RF Exposure Evaluation Report

Product	:	T1 Wireless
Trade mark	:	Typhur
Model/Type reference	:	T1000
Serial Number	:	N/A
Report Number	:	EED32O80604205
FCC ID	:	2A6RN-T1000
Date of Issue	:	Jun. 16, 2022
Test Standards	:	47 CFR Part 1.1307 47 CFR Part 2.1093 KDB447498D01 General RF Exposure Guidance v06
Test result	:	PASS

Prepared for:

Shenzhen Typhur Technology Co., Ltd
22 Floor, Prince Plaza, 51 Taizi Road Shuiwan Community, Zhaoshang Street, Nanshan N/A Shenzhen N/A China

Prepared by:

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Check No.: 1154290422

2 Version

Version No.	Date	Description
00	Jun. 16, 2022	Original

3 Contents

4 General Information

4.1 Client Information

Applicant:	Shenzhen Typhur Technology Co., Ltd
Address of Applicant:	22 Floor, Prince Plaza, 51 Taizi Road Shuiwan Community, Zhaoshang Street, Nanshan N/A Shenzhen N/A China
Manufacturer:	Shenzhen Typhur Technology Co., Ltd
Address of Manufacturer:	Prince Plaza 2201、2202、2203、2204、2205、2206, 51 Taizi Road, Shuiwan Community, Zhaoshang Street, Nanshan District, Shenzhen, Guangdong, China
Factory:	Shenzhen Typhur Technology Co., Ltd
Address of Factory:	Prince Plaza 2201、2202、2203、2204、2205、2206, 51 Taizi Road, Shuiwan Community, Zhaoshang Street, Nanshan District, Shenzhen, Guangdong, China

4.2 General Description of EUT

Product Name:	T1 Wireless
Model No.:	T1000
Trade mark:	Typhur
EUT Supports Radios application:	Bluetooth 5.0 dual mode: 2402-2480MHz 2.4GHz Wi-Fi: IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz 5GHz Wi-Fi: U-NII-1 & U-NII-2A: 5180-5320MHz U-NII-2C:5500-5700MHz(except 5600-5650MHz) U-NII-3:5745-5825MHz

4.3 Product Specification subjective to this standard

Frequency Range:	Bluetooth : 2402-2480MHz 2.4GHz Wi-Fi: IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz 5GHz Wi-Fi: U-NII-1 & U-NII-2A: 5180-5320MHz U-NII-2C:5500-5700MHz(except 5600-5650MHz) U-NII-3:5745-5825MHz
Modulation Type:	IEEE for 802.11b:DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g:OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n(HT20/HT40): OFDM (64QAM, 16QAM,QPSK,BPSK) IEEE 802.11a: OFDM (BPSK, QPSK, 16QAM, 64QAM) IEEE 802.11ac(HT20/HT40/HT80): OFDM (BPSK, QPSK, 16QAM, 64QAM) BT/BLE: GFSK, 8DPSK, π/4DQPSK
Test Power Grade:	Default
Antenna Type	PIFA Antenna
Antenna Gain	2.4GWIFI:ANT1:1.47 dBi 5GWIFI:ANT1: 3.96 dBi BT/BLE:1.47 dBi

Function (Wi-Fi):	☒ SISO ☐ 2x2 MIMO ☐ 3x3 MIMO ☐ 4x4MIMO
Power Supply:	DC 3.3V
Max Conducted Peak Output Power:	BLE:-2.39dBm, BT: 6.57dBm, 2.4G WIFI:13.52dBm; 5G WIFI:11.72dBm
	The Max Conducted Peak Output Power data refer to the report EED32O80604201, EED32O80604202, EED32O80604203, EED32O80604204
Sample Received Date:	Apr. 29, 2022
Sample tested Date:	Apr. 29, 2022 to May 11, 2022
Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.	

4.4 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

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.

5 RF Exposure Evaluation

5.1 RF Exposure Compliance Requirement

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{377}$

Where E = Field strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{377 d^2}$$

Changing to units of mW and cm, using:

P (mW) = P (W) / 1000 and

d (cm) = d(m) / 100

Yields

$$S = \frac{30 \times (P/1000) \times G}{377 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2}$$ **Equation 1**

Where d = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm^2

5.2 Maximum Permissible Exposure

Substituting the MPE safe distance using d = 20 cm into Equation 1:

$$S = 0.000199 \times P \times G$$

Where P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm^2

1) For BLE:

Measurement Data:

1M:

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-2.66	-2±1	-1	0.794
Middle(2440MHz)	-2.48	-2±1	-1	0.794
Highest(2480MHz)	-2.39	-2±1	-1	0.794

2M:

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-2.7	-2±1	-1	0.794
Middle(2440MHz)	-2.54	-2±1	-1	0.794
Highest(2480MHz)	-2.44	-2±1	-1	0.794

2) For Bluetooth Classic

Measurement Data:

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	6.05	6±1	7	5.012
Middle(2441MHz)	6.35	6±1	7	5.012
Highest(2480MHz)	6.57	6±1	7	5.012

π/4DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	5.37	5±1	6	3.981
Middle(2441MHz)	5.58	5±1	6	3.981
Highest(2480MHz)	5.75	5±1	6	3.981

8DPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	5.43	5±1	6	3.981
Middle(2441MHz)	5.66	5±1	6	3.981
Highest(2480MHz)	5.76	5±1	6	3.981

3) For 2.4G WIFI:

Measurement Data:

802.11b mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2412MHz)	13.45	13±1	14	25.119
Middle(2437MHz)	13.18	13±1	14	25.119
Highest(2462MHz)	13.52	13±1	14	25.119

802.11g mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2412MHz)	12.65	12±1	13	19.953
Middle(2437MHz)	12.53	12±1	13	19.953
Highest(2462MHz)	12.35	12±1	13	19.953

802.11(HT20) mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2412MHz)	12.66	12±1	13	19.953
Middle(2437MHz)	12.39	12±1	13	19.953
Highest(2462MHz)	12.10	12±1	13	19.953

802.11(HT40) mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2422MHz)	12.94	12±1	13	19.953
Middle(2437MHz)	12.86	12±1	13	19.953
Highest(2452MHz)	12.69	12±1	13	19.953

4) For 5G WIFI:

Measurement Data:

IEEE for 802.11n(HT40) 5GWIFI mode（worse）				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
5190MHz	11.51	11±1	12	15.849
5230MHz	11.40	11±1	12	15.849
5270MHz	11.20	11±1	12	15.849
5310MHz	11.72	11±1	12	15.849
5510MHz	11.61	11±1	12	15.849
5550MHz	11.60	11±1	12	15.849
5670MHz	11.63	11±1	12	15.849
5755MHz	10.16	11±1	12	15.849
5795MHz	10.16	11±1	12	15.849

BLE:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm^2)
39	2480	0.794	1.403	20	0.0002	1

BT Classic:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm^2)
78	2480	5.012	1.403	20	0.0014	1

2.4G WIFI:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm^2)
11	2462	25.119	1.40	20	0.0070	1

5G WIFI:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm^2	Limit (mW/cm^2)
62	5310	15.849	2.489	20	0.0079	1

5) For BT Classic and WIFI

BT and WIFI can not transmit simultaneously.

PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No. EED32O80604201 for EUT external and internal photos.

*** End of Report ***