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RF Exposure Evaluation Report

Report No.: CQASZ20230500757E-02
Applicant: Shenzhen Hollyland Technology Co., Ltd
Address of Applicant: 8F, Building 5D, Skyworth Innovation Valley, Tangtou Road. Shiyuan Street, Baoan District Shenzhen, China.
Equipment Under Test (EUT):
EUT Name: Lark C1
Model No.: Lark C1, Lark M1, Lark C2
Test Model No.: Lark C1
Brand Name: HOLLYLAND, HOLLYVIEW
FCC ID: 2ADZC-6501R
Standards: 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General RF Exposure Guidance v06
Date of Receipt: 2023-05-11
Date of Test: 2023-05-11 to 2023-05-22
Date of Issue: 2023-05-29
Test Result: **PASS***

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

Tested By: Lewis Zhou
(Lewis Zhou)

Reviewed By: Timo Lei
(Timo Lei)

Approved By: Jack Ai
(Jack Ai)



1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20230500757E-02	Rev.01	Initial report	2023-05-29

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3 General Information

3.1 Client Information

Applicant:	Shenzhen Hollyland Technology Co., Ltd
Address of Applicant:	8F, Building 5D, Skyworth Innovation Valley, Tangtou Road. Shiyan Street, Baoan District Shenzhen, China.
Manufacturer:	Shenzhen Hollyland Technology Co., Ltd
Address of Manufacturer:	8F, Building 5D, Skyworth Innovation Valley, Tangtou Road. Shiyan Street, Baoan District Shenzhen, China.
Factory:	Shenzhen Hollyland Technology Co., Ltd
Address of Factory:	8F, Building 5D, Skyworth Innovation Valley, Tangtou Road. Shiyan Street, Baoan District Shenzhen, China.

3.2 General Description of EUT

Product Name:	Lark C1
Model No.:	Lark C1, Lark M1, Lark C2
Test Model No.:	Lark C1
Trade Mark:	HOLLYLAND, HOLLYVIEW
Software Version:	V0018
Hardware Version:	V2.0
Sample Type:	<input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable
Operation Frequency:	2402MHz~2480MHz
Channel Numbers:	40
Modulation Type:	GFSK
Antenna Type:	Chip antenna
Antenna Gain:	3.18dBi
Power Supply:	Power by DC 3.7V for phone

4 SAR 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:

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

4.1.3 EUT RF Exposure

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

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,

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

Antenna polarization: Horizontal		
Frequency (MHz)	Level (dBuV/m)	Polarization
2402	91.73	Peak
2402	86.41	Average

Antenna polarization: Vertical		
Frequency (MHz)	Level (dBuV/m)	Polarization
2440	87.60	Peak
2440	83.84	Average

For 2402MHz wireless:

Field strength = 91.73dB μ V/m @3m

Ant. gain 3.18dBi; so Ant numeric gain=2.08

$$\text{So } p_t = \{ [10^{(91.73/20)} / 10^6 \times 3]^2 / 30 / 2.08 \} \times 1000 \text{mW} = 0.215 \text{mW}$$

$$\text{So } (0.215 \text{mW} / 5 \text{mm}) \times \sqrt{0.3142 \text{GHz}} = 0.024,$$

0.024 < 3.0 for 1-g SAR

So the SAR report is not required.