



Microtest
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RF EXPOSURE Test Report

Report No.: MTi211125016-01E3

Date of issue: 2022-07-15

Applicant: Shenzhen Teneth Technology Co., Ltd

Product name: Cutting Plotter

Model(s): V9PRO, A9PRO

FCC ID: 2A33R-V9PRO

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>



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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 Province, China
Manufacturer:	Shenzhen Teneth Technology Co., Ltd
Address:	Building A-2, No. 8, Baolong 1st Road, Baolong Community, Baolong Street, Longgang District, Shenzhen City, Guangdong province, China
Factory:	Shenzhen Teneth Technology Co., Ltd
Address:	3rd Floor, Building C, No.161, Pinghu street, Pinghu Town, Longgang District, Shenzhen, Guangdong, China
Product description	
Product name	Cutting Plotter
Trademark	TENETH
Model Name	V9PRO
Serial Model	A9PRO
Standards.....	N/A
Test procedure	KDB 447498 D01 v06
Date of Test	
Date (s) of performance of tests	2021-12-17 ~ 2022-07-14
Test Result.....	Pass

Testing Engineer

:

Yanice Xie

(Yanice Xie)

Technical Manager

:

Leon Chen

(Leon Chen)

Authorized Signatory

:

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: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

π = 3.1415926

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

P_d the limit of MPE, 1mW/cm². 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

BLE:

Operation Frequency: 2402-2480MHz,

Power density limited: 1mW/ cm²

Antenna Type: PCB Antenna;

BLE antenna gain: 0dBi

Antenna gain Numeric= $10^{(dBi/10)} = 10^{(3/10)} = 1$

2.4GWiFi:

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

802.11n HT40: 2422-2452MHz,

Power density limited: 1mW/ cm²

Antenna Type: FPC Antenna;

WIFI antenna gain: 2dBi

R=20cm

mW= $10^{(dBm/10)}$

antenna gain Numeric= $10^{(dBi/10)} = 10^{(3/10)} = 1.58$

BLE:

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain		(mW/cm2)	(mW/cm2)
				(dBm)	(mW)	(dBi)	Numeric		
2402	GFSK	-0.68	(-1) ±1	0	1.000	0	1.00	0.0002	1
2440		-0.8	(-1) ±1	0	1.000	0	1.00	0.0002	1
2480		-1.99	(-1) ±1	0	1.000	0	1.00	0.0002	1



2.4GWiFi:

Channel Freq. (MHz)	modulation	conducted power	Tune-up power	Max		Antenna	Evaluation result at 20cm	Power density Limits
		(dBm)	(dBm)	tune-up power		Gain	Power density(mW/cm2)	(mW/cm2)
				(dBm)	(mW)	Numeric		
		Ant A	Ant A	Ant A	Ant A	Ant A	Ant A	
2412	802.11b	13.81	14±1	15	31.622777	1.58	0.00994	1
2437		14.45	14±1	15	31.622777	1.58	0.00994	1
2462		14.04	14±1	15	31.622777	1.58	0.00994	1
2412	802.11g	8.42	9±1	10	10	1.58	0.00314	1
2437		9.39	9±1	10	10	1.58	0.00314	1
2462		9.58	9±1	10	10	1.58	0.00314	1
2412	802.11n H20	8.50	9±1	10	10	1.58	0.00314	1
2437		9.43	9±1	10	10	1.58	0.00314	1
2462		9.34	9±1	10	10	1.58	0.00314	1
2422	802.11n H40	8.55	9±1	10	10	1.58	0.00314	1
2437		9.13	9±1	10	10	1.58	0.00314	1
2452		9.38	9±1	10	10	1.58	0.00314	1

Simultaneous transmit

BLE+2.4GWiFi=0.0002+0.00994=0.01014

Conclusion:

For the max result: $0.01014 \leq 1.0$ for 1g SAR, No SAR is required.

----END OF REPORT----