

RF EXPOSURE EVALUATION REPORT

Application No.: GZCR2110021316AT
Applicant: NormaTec Industries LP
Address of Applicant: 480 Pleasant St. Ste A200 Watertown, Massachusetts 02472, United States
Manufacturer: NormaTec Industries LP
Address of Manufacturer: 480 Pleasant St. Ste A200 Watertown, Massachusetts 02472, United States
Factory: Ryder Electronics (Xinfeng) Ltd.
Address of Factory: East Shuidong Avenue, Industrial Park, Xinfeng Town, Ganzhou City, Jiangxi Province, P.R. China 341600

Equipment Under Test (EUT):

EUT Name: Normatec Go

Model No.: ALJ7

Trade Mark:



Standard(s) : 47 CFR PART 1, Subpart I, Section 1.1310
 47 CFR PART 2, Subpart J, Section 2.1093
 KDB447498D01 General RF Exposure Guidance v06

Date of Receipt: 2021-10-15

Date of Evaluation: 2021-10-16 to 2021-10-29

Date of Issue: 2021-11-03

Evaluation Result:	Pass*
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* In the configuration evaluated, the EUT complied with the standards specified above.



Kobe Jian
EMC Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2021-11-03		Original

Authorized for issue by				
Tested By				
		Curry Wu/Project Engineer		
Reviewed By				
		Ricky Liu/Reviewer		

2 Evaluation Summary

Note:

E.U.T./EUT means Equipment Under Test.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

Remark: The product comes with different Air compressor, Solenoid Valves and batteries, all the Configurations have been pre-tested, and only record the worst case in the report, here are the different configurations:

Component	Manufacturer	Type	Specification
Internal battery (Hixon J962)	Hixon (Shenzhen) Technology Limited	J962	3.6V, 2550mAh
Internal battery (D610-1-D1-1S1P)	Greenway Technology Co., Ltd	D610-1-D1-1S1P	3.65V, 2600mAh
Solenoid Valve	Shenzhen Deyuxin Technology Co., Ltd	DQF3-6A-9	DC3.3V
	DongGuan jingbofang Electronics Co., Ltd.	JQF1320-3.3A	DC3.3V
Air compressor	Shenzhen Deyuxin Technology Co., Ltd	DQB100-F	DC3.3V Flow rate: $\geq 1.7\text{L/min}$, Pressure: $\leq 85\text{KPA}$
	DongGuan jingbofang Electronics Co., Ltd.	JQB130-3.3B	DC3.3V Flow rate: $\geq 1.5\text{L/min}$, Pressure: $> 400\text{mmHg}$

3 Contents

	Page
1 Cover Page	1
2 Evaluation Summary	3
3 Contents	4
4 General Information.....	5
4.1 Details of E.U.T.	5
4.2 Evaluating Location	5
4.3 Facility	6
4.4 Deviation from Standards.....	6
4.5 Abnormalities from Standard Conditions	6
5 Technical Requirements Specification.....	7
5.1 RF Exposure Evaluation	7
5.1.1 Limit & Test Method.....	7
5.1.2 Conclusion	7
6 EUT Constructional Details (EUT Photos)	8



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4 General Information

4.1 Details of E.U.T.

Power supply:	Switching Mode Power Supply Model: GPE013A-050200-Z Input: AC 100-240V, 50/60Hz, 0.3A Output: DC 5V, 2.0A, 10.0W Max
EUT Type:	Portable device
Cable(s):	Type C cable:146cm unshielded
For Bluetooth LE	
Frequency Range:	2402MHz to 2480MHz
Bluetooth Version:	V5.0
Modulation Type:	GFSK
Number of Channels:	40
Data rate:	1Mbps, 2Mbps
Antenna Type:	PCB Antenna
Antenna Gain:	3dBi
For 433.92MHz	
Operation Frequency:	433.92MHz
Modulation Type:	FSK
Number of channels:	1
Antenna type:	Helical Antenna
Antenna Gain:	3dBi

4.2 Evaluating Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

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No tests were sub-contracted.



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4.3 Facility

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

- **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

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

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

- **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory 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: CN5016, Test Firm Registration Number: 486818.

- **ISED (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

- **VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)**

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

4.4 Deviation from Standards

None

4.5 Abnormalities from Standard Conditions

None



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5 Technical Requirements Specification

5.1 RF Exposure Evaluation

5.1.1 Limit & Test Method

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$\frac{[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})]}{[\sqrt{f(\text{GHz})}]} \leq 3.0$$
 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation¹⁷
- The result is rounded to one decimal place for comparison

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 is applied to determine SAR test exclusion

5.1.2 Conclusion

For Bluetooth LE

The Max. power (including tune-up tolerance) is 0.08 dBm on the middle channel 2.44 GHz (*)
0.08 dBm logarithmic terms convert to numeric result is nearly 1.02 mW

According to the formula, calculate the test exclusion thresholds:

$$\frac{[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})]}{[\sqrt{f(\text{GHz})}]} \leq 3.0$$

$$\text{General RF Exposure} = (1.02 \text{ mW} / 5 \text{ mm}) \times \sqrt{2.44 \text{ GHz}} = 0.32 \quad (1)$$

SAR requirement:

$$S = 3.0 \quad (2)$$

$(1) < (2)$

So the SAR report is not required.

(*) Max. power refer to Report No.: GZCR211002131601

For 433.92MHz

The Max. power (including tune-up tolerance) is -15.53 dBm on the channel 0.43392GHz(*)

-15.53 dBm logarithmic terms convert to numeric result is nearly 0.03 mW

According to the formula. calculate the test exclusion thresholds:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}]$$

$$\text{General RF Exposure} = (0.03 \text{ mW} / 5 \text{ mm}) \times \sqrt{0.43392 \text{ GHz}} = 0.003952 \quad (1)$$

SAR requirement:

$$S = 3.0 \quad (2)$$

$$(1) < (2)$$

So the SAR report is not required.

(*) Max. power refer to Report No.:GZCR211002131602

Note: $ERP = p_t \times g_t = (E \times d)^2 / 49.2$ (According to ANSI C63.10 Annex G.2).

where

p_t is the transmitter output power in watts

g_t is the numeric gain of the transmitting antenna (dimensionless)

E is the electric field strength in V/m

d is the measurement distance in meters (m)

$$V/m = 10^{((\text{dBmV/m}) - 120) / 20}$$

The simultaneous transmission result between of Bluetooth LE and 433.92MHz:

The SAR Exclusion Threshold Level:

$$= CPD1 / LPD1 + CPD2 / LPD2$$

(CPD = Calculation power density, LPD = Limit of power density)

$$= (0.32/3) + (0.003952/3) = 0.11 < 1$$

Since the SAR Exclusion Threshold Level is well below the SAR low threshold level, so the EUT is considered to comply with SAR requirement without testing.

6 EUT Constructional Details (EUT Photos)

Refer to appendix - external and internal photos for GZCR2110021316AT

- End of the Report -



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