EMF TEST REPORT

Test Report No.	**: OT-24N-RWD-053**
Reception No.	**: 2411004143**
Applicant	**: SJIT Co., Ltd.**
Address	**: 54-11, Dongtanhana 1-gil, Hwaseong-si, Gyeonggi-do, Republic of Korea**
Manufacturer	**: SJIT Co., Ltd.**
Address	**: 54-11, Dongtanhana 1-gil, Hwaseong-si, Gyeonggi-do, Republic of Korea**
Type of Equipment	**: Asset Tracker**
Model Name	**: IET10MO**
Multiple Model Name	**: N/A**
Serial number	**: N/A**
Total page of Report	**: 7 pages (including this page)**
Date of Incoming	**: November 01, 2022**
Date of issue	**: November 29, 2024**

SUMMARY

The equipment complies with the standard; EN 62311: 2008

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.

This report is not correlated with the "KS Q ISO/IEC 17025 and KOLAS accreditation" of Korean Laboratory Accreditation Scheme.

Tested by	Reviewed by	Approved by
Yun-Bok, Wi / Engineer	Tae-Ho, Kim / Chief Engineer	Jae-Ho, Lee / Chief Engineer
ONETECH Corp.	ONETECH Corp.	ONETECH Corp.

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-22N-RWD-011	November 04, 2022	Initial Release	All
1	OT-24N-RWD-053	November 29, 2024	Changed company name and address.	All

* Please contact us (e-mail: info@onetech.co.kr) for verification of this test report.

1. APPLICANT AND MANUFACTURER INFORMATION

-. Applicant : SJIT Co., Ltd.

-. Address : 54-11, Dongtanhana 1-gil, Hwaseong-si, Gyeonggi-do, Republic of Korea

-. Manufacturer : SJIT Co., Ltd.

-. Address : 54-11, Dongtanhana 1-gil, Hwaseong-si, Gyeonggi-do, Republic of Korea

2. TEST SUMMARY

2.1 Test standards and results

STANDARDS	TEST ITEMS
62311: 2008	Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz – 300 GHz)

2.2 Additions, deviations, exclusions from standards

No additions, deviations or exclusions have been made from standard.

2.3 Purpose of the test

To determine whether the equipment under test fulfills the RF spectrum electro magnetic compatibility requirements of the standards stated in section 2.1.

2.4 Test Facility

The Onetech Corp. has been designated to perform equipment testing in compliance with ISO/IEC 17025.

The Electromagnetic compatibility measurement facilities are located at 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea

-. Site Filing:

VCCI (Voluntary Control Council for Interference) – Registration No. R-20122/ C-14617/ G-10666/ T-11842

-. Lab Accreditation:

KOLAS (Korea Laboratory Accreditation Scheme) - Accreditation NO. KT085

ISED (Innovation, Science and Economic Development Canada) – Registration No. Site# 3736A-3

FCC (Federal Communications Commission) - Accreditation No. KR0013

RRA (Radio Research Agency) – Designation No. KR0013

3. EUT (Equipment Under Test)

3.1 Identification of EUT

-. Equipment : Asset Tracker

-. Model Name : IET10MO

-. Brand Name : SJI

-. Serial number : N/A

-. Manufacturer : SJIT Co., Ltd.

3.2 Additional information about the EUT

The SJIT Co., Ltd., Model IET10MO (referred to as the EUT in this report) is a Asset Tracker. The product specification described herein was obtained from product data sheet or user's manual.

DEVICE TYPE	Asset Tracker	
Temperature Range	-30 °C ~ 60 °C	
OPERATING FREQUENCY	Sig Fox	920.7375 MHz ~ 923.2625 MHz
	GPS	1 559 MHz ~ 1 610 MHz
	Bluetooth LE	2 402 MHz ~ 2 480 MHz
	WLAN 2.4 GHz	2 412 MHz ~ 2 472 MHz (802.11b/g/n(HT20))
MODULATION TYPE	Sig Fox	DBPSK
	Bluetooth LE	GFSK
	WLAN 2.4 GHz	802.11b: DSSS Modulation(DBPSK/DQPSK/CCK) 802.11g/n(HT20): OFDM Modulation(BPSK/QPSK/16QAM/64QAM)
ANTENNA TYPE		Sig Fox : Metal Antenna Bluetooth LE / WLAN 2.4 GHz : Chip Antenna GPS : Ceramic Patch Antenna
ANTENNA GAIN		Sig Fox: 2.50 dBi Bluetooth LE: 2.50 dBi WLAN 2.4 GHz: 2.50 dBi
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)		32.768 kHz, 26 MHz, 32 MHz

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

-. None.

4. RF Exposure Limit

According to the EN 62311, the criteria listed in below table shall be used to evaluate the environment impact of human exposure to Radio Frequency radiation as specified table 2 of Council Recommendation 1999/519/EC.

Reference levels for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz, unperturbed rms values)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density S_{eq} (W/m^2)
0-1 Hz	—	$3,2 \times 10^4$	4×10^4	—
1-8 Hz	10 000	$3,2 \times 10^4/f^2$	$4 \times 10^4/f^2$	—
8-25 Hz	10 000	4 000/f	5 000/f	—
0,025-0,8 kHz	250/f	4/f	5/f	—
0,8-3 kHz	250/f	5	6,25	—
3-150 kHz	87	5	6,25	—
0,15-1 MHz	87	0,73/f	0,92/f	—
1-10 MHz	$87/f^{1/2}$	0,73/f	0,92/f	—
10-400 MHz	28	0,073	0,092	2
400-2 000 MHz	$1,375\ f^{1/2}$	$0,0037\ f^{1/2}$	$0,0046\ f^{1/2}$	f/200
2-300 GHz	61	0,16	0,20	10

Notes:

1. f as indicated in the frequency range column.
2. For frequency between 100 kHz and 10 GHz, Seq, E^2, H^2, and B^2 are to be averaged over any six-minute period.
3. For frequencies exceeding 10 GHz, Seq, E^2, H^2, and B^2 are to be averaged over any $68/f^{1.05}$ – minute period (f in GHz)
4. No E-field value is provided for frequencies < 1 Hz, which are effectively static electric fields. For most people the annoying perception of surface electric charges will not occur at field strengths less than 25 kV/m. Spark discharges causing stress or annoyance should be avoided.

5. Calculated MPE Evaluation

The electric field generated for a 1mW/cm²exposure is calculated as follows:

$E = \sqrt{(30 * P * G)} / d$, and $S = E^2 / Z = E^2 / 377$

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

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

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

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

Changing to units of mW and cm, using P (mW) = P (W) / 1000, d (cm) = 100 * d (m),

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

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

5.1 Test data

Mode	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (W)	Antenna Gain Log	Antenna Gain Linear	Limit (V/m)	distance (m)	Exposure Evaluation @ 20cm
SigFox	922.0125	22.11	0.16255	2.5	1.78	41.75	0.0483	14.724
LE	2402	6.30	0.00427	2.5	1.78	61.00	0.0078	2.385
WLAN 2.4 GHz	2412	19.60	0.09120	2.5	1.78		0.0362	11.029