Shenzhen CTA Testing Technology Co., Ltd.
Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

TEST REPORT

EN IEC 62311:2020

Report Reference No.....:	**CTA21121000303**
Compiled by (position+printed name+signature)..:	File administrators Kevin Liu
Supervised by (position+printed name+signature)..:	Project Engineer Kevin Liu
Approved by (position+printed name+signature)..:	RF Manager Eric Wang
Date of issue.....:	Jan. 04, 2022

Testing Laboratory Name .....:	**Shenzhen CTA Testing Technology Co., Ltd.**
Address.....:	Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

Applicant's name.....:	**Shenzhen Sonoff Technologies Co.,Ltd.**
Address.....:	3F & 6F, Bld A, No. 663, Bulong Rd, Shenzhen, GD, China

Test specification ..... **:**	
Standard .....:	**EN IEC 62311:2020**

Test item description .....:	**RDM6300**
Trade Mark .....:	SONOFF
Manufacturer .....:	Shenzhen Sonoff Technologies Co.,Ltd.
Model/Type reference.....:	RDM6300
Listed Models .....:	N/A
Modulation Type .....:	ASK/FSK
Operation Frequency.....:	125KHz
Rating .....:	DC 3.3V From external circuit
Result.....:	**PASS**

TEST REPORT

Equipment under Test	:	RDM6300
Model /Type	:	RDM6300
Listed Models	:	N/A
Applicant	:	**Shenzhen Sonoff Technologies Co.,Ltd.**
Address	:	3F & 6F, Bld A, No. 663, Bulong Rd, Shenzhen, GD, China
Manufacturer	:	**Shenzhen Sonoff Technologies Co.,Ltd.**
Address	:	3F & 6F, Bld A, No. 663, Bulong Rd, Shenzhen, GD, China

Test Result:	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
V1.0	Jan. 04, 2022	Initial Issue	Eric Wang

Contents

1 TEST SUMMARY

1.1 Test Standards

EN IEC 62311:2020: Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz to 300 GHz)

1.2 Test Laboratory

Shenzhen CTA Testing Technology Co., Ltd.
Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

1.3 Test Facility

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

FCC-Registration No.: 517856 Designation Number: CN1318

Shenzhen CTA Testing Technology Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA-Lab Cert. No.: 6534.01

Shenzhen CTA Testing Technology Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010.

2 GENERAL INFORMATION

2.1 General Remarks

Date of receipt of test sample	:	Dec. 21, 2021
Testing commenced on	:	Dec. 21, 2021
Testing concluded on	:	Jan. 04, 2022

2.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C -35°C
Relative Humidity:	35%-55 %
Air Pressure:	101 KPa

2.3 Product Description

Product Name:	RDM6300
Model/Type reference:	RDM6300
Power supply:	DC 3.3V From external circuit
Auxiliary test equipment(Supplied by Test Lab):	Name: PC Trade: ThinkPad Model: E480
125KHz	
Operation frequency:	125KHz
Modulation :	ASK
No. of Channel :	1
Antenna type:	Loop Antenna

Note: For more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.4 Objective

According to its specifications, the EUT must comply with the requirements of the following standards:
EN IEC 62311:2020–Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz)

2.5 Test Methodology

All measurements contained in this report were conducted with EN IEC 62311:2020.

2.6 Equipments

Radiated emissions are measured with one or more of the following types of linearly polarizedantennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrumanalyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.Conducted emissions are measured with Line Impedance Stabilization Networks and EMI TestReceivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for makingmeasurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference MeasuringApparatus and Measurement Methods.”

2.7 Measurement Uncertainty(95% confidence levels, k=2)

Test Items	Measurement Uncertainty	Notes
Occupied Channel Bandwidth	±2%	(1)
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emission	1.60 dB	(1)
Radiated spurious emission	2.20 dB	(1)
Temperature	±1℃	(1)
Humidity	±3%	(1)
DC and low frequency voltages	±1.5%	(1)
Time	±2%	(1)
Duty cycle	±2%	(1)

Note 1: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

3 HUMAN EXPOSURE TO THE ELECTROMAGNETIC FIELDS

Basic Restrictions Reference levels

Council Recommendation 1999/519/EC Annex III

Basic restrictions for electric, magnetic and electromagnetic fields (0Hz to 300GHz)

Frequency range	Magnetic flux density (mT)	Current density (Ma/m2) (rms)	Whole body average SAR (W/kg)	Localised SAR (head and trunk) (W/kg)	Localised SAR (limbs) (W/kg)	Power density (W/m2)
0Hz	40	-	-	-	-	-
>0-1Hz	-	8	-	-	-	-
1-4Hz	-	8/f	-	-	-	-
4-1000Hz	-	2	-	-	-	-
1000Hz-100kHz	-	f/500	-	-	-	-
100kHz-10MHz	-	f/500	0.08	2	4	-
10MHz-10GHz	-	-	0.08	2	4	-
10-300GHz	-	-	-	-	-	10

Note:

1. f is the frequency in Hz.

2. The basic restriction on the current density is intended to protect against acute exposure effects on central nervous system tissues in the head and trunk of the body and includes a safety factor. The basic restrictions for ELF fields are based on established adverse effects on the central nervous system. Such acute effects are essentially instantaneous and there is no scientific justification to modify the basic restrictions for exposure of short duration. However, since the basic restriction refers to adverse effects on the central nervous system, this basic restriction may permit higher current densities in body tissues other than the central nervous system under the same exposure conditions.

3. Because of electrical inhomogeneity of the body, current densities should be averaged over a cross section of 1cm2 perpendicular to the current direction.

4. For frequencies up to 100 kHz, peak current density values can be obtained by multiplying the rms value by √2(=1.414). For pulses of duration tp the equivalent frequency to apply in the basic restrictions should be calculated as=1/(2tp)

5. For frequencies up to 100kHz and for pulsed magnetic fields, the maximum current density associated with the pulses can be calculated from the rise/fall times and the maximum rate of change of magnetic flux density. The induced current density can then be compared with the appropriate basic restriction.

6. All SAR values are to be averaged over any six-minute period.

7. Localised SAR averaging mass is any 10g of contiguous tissue; the maximum SAR so obtained should be the value used for the estimation of exposure. These 10g of tissue are intended to be a mass of contiguous tissue with nearly homogeneous electrical properties. In specifying a contiguous mass of tissue, it is recognised that this concept can be used in computational dosimetry but may present difficulties for direct

physical measurements. A simple geometry such as cubic tissue mass can be used provided that the calculated dosimetric quantities have conservation values relative to the exposure guidelines.

8. For pulses of duration tp the equivalent frequency to apply in the basic restrictions should be calculated as=1/(2tp). Additionally, for pulsed exposures, in the frequency range 0,3 to 10GHz and for localised exposure of the head, in order to limit and avoid auditory effects caused by thermoelastic expansion, an additional basic restriction is recommended. This is that SA should not exceed 2mJ kg-1 averaged over 10g of tissue.

Reference Levels

Council Recommendation 1999/519/EC Annex III
Reference levels for electric, magnetic and electromagnetic fields (0Hz to 300GHz)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (uT)	Equivalent plane wave power density S_{eq}(W/m^2)
0-1Hz	--	3.2×10^4	4×10^4	--
1-8Hz	10000	$3.2\times10^4/f^2$	$4\times10^4/f^2$	--
8-25Hz	10000	4000/f	5000/f	--
0.025-0.8KHz	250/f	4/f	5/f	--
0.8-3KHz	250/f	5	6.25	--
3-150KHz	87	5	6.25	--
0.15-1MHz	87	0.73/f	0.92/f	--
1-10MHz	$87/f^{1/2}$	0.73/f	0.92/f	--
10-400MHz	28	0.073	0.092	2
400-2000MHz	$1.375f^{1/2}$	$0.0037f^{1/2}$	$0.0046f^{1/2}$	f/200
2-300GHz	61	0.16	0.20	10

Notes:
1. f as indicated in the frequency range column.
2. For frequencies between 100kHz and 10GHz, S_{eq}, E^2, H^2 and B^2 are to be averaged over any six-minute period.
3. For frequencies exceeding 10GHz, S_{eq}, E^2, H^2 and B^2 are to be averaged over any $68/f^{1.05}$-minute period (.in GHz).
4. No E-field value is provided for frequencies <1Hz, which are effectively static electric fields. For most people the annoying perception of surface electric charges will not occur at field strengths less than 20kV/m. Spark discharges causing stress or annoyance should be avoided.

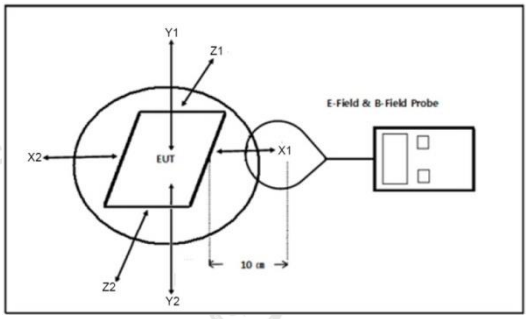
4 RF EXPOSURE EVALUATION

Test Equipment

The following test equipments are used during the power line conducted measurement:

Description	Brand	Model No.	Frequency Range	Calibrated Date	Calibrated Until
Broadband Field Meter	NARDA	NBM-550	-	2021/07/17	2022/07/16
Magnetic Field Meter	NARDA	ELT-400	1 – 400kHz	2021/07/17	2022/07/16
Magnetic Probe	NARDA	HF-3061	300kHz – 30MHz	2021/07/17	2022/07/16
Magnetic Probe	NARDA	HF-0191	27 – 1000MHz	2021/07/17	2022/07/16
Broadband Field Meter	NARDA	NBM-550	-	2021/07/17	2022/07/16
Electric Field Meter	COMBINOVA	EFM 200	5Hz – 400kHz	2021/07/17	2022/07/16
E-Field Probe	NARDA	EF-0391	100kHz – 3GHz	2021/07/17	2022/07/16
E-Field Probe	NARDA	EF-6091	100MHz – 60GHz	2021/07/17	2022/07/16

Block Diagram of Test Setup



*Note:
Position A: Back Side of the EUT
Position B: Left Side of the EUT
Position C: Front Side of the EUT
Position D: Right Side of the EUT
Position E: Top Side of the EUT
Position F: Bottom Side of the EUT

Test Results

H-field Strength Test Result:

Testcondition:RF ID

Frequency Range(KHz)	Probe Position Hx1 (A/m)	Probe Position Hx2 (A/m)	Probe Position Hy (A/m)	Probe Position Hz1 (A/m)	Probe Position Hz2 (A/m)	ResultH (A/m)	Limit (A/m)
125	0.86	0.97	1.04	0.74	0.85	2.01	5

$H = \sqrt{H_x^2 + H_y^2 + H_z^2}$=2.01A/m

Limit=0.73/0.165A/m=4.424A/m

Note: All test modes have been tested and only record the worst result.

5 External and Internal Photos of the EUT

Reference to the test report No. **CTA21121000302**

********** End of Report **********