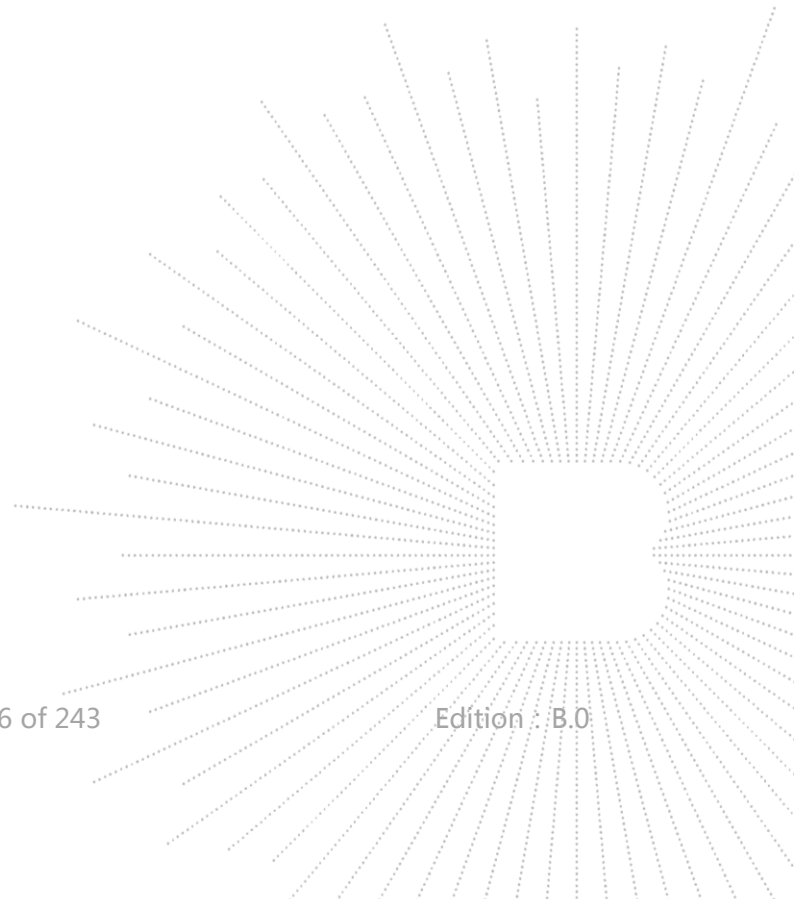
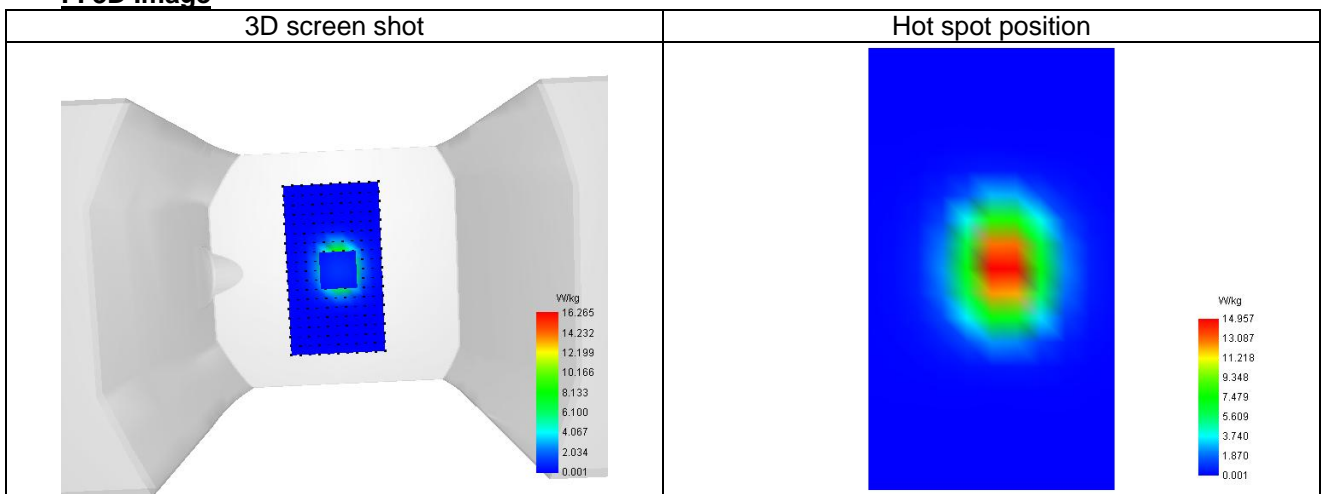

F. 3D Image


System check at 5200 MHz

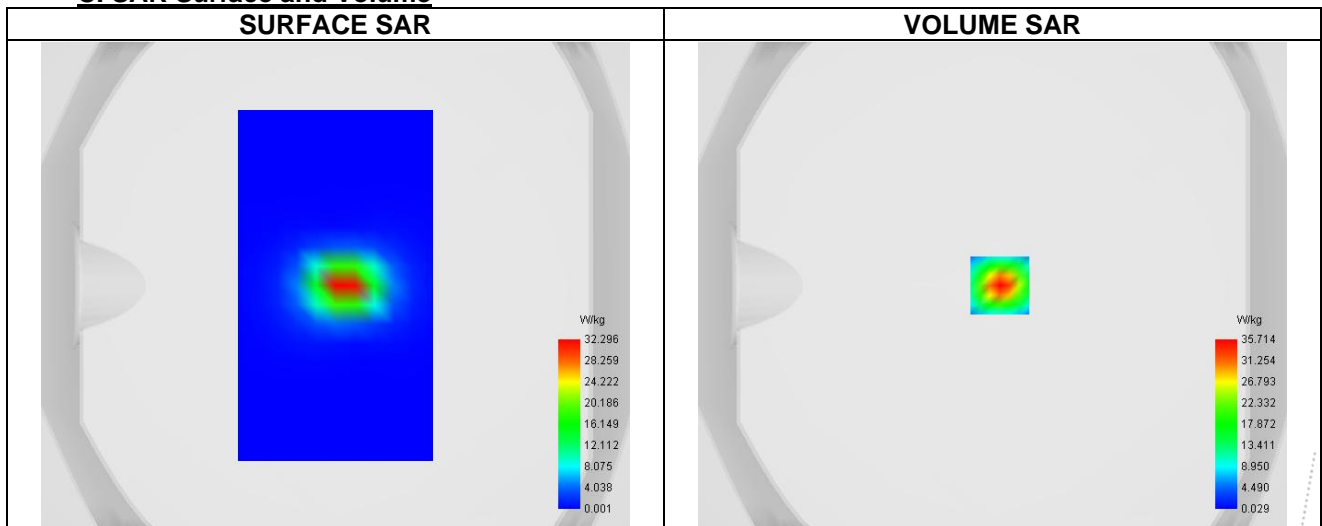
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.18
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Dipole
Band	CW5200
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	5200.000
Relative permittivity (real part)	36.497
Relative permittivity (imaginary part)	16.130
Conductivity (S/m)	4.541

C. SAR Surface and Volume



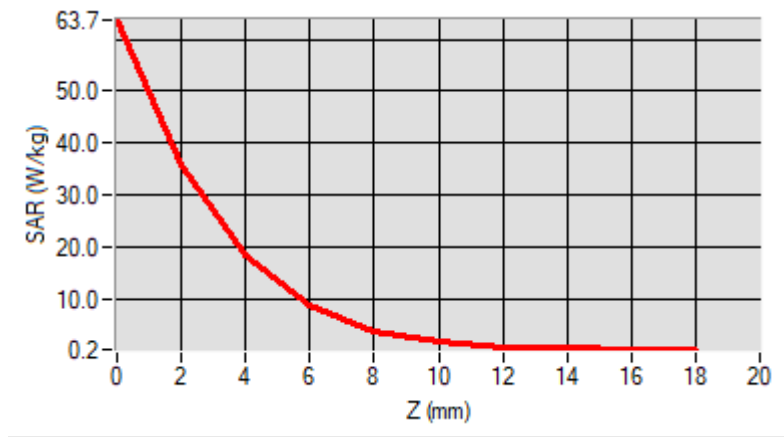
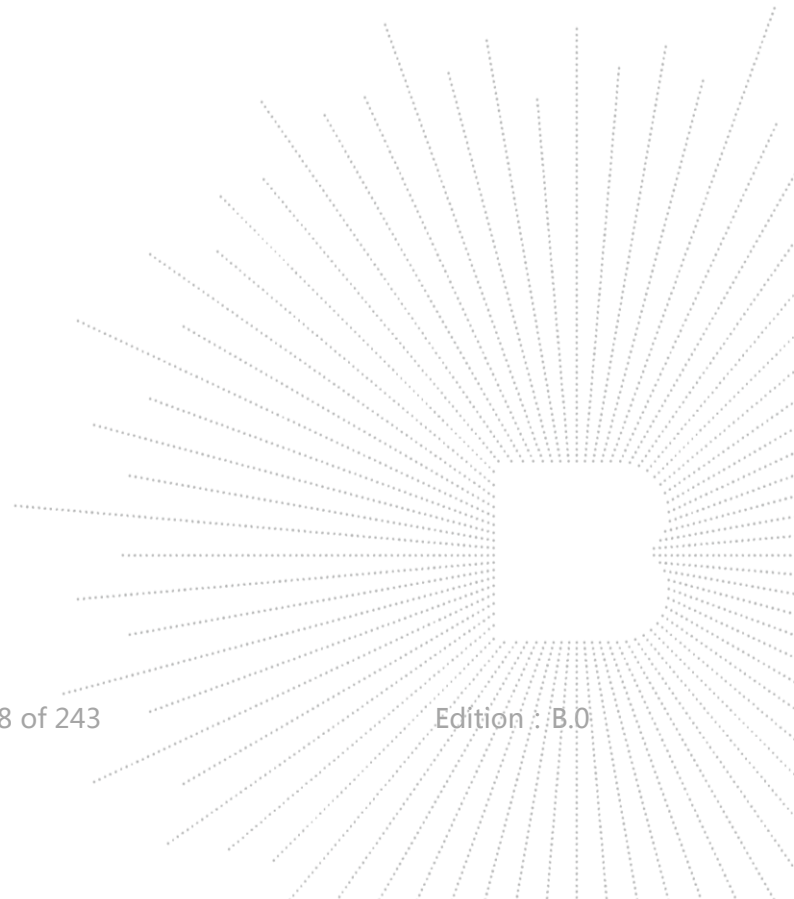
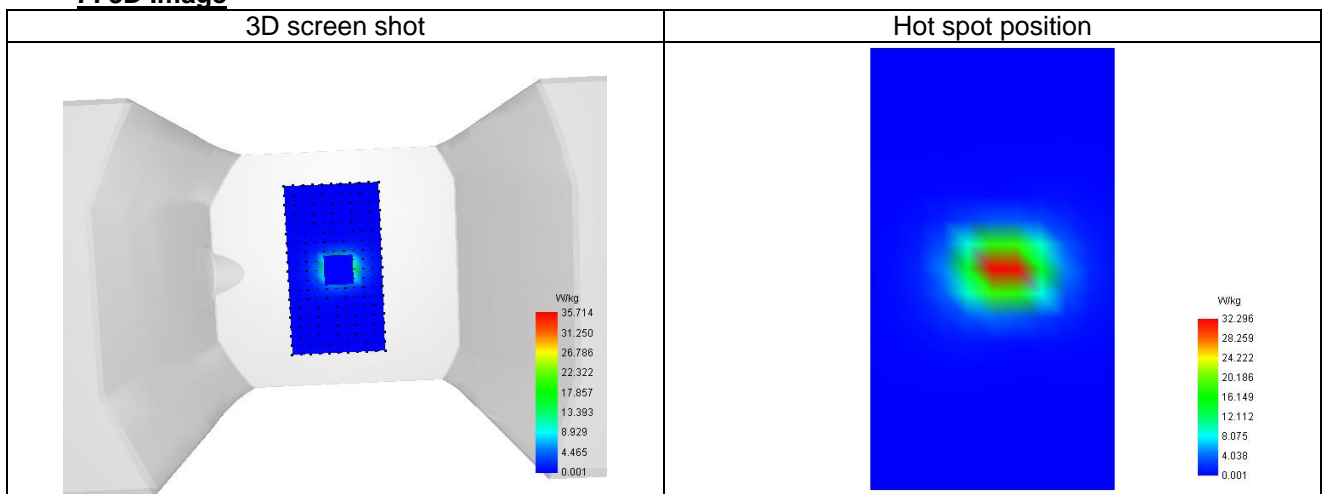
Maximum location: X=3.00, Y=0.00 ; SAR Peak: 64.02 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	5.197
SAR 1g (W/Kg)	18.425
Variation (%)	-2.170
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
SAR (W/Kg)	63.614	35.528	18.106	8.235	3.407	1.502	0.710	0.358	0.255


F. 3D Image


System check at 5800 MHz

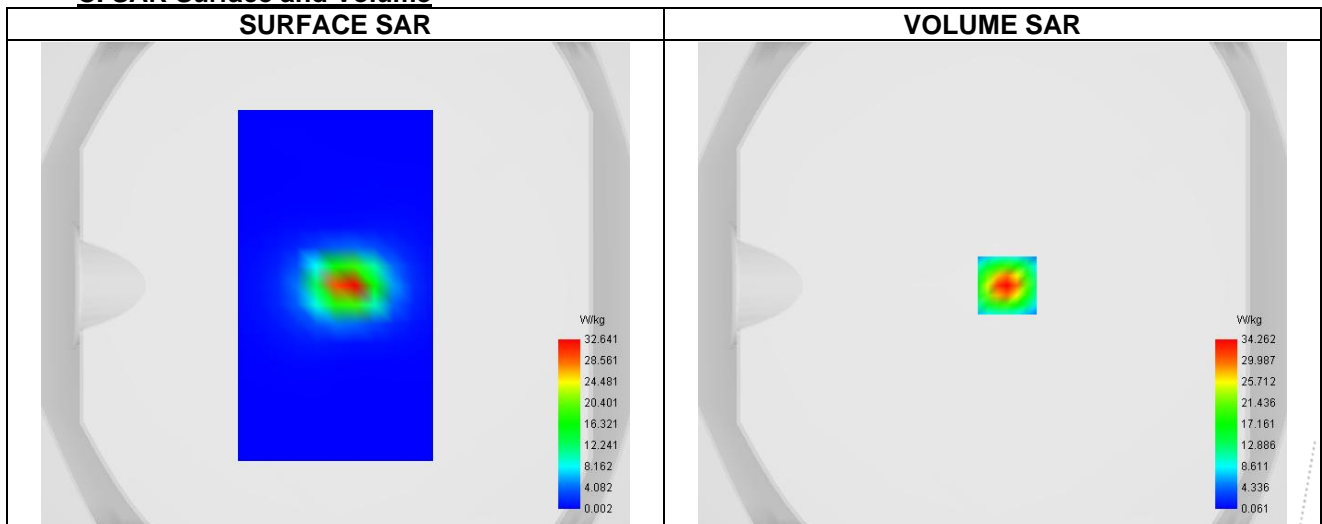
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.15
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Dipole
Band	CW5800
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	5800.000
Relative permittivity (real part)	35.721
Relative permittivity (imaginary part)	18.420
Conductivity (S/m)	5.152

C. SAR Surface and Volume



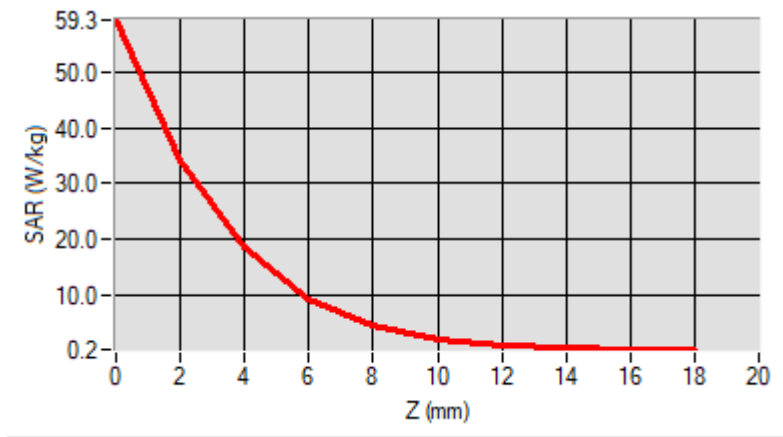
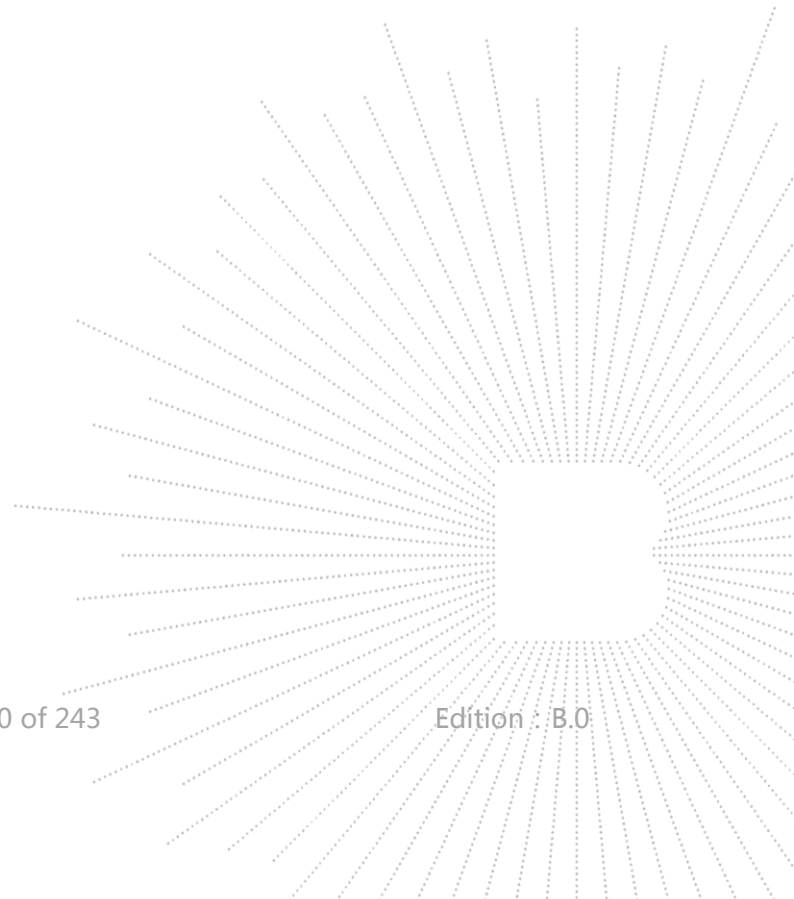
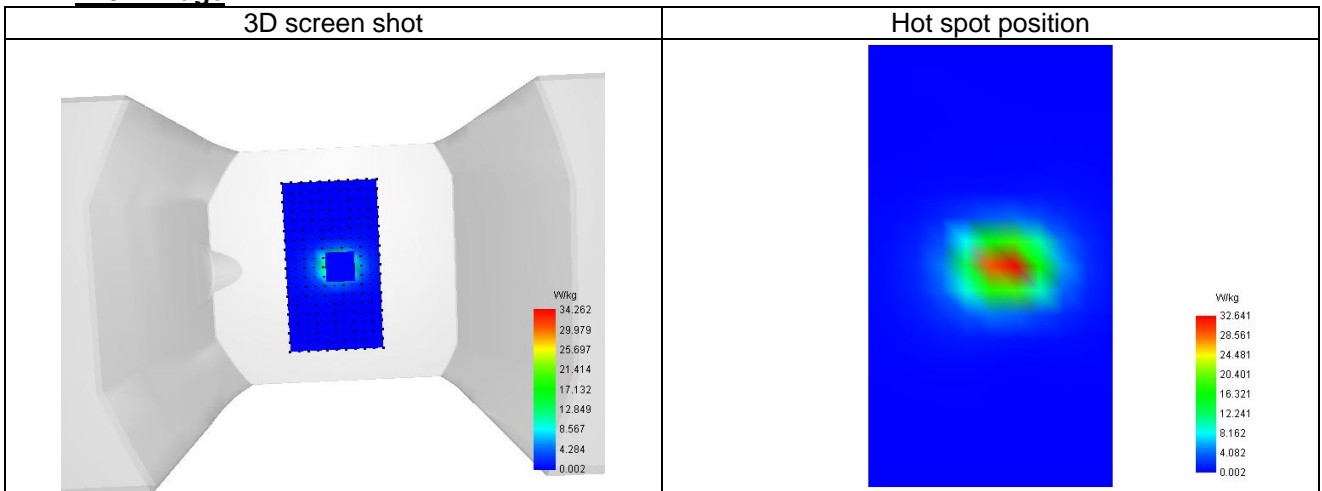
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 61.04 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	5.151
SAR 1g (W/Kg)	18.176
Variation (%)	-1.780
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
SAR (W/Kg)	59.275	34.082	18.374	9.012	4.026	2.008	1.014	0.521	0.304


F. 3D Image


15.2 SAR Test Graph Results

SAR plots for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination according to FCC KDB 865664 D02

Plot 1

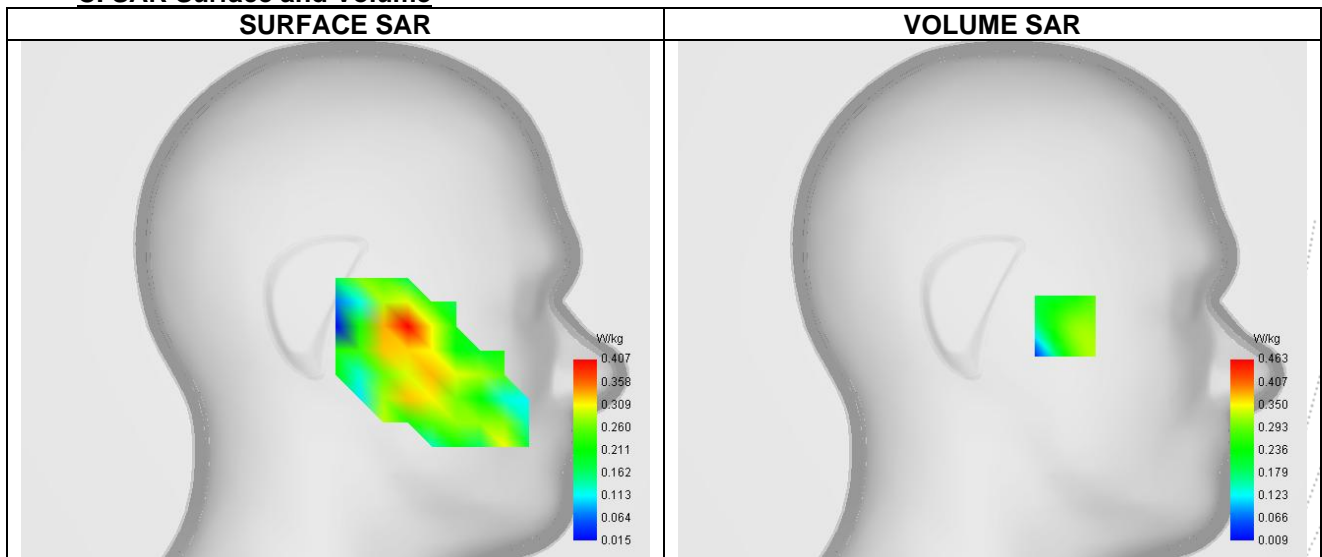
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.81
Area Scan	dx=12mm dy=12mm, Adaptative 1 max
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	GSM850
Channels	Lower (128)
Signal	TDMA (Crest factor: 8.0)

B. Permittivity

Frequency (MHz)	824.200
Relative permittivity (real part)	42.389
Relative permittivity (imaginary part)	19.340
Conductivity (S/m)	0.922

C. SAR Surface and Volume



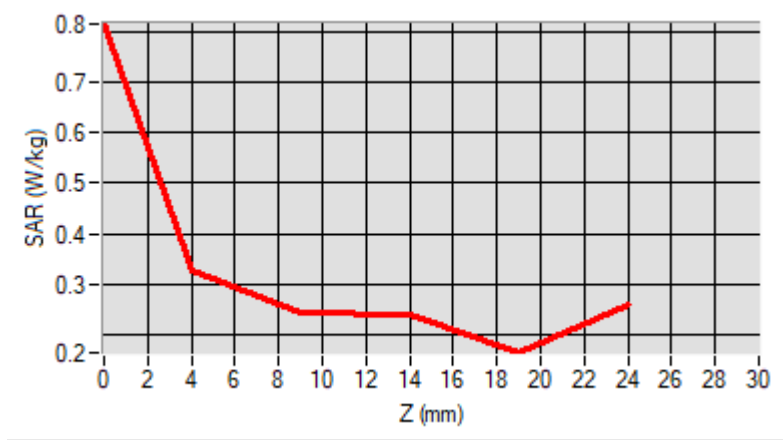
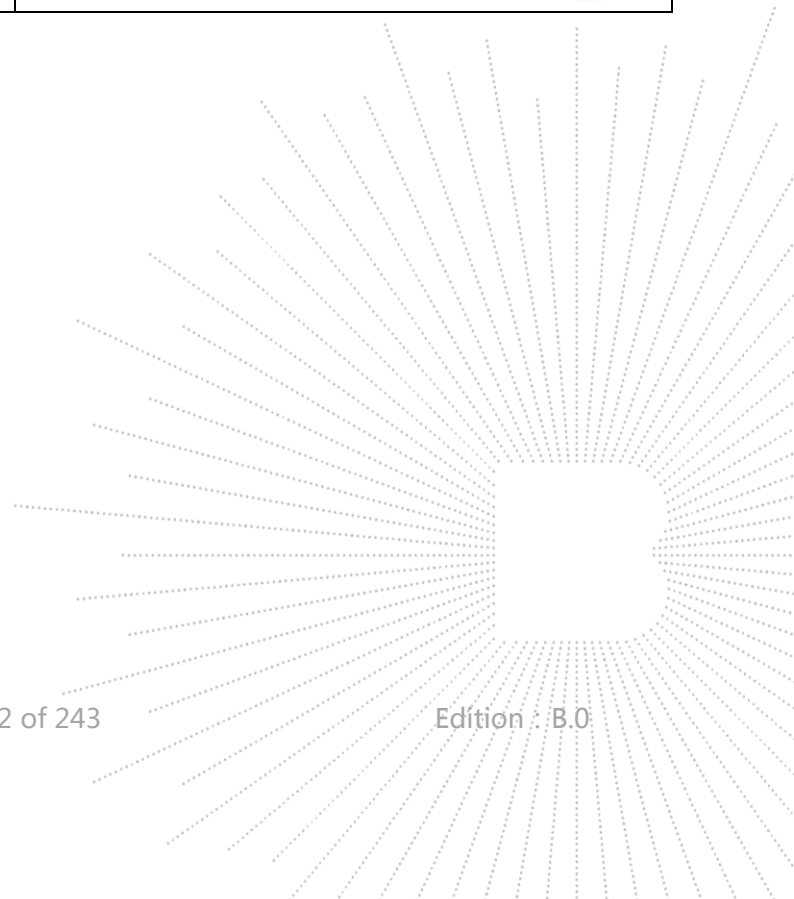
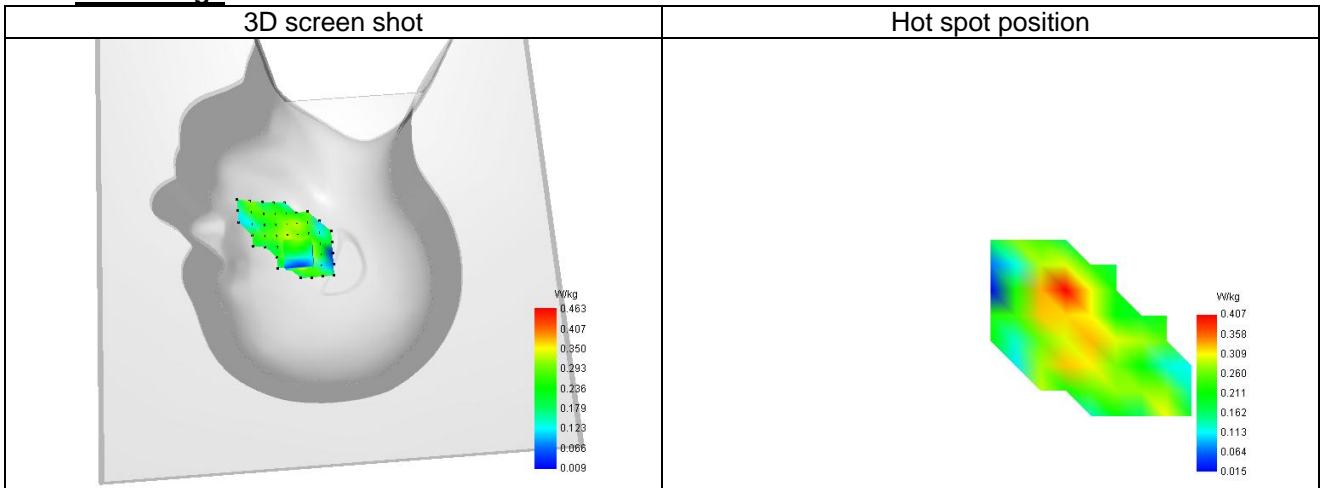
Maximum location: X=-36.00, Y=-12.00 ; SAR Peak: 0.52 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.252
SAR 1g (W/Kg)	0.310
Variation (%)	3.090
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.815	0.326	0.244	0.242	0.164


F. 3D Image


Plot 2

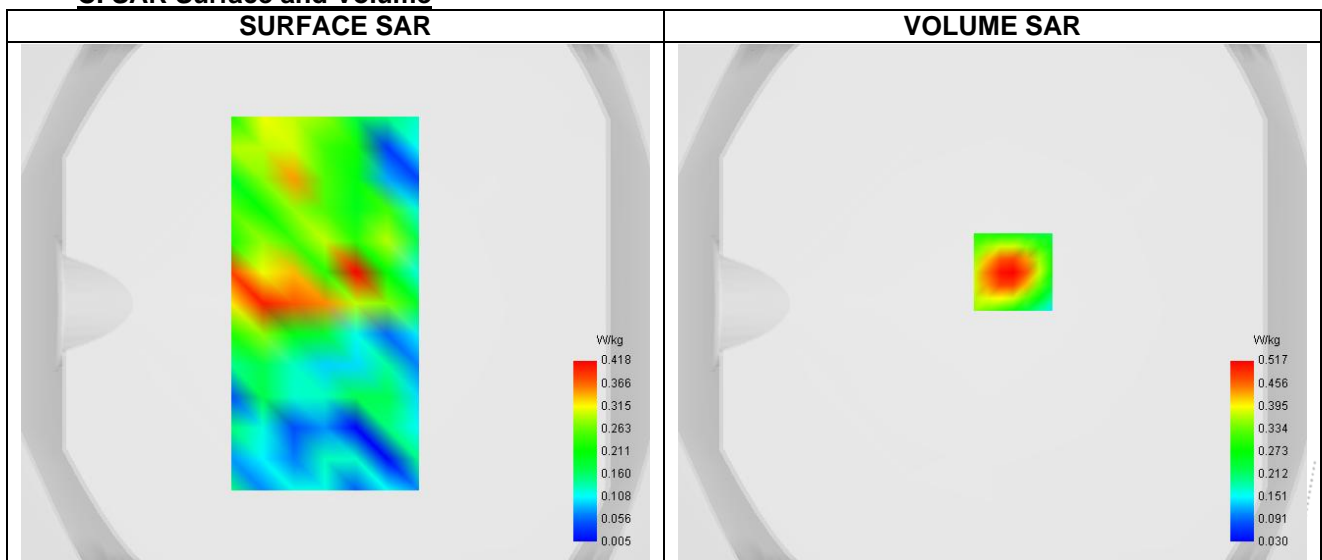
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.81
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	GPRS850_2TX
Channels	Lower (128)
Signal	Custom (Crest factor: 4.0)

B. Permittivity

Frequency (MHz)	824.200
Relative permittivity (real part)	42.389
Relative permittivity (imaginary part)	19.340
Conductivity (S/m)	0.922

C. SAR Surface and Volume

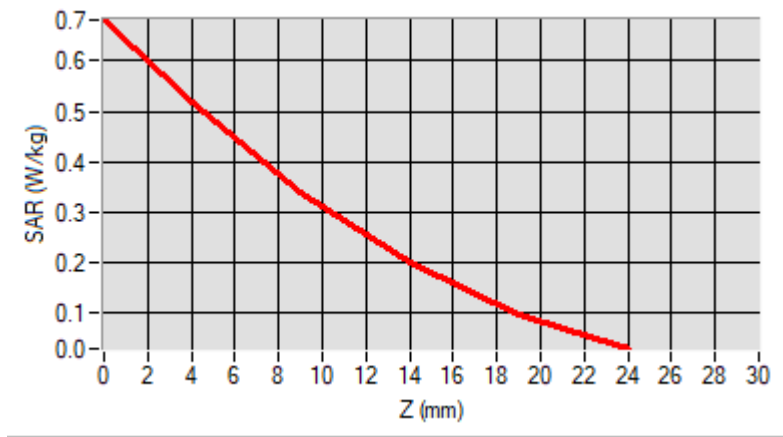
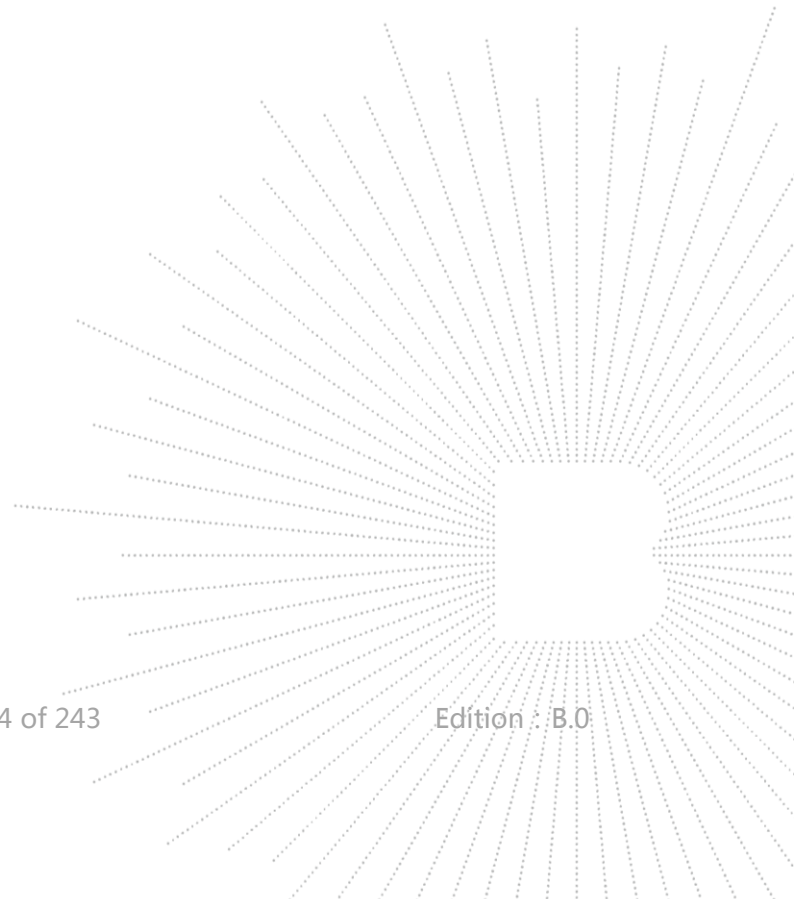
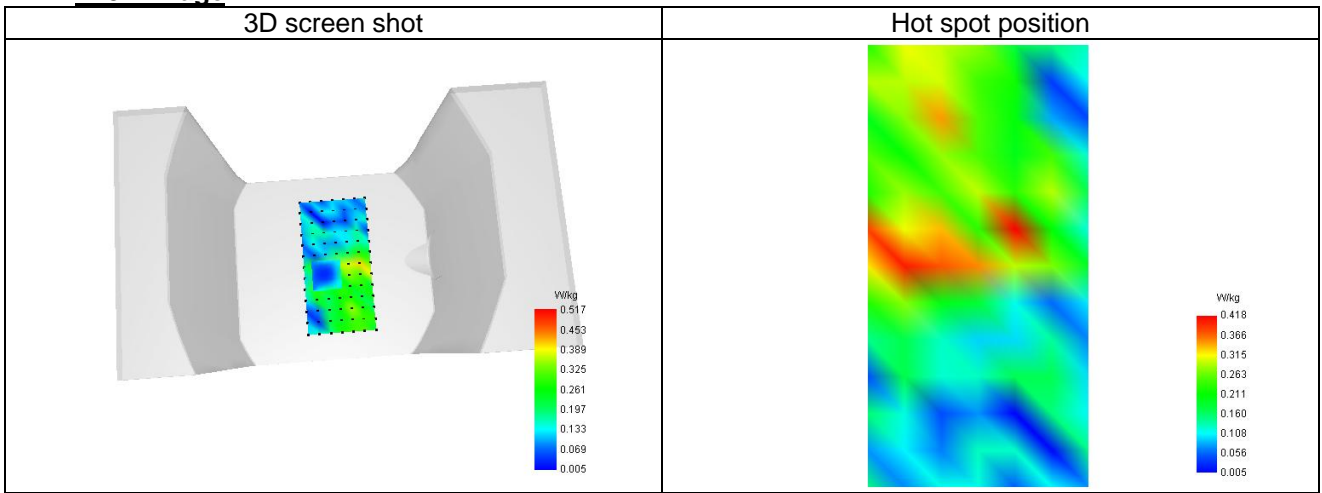


D. SAR 1g & 10g

SAR 10g (W/Kg)	0.303
SAR 1g (W/Kg)	0.476
Variation (%)	3.770
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.681	0.517	0.341	0.200	0.096


F. 3D Image


Plot 3

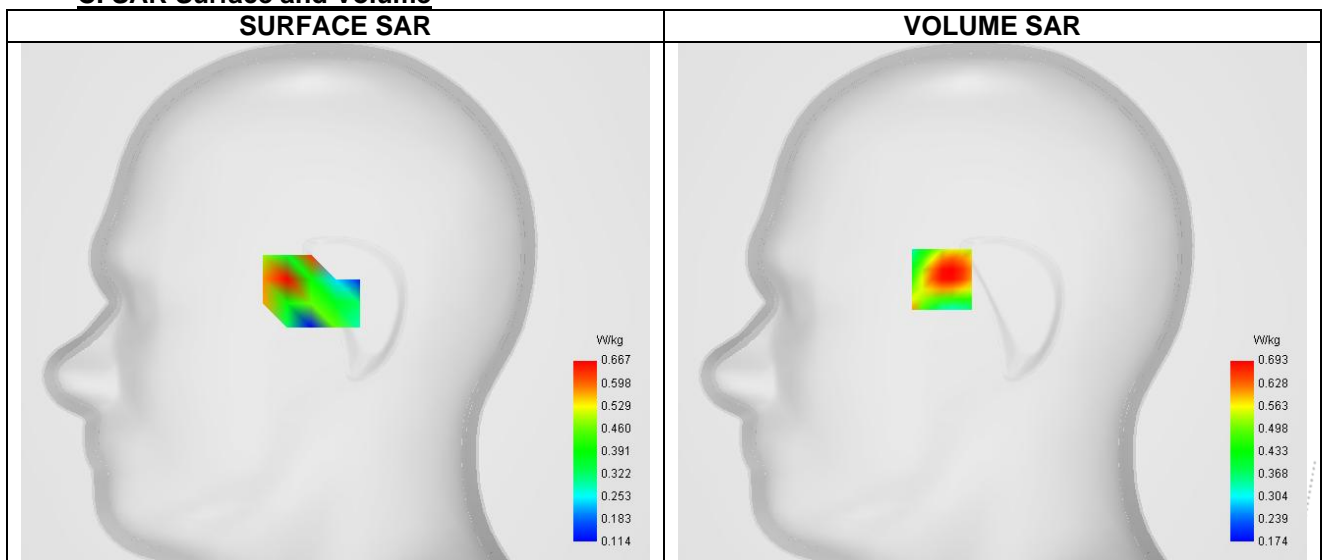
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.04
Area Scan	dx=12mm dy=12mm, Adaptive 1 max
Zoom Scan	7x7x7, dx=5mm dy=5mm dz=5mm
Phantom	Right head
Device Position	Cheek
Band	GSM1900
Channels	Middle (661)
Signal	TDMA (Crest factor: 8.0)

B. Permittivity

Frequency (MHz)	1880.000
Relative permittivity (real part)	40.994
Relative permittivity (imaginary part)	13.408
Conductivity (S/m)	1.387

C. SAR Surface and Volume

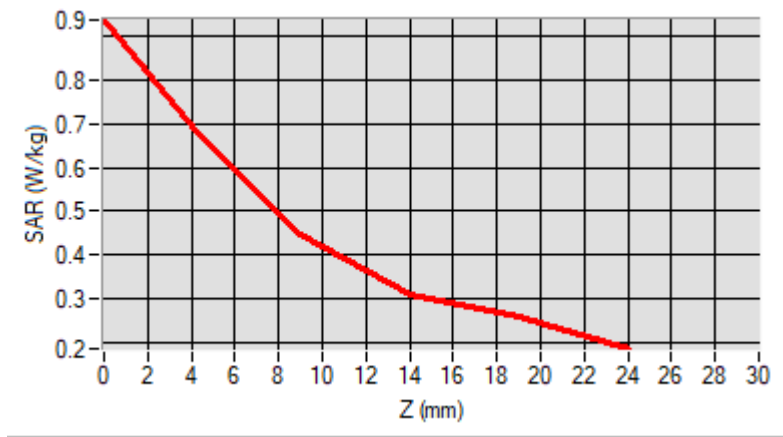
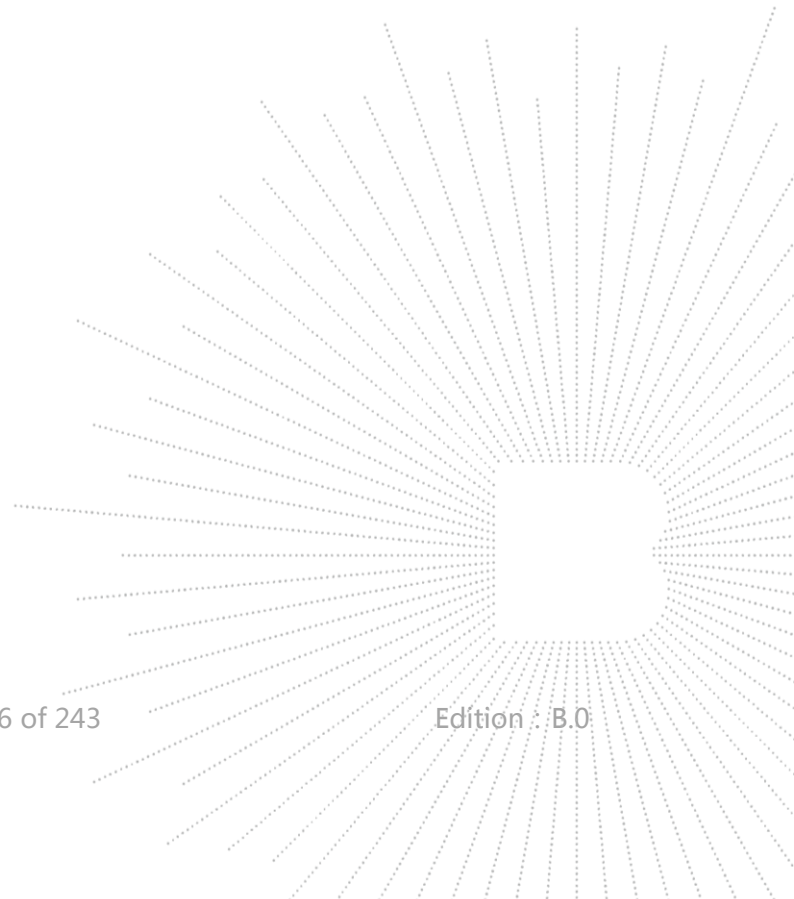
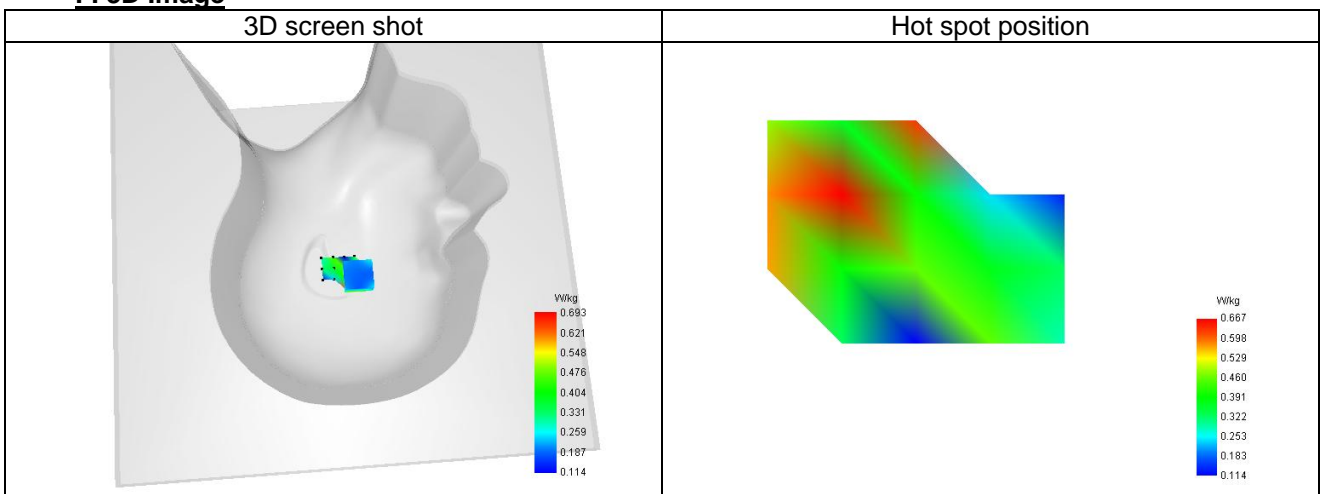


D. SAR 1g & 10g

SAR 10g (W/Kg)	0.433
SAR 1g (W/Kg)	0.647
Variation (%)	2.140
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.938	0.693	0.446	0.310	0.257


F. 3D Image


Plot 4

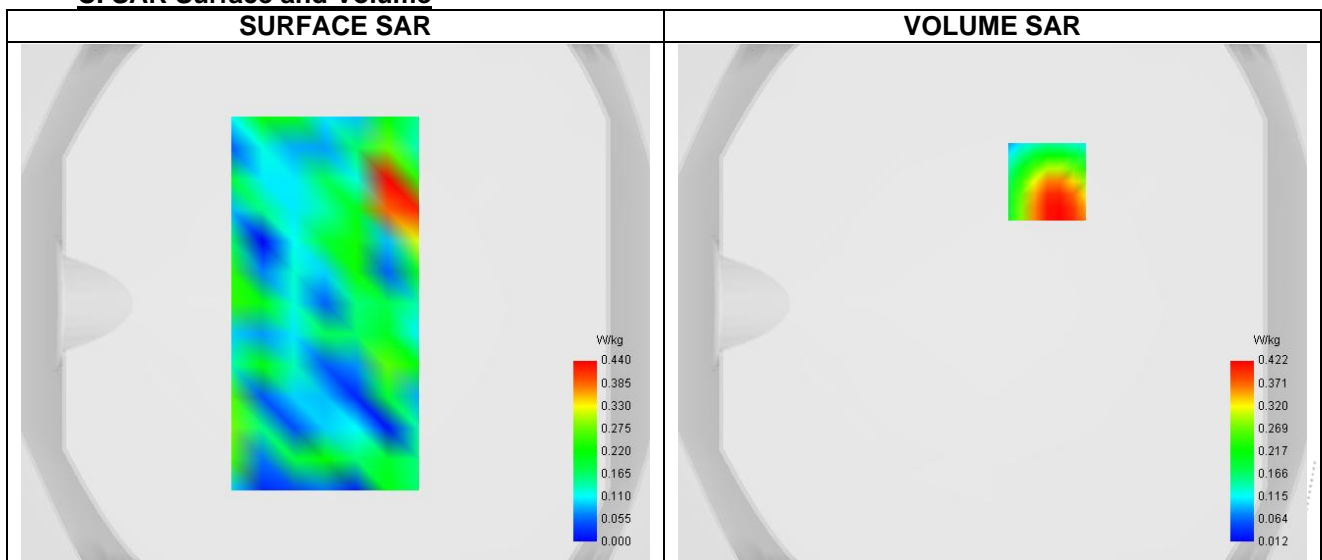
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.04
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	GPRS1900_2TX
Channels	Lower (512)
Signal	Custom (Crest factor: 4.0)

B. Permittivity

Frequency (MHz)	1850.200
Relative permittivity (real part)	40.925
Relative permittivity (imaginary part)	13.408
Conductivity (S/m)	1.375

C. SAR Surface and Volume

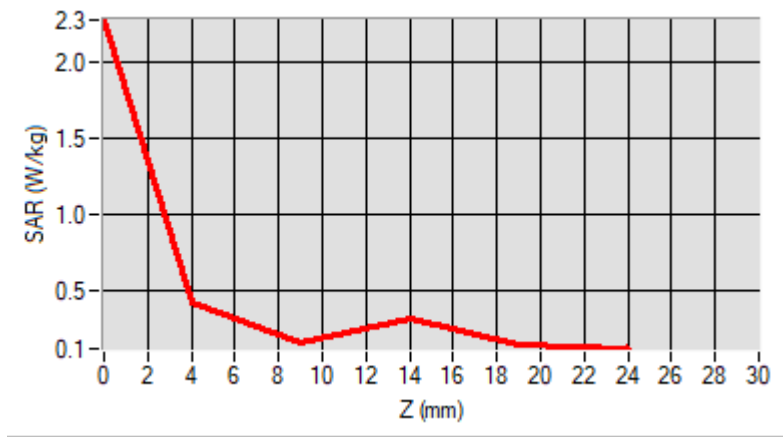
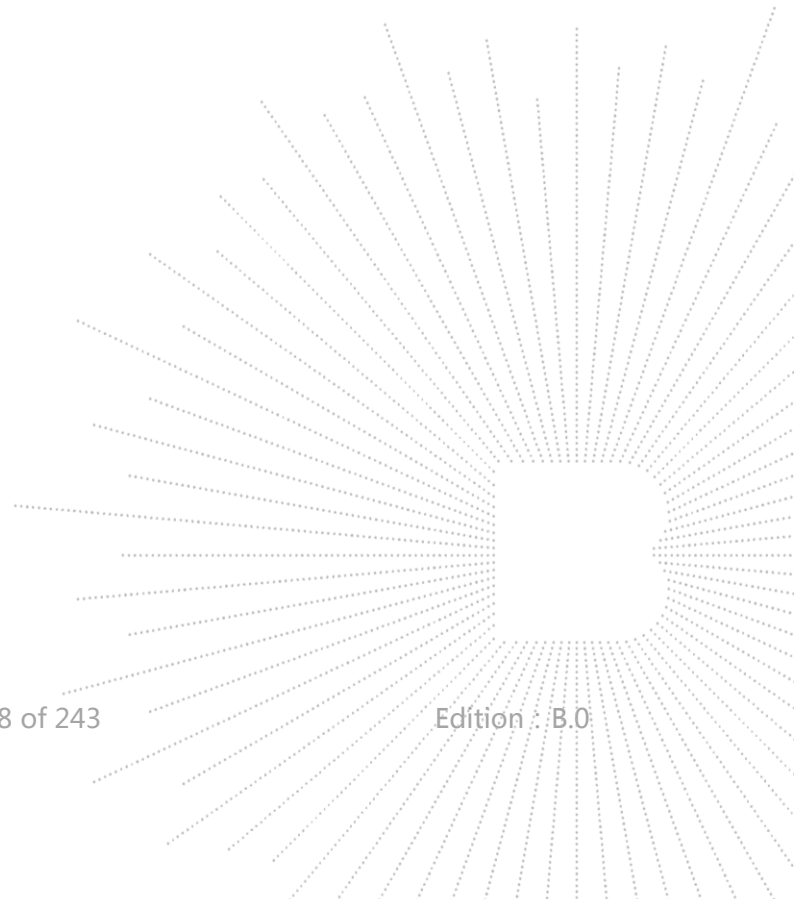
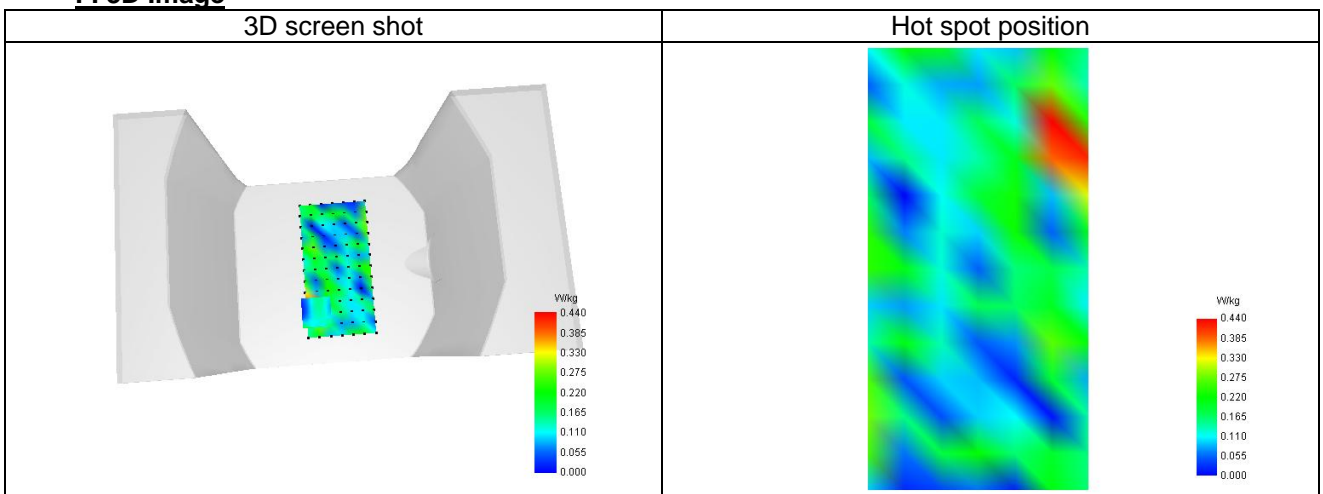


D. SAR 1g & 10g

SAR 10g (W/Kg)	0.255
SAR 1g (W/Kg)	0.413
Variation (%)	-1.260
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	2.272	0.422	0.155	0.319	0.141


F. 3D Image


Plot 5

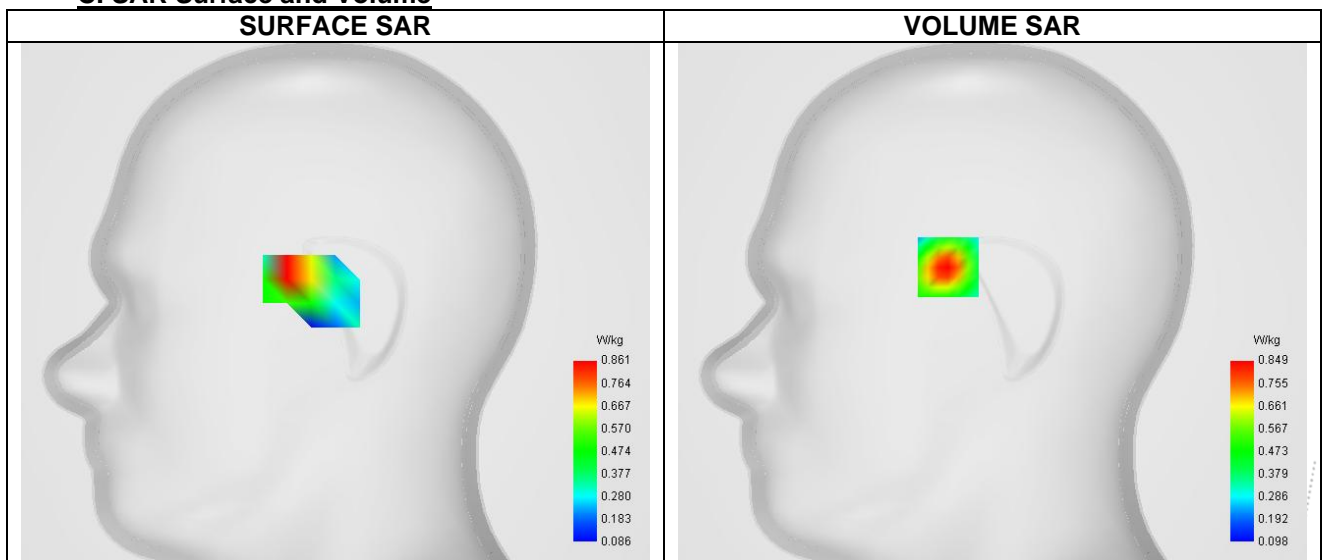
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.04
Area Scan	dx=12mm dy=12mm, Adaptive 1 max
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Right head
Device Position	Cheek
Band	Band2_WCDMA1900
Channels	Middle (9400)
Signal	WCDMA (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	1880.000
Relative permittivity (real part)	40.994
Relative permittivity (imaginary part)	13.408
Conductivity (S/m)	1.387

C. SAR Surface and Volume



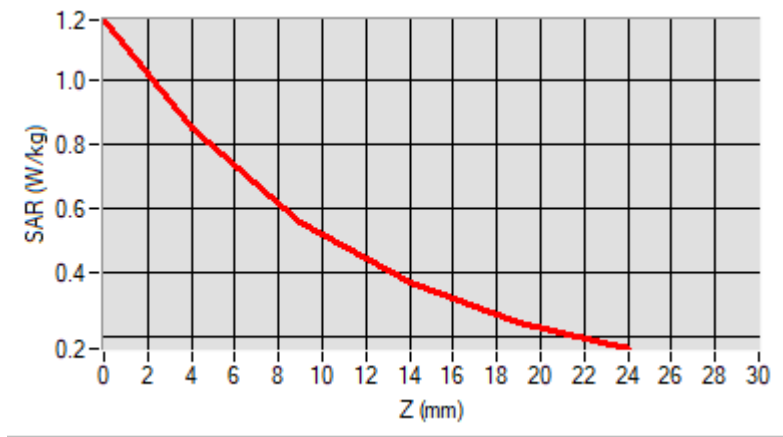
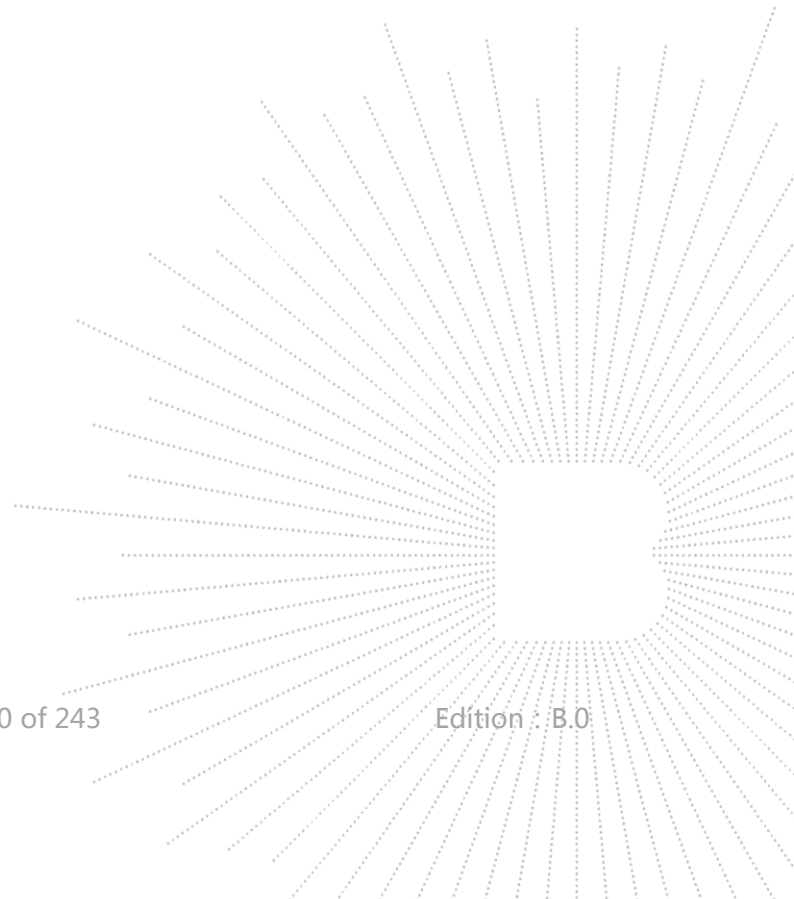
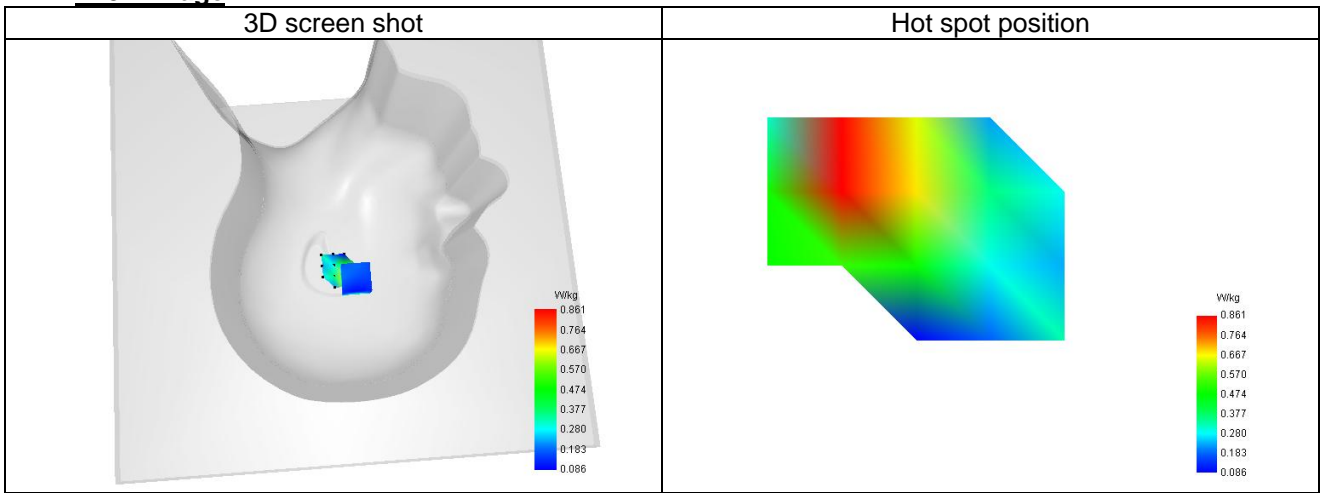
Maximum location: X=-22.00, Y=18.00 ; SAR Peak: 1.19 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.468
SAR 1g (W/Kg)	0.778
Variation (%)	-1.080
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.184	0.849	0.556	0.368	0.248


F. 3D Image


Plot 6

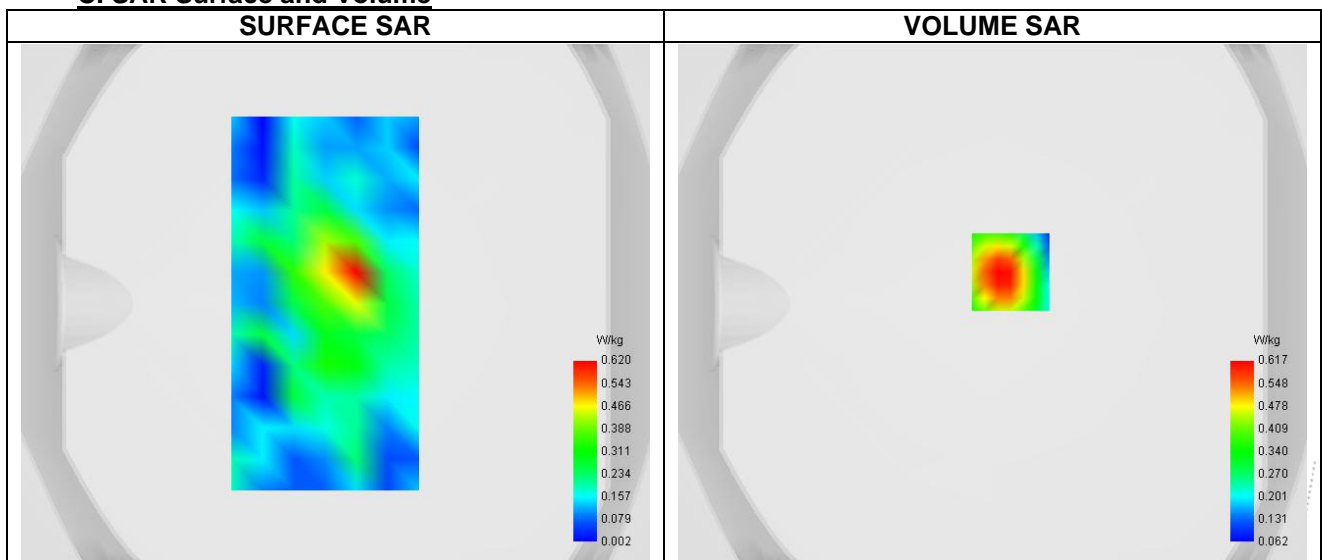
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.04
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	Band2_WCDMA1900
Channels	Middle (9400)
Signal	WCDMA (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	1880.000
Relative permittivity (real part)	40.994
Relative permittivity (imaginary part)	13.408
Conductivity (S/m)	1.387

C. SAR Surface and Volume

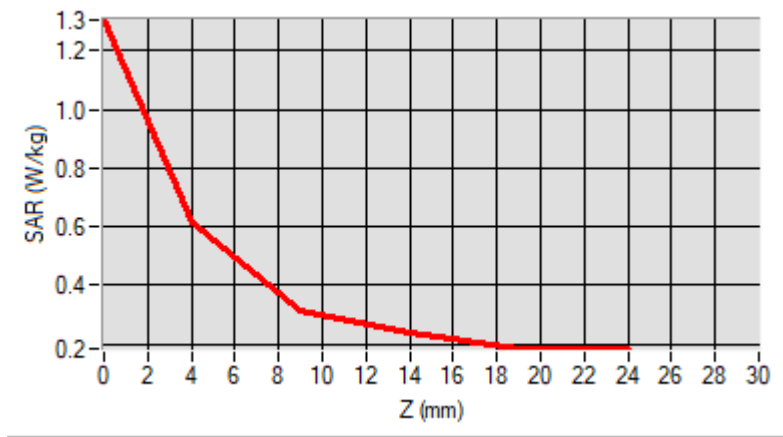
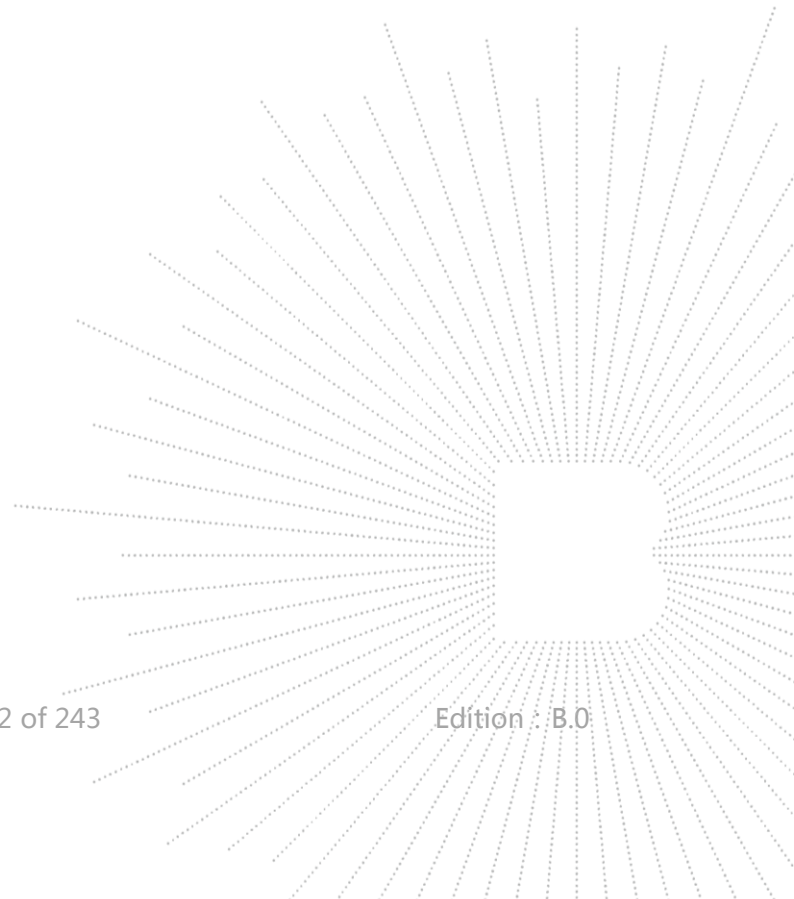
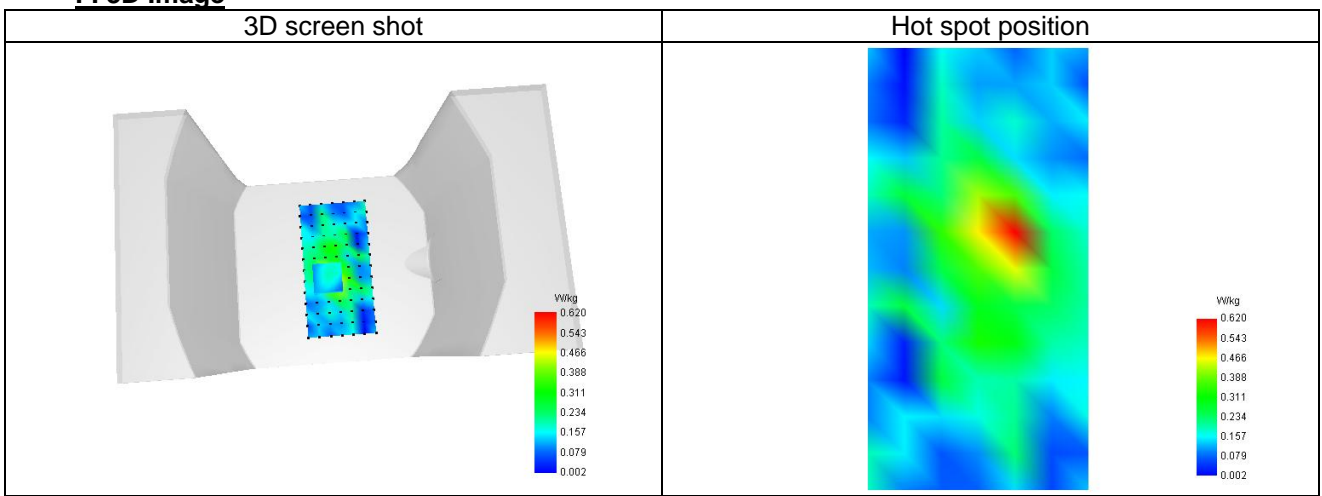


D. SAR 1g & 10g

SAR 10g (W/Kg)	0.350
SAR 1g (W/Kg)	0.582
Variation (%)	1.780
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.304	0.617	0.314	0.238	0.185


F. 3D Image


Plot 7

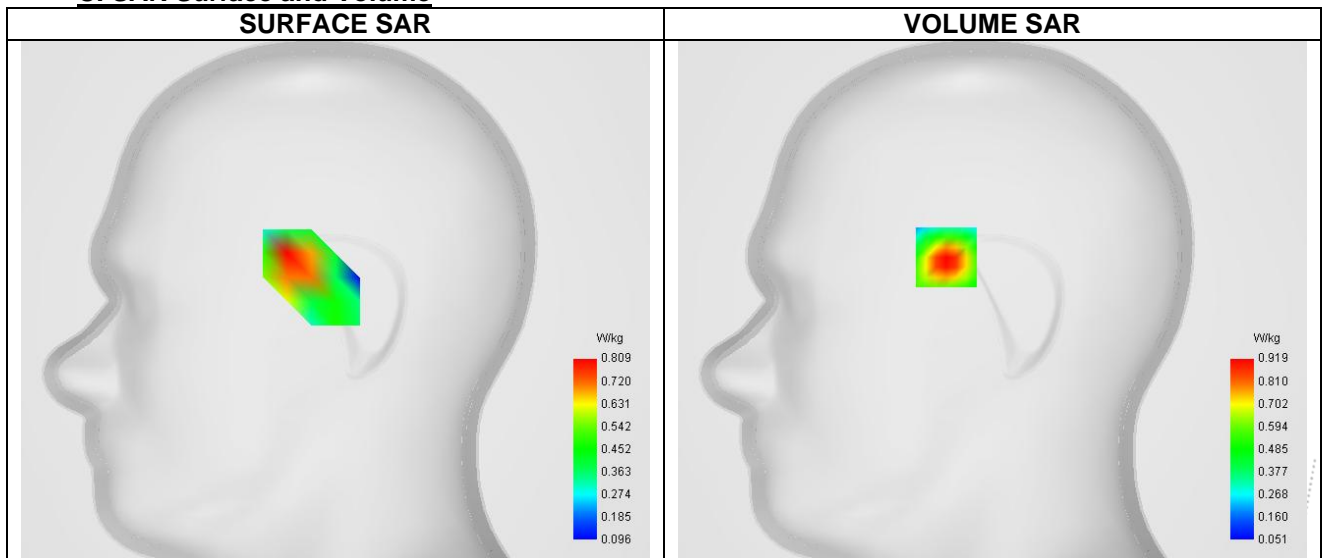
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.96
Area Scan	dx=12mm dy=12mm, Adaptive 1 max
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Right head
Device Position	Cheek
Band	Band4_WCDMA1700
Channels	Higher (1513)
Signal	WCDMA (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	1752.600
Relative permittivity (real part)	41.303
Relative permittivity (imaginary part)	14.137
Conductivity (S/m)	1.345

C. SAR Surface and Volume

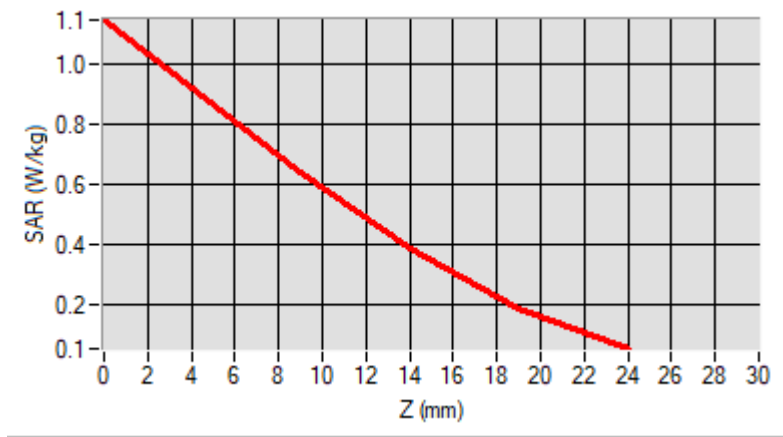
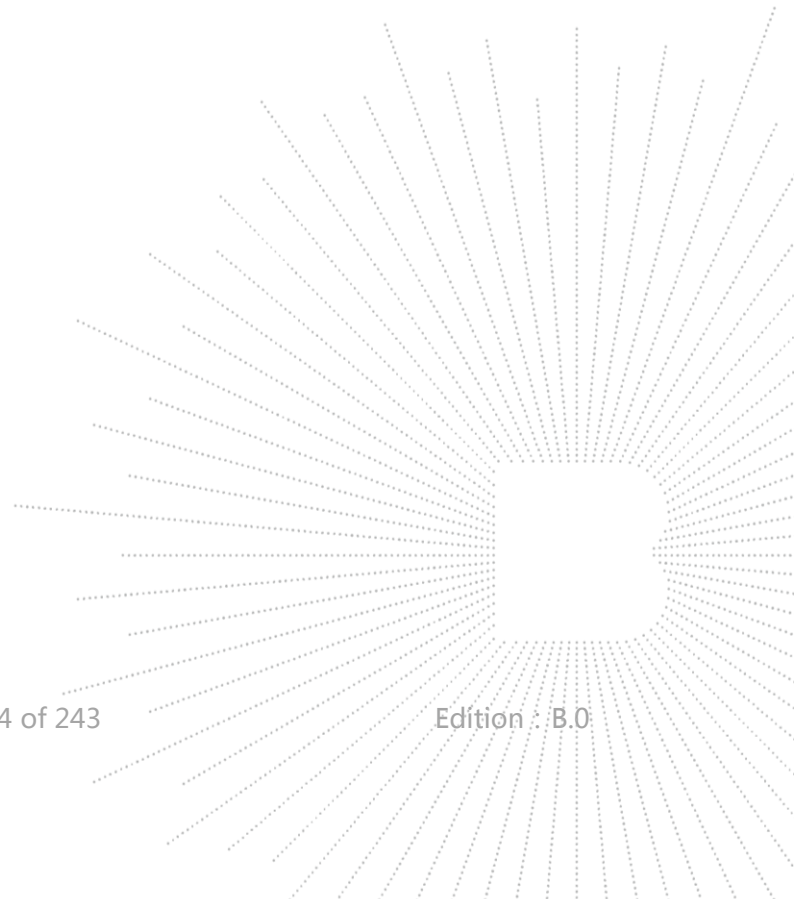
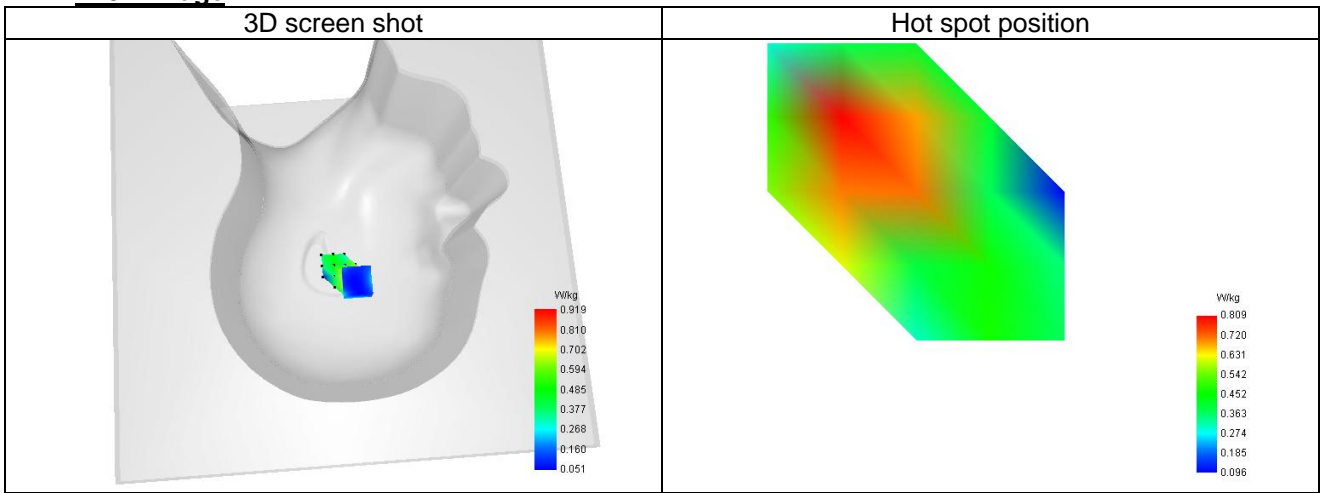


D. SAR 1g & 10g

SAR 10g (W/Kg)	0.498
SAR 1g (W/Kg)	0.843
Variation (%)	2.330
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.148	0.919	0.640	0.390	0.188


F. 3D Image


Plot 8

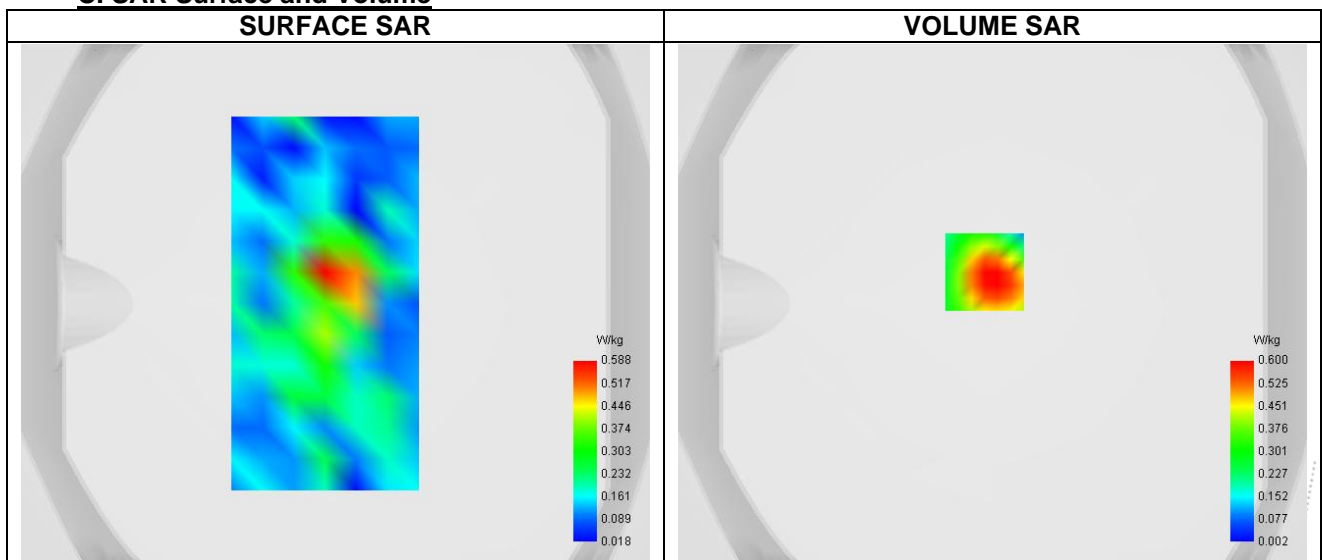
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.96
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	Band4_WCDMA1700
Channels	Higher (1513)
Signal	WCDMA (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	1752.600
Relative permittivity (real part)	41.303
Relative permittivity (imaginary part)	14.137
Conductivity (S/m)	1.345

C. SAR Surface and Volume



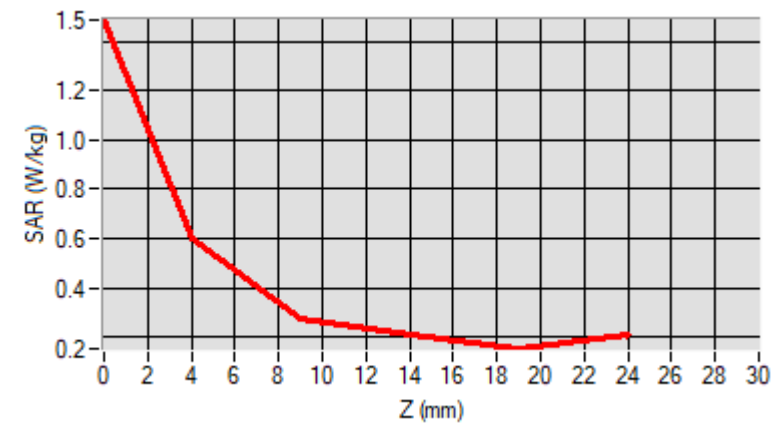
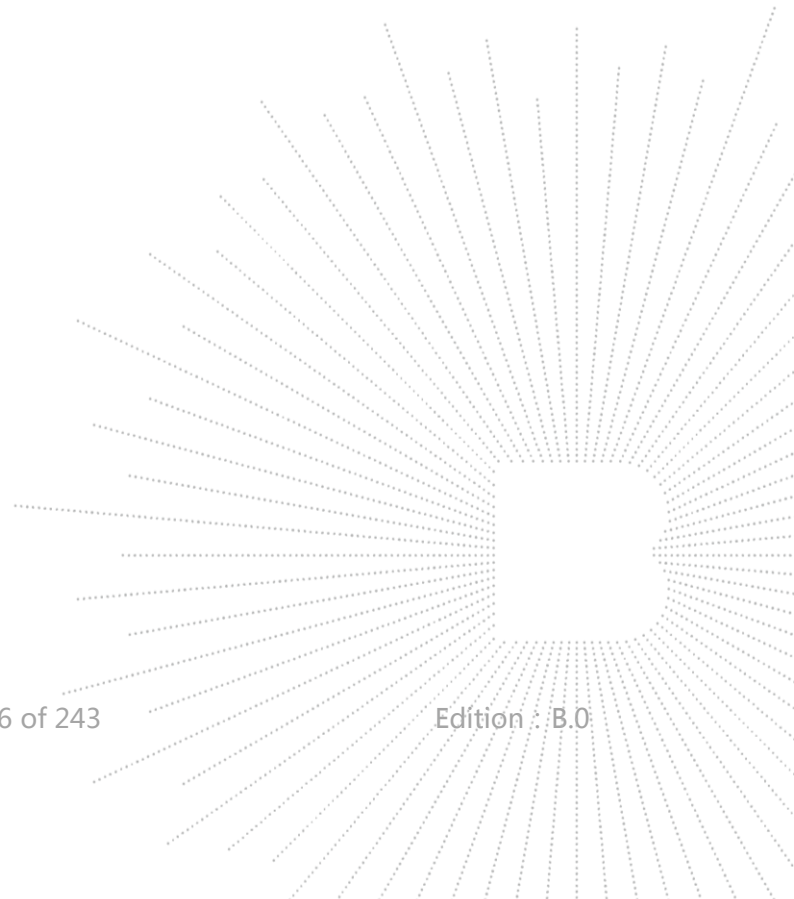
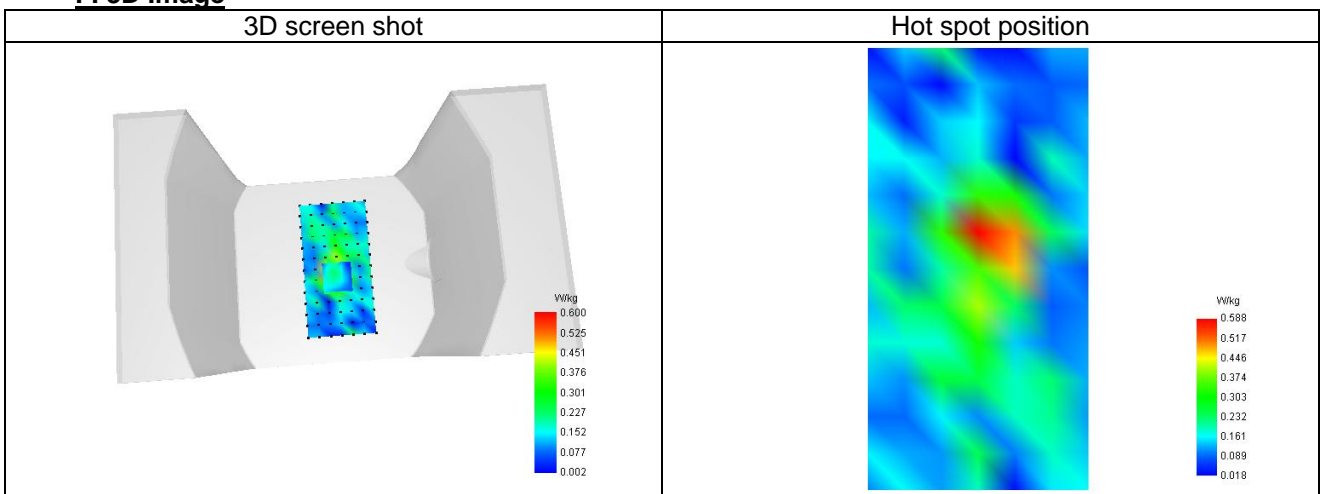
Maximum location: X=-3.00, Y=12.00 ; SAR Peak: 1.01 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.342
SAR 1g (W/Kg)	0.579
Variation (%)	2.030
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.487	0.600	0.272	0.213	0.153


F. 3D Image


Plot 9

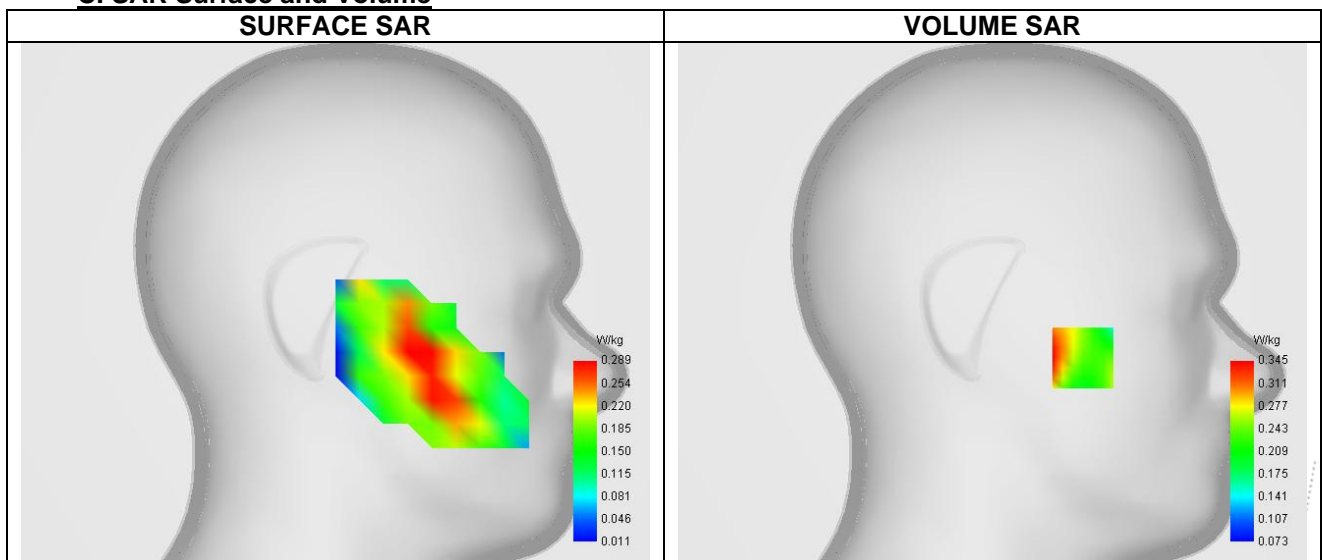
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.81
Area Scan	dx=12mm dy=12mm, Adaptive 1 max
Zoom Scan	7x7x7, dx=5mm dy=5mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	Band5_WCDMA850
Channels	Higher (4233)
Signal	WCDMA (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	846.600
Relative permittivity (real part)	42.355
Relative permittivity (imaginary part)	20.226
Conductivity (S/m)	0.934

C. SAR Surface and Volume



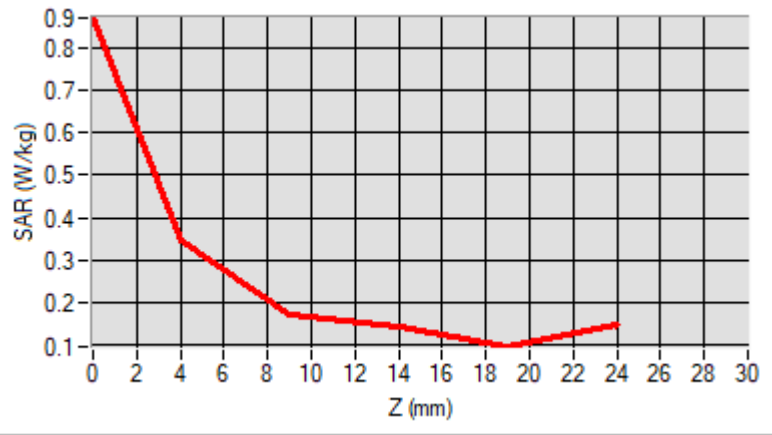
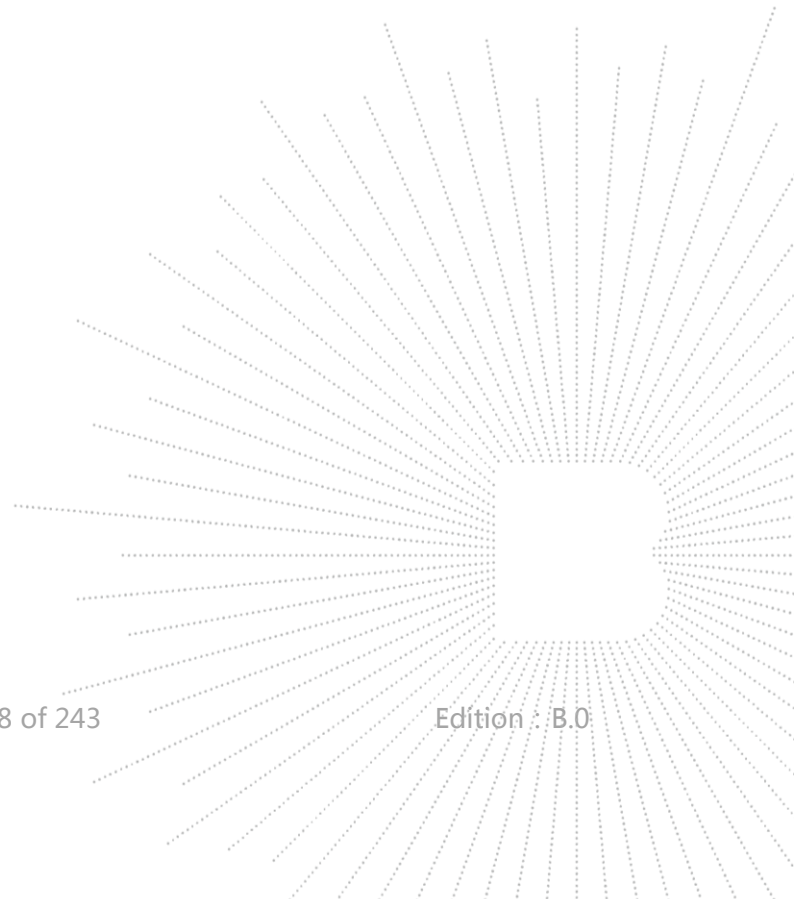
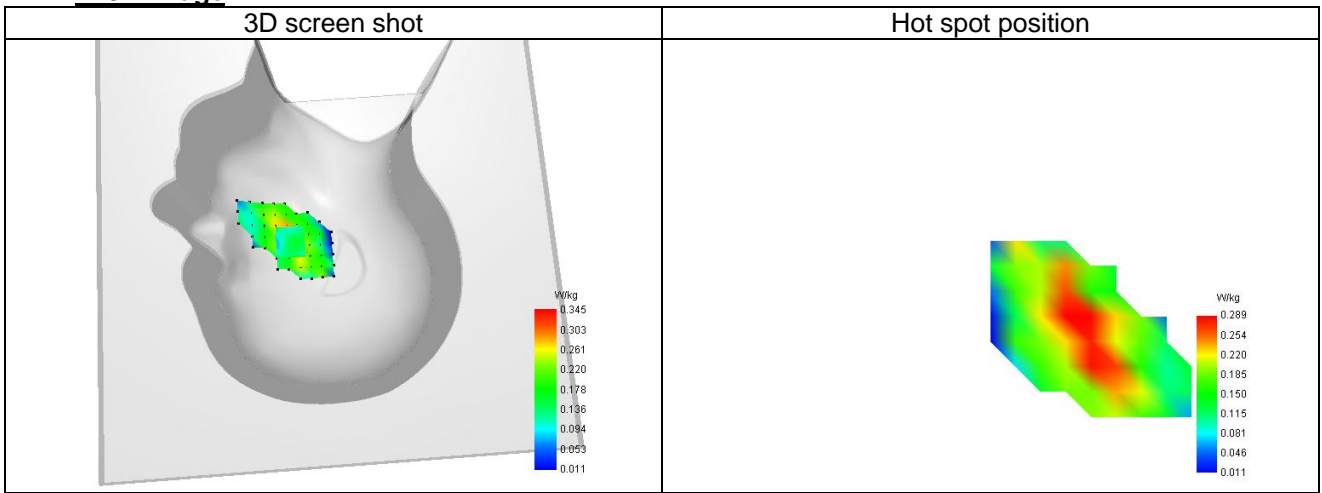
Maximum location: X=-45.00, Y=-27.00 ; SAR Peak: 0.55 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.218
SAR 1g (W/Kg)	0.314
Variation (%)	2.800
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.869	0.345	0.174	0.144	0.097


F. 3D Image


Plot 10

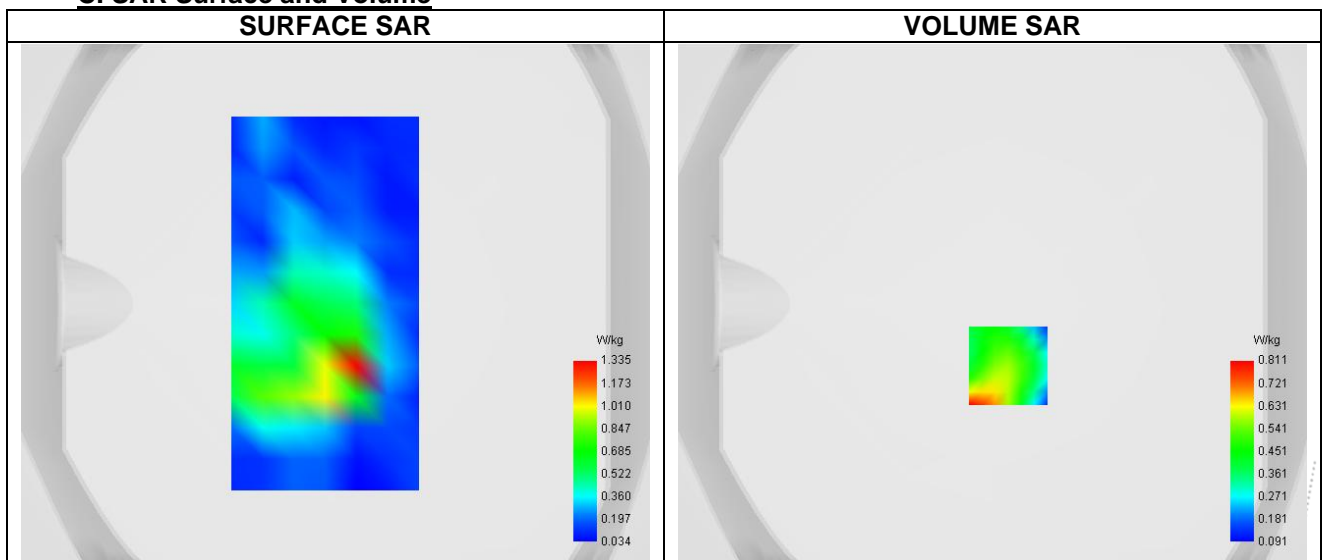
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.81
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	Band5_WCDMA850
Channels	Higher (4233)
Signal	WCDMA (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	846.600
Relative permittivity (real part)	42.355
Relative permittivity (imaginary part)	20.226
Conductivity (S/m)	0.934

C. SAR Surface and Volume

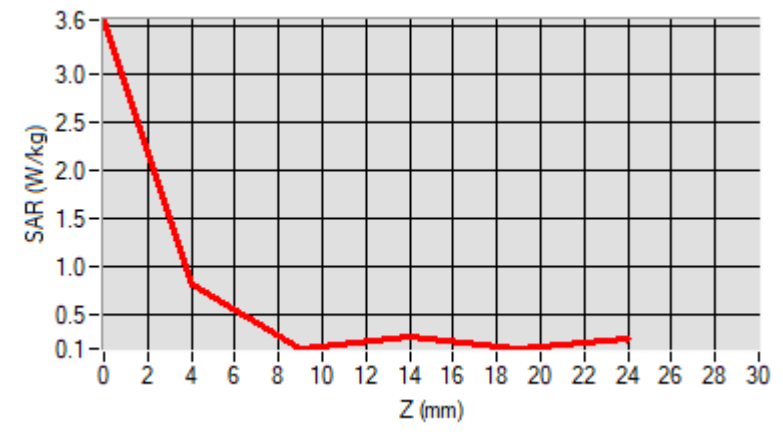
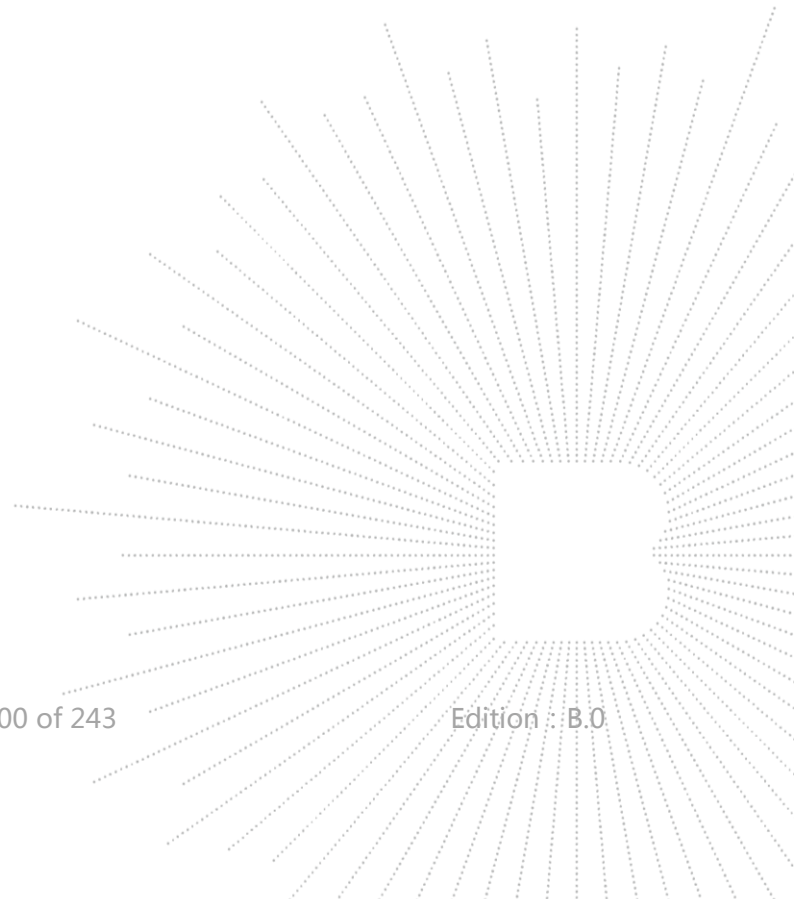
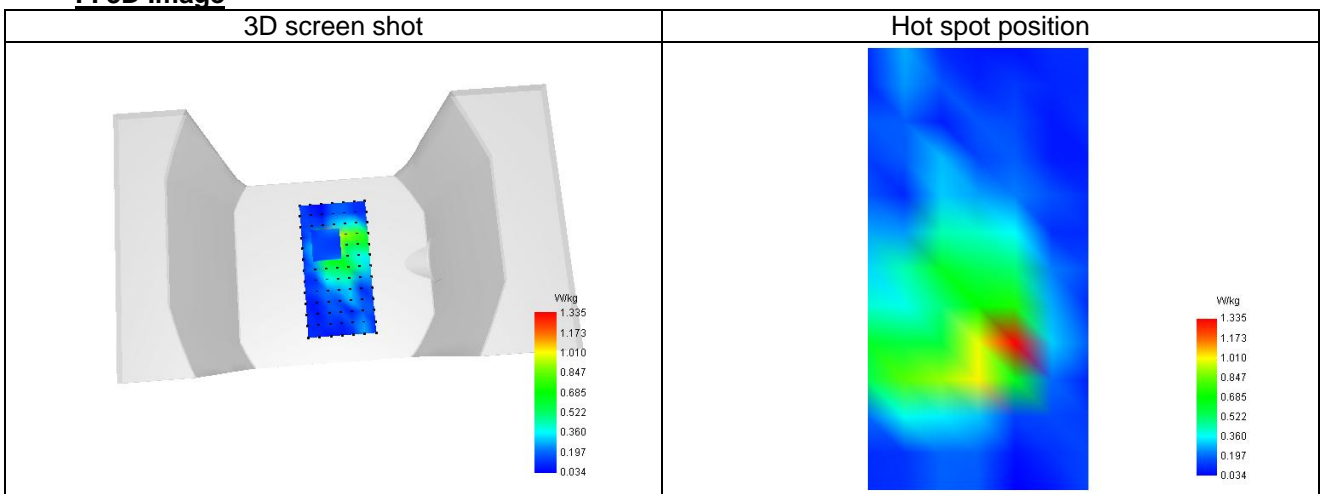


D. SAR 1g & 10g

SAR 10g (W/Kg)	0.387
SAR 1g (W/Kg)	0.650
Variation (%)	-0.060
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	3.562	0.811	0.138	0.260	0.144


F. 3D Image


Plot 11

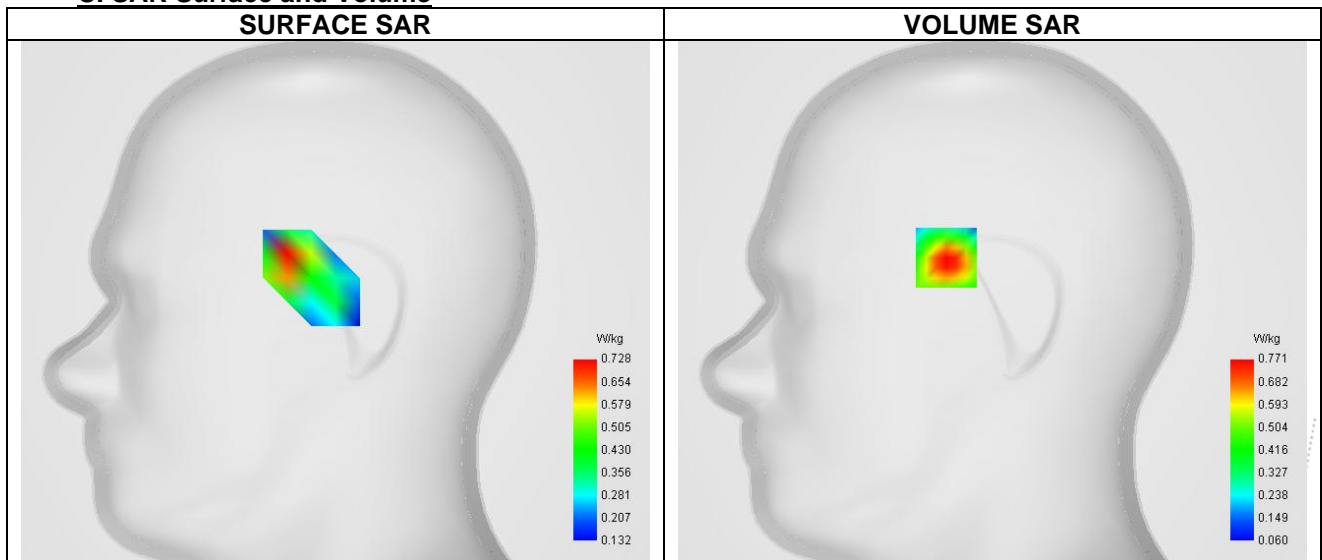
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.04
Area Scan	dx=12mm dy=12mm, Adaptive 1 max
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Right head
Device Position	Cheek
Band	LTE band 2
Channels	Middle (18900)
Signal	LTE (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	1880.000
Relative permittivity (real part)	40.994
Relative permittivity (imaginary part)	13.408
Conductivity (S/m)	1.387

C. SAR Surface and Volume



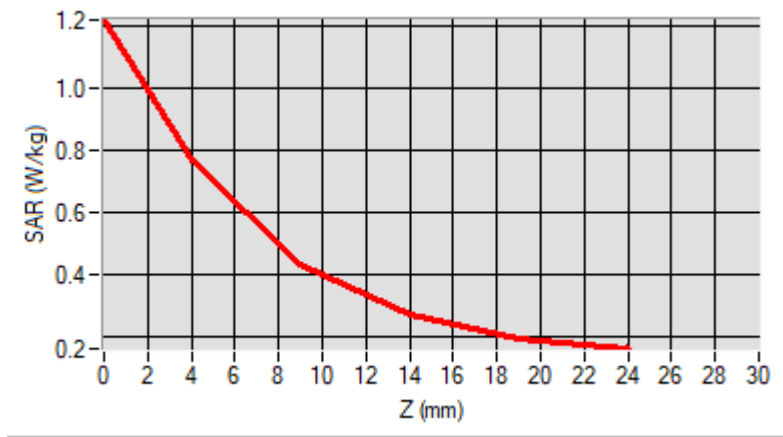
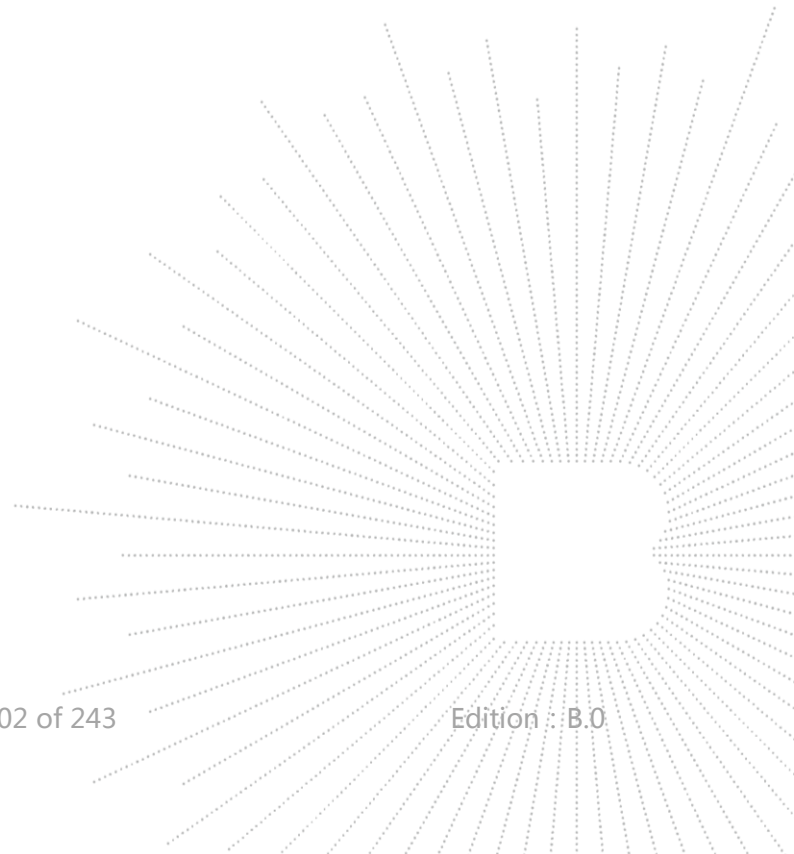
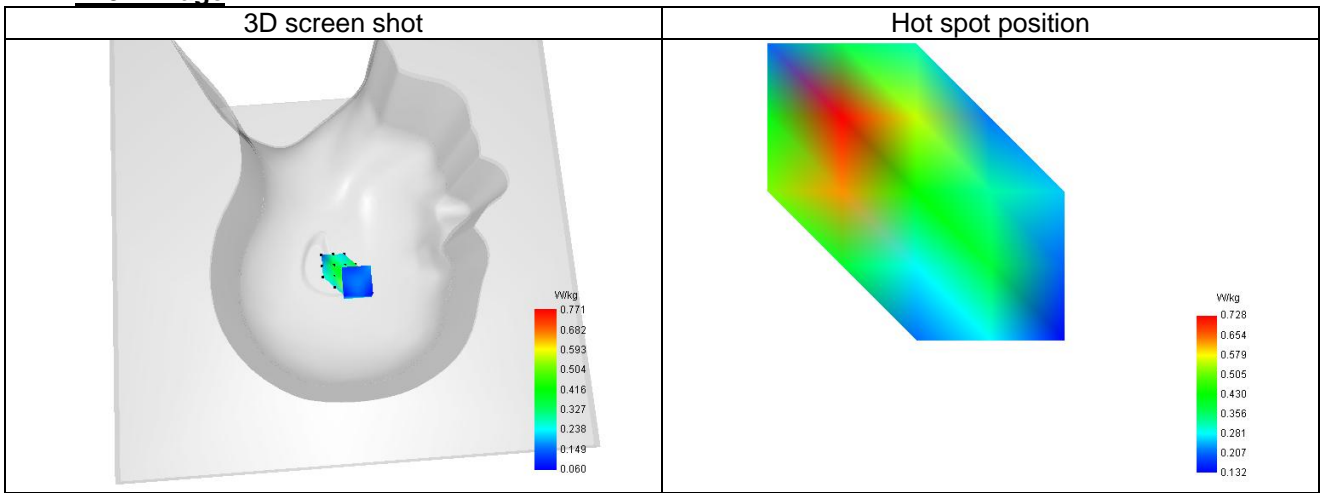
Maximum location: X=-23.00, Y=22.00 ; SAR Peak: 1.25 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.418
SAR 1g (W/Kg)	0.723
Variation (%)	-1.750
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.221	0.771	0.436	0.271	0.199


F. 3D Image


Plot 12

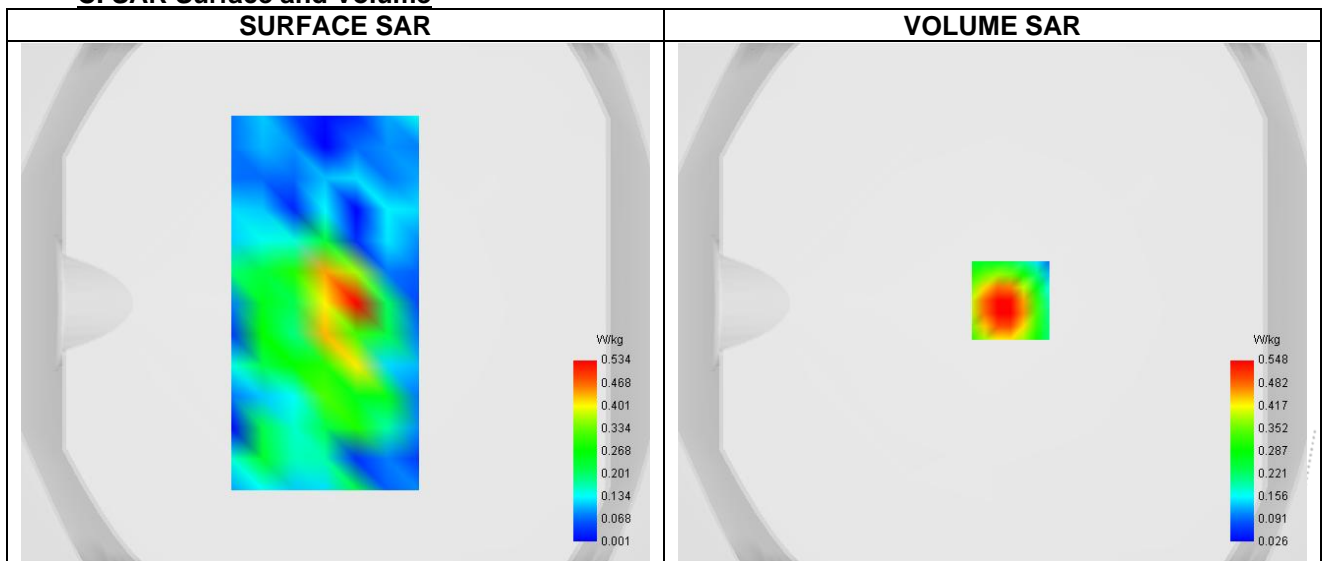
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.04
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 2
Channels	Middle (18900)
Signal	LTE (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	1880.000
Relative permittivity (real part)	40.994
Relative permittivity (imaginary part)	13.408
Conductivity (S/m)	1.387

C. SAR Surface and Volume



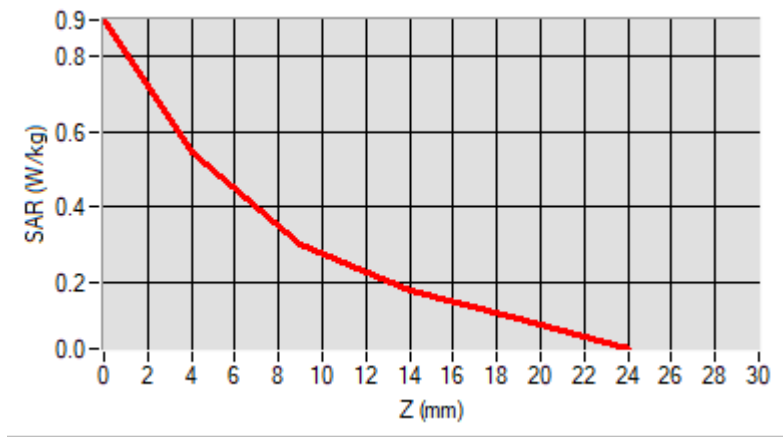
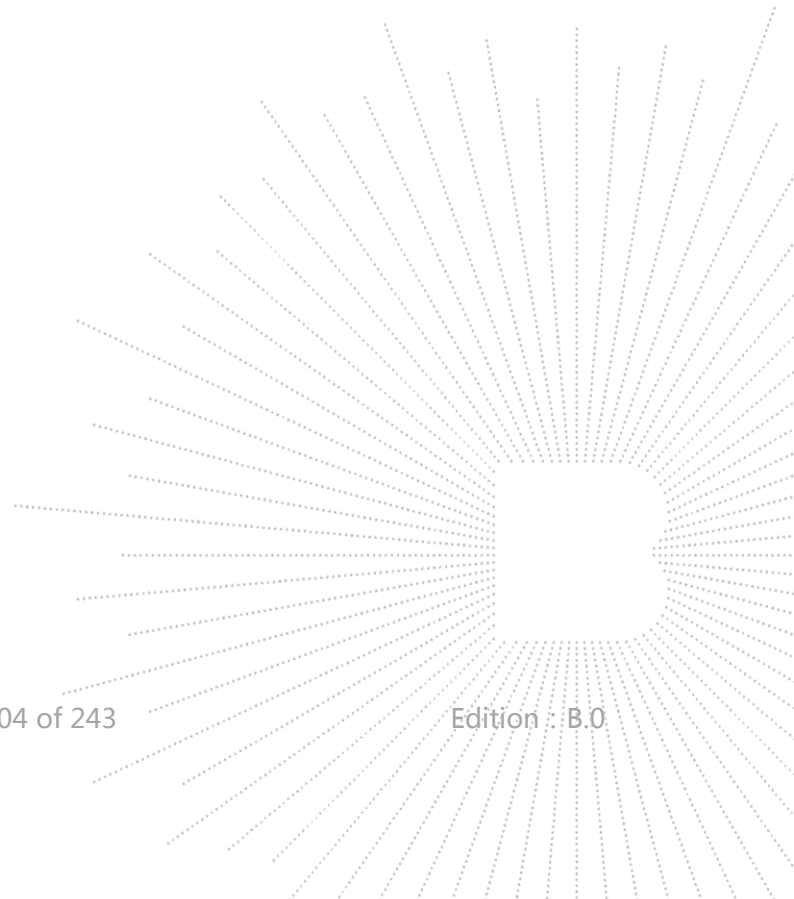
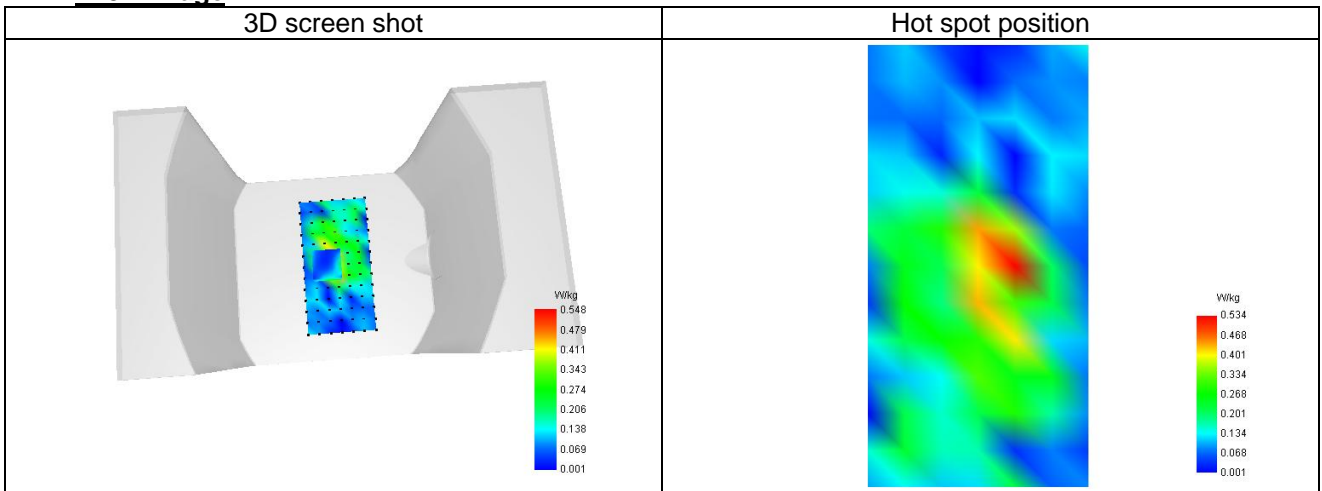
Maximum location: X=7.00, Y=1.00 ; SAR Peak: 0.81 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.302
SAR 1g (W/Kg)	0.515
Variation (%)	-3.580
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.896	0.548	0.302	0.180	0.106


F. 3D Image


Plot 13

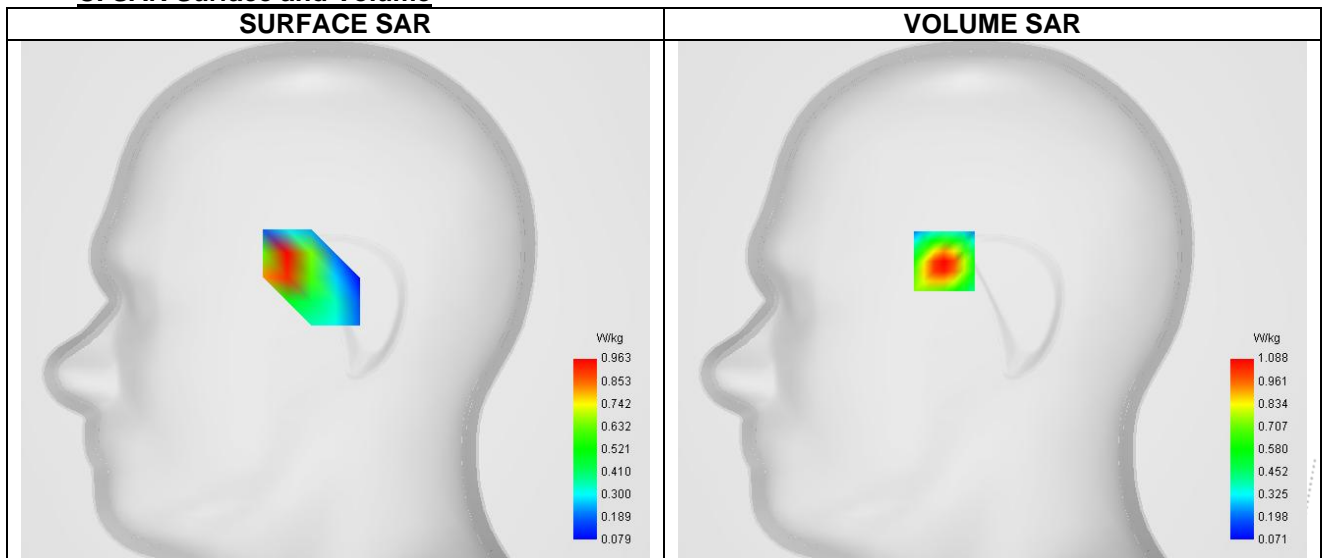
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.96
Area Scan	dx=12mm dy=12mm, Adaptive 1 max
Zoom Scan	7x7x7, dx=5mm dy=5mm dz=5mm
Phantom	Right head
Device Position	Cheek
Band	LTE band 4
Channels	Middle (20175)
Signal	LTE (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	1732.500
Relative permittivity (real part)	41.292
Relative permittivity (imaginary part)	14.136
Conductivity (S/m)	1.331

C. SAR Surface and Volume



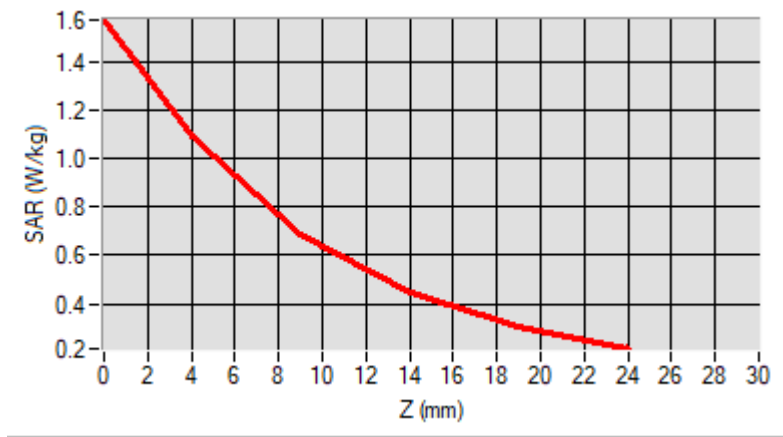
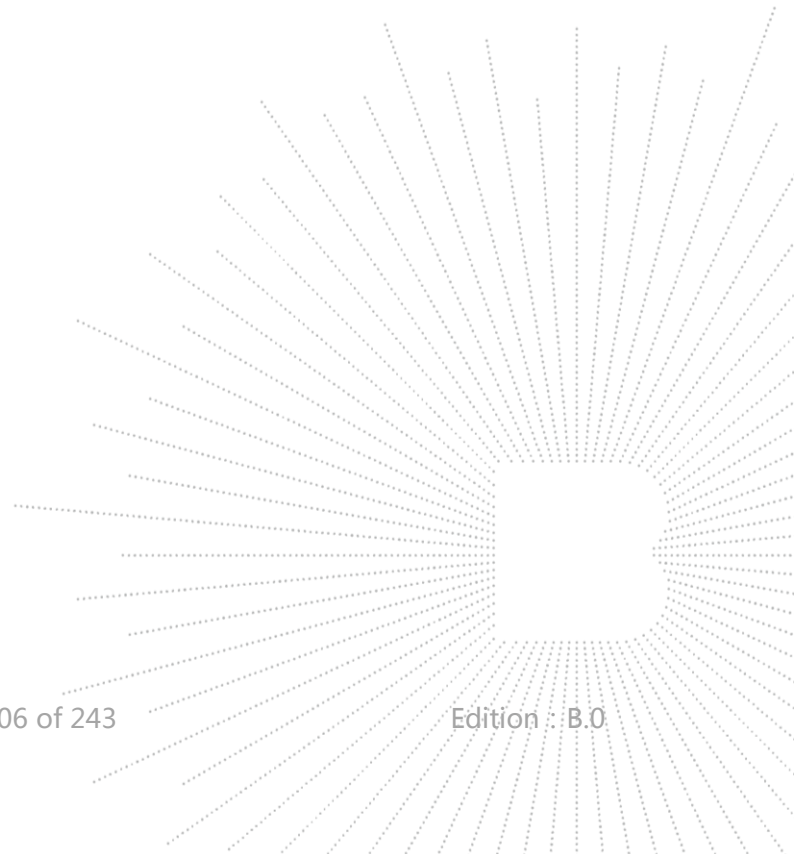
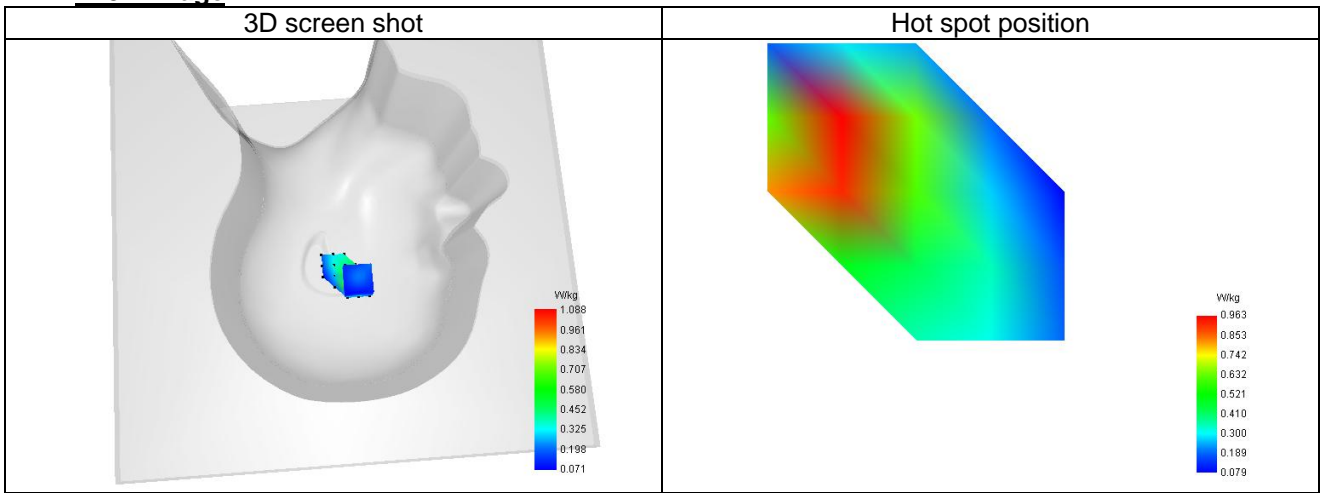
Maximum location: X=-24.00, Y=20.00 ; SAR Peak: 1.58 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.582
SAR 1g (W/Kg)	1.002
Variation (%)	-1.480
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.572	1.088	0.685	0.445	0.306


F. 3D Image


Plot 14

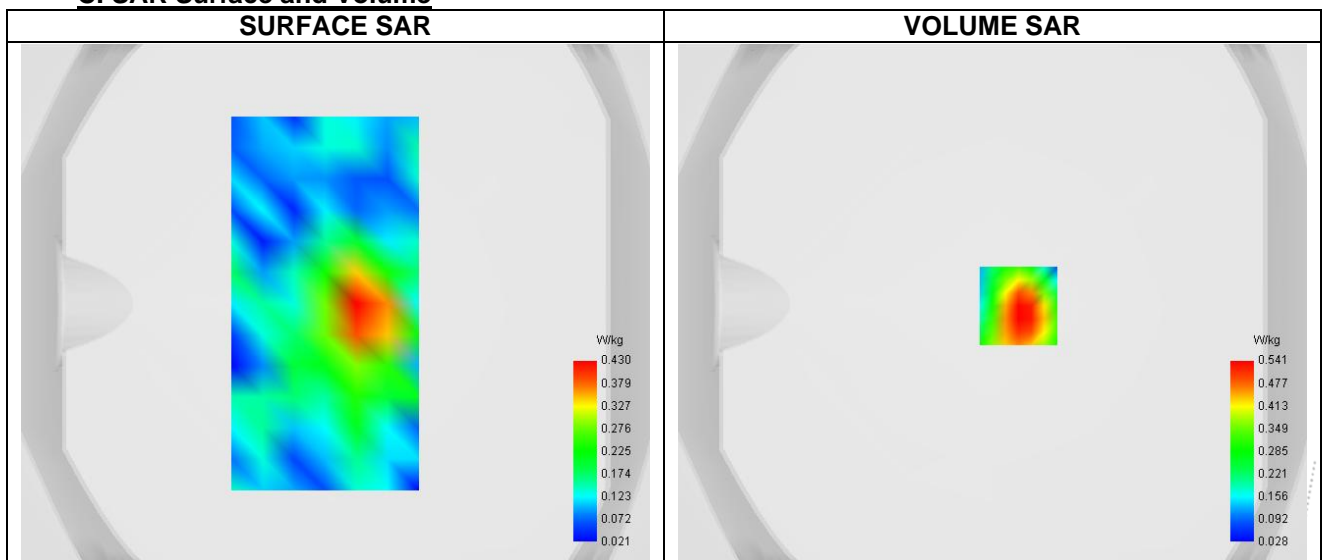
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.96
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 4
Channels	Middle (20175)
Signal	LTE (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	1732.500
Relative permittivity (real part)	41.292
Relative permittivity (imaginary part)	14.136
Conductivity (S/m)	1.331

C. SAR Surface and Volume



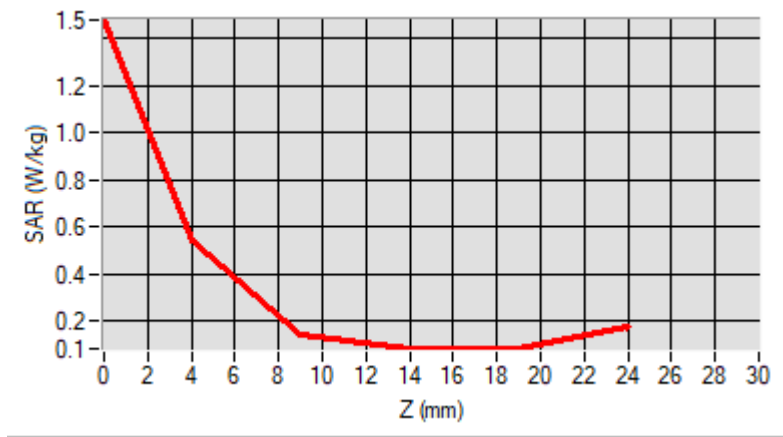
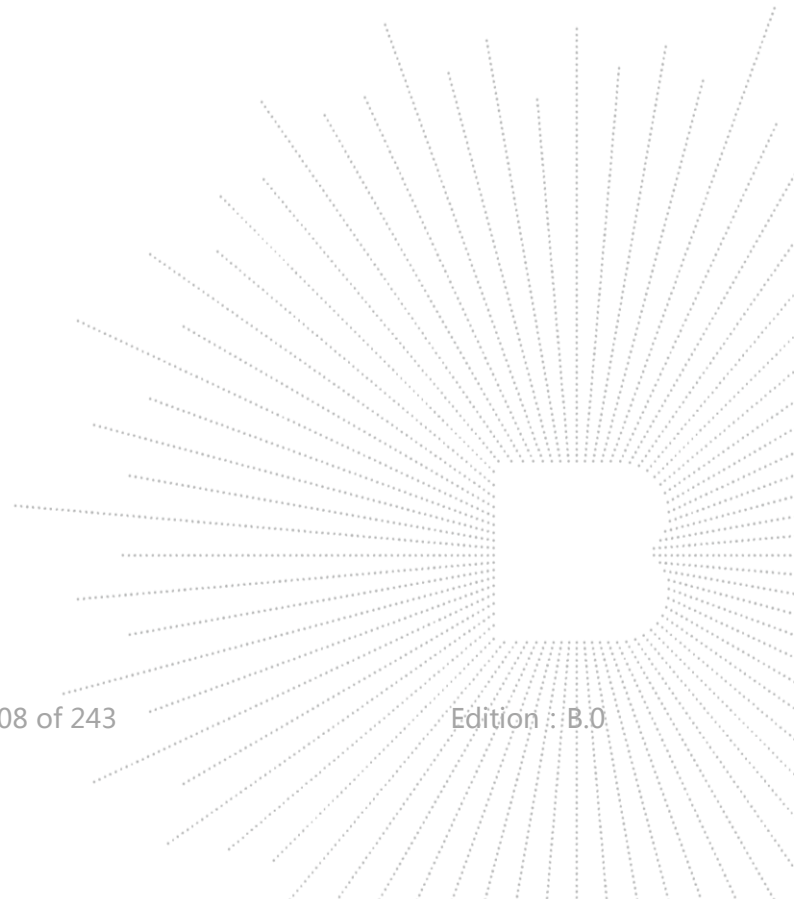
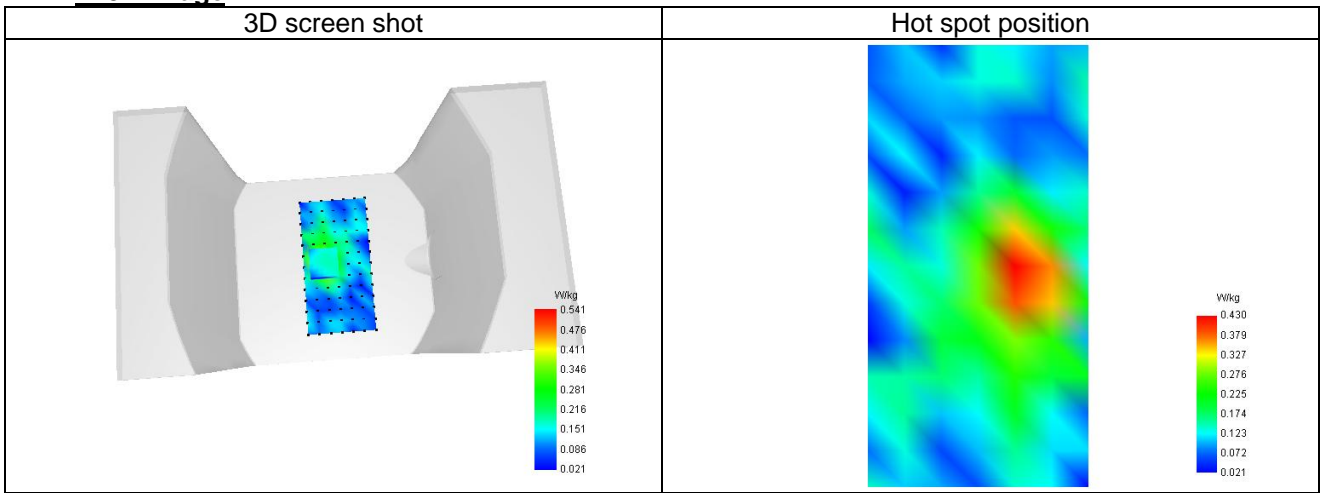
Maximum location: X=10.00, Y=-1.00 ; SAR Peak: 1.23 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.281
SAR 1g (W/Kg)	0.549
Variation (%)	0.640
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.480	0.541	0.145	0.084	0.085


F. 3D Image


Plot 15

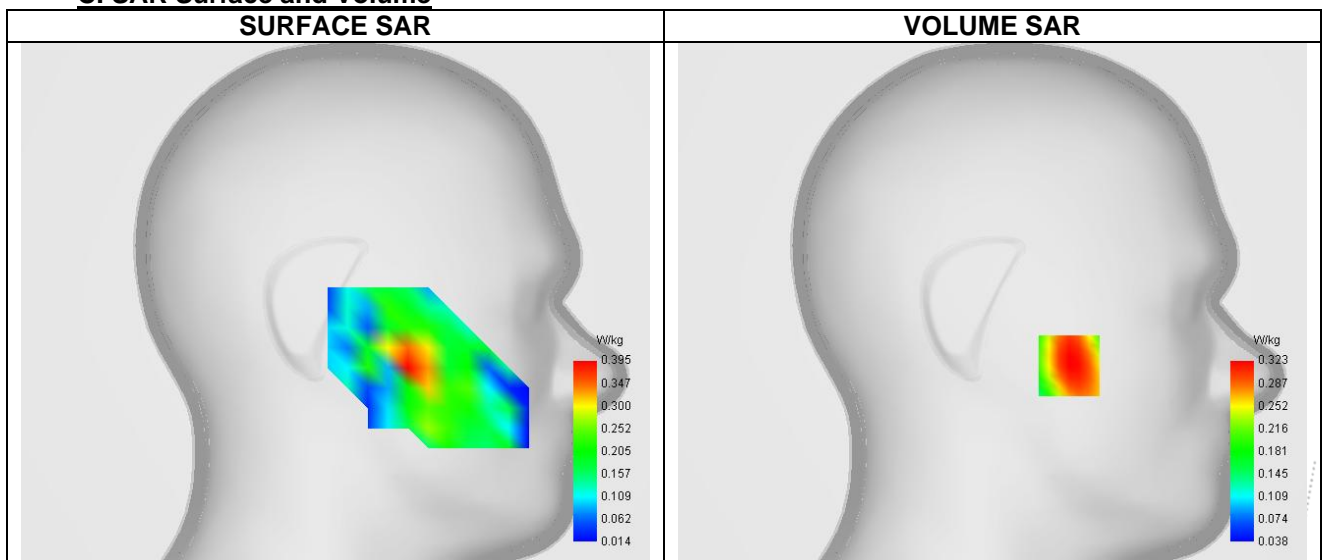
A. Experimental conditions.

Probe	SN 26/23 EPG0420
ConvF	0.81
Area Scan	dx=12mm dy=12mm, Adaptive 1 max
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	LTE band 5
Channels	Middle (20525)
Signal	LTE (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	836.500
Relative permittivity (real part)	42.355
Relative permittivity (imaginary part)	20.225
Conductivity (S/m)	0.934

C. SAR Surface and Volume



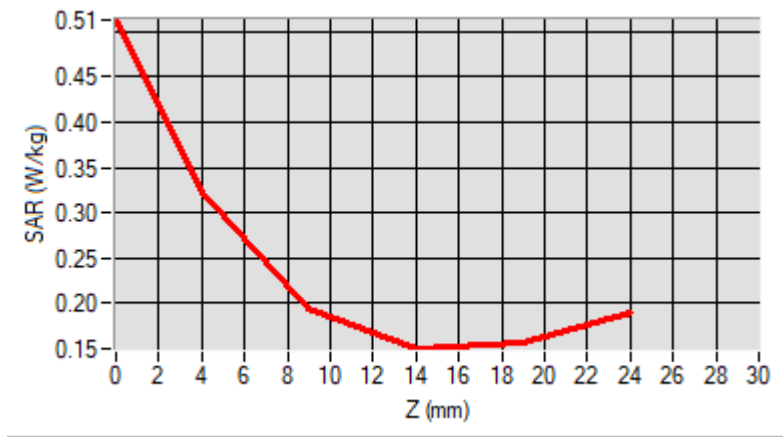
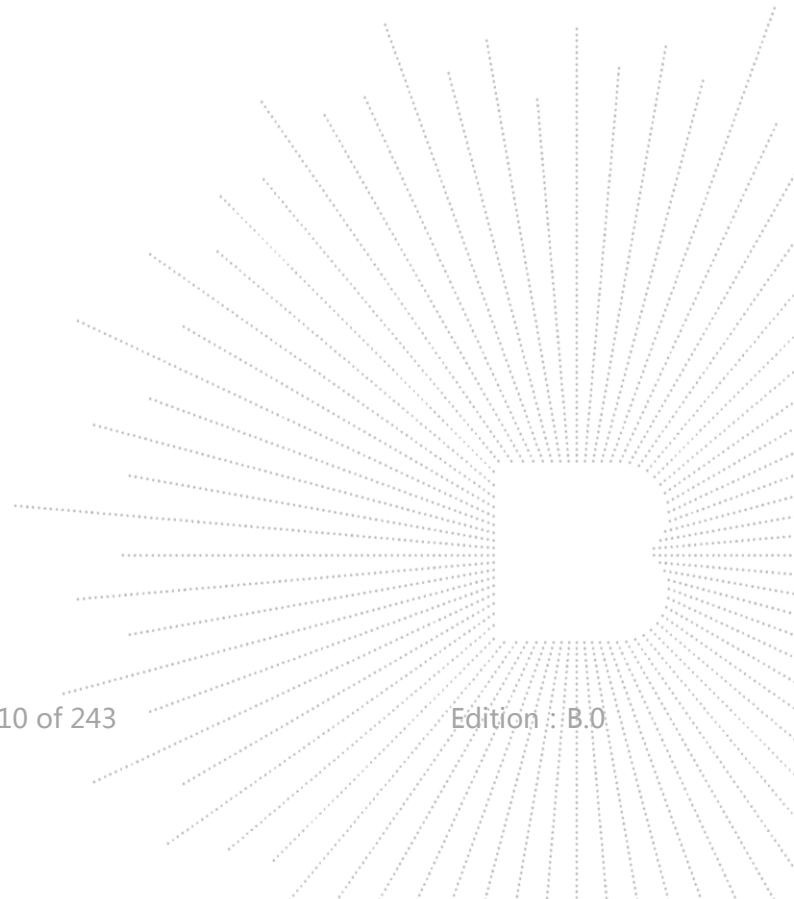
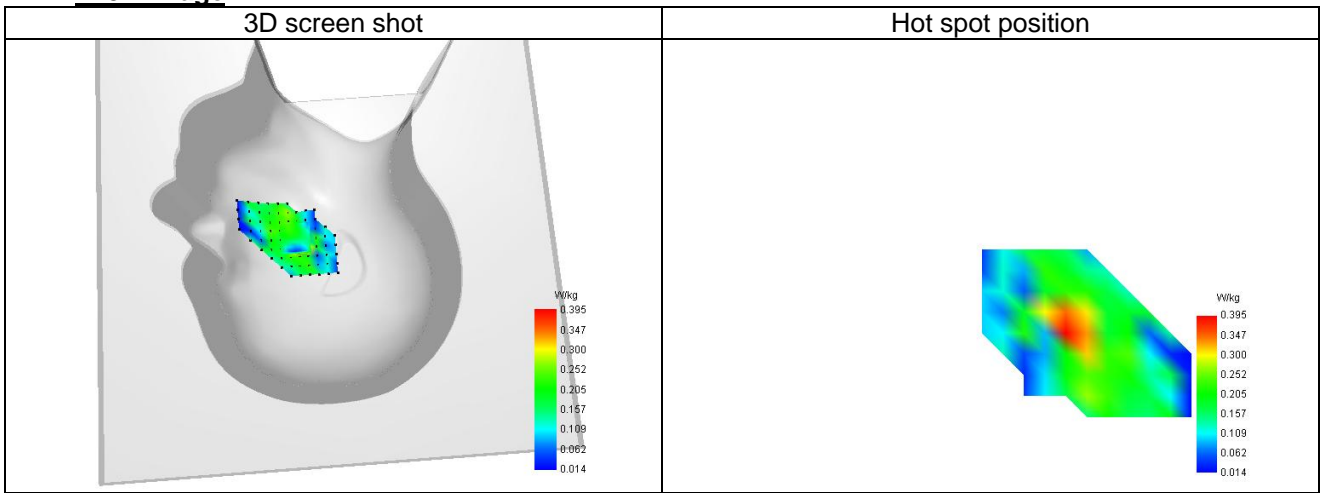
Maximum location: X=-38.00, Y=-31.00 ; SAR Peak: 0.52 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.238
SAR 1g (W/Kg)	0.334
Variation (%)	-3.760
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.513	0.323	0.194	0.149	0.156


F. 3D Image


Plot 16

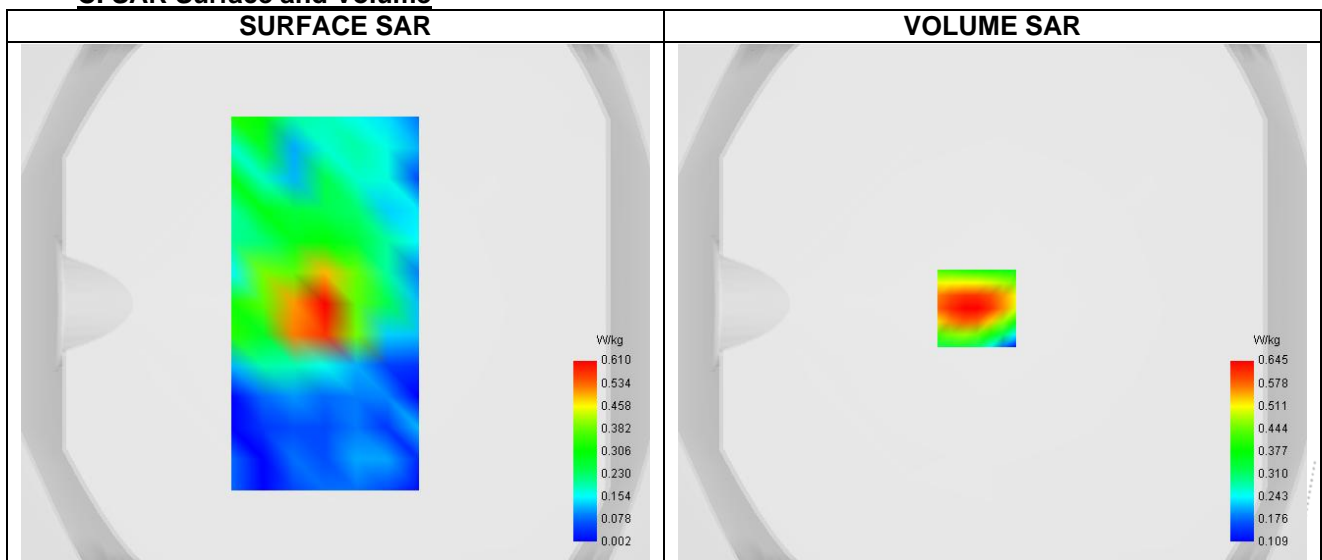
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.81
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 5
Channels	Middle (20525)
Signal	LTE (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	836.500
Relative permittivity (real part)	42.355
Relative permittivity (imaginary part)	20.225
Conductivity (S/m)	0.934

C. SAR Surface and Volume

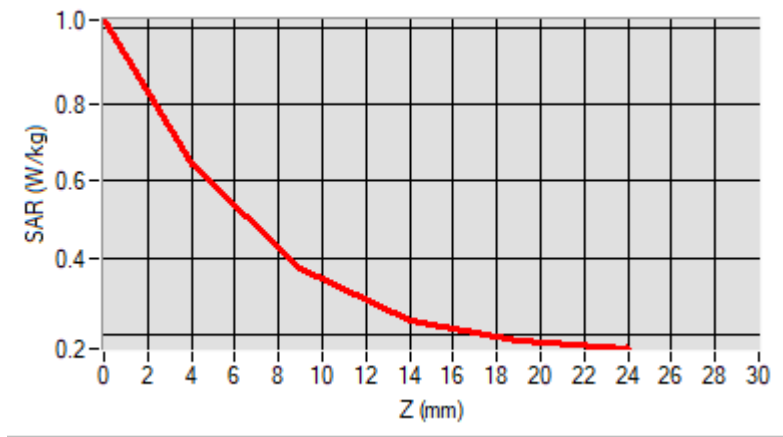
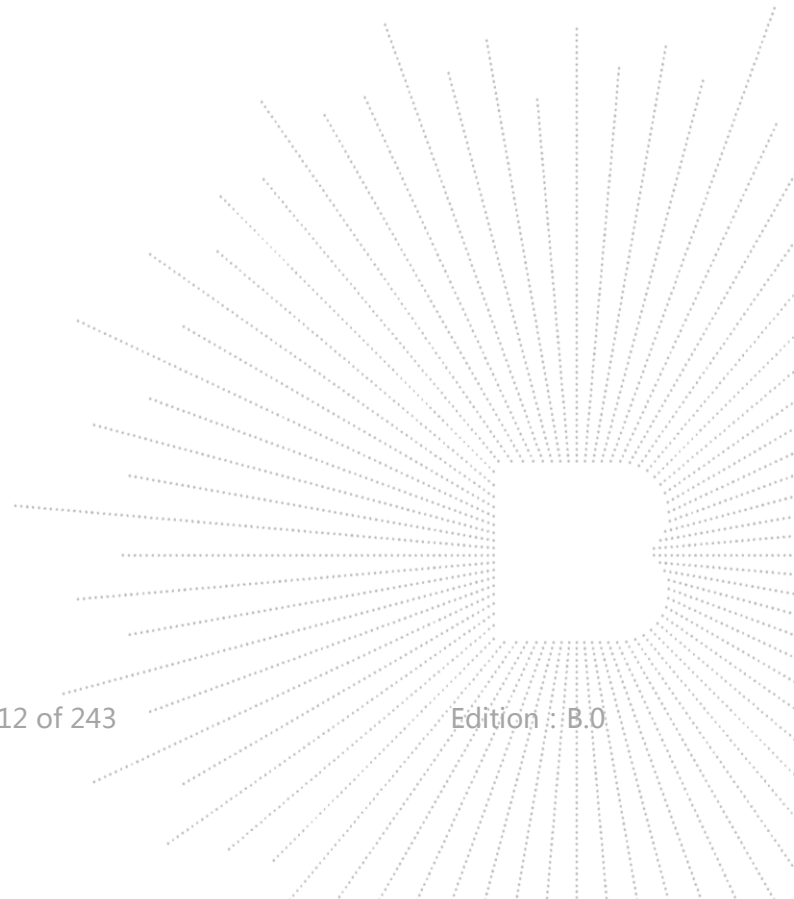
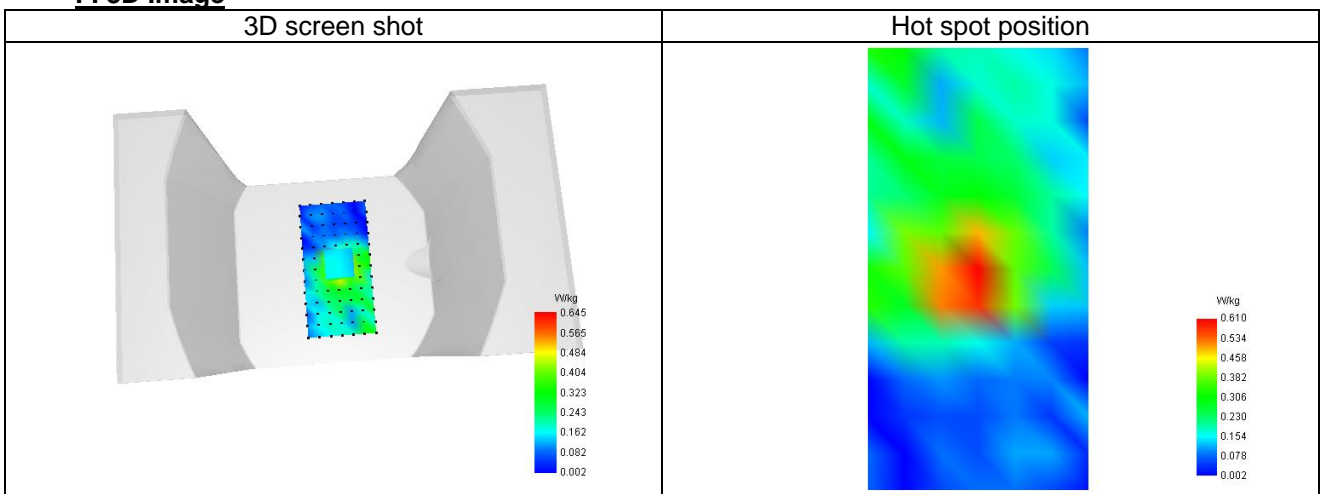


D. SAR 1g & 10g

SAR 10g (W/Kg)	0.394
SAR 1g (W/Kg)	0.641
Variation (%)	2.800
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.019	0.645	0.370	0.238	0.185


F. 3D Image


Plot 17

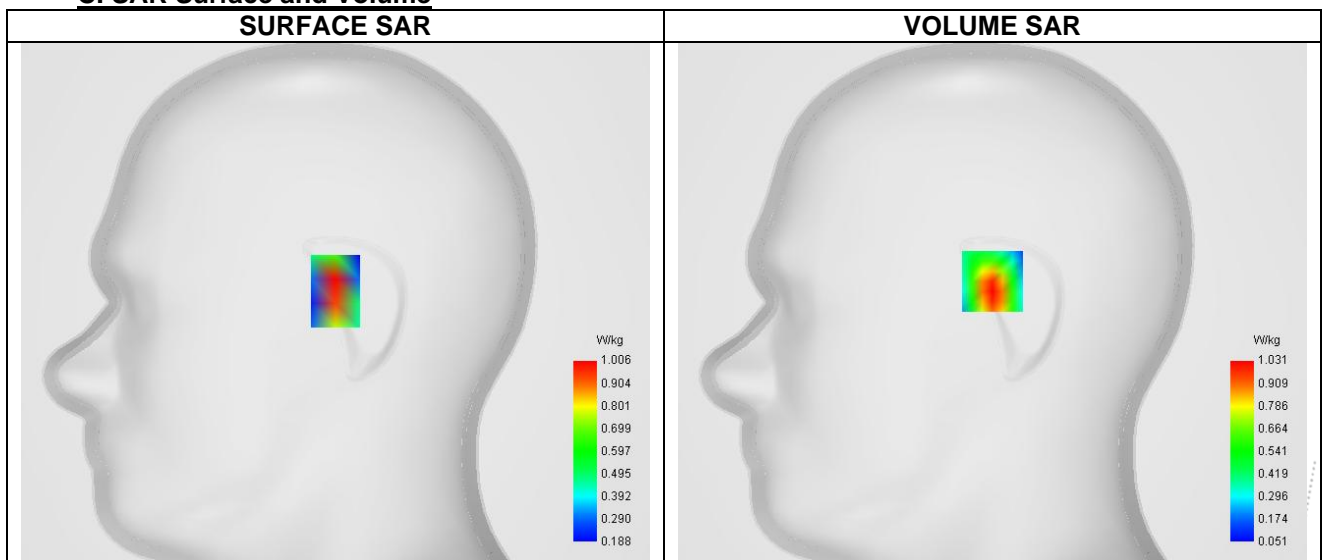
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.03
Area Scan	dx=12mm dy=12mm, Adaptive 1 max
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Right head
Device Position	Tilt
Band	LTE band 7
Channels	Higher (21350)
Signal	LTE (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	2560.000
Relative permittivity (real part)	39.716
Relative permittivity (imaginary part)	13.418
Conductivity (S/m)	1.893

C. SAR Surface and Volume



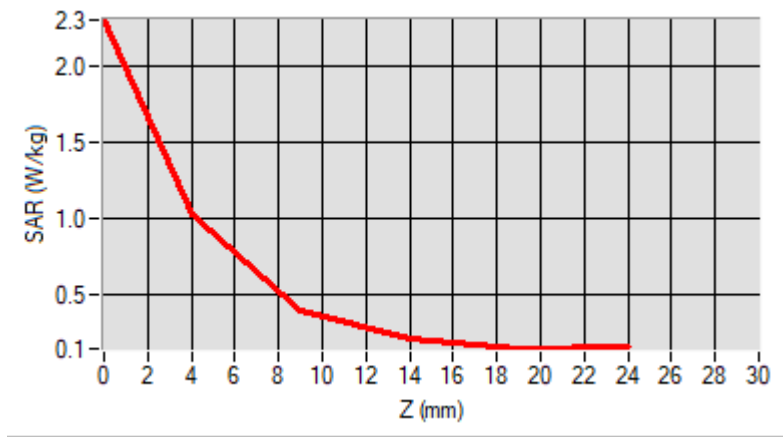
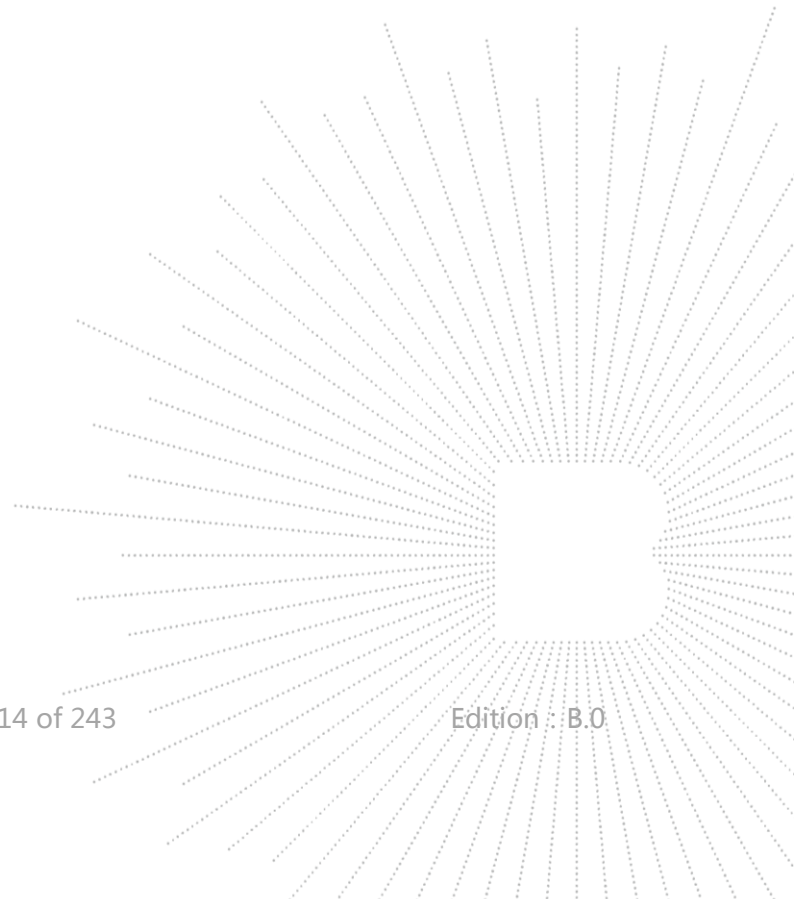
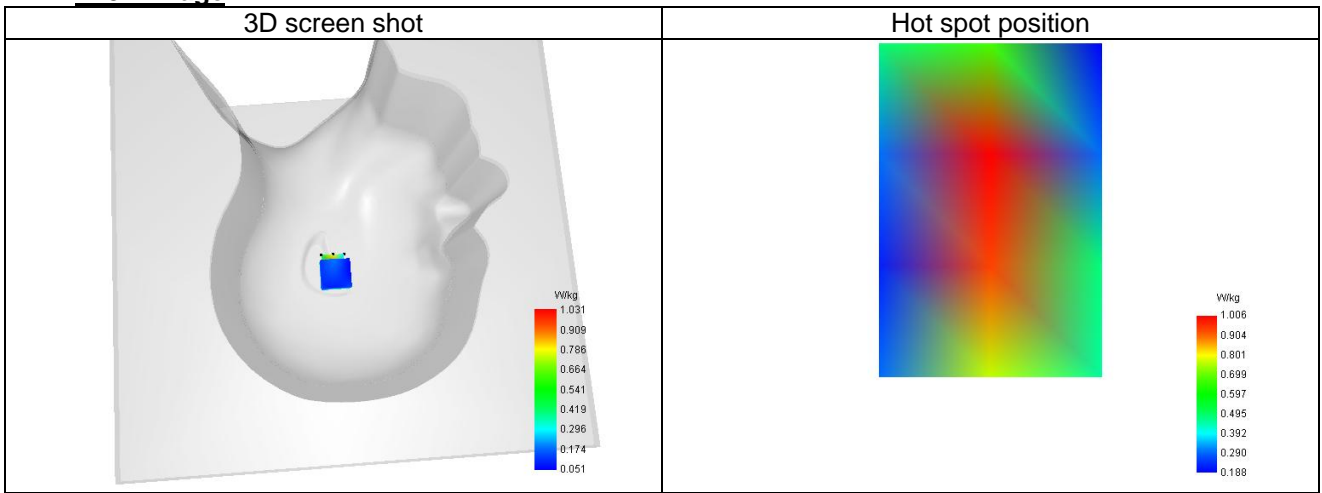
Maximum location: X=0.00, Y=11.00 ; SAR Peak: 1.95 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.467
SAR 1g (W/Kg)	0.955
Variation (%)	-3.890
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	2.308	1.031	0.397	0.217	0.146


F. 3D Image


Plot 18

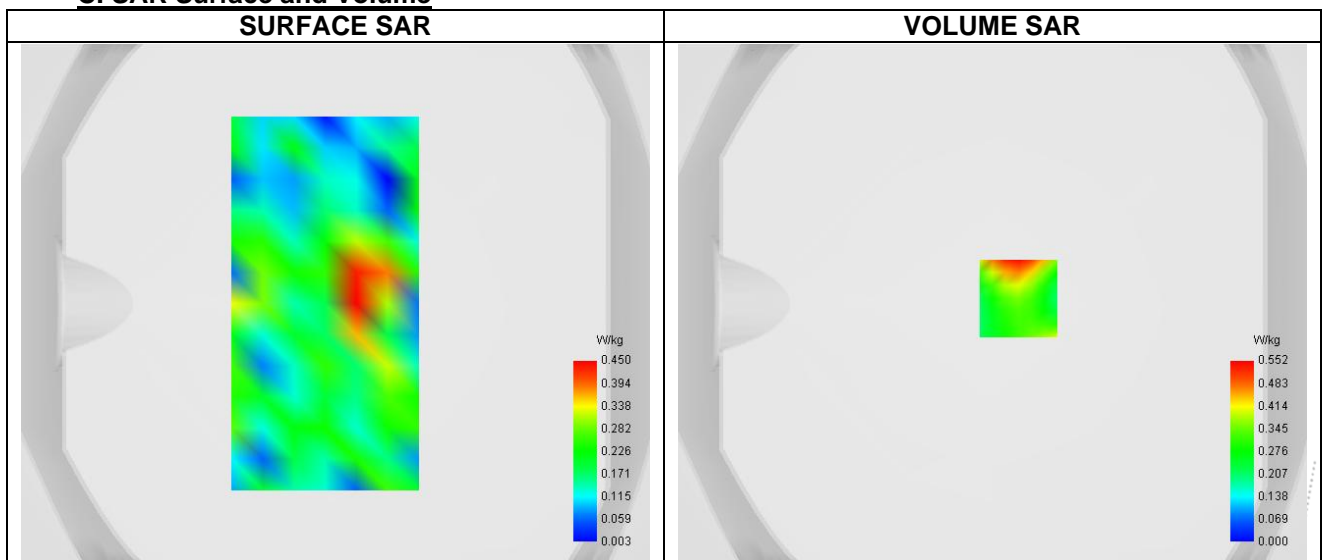
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.03
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 7
Channels	Higher (21350)
Signal	LTE (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	2560.000
Relative permittivity (real part)	39.716
Relative permittivity (imaginary part)	13.418
Conductivity (S/m)	1.893

C. SAR Surface and Volume

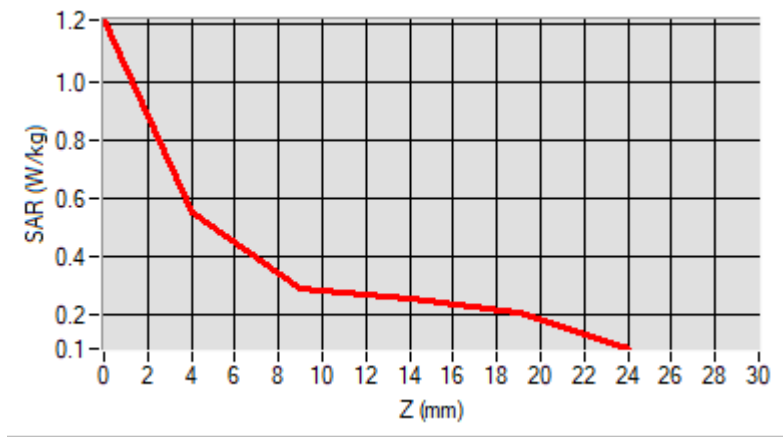
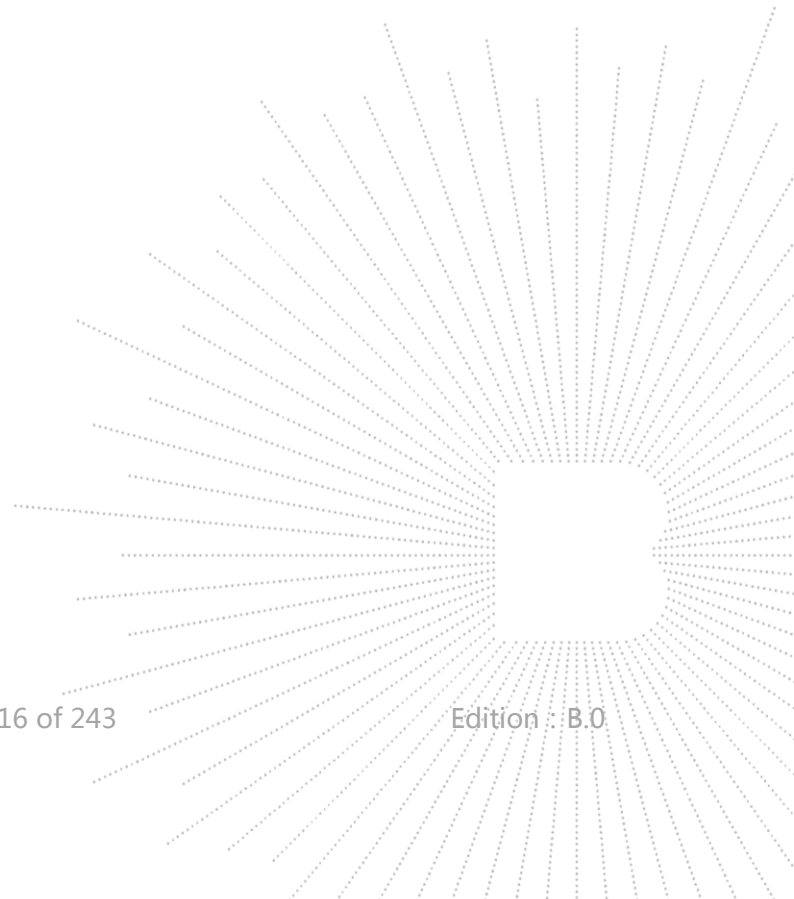
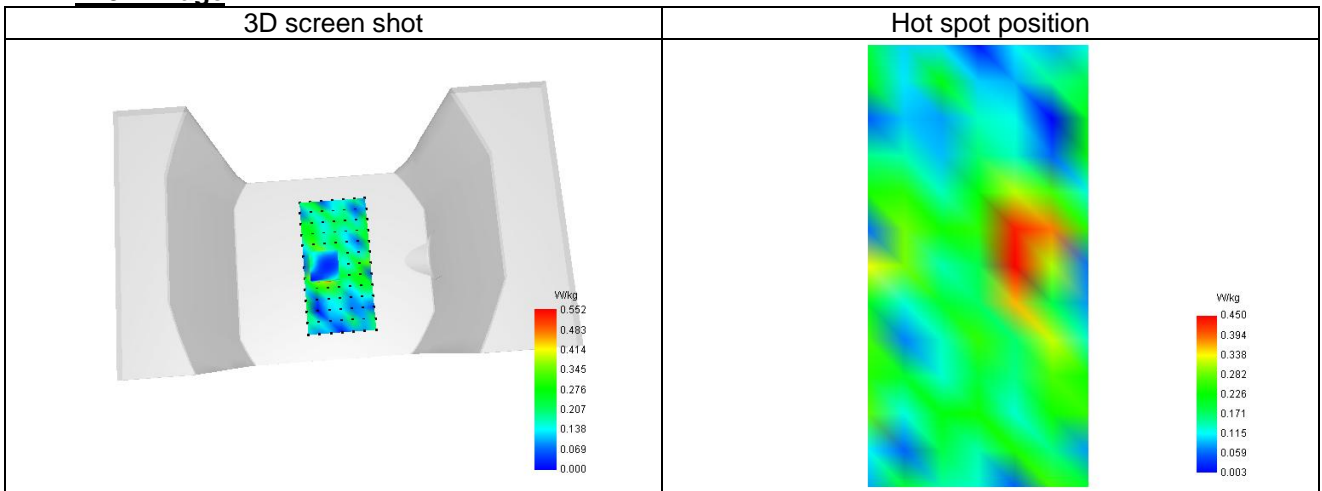


D. SAR 1g & 10g

SAR 10g (W/Kg)	0.250
SAR 1g (W/Kg)	0.445
Variation (%)	-1.630
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.212	0.552	0.289	0.254	0.203


F. 3D Image


Plot 19

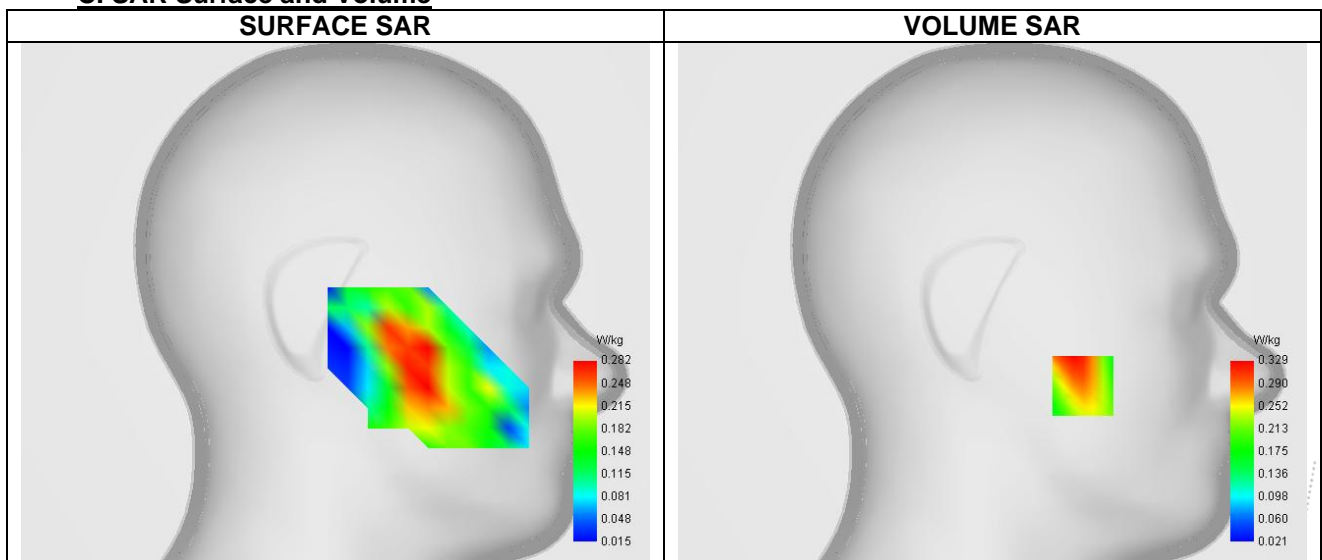
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.80
Area Scan	dx=12mm dy=12mm, Adaptive 1 max
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	LTE band 12
Channels	Middle (23095)
Signal	LTE (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	707.500
Relative permittivity (real part)	42.862
Relative permittivity (imaginary part)	23.264
Conductivity (S/m)	0.907

C. SAR Surface and Volume



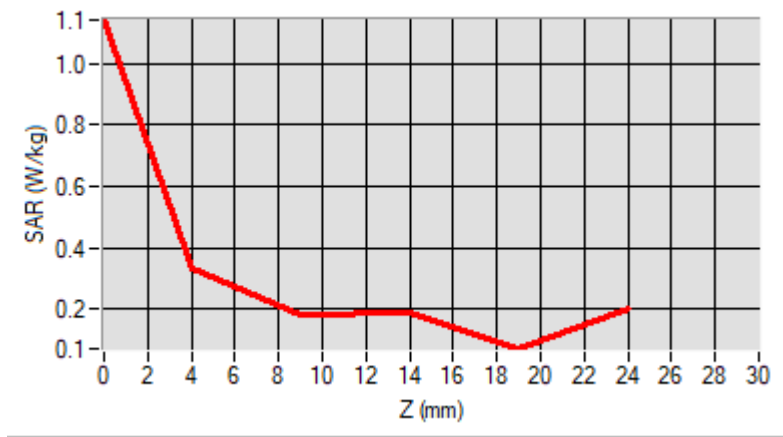
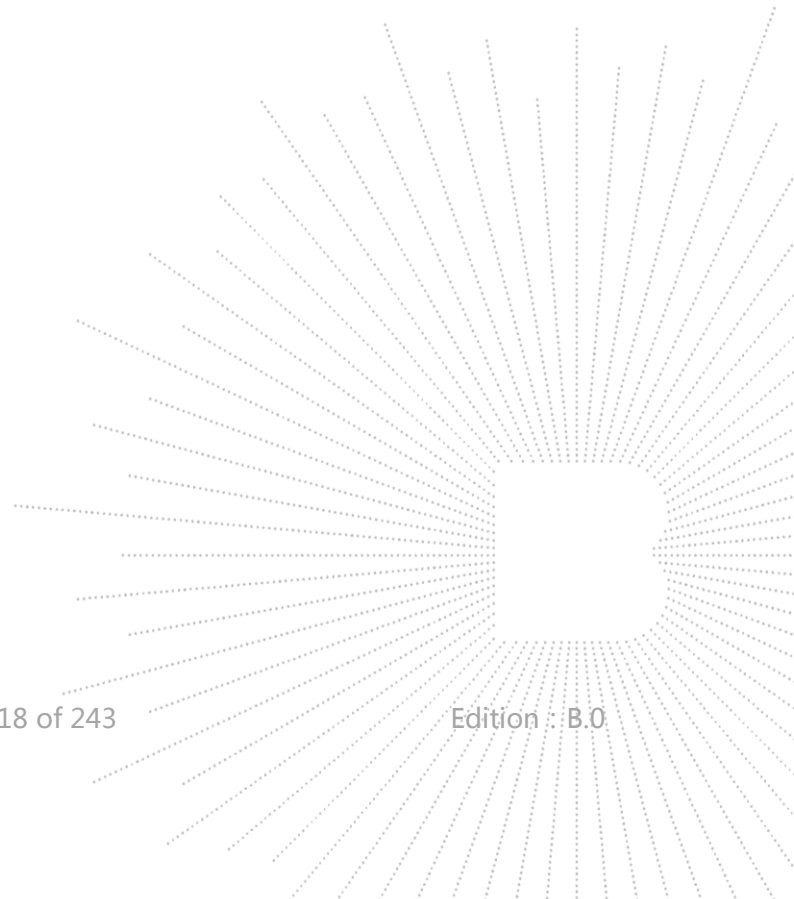
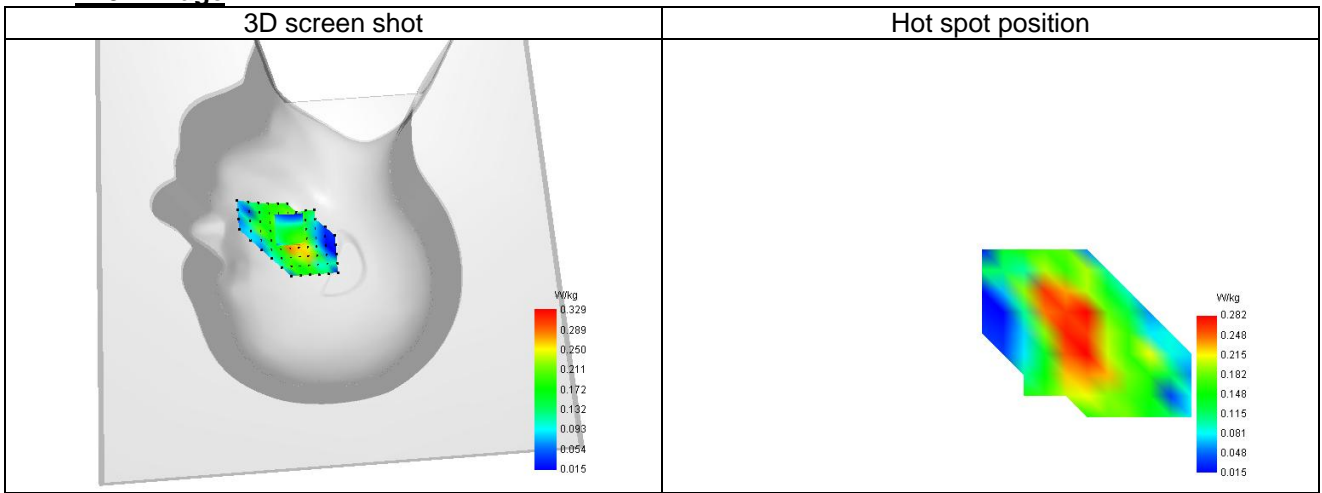
Maximum location: X=-45.00, Y=-41.00 ; SAR Peak: 0.49 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.249
SAR 1g (W/Kg)	0.329
Variation (%)	4.060
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.141	0.329	0.182	0.186	0.071


F. 3D Image


Plot 20

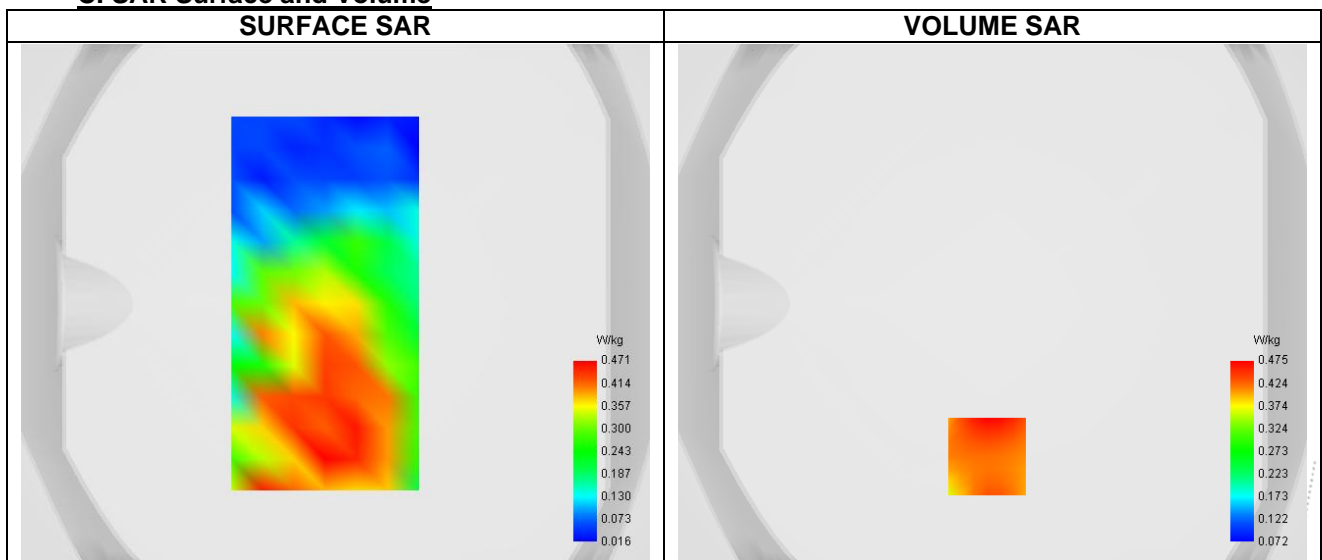
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.80
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 12
Channels	Middle (23095)
Signal	LTE (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	707.500
Relative permittivity (real part)	42.862
Relative permittivity (imaginary part)	23.264
Conductivity (S/m)	0.907

C. SAR Surface and Volume

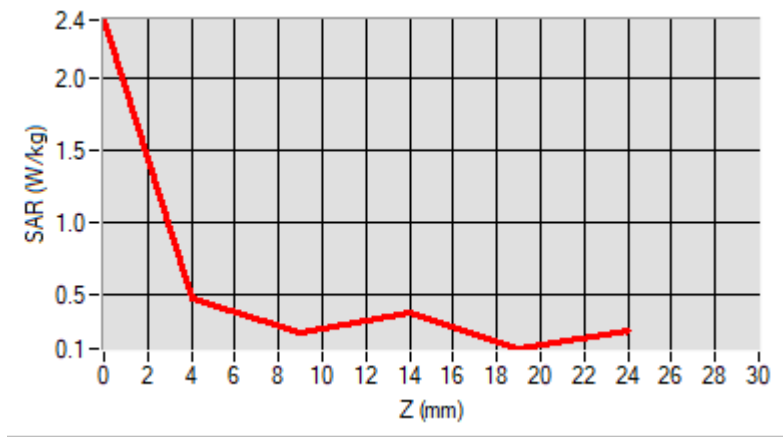
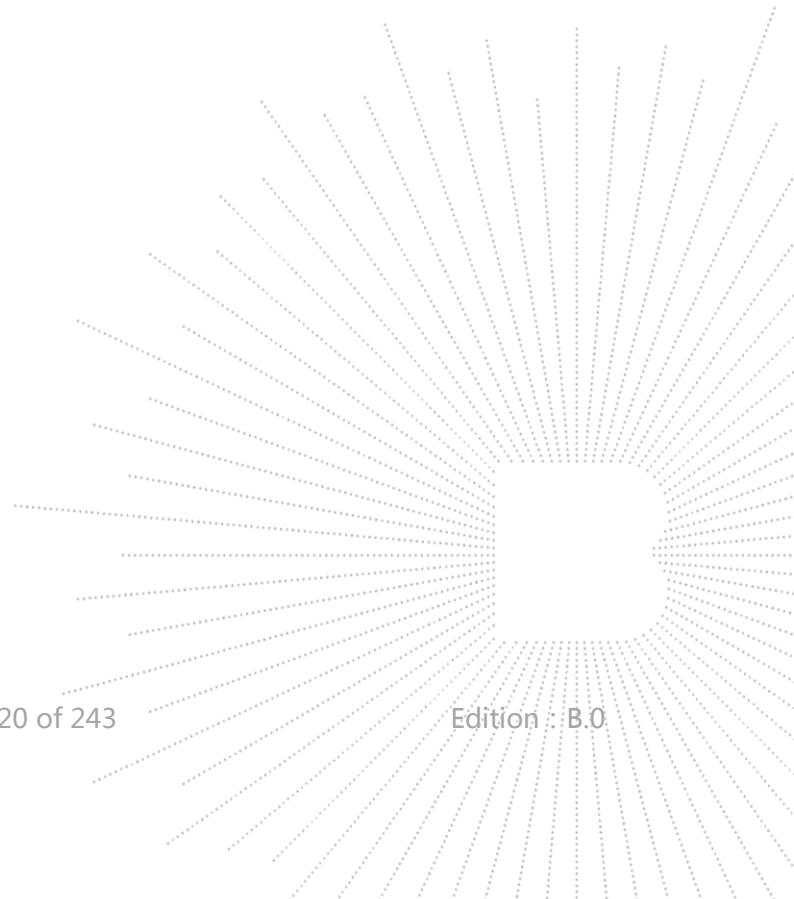
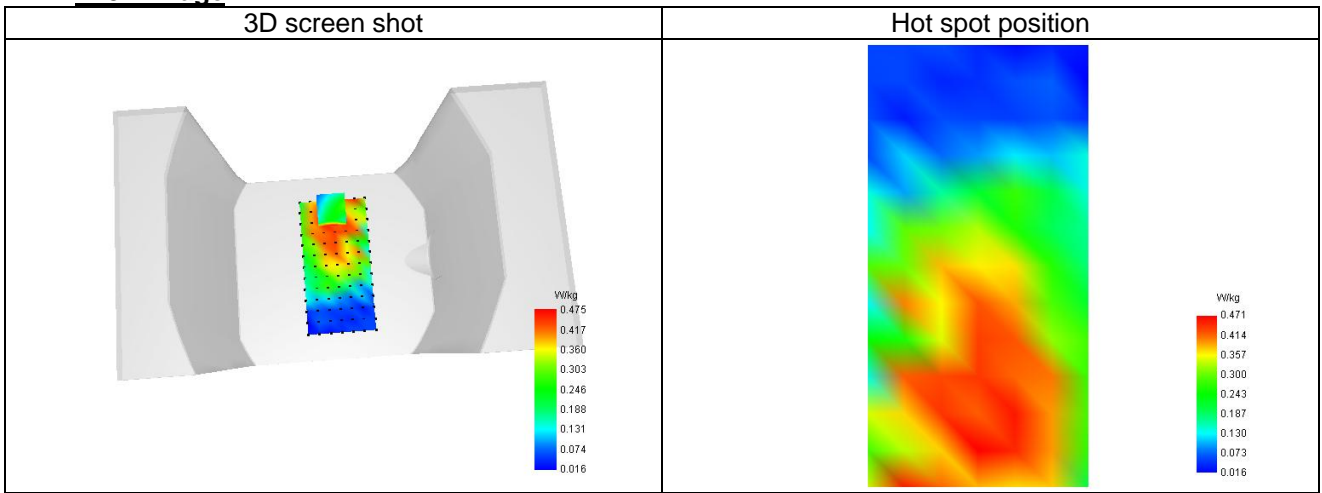


D. SAR 1g & 10g

SAR 10g (W/Kg)	0.387
SAR 1g (W/Kg)	0.478
Variation (%)	-1.200
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	2.409	0.475	0.238	0.375	0.127


F. 3D Image


Plot 21

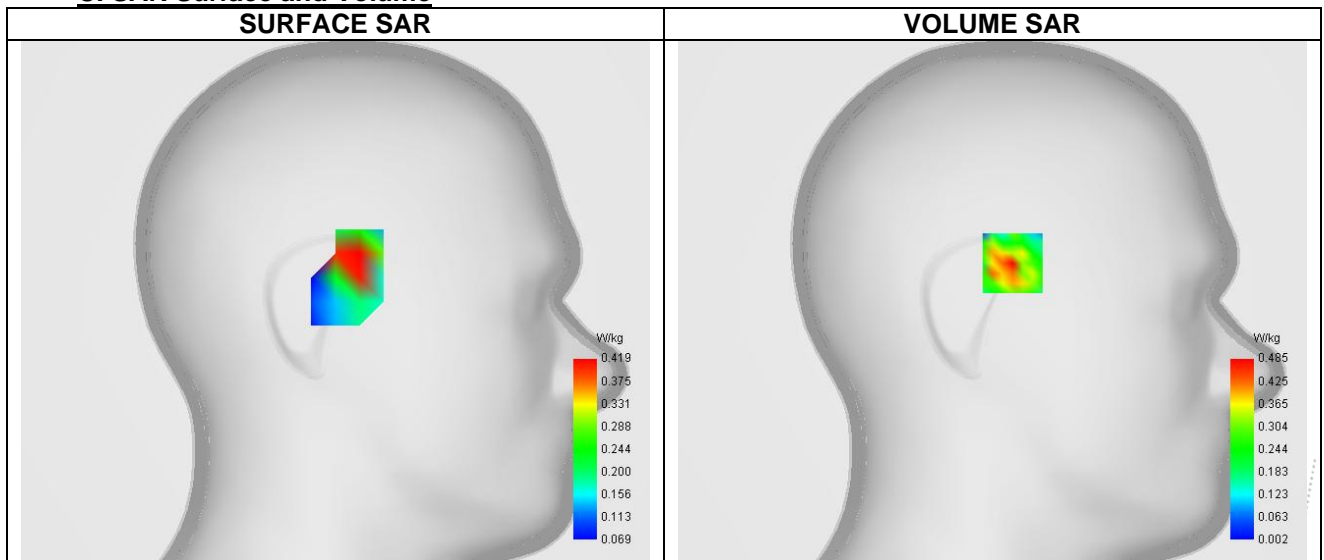
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.11
Area Scan	dx=12mm dy=12mm, Adaptive 1 max
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Left head
Device Position	Tilt
Band	IEEE 802.11b ISM
Channels	Middle (6)
Signal	IEEE802.b (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	2437.000
Relative permittivity (real part)	40.245
Relative permittivity (imaginary part)	13.207
Conductivity (S/m)	1.749

C. SAR Surface and Volume



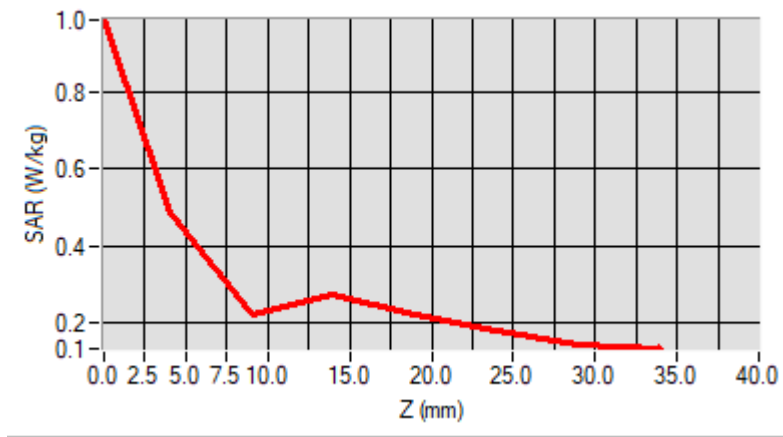
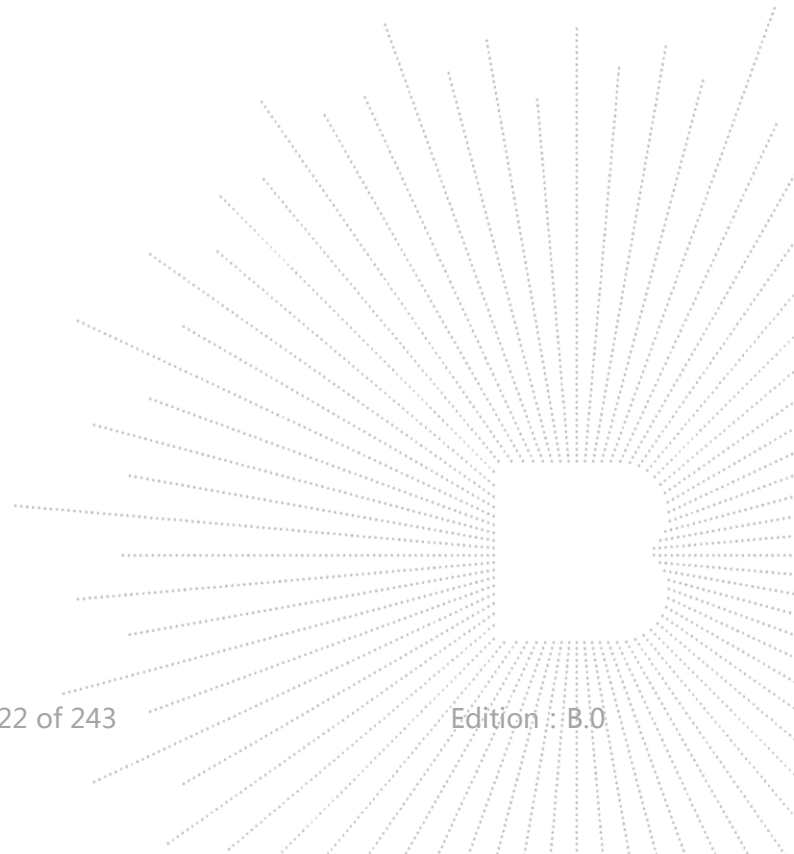
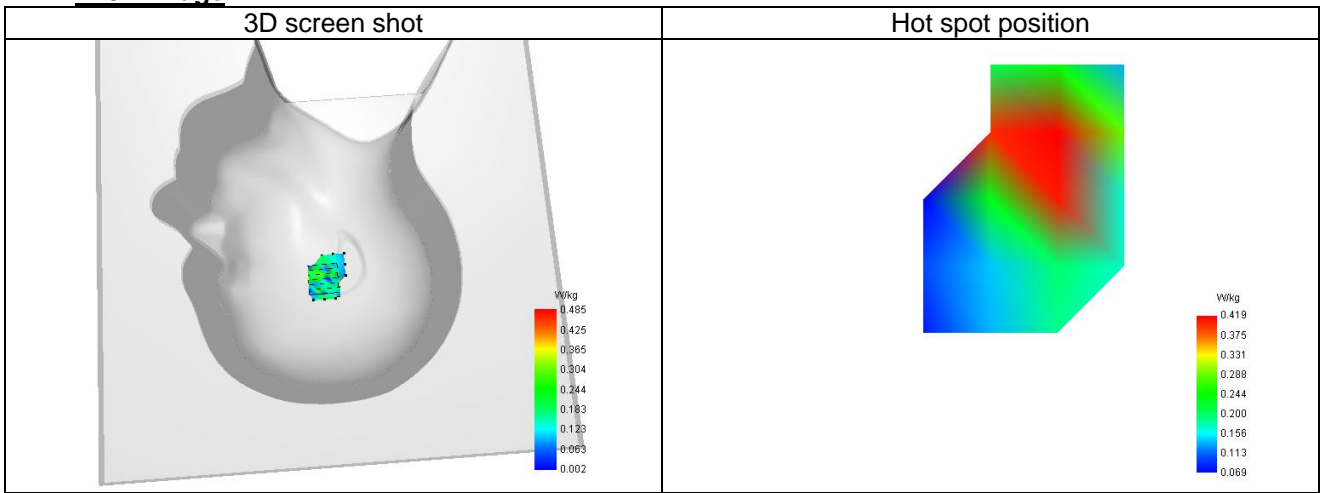
Maximum location: X=-10.00, Y=19.00 ; SAR Peak: 0.99 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.283
SAR 1g (W/Kg)	0.433
Variation (%)	3.140
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.989	0.485	0.221	0.273	0.221	0.180	0.146


F. 3D Image


Plot 22

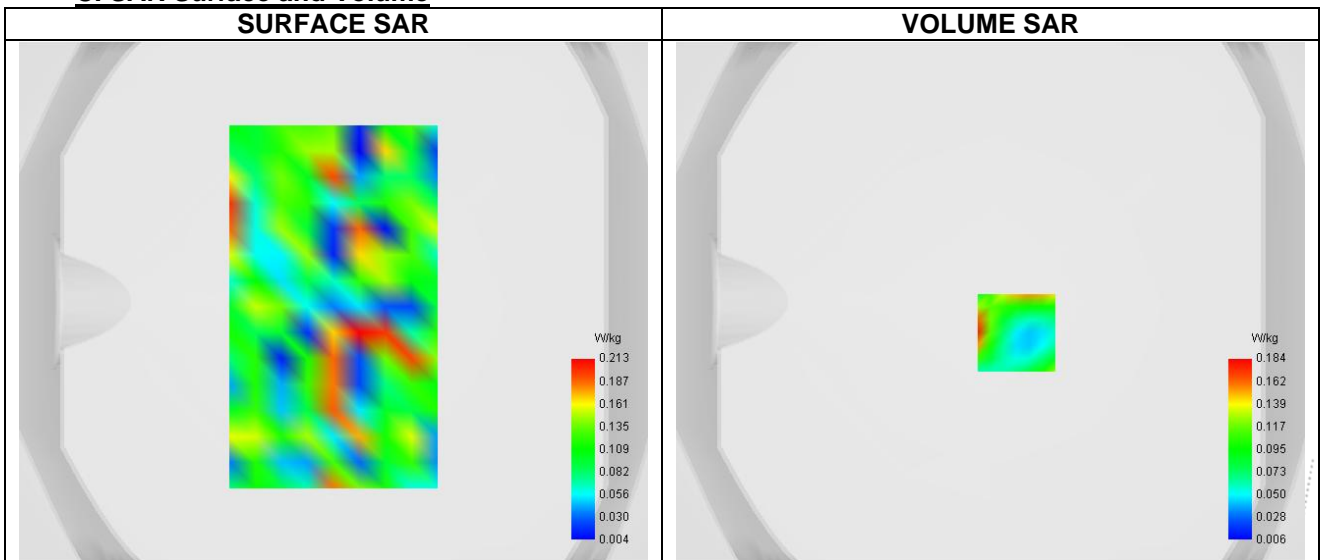
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.11
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x7,dx=5mm dy=5mm dz=5mm
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11b ISM
Channels	Middle (6)
Signal	IEEE802.b (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	2437.000
Relative permittivity (real part)	40.245
Relative permittivity (imaginary part)	13.207
Conductivity (S/m)	1.749

C. SAR Surface and Volume

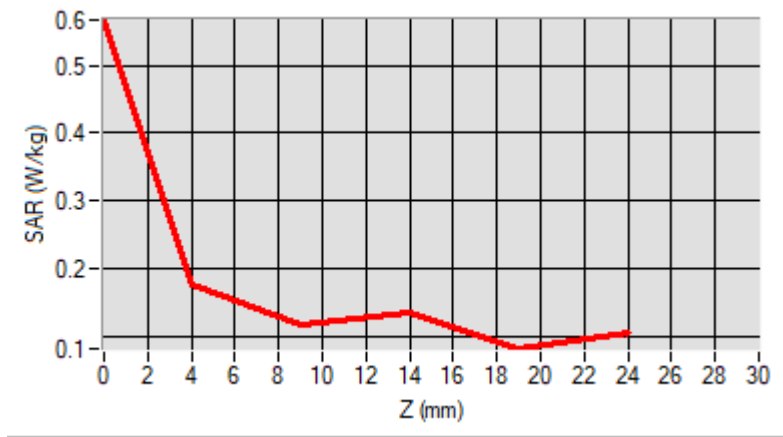
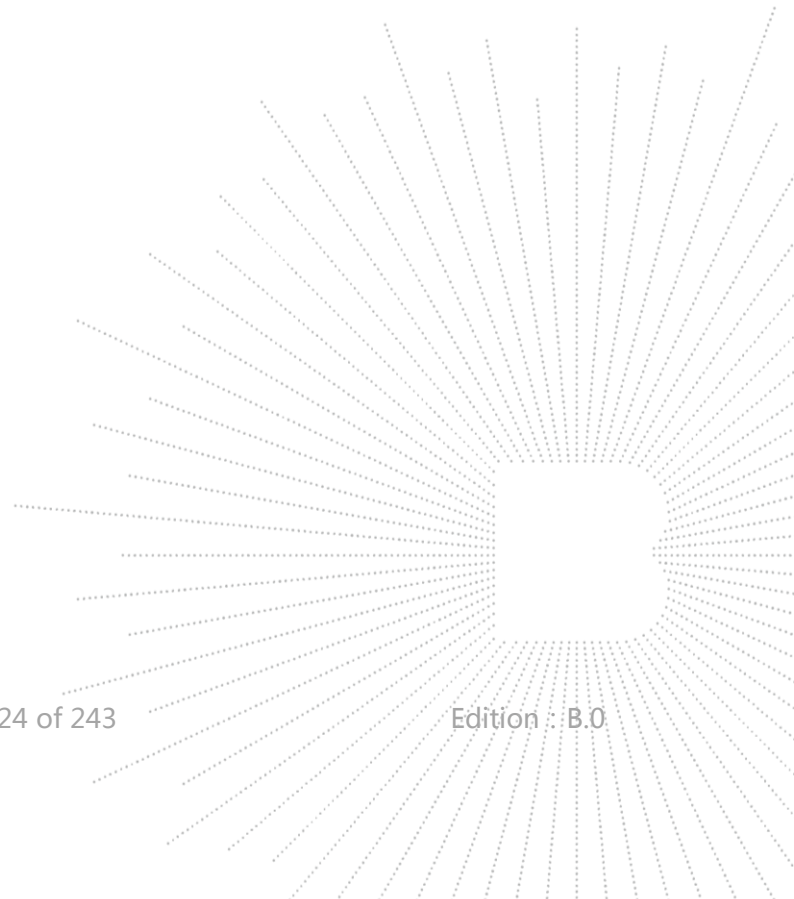
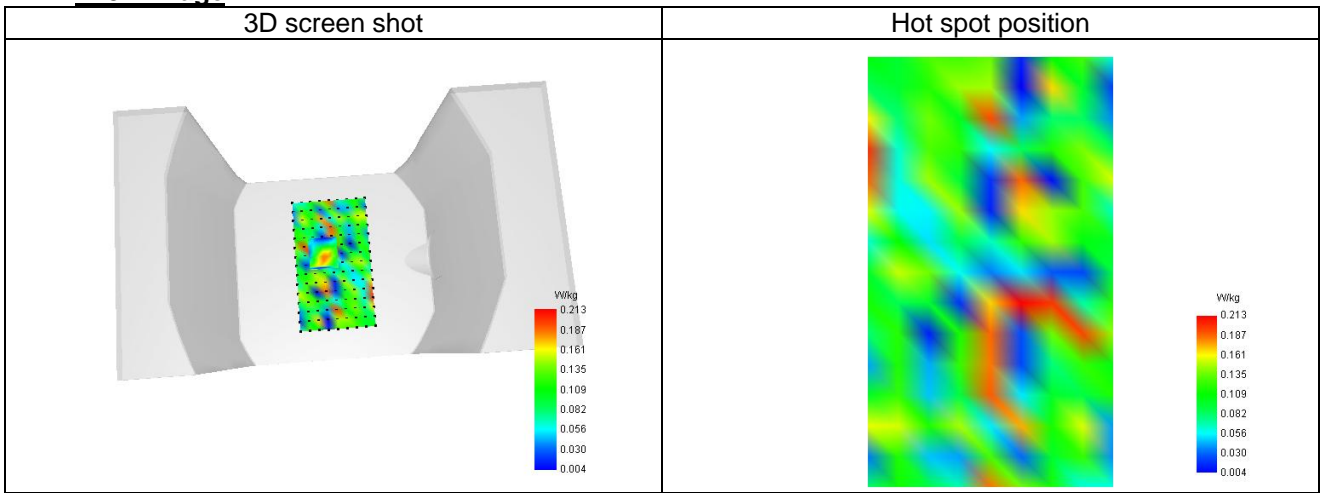


D. SAR 1g & 10g

SAR 10g (W/Kg)	0.096
SAR 1g (W/Kg)	0.149
Variation (%)	4.110
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.567	0.177	0.118	0.135	0.082


F. 3D Image


Plot 23

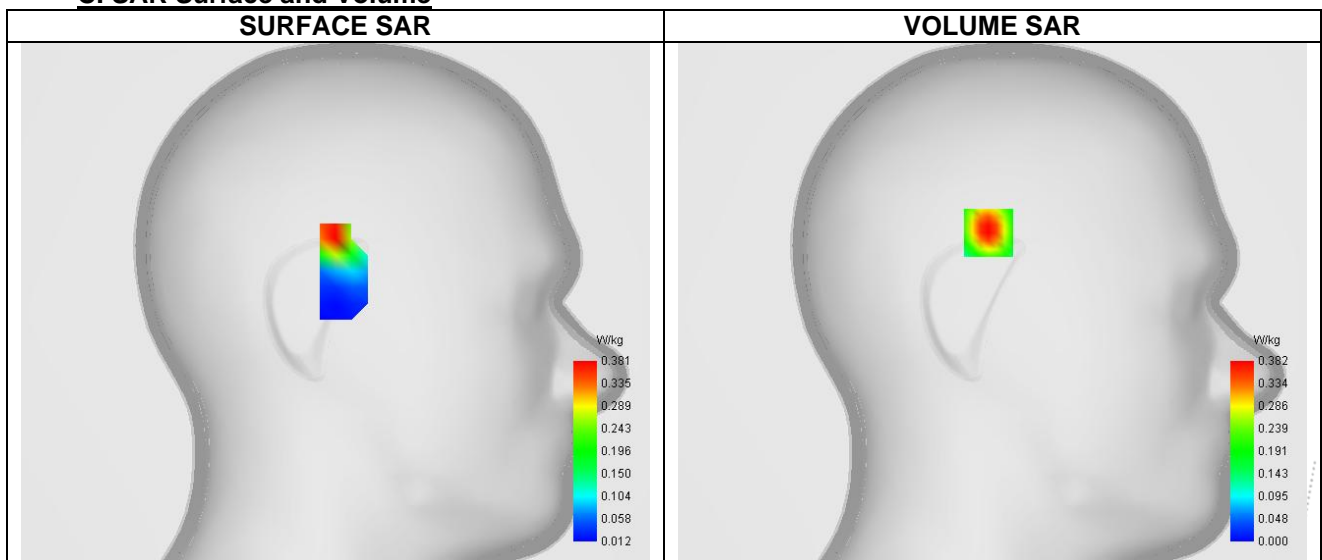
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.18
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Left head
Device Position	Cheek
Band	IEEE 802.11a U-NII-1
Channels	Middle (40)
Signal	IEEE802.a (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	5200.000
Relative permittivity (real part)	36.497
Relative permittivity (imaginary part)	16.130
Conductivity (S/m)	4.541

C. SAR Surface and Volume



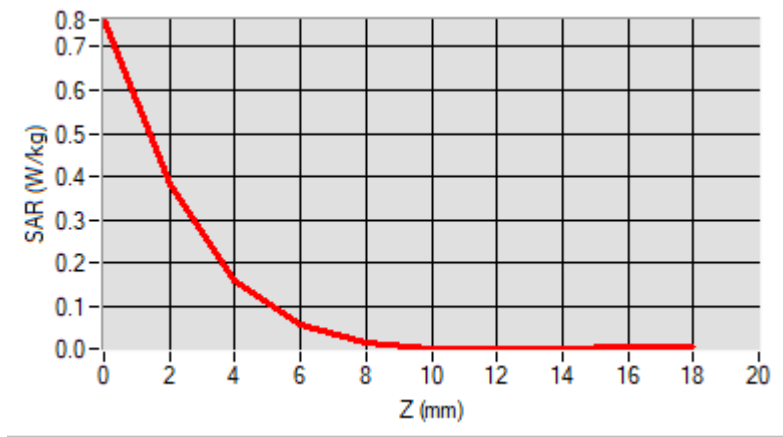
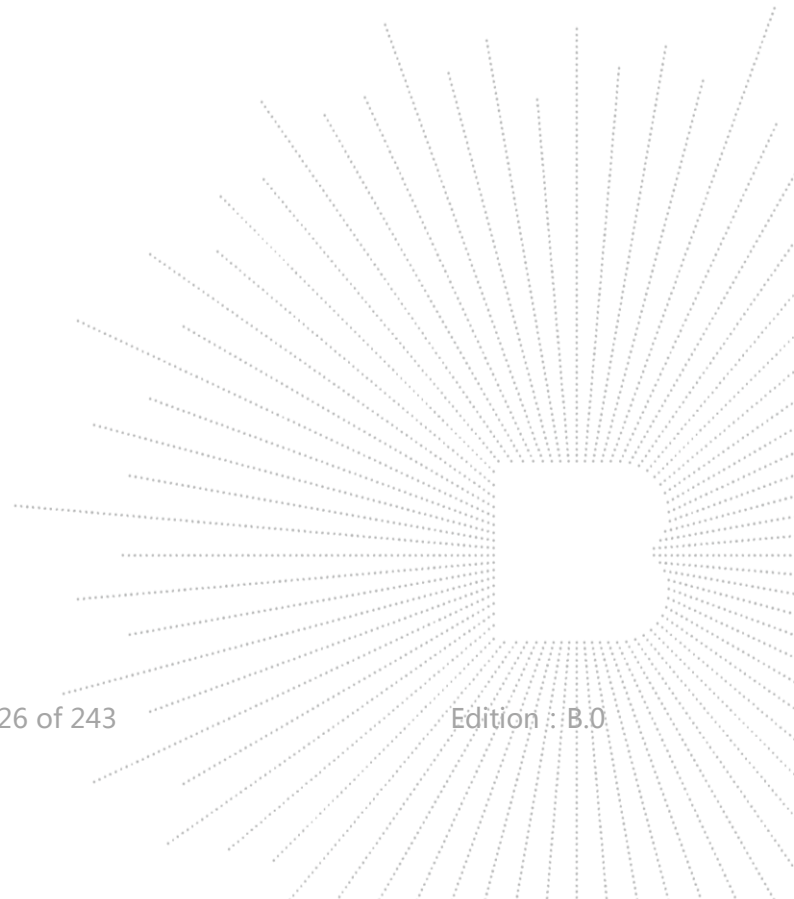
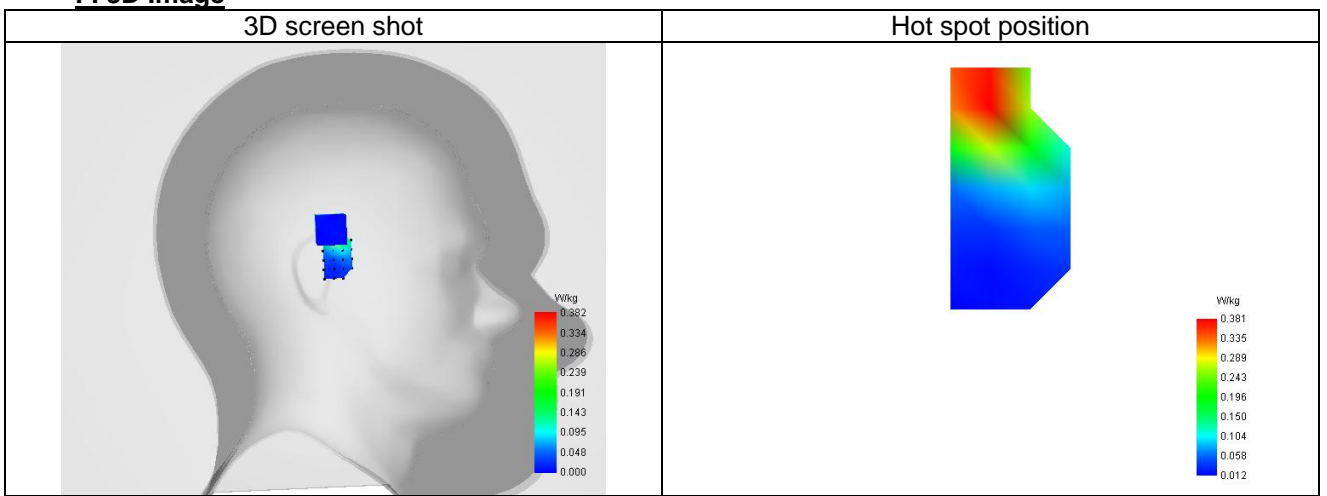
Maximum location: X=2.00, Y=35.00 ; SAR Peak: 1.37 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.157
SAR 1g (W/Kg)	0.428
Variation (%)	-2.880
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
SAR (W/Kg)	0.762	0.382	0.160	0.055	0.015	0.002	0.002	0.001	0.004


F. 3D Image


Plot 24

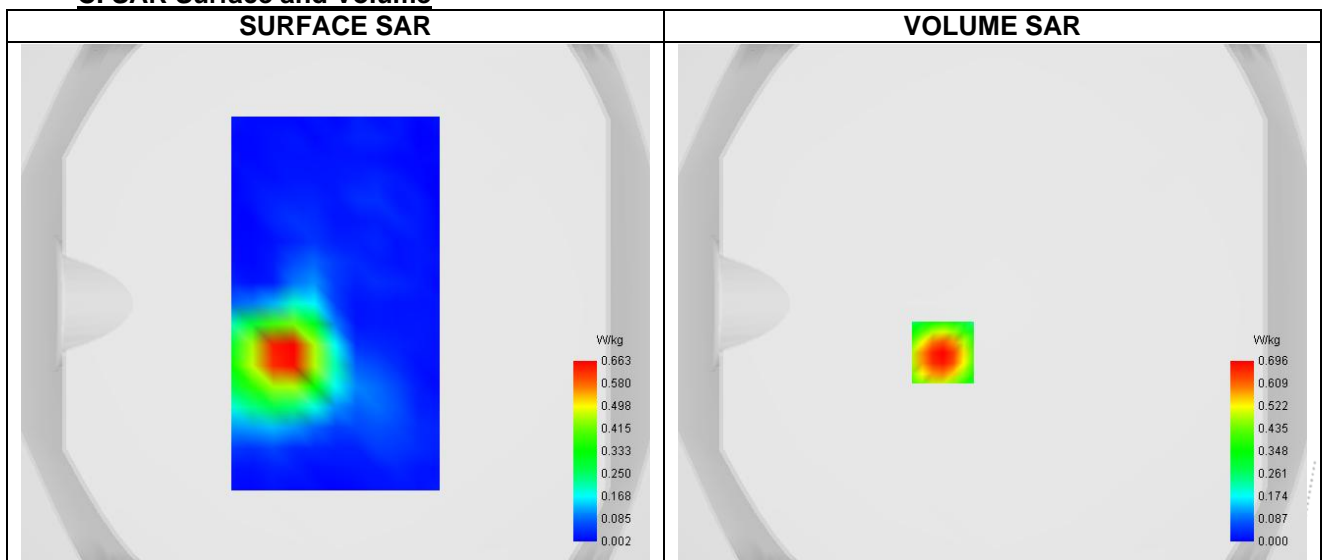
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.18
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11a U-NII-1
Channels	Middle (40)
Signal	IEEE802.a (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	5200.000
Relative permittivity (real part)	36.497
Relative permittivity (imaginary part)	16.130
Conductivity (S/m)	4.541

C. SAR Surface and Volume



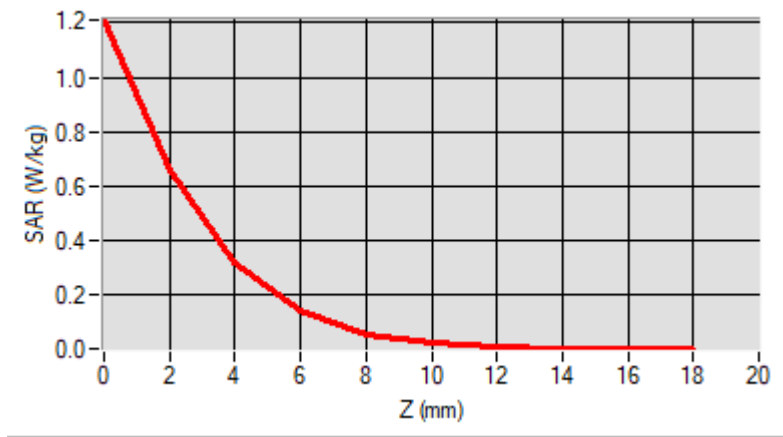
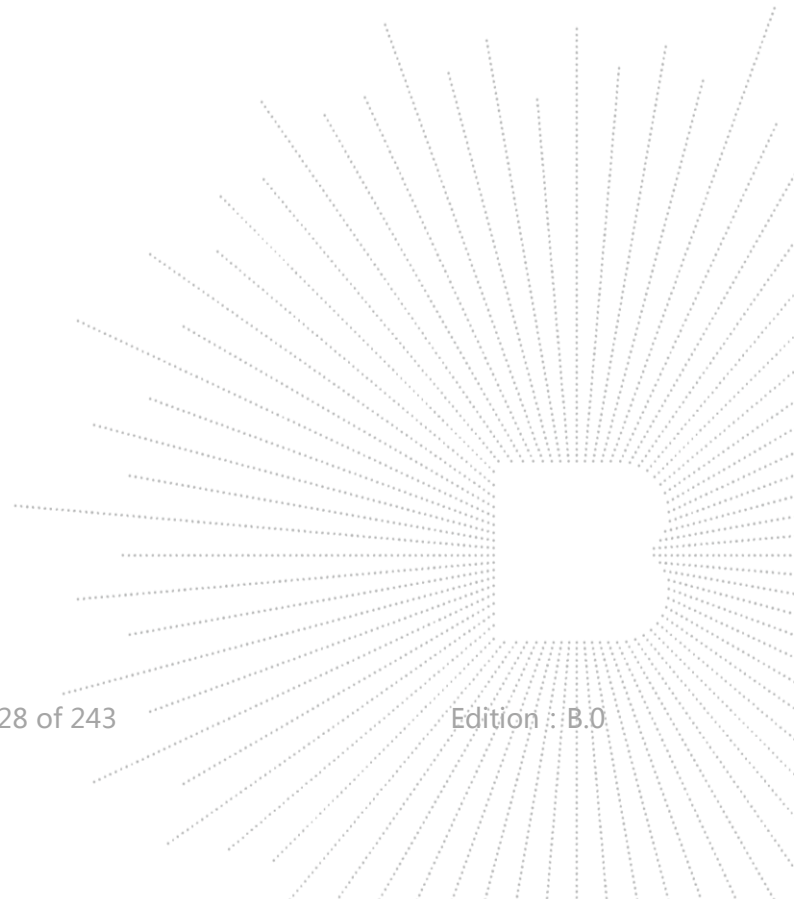
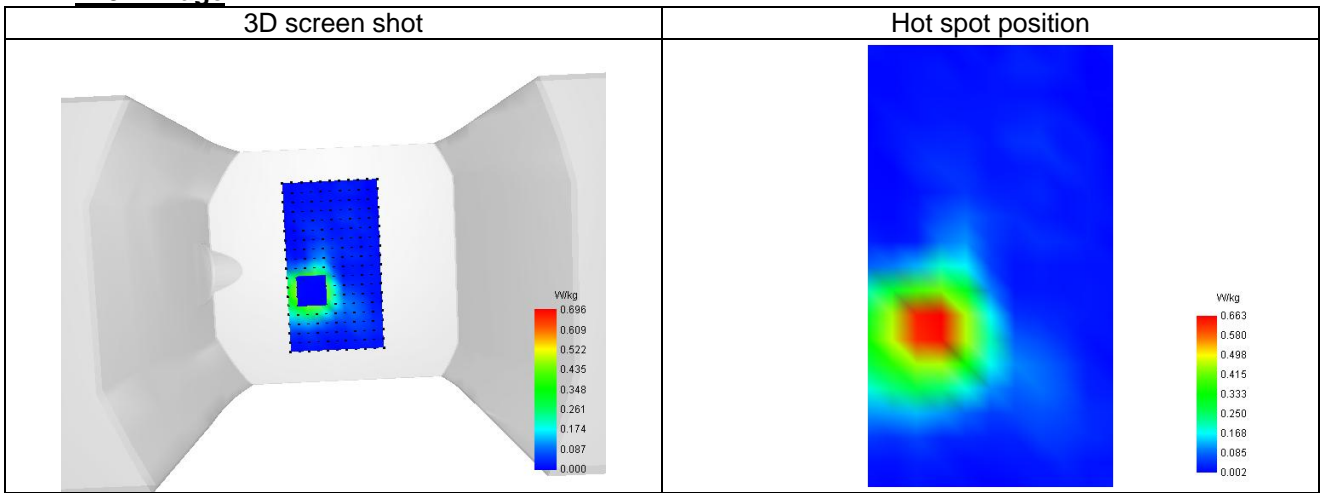
Maximum location: X=-19.00, Y=-19.00 ; SAR Peak: 1.27 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.123
SAR 1g (W/Kg)	0.369
Variation (%)	-2.220
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
SAR (W/Kg)	1.210	0.658	0.323	0.142	0.057	0.022	0.009	0.004	0.003


F. 3D Image


Plot 25

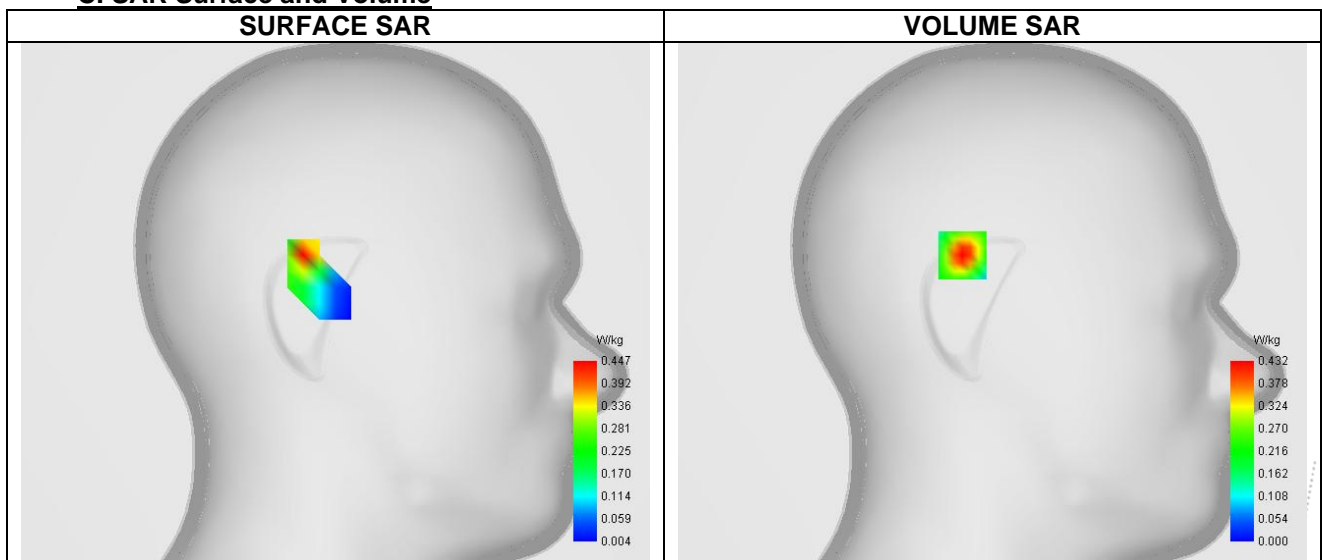
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.15
Area Scan	dx=8mm dy=8mm, Adaptive 1 max
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Left head
Device Position	Cheek
Band	IEEE 802.11a U-NII-3
Channels	Higher (165)
Signal	IEEE802.a (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	5825.000
Relative permittivity (real part)	35.635
Relative permittivity (imaginary part)	16.370
Conductivity (S/m)	5.193

C. SAR Surface and Volume

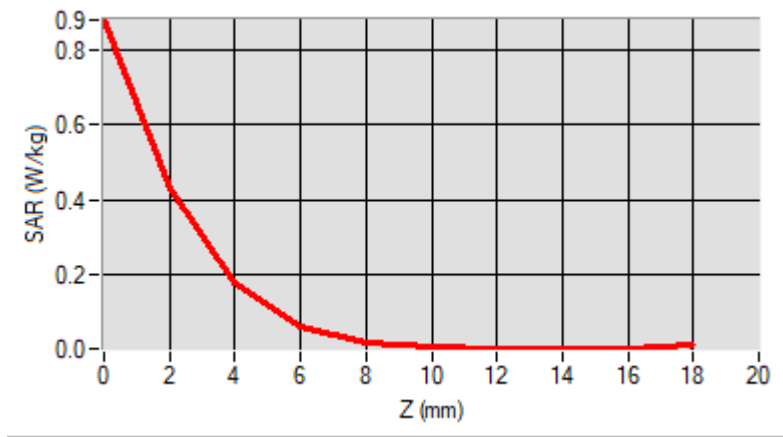
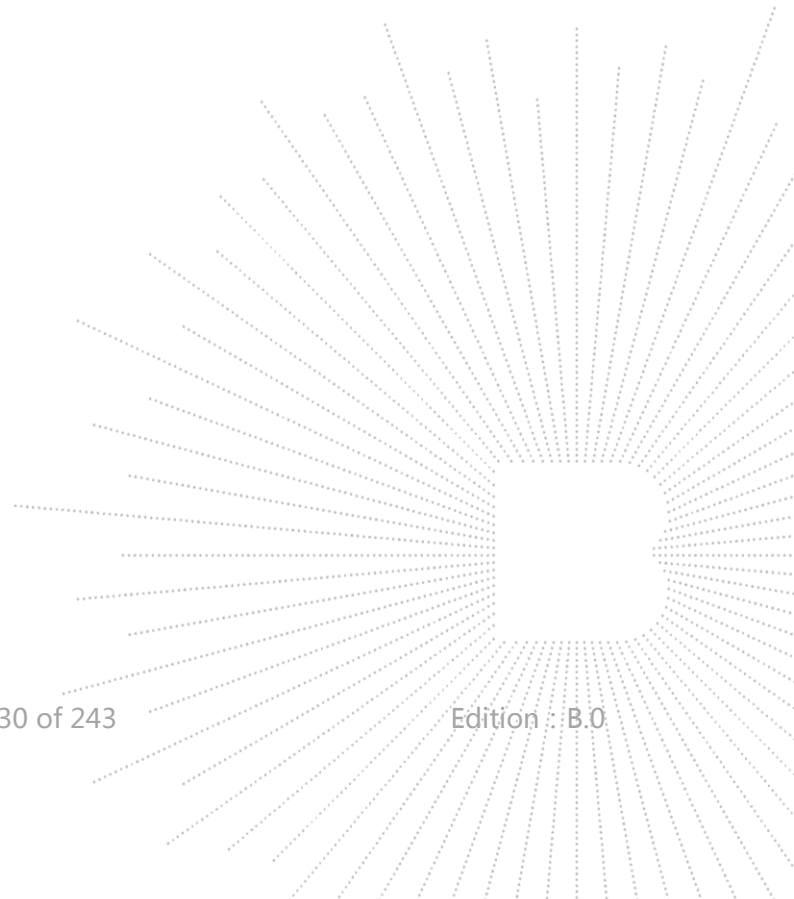
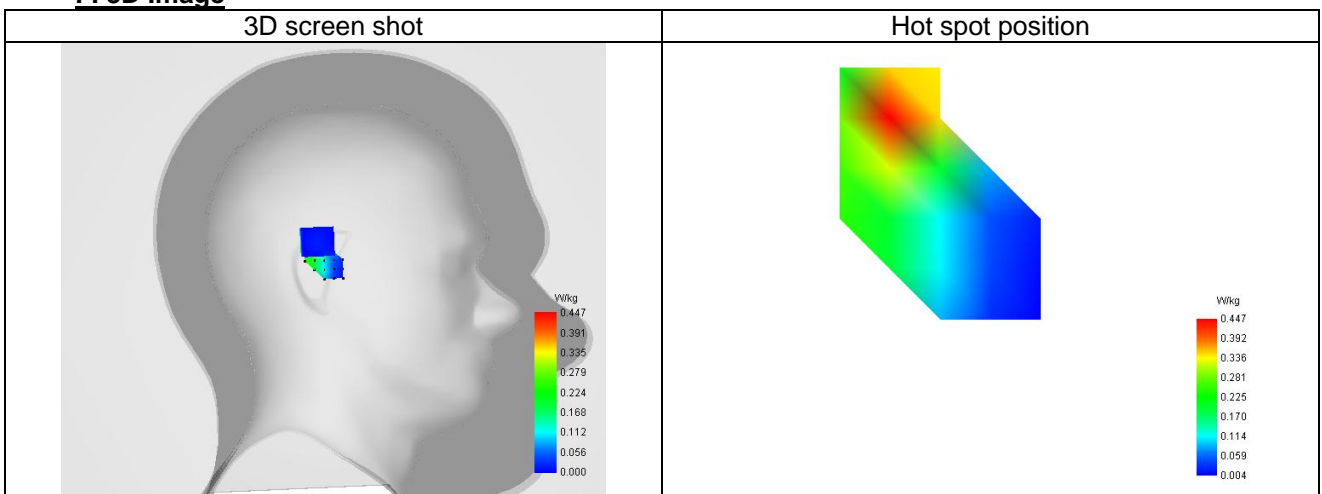


D. SAR 1g & 10g

SAR 10g (W/Kg)	0.170
SAR 1g (W/Kg)	0.467
Variation (%)	-2.070
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
SAR (W/Kg)	0.881	0.432	0.177	0.060	0.017	0.005	0.003	0.004	0.001


F. 3D Image


Plot 26

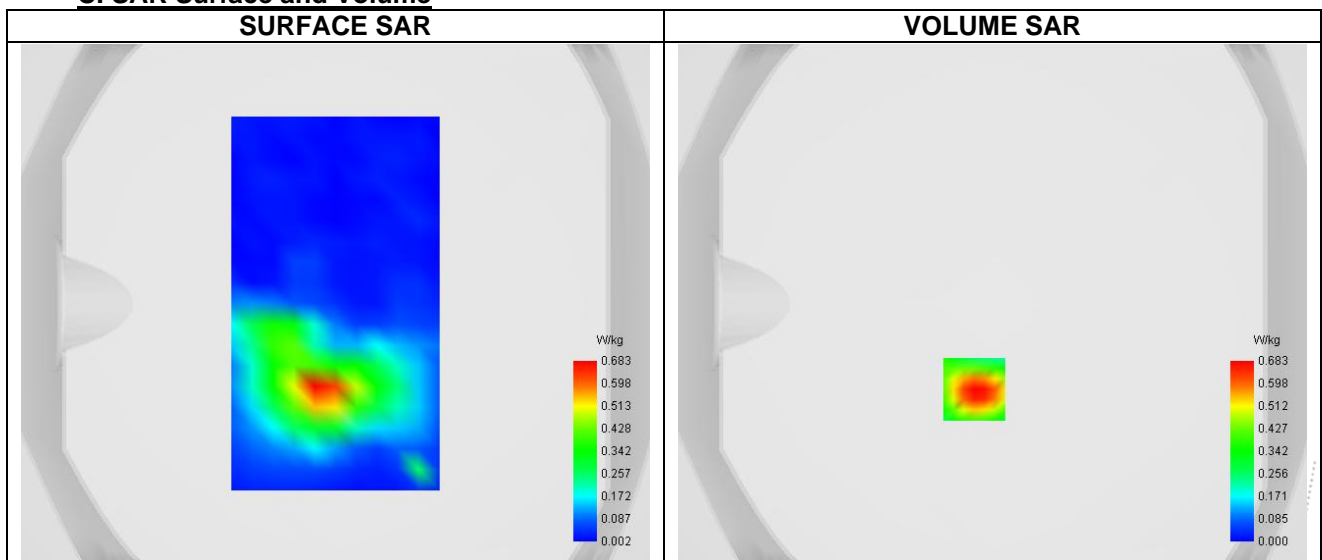
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.15
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11a U-NII-3
Channels	Higher (165)
Signal	IEEE802.a (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	5825.000
Relative permittivity (real part)	35.635
Relative permittivity (imaginary part)	16.370
Conductivity (S/m)	5.193

C. SAR Surface and Volume



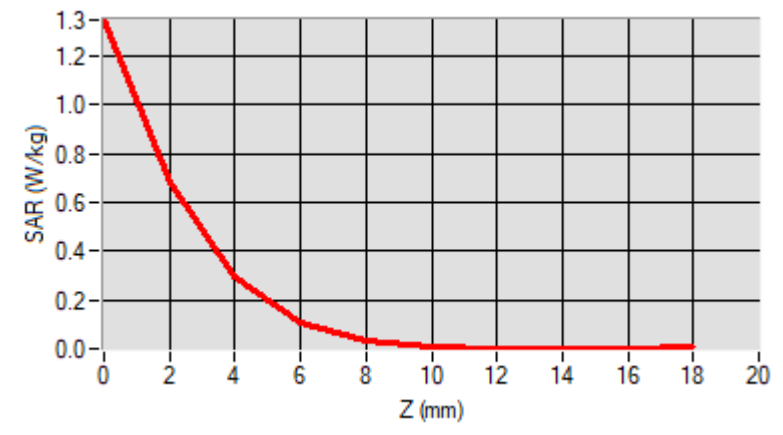
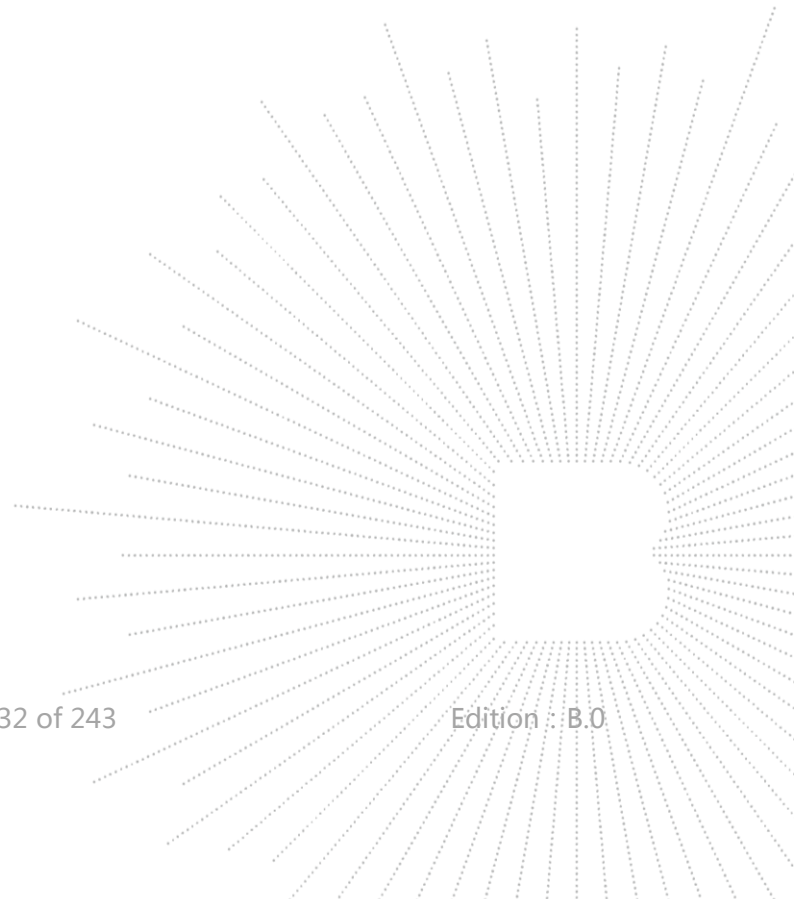
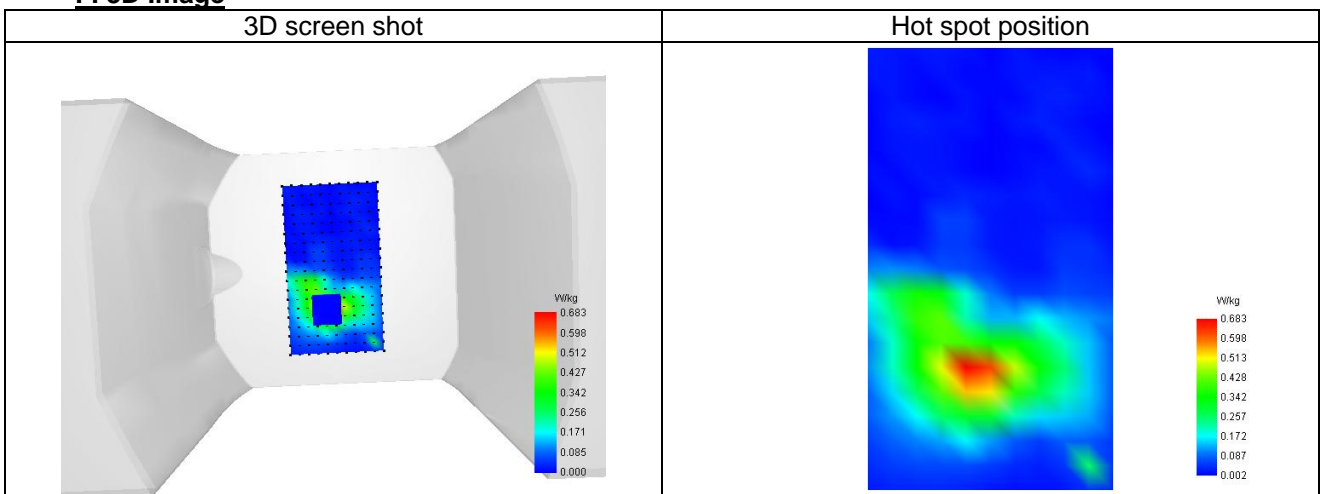
Maximum location: X=-7.00, Y=-33.00 ; SAR Peak: 1.43 W/kg

D. SAR 1g & 10g

SAR 10g (W/Kg)	0.106
SAR 1g (W/Kg)	0.377
Variation (%)	-2.140
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

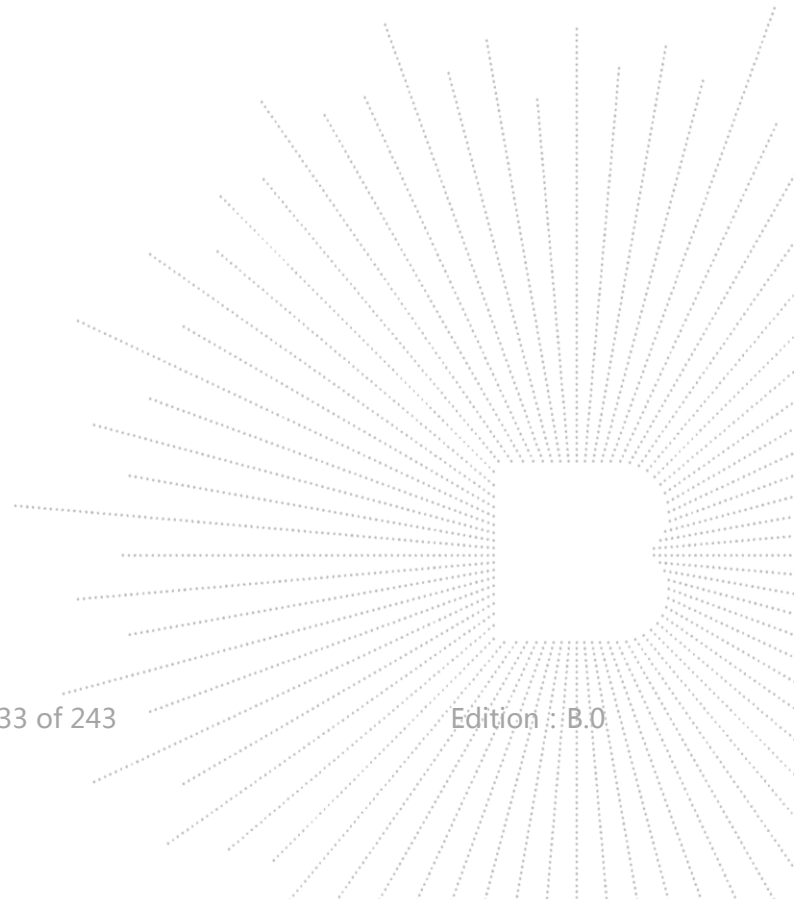
E. Z Axis Scan

Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
SAR (W/Kg)	1.349	0.683	0.296	0.106	0.030	0.006	0.001	0.000	0.001


F. 3D Image


16. CALIBRATION CERTIFICATES

Probe-EPGO420 Calibration Certificate
SID750Dipole Calibration Certificate
SID835Dipole Calibration Certificate
SID1800Dipole Calibration Certificate
SID1900Dipole Calibration Certificate
SID2450Dipole Calibration Certificate
SID2600Dipole Calibration Certificate
SID5000Dipole Calibration Certificate





COMOSAR E-Field Probe Calibration Report

Ref : ACR.199.1.23.BES.A

SHENZHEN BCTC TECHNOLOGY CO., LTD.
1 ~2/ F, NO. B FACTORY BUILDING, PENGZHOU
INDUSTRIAL PARK, FUYUAN 1ST ROAD,
TANGWEI COMMUNITY, FUHAI STREET, BAO'AN
DISTRICT, SHENZHEN, GUANGDONG, CHINA
MVG COMOSAR DOSIMETRIC E-FIELD PROBE
SERIAL NO.: 2623-EPGO-420

Calibrated at MVG
Z.I. de la pointe du diable
Technopôle Brest Iroise – 295 avenue Alexis de Rochon
29280 PLOUZANE - FRANCE

Calibration date: 7/18/2023



Accreditations #2-6789
Scope available on www.cofrac.fr



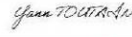
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Summary:

This document presents the method and results from an accredited COMOSAR Dosimetric E-Field Probe calibration performed at MVG, using the CALIPROBE test bench, for use with a MVG COMOSAR system only. The test results covered by accreditation are traceable to the International System of Units (SI).

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	<i>Name</i>	<i>Function</i>	<i>Date</i>	<i>Signature</i>
<i>Prepared by :</i>	Cyrille ONNEE	Measurement Responsible	7/18/2023	
<i>Checked & approved by:</i>	Jérôme Luc	Technical Manager	7/18/2023	
<i>Authorized by:</i>	Yann Toutain	Laboratory Director	7/18/2023	

Yann Toutain ID
 Signature numérique de Yann Toutain ID
 Date : 2023.07.18 10:38:49 +02'00'

	<i>Customer Name</i>
<i>Distribution :</i>	Shenzhen BCTC Technology Co., Ltd.

<i>Issue</i>	<i>Name</i>	<i>Date</i>	<i>Modifications</i>
A	Cyrille ONNEE	7/18/2023	Initial release

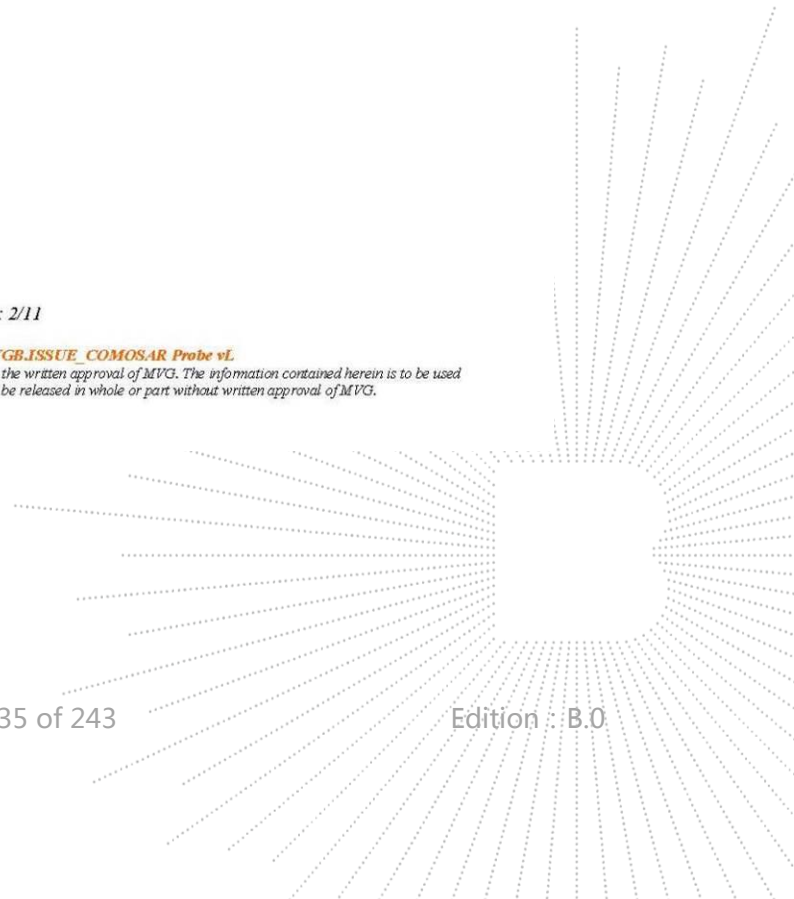


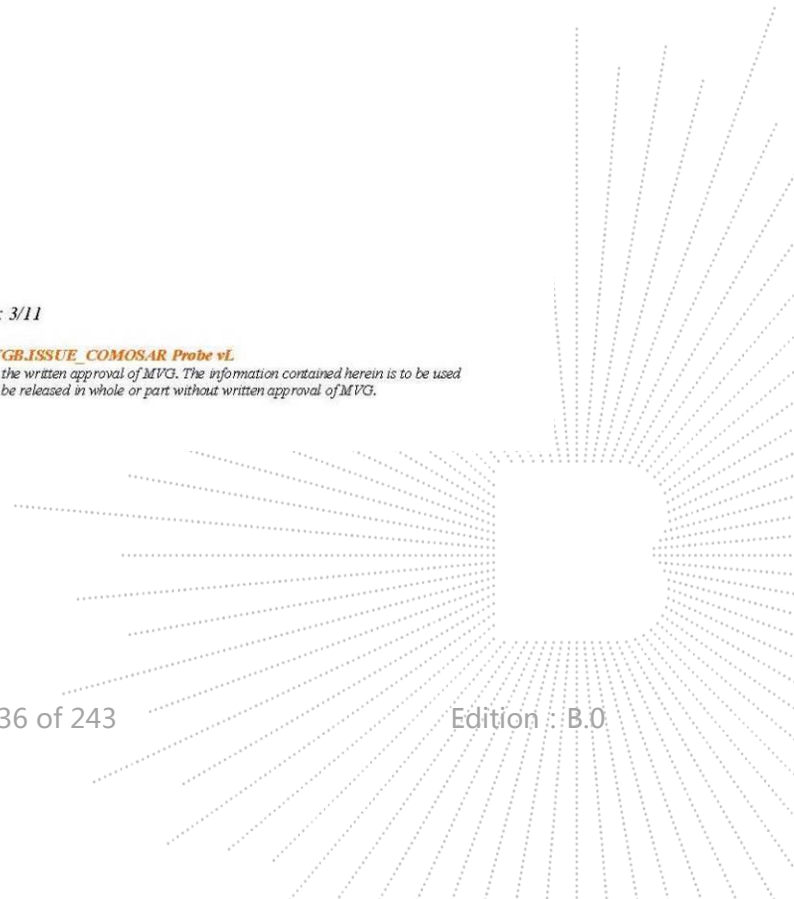

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1 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR DOSIMETRIC E FIELD PROBE
Manufacturer	MVG
Model	SSE2
Serial Number	2623-EPGO-420
Product Condition (new / used)	New
Frequency Range of Probe	0.15 GHz-7.5GHz
Resistance of Three Dipoles at Connector	Dipole 1: R1=0.228 MΩ Dipole 2: R2=0.238 MΩ Dipole 3: R3=0.230 MΩ

2 PRODUCT DESCRIPTION

2.1 GENERAL INFORMATION

MVG's COMOSAR E field Probes are built in accordance to the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards.



Figure 1 – MVG COMOSAR Dosimetric E field Probe

Probe Length	330 mm
Length of Individual Dipoles	24.5 mm
Maximum external diameter	8 mm
Probe Tip External Diameter	2.55 mm
Distance between dipoles / probe extremity	12.7 mm

3 MEASUREMENT METHOD

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards provide recommended practices for the probe calibrations, including the performance characteristics of interest and methods by which to assess their effect. All calibrations / measurements performed meet the fore-mentioned standards.

3.1 SENSITIVITY

The sensitivity factors of the three dipoles were determined using a two step calibration method (air and tissue simulating liquid) using waveguides as outlined in the standards for frequency range 600-7500MHz and using the calorimeter cell method (transfer method) as outlined in the standards for frequency 150-450 MHz.

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3.2 LINEARITY

The evaluation of the linearity was done in free space using the waveguide, performing a power sweep to cover the SAR range 0.01W/kg to 100W/kg.

3.3 ISOTROPY

The axial isotropy was evaluated by exposing the probe to a reference wave from a standard dipole with the dipole mounted under the flat phantom in the test configuration suggested for system validations and checks. The probe was rotated along its main axis from 0 to 360 degrees in 15-degree steps. The hemispherical isotropy is determined by inserting the probe in a thin plastic box filled with tissue-equivalent liquid, with the plastic box illuminated with the fields from a half wave dipole. The dipole is rotated about its axis (0°–180°) in 15° increments. At each step the probe is rotated about its axis (0°–360°).

3.4 BOUNDARY EFFECT

The boundary effect is defined as the deviation between the SAR measured data and the expected exponential decay in the liquid when the probe is oriented normal to the interface. To evaluate this effect, the liquid filled flat phantom is exposed to fields from either a reference dipole or waveguide. With the probe normal to the phantom surface, the peak spatial average SAR is measured and compared to the analytical value at the surface.

The boundary effect uncertainty can be estimated according to the following uncertainty approximation formula based on linear and exponential extrapolations between the surface and d_{be} + d_{step} along lines that are approximately normal to the surface:

$$SAR_{uncertainty} [\%] = \Delta SAR_{be} \frac{(d_{be} + d_{step})^2}{2d_{step}} \frac{(e^{-d_{be}/(\delta/2)})}{\delta/2} \text{ for } (d_{be} + d_{step}) < 10 \text{ mm}$$

where

$SAR_{uncertainty}$	is the uncertainty in percent of the probe boundary effect
d_{be}	is the distance between the surface and the closest <i>zoom-scan</i> measurement point, in millimetre
Δ_{step}	is the separation distance between the first and second measurement points that are closest to the phantom surface, in millimetre, assuming the boundary effect at the second location is negligible
δ	is the minimum penetration depth in millimetres of the head tissue-equivalent liquids defined in this standard, i.e., $\delta \approx 14$ mm at 3 GHz;
ΔSAR_{be}	in percent of SAR is the deviation between the measured SAR value, at the distance d_{be} from the boundary, and the analytical SAR value.

The measured worst case boundary effect SARuncertainty[%] for scanning distances larger than 4mm is 1.0% Limit ,2%).

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