

FCC 47 CFR PART 97 SUBPART D

for

Linear Power Amplifier

Model: XPA125B

Brand: XIEGU

Test Report Number:

C181025Z02-RP1

Issued Date: November 23, 2018

Issued for

Chongqing Xiegu Technology Co., Ltd

**7-6, Incubator Building, No.256, Fangzheng Avenue, Shuitu High
High-tech Park, Beibei District, Chongqing, China**

Issued by:

GRG Metrology & Test (Shenzhen) Co., Ltd.

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Revision History

| Rev. | Issue Date | Revisions | Effect Page | Revised By |
|------|-------------------|---------------|-------------|------------|
| 00 | November 23, 2018 | Initial Issue | ALL | Anna Liu |
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TABLE OF CONTENTS

1 TEST CERTIFICATION.....4

2 TEST RESULT SUMMARY5

3 EUT DESCRIPTION6

4 TEST METHODOLOGY7

 4.1. DESCRIPTION OF TEST MODES7

5 SETUP OF EQUIPMENT UNDER TEST8

 5.1. DESCRIPTION OF SUPPORT UNITS8

 5.2. CONFIGURATION OF SYSTEM UNDER TEST8

 5.3. TEST INSTRUMENTS9

6 FACILITIES AND ACCREDITATIONS 10

 6.1. FACILITIES10

 6.2. ACCREDITATIONS.....10

 6.3. MEASUREMENT UNCERTAINTY10

7 FCC PART 97.307 REQUIREMENTS..... 11

 7.1. 97.307(d) Radiated Spurious Emissions for TX Operating Below 30 MHz11

 7.2. 97.307(e) Radiated Spurious Emissions for TX Operating Above 30 MHz.....14

8 PHOTOGRAPHS OF THE TEST CONFIGURATION 16

1 TEST CERTIFICATION

| | |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product | Linear Power Amplifier |
| Model | XPA125B |
| Brand | XIEGU |
| Tested | October 25~ November 23, 2018 |
| Applicant | Chongqing Xiegu Technology Co., Ltd 7-6, Incubator Building, No.256, Fangzheng Avenue, Shuitu High High-tech Park, Beibei District, Chongqing, China |
| Manufacturer | Chongqing Xiegu Technology Co., Ltd 7-6, Incubator Building, No.256, Fangzheng Avenue, Shuitu High High-tech Park, Beibei District, Chongqing, China |

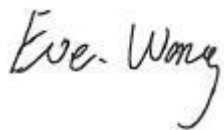
| APPLICABLE STANDARDS | |
|----------------------|-----------------------------------------------------------|
| Standard | Test Type |
| FCC Part 97. 307 (d) | Radiated Spurious Emissions for TX Operating Below 30 MHz |
| FCC Part 97. 307 (e) | Radiated Spurious Emissions for TX Operating Above 30 MHz |

We hereby certify that:

GRG Metrology & Test (Shenzhen) Co., Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The test results of this report relate only to the tested sample identified in this report.

Approved by:



Eve Wang
Supervisor of EMC Dept.
GRG Metrology & Test (Shenzhen) Co., Ltd.

Reviewed by:



Nancy Fu
Supervisor of Report Dept.
GRG Metrology & Test (Shenzhen) Co., Ltd.

2 TEST RESULT SUMMARY

| APPLICABLE STANDARDS | | | |
|----------------------|-----------------------------------------------------------|--------|--------------------------------|
| Standard | Test Type | Result | Remark |
| FCC Part 97. 307 (d) | Radiated Spurious Emissions for TX Operating Below 30 MHz | Pass | Meet the requirement of limit. |
| FCC Part 97. 307 (e) | Radiated Spurious Emissions for TX Operating Above 30 MHz | Pass | Meet the requirement of limit. |

Note: 1. The statements of test result on the above are decided by the request of test standard only; the measurement uncertainties are not factored into this compliance determination.

2. The information of measurement uncertainty is available upon the customer's request.

3 EUT DESCRIPTION

| | |
|------------------------------|-------------------------------|
| Product | Linear Power Amplifier |
| Model Number | XPA125B |
| Brand | XIEGU |
| Model Discrepancy | N/A |
| Identify Number | C181025Z02-RP1 |
| Received Date | October 25, 2018 |
| Power Supply | DC 13.8V supplied by DC power |
| Frequency Range | 1-54MHz |
| Transmit Power | 100W |
| Antenna Specification | 13dB(± 2 dB) |
| Hardware Version | N/A |
| Software Version | N/A |

- Note:** 1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: **2ANLH-XPA125B1** filing to comply with Section 97. 307 (d) and 97. 307 (e) of the FCC Part 97, Subpart D Rules.

4 TEST METHODOLOGY

4.1. DESCRIPTION OF TEST MODES

The EUT was operated in the following manner:

The XPA125B is an External Power Amplifier per FCC regulations. It is a communications system device that accepts RF drive of approximately 50W and amplifies it linearly to 100W. It has two modes: Operate and Standby. It bi-directionally passes the input signal through without modification when in Standby mode.

In operate mode, the XPA125B has two sub-modes: Receive and Transmit. In receive mode, the signal from the antenna passes through the device in the reverse direction to the input, without amplification.

Connected transceiver X5105, set the output power to 5 W. Set your X5105 to CW mode, presses the CW key to transmit, and the XPA125B amplifier will be activated.

Performance of the EUT was monitored in the following manner:

RF output dropping from its nominal 100W to a low value (less than 50W) is considered a failure. Power output is displayed on the RF deck front panel in two places: an LED bargraph and a digital (numeric) LCD display.

Note that the amplifier is not intended for continuous operation. If its duty cycle is exceeded, thermal protection will shut down the amplifier. This is NOT considered a failure as operation will resume after the heat sink cools. Please keep test transmissions to 10 minutes of power output at a time, with a 50% nominal duty cycle

5 SETUP OF EQUIPMENT UNDER TEST

5.1. 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.

| No. | Equipment | Model No. | Serial No. | FCC ID | Brand | Data Cable | Power Cord |
|-----|------------------|-----------------------|------------|-------------|-------|----------------------|----------------------------------------------------------------------|
| 1 | DC power supply | PS9065D | 20018978 | N/A | N/A | N/A | Unshielded 1.50m (AC Cable) Shielded 0.50m (DC Cable) |
| 2 | TX Signal source | X5105 | N/A | 2ANLH-X5105 | N/A | Unshielded, 1.00m | N/A |
| 3 | Load | HXFZ 003 G 200N/CW | N/A | N/A | N/A | Unshielded, 0.50m | N/A |

Note:

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

5.2. CONFIGURATION OF SYSTEM UNDER TEST

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.

5.3. TEST INSTRUMENTS

| Radiated Emission Test Site 966 (2) | | | | | |
|-------------------------------------|----------------|--------------------|---------------|------------------|-----------------|
| Name of Equipment | Manufacturer | Model Number | Serial Number | Last Calibration | Due Calibration |
| Spectrum Analyzer | Agilent | N9010A | MY52221469 | 01/27/2018 | 01/26/2019 |
| EMI TEST RECEIVER | ROHDE&SCHWARZ | ESCI | 100783 | 01/27/2018 | 01/26/2019 |
| Amplifier | EMEC | EM330 | 060661 | 01/27/2018 | 01/26/2019 |
| High Noise Amplifier | Agilent | 8449B | 3008A01838 | 01/27/2018 | 01/26/2019 |
| Loop Antenna | COM-POWER | AL-130 | 121044 | 01/30/2018 | 01/29/2019 |
| Bilog Antenna | SCHAFFNER | CBL6143 | 5082 | 02/21/2018 | 02/20/2019 |
| Horn Antenna | SCHWARZBECK | BBHA9120 | D286 | 01/27/2018 | 01/26/2019 |
| Board-Band Horn Antenna | Schwarzbeck | BBHA 9170 | 9170-497 | 01/24/2018 | 01/23/2019 |
| Turn Table | N/A | N/A | N/A | N.C.R | N.C.R |
| Antenna Tower | SUNOL | TLT2 | N/A | N.C.R | N.C.R |
| Controller | Sunol Sciences | SC104V | 022310-1 | N.C.R | N.C.R |
| Controller | CT | N/A | N/A | N.C.R | N.C.R |
| Temp. / Humidity Meter | Anymetre | JR913 | N/A | 01/29/2018 | 01/28/2019 |
| Test S/W | FARAD | LZ-RF / CCS-SZ-3A2 | | | |

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. N.C.R = No Calibration Request.

6 FACILITIES AND ACCREDITATIONS

6.1. FACILITIES

All measurement facilities used to collect the measurement data are located at **Building 10-1, Mingkeda Logistics Park, No.18, Huanguan South Road, Guanlan, Bao'an District, Shenzhen, Guangdong, China**

The sites are constructed in conformance with the requirements of ANSI C63.10, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following accreditation body according to ISO/IEC 17025.

| | |
|--------------|-------------|
| USA | A2LA |
| China | CNAS |

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

| | |
|---------------|---------------------------------------------|
| USA | FCC (Designation Number: CN1198) |
| Japan | VCCI (C-4815,R-4320,T-2317, G-10624) |
| Canada | INDUSTRY CANADA |

Copies of granted accreditation certificates are available for downloading from our web site, <http://www.ccssz.com>

6.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| Parameter | Uncertainty |
|----------------------------------------------------------|--------------------|
| Radiated Emission, 30 to 200 MHz Test Site : 966(2) | +/-3.6880dB |
| Radiated Emission, 200 to 1000 MHz Test Site : 966(2) | +/-3.6695dB |

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

The measured result is above (below) the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to state compliance based on the 95% level of confidence. However, the result indicates that compliance (non-compliance) is more probable than non-compliance) with the specification limit.

7 FCC PART 97.307 REQUIREMENTS

7.1. 97.307(d) Radiated Spurious Emissions for TX Operating Below 30 MHz

7.1.1. LIMITS

For transmitters installed after January 1, 2003, the mean power of any spurious emission from a station transmitter or external RF power amplifier transmitting on a frequency a 30 MHz must be at least 43 dB below the mean power of the fundamental emission. For transmitters installed on or before January 1, 2003, the mean power of any spurious emission from a station transmitter or external RF power amplifier transmitting on a frequency below 30 MHz must not exceed 50 mW and must be at least 40 dB below the mean power of the fundamental emission. For a transmitter of mean power less than 5 W installed on or before January 1, 2003, the attenuation must be at least 30 dB. A transmitter built before April 15, 1977, or first marketed before January 1, 1978, is exempt from this requirement.

| Radiated Emissions | | |
|-----------------------|---------------------|-------------|
| Frequency Range (MHz) | Specification | Margin(dBc) |
| Below 30MHz | FCC Part 97.307 (d) | >43 |

7.1.2. TEST PROCEDURES

- The EUT was placed on top of an 80 centimeter high table inside a semi-anechoic chamber. A transceiver was connected to the input of the EUT and a 50 Ohm load was connected to the output. Various antennas were placed near the EUT and measurements were taken of the field strengths and frequencies. For final radiated measurements, the EUT was placed inside a semi-anechoic chamber, and located 10 meters from the antenna mast.

7.1.3. TEST RESULTS

| | | | |
|------------------|----------|---------------------------------|-------------------|
| Model No. | XPA125B | Environmental Conditions | 22°C, 45% RH |
| Tested by | Darry Wu | Test Date | November 23, 2018 |

| Frequency | Harmonic | dB below Fundamental | >43dB |
|-----------|----------|----------------------|-------|
| 1.9 | 1.9 | -- | -- |
| | 3.8 | >43dB | yes |
| | 5.7 | >43dB | yes |
| | 7.6 | >43dB | yes |
| | 9.5 | >43dB | yes |
| | 11.4 | >43dB | yes |
| | 13.3 | >43dB | yes |
| | 15.2 | >43dB | yes |
| | 17.1 | >43dB | yes |
| | 19 | >43dB | yes |

| Frequency | Harmonic | dB below Fundamental | >43dB |
|-----------|----------|----------------------|-------|
| 3.75 | 3.75 | -- | -- |
| | 7.5 | >43dB | yes |
| | 11.25 | >43dB | yes |
| | 15 | >43dB | yes |
| | 18.75 | >43dB | yes |
| | 22.5 | >43dB | yes |
| | 26.25 | >43dB | yes |
| | 30 | >43dB | yes |
| | 33.75 | >43dB | yes |
| | 37.5 | >43dB | yes |

| Frequency | Harmonic | dB below Fundamental | >43dB |
|-----------|----------|----------------------|-------|
| 5.357 | 5.357 | -- | -- |
| | 10.714 | >43dB | yes |
| | 16.071 | >43dB | yes |
| | 21.428 | >43dB | yes |
| | 26.785 | >43dB | yes |
| | 32.142 | >43dB | yes |
| | 37.449 | >43dB | yes |
| | 42.856 | >43dB | yes |
| | 18.213 | >43dB | yes |
| | 53.57 | >43dB | yes |

| Frequency | Harmonic | dB below Fundamental | >43dB |
|-----------|----------|----------------------|-------|
| 7.15 | 7.15 | -- | -- |
| | 14.3 | >43dB | yes |
| | 21.45 | >43dB | yes |
| | 28.6 | >43dB | yes |
| | 35.75 | >43dB | yes |
| | 42.9 | >43dB | yes |
| | 50.05 | >43dB | yes |
| | 57.2 | >43dB | yes |
| | 64.35 | >43dB | yes |
| | 71.5 | >43dB | yes |

| Frequency | Harmonic | dB below Fundamental | >43dB |
|-----------|----------|----------------------|-------|
| 10.125 | 10.125 | -- | -- |
| | 20.25 | >43dB | yes |
| | 30.375 | >43dB | yes |
| | 40.5 | >43dB | yes |
| | 50.625 | >43dB | yes |
| | 60.75 | >43dB | yes |
| | 70.875 | >43dB | yes |
| | 81 | >43dB | yes |
| | 91.125 | >43dB | yes |
| | 101.25 | >43dB | yes |

| Frequency | Harmonic | dB below Fundamental | >43dB |
|-----------|----------|----------------------|-------|
| 14.175 | 14.175 | -- | -- |
| | 28.35 | >43dB | yes |
| | 42.525 | >43dB | yes |
| | 56.7 | >43dB | yes |
| | 70.875 | >43dB | yes |
| | 85.05 | >43dB | yes |
| | 99.225 | >43dB | yes |
| | 113.4 | >43dB | yes |
| | 127.575 | >43dB | yes |
| | 141.75 | >43dB | yes |

| Frequency | Harmonic | dB below Fundamental | >43dB |
|-----------|----------|----------------------|-------|
| 18.118 | 18.118 | -- | -- |
| | 36.236 | >43dB | yes |
| | 54.354 | >43dB | yes |
| | 72.472 | >43dB | yes |
| | 90.59 | >43dB | yes |
| | 108.708 | >43dB | yes |
| | 126.826 | >43dB | yes |
| | 144.944 | >43dB | yes |
| | 163.062 | >43dB | yes |
| | 181.18 | >43dB | yes |

| Frequency | Harmonic | dB below Fundamental | >43dB |
|-----------|----------|----------------------|-------|
| 21.225 | 21.225 | -- | -- |
| | 42.45 | >43dB | yes |
| | 63.675 | >43dB | yes |
| | 84.9 | >43dB | yes |
| | 106.125 | >43dB | yes |
| | 127.35 | >43dB | yes |
| | 148.575 | >43dB | yes |
| | 169.8 | >43dB | yes |
| | 191.025 | >43dB | yes |
| | 212.25 | >43dB | yes |

| Frequency | Harmonic | dB below Fundamental | >43dB |
|-----------|----------|----------------------|-------|
| 24.94 | 24.94 | -- | -- |
| | 49.88 | >43dB | yes |
| | 74.82 | >43dB | yes |
| | 99.76 | >43dB | yes |
| | 124.7 | >43dB | yes |
| | 149.64 | >43dB | yes |
| | 174.58 | >43dB | yes |
| | 199.52 | >43dB | yes |
| | 224.46 | >43dB | yes |
| | 249.4 | >43dB | yes |

| Frequency | Harmonic | dB below Fundamental | >43dB |
|-----------|----------|----------------------|-------|
| 28.85 | 28.85 | -- | -- |
| | 57.7 | >43dB | yes |
| | 86.55 | >43dB | yes |
| | 115.4 | >43dB | yes |
| | 144.25 | >43dB | yes |
| | 173.1 | >43dB | yes |
| | 201.95 | >43dB | yes |
| | 230.8 | >43dB | yes |
| | 259.65 | >43dB | yes |
| | 288.5 | >43dB | yes |

7.2. 97.307(e) Radiated Spurious Emissions for TX Operating Above 30 MHz

7.2.1. LIMITS

The mean power of any spurious emission from a station transmitter or external RF power amplifier transmitting on a frequency between 30-225 MHz must be at least 60 dB below the mean power of the fundamental. For a transmitter having a mean power of 25 W or less, the mean power of any spurious emission supplied to the antenna transmission line must not exceed 25 μ W and must be at least 40 dB below the mean power of the fundamental emission, but need not be reduced below the power of 10 μ W. A transmitter built before April 15, 1977, or first marketed before January 1, 1978, is exempt from this requirement.

| Radiated Emissions | | |
|-----------------------|---------------------|-------------|
| Frequency Range (MHz) | Specification | Margin(dBc) |
| 30-225MHz | FCC Part 97.307 (e) | >60 |

7.2.1.1. TEST PROCEDURE

The EUT was placed on top of an 80 centimeter high table inside a semi-anechoic chamber. A transceiver was connected to the input of the EUT and a 50 Ohm load was connected to the output. Various antennas were placed near the EUT and measurements were taken of the field strengths and frequencies. For final radiated measurements, the EUT was placed inside a semi-anechoic chamber, and located 10 meters from the antenna mast.

7.2.1.2. TEST RESULTS

| | | | |
|------------------|----------|---------------------------------|-------------------|
| Model No. | XPA125B | Environmental Conditions | 22°C, 45% RH |
| Tested by | Darry Wu | Test Date | November 23, 2018 |

| Frequency | Harmonic | dB below Fundamental | >43dB |
|-----------|----------|----------------------|-------|
| 52 | 52 | -- | -- |
| | 104 | >60dB | yes |
| | 156 | >60dB | yes |
| | 208 | >60dB | yes |
| | 260 | >60dB | yes |
| | 312 | >60dB | yes |
| | 364 | >60dB | yes |
| | 416 | >60dB | yes |
| | 468 | >60dB | yes |
| | 520 | >60dB | yes |

8 PHOTOGRAPHS OF THE TEST CONFIGURATION

Below 30 MHz



Above 30 MHz

