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TPMS PROTOCOL

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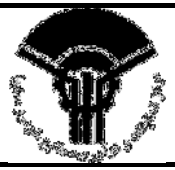
DOCUMENT TYPE:		TPMS PROTOCOL FOR QUIK AND SAINA 99 – 85 STD		
FACT SHEET	☐			
PROJECT PROGRESS	☐			
DEVELOPMENT	☒			
TROUBLESHOOTING	☐			
FUNCTION DESCRIPTION	☒	**Prepared by:** AIRIC	**Send to:** ICM and BCM suppliers	**Date:** December 07, 2019 **Version:** 0.0

1. GENERAL INFORMATION

Version	Date	Prepared by:	Checked by:	Confirmed by:	Number of pages	Project Code
0.0	20/01/2020	M. H. Rabipour	D.Shokri	A. Fallah	..	39198047

Table of contents

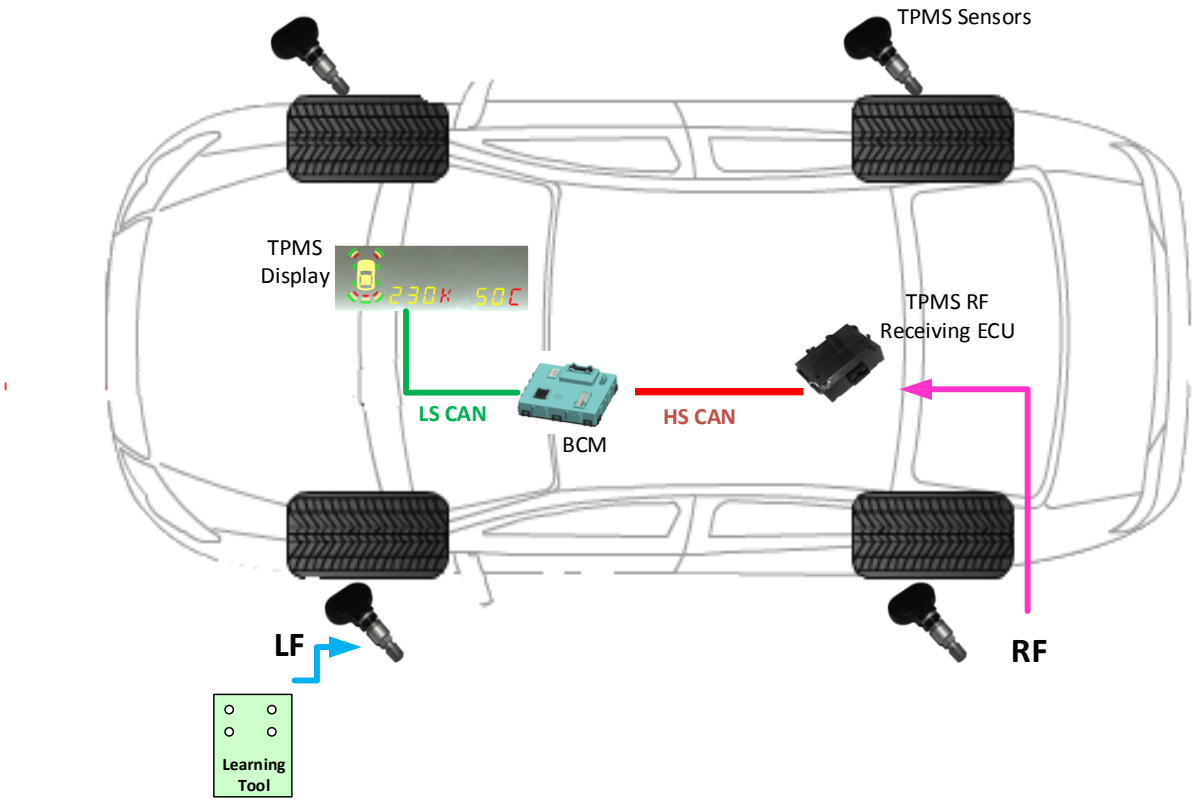
Draft changes history

Issue	Date	Paragraph	Comment
01	19.Jan.2020	--	First Issue.

1. TPMS Function

1.1 TPMS Function:

TPMS measures the pressure and temperature of each tire separately and send the related information via RF to the TPMS ECU and this unit will put necessary information according message table on the CAN bus. Then display must receive the related data from CAN bus and show them.
In EOL a Learning tool will be use to define related ID of each sensor in TPMS ECU.



2. LF Protocol

LF Protocol

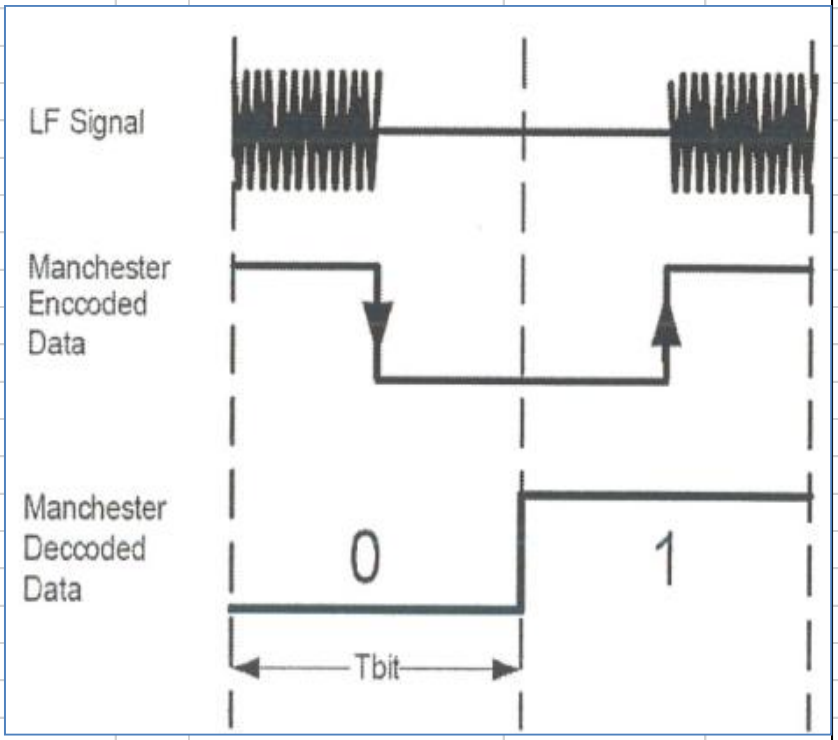
1 : LF Parameter

NO.	Item	Parameter	Remark
1	Modulation	ASK	
2	Modulation Frequency	125KHz±3KHz	
3	LF Receive Sensitivity	45NTP	
4	Data Band Rate	3.9Kbps±5%	

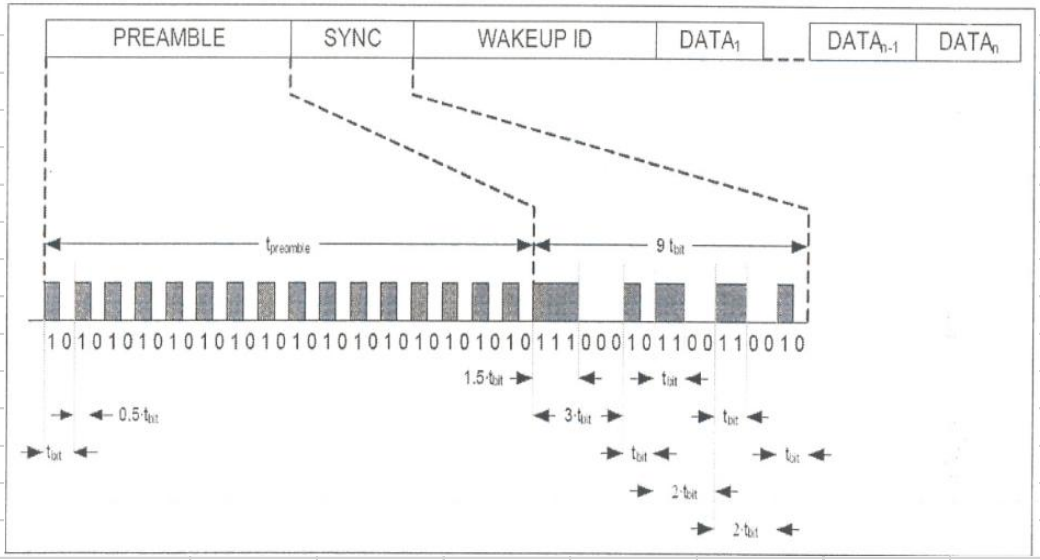
2 : Encode Scheme

Inverted Manchester

Wave as below



3 : Data Format



One Bit Time :

tBit=256us

0.5tBit=128us

1 : Preamble-->Wireless transmission initiation synchronization

tpreamble=32*0.5tbit=4096us

2:SYNC-->For TPMS sensor to determine effective wireless signal transmission

tsync=18*0.5tbit=2304us

3:Wake-UP ID-->wake up sensor (Fixed 0xFFF7)

twankeup ID=32*0.5tbit=4096us

4:Data-->Identify different LF commands

MLF1:0x5A XX

MLF2:0xDD XX

MLF3:0x2B XX

MLF4:0x4C XX

MLF5:0x8E XX

3. RF Protocol

RF Protocol

1 : Frame Structure

Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8	Byte9	Byte10	1Bit
0x00	0x01	ID1	ID2	ID3	ID4	Pressure	Temp.	Flag	CRC8	End

2 : Byte Definition

Byte1	SYNC Data 1	0x00		
Byte2	SYNC Data 2	0x01		
Byte3	ID1			
Byte4	ID2			
Byte5	ID3			
Byte6	ID4			
Byte7	Pressure	P= （Byte7） *1.373 unit kPa		
Byte8	Temperature	T= （Byte8） -50 unit ℃		
Byte9	Flag bit	Sensor status （Bit7）	1XXX XXXX	Sensor Error
			0XXX XXXX	Sensor OK
		Sensor Mode （Bit6， Bit5）	X00X XXXX	Sleep
			X01X XXXX	
			X10X XXXX	Stop
			X11X XXXX	Run
		Battery Voltage(Bit4)	XXX0 XXXX	Normal
			XXX1 XXXX	Low
		Rapid leak （Bit3）	XXXX 0XXX	No Leak
			XXXX 1XXX	Rapid Leak
		Trigger Mode	XXXX X000	Time to launch
			XXXX X001	MLF1
			XXXX X010	MLF2
			XXXX X011	MLF3
			XXXX X100	MLF4
			XXXX X101	MLF5
			XXXX X110	No use
			XXXX X111	No use
Byte10	CRC8	CRC8 Value		

COMPANY INFORMATION

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