

FranklinWH Energy Storage Inc

MPE ASSESSMENT REPORT

Report Type:
FCC MPE assessment report

Model:
aGate X

REPORT NUMBER:
230201553SHA-004

ISSUE DATE:
June 12, 2023

DOCUMENT CONTROL NUMBER:
TTRFFCCMPE-01_V1 © 2018 Intertek



Applicant: FranklinWH Energy Storage Inc
1731 Technology Dr., Suite 530, San Jose, CA 95110, USA

Manufacturer: FranklinWH Technologies Co., Ltd.
Room 301, Building 5A Skyworth Innovation Park, No.8 Tangtou 1st Road,
Tangtou community Shiyan sub-district , Baoan District, Shenzhen,
Guangdong, China

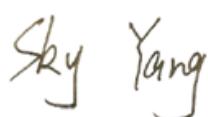
Factory: Dongguan Shingi Electrics Co., Ltd.
151 Naner street, Qiaodong Road, Shanhe Village, Qiaotou Town,
Dongguan City, Guangdong Province, China

FCC ID: 2BCMR-AGATEX01US

SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:

KDB447498 D01 General RF Exposure Guidance v06
FCC Part2.1091, FCC Part2.1093 FCC Part1.1307(b)

PREPARED BY:

Project Engineer
Sky Yang**REVIEWED BY:**

Reviewer
Wakeyou Wang

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

TEST REPORT**Revision History**

Report No.	Version	Description	Issued Date
230201553SHA-004	Rev. 01	Initial issue of report	June 12, 2023

TEST REPORT**1 GENERAL INFORMATION****1.1 Description of Equipment Under Test (EUT)**

Product name:	aGate
Type/Model:	aGate X
Description of EUT:	The EUT is an Energy storage control system which supports WiFi (802.11a/g mode), BLE and LTE function. LTE function uses a certified module, the FCC ID is XMR201909EC25AFX.
Rating:	120/208VAC; 120V/240VAC
EUT type:	<input checked="" type="checkbox"/> Table top <input type="checkbox"/> Floor standing
Software Version:	V1.4.1
Hardware Version:	1.1
Sample received date:	February 21, 2023
Date of test:	February 22, 2023 to February 23, 2023

1.2 Technical Specification

Frequency Range:	2412MHz ~ 2462MHz
Support Standards:	IEEE 802.11g
Type of Modulation:	IEEE 802.11g: OFDM (64-QAM, 16-QAM, QPSK, BPSK)
Channel Number:	11 Channels for 802.11g
Data Rate:	IEEE 802.11g: Up to 54 Mbps
Channel Separation:	5 MHz
Antenna Information:	4.13dBi, FPC Antenna for antenna 0 and antenna 1

Frequency Range:	5150 ~ 5250MHz 5250 ~ 5350MHz 5470 ~ 5725MHz 5725 ~ 5850MHz
Support Standards:	802.11a
Type of Modulation:	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Channel Number:	For 5150 ~ 5250MHz band: Channel 36 - 48 For 5250 ~ 5350MHz Band: Channel 52 - 64 For 5470 ~ 5725MHz Band: Channel 100 - 140 For 5725 ~ 5850MHz band: Channel 149 - 165
Antenna Information:	4.39dBi, FPC Antenna for antenna 0 and antenna 1

TEST REPORT

Frequency Band:	2400MHz ~ 2483.5MHz
Support Standards:	Bluetooth LE
Type of Modulation:	GFSK
Channel Number:	40 (0 - 39)
Data Rate:	1Mbps
Channel Separation:	2 MHz
Antenna Information:	1.33dBi, PCB Antenna

TEST REPORT**1.3 Description of Test Facility**

Name:	Intertek Testing Services Shanghai
Address:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is recognized, certified, or accredited by these organizations:	CNAS Accreditation Lab Registration No. CNAS L0139
	FCC Accredited Lab Designation Number: CN0175
	IC Registration Lab Registration code No.: 2042B-1
	VCCI Registration Lab Registration No.: R-14243, G-10845, C-14723, T-12252
	A2LA Accreditation Lab Certificate Number: 3309.02

All tests were sub-contracted.

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng Science and Technology Park, Longhua District, Shenzhen, China 518109

Telephone: +86 (0) 755 2823 0888

Fax: +86 (0) 755 2823 0886

All tests were sub-contracted at Shenzhen UnionTrust Quality and Technology Co., Ltd, and conducted by Dylan Zhang

Reviewed and approved by Wakeyou Wang from Intertek Testing Services Shanghai.

The test facility is recognized, certified, or accredited by the following organizations:**CNAS-Lab Code: L9069**

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

IC-Registration No.: 21600-1

TEST REPORT

The 3m Semi-anechoic chamber of Shenzhen UnionTrust Quality and Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 21600-1.

A2LA-Lab Certificate No.: 4312.01

Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC Accredited Lab.

Designation Number: CN1194

Test Firm Registration Number: 259480

ISED Wireless Device Testing Laboratories

CAB identifier: CN0032

TEST REPORT**2 MPE Assessment**

Test result: Pass

2.1 MPE Assessment Limit**Limits for General Population / Uncontrolled Exposure**

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-100000	/	/	1	30

Note: f = frequency in MHz: * = Plane-wave equivalents power density.

Exposure for simultaneous transmission operations: **the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is ≤ 1.0**

TEST REPORT**2.2 Assessment Results**

Power density (S) is calculated according to the formula:

$$S = PG / (4\pi R^2) = EIRP / 4\pi R^2$$

Where S = power density in mW/cm²

P = Radiated transmit power in mW

G = numeric gain of transmit antenna

R = distance (cm)

As we can see from the test report 230201553SHA-001:

The maximum EIRP = 29.34dBm = 859.01 mW;

Here R is chosen to be 20cm,

$$S1 = EIRP / 4\pi R^2 = 859.01 / (4 * 3.14 * 20 * 20) = 0.1709 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2$$

As we can see from the test report 230201553SHA-002:

The maximum EIRP = 4.58dBm = 2.87 mW;

Here R is chosen to be 20cm,

$$S2 = EIRP / 4\pi R^2 = 2.87 / (4 * 3.14 * 20 * 20) = 0.0006 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2$$

As we can see from the test report 230201553SHA-003:

The maximum EIRP = 18.02dBm = 63.39 mW;

Here R is chosen to be 20cm,

$$S2 = EIRP / 4\pi R^2 = 63.39 / (4 * 3.14 * 20 * 20) = 0.0126 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2$$

The maximum LTE EIRP = 0.244W

$$S3 = EIRP / 4\pi R^2 = 244.00 / (4 * 3.14 * 20 * 20) = 0.0486 \text{ mW/cm}^2 < 0.527 \text{ mW/cm}^2$$

TEST REPORT
Results for transmit simultaneously

No.	Configurations	Maximum MPE Value				Limits
		WLAN	LTE	BLE	Transmit simultaneously	
1	2.4G WI-FI + LTE +BLE	0.1709	0.0486	0.0005	0.2637	1

Note:
According to KDB 447498 D01 General RF Exposure Guidance v06, At the transmit simultaneously calculation method is as follows:

$$\text{Transmit simultaneously MPE} = \Sigma \text{ of MPE ratios}$$

$$\text{MPE ratios} = \text{Field strengths or power density} / \text{MPE limit at the test frequency}$$

No.	Configurations	Maximum MPE Value				Limits
		WLAN	LTE	BLE	Transmit simultaneously	
1	5G WI-FI + LTE+BLE	0.0126	0.0486	0.0006	0.1054	1

Note:
According to KDB 447498 D01 General RF Exposure Guidance v06, At the transmit simultaneously calculation method is as follows:

$$\text{Transmit simultaneously MPE} = \Sigma \text{ of MPE ratios}$$

$$\text{MPE ratios} = \text{Field strengths or power density} / \text{MPE limit at the test frequency}$$

TEST REPORT

Appendix I

Definition below must be outlined in the User Manual:

To satisfy FCC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation.

To ensure compliance, operations at closer than this distance is not recommended.

***** END *****