TEST REPORT

EN IEC 62311:2020

for

Samsung Galaxy watch Charger Mobileparts

Models:MS-30016

Prepared for :	**2Service B.V.**
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Date of Test:	**Dec. 25, 2023 to Jan. 17, 2024**
Date of Report:	**Jan. 17, 2024**
Report Number:	**NCT240031435XE2-3**

1 TEST RESULT CERTIFICATION

Applicant	:	2Service B.V.
Address	:	Santkamp 5, 6836 BE, Arnhem, The Netherlands
Manufacturer	:	2Service B.V.
Address	:	Santkamp 5, 6836 BE, Arnhem, The Netherlands
Product name	:	Samsung Galaxy watch Charger Mobileparts
Model name	:	MS-30016

This device described above has been tested by NCT, and the test results show that the equipment under test (EUT) is in compliance with the 2014/53/EU Directive Art.3.2 requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test

Date (s) of performance of tests:	Dec. 25, 2023 to Jan. 17, 2024
Date of Issue:	Jan. 17, 2024
Test Result:	**Pass**

Test Engineer:

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Technical Manager:

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2 Test Summary

Test	Test Requirement	Test Method	Limit / Severity	Result
RF Exposure	EN IEC 62311	EN IEC 62311	-	PASS

Remark:

N/A: Not Applicable

RF: In this whole report RF means Radio Frequency.

A.M. Amplitude Modulation.

P.M. Pulse Modulation.

3 General Information

3.1 General Description of E.U.T.

Product:	Samsung Galaxy watch Charger Mobileparts
Model Number:	MS-30016
Different:	N/A
Rating:	Type-c Input: 5Vdc,1A Wireless Output :5W
Frequency Range:	145.6KHz
Modulation Technique:	Induction
Antenna Type:	Induction Coil antenna
Antenna Gain:	0 dBm
Temperature Range:	-20°C ~ +55°C

4 RF Exposure Evaluation

4.1 Limits

Basic Restrictions

Council Recommendation 99/519/EC Annex II

Basic restrictions for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz)

Frequency range	Magnetic flux density (mT)	Current density (mA/m^2) (rms)	Whole body average SAR (W/kg)	Localized SAR (head and trunk) (W/kg)	Localized SAR (limbs) (W/kg)	Power density, S (W/m^2)
0Hz	40	-	-	-	-	-
>0-1Hz	-	8	-	-	-	-
1–4Hz	-	8/f	-	-	-	-
4Hz–1000Hz	-	2	-	-	-	-
1000Hz–100kHz	-	f/500	-	-	-	-
100kHz–10MHz	-	f/500	0.08	2	4	-
10MHz–10GHz	-	-	0.08	2	4	-
10GHz–300GHz	-	-	-	-	-	10

Note:

1. f is the frequency in Hz.
2. The basic restriction on the current density is intended to protect against acute exposure effects on central nervous system tissues in the head and trunk of the body and includes a safety factor. The basic restrictions for ELF fields are based on established adverse effects on the central nervous system. Such acute effects are essentially instantaneous and there is no scientific justification to modify the basic restrictions for exposure of short duration. However, since the basic restriction refers to adverse effects on the central nervous system, this basic restriction may permit higher current densities in body tissues other than the central nervous system under the same exposure conditions.
3. Because of electrical inhomogeneity of the body, current densities should be averaged over a cross section of 1 cm^2 perpendicular to the current direction.
4. For frequencies up to 100kHz, AV current density values can be obtained by multiplying the rms value by$\sqrt{2}$ (=1.414). For pulses of duration tp the equivalent frequency to apply in the basic restrictions should be calculated as-1/(2tp).

5. For frequencies up to 100kHz and for pulsed magnetic fields, the maximum current density associated with the pulses can be calculated from the rise/fall times and the maximum rate of change of magnetic flux density. The induced current density can then be compared with the appropriate basic restriction.

6. All SAR values are to be averaged over any six-minute period.

7. Localised SAR averaging Mass is any 10g of contiguous tissue; the maximum SAR so obtained should be the value used for the estimation of exposure. These 10g of tissue are intended to be a mass of contiguous tissue with nearly homogeneous electrical properties. In specifying a contiguous mass of tissue, it is recognized that this concept can be used in computational dissymmetry but may present difficulties for direct physical measurements. A simple geometry such as cubic tissue mass can be used provided that the calculated dissymmetric quantities have conservative values relative to the exposure guidelines.

8. For pulses of duration tp the equivalent frequency to apply in the basic restrictions should be calculated an=1/(2tp). Additionally, for pulsed exposures, in the frequency rage 0.3 to 10GHz and for localized exposure of the head, in order to limit and avoid auditory effects caused by thermoplastic expansion, an additional basic restriction is recommended. This is that the SA should not exceed 2mJ kg-1 averaged over 10g of tissue.

Reference Levels

Council Recommendation 99/519/EC Annex III

Reference levels for electric, magnetic and electromagnetic fields (0 Hz to 300GHz)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density Seq (W/m2)
0-1 Hz	-	3.2×10^4	4×10^4	-
1-8 Hz	10000	$3.2\times10^4/f^2$	$4\times10^4/f^2$	-
8-25 Hz	10000	4000/f	5000/f	-
0.025-0.8 kHz	250/f	4/f	5/f	-
0.8-3 kHz	250/f	5	6.25	-
3-150 kHz	87	5	6.25	-
0.15-1 MHz	87	0.73/f	0.92/f	-
1-10 MHz	$87/f^{1/2}$	0.73/f	0.92/f	-
10-400 MHz	28	0.073	0.095	2
400-2000 MHz	$1.375\ f^{1/2}$	$0.0037\ f^{1/2}$	$0.0046\ f^{1/2}$	f/200
2-300 GHz	61	0.16	0.2	10

Notes:

1. As indicated in the frequency range column.
2. For frequencies between 100kHz and 10 GHz, Seq, E2, H2 and B2 are to averaged over any six-minute period.
3. For frequencies exceeding 10 GHz, Seq, E2, H2, and B2 are averaged over any 68/1.05-minute period(in GHz).
4. No E-field value is provided for frequencies<1 Hz, which are effectively static electric fields. For most people the annoying perception of surface electric charges will not occur at field strengths less than 25 kV/m. Spark discharges causing stress or annoyance should be avoided.

4.2 Test Result

Magnetic Field (H-Field) strength at 20cm from the boundaries of EUT, and 20cm from the top.

Test Mode: Wireless Charging					
		Measuring Distance(cm)	Magnetic Field(A/m)	Limit(A/m)	50% Limit(A/m)
Measurement Point 1	Front	20	0.0125	6.636	3.318
Measurement Point 2	Back	20	0.0285		
Measurement Point 3	Left	20	0.0369		
Measurement Point 4	Right	20	0.0741		
Measurement Point 5	Bottom	20	0.0854		
Measurement Point 6	Top	20	0.0458		

Electric Field (E-Field) strength at 20cm from the boundaries of EUT, and 20cm from the top.

Test Mode: Wireless Charging					
		Measuring Distance(cm)	Electric Field(V/m)	Limit(V/m)	50% Limit(V/m)
Measurement Point 1	Front	20	1.33	87	43.5
Measurement Point 2	Back	20	1.19		
Measurement Point 3	Left	20	1.47		

Measurement Point 4	Right	20	1.62		
Measurement Point 5	Bottom	20	1.18		
Measurement Point 6	Top	20	1.37		

Magnetic Field (B-Field) strength at 20cm from the boundaries of EUT, and 20cm from the top.

Test Mode: Wireless Charging					
		Measuring Distance(cm)	Magnetic Field(μT)	Limit(μT)	50%Limit (μT)
Measurement Point 1	Front	20	0.142	8.364	4.182
Measurement Point 2	Back	20	0.296		
Measurement Point 3	Left	20	0.217		
Measurement Point 4	Right	20	0.221		
Measurement Point 5	Bottom	20	0.374		
Measurement Point 6	Top	20	0.356		

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