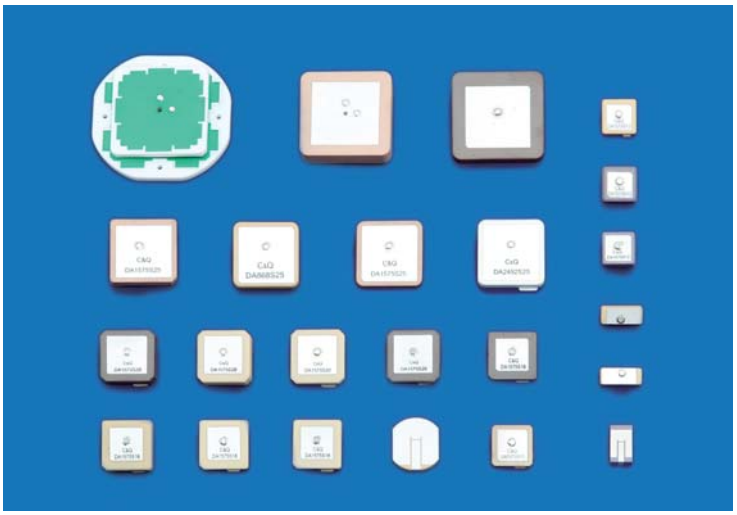
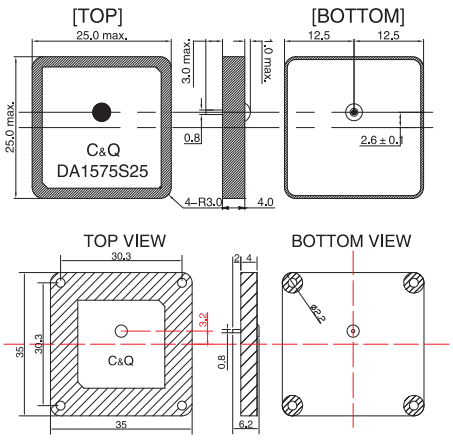
# Dielectric Patch Antenna

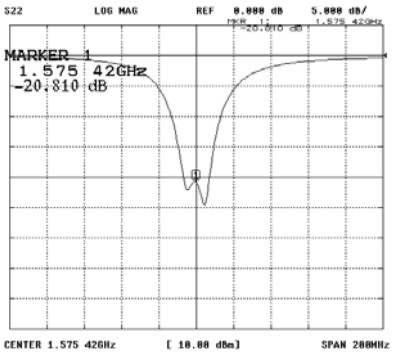
– For miniature antenna element for GPS/Beidou/Glonass/Galileo
– 适用于GPS/北斗/GLONASS/伽利略卫星定位、导航、授时、测量的小型天线元件

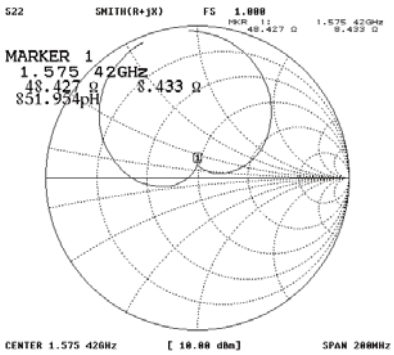


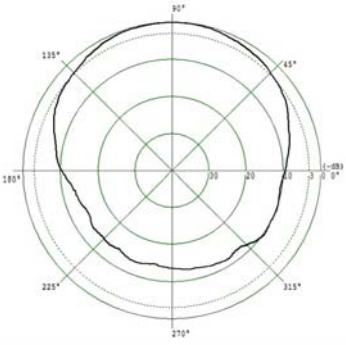
## Dimension (尺寸) ( Unit:mm )




## Typical Characteristic (波形特性)



## ◆ Principal Parameters(主要参数)

| Part No.<br>型号 | Size<br>(mm)<br>尺寸 | Center Frequency<br>(MHz)<br>中心频率 | Band Width<br>(MHz)<br>带宽 | Gain<br>(dBi)<br>增益 | Ground Plane<br>(mm)<br>接地面积 | Application<br>应用 |
|---|---|---|---|---|---|---|
| DA1575S25T45B | 25×25×4.5 | 1575.42 | ≥20 | 5.0 | 70×70 | GPS |
| DA1575S25T4A | 25×25×4 | 1575.42 | ≥15 | 4.5 | 35×35 | |
| DA1575S25T4B | 25×25×4 | 1575.42 | ≥15 | 4.5 | 70×70 | |
| DA1575S25T3A | 25×25×3 | 1575.42 | ≥15 | 4.5 | 35×35 | |
| DA1575S25T2B | 25×25×2 | 1575.42 | ≥15 | 4.0 | 70×70 | |
| DA1575S20T4 | 20×20×4 | 1575.42 | ≥10 | 3.5 | 20×20 | |
| DA1575S20T2 | 20×20×2 | 1575.42 | ≥10 | 3.5 | 20×20 | |
| DA1575S18T4 | 18×18×4 | 1575.42 | ≥10 | 3.0 | 18×18 | |
| DA1575S18T2 | 18×18×2 | 1575.42 | ≥10 | 2.5 | 18×18 | |
| DA1575S15T45 | 15×15×4.5 | 1575.42 | ≥10 | 2.0 | 15×15 | |
| DA1575S15T4 | 15×15×4 | 1575.42 | ≥8 | 1.5 | 15×15 | |
| DA1575S15T2 | 15×15×2 | 1575.42 | ≥8 | 1.0 | 15×15 | |
| DA1575S13T4 | 13×13×4 | 1575.42 | ≥5 | 0.0 | 13×13 | |
| DA1575S13T3 | 13×13×3 | 1575.42 | ≥5 | 0.0 | 13×13 | |
| DA1575S13T2 | 13×13×2 | 1575.42 | ≥5 | 0.0 | 13×13 | |
| DA1575S12T6 | 12×12×6 | 1575.42 | ≥5 | 0.0 | 12×12 | |
| DA1575S12T4 | 12×12×4 | 1575.42 | ≥5 | 0.0 | 12×12 | |
| DA1575S12T2 | 12×12×2 | 1575.42 | ≥5 | 0.0 | 12×12 | |
| DA1575S36T4 | 36×36×4 | 1575.42 | ≥30 | 5.0 | 80×80 | |
| DA1268S25T4 | 25×25×4 | 1268 | ≥10 | 4.5 | 70×70 | 北斗 |
| DA1268S35T4 | 35×35×4 | 1268 | ≥10 | 6.0 | 50×50 | |
| DA1595S25T4 | 25×25×4 | 1595 | ≥10 | 4.5 | 70×70 | |
| DA1595S35T4 | 35×35×4 | 1595 | ≥40 | 6.0 | 50×50 | |
| DA2492S25T4 | 25×25×4 | 2492 | ≥10 | 4.0 | 25×25 | |
| DA2492S35T4 | 35×35×4 | 2492 | ≥50 | 6.0 | 50×50 | |
| DA2450D16 | Φ16 | 2450 | 45 | 2.1 | 50×70 | |
| DA1616S25(Tx) | 25×25×4 | 1616 | ≥10 | 4.0 | 70×70 | W-LAN |
| DA2492S25(Rx) | 25×25×4 | 2492 | ≥10 | 4.0 | 70×70 | Beidou Satellite Position System<br>北斗双星天线 |

Note:The data for reference only, Design it as customer's request.以上参数仅作为参考，可根据用户要求设计。

CAIQIN ELECTRONICS

# Dielectric Patch Antenna

## ◆产品介绍

介质天线在目前卫星导航、定位与授时以及勘测领域中得到了非常广泛的应用，由于介质天线在小体积的条件下就可以得到较大的增益，从而在对体积要求较高的产品中被广泛的使用。
在目前市场上所使用的GPS介质天线大多数是25*25*4mm尺寸的，随着市场上对系统小型化的要求，目前已经有更加小型的介质天线应用于GPS导航系统。

## ◆产品特点：

多种尺寸、高温度稳定性、高质量的介质陶瓷、高增益、低噪音、极好的方向图

## ◆产品应用：

适用于GPS/北斗/GLONASS/伽利略卫星定位、导航、授时、测量的小型天线元件

## ◆Introduction

Dielectric Antenna has been used very widely in the current field of satellite navigation and surveying and satellite TV reception. As the antenna in a small volume can get a larger gain, it is widely used in the products which claim a higher volume.
In the current market, most of the GPS Dielectric Antenna’s size is 25 * 25 * 4mm, with the miniaturization of the system on the market , there are already more smaller size antenna for GPS navigation system.

## ◆Features

A variety of sizes, high temperature stability, high–quality dielectric ceramics, high–gain, low noise, excellent pattern.

## ◆Applications

Miniature antenna element for Global Positioning Systems (GPS)

## Method of Definition (命名方式)

□ □□□□ □ □□ □□
① ② ③ ④ ⑤

①Dielectric Antenna
②Center Frequency
③Structure
④Dimensions
⑤Thickness

①介质天线
②中心频率
③结构
④尺寸
⑤厚度

T4: 4.0mm；T2: 2.0mm；T45: 4.5mm；T35: 3.5mm；T6: 6.0mm；T3: 3.0mm

## Operation instructions (使用说明)

天线周围（2~5mm）尽量净空，尽量不与（整机主板、显示屏）平行，即Patch天线的本体上表面应高于周围的物体表面,以致使天线以最大gain辐射。

在天线周围附近，不可以放金属物件，整机外壳不可以喷金属漆和加金属物件。

由于patch天线是定向天线，整机内天线的摆放应将patch上表面朝向天空为佳。

在客户整机空间允许的条件下，反射面越大，即PCB板尺寸越大，则天线的增益越高一点，收讯性能会越好。

天线周围不可以存在磁场，即在天线周围尽量不可以放磁铁。

内置天线模组需要在用户的整机中匹配，同一款整机通常有2至3种材质，不同材质对天线的频率有直接的影响，需要分别进行匹配。

整机调试需要提供完整的机构件，包括外壳(Crust)、主板（Main Board）、电池(Battery)、液晶屏（Panel）和屏蔽盖（Shielding Case）等。尽量能提供最终量产的机型，因为客户的设计改动对天线性能都是有影响的。

EMI干扰是影响天线调试性能最大的难题。因为天线在接收有用信号的同时也会将噪声一起接收进入系统，一旦处于天线中心频率附近的EMI干扰越大，那CN值就会直接下降。因此，对于EMI干扰较大的机器，收讯性能较差，并非天线调试性能不好，而有可能是客户的整机在主板layout过程中布线、接地不合理等造成的。目前我们只能采取将天线调偏频的方法来尽量避开EMI干扰的频点，略微提高收讯性能，如果调试偏频无效的话，只能按照最好的效果给客户。对于存在EMI干扰严重的机器，需客户确认是否未来会有cost down计划（削减成本，更改元器件），因为cost down之后的机器EMI干扰与之前的机器会有不同，有可能导致之前调试的样品或者出货的天线收讯性能较差，出现退货等情形。对于这种情况，应该区分清楚客户机器是否更改了元件，影响天线性能，而非天线本身性能不好。

Around the antenna (2~5mm) is clearance and not to parallel to the main board and panel as possible. That means the surface of the patch antenna should be higher than the surrounding surface, in order to cause the antenna to the maximum radiation gain
Around the antenna can’t put metal objects, The whole shell can’t be covered the metal spray paint and jerked the metal objects.
As the patch antenna is a directional antenna, the surface of antenna should be placed toward the sky.
Under the conditions of the space on the client machine, the reflector is larger, that means the size of the PCB is larger, the antenna gain is higher and the reception is better.
Magnetic field around the antenna can’t exist, that is not possible to put magnets around the antenna
Different color and material has a direct impact on the frequency. They need to be debugged separately while the customer’s same machine usually have two to three colors.
The machine debugging require to proved complete parts, including Main Board, Battery, Panel and Shielding Case etc. Try to provide the final production models, because the customer's design changes are affecting the electrical specifications of the antenna.
EMI interference is the biggest problem affecting the antenna debugging.
Because while the antenna receiving the signal, the noise will also be received into the system. Once the EMI interference in the vicinity of the antenna center frequency is greater, the CN values will decline directly.
Therefore, for large EMI interference, poor reception are not bad debugged to antenna, which may be the customer's machine in the irrational process of wiring board layout, grounding caused.
Currently we can only adjust the offset frequency of antenna to try to avoid EMI interference frequency, and slightly improve reception. If debugging the offset frequency is invalid, then we only can provide the best results to customers.
For EMI interference of the machine is serious, we should take the customer to confirm whether there will be cost down program. For the EMI will be different between the cost down and before, It maybe lead to poor reception for debugged samples or shipping antenna, and returns etc.
In this case, it should be clearly distinguished if the components of client machine are changed, these changes will affect the antenna, rather than the poor performance of the antenna itself.