No.	Conditions (SAR1+ SAR2 + SAR3) & (SAR1+ SAR2 + SAR3 + SAR4)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	Max. SAR3	SAR Summation	SPLSR Analysis
22	LTE 14 + WLAN Ant-0 (DTS) + BT Ant-1 (DSS)	Body (Tablet PC Mode)	Rear Face	1.13	0.33	0.04	1.50	Σ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Right Side	0.06	0.40	0.21	0.67	Σ SAR < 1.6, Not required
			Top Side	0.00	0.13	0.01	0.14	Σ SAR < 1.6, Not required
			Bottom Side	0.86	0.40	0.21	1.47	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.53	0.19	0.02	0.74	Σ SAR < 1.6, Not required
23	LTE 14 + WLAN Ant-0 (NII) + BT Ant-1 (DSS)	Body (Tablet PC Mode)	Rear Face	1.13	0.22	0.04	1.39	Σ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Right Side	0.06	0.40	0.21	0.67	Σ SAR < 1.6, Not required
			Top Side	0.00	0.48	0.01	0.49	Σ SAR < 1.6, Not required
			Bottom Side	0.86	0.40	0.21	1.47	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.53	0.47	0.02	1.02	Σ SAR < 1.6, Not required
24	LTE 14 + WLAN (DTS) + WLAN (NII)	Body (Tablet PC Mode)	Rear Face	1.13	0.53	0.22	1.88	**Analyzed as below**
			Left Side	0.00	0.40	0.40	0.80	Σ SAR < 1.6, Not required
			Right Side	0.06	0.40	0.40	0.86	Σ SAR < 1.6, Not required
			Top Side	0.00	0.28	0.48	0.76	Σ SAR < 1.6, Not required
			Bottom Side	0.86	0.40	0.40	1.66	**Analyzed as below**
		Body (Laptop PC Mode)	Bottom	0.53	0.40	0.47	1.40	Σ SAR < 1.6, Not required

No.	Conditions (SAR1+ SAR2 + SAR3) & (SAR1+ SAR2 + SAR3 + SAR4)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	Max. SAR3	SAR Summation	SPLSR Analysis
25	LTE 17 + WLAN Ant-0 (DTS) + BT Ant-1 (DSS)	Body (Tablet PC Mode)	Rear Face	0.33	0.33	0.04	0.70	Σ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Right Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Top Side	0.00	0.13	0.01	0.14	Σ SAR < 1.6, Not required
			Bottom Side	0.47	0.40	0.21	1.08	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.31	0.19	0.02	0.52	Σ SAR < 1.6, Not required
26	LTE 17 + WLAN Ant-0 (NII) + BT Ant-1 (DSS)	Body (Tablet PC Mode)	Rear Face	0.33	0.22	0.04	0.59	Σ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Right Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Top Side	0.00	0.48	0.01	0.49	Σ SAR < 1.6, Not required
			Bottom Side	0.47	0.40	0.21	1.08	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.31	0.47	0.02	0.80	Σ SAR < 1.6, Not required
27	LTE 17 + WLAN (DTS) + WLAN (NII)	Body (Tablet PC Mode)	Rear Face	0.33	0.53	0.22	1.08	Σ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.40	0.80	Σ SAR < 1.6, Not required
			Right Side	0.00	0.40	0.40	0.80	Σ SAR < 1.6, Not required
			Top Side	0.00	0.28	0.48	0.76	Σ SAR < 1.6, Not required
			Bottom Side	0.47	0.40	0.40	1.27	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.31	0.40	0.47	1.18	Σ SAR < 1.6, Not required

No.	Conditions (SAR1+ SAR2 + SAR3) & (SAR1+ SAR2 + SAR3 + SAR4)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	Max. SAR3	SAR Summation	SPLSR Analysis
28	LTE 25 + WLAN Ant-0 (DTS) + BT Ant-1 (DSS)	Body (Tablet PC Mode)	Rear Face	1.06	0.33	0.04	1.43	Σ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Right Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Top Side	0.00	0.13	0.01	0.14	Σ SAR < 1.6, Not required
			Bottom Side	0.39	0.40	0.21	1.00	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	1.18	0.19	0.02	1.39	Σ SAR < 1.6, Not required
29	LTE 25 + WLAN Ant-0 (NII) + BT Ant-1 (DSS)	Body (Tablet PC Mode)	Rear Face	1.06	0.22	0.04	1.32	Σ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Right Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Top Side	0.00	0.48	0.01	0.49	Σ SAR < 1.6, Not required
			Bottom Side	0.39	0.40	0.21	1.00	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	1.18	0.47	0.02	1.67	**Analyzed as below**
30	LTE 25 + WLAN (DTS) + WLAN (NII)	Body (Tablet PC Mode)	Rear Face	1.06	0.53	0.22	1.81	**Analyzed as below**
			Left Side	0.00	0.40	0.40	0.80	Σ SAR < 1.6, Not required
			Right Side	0.00	0.40	0.40	0.80	Σ SAR < 1.6, Not required
			Top Side	0.00	0.28	0.48	0.76	Σ SAR < 1.6, Not required
			Bottom Side	0.39	0.40	0.40	1.19	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	1.18	0.40	0.47	2.05	**Analyzed as below**

No.	Conditions (SAR1+ SAR2 + SAR3) & (SAR1+ SAR2 + SAR3 + SAR4)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	Max. SAR3	SAR Summation	SPLSR Analysis
31	LTE 26 + WLAN Ant-0 (DTS) + BT Ant-1 (DSS)	Body (Tablet PC Mode)	Rear Face	0.88	0.33	0.04	1.25	Σ SAR < 1.6, Not required
			Left Side	0.04	0.40	0.21	0.65	Σ SAR < 1.6, Not required
			Right Side	0.18	0.40	0.21	0.79	Σ SAR < 1.6, Not required
			Top Side	0.00	0.13	0.01	0.14	Σ SAR < 1.6, Not required
			Bottom Side	0.69	0.40	0.21	1.30	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.48	0.19	0.02	0.69	Σ SAR < 1.6, Not required
32	LTE 26 + WLAN Ant-0 (NII) + BT Ant-1 (DSS)	Body (Tablet PC Mode)	Rear Face	0.88	0.22	0.04	1.14	Σ SAR < 1.6, Not required
			Left Side	0.04	0.40	0.21	0.65	Σ SAR < 1.6, Not required
			Right Side	0.18	0.40	0.21	0.79	Σ SAR < 1.6, Not required
			Top Side	0.00	0.48	0.01	0.49	Σ SAR < 1.6, Not required
			Bottom Side	0.69	0.40	0.21	1.30	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.48	0.47	0.02	0.97	Σ SAR < 1.6, Not required
33	LTE 26 + WLAN (DTS) + WLAN (NII)	Body (Tablet PC Mode)	Rear Face	0.88	0.53	0.22	1.63	**Analyzed as below**
			Left Side	0.04	0.40	0.40	0.84	Σ SAR < 1.6, Not required
			Right Side	0.18	0.40	0.40	0.98	Σ SAR < 1.6, Not required
			Top Side	0.00	0.28	0.48	0.76	Σ SAR < 1.6, Not required
			Bottom Side	0.69	0.40	0.40	1.49	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.48	0.40	0.47	1.35	Σ SAR < 1.6, Not required

No.	Conditions (SAR1+ SAR2 + SAR3) & (SAR1+ SAR2 + SAR3 + SAR4)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	Max. SAR3	SAR Summation	SPLSR Analysis
34	LTE 30 + WLAN Ant-0 (DTS) + BT Ant-1 (DSS)	Body (Tablet PC Mode)	Rear Face	0.23	0.33	0.04	0.60	Σ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Right Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Top Side	0.00	0.13	0.01	0.14	Σ SAR < 1.6, Not required
			Bottom Side	0.12	0.40	0.21	0.73	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.17	0.19	0.02	0.38	Σ SAR < 1.6, Not required
35	LTE 30 + WLAN Ant-0 (NII) + BT Ant-1 (DSS)	Body (Tablet PC Mode)	Rear Face	0.23	0.22	0.04	0.49	Σ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Right Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Top Side	0.00	0.48	0.01	0.49	Σ SAR < 1.6, Not required
			Bottom Side	0.12	0.40	0.21	0.73	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.17	0.47	0.02	0.66	Σ SAR < 1.6, Not required
36	LTE 30 + WLAN (DTS) + WLAN (NII)	Body (Tablet PC Mode)	Rear Face	0.23	0.53	0.22	0.98	Σ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.40	0.80	Σ SAR < 1.6, Not required
			Right Side	0.00	0.40	0.40	0.80	Σ SAR < 1.6, Not required
			Top Side	0.00	0.28	0.48	0.76	Σ SAR < 1.6, Not required
			Bottom Side	0.12	0.40	0.40	0.92	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.17	0.40	0.47	1.04	Σ SAR < 1.6, Not required

No.	Conditions (SAR1+ SAR2 + SAR3) & (SAR1+ SAR2 + SAR3 + SAR4)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	Max. SAR3	SAR Summation	SPLSR Analysis
37	LTE 38 + WLAN Ant-0 (DTS) + BT Ant-1 (DSS)	Body (Tablet PC Mode)	Rear Face	0.97	0.33	0.04	1.34	Σ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.40	0.80	Σ SAR < 1.6, Not required
			Right Side	0.00	0.40	0.40	0.80	Σ SAR < 1.6, Not required
			Top Side	0.00	0.13	0.01	0.14	Σ SAR < 1.6, Not required
			Bottom Side	0.51	0.40	0.40	1.31	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.45	0.19	0.02	0.66	Σ SAR < 1.6, Not required
38	LTE 38 + WLAN Ant-0 (NII) + BT Ant-1 (DSS)	Body (Tablet PC Mode)	Rear Face	0.97	0.22	0.04	1.23	Σ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.40	0.80	Σ SAR < 1.6, Not required
			Right Side	0.00	0.40	0.40	0.80	Σ SAR < 1.6, Not required
			Top Side	0.00	0.48	0.01	0.49	Σ SAR < 1.6, Not required
			Bottom Side	0.51	0.40	0.40	1.31	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.45	0.47	0.02	0.94	Σ SAR < 1.6, Not required
39	LTE 38 + WLAN (DTS) + WLAN (NII)	Body (Tablet PC Mode)	Rear Face	0.97	0.53	0.22	1.72	Σ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.40	0.80	Σ SAR < 1.6, Not required
			Right Side	0.00	0.40	0.40	0.80	Σ SAR < 1.6, Not required
			Top Side	0.00	0.28	0.48	0.76	Σ SAR < 1.6, Not required
			Bottom Side	0.51	0.40	0.40	1.31	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.45	0.40	0.47	1.32	Σ SAR < 1.6, Not required

No.	Conditions (SAR1+ SAR2 + SAR3) & (SAR1+ SAR2 + SAR3 + SAR4)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	Max. SAR3	SAR Summation	SPLSR Analysis
40	LTE 41 + WLAN Ant-0 (DTS) + BT Ant-1 (DSS)	Body (Tablet PC Mode)	Rear Face	0.36	0.33	0.04	0.73	Σ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Right Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Top Side	0.00	0.13	0.01	0.14	Σ SAR < 1.6, Not required
			Bottom Side	0.16	0.40	0.21	0.77	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.16	0.19	0.02	0.37	Σ SAR < 1.6, Not required
41	LTE 41 + WLAN Ant-0 (NII) + BT Ant-1 (DSS)	Body (Tablet PC Mode)	Rear Face	0.36	0.22	0.04	0.62	Σ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Right Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Top Side	0.00	0.48	0.01	0.49	Σ SAR < 1.6, Not required
			Bottom Side	0.16	0.40	0.21	0.77	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.16	0.47	0.02	0.65	Σ SAR < 1.6, Not required
42	LTE 41 + WLAN (DTS) + WLAN (NII)	Body (Tablet PC Mode)	Rear Face	0.36	0.53	0.22	1.11	Σ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.40	0.80	Σ SAR < 1.6, Not required
			Right Side	0.00	0.40	0.40	0.80	Σ SAR < 1.6, Not required
			Top Side	0.00	0.28	0.48	0.76	Σ SAR < 1.6, Not required
			Bottom Side	0.16	0.40	0.40	0.96	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.16	0.40	0.47	1.03	Σ SAR < 1.6, Not required

No.	Conditions (SAR1+ SAR2 + SAR3) & (SAR1+ SAR2 + SAR3 + SAR4)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	Max. SAR3	SAR Summation	SPLSR Analysis
43	LTE 66 + WLAN Ant-0 (DTS) + BT Ant-1 (DSS)	Body (Tablet PC Mode)	Rear Face	0.87	0.33	0.04	1.24	Σ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Right Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Top Side	0.00	0.13	0.01	0.14	Σ SAR < 1.6, Not required
			Bottom Side	0.45	0.40	0.21	1.06	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.60	0.19	0.02	0.81	Σ SAR < 1.6, Not required
44	LTE 66 + WLAN Ant-0 (NII) + BT Ant-1 (DSS)	Body (Tablet PC Mode)	Rear Face	0.87	0.22	0.04	1.13	Σ SAR < 1.6, Not required
			Left Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Right Side	0.00	0.40	0.21	0.61	Σ SAR < 1.6, Not required
			Top Side	0.00	0.48	0.01	0.49	Σ SAR < 1.6, Not required
			Bottom Side	0.45	0.40	0.21	1.06	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.60	0.47	0.02	1.09	Σ SAR < 1.6, Not required
45	LTE 66 + WLAN (DTS) + WLAN (NII)	Body (Tablet PC Mode)	Rear Face	0.87	0.53	0.22	1.62	**Analyzed as below**
			Left Side	0.00	0.40	0.40	0.80	Σ SAR < 1.6, Not required
			Right Side	0.00	0.40	0.40	0.80	Σ SAR < 1.6, Not required
			Top Side	0.00	0.28	0.48	0.76	Σ SAR < 1.6, Not required
			Bottom Side	0.45	0.40	0.40	1.25	Σ SAR < 1.6, Not required
		Body (Laptop PC Mode)	Bottom	0.60	0.40	0.47	1.47	Σ SAR < 1.6, Not required

<SAR to Peak Location Separation Ratio Analysis>

The simultaneous transmitting antennas in each operating mode and exposure condition combination are considered one pair at a time to determine the SPLSR. When SAR is measured for both antennas in the pair, the peak location separation distance is computed by the following formula.

$$\text{Peak Location Separation Distance} = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2}$$

Where (x_1, y_1, z_1) and (x_2, y_2, z_2) are the coordinates of the extrapolated peak SAR locations in the area or zoom scans.

When standalone test exclusion applies, SAR is estimated; the peak location is assumed to be at the feed-point or geometric center of the antenna. Due to curvatures on the SAM phantom, when SAR is estimated for one of the antennas in an antenna pair, the measured peak SAR location will be translated onto the test device to determine the peak location separation for the antenna pair.

The SPLSR is determined by the following formula.

$$\text{SPLSR} = \frac{(\text{SAR}_1 + \text{SAR}_2)^{1.5}}{R_i}$$

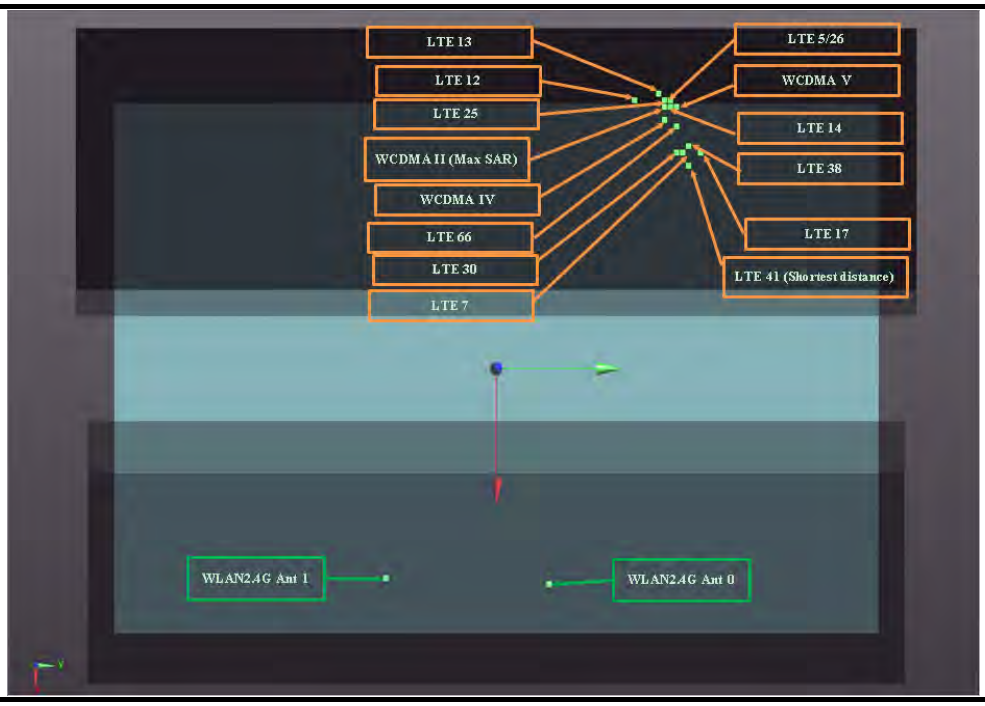
Where SAR_1 and SAR_2 are the highest reported or estimated SAR for each antenna in the pair, and R_i is the separation distance between the peak SAR locations for the antenna pair in mm.

When the SPLSR is <= 0.04, the simultaneous transmission SAR is not required. Otherwise, the enlarged zoom scan and volume scan post-processing procedures will be performed.

For the evaluation of SPLSR, only the worst case of Simultaneous transmission SAR and the shortest distance between the peak point of WWAN and WLAN have been evaluated and recorded in the report. Based on the above factors, other SPLSR conditions all meets the limit.

<T77W968 + 9560NGW>

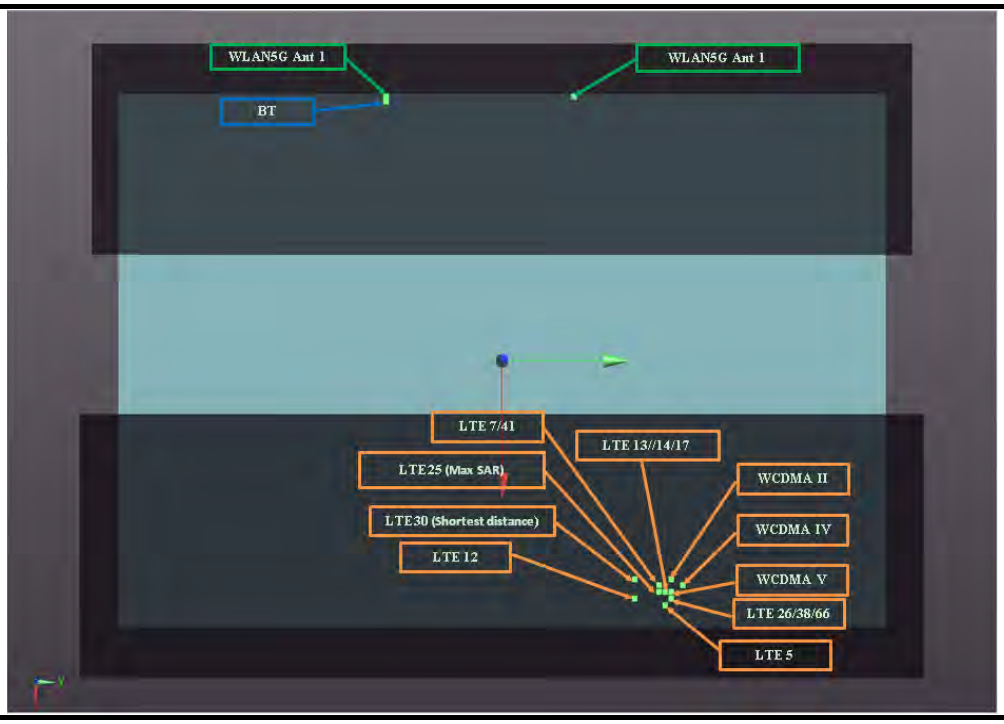
Tablet PC Mode



Conditions	Exposure Condition	Test Position	SAR Value (W/kg)	Coordinates			Peak Location Separation Distance (R_i, mm)	SPLSR	Simultaneous Transmission SAR Test
				x	y	z			
WCDMA II RMC 12.2K Ch9538	Body	Rear Face	1.17	-96.8	62.9	-3.47	251.7	0.01	SPLSR ≤ 0.04, Not required
802.11b Ch11_Cube0			1.02	86	32.8	-173.9			
WCDMA II RMC 12.2K Ch9538	Body	Rear Face	1.17	-96.8	62.9	-3.47	273.9	0.01	SPLSR ≤ 0.04, Not required
802.11b Ch11_Cube1			1.03	86.4	-48.4	-173.9			
802.11b Ch11_Cube0	Body	Rear Face	1.02	86	32.8	-173.9	81.2	0.04	SPLSR ≤ 0.04, Not required
802.11b Ch11_Cube1			1.03	86.4	-48.4	-173.9			

Conditions	Exposure Condition	Test Position	SAR Value (W/kg)	Coordinates			Peak Location Separation Distance (R_i, mm)	SPLSR	Simultaneous Transmission SAR Test
				x	y	z			
LTE 41 QPSK20M Ch41055	Body	Rear Face	0.36	-87.1	72	-2.37	246.8	0.01	SPLSR ≤ 0.04, Not required
802.11b Ch11_Cube0			1.02	86	32.8	-173.9			
LTE 41 QPSK20M Ch41055	Body	Rear Face	0.36	-87.1	72	-2.37	272.1	0.01	SPLSR ≤ 0.04, Not required
802.11b Ch11_Cube1			1.03	86.4	-48.4	-173.9			
802.11b Ch11_Cube0	Body	Rear Face	1.02	86	32.8	-173.9	81.2	0.04	SPLSR ≤ 0.04, Not required
802.11b Ch11_Cube1			1.03	86.4	-48.4	-173.9			

Laptop PC Mode

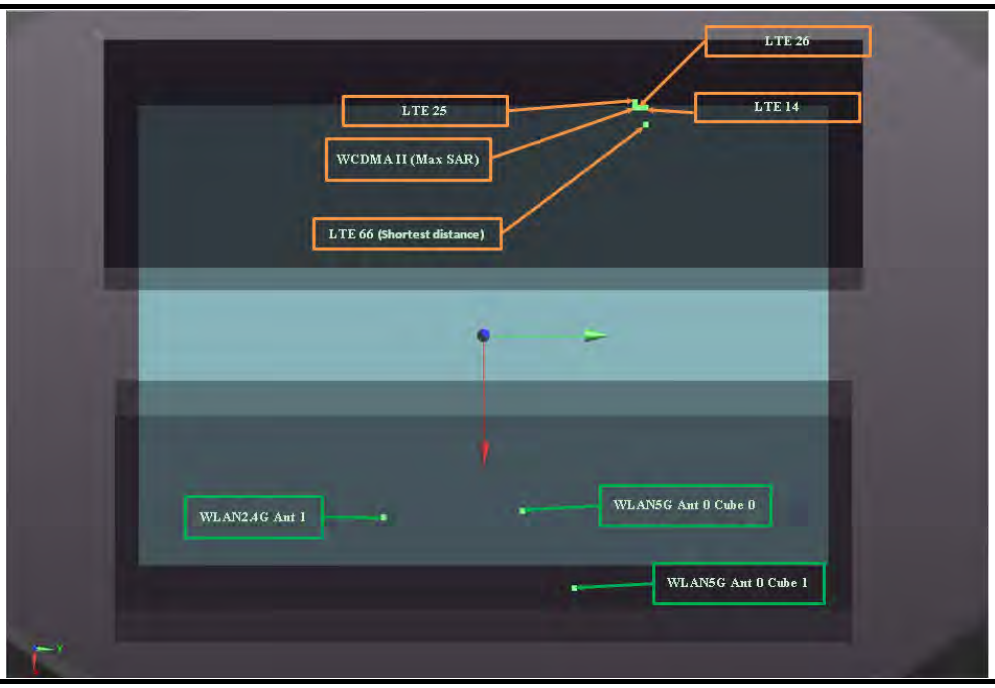


Conditions	Exposure Condition	Test Position	SAR Value (W/kg)	Coordinates			Peak Location Separation Distance (R_i, mm)	SPLSR	Simultaneous Transmission SAR Test
				x	y	z			
LTE 25 QPSK20M Ch26590	Body	Bottom	1.18	89.1	61.8	-2.1	187.6	0.02	SPLSR ≤ 0.04, Not required
802.11ac VHT160 Ch114_Cube0			1.11	-96	31.6	4.08			
LTE 25 QPSK20M Ch26590	Body	Bottom	1.18	89.1	61.8	-2.1	217.5	0.02	SPLSR ≤ 0.04, Not required
802.11ac VHT80 Ch155_Cube1			1.06	-97.6	-49.6	3.9			
LTE 25 QPSK20M Ch26590	Body	Bottom	1.18	89.1	61.8	-2.1	214.5	0.01	SPLSR ≤ 0.04, Not required
BT DH5 Ch78			0.1	-93.2	-51.2	2.81			
802.11ac VHT160 Ch114_Cube0	Body	Bottom	1.11	-96	31.6	4.08	81.2	0.04	SPLSR ≤ 0.04, Not required
802.11ac VHT80 Ch155_Cube1			1.06	-97.6	-49.6	3.9			
BT DH5 Ch78			0.1	-93.2	-51.2	2.81			

Conditions	Exposure Condition	Test Position	SAR Value (W/kg)	Coordinates			Peak Location Separation Distance (R_i, mm)	SPLSR	Simultaneous Transmission SAR Test
				x	y	z			
LTE 30 QPSK10M Ch27710	Body	Bottom	0.17	82.5	50.2	-2.25	179.6	0.01	SPLSR ≤ 0.04, Not required
802.11ac VHT160 Ch114_Cube0			1.11	-96	31.6	4.08			
LTE 30 QPSK10M Ch27710	Body	Bottom	0.17	82.5	50.2	-2.25	206.0	0.01	SPLSR ≤ 0.04, Not required
802.11ac VHT80 Ch155_Cube1			1.06	-97.6	-49.6	3.9			
LTE 30 QPSK10M Ch27710	Body	Bottom	0.17	82.5	50.2	-2.25	202.9	0.00	SPLSR ≤ 0.04, Not required
BT DH5 Ch78			0.1	-93.2	-51.2	2.81			
802.11ac VHT160 Ch114_Cube0	Body	Bottom	1.11	-96	31.6	4.08	81.2	0.04	SPLSR ≤ 0.04, Not required
802.11ac VHT80 Ch155_Cube1			1.06	-97.6	-49.6	3.9			
BT DH5 Ch78			0.1	-93.2	-51.2	2.81			

<T77W968 + QCNFA344A>

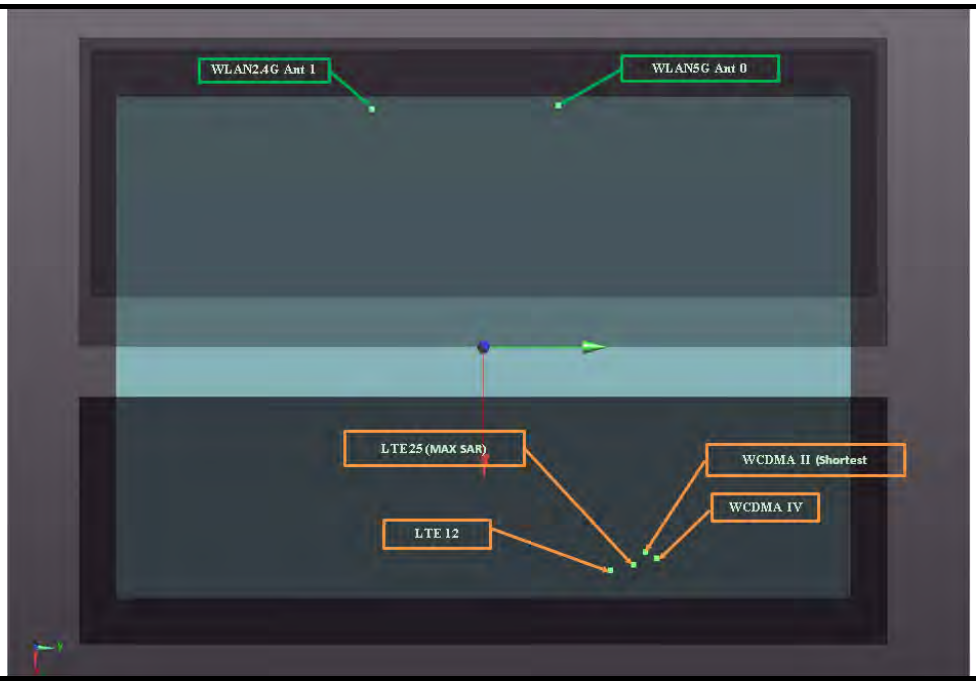
Tablet PC Mode



Conditions	Exposure Condition	Test Position	SAR Value (W/kg)	Coordinates			Peak Location Separation Distance (R_i, mm)	SPLSR	Simultaneous Transmission SAR Test
				x	y	z			
WCDMA II RMC 12.2K Ch9538	Body	Rear Face	1.17	-96.8	62.9	-3.47	207.7	0.01	SPLSR ≤ 0.04, Not required
802.11b Ch11_ANT1			0.53	80	-46	-1.76			
WCDMA II RMC 12.2K Ch9538	Body	Rear Face	1.17	-96.8	62.9	-3.47	185.2	0.01	SPLSR ≤ 0.04, Not required
802.11ac VHT40 Ch159 ANT0 Cube 0			0.22	85.5	30.5	-0.82			
802.11b Ch11_ANT1	Body	Rear Face	0.53	80	-46	-1.76	76.7	0.01	SPLSR ≤ 0.04, Not required
802.11ac VHT40 Ch159 ANT0 Cube 0			0.22	85.5	30.5	-0.82			

Conditions	Exposure Condition	Test Position	SAR Value (W/kg)	Coordinates			Peak Location Separation Distance (R_i, mm)	SPLSR	Simultaneous Transmission SAR Test
				x	y	z			
LTE 66 QPSK20M Ch132572	Body	Rear Face	0.87	-96.8	70.2	-2.16	211.6	0.01	SPLSR ≤ 0.04, Not required
802.11b Ch11_ANT1			0.53	80	-46	-1.76			
LTE 66 QPSK20M Ch132572	Body	Rear Face	0.87	-96.8	70.2	-2.16	186.6	0.01	SPLSR ≤ 0.04, Not required
802.11ac VHT40 Ch159 ANT0 Cube 0			0.22	85.5	30.5	-0.82			
802.11b Ch11_ANT1	Body	Rear Face	0.53	80	-46	-1.76	76.7	0.01	SPLSR ≤ 0.04, Not required
802.11ac VHT40 Ch159 ANT0 Cube 0			0.22	85.5	30.5	-0.82			

Laptop PC Mode



Conditions	Exposure Condition	Test Position	SAR Value (W/kg)	Coordinates			Peak Location Separation Distance (R_i, mm)	SPLSR	Simultaneous Transmission SAR Test
				x	y	z			
WCDMA II RMC 12.2K Ch9400	Body	Bottom	1.14	80.9	65.2	-2.93	210.5	0.01	SPLSR ≤ 0.04, Not required
802.11b Ch11_Ant 1			0.4	-91.2	-56	-2.97			
WCDMA II RMC 12.2K Ch9400	Body	Bottom	1.14	80.9	65.2	-2.93	170.0	0.01	SPLSR ≤ 0.04, Not required
802.11ac VHT40 Ch159_Ant 0			0.47	-85	28	-2.47			
802.11b Ch11_Ant 1	Body	Bottom	0.4	-91.2	-56	-2.97	84.2	0.01	SPLSR ≤ 0.04, Not required
802.11ac VHT40 Ch159_Ant 0			0.47	-85	28	-2.47			

Conditions	Exposure Condition	Test Position	SAR Value (W/kg)	Coordinates			Peak Location Separation Distance (R_i, mm)	SPLSR	Simultaneous Transmission SAR Test
				x	y	z			
LTE 25 QPSK20M Ch26590	Body	Bottom	1.18	89.1	61.8	-1.95	215.4	0.01	SPLSR ≤ 0.04, Not required
802.11b Ch11_Ant 1			0.4	-91.2	-56	-2.97			
LTE 25 QPSK20M Ch26590	Body	Bottom	1.18	89.1	61.8	-1.95	177.4	0.01	SPLSR ≤ 0.04, Not required
802.11ac VHT40 Ch159_Ant 0			0.47	-85	28	-2.47			
802.11b Ch11_Ant 1	Body	Bottom	0.4	-91.2	-56	-2.97	84.2	0.01	SPLSR ≤ 0.04, Not required
802.11ac VHT40 Ch159_Ant 0			0.47	-85	28	-2.47			

Test Engineer： Hance Chang, and Chienlun Huang

5. Calibration of Test Equipment

Equipment	Manufacturer	Model	SN	Cal. Date	Cal. Interval
System Validation Dipole	SPEAG	D750V3	1013	Aug. 23, 2018	1 Year
System Validation Dipole	SPEAG	D835V2	4d121	Aug. 23, 2018	1 Year
System Validation Dipole	SPEAG	D1750V2	1055	Aug. 27, 2018	1 Year
System Validation Dipole	SPEAG	D1900V2	5d018	Jun. 21, 2018	1 Year
System Validation Dipole	SPEAG	D2300V2	1091	Dec. 04, 2018	1 Year
System Validation Dipole	SPEAG	D2600V2	1020	Aug. 24, 2018	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	3971	Mar. 26, 2018	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	3650	Jul. 27, 2018	1 Year
Data Acquisition Electronics	SPEAG	DAE3	579	Aug. 27, 2018	1 Year
Data Acquisition Electronics	SPEAG	DAE4	861	May. 30, 2018	1 Year
Radio Communication Analyzer	Anritsu	MT8820C	6201381727	May. 09, 2018	1 Year
Universal Radio Communication Tester	Anritsu	MT8821C	6201502978	Jul. 20, 2018	1 Year
Spectrum Analyzer	R&S	FSL6	102006	Mar. 23, 2018	1 Year
ENA Series Network Analyzer	Agilent	E5071C	MY46214281	Jun. 08, 2018	1 Year
MXG Analong Signal Generator	Agilent	N5181A	MY50143868	Jul. 03, 2018	1 Year
Vector Signal Generator	Anritsu	MG3710A	6201599977	Mar. 16, 2018	1 Year
Power Meter	Anritsu	ML2495A	1218009	Jul. 03, 2018	1 Year
Power Sensor	Anritsu	MA2411B	1207252	Jul. 03, 2018	1 Year
Thermometer	YFE	YF-160A	130504591	Mar. 23, 2018	1 Year

6. Measurement Uncertainty

According to KDB 865664 D01, SAR measurement uncertainty analysis is required in SAR reports only when the highest measured SAR in a frequency band is ≥ 1.5 W/kg for 1-g SAR, and ≥ 3.75 W/kg for 10-g SAR. The procedures described in IEEE Std 1528-2013 should be applied. The expanded SAR measurement uncertainty must be ≤ 30 %, for a confidence interval of k = 2. When the highest measured SAR within a frequency band is < 1.5 W/kg for 1-g and < 3.75 W/kg for 10-g, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. Hence, the measurement uncertainty analysis is not required in this SAR report because the test result met the condition.

7. Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Fax: 886-3-666-8323

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Web Site: www.bureauveritas-adt.com

The road map of all our labs can be found in our web site also.

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Appendix A. SAR Plots of System Verification

The plots for system verification with largest deviation for each SAR system combination are shown as follows.

Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2019/01/17

System Check_B750_190117

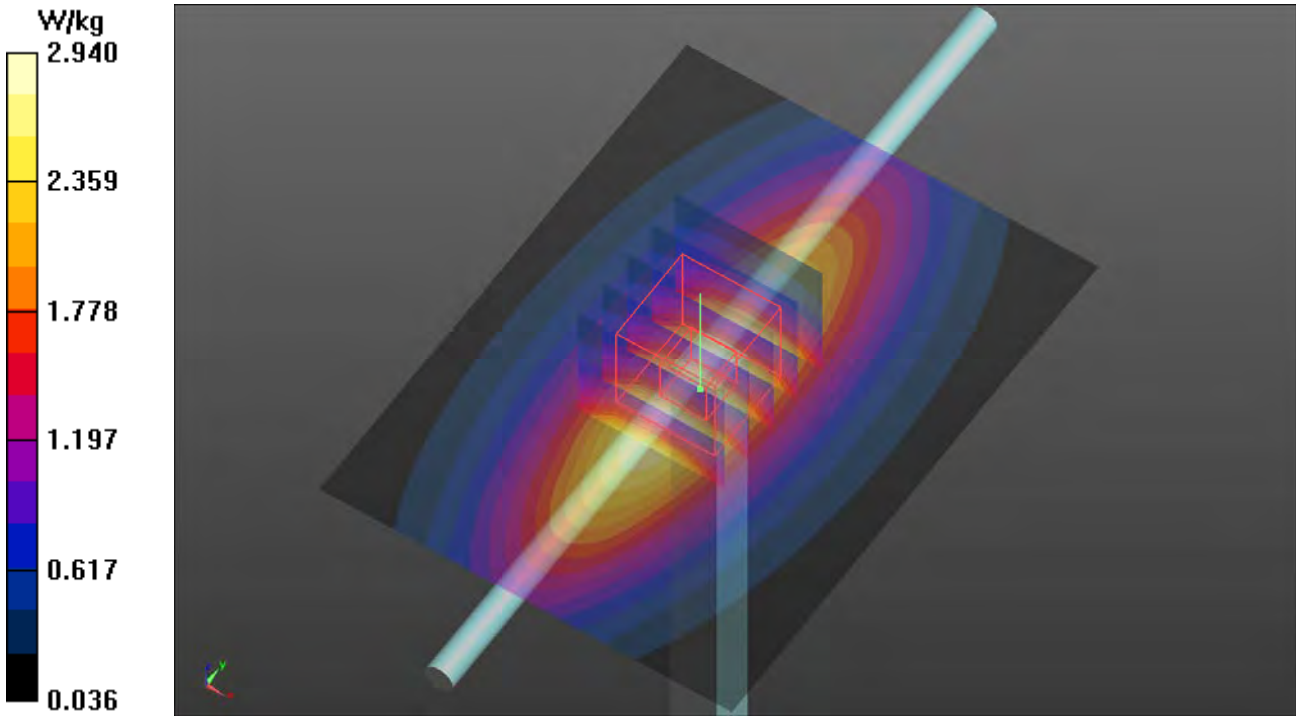
DUT: Dipole 750 MHz; Type: D750V3; SN: 1013

Communication System: CW; Frequency: 750 MHz;Duty Cycle: 1:1
Medium: B06T09N1_0117 Medium parameters used: f = 750 MHz; σ = 0.959 S/m; ε_r = 56.412; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃ ； Liquid Temperature：23.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3971; ConvF(10.43, 10.43, 10.43); Calibrated: 2018/03/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2018/05/30
- Phantom: ELI Phantom_1245; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.94 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 56.70 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 3.53 W/kg
SAR(1 g) = 2.31 W/kg; SAR(10 g) = 1.5 W/kg
Maximum value of SAR (measured) = 2.96 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2019/01/18

System Check_B835_190118

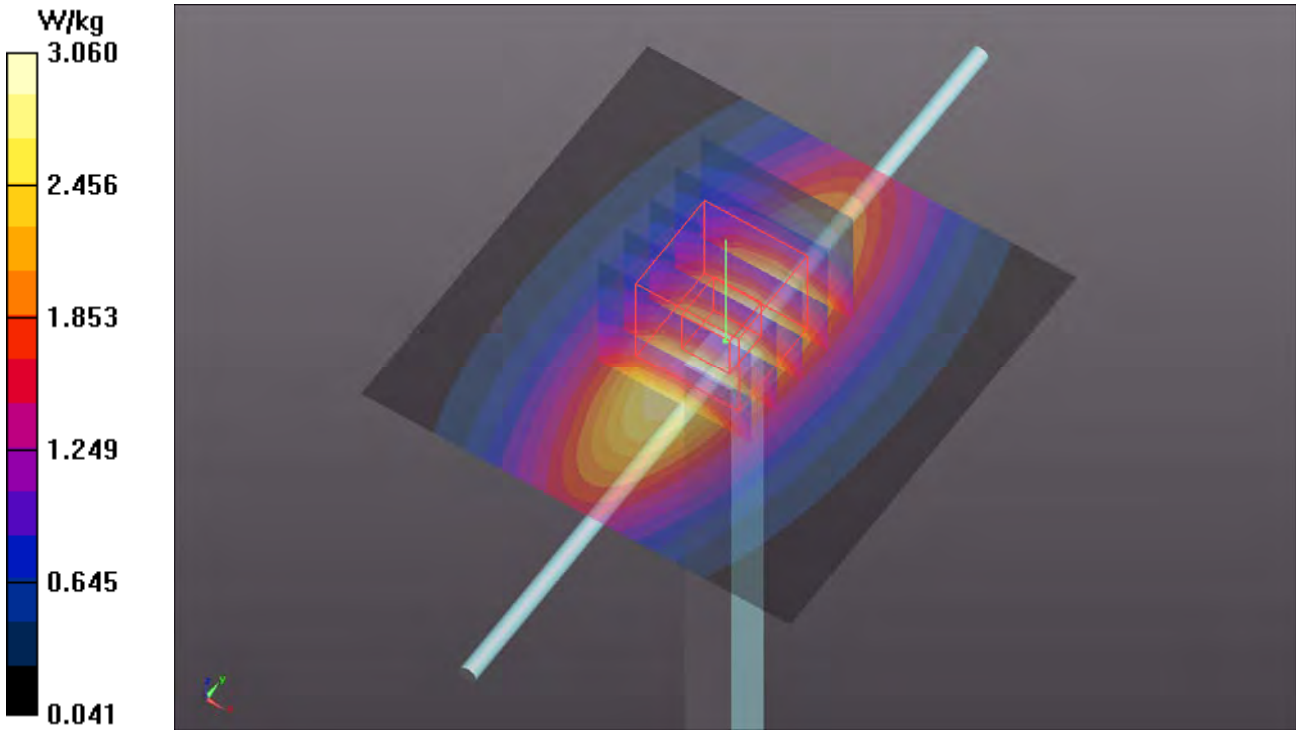
DUT: Dipole 835 MHz; Type: D835V2; SN: 4d121

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: B07T10N1_0118 Medium parameters used: f = 835 MHz; σ = 0.994 S/m; ε_r = 57.037; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃ ； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.74, 9.74, 9.74); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.06 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 57.91 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 3.42 W/kg
SAR(1 g) = 2.29 W/kg; SAR(10 g) = 1.51 W/kg
Maximum value of SAR (measured) = 3.05 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2019/01/19

System Check_B1750_190119

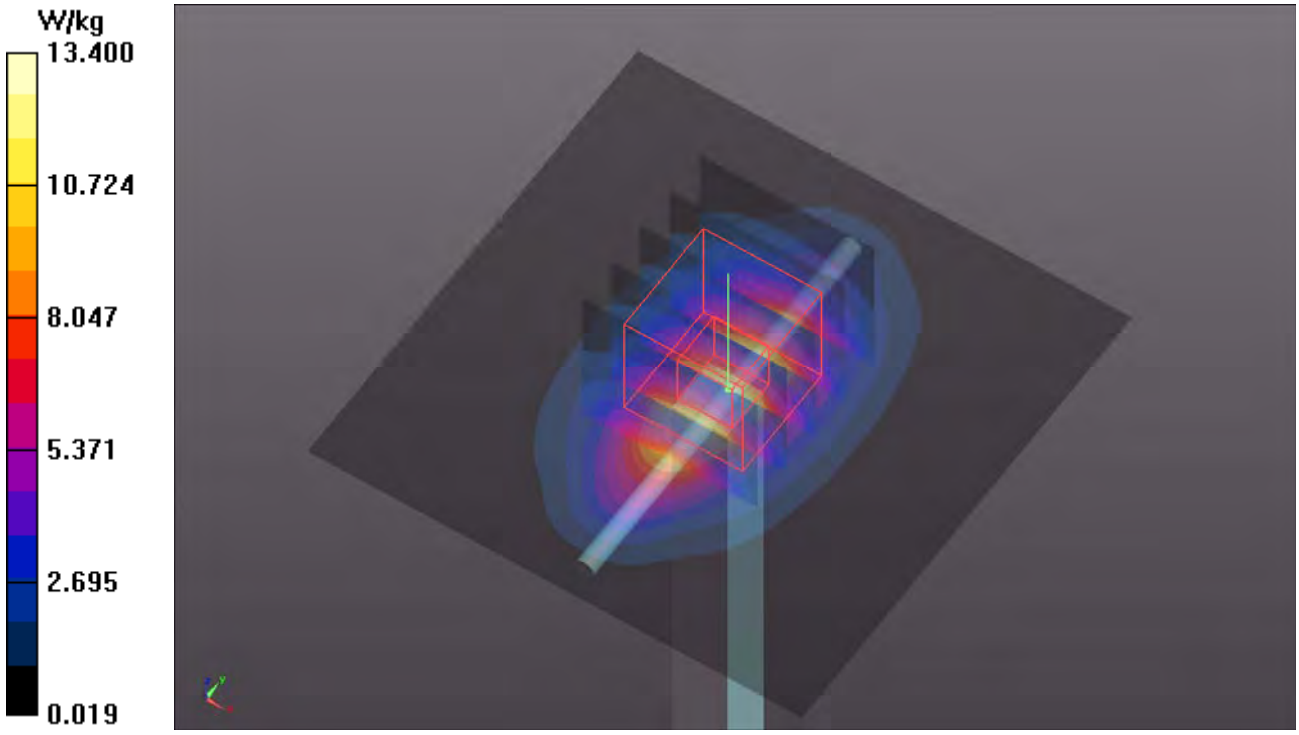
DUT: Dipole 1750 MHz; Type: D1750V2; SN: 1055

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: B16T20N2_0119 Medium parameters used: f = 1750 MHz; σ = 1.44 S/m; ε_r = 51.492; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃ ； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(8.2, 8.2, 8.2); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 13.4 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 99.83 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 15.6 W/kg
SAR(1 g) = 8.78 W/kg; SAR(10 g) = 4.69 W/kg
Maximum value of SAR (measured) = 13.3 W/kg



System Check_B1900_190123

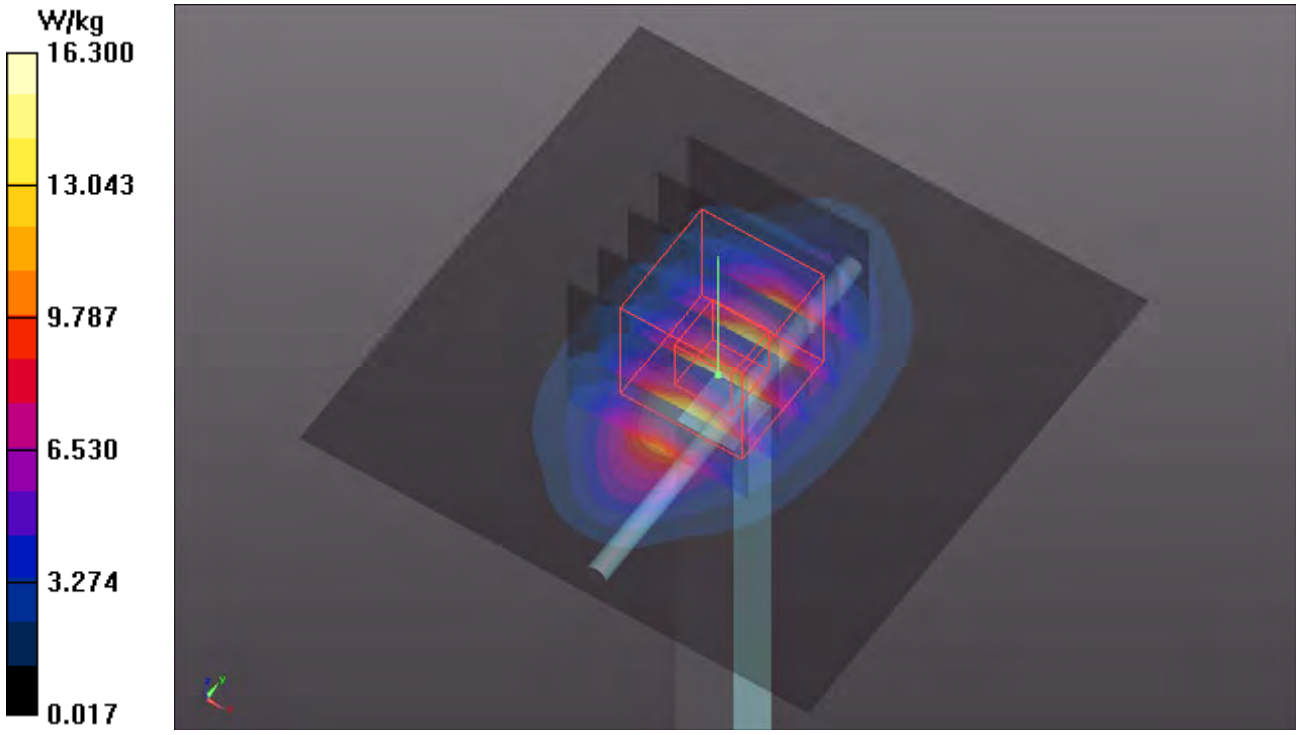
DUT: Dipole 1900 MHz; Type: D1900V2; SN: 5d018

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: B16T20N1_0123 Medium parameters used: f = 1900 MHz; σ = 1.56 S/m; ε_r = 51.445; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃ ； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.89, 7.89, 7.89); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 16.3 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 99.06 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 19.5 W/kg
SAR(1 g) = 10.3 W/kg; SAR(10 g) = 5.25 W/kg
Maximum value of SAR (measured) = 16.3 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2019/01/21

System Check_B2300_190121

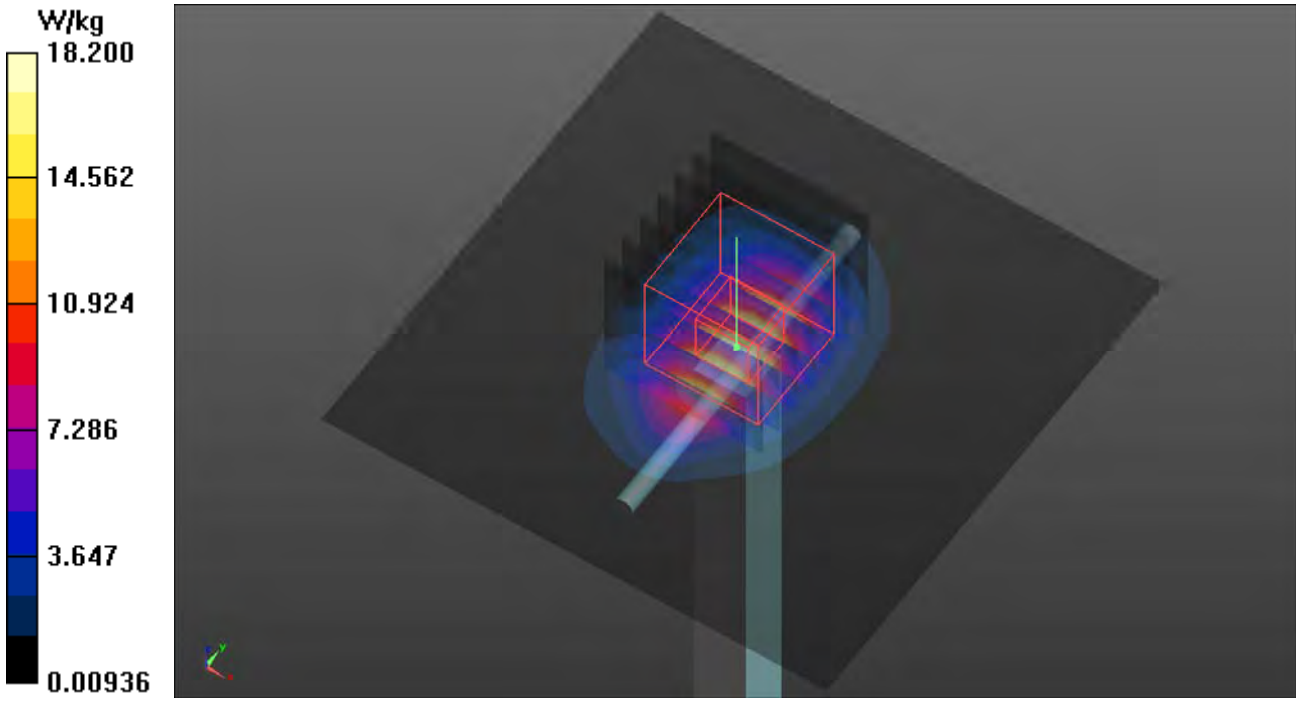
DUT: Dipole 2300 MHz; Type: D2300V2; SN:1091

Communication System: CW; Frequency: 2300 MHz;Duty Cycle: 1:1
Medium: B19T27N1_0121 Medium parameters used: f = 2300 MHz; σ = 1.815 S/m; ε_r = 52.915; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃ ； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3971; ConvF(7.75, 7.75, 7.75); Calibrated: 2018/03/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2018/05/30
- Phantom: ELI Phantom_1245; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 18.2 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 103.7 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 22.3 W/kg
SAR(1 g) = 11 W/kg; SAR(10 g) = 5.22 W/kg
Maximum value of SAR (measured) = 18.2 W/kg



System Check_B2600_190123

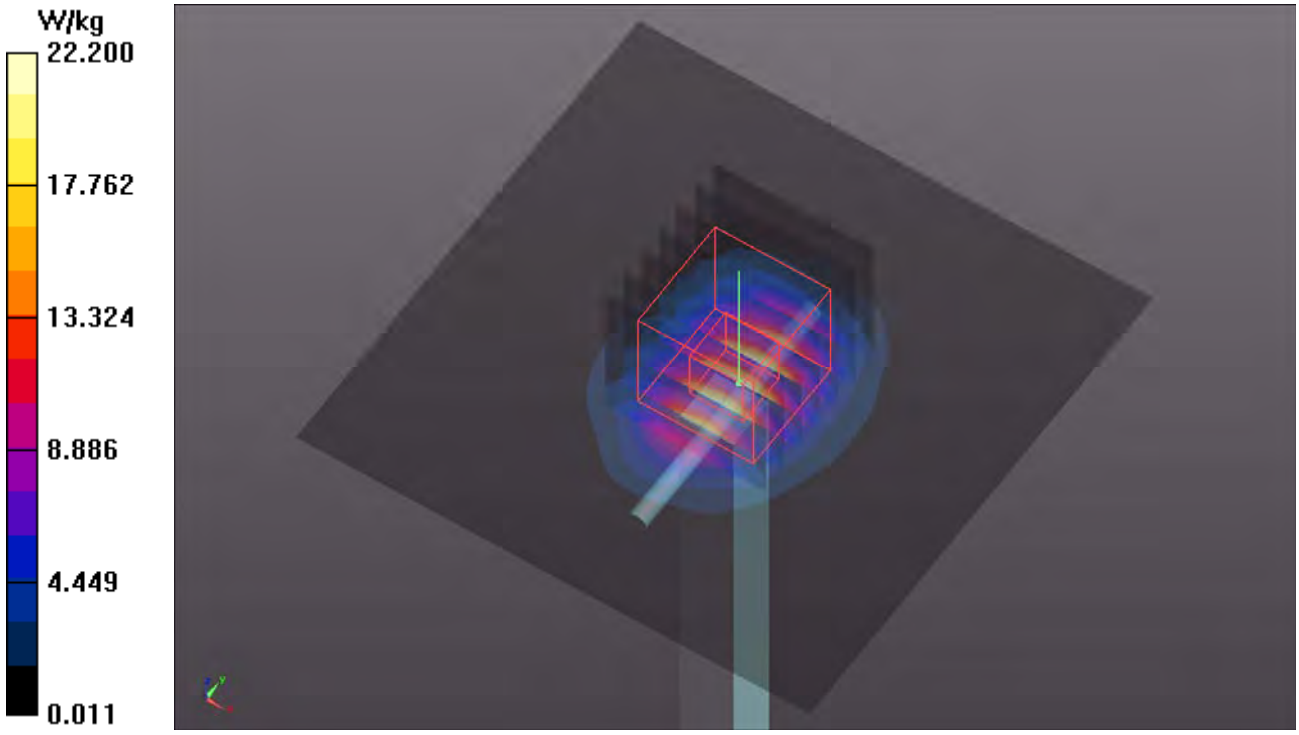
DUT: Dipole 2600 MHz; Type: D2600V2; SN: 1020

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: B19T27N3_0123 Medium parameters used: f = 2600 MHz; σ = 2.193 S/m; ε_r = 50.164; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃ ； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.48, 7.48, 7.48); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 22.2 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 99.19 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 29.0 W/kg
SAR(1 g) = 13.2 W/kg; SAR(10 g) = 5.92 W/kg
Maximum value of SAR (measured) = 22.9 W/kg



Appendix B. SAR Plots of SAR Measurement

The SAR plots for highest measured SAR in each exposure configuration, wireless mode and frequency band combination, and measured SAR > 1.5 W/kg are shown as follows.

P01 WCDMA II_RMC12.2K_Rear Face_0mm_Ch9538_Battery1_P-Sensor_w

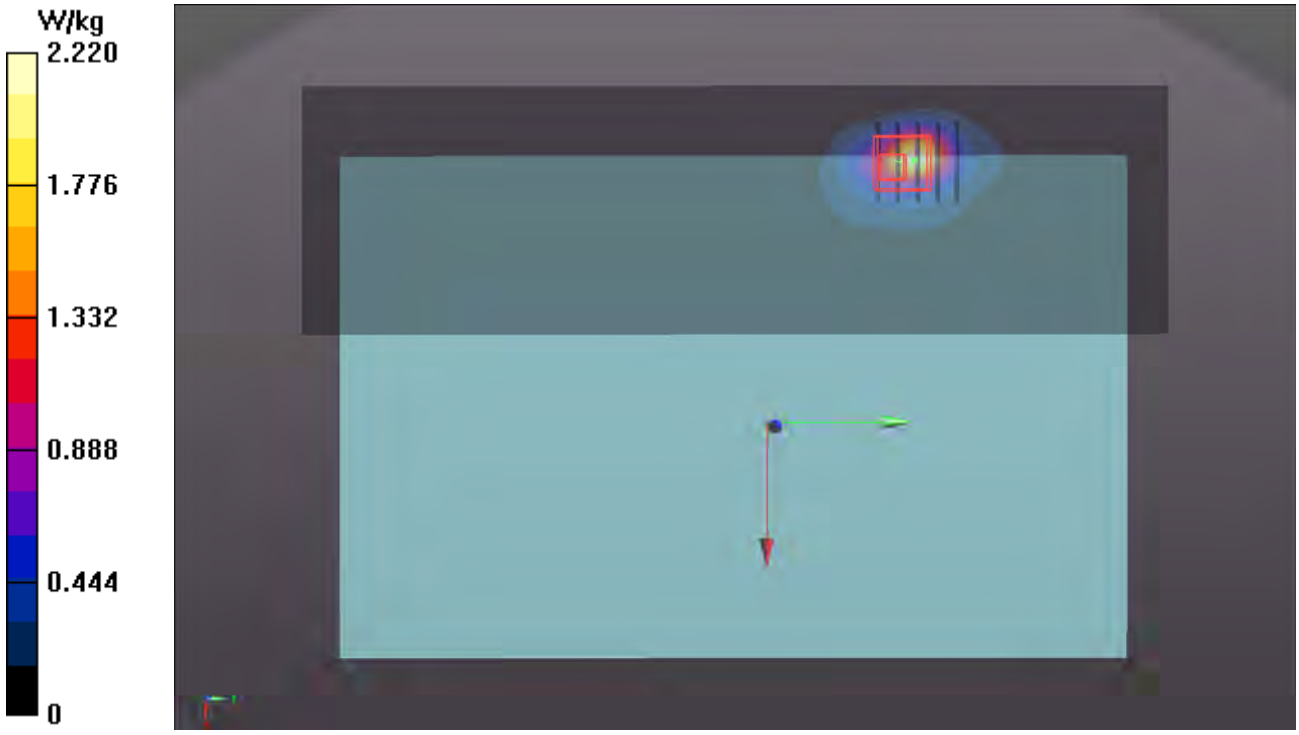
DUT: 180914C32

Communication System: WCDMA; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: B16T20N2_0119 Medium parameters used: f = 1908 MHz; σ = 1.587 S/m; ε_r = 51.118; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃ ； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.89, 7.89, 7.89); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.22 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 36.13 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 2.88 W/kg
SAR(1 g) = 1.14 W/kg; SAR(10 g) = 0.515 W/kg
Maximum value of SAR (measured) = 2.06 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2019/01/19

P02 WCDMA IV_RMC12.2K_Rear Face_0mm_Ch1413_Battery1_P-Sensor_w

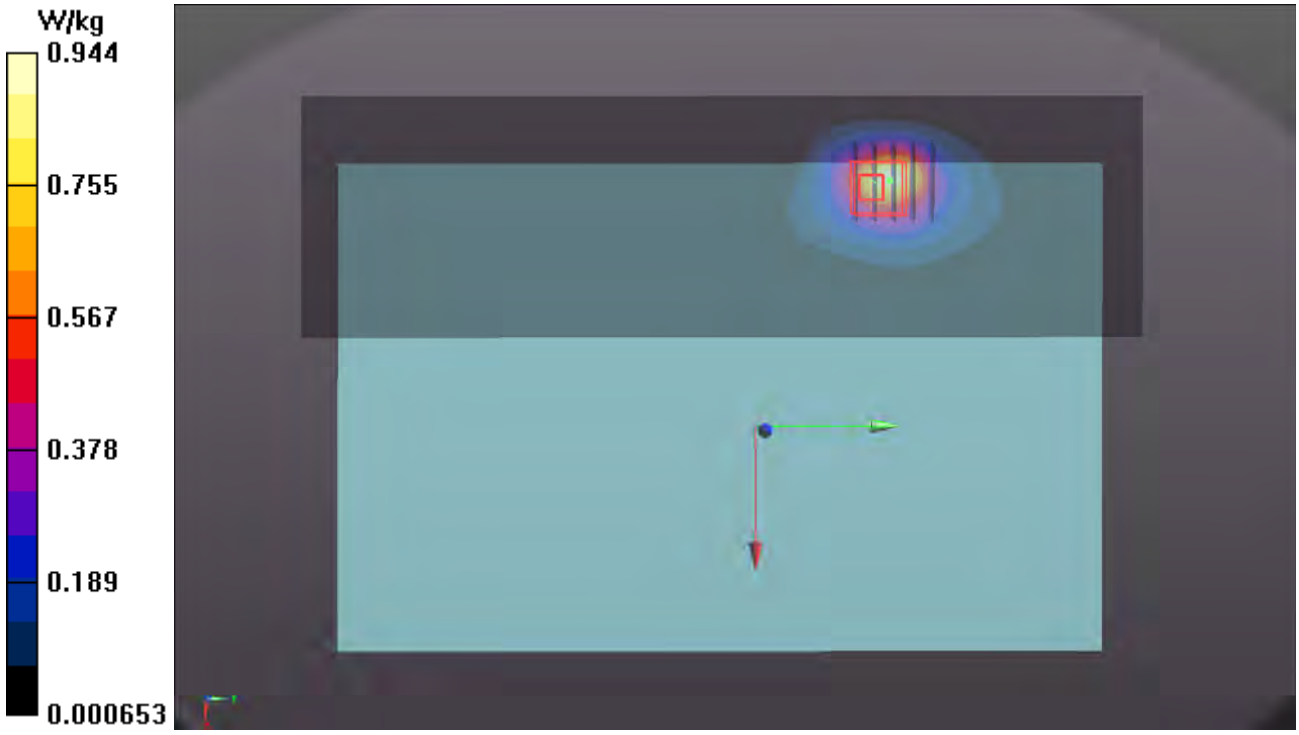
DUT: 180914C32

Communication System: WCDMA; Frequency: 1732.6 MHz;Duty Cycle: 1:1
Medium: B16T20N2_0119 Medium parameters used: f = 1733 MHz; σ = 1.423 S/m; ε_r = 51.534; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃ ； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(8.2, 8.2, 8.2); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.944 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.00 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 1.95 W/kg
SAR(1 g) = 0.825 W/kg; SAR(10 g) = 0.378 W/kg
Maximum value of SAR (measured) = 1.37 W/kg



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2019/01/18

P03 WCDMA V_RMC12.2K_Rear Face_0mm_Ch4132_Battery1_P-Sensor_w

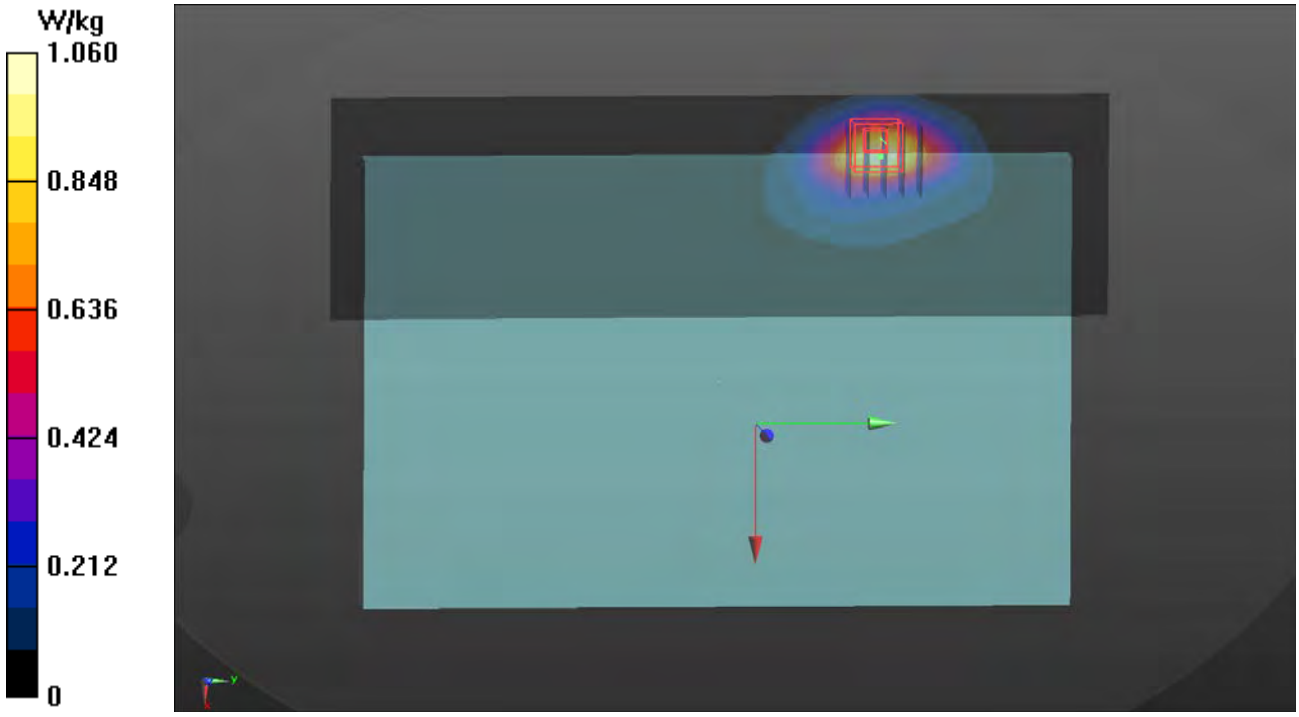
DUT: 180914C32

Communication System: WCDMA; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: B07T10N2_0118 Medium parameters used: f = 826.4 MHz; σ = 0.964 S/m; ε_r = 56.174; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃ ； Liquid Temperature：23.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3971; ConvF(10.15, 10.15, 10.15); Calibrated: 2018/03/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2018/05/30
- Phantom: ELI Phantom_1245; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.06 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 33.96 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.67 W/kg
SAR(1 g) = 0.727 W/kg; SAR(10 g) = 0.376 W/kg
Maximum value of SAR (measured) = 1.30 W/kg



P04 LTE 5_QPSK10M_Rear Face_0mm_Ch20450_1RB_OS0_Battery1_P-Sensor_w

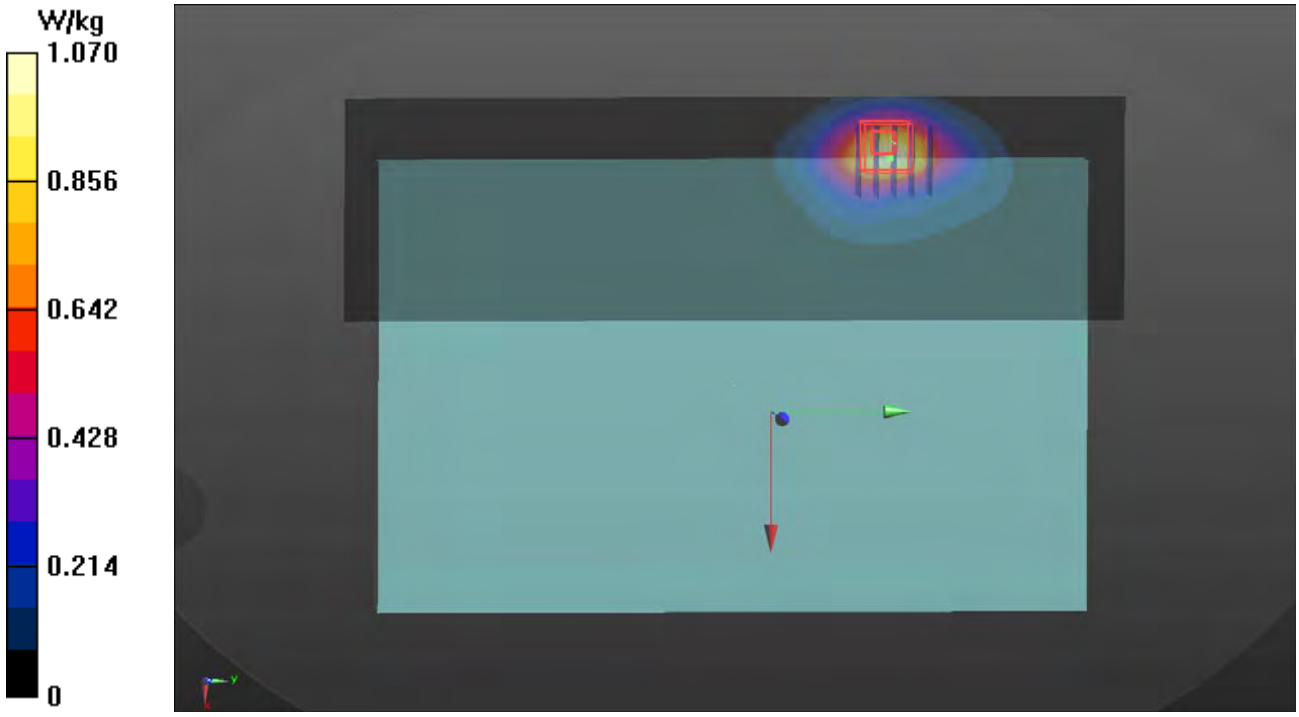
DUT: 180914C32

Communication System: LTE; Frequency: 829 MHz;Duty Cycle: 1:1
Medium: B07T10N2_0118 Medium parameters used: f = 829 MHz; σ = 0.967 S/m; ε_r = 56.153; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃ ； Liquid Temperature：23.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3971; ConvF(10.15, 10.15, 10.15); Calibrated: 2018/03/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2018/05/30
- Phantom: ELI Phantom_1245; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.07 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 33.85 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.78 W/kg
SAR(1 g) = 0.815 W/kg; SAR(10 g) = 0.442 W/kg
Maximum value of SAR (measured) = 1.38 W/kg



P05 LTE 7_QPSK20M_Rear Face_0mm_Ch21350_1RB_OS0_Battery1_P-Sensor_w

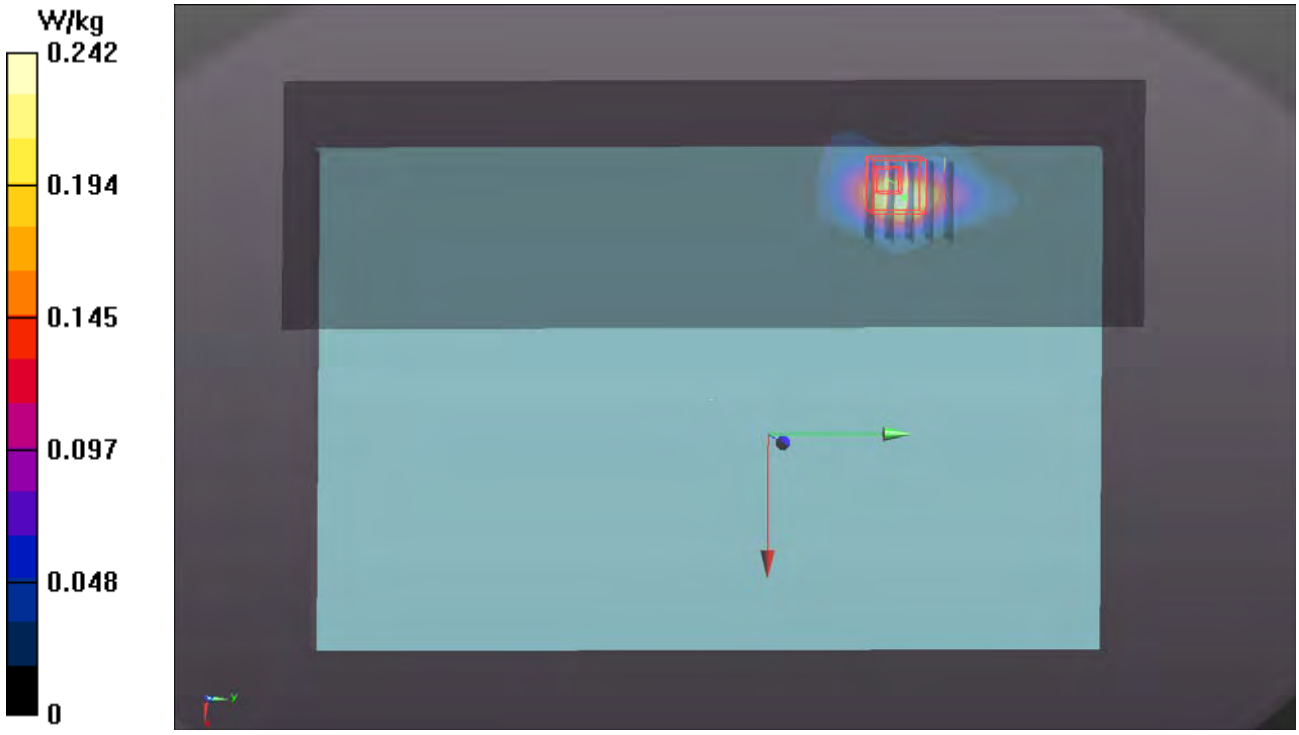
DUT: 180914C32

Communication System: LTE; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium: B19T27N3_0123 Medium parameters used: f = 2560 MHz; σ = 2.146 S/m; ε_r = 50.279; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃ ； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.48, 7.48, 7.48); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (91x301x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.242 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.60 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.82 W/kg
SAR(1 g) = 0.562 W/kg; SAR(10 g) = 0.190 W/kg
Maximum value of SAR (measured) = 1.39 W/kg



P06 LTE 12_QPSK10M_Bottom Side_0mm_Ch23130_1RB_OS0_Battery1_P-Sensor_w

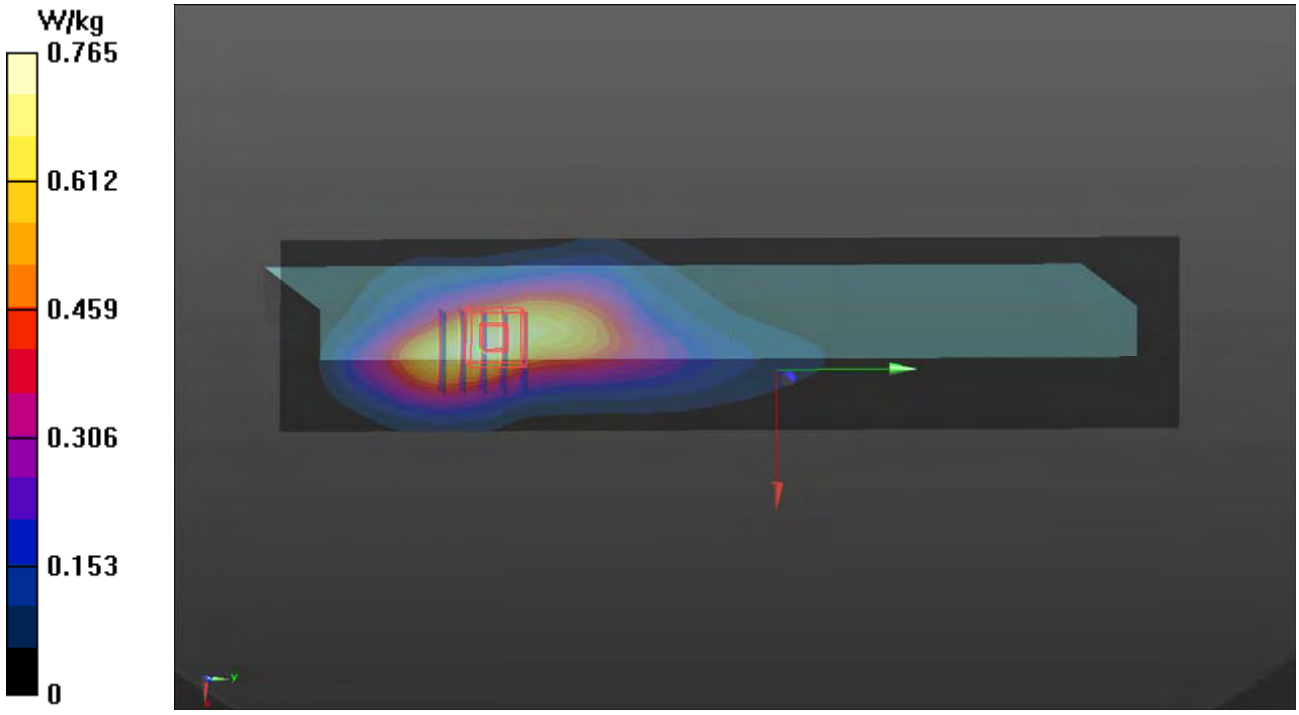
DUT: 180914C32

Communication System: LTE; Frequency: 711 MHz;Duty Cycle: 1:1
Medium: B06T09N1_0117 Medium parameters used: f = 711 MHz; σ = 0.924 S/m; ε_r = 56.804; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃； Liquid Temperature：23.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3971; ConvF(10.43, 10.43, 10.43); Calibrated: 2018/03/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2018/05/30
- Phantom: ELI Phantom_1245; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (51x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.765 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.53 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 3.27 W/kg
SAR(1 g) = 1.16 W/kg; SAR(10 g) = 0.513 W/kg
Maximum value of SAR (measured) = 2.11 W/kg



P07 LTE 13_QPSK10M_Rear Face_0mm_Ch23230_1RB_OS0_Battery1_P-Sensor_w

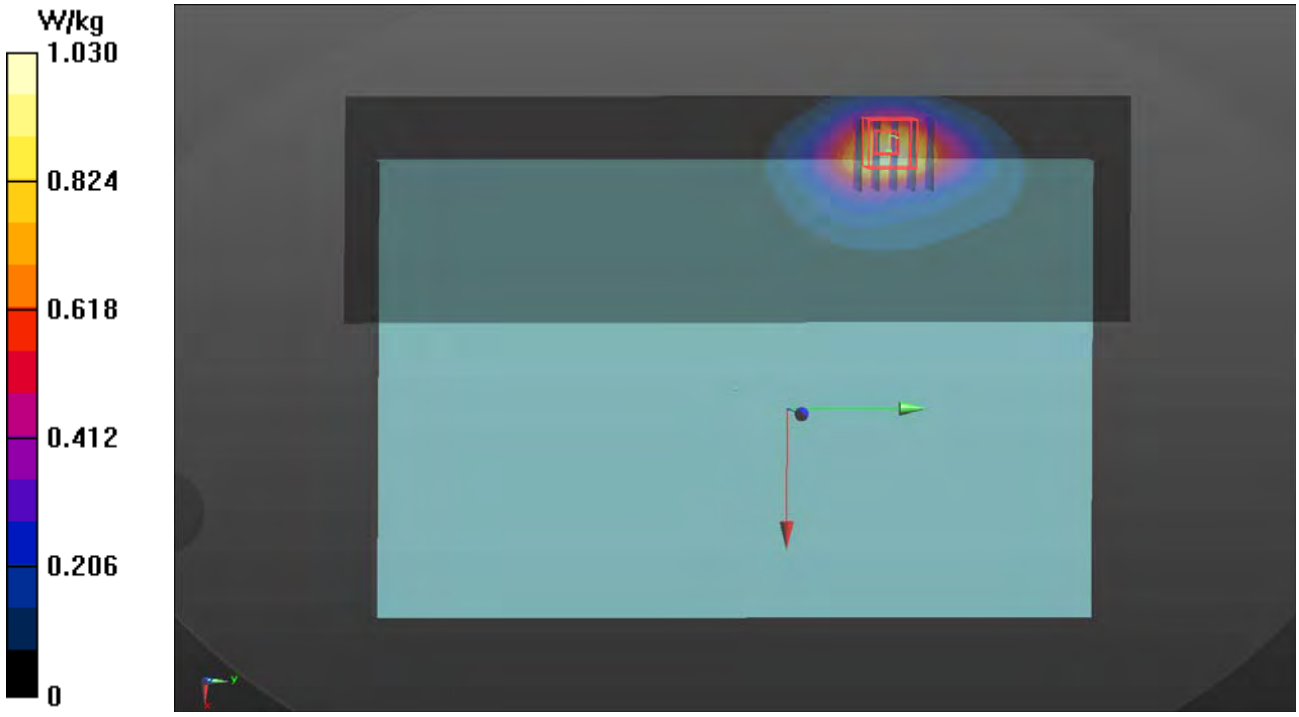
DUT: 180914C32

Communication System: LTE; Frequency: 782 MHz;Duty Cycle: 1:1
Medium: B06T09N1_0117 Medium parameters used: f = 782 MHz; σ = 0.99 S/m; ε_r = 56.114; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃； Liquid Temperature：23.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3971; ConvF(10.43, 10.43, 10.43); Calibrated: 2018/03/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2018/05/30
- Phantom: ELI Phantom_1245; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.03 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.78 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.53 W/kg
SAR(1 g) = 0.765 W/kg; SAR(10 g) = 0.428 W/kg
Maximum value of SAR (measured) = 1.11 W/kg



P08 LTE 14_QPSK10M_Rear Face_0mm_Ch23330_1RB_OS0_Battery1_P-Sensor_w

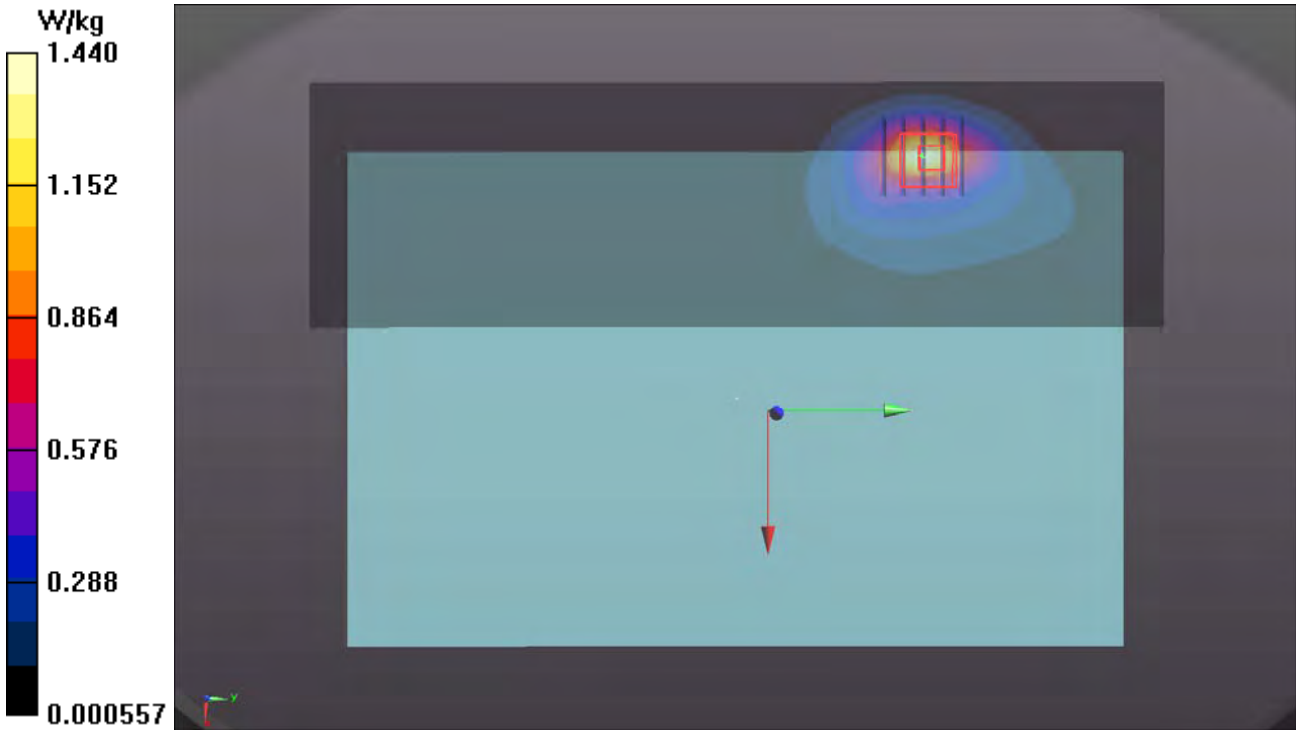
DUT: 180914C32

Communication System: LTE; Frequency: 793 MHz;Duty Cycle: 1:1
Medium: B06T09N1_0119 Medium parameters used: f = 793 MHz; σ = 1 S/m; ε_r = 56.039; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃ ； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.91, 9.91, 9.91); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.44 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 36.74 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 2.88 W/kg
SAR(1 g) = 1.12 W/kg; SAR(10 g) = 0.553 W/kg
Maximum value of SAR (measured) = 2.06 W/kg



P09 LTE 17_QPSK10M_Bottom Side_0mm_Ch23780_1RB_OS0_Battery1_P-Sensor_w

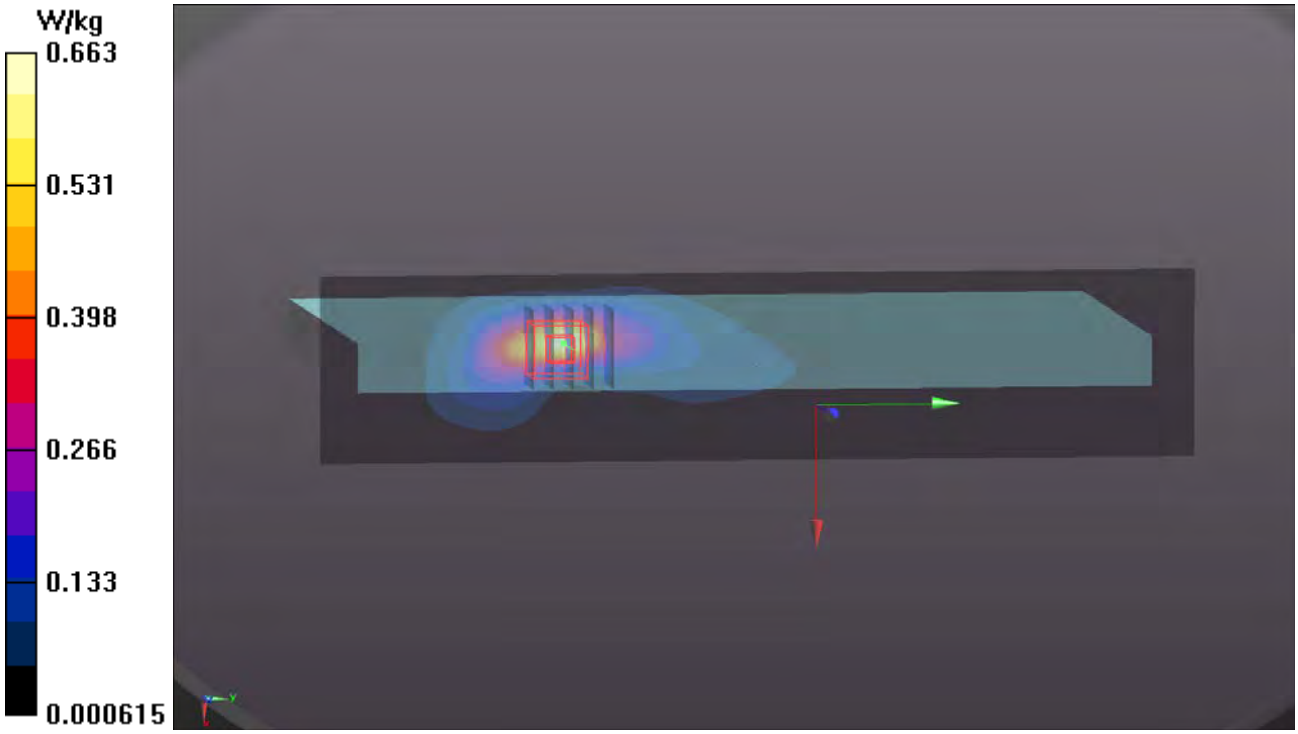
DUT: 180914C32

Communication System: LTE; Frequency: 709 MHz;Duty Cycle: 1:1
Medium: B06T09N1_0123 Medium parameters used: f = 709 MHz; σ = 0.937 S/m; ε_r = 56.416; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃ ； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.91, 9.91, 9.91); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.663 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.37 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.468 W/kg; SAR(10 g) = 0.224 W/kg
Maximum value of SAR (measured) = 0.845 W/kg



P10 LTE 25_QPSK20M_Rear Face_0mm_Ch26140_1RB_OS0_Battery1_P-Sensor_w

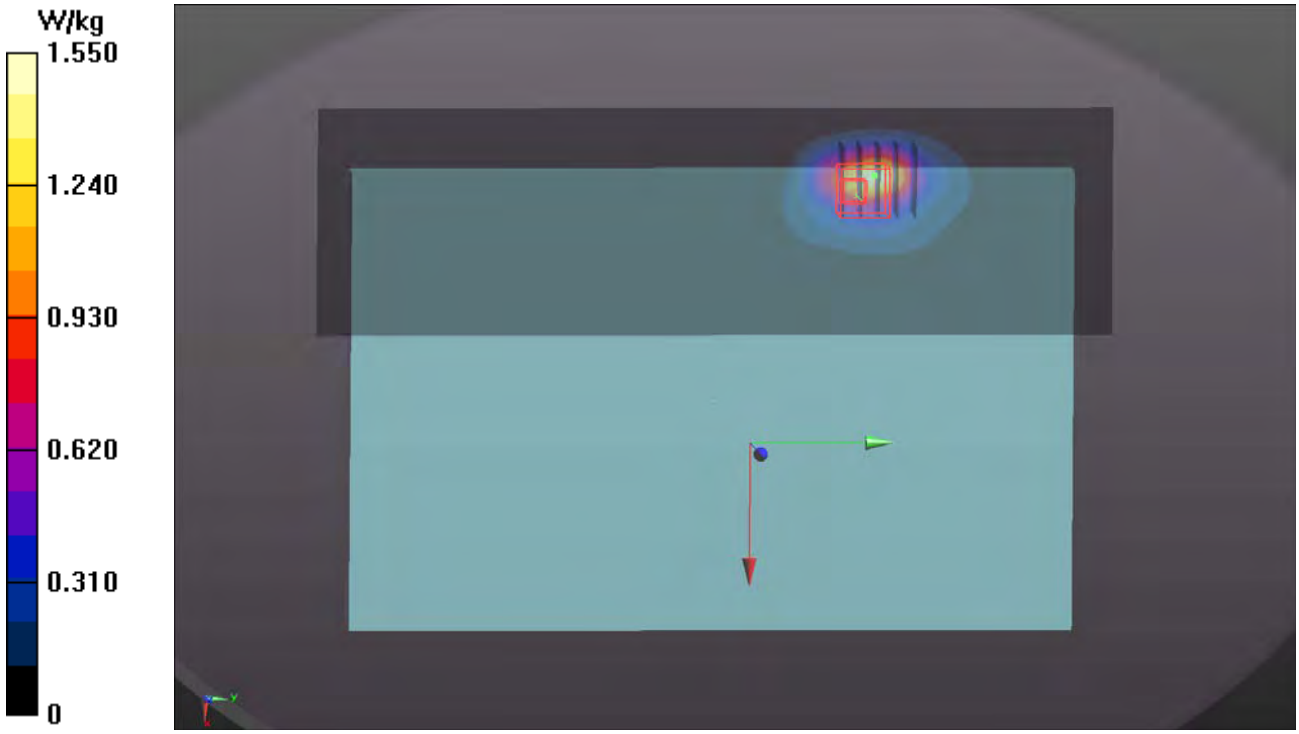
DUT: 180914C32

Communication System: LTE; Frequency: 1860 MHz;Duty Cycle: 1:1
Medium: B16T20N1_0123 Medium parameters used: f = 1860 MHz; σ = 1.541 S/m; ε_r = 51.423; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.89, 7.89, 7.89); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.55 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.40 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 2.51 W/kg
SAR(1 g) = 1.06 W/kg; SAR(10 g) = 0.470 W/kg
Maximum value of SAR (measured) = 1.93 W/kg



P11 LTE 26_QPSK15M_Rear Face_0mm_Ch26865_1RB_OS0_Battery1_P-Sensor_w

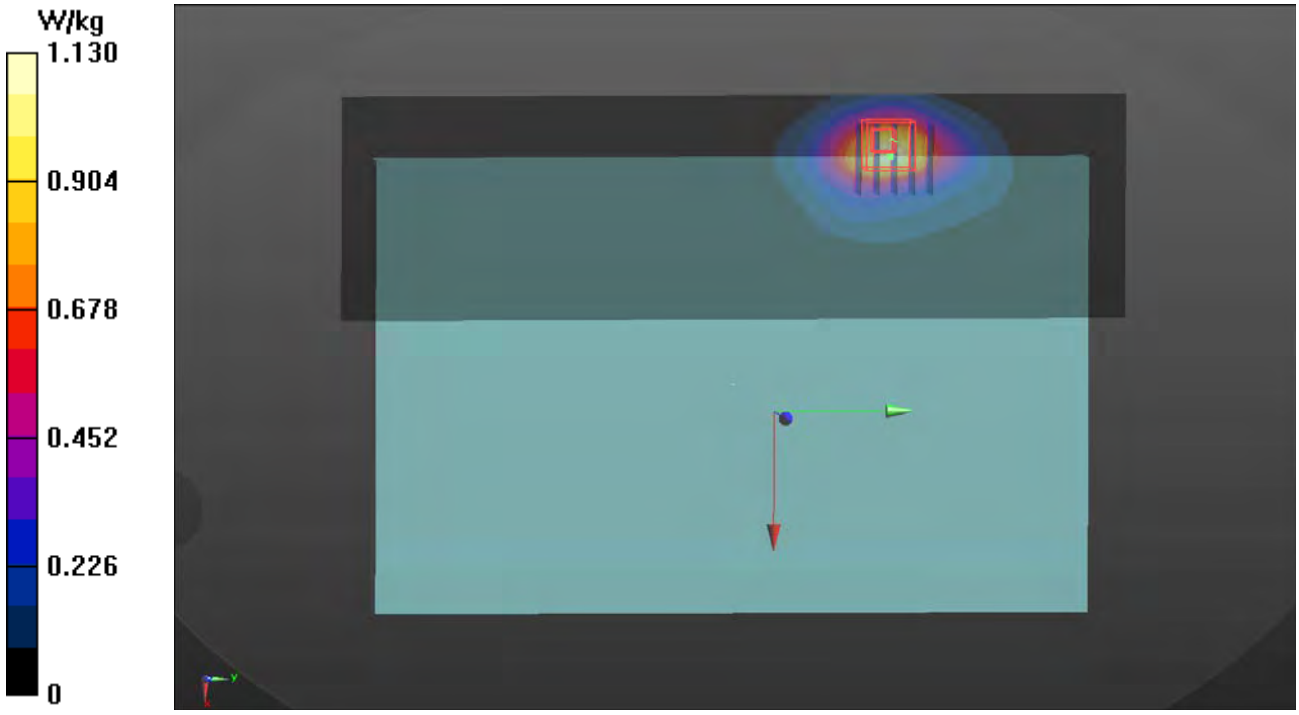
DUT: 180914C32

Communication System: LTE; Frequency: 831.5 MHz;Duty Cycle: 1:1
Medium: B07T10N2_0118 Medium parameters used: f = 831.5 MHz; σ = 0.969 S/m; ε_r = 56.137; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃； Liquid Temperature：23.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3971; ConvF(10.15, 10.15, 10.15); Calibrated: 2018/03/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2018/05/30
- Phantom: ELI Phantom_1245; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.13 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.71 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 1.87 W/kg
SAR(1 g) = 0.867 W/kg; SAR(10 g) = 0.470 W/kg
Maximum value of SAR (measured) = 1.43 W/kg



P12 LTE 30_QPSK10M_Rear Face_0mm_Ch27710_1RB_OS0_Battery1_P-Sensor_w

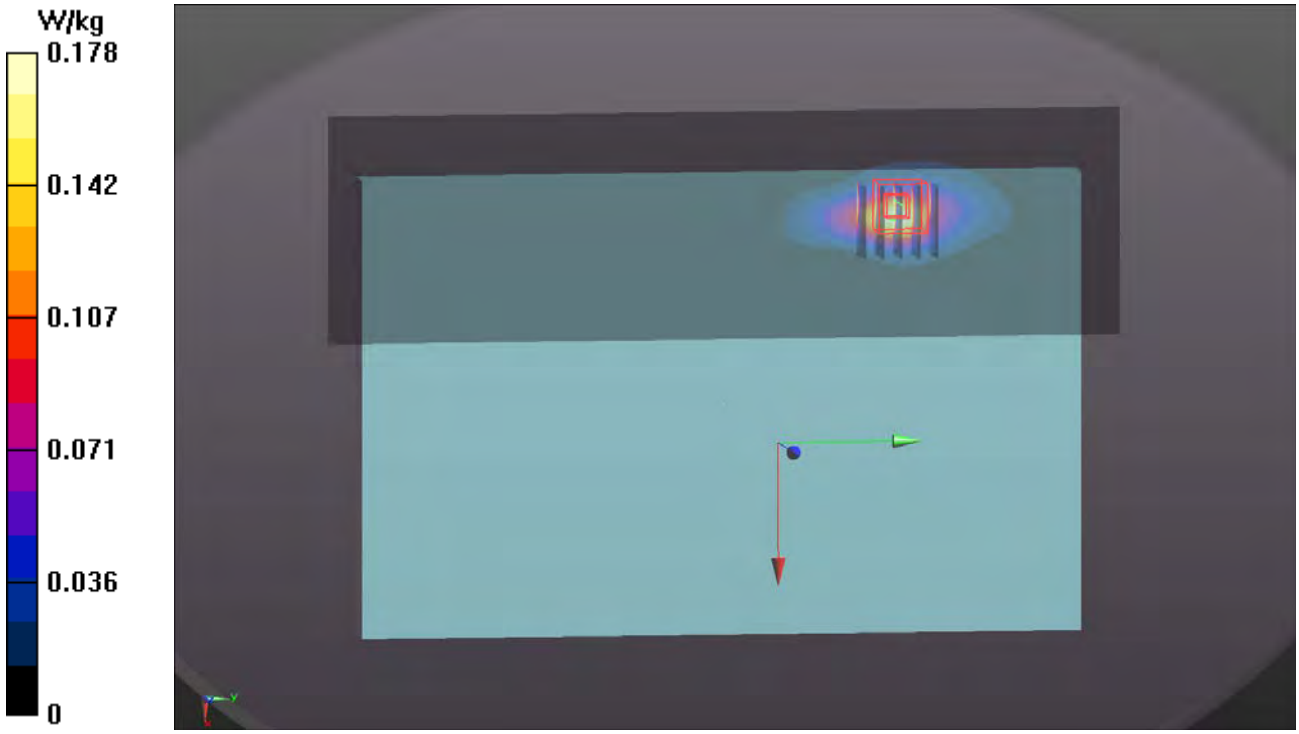
DUT: 180914C32

Communication System: LTE; Frequency: 2310 MHz;Duty Cycle: 1:1
Medium: B19T27N3_0123 Medium parameters used: f = 2310 MHz; σ = 1.869 S/m; ε_r = 50.948; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.77, 7.77, 7.77); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (91x301x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.178 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.04 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.664 W/kg
SAR(1 g) = 0.232 W/kg; SAR(10 g) = 0.087 W/kg
Maximum value of SAR (measured) = 0.476 W/kg



P13 LTE 38_QPSK20M_Rear Face_0mm_Ch38150_1RB_OS0_Battery1_P-Sensor_w

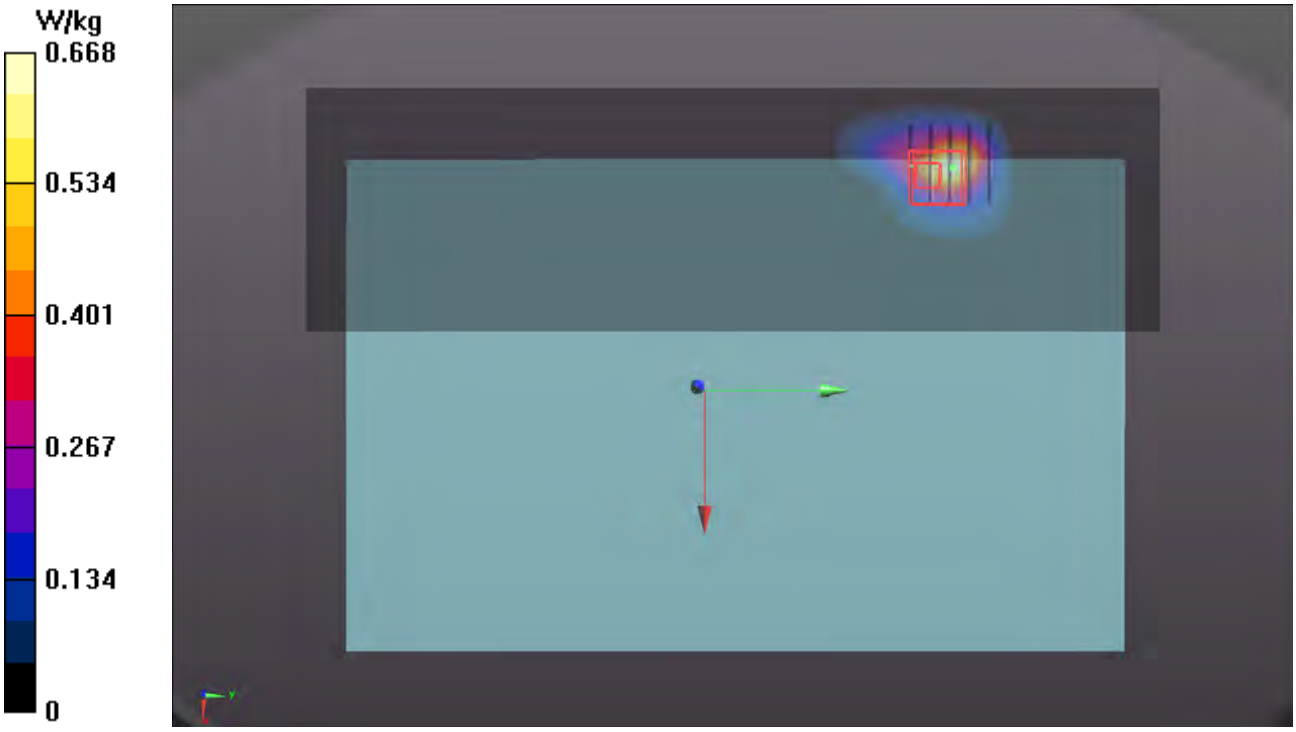
DUT: 180914C32

Communication System: LTE TDD CF0; Frequency: 2610 MHz;Duty Cycle: 1:1.58
Medium: B19T27N1_0223 Medium parameters used: f = 2610 MHz; σ = 2.211 S/m; ε_r = 51.132; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃ ； Liquid Temperature：23.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3971; ConvF(7.36, 7.36, 7.36); Calibrated: 2018/03/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2018/05/30
- Phantom: ELI Phantom_1039; Type: QDOVA001BB;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (91x301x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.668 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.54 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 2.94 W/kg
SAR(1 g) = 0.962 W/kg; SAR(10 g) = 0.345 W/kg
Maximum value of SAR (measured) = 1.96 W/kg



P14 LTE 41_QPSK20M_Rear Face_0mm_Ch41055_1RB_OS0_Battery1_P-Sensor_w

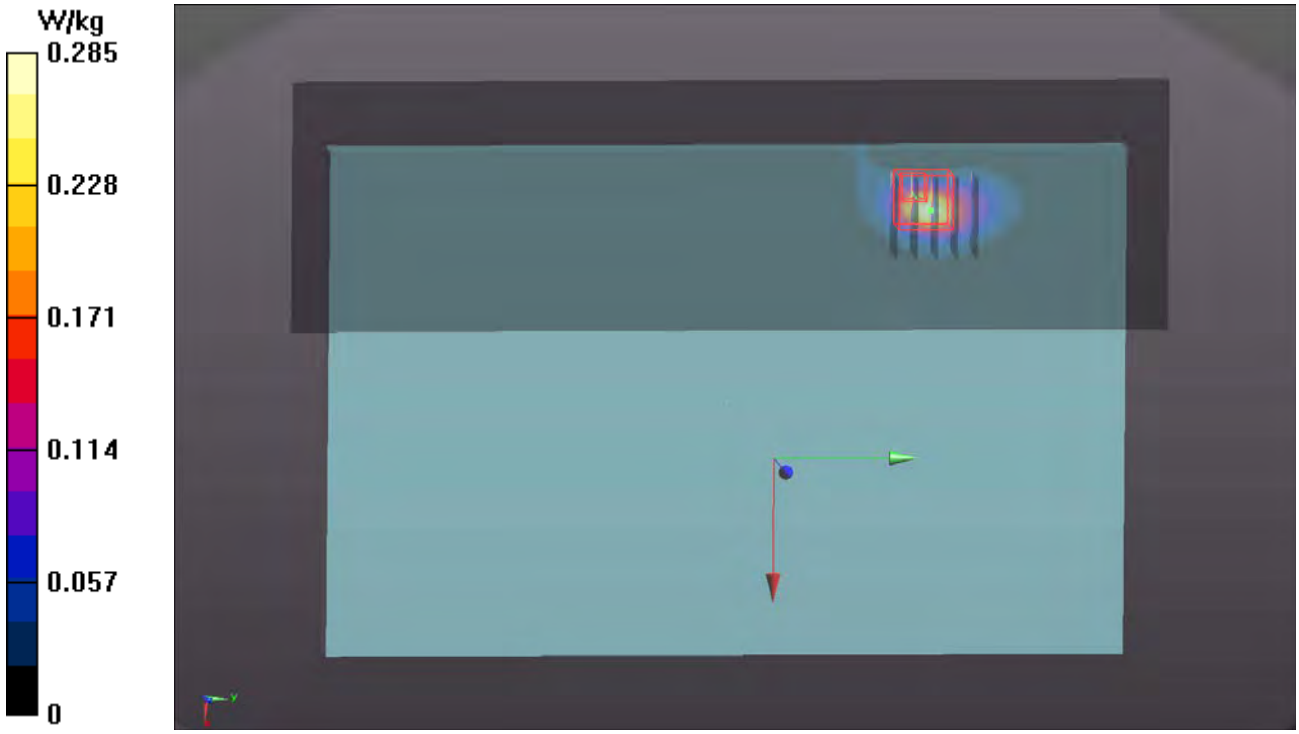
DUT: 180914C32

Communication System: LTE TDD CF0; Frequency: 2636.5 MHz;Duty Cycle: 1:1.58
Medium: B19T27N3_0123 Medium parameters used: f = 2636.5 MHz; σ = 2.235 S/m; ε_r = 50.053; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.48, 7.48, 7.48); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (91x301x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.285 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.02 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.13 W/kg
SAR(1 g) = 0.349 W/kg; SAR(10 g) = 0.111 W/kg
Maximum value of SAR (measured) = 0.847 W/kg



P15 LTE 66_QPSK20M_Rear Face_0mm_Ch132572_1RB_OS0_Battery1_P-Sensor_w

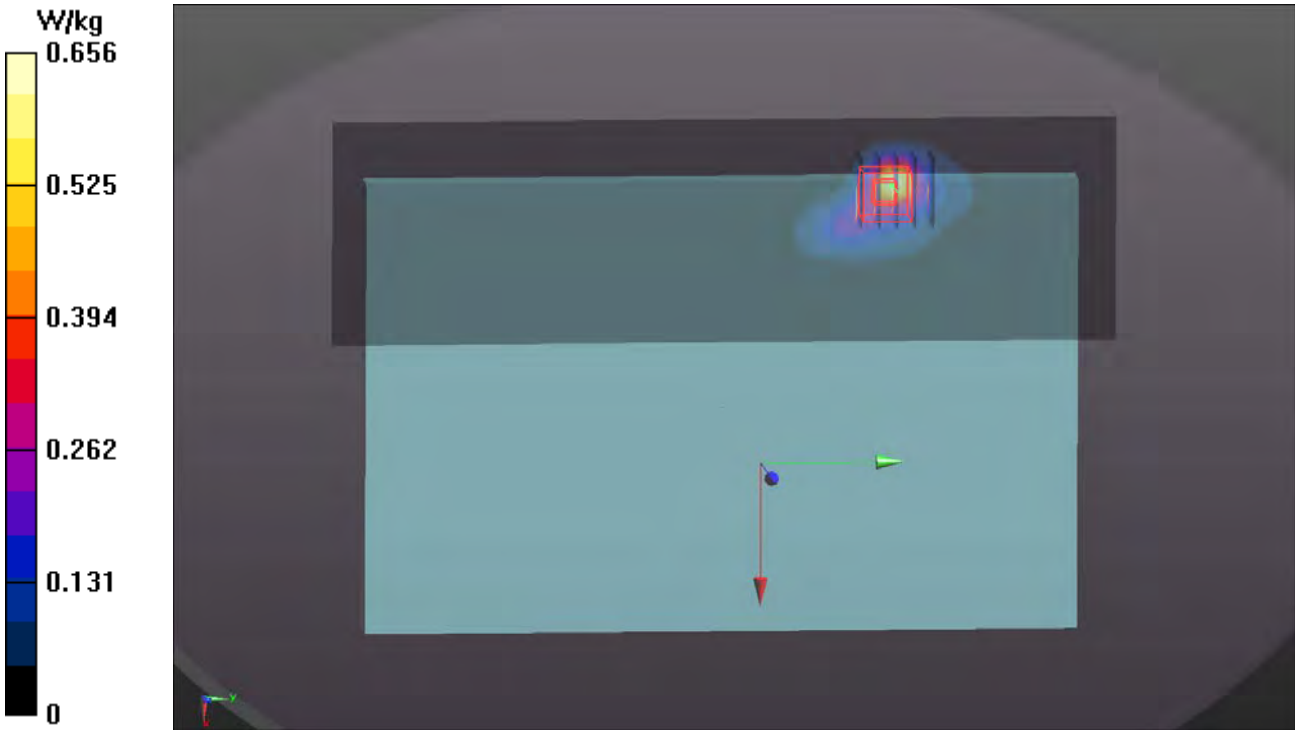
DUT: 180914C32

Communication System: LTE; Frequency: 1770 MHz;Duty Cycle: 1:1
Medium: B16T20N1_0123 Medium parameters used: f = 1770 MHz; σ = 1.453 S/m; ε_r = 51.686; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(8.2, 8.2, 8.2); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.656 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.45 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.96 W/kg
SAR(1 g) = 0.869 W/kg; SAR(10 g) = 0.374 W/kg
Maximum value of SAR (measured) = 1.38 W/kg



P16 WCDMA II_RMC12.2K_Bottom_0mm_Ch9400_Battery1

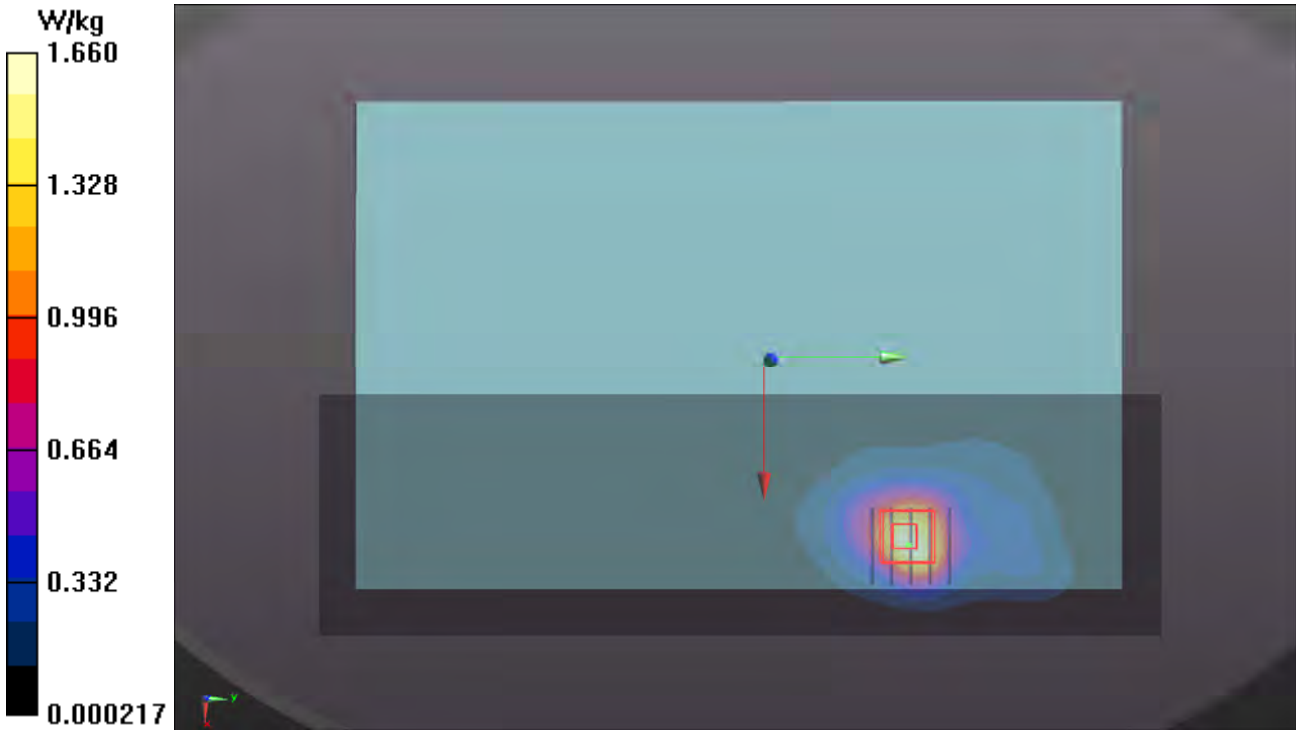
DUT: 180914C32

Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: B16T20N1_0117 Medium parameters used: f = 1880 MHz; σ = 1.563 S/m; ε_r = 51.643; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.89, 7.89, 7.89); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.66 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.18 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 2.30 W/kg
SAR(1 g) = 1.14 W/kg; SAR(10 g) = 0.612 W/kg
Maximum value of SAR (measured) = 1.75 W/kg



P17 WCDMA IV_RMC12.2K_Bottom_0mm_Ch1312_Battery1

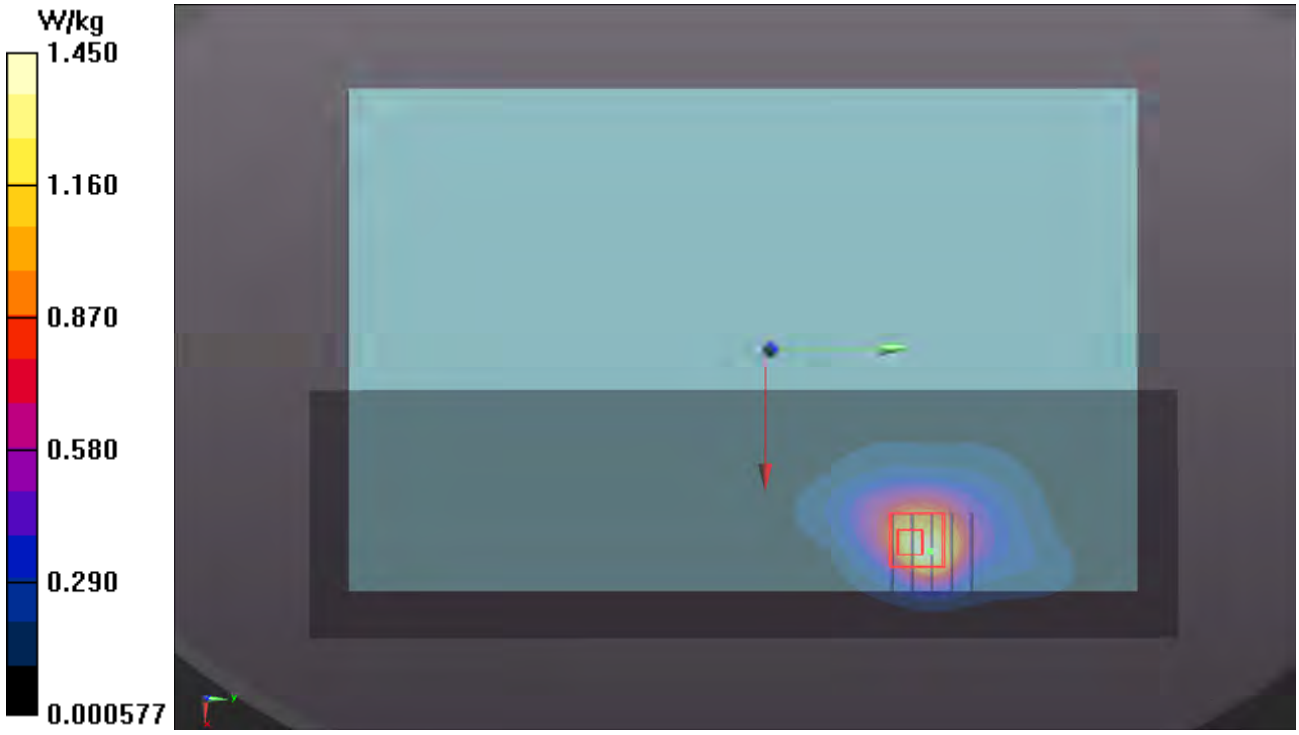
DUT: 180914C32

Communication System: WCDMA; Frequency: 1712.4 MHz;Duty Cycle: 1:1
Medium: B16T20N1_0117 Medium parameters used: f = 1712.4 MHz; σ = 1.398 S/m; ε_r = 52.149; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(8.2, 8.2, 8.2); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.45 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.74 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 2.06 W/kg
SAR(1 g) = 1.04 W/kg; SAR(10 g) = 0.552 W/kg
Maximum value of SAR (measured) = 1.57 W/kg



P18 WCDMA V_RMC12.2K_Bottom_0mm_Ch4132_Battery1

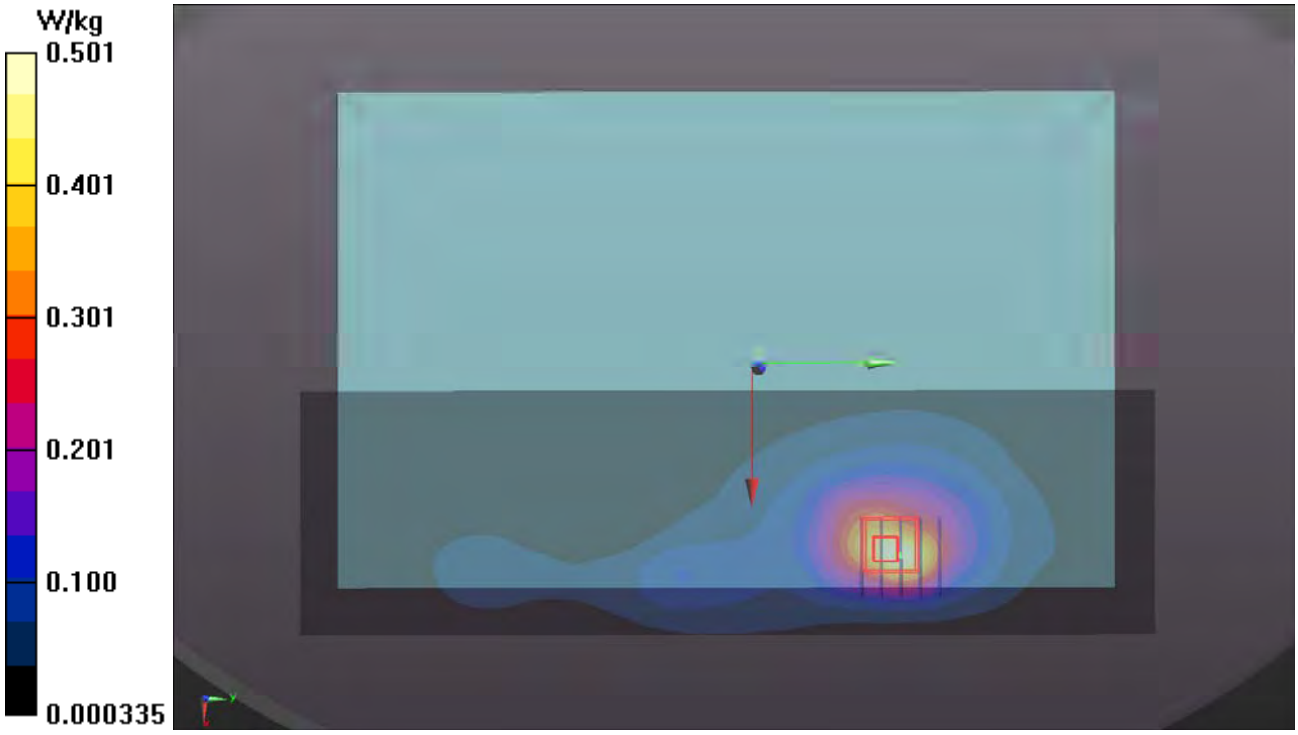
DUT: 180914C32

Communication System: WCDMA; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: B07T10N1_0117 Medium parameters used: f = 826.4 MHz; σ = 0.969 S/m; ε_r = 56.071; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.74, 9.74, 9.74); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.501 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.28 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.768 W/kg
SAR(1 g) = 0.395 W/kg; SAR(10 g) = 0.222 W/kg
Maximum value of SAR (measured) = 0.597 W/kg



P19 LTE 5_QPSK10M_Bottom_0mm_Ch20450_1RB_OS0_Battery1

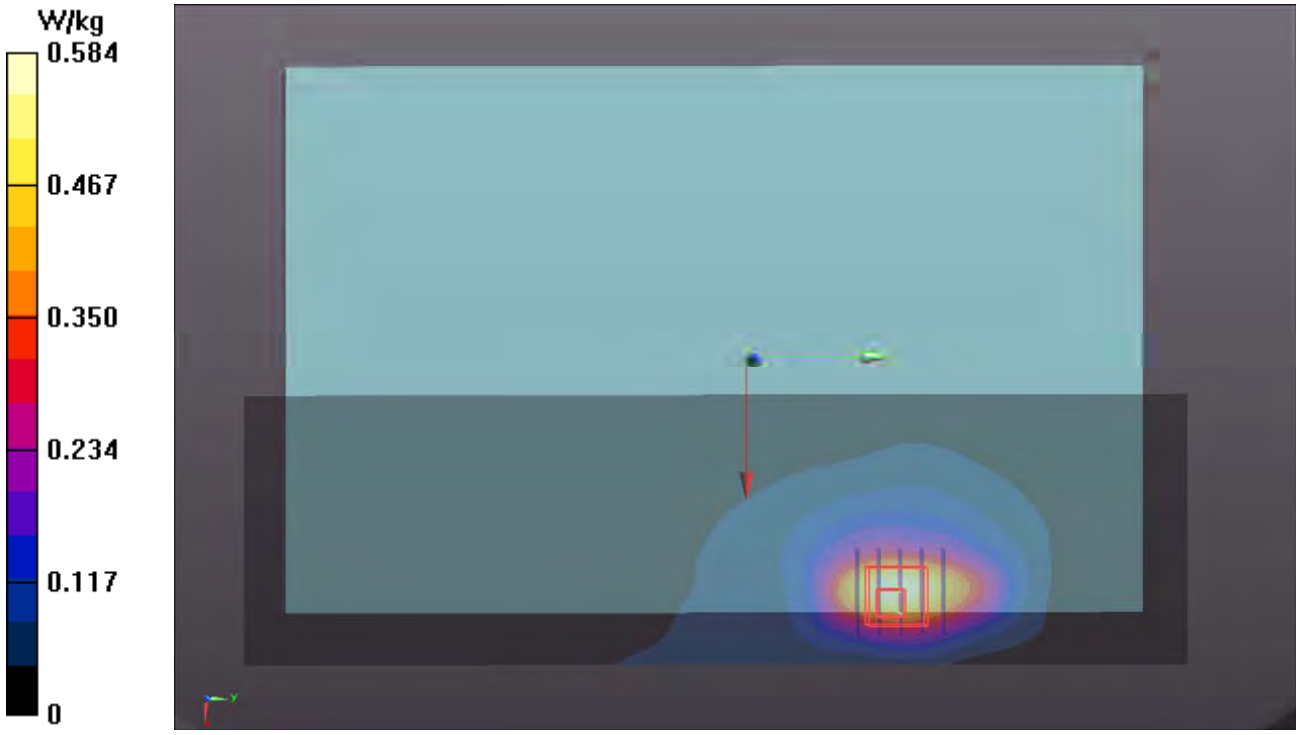
DUT: 180914C32

Communication System: LTE; Frequency: 829 MHz;Duty Cycle: 1:1
Medium: B07T10N1_0118 Medium parameters used: f = 829 MHz; σ = 0.988 S/m; ε_r = 57.062; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.74, 9.74, 9.74) @ 829 MHz; Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.584 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.99 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.913 W/kg
SAR(1 g) = 0.462 W/kg; SAR(10 g) = 0.255 W/kg
Maximum value of SAR (measured) = 0.703 W/kg



P20 LTE 7_QPSK20M_Bottom_0mm_Ch21350_1RB_OS0_Battery1

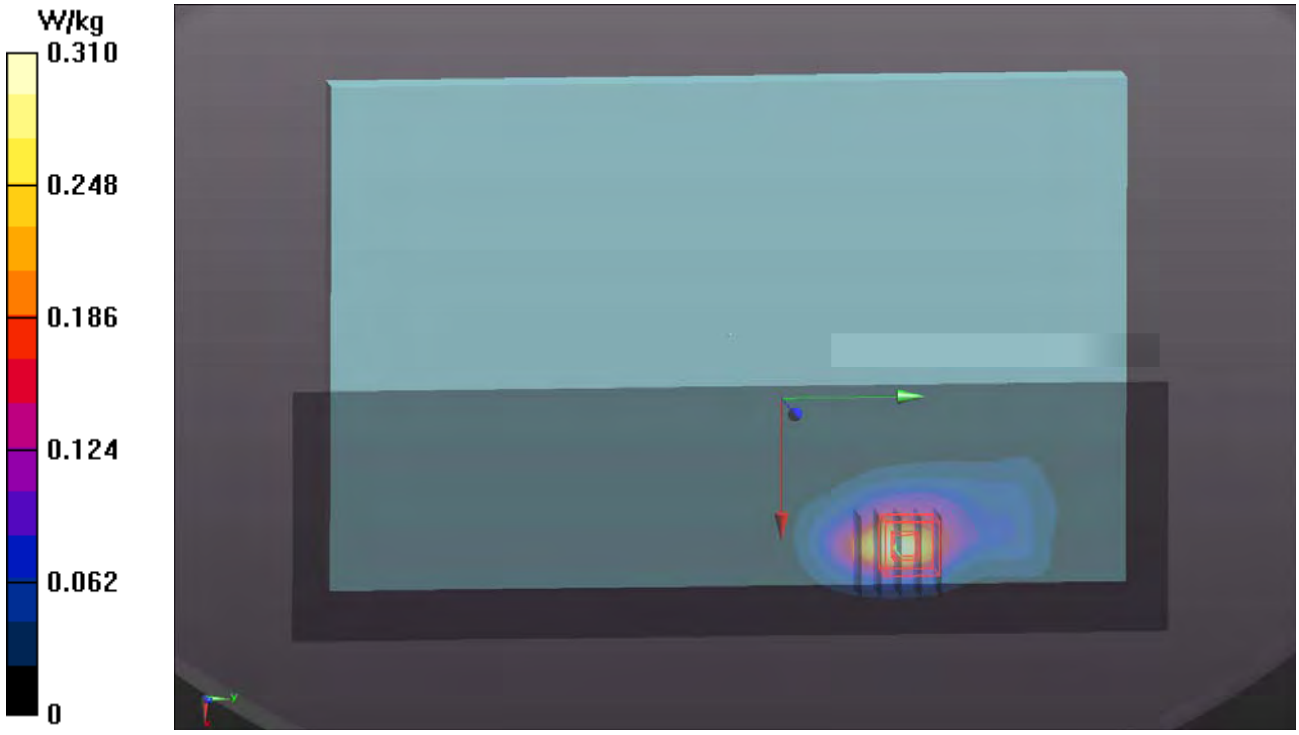
DUT: 180914C32

Communication System: LTE; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium: B19T27N3_0123 Medium parameters used: f = 2560 MHz; σ = 2.146 S/m; ε_r = 50.279; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃ ； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.48, 7.48, 7.48); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (91x301x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.310 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.012 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.652 W/kg
SAR(1 g) = 0.260 W/kg; SAR(10 g) = 0.106 W/kg
Maximum value of SAR (measured) = 0.473 W/kg



P21 LTE 12_QPSK10M_Bottom_0mm_Ch23060_1RB_OS0_Battery1

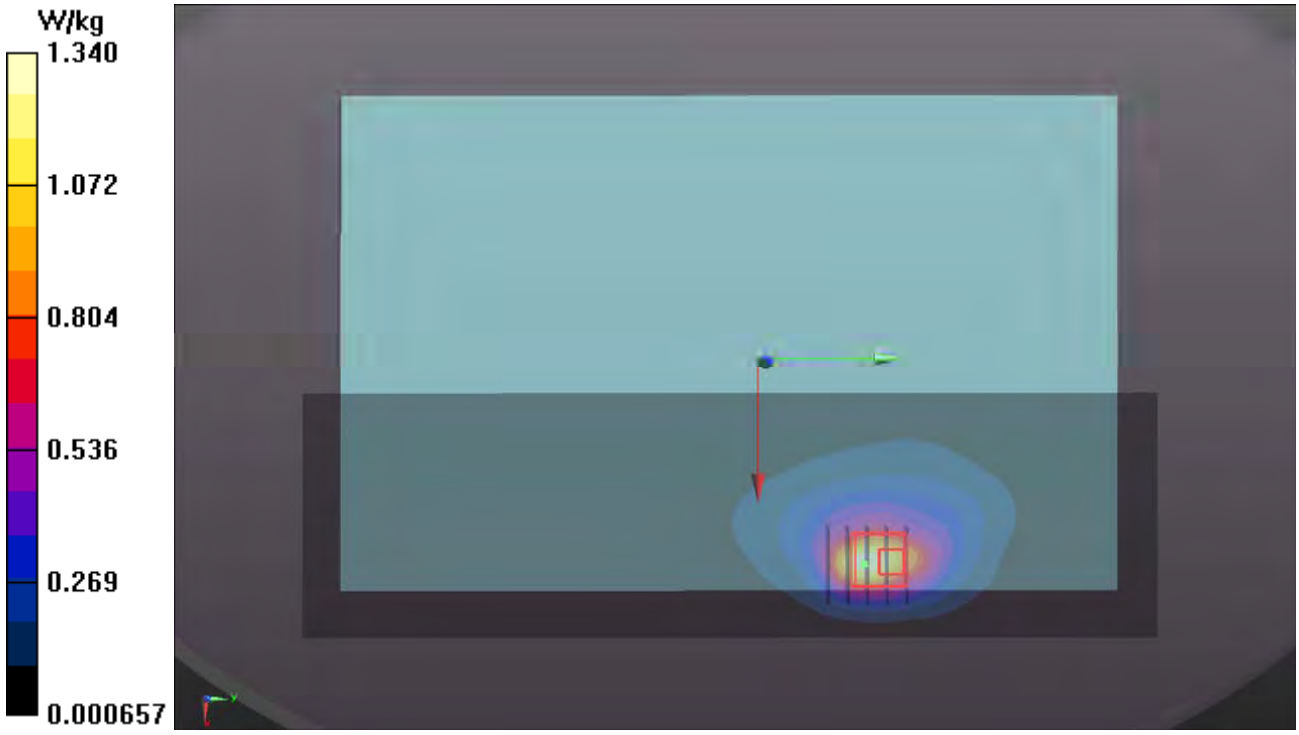
DUT: 180914C32

Communication System: LTE; Frequency: 704 MHz;Duty Cycle: 1:1
Medium: B06T09N1_0117 Medium parameters used: f = 704 MHz; σ = 0.916 S/m; ε_r = 55.919; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃ ； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.91, 9.91, 9.91); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.34 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.21 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 2.02 W/kg
SAR(1 g) = 0.804 W/kg; SAR(10 g) = 0.386 W/kg
Maximum value of SAR (measured) = 1.53 W/kg



P22 LTE 13_QPSK10M_Bottom_0mm_Ch23230_1RB_OS0_Battery1

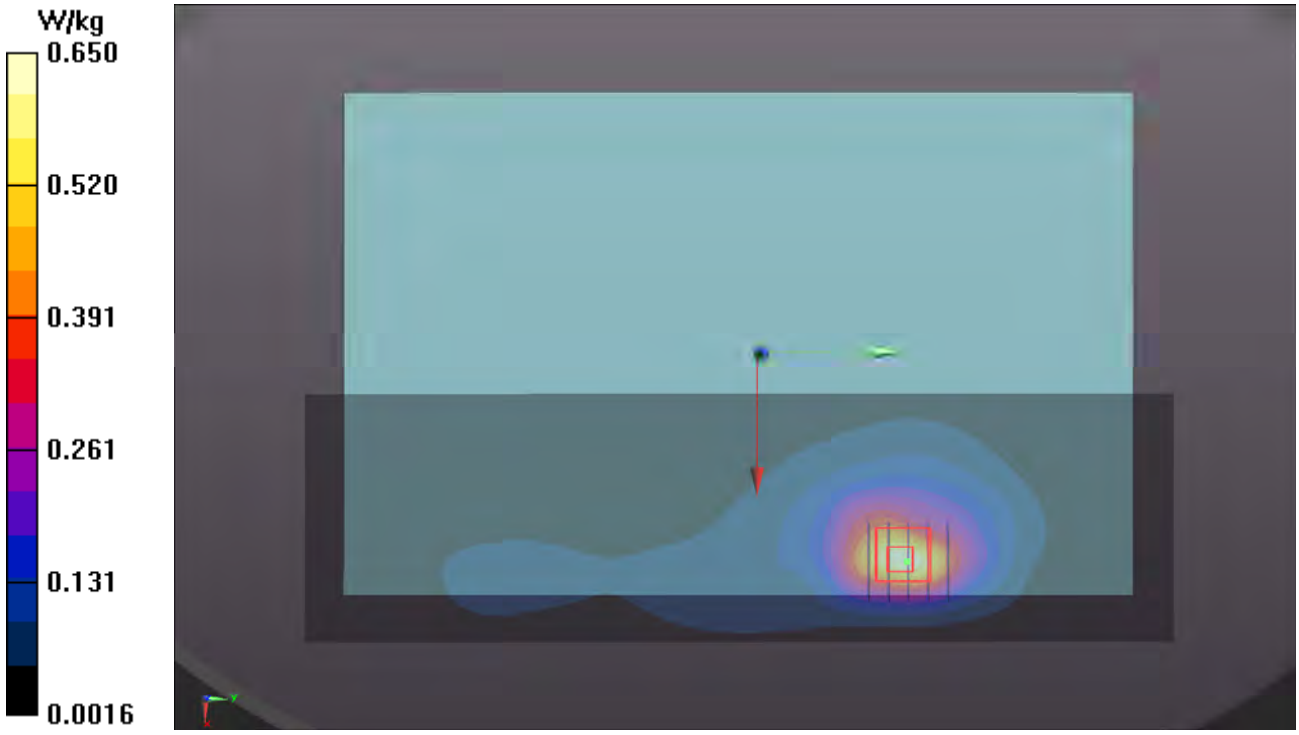
DUT: 180914C32

Communication System: LTE; Frequency: 782 MHz;Duty Cycle: 1:1
Medium: B06T09N1_0117 Medium parameters used: f = 782 MHz; σ = 0.986 S/m; ε_r = 55.192; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.91, 9.91, 9.91); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.650 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.99 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.947 W/kg
SAR(1 g) = 0.472 W/kg; SAR(10 g) = 0.263 W/kg
Maximum value of SAR (measured) = 0.748 W/kg



P23 LTE 14_QPSK10M_Bottom_0mm_Ch23330_1RB_OS0_Battery1

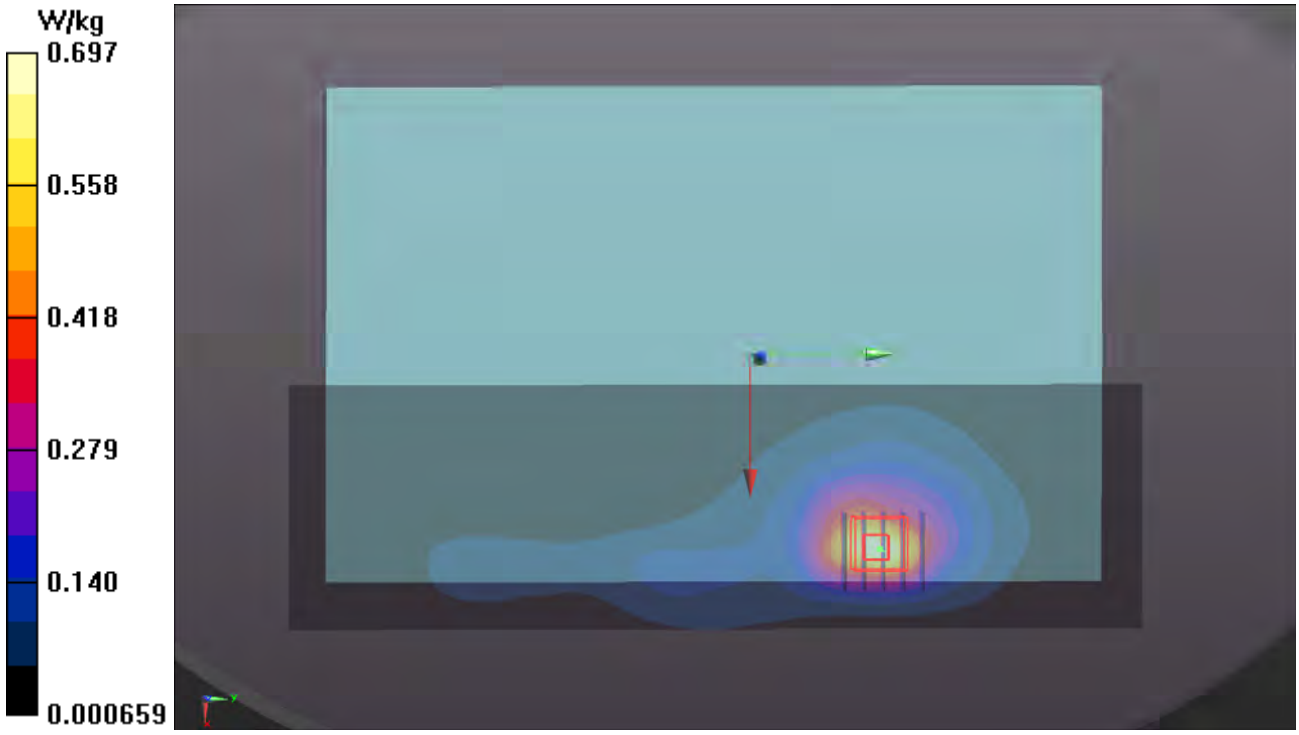
DUT: 180914C32

Communication System: LTE; Frequency: 793 MHz;Duty Cycle: 1:1
Medium: B06T09N1_0119 Medium parameters used: f = 793 MHz; σ = 1 S/m; ε_r = 56.039; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃ ； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.91, 9.91, 9.91); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.697 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.94 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 1.03 W/kg
SAR(1 g) = 0.520 W/kg; SAR(10 g) = 0.290 W/kg
Maximum value of SAR (measured) = 0.817 W/kg



P24 LTE 17_QPSK10M_Bottom_0mm_Ch23780_1RB_OS0_Battery1

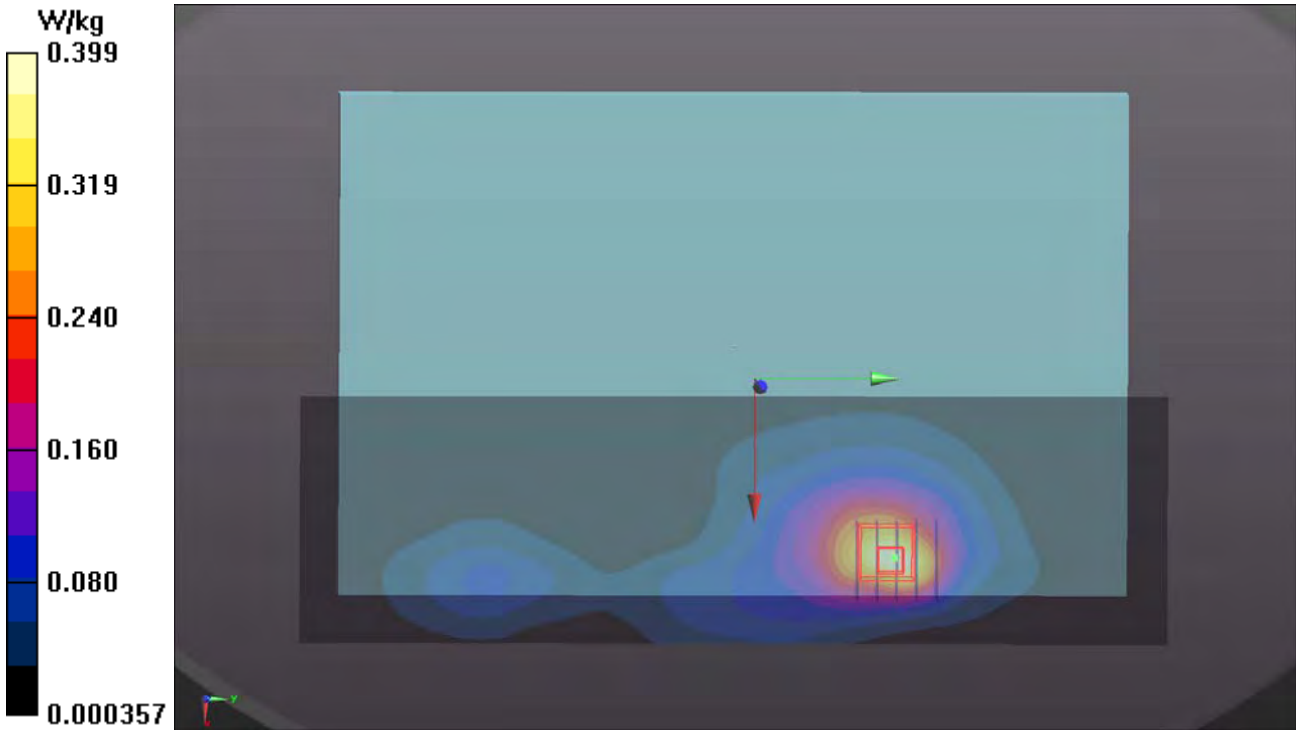
DUT: 180914C32

Communication System: LTE; Frequency: 709 MHz;Duty Cycle: 1:1
Medium: B06T09N1_0123 Medium parameters used: f = 709 MHz; σ = 0.937 S/m; ε_r = 56.416; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃ ； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.91, 9.91, 9.91); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.399 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.41 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.583 W/kg
SAR(1 g) = 0.305 W/kg; SAR(10 g) = 0.179 W/kg
Maximum value of SAR (measured) = 0.449 W/kg



P25 LTE 25_QPSK20M_Bottom_0mm_Ch26590_1RB_OS0_Battery1

DUT: 180914C32

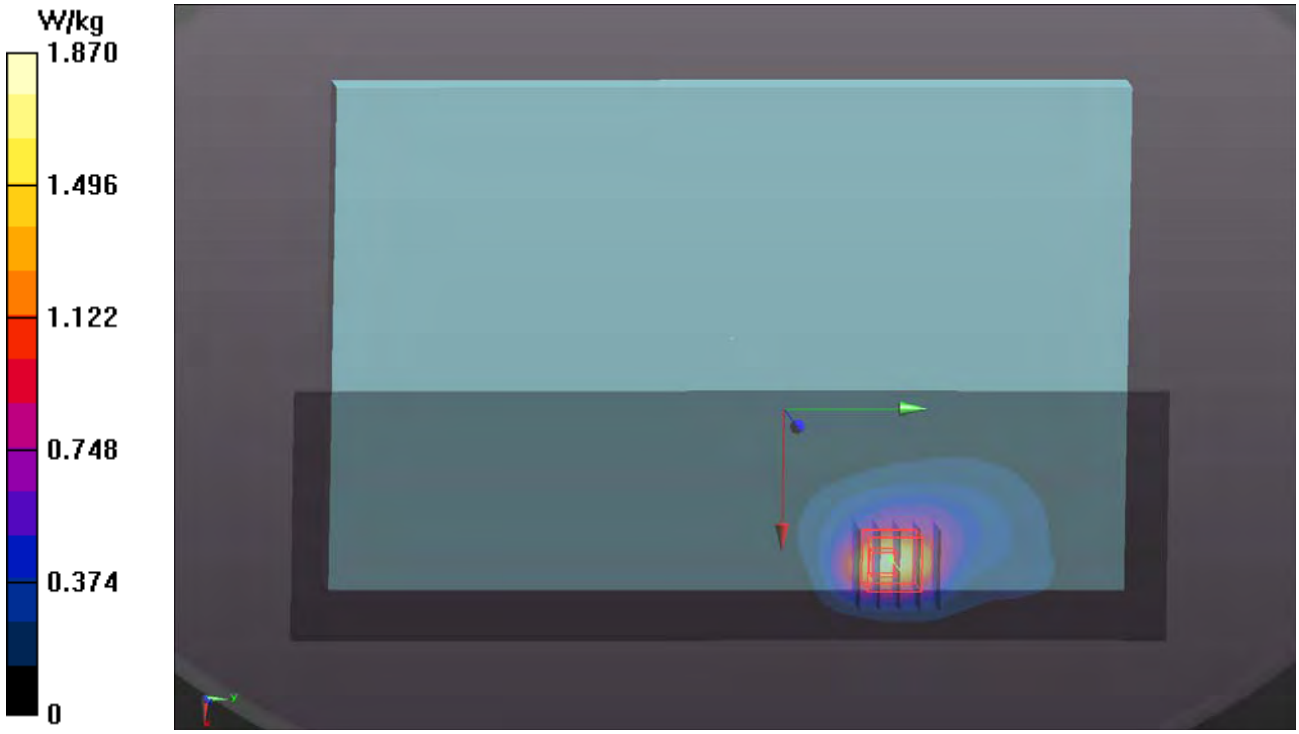
Communication System: LTE; Frequency: 1905 MHz;Duty Cycle: 1:1

Medium: B16T20N1_0123 Medium parameters used: f = 1905 MHz; σ = 1.565 S/m; ε_r = 51.435; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.89, 7.89, 7.89); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.87 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.64 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 2.32 W/kg
SAR(1 g) = 1.16 W/kg; SAR(10 g) = 0.649 W/kg
Maximum value of SAR (measured) = 1.87 W/kg



P26 LTE 26_QPSK15M_Bottom_0mm_Ch26865_1RB_OS0_Battery1

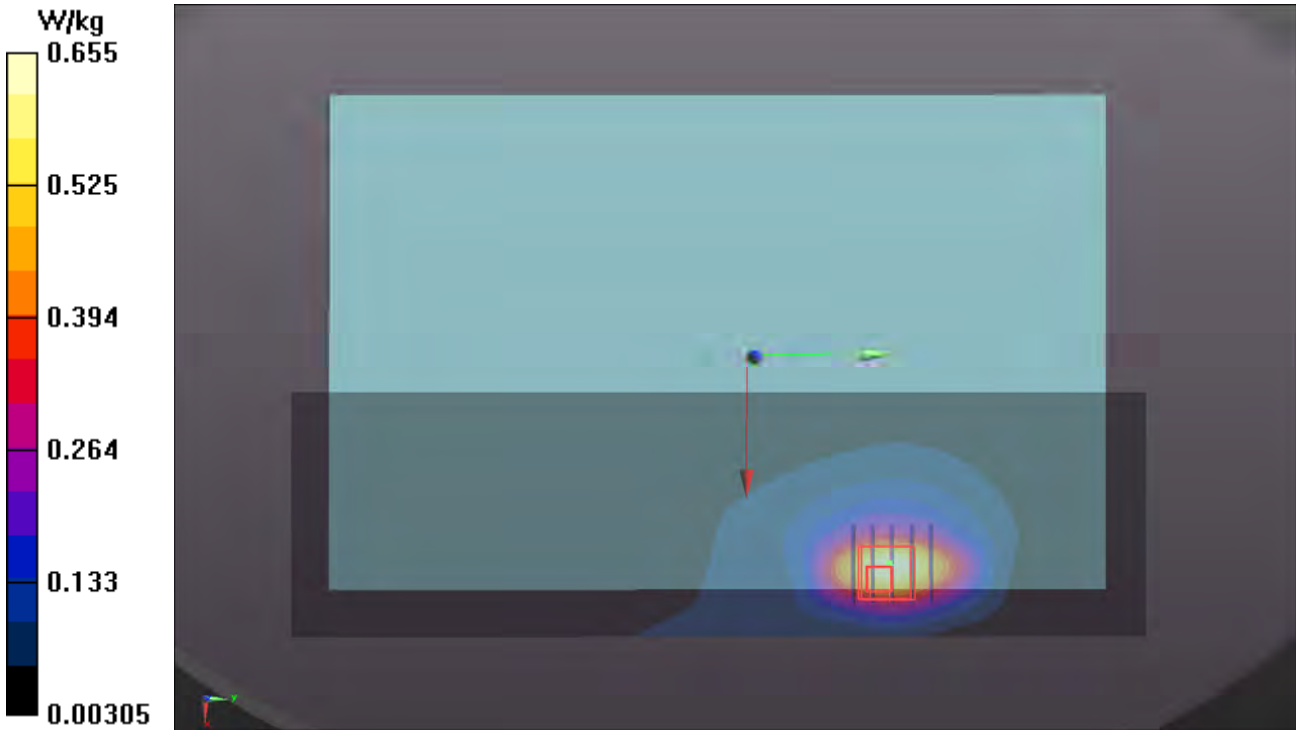
DUT: 180914C32

Communication System: LTE; Frequency: 831.5 MHz;Duty Cycle: 1:1
Medium: B07T10N1_0118 Medium parameters used: f = 831.59 MHz; σ = 0.99 S/m; ε_r = 57.046; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃ ； Liquid Temperature：23.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(9.74, 9.74, 9.74); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.655 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.45 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.949 W/kg
SAR(1 g) = 0.471 W/kg; SAR(10 g) = 0.260 W/kg
Maximum value of SAR (measured) = 0.740 W/kg



P27 LTE 30_QPSK10M_Bottom_0mm_Ch27710_1RB_OS0_Battery1

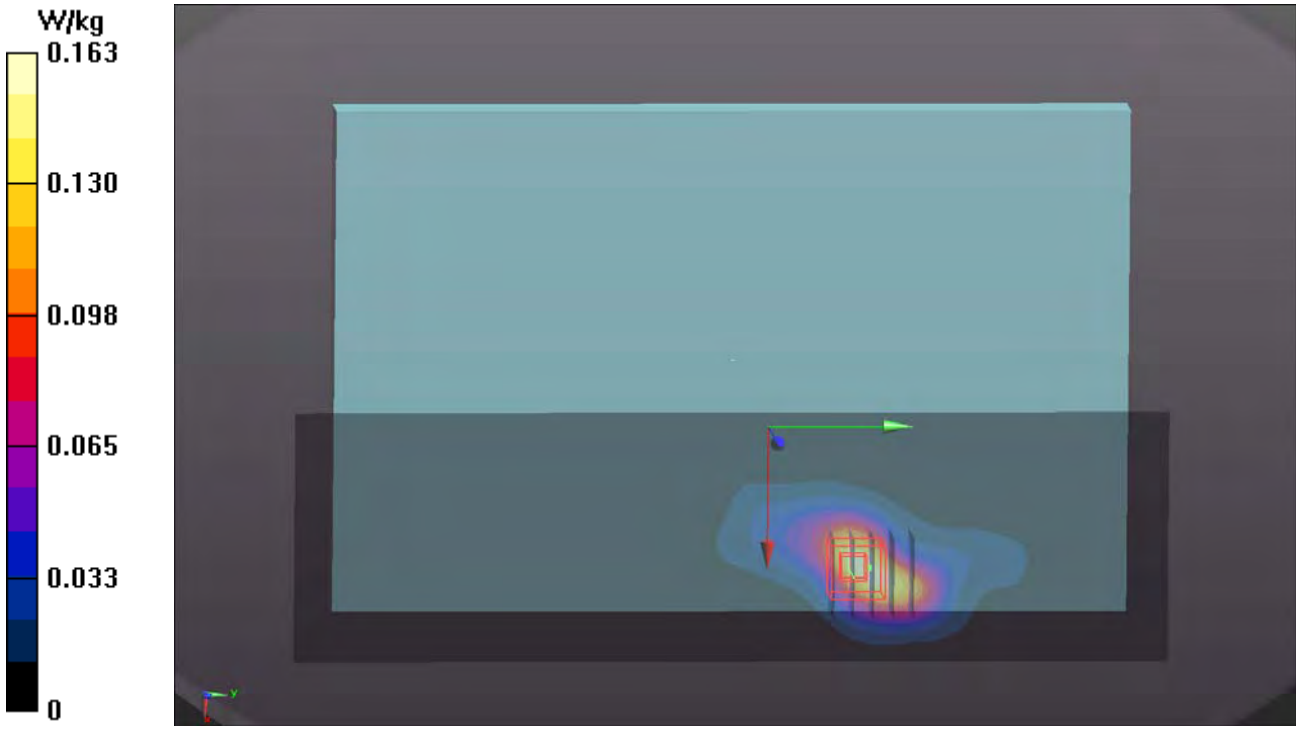
DUT: 180914C32

Communication System: LTE; Frequency: 2310 MHz;Duty Cycle: 1:1
Medium: B19T27N3_0123 Medium parameters used: f = 2310 MHz; σ = 1.869 S/m; ε_r = 50.948; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.77, 7.77, 7.77); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (91x301x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.163 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.346 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.367 W/kg
SAR(1 g) = 0.168 W/kg; SAR(10 g) = 0.071 W/kg
Maximum value of SAR (measured) = 0.269 W/kg



P28 LTE
38_QPSK20M_Bottom_0mm_Ch38150_1RB_OS0_Battery1

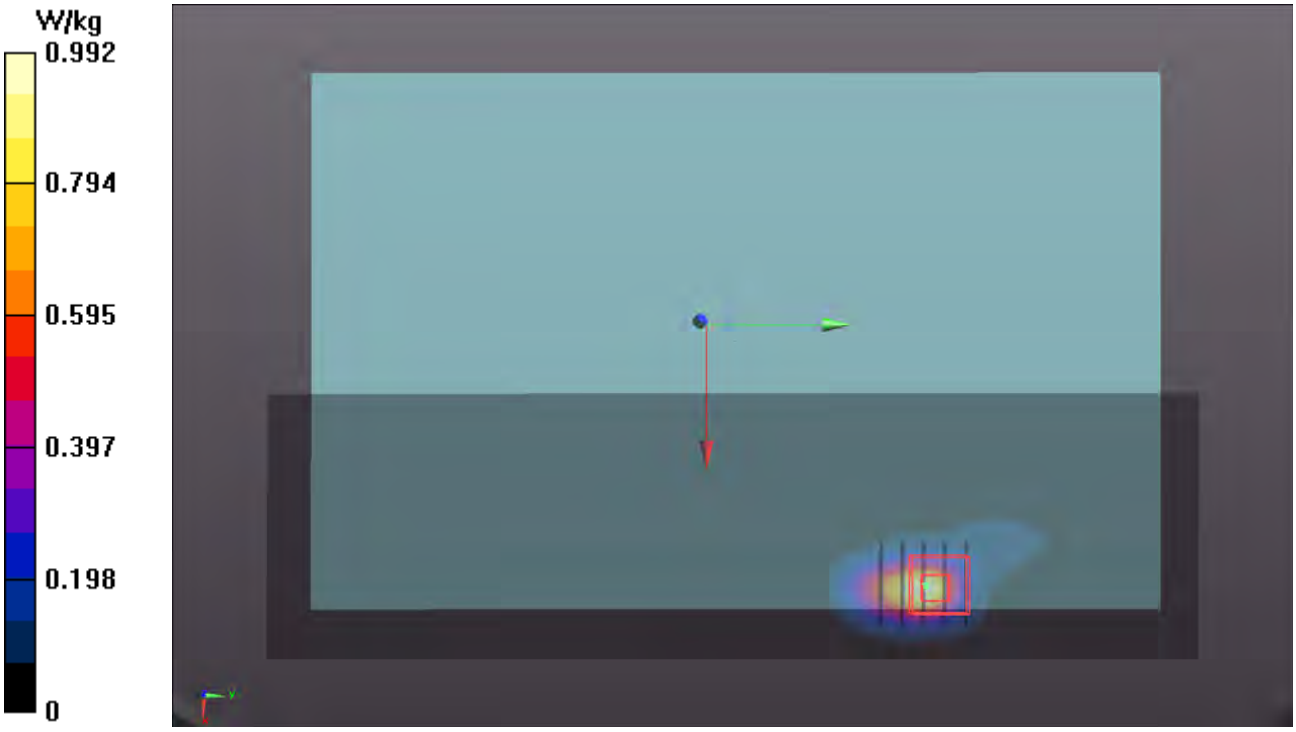
DUT: 180914C32

Communication System: LTE TDD CF0; Frequency: 2610 MHz;Duty Cycle: 1:1.58
Medium: B19T27N1_0223 Medium parameters used (interpolated): f = 2610 MHz; σ = 2.211 S/m; ε_r = 51.132; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：23.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3971; ConvF(7.36, 7.36, 7.36); Calibrated: 2018/03/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2018/05/30
- Phantom: ELI Phantom_1039; Type: QDOVA001BB;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (91x301x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.992 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.14 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.16 W/kg
SAR(1 g) = 0.450 W/kg; SAR(10 g) = 0.178 W/kg
Maximum value of SAR (measured) = 0.844 W/kg



P29 LTE 41_QPSK20M_Bottom_0mm_Ch40620_1RB_OS0_Battery1

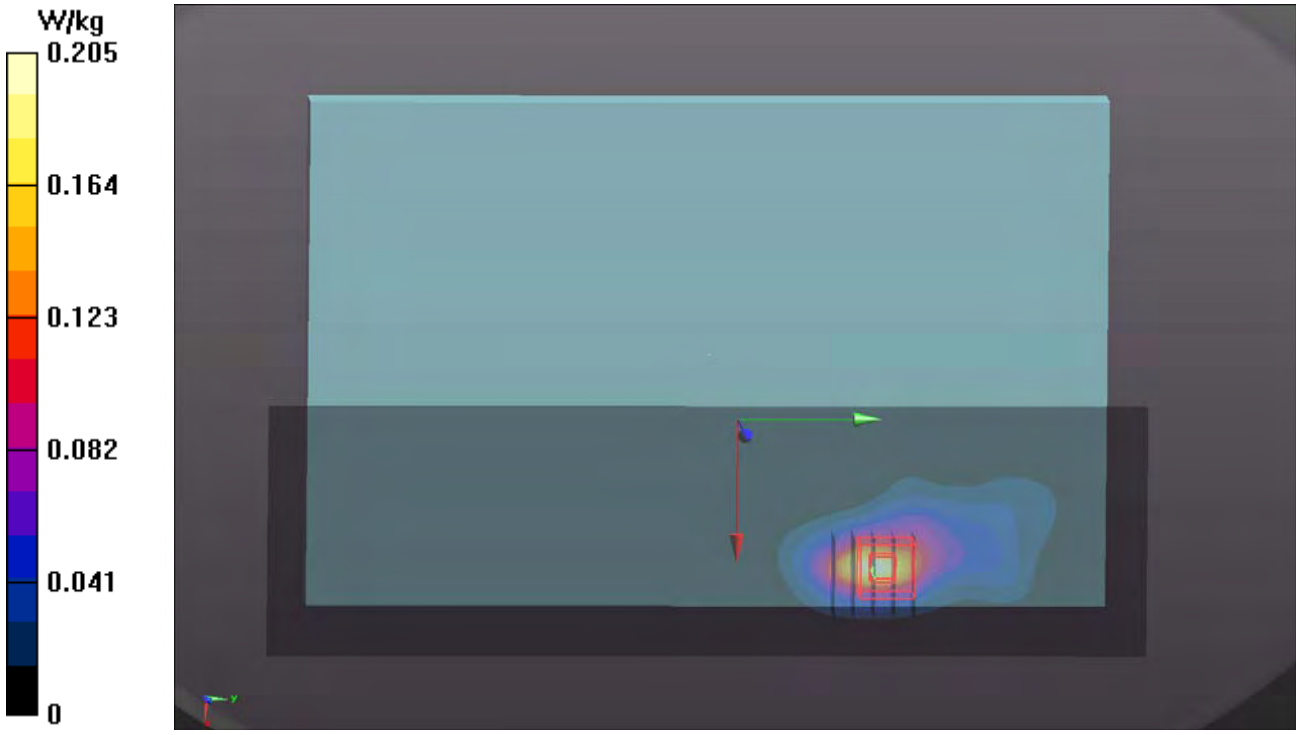
DUT: 180914C32

Communication System: LTE TDD CF0; Frequency: 2593 MHz;Duty Cycle: 1:1.58
Medium: B19T27N3_0123 Medium parameters used: f = 2593 MHz; σ = 2.185 S/m; ε_r = 50.187; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(7.48, 7.48, 7.48); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (91x301x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.205 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.245 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.411 W/kg
SAR(1 g) = 0.161 W/kg; SAR(10 g) = 0.065 W/kg
Maximum value of SAR (measured) = 0.294 W/kg



P30 LTE 66_QPSK20M_Bottom_0mm_Ch132572_1RB_OS0_Battery1

DUT: 180914C32

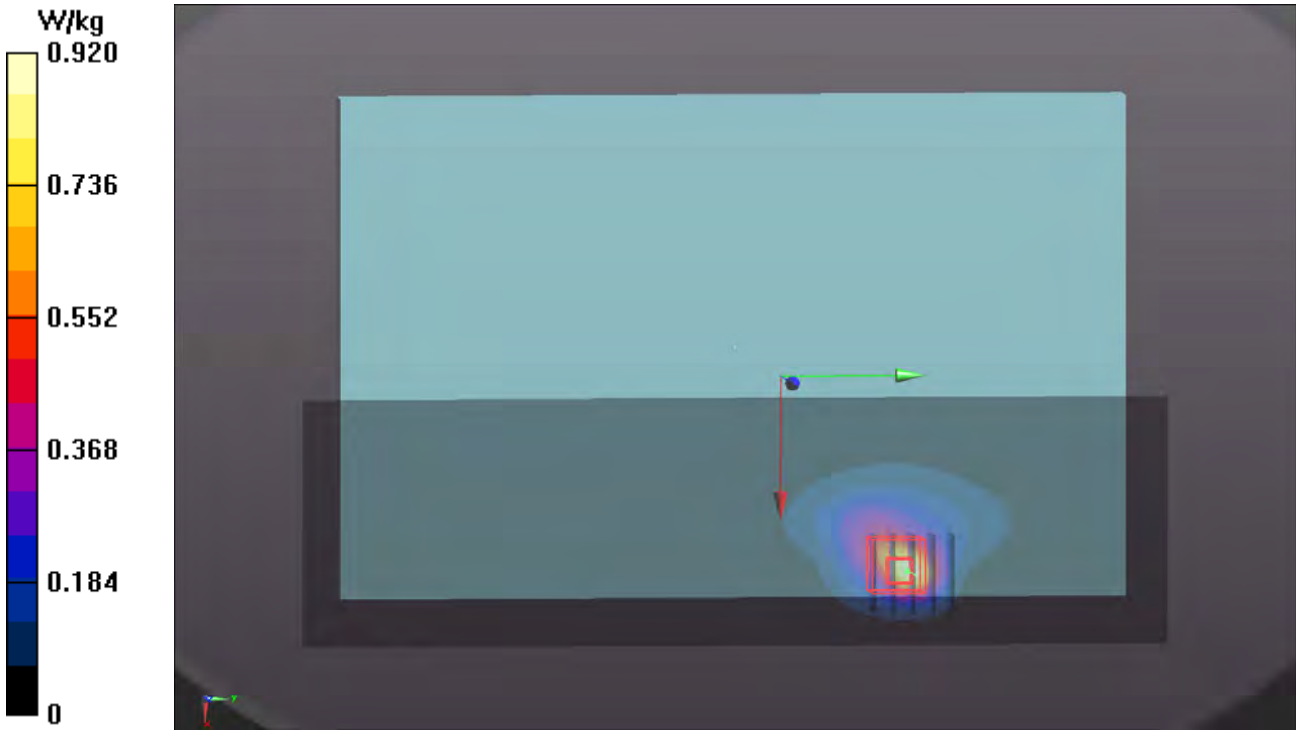
Communication System: LTE; Frequency: 1770 MHz;Duty Cycle: 1:1

Medium: B16T20N1_0123 Medium parameters used: f = 1770 MHz; σ = 1.453 S/m; ε_r = 51.686; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3650; ConvF(8.2, 8.2, 8.2); Calibrated: 2018/07/27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2018/08/27
- Phantom: ELI Phantom_1206; Type: QDOVA002AA;
- Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7450)

- Area Scan (71x241x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.920 W/kg

- Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.73 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.33 W/kg
SAR(1 g) = 0.597 W/kg; SAR(10 g) = 0.290 W/kg
Maximum value of SAR (measured) = 1.08 W/kg



Appendix C. Calibration Certificate for Probe and Dipole

The SPEAG calibration certificates are shown as follows.

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **B.V.ADT (Auden)** **Certificate No: D750V3-1013_Aug18**

CALIBRATION CERTIFICATE

Object	D750V3 - SN:1013
Calibration procedure(s)	QA CAL-05.v10 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	August 23, 2018

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 7349	30-Dec-17 (No. EX3-7349_Dec17)	Dec-18
DAE4	SN: 601	26-Oct-17 (No. DAE4-601_Oct17)	Oct-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-17)	In house check: Oct-18

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 24, 2018

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Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.1
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.9 ± 6 %	0.89 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.05 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**8.15 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.33 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.30 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	55.0 ± 6 %	0.96 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.16 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**8.62 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.43 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**5.71 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.9 Ω + 0.1 jΩ
Return Loss	- 28.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.6 Ω - 3.1 jΩ
Return Loss	- 29.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.035 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 22, 2010

DASY5 Validation Report for Head TSL

Date: 22.08.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1013

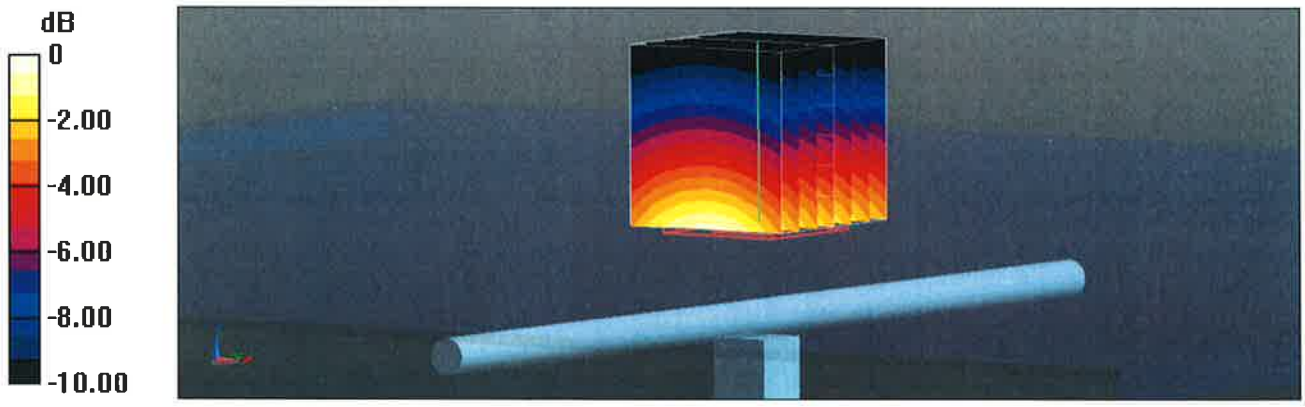
Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.89 S/m; ε_r = 40.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.22, 10.22, 10.22) @ 750 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

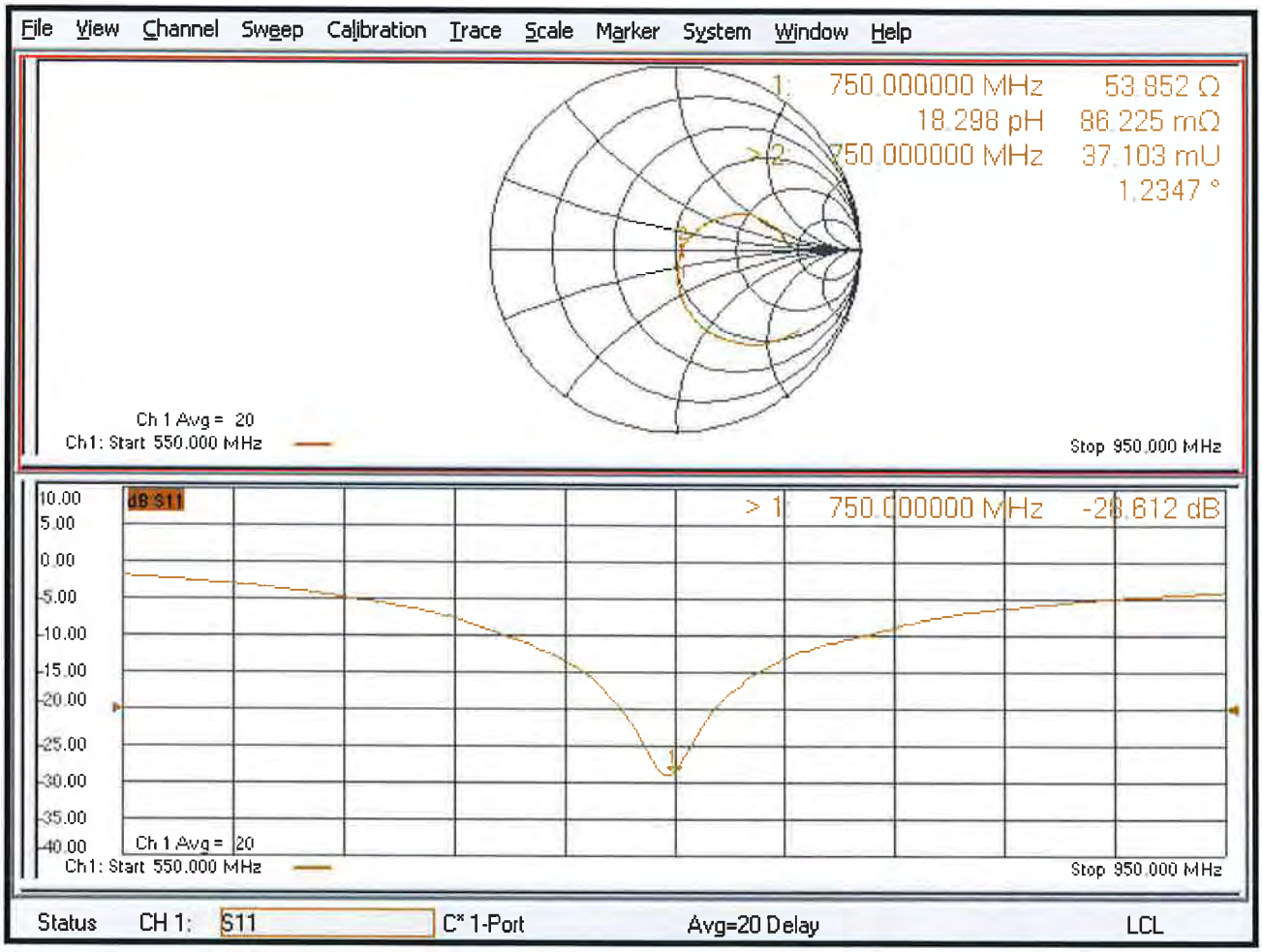
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 59.09 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 3.09 W/kg
SAR(1 g) = 2.05 W/kg; SAR(10 g) = 1.33 W/kg
Maximum value of SAR (measured) = 2.75 W/kg



0 dB = 2.75 W/kg = 4.39 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 23.08.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1013

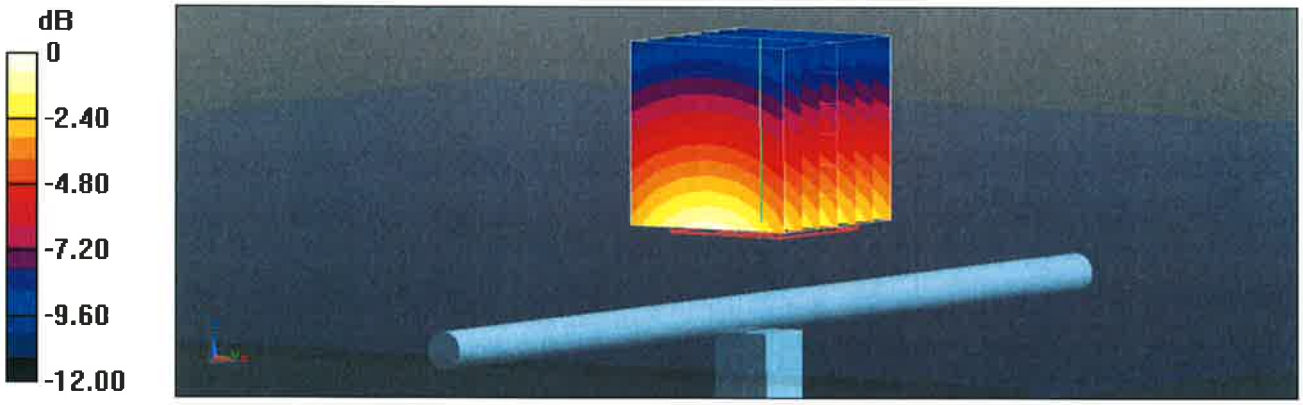
Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.96 S/m; ε_r = 55; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.19, 10.19, 10.19) @ 750 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

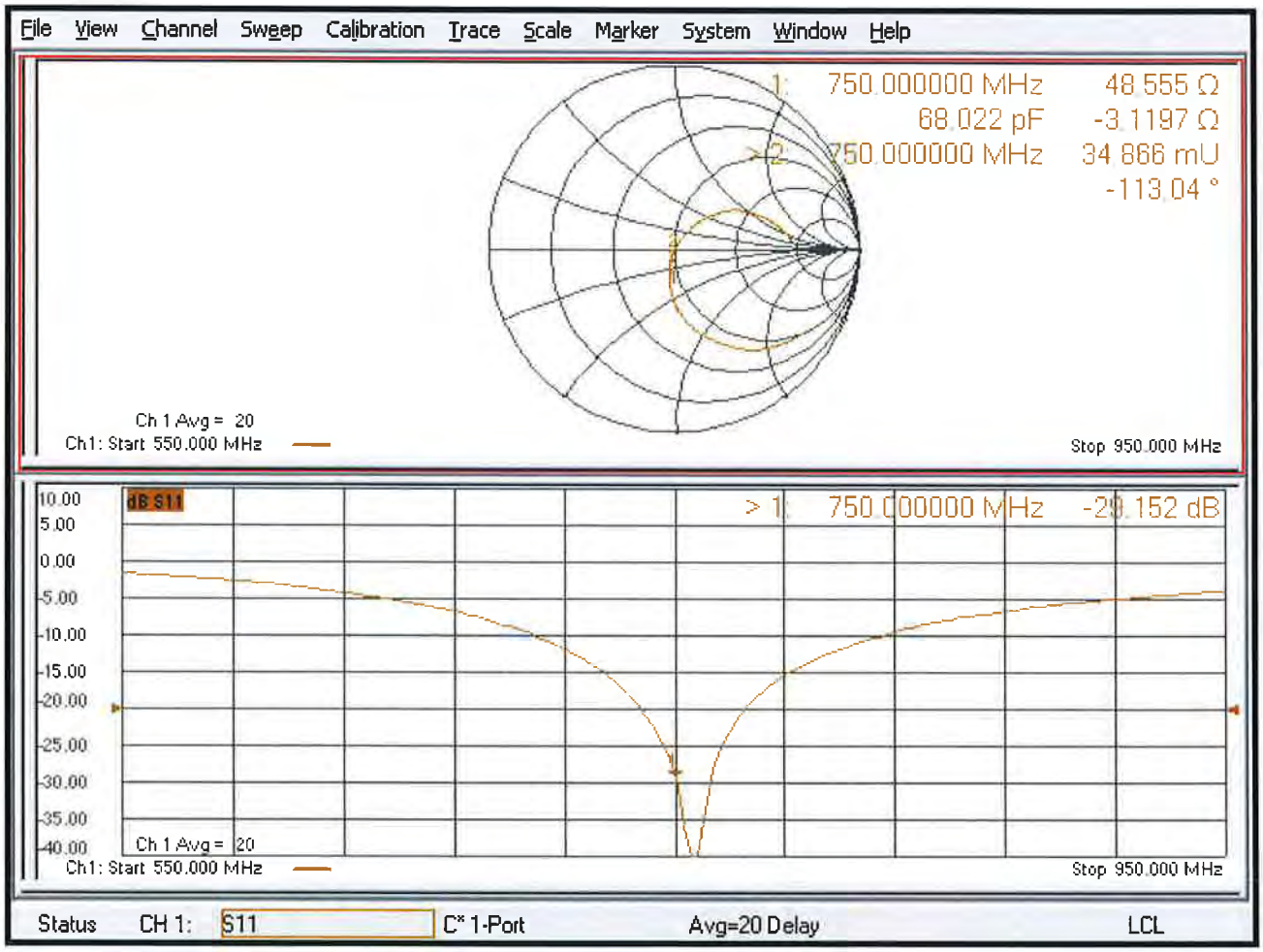
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.93 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 3.18 W/kg
SAR(1 g) = 2.16 W/kg; SAR(10 g) = 1.43 W/kg
Maximum value of SAR (measured) = 2.85 W/kg



0 dB = 2.85 W/kg = 4.55 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client **B.V.ADT (Auden)** **Certificate No: D835V2-4d121_Aug18**

CALIBRATION CERTIFICATE

Object D835V2 - SN:4d121

Calibration procedure(s) QA CAL-05.v10
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: August 23, 2018

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 7349	30-Dec-17 (No. EX3-7349_Dec17)	Dec-18
DAE4	SN: 601	26-Oct-17 (No. DAE4-601_Oct17)	Oct-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-17)	In house check: Oct-18

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 24, 2018

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Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.1
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.7 ± 6 %	0.92 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.41 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.44 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.55 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**6.10 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.9 ± 6 %	0.99 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.45 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**9.64 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.60 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**6.32 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.3 Ω - 2.3 jΩ
Return Loss	- 31.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.2 Ω - 5.4 jΩ
Return Loss	- 24.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.395 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	June 29, 2010

DASY5 Validation Report for Head TSL

Date: 22.08.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d121

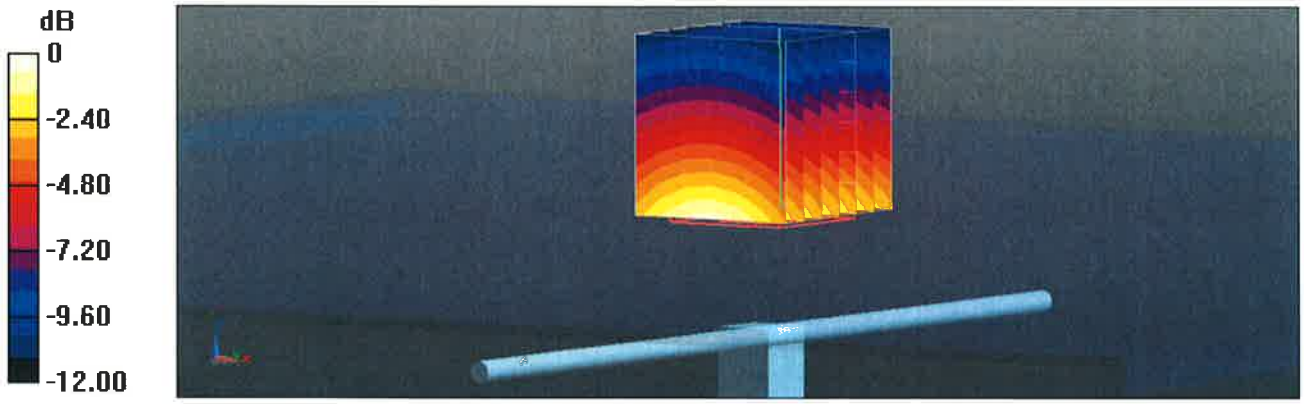
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.92 S/m; ε_r = 40.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.9, 9.9, 9.9) @ 835 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

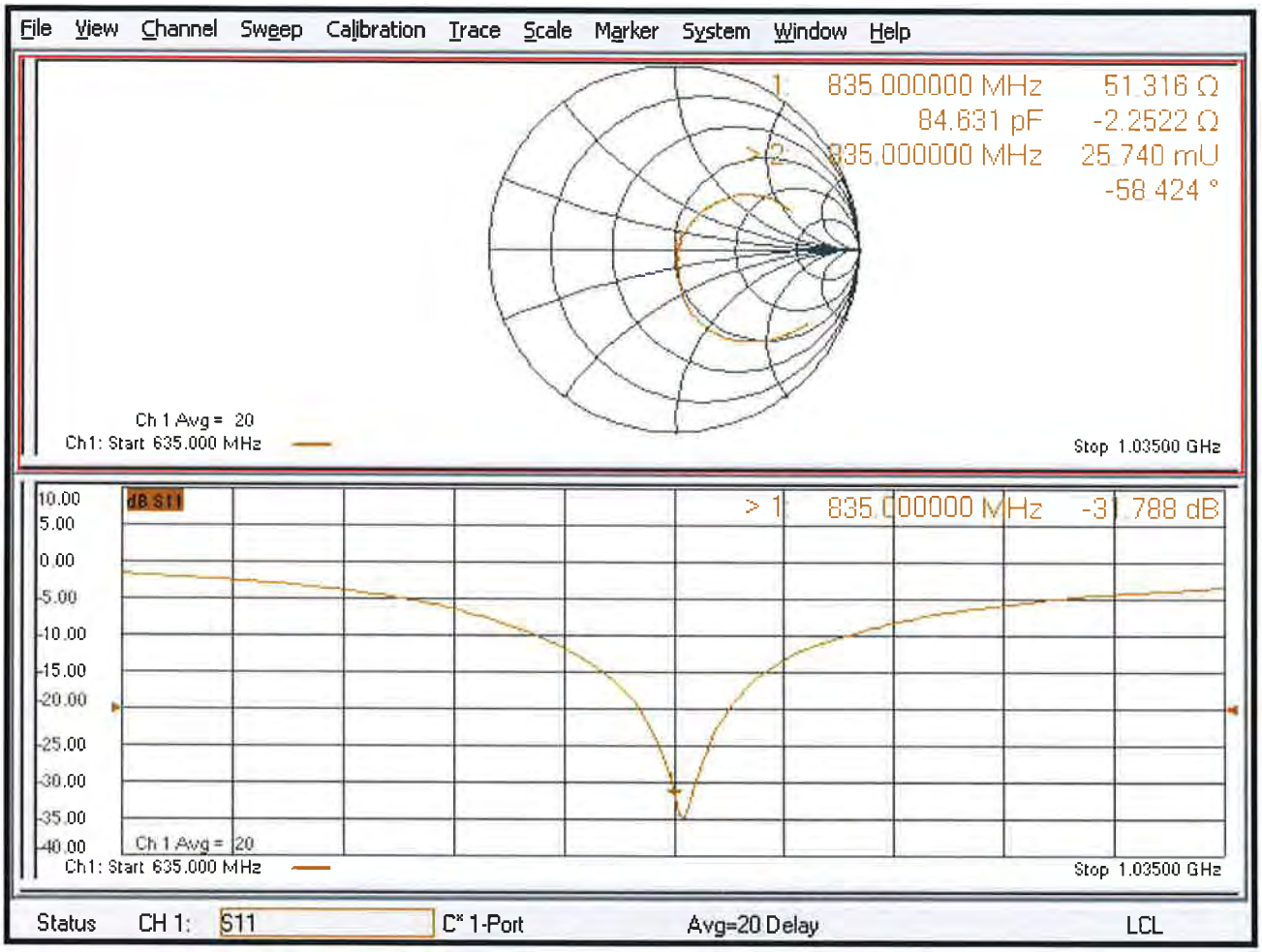
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 63.11 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 3.70 W/kg
SAR(1 g) = 2.41 W/kg; SAR(10 g) = 1.55 W/kg
Maximum value of SAR (measured) = 3.26 W/kg



0 dB = 3.26 W/kg = 5.13 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 23.08.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d121

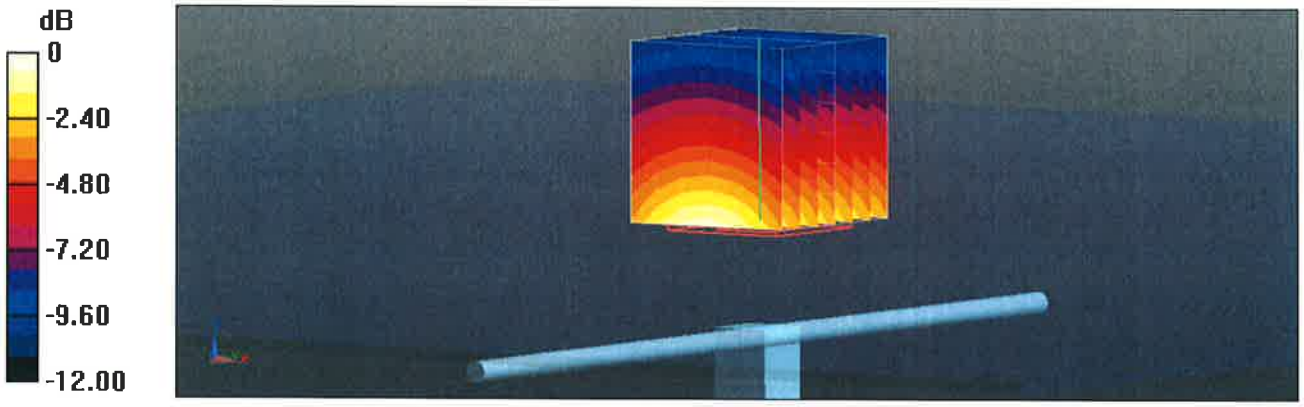
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.99 S/m; ε_r = 54.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.05, 10.05, 10.05) @ 835 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

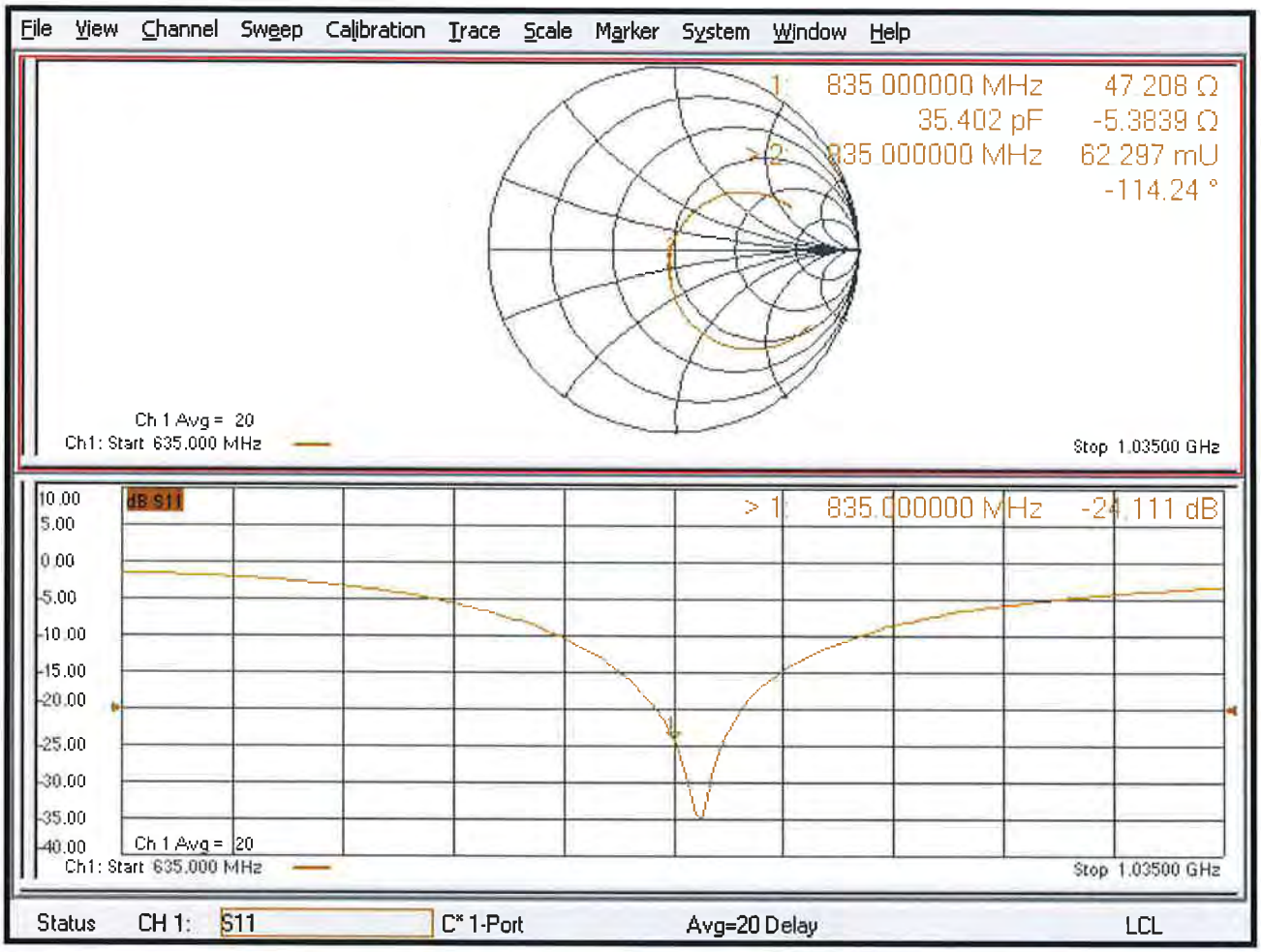
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 61.20 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.64 W/kg
SAR(1 g) = 2.45 W/kg; SAR(10 g) = 1.6 W/kg
Maximum value of SAR (measured) = 3.26 W/kg



0 dB = 3.26 W/kg = 5.13 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client **B.V. ADT (Auden)** **Certificate No: D1750V2-1055_Aug18**

CALIBRATION CERTIFICATE

Object: D1750V2 - SN:1055

Calibration procedure(s): QA CAL-05.v10
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: August 27, 2018

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 7349	30-Dec-17 (No. EX3-7349_Dec17)	Dec-18
DAE4	SN: 601	26-Oct-17 (No. DAE4-601_Oct17)	Oct-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-17)	In house check: Oct-18

	Name	Function	Signature
Calibrated by:	Manu Seitz	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 28, 2018

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Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.1
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.9 ± 6 %	1.34 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.15 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**36.9 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.81 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**19.3 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.4 ± 6 %	1.47 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.15 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**36.9 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	4.89 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**19.7 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.6 Ω + 2.1 jΩ
Return Loss	- 29.9 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.3 Ω + 0.5 jΩ
Return Loss	- 31.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.223 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	February 19, 2010

DASY5 Validation Report for Head TSL

Date: 27.08.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1055

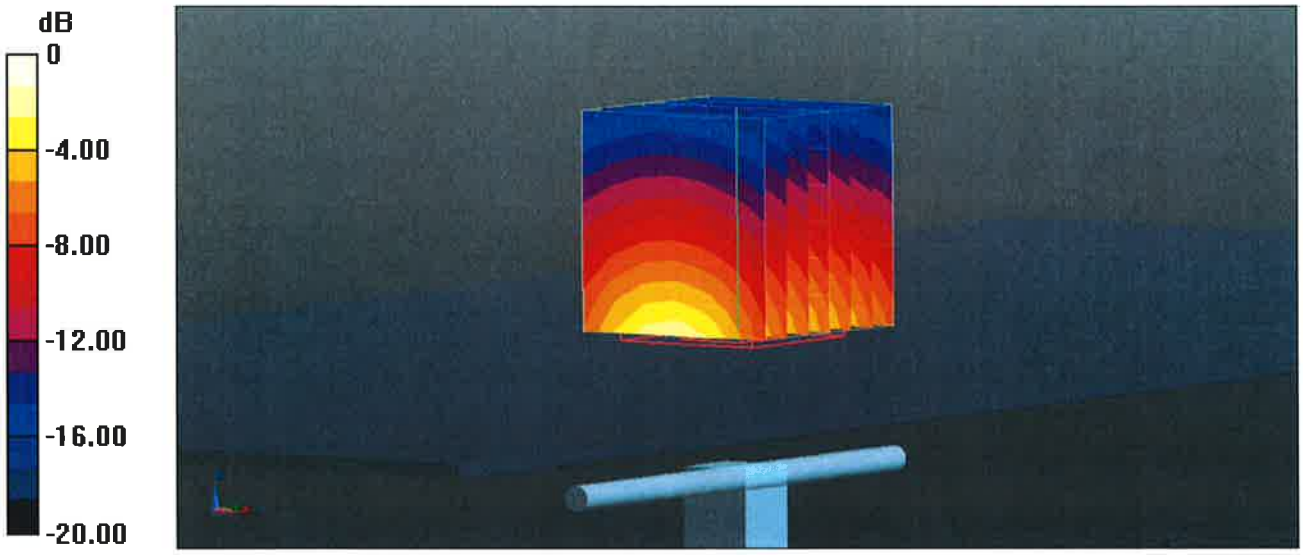
Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.34 S/m; ε_r = 38.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.5, 8.5, 8.5) @ 1750 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

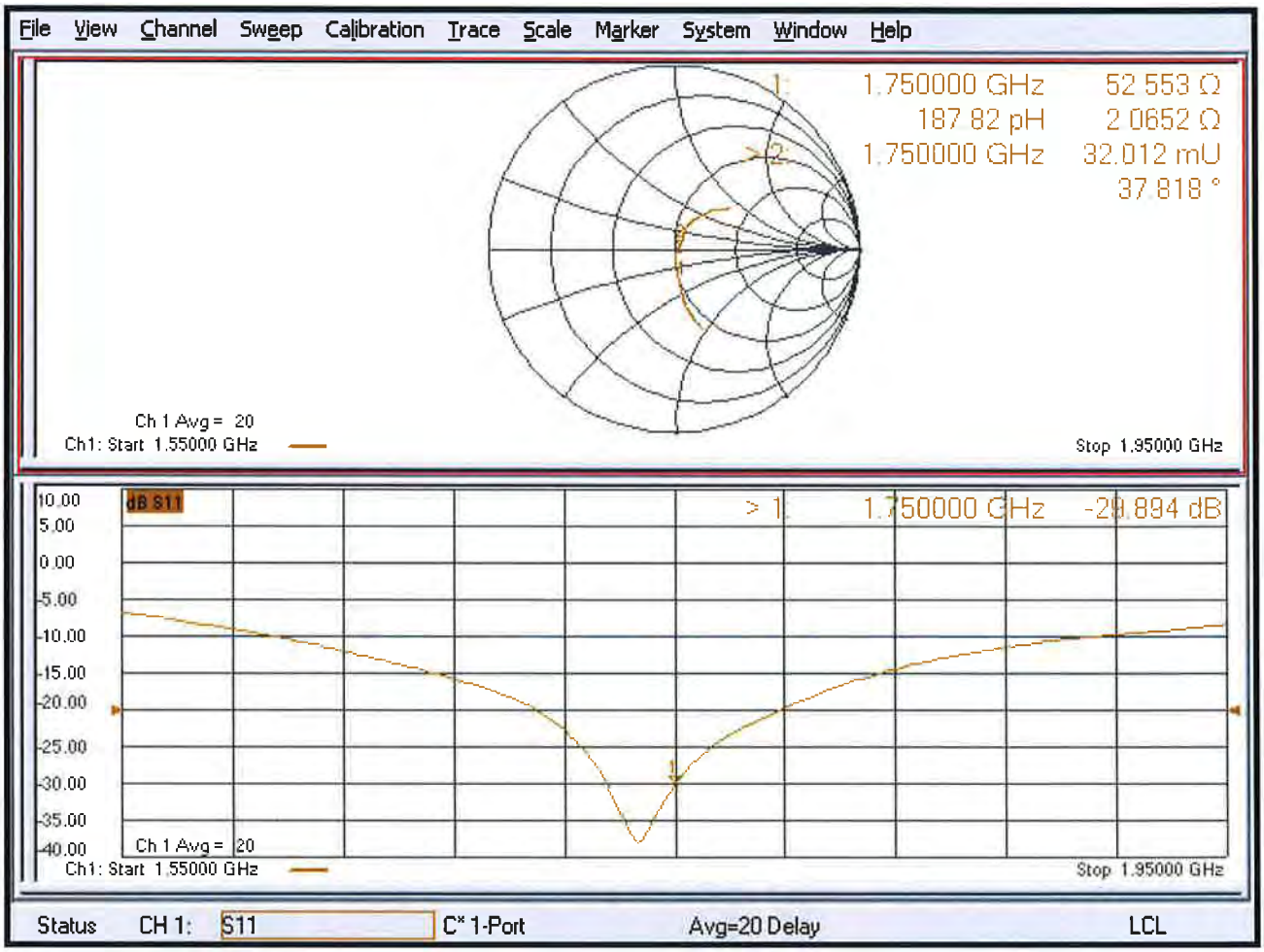
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 107.6 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 16.9 W/kg
SAR(1 g) = 9.15 W/kg; SAR(10 g) = 4.81 W/kg
Maximum value of SAR (measured) = 14.2 W/kg



0 dB = 14.2 W/kg = 11.52 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 27.08.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1055

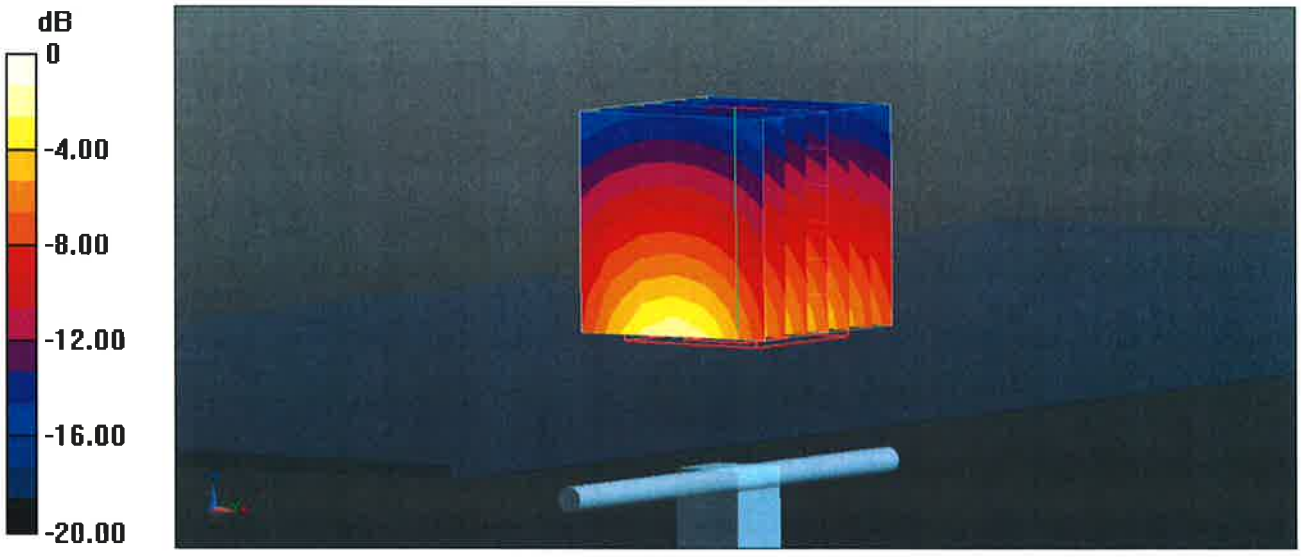
Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.47 S/m; ε_r = 53.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.35, 8.35, 8.35) @ 1750 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 102.2 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 16.1 W/kg
SAR(1 g) = 9.15 W/kg; SAR(10 g) = 4.89 W/kg
Maximum value of SAR (measured) = 13.9 W/kg



0 dB = 13.9 W/kg = 11.43 dBW/kg

Impedance Measurement Plot for Body TSL