

TEST REPORT

Application No.: HKEM2311000863PF
Applicant: Termatrac Pty Ltd
Address of Applicant: 44/28 Burnside Rd, Omeau, Qld, 4208, Australia
Equipment Under Test (EUT):
EUT Name: T5 iTraker
Model No.: T5
FCC ID: 2BEMQ-T5B
Standard(s) : 47 CFR Part 1.1307; 47 CFR Part 2.1093
KDB447498D04 General RF Exposure Guidance v01
Date of Receipt: 2023-12-14
Date of Test: 2023-12-14 to 2023-12-22
Date of Issue: 2023-12-22

Test Result:	The submitted sample was found to comply with the test requirement
---------------------	--





Law Man Kit
EMC Manager

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request and accessible at <http://www.sgs.com/en/Terms-and-conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. The document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Revision Record			
Revision No.	Date	Report superseded	Remark

Authorized for issue by:			
			
		Chan Chun Lok /Project Engineer	Date: 2023-12-22
			
		Law Man Kit /Reviewer	Date: 2023-12-22

2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
RF Exposure	47 CFR Part 1.1307, 47 CFR Part 2.1093, KDB 447498 D01	KDB447498D04	KDB447498D04	PASS

Declaration of EUT Family Grouping:

N/A

Abbreviation:

- Tx: In this whole report Tx (or tx) means Transmitter.
- Rx: In this whole report Rx (or rx) means Receiver.
- RF: In this whole report RF means Radiated Frequency.
- CH: In this whole report CH means channel.
- Volt: In this whole report Volt means Voltage.
- Temp: In this whole report Temp means Temperature.
- Humid: In this whole report Humid means humidity.
- Press: In this whole report Press means Pressure.
- N/A: In this whole report not application.

3 Contents

	Page
1 COVER PAGE	1
2 TEST SUMMARY	3
3 CONTENTS	4
4 GENERAL INFORMATION	5
4.1 DETAILS OF E.U.T.	5
4.2 DESCRIPTION OF SUPPORT UNITS	6
4.3 MODULATION CONFIGURATION	6
4.4 TEST LOCATION	7
4.5 TEST FACILITY	7
4.6 DEVIATION FROM STANDARDS	7
4.7 ABNORMALITIES FROM STANDARD CONDITIONS	7
5 RADIO SPECTRUM TECHNICAL REQUIREMENT	8
5.1 RF EXPOSURE	8
5.1.1 <i>Test Requirement:</i>	8
5.1.1 <i>EUT RF Exposure Evaluation</i>	9
6 PHOTOGRAPHS	10
6.1 EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS)	10

4 General Information

4.1 Details of E.U.T.

Power supply:	Battery Model: DNK 103049 Output: DC 3.7 V
Test voltage:	DC 3.7 V
Cable:	Power Cable: 95.5 cm unshielded 2-wire USB cable
Antenna Gain:	0.1 dBi
Antenna Type:	PCB Antenna
Bluetooth Version:	V5.1 LE
Channel Separation:	2MHz
Modulation Type:	GFSK
Number of Channels:	40
Operation Frequency:	2402MHz to 2480MHz
Series No.:	A1
Firmware Version:	2.130
Hardware Version:	1.0

Frequency Lists:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2442
1	2404	21	2444
2	2406	22	2446
3	2408	23	2448
4	2410	24	2450
5	2402	25	2452
6	2414	26	2454
7	2416	27	2456
8	2418	28	2458
9	2420	29	2460
10	2422	30	2462
11	2424	31	2464
12	2426	32	2466
13	2428	33	2468
14	2430	34	2470
15	2432	35	2480
16	2434	36	2474
17	2436	37	2476
18	2438	38	2478
19	2440	39	2480

The frequencies under test are bolded.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Smart phone	Samsung	N/A	N/A
Laptop	DELL	P75F	475LXQ2
NRF_Connect.exe	C-MER RainsOptics Limited	N/A	N/A

Note: The laptop and the software NRF_Connect.exe were for the control of the engineering mode and the Smart phone provided Bluetooth connection to the EUT.

4.3 Modulation Configuration

RF software:	NRF_Connect.exe			
Modulation	Packet	Packet Type	Packet Size	Power
GFSK	Default	Default	Default	Default
Remark:				
1. Default value was set in test software as maximum output power setting.				

4.4 Test Location

All tests were performed at:

SGS Hong Kong Limited

Unit 2 and 3, G/F, Block A, Po Lung Centre,

11 Wang Chiu Road, Kowloon Bay, Kowloon, Hong Kong

Tel: +852 2305 2570 Fax: +852 2756 4480

No tests were sub-contracted.

4.5 Test Facility

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

- **IAS Accreditation (Lab Code: TL-817)**

SGS Hong Kong Limited has met the requirements of AC89, IAS Accreditation Criteria for Testing Laboratories, and has demonstrated compliance with ISO/IEC Standard 17025:2017, General requirements for the competence of testing and calibration laboratories. This organization is accredited to provide the services specified in the scope of accreditation maintained on the IAS website (www.iasonline.org).

The report must not be used by the client to claim product certification, approval, or endorsement by IAS, NIST, or any agency of the Federal Government.

- **FCC Recognized Accredited Test Firm(CAB Registration No.: 514599)**

SGS Hong Kong Limited has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: HK0015, Test Firm Registration Number: 514599.

- **Industry Canada (Site Registration No.: 26103; CAB Identifier No.: HK0015)**

SGS Hong Kong Limited has been recognized by Department of Innovation, Science and Economic Development (ISED) Canada as a wireless testing laboratory. The acceptance letter from the ISED is maintained in our files. CAB Identifier No: HK0015, Site Registration Number: 26103.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Radio Spectrum Technical Requirement

5.1 RF Exposure

5.1.1 Test Requirement:

CFR 47 Part 1.1310

Limit:

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in Part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

According to IEEE C95.3:2002 section 5.5.1.1, The power density S at a point on the axis at a distance d from a transmitting antenna is given by the Friis free-space transmission formula

$$S = \frac{PG}{4\pi d^2}$$

S = power density (mW/cm²)
P = the net power delivered to the antenna (mW)
G = gain of the antenna in linear scale
d = distance between observation point and center of the radiator (cm)

5.1.1 EUT RF Exposure Evaluation

Antenna Gain: 0.1 dBi for BLE.

The maximum Gain measured in fully anechoic chamber is 1.023 (BLE) in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

For FCC;

BLE:

Operation mode	Channel	Frequency (MHz)	Conduct power (including Tune-up tolerance) (dBm)	Conduct power (mW)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
GFSK	Low	2402	2.3	1.698	0.00035	1	Pass
GFSK	Middle	2440	2.7	1.862	0.00038	1	Pass
GFSK	High	2480	2.3	1.698	0.00035	1	Pass



6 Photographs

6.1 EUT Constructional Details (EUT Photos)

Refer to the appendices external, internal and setup photos.

- End of the Report -