Technical Description of the transmitter type designation : GM10306573

Brief Description

A block diagram of the RTPMS2 is shown in figure 1. The transmitter has the following sections:

- RF circuit
- Pressure sensor
- roll switch
- Magnet-learn Switch (reed switch)
- ASIC

The system has been developed to monitor a vehicle's tyre pressures whilst driving or stationary. An electronic unit inside each tyre, (referred to as the RTPMS2 transmitter) mounted to the valve stem, periodically measures actual tyre pressure. By means of RF communication, this pressure information is transmitted to a receiver/decoder which is fitted in the car.

The tire pressure value is detected by the ASIC (Application Specific Integrated Circuit) via a pressure sensor. The data is transmitted using a Manchester coding protocol at a maximum data rate of 4.096 Kbits/sec. The clock generator for the ASIC is crystal controlled. The block transmission format is shown in figure 2. The valve stem is part of the transmitting antenna. while the vehicle is parked (Stationary Mode), there is no transmission. when the vehicle is moving (roll switch closed) the RTPMS2 transmits 8 words every 32 sec as shown in figure 2. The transmitter will remain in drive mode for a period of time known as the Service Period after the vehicle comes to rest (roll switch open). After the Service Period time has elapsed the transmitter returns to Stationary Mode.

The RTPMS2 uses a Reed Switch, which when magnetically activated, will learn the ID code to the receiver/decoder in the production line of the vehicles.

MRX-GMXFM315

Consumer Use Modes	Manufacturing & Service Modes	Mode of Operation	Explanation	Frequency of Transmission
X		Roll Mode (Drive mode)	Transmitter in normal operation - wheel is rotating and roll switch is closed	8 words every 32 seconds
	X	Learn Mode	Transmits 40 words after magnetic or LF transponder activation or when sensor exits Off mode due to Roll switch closure	40 words for 1 transmission, < 5secs
	X	Factory Mode.	Transmitter is in Factory mode for the next 16 or fewer Roll Switch closures after a Learn activation. The Wheel has to be rotating (roll switch closed)	8 words every 10 seconds.
X	X	Stationary Mode	Transmitter enters mode after Factory Mode or Drive Mode - Wheel is not rotating - Vehicle is stopped.	no transmission
X		Wake Mode	Transmit 8 words when sensor transitions from Stationary mode to Drive mode due to Roll switch closure	8 words for 1 transmission
X	X	Off Mode	Transmit 8 words when sensor transitions to Off mode	8 words for 1 transmission
X		Low Battery Mode	Pursuant to Section 15.231(a)(4), alarm conditions apply for these two modes as they occur only during sudden change in tire pressure or at the time of low battery, per conversations with FCC.	
X		Re-measure Mode		
X	X	Sleep Mode	All of the time between the other modes	no transmission

Notes:

1) The manufacturing and service modes fall under FCC Part 2.803(d),2.803(e)(1)(iv),(v), and 2.803(e)(2). These modes are used to setup and program the tire pressure monitoring system on the vehicle and will be used in factory and service environments (i.e. vehicle/tire dealers) only. Since these procedures require special equipment and training, they will not be evoked by the consumer.

2) Power levels of all transmissions are the same

3) 8 word packet is < 1sec in duration

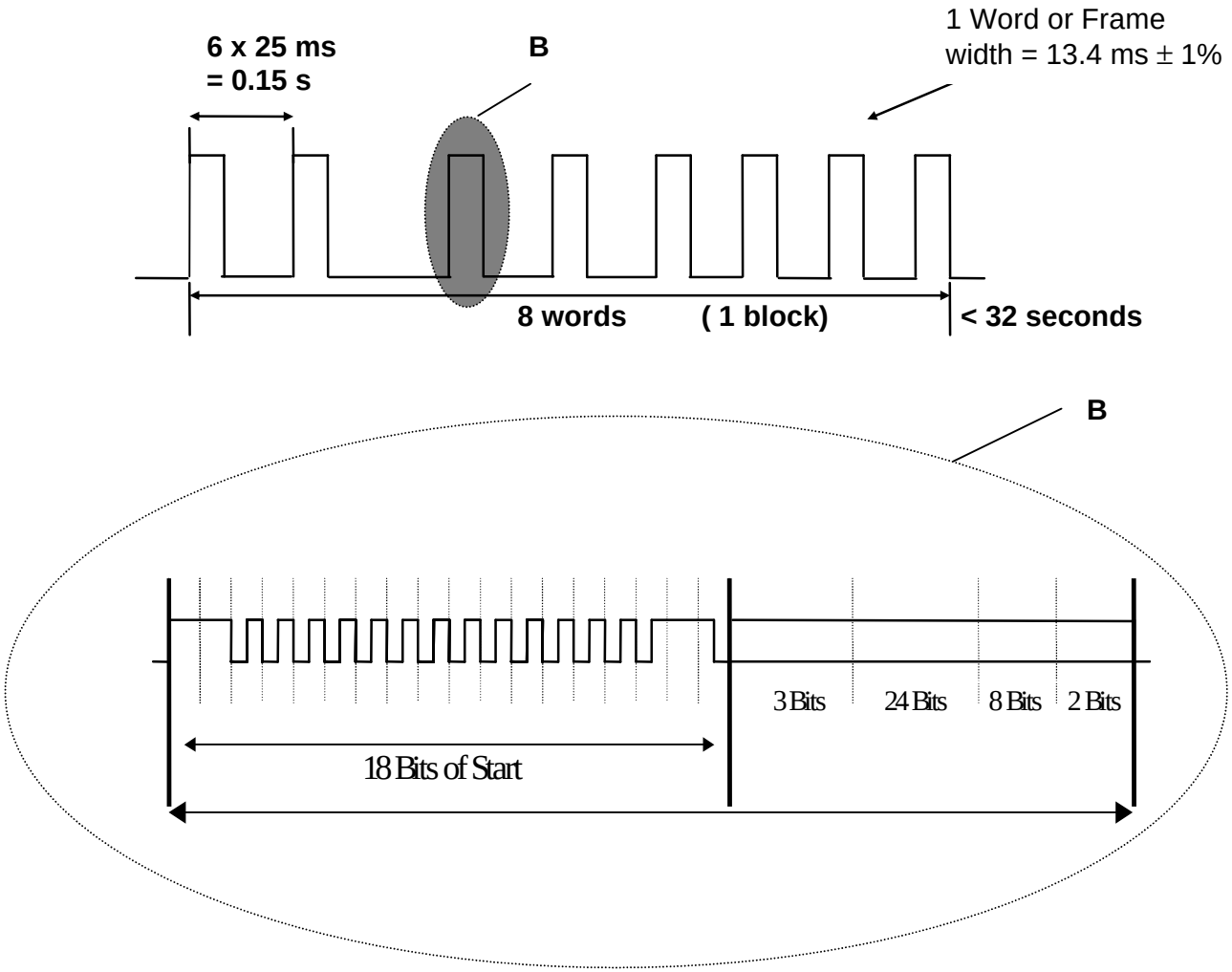
6 x 25 ms
= 0.15 s
B
1 Word or Frame
width = 13.4 ms ± 1%
8 words
(1 block)
< 32 seconds
B
3 Bits
24 Bits
8 Bits
2 Bits
18 Bits of Start

Fig.2