

MPE TEST REPORT

Applicant	ID TECH
FCC ID	WQJ-VP8810
Product	VP8810
Brand	ID TECH
Model	VP8810-0800; VP8810-0800D
Report No.	R2210A0936-M1
Issue Date	June 16, 2023

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC 47 CFR Part 1 1.1310**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.



Prepared by: Wei Fangying



Approved by: Fan Guangchang

TA Technology (Shanghai) Co., Ltd.

Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China

TEL: +86-021-50791141/2/3

FAX: +86-021-50791141/2/3-8000

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1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA Technology (Shanghai) Co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2 Test Facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.

Address: Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China

City: Shanghai

Post code: 201201

Country: P. R. China

Contact: Fan Guangchang

Telephone: +86-021-50791141/2/3

Fax: +86-021-50791141/2/3-8000

Website: <http://www.ta-shanghai.com>

E-mail: fanguangchang@ta-shanghai.com

1.4 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25 °C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

2 Description of Equipment Under Test

Client Information

Applicant	ID TECH
Applicant address	10721 Walker Street, Cypress, California 90630, United States
Manufacturer	ID TECH TAIWAN
Manufacturer address	No. 16, Lane 22, GaoQing Rd., YanMei Dist., TaoYuan City 326, Taiwan

General Technologies

Model	VP8810-0800; VP8810-0800D
Hardware Version	Rev.A
Software Version	v1.00
Date of Sample Received	October 13, 2022
Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant. 2. All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. 3. VP8810-0800 and VP8810-0800D are the same except for different models, and this report only tests VP8810-0800.	

3 Maximum Tune Up and Antenna Gain

The numeric gain (G) of the antenna with a gain specified in dB is determined by

$$\text{Numeric gain (G)} = 10^{(\text{antenna gain}/10)}$$

Band	Maximum Tune Up Power		Antenna Gain (dBi)	Numeric Gain
	(dBm)	(mW)		
Wi-Fi 2.4G	18.000	63.096	-2.00	0.631
Wi-Fi 5G	15.000	31.623	-1.20	0.759
Bluetooth	10.000	10.000	-2.00	0.631

4 Test Result

According to section 1.1310 of FCC 47 CFR Part 1, limits for maximum permissible exposure (MPE) are as following.

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
3-30	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

* = Plane-wave equivalent power density

Note1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational / controlled limits apply provided he or she is made aware of the potential for exposure.

Note2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

The maximum permissible exposure for 1500~100,000MHz is 1.0. So

Band	The Maximum Permissible Exposure (mW/cm ²)
Wi-Fi 2.4GHz	1.000
Wi-Fi 5GHz	1.000
Bluetooth	1.000

The Electric Field Strength for 1.34 ~ 300 MHz is 824/f. So

Band	E-field Strength Limit (V/m)
NFC	60.767

RF Exposure Calculations:

The following information provides the minimum separation distance for the highest gain antenna provided. This calculation is based on the conducted power, considering maximum power and antenna gain. The formula shown in KDB 447498 D01 is used in the calculation.

Equation from KDB 447498 D01 General RF Exposure Guidance v06 (10/23/2015) is:

$$S = PG / 4\pi R^2$$

Where: S = power density (in appropriate units, e.g. mW/cm²)

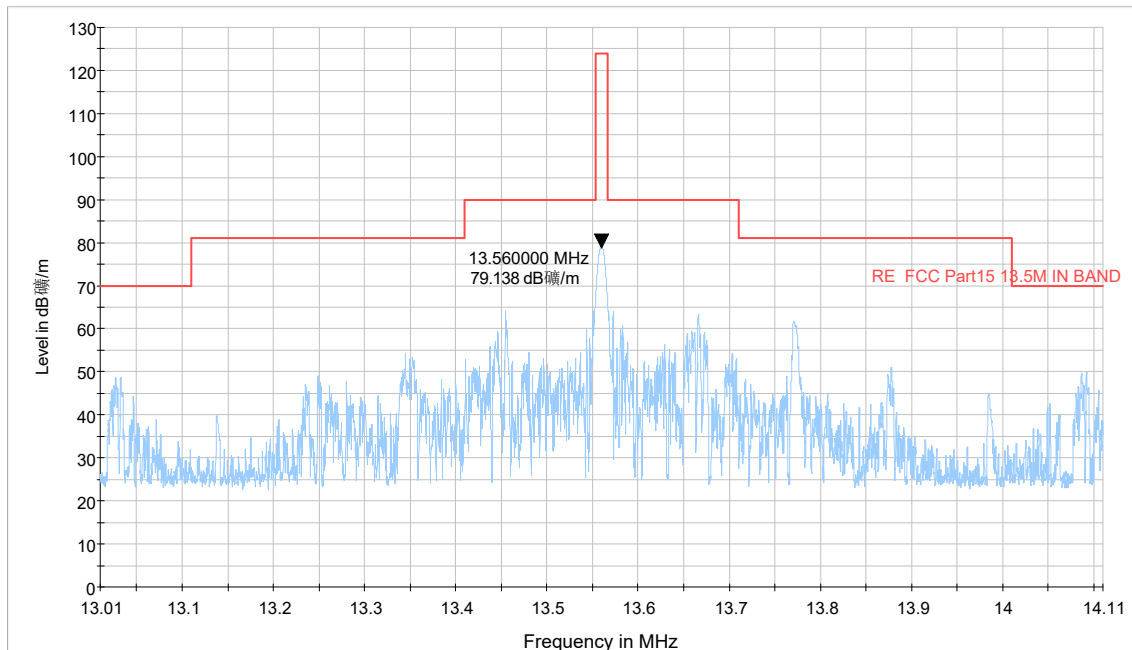
P = Time-average maximum tune up procedure (in appropriate units, e.g., mW)

G = the numeric gain of the antenna

R = distance to the center of radiation of the antenna (20 cm = limit for MPE)

Band	Maximum Tune Up (dBm)	Antenna Gain (dBi)	Maximum EIRP (dBm)	PG (mW)	Result (mW/cm ²)	Limit Value (mW/cm ²)	The MPE Ratio
Wi-Fi 2.4GHz	18.000	-2.00	16.000	39.811	0.008	1.000	0.008
Wi-Fi 5GHz	15.000	-1.20	13.800	23.988	0.005	1.000	0.005
Bluetooth	10.000	-2.00	8.000	6.310	0.001	1.000	0.001
Note: R = 20cm $\pi = 3.1416$ The MPE Ratio = Mac Test Result ÷ Limit Value							

A symbol (dBμV/m) in the test plot below means (dBμV/m)



Note: Test data comes from RF report and please refer to the RF report for testing related information.

Test Frequency (MHz)	Max. E-field Strength @ 3m (dBμV/m)	Max. E-field Strength @ 20cm (dBμV/m)	Max. E-field Strength @ 20cm (V/m)	E-field Strength Limit (V/m)	Conclusion
13.560	79.138	102.660	0.1358	60.767	Pass

Note: Max. E-field Strength @ 20cm = Max. E-field Strength @ 3m + 20log (3m/0.2m)
 $V/m = 10^{((dB\mu V/m) - 120)/20}$

So the simultaneous transmitting antenna pairs as below:

$\sum$ of MPE Ratios = Wi-Fi Antenna + Bluetooth Antenna = 0.008 + 0.001 = 0.009 < 1

NFC Antenna and Bluetooth/Wi-Fi Antenna can't transmit simultaneously.

Note: For transmitters, minimum separation distance is 20cm, even if calculations indicate MPE distance is less.

*****END OF REPORT *****

ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.