Radio Frequency Exposure Evaluation Report

FOR:

Hysko

Model Name:
hws-01

Product Description:
Wearable device for combat sports. Installed on the wrists, the boxers and MMA athletes can know how many punches, at what speed, and what is the type of the punches they thrown during their trainings.

FCC ID: 2AK2R-HWS01
IC ID: 22370-HWS01

Applied Rules and Standards:
CFR 47 Part 2.1093
FCC KDB 447498 D01 General RF Exposure Guidance v06
IC RSS-102 Issue 5

Report number: EMC_ARROW-001-16501_FCC_IC_SAR-EX_Rev1

DATE: 2017-03-28

A2LA Accredited

IC recognized #
3462B-1

***CETECOM* Inc.**
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Contents

1. Assessment

The following device was evaluated against the limits for general population uncontrolled exposure specified in CFR 47 Part 2.1093 according to SAR evaluation exclusion requirements specified in FCC regulation as listed in KDB 447498, and IC RSS-102 Issue 5.

The device meets the requirements for SAR exclusion as stipulated by the above given FCC/IC rules.

Company	Description	Model #
Hykso	Wearable device for combat sports. Installed on the wrists, the boxers and MMA athletes can know how many punches, at what speed, and what is the type of the punches they thrown during their trainings.	hws-01

Responsible for Testing Laboratory:

Date	Section	Name	Signature
2017-03-28	Compliance	James Donnellan (Sr. EMC Test Engineer)	James Donnellan Digitally signed by James Donnellan DN: cn=James Donnellan, c=US, o=Cetecom Inc., ou=Compliance, email=james.donnellan@cetecom.com Date: 2017.03.28 14:18:09 -07'00'

Responsible for the Report:

Date	Section	Name	Signature
2017-03-28	Compliance	Douglas Antioco (Sr. EMC Test Engineer)	Douglas Antioco 2017.03.28 14:08:38 -07'00'

2. Administrative Data

2.1. Identification of the Testing Laboratory Issuing the Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Street Address:	411 Dixon Landing Road
City/Zip Code	Milpitas, CA 95035
Country	USA
Telephone:	+1 (408) 586 6200
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Project Manager:	Laith Saman
Responsible Project Leader:	Douglas Antioco

2.2. Identification of the Client

Applicant's Name:	Hykso
Street Address:	234 E 17th St, Suite 207
City/Zip Code	Costa Mesa, CA 92627
Country	USA

2.1. Identification of the Manufacturer

Applicant's Name:	Same As Client.
Street Address:	
City/Zip Code	
Country	

3. Equipment under Assessment

Model No	Hws-01
HW Version	hws-trk-01c
SW Version	firmware version: 1.03r
FCC-ID	2AK2R-HWS01
IC ID	22370-HWS01
Product Description	Wearable device for combat sports. Installed on the wrists, the boxers and MMA athletes can know how many punches, at what speed, and what is the type of the punches they thrown during their trainings.
Device Category	☐ Fixed Installation ☐Mobile ■ Portable ☐ Mixed Mobile and Portable
Frequency Range / number of channels	2402 MHz (Ch. 0) – 2480 (Ch.39), 40 channels;
Type(s) of Modulation	Bluetooth LE, using Direct Sequence Spread Spectrum with GFSK modulation.
Modes of Operation	Bluetooth LE
Max. declared antenna gain	Internal antenna: Antenna Gain: 1.8 dBi @ 2.4 GHz.
Minimum distance of antenna or radiating parts to user	5mm or less
Max. declared conducted output power including tune up	Maximum conducted power 0 dBm + 1 dBm tolerance
Max. measured conducted output power	0 dBm (Peak)
Power Supply/ Rated Operating Voltage Range	Vmin: 3.4VDC/ Vnom: 3.7VDC / Vmax: 4.2VDC
Operating Temperature Range	15.6° C (60° F) to 32.2° C (90° F)
Other Radios included in the device	None
Co-located Transmitters/ Antennas	☐ Yes ■ No
Sample Revision	☐ Prototype ■ Production ☐ Pre-Production
Exposure Category	☐ Occupational/ Controlled ■ General Population/ Uncontrolled

4. FCC and IC Exemption Limits for Routine Evaluation

4.1. FCC SAR test exclusions are set by KDB 447498 D01 General RF Exposure Guidance v06

KDB 447498 Section: 4.3.1. Standalone SAR test exclusion considerations

a) For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR,30 where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- The values 3.0 and 7.5 are referred to as *numeric thresholds* in step b) below

The test exclusions are applicable only when the minimum *test separation distance* is ≤ 50 mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum *test separation distance* is < 5 mm, a distance of 5 mm according to 4.1 f) is applied to determine SAR test exclusion.

4.2. IC SAR test exclusions are set by IC RSS-102 Issue 5

IC RSS-102 Section: 2.5.1 Exemption Limits for Routine Evaluation — SAR Evaluation

SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1.

- For BT LE radio, the maximum RF channel power for the device under evaluation is 1.91 mW.

For a limb worn device operating at 2.45GHz the SAR evaluation exemption limit at distance 5mm or less is 10mW

4.3. Stand-Alone SAR Evaluation Exclusion

According to KDB 447498, SAR evaluation can be excluded if the following equation is satisfied:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] ·[√f(GHz)] ≤ 7.5

- The maximum RF channel power for the device under evaluation is 1.91 mW.

Using the above equation:

$$[(1.82mW) / (5mm)] \cdot [\sqrt{2.480}] = 0.6$$

5. Conclusion:

BTLE Radio

- SAR testing for FCC is excluded because the exclusion threshold of 0.6 is less than the 7.5 FCC limit
- SAR testing for IC is excluded because the maximum power of 1.9mW is less than the 4mW IC limit

6. Revision History

Date	Report Name	Changes to report	Report prepared by
2017-02-23	EMC_ARROW-001-16501_FCC_IC_SAR-EX	Initial version	Douglas Antioco
2017-02-23	EMC_ARROW-001-16501_FCC_IC_SAR-EX_Rev1	Changing Hykso company address	Douglas Antioco