14 SAR Test Result

It is determined by user manual for the distance between the EUT and the phantom bottom. The distance is 10mm and just applied to the condition of body worn accessory.

It is performed for all SAR measurements with area scan based 1-g SAR estimation (Fast SAR). A zoom scan measurement is added when the estimated 1-g SAR is the highest measured SAR in each exposure configuration, wireless mode and frequency band combination or more than 1.2W/kg.

The calculated SAR is obtained by the following formula:

$$\text{Reported SAR} = \text{Measured SAR} \times 10^{(P_{Target}-P_{Measured})/10}$$

Where P_{Target} is the power of manufacturing upper limit;
$P_{Measured}$ is the measured power in chapter 11.

Table 14.1: Duty Cycle

Mode	Duty Cycle
Speech for GSM850/1900	1:8.3
GPRS&EGPRS	1:2
WCDMA&LTE&WiFi	1:1

14.1 SAR results for Fast SAR

Table 14.2: SAR Values (GSM 850 MHz Band - Head)

Ambient Temperature: 22.3 °C Liquid Temperature: 21.8 °C											
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
848.8	251	Left	Touch	/	32.75	33.5	0.149	**0.18**	0.213	**0.25**	-0.02
836.6	190	Left	Touch	/	32.61	33.5	0.177	**0.22**	0.253	**0.31**	0.10
824.2	128	Left	Touch	/	32.89	33.5	0.232	**0.27**	0.296	**0.34**	0.09
848.8	251	Left	Tilt	/	32.75	33.5	0.101	**0.12**	0.143	**0.17**	-0.08
836.6	190	Left	Tilt	/	32.61	33.5	0.120	**0.15**	0.169	**0.21**	0.02
824.2	128	Left	Tilt	/	32.89	33.5	0.142	**0.16**	0.200	**0.23**	-0.13
848.8	251	Right	Touch	/	32.75	33.5	0.224	**0.27**	0.299	**0.36**	-0.03
836.6	190	Right	Touch	/	32.61	33.5	0.235	**0.29**	0.345	**0.42**	0.14
824.2	128	Right	Touch	Fig.1	32.89	33.5	0.311	**0.36**	0.406	**0.47**	-0.10
848.8	251	Right	Tilt	/	32.75	33.5	0.112	**0.13**	0.157	**0.19**	0.03
836.6	190	Right	Tilt	/	32.61	33.5	0.131	**0.16**	0.183	**0.22**	-0.02
824.2	128	Right	Tilt	/	32.89	33.5	0.145	**0.17**	0.203	**0.23**	0.05

Table 14.3: SAR Values (GSM 850 MHz Band - Body)

Ambient Temperature: 22.3 °C Liquid Temperature: 21.8 °C											
Frequency		Mode (number of timeslots)	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
848.8	251	GPRS (4)	Front	/	27.98	29.2	0.464	**0.61**	0.702	**0.93**	-0.07
836.6	190	GPRS (4)	Front	/	28.20	29.2	0.450	**0.57**	0.681	**0.86**	-0.04
824.2	128	GPRS (4)	Front	/	28.20	29.2	0.414	**0.52**	0.623	**0.78**	0.05
848.8	251	GPRS (4)	Rear	Fig.2	27.98	29.2	0.681	**0.90**	0.884	**1.17**	0.00
836.6	190	GPRS (4)	Rear	/	28.20	29.2	0.606	**0.76**	0.859	**1.08**	-0.04
824.2	128	GPRS (4)	Rear	/	28.20	29.2	0.554	**0.70**	0.786	**0.99**	-0.02
836.6	190	GPRS (4)	Left	/	28.20	29.2	0.256	**0.32**	0.380	**0.48**	0.18
848.8	251	GPRS (4)	Right	/	27.98	29.2	0.473	**0.63**	0.704	**0.93**	0.03
836.6	190	GPRS (4)	Right	/	28.20	29.2	0.462	**0.58**	0.685	**0.86**	0.01
824.2	128	GPRS (4)	Right	/	28.20	29.2	0.422	**0.53**	0.627	**0.79**	0.04
836.6	190	GPRS (4)	Bottom	/	28.20	29.2	0.185	**0.23**	0.299	**0.38**	0.04
848.8	251	EGPRS (4)	Rear	/	27.92	29.2	0.555	**0.75**	0.819	**1.10**	-0.06
848.8	251	Speech	Rear Headset1	/	32.75	33.5	0.194	**0.23**	0.301	**0.36**	0.08
848.8	251	Speech	Rear Headset2	/	32.75	33.5	0.196	**0.23**	0.303	**0.36**	0.00

Note1: The distance between the EUT and the phantom bottom is 10mm.
Note2: Headset1 is CCB3000A12C1, Headset2 is CCB3000A12C2.

Table 14.4: SAR Values (GSM 1900 MHz Band - Head)

Ambient Temperature: 22.1 °C Liquid Temperature: 21.6 °C											
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1909.8	810	Left	Touch	/	29.38	30.5	0.055	**0.07**	0.093	**0.12**	0.10
1880	661	Left	Touch	/	29.28	30.5	0.056	**0.07**	0.097	**0.13**	0.02
1850.2	512	Left	Touch	/	29.36	30.5	0.060	**0.08**	0.101	**0.13**	0.05
1909.8	810	Left	Tilt	/	29.38	30.5	0.025	**0.03**	0.049	**0.06**	0.12
1880	661	Left	Tilt	/	29.28	30.5	0.028	**0.04**	0.057	**0.07**	0.02
1850.2	512	Left	Tilt	/	29.36	30.5	0.027	**0.04**	0.054	**0.07**	0.11
1909.8	810	Right	Touch	/	29.38	30.5	0.068	**0.09**	0.119	**0.15**	0.03
1880	661	Right	Touch	/	29.28	30.5	0.069	**0.09**	0.118	**0.16**	0.08
1850.2	512	Right	Touch	Fig.3	29.36	30.5	0.086	**0.11**	0.137	**0.18**	0.05
1909.8	810	Right	Tilt	/	29.38	30.5	0.026	**0.03**	0.050	**0.07**	0.06
1880	661	Right	Tilt	/	29.28	30.5	0.025	**0.03**	0.046	**0.06**	0.09
1850.2	512	Right	Tilt	/	29.36	30.5	0.029	**0.04**	0.054	**0.07**	0.13

Table 14.5: SAR Values (GSM 1900 MHz Band - Body)

Ambient Temperature: 22.1 °C Liquid Temperature: 21.6 °C											
Frequency		Mode (number of timeslots)	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1880	661	GPRS (4)	Front	/	24.82	26.5	0.190	**0.28**	0.326	**0.48**	-0.10
1909.8	810	GPRS (4)	Rear	/	24.78	26.5	0.180	**0.27**	0.308	**0.46**	-0.12
1880	661	GPRS (4)	Rear	/	24.82	26.5	0.210	**0.31**	0.356	**0.52**	-0.08
1850.2	512	GPRS (4)	Rear	Fig.4	24.72	26.5	0.354	**0.53**	0.678	**1.02**	-0.12
1880	661	GPRS (4)	Left	/	24.82	26.5	0.061	**0.09**	0.111	**0.16**	-0.13
1880	661	GPRS (4)	Right	/	24.82	26.5	0.042	**0.06**	0.072	**0.11**	-0.12
1880	661	GPRS (4)	Bottom	/	24.82	26.5	0.168	**0.25**	0.327	**0.48**	-0.01
1850.2	512	EGPRS (4)	Rear	/	24.72	26.5	0.351	**0.53**	0.670	**1.01**	-0.05
1850.2	512	Speech	Rear Headset1	/	29.36	30.5	0.320	**0.42**	0.621	**0.81**	0.08
1850.2	512	Speech	Rear Headset2	/	29.36	30.5	0.280	**0.36**	0.549	**0.71**	0.02

Note1: The distance between the EUT and the phantom bottom is 10mm.
Note2: Headset1 is CCB3000A12C1, Headset2 is CCB3000A12C2.

Table 14.6: SAR Values (WCDMA 850 MHz Band - Head)

Ambient Temperature: 22.3 °C Liquid Temperature: 21.8 °C											
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
846.6	4233	Left	Touch	/	22.32	24.0	0.107	**0.16**	0.153	**0.23**	-0.05
836.4	4182	Left	Touch	/	22.47	24.0	0.124	**0.18**	0.177	**0.25**	0.04
826.4	4132	Left	Touch	/	22.49	24.0	0.158	**0.22**	0.204	**0.29**	0.03
846.6	4233	Left	Tilt	/	22.32	24.0	0.070	**0.10**	0.100	**0.15**	0.12
836.4	4182	Left	Tilt	/	22.47	24.0	0.084	**0.12**	0.119	**0.17**	0.06
826.4	4132	Left	Tilt	/	22.49	24.0	0.097	**0.14**	0.137	**0.19**	-0.03
846.6	4233	Right	Touch	/	22.32	24.0	0.148	**0.22**	0.215	**0.32**	0.07
836.4	4182	Right	Touch	/	22.47	24.0	0.166	**0.24**	0.241	**0.34**	0.05
826.4	4132	Right	Touch	Fig.5	22.49	24.0	0.208	**0.29**	0.268	**0.38**	0.10
846.6	4233	Right	Tilt	/	22.32	24.0	0.080	**0.12**	0.113	**0.17**	0.11
836.4	4182	Right	Tilt	/	22.47	24.0	0.094	**0.13**	0.132	**0.19**	0.09
826.4	4132	Right	Tilt	/	22.49	24.0	0.112	**0.16**	0.163	**0.23**	0.01

Table 14.7: SAR Values (WCDMA 850 MHz Band - Body)

Ambient Temperature: 22.3 °C					Liquid Temperature: 21.8 °C					
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.									
836.4	4182	Front	/	22.47	24.0	0.212	**0.30**	0.298	**0.42**	-0.03
846.6	4233	Rear	/	22.32	24.0	0.275	**0.40**	0.391	**0.58**	-0.05
836.4	4182	Rear	/	22.47	24.0	0.303	**0.43**	0.430	**0.61**	-0.04
826.4	4132	Rear	Fig.6	22.49	24.0	0.358	**0.51**	0.465	**0.66**	0.14
836.4	4182	Left	/	22.47	24.0	0.130	**0.18**	0.193	**0.27**	0.07
836.4	4182	Right	/	22.47	24.0	0.225	**0.32**	0.333	**0.47**	-0.13
836.4	4182	Bottom	/	22.47	24.0	0.081	**0.11**	0.130	**0.18**	0.06
826.4	4132	Rear Headset1	/	22.49	24.0	0.225	**0.32**	0.333	**0.47**	-0.13
826.4	4132	Rear Headset2	/	22.49	24.0	0.300	**0.42**	0.426	**0.60**	0.03

Note1: The distance between the EUT and the phantom bottom is 10mm.

Note2: Headset1 is CCB3000A12C1, Headset2 is CCB3000A12C2.

Table 14.8: SAR Values (WCDMA 1900 MHz Band - Head)

Ambient Temperature: 22.1 °C						Liquid Temperature: 21.6 °C					
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1907.6	9538	Left	Touch	/	22.36	24.0	0.094	**0.14**	0.162	**0.24**	0.03
1880	9400	Left	Touch	/	22.39	24.0	0.113	**0.16**	0.184	**0.27**	0.09
1852.4	9262	Left	Touch	/	22.21	24.0	0.095	**0.14**	0.161	**0.24**	0.04
1907.6	9538	Left	Tilt	/	22.36	24.0	0.049	**0.07**	0.091	**0.13**	0.13
1880	9400	Left	Tilt	/	22.39	24.0	0.047	**0.07**	0.087	**0.13**	0.11
1852.4	9262	Left	Tilt	/	22.21	24.0	0.046	**0.07**	0.084	**0.13**	0.02
1907.6	9538	Right	Touch	/	22.36	24.0	0.129	**0.19**	0.222	**0.32**	0.13
1880	9400	Right	Touch	Fig.7	22.39	24.0	0.154	**0.22**	0.246	**0.36**	0.06
1852.4	9262	Right	Touch	/	22.21	24.0	0.130	**0.20**	0.221	**0.33**	0.03
1907.6	9538	Right	Tilt	/	22.36	24.0	0.056	**0.08**	0.104	**0.15**	0.11
1880	9400	Right	Tilt	/	22.39	24.0	0.057	**0.08**	0.106	**0.15**	0.08
1852.4	9262	Right	Tilt	/	22.21	24.0	0.058	**0.09**	0.107	**0.16**	0.05

Table 14.9: SAR Values (WCDMA 1900 MHz Band - Body)

Ambient Temperature: 22.1 °C		Liquid Temperature: 21.6 °C								
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.									
1907.6	9538	Front	/	22.36	24.0	0.275	**0.40**	0.468	**0.68**	-0.08
1880	9400	Front	/	22.39	24.0	0.336	**0.49**	0.571	**0.83**	-0.10
1852.4	9262	Front	/	22.21	24.0	0.265	**0.40**	0.451	**0.68**	0.04
1907.6	9538	Rear	/	22.36	24.0	0.319	**0.47**	0.584	**0.85**	-0.03
1880	9400	Rear	Fig.8	22.39	24.0	0.384	**0.56**	0.713	**1.03**	-0.01
1852.4	9262	Rear	/	22.21	24.0	0.312	**0.47**	0.563	**0.85**	0.07
1880	9400	Left	/	22.39	24.0	0.113	**0.16**	0.209	**0.30**	-0.07
1880	9400	Right	/	22.39	24.0	0.081	**0.12**	0.137	**0.20**	-0.03
1880	9400	Bottom	/	22.39	24.0	0.254	**0.37**	0.509	**0.74**	0.10
1880	9400	Rear Headset1	/	22.39	24.0	0.361	**0.52**	0.664	**0.96**	-0.03
1880	9400	Rear Headset2	/	22.39	24.0	0.354	**0.51**	0.648	**0.94**	-0.07

Note1: The distance between the EUT and the phantom bottom is 10mm.

Note2: Headset1 is CCB3000A12C1, Headset2 is CCB3000A12C2.

Table 14.10: SAR Values (LTE Band2 - Head)

Ambient Temperature: 22.1 °C		Liquid Temperature: 21.6 °C										
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.											
1860	18700	1RB_Low	Left	Touch	/	22.88	24.0	0.108	**0.14**	0.174	**0.23**	-0.16
1860	18700	1RB_Low	Left	Tilt	/	22.88	24.0	0.083	**0.11**	0.156	**0.20**	0.03
1860	18700	1RB_Low	Right	Touch	Fig.9	22.88	24.0	0.191	**0.25**	0.308	**0.40**	-0.10
1860	18700	1RB_Low	Right	Tilt	/	22.88	24.0	0.084	**0.11**	0.155	**0.20**	0.19
1860	18700	50RB_Low	Left	Touch	/	21.84	23.0	0.077	**0.10**	0.132	**0.17**	0.14
1860	18700	50RB_Low	Left	Tilt	/	21.84	23.0	0.059	**0.08**	0.102	**0.13**	0.15
1860	18700	50RB_Low	Right	Touch	/	21.84	23.0	0.132	**0.17**	0.230	**0.30**	0.16
1860	18700	50RB_Low	Right	Tilt	/	21.84	23.0	0.067	**0.09**	0.123	**0.16**	0.14

Note1: The LTE mode is QPSK_20MHz.

Table 14.11: SAR Values (LTE Band2 - Body)

Ambient Temperature: 22.1 °C Liquid Temperature: 21.6 °C											
Frequency		Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1860	18700	1RB_Low	Front	/	22.88	24.0	0.342	**0.44**	0.582	**0.75**	-0.04
1900	19100	1RB_Low	Rear	/	22.68	24.0	0.366	**0.50**	0.653	**0.88**	0.12
1880	18900	1RB_Low	Rear	/	22.86	24.0	0.416	**0.54**	0.731	**0.95**	0.05
1860	18700	1RB_Low	Rear	Fig.10	22.88	24.0	0.495	**0.64**	0.914	**1.18**	0.11
1860	18700	1RB_Low	Left	/	22.88	24.0	0.115	**0.15**	0.207	**0.27**	0.07
1860	18700	1RB_Low	Right	/	22.88	24.0	0.089	**0.12**	0.151	**0.20**	0.02
1860	18700	1RB_Low	Bottom	/	22.88	24.0	0.310	**0.40**	0.574	**0.74**	-0.06
1860	18700	50RB_Low	Front	/	21.84	23.0	0.275	**0.36**	0.471	**0.62**	-0.11
1900	19100	50RB_Low	Rear	/	21.76	23.0	0.296	**0.39**	0.523	**0.70**	0.04
1880	18900	50RB_Low	Rear	/	21.73	23.0	0.330	**0.44**	0.583	**0.78**	0.07
1860	18700	50RB_Low	Rear	/	21.84	23.0	0.416	**0.54**	0.731	**0.95**	0.06
1860	18700	50RB_Low	Left	/	21.84	23.0	0.095	**0.12**	0.171	**0.22**	-0.13
1860	18700	50RB_Low	Right	/	21.84	23.0	0.074	**0.10**	0.127	**0.17**	0.05
1860	18700	50RB_Low	Bottom	/	21.84	23.0	0.225	**0.29**	0.436	**0.57**	-0.04
1860	18700	100RB	Rear	/	21.79	23.0	0.355	**0.47**	0.611	**0.81**	-0.06

Note1: The distance between the EUT and the phantom bottom is 10mm.
Note2: The LTE mode is QPSK_20MHz.

Table 14.12: SAR Values (LTE Band4 - Head)

Ambient Temperature: 22.3 °C Liquid Temperature: 21.8 °C												
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.											
1720	20050	1RB_Low	Left	Touch	Fig.11	23.25	24.0	0.231	**0.27**	0.358	**0.43**	0.10
1720	20050	1RB_Low	Left	Tilt	/	23.25	24.0	0.113	**0.13**	0.202	**0.24**	0.03
1720	20050	1RB_Low	Right	Touch	/	23.25	24.0	0.177	**0.21**	0.290	**0.34**	0.07
1720	20050	1RB_Low	Right	Tilt	/	23.25	24.0	0.132	**0.16**	0.240	**0.29**	0.03
1720	20050	50RB_Low	Left	Touch	/	22.00	23.0	0.149	**0.19**	0.245	**0.31**	0.09
1720	20050	50RB_Low	Left	Tilt	/	22.00	23.0	0.085	**0.11**	0.152	**0.19**	0.09
1720	20050	50RB_Low	Right	Touch	/	22.00	23.0	0.135	**0.17**	0.221	**0.28**	0.14
1720	20050	50RB_Low	Right	Tilt	/	22.00	23.0	0.099	**0.12**	0.181	**0.23**	0.10

Note1: The LTE mode is QPSK_20MHz.

Table 14.13: SAR Values (LTE Band4 - Body)

Ambient Temperature: 22.3 °C Liquid Temperature: 21.8 °C											
Frequency		Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1745	20300	1RB_Low	Front	/	23.13	24.0	0.516	**0.63**	0.854	**1.04**	0.10
1732.5	20175	1RB_Low	Front	/	22.95	24.0	0.509	**0.65**	0.837	**1.07**	0.03
1720	20050	1RB_Low	Front	/	23.25	24.0	0.502	**0.60**	0.872	**1.04**	0.03
1745	20300	1RB_Low	Rear	/	23.13	24.0	0.649	**0.79**	1.06	**1.30**	0.01
1732.5	20175	1RB_Low	Rear	/	22.95	24.0	0.621	**0.79**	1.02	**1.30**	0.15
1720	20050	1RB_Low	Rear	Fig.12	23.25	24.0	0.651	**0.77**	1.09	**1.30**	0.10
1745	20300	1RB_Low	Left	/	23.25	24.0	0.245	**0.29**	0.417	**0.50**	-0.07
1745	20300	1RB_Low	Right	/	23.25	24.0	0.098	**0.12**	0.162	**0.19**	-0.09
1745	20300	1RB_Low	Bottom	/	23.13	24.0	0.352	**0.43**	0.635	**0.78**	0.10
1732.5	20175	1RB_Low	Bottom	/	22.95	24.0	0.331	**0.42**	0.583	**0.74**	0.06
1720	20050	1RB_Low	Bottom	/	23.25	24.0	0.392	**0.47**	0.732	**0.87**	0.09
1745	20300	50RB_Low	Front	/	21.93	23.0	0.369	**0.47**	0.653	**0.84**	-0.10
1732.5	20175	50RB_Low	Front	/	21.95	23.0	0.388	**0.49**	0.646	**0.82**	-0.07
1720	20050	50RB_Low	Front	/	22.00	23.0	0.402	**0.51**	0.661	**0.83**	0.04
1745	20300	50RB_Low	Rear	/	21.93	23.0	0.419	**0.54**	0.734	**0.94**	-0.09
1732.5	20175	50RB_Low	Rear	/	21.95	23.0	0.417	**0.53**	0.730	**0.93**	-0.10
1720	20050	50RB_Low	Rear	/	22.00	23.0	0.426	**0.54**	0.745	**0.94**	-0.12
1720	20050	50RB_Low	Left	/	22.00	23.0	0.119	**0.15**	0.205	**0.26**	0.07
1720	20050	50RB_Low	Right	/	22.00	23.0	0.079	**0.10**	0.131	**0.16**	0.16
1720	20050	50RB_Low	Bottom	/	22.00	23.0	0.276	**0.35**	0.490	**0.62**	0.15
1745	20300	100RB	Front	/	21.97	23.0	0.346	**0.44**	0.607	**0.77**	0.04
1745	20300	100RB	Rear	/	21.97	23.0	0.420	**0.53**	0.736	**0.93**	-0.08
1745	20300	100RB	Bottom	/	21.97	23.0	0.243	**0.31**	0.425	**0.54**	0.02

Note1: The distance between the EUT and the phantom bottom is 10mm.

Note2: The LTE mode is QPSK_20MHz.

Table 14.14: SAR Values (LTE Band7 - Head)

Ambient Temperature: 22.2 °C Liquid Temperature: 21.7 °C												
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.											
2510	20850	1RB_Low	Left	Touch	Fig.13	21.67	22.3	0.185	**0.21**	0.342	**0.40**	0.08
2510	20850	1RB_Low	Left	Tilt	/	21.67	22.3	0.050	**0.06**	0.096	**0.11**	0.08
2510	20850	1RB_Low	Right	Touch	/	21.67	22.3	0.113	**0.13**	0.209	**0.24**	0.10
2510	20850	1RB_Low	Right	Tilt	/	21.67	22.3	0.077	**0.09**	0.152	**0.18**	0.01
2560	21350	50RB_Low	Left	Touch	/	20.27	21.3	0.176	**0.22**	0.318	**0.40**	0.03
2560	21350	50RB_Low	Left	Tilt	/	20.27	21.3	0.046	**0.06**	0.084	**0.11**	0.07
2560	21350	50RB_Low	Right	Touch	/	20.27	21.3	0.097	**0.12**	0.180	**0.23**	0.06
2560	21350	50RB_Low	Right	Tilt	/	20.27	21.3	0.063	**0.08**	0.122	**0.15**	0.04

Note1: The LTE mode is QPSK_20MHz.

Table 14.15: SAR Values (LTE Band7 - Body)

Ambient Temperature: 22.2 °C Liquid Temperature: 21.7 °C												
Frequency		Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)	
MHz	Ch.											
2510	20850	1RB_Low	Front	/	21.67	22.3	0.250	**0.29**	0.480	**0.55**	0.17	
2560	21350	1RB_Low	Rear	/	21.31	22.3	0.380	**0.48**	0.744	**0.93**	-0.08	
2535	21100	1RB_Low	Rear	/	21.56	22.3	0.441	**0.52**	0.864	**1.02**	-0.07	
2510	20850	1RB_Low	Rear	/	21.67	22.3	0.481	**0.56**	0.924	**1.07**	0.08	
2510	20850	1RB_Low	Left	/	21.67	22.3	0.122	**0.14**	0.232	**0.27**	0.08	
2510	20850	1RB_Low	Right	/	21.67	22.3	0.033	**0.04**	0.057	**0.07**	0.11	
2560	21350	1RB_Low	Bottom	/	21.31	22.3	0.446	**0.56**	0.932	**1.17**	-0.03	
2535	21100	1RB_Low	Bottom	/	21.56	22.3	0.436	**0.52**	0.887	**1.05**	0.08	
2510	20850	1RB_Low	Bottom	Fig.14	21.67	22.3	0.572	**0.66**	1.12	**1.29**	0.03	
2560	21350	50RB_Low	Front	/	20.27	21.3	0.226	**0.29**	0.403	**0.51**	-0.07	
2560	21350	50RB_Low	Rear	/	20.27	21.3	0.282	**0.36**	0.550	**0.70**	0.09	
2560	21350	50RB_Low	Left	/	20.27	21.3	0.106	**0.13**	0.197	**0.25**	0.02	
2560	21350	50RB_Low	Right	/	20.27	21.3	0.036	**0.05**	0.063	**0.08**	-0.11	
2560	21350	50RB_Low	Bottom	/	20.27	21.3	0.301	**0.38**	0.627	**0.79**	-0.10	
2510	20850	100RB	Rear	/	20.20	21.3	0.335	**0.43**	0.675	**0.87**	0.08	
2510	20850	100RB	Bottom	/	20.20	21.3	0.404	**0.52**	0.814	**1.05**	0.05	

Note1: The distance between the EUT and the phantom bottom is 10mm.

Note2: The LTE mode is QPSK_20MHz.

Table 14.16: SAR Values (Wi-Fi 802.11b - Head)

Ambient Temperature: 22.5 °C Liquid Temperature: 22.0 °C											
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
2437	6	Left	Touch	/	18.41	18.5	0.145	**0.15**	0.262	**0.27**	0.17
2437	6	Left	Tilt	/	18.41	18.5	0.114	**0.12**	0.227	**0.23**	0.11
2437	6	Right	Touch	Fig.15	18.41	18.5	0.152	**0.16**	0.287	**0.29**	-0.06
2437	6	Right	Tilt	/	18.41	18.5	0.140	**0.14**	0.257	**0.26**	0.08

Table 14.17: SAR Values (Wi-Fi 802.11b - Body)

Ambient Temperature: 22.5 °C Liquid Temperature: 22.0 °C										
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.									
2437	6	Front	/	18.41	18.5	0.067	**0.07**	0.123	**0.13**	0.13
2437	6	Rear	Fig.16	18.41	18.5	0.119	**0.12**	0.255	**0.26**	0.16
2437	6	Right	/	18.41	18.5	0.027	**0.03**	0.053	**0.05**	0.02
2437	6	Top	/	18.41	18.5	0.083	**0.08**	0.182	**0.19**	-0.17

Note1: The distance between the EUT and the phantom bottom is 10mm.

14.2 SAR results for Standard procedure

There is zoom scan measurement to be added for the highest measured SAR in each exposure configuration/band.

Table 14.18: SAR Values (GSM 850 MHz Band - Head)

Ambient Temperature: 22.3 °C Liquid Temperature: 21.8 °C											
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
824.2	128	Right	Touch	Fig.1	32.89	33.5	0.311	**0.36**	0.406	**0.47**	-0.10

Table 14.19: SAR Values (GSM 850 MHz Band - Body)

Ambient Temperature: 22.3 °C Liquid Temperature: 21.8 °C											
Frequency		Mode (number of timeslots)	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
848.8	251	GPRS (4)	Rear	Fig.2	27.98	29.2	0.681	**0.90**	0.884	**1.17**	0.00

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.20: SAR Values (GSM 1900 MHz Band - Head)

Ambient Temperature: 22.1 °C Liquid Temperature: 21.6 °C											
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1850.2	512	Right	Touch	Fig.3	29.36	30.5	0.086	**0.11**	0.137	**0.18**	0.05

Table 14.21: SAR Values (GSM 1900 MHz Band - Body)

Ambient Temperature: 22.1 °C Liquid Temperature: 21.6 °C											
Frequency		Mode (number of timeslots)	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1850.2	512	GPRS (4)	Rear	Fig.4	24.72	26.5	0.354	**0.53**	0.678	**1.02**	-0.12

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.22: SAR Values (WCDMA 850 MHz Band - Head)

Ambient Temperature: 22.3 °C Liquid Temperature: 21.8 °C											
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
826.4	4132	Right	Touch	Fig.5	22.49	24.0	0.208	**0.29**	0.268	**0.38**	0.10

Table 14.23: SAR Values (WCDMA 850 MHz Band - Body)

Ambient Temperature: 22.3 °C Liquid Temperature: 21.8 °C										
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.									
826.4	4132	Rear	Fig.6	22.49	24.0	0.358	**0.51**	0.465	**0.66**	0.14

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.24: SAR Values (WCDMA 1900 MHz Band - Head)

Ambient Temperature: 22.1 °C Liquid Temperature: 21.6 °C											
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1880	9400	Right	Touch	Fig.7	22.39	24.0	0.154	**0.22**	0.246	**0.36**	0.06

Table 14.25: SAR Values (WCDMA 1900 MHz Band - Body)

Ambient Temperature: 22.1 °C Liquid Temperature: 21.6 °C										
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.									
1880	9400	Rear	Fig.8	22.39	24.0	0.384	**0.56**	0.713	**1.03**	-0.01

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.26: SAR Values (LTE Band2 - Head)

Ambient Temperature: 22.1 °C Liquid Temperature: 21.6 °C												
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.											
1860	18700	1RB_Low	Right	Touch	Fig.9	22.88	24.0	0.191	**0.25**	0.308	**0.40**	-0.10

Note1: The LTE mode is QPSK_20MHz.

Table 14.27: SAR Values (LTE Band2 - Body)

Ambient Temperature: 22.1 °C Liquid Temperature: 21.6 °C											
Frequency		Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1860	18700	1RB_Low	Rear	Fig.10	22.88	24.0	0.495	**0.64**	0.914	**1.18**	0.11

Note1: The distance between the EUT and the phantom bottom is 10mm.

Note2: The LTE mode is QPSK_20MHz.

Table 14.28: SAR Values (LTE Band4 - Head)

Ambient Temperature: 22.3 °C Liquid Temperature: 21.8 °C												
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.											
1720	20050	1RB_Low	Left	Touch	Fig.11	23.25	24.0	0.231	**0.27**	0.358	**0.43**	0.10

Note1: The LTE mode is QPSK_20MHz.

Table 14.29: SAR Values (LTE Band4 - Body)

Ambient Temperature: 22.3 °C Liquid Temperature: 21.8 °C											
Frequency		Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1720	20050	1RB_Low	Rear	Fig.12	23.25	24.0	0.651	**0.77**	1.09	**1.30**	0.10

Note1: The distance between the EUT and the phantom bottom is 10mm.
Note2: The LTE mode is QPSK_20MHz.

Table 14.30: SAR Values (LTE Band7 - Head)

Ambient Temperature: 22.2 °C Liquid Temperature: 21.7 °C												
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.											
2510	20850	1RB_Low	Left	Touch	Fig.13	21.67	22.3	0.185	**0.21**	0.342	**0.40**	0.08

Note1: The LTE mode is QPSK_20MHz.

Table 14.31: SAR Values (LTE Band7 - Body)

Ambient Temperature: 22.2 °C Liquid Temperature: 21.7 °C											
Frequency		Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
2510	20850	1RB_Low	Bottom	Fig.14	21.67	22.3	0.572	**0.66**	1.12	**1.29**	0.03

Note1: The distance between the EUT and the phantom bottom is 10mm.
Note2: The LTE mode is QPSK_20MHz.

Table 14.32: SAR Values (Wi-Fi 802.11b - Head)

Ambient Temperature: 22.5 °C Liquid Temperature: 22.0 °C											
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
2437	6	Right	Touch	Fig.15	18.41	18.5	0.152	**0.16**	0.287	**0.29**	-0.06

Table 14.33: SAR Values (Wi-Fi 802.11b - Body)

Ambient Temperature: 22.5 °C Liquid Temperature: 22.0 °C										
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.									
2437	6	Rear	Fig.16	18.41	18.5	0.119	**0.12**	0.255	**0.26**	0.16

Note1: The distance between the EUT and the phantom bottom is 10mm.

15 SAR Measurement Variability

SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium.

The following procedures are applied to determine if repeated measurements are required.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.

2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.

3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).

4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Table 15.1: SAR Measurement Variability for Body GSM850 (1g)

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
MHz	Ch.						
848.8	251	Rear	10	0.884	0.878	1.01	/

Table 15.2: SAR Measurement Variability for Body LTE Band 2 (1g)

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
MHz	Ch.						
1860	18700	Rear	10	0.914	0.909	1.01	/

Table 15.3: SAR Measurement Variability for Body LTE Band 4 (1g)

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
MHz	Ch.						
1720	20050	Rear	10	1.09	1.06	1.03	/

Table 15.4: SAR Measurement Variability for Body LTE Band 7 (1g)

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
MHz	Ch.						
2510	20850	Bottom	10	1.12	1.09	1.03	/

16 Measurement Uncertainty

16.1 Measurement Uncertainty for Normal SAR Tests (300MHz~3GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	5.5	N	1	1	1	5.5	5.5	∞
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RF ambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. restrictions	B	0.4	R	$\sqrt{3}$	1	1	0.2	0.2	∞
12	Probe positioning with respect to phantom shell	B	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Test sample related										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
15	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
16	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
17	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
20	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
21	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521

Combined standard uncertainty	$u_c' = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$					9.25	9.12	257
Expanded uncertainty (confidence interval of 95 %)	$u_e = 2u_c$					18.5	18.2	

16.2 Measurement Uncertainty for Normal SAR Tests (3~6GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	6.5	N	1	1	1	6.5	6.5	∞
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	2.0	R	$\sqrt{3}$	1	1	1.2	1.2	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RF ambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. restrictions	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
12	Probe positioning with respect to phantom shell	B	6.7	R	$\sqrt{3}$	1	1	3.9	3.9	∞
13	Post-processing	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
Test sample related										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
15	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
16	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
17	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43

20	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
21	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
Combined standard uncertainty		$u_c' = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$						10.8	10.7	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						21.6	21.4	

16.3 Measurement Uncertainty for Fast SAR Tests (300MHz~3GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	5.5	N	1	1	1	5.5	5.5	∞
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RF ambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. Restrictions	B	0.4	R	$\sqrt{3}$	1	1	0.2	0.2	∞
12	Probe positioning with respect to phantom shell	B	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
14	Fast SAR z-Approximation	B	7.0	R	$\sqrt{3}$	1	1	4.0	4.0	∞
Test sample related										
15	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
16	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
17	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞

Phantom and set-up										
18	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
19	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
20	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
21	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
22	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
Combined standard uncertainty		$u_c' = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						10.1	9.95	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						20.2	19.9	

16.4 Measurement Uncertainty for Fast SAR Tests (3~6GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	6.5	N	1	1	1	6.5	6.5	∞
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	2.0	R	$\sqrt{3}$	1	1	1.2	1.2	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RF ambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. Restrictions	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
12	Probe positioning with respect to phantom shell	B	6.7	R	$\sqrt{3}$	1	1	3.9	3.9	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
14	Fast SAR z-Approximation	B	14.0	R	$\sqrt{3}$	1	1	8.1	8.1	∞
Test sample related										

15	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
16	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
17	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
18	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
19	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
20	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
21	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
22	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						13.3	13.2	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						26.6	26.4	

17 MAIN TEST INSTRUMENTS

Table 17.1: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	E5071C	MY46110673	February 15,2014	One year
02	Power meter	NRVD	102196	March 15,2014	One year
03	Power sensor	NRV-Z5	100596		
04	Signal Generator	E4438C	MY49071430	February 08, 2014	One Year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	BTS	E5515C	MY50263375	January 30, 2014	One year
07	BTS	CMW500	129942	March 11, 2014	One year
08	E-field Probe	SPEAG EX3DV4	3846	September 24, 2014	One year
09	DAE	SPEAG DAE4	777	September 17, 2014	One year
10	Dipole Validation Kit	SPEAG D835V2	4d069	August 28, 2014	One year
11	Dipole Validation Kit	SPEAG D1750V2	1003	August 18, 2014	One year
12	Dipole Validation Kit	SPEAG D1900V2	5d101	July 23, 2014	One year
13	Dipole Validation Kit	SPEAG D2450V2	853	July 24, 2014	One year
14	Dipole Validation Kit	SPEAG D2600V2	1012	July 16, 2014	One year

END OF REPORT BODY

ANNEX A Graph Results

850 Low Cheek Low

Date: 2015-1-12
Electronics: DAE4 Sn777
Medium: Head 850 MHz
Medium parameters used: f = 825 MHz; σ = 0.908 mho/m; εr = 42.434; ρ = 1000 kg/m^3
Ambient Temperature: 22.3^{o}C Liquid Temperature: 21.8^{o}C
Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3
Probe: EX3DV4 - SN3846 ConvF(9.18, 9.18, 9.18)

Cheek Low/Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.465 W/kg

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.314 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.518 W/kg
SAR(1 g) = 0.406 W/kg; SAR(10 g) = 0.311 W/kg
Maximum value of SAR (measured) = 0.423 W/kg

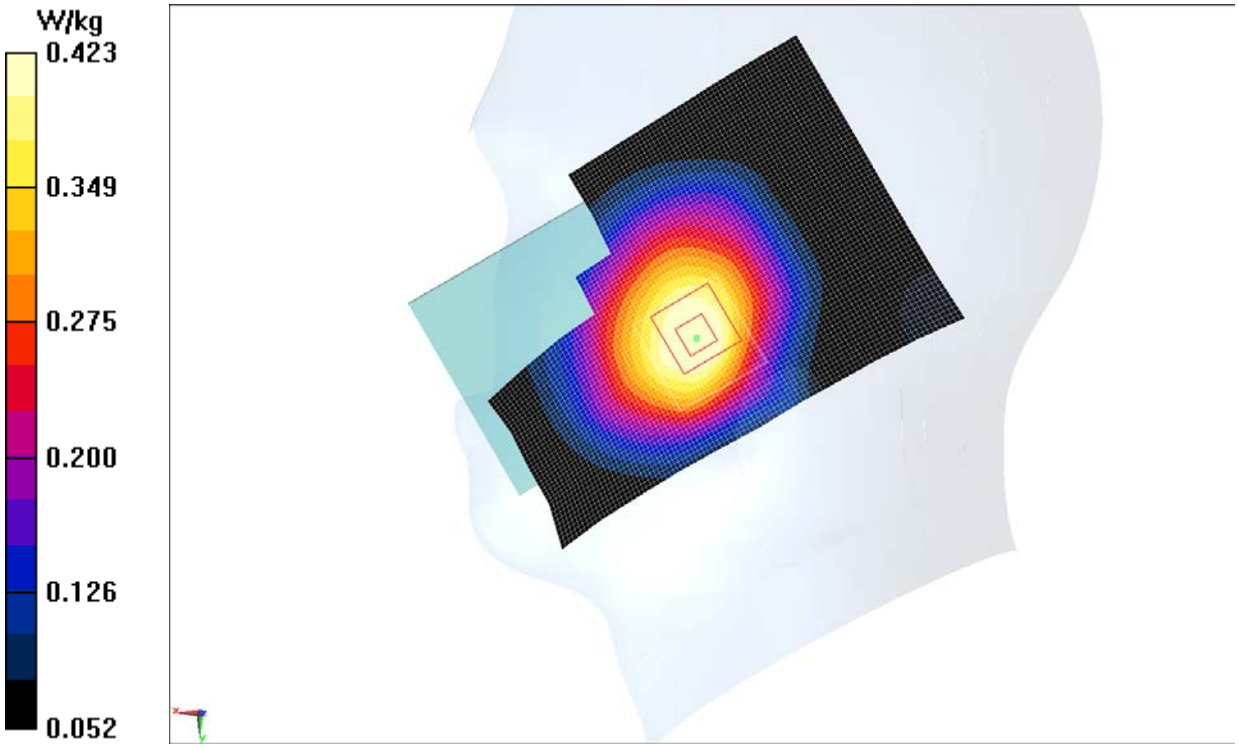

Fig.1 850MHz

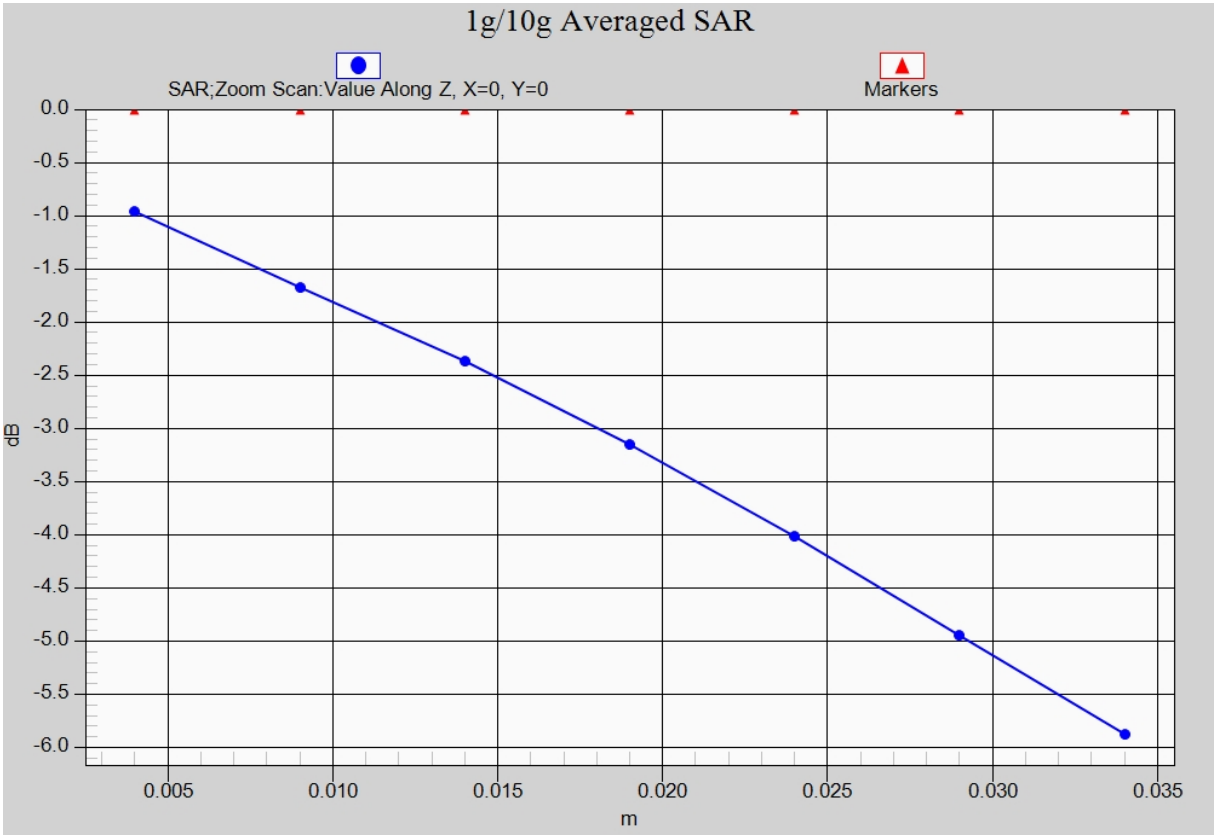

Fig. 1-1 Z-Scan at power reference point (850 MHz)

850 Body Rear High

Date: 2015-1-12
Electronics: DAE4 Sn777
Medium: Body 850 MHz
Medium parameters used (interpolated): f = 848.8 MHz; σ = 1.005 mho/m; εr = 54.118; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: GSM 850 GPRS Frequency: 848.8 MHz Duty Cycle: 1:2
Probe: EX3DV4 - SN3846 ConvF(9.09, 9.09, 9.09)

Rear High/Area Scan (131x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.34 W/kg

Rear High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 30.75 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.10 W/kg
SAR(1 g) = 0.884 W/kg; SAR(10 g) = 0.681 W/kg
Maximum value of SAR (measured) = 0.957 W/kg

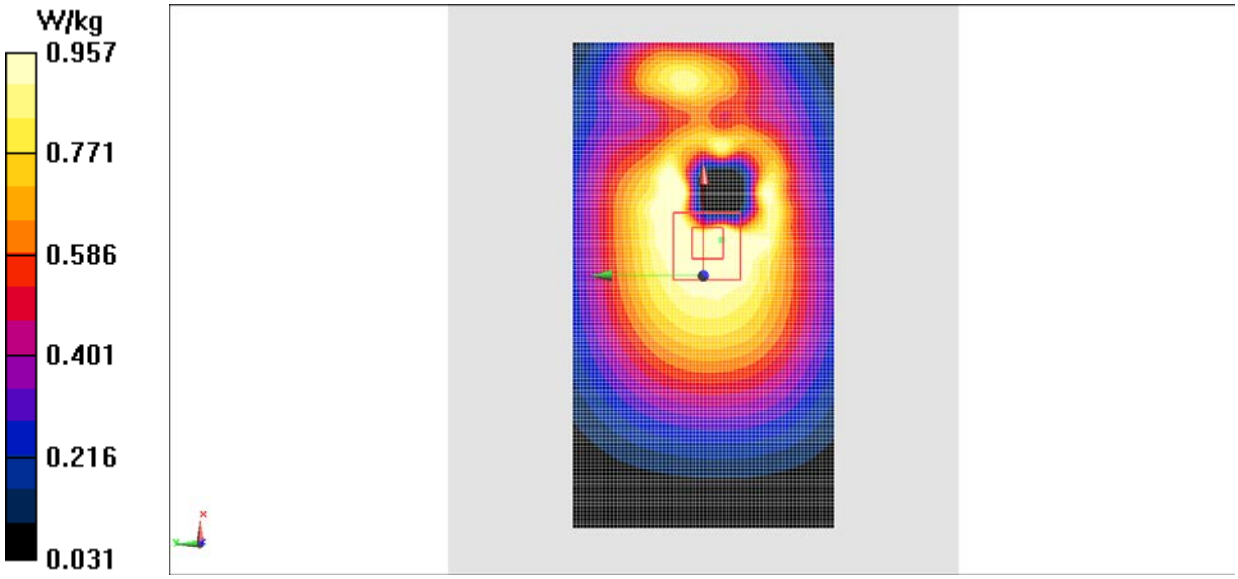

Fig.2 850 MHz

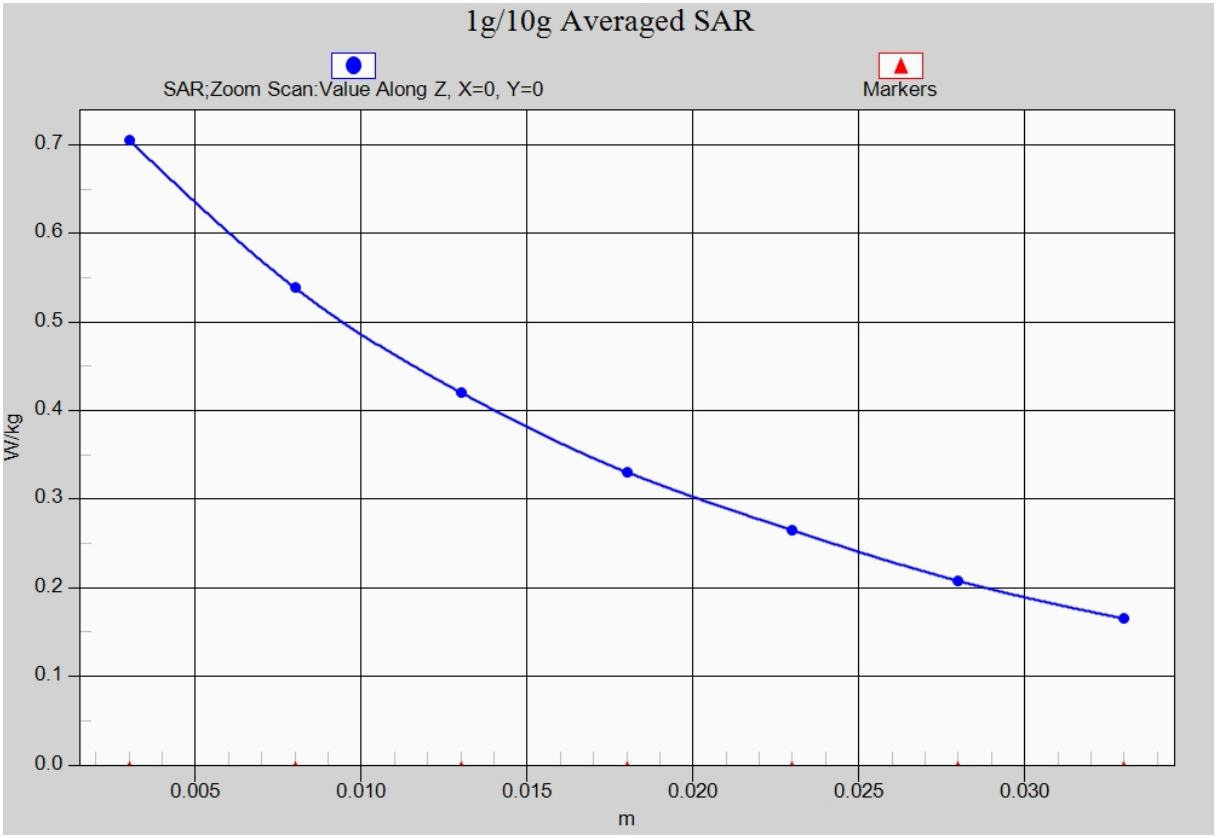

Fig. 2-1 Z-Scan at power reference point (850 MHz)

1900 Right Cheek Low

Date: 2015-1-13
Electronics: DAE4 Sn777
Medium: Head 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.352 mho/m; εr = 40.595; ρ = 1000 kg/m^3
Ambient Temperature: 22.1°C Liquid Temperature: 21.6°C
Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: EX3DV4 - SN3846 ConvF(7.26, 7.26, 7.26)

Cheek Low/Area Scan (71x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.169 W/kg

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.253 V/m; Power Drift = 0.05dB
Peak SAR (extrapolated) = 0.203 W/kg
SAR(1 g) = 0.137 W/kg; SAR(10 g) = 0.086 W/kg
Maximum value of SAR (measured) = 0.174 W/kg

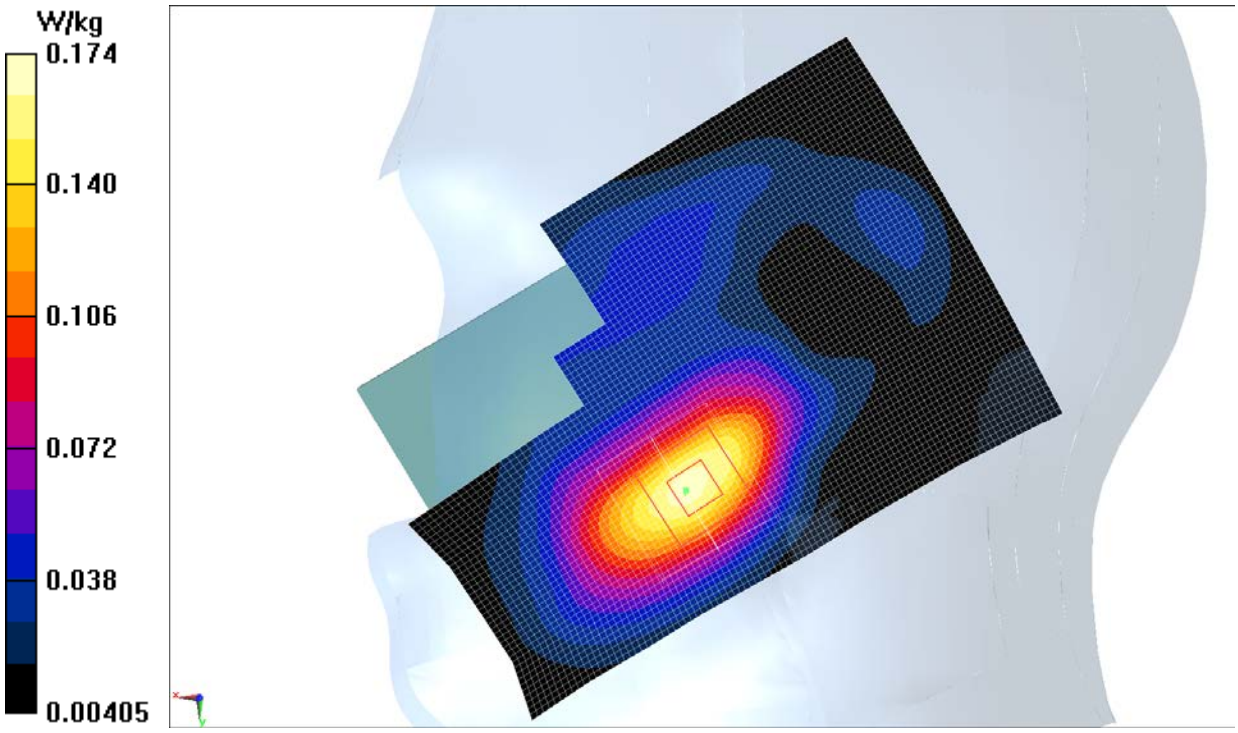

Fig.4 1900 MHz

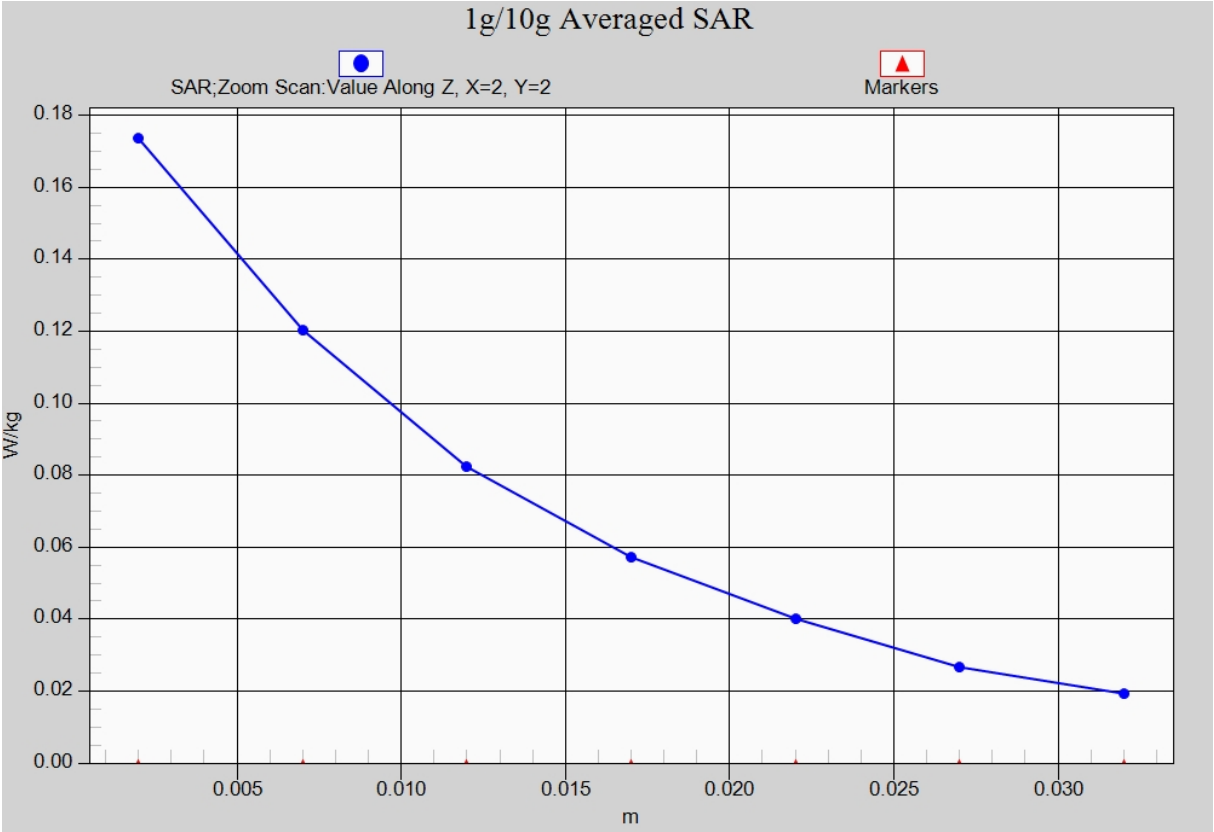

Fig. 3-1 Z-Scan at power reference point (1900 MHz)

1900 Body Rear Low

Date: 2015-1-13
Electronics: DAE4 Sn777
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.45 mho/m; εr = 54.338; ρ = 1000 kg/m^3
Ambient Temperature: 22.1°C Liquid Temperature: 21.6°C
Communication System: GSM 1900MHz GPRS Frequency: 1850.2 MHz Duty Cycle: 1:2
Probe: EX3DV4 - SN3846 ConvF(7.15, 7.15, 7.15)

Rear Low/Area Scan (111x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.771 W/kg

Rear Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.32 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 1.16 W/kg
SAR(1 g) = 0.678 W/kg; SAR(10 g) = 0.354 W/kg
Maximum value of SAR (measured) = 0.819 W/kg

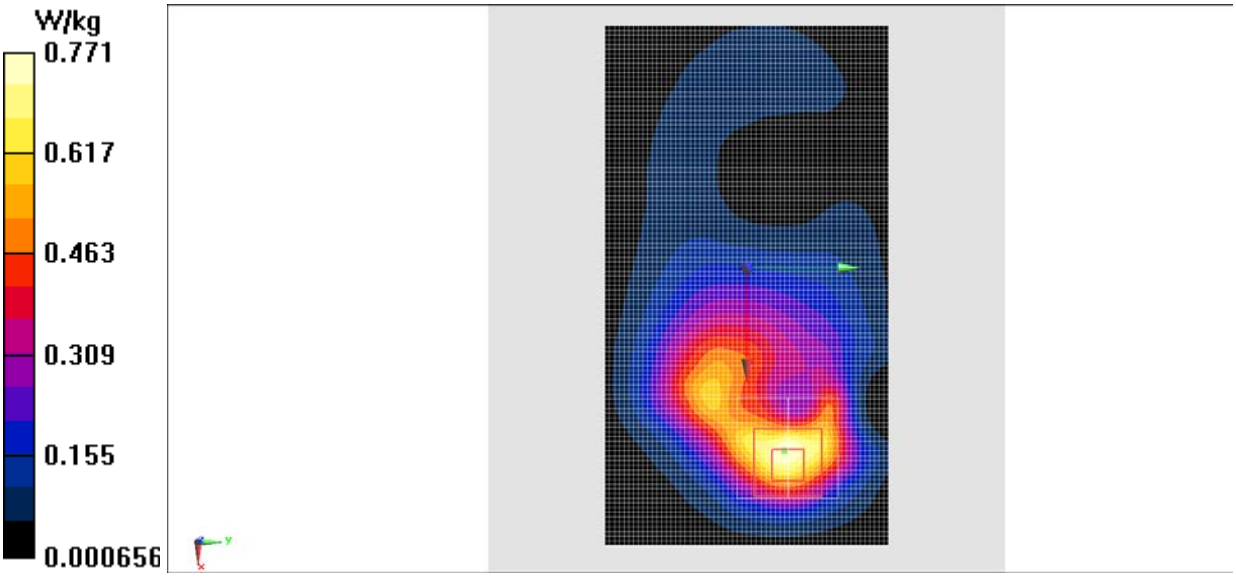

Fig.4 1900 MHz

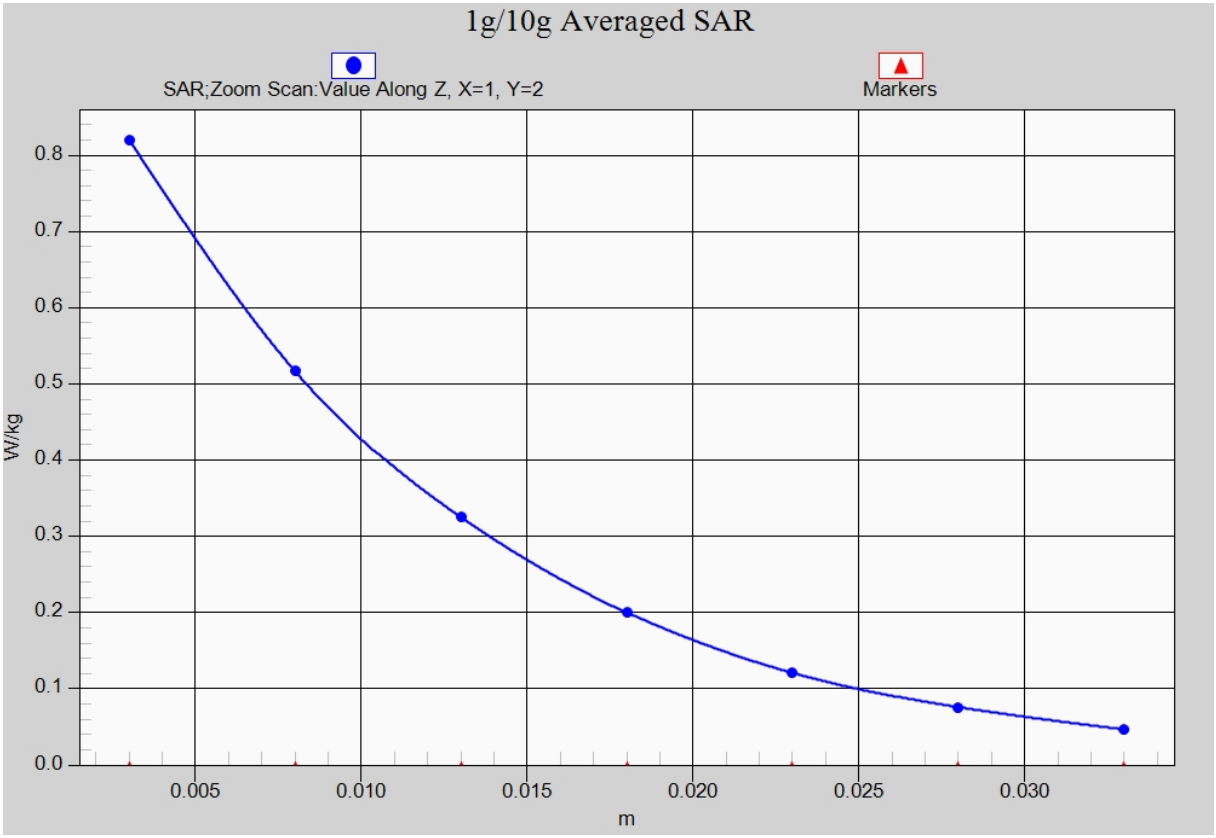

Fig.4-1 Z-Scan at power reference point (1900 MHz)

WCDMA 850 Right Cheek Low

Date: 2015-1-12
Electronics: DAE4 Sn777
Medium: Head 850 MHz
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.909 mho/m; εr = 42.413; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: WCDMA; Frequency: 826.4 MHz; Duty Cycle: 1:1
Probe: EX3DV4 - SN3846 ConvF(9.18, 9.18, 9.18)

Cheek Low/Area Scan (71x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.307 W/kg

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.264 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.339 W/kg
SAR(1 g) = 0.268 W/kg; SAR(10 g) = 0.208 W/kg
Maximum value of SAR (measured) = 0.280 W/kg

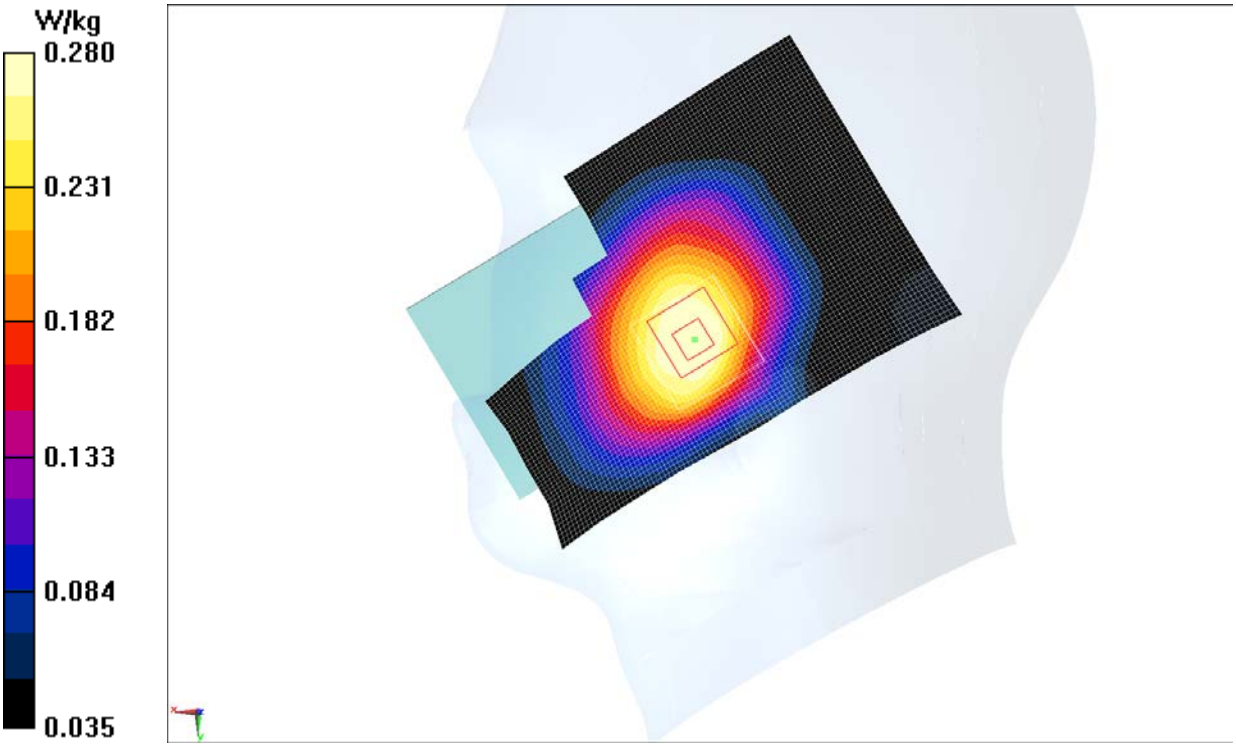

Fig.5 WCDMA 850

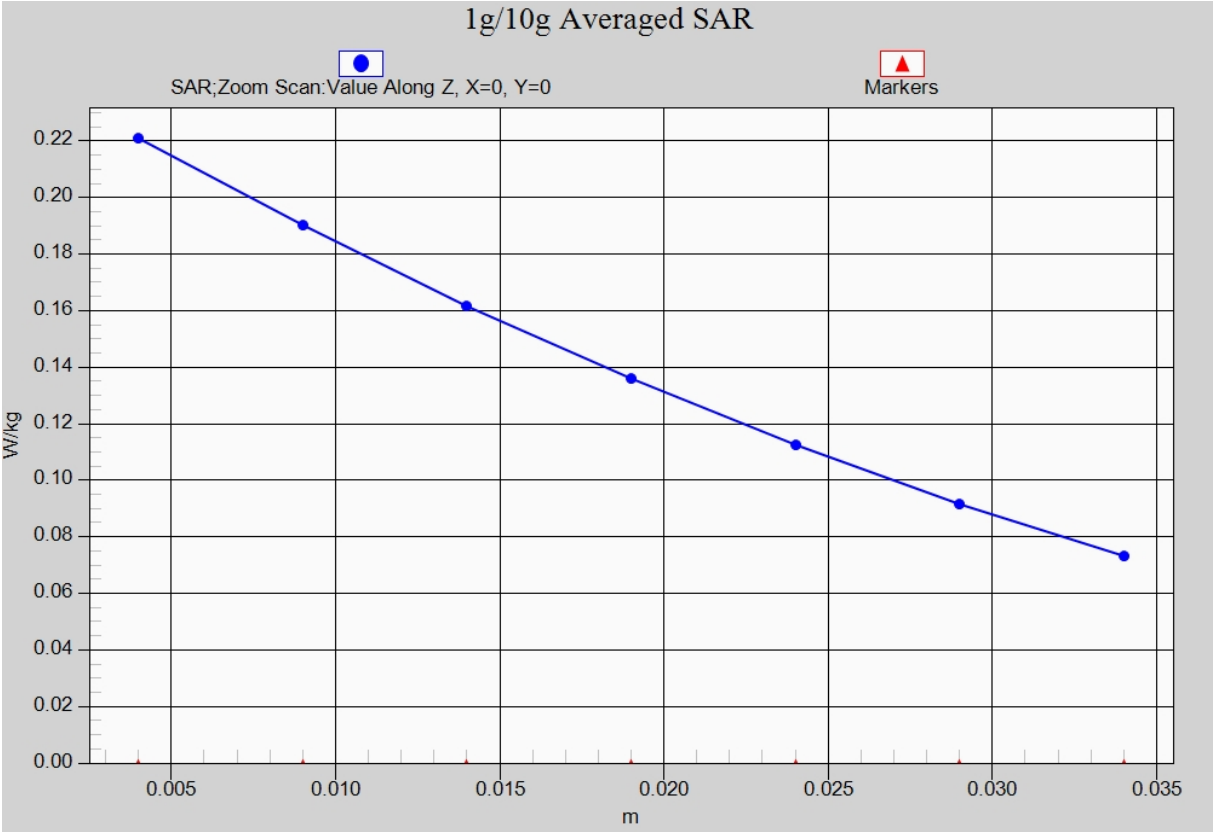

Fig. 5-1 Z-Scan at power reference point (WCDMA 850)

WCDMA 850 Body Rear Low

Date: 2015-1-12
Electronics: DAE4 Sn777
Medium: Body 850 MHz
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.984 mho/m; εr = 54.345; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: WCDMA; Frequency: 826.4 MHz; Duty Cycle: 1:1
Probe: EX3DV4 - SN3846 ConvF(9.09, 9.09, 9.09)

Rear Low/Area Scan (131x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.512 W/kg

Rear Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.29 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.572 W/kg
SAR(1 g) = 0.465 W/kg; SAR(10 g) = 0.358 W/kg
Maximum value of SAR (measured) = 0.507 W/kg

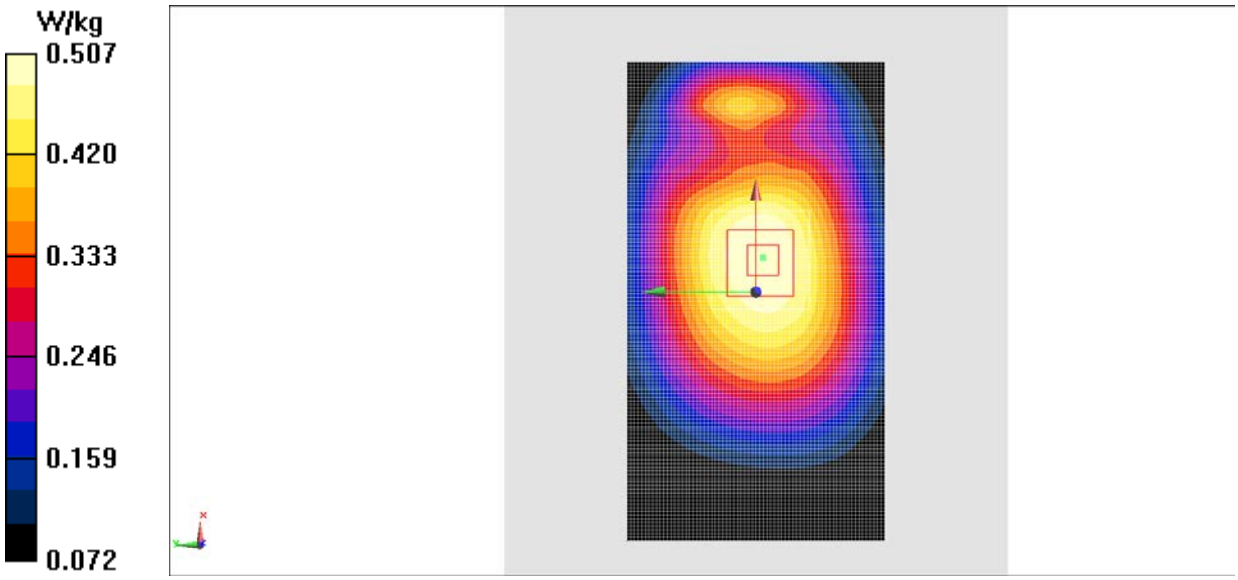

Fig.6 WCDMA 850

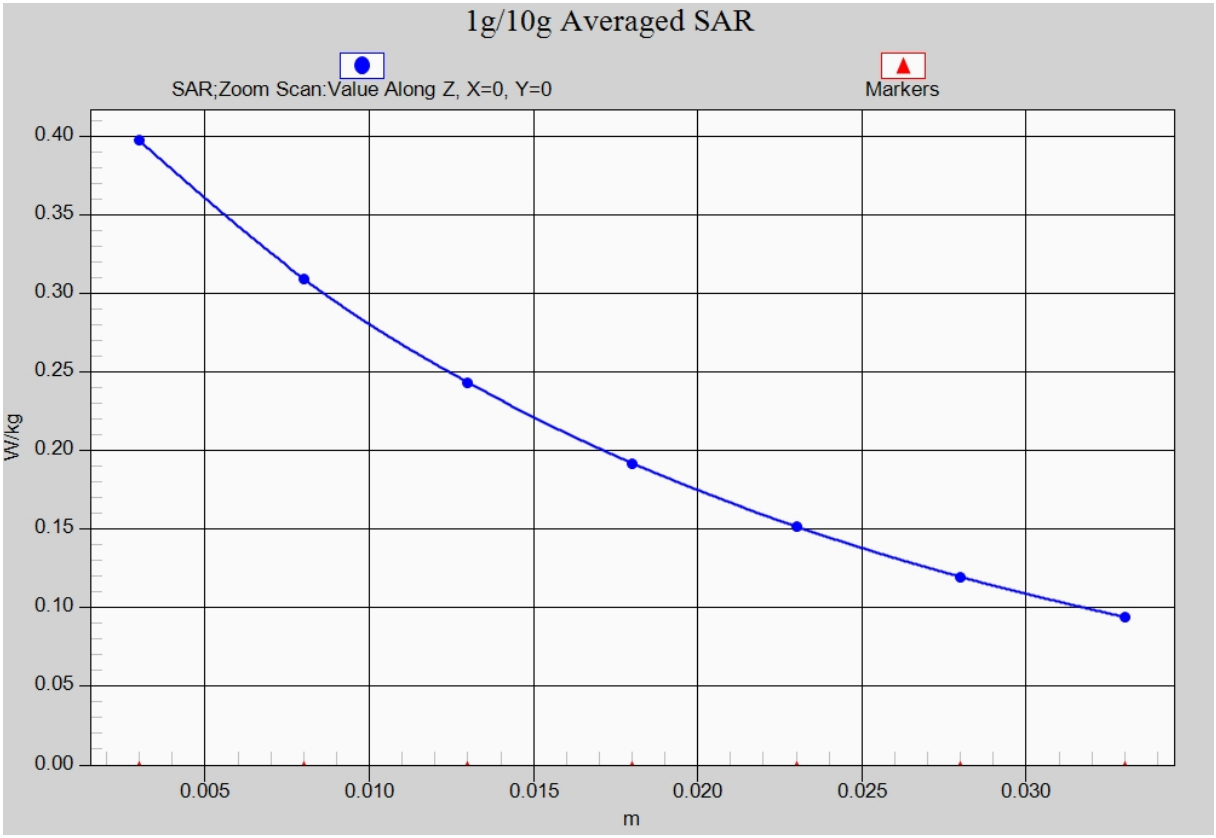

Fig. 6-1 Z-Scan at power reference point (WCDMA850)

WCDMA 1900 Right Cheek Middle

Date: 2015-1-13
Electronics: DAE4 Sn777
Medium: Head 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.38 mho/m; εr = 40.435; ρ = 1000 kg/m^3
Ambient Temperature: 22.1°C Liquid Temperature: 21.6°C
Communication System: WCDMA 1900 Frequency: 1880 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3846 ConvF(7.26, 7.26, 7.26)

Cheek Middle/Area Scan (71x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.311 W/kg

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.807 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.369 W/kg
SAR(1 g) = 0.246 W/kg; SAR(10 g) = 0.154 W/kg
Maximum value of SAR (measured) = 0.316 W/kg

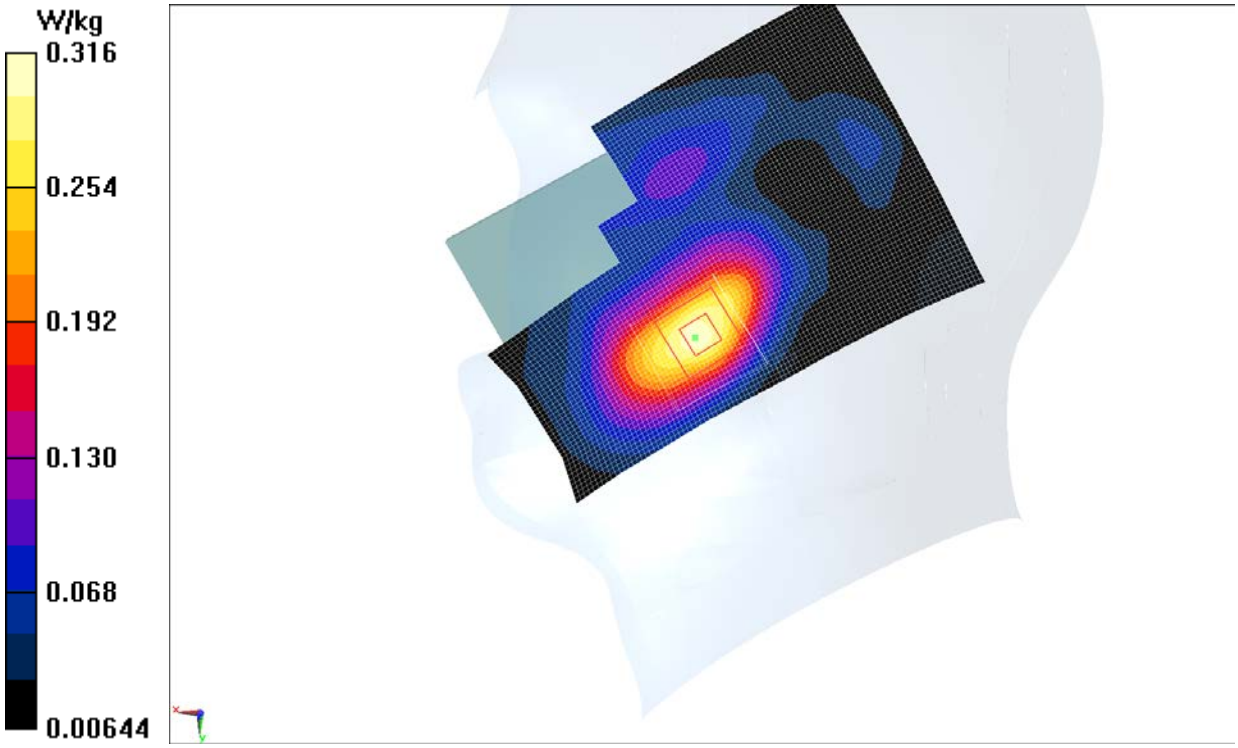

Fig.7 WCDMA1900

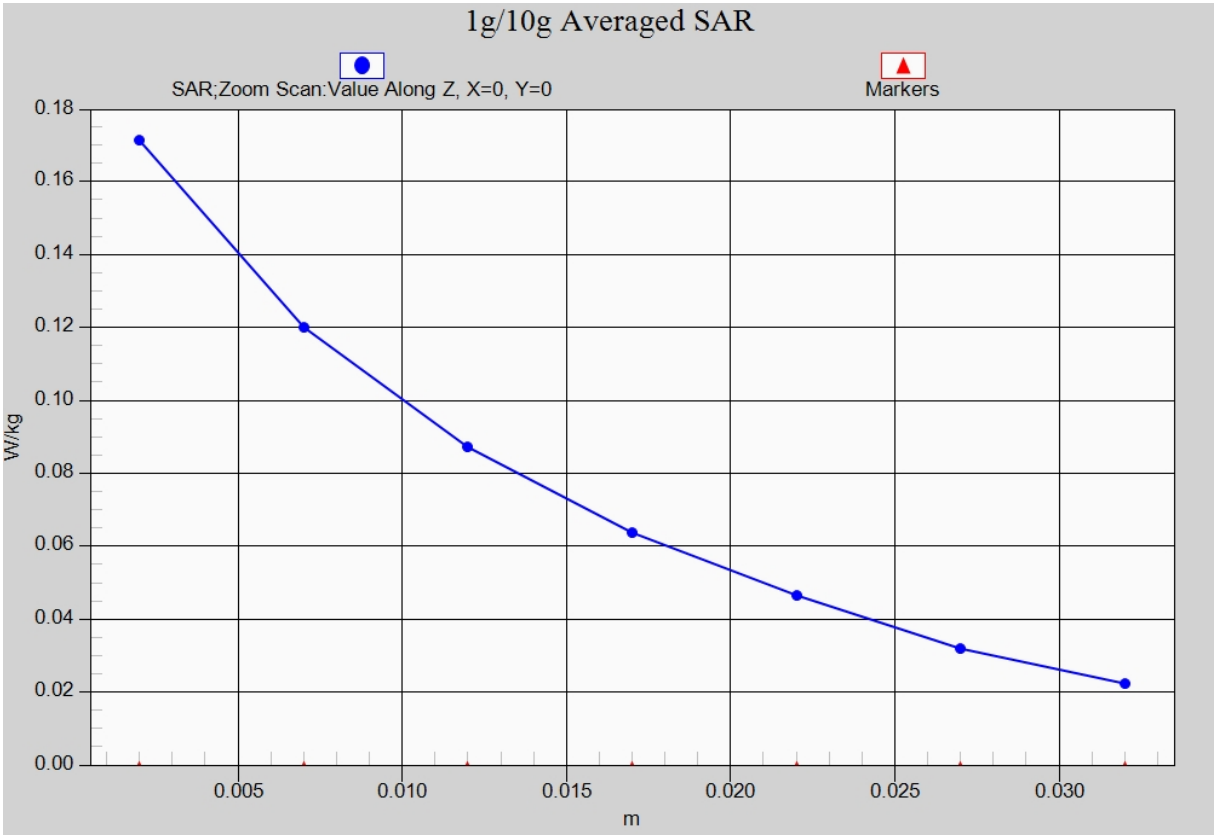

Fig. 7-1 Z-Scan at power reference point (WCDMA1900)

WCDMA 1900 Body Rear Middle

Date: 2015-1-13
Electronics: DAE4 Sn777
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.482 mho/m; εr = 54.226; ρ = 1000 kg/m^3
Ambient Temperature: 22.1°C Liquid Temperature: 21.6°C
Communication System: WCDMA 1900 Frequency: 1880 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3846 ConvF(7.15, 7.15, 7.15)

Rear Middle/Area Scan (111x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.820 W/kg

Rear Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.78 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.19 W/kg
SAR(1 g) = 0.713 W/kg; SAR(10 g) = 0.384 W/kg
Maximum value of SAR (measured) = 0.821 W/kg

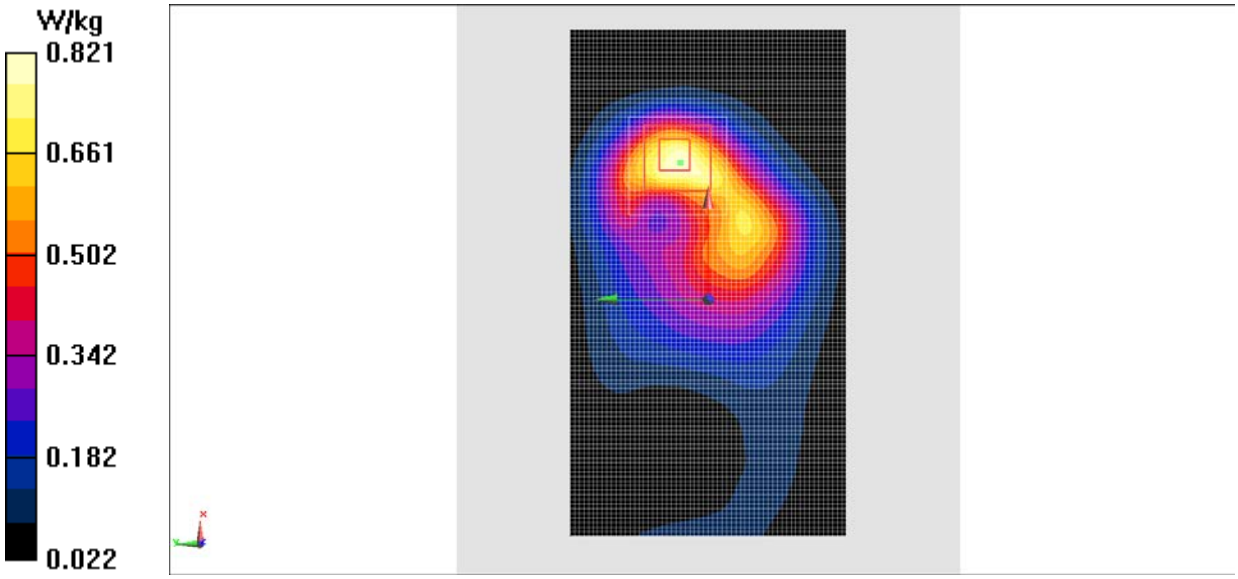

Fig.8 WCDMA1900

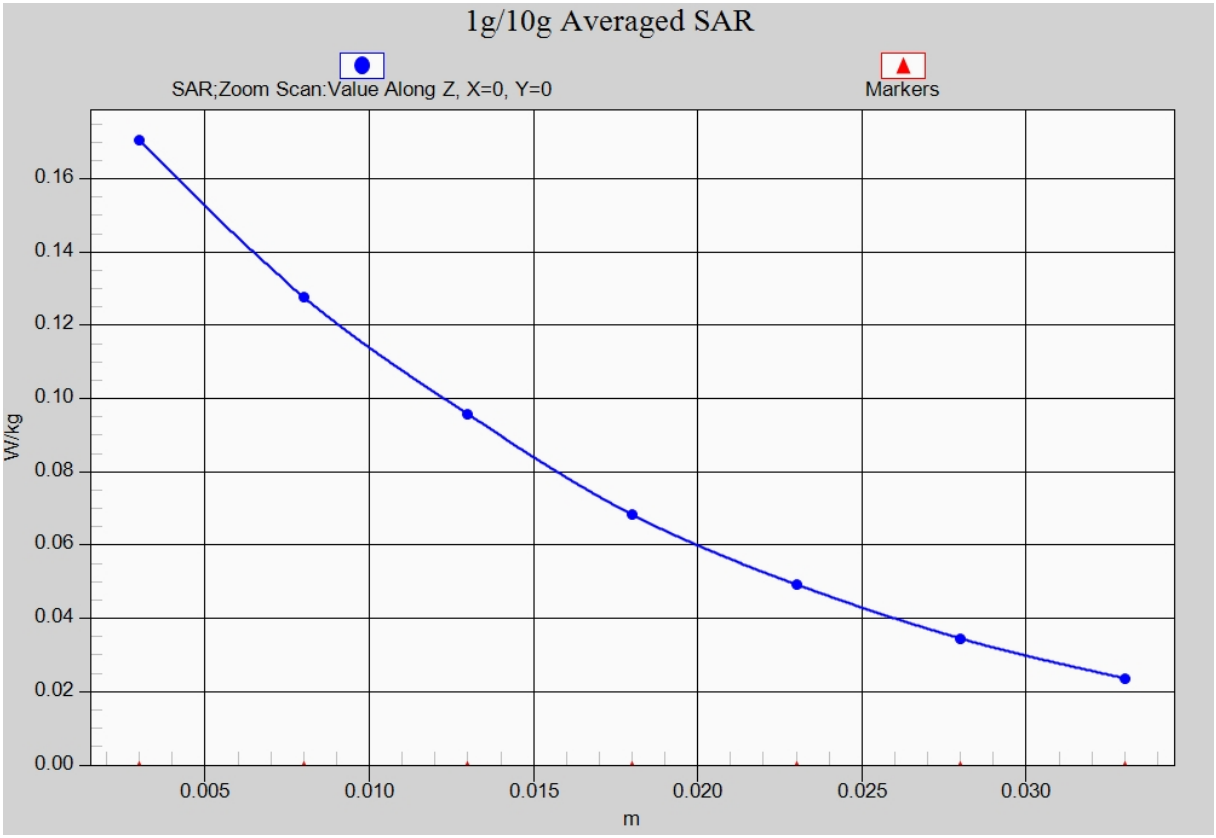

Fig. 8-1 Z-Scan at power reference point (WCDMA1900)

LTE Band2 Right Cheek Low with QPSK_20M_1RB_Low

Date: 2015-1-13
Electronics: DAE4 Sn777
Medium: Head 1900 MHz
Medium parameters used: f = 1860 MHz; σ = 1.352 mho/m; εr = 40.552; ρ = 1000 kg/m^3
Ambient Temperature: 22.1°C Liquid Temperature: 21.6°C
Communication System: LTE Band2 Frequency: 1860 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3846 ConvF(7.26, 7.26, 7.26)

Cheek Low/Area Scan (71x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.370 W/kg

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.037 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.461 W/kg
SAR(1 g) = 0.308 W/kg; SAR(10 g) = 0.191 W/kg
Maximum value of SAR (measured) = 0.342 W/kg

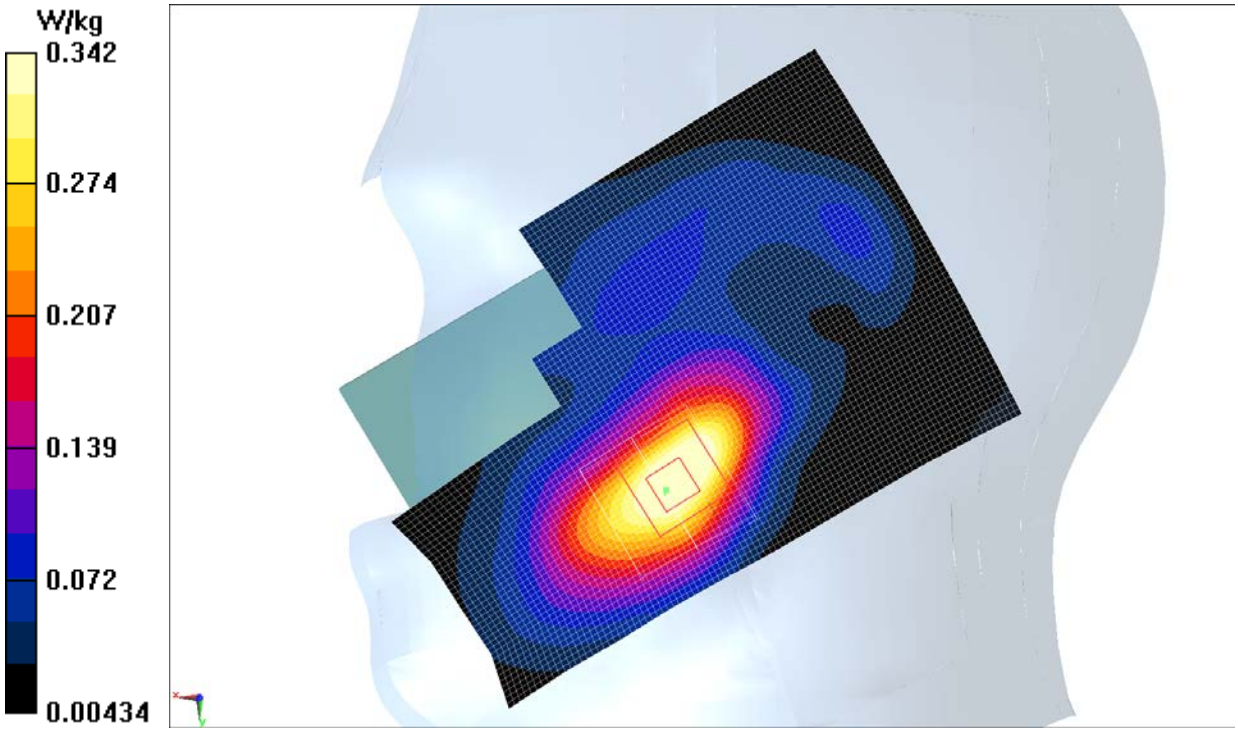

Fig.9 LTE Band2

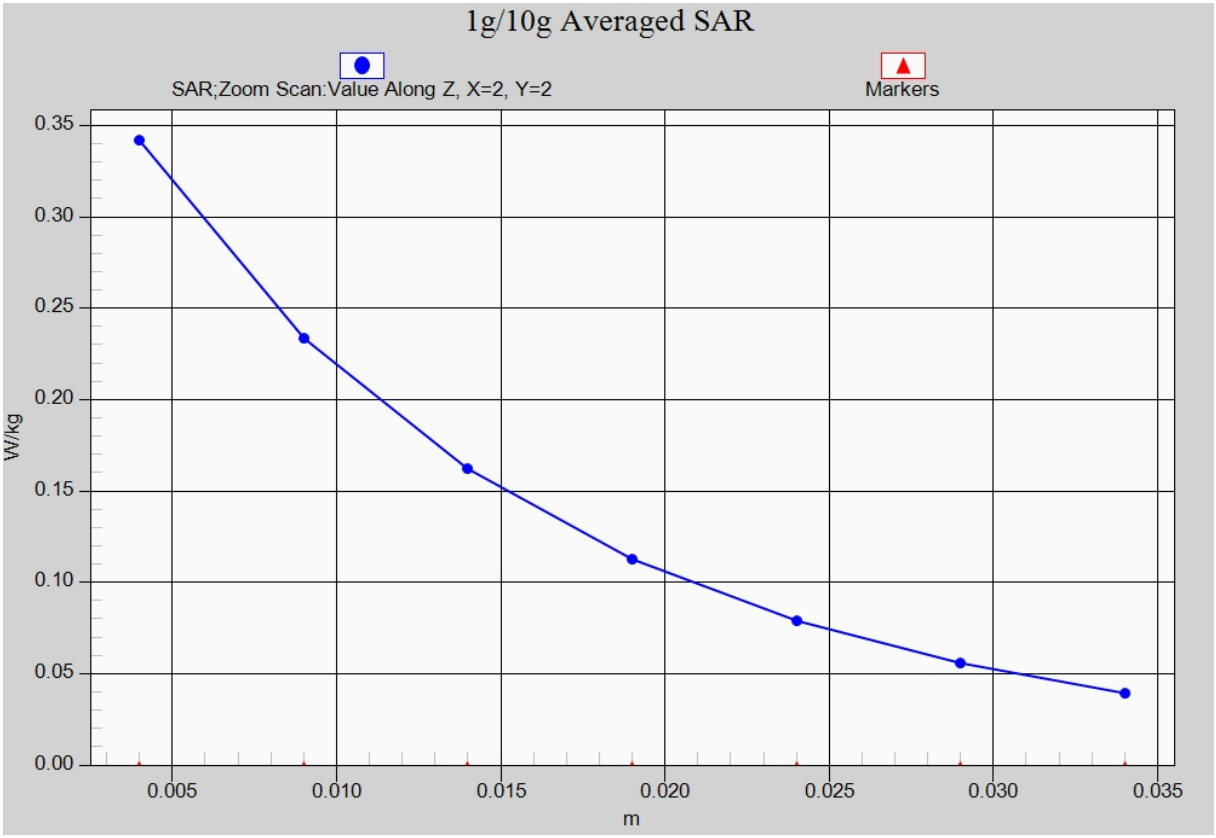

Fig. 9-1 Z-Scan at power reference point (LTE Band2)

LTE Band2 Body Rear Low with QPSK_20M_1RB_Low
Date: 2015-1-13
Electronics: DAE4 Sn777
Medium: Body 1900 MHz
Medium parameters used: f = 1860 MHz; σ = 1.469 mho/m; εr = 54.176; ρ = 1000 kg/m^3
Ambient Temperature: 22.1°C Liquid Temperature: 21.6°C
Communication System: LTE Band4 Frequency: 1860 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3846 ConvF(7.15, 7.15, 7.15)

Rear Low/Area Scan (121x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.03 W/kg

Rear Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.07 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.53 W/kg
SAR(1 g) = 0.914 W/kg; SAR(10 g) = 0.495 W/kg
Maximum value of SAR (measured) = 1.13 W/kg

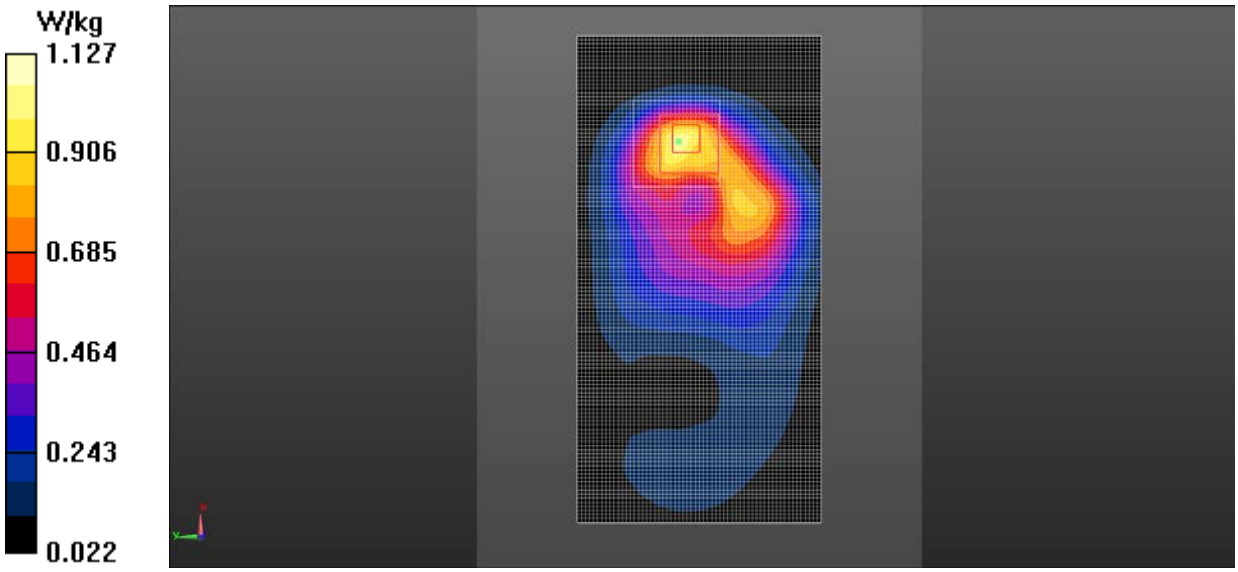

Fig.10 LTE Band2

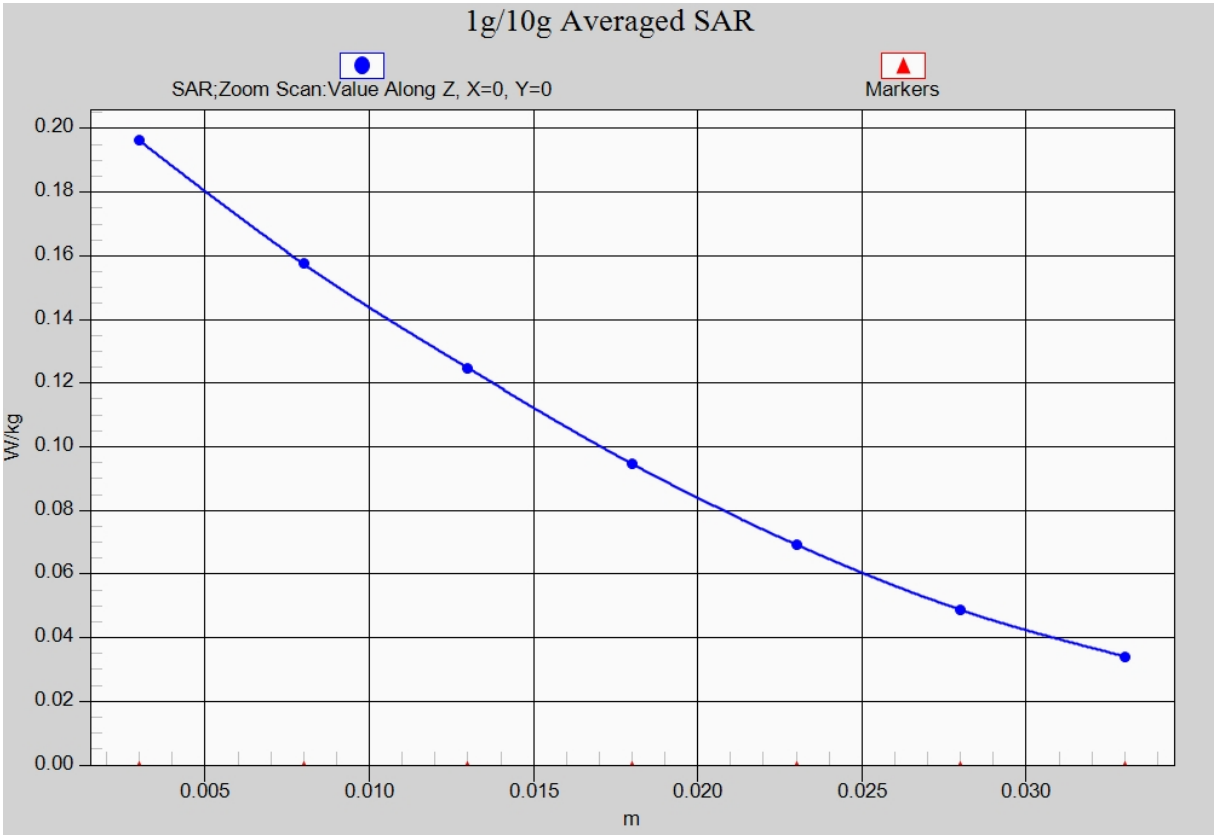

Fig. 10-1 Z-Scan at power reference point (LTE Band2)

LTE Band4 Left Cheek Low with QPSK_20M_1RB_Low
Date: 2015-1-8
Electronics: DAE4 Sn777
Medium: Head 1750 MHz
Medium parameters used: f = 1720 MHz; σ = 1.318 mho/m; εr = 41.167; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: LTE Band4 Frequency: 1720 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3846 ConvF(7.64, 7.64, 7.64)

Cheek Low/Area Scan (71x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.366 W/kg

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.879 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.517 W/kg
SAR(1 g) = 0.358 W/kg; SAR(10 g) = 0.231 W/kg
Maximum value of SAR (measured) = 0.385 W/kg

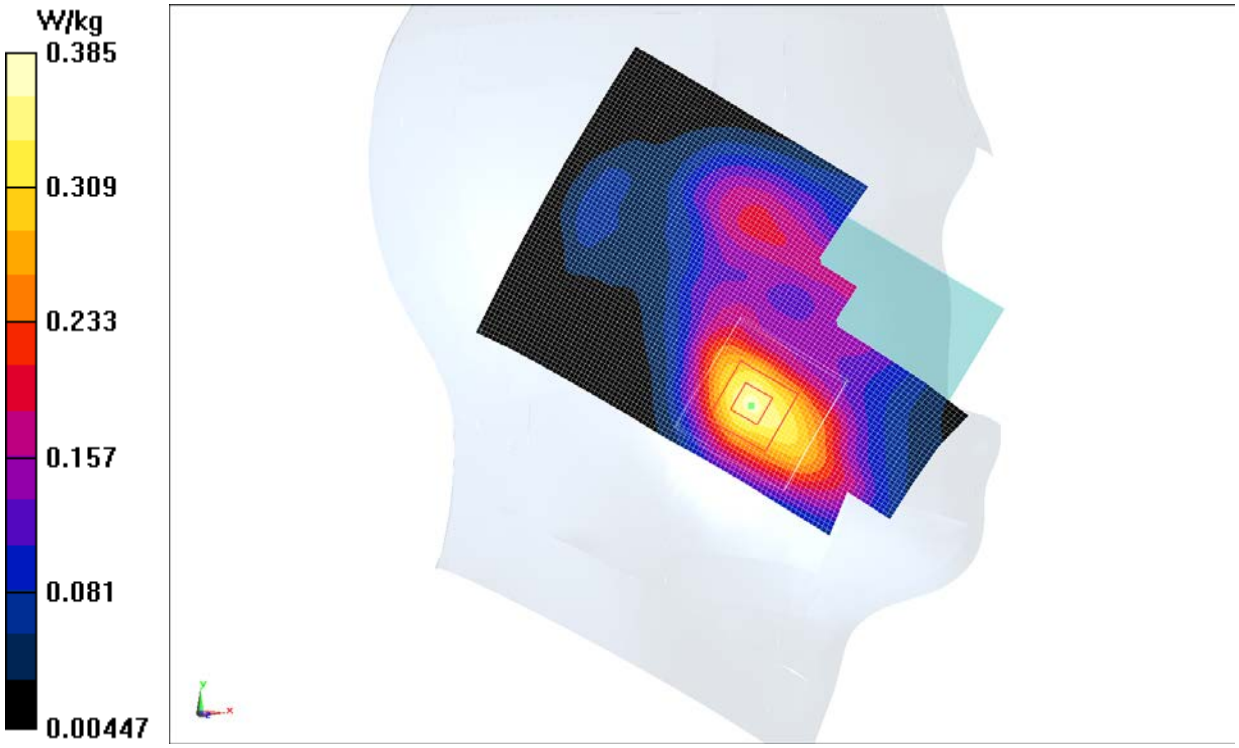

Fig.11 LTE Band4

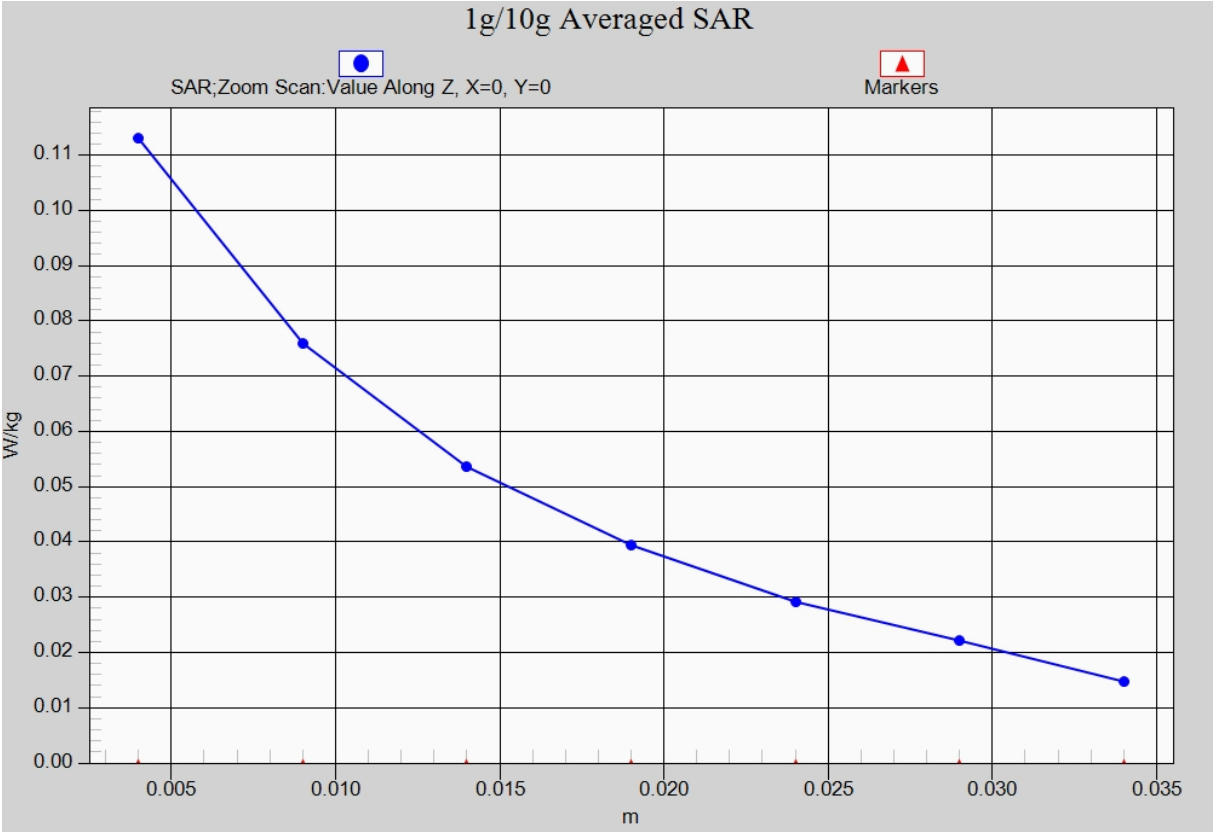

Fig. 11-1 Z-Scan at power reference point (LTE Band4)

LTE Band4 Body Rear Low with QPSK_20M_1RB_Low
Date: 2015-1-8
Electronics: DAE4 Sn777
Medium: Body 1750 MHz
Medium parameters used: f = 1720 MHz; σ = 1.424 mho/m; εr = 51.832; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C
Communication System: LTE Band4 Frequency: 1720 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN3846 ConvF(7.43, 7.43, 7.43)

Rear Low/Area Scan (71x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.22 W/kg

Rear Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.672 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 1.72 W/kg
SAR(1 g) = 1.09 W/kg; SAR(10 g) = 0.651 W/kg
Maximum value of SAR (measured) = 1.16 W/kg

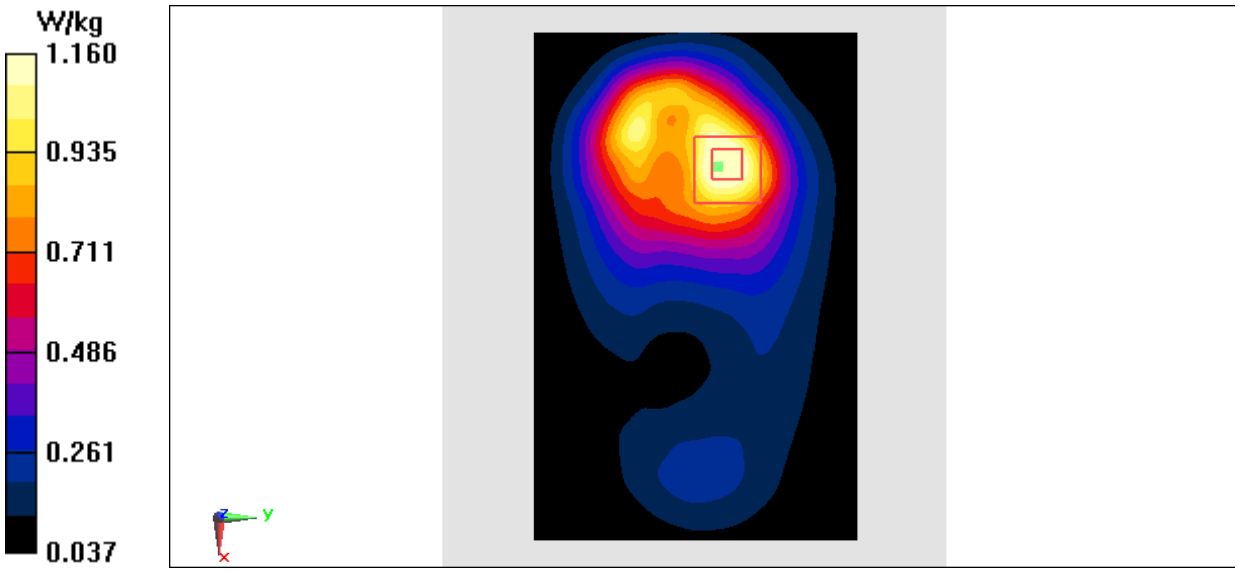

Fig.12 LTE Band4