

RF Exposure evaluation report

Applicant:	Guangzhou Yuandong Smart Sports Technology Co, Ltd.
Address of Applicant:	Room 1004, Building (2), No.6 Yunpu 4th Road, Huangpu District, Guangzhou, Guangdong, China
Manufacturer:	Guangzhou Yuandong Smart Sports Technology Co, Ltd.
Address of Manufacturer:	Room 1004, Building (2), No.6 Yunpu 4th Road, Huangpu District, Guangzhou, Guangdong, China
Product name:	Treadmill
Model:	X21-22A00, X21-22N00, X21-22xxx ("x"=0-9, A-Z, a-z, -or blank) X21-30A00, X21-30N00, X21-30xxx ("x"=0-9, A-Z, a-z, -or blank)
Rating(s):	X21-22A00, X21-22N00, X21-22xxx ("x"=0-9, A-Z, a-z, -or blank) 110-240V~, 50/60Hz, 2200W, Class I X21-30A00, X21-30N00, X21-30xxx ("x"=0-9, A-Z, a-z, -or blank) 110-240V~, 50/60Hz, 3000W, Class I
Trademark:	/
Standards:	47 CFR Part 1.1310 (2013) 47 CFR Part 2.1091 (2013) KDB447498D01 General RF Exposure Guidance v06
FCC ID:	2AVMF-X2122A0001
Date of Receipt:	2019-07-24
Date of Test:	2019-07-24~2020-01-02
Date of Issue:	2020-01-03
Test Result	Pass*

* In the configuration tested, the test item complied with the standards specified above.

Authorized for issue by:

Test by:

Jan.03, 2020 Eleven Liang

Project Engineer

Date

Name/Position

Signature



Pauler Li *Pauler Li*

Project Manager

Date

Name/Position

Signature

Possible test case verdicts:

test case does not apply to the test object ...: N/A

test object does meet the requirement: P (Pass)

test object does not meet the requirement ...: F (Fail)

Testing Laboratory information:

Testing Laboratory Name: ITL Co., Ltd

Address.....: No. 8 Jinqianling Street 5, Huangjiang Town, Dongguan,
Guangdong, 523757 P.R.C.

Testing location : Same as above

Tel : 0086-769-39001678

Fax : 0086-20-62824387

E-mail : itl@i-testlab.com

General remarks:

The test results presented in this report relate only to the object tested.

The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

This report would be invalid test report without all the signatures of testing technician and approver.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

General product information:

All models have similar mechanical and electrical construction. Differences between them are motor and wattage.

If no otherwise specified, all tests were conducted on model X21-30A00

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2 General Information

2.1 Client Information

Applicant: Guangzhou Yuandong Smart Sports Technology Co, Ltd.
Address of Applicant: Room 1004, Building (2), No.6 Yunpu 4th Road, Huangpu District, Guangzhou, Guangdong, China

2.2 General Description of E.U.T.

Name: Treadmill
Model No.: X21-30A00
Trade Mark: /
Operating Frequency: 802.11 b/g/n(HT20): 2412MHz-2462MHz
2402 MHz to 2480 MHz for Bluetooth.
Channels: 802.11b, 802.11g, 802.11n(20MHz): 11
79 channels with 1MHz step for Bluetooth
Type of Modulation: CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM for WIFI
GFSK, ($\pi/4$) DQPSK, 8DPSK for Bluetooth
Antenna Reference: Internal Antenna with 3dBi peak Gain
Function: Treadmill

2.3 Details of E.U.T.

EUT Power Supply: 120Vac, 60Hz

Test mode for WIFI: The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, and to measure its highest possible emissions level, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	802.11b	2412MHz, 2437MHz, 2462MHz,
TM2	802.11g	2412MHz, 2437MHz, 2462MHz,
TM3	802.11n(HT20)	2412MHz, 2437MHz, 2462MHz,

Test mode for BT: The program used to control the EUT for staying in continuous transmitting and receiving mode is programmed. Channel lowest (2402MHz), middle (2441MHz) and highest (2480MHz) are chosen for Bluetooth full testing.
Normal mode: the Bluetooth has been tested on the Modulation of GFSK;
EDR mode: the Bluetooth has been tested on the Modulation of ($\pi/4$)DQPSK and 8DPSK, compliance test and record the worst case on ($\pi/4$)DQPSK and 8DPSK

Test mode for BLE: The program used to control the EUT for staying in continuous transmitting and receiving mode is programmed. Channel lowest (2402MHz), middle (2440MHz) and highest (2480MHz) are chosen for full testing.

2.4 Description of Support Units

The EUT has been tested as an independent unit for fixed frequency by testing lab.

2.5 Test Location

All tests were performed at:

ITL Co., Ltd

No. 8 Jinqianling Street 5, Huangjiang Town, Dongguan, Guangdong, 523757 P.R.C.

0086-769-39001678

itl@i-testlab.com

No tests were sub-contracted.

2.6 Deviation from Standards

Biconical and log periodic antennas were used instead of dipole antennas.

2.7 Abnormalities from Standard Conditions

None.

2.8 Other Information Requested by the Customer

None.

2.9 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- CNAS Lab code:L9342
- FCC Designation No.:CN5035
- IC Registration NO.: 12593A
- NVLAP LAB CODE: 600199-0

3 SAR Evaluation

3.1 RF Exposure Compliance Requirement

3.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06 and FCC 1.1310
Radiofrequency radiation exposure limits for General Population/Uncontrolled Exposure

3.1.2 Maximum Peak Output Power

BT

Normal mode(DH5):		
Test Channel	Fundamental Frequency (MHz)	Output Power (dBm)
Lowest	2402	8.72
Middle	2441	8.70
Highest	2480	8.94
EDR mode(2DH5):		
Test Channel	Fundamental Frequency (MHz)	Output Power (dBm)
Lowest	2402	8.755
Middle	2441	8.702
Highest	2480	8.916
EDR mode(3DH5):		
Test Channel	Fundamental Frequency	Output Power (dBm)
Lowest	2402	8.097
Middle	2441	8.020
Highest	2480	8.150
BLE		
Test Channel	Fundamental Frequency	Output Power (dBm)
Lowest	2402	4.49
Middle	2440	4.74
Highest	2480	6.73

WIFI

Test mode	Test Channel	Test Result (dBm)
802.11b	2412	19.71
	2437	19.74
	2462	19.62
802.11g	2412	19.64
	2437	19.62
	2462	19.37
802.11n(HT20)	2412	18.80
	2437	18.81
	2462	18.80

3.1.3 EUT RF Exposure

$$P_d = P_G / 4 \pi R^2$$

P_d = power density in mW/cm²

P = 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

FREQUENCY BAND (MHz)	MAX POWER (dBm)	MAX POWER (mW)	ANTENNA GAIN	DISTANCE (cm)	POWER DENSITY (mW/cm ²)	LIMIT (mW/cm ²)
BT	8.94	7.83	2	20	0.00312	1
WIFI	19.74	94.19	2	20	0.03750	1

CONCLUSION: Both of the WIFI and BT can transmit simultaneously, the formula of calculated the MPE is: $CPD1 / LPD1 + CPD2 / LPD2 < 1$

CPD = Calculation power density

LPD = Limit of power density

--END--