



REPORT No. : SZ17030100S02

RF EXPOSURE EVALUATION REPORT

APPLICANT : Testo SE & Co. KGaA

PRODUCT NAME : WLAN data logger

MODEL NAME : testo 160 TH /testo 160 E /testo 160 THE /
testo 160 THL /testo 160 THG

TRADE NAME : Testo

BRAND NAME : Testo

FCC ID : WAF-0572202X
47CFR 2.1091

STANDARD(S) : KDB 447498 D01 General RF Exposure
Guidance v06

ISSUE DATE : 2017-04-06

SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.

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Change History		
Issue	Date	Reason for change
1.0	2017-04-06	First edition



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TEST REPORT DECLARATION

Applicant	Testo SE & Co. KGaA
Applicant Address	Testo-Str.1, 79853 Lenzkirch, Germany
Manufacturer	testo Instruments (Shenzhen) Co., Ltd
Manufacturer Address	Block A, B4 Building, China Merchants Guangming Sci&Tech Park, No.3009 Guan Guang Road, Guangming New District, Shenzhen City
Product Name	WLAN data logger
Model Name	testo 160 TH /testo 160 E /testo 160 THE /testo 160 THL / testo 160 THG
Brand Name	Testo
HW Version	4.0
SW Version	1.22
Test Standards	47CFR 2.1091; KDB 447498 D01 General RF Exposure Guidance v06
Issue Date	2017-04-06
SAR Evaluation	Not Required

Reviewed by :

Liu Jun

Approved by :

Peng Huarui



1. TECHNICAL INFORMATION

Note: the following data is based on the information by the applicant.

1.1. Identification of Applicant

Company Name:	Testo SE & Co. KGaA
Address:	Testo-Str.1, 79853 Lenzkirch, Germany

1.2. Identification of Manufacturer

Company Name:	testo Instruments (Shenzhen) Co., Ltd
Address:	Block A, B4 Building, China Merchants Guangming Sci&Tech Park, No.3009 Guan Guang Road, Guangming New District, Shenzhen City

1.3. Equipment Under Test (EUT)

Model Name:	testo 160 TH /testo 160 E /testo 160 THE /testo 160 THL / testo 160 THG
Trade Name:	Testo
Brand Name:	Testo
Hardware Version:	4.0
Software Version:	1.22
Frequency Bands:	WIFI 802.11b/g/n20;
Modulation Mode:	WIFI802.11b: DSSS;WIFI802.11g: OFDM; WIFI802.11n: OFDM;
Antenna type:	Copper tube antenna
Development Stage:	Identical prototype



1.3.1. Photographs of the EUT

1. EUT front view



2. EUT rear view





1.3.2. Identification of all used EUT

The EUT identity consists of numerical and letter characters, the letter character indicates the test sample, and the following two numerical characters indicate the software version of the test sample.

EUT Identity	Hardware Version	Software Version
1#	4.0	1.22

1.4. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	47 CFR§2.1091	Radiofrequency Radiation Exposure Evaluation: mobile devices
2	KDB 447498 D01v06	General RF Exposure Guidance



2. DEVICE CATEGORY AND RF EXPOSURE LIMIT

Per user manual, this device Based on 47CFR 2.1091, this device belongs to mobile device category with General Population/Uncontrolled exposure.

Mobile Devices:

47CFR 2.1091(b)

For purposes of this section, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term "fixed location" means that the device is physically secured at one location and is not able to be easily moved to another location. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

GENERAL POPULATION / UNCONTROLLED EXPOSURE

The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category, and the general population/uncontrolled exposure limits apply to these devices.

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)
(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

* = Plane-wave equivalent power density



3. MEASUREMENT OF CONDUCTED PEAK OUTPUT POWER

Wi-Fi average output power

Band	Channel	Frequency (MHz)	Output Power(dBm)		
			802.11b	802.11g	802.11n20
Wi-Fi	1	2412	9.66	6.50	4.55
	6	2437	11.63	8.24	6.21
	11	2462	11.44	7.12	5.62

Note:

The conducted average output power of this report reference the wifi module's report which report number is RKS160620001-00C and FCC ID is N8NLSD4WF0459

3. RF EXPOSURE EVALUATION

Standalone transmission MPE evaluation

Bands	Frequency (MHz)	Antenna Gain (dBi)	Conducted Average Power (dBm)	Time-averaging EIRP (mW)	Power density (mW/cm ²)	Limit for MPE (mW/cm ²)
2.4GHz	2437	2	11.63	23.07	0.005	1.0

Note:

1. MPE calculation method

$$\text{Power Density} = \text{EIRP}/4\pi R^2$$

Where: EIRP = P·G

P = Peak out power

G = Antenna gain

R = Separation distance (20cm)



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ANNEX GENERAL INFORMATION

1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, Guangdong Province, P. R. China
Responsible Test Lab Manager:	Mr. Su Feng
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2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, Guangdong Province, P. R. China

***** END OF REPORT *****