1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 General Information

Client Information

Applicant:	Zhuhai 4Dage Technology Co., Ltd
Address of applicant:	2-101-2,Building 2,Tech Bay,NO.1 Jintang Road, Tangjiawan,High-Tech Zone,Zhuhai,China
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Address of applicant:	2-101-2,Building 2,Tech Bay,NO.1 Jintang Road, Tangjiawan,High-Tech Zone,Zhuhai,China

General Description of EUT:

Product Name:	3D Capture System
Trade Name:	4DKanKan
Model No.:	4DKanKan Pro
Adding Model(s):	/
Rated Voltage:	DC7.26V
Power Adapter Model:	MODEL: PN453U INPUT: AC100-240V, 50/60Hz, 1.2A OUTPUT: DC5V, 3A ; DC9V, 3A; DC12V, 3A; DC15V, 3A; DC20V, 2.25A Max
FCC ID:	2ARKS-4DKANKANPRO
Equipment Type:	Fixed

Technical Characteristics of EUT:	
Wi-Fi (2.4G)	
Support Standards:	802.11b, 802.11g, 802.11n-HT20, 802.11n-HT40
Frequency Range:	2412-2462MHz for 802.11b/g/n(HT20) 2422-2452MHz for 802.11n(HT40)
RF Output Power:	17.65dBm (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:	FPC Antenna
Antenna Gain:	3.9dBi
Wi-Fi (5G)	
Support Standards:	802.11a, 802.11n(HT20) , 802.11n-HT40, 802.11ac-HT80,
Frequency Range:	5150-5250MHz, 5725-5850MHz
RF Output Power:	11.47dBm (Conducted)
Type of Modulation:	BPSK, QPSK,16QAM,64QAM, 256QAM
Quantity of Channels:	15

Type of Antenna:	FPC Antenna
Antenna Gain:	5.47dBi

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 $\|E\|^2$, $\|H\|^2$ 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 $\|E\|^2$, $\|H\|^2$ 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

Wi-Fi(2.4G)
Maximum Tune-Up output power: 18(dBm)
Maximum peak output power at antenna input terminal: 63.10 (mW)
Prediction distance: >20(cm)
Prediction frequency: 2462 (MHz)
Antenna gain: 3.9 (dBi)
Directional gain (numeric gain): 2.45
The worst case is power density at prediction frequency at 20cm: 0.0308 (mw/cm^2)
MPE limit for general population exposure at prediction frequency: 1 (mw/cm^2)

Wi-Fi (5G)
Maximum Tune-Up output power: 12(dBm)
Maximum peak output power at antenna input terminal: 15.85(mW)
Prediction distance: >20(cm)
Prediction frequency: 5240 (MHz)
Antenna gain: 5.47 (dBi)
Directional gain (numeric gain): 3.52
The worst case is power density at prediction frequency at 20cm: 0.0111 (mw/cm^2)
MPE limit for general population exposure at prediction frequency: 1 (mw/cm^2)

Mode for Simultaneous Multi-band Transmission
WIFI Antenna 1 + WIFI Antenna 2

Wi-Fi (2.4G) + Wi-Fi (2.4G)
The worst case is power density at prediction frequency at 20cm: 0.0308+0.0308=0.0616 (mw/cm^2)
MPE limit for general population exposure at prediction frequency: 1 (mw/cm^2)

Wi-Fi (2.4G) + Wi-Fi (5G)
The worst case is power density at prediction frequency at 20cm: 0.0308+0.0111=0.0419 (mw/cm^2)
MPE limit for general population exposure at prediction frequency: 1 (mw/cm^2)

Wi-Fi (5G) + Wi-Fi (5G)
The worst case is power density at prediction frequency at 20cm: 0.0111+0.0111=0.0222(mw/cm^2)
MPE limit for general population exposure at prediction frequency: 1 (mw/cm^2)

Result: Pass