

SZEMC-TRF-01 Rev. A/0 Aug01,2022

Report No.: SZCR230400091206

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# RF EXPOSURE EVALUATION REPORT

Application No.: SZCR2304000912AT

Applicant: KanDao Technology Co., Ltd.

Address of Applicant: 503, Building 1, Dayun Soft Parts Town, 8288 Longgang Avenue, Yuanshan

Street, Longgang District, Shenzhen, China

Manufacturer: KanDao Technology Co., Ltd.

Address of Manufacturer: 503, Building 1, Dayun Soft Parts Town, 8288 Longgang Avenue, Yuanshan

Street, Longgang District, Shenzhen, China

Factory: L Lab Corporation(Hui Zhou) Limited

Address of Factory: West Wing, 2/F, Factory Building A, No.13 of JinDa Road, HuiNan High-

Tech industrial Park Hui'Ao Avenue, HuiZhou City, GuangDong Province,

P.R.China

**Equipment Under Test (EUT):** 

EUT Name: Kandao Meeting Ultra

Kandao Meeting Ultra Standard

Model No.: MT1001, MT1002

Please refer to section 3 of this report which indicates which model was

actual tested and which were electrically identical.

Trade Mark: KanDao FCC ID: 2ATPV-KDUL

Standard(s): FCC Rules 47 CFR §2.1091

KDB 447498 D04 interim General RF Exposure Guidance v01

**Date of Receipt:** 2023-04-03

**Date of Test:** 2023-04-07 to 2023-04-18

**Date of Issue:** 2023-04-24

Evaluation Result: Pass\*

Keny Xu EMC Laboratory Manager

Ceny. Ku



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<sup>\*</sup> In the configuration evaluated, the EUT complied with the standards specified above.



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	Revision Record					
Version	Chapter	Date	Modifier	Remark		
01		2023-04-24		Original		

Authorized for issue by:		
	(eo_li	
	Leo Li/Project Engineer	
	Exic Fu	
	Eric Fu/Reviewer	



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### **General Information**

### 3.1 General Description of E.U.T.

C. General Description of E.O.1.			
DC 15V from adapter input AC 120V/60Hz			
Adapter Model: ADT-65NS-D00			
Input: 100-240V~1.6A 50/60Hz			
Output: 5.0V =3.0A 15.0W or 9.0V =3.0A 27.0W or 12.0V =5.0A 60.0W or 15.0V =4.33 A 64.95W or 20.0V =3.25A 65.0W			
PoE 44~58V 1A(IEEE802.3bt)			
3V DC (1.5Vx2"AAA" Size Batteries) for remote controller			
USB-C cable: 150cm shielded			
Adapter AC cable: 150cm unshielded			
Adapter DC cable: 180cm shielded			
2402MHz to 2480MHz			
V5.0 Dual mode			
GFSK, pi/4DQPSK, 8DPSK			
79			
1MHz			
Frequency Hopping Spread Spectrum(FHSS)			
FPC Antenna			
ANT 1: 3.65dBi			
2402MHz to 2480MHz			
V5.0 Dual mode			
GFSK			
40			
2MHz			
FPC Antenna			
ANT 1: 3.65dBi			



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For Wi-Fi 2.4G	
Operation Frequency:	802.11b/g/n(HT20)/ax(HEW20): 2412MHz to 2462MHz,
	802.11b: DSSS (CCK, DQPSK, DBPSK),
Modulation Type:	802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
	802.11ax: OFDMA(16QAM, 64QAM, 256QAM, 1024QAM, QPSK, BPSK)
Number of Channels:	802.11b/g/n(HT20)/ax(HEW20): 11
Channel Spacing:	5MHz
Antenna Type:	FPC Antenna
Antenna Gain:	ANT 1: 3.65dBi; ANT 2: 3.65dBi
For Wi-Fi 5G	
Operation Frequency/Number of channels (20MHz):	U-NII-1: 5180-5240MHz (4 Channels)
Operation Frequency/Number of channels/(40MHz):	U-NII-1: 5190-5230MHz (2 Channels)
Operation Frequency/Number of channels (80MHz):	U-NII-1: 5210MHz (1 Channel)
	802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK);
Modulation Type:	802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM);
wooddation Type.	802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
	802.11ax: OFDMA(16QAM, 64QAM, 256QAM, 1024QAM, QPSK, BPSK)
Channel Spacing:	802.11a/n(HT20)/ac(HT20): 20MHz; 802.11n(HT40)/ac(HT40): 40MHz; 802.11ac(HT80): 80MHz
DFS Function:	Without DFS function
TPC Function:	Without TPC function
Antenna Type:	FPC Antenna
Antenna Gain:	ANT 1:3.88dBi; ANT2: 3.88dBi

#### **Declaration of EUT Family Grouping:**

Model No.: MT1001, MT1002

Only the model MT1001 was evaluated, since according to the declaration from the applicant, the electrical circuit design, PCB layout, components used and internal wiring and functions were identical for the above models, with only difference on model MT1001 has a touch display and model MT1002 doesn't.



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### 3.2 Separation Distance

Minimum test separation distance:

20cm

Remark: This minimum test separation distance is determined by the smallest distance from the antenna and radiating structures or outer surface of the device, according to the host form factor, exposure conditions and platform requirements, to any part of the body or extremity of a user or bystander.



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#### 3.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted. All tests were performed at:

### 3.4 Test Facility

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

#### A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

### VCCI (Member No. 1937)

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

#### • FCC -Designation Number: CN1336

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1336. Test Firm Registration Number: 787754.

#### • Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

#### 3.5 Deviation from Standards

None

#### **Abnormalities from Standard Conditions**

None



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# FCC Radiofrequency radiation exposure limits

Test exemptions apply for devices used in general population/uncontrolled exposure environments, according to the SAR-based, or MPE-based exemption thresholds.

### Blanket 1 mW Blanket Exemption

The 1 mW Blanket Exemption of §1.1307(b)(3)(i)(A) applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power of no more than 1 mW, regardless of separation distance.

The 1-mW blanket exemption applies at separation distances less than 0.5 cm, including where there is no separation. This exemption shall not be used in conjunction with other exemption criteria other than those for multiple RF sources in paragraph §1.1307(b)(3)(ii)(A).

The 1-mW exemption is independent of service type and covers the full range of 100 kHz to 100 GHz, but it shall not be used in conjunction with other exemption criteria or in devices with higher-power transmitters operating in the same time-averaging period. Exposure from such higher-power transmitters would invalidate the underlying assumption that exposure from the lower-power transmitter is the only contributor to SAR in the relevant volume of tissue.

### 4.2 MPE-based Exemption

General frequency and separation-distance dependent MPE-based effective radiated power (ERP) thresholds are in Table B.1 [Table 1 of §1.1307(b)(1)(i)(C)] to support an exemption from further evaluation from 300 kHz through 100 GHz.

Table B.1—Thresholds For Single RF Sources Subject to Routine Environmental Evaluation

RF Source Frequency			Minimum Distance			Threshold ERP
f∟ MHz		f <sub>H</sub> MHz	λ∟ / 2π		λн / 2π	W
0.3	-	1.34	159 m	_	35.6 m	1,920 R <sup>2</sup>
1.34	_	30	35.6 m	_	1.6 m	3,450 R <sup>2</sup> /f <sup>2</sup>
30	_	300	1.6 m	_	159 mm	3.83 R <sup>2</sup>
300	_	1,500	159 mm	_	31.8 mm	0.0128 R <sup>2</sup> f
1,500	_	100,000	31.8 mm	_	0.5 mm	19.2R <sup>2</sup>

Subscripts L and H are low and high; λ is wavelength.

From §1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.

The table applies to any RF source (i.e. single fixed, mobile, and portable transmitters) and specifies power and distance criteria for each of the five frequency ranges used for the MPE limits. These criteria apply at separation distances from any part of the radiating structure of at least  $\lambda/2\pi$ . The thresholds are



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based on the general population MPE limits with a single perfect reflection, outside of the reactive near-field, and in the main beam of the radiator.

For mobile devices that are not exempt per Table B.1 [Table 1 of §1.1307(b)(1)(i)(C)] at distances from 20 cm to 40 cm and in 0.3 GHz to 6 GHz, evaluation of compliance with the exposure limits in §1.1310 is necessary if the ERP of the device is greater than ERP20cm in Formula (B.1) [repeated from §2.1091(c)(1); also in §1.1307(b)(1)(i)(B)].

$$P_{\rm th} \ ({\rm mW}) = ERP_{\rm 20 \ cm} \ ({\rm mW}) = \begin{cases} 2040 f & 0.3 \ {\rm GHz} \le f < 1.5 \ {\rm GHz} \\ \\ 3060 & 1.5 \ {\rm GHz} \le f \le 6 \ {\rm GHz} \end{cases} \eqno({\rm B.} \ 1)$$

If the ERP is not easily obtained, then the available maximum time-averaged power may be used (i.e., without consideration of ERP only if the physical dimensions of the radiating structure(s) do not exceed the electrical length of  $\lambda/4$  or if the antenna gain is less than that of a half-wave dipole.

SAR-based exemptions are constant at separation distances between 20 cm and 40 cm to avoid discontinuities in the threshold when transitioning between SAR-based and MPE-based exemption criteria at 40 cm, considering the importance of reflections.

Limit calculation						
Frequency range Frequency (MHz) $R(N2\pi)$ (m) Threshold ERP(W)						
300~1500MHz	915	0.0522	0.032			
1500~100000MHz	2480	0.0193	0.007			

### 4.3 SAR-based Exemption

SAR-based thresholds are derived based on frequency, power, and separation distance of the RF source. The formula defines the thresholds in general for either available maximum time-averaged power or maximum time-averaged ERP, whichever is greater.

If the ERP of a device is not easily determined, such as for a portable device with a small form factor, the applicant may use the available maximum time-averaged power exclusively if the device antenna or radiating structure does not exceed an electrical length of  $\lambda/4$ .

As for devices with antennas of length greater than  $\lambda/4$  where the gain is not well defined, but always less than that of a half-wave dipole (length  $\lambda/2$ ), the available maximum time-averaged power generated by the device may be used in place of the maximum time-averaged ERP, where that value is not known.

The separation distance is the smallest distance from any part of the antenna or radiating structure for all persons, during operation at the applicable ERP. In the case of mobile or portable devices, the separation distance is from the outer housing of the device where it is closest to the antenna.



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The SAR-based exemption formula of §1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold  $P_{th}$  (mW).

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by Formula (B.2).

$$P_{\text{th}} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \le 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \le 40 \text{ cm} \end{cases}$$
(B. 2)

where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\,\mathrm{cm}}\sqrt{f}}\right)$$

and f is in GHz, d is the separation distance (cm), and  $ERP_{20cm}$  is per Formula (B.1).



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Example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

							•	<u>,                                      </u>		
Frequency					Distanc	ce(mm)				
(MHz)	5	10	15	20	25	30	35	40	45	50
300	39	65	88	110	129	148	166	184	201	217
450	22	44	67	89	112	135	158	180	203	226
835	9	25	44	66	90	116	145	175	207	240
1900	3	12	26	44	66	92	122	157	195	236
2450	3	10	22	38	59	83	111	143	179	219
3600	2	8	18	32	49	71	96	125	158	195
5800	1	6	14	25	40	58	80	106	136	169

Limit calculation						
Frequency range(GHz)	Frequency(GHz)	Χ	Distance(cm)	Pth (mW)		
0.3~1.5	0.915	1.474	0.5	8.133		
1.5~6	2.48	1.905	0.5	2.717		



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#### 5 **Measurement and Calculation**

### Maximum transmit power

The BT and Wi-Fi cannot simultaneous transmission.

#### For BT:

The Power Data is based on the RF Test Report SZCR230400091202

Antenna Gain: ANT1: 3.65 dBi

Output Power Into Antenna & RF Exposure Evaluation Distance:

Frequency	Maximum Conducted Power [dBm]	Maximum Conducted Power (mW)	Maximum EIRP [dBm]	Maximum EIRP (mW)
2480	9.40	8.71	13.05	20.18

#### For BLE:

The Power Data is based on the RF Test Report SZCR230400091203

Antenna Gain: ANT1: 3.65 dBi

Output Power Into Antenna & RF Exposure Evaluation Distance:

Frequency	Maximum Conducted Power [dBm]	Maximum Conducted Power (mW)	Maximum EIRP [dBm]	Maximum EIRP (mW)
2480	8.41	6.93	12.06	16.07



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#### For Wi-Fi 2.4G:

The Power Data is based on the RF Test Report SZCR230400091204

Antenna Gain: ANT 1: 3.65dBi; ANT 2: 3.65dBi; Directional Gain: 3.65 dBi

Output Power Into Antenna & RF Exposure Evaluation Distance:

Frequency	Maximum Conducted Power [dBm]	Maximum Conducted Power (mW)	Maximum EIRP [dBm]	Maximum EIRP (mW)
2412	17.32	53.95	20.97	125.03

#### For Wi-Fi 5G:

The Power Data is based on the RF Test Report SZCR230400091205

Antenna Gain: ANT 1: 3.88 dBi; ANT 2: 3.88 dBi; Directional Gain: 3.88 dBi

Output Power Into Antenna & RF Exposure Evaluation Distance:

Frequency	Maximum Conducted Power [dBm]	Maximum Conducted Power (mW)	Maximum EIRP [dBm]	Maximum EIRP (mW)
5180	18.10	65.57	21.98	157.76



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### 5.2 RF Exposure Calculation

Remark: we used the maximum EIRP between the conducted power and ERP/EIRP to perform RF exposure exemption evaluation.

	Evaluation method	Exempt Limit(mW)	Verdict
	Blanket 1 mW Blanket Exemption	1mW	N/A
	MPE-based Exemption(ERP)	7mW(ERP)	N/A
$\boxtimes$	SAR-based Exemption( $P_{ ext{th}}$ )	3060	Yes

So, the device is to qualify for SAR test exemption, the exemption report is in lieu of the SAR report.

-- End of the Report--



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