Variant RF Exposure Evaluation Declaration

Product Name	:	Asset Tracker
Brand Name	:	Samsara
Model No.	:	010-2051, 010-2053
FCC ID	:	2AIHD2051

Applicant	:	SAMSARA NETWORKS INC
Address	:	1990 Alameda Street, San Francisco, CA 94103, USA

Date of Receipt	:	Jul. 01, 2022
Issued Date	:	Jul. 18, 2022
Report No.	:	2270004R-RFNAOTHV02-C
Report Version	:	V1.0

The test results relate only to the samples tested.
The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.
This report must not be used to claim product endorsement by TAF or any agency of the government.
Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Product Name	:	Asset Tracker
Applicant	:	SAMSARA NETWORKS INC
Address	:	1990 Alameda Street, San Francisco, CA 94103, USA
Manufacturer	:	WISTRON NEWEB CORP.
Address	:	20 Park Avenue II, Hsinchu Science Park, Hsinchu 308, Taiwan, R.O.C
Brand Name	:	Samsara
Model No.	:	010-2051, 010-2053
FCC ID	:	2AIHD2051
EUT Voltage	:	EUT 1: DC 12V from external power source DC 3.6V or 3.65V from internal li-ion battery EUT 2: DC 4.5V from AA battery (AA battery*3)
Testing Voltage	:	EUT 1: DC 12V EUT 2: DC 4.5V
Applicable Standard	:	FCC 47 CFR Part 2.1091 Radiofrequency radiation exposure evaluation: mobile devices.
Laboratory Name	:	DEKRA Testing and Certification Co., Ltd. Hsin Chu Laboratory
Address	:	No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 310, Taiwan, R.O.C.
Test Result	:	Complied

Documented By : Hailey Peng

(Hailey Peng / Senior Engineer)

Approved By : Rueyyan.Lin

(Rueyyan Lin / Supervisor)

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of DEKRA Testing and Certification Co., Ltd.

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	Jul. 18, 2022

Class II Permissive Change (C2PC)

Report No.	Version	Description	Issued Date
2240462R-RFUSMPEV02-A	V1.0	Original application.	Jun. 10, 2022
2270004R-RFNAOTHV02-C	V1.0	1. Updating software version to “v316.2” from “v0.93”. 2. The EUT 1 (model: 010-2053) adding the second source of battery. The difference between first source of battery and second source of battery, please refer to the section 1.1 for detail.	Jul. 18, 2022

1. General Information

1.1. EUT General Information

RF General Information			
Evaluation Mode	Frequency Range (MHz)	Operating Frequency (MHz)	Modulation Type
Bluetooth	2400 ~ 2483.5	2402 ~ 2480	LE: GFSK

The difference for each model is shown as below:

EUT	1		2
Model No.	010-2053		010-2051
Type	Avalanche*		Crevasse*
Key ICs			
Battery End-of-Service Monitoring	MAX17260		N/A
CAN transceiver	MCP25625 or MCP2515		N/A
ADC Input	2x		N/A
Output	1x		N/A
CAN Bus	1x		N/A
Power			
Primary Power source	1st source (EVE)	Secondary Cell (Lithium-ion) 18650 pack (3.6V)	3x Primary Cell L91
	2nd source (LISONERGY)	Secondary Cell (Lithium-ion) 18650 pack (3.65V)	
External Power source	9~36 VDC		4.5 VDC
Enclosure			
Rough dimensions	123 x 82 x 35 mm		81 x 110 x 31 mm
Ambient Temp Rating	-20°C~+60°C		-40°C~+60°C
Screw	Hexalobular socket		Phillips
The manufacturer declares that RF-related parts and software are unchanged for both models.			

The EUT 1 (model: 010-2053) has two sources of battery for marketing:

Sources of Battery	First Source	Second Source
Brand Name	EVE	LISONERGY
Model No.	A0679B	LS.11110D01
Nominal Voltage	3.6V	3.65V
Typical Capacity	3100mAh	3000mAh
MAX Charge Current	3.1A	0.9A
Typical Over Charge	4.28V	4.275V
Typical Over Charge Release	4.080V	4.075V
Typical Over Charge Delay Time	1.2s	1s
Typical Over Discharge	2.3V	2.5V
Typical Over Discharge Release	2.3V	2.9V
Typical Over Discharge Delay Time	150ms	128ms

Note: The above EUT information is declared by the manufacturer.

1.2. Test Facility

Laboratory Information

USA	**:**	**FCC Registration Number: TW3024**
Canada		**CAB identifier : TW3024**

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: http://www.dekra.com.tw

If you have any comments, please don't hesitate to contact us. Our test sites as below:

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
Address	1. No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. 2. No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
Phone number	1. +886-3-582-8001 2. +886-3-582-8001
Fax number	1. +886-3-582-8958 2. +886-3-582-8958
E mail address	info.tw@dekra.com
Website	http://www.dekra.com.tw
Note: Test site number for address 1 includes HC-SR02. Test site number for address 2 includes HC-CB02, HC-CB03, HC-CB04, HC-SR10 and HC-SR12.	

2. RF Exposure Evaluation

2.1. Test Limit

(A) Test Limit for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time |E|²,|H|² or S (minutes)
0.3-3.0	614	1.63	*(100)	<6
3.0-30	1842/f	4.89/f	*(900/f²)	<6
30-300	61.4	0.163	1.0	<6
300-1500	-	-	f/300	<6
1500-100,000	-	-	5	<6

(B) Test Limit for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time |E|²,|H|² or S (minutes)
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*(180/f²)	<30
30-300	27.5	0.073	0.2	<30
300-1500	-	-	f/1500	<30
1500-100,000	-	-	1.0	<30

Note: f = frequency in MHz; *Plane-wave equivalent power density

Power Density (S) is calculated by the following formula:

$$S=(P*G)/4\pi R^2$$

where:

S = power density (in appropriate units, e.g. mW/ cm^2)

P = power input to the antenna (in appropriate units, e.g., mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

π = 3.1416

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

2.2. Test Result of RF Exposure Evaluation

Exposure Environment: General Population / Uncontrolled Exposure

Evaluation Mode	E.I.R.P (dBm)	E.I.R.P (mW)	Power Density (mW/cm^2)	Limit (mW/cm^2)	Test Result (PASS/FAIL)
Bluetooth LE	18.810	76.033	0.015	1.000	PASS

Distance (cm): 20 for Maximum Permissible Exposure.

Note:

1. The above EUT information is declared by the manufacturer.
2. The results are evaluated using the maximum power.