RF EXPOSURE
Test Report

Report No.: MTi220715012-01E4

Date of issue: 2023-02-22

Applicant: Shenzhen Teneth Technology Co., Ltd

Product: CUTTING PLOTTER

Model(s): MC6-230GB, MC6-180GB, MC6-230BT, MC6-180BT

FCC ID: 2A33R-MC6

Shenzhen Microtest Co., Ltd.

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Test Result Certification	
Applicant:	**Shenzhen Teneth Technology Co., Ltd**
Address:	No.161, Pinghu Street, Pinghu Town, Longgang District, Shenzhen City, Guangdong, China.
Manufacturer:	**Shenzhen Teneth Technology Co., Ltd**
Address:	No.161, Pinghu Street, Pinghu Town, Longgang District, Shenzhen City, Guangdong, China.
Factory:	**Shenzhen Teneth Technology Co., Ltd**
Address:	No.161, Pinghu Street, Pinghu Town, Longgang District, Shenzhen City, Guangdong, China.
Product description	
Product name:	CUTTING PLOTTER
Trademark:	TENETH
Model name:	MC6-230GB
Series Model:	MC6-180GB, MC6-230BT, MC6-180BT
Standards:	N/A
Test method:	KDB 447498 D01 v06
Date of Test	
Date of test:	2022-11-03 ~ 2023-02-22
Test result:	Pass

Test Engineer : Yanice Xie

(Yanice Xie)

Reviewed By: : Leon chen

(Leon Chen)

Approved By: : Tom Xue

(Tom Xue)

RF EXPOSURE EVALUATION

According to FCC 1.1310: 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 §1.1307(b)

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 Exposure				
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
300-1,500			f/300	6
1,500-100,000			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
300-1,500			f/1500	30
1,500-100,000			1.0	30

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

MPE Calculation Method

Friis transmission formula: $Pd= (Pout*G)\ (4*pi*R^2)$

Where

Pd= Power density in mW/cm^2

Pout=output power to antenna in mW

G= Numeric gain of the antenna relative to isotropic antenna

Pi=3.1415926

R= distance between observation point and center of the radiator in cm(20cm)

Pd the limit of MPE, $1mW/cm^2$. If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

Measurement Result

BT/BLE:

Operation Frequency: 2402-2480MHz,

Power density limited: 1mW/ cm^2

2.4GWiFi:

Operation Frequency: WIFI 802.11b/g/n HT20: 2412-2462MHz,

802.11n HT40: 2422-2452MHz,

Power density limited: 1mW/ cm^2

Antenna Type:
BT/BLE: PCB Antenna;
2.4G WIFI: FPC Antenna

BT/BLE antenna gain: -0.1 dBi
R=20cm

mW=10^(dBm/10)

antenna gain Numeric=10^(dBi/10)= 10^(-0.1/10)=0.98

WIFI antenna gain: 3.06dBi

R=20cm

mW=10^(dBm/10)

antenna gain Numeric=10^(dBi/10)= 10^(3.06/10)=2.02

BLE:

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain		(mW/cm^2)	(mW/cm^2)
				(dBm)	(mW)	(dBi)	Numeric		
2402	GFSK	-0.96	(-1)±1	0	1.000	-0.1	0.98	0.0002	1
2440		-1.38	(-1)±1	0	1.000	-0.1	0.98	0.0002	1
2480		-2.2	(-2)±1	-1	0.794	-0.1	0.98	0.0002	1

BR+EDR:

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Antenna Gain (dBi)	Antenna Gain Numeric	Evaluation result (mW/cm²)	Power density Limits (mW/cm²)
2402	GFSK	-3.2	(-3)±1	-2	0.631	-0.1	0.98	0.0001	1
2441		-3.03	(-3)±1	-2	0.631	-0.1	0.98	0.0001	1
2480		-3.75	(-3)±1	-2	0.631	-0.1	0.98	0.0001	1
2402	π/4-DQPSK	-2.92	(-3)±1	-2	0.631	-0.1	0.98	0.0001	1
2441		-2.85	(-3)±1	-2	0.631	-0.1	0.98	0.0001	1
2480		-3.48	(-3)±1	-2	0.631	-0.1	0.98	0.0001	1
2402	8DPSK	-2.56	(-3)±1	-2	0.631	-0.1	0.98	0.0001	1
2441		-2.33	(-3)±1	-2	0.631	-0.1	0.98	0.0001	1
2480		-3.1	(-3)±1	-2	0.631	-0.1	0.98	0.0001	1

2.4GWiFi:

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Max tune-up power (mW)	Antenna Gain (dBi)	Antenna Gain Numeric	Evaluation result at 20cm Power density(mW/cm²)	Power density Limits (mW/cm²)
2412	802.11b	13.93	13±1	14	25.119	3.06	2.02	0.01011	1
2437		13.88	13±1	14	25.119	3.06	2.02	0.01011	1
2462		12.75	13±1	14	25.119	3.06	2.02	0.01011	1
2412	802.11g	17.15	17±1	18	63.096	3.06	2.02	0.02539	1
2437		17.08	17±1	18	63.096	3.06	2.02	0.02539	1
2462		15.94	16±1	17	50.119	3.06	2.02	0.02017	1
2412	802.11n H20	16.82	16±1	17	50.119	3.06	2.02	0.02017	1
2437		16.84	16±1	17	50.119	3.06	2.02	0.02017	1
2462		15.88	16±1	17	50.119	3.06	2.02	0.02017	1
2422	802.11n H40	16.04	16±1	17	50.119	3.06	2.02	0.02017	1
2437		15.96	16±1	17	50.119	3.06	2.02	0.02017	1
2452		15.55	16±1	17	50.119	3.06	2.02	0.02017	1

Conclusion:

Simultaneous transmit:

BR&EDR+2.4G WIFI =0.0001+0.02539=0.02549

BLE+2.4G WIFI=0.0002+0.02539=0.02559

For the max result: 0.02559≤ 1.0 for 1g SAR, No SAR is required.

----END OF REPORT----