ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR LOW-POWER, NON-LICENSED TRANSMITTER

Test Report No.	**: OT-202-RWD-014**
AGR No.	**: A19NA-063**
Applicant	**: SOOIL Development Co., Ltd.**
Address	**: 62, Yonggu-daero 2325beon-gil, Giheung-gu, Yongin-si, Gyeonggi-do, 16922, Korea**
Manufacturer	**: SOOIL Development Co., Ltd (Heukseok)**
Address	**: 62, Yonggu-daero 2325beon-gil, Giheung-gu, Yongin-si, Gyeonggi-do, 16922, Korea**
Type of Equipment	**: Insulin Pump**
FCC ID.	**: VF9DANAI5**
Model Name	**: Diabecare DANA-i5**
Serial number	**: N/A**
Total page of Report	**: 7 pages (including this page)**
Date of Incoming	**: December 30, 2019**
Date of issue	**: February 10, 2020**

SUMMARY

The equipment complies with the regulation; ***FCC PART 15 SUBPART C Section 15.247***

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

Reviewed by: Tae-Ho, Kim / Senior Manager, ONETECH Corp.

Approved by: Ki-Hong, Nam / General Manager, ONETECH Corp.

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ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

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Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-202-RWD-014	February 10, 2020	Initial Release	All

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1. VERIFICATION OF COMPLIANCE

Applicant : SOOIL Development Co., Ltd.

Address : 62, Yonggu-daero 2325beon-gil, Giheung-gu, Yongin-si, Gyeonggi-do, 16922, Korea

Contact Person : Geun-Sang, Lim / General Manager

Telephone No. : +82-2-2824-2133

FCC ID : VF9DANAI5

Model Name : Diabecare DANA-i5

Brand Name : -

Serial Number : N/A

Date : February 10, 2020

EQUIPMENT CLASS	DTS – DIGITAL TRNSMISSION SYSTEM
E.U.T. DESCRIPTION	Insulin Pump
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	ANSI C63.10: 2013
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 SUBPART C Section 15.247 558074 D01 15.247 Meas Guidance v05r02
Modifications on the Equipment to Achieve Compliance	None
Final Test was Conducted On	10 m, Semi Anechoic Chamber

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

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2. GENERAL INFORMATION

2.1 Product Description

The SOOIL Development Co., Ltd., Model Diabecare DANA-i5 (referred to as the EUT in this report) is an Insulin Pump, Product specification information described herein was obtained from product data sheet or user's manual.

DEVICE TYPE	Insulin Pump
Temperature Range	1 °C ~ 40 °C
Operating Frequency	2 402 MHz ~ 2 480 MHz
Modulation Type	GFSK
RF Output Power	125 kbps: -6.08 dBm 1 Mbps: -6.08 dBm
ANTENNA TYPE	Chip Antenna
ANTENNA GAIN	1.05 dBi
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)	32.768 kHz
RATED SUPPLY VOLTAGE	DC 1.5 V

2.2 Alternative type(s)/model(s); also covered by this test report.

-. None

3. EUT MODIFICATIONS

-. None

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4. MAXIMUM PERMISSIBLE EXPOSURE

4.1 RF Exposure Calculation

According to the FCC rule 1.1310 table 1B, the limit for the maximum permissible RF exposure for an uncontrolled environment are f/1500 mW/cm² for the frequency range between 300 MHz and 1 500 MHz and 1.0 mW/cm² for the frequency range between 1 500 MHz and 100 000 MHz.

The electric field generated for a 1 mW/cm² exposure is calculated as follows:

$E = \sqrt{(30 * P * G)} / d$, and $S = E^2 / Z = E^2 / 377$, because 1 mW/cm² = 10 W/m²

Where

S = Power density in mW/cm², Z = Impedance of free space, 377 Ω

E = Electric filed strength in V/m, G = Numeric antenna gain, and d = distance in meter

Combing equations and rearranging the terms to express the distance as a function of the remaining variable

$d = \sqrt{(30 * P * G) / (377 * 10 S)}$

Changing to units of mW and cm, using P (mW) = P (W) / 1 000, d (cm) = 0.01 * d (m)

$d = 0.282 * \sqrt{(P * G) / S}$

Where

d = distance in cm, P = Power in mW, G = Numeric antenna gain, and S = Power density in mW/cm²

Kind of EUT	Insulin Pump
Device Category	■ Portable (< 20 cm separation) ☐ Mobile (> 20 cm separation) ☐ Others
Exposure Evaluation Applied	☐ MPE ☐ SAR ■ N/A

Tested by: Hyung-Kwon, Oh / Assistant Manager

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4.2 Test Result for Bluetooth LE

According to the procedure, KDB 447498 D01, the standalone SAR test exclusion threshold is

[(Max. Power of channel, including tune-up tolerance, mW)/(Mim. test separation distance, mm)] X [√ f(GHz)] < 3

= (0.28/5) X √ 2.402 = 0.087

Conclusion: The SAR test exclusion threshold is less than 3, so the device meets the RF Exposure Requirement and are excluded from SAR Test.

Operating Mode	Frequency (MHz)	Target Power W/tolerance (dBm)	Max tune up power (dBm)	Max tune up power (mW)	Separation distance (mm)	RF exposure
Bluetooth LE	2 402.00	-6.50 ± 1.0	-5.50	0.28	5.00	0.087

Tested by: Hyung-Kwon, Oh / Assistant Manager

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