

Product Name:	Xiaomi WiFi Range Extender N300
Brand Name:	Xiaomi
Model No.:	RD10M
Series Model:	---
Applicant:	Beijing Xiaomi Electronics Co., Ltd. #802, 8th Floor, Building 5, No. 15 10th Kechuang Street, Beijing Economic-Technological Development Area, Beijing, China, 100176
Date of Receipt:	Nov. 17, 2023
Finished date of Test:	Dec. 01, 2023
Applicable Standards:	47 CFR Part 15, Subpart C, 15.247 ANSI C63.10: 2013 FCC publication KDB 558074 D01 15.247 Meas Guidance v05r02 Apr 02, 2019

We, **Spectrum Research & Testing Laboratory Inc.**, hereby certify that one sample of the above was tested in our laboratory with positive results according to the above-mentioned standards. The records in the report are an accurate account of the results. Details of the results are given in the subsequent pages of this report.

Tested By : Jimmy Tseng, Date: 12/4/2023  
(Jimmy Tseng)

Approved By : \_\_\_\_\_ , Date: \_\_\_\_\_  
 ( Johnson Ho, Director )



 <b>Spectrum Research &amp; Testing Lab., Inc.</b> No.167,Ln. 780, Shan-Tong Rd.,Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)	<h1>TEST REPORT</h1>	Reference No.: A23111702 Report No.: FCCA23111702 -M0 FCC ID : 2AIMRRD10M Page: 2 of 7 Date: Dec. 04, 2023
--	----------------------	--

## Revisions History

Report No.	Issue Date	Revisions
FCCA23111702-M0	Dec. 04, 2023	Initial issue.

 <b>Spectrum Research &amp; Testing Lab., Inc.</b> No.167,Ln. 780, Shan-Tong Rd.,Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)	<h1>TEST REPORT</h1>	Reference No.: A23111702 Report No.: FCCA23111702 -M0 FCC ID : 2AIMRRD10M Page: 3 of 7 Date: Dec. 04, 2023
--	----------------------	--

## 1. DOCUMENT POLICY AND TEST STATEMENT

### 1.1 DOCUMENT POLICY

- The report shall not be reproduced except in full, without the written approval of SRT Lab, Inc.
- FCC Registered Test Site Number: TW1016

### 1.2 TEST STATEMENT

- This random test report is for FCC's market spot check action by FCC ID: 2AIMRRD10M project, applied only to the specific samples tested under conditions.
- The test results in the report apply only to the unit tested by SRT Lab.
- There was no deviation from the requirements of test standards during the test.
- AC power source, 100-240VAC, 50/60Hz, was used during the test.

### 1.3 EUT MODIFICATION

- No modification in SRT Lab.

### 1.4 DECISION RULE

- To make sure the testing report(s) meet the requirement of ISO/IEC 17025:2017 standard and meet chapter 7.1 (Review of Requests, Tenders and Contracts), chapter 7.4 (Handling of Test or Calibration Items), chapter 7.8.2 (Reporting of Results – Common Requirement for Reports (Test, Calibration or Sampling)), This decision rule will be the base of adjustment (include the disclaimer scope) from SRT LAB.
- After communicate between SRT LAB. and clients /applicants and get the agreement, SRT LAB. will do the adjustment. According to this decision rule, SRT LAB. Manager(s) will do the Pass or Fail adjustment. (But one thing need to be concerned is, not every assessing rule suits all declaration of conformity assessing actions, it should be ruled depends on product's feature, test standard, technical regulation, test results, and also acceptance of risk of both sides.)
- This report according to the “description of applied standards and statements of conformity” on the report, as the decision rule.

### 1.5 REPORTING STATEMENTS OF CONFORMITY

Base on ISO/IEC 17025, the statements of conformity requirement of testing results.

- ☐ It does not need to provide the statements of conformity.
- ☒ It need to provide the statements of conformity and
  - ☒ Use CISPR 16-4,ISO/IEC Guide 98-3, IEC Guide 115,etsi ETR 028 speciation and it does not need to provide additional uncertainty of the testing results or data on the report(s).
  - ☐ It need to provide additional uncertainty of the testing results or data on the report(s).

 <b>Spectrum Research &amp; Testing Lab., Inc.</b> No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)	<h1>TEST REPORT</h1>	Reference No.: A23111702 Report No.: FCCA23111702 -M0 FCC ID : 2AIMRRD10M Page: 4 of 7 Date: Dec. 04, 2023
--	----------------------	--

## 2. GENERAL CONCLUSION

According to FCC §1.1307 and KDB 447498 D04, the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold  $P_{th}$  (mW).

### 1) Option A. 1-mW Test Exemption

Per § 1.1307(b)(3)(i)(A), a single RF source is exempt RF device (from the requirement to show data demonstrating compliance to RF exposure limits, as previously mentioned) if the available maximum time-averaged power is no more than 1 mW, regardless of separation distance.

This exemption applies to all operating configurations and exposure conditions, for the frequency range 100 kHz to 100 GHz, regardless of fixed, mobile, or portable device exposure conditions. This is a standalone exemption, and it cannot be applied in conjunction with any other test exemption.

### 2) Option B. SAR-Based Exemption

A more comprehensive exemption, considering a variable power threshold that depends on both the separation distance and power, is provided in §

1.1307(b)(3)(i)(B). This exemption is applicable to the frequency range between 300 MHz and 6 GHz, with test separation distances between 0.5 cm and 40 cm, and for all RF sources in fixed, mobile, and portable device exposure conditions.

Accordingly, a RF source is considered an RF exempt device if its available maximum time-averaged (matched conducted) power or its effective radiated power (ERP), whichever is greater, are below a specified threshold.

This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive).  $P_{th}$  is given by:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left( \frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

$d$  = the separation distance (cm);

**Table B2-Example Power Thresholds (mW)**

Frequency (MHz)	Distance(mm)										
	mW	5	10	15	20	25	30	35	40	45	50
	300	39	65	88	110	129	148	166	184	201	217
	450	22	44	67	89	112	135	158	180	203	226
	835	9	25	44	66	90	116	145	175	207	240
	1900	3	12	26	44	66	92	122	157	195	236
	2450	3	10	22	38	59	83	111	143	179	219
	3600	2	8	18	32	49	71	96	125	158	195
	5800	1	6	14	25	40	58	80	106	136	169

### 3) Option C MPE-Based Exemption

An alternative to the SAR-based exemption is provided in § 1.1307(b)(3)(i)(C), for a much wider frequency range, from 300 kHz to 100 GHz, applicable for separation distances greater or equal to  $\lambda/2\pi$ , where  $\lambda$  is the free-space operating wavelength in meters. The MPE-based test exemption condition is in terms of ERP, defined as the product of the maximum antenna gain and the delivered maximum time-averaged power. For this case, a RF source is an RF exempt device if its ERP (watts) is no more than a frequency-dependent value, as detailed tabular form in Appendix B. These limits have been derived based on the basic specifications on Maximum Permissible Exposure (MPE) considered for the FCC rules in § 1.1310(e)(1).

**Table B.1 - Thresholds for Single RF Sources  
Subject to Routine Environmental Evaluation**

RF Source Frequency		Minimum Distance		Threshold ERP
$f_L$ MHz	- $f_H$ MHz	$\lambda_L / 2\pi$	- $\lambda_H / 2\pi$	W
0.3	- 1.34	159 m	- 35.6 m	$1920 R^2$
1.34	- 30	35.6 m	- 1.6 m	$3450 R^2/f^2$
30	- 300	1.6 m	- 159 mm	$3.83 R^2$
300	- 1,500	159 mm	- 31.8 mm	$0.0128 R^2 f$
1,500	- 100,000	31.8 mm	- 0.5 mm	$1932 R^2$
Subscripts L and H are low and high; $\lambda$ is wavelength. From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.				

In the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.



$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1$$

Where:

a = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(B) of this section for  $P_{th}$ , including existing exempt transmitters and those being added.

b = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(C) of this section for Threshold ERP, including existing exempt transmitters and those being added.

c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.

$P_i$  = the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm (inclusive).

$P_{th,i}$  = the exemption threshold power ( $P_{th}$ ) according to paragraph (b)(3)(i)(B) of this section for fixed, mobile, or portable RF source i.

$ERP_j$  = the ERP of fixed, mobile, or portable RF source j.

$ERP_{th,j}$  = exemption threshold ERP for fixed, mobile, or portable RF source j, at a distance of at least  $\lambda/2\pi$  according to the applicable formula of paragraph (b)(3)(i)(C) of this section.

$Evaluated_k$  = the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation at the location of exposure.

$Exposure Limit_k$  = either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source k, as applicable from §1.1310 of this chapter.

 <b>Spectrum Research &amp; Testing Lab., Inc.</b> No.167,Ln. 780, Shan-Tong Rd.,Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)	<h1>TEST REPORT</h1>	Reference No.: A23111702 Report No.: FCCA23111702 -M0 FCC ID : 2AIMRRD10M Page: 7 of 7 Date: Dec. 04, 2023
--	----------------------	--

### 3. TEST RESULTS

For WIFI 2.4G

$$MPE=10^{((\text{output\_power}+\text{antenna\_gain})/10)} / (4 \times 3.14 \times (20\text{cm})^2)$$

Type	功率	ANTENNA GAIN	EIRP	mw
wifi 2.4G ant 1	20.85	4.03	24.88	307.6096815
wifi 2.4G ant 2	24.66	3.77	28.43	696.6265141
Totla(mw)				1004.236196
Totla (dbm)				30.018635871

MPE = **0.19989** mW/cm2

**Note:**

- (1)Output power including tune up tolerance.
- (2)MPE evaluation is not required.

# End of report