Electro Magnetic Field(EMF) Radiation Exposure TEST REPORT

No. I23Z70243-SEM01

For

SAMSUNG Electronics Co., Ltd.

Wireless Battery Pack

Model Name: EB-U2510

with

Hardware Version: V3

Software Version: V02

FCC ID: ZCAEBU2510

Issued Date: 2023-11-15

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

Test Laboratory:

CTTL, Telecommunication Technology Labs, CAICT

No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191.

Tel:+86(0)10-62304633-2512, Fax:+86(0)10-62304633-2504

Email: cttl_terminals@caict.ac.cn, website: www.caict.ac.cn

REPORT HISTORY

Report Number	Revision	Issue Date	Description
I23Z70243-SEM01	Rev.0	2023-10-30	Initial creation of test report
I23Z70243-SEM01	Rev.1	2023-11-03	Update the information on page8. Update the information on page5/7.
I23Z70243-SEM01	Rev.2	2023-11-15	Update the information for product name.

TABLE OF CONTENT

1 Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under American Association for Laboratory Accreditation (A2LA) with lab code 7049.01, and is also an FCC accredited test laboratory (CN1349), and ISED accredited test laboratory (CAB identifier:CN0066). The detail accreditation scope can be found on A2LA website.

1.2. Testing Location

Location 1: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191

1.3. Testing Environment

Normal Temperature: 15-35℃

Extreme Temperature: -10/+55℃

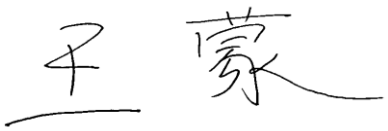
Relative Humidity: 20-75%

1.4. Project data

Testing Start Date: 2023-10-26

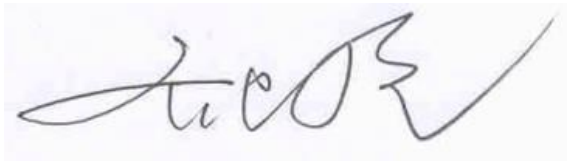
Testing End Date: 2023-10-26

1.5. Signature



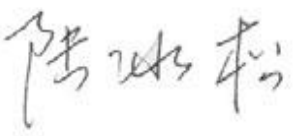
Wang Meng

(Prepared this test report)



Qi Dianyuan

(Reviewed this test report)



Lu Bingsong

Deputy Director of the laboratory

(Approved this test report)

2 Statement of Compliance

According to 'KDB 680106 D01 Wireless Power Transfer v04'，for mobile WPT equipment, its H-field needs to be measured at 15 cm and is limited to 1.63A/m. the measured value at 14cm is 0.17.

3 Client Information

3.1 Applicant Information

Company Name:	SAMSUNG Electronics Co., Ltd.
Address/Post:	19 Chapin Rd.,Building D Pine Brook, NJ 07058
Contact Person:	Jenni Chun
Contact Email:	j1.chun@samsung.com
Telephone:	+1-201-937-4203
Fax	/

3.2 Manufacturer Information

Company Name:	Samsung Electronics. Co., Ltd.
Address/Post:	Samsung R5, Maetan dong 129, Samsung ro Youngtong gu, Suwon city 443 742, Korea
Contact Person:	Kobe Cho
Contact Email:	ggobi.cho@samsung.com
Telephone:	+82 - 10 - 2722 - 4159
Fax	/

4 Equipment Under Test (EUT) and Ancillary Equipment (AE)

4.1 About EUT

Description:	Wireless Battery Pack
Model Name:	EB-U2510
Tested mode:	Wireless Charging
Operating Frequency:	120–130 kHz
Test device Production information:	Production unit
Antenna type:	Inductive Loop Coil Antenna

4.2 Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version
EUT1	I23Z70242UT05a	V3	V02

*EUT ID: is used to identify the test sample in the lab internally.

Note: It is performed to test E-field strength with the EUT1.

4.3 Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
AE1	Battery	Rechargeable Li-ion Cell	5160A0	HuiZhou GanFeng LiEnergy Battery Technology Co., Ltd.

*AE ID: is used to identify the test sample in the lab internally.

5 TEST METHODOLOGY

5.1 Applicable Measurement Standards

KDB 680106 D01 Wireless Power Transfer v04

TCB Workshop April 2022: Part 18 & Wireless Power Transfer

5.2 RF Exposure Requirements

For equipment authorization of RF devices operating between 100 kHz and 4 MHz, the use of MPE limits in 47 CFR § 1.1310 (with the 300 kHz limit applicable all the way down to 100 kHz) for both E- and H- field strength is allowed in lieu of SAR.

For loop/coil emitting structures (dominant H-field near-field emission), only H-field measurements are acceptable for MPE limit compliance

According to 'KDB 680106 D01 Wireless Power Transfer v04'，for mobile WPT equipment, its H-field needs to be measured at 15 cm and is limited to 1.63A/m.

Table 1 to § 1.1310(e)(1) - 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)
(i) 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
(ii) 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.

6 Test Setup

For the EHP-200A the sensitive element is located approximately 8mm bellow the external surface like Figure 1.

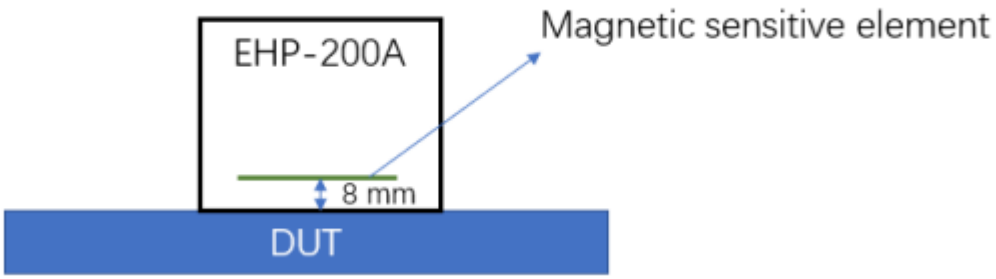


Figure 1. The located of sensitive element

E- and H-field data are taken along all three axes the device, from 0 cm to 20 cm, in 2 cm minimum increment measured from the edge of the device, with one axis coincident with the axis of the main coil.

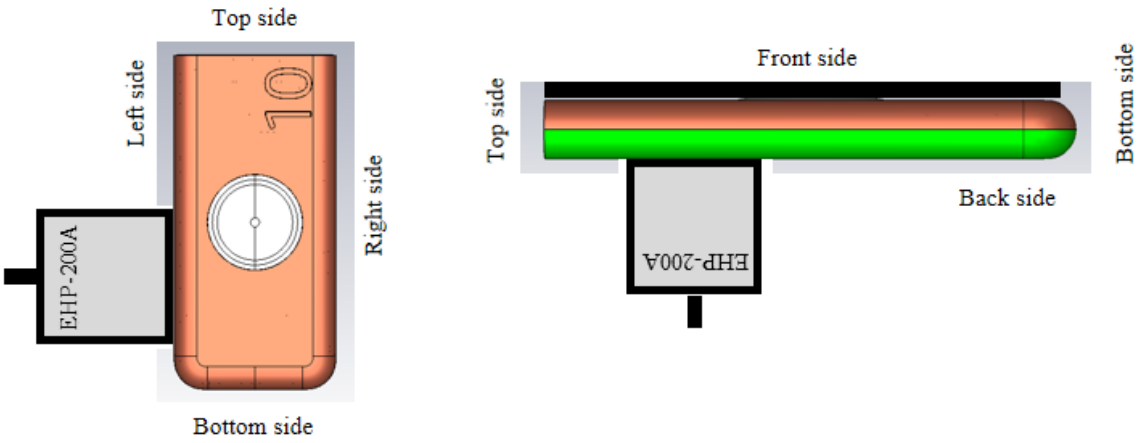


Figure 2. DUT test diagram

7 H-field strength Test Results

Position	Distance (cm)	Tx Power (W)	H-field (A/m)
Front Side	2	7.5	1.43
Front Side	4	7.5	0.87
Front Side	6	7.5	0.56
Front Side	8	7.5	0.34
Front Side	10	7.5	0.25
Front Side	12	7.5	0.19
Front Side	14	7.5	0.17
Front Side	16	7.5	0.12
Front Side	18	7.5	0.11
Back Side	0	7.5	10.61
Back Side	2	7.5	6.16
Back Side	4	7.5	2.00
Back Side	6	7.5	0.89
Back Side	8	7.5	0.40
Back Side	10	7.5	0.32
Back Side	12	7.5	0.20
Back Side	14	7.5	0.15
Back Side	16	7.5	0.11
Back Side	18	7.5	0.06
Right Side	0	7.5	6.57
Right Side	2	7.5	2.54
Right Side	4	7.5	1.53
Right Side	6	7.5	0.78
Right Side	8	7.5	0.27
Right Side	10	7.5	0.21
Right Side	12	7.5	0.18
Right Side	14	7.5	0.16
Right Side	16	7.5	0.12
Right Side	18	7.5	0.07
Left Side	0	7.5	6.91
Left Side	2	7.5	2.79
Left Side	4	7.5	1.02
Left Side	6	7.5	0.53
Left Side	8	7.5	0.34
Left Side	10	7.5	0.26
Left Side	12	7.5	0.21
Left Side	14	7.5	0.16
Left Side	16	7.5	0.11
Left Side	18	7.5	0.09
Bottom Side	0	7.5	1.26
Bottom Side	2	7.5	0.58
Bottom Side	4	7.5	0.32
Bottom Side	6	7.5	0.19
Bottom Side	8	7.5	0.17
Bottom Side	10	7.5	0.13
Bottom Side	12	7.5	0.11
Bottom Side	14	7.5	0.09
Bottom Side	16	7.5	0.08
Bottom Side	18	7.5	0.06
Top Side	0	7.5	0.80
Top Side	2	7.5	0.51
Top Side	4	7.5	0.32
Top Side	6	7.5	0.21
Top Side	8	7.5	0.19
Top Side	10	7.5	0.16
Top Side	12	7.5	0.13
Top Side	14	7.5	0.12
Top Side	16	7.5	0.11
Top Side	18	7.5	0.08

8 MAIN TEST INSTRUMENTS

	Name	Type	Serial Number	Calibration Date	Valid Period
01	Electromagnetic field probe	EHP-200AC	180ZX10205	May 18, 2023	One year

ANNEX A H-field and SAR Simulation Results

Refer to WPT SAR Compliance Simulation Report for EB-U2510 report

ANNEX B Accreditation Certificate

ilac-MRA A2LA

Accredited Laboratory

A2LA has accredited

TELECOMMUNICATION TECHNOLOGY LABS, CAICT

Beijing, People's Republic of China

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 26th day of June 2023.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 7049.01
Valid to July 31, 2024

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.