

Table 14.1-15: SAR Values (LTE Band5 - Head)

Ambient Temperature: 22.5 °C Liquid Temperature: 22.0 °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.											
829	20450	1RB_Low	Left	Touch	/	23.26	24	0.184	0.22	0.267	0.32	0.04
829	20450	1RB_Low	Left	Tilt	/	23.26	24	0.133	0.16	0.19	0.23	0.14
829	20450	1RB_Low	Right	Touch	Fig.15	23.26	24	0.253	0.30	0.328	0.39	0.11
829	20450	1RB_Low	Right	Tilt	/	23.26	24	0.137	0.16	0.197	0.23	0.07
829	20450	25RB_Low	Left	Touch	/	22.23	23	0.146	0.17	0.212	0.25	0.07
829	20450	25RB_Low	Left	Tilt	/	22.23	23	0.108	0.13	0.155	0.19	-0.01
829	20450	25RB_Low	Right	Touch	/	22.23	23	0.174	0.21	0.255	0.30	0.01
829	20450	25RB_Low	Right	Tilt	/	22.23	23	0.109	0.13	0.155	0.19	0.01

Note1: The LTE mode is QPSK_10MHz.

Table 14.1-16: SAR Values (LTE Band5 - Body)

Ambient Temperature: 22.5 °C Liquid Temperature: 22.0 °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.										
829	20450	1RB_Low	Front	/	23.26	24	0.261	0.31	0.36	0.43	-0.09
829	20450	1RB_Low	Rear	Fig.16	23.26	24	0.403	0.48	0.523	0.62	0.08
829	20450	1RB_Low	Left	/	23.26	24	0.0924	0.11	0.135	0.16	0.05
829	20450	1RB_Low	Right	/	23.26	24	0.214	0.25	0.309	0.37	-0.14
829	20450	1RB_Low	Bottom	/	23.26	24	0.139	0.16	0.227	0.27	0.13
829	20450	25RB_Low	Front	/	22.23	23	0.214	0.26	0.294	0.35	-0.05
829	20450	25RB_Low	Rear	/	22.23	23	0.294	0.35	0.409	0.49	-0.02
829	20450	25RB_Low	Left	/	22.23	23	0.0727	0.09	0.106	0.13	-0.06
829	20450	25RB_Low	Right	/	22.23	23	0.168	0.20	0.244	0.29	0.00
829	20450	25RB_Low	Bottom	/	22.23	23	0.107	0.13	0.174	0.21	-0.02

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

Note2: The LTE mode is QPSK_10MHz.

Table 14.1-17: SAR Values (LTE Band12 - Head)

Ambient Temperature: 22.5 °C Liquid Temperature: 22.0 °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.											
711	23130	1RB_Mid	Left	Touch	Fig.17	23.12	24	0.15	0.18	0.191	0.23	-0.04
711	23130	1RB_Mid	Left	Tilt	/	23.12	24	0.0671	0.08	0.0941	0.12	0.09
711	23130	1RB_Mid	Right	Touch	/	23.12	24	0.115	0.14	0.163	0.20	0.08
711	23130	1RB_Mid	Right	Tilt	/	23.12	24	0.0708	0.09	0.1	0.12	0.12
711	23130	25RB_Mid	Left	Touch	/	21.98	23	0.106	0.13	0.15	0.19	0.13
711	23130	25RB_Mid	Left	Tilt	/	21.98	23	0.0557	0.07	0.0781	0.10	0.19
711	23130	25RB_Mid	Right	Touch	/	21.98	23	0.0975	0.12	0.138	0.17	0.03
711	23130	25RB_Mid	Right	Tilt	/	21.98	23	0.0599	0.08	0.0848	0.11	0.02

Note1: The LTE mode is QPSK_10MHz.

Table 14.1-18: SAR Values (LTE Band12 - Body)

Ambient Temperature: 22.5 °C Liquid Temperature: 22.0 °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.										
711	23130	1RB_Mid	Front	/	23.12	24	0.169	0.21	0.23	0.28	0.13
711	23130	1RB_Mid	Rear	Fig.18	23.12	24	0.299	0.37	0.381	0.47	0.11
711	23130	1RB_Mid	Left	/	23.12	24	0.162	0.20	0.23	0.28	-0.08
711	23130	1RB_Mid	Right	/	23.12	24	0.214	0.26	0.305	0.37	0.01
711	23130	1RB_Mid	Bottom	/	23.12	24	0.0623	0.08	0.0939	0.11	-0.12
711	23130	25RB_Mid	Front	/	21.98	23	0.131	0.17	0.178	0.23	-0.07
711	23130	25RB_Mid	Rear	/	21.98	23	0.21	0.27	0.289	0.37	0.00
711	23130	25RB_Mid	Left	/	21.98	23	0.127	0.16	0.181	0.23	-0.02
711	23130	25RB_Mid	Right	/	21.98	23	0.165	0.21	0.234	0.30	0.00
711	23130	25RB_Mid	Bottom	/	21.98	23	0.0483	0.06	0.0731	0.09	-0.17

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

Note2: The LTE mode is QPSK_10MHz.

Table 14.1-19: SAR Values (LTE Band30 - Head)

Ambient Temperature: 22.5 °C Liquid Temperature: 22.0 °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.											
2310	27710	1RB_Mid	Left	Touch	Fig.19	22.20	23	0.157	0.19	0.287	0.34	0.08
2310	27710	1RB_Mid	Left	Tilt	/	22.20	23	0.0493	0.06	0.0898	0.11	0.17
2310	27710	1RB_Mid	Right	Touch	/	22.20	23	0.0773	0.09	0.139	0.17	0.07
2310	27710	1RB_Mid	Right	Tilt	/	22.20	23	0.0442	0.05	0.0826	0.10	0.06
2310	27710	25RB_Mid	Left	Touch	/	21.10	22	0.12	0.15	0.226	0.28	0.11
2310	27710	25RB_Mid	Left	Tilt	/	21.10	22	0.0388	0.05	0.0708	0.09	0.06
2310	27710	25RB_Mid	Right	Touch	/	21.10	22	0.0602	0.07	0.112	0.14	0.18
2310	27710	25RB_Mid	Right	Tilt	/	21.10	22	0.0354	0.04	0.0661	0.08	0.16

Note1: The LTE mode is QPSK_10MHz.

Table 14.1-20: SAR Values (LTE Band30 - Body) – AP ON

Ambient Temperature: 22.5 °C Liquid Temperature: 22.0 °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.										
2310	27710	1RB_Mid	Front	/	21.34	22	0.195	0.23	0.36	0.42	-0.14
2310	27710	1RB_Mid	Rear	/	21.34	22	0.18	0.21	0.332	0.39	-0.02
2310	27710	1RB_Mid	Left	/	21.34	22	0.0867	0.10	0.16	0.19	-0.17
2310	27710	1RB_Mid	Right	/	21.34	22	0.0503	0.06	0.0885	0.10	0.11
2310	27710	1RB_Mid	Bottom	Fig.20	21.34	22	0.239	0.28	0.475	0.55	-0.07
2310	27710	25RB_High	Front	/	21.16	22	0.166	0.20	0.314	0.38	0.06
2310	27710	25RB_High	Rear	/	21.16	22	0.146	0.18	0.271	0.33	-0.02
2310	27710	25RB_High	Left	/	21.16	22	0.0671	0.08	0.124	0.15	0.08
2310	27710	25RB_High	Right	/	21.16	22	0.0424	0.05	0.0746	0.09	-0.06
2310	27710	25RB_High	Bottom	/	21.16	22	0.157	0.19	0.321	0.39	-0.07

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

Note2: The LTE mode is QPSK_10MHz.

Table 14.1-21: SAR Values (LTE Band30 - Body) – AP OFF

Ambient Temperature: 22.5 °C				Liquid Temperature: 22.0 °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.										
2310	27710	1RB_Mid	Front	Fig.21	22.20	23	0.126	0.15	0.212	0.25	0.04
2310	27710	1RB_Mid	Rear	/	22.20	23	0.0899	0.11	0.165	0.20	-0.08
2310	27710	25RB_Mid	Front	/	21.10	22	0.0889	0.11	0.161	0.20	0.10
2310	27710	25RB_Mid	Rear	/	21.10	22	0.0715	0.09	0.132	0.16	0.02

Note1: The distance between the EUT and the phantom bottom is 15mm.

Note2: The LTE mode is QPSK_10MHz.

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 14.2-1: SAR Values (GSM 850 MHz Band - 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.										
848.8	251	Right	Touch	Fig.1	32.18	33.5	0.21	0.28	0.276	0.37	0.16

Table 14.2-2: SAR Values (GSM 850 MHz Band - Body)

Ambient Temperature: 22.5 °C				Liquid Temperature: 22.0 °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 (2)	Rear	Fig.2	30.53	32	0.375	0.53	0.683	0.96	-0.09

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

Table 14.2-3: SAR Values (GSM 1900 MHz Band - 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.										
1850.2	512	Right	Touch	Fig.3	28.68	30	0.0555	0.08	0.0894	0.12	0.11

Table 14.2-4: SAR Values (GSM 1900 MHz Band - Body)

Ambient Temperature: 22.5 °C				Liquid Temperature: 22.0 °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.										
1909.8	810	GPRS (2)	Rear	Fig.4	27.87	29	0.472	0.61	0.893	1.16	-0.01

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

Table 14.2-5: SAR Values (WCDMA 850 MHz Band - 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.										
826.4	4132	Right	Touch	Fig.6	22.75	23.5	0.224	0.27	0.291	0.35	0.03

Table 14.2-6: SAR Values (WCDMA 850 MHz Band - 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.										
836.4	4182	Rear	Fig.6	22.72	23.5	0.275	0.33	0.492	0.59	-0.02	

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

Table 14.2-7: SAR Values (WCDMA 1700 MHz Band - 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.										
1712.4	1312	Left	Touch	Fig.7	23.52	24	0.144	0.16	0.228	0.25	0.04

Table 14.2-8: SAR Values (WCDMA 1700 MHz Band - 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.										
1752.6	1513	Rear	Fig.8	23.52	24	0.666	0.74	1.25	1.40	0.06	

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

Table 14.2-9: SAR Values (WCDMA 1900 MHz Band - 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.										
1852.4	9262	Right	Touch	Fig.9	21.94	23	0.0819	0.10	0.131	0.17	0.07

Table 14.2-10: SAR Values (WCDMA 1900 MHz Band - 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.									
1907.6	9538	Bottom	Fig.10	22.00	23	0.424	0.53	0.807	1.02	-0.04

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

Table 14.2-11: SAR Values (LTE Band2 - Head)

Ambient Temperature: 22.5 °C				Liquid Temperature: 22.0 °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.												
1900	19100	1RB_Mid	Right	Touch	Fig.11	23.21	23.5	0.0894	0.10	0.147	0.16	-0.15	

Note1: The LTE mode is QPSK_20MHz.

Table 14.2-12: SAR Values (LTE Band2 - Body)

Ambient Temperature: 22.5 °C				Liquid Temperature: 22.0 °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_Mid	Bottom	/	22.97	23.4	0.502	0.55	0.973	1.07	0.15

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.2-13: SAR Values (LTE Band4 - Head)

Ambient Temperature: 22.5 °C				Liquid Temperature: 22.0 °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.												
1745	20300	1RB_Mid	Right	Touch	Fig.13	22.99	23.4	0.149	0.16	0.235	0.26	-0.08	

Note1: The LTE mode is QPSK_20MHz.

Table 14.2-14: SAR Values (LTE Band4 - Body)

Frequency		Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Liquid Temperature: 22.0 °C		Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.						Ambient Temperature: 22.5 °C	Liquid Temperature: 22.0 °C					
1732.5	20175	1RB_Mid	Rear	Fig.14	22.74	23.5	0.461	0.55	0.852	1.01	-0.02		

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.2-15: SAR Values (LTE Band5 - Head)

Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Liquid Temperature: 22.0 °C		Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.							Ambient Temperature: 22.5 °C	Liquid Temperature: 22.0 °C					
829	20450	1RB_Low	Right	Touch	Fig.15	23.26	24	0.253	0.30	0.328	0.39	0.11		

Note1: The LTE mode is QPSK_10MHz.

Table 14.2-16: SAR Values (LTE Band5 - Body)

Frequency		Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Liquid Temperature: 22.0 °C		Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.						Ambient Temperature: 22.5 °C	Liquid Temperature: 22.0 °C					
829	20450	1RB_Low	Rear	Fig.16	23.26	24	0.403	0.48	0.523	0.62	0.08		

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

Note2: The LTE mode is QPSK_10MHz.

Table 14.2-17: SAR Values (LTE Band12 - Head)

Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Liquid Temperature: 22.0 °C		Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.							Ambient Temperature: 22.5 °C	Liquid Temperature: 22.0 °C					
711	23130	1RB_Mid	Left	Touch	Fig.17	23.12	24	0.15	0.18	0.191	0.23	-0.04		

Note1: The LTE mode is QPSK_10MHz.

Table 14.2-18: SAR Values (LTE Band12 - Body)

Ambient Temperature: 22.5 °C				Liquid Temperature: 22.0 °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.										
711	23130	1RB_Mid	Rear	Fig.18	23.12	24	0.299	0.37	0.381	0.47	0.11

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

Note2: The LTE mode is QPSK_10MHz.

Table 14.2-19: SAR Values (LTE Band30 - Head)

Ambient Temperature: 22.5 °C				Liquid Temperature: 22.0 °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.											
2310	27710	1RB_Mid	Left	Touch	Fig.19	22.20	23	0.157	0.19	0.287	0.34	0.08

Note1: The LTE mode is QPSK_10MHz.

Table 14.2-20: SAR Values (LTE Band30 - Body) – AP ON

Ambient Temperature: 22.5 °C				Liquid Temperature: 22.0 °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.											
2310	27710	1RB_Mid	Bottom	Fig.20	21.34	22	0.239	0.28	0.475	0.55	-0.07	

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

Note2: The LTE mode is QPSK_10MHz.

Table 14.2-21: SAR Values (LTE Band30 - Body) – AP OFF

Ambient Temperature: 22.5 °C				Liquid Temperature: 22.0 °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.											
2310	27710	1RB_Mid	Front	Fig.21	22.20	23	0.126	0.15	0.212	0.25	0.04	

Note1: The distance between the EUT and the phantom bottom is 15mm.

Note2: The LTE mode is QPSK_10MHz.

14.3 WLAN Evaluation

According to the KDB248227 D01, SAR is measured for 2.4GHz 802.11b DSSS using the initial test position procedure.

Head Evaluation

Table 14.3-1: SAR Values (WLAN - Head) – 802.11b 5.5Mbps (Fast SAR)

		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.				(dBm)	(dBm)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(dB)
2437	6	Left	Touch	/	16.24	17	0.139	0.17	0.282	0.34	0.12
2437	6	Left	Tilt	/	16.24	17	0.0989	0.12	0.189	0.23	0.05
2437	6	Right	Touch	/	16.24	17	0.0572	0.07	0.106	0.13	0.12
2437	6	Right	Tilt	/	16.24	17	0.0621	0.07	0.12	0.14	0.07

As shown above table, the initial test position for head is “Left Touch”. So the head SAR of WLAN is presented as below:

Table 14.3-2: SAR Values (WLAN - Head) – 802.11b 5.5Mbps (Full SAR)

		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.				(dBm)	(dBm)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(dB)
2437	6	Left	Touch	Fig.22	16.24	17	0.135	0.16	0.291	0.35	0.12

Note1: When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest estimated 1-g SAR conditions determined by area scans, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg.

Note2: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. A maximum transmission duty factor of 98.80% is achievable for WLAN in this project and the scaled reported SAR is presented as below.

Table 14.3-3: SAR Values (WLAN - Head) – 802.11b 1Mbps (Scaled Reported SAR)

		Ambient Temperature: 22.5 °C				Liquid Temperature: 22.0 °C			
Frequency		Side	Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g) (W/kg)	Scaled reported SAR (1g) (W/kg)		
MHz	Ch.					(W/kg)	(W/kg)		
2437	6	Left	Touch	98.80%	100%	0.35	0.35		
2437	6	Right	Touch	98.80%	100%	0.13	0.13		

SAR is not required for OFDM because the 802.11b adjusted SAR ≤ 1.2 W/kg.

Body Evaluation

Table 14.3-4: SAR Values (WLAN - Body) – 802.11b 5.5Mbps (Fast SAR)

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.			(dBm)	(dBm)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(dB)
2437	6	Front	/	16.24	17	0.0394	0.05	0.0749	0.09	0.00
2437	6	Rear	/	16.24	17	0.0505	0.06	0.101	0.12	0.04
2437	6	Right	/	16.24	17	0.035	0.04	0.0748	0.09	-0.02
2437	6	Top	/	16.24	17	0.0402	0.05	0.0763	0.09	0.12

As shown above table, the initial test position for body is “Rear”. So the body SAR of WLAN is presented as below:

Table 14.3-5: SAR Values (WLAN - Body) – 802.11b 5.5Mbps (Full SAR)

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.			(dBm)	(dBm)	(W/kg)	(W/kg)	(W/kg)	(W/kg)	(dB)
2437	6	Rear	Fig.23	16.24	17	0.051	0.06	0.103	0.12	0.04

Note1: When the reported SAR of the initial test position is $> 0.4 \text{ W/kg}$, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest estimated 1-g SAR conditions determined by area scans, on the highest maximum output power channel, until the reported SAR is $\leq 0.8 \text{ W/kg}$.

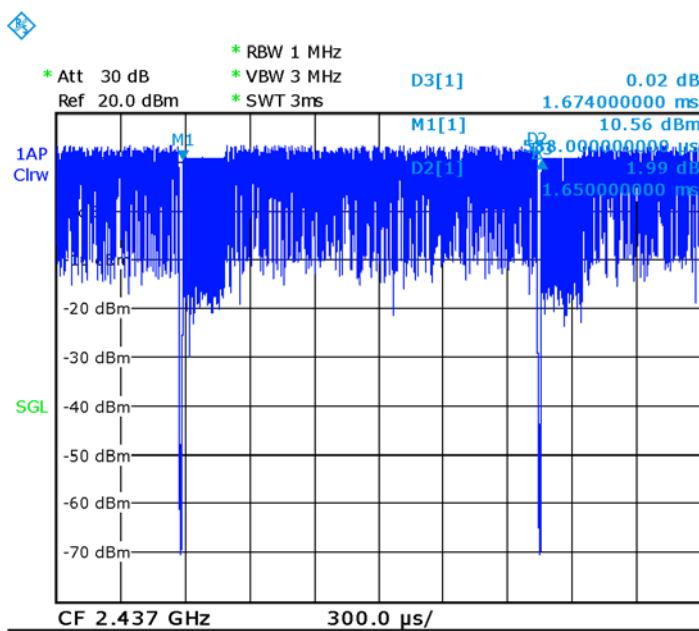
Note2: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is $> 0.8 \text{ W/kg}$, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is $\leq 1.2 \text{ W/kg}$ or all required channels are tested.

According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. A maximum transmission duty factor of 98.80% is achievable for WLAN in this project and the scaled reported SAR is presented as below.

Table 14.3-6: SAR Values (WLAN - Body) – 802.11b 1Mbps (Scaled Reported SAR)

Ambient Temperature: 22.5 °C				Liquid Temperature: 22.0 °C			
Frequency		Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g) (W/kg)	Scaled reported SAR (1g) (W/kg)	
MHz	Ch.			(W/kg)	(W/kg)	(W/kg)	
2437	6	Rear	98.80%	100%	0.12	0.12	

SAR is not required for OFDM because the 802.11b adjusted SAR $\leq 1.2 \text{ W/kg}$.



Picture 14.1 The plot of duty factor for WLAN-2.4G

OFDM – 5G
Table 14.3-7: OFDM mode specified maximum output power of WLAN antenna

802.11 mode	a	g	n		ac			
Ch. BW(MHz)	20	20	20	40	20	40	80	160
§ 15.247 (2.4 GHz)		X	X					
U-NII-1	X		X	X				
U-NII-2A	X		X	X				
U-NII-1 + U-NII-2A								
U-NII-2C	X		X	X				
U-NII-3	X		X	X				
§ 15.247 (5.8 GHz)								

X: maximum(conducted) output power(mW), including tolerance, specified for production units

Table 14.3-8: Maximum output power specified of WLAN antenna

802.11 mode	a	g	n		ac			
Ch. BW(MHz)	20	20	20	40	20	40	80	160
§ 15.247 (2.4 GHz)		X	20					
U-NII-1	12		10	11				
U-NII-2A	12		10	11				
U-NII-1 + U-NII-2A								
U-NII-2C	20		16	20				
U-NII-3	13		9	7				
§ 15.247 (5.8 GHz)								

- The maximum output power specified for production units is the same for all channels, modulations and data rates in each channel bandwidth configuration of the 802.11a/g/n/ac modes.
- The blue highlighted cells represent highest output configurations in each standalone or aggregated frequency band, with tune-up tolerance included.
- For SAR test reduction in the 2.4GHz band, the maximum output specified for production units is 50mW for 802.11b and the highest reported SAR for DSSS is 0.35 W/kg for head, 0.12 W/kg for body.

Table 14.3-9: Maximum output power measured of WLAN antenna, for the applicable OFDM configurations according to the default power measurement procedures for selection initial test configurations

802.11 mode	a	g	n	
BW(MHz)	20	20	20	40
§ 15.247 (2.4 GHz)		1/6/11 15/17/15	1/6/11 Lower power	
U-NII-1	36/40/44/48 9/11/11/11		36/40/44/48 Lower power	38/46 Lower power
U-NII-2A	52/56/60/64 10/9/8/8		52/56/60/64 Lower power	54/62 Lower power
U-NII-2C	100/104/108/112 16/15/17/18 116/132/136/140 19/16/15/14		100/104/108/112 116/132/136/140 Lower power	102/110/118/126/134 8/15/16/16/10
U-NII-3	149/153/157/161/165 9/9/9/9/8		149/153/157/161/165 Lower power	151/159 Lower power
<ul style="list-style-type: none"> Channels with measured maximum power within 0.25dB are considered to have the same measured output. Channels selected for initial test configuration are highlighted in yellow. 				

Base on the above table, the initial test position procedure is performed according to the following:

Table 14.3-10: Initial test position evaluation for OFDM – Head (Fast SAR)

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.										
5260	52	Left	Touch	Fig.24	9.97	10.8	0.069	0.08	0.175	0.21	0.17
5260	52	Left	Tilt	/	9.97	10.8	0.0521	0.06	0.13	0.16	0.03
5260	52	Right	Touch	/	9.97	10.8	0.0252	0.03	0.0587	0.07	-0.14
5260	52	Right	Tilt	/	9.97	10.8	0.0521	0.06	0.13	0.16	0.03
5580	116	Left	Touch	Fig.26	12.84	13	0.0799	0.08	0.221	0.23	-0.11
5580	116	Left	Tilt	/	12.84	13	0.0582	0.06	0.154	0.16	-0.03
5580	116	Right	Touch	/	12.84	13	0.0306	0.03	0.071	0.07	0.17
5580	116	Right	Tilt	/	12.84	13	0.0346	0.04	0.0906	0.09	0.09
5785	157	Left	Touch	Fig.28	9.42	11	0.0664	0.10	0.176	0.25	0.07
5785	157	Left	Tilt	/	9.42	11	0.0642	0.09	0.167	0.24	0.13
5785	157	Right	Touch	/	9.42	11	0.0318	0.05	0.0741	0.11	-0.10
5785	157	Right	Tilt	/	9.42	11	0.0369	0.05	0.0969	0.14	0.08

As shown above table, the initial test position for head is "Left Touch". So the head SAR of WLAN is presented as below:

Table 14.3-11: SAR Values for Head (Full SAR)

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.										
5260	52	Left	Touch	Fig.24	9.97	10.8	0.102	0.12	0.228	0.28	0.17
5580	116	Left	Touch	Fig.26	12.84	13	0.126	0.13	0.283	0.29	-0.11
5785	157	Left	Touch	Fig.28	9.42	11	0.107	0.15	0.243	0.35	0.07

Note1: When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest estimated 1-g SAR conditions determined by area scans, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg.

Note2: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. The scaled reported SAR is presented as below.

Table 14.3-12: SAR Values for Head (Scaled Reported SAR)

Ambient Temperature: 22.5 °C				Liquid Temperature: 22.0 °C				
Frequency		Side	Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g) (W/kg)	Scaled reported SAR (1g) (W/kg)	
MHz	Ch.							
5260	52	Left	Touch	97.83%	100%	0.28	0.29	
5580	116	Left	Touch	97.41%	100%	0.29	0.30	
5785	157	Left	Touch	97.83%	100%	0.35	0.36	

Table 14.3-13: Reported SAR of initial test configuration for head

802.11 mode	a	g	n
BW(MHz)	20	20	40
§ 15.247 (2.4 GHz)		1/6/11	1/6/11
		SAR not required for OFDM 802.11b adjusted SAR ≤ 1.2	
U-NII-1	36/40/44/48 U-NII-2A exclusion applied		36/40/44/48
U-NII-2A	52/56/60/64 0.29		52/56/60/64
U-NII-2C	100/104/108/112 116/132/136/140 0.30		100/104/108/112 116/132/136/140
U-NII-3	149/153/157/161/165 0.36		149/153/157/161/165
U-NII-1 and U-NII-2A bands have the same specified maximum output and tolerance; SAR is measured for U-NII-2A band first. Adjusted SAR of U-NII-2A band is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.			

Table 14.3-14: Initial test position evaluation for OFDM - 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.									
5260	52	Front	/	9.97	10.8	0.0175	0.02	0.0506	0.06	0.00
5260	52	Rear	Fig.25	9.97	10.8	0.0967	0.12	0.28	0.34	0.00
5260	52	Right	/	9.97	10.8	0.0608	0.07	0.161	0.19	-0.12
5260	52	Top	/	9.97	10.8	0.0533	0.06	0.135	0.16	0.12
5580	116	Front	/	12.84	13	0.00816	0.01	0.0366	0.04	0.09
5580	116	Rear	Fig.27	12.84	13	0.0643	0.07	0.184	0.19	0.00
5580	116	Right	/	12.84	13	0.0422	0.04	0.11	0.11	0.00
5580	116	Top	/	12.84	13	0.0441	0.05	0.108	0.11	0.14
5785	157	Front	/	9.42	11	0.00941	0.01	0.0329	0.05	0.09
5785	157	Rear	Fig.29	9.42	11	0.0797	0.11	0.227	0.33	0.00
5785	157	Right	/	9.42	11	0.0442	0.06	0.115	0.17	0.09
5785	157	Top	/	9.42	11	0.048	0.07	0.121	0.17	0.15

As shown above table, the initial test position for head is "Rear". So the head SAR of WLAN is presented as below:

Table 14.3-15: SAR Values for Body (Full SAR)

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.									
5260	52	Rear	Fig.25	9.97	10.8	0.0903	0.11	0.289	0.35	0.00
5580	116	Rear	Fig.27	12.84	13	0.0534	0.06	0.169	0.18	0.00
5785	157	Rear	Fig.29	9.42	11	0.0696	0.10	0.215	0.31	0.00

Note1: When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest estimated 1-g SAR conditions determined by area scans, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg.

Note2: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

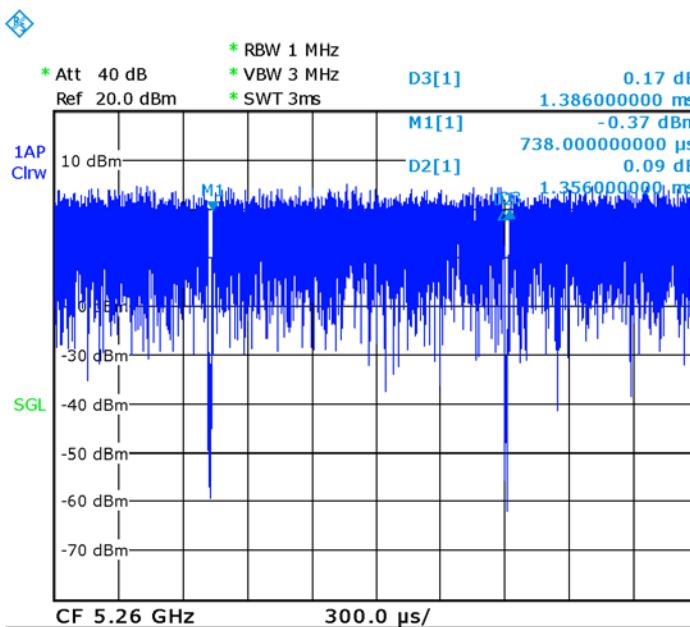
According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. The scaled reported SAR is presented as below:

Table 14.3-16: SAR Values for Body (Scaled Reported SAR)

Ambient Temperature: 22.5 °C				Liquid Temperature: 22.0 °C			
Frequency		Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g) (W/kg)	Scaled reported SAR (1g) (W/kg)	
MHz	Ch.						
5260	52	Rear	97.83%	100%	0.35	0.36	
5580	116	Rear	97.41%	100%	0.18	0.18	
5785	157	Rear	97.83%	100%	0.31	0.32	

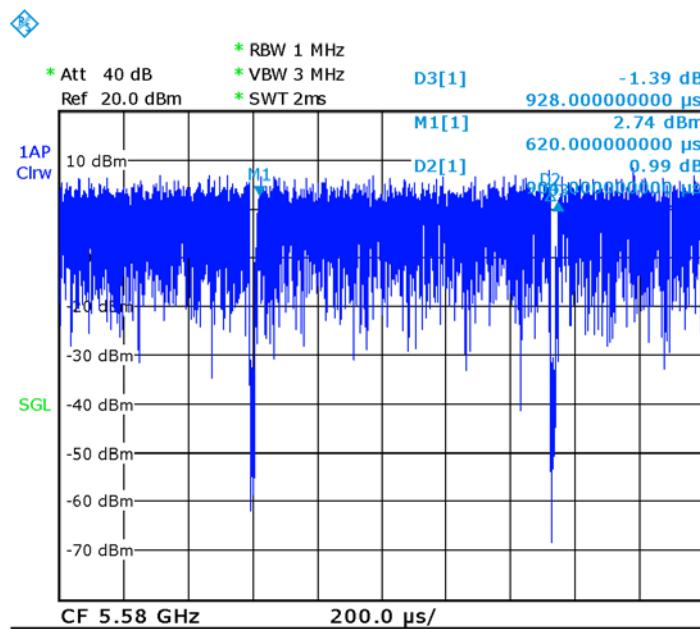
Table 14.3-17: Reported SAR of initial test configuration for body

802.11 mode	a	g	n	
BW(MHz)	20	20	20	40
§ 15.247 (2.4 GHz)		1/6/11	1/6/11	SAR not required for OFDM 802.11b adjusted SAR≤1.2
U-NII-1	36/40/44/48 U-NII-2A exclusion applied		36/40/44/48	38/46
U-NII-2A	52/56/60/64 0.36		52/56/60/64	54/62
U-NII-2C	100/104/108/112 116/132/136/140 0.18		100/104/108/112 116/132/136/140	102/110/118/126/134
U-NII-3	149/153/157/161/165 0.32		149/153/157/161/165	151/159
U-NII-1 and U-NII-2A bands have the same specified maximum output and tolerance; SAR is measured for U-NII-2A band first. Adjusted SAR of U-NII-2A band is ≤ 1.2W/kg, SAR is not required for U-NII-1 band.				



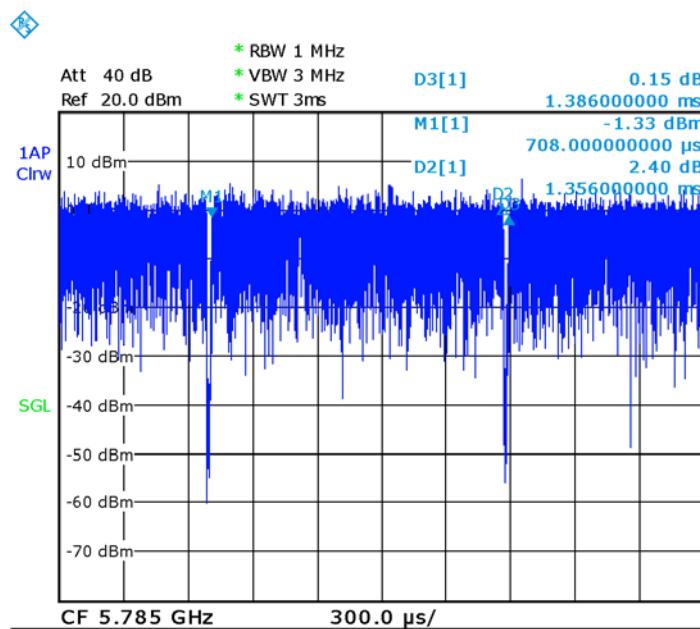
Date: 14.JAN.2016 15:35:26

Picture 14.2 The plot of duty factor for WLAN-5G channel 52



Date: 14.JAN.2016 15:43:18

Picture 14.3 The plot of duty factor for WLAN-5G channel 116



Date: 15.JAN.2016 09:53:04

Picture 14.4 The plot of duty factor for WLAN-5G channel 157

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 GSM 1900 (1g)

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
MHz	Ch.						
1909.8	810	Rear	10	0.893	0.885	1.01	/

Table 15.2: SAR Measurement Variability for Body WCDMA 1700 (1g)

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
MHz	Ch.						
1752.6	1738	Rear	10	1.25	1.24	1.01	/

Table 15.3: SAR Measurement Variability for Body WCDMA 1900 (1g)

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
MHz	Ch.						
1907.6	9938	Bottom	10	0.807	0.810	1.00	/

Table 15.4: 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	Bottom	10	0.973	0.974	1.01	/

Table 15.5: 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.						
1732.5	20175	Rear	10	0.852	0.855	1.01	/

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
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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
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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	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞

	(target)									
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 03, 2015	One year
02	Dielectric Probe Kit	85070E	Agilent	No Calibration Requested	
03	Power meter	NRVD	102196	March 03, 2015	One year
04	Power sensor	NRV-Z5	100596		
05	Power sensor	NRV-Z5	100595	September 16, 2015	One year
06	Signal Generator	E4438C	MY49071430	February 02, 2015	One year
07	Amplifier	60S1G4	0331848	No Calibration Requested	
08	Directional Coupler	778D	MY48220584	No Calibration Requested	
09	Directional Coupler	772D	MY46151265	No Calibration Requested	
10	BTS	E5515C	MY50263375	January 30, 2015	One year
11	BTS	CMW500	129942	March 03, 2015	One year
12	E-field Probe	SPEAG EX3DV4	3617	August 26, 2015	One year
13	DAE	SPEAG DAE4	777	August 26, 2015	One year
14	Dipole Validation Kit	SPEAG D835V2	4d069	July 23, 2015	One year
15	Dipole Validation Kit	SPEAG D1750V2	1003	July 16, 2015	One year
16	Dipole Validation Kit	SPEAG D1900V2	5d101	July 23, 2015	One year
17	Dipole Validation Kit	SPEAG D2450V2	853	July 24, 2015	One year
18	Dipole Validation Kit	SPEAG D5GHzV2	1060	July 27, 2015	One year

END OF REPORT BODY

ANNEX A Graph Results

850 Right Cheek High

Date: 2015-12-26

Electronics: DAE4 Sn777

Medium: Head 850 MHz

Medium parameters used (interpolated): $f = 848.8 \text{ MHz}$; $\sigma = 0.901 \text{ mho/m}$; $\epsilon_r = 43.06$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3

Probe: EX3DV4 - SN3617 ConvF(9.58, 9.58, 9.58)

Area Scan (71x121x1): Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$

Maximum value of SAR (interpolated) = 0.301 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 6.644 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.357 W/kg

SAR(1 g) = 0.276 W/kg; SAR(10 g) = 0.210 W/kg

Maximum value of SAR (measured) = 0.302 W/kg

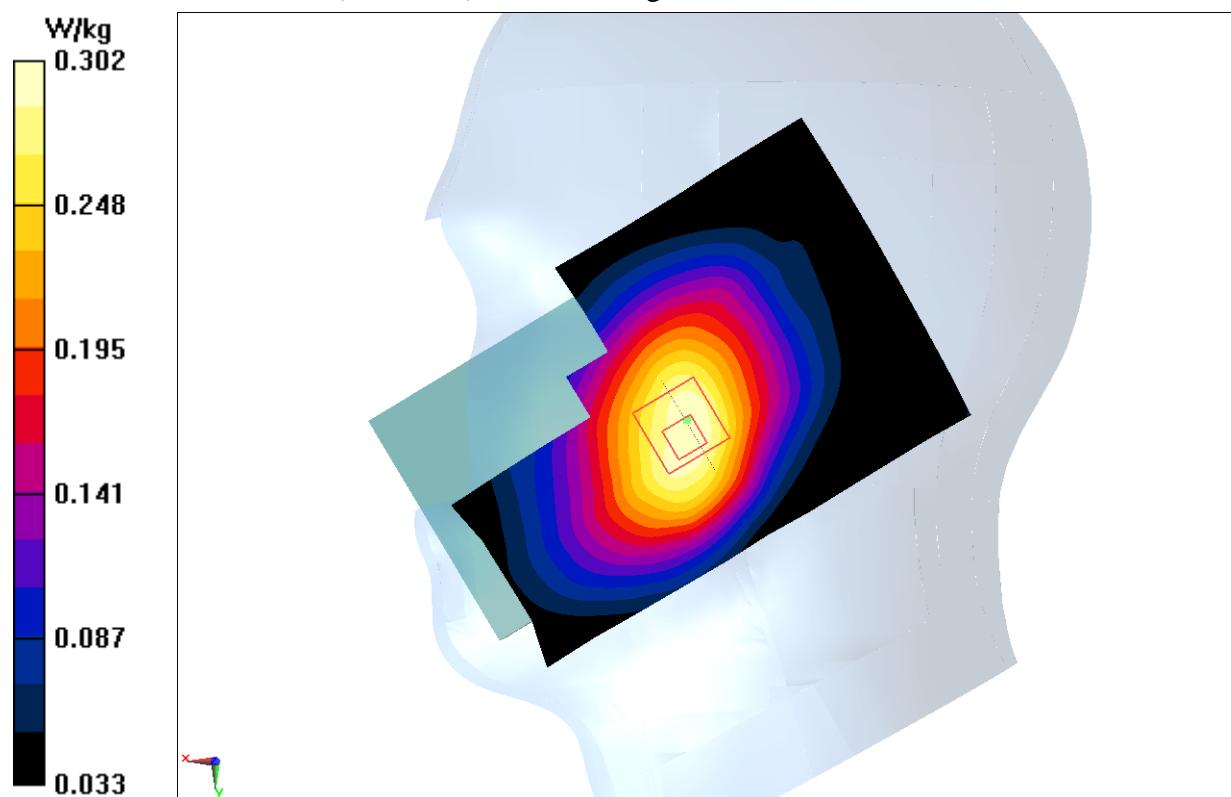


Fig.1 850MHz

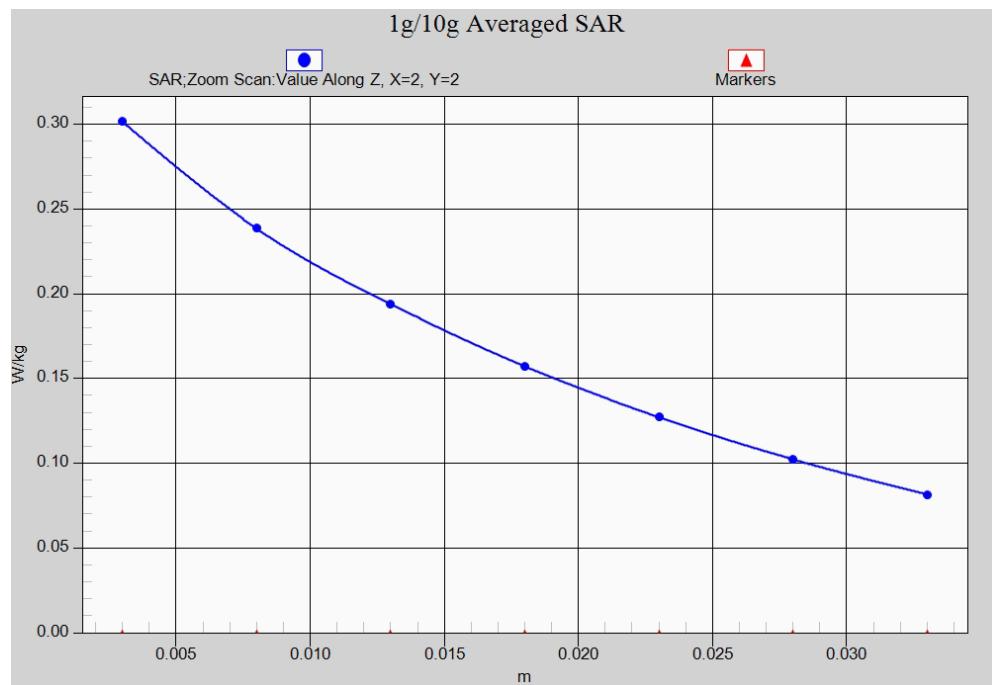


Fig. 1-1 Z-Scan at power reference point (850 MHz)

850 Body Rear High

Date: 2015-12-26

Electronics: DAE4 Sn777

Medium: Body 850 MHz

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.952$ mho/m; $\epsilon_r = 56.21$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: GSM 850 GPRS Frequency: 848.8 MHz Duty Cycle: 1:4

Probe: EX3DV4 - SN3617 ConvF(9.71, 9.71, 9.71)

Area Scan (131x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.816 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23.53 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 1.21 W/kg

SAR(1 g) = 0.683 W/kg; SAR(10 g) = 0.375 W/kg

Maximum value of SAR (measured) = 0.732 W/kg

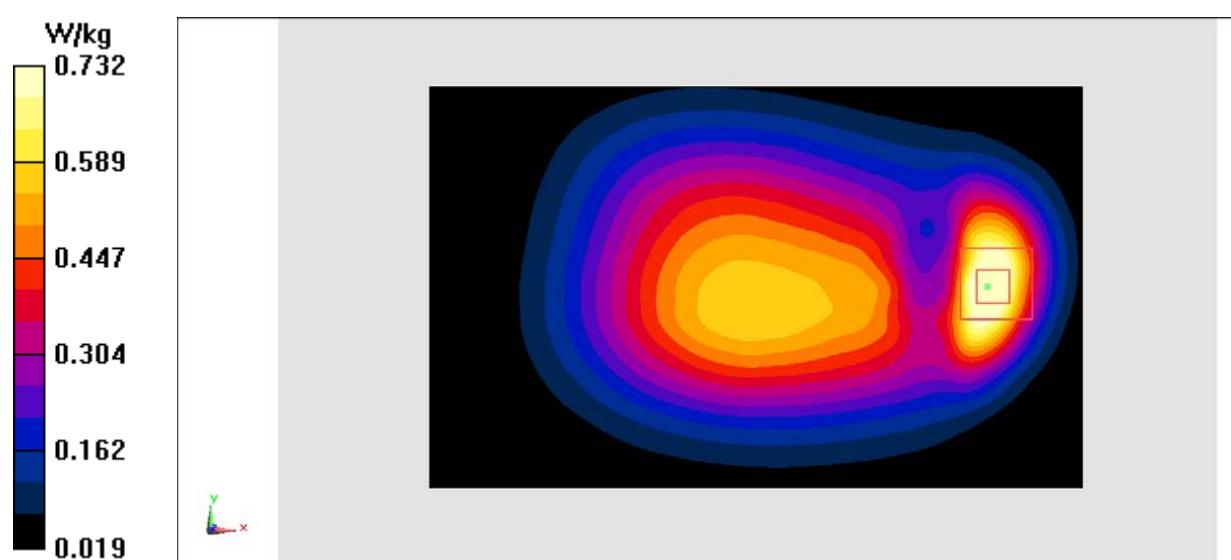


Fig.2 850 MHz

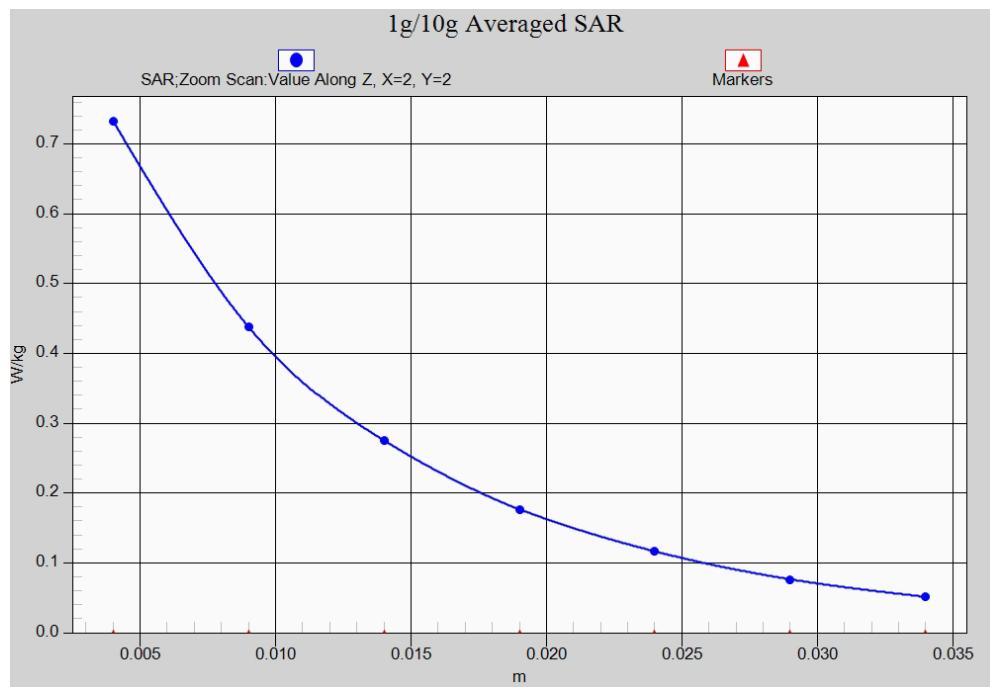


Fig. 2-1 Z-Scan at power reference point (850 MHz)

1900 Right Cheek Low

Date: 2015-12-28

Electronics: DAE4 Sn777

Medium: Head 1900 MHz

Medium parameters use (interpolated): $f = 1850.2$ MHz; $\sigma = 1.377$ mho/m; $\epsilon_r = 39.317$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3

Probe: EX3DV4 - SN3617 ConvF(8.07, 8.07, 8.07)

Area Scan (81x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.111 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.454 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.131 W/kg

SAR(1 g) = 0.089 W/kg; SAR(10 g) = 0.056 W/kg

Maximum value of SAR (measured) = 0.105 W/kg

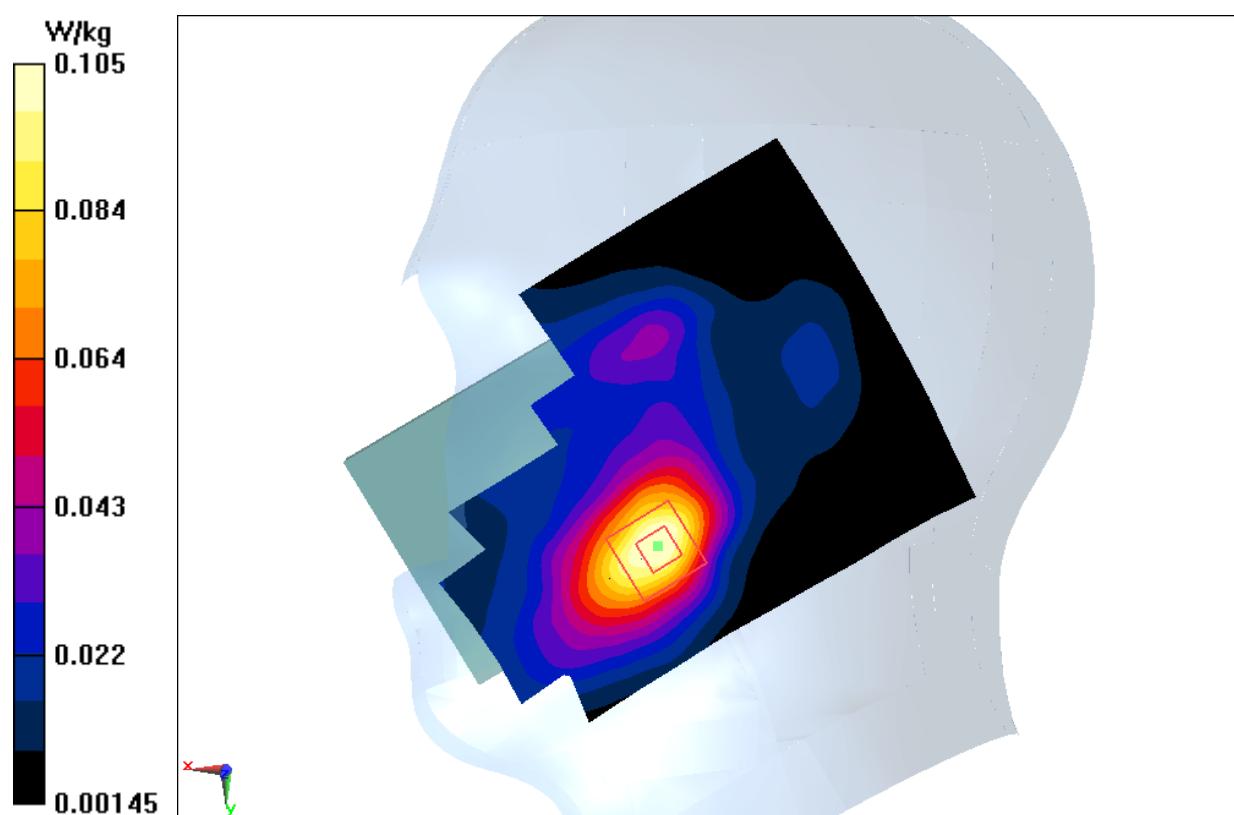


Fig.3 1900 MHz

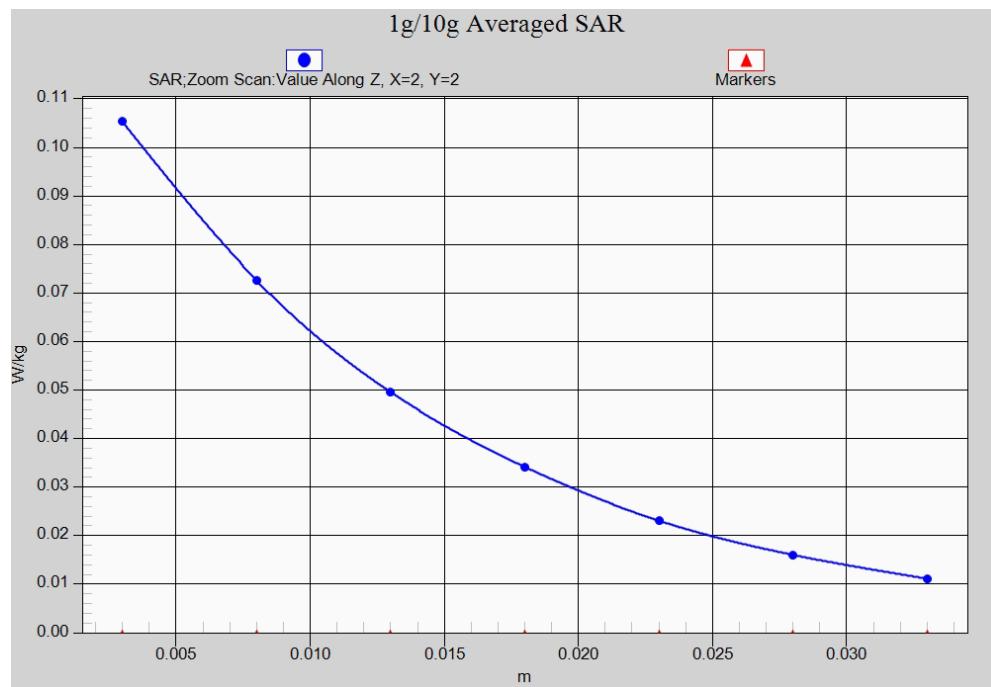


Fig. 3-1 Z-Scan at power reference point (1900 MHz)

1900 Body Rear High

Date: 2015-12-28

Electronics: DAE4 Sn777

Medium: Body 1900 MHz

Medium parameters used (interpolated): $f = 1909.8 \text{ MHz}$; $\sigma = 1.59 \text{ mho/m}$; $\epsilon_r = 54.35$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: GSM 1900MHz GPRS Frequency: 1909.8 MHz Duty Cycle: 1:4

Probe: EX3DV4 - SN3617 ConvF(7.74, 7.74, 7.74)

Area Scan (121x71x1): Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$

Maximum value of SAR (interpolated) = 1.18 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 8.420 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.57 W/kg

SAR(1 g) = 0.893 W/kg; SAR(10 g) = 0.472 W/kg

Maximum value of SAR (measured) = 1.27 W/kg

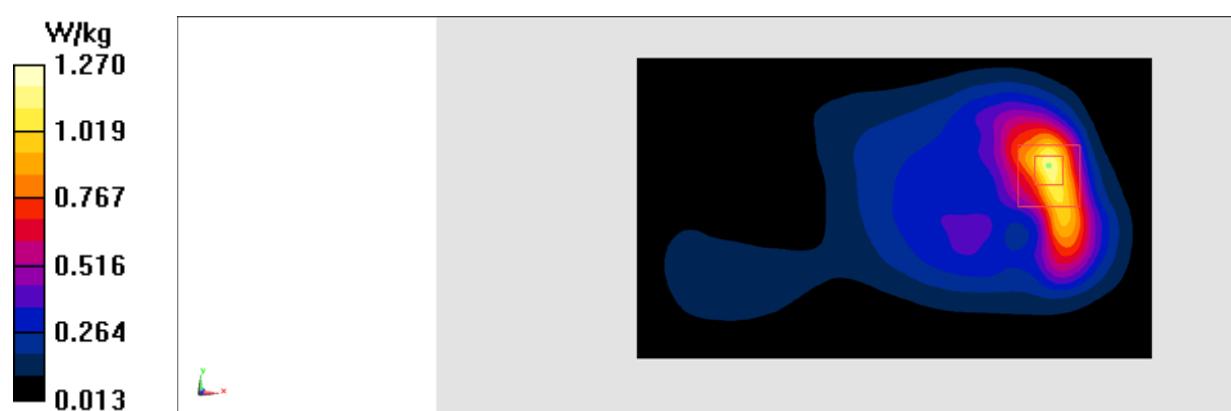


Fig.4 1900 MHz

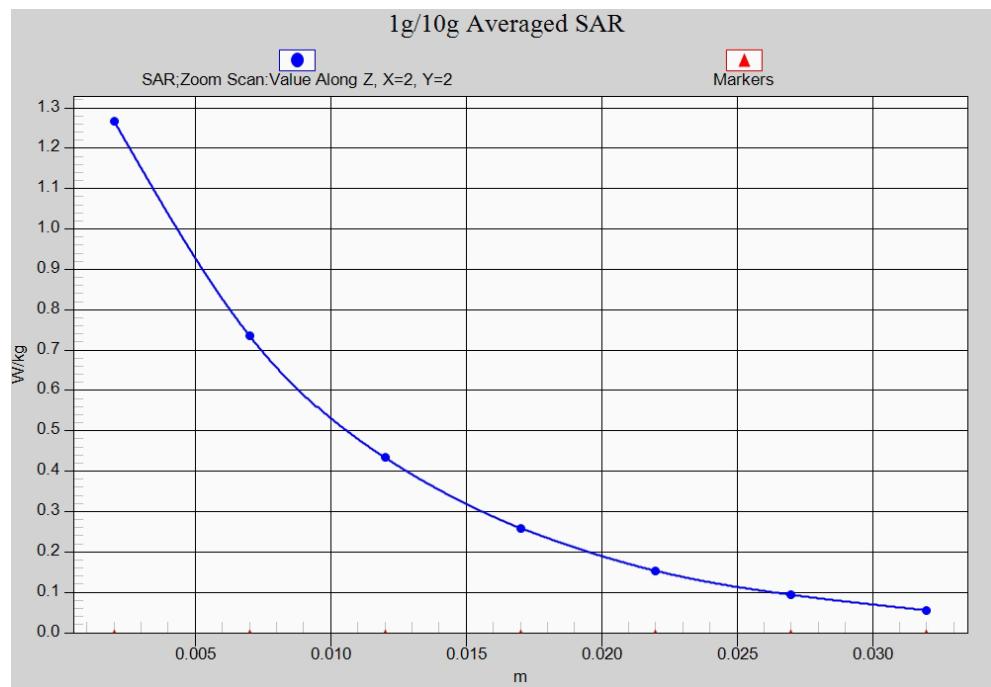


Fig.4-1 Z-Scan at power reference point (1900 MHz)

WCDMA 850 Right Cheek Low

Date: 2015-12-26

Electronics: DAE4 Sn777

Medium: Head 850 MHz

Medium parameters used (interpolated): $f = 826.4$ MHz; $\sigma = 0.832$ mho/m; $\epsilon_r = 40.257$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: WCDMA; Frequency: 826.4 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN3617 ConvF(9.58, 9.58, 9.58)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.314 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.371 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.372 W/kg

SAR(1 g) = 0.291 W/kg; SAR(10 g) = 0.224 W/kg

Maximum value of SAR (measured) = 0.316 W/kg

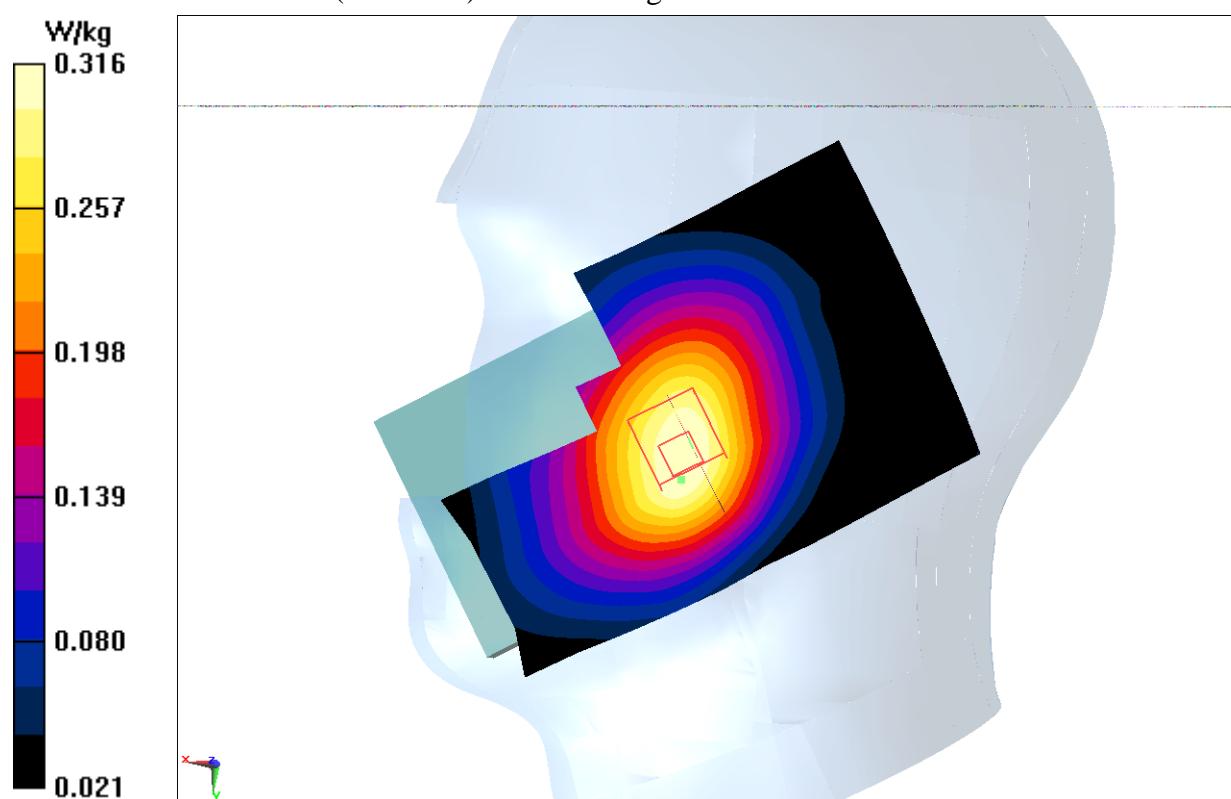


Fig.5 WCDMA 850

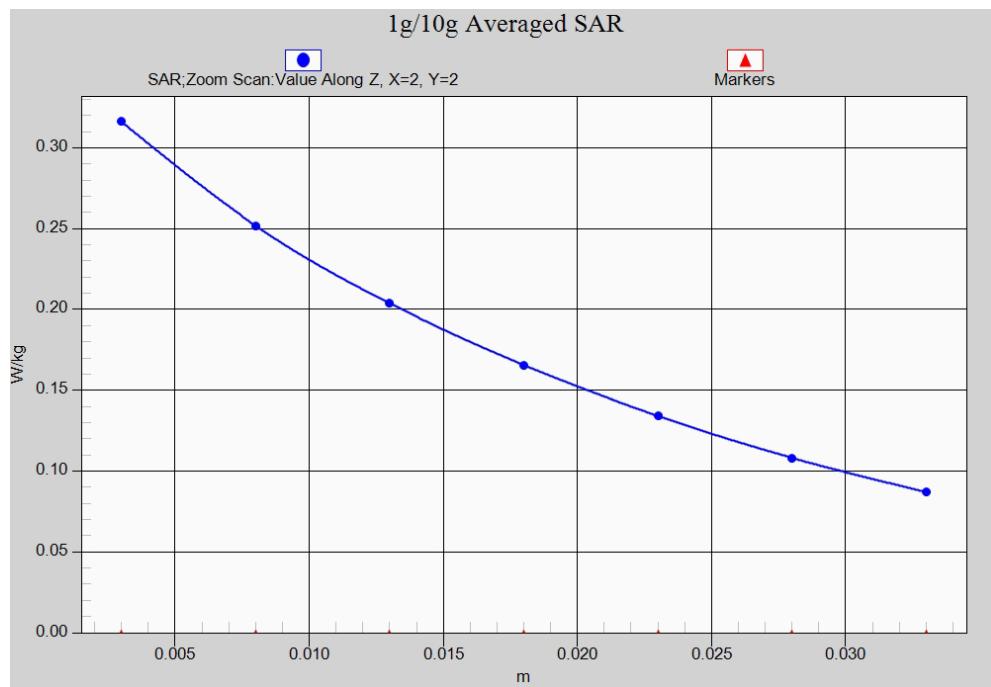


Fig. 5-1 Z-Scan at power reference point (WCDMA 850)

WCDMA 850 Body Rear Middle

Date: 2015-12-26

Electronics: DAE4 Sn777

Medium: Body 850 MHz

Medium parameters used (interpolated): $f = 836.4$ MHz; $\sigma = 0.894$ mho/m; $\epsilon_r = 55.132$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: WCDMA; Frequency: 836.4 MHz; Duty Cycle: 1:1

Probe: EX3DV4 - SN3617 ConvF(9.71, 9.71, 9.71)

Area Scan (121x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.629 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.32 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.867 W/kg

SAR(1 g) = 0.492 W/kg; SAR(10 g) = 0.275 W/kg

Maximum value of SAR (measured) = 0.683 W/kg

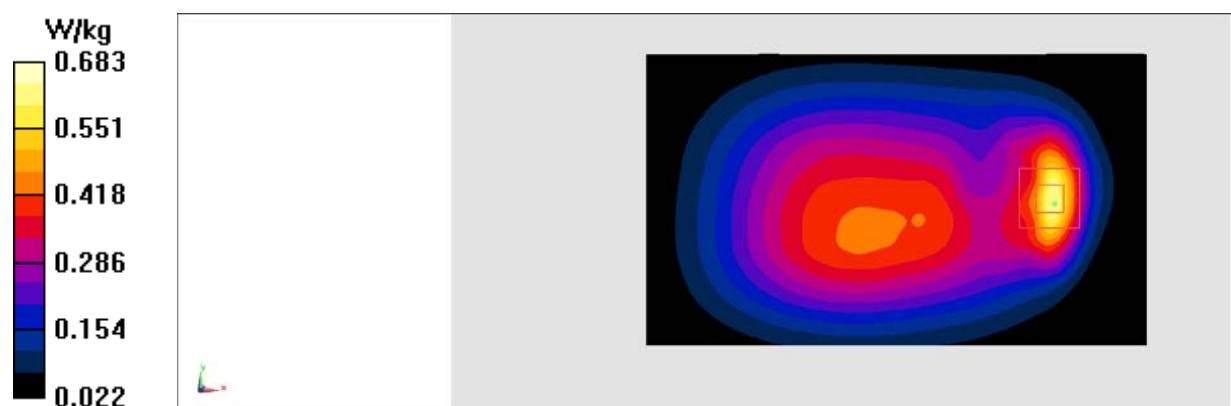


Fig.6 WCDMA 850

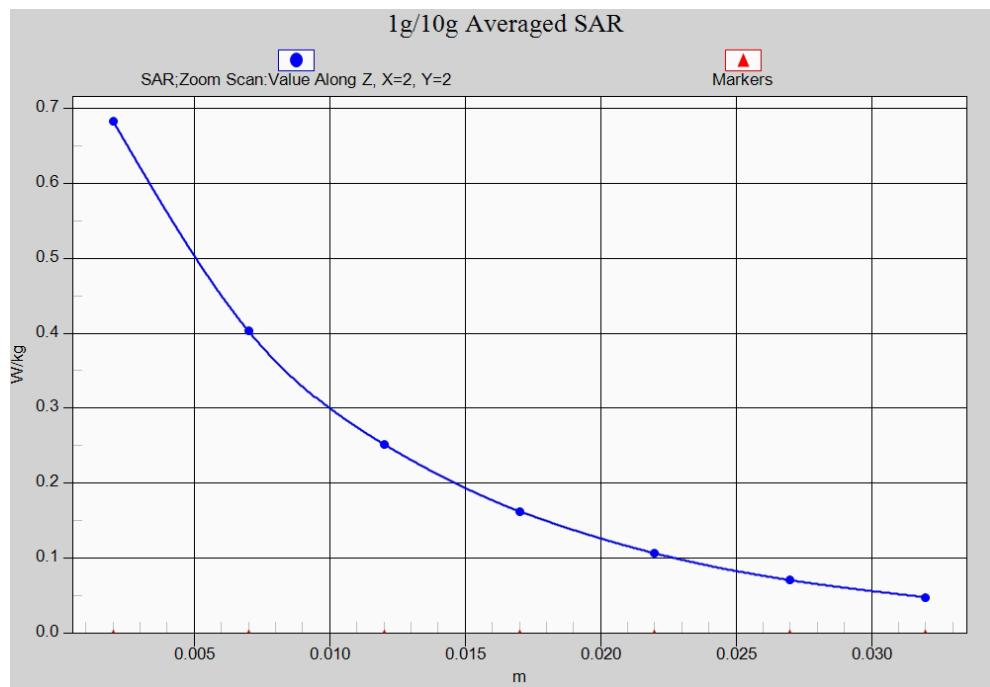


Fig. 6-1 Z-Scan at power reference point (WCDMA850)

WCDMA 1700 Right Cheek High

Date: 2015-12-27

Electronics: DAE4 Sn777

Medium: Head 1750 MHz

Medium parameters used (interpolated): $f = 1752.6$ MHz; $\sigma = 1.363$ mho/m; $\epsilon_r = 39.647$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: WCDMA 1700 Frequency: 1752.6 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN3617 ConvF(8.34, 8.34, 8.34)

Area Scan (81x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.287 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.862 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.338 W/kg

SAR(1 g) = 0.228 W/kg; SAR(10 g) = 0.144 W/kg

Maximum value of SAR (measured) = 0.268 W/kg

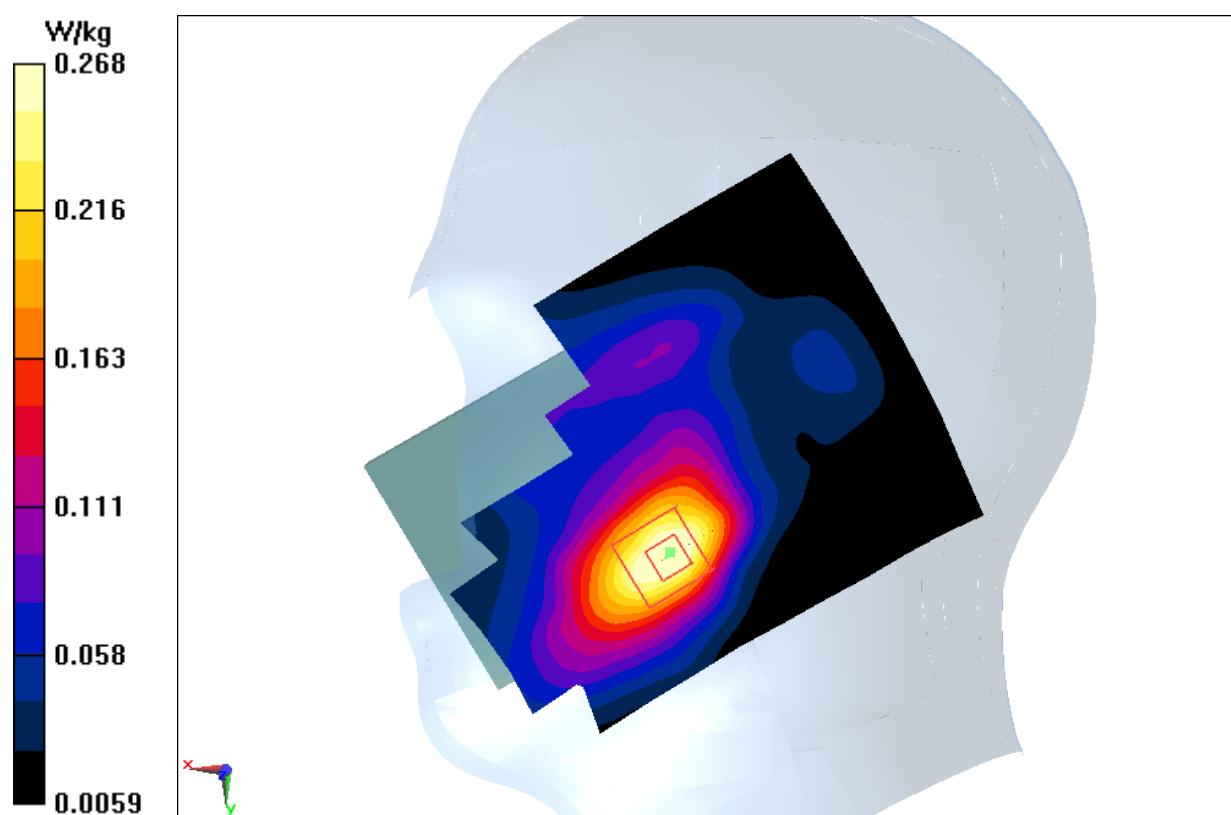


Fig.7 1700MHz

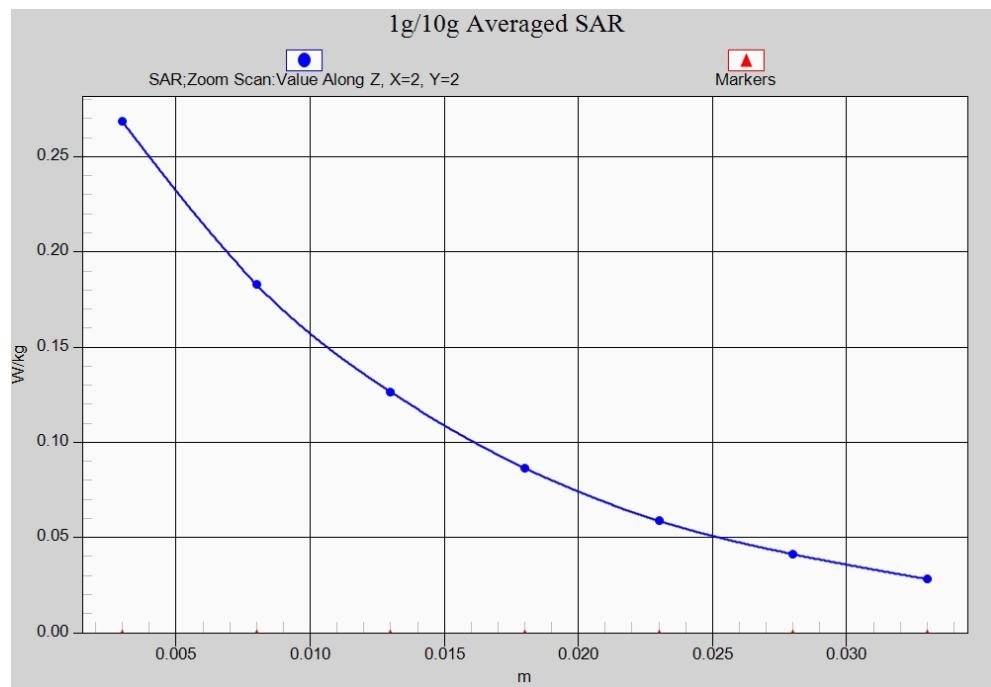


Fig. 7-1 Z-Scan at power reference point (1700 MHz)

WCDMA 1700 Body Rear High

Date: 2015-12-19

Electronics: DAE4 Sn777

Medium: Body 1750 MHz

Medium parameters used (interpolated): $f = 1752.6 \text{ MHz}$; $\sigma = 1.562 \text{ mho/m}$; $\epsilon_r = 52.899$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: WCDMA 1700 Frequency: 1752.6 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN3617 ConvF(7.96, 7.96, 7.96)

Area Scan (121x71x1): Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$

Maximum value of SAR (interpolated) = 1.59 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 11.45 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 2.19 W/kg

SAR(1 g) = 1.25 W/kg; SAR(10 g) = 0.666 W/kg

Maximum value of SAR (measured) = 1.72 W/kg



Fig.8 1700 MHz

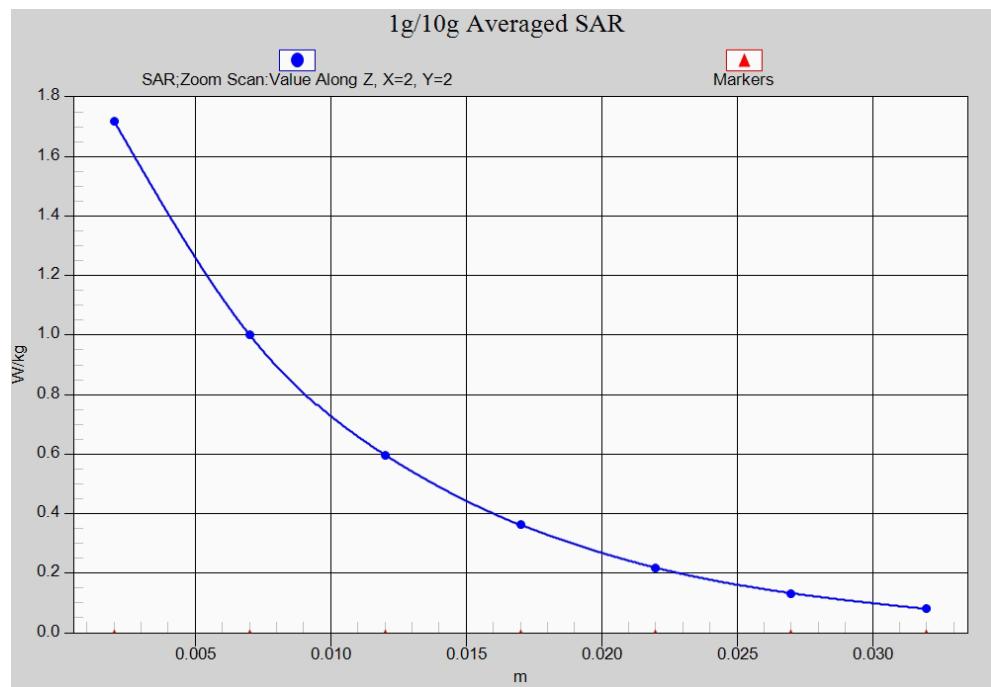


Fig. 8-1 Z-Scan at power reference point (1700 MHz)

WCDMA 1900 Right Cheek Low

Date: 2015-12-28

Electronics: DAE4 Sn777

Medium: Head 1900 MHz

Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.257$ mho/m; $\epsilon_r = 38.98$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: WCDMA 1900 Frequency: 1852.4 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN3617ConvF(8.07, 8.07, 8.07)

Area Scan (81x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.163 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.022 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.194 W/kg

SAR(1 g) = 0.131 W/kg; SAR(10 g) = 0.082 W/kg

Maximum value of SAR (measured) = 0.153 W/kg

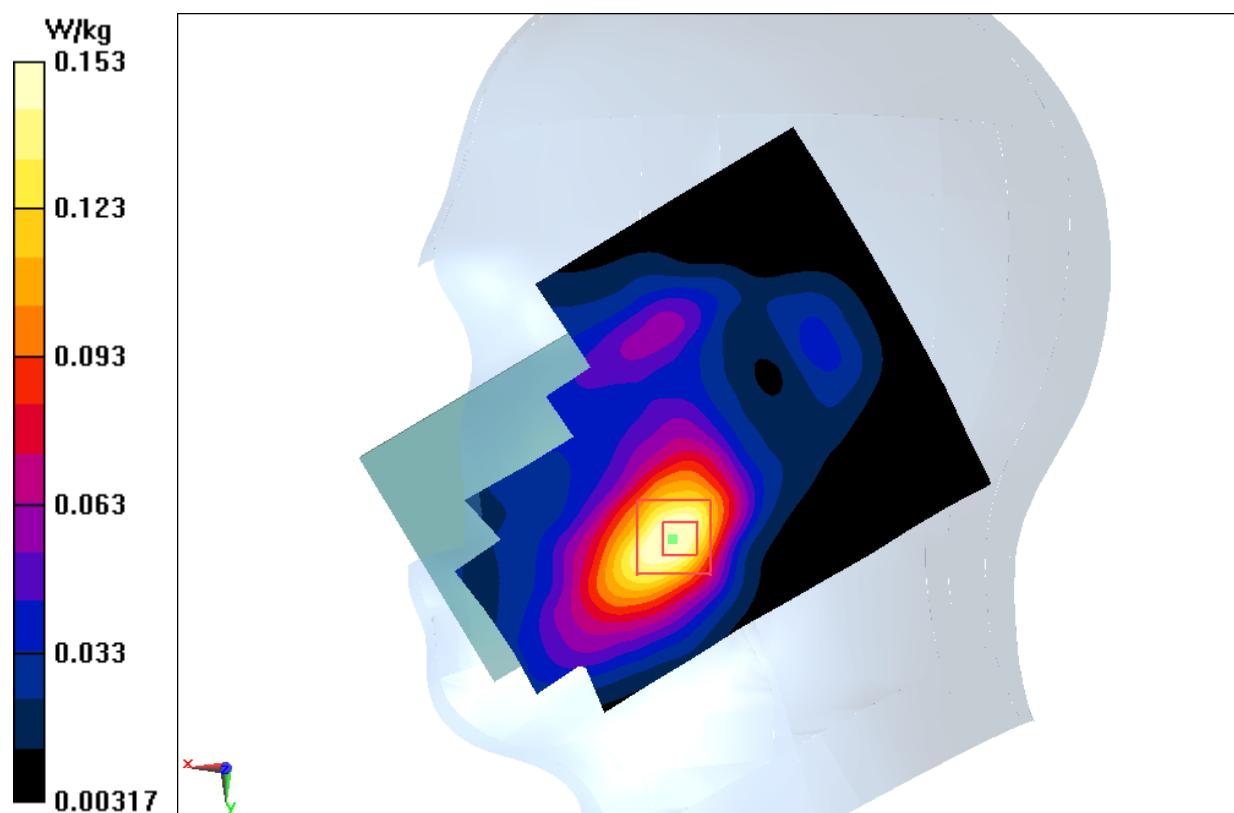


Fig.9 WCDMA1900

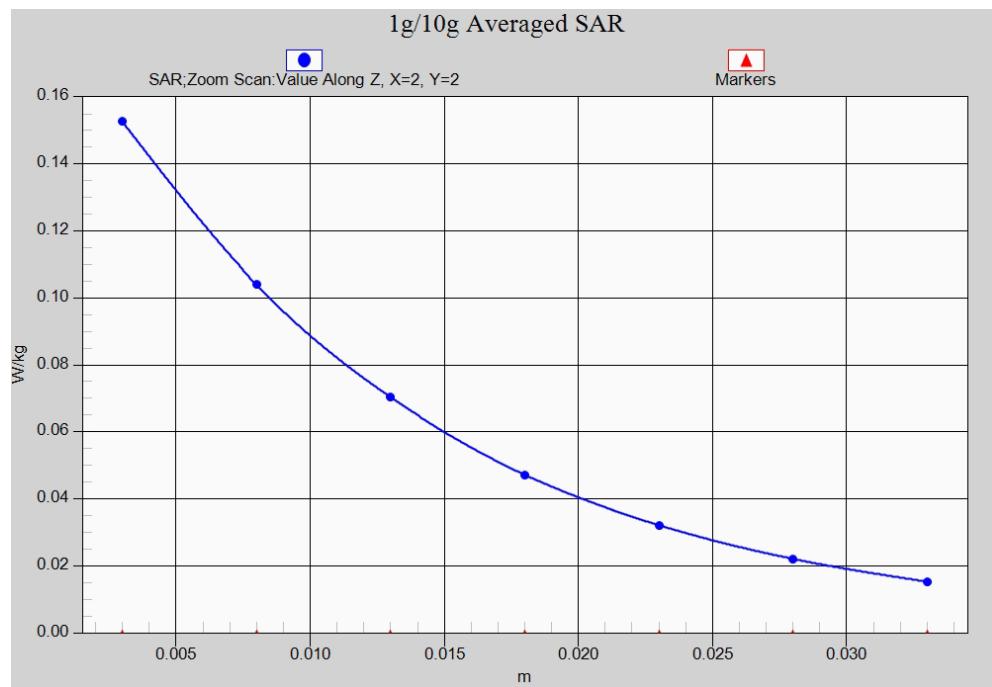


Fig. 9-1 Z-Scan at power reference point (WCDMA1900)

WCDMA 1900 Body Bottom High

Date: 2015-12-28

Electronics: DAE4 Sn777

Medium: Body 1900 MHz

Medium parameters used: $f = 1907.6 \text{ MHz}$; $\sigma = 1.564 \text{ mho/m}$; $\epsilon_r = 54.146$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: WCDMA 1900 Frequency: 1907.6 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(7.74, 7.74, 7.74)

Area Scan (121x71x1): Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$

Maximum value of SAR (interpolated) = 1.09 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 22.21 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.39 W/kg

SAR(1 g) = 0.807 W/kg; SAR(10 g) = 0.424 W/kg

Maximum value of SAR (measured) = 1.14 W/kg

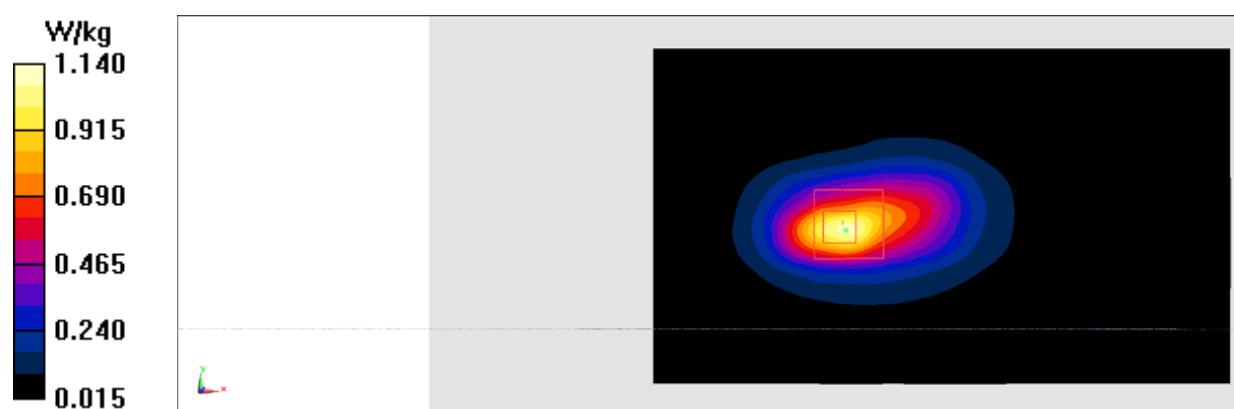


Fig.10 WCDMA1900

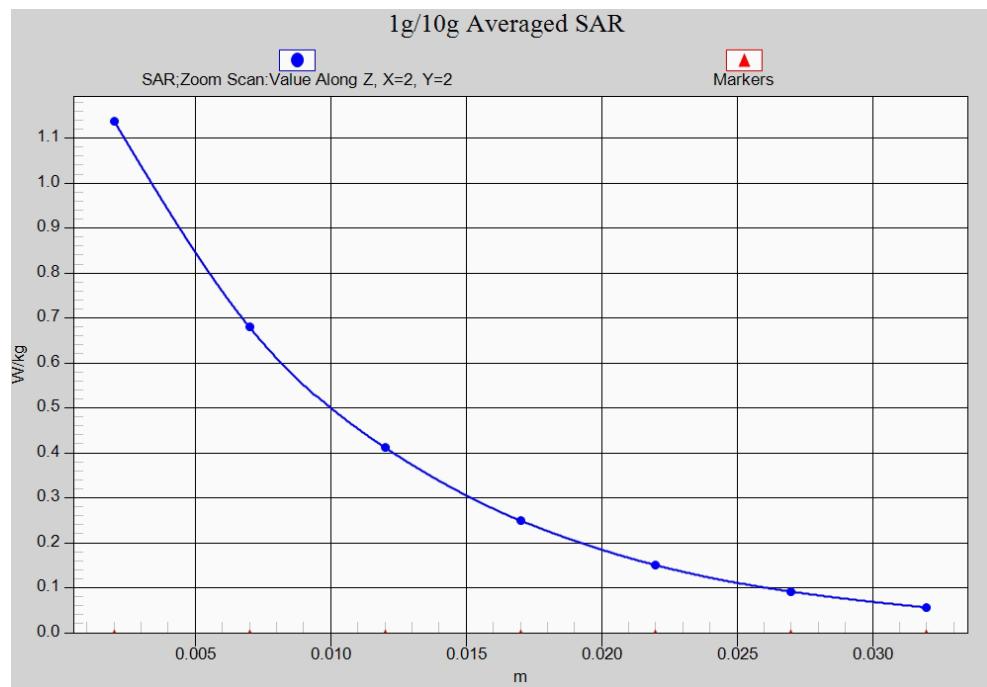


Fig. 10-1 Z-Scan at power reference point (WCDMA1900)

LTE Band2 Right Cheek High with QPSK_20M_1RB_Middle

Date: 2015-12-28

Electronics: DAE4 Sn777

Medium: Head 1900 MHz

Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.427 \text{ mho/m}$; $\epsilon_r = 39.78$; $\rho = 1000 \text{ kg/m}^3$ Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: LTE Band2 Frequency: 1900 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN3617 ConvF(8.07, 8.07, 8.07)

Area Scan (81x121x1): Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$

Maximum value of SAR (interpolated) = 0.192 W/kg

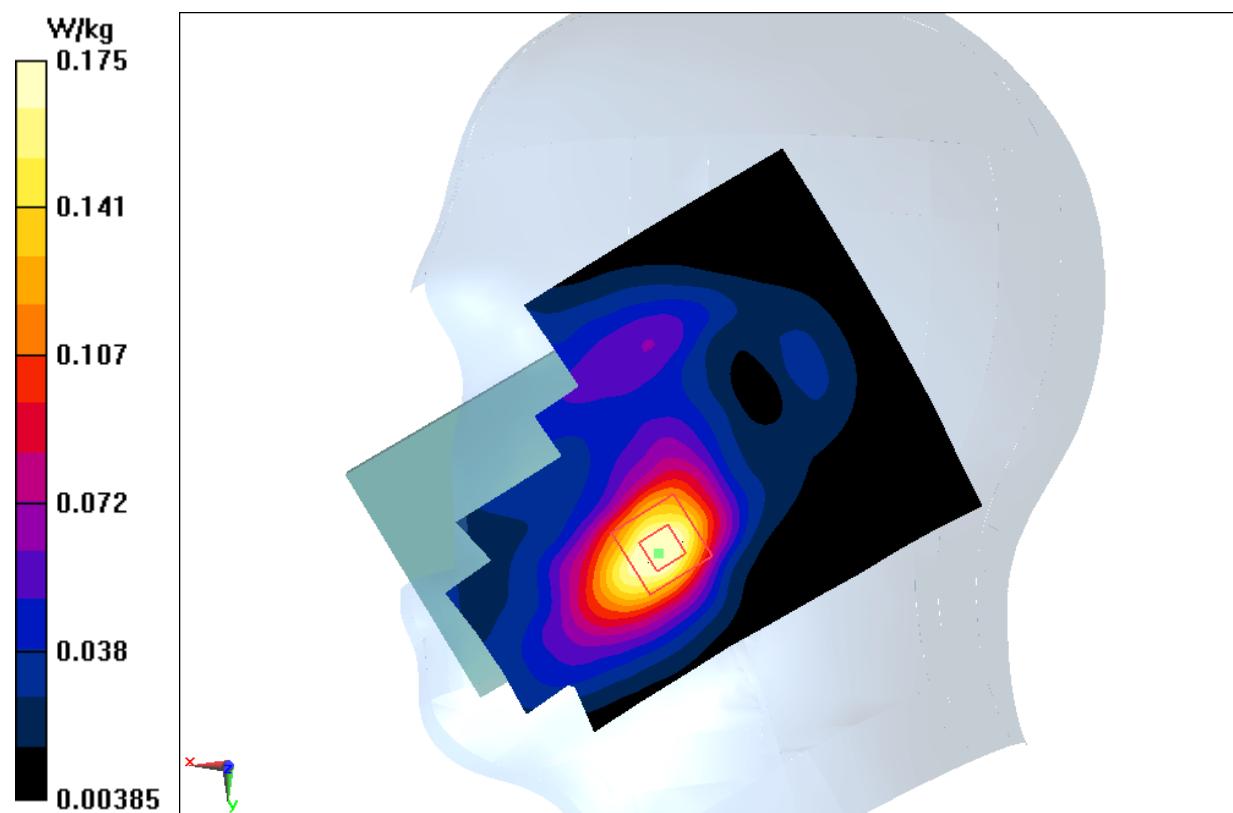
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 4.830 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 0.228 W/kg

SAR(1 g) = 0.147 W/kg; SAR(10 g) = 0.089 W/kg

Maximum value of SAR (measured) = 0.175 W/kg

**Fig.11 LTE Band2**

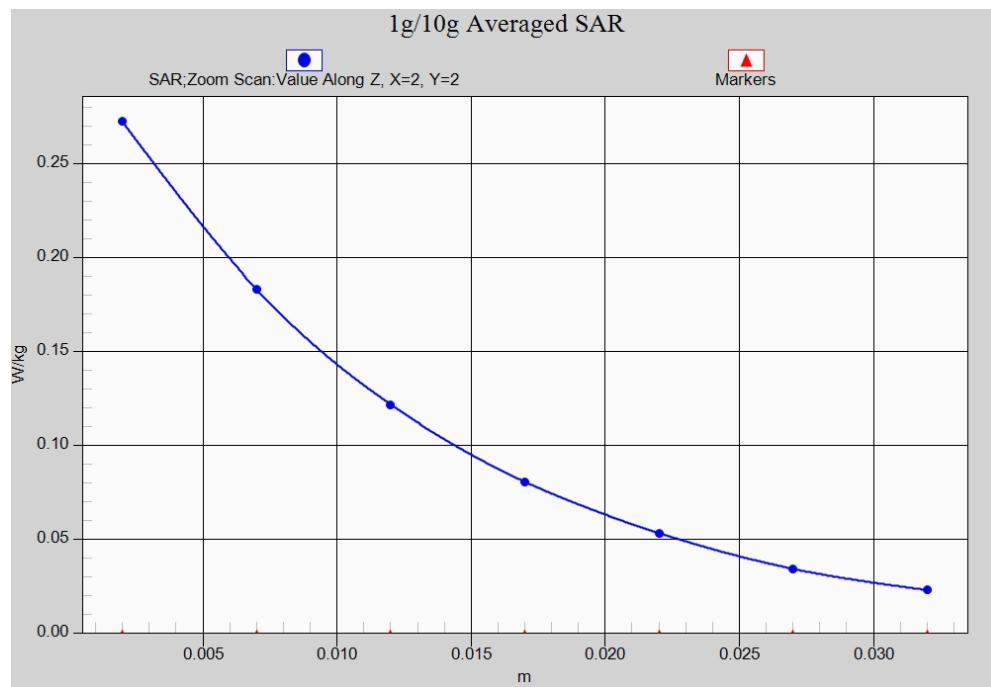


Fig. 11-1 Z-Scan at power reference point (LTE Band2)

LTE Band2 Body Bottom Low with QPSK_20M_1RB_Middle

Date: 2015-12-28

Electronics: DAE4 Sn777

Medium: Body 1900 MHz

Medium parameters used: $f = 1860$ MHz; $\sigma = 1.45$ mho/m; $\epsilon_r = 53.897$; $\rho = 1000$ kg/m 3

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: LTE Band2 Frequency: 1860 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN3617 ConvF(7.74, 7.74, 7.74)

Area Scan (121x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.18 W/kg

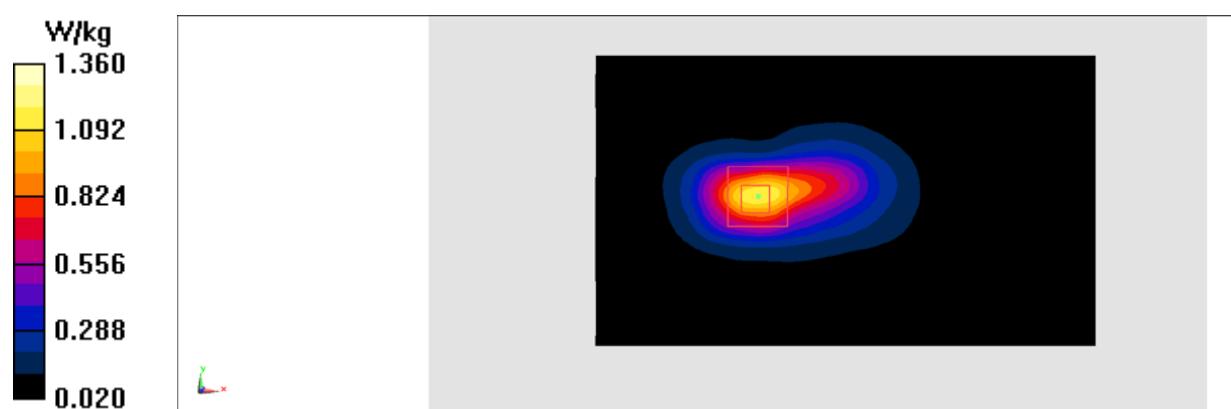
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 18.04 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 1.70 W/kg

SAR(1 g) = 0.973 W/kg; SAR(10 g) = 0.502 W/kg

Maximum value of SAR (measured) = 1.36 W/kg

**Fig.12 LTE Band2**

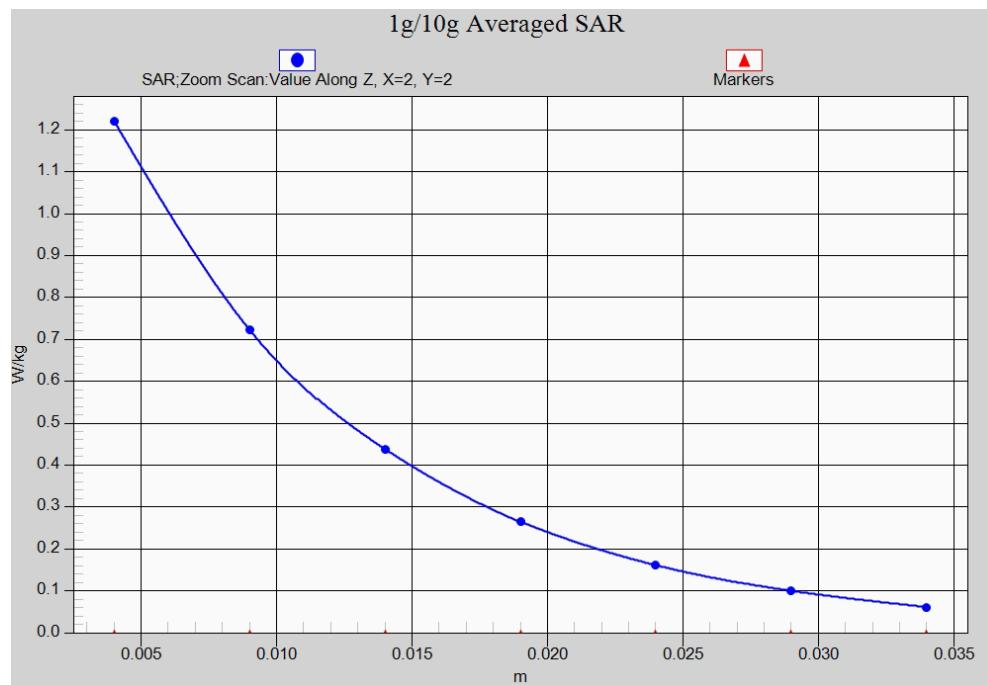


Fig. 12-1 Z-Scan at power reference point (LTE Band2)

LTE Band4 Right Cheek High with QPSK_20M_1RB_Middle

Date: 2015-12-27

Electronics: DAE4 Sn777

Medium: Head 1750 MHz

Medium parameters used (interpolated): $f = 1745$ MHz; $\sigma = 1.329$ mho/m; $\epsilon_r = 39.022$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: LTE Band4 Frequency: 1745 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN3617 ConvF(8.34, 8.34, 8.34)

Area Scan (81x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.295 W/kg

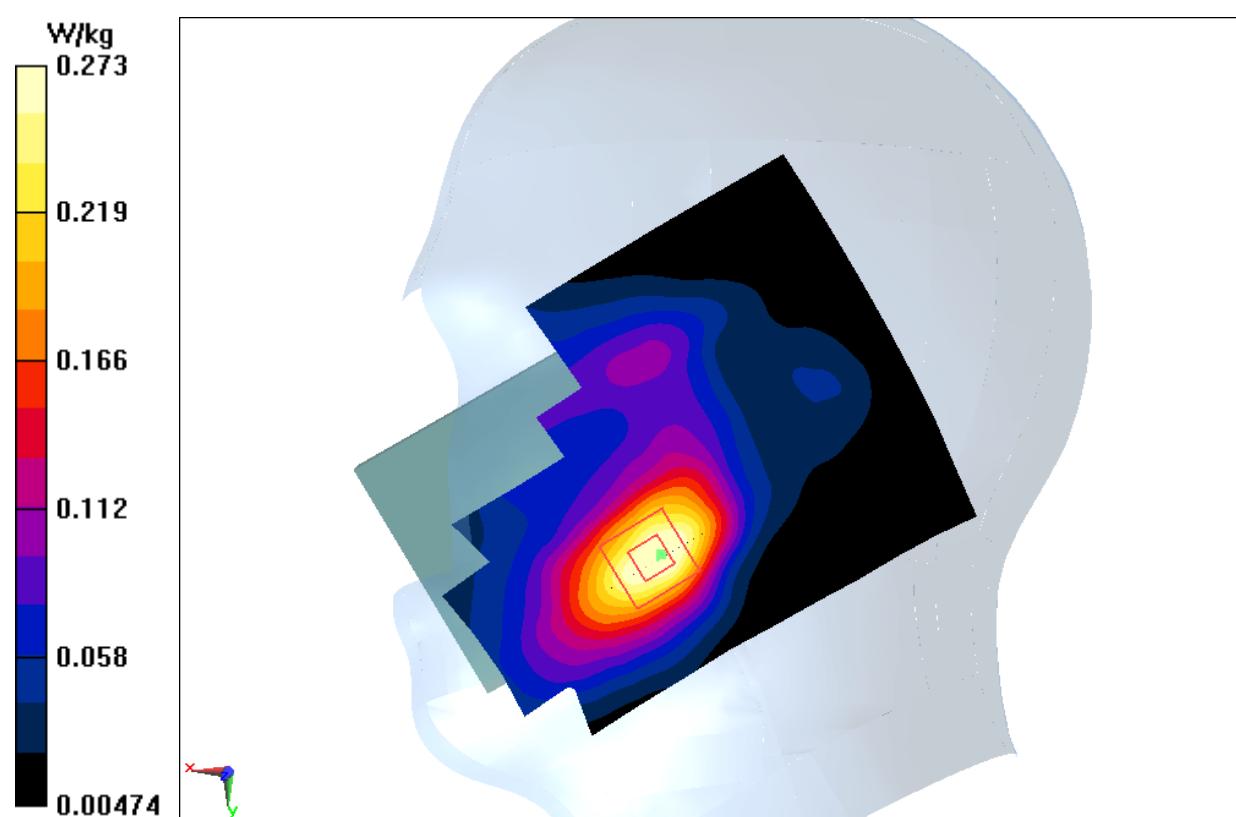
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.462 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.345 W/kg

SAR(1 g) = 0.235 W/kg; SAR(10 g) = 0.149 W/kg

Maximum value of SAR (measured) = 0.273 W/kg

**Fig.13 LTE Band4**

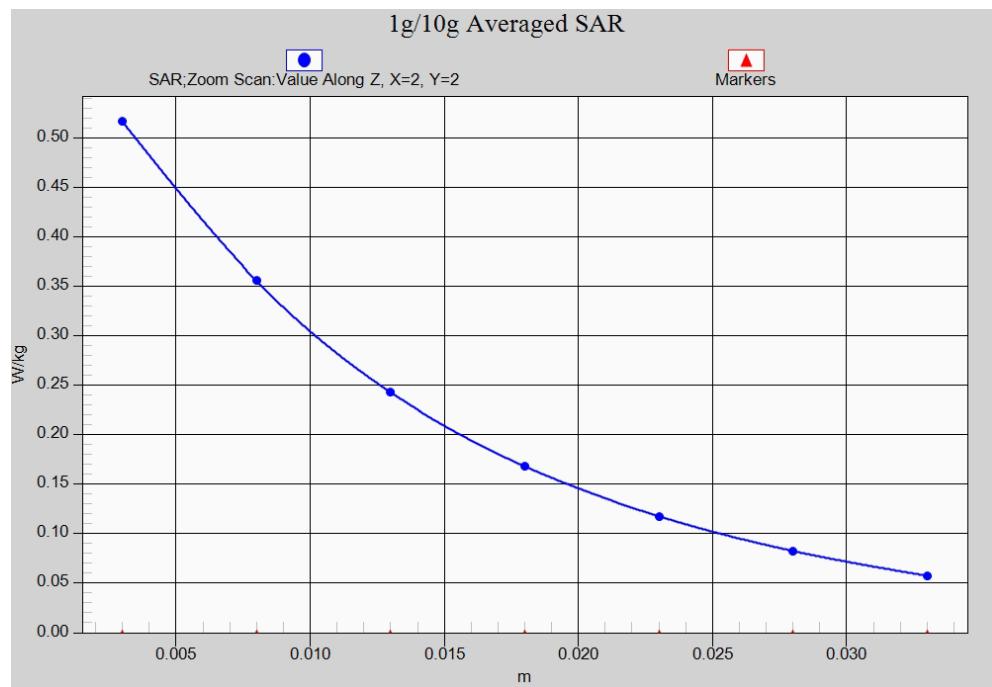


Fig. 13-1 Z-Scan at power reference point (LTE Band4)

LTE Band4 Body Rear Middle with QPSK_20M_1RB_Middle

Date: 2015-12-27

Electronics: DAE4 Sn777

Medium: Body 1750 MHz

Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.339$ mho/m; $\epsilon_r = 51.152$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: LTE Band4 Frequency: 1732.5 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN3617 ConvF(7.96, 7.96, 7.96)

Area Scan (121x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.05 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.93 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.48 W/kg

SAR(1 g) = 0.852 W/kg; SAR(10 g) = 0.461 W/kg

Maximum value of SAR (measured) = 1.18 W/kg

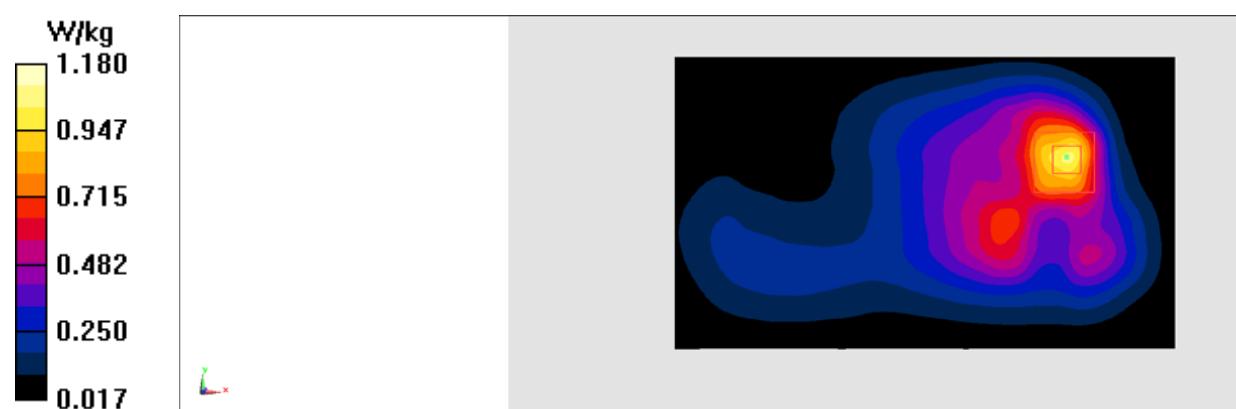


Fig.14 LTE Band4

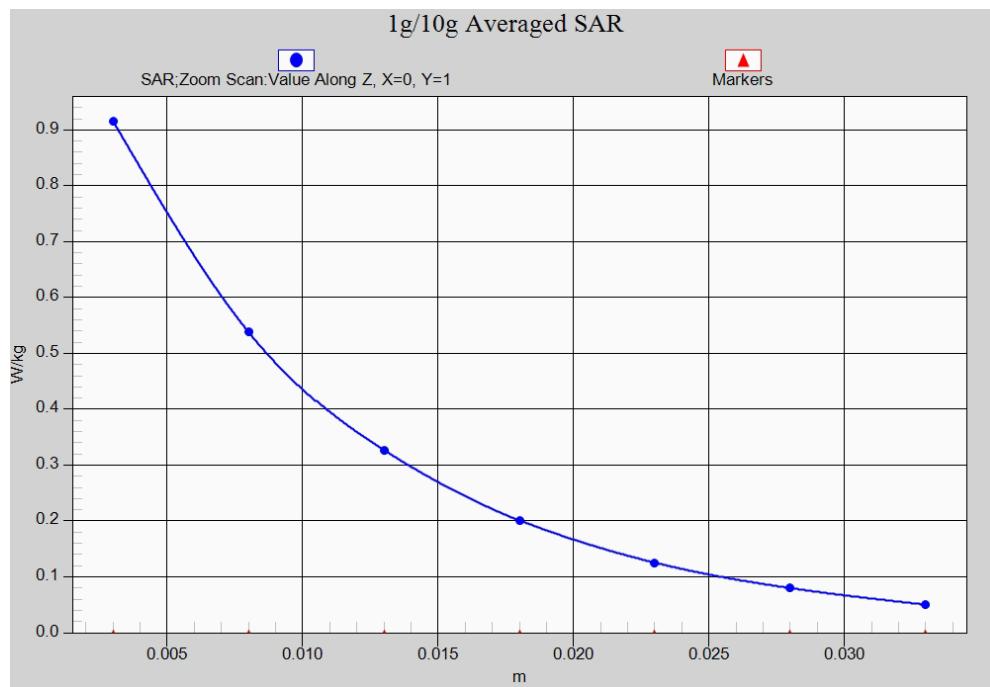


Fig. 14-1 Z-Scan at power reference point (LTE Band4)

LTE Band5 Right Cheek Low with QPSK_10M_1RB_Low

Date: 2015-12-26

Electronics: DAE4 Sn777

Medium: Head 850 MHz

Medium parameters used (interpolated): $f = 829$ MHz; $\sigma = 0.916$ mho/m; $\epsilon_r = 41.481$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: LTE Band5 Frequency: 829 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN3617 ConvF(9.58, 9.58, 9.58)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.369 W/kg

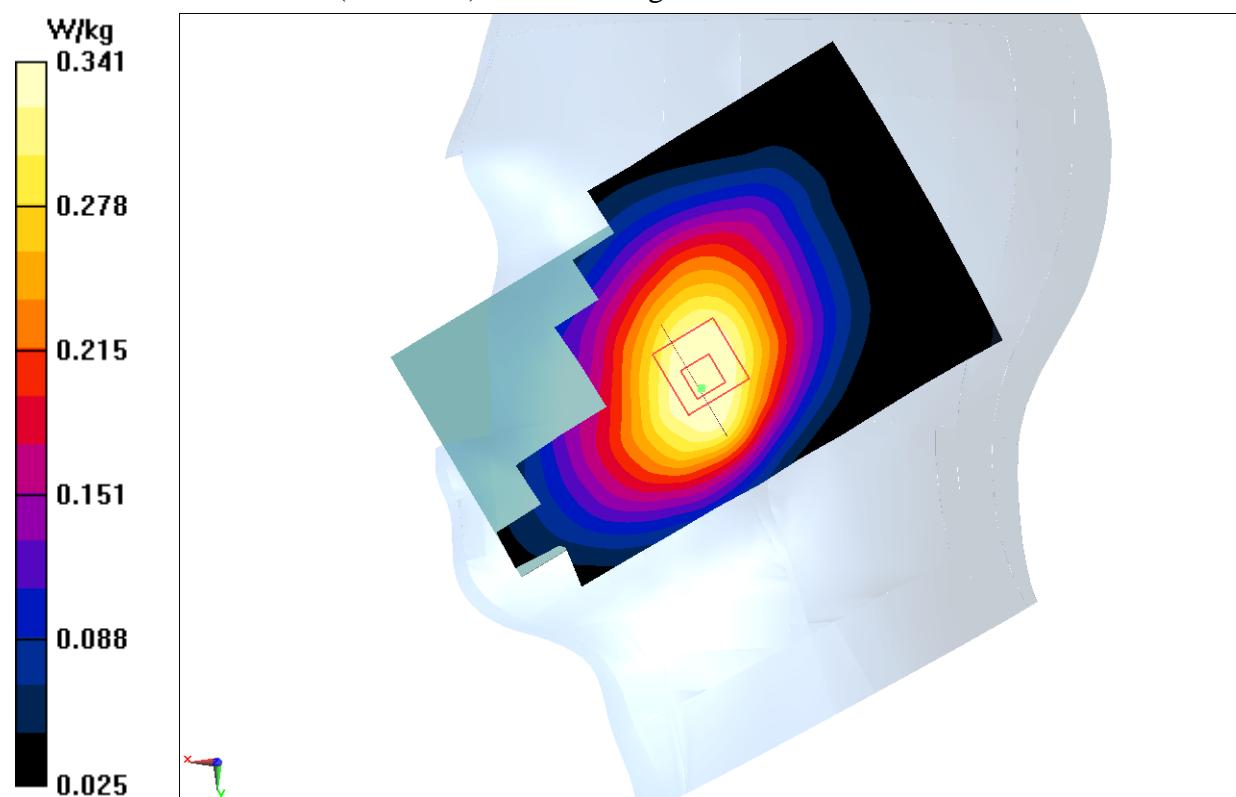
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.730 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.410 W/kg

SAR(1 g) = 0.328 W/kg; SAR(10 g) = 0.253 W/kg

Maximum value of SAR (measured) = 0.341 W/kg

**Fig.15 LTE Band5**

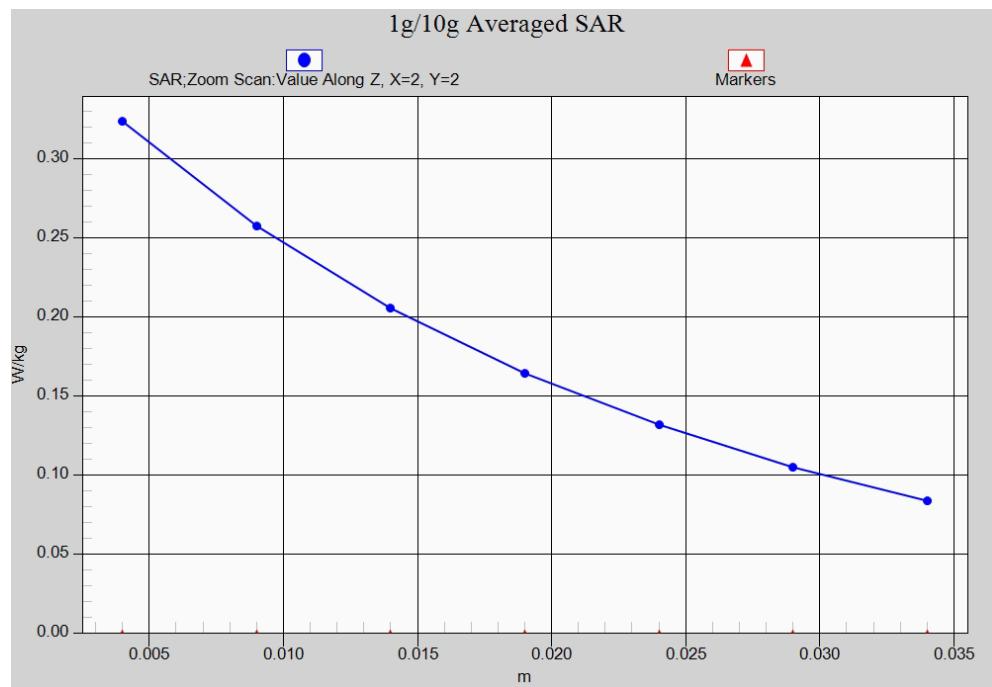


Fig. 15-1 Z-Scan at power reference point (LTE Band5)

LTE Band5 Body Rear Low with QPSK_10M_1RB_Low

Date: 2015-12-26

Electronics: DAE4 Sn777

Medium: Body 850 MHz

Medium parameters used (interpolated): $f = 829$ MHz; $\sigma = 0.956$ mho/m; $\epsilon_r = 56.859$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: LTE Band5 Frequency: 829 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN3617 ConvF(9.71, 9.71, 9.71)

Area Scan (121x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.603 W/kg

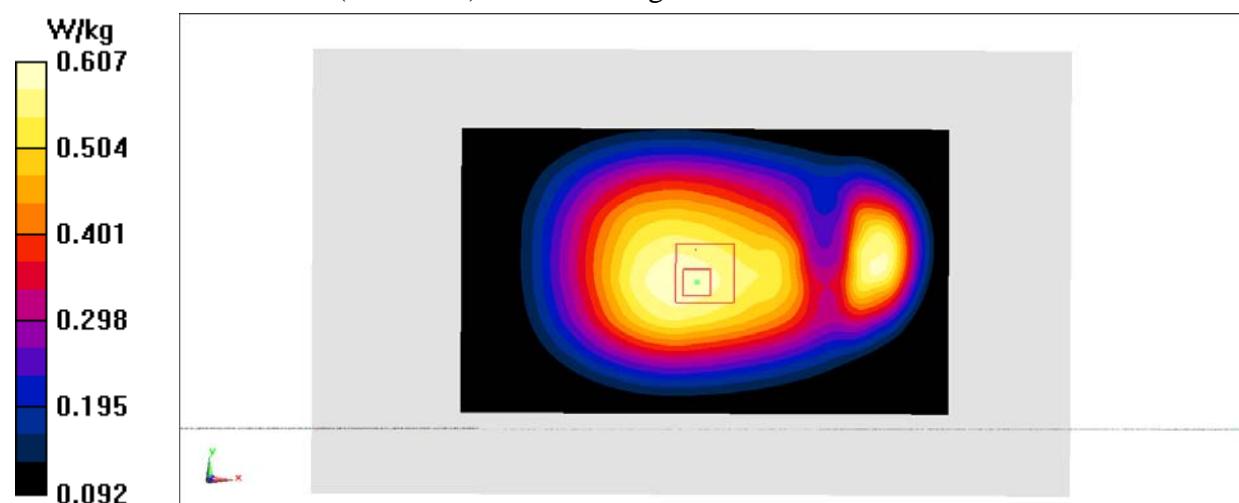
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23.24 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.677 W/kg

SAR(1 g) = 0.523 W/kg; SAR(10 g) = 0.403 W/kg

Maximum value of SAR (measured) = 0.607 W/kg

**Fig.16 LTE Band5**

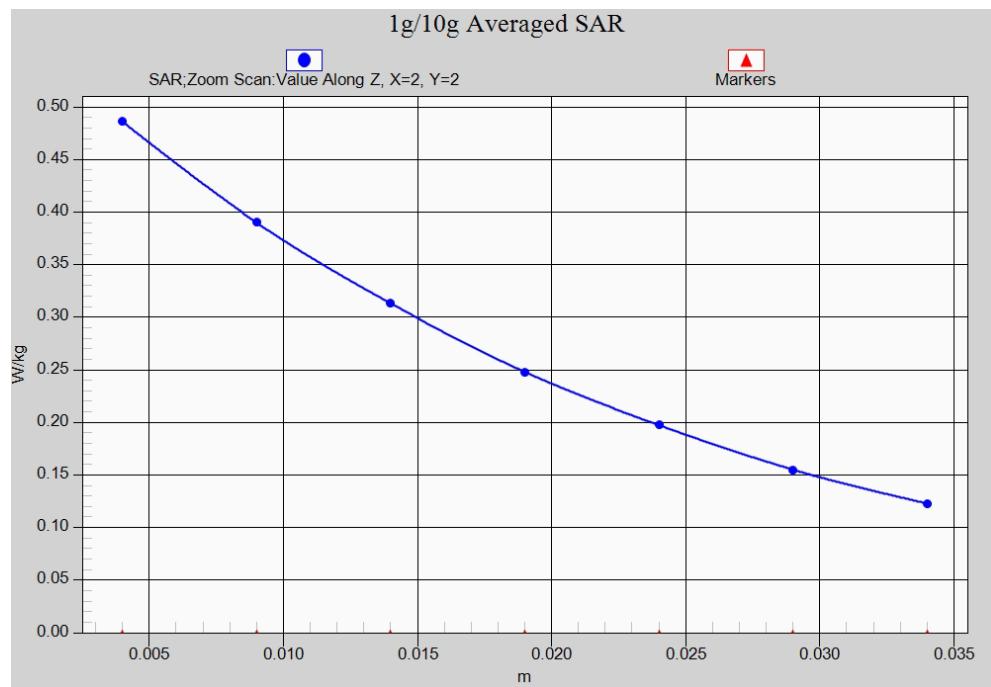


Fig. 16-1 Z-Scan at power reference point (LTE Band5)

LTE Band12 Left Cheek High with QPSK_10M_1RB_Middle

Date: 2015-12-25

Electronics: DAE4 Sn777

Medium: Head 750 MHz

Medium parameters used (interpolated): $f = 711$ MHz; $\sigma = 0.869$ mho/m; $\epsilon_r = 42.832$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: LTE Band12 Frequency: 711 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN3617 ConvF(9.98, 9.98, 9.98)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.209 W/kg

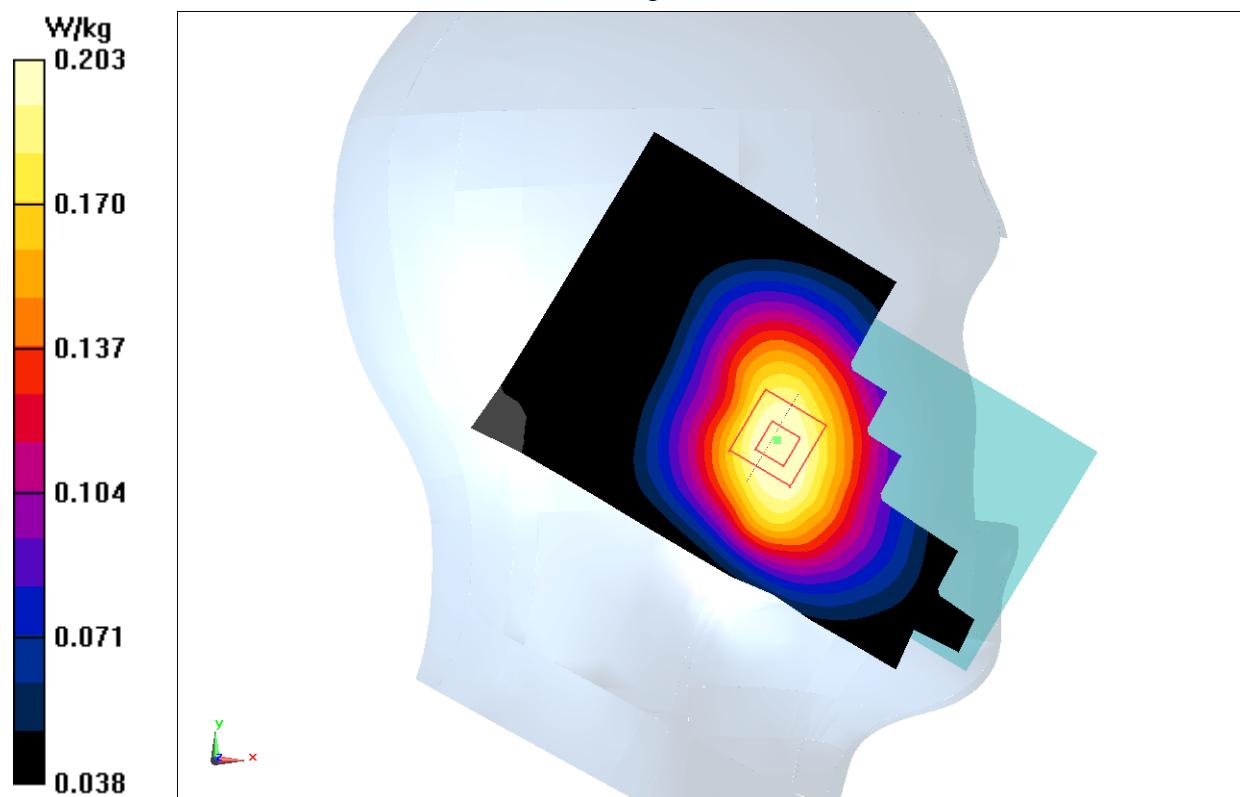
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.740 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.228 W/kg

SAR(1 g) = 0.191 W/kg; SAR(10 g) = 0.150 W/kg

Maximum value of SAR (measured) = 0.203 W/kg

**Fig.17 LTE Band12**

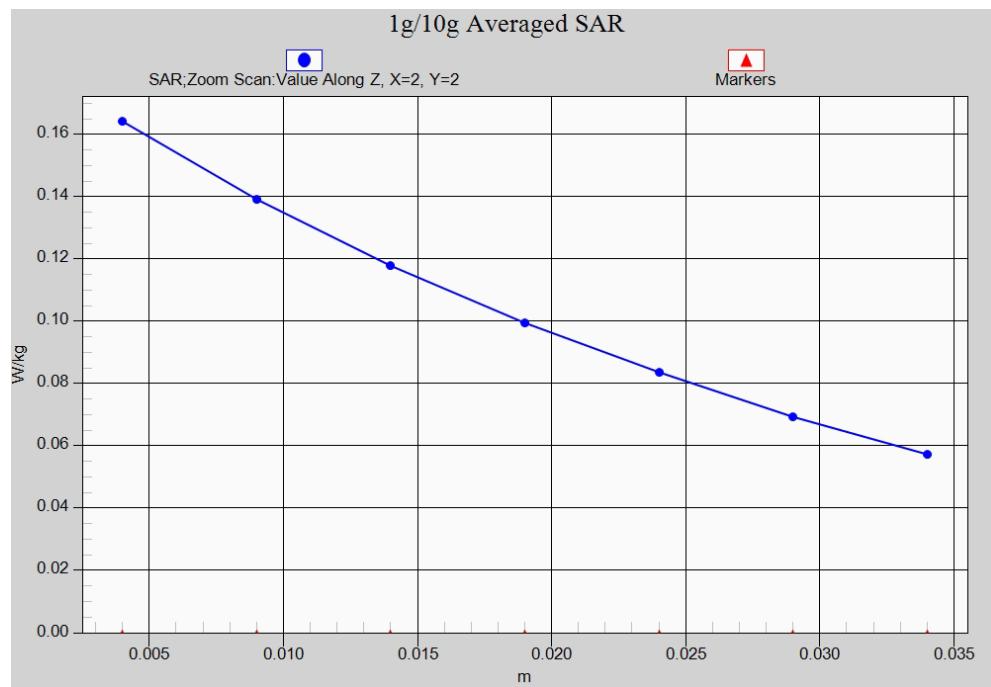


Fig. 17-1 Z-Scan at power reference point (LTE Band12)

LTE Band12 Body Rear High with QPSK_10M_1RB_Middle

Date: 2015-12-25

Electronics: DAE4 Sn777

Medium: Body 750 MHz

Medium parameters used (interpolated): $f = 711$ MHz; $\sigma = 0.921$ mho/m; $\epsilon_r = 56.574$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: LTE Band12 Frequency: 711 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN3617 ConvF(9.76, 9.76, 9.76)

Area Scan (121x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.410 W/kg

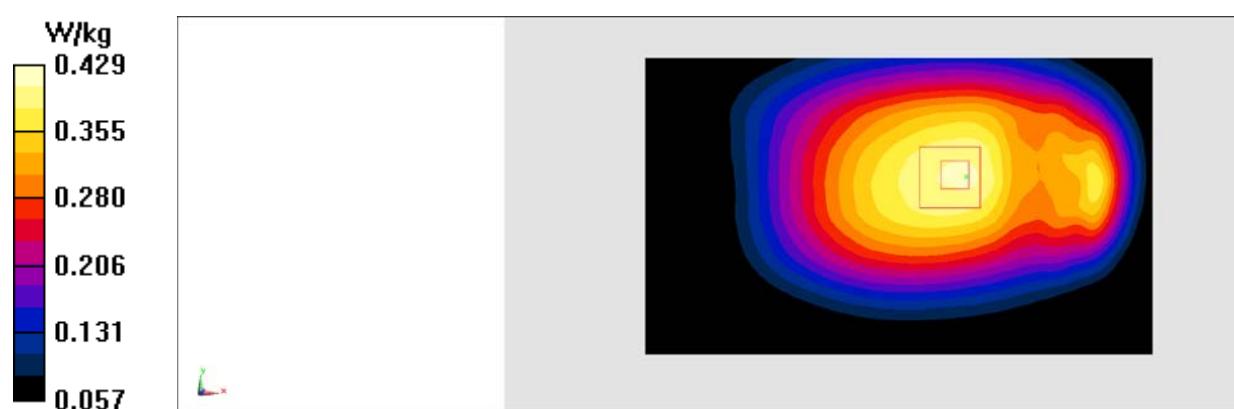
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.10 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.465 W/kg

SAR(1 g) = 0.381 W/kg; SAR(10 g) = 0.299 W/kg

Maximum value of SAR (measured) = 0.429 W/kg

**Fig.18 LTE Band12**

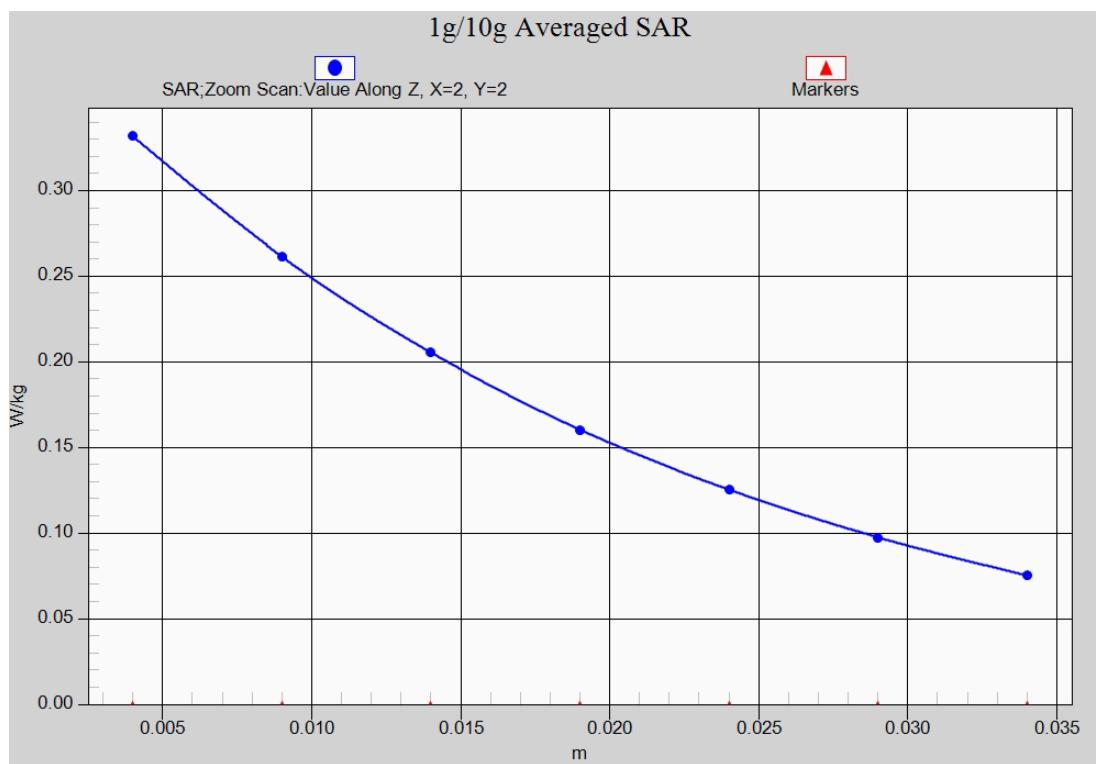


Fig. 18-1 Z-Scan at power reference point (LTE Band12)

LTE Band30 Left Cheek High with QPSK_10M_1RB_Middle

Date: 2015-12-29

Electronics: DAE4 Sn777

Medium: Head 2450 MHz

Medium parameters used (interpolated): $f = 2310$ MHz; $\sigma = 1.327$ mho/m; $\epsilon_r = 39.634$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C

Communication System: WLan 2450 Frequency: 2310 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN3617 ConvF(7.24, 7.24, 7.24)

Area Scan (91x151x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.359 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.303 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.511 W/kg

SAR(1 g) = 0.287 W/kg; SAR(10 g) = 0.157 W/kg

Maximum value of SAR (measured) = 0.352 W/kg

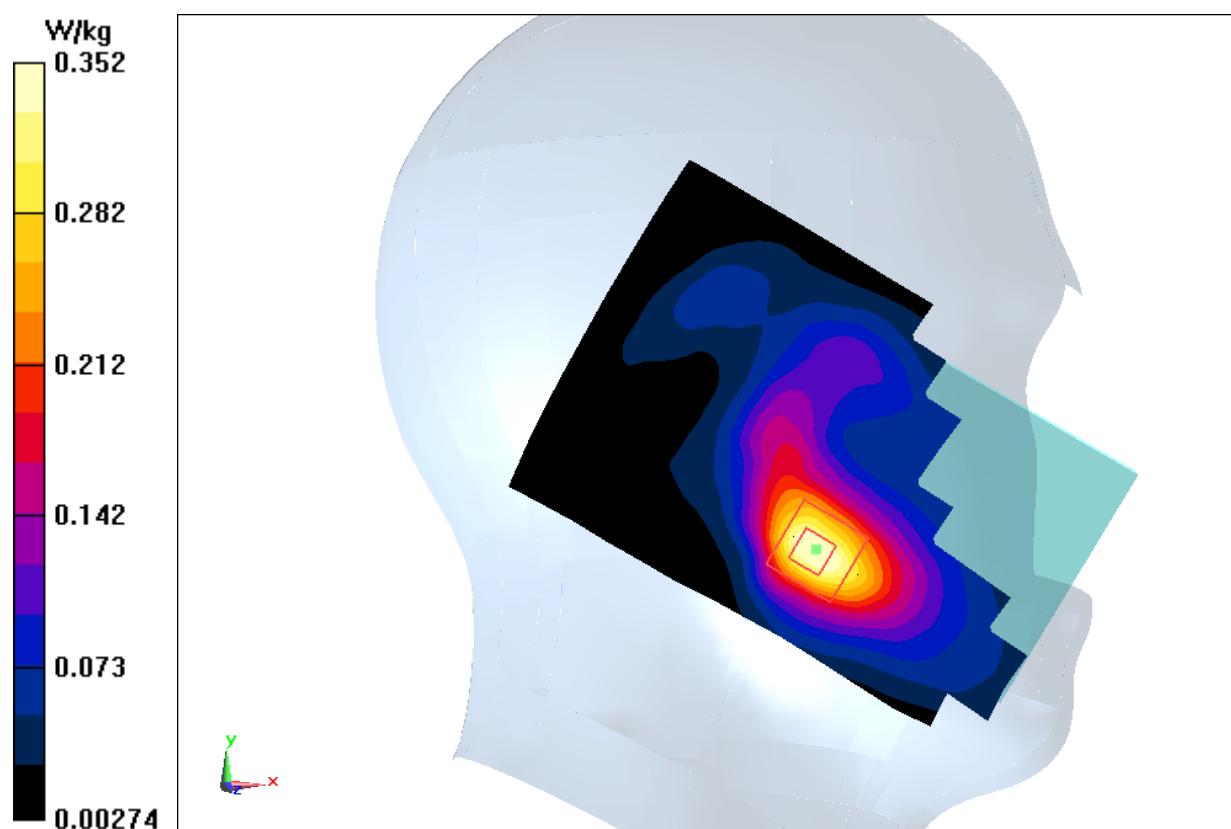


Fig.19 LTE Band30