

<b>Prüfbericht-Nr.:</b> <i>Test report no.:</i>	<b>CN2419OH 002</b>	<b>Auftrags-Nr.:</b> <i>Order no.:</i>	168495478	Seite 1 von 17 Page 1 of 17
<b>Kunden-Referenz-Nr.:</b> <i>Client reference no.:</i>	N/A	<b>Auftragsdatum:</b> <i>Order date:</i>	2024-07-22	
<b>Auftraggeber:</b> <i>Client:</i>	Typhur Inc. 2890 Zanker Road #120, San Jose, California, United States			
<b>Prüfgegenstand:</b> <i>Test item:</i>	Typhur Sync One Wireless Thermometer			
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type no.:</i>	WT01			
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	Test Report			
<b>Prüfgrundlage:</b> <i>Test specification:</i>	CFR47 FCC Part 15: Subpart C Section 15.247 RSS-247 Issue 3 August 2023 RSS-Gen Issue 5 February 2021			
<b>Wareneingangsdatum:</b> <i>Date of sample receipt:</i>	2024-07-30	Please refer to Photo Document		
<b>Prüfmuster-Nr.:</b> <i>Test sample no.:</i>	S202407304027-ZJA01/3			
<b>Prüfzeitraum:</b> <i>Testing period:</i>	2024-08-12 - 2024-08-22			
<b>Ort der Prüfung:</b> <i>Place of testing:</i>	Refer to section 2.1			
<b>Prüflaboratorium:</b> <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
<b>Prüfergebnis*:</b> <i>Test result*:</i>	Pass			
<b>geprüft von:</b> <i>tested by:</i>	X <u>Lin Lin</u>	<b>genehmigt von:</b> <i>authorized by:</i>	X <u>Hardy Suo</u>	
<b>Datum:</b> <i>Date:</i>	2024-08-30	<b>Ausstellungsdatum:</b> <i>Issue date:</i>	2024-08-30	
<b>Stellung / Position:</b>	Sachverständige(r)/Expert	<b>Stellung / Position:</b>	Sachverständige(r)/Expert	
<b>Sonstiges /</b> <i>Other:</i>	FCC ID: 2BEFM-WT1000R IC: 31884-WT1000R, HVIN: WT1000R, HMN: WT01 Note: This wireless module adding a new host (portable device) and additional type of antenna, since these changed, Radiated Spurious Emissions(RF output power spot check before RSE testing), Conducted Emissions and SAR are arranged re-testing, and the other conducted measurement test data can be refer to test report FR1D1609A, FR1D1609B, CR1D1609ATX and CR1D1609BTX as issued by Sporton International Inc. (Kunshan).			
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>			
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
<b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b> <i>This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

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Test report no.:

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**Anmerkungen**  
Remarks

- |   |  |
|---|--|
| 1 | <p>Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben.<br/>Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.</p> <p><i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i></p>   |
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| 3 | <p>Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben.<br/>Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.</p> <p><i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.<br/>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i></p>  |
| 4 | <p>Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.</p> <p><i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i></p>   |

## ***Test Summary***

**5.1.1 ANTENNA REQUIREMENT**

*RESULT: Pass*

**5.1.2 RADIATED SPURIOUS EMISSION**

*RESULT: Pass*

**5.1.3 CONDUCTED EMISSION ON AC MAINS**

*RESULT: Pass*

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# 1 General Remarks

## 1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Test Results.

Appendix B: Photographs of Test Set-up.

## 2 Test Sites

### 2.1 Test Facilities

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

Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

CNAS Registration No.: CNAS L9069

A2LA Certificate Number: 4312.01

### 2.2 List of Test and Measurement Instruments

**Table 1: List of Test and Measurement Equipment**

Kind of Equipment	Manufacturer	Type	S/N	Calibrated until
<b>Conducted Emission</b>				
LISN	R&S	ESH2-Z5	860014/024	26-Oct-2024
Receiver	R&S	ESR7	101181	26-Oct-2024
Pulse Limiter	R&S	ESH3-Z2	0357.8810.54	26-Oct-2024
Shielding room	ETS-Lindgren	843	Euroshiedpn-CT001270-1246	4-Nov-2024
Test Software	EZ-EMC	EZ-CON	Software Version: EMC-CON 3A1.1	
<b>Radiated Disturbances</b>				
3m Chamber & Accessory Equipment	ETS-Lindgren	3m	Euroshiedpn-CT001270-1317	10-Nov-2026
Broadband Antenna	ETS-Lindgren	3142E	00201566	29-Oct-2024
6dB Attenuator	Talent	RA6A5-N-18	18103001	29-Oct-2024
Pre-amplifier	HP	8447F	2805A02960	30-Oct-2024
Receiver	ROHDE & SCHWARZ	ESIB26	100114	26-Oct-2024
Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201541	31-Mar-2025
Pre-amplifier	ETS-Lindgren	00118385	00201874	30-Oct-2024
Multi device Controller	ETS-Lindgren	7006-001	00160105	N/A
Band Rejection Filter (2400MHz~2500MHz)	Micro-Tronics	BRM50702	G248	26-Oct-2024
Test Software	Audix	e3	Software Version: 9.160323	

### 2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

## 2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

## 2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

**Table 2: Measurement Uncertainty**

No.	Item	Measurement Uncertainty
1	Conducted emission, 9kHz-150kHz	±3.2 dB
2	Conducted emission, 150kHz-30MHz	±2.7 dB
3	Radiated Spurious emissions 30MHz-1GHz	± 4.9 dB
4	Radiated Spurious emissions 1GHz-18GHz	± 4.8 dB

Remark: 95% Confidence Levels, k=2.

## 2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) Co., Ltd. file for certification follow-up purposes.

## 2.7 Status of Facility Used for Testing

The Shenzhen UnionTrust Quality and Technology Co., Ltd. Test facility located at Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at No.362, Huanguan Middle Road, Songyuansha Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

### 3 General Product Information

#### 3.1 Product Function and Intended Use

The product is Typhur Sync One Wireless Thermometer which supports 2.4GHz Band Wi-Fi and Bluetooth low energy functions.

For details refer to the User Manual, Technical Description and Circuit Diagram.

#### 3.2 Ratings and System Details

**Table 3: Technical Specification of EUT**

General Information of EUT	Value
Kind of Equipment	Typhur Sync One Wireless Thermometer
Type Designation	WT01
FCC ID	2BEFM-WT1000R
IC	31884-WT1000R
HVIN	WT1000R
HMN	WT01
Operating Voltage	AC 100-240V, 50/60Hz input via AC/DC Adapter or Internal battery operated (3.7Vdc, 1950mAh)
<b>Technical Specification of Bluetooth LE</b>	
Operating Frequency	2402-2480MHz
Type of Modulation	GFSK
Data Rate	1Mbps, 2Mbps
Channel Number	40 channels
Channel Separation	2MHz
Antenna Type	FPC Antenna
Antenna Number	1
Antenna Gain	1.26 dBi (Provided by the Client)
The type of wideband data transmission equipment	Non-FHSS
<b>Technical Specification of 2.4GHz Wi-Fi</b>	
Operating Frequency	2412 - 2462MHz for 802.11b/g/n(HT20) 2422 - 2452MHz for 802.11n(HT40)
Type of Modulation	DSSS(DBPSK/DQPSK/CCK) OFDM(BPSK/QPSK/16QAM/64QAM)
Data Rate	1/2/5.5/11 Mbps for 802.11b 6/9/12/18/24/36/48/54 Mbps for 802.11g MCS0 ~ MCS7 for 802.11n
Channel Number	11 channels for 802.11b/g/n(HT20) 7 channels for 802.11n(HT40)
Channel Separation	5 MHz
Antenna Type	FPC Antenna
Antenna Number	1



Antenna Gain	1.26 dBi (Provided by the Client)
The type of wideband data transmission equipment	DTS

**Table 4: RF Channel and Frequency of Bluetooth LE**

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
<b>0</b>	<b>2402</b>	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	<b>19</b>	<b>2440</b>	29	2460	<b>39</b>	<b>2480</b>

**Table 5: RF Channel and Frequency of 2.4GHz Wi-Fi**

RF Channel	802.11 b/g/n(HT20)	802.11 n(HT40)
	Frequency (MHz)	Frequency (MHz)
01	2412	
02	2417	
03	2422	2422
04	2427	2427
05	2432	2432
06	2437	2437
07	2442	2442
08	2447	2447
09	2452	2452
10	2457	
11	2462	

### 3.3 Independent Operation Modes

The basic operation modes are:

- A. On, Bluetooth wireless transmitting mode
  - 1) Low Channel
  - 2) Middle Channel
  - 3) High Channel
- B. On, Wi-Fi 802.11 b/g/n wireless transmitting mode
  - 1) Low Channel
  - 2) Middle Channel
  - 3) High Channel
- C. On, Charging + Wireless link
- D. Off

### 3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

### 3.5 Submitted Documents

- Application Form
- ID Label and Location Info
- Schematics
- Operation Description
- Block Diagram
- PCB Layout

## 4 Test Set-up and Operation Modes

### 4.1 Principle of Configuration Selection

**Radio Spectrum:** The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

**Emission:** The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

### 4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All tests were performed according to the procedures in ANSI C63.10: 2013.

According to clause 3.1, all tests were performed on model WT01 in this report.

### 4.3 Special Accessories and Auxiliary Equipment

Table 6: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N
Notebook	DELL	Latitude 3400	16238087894
Adapter	HUAWEI	HW-050200C01	B78578GBT02395

### 4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

## 4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

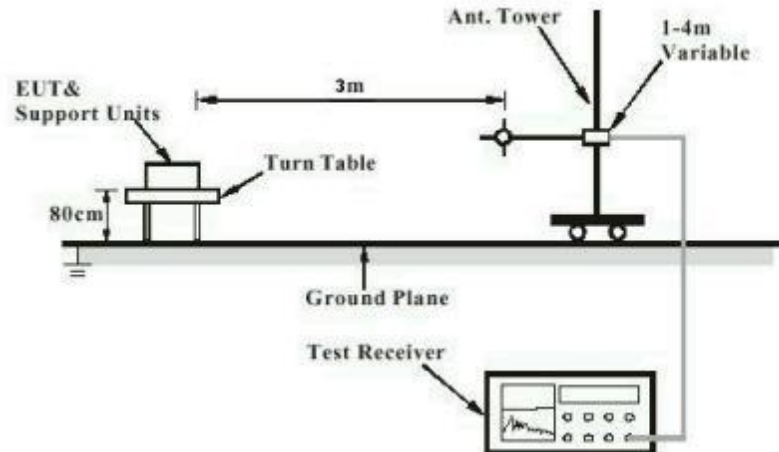


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

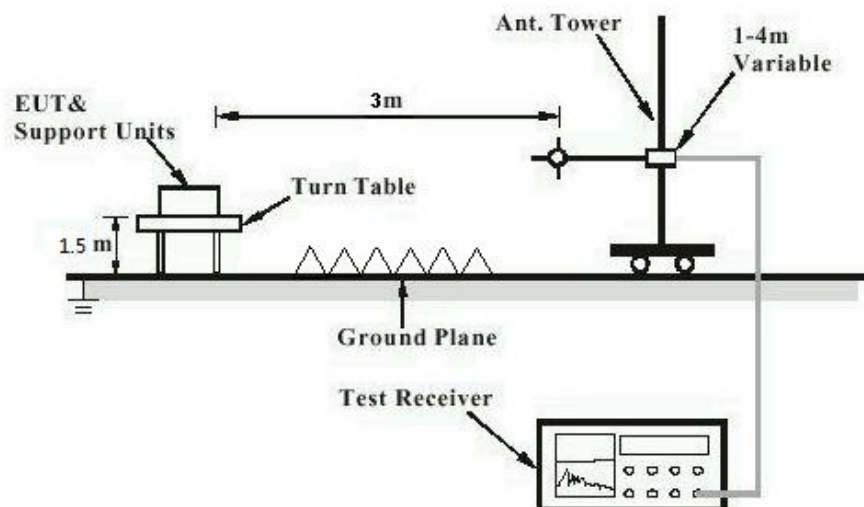


Diagram of Measurement Configuration for Mains Conduction Measurement

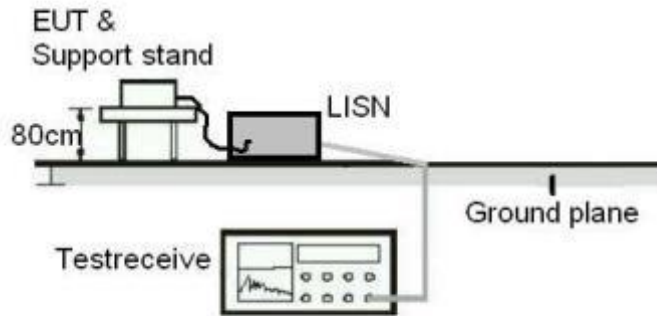
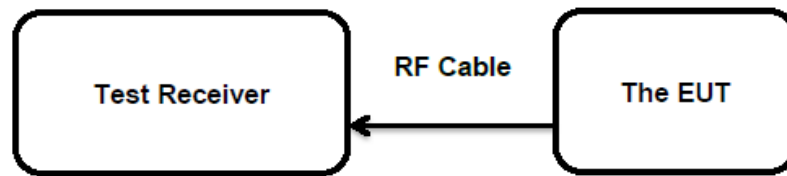


Diagram of Measurement Configuration for Conducted Transmitter Measurement



## 5 Test Results

### 5.1 Transmitter Requirement & Test Suites

#### 5.1.1 Antenna Requirement

RESULT:

Pass

**Test Specification**

Test standard : FCC Part 15.247(b)(4) and Part 15.203  
RSS-Gen Section 6.8

According to the manufacturer declared, the EUT has a FPC antenna, the directional gain of antenna is 1.26dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement.

Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

## 5.1.2 Radiated Spurious Emission

**RESULT:****Pass****Test Specification**

Test standard	: FCC Part 15.247(d) & FCC Part 15.205 RSS-247 Clause 3.3
Basic standard	: ANSI C63.10: 2013
Limits	: Refer to 15.209(a) of FCC part 15.247(d) RSS-Gen Table 5
Kind of test site	: 3m Semi-anechoic Chamber

**Test Setup**

Date of testing	: 2024-08-15 to 2024-08-22
Input voltage	: AC 120V, 60Hz
Operation mode	: A, B
Test channel	: Low / Middle / High
Ambient temperature	: 24.8 °C
Relative humidity	: 54.3 %
Atmospheric pressure	: 99.9 kPa

**Remark:**

Testing was carried out within frequency range 9kHz to the tenth harmonics. Only the worst case spurious emissions configuration of the each mode were reported.

For the measurement records, refer to the appendix A.

### 5.1.3 Conducted Emission on AC Mains

**RESULT:****Pass****Test Specification**

Test standard	:	FCC Part 15.207(a) RSS-Gen Section 8.8
Basic standard	:	ANSI C63.10: 2013
Frequency range	:	0.15 – 30MHz
Limits	:	FCC Part 15.207(a) RSS-Gen Table 4
Kind of test site	:	Shielded Room

**Test Setup**

Date of testing	:	2024-08-12
Input voltage	:	AC 120V, 60Hz
Operation mode	:	C
Earthing	:	Not connected
Ambient temperature	:	25.6 °C
Relative humidity	:	61.6 %
Atmospheric pressure	:	100.4 kPa

For the measurement records, refer to the appendix A.



## 6 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix B.

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