



FCC ID: 2A4AD-NRF52810

Report No.: SHATBL2201008W02

MPE TEST REPORT

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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

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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.

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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)

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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	<i>SAR Test Exclusion Threshold (mW)</i>
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	<i>SAR Test Exclusion Threshold (mW)</i>
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	

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

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

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 \leq 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 \leq 5mm.

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

*****END OF THE REPORT*****

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