

TEST REPORT

Applicant Name: Qingdao Highway IOT Technology Co.,Ltd.
Address: No.31,Xinye Road,qingdao,China
Report Number: 2501X06587E-EM-00
FCC ID: 2BT5S-RFIDE8P

Test Standard (s)

FCC Part 15, Subpart B (Class B)

Sample Description

Product Type: UHF RFID Reader
Model No.: HW-RX-E8P
Multiple Model(s) No.: HW-R800, HW-R8, HW-UHF8-860ISM, HW-Rfly-RX-E8P,
HW-RX-E8P-US, HW-RX-E8P-CN, HW-RX-E8P-EU,
HW-RX-E8P-RUS
Trade Mark: 
Date Received: 2025/12/09
Issue Date: 2026/02/06

Test Result:	Pass▲
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▲ In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

Amy Ye

Amy Ye
EMC Engineer

Approved By:

Moon Liu

Moon Liu
EMC Supervisor

Note: The information marked # is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included.

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	2501X06587E-EM-00	Original Report	2026/02/06

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	UHF RFID Reader
Tested Model	HW-RX-E8P
Multiple Model(s)	HW-R800, HW-R8, HW-UHF8-860ISM, HW-Rfly-RX-E8P, HW-RX-E8P-US, HW-RX-E8P-CN, HW-RX-E8P-EU, HW-RX-E8P-RUS
Voltage Range	DC 24V from Power
Highest operating frequency [#]	927.25MHz (Provided by the applicant)
Equipment Class	Class B
Sample number	3AF1-1 (Assigned by BACL, Shenzhen)
Sample/EUT Status	Good condition
Adapter Information	Model: NDR-240-24 Input: 100-240VAC 2.8A 50/60Hz Output: 24VDC, 10A
Note: The Multiple models are electrically identical with the test model except for model number and sales channel. Please refer to the declaration letter [#] for more detail, which was provided by manufacturer.	

Objective

This test report is in accordance with Part 2-Subpart J, Part 15B Subparts A and B of the Federal Communication Commissions rules.

The objective of the manufacturer is to determine the compliance of the EUT with FCC Part 15B.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters. Each test item follows test standards and with no deviation.

Measurement Uncertainty

Item	Frequency Range		Expanded Measurement uncertainty
Conducted Emissions	AC Mains	150 kHz ~30MHz	3.66dB(k=2, 95% level of confidence)
Radiated Disturbance	30MHz~200MHz	Horizontal	5.32dB(k=2, 95% level of confidence)
	30MHz~200MHz	Vertical	5.43dB(k=2, 95% level of confidence)
	200MHz~1000MHz	/	5.77dB(k=2, 95% level of confidence)
	200MHz~1000MHz	/	5.73dB(k=2, 95% level of confidence)
	1GHz~6GHz	/	5.34dB(k=2, 95% level of confidence)

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) , 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, 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, test firm registration No.: 715558, the FCC Designation No.: CN5045.

Each test item follows test standards and with no deviation.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in worst case condition.

Test Mode: Reading and Writing

Note:

Triggered Working Mode

1. External trigger signals are transmitted to the RFID device via GPIO lines. Upon receiving the trigger signal, the RFID device initiates inventory counting, with the counting time being configurable.
2. After counting the tag data in the radio frequency field area, the data is transmitted to the host computer via RS232 or network port.
3. The GPIO line outputs a high or low level.

Non-Triggered Working Mode

1. The RFID device receives commands sent via RS232 or network port. Different commands correspond to different inventory counting modes.
2. Execute the corresponding inventory counting mode, and transmit the counted tag data to the host computer via RS232 or network port.
3. The GPIO line outputs a high or low level.

EUT exercise software

No exercise software was used.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

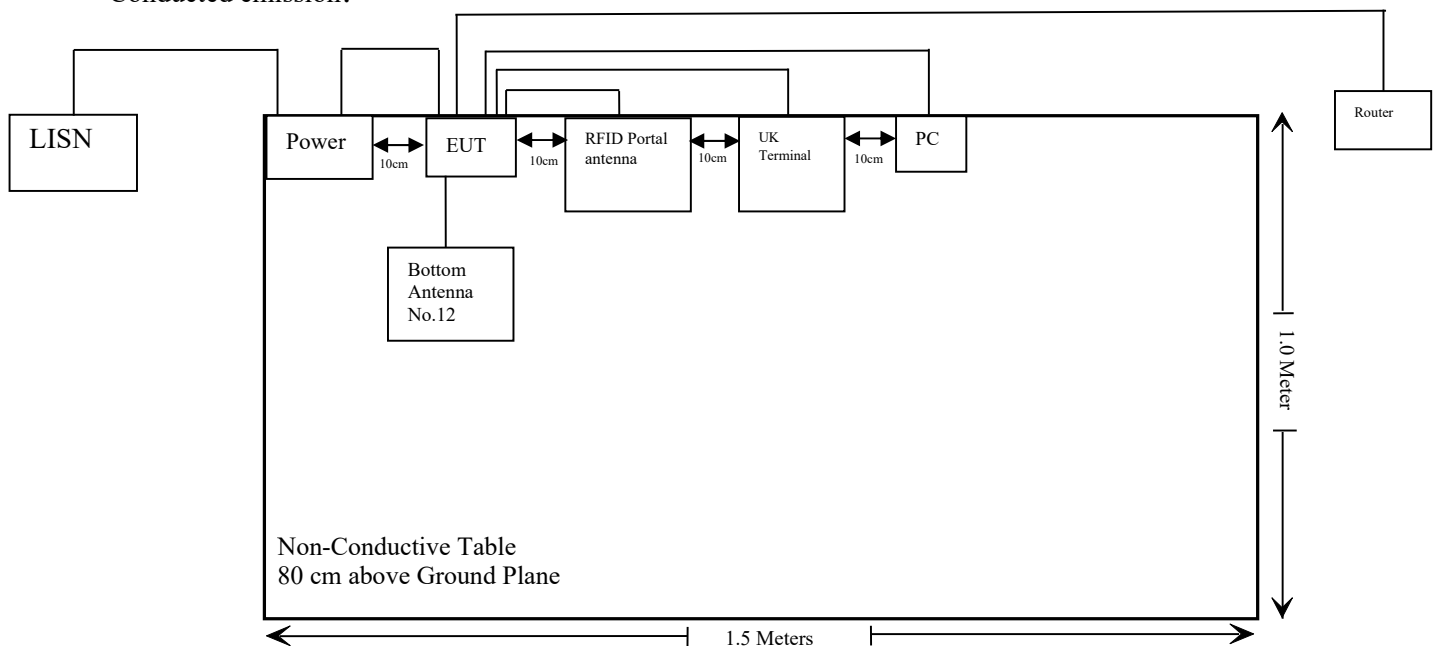
Manufacturer	Description	Model	Serial Number
/	Bottom Antenna No.12	HW-AP8040	/
GR	RFID Portal antenna	HW-AB10010	/
UGREEN	Cable	USB 2.0 to DB9 Adapter Cable	/
DELL	PC	Latitude E5430	JG3NLV1
HIKVISION	Router	DS-3WR03	10021642429

External I/O Cable

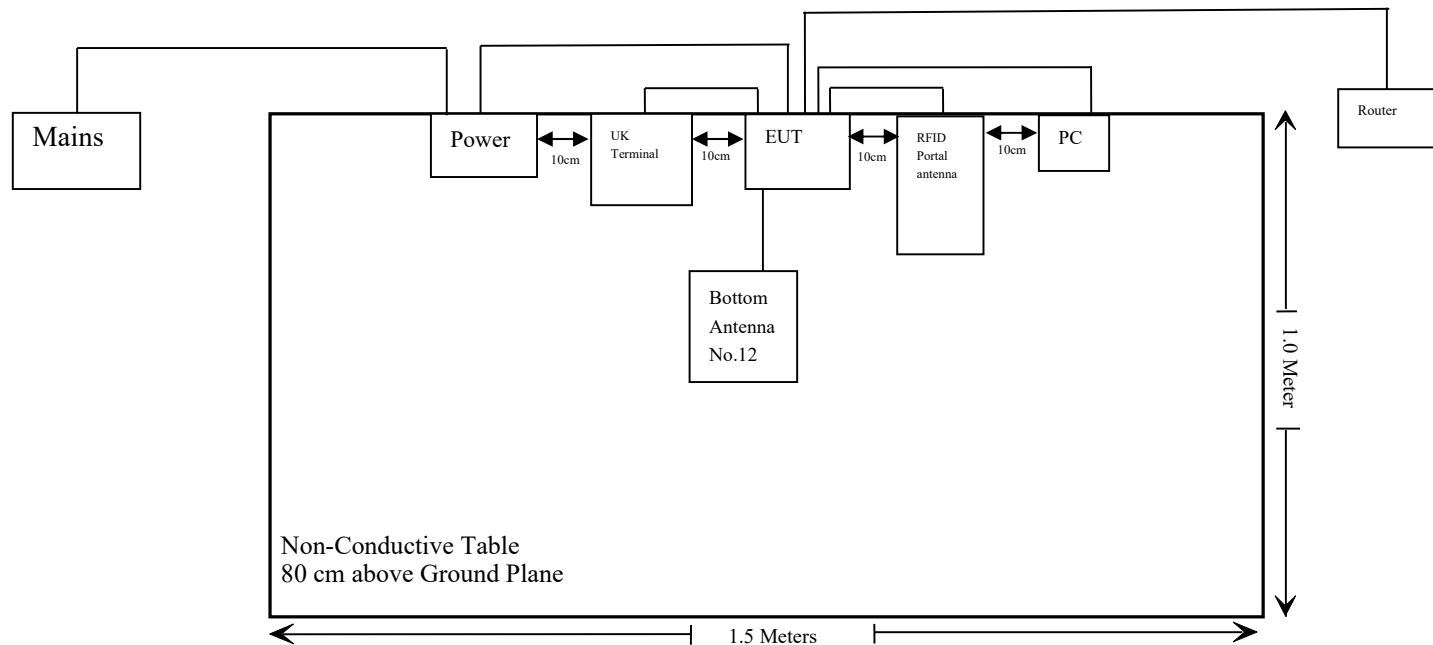
Cable Description	Length (m)	From/Port	To
Un-shielding Detachable AC Cable	1.0	LISN	power
Un-shielding Detachable AC Cable	1.0	Mains	power
Un-shielding Detachable DC Cable	1.5	power	EUT
Un-shielding Detachable RF Cable	0.6	EUT	RFID Portal antenna
Un-shielding Detachable RF Cable	0.6	EUT	Bottom Antenna No.12
Un-shielding Detachable USB 2.0 to DB9 Adapter Cable	1.1	EUT	PC
Un-shielding Detachable singnal Cable	0.8	EUT	UK Terminal
Un-shielding Detachable RJ45 Cable	3.0	EUT	Router

Block Diagram of Test Setup

Conducted emission:



Radiated emission:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	AC Line Conducted Emissions	Compliant
§15.109	Radiated Emissions	Compliant

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2025/09/01	2026/08/31
Rohde & Schwarz	LISN	ENV216	101613	2025/09/18	2026/09/17
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2025/09/18	2026/09/17
Unknown	CE Cable	Unknown	UF A210B-1-0720-504504	2025/09/18	2026/09/17
Audix	EMI Test software	E3	191218(V9)	NCR	NCR
Radiated Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESR3	102455	2025/09/01	2026/08/31
Sonoma instrument	Pre-amplifier	310 N	186238	2025/09/08	2026/09/07
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2023/07/20	2026/07/19
Unknown	Chamber A Cable	Cable A1	Cable A1	2025/09/08	2026/09/07
Unknown	Chamber A Cable	Cable A2	Cable A2	2025/09/08	2026/09/07
Unknown	Chamber A Cable	Cable A4	Cable A4	2025/09/08	2026/09/07
Audix	EMI Test software	E3	19821b(V9)	NCR	NCR
Rohde & Schwarz	Spectrum Analyzer	FSV40	101605	2025/09/01	2026/08/31
A.H.System	Preamplifier	PAM-0118P	489	2025/09/08	2026/09/07
Schwarzbeck	Horn Antenna	BBHA9120D (1201)	1143	2023/07/26	2026/07/25
Unknown	Chamber B Cable	Cable B1	Cable B1	2025/09/08	2026/09/07
Unknown	Chamber B Cable	Cable B2	Cable B2	2025/09/08	2026/09/07
Audix	EMI Test software	E3	191218(V9)	NCR	NCR

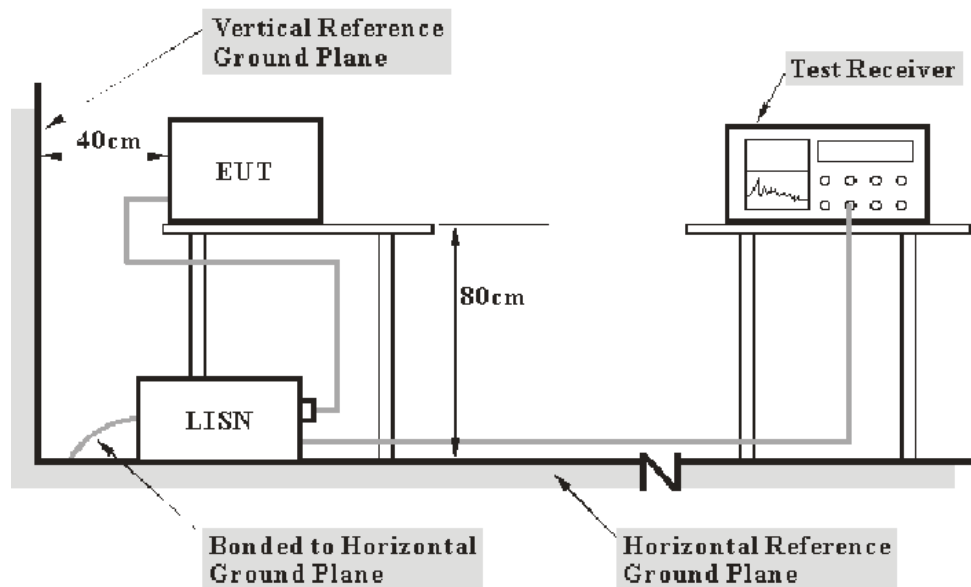
* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §15.107 - AC LINE CONDUCTED EMISSIONS

Applicable Standard

According to FCC§15.107

EUT Setup



- Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The measurement procedure of EUT setup is according with ANSI C63.4-2014. The related limit was specified in FCC Part 15.107.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW
150 kHz – 30 MHz	9 kHz

Test Procedure

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

Level & Over Limit Calculation

The Level is calculated by adding the LISN Factor, Cable Loss and the Read Level. The basic equation is as follows:

$$\text{Level (dBuV)} = \text{Read Level (dBuV)} + \text{LISN Factor} + \text{Cable Loss}$$

The “**Over limit**” column of the following data tables indicates the degree of compliance with the applicable limit.

$$\text{Over Limit (dB)} = \text{Level (dBuV)} - \text{Limit Line (dBuV)}$$

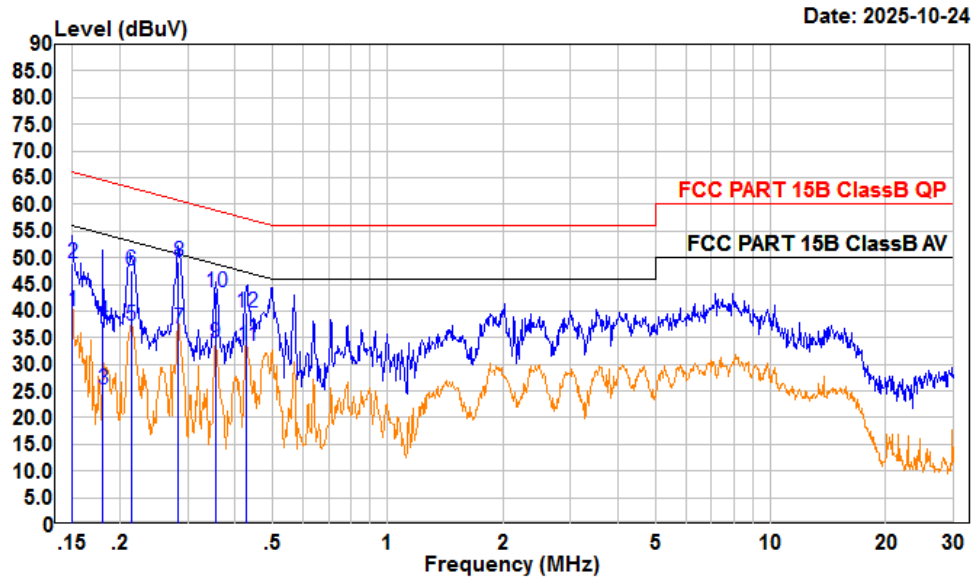
Note: The term "cable loss" refers to the combination of a cable and a 10dB transient limiter (attenuator).

Test Data

Environmental Conditions

Temperature:	25.1 °C
Relative Humidity:	45 %
ATM Pressure:	101.1 kPa

The testing was performed by Macy Shi on 2025-10-24.

*Test Mode: Reading and Writing***AC 120V/60 Hz, Line**

Condition: Line

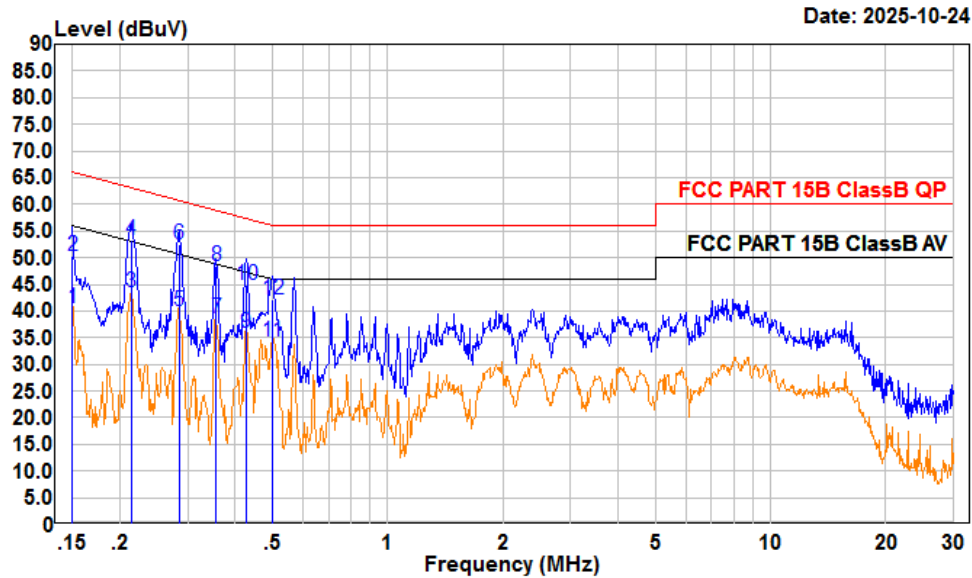
Project : 2501X06587E-EM

test Mode: Reading and Writing

tester : Macy.shi Setting:RBW:9kHz

	Freq	Read Level	LISN Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.150	20.23	39.85	9.60	10.02	56.00	-16.15	Average
2	0.150	29.37	48.99	9.60	10.02	66.00	-17.01	QP
3	0.180	5.65	25.28	9.60	10.03	54.47	-29.19	Average
4	0.180	18.50	38.13	9.60	10.03	64.47	-26.34	QP
5	0.213	17.63	37.26	9.60	10.03	53.07	-15.81	Average
6	0.213	28.08	47.71	9.60	10.03	63.07	-15.36	QP
7	0.284	17.04	36.67	9.60	10.03	50.70	-14.03	Average
8	0.284	29.59	49.22	9.60	10.03	60.70	-11.48	QP
9	0.355	14.33	33.96	9.60	10.03	48.84	-14.88	Average
10	0.355	23.80	43.43	9.60	10.03	58.84	-15.41	QP
11	0.428	13.81	33.44	9.60	10.03	47.29	-13.85	Average
12	0.428	19.96	39.59	9.60	10.03	57.29	-17.70	QP

AC 120V/60 Hz, Neutral



Condition: neutral

Project : 2501X06587E-EM

test Mode: Reading and Writing

tester : Macy.shi Setting:RBW:9kHz

	Freq	Read Level	LISN Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.150	20.83	40.45	9.60	10.02	55.99	-15.54	Average
2	0.150	30.71	50.33	9.60	10.02	65.99	-15.66	QP
3	0.214	23.99	43.62	9.60	10.03	53.06	-9.44	Average
4	0.214	33.78	53.41	9.60	10.03	63.06	-9.65	QP
5	0.286	20.32	39.95	9.60	10.03	50.65	-10.70	Average
6	0.286	32.79	52.42	9.60	10.03	60.65	-8.23	QP
7	0.356	18.99	38.62	9.60	10.03	48.82	-10.20	Average
8	0.356	28.87	48.50	9.60	10.03	58.82	-10.32	QP
9	0.426	16.38	36.01	9.60	10.03	47.32	-11.31	Average
10	0.426	25.34	44.97	9.60	10.03	57.32	-12.35	QP
11	0.499	14.59	34.22	9.60	10.03	46.02	-11.80	Average
12	0.499	22.47	42.10	9.60	10.03	56.02	-13.92	QP

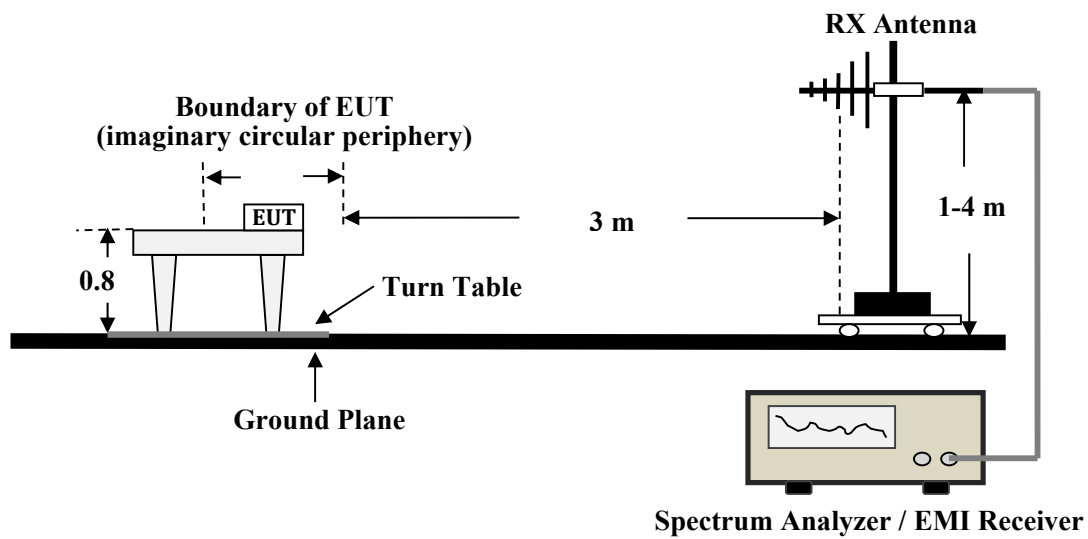
FCC §15.109 - RADIATED EMISSIONS

Applicable Standard

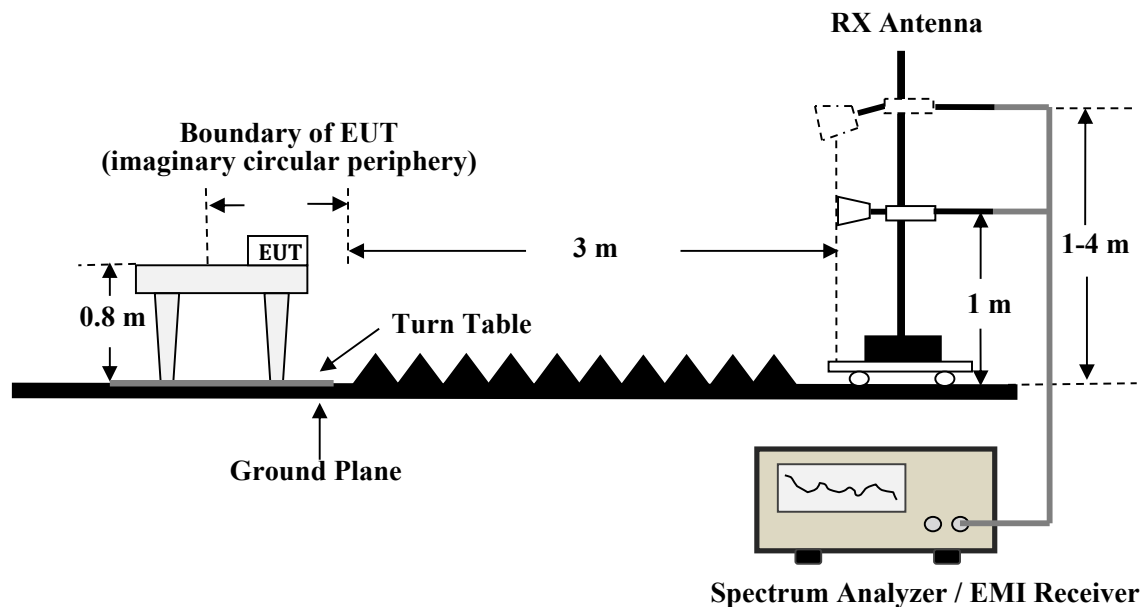
FCC §15.109

EUT Setup

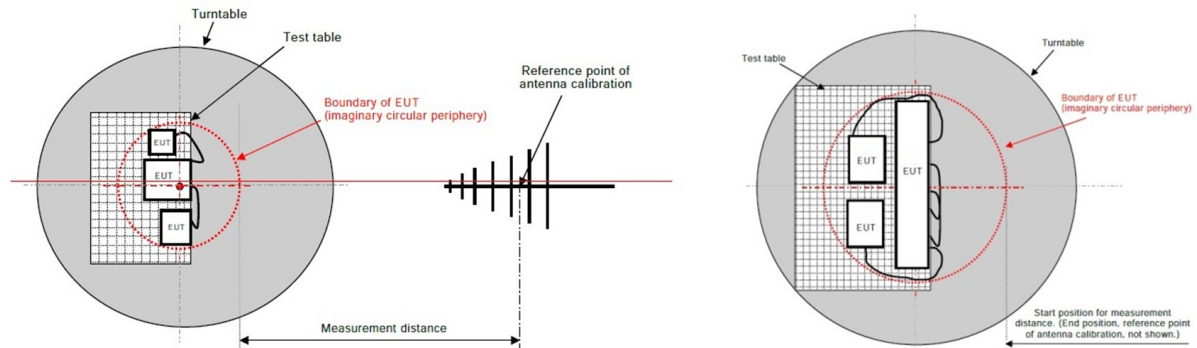
Below 1GHz for Radiated Emissions



Above 1GHz for Radiated Emissions



Radiated Emissions Setup Configuration



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2014. The related limit was specified in FCC Part 15B.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver and Spectrum analyzer Setup

During the radiated emission test, the EMI test receiver and spectrum analyzer setup was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	120 kHz	500 kHz	/	PK
	/	/	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	PK

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

If the emission level of the EUT in Peak mode was 6dB lower than the limit specified, Peak values of EUT will be reported. Otherwise, the emission will be repeated by using the Quasi-Peak method and reported for frequency range below 1GHz.

If emission level of the EUT in Peak measurement mode is 20dB lower than peak limit line (that means the emission level in Peak measurement mode complies with both Peak and average limit lines) then only Peak measurement result is reported .Otherwise, Emission in average measurement mode shall be measured, and reported for frequency range above 1GHz.

Level & Over Limit Calculation

The Level is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Read Level. The basic equation is as follows:

$$\text{Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

$$\text{Level} = \text{Read Level} + \text{Factor}$$

The “Over limit” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over limit of -6 dB means the emission is 6dB below the limit for Class B. The equation for Over Limit calculation is as follows:

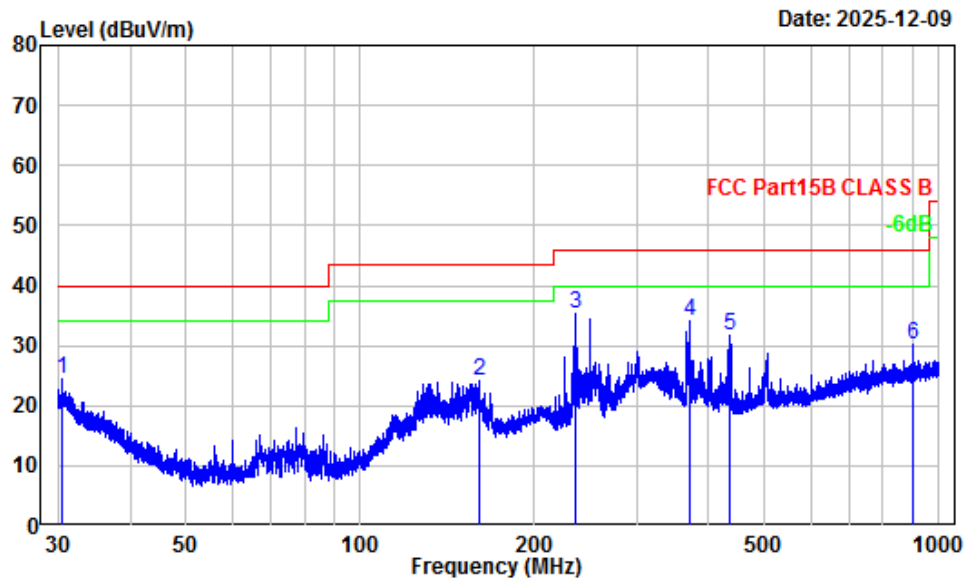
$$\text{Over limit} = \text{Level} - \text{Limit}$$

Test Data

Environmental Conditions

Temperature:	24.1 °C
Relative Humidity:	47~52 %
ATM Pressure:	101.3~101.6 kPa

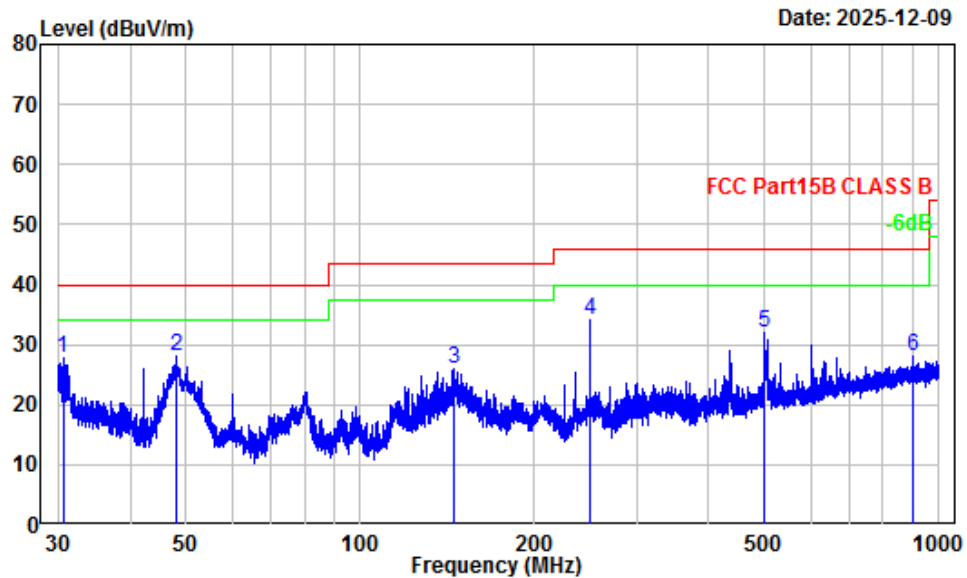
The testing was performed by Nico Wu on 2025-12-09 for below 1GHz and Wing K Ji on 2025-10-24 for above 1GHz.

*Test Mode: Reading and Writing***30 MHz~1 GHz****Horizontal**

Site : Chamber A
Condition : 3m Horizontal
Project Number : 2501X06587E-EM
Test Mode : Reading and Writing
Detector: Peak RBW/VBW: 120/500kHz
Tester : Nico Wu

	Freq Factor		Read Level		Limit	Over	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	30.57	-6.26	30.65	24.39	40.00	-15.61	Peak
2	160.70	-12.72	36.95	24.23	43.50	-19.27	Peak
3	234.68	-13.56	48.85	35.29	46.00	-10.71	Peak
4	370.70	-9.49	43.47	33.98	46.00	-12.02	Peak
5	435.21	-7.74	39.46	31.72	46.00	-14.28	Peak
6	900.15	-1.31	31.59	30.28	46.00	-15.72	Peak

Vertical

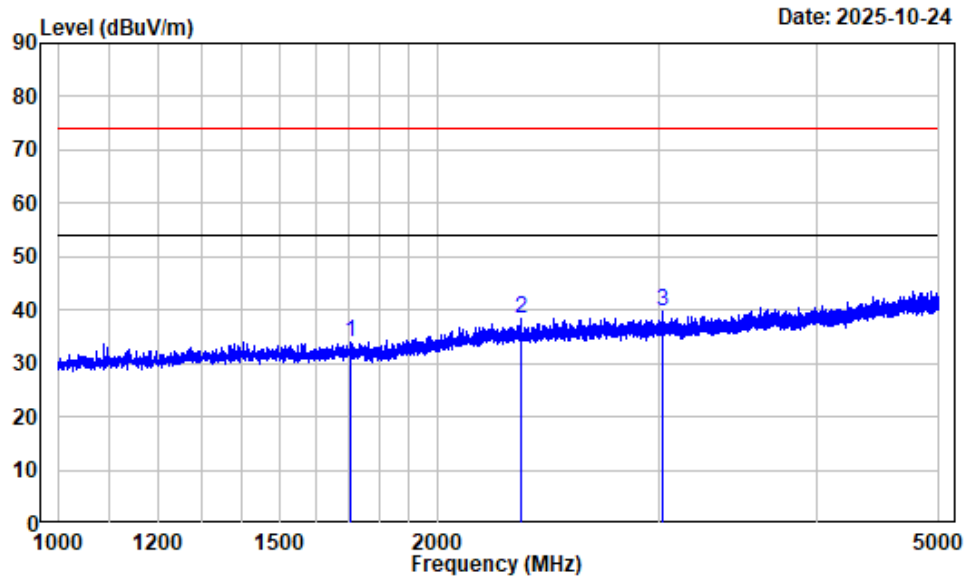


Site : Chamber A
Condition : 3m Vertical
Project Number : 2501X06587E-EM
Test Mode : Reading and Writing
Detector: Peak RBW/VBW: 120/500kHz
Tester : Nico Wu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	30.61	-6.28	33.95	27.67	40.00	-12.33	Peak
2	47.99	-17.34	45.52	28.18	40.00	-11.82	Peak
3	145.22	-12.19	38.10	25.91	43.50	-17.59	Peak
4	249.97	-13.09	47.11	34.02	46.00	-11.98	Peak
5	500.30	-5.76	37.81	32.05	46.00	-13.95	Peak
6	900.15	-1.31	29.41	28.10	46.00	-17.90	Peak

1 ~ 5 GHz

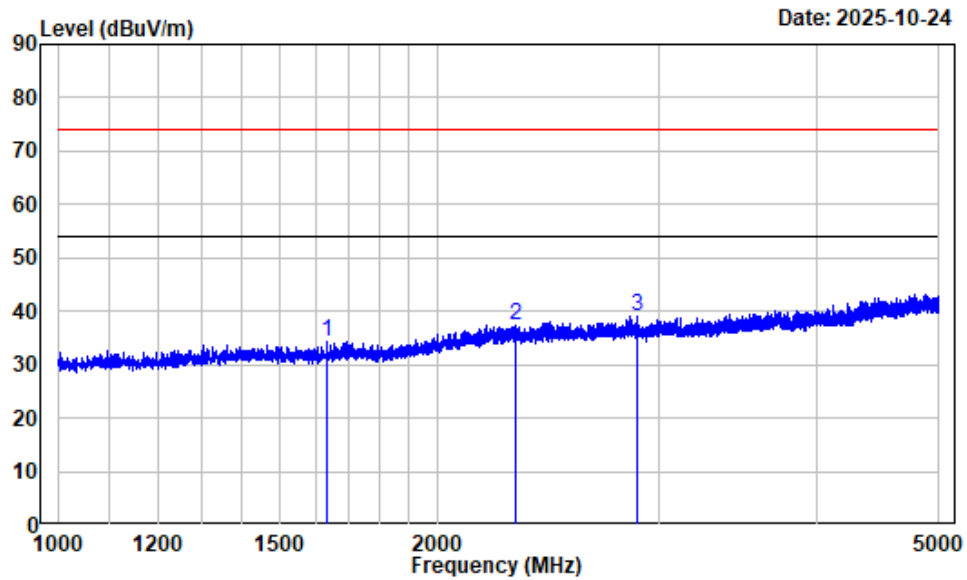
Horizontal



Site : chamber B
Condition : Horizontal
Project Number : 2501X06587E-EM
Test mode : Reading and Writing
Tester : Wing K Ji
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak

	Freq Factor		Read Level		Limit	Over	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1708.500	-13.59	47.72	34.13	74.00	-39.87	Peak
2	2329.500	-10.39	48.67	38.28	74.00	-35.72	Peak
3	3014.000	-9.39	49.00	39.61	74.00	-34.39	Peak

Vertical



Site : chamber B
Condition : Vertical
Project Number : 2501X06587E-EM
Test mode : Reading and Writing
Tester : Wing K Ji
Spectrum setting: Peak reading: RBW:1MHz VBW:3MHz Detector:Peak

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1634.000	-13.86	48.21	34.35	74.00	-39.65	Peak
2	2308.000	-10.34	47.66	37.32	74.00	-36.68	Peak
3	2883.500	-9.85	48.99	39.14	74.00	-34.86	Peak

EUT PHOTOGRAPHS

Please refer to the attachment 2501X06587E-RF-EXP External photo and 2501X06587E-RF-INP Internal photo.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2501X06587E-EM-TSP Test Setup photo.

******* END OF REPORT *******