

APPENDIX D: SAR TISSUE SPECIFICATIONS

Measurement Procedure for Tissue verification:

- 1) The network analyzer and probe system were 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.

Figure D-1

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: BCG-A3337	RF EXPOSURE REPORT	Approved by: Technical Manager
DUT Type: Watch		APPENDIX D: Page 1 of 3

Measurement Certificate / Material Test

Item Name Head Tissue Simulating Liquid (HBBL000-10000V6)
Product No. SL AAH U16 CA (Batch: 250317-1)
Manufacturer SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated DAK probe.

Target Parameters

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

Test Condition

Ambient Condition 22°C ; 30% humidity

TSL Temperature 22°C

Test Date 20-Mar-25

Operator CL

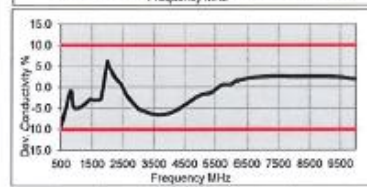
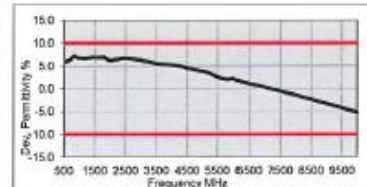
Additional Information

TSL Density

TSL Heat-capacity

Results

f [MHz]	Measured				Target		Diff. to Target [%]	
	ϵ'	ϵ''	σ	σ_{rms}	ϵ'_{ps}	σ_{ps}	$\Delta\epsilon'$	$\Delta\sigma$
600	45.3	24.6	0.82	0.88	42.7	0.88	6.0	-7.0
750	44.7	20.9	0.87	0.89	41.9	0.89	6.6	-2.6
900	44.6	20.0	0.89	0.90	41.7	0.90	7.0	-0.8
1050	44.5	19.8	0.90	0.91	41.6	0.91	7.0	-0.7
1200	44.5	19.4	0.91	0.91	41.5	0.91	7.1	-0.2
1350	44.4	19.2	0.91	0.92	41.5	0.92	7.0	-0.7
1500	44.3	18.5	0.93	0.97	41.5	0.97	6.7	-4.1
1650	43.4	14.7	1.14	1.18	40.6	1.18	6.9	-3.3
1800	43.3	14.5	1.17	1.20	40.5	1.20	6.9	-2.5
1950	43.1	14.0	1.25	1.28	40.3	1.28	6.9	-2.7
2100	43.1	13.9	1.26	1.30	40.3	1.30	7.0	-3.0
2250	43.1	13.9	1.27	1.31	40.3	1.31	7.1	-2.8
2400	43.0	13.9	1.27	1.31	40.2	1.31	6.9	-3.3
2550	42.9	13.8	1.30	1.34	40.2	1.34	6.8	-3.1
2700	42.8	13.7	1.33	1.37	40.1	1.37	6.8	-3.0
2850	42.8	13.6	1.36	1.40	40.0	1.40	7.0	-2.9
3000	42.8	13.6	1.37	1.40	40.0	1.40	7.0	-2.1
3150	42.8	13.6	1.38	1.40	40.0	1.40	7.0	-1.4
3300	42.7	13.5	1.39	1.40	40.0	1.40	6.8	-0.7
3450	42.6	13.4	1.42	1.40	40.0	1.40	6.5	1.4
3600	42.5	13.4	1.45	1.40	40.0	1.40	6.3	3.6
3750	42.5	13.4	1.49	1.40	40.0	1.40	6.3	6.4
3900	42.4	13.3	1.52	1.44	40.2	1.44	6.2	5.2
4050	42.3	13.3	1.55	1.49	40.2	1.49	6.2	4.1
4200	42.3	13.3	1.59	1.53	40.5	1.53	6.5	3.7
4350	42.2	13.3	1.62	1.58	40.4	1.58	6.4	2.7
4500	42.1	13.3	1.66	1.62	40.4	1.62	6.4	2.3
4650	42.0	13.3	1.70	1.67	40.4	1.67	6.4	2.0
4800	42.0	13.3	1.74	1.71	40.7	1.71	6.7	1.7
4950	41.9	13.3	1.77	1.76	40.6	1.76	6.6	0.8
5100	41.8	13.3	1.81	1.80	40.6	1.80	6.6	0.6
5250	41.8	13.3	1.85	1.85	40.8	1.85	6.8	-0.2
5400	41.7	13.3	1.89	1.91	40.7	1.91	6.7	-1.0
5550	41.6	13.4	1.93	1.96	40.6	1.96	6.6	-1.7



3500	40.0	14.0	2.72	37.9	2.81	5.5	-6.5
3750	39.7	14.1	2.91	37.7	3.12	5.4	-8.6
4000	37.2	15.8	4.95	36.0	4.65	3.5	-1.6
4250	37.1	15.9	4.63	35.9	4.71	3.3	-1.6
4500	37.0	15.9	4.69	35.9	4.78	3.2	-1.5
4750	36.6	16.1	4.93	35.6	4.96	2.8	-0.7
5000	36.4	16.2	5.05	35.5	5.07	2.3	-0.1
5250	36.2	16.4	5.19	35.4	5.17	2.1	0.4
5500	36.0	16.4	5.30	35.3	5.27	2.0	0.6
5750	35.8	16.5	5.51	35.1	5.48	2.2	0.6
6000	34.8	17.1	6.20	34.5	6.97	1.1	2.1
6250	34.0	17.5	6.81	33.9	6.65	0.3	2.6
6500	33.1	17.8	7.43	33.3	7.24	-0.6	2.6
6750	32.2	18.1	8.04	32.7	7.84	-1.5	2.6
7000	31.4	18.3	8.67	32.1	8.45	-2.4	2.6
7250	30.5	18.6	9.31	31.5	9.08	-3.3	2.6
7500	29.6	18.8	9.94	31.0	9.71	-4.3	2.3
7750	28.8	19.0	10.58	30.4	10.36	-5.2	1.9

Figure D-2
600 – 10000 MHz Head Tissue Equivalent Matter

FCC ID: BCG-A3337	RF EXPOSURE REPORT	Approved by: Technical Manager
DUT Type: Watch		APPENDIX D: Page 2 of 3

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 temperature (22 $\pm$ 3)°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''	σ_{rms}	ϵ_{ps}	σ_{rms}	$\Delta\epsilon_{\text{ps}}$	$\Delta\sigma_{\text{rms}}$
5	53.4	2002.47	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	-4.0
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	239.10	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	188.67	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	0.0
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	68.96	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

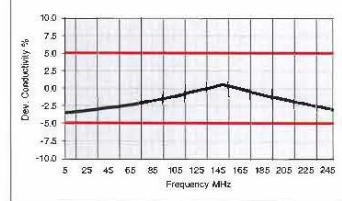
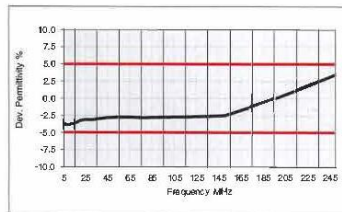


Figure D-3
5– 250 MHz Head Tissue Equivalent Matter

FCC ID: BCG-A3337	RF EXPOSURE REPORT	Approved by: Technical Manager
DUT Type: Watch		APPENDIX D: Page 3 of 3