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RF Exposure Evaluation Report

Report No. :	CQASZ20210500029EX-02
Applicant:	Shenzhen ThreeNH Technology Co.,Ltd
Address of Applicant:	Floor 6, Building 5B, Skyworth Innovation Valley, Tangtou No.1 Road, Shiyan Street, Bao an District, Shenzhen, Guangdong, China
Manufacturer:	Shenzhen ThreeNH Technology Co.,Ltd
Address of Manufacturer:	Floor 6, Building 5B, Skyworth Innovation Valley, Tangtou No.1 Road, Shiyan Street, Bao an District, Shenzhen, Guangdong, China
Equipment Under Test (EUT):	
Product:	ColorReader
All Model:	CR3, CR2, CR1, CRP, CRS, CR3+, CR2+, CR1+, CR4, CR5, CR6, CR7, CR8, CR9, CR7+, CR8+, CR9+
Test Model No.:	CR3
Brand Name:	3nh
FCC ID:	2AMRM-CR3
Standards:	47 CFR Part 1.1307 47 CFR Part 1.1310 KDB447498D01 General RF Exposure Guidance v06
Date of Test:	Apr. 28, 2021to Jul. 19, 2021
Date of Issue:	Jul. 19, 2021
Test Result :	**PASS**

Tested By: lewis zhou

(Lewis Zhou)

Reviewed By: Timo Lei

(Timo Lei)

Approved By: Jack

(Jack Ai)

SHENZHEN HUAXIA TESTING TECHNOLOGY CO., LTD
华夏准测
APPROVED

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20210500029EX-02	Rev.01	Initial report	Jul. 19, 2021

2 Contents

3 General Information

3.1 Client Information

Applicant:	Shenzhen ThreeNH Technology Co.,Ltd
Address of Applicant:	Floor 6, Building 5B, Skyworth Innovation Valley, Tangtou No.1 Road, Shiyan Street, Bao an District, Shenzhen, Guangdong, China
Manufacturer:	Shenzhen ThreeNH Technology Co.,Ltd
Address of Manufacturer:	Floor 6, Building 5B, Skyworth Innovation Valley, Tangtou No.1 Road, Shiyan Street, Bao an District, Shenzhen, Guangdong, China

3.2 General Description of EUT

Product Name:	ColorReader
Test Model No.:	CR3
Trade Mark:	3nh
Hardware Version:	V1.6
Software Version:	V1.0
Operation Frequency:	2402-2480MHz
Modulation Type:	GFSK
Transfer Rate:	1Mbps(Test software see page 6)
Number of Channel:	40
Product Type:	☐ Mobile ☒ Portable ☐ Fix Location
Antenna Type:	Ceramic antenna
Antenna Gain:	2dBi
EUT Power Supply:	battery: 3.7V

Note:

All model: CR3, CR2, CR1, CRP, CRS, CR3+, CR2+, CR1+, CR4, CR5, CR6, CR7, CR8, CR9, CR7+, CR8+, CR9+,

Only the model CR3 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being model name.

4 RF Exposure 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:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] ·[√f(GHz)] ≤ 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 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

1) For BLE

Measurement Data

GFSK mode						
Test Channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	LIMIT
			(dBm)	(mW)		
Lowest(2402MHz)	2.502	3±1	4	2.512	0.779	3
Middle(2440MHz)	2.677	3±1	4	2.512	0.785	
Highest(2480MHz)	2.975	3±1	4	2.512	0.791	

Conclusion: the calculated value< 3.0 ,SAR is exempted

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20210500029EX-01