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# RF Exposure Evaluation Report

**Report No. :** CQASZ20191101225E-03  
**Applicant:** Zhejiang PDW Industrial Co., Ltd.  
**Address of Applicant:** Quanxi Industrial Park, Wuyi County, Jinhua City, Zhejiang, P.R. China 321200  
**Equipment Under Test (EUT):**  
**EUT Name:** TPMS Bluetooth Adaptor  
**Model No.:** 04.01.73, 04.01.75  
**Test Model No.:** 04.01.73  
**Brand Name:** PDW, PROCAS  
**FCC ID:** 2ATWD-040173  
**Standards:** 47 CFR Part 1.1307  
47 CFR Part 2.1093  
KDB447498D01 General RF Exposure Guidance v06  
**Date of Receipt:** 2019-11-28  
**Date of Test:** 2019-11-28 to 2019-12-05  
**Date of Issue:** 2019-12-05  
**Test Result :** **PASS\***

\*In the configuration tested, the EUT complied with the standards specified above

**Tested By:**

*Tom Chen*

(Tom Chen)

**Reviewed By:**

*Aaron Ma*

(Aaron Ma)

**Approved By:**

*Jack Ai*  
(Jack Ai)



## 1 Version

### Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20191101225E-03	Rev.01	Initial report	2019-12-05

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### 3 General Information

#### 3.1 Client Information

Applicant:	Zhejiang PDW Industrial Co., Ltd.
Address of Applicant:	Quanxi Industrial Park, Wuyi County, Jinhua City, Zhejiang, P.R. China 321200
Manufacturer:	Zhejiang PDW Industrial Co., Ltd.
Address of Manufacturer:	Quanxi Industrial Park, Wuyi County, Jinhua City, Zhejiang, P.R. China 321200

#### 3.2 General Description of EUT

Product Name:	TPMS Bluetooth Adaptor
Model No.:	04.01.73, 04.01.75
Test Model No.:	04.01.73
Trade Mark:	PDW, PROCAS
Hardware Version:	V05
Software Version:	V01
Bluetooth Version:	V4.2
Sample Type:	<input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable <input type="checkbox"/> Fix Location
Power Supply:	DC5V

#### 3.3 General Description of BT

Operation Frequency:	2402MHz~2480MHz
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channel:	79
Transfer Rate:	1Mbps/2Mbps/3Mbps
Hopping Channel Type:	Adaptive Frequency Hopping systems
Test Software of EUT:	Blue test 3 (manufacturer declare )
Antenna Type:	PCB antenna
Antenna Gain:	0dBi

#### 3.4 General Description of BLE

Operation Frequency:	2402MHz~2480MHz
Modulation Type:	GFSK
Transfer Rate:	1Mbps/2Mbps
Number of Channel:	40
Test Software of EUT:	Blue test 3 (manufacturer declare )
Antenna Type:	PCB antenna
Antenna Gain:	0dBi

Remark: Model No.: 04.01.73, 04.01.75

Only the model 04.01.73 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being Trademarks and models.

## 4 SAR Evaluation

### 4.1 RF Exposure Compliance Requirement

#### 4.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

##### 4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

#### 4.1.2 Limits

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by:

$$\left[ \frac{\text{max. power of channel, including tune-up tolerance, mW}}{\text{min. test separation distance, mm}} \right] \cdot \sqrt{f(\text{GHz})} \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

f(GHz) is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation<sup>17</sup>

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion

### 4.1.3 EUT RF Exposure

#### Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-0.120	0±1	1	1.259
Middle(2441MHz)	2.270	2±1	3	1.995
Highest(2480MHz)	3.150	3±1	4	2.512
π/4DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-2.500	-2±1	-1	0.794
Middle(2441MHz)	0.150	0±1	1	1.259
Highest(2480MHz)	1.000	1±1	2	1.585
8DPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-2.000	-2±1	-1	0.794
Middle(2441MHz)	0.450	0±1	1	1.259
Highest(2480MHz)	1.480	1±1	2	1.585

Worst case: GFSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune- up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	-0.120	0±1	1	1.259	0.39	3.0
Middle (2441MHz)	2.270	2±1	3	1.995	0.62	
Highest (2480MHz)	3.150	3±1	4	2.512	0.79	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20191101225E-01

2) For BLE

Measurement Data

GFSK(1Mbps) mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	2.45	2±1	3	1.995
Middle(2440MHz)	4.28	4±1	5	3.162
Highest(2480MHz)	4.78	4±1	5	3.162

Worst case: GFSK(1Mbps)						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune- up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	2.45	2±1	3	1.995	0.62	3.0
Middle (2440MHz)	4.28	4±1	5	3.162	0.99	
Highest (2480MHz)	4.78	4±1	5	3.162	1.00	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20191101225E-02

BDR, EDR and BLE can not simultaneous transmitting at same time.