

# RF Exposure Evaluation declaration

Product Name : Bicycle Light  
Trade Name : LEZYNE  
Model No. : KTV SMART WIRELESS REAR  
FCC ID : 2AD4S-13PV104R

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 : Oct. 22, 2019  
Report No. : 1960152R-RFUSP02V00  
Report Version : V1.0



The declaration results relate only to the samples calculated.

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# Test Report Certification

Issued Date : Oct. 22, 2019

Report No. : 1960152R-RFUSP02V00



Product Name : Bicycle Light

Applicant : LEZYNE USA Inc.

Address : 645 Tank Farm Road, Suite F, San Luis Obispo, CA 93401,  
USA

Manufacturer : LEZYNE USA Inc.

Model No. : KTV SMART WIRELESS REAR

FCC ID. : 2AD4S-13PV104R

EUT Voltage : DC 3.7V (Power by Battery)

Testing Voltage : DC 5V (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 :



( Elwin Lin / Engineer )

Approved By :



( Louis Hsu / Deputy Manager )

**Revision History**

Report No.	Version	Description	Issued Date
1960152R-RFUSP02V00	V1.0	Initial issue of report	Oct. 22, 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	24	3
Humidity (%RH)		25 - 75	46	

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

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

F= 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 x 10 <sup>-4</sup> $f$ 0.5	3.33 x 10 <sup>-4</sup> $f$	616000/ $f$ 1.2
<b>Note:</b> $f$ 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  $mW/cm^2$

$P_{out}$  = 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,  $1 mW/cm^2$ . 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	-3.34	0.463	0.000053	1
19	2440	-2.78	0.527	0.000060	1
39	2480	-2.02	0.628	0.000072	1

Note:

1. The results are evaluated using the maximum power from test report no. 1960152R-RFUSP01V00
2. The antenna information is from the customer declaration.