RF EXPOSURE REPORT

Certificate No.	:	TB191124287
Applicant	:	SUNSTAR DIGI (H.K.) CO., LTD.
Equipment Under Test (EUT)		
EUT Name	:	ANC Earbuds
Model No.	:	X7
Series Model No.	:	X5, X6, X8, X9, X10
Brand Name	:	ITOLK
Receipt Date	:	2019-11-26
Test Date	:	2019-11-27 to 2019-12-05
Issue Date	:	2019-12-06
Standards	:	**EN 62479: 2010**
Conclusions	:	**PASS**

In the configuration tested, the EUT complied with the standards specified above. The EUT technically complies with the Council Directive 2014/53/EU relating to radio equipment.

Test/Witness Engineer	:	Jack Deng
Engineer Supervisor	:	Ivan Su
Engineer Manager	:	Roy Lai

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

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TABLE OF CONTENTS

Revision History

Report No.	Version	Description	Issued Date
TB-HEA170573	Rev.01	Initial issue of report	2019-12-06

1 General Information

1.1 Client Information

Applicant	:	SUNSTAR DIGI (H.K.) CO., LTD.
Address	:	Floor 3 F Building, Guanlong 1st Industrial Zone, Xili Town, Nanshan District, Shenzhen, Guangdong, China
Manufacturer	:	SUNSTAR DIGI (H.K.) CO., LTD.
Address	:	Floor 3 F Building, Guanlong 1st Industrial Zone, Xili Town, Nanshan District, Shenzhen, Guangdong, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	ANC Earbuds	
Model No.	:	X5, X6, X7, X8, X9, X10	
Model Difference	:	All these models are in the same PCB, layout and electrical circuit, the only difference is appearance.	
Product Description	:	Operation Frequency:	Bluetooth V5.0:2402MHz~2480MHz
		Antenna Gain:	-2 dBi PIFA Antenna
		Modulation Type:	GFSK(1Mbps) π/4-DQPSK(2 Mbps) 8-DPSK(3 Mbps)
	:	Output Power:	GFSK: 0.72dBm (max) 8-DPSK: -0.94dBm (max)
Power Rating	:	USB Intput: DC 5.0V 80mAh by adapter DC 3.7V by 65mAh Li-ion battery	
Software Version	:	V007	
Hardware Version	:	SX-1905ANC	
Connecting I/O Port(S)	:	Please refer to the User's Manual	
Remark	:	The antenna gain provided by the applicant, the adapter and verified for the RF conduction test provided by TOBY test lab.	

Note:

(1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual. This Test Report is EN 62479 for Bluetooth, under RED Article 3.2.

(2) More information about the RF function, please refer the RF test reports.

1.3 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025：2005 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.

IC Registration No.: (11950A-1)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.

2 Conformity Assessment Methods

2.1 General Considerations

Compliance of electromagnetic emissions from electronic and electrical equipment with the basic restrictions usually is determined by measurements and, in some cases, calculation of the exposure level. If the electrical power used by or radiated by the equipment is sufficiently low, the electromagnetic fields emitted will be incapable of producing exposures that exceed the basic restrictions. This standard provides simple EMF assessment procedures for this low power equipment.

For transmitter intended for use with more than one antenna configuration option, the combination of transmitter and antenna(s) which generates the highest available antenna power and/or average total radiated power shall be assessed.

2.2 Low-power exclusion level (P_{max}) based on considerations of SAR

Low-power electronic and electrical equipment is deemed to comply with the provisions of this standard if it can be demonstrated using routes B, C or D that the available antenna power and/or the average total radiated power is less than or equal to the applicable low-power exclusion level P_{max}.

When SAR is the basic restriction, a conservative minimum value for P_{max} can be derived, equal to the localized SAR limit (SARmax) multiplied by the average mass (m):

$$P_{max}=SAR_{max}m$$

Example values of P_{max} according to Equation are provided in follows for cases described by the ICNIRP Guidelines, IEEE Std C95.1-1999 and IEEE Std C95.1-2005 where SAR limits are defined. Other exposure guidelines or standards may be applicable depending on national regulations.

Note: Unless otherwise mentioned in other applicable regulations or standards, the most recent edition IEEE C95.1-2005 takes precedence over the previous edition IEEE C95.1-1999.

Example values of SAR-based P_{max}

Guideline/ Standard	SAR limit, SAR_{max} W/kg	Averaging mass, m g	P_{max} mW	Exposure tier	Region of body
ICNIRP	2	10	20	General public	Head and trunk
	4	10	40	General public	Limbs
	10	10	100	Occupational	Head and trunk
	20	10	200	Occupational	Limbs
IEEE Std C95.1-1999	1.6	1	1.6	Uncontrolled environment	Head, trunk, arms, legs
	4	10	40	Uncontrolled environment	Hands, wrists, feet and ankles
	8	1	8	Controlled environment	Head, trunk, arms, legs
	20	10	200	Controlled environment	Hands, wrists, feet and ankles

IEEE Std C95.1-2005	2	10	20	Action level	Body except extremities and pinnae
	4	10	40	Action level	Extremities and pinnae
	10	10	100	Controlled environment	Body except extremities and pinnae
	20	10	200	Controlled environment	Extremities and pinnae

When power density is the basic restriction, a conservative minimum value for P_{max} can be derived, equal to the power density limit (s) multiplied by the averaging area (a);

$$P_{max} = Sa$$

Therefore, equation yields conservative values for P_{max} of 20 mW and 100 mW for general public and occupational exposures, respectively.

2.3 RF Exposure Evaluation

According to EN 62479 Clause 4.2 Low-power exclusion level (P_{max}), low-power electronic and electrical equipment can be demonstrated using routes B, C or D that the available antenna power and/or the average total radiated power is less than or equal to the applicable low-power exclusion level Pmax.

P max= 20 mW(13 dBm) according to ICNIRP Guidelines, since the EUT is General public used.

Remark:

B: The input power level to electrical or electronic components that are capable of radiating electromagnetic energy in relevant frequency range is so low that the available antenna power and/or the average total radiated power can not exceed the low-power exclusion level defined in 4.2.

C: The available antenna power and/or the average total radiated power are limited by product standards for transmitters to levels below the low-power exclusion level defined in 4.2.

D: Measurements or calculations show that the available antenna power and/or the average total radiated power are below the low-power exclusion level defined in 4.2.

3 Test Results Summary

3.1 Transmit Power

BT 1Mbps				
Frequency (MHz)	Power(dBm)	Power(mW)	Limit(mW)	Result
2402	0.57	1.14	20	PASS
2441	0.72	1.18	20	PASS
2480	0.23	1.05	20	PASS
BT 3Mbps				
Frequency (MHz)	Power(dBm)	Power(mW)	Limit(mW)	Result
2402	-1.36	0.73	20	PASS
2441	-0.94	0.81	20	PASS
2480	-1.42	0.72	20	PASS

More details please refer to Report TB-RF170572 for more details.

3.2 Test Result

The result: PASS
From results of report TB-RF170572 can be assumed that the compliance criteria is Fulfilled (max radiated power is less than 20mW).The assumption is made with an uncertainty of 30%.

*EN 62479:2010 Annex A: Derivation of low-power exclusion level from ICNIRP and IEEE exposure limits.
The ICNIRP guidelines provide SAR limits of 2W/kg, and averaging mass 10g, over the 10GHz to 300 GHz frequency range for general public and occupational exposures, respectively, and a conservative minimum value for P_{max}=20mW. So when the equipment radiated power is less than 20mW, it complies with EMF basic restrictions.

-----END OF REPORT-----