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RF Exposure Evaluation Report

Report No. : CQASZ20190600032EX-02
Applicant: SHENZHEN HYPERSYNES CO.,LTD
Address of Applicant: 2303,CHANGHONG SCIENCE TECHNOLOGY BLD., HI-TECH PARK,NANSHAN, SHENZHEN
Manufacturer: SHENZHEN HYPERSYNES CO.,LTD
Address of Manufacturer: 2303,CHANGHONG SCIENCE TECHNOLOGY BLD., HI-TECH PARK,NANSHAN, SHENZHEN

Equipment Under Test (EUT):

Product: Wireless Thermometer
Model No.: AT-01, AT-02, AT-03, AT-04, AT-05
Test Model No.: AT-01
Brand Name: N/A
FCC ID: 2AI4M-AT01
Standards: 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General RF Exposure Guidance v06
Date of Test: 2019-06-10 to 2019-07-01
Date of Issue: 2019-07-01
Test Result : PASS*

Tested By:

Daisy Qin

Reviewed By:

Aaron Ma

Approved By:

Jack Ai



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

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CQA, this report can't be reproduced except in full.

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20190600032EX-02	Rev.01	Initial report	2019-07-01

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3 General Information

3.1 Client Information

Applicant:	SHENZHEN HYPERSYNES CO.,LTD
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3.2 General Description of EUT

Product Name:	Wireless Thermometer
Test Model No.:	AT-01
Trade Mark:	N/A
Hardware Version:	V1.0
Software Version:	V1.3.1
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V4.2
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, π/4DQPSK, 8DPSK
Transfer Rate:	1Mbps/2Mbps/3Mbps
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Product Type:	<input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable <input type="checkbox"/> Fix Location
Antenna Type:	PCB antenna
Antenna Gain:	0dBi
EUT Power Supply:	DC 4.5V from 3*AAA battery

Note:

All model: AT-01, AT-02, AT-03, AT-04, AT-05

Only the model AT-01 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being color of appearance and model name.

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:

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

$f(\text{GHz})$ 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

Measurement Data

Worst case: GFSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	-3.572	-3.0±1	-2.0	0.631	0.196	3.0
Middle (2441MHz)	-3.780	-3.0±1	-2.0	0.631	0.197	
Highest (2480MHz)	-4.549	-4.0±1	-3.0	0.501	0.158	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Worst case: π/4DQPSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	-2.399	-3.0±1	-2.0	0.631	0.196	3.0
Middle (2441MHz)	-2.591	-3.0±1	-2.0	0.631	0.197	
Highest (2480MHz)	-3.333	-4.0±1	-3.0	0.501	0.158	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Worst case: 8DPSK

Channel	Maximum Peak Conducted Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power		Calculated value	Exclusion threshold
			(dBm)	(mW)		
Lowest (2402MHz)	-2.405	-3.0±1	-2.0	0.631	0.196	3.0
Middle (2441MHz)	-2.584	-3.0±1	-2.0	0.631	0.197	
Highest (2480MHz)	-3.329	-4.0±1	-3.0	0.501	0.158	

Conclusion: the calculated value ≤3.0, SAR is exempted.

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20190600032EX-01