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RF Exposure Evaluation Report

Report No. :	CQASZ20180500005E-03
Applicant:	SUNVALLEYTEK INTERNATIONAL, INC.
Address of Applicant:	46724 Lakeview Blvd, Fremont, California, United States, 94538-6529
Manufacturer:	Shenzhen NearbyExpress Technology Development Company Limited
Address of Manufacturer:	333 Bulong Road, Jialianda Industrial Park, Building 1, Bantian, Longgang District, Shenzhen, China
Factory:	GANZHOU DEHUIDA TECHNOLOGY CO., LTD.
Address of Factory:	No. 5,6,7,8,9 Build, Dehuida Science and Technology Park, Huoyanshan Road, Anyuan District, Ganzhou City, Jianxi Province, China

Equipment Under Test (EUT):

Product:	Sound Bar
Model No.:	TT-SK020
Brand Name:	TaoTronics
FCC ID:	2AFDGTT-SK020
Standards:	47 CFR Part 1.1307
	47 CFR Part 2.1091
	KDB447498D01 General RF Exposure Guidance v06
Date of Test:	2018-05-15 to 2018-06-13
Date of Issue:	2018-06-13
Test Result :	**PASS***
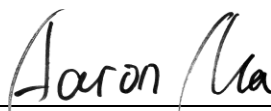
Tested By： _____
(Aaron Ma)

Reviewed By: _____
(Owen Zhou)

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.

2   Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20180500005E-03	Rev.01	Initial report	2018-06-13

3   Contents

1   COVER PAGE..**1**

2   VERSION **2**

3   CONTENTS **3**

4   GENERAL INFORMATION..**4**

    4.1   CLIENT INFORMATION..4
    4.2   GENERAL DESCRIPTION OF EUT...4
    4.3   GENERAL DESCRIPTION OF BT 4
    4.4   GENERAL DESCRIPTION OF 912MHZ WIRELESS 4

5   SAR EVALUATION **5**

    5.1   RF EXPOSURE COMPLIANCE REQUIREMENT 5
        5.1.1   *Standard Requirement*..*5*
        5.1.2   *Limits* *5*
        5.1.3   *EUT RF Exposure*..*5*

4   General Information

4.1 Client Information

Applicant:	SUNVALLEYTEK INTERNATIONAL, INC.
Address of Applicant:	46724 Lakeview Blvd, Fremont, California, United States, 94538-6529
Manufacturer:	Shenzhen NearbyExpress Technology Development Company Limited
Address of Manufacturer:	333 Bulong Road, Jialianda Industrial Park, Building 1, Bantian, Longgang District, Shenzhen, China
Factory:	GANZHOU DEHUIDA TECHNOLOGY CO., LTD.
Address of Factory:	No. 5,6,7,8,9 Build, Dehuida Science and Technology Park, Huoyanshan Road, Anyuan District, Ganzhou City, Jianxi Province, China

4.2 General Description of EUT

Product Name:	Sound Bar
Model No.:	TT-SK020
Trade Mark:	TaoTronics
Hardware Version:	V1.0
Software Version:	V1.2
Power Supply:	Adaptor : VSL1800220HU Input:100-240V~50/60Hz 1.2A, Output: DC18V 2.2A

4.3 General Description of BT

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V3.0
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, π/4DQPSK
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Sample Type:	Moible production
Test Software of EUT:	FCCAssist 2.4 (manufacturer declare)
Antenna Type:	PCB antenna
Antenna Gain:	0dBi

4.4 General Description of 912MHz Wireless

Frequency Range:	912MHz
Modulation Type:	FSK
Number of Channels:	1 (declared by the client)
Sample Type:	Mobile production
Test Software of EUT:	RF test (manufacturer declare)
Antenna Type:	PCB antenna
Antenna Gain:	0dBi

5 SAR Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 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.

5.1.2 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 calculation[17]
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

5.1.3 EUT RF Exposure

For BT:

Measurement Data

GFSK mode	
Test channel	Peak Output Power (dBm)
Lowest	-2.190
Middle	-2.630
Highest	-2.560
π/4DQPSK mode	
Test channel	Peak Output Power (dBm)
Lowest	-1.360
Middle	-1.610
Highest	-1.750

The Max Conducted Peak Output Power is -1.360dBm in lowest channel(2.402GHz);

The best case gain of the antenna is 0dBi.

EIRP= -1.360dBm + 0dBi =-1.360dBm

-1.360dBm logarithmic terms convert to numeric result is nearly 0.73mW

According to the formula. calculate the EIRP test result:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [$\sqrt{f}$(GHz)]

General RF Exposure = (0.73mW / 5 mm) x $\sqrt{2.402}$GHz = 0.226 ①

SAR requirement:

S= 3.0　　　　　　　　　　　　　　　　　② ;

① < ②.

So the SAR report is not required.

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20180500005E-01

For 912MHz wireless

$eirp = pt \times gt = (E \times d)^2/30$

where:

pt = transmitter output power in watts,

gt = 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,

So $pt = (E \times d)^2/30 / gt$

The worst case (refer to report CQASZ20180200005E-01) is below:

For **912MHz wireless**

Field strength = 62.9dBµV/m @3m

Ant. gain 0dBi; so Ant numeric gain=1.0

So $pt=\{[10^{(62.9/20)}/10^6 \times 3]^2/30 /1.0\} \times 1000mW = 0.001mW$

So $(0.001mW/5mm) \times \sqrt{0.912GHz} = 0.0002$,

0.0002<3.0 for 1-g SAR

So the SAR report is not required.