

MPE EVALUATION REPORT

Product Name: Bluetooth Thermometer

Trade Mark:



Model No.: WNR004

Add. Model No.: N/A

Report Number: 25010715640RFC-2

Test Standards: FCC 47 CFR Part 1 Subpart I
RSS-102 Issue 6

FCC ID: 2AHSR-NBEX001

IC: 21267-NBEX001

Test Result: PASS

Date of Issue: February 28, 2025

Prepared for:

Weber-Stephen Products LLC
1415 S.Roselle Road, Palatine, IL 60067, USA

Prepared by:

Shenzhen UnionTrust Quality and Technology Co., Ltd.
16/F, Block A, Building 6th, Baoneng Science and Technology Park,
Longhua Street, Longhua District, Shenzhen, China
TEL: +86-755-2823 0888
FAX: +86-755-2823 0886

Prepared by:

David Chen

David Chen
Senior Project Engineer

Reviewed by:

Henry Lu

Henry Lu
Team Leader

Approved by:

Robben Chen

Robben Chen
Assistant Manager

Date:

February 28, 2025

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC-MPE-V1.0

Version

Version No.	Date	Description
V1.0	February 28, 2025	Original

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com<http://www.uttlab.com>

UTTR-RF-FCC-MPE-V1.0

CONTENTS


1. GENERAL INFORMATION	4
1.1 CLIENT INFORMATION	4
1.2 EUT INFORMATION	4
1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD	4
1.4 OTHER INFORMATION.....	5
1.5 GENERAL DESCRIPTION OF APPLIED STANDARDS	5
1.6 DEVIATION FROM STANDARDS	5
1.7 ABNORMALITIES FROM STANDARD CONDITIONS.....	5
1.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER	5
2. EQUIPMENT LIST	5
3. MPE EVALUATION	6
3.1 REFERENCE DOCUMENTS FOR EVALUATION	6
3.2 MPE COMPLIANCE REQUIREMENT	6
3.2.1 LIMITS	6
3.2.2 TEST PROCEDURE	7
3.3 MPE CALCULATION METHOD.....	7
3.4 MPE CALCULATION RESULTS	8
3.4.1 FOR BT	8
APPENDIX 1 PHOTOS OF TEST SETUP.....	9
APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS.....	9

1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	Weber-Stephen Products LLC
Address of Applicant:	1415 S.Roselle Road, Palatine, IL 60067, USA
Manufacturer:	TKC Progress CO.,LTD
Address of Manufacturer:	Rangsit Fortune Estate (RPE II) 64/16-19 Moo 3, Klongnueng,Klonglauang, Pathumthani 12120, Thailand

1.2 EUT INFORMATION

Product Name:	Bluetooth Thermometer
Model No.:	WNR004
HVIN:	WNR004
Trade Mark:	
DUT Stage:	Identical Prototype
EUT Supports Function: (Provided by the customer)	Bluetooth 5.0
Power Supply:	3.2Vdc Button Battery
Software Version:	Revision 3 (Provided by the customer)
Hardware Version:	2.0.4 (Provided by the customer)
Sample Received Date:	January 7, 2025
Sample Tested Date:	January 8, 2025 to February 10, 2025

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

For 2.4 GHz ISM Band of Bluetooth	
Frequency Band:	2400 MHz to 2483.5 MHz
Frequency Range:	2402 MHz to 2480 MHz
Bluetooth Version:	Bluetooth LE
Type of Modulation:	GFSK
Number of Channels:	40
Channel Separation:	2 MHz
Antenna Type: (Provided by the customer)	Integral Antenna
Antenna Gain: (Provided by the customer)	2.14 dBi
Maximum Peak Power:	5.31 dBm

1.4 OTHER INFORMATION

Operation Frequency Each of Channel	
$f = 2402 + 2k \text{ MHz, } k = 0, \dots, 39$	
Note:	
f	is the operating frequency (MHz);
k	is the operating channel.

1.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC 47 CFR Part 1 Subpart I
RSS-102 Issue 6

All test items have been performed and recorded as per the above standards

1.6 DEVIATION FROM STANDARDS

None.

1.7 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

2. EQUIPMENT LIST

Please refer to the RF test report no.: 24010715640RFC-1.

3. MPE EVALUATION

3.1 REFERENCE DOCUMENTS FOR EVALUATION

No.	Identity	Document Title
1	FCC 47 CFR Part 1 Subpart I	PROCEDURES IMPLEMENTING THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969
2	KDB 447498 D01 General RF Exposure Guidance v06	RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES
3	FCC 47 CFR Part 1 Subpart I	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

3.2 MPE COMPLIANCE REQUIREMENT

3.2.1 Limits

3.2.1.1 FCC 47 CFR Part 1 Subpart I

According to §1.1307(b)(1), system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

Limits 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 Times 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)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	F/300	6
1500-100000	/	/	5	6

Limits 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 Times 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)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-100000	/	/	1	30

Note: f = frequency in MHz: * = Plane-wave equivalents power density.

3.2.1.2 FCC 47 CFR Part 1 Subpart I

According to FCC 47 CFR Part 1 Subpart I, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

According to FCC 47 CFR Part 1 Subpart I, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz⁶ and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6th, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC-MPE-V1.0

- device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
 - at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
 - at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

3.2.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3.3 MPE CALCULATION METHOD

FCC 47 CFR Part 1 Subpart I

$$S = PG/4\pi R^2 = EIRP/4\pi R^2$$

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, the power gain factor is normally numeric gain.

R = 20cm distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

3.4 MPE CALCULATION RESULTS

Note: For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

3.4.1 For BT

For BT_BLE function, operating at 2402MHz to 2480 MHz for GFSK

3.4.1.1 Antenna Type:

Integral Antenna

3.4.1.2 Antenna Gain:

2402MHz to 2480 MHz: 2.14 dBi

3.4.1.3 Results for FCC 47 CFR Part 1 Subpart I

Operating Mode	Freq.	Declared maximum conducted Average output power	Max. positive tolerance according manufacturer	Max. Antenna Gain	Calculated maximum EIRP	Declared maximum EIRP	MPE Limit	MPE Value
	(MHz)	(dBm)		(dBi)	(dBm)	(mW)		(mW/cm ²)
Bluetooth	2402-2480	4.0	1	2.14	7.14	5.1761	1	0.0010

3.4.1.4 Results for RSS-102 Issue 6

Operating Mode	Freq.	Declared maximum conducted avg output power	Max. positive tolerance according manufacturer	Antenna Gain	Calculated maximum EIRP	Declared maximum EIRP	Limit
	(MHz)	(dBm)		(dBi)	(dBm)	(W)	(W)
Bluetooth	2402-2480	4.0	1	2.14	7.14	0.0052	2.6764

APPENDIX 1 PHOTOS OF TEST SETUP

N/A

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal Photos.

*** End of Report ***

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of UnionTrust, this report can't be reproduced except in full.
