User Manual / Functional Description

of the

Siemens

RF Transmitter

5WK4 5032 315 MHz

Language: English

General description of the RF transmitter

The 315 MHz RF remote control system consisting of a RF transmitter and a RF receiver mounted within the control unit. The RF transmitter is mechanically integrated in the head of the key. This transmitter is used to transmit an information for locking or unlocking the vehicle by an unidirectional RF transmission line for normal remote operation by pressing a button. For passive access functionality the transmitter is able to reply to an inductive command with sending a remote telegramme.

In general the following functions are provided by pressing the buttons:

- Lock the car
- Unlock the car
- Unlock trunc

Additional the following functions are provided (Keyless Entry/Go Functions):

- Lock/Unlock the car
- Start/Stop the engine

Power supply

The transmitter is provided with 1 Lithium battery (CR2032) that gives a tension of feeding of +3V.
The battery inversion is protected mechanically***.***

Buttons

There are three buttons which enable to lock, unlock the doors and unlock the trunk. During activation, the button is forced to the ground via a “pull-up” within the microcontroller.

LED

The LED is turned on between transmission blocks.

Oscillator

The oscillator is of PLL type. The operating frequency is about 315 MHz ± 75 kHz.

Mechanical design

The mechanical of the transmitter is composed of four parts*:*

the superior shell
the inferior shell
metal insert
battery support (mechanical protection to afford battery inversion)

The battery placement is integrated in the inferior shell.

Technical data

Carrier frequency	315 MHz ± 75 kHz
Output Power	< -18 dBm (carrier frequency)
Type of modulation	ASK
Method of frequency generation	Crystal
Number of channels	1
Baudrate	2 k Baud
Power supply	3 Volt
Type of battery	Lithium
Transmission range	typical 10 meters

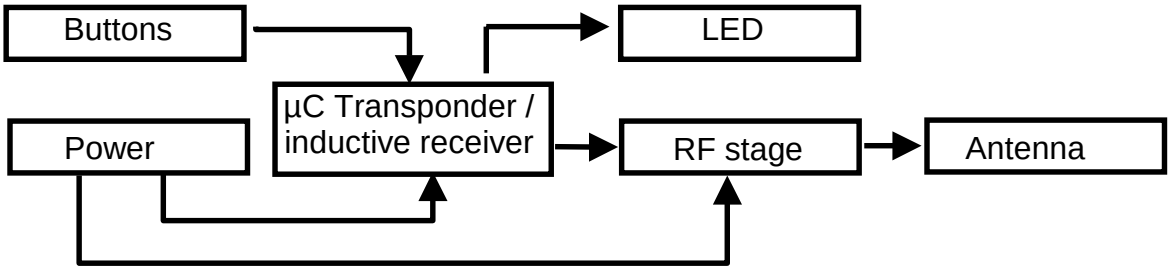
Typical usage pattern

27 lock / unlock operations in 24 hours with a typical transmission duration of 500 milliseconds

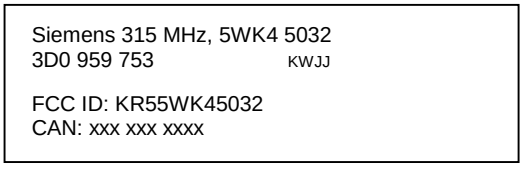
Transmitter ON	13,5	seconds / 24 hours
Transmitter OFF	86.386,5	seconds / 24 hours

Duty Cycle: T_{ON} / $T_{(ON+OFF)}$ x 100% = 13,5 / 86.400 x 100 % = 0,015 %

Block diagram of the transmitter



Label design



Setup of homologation testing samples

For homologation testing the testing samples are equipped with continuous transmission mode. After inserting the battery the transmitter starts continous transmission until the battery is removed.

These special function have only been implemented for the testing related to radio homologation.

This procedure does not correspond to the standard mode of operation!!!