



FCC ID & IC C2PC - TEST REPORT

Report Number	: 709992205006-01	Date of Issue: <u>November 27, 2022</u>
Model	: APF V3.4-B	
Product Type	: Automatic Press Fixture	
Applicant	: Suzhou Secote Precision Electronic Co.,Ltd.	
Address	: No. 585, Songjia Road, Guoxiang Street, Wuzhong District, 215128 Suzhou, Jiangsu Province, PEOPLE'S REPUBLIC OF CHINA	
Production Facility	: Suzhou Secote Precision Electronic Co.,Ltd.	
Address	: No. 585, Songjia Road, Guoxiang Street, Wuzhong District, 215128 Suzhou, Jiangsu Province, PEOPLE'S REPUBLIC OF CHINA	
Test Result	: <input checked="" type="radio"/> Positive <input type="radio"/> Negative	
Total pages including Appendices	: <u>23</u>	

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2 Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
No.16 Lane, 1951 Du Hui Road,
Shanghai 201108,
P.R. China

Telephone: +86 21 6141 0123

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FCC Registration
No.: 820234

FCC Designation
Number: CN1183

ISED#: 25988

CAB identifier CN0101

3 Description of the Equipment Under Test

Description of the Equipment Under Test

Product: Automatic Press Fixture

Model no.: APF V3.4-B

FCC ID: 2A72V-APF

IC: 28856-APF

Rating: Input: 100-240V, 50/60Hz, 120W

Modulation type: ASK

Hardware version: V3.4

Software version: V2.5

RF Transmission Frequency: 13.56MHz

Antenna Type: PCB loop antenna

Description of the EUT: The EUT was an Automatic Press Fixture which will be used in the factory. This device has RFID function, transmitter operated at 13.56MHz.

Test sample no.: SHA-691130-1

4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators
RSS-Gen Issue 5 Amendment 1 March 2019	General Requirements for Compliance of Radio Apparatus
RSS-210 Issue 10 December 2019	Licence-Exempt Radio Apparatus: Category I

All the test methods were according to ANSI C63.10-2013.

5 Summary of Test Results

Technical Requirements				
FCC Part 15 Subpart C, RSS-Gen and RSS-210				
Test Condition		Pages	Test Site	Test Result
§15.207 RSS-Gen Section 7.2.4	Conducted emission AC power port	11-13	Test Site 1	Pass
§15.205, §15.209, 15.225 (a, b, c, d) RSS-210 Section A2.6	Radiated Emission, 9KHz to 1000MHz	14-19	Test Site 1	Pass

6 General Remarks

NOTICE: This report is a Class II Permissive Change test report. This report is a SUPPLEMENT OF PROJECT 709992205006-00. So the report is not valid without the report of 709992205006-00.

This submittal(s) (test report) is intended for FCC ID: 2A72V-APF IC: 28856-APF complies with Section 15.205, 15.207, 15.209, 15.225 of the FCC Part 15, Subpart C Rules and RSS-210, RSS-GEN.

According to client's request, new model APF V3.4-B was added to the FCC ID and IC certification.

According to client's declaration, the new model APF V3.4-B and original model APF V3.4 have same RFID transmitter module. For the detail differents are as below:

The transmitter module itself has not changed.

Here are the changes:

1. Upgraded the control board and added some filter parts, such as inductance and capacitance, with no change in function.
2. The filter socket is replaced. Compared with the old model, the filter capacitance inside the filter socket is changed to inhibit the conduction interference.
3. The switching power supply with EMC Class B is replaced. The output power is changed from 150W to 120W, and the actual rated power of the fixture is 60W.
4. Install magnetic rings on some key cables (such as power cables and motor control cables) to suppress radiation interference.
5. The servo driver is equipped with a metal housing to suppress radiation interference.

So according to Class II Permissive Change required, we choose the new model APF V3.4-B to perform the Conducted emission and Radiated Emission tests, other test results please refer to original test report: 709992205006-00.

SUMMARY:

All tests according to the regulations cited on page 5 were

- Performed

- **Not** Performed

The Equipment Under Test

- **Fulfills** the general approval requirements.

- **Does not** fulfill the general approval requirements.

Sample Received Date: November 19, 2022

Testing Start Date: November 21, 2022

Testing End Date: November 21, 2022

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

Reviewed by:

Prepared by:

Tested by:



Hui TONG
EMC Section Manager



Zhining ZHANG
EMC Project Manager



Yiquan WANG
EMC Test Engineer

7 Systems test configuration

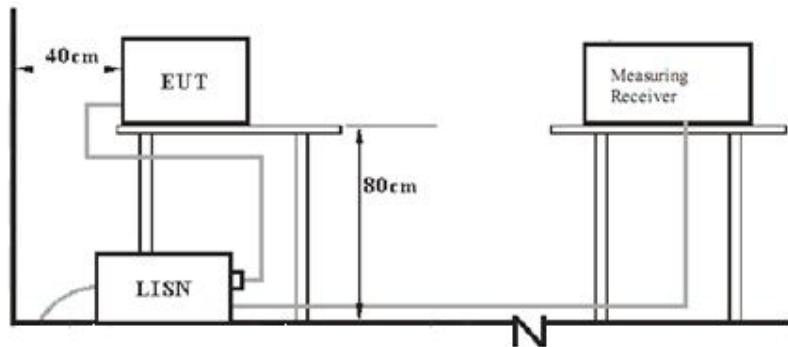
Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
Notebook	Lenovo	E470	PF-OU5TS7 17/09

Test software: SSCOM V5.13.1 set the RFID continue transmit.

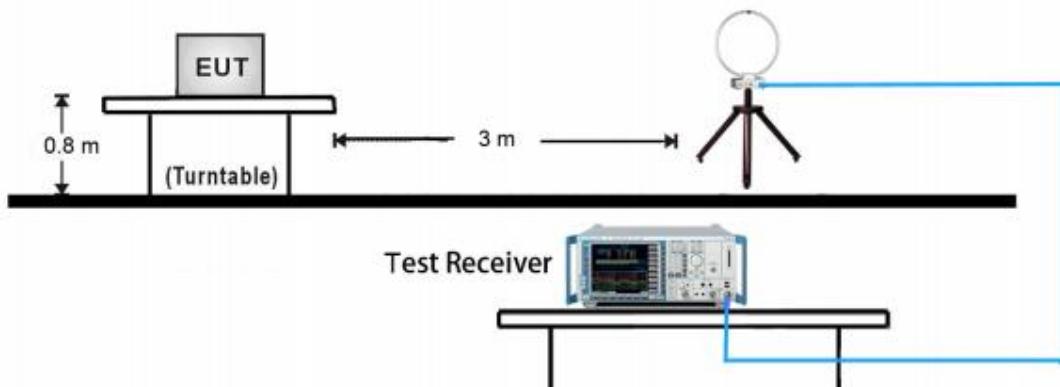
8 Test Setups

8.1 AC Power Line Conducted Emission test setups

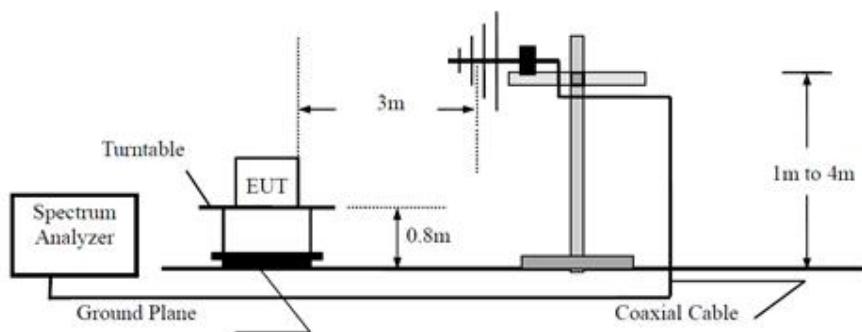


8.2 Radiated test setups

9kHz ~ 30MHz Test Setup:



30MHz ~ 1GHz Test- Setup



9 Test Methodology

10 Conducted Emission

Test Method

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. A EMI test receiver is used to test the emissions from both sides of AC line

Limit

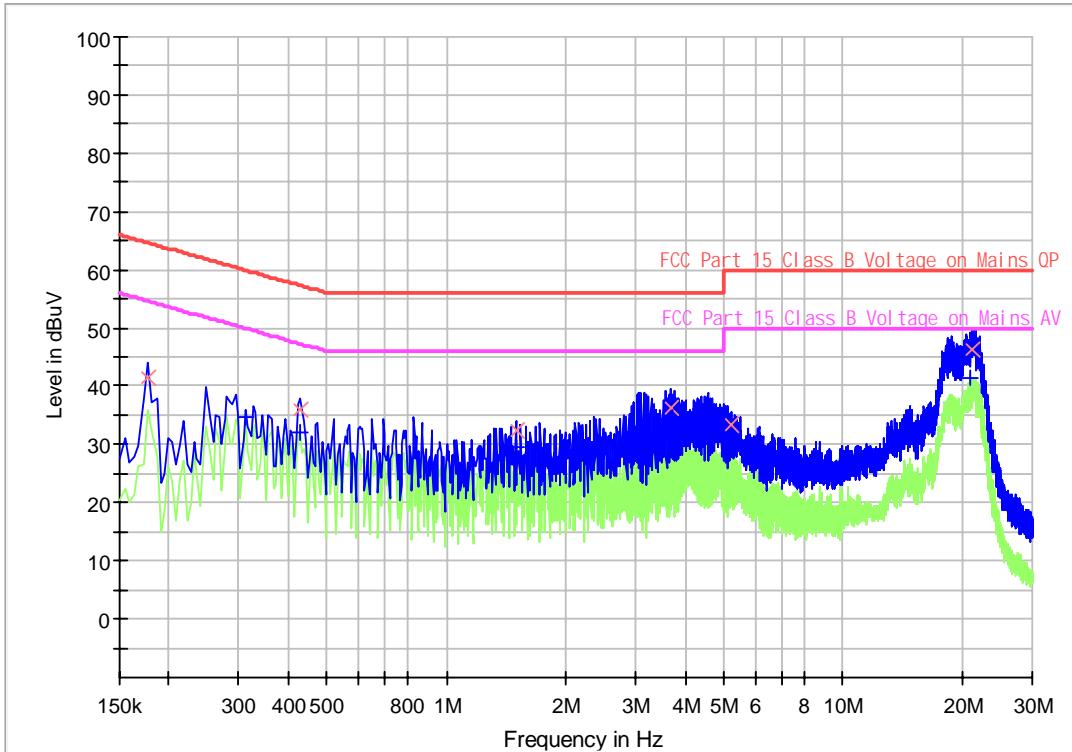
The FCC Class 'B' conducted limits are given below. The lower limit shall apply at the transition frequency.

Frequency MHz	QP Limit dB μ V	AV Limit dB μ V
0.150-0.500	66 to 56	56 to 46
0.500-5	56	46
5-30	60	50

Decreasing linearly with logarithm of the frequency

Conducted Emission

Product Type : Automatic Press Fixture
 M/N : APF V3.4-B
 Operating Condition : Mode 1: Transmit at 13.56MHz
 Test Specification : L-line
 Comment : AC 120V/60Hz

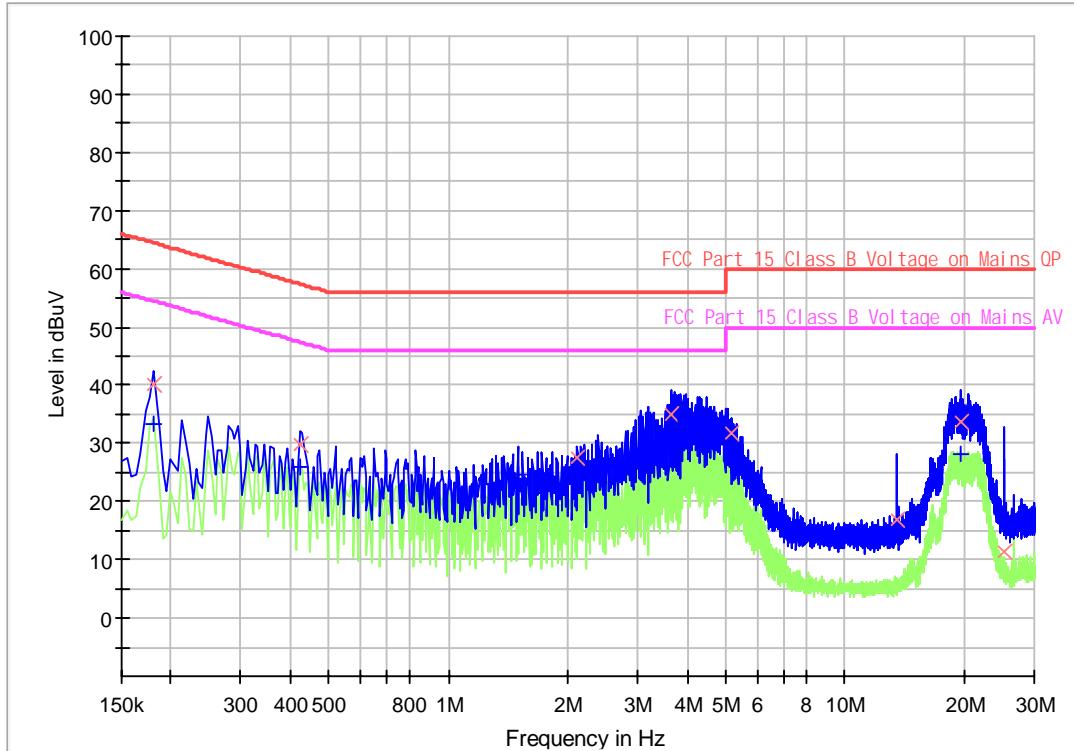


Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.177000	41.57	---	64.63	23.06	1000.0	9.000	L1	19.6
0.312000	---	34.79	49.92	15.13	1000.0	9.000	L1	19.6
0.429000	---	32.16	47.27	15.11	1000.0	9.000	L1	19.6
0.429000	35.83	---	57.27	21.44	1000.0	9.000	L1	19.6
1.495500	---	29.63	46.00	16.37	1000.0	9.000	L1	19.6
1.495500	32.53	---	56.00	23.47	1000.0	9.000	L1	19.6
3.687000	36.36	---	56.00	19.64	1000.0	9.000	L1	19.6
3.732000	---	34.51	46.00	11.49	1000.0	9.000	L1	19.6
5.230500	33.21	---	60.00	26.79	1000.0	9.000	L1	19.6
5.230500	---	30.09	50.00	19.91	1000.0	9.000	L1	19.6
20.917500	---	41.41	50.00	8.59	1000.0	9.000	L1	20.0
21.165000	46.38	---	60.00	13.62	1000.0	9.000	L1	20.0

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)
 Factor (dB) = Cable Loss (dB) + LISN Factor (dB) + 10dB Attenuator

Product Type : Automatic Press Fixture
 M/N : APF V3.4-B
 Operating Condition : Mode 1: Transmit at 13.56MHz
 Test Specification : N-line
 Comment : AC 120V/60Hz



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.181500	---	33.22	54.42	21.20	1000.0	9.000	N	19.6
0.181500	40.27	---	64.42	24.15	1000.0	9.000	N	19.6
0.424500	---	25.99	47.36	21.37	1000.0	9.000	N	19.6
0.424500	29.76	---	57.36	27.60	1000.0	9.000	N	19.6
1.495500	---	24.66	46.00	21.34	1000.0	9.000	N	19.6
2.121000	27.68	---	56.00	28.32	1000.0	9.000	N	19.6
3.642000	35.06	---	56.00	20.94	1000.0	9.000	N	19.7
3.822000	---	32.88	46.00	13.12	1000.0	9.000	N	19.7
5.140500	---	28.18	50.00	21.82	1000.0	9.000	N	19.7
5.185500	31.73	---	60.00	28.27	1000.0	9.000	N	19.7
13.560000	16.81	---	60.00	43.19	1000.0	9.000	N	19.9
19.621500	---	28.04	50.00	21.96	1000.0	9.000	N	19.9
19.621500	33.67	---	60.00	26.33	1000.0	9.000	N	19.9
25.093500	11.32	---	60.00	48.68	1000.0	9.000	N	20.2

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)
 Factor (dB) = Cable Loss (dB) + LISN Factor (dB) + 10dB Attenuator

11 Radiated Emission

Test Method

1. 1 The EUT was place on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3 meters chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
4. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
5. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
6. Use the following spectrum analyzer settings According to C63.10:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 kHz for $f < 1$ GHz; VBW RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.
 For average measurement:

VBW = 10 Hz, when duty cycle is no less than 98 percent.
 VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
7. Repeat above procedures until all frequencies measured were complete.

Limit

According to §15.225 (a, b, c), the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Limits for 15.209 Radiated emission limits; general requirements

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Frequency	Limit at 3m (dBuV/m)
0.009 MHz – 0.490 MHz	128.5 to 93.8 ¹
0.490 MHz – 1.705 MHz	73.8 to 63 ¹
1.705 MHz – 30 MHz	69.5 ¹
30 MHz – 88 MHz	40.0 ¹
88 MHz – 216 MHz	43.5 ¹
216 MHz – 960 MHz	46.0 ¹
Above 960 MHz	54.0 ¹
Above 1000 MHz	54.0 ²
Above 1000 MHz	74.0 ³

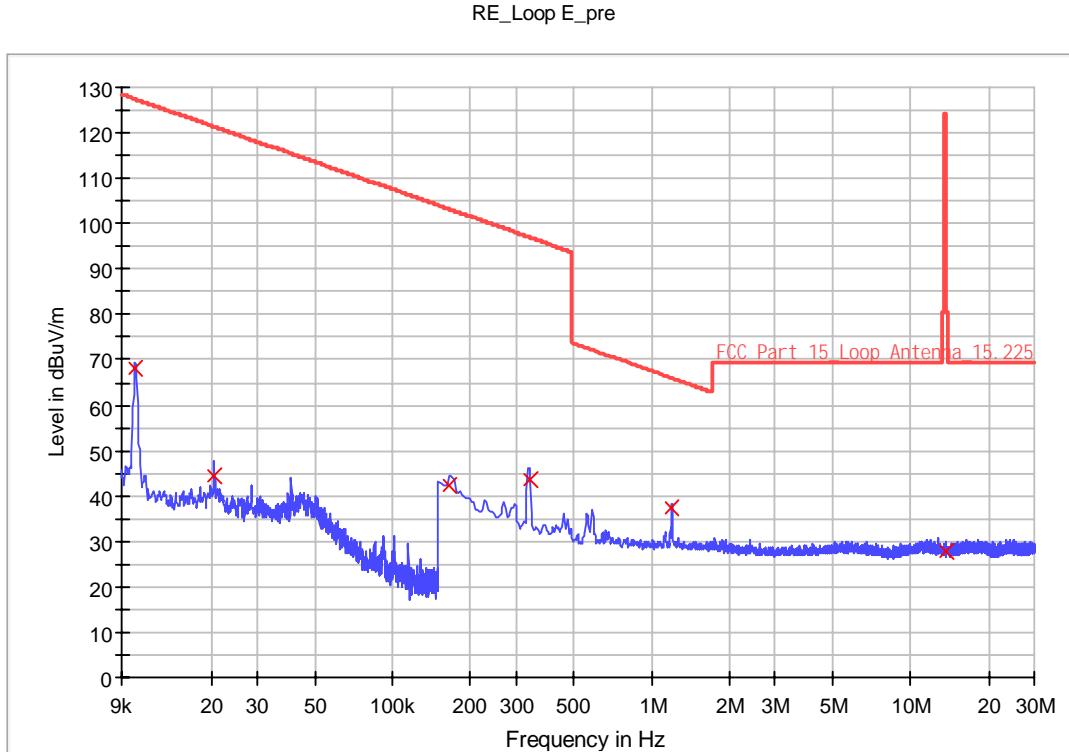
¹Limit is with detector with bandwidths as defined in CISPR-16-1-1 except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz where an Average detector is used.

²Limit is with 1 MHz measurement bandwidth and using an Average detector

³Limit is with 1 MHz measurement bandwidth and using a Peak detector

Spurious radiated emissions for transmitter

Site: 3 meter chamber	Time: 2022/11/10 - 16:33
Limit: FCC_Part15.209_RE(3m)	Engineer: Wang Yiquan
Probe: HFH2-Z2	Polarity: Horizontal
EUT: Automatic Press Fixture	Power: AC 120V,60Hz
Note: APF V3.4-B, Transmit at 13.56MHz.	



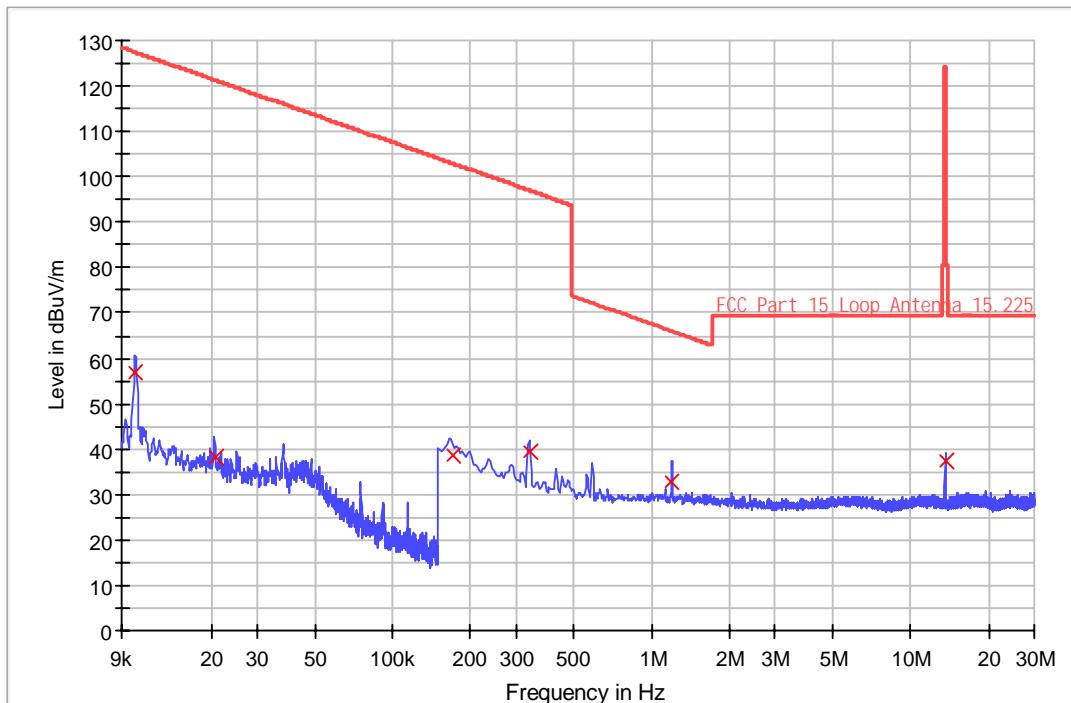
Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
0.010200	67.9	1000.0	0.200	100.0	H	8.0	19.6	59.492	127.432
0.020440	44.4	1000.0	0.200	100.0	H	38.0	19.0	76.974	121.394
0.166000	42.2	1000.0	9.000	100.0	H	65.0	18.8	60.982	103.202
0.338000	43.5	1000.0	9.000	100.0	H	96.0	18.8	53.546	97.026
1.198000	37.3	1000.0	9.000	100.0	H	150.0	18.9	28.695	66.035
13.562000	27.9	1000.0	9.000	100.0	H	193.0	18.9	96.080	124.000

Note 1: Corrector factor = Antenna Factor + Cable Loss
 Emission Level = Reading level + Correction Factor
 (The Reading Level is recorded by software which is not shown in the sheet)

Site: 3 meter chamber	Time: 2022/11/10 - 16:27
Limit: FCC_Part15.209_RE(3m)	Engineer: Wang Yiquan
Probe: HFH2-Z2	Polarity: Vertical
EUT: Automatic Press Fixture	Power: AC 120V,60Hz
Note: APF V3.4-B, Transmit at 13.56MHz.	

RE_Loop E_pre



Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
0.010200	57.0	1000.0	0.200	100.0	H	123.0	19.6	70.482	127.432
0.020600	38.0	1000.0	0.200	100.0	H	170.0	19.0	83.317	121.327
0.170000	38.7	1000.0	9.000	100.0	H	272.0	18.8	64.335	102.995
0.338000	39.6	1000.0	9.000	100.0	H	215.0	18.8	57.456	97.026
1.198000	32.9	1000.0	9.000	100.0	H	324.0	18.9	33.105	66.035
13.562000	37.5	1000.0	9.000	100.0	H	61.0	18.9	86.490	124.000

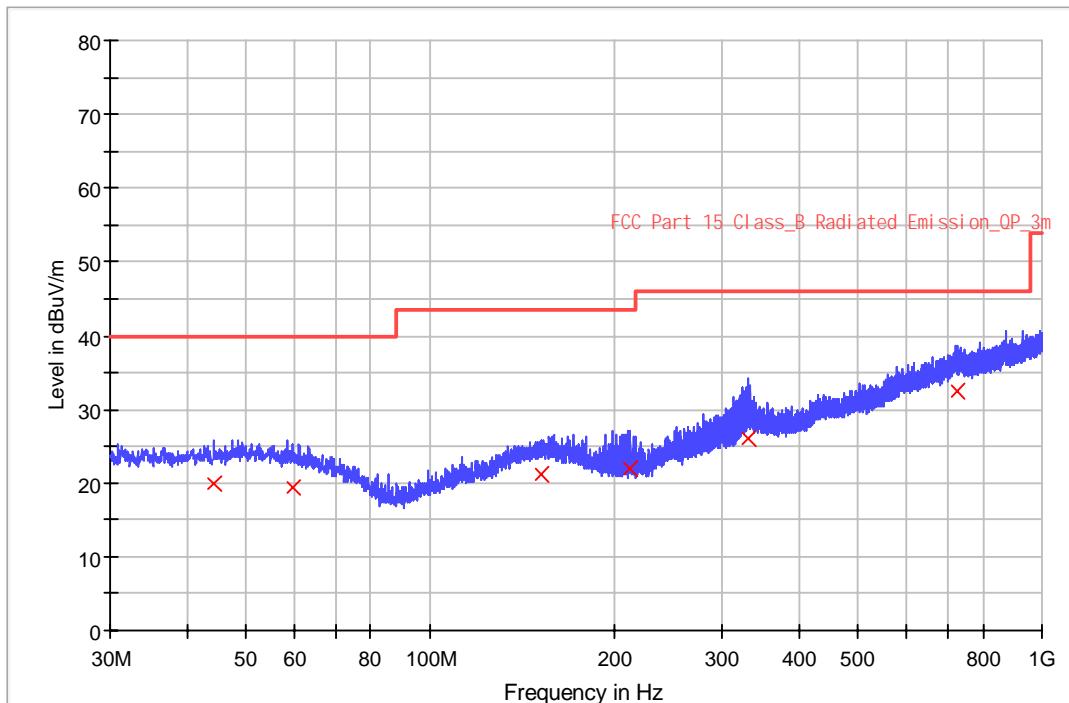
Note 1: Corrector factor = Antenna Factor + Cable Loss

Emission Level =Reading level +Correction Factor

(The Reading Level is recorded by software which is not shown in the sheet)

Site: 3 meter chamber	Time: 2022/11/10 - 17:19
Limit: FCC_Part15.209_RE(3m)	Engineer: Wang Yiquan
Probe: VULB 9168	Polarity: Horizontal
EUT: Automatic Press Fixture	Power: AC 120V,60Hz
Note: APF V3.4-B, Transmit at 13.56MHz.	

RE_VULB9168_pre_Cont_30-1000



Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dB)
44.320000	20.0	1000.0	120.000	100.0	H	303.0	20.3	20.0	40.0
59.680000	19.4	1000.0	120.000	100.0	H	268.0	20.2	20.6	40.0
151.920000	21.3	1000.0	120.000	100.0	H	213.0	20.9	22.2	43.5
211.440000	22.0	1000.0	120.000	100.0	H	117.0	17.6	21.5	43.5
330.320000	26.1	1000.0	120.000	100.0	H	333.0	22.6	20.0	46.0
726.840000	32.5	1000.0	120.000	100.0	H	160.0	31.3	13.5	46.0

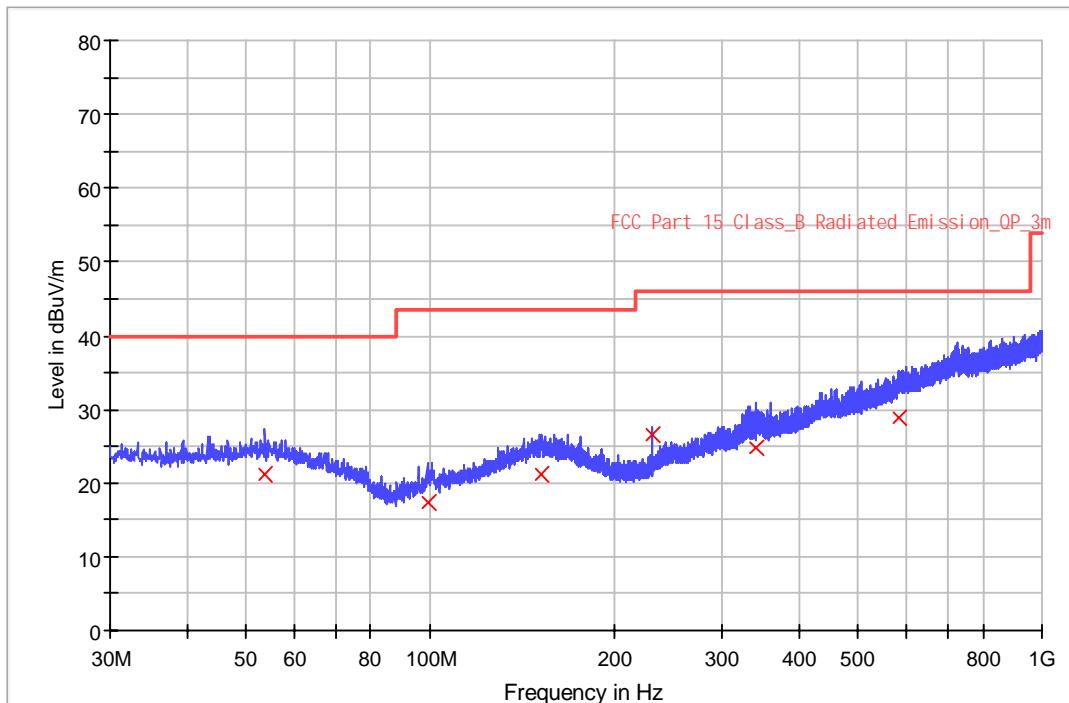
Note 1: Corrector factor = Antenna Factor + Cable Loss

Emission Level = Reading level + Correction Factor

(The Reading Level is recorded by software which is not shown in the sheet)

Site: 3 meter chamber	Time: 2022/11/10 - 17:23
Limit: FCC_Part15.209_RE(3m)	Engineer: Wang Yiquan
Probe: VULB 9168	Polarity: Vertical
EUT: Automatic Press Fixture	Power: AC 120V,60Hz
Note: APF V3.4-B, Transmit at 13.56MHz.	

RE_VULB9168_pre_Cont_30-1000



Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
53.800000	21.3	1000.0	120.000	100.0	V	333.0	20.4	18.7	40.0
99.080000	17.5	1000.0	120.000	100.0	V	276.0	16.0	26.0	43.5
152.320000	21.3	1000.0	120.000	100.0	V	225.0	21.0	22.3	43.5
230.480000	26.5	1000.0	120.000	100.0	V	186.0	18.1	19.5	46.0
339.880000	24.8	1000.0	120.000	100.0	V	127.0	22.6	21.2	46.0
585.360000	28.9	1000.0	120.000	100.0	V	73.0	28.4	17.1	46.0

Note 1: Corrector factor = Antenna Factor + Cable Loss

Emission Level = Reading level + Correction Factor

(The Reading Level is recorded by software which is not shown in the sheet)

12 Test Equipment List

List of Test Instruments

USED	Equipment Name	Model	Manufacturer	Equipment ID.	Calibration Date	Calibration Due
<input checked="" type="checkbox"/>	EMI test receiver	ESR3	R&S	S1503109-YQ-EMC	2022.8.1	2023.7.31
<input checked="" type="checkbox"/>	Trilog super broadband test antenna	SCHWARZBECK	VULB9168	S1808296-YQ-EMC	2021.9.23	2024.9.22
<input type="checkbox"/>	Temperature Chamber	HTT-100AP	Shanghai HUCAN	S2201430b-YQ-EMC	2022-3-08	2023-3-07
<input checked="" type="checkbox"/>	Loop antenna	HFH2-Z2	R&S	S1503013-YQ-EMC	2022-6-13	2023-6-12
<input checked="" type="checkbox"/>	EMI test receiver	R & S	ESR3	S1503001-YQ-EMC	2022.8.1	2023.7.31
<input checked="" type="checkbox"/>	2-Line V-network	R & S	ENV216	S1503103-YQ-EMC	2022.8.1	2023.7.31

13 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

Items	Extended Uncertainty
Radiated Disturbance	30MHz to 1GHz, $\pm 5.03\text{dB}$ (Horizontal) $\pm 5.11\text{dB}$ (Vertical) 1GHz to 18GHz, $\pm 5.15\text{dB}$ (Horizontal) $\pm 5.12\text{dB}$ (Vertical)

14 Photographs of Test Set-ups

Refer to the < Test Setup photos >.

15 Photographs of EUT

Refer to the < External Photos > & < Internal Photos >.

THE END