



Test report No:
2410381R-RF-US-P20V01

RF Exposure Evaluation Exemption Report

Product Name	Bluetooth Low Energy module
Trademark	MINEW
Model and /or type reference	MS88SFA
FCC ID	2ABU6-MS88SFA
Applicant's name / address	Shenzhen Minew Technologies Co., Ltd. 3rd Floor, I Building, Gangzhilong Science Park, Qinglong Road, Longhua District, Shenzhen City, China
Test method requested, standard	FCC 47CFR §1.1307
Verdict Summary	IN COMPLIANCE
Documented By (name / position & signature)	Tim Cao/Project Manager 
Approved by (name / position & signature)	Jack Zhang/ Manager 
Date of issue	2024-09-23
Report Version	V1.0
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COMPETENCES AND GUARANTEES

DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

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The results presented in this Test Report apply only to the particular item under test established in this document.

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GENERAL CONDITIONS

Test Location	No. 99, Hongye Road, Suzhou Industrial Park Suzhou, 215006, P.R. China
Date (receive sample)	Jan. 15, 2024
Date (start test)	Sept. 09, 2024
Date (finish test)	Sept. 11, 2024

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
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4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.

ENVIRONMENTAL CONDITIONS

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

Ambient temperature	15°C - 35 °C
Relative Humidity air	30% - 60%

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

POSSIBLE TEST CASE VERDICTS

Test case does not apply to test object	N/A
Test object does meet requirement	P (Pass) / PASS
Test object does not meet requirement	F (Fail) / FAIL
Not measured	N/M

ABBREVIATIONS

For the purposes of the present document, the following abbreviations apply:

EUT	: Equipment Under Test
QP	: Quasi-Peak
CAV	: CISPR Average
AV	: Average
CDN	: Coupling Decoupling Network
SAC	: Semi-Anechoic Chamber
OATS	: Open Area Test Site
BW	: Bandwidth
AM	: Amplitude Modulation
PM	: Pulse Modulation
HCP	: Horizontal Coupling Plane
VCP	: Vertical Coupling Plane
UN	: Nominal voltage
Tx	: Transmitter
Rx	: Receiver
N/A	: Not Applicable
N/M	: Not Measured

DOCUMENT HISTORY

Report No.	Version	Description	Issued Date
2410381R-RF-US-P20V01	V1.0	Initial issue of report.	2024-09-23

REMARKS AND COMMENTS

1. The equipment under test (EUT) does meet the essential requirements of the stated standard(s)/test(s).
2. These test results on a sample of the device are for the purpose of demonstrating Compliance with FCC 47CFR §1.1307.
3. The measurement result is considered in conformance with the requirement if it is within the prescribed limit, it is not necessary to account the uncertainty associated with the measurement result.
4. The test results presented in this report relate only to the object tested.
5. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification (Suzhou) Co., Ltd.
6. This report will not be used for social proof function in China market.
7. DEKRA declines any responsibility with the following test data provided by customer that may affect the validity of result:
 - Chapter 1.3 Antenna information.

1. RF Exposure Evaluation

1.1. Limits

According to § 1.1307(b)(3)(i)(C)

Using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	$1,920 R^2$.
1.34-30	$3,450 R^2/f^2$.
30-300	$3.83 R^2$.
300-1,500	$0.0128 R^2f$.
1,500-100,000	$19.2R^2$.

Finally, when 10-g extremity SAR applies, SAR test exemption may be considered by applying a factor of 2.5 to the SAR-based exemption threshold.

1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18°C and 78% RH.

1.3. Test Result of RF Exposure Evaluation

2. Product Name	Bluetooth low energy module
Model No.	MS88SFA
Trademark	MINEW
FCC ID	2ABU6-MS88SFA
Manufacturer	Shenzhen Minew Technologies Co., Ltd.
Manufacturer Address	Building 3, Instrument World Industrial Park, No. 306, Guanlan Guiyue Road, Longhua District, Shenzhen

Wireless specification	BLE 5.0				
Operating frequency range(s)	2402~2480MHz				
Type of Modulation	GFSK				
PHYs	<input checked="" type="checkbox"/>	LE 1M	<input checked="" type="checkbox"/>	LE 2M	<input type="checkbox"/> LE Coded S=2/8
Data Rate	<input checked="" type="checkbox"/>	1Mbit/s	<input checked="" type="checkbox"/>	2Mbit/s	<input type="checkbox"/> 500/125 Kbit/s
Number of channel	40				

Rated power supply	Voltage and Frequency	
	<input type="checkbox"/>	AC: 220 – 240 Vac, 50/60 Hz
	<input type="checkbox"/>	AC: 110 – 130 Vac, 50/60 Hz
	<input type="checkbox"/>	DC: 1.7 – 5Vdc
	<input type="checkbox"/>	Battery:
	<input type="checkbox"/>	PoE:
Mounting position	<input type="checkbox"/>	Table top equipment
	<input type="checkbox"/>	Wall/Ceiling mounted equipment
	<input type="checkbox"/>	Floor standing equipment
	<input type="checkbox"/>	Hand-held equipment
	<input checked="" type="checkbox"/>	Other: RF Module

Antenna information

Antenna model / type number	ANT-BBNCNC22019			
Antenna serial number	N/A			
Antenna Delivery	<input checked="" type="checkbox"/>	1TX + 1RX		
	<input type="checkbox"/>	2TX + 2RX		
	<input type="checkbox"/>	Others:.....		
Antenna technology.....	<input checked="" type="checkbox"/>	SISO		
	<input type="checkbox"/>	MIMO	<input type="checkbox"/>	CDD
			<input type="checkbox"/>	Beam-forming
Antenna Type	<input type="checkbox"/>	External	<input type="checkbox"/>	Dipole
			<input type="checkbox"/>	Sectorized
			<input type="checkbox"/>	Ceramic Chip
	<input checked="" type="checkbox"/>	Internal	<input type="checkbox"/>	PIFA
			<input checked="" type="checkbox"/>	PCB
			<input type="checkbox"/>	Metal
			<input type="checkbox"/>	Others.....
Antenna Gain.....	2.83 dBi			

Note: The antenna information for the EUT in clause 1.3 are provided and confirmed by the client.

The tune-up power is 0.5dB, the maximum conducted power we used to calculate RF exposure is 3.48dBm.

Band	Exposure Condition	Pmax (dBm)	EIRP (mW)	ERP (mW)	Distance (mm)	$\lambda/2\pi$ (mm)	f(MHz)	Threshold ERP (mW)	RF exposure evaluation verdict
Bluetooth	Body	3.48	4.27	2.61	20	19.9	2400	7.68	Not required

Conclusion: RF exposure evaluation is not required if the separation distance between the user and/or bystander and the device's radiating element is greater than 2 cm.

_____ The End _____