

APPENDIX D: SAR TISSUE SPECIFICATIONS

Measurement Procedure for Tissue verification:

- 1) The network analyzer and probe system was configured and calibrated.
- 2) The probe was immersed in the tissue. The tissue was placed in a nonmetallic container. Trapped air bubbles beneath the flange were minimized by placing the probe at a slight angle.
- 3) The complex admittance with respect to the probe aperture was measured
- 4) The complex relative permittivity ϵ' can be calculated from the below equation (Pournaropoulos and Misra):

$$Y = \frac{j2\omega\epsilon_r\epsilon_0}{[\ln(b/a)]^2} \int_a^b \int_a^b \int_0^\pi \cos\phi' \frac{\exp[-j\omega r(\mu_0\epsilon_r'\epsilon_0)^{1/2}]}{r} d\phi' d\rho' d\rho$$

where Y is the admittance of the probe in contact with the sample, the primed and unprimed coordinates refer to source and observation points, respectively, $r^2 = \rho^2 + \rho'^2 - 2\rho\rho'\cos\phi'$, ω is the angular frequency, and $j = \sqrt{-1}$.

3 Composition / Information on ingredients

3.2 Mixtures

Description: Aqueous solution with surfactants and inhibitors

Declarable, or hazardous components:

CAS: 107-21-1 EINECS: 203-473-3 Reg.nr.: 01-2119456816-28-0000	Ethanediol STOT RE 2, H373; Acute Tox. 4, H302	>1.0-4.9%
CAS: 68608-26-4 EINECS: 271-781-5 Reg.nr.: 01-2119527859-22-0000	Sodium petroleum sulfonate Eye Irrit. 2, H319	< 2.9%
CAS: 107-41-5 EINECS: 203-489-0 Reg.nr.: 01-2119539582-35-0000	Hexylene Glycol / 2-Methyl-pentane-2,4-diol Skin Irrit. 2, H315; Eye Irrit. 2, H319	< 2.9%
CAS: 68920-66-1 NLP: 500-236-9 Reg.nr.: 01-2119489407-26-0000	Alkoxyated alcohol, > C₁₆ Aquatic Chronic 2, H411; Skin Irrit. 2, H315; Eye Irrit. 2, H319	< 2.0%

Additional information:

For the wording of the listed risk phrases refer to section 16.

Not mentioned CAS-, EINECS- or registration numbers are to be regarded as Proprietary/Confidential.

The specific chemical identity and/or exact percentage concentration of proprietary components is withheld as a trade secret.

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Note: Liquid recipes are proprietary SPEAG. Since the composition is approximate to the actual liquids utilized, the manufacturer tissue-equivalent liquid data sheets are provided below.

FCC ID: 2A6WXWCSCN10A	RF Exposure Test Report	Approved by: Technical Manager
DUT Type: Wireless Charger		APPENDIX D Page 1 of 2

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Measurement Certificate / Material Test

Item Name	Head Tissue Simulating Liquid (HBBL4-250V3)
Product No.	SL AAH 005 AD (Batch: 250129-1)
Manufacturer	SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated DAK probe.

Setup Validation

Validation results were within $\pm 2.5\%$ towards the target values of Methanol.

Target Parameters

Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards.

Test Condition

Ambient	Environment temperatur ($22 \pm 3^\circ\text{C}$) and humidity < 70%
TSL Temperature	22°C
Test Date	5-Feb-25
Operator	CL

Additional Information

TSL Density	1.042 g/cm ³
TSL Heat-capacity	3.574 kJ/(kg*°K)

f [MHz]	Measured			Target		Diff. to Target [%]	
	ϵ'	ϵ''	sigma	eps	sigma	$\Delta\epsilon'$	$\Delta\epsilon''$
5	53.4	2602.47	0.72	55.5	0.75	-3.7	-4.0
10	53.3	1301.69	0.72	55.5	0.75	-3.9	-9.0
15	53.3	868.51	0.72	55.3	0.75	-3.7	-4.6
20	53.3	651.94	0.73	55.1	0.75	-3.3	-2.7
25	53.3	522.00	0.73	55.0	0.75	-3.1	-2.7
30	53.3	435.45	0.73	55.0	0.75	-3.1	-2.7
35	53.2	373.64	0.73	54.9	0.75	-3.1	-2.7
40	53.2	327.33	0.73	54.8	0.75	-2.9	-2.7
45	53.1	291.35	0.73	54.7	0.75	-2.9	-2.7
50	53.0	262.60	0.73	54.6	0.75	-2.8	-2.7
55	52.9	236.10	0.73	54.4	0.75	-2.8	-2.8
60	52.8	219.54	0.73	54.3	0.75	-2.8	-2.9
65	52.7	203.02	0.73	54.2	0.75	-2.8	-2.9
70	52.6	186.87	0.74	54.1	0.75	-2.8	-1.6
75	52.5	176.62	0.74	54.0	0.75	-2.8	-1.7
80	52.4	165.91	0.74	53.9	0.75	-2.7	-1.7
85	52.3	156.47	0.74	53.8	0.75	-2.7	-1.8
90	52.2	148.09	0.74	53.7	0.75	-2.7	-1.9
95	52.1	140.60	0.74	53.5	0.75	-2.7	-1.9
100	52.0	133.87	0.74	53.4	0.75	-2.7	-2.0
105	51.9	127.78	0.75	53.3	0.76	-2.6	-0.7
110	51.8	122.26	0.75	53.2	0.76	-2.6	-0.7
115	51.7	117.22	0.75	53.1	0.76	-2.6	-0.8
120	51.6	112.61	0.75	53.0	0.76	-2.6	-0.9
125	51.5	108.37	0.75	52.9	0.76	-2.6	-0.9
130	51.4	104.46	0.76	52.8	0.76	-2.6	0.4
135	51.3	100.85	0.76	52.6	0.76	-2.5	0.3
140	51.2	97.49	0.76	52.5	0.76	-2.5	0.2
145	51.1	94.37	0.76	52.4	0.76	-2.5	0.2
150	51.0	91.46	0.76	52.3	0.76	-2.5	0.1
155	50.9	88.74	0.77	52.1	0.76	-2.2	1.0
160	50.8	86.20	0.77	51.8	0.77	-2.0	0.5
165	50.7	83.81	0.77	51.6	0.77	-1.7	0.6
170	50.6	81.56	0.77	51.4	0.77	-1.5	-0.5
175	50.5	79.45	0.77	51.1	0.78	-1.2	-0.9
180	50.4	77.45	0.78	50.9	0.78	-1.0	-0.1
185	50.3	75.56	0.78	50.7	0.78	-0.7	-0.6
190	50.3	73.78	0.78	50.4	0.79	-0.3	-1.0
195	50.2	72.09	0.78	50.2	0.79	0.0	-1.5
200	50.1	70.48	0.78	50.0	0.80	0.3	-2.0
205	50.0	68.95	0.79	49.7	0.80	0.5	-1.2
210	49.9	67.51	0.79	49.5	0.80	0.8	-1.6
215	49.8	66.13	0.79	49.3	0.81	1.1	-2.1
220	49.8	64.81	0.79	49.0	0.81	1.6	-2.5
225	49.7	63.56	0.80	48.8	0.81	1.8	-1.7
230	49.6	62.35	0.80	48.6	0.82	2.1	-2.1
235	49.5	61.21	0.80	48.3	0.82	2.4	-2.6
240	49.4	60.10	0.80	48.1	0.82	2.7	-3.0
245	49.4	59.05	0.80	47.9	0.83	3.2	-3.4
250	49.3	58.04	0.81	47.6	0.83	3.5	-2.7

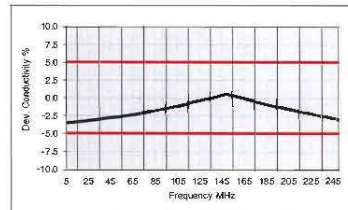
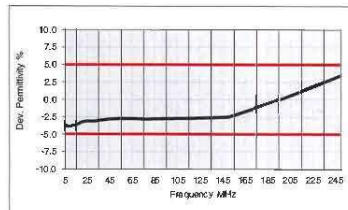


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5– 250 MHz Head Tissue Equivalent Matter

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DUT Type: Wireless Charger		APPENDIX D Page 2 of 2