15.11 SAR Tissue Ingredients

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		
	MSL2450V2	2450	Water, DGBE		
Broad – Band Solutions (±5% tolerance)	Product	Test Frequency [MHz]	Main Ingredients		
	MBBL3500-5800V5	3500-5800	Water, Oil		

MSL2450V2

The Item is composed of the following ingredients:

H2O	Water, 52 – 75%
C8H18O3	Diethylene glycol monobutyl ether (DGBE), 25 – 48% (CAS-No. 112-34-5, EC-No. 203-961-6, EC-index-No. 603-096-00-8) Relevant for safety; Refer to the respective Safety Data Sheet*.
NaCl	Sodium Chloride, <1.0%

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Measurement Certificate / Material Test

Item Name	**Body Tissue Simulating Liquid (MSL2450V2)**
Product No.	SL AAM 245 BA (Charge: 130502-1)
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.

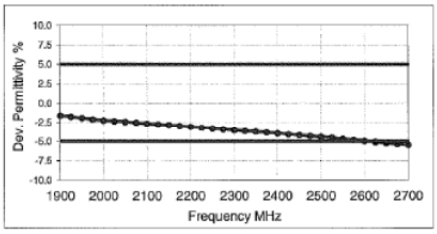
Test Condition

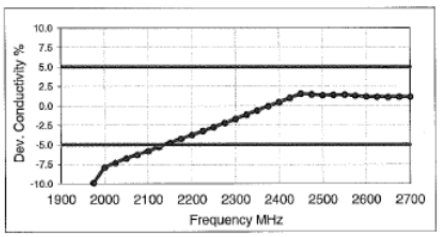
Ambient	Environment temperatur (22 ± 3)°C and humidity < 70%.
TSL Temperature	22°C
Test Date	2-May-13
Operator	IEN

Additional Information

TSL Density	0.996 g/cm^3
TSL Heat-capacity	3.987 kJ/(kg*K)

	Measured			Target		Diff.to Target [%]	
f [MHz]	HP-e'	HP-e"	sigma	eps	sigma	Δ-eps	Δ-sigma
1900	52.5	12.14	1.28	53.3	1.52	-1.6	-15.6
1925	52.4	12.25	1.31	53.3	1.52	-1.7	-13.7
1950	52.3	12.35	1.34	53.3	1.52	-1.9	-11.8
1975	52.2	12.47	1.37	53.3	1.52	-2.1	-9.9
2000	52.1	12.59	1.40	53.3	1.52	-2.2	-7.9
2025	52.0	12.70	1.43	53.3	1.54	-2.3	-7.3
2050	52.0	12.82	1.46	53.2	1.57	-2.4	-6.7
2075	51.9	12.93	1.49	53.2	1.59	-2.5	-6.2
2100	51.8	13.03	1.52	53.2	1.62	-2.6	-5.8
2125	51.7	13.14	1.55	53.1	1.64	-2.7	-5.2
2150	51.6	13.25	1.58	53.1	1.66	-2.9	-4.7
2175	51.5	13.36	1.62	53.1	1.69	-3.0	-4.2
2200	51.4	13.46	1.65	53.0	1.71	-3.1	-3.7
2225	51.3	13.57	1.68	53.0	1.74	-3.2	-3.2
2250	51.2	13.67	1.71	53.0	1.76	-3.3	-2.7
2275	51.1	13.78	1.74	52.9	1.78	-3.4	-2.2
2300	**51.0**	**13.89**	**1.78**	**52.9**	**1.81**	**-3.5**	**-1.6**
2325	51.0	14.00	1.81	52.9	1.83	-3.6	-1.1
2350	50.9	14.11	1.84	52.8	1.85	-3.7	-0.6
2375	50.8	14.21	1.88	52.8	1.88	-3.8	0.0
2400	50.7	14.32	1.91	52.8	1.90	-3.9	0.5
2425	50.6	14.43	1.95	52.7	1.93	-4.1	1.1
2450	**50.5**	**14.53**	**1.98**	**52.7**	**1.95**	**-4.2**	**1.6**
2475	50.4	14.63	2.02	52.7	1.99	-4.3	1.5
2500	50.3	14.73	2.05	52.6	2.02	-4.4	1.4
2525	50.2	14.85	2.09	52.6	2.06	-4.5	1.4
2550	50.1	14.96	2.12	52.6	2.09	-4.7	1.5
2575	50.0	15.05	2.16	52.5	2.13	-4.8	1.3
2600	**49.9**	**15.13**	**2.19**	**52.5**	**2.16**	**-4.9**	**1.2**
2625	49.8	15.23	2.22	52.5	2.20	-5.1	1.2
2650	49.7	15.33	2.26	52.4	2.23	-5.2	1.2
2675	49.6	15.43	2.30	52.4	2.27	-5.3	1.2
2700	49.5	15.52	2.33	52.4	2.30	-5.5	1.2





MBBL3500-5800V5

The Item is composed of the following ingredients:

Water	60 – 80%
Esters, Emulsifiers, Inhibitors	20 – 40%
Sodium salt	0 – 1.5%

Safety relevant ingredients according to Swiss and EU directives: none
Safety relevant ingredients according to other directives:
CAS 26399-02-0 10 – 28% Oleic acid, alkylester

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Measurement Certificate / Material Test

Item Name	**Body Tissue Simulating Liquid (MBBL3500-5800V5)**
Product No.	SL AAM 501 EA (Charge: 130528-2)
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	29-May-13
Operator	IEN

Additional Information
TSL Density
TSL Heat-capacity

	Measured			Target		Diff.to Target [%]	
f [MHz]	HP-e'	HP-e"	sigma	eps	sigma	Δ-eps	Δ-sigma
3400	51.9	16.39	3.10	51.5	3.20	0.9	-3.0
3500	**51.8**	**16.43**	**3.20**	**51.3**	**3.31**	**0.9**	**-3.4**
3600	51.7	16.52	3.31	51.2	3.43	1.0	-3.5
3700	**51.5**	**16.60**	**3.42**	**51.1**	**3.55**	**0.9**	**-3.6**
3800	51.4	16.65	3.52	50.9	3.66	1.0	-3.9
3900	51.3	16.72	3.63	50.8	3.78	1.0	-4.0
4000	51.2	16.83	3.74	50.6	3.90	1.1	-4.0
4100	51.0	16.91	3.86	50.5	4.01	1.0	-3.9
4200	50.9	17.04	3.98	50.4	4.13	1.0	-3.7
4300	50.8	17.23	4.12	50.2	4.25	1.1	-3.0
4400	50.6	17.40	4.26	50.1	4.37	1.0	-2.4
4500	50.4	17.51	4.38	50.0	4.48	0.9	-2.3
4600	50.2	17.63	4.51	49.8	4.60	0.7	-1.9
4700	50.0	17.72	4.63	49.7	4.72	0.6	-1.8
4800	49.9	17.81	4.75	49.6	4.83	0.7	-1.7
4850	49.8	18.00	4.86	49.5	4.89	0.6	-0.6
4900	49.8	17.96	4.90	49.4	4.95	0.8	-1.0
4950	49.6	18.07	4.98	49.4	5.01	0.5	-0.5
5000	49.7	18.14	5.05	49.3	5.07	0.8	-0.3
5050	49.5	18.13	5.09	49.2	5.12	0.6	-0.7
5100	49.4	18.26	5.18	49.2	5.18	0.5	0.0
5150	49.3	18.26	5.23	49.1	5.24	0.4	-0.2
5200	**49.2**	**18.38**	**5.32**	**49.0**	**5.30**	**0.4**	**0.4**
5250	49.1	18.38	5.37	48.9	5.36	0.3	0.2
5300	49.0	18.50	5.45	48.9	5.42	0.2	0.6
5350	49.0	18.52	5.51	48.8	5.47	0.4	0.6
5400	48.8	18.58	5.58	48.7	5.53	0.1	0.9
5450	48.8	18.66	5.66	48.7	5.59	0.3	1.2
5500	**48.7**	**18.64**	**5.70**	**48.6**	**5.65**	**0.2**	**0.9**
5550	48.6	18.76	5.79	48.5	5.71	0.1	1.4
5600	48.6	18.76	5.85	48.5	5.77	0.3	1.4
5650	48.4	18.87	5.93	48.4	5.82	0.0	1.8
5700	48.4	18.89	5.99	48.3	5.88	0.1	1.8
5750	48.3	18.99	6.08	48.3	5.94	0.1	2.3
5800	**48.2**	**19.01**	**6.13**	**48.2**	**6.00**	**0.0**	**2.2**
5850	48.1	19.10	6.22	48.1	6.06	-0.1	2.7
5900	48.1	19.16	6.29	48.1	6.12	0.1	2.8