RF EXPOSURE REPORT

Applicant	Zhiwei Robotics Corp.
Address	Room 603, 2 Boyun Road, Pudong, Shanghai P.R.China

Manufacturer or Supplier	Zhiwei Robotics Corp.
Address	Room 603, 2 Boyun Road, Pudong, Shanghai P.R.China
Product	LattePanda 3 Delta
Brand Name	LattePanda
Model	DFR0981
Additional Model & Model Difference	DFR0982
Date of tests	Jun. 05, 2022 ~ Jul. 22, 2022

☒ **FCC Part 2 (Section 2.1091)**
☒ **KDB 447498 D01**
☒ **IEEE C95.1**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Tested by Lucas Chen Project Engineer / EMC Department	Approved by Glyn He Assistant Manager / EMC Department
	 Date: Aug. 03, 2022

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FM2205WDG0306	Original release	Aug. 03, 2022

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1. CERTIFICATION

PRODUCT:	LattePanda 3 Delta
BRAND NAME:	LattePanda
MODEL NO.:	DFR0981
ADDITIONAL MODEL:	DFR0982
FCC ID:	2AIDMLPDF0981
TEST SAMPLE:	ENGINEERING SAMPLE
APPLICANT:	Zhiwei Robotics Corp.
STANDARDS:	FCC Part 2 (Section 2.1091)
	KDB 447498 D01
	IEEE C95.1

2. RF EXPOSURE LIMIT

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

FREQUENCY RANGE (MHz)	ELECTRIC FIELD STRENGTH (V/m)	MAGNETIC FIELD STRENGTH (A/m)	POWER DENSITY (mW/cm^2)	AVERAGE TIME (minutes)
LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE				
300-1500	…	…	F/1500	30
1500-100,000	…	…	1.0	30

F = Frequency in MHz

3. MPE CALCULATION FORMULA

$Pd = (Pout*G) / (4*pi*r^2)$

where

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

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

4. CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

5. ANTENNA GAIN

The antennas provided to the EUT, please refer to the following table:

Frequency Band	Antenna Gain (dBi)	Antenna Type
BT 2.4GHz	1.56	FPCB Antenna
Wi-Fi 2.4GHz	1.56	FPCB Antenna
Wi-Fi 5GHz (5150-5250MHz)	0.67	FPCB Antenna
Wi-Fi 5GHz (5250-5350MHz)	0.67	FPCB Antenna
Wi-Fi 5GHz (5500-5725MHz)	0.67	FPCB Antenna
Wi-Fi 5GHz (5725-5850MHz)	0.67	FPCB Antenna

6. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

The tuned conducted Average Power (declared by client)

Mode	Frequency (MHz)	Target Power (dBm)	Tolerance (dBm)	Lower Tolerance (dBm)	Upper Tolerance (dBm)
BT (GFSK)	2402-2480MHz	8	+-1	7	9
BT (8DPSK)	2402-2480MHz	7	+-1	6	8
BT-LE (GFSK) 1M bps	2402-2480MHz	7	+-1	6	8
BT-LE (GFSK) 2M bps	2402-2480MHz	7	+-1	6	8
802.11b	2412-2462MHz	15	+-1	14	16
802.11g	2412-2462MHz	14	+-1	13	15
802.11n HT20	2412-2462MHz	12	+-1	11	13
802.11n HT40	2422-2452MHz	11	+-1	10	12
802.11ax (HE20)	2412-2462MHz	11	+-1	10	12
802.11ax (HE40)	2422-2452MHz	11	+-1	10	12
Wi-Fi 5GHz(Band1)	5150-5250MHz	12	+-2	10	14
Wi-Fi 5GHz(Band2)	5250-5350MHz	12	+-2	10	14
Wi-Fi 5GHz(Band3)	5500-5725MHz	12	+-2	10	14
Wi-Fi 5GHz(Band4)	5725-5850MHz	11	+-2	9	13

The measured conducted Average Power

Mode	Frequency (MHz)	Averaged Power (dBm)
BT (GFSK)	2480	7.60
BT (8DPSK)	2480	6.88
BT-LE (GFSK) 1M bps	2480	6.61
BT-LE (GFSK) 2M bps	2480	6.63
802.11b	2462	15.27
802.11g	2462	14.16
802.11n HT20	2462	12.04
802.11n HT40	2452	11.27
802.11ax (HE20)	2462	11.50
802.11ax (HE40)	2452	11.22
Wi-Fi 5GHz(Band1)	5210	12.36
Wi-Fi 5GHz(Band2)	5290	12.24
Wi-Fi 5GHz(Band3)	5670	12.08
Wi-Fi 5GHz(Band4)	5795	11.28

FREQUENCY BAND (MHz)	MAX AVERAGE POWER (dBm)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
BT	9	1.56	20	0.002263	1.0
Wi-Fi 2.4GHz	16	1.56	20	0.011343	1.0
Wi-Fi 5GHz	14	0.67	20	0.005831	1.0

CONCLUSION:

The BT and Wi-Fi can transmit simultaneously, but Wi-Fi 2.4G and Wi-Fi 5G can not transmit simultaneously, the formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

(0.002263/1)+(0.011343/1)= 0.013606<1, which is less than the “1” limit.

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