RF Exposure Evaluation Declaration

Product Name	:	Asset Tracker
Brand Name	:	Samsara
Model No.	:	010-2054, 010-2055, 010-2056
FCC ID	:	2AIHD2054

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

Date of Receipt	:	Jul. 05, 2022
Issued Date	:	Jul. 20, 2022
Report No.	:	2270102R-RFUSMPEV02-A
Report Version	:	V1.0

Testing Laboratory
3024

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
Brand Name	:	Samsara
Model No.	:	010-2054, 010-2055, 010-2056
FCC ID	:	2AIHD2054
EUT Voltage	:	EUT 1: DC 12V from external power source or DC 3.65V from internal li-ion battery EUT 2: DC 12V from external power source or DC 3.65V from internal li-ion battery EUT 3: DC 4.5V from AA battery (AA battery*3)
Testing Voltage	:	EUT 1: DC 12V EUT 2: DC 12V EUT 3: DC 4.5V
Applicable Standard	:	FCC 47 CFR Part 2.1091 Radiofrequency radiation exposure evaluation: mobile devices. Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)
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 : Amelia Wu

(Amelia Wu / Project Specialist)

Approved By : Rueyyan.Lin

(Rueyyan Lin / Supervisor)

The test results relate only to the samples tested.

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	Jul. 20, 2022

1. General Information

1.1. EUT General Information

RF General Information			
Evaluation Mode	Frequency Range (MHz)	Operating Frequency (MHz)	Modulation Type
WiFi 2.4 GHz	2400 ~ 2483.5	2412 ~ 2472	802.11b: DSSS 802.11g/n: OFDM
Bluetooth	2400 ~ 2483.5	2402 ~ 2480	LE: GFSK

The difference for each model is shown as below:

EUT	3	2	1
Model	AG51	AG52	AG53
	010-2054	010-2055	010-2056
Type	Crevasse*	Serac*	Avalanche*
Key ICs			
Battery End-of-Service Monitoring	NA	MAX17260	MAX17260
CAN transceiver	NA	MCP25625 or MCP2515	MCP25625 or MCP2515
ADC Input	NA	2x	2x
Output	NA	1x	1x
CAN Bus	NA	NA	1x
Power			
Primary Power source	3x Primary Cell L91	Secondary Cell (Lithium-ion) 18650 pack (3.65V)	Secondary Cell (Lithium-ion) 18650 pack (3.65V)
External Power source	4.5VDC	9~36 VDC	9~36 VDC
Enclosure			
Rough dimensions	81 x 110 x 31 mm	124 x 81 x 35 mm	124 x 81 x 35 mm
Ambient Temp Rating	-40°C ~ +60°C	-20°C ~ +60°C	-20°C ~ +60°C
Screw	Phillips	Hexalobular socket	Hexalobular socket
The manufacturer declares that RF-related parts and software are unchanged for three models.			

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)
WiFi 2.4 GHz	23.370	217.270	0.043	1.000	PASS
Bluetooth LE	22.240	167.494	0.033	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.