

Test Report

Report No.: RKEYS250916316

Date: Oct. 13, 2025

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FCC EMC

for

Product: solar inverter

**Model No.: HE200-7200-F, HE200-2500-O, HE200-4200-T, HE200-6500-F,
HE200-6500-FP, HE200-6500-T, HE200-7200-F1, HE200-7200-FP,
HE200-12000-F, HE200-4200-T-I5, HE200-6500-FP-I5, HE200-6500-T-I5,
HE200-7200-F-I5, HE200-12000-F-I5, HE300-12000-F, HE300-12000-FP,
HE300-12000-F-I5, HE300-12000-FP-I5, HE500-2500-O, HE500-4200-T, HE500-6500-F,
HE500-7200-F, HE500-12000-F**

Report No.: RKEYS250916316

Issued for

Anhui Haishang Frequency Conversion Technology Co.,Ltd.

**No. 18 Xiaoguo Avenue, Xiaoxian Economic Development Zone, Suzhou City, Anhui
Province**

Issued by

Guangdong KEYS Testing Technology Co., Ltd.

**Building 1, No.18, Shihuan Road, Dongcheng Subdistrict, Dongguan,
Guangdong, China**



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1. TEST CERTIFICATION

Product: solar inverter

Trade mark: N/A

Model No.: HE200-7200-F

Model List(s): HE200-2500-O, HE200-4200-T, HE200-6500-F,
HE200-6500-FP, HE200-6500-T, HE200-7200-F1, HE200-7200-FP,
HE200-12000-F, HE200-4200-T-I5, HE200-6500-FP-I5, HE200-6500-T-I5,
HE200-7200-F-I5, HE200-12000-F-I5, HE300-12000-F, HE300-12000-FP,
HE300-12000-F-I5, HE300-12000-FP-I5, HE500-2500-O, HE500-4200-T,
HE500-6500-F, HE500-7200-F, HE500-12000-F

Applicant : Anhui Haishang Frequency Conversion Technology Co.,Ltd.

Address: No. 18 Xiaoguo Avenue, Xiaoxian Economic Development Zone, Suzhou City, Anhui Province

Manufacturer: Anhui Haishang Frequency Conversion Technology Co.,Ltd.

Address: No. 18 Xiaoguo Avenue, Xiaoxian Economic Development Zone, Suzhou City, Anhui Province

Sample Received Date: Sep.16, 2025

Test Date: Sep.16, 2025 to Sep.22, 2025

Rating: AC90-280V, 50/60Hz, 26A, 6KW

Applicable Standards: CFR 47, FCC Part 15, Subpart B

ANSI C63.4:2014

The above equipment has been tested by Guangdong KEYS Testing Technology Co., Ltd. and found compliance with the requirements in the technical standards mentioned above. The test results presented in this report only relate to the product/system tested. The other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Prepared by:

Approved by:



Joy Jiang / Engineer
Bruce Zhang / Manager

2. TEST SUMMARY

Standard	Item	FCC Rule Part	Result
CFR 47, FCC Part 15, Subpart B	Conducted Emission	15.107	PASS
	Radiated Emission	15.109	PASS

3. TEST SITE

3.1. TEST FACILITY

Guangdong KEYS Testing Technology Co., Ltd.

Address: Building 1, No.18, Shihuan Road, Dongcheng Subdistrict, Dongguan, Guangdong, China

A2LA Certificate Number.: 7547.01

Designation Number: CN1419

Test Firm Registration Number: 361541

3.2. MEASUREMENT UNCERTAINTY

Parameter	Uncertainty
Conducted Emission(150KHz-30MHz)	$\pm 3.2\text{dB}$
Radiated Emission(30MHz-1GHz)	$\pm 4.7\text{dB}$
Radiated Emission (1GHz-6GHz)	$\pm 5.1\text{dB}$
Radiated Emission (6GHz-18GHz)	$\pm 5.1\text{dB}$

Note 1: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

3.3. LIST OF TEST AND MEASUREMENT INSTRUMENTS

3.3.1. ☒ For conducted emission at the mains terminals test

Equipment	Manufacturer	Model	Serial No.	Calibration Date	Cal. Interval
Pulse limiter	Rohde&Schwarz	ESH3-Z2	KEYS-EL-201	Mar. 03, 2025	1 Year
LISN impedance network TWO-LINE V-WORK	Rohde&Schwarz	ENV216	KEYS-EL-202	Mar. 03, 2025	1 Year
EMI Test Receiver	Rohde&Schwarz	ESCI	KEYS-EL-203	Mar. 03, 2025	1 Year
Test Software	Tonscend	JS32-CE Version 5.0.0			

3.3.2. ☒ For radiated emission test (30MHz-1GHz)

Equipment	Manufacturer	Model	Serial No.	Calibration Date	Cal. Interval
EMI Test Receiver	Rohde&Schwarz	ESCI7	KEYS-EL-205	Mar. 03, 2025	1 Year
Logarithmic Periodic Broadband Antenna	Schwarzbeck	VULB9168	KEYS-EL-209	Mar. 06, 2025	3 Year
Preamplifier	HP	EM330	KEYS-EL-210	Mar. 03, 2025	1 Year
3m standard semi-anechoic chamber	Taihe MaoRui	9*6*6	KEYS-EL-234	Oct. 12, 2024	5 Year
Test Software	Tonscend	JS32-RE Version 5.0.0			

3.3.3. ☐ For radiated emission test (1GHz above)

Equipment	Manufacturer	Model	Serial No.	Calibration Date	Cal. Interval
EMI Test Receiver	Rohde&Schwarz	ESCI7	KEYS-EL-005	Mar. 03, 2025	1 Year
Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA 9120D	KEYS-EL-239	Mar. 06, 2025	3 Year
Preamplifier	/	1-18-53G22	KEYS-EL-210	Mar. 03, 2025	1 Year
3m standard semi-anechoic chamber	Taihe MaoRui	9*6*6	KEYS-EL-234	Oct. 12, 2024	5 Year
Test Software	Tonscend	JS32-RE Version 5.0.0			

4. EUT DESCRIPTION

Product	solar inverter
Model	HE200-7200-F
Model list(s)	HE200-2500-O, HE200-4200-T, HE200-6500-F, HE200-6500-FP, HE200-6500-T, HE200-7200-F1, HE200-7200-FP, HE200-12000-F, HE200-4200-T-I5, HE200-6500-FP-I5, HE200-6500-T-I5, HE200-7200-F-I5, HE200-12000-F-I5, HE300-12000-F, HE300-12000-FP, HE300-12000-F-I5, HE300-12000-FP-I5, HE500-2500-O, HE500-4200-T, HE500-6500-F, HE500-7200-F, HE500-12000-F
Test Voltage	AC120V, 60Hz
Classification of Digital devices	☐ ClassA ☒ ClassB
Highest Internal Frequency:	☒ less than 180MHz ☐ More than 108MHz
EUT Type	☒ Table-top ☐ Floor Standing
Adapter	/

Remark: The above EUT's information was provided by customer. Please refer to the specifications or user's manual for more detailed description.

I/O PORT

I/O PORT TYPES	Q'TY	TESTED WITH
AC Port	1	☒
DC Port	1	☐

Models Difference

All series models are identical, except for model name difference for trading purpose.

5. TEST METHODOLOGY

5.1. TEST MODE

The EUT was tested together with the thereafter additional components, and a configuration, which produced the worst emission levels, was selected and recorded in this report.

Test Mode	
Mode 1	EUT+Normal Working

The following worst test mode was recorded.

Test Items		Test Mode
Emission	Conducted Emission	Mode 1
	Radiated Emission	Mode 1

5.2. EUT SYSTEM OPERATION

1. Set up EUT with the support equipment.
2. Make sure the EUT work normally during the test.

6. SETUP OF EQUIPMENT UNDER TEST

6.1. DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Support Equipment

No.	Equipment	Model	Serial No.	Manufacturer
1	/	/	/	/

Support Cable

No.	Description	Shield	Length	Manufacturer
1	/	/	/	/

Note: 1) All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2) Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

7. CONDUCTED EMISSION MEASUREMENT

7.1. LIMITS

FREQUENCY (MHz)	Class A		Class B	
	Quasi-peak dB(μ V)	Average dB(μ V)	Quasi-peak dB(μ V)	Average dB(μ V)
0.15 - 0.5	79	66	66-56*	56-46*
0.5 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Note: 1) *Decreasing linearly with logarithm of frequency.

2) The lower limit shall apply at the transition frequencies.

3) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

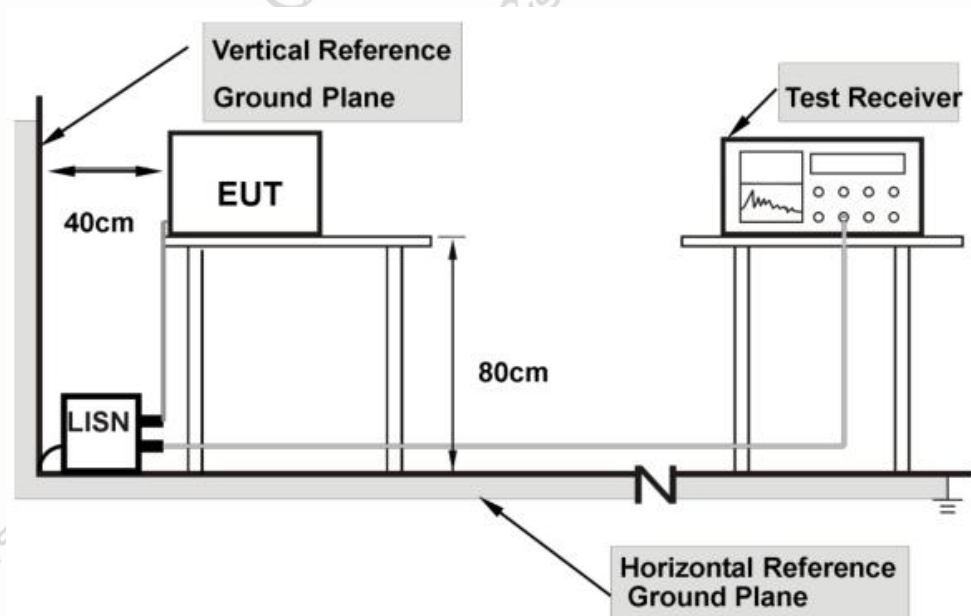
7.2. TEST PROCEDURES

The EUT and Support equipment, if needed, was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane. When the EUT is floor standing equipment, it is placed on the ground plane, which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane. The EUT should be 0.8 m apart from the AMN, where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, Details please refer to test setup photography.

The Receiver scanned from 150 kHz to 30 MHz for emissions in each of the test modes. During the above scans, the emissions were maximized by cable manipulation.

A scan was taken on both of the power lines, Line and neutral, recording the highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. The test data of the worst-case condition(s) was recorded.

7.3. TEST SETUP



Note: 1.Support units were connected to second LISN.

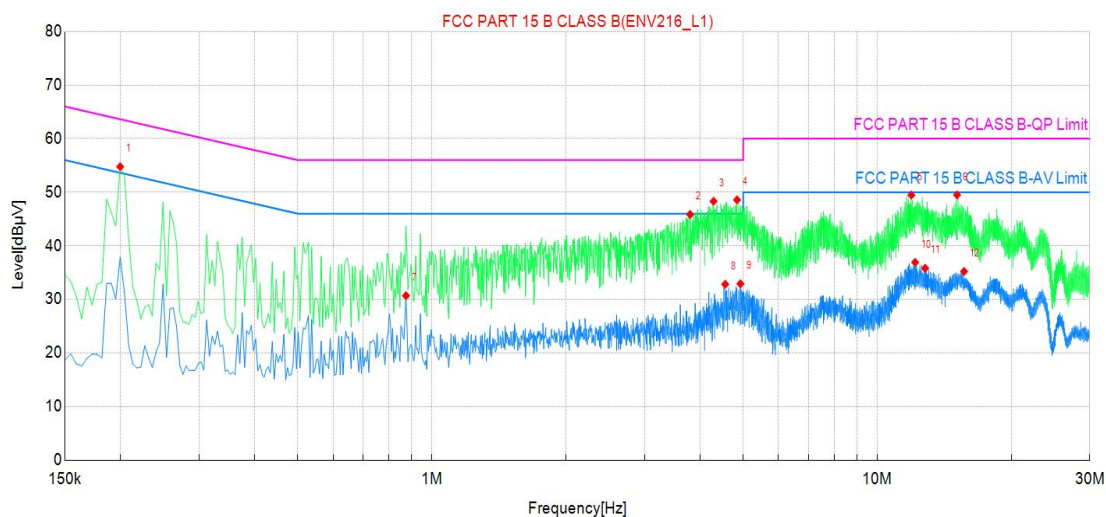
2.Both of LISNs(AMN) are 80 cm from EUT and at least 80 from other units and other metal planes.

7.4. TEST RESULT

Product name	solar inverter	Test voltage:	AC120V/60Hz
Model	HE200-7200-F	Temperature:	24.2°C
Test Mode	Mode 1	Relative Humidity :	51% RH

Please refer to the following diagram:

Line:

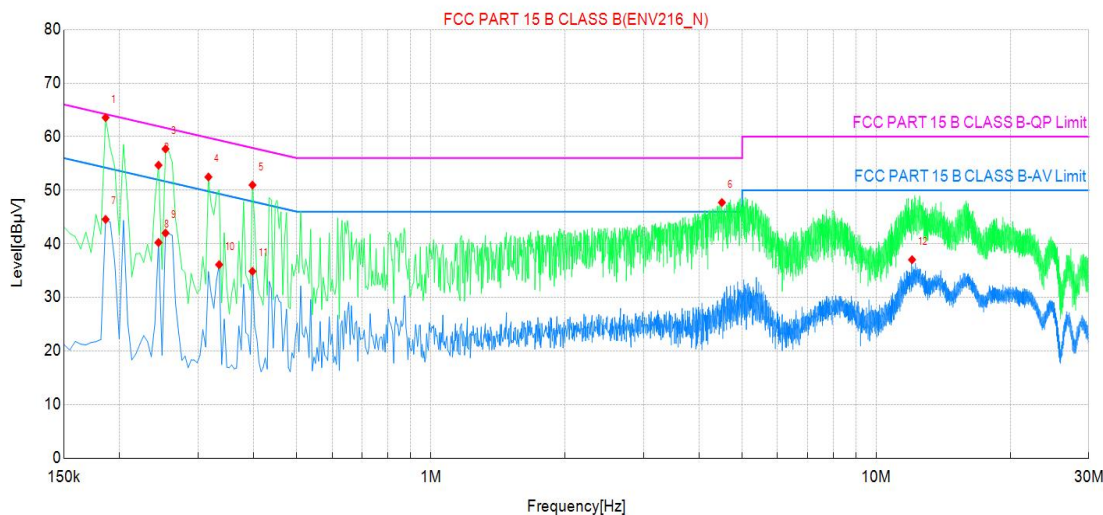


Suspected Data List									
NO.	Frequency [MHz]	Reading [dBμV]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Phase	Detector	Verdict
1	0.199500	35.58	54.77	19.19	63.63	8.86	L1	QP	PASS
2	3.799500	26.63	45.86	19.23	56.00	10.14	L1	QP	PASS
3	4.290000	29.10	48.32	19.22	56.00	7.68	L1	QP	PASS
4	4.843500	29.37	48.57	19.20	56.00	7.43	L1	QP	PASS
5	11.926500	30.09	49.47	19.38	60.00	10.53	L1	QP	PASS
6	15.108000	30.25	49.50	19.25	60.00	10.50	L1	QP	PASS
7	0.874500	11.45	30.69	19.24	46.00	15.31	L1	AV	PASS
8	4.555500	13.61	32.82	19.21	46.00	13.18	L1	AV	PASS
9	4.929000	13.71	32.91	19.20	46.00	13.09	L1	AV	PASS
10	12.165000	17.54	36.91	19.37	50.00	13.09	L1	AV	PASS
11	12.808500	16.48	35.82	19.34	50.00	14.18	L1	AV	PASS
12	15.666000	15.94	35.22	19.28	50.00	14.78	L1	AV	PASS

Note: (1) Level = Reading + Factor

(2) Margin = Limit - Level

Neutral:



Suspected Data List									
NO.	Frequency [MHz]	Reading [dBuV]	Level [dBuV]	Factor [dB]	Limit [dBuV]	Margin [dB]	Phase	Detector	Verdict
1	0.186000	44.37	63.56	19.19	64.21	0.65	N	QP	PASS
2	0.244500	35.48	54.67	19.19	61.94	7.27	N	QP	PASS
3	0.253500	38.52	57.71	19.19	61.64	3.93	N	QP	PASS
4	0.316500	33.28	52.47	19.19	59.80	7.33	N	QP	PASS
5	0.397500	31.78	50.97	19.19	57.91	6.94	N	QP	PASS
6	4.501500	28.54	47.71	19.17	56.00	8.29	N	QP	PASS
7	0.186000	25.37	44.56	19.19	54.21	9.65	N	AV	PASS
8	0.244500	21.05	40.24	19.19	51.94	11.70	N	AV	PASS
9	0.253500	22.82	42.01	19.19	51.64	9.63	N	AV	PASS
10	0.334500	16.92	36.11	19.19	49.34	13.23	N	AV	PASS
11	0.397500	15.68	34.87	19.19	47.91	13.04	N	AV	PASS
12	12.034500	17.77	37.03	19.26	50.00	12.97	N	AV	PASS

Note: (1) Level = Reading + Factor

(2) Margin = Limit - Level

8. RADIATED EMISSION MEASUREMENT

8.1. LIMITS

LIMITS OF RADIATED EMISSION MEASUREMENT (Below 1GHz)

FREQUENCY (MHz)	dBμV/m (At 3m)	
	Class A digital device	Class B digital device
30~88	49.00	40.00
88~216	53.50	43.50
216~960	56.40	46.00
960~1000	59.50	54.00

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1GHz)

FREQUENCY (MHz)	Detector	dBμV/m (At 3m)	
		Class A digital device	Class B digital device
Above 1000	Peak	80	74
	Average	60	54

Note: 1) The lower limit shall apply at the transition frequencies.

2) Emission level (dBμV/m) = 20 log Emission level (μV/m).

8.2. TEST PROCEDURE

- The EUT is placed on a turntable, which is 0.8 m above ground plane.
- The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
- Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- Repeat above procedures until the measurements for all frequencies are complete.
- The distance between test antenna and EUT as following table states:

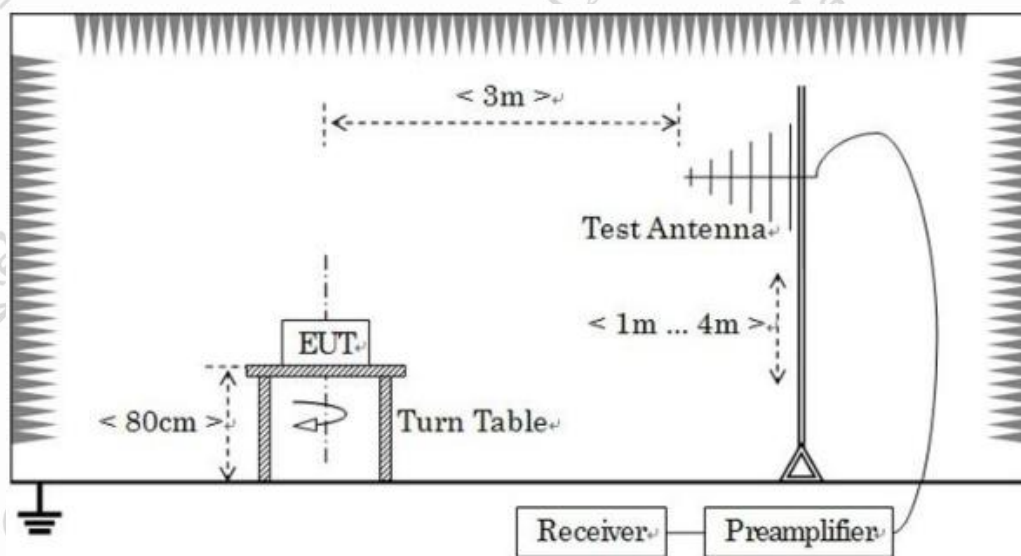
Test Frequency range	Test Antenna Type	Test Distance
30MHz-1GHz	Ultra-Broadband Antenna	3
1GHz-18GHz	Double Ridged Horn Antenna	3

- Setting test receiver/spectrum as following table states:

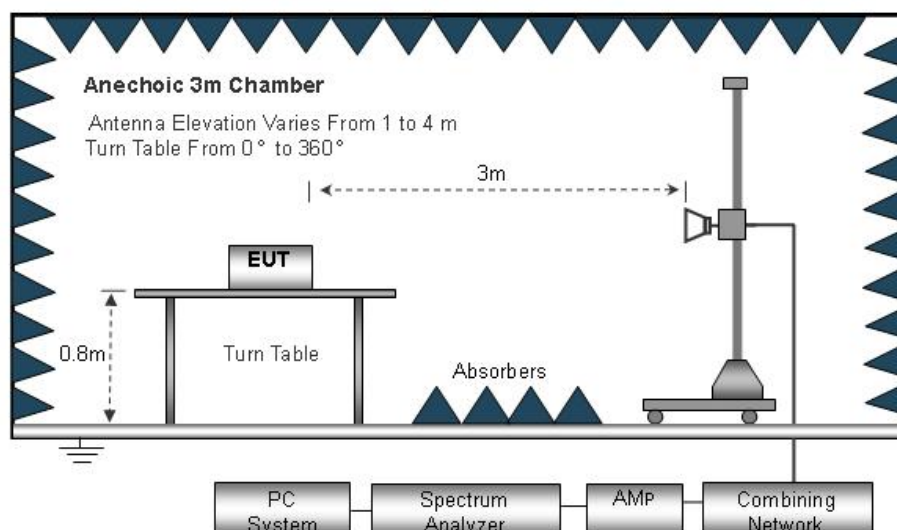
Test Frequency range	Test Receiver/Spectrum Setting	Detector
30MHz-1GHz	QP Value: RBW=120KHz/VBW=300KHz	QP
Above 1GHz	Peak Value: RBW=1MHz/VBW=3MHz	Peak
	Average Value: RBW=1MHz/VBW=3MHz	Average

8.3. TEST SETUP

Radiated Emission below 1GHz



Radiated Emission above 1GHz



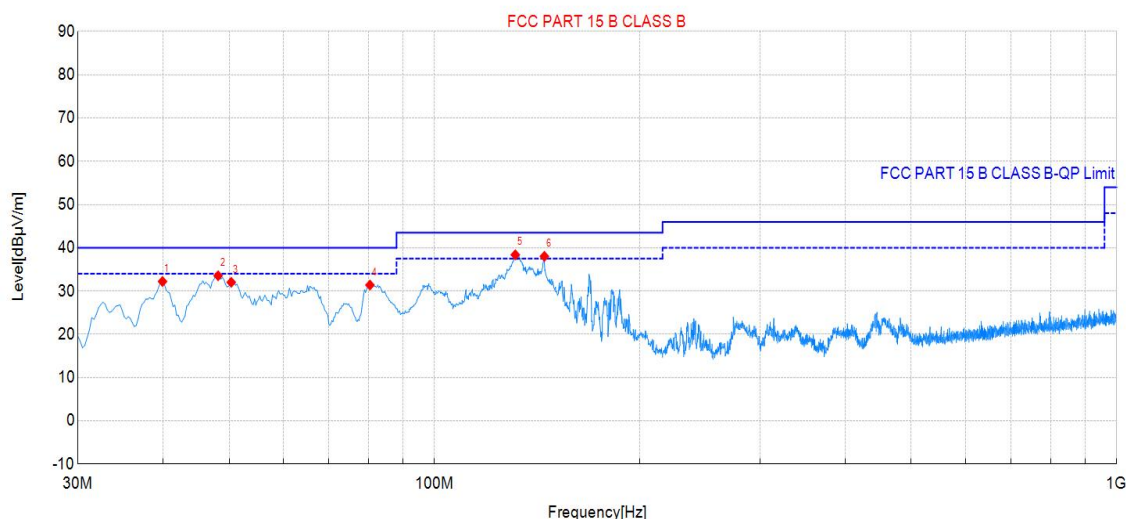
Note: For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

8.4. TEST RESULT

Product name	solar inverter	Test voltage:	AC120V, 60Hz
Model	HE200-7200-F	Temperature:	24.3°C
Test Mode	Mode 1	Relative Humidity :	53% RH

Please refer to the following diagram:

Vertical

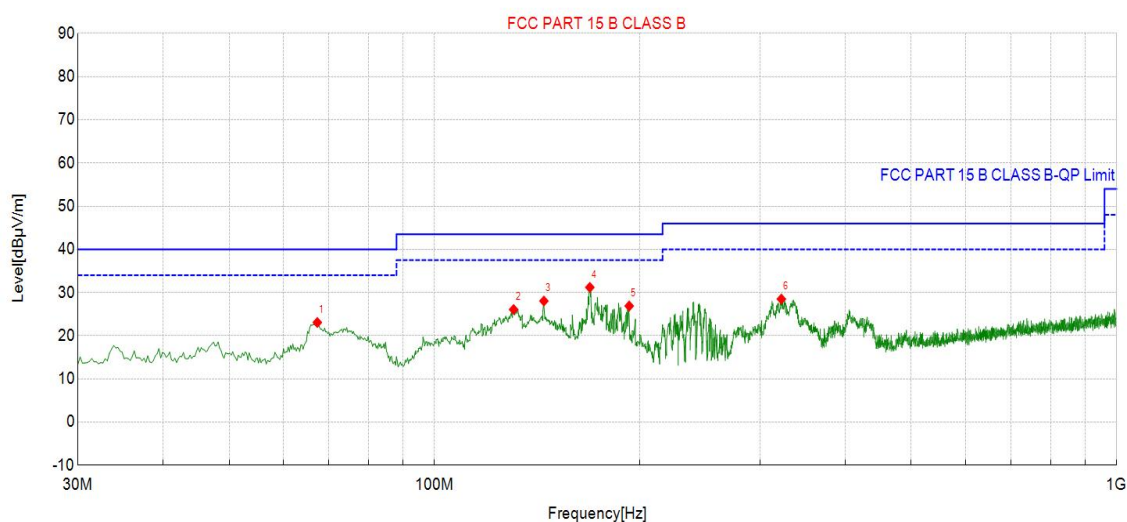


Suspected Data List											
NO.	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Det	Pol	Verdict
1	39.94	49.23	32.22	-17.01	40.00	7.78	100	353	QP	Vert	PASS
2	48.19	50.72	33.54	-17.18	40.00	6.46	100	264	QP	Vert	PASS
3	50.37	49.28	32.03	-17.25	40.00	7.97	100	246	QP	Vert	PASS
4	80.44	52.06	31.40	-20.66	40.00	8.60	100	227	QP	Vert	PASS
5	131.37	55.36	38.38	-16.98	43.50	5.12	100	275	QP	Vert	PASS
6	144.95	54.30	38.03	-16.27	43.50	5.47	100	275	QP	Vert	PASS

Note: (1) Level = Reading + Factor

(2) Margin = Limit - Level

Horizontal



Suspected Data List											
NO.	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Det	Pol	Verdict
1	67.35	42.22	23.07	-19.15	40.00	16.93	100	316	QP	Hori	PASS
2	130.64	43.11	26.08	-17.03	43.50	17.42	100	242	QP	Hori	PASS
3	144.70	44.31	28.04	-16.27	43.50	15.46	100	279	QP	Hori	PASS
4	168.95	48.31	31.20	-17.11	43.50	12.30	100	156	QP	Hori	PASS
5	192.96	46.34	26.89	-19.45	43.50	16.61	100	100	QP	Hori	PASS
6	322.46	44.70	28.50	-16.20	46.00	17.50	100	232	QP	Hori	PASS

Note: (1) Level = Reading + Factor

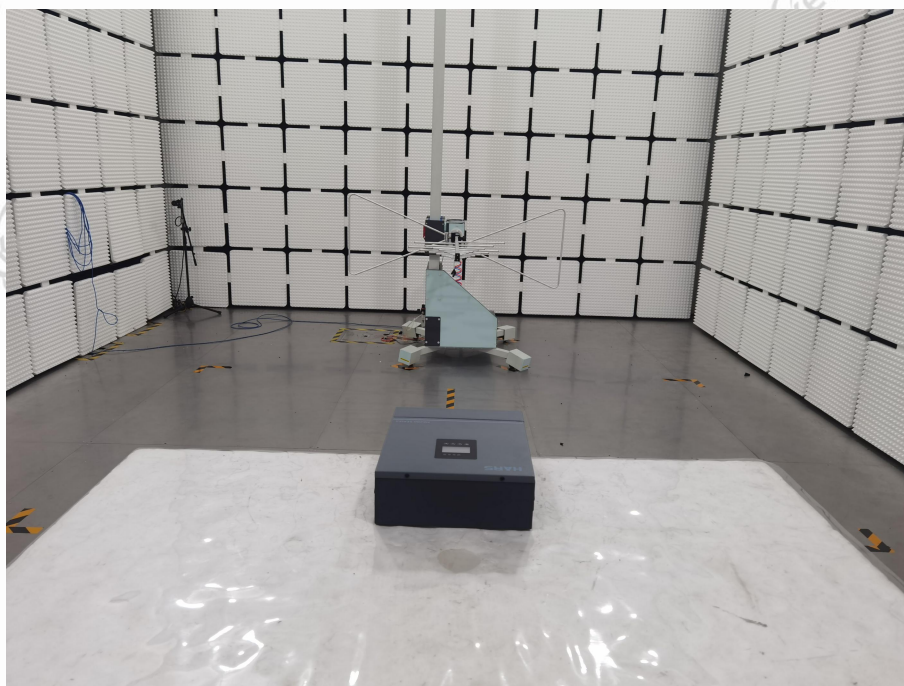
(2) Margin = Limit - Level

9. PHOTOGRAPHS OF THE TEST CONFIGURATION

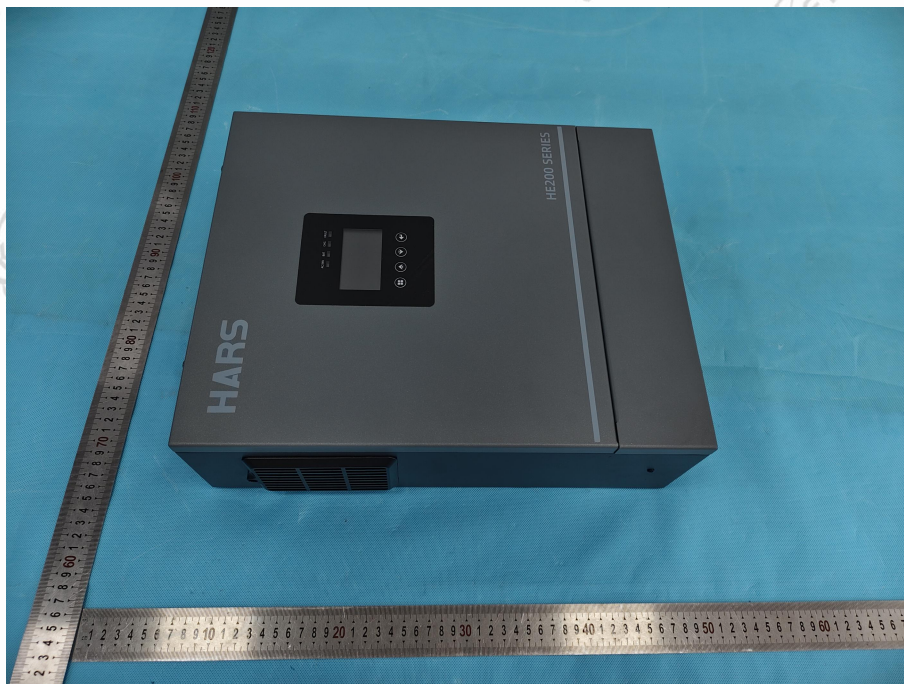
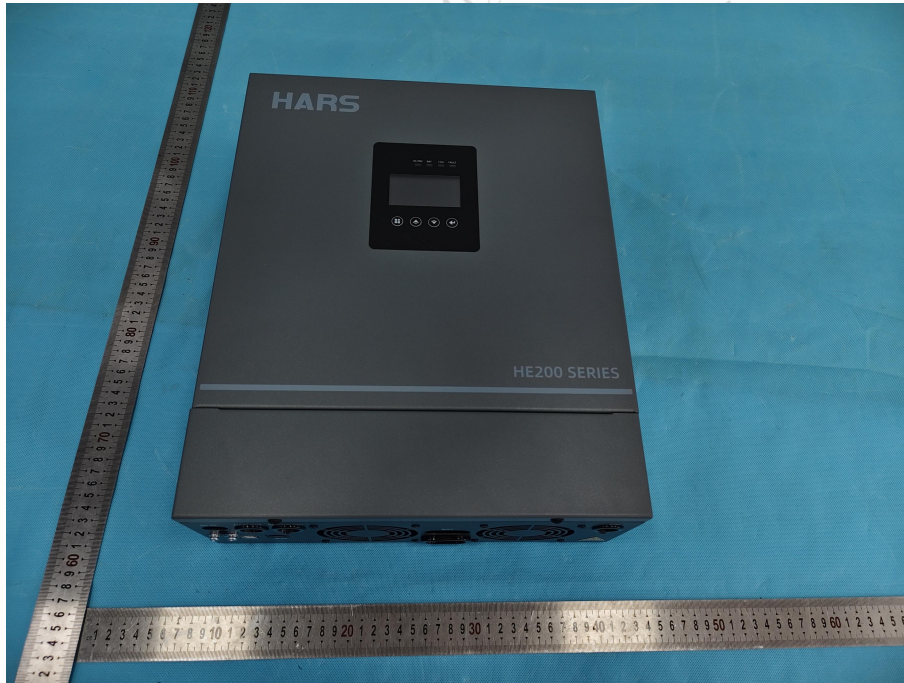
CONDUCTED EMISSION

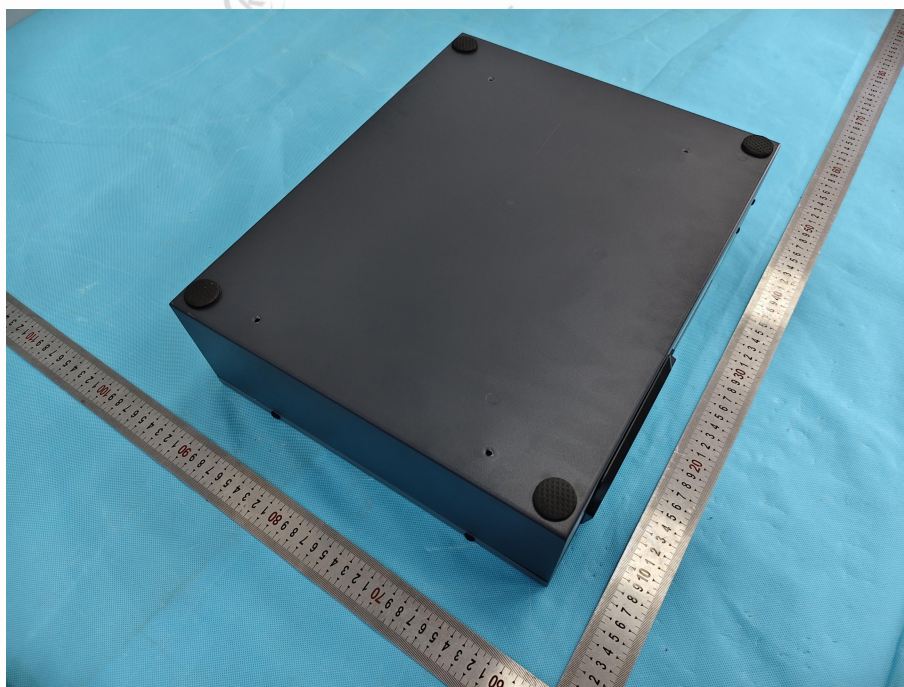


RADIATED EMISSION BELOW 1GHz

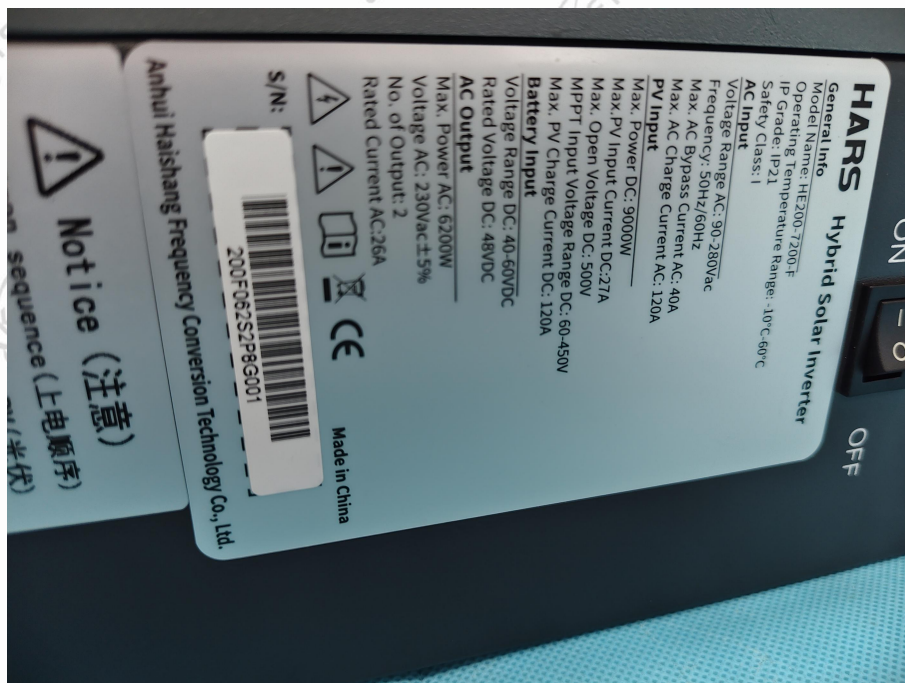


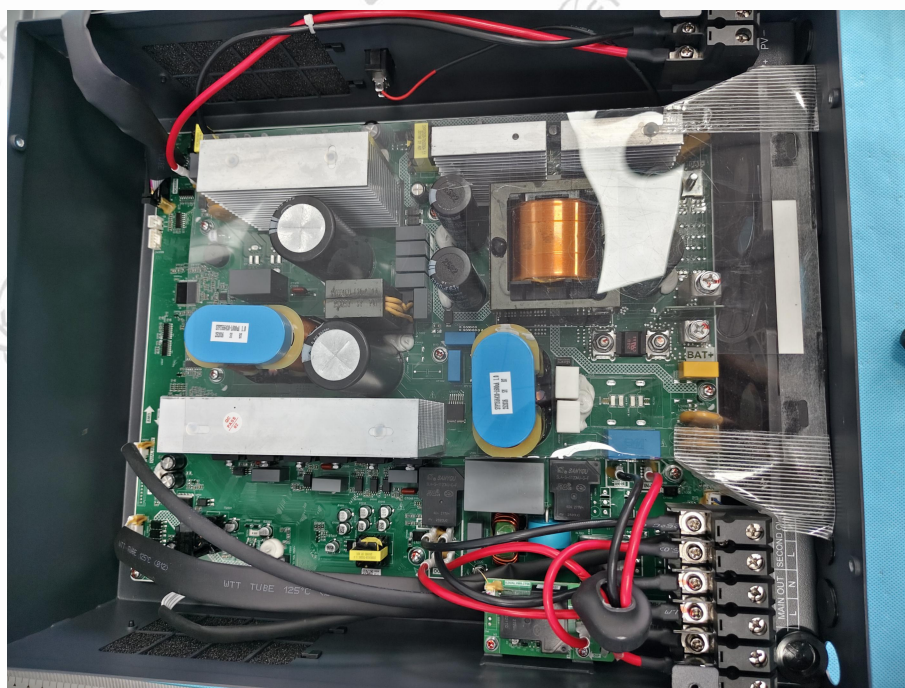
10. PHOTOGRAPHS OF EUT

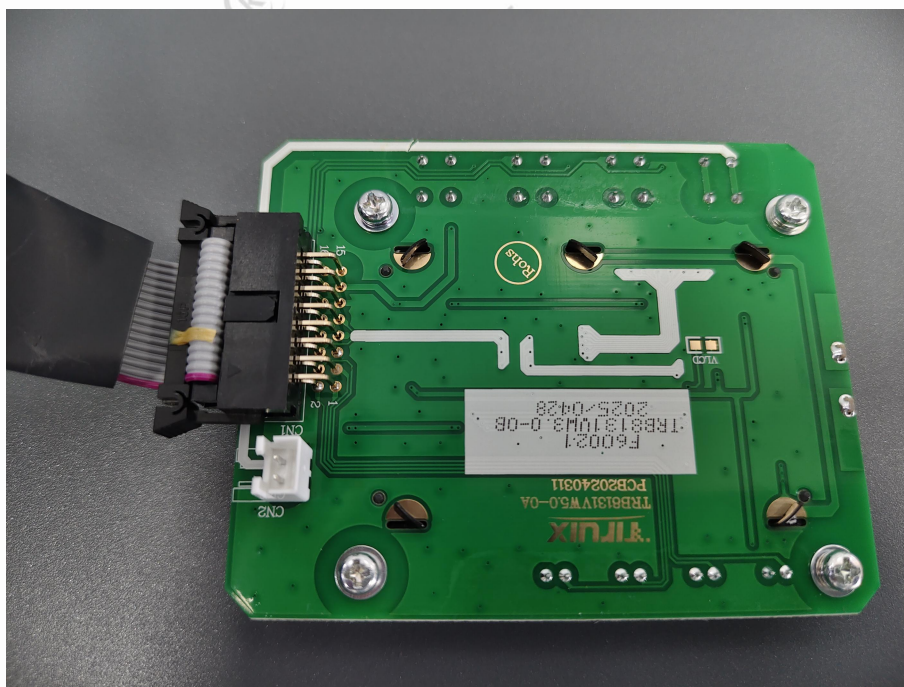












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