# **Head Tissue Simulating Liquids**

Head Tissue	Parameters according to IEEE Std 1528-2013 / IEC 62209 / FCC KDB 865664 D01				
Narrow- Band	Product	Test Frequency (MHz)	Main Ingredients		
Solutions (±5% tolerance)	HSL300V2 HSL450V2 HSL750V2 HSL900V2 HSL1450V2 HSL1750V2 HSL1800V2 HSL1900V2 HSL1950V2 HSL2450V2	300 450 750 835, 900 1450, 1500, 1640 1750 1800, 1900 1900 1950, 2000 2450, 2600	Water, Sugar Water, Sugar Water, Sugar Water, Sugar Water, DGBE		
Broad- Band Solutions (±5% tolerance)	Product  HBBL30-250V3 HBBL1350-1850V3 HBBL1550-1950V3 HBBL1900-3800V3 HBBL3500-5800V5	Test Frequency (MHz)  30-250 1400-1800 1750-1900 1950-3000 3500-5800	Main Ingredients  Water, Tween Water, Tween Water, Tween Water, Tween Water, Oil		

## **Body Tissue Simulating Liquids**

Body Tissue (Muscle)	Parameters according to FCC	KDB 865664 D01		
Narrow- Band Solutions (±5% tolerance)	Product MSL300V2 MSL450V2 MSL750V2 MSL900V2	<b>Test Frequency (MHz)</b> 300 400, 450 750 835, 900	Main Ingredients Water, Sugar Water, Sugar Water, Sugar Water, Sugar	
	MSL1450V2 MSL1750V2 MSL1800V2 MSL1900V2 MSL1950V2 MSL2450V2	1450, 1500, 1640 1750 1800, 1900 1900 1950, 2100 2450, 2600	Water, DGBE Water, DGBE Water, DGBE Water, DGBE Water, DGBE Water, DGBE	
Broad- Band Solutions (±5% tolerance)	Product  MBBL130-250V3  MBBL1350-1850V3  MBBL1550-1950V3  MBBL1900-3800V3  MBBL3500-5800V5	Test Frequency (MHz) 130-250 1350-1800 1550-1850 1950-3800 3500-5800	Main Ingredients Water, Tween Water, Tween Water, Tween Water, Tween Water, Oil	

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### **Measurement Certificate / Material Test**

Item Name Body Tissue Simulating Liquid (MSL900V2)

Product No. SL AAM 090 CA (Charge: 140710-1)

Manufacturer SPEAG

#### Measurement Method

TSL dielectric parameters measured using calibrated OCP probe.

#### Setup Validation

Validation results were within ± 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**

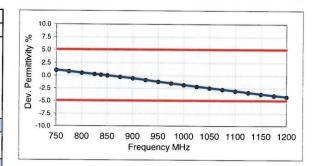
Ambient Environment temperatur  $(22 \pm 3)$ °C and humidity < 70%.

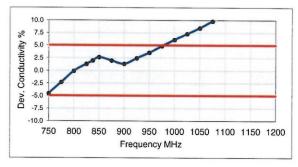
TSL Temperature 22°C
Test Date 16-Jul-14
Operator IEN

#### **Additional Information**

TSL Density 1.208 g/cm3 TSL Heat-capacity 3.113 kJ/(kg\*K)

	Measured			Target		Diff.to Target [%]	
f [MHz]	HP-e'	НР-е"	sigma	eps	sigma		Δ-sigma
700	56.6	22.41	0.87	55.7	0.96	1.6	-9.0
725	56.4	22.23	0.90	55.6	0.96	1.3	-6.8
750	56.1	22.04	0.92	55.5	0.96	1.1	-4.5
775	55.9	21.88	0.94	55.4	0.97	0.8	-2.3
800	55.6	21.72	0.97	55.3	0.97	0.5	-0.1
825	55.4	21.59	0.99	55.2	0.98	0.3	1.3
838	55.3	21.52	1.00	55.2	0.98	0.2	2.0
850	55.2	21.46	1.01	55.2	0.99	0.0	2.6
875	54.9	21.35	1.04	55.1	1.02	-0.2	2.0
900	54.7	21.25	1.06	55.0	1.05	-0.5	1.3
925	54.5	21.17	1.09	55.0	1.06	-0.9	2.5
950	54.3	21.08	1.11	54.9	1.08	-1.2	3.6
975	54.1	21.01	1.14	54.9	1.09	-1.5	4.9
1000	53.8	20.95	1.17	54.8	1.10	-1.8	6.1
1025	53.6	20.88	1.19	54.8	1.11	-2.1	7.3
1050	53.4	20.81	1.22	54.7	1.12	-2.4	8.5
1075	53.2	20.79	1.24	54.7	1.13	-2.7	9.8
1100	53.0	20.76	1.27	54.7	1.14	-3.0	11.2
1125	52.8	20.71	1.30	54.6	1.15	-3.3	12.3
1150	52.6	20.66	1.32	54.6	1.17	-3.7	13.4
1175	52.4	20.64	1.35	54.5	1.18	-3.9	14.7
1200	52.2	20.63	1.38	54.5	1.19	-4.2	15.9





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#### Measurement Certificate / Material Test

Item Name Body Tissue Simulating Liquid (MBBL1550-1950V3)

Product No. SL AAM 181 AA (Charge: 140826-1)

Manufacturer SPEAG

#### **Measurement Method**

TSL dielectric parameters measured using calibrated OCP probe.

#### Setup Validation

Validation results were within ± 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  $(22 \pm 3)^{\circ}$ C and humidity < 70%.

TSL Temperature 22°C
Test Date 27-Aug-14
Operator IEN

#### **Additional Information**

TSL Density 1.042 g/cm<sup>3</sup> TSL Heat-capacity 3.475 kJ/(kg\*K)

	Measured			Target		Diff.to Target [%]	
f [MHz]	HP-e'	HP-e"	sigma	eps	sigma		∆-sigma
1500	53.6	14.84	1.24	53.9	1.33	-0.7	-7.0
1525	53.5	14.85	1.26	53.9	1.35	-0.8	-6.5
1550	53.4	14.85	1.28	53.9	1.36	-0.9	-6.0
1575	53.3	14.85	1.30	53.8	1.38	-1.0	-5.6
1600	53.2	14.85	1.32	53.8	1.39	-1.1	-5.1
1625	53.2	14.86	1.34	53.8	1.41	-1.1	-4.7
1650	53.1	14.87	1.36	53.7	1.43	-1.1	-4.2
1675	53.0	14.88	1.39	53.6	1.44	-1.2	-3.8
1700	52.9	14.89	1.41	53.6	1.46	-1.2	-3.3
1725	52.9	14.91	1.43	53.5	1.47	-1.2	-2.8
1750	52.8	14.93	1.45	53.4	1.49	-1.2	-2.3
1775	52.7	14.94	1.48	53.4	1.50	-1.2	-1.9
1800	52.6	14.96	1.50	53.3	1.52	-1.2	-1.5
1825	52.6	14.98	1.52	53.3	1.52	-1.4	0.1
1850	52.5	15.01	1.54	53.3	1.52	-1.5	1.6
1875	52.4	15.02	1.57	53.3	1.52	-1.6	3.1
1900	52.4	15.03	1.59	53.3	1.52	-1.8	4.5
1925	52.3	15.06	1.61	53.3	1.52	-1.9	6.1
1950	52.2	15.09	1.64	53.3	1.52	-2.0	7.7
1975	52.2	15.11	1.66	53.3	1.52	-2.1	9.2
2000	52.1	15.13	1.68	53.3	1.52	-2.2	10.7

