

16.8 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:

H<sub>2</sub>O Water, 52 – 75%  
C<sub>8</sub>H<sub>18</sub>O<sub>3</sub> 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  $\pm 2.5\%$  towards the target values of Methanol.

#### Target Parameters

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

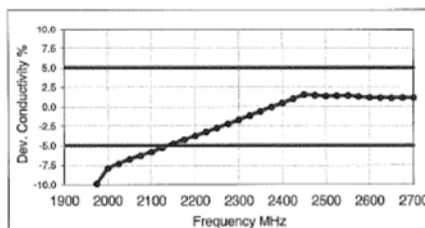
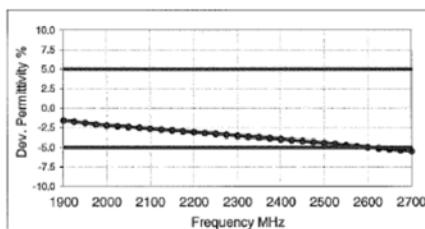
#### Test Condition

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

#### Additional Information

TSL Density 0.996 g/cm<sup>3</sup>  
TSL Heat-capacity 3.987 kJ/(kg\*K)

| f [MHz] | Measured |        |       | Target |       | Diff. to Target [%] |         |
|---------|----------|--------|-------|--------|-------|---------------------|---------|
|         | 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  $\pm 2.5\%$  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 temperatur ( $22 \pm 3$ )°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  | 4.28  | 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                |  |

