# Head Tissue Simulating Liquids

Application	Specific absorption rate according to standards (e.g., IEC 62209-x, IEEE 1528)						
Packaging	Plastic container of 10 liters with nozzle						
Life Time	Life time and stability of the liquid depend on usage, storage, and handling of tissue simulating liquid						
Options	Tissue simulating liquids for frequencies outside the below listed ranges are available upon request (please contact <u>info@speag.swiss</u> )						
Head Tissue	Parameters according to IEEE 1528 / IEC 62209-1/ IEC 62209-2 / FCC KDB 865664						
Narrow- Band Solutions (±5% Tolerance) Broad- Band Solutions (±5% Tolerance)	Product         HSL300V2         HSL450V2         HSL750V2         HSL900V2         Product         HBBL1350-1850V3         HBBL1550-1950V3         HBBL1900-3800V3	Test Frequency (MHz)         300         450         750         835, 900    Test Frequency (MHz)          1450 - 1800         1750 - 1850         1950 - 3000	Main Ingredients Water, Sugar Water, Sugar Water, Sugar Water, Sugar Main Ingredients Water, Tween Water, Tween Water, Tween Water, Tween				
	HBBL3500-5800V5	3500 - 5800	Water, Oil				
Broad- Band Solutions (±10% Tolerance)	Product HBBL4-250V3 HBBL1350-1850V3 HBBL1550-1950V3 HBBL1900-3800V3 HBBL600-10000V6	<b>Test Frequency (MHz)</b> 4 – 250 1300 – 1850 1550 – 1950 1900 – 3800 600 – 10000	Main Ingredients Water, Tween Water, Tween Water, Tween Water, Tween Water, Oil				

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## Measurement Certificate / Material Test

Item Name	Head Tissue Simulating Liquid (HBBL600-10000V6)
Product No.	SL AAH U16 BD (Batch: 180208-1)
Manufacturer	SPEAG

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#### **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.

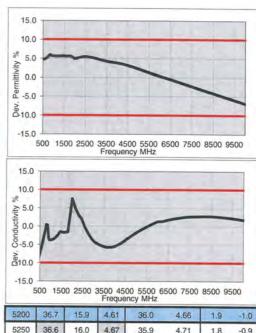
#### **Test Condition**

TSL Density		
Additional Inform	ation	
Operator	WM	
Test Date	8-Feb-18	
TSL Temperature	22°C	
Ambient Condition	22°C ; 30% humidity	

TSL Heat-capacity

### Results

	Measured			Target		Diff.to Target [%]		
f [MHz]	e' e'' sigm		sigma	eps sigma		∆-eps	∆-sigma	
800	44.1	20.3	0.90	41.7	0.90	5.8	0.3	
825	44.1	19.9	0.91	41.6	0.91	6.0	0.4	
835	44.1	19.7	0.92	41.5	0.91	6.1	0.9	
850	44.0	19.4	0.92	41.5	0.92	6.0	0.4	
900	43.9	18.7	0.94	41.5	0.97	5.8	-3.1	
1400	42.9	14.9	1.16	40.6	1.18	5.7	-1.6	
1450	42.8	14.7	1.18	40.5	1.20	5.7	-1.7	
1600	42.6	14.2	1.26	40.3	1.28	5.7	-1.9	
1625	42.6	14.1	1.28	40.3	1.30	5.8	-1.4	
1640	42.6	14.1	1.29	40.3	1.31	5.8	-1.2	
1650	42.5	14.1	1.29	40.2	1.31	5.6	-1.8	
1700	42.4	14.0	1.32	40.2	1.34	5.6	-1.6	
1750	42.3	13.9	1.35	40.1	1.37	5.5	-1.5	
1800	42.3	13.8	1.38	40.0	1.40	5.7	-1.4	
1810	42.3	13.8	1.39	40.0	1.40	5.7	-0.7	
1825	42.3	13.7	1.40	40.0	1.40	5.7	0.0	
1850	42.2	13.7	1.41	40.0	1.40	5.5	0.7	
1900	42.1	13.6	1.44	40.0	1.40	5.3	2.9	
1950	42.0	13.6	1.47	40.0	1.40	5.0	5.0	
2000	42.0	13.5	1.51	40.0	1.40	5.0	7.9	
2050	41.9	13.5	1.54	39.9	1.44	5.0	6.6	
2100	41.8	13.5	1.57	39.8	1.49	5.0	5.4	
2150	41.8	13.5	1.61	39.7	1.53	5.2	5.0	
2200	41.7	13.4	1.64	39.6	1.58	5.2	3.9	
2250	41.6	13.4	1.68	39.6	1.62	5.2	3.6	
2300	41.6	13.4	1.72	39.5	1.67	5.4	3.2	
2350	41.5	13.4	1.76	39.4	1.71	5.4	2.9	
2400	41.4	13.5	1.80	39.3	1.76	5.4	2.5	
2450	41.4	13.5	1.84	39.2	1.80	5.6	2.2	
2500	41.3	13.5	1.88	39.1	1.85	5.5	1.4	
2550	41.2	13.5	1.92	39.1	1.91	5.4	0.6	
2600	41.1	13.6	1.96	39.0	1.96	5.4	-0.2	
3500	39.6	14.1	2.75	37.9	2.91	4.3	-5.5	
3700	39.2	14.3	2.94	37.7	3.12	4.1	-5.7	



5200	36.7	15.9	4.61	36.0	4.66	1.9	-1.0
5250	36.6	16.0	4.67	35.9	4.71	1.8	-0.9
5300	36.5	16.0	4.72	35.9	4.76	1.7	-0.7
5500	36.1	16.2	4.96	35.6	4.96	1.3	-0.1
5600	35.9	16.3	5.08	35.5	5.07	1.1	0.2
5700	35.7	16.4	5.19	35.4	5.17	0.9	0.5
5800	35.6	16.5	5.31	35.3	5.27	0.8	0.8
6000	35.2	16.6	5.55	35.1	5.48	0.4	1.3
6500	34.3	17.1	6.18	34.5	6.07	-0.5	1.8
7000	33.4	17.5	6.81	33.9	6.65	-1.4	2.3
7500	32.5	17.8	7.43	33.3	7.24	-2.3	2.7
8000	31.7	18.1	8.06	32.7	7.84	-3.2	2.8
8500	30.8	18.4	8.68	32.1	8.45	-4.2	2.8
9000	30.0	18.6	9.31	31.5	9.08	-5.1	2.6
9500	29.1	18.8	9.93	31.0	9.71	-5.9	2.2
10000	28.3	19.0	10.55	30.4	10.36	-6.9	1.8