Shenzhen Most Technology Service Co., Ltd.
No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen, Guangdong, China.

RF Exposure Evaluation Report

Report Reference No......:	**MTWG2209320-H**
FCC ID..... **:**	**2A8Z8-CARVERA**
Compiled by (position+printed name+signature)..:	File administrators Alisa Luo
Supervised by (position+printed name+signature)..:	Test Engineer Sunny Deng
Approved by (position+printed name+signature)..:	Manager Yvette Zhou
Date of issue.....:	**October 21,2022**
Representative Laboratory Name .:	**Shenzhen Most Technology Service Co., Ltd.**
Address .....:	No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen, Guangdong, China.
Applicant's name.....:	**Huaibei Makera Technology Co., Ltd**
Address .....:	1st floor, building C1, e-commerce Industrial Park, Suixi Economic Development Zone, Suixi County, Huaibei City, Anhui Province, China
Test specification/ Standard .....**:**	**47 CFR Part 1.1307** **47 CFR Part 2.1093**
TRF Originator.....:	Shenzhen Most Technology Service Co., Ltd.

Test item description .....:	Carvera Desktop CNC machine
Trade Mark .....:	Carvera
Model/Type reference.....:	CARVERA
Listed Models .....:	N/A
Modulation Type.....:	O-QPSK CCK/DSSS/ OFDM
Operation Frequency.....:	From 2405MHz ~ 2480MHz
Rating .....:	100-240VAC 4A
Hardware version .....:	V1.0
Software version .....:	V1.0
Result.....:	**PASS**

TEST REPORT

Equipment under Test	:	Carvera Desktop CNC machine
Model /Type	:	CARVERA
Listed Models	:	Carvera
Remark	:	N/A
Applicant	:	**Huaibei Makera Technology Co., Ltd**
Address	:	1st floor, building C1, e-commerce Industrial Park, Suixi Economic Development Zone, Suixi County, Huaibei City, Anhui Province, China
Manufacturer	:	**Huaibei Makera Technology Co., Ltd**
Address	:	1st floor, building C1, e-commerce Industrial Park, Suixi Economic Development Zone, Suixi County, Huaibei City, Anhui Province, China

Test Result:	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

1. Revision History

Revision	Issue Date	Revisions	Revised By
00	2022.10.21	Initial Issue	Alisa Luo

2. SAR Evaluation

2.1 RF Exposure Compliance Requirement

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

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	*($900/f^2$)	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	*($180/f^2$)	30
30–300	27.5	0.073	0.2	30
300–1500	.....	.....	f/1500	30
1500–100,000	.....	.....	1.0	30

F= Frequency in MHz
Friis Formula
Friis transmission formula: Pd = (Pout*G)/(4* Pi * R 2) Where
Pd = power density in mW/cm2
Pout = output power to antenna in mW
G = gain of antenna in linear scale
Pi = 3.1416

R = distance between observation point and center of the radiator in cm
Pd id the limit of MPE, 1 mW/cm2 . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

2.1.3 EUT RF Exposure

Measurement Data
Antenna Gain (dBi)：5

Wifi 2.4G

802.11b			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power (dBm)
Lowest(2412MHz)	8.90	8.90±1	9.90
Middle(2437MHz)	10.23	10.23±1	11.23
Highest(2462MHz)	11.33	11.33±1	12.33

802.11g			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power (dBm)
Lowest(2412MHz)	9.01	9.01±1	10.01
Middle(2437MHz)	9.11	9.11±1	10.11
Highest(2462MHz)	11.01	11.01±1	12.01

802.11n(HT20)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power (dBm)
Lowest(2412MHz)	8.79	8.79±1	9.79
Middle(2437MHz)	9.03	9.03±1	10.03
Highest(2462MHz)	11.02	11.02±1	12.02

Worst case: 802.11b						
Channel	Maximum Peak Conducted Output Power (dBm)	Maximum Peak Conducted Output Power (MW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm2)	Limit	Result
Highest(2462 MHz)	12.33	17.10	5	0.0107	1.0	Pass

Note: 1) Refer to report **MTWG2209320-R1** for EUT test Max Conducted average Output Power value.

Note: 2) Pd = (Pout*G)/(4* Pi * R2)=(17.10*3.16)/(4*3.1416*20^2)=0.0107

Note: 3)EUT's Bluetooth module is more than 20cm away from the human body.

Measurement Data
Antenna Gain (dBi)：3
O-QPSK

O-QPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power (dBm)
Lowest(2405MHz)	5.568	5.568±1	6.568
Middle(2440MHz)	5.732	5.732±1	6.732
Highest(2480MHz)	6.010	6.010±1	7.010

Worst case: O-QPSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Maximum Peak Conducted Output Power (MW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm2)	Limit	Result
Highest(2480MHz)	7.010	5.023	3	0.002	1.0	Pass

Note: 1) Refer to report **MTWG2209320-R2** for EUT test Max Conducted average Output Power value.
Note: 2) Pd = (Pout*G)/(4* Pi * R2)=(5.023*1.99)/(4*3.1416*20^2)=0.002
Note: 3)EUT's Bluetooth module is more than 20cm away from the human body.

.....THE END OF REPORT.....