RF Exposure Evaluation Report

Product	:	SMART SENSE Situational Awareness Bluetooth® Earbuds
Trade mark	:	KLEIN TOOLS
Model/Type reference	:	AESEB1S
Serial Number	:	N/A
Report Number	:	EED32P80449002
FCC ID	:	2AI28-AESEB1S
Date of Issue	:	May 15, 2023
Test Standards	:	47 CFR Part 1.1307 47 CFR Part 2.1093 KDB447498D01 General RF Exposure Guidance v06
Test result	:	PASS

Prepared for:

Klein Tools, Inc.
450 Bond St. Lincolnshire, IL 60069 USA

Prepared by:

Centre Testing International Group Co., Ltd.
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Approved by: Aaron Ma Date: May 15, 2023

Aaron Ma

Check No.: 6131030423

1 Version

Version No.	Date	Description
00	May 15, 2023	Original

2 Contents

3 General Information

3.1 Client Information

Applicant:	Klein Tools, Inc.
Address of Applicant:	450 Bond St. Lincolnshire, IL 60069 USA
Manufacturer:	Klein Tools, Inc.
Address of Manufacturer:	450 Bond St. Lincolnshire, IL 60069 USA
Factory:	Concord Intelligent Technology (Huizhou) Ltd.
Address of Factory:	25, Ping An Rd, Shuikou Street, Hui Cheng District, Huizhou City, Guangdong Province, China

3.2 General Description of EUT

Product Name:	SMART SENSE Situational Awareness Bluetooth® Earbuds
Model No.(EUT):	AESEB1S
Trade mark:	KLEIN TOOLS
Product Type:	☐ Mobile ☒ Portable ☐ Fix Location
Power Supply:	Battery DC 3.7V
Test Voltage:	DC 3.7V
Sample Received Date:	Apr. 03, 2023
Sample tested Date:	Apr. 03, 2023 to Apr. 11, 2023
Remark: Company Name and Address shown on Report, the sample(s) and sample Information were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.	

3.3 General Description of BT Classic

Operation Frequency:	2402MHz~2480MHz
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, π/4DQPSK, 8DPSK
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Antenna Type:	FPC Antenna
Antenna Gain:	Left ear : -1.7 dBi Right ear : -2.0 dBi

3.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd
Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China
Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385
No tests were sub-contracted.
FCC Designation No.: CN1164

3.5 Deviation from Standards

None.

3.6 Abnormalities from Standard Conditions

None.

3.7 Other Information Requested by the Customer

None.

4 SAR Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

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.

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

4.1.2 EUT RF Exposure

1) For BT Classic

Measurement Data

The data of ear right is worst, only the worst case is recorded in the report.

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	0.98	1.0±1	2.0	1.585
Middle(2441MHz)	1.47	1.0±1	2.0	1.585
Highest(2480MHz)	1.92	1.0±1	2.0	1.585
π/4DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	1.02	1.0±1	2.0	1.585
Middle(2441MHz)	1.45	1.0±1	2.0	1.585
Highest(2480MHz)	1.79	1.0±1	2.0	1.585
8DPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	0.62	1.0±1	2.0	1.585
Middle(2441MHz)	1.43	1.0±1	2.0	1.585
Highest(2480MHz)	1.91	1.0±1	2.0	1.585

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)	0.98	1.0±1	2.0	1.585	0.499	3.0
Middle (2441MHz)	1.47	1.0±1	2.0	1.585	0.499	
Highest (2480MHz)	1.92	1.0±1	2.0	1.585	0.499	
Conclusion: the calculated value ≤3.0, SAR is exempted.						

Remark: The Max Conducted Peak Output Power data refer to report Report No.: EED32P80449001.

*** End of Report ***