

## **Functional description**

**S180052020**

**User Manual / Functional Description**

**of the**

**Continental**

**Tire Pressure Generation 1C wheel unit**

**Type**

**S180 052 020**

## 1. SYSTEM OVERVIEW

The tire pressure monitoring system (referred as TG for Tire Guard) consists of the following units:

- Tire guard wheel unit type S180 052 020 which includes an integrated pressure, temperature and acceleration sensor and a RF transmitter.
- RF receiver unit which includes a RF receiver (not described in this document)

The TG monitors a vehicle's tire pressure whilst driving or stationary. An electronic unit (wheel unit) inside each tire, mounted to the valve stem, periodically measures the actual tire pressure. By means of RF communication, this pressure information is transmitted to the RF receiver/decoder.

## 2. TECHNICAL DESCRIPTION

Carrier frequency:	433.92 MHz
Frequency FSK deviation:	$\pm 40$ kHz max
Number of channels:	1
Type of modulation:	Frequency Shift Keying (FSK)
Baud rate:	9600bds
Rated Output Power:	< 10mW
Antenna:	Internal
Voltage supply:	1 Lithium battery 3V (CR2450)
Voltage supply range :	2.1 up to 3.2V

### 3. TYPICAL USAGE PATTERN

#### DUTY CYCLE CALCULATION (EN 300 220-1)

PARKING: 1 burst transmission every 13H + 1 WUP transmission

FIRST BLOCK: During 2 minutes after vehicle start, burst emission every 16.8s (8 burst emission)

INTERIM FIRST BLOCK: none transmission

DRIVING: 1 burst emission every 67.2s during the rest of the hour (54 burst emission)

INTERIM: none transmission

=> During 1 hour, the Wheel Unit transmits 63 bursts + 1 WUP.

1 burst = 30.29806ms MAX

1 WUP length max = 42.1ms MAX

⇒ total transmission during 1 hour =  $63 \times 30.29806\text{ms} + 42.1\text{ms} = 1.96\text{s}$

DUTY CYCLE =  $(1.96 / 3600) \times 100\% = \underline{0.06\%}$

AVERAGE FACTOR CALCULATION (Standard 47 CFR Part 15C (periodic intentional transmitter))

WUP definition:

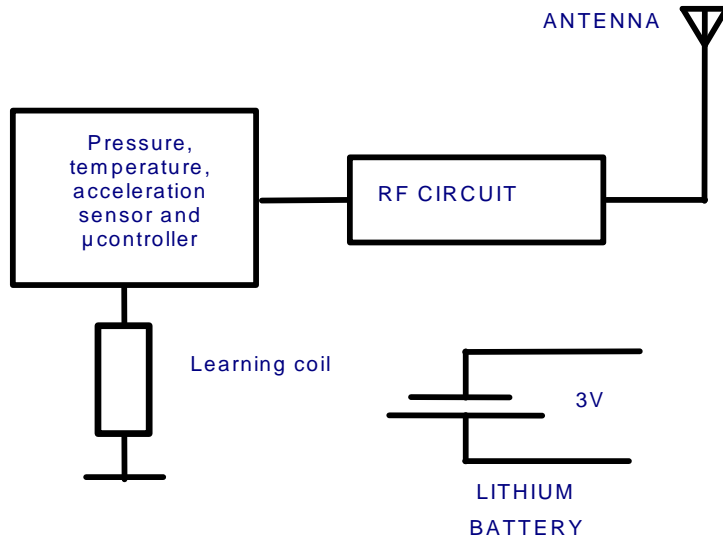
- Modulation FSK for the WUP
- 10 blocks in the WUP
- 5 bytes à "00" manchester in each blocks

⇒ WUP length = 41.664ms 1% (max = 42.1ms)

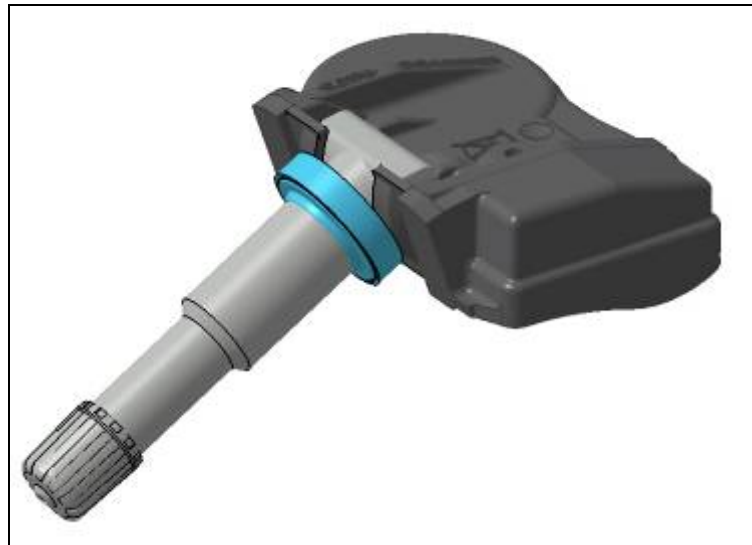
⇒ Averaging factor =  $20 \times \log(42.1/100) = \underline{-7.5\text{dB}}$

#### 4. BLOCK DIAGRAM

The block diagram below shows the main electronic units of the wheel unit:



## 5. PICTURE



### Label

Continental  
S180052020

FCC ID: KR5S180020  
IC: 7812D-S180020

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.

### USA:

This device complies with Part 15 of the FCC 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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.