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# RF Exposure Evaluation Report

**Report No.:** CQASZ20201001281E-02

**Applicant:** Ruian BoYu Automobile Parts Co., Ltd Pingyang Branch

**Address of Applicant:** No. 146, Xinbin Road, Haixi Town, Pingyang, Zhejiang

**Equipment Under Test (EUT):**

**EUT Name:** Auto Tire Pressure Monitoring System Sensors

**Model No.:** BY-MLX-26

**Brand Name:** N/A

**FCC ID:** 2AX5N-BYMLX26

**Standards:** 47 CFR Part 1.1307

47 CFR Part 2.1093

KDB447498D01 General RF Exposure Guidance v06

**Date of Receipt:** 2020-11-02

**Date of Test:** 2020-11-02 to 2020-11-06

**Date of Issue:** 2020-11-06

**Test Result:** PASS\*

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

**Tested By:**

*Martin Lee*

(Martin Lee)

**Reviewed By:**

*Sheek Luo*

(Sheek Luo)

**Approved By:**

*Jack Ai*

( Jack Ai)



## 1 Version

### Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20201001281E-02	Rev.01	Initial report	2020-11-06

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### 3 General Information

#### 3.1 Client Information

Applicant:	Ruian BoYu Automobile Parts Co., Ltd Pingyang Branch
Address of Applicant:	No. 146, Xinbin Road, Haixi Town, Pingyang, Zhejiang
Manufacturer:	Ruian BoYu Automobile Parts Co., Ltd Pingyang Branch
Address of Manufacturer:	No. 146, Xinbin Road, Haixi Town, Pingyang, Zhejiang
Factory:	Ruian BoYu Automobile Parts Co., Ltd Pingyang Branch
Address of Factory:	No. 146, Xinbin Road, Haixi Town, Pingyang, Zhejiang

#### 3.2 General Description of EUT

Product Name:	Auto Tire Pressure Monitoring System Sensors
Model No.:	BY-MLX-26
Trade Mark:	N/A
Hardware Version:	BY_MLX_HW_V1.0
Software Version:	BY_MLX_PG_V1.0
Test sample No:	CQASZ20201001281E#1
Sample Type:	<input checked="" type="checkbox"/> Mobile <input type="checkbox"/> Portable <input type="checkbox"/> Fix Location
Operation Frequency:	433.92MHz
Channel Numbers:	1
Modulation Type:	FSK
Antenna Type:	Integral antenna
Antenna Gain:	0dBi
Power Supply:	Button battery: DC 3V

Note: Using the new battery for testing.

## 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:

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

$f(\text{GHz})$  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

$$eirp = pt \times gt = (E \times d)^2/30$$

where:

pt = transmitter output power in watts,

gt = numeric gain of the transmitting antenna (unitless),

E = electric field strength in V/m,  $-10^{((dB\mu V/m)/20)/10^6}$ ,

d = measurement distance in meters (m)---3m,

$$\text{So } pt = (E \times d)^2/30 / gt$$

The worst case (refer to report CQASZ20201001281E-01) is below:

Antenna polarization: Horizontal		
Frequency (MHz)	Level (dBuV/m)	Polarization
433.92	83.84	Peak
433.92	71.40	Average

Antenna polarization: Vertical		
Frequency (MHz)	Level (dBuV/m)	Polarization
433.92	81.79	Peak
433.92	69.35	Average

For 433.92MHz wireless:

Field strength = 83.84dB $\mu$ V/m @3m

Ant. gain 0dBi; so Ant numeric gain=1.0

So  $pt = [10^{(83.84/20)/10^6} \times 3]^2/30 / 1.0 \times 1000 \text{mW} = 0.073 \text{mW}$

So  $(0.073 \text{mW}/5 \text{mm}) \times \sqrt{0.43392 \text{GHz}} = 0.0096$ ,

$0.0096 < 3.0$  for 1-g SAR

So the SAR report is not required.