

FCC Test Report

Report No. : 1812C50368812502

Applicant : Jinan USR IOT Technology Limited

Address : Floor F1 & Part of Floor F2, Building No. 9,
Diya shuang chuang Industrial Zone, No.2566
Century Main Road, Gaoxin District, Jinan,
Shandong, China

Product Name : Industrial Edge Gateway

Report Date : 2025-08-27

Shenzhen Anbotek Compliance Laboratory Limited



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TEST REPORT

Applicant : Jinan USR IOT Technology Limited

Manufacturer : Jinan USR IOT Technology Limited

Product Name : Industrial Edge Gateway

Model No. : USR-M300, USR-M050, USR-M100, USR-M100s, USR-M200, USR-M600,
USR-M800, USR-IO8000, USR-IO0440, USR-IO4040, USR-IO0800,
USR-IO0080, USR-IO4400, USR-EC100, USR-EC300, USR-EC500,
USR-M300-GL

Trade Mark : 

Rating(s) : Input: 9-36V=2A

Test Standard(s) : 47 CFR Part 2, 47 CFR Part 22(H), 47 CFR Part 24(E), 47 CFR Part 27(C)

Test Method(s) : ANSI C63.26-2015
KDB 971168 D01 Power Meas License Digital Systems v03r01

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 47 CFR Part 22, 47 CFR Part 24, 47 CFR Part 27 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 2025-07-28

Date of Test : 2025-07-28 to 2025-08-12

Prepared by : 
(Cecilia Chen)

Approved & Authorized Signer : 
(Hugo Chen)

Revision History

Report Version	Description	Issued Date
R00	Original Issue.	2025-08-27

Note 1:

The product contains a certified module: EG25-GL. The RF conducted measurement data will retain the original test results. only Radiated Spurious Emission were retested.

1. General Information

1.1. Client Information

Applicant	:	Jinan USR IOT Technology Limited
Address	:	Floor F1 & Part of Floor F2, Building No. 9, Diya shuang chuang Industrial Zone, No.2566 Century Main Road, Gaoxin District, Jinan, Shandong, China
Manufacturer	:	Jinan USR IOT Technology Limited
Address	:	Floor F1 & Part of Floor F2, Building No. 9, Diya shuang chuang Industrial Zone, No.2566 Century Main Road, Gaoxin District, Jinan, Shandong, China
Factory	:	Jinan USR IOT Technology Limited
Address	:	Floor F1 & Part of Floor F2, Building No. 9, Diya shuang chuang Industrial Zone, No.2566 Century Main Road, Gaoxin District, Jinan, Shandong, China

1.2. Description of Device (EUT)

Product Name	:	Industrial Edge Gateway
Model No.	:	USR-M300, USR-M050, USR-M100, USR-M100s, USR-M200, USR-M600, USR-M800, USR-IO8000, USR-IO0440, USR-IO4040, USR-IO0800, USR-IO0080, USR-IO4400, USR-EC100, USR-EC300, USR-EC500, USR-M300-GL (Note: All samples are the same except the model number, so we prepare "USR-M300" for test only.)
Trade Mark	:	
Test Power Supply	:	AC 120V/60Hz for adapter
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
Adapter	:	Manufacturer: SHENZHEN TRANSIN TECHNOLOGIES CO., LD Model: TS-A024-120200AB Input: 100-240V~50/60Hz 0.6A Output: 12V=2A
RF Specification		
Support Band	:	☒ FDD Band II ☒ FDD Band V ☒ FDD Band IV
Transmit Frequency	:	FDD Band II: 1852.40MHz~1907.60MHz FDD Band V: 826.40MHz~846.60MHz FDD Band IV: 1712.40MHz~1752.60MHz
Receive Frequency	:	FDD Band II: 1932.40MHz~1987.60MHz FDD Band V: 871.40MHz~891.60MHz FDD Band IV: 2112.40MHz~2152.60MHz

Modulation Type	:	QPSK
Power Class	:	Class 3
Antenna Type	:	External Antenna
Antenna Gain(Peak)	:	FDD Band II: 1.38dBi FDD Band V: 2.00dBi FDD Band IV: 2.13dBi
Remark: 1) All of the RF specification are provided by customer. 2) 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

Title	Manufacturer	Model No.	Serial No.
/	/	/	/

1.4. Operation State

Test frequency list:

FDD Band II		FDD Band V		FDD Band IV	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
9262	1852.40	4132	826.40	1312	1712.40
9400	1880.00	4183	836.60	1413	1732.60
9538	1907.60	4233	846.60	1513	1752.60

Test mode:

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas. License Digital Systems v03 and ANSI C63.26-2015 with maximum output power.

Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission.

Radiated emissions were investigated as following frequency range:

30 MHz to 10th harmonic for FDD Band II, Band V, Band IV

All modes and data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

Test modes		
Band	Radiated	Conducted
FDD Band II	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
FDD Band V	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band IV	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link

1.5. Environmental Conditions

Temperature range:	21-25°C
Humidity range:	40-75%
Pressure range:	86-106kPa

1.6. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Preamplifier	SKET Electronic	LNPA-0118G-45	SKET-PA-002	2025-01-13	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	2025-01-14	1 Year
3.	Double Ridged Horn Antenna	SCHWARZBECK	BBHA 9120D	02555	2022-10-16	3 Year
4.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	345	2022-10-23	3 Year
5.	Pre-amplifier	SONOMA	310N	186860	2025-01-14	1 Year
6.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
7.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	2024-09-09	1 Year
8.	MXG RF Vector Signal Generator	Agilent	N5182A	MY47420822	2025-02-21	1 Year
9.	DC Power Supply	LW	TPR-6420D	374470	2024-10-17	1 Year
10.	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80B	N/A	2024-10-14	1 Year
11.	Wideband Radio Communication Tester	Rohde & Schwarz	CMW 500	167336	2025-02-21	1 Year
12.	High-Pass Filter	CDKMV	ZHPF-BM110 0-4000-0730	B2015094550	2024-10-17	1 Year
13.	High-Pass Filter	CDKMV	ZHPF-M3.5-1 8G-3834	1307006523	2024-10-17	1 Year
14.	Bilog Broadband Antenna	SCHWARZBECK	VULB 9163	01109	2022-10-16	3 Year
15.	Double Ridged Horn Antenna	Chengyi Electronics Co., Ltd.	GTH-0118	351600	2024-11-01	2 Year

1.7. Measurement Uncertainty

Parameter	Uncertainty
Radiated spurious emissions (30MHz~1GHz)	Horizontal: 3.70dB; Vertical: 4.42dB
Radiated spurious emissions (above 1GHz)	1G-6GHz: 4.64dB 6G-18GHz: 4.82dB 18G-40GHz: 5.62dB
The measurement uncertainty and decision risk evaluated according to AB/WI-RF-F-032. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

1.8. Description of Test Facility

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

FCC-Registration No.: 279531

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. 279531.

Test Location

Shenzhen Anbotek Compliance Laboratory Limited.

Sogood Industrial Zone Laboratory & 1/F. of Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China.

1.9. Disclaimer

1. The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
2. The test report is invalid if there is any evidence and/or falsification.
3. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
4. This document may not be altered or revised in any way unless done so by Anbotek and all revisions are duly noted in the revisions section.
5. Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
6. The authenticity of the information provided by the customer is the responsibility of the customer and the laboratory is not responsible for its authenticity.
7. The data in this report will be synchronized with the corresponding national market supervision and management departments and cross-border e-commerce platforms as required by regulatory agencies.

The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

2. Summary of Test

2.1. Summary of test result

FCC Rules	Description of Test	Result
Part 2.1053 Part 22.917 Part 24.238 Part 27.53(h)	Radiated Spurious Emission	Compliance

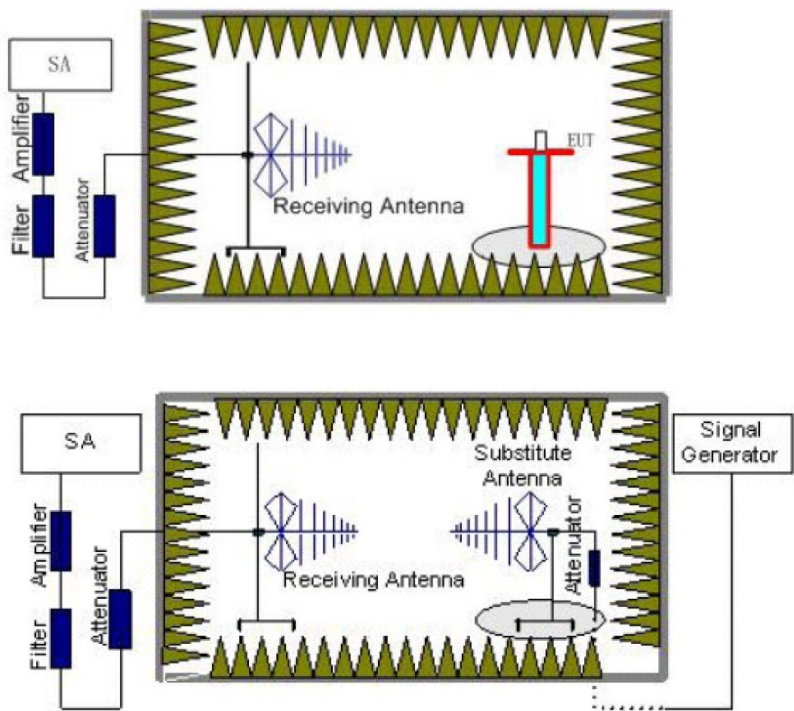
Note: Testing was performed by configuring EUT to maximum output power status, the declared output power class for different

3. Radiated Spurious Emission

3.1. Test Standard and Limit

Applicable Standard:	Part 2.1053 Part 22.917 Part 24.238 Part 27.53(h)
Limit:	-13dBm

3.2. Test Setup



3.3. Test Procedure

- Place the EUT in the center of the turntable.
 - For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, the EUT shall be placed on a RF-transparent table at a nominal height of 80 cm above the reference ground plane
 - For radiated measurements performed at frequencies above 1 GHz, the EUT shall be placed on an RF transparent table at a nominal height of 1.5 m above the ground plane.
- Unless the EUT uses an integral antenna, the EUT shall be terminated with a non-radiating transmitter load. In cases where the EUT uses an adjustable antenna, the antenna shall be adjusted through typical positions and lengths to maximize emissions levels.
- The EUT shall be tested while operating on the frequency per manufacturer specification. Set the transmitter to operate in continuous transmit mode.
- Receiver or Spectrum set as follow:
Below 1GHz, RBW=100kHz, VBW=300kHz, Detector=Peak, Sweep time=Auto

Above 1GHz, RBW=1MHz, VBW=3MHz, Detector=Peck, Sweep time=Auto

5. Each emission under consideration shall be evaluated:
 - a) Raise and lower the measurement antenna from 1 m to 4 m, as necessary to enable detection of the maximum emission amplitude relative to measurement antenna height.
 - b) Rotate the EUT through 360° to determine the maximum emission level relative to the axial position.
 - c) Return the turntable to the azimuth where the highest emission amplitude level was observed.
 - d) Vary the measurement antenna height again through 1 m to 4 m again to find the height associated with the maximum emission amplitude.
 - e) Record the measured emission amplitude level and frequency
6. Repeat step 5 for each emission frequency with the measurement antenna oriented in both the horizontal and vertical polarizations to determine the orientation that gives the maximum emissions amplitude.
7. Set-up the substitution measurement with the reference point of the substitution antenna located as near as possible to where the center of the EUT radiating element was located during the initial EUT measurement.
8. Maintain the previous measurement instrument settings and test set-up, with the exception that the EUT is removed and replaced by the substitution antenna.
9. Connect a signal generator to the substitution antenna; locate the signal generator so as to minimize any potential influences on the measurement results. Set the signal generator to the frequency where emissions are detected, and set an output power level such that the radiated signal can be detected by the measurement instrument, with sufficient dynamic range relative to the noise floor.
10. For each emission that was detected and measured in the initial test
 - a) Vary the measurement antenna height between 1 m to 4 m to maximize the received (measured) signal amplitude.
 - b) Adjust the signal generator output power level until the amplitude detected by the measurement instrument equals the amplitude level of the emission previously measured directly in step 5 and step 6.
 - c) Record the output power level of the signal generator when equivalence is achieved in step b).
11. Repeat step 8 through step 10 with the measurement antenna oriented in the opposite polarization.
12. Calculate the emission power in dBm referenced to a half-wave dipole using the following equation:
$$P_e = P_s(\text{dBm}) - \text{cable loss (dB)} + \text{antenna gain (dBd)}$$

where
 P_e = equivalent emission power in dBm
 P_s = source (signal generator) power in dBm
NOTE—dBd refers to the measured antenna gain in decibels relative to a half-wave dipole.
13. Correct the antenna gain of the substitution antenna if necessary to reference the emission power to a half-wave dipole. When using measurement antennas with the gain specified in dBi, the equivalent dipole-referenced gain can be determined from:
$$\text{gain (dBd)} = \text{gain (dBi)} - 2.15 \text{ dB}.$$

If necessary, the antenna gain can be calculated from calibrated antenna factor information
14. Provide the complete measurement results as a part of the test report.

3.4. Test Data

Pass

Note: Worst case at WCDMA Band II/ WCDMA Band V/ WCDMA Band IV

WCDMA Band II							
Channel	Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
		Polarization	Reading (dBm)	Factor (dB)	Level (dBm)		
9262	3704.80	Vertical	-49.07	13.26	-35.81	<-13.00	PASS
	5557.20	V	-56.14	16.62	-39.52		
	7409.60	V	-58.37	17.84	-40.53		
	3704.80	Horizontal	-50.32	13.26	-37.06	<-13.00	PASS
	5557.20	H	-57.31	16.62	-40.69		
	7409.60	H	-59.37	17.84	-41.53		
9400	3760.00	Vertical	-48.14	13.27	-34.87	<-13.00	PASS
	5640.00	V	-55.13	16.49	-38.64		
	7520.00	V	-57.66	17.96	-39.70		
	3760.00	Horizontal	-49.19	13.27	-35.92	<-13.00	PASS
	5640.00	H	-56.25	16.49	-39.76		
	7520.00	H	-58.61	17.96	-40.65		
9538	3815.20	Vertical	-46.86	13.59	-33.27	<-13.00	PASS
	5722.80	V	-53.87	16.69	-37.18		
	7630.40	V	-56.27	17.95	-38.32		
	3815.20	Horizontal	-48.95	13.59	-35.36	<-13.00	PASS
	5722.80	H	-55.92	16.69	-39.23		
	7630.40	H	-58.15	17.95	-40.20		

Remark:

1. The emission behaviour belongs to narrowband spurious emission.
2. The emission levels of not record in the report are very lower than the limit and not show in test report.

WCDMA Band V							
Channel	Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
		Polarization	Reading (dBm)	Factor (dB)	Level (dBm)		
4132	1652.80	Vertical	-39.01	5.62	-33.39	<-13.00	PASS
	2479.20	V	-47.29	9.32	-37.97		
	3305.60	V	-53.24	12.69	-40.55		
	1652.80	Horizontal	-40.28	5.62	-34.66	<-13.00	PASS
	2479.20	H	-48.49	9.32	-39.17		
	3305.60	H	-54.37	12.69	-41.68		
4183	1673.20	Vertical	-40.02	7.69	-32.33	<-13.00	PASS
	2509.80	V	-46.44	9.46	-36.98		
	3346.40	V	-51.88	12.26	-39.62		
	1673.20	Horizontal	-41.47	7.69	-33.78	<-13.00	PASS
	2509.80	H	-47.80	9.46	-38.34		
	3346.40	H	-53.16	12.26	-40.90		
4233	1693.20	Vertical	-39.34	8.26	-31.08	<-13.00	PASS
	2539.80	V	-45.46	9.65	-35.81		
	3386.40	V	-50.93	12.41	-38.52		
	1693.20	Horizontal	-41.00	8.26	-32.74	<-13.00	PASS
	2539.80	H	-47.02	9.65	-37.37		
	3386.40	H	-52.40	12.41	-39.99		

Remark:

1. The emission behaviour belongs to narrowband spurious emission.
2. The emission levels of not record in the report are very lower than the limit and not show in test report.

WCDMA Band IV							
Channel	Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
		Polarization	Reading (dBm)	Factor (dB)	Level (dBm)		
1312	1652.80	Vertical	-41.69	8.69	-33.00	<-13.00	PASS
	2479.20	V	-46.81	9.23	-37.58		
	3305.60	V	-52.75	12.59	-40.16		
	1652.80	Horizontal	-43.23	8.69	-34.54	<-13.00	PASS
	2479.20	H	-48.25	9.23	-39.02		
	3305.60	H	-54.11	12.59	-41.52		
1413	1673.20	Vertical	-40.50	8.78	-31.72	<-13.00	PASS
	2509.80	V	-46.03	9.65	-36.38		
	3346.40	V	-51.64	12.61	-39.03		
	1673.20	Horizontal	-42.26	8.78	-33.48	<-13.00	PASS
	2509.80	H	-47.67	9.65	-38.02		
	3346.40	H	-53.19	12.61	-40.58		
1513	1693.20	Vertical	-38.91	8.69	-30.22	<-13.00	PASS
	2539.80	V	-44.49	9.52	-34.97		
	3386.40	V	-50.39	12.69	-37.70		
	1693.20	Horizontal	-40.92	8.69	-32.23	<-13.00	PASS
	2539.80	H	-46.37	9.52	-36.85		
	3386.40	H	-52.17	12.69	-39.48		

Remark:

1. The emission behaviour belongs to narrowband spurious emission.
2. The emission levels of not record in the report are very lower than the limit and not show in test report.

APPENDIX I -- TEST SETUP PHOTOGRAPH

Please refer to separated files Appendix I -- Test Setup Photograph_Licensed

APPENDIX II -- EXTERNAL PHOTOGRAPH

Please refer to separated files Appendix II -- External Photograph

APPENDIX III -- INTERNAL PHOTOGRAPH

Please refer to separated files Appendix III -- Internal Photograph

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