

RF Exposure Evaluation Report

Product : Wireless Sensor T1
Trade mark : Testo
Model/Type reference : 0572 2201 02
Serial Number : N/A
Report Number : EED32O80113602
FCC ID : WAF-0572220102
Date of Issue : Jul. 14, 2022
Test Standards : 47 CFR Part 1.1307
47 CFR Part 1.1310
KDB447498D01 General RF
Exposure Guidance v06
Test result : PASS

Prepared for:

Testo SE & Co. KGaA
Celsiusstr. 2, 79822 Titisee-Neustadt, Germany

Prepared by:

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Jul. 14, 2022

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1 Version

Version No.	Date	Description
00	Jul. 14, 2022	Original

2 Contents

	Page
1 VERSION.....	2
2 CONTENTS.....	3
3 GENERAL INFORMATION.....	4
3.1 CLIENT INFORMATION.....	4
3.2 GENERAL DESCRIPTION OF EUT.....	4
3.3 TEST LOCATION.....	5
3.4 DEVIATION FROM STANDARDS.....	5
3.5 ABNORMALITIES FROM STANDARD CONDITIONS.....	5
3.6 OTHER INFORMATION REQUESTED BY THE CUSTOMER.....	5
4 SAR EVALUATION.....	6
4.1 RF EXPOSURE COMPLIANCE REQUIREMENT.....	6
4.1.1 Limits.....	6
4.1.2 Test Procedure.....	6
4.1.3 EUT RF Exposure.....	7
PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS.....	8

3 General Information

3.1 Client Information

Applicant:	Testo SE & Co. KGaA
Address of Applicant:	Celsiusstr. 2, 79822 Titisee-Neustadt, Germany
Manufacturer:	Testo SE & Co. KGaA
Address of Manufacturer:	Celsiusstr. 2, 79822 Titisee-Neustadt, Germany
Factory:	Testo Instruments (Shenzhen) Co., Ltd
Address of Factory:	Block A, B4 Building, China Merchants Guangming Sci&Tech Park, No.3009 Guan Guang Road, Guangming New District, Shenzhen, Guangdong, China

3.2 General Description of EUT

Product Name:	Wireless Sensor T1
Mode No.:	0572 2201 02
Trade mark:	Testo
Hardware Version:	2.3
Software Version:	V1.12.20
Power Supply:	Lithium battery: DC 3.6V (SL-860), DC 3.7V (HLC-1020L). Note: Battery SL-860 and HLC-1020L are used in parallel, with SL-860 as the power supply and HLC-1020L as the auxiliary.
Operation Frequency:	915MHz to 928MHz
Modulation Technique:	GFSK
Number of Channels:	64
Product Type:	☐ Mobile ☐ Portable ☒ Fix Location
Antenna Type:	PIFA Antenna
Antenna Gain:	-1.13dBi
Test Voltage:	DC 3.6V
Sample Received Date:	Jan. 25, 2022
Sample tested Date:	Apr. 20, 2022 to Jun. 20, 2022
Company Name and Address shown on Report, the sample(s) and sample Information were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.	

3.3 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

3.4 Deviation from Standards

None.

3.5 Abnormalities from Standard Conditions

None.

3.6 Other Information Requested by the Customer

None.

4 SAR Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Limits

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 Exposures				
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) 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
300–1500			f/1500	30
1500–100,000			1.0	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

4.1.2 Test Procedure

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

4.1.3 EUT RF Exposure

Antenna Gain: -1.13dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 0.77 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(915.2MHz)	12.6	12.0±1	13.0	19.953
Middle(921.4MHz)	12.56	12.0±1	13.0	19.953
Highest(927.8MHz)	12.5	12.0±1	13.0	19.953

The worst case:

Maximum tune-up Power (mW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
19.953	-1.13	0.0030601	1.0	PASS

Note: 1) Refer to report No. EED32O80113601 for EUT test Max Conducted Peak Output Power value.

2) $P_d = (P_{out} * G) / (4 * \pi * R^2) = (19.953 * 0.77) / (4 * 3.1416 * 20^2) = 0.0030601$

PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No. EED32O80113601 for EUT external and internal photos.

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 CTI, this report can't be reproduced except in full.

*** End of Report ***