

RED-Health Test Report

Client Name : Acrel Co., Ltd.

Address : No.253, Yulv Road, Jiading, Shanghai, China

Product Name : Anet Smart IoT Gateway

Date : Mar. 14, 2022

Shenzhen Anbotech Compliance Laboratory Limited



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TEST REPORT

Applicant : Acrel Co., Ltd.

Manufacturer : Jiangsu Acrel Electrical Manufacturing. Co., Ltd.

Product Name : Anet Smart IoT Gateway

Model No. : ANet-2E4SM, ANet-2E4SM-D, ANet-2E4SM-LR, ANet-2E4SM-LR/D, ANet-1E1S1, ANet-1E1S1-LR, ANet-1E1S1-4G, ANet-1E1S1-4G/LR, ANet-1E2S1, ANet-1E2S1-LR, ANet-1E2S1-4G, ANet-1E2S1-4G/LR, ANet-2E4S1, ANet-2E8S1, ANet-M4G, ANet-M485

Trade Mark : Acrel

Rating(s) : Input: DC 9-36V

Test Standard(s) : EN IEC 62311: 2020

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the EN IEC 62311 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt

Feb. 17, 2022

Date of Test

Feb. 17~Mar. 10, 2022

Prepared By

Tu Tu Hong

(TuTu Hong)

Approved & Authorized Signer

Kingkong Jin

(Kingkong Jin)



1. General Information

1.1. Client Information

Applicant	:	Acrel Co., Ltd.
Address	:	No.253, Yulv Road, Jiading, Shanghai, China
Manufacturer	:	Jiangsu Acrel Electrical Manufacturing. Co., Ltd.
Address	:	No.5, Dongmeng Road, Nanzha, Jiangyin, Jiangsu, China
Factory	:	Jiangsu Acrel Electrical Manufacturing. Co., Ltd.
Address	:	No.5, Dongmeng Road, Nanzha, Jiangyin, Jiangsu, China

1.2. Description of Device (EUT)

Product Name	:	Anet Smart IoT Gateway	
Model No.	:	ANet-2E4SM, ANet-2E4SM-D, ANet-2E4SM-LR, ANet-2E4SM-LR/D, ANet-1E1S1, ANet-1E1S1-LR, ANet-1E1S1-4G, ANet-1E1S1-4G/LR, ANet-1E2S1, ANet-1E2S1-LR, ANet-1E2S1-4G, ANet-1E2S1-4G/LR, ANet-2E4S1, ANet-2E8S1, ANet-M4G, ANet-M485 (Note: All samples are the same except the appearance and size, so we prepare "ANet-2E4SM" for test only.)	
Trade Mark	:	Acrel	
Test Power Supply	:	DC 12V (Note: During the test, pre-scan all test voltages and only show the test data of the worst case DC 12V in this Report.)	
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)	
Product Description	:	Operation Frequency:	FDD- LTE: Band3:TX:1710-1785 MHz; RX: 1805-1880 MHz Band8:TX: 880-915 MHz; RX: 925-960 MHz TDD- LTE: Band38: 2570-2620 MHz Band40: 2300-2400 MHz
		Modulation Type:	QPSK, 16QAM
		Antenna Type:	External Antenna
		Antenna Gain(Peak):	LTE Band 1/3/8/38/40: 0dBi(Provided by customer)
		Adapter:	N.A.

Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

1.3. Auxiliary Equipment Used during Test

N/A	
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1.4. Description of Test Facility

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

FCC-Registration No.: 184111

Shenzhen Anbotech Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 184111.

ISED-Registration No.: 8058A

Shenzhen Anbotech Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

Test Location

Shenzhen Anbotech Compliance Laboratory Limited.
1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518128

2. General Product Information

2.1 Basic Restriction

The essential requirements of Directive 99/519/EC in the article 3.1(a) and the limits must be taken from Council Recommendation 99/519/EC for General Population or from the ICNIRP Guidelines for Occupational Exposure. EN 50371:2002 Generic standard to demonstrate the compliance of low power electronic and electrical apparatus with the basic restrictions related to human exposure to electromagnetic fields. The average power of EUT is less than 20mW then comply with basic restriction (1999/519/EC) without test.

2.2 Table for Filed Antenna

	Antenna Type	Gain (dBi)
LTE Band3/8/38/40	External Antenna	0



3. Test Result

3.1 Limit

Council Recommendation 99/519/EC Annex III

Reference levels for electric, magnetic and electromagnetic fields (0Hz to 300GHz)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density Seq (W/m ²)
0-1Hz	-	$3,2 \times 10^4$	4×10^4	-
1-8Hz	1000	$3,2 \times 10^4 / f^2$	$4 \times 10^4 / f^2$	-
8-25Hz	1000	$4000 / f$	$5000 / f$	-
0.025Hz-0,8kHz	$250 / f$	$4 / f$	$5 / f, 25$	-
0,8-3kHz	$250 / f$	5	6,25	-
3-150kHz	87	5	6,25	-
0,15-1MHz	87	$0.73 / f$	$0.92 / f$	-
1-10MHz	$87 / f^{1/2}$	$0.73 / f$	$0.92 / f$	-
10-400MHz	28	0.073	0.092	2
400-2000MHz	$1,375 f^{1/2}$	$0,0037 f^{1/2}$	$0,0046 f^{1/2}$	$f / 200$
2-300GHz	61	0,16	0,20	10

Note:

(1)As indicated in the frequency range column.

(2)For frequencies between 100kHz and 10GHz, Seq, E2, H2 and B2 are to be averaged over any six-minute period.

(3)For frequencies exceeding 10GHz, Seq, E2, H2 and B2 are to be averaged over any 68/1.05-minute period (.in GHz).

(4)No E-field value is provided for frequencies <1Hz, which are effectively static electric fields. For most people the annoying perception of surface electric charges will not occur at field strengths less than 20kV/m. Spark discharges causing stress or annoyance should be avoided.

3.2 Detailed results

3.2.1 MPE Evaluation

$$S = PG * \text{Duty factor} / 4\pi R^2$$

P = Peak Power Input to antenna (Watts)

G = Antenna Gain (numeric)

R = distance to the center of radiation of antenna (in meter) = 0.20 m

Note:

1) $P \text{ (Watts)} = (10^{(\text{dBm} / 10)}) / 1000$

2) $G \text{ (Antenna gain in numeric)} = 10^{(\text{Antenna gain in dBi} / 10)}$

3) Duty factor=1

4) $\pi = 3.142$

The maximum power density at a distance of 0.2 m for EUT is shown as below:

Test Mode	Antenna Gain(dBi)	Peak Output Power (dBm)	Peak Output Power (W)	Duty factor	Calculated RF Exposure (W/ m ²)	Limit (W/ m ²)
LTE Band3	0	23.2	0.2089	1.000	0.4156	8.55
LTE Band8	0	23.67	0.2328	1.000	0.4631	4.4
LTE Band38	0	22.41	0.1742	1.000	0.3465	10
LTE Band40	0	23.17	0.2075	1.000	0.4127	10

----- End of Report -----

