1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Client Information

Applicant:	Universal Ubiquitous Co., Ltd.
Address of applicant:	Room 658, Building 1, No.1, Lvting Road, Cangqian Street, Yuhang District, Hangzhou City
Manufacturer:	Universal Ubiquitous Co., Ltd.
Address of manufacturer:	Room 658, Building 1, No.1, Lvting Road, Cangqian Street, Yuhang District, Hangzhou City

General Description of EUT	
Product Name:	Face recognition terminal
Trade Name:	uni-ubi 宇泛智能
Model No.:	OS-K21-11901
Adding Model(s):	/
Rated Voltage:	DC5V
Power Adapter Model:	MODEL: XED-UL050200CU INPUT: AC100-240V, 50/60Hz, 0.3A OUTPUT: DC5V, 2.0A
FCC ID:	2AUI4-OS-K21-11901

Note: The test data is gathered from a production sample provided by the manufacturer.

Technical Characteristics of EUT	
WIFI:	
Support Standards:	802.11b, 802.11g, 802.11n
Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20) 2422-2452MHz for 802.11n(HT40)
RF Output Power:	15.28dBm (Conducted)
Type of Modulation:	DBPSK,BPSK,DQPSK,QPSK,16QAM,64QAM
Quantity of Channels:	11 for 802.11b/g/n(HT20); 7 for 802.11n(HT40)
Channel Separation:	5MHz
Type of Antenna:	Integral Antenna
Antenna Gain:	3.4dBi
Bluetooth	
Bluetooth Version:	V4.2
Frequency Range:	2402-2480MHz
RF Output Power:	5.87dBm (Conducted)
Data Rate:	1Mbps, 2Mbps, 3Mbps

Modulation:	GFSK, π/4 DQPSK, 8DPSK
Quantity of Channels:	79/40
Channel Separation:	1MHz/2MHz
Type of Antenna:	Integral Antenna
Antenna Gain:	3.4dBi

1.2 Standard Applicable

According to §1.1307(b)(1) and KDB 447498 D01 General RF Exposure Guidance v06, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

(a) Limits for Occupational / Controlled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\mid E \mid^2$, $\mid H \mid^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	F/300	6
1500-100000	/	/	5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\mid E \mid^2$, $\mid H \mid^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-100000	/	/	1	30

Note: f = frequency in MHz: * = Plane-wave equivalents power density

1.3 MPE Calculation Method

$S = (30*P*G) / (377*R^2)$

S = power density (in appropriate units, e.g., mw/cm^2)

P = power input to the antenna (in appropriate units, e.g., mw)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

1.4 MPE Calculation Result

WIFI

Maximum Tune-Up output power: <u>16(dBm)</u>

Maximum peak output power at antenna input terminal: <u>39.81 (mW)</u>

Prediction distance: <u>>20(cm)</u>

Prediction frequency: <u>2412 (MHz)</u>

Antenna gain: <u>3.4 (dBi)</u>

Directional gain (numeric gain): <u>2.19</u>

The worst case is power density at prediction frequency at 20cm: <u>0.0173 (mw/cm^2)</u>

MPE limit for general population exposure at prediction frequency: <u>1 (mw/cm^2)</u>

Bluetooth

Maximum Tune-Up output power: <u>6(dBm)</u>

Maximum peak output power at antenna input terminal: <u>3.98(mW)</u>

Prediction distance: <u>>20(cm)</u>

Prediction frequency: <u>2402 (MHz)</u>

Antenna gain: <u>3.4(dBi)</u>

Directional gain (numeric gain): <u>2.19</u>

The worst case is power density at prediction frequency at 20cm: <u>0.0017(mw/cm^2)</u>

MPE limit for general population exposure at prediction frequency: <u>1 (mw/cm^2)</u>

Mode for Simultaneous Multi-band Transmission

Wi-Fi+ Bluetooth

The worst case is power density at prediction frequency at 20cm: 0.0173+0.0017=0.0190(mw/cm2)

MPE limit for general population exposure at prediction frequency: <u>1 (mw/cm^2)</u>

Result: Pass