

Compact Antenna for Bluetooth "SF2450"

1. INTRODUCTION

Along with the recent development of the Bluetooth market, we frequently hear the release news of electronic equipment provided with the Bluetooth functions including notebook PCs, mobile phones, digital cameras and headsets. In order for the Bluetooth system to be enhanced in the convenience, it is essential that the system be installed in a number of equipment of diversified areas, sharing varieties of application software within the network. For such wide acceptance of the Bluetooth equipment in the marketplace, the components have to be not only compact in size and low in cost but also provided with satisfactory characteristics to ensure its availability in a multitude of environments.

In an effort to meet such requirements mentioned above, Furukawa Electric has developed a compact antenna --one of the key devices of the Bluetooth system-- based on our proprietary technology. See Photo 1. The features and specifications of the antenna "SF2450" will be described below.

2. FEATURES

1) Ultra-compact and Ultra-slim Package

Figure 1 shows the outer dimensions. We have been successful in making the antenna small in size and low in profile by utilizing our proprietary technology of radiating element configuration as well as using a dielectric material of high dielectric constant. The product is tape mounted for automatic loading enabling surface mounting.

2) Wide Bandwidth

Although downsizing of antennas ordinarily results in limited bandwidth, we have been successful, based on our proprietary technology of antenna radiator configuration, in achieving an antenna bandwidth that is twice as much as is required for the Bluetooth equipment irrespective of the small size mentioned above. See Figure 2.

3) High Efficiency

High radiation efficiency has been attained by configuring the antenna radiators of proprietary shape using a copper alloy of high electrical conductivity, followed by molding the product using a dielectric material of low dissipation factor. Figure 3 shows a typical radiation pattern.



Photo 1 Appearance of SF2450.

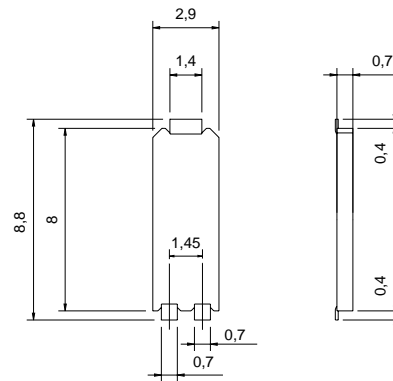


Figure 1 Outer dimensions of SF2450.

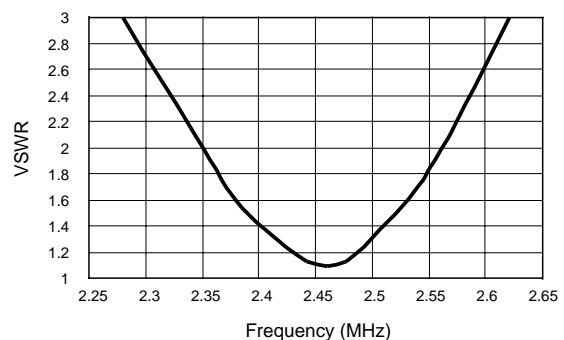


Figure 2 Input impedance of SF2450.

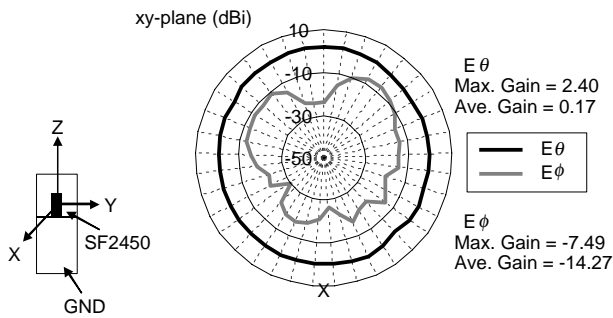


Figure 3 Typical radiation pattern of SF2450.

4) Low Cost

A manufacturing method has been established in which the radiator conductor is stamped by a press, inserted into a die, and is subsequently injection molded. This method is suited for continuous manufacturing of automatic operation, contributing to the reduction of costs. Moreover, the adoption of such high-precision manufacturing methods as stamping and injection molding has resulted in a stabilized standard of product quality, suppressing the variation in product performance.

As described above, SF2450 has a number of features. It is ultra compact and ultra slim, so that it permits installation in compact equipment of high packing density with limited space for mounting. It has a wide bandwidth, so that it allows for ensuring required bandwidths in case of frequency shift occurrence due to the environment. Thus, it is applicable to a variety of Bluetooth equipment.

3. IN CONCLUSION

With its outstanding features, the product is expected to demonstrate its capability in various Bluetooth equipment. However, it is known that an antenna is likely to change its characteristics under the influence of grounding conditions, the position of mounting and other components mounted around it. So it is recommended to make final evaluation using actual equipment.

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