MPE REPORT

FCC ID:2AWJD-IT005

Date of issue: June 10, 2020

Report number:	MTi19102108-12E2
Sample description:	TWHBC01 IT001 tag
Model(s):	IT005, IT008
Applicant:	Tatwah SA
Address:	Rue de Lausanne 47, CH-1110 Morges, Switzerland
Date of test:	May 22, 2020 to June 10, 2020

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TEST RESULT CERTIFICATION	
Applicant's name:	Tatwah SA
Address:	Rue de Lausanne 47, CH-1110 Morges, Switzerland
Manufacture's name:	Tatwah Technology Co., Ltd
Address:	No.9 Shuiyi South Road Taifeng industrial Park, Xiaolan Town, Zhongshan City, Guangdong, China
Product name:	TWHBC01 IT001 tag
Trademark:	Mango
Model and/or type reference:	IT005
Serial model:	IT008
RF exposure procedures:	KDB 447498 D01 v06

This device described above has been tested by Shenzhen Microtest Co., Ltd and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by: Demi Mu — June 10, 2020

Reviewed by: Leo Su — June 10, 2020

Approved by: Tom Xue — June 10, 2020

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/cm2

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/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/ cm^2

Antenna Type: PCB Antenna;
Antenna gain: 1dBi

R=20cm

mW=10^(dBm/10)

antenna gain Numeric=10^(dBi/10)= 10^(1/10)=1.26

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	-4.086	-4±1	-3	0.501	1.00	1.26	0.0001	1
2440		-4.046	-4±1	-3	0.501	1.00	1.26	0.0001	1
2480		-3.569	-4±1	-3	0.501	1.00	1.26	0.0001	1

Conclusion:

For the max result: 0.0001≤ 1.0 for 1g SAR, No SAR is required.

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