

# RF Exposure Evaluation Declaration

Product Name : Bicycle Light  
Trade Name : LEZYNE  
Model No. : KTV SMART WIRELESS FRONT  
FCC ID. : 2AD4S-13PV104F

Applicant : Lezyne USA, Incorporated

Address : 645 Tank Farm Road Unit F, San Luis Obispo,  
California, 93401, United States

Date of Receipt : Jun. 13, 2019  
Date of Declaration : Dec. 13, 2019  
Report No. : 1960156R-RFUSP02V00  
Report Version : V1.0



The declaration results relate only to the samples calculated.

The declaration shall not be reproduced except in full without the written approval of DEKRA Testing and Certification Co., Ltd.

# Test Report Certification

Issued Date : Dec. 13, 2019

Report No. : 1960156R-RFUSP02V00



Product Name : Bicycle Light

Applicant : Lezyne USA, Incorporated

Address : 645 Tank Farm Road Unit F, San Luis Obispo, California,  
93401, United States

Manufacturer : Lezyne USA, Incorporated

Model No. : KTV SMART WIRELESS FRONT

FCC ID. : 2AD4S-13PV104F

EUT Voltage : DC 3.7V

Testing Voltage : AC 120V/60Hz (Power by PC)  
DC 3.7V (Power by Battery)

Trade Name : LEZYNE

Applicable Standard : FCC 47 CFR Part 2.1091 Radiofrequency radiation  
exposure evaluation: mobile devices.

Laboratory Name : Hsin Chu Laboratory

Address : No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township,  
Hsinchu County 310, Taiwan, R.O.C.  
TEL: +886-3-582-8001 / FAX: +886-3-582-8958

Test Result : Complied

Tested By :



( Scott Chang / Engineer )

Approved By :



( Louis Hsu / Deputy Manager )

**Revision History**

Report No.	Version	Description	Issued Date
1960156R-RFUSP02V00	V1.0	Initial issue of report	Dec. 13, 2019

## 1. General Information

### 1.1. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual	Test Site
Temperature (°C)	Peak Output Power	15 - 35	20	3
Humidity (%RH)		25 - 75	50	

Note: Test site information refers to Laboratory Information.

### Laboratory Information

**USA** : FCC Registration Number: TW3024  
**Canada** : IC Registration Number: 22397-1 / 22397-2 / 22397-3

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site : <http://www.dekra.com.tw>

If you have any comments, Please don't hesitate to contact us. Our test sites as below:

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
Address	1. No. 75-2, 3rd Lin, WangYe Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C. 2. No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. 3. No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
Phone number	1. +886-3-592-8858 2. +886-3-582-8001 3. +886-3-582-8001
Fax number	1. +886-3-592-8859 2. +886-3-582-8958 3. +886-3-582-8958
E mail address	<a href="mailto:info.tw@dekra.com">info.tw@dekra.com</a>
Website	<a href="http://www.dekra.com.tw">http://www.dekra.com.tw</a>

## 1.2. List of Test Equipment

Peak Output Power / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2018/12/17	2019/12/16
Pulse Power Sensor	Anritsu	MA2411B	1531043	2018/12/17	2019/12/16
Pulse Power Sensor	Anritsu	MA2411B	1531044	2018/12/17	2019/12/16
Power Meter	Keysight	8990B	MY51000248	2019/05/21	2020/05/20
Power Sensor	Keysight	N1923A	MY57240005	2019/05/21	2020/05/20

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

## 1.3. Uncertainty

Test item	Uncertainty
Peak Output Power	$\pm 2.26$ dB

Note: Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

## 2. RF Exposure Evaluation

### 2.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

**Note:**  $f$  is frequency in MHz.

#### RF Field Strength Limits for Controlled Use Devices (Controlled Environment)

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m <sup>2</sup> )	Reference Period (minutes)
0.003-1023	170	180	-	Instantaneous*
0.1-10	-	$1.6/f$	-	6**
1.29-10	$193/f^{0.5}$	-	-	6**
10-20	61.4	0.163	10	6
20-48	$129.8/f^{0.25}$	$0.3444/f^{0.25}$	$44.72/f^{0.5}$	6
48-100	49.33	0.1309	6.455	6
100-6000	$15.60 f^{0.25}$	$0.04138 f^{0.25}$	$0.6455 f^{0.5}$	6
6000-15000	137	0.364	50	6
15000-150000	137	0.364	50	616000/ $f^{1.2}$
150000-300000	$0.354 f^{0.5}$	$9.40 \times 10^{-4} f^{0.5}$	$3.33 \times 10^{-4} f$	616000/ $f^{1.2}$

**Note:**  $f$  is frequency in MHz.

\*Based on nerve stimulation (NS). \*\* Based on specific absorption rate (SAR).

#### Friis Formula

Friis transmission formula:  $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

$P_d$  = power density in  $\text{mW}/\text{cm}^2$

$P_{out}$  = output power to antenna in mW

$G$  = gain of antenna in linear scale

$\pi = 3.1416$

$R$  = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE,  $1 \text{ mW}/\text{cm}^2$ . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance  $r$  where the MPE limit is reached.

## 2.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

### 2.3. Test Result of RF Exposure Evaluation

Product	Bicycle Light
Test Mode	Mode 1: Transmit
Test Condition	RF Exposure Evaluation

**Antenna Gain:** The maximum antenna gain is -2.4 dBi.

#### Output Power into Antenna & RF Exposure Evaluation Distance:

Channel	Channel Frequency (MHz)	Conducted Output Power		Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
		(dBm)	(mW)		
00	2402	-0.790	0.834	0.000095	1
19	2440	-0.970	0.800	0.000092	1
39	2480	-1.550	0.700	0.000080	1

Note:

1. The results are evaluated using the maximum power from test report no. 1960156R-RFUSP01V00
2. The antenna information is from the customer declaration.