

RF Exposure Evaluation

FCC ID: 2BG6E-AK30

Product : Finder Tag
Model Name : AK30, AK30B, AK30C
Brand : N/A
Report No. : NCT24051387XE-1

Prepared for

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Prepared by

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1 TEST RESULT CERTIFICATION

Applicant's name : Shenzhen Zhongxiangxin Technology Co., Ltd
Address : 316, BuildingB1, Hongwan Maker Center, GushuCommunity, XixiangStreet, Baoan District, Shenzhen, China
Manufacture's name : Shenzhen Zhongxiangxin Technology Co., Ltd
Address : 316, BuildingB1, Hongwan Maker Center, GushuCommunity, XixiangStreet, Baoan District, Shenzhen, China
Product name : Finder Tag
Model name : AK30, AK30B, AK30C
Standards : FCC CFR47 Part 15 Section 15.247
Test procedure : 47CFR § 1.1310, 47CFR § 2.1093
KDB447498 D01 General RF Exposure Guidance v06
Date of test : Dec. 10, 2024 to Dec. 23, 2024
Date of Issue : Dec. 23, 2024

This device described above has been tested by NCT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Test Engineer:


Keven Wu / Engineer

Technical Manager:


Henry Wang / Manager



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2 SUMMARY

2.1 EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

○ /	Length (m) :	/
	Shield :	/
	Detachable :	/

2.2 Product Description

Product Name	:	Finder Tag
Model Name	:	AK30
Sample ID	:	NCT24051387-001#
Sample(s) Status:	:	Engineer sample
Series Model	:	AK30B, AK30C
Model Different..	:	All models have same Power circuits diagram, RF Chip and PCB Layout, Internal construction and rated power. Only the model name and appearance color were different.
Operating frequency	:	BLE: 2402-2480MHz
Number of Channels	:	40 channels
Type of Modulation	:	GFSK
Antenna installation	:	PCB Antenna
Antenna Gain	:	-0.00 dBi
Power supply	:	DC 3V from Battery
Hardware Version	:	/
Software Version	:	/
Remark: the Antenna gain is provided by customer from Antenna spec. and the laboratory will not be responsible for the accumulated calculation results which covers the information provided by the applicant.		

3 TEST ENVIRONMENT

3.1 Address of the test laboratory

Shenzhen NCT Testing Technology Co., Ltd.
A101&2F B2, Fuqiao 6th Area, Xintian Community, Fuhai Street, Baoan District, Shenzhen,
People's Republic of China

3.2 Test Facility

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

Accredited by CNAS, 2022-09-27

The certificate is valid until 2028.01.07

The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2017)

The Certificate Registration Number is L8251

Designation Number: CN1347

Test Firm Registration Number: 894804

Accredited by A2LA, June 14, 2023

Accredited by Industry Canada, November 09, 2018

The Conformity Assessment Body Identifier is CN0150

Company Number: 30806

3.3 Environmental conditions

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

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

3.4 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Global Test Service Co.,Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen NCT Testing Technology Co., Ltd is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	±5.03dB	(1)
Radiated Emission	1~25GHz	±4.74dB	(1)
Radiated Emission	25-40GHz	±3.38dB	(1)
Conducted Disturbance	0.15~30MHz	±3.64dB	(1)

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4 Method of measurement

4.1 Applicable Standard

[ANSI C95.1-1999](#): IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

[FCC KDB447498 D01 General RF Exposure Guidance v06](#): Mobile and Portable Device, RF Exposure, Equipment Authorization Procedures.

[FCC CFR 47 part1 1.1310](#): Radiofrequency radiation exposure limits.

[FCC CFR 47 part2 2.1093](#): Radiofrequency radiation exposure evaluation: portable devices

4.2 Evaluation Method and Limit

According to KDB447498 D01 General RF Exposure Guidance v06 Section 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 Test Exclusion Threshold condition, listed below, is satisfied. These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions. The minimum test separation distance is determined by the smallest distance from the antenna and radiating structures or outer surface of the device, according to the host form factor, exposure conditions and platform requirements, to any part of the body or extremity of a user or bystander (see 5) of section 4.1). To qualify for SAR test exclusion, the test separation distances applied must be fully explained and justified by the operating configurations and exposure conditions of the transmitter and applicable host platform requirements, typically in the SAR measurement or SAR analysis report, according to the required published RF exposure KDB procedures. When no other RF exposure testing or reporting is required, a statement of justification and compliance must be included in the equipment approval, in lieu of the SAR report, to qualify for the SAR test exclusion. When required, the device specific conditions described in the other published RF exposure KDB procedures must be satisfied before applying these SAR test exclusion provisions; for example, handheld PTT two-way radios, handsets, laptops & tablets etc."

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [f \text{ (GHz)}] \leq 3.0$$
 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where:

- f (GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

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 according to f in section 4.1 is applied to determine SAR test exclusion.

When one of the following test exclusion conditions is satisfied for all combinations of simultaneous transmission configurations, further equipment approval is not required to incorporate transmitter modules in host devices that operate in the mixed mobile and portable host platform exposure conditions. The grantee is responsible for documenting this according to Class I permissive change requirements. Antennas that qualify for standalone SAR test exclusion must apply the estimated standalone SAR to determine simultaneous transmission test exclusion. The $[\sum \text{ of (the highest measured or estimated SAR for each standalone antenna configuration, adjusted for maximum tune-up tolerance) / 1.6 W/kg}] + [\sum \text{ of MPE ratios}] \leq 1.0$.

The SAR to peak location separation ratios of all simultaneously transmitting antenna pairs operating in portable device exposure conditions are all ≤ 0.04 , and the $[\sum \text{ of MPE ratios}] \leq 1.0$.

5 Evaluation Results

5.1 Standalone Evaluation

tune-up power. (dBm)	Max. tune-up power. (dBm)	tune-up power. (mW)	Frequency(MHz)	Min. distance(mm)	Calc. thresholds	limit
1±1	2	1.585	2402	5	0.491	3.0
1±1	2	1.585	2440	5	0.495	3.0
2±1	3	1.995	2480	5	0.628	3.0

Remark:

$$\text{Result} = P \sqrt{F} / D$$

P=Maximum turn-up power in mW

F=Channel frequency in GHz

D=Minimum test separation distance in mm

Output power including tune up tolerance;

When the minimum test separation distance is < 5 mm, a distance of 5 mm according to f) in section 4.1 of KDB447498 D01 General RF Exposure Guidance v06 is applied to determine SAR test exclusion.

6 Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1093 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB447498 D01 General RF Exposure Guidance v06, No SAR is required.

.....**End of Report**.....