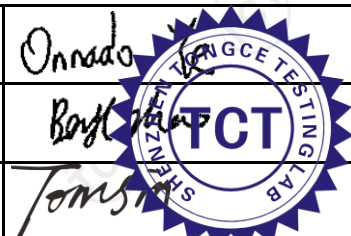




# TEST REPORT

<b>FCC ID</b> ..... :	2A5HQ-C2231	
<b>Test Report No</b> ..... :	TCT230301E005	
<b>Date of issue</b> ..... :	Mar. 09, 2023	
<b>Testing laboratory</b> .....	SHENZHEN TONGCE TESTING LAB	
<b>Testing location/ address:</b>	2101 & 2201, Zhenchang Factory Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China	
<b>Applicant's name</b> ..... :	Ciro Corporation	
<b>Address</b> ..... :	1310 Gateway Circle, Hudson, Wisconsin 54016, United States	
<b>Manufacturer's name</b> ... :	Ciro Corporation	
<b>Address</b> ..... :	1310 Gateway Circle, Hudson, Wisconsin 54016, United States	
<b>Standard(s)</b> .....	FCC CFR Title 47 Part 1.1307	
<b>Test item description</b> .....	Lightstrike	
<b>Trade Mark</b> .....	Ciro	
<b>Model/Type reference</b> ..... :	C2231(48019), C2237(40353/40373/40354/40374), C222(41032/41036), C2220(40900/40901/40902/40903), C2236(40453/40454/40473/40474)	
<b>Rating(s)</b> ..... :	DC 12V	
<b>Date of receipt of test item</b> .....	Mar. 01, 2023	
<b>Date (s) of performance of test</b> ..... :	Mar. 01, 2023 - Mar. 09, 2023	
<b>Tested by (+signature)</b> ... :	Onnado YE	
<b>Check by (+signature)</b> ..... :	Beryl ZHAO	
<b>Approved by (+signature)</b> :	Tomsin	

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## 1. General Product Information

### 1.1. EUT description

Test item description .....	Lightstrike
Model/Type reference.....	C2231(48019)
Sample Number.....	TCT230301E004-0101
Operation Frequency .....	2402MHz~2480MHz
Modulation Type .....	GFSK
Antenna Type.....	PCB Antenna
Antenna Gain.....	2.21dBi
Rating(s).....	DC 12V

Note: The antenna gain listed in this report is provided by applicant, and the test laboratory is not responsible for this parameter.

### 1.2. Model(s) list

No.	Model No.	Tested with
1	C2231(48019)	<input checked="" type="checkbox"/>
Other models	C2237(40353/40373/40354/40374), C222(41032/41036), C2220(40900/40901/40902/40903), C2236(40453/40454/40473/40474)	<input type="checkbox"/>

Note: C2231(48019) is tested model, other models are derivative models. The models are identical in circuit and PCB layout, only different on the model names. So the test data of C2231(48019) can represent the remaining models.

## 2. General Information

### 2.1. Test environment and mode

Item	Normal condition
Temperature	+25°C
Voltage	DC 12V
Humidity	56%
Atmospheric Pressure:	1008 mbar
<b>Test Mode:</b>	
Engineering mode:	Keep the EUT in continuous transmitting by select channel

### 2.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
/	/	/	/	/

**Note:**

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
3. For conducted measurements (Output Power, 20dB Occupied Bandwidth, Carrier Frequencies Separation, Hopping Channel Number, Dwell Time, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

### 3. Facilities and Accreditations

#### 3.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098  
SHENZHEN TONGCE TESTING LAB  
Designation Number: CN1205

The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1  
SHENZHEN TONGCE TESTING LAB  
CAB identifier: CN0031

The testing lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

#### 3.2. Location

SHENZHEN TONGCE TESTING LAB

Address: 2101 & 2201, Zhenchang Factory Renshan Industrial Zone, Fuhai Subdistrict,  
Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China

TEL: +86-755-27673339

## 4. Test Results and Measurement Data

According to §1.1307(b), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

- Remark: 1) The maximum output power for antenna is -4.52dBm (0.35mW) at 2480MHz, 2.21dBi antenna gain (with 1.66 numeric antenna gain.)  
2) For mobile or fixed location transmitters, no SAR consideration applied. The minimum separation generally be used is at least 20cm, even if the calculation indicate that the MPE distance would be lesser.

### Calculation

$$\text{Given } E = \frac{\sqrt{30 \times P \times G}}{d} \quad \& \quad S = \frac{E^2}{3770}$$

Where  $E$  = Field Strength in Volts / meter

$P$  = Power in Watts

$G$  = Numeric antenna gain

$d$  = Distance in meters

$S$  = Power Density in milliwatts / square centimeter

Maximum Permissible Exposure

output power= 0.35mW

Numeric Antenna gain= 1.66

Substituting the MPE safe distance using  $d=20\text{cm}$  into above equation.

Yields:

$$S = 0.000199 \times P \times G$$

Where  $P$  = Power in mW

$G$  = Numeric antenna gain

$S$  = Power density in  $\text{mW}/\text{cm}^2$

Power density =  $0.000116 \text{mW}/\text{cm}^2$

(For mobile or fixed location transmitters, the maximum power density is  $1.0 \text{mW}/\text{cm}^2$  even if the calculation indicates that the power density would be larger.)

\*\*\*\*\***END OF REPORT**\*\*\*\*\*