Head Tissue Simulating Liquids

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

Body Tissue Simulating Liquids

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

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Measurement Certificate / Material Test

Item Name	**Head Tissue Simulating Liquid (HBBL1900-3800V3)**
Product No.	SL AAH 196 AB (Charge: 140729-2)
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.

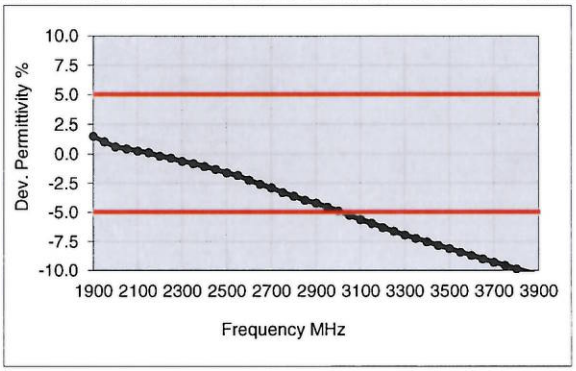
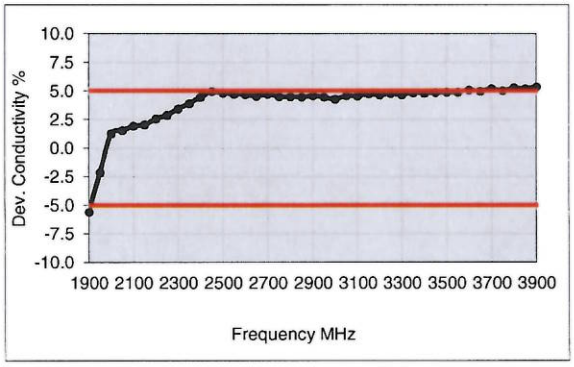
Target Parameters

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

Test Condition

Ambient	Environment temperatur (22 ± 3)°C and humidity < 70%.
TSL Temperature	22°C
Test Date	30-Jul-14
Operator	CL

Additional Information

TSL Density	1.054 g/cm^3
TSL Heat-capacity	3.389 kJ/(kg*K)

	Measured			Target		Diff.to Target [%]	
f [MHz]	HP-e'	HP-e"	sigma	eps	sigma	Δ-eps	Δ-sigma
1900	40.6	12.5	1.3	40.0	1.4	1.5	-5.6
1950	40.4	12.6	1.4	40.0	1.4	1.1	-2.1
2000	40.3	12.7	1.4	40.0	1.4	0.6	1.3
2050	40.1	12.9	1.5	39.9	1.4	0.5	1.6
2100	39.9	13.0	1.5	39.8	1.5	0.3	1.9
2150	39.8	13.1	1.6	39.7	1.5	0.1	2.0
2200	39.6	13.2	1.6	39.6	1.6	-0.2	2.6
2250	39.4	13.3	1.7	39.6	1.6	-0.3	2.9
2300	39.2	13.5	1.7	39.5	1.7	-0.6	3.4
2350	39.1	13.6	1.8	39.4	1.7	-0.8	3.9
2400	38.9	13.7	1.8	39.3	1.8	-1.0	4.5
2450	38.7	13.9	1.9	39.2	1.8	-1.3	4.9
2500	38.5	14.0	1.9	39.1	1.9	-1.6	4.8
2550	38.4	14.1	2.0	39.1	1.9	-1.8	4.8
2600	38.1	14.2	2.1	39.0	2.0	-2.2	4.7
2650	37.9	14.3	2.1	38.9	2.0	-2.6	4.6
2700	37.8	14.5	2.2	38.9	2.1	-2.9	4.7
2750	37.5	14.5	2.2	38.8	2.1	-3.3	4.5
2800	37.4	14.6	2.3	38.8	2.2	-3.6	4.5
2850	37.2	14.7	2.3	38.7	2.2	-3.9	4.5
2900	37.0	14.9	2.4	38.6	2.3	-4.2	4.6
2950	36.8	14.9	2.5	38.6	2.3	-4.5	4.5
3000	36.6	15.0	2.5	38.5	2.4	-4.9	4.3
3050	36.4	15.1	2.6	38.4	2.5	-5.2	4.6
3100	36.2	15.2	2.6	38.4	2.5	-5.6	4.6
3150	36.1	15.3	2.7	38.3	2.6	-5.9	4.8
3200	35.9	15.3	2.7	38.3	2.6	-6.3	4.7
3250	35.7	15.4	2.8	38.2	2.7	-6.6	4.8
3300	35.5	15.4	2.8	38.2	2.7	-6.9	4.7
3350	35.4	15.5	2.9	38.1	2.8	-7.2	4.9
3400	35.2	15.6	2.9	38.0	2.8	-7.5	4.8
3450	35.0	15.6	3.0	38.0	2.9	-7.8	4.9
3500	34.9	15.7	3.1	37.9	2.9	-8.1	4.9
3550	34.7	15.7	3.1	37.9	3.0	-8.4	4.9
3600	34.5	15.8	3.2	37.8	3.0	-8.7	5.1
3650	34.4	15.9	3.2	37.8	3.1	-9.0	5.0
3700	34.2	15.9	3.3	37.7	3.1	-9.3	5.2
3750	34.0	16.0	3.3	37.6	3.2	-9.6	5.0
3800	33.9	16.0	3.4	37.6	3.2	-9.9	5.3
3850	33.7	16.1	3.4	37.5	3.3	-10.1	5.2