



MPE TEST REPORT

Report No.: SHATBL2201008W02

Applicant:

Sichuan AnSphere Technology Co., Ltd.

Address:

Room 332, building 2, innovation center,
science and Innovation Park, Mianyang, Sichuan, China

Product Name : Bluetooth modular

Brand Name : N/A

Model Name : nRF52810

Series Model : N/A

Test Standard : FCC CFR 47 part 1, 1.1310

FCC ID : 2A4AD-NRF52810

"Shanghai ATBL Technology Co., Ltd." hereby certifies that according to actual testing conditions. The test results or observations are provided in accordance with measured value, without taking risks caused by uncertainty into account. Without explicit stipulation in special agreements, standards or regulations, ATBL shall not assume any responsibility. The test results or observations are applicable only to tested sample. Client shall be responsible for representativeness of the sample and authenticity of the material. This report will be void without authorized signature or special seal for testing report. Do not copied without authorization.

TEST RESULT INFORMATION

Applicant's Name.....: Sichuan AnSphere Technology Co., Ltd.
Address.....: Room 332, building 2, innovation center, science and Innovation
Park, Mianyang, Sichuan, China

Manufacture's Name.....: Sichuan AnSphere Technology Co., Ltd.
Address.....: Room 332, building 2, innovation center, science and Innovation
Park, Mianyang, Sichuan, China

Product Description

Product Name.....: Bluetooth modular
Brand Name: N/A
Model Name: nRF52810
Series Model.....: N/A
Standards.....: FCC CFR 47 part 1, 1.1310
Test Procedure: 680106 D01 RF Exposure Wireless Charging Apps v03

This device described above has been tested by ATBL, the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of ATBL, this document

Date of Test.....:
Date of receipt of test item.....: 06 Jan. 2022
Date of performance of tests: 07 Jan. 2022~ 14 Jan. 2022
Date of Issue.....: 17 Jan. 2022
Test Result.....: **Pass**

Report Prepared by :

Roean Wei
(Roeanwei)

Report Approved by :

Ghost Li.
(Ghost li)

Authorized Signatory :

Terry yang
(Terry yang)



"Shanghai ATBL Technology Co., Ltd." hereby certifies that according to actual testing conditions. The test results or observations are provided in accordance with measured value, without taking risks caused by uncertainty into account. Without explicit stipulation in special agreements, standards or regulations, ATBL shall not assume any responsibility. The test results or observations are applicable only to tested sample. Client shall be responsible for representativeness of the sample and authenticity of the material. This report will be void without authorized signature or special seal for testing report. Do not copied without authorization.

Maximum Permissible Exposure (MPE) Report

1. Limits and Guidelines on Exposure to Electromagnetic Fields

1.1 TEST STANDARDS

The limit for Maximum Permissible Exposure (MPE) specified in KDB 447498 D01 General RF Exposure Guidance v06 is followed. The gain of the antennas used in the product is extracted from the Antenna data sheets provided and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.

Although the Friis Transmission formula is far field assumption, the calculated result of that is an over-prediction for near field power density. It is taken as worst case to specify the safety range.

1.2 LIMIT

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table.

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	
MHz	30	35	40	45	50	mm
150	232	271	310	349	387	SAR Test Exclusion Threshold (mW)
300	164	192	219	246	274	
450	134	157	179	201	224	
835	98	115	131	148	164	
900	95	111	126	142	158	
1500	73	86	98	110	122	
1900	65	76	87	98	109	
2450	57	67	77	86	96	
3600	47	55	63	71	79	
5200	39	46	53	59	66	
5400	39	45	52	58	65	
5800	37	44	50	56	62	

"Shanghai ATBL Technology Co., Ltd." hereby certifies that according to actual testing conditions. The test results or observations are provided in accordance with measured value, without taking risks caused by uncertainty into account. Without explicit stipulation in special agreements, standards or regulations, ATBL shall not assume any responsibility. The test results or observations are applicable only to tested sample. Client shall be responsible for representativeness of the sample and authenticity of the material. This report will be void without authorized signature or special seal for testing report. Do not copied without authorization.

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where $f(\text{GHz})$ is the RF channel transmit frequency in GHz.

Power and distance are rounded to the nearest mW and mm before calculation

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

1.3 TEST RESULT

Maximum measured transmitter power.

The Worst Case

Mode	frequency	Maximum AV Output Power	Tune up tolerance	Max Tune up
	GHz	dBm	dBm	dBm
1Mbps/GFSK	2.402	-0.90	0 \pm 1	0 \pm 1
2Mbps/GFSK	2.402	-0.64	0 \pm 1	0 \pm 1

Remark: The worst case gain of the antenna is 2.14dBi.

2.14dBi logarithmic terms convert to numeric result is nearly 1.64.

Maximum Tune up Power₍₂₄₀₂₎= 1.259mw

Maximum Tune up Power₍₂₄₀₂₎= 1.259mw

$[(1\text{Mbps/GFSK power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] = 1.259/5 \cdot \sqrt{2.402} = 0.39 \leq 3.0$

$[(2\text{Mbps/GFSK power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] = 1.259/5 \cdot \sqrt{2.402} = 0.39 \leq 3.0$

Threshold at which no SAR required is $0.39 \leq 3.0$ for 1-g SAR, Separation distance ≤ 5 mm.

Threshold at which no SAR required is $0.39 \leq 3.0$ for 1-g SAR, Separation distance ≤ 5 mm.

END OF THE REPORT

"Shanghai ATBL Technology Co., Ltd." hereby certifies that according to actual testing conditions. The test results or observations are provided in accordance with measured value, without taking risks caused by uncertainty into account. Without explicit stipulation in special agreements, standards or regulations, ATBL shall not assume any responsibility. The test results or observations are applicable only to tested sample. Client shall be responsible for representativeness of the sample and authenticity of the material. This report will be void without authorized signature or special seal for testing report. Do not copied without authorization.