

## Worst case evaluation

### EUT configuraion

The EUT has 2 type of barcode reader and 4 type of keypad.

Barcode reader     1D laser scanner / 2 D Imager

Keypad                Telephony Numeric  
                          Calculator Numeric  
                          Alpha Numeric Wide  
                          Alpha Primary

### Pretest for 1D laser scanner / 2 D Imager

Pretest of SAR testing for 1 D laser scanner and 2 D Imager to find worst one.

Test modes are as below :

Test mode	mode	Position	Test Frequency	SAR value	Remark
1	CDMA 1900	Body / Front	1880 MHz	0.388	1D , Keypad 4(Alpha Primary)
2	CDMA 1900	Body / Front	1880 MHz	0.389	2D , Keypad 4(Alpha Primary)
3	802.11G AUX	Body / Front	2437 MHz	0.07	1D , Keypad 4(Alpha Primary)
4	802.11G AUX	Body / Front	2437 MHz	0.08	2D , Keypad 4(Alpha Primary)
5	802.11A AUX	Body / Front	5745 MHz	0.059	1D , Keypad 4(Alpha Primary)
6	802.11A AUX	Body / Front	5745 MHz	0.061	2D , Keypad 4(Alpha Primary)

Note

Highest power channel of 2.4 and 5GHz are chosen to test..

Middle channel of CDMA 1900 is chosen to test.

Power tables are shown on Page 3,4

According to pretest result as above , SAR value of 2 D Imager is bigger than 1 D laser scanner. Therefore, 2 D Imager will collocate with others keypad to determine worst configuration of SAR testing.

## Pretest for Keypad

( Telephony Numeric / Calculator Numeric / Alpha Numeric Wide /Alpha Primary)

Pretest of SAR testing for 4 types of keypad with 2 D Imager to find worst one.

Test modes are as below :

Test mode	mode	Position	Test Frequency	SAR value	Remark
2	CDMA 1900	Body / Front	1880 MHz	0.389	2D , Keypad 4(Alpha Primary)
7	CDMA 1900	Body / Front	1880 MHz	0.381	2D , Keypad 3(Alpha Numeric wide)
8	CDMA 1900	Body / Front	1880 MHz	0.369	2D , Keypad 1(Telephony Numeric)
9	CDMA 1900	Body / Front	1880 MHz	0.321	2D , Keypad 2(Calculator Numeric)

Note : Since SAR value of 2.4 and 5GHz is less than 1/4 of CDMA 1900, so only CDMA 1900 is chose to test.

According to pretest result as above , 2D Imager + Keypad ( Alpha Primary ) has max SAR value

## Conclusion

After pretesting of SAR , We can find 2D Imager + Keypad ( Alpha Primary ) is worst configuration of SAR testing. Therefore, all test modes will be done under this configuration.

## Power table of 2.4, 5 GHz and CDMA 1900

### Power table of 2.4 GHz

Main antenna	Aux. antenna
802.11b	802.11b
37.497mW / Ch1: 2412MHz	40.551mW / Ch1: 2412MHz
37.670mW / Ch6: 2437MHz	40.926mW / Ch6: 2437MHz
36.244mW / Ch11: 2462MHz	40.272mW / Ch11: 2462MHz
802.11g	802.11g
60.954mW / Ch1: 2412MHz	63.387mW / Ch1: 2412MHz
159.956mW / Ch6: 2437MHz	178.238mW / Ch6: 2437MHz
54.702mW / Ch11: 2462MHz	65.013mW / Ch11: 2462MHz

### Power table of 5GHz

Main antenna	Aux. antenna
7.780mW / Ch36: 5180MHz	10.593mW / Ch36: 5180MHz
7.311mW / Ch40: 5200MHz	8.974mW / Ch40: 5200MHz
7.161mW / Ch44: 5220MHz	9.078mW / Ch44: 5220MHz
7.194mW / Ch48: 5240MHz	10.495mW / Ch48: 5240MHz
8.375mW / Ch52: 5260MHz	10.069mW / Ch52: 5260MHz
8.433mW / Ch56: 5280MHz	10.257mW / Ch56: 5280MHz
9.594mW / Ch60: 5300MHz	11.455mW / Ch60: 5300MHz
9.462mW / Ch64: 5320MHz	10.765mW / Ch64: 5320MHz
10.069mW / Ch100: 5500MHz	10.280mW / Ch100: 5500MHz
16.069mW / Ch104: 5520MHz	17.906mW / Ch104: 5520MHz
22.439mW / Ch108: 5540MHz	24.266mW / Ch108: 5540MHz
20.941mW / Ch112: 5560MHz	23.281mW / Ch112: 5560MHz
19.275mW / Ch116: 5580MHz	21.777mW / Ch116: 5580MHz
22.182mW / Ch120: 5600MHz	23.174mW / Ch120: 5600MHz
20.941mW / Ch124: 5620MHz	22.080mW / Ch124: 5620MHz
21.086mW / Ch128: 5640MHz	21.777mW / Ch128: 5640MHz
18.578mW / Ch132: 5660MHz	19.275mW / Ch132: 5660MHz
21.281mW / Ch136: 5680MHz	22.336mW / Ch136: 5680MHz
6.486mW / Ch140: 5700MHz	7.178mW / Ch140: 5700MHz
121.060mW / Ch149: 5745MHz	128.529mW / Ch149: 5745MHz
106.170mW / Ch153: 5765MHz	109.901mW / Ch153: 5765MHz
108.143mW / Ch157: 5785MHz	122.180mW / Ch157: 5785MHz
103.753mW / Ch161: 5850MHz	121.060mW / Ch161: 5850MHz
104.954mW / Ch165: 5825MHz	113.240mW / Ch165: 5825MHz

## Power table of CDMA1900

CDMA 2000 CONDUCTED POWER													
CHAN.	FREQ. (MHz)	CDMA 2000	RAW VALUE (dBm)					CORR. FACTOR (dB)	OUTPUT POWER (dBm)				
		RC	SO2	SO55	TDSO SO32 (FCH)	TDSO SO32 (FCH+ SCH)	SO3		SO2	SO55	TDSO SO32 (FCH)	TDSO SO32 (FCH+ SCH)	SO3
25	1851.25	RC1	19.92	20.01	-	-	19.96	4.50	24.42	24.51	-	-	24.46
		RC3	19.81	19.90	20.24	20.15	19.93	4.50	24.31	24.40	24.74	24.65	24.43
600	1880.00	RC1	19.97	20.22	-	-	20.10	4.50	24.47	24.72	-	-	24.60
		RC3	19.92	20.13	20.28	20.17	19.99	4.50	24.42	24.63	24.78	24.67	24.49
1175	1908.75	RC1	20.19	20.21	-	-	20.14	4.50	24.69	24.71	-	-	24.64
		RC3	20.19	20.19	20.38	20.21	20.04	4.50	24.69	24.69	24.88	24.71	24.54

## Test instrument / system validation / Liquid check for SAR testing

### Test instruments

Test instruments	Serial No. of Test instruments	Calibrated date	Due date of Calibration
D1900V2	5d036	2008/4/22	2009/4/21
D2450V2	737	2008/4/22	2009/4/21
D5GHzV2	1018	2008/4/21	2009/4/20
EX3DV3	3504	2009/1/21	2010/1/20
EX3DV3	3578	2008/5/21	2009/5/20
DAE	861	2008/9/22	2009/9/21

### System validation

Environment and liquid factor					
Test date	Tissue type / frequency	Liquid Level ( mm )	Ambient temp(℃)	Liquid temp(℃)	Ambient Humidity(%)
2009/3/15	MSL1900	150	23.1	22.9	64
2009/3/15	MSL2450	154	23	22.8	65
2009/3/15	MSL5800	151	23.1	22.8	65

Measured value of system validation					
Test frequency ( MHz)	Required Value ( mW/g)		Measured Value ( mW/g)	Deviation ( % )	Separation distance (mm)
MSL 1900	1g	10.2	9.67	-5.20	10
MSL 1900	10g	5.37	4.99	-7.08	10
MSL 2450	1g	12.8	13.1	2.34	10
MSL 2450	10g	5.97	5.96	-0.17	10
MSL 5800	1g	7.37	6.99	-5.16	10
MSL 5800	10g	2.05	1.94	-5.37	10

## Liquid check

TISSUE TYPE	BODY 1900			
FREQUENCY(MHz)	LIQUID PARAMETER	STANDARD VALUE	MEASUREMENT VALUE	ERROR PERCENTAGE
1880	PERMITIVITY ( $\epsilon_r$ )	53.3	55.6	4.32
1900		53.3	55.5	4.13
1880	CONDUCTIVITY ( $\sigma$ )	1.52	1.56	2.63
1900		1.52	1.59	4.61

TISSUE TYPE	BODY 2450			
FREQUENCY(MHz)	LIQUID PARAMETER	STANDARD VALUE	MEASUREMENT VALUE	ERROR PERCENTAGE
2437	PERMITIVITY ( $\epsilon_r$ )	52.7	54.7	3.80
2450		52.7	54.6	3.61
2437	CONDUCTIVITY ( $\sigma$ )	1.94	1.97	1.55
2450		1.95	1.99	2.05

TISSUE TYPE	BODY 5800			
FREQUENCY(MHz)	LIQUID PARAMETER	STANDARD VALUE	MEASUREMENT VALUE	ERROR PERCENTAGE
5745	PERMITIVITY ( $\epsilon_r$ )	48.3	49.5	2.48
5800		48.2	49.3	2.28
5745	CONDUCTIVITY ( $\sigma$ )	5.94	6.15	3.54
5800		6	6.24	4.00

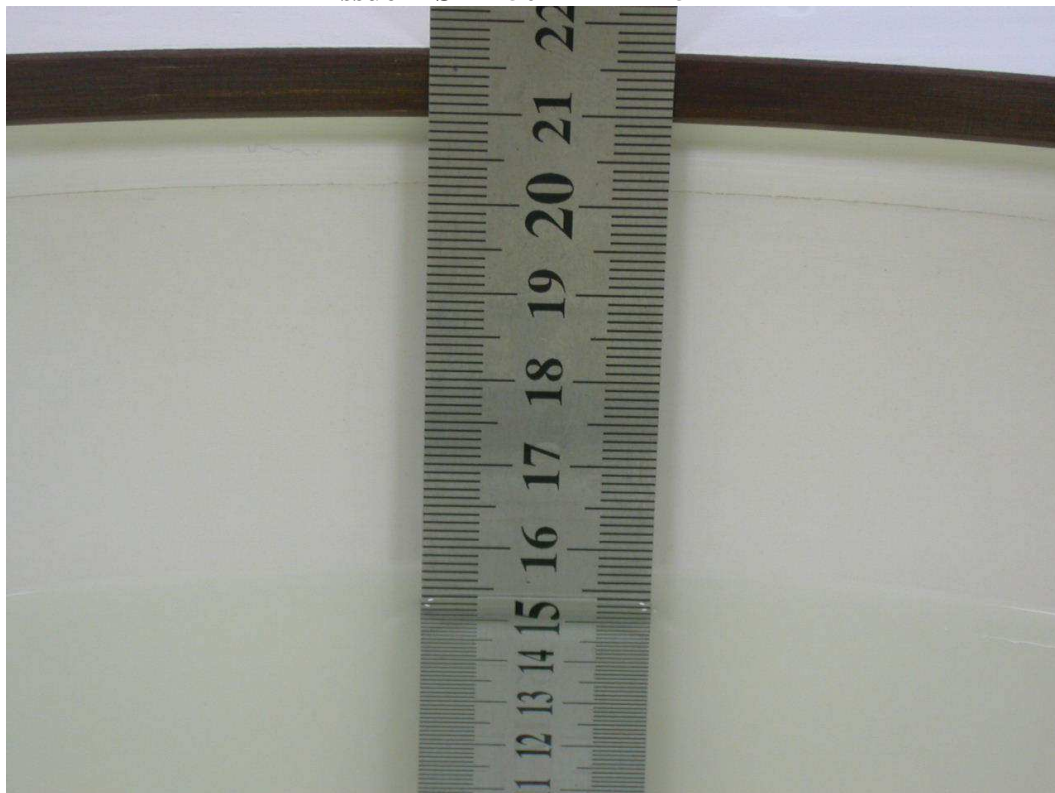
## APPENDIX A: TEST DATA

### Liquid Level Photo

Tissue MSL1900MHz D=150mm



Tissue MSL2450MHz D=154mm



**Tissue MSL5800MHz D=151mm**





Test Laboratory: Bureau Veritas ADT

## M01-Body Front -CDMA1900 Ch600 /1D(Keypad:Alpha Primary)

### DUT: PDA ; Type: MC 9598

Communication System: CDMA ; Frequency: 1880 MHz ; Duty Cycle: 1:1 ; Modulation type: HPSK  
Medium: MSL1900 Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.56 \text{ mho/m}$ ;  $\epsilon_r = 55.6$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT to the Phantom)

### DASY4 Configuration:

- Probe: EX3DV3 - SN3504 ; ConvF(8.21, 8.21, 8.21) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861 ; Calibrated: 2008/9/22
- Phantom: SAM with CRP ; Type: SAM ; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125 ; SEMCAD X Version 13.4 Build 125

### Mid Channel 600/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.448 mW/g

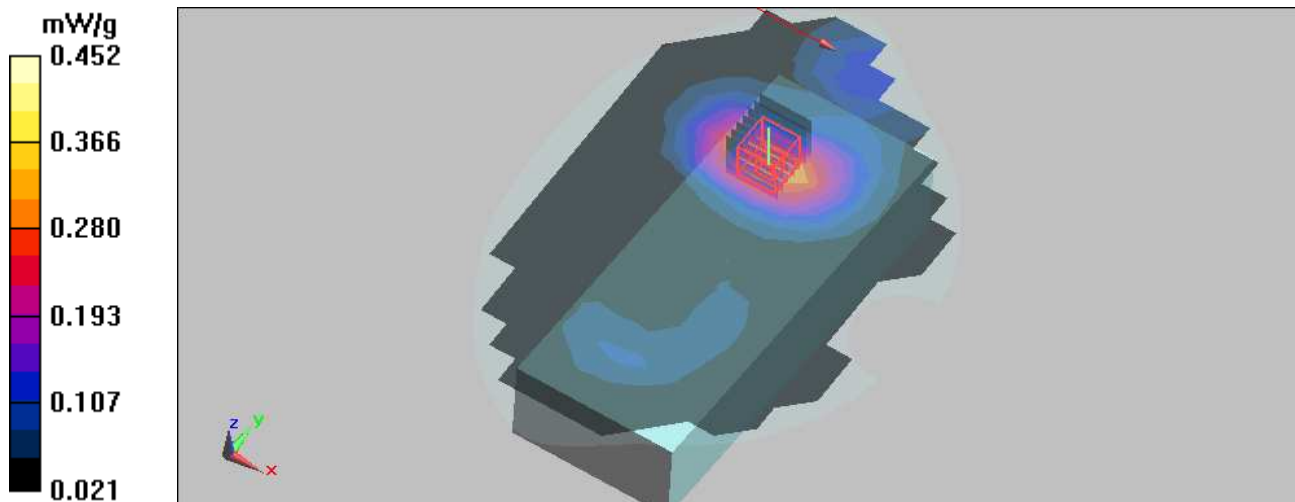
### Mid Channel 600/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.23 V/m

Peak SAR (extrapolated) = 0.593 W/kg

SAR(1 g) = **0.388 mW/g**; SAR(10 g) = 0.252 mW/g

Maximum value of SAR (measured) = 0.452 mW/g



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Test Laboratory: Bureau Veritas ADT

## M02-Body Front -CDMA1900 Ch600 /2D(Keypad:Alpha Primary)

### DUT: PDA ; Type: MC 9598

Communication System: CDMA ; Frequency: 1880 MHz ; Duty Cycle: 1:1 ; Modulation type: HPSK  
 Medium: MSL1900 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.56$  mho/m;  $\epsilon_r = 55.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT to the Phantom)

### DASY4 Configuration:

- Probe: EX3DV3 - SN3504 ; ConvF(8.21, 8.21, 8.21) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861 ; Calibrated: 2008/9/22
- Phantom: SAM with CRP ; Type: SAM ; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125 ; SEMCAD X Version 13.4 Build 125

### Mid Channel 600/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.338 mW/g

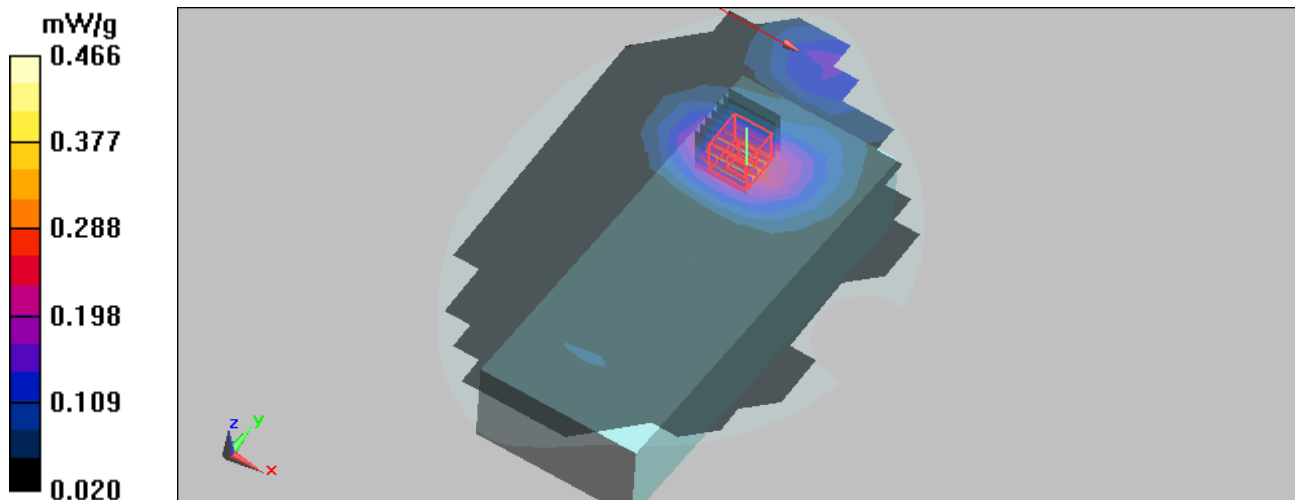
### Mid Channel 600/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.48 V/m

Peak SAR (extrapolated) = 0.612 W/kg

**SAR(1 g) = 0.389 mW/g; SAR(10 g) = 0.250 mW/g**

Maximum value of SAR (measured) = 0.466 mW/g



Test Laboratory: Bureau Veritas ADT

## M03-Body Front -11G Ch6 /1D(Keypad:Alpha Primary)

### DUT: PDA ; Type: MC 9598

Communication System: 802.11g ; Frequency: 2437 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK  
Medium: MSL2450 Medium parameters used:  $f = 2437 \text{ MHz}$ ;  $\sigma = 1.97 \text{ mho/m}$ ;  $\epsilon_r = 54.7$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT to the Phantom)

### DASY4 Configuration:

- Probe: EX3DV3 - SN3504 ; ConvF(7.53, 7.53, 7.53) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861 ; Calibrated: 2008/9/22
- Phantom: SAM with CRP ; Type: SAM ; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125 ; SEMCAD X Version 13.4 Build 125

**Mid Channel 6/Area Scan (14x21x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (measured) = 0.094 mW/g

**Mid Channel 6/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 1.42 V/m

Peak SAR (extrapolated) = 0.126 W/kg

**SAR(1 g) = 0.070 mW/g; SAR(10 g) = 0.038 mW/g**

Maximum value of SAR (measured) = 0.089 mW/g

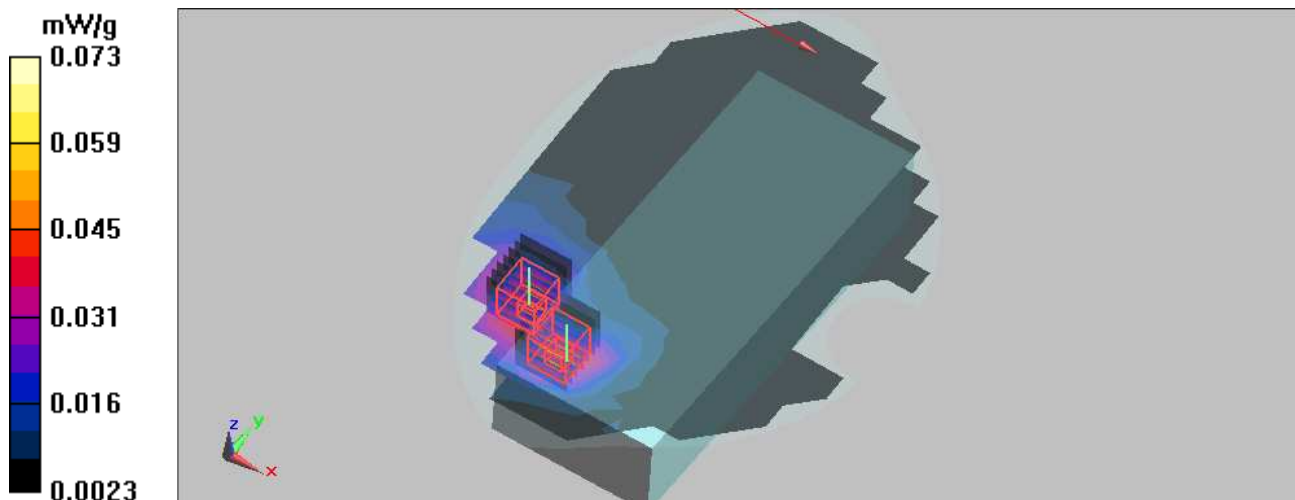
**Mid Channel 6/Zoom Scan (7x7x7) (7x7x7)/Cube 1:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 1.42 V/m

Peak SAR (extrapolated) = 0.107 W/kg

**SAR(1 g) = 0.057 mW/g; SAR(10 g) = 0.033 mW/g**

Maximum value of SAR (measured) = 0.073 mW/g



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## M04-Body Front -11G Ch6 /2D(Keypad:Alpha Primary)

### DUT: PDA ; Type: MC 9598

Communication System: 802.11g ; Frequency: 2437 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK  
Medium: MSL2450 Medium parameters used:  $f = 2437 \text{ MHz}$ ;  $\sigma = 1.97 \text{ mho/m}$ ;  $\epsilon_r = 54.7$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT to the Phantom)

### DASY4 Configuration:

- Probe: EX3DV3 - SN3504 ; ConvF(7.53, 7.53, 7.53) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861 ; Calibrated: 2008/9/22
- Phantom: SAM with CRP ; Type: SAM ; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125 ; SEMCAD X Version 13.4 Build 125

**Mid Channel 6/Area Scan (14x21x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (measured) = 0.084 mW/g

**Mid Channel 6/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 1.52 V/m

Peak SAR (extrapolated) = 0.145 W/kg

**SAR(1 g) = 0.080 mW/g; SAR(10 g) = 0.042 mW/g**

Maximum value of SAR (measured) = 0.101 mW/g

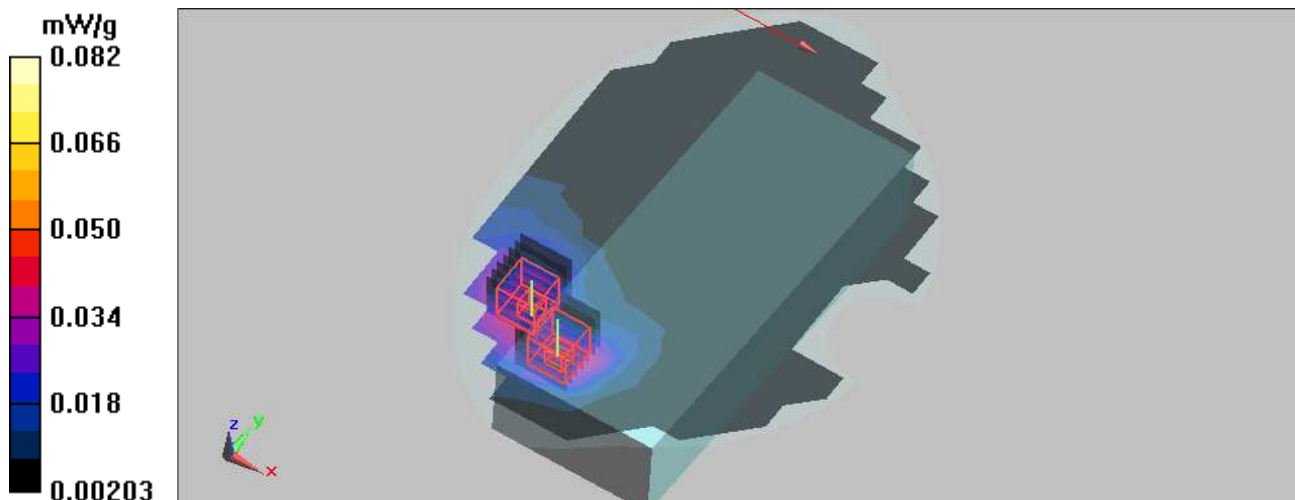
**Mid Channel 6/Zoom Scan (7x7x7) (7x7x7)/Cube 1:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 1.52 V/m

Peak SAR (extrapolated) = 0.126 W/kg

**SAR(1 g) = 0.067 mW/g; SAR(10 g) = 0.039 mW/g**

Maximum value of SAR (measured) = 0.082 mW/g



Test Laboratory: Bureau Veritas ADT

## M05-Body Front -11A Ch149 /1D(Keypad:Alpha Primary)

### DUT: PDA ; Type: MC 9598

Communication System: 802.11a ; Frequency: 5745 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK  
Medium: HSL5800 Medium parameters used:  $f = 5745 \text{ MHz}$ ;  $\sigma = 6.15 \text{ mho/m}$ ;  $\epsilon_r = 49.5$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT to the Phantom)

### DASY4 Configuration:

- Probe: EX3DV3 - SN3504 ; ConvF(3.98, 3.98, 3.98) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861 ; Calibrated: 2008/9/22
- Phantom: SAM with CRP ; Type: SAM ; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125 ; SEMCAD X Version 13.4 Build 125

**High Channel 149 /Area Scan (19x29x1):** Measurement grid:  $dx=10\text{mm}$ ,  $dy=10\text{mm}$   
Maximum value of SAR (measured) = 0.068 mW/g

**High Channel 149 /Zoom Scan (8x8x8)/Cube 0:** Measurement grid:  $dx=4.3\text{mm}$ ,  $dy=4.3\text{mm}$ ,  $dz=3\text{mm}$

Reference Value = 0.865 V/m

Peak SAR (extrapolated) = 0.156 W/kg

**SAR(1 g) = 0.051 mW/g; SAR(10 g) = 0.022 mW/g**

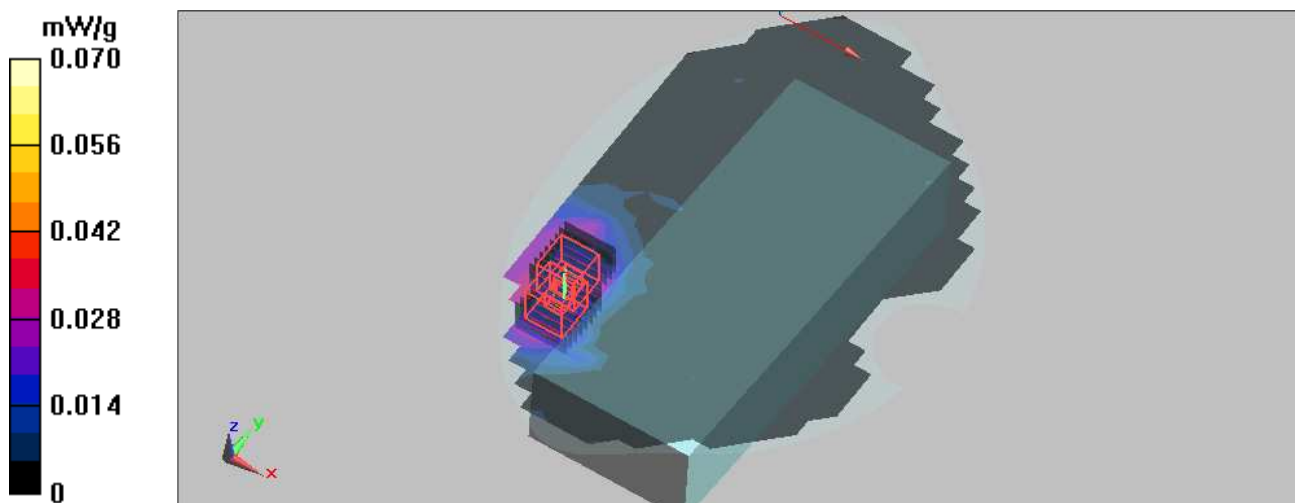
Maximum value of SAR (measured) = 0.070 mW/g

**High Channel 149 /Zoom Scan (8x8x8)/Cube 1:** Measurement grid:  $dx=4.3\text{mm}$ ,  $dy=4.3\text{mm}$ ,  $dz=3\text{mm}$

Reference Value = 0.865 V/m

Peak SAR (extrapolated) = 0.313 W/kg

**SAR(1 g) = 0.059 mW/g; SAR(10 g) = 0.026 mW/g**



Test Laboratory: Bureau Veritas ADT

## M06-Body Front -11A Ch149 /2D(Keypad:Alpha Primary)

### DUT: PDA ; Type: MC 9598

Communication System: 802.11a ; Frequency: 5745 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK  
Medium: HSL5800 Medium parameters used:  $f = 5745$  MHz;  $\sigma = 6.15$  mho/m;  $\epsilon_r = 49.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT to the Phantom)

### DASY4 Configuration:

- Probe: EX3DV3 - SN3504 ; ConvF(3.98, 3.98, 3.98) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861 ; Calibrated: 2008/9/22
- Phantom: SAM with CRP ; Type: SAM ; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125 ; SEMCAD X Version 13.4 Build 125

**High Channel 149 /Area Scan (19x29x1):** Measurement grid: dx=10mm, dy=10mm  
Maximum value of SAR (measured) = 0.070 mW/g

**High Channel 149 /Zoom Scan (8x8x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 0.865 V/m

Peak SAR (extrapolated) = 0.161 W/kg

**SAR(1 g) = 0.052 mW/g; SAR(10 g) = 0.023 mW/g**

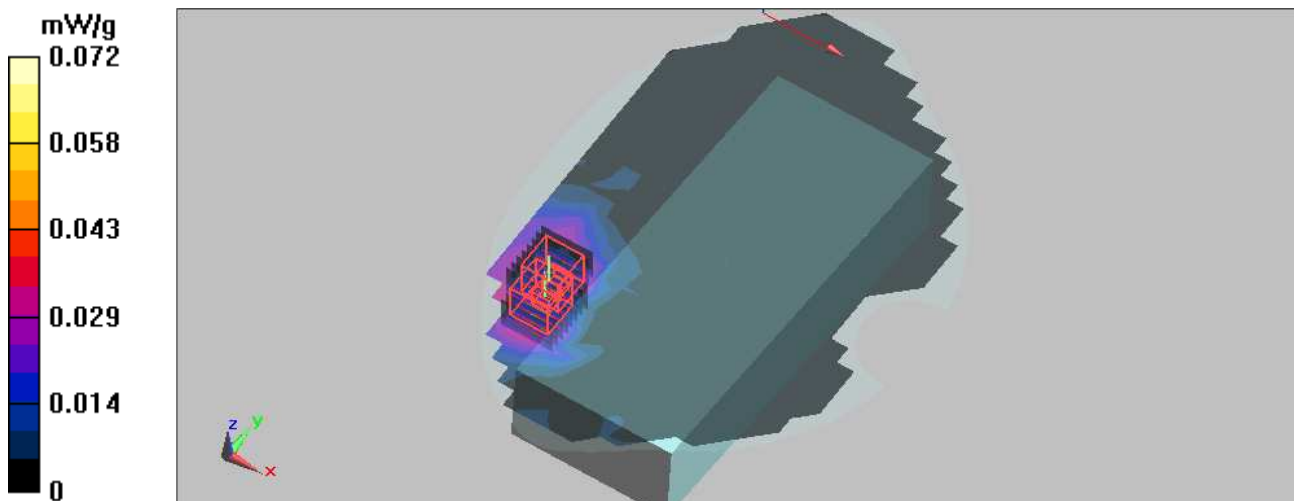
Maximum value of SAR (measured) = 0.072 mW/g

**High Channel 149 /Zoom Scan (8x8x8)/Cube 1:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 0.865 V/m

Peak SAR (extrapolated) = 0.322 W/kg

**SAR(1 g) = 0.061 mW/g; SAR(10 g) = 0.027 mW/g**



Test Laboratory: Bureau Veritas ADT

## M07-Body Front -CDMA1900 Ch600 /2D(Keypad:Alpha Numeric Wide)

### DUT: PDA ; Type: MC 9598

Communication System: CDMA ; Frequency: 1880 MHz ; Duty Cycle: 1:1 ; Modulation type: HPSK  
Medium: MSL1900 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.56$  mho/m;  $\epsilon_r = 55.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT to the Phantom)

### DASY4 Configuration:

- Probe: EX3DV3 - SN3504 ; ConvF(8.21, 8.21, 8.21) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861 ; Calibrated: 2008/9/22
- Phantom: SAM with CRP ; Type: SAM ; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125 ; SEMCAD X Version 13.4 Build 125

### Mid Channel 600/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.445 mW/g

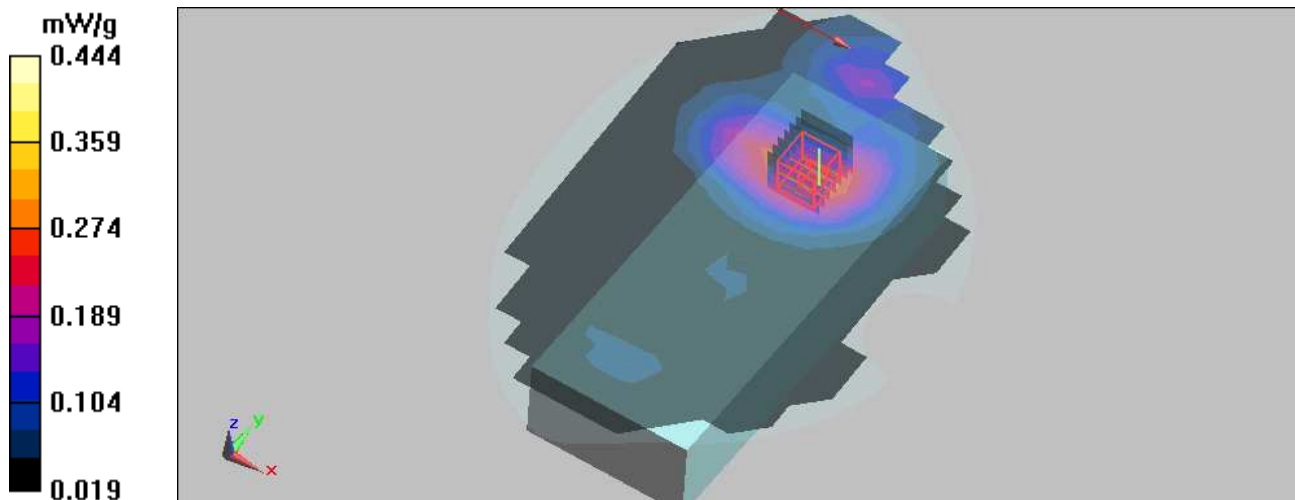
### Mid Channel 600/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.01 V/m

Peak SAR (extrapolated) = 0.585 W/kg

SAR(1 g) = **0.381** mW/g; SAR(10 g) = 0.243 mW/g

Maximum value of SAR (measured) = 0.444 mW/g





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## M08-Body Front -CDMA1900 Ch600 /2D(Keypad:Telephony Numeric)

### DUT: PDA ; Type: MC 9598

Communication System: CDMA ; Frequency: 1880 MHz ; Duty Cycle: 1:1 ; Modulation type: HPSK  
Medium: MSL1900 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.56$  mho/m;  $\epsilon_r = 55.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT to the Phantom)

### DASY4 Configuration:

- Probe: EX3DV3 - SN3504 ; ConvF(8.21, 8.21, 8.21) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861 ; Calibrated: 2008/9/22
- Phantom: SAM with CRP ; Type: SAM ; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125 ; SEMCAD X Version 13.4 Build 125

### Mid Channel 600/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.431 mW/g

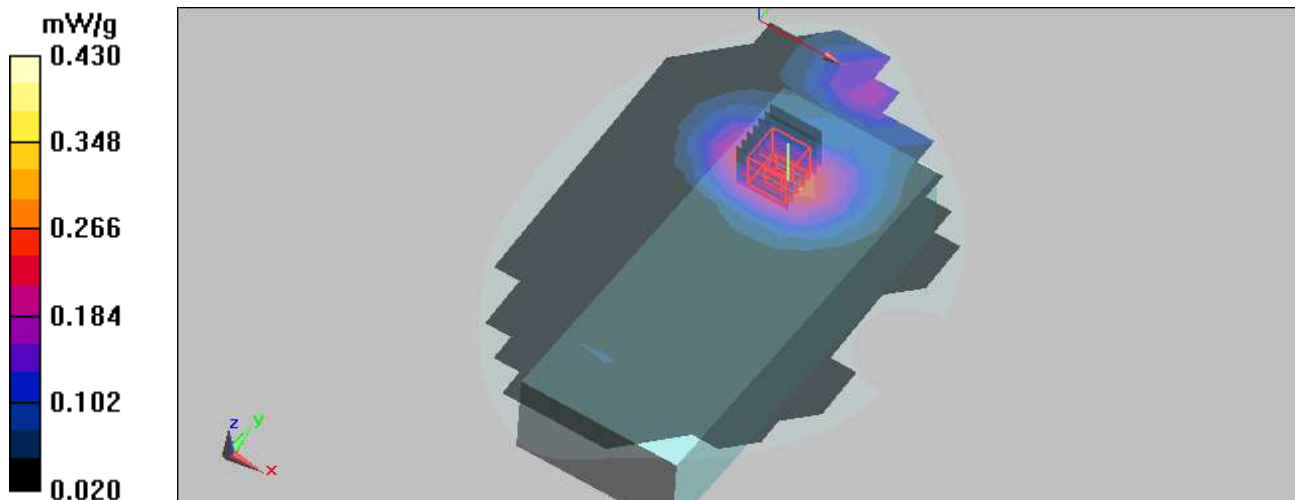
### Mid Channel 600/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.28 V/m

Peak SAR (extrapolated) = 0.557 W/kg

SAR(1 g) = **0.369 mW/g**; SAR(10 g) = 0.238 mW/g

Maximum value of SAR (measured) = 0.430 mW/g





Date/Time: 2009/3/15 18:14:21

Test Laboratory: Bureau Veritas ADT

## M09-Body Front -CDMA1900 Ch600 /2D(Keypad:Calculator Numeric)

**DUT: PDA ; Type: MC 9598**

Communication System: CDMA ; Frequency: 1880 MHz ; Duty Cycle: 1:1 ; Modulation type: HPSK  
Medium: MSL1900 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.56$  mho/m;  $\epsilon_r = 55.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT to the Phantom)

DASY4 Configuration:

- Probe: EX3DV3 - SN3504 ; ConvF(8.21, 8.21, 8.21) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861 ; Calibrated: 2008/9/22
- Phantom: SAM with CRP ; Type: SAM ; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125 ; SEMCAD X Version 13.4 Build 125

**Mid Channel 600 /Area Scan (13x19x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 0.367 mW/g

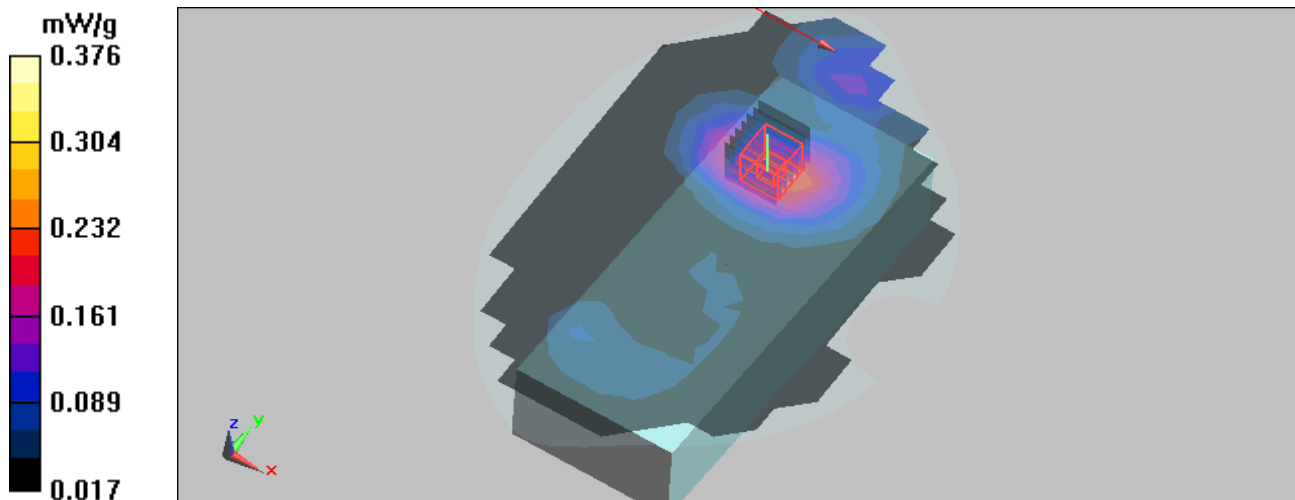
**Mid Channel 600 /Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.16 V/m

Peak SAR (extrapolated) = 0.493 W/kg

**SAR(1 g) = 0.321 mW/g; SAR(10 g) = 0.207 mW/g**

Maximum value of SAR (measured) = 0.376 mW/g



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## System validation MSL 1900MHz

**DUT: Dipole 1900 MHz ; Type: D1900V2 ; Serial: 5d036 ; Test Frequency: 1900 MHz**

Communication System: CW ; Frequency: 1900 MHz; Duty Cycle: 1:1; Modulation type: CW  
Medium: MSL1900; Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.59$  mho/m;  $\epsilon_r = 55.5$ ;  $\rho = 1000$  kg/m<sup>3</sup> ; Liquid level : 150 mm

Phantom section: Flat Section ; Separation distance : 10 mm (The feetpoint of the dipole to the Phantom) Air temp. : 23.1 degrees ; Liquid temp. : 22.9 degrees

DASY5 Configuration:

- Probe: EX3DV3 - SN3504 ; ConvF(8.21, 8.21, 8.21) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**d=10mm, Pin=250mW/Area Scan (7x7x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 8.47 mW/g

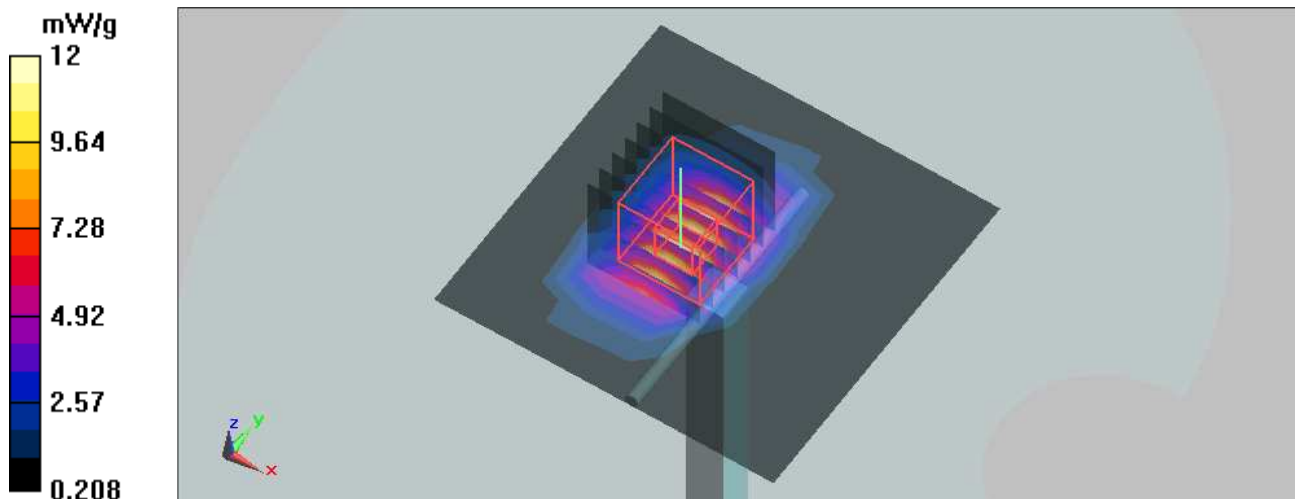
**d=10mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 73.4 V/m; Power Drift = 0.157 dB

Peak SAR (extrapolated) = 18 W/kg

**SAR(1 g) = 9.67 mW/g; SAR(10 g) = 4.99 mW/g**

Maximum value of SAR (measured) = 12.3 mW/g



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Test Laboratory: Bureau Veritas ADT

## System validation MSL 2450MHz

**DUT: Dipole 2450 MHz ; Type: D2450V2 ; Serial: 737 ; Test Frequency: 2450 MHz**

Communication System: CW ; Frequency: 2450 MHz; Duty Cycle: 1:1; Modulation type: CW  
Medium: MSL2450; Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.99$  mho/m;  $\epsilon_r = 54.6$ ;  $\rho = 1000$  kg/m<sup>3</sup> ; Liquid level : 154 mm

Phantom section: Flat Section ; Separation distance : 10 mm (The feetpoint of the dipole to the Phantom) Air temp. : 23.0 degrees ; Liquid temp. : 22.8 degrees

DASY5 Configuration:

- Probe: EX3DV3 - SN3504 ; ConvF(7.53, 7.53, 7.53) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**d=10mm, Pin=250mW/Area Scan (5x7x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 15.8 mW/g

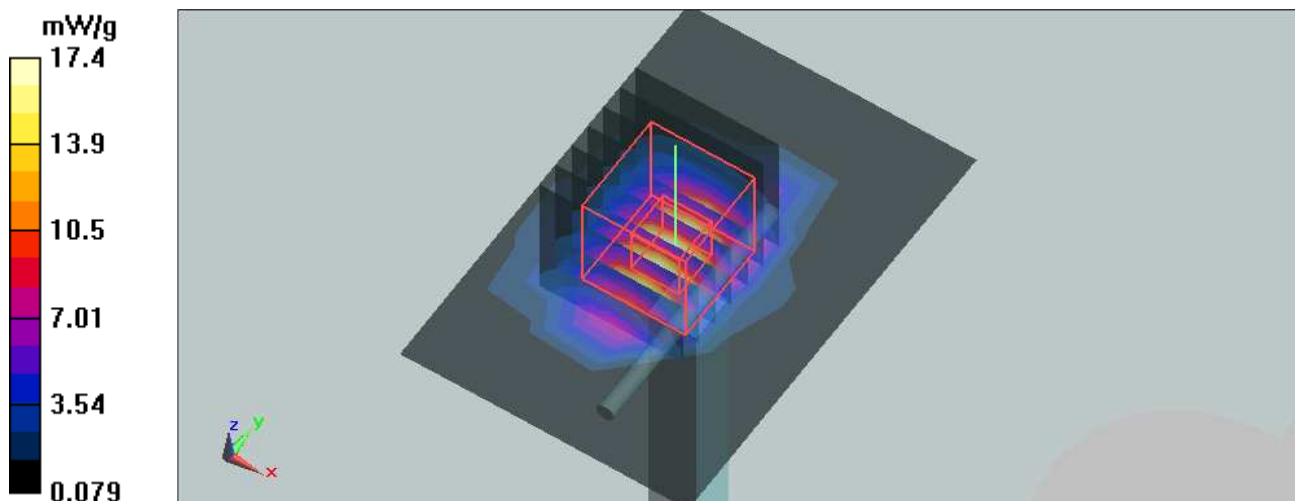
**d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 90.9 V/m; Power Drift = -0.051 dB

Peak SAR (extrapolated) = 27.8 W/kg

**SAR(1 g) = 13.1 mW/g; SAR(10 g) = 5.96 mW/g**

Maximum value of SAR (measured) = 17.4 mW/g



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Test Laboratory: Bureau Veritas ADT

## System validation MSL 5800MHz

**DUT: Dipole 5 GHz ; Type: D5GHzV2 ; Serial: 1018 ; Test Frequency: 5800 MHz**

Communication System: CW ; Frequency: 5800 MHz; Duty Cycle: 1:1; Modulation type: CW  
Medium: MSL5800; Medium parameters used:  $f = 5800$  MHz;  $\sigma = 6.24$  mho/m;  $\epsilon_r = 49.3$ ;  $\rho = 1000$  kg/m<sup>3</sup> ; Liquid level : 151 mm

Phantom section: Flat Section ; Separation distance : 10 mm (The feetpoint of the dipole to the Phantom) Air temp. : 23.1 degrees ; Liquid temp. : 22.8 degrees

DASY5 Configuration:

- Probe: EX3DV4 - SN3578 ; ConvF(3.98, 3.98, 3.98) ; Calibrated: 2008/5/20
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

**f=5800, d=10mm, Pin=100mW/Area Scan (6x6x1):** Measurement grid: dx=10mm, dy=10mm  
Maximum value of SAR (measured) = 8.84 mW/g

**f=5800, d=10mm, Pin=100mW/Zoom Scan (8x8x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 39.3 V/m; Power Drift = 0.092 dB

Peak SAR (extrapolated) = 28.9 W/kg

**SAR(1 g) = 6.99 mW/g; SAR(10 g) = 1.94 mW/g**

Maximum value of SAR (measured) = 9.94 mW/g

