

Appendix B: Tissue Stimulating Liquids, System Checks and System Validation

B.1. SAR System Check

Prior to SAR assessment, the system is verified to $\pm 10\%$ of the SAR measurement on the reference dipole at the time of calibration by the calibration facility. Full system validation status and result summary can be found in Section B.4.

Table 1 System Check Results (SAR)

System	Frequency (MHz)	Tissue Type	Date	Amb. Temp. (°C)	Tissue Temp (°C)	Input Power (dBm)	Verification Source SN	Probe SN	DAE SN	Measured 1g SAR (W/Kg)	1W Target 1g SAR (W/Kg)	1W Normalized 1g SAR (W/Kg)	1g SAR Deviation	Measured 10g SAR (W/Kg)	1W Target 10g SAR (W/Kg)	1W Normalized 10g SAR (W/Kg)	10g SAR Deviation	Measured APD 4 cm ² (W/m ²)	APD 4cm ² Deviation
Gamma	13	Head	4/22/2026	23.1	23.6	24.5	1041	7872	1843	0.139	0.457	0.493	7.92%	0.085	0.296	0.302	1.89%	N/A	N/A
Zeta	750	Head	4/13/2026	21.1	20.8	17	1235	7969	1933	0.413	8.690	8.240	-5.17%	0.275	5.690	5.487	-3.57%	N/A	N/A
Zeta	835	Head	4/13/2026	21.1	20.8	17	4d311	7969	1933	0.497	9.820	9.916	0.98%	0.329	6.370	6.564	3.05%	N/A	N/A
Zeta	835	Head	4/15/2026	21.8	20.3	17	4d311	7969	1933	0.490	9.820	9.777	-0.44%	0.323	6.370	6.445	1.17%	N/A	N/A
Gamma	835	Head	5/26/2026	22.1	21.8	17	4d311	7872	1843	0.509	9.820	10.156	3.42%	0.332	6.370	6.624	3.99%	N/A	N/A
Zeta	1750	Head	4/22/2026	22.4	20.2	17	1205	7969	1933	1.790	36.500	35.715	-2.15%	0.954	19.200	19.035	-0.86%	N/A	N/A
Delta	1750	Head	4/27/2026	23.2	22.4	17	1205	7853	1844	1.810	36.500	36.114	-1.06%	0.968	19.200	19.314	0.59%	N/A	N/A
Zeta	1900	Head	4/16/2026	22.8	21.4	17	5d252	7969	1933	1.960	39.800	39.107	-1.74%	1.030	21.000	20.551	-2.14%	N/A	N/A
Zeta	1900	Head	6/1/2026	20.8	21.0	17	5d252	7969	1933	1.880	39.800	37.511	-5.75%	0.990	21.000	19.753	-5.94%	N/A	N/A
Beta	2450	Head	4/27/2026	23.5	23.0	17	1112	7857	1838	2.570	50.600	51.278	1.34%	1.210	23.700	24.143	1.87%	N/A	N/A
Zeta	2450	Head	5/6/2026	22.5	21.9	17	1112	7969	1933	2.440	50.600	48.684	-3.79%	1.150	23.700	22.946	-3.18%	N/A	N/A
Zeta	2450	Head	5/11/2026	22.5	22.2	17	1112	7969	1933	2.410	50.600	48.086	-4.97%	1.140	23.700	22.746	-4.03%	N/A	N/A
Epsilon	2450	Head	5/20/2026	22.3	21.5	17	1112	7971	1862	2.470	50.600	49.283	-2.60%	1.170	23.700	23.345	-1.50%	N/A	N/A
Zeta	2600	Head	4/16/2026	22.8	21.4	17	1215	7969	1933	2.740	55.300	54.670	-1.14%	1.240	24.900	24.741	-0.64%	N/A	N/A
Gamma	5250	Head	4/13/2026	21.9	21.5	17	1396	7872	1843	4.050	77.900	80.808	3.73%	1.150	22.400	22.946	2.44%	N/A	N/A
Gamma	5600	Head	4/13/2026	21.9	21.5	17	1396	7872	1843	4.310	81.100	85.996	6.04%	1.210	23.300	24.143	3.62%	N/A	N/A
Gamma	5750	Head	4/13/2026	21.9	21.5	17	1396	7872	1843	3.950	80.100	78.813	-1.61%	1.120	22.800	22.347	-1.99%	N/A	N/A
Gamma	5850	Head	4/13/2026	21.9	21.5	17	1396	7872	1843	4.220	76.900	84.200	9.49%	1.180	22.000	23.544	7.02%	N/A	N/A
Beta	6500	Head	4/14/2026	23.0	22.3	10	1104	7857	1838	2.810	298.000	281.000	-5.70%	0.523	55.000	52.300	-4.91%	12.700	-5.22%
Gamma	6500	Head	4/15/2026	22.3	21.3	10	1104	7872	1843	3.010	298.000	301.000	1.01%	0.557	55.000	55.700	1.27%	13.500	0.75%
Beta	8000	Head	4/14/2026	23.0	22.3	10	1016	7857	1838	2.550	273.000	255.000	-6.59%	0.440	46.100	44.000	-4.56%	10.600	-6.19%

B.2. Power Density System Check

The system was verified to be within ± 0.66 dB of the power density targets on the calibration certificate according to the test system specification in the user's manual and calibration facility recommendation. The 0.66 dB deviation threshold represents the expanded uncertainty for system performance checks using SPEAG's mmWave verification sources.

The measured power density distribution of verification source was also confirmed through visual inspection to have no noticeable differences, both spatially (shape) and numerically (level) from the distribution provided by the manufacturer, per November 2017 TCBC Workshop Notes.

Table 2 System Check Results (Power Density)

Date	Probe SN	Frequency (MHz)	Source SN	Prad (mW)	Measured Normal psPD (W/m ²)	Target Normal psPD (W/m ²)	Deviation Normal psPD (dB)	Measured Total psPD (W/m ²)	Target Total psPD (W/m ²)	Deviation Total psPD (dB)
5/4/2026	9690	10000.0	1074	1.46	0.865	0.838	0.14	0.892	0.842	0.25

B.3. Dielectric Parameters of the TSL

Table 3 SAR Tissue Dielectric Parameters

Date	Tissue Type	Liquid Temp (°C)	Frequency (MHz)	Conductivity Measured (σ)	Conductivity Target (σ)	Deviation	Permittivity measured (εr)	Permittivity Target (εr)	Deviation
4/13/2026	Head	21.2	650	0.84	0.89	-5.37%	44.6	42.5	4.99%
4/13/2026	Head	21.2	700	0.86	0.89	-3.86%	44.4	42.2	5.21%
4/13/2026	Head	21.2	750	0.87	0.89	-2.31%	44.2	41.9	5.45%
4/13/2026	Head	21.2	800	0.89	0.90	-0.63%	44.1	41.7	5.74%
4/13/2026	Head	21.2	850	0.91	0.92	-0.65%	43.9	41.5	5.89%
4/13/2026	Head	21.2	900	0.93	0.97	-3.91%	43.7	41.5	5.41%
4/13/2026	Head	21.2	950	0.95	0.99	-4.62%	43.6	41.4	5.34%
4/13/2026	Head	21.5	5150	4.45	4.60	-3.29%	35.1	36.0	-2.56%
4/13/2026	Head	21.5	5200	4.50	4.66	-3.28%	35.0	36.0	-2.68%
4/13/2026	Head	21.5	5250	4.56	4.71	-3.12%	34.9	35.9	-2.83%
4/13/2026	Head	21.5	5300	4.61	4.76	-3.08%	34.8	35.9	-2.86%
4/13/2026	Head	21.5	5350	4.67	4.81	-2.96%	34.7	35.8	-3.02%
4/13/2026	Head	21.5	5500	4.82	4.96	-2.96%	34.5	35.6	-3.32%
4/13/2026	Head	21.5	5550	4.87	5.01	-2.78%	34.4	35.6	-3.44%
4/13/2026	Head	21.5	5600	4.93	5.07	-2.76%	34.3	35.5	-3.56%
4/13/2026	Head	21.5	5650	4.99	5.12	-2.54%	34.2	35.5	-3.69%
4/13/2026	Head	21.5	5700	5.04	5.17	-2.54%	34.1	35.4	-3.83%
4/13/2026	Head	21.5	5750	5.09	5.22	-2.43%	34.0	35.4	-3.87%
4/13/2026	Head	21.5	5800	5.14	5.27	-2.38%	33.9	35.3	-4.08%
4/13/2026	Head	21.5	5850	5.20	5.32	-2.35%	33.8	35.3	-4.15%
4/13/2026	Head	21.5	5900	5.25	5.38	-2.33%	33.7	35.2	-4.33%
4/14/2026	Head	22.3	5910	5.62	5.39	4.39%	36.6	35.2	3.90%
4/14/2026	Head	22.3	5950	5.67	5.43	4.52%	36.5	35.2	3.80%
4/14/2026	Head	22.3	6000	5.73	5.48	4.53%	36.4	35.1	3.69%
4/14/2026	Head	22.3	6050	5.80	5.54	4.66%	36.3	35.0	3.54%
4/14/2026	Head	22.3	6100	5.86	5.60	4.66%	36.2	35.0	3.46%
4/14/2026	Head	22.3	6150	5.93	5.66	4.83%	36.1	34.9	3.34%
4/14/2026	Head	22.3	6200	5.99	5.72	4.72%	36.0	34.9	3.23%
4/14/2026	Head	22.3	6250	6.06	5.78	4.91%	35.9	34.8	3.15%
4/14/2026	Head	22.3	6500	6.36	6.07	4.83%	35.4	34.5	2.67%
4/14/2026	Head	22.3	6750	6.68	6.36	5.02%	34.9	34.2	2.07%
4/14/2026	Head	22.3	7000	6.97	6.65	4.88%	34.5	33.9	1.89%
4/14/2026	Head	22.3	7250	7.32	6.95	5.40%	34.0	33.6	1.13%
4/14/2026	Head	22.3	7950	8.17	7.78	5.07%	32.8	32.8	0.03%
4/14/2026	Head	22.3	8000	8.23	7.84	5.01%	32.7	32.7	0.05%
4/15/2026	Head	21.8	5910	5.24	5.39	-2.66%	33.6	35.2	-4.53%
4/15/2026	Head	21.8	5950	5.29	5.43	-2.50%	33.5	35.2	-4.63%
4/15/2026	Head	21.8	6000	5.34	5.48	-2.57%	33.4	35.1	-4.73%
4/15/2026	Head	21.8	6050	5.41	5.54	-2.37%	33.3	35.0	-4.88%
4/15/2026	Head	21.8	6100	5.46	5.60	-2.41%	33.2	35.0	-4.96%
4/15/2026	Head	21.8	6150	5.53	5.66	-2.19%	33.2	34.9	-5.04%
4/15/2026	Head	21.8	6200	5.58	5.72	-2.32%	33.1	34.9	-5.15%
4/15/2026	Head	21.8	6250	5.65	5.78	-2.14%	33.0	34.8	-5.19%
4/15/2026	Head	21.8	6500	5.94	6.07	-2.18%	32.5	34.5	-5.68%
4/15/2026	Head	21.8	6750	6.23	6.36	-2.10%	32.1	34.2	-6.19%
4/15/2026	Head	21.8	7000	6.51	6.65	-2.15%	31.7	33.9	-6.35%
4/15/2026	Head	21.8	7250	6.83	6.95	-1.62%	31.2	33.6	-7.07%
4/15/2026	Head	21.8	7950	7.64	7.78	-1.77%	30.2	32.8	-7.90%
4/15/2026	Head	21.8	8000	7.70	7.84	-1.80%	30.1	32.7	-7.97%
4/15/2026	Head	21	650	0.81	0.89	-8.13%	44.4	42.5	4.46%
4/15/2026	Head	21	700	0.83	0.89	-6.69%	44.2	42.2	4.70%
4/15/2026	Head	21	750	0.85	0.89	-5.23%	44.0	41.9	4.96%
4/15/2026	Head	21	800	0.86	0.90	-3.63%	43.9	41.7	5.28%
4/15/2026	Head	21	850	0.88	0.92	-3.72%	43.8	41.5	5.42%
4/15/2026	Head	21	900	0.90	0.97	-6.90%	43.6	41.5	4.99%
4/15/2026	Head	21	950	0.92	0.99	-7.63%	43.5	41.4	4.90%
4/16/2026	Head	21.8	1600	1.24	1.28	-3.52%	42.3	40.3	5.04%
4/16/2026	Head	21.8	1650	1.26	1.31	-3.82%	42.2	40.2	4.99%
4/16/2026	Head	21.8	1700	1.29	1.34	-3.91%	42.2	40.2	5.09%
4/16/2026	Head	21.8	1750	1.32	1.37	-3.76%	42.2	40.1	5.17%
4/16/2026	Head	21.8	1800	1.35	1.40	-3.59%	42.1	40.0	5.26%
4/16/2026	Head	21.8	1850	1.38	1.40	-1.17%	42.0	40.0	4.99%
4/16/2026	Head	21.8	1900	1.41	1.40	0.81%	41.9	40.0	4.78%
4/16/2026	Head	21.8	1950	1.45	1.40	3.23%	41.8	40.0	4.62%
4/16/2026	Head	21.8	2000	1.48	1.40	5.39%	41.8	40.0	4.42%
4/16/2026	Head	21.8	2050	1.51	1.44	4.75%	41.7	39.9	4.51%
4/16/2026	Head	21.8	2100	1.54	1.49	3.61%	41.6	39.8	4.50%
4/16/2026	Head	21.8	2300	1.69	1.67	1.25%	41.3	39.5	4.73%
4/16/2026	Head	21.8	2350	1.72	1.71	0.69%	41.3	39.4	4.85%
4/16/2026	Head	21.8	2400	1.76	1.76	0.47%	41.2	39.3	4.91%
4/16/2026	Head	21.8	2450	1.80	1.80	0.13%	41.2	39.2	4.99%
4/16/2026	Head	21.8	2500	1.84	1.85	-0.52%	41.1	39.1	4.94%
4/16/2026	Head	21.8	2550	1.88	1.91	-1.27%	41.0	39.1	4.89%
4/16/2026	Head	21.8	2600	1.93	1.96	-1.77%	40.9	39.0	4.87%
4/16/2026	Head	21.8	2650	1.97	2.02	-2.43%	40.8	38.9	4.79%
4/16/2026	Head	21.8	2700	2.01	2.07	-2.94%	40.7	38.9	4.74%
4/22/2026	Head	21.2	1600	1.23	1.28	-3.99%	41.9	40.3	3.99%
4/22/2026	Head	21.2	1650	1.26	1.31	-4.12%	41.8	40.2	3.94%
4/22/2026	Head	21.2	1700	1.29	1.34	-3.95%	41.8	40.2	4.01%

Table 4 SAR Tissue Dielectric Parameters (Continued)

Date	Tissue Type	Liquid Temp (°C)	Frequency (MHz)	Conductivity Measured (σ)	Conductivity Target (σ)	Deviation	Permittivity measured (εr)	Permittivity Target (εr)	Deviation
4/22/2026	Head	21.2	1750	1.32	1.37	-3.77%	41.7	40.1	3.94%
4/22/2026	Head	21.2	1800	1.35	1.40	-3.69%	41.6	40.0	4.02%
4/22/2026	Head	21.2	1850	1.38	1.40	-1.43%	41.5	40.0	3.73%
4/22/2026	Head	21.2	1900	1.41	1.40	0.61%	41.4	40.0	3.61%
4/22/2026	Head	21.2	1950	1.44	1.40	3.19%	41.4	40.0	3.40%
4/22/2026	Head	21.2	2000	1.48	1.40	5.42%	41.3	40.0	3.25%
4/22/2026	Head	21.2	2050	1.51	1.44	4.86%	41.2	39.9	3.25%
4/22/2026	Head	21.2	2100	1.54	1.49	3.67%	41.1	39.8	3.26%
4/22/2026	Head	20.9	1600	1.23	1.28	-3.99%	41.9	40.3	3.99%
4/22/2026	Head	20.9	1650	1.26	1.31	-4.12%	41.8	40.2	3.94%
4/22/2026	Head	20.9	1700	1.29	1.34	-3.95%	41.8	40.2	4.01%
4/22/2026	Head	20.9	1750	1.32	1.37	-3.77%	41.7	40.1	3.94%
4/22/2026	Head	20.9	1800	1.35	1.40	-3.69%	41.6	40.0	4.02%
4/22/2026	Head	20.9	1850	1.38	1.40	-1.43%	41.5	40.0	3.73%
4/22/2026	Head	20.9	1900	1.41	1.40	0.61%	41.4	40.0	3.61%
4/22/2026	Head	20.9	1950	1.44	1.40	3.19%	41.4	40.0	3.40%
4/22/2026	Head	20.9	2000	1.48	1.40	5.42%	41.3	40.0	3.25%
4/22/2026	Head	20.9	2050	1.51	1.44	4.86%	41.2	39.9	3.25%
4/22/2026	Head	20.9	2100	1.54	1.49	3.67%	41.1	39.8	3.26%
4/22/2026	Head	23.9	10	0.76	0.75	1.68%	51.2	55.0	-6.94%
4/22/2026	Head	23.9	15	0.76	0.75	1.65%	51.4	55.0	-6.48%
4/27/2026	Head	22.6	1600	1.27	1.28	-0.93%	41.9	40.3	4.06%
4/27/2026	Head	22.6	1650	1.30	1.31	-1.06%	41.8	40.2	3.97%
4/27/2026	Head	22.6	1700	1.33	1.34	-1.16%	41.7	40.2	3.95%
4/27/2026	Head	22.6	1750	1.36	1.37	-1.13%	41.7	40.1	4.00%
4/27/2026	Head	22.6	1800	1.38	1.40	-1.16%	41.6	40.0	4.01%
4/27/2026	Head	22.6	1850	1.42	1.40	1.19%	41.5	40.0	3.77%
4/27/2026	Head	22.6	1900	1.45	1.40	3.26%	41.4	40.0	3.50%
4/27/2026	Head	22.6	1950	1.48	1.40	5.67%	41.3	40.0	3.30%
4/27/2026	Head	22.6	2000	1.51	1.40	7.78%	41.2	40.0	3.01%
4/27/2026	Head	22.6	2050	1.54	1.44	6.80%	41.1	39.9	3.10%
4/27/2026	Head	22.6	2100	1.57	1.49	5.44%	41.1	39.8	3.09%
4/27/2026	Head	23.2	2300	1.71	1.67	2.40%	40.2	39.5	1.90%
4/27/2026	Head	23.2	2350	1.74	1.71	1.82%	40.1	39.4	1.93%
4/27/2026	Head	23.2	2400	1.78	1.76	1.39%	40.0	39.3	1.92%
4/27/2026	Head	23.2	2450	1.81	1.80	0.80%	40.0	39.2	1.95%
4/27/2026	Head	23.2	2500	1.85	1.85	-0.21%	39.9	39.1	1.88%
4/27/2026	Head	23.2	2550	1.89	1.91	-1.22%	39.8	39.1	1.83%
4/27/2026	Head	23.2	2600	1.93	1.96	-1.96%	39.7	39.0	1.83%
4/27/2026	Head	23.2	2650	1.96	2.02	-2.68%	39.6	38.9	1.77%
4/27/2026	Head	23.2	2700	2.00	2.07	-3.32%	39.5	38.9	1.69%
5/6/2026	Head	22.3	2300	1.64	1.67	-1.65%	39.0	39.5	-1.18%
5/6/2026	Head	22.3	2350	1.67	1.71	-2.34%	39.0	39.4	-1.02%
5/6/2026	Head	22.3	2400	1.71	1.76	-2.61%	38.9	39.3	-0.92%
5/6/2026	Head	22.3	2450	1.75	1.80	-2.92%	38.9	39.2	-0.81%
5/6/2026	Head	22.3	2500	1.79	1.85	-3.51%	38.8	39.1	-0.86%
5/6/2026	Head	22.3	2550	1.83	1.91	-4.26%	38.7	39.1	-0.97%
5/6/2026	Head	22.3	2600	1.87	1.96	-4.82%	38.6	39.0	-1.02%
5/6/2026	Head	22.3	2650	1.90	2.02	-5.62%	38.5	38.9	-1.16%
5/6/2026	Head	22.3	2700	1.94	2.07	-6.29%	38.4	38.9	-1.22%
5/11/2026	Head	22.6	2300	1.64	1.67	-1.65%	40.0	39.5	1.25%
5/11/2026	Head	22.6	2350	1.67	1.71	-2.48%	39.9	39.4	1.35%
5/11/2026	Head	22.6	2400	1.70	1.76	-2.89%	39.9	39.3	1.45%
5/11/2026	Head	22.6	2450	1.74	1.80	-3.33%	39.8	39.2	1.57%
5/11/2026	Head	22.6	2500	1.78	1.85	-3.98%	39.7	39.1	1.56%
5/11/2026	Head	22.6	2550	1.82	1.91	-4.69%	39.7	39.1	1.52%
5/11/2026	Head	22.6	2600	1.86	1.96	-5.15%	39.6	39.0	1.52%
5/11/2026	Head	22.6	2650	1.90	2.02	-5.78%	39.5	38.9	1.39%
5/11/2026	Head	22.6	2700	1.94	2.07	-6.34%	39.4	38.9	1.33%
5/11/2026	Head	22.6	2300	1.64	1.67	-1.65%	40.0	39.5	1.25%
5/11/2026	Head	22.6	2350	1.67	1.71	-2.48%	39.9	39.4	1.35%
5/11/2026	Head	22.6	2400	1.70	1.76	-2.89%	39.9	39.3	1.45%
5/11/2026	Head	22.6	2450	1.74	1.80	-3.33%	39.8	39.2	1.57%
5/11/2026	Head	22.6	2500	1.78	1.85	-3.98%	39.7	39.1	1.56%
5/11/2026	Head	22.6	2550	1.82	1.91	-4.69%	39.7	39.1	1.52%
5/11/2026	Head	22.6	2600	1.86	1.96	-5.15%	39.6	39.0	1.52%
5/11/2026	Head	22.6	2650	1.90	2.02	-5.78%	39.5	38.9	1.39%
5/11/2026	Head	22.6	2700	1.94	2.07	-6.34%	39.4	38.9	1.33%
5/14/2026	Head	23.4	1600	1.26	1.28	-1.62%	43.8	40.3	8.76%
5/14/2026	Head	23.4	1650	1.29	1.31	-1.57%	43.8	40.2	8.74%
5/14/2026	Head	23.4	1700	1.32	1.34	-1.34%	43.7	40.2	8.79%
5/14/2026	Head	23.4	1750	1.35	1.37	-1.24%	43.6	40.1	8.69%
5/14/2026	Head	23.4	1800	1.38	1.40	-1.21%	43.5	40.0	8.78%
5/14/2026	Head	23.4	1850	1.42	1.40	1.15%	43.4	40.0	8.44%
5/14/2026	Head	23.4	1900	1.44	1.40	2.96%	43.3	40.0	8.25%
5/14/2026	Head	23.4	1950	1.47	1.40	5.25%	43.2	40.0	8.05%
5/14/2026	Head	23.4	2000	1.50	1.40	7.31%	43.2	40.0	7.98%
5/14/2026	Head	23.4	2050	1.54	1.44	6.75%	43.1	39.9	8.06%
5/14/2026	Head	23.4	2100	1.57	1.49	5.68%	43.0	39.8	8.10%
5/20/2026	Head	21.8	2300	1.74	1.67	4.54%	42.5	39.5	7.62%
5/20/2026	Head	21.8	2350	1.78	1.71	4.05%	42.4	39.4	7.70%
5/20/2026	Head	21.8	2400	1.82	1.76	3.86%	42.3	39.3	7.71%
5/20/2026	Head	21.8	2450	1.86	1.80	3.48%	42.2	39.2	7.72%
5/20/2026	Head	21.8	2500	1.90	1.85	2.70%	42.1	39.1	7.66%
5/20/2026	Head	21.8	2550	1.94	1.91	1.84%	42.0	39.1	7.60%
5/20/2026	Head	21.8	2600	1.99	1.96	1.29%	42.0	39.0	7.57%
5/20/2026	Head	21.8	2650	2.03	2.02	0.62%	41.9	38.9	7.48%
5/20/2026	Head	21.8	2700	2.07	2.07	0.09%	41.8	38.9	7.43%
5/26/2026	Head	21.8	650	0.81	0.89	-8.50%	45.1	42.5	6.21%
5/26/2026	Head	21.8	700	0.83	0.89	-7.20%	44.9	42.2	6.44%
5/26/2026	Head	21.8	750	0.84	0.89	-5.62%	44.7	41.9	6.69%
5/26/2026	Head	21.8	800	0.86	0.90	-4.19%	44.6	41.7	7.11%
5/26/2026	Head	21.8	850	0.88	0.92	-3.99%	44.5	41.5	7.24%
5/26/2026	Head	21.8	900	0.90	0.97	-7.20%	44.3	41.5	6.79%
5/26/2026	Head	21.8	950	0.92	0.99	-7.72%	44.2	41.4	6.73%

Table 5 SAR Tissue Dielectric Parameters (Continued)

Date	Tissue Type	Liquid Temp (°C)	Frequency (MHz)	Conductivity Measured (σ)	Conductivity Target (σ)	Deviation	Permittivity measured (ϵ_r)	Permittivity Target (ϵ_r)	Deviation
6/1/2026	Head	21.4	1600	1.19	1.28	-7.02%	40.3	40.3	-0.05%
6/1/2026	Head	21.4	1650	1.22	1.31	-6.96%	40.2	40.2	-0.10%
6/1/2026	Head	21.4	1700	1.25	1.34	-6.78%	40.1	40.2	-0.12%
6/1/2026	Head	21.4	1750	1.28	1.37	-6.76%	40.0	40.1	-0.21%
6/1/2026	Head	21.4	1800	1.31	1.40	-6.70%	39.9	40.0	-0.17%
6/1/2026	Head	21.4	1850	1.34	1.40	-4.57%	39.8	40.0	-0.52%
6/1/2026	Head	21.4	1900	1.36	1.40	-2.92%	39.7	40.0	-0.69%
6/1/2026	Head	21.4	1950	1.39	1.40	-0.70%	39.7	40.0	-0.85%
6/1/2026	Head	21.4	2000	1.42	1.40	1.37%	39.6	40.0	-0.98%
6/1/2026	Head	21.4	2050	1.46	1.44	0.74%	39.5	39.9	-0.94%
6/1/2026	Head	21.4	2100	1.48	1.49	-0.34%	39.5	39.8	-0.93%

The above measured tissue parameters were used in the DASY software. The DASY software was used to perform interpolation to determine the dielectric parameters at the SAR test device frequencies (per KDB Publication 865664 D01v01r04 and IEEE 1528-2013 6.6.1.2). The tissue parameters listed in the SAR test plots may slightly differ from the table above due to significant digit rounding in the software.

The SAR values were compensated for deviations between the measured and required tissue dielectric properties, as described in IEEE 1528-2013. The SAR values were applied to only scale up the measured SAR values, and not downward, per KDB Publication 865664 D01v04r04.

B.4. FCC System Validation

Per FCC KDB Publication 865664 D02 Section 2.3 a) states “SAR system validation status and system verification results should be documented in a separate section of the SAR report, or as an attachment, to confirm measurement accuracy.”

The SAR systems used for evaluating this device were validated against its performance specifications prior to the SAR measurements.

Reference dipoles were used with the required tissue-equivalent media for system validation, according to the procedures outlined in FCC KDB Publication 865664 D01 and IEEE 1528-2013. Since SAR probe calibrations are frequency dependent, each probe calibration point was validated at a frequency within the valid frequency range of the probe calibration point.

Per FCC KDB 865664 D02, “the validation status should be documented according to the validation date(s), measurement frequencies, SAR probes, calibrated signal type(s) and tissue dielectric parameters.” A tabulated summary of the system validation status is provided accordingly:

Table 6 System Validation

System	Frequency (MHz)	Date	Probe	DAE	Probe CalF		Cond. (σ)	Perm (ϵ_r)	CW Validation			Mod Validation		
					Freq (MHz)	Tissue Type			Sensitivity	Probe Linearity	Probe Isotropy	Mod Type	Duty Factor	PAR
Gamma	13	11/14/2025	7872	1843	13	Head	0.695	52	PASS	PASS	PASS	N/A	N/A	N/A
Zeta	750	02/16/2026	7969	1933	750	Head	0.829	43.4	PASS	PASS	PASS	N/A	N/A	N/A
Zeta	835	02/17/2026	7969	1933	835	Head	0.884	44.7	PASS	PASS	PASS	GMSK	PASS	N/A
Gamma	835	08/27/2025	7872	1843	835	Head	0.93	41.9	PASS	PASS	PASS	GMSK	PASS	N/A
Delta	1750	12/02/2025	7853	1844	1750	Head	1.35	39.57	PASS	PASS	PASS	N/A	N/A	N/A
Zeta	1750	02/12/2026	7969	1933	1750	Head	1.25	38.3	PASS	PASS	PASS	N/A	N/A	N/A
Zeta	1900	02/12/2026	7969	1933	1900	Head	1.33	38	PASS	PASS	PASS	GMSK	PASS	N/A
Zeta	2450	02/13/2026	7969	1933	2450	Head	1.7	37.2	PASS	PASS	PASS	OFDM	N/A	PASS
Beta	2450	01/23/2026	7857	1838	2450	Head	1.77	38.7	PASS	PASS	PASS	OFDM	N/A	PASS
Epsilon	2450	04/20/2026	7971	1862	2450	Head	1.79	38.3	PASS	PASS	PASS	OFDM	N/A	PASS
Zeta	2600	02/13/2026	7969	1933	2600	Head	1.82	37	PASS	PASS	PASS	TDD	PASS	N/A
Gamma	5250	08/25/2025	7872	1843	5250	Head	4.53	34.7	PASS	PASS	PASS	OFDM	N/A	PASS
Gamma	5600	08/26/2025	7872	1843	5600	Head	4.971	33.989	PASS	PASS	PASS	OFDM	N/A	PASS
Gamma	5750	08/26/2025	7872	1843	5750	Head	5.141	33.717	PASS	PASS	PASS	OFDM	N/A	PASS
Gamma	5850	08/26/2025	7872	1843	5850	Head	5.2	33.6	PASS	PASS	PASS	OFDM	N/A	PASS
Gamma	6500	09/19/2025	7872	1843	6500	Head	5.99	32.2	PASS	PASS	PASS	OFDM	N/A	PASS
Beta	6500	01/29/2026	7857	1838	6500	Head	6.04	32.7	PASS	PASS	PASS	OFDM	N/A	PASS
Beta	8000	04/14/2026	7857	1838	8000	Head	7.524	29.867	PASS	PASS	PASS	N/A	N/A	N/A

NOTE: The probes have been calibrated for both CW and modulated signals. Modulations in the table above represent test configurations for which the measurement system has been validated per FCC KDB Publication 865664 D01 for scenarios when CW probe calibrations are used with other signal types.

SAR systems were additionally validated for modulated signals with a periodic duty cycle or with a high PAR (peak to average ratio) >5 dB, such as OFDM according to FCC KDB Publication 865664 D01 v01r04.

B.5. Sample TSL Compositions

TSL recipes are proprietary to SPEAG. Since the composition is approximate to the actual liquids utilized, the manufacturer data sheets are provided below.

Measurement Certificate / Material Test

Item Name Head Tissue Simulating Liquid (HBBL4-250V3)
Product No. SL AAH 005 AD (Batch: 230809-2)
Manufacturer SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated DAK 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 temperature $(22 \pm 3)^\circ\text{C}$ and humidity $< 70\%$.
TSL Temperature 22°C
Test Date 10-Aug-23
Operator CL

Additional Information

TSL Density 1.042 g/cm³
TSL Heat-capacity 3.574 kJ/(kg·K)

f [MHz]	Measured		Target		Diff to Target [%]	
	ϵ'	ϵ''	ϵ'_{tgt}	ϵ''_{tgt}	$\Delta\epsilon'$	$\Delta\epsilon''$
8	64.4	2887.67	7.75	55.5	0.75	-1.9
10	64.7	1344.05	7.75	55.5	0.75	-1.4
15	64.5	896.79	7.75	55.3	0.75	-1.5
20	64.3	673.18	7.75	55.1	0.75	-1.5
25	64.1	539.04	7.75	55.0	0.75	-1.6
30	63.9	449.85	7.75	55.0	0.75	-2.0
35	63.7	395.84	7.75	54.9	0.75	-2.2
40	63.5	336.02	7.75	54.8	0.75	-2.3
45	63.3	300.86	7.75	54.7	0.75	-2.5
50	63.2	271.17	7.75	54.6	0.75	-2.5
55	63.0	246.90	7.75	54.4	0.75	-2.6
60	62.9	226.71	7.75	54.3	0.75	-2.6
65	62.7	209.64	7.75	54.2	0.75	-2.8
70	62.6	195.02	7.75	54.1	0.75	-2.8
75	62.5	182.36	7.75	54.0	0.75	-2.8
80	62.3	171.29	7.75	53.9	0.75	-2.9
85	62.2	161.53	7.75	53.8	0.75	-2.9
90	62.1	152.87	7.77	53.7	0.75	-2.9
95	62.0	145.12	7.77	53.5	0.75	-2.9
100	61.9	138.15	7.77	53.4	0.75	-2.9
105	61.8	131.86	7.77	53.3	0.75	-2.8
110	61.7	126.14	7.77	53.2	0.75	-2.8
115	61.6	120.93	7.77	53.1	0.75	-2.8
120	61.5	116.15	7.78	53.0	0.75	-2.8
125	61.3	111.77	7.78	52.9	0.75	-3.0
130	61.2	107.72	7.78	52.8	0.75	-2.9
135	61.1	103.98	7.78	52.6	0.75	-2.9
140	61.0	100.51	7.78	52.5	0.75	-2.9
145	60.9	97.29	7.78	52.4	0.75	-2.9
150	60.8	94.28	7.79	52.3	0.75	-2.9
155	60.7	91.47	7.79	52.1	0.75	-2.6
160	60.6	88.83	7.79	51.8	0.77	-2.4
165	60.5	86.36	7.79	51.6	0.77	-2.1
170	60.4	84.04	7.79	51.4	0.77	-1.9
175	60.3	81.84	0.80	51.1	0.78	-1.6
180	60.3	79.78	0.80	50.9	0.78	-1.2
185	60.2	77.83	0.80	50.7	0.78	-0.9
190	60.1	75.98	0.80	50.4	0.79	-0.7
195	60.0	74.23	0.81	50.2	0.79	-0.4
200	49.9	72.57	0.81	50.0	0.80	-0.1
205	49.8	70.99	0.81	49.7	0.80	0.1
210	49.7	69.49	0.81	49.5	0.80	0.4
215	49.6	68.06	0.81	49.3	0.81	0.7
220	49.6	66.70	0.82	49.0	0.81	1.2
225	49.5	65.39	0.82	48.8	0.81	1.4
230	49.4	64.15	0.82	48.6	0.82	1.7
235	49.3	62.96	0.82	48.3	0.82	2.0
240	49.2	61.83	0.83	48.1	0.82	2.3
245	49.2	60.73	0.83	47.9	0.83	2.8
250	49.1	59.69	0.83	47.6	0.83	3.1

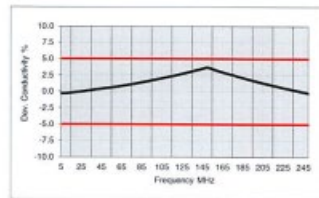
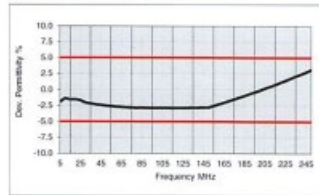


Figure 1 - Head TSL Calibration Certificate Example (4 – 250 MHz)

Measurement Certificate / Material Test

Item Name Head Tissue Simulating Liquid (HBBL600-10000V6)
Product No. SL AAH U16 BC (Batch: 230912-5)
Manufacturer SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated DAK probe.

Target Parameters

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

Test Condition

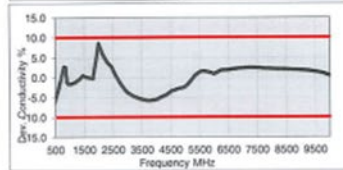
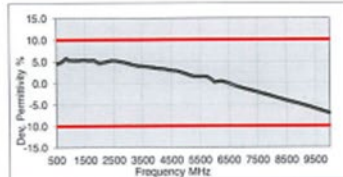
Ambient Condition 22°C ; 30% humidity
TSL Temperature 22°C
Test Date 14-Sep-23
Operator CL

Additional Information

TSL Density
TSL Heat-capacity

Results

f (MHz)	Measured			Target		Diff. to Target [%]	
	ϵ'	ϵ''	σ	ϵ	σ	$\Delta\epsilon$	$\Delta\sigma$
600	44.7	25.6	0.86	42.7	0.88	4.6	-2.5
750	44.2	21.7	0.90	41.9	0.89	5.4	0.7
800	44.0	20.7	0.92	41.7	0.90	5.6	2.5
825	44.0	20.3	0.93	41.6	0.91	5.8	2.6
835	44.0	20.1	0.94	41.5	0.91	5.9	3.1
850	43.9	19.9	0.94	41.5	0.92	5.8	2.6
900	43.8	19.2	0.96	41.5	0.97	5.5	-1.0
1400	42.8	15.2	1.18	40.6	1.18	5.4	0.0
1450	42.7	15.0	1.21	40.5	1.20	5.4	0.8
1600	42.4	14.4	1.29	40.3	1.28	5.2	0.4
1625	42.4	14.4	1.30	40.3	1.30	5.3	0.1
1640	42.4	14.3	1.31	40.3	1.31	5.3	0.3
1650	42.4	14.3	1.31	40.2	1.31	5.4	-0.2
1700	42.3	14.2	1.34	40.2	1.34	5.3	-0.2
1750	42.2	14.1	1.37	40.1	1.37	5.3	-0.1
1800	42.1	14.0	1.40	40.0	1.40	5.3	0.0
1810	42.1	13.9	1.41	40.0	1.40	5.3	0.7
1825	42.1	13.9	1.42	40.0	1.40	5.3	1.4
1850	42.1	13.9	1.43	40.0	1.40	5.3	2.1
1900	42.0	13.8	1.46	40.0	1.40	5.0	4.3
1950	41.9	13.7	1.49	40.0	1.40	4.7	6.4
2000	41.8	13.7	1.52	40.0	1.40	4.5	8.6
2050	41.8	13.6	1.55	39.9	1.44	4.7	7.3
2100	41.7	13.6	1.59	39.8	1.49	4.7	6.8
2150	41.6	13.6	1.62	39.7	1.53	4.7	5.7
2200	41.6	13.5	1.66	39.6	1.58	4.9	5.2
2250	41.5	13.5	1.69	39.5	1.62	4.9	4.2
2300	41.4	13.5	1.73	39.5	1.67	4.9	3.8
2350	41.4	13.5	1.77	39.4	1.71	5.1	3.4
2400	41.3	13.6	1.81	39.3	1.76	5.1	3.1
2450	41.2	13.6	1.85	39.2	1.80	5.1	2.8
2500	41.2	13.6	1.89	39.1	1.85	5.3	1.9
2550	41.1	13.6	1.93	39.1	1.91	5.2	1.1
2600	41.0	13.6	1.97	39.0	1.96	5.1	0.3



3500	39.4	14.1	2.75	37.9	2.91	3.9	-5.5
3700	39.1	14.3	2.94	37.7	3.12	3.7	-5.8
5200	36.6	16.0	4.62	36.0	4.66	1.7	-0.8
5250	36.5	16.1	4.69	35.9	4.71	1.6	-0.3
5300	36.4	16.2	4.76	35.9	4.76	1.5	0.1
5500	36.2	16.4	5.03	35.6	4.96	1.5	1.3
5600	36.1	16.5	5.14	35.5	5.07	1.5	1.5
5700	35.9	16.5	5.25	35.4	5.17	1.5	1.6
5800	35.7	16.6	5.34	35.3	5.27	1.2	1.4
6000	35.1	16.5	5.52	35.1	5.48	0.2	0.9
6500	34.4	17.1	6.19	34.5	6.07	-0.1	1.9
7000	33.5	17.5	6.81	33.9	6.65	-1.3	2.4
7500	32.6	17.8	7.41	33.3	7.24	-2.1	2.4
8000	31.7	18.0	8.01	32.7	7.84	-3.1	2.2
8500	30.8	18.2	8.62	32.1	8.45	-4.1	2.0
9000	30.0	18.5	9.24	31.5	9.08	-4.9	1.9
9500	29.1	18.6	9.85	31.0	9.71	-5.9	1.4
10000	28.2	18.7	10.41	30.4	10.36	-7.6	0.5

Figure 2 - Head TSL Calibration Certificate Example (600 – 10000 MHz)