RF Exposure Evaluation Report

APPLICANT	:	Thundercomm Technology Co., Ltd
EQUIPMENT	:	Calculation Module
BRAND NAME	:	TurboX
MODEL NAME	:	C6125
FCC ID	:	2AOHHTURBOXC6125
STANDARD	:	47 CFR Part 2.1091 FCC KDB 447498 D01 v06

We, Sporton International (Shenzhen) Inc., would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091 and FCC KDB 447498 D01 v06, and pass the limit. Without written approval of Sporton International (Shenzhen) Inc., the test report shall not be reproduced except in full.

Hank Huang

Reviewed by: Hank Huang / Supervisor

Johnny Chen

Approved by: Johnny Chen / Manager

ACCREDITED Cert #5145.01

Sporton International (ShenZhen) Inc.

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People's Republic of China

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA180601	Rev. 01	Initial issue of report	Sep. 30, 2021

1. Administration Data

1.1. Testing Laboratory

Sporton International (Shenzhen) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Testing Laboratory			
Test Firm	Sporton International (Shenzhen) Inc.		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR01-SZ	CN1256	421272

Applicant	
Company Name	Thundercomm Technology Co., Ltd
Address	Building 4, No. 99, Data Valley Middle Road,Xiantao District, Yubei District Chongqing, China

Manufacturer	
Company Name	Thundercomm Technology Co., Ltd
Address	Building 4, No. 99, Data Valley Middle Road,Xiantao District, Yubei District Chongqing, China

2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Calculation Module
Brand Name	TurboX
Model Name	C6125
FCC ID	2AOHHTURBOXC6125
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	WLAN 2.4GHz : 802.11b/g/n/ HT20/ HT40 WLAN 5GHz : 802.11a/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE
Antenna Type	Bluetooth: Dipole Antenna WLAN: Dipole Antenna
Antenna gain	WLAN 2.4GHz: gain 3.2 dBi WLAN 5.2GHz: gain 4.2 dBi WLAN 5.3GHz: gain 4.25 dBi WLAN 5.5GHz: gain 4.0 dBi WLAN 5.8GHz: gain 4.0 dBi Bluetooth: gain 3.2 dBi
HW Version	DVT V03
SW Version	Turbox_C6125_LA1.0.FC.r001
EUT Stage	Identical Prototype
Remark: 1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description. 2. WLAN2.4GHz and WLAN5GHz support SISO mode only.	

Comments and Explanations:
1. The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification. 2. The maximum RF output tune up power, antenna gain also the safe distance used for evaluate RF exposure were declared by manufacturer.

3. Maximum RF average output power among production units

<Bluetooth>

Mode	Maximum Average Power (dBm)
Bluetooth BR/EDR	12.50
Bluetooth LE	7.00

<WLAN 2.4GHz>

Mode		Maximum Average Power (dBm)
2.4GHz	802.11b	18.00
	802.11g	17.00
	802.11n-HT20	17.00
	802.11n-HT40	17.00

<WLAN 5GHz>

Mode		Maximum Average Power (dBm)
WLAN 5.2GHz	802.11a	17.00
	802.11n-HT20	17.00
	802.11n-HT40	16.00
	802.11ac-VHT20	15.00
	802.11ac-VHT40	16.00
	802.11ac-VHT80	13.50
WLAN 5.3GHz	802.11a	17.00
	802.11n-HT20	17.00
	802.11n-HT40	16.00
	802.11ac-VHT20	15.00
	802.11ac-VHT40	16.00
	802.11ac-VHT80	14.00
WLAN 5.5GHz	802.11a	17.00
	802.11n-HT20	17.00
	802.11n-HT40	16.00
	802.11ac-VHT20	15.00
	802.11ac-VHT40	17.00
	802.11ac-VHT80	17.00
WLAN 5.8GHz	802.11a	17.00
	802.11n-HT20	17.00
	802.11n-HT40	16.00
	802.11ac-VHT20	15.00
	802.11ac-VHT40	17.00
	802.11ac-VHT80	17.00

4. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
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) Limits for General Population/Uncontrolled Exposure				
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

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:
S = Power Density
P = Output Power at Antenna Terminals
G = Gain of Transmit Antenna (linear gain)
R = Distance from Transmitting Antenna

5. Radio Frequency Radiation Exposure Evaluation

5.1. Standalone Power Density Calculation

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm^2)	Limit (mW/cm^2)
2.4GHz WLAN	2412	3.20	18.00	21.20	0.13	131.83	0.026	1.000
WLAN 5.2GHz	5180	4.20	17.00	21.20	0.13	131.83	0.026	1.000
WLAN 5.3GHz	5260	4.25	17.00	21.25	0.13	133.35	0.027	1.000
WLAN 5.5GHz	5500	4.00	17.00	21.00	0.13	125.89	0.025	1.000
WLAN 5.8GHz	5745	4.00	17.00	21.00	0.13	125.89	0.025	1.000
Bluetooth	2402	3.2	12.50	15.70	0.04	37.15	0.007	1.000

Note:
1. For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.
2. Chose the maximum power to do MPE analysis.
3. According to the EUT characteristic, WLAN 2.4GHz and WLAN 5GHz cannot transmit simultaneously.
4. According to the EUT characteristic, WLAN and Bluetooth cannot transmit simultaneously.

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.

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