

RF Exposure*1. Regulation**

According to the KDB 447498 D04 V01, the following RF exposure evaluation shall to demonstrate RF exposure compliance.

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. RF Exposure Compliance Issue

Overview

Mode	Frequency (MHz)	Conducted power (dBm)	MAX power (mW)	Limit (mW)
GFSK	2480	-2.91	0.51	1.00
$\pi/4$ DQPSK	2480	-2.03	0.63	1.00
8DPSK	2480	-2	0.63	1.00

Maximum antenna gain = -0.58 dBi

Conclusion: The output power of EUT is no more than 1mW, regardless of separation distance. Therefore, this EUT is exempt from SAR test.

Product Name:	Bluetooth speaker
Product Model No.:	Input: 5 V $\overline{\text{---}}$ 2 A Wireless charging output: 5 W/ 10 W
Model Difference:	G3mini is tested model, other models are derivative models. The models are identical in circuit, only different on the model names. So the test data of G3min can represent the remaining models.
Test Auxiliary:	Smartphone and Power adapter
Transmitting mode:	Keep the EUT in continuously wireless charging mode
Power supply:	Input: 5 V $\overline{\text{---}}$ 2 A Wireless charging output: 5 W/ 10 W

Test Modes:	
Mode 1	Wireless charging mode(10W)
Mode 2	Wireless charging mode(5W)
Note: All modes were tested, only the worst-case was recorded in the report. Mode 1 is the worst mode.	

RF Exposure Evaluation

1 Measuring Standard

KDB 680106 D01 Wireless Power Transfer v04

2 Requirements

According to the item 3 of KDB 680106 D01 v04:

Inductive wireless power transfer applications that meet all of the following requirements are excluded from submitting an RF exposure evaluation.

(1) Mobile Device and Portable Device Configurations

Yes, Mobile Device

(2) Equipment Authorization Procedures for Devices Operating at Frequencies Below 4 MHz

Yes, The device operate in the frequency range 110.01kHz-205kHz

(3) RF Exposure compliance may be ensured only for a minimum separation distance that is greater than 20 cm, while use conditions at smaller distances can still be considered unlikely.

Yes, The EUT is used when larger than 20cm.

Limits

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)

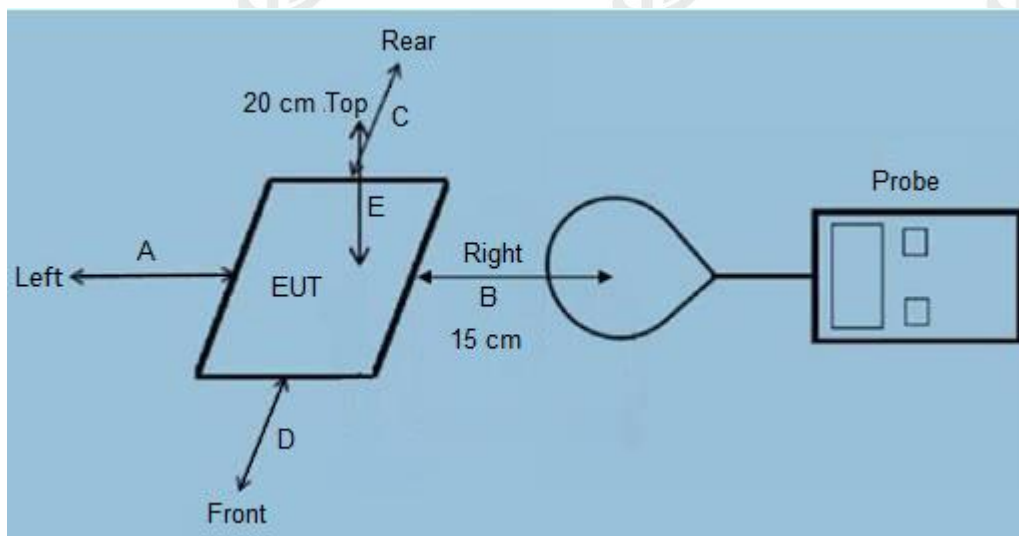


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Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	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
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

F=frequency in MHz
*=Plane-wave equivalent power density
RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).

3 Test Setup



4 Test Procedure

- 1) The RF exposure test was performed in anechoic chamber.
- 2) The measurement probe was placed at test distance (15 cm from all sides and 20 cm from the top) which is between the edge of the charger and the geometric center of probe.
- 3) The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E) were completed.
- 4) The EUT was measured according to the dictates of KDB 680106 D01 v04.

Remark: The EUT's test position A, B, C, D and E is valid for the E and H field measurements.

5 Test Instruments list

Test Equipment	Manufacturer	Model No.	SN.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
Exposure Level Tester	Narda	ELT-400	N-0231	May 10, 2024	May 09, 2025
Magnetic field probe 100cm ²	Narda	ELT probe 100cm ²	M0675	May 10, 2024	May 09, 2025
Isotropic Electric field probe	Narda	EP-601	611WX70332	May 10, 2024	May 09, 2025

6 Test Result

We have evaluated 1%, 50% and 99% battery charging mode, and the worst mode (1%) is showed in this report.

E-Filed Strength at 15 cm from the edges surrounding the EUT (V/m)

Frequency Range (MHz)	Test Position A	Test Position B	Test Position C	Test Position D	Limits (V/m)
0.11001-0.205	0.50	0.54	0.55	0.53	614

E-Filed Strength at 20 cm from the top of the EUT (V/m)

Frequency Range (MHz)	Test Position E	Limits (V/m)
0.11001-0.205	0.52	614

H-Filed Strength at 15 cm from the edges surrounding the EUT (A/m)

Frequency Range (MHz)	Test Position A	Test Position B	Test Position C	Test Position D	Limits (A/m)
0.11001-0.205	0.11	0.11	0.10	0.11	1.63

H-Filed Strength at 20 cm from the top of the EUT (A/m)

Frequency Range (MHz)	Test Position E	Limits (A/m)
0.11001-0.205	0.14	1.63

7 Test Photo

