

Bureau Veritas Consumer Product Services, Inc.	Test Report Number:
One Distribution Center Circle #1, Littleton, MA 01460	EY0475-1-3 Issue 2



## CFR Title 47 FCC Parts



1.1307, 1.1310, 2.1091

## RF Exposure Exhibit

Prepared for RSAE Labs, Inc.

**Product Name: TSU-1**

**Hardware Version: 03-2003-01**

Prepared by Yunus Faziloglu Sr. Wireless Engineer	Approved by Ahmed Ait Ahmed EMC Manager
	
Issue Date: Jan 15, 2025	Issue Number: 2



This test result relates only to the described test object.

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The test is traceable to national standard or related international standard

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# 1 Device Under Test

## 1.1 Product Information

Project Number:	EY0475-1	
Applicant Information:	RSAE Labs, Inc.	
	1002 Arthur Drive Suite 200, Lynn Haven, FL 32444	
Product Marketing Name:	TSU-1	
Hardware Version	03-2003-01	
Additional Versions	Product Marketing Name	Hardware Version Identification Number
	RSU-4	03-2002-01
	RSU-4	03-2002-02
	RSU-4	03-2002-03
	RSU-4	03-2002-04
	RSU-4	03-2002-05
	<b>TSU-1</b>	<b>03-2003-01</b>
	TSU-1	03-2003-02
	TSU-1	03-2003-03
	TSU-1	03-2003-04
	TSU-1	03-2003-05
	TSU-1	03-2003-06
	Version variants are for marketing purposes only. All versions are electrically identical to the tested version indicated in bold above.	
Separation Distance:	20cm	
Exposure Category of DUT:	Mobile	
Multiple Simultaneous RF Sources:	No	
Type of Evaluation:	MPE Calculation	
Evaluation Method:	447498 D01 General RF Exposure Guidance v06	
Deviations from Standard:	None	

## 1.2 Technical Information

Radio Description	2.4GHz 802.15.4
FCC ID:	2ASIM-TSU1
Exposure Category of Transmitter:	Mobile
Maximum Conducted Output Power (mW):	2.33mW (Average)
Maximum Tune-up Tolerance (dB):	N/A
Maximum Antenna Gain (dBi):	0.23dBi Peak

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## 2 Test Laboratory Information

<b>Location of Test Lab:</b>	One Distribution Center Circle #1 Littleton, MA 01460 (978) 486-8880
<b>Key Contact:</b>	Yunus Faziloglu Yunus.faziloglu@bureauveritas.com
<b>Laboratory Accreditations:</b>	BUREAU VERITAS CONSUMER PRODUCTS SERVICES, INC is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories.
<b>ISO/IEC 17025:2017:</b>	1627-01
<b>FCC Test Site Number:</b>	US1028

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### 3 RF Exposure Limit:

According to CFR Title 47 FCC section 1.1310, the criteria listed in the following table shall be used to evaluate Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields.

**TABLE 1 TO § 1.1310(E)(1)—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
(i) LIMITS FOR OCCUPATIONAL/CONTROLLED EXPOSURE				
0.3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	<6
30-300	61.4	0.163	1.0	<6
300-1,500			f/300	<6
1,500-100,000			5	<6
(ii) LIMITS FOR GENERAL POPULATION/UNCONTROLLED EXPOSURE				
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	<30
30-300	27.5	0.073	0.2	<30
300-1,500			f/1500	<30
1,500-100,000			1.0	<30

*f* = frequency in MHz. \* = Plane-wave equivalent power density.

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## 4 RF Exposure – MPE Evaluation

<u>Prediction of MPE limit at a given distance</u>				
Equation from page 18 of OET Bulletin 65, Edition 97-01				
$S = \frac{PG}{4\pi R^2}$				
where:	S = power density			
	P = power input to the antenna			
	G = power gain of the antenna in the direction of interest relative to an isotropic radiator			
	R = distance to the center of radiation of the antenna			
Maximum peak output power at the antenna terminal:	3.67	(dBm)		
Maximum peak output power at the antenna terminal:	2.33	(mW)		
Antenna gain(typical):	0.23	(dBi)		
Maximum antenna gain:	1.05	(numeric)		
Prediction distance:	20	(cm)		
Prediction frequency:	2405	(MHz)		
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm^2)		
Power density at prediction frequency:	0.000488	(mW/cm^2)		

## 5 Conclusion

EUT complies with FCC section 1.1310 MPE limits for general population as a mobile device.

## Document Revisions

Issue No.	Summary of Changes	Date Issued	Prepared by	Approved by
1	Original Release	Nov 12, 2024	YF	AA
2	Updated applicant address	Jan 15, 2025	YF	AA

End of Report