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【 Description 】

【 Title of Invention 】

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A device for reducing the electromagnetic wave of a mobile communication terminal

10 【 Brief Description of Drawings 】

Figure 1 is a longitudinal section showing the composition of a conventional antenna.

15 Figure 2 is a longitudinal section showing the embodiment wherein the electromagnetic wave reducing device of the present invention is applied to the antenna of a mobile communication terminal provided with a whip antenna or helical antenna.

20 Figure 3a and Figure 3b are enlarged sections showing the extract from the electromagnetic wave absorber used on the reducing device of the present invention.

25 Figure 4 to Figure 10 are drawings showing the first measure result under the state that the antenna of the present invention and a conventional antenna are installed at a CDMA mode mobile communication terminal and subsequently, a whip antenna portion is inserted,

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Figure 4 is a drawing showing a reflection loss graph.

Figure 5 is a drawing showing a Smith chart measuring impedance.

35 Figure 6 is a drawing showing a standing-wave ratio graph.

Figure 7 and Figure 8 are drawings showing long-distant

electromagnetic wave radial pattern from 824 MHz and 894 MHz.

Figure 9 is a drawing showing short-distant electromagnetic wave radiated from a conventional antenna.

Figure 10 is a drawing showing short-distant electromagnetic wave radiated from the antenna of the present invention.

Figures 11 to 17 are drawings showing the result of the second measure under the state that the antenna of the present invention and a conventional antenna are installed at the CDMA mode mobile communication terminal and a whip antenna is fetched.

Figure 11 is a drawing showing a reflection loss graph,

Figure 12 is a drawing showing the Smith chart measuring impedance,

Figure 13 is a drawing showing a standing-wave ratio graph,

Figure 14 and Figure 15 are drawings showing long-distant electromagnetic radial pattern from 824 MHz and 894 MHz,

Figure 16 is a drawing showing short-distant electromagnetic wave radiated from a conventional antenna.

Figure 17 is a drawing showing short-distant electromagnetic wave radiated from the antenna of the present invention.

Figure 18 to Figure 23 are drawings showing the third measure result on the state that the antenna of the present invention and a conventional antenna are installed at a PCS mode mobile communication terminal, and a whip antenna is inserted,

Figure 18 is a drawing showing a Smith chart measuring impedance,

Figure 19 is a drawing showing a standing-wave ratio graph,

Figure 20 is a drawing showing long-distant electromagnetic wave

radiation pattern from 1.75GHz, 1.78GHz, 1.84GHz and 1.87GHz radiated from a conventional antenna.

Figure 21 is a drawing showing long-distant electromagnetic wave radiation pattern from 1.75GHz, 1.78GHz, 1.84GHz and 1.87GHz radiated from the antenna of the present invention.

Figure 22 is a drawing showing short-distant electromagnetic wave radiated from the antenna of a conventional antenna.

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Figure 23 is a drawing showing short-distant electromagnetic wave radiated from the antenna of the present invention.

Figure 24 to Figure 28 are drawings showing the fourth measure result on the state that the antenna of the present invention and a conventional antenna are installed at the PCS mode mobile communication terminal and a whip antenna is fetched.

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Figure 24 is a drawing showing the Smith chart measuring impedance,

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Figure 25 is a drawing showing a standing-wave ratio graph,

Figure 26 is a drawing showing distant electron wave radiation pattern of 1.75GHz, 1.78GHz, 1.84GHz and 1.87GHz radiated from a conventional antenna,

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Figure 27 is a drawing showing long-distant electromagnetic wave radiation pattern of 1.75GHz, 1.78GHz, 1.84GHz and 1.87GHz radiated from the antenna of the present invention,

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Figure 28 is a drawing showing short-distant electromagnetic wave radiated from a conventional antenna,

Figure 29 is a drawing showing short-distant electromagnetic wave radiated from the antenna of the present invention,

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Figure 30 is a longitudinal section showing another working examples applied to the antenna of a mobile communication

terminal wherein the electromagnetic wave reducing device of the present invention is installed only at the whip antenna.

* Description of signs relating to the main portion of drawings *

100: the helical antenna portion

101: metal rod

103: helical antenna

120: whip antenna

10 125: wire
absorber

300: electromagnetic wave

302: through bore

15 [Detailed Description of the Invention]

20 [Purpose of the Invention]

[The field pertaining to the invention and prior art of the filed]

25 The invention relates to the electromagnetic wave-reducing device of a mobile communication terminal which is installed at the mobile communication terminal, thereby reducing the intensity of short distance electromagnetic wave affecting human body from the antenna which transmits and receives high frequency of
30 certain frequency.

35 Generally, wireless machinery is used on an antenna to carry out wireless communication. That is, wireless machinery applies the signal of high frequency which is output from the modulation portion, to an antenna, thereby transmitting it to the air and receiving the high frequency signals which are transmitted through the air.

In order to enhance the prosperities of transmittance and reception of the antenna, according to the frequency of high frequency signals to be transmitted and received, the impedances of the antenna and transceiver are matched to each other and unnecessary radiation is to be prevented and the loss should be reduced.

A helical antenna and a rod antenna are structurally and integrally in the antenna used on portable wireless machinery.

Figure 1 is a longitudinal section showing the composition of a conventional antenna. As illustrated, the antenna used on a mobile communication terminal consists of a helical antenna portion (100) and a whip antenna portion (120).

Said helical antenna portion (100) wherein a helical antenna (103) winding a wire, is fixed on the upper portion of a metal rod (101), and the metal rod (101) and the helical antenna (103) leave the lower portion of the metal rod (101) to be fixed at the mobile communication terminal, and are molded by inserting and injecting it.

If we review said whip antenna portion (120), a handle portion (121) which the user may grasp in case of where the whip antenna portion (120) is expanded and/or received, an insulation portion (123), and a fixed length of wire (125) are in a row, thereby penetrating the center of said helical antenna portion (100), and a stopper (127) is fixed to the lower portion of the wire (125) in order for the whip antenna (120) from being detachable from the helical antenna portion (100).

An antenna having the same composition as mentioned above, is commonly fixed to a mobile communication terminal. A metal rod (11) is electrically connected to the transceiver portion provided with the mobile communication terminal, thereby transmitting and receiving the high frequency signals of frequency. Where the whip antenna portion (120) is inserted, the helical antenna (103) of the helical antenna portion (100)

operates, thereby transmitting and receiving high frequency signals. In a case where the whip antenna portion (120) is expanded, the whip antenna portion (120) and the helical antenna are parallel combined with each other, thereby being operated.

As a general rule, a mobile communication terminal generates a lot of electromagnetic wave at the time of telephone communication. According to the research results, it has revealed that said electromagnetic wave generated, particularly short-distant electromagnetic wave causes the failure of memory and excitement, thereby being harmful to human body. Accordingly, many countries including the U. S., Japan, European countries, etc... regulates the strength of short-distant electromagnetic wave radiated from a mobile communication terminal.

Therefore, various countries are making much efforts to reduce the strength of short-distant electromagnetic wave radiated from an antenna. However, the antenna of a mobile communication terminal still generates much short-distant electromagnetic wave.

[Technical problem intended to be resolved by the present invention]

Accordingly, the purpose of the present invention is to provide the electromagnetic wave-reducing device of a mobile communication terminal allowing short-distant electromagnetic wave to effectively be reduced without almost affecting long-distant electromagnetic wave generating from the antenna of a mobile communication terminal at the time of telephone communication.

[The composition and effect of the present invention]

The purpose of the electromagnetic wave reducing device of a mobile communication terminal is not to almost affect long-

distant electromagnetic wave radiated from a mobile communication terminal and to effect reduce short-distant electromagnetic wave only; and electromagnetic wave absorber is built in the antenna to effectively reduce short-distant electromagnetic wave only. The
5 electromagnetic wave absorber is provided with the exterior of the metal road of said helical antenna. In this context, it is desirable that said electromagnetic absorber is installed at the exterior of the lower portion of the location which the helical antenna connects, of the metal road.

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The upper portion of said electromagnetic wave absorber is formed as a cylinder having a big diameter and the lower portion is formed as a cylinder having a small diameter and a through bore is formed at the central portion. Accordingly, said metal road
15 is inserted at the through bore or the said is formed as a cylinder in entirety, and the through bore is formed at the central portion, therefore, said helical antenna is inserted at the through bore or is integrally inserted and injected at the metal road.

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In addition, said electromagnetic absorber consists of magnese zinc ferry magnetic material including Y_2O_3 1.8 ~ 2.0 weight %, K_2O 0.04 ~ 0.09 weight %, TiO_2 0.02 ~ 0.09 weight %, Na_2O 0.29 ~ 0.38 weight %, MnO_2 14.0 ~ 15.0 weight %, ZnO 15.0 ~
25 16.5 weight %, Fe_2O_3 65.0 ~ 75.0 weight %, CaO 0.05 ~ 0.09 weight %, SiO_2 0.60 ~ 0.85 weight %, NiO 0.01 ~ 0.03 weight % and Cr_2O_3 0.01 ~ 0.05 weight %.

The description of the electromagnetic wave-reducing
30 device of the mobile communication terminal of the present invention, will in detail be provided, referring to drawings of Figures 2 to 10 attached hereinafter. In this context, the same signals as prior those are assigned.

35 Figure 2 is a longitudinal section illustrating the antenna of a mobile communication terminal according to the electromagnetic wave reducing device of the present invention. As illustrated above, the present invention refers to the fact

that an electromagnetic wave absorber (300) is provided at the exterior of the metal road (101) which is in said helical antenna portion (100), in the antenna of a mobile communication terminal consisting of a helical antenna (100) and a whip antenna (120).

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Said electromagnetic wave absorber (300) comprises magnese zinc ferry magnetic material including Y_2O_3 1.8 ~ 2.0 weight %, K_2O 0.04 ~ 0.09 weight %, TiO_2 0.02 ~ 0.09 weight %, Na_2O 0.29 ~ 0.38 weight %, MnO_2 14.0 ~ 15.0 weight %, ZnO 15.0 ~ 16.5 weight %, Fe_2O_3 65.0 ~ 75.0 weight %, CaO 0.05 ~ 0.09 weight %, SiO_2 0.60 ~ 0.85 weight %, NiO 0.01 ~ 0.03 weight % and Cr_2O_3 0.01 ~ 0.05 weight %.

For example, as illustrated in Figure 3A, said electromagnetic wave absorber (300) is in its entirety formed as a cylinder, and a through bore (302) is formed at the central portion, thereby said metal road (101) being inserted at the through bore (302). In this context, it is desirable that an electromagnetic wave absorber is installed at the exterior of the lower portion of the location which a helical antenna (103) is fixed at the metal road (101). As illustrated in Figure 3b, the upper portion of said electromagnetic wave absorber (300), is formed as a cylinder having a big diameter, and the lower portion having a small diameter, is formed. At the same time, at the central portion, a through bore (302) is formed, thereby said metal road (1010) can be inserted at the through bore (302).

In addition, in the present invention, said electromagnetic wave absorber (300) is not manufactured independently, and the manufactured metal road (101) is inserted at the fixed metal mould, and then an electromagnetic wave absorber (300) may integrally be inserted and injected.

The antenna of the present invention composed in such manner, is installed at a mobile communication terminal in a common way, and the metal road (11) is electrically connected to the transceiver provided within the mobile communication terminal. Therefore, the antenna receives and transmits the high frequency

signals of certain frequency.

On the state that the antenna of the present invention and a conventional antenna are fixed to a CDMA mode mobile communication terminal, and a PCS mode mobile communication terminal respectively and the whip antenna portion (120) is inserted and pulled out, the property is measured.

Figures 4 to 10 are drawing illustrating the first measure results which are measured on the state that the antenna of the present invention and prior antenna are installed at the CDMA mode mobile communication terminal and the whip antenna is inserted. Figure 4 is a drawing illustrating the reflection loss graph. Figure 5 is a drawing illustrating the Smith chart measuring impedance and Figure 6 is a drawing illustrating the standing-wave ratio graph and Figure 7 and Figure 8 are drawing illustrating the long-distant electromagnetic wave radiation pattern from 824MHz and 894MHz. Figure 9 is a drawing illustrating short-distant electromagnetic wave radiated from prior antenna and Figure 10 is a drawing illustrating short-distant electromagnetic wave radiated from the antenna of the present invention.

In this context, the positions (1~3) of each point (Δ and/or ∇) show the measure frequency position of 824MHz, 894MHz and 960MHz respectively, and a is the measure value of the antenna of the present invention and b is the measure value of the conventional antenna.

According to said first measure results, it has been revealed that the reflection loss, impedance and standing-wave ratio remain almost unchanged, as illustrated in Figures 4 to 6, on the state that the antenna of the present invention and prior antenna are installed at a CDMA mode mobile communication terminal and the whip antenna portion is inserted. Also, it has been revealed that long-distant electromagnetic wave radiation pattern is -44.35dB at the azimuth angle of 67°, in 824MHz and in case of the antenna of the present invention, it is -44.99dB at

the azimuth angle of 68° , shown in Figure 7. As shown in Figure 8, in case of the conventional antenna, it is -46.18dB in 894MHz at the azimuth angle of 68° and in a case of the antenna of the present invention, it is -46.72dB at the azimuth angle of 72° .

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However, the maximum value of short-distant electromagnetic wave radiated from the mobile communication terminal having the prior antenna, as shown in Figure 9, is 1.89mW/g , whereas that of short-distant electron wave radiated from the mobile communication terminal having the antenna of the present invention is 1.27mW/g , as shown in Figure 10. That is, the maximum value has been remarkably reduced.

Figures 11 to 17 are drawings showing that the second measure results on the state that the antenna of the present and prior antenna were installed at the CDMA mode mobile communication terminal and the whip antenna were pulled out. Figure 11 is a drawing showing the reflection loss graph and Figure 12 is a drawing showing the Smith chart measuring impedance and Figure 13 is a drawing showing the standing-wave ratio graph. Figures 14 and 15 are drawings showing the long-distant electromagnetic wave radiation pattern from 824MHz and 894MHz . Figure 16 is a drawing showing the short-distant electromagnetic wave radiated from prior antenna and Figure 17 is a drawing illustrating the short-distant electromagnetic wave radiated from the antenna of the present invention.

In this context, the positions (1 ~ 3) of each point (Δ and/or ∇) refer to the measure frequency positions of 824MHz , 894MHz and 960MHz respectively. a is the measure value of the antenna of the present invention and b is the measure value of the prior antenna.

Even, in the second 2 measure results, the reflection loss, impedance and the standing-wave ratio remain unchanged on the state that the antenna of the present invention and prior antenna are built in the CDMA mode mobile communication terminal and the whip antenna portion is pulled out, as shown in Figures 11 to 13.

Also, as shown in Figure 14, in the case of the prior antenna, the long-distant electromagnetic radiation pattern is -42.30dB in 824MHz at the azimuth angle of 71° and in the case of the antenna of the present invention, it is -42.87dB at the azimuth angle of 73° and as shown in Figure 15, in the case of the prior antenna, it is -44.53dB in 894MHz at the azimuth angle of 77° and in the case of the antenna of the present invention, it is -45.03dB at the azimuth angle of 73°. In light of the above results, the long-distant electromagnetic radiation pattern remains unchanged.

However, the maximum value of short-distant electromagnetic wave radiated from the mobile communication terminal having the prior antenna, as shown in Figure 16, is 1.75mW/g whereas that of short-distant electromagnetic wave radiated from the mobile communication terminal having the antenna of the present invention is 1.30mW/g. The maximum value has remarkably been reduced.

Figures 18 to Figure 23 are drawings illustrating the third measure results on the state that the antenna of the present invention and prior antenna are installed at the PCS mode mobile communication terminal and the whip antenna portion is inserted. Figure 18 is a drawing showing the Smith chart measuring impedance and Figure 19 is a drawing showing the standing-wave ratio graph, Figure 20 is a drawing showing electromagnetic radiation pattern from 1.75GHz, 1.78GHz, 1.84GHz radiated from the conventional antenna, Figure 21 is a drawing illustrating long-distant electromagnetic radiation pattern from 1.75GHz, 1.78GHz, 1.84GHz and 1.87GHz radiated from the antenna of the present invention. Figure 22 is a drawing illustrating short-distant electromagnetic wave radiated from the antenna of the present invention. Figure 23 is a drawing showing short-distant electromagnetic wave radiated from the antenna of the present invention.

In this context, the positions (11~14) of each point (Δ and/or ∇) stand for the measure frequency positions of 1.75GHz, 1.78GHz, 1.84GHz and 1.87GHz respectively, and a is the measure value of the present invention and b is the measure value of the

conventional antenna.

Also according to the third measure result, on the state that the antenna of the present invention and the conventional antenna are installed at the PCS mode mobile communication terminal and the whip antenna is inserted, the impedance and the standing-wave ratio remain unchanged as in Figure 18 and Figure 19. As illustrated in Figure 20, the maximum value of long-distant electromagnetic wave radiation pattern of the prior antenna is -37.76dB at the azimuth angle of -65° in 1.75GHz, -40.09dB at the azimuth angle of -65° in 1.78GHz, -37.44dB at the azimuth angle of 30° in 1.84GHz and -36.40dB at the azimuth angle of 30° in 1.87GHz. Whereas in case of the antenna of the present invention, as illustrated in Figure 21, the maximum value of long-distant radiation pattern is -36.94dB in 1.75GHz at the azimuth angle of 45° , -40.02dB in 1.78GHz at the azimuth angle of -55° , -38.08dB in 1.84GHz at the azimuth angle of -45° , -36.46dB in 1.87GHz at the azimuth angle of -50° . From these results, we can see that the maximum values remain unchanged. However, the maximum value of short-distant electromagnetic wave radiated from a mobile communication terminal in which the conventional antenna is built, is 1.67mW/g, as shown in Figure 22 while the maximum value of short-distant electromagnetic wave radiated from a mobile communication terminal in which an antenna of the present invention is built, is 1.51mW/g. From the results, we can see that the maximum values has been remarkably reduced.

Figures 24 to 29 are drawings showing the fourth measure results on the state that the antenna of the present invention and the conventional antenna are installed at the PCS mode mobile communication terminal and the whip antenna is pulled out. Figure 24 is a drawing showing the Smith chart measuring impedance and Figure 25 is a drawing illustrating the standing-wave ratio graph, Figure 26 is a drawing showing long-distant electromagnetic radiation pattern of 1.75GHz, 1.78GHz, 1.84GHz and 1.87GHz radiated from the prior antenna. Figure 27 is long-distant electromagnetic radiation pattern of 1.75GHz, 1.78GHz, 1.84GHz and 1.87GHz radiated from the antenna of the present invention.

Figure 28 is a drawing illustrating long-distant electromagnetic radiation pattern radiated from the conventional antenna and Figure 29 is a drawing showing short-distant electromagnetic wave radiated from the antenna of the present invention.

In this context, the positions (11~14) of each point (Δ and/or ∇) stand for the measure frequency position of 1.75GHz, 1.78GHz, 1.84GHz and 1.87GHz respectively, and a is the measure value of the antenna of the present invention and b is the measure value of the conventional antenna.

Also, according to the fourth measure results, it has been revealed that the impedance and the standing-wave ratio of the state that the antenna of the present invention and prior antenna are installed at the PCS mode mobile communication terminal and the whip antenna is pulled out, remain unchanged as in Figures 24 and 25. Also, as illustrated in Figure 26, the value of long-distant electromagnetic radiation pattern is -36.06dB at 1.75GHz and the azimuth angle of -60° , -38.82dB in 1.84GHz at the azimuth angle of -60° , -37.48dB at 1.84GHz at the azimuth angle of -45° , -35.53dB in 1.87GHz and the azimuth angle of -50° . Whereas in case of the antenna of the present invention, as illustrated in Figure 27, it is -36.19dB in 1.75GHz at the azimuth angle of -55° , -38.80dB in 1.78GHz at the azimuth angle of -55° , -37.48dB at 1.84GHz at the azimuth angle of -45° . Eventually, the maximum value remains unchanged.

However, the maximum value of short-distant electromagnetic wave radiated from the mobile communication terminal wherein the prior antenna is installed, as Figure 28, is 1.32mW/g. While the maximum value of short-distant electromagnetic wave radiated from the mobile communication terminal, wherein the antenna of the present invention is installed, is 0.929mW/g. That is, the maximum value has been remarkably reduced.

Figure 30 is a longitude section showing another working example applied to the antenna of the mobile communication

terminal wherein only the whip antenna is installed as the electromagnetic wave reducing device of the present.

As illustrated, the present invention is that in the antenna of the mobile communication terminal wherein the helical antenna (103) is fixed, inserted and injected and molded at the upper portion of the metal road (101), the electromagnetic wave absorber (300) is installed at the exterior of said metal road (101), as in said working example.

The properties are measured on the state that the antenna of working example of the present invention and the prior antenna are fixed at the CDMA mode and PCS mode mobile communication terminal respectively.

According to the measure results, it has been revealed that prosperities similar to the first and third measure results, namely, reflection loss, impedance, standing-wave ratio and long-distant electromagnetic wave radiation pattern remain unchanged, but, short-distant electromagnetic wave radiation pattern which affect human body, has remarkably been reduced.

As described thus far, the present invention was explained, together with the illustration of the specific preferred embodiment. It will be appreciated that it is not intended to limit the present invention to the above example only, many variations, such as might readily occur to one skilled in the art, being possible, without departing from the scope thereof.

【 Effect of the Invention 】

According to the present invention described thus far, the present invention reduces the strength of short-distant electromagnetic wave radiated from the mobile communication terminal by inserting the electromagnetic wave absorber at the metal road of the antenna. And it does not almost affect the radiation of long-distant electromagnetic wave radiation as well

as the reflection loss of the antenna, impedance and standing-wave ratio and can reduce the affect on the human body due to short-distant electromagnetic wave by effectively reducing the strength of short-distant electromagnetic wave.

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【 What is claimed is 】

【Claim 1】

An electromagnetic wave-reducing device in an antenna of a mobile communication terminal comprising an electromagnetic wave absorber installed at the exterior of the metal road of a helical antenna, wherein an electromagnetic wave absorber has the upper portion as a form of a cylinder having a big diameter, the lower portion as a form of a cylinder having small diameter, and a through bore formed at the central portion, thereby said metal road being inserted at the through bore.

【Claim 2】

An electromagnetic wave-reducing device in an antenna of a mobile communication terminal comprising an electromagnetic wave absorber installed at the exterior of the metal road of the said helical antenna, wherein an electromagnetic wave absorber is formed as a cylinder and has a through bore formed at the central portion, thereby said metal road being inserted at the through bore.

【Claim 3】

An electromagnetic wave-reducing device in an antenna of a mobile communication terminal comprising an electromagnetic wave absorber installed at the exterior of the metal road of the said helical antenna, wherein an electromagnetic wave absorber is integrally inserted to said metal road.

【Claim 4】

An electromagnetic wave-reducing device according to Claim 1 to 3; wherein an electromagnetic wave absorber comprises manganese zinc based ferry magnetic material including Y_2O_3 1.8 ~2.0 weight %, K_2O 0.04 ~0.09 weight %, TiO_2 0.02~0.09 weight %, Na_2O 0.29~0.38 weight %, MnO_2 14.0~15.0 weight %, ZnO 15.0 ~16.5 weight %, Fe_2O_3 65.0~75.0 weight%, CaO 0.05 ~0.09 weight %, SiO_2 0.60~0.85 weight %, NiO 0.01~0.03 weight % and Cr_2O_3 0.01 ~0.05 weight %.

WO 02/47199

PCT/KR01/00202

17

【 Claim 5 】

Said electromagnetic absorber as set forth in any one of Claims 1 to 4;

An electromagnetic-reducing device of a mobile communication terminal wherein said electromagnetic absorber comprises magnese zinc ferry magnetic material including Y_2O_3 1.8 ~ 2.0 weight %, K_2O 0.04 ~ 0.09 weight %, TiO_2 0.02 ~ 0.09 weight %, Na_2O 0.29 ~ 0.38 weight %, MnO_2 14.0 ~ 15.0 weight %, ZnO 15.0 ~ 16.5 weight %, Fe_2O_3 65.0 ~ 75.0 weight %, CaO 0.05 ~ 0.09 weight %, SiO_2 0.60 ~ 0.85 weight %, NiO 0.01 ~ 0.03 weight % and Cr_2O_3 0.01 ~ 0.05 weight %.

【 Claim 6 】

In an antenna of a mobile communication terminal wherein a helical antenna wherein a wire is wound, is fixed at the upper portion of the metal road, and then leaves the lower portion of the metal road fixed to the mobile communication terminal, and the upper portion is molded,

An electromagnetic-reducing device of a mobile communication terminal wherein an electromagnetic wave absorber

is installed at the exterior of said metal road.

【 Claim 7 】

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Said electromagnetic absorber as set forth in Claim 6;

an electromagnetic wave-reducing device of a mobile communication
terminal wherein the upper portion is formed as a cylinder having
10 big diameter and lower portion is formed as a cylinder having a
small diameter and a through bore is formed at the central portion,
thereby said metal road being inserted at the through bore.

15 【 Claim 8 】

Said electromagnetic absorber as set forth in Claim 6;

an electromagnetic wave-reducing device of a mobile communication
20 terminal wherein they are formed as cylinders and a through bore
is formed at the central portion, thereby said metal road being
inserted at the through bore.

25 【 Claim 9 】

Said electromagnetic absorber as set forth in Claim 6;

an electromagnetic wave-reducing device of a mobile communication
30 terminal which is inserted and injected at the metal road.

【 Claim 10】

35 Said electromagnetic absorber as set forth in Claims 6 to 9;

an electromagnetic wave-reducing device of a mobile communication

terminal comprising magnese zinc ferry magnetic material including Y_2O_3 1.8 ~ 2.0 weight %, K_2O 0.04 ~ 0.09 weight %, TiO_2 0.02 ~ 0.09 weight %, Na_2O 0.29 ~ 0.38 weight %, MnO_2 14.0 ~ 15.0 weight %, ZnO 15.0 ~ 16.5 weight %, Fe_2O_3 65.0 ~ 75.0 weight %, CaO 0.05 ~ 0.09 weight %, SiO_2 0.60 ~ 0.85 weight %, NiO 0.01 ~ 0.03 weight % and Cr_2O_3 0.01 ~ 0.05 weight %.