

ANTENNA FOR USE OF PORTABLE WIRELESS COMMUNICATION SYSTEM

Technical Field

The present invention relates to a portable wireless communication system, and more particularly, to an antenna for use of portable wireless communication system in which configurations of a spring and a C-ring arranged in an interior of a helical antenna are enhanced so as to obtain an enhanced bandwidth, so that quality of communication may not be deteriorated by a frequency movement, so as to thereby allow the standing-wave ratio to approximate to a reference value with an enhanced impedance.

Background Art

In general, wireless communication system adopts an antenna for performing wireless communications, wherein, through the antenna, a high frequency signal output from a modulation unit of the wireless communication system is transmitted and the thus-transmitted radio wave is received.

For an enhanced transmission and receipt characteristics of antenna, impedance of the antenna and that of the transmitter or receiver may be matched according to the transmitting or receiving frequency, and an unnecessary emission may be prevented, thereby reducing a power loss.

Such an antenna has a single unit configuration, so that it functions as a helical antenna when retracted and as a rod antenna when extracted.

In addition, the antenna accommodates in a lower portion thereof a spring to improve a receipt state.

Fig. 1 illustrates a conventional antenna unit of wireless communication system, wherein an antenna unit 20 includes a handle 21 to be used when extracting or retracting an antenna, an insulator unit 22, a helical antenna 23 to be coupled to a main body 10 so as to operate when the antenna is retracted and which is provided with a spring 25, and a Ni-Ti wire 24 to be coupled to the helical antenna 23 so as to function as an antenna when the antenna is extracted.

Fig. 2 illustrates a spring unit of a conventional antenna. In detail, Fig. 2 shows the spring 25 housed in the helical antenna 23, a metal rod 26 to which the spring 25 is to be coupled, and a rubber bobbin 27 which is to be inserted into the spring 25 so as to support the same, wherein one end of the spring 25 is coupled to the metal rod 26 by winding approximately 1 turn of the end of the spring 25.

Fig. 3 illustrates a cross cut portion 28 and a C-ring 29 of the conventional helical antenna 23.

Disclosure of Invention

Therefore, it is an object of the present invention to provide an antenna for use of wireless communication system in which a spring and a C-ring accommodated into a helical antenna have enhanced configuration.

To accomplish the above object of the present invention, there

is provided an antenna for use of wireless communication system
in which a spring housed into a helical antenna is made up of a
leaf spring rolled to have a thickness of 0.5 Ψ in sectional surface
thereof and a C-ring formed of beryllium copper is heat-treated
5 and pressed.

Brief Description of Drawings

The present invention will become more fully understood from
the detailed description given hereinafter accompanying drawings,
10 which are given by way of illustration only, and thus are not
limitative of the present invention, and wherein:

Fig. 1 illustrates a conventional antenna of a wireless
communication system;

Fig. 2 illustrates a spring unit of a conventional antenna;

15 Fig. 3 illustrates a cross cut portion and a C-ring portion
of a conventional antenna;

Fig. 4 illustrates an antenna of the present invention;

Fig. 5 illustrates a spring unit of the present invention;

Fig. 6 illustrates a C-ring portion of the present invention;

20 and

Figs. 7A to 7F illustrate an assembly process of an antenna
of the present invention.

Best Mode for Carrying Out the Invention

25 The present invention will be explained in more detail with
reference to the attached drawings.

Referring to Fig. 4, the antenna unit 20 includes the handle 21, insulator unit 22, helical antenna 23, and Ni-Ti wire 24. A spring 25A is made up of a leaf spring, and the C-ring 30 is formed of pressed beryllium copper. Reference numeral 31 denotes a stopper.

5 Fig. 5 illustrates the spring unit inside of the helical antenna of the present invention, wherein one end of the spring 25A is coupled to the metal rod 26, a soldering is performed thereto, and a bobbin 32 is inserted therein.

Fig. 6 illustrates a configuration of the C-ring 30 of the
10 present invention. Here, four resilient plates 30A for resiliently fixing the antenna when extracted or retracted from or to the main body are arranged at side surfaces of the C-ring 30.

Thus-configured antenna of the present invention operates as follows.

15 In an antenna of the present invention, the spring 25A is inserted into the metal rod 26 and soldered for a firm fixation.

The spring 25A is arranged to have an outer diameter by pitch ($P=1.75$) of ψ 5.6, and the spring 25a is wound by 6.0 turns so as to enhance characteristics of the antenna. Here, the spring 25A
20 is a leaf spring rolled to a thickness of ψ 0.5.

Preferably, a heat-treated and pressed beryllium copper is used as the C-ring 33.

The C-ring 30 to be inserted into a lower interior of the spring 25A is formed to a circle shape provided at side surfaces thereof
25 a plurality of resilient plates 30A. Thus, the antenna may be firmly fixed by being resiliently supported by the resilient plate 30A

when the antenna is extracted, while the antenna may be firmly fixed to the main body by being resiliently supported by the resilient plate 30A when it is retracted.

Figs. 7A to 7F illustrate an assembly process of the antenna of the present invention, wherein the C-ring 30 is inserted into a supporting member 33 as shown in (A), and sealed as shown in (B). Subsequently, the spring 25A is assembled to the supporting member 33 and soldered as shown in (C). Then, the bobbin 32 is assembled downwardly to the supporting member 33 which is coupled to the spring 25A as shown in (D). Then, the supporting member 33 assembly is inserted into a pipe as shown in (E). Subsequently, a knob 22 is coupled to the pipe, and the stopper 31 is assembled to the Ni-Ti wire 24 and punched, thereby completing the process.

15 Industrial Applicability

As described above, the present invention has advantage in that the spring arranged in a helical antenna is formed of a leaf spring so that antenna characteristics may be enhanced due to an expanded bandwidth. In addition, the C-ring arranged in the lower interior of the spring is formed of beryllium copper and pressed, thus a manufacturing cost may be curtailed with an enhanced product quality.

CLAIMS

1. An antenna for use of portable wireless communication system in which said antenna has a single unit configuration so as to function as a helical antenna when retracted and as a rod antenna
5 when extracted, and a spring arranged in said helical antenna is formed of a leaf spring rolled to a thickness of ψ 0.5 so as to expand a bandwidth, and a C-ring to be coupled to a lower interior of said spring is shaped as a circle having at side surfaces thereof a plurality of resilient plates, inserted into a supporting member
10 and contracted so that an antenna may be resiliently fixed when extracted or retracted.

