

Test Report No:
2360394R-RFUSV17S-A

RF EXPOSURE EVALUATION DECLARATION

Product Name	TrackKing V5
Brand Name	Thermo King
Model No.	TKV5LA
FCC ID	Q37TKV5LA
Applicant's Name / Address	Thermo King Corporation 314 West 90th Street, Minneapolis, MN USA 55420
Manufacturer's Name / Address	Thermo King Corporation 314 West 90th Street, Minneapolis, MN USA 55420
Test Method Requested, Standard	FCC CFR Title 47 Part 2.1091 Radiofrequency radiation exposure evaluation: mobile devices.
Verdict Summary	IN COMPLIANCE
Documented By	 Amelia Wu
Approved By	 Rueyyan Lin
Date of Receipt	Jun. 12, 2023
Date of Issue	Sep. 25, 2023
Report Version	V1.0

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Competences and Guarantees

DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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General Conditions

1. The test results relate only to the samples tested.
2. The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.
3. This report must not be used to claim product endorsement by TAF or any agency of the government.
4. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.
5. Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	Sep. 25, 2023

1. General Information

1.1. EUT Description

RF General Information				
Evaluation Mode	Frequency Range (MHz)	Operating Frequency (MHz)	Modulation Type	
Bluetooth	2400 ~ 2483.5	2402 ~ 2480	LE: GFSK	
Evaluation Mode	Tx Frequency Range (MHz)	Rx Frequency Range (MHz)	Modulation Type	
GSM 850	824.2-848.8	935.2-959.8	GPRS	
PCS 1900	1850.2-1909.8	1930.2-1989.8		
Evaluation Mode	Band	Uplink Frequency Range (MHz)	Downlink Frequency Range (MHz)	Modulation Type
WWAN WCDMA	WCDMA Band 2	1850~1910	1930~1990	BPSK / QPSK / 16QAM
	WCDMA Band 5	824~849	869~894	
WWAN LTE	LTE Band 2	1850~1910	1930~1990	QPSK / 16QAM
	LTE Band 4	1710~1755	2110~2155	
	LTE Band 5	824 ~ 849	869 ~ 894	
	LTE Band 7	2500~2570	2620~2690	
	LTE Band 66	1710~1780	2110~2200	

Note: The above EUT information is declared by the manufacturer.

1.2. Testing Location Information

Testing Location Information		
Test Laboratory : DEKRA Testing and Certification Co., Ltd.		
	1 (TAF: 3024)	ADD: No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. TEL: +886-3-582-8001 FAX: +886-3-582-8958
	2 (TAF: 3024)	ADD: No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. TEL: +886-3-582-8001 FAX: +886-3-582-8958
Test site number for address 1 includes HC-SR02. Test site number for address 2 includes HC-CB02, HC-CB03, HC-CB04, HC-SR10 and HC-SR12.		

2. RF Exposure Evaluation

2.1. Test Limit

(A) Test Limit for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
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
300-1500	-	-	f/300	<6
1500-100,000	-	-	5	<6

(B) Test Limit for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
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
300-1500	-	-	f/1500	<30
1500-100,000	-	-	1.0	<30

Note: f = frequency in MHz; *Plane-wave equivalent power density

Power Density (S) is calculated by the following formula:

$$S=(P \cdot G) / 4 \pi R^2$$

where:

S = power density (in appropriate units, e.g. mW/ cm²)

P = power input to the antenna (in appropriate units, e.g., mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

π = 3.1416

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

2.2. Test Result of RF Exposure Evaluation

Exposure Environment: General Population / Uncontrolled Exposure

Evaluation Mode	E.I.R.P (dBm)	E.I.R.P (mW)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Test Result (PASS/FAIL)
Bluetooth LE	13.660	23.227	0.005	1.000	PASS
GSM 850	33.230	2103.778	0.052	0.549	PASS
PCS 1900	32.290	1694.338	0.042	1.000	PASS
WCDMA Band 2	25.510	355.631	0.071	1.000	PASS
WCDMA Band 5	23.390	218.273	0.043	0.549	PASS
LTE Band 2	26.030	400.867	0.080	1.000	PASS
LTE Band 4	26.880	487.528	0.097	1.000	PASS
LTE Band 5	23.630	230.675	0.046	0.549	PASS
LTE Band 7	26.240	420.727	0.084	1.000	PASS
LTE Band 66	26.880	487.528	0.097	1.000	PASS

Distance (cm): 20 for Maximum Permissible Exposure.

For 2G, the conducted power using GPRS class 8 (1 up and 1 down), duty cycle is 12.5%

Co-location
Conclusion: The formula of calculated the MPE is: CPD1 / LPD1 + CPD2 / LPD2 +etc. < 1 CPD = Calculation power density LPD = Limit of power density 1.BT LE + WWAN: GSM function=0.005+0.095=0.100, therefore the maximum calculations of above situations are less than the “1” limit. 2.BT LE + WWAN: WCDMA function=0.005+0.079=0.084, therefore the maximum calculations of above situations are less than the “1” limit. 3.BT LE + WWAN: LTE function=0.005+0.097=0.102, therefore the maximum calculations of above situations are less than the “1” limit.

Note:

1. The above EUT information is declared by the manufacturer.
2. The results are evaluated using the maximum power.