Table 14-11 LTE1900-FDD2 #1 Head

LTE1900-FDD2 #1 Head								
Ambient Temperature: 22.3						Liquid Temperature: 22.1		
Mode	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			19100	18900	18700	19100	18900	18700
			M	M	M	M	M	M
20MHz QPSK1RB	Tune-up		24.00	24.00	24.00	Scaling factor*		
	Measured Power [dBm]		23.13	23.70	23.21	1.22	1.07	1.20
	Left Cheek	1g SAR		0.614			0.66	
		10g SAR		0.383			0.41	
		Deviation		0.19			0.19	
	Left Tilt	1g SAR		0.234			0.25	
		10g SAR		0.153			0.16	
		Deviation		0.04			0.04	
	Right Cheek	1g SAR		0.384			0.41	
		10g SAR		0.235			0.25	
		Deviation		-0.09			-0.09	
	Right Tilt	1g SAR		0.307			0.33	
		10g SAR		0.193			0.21	
		Deviation		0.14			0.14	
TRUE	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			19100	18900	18700	19100	18900	18700
			M	H	M	M	H	M
20MHz QPSK50% RB	Tune-up		23.00	23.00	23.00	Scaling factor*		
	Measured Power [dBm]		22.06	22.16	22.08	1.24	1.21	1.24
	Left Cheek	1g SAR		0.469			0.57	
		10g SAR		0.28			0.34	
		Deviation		0.06			0.06	
	Left Tilt	1g SAR		0.241			0.29	
		10g SAR		0.152			0.18	
		Deviation		0.07			0.07	
	Right Cheek	1g SAR		0.35			0.42	
		10g SAR		0.241			0.29	
		Deviation		0.12			0.12	
	Right Tilt	1g SAR		0.222			0.27	
		10g SAR		0.141			0.17	
		Deviation		0.08			0.08	

Table 14-12 LTE1900-FDD2 #1 Body

LTE1900-FDD2 #1 Body								
Ambient Temperature: 22.3					Liquid Temperature: 22.1			
Mode	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			19100	18900	18700	19100	18900	18700
			M	M	M	M	M	M
20MHz QPSK1RB	Tune-up		24.00	24.00	24.00	Scaling factor*		
	Measured Power [dBm]		23.13	23.70	23.21	1.22	1.07	1.20
	Front	1g SAR	0.677	0.917	0.7	0.83	0.98	0.84
		10g SAR	0.337	0.483	0.341	0.41	0.52	0.41
		Deviation	0.09	0.05	0.11	0.09	0.05	0.11
	Rear	1g SAR	0.571	0.786	0.589	0.70	0.84	0.71
		10g SAR	0.336	0.408	0.352	0.41	0.44	0.42
		Deviation	0.02	0.05	0.03	0.02	0.05	0.03
	Left edge	1g SAR		0.435			0.47	
		10g SAR		0.237			0.25	
		Deviation		0.09			0.09	
	Right edge	1g SAR		0.281			0.30	
		10g SAR		0.162			0.17	
		Deviation		0.11			0.11	
	Bottom edge	1g SAR	0.74	0.962	0.847	0.90	1.03	1.02
		10g SAR	0.345	0.494	0.456	0.42	0.53	0.55
		Deviation	0.08	0.09	0.11	0.08	0.09	0.11
Mode	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			19100	18900	18700	19100	18900	18700
			M	H	M			
20MHz QPSK50% RB	Tune-up		23.00	23.00	23.00	Scaling factor*		
	Measured Power [dBm]		22.06	22.16	22.08	1.24	1.21	1.24
	Front	1g SAR	0.577	0.672	0.562	0.72	0.82	0.69
		10g SAR	0.265	0.333	0.261	0.33	0.40	0.32
		Deviation	-0.01	0.04	0.09	-0.01	0.04	0.09
	Rear	1g SAR	0.568	0.706	0.559	0.71	0.86	0.69
		10g SAR	0.266	0.341	0.272	0.33	0.41	0.34
		Deviation	0.02	0.15	0.03	0.02	0.15	0.03
	Left edge	1g SAR		0.336			0.41	
		10g SAR		0.195			0.24	
		Deviation		0.02			0.02	
	Right edge	1g SAR		0.278			0.34	
		10g SAR		0.148			0.18	
		Deviation		-0.03			-0.03	
	Bottom edge	1g SAR	0.619	0.737	0.675	0.77	0.89	0.83
		10g SAR	0.252	0.396	0.362	0.31	0.48	0.45
		Deviation	0.15	0.12	0.08	0.15	0.12	0.08
Mode	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			19100	18900	18700	19100	18900	18700
20MHz QPSK100% RB	Tune-up		23.00	23.00	23.00	Scaling factor*		
	Measured Power [dBm]		21.96	22.17	21.98	1.27	1.21	1.27
	Front	1g SAR		0.653			0.79	
		10g SAR		0.332			0.40	
		Deviation		0.15			0.15	
20MHz QPSK100% RB	*Rear*	1g SAR		0.593			0.64	
		10g SAR		0.299			0.32	
		Deviation		0.03			0.03	
20MHz QPSK100% RB	*Bottom edge*	1g SAR		0.729			0.78	
		10g SAR		0.384			0.41	
		Deviation		-0.07			-0.07	

Table 14-13 LTE1700-FDD4 #1 Head

LTE1700-FDD4 #1 Head								
Ambient Temperature: 22.3						Liquid Temperature: 22.1		
Mode	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			20300	20175	20050	20300	20175	20050
			M	M	M	M	M	M
20MHz QPSK1RB	Tune-up		24.00	24.00	24.00	Scaling factor*		
	Measured Power [dBm]		23.22	23.09	23.14	1.20	1.23	1.22
	Left Cheek	1g SAR	0.169			0.20		
		10g SAR	0.105			0.13		
		Deviation	0.13			0.13		
	Left Tilt	1g SAR	0.101			0.12		
		10g SAR	0.069			0.08		
		Deviation	0.08			0.08		
	Right Cheek	1g SAR	0.311			0.37		
		10g SAR	0.201			0.24		
		Deviation	-0.03			-0.03		
	Right Tilt	1g SAR	0.178			0.21		
		10g SAR	0.121			0.14		
		Deviation	0.05			0.05		
TRUE	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			20300	20175	20050	20300	20175	20050
			L	M	L	L	M	L
20MHz QPSK50% RB	Tune-up		23.00	23.00	23.00	Scaling factor*		
	Measured Power [dBm]		22.23	22.03	22.02	1.19	1.25	1.25
	Left Cheek	1g SAR	0.125			0.15		
		10g SAR	0.085			0.10		
		Deviation	0.09			0.09		
	Left Tilt	1g SAR	0.086			0.10		
		10g SAR	0.058			0.07		
		Deviation	0.11			0.11		
	Right Cheek	1g SAR	0.216			0.26		
		10g SAR	0.137			0.16		
		Deviation	0.04			0.04		
	Right Tilt	1g SAR	0.115			0.14		
		10g SAR	0.087			0.10		
		Deviation	0.12			0.12		

Table 14-14 LTE1700-FDD4 #1 Body

LTE1700-FDD4 #1 Body								
Ambient Temperature:		22.3				Liquid Temperature:		22.1
Mode	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			20300	20175	20050	20300	20175	20050
			M	M	M	M	M	M
20MHz QPSK1RB	Tune-up		24.00	24.00	24.00	Scaling factor*		
	Measured Power [dBm]		23.22	23.09	23.14	1.20	1.23	1.22
	Front	1g SAR	0.58			0.69		
		10g SAR	0.306			0.37		
		Deviation	0.11			0.11		
	Rear	1g SAR	0.669	0.766	0.641	0.80	0.94	0.78
		10g SAR	0.351	0.464	0.471	0.42	0.57	0.57
		Deviation	0.05	0.02	0.03	0.05	0.02	0.03
	Left edge	1g SAR	0.105			0.13		
		10g SAR	0.064			0.08		
		Deviation	0.09			0.09		
	Right edge	1g SAR	0.138			0.17		
		10g SAR	0.086			0.10		
		Deviation	-0.08			-0.08		
	Bottom edge	1g SAR	0.853	0.953	0.876	1.02	1.18	1.07
		10g SAR	0.392	0.515	0.476	0.47	0.64	0.58
		Deviation	0.11	0.08	0.18	0.11	0.08	0.18
Mode	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			20300	20175	20050	20300	20175	20050
			L	M	L			
20MHz QPSK50% RB	Tune-up		23.00	23.00	23.00	Scaling factor*		
	Measured Power [dBm]		22.23	22.03	22.02	1.19	1.25	1.25
	Front	1g SAR	0.433			0.52		
		10g SAR	0.237			0.28		
		Deviation	0.04			0.04		
	Rear	1g SAR	0.547			0.65		
		10g SAR	0.286			0.34		
		Deviation	-0.09			-0.09		
	Left edge	1g SAR	0.051			0.06		
		10g SAR	0.031			0.04		
		Deviation	0.16			0.16		
	Right edge	1g SAR	0.095			0.11		
		10g SAR	0.059			0.07		
		Deviation	0.03			0.03		
	Bottom edge	1g SAR	0.708	0.655	0.646	0.85	0.82	0.81
		10g SAR	0.376	0.355	0.346	0.45	0.44	0.43
		Deviation	0.04	0.01	0.05	0.04	0.01	0.05
Mode	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			20300	20175	20050	20300	20175	20050
20MHz QPSK100% RB	Tune-up		23.00	23.00	23.00	Scaling factor*		
	Measured Power [dBm]		22.00	21.92	22.04	1.26	1.28	1.25
	Bottom edge	1g SAR			0.766			0.96
		10g SAR			0.394			0.49
		Deviation			0.08			0.08

Table 14-15 LTE850-FDD5 #1 Head

LTE850-FDD5 #1 Head								
Ambient Temperature: 22.3						Liquid Temperature: 22.1		
Mode	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			20600	20525	20450	20600	20525	20450
			M	M	M	M	M	M
10MHz QPSK1RB	Tune-up		25.50	25.50	25.50	Scaling factor*		
	Measured Power [dBm]		24.74	24.83	25.16	1.19	1.17	1.08
	Left Cheek	1g SAR			0.526			0.57
		10g SAR			0.414			0.45
		Deviation			0.05			0.05
	Left Tilt	1g SAR			0.3			0.32
		10g SAR			0.239			0.26
		Deviation			-0.01			-0.01
	Right Cheek	1g SAR			0.586			0.63
		10g SAR			0.448			0.48
		Deviation			0.03			0.03
	Right Tilt	1g SAR			0.408			0.44
		10g SAR			0.329			0.36
		Deviation			0.01			0.01
TRUE	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			20600	20525	20450	20600	20525	20450
			M	H	H	M	H	H
10MHz QPSK50% RB	Tune-up		24.50	24.50	24.50	Scaling factor*		
	Measured Power [dBm]		23.93	23.90	23.96	1.14	1.15	1.13
	Left Cheek	1g SAR			0.443			0.50
		10g SAR			0.349			0.40
		Deviation			0.08			0.08
	Left Tilt	1g SAR			0.242			0.27
		10g SAR			0.193			0.22
		Deviation			-0.05			-0.05
	Right Cheek	1g SAR			0.488			0.55
		10g SAR			0.375			0.42
		Deviation			-0.08			-0.08
	Right Tilt	1g SAR			0.344			0.39
		10g SAR			0.277			0.31
		Deviation			0.03			0.03

Table 14-16 LTE850-FDD5 #1 Body

LTE850-FDD5 #1 Body								
Ambient Temperature: 22.3					Liquid Temperature: 22.1			
Mode	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			20600	20525	20450	20600	20525	20450
			M	M	M	M	M	M
10MHz QPSK1RB	Tune-up		25.50	25.50	25.50	Scaling factor*		
	Measured Power [dBm]		24.74	24.83	25.16	1.19	1.17	1.08
	Front	1g SAR			0.562			0.61
		10g SAR			0.443			0.48
		Deviation			0.08			0.08
	Rear	1g SAR	0.833	0.794	0.801	0.99	0.93	0.87
		10g SAR	0.643	0.615	0.594	0.77	0.72	0.64
		Deviation	-0.11	0.04	0.08	-0.11	0.04	0.08
	Left edge	1g SAR			0.496			0.54
		10g SAR			0.439			0.47
		Deviation			0.01			0.01
	Right edge	1g SAR			0.61			0.66
		10g SAR			0.427			0.46
		Deviation			0.12			0.12
	Bottom edge	1g SAR			0.058			0.06
		10g SAR			0.037			0.04
		Deviation			0.01			0.01
Mode	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			20600	20525	20450	20600	20525	20450
			M	H	H			
10MHz QPSK50% RB	Tune-up		24.50	24.50	24.50	Scaling factor*		
	Measured Power [dBm]		23.93	23.90	23.96	1.14	1.15	1.13
	Front	1g SAR			0.47			0.53
		10g SAR			0.371			0.42
		Deviation			0.09			0.09
	Rear	1g SAR			0.634			0.72
		10g SAR			0.496			0.56
		Deviation			-0.08			-0.08
	Left edge	1g SAR			0.403			0.46
		10g SAR			0.285			0.32
		Deviation			0.08			0.08
	Right edge	1g SAR			0.495			0.56
		10g SAR			0.345			0.39
		Deviation			0.09			0.09
	Bottom edge	1g SAR			0.054			0.06
		10g SAR			0.293			0.33
		Deviation			0.13			0.13

Table 14-17 LTE2500-FDD7 #1 Head

LTE2500-FDD7 #1 Head								
Ambient Temperature: 22.3						Liquid Temperature: 22.1		
Mode	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			21350	21100	20850	21350	21100	20850
			M	M	M	M	M	M
20MHz QPSK1RB	Tune-up		24.00	24.00	24.00	Scaling factor*		
	Measured Power [dBm]		23.45	23.48	23.17	1.13	1.13	1.21
	Left Cheek	1g SAR		0.259			0.29	
		10g SAR		0.139			0.16	
		Deviation		0.01			0.01	
	Left Tilt	1g SAR		0.184			0.21	
		10g SAR		0.088			0.10	
		Deviation		-0.06			-0.06	
	Right Cheek	1g SAR		0.285			0.32	
		10g SAR		0.141			0.16	
		Deviation		0.15			0.15	
	Right Tilt	1g SAR		0.103			0.12	
		10g SAR		0.058			0.07	
		Deviation		-0.03			-0.03	
TRUE	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			21350	21100	20850	21350	21100	20850
			L	H	M	L	H	M
20MHz QPSK50% RB	Tune-up		23.00	23.00	23.00	Scaling factor*		
	Measured Power [dBm]		22.04	22.04	22.12	1.25	1.25	1.22
	Left Cheek	1g SAR			0.066			0.08
		10g SAR			0.036			0.04
		Deviation			0.07			0.07
	Left Tilt	1g SAR			0.046			0.06
		10g SAR			0.024			0.03
		Deviation			0.02			0.02
	Right Cheek	1g SAR			0.181			0.22
		10g SAR			0.09			0.11
		Deviation			0.02			0.02
	Right Tilt	1g SAR			0.038			0.05
		10g SAR			0.021			0.03
		Deviation			0.01			0.01

Table 14-18 LTE2500-FDD7 #1 Body

LTE2500-FDD7 #1 Body								
Ambient Temperature: 22.3						Liquid Temperature: 22.1		
Mode	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			21350	21100	20850	21350	21100	20850
			M	M	M	M	M	M
20MHz QPSK1RB	Tune-up		24.00	24.00	24.00	Scaling factor*		
	Measured Power [dBm]		23.45	23.48	23.17	1.13	1.13	1.21
	Front	1g SAR		0.683			0.77	
		10g SAR		0.31			0.35	
		Deviation		-0.02			-0.02	
	Rear	1g SAR	1.05	0.867	0.858	1.19	0.98	1.04
		10g SAR	0.481	0.4	0.396	0.55	0.45	0.48
		Deviation	0.06	-0.05	0.01	0.06	-0.05	0.01
	Left edge	1g SAR		0.128			0.14	
		10g SAR		0.064			0.07	
		Deviation		-0.04			-0.04	
	Right edge	1g SAR		0.134			0.15	
		10g SAR		0.068			0.08	
		Deviation		0.03			0.03	
	Bottom edge	1g SAR	0.833	0.842	0.785	0.94	0.95	0.95
		10g SAR	0.374	0.376	0.355	0.42	0.42	0.43
		Deviation	-0.09	0.05	0.01	-0.09	0.05	0.01
Mode	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			21350	21100	20850	21350	21100	20850
			L	H	M			
20MHz QPSK50% RB	Tune-up		23.00	23.00	23.00	Scaling factor*		
	Measured Power [dBm]		22.04	22.04	22.12	1.25	1.25	1.22
	Front	1g SAR			0.528			0.65
		10g SAR			0.243			0.30
		Deviation			0.01			0.01
	Rear	1g SAR	0.748	0.791	0.748	0.93	0.99	0.92
		10g SAR	0.345	0.354	0.345	0.43	0.44	0.42
		Deviation	0.06	-0.02	0.07	0.06	-0.02	0.07
	Left edge	1g SAR			0.068			0.08
		10g SAR			0.034			0.04
		Deviation			0.01			0.01
	Right edge	1g SAR			0.1			0.12
		10g SAR			0.051			0.06
		Deviation			0.07			0.07
	Bottom edge	1g SAR			0.562			0.69
		10g SAR			0.25			0.31
		Deviation			0.01			0.01
Mode	Device orientation	SAR measurement	Measured SAR [W/kg]			Reported SAR [W/kg]		
			21350	21100	20850	21350	21100	20850
20MHz QPSK100% RB	Tune-up		23.00	23.00	23.00	Scaling factor*		
	Measured Power [dBm]		21.98	22.14	21.90	1.26	1.22	1.29
	Rear	1g SAR		0.711			0.87	
		10g SAR		0.334			0.41	
		Deviation		-0.03			-0.03	
20MHz QPSK100% RB	*Bottom edge*	1g SAR		0.695			0.78	
		10g SAR		0.323			0.36	
		Deviation		0.09			0.09	

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	190	836.6 MHz	30	29.40	Right Cheek	0.48	0.628	0.55	0.72	0.02	Fig A.1
GSM850	128	824.2 MHz	30	29.28	Rear	0.702	0.9	0.83	1.06	0.08	Fig A.2
PCS1900	810	1909.8 MHz	30	29.26	Left Cheek	0.382	0.614	0.45	0.73	-0.19	Fig A.3
PCS1900	512	1850.2 MHz	30	29.42	Bottom edge	0.436	0.836	0.50	0.96	0.07	Fig A.4
WCDMA1900-BII	9262	1852.4 MHz	24	23.35	Left Cheek	0.416	0.653	0.48	0.76	-0.14	Fig A.5
WCDMA1900-BII	9262	1852.4 MHz	24	23.35	Front	0.438	0.755	0.51	0.88	0.03	Fig A.6
WCDMA1700-BIV	1412	1732.4 MHz	24	23.17	Left Cheek	0.175	0.258	0.21	0.31	0.19	Fig A.7
WCDMA1700-BIV	1412	1732.4 MHz	24	23.17	Bottom edge	0.554	1.03	0.67	1.25	-0.04	Fig A.8
WCDMA850-BV	4182	846.6 MHz	25.5	24.82	Right Cheek	0.464	0.614	0.54	0.72	-0.08	Fig A.9
WCDMA850-BV	4182	846.6 MHz	25.5	24.82	Rear	0.665	0.871	0.78	1.02	-0.04	Fig A.10
LTE1900-FDD2	18900	1880 MHz	24	23.70	Left Cheek	0.383	0.614	0.41	0.66	0.19	Fig A.11
LTE1900-FDD2	18900	1880 MHz	24	23.70	Bottom edge	0.494	0.962	0.53	1.03	0.09	Fig A.12
LTE1700-FDD4	20300	1745 MHz	24	23.22	Right Cheek	0.201	0.311	0.24	0.37	-0.03	Fig A.13
LTE1700-FDD4	20175	1732.5 MHz	24	23.09	Bottom edge	0.515	0.953	0.64	1.18	0.08	Fig A.14
LTE850-FDD5	20450	829 MHz	25.5	25.16	Right Cheek	0.448	0.586	0.48	0.63	0.03	Fig A.15
LTE850-FDD5	20450	829 MHz	25.5	24.74	Rear	0.643	0.833	0.77	0.99	-0.11	Fig A.16
LTE2500-FDD7	21100	2535 MHz	24	23.48	Right Cheek	0.141	0.285	0.16	0.32	0.15	Fig A.17
LTE2500-FDD7	21350	2560 MHz	24	23.45	Rear	0.481	1.05	0.55	1.19	0.06	Fig A.18

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 14-19 WLAN2450 #1

WLAN2450 #1								
Ambient Temperature: 22.3						Liquid Temperature: 22.1		
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 1Mbps	Tune up		14	15	15	Scaling factor*		
	Slot Average Power [dBm]		13.86	14.74	14.72	1.03	1.06	1.07
	Left Cheek	1g Fast SAR		0.722			0.77	
		10g SAR		0.329			0.35	
		Deviation		0.02			0.02	
	Left Tilt	1g Fast SAR		0.418			0.44	
		10g SAR		0.207			0.22	
		Deviation		0.03			0.03	
	Right Cheek	1g Fast SAR		0.29			0.31	
		10g SAR		0.159			0.17	
		Deviation		0.03			0.03	
	Right Tilt	1g Fast SAR		0.239			0.25	
		10g SAR		0.127			0.13	
		Deviation		0.05			0.05	

Table 14-20 WLAN2450 #1 Head Full SAR

WLAN2450 #1 Head Full SAR								
Ambient Temperature: 22.3						Liquid Temperature: 22.1		
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 1Mbps	Tune up		14	15	15	Scaling factor*		
	Slot Average Power [dBm]		13.86	14.74	14.72	1.03	1.06	1.07
	Left Cheek	1g Full SAR		0.753			0.80	
		10g SAR		0.34			0.36	
		Deviation		0.02			0.02	
	Left Tilt	1g Full SAR		0.427			0.45	
		10g SAR		0.198			0.21	
		Deviation		0.03			0.03	

Table 14-21 WLAN2450 #1 Body Fast SAR

WLAN2450 #1 Body Fast SAR								
Ambient Temperature: 22.3						Liquid Temperature: 22.1		
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 1Mbps	Tune up		14	15	15	Scaling factor*		
	Slot Average Power [dBm]		13.86	14.74	14.72	1.03	1.06	1.07
	Front	1g Fast SAR		0.333			0.35	
		10g SAR		0.159			0.17	
		Deviation		0.02			0.02	
	Rear	1g Fast SAR		0.264			0.28	
		10g SAR		0.127			0.13	
		Deviation		0.03			0.03	
	Top edge	1g Fast SAR		0.142			0.15	
		10g SAR		0.072			0.08	
		Deviation		0.04			0.04	
	Right edge	1g Fast SAR		0.212			0.23	
		10g SAR		0.1			0.11	
		Deviation		0.02			0.02	

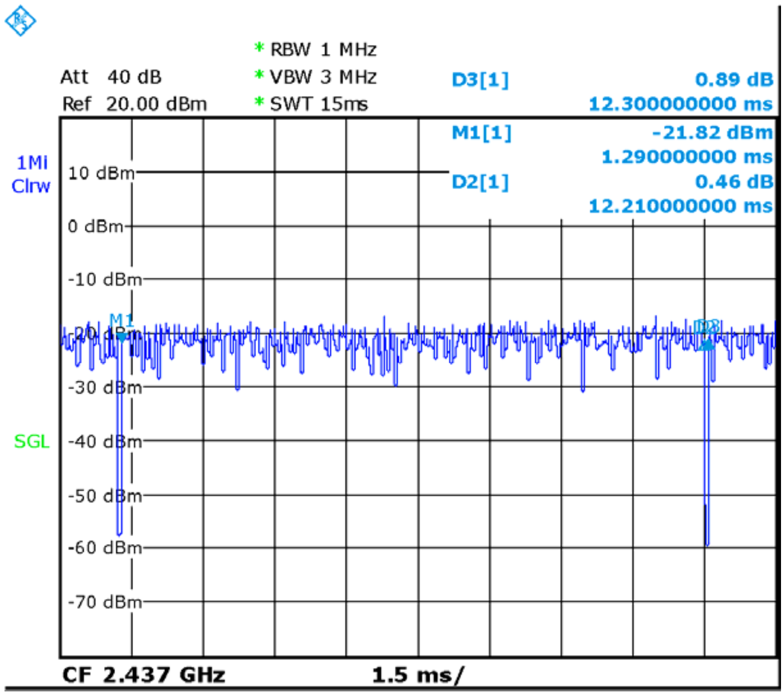
Table 14-22 WLAN2450 #1 Body Full SAR

WLAN2450 #1 Body Full SAR								
Ambient Temperature: 22.3						Liquid Temperature: 22.1		
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 1Mbps	Tune up		14	15	15	Scaling factor*		
	Slot Average Power [dBm]		13.86	14.74	14.72	1.03	1.06	1.07
	Front	1g Full SAR		0.345			0.37	
		10g SAR		0.171			0.18	
		Deviation		0.02			0.02	

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

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.						
2437	6	Left Cheek	99.27%	100%	0.80	0.81	Fig.A.19

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.						
2437	6	Front	99.27%	100%	0.37	0.37	Fig.A.20
2437	6	Rear	99.27%	100%	0.28	0.28	/



Picture 14.1 Duty factor plot

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
GSM850	128	824.2	Rear	0.9	0.88	1.02
PCS1900	512	1850.2	Front	0.836	0.812	1.03
WCDMA850	4182	846.6	Rear	0.871	0.865	1.01
WCDMA1700	1412	1732.4	Bottom	1.03	1.01	1.02
LTE Band2	18900	1880	Bottom	0.962	0.956	1.01
LTE Band4	20175	1732.5	Bottom	0.953	0.949	1.00
LTE Band5	20450	829	Rear	0.833	0.812	1.03
LTE Band7	21350	2560	Rear	1.05	1.02	1.03

16 Measurement Uncertainty

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

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	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 13, 2017	One year
02	Power meter	NRVD	102196	March 02,2017	One year
03	Power sensor	NRV-Z5	100596		
04	Signal Generator	E4438C	MY49071430	January 13,2017	One Year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	BTS	E5515C	MY50263375	January 16, 2017	One year
07	BTS	CMW500	149646	October 31, 2017	One year
08	E-field Probe	SPEAG EX3DV4	3846	January 13,2017	One year
09	DAE	SPEAG DAE4	1331	January19, 2017	One year
10	Dipole Validation Kit	SPEAG D835V2	4d069	July 19, 2017	One year
11	Dipole Validation Kit	SPEAG D1750V2	1003	July 21, 2017	One year
12	Dipole Validation Kit	SPEAG D1900V2	5d101	July 26, 2017	One year
13	Dipole Validation Kit	SPEAG D2450V2	853	July 21, 2017	One year
14	Dipole Validation Kit	SPEAG D2600V2	1012	July 21, 2017	One year

END OF REPORT BODY

ANNEX A Graph Results

GSM850_CH190 Right Cheek
Date: 12/31/2017
Electronics: DAE4 Sn1331
Medium: Head 835 MHz
Medium parameters used: f = 836.6 MHz; σ = 0.915 mho/m; εr = 41.8; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C
Communication System: GSM850 836.6 MHz Duty Cycle: 1:8.3
Probe: EX3DV4 – SN3846 ConvF(9.33,9.33,9.33)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.734 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.885 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.798 W/kg
SAR(1 g) = 0.628 W/kg; SAR(10 g) = 0.48 W/kg
Maximum value of SAR (measured) = 0.694 W/kg

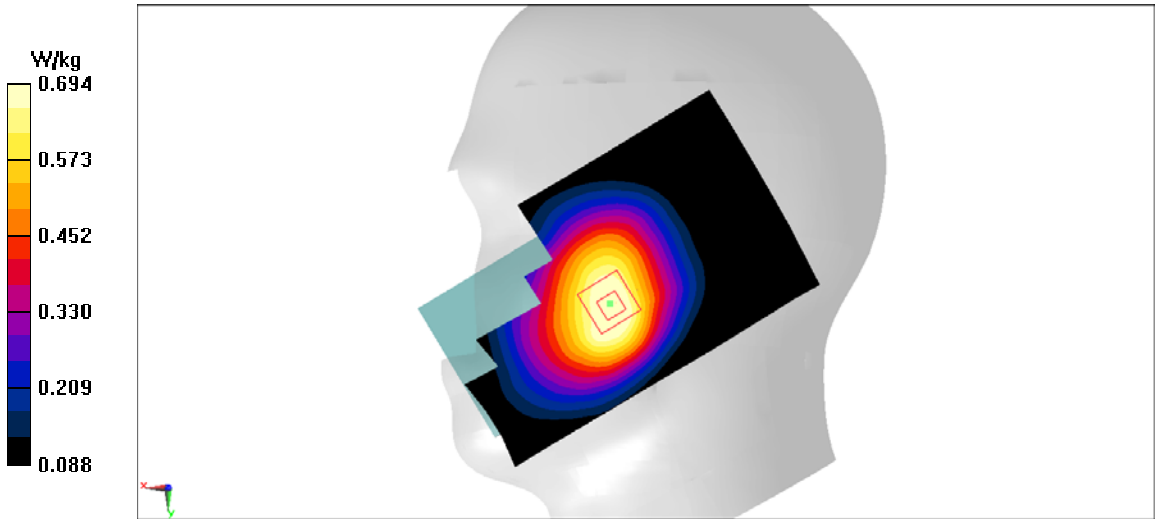


Fig A.1

GSM850_CH128 Rear
Date: 12/31/2017
Electronics: DAE4 Sn1331
Medium: Head 835 MHz
Medium parameters used: f = 824.2 MHz; σ = 0.976 mho/m; εr = 56.21; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C
Communication System: GSM850 824.2 MHz Duty Cycle: 1:2
Probe: EX3DV4 – SN3846 ConvF(9.52,9.52,9.52)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.991 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 27.54 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.10 W/kg
SAR(1 g) = 0.9 W/kg; SAR(10 g) = 0.702 W/kg
Maximum value of SAR (measured) = 0.942 W/kg

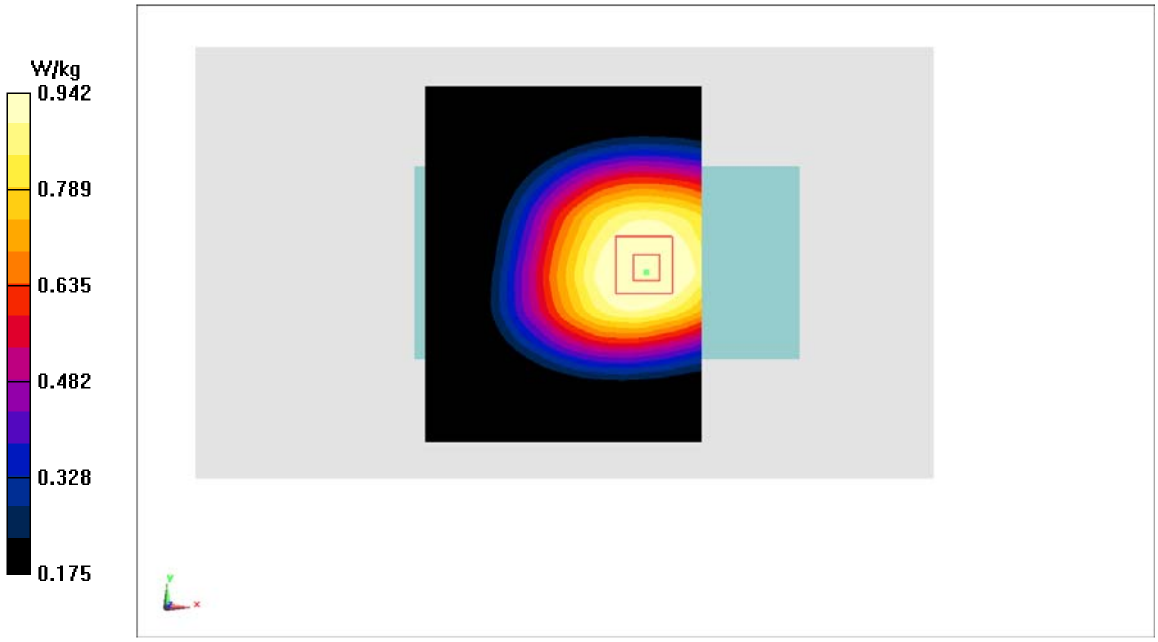


Fig A.2

PCS1900_CH810 Left Cheek
Date: 1/2/2018
Electronics: DAE4 Sn1331
Medium: Head 1900 MHz
Medium parameters used: f = 1909.8 MHz; σ = 1.412 mho/m; εr = 39.63; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C
Communication System: PCS1900 1909.8 MHz Duty Cycle: 1:8.3
Probe: EX3DV4 – SN3846 ConvF(7.89,7.89,7.89)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.766 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.391 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.974 W/kg
SAR(1 g) = 0.614 W/kg; SAR(10 g) = 0.382 W/kg
Maximum value of SAR (measured) = 0.720 W/kg

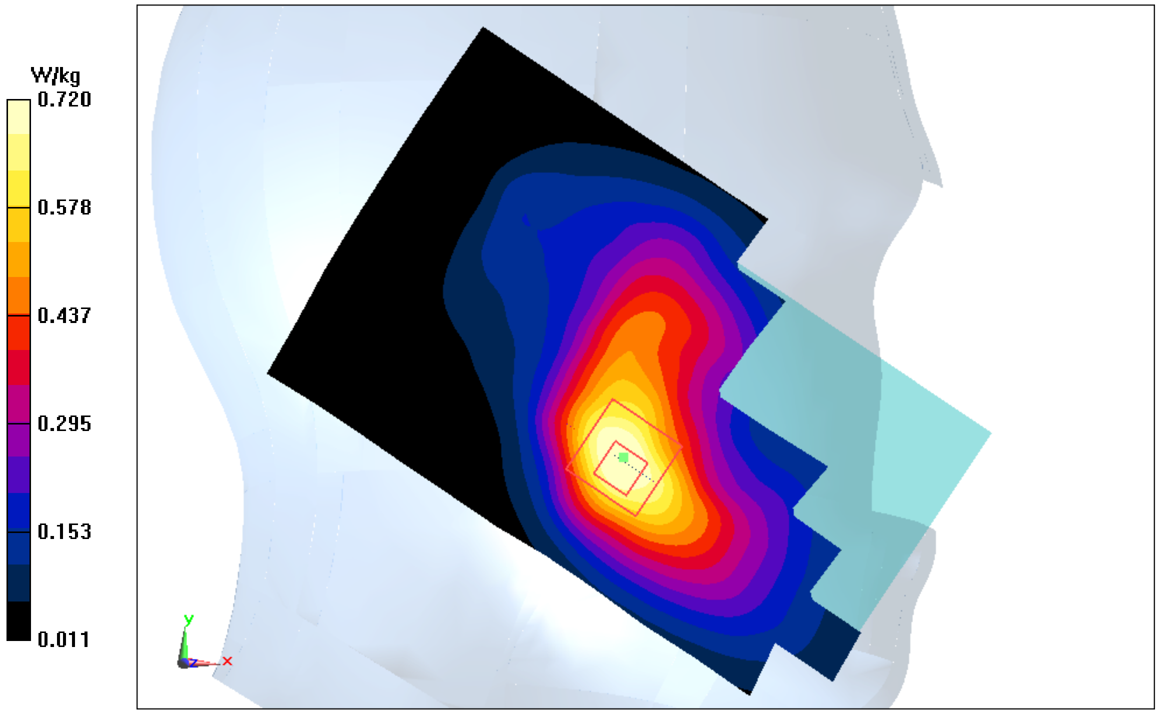


Fig A.3

PCS1900_CH512 Bottom edge
Date: 1/2/2018
Electronics: DAE4 Sn1331
Medium: Head 1900 MHz
Medium parameters used: f = 1850.2 MHz; σ = 1.457 mho/m; εr = 52.5; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C
Communication System: PCS1900 1850.2 MHz Duty Cycle: 1:4
Probe: EX3DV4 – SN3846 ConvF(7.57,7.57,7.57)

Area Scan (71x121x1): 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 = 21.01 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.43 W/kg
SAR(1 g) = 0.836 W/kg; SAR(10 g) = 0.436 W/kg
Maximum value of SAR (measured) = 1.05 W/kg

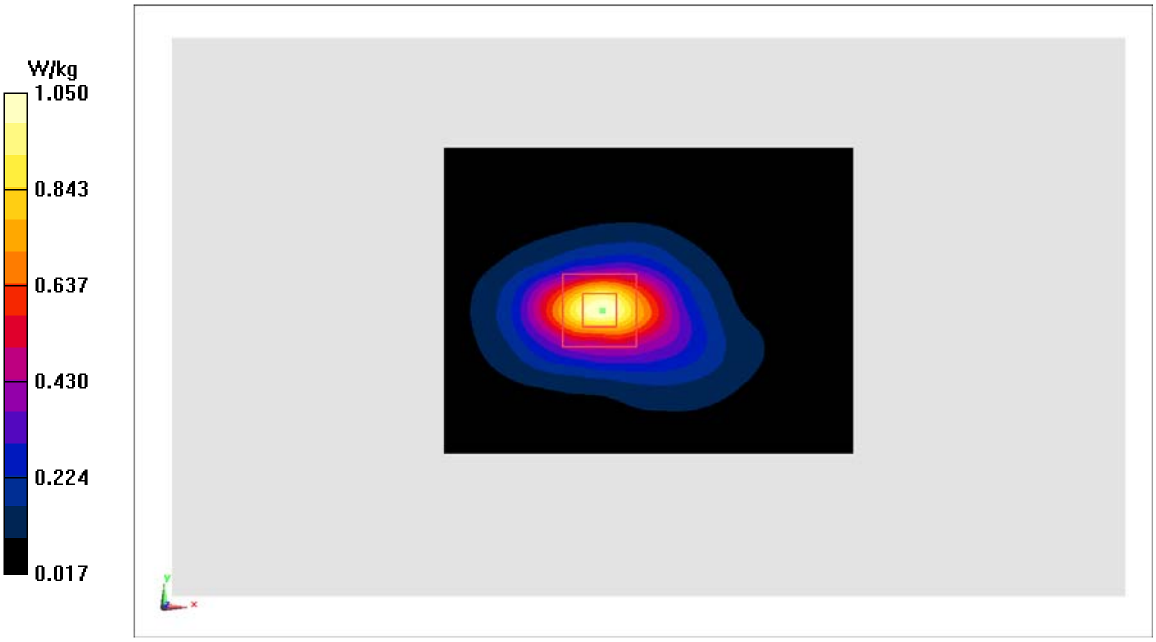


Fig A.4

WCDMA1900-BII_CH9262 Left Cheek
Date: 1/2/2018
Electronics: DAE4 Sn1331
Medium: Head 1900 MHz
Medium parameters used: f = 1852.4 MHz; σ = 1.356 mho/m; εr = 39.7; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C
Communication System: WCDMA1900-BII 1852.4 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(7.89,7.89,7.89)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.823 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.435 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.985 W/kg
SAR(1 g) = 0.653 W/kg; SAR(10 g) = 0.416 W/kg
Maximum value of SAR (measured) = 0.761 W/kg

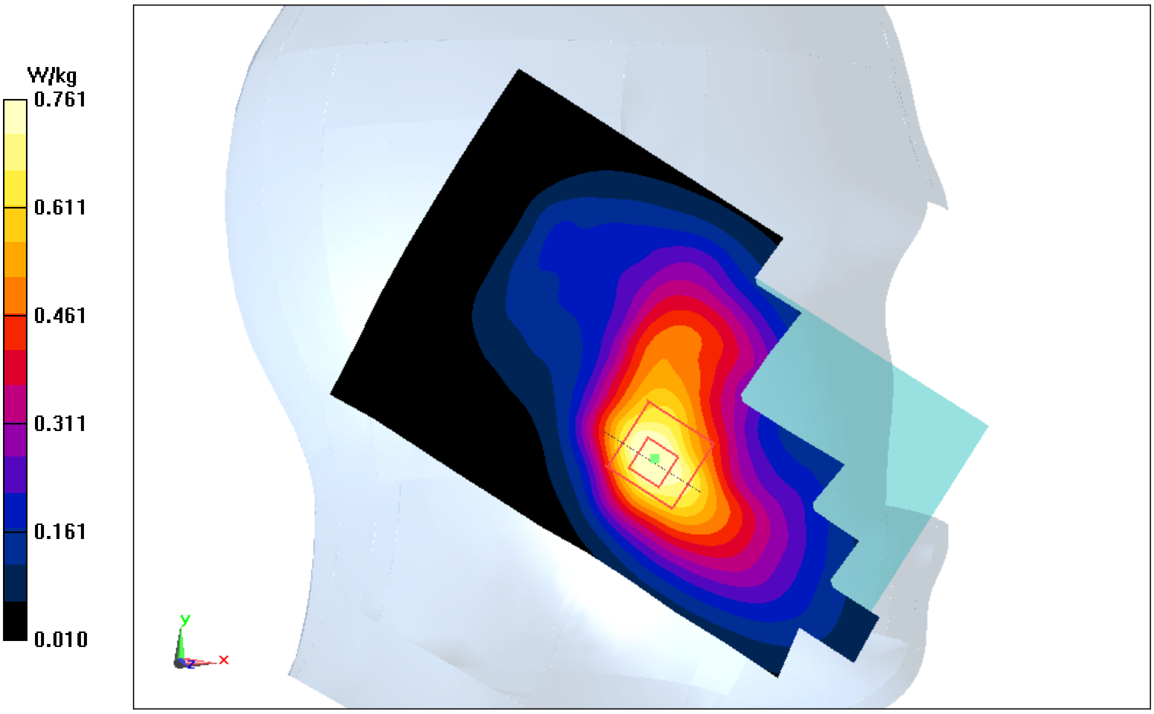


Fig A.5

WCDMA1900-BII_CH9262 Front
Date: 1/2/2018
Electronics: DAE4 Sn1331
Medium: Head 1900 MHz
Medium parameters used: f = 1852.4 MHz; σ = 1.459 mho/m; εr = 52.5; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C
Communication System: WCDMA1900-BII 1852.4 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(7.57,7.57,7.57)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.916 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.11 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.30 W/kg
SAR(1 g) = 0.755 W/kg; SAR(10 g) = 0.438 W/kg
Maximum value of SAR (measured) = 0.889 W/kg

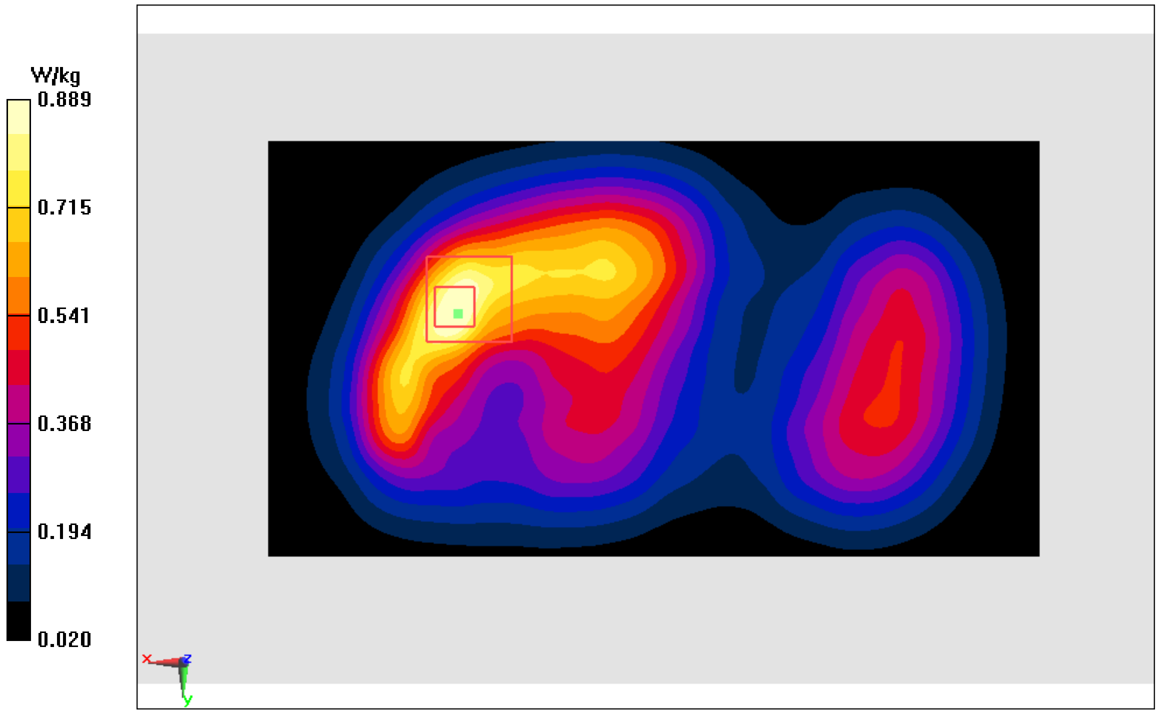


Fig A.6

WCDMA1700-BIV_CH1412 Left Cheek
Date: 1/1/2018
Electronics: DAE4 Sn1331
Medium: Head 1750 MHz
Medium parameters used: f = 1732.4 MHz; σ = 1.36 mho/m; εr = 39.4; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C
Communication System: WCDMA1700-BIV 1732.4 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(8.16,8.16,8.16)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.322 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.902 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.367 W/kg
SAR(1 g) = 0.258 W/kg; SAR(10 g) = 0.175 W/kg
Maximum value of SAR (measured) = 0.293 W/kg

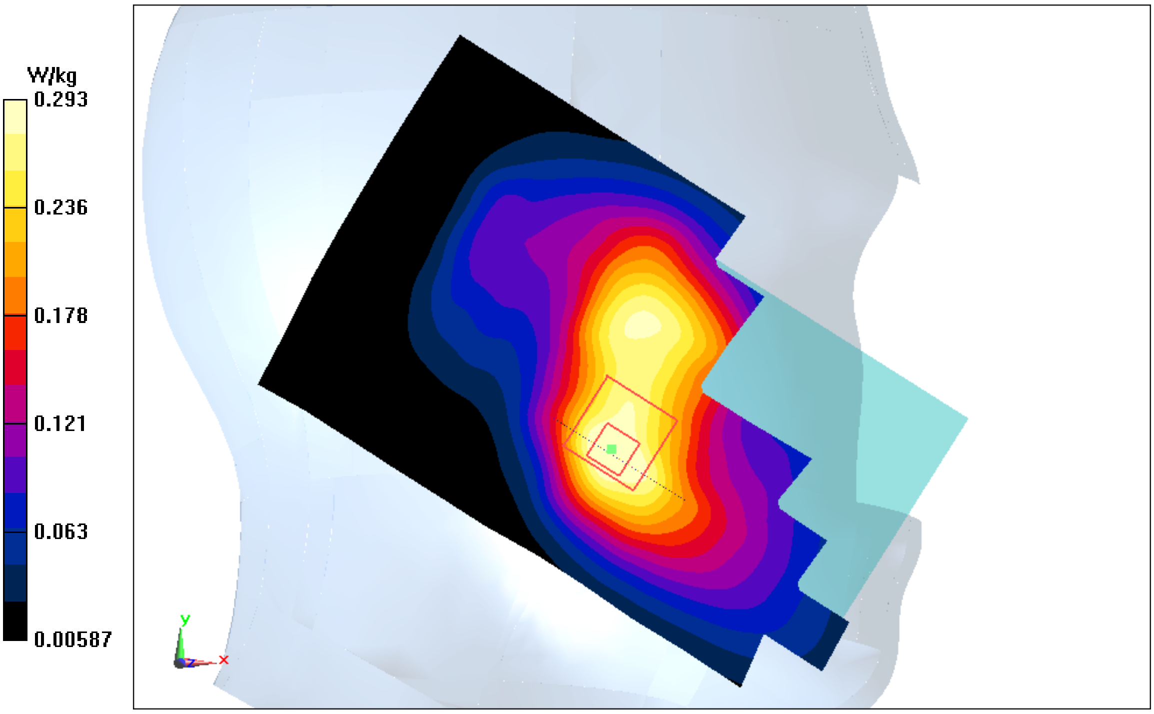


Fig A.7

WCDMA1700-BIV_CH1412 Bottom edge
Date: 1/1/2018
Electronics: DAE4 Sn1331
Medium: Head 1750 MHz
Medium parameters used: f = 1732.4 MHz; σ = 1.478 mho/m; εr = 53.42; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C
Communication System: WCDMA1700-BIV 1732.4 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(7.9,7.9,7.9)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.34 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.22 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.77 W/kg
SAR(1 g) = 1.03 W/kg; SAR(10 g) = 0.554 W/kg
Maximum value of SAR (measured) = 1.28 W/kg

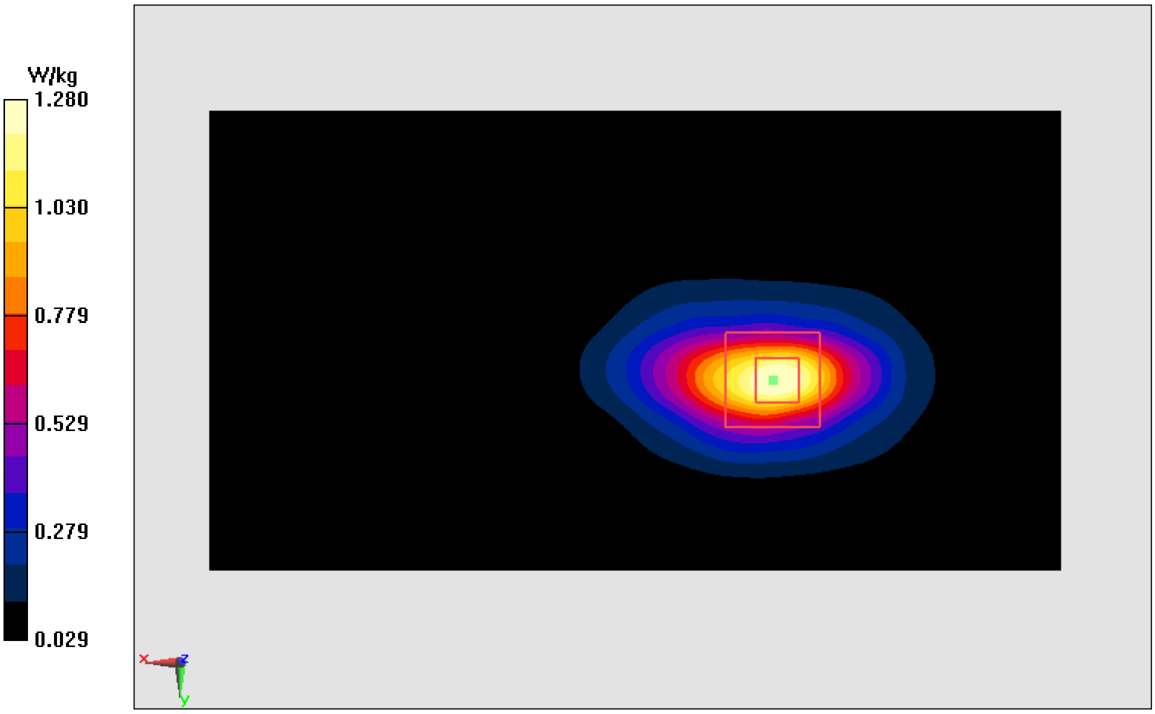


Fig A.8

WCDMA850-BV_CH4182 Right Cheek
Date: 12/31/2017
Electronics: DAE4 Sn1331
Medium: Head 835 MHz
Medium parameters used: f = 846.6 MHz; σ = 0.924 mho/m; εr = 41.79; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C
Communication System: WCDMA850-BV 846.6 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(9.33,9.33,9.33)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.687 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.097 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.803 W/kg
SAR(1 g) = 0.614 W/kg; SAR(10 g) = 0.464 W/kg
Maximum value of SAR (measured) = 0.683 W/kg

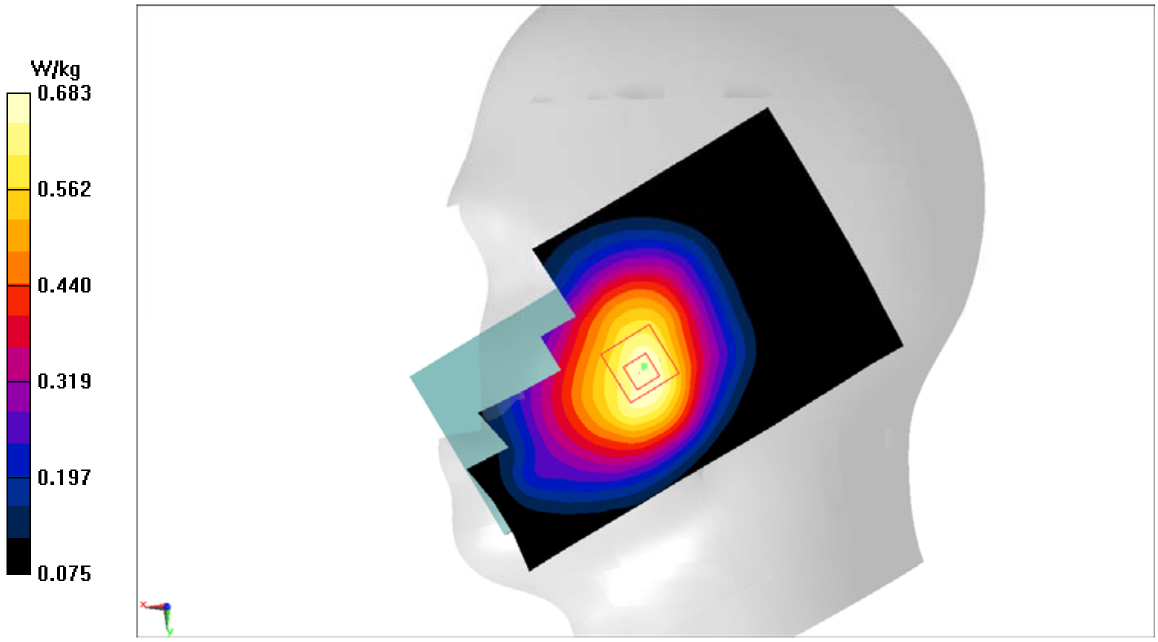


Fig A.9

WCDMA850-BV_CH4182 Rear
Date: 12/31/2017
Electronics: DAE4 Sn1331
Medium: Head 835 MHz
Medium parameters used: f = 846.6 MHz; σ = 0.997 mho/m; εr = 56.19; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C
Communication System: WCDMA850-BV 846.6 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(9.52,9.52,9.52)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.948 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.48 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.871 W/kg; SAR(10 g) = 0.665 W/kg
Maximum value of SAR (measured) = 0.961 W/kg

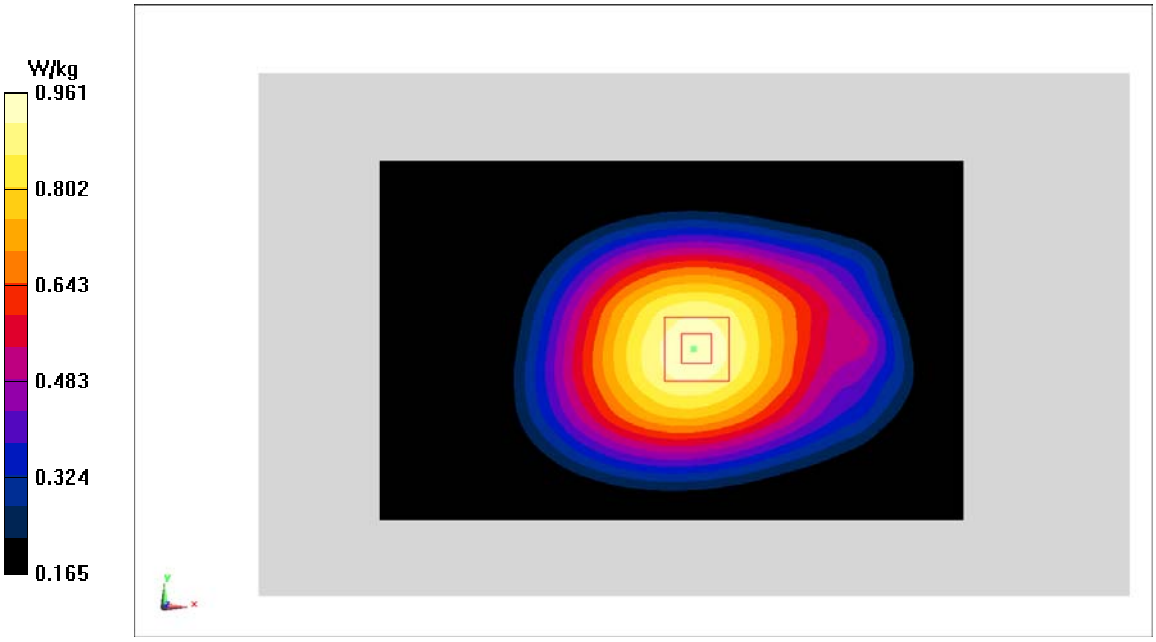


Fig A.10

LTE1900-FDD2_CH18900 Left Cheek
Date: 1/2/2018
Electronics: DAE4 Sn1331
Medium: Head 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.383 mho/m; εr = 39.66; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C
Communication System: LTE1900-FDD2 1880 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(7.89,7.89,7.89)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.751 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.516 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.962 W/kg
SAR(1 g) = 0.614 W/kg; SAR(10 g) = 0.383 W/kg
Maximum value of SAR (measured) = 0.717 W/kg

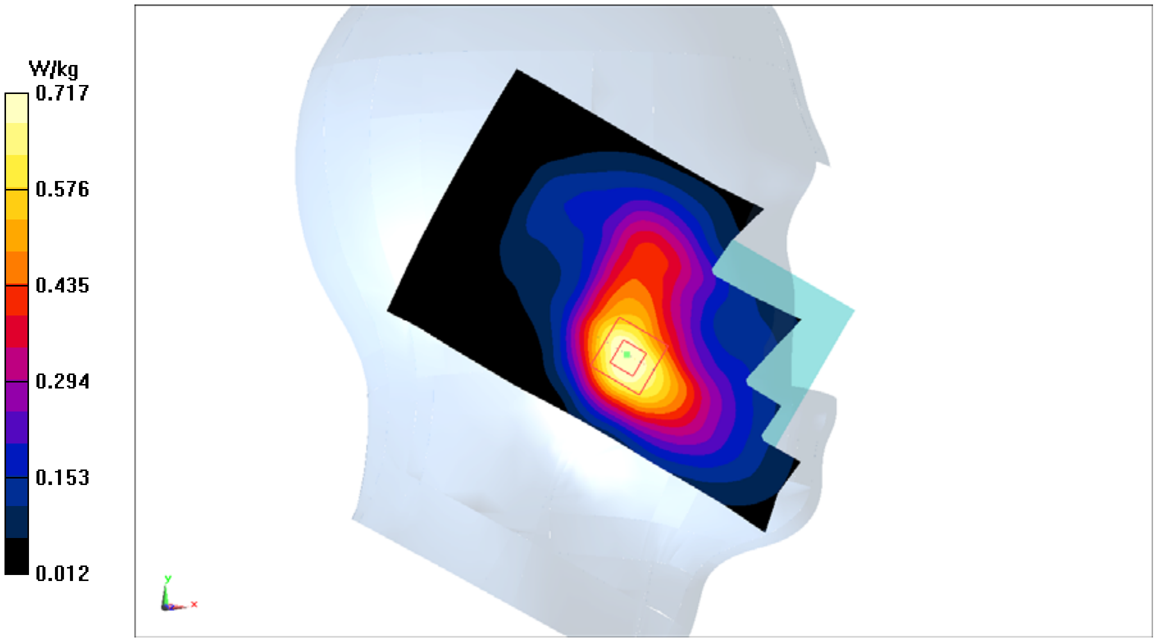


Fig A.11

LTE1900-FDD2_CH18900 Bottom edge
Date: 1/2/2018
Electronics: DAE4 Sn1331
Medium: Head 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.486 mho/m; εr = 52.46; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C,   Liquid Temperature: 22.1°C
Communication System: LTE1900-FDD2 1880 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(7.57,7.57,7.57)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.24 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.58 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.66 W/kg
SAR(1 g) = 0.962 W/kg; SAR(10 g) = 0.494 W/kg
Maximum value of SAR (measured) = 1.22 W/kg

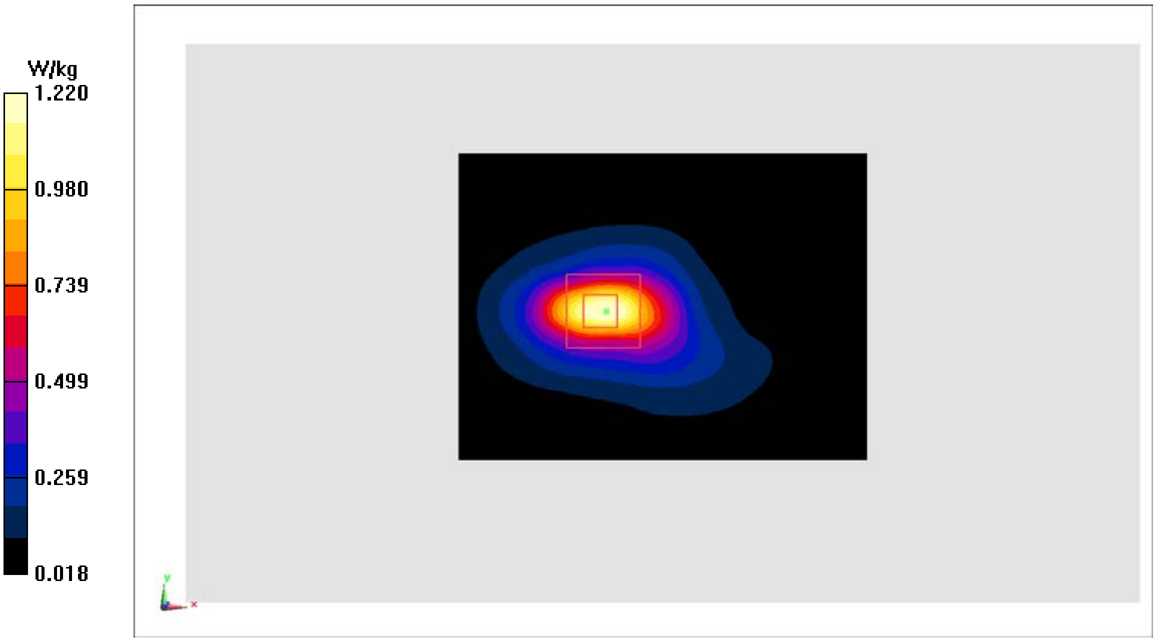


Fig A.12

LTE1700-FDD4_CH20300 Right Cheek
Date: 1/1/2018
Electronics: DAE4 Sn1331
Medium: Head 1750 MHz
Medium parameters used: f = 1745 MHz; σ = 1.372 mho/m; εr = 39.39; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C
Communication System: LTE1700-FDD4 1745 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(8.16,8.16,8.16)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.375 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.590 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.459 W/kg
SAR(1 g) = 0.311 W/kg; SAR(10 g) = 0.201 W/kg
Maximum value of SAR (measured) = 0.358 W/kg

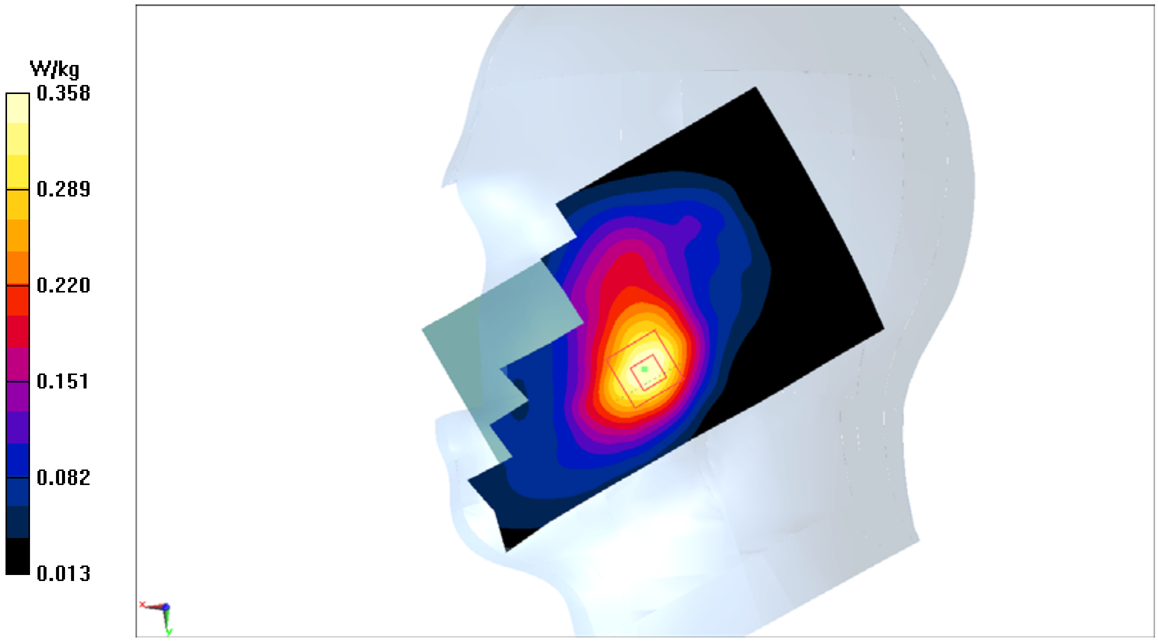


Fig A.13

LTE1700-FDD4_CH20175 Bottom edge

Date: 1/1/2018

Electronics: DAE4 Sn1331

Medium: Head 1750 MHz

Medium parameters used: f = 1732.5 MHz; σ = 1.478 mho/m; εr = 53.42; ρ = 1000 kg/m^3

Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C

Communication System: LTE1700-FDD4 1732.5 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3846 ConvF(7.9,7.9,7.9)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.22 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.72 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.63 W/kg
SAR(1 g) = 0.953 W/kg; SAR(10 g) = 0.515 W/kg
Maximum value of SAR (measured) = 1.18 W/kg

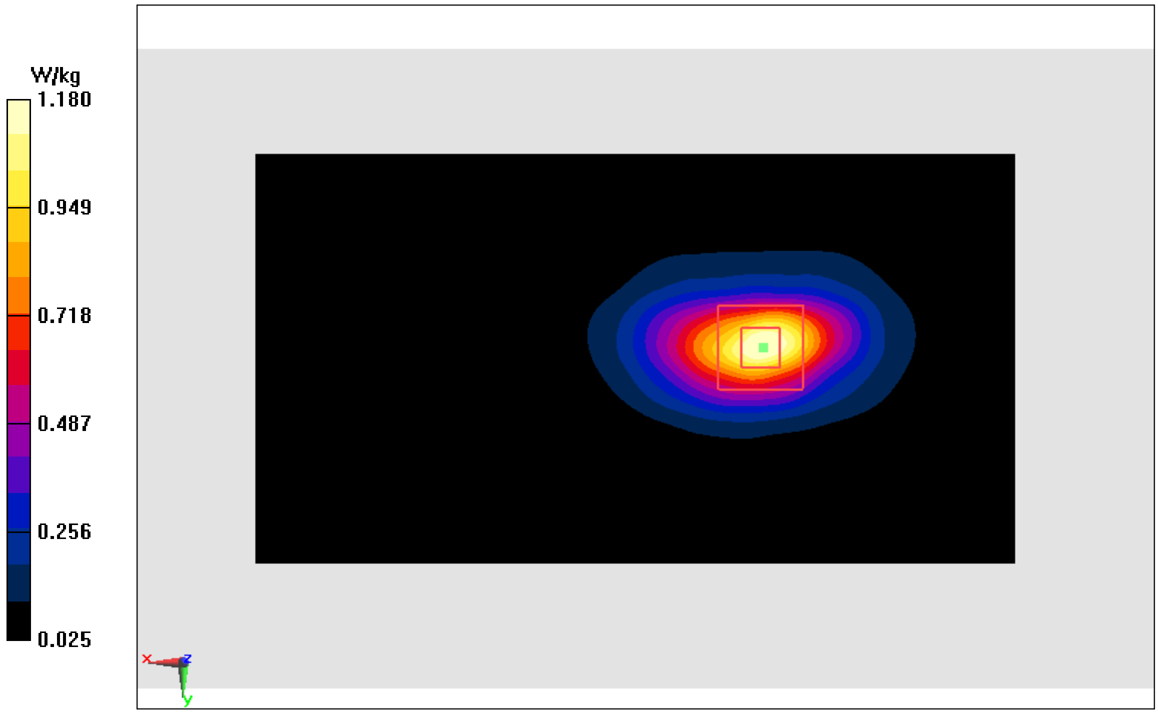


Fig A.14

LTE850-FDD5_CH20450 Right Cheek
Date: 12/31/2017
Electronics: DAE4 Sn1331
Medium: Head 835 MHz
Medium parameters used: f = 829 MHz; σ = 0.907 mho/m; εr = 41.81; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C
Communication System: LTE850-FDD5 829 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(9.33,9.33,9.33)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.659 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.793 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.759 W/kg
SAR(1 g) = 0.586 W/kg; SAR(10 g) = 0.448 W/kg
Maximum value of SAR (measured) = 0.648 W/kg

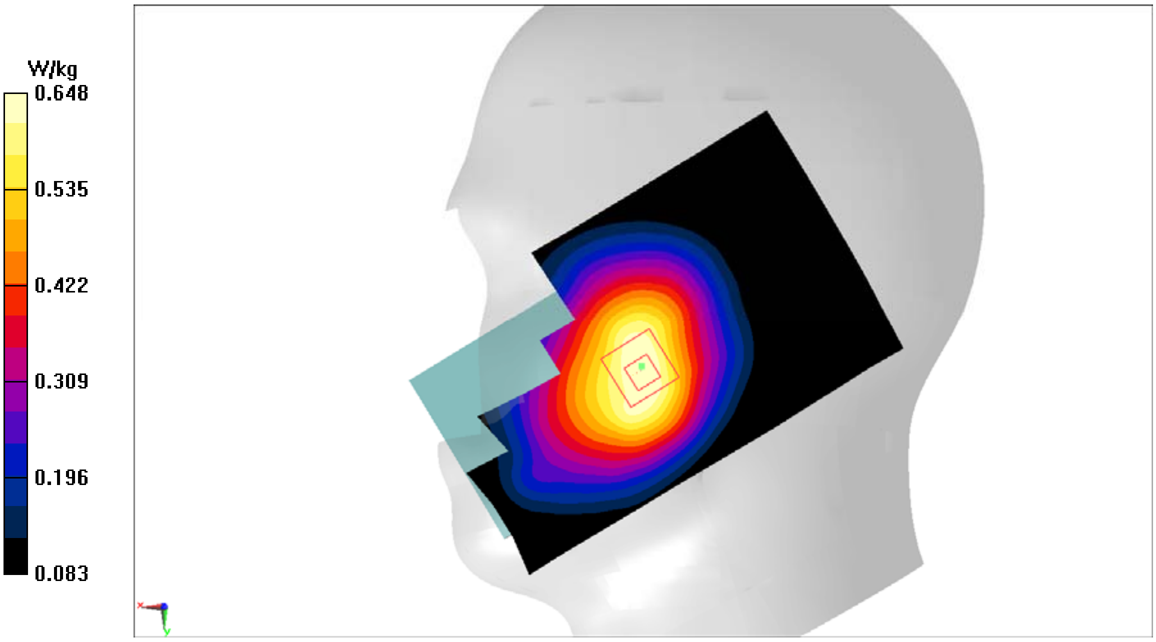


Fig A.15

LTE850-FDD5_CH20450 Rear
Date: 12/31/2017
Electronics: DAE4 Sn1331
Medium: Head 835 MHz
Medium parameters used: f = 829 MHz; σ = 0.98 mho/m; εr = 56.21; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C
Communication System: LTE850-FDD5 829 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(9.52,9.52,9.52)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.953 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 28.18 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.04 W/kg
SAR(1 g) = 0.833 W/kg; SAR(10 g) = 0.643 W/kg
Maximum value of SAR (measured) = 0.908 W/kg

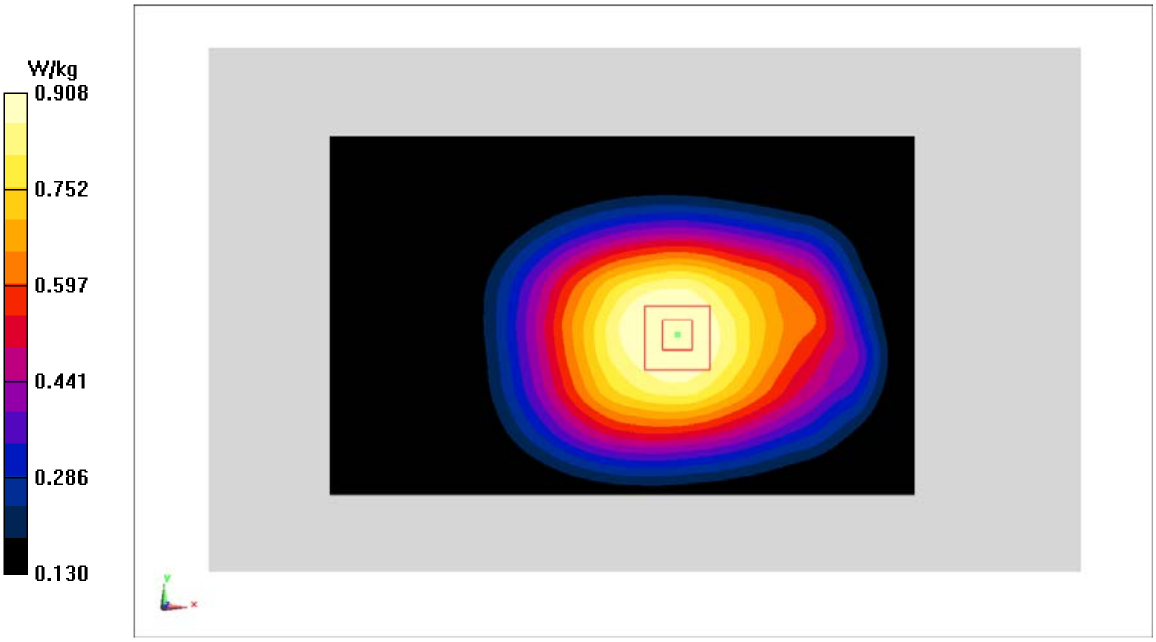


Fig A.16

LTE2500-FDD7_CH21100 Right Cheek
Date: 1/4/2018
Electronics: DAE4 Sn1331
Medium: Head 2600 MHz
Medium parameters used: f = 2535 MHz; σ = 1.893 mho/m; εr = 39.12; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C
Communication System: LTE2500-FDD7 2535 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(7.12,7.12,7.12)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.353 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.735 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.555 W/kg
SAR(1 g) = 0.285 W/kg; SAR(10 g) = 0.141 W/kg
Maximum value of SAR (measured) = 0.363 W/kg

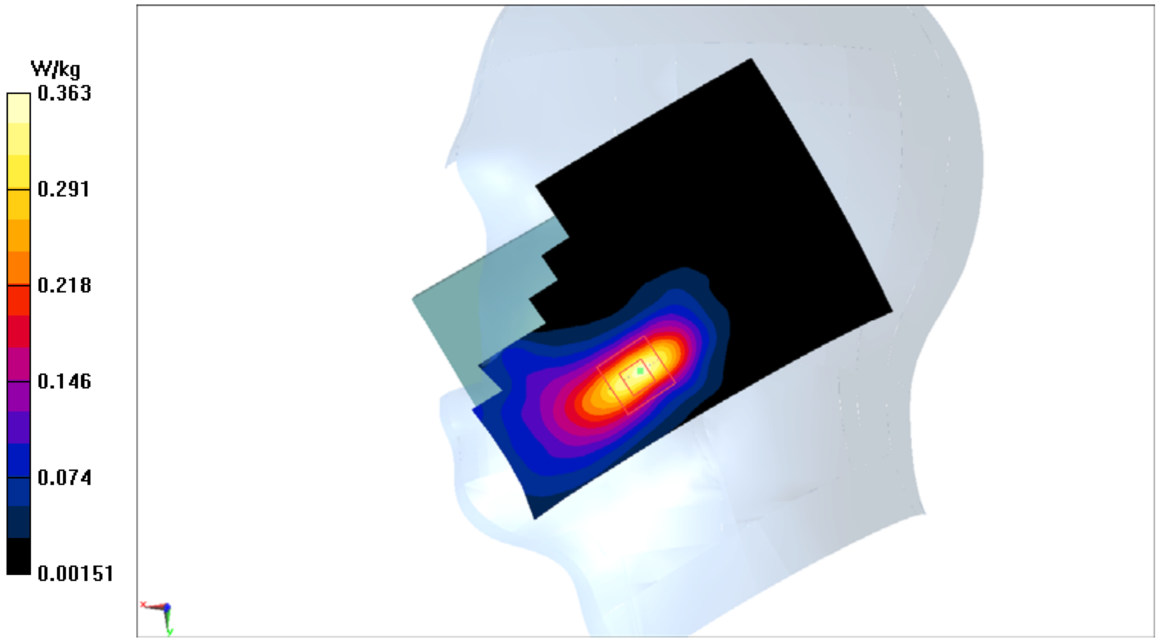


Fig A.17

LTE2500-FDD7_CH21350 Rear
Date: 1/4/2018
Electronics: DAE4 Sn1331
Medium: Head 2600 MHz
Medium parameters used: f = 2560 MHz; σ = 2.135 mho/m; εr = 53.23; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C
Communication System: LTE2500-FDD7 2560 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(7.25,7.25,7.25)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.42 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.568 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 2.08 W/kg
SAR(1 g) = 1.05 W/kg; SAR(10 g) = 0.481 W/kg
Maximum value of SAR (measured) = 1.39 W/kg

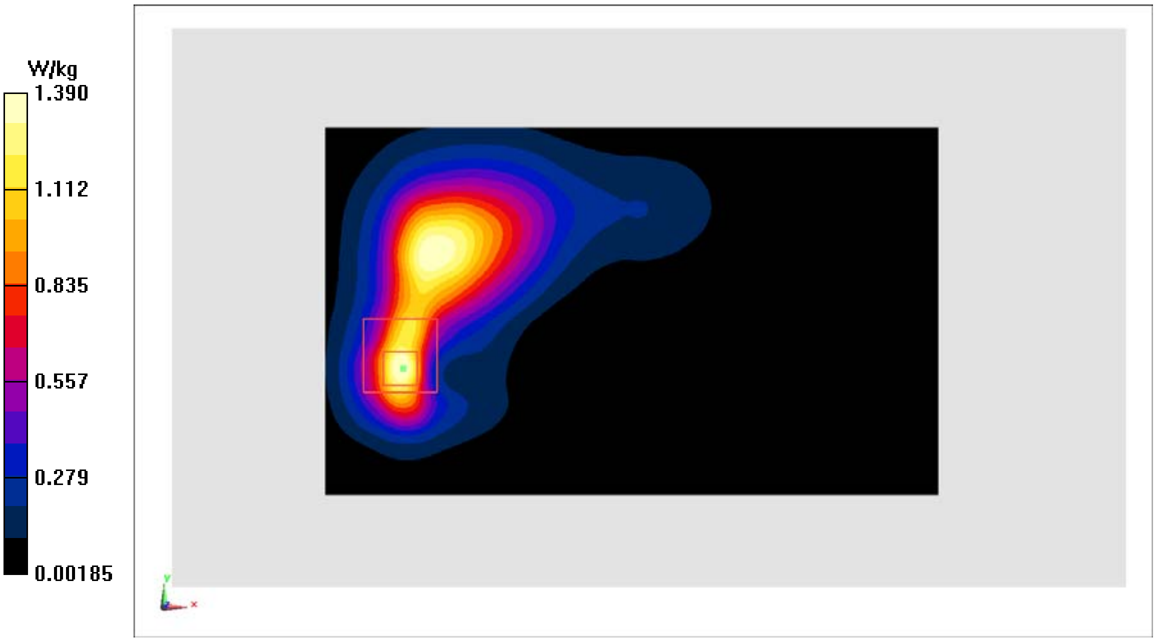


Fig A.18

WLAN2450_CH6 Left Cheek
Date: 1/3/2018
Electronics: DAE4 Sn1331
Medium: Head 2450 MHz
Medium parameters used: f = 2437 MHz; σ = 1.807 mho/m; εr = 39.41; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C
Communication System: WLAN2450 2437 Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(7.22,7.22,7.22)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.08 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.04 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.70 W/kg
SAR(1 g) = 0.753 W/kg; SAR(10 g) = 0.34 W/kg
Maximum value of SAR (measured) = 1.00 W/kg

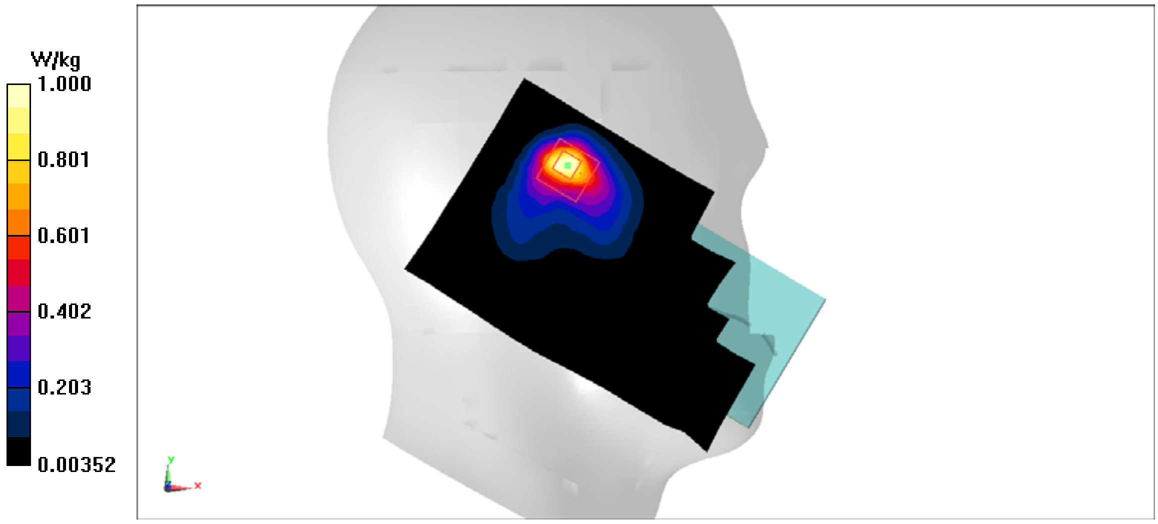


Fig A.19

WLAN2450_CH6 Front
Date: 1/3/2018
Electronics: DAE4 Sn1331
Medium: Head 2450 MHz
Medium parameters used: f = 2437 MHz; σ = 1.958 mho/m; εr = 52.51; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C, Liquid Temperature: 22.1°C
Communication System: WLAN2450 2437 Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(7.31,7.31,7.31)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.458 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.154 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.670 W/kg
SAR(1 g) = 0.333 W/kg; SAR(10 g) = 0.159 W/kg
Maximum value of SAR (measured) = 0.439 W/kg

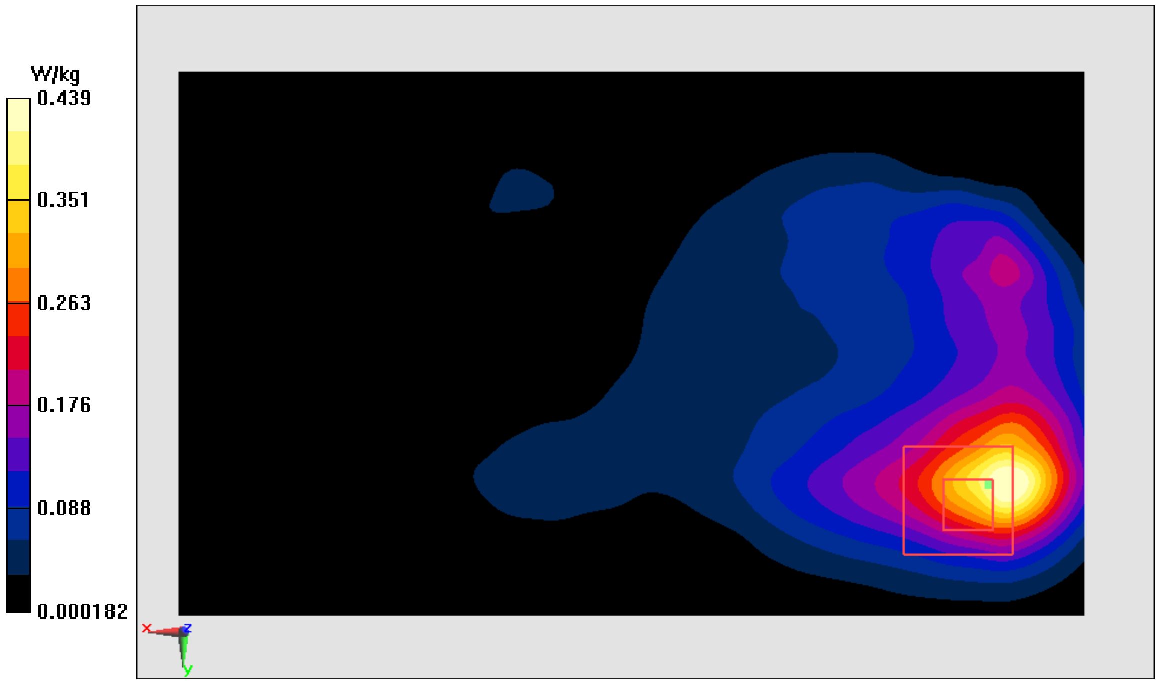


Fig A.20

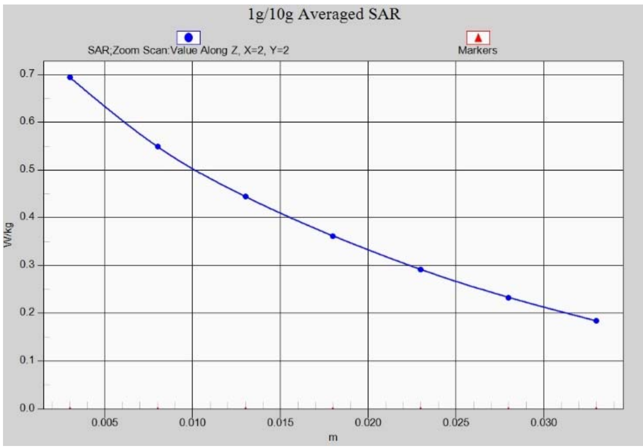


Fig.A.1- 1 Z-Scan at power reference point (GSM850)

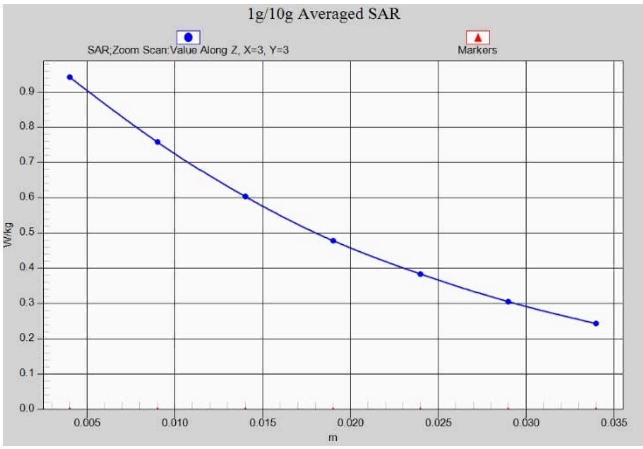


Fig.A.1- 2 Z-Scan at power reference point (GSM850)

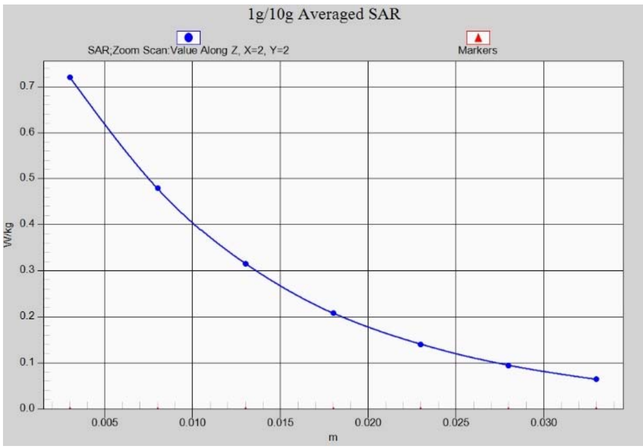


Fig.A.1- 3 Z-Scan at power reference point (PCS1900)

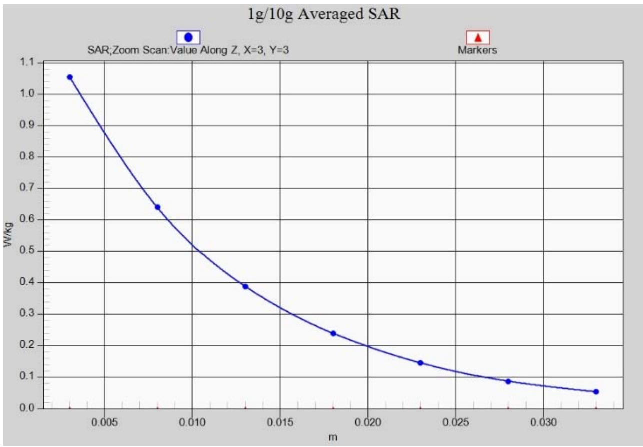


Fig.A.1- 4 Z-Scan at power reference point (PCS1900)

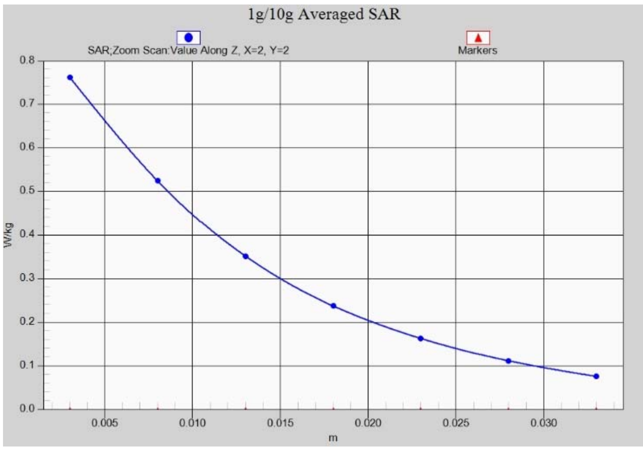


Fig.A.1- 5 Z-Scan at power reference point (W1900)

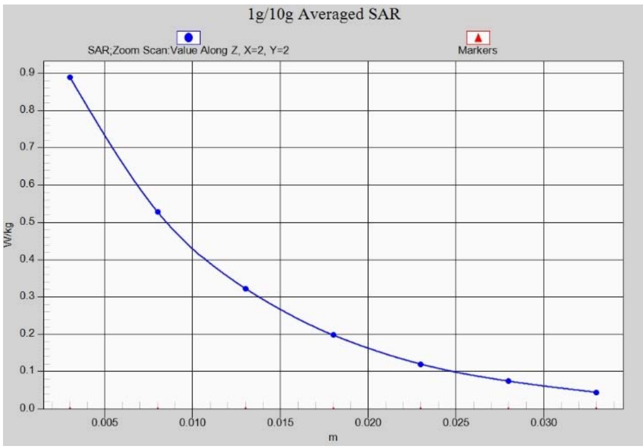


Fig.A.1- 6 Z-Scan at power reference point (W1900)

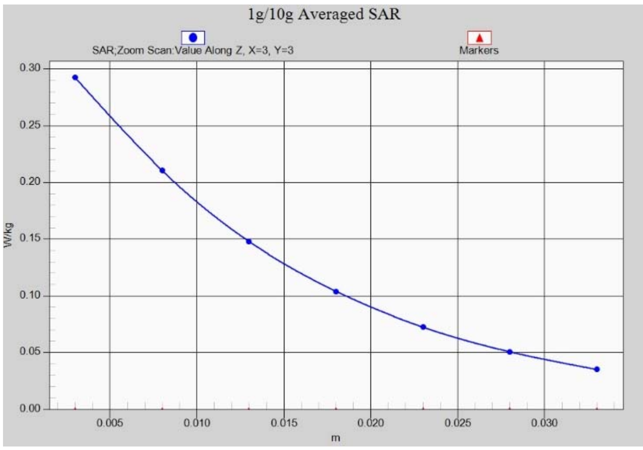


Fig.A.1- 7 Z-Scan at power reference point (W1700)

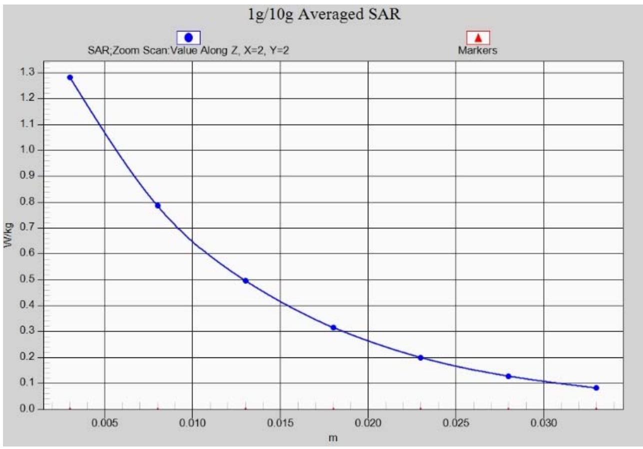


Fig.A.1- 8 Z-Scan at power reference point (W1700)

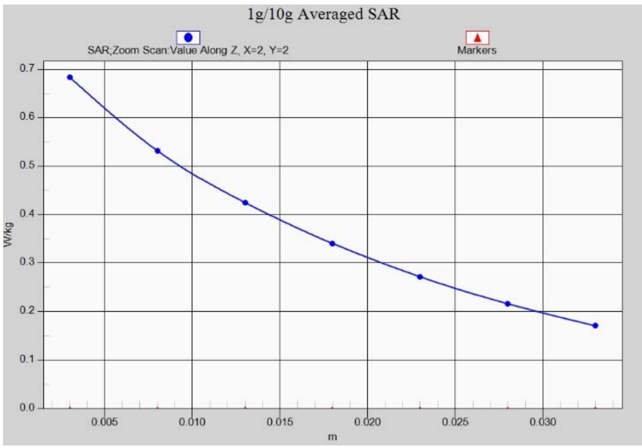


Fig.A.1- 9 Z-Scan at power reference point (W850)

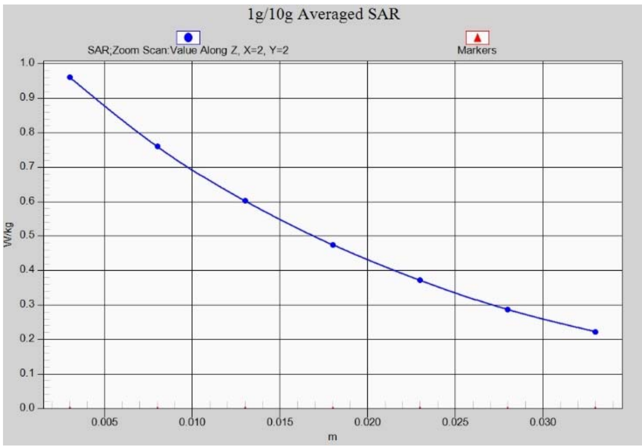


Fig.A.1- 10 Z-Scan at power reference point (W850)

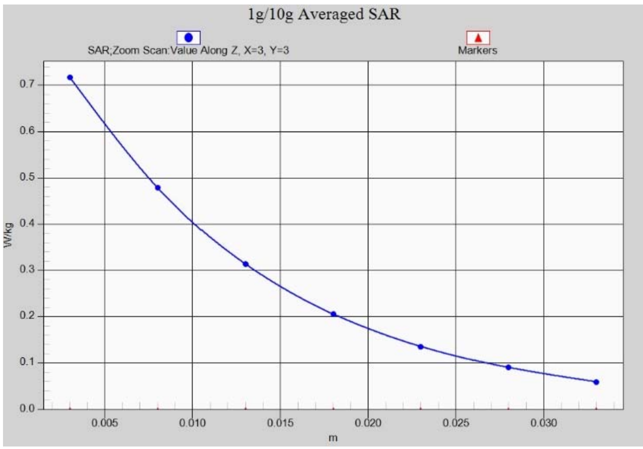


Fig.A.1- 11 Z-Scan at power reference point (LTE band2)

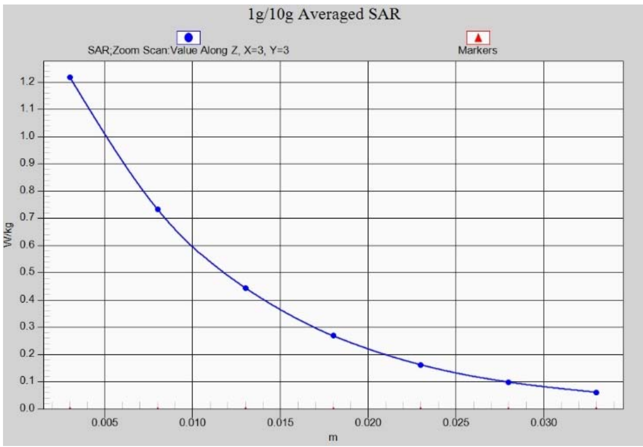


Fig.A.1- 12 Z-Scan at power reference point (LTE band2)

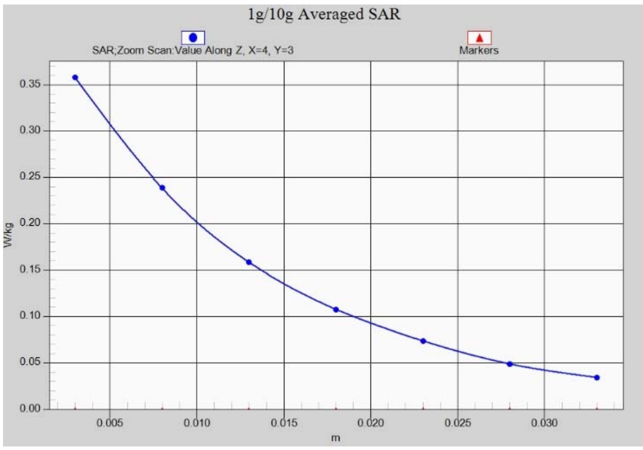


Fig.A.1- 13 Z-Scan at power reference point (LTE band4)

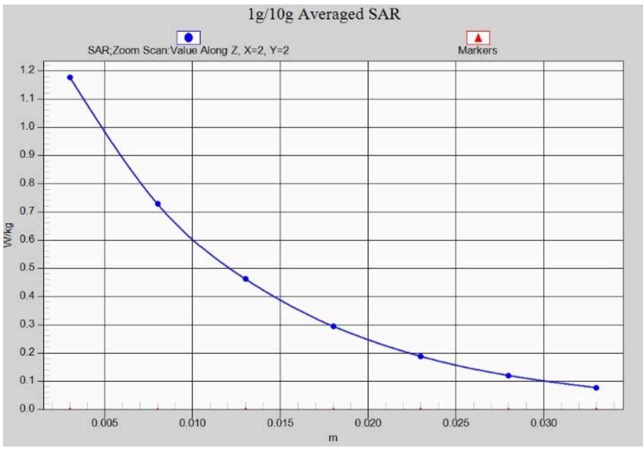


Fig.A.1- 14 Z-Scan at power reference point (LTE band4)

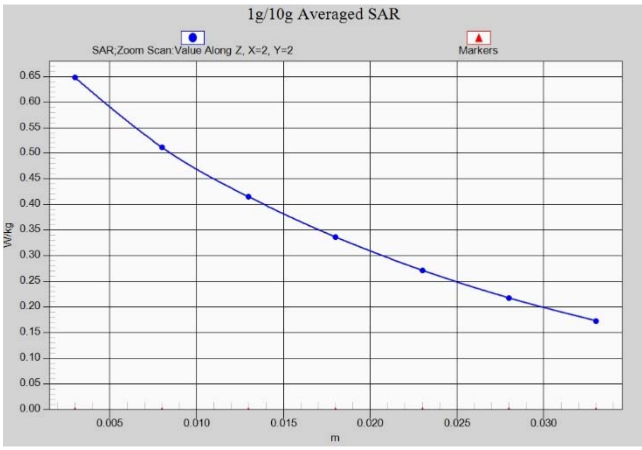


Fig.A.1- 15 Z-Scan at power reference point (LTE band5)

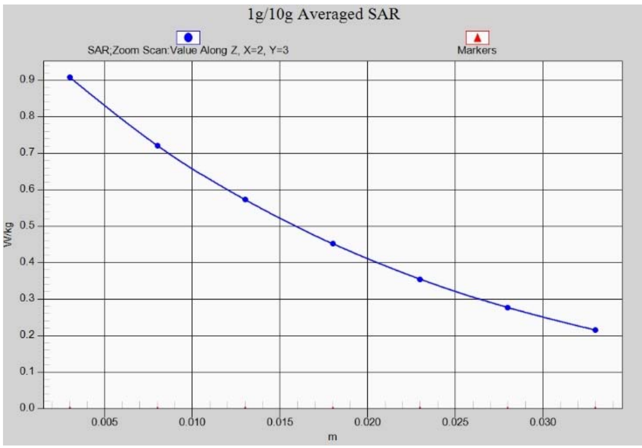


Fig.A.1- 16 Z-Scan at power reference point (LTE band5)

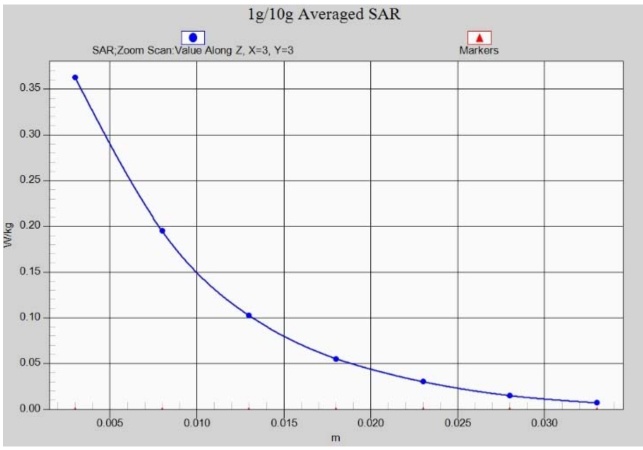


Fig.A.1- 17 Z-Scan at power reference point (LTE band7)

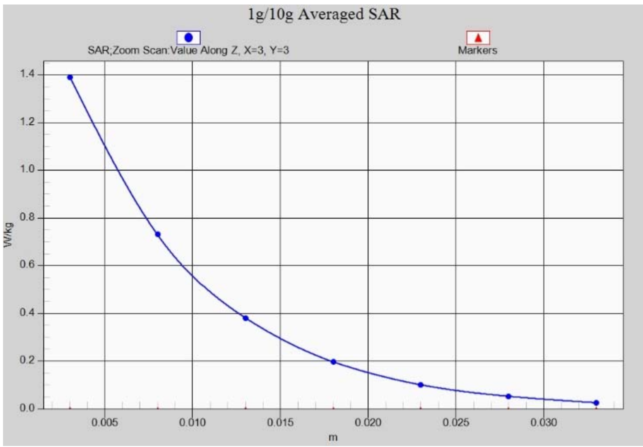


Fig.A.1- 18 Z-Scan at power reference point (LTE band7)

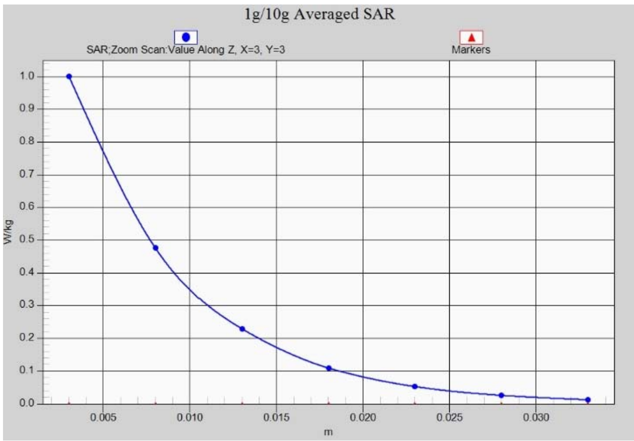


Fig.A.1- 19 Z-Scan at power reference point (Wifi2450)

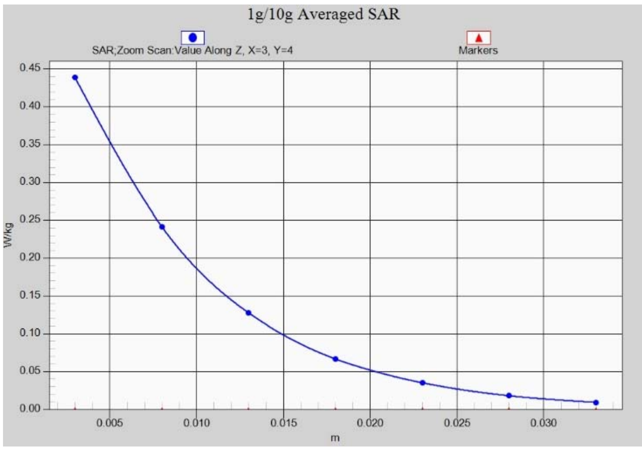


Fig.A.1- 20 Z-Scan at power reference point (Wifi2450)

ANNEX B System Verification Results

835 MHz

Date: 12/31/2017
Electronics: DAE4 Sn1331
Medium: Head 835 MHz
Medium parameters used: f = 835 MHz; σ =0.913 mho/m; ε_r = 41.8; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C Liquid Temperature: 22.1°C
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(9.33,9.33,9.33)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Reference Value = 61.29 V/m; Power Drift = 0.07

Fast SAR: SAR(1 g) = 2.33 W/kg; SAR(10 g) = 1.49 W/kg

Maximum value of SAR (interpolated) = 3.23 W/kg

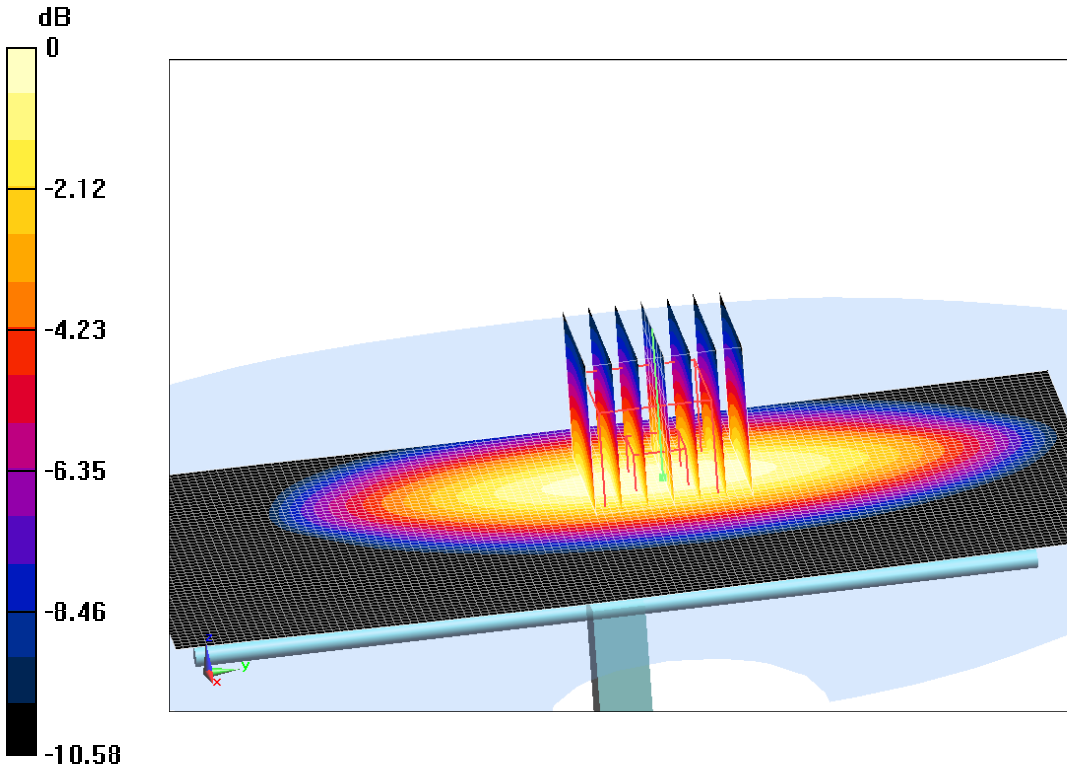
System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value =61.29 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 3.69 W/kg

SAR(1 g) = 2.37 W/kg; SAR(10 g) = 1.54 W/kg

Maximum value of SAR (measured) = 3.26 W/kg



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

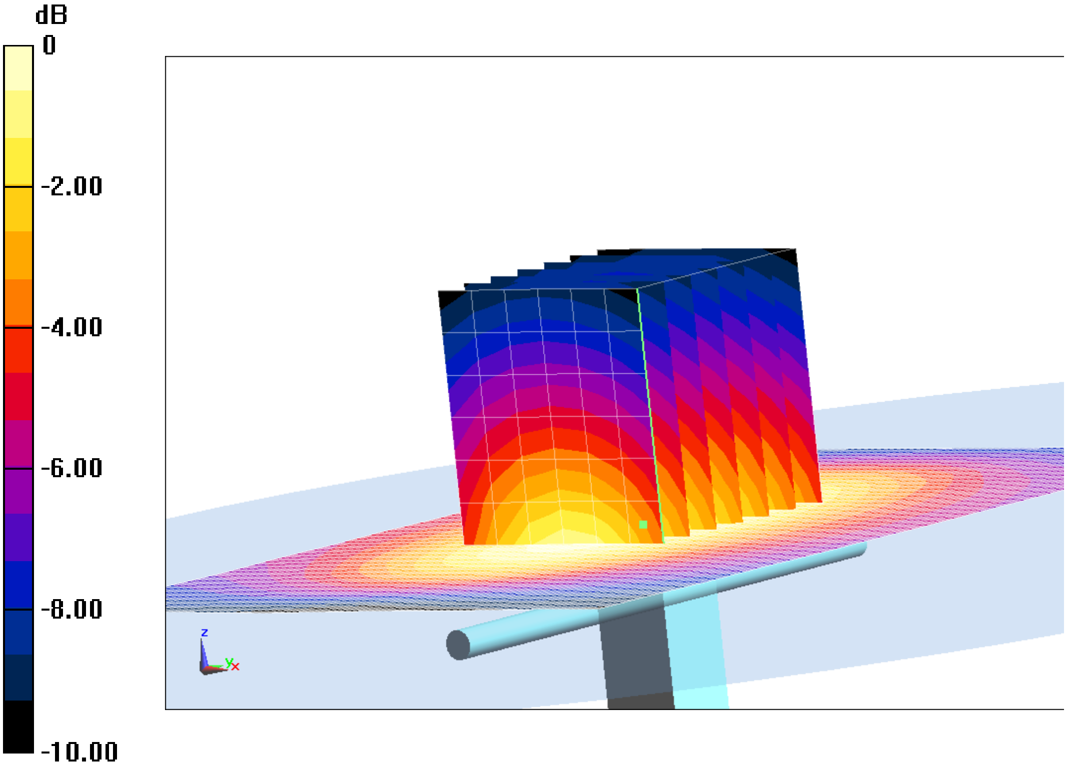
Fig.B.1 validation 835 MHz 250mW

835 MHz

Date: 12/31/2017
Electronics: DAE4 Sn1331
Medium: Body 835 MHz
Medium parameters used: f = 835 MHz; σ =0.986 mho/m; ε_r = 56.2; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C Liquid Temperature: 22.1°C
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(9.52,9.52,9.52)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 58.81 V/m; Power Drift = 0.09
Fast SAR: SAR(1 g) = 2.33 W/kg; SAR(10 g) = 1.51 W/kg
Maximum value of SAR (interpolated) = 3.5 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =58.81 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 3.61 W/kg
SAR(1 g) = 2.37 W/kg; SAR(10 g) = 1.51 W/kg
Maximum value of SAR (measured) = 3.24 W/kg



0 dB = 3.24 W/kg = 5.11 dB W/kg

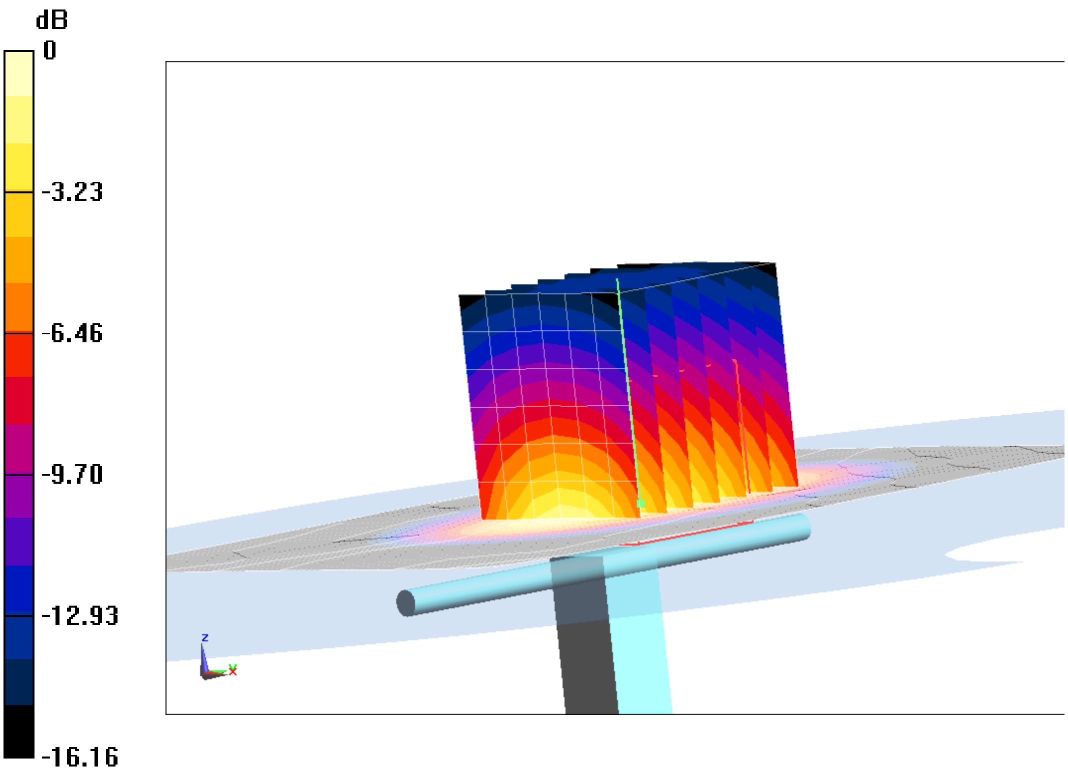
Fig.B.2 validation 835 MHz 250mW

1750 MHz

Date: 1/1/2018
Electronics: DAE4 Sn1331
Medium: Head 1750 MHz
Medium parameters used: f = 1750 MHz; σ =1.377 mho/m; ε_r = 39.38; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C Liquid Temperature: 22.1°C
Communication System: CW Frequency: 1750 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(8.16,8.16,8.16)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 107.33 V/m; Power Drift = 0.08
Fast SAR: SAR(1 g) = 9.01 W/kg; SAR(10 g) = 4.87 W/kg
Maximum value of SAR (interpolated) = 14.85 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =107.33 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 18.14 W/kg
SAR(1 g) = 9.08 W/kg; SAR(10 g) = 4.88 W/kg
Maximum value of SAR (measured) = 14.43 W/kg



0 dB = 14.43 W/kg = 11.59 dB W/kg

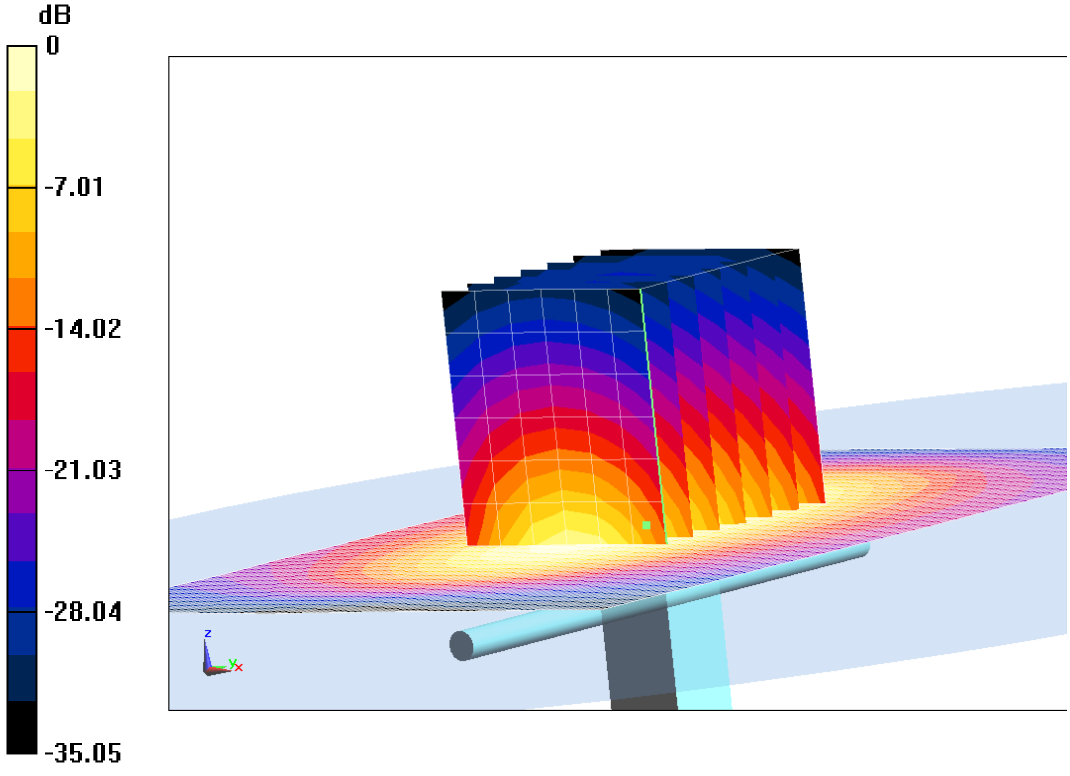
Fig.B.3 validation 1750 MHz 250mW

1750 MHz

Date: 1/1/2018
Electronics: DAE4 Sn1331
Medium: Body 1750 MHz
Medium parameters used: f = 1750 MHz; σ =1.495 mho/m; ε_r = 53.4; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C Liquid Temperature: 22.1°C
Communication System: CW Frequency: 1750 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(7.9,7.9,7.9)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 99.68 V/m; Power Drift = 0.06
Fast SAR: SAR(1 g) = 9.13 W/kg; SAR(10 g) = 4.96 W/kg
Maximum value of SAR (interpolated) = 16.49 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =99.68 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 16.45 W/kg
SAR(1 g) = 9.36 W/kg; SAR(10 g) = 5.05 W/kg
Maximum value of SAR (measured) = 13.14 W/kg



0 dB = 13.14 W/kg = 11.19 dB W/kg

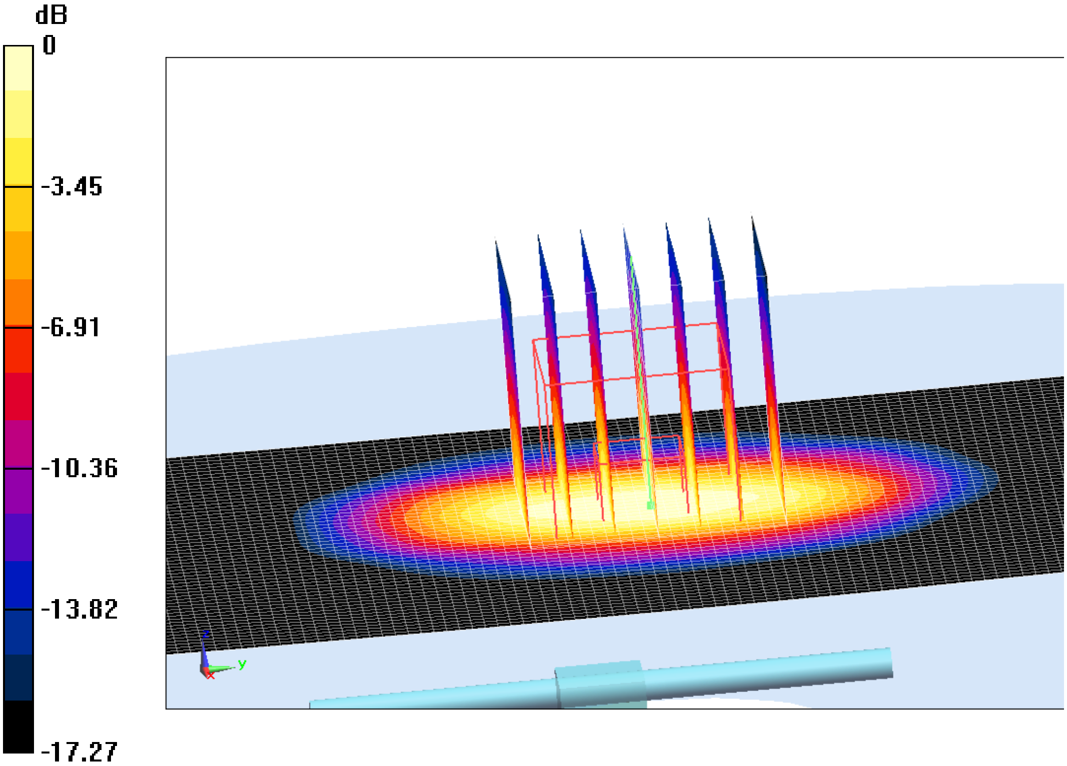
Fig.B.4 validation 1750 MHz 250mW

1900 MHz

Date: 1/2/2018
Electronics: DAE4 Sn1331
Medium: Head 1900 MHz
Medium parameters used: f = 1900 MHz; σ =1.402 mho/m; ε_r = 39.64; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C Liquid Temperature: 22.1°C
Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(7.89,7.89,7.89)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 107.02 V/m; Power Drift = -0.09
Fast SAR: SAR(1 g) = 10.12 W/kg; SAR(10 g) = 5.18 W/kg
Maximum value of SAR (interpolated) = 14.72 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =107.02 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 18.73 W/kg
SAR(1 g) = 10.12 W/kg; SAR(10 g) = 5.25 W/kg
Maximum value of SAR (measured) = 14.88 W/kg



0 dB = 14.88 W/kg = 11.73 dB W/kg

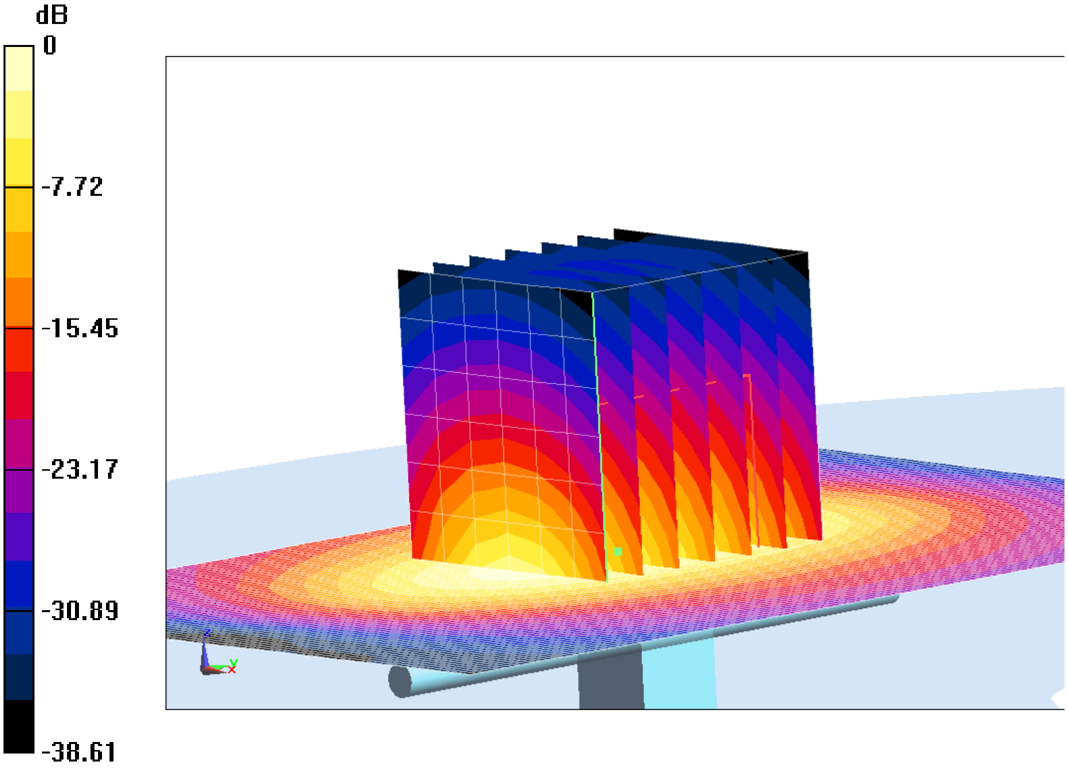
Fig.B.5 validation 1900 MHz 250mW

1900 MHz

Date: 1/2/2018
Electronics: DAE4 Sn1331
Medium: Body 1900 MHz
Medium parameters used: f = 1900 MHz; σ =1.505 mho/m; ε_r = 52.44; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C Liquid Temperature: 22.1°C
Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(7.57,7.57,7.57)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 103.02 V/m; Power Drift = 0.05
Fast SAR: SAR(1 g) = 10.19 W/kg; SAR(10 g) = 5.3 W/kg
Maximum value of SAR (interpolated) = 17.42 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =103.02 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 17.57 W/kg
SAR(1 g) = 10.18 W/kg; SAR(10 g) = 5.43 W/kg
Maximum value of SAR (measured) = 14.32 W/kg



0 dB = 14.32 W/kg = 11.56 dB W/kg

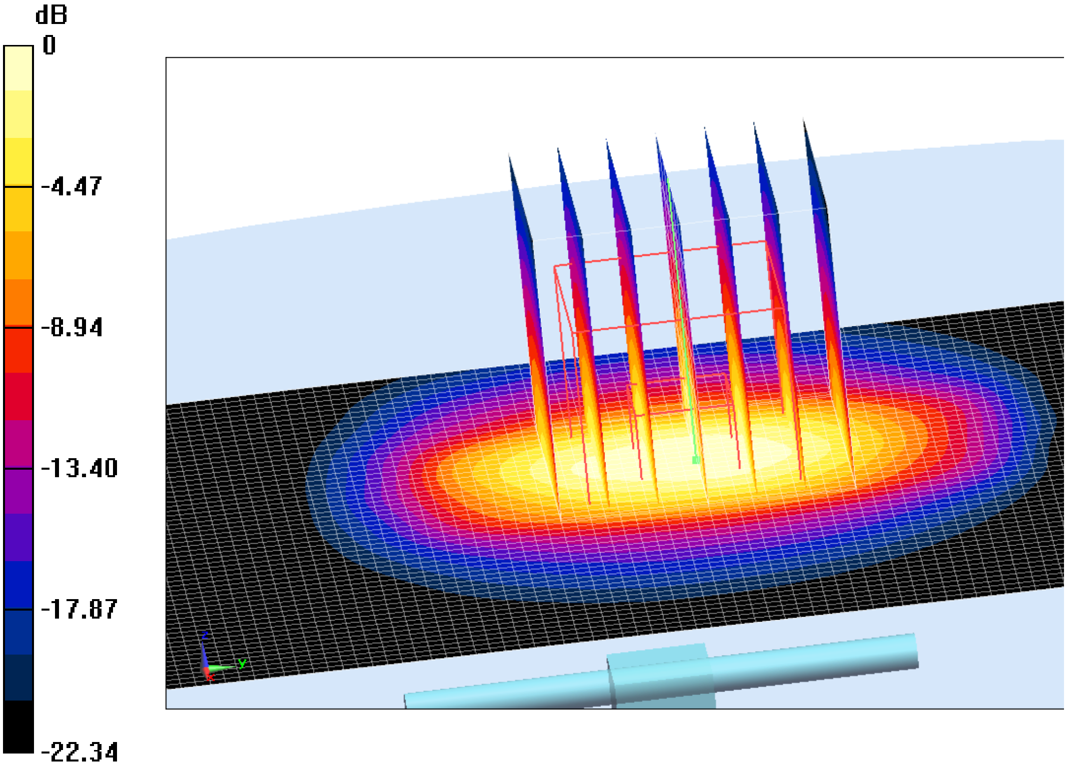
Fig.B.6 validation 1900 MHz 250mW

2450 MHz

Date: 1/3/2018
Electronics: DAE4 Sn1331
Medium: Head 2450 MHz
Medium parameters used: f = 2450 MHz; σ =1.819 mho/m; ε_r = 39.39; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C Liquid Temperature: 22.1°C
Communication System: CW Frequency: 2450 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(7.22,7.22,7.22)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 110.88 V/m; Power Drift = -0.06
Fast SAR: SAR(1 g) = 13.11 W/kg; SAR(10 g) = 6.17 W/kg
Maximum value of SAR (interpolated) = 21.67 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =110.88 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 26.9 W/kg
SAR(1 g) = 13.29 W/kg; SAR(10 g) = 6.17 W/kg
Maximum value of SAR (measured) = 21.22 W/kg



0 dB = 21.22 W/kg = 13.27 dB W/kg

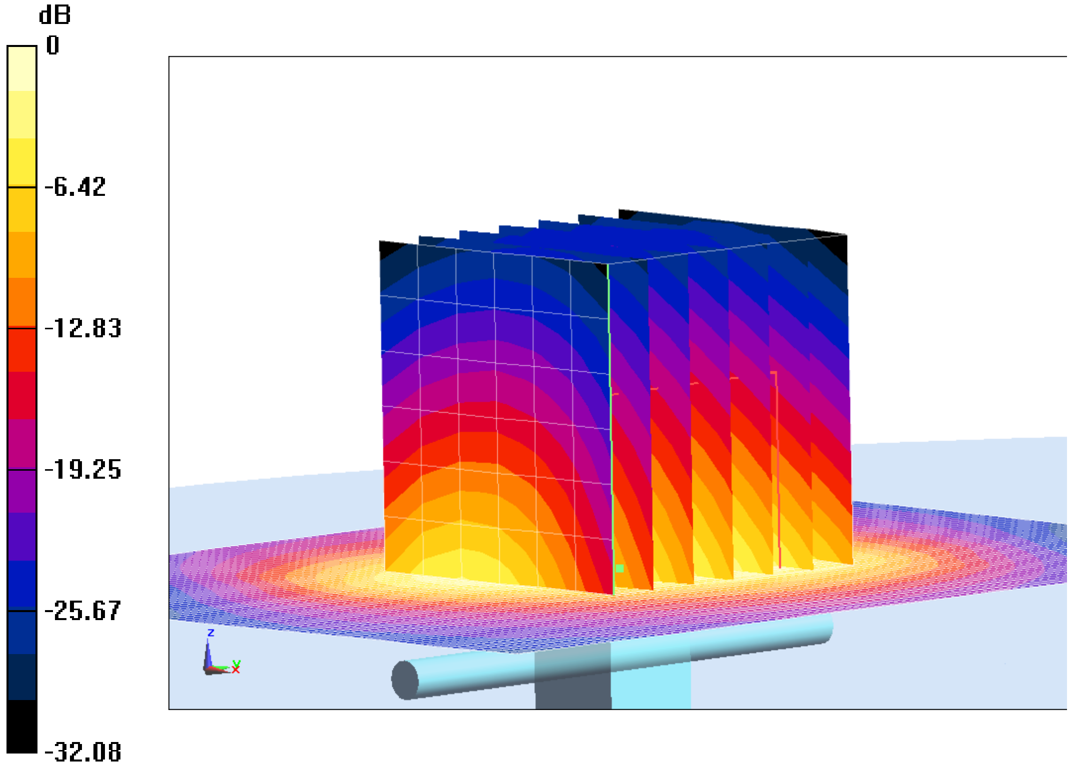
Fig.B.7 validation 2450 MHz 250mW

2450 MHz

Date: 1/3/2018
Electronics: DAE4 Sn1331
Medium: Body 2450 MHz
Medium parameters used: f = 2450 MHz; σ =1.97 mho/m; ε_r = 52.49; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C Liquid Temperature: 22.1°C
Communication System: CW Frequency: 2450 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(7.31,7.31,7.31)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 103.53 V/m; Power Drift = 0.04
Fast SAR: SAR(1 g) = 12.46 W/kg; SAR(10 g) = 6.01 W/kg
Maximum value of SAR (interpolated) = 25.06 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =103.53 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 25.2 W/kg
SAR(1 g) = 12.41 W/kg; SAR(10 g) = 5.89 W/kg
Maximum value of SAR (measured) = 20.22 W/kg



0 dB = 20.22 W/kg = 13.06 dB W/kg

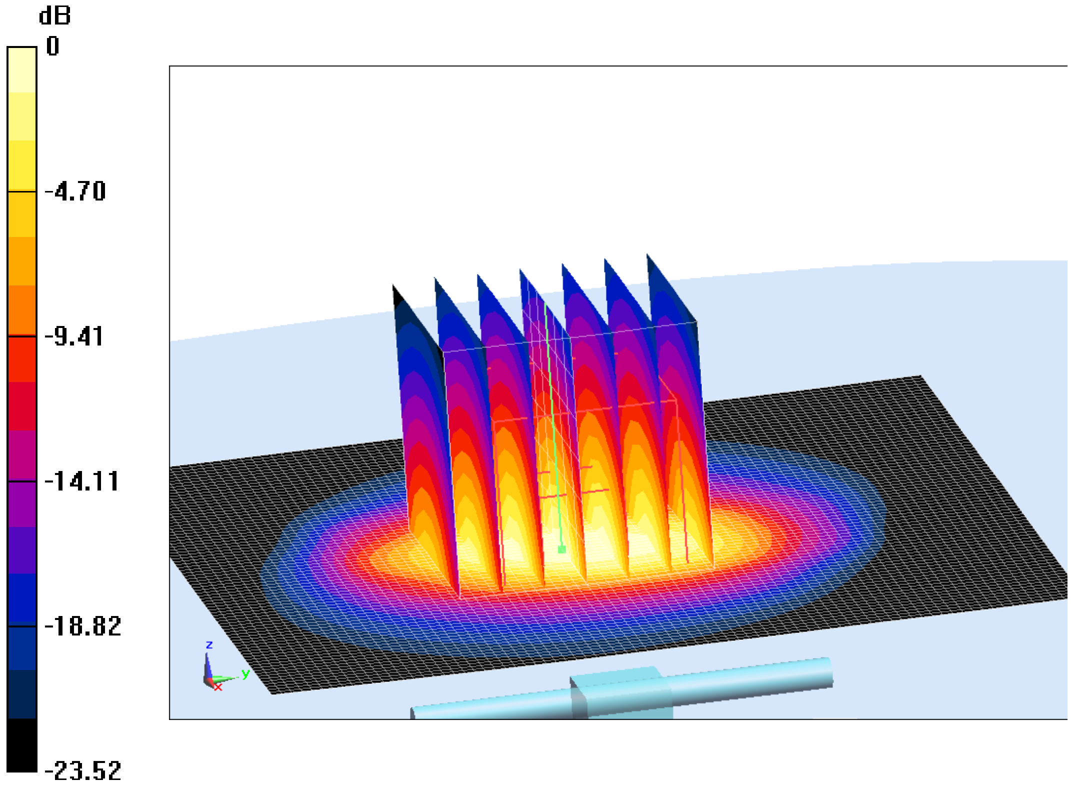
Fig.B.8 validation 2450 MHz 250mW

2600 MHz

Date: 1/4/2018
Electronics: DAE4 Sn1331
Medium: Head 2600 MHz
Medium parameters used: f = 2600 MHz; σ =1.955 mho/m; ε_r = 39.04; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C Liquid Temperature: 22.1°C
Communication System: CW Frequency: 2600 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(7.12,7.12,7.12)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 115.41 V/m; Power Drift = 0.05
Fast SAR: SAR(1 g) = 14.34 W/kg; SAR(10 g) = 6.52 W/kg
Maximum value of SAR (interpolated) = 24.97 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =115.41 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 32.45 W/kg
SAR(1 g) = 14.66 W/kg; SAR(10 g) = 6.35 W/kg
Maximum value of SAR (measured) = 24.78 W/kg



0 dB = 24.78 W/kg = 13.94 dB W/kg

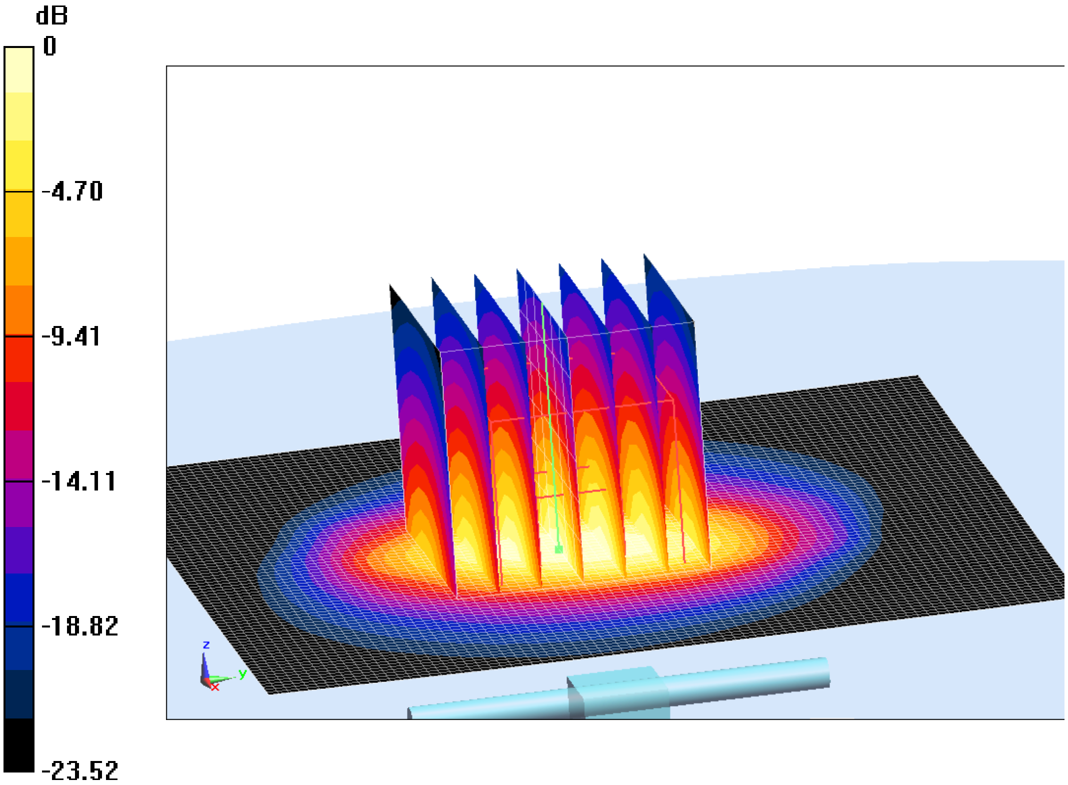
Fig.B.9 validation 2600 MHz 250mW

2600 MHz

Date: 1/4/2018
Electronics: DAE4 Sn1331
Medium: Body 2600 MHz
Medium parameters used: f = 2600 MHz; σ =2.173 mho/m; ε_r = 53.18; ρ = 1000 kg/m^3
Ambient Temperature: 22.3°C Liquid Temperature: 22.1°C
Communication System: CW Frequency: 2600 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN3846 ConvF(7.25,7.25,7.25)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 107.16 V/m; Power Drift = 0.08
Fast SAR: SAR(1 g) = 13.67 W/kg; SAR(10 g) = 6.09 W/kg
Maximum value of SAR (interpolated) = 30.44 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =107.16 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 30.51 W/kg
SAR(1 g) = 13.67 W/kg; SAR(10 g) = 6.16 W/kg
Maximum value of SAR (measured) = 22.98 W/kg



0 dB = 22.98 W/kg = 13.61 dB W/kg

Fig.B.10 validation 2600 MHz 250mW

The SAR system verification must be required that the area scan estimated 1-g SAR is within 3% of the zoom scan 1-g SAR.

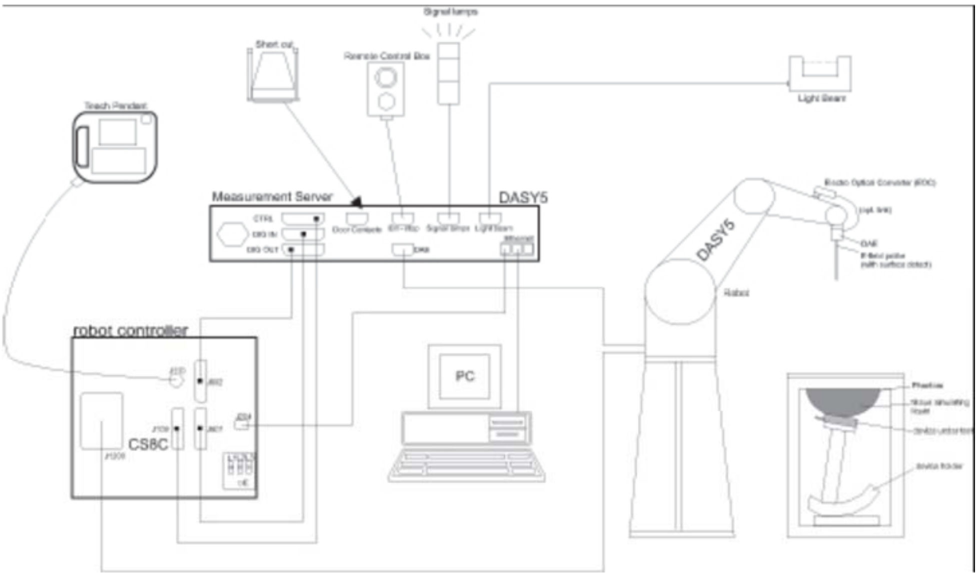
Table B.1 Comparison between area scan and zoom scan for system verification

Date	Band	Position	Area scan (1g)	Zoom scan (1g)	Drift (%)
2017-12-31	835	Head	2.33	2.37	-1.69
	835	Body	2.33	2.37	-1.69
2018-1-1	1750	Head	9.01	9.08	-0.77
	1750	Body	9.13	9.36	-2.46
2018-1-2	1900	Head	10.12	10.12	0.00
	1900	Body	10.19	10.18	0.10
2018-1-3	2450	Head	13.11	13.29	-1.35
	2450	Body	12.46	12.41	0.40
2018-1-4	2600	Head	14.34	14.66	-2.18
	2600	Body	13.67	13.67	0.00

ANNEX C SAR Measurement Setup

C.1 Measurement Set-up

The Dasy4 or DASY5 system for performing compliance tests is illustrated above graphically. This system consists of the following items:



Picture C.1 SAR Lab Test Measurement Set-up

- A standard high precision 6-axis robot (Stäubli TX=RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP and the DASY4 or DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as
- warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

C.2 Dasy4 or DASY5 E-field Probe System

The SAR measurements were conducted with the dosimetric probe designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multifiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY4 or DASY5 software reads the reflection durning a software approach and looks for the maximum using 2nd ord curve fitting. The approach is stopped at reaching the maximum.

Probe Specifications:

Model: ES3DV3, EX3DV4

Frequency Range: 10MHz — 6.0GHz(EX3DV4)
10MHz — 4GHz(ES3DV3)

Calibration: In head and body simulating tissue at Frequencies from 835 up to 5800MHz

Linearity: ± 0.2 dB(30 MHz to 6 GHz) for EX3DV4
± 0.2 dB(30 MHz to 4 GHz) for ES3DV3

Dynamic Range: 10 mW/kg — 100W/kg

Probe Length: 330 mm

Probe Tip Length: 20 mm

Body Diameter: 12 mm

Tip Diameter: 2.5 mm (3.9 mm for ES3DV3)

Tip-Center: 1 mm (2.0mm for ES3DV3)

Application: SAR Dosimetry Testing
Compliance tests of mobile phones
Dosimetry in strong gradient fields

Picture C.2 Near-field Probe

Picture C.3 E-field Probe

C.3 E-field Probe Calibration

Each E-Probe/Probe Amplifier combination has unique calibration parameters. A TEM cell calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density (1 mW/cm^2) using an RF Signal generator, TEM cell, and RF Power Meter.

The free space E-field from amplified probe outputs is determined in a test chamber. This calibration can be performed in a TEM cell if the frequency is below 1 GHz and inn a waveguide or other methodologies above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1 mW/ cm^2.

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The E-field in the medium correlates with the temperature rise in the dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C \frac{\Delta T}{\Delta t}$$

Where:

Δt = Exposure time (30 seconds),

C = Heat capacity of tissue (brain or muscle),

ΔT = Temperature increase due to RF exposure.

$$SAR = \frac{|E|^2 \cdot \sigma}{\rho}$$

Where:

σ = Simulated tissue conductivity,

ρ = Tissue density (kg/m^3).

C.4 Other Test Equipment

C.4.1 Data Acquisition Electronics(DAE)

The data acquisition electronics consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.

The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

PictureC.4: DAE

C.4.2 Robot

The SPEAG DASY system uses the high precision robots (DASY4: RX90XL; DASY5: RX160L) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability 0.02mm)
- High reliability (industrial design)
- Low maintenance costs (virtually maintenance free due to direct drive gears; no belt drives)
- Jerk-free straight movements (brushless synchron motors; no stepper motors)
- Low ELF interference (motor control fields shielded via the closed metallic construction shields)

Picture C.5 DASY 4

Picture C.6 DASY 5

C.4.3 Measurement Server

The Measurement server is based on a PC/104 CPU broad with CPU (dasy4: 166 MHz, Intel Pentium; DASY5: 400 MHz, Intel Celeron), chipdisk (DASY4: 32 MB; DASY5: 128MB), RAM (DASY4: 64 MB, DASY5: 128MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY I/O broad, which is directly connected to the PC/104 bus of the CPU broad.

The measurement server performs all real-time data evaluation of field measurements and surface detection, controls robot movements and handles safety operation. The PC operating system cannot interfere with these time critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program-controlled robot movements. Furthermore, the measurement server is equipped with an expansion port which is reserved for future applications. Please note that this expansion port does not have a standardized pinout, and therefore only devices provided by SPEAG can be connected. Devices from any other supplier could seriously damage the measurement server.

Picture C.7 Server for DASY 4

Picture C.8 Server for DASY 5

C.4.4 Device Holder for Phantom

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5mm distance, a positioning uncertainty of ±0.5mm would produce a SAR uncertainty of ±20%. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

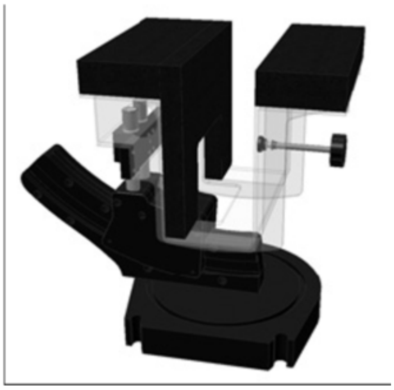
The DASY device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity ε=3 and loss tangent δ =0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

<Laptop Extension Kit>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the Mounting Device in place of the phone positioner. The extension is fully compatible with the Twin-SAM and ELI phantoms.

Picture C.9-1: Device Holder



Picture C.9-2: Laptop Extension Kit

C.4.5 Phantom

The SAM Twin Phantom V4.0 is constructed of a fiberglass shell integrated in a table. The shape of the shell is based on data from an anatomical study designed to

Represent the 90th percentile of the population. The phantom enables the dissymmetric evaluation of SAR for both left and right handed handset usage, as well as body-worn usage using the flat phantom region. Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot. The shell phantom has a 2mm shell thickness (except the ear region where shell thickness increases to 6 mm).

Shell Thickness: 2 ± 0. 2 mm

Filling Volume: Approx. 25 liters

Dimensions: 810 x l000 x 500 mm (H x L x W)

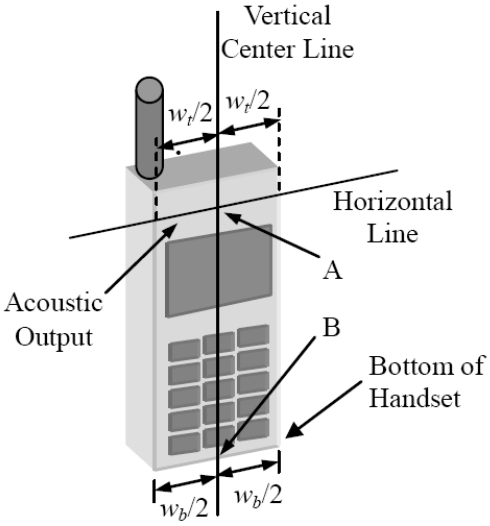
Available: Special

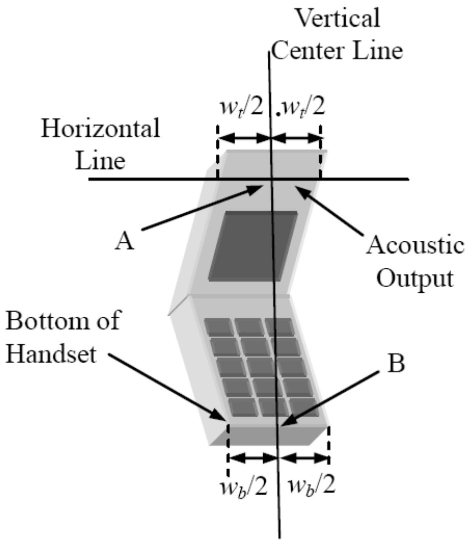
Picture C.10: SAM Twin Phantom

ANNEX D Position of the wireless device in relation to the phantom

D.1 General considerations

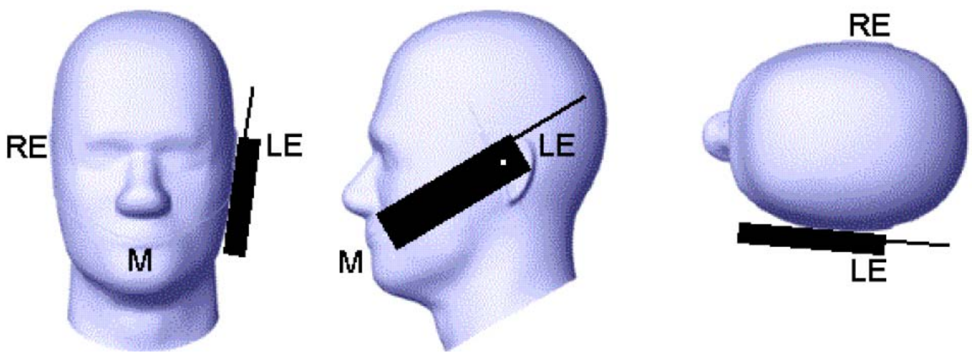
This standard specifies two handset test positions against the head phantom – the “cheek” position and the “tilt” position.



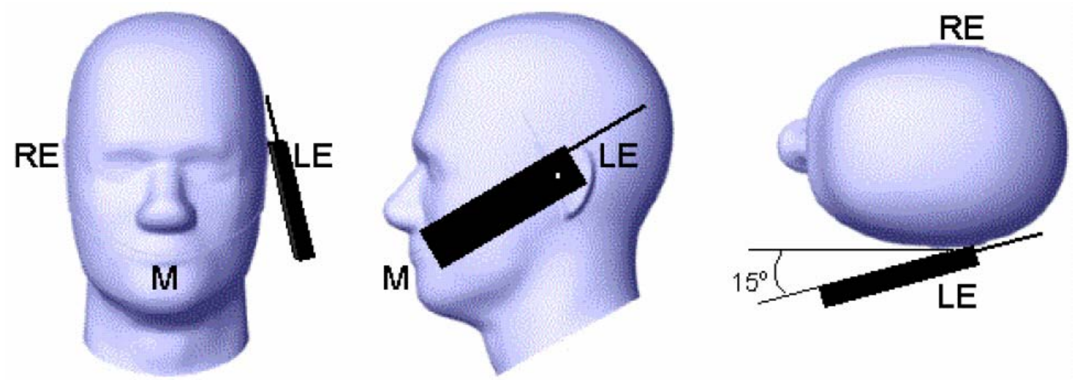


w_t	Width of the handset at the level of the acoustic
w_b	Width of the bottom of the handset
A	Midpoint of the width w_t of the handset at the level of the acoustic output
B	Midpoint of the width w_b of the bottom of the handset

Picture D.1-a Typical “fixed” case handset Picture D.1-b Typical “clam-shell” case handset



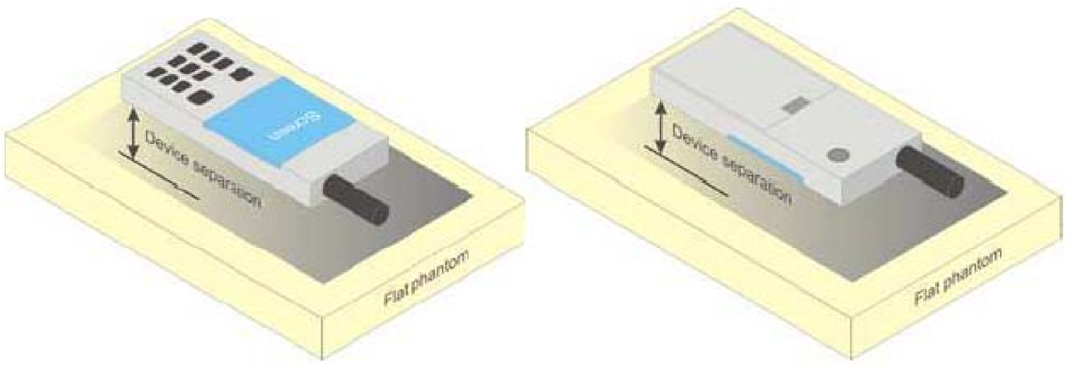
Picture D.2 Cheek position of the wireless device on the left side of SAM



Picture D.3 Tilt position of the wireless device on the left side of SAM

D.2 Body-worn device

A typical example of a body-worn device is a mobile phone, wireless enabled PDA or other battery operated wireless device with the ability to transmit while mounted on a person's body using a carry accessory approved by the wireless device manufacturer.

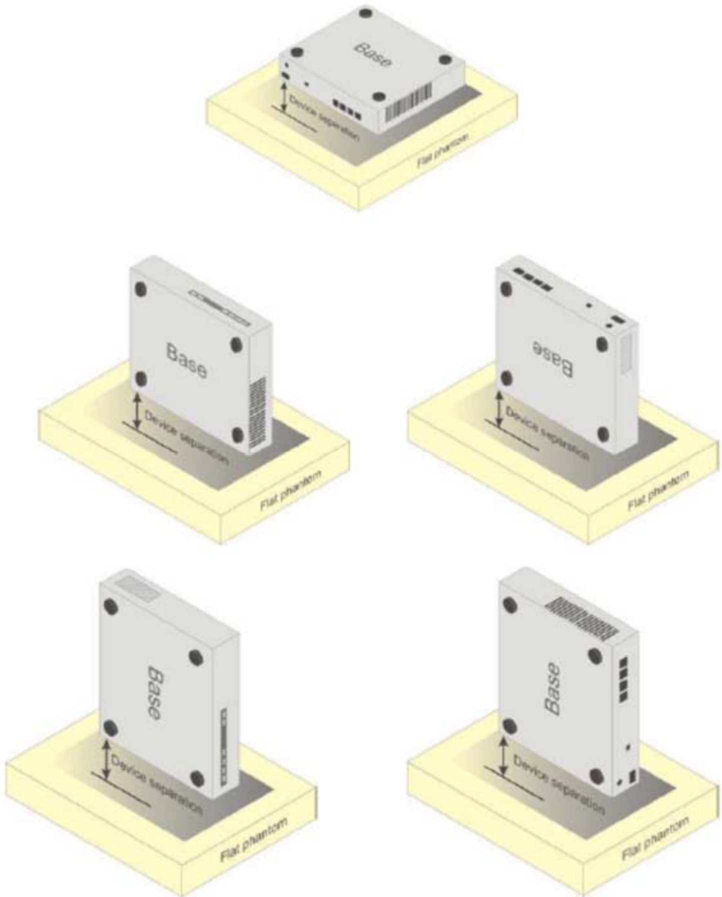


Picture D.4 Test positions for body-worn devices

D.3 Desktop device

A typical example of a desktop device is a wireless enabled desktop computer placed on a table or desk when used.

The DUT shall be positioned at the distance and in the orientation to the phantom that corresponds to the intended use as specified by the manufacturer in the user instructions. For devices that employ an external antenna with variable positions, tests shall be performed for all antenna positions specified. Picture 8.5 show positions for desktop device SAR tests. If the intended use is not specified, the device shall be tested directly against the flat phantom.



Picture D.5 Test positions for desktop devices

D.4 DUT Setup Photos

Picture D.6

ANNEX E Equivalent Media Recipes

The liquid used for the frequency range of 800-3000 MHz consisted of water, sugar, salt, preventol, glycol monobutyl and Cellulose. The liquid has been previously proven to be suited for worst-case. The Table E.1 shows the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the IEEE 1528 and IEC 62209.

Table E.1: Composition of the Tissue Equivalent Matter

Frequency (MHz)	835 Head	835 Body	1900 Head	1900 Body	2450 Head	2450 Body	5800 Head	5800 Body
Ingredients (% by weight)								
Water	41.45	52.5	55.242	69.91	58.79	72.60	65.53	65.53
Sugar	56.0	45.0	\	\	\	\	\	\
Salt	1.45	1.4	0.306	0.13	0.06	0.18	\	\
Preventol	0.1	0.1	\	\	\	\	\	\
Cellulose	1.0	1.0	\	\	\	\	\	\
Glycol Monobutyl	\	\	44.452	29.96	41.15	27.22	\	\
Diethylenglycol monohexylether	\	\	\	\	\	\	17.24	17.24
Triton X-100	\	\	\	\	\	\	17.24	17.24
Dielectric Parameters Target Value	ε=41.5 σ=0.90	ε=55.2 σ=0.97	ε=40.0 σ=1.40	ε=53.3 σ=1.52	ε=39.2 σ=1.80	ε=52.7 σ=1.95	ε=35.3 σ=5.27	ε=48.2 σ=6.00

Note: There are a little adjustment respectively for 750, 1750, 2600, 5200, 5300 and 5600 based on the recipe of closest frequency in table E.1.

ANNEX F System Validation

The SAR system must be validated against its performance specifications before it is deployed. When SAR probes, system components or software are changed, upgraded or recalibrated, these must be validated with the SAR system(s) that operates with such components.

Table F.1: System Validation for 3846

Probe SN.	Liquid name	Validation date	Frequency point	Status (OK or Not)
3846	Head 750MHz	Jan.19,2017	750 MHz	OK
3846	Head 850MHz	Jan.19,2017	850 MHz	OK
3846	Head 900MHz	Jan.18,2017	900 MHz	OK
3846	Head 1750MHz	Jan.17,2017	1750 MHz	OK
3846	Head 1810MHz	Jan.17,2017	1810 MHz	OK
3846	Head 1900MHz	Jan.16,2017	1900 MHz	OK
3846	Head 1950MHz	Jan.16,2017	1950 MHz	OK
3846	Head 2000MHz	Jan.16,2017	2000 MHz	OK
3846	Head 2100MHz	Jan.16,2017	2100 MHz	OK
3846	Head 2300MHz	Jan.15,2017	2300 MHz	OK
3846	Head 2450MHz	Jan.15,2017	2450 MHz	OK
3846	Head 2550MHz	Jan.15,2017	2550 MHz	OK
3846	Head 2600MHz	Jan.15,2017	2600 MHz	OK
3846	Head 3500MHz	Jan.14,2017	3500 MHz	OK
3846	Head 3700MHz	Jan.14,2017	3700 MHz	OK
3846	Head 5200MHz	Jan.13,2017	5200 MHz	OK
3846	Head 5500MHz	Jan.13,2017	5500 MHz	OK
3846	Head 5800MHz	Jan.13,2017	5800 MHz	OK
3846	Body 750MHz	Jan.19,2017	750 MHz	OK
3846	Body 850MHz	Jan.19,2017	850 MHz	OK
3846	Body 900MHz	Jan.18,2017	900 MHz	OK
3846	Body 1750MHz	Jan.17,2017	1750 MHz	OK
3846	Body 1810MHz	Jan.17,2017	1810 MHz	OK
3846	Body 1900MHz	Jan.16,2017	1900 MHz	OK
3846	Body 1950MHz	Jan.16,2017	1950 MHz	OK
3846	Body 2000MHz	Jan.16,2017	2000 MHz	OK
3846	Body 2100MHz	Jan.16,2017	2100 MHz	OK
3846	Body 2300MHz	Jan.15,2017	2300 MHz	OK
3846	Body 2450MHz	Jan.15,2017	2450 MHz	OK
3846	Body 2550MHz	Jan.15,2017	2550 MHz	OK
3846	Body 2600MHz	Jan.15,2017	2600 MHz	OK
3846	Body 3500MHz	Jan.14,2017	3500 MHz	OK
3846	Body 3700MHz	Jan.14,2017	3700 MHz	OK
3846	Body 5200MHz	Jan.13,2017	5200 MHz	OK
3846	Body 5500MHz	Jan.13,2017	5500 MHz	OK
3846	Body 5800MHz	Jan.13,2017	5800 MHz	OK

ANNEX G Probe Calibration Certificate

Probe 3846 Calibration Certificate

In Collaboration with
s p e a g
CALIBRATION LABORATORY

Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2218 Fax: +86-10-62304633-2209
E-mail: cttl@chinattl.com Http://www.chinattl.cn

中国认可
国际互认
校准
CALIBRATION
CNAS L0570

Client CTTL Certificate No: Z16-97251

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3846

Calibration Procedure(s): FD-Z11-004-01
Calibration Procedures for Dosimetric E-field Probes

Calibration date: January 13, 2017

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	101919	27-Jun-16 (CTTL, No.J16X04777)	Jun-17
Power sensor NRP-Z91	101547	27-Jun-16 (CTTL, No.J16X04777)	Jun-17
Power sensor NRP-Z91	101548	27-Jun-16 (CTTL, No.J16X04777)	Jun-17
Reference10dBAttenuator	18N50W-10dB	13-Mar-16(CTTL,No.J16X01547)	Mar-18
Reference20dBAttenuator	18N50W-20dB	13-Mar-16(CTTL, No.J16X01548)	Mar-18
Reference Probe EX3DV4	SN 7433	26-Sep-16(SPEAG,No.EX3-7433_Sep16)	Sep-17
DAE4	SN 1331	21-Jan-16(SPEAG, No.DAE4-1331_Jan16)	Jan -17
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
SignalGeneratorMG3700A	6201052605	27-Jun-16 (CTTL, No.J16X04776)	Jun-17
Network Analyzer E5071C	MY46110673	26-Jan-16 (CTTL, No.J16X00894)	Jan -17

	Name	Function	Signature
Calibrated by:	Yu Zongying	SAR Test Engineer	
Reviewed by:	Qi Dianyuan	SAR Project Leader	
Approved by:	Lu Bingsong	Deputy Director of the laboratory	

Issued: January 14, 2017

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.