



JAPAN RADIO TEST REPORT

Applicant: Welkin International CO., LTD.

Address: No. 12-7, 5-chome, Umeda, Adachi-ku, Tokyo

Manufacturer: Welkin International CO., LTD.

Address: No. 12-7, 5-chome, Umeda, Adachi-ku, Tokyo

Product Name: Dynamic Camping Light

Trade Mark: L&S WORKS

Model Number: LS020

Date of Receipt: Dec. 02, 2025

Test Date: Dec. 02, 2025-Jan. 09, 2026

Date of Report: Jan. 09, 2026

Prepared By: Shenzhen DL Testing Technology Co., Ltd.

Address: 101-201, Comprehensive Building, Tongzhou Electronics Longgang Factory Area,
No.1 Baolong Fifth Road, Baolong Community, Baolong Street, Longgang District,
Shenzhen, China

Applicable Article 2 paragraph 1 item 19
Standards: Notice No.88 Annex 43

Test Result: Pass

Report Number: DLE-251219013R

Prepared (Test Engineer): Alisa Song

Reviewer (Supervisor): Jack Bu

Approved (Manager): Jade Yang



This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen DL Testing Technology Co., Ltd.



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1. TECHNICAL INFORMATION

Note: the following data is based on the information by the applicant.

1.1 EUT DESCRIPTION

Product Name:	Dynamic Camping Light
Trade Mark:	L&S WORKS
Model Number:	LS020
Modulation Type:	GFSK 1M & 2M
Operation Frequency:	2402MHz~2480MHz
Antenna Designation:	PCB antenna
Antenna Gain:	4.0 dBi
Channel No.:	40
Channel space	2MHz
Hardware Version:	V9.0
Software Version:	V5.0
Power supply:	DC 5V by adapter or battery 3.6V



1.2 CHANNEL LIST

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	10	2422MHz	20	2442MHz	30	2462MHz
1	2404MHz	11	2424MHz	21	2444MHz	31	2464MHz
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
8	2418MHz	18	2438MHz	28	2458MHz	38	2478MHz
9	2420MHz	19	2440MHz	29	2460MHz	39	2480MHz

1.3 DESCRIPTION OF TEST MODES

The bluetooth module was tested while in a continuous transmitter/receiver mode.

The EUT was tuned to a low, middle, and high channel for all tests. For all test case pre/scans were completed in all

Modes to determine worst case levels.

Power Supply Voltage Fluctuation Test

Voltage Fluctuation Test	Normal Voltage	High Voltage +10% of Normal Voltage	Low Voltage -10% of Normal Voltage
Input DC Power	5.0V	5.5V	4.5V
RF Chip	3.6V	3.636V	3.564V
Voltage Variation(%)	--	1%	-1%

Note:

Voltage Variation (%)

= (Output high or Low Voltage - Output Normal Voltage) / Output Normal Voltage * 100

Note: During the input supply voltage to the EUT from the external power source is varied by $\pm 10\%$, the fluctuation of input voltage to the circuit of RF unit of test equipment is exceed $\pm 1\%$. So, all measurement has been conducted by normal and limit voltage.



2.TEST ITEMS AND THE RESULTS

Part	Rule Section	Description of Test	Result
4.1	3	Frequency Error	Complies
4.2	4	Occupied Bandwidth (99%) and Spread-spectrum Bandwidth (90%)	Complies
4.3	5	Unwanted Emission Intensity	Complies
4.4	6	Antenna Power Error	Complies
4.5	7	Limitation of Collateral Emission of Receiver	Complies
4.6	9	Transmission Radiation Angle Width (3dB Beamwidth)	N/A
4.7	10	Radio Interference Prevention Capability	Complies
4.8	11	Construction Protection Confirmation	Complies

Pass: The EUT complies radio interference prevention capability.

2.1 TEST FACILITY

Shenzhen DL Testing Technology Co., Ltd.

Add.: 101-201, Comprehensive Building, Tongzhou Electronics Longgang Factory Area, No.1 Baolong Fifth Road, Baolong Community, Baolong Street, Longgang District, Shenzhen, China

FCC Test Firm Registration Number: 854456

Designation Number: CN1307

IC Registered No.: 27485

CAB ID.: CN0118

CNAS: L11567



2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 3.2\text{dB}$
2	Radiated Emission Test	$\pm 4.7\text{dB}$
3	RF power, conducted	$\pm 0.16\text{dB}$
4	Spurious emissions, conducted	$\pm 0.21\text{dB}$
5	All emissions, radiated (<1G)	$\pm 4.68\text{dB}$
6	All emissions, radiated(>1G)	$\pm 5.0\text{dB}$
7	frequency error ppm	$\pm 0.5\text{ppm}$
8	Occupied Bandwidth	$\pm 0.32\text{MHz}$



3. DETAILS OF TEST

3.1 LIST OF TEST EQUIPMENTS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated until
1	SPECTRUM ANALYZER	AGILENT	E4407B	160400005	Nov. 01, 2025	Oct. 31, 2026
2	TEST RECEIVER	R&S	ESPI	101318	Nov. 01, 2025	Oct. 31, 2026
3	BILOG ANTENNA	TESEQ	CBL6111D	31216	Nov. 01, 2025	Oct. 31, 2026
4	50Ω COAXIAL SWITCH	ANRITSU	MP59B	6200264416	Nov. 01, 2025	Oct. 31, 2026
5	SPECTRUM ANALYZER	ADVANTEST	R3132	150900201	Nov. 01, 2025	Oct. 31, 2026
6	HORN ANTENNA	EM	EM-AH-10180	2011071402	Nov. 01, 2025	Oct. 31, 2026
7	HORN ANT	SCHWARZBECK	BBHA 9170	9170-181	Nov. 01, 2025	Oct. 31, 2026
8	AMPLIFIER	EM	EM-30180	060538	Nov. 01, 2025	Oct. 31, 2026
9	LOOP ANTENNA	ARA	PLA-1030/B	1029	Nov. 01, 2025	Oct. 31, 2026
10	POWER METER	R&S	NRVS	100696	Nov. 01, 2025	Oct. 31, 2026
11	TEST RECEIVER	R&S	ESCI	101160	Nov. 01, 2025	Oct. 31, 2026
12	SPECTRUM ANALYZER	AGILENT	N9020A	MY55370280	Nov. 01, 2025	Oct. 31, 2026
13	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW500	106504	Nov. 01, 2025	Oct. 31, 2026
14	50Ω COAXIAL SWITCH	ANRITSU	MP59B	6200264417	Nov. 01, 2025	Oct. 31, 2026
15	D.C. POWER SUPPLY	LONGWEI	PS-305D	010964729	Nov. 01, 2025	Oct. 31, 2026
16	DIGITAL OSCILLOSCOPE	TEKTRONIX	TDS3032B	-	Nov. 01, 2025	Oct. 31, 2026

Note: All Equipments Calibration In Guangzhou GRE Metrology & Test Co., Ltd

(a) Calibration conducted by the National Institute of Information and Communications Technology (NICT) in Japan (hereinafter referred to as "NICT") or a designated calibration agency under Article 102-18 paragraph (1) in JRL.

(b) Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Act (Act No. 51 of 1992).

(c) Calibration conducted in countries except Japan, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).

(d) Calibration, etc. conducted by using measuring instruments and other equipment listed in the right column of appended table No. 3, which shall have been given any type of calibration, etc. listed above from (a) to (C) From JRL Article 24-2, paragraph 4, Item 2

3.2 ENVIRONMENTAL CONDITIONS

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 24.6°C
- Humidity: 55.4%
- Atmospheric pressure: 101 kPa



4. TEST RESULTS

4.1 FREQUENCY ERROR MEASUREMENT

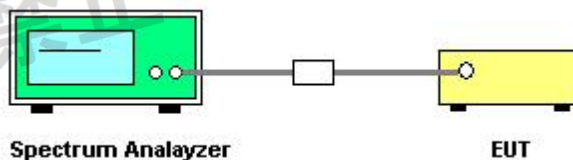
4.1.1. LIMIT

Item	Limits
Frequency Tolerance (2402~2480MHz)	$\leq \pm 50\text{ppm}$

4.1.2. TEST PROCEDURES

Test Frequency: test channel,
RBW=VBW=10KHz, Span=1MHz, Sweep time=Auto, Detector mode=Positive peak

4.1.3. TEST SETUP LAYOUT



4.1.4. TEST DEVIATION

There is no deviation with the original standard.

4.1.5. EUT OPERATION DURING TEST

The EUT was placed on the test table and programmed in un-modulation function.

4.1.6. RESULTS OF FREQUENCY ERROR

Measurement Data : The detailed test data see Appendix I



4.2. OCCUPIED BANDWIDTH AND SPREAD-SPECTRUM BANDWIDTH MEASUREMENT

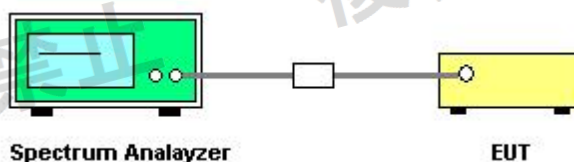
4.2.1. LIMIT

Item	Limits
Occupied Bandwidth:	$\leq 26\text{MHz}$

4.2.2. TEST PROCEDURES

Test Frequency: test channel,
RBW=VBW=300KHz, Span=3MHz, Sweep time=Auto, Detector mode=Positive peak

4.2.3. TEST SETUP LAYOUT



4.2.4. TEST DEVIATION

There is no deviation with the original standard.

4.2.5. EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

4.2.7. RESULTS OF OCCUPIED BANDWIDTH AND SPREAD-SPECTRUM BANDWIDTH

Measurement Data : The detailed test data see Appendix I



4.3. UNWANTED EMISSION INTENSITY MEASUREMENT

4.3.1 LIMIT

Item	Limits
TX Spurious Emission(2402~2480MHz)	Below 2387 MHz: 2.5 μ W/MHz or less 2387 to 2400 MHz: 25 μ W/MHz or less 2483.5 through 2496.5 MHz: 25 μ W/MHz or less Over 2496.5 MHz: 2.5 μ W/MHz or less

4.3.2. MEASURING INSTRUMENTS AND SETTING

Please refer to section 5 in this report. The following table is the setting of Spectrum Analyzer.

Step 1

All spurious are measured from 30MHz to 13GHz by peak mode.

Step 2

If the value measured by Step1 is 3dB or less to the limit, measure in average mode.

4.3.3. TEST PROCEDURES

Step 1:

Test Frequency: test channel,

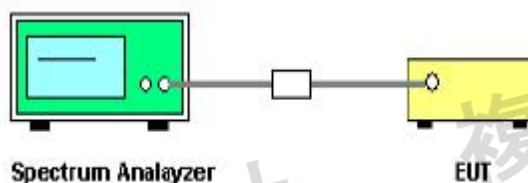
RBW=VBW=1MHz, Sweep time=Auto, Detector mode=Positive peak

Step 2:

Test Frequency: spurious frequency

RBW=VBW=1MHz, Sweep time=Auto, Detector mode=Sample, Span=0H

4.3.4. TEST SETUP LAYOUT



4.3.5. TEST DEVIATION

There is no deviation with the original standard.

4.3.6. EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

4.3.7. TEST RESULT OF UNWANTED EMISSION INTENSITY

Measurement Data : The detailed test data see Appendix I



4.4. ANTENNA POWER ERROR MEASUREMENT

4.4.1. LIMIT

Item	Limits
Antenna Power Error	10mW The output power tolerance must be within +20% E.I.R.P: $\leq 12.14\text{dBm}$

4.4.3. TEST PROCEDURES

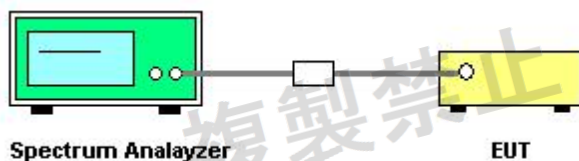
1) Search Frequency of Peak Power

Test Frequency: test channel,
RBW=1M, VBW=3M, Span=2BW, Sweep time=Auto, Detector mode =Positive peak, Sweep time=Auto, Sweep Type: Continue

2) Measure of average burst power

Test Frequency: frequency of peak power
RBW=1M, VBW=1M, Span=0Hz, Detector mode =RMS, Sweep time=Auto, Sweep Type: Single
Antenna power= average burst power

4.4.4. TEST SETUP LAYOUT



4.4.5. EST DEVIATION

There is no deviation with the original standard.

4.4.6. EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

4.4.7. TEST RESULT OF ANTENNA POWER ERROR

Measurement Data : The detailed test data see Appendix I



4.5. SECONDARY RADIATED EMISSIONS TEST

4.5.1. LIMIT

Item	Limits
RX Spurious Emission:	Below 1GHz: 4.0nW or less Above 1GHz: 20nW or less

4.5.2. MEASURING INSTRUMENTS AND SETTING

Please refer to section 5 in this report. The following table is the setting of Spectrum Analyzer.

Step 1

All spurious are measured from 30MHz to 13GHz by peak mode.

Step 2

If the value measured by Step1 is 3dB or less to the limit, measure in average mode.

4.5.3. TEST PROCEDURES

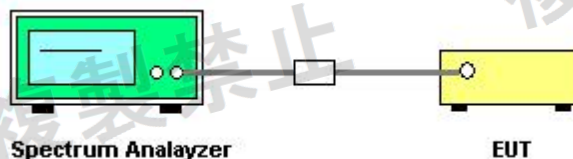
Step 1:

Test Frequency: test channel,
Below 1GHz, RBW=VBW=100KHz;
Above 1GHz, RBW=VBW=1MHz,
Sweep time=Auto, Detector mode=Positive peak

Step 2:

Test Frequency: spurious frequency
Test Frequency: test channel,
Below 1GHz, RBW=VBW=100KHz;
Above 1GHz, RBW=VBW=1MHz,
Sweep time=Auto, Detector mode=Sample, Span=0Hz

4.5.4. TEST SETUP LAYOUT



4.5.6. TEST DEVIATION

There is no deviation with the original standard.

4.5.7. EUT OPERATION DURING TEST

The EUT was programmed to be in continuously reception mode.

4.5.8. TEST RESULT

Measurement Data : The detailed test data see Appendix I



4.6. RADIO INTERFERENCE PREVENTION CAPABILITY MEASUREMENT

4.6.1. LIMIT

Item	Limits
Identification code	≥ 48 bits

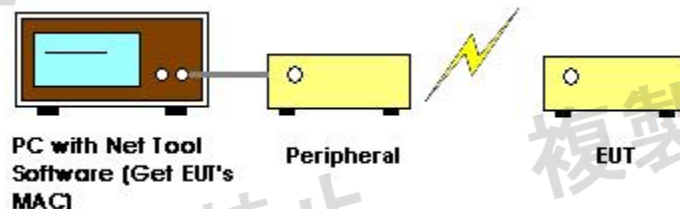
4.6.2. MEASURING ID CODE SOFTWARE

Item	Limits
MAC IP List	MAC Scan

4.6.3. TEST PROCEDURES

1. In the case that the EUT has the function of automatically transmitting the identification code: a. Transmit the predetermined identification codes from EUT. b. Check the transmitted identification codes with the demodulator.
2. In the case of receiving the identification code: a. Transmit the predetermined identification codes from the counterpart. b. Check if communication is normal. c. Transmit the signals other than predetermined ID codes from the counterpart. d. Check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones.

4.6.4. TEST SETUP LAYOUT



4.6.5. TEST DEVIATION

There is no deviation with the original standard.

4.6.6. EUT OPERATION DURING TEST

The EUT was programmed to be in normal transmitting mode.

4.6.7. TEST RESULT OF RADIO INTERFERENCE PREVENTION CAPABILITY

Test result:	CONFORM
MAC address:	00:E0:4E:88:22:56

4.7. CONSTRUCTION PROTECTION CONFIRMATION METHOD

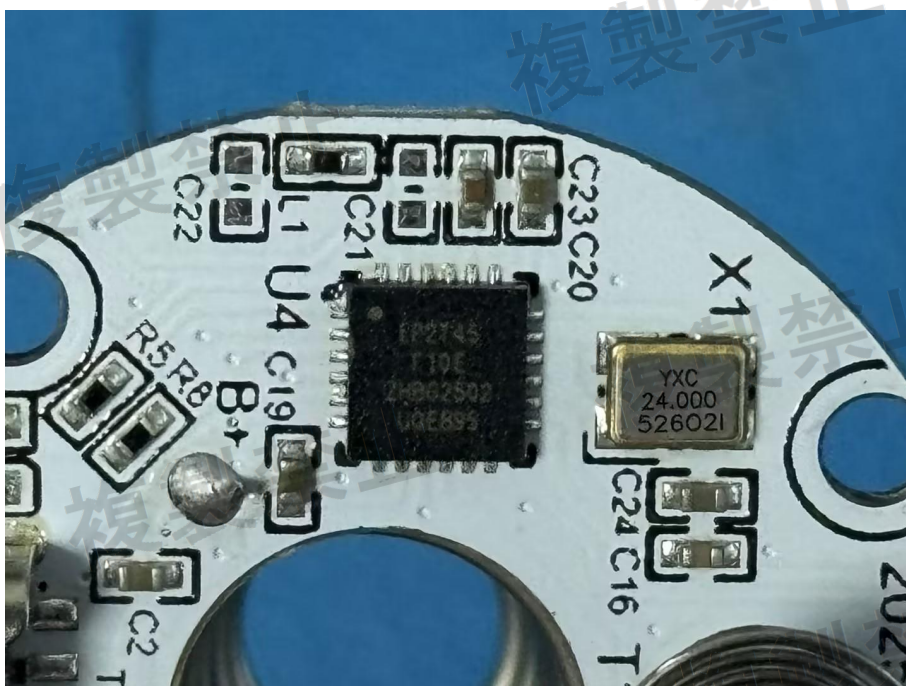
4.7.1. LIMIT

The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily.

4.7.2. CONFIRMATION METHOD

Enclosure:

The pin angle of the chip is 24 degrees, and the pin spacing is less than 0.5mm.





5. TEST SETUP PHOTO

Reference to the **Test Photo** for details.

6. EUT PHOTO

Reference to the **External Photos** and **Internal Photos** for details.

---END---