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Report Template Version: V03
Report Template Revision Date: Mar.1st, 2017

RF Exposure Evaluation Report

Report No. : CQASZ20190600412E-02

Applicant: Zhongshan Jucar Auto Accessories Co., Ltd.

Address of Applicant: UNIT 701, HONGJI INDUSTRIAL 1 BUILDING ,NO. 23, TONGJI WEST ROAD, NANTOU TOWN, ZHONGSHAN CITY, GUANGDONG, (CHINA)

Manufacturer: Zhongshan Jucar Auto Accessories Co., Ltd.

Address of Manufacturer: UNIT 701, HONGJI INDUSTRIAL 1 BUILDING ,NO. 23, TONGJI WEST ROAD, NANTOU TOWN, ZHONGSHAN CITY, GUANGDONG, (CHINA)

Equipment Under Test (EUT):

Product: WIRELESS LED TRAILER LIGHT

Model No.: TB-10LED-WL-US

Brand Name: JUCAR/NICAR/Sparex/conniX

FCC ID: 2AT2V-TB10LEDWL

Standards: 47 CFR Part 1.1307
47 CFR Part 1.1310
KDB447498D01 General RF Exposure Guidance v06

Date of Test: 2019-06-03 to 2019-06-11

Date of Issue: 2019-06-11

Test Result : PASS*

Tested By:

Tiny You

(Tiny You)

Reviewed By:

Aaron Ma

(Aaron Ma)

Approved By:

Jack Ai

(Jack Ai)



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

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CQA, this report can't be reproduced except in full.

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20190600412E-02	Rev.01	Initial report	2019-06-11

2 Contents

	Page
1 VERSION	2
2 CONTENTS	3
3 GENERAL INFORMATION	4
3.1 CLIENT INFORMATION.....	4
3.2 GENERAL DESCRIPTION OF EUT	4
4 RF EXPOSURE EVALUATION	5
4.1 RF EXPOSURE COMPLIANCE REQUIREMENT	5
4.1.1 Standard Requirement.....	5
4.1.2 Limits.....	5
4.2 EUT RF EXPOSURE EVALUATION.....	6

3 General Information

3.1 Client Information

Applicant:	Zhongshan Jucar Auto Accessories Co., Ltd.
Address of Applicant:	UNIT 701, HONGJI INDUSTRIAL 1 BUILDING ,NO. 23, TONGJI WEST ROAD, NANTOU TOWN, ZHONGSHAN CITY, GUANGDONG, (CHINA)
Manufacturer:	Zhongshan Jucar Auto Accessories Co., Ltd.
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3.2 General Description of EUT

Name:	WIRELESS LED TRAILER LIGHT
Model No.:	TB-10LED-WL-US
Trade Mark :	JUCAR/NICAR
Hardware Version:	V1.0
Software Version:	V1.0
Frequency Range:	2409 MHz ~ 2470MHz
Modulation Type:	GFSK
Number of Channels:	3(declared by the client)
Sample Type:	☐ Mobile ☐ Portable ☒ Fix Location
Test Software of EUT:	RF test (manufacturer declare)
Antenna Type:	Internal antenna
Antenna Gain:	0dBi
Power Supply:	DC12V

4 RF Exposure 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 ≤ 50 mm are determined by:

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

$f(\text{GHz})$ is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation¹⁷

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 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

4.2 EUT RF Exposure Evaluation

1) For 2.4G

$$e_{irp} = p_t \times g_t = (E \times d)^2 / 30$$

where:

p_t = transmitter output power in watts,

g_t = 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,

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

The worst case (refer to report CQASZ20190600412E-01) is below:

Antenna polarization: Horizontal		
Frequency (MHz)	Level (dBuV/m)	Polarization
2470	97.89	Peak
2470	88.11	Average

Antenna polarization: Vertical		
Frequency (MHz)	Level (dBuV/m)	Polarization
2470	98.62	Peak
2470	88.31	Average

For 2470MHz wireless:

Field strength = 98.62dBuV/m @3m

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

$$\text{So } p_t = \{ [10^{(98.62/20)/10^6} \times 3]^2 / 30 / 1.0 \} \times 1000 \text{mW} = 2.183 \text{mW}$$

$$\text{So } (2.183 \text{mW} / 5 \text{mm}) \times \sqrt{2.470 \text{GHz}} = 0.69,$$

$$0.69 < 3.0 \text{ for 1-g SAR}$$

So the SAR report is not required.