Claims

1. A communication device for rail vehicle, of the type comprising a wireless communication apparatus,

the wireless communication apparatus comprises a transmitter-receiver module and a communication antenna, the transmitter-receiver module communicating, via the communication antenna, with control beacons arranged along a trackside for a real-time control of railway traffic,

the communication between the transmitter-receiver module and the control beacons being established on at least one communication spectral band of a spectral range subdivided into several predetermined channels,

the spectral range being not exclusively allocated to the communication between the wireless communication apparatus and the control beacon but capable of being used by a terminal used by a passenger located in a coach of the rail vehicle,

wherein said communication device further comprises a directional antenna and a protection apparatus that is linked to the directional antenna,

the protection apparatus, which protects the communication between the transmitter-receiver module and the control beacon against perturbations by the terminal used by the passenger, generates signals on at least one predetermined channel of the predetermined channels subdividing the spectral range, the at least one predetermined channel covering at least one communication spectral band while at least one communication spectral band is used by the communication apparatus communicating with the control beacon, and

the directional antenna radiating the signals generated by the protection apparatus in the direction of the coach of the rail vehicle where the passenger is located, in order to prevent the terminal used by the passenger use of the at least one predetermined channel.

2. The device according to claim 1, wherein the protection apparatus transmits signals continuously over time on the or on each predetermined channel.

3. The device according to claim 1, wherein the or each communication band is narrower than a predetermined channel of the multi-channel spectral range.

4. The device according claim 1, wherein the communication apparatus comprises screening means attenuating the signals radiated by the directional antenna.

5. The device according to claim 1, wherein the communication apparatus comprises filtering means attenuating signals whose frequency belongs to predetermined channels which do not cover the or each communication band.

6. The device according to claim 1, wherein the characteristics of the spectral range are defined by standard IEEE 802.11.

7. The device according to claim 1, wherein the protection apparatus transmits signals which contain data frames at level 2 of the OSI model.

8. A rail vehicle, wherein the rail vehicle comprises a communication device according to any of claims 1 to 7.

9. The rail vehicle according to claim 8, wherein the directional antenna radiates in the direction of at least one of the coaches of the rail vehicle which are located in the vicinity of the installation point of the communication apparatus of the communication device on board the rail vehicle.