RF Exposure Report

Report No.:	MFBCKS-WTW-P22090987
FCC ID:	2A82RMARK3
Test Model:	Mark 3
Received Date:	Oct. 17, 2022
Date of Evaluation:	Nov. 22, 2022
Issued Date:	Dec. 12, 2022
Applicant:	Arable Labs Inc.
Address:	51 Federal St., San Francisco, CA 94107, USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN
FCC Registration / Designation Number:	788550 / TW0003

Testing Laboratory
2021

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Release Control Record

Issue No.	Description	Date Issued
MFBCKS-WTW-P22090987	Original Release	Dec. 12, 2022

1 Certificate of Conformity

Product:	Arable Mark 3
Brand:	Arable Labs
Test Model:	Mark 3
Sample Status:	Engineering Sample
Applicant:	Arable Labs Inc.
Date of Evaluation:	Nov. 22, 2022
FCC Rule Part:	FCC Part 2 (Section 2.1091)
Standards:	KDB 447498 D01 General RF Exposure Guidance v06

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : Vera Huang , **Date:** Dec. 12, 2022

Vera Huang / Specialist

Approved by : Jeremy Lin , **Date:** Dec. 12, 2022

Jeremy Lin / Project Engineer

2 RF Exposure

2.1 Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (minutes)
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

2.2 MPE Calculation Formula

$Pd = (Pout*G) / (4*pi*r^2)$
where
Pd = power density in mW/cm^2
Pout = output power to antenna in mW
G = gain of antenna in linear scale
pi = 3.1416
r = distance between observation point and center of the radiator in cm

2.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

3 Calculation Result of Maximum Conducted Power

Band	Max ERP Power (dBm)	Max EIRP Power (dBm)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
GPRS 850	31.17	33.32	20	0.427	0.55
GPRS 1900	-	32.12	20	0.324	1.00
eMTC					
LTE Band 2	-	26.42	20	0.087	1.00
LTE Band 4	-	25.79	20	0.075	1.00
LTE Band 5	22.13	24.28	20	0.053	0.55
LTE Band 12	22.23	24.38	20	0.055	0.46
LTE Band 13	22.13	24.28	20	0.053	0.52
LTE Band 25	-	25.97	20	0.079	1.00
LTE Band 26	22.39	24.54	20	0.057	0.54
LTE Band 66	-	25.88	20	0.077	1.00
LTE Band 85	22.42	24.57	20	0.057	0.46
NB-IoT					
NB-IoT Band 2	-	26.69	20	0.093	1.00
NB-IoT Band 4	-	26.05	20	0.080	1.00
NB-IoT Band 5	22.41	24.56	20	0.057	0.55
NB-IoT Band 12	22.93	25.08	20	0.064	0.46
NB-IoT Band 13	22.91	25.06	20	0.064	0.52
NB-IoT Band 25	-	26.95	20	0.099	1.00
NB-IoT Band 66	-	26.28	20	0.085	1.00
NB-IoT Band 71	23.13	25.28	20	0.067	0.44
NB-IoT Band 85	22.77	24.92	20	0.062	0.46

Band	Max AV Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
BT LE	14.49	2.40	20	0.0097	1

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. EIRP = ERP + 2.15dB
3. Detail antenna specification please refer to antenna datasheet or an antenna gain measurement report.

Conclusion:

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

The simultaneous operation mode was determined by client.

WWAN + BT LE = 0.427/0.55 + 0.0097/1 = 0.786

Therefore the maximum calculations of above situations are less than the “1” limit.

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