Table 14-21 LTE700-FDD71 #1 Head

LTE700-FDD71 #1 Head								
Ambient Temperature:	22.5					Liquid Temperature:		22.3
Mode	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			133372	133297	133222	133372	133297	133222
			M	M	M	M	M	M
20MHz QPSK1RB	Tune-up		24.50	24.50	24.50	Scaling factor*		
	Measured Power [dBm]		22.93	23.00	23.17	1.44	1.41	1.36
	Left Cheek	1g SAR			0.272			0.37
		10g SAR			0.205			0.28
		Deviation			-0.1			-0.10
	Left Tilt	1g SAR			0.152			0.21
		10g SAR			0.103			0.14
		Deviation			0.04			0.04
	Right Cheek	1g SAR			0.262			0.36
		10g SAR			0.197			0.27
		Deviation			0.09			0.09
	Right Tilt	1g SAR			0.065			0.09
		10g SAR			0.048			0.07
		Deviation			0.02			0.02
TRUE	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			133372	133297	133222	133372	133297	133222
			M	H	H	M	H	H
20MHz QPSK50% RB	Tune-up		23.50	23.50	23.50	Scaling factor*		
	Measured Power [dBm]		21.93	22.05	21.99	1.44	1.40	1.42
	Left Cheek	1g SAR		0.193			0.27	
		10g SAR		0.145			0.20	
		Deviation		0.12			0.12	
	Left Tilt	1g SAR		0.101			0.14	
		10g SAR		0.076			0.11	
		Deviation		-0.04			-0.04	
	Right Cheek	1g SAR		0.222			0.31	
		10g SAR		0.168			0.23	
		Deviation		0.09			0.09	
	Right Tilt	1g SAR		0.149			0.21	
		10g SAR		0.117			0.16	
		Deviation		0.06			0.06	

Table 14-22 LTE700-FDD71 #1 Body

LTE700-FDD71 #1 Body								
Ambient Temperature:	22.5					Liquid Temperature:		22.3
Mode	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			133372	133297	133222	133372	133297	133222
			M	M	M	M	M	M
20MHz QPSK1RB	Tune-up		24.50	24.50	24.50	Scaling factor*		
	Measured Power [dBm]		22.93	23.00	23.17	1.44	1.41	1.36
	Front	1g SAR			0.28			0.38
		10g SAR			0.217			0.30
		Deviation			0.02			0.02
	Rear	1g SAR			0.388			0.53
		10g SAR			0.295			0.40
		Deviation			-0.2			-0.20
	Left edge	1g SAR			0.137			0.19
		10g SAR			0.096			0.13
		Deviation			0.05			0.05
	Right edge	1g SAR			0.184			0.25
		10g SAR			0.13			0.18
		Deviation			0.06			0.06
	Bottom edge	1g SAR			0.073			0.10
		10g SAR			0.044			0.06
		Deviation			0.08			0.08
Mode	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			133372	133297	133222	133372	133297	133222
			M	H	H			
20MHz QPSK50% RB	Tune-up		23.50	23.50	23.50	Scaling factor*		
	Measured Power [dBm]		21.93	22.05	21.99	1.44	1.40	1.42
	Front	1g SAR		0.221			0.31	
		10g SAR		0.17			0.24	
		Deviation		0.06			0.06	
	Rear	1g SAR		0.297			0.41	
		10g SAR		0.226			0.32	
		Deviation		0.05			0.05	
	Left edge	1g SAR		0.176			0.25	
		10g SAR		0.124			0.17	
		Deviation		0.09			0.09	
	Right edge	1g SAR		0.2			0.28	
		10g SAR		0.143			0.20	
		Deviation		0.11			0.11	
	Bottom edge	1g SAR		0.057			0.08	
		10g SAR		0.034			0.05	
		Deviation		0.04			0.04	

14.2 Full SAR

Test Band	Channel	Frequency	Tune-Up	Measured Power	Test Position	Measured 10g SAR	Measured 1g SAR	Reported 10g SAR	Reported 1g SAR	Power Drift	Figure
GSM850	251	848.8 MHz	32.5	31.54	Right Cheek	0.13	0.168	0.16	0.21	0.2	Fig A.1
GSM850	251	848.8 MHz	28.5	27.49	Rear	0.215	0.386	0.27	0.49	-0.05	Fig A.2
PCS1900	810	1909.8 MHz	30.3	29.44	Right Cheek	0.153	0.265	0.19	0.32	-0.11	Fig A.3
PCS1900	810	1909.8 MHz	25	24.07	Bottom edge	0.211	0.424	0.26	0.53	-0.03	Fig A.4
WCDMA1900-BII	9262	1852.4 MHz	24	23.37	Right Cheek	0.301	0.515	0.35	0.60	0.01	Fig A.5
WCDMA1900-BII	9262	1852.4 MHz	24	23.37	Front	0.434	0.719	0.50	0.83	0.09	Fig A.6
WCDMA1700-BIV	1513	1752.6 MHz	24	23.88	Left Cheek	0.214	0.348	0.22	0.36	-0.04	Fig A.7
WCDMA1700-BIV	1412	1732.4 MHz	24	23.94	Front	0.595	0.987	0.60	1.00	0.06	Fig A.8
WCDMA850-BV	4233	846.6 MHz	24	23.44	Right Cheek	0.172	0.222	0.20	0.25	0.14	Fig A.9
WCDMA850-BV	4233	846.6 MHz	24	23.44	Rear	0.181	0.328	0.21	0.37	0.03	Fig A.10
LTE1900-FDD2	19100	1900 MHz	24	23.44	Right Cheek	0.27	0.465	0.31	0.53	0.13	Fig A.11
LTE1900-FDD2	19100	1900 MHz	24	23.44	Rear	0.365	0.689	0.42	0.78	0.08	Fig A.12
LTE850-FDD5	20600	844 MHz	24.5	23.47	Right Cheek	0.186	0.243	0.24	0.31	0.11	Fig A.13
LTE850-FDD5	20600	844 MHz	24.5	23.47	Rear	0.193	0.348	0.24	0.44	-0.04	Fig A.14
LTE700-FDD12	23060	704 MHz	24.5	23.50	Right Cheek	0.161	0.203	0.20	0.26	0.19	Fig A.15
LTE700-FDD12	23060	704 MHz	24.5	23.50	Rear	0.309	0.4	0.39	0.50	0.04	Fig A.16
LTE750-FDD13	23230	782 MHz	24	22.92	Left Cheek	0.103	0.131	0.13	0.17	0.16	Fig A.17
LTE750-FDD13	23230	782 MHz	24	22.92	Rear	0.162	0.296	0.21	0.38	0.06	Fig A.18
LTE1700-FDD66	132322	782 MHz	24	23.23	Left Cheek	0.188	0.303	0.22	0.36	-0.01	Fig A.19
LTE1700-FDD66	132072	782 MHz	24	23.01	Rear	0.378	0.688	0.47	0.86	0.03	Fig A.20
LTE700-FDD71	133222	782 MHz	24.5	23.17	Left Cheek	0.205	0.272	0.28	0.37	-0.1	Fig A.21
LTE700-FDD71	133222	782 MHz	24.5	23.17	Rear	0.295	0.388	0.40	0.53	-0.2	Fig A.22

14.3 WLAN Evaluation

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

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.

Note3: 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.

Table 14-23 WLAN2450 #1 Head Fast SAR

WLAN2450 #1 Head Fast SAR									
Ambient Temperature:	22.5					Liquid Temperature:	22.3		
Rate	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]			
			11	6	1	11	6	1	
			2462 MHz	2437 MHz	2412 MHz				
802.11b 5.5Mbps	Tune up		20.5	20.5	20.5	Scaling factor*			
	Slot Average Power [dBm]		20.18	19.96	20.15	1.08	1.13	1.08	
	Left Cheek	1g Fast SAR	0.436			0.47			
		10g SAR	0.209			0.22			
		Deviation	-0.01			-0.01			
	Left Tilt	1g Fast SAR	0.355			0.38			
		10g SAR	0.177			0.19			
		Deviation	0.08			0.08			
	Right Cheek	1g Fast SAR	0.263			0.28			
		10g SAR	0.132			0.14			
		Deviation	-0.04			-0.04			
	Right Tilt	1g Fast SAR	0.222			0.24			
		10g SAR	0.111			0.12			
		Deviation	-0.06			-0.06			

Table 14-24 WLAN2450 #1 Head Full SAR

WLAN2450 #1 Head Full SAR									
Ambient Temperature:	22.5					Liquid Temperature:	22.3		
Rate	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]			
			11	6	1	11	6	1	
			2462 MHz	2437 MHz	2412 MHz				
802.11b 5.5Mbps	Tune up		20.5	20.5	20.5	Scaling factor*			
	Slot Average Power [dBm]		20.18	19.96	20.15	1.08	1.13	1.08	
	Left Cheek	1g Full SAR	0.475			0.51			
		10g SAR	0.219			0.24			
		Deviation	-0.01			-0.01			
	Left Tilt	1g Full SAR	0.385			0.41			
		10g SAR	0.161			0.17			
		Deviation	0.02			0.02			
	Right Cheek	1g Full SAR							
		10g SAR							
		Deviation							
	Right Tilt	1g Full SAR							
		10g SAR							
		Deviation							

Table 14-25 WLAN2450 #1 Body Fast SAR

WLAN2450 #1 Body Fast SAR									
Ambient Temperature:	22.5					Liquid Temperature:	22.3		
Rate	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]			
			11	6	1	11	6	1	
			2462 MHz	2437 MHz	2412 MHz				
802.11b 5.5Mbps	Tune up		20.5	20.5	20.5	Scaling factor*			
	Slot Average Power [dBm]		20.18	19.96	20.15	1.08	1.13	1.08	
	Front	1g Fast SAR	0.095			0.10			
		10g SAR	0.0526			0.06			
		Deviation	0.01			0.01			
	Rear	1g Fast SAR	0.168			0.18			
		10g SAR	0.0853			0.09			
		Deviation	-0.04			-0.04			
	Top edge	1g Fast SAR	0.116			0.12			
		10g SAR	0.0596			0.06			
		Deviation	-0.04			-0.04			
	Right edge	1g Fast SAR	0.0794			0.09			
		10g SAR	0.042			0.05			
		Deviation	0.03			0.03			

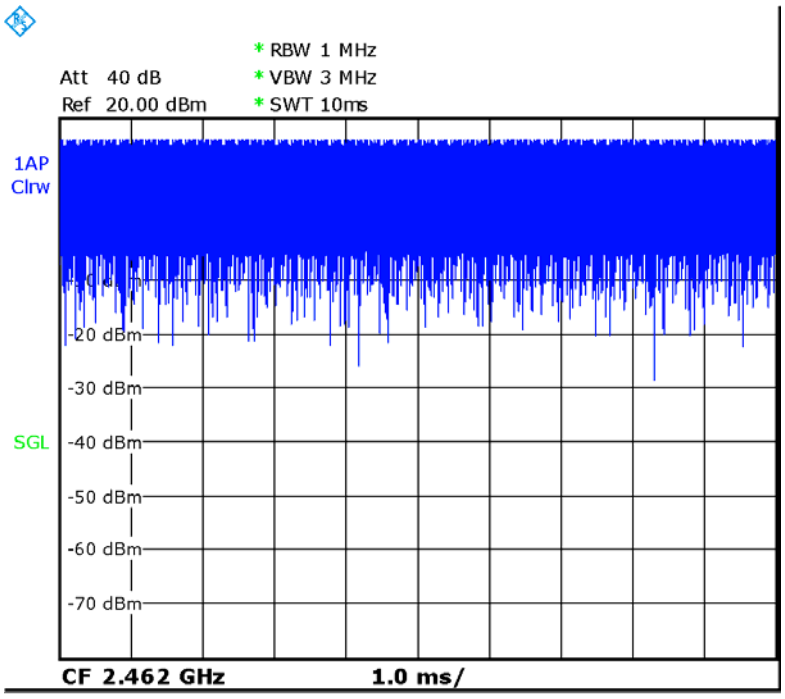
Table 14-26 WLAN2450 #1 Body Full SAR

WLAN2450 #1 Body Full SAR									
Ambient Temperature:		22.5				Liquid Temperature:		22.3	
Rate	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]			
			11	6	1	11	6	1	
			2462 MHz	2437 MHz	2412 MHz				
802.11b 5.5Mbps	Tune up		20.5	20.5	20.5	Scaling factor*			
	Slot Average Power [dBm]		20.18	19.96	20.15	1.08	1.13	1.08	
	Rear	1g Full SAR	0.181			0.19			
		10g SAR	0.0904			0.10			
		Deviation	-0.04			-0.04			

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							
Frequency		Test Position	Actual duty factor	maximum duty factor	Reported SAR(1g)(W/kg)	Scaled reported SAR(1g)(W/kg)	Figure
MHz	Ch.						
2462 MHz	11	Left Cheek	100.00%	100%	**0.51**	0.51	Fig.A.23

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							
Frequency		Test Position	Actual duty factor	maximum duty factor	Reported SAR(1g)(W/kg)	Scaled reported SAR(1g)(W/kg)	Figure
MHz	Ch.						
2462 MHz	11	Rear	100.00%	100%	**0.19**	0.19	Fig.A.24

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



Picture 14.1 Duty factor plot CH11

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.

Mode	CH	Freq	Test Poisition	Original SAR (W/kg)	First Repeated SAR(W/kg)	The Ratio
WCDMA1700-BIV	1412	1732.4 MHz	Front	0.987	0.986	1.00

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	6.0	N	1	1	1	6.0	6.0	∞
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	N	1	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	RFambient 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	$u_c' = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$					9.55	9.43	257
Expanded uncertainty (confidence interval of 95 %)	$u_e = 2u_c$					19.1	18.9	

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	6.55	N	1	1	1	6.55	6.55	∞
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	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞

	(target)									
21	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$						10.7	10.6	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						21.4	21.1	

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	6.0	N	1	1	1	6.0	6.0	∞
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		$u_c' = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						10.4	10.3	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						20.8	20.6	

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	6.55	N	1	1	1	6.55	6.55	∞
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		$u_c' = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						13.5	13.4	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						27.0	26.8	

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	January 24, 2018	One year
02	Power meter	NRVD	102083	November 01, 2017	One year
03	Power sensor	NRV-Z5	100542		
04	Signal Generator	E4438C	MY49071430	January 2,2018	One Year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	BTS	E5515C	MY50263375	January 23, 2018	One year
07	BTS	CMW500	149646	October 31, 2017	One year
08	E-field Probe	SPEAG EX3DV4	7464	September 12,2017	One year
09	DAE	SPEAG DAE4	1525	October 2, 2017	One year
10	Dipole Validation Kit	SPEAG D750V3	1017	July 19, 2017	One year
11	Dipole Validation Kit	SPEAG D835V2	4d069	July 19, 2017	One year
12	Dipole Validation Kit	SPEAG D1750V2	1003	July 21, 2017	One year
13	Dipole Validation Kit	SPEAG D1900V2	5d101	July 26, 2017	One year
14	Dipole Validation Kit	SPEAG D2450V2	853	July 21, 2017	One year

END OF REPORT BODY

ANNEX A Graph Results

GSM850_CH251 Right Cheek
Date: 4/23/2018
Electronics: DAE4 Sn1525
Medium: Head 835 MHz
Medium parameters used: f = 848.8 MHz; σ = 0.905 mho/m; εr = 41.08; ρ = 1000 kg/m^3
Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C
Communication System: GSM850 848.8 MHz Duty Cycle: 1:8.3
Probe: EX3DV4 – SN7464 ConvF(10.28,10.28,10.28)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.179 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.993 V/m; Power Drift = 0.2 dB
Peak SAR (extrapolated) = 0.205 W/kg
SAR(1 g) = 0.168 W/kg; SAR(10 g) = 0.13 W/kg
Maximum value of SAR (measured) = 0.175 W/kg

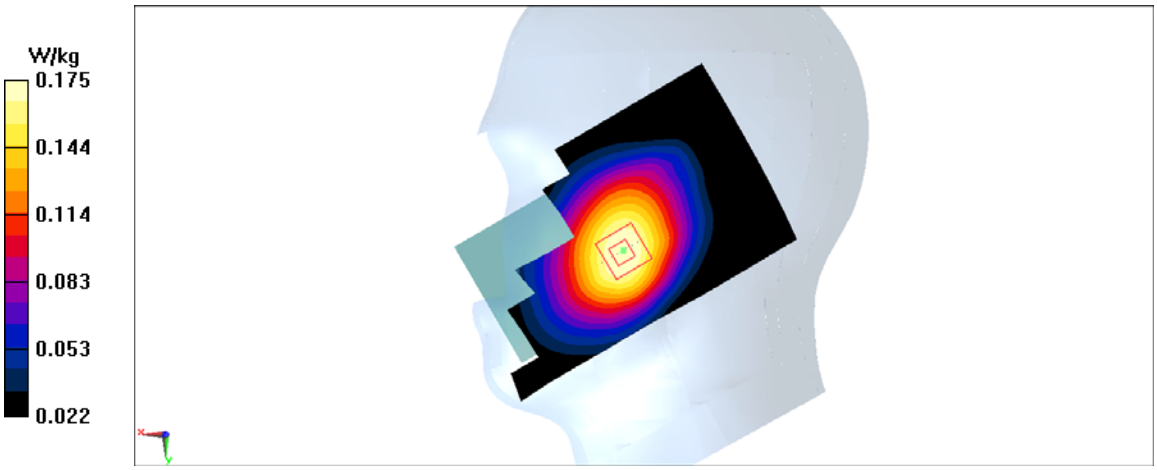


Fig A.1

GSM850_CH251 Rear
Date: 4/23/2018
Electronics: DAE4 Sn1525
Medium: Head 835 MHz
Medium parameters used: f = 848.8 MHz; σ = 0.99 mho/m; εr = 54.27; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: GSM850 848.8 MHz Duty Cycle: 1:2
Probe: EX3DV4 – SN7464 ConvF(10.21,10.21,10.21)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.479 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.56 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.675 W/kg
SAR(1 g) = 0.386 W/kg; SAR(10 g) = 0.215 W/kg
Maximum value of SAR (measured) = 0.432 W/kg

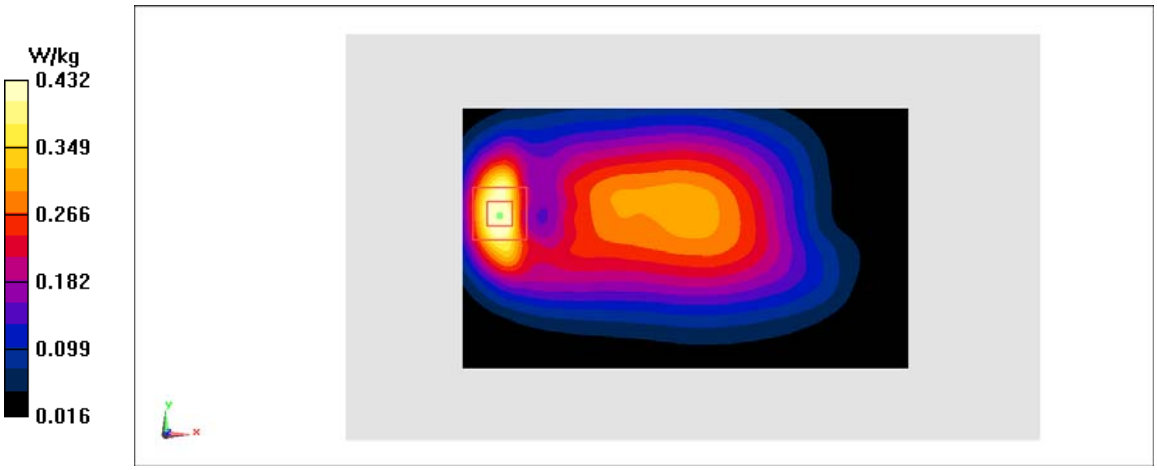


Fig A.2

PCS1900_CH810 Right Cheek
Date: 4/25/2018
Electronics: DAE4 Sn1525
Medium: Head 1900 MHz
Medium parameters used: f = 1909.8 MHz; σ = 1.438 mho/m; εr = 39.98; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: PCS1900 1909.8 MHz Duty Cycle: 1:8.3
Probe: EX3DV4 – SN7464 ConvF(8.39,8.39,8.39)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.312 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.723 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.438 W/kg
SAR(1 g) = 0.265 W/kg; SAR(10 g) = 0.153 W/kg
Maximum value of SAR (measured) = 0.293 W/kg

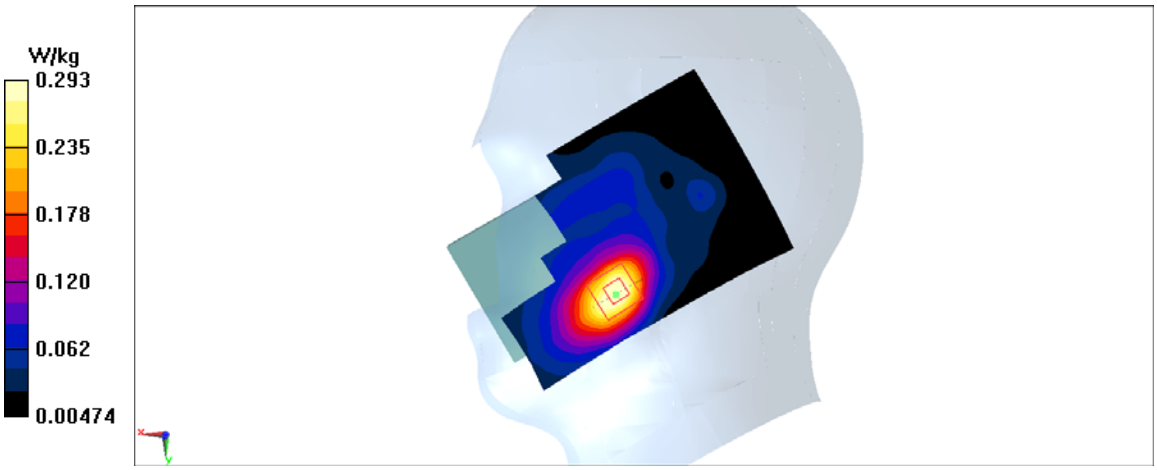


Fig A.3

PCS1900_CH810 Bottom edge
Date: 4/25/2018
Electronics: DAE4 Sn1525
Medium: Head 1900 MHz
Medium parameters used: f = 1909.8 MHz; σ = 1.52 mho/m; εr = 53.1; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: PCS1900 1909.8 MHz Duty Cycle: 1:2
Probe: EX3DV4 – SN7464 ConvF(8.32,8.32,8.32)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.499 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.96 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.774 W/kg
SAR(1 g) = 0.424 W/kg; SAR(10 g) = 0.211 W/kg
Maximum value of SAR (measured) = 0.492 W/kg

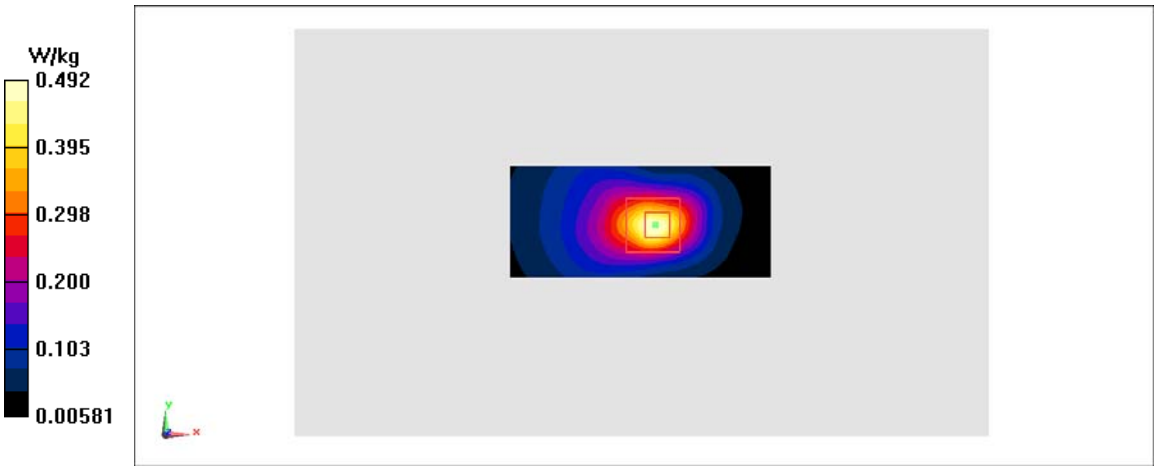


Fig A.4

WCDMA1900-BII_CH9262 Right Cheek
Date: 4/25/2018
Electronics: DAE4 Sn1525
Medium: Head 1900 MHz
Medium parameters used: f = 1852.4 MHz; σ = 1.382 mho/m; εr = 40.05; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA1900-BII 1852.4 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7464 ConvF(8.39,8.39,8.39)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.6 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.12 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.835 W/kg
SAR(1 g) = 0.515 W/kg; SAR(10 g) = 0.301 W/kg
Maximum value of SAR (measured) = 0.564 W/kg

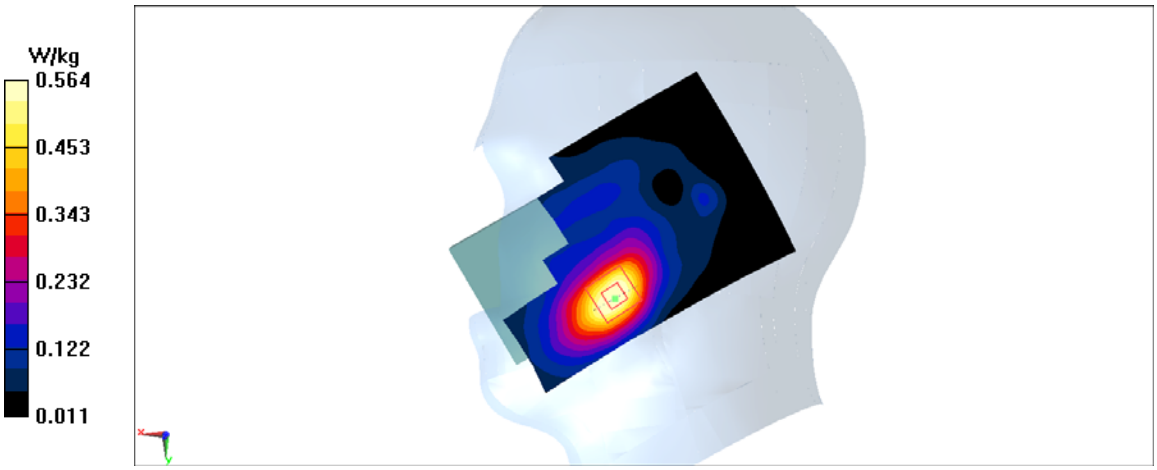


Fig A.5

WCDMA1900-BII_CH9262 Front
Date: 4/25/2018
Electronics: DAE4 Sn1525
Medium: Head 1900 MHz
Medium parameters used: f = 1852.4 MHz; σ = 1.464 mho/m; εr = 53.17; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA1900-BII 1852.4 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7464 ConvF(8.32,8.32,8.32)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.873 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.69 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.14 W/kg
SAR(1 g) = 0.719 W/kg; SAR(10 g) = 0.434 W/kg
Maximum value of SAR (measured) = 0.78 W/kg

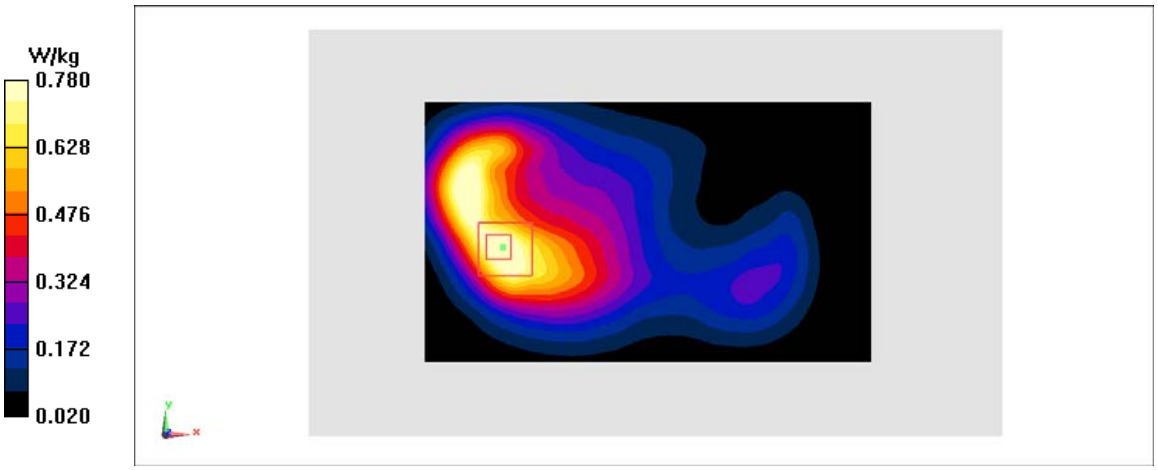


Fig A.6

WCDMA1700-BIV_CH1513 Left Cheek
Date: 4/24/2018
Electronics: DAE4 Sn1525
Medium: Head 1750 MHz
Medium parameters used: f = 1752.6 MHz; σ = 1.38 mho/m; εr = 40.82; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA1700-BIV 1752.6 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7464 ConvF(8.70,8.70,8.70)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.424 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.642 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.553 W/kg
SAR(1 g) = 0.348 W/kg; SAR(10 g) = 0.214 W/kg
Maximum value of SAR (measured) = 0.379 W/kg

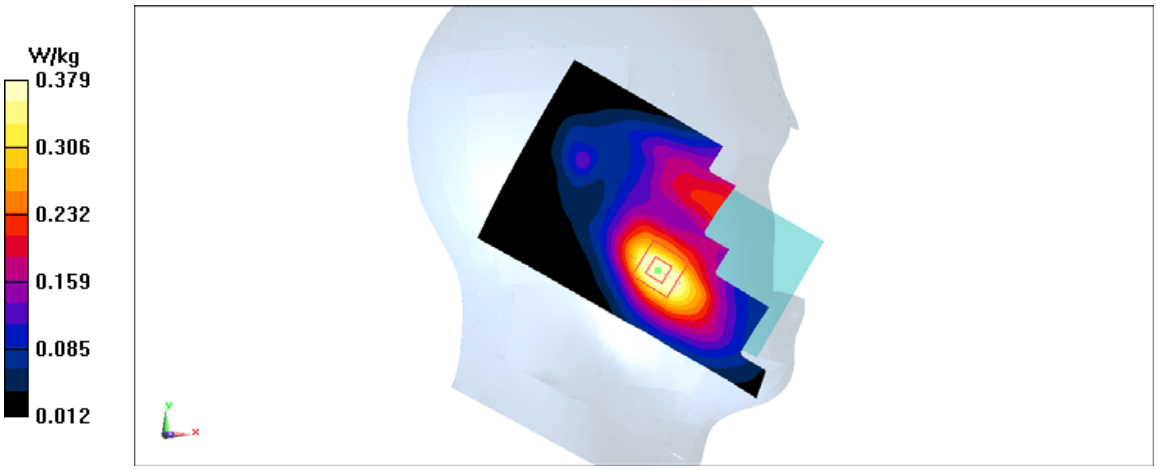


Fig A.7

WCDMA1700-BIV_CH1412 Front
Date: 4/24/2018
Electronics: DAE4 Sn1525
Medium: Head 1750 MHz
Medium parameters used: f = 1732.4 MHz; σ = 1.468 mho/m; εr = 52.6; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA1700-BIV 1732.4 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7464 ConvF(8.60,8.60,8.60)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.2 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.548 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.53 W/kg
SAR(1 g) = 0.987 W/kg; SAR(10 g) = 0.595 W/kg
Maximum value of SAR (measured) = 1.07 W/kg

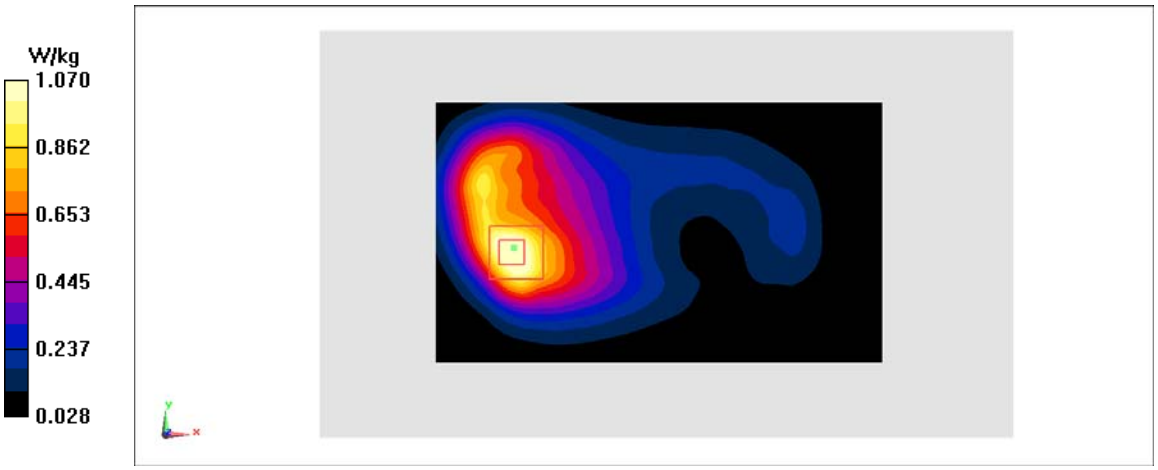


Fig A.8

WCDMA850-BV_CH4233 Right Cheek
Date: 4/23/2018
Electronics: DAE4 Sn1525
Medium: Head 835 MHz
Medium parameters used: f = 846.6 MHz; σ = 0.903 mho/m; εr = 41.09; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA850-BV 846.6 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7464 ConvF(10.28,10.28,10.28)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.242 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.783 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.27 W/kg
SAR(1 g) = 0.222 W/kg; SAR(10 g) = 0.172 W/kg
Maximum value of SAR (measured) = 0.231 W/kg

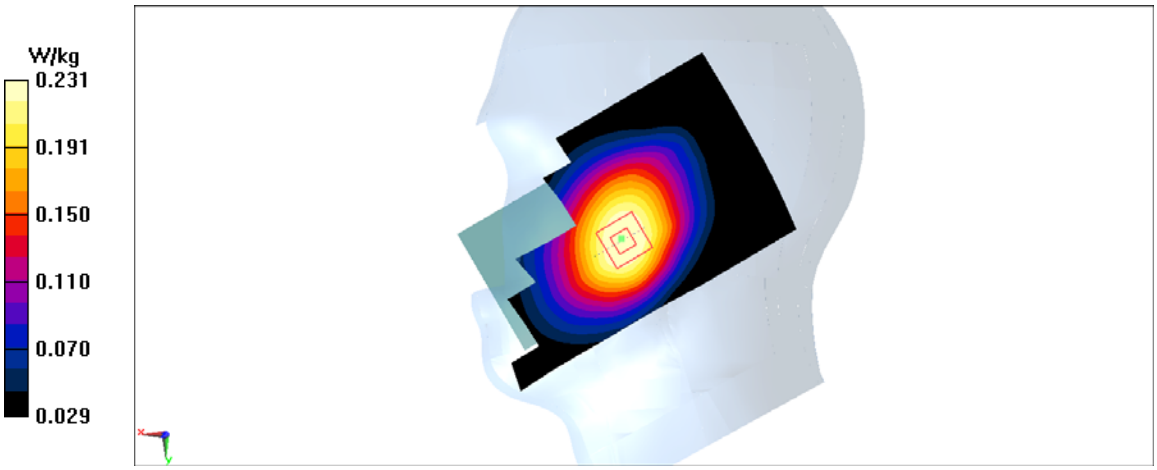


Fig A.9

WCDMA850-BV_CH4233 Rear
Date: 4/23/2018
Electronics: DAE4 Sn1525
Medium: Head 835 MHz
Medium parameters used: f = 846.6 MHz; σ = 0.988 mho/m; εr = 54.28; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA850-BV 846.6 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7464 ConvF(10.21,10.21,10.21)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.401 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.16 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.58 W/kg
SAR(1 g) = 0.328 W/kg; SAR(10 g) = 0.181 W/kg
Maximum value of SAR (measured) = 0.366 W/kg

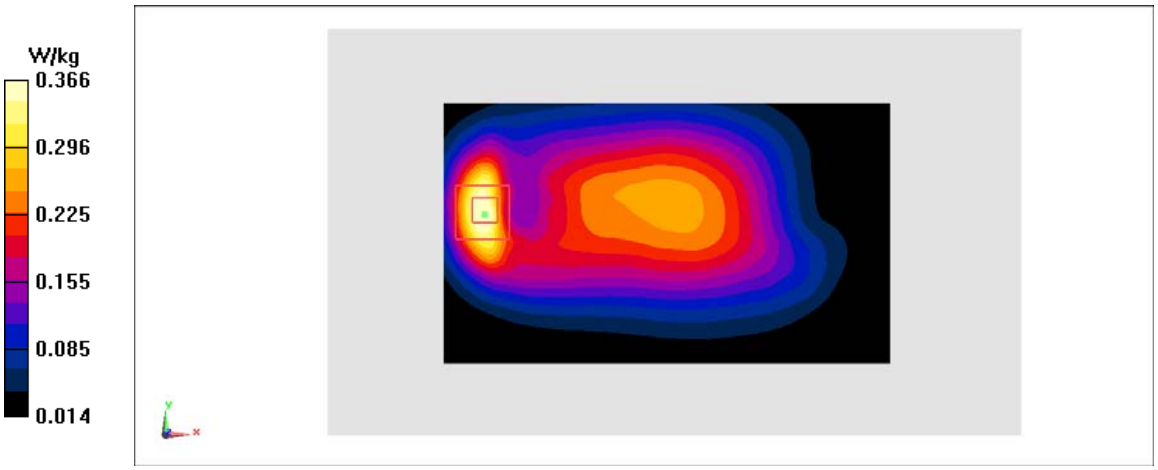


Fig A.10

LTE1900-FDD2_CH19100 Right Cheek
Date: 4/25/2018
Electronics: DAE4 Sn1525
Medium: Head 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.428 mho/m; εr = 39.99; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE1900-FDD2 1900 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7464 ConvF(8.39,8.39,8.39)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.554 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.593 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.763 W/kg
SAR(1 g) = 0.465 W/kg; SAR(10 g) = 0.27 W/kg
Maximum value of SAR (measured) = 0.516 W/kg

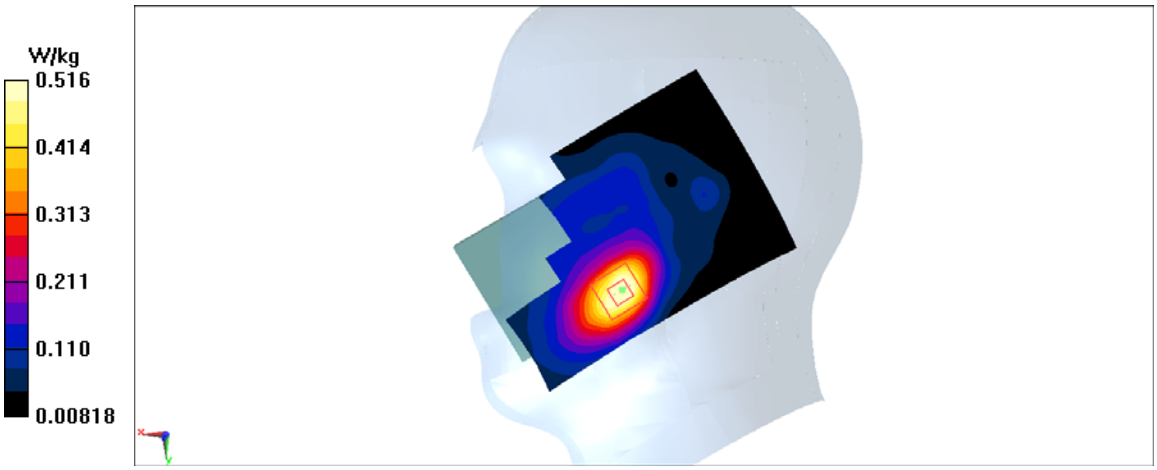


Fig A.11

LTE1900-FDD2_CH19100 Rear
Date: 4/25/2018
Electronics: DAE4 Sn1525
Medium: Head 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.51 mho/m; εr = 53.11; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE1900-FDD2 1900 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7464 ConvF(8.32,8.32,8.32)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.859 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.41 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.28 W/kg
SAR(1 g) = 0.689 W/kg; SAR(10 g) = 0.365 W/kg
Maximum value of SAR (measured) = 0.762 W/kg

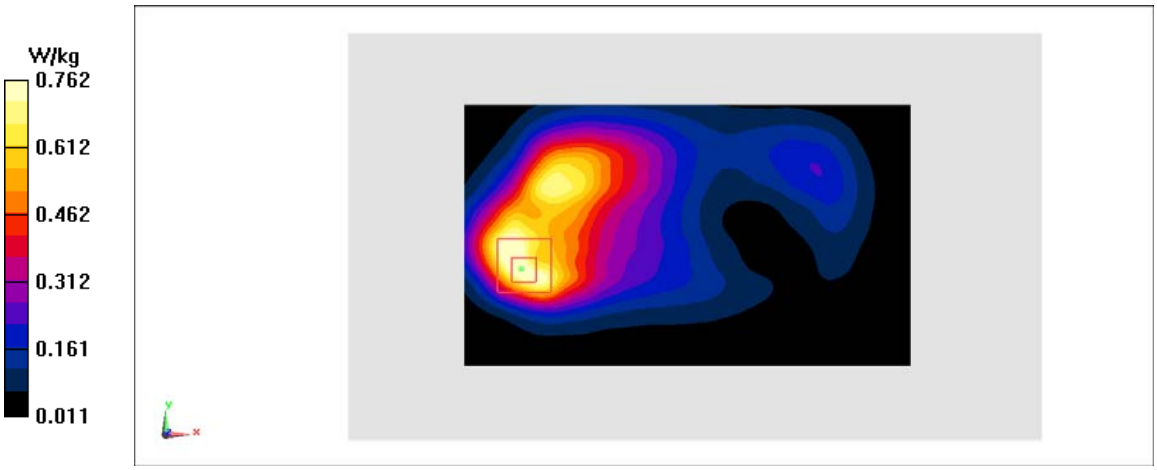


Fig A.12

LTE850-FDD5_CH20600 Right Cheek
Date: 4/23/2018
Electronics: DAE4 Sn1525
Medium: Head 835 MHz
Medium parameters used: f = 844 MHz; σ = 0.901 mho/m; εr = 41.09; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE850-FDD5 844 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7464 ConvF(10.28,10.28,10.28)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.269 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.356 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.301 W/kg
SAR(1 g) = 0.243 W/kg; SAR(10 g) = 0.186 W/kg
Maximum value of SAR (measured) = 0.254 W/kg

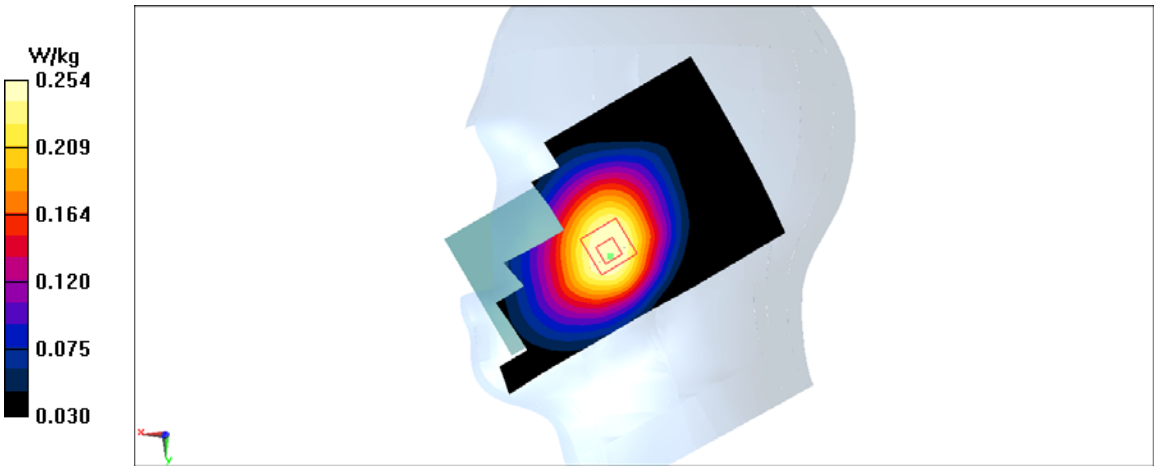


Fig A.13

LTE850-FDD5_CH20600 Rear
Date: 4/23/2018
Electronics: DAE4 Sn1525
Medium: Head 835 MHz
Medium parameters used: f = 844 MHz; σ = 0.986 mho/m; εr = 54.28; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE850-FDD5 844 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7464 ConvF(10.21,10.21,10.21)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.434 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.05 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.612 W/kg
SAR(1 g) = 0.348 W/kg; SAR(10 g) = 0.193 W/kg
Maximum value of SAR (measured) = 0.386 W/kg

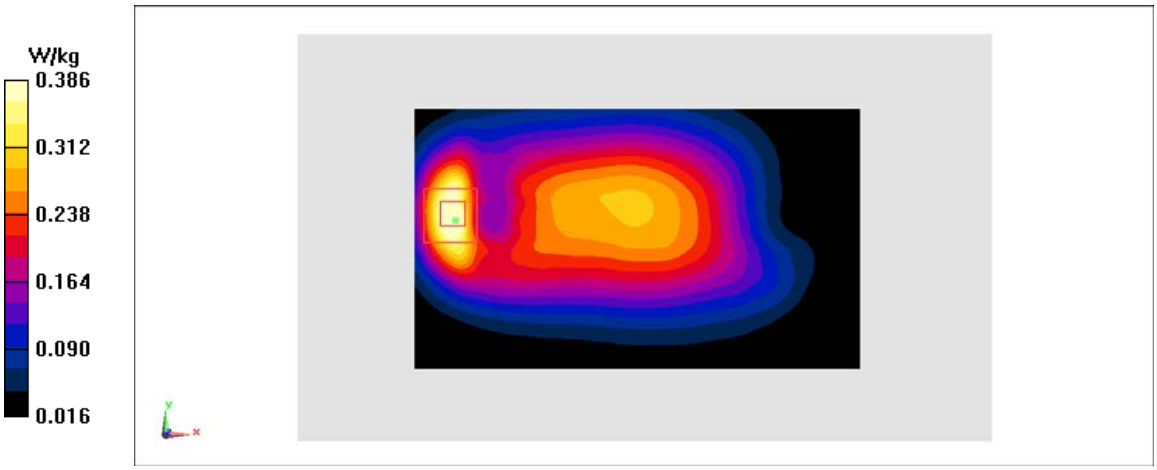


Fig A.14

LTE700-FDD12_CH23060 Right Cheek
Date: 4/22/2018
Electronics: DAE4 Sn1525
Medium: Head 750 MHz
Medium parameters used: f = 704 MHz; σ = 0.844 mho/m; εr = 41.41; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE700-FDD12 704 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7464 ConvF(10.57,10.57,10.57)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.221 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.405 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.241 W/kg
SAR(1 g) = 0.203 W/kg; SAR(10 g) = 0.161 W/kg
Maximum value of SAR (measured) = 0.211 W/kg

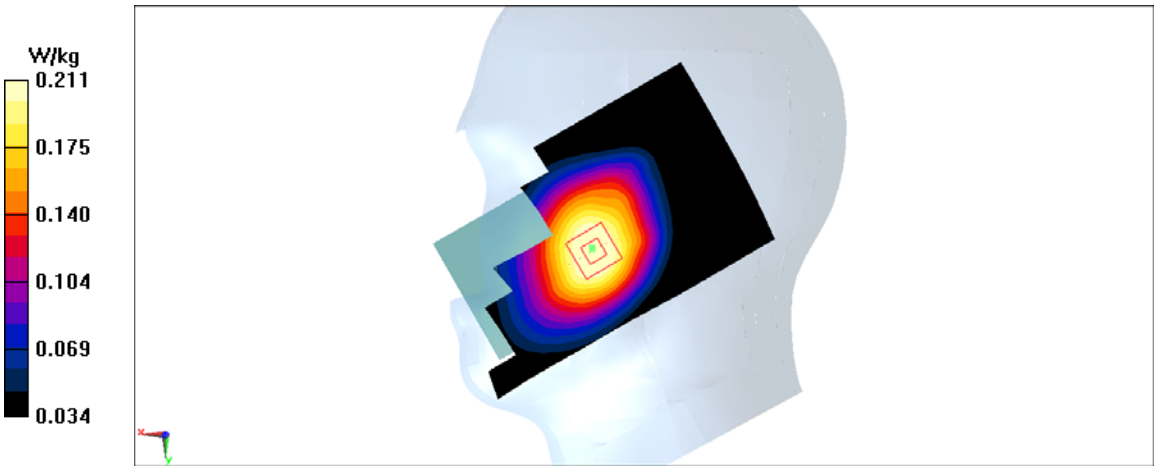


Fig A.15

LTE700-FDD12_CH23060 Rear
Date: 4/22/2018
Electronics: DAE4 Sn1525
Medium: Head 750 MHz
Medium parameters used: f = 704 MHz; σ = 0.911 mho/m; εr = 56.01; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE700-FDD12 704 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7464 ConvF(10.63,10.63,10.63)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.439 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.03 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.493 W/kg
SAR(1 g) = 0.4 W/kg; SAR(10 g) = 0.309 W/kg
Maximum value of SAR (measured) = 0.417 W/kg

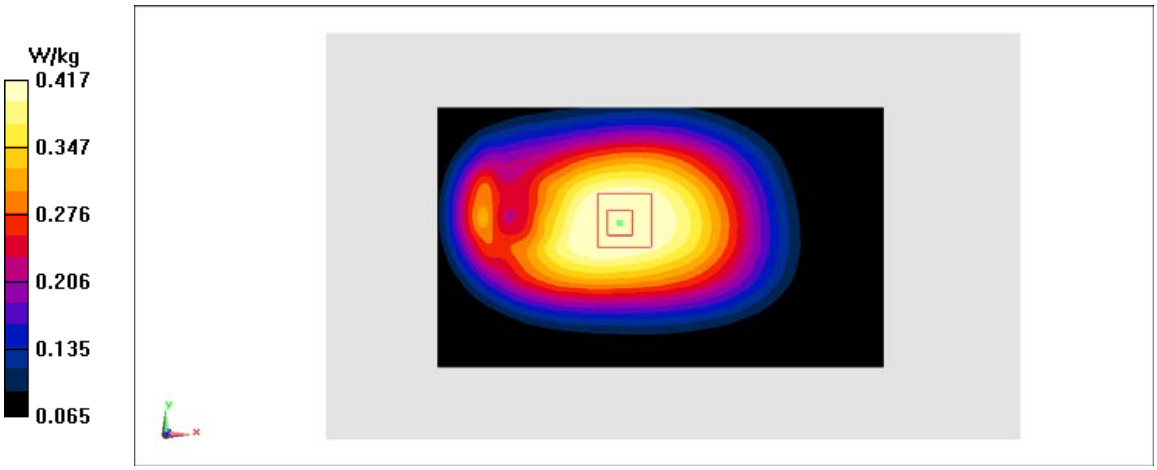


Fig A.16

LTE750-FDD13_CH23230 Left Cheek
Date: 4/22/2018
Electronics: DAE4 Sn1525
Medium: Head 750 MHz
Medium parameters used: f = 782 MHz; σ = 0.918 mho/m; εr = 41.31; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE750-FDD13 782 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7464 ConvF(10.57,10.57,10.57)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.141 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.408 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.158 W/kg
SAR(1 g) = 0.131 W/kg; SAR(10 g) = 0.103 W/kg
Maximum value of SAR (measured) = 0.137 W/kg

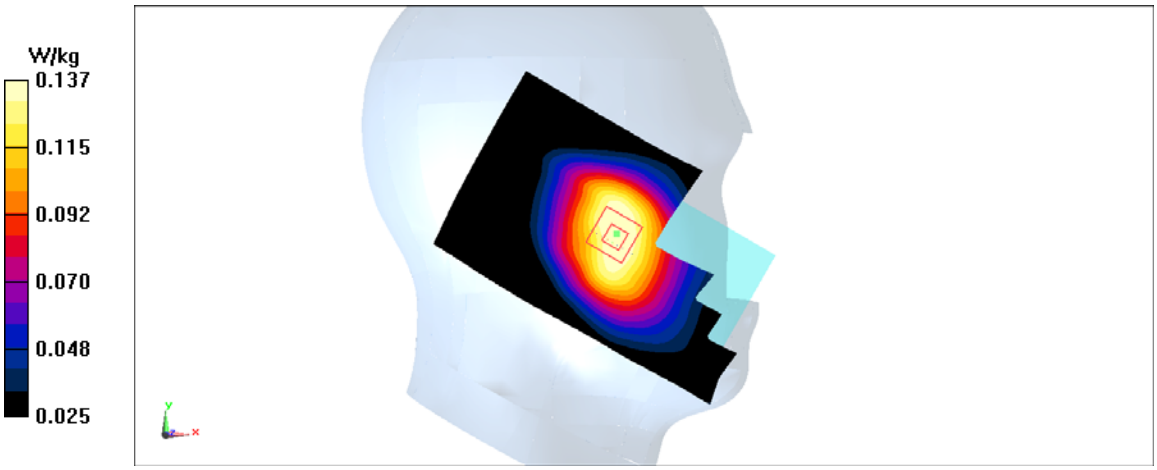


Fig A.17