RF Exposure Evaluation Report

Applicant:	Maersk Container Industry AS
Address of Applicant:	Bjerndrupvej 47, 6360 Tinglev, Denmark

Equipment Under Test (EUT)

Product Name:	Sekstant Gateway
Model No.:	Sekstant Gateway v1.3
Trade mark:	SEKSTANT
FCC ID:	2AUZI-819628B
Applicable standards:	FCC CFR Title 47 Part 2 (§2.1091)
Date of sample receipt:	08 Dec., 2022
Date of Test:	09 Dec., 2022 to 13 Jan., 2023
Date of report issue:	16 Jan., 2023
Test Result:	PASS

Tested by:	Mike ou ***Test Engineer***	***Date:***	*16 Jan., 2023*
Reviewed by:	Vivien Zhou ***Project Engineer***	***Date:***	*16 Jan., 2023*
Approved by:	Manager Zhang ***Manager***	***Date:***	*16 Jan., 2023*

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in above the application standard version. Test results reported herein relate only to the item(s) tested.

1 Version

Version No.	Date	Description
00	*16 Jan., 2023*	*Original*

2 Contents

3 General Information

3.1 Client Information

Applicant:	Maersk Container Industry AS
Address:	Bjerndrupvej 47, 6360 Tinglev, Denmark
Manufacturer:	Maersk Container Industry AS
Address:	Bjerndrupvej 47, 6360 Tinglev, Denmark
Factory :	Ark Electronics
Address:	No.70 Beijing Road I Qingdao Free Trade Zone, Qingdao I Shangdong, CN 266500

3.2 General Description of E.U.T.

Product Name:	Sekstant Gateway
Model No.:	Sekstant Gateway v1.3
Operation Frequency:	BLE: 2402MHz~2480MHz GSM850: 824.2 MHz - 848.8 MHz PCS1900: 1850.2 MHz - 1909.8 MHz WCADM band II: 1852.4 MHz - 1907.6 MHz WCADM band IV: 1712.4 MHz - 1752.6 MHz WCADM band V: 826.4 MHz - 846.6 MHz LTE band 2: 1850 MHz - 1910 MHz LTE band 4: 1710 MHz - 1755 MHz LTE band 5: 824 MHz - 849 MHz LTE band 7: 2500 MHz - 2570 MHz LTE band 12: 699 MHz - 716 MHz
Modulation technology:	BLE: GFSK GSM: Voice(GMSK), GPRS(GMSK), EGPRS(GMSK, 8PSK) WCDMA: RMC(QPSK), HSUPA(QPSK) , HSDPA(QPSK,16QAM) LTE: QPSK, 16QAM
Antenna Type:	Internal Antenna
Antenna gain:	BLE: 2.0 dBi; GSM 850: -11.5 dBi; PCS1900: 1.1 dBi
	WCDMA band II: 1.1 dBi; WCDMA band IV: 1.0 dBi; WCDMA band V: -11.5 dBi
	LTE band 2: 1.1 dBi; LTE band 4: 0.4 dBi; LTE band 5: -11.5 dBi
	LTE band 7: -0.5 dBi; LTE band 12: -13.6 dBi
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

3.3 Operating Modes

Operating mode	Detail description
BLE mode	Keep the EUT in continuously transmitting in BLE mode
GSM mode	Keep the EUT in continuously transmitting in GSM 850/ PCS1900 mode
WCDMA mode	Keep the EUT in continuously transmitting in WCDMA band II / VI / V mode
LTE mode	Keep the EUT in continuously transmitting in LTE band 2 /4 / 5/ 7/ 12 mode

3.4 Additions to, deviations, or exclusions from the method

No

3.5 Laboratory Facility

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

- **FCC - Designation No.: CN1211**

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

- **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **CNAS - Registration No.: CNAS L15527**

JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

3.6 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd.
Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info-JYTee@lets.com, Website: http://jyt.lets.com

4 Technical Requirements Specification

4.1 Limits

The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
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
(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

4.2 Test Procedure

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

$$S = \frac{P \times G}{4 \times \pi \times R^2}$$

Where:

S = power density

P = power input to the antenna

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

R = distance to the centre of radiation of the antenna

4.3 Result

Frequency (MHz)	Maximum Output power (dBm)	Maximum Output power (mW)	Antenna Gain (dBi)	Antenna Gain (numeric)	Distance (cm)	Result (mW/cm^2)	Limits for General Population/ Uncontrolled Exposure (mW/cm^2)	Verdict
BLE								
2480	8.7	7.41	2.0	1.58	20.00	0.0023	1.0	Pass
GSM								
GSM 850	19.92	98.175	-11.5	0.07	20.00	0.001	0.55	Pass
PCS1900	31.85	1531.087	1.1	1.29	20.00	0.392	1.0	Pass
WCDMA								
Band II	25.62	364.754	1.1	1.29	20.00	0.093	1.0	Pass
Band VI	25.15	327.341	1.0	1.26	20.00	0.082	1.0	Pass
Band V	10.88	12.246	-11.5	0.07	20.00	0.0002	0.55	Pass
LTE								
Band 2	24.76	299.226	1.1	1.29	20.00	0.077	1.0	Pass
Band 4	23.56	226.986	0.4	1.10	20.00	0.050	1.0	Pass
Band 5	9.93	9.840	-11.5	0.07	20.00	0.0001	0.55	Pass
Band 7	22.65	184.077	-0.5	0.89	20.00	0.033	1.0	Pass
Band 12	8.18	6.577	-13.6	0.04	20.00	0.0001	0.47	Pass

Simultaneous transmission(Worse mode):

Mode	Ratio	Total Ratio	Limit	Verdict
BLE	0.0023	0.3943	1.00	Pass
PCS1900	0.392			

Note: Just the worst case mode was shown in report.

4.4 Conclusion

The device is exempt from the SAR test and satisfies RF exposure evaluation.

------End of report------