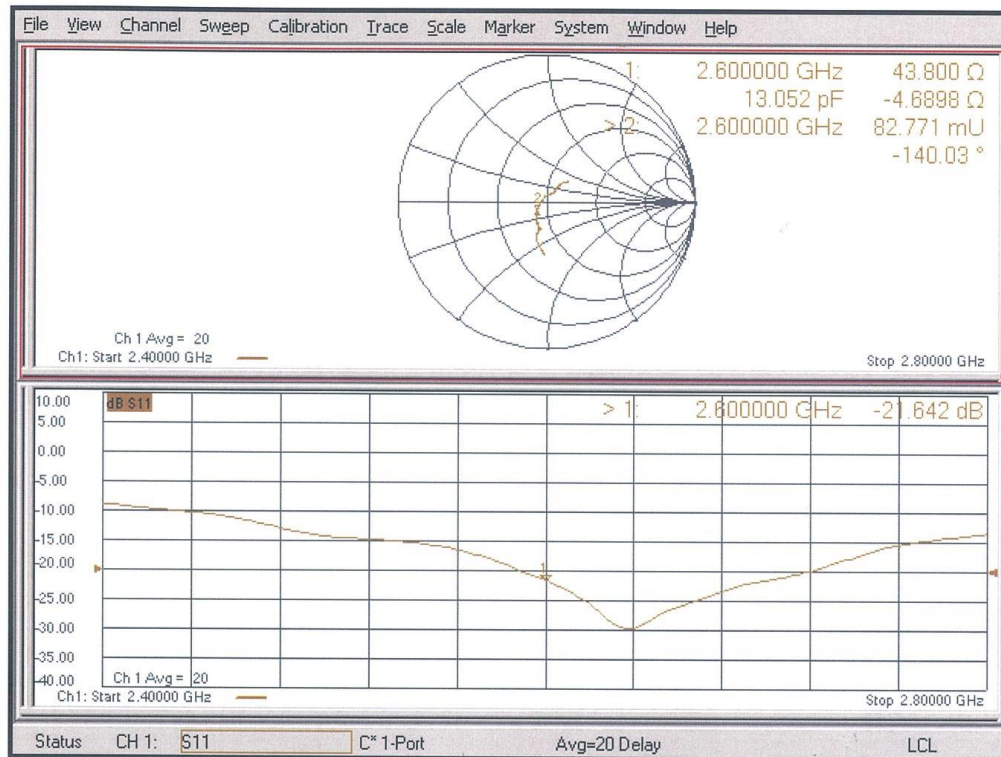


Impedance Measurement Plot for Body TSL



## ANNEX I Variant Product Test

### I.1 Dielectric Performance and System Validation

Table I.1-1: Dielectric Performance of Head Tissue Simulating Liquid

Measurement Date (yyyy-mm-dd)	Type	Frequency	Permittivity $\epsilon$	Drift (%)	Conductivity $\sigma$ (S/m)	Drift (%)
2019-11-19	Head	750 MHz	41.7	-0.57	0.898	0.90
2019-11-20	Head	835 MHz	41.6	0.24	0.901	0.11
2019-11-21	Head	1750 MHz	40.68	1.50	1.38	0.73
2019-11-22	Head	1900 MHz	39.55	-1.13	1.39	-0.71
2019-11-23	Head	2450 MHz	39.05	-0.38	1.784	-0.89
2019-11-23	Head	2600 MHz	39.57	1.44	1.966	0.31

Table I.1-2: System Validation of Head

Measurement Date (yyyy-mm-dd)	Frequency	Target value (W/kg)		Measured value(W/kg)		Deviation	
		10 g Average	1 g Average	10 g Average	1 g Average	10 g Average	1 g Average
2019-11-19	750 MHz	5.57	8.57	5.52	8.56	-0.90%	-0.12%
2019-11-20	835 MHz	6.29	9.70	6.28	9.8	-0.16%	1.03%
2019-11-21	1750 MHz	19.3	36.6	19.4	36.04	0.52%	-1.53%
2019-11-22	1900 MHz	20.8	39.7	20.6	40.28	-0.96%	1.46%
2019-11-23	2450 MHz	24.2	51.6	24.64	52.56	1.82%	1.86%
2019-11-23	2600 MHz	25.1	55.8	25.24	56.68	0.56%	1.58%

### I.2 New frequency band

#### I.2.1 Conducted power of selected case

Band 28				
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Actual output power (dBm)	
	RB offset		QPSK	16QAM
3MHz	1RB_High	746.5	22.78	21.42
		719.5	22.79	21.88
		704.5	22.72	21.81
	1RB_Middle	746.5	22.65	22.40
		719.5	22.72	21.95
		704.5	22.89	21.94
	1RB_Low	746.5	22.82	21.42
		719.5	22.73	21.82
		704.5	22.82	22.11
	8RB_High		746.5	21.68

		719.5	21.92	20.79	
		704.5	21.74	20.99	
		8RB_Middle	746.5	21.87	20.81
			719.5	22.01	20.85
			704.5	21.64	20.82
		8RB_Low	746.5	21.76	20.64
	719.5		21.95	20.61	
	704.5		21.68	20.80	
	15RB	746.5	21.77	20.80	
		719.5	21.95	20.75	
		704.5	21.72	20.72	
	5MHz	1RB_High	745.5	22.58	21.26
720.5			22.86	21.60	
705.5			22.67	21.27	
1RB_Middle		745.5	23.00	21.54	
		720.5	23.04	21.64	
		705.5	22.88	21.05	
1RB_Low		745.5	22.66	21.21	
		720.5	22.82	21.40	
		705.5	22.73	21.05	
12RB_High		745.5	21.81	20.84	
		720.5	21.86	20.71	
		705.5	21.65	20.62	
12RB_Middle		745.5	21.85	20.66	
		720.5	21.92	20.72	
		705.5	21.74	20.64	
12RB_Low		745.5	21.74	20.83	
		720.5	21.89	20.78	
		705.5	21.73	20.63	
25RB		745.5	21.82	20.86	
		720.5	21.95	20.84	
		705.5	21.68	20.60	
10MHz		1RB_High	743	22.71	22.13
			723	22.96	21.78
			708	22.82	21.90
	1RB_Middle	743	22.80	21.44	
		723	23.05	22.10	
		708	22.76	21.90	
	1RB_Low	743	22.79	22.12	
		723	22.78	21.82	
		708	22.88	21.75	
	25RB_High	743	21.82	20.91	

		723	21.99	20.89	
		708	21.68	20.83	
		743	21.75	20.86	
	25RB_Middle	723	21.90	20.96	
		708	21.66	20.69	
		743	21.80	20.73	
	25RB_Low	723	21.97	20.94	
		708	21.54	20.53	
		743	21.80	20.80	
50RB	723	21.95	20.87		
	708	21.54	20.61		
	743	21.80	20.80		
15MHz	1RB_High	740.5	22.90	21.82	
		725.5	22.83	22.33	
		710.5	22.65	22.46	
	1RB_Middle	740.5	23.14	21.93	
		725.5	23.02	21.61	
		710.5	23.03	22.65	
	1RB_Low	740.5	22.96	21.99	
		725.5	22.76	21.37	
		710.5	22.66	22.35	
	36RB_High	740.5	21.88	20.67	
		725.5	21.96	21.04	
		710.5	22.02	20.88	
	36RB_Middle	740.5	21.81	20.77	
		725.5	21.99	21.07	
		710.5	21.90	20.72	
	36RB_Low	740.5	21.77	20.74	
		725.5	21.85	20.96	
		710.5	21.74	20.68	
	75RB	740.5	21.87	20.79	
		725.5	21.90	20.87	
		710.5	21.84	20.81	
	20MHz	1RB_High	738	22.56	21.96
			728	23.14	21.49
			713	22.62	21.37
		1RB_Middle	738	22.90	22.07
			728	23.46	22.03
			713	23.09	21.77
1RB_Low		738	22.49	21.40	
		728	23.05	21.74	
		713	22.62	21.12	
50RB_High		738	22.03	20.80	

		728	22.01	21.07
		713	21.97	20.85
	50RB_Middle	738	22.02	21.06
		728	21.98	21.09
		713	21.95	20.61
	50RB_Low	738	21.91	20.77
		728	21.94	20.68
		713	21.74	20.61
	100RB	738	21.90	20.89
		728	21.91	21.00
		713	21.88	20.85

## I.2.2 SAR Test Result

**Table I.2.2-1: SAR Values (LTE Band28 - Head)**

Ambient Temperature: 22.9°C      Liquid Temperature: 22.5°C												
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
27460	728	1RB_Mid	Left	Touch	Fig.1	23.46	24	0.097	<b>0.11</b>	0.123	<b>0.14</b>	0.01
27460	728	1RB_Mid	Left	Tilt	/	23.46	24	0.073	<b>0.08</b>	0.090	<b>0.10</b>	-0.09
27460	728	1RB_Mid	Right	Touch	/	23.46	24	0.070	<b>0.08</b>	0.087	<b>0.10</b>	-0.10
27460	728	1RB_Mid	Right	Tilt	/	23.46	24	0.054	<b>0.06</b>	0.068	<b>0.08</b>	-0.04
27560	738	50RB_High	Left	Touch	/	22.03	23	0.083	<b>0.10</b>	0.105	<b>0.13</b>	-0.04
27560	738	50RB_High	Left	Tilt	/	22.03	23	0.070	<b>0.09</b>	0.088	<b>0.11</b>	-0.05
27560	738	50RB_High	Right	Touch	/	22.03	23	0.060	<b>0.08</b>	0.077	<b>0.10</b>	0.03
27560	738	50RB_High	Right	Tilt	/	22.03	23	0.052	<b>0.07</b>	0.066	<b>0.08</b>	-0.10

Note1: The LTE mode is QPSK\_20MHz.

**Table I.2.2-2: SAR Values (LTE Band28 - Body)**

Frequency		Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
Ambient Temperature: 22.9 °C      Liquid Temperature: 22.5 °C											
27460	728	1RB_Mid	Front	/	23.46	24	0.102	<b>0.12</b>	0.136	<b>0.15</b>	0.08
27460	728	1RB_Mid	Rear	Fig.2	23.46	24	0.153	<b>0.17</b>	0.202	<b>0.23</b>	0.07
27460	728	1RB_Mid	Left	/	23.46	24	0.086	<b>0.10</b>	0.130	<b>0.15</b>	-0.08
27460	728	1RB_Mid	Right	/	23.46	24	0.061	<b>0.07</b>	0.086	<b>0.10</b>	-0.06
27460	728	1RB_Mid	Bottom	/	23.46	24	0.032	<b>0.04</b>	0.054	<b>0.06</b>	0.05
27560	738	50RB_High	Front	/	22.03	23	0.090	<b>0.11</b>	0.120	<b>0.15</b>	0.12
27560	738	50RB_High	Rear	/	22.03	23	0.134	<b>0.17</b>	0.179	<b>0.22</b>	0.02
27560	738	50RB_High	Left	/	22.03	23	0.120	<b>0.15</b>	0.169	<b>0.21</b>	0.00
27560	738	50RB_High	Right	/	22.03	23	0.058	<b>0.07</b>	0.081	<b>0.10</b>	-0.02
27560	738	50RB_High	Bottom	/	22.03	23	0.031	<b>0.04</b>	0.054	<b>0.07</b>	-0.02

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

Note2: The LTE mode is QPSK\_20MHz.

### I.3 Spot Check

#### I.3.1 Conducted power of selected case

**Table I.3-1: The conducted power results for 2G- Normal Power**

GSM 850MHZ	Measured Power (dBm)		
		251	190
Speech	32.05	/	/
GPRS(2Tx)	29.17	/	/
GSM1900MHZ	Measured Power (dBm)		
		810	661
Speech	/	/	28.61
GPRS(2Tx)	/	/	26.86

**Table I.3-2: The conducted Power for WCDMA- Normal Power**

Item	band	FDDII result		
		ARFCN	9538/9938	9400/9800
WCDMA	\	(1907.6MHz)	(1880MHz)	(1852.4MHz)
		/	22.62	22.69
Item	band	FDDIV result		
	ARFCN	1513/1738	1412/1637	1312/1537
WCDMA	\	(1752.6MHz)	(1732.4MHz)	(1712.4MHz)
		22.84	/	/
Item	band	FDDV result		
	ARFCN	4233/4458	4183/4408	4132/4357
WCDMA	\	(846.6MHz)	(836.6MHz)	(826.4MHz)

		22.75	/	22.66
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**Table I.3-3: The conducted Power for WCDMA- Low Power**

Item	band	FDDII result		
	ARFCN	9538/9938	9400/9800	9262/9662
WCDMA	\	(1907.6MHz)	(1880MHz)	(1852.4MHz)
		19.02	/	/
Item	band	FDDIV result		
	ARFCN	1513/1738	1412/1637	1312/1537
WCDMA	\	(1752.6MHz)	(1732.4MHz)	(1712.4MHz)
		18.93	/	/

**Table I.3-4: The conducted Power for LTE-Normal Power**

LTE Band2	1RB-Middle	1900(19100)	22.97
LTE Band5	1RB-Middle	829(20450)	22.97
LTE Band7	1RB-Middle	2535 (21100)	22.80
LTE Band7	1RB-Middle	2560 (21350)	23.19
LTE Band13	1RB-Middle	782 (23230)	23.07
LTE Band17	1RB-Middle	709 (23780)	22.79
LTE Band66	1RB-Middle	1770 (132572)	22.92

**Table I.3-5: The conducted Power for LTE-Low Power**

LTE Band2	50RB-Middle	1900(19100)	19.34
LTE Band7	50RB-Middle	2535 (21100)	18.68
LTE Band66	1RB-Middle	1745 (132322)	19.95

**Table I.3-6: The conducted Power for WLAN**

Mode / data rate	Channel	Measured Power (dBm)
802.11b – 1Mbps	6	16.12

### F.3.2 Measurement results

Test Band	Channel	Frequency	Tune-Up	Measured Power	Test Position	Measured 10g SAR	Measured 1g SAR	Reported 10g SAR	Reported 1g SAR	Power Drift
GSM850	251	848.8	33.3	32.13	Left Cheek	0.304	0.401	0.41	0.53	0.02
GSM850	251	848.8	30.5	29.52	Rear	0.264	0.481	0.36	0.65	0.09
PCS1900	512	1850.2	30.3	28.75	Left Cheek	0.081	0.132	0.12	0.19	0.09
PCS1900	512	1850.2	28	27.02	Bottom	0.365	0.694	0.47	0.90	0.01
WCDMA1900-BII	9400	1880	24	22.42	Left Cheek	0.138	0.219	0.19	0.30	0.04
WCDMA1900-BII	9538	1907.6	20	19.32	Bottom	0.112	0.215	0.14	0.27	0.14
WCDMA1900-BII	9262	1852.4	24	22.65	Rear	0.292	0.512	0.39	0.69	-0.02
WCDMA1700-BIV	1513	1752.6	24	22.95	Left Cheek	0.114	0.177	0.15	0.23	-0.08
WCDMA1700-BIV	1513	1752.6	20	19.25	Rear	0.195	0.358	0.25	0.46	-0.04
WCDMA1700-BIV	1513	1752.6	24	22.95	Rear	0.236	0.414	0.31	0.54	-0.02
WCDMA850-BV	4132	826.4	24	22.6	Left Cheek	0.185	0.257	0.25	0.35	-0.05
WCDMA850-BV	4233	846.6	24	22.54	Rear	0.232	0.422	0.31	0.56	-0.02
LTE1900-FDD2	19100	1900 MHz	24	23.06	Right Cheek	0.111	0.178	0.14	0.23	0.02
LTE1900-FDD2	19100	1900 MHz	20	18.78	Bottom	0.192	0.382	0.22	0.44	0.12
LTE1900-FDD2	19100	1900 MHz	24	23.06	Rear	0.268	0.465	0.34	0.59	-0.01
LTE850-FDD5	20450	829 MHz	24	22.51	Left Cheek	0.226	0.305	0.29	0.39	0.03
LTE850-FDD5	20450	829 MHz	24	22.51	Rear	0.316	0.415	0.40	0.53	0.06
LTE2500-FDD7	21100	2535 MHz	24	22.81	Right Cheek	0.0319	0.0633	0.04	0.08	0.03
LTE2500-FDD7	21100	2535 MHz	19.5	18.84	Bottom	0.236	0.509	0.29	0.61	0.05
LTE2500-FDD7	21350	2560 MHz	24	22.89	Rear	0.419	0.817	0.50	0.98	0.05
LTE750-FDD13	23230	782 MHz	24	23.1	Left Cheek	0.151	0.195	0.19	0.24	0.04
LTE750-FDD13	23230	782 MHz	24	23.1	Rear	0.235	0.307	0.29	0.38	0.07
LTE700-FDD17	23780	709 MHz	24	22.67	Left Cheek	0.0666	0.0864	0.09	0.11	0.08
LTE700-FDD17	23780	709 MHz	24	22.67	Rear	0.0676	0.108	0.09	0.14	-0.16
LTE1700-FDD66	132572	709 MHz	24	22.85	Left Cheek	0.17	0.271	0.22	0.35	0.03
LTE1700-FDD66	132322	709 MHz	20	19.07	Rear	0.154	0.287	0.16	0.29	-0.03
LTE1700-FDD66	132572	709 MHz	24	22.85	Rear	0.245	0.421	0.31	0.54	-0.14
WLAN2450	6	2437	17.5	15.73	Right Tilt	0.162	0.412	0.22	0.57	0.09
WLAN2450	6	2437	17.5	15.73	Top	0.0894	0.198	0.12	0.27	0.03

### F.3.3 Reported SAR Comparison

Table F.4-1: Comparison

Exposure Configuration	Technology Band	Reported SAR 1g(W/kg) Original	Reported SAR 1g(W/kg) Spot check	Equipment Class
Head (Separation Distance 0mm)	GSM 850	0.60	0.53	PCE
	PCS 1900	0.15	0.19	
	UMTS FDD 2	0.31	0.30	
	UMTS FDD 4	0.40	0.23	
	UMTS FDD 5	0.43	0.35	
	LTE Band 2	0.29	0.23	
	LTE Band 5	0.44	0.39	
	LTE Band 7	0.09	0.08	
	LTE Band 13	0.30	0.24	
	LTE Band 17	0.14	0.11	
	LTE Band 66	0.35	0.35	
WLAN 2.4 GHz	0.41	0.57	DTS	
Hotspot (Separation Distance 10mm)	GSM 850	0.59	0.65	PCE
	PCS 1900	0.78	0.90	
	UMTS FDD 2	0.65	0.27	
	UMTS FDD 4	0.32	0.46	
	UMTS FDD 5	0.63	0.56	



	LTE Band 2	0.65	0.44	
	LTE Band 5	0.56	0.53	
	LTE Band 7	0.90	0.61	
	LTE Band 13	0.56	0.38	
	LTE Band 17	0.22	0.14	
	LTE Band 66	0.37	0.29	
	WLAN 2.4 GHz	0.22	0.27	
Body-worn (Separation Distance 15mm)	UMTS FDD 2	0.62	0.69	PCE
	UMTS FDD 4	0.59	0.54	
	LTE Band 2	0.59	0.59	
	LTE Band 7	1.32	0.98	
	LTE Band 66	0.52	0.54	

**Note: The spot check results marked by blue are larger than the original result. So they replace the original result and others are shared.**

#### I.4 List of Main Instruments

**Table F.4.1: List of Main Instruments**

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	E5071C	MY46110673	January 24, 2019	One year
02	Power meter	NRP2	106277	September 4, 2019	One year
03	Power sensor	NRP8S	104291		
04	Signal Generator	E4438C	MY49070393	January 4, 2019	One Year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	BTS	E5515C	MY50263375	January 17, 2019	One year
07	BTS	CMW500	159890	January 3, 2019	One year
08	E-field Probe	SPEAG EX3DV4	3617	January 31, 2019	One year
09	DAE	SPEAG DAE4	771	January 11,2019	One year
10	Dipole Validation Kit	SPEAG D750V3	1017	July 18, 2019	One year
11	Dipole Validation Kit	SPEAG D835V2	4d069	July 18, 2019	One year
12	Dipole Validation Kit	SPEAG D1750V2	1003	July 16, 2019	One year
13	Dipole Validation Kit	SPEAG D1900V2	5d101	July 17, 2019	One year
14	Dipole Validation Kit	SPEAG D2450V2	853	July 17, 2019	One year
15	Dipole Validation Kit	SPEAG D2600V2	1012	July 17, 2019	One year

## I.5 GRAPH RESULTS

### GSM850\_CH251 Left Cheek

Date: 11/20/2019

Electronics: DAE4 Sn771

Medium: head 835 MHz

Medium parameters used:  $f = 848.8$ ;  $\sigma = 0.914$  mho/m;  $\epsilon_r = 41.58$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: GSM850 848.8 Duty Cycle: 1:8.3

Probe: EX3DV4 – SN3617 ConvF(9.75,9.75,9.75)

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

Maximum value of SAR (interpolated) = 0.491 W/kg

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

Reference Value = 4.165 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.533 W/kg

**SAR(1 g) = 0.401 W/kg; SAR(10 g) = 0.304 W/kg**

Maximum value of SAR (measured) = 0.486 W/kg

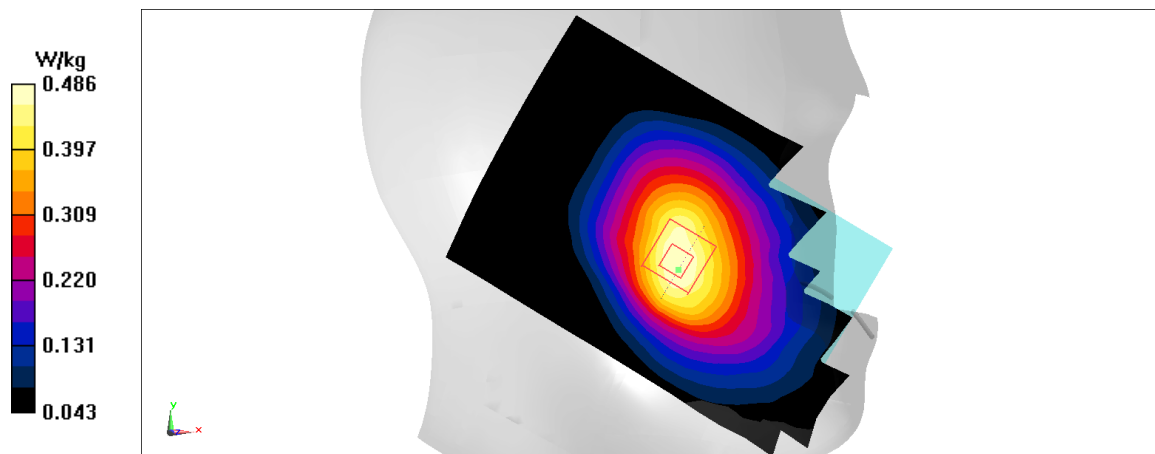


Fig A.1

**GSM850\_CH251 Rear**

Date: 11/20/2019

Electronics: DAE4 Sn771

Medium: body 835 MHz

Medium parameters used:  $f = 848.8$ ;  $\sigma = 0.914$  mho/m;  $\epsilon_r = 41.58$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: GSM850 848.8 Duty Cycle: 1:4

Probe: EX3DV4 – SN3617 ConvF(9.61,9.61,9.61)

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

Maximum value of SAR (interpolated) = 0.711 W/kg

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

Reference Value = 21.94 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.925 W/kg

**SAR(1 g) = 0.481 W/kg; SAR(10 g) = 0.264 W/kg**

Maximum value of SAR (measured) = 0.737 W/kg

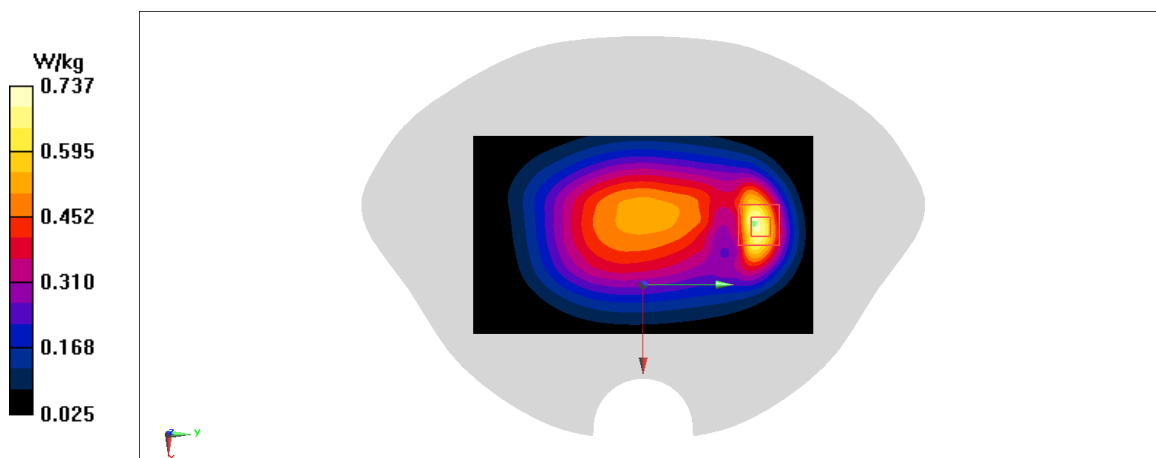


Fig A.2

**PCS1900\_CH512 Left Cheek**

Date: 11/22/2019

Electronics: DAE4 Sn771

Medium: head 1900 MHz

Medium parameters used:  $f = 1850.2$ ;  $\sigma = 1.342$  mho/m;  $\epsilon_r = 39.61$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: PCS1900 1850.2 Duty Cycle: 1:8.3

Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

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

Maximum value of SAR (interpolated) = 0.181 W/kg

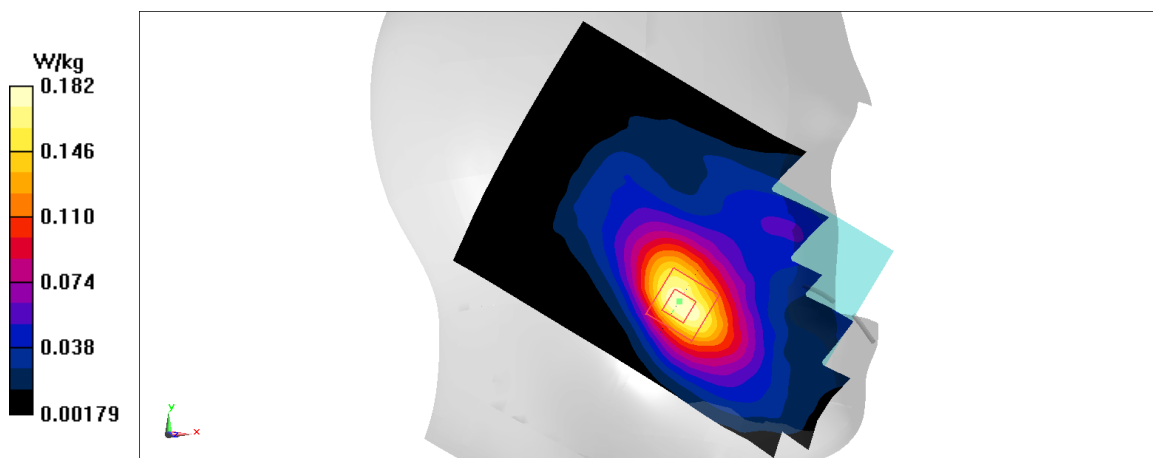
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.46 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.214 W/kg

**SAR(1 g) = 0.132 W/kg; SAR(10 g) = 0.081 W/kg**

Maximum value of SAR (measured) = 0.182 W/kg



**Fig A.3**

**PCS1900\_CH512 Bottom**

Date: 11/22/2019

Electronics: DAE4 Sn771

Medium: body 1900 MHz

Medium parameters used:  $f = 1850.2$ ;  $\sigma = 1.342$  mho/m;  $\epsilon_r = 39.61$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: PCS1900 1850.2 Duty Cycle: 1:4

Probe: EX3DV4 – SN3617 ConvF(7.78,7.78,7.78)

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

Maximum value of SAR (interpolated) = 0.96 W/kg

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

Reference Value = 19.63 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 1.21 W/kg

**SAR(1 g) = 0.694 W/kg; SAR(10 g) = 0.365 W/kg**

Maximum value of SAR (measured) = 0.982 W/kg

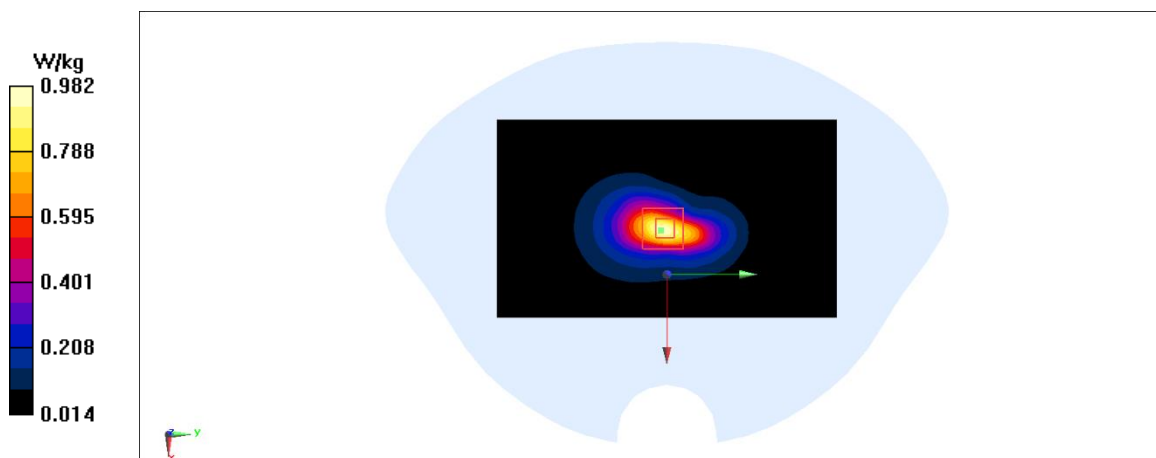


Fig A.4

**WCDMA1900-BII\_CH9400 Left Cheek**

Date: 11/22/2019

Electronics: DAE4 Sn771

Medium: head 1900 MHz

Medium parameters used:  $f = 1880$ ;  $\sigma = 1.371$  mho/m;  $\epsilon_r = 39.57$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA1900-BII 1880 Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

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

Maximum value of SAR (interpolated) = 0.306 W/kg

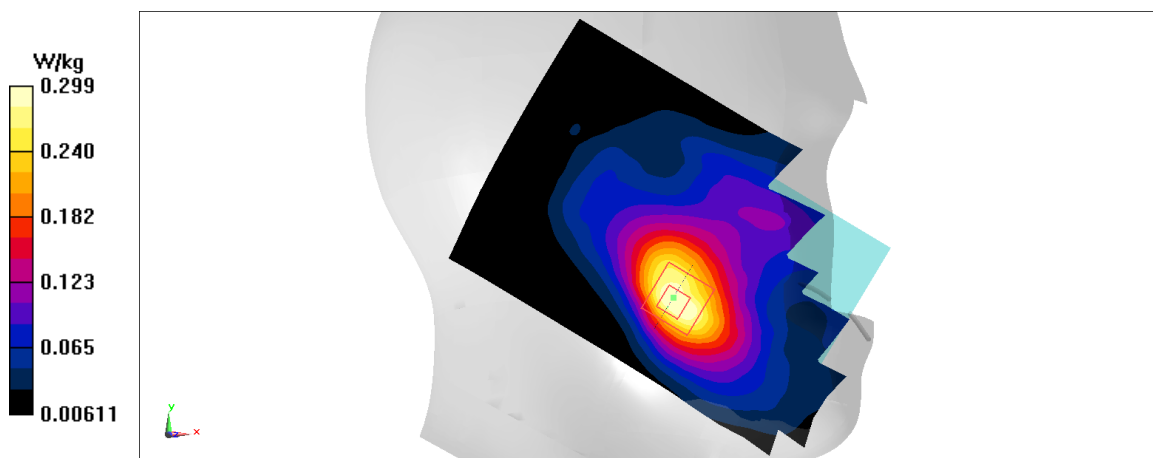
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.935 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.352 W/kg

**SAR(1 g) = 0.219 W/kg; SAR(10 g) = 0.138 W/kg**

Maximum value of SAR (measured) = 0.299 W/kg



**Fig A.5**

**WCDMA1900-BII\_CH9538 Bottom**

Date: 11/22/2019

Electronics: DAE4 Sn771

Medium: body 1900 MHz

Medium parameters used:  $f = 1907.6$ ;  $\sigma = 1.398$  mho/m;  $\epsilon_r = 39.54$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA1900-BII 1907.6 Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(7.78,7.78,7.78)

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

Maximum value of SAR (interpolated) = 0.296 W/kg

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

Reference Value = 11.74 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.374 W/kg

**SAR(1 g) = 0.215 W/kg; SAR(10 g) = 0.112 W/kg**

Maximum value of SAR (measured) = 0.304 W/kg

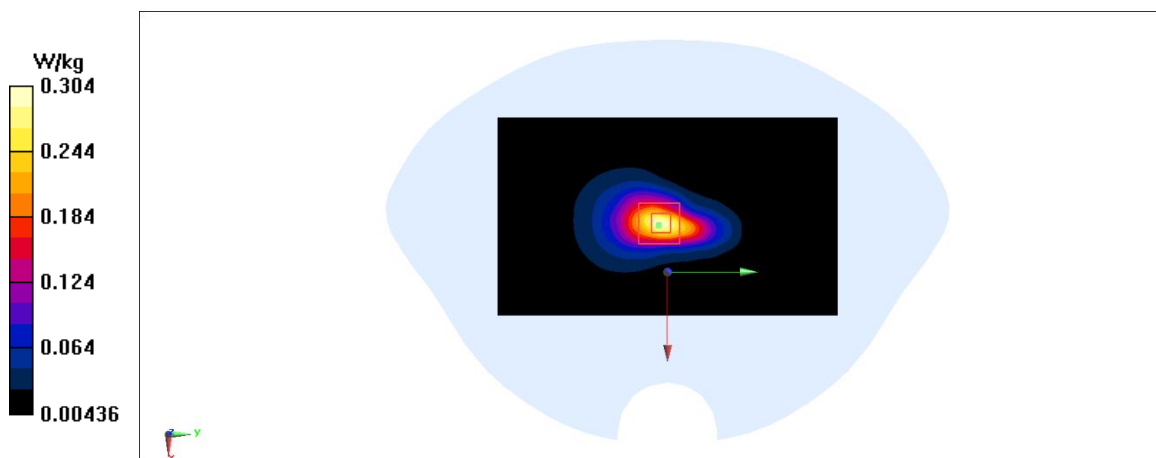


Fig A.6

**WCDMA1900-BII\_CH9262 Rear**

Date: 11/22/2019

Electronics: DAE4 Sn771

Medium: body 1900 MHz

Medium parameters used:  $f = 1852.4$ ;  $\sigma = 1.344$  mho/m;  $\epsilon_r = 39.61$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA1900-BII 1852.4 Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(7.78,7.78,7.78)

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

Maximum value of SAR (interpolated) = 0.795 W/kg

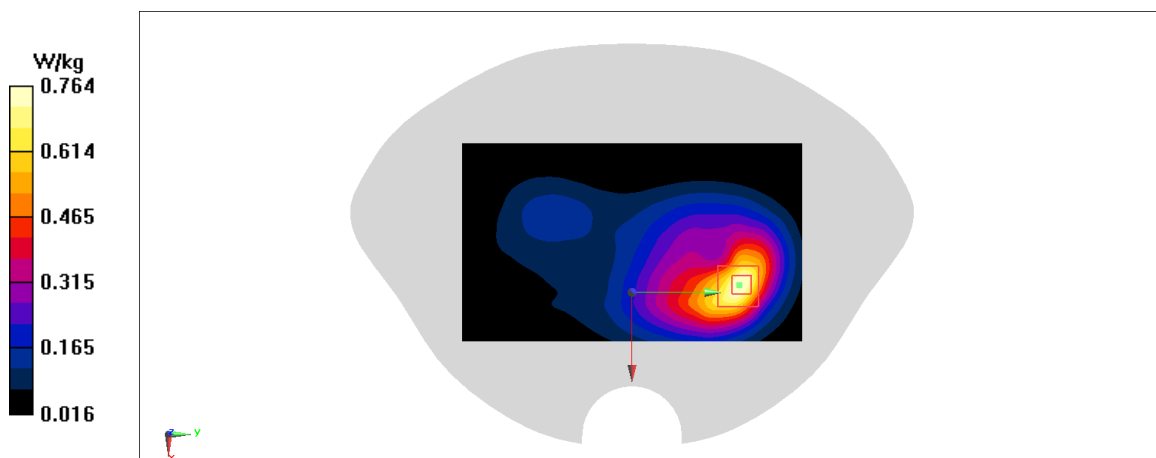
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.864 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.911 W/kg

**SAR(1 g) = 0.512 W/kg; SAR(10 g) = 0.292 W/kg**

Maximum value of SAR (measured) = 0.764 W/kg

**Fig A.7**



**WCDMA1700-BIV\_CH1513 Left Cheek**

Date: 11/21/2019

Electronics: DAE4 Sn771

Medium: head 1750 MHz

Medium parameters used:  $f = 1752.6$ ;  $\sigma = 1.383$  mho/m;  $\epsilon_r = 40.68$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA1700-BIV 1752.6 Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(8.38,8.38,8.38)

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

Maximum value of SAR (interpolated) = 0.235 W/kg

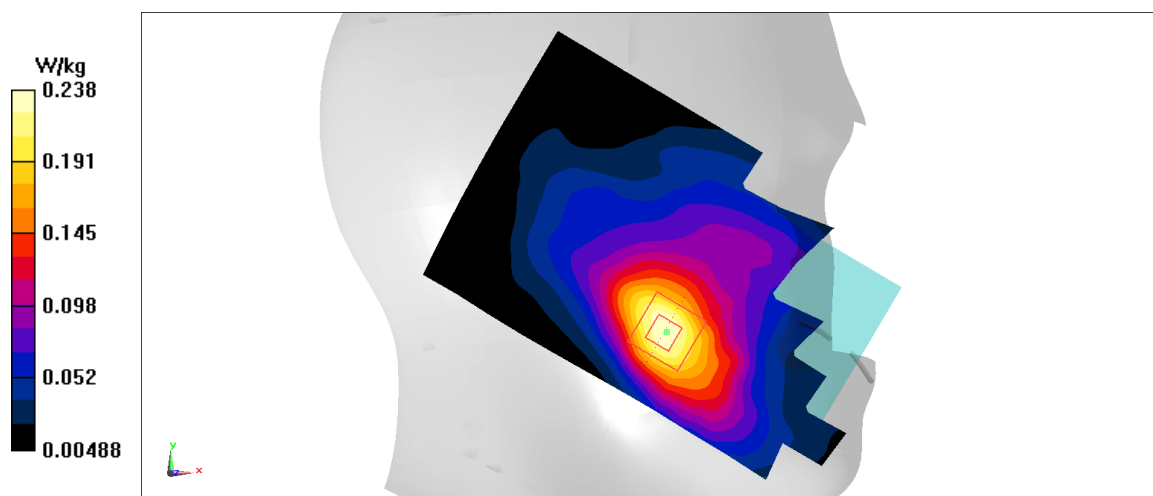
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.312 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.27 W/kg

**SAR(1 g) = 0.177 W/kg; SAR(10 g) = 0.114 W/kg**

Maximum value of SAR (measured) = 0.238 W/kg



**Fig A.8**

**WCDMA1700-BIV\_CH1513 Rear**

Date: 11/21/2019

Electronics: DAE4 Sn771

Medium: body 1750 MHz

Medium parameters used:  $f = 1752.6$ ;  $\sigma = 1.383$  mho/m;  $\epsilon_r = 40.68$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA1700-BIV 1752.6 Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(8.03,8.03,8.03)

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

Maximum value of SAR (interpolated) = 0.546 W/kg

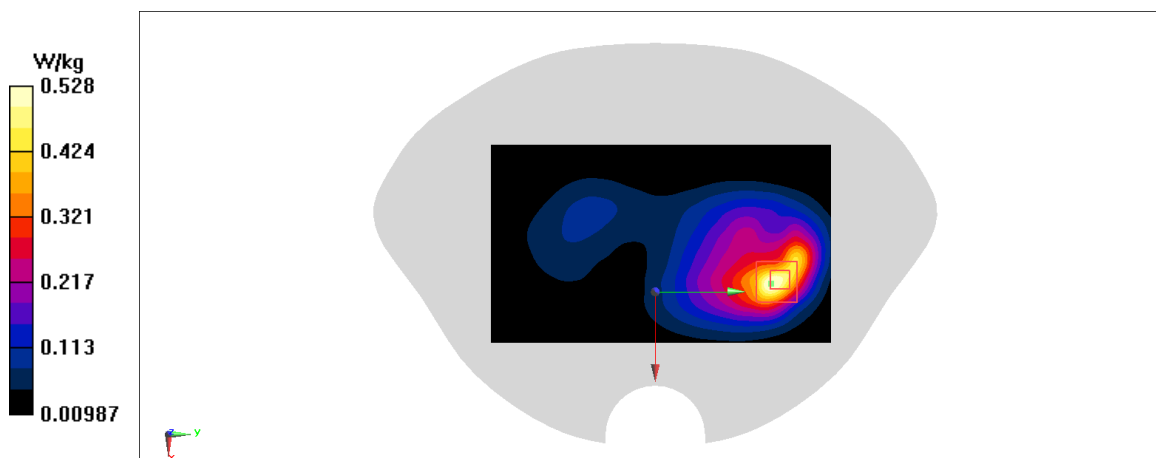
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.569 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.659 W/kg

**SAR(1 g) = 0.358 W/kg; SAR(10 g) = 0.195 W/kg**

Maximum value of SAR (measured) = 0.528 W/kg

**Fig A.9**

**WCDMA1700-BIV\_CH1513 Rear**

Date: 11/21/2019

Electronics: DAE4 Sn771

Medium: body 1750 MHz

Medium parameters used:  $f = 1752.6$ ;  $\sigma = 1.383$  mho/m;  $\epsilon_r = 40.68$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA1700-BIV 1752.6 Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(8.03,8.03,8.03)

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

Maximum value of SAR (interpolated) = 0.626 W/kg

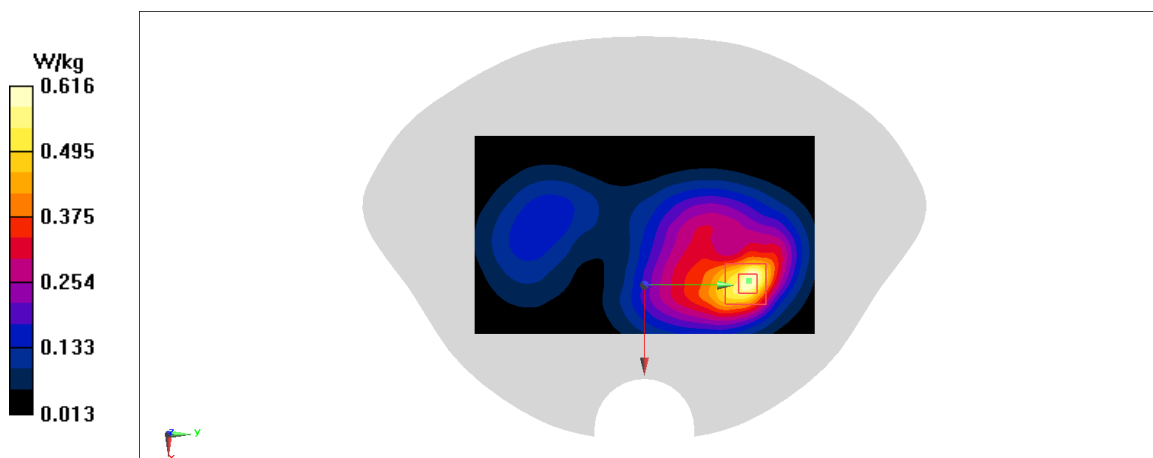
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.86 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.741 W/kg

**SAR(1 g) = 0.414 W/kg; SAR(10 g) = 0.236 W/kg**

Maximum value of SAR (measured) = 0.616 W/kg



**Fig A.10**

**WCDMA850-BV\_CH4132 Left Cheek**

Date: 11/20/2019

Electronics: DAE4 Sn771

Medium: head 835 MHz

Medium parameters used:  $f = 826.4$ ;  $\sigma = 0.892$  mho/m;  $\epsilon_r = 41.61$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA850-BV 826.4 Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(9.75,9.75,9.75)

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

Maximum value of SAR (interpolated) = 0.272 W/kg

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

Reference Value = 6.375 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.459 W/kg

**SAR(1 g) = 0.257 W/kg; SAR(10 g) = 0.185 W/kg**

Maximum value of SAR (measured) = 0.274 W/kg

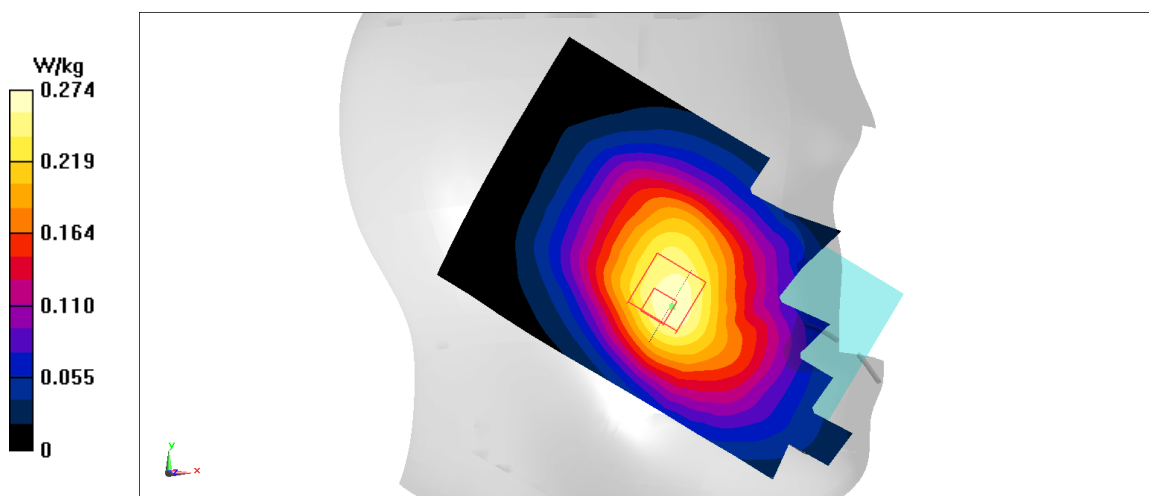


Fig A.11

**WCDMA850-BV\_CH4233 Rear**

Date: 11/20/2019

Electronics: DAE4 Sn771

Medium: body 835 MHz

Medium parameters used:  $f = 846.6$ ;  $\sigma = 0.912$  mho/m;  $\epsilon_r = 41.59$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA850-BV 846.6 Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(9.61,9.61,9.61)

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

Maximum value of SAR (interpolated) = 0.617 W/kg

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

Reference Value = 22.36 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.821 W/kg

**SAR(1 g) = 0.422 W/kg; SAR(10 g) = 0.232 W/kg**

Maximum value of SAR (measured) = 0.65 W/kg

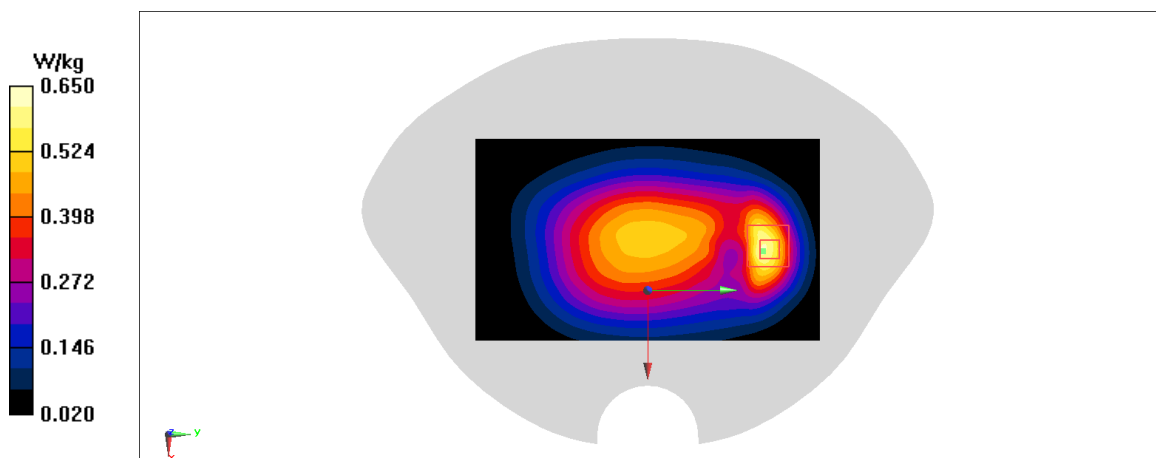


Fig A.12

**LTE1900-FDD2\_CH19100 Right Cheek**

Date: 11/22/2019

Electronics: DAE4 Sn771

Medium: head 1900 MHz

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 39.55$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE1900-FDD2 1900 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

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

Maximum value of SAR (interpolated) = 0.245 W/kg

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

Reference Value = 2.361 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.284 W/kg

**SAR(1 g) = 0.178 W/kg; SAR(10 g) = 0.111 W/kg**

Maximum value of SAR (measured) = 0.244 W/kg

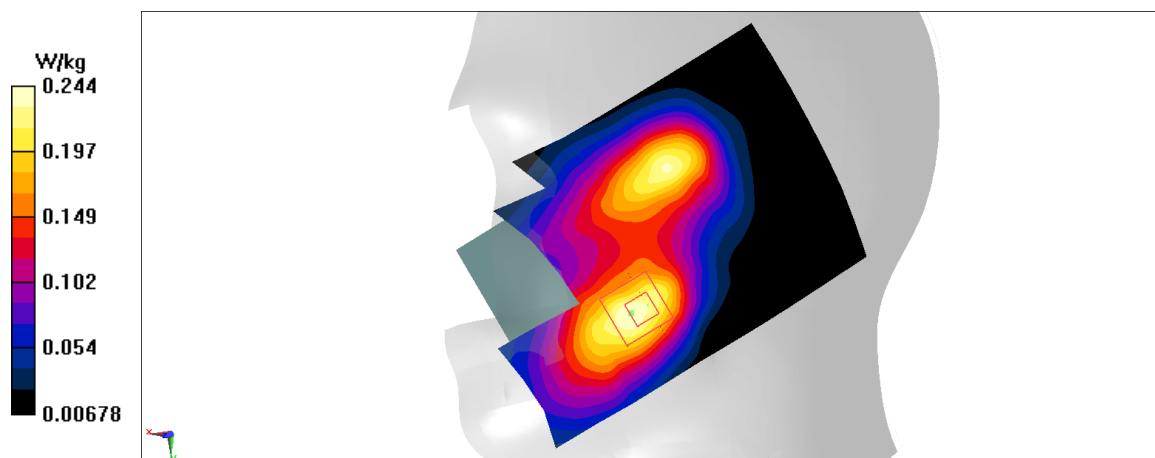


Fig A.13

**LTE1900-FDD2\_CH19100 Bottom**

Date: 11/22/2019

Electronics: DAE4 Sn771

Medium: body 1900 MHz

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 39.55$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE1900-FDD2 1900 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(7.78,7.78,7.78)

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

Maximum value of SAR (interpolated) = 0.585 W/kg

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

Reference Value = 15.98 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.722 W/kg

**SAR(1 g) = 0.382 W/kg; SAR(10 g) = 0.192 W/kg**

Maximum value of SAR (measured) = 0.591 W/kg

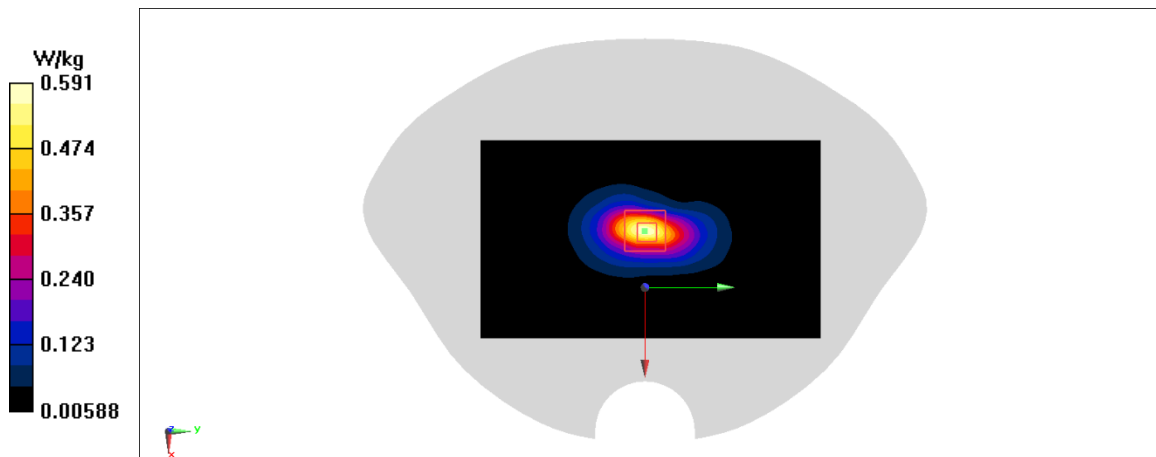


Fig A.14

**LTE1900-FDD2\_CH19100 Rear**

Date: 11/22/2019

Electronics: DAE4 Sn771

Medium: body 1900 MHz

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 39.55$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE1900-FDD2 1900 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(7.78,7.78,7.78)

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

Maximum value of SAR (interpolated) = 0.649 W/kg

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

Reference Value = 7.931 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.813 W/kg

**SAR(1 g) = 0.465 W/kg; SAR(10 g) = 0.268 W/kg**

Maximum value of SAR (measured) = 0.676 W/kg

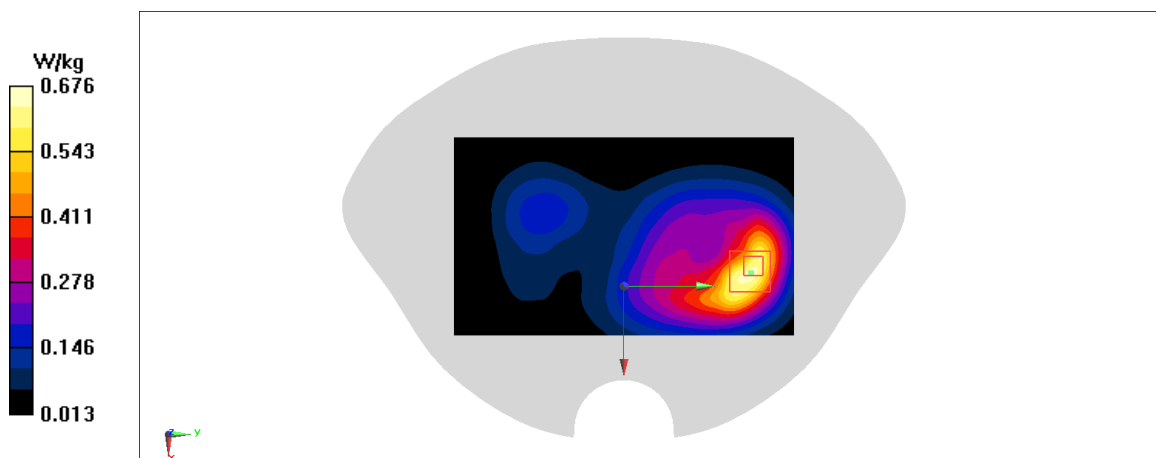


Fig A.15



**LTE850-FDD5\_CH20450 Left Cheek**

Date: 11/20/2019

Electronics: DAE4 Sn771

Medium: head 835 MHz

Medium parameters used:  $f = 829$  MHz;  $\sigma = 0.895$  mho/m;  $\epsilon_r = 41.61$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE850-FDD5 829 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(9.75,9.75,9.75)

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

Maximum value of SAR (interpolated) = 0.358 W/kg

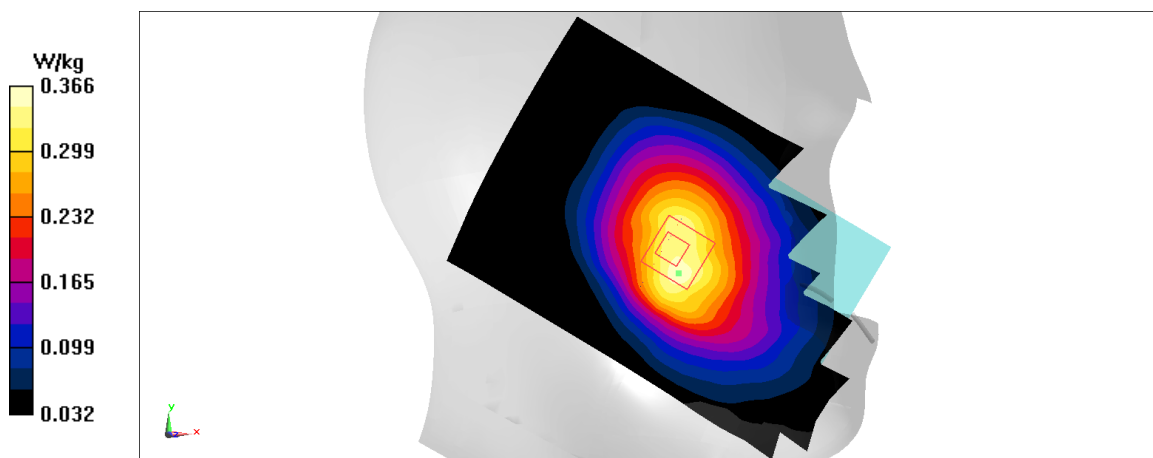
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.852 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.404 W/kg

**SAR(1 g) = 0.305 W/kg; SAR(10 g) = 0.226 W/kg**

Maximum value of SAR (measured) = 0.366 W/kg



**Fig A.16**

**LTE850-FDD5\_CH20450 Rear**

Date: 11/20/2019

Electronics: DAE4 Sn771

Medium: body 835 MHz

Medium parameters used:  $f = 829$  MHz;  $\sigma = 0.895$  mho/m;  $\epsilon_r = 41.61$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE850-FDD5 829 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(9.61,9.61,9.61)

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

Maximum value of SAR (interpolated) = 0.511 W/kg

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

Reference Value = 22.27 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.561 W/kg

**SAR(1 g) = 0.415 W/kg; SAR(10 g) = 0.316 W/kg**

Maximum value of SAR (measured) = 0.506 W/kg

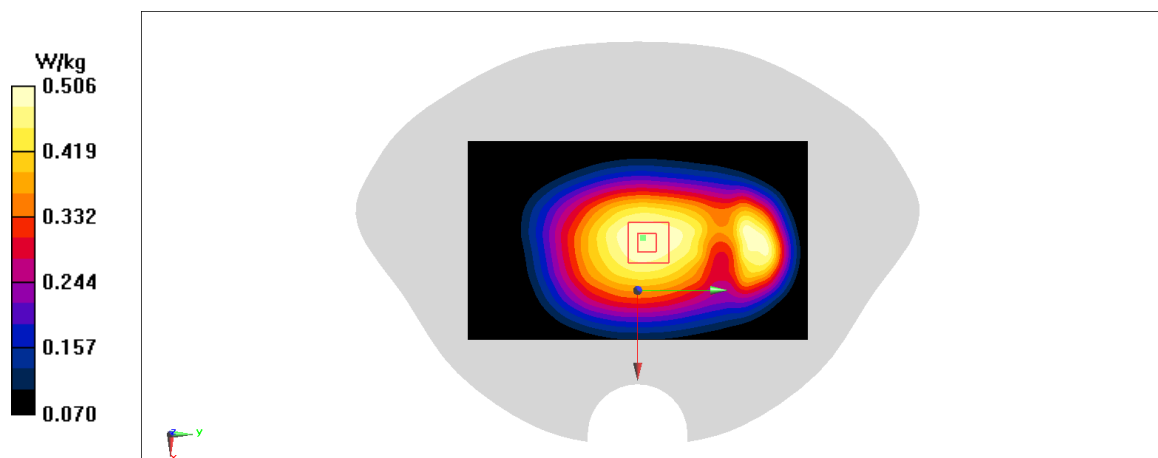


Fig A.17

**LTE2500-FDD7\_CH21100 Right Cheek**

Date: 11/23/2019

Electronics: DAE4 Sn771

Medium: head 2600 MHz

Medium parameters used:  $f = 2535$  MHz;  $\sigma = 1.904$  mho/m;  $\epsilon_r = 39.65$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE2500-FDD7 2535 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(7.19,7.19,7.19)

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

Maximum value of SAR (interpolated) = 0.108 W/kg

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

Reference Value = 1.419 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.119 W/kg

**SAR(1 g) = 0.0633 W/kg; SAR(10 g) = 0.0319 W/kg**

Maximum value of SAR (measured) = 0.0967 W/kg

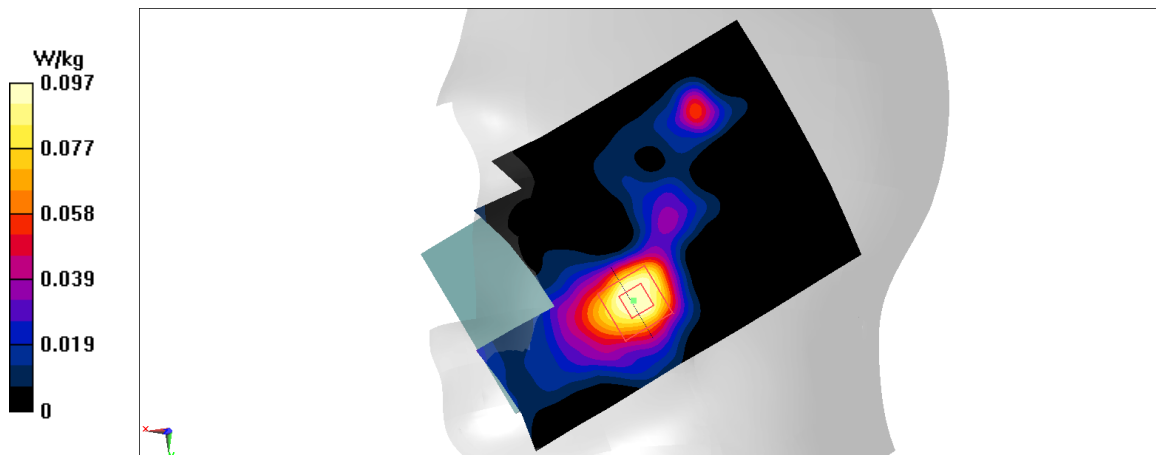


Fig A.18

**LTE2500-FDD7\_CH21100 Bottom**

Date: 11/23/2019

Electronics: DAE4 Sn771

Medium: body 2600 MHz

Medium parameters used:  $f = 2535$  MHz;  $\sigma = 1.904$  mho/m;  $\epsilon_r = 39.65$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE2500-FDD7 2535 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(7.49,7.49,7.49)

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

Maximum value of SAR (interpolated) = 0.869 W/kg

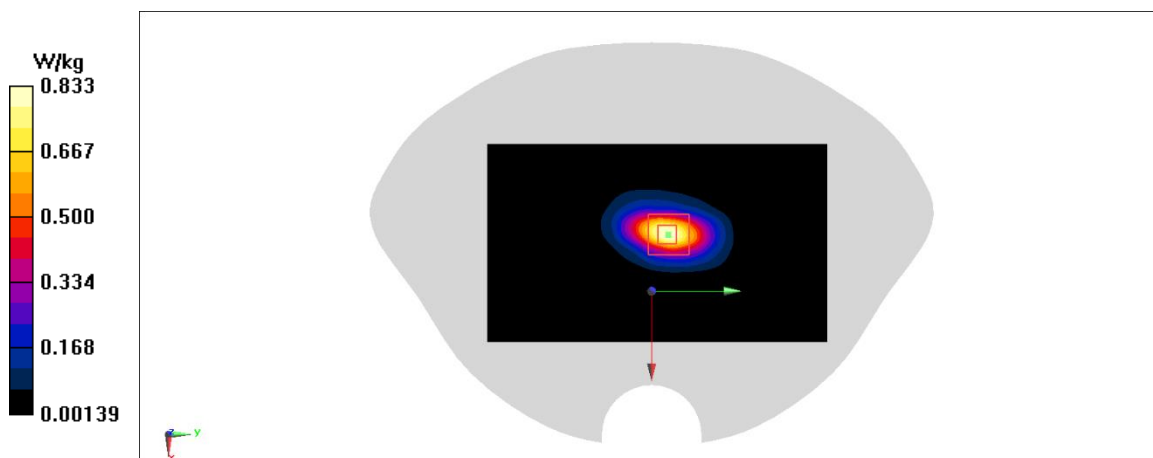
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 14.4 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 1.06 W/kg

**SAR(1 g) = 0.509 W/kg; SAR(10 g) = 0.236 W/kg**

Maximum value of SAR (measured) = 0.833 W/kg



**Fig A.19**

**LTE2500-FDD7\_CH21350 Rear**

Date: 11/23/2019

Electronics: DAE4 Sn771

Medium: body 2600 MHz

Medium parameters used:  $f = 2560$  MHz;  $\sigma = 1.928$  mho/m;  $\epsilon_r = 39.62$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE2500-FDD7 2560 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(7.49,7.49,7.49)

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

Maximum value of SAR (interpolated) = 1.31 W/kg

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

Reference Value = 1.921 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 1.56 W/kg

**SAR(1 g) = 0.817 W/kg; SAR(10 g) = 0.419 W/kg**

Maximum value of SAR (measured) = 1.28 W/kg

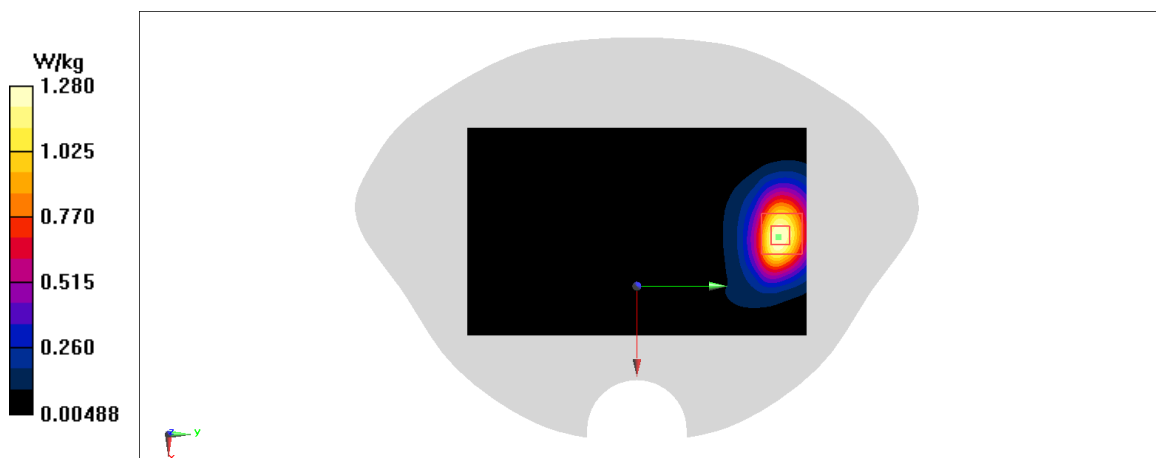


Fig A.20

**LTE750-FDD13\_CH23230 Left Cheek**

Date: 11/19/2019

Electronics: DAE4 Sn771

Medium: head 750 MHz

Medium parameters used:  $f = 782 \text{ MHz}$ ;  $\sigma = 0.928 \text{ mho/m}$ ;  $\epsilon_r = 41.66$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $22.5^\circ\text{C}$ , Liquid Temperature:  $22.3^\circ\text{C}$

Communication System: LTE750-FDD13 782 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(10.03,10.03,10.03)

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

Maximum value of SAR (interpolated) =  $0.235 \text{ W/kg}$

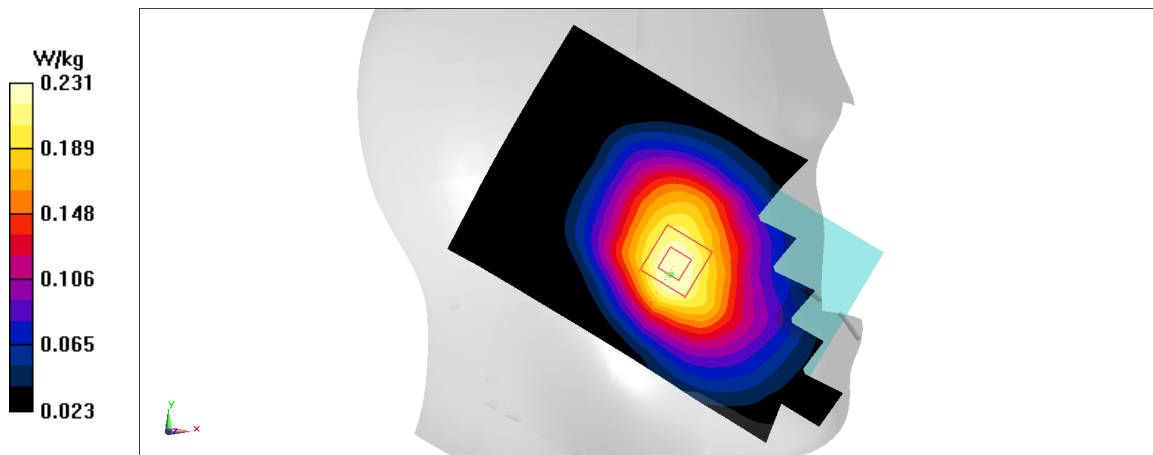
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $3.244 \text{ V/m}$ ; Power Drift =  $0.04 \text{ dB}$

Peak SAR (extrapolated) =  $0.252 \text{ W/kg}$

**SAR(1 g) =  $0.195 \text{ W/kg}$ ; SAR(10 g) =  $0.151 \text{ W/kg}$**

Maximum value of SAR (measured) =  $0.231 \text{ W/kg}$



**Fig A.21**

**LTE750-FDD13\_CH23230 Rear**

Date: 11/19/2019

Electronics: DAE4 Sn771

Medium: body 750 MHz

Medium parameters used:  $f = 782 \text{ MHz}$ ;  $\sigma = 0.928 \text{ mho/m}$ ;  $\epsilon_r = 41.66$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $22.5^\circ\text{C}$ , Liquid Temperature:  $22.3^\circ\text{C}$

Communication System: LTE750-FDD13 782 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(9.85,9.85,9.85)

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

Maximum value of SAR (interpolated) =  $0.376 \text{ W/kg}$

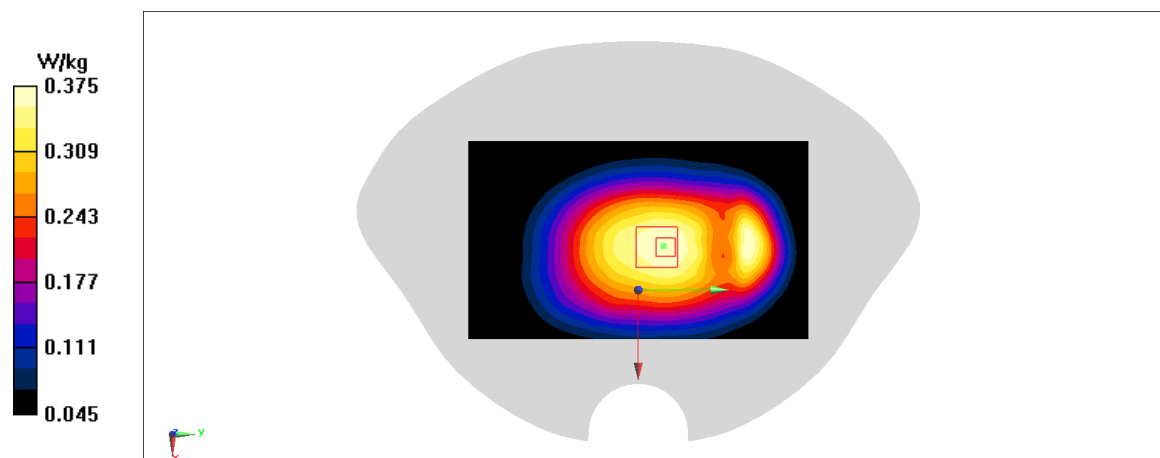
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $19.15 \text{ V/m}$ ; Power Drift =  $0.07 \text{ dB}$

Peak SAR (extrapolated) =  $0.419 \text{ W/kg}$

**SAR(1 g) =  $0.307 \text{ W/kg}$ ; SAR(10 g) =  $0.235 \text{ W/kg}$**

Maximum value of SAR (measured) =  $0.375 \text{ W/kg}$



**Fig A.22**

**LTE700-FDD17\_CH23780 Left Cheek**

Date: 11/19/2019

Electronics: DAE4 Sn771

Medium: head 750 MHz

Medium parameters used:  $f = 709$  MHz;  $\sigma = 0.859$  mho/m;  $\epsilon_r = 41.75$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE700-FDD17 709 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(10.03,10.03,10.03)

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

Maximum value of SAR (interpolated) = 0.102 W/kg

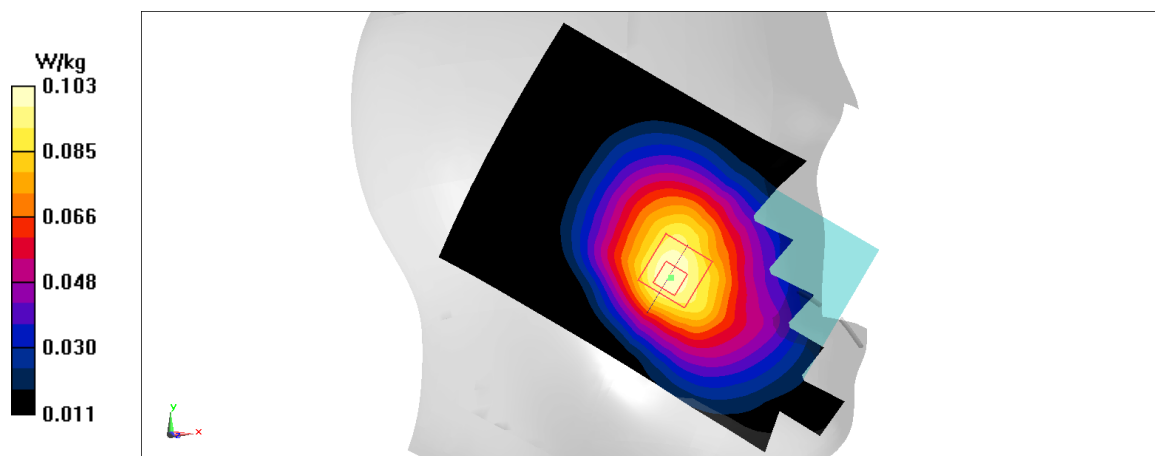
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.277 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.112 W/kg

**SAR(1 g) = 0.0864 W/kg; SAR(10 g) = 0.0666 W/kg**

Maximum value of SAR (measured) = 0.103 W/kg



**Fig A.23**



**LTE700-FDD17\_CH23780 Rear**

Date: 11/19/2019

Electronics: DAE4 Sn771

Medium: body 750 MHz

Medium parameters used:  $f = 709$  MHz;  $\sigma = 0.859$  mho/m;  $\epsilon_r = 41.75$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE700-FDD17 709 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(9.85,9.85,9.85)

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

Maximum value of SAR (interpolated) = 0.171 W/kg

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

Reference Value = 11.11 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 0.197 W/kg

**SAR(1 g) = 0.108 W/kg; SAR(10 g) = 0.0676 W/kg**

Maximum value of SAR (measured) = 0.155 W/kg

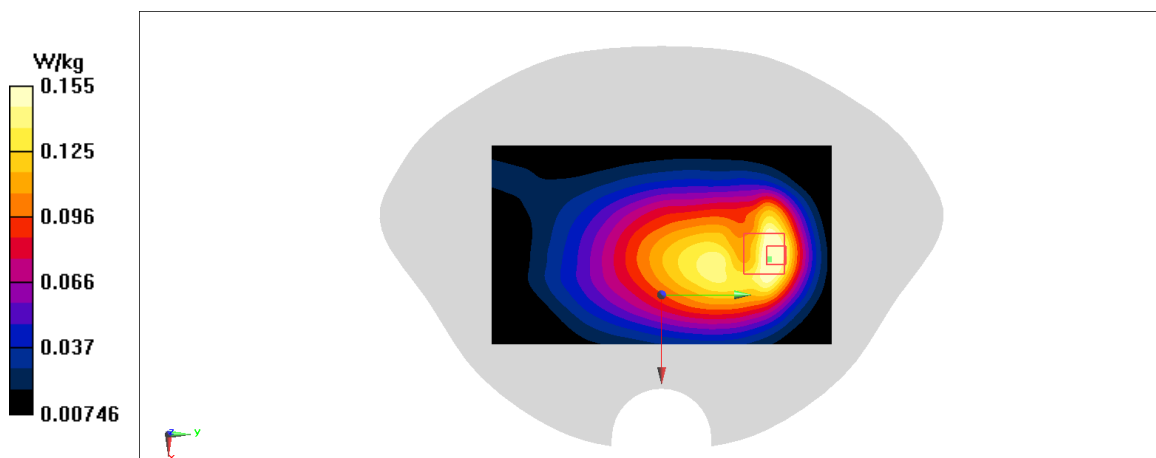


Fig A.24

**LTE1700-FDD66\_CH132572 Left Cheek**

Date: 11/21/2019

Electronics: DAE4 Sn771

Medium: head 1750 MHz

Medium parameters used:  $f = 709$  MHz;  $\sigma = 0.391$  mho/m;  $\epsilon_r = 41.93$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE1700-FDD66 709 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(8.38,8.38,8.38)

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

Maximum value of SAR (interpolated) = 0.34 W/kg

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

Reference Value = 4.736 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.417 W/kg

**SAR(1 g) = 0.271 W/kg; SAR(10 g) = 0.17 W/kg**

Maximum value of SAR (measured) = 0.363 W/kg

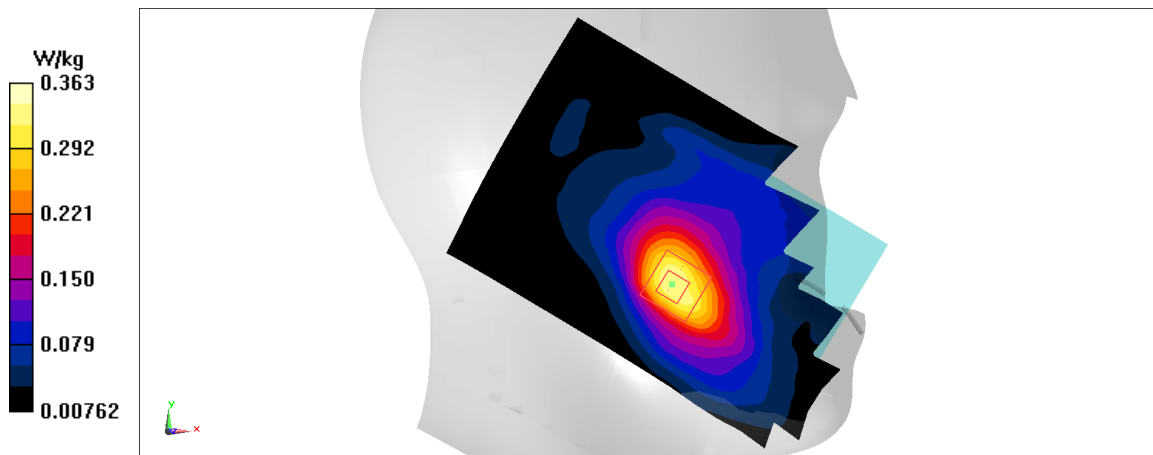


Fig A.25

**LTE1700-FDD66\_CH132322 Rear**

Date: 11/21/2019

Electronics: DAE4 Sn771

Medium: body 1750 MHz

Medium parameters used:  $f = 709$  MHz;  $\sigma = 0.391$  mho/m;  $\epsilon_r = 41.93$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE1700-FDD66 709 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(8.03,8.03,8.03)

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

Maximum value of SAR (interpolated) = 0.398 W/kg

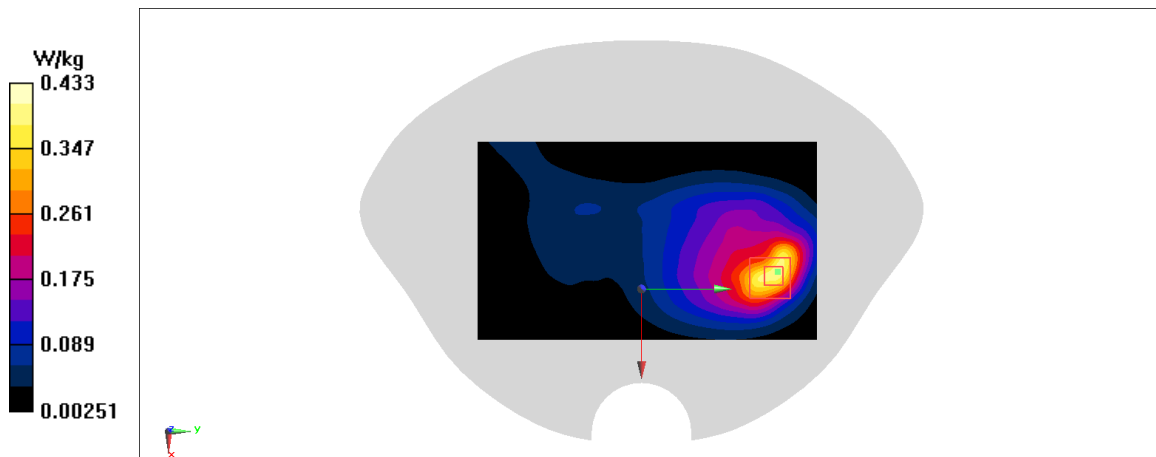
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.203 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.535 W/kg

**SAR(1 g) = 0.287 W/kg; SAR(10 g) = 0.154 W/kg**

Maximum value of SAR (measured) = 0.433 W/kg



**Fig A.26**

**LTE1700-FDD66\_CH132572 Rear**

Date: 11/21/2019

Electronics: DAE4 Sn771

Medium: body 1750 MHz

Medium parameters used:  $f = 709$  MHz;  $\sigma = 0.391$  mho/m;  $\epsilon_r = 41.93$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE1700-FDD66 709 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(8.03,8.03,8.03)

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

Maximum value of SAR (interpolated) = 0.616 W/kg

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

Reference Value = 7.335 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 0.735 W/kg

**SAR(1 g) = 0.421 W/kg; SAR(10 g) = 0.245 W/kg**

Maximum value of SAR (measured) = 0.611 W/kg

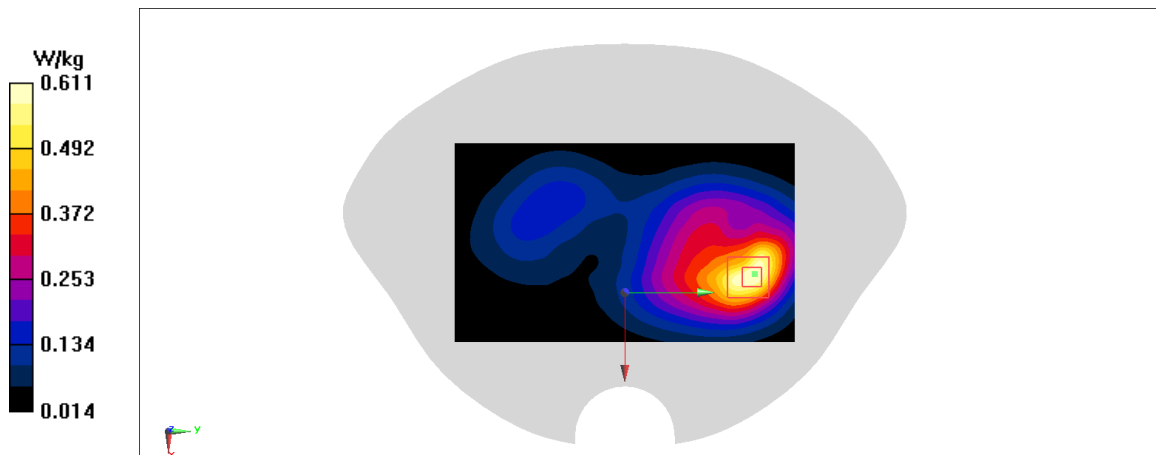


Fig A.27

**WLAN2450\_CH6 Right Tilt**

Date: 11/23/2019

Electronics: DAE4 Sn771

Medium: head 2450 MHz

Medium parameters used:  $f = 2437$ ;  $\sigma = 1.772$  mho/m;  $\epsilon_r = 39.07$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WLAN2450 2437 Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(7.62,7.62,7.62)

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

Maximum value of SAR (interpolated) = 0.777 W/kg

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

Reference Value = 8.346 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.933 W/kg

**SAR(1 g) = 0.412 W/kg; SAR(10 g) = 0.162 W/kg**

Maximum value of SAR (measured) = 0.693 W/kg

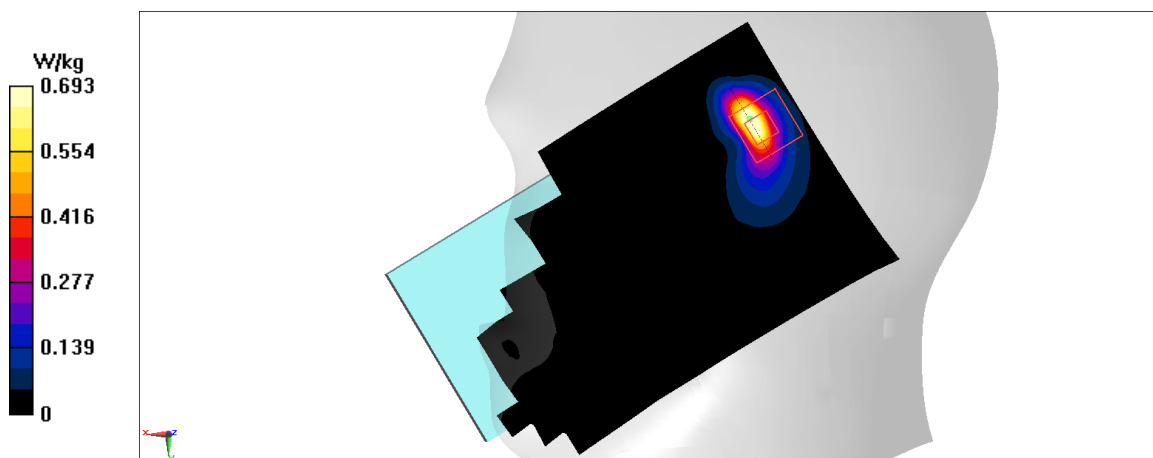


Fig A.28

**WLAN2450\_CH6 Top**

Date: 11/23/2019

Electronics: DAE4 Sn771

Medium: body 2450 MHz

Medium parameters used:  $f = 2437$ ;  $\sigma = 1.772$  mho/m;  $\epsilon_r = 39.07$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WLAN2450 2437 Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(7.79,7.79,7.79)

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

Maximum value of SAR (interpolated) = 0.345 W/kg

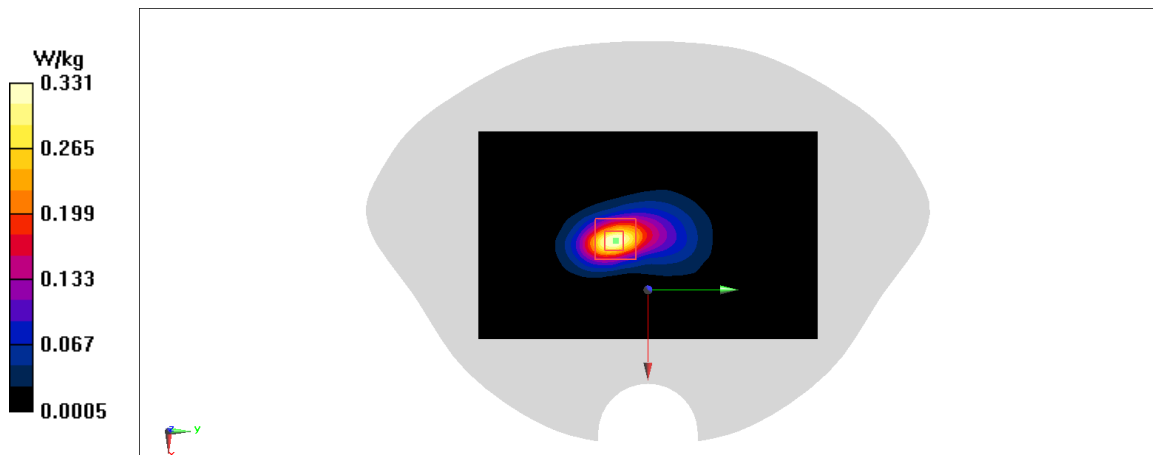
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.669 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.411 W/kg

**SAR(1 g) = 0.198 W/kg; SAR(10 g) = 0.0894 W/kg**

Maximum value of SAR (measured) = 0.331 W/kg



**Fig A.29**

**LTE700-FDD28\_CH27460 Left Cheek**

Date: 11/19/2019

Electronics: DAE4 Sn771

Medium: head 750 MHz

Medium parameters used:  $f = 728 \text{ MHz}$ ;  $\sigma = 0.898 \text{ mho/m}$ ;  $\epsilon_r = 41.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE700-FDD28 728 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(10.03,10.03,10.03)

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

Maximum value of SAR (interpolated) = 0.143 W/kg

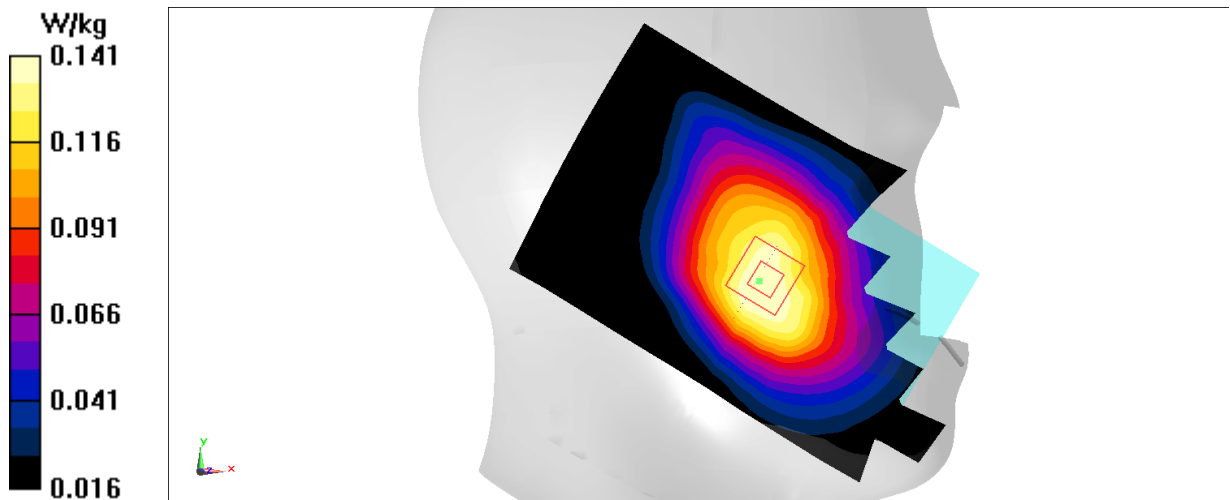
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 2.585 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.152 W/kg

SAR(1 g) = 0.123 W/kg; SAR(10 g) = 0.097 W/kg

Maximum value of SAR (measured) = 0.141 W/kg



**Fig A.30**

**LTE700-FDD28\_CH27460 Rear**

Date: 11/19/2019

Electronics: DAE4 Sn771

Medium: body 750 MHz

Medium parameters used:  $f = 728$  MHz;  $\sigma = 0.898$  mho/m;  $\epsilon_r = 41.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE700-FDD28 728 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(9.85,9.85,9.85)

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

Maximum value of SAR (interpolated) = 0.248 W/kg

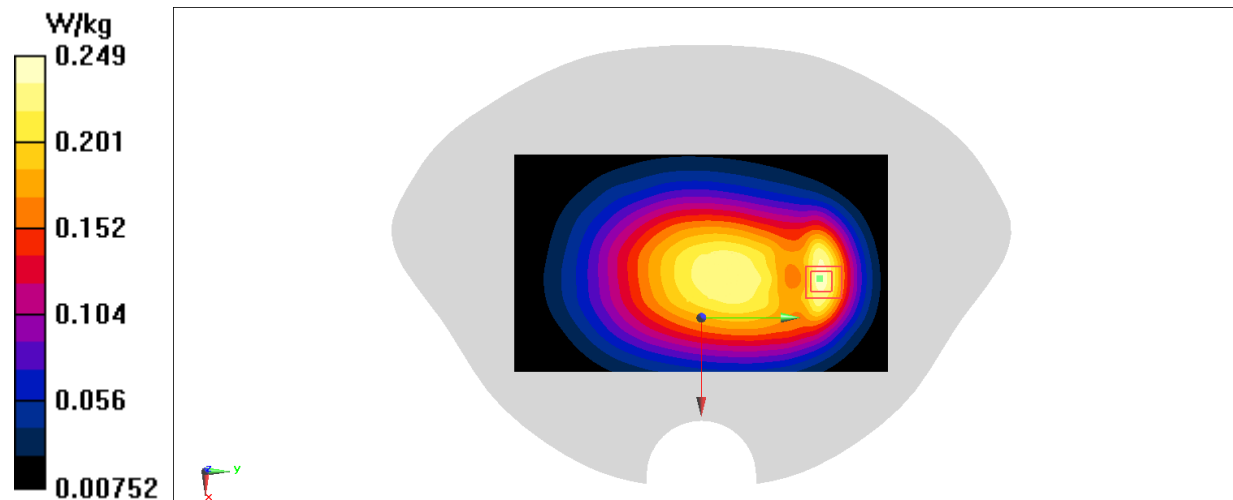
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 15.40 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.307 W/kg

SAR(1 g) = 0.202 W/kg; SAR(10 g) = 0.153 W/kg

Maximum value of SAR (measured) = 0.249 W/kg

**Fig A.31**



## I.6 ANNEX SYSTEM VALIDATION RESULTS

### 750 MHz

Date: 11/19/2019

Electronics: DAE4 Sn771

Medium: Head 750 MHz

Medium parameters used:  $f = 750 \text{ MHz}$ ;  $\sigma = 0.898 \text{ mho/m}$ ;  $\epsilon_r = 41.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

Communication System: CW Frequency: 750 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(10.03,10.03,10.03)

**System Validation /Area Scan (81x191x1):** Interpolated grid:  $dx=1.000 \text{ mm}$ ,  $dy=1.000 \text{ mm}$

Reference Value = 60.78 V/m; Power Drift = 0.03

**Fast SAR: SAR(1 g) = 2.11 W/kg; SAR(10 g) = 1.42 W/kg**

Maximum value of SAR (interpolated) = 2.78 W/kg

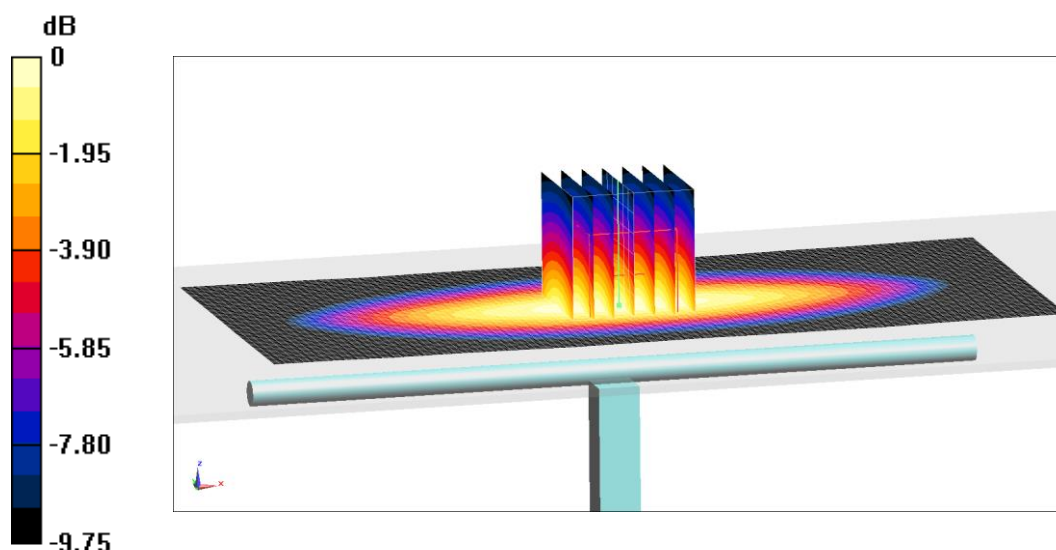
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =60.78 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 3.16 W/kg

**SAR(1 g) = 2.14 W/kg; SAR(10 g) = 1.38 W/kg**

Maximum value of SAR (measured) = 2.83 W/kg



0 dB = 2.83 W/kg = 4.52 dB W/kg

**Fig.B.1 validation 750 MHz 250mW**

### 835 MHz

Date: 11/20/2019

Electronics: DAE4 Sn771

Medium: Head 835 MHz

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.901 \text{ mho/m}$ ;  $\epsilon_r = 41.6$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(9.75,9.75,9.75)

**System Validation /Area Scan (81x191x1):** Interpolated grid:  $dx=1.000 \text{ mm}$ ,  $dy=1.000 \text{ mm}$

Reference Value = 63.88 V/m; Power Drift = 0.04

**Fast SAR: SAR(1 g) = 2.42 W/kg; SAR(10 g) = 1.56 W/kg**

Maximum value of SAR (interpolated) = 3.16 W/kg

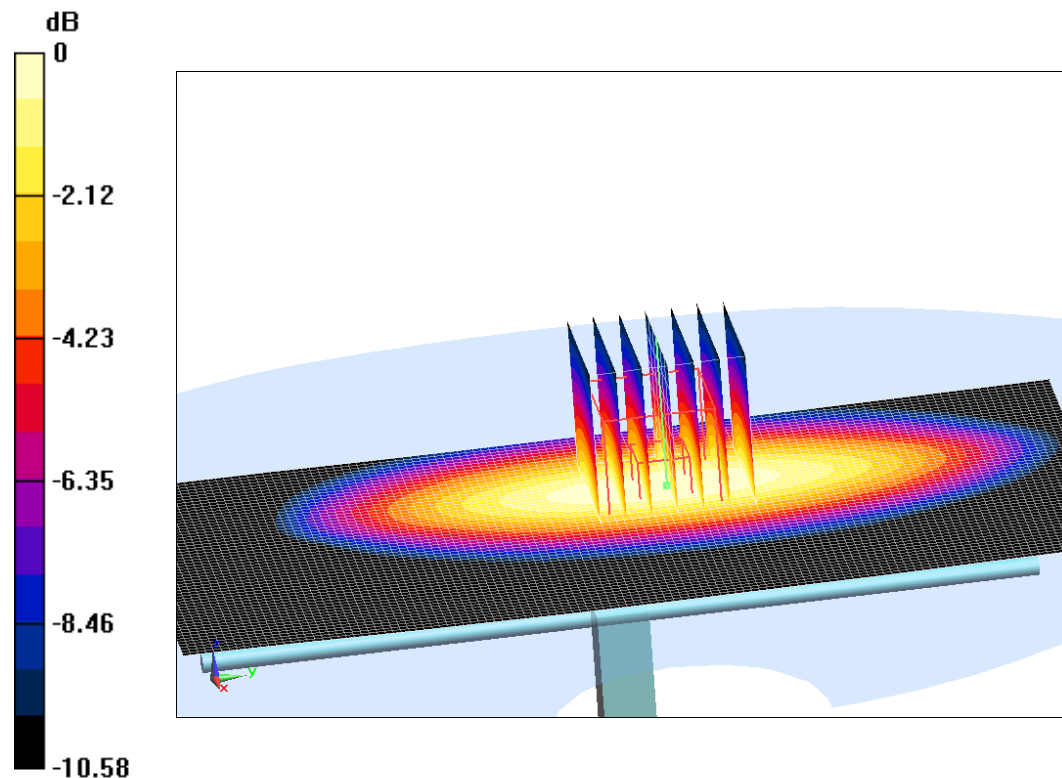
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =63.88 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 3.62 W/kg

**SAR(1 g) = 2.45 W/kg; SAR(10 g) = 1.57 W/kg**

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



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

**Fig.B.2 validation 835 MHz 250mW**

## 1750 MHz

Date: 11/21/2019

Electronics: DAE4 Sn771

Medium: Head 1750 MHz

Medium parameters used:  $f = 1750$  MHz;  $\sigma = 1.38$  mho/m;  $\epsilon_r = 40.68$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

Communication System: CW Frequency: 1750 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(8.38,8.38,8.38)

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

Reference Value = 104.5 V/m; Power Drift = 0.06

**Fast SAR: SAR(1 g) = 9.03 W/kg; SAR(10 g) = 4.83 W/kg**

Maximum value of SAR (interpolated) = 14.31 W/kg

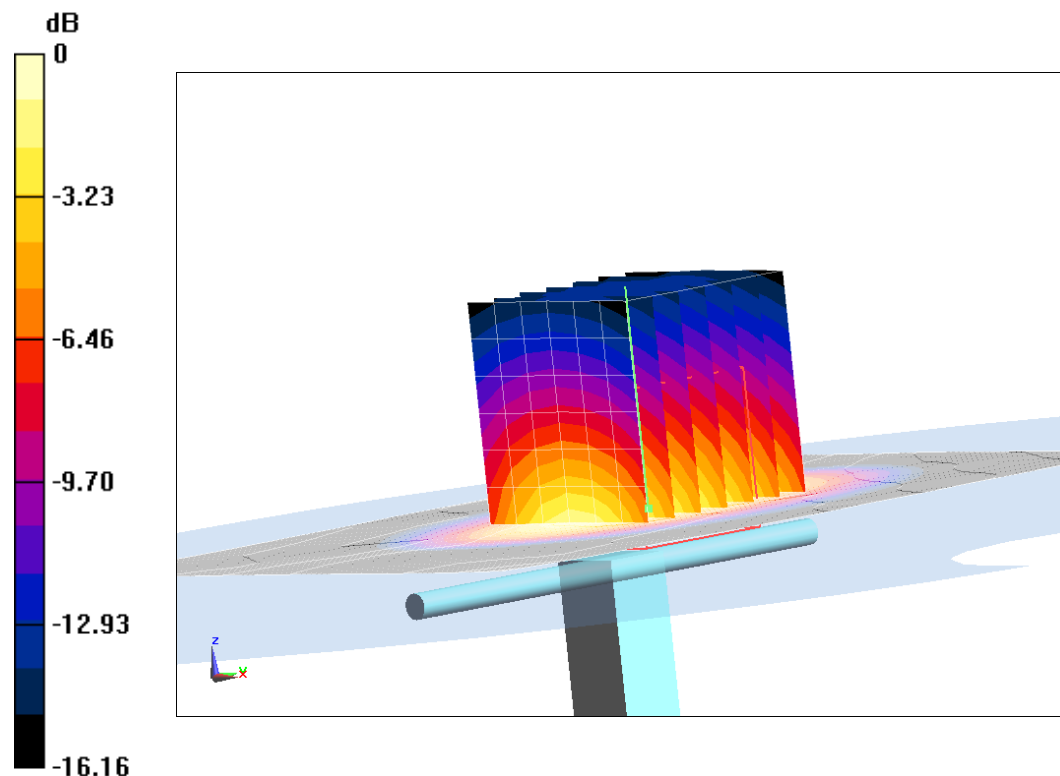
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 104.5 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 16.53 W/kg

**SAR(1 g) = 9.01 W/kg; SAR(10 g) = 4.85 W/kg**

Maximum value of SAR (measured) = 13.9 W/kg



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

**Fig.B.3 validation 1750 MHz 250mW**

## 1900 MHz

Date: 11/22/2019

Electronics: DAE4 Sn771

Medium: Head 1900 MHz

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 39.55$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

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

Reference Value = 107.26 V/m; Power Drift = 0.02

**Fast SAR: SAR(1 g) = 9.96 W/kg; SAR(10 g) = 5.2 W/kg**

Maximum value of SAR (interpolated) = 15.34 W/kg

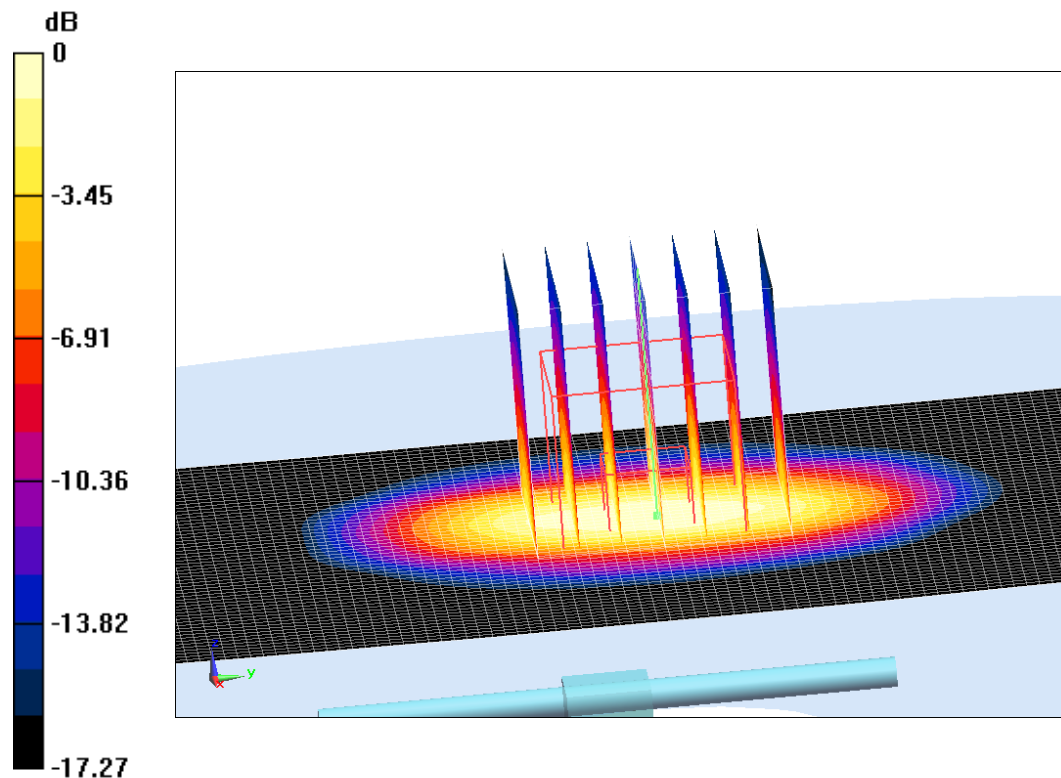
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 107.26 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 17.52 W/kg

**SAR(1 g) = 10.07 W/kg; SAR(10 g) = 5.15 W/kg**

Maximum value of SAR (measured) = 14.81 W/kg



0 dB = 14.81 W/kg = 11.71 dB W/kg

**Fig.B.4 validation 1900 MHz 250mW**

## 2450 MHz

Date: 11/23/2019

Electronics: DAE4 Sn771

Medium: Head 2450 MHz

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.784$  mho/m;  $\epsilon_r = 39.05$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

Communication System: CW Frequency: 2450 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(7.62,7.62,7.62)

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

Reference Value = 116.72 V/m; Power Drift = -0.08

**Fast SAR: SAR(1 g) = 12.8 W/kg; SAR(10 g) = 5.97 W/kg**

Maximum value of SAR (interpolated) = 21.99 W/kg

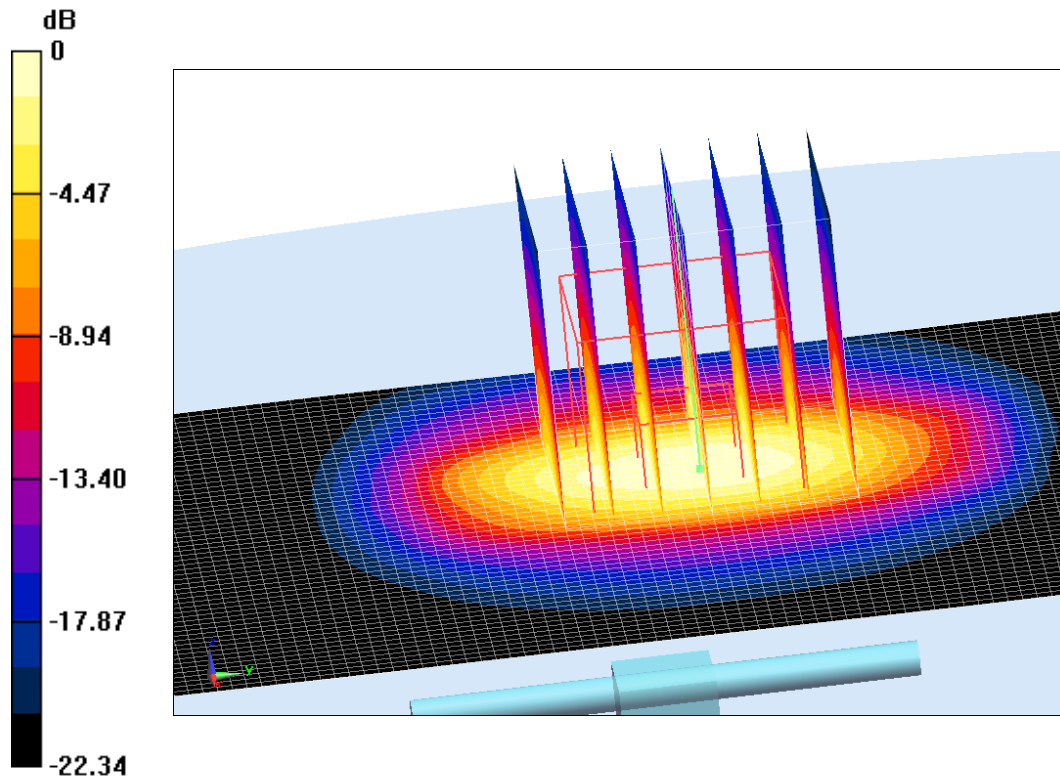
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 116.72 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 25.53 W/kg

**SAR(1 g) = 13.14 W/kg; SAR(10 g) = 6.16 W/kg**

Maximum value of SAR (measured) = 21.92 W/kg



0 dB = 21.92 W/kg = 13.41 dB W/kg

**Fig.B.5 validation 2450 MHz 250mW**

## 2600 MHz

Date: 11/23/2019

Electronics: DAE4 Sn771

Medium: Head 2600 MHz

Medium parameters used:  $f = 2600$  MHz;  $\sigma = 1.966$  mho/m;  $\epsilon_r = 39.57$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

Communication System: CW Frequency: 2600 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(7.19,7.19,7.19)

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

Reference Value = 118.31 V/m; Power Drift = -0.05

**Fast SAR: SAR(1 g) = 13.82 W/kg; SAR(10 g) = 6.2 W/kg**

Maximum value of SAR (interpolated) = 25.14 W/kg

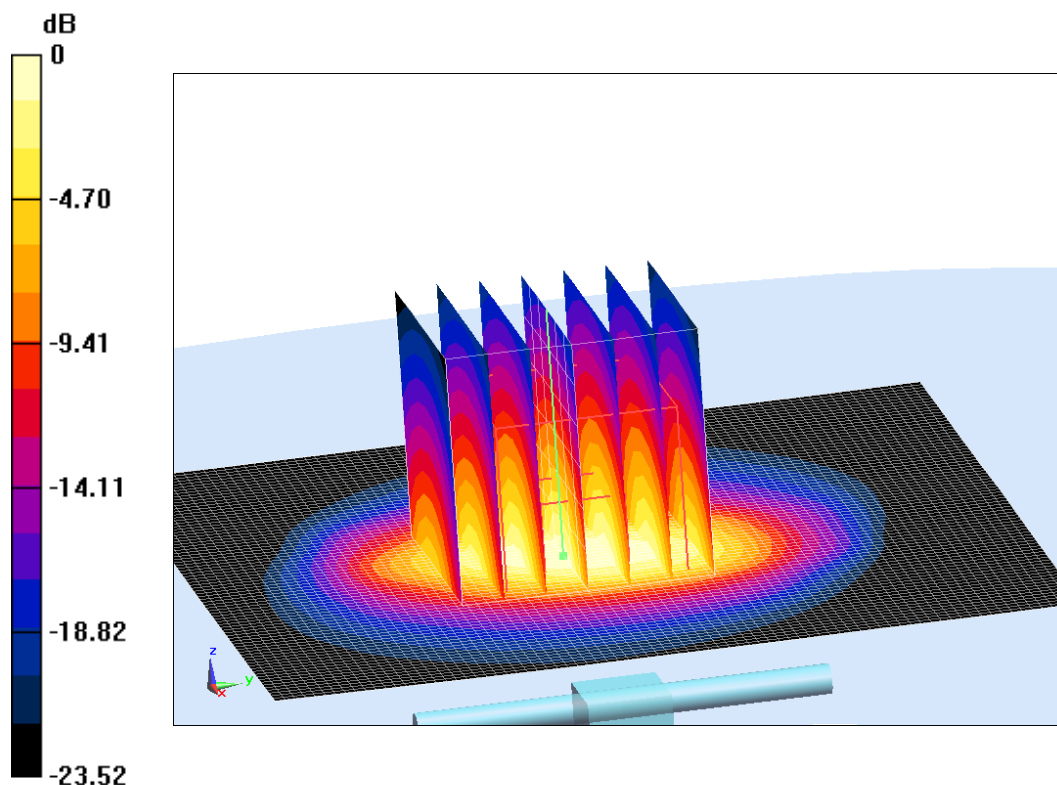
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 118.31 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 28.68 W/kg

**SAR(1 g) = 14.17 W/kg; SAR(10 g) = 6.31 W/kg**

Maximum value of SAR (measured) = 23.74 W/kg



0 dB = 23.74 W/kg = 13.75 dB W/kg

**Fig.B.6 validation 2600 MHz 250mW**

## ANNEX J Spot Check

### J.1 Dielectric Performance and System Validation

Table J.1-1: Dielectric Performance of Tissue Simulating Liquid

Measurement Date yyyy/mm/dd	Frequency	Type	Permittivity $\epsilon$	Drift (%)	Conductivity $\sigma$ (S/m)	Drift (%)
2020/8/10	750 MHz	Head	41.70	-0.57	0.898	0.90
2020/8/11	835 MHz	Head	41.60	0.24	0.901	0.11
2020/8/12	1750 MHz	Head	40.68	1.50	1.380	0.73
2020/8/13	1900 MHz	Head	39.55	-1.13	1.390	-0.71
2020/8/15	2450 MHz	Head	39.05	-0.38	1.784	-0.89
2020/8/16	2600 MHz	Head	39.57	1.44	1.966	0.31

### J.2 System Verification

Table J.2-1: System Validation of Head

Measurement Date (yyyy-mm-dd)	Frequency	Target value (W/kg)		Measured value (W/kg)		Deviation	
		10 g Average	1 g Average	10 g Average	1 g Average	10 g Average	1 g Average
2020/8/10	750 MHz	5.55	8.44	5.48	8.44	-1.26%	0.00%
2020/8/11	835 MHz	6.20	9.49	6.2	9.6	0.00%	1.16%
2020/8/12	1750 MHz	18.7	35.5	18.8	34.96	0.53%	-1.52%
2020/8/13	1900 MHz	20.8	40.1	20.6	40.68	-0.96%	1.45%
2020/8/15	2450 MHz	24.0	52.7	24.44	53.68	1.83%	1.86%
2020/8/16	2600 MHz	25.3	57.2	25.44	58.12	0.55%	1.61%

### J.3 Conducted power of selected case

Table J.3-1: The conducted power results for 2G- Normal Power

GSM 850MHZ	Measured Power (dBm)		
	251	190	128
Speech	32.13	/	/
GPRS(2Tx)	29.37	/	/
GSM1900MHZ	Measured Power (dBm)		
	810	661	512
Speech	/	/	28.42
GPRS(2Tx)	/	/	26.15



**Table J.3-2: The conducted Power for WCDMA- Normal Power**

Item	band	FDDII result		
	ARFCN	9538/9938	9400/9800	9262/9662
WCDMA	\	(1907.6MHz)	(1880MHz)	(1852.4MHz)
		/	22.07	22.04
Item	band	FDDIV result		
	ARFCN	1513/1738	1412/1637	1312/1537
WCDMA	\	(1752.6MHz)	(1732.4MHz)	(1712.4MHz)
		22.45	/	/
Item	band	FDDV result		
	ARFCN	4233/4458	4183/4408	4132/4357
WCDMA	\	(846.6MHz)	(836.6MHz)	(826.4MHz)
		22.05	/	22.14

**Table J.3-3: The conducted Power for WCDMA- Low Power**

Item	band	FDDII result		
	ARFCN	9538/9938	9400/9800	9262/9662
WCDMA	\	(1907.6MHz)	(1880MHz)	(1852.4MHz)
		18.95	/	/
Item	band	FDDIV result		
	ARFCN	1513/1738	1412/1637	1312/1537
WCDMA	\	(1752.6MHz)	(1732.4MHz)	(1712.4MHz)
		18.71	/	/

**Table J.3-4: The conducted Power for LTE-Normal Power**

LTE Band2	1RB-Middle	1900(19100)	22.51
LTE Band5	1RB-Middle	829(20450)	22.52
LTE Band7	1RB-Middle	2535 (21100)	22.51
LTE Band7	1RB-Middle	2560 (21350)	22.84
LTE Band13	1RB-Middle	782 (23230)	22.78
LTE Band17	1RB-Middle	709 (23780)	22.72
LTE Band28	1RB-Middle	728(27460)	22.62
LTE Band66	1RB-Middle	1770 (132572)	22.55

**Table J.3-5: The conducted Power for LTE-Low Power**

LTE Band2	50RB-Middle	1900(19100)	18.60
LTE Band7	50RB-Middle	2535 (21100)	18.45
LTE Band7	50RB-Middle	2560(21350)	18.31
LTE Band7	50RB-Middle	2510(20850)	18.22
LTE Band66	1RB-Middle	1745 (132322)	18.74

**Table J.3-6: The conducted Power for WLAN**

Mode / data rate	Channel	Measured Power (dBm)
802.11b – 1Mbps	6	16.98



### J.4 Measurement results

Test Position	Phantom position L/R/F	Frequency Band	Channel Number	Frequency (MHz)	Tune up (dBm)	EUT Measured Power (dBm)	Test setup	Measured SAR 10g (W/kg)	Measured SAR 1g (W/kg)	Calculated SAR 10g (W/kg)	Calculated SAR 1g (W/kg)	Power Drift	Fig.
Cheek	L	GSM850	251	848.8	33.3	32.13	Left Cheek	0.281	0.360	0.37	0.47	0.08	Fig J.1
Body	F	GSM850	251	848.8	30.5	29.37	Rear 10mm 2TX	0.342	0.447	0.44	0.58	0.01	Fig J.2
Cheek	L	GSM1900	512	1850.2	30.3	28.42	Left Cheek	0.047	0.075	0.07	0.12	-0.16	Fig J.3
Body	F	GSM1900	512	1850.2	28	26.15	Bottom 10mm 2TX	0.177	0.364	0.27	0.56	-0.08	Fig J.4
Cheek	L	WCDMA1900	9400	1880	24	22.07	Left Cheek	0.083	0.132	0.13	0.21	0.03	Fig J.5
Body	F	WCDMA1900	9538	1907.6	20	18.95	Bottom 10mm	0.263	0.510	0.33	0.65	0.37	Fig J.6
Body	F	WCDMA1900	9262	1852.4	24	22.04	Rear 15mm	0.253	0.442	0.40	0.69	-0.27	Fig J.7
Cheek	L	WCDMA1700	1513	1752.6	24	22.45	Left Cheek	0.113	0.174	0.16	0.25	-0.03	Fig J.8
Body	F	WCDMA1700	1513	1752.6	20	18.71	Rear 10mm	0.175	0.322	0.24	0.43	-0.03	Fig J.9
Body	F	WCDMA1700	1513	1752.6	24	22.45	Rear 15mm	0.259	0.451	0.37	0.64	-0.17	Fig J.10
Cheek	L	WCDMA 850	4132	826.4	24	22.14	Left Cheek	0.187	0.238	0.29	0.37	0.29	Fig J.11
Body	F	WCDMA 850	4233	846.6	24	22.05	Rear 10mm	0.205	0.372	0.32	0.58	-0.09	Fig J.12
Cheek	R	LTE Band2	19100	1900	24	22.51	Right Cheek 1RB-Middle	0.100	0.160	0.14	0.23	0.86	Fig J.13
Body	F	LTE Band2	19100	1900	20	18.6	50RB-Middle Bottom 10mm	0.266	0.522	0.37	0.72	0.22	Fig J.14
Body	F	LTE Band2	19100	1900	24	22.51	1RB-Middle Rear 15mm	0.284	0.499	0.40	0.70	-0.02	Fig J.15
Cheek	L	LTE Band5	20450	829	24	22.52	Left Cheek 1RB-Middle	0.207	0.263	0.29	0.37	-0.04	Fig J.16
Body	F	LTE Band5	20450	829	24	22.52	1RB-Middle Rear 10mm	0.227	0.415	0.32	0.58	0.03	Fig J.17
Cheek	R	LTE Band7	21100	2535	24	22.51	Right Cheek 1RB-Middle	0.046	0.089	0.06	0.13	2.26	Fig J.18
Body	F	LTE Band7	21100	2535	19.5	18.45	50RB-Middle Bottom 10mm	0.425	0.910	0.54	1.16	0.19	Fig J.19
Body	F	LTE Band7	21350	2560	19.5	18.31	50RB-Middle Bottom Edge 10mm	0.410	0.867	0.54	1.14	0.08	/
Body	F	LTE Band7	20850	2510	19.5	18.22	50RB-Middle Bottom Edge 10mm	0.325	0.684	0.44	0.92	0.03	/
Body	F	LTE Band7	21350	2560	24	22.84	1RB-Middle Rear 15mm	0.452	0.874	0.59	1.14	-1.22	Fig J.20
Cheek	L	LTE Band13	23230	782	24	22.78	Left Cheek 1RB-Middle	0.160	0.202	0.21	0.27	0.05	Fig J.21
Body	F	LTE Band13	23230	782	24	22.78	1RB-Middle Rear 10mm	0.162	0.276	0.21	0.37	0.01	Fig J.22
Cheek	L	LTE Band17	23780	709	24	22.72	Left Cheek 1RB-Middle	0.068	0.085	0.09	0.11	-0.22	Fig J.23
Body	F	LTE Band17	23780	709	24	22.72	1RB-Middle Rear 10mm	0.133	0.172	0.18	0.23	-0.16	Fig J.24
Cheek	L	LTE Band28	27460	728	24	22.62	Left Cheek 1RB-Middle	0.096	0.117	0.13	0.16	-1.53	Fig J.25
Body	F	LTE Band28	27460	728	24	22.62	1RB-Middle Rear 10mm	0.107	0.140	0.15	0.19	-0.03	Fig J.26
Cheek	L	LTE Band66	132572	1770	24	22.55	Left Cheek 1RB-Middle	0.117	0.185	0.16	0.26	-0.01	Fig J.27
Body	F	LTE Band66	132322	1745	20	18.74	1RB-Middle Rear 10mm	0.229	0.407	0.31	0.54	-0.18	Fig J.28
Body	F	LTE Band66	132572	1770	24	22.55	1RB-Middle Rear 15mm	0.282	0.494	0.39	0.69	-0.03	Fig J.29
Tilt	R	WLAN	6	2437	17.5	16.98	Right Tilt 1M 13dB	0.146	0.363	0.16	0.41	0.05	Fig J.30
Body	F	WLAN	6	2437	17.5	16.98	Top Edge 10mm	0.065	0.150	0.07	0.17	-0.03	Fig J.31

### J.5 Evaluation of Simultaneous

**Table J.5.1: The sum of reported SAR values for main antenna and WiFi**

	Position	Main antenna	WiFi	Sum
Highest reported SAR value for Head	Left head, Touch cheek	0.60	0.21	<b>0.81</b>
Highest reported SAR value for Head	Right head, Tilt	0.29	0.57	<b>0.86</b>
Highest reported SAR value for Body	Rear 10mm	0.75	0.17	<b>0.92</b>
Highest reported SAR value for Body	Bottom 10mm	1.16	<0.01	<b>1.16</b>
Highest reported SAR value for Body	Rear 15mm	1.32	0.08	<b>1.40</b>

**Table J.5.2: The sum of reported SAR values for main antenna and BT**

	Position	Main antenna	BT	Sum
Maximum reported SAR value for Head	Left head, Touch cheek	0.60	<0.01	<b>0.60</b>
Maximum reported SAR value for Body	Bottom 10mm	1.16	/	<b>1.16</b>
Maximum reported SAR value for Body	Rear 15mm	1.32	0.22 <sup>[1]</sup>	<b>1.54</b>

## J.6 Reported SAR Comparison

**Table J.6-1: Comparison**

Exposure Configuration	Technology Band	Reported SAR 1g(W/kg) Original	Reported SAR 1g(W/kg) Spot check	Equipment Class
Head (Separation Distance 0mm)	GSM 850	0.60	0.47	PCE
	PCS 1900	0.19	0.12	
	UMTS FDD 2	0.31	0.21	
	UMTS FDD 4	0.40	0.25	
	UMTS FDD 5	0.43	0.37	
	LTE Band 2	0.29	0.23	
	LTE Band 5	0.44	0.37	
	LTE Band 7	0.09	0.13	
	LTE Band 13	0.30	0.27	
	LTE Band 17	0.14	0.11	
	LTE Band 28	0.14	0.16	
	LTE Band 66	0.35	0.26	
	WLAN 2.4 GHz	0.57	0.41	DTS
Hotspot (Separation Distance 10mm)	GSM 850	0.65	0.58	PCE
	PCS 1900	0.90	0.56	
	UMTS FDD 2	0.65	0.65	
	UMTS FDD 4	0.46	0.43	
	UMTS FDD 5	0.63	0.58	
	LTE Band 2	0.65	0.72	
	LTE Band 5	0.56	0.58	
	LTE Band 7	0.90	1.16	
	LTE Band 13	0.56	0.37	
	LTE Band 17	0.22	0.23	
	LTE Band 28	0.23	0.19	
	LTE Band 66	0.37	0.54	
	WLAN 2.4 GHz	0.27	0.17	DTS
Body-worn (Separation Distance 15mm)	UMTS FDD 2	0.69	0.69	PCE
	UMTS FDD 4	0.59	0.64	
	LTE Band 2	0.59	0.70	
	LTE Band 7	1.32	1.14	
	LTE Band 66	0.54	0.69	

**Note: The spot check results marked by blue are larger than the original result. So they replace the original result and others are shared.**

## J.7 List of Main Instruments

**Table J.7.1: List of Main Instruments**

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	E5071C	MY46110673	February 10, 2020	One year
02	Power meter	NRP2	106277	September 4, 2019	One year
03	Power sensor	NRP8S	104291		
04	Signal Generator	E4438C	MY49070393	January 4, 2020	One Year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	BTS	CMW500	129942	February 10, 2020	One year
07	E-field Probe	SPEAG EX3DV4	3617	January 30, 2020	One year
08	DAE	SPEAG DAE4	777	January 8, 2020	One year
09	Dipole Validation Kit	SPEAG D750V3	1078	June 18,2020	One year
10	Dipole Validation Kit	SPEAG D835V2	4d092	June 17,2020	One year
11	Dipole Validation Kit	SPEAG D1750V2	1111	April 29,2020	One year
12	Dipole Validation Kit	SPEAG D1900V2	5d142	June 24,2020	One year
13	Dipole Validation Kit	SPEAG D2450V2	735	December 17,2019	One year
14	Dipole Validation Kit	SPEAG D2600V2	1058	June 29,2020	One year

## J.8 GRAPH RESULTS

### GSM850\_CH251 Left Cheek

Date: 8/11/2020

Electronics: DAE4 Sn777

Medium: head 835 MHz

Medium parameters used:  $f = 848.8$  MHz;  $\sigma = 0.914$  mho/m;  $\epsilon_r = 41.58$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: GSM850 848.8 MHz Duty Cycle: 1: 8.3

Probe: EX3DV4 – SN3617 ConvF(9.66,9.66,9.66)

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

Maximum value of SAR (interpolated) = 0.419 W/kg

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

Reference Value = 3.784 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.465 W/kg

**SAR(1 g) = 0.360 W/kg; SAR(10 g) = 0.281 W/kg**

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

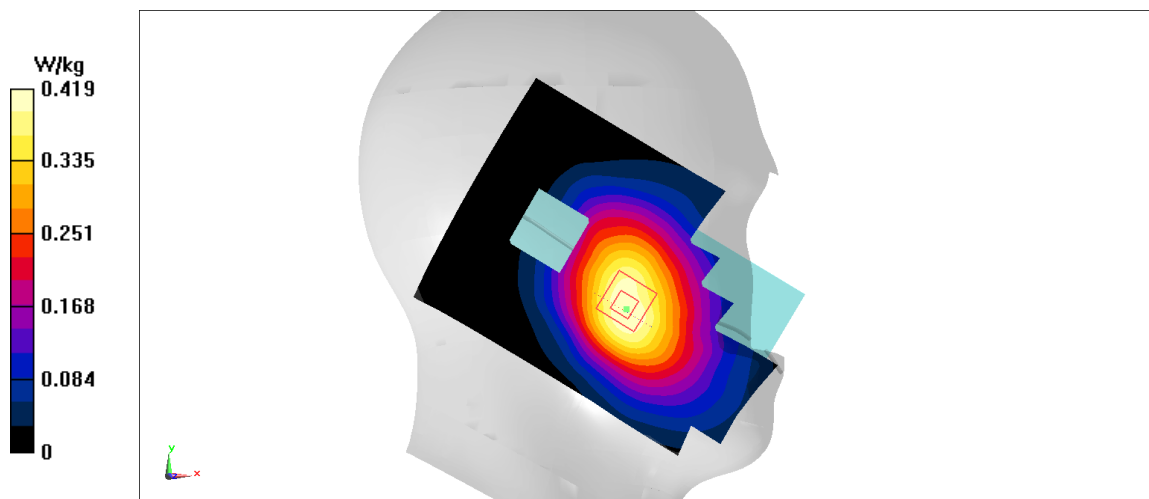


Fig J.1

**GSM850\_CH251 Rear GPRS 10mm**

Date: 8/11/2020

Electronics: DAE4 Sn777

Medium: body 835 MHz

Medium parameters used:  $f = 848.8$  MHz;  $\sigma = 0.914$  mho/m;  $\epsilon_r = 41.58$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: GSM850 848.8 MHz Duty Cycle: 1: 4

Probe: EX3DV4 – SN3617 ConvF(9.66,9.66,9.66)

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

Maximum value of SAR (interpolated) = 0.546 W/kg

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

Reference Value = 22.18 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.597 W/kg

**SAR(1 g) = 0.447 W/kg; SAR(10 g) = 0.342 W/kg**

Maximum value of SAR (measured) = 0.543 W/kg

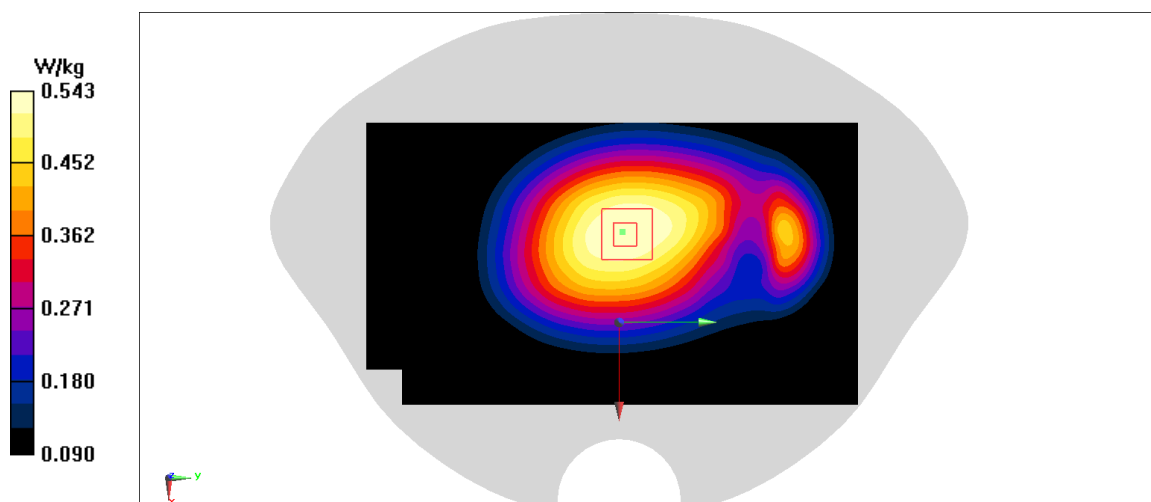


Fig J.2

**PCS1900\_CH512 Left Cheek**

Date: 8/13/2020

Electronics: DAE4 Sn777

Medium: head 1900 MHz

Medium parameters used:  $f = 1850.2$  MHz;  $\sigma = 1.342$  mho/m;  $\epsilon_r = 39.61$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: PCS1900 1850.2 MHz Duty Cycle: 1: 8.3

Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

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

Maximum value of SAR (interpolated) = 0.0988 W/kg

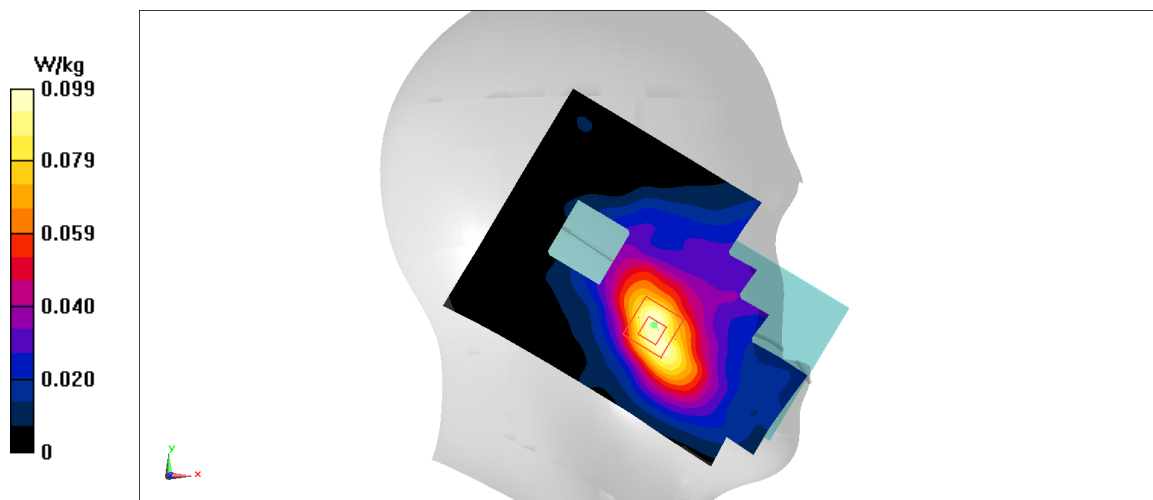
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.921 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 0.120 W/kg

**SAR(1 g) = 0.075 W/kg; SAR(10 g) = 0.047 W/kg**

Maximum value of SAR (measured) = 0.101 W/kg



**Fig J.3**

**PCS1900\_CH512 Bottom Edge GPRS 10mm**

Date: 8/13/2020

Electronics: DAE4 Sn777

Medium: body 1900 MHz

Medium parameters used:  $f = 1850.2$  MHz;  $\sigma = 1.342$  mho/m;  $\epsilon_r = 39.61$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: PCS1900 1850.2 MHz Duty Cycle: 1: 4

Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

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

Maximum value of SAR (interpolated) = 0.480 W/kg

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

Reference Value = 13.45 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.818 W/kg

**SAR(1 g) = 0.364 W/kg; SAR(10 g) = 0.177 W/kg**

Maximum value of SAR (measured) = 0.478 W/kg

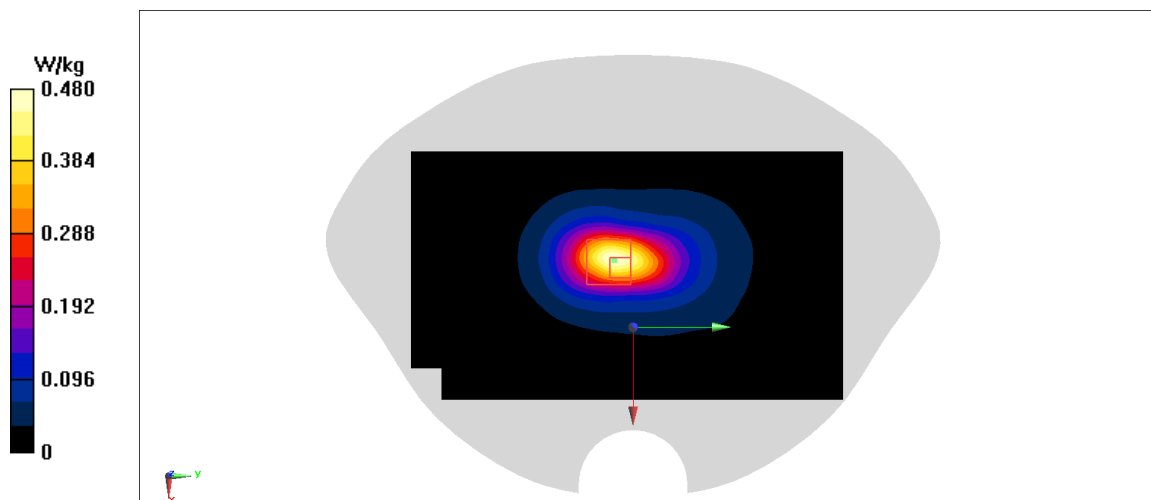


Fig J.4

**WCDMA1900-BII\_CH9400 Left Cheek**

Date: 8/13/2020

Electronics: DAE4 Sn777

Medium: head 1900 MHz

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.371$  mho/m;  $\epsilon_r = 39.57$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA1900-BII 1880 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

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

Maximum value of SAR (interpolated) = 0.181 W/kg

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

Reference Value = 1.930 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.210 W/kg

**SAR(1 g) = 0.132 W/kg; SAR(10 g) = 0.083 W/kg**

Maximum value of SAR (measured) = 0.181 W/kg

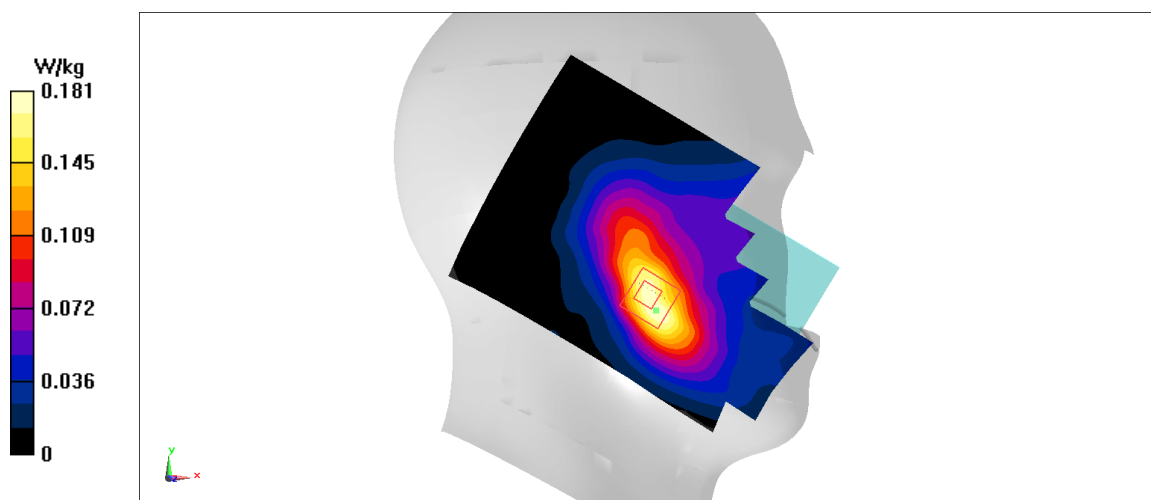


Fig J.5



**WCDMA1900-BII\_CH9538 Bottom Edge 10mm**

Date: 8/13/2020

Electronics: DAE4 Sn777

Medium: body 1900 MHz

Medium parameters used:  $f = 1907.6$  MHz;  $\sigma = 1.423$  mho/m;  $\epsilon_r = 39.91$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA1900-BII 1907.6 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

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

Maximum value of SAR (interpolated) = 0.760 W/kg

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

Reference Value = 13.79 V/m; Power Drift = 0.37 dB

Peak SAR (extrapolated) = 0.940 W/kg

**SAR(1 g) = 0.510 W/kg; SAR(10 g) = 0.263 W/kg**

Maximum value of SAR (measured) = 0.791 W/kg

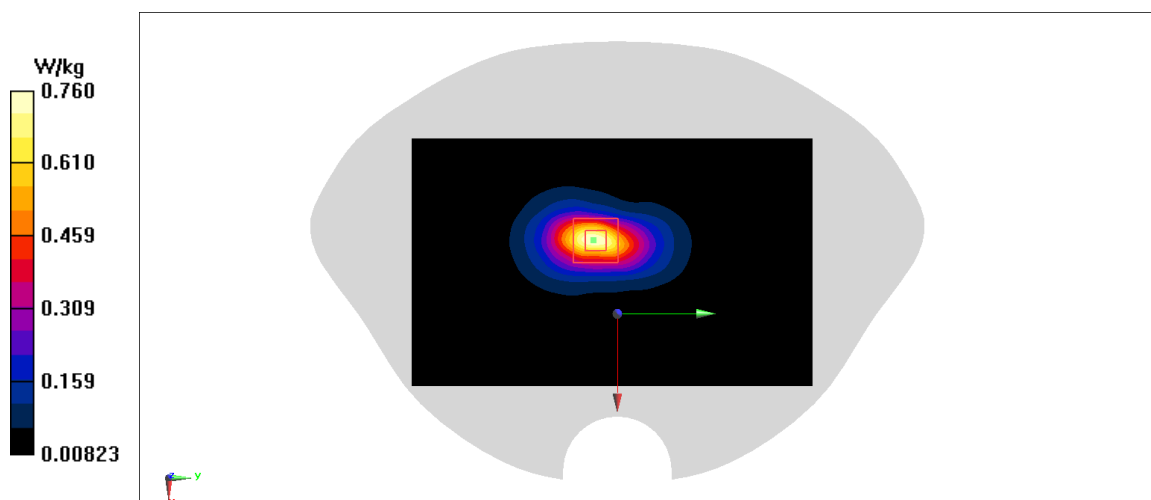


Fig J.6

**WCDMA1900-BII\_CH9262 Rear 15mm**

Date: 8/13/2020

Electronics: DAE4 Sn777

Medium: body 1900 MHz

Medium parameters used:  $f = 1852.4$ ;  $\sigma = 1.369$  mho/m;  $\epsilon_r = 39.98$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA1900-BII 1852.4 Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

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

Maximum value of SAR (interpolated) = 0.636 W/kg

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

Reference Value = 8.868 V/m; Power Drift = -0.27 dB

Peak SAR (extrapolated) = 0.770 W/kg

**SAR(1 g) = 0.442 W/kg; SAR(10 g) = 0.253 W/kg**

Maximum value of SAR (measured) = 0.644W/kg

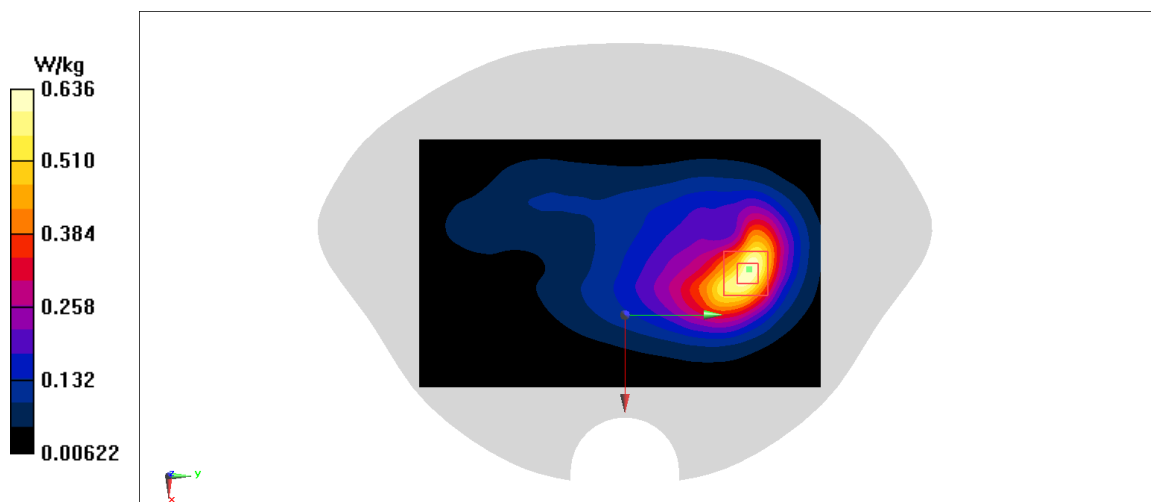


Fig J.7

**WCDMA1700-BIV\_CH1513 Left Cheek**

Date: 8/12/2020

Electronics: DAE4 Sn777

Medium: head 1750 MHz

Medium parameters used:  $f = 1752.6$  MHz;  $\sigma = 1.383$  mho/m;  $\epsilon_r = 40.68$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA1700-BIV 1752.6 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(8.41,8.41,8.41)

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

Maximum value of SAR (interpolated) = 0.229 W/kg

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

Reference Value = 3.570 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.264 W/kg

**SAR(1 g) = 0.174 W/kg; SAR(10 g) = 0.113 W/kg**

Maximum value of SAR (measured) = 0.230 W/kg

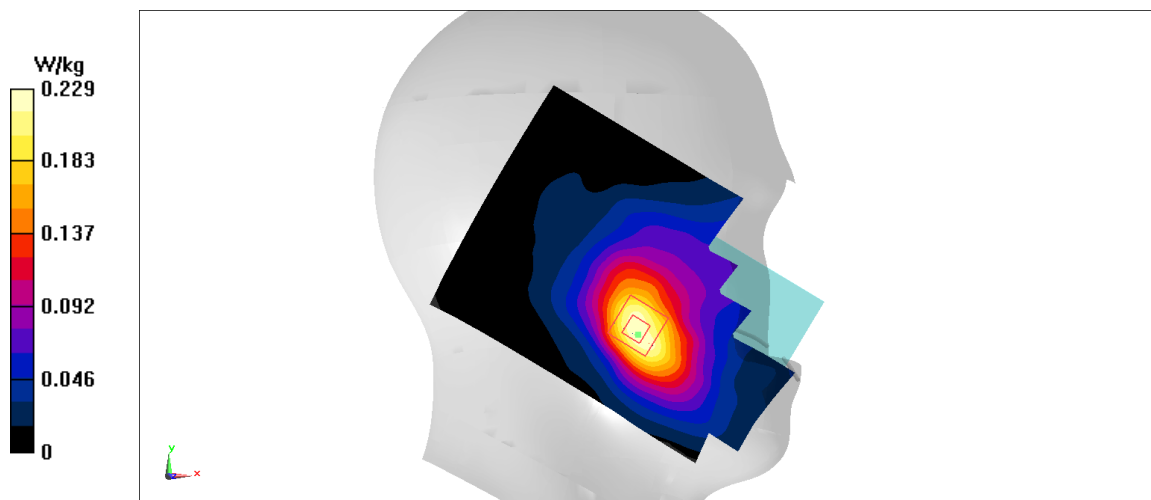


Fig J.8

**WCDMA1700-BIV\_CH1513 Rear 10mm**

Date: 8/12/2020

Electronics: DAE4 Sn777

Medium: body 1750 MHz

Medium parameters used:  $f = 1752.6$  MHz;  $\sigma = 1.383$  mho/m;  $\epsilon_r = 40.68$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA1700-BIV 1752.6 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(8.41,8.41,8.41)

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

Maximum value of SAR (interpolated) = 0.455 W/kg

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

Reference Value = 7.258 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.592 W/kg

**SAR(1 g) = 0.322 W/kg; SAR(10 g) = 0.175 W/kg**

Maximum value of SAR (measured) = 0.466 W/kg

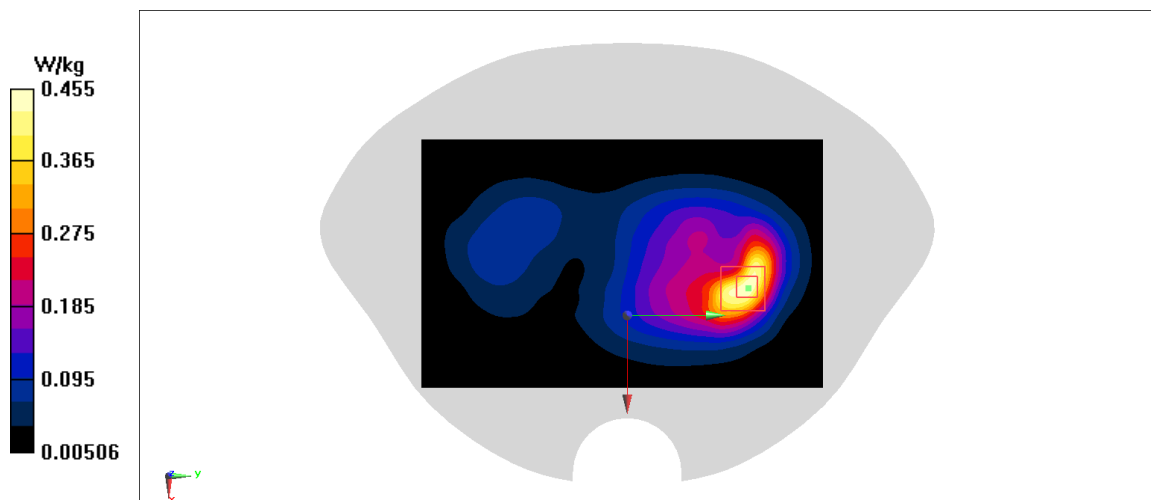


Fig J.9

**WCDMA1700-BIV\_CH1513 Rear 15mm**

Date: 8/12/2020

Electronics: DAE4 Sn777

Medium: body 1750 MHz

Medium parameters used:  $f = 1752.6$  MHz;  $\sigma = 1.383$  mho/m;  $\epsilon_r = 40.68$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA1700-BIV 1752.6 Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(8.41,8.41,8.41)

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

Maximum value of SAR (interpolated) = 0.648 W/kg

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

Reference Value = 9.321 V/m; Power Drift = -0.17 dB

Peak SAR (extrapolated) = 0.796 W/kg

**SAR(1 g) = 0.451 W/kg; SAR(10 g) = 0.259 W/kg**

Maximum value of SAR (measured) = 0.652 W/kg

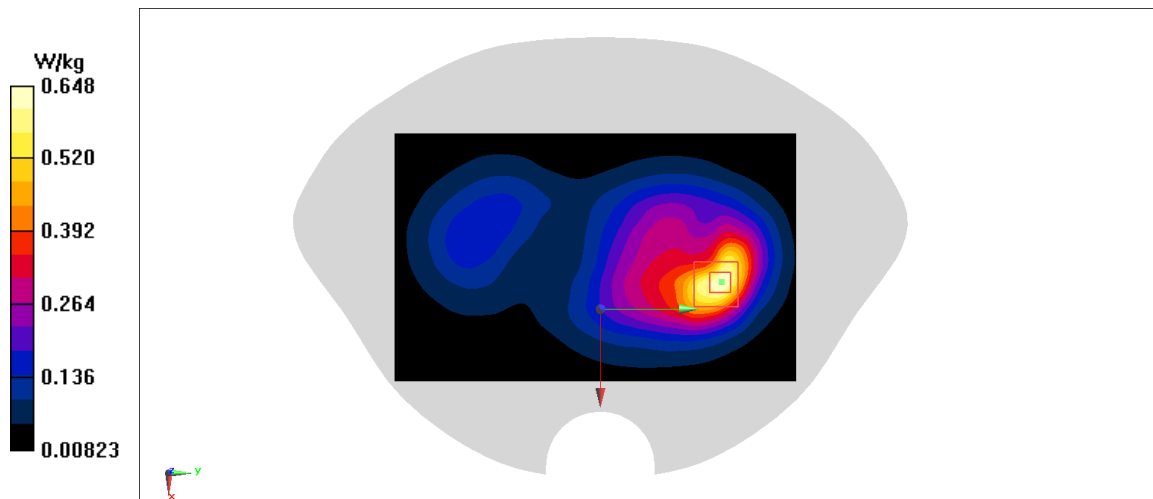


Fig J.10

**WCDMA850-BV\_CH4132 Left Cheek**

Date: 8/11/2020

Electronics: DAE4 Sn777

Medium: head 835 MHz

Medium parameters used:  $f = 826.4$  MHz;  $\sigma = 0.892$  mho/m;  $\epsilon_r = 41.61$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA850-BV 826.4 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(9.66,9.66,9.66)

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

Maximum value of SAR (interpolated) = 0.279 W/kg

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

Reference Value = 4.527 V/m; Power Drift = 0.29 dB

Peak SAR (extrapolated) = 0.306 W/kg

**SAR(1 g) = 0.238 W/kg; SAR(10 g) = 0.187 W/kg**

Maximum value of SAR (measured) = 0.282 W/kg

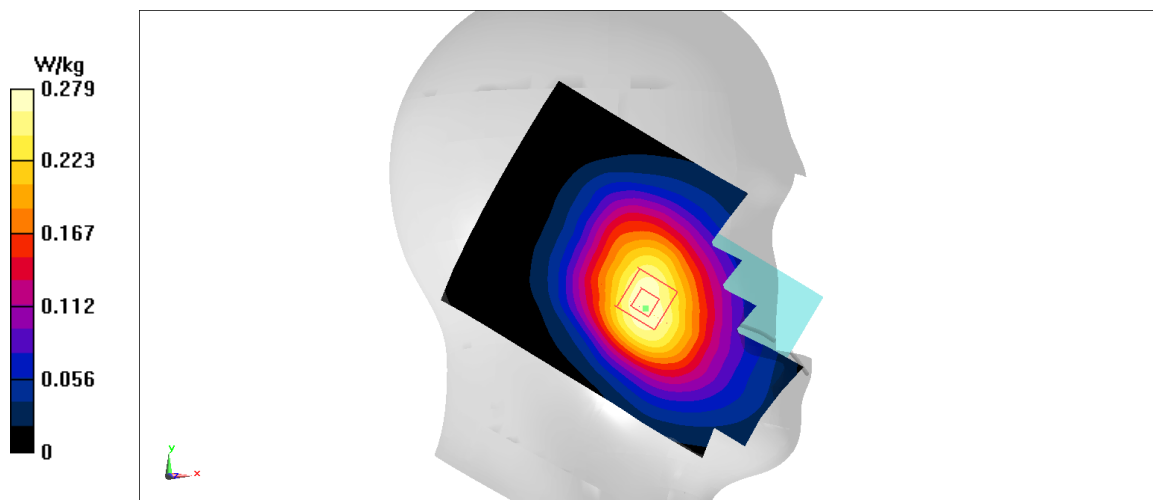


Fig J.11

**WCDMA850-BV\_CH4233 Rear 10mm**

Date: 8/11/2020

Electronics: DAE4 Sn777

Medium: body 835 MHz

Medium parameters used:  $f = 846.6$  MHz;  $\sigma = 0.928$  mho/m;  $\epsilon_r = 42.17$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WCDMA850-BV 846.6 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(9.66,9.66,9.66)

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

Maximum value of SAR (interpolated) = 0.578 W/kg

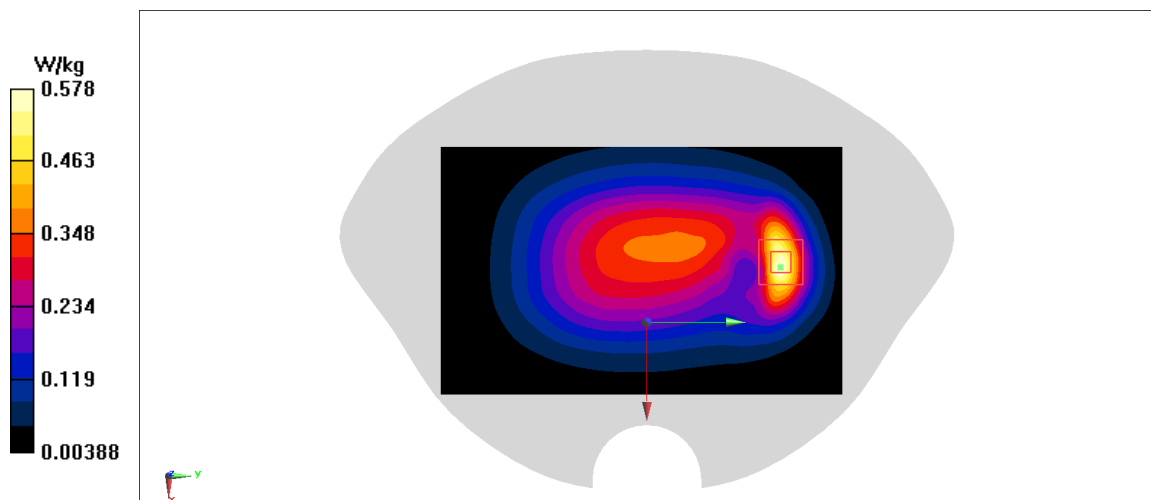
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 18.43 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.714 W/kg

**SAR(1 g) = 0.372 W/kg; SAR(10 g) = 0.205 W/kg**

Maximum value of SAR (measured) = 0.575 W/kg



**Fig J.12**

**LTE1900-FDD2\_CH19100 Right Cheek 1RB-Middle**

Date: 8/13/2020

Electronics: DAE4 Sn777

Medium: head 1900 MHz

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 39.55$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE1900-FDD2 1900 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

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

Maximum value of SAR (interpolated) = 0.245 W/kg

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

Reference Value = 2.676 V/m; Power Drift = 0.86 dB

Peak SAR (extrapolated) = 0.260 W/kg

**SAR(1 g) = 0.160 W/kg; SAR(10 g) = 0.100 W/kg**

Maximum value of SAR (measured) = 0.226 W/kg

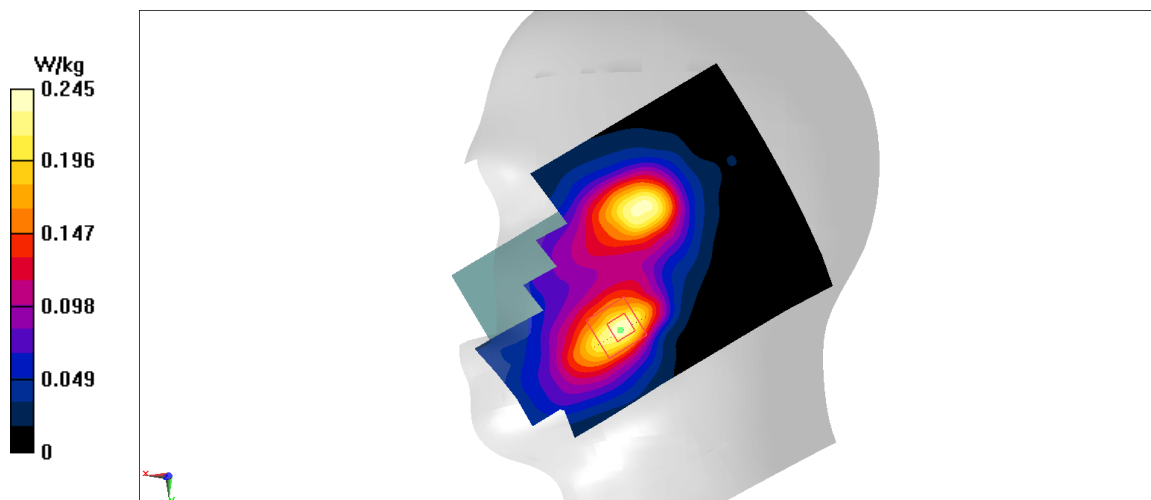


Fig J.13



**LTE1900-FDD2\_CH19100 50RB-Middle Bottom Edge 10mm (hotspot)**

Date: 8/13/2020

Electronics: DAE4 Sn777

Medium: body 1900 MHz

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.39$  mho/m;  $\epsilon_r = 39.55$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE1900-FDD2 1900 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

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

Maximum value of SAR (interpolated) = 0.777 W/kg

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

Reference Value = 18.85 V/m; Power Drift = 0.22 dB

Peak SAR (extrapolated) = 0.974 W/kg

**SAR(1 g) = 0.522 W/kg; SAR(10 g) = 0.266 W/kg**

Maximum value of SAR (measured) = 0.795 W/kg

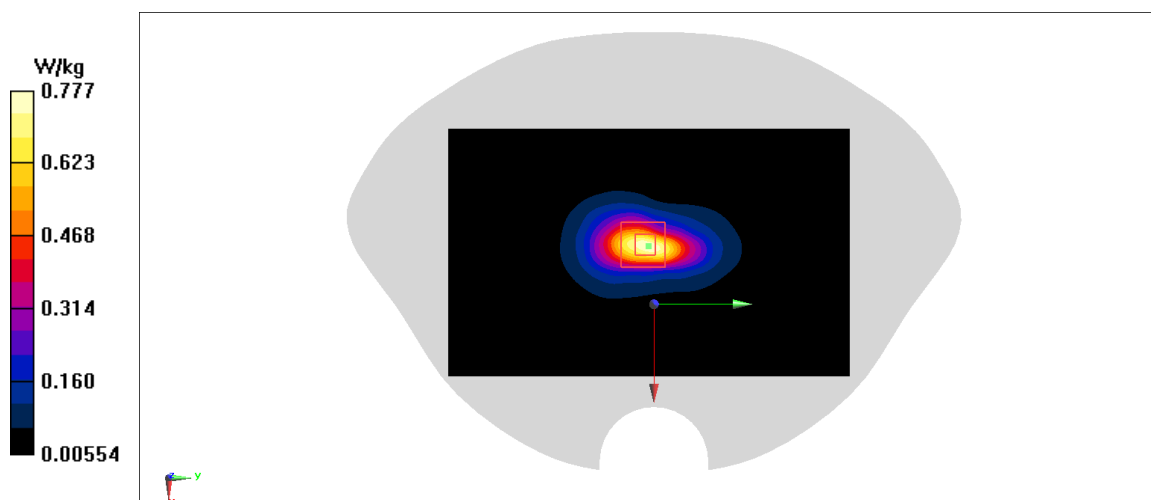


Fig J.14

**LTE1900-FDD2\_CH19100 1RB-Middle Rear 15mm**

Date: 8/13/2020

Electronics: DAE4 Sn777

Medium: body 1900 MHz

Medium parameters used:  $f = 1900 \text{ MHz}$ ;  $\sigma = 1.39 \text{ mho/m}$ ;  $\epsilon_r = 39.55$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE1900-FDD2 1900 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

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

Maximum value of SAR (interpolated) = 0.747 W/kg

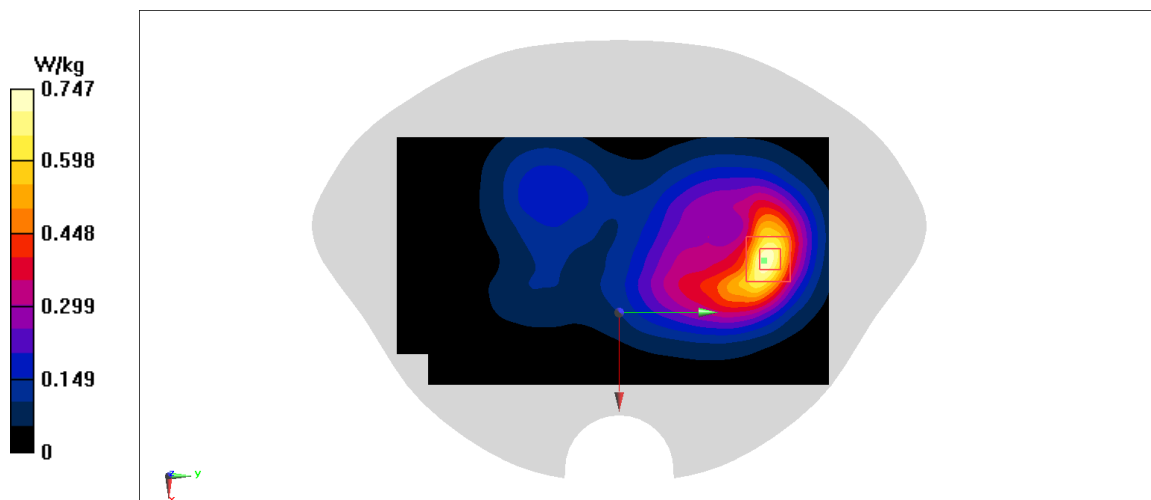
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 7.874 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.856 W/kg

**SAR(1 g) = 0.499 W/kg; SAR(10 g) = 0.284 W/kg**

Maximum value of SAR (measured) = 0.726 W/kg



**Fig J.15**

**LTE850-FDD5\_CH20450 Left Cheek 1RB-Middle**

Date: 8/11/2020

Electronics: DAE4 Sn777

Medium: head 835 MHz

Medium parameters used:  $f = 829$  MHz;  $\sigma = 0.895$  mho/m;  $\epsilon_r = 41.61$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE850-FDD5 829 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(9.66,9.66,9.66)

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

Maximum value of SAR (interpolated) = 0.300 W/kg

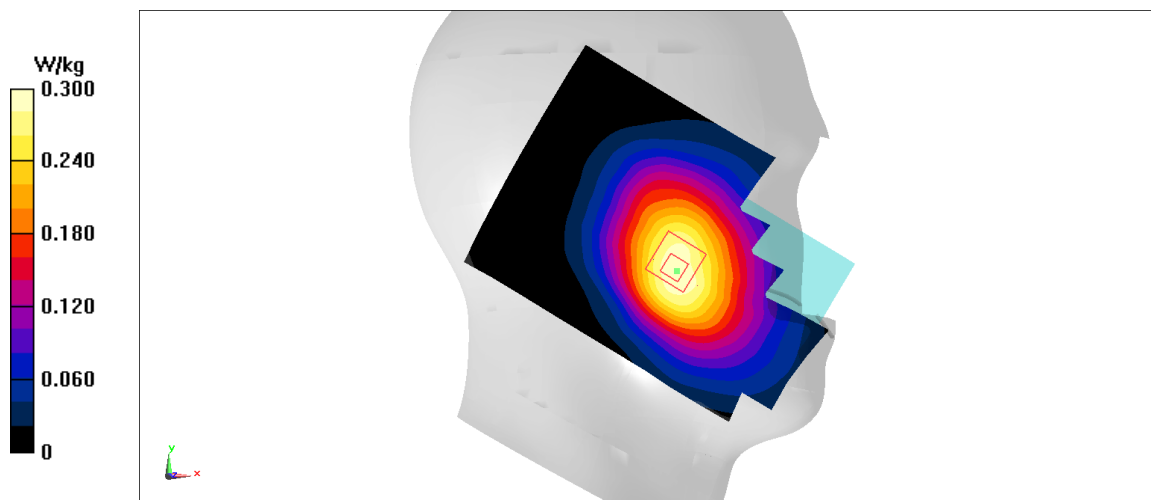
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.677 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.330 W/kg

**SAR(1 g) = 0.263 W/kg; SAR(10 g) = 0.207 W/kg**

Maximum value of SAR (measured) = 0.306 W/kg



**Fig J.16**

**LTE850-FDD5\_CH20450 1RB-Middle Rear 10mm**

Date: 8/11/2020

Electronics: DAE4 Sn777

Medium: body 835 MHz

Medium parameters used:  $f = 829$  MHz;  $\sigma = 0.895$  mho/m;  $\epsilon_r = 41.61$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE850-FDD5 829 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(9.66,9.66,9.66)

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

Maximum value of SAR (interpolated) = 0.644 W/kg

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

Reference Value = 19.15 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.811 W/kg

**SAR(1 g) = 0.415 W/kg; SAR(10 g) = 0.227 W/kg**

Maximum value of SAR (measured) = 0.656 W/kg

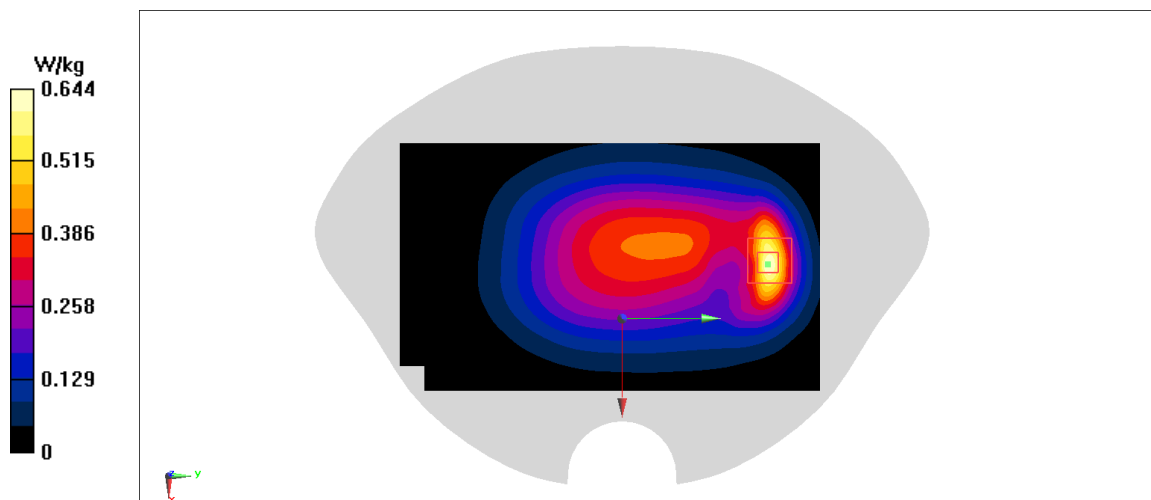


Fig J.17

**LTE2500-FDD7\_CH21100 Right Cheek 1RB-Middle**

Date: 8/16/2020

Electronics: DAE4 Sn777

Medium: head 2600 MHz

Medium parameters used:  $f = 2535$  MHz;  $\sigma = 1.904$  mho/m;  $\epsilon_r = 39.65$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE2500-FDD7 2535 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(7.52,7.52,7.52)

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

Maximum value of SAR (interpolated) = 0.139 W/kg

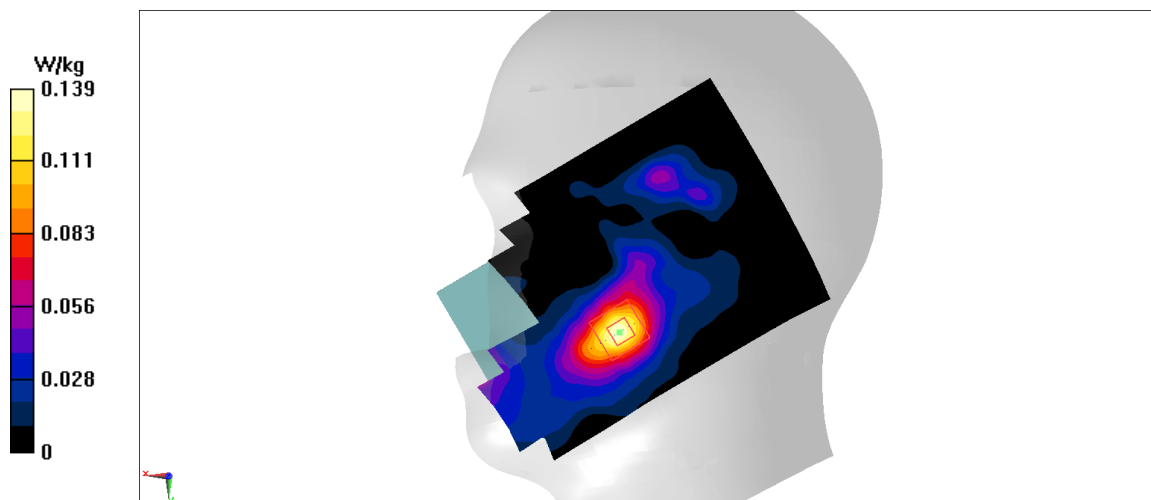
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.421 V/m; Power Drift = 2.26 dB

Peak SAR (extrapolated) = 0.160 W/kg

**SAR(1 g) = 0.089 W/kg; SAR(10 g) = 0.046 W/kg**

Maximum value of SAR (measured) = 0.133 W/kg



**Fig J.18**

**LTE2500-FDD7\_CH21100 50RB-Middle Bottom Edge 10mm**

Date: 8/16/2020

Electronics: DAE4 Sn777

Medium: body 2600 MHz

Medium parameters used:  $f = 2535$  MHz;  $\sigma = 1.904$  mho/m;  $\epsilon_r = 39.65$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE2500-FDD7 2535 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(7.65,7.65,7.65)

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

Maximum value of SAR (interpolated) = 1.62 W/kg

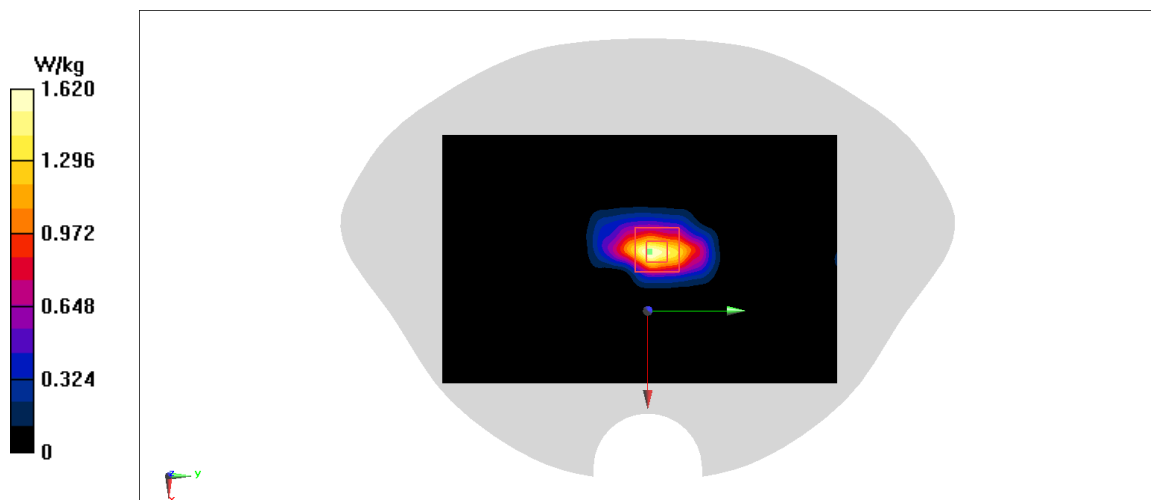
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.15 V/m; Power Drift = 0.19 dB

Peak SAR (extrapolated) = 1.89 W/kg

**SAR(1 g) = 0.910 W/kg; SAR(10 g) = 0.425 W/kg**

Maximum value of SAR (measured) = 1.52 W/kg



**Fig J.19**

**LTE2500-FDD7\_CH21350 1RB-Middle Rear 15mm**

Date: 8/16/2020

Electronics: DAE4 Sn777

Medium: body 2600 MHz

Medium parameters used:  $f = 2560$  MHz;  $\sigma = 1.902$  mho/m;  $\epsilon_r = 38.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE2500-FDD7 2560 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(7.65,7.65,7.65)

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

Maximum value of SAR (interpolated) = 1.40 W/kg

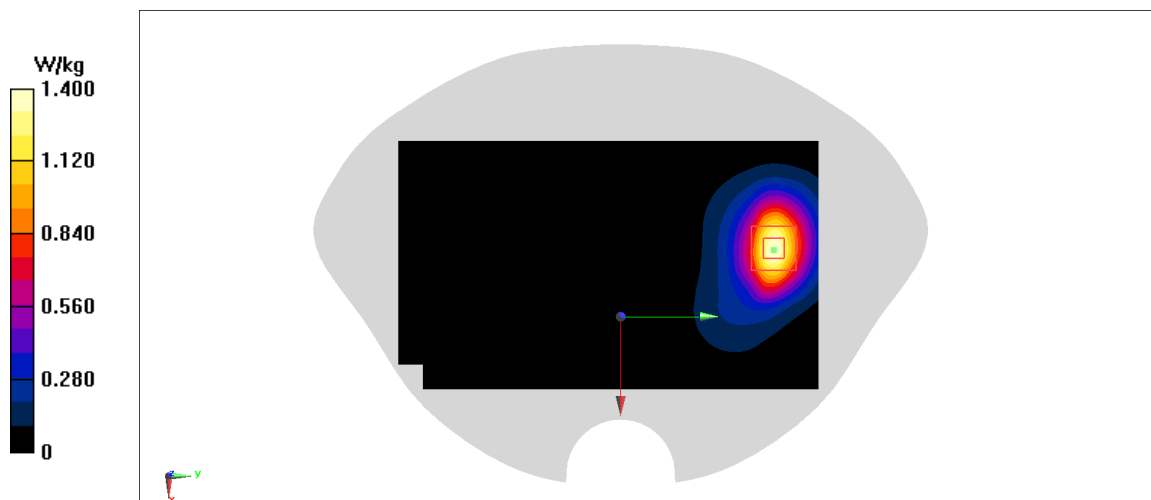
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.762 V/m; Power Drift = -1.22 dB

Peak SAR (extrapolated) = 1.67 W/kg

**SAR(1 g) = 0.874 W/kg; SAR(10 g) = 0.452 W/kg**

Maximum value of SAR (measured) = 1.37 W/kg



**Fig J.20**

**LTE750-FDD13\_CH23230 Left Cheek 1RB-Middle**

Date: 8/10/2020

Electronics: DAE4 Sn777

Medium: head 750 MHz

Medium parameters used:  $f = 782 \text{ MHz}$ ;  $\sigma = 0.928 \text{ mho/m}$ ;  $\epsilon_r = 41.66$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $22.5^\circ\text{C}$ , Liquid Temperature:  $22.3^\circ\text{C}$

Communication System: LTE750-FDD13 782 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(10.07,10.07,10.07)

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

Maximum value of SAR (interpolated) =  $0.236 \text{ W/kg}$

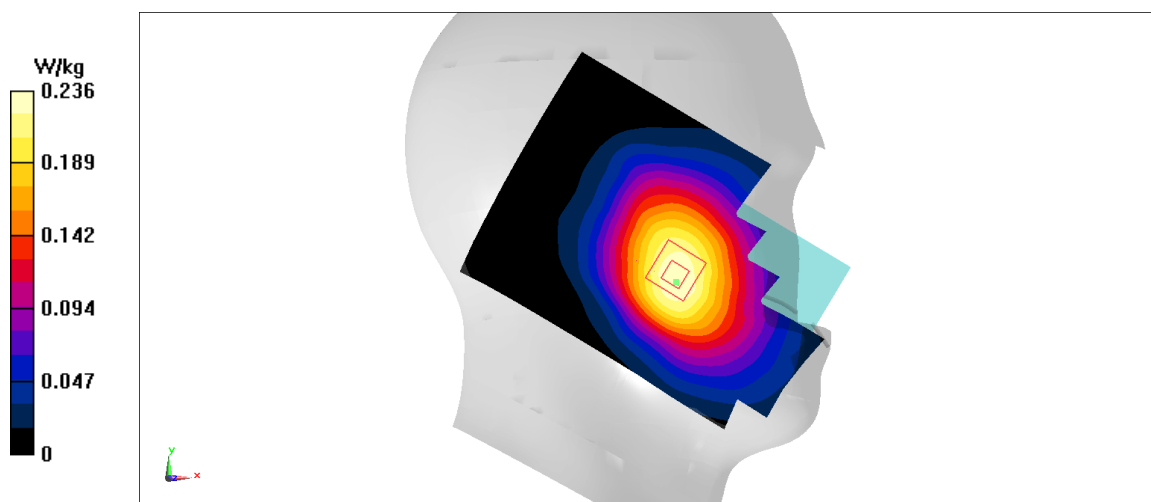
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $3.967 \text{ V/m}$ ; Power Drift =  $0.05 \text{ dB}$

Peak SAR (extrapolated) =  $0.256 \text{ W/kg}$

**SAR(1 g) =  $0.202 \text{ W/kg}$ ; SAR(10 g) =  $0.160 \text{ W/kg}$**

Maximum value of SAR (measured) =  $0.237 \text{ W/kg}$



**Fig J.21**



**LTE750-FDD13\_CH23230 1RB-Middle Rear 10mm**

Date: 8/10/2020

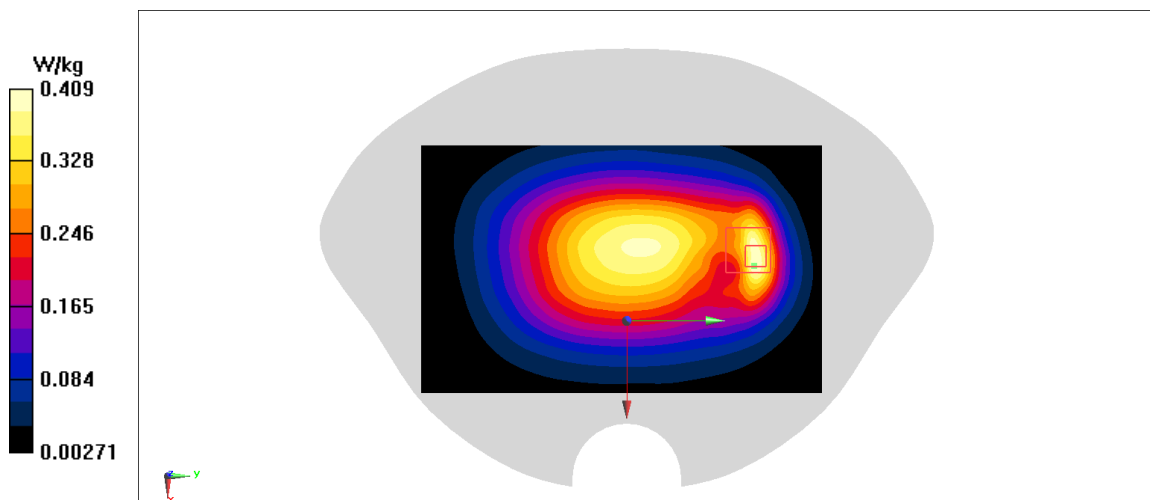
Electronics: DAE4 Sn777

Medium: body 750 MHz

Medium parameters used:  $f = 782 \text{ MHz}$ ;  $\sigma = 0.928 \text{ mho/m}$ ;  $\epsilon_r = 41.66$ ;  $\rho = 1000 \text{ kg/m}^3$ Ambient Temperature:  $22.5^\circ\text{C}$ , Liquid Temperature:  $22.3^\circ\text{C}$ 

Communication System: LTE750-FDD13 782 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(10.07,10.07,10.07)

**Area Scan (71x121x1):** Interpolated grid:  $dx=1.000 \text{ mm}$ ,  $dy=1.000 \text{ mm}$ Maximum value of SAR (interpolated) =  $0.409 \text{ W/kg}$ **Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$ Reference Value =  $19.24 \text{ V/m}$ ; Power Drift =  $0.01 \text{ dB}$ Peak SAR (extrapolated) =  $0.525 \text{ W/kg}$ **SAR(1 g) =  $0.276 \text{ W/kg}$ ; SAR(10 g) =  $0.162 \text{ W/kg}$** Maximum value of SAR (measured) =  $0.426 \text{ W/kg}$ **Fig J.22**

**LTE700-FDD17\_CH23780 Left Cheek 1RB-Middle**

Date: 8/10/2020

Electronics: DAE4 Sn777

Medium: head 750 MHz

Medium parameters used:  $f = 709$  MHz;  $\sigma = 0.843$  mho/m;  $\epsilon_r = 41.88$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE700-FDD17 709 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(10.07,10.07,10.07)

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

Maximum value of SAR (interpolated) = 0.0999 W/kg

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

Reference Value = 3.204 V/m; Power Drift = -0.22 dB

Peak SAR (extrapolated) = 0.106 W/kg

**SAR(1 g) = 0.085 W/kg; SAR(10 g) = 0.068 W/kg**

Maximum value of SAR (measured) = 0.0986 W/kg

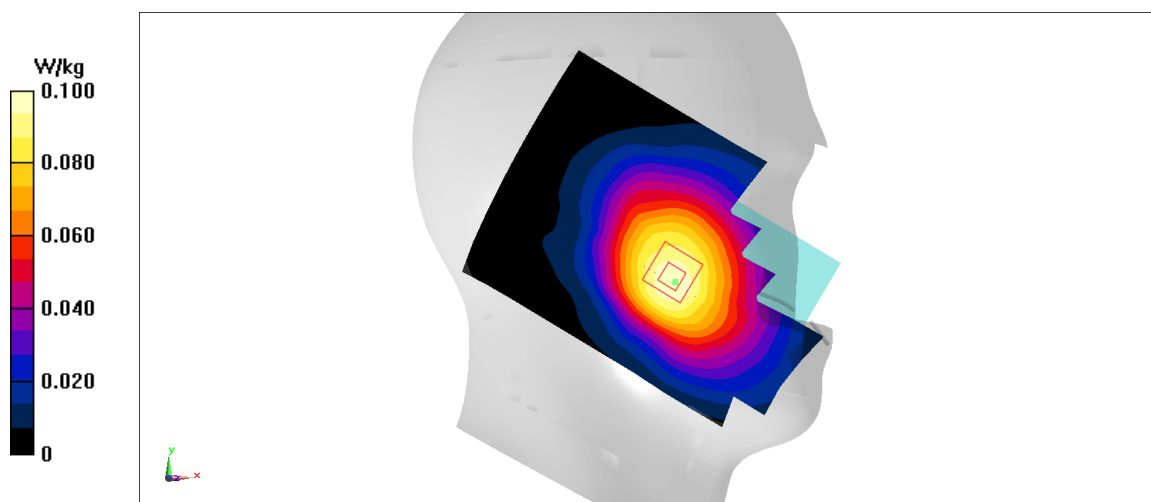


Fig J.23

**LTE700-FDD17\_CH23780 1RB-Middle Rear 10mm**

Date: 8/10/2020

Electronics: DAE4 Sn777

Medium: body 750 MHz

Medium parameters used:  $f = 709$  MHz;  $\sigma = 0.843$  mho/m;  $\epsilon_r = 41.88$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE700-FDD17 709 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(10.07,10.07,10.07)

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

Maximum value of SAR (interpolated) = 0.216 W/kg

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

Reference Value = 14.31 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 0.280 W/kg

**SAR(1 g) = 0.172 W/kg; SAR(10 g) = 0.133 W/kg**

Maximum value of SAR (measured) = 0.226W/kg

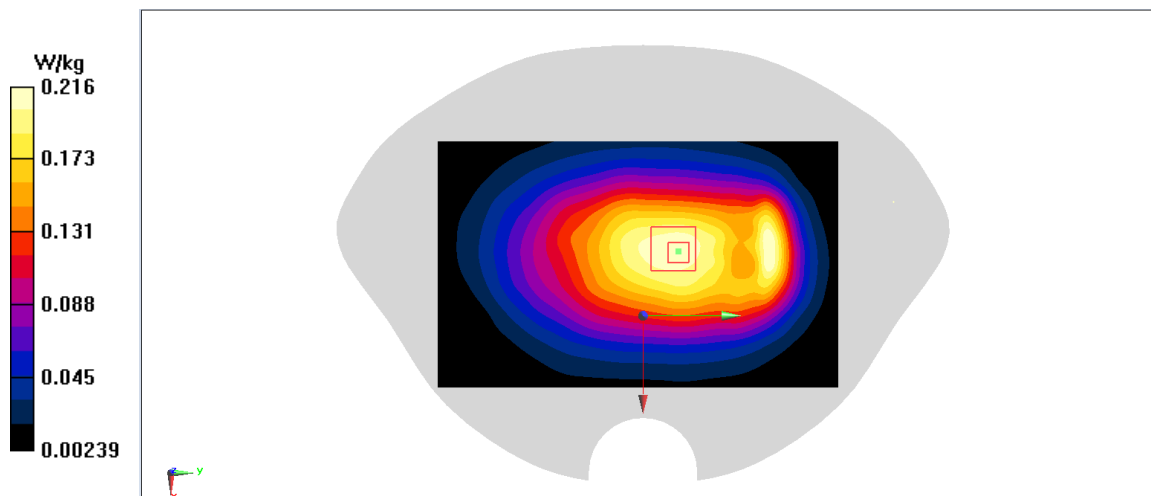


Fig J.24

**LTE700-FDD28\_CH 27460 Left Cheek 1RB-Middle**

Date: 8/10/2020

Electronics: DAE4 Sn777

Medium: head 750 MHz

Medium parameters used:  $f = 728$  MHz;  $\sigma = 0.845$  mho/m;  $\epsilon_r = 41.86$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE700-FDD28 728 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617

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

Maximum value of SAR (interpolated) = 0.131 W/kg

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

Reference Value = 3.602 V/m; Power Drift = -1.53 dB

Peak SAR (extrapolated) = 0.149 W/kg

**SAR(1 g) = 0.117 W/kg; SAR(10 g) = 0.096 W/kg**

Maximum value of SAR (measured) = 0.136 W/kg

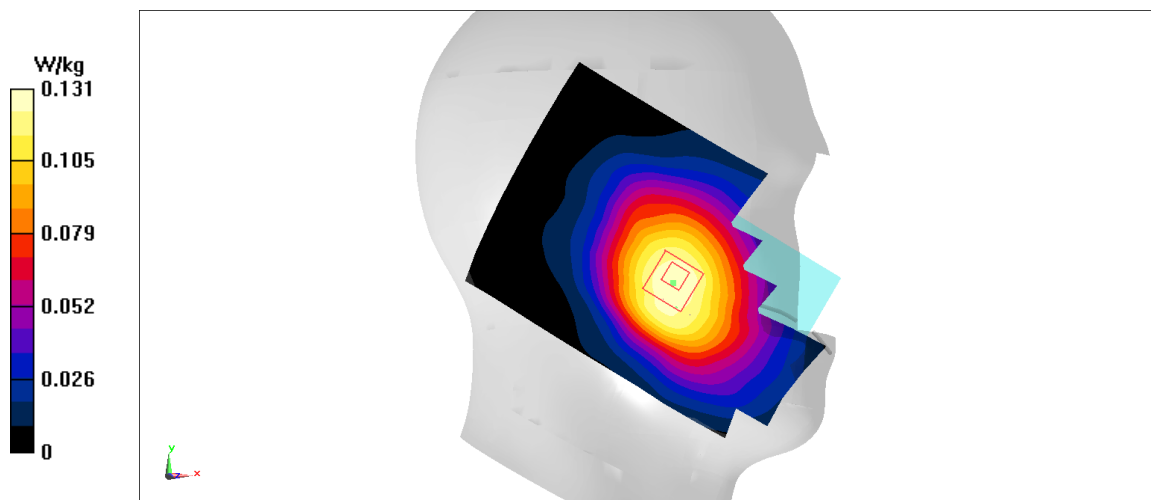


Fig J.25

**LTE700-FDD28\_CH 27460 1RB-Middle Rear 10mm**

Date: 8/10/2020

Electronics: DAE4 Sn777

Medium: body 750 MHz

Medium parameters used:  $f = 728 \text{ MHz}$ ;  $\sigma = 0.845 \text{ mho/m}$ ;  $\epsilon_r = 41.86$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $22.5^\circ\text{C}$ , Liquid Temperature:  $22.3^\circ\text{C}$

Communication System: LTE700-FDD28 728 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617

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

Maximum value of SAR (interpolated) =  $0.169 \text{ W/kg}$

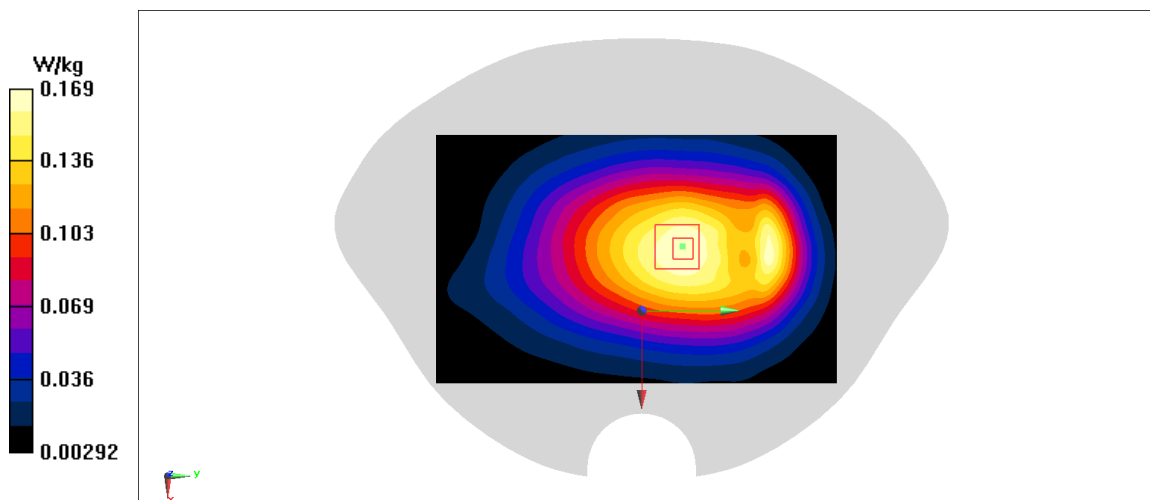
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $12.40 \text{ V/m}$ ; Power Drift =  $-0.03 \text{ dB}$

Peak SAR (extrapolated) =  $0.187 \text{ W/kg}$

**SAR(1 g) =  $0.140 \text{ W/kg}$ ; SAR(10 g) =  $0.107 \text{ W/kg}$**

Maximum value of SAR (measured) =  $0.170 \text{ W/kg}$



**Fig J.26**

**LTE1700-FDD66\_CH132572 Left Cheek 1RB-Middle**

Date: 8/12/2020

Electronics: DAE4 Sn777

Medium: head 1750 MHz

Medium parameters used:  $f = 1770$  MHz;  $\sigma = 1.406$  mho/m;  $\epsilon_r = 39.92$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE1700-FDD66 728 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(8.41,8.41,8.41)

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

Maximum value of SAR (interpolated) = 0.244 W/kg

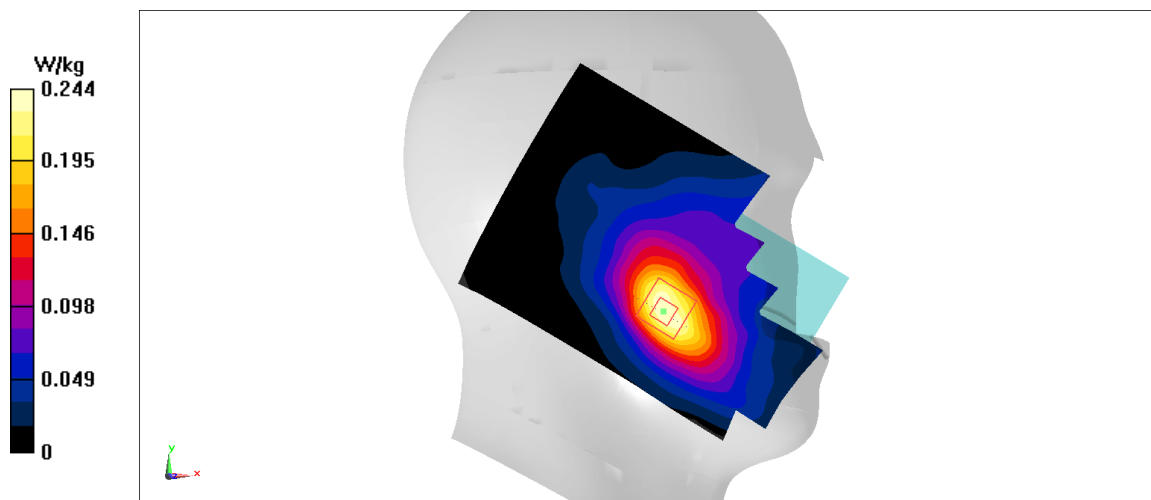
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.239 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.290 W/kg

**SAR(1 g) = 0.185 W/kg; SAR(10 g) = 0.117 W/kg**

Maximum value of SAR (measured) = 0.244 W/kg



**Fig J.27**

**LTE1700-FDD66\_CH132322 1RB-Middle Rear 10mm**

Date: 8/12/2020

Electronics: DAE4 Sn777

Medium: body 1750 MHz

Medium parameters used:  $f = 1745$  MHz;  $\sigma = 1.391$  mho/m;  $\epsilon_r = 39.96$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE1700-FDD66 728 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(8.41,8.41,8.41)

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

Maximum value of SAR (interpolated) = 0.637 W/kg

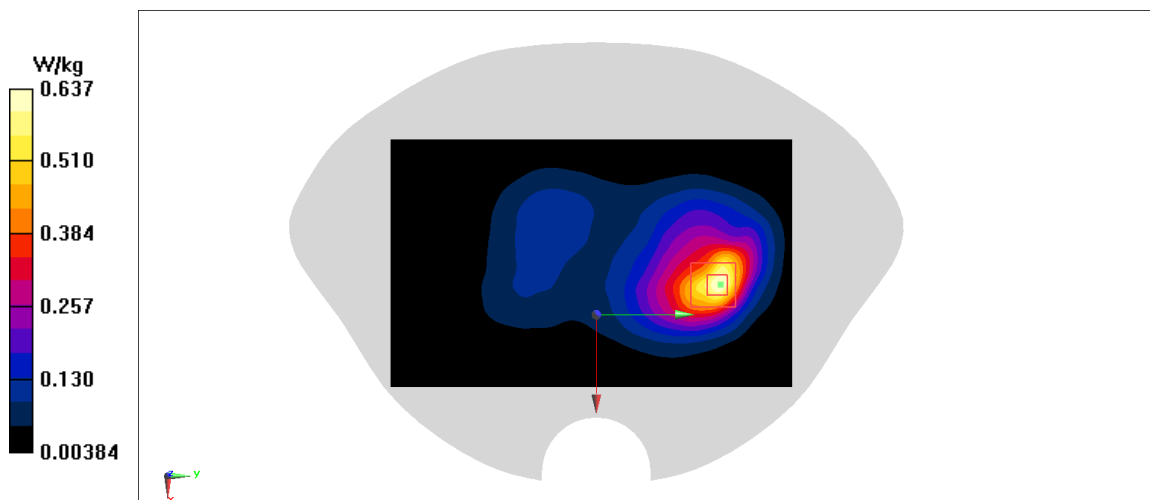
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.782 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 0.745 W/kg

**SAR(1 g) = 0.407 W/kg; SAR(10 g) = 0.229 W/kg**

Maximum value of SAR (measured) = 0.598 W/kg



**Fig J.28**

**LTE1700-FDD66\_CH132572 1RB-Middle Rear 15mm**

Date: 8/12/2020

Electronics: DAE4 Sn777

Medium: body 1750 MHz

Medium parameters used:  $f = 1770$  MHz;  $\sigma = 1.406$  mho/m;  $\epsilon_r = 39.92$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: LTE1700-FDD66 2560 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(8.41,8.41,8.41)

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

Maximum value of SAR (interpolated) = 0.712 W/kg

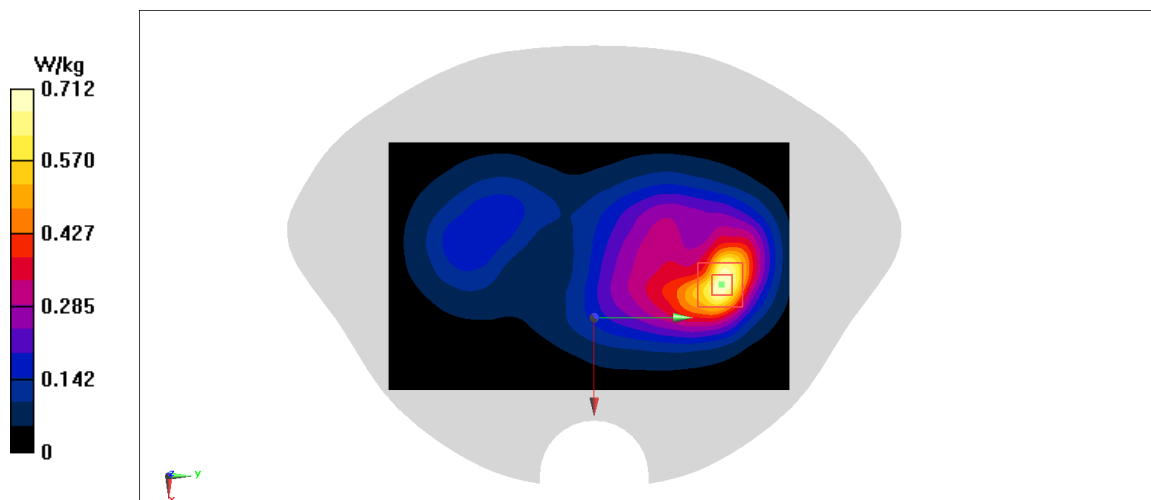
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.385 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.872 W/kg

**SAR(1 g) = 0.494 W/kg; SAR(10 g) = 0.282 W/kg**

Maximum value of SAR (measured) = 0.718 W/kg



**Fig J.29**



**WLAN2450\_CH6 Right Tilt**

Date: 8/15/2020

Electronics: DAE4 Sn777

Medium: head 2450 MHz

Medium parameters used:  $f = 2437$  MHz;  $\sigma = 1.772$  mho/m;  $\epsilon_r = 39.07$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WLAN2450 2437 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(7.65,7.65,7.65)

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

Maximum value of SAR (interpolated) = 0.613 W/kg

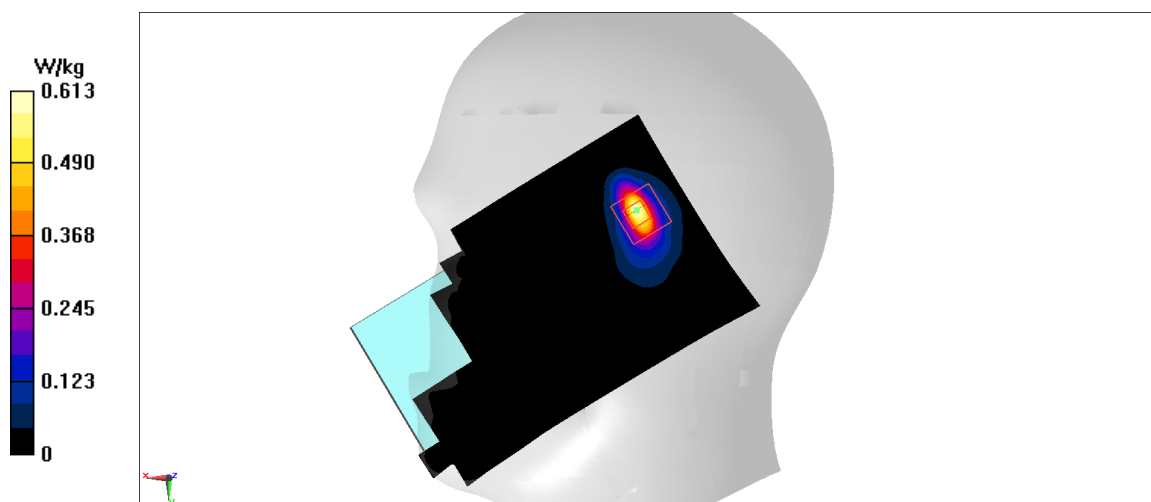
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 12.10 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.810 W/kg

**SAR(1 g) = 0.363 W/kg; SAR(10 g) = 0.146 W/kg**

Maximum value of SAR (measured) = 0.621 W/kg



**Fig J.30**

**WLAN2450\_CH6 Top Edge 10mm**

Date: 8/15/2020

Electronics: DAE4 Sn777

Medium: body 2450 MHz

Medium parameters used:  $f = 2437$  MHz;  $\sigma = 1.772$  mho/m;  $\epsilon_r = 39.07$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C

Communication System: WLAN2450 2437 MHz Duty Cycle: 1: 1

Probe: EX3DV4 – SN3617 ConvF(7.65,7.65,7.65)

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

Maximum value of SAR (interpolated) = 0.669 W/kg

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

Reference Value = 6.984 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.308 W/kg

**SAR(1 g) = 0.150 W/kg; SAR(10 g) = 0.065 W/kg**

Maximum value of SAR (measured) = 0.239 W/kg

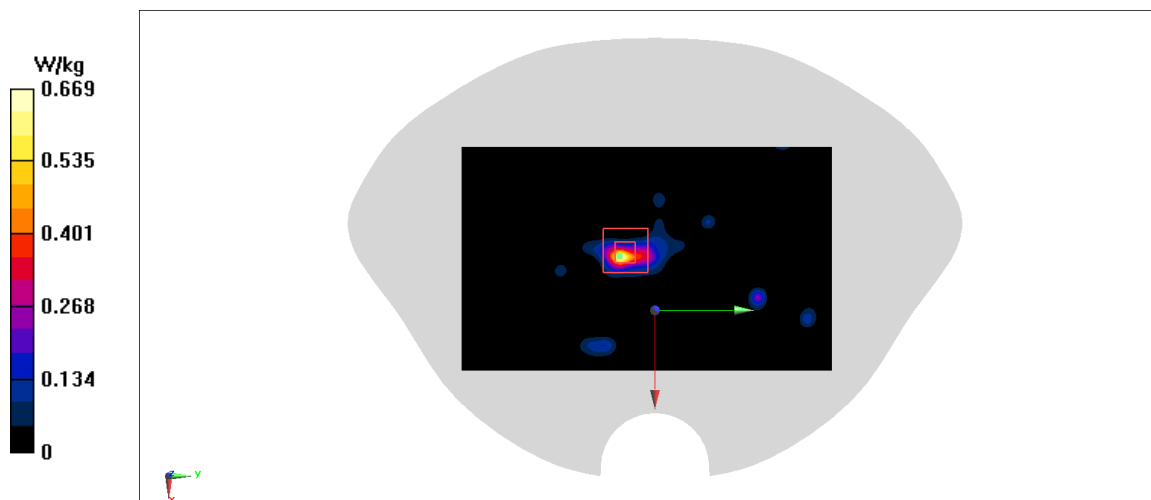


Fig J.31

## J.9 SYSTEM VALIDATION RESULTS

### 750 MHz

Date: 8/10/2020

Electronics: DAE4 Sn777

Medium: Head 750 MHz

Medium parameters used:  $f = 750 \text{ MHz}$ ;  $\sigma = 0.898 \text{ mho/m}$ ;  $\epsilon_r = 41.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $22.5^\circ\text{C}$  Liquid Temperature:  $22.3^\circ\text{C}$

Communication System: CW Frequency: 750 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(10.07,10.07,10.07)

**System Validation /Area Scan (81x191x1):** Interpolated grid:  $dx=1.000 \text{ mm}$ ,  $dy=1.000 \text{ mm}$

Reference Value = 55.82 V/m; Power Drift = 0.03

**Fast SAR: SAR(1 g) = 2.07 W/kg; SAR(10 g) = 1.41 W/kg**

Maximum value of SAR (interpolated) = 2.79 W/kg

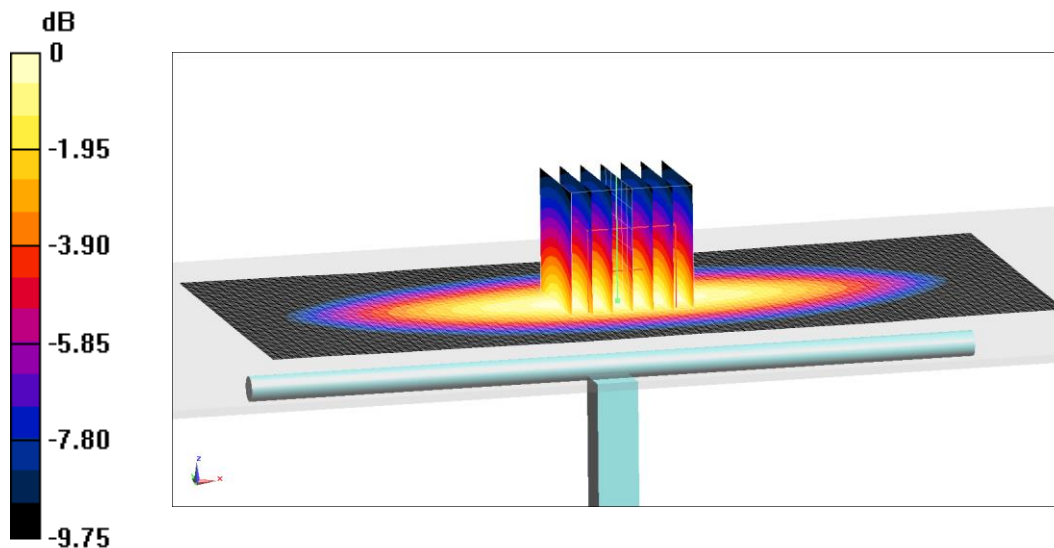
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 55.82 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 3.46 W/kg

**SAR(1 g) = 2.11 W/kg; SAR(10 g) = 1.37 W/kg**

Maximum value of SAR (measured) = 2.82 W/kg



0 dB = 2.82 W/kg = 4.5 dB W/kg

**Fig.B.1 validation 750 MHz 250mW**

**835 MHz**

Date: 8/11/2020

Electronics: DAE4 Sn777

Medium: Head 835 MHz

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.901 \text{ mho/m}$ ;  $\epsilon_r = 41.6$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $22.5^\circ\text{C}$  Liquid Temperature:  $22.3^\circ\text{C}$

Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(9.66,9.66,9.66)

**System Validation /Area Scan (81x191x1):** Interpolated grid:  $dx=1.000 \text{ mm}$ ,  $dy=1.000 \text{ mm}$

Reference Value =  $57.4 \text{ V/m}$ ; Power Drift = 0.04

**Fast SAR: SAR(1 g) =  $2.37 \text{ W/kg}$ ; SAR(10 g) =  $1.53 \text{ W/kg}$**

Maximum value of SAR (interpolated) =  $3.18 \text{ W/kg}$

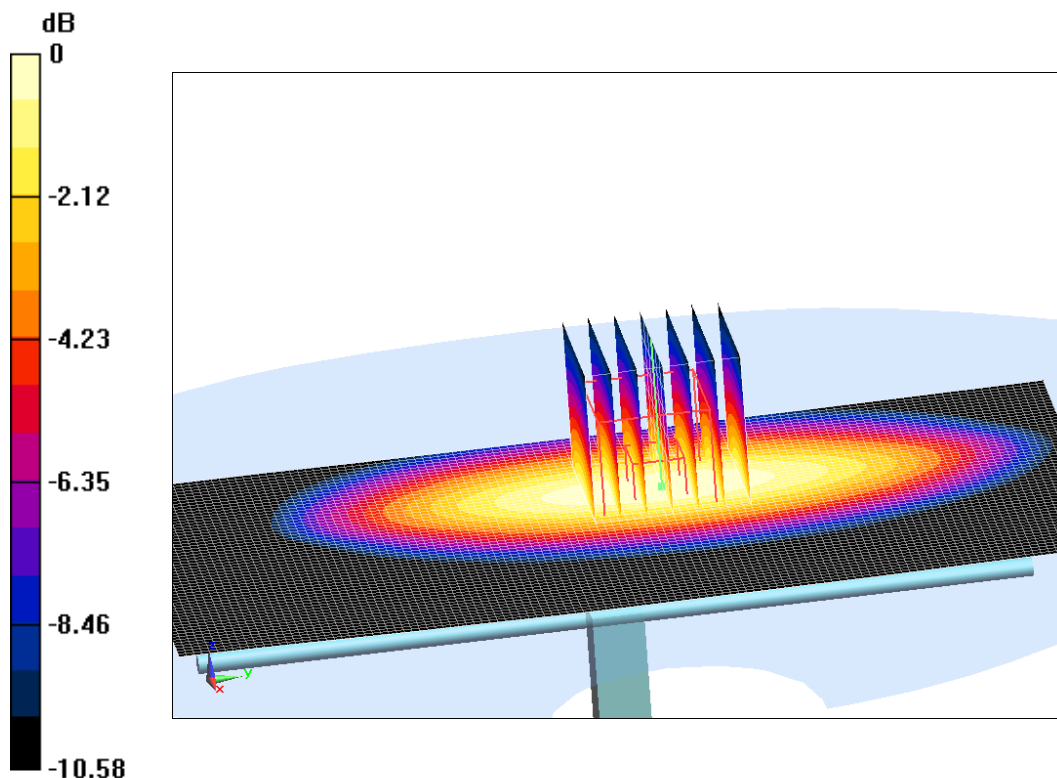
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $57.4 \text{ V/m}$ ; Power Drift = 0.04 dB

Peak SAR (extrapolated) =  $3.78 \text{ W/kg}$

**SAR(1 g) =  $2.4 \text{ W/kg}$ ; SAR(10 g) =  $1.55 \text{ W/kg}$**

Maximum value of SAR (measured) =  $3.29 \text{ W/kg}$



0 dB =  $3.29 \text{ W/kg} = 5.17 \text{ dB W/kg}$

**Fig.B.2 validation 835 MHz 250mW**

**1750 MHz**

Date: 8/12/2020

Electronics: DAE4 Sn777

Medium: Head 1750 MHz

Medium parameters used:  $f = 1750 \text{ MHz}$ ;  $\sigma = 1.38 \text{ mho/m}$ ;  $\epsilon_r = 40.68$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

Communication System: CW Frequency: 1750 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(8.41,8.41,8.41)

**System Validation /Area Scan (81x191x1):** Interpolated grid:  $dx=1.000 \text{ mm}$ ,  $dy=1.000 \text{ mm}$

Reference Value = 92.32 V/m; Power Drift = 0.06

**Fast SAR: SAR(1 g) = 8.76 W/kg; SAR(10 g) = 4.68 W/kg**

Maximum value of SAR (interpolated) = 14.24 W/kg

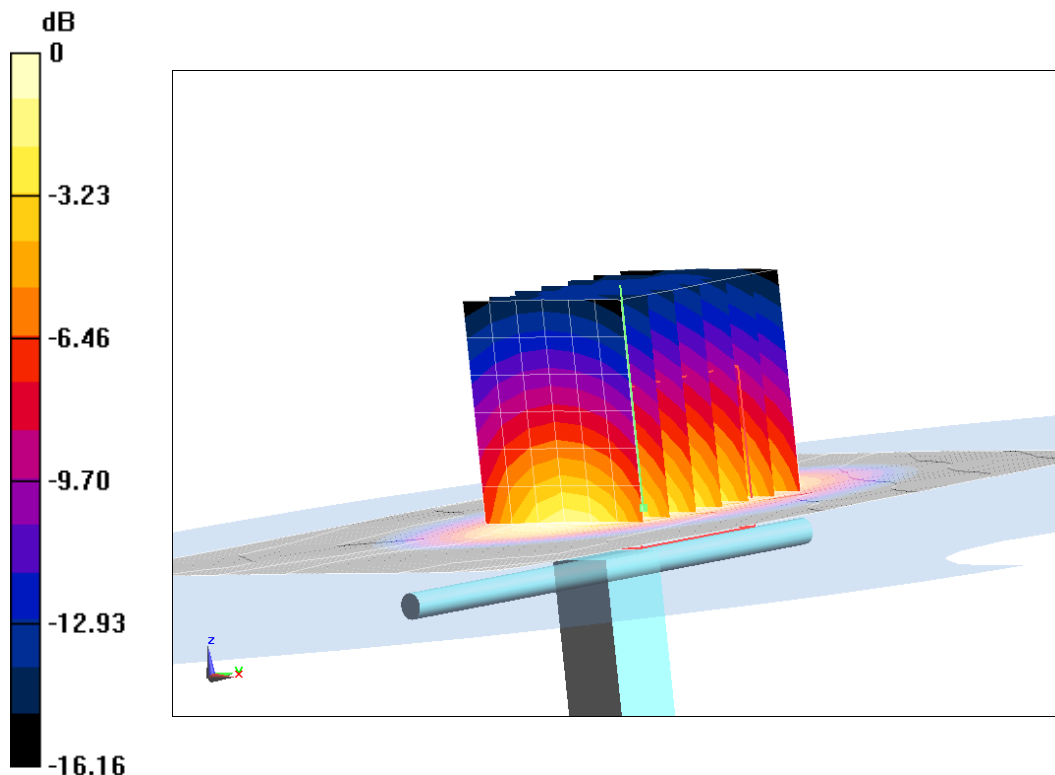
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =92.32 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 16.53 W/kg

**SAR(1 g) = 8.74 W/kg; SAR(10 g) = 4.7 W/kg**

Maximum value of SAR (measured) = 13.7 W/kg



0 dB = 13.7 W/kg = 11.37 dB W/kg

**Fig.B.3validation 1750 MHz 250mW**

**1900 MHz**

Date: 8/13/2020

Electronics: DAE4 Sn777

Medium: Head 1900 MHz

Medium parameters used:  $f = 1900 \text{ MHz}$ ;  $\sigma = 1.39 \text{ mho/m}$ ;  $\epsilon_r = 39.55$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(8.14,8.14,8.14)

**System Validation /Area Scan (81x191x1):** Interpolated grid:  $dx=1.000 \text{ mm}$ ,  $dy=1.000 \text{ mm}$

Reference Value = 107.35 V/m; Power Drift = 0.02

**Fast SAR: SAR(1 g) = 10.06 W/kg; SAR(10 g) = 5.2 W/kg**

Maximum value of SAR (interpolated) = 15.37 W/kg

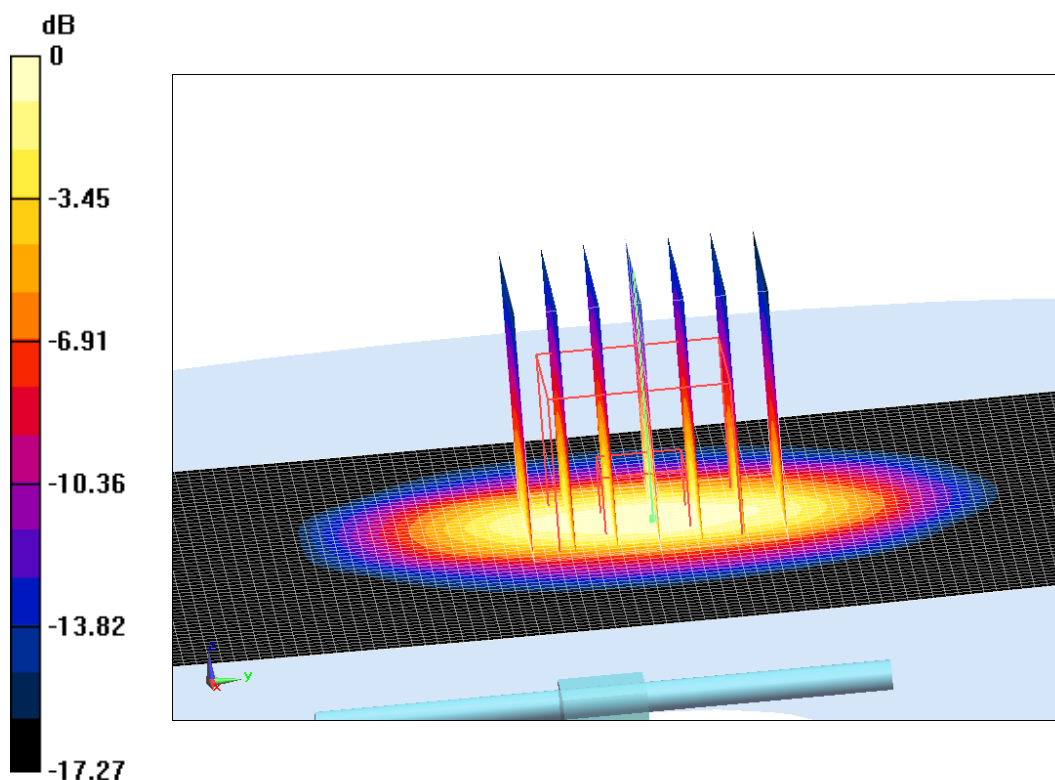
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =107.35 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 18.52 W/kg

**SAR(1 g) = 10.17 W/kg; SAR(10 g) = 5.15 W/kg**

Maximum value of SAR (measured) = 15.41 W/kg



0 dB = 15.41 W/kg = 11.88 dB W/kg

**Fig.B.4 validation 1900 MHz 250mW**

**2450 MHz**

Date: 8/15/2020

Electronics: DAE4 Sn777

Medium: Head 2450 MHz

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.784$  mho/m;  $\epsilon_r = 39.05$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

Communication System: CW Frequency: 2450 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(7.65,7.65,7.65)

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

Reference Value = 104.2 V/m; Power Drift = -0.08

**Fast SAR: SAR(1 g) = 13.18 W/kg; SAR(10 g) = 5.92 W/kg**

Maximum value of SAR (interpolated) = 21.9 W/kg

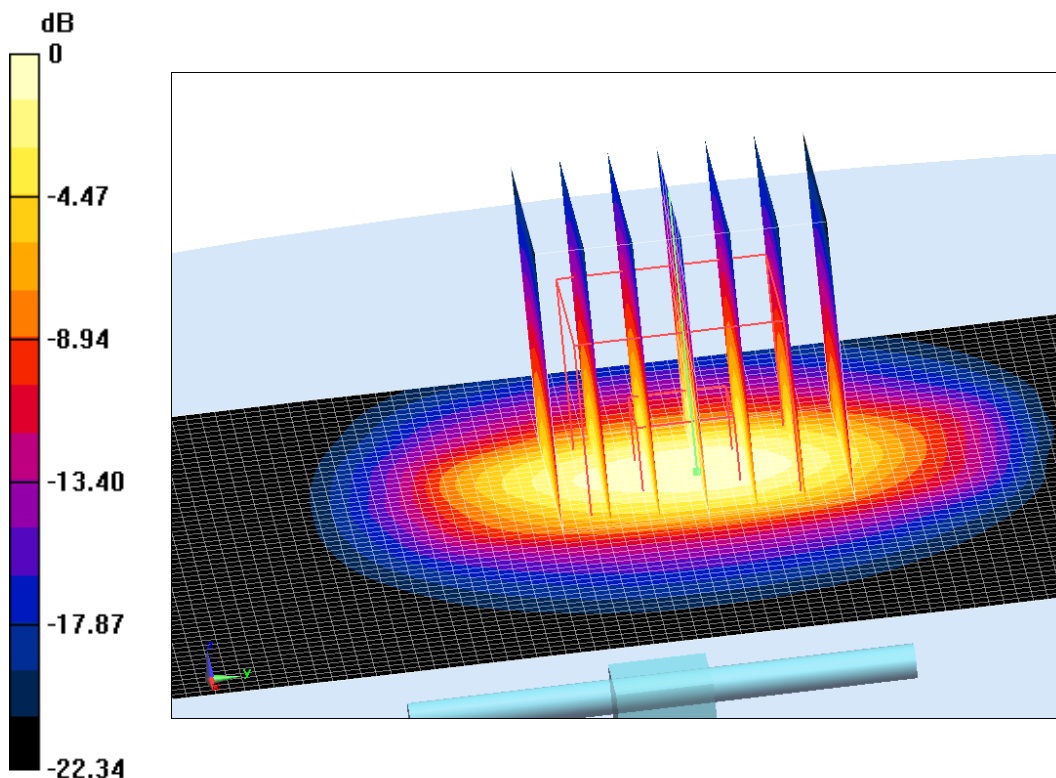
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value =104.2 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 27.72 W/kg

**SAR(1 g) = 13.42 W/kg; SAR(10 g) = 6.11 W/kg**

Maximum value of SAR (measured) = 22.32 W/kg



0 dB = 22.32 W/kg = 13.49 dB W/kg

**Fig.B.5 validation 2450 MHz 250mW**

**2600 MHz**

Date: 8/16/2020

Electronics: DAE4 Sn777

Medium: Head 2600 MHz

Medium parameters used:  $f = 2600 \text{ MHz}$ ;  $\sigma = 1.966 \text{ mho/m}$ ;  $\epsilon_r = 39.57$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C

Communication System: CW Frequency: 2600 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3617 ConvF(7.52,7.52,7.52)

**System Validation /Area Scan (81x191x1):** Interpolated grid:  $dx=1.000 \text{ mm}$ ,  $dy=1.000 \text{ mm}$

Reference Value = 100.65 V/m; Power Drift = -0.05

**Fast SAR: SAR(1 g) = 14.27 W/kg; SAR(10 g) = 6.25 W/kg**

Maximum value of SAR (interpolated) = 24.91 W/kg

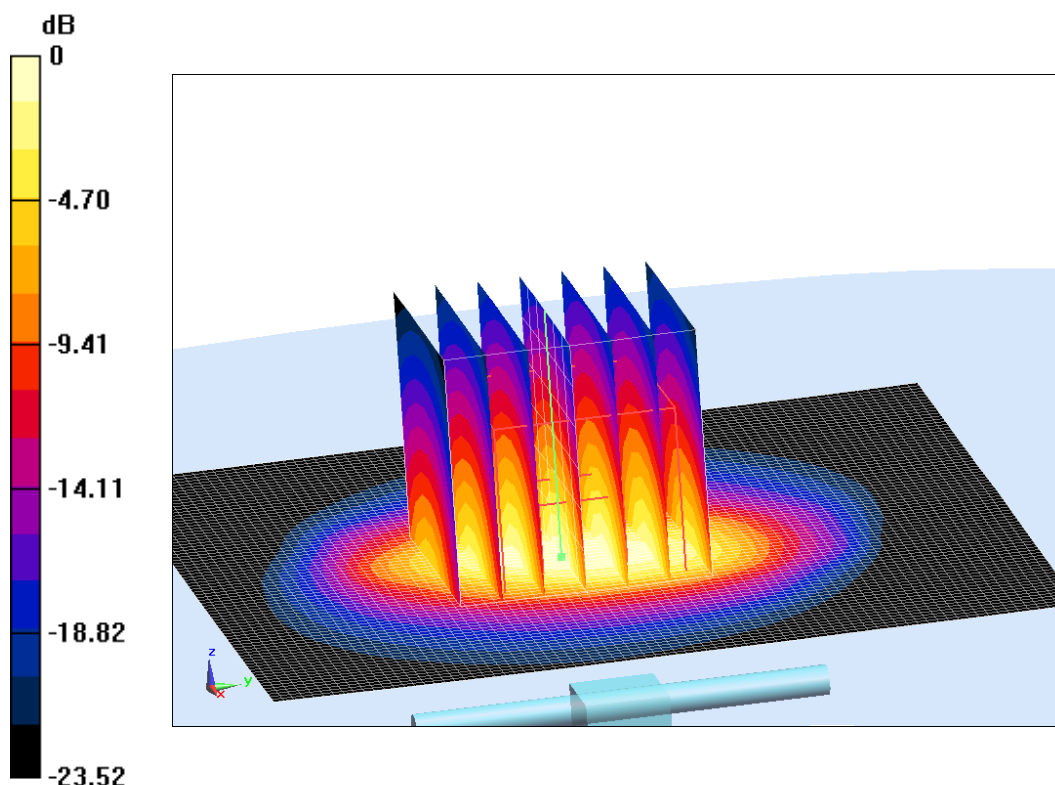
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 100.65 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 31.17 W/kg

**SAR(1 g) = 14.53 W/kg; SAR(10 g) = 6.36 W/kg**

Maximum value of SAR (measured) = 24.53 W/kg



0 dB = 24.53 W/kg = 13.9 dB W/kg

**Fig.B.6 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 .1 Comparison between area scan and zoom scan for system verification**

<b>Date</b>	<b>Band</b>	<b>Position</b>	<b>Area scan (1g)</b>	<b>Zoom scan (1g)</b>	<b>Drift (%)</b>
2020/8/10	750 MHz	Head	2.07	2.11	-1.90
2020/8/11	835 MHz	Head	2.37	2.40	-1.25
2020/8/12	1750 MHz	Head	8.76	8.74	0.23
2020/8/13	1900 MHz	Head	10.06	10.17	-1.08
2020/8/15	2450 MHz	Head	13.18	13.42	-1.79
2020/8/16	2600 MHz	Head	14.27	14.53	-1.79

## J.10 Probe Calibration Certificate

### Probe 3617 Calibration Certificate

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



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

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

Accreditation No.: SCS 0108

Client **CTTL (Auden)**

Certificate No: **EX3-3617\_Jan20/2**

#### CALIBRATION CERTIFICATE (Replacement of No: EX3-3617\_Jan20)

Object	EX3DV4 - SN:3617
Calibration procedure(s)	QA CAL-01.v9, QA CAL-12.v9, QA CAL-14.v5, QA CAL-23.v5, QA CAL-25.v7 Calibration procedure for dosimetric E-field probes
Calibration date:	January 30, 2020
This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.	
All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.	
Calibration Equipment used (M&TE critical for calibration)	

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	03-Apr-19 (No. 217-02892/02893)	Apr-20
Power sensor NRP-Z91	SN: 103244	03-Apr-19 (No. 217-02892)	Apr-20
Power sensor NRP-Z91	SN: 103245	03-Apr-19 (No. 217-02893)	Apr-20
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-19 (No. 217-02894)	Apr-20
DAE4	SN: 660	27-Dec-19 (No. DAE4-660, Dec19)	Dec-20
Reference Probe ES3DV2	SN: 3013	31-Dec-19 (No. ES3-3013, Dec19)	Dec-20
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-20
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-16)	In house check: Jun-20
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-16)	In house check: Jun-20
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-16)	In house check: Jun-20
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-19)	In house check: Oct-20

Calibrated by:	Name Claudio Leubler	Function Laboratory Technician	Signature 
Approved by:	Name Katja Pokovic	Function Technical Manager	Signature 
			Issued: April 7, 2020
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			

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



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

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

Accreditation No.: **SCS 0108**

**Glossary:**

TSL	tissue simulating liquid
NORM <sub>x,y,z</sub>	sensitivity in free space
ConvF	sensitivity in TSL / NORM <sub>x,y,z</sub>
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization $\varphi$	$\varphi$ rotation around probe axis
Polarization $\vartheta$	$\vartheta$ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

**Calibration is Performed According to the Following Standards:**

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

**Methods Applied and Interpretation of Parameters:**

- **NORM<sub>x,y,z</sub>:** Assessed for E-field polarization  $\vartheta = 0$  ( $f \leq 900$  MHz in TEM-cell;  $f > 1800$  MHz: R22 waveguide). NORM<sub>x,y,z</sub> are only intermediate values, i.e., the uncertainties of NORM<sub>x,y,z</sub> does not affect the E<sup>2</sup>-field uncertainty inside TSL (see below ConvF).
- **NORM(f)<sub>x,y,z</sub> = NORM<sub>x,y,z</sub> \* frequency\_response** (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- **DCP<sub>x,y,z</sub>:** DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- **PAR:** PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- **A<sub>x,y,z</sub>; B<sub>x,y,z</sub>; C<sub>x,y,z</sub>; D<sub>x,y,z</sub>; VR<sub>x,y,z</sub>:** A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- **ConvF and Boundary Effect Parameters:** Assessed in flat phantom using E-field (or Temperature Transfer Standard for  $f \leq 800$  MHz) and inside waveguide using analytical field distributions based on power measurements for  $f > 800$  MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM<sub>x,y,z</sub> \* ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from  $\pm 50$  MHz to  $\pm 100$  MHz.
- **Spherical isotropy (3D deviation from isotropy):** in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- **Sensor Offset:** The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- **Connector Angle:** The angle is assessed using the information gained by determining the NORM<sub>x</sub> (no uncertainty required).

EX3DV4 – SN:3617

January 30, 2020

## DASY/EASY - Parameters of Probe: EX3DV4 - SN:3617

### Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ( $\mu\text{V}/(\text{V}/\text{m})^2$ ) <sup>A</sup>	0.35	0.21	0.32	± 10.1 %
DCP (mV) <sup>B</sup>	104.3	93.8	97.1	

### Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB- $\mu\text{V}$	C	D dB	VR mV	Max dev.	Max Unc <sup>E</sup> (k=2)
0	CW	X	0.00	0.00	1.00	0.00	130.5	± 3.5 %	± 4.7 %
		Y	0.00	0.00	1.00		137.4		
		Z	0.00	0.00	1.00		129.2		
10352-AAA	Pulse Waveform (200Hz, 10%)	X	5.74	74.31	15.16	10.00	60.0	± 2.6 %	± 9.6 %
		Y	20.00	84.63	18.23		60.0		
		Z	20.00	90.64	20.98		60.0		
10353-AAA	Pulse Waveform (200Hz, 20%)	X	11.18	82.57	16.62	6.99	80.0	± 1.6 %	± 9.6 %
		Y	11.60	81.13	15.97		80.0		
		Z	20.00	91.54	20.06		80.0		
10354-AAA	Pulse Waveform (200Hz, 40%)	X	20.00	88.75	16.93	3.98	95.0	± 1.0 %	± 9.6 %
		Y	1.22	64.13	8.17		95.0		
		Z	20.00	94.77	20.04		95.0		
10355-AAA	Pulse Waveform (200Hz, 60%)	X	20.00	90.94	16.71	2.22	120.0	± 1.3 %	± 9.6 %
		Y	0.41	60.00	4.32		120.0		
		Z	20.00	99.77	20.92		120.0		
10387-AAA	QPSK Waveform, 1 MHz	X	0.73	63.23	9.65	0.00	150.0	± 4.1 %	± 9.6 %
		Y	0.47	60.00	5.82		150.0		
		Z	0.73	63.00	9.63		150.0		
10388-AAA	QPSK Waveform, 10 MHz	X	2.46	70.66	17.17	0.00	150.0	± 1.7 %	± 9.6 %
		Y	2.10	68.37	15.67		150.0		
		Z	2.46	70.34	17.05		150.0		
10396-AAA	64-QAM Waveform, 100 kHz	X	3.34	72.82	19.20	3.01	150.0	± 1.6 %	± 9.6 %
		Y	3.57	72.45	19.52		150.0		
		Z	3.45	73.00	19.94		150.0		
10399-AAA	64-QAM Waveform, 40 MHz	X	3.61	68.21	16.41	0.00	150.0	± 3.8 %	± 9.6 %
		Y	3.40	67.13	15.82		150.0		
		Z	3.62	68.06	16.39		150.0		
10414-AAA	WLAN CCDF, 64-QAM, 40MHz	X	4.88	66.26	15.89	0.00	150.0	± 6.6 %	± 9.6 %
		Y	4.57	64.95	15.35		150.0		
		Z	4.92	66.18	15.92		150.0		

Note: For details on UID parameters see Appendix

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

<sup>A</sup> The uncertainties of Norm X,Y,Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Pages 5 and 6).

<sup>B</sup> Numerical linearization parameter: uncertainty not required.

<sup>E</sup> Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.





EX3DV4- SN:3617

January 30, 2020

**DASY/EASY - Parameters of Probe: EX3DV4 - SN:3617****Sensor Model Parameters**

	C1 fF	C2 fF	$\alpha$ V <sup>-1</sup>	T1 ms.V <sup>-2</sup>	T2 ms.V <sup>-1</sup>	T3 ms	T4 V <sup>-2</sup>	T5 V <sup>-1</sup>	T6
X	41.2	299.64	34.06	12.13	0.82	5.00	1.88	0.20	1.00
Y	42.0	334.64	39.96	9.91	1.46	5.06	0.00	0.82	1.01
Z	42.8	318.14	35.45	11.95	0.73	5.04	1.02	0.40	1.01

**Other Probe Parameters**

Sensor Arrangement	Triangular
Connector Angle (°)	13
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm