

The test frequencies are properly matched as this is a cellular band. The probe calibration for permittivity and conductivity is within +/-5%:

1. Were the probe calibrated frequency at 1950MHz has permittivity and conductivity of 53.3 and 1.52 respectively for Body Liquid. At the probe extreme frequencies the following are true: at 1850 MHz the permittivity and conductivity are 52.07 and 1.50 respectively. At 1880 MHz the permittivity and conductivity are 51.99 and 1.52 respectively. The probe was calibrated at these parameters in order to cover the frequency range 1850 MHz to 1880 MHz.

The target permittivity and conductivity at 1900 MHz is 53.3 and 1.52 respectively which is within the calibrated range of the probe parameter.

2. Were the probe calibrated frequency at 1950MHz has permittivity and conductivity of 40.0 and 1.40 respectively for Head Liquid. At the probe extreme frequencies the following are true: at 1850 MHz the permittivity and conductivity are 39.71 and 1.37 respectively. At 1880MHz the permittivity and conductivity are 39.55 and 1.39 respectively. The probe was calibrated at these parameters in order to cover the frequency range 1850 MHz to 1880 MHz.

The target permittivity and conductivity at 1900 MHz is 40.0 and 1.40 respectively which is within the calibrated range of the probe parameter. The following parameters are declared in the probe calibration certificate on page 8:

f [MHz]	Validity [MHz] <sup>c</sup>	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
450	$\pm 50 / \pm 100$	Head	$43.5 \pm 5\%$	$0.87 \pm 5\%$	0.36	1.84	$7.20 \pm 13.3\% (k=2)$
835	$\pm 50 / \pm 100$	Head	$41.5 \pm 5\%$	$0.90 \pm 5\%$	0.25	3.53	$6.33 \pm 11.0\% (k=2)$
900	$\pm 50 / \pm 100$	Head	$41.5 \pm 5\%$	$0.97 \pm 5\%$	0.27	3.53	$6.14 \pm 11.0\% (k=2)$
1750	$\pm 50 / \pm 100$	Head	$40.1 \pm 5\%$	$1.37 \pm 5\%$	0.56	2.77	$5.35 \pm 11.0\% (k=2)$
1950	$\pm 50 / \pm 100$	Head	$40.0 \pm 5\%$	$1.40 \pm 5\%$	0.57	2.72	$4.89 \pm 11.0\% (k=2)$
2450	$\pm 50 / \pm 100$	Head	$39.2 \pm 5\%$	$1.80 \pm 5\%$	0.51	1.60	$4.39 \pm 11.0\% (k=2)$
450	$\pm 50 / \pm 100$	Body	$56.7 \pm 5\%$	$0.94 \pm 5\%$	0.27	1.80	$7.52 \pm 13.3\% (k=2)$
835	$\pm 50 / \pm 100$	Body	$55.2 \pm 5\%$	$0.97 \pm 5\%$	0.36	2.75	$6.14 \pm 11.0\% (k=2)$
900	$\pm 50 / \pm 100$	Body	$55.0 \pm 5\%$	$1.05 \pm 5\%$	0.43	2.51	$5.98 \pm 11.0\% (k=2)$
1750	$\pm 50 / \pm 100$	Body	$53.4 \pm 5\%$	$1.49 \pm 5\%$	0.99	1.74	$4.84 \pm 11.0\% (k=2)$
1950	$\pm 50 / \pm 100$	Body	$53.3 \pm 5\%$	$1.52 \pm 5\%$	0.99	1.50	$4.60 \pm 11.0\% (k=2)$
2450	$\pm 50 / \pm 100$	Body	$52.7 \pm 5\%$	$1.95 \pm 5\%$	0.98	1.42	$3.91 \pm 11.0\% (k=2)$

<sup>c</sup> The validity of  $\pm 100$  MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

The system manufacturer has carried out addition steps as detailed on page 4 of KDB450824. This is detailed in the calibration certificates. The measured SAR values in the report are all below 10% of the SAR limit. The measured fluid dielectric parameters for 1900 MHz, performed during test values were all within +/-5% of the 1900MHz Target value. At 1950 MHz were the probe was calibrated, the tissue dielectric parameter measured for routine measurements at 1900 MHz was less than the target parameter for 1900 MHz  $\epsilon$  and higher than the target parameter for 1900 MHz  $\sigma$ .

**Table 5: Dielectric Performance of Head Tissue Simulating Liquid**

Frequency	Description	Dielectric Parameters		Temp °C
		$\epsilon_r$	$\sigma(s/m)$	
835MHz (head)	Target value $\pm 5\%$ window	41.50 39.43 — 43.58	0.90 0.86 — 0.95	/
	Measurement value 2009-9-14	41.86	0.92	
1900MHz (head)	Target value $\pm 5\%$ window	40.0 38 — 42	1.40 1.33 — 1.47	/
	Measurement value 2009-9-14	39.50	1.41	

**Table 6: Dielectric Performance of Body Tissue Simulating Liquid**

Frequency	Description	Dielectric Parameters		Temp °C
		$\epsilon_r$	$\sigma(s/m)$	
835MHz (body)	Target value $\pm 5\%$ window	55.20 52.44 — 57.96	0.97 0.92 — 1.02	/
	Measurement value 2009-9-22	55.07	1.01	
1900MHz (body)	Target value $\pm 5\%$ window	53.3 50.64 — 55.97	1.52 1.44 — 1.60	/
	Measurement value 2009-9-22	51.93	1.54	

The probe conversion factor and its frequency response, with respect to the tissue dielectric media used during the probe calibration and routine measurements was examined to determine if the effective frequency interval is adequate for the intended measurements to satisfy protocol requirements. The frequency range at which the probe was calibrated for 1950 MHz covered 1850 MHz to 2050 MHz and the dielectric parameters required for 1850 to 1910 MHz were all within the calibrated range of the probe dielectric parameters

The measurement within the required frequency interval satisfy an expanded probe calibration uncertainty ( $k=2$ )  $\leq 15\%$  for all measurement conditions. Please refer to SAR report for probe and dipole calibration certificates produce by the system manufacturer

#### Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

#### Boundary Effect

**TSL**                    **900 MHz**                    **Typical SAR gradient: 5 % per mm**

Sensor Center to Phantom Surface Distance	3.7 mm	4.7 mm
SAR <sub>be</sub> [%]      Without Correction Algorithm	10.7	6.9
SAR <sub>be</sub> [%]      With Correction Algorithm	0.3	0.4

**TSL**                    **1750 MHz**                    **Typical SAR gradient: 10 % per mm**

Sensor Center to Phantom Surface Distance	3.7 mm	4.7 mm
SAR <sub>be</sub> [%]      Without Correction Algorithm	12.5	8.4
SAR <sub>be</sub> [%]      With Correction Algorithm	0.8	0.5

#### Sensor Offset

Probe Tip to Sensor Center                    **2.7 mm**

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.