

# **Technical Description**

Key: **3BO 825 381 A**



Hella KGaA Hueck & Co  
59552 Lippstadt

# Function Description

## PLL Fold-Away RF Transmitter

### Bugatti 5B0 825 381A

2005-07-25			New Document	K. Bödeker
Amend. date	Amend. No.	Page	Amendment	Gr./Name/Chkd
Date: 2005-07-25	Processed: K. Bödeker EE-324		Checked:	Bugatti_5B0 825 381.A_techn_description

## Function description: PLL fold-away RF transmitter Bugatti 5B0 825 381A

The transmitter operates at a nominal operating frequency of 315.0 MHz. The frequency-determining element is a quartz crystal-stabilised PLL circuit. The reference quartz crystal oscillates with a nominal frequency of 9.84375 MHz, the maximum frequency deviation is  $\pm 100$  ppm.

A type U2741B single-chip transmitter (Atmel) is used as the active transmitter element. This module also contains all active PLL components. The loop filter (C4, C5 and R5), the quartz crystal (Q1) and the adaptations to the integrated circuit board antenna (C8, C10 and C11) are required as external elements.

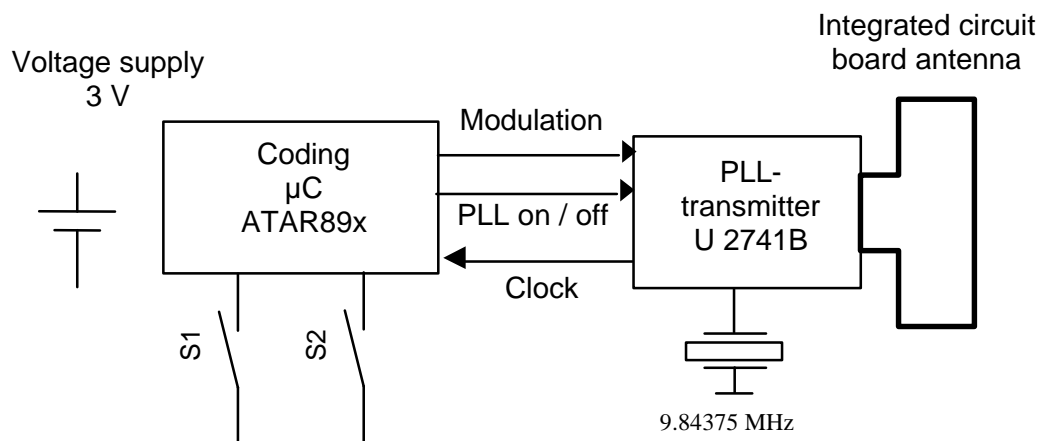
The transmitter is amplitude-modulated (Amplitude Shift Keying [ASK], ON Off Keying [OOK]). The transmitter is modulated via the **AM** input of the IC2 U2741B. The modulation signal is supplied by microcontroller IC1 (ROM versions ATAR890 or ATAR892 or identically functioning MTP versions, Atmel).

The clock signal for the microcontroller is provided by the PLL- IC U2741B.

The transmitter is equipped with 2 buttons (see "Technical data" table). If no button is pressed, the microcontroller is in "sleep mode", and the transmitter's RF stage is disabled. When a button is pressed, the microcontroller wakes up and switches on the PLL circuit. After stabilisation of the PLL the microcontroller outputs a coded signal to the RF transmitter. Transmission of the RF signal continues until all buttons are released, but not longer than 60 seconds.

Coding is accomplished using a combination of fixed and rolling code.

The transmitter is supplied by one lithium battery (type CR2032, nominal voltage 3V).



**Figure 1: Block diagram of the transmitter**



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### Technical data:

Model designation	Buttons	Function
5B0 825 381A (2 Buttons)	S1 S2	"Lock" "Unlock"
Operating voltage	3V nominal (1 lithium battery CR2032)	
Current consumption	approx. 8 mA	
Operating frequency	315.0 MHz $\pm$ 100 ppm	
Frequency synthesis	quartz crystal-stabilised PLL	
PLL reference frequency	9.84375 MHz	
Modulation	pulse modulation (ASK)	
Type of transmission/operation (ITU designation)	A1D / Simplex	
Modulation frequency	approx. 1 kHz	
Signal strength	approx. 520 $\mu$ V/m @ 3m	
Operating temperature range	-20 °C ... +60 °C	
Antenna	integrated circuit board antenna	

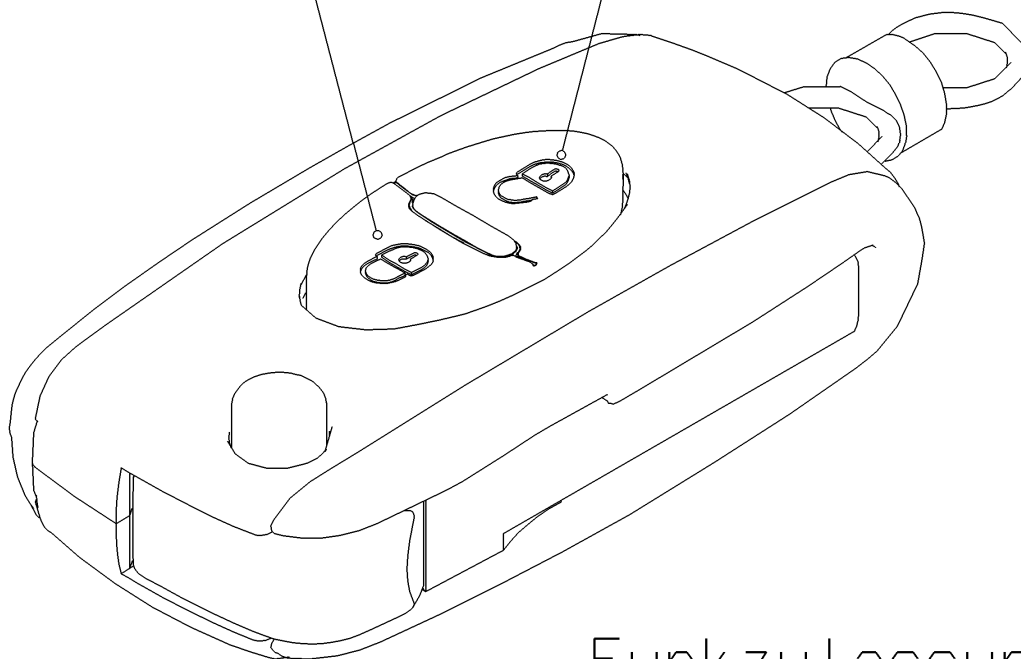
Date:  
2005-07-25

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Checked:

Verriegelungstaste  
button for closing

Entriegelungstaste  
button for opening




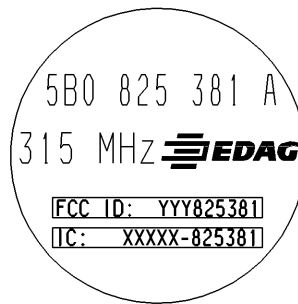
Funkzulassung  
Radio approval  
Bugatti  
5B0 825 381 A

part dimension:  
ca. 87mm x 35mm x 20mm

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Maszstab Scale		2:1	Datum Date	05-07-20	Name	Dreger	 <b>Hella KGaA</b> Hueck & Co.	
Projektionsmethode Projection		3	Erstellt/Entw. Drawn					
Freigegeben Checked		1	Konstr.-Gr. Department	EE-322				
Benennung FUNKSENDER 2T 315 MHz						Ordnungs-Nr. Ordering-No.	Material-Nr. Material-No.	Revision
						5B0 825 381 A	5B0 825 381 A	
Title RADIO TRANSMITTER 2T 315 MHz						Zeichnungs-Nr. Drawing No.	5B0 825 381 A	Format Size A4
Ersatz fuer Replaces						Blatt: Page:	Blattzahl: Of:	
Erstverwendung: First Project No.:								
CATIA:						Dok.-Status:		



# Zulassungs-Etikett im Funksender Approval-Label inside Radio Transmitter


Statement in the user manual of the vehicle:

This device complies with part 15 of the FCC rules and with RSS-210 of the IC rules. Operation is subject to the following two conditions:  
(1) This device may not cause harmful interference, and  
(2) this device must accept any interference received,  
including interference that may cause undesired operation.

Note:  
The manufacturer is not responsible for ANY RADIO OR TV interference caused by unauthorized modifications to this equipment.  
Such modifications could void the users authority to operate the equipment.

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Projektionsmethode Projection <b>3</b>	Erstellt/Entw. Drawn Freigegeben Checked Konstr.-Gr. Department <b>EE-322</b>					
Benennung <b>ZULASSUNGSBESCHRIFTUNG</b>				Ordnungs-Nr. Ordering-No. <b>5B0 825 381 A</b>	Material-Nr. Material-No.	Revision
Title <b>APPROVAL MARKING (EXAMPLES)</b>				Zeichnungs-Nr. Drawing No. <b>5B0 825 381 A</b>	Format Size <b>A4</b>	
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