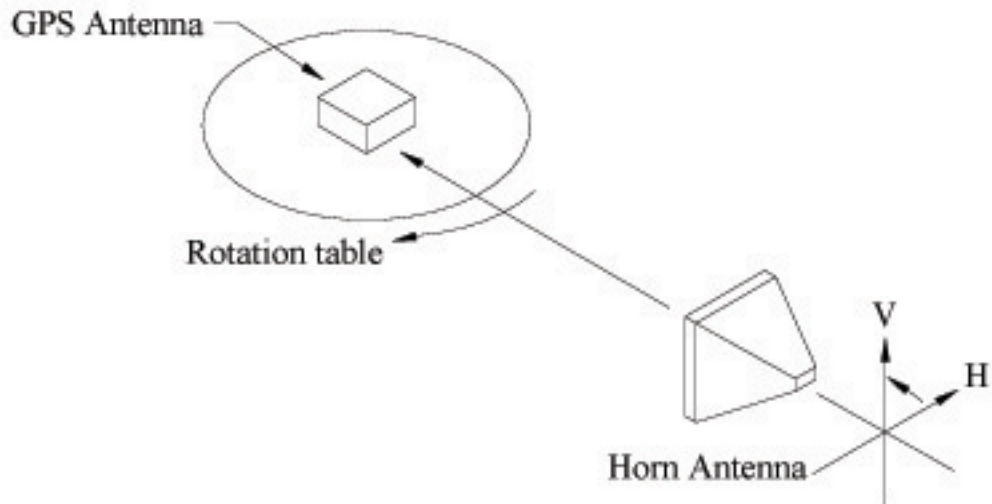
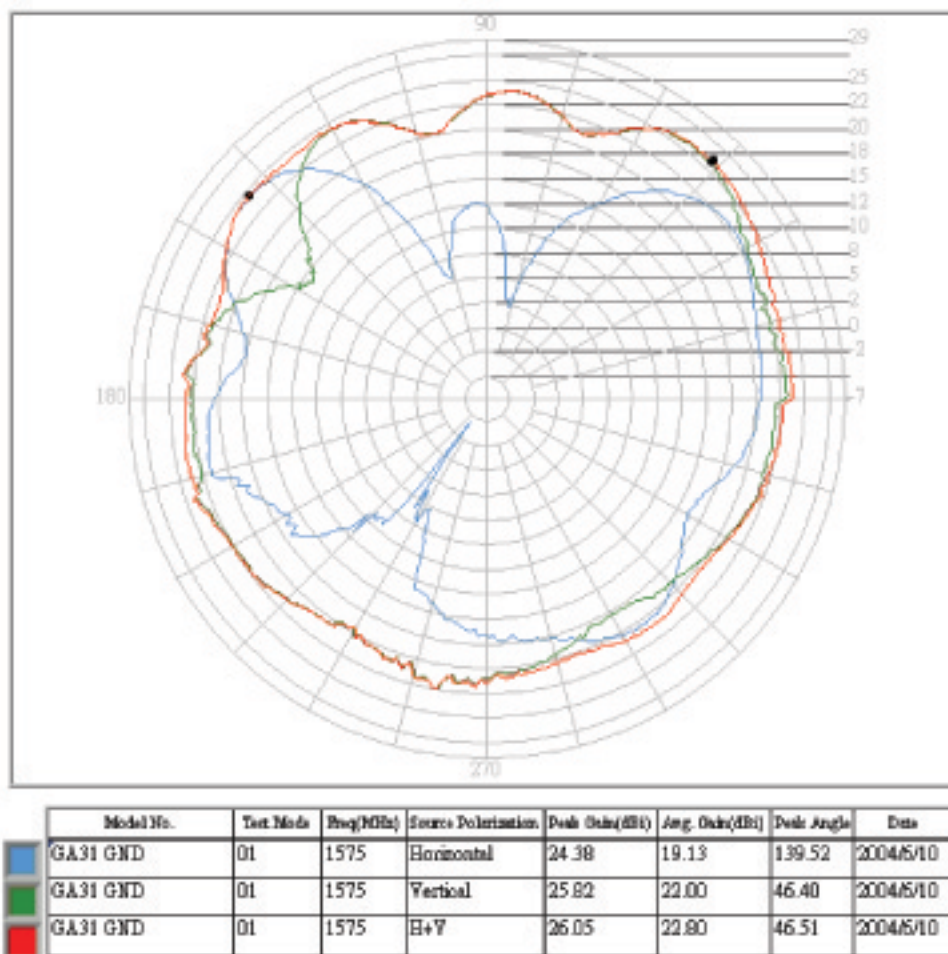


Fig. 3. 5m cable antenna 180°. (at 3.0V)

Antenna Pattern Measurement



11.2 E-plan

GPS Antenna

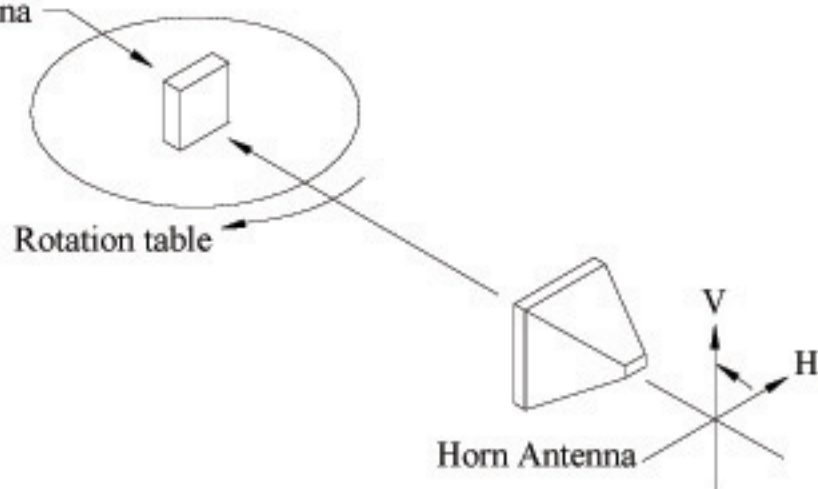
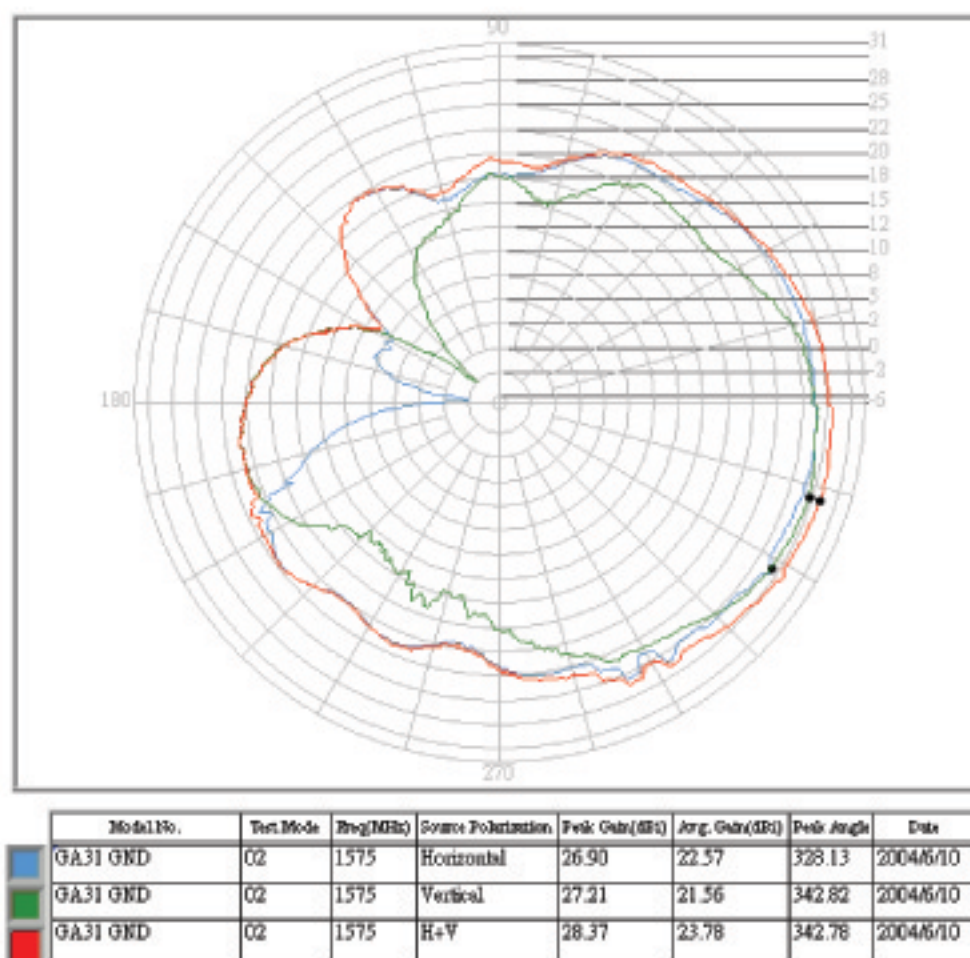


Fig. 4 5m cable antenna 90° (at 3.0V)

Antenna Pattern Measurement



12.0 Package

12.1 100 Units / Carton (Fig. 5)

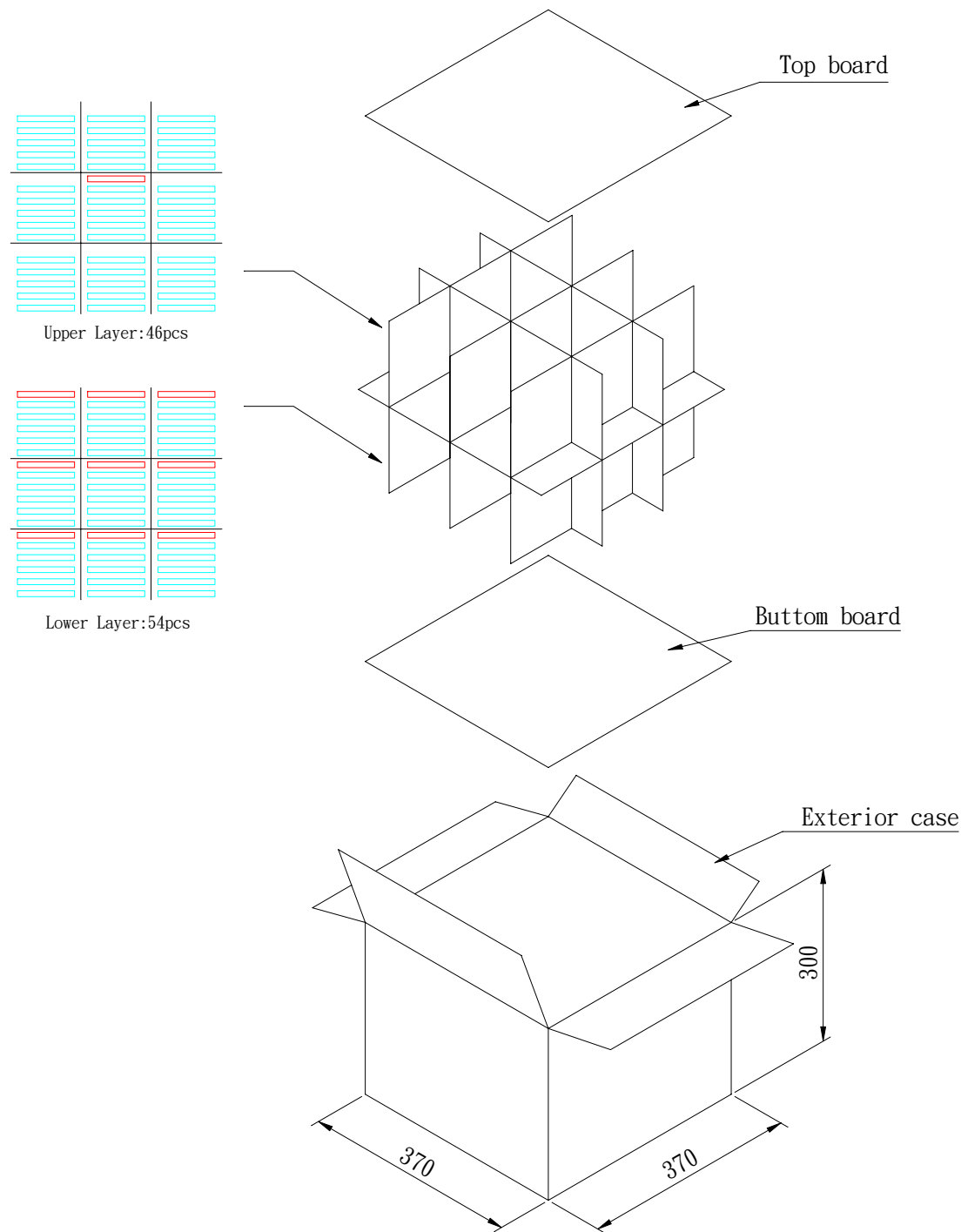


Fig. 5