中认信通
CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)

ACCREDITED
TESTING LABORATORY
CERTIFICATE # 6356.01

RF EXPOSURE
EVALUATION REPORT

Applicant: **Xiamen Milesight IoT Co., Ltd.**

Address: Building C09, Software Park Phase III, Xiamen 361024, Fujian, China

FCC ID: **2AYHY-UG56**

Product Name: **LoRaWAN Gateway**

Standard(s): **47 CFR §1.1307**

The above equipment has been tested and found compliant with the requirement of the relative standards by China Certification ICT Co., Ltd (Dongguan)

Report Number: **CR220942749-00E**

Date Of Issue: **2023/4/20**

Reviewed By: **Sun Zhong**

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Title: Manager

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Test Facility

The Test site used by China Certification ICT Co., Ltd (Dongguan) to collect test data is located on the No. 113, Pingkang Road, Dalang Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 442868, the FCC Designation No. : CN1314.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0123.

Declarations

China Certification ICT Co., Ltd (Dongguan) is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol "▲". Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	CR220942749-00E	Original Report	2023/4/20

1. RF EXPOSURE EVALUATION

1.1 Applicable Standard

According to §1.1307(b)(3)(ii)(B)

Simultaneous Transmission with both SAR-based and MPE-Based Test Exemptions

This case is described in detail in § 1.1307(b)(3)(ii)(B) and covers the situations where both SAR-based and MPE-based exemption may be considered for test exemption in fixed, mobile, or portable device exposure conditions. For these cases, a device with multiple RF sources transmitting simultaneously will be considered an RF exempt device if the condition of Formula (1) is satisfied.

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

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\,cm}\sqrt{f}}\right)$$ and f is in GHz;

and

$$ERP_{20\,cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

d = the separation distance (cm);

$$\sum_{i=1}^{a}\frac{P_i}{P_{th,i}}+\sum_{j=1}^{b}\frac{ERP_j}{ERP_{th,j}}+\sum_{k=1}^{c}\frac{Evaluated_k}{Exposure\ Limit_k}\leq 1 \qquad (1)$$

Where:

a = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(B) of this section for P_{th}, including existing exempt transmitters and those being added.

b = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(C) of this section for Threshold ERP, including existing exempt transmitters and those being added.

c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.

P_i = the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source *i* at a distance between 0.5 cm and 40 cm (inclusive).

$P_{th,i}$ = the exemption threshold power (P_{th}) according to paragraph (b)(3)(i)(B) of this section for fixed, mobile, or portable RF source *i*.

ERP_j = the ERP of fixed, mobile, or portable RF source *j*.

ERP_{thj} = exemption threshold ERP for fixed, mobile, or portable RF source *j*, at a distance of at least λ/2π according to the applicable formula of paragraph (b)(3)(i)(C) of this section.

$Evaluated_k$ = the maximum reported SAR or MPE of fixed, mobile, or portable RF source *k* either in the device or at the transmitter site from an existing evaluation at the location of exposure.

$Exposure\ Limit_k$ = either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source *k*, as applicable from § 1.1310 of this chapter.

1.2 EUT WAAN Information▲:

Operation Modes	Operation Frequency (MHz)	Maximum Conducted Power including Tune-up Tolerance (dBm)	Antenna Gain (dBi)	ERP or EIRP (dBm)	Limit (dBm)
WCDMA B2	1850-1910	25	2.97	27.97	33
WCDMA B4	1710-1755	25	1.85	26.85	30
WCDMA B5	824-849	25	-4.36	18.49	38.45
LTE B2	1850-1910	25	2.97	27.97	33
LTE B4	1710-1755	25	1.85	26.85	30
LTE B5	824-849	25	-4.36	18.49	38.45
LTE B12	699-716	25	-4.36	18.49	34.77
LTE B13	777-787	25	-4.36	18.49	34.77
LTE B14	788-798	25	-4.36	18.49	34.77
LTE B66	1710-1780	25	1.85	26.85	30
LTE B71	663-698	25	-19.55	3.3	34.77
Note: The devices contain certified WWAN Module, FCC ID: XMR201909EC25AFX.					

1.2 Measurement Result

Radio	Frequency (MHz)	Distance (mm)	P_{th} (mW)	Maximum Conducted Power including Tune-up Tolerance (dBm)	Antenna Gain (dBi)	The Greater of Conducted Power or ERP	
						dBm	mW
2.4G WLAN	2412-2462	200	3060	18	0.06	18	63.1
Lora- FHSS	902.3-927.6	200	1841	27	5.06	29.91	979.49
Lora- DTS	904.6-927.5	200	1845	13	5.06	15.91	38.99
WCDMA B2	1850-1910	200	3060	25	2.97	25.82	381.94
WCDMA B4	1710-1755	200	3060	25	1.85	25	316.23
WCDMA B5	824-849	200	1681	25	-4.36	25	316.23
LTE B2	1850-1910	200	3060	25	2.97	25.82	381.94
LTE B4	1710-1755	200	3060	25	1.85	25	316.23
LTE B5	824-849	200	1681	25	-4.36	25	316.23
LTE B12	699-716	200	1426	25	-4.36	25	316.23
LTE B13	777-787	200	1585	25	-4.36	25	316.23
LTE B14	788-798	200	1608	25	-4.36	25	316.23
LTE B66	1710-1780	200	3060	25	1.85	25	316.23
LTE B71	663-698	200	1353	25	-19.55	25	316.23

Note:

The WWAN, WiFi and Lora can transmit simultaneously.

$$\sum_{i=1}^{a}\frac{P_i}{P_{\mathrm{th},i}}+\sum_{j=1}^{b}\frac{ERP_j}{ERP_{\mathrm{th},j}}+\sum_{k=1}^{c}\frac{Evaluated_k}{Exposure\ Limit_k}$$

$=P_{WAAN} / P_{th} + P_{WiFi} / P_{th} + P_{Lora} / P_{th}$

=316.23/1353+63.1/3060 + 979.49/1841

=0.786

< 1.0

Result: The device meet FCC MPE at 20 cm distance.

===== END OF REPORT =====