

**Shenzhen Global Test Service Co.,Ltd.**

No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

RF Exposure evaluation**Report Reference No.....: GTS20230630003-1-8****FCC ID.: 2A2RW-RD1853399**

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Representative Laboratory Name.: Shenzhen Global Test Service Co.,Ltd.

Address: No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

Applicant's name.....: ReadyDock, Inc. dba iCleanse

Address: 136 Simsbury Rd, Avon, CT 06001, Building #11, Avon CT 06001 United States

Test specification

Standard.....: 47CFR §1.1310 Basis and purpose
47CFR §2.1091 Radiofrequency radiation exposure evaluation:
mobile devices
KDB447498 D01 General RF Exposure Guidance v06

TRF Originator.....: Shenzhen Global Test Service Co.,Ltd.

Master TRF: Dated 2014-12

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Test item description: 18.5 Touch Display

Trade Mark: N/A

Manufacturer: ReadyDock, Inc. dba iCleanse

Model/Type reference: RD1853399

Listed Models: N/A

Hardware Version: N/A

Software Version: N/A

Rating: DC 12.0V/3.0A by Adapter

Result: **PASS**

TEST REPORT

Test Report No. :	GTS20230630003-1-8	Aug.22, 2023
		Date of issue

Equipment under Test : 18.5 Touch Display

Model /Type : RD1853399

Listed model : N/A

Applicant : **ReadyDock, Inc. dba iCleanse**

Address : 136 Simsbury Rd, Avon, CT 06001, Building #11, Avon CT 06001
United States

Manufacturer : **ReadyDock, Inc. dba iCleanse**

Address : 136 Simsbury Rd, Avon, CT 06001, Building #11, Avon CT 06001
United States

Test Result:	PASS
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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.

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1. SUMMARY

1.1 EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

● /	Length (m) :	/
	Shield :	/
	Detachable :	/

1.2 Product Description

Product Name:	18.5 Touch Display
Trade Mark:	N/A
Model/Type reference:	RD1853399
List Model:	N/A
Model Declaration	N/A
Power supply:	DC 12.0V/3.0A by Adapter
Hardware Version	N/A
Software Version	N/A
Sample ID	GTS20230630003-1-S0001-1#>S20230630003-1-S0001-2#
2.4GWLAN	
WLAN Operation frequency	IEEE 802.11b:2412-2462MHz IEEE 802.11g:2412-2462MHz IEEE 802.11n HT20:2412-2462MHz IEEE 802.11n HT40:2422-2452MHz
WLAN Modulation Type	IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20: OFDM (64QAM, 16QAM, QPSK,BPSK) IEEE 802.11n HT40: OFDM (64QAM, 16QAM, QPSK,BPSK)
Channel number:	11 Channel for IEEE 802.11b/g/n(HT20) 7 Channel for IEEE 802.11n(HT40)
Channel separation:	5MHz
Antenna Description	External Antenna, 2.00dBi (Max.)
LTE	
LTE Operation Frequency Band	E-UTRA Band 2(1850 MHz -1910MHz) E-UTRA Band 4(1710 MHz -1755MHz) E-UTRA Band 5(824 MHz -849MHz) E-UTRA Band 12(699 MHz -716MHz) E-UTRA Band 13(777 MHz -787MHz) E-UTRA Band 66(1710 MHz -1780MHz) E-UTRA Band 71(663 MHz -698MHz)
LTE Release Version	R10
Type Of Modulation	QPSK/16QAM
Antenna Description	External Antenna; 2.00dBi (max.) For LTE Band 2; 2.00dBi (max.) For LTE Band 4; 2.00dBi (max.) For LTE Band 5; 2.00dBi (max.) For LTE Band 12; 2.00dBi (max.) For LTE Band 13; 2.00dBi (max.) For LTE Band 66; 2.00dBi (max.) For LTE Band 71;

2. TEST ENVIRONMENT

2.1 Address of the test laboratory

Shenzhen Global Test Service Co.,Ltd.

No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

2.2 Test Facility

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

CNAS (No. CNAS L8169)

Shenzhen Global Test Service Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2019 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA (Certificate No. 4758.01)

Shenzhen Global Test Service Co., Ltd. has been assessed by the American Association for Laboratory Accreditation (A2LA). Certificate No. 4758.01.

Industry Canada Registration Number. is 24189.

FCC Designation Number is CN1234.

FCC Registered Test Site Number is165725.

2.3 Environmental conditions

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

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

2.4 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen Global Test Service Co.,Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen GTS laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.57 dB	(1)

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3. METHOD OF MEASUREMENT

3.1 Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

KDB447498 D01 General RF Exposure Guidance v06: Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies

3.2 Requirement

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

In accordance with KDB447498 D01 General RF Exposure Guidance v06 for Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0 . The MPE ratio of each antenna is determined at the minimum test separation distance required by the operating configurations and exposure conditions of the host device, according to the ratio of field strengths or power density to MPE limit, at the test frequency. Either the maximum peak or spatially averaged results from measurements or numerical simulations may be used to determine the MPE ratios. Spatial averaging does not apply when MPE is estimated using simple calculations based on far-field plane-wave equivalent conditions. The antenna installation and operating requirements for the host device must meet the minimum test separation distances required by all antennas, in both standalone and simultaneous transmission operations, to satisfy compliance.

3.3 Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
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

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 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

3.4 MPE Calculation Method

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna

As declared by the Applicant, the EUT transmits with the maximum source-based Duty Cycle of 100%-see the User manual, and the EUT is a wireless device used in a mobile application, at least 20 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum mobile separation distance, $r = 20\text{cm}$, as well as the gain of the used antenna is 2.00dBi for BT<E, and the power drift from Turn-up Procedure provide by manufacturer as following states, the RF power density can be obtained.

3.5 Antenna Information

RD1853399 can only use antennas certificated as follows provided by manufacturer;

Internal Identification	Antenna Identification in Internal photos	Antenna type and antenna number	Operate frequency band	Maximum antenna gain
Antenna 0	WLAN ANT 0	External antenna	2.4 – 2.5 GHz	2.00dBi(Max.) for 2.4G band
Antenna 1	LTE ANT 1	External antenna	600 – 1000 MHz 1.0 – 3.0 GHz	2.00dBi (max.) For LTE Band 2; 2.00dBi (max.) For LTE Band 4; 2.00dBi (max.) For LTE Band 5; 2.00dBi (max.) For LTE Band 12; 2.00dBi (max.) For LTE Band 13; 2.00dBi (max.) For LTE Band 66; 2.00dBi (max.) For LTE Band 71;

4. Conducted Power Results

Antenna 0:

2.4GWLAN

Mode	Channel	Frequency (MHz)	Peak Conducted Output Power (dBm)
802.11b	01	2412	15.45
	06	2437	16.31
	11	2462	16.71
802.11g	01	2412	19.61
	06	2437	19.89
	11	2462	20.87
802.11n(HT20)	01	2412	19.43
	06	2437	20.26
	11	2462	20.67
802.11n(HT40)	03	2422	19.16
	06	2437	19.65
	09	2452	19.86

Antenna 1:

<LTE Max Conducted Power>

Test Mode		Channel	Max Conducted Power (dBm)
LTE	Band 2	LCH	23.43
		MCH	23.13
		HCH	23.01
	Band 4	LCH	22.80
		MCH	22.69
		HCH	22.72
	Band 5	LCH	24.74
		MCH	24.69
		HCH	24.77
	Band 12	LCH	24.55
		MCH	24.66
		HCH	24.66
	Band 13	LCH	24.49
		MCH	24.45
		HCH	24.52
	Band 66	LCH	23.43
		MCH	23.57
		HCH	23.65
	Band 71	LCH	23.96
		MCH	23.99
		HCH	23.95

5. Manufacturing Tolerance

Antenna 0:

2.4GWLAN

IEEE 802.11b (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	15.0	16.0	16.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11g (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	19.0	19.0	20.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT20 (Peak)			
Channel	Channel 01	Channel 06	Channel 11
Target (dBm)	19.0	20.0	20.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0
IEEE 802.11n HT40 (Peak)			
Channel	Channel 03	Channel 06	Channel 09
Target (dBm)	19.0	19.0	19.0
Tolerance $\pm$ (dB)	1.0	1.0	1.0

Antenna 1:

LTE

Mode	Target Power
LTE BAND 2	24 ± 1.0 dBm
LTE BAND 4	23 ± 1.0 dBm
LTE BAND 5	25 ± 1.0 dBm
LTE BAND 12	25 ± 1.0 dBm
LTE BAND 13	25 ± 1.0 dBm
LTE BAND 66	24 ± 1.0 dBm
LTE BAND 71	24 ± 1.0 dBm

6. Measurement Results

6.1 Standalone MPE Evaluation

As declared by the Applicant, the EUT is a wireless device used in a fix application, at least 20 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum separation distance, $r = 20\text{cm}$, as well as the gain of the used antenna refer to antenna information, the RF power density can be obtained.

2.4GWLAN

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
802.11b	17.00	50.1187	2.00	1.5849	0.0158	1.0000
802.11g	21.00	125.8925	2.00	1.5849	0.0397	1.0000
802.11n(HT20)	21.00	125.8925	2.00	1.5849	0.0397	1.0000
802.11n(HT40)	20.00	100.0000	2.00	1.5849	0.0315	1.0000

LTE

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
LTE Band 2	25.00	316.2278	2.00	1.5849	0.0997	1.00
LTE Band 4	24.00	251.1886	2.00	1.5849	0.0792	1.00
LTE Band 5	26.00	398.1072	2.00	1.5849	0.1255	0.55
LTE Band 12	26.00	398.1072	2.00	1.5849	0.1255	0.47
LTE Band 13	26.00	398.1072	2.00	1.5849	0.1255	0.52
LTE Band 66	25.00	316.2278	2.00	1.5849	0.0997	1.00
LTE Band 71	25.00	316.2278	2.00	1.5849	0.0997	0.44

Remark:

1. Output power including tune-up tolerance;
2. MPE evaluate distance is 20cm from user manual provide by manufacturer;

6.2 Simultaneous Transmission MPE

The sample support one Bluetooth & WLAN modular, one GSM<E modular, and one Bluetooth & WLAN antenna, and one GSM<E antenna, Need consider simultaneous transmission ;

According to KDB447498 D01 General RF Exposure Guidance v06 for Transmitters used in mobile exposure conditions for simultaneous transmission operations;

$\sum$ of MPE ratios ≤ 1.0

6.2.1 Summary simultaneous transmission results

Maximum Simultaneous transmission MPE Ratios for **2.4GWLAN, LTE** .

Maximum MPE ratio 2.4GWLAN	Maximum MPE ratio LTE	$\sum$ MPE ratios	Limit	Results
0.0397	0.2670	0.3067	1.0	PASS

7. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB447498 D01 General RF Exposure Guidance v06, No SAR is required.

.....End of Report.....