

RED-Health Test Report

Client Name : Acrel Co., Ltd.

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

Product Name : Energy Meter

Date : Apr. 19, 2022



Shenzhen Anbotek Compliance Laboratory Limited



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TEST REPORT

Applicant : Acrel Co., Ltd.
Manufacturer : Jiangsu Acrel Electrical Manufacturing. Co., Ltd.
Product Name : Energy Meter
Model No. : ADW300, ADW300-WF, ADW300-WIFI, ADW300-4GHW, ADW300-FGHW,
ADW300-Lora, ADW350, ADW400, ADW200, ADW210, ADW220, ADW500
Trade Mark : Acrel
Rating(s) : Input: AC 3x57.7/100V, 3x230/400V, AC 3x1(6)A

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.

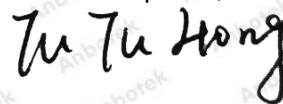
Date of Receipt

Mar. 22, 2022

Date of Test

Mar. 22~Apr. 12, 2022

Prepared By



(TuTu Hong)

Approved & Authorized Signer



(Kingkong Jin)

1. General Information

1.1. Client Information

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

1.2. Description of Device (EUT)

Product Name	:	Energy Meter
Model No.	:	ADW300, ADW300-WF, ADW300-WIFI, ADW300-4GHW, ADW300-FGHW, ADW300-Lora, ADW350, ADW400, ADW200, ADW210, ADW220, ADW500 (Note: All samples are the same except the model number, so we prepare "ADW300" for test only.)
Trade Mark	:	Acrel
Test Power Supply	:	AC 230V, 50Hz
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
Product Description	Operation Frequency:	SRD: 868.5MHz WiFi 2.4G 802.11b/g/n(HT20): 2412~2472MHz LTE-FDD: Band3: 1710-1785 MHz (TX); 1805-1880 MHz (RX) Band8: 880-915 MHz (TX); 925-960 MHz (RX) LTE-TDD: Band38: 2570-2620 MHz (TX & RX) Band40: 2300-2400 MHz (TX & RX)
	Modulation Type:	SRD: GFSK WiFi 2.4G: CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM LTE: QPSK, 16QAM
	Number of Channel:	SRD: 1 Channels WiFi 2.4G 802.11b/g/n(HT20): 13 Channels
	Antenna Type:	External Antenna
	Antenna Gain(Peak):	SRD: 2dBi (Provided by customer) WiFi 2.4G: 2dBi (Provided by customer) LTE Band 3/8/38/40: 2dBi (Provided by customer)
	Hardware version :	V1.04
	Software version :	V1.10
	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

1.4. Description of Test Facility

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

FCC-Registration No.: 184111

Shenzhen Anbotek 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 Anbotek 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 Anbotek 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)
WiFi 2.4G	External Antenna	2
SRD	External Antenna	2
LTE Band3/8/38/40	External Antenna	2

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	-	3,2×10 ⁴	4×10 ⁴	-
1-8Hz	1000	3,2×10 ⁴ /f ²	4×10 ⁴ /f ²	-
8-25Hz	1000	4000/f	5000/f	-
0.025Hz-0,8kHz	250/f	4/f	5/f ^{6,25}	-
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}	0,0046f ^{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) $P \text{ (Watts)} = (10^{(dBm / 10)}) / 1000$

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

3) Duty factor=1, (1/8 for GSM900/DCS1800)

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)
WiFi 2.4G	2	15.74	0.0375	1.000	0.0746	10
SRD	2	13.850	0.0243	1.000	0.0483	10
LTE Band3	2	25.33	0.3412	1.000	0.6787	8.55
LTE Band8	2	24.97	0.3141	1.000	0.6247	4.4
LTE Band38	2	24.61	0.2891	1.000	0.5750	10
LTE Band40	2	24.09	0.2564	1.000	0.5101	10

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