



RF EXPOSURE Test Report

Report No.: MTi240226021-01E4
Date of issue: 2024-05-27
Applicant: Linkplay Technology Inc.
Product: S28
Model(s): S28
FCC ID: 2BABF-S28

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>

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Test Result Certification	
Applicant:	Linkplay Technology Inc.
Address:	8000 Jarvis Avenue Suite #130, Newark, CA 94560
Manufacturer:	Linkplay Technology Inc.
Address:	8000 Jarvis Avenue Suite #130, Newark, CA 94560
Product description	
Product name:	S28
Trademark:	WiiM
Model name:	S28
Serial Model:	N/A
Standards:	N/A
Test procedure:	KDB 447498 D01 v06
Date of Test	
Date of test:	2024-04-07 to 2024-05-25
Test result:	Pass

Test Engineer :

Letter Lan.

(Letter Lan)

Reviewed By: :

David Lee

(David Lee)

Approved By: :

Leon Chen

(Leon Chen)

RF EXPOSURE EVALUATION

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) Radiation as specified in §1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

MPE Calculation Method

Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

π = 3.1415926

R = distance between observation point and center of the radiator in cm (20cm)

P_d the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

Measurement Result

BLE:

Operation Frequency: 2402-2480MHz

ANT Gain: 1.5dBi

Power density limited: 1mW/ cm²

BLE:

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
				tune-up power		Gain			
				(dBm)	(mW)	(dBi)	Numeric		
2402	GFSK-1M	9.68	9±1	10	10.000	1.5	1.41	0.0028	1
2440		9.31	9±1	10	10.000	1.5	1.41	0.0028	1
2480		9.54	9±1	10	10.000	1.5	1.41	0.0028	1
2402	GFSK-2M	10.70	10±1	11	12.589	1.5	1.41	0.0035	1
2440		11.42	11±1	12	15.849	1.5	1.41	0.0045	1
2480		10.50	10±1	11	12.589	1.5	1.41	0.0035	1

2.4G WIFI:

Operation Frequency: WIFI 802.11b/g/n HT20: 2412-2462MHz,

ANT Gain: 1.5dBi

Power density limited: 1mW/ cm²

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max		Antenna Gain	Evaluation result at 20cm Power density(mW/cm ²)	Power density Limits (mW/cm ²)
				tune-up power				
				(dBm)	(mW)			
2412	802.11b	17.42	17±1	18	63.096	1.41	0.01773	1
2437		16.67	16±1	17	50.119	1.41	0.01408	1
2462		16.51	16±1	17	50.119	1.41	0.01408	1
2412	802.11g	15.56	15±1	16	39.811	1.41	0.01119	1
2437		14.40	14±1	15	31.623	1.41	0.00889	1
2462		15.69	15±1	16	39.811	1.41	0.01119	1
2412	802.11n H20	14.82	14±1	15	31.623	1.41	0.00889	1
2437		14.32	14±1	15	31.623	1.41	0.00889	1
2462		13.79	13±1	14	25.119	1.41	0.00706	1
2422	802.11n H40	15.39	15±1	16	39.811	1.41	0.01119	1
2437		14.42	14±1	15	31.623	1.41	0.00889	1
2452		15.18	15±1	16	39.811	1.41	0.01119	1

802.11a/n(HT20):

U-NII Band 1: 5180MHz to 5240MHz;

U-NII Band 2A: 5260MHz to 5320MHz;

U-NII Band 2C: 5500MHz to 5700MHz;

U-NII Band 3: 5745MHz to 5825MHz;

802.11n(HT40):

U-NII Band 1: 5190MHz to 5230MHz;

U-NII Band 2A: 5270MHz to 5310MHz;

U-NII Band 2C: 5510MHz to 5670MHz;

U-NII Band 3: 5755MHz to 5795MHz;

ANT Gain: U-NII Band 1: 3.32dBi; U-NII Band 2A: 2.97dBi; U-NII Band 2C: 3.17dBi; U-NII Band 3: 3.32dBi;

 Power density limited: 1mW/ cm²

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max		Antenna Gain Numeric	Evaluation result at 20cm Power density(mW/cm ²)	Power density Limits (mW/cm ²)	
				tune-up power (dBm)	(mW)				
5180	11A	15.64	15±1	16	39.811	2.15	0.01701	1	
5200		15.12	15±1	16	39.811	2.15	0.01701	1	
5240		15.76	15±1	16	39.811	2.15	0.01701	1	
5260		14.46	14±1	15	31.623	1.98	0.01247	1	
5280		15.26	15±1	16	39.811	1.98	0.01569	1	
5320		15.87	15±1	16	39.811	1.98	0.01569	1	
5500		12.90	12±1	13	19.953	2.07	0.00824	1	
5580		14.70	14±1	15	31.623	2.07	0.01305	1	
5700		15.26	15±1	16	39.811	2.07	0.01643	1	
5745		14.88	14±1	15	31.623	2.15	0.01351	1	
5785		15.41	15±1	16	39.811	2.15	0.01701	1	
5825		15.08	15±1	16	39.811	2.15	0.01701	1	
5180		11N20SISO	13.23	13±1	14	25.119	2.15	0.01073	1
5200			14.13	14±1	15	31.623	2.15	0.01351	1
5240	14.98		14±1	15	31.623	2.15	0.01351	1	
5260	13.93		13±1	14	25.119	1.98	0.00990	1	
5280	14.52		14±1	15	31.623	1.98	0.01247	1	
5320	14.03		14±1	15	31.623	1.98	0.01247	1	
5500	12.16		12±1	13	19.953	2.07	0.00824	1	
5580	13.07		13±1	14	25.119	2.07	0.01037	1	
5700	13.73		13±1	14	25.119	2.07	0.01037	1	
5745	13.12		13±1	14	25.119	2.15	0.01073	1	
5785	13.44		13±1	14	25.119	2.15	0.01073	1	
5825	13.56		13±1	14	25.119	2.15	0.01073	1	
5190	11N40SISO		14.27	14±1	15	31.623	2.15	0.01158	1
5230			14.66	14±1	15	31.623	2.15	0.01351	1
5270		13.88	13±1	14	25.119	1.98	0.00990	1	
5310		13.66	14±1	15	31.623	1.98	0.01247	1	
5510		12.52	12±1	13	19.953	2.07	0.00824	1	
5550		14.15	14±1	15	31.623	2.07	0.01305	1	
5670		14.12	14±1	15	31.623	2.07	0.01305	1	
5755		14.29	14±1	15	31.623	2.15	0.01351	1	
5795	14.14	14±1	15	31.623	2.15	0.01351	1		

Conclusion:
SIMULTANEOUS TRANSMISSIONS

When a number of sources at different frequencies, and/or broadband sources, contribute to the total exposure, it becomes necessary to weigh each contribution relative to the MPE. To comply with the MPE, the fraction of the MPE in terms of E2, H2 (or power density) incurred within each frequency interval should be determined and the sum of all such fractions should not exceed unity. In order to ensure compliance with the MPE for a controlled environment, the sum of the ratios of the power density to the corresponding MPE should not exceed unity. That is

$$\sum_{i=1}^n \frac{S_i}{MPE_i} \leq 1$$

Simultaneous transmit:

Operating Band	The MPE ratio
BLE	0.0045
2.4G WIFI	0.01773
5G WIFI	0.01701

So the simultaneous transmitting antenna pairs as below:

$$BLE+5G WIFI = 0.0045+ 0.01701=0.02151$$

$$BLE+2.4G WIFI = 0.0045+ 0.01773=0.0223$$

For the max result: $0.0223 \leq 1.0$, No SAR is required.

----END OF REPORT----