

MEASUREMENT 2

Date of measurement: 8/4/2024

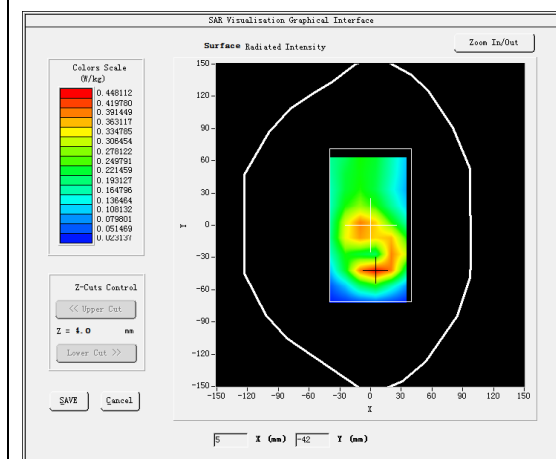
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>GSM850</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>TDMA (Crest factor: 2.0)</u>
<u>ConvF</u>	<u>2.32</u>

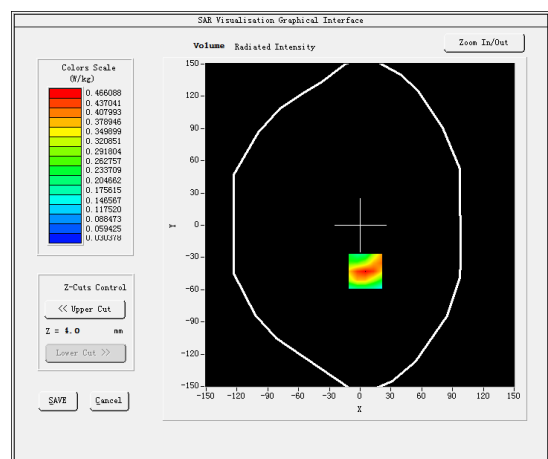
B. SAR Measurement Results

Frequency (MHz)	836.400000
Relative permittivity (real part)	41.006798
Relative permittivity (imaginary part)	19.082279
Conductivity (S/m)	0.886690
Variation (%)	-0.550000

SURFACE SAR



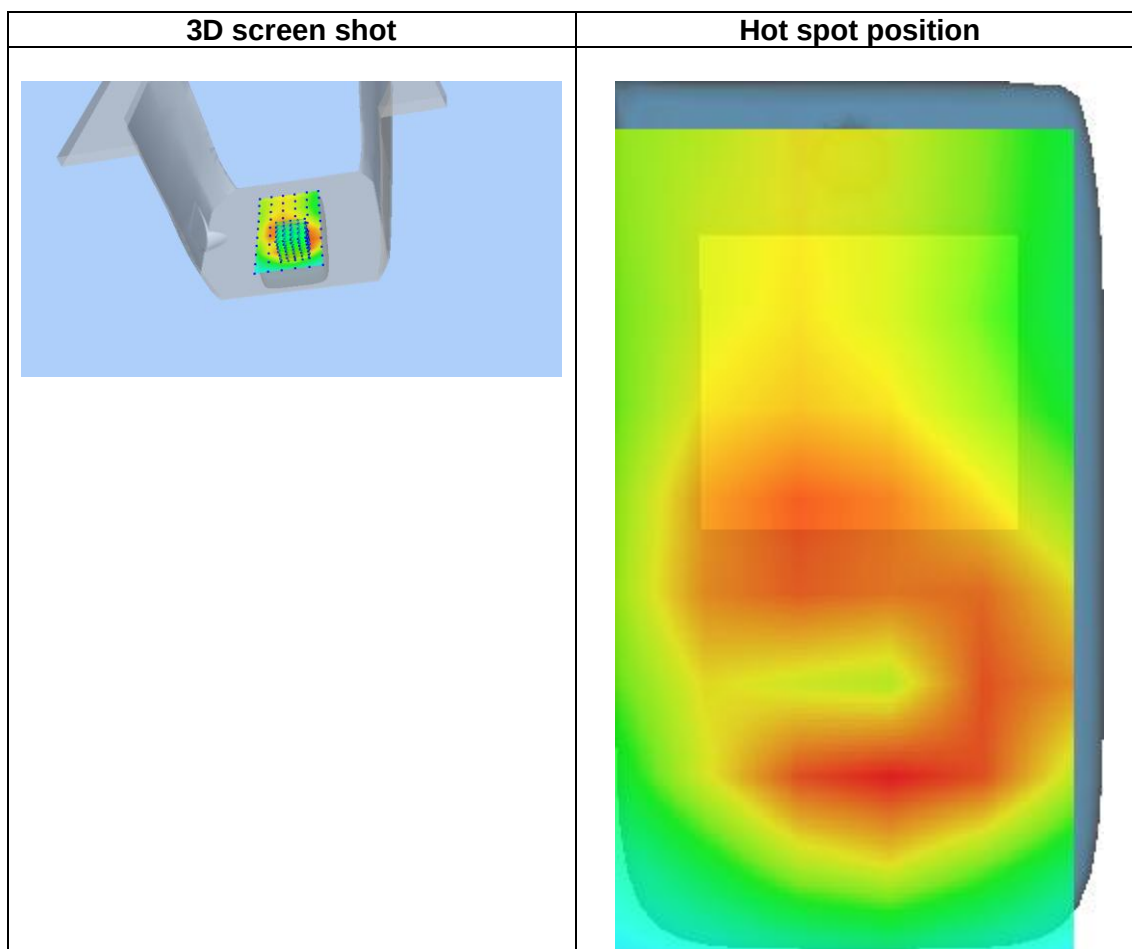
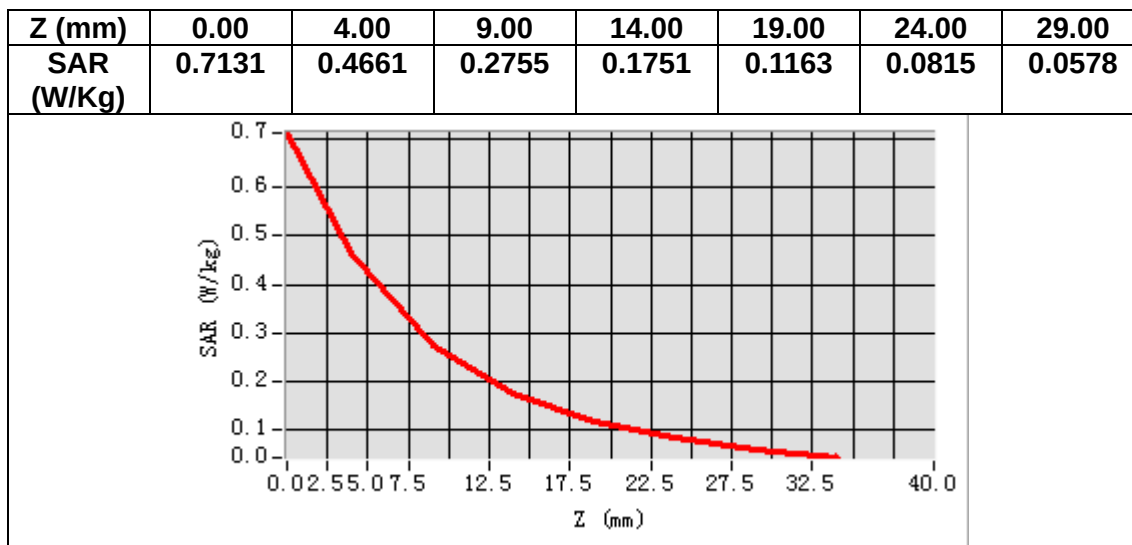
VOLUME SAR



Maximum location: X=5.00, Y=-43.00

SAR Peak: 0.72 W/kg

SAR 10g (W/Kg)	0.247334
SAR 1g (W/Kg)	0.441644



MEASUREMENT 3

Date of measurement: 9/4/2024

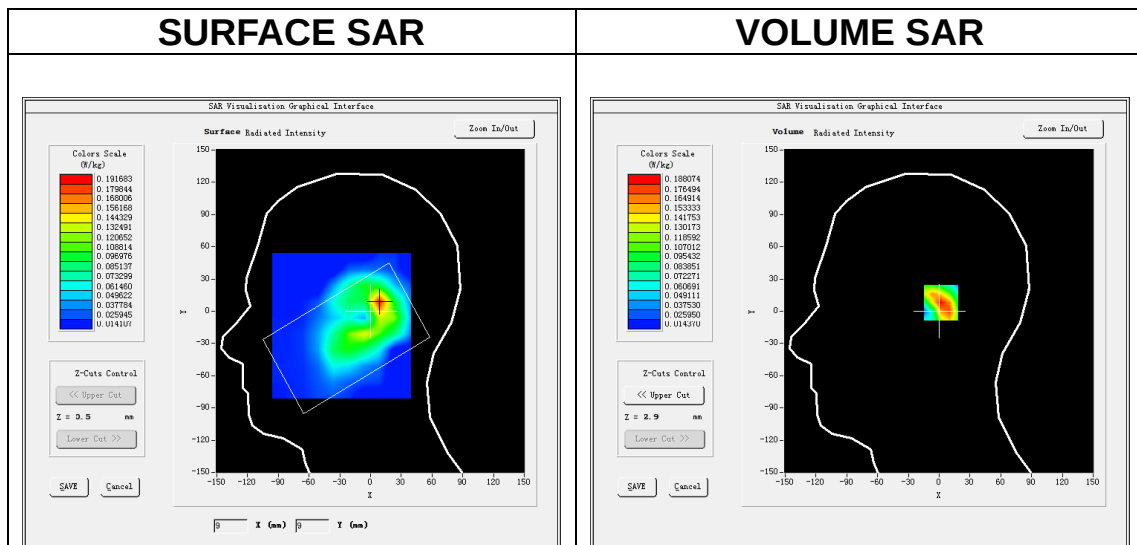
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>GSM1900</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>TDMA (Crest factor: 2.0)</u>
<u>ConvF</u>	<u>2.63</u>

B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.100822
Relative permittivity (imaginary part)	13.853208
Conductivity (S/m)	1.446891
Variation (%)	-0.580000

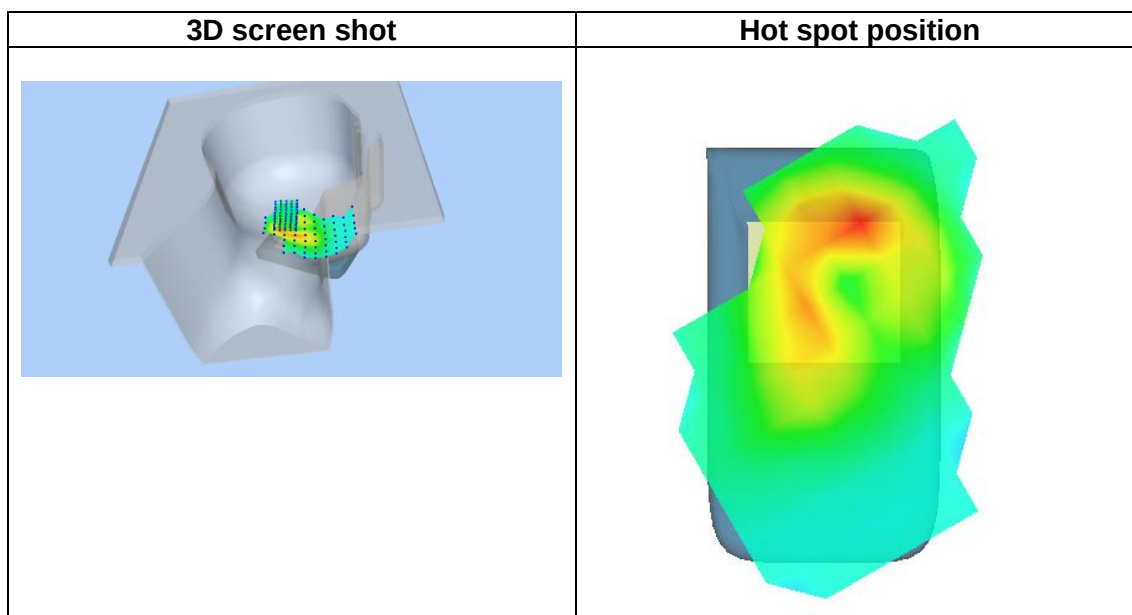
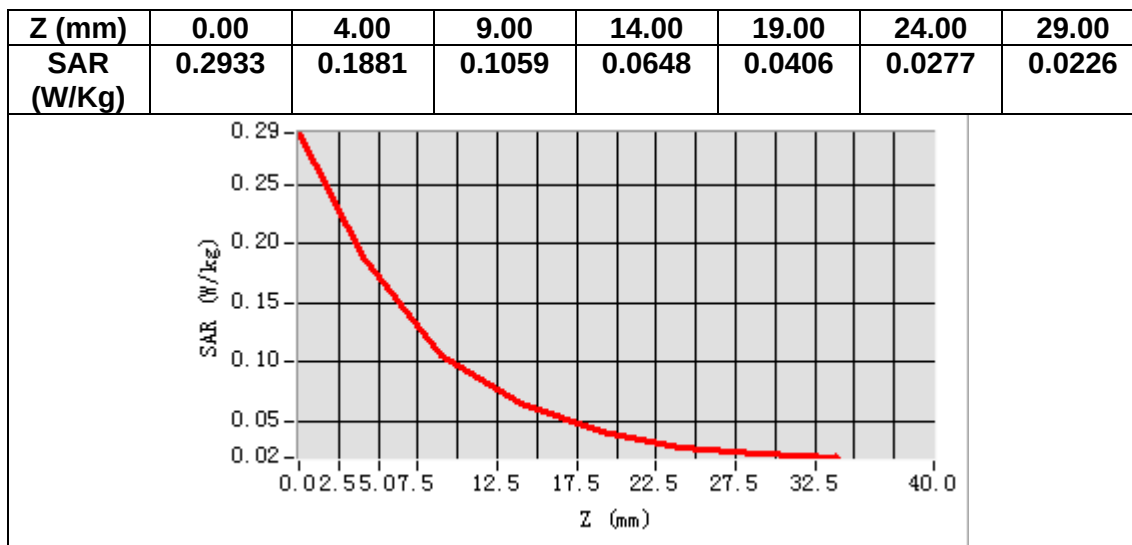
SURFACE SAR



Maximum location: X=9.00, Y=8.00

SAR Peak: 0.30 W/kg

SAR 10g (W/Kg)	0.100075
SAR 1g (W/Kg)	0.182431



MEASUREMENT 4

Date of measurement: 9/4/2024

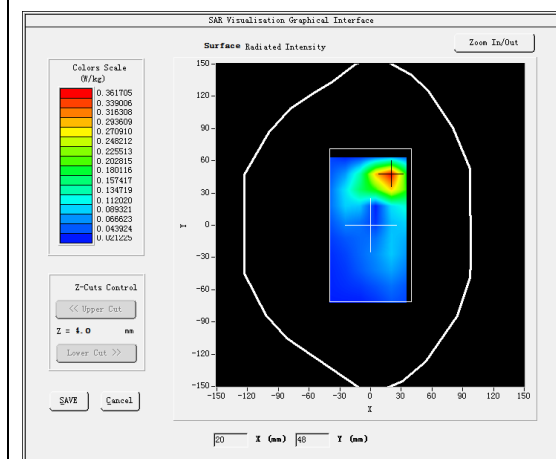
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>GSM1900</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>TDMA (Crest factor: 2.0)</u>
<u>ConvF</u>	<u>2.63</u>

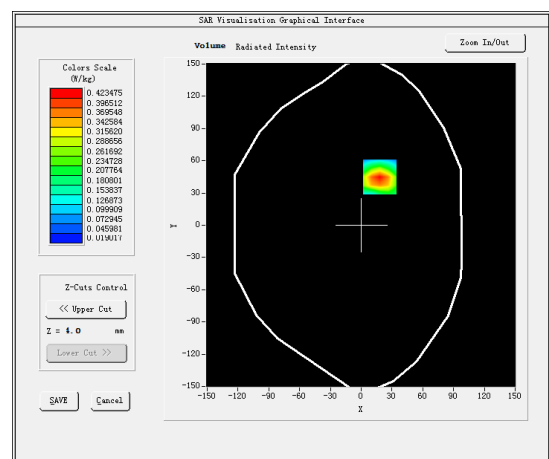
B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.100822
Relative permittivity (imaginary part)	13.853208
Conductivity (S/m)	1.446891
Variation (%)	-3.980000

SURFACE SAR



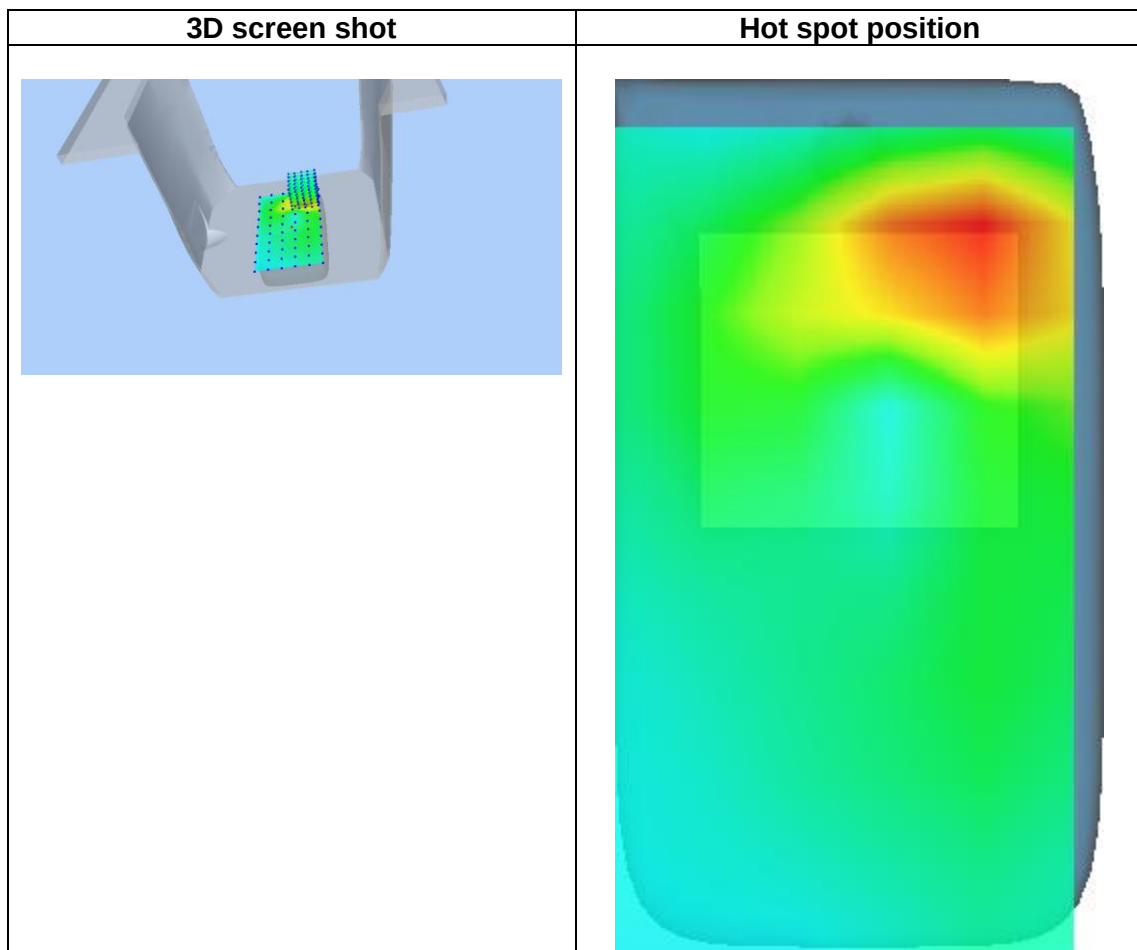
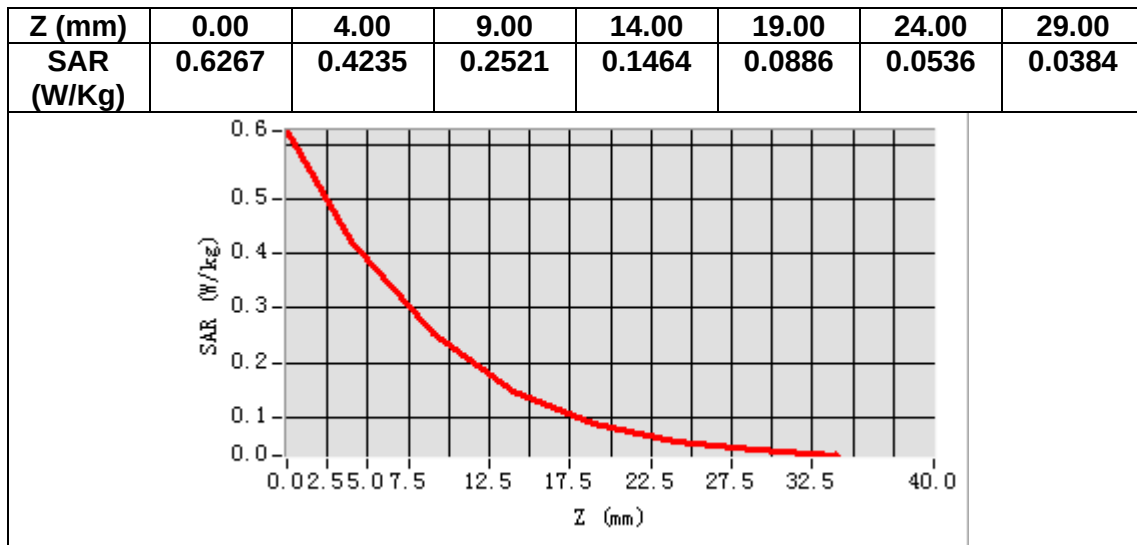
VOLUME SAR



Maximum location: X=18.00, Y=45.00

SAR Peak: 0.66 W/kg

SAR 10g (W/Kg)	0.211934
SAR 1g (W/Kg)	0.411018



MEASUREMENT 5

Date of measurement: 9/4/2024

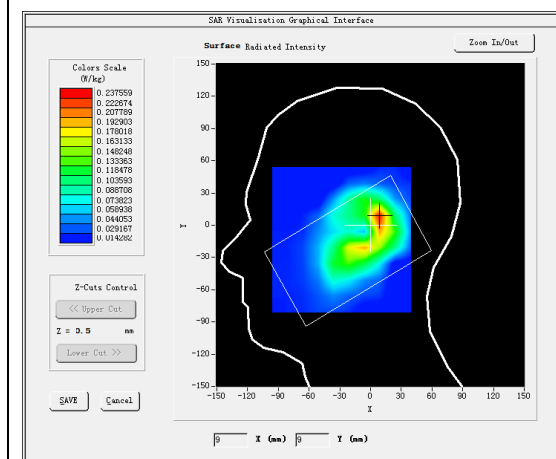
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>Band2 WCDMA1900</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>WCDMA (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.63</u>

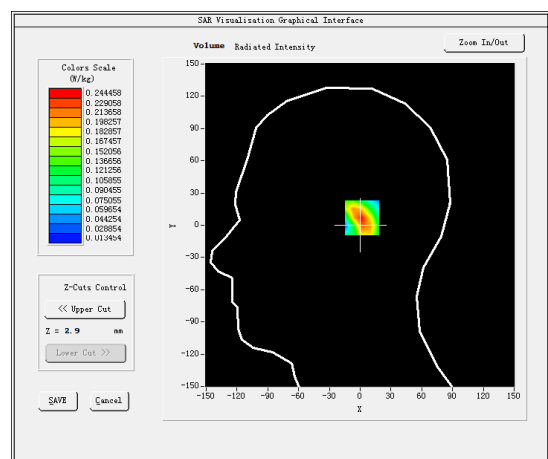
B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.100822
Relative permittivity (imaginary part)	13.853208
Conductivity (S/m)	1.446891
Variation (%)	-0.590000

SURFACE SAR



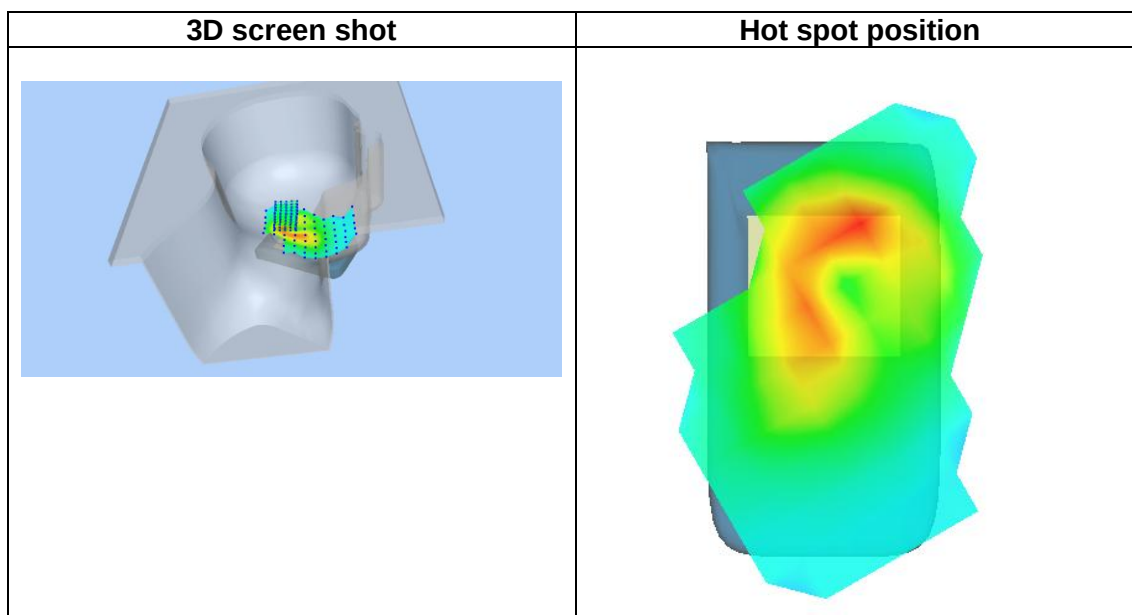
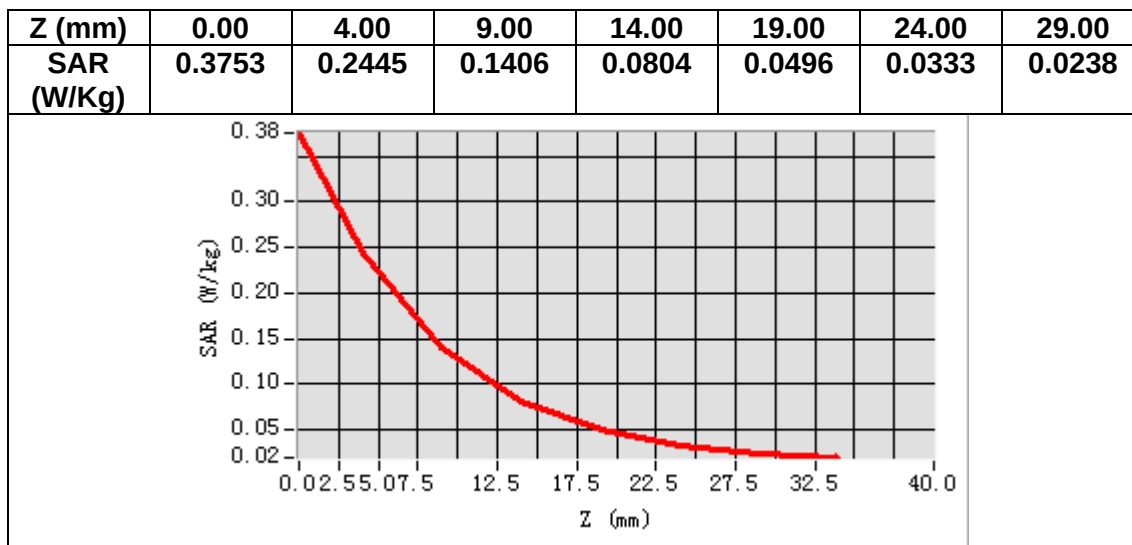
VOLUME SAR



Maximum location: X=9.00, Y=7.00

SAR Peak: 0.38 W/kg

SAR 10g (W/Kg)	0.125746
SAR 1g (W/Kg)	0.233683



MEASUREMENT 6

Date of measurement: 9/4/2024

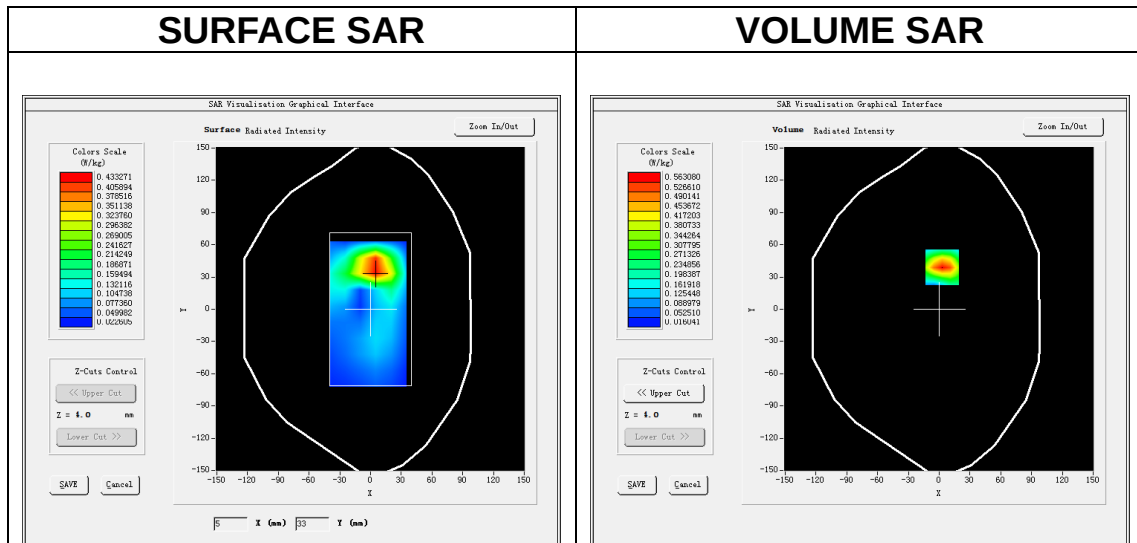
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>Band2 WCDMA1900</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>WCDMA (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.63</u>

B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.100822
Relative permittivity (imaginary part)	13.853208
Conductivity (S/m)	1.446891
Variation (%)	-3.900000

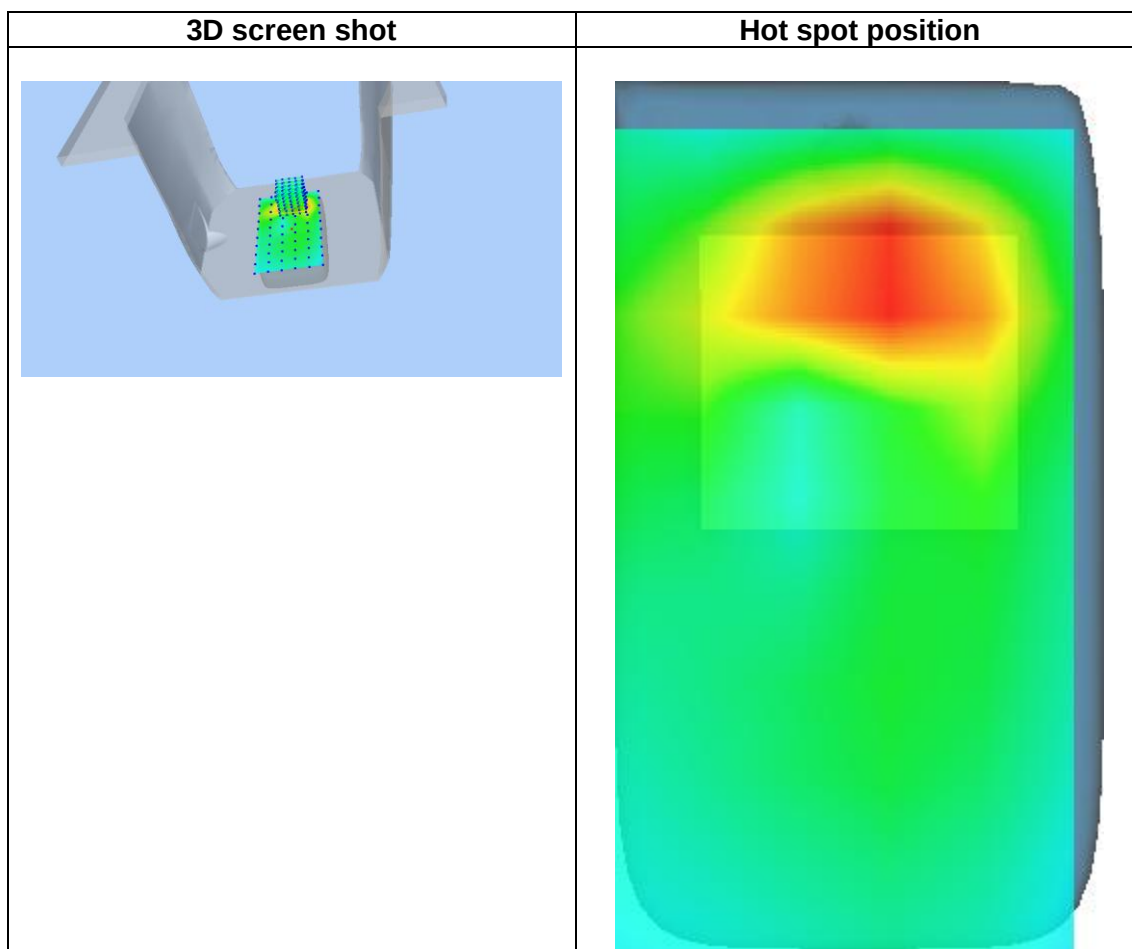
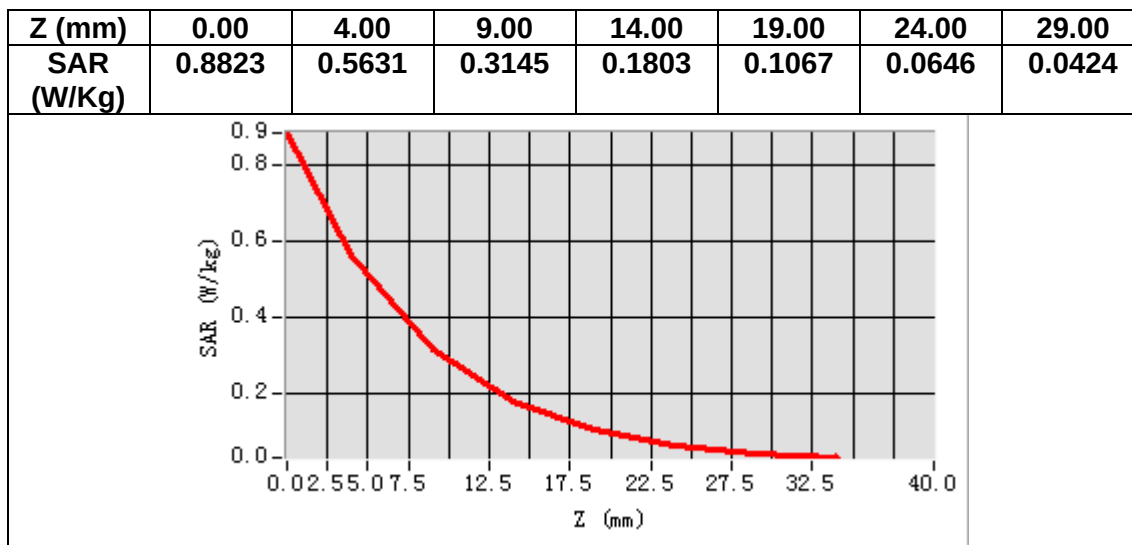
SURFACE SAR



Maximum location: X=3.00, Y=39.00

SAR Peak: 0.88 W/kg

SAR 10g (W/Kg)	0.273842
SAR 1g (W/Kg)	0.537932



MEASUREMENT 7

Date of measurement: 10/4/2024

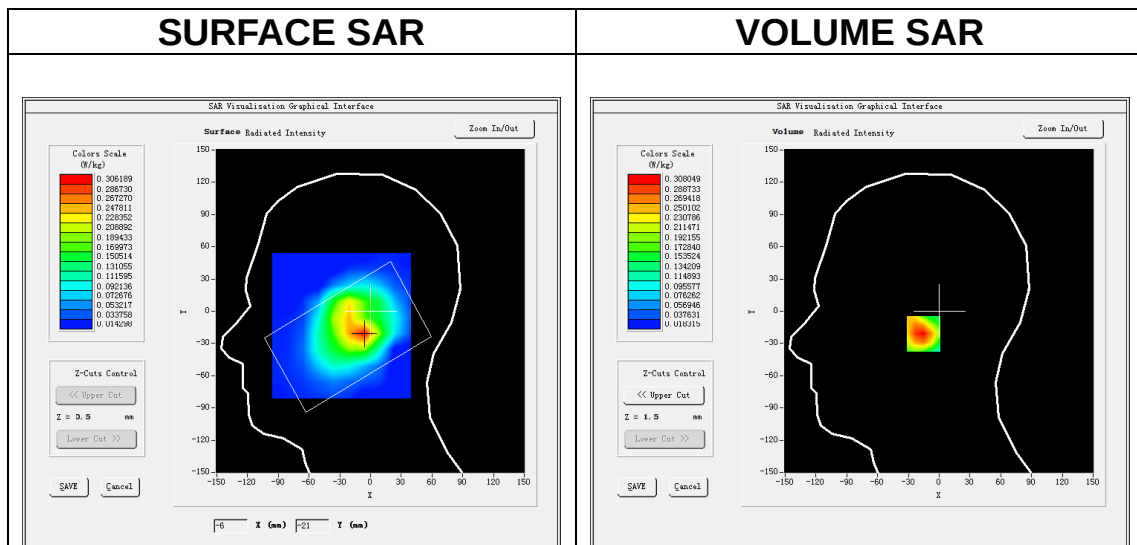
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>Band4 WCDMA1700</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>WCDMA (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.45</u>

B. SAR Measurement Results

Frequency (MHz)	1732.600000
Relative permittivity (real part)	39.661102
Relative permittivity (imaginary part)	13.922263
Conductivity (S/m)	1.339631
Variation (%)	0.730000

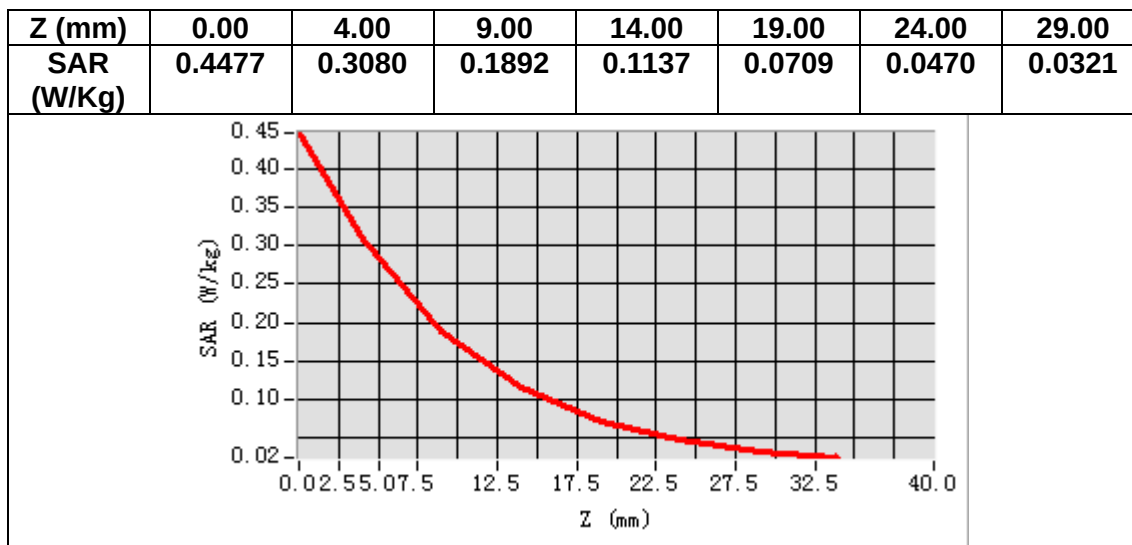
SURFACE SAR



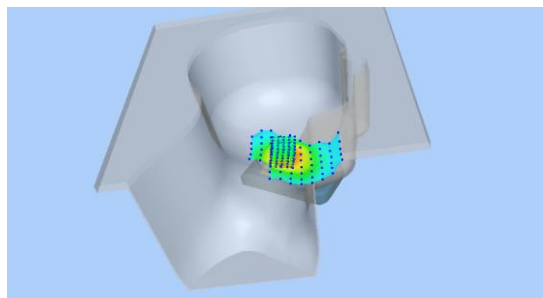
Maximum location: X=-7.00, Y=-21.00

SAR Peak: 0.45 W/kg

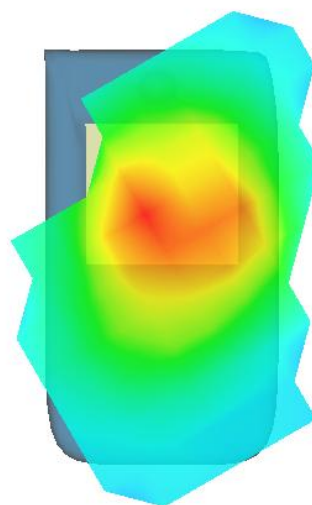
SAR 10g (W/Kg)	0.170443
SAR 1g (W/Kg)	0.293746



3D screen shot



Hot spot position



MEASUREMENT 8

Date of measurement: 10/4/2024

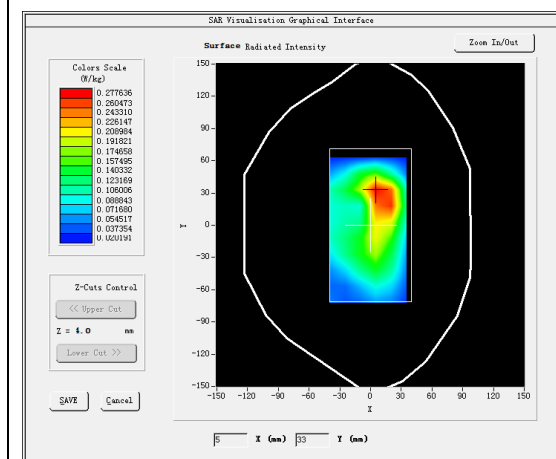
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>Band4 WCDMA1700</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>WCDMA (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.45</u>

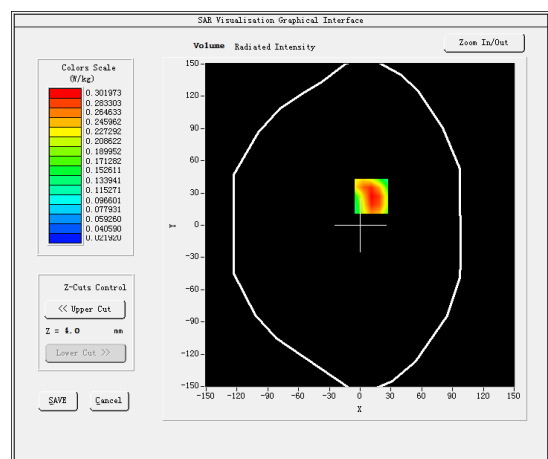
B. SAR Measurement Results

Frequency (MHz)	1732.600000
Relative permittivity (real part)	39.661102
Relative permittivity (imaginary part)	13.922263
Conductivity (S/m)	1.339631
Variation (%)	0.780000

SURFACE SAR



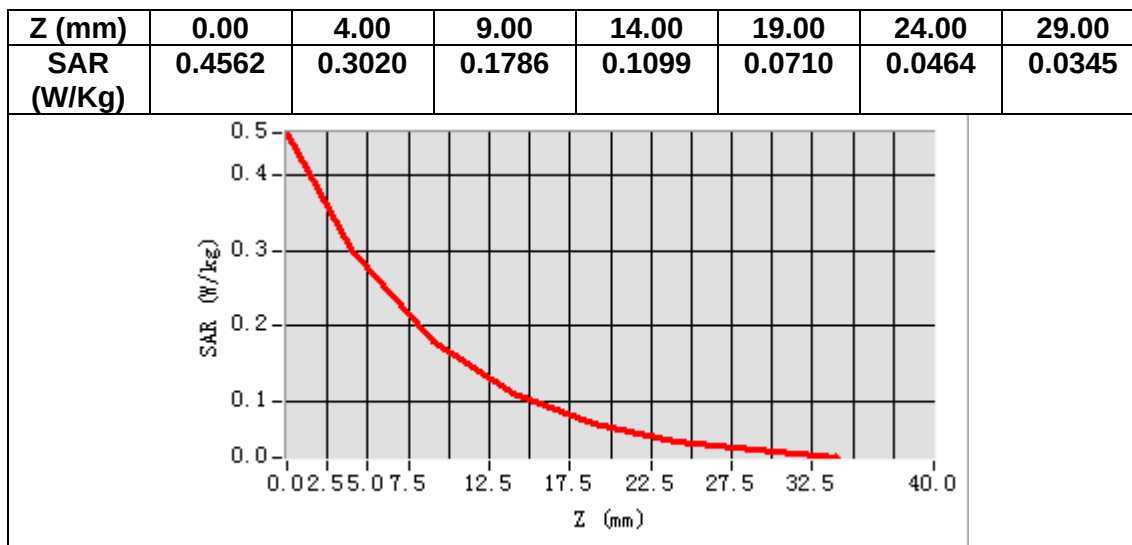
VOLUME SAR



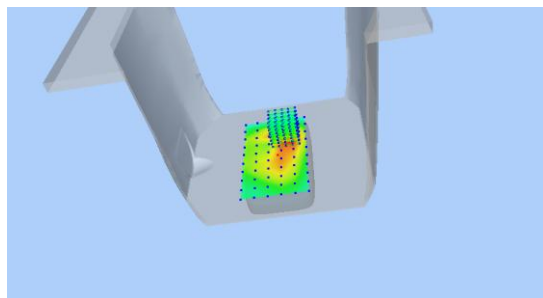
Maximum location: X=11.00, Y=27.00

SAR Peak: 0.46 W/kg

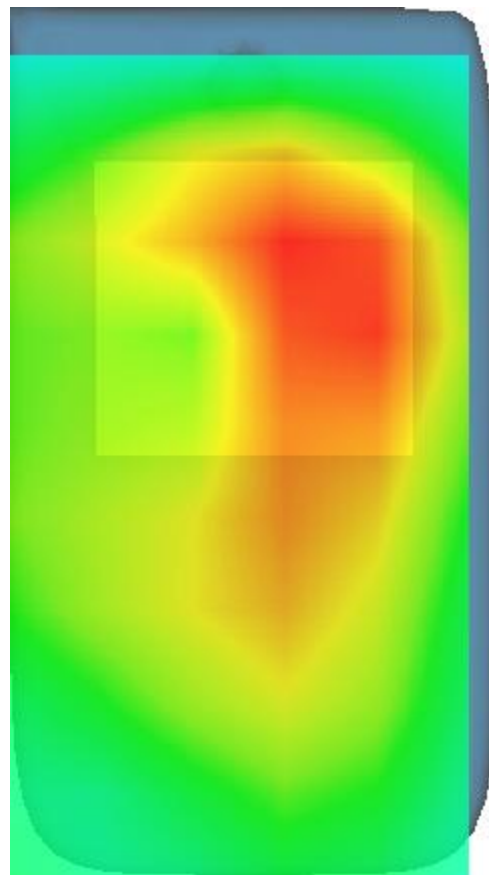
SAR 10g (W/Kg)	0.170072
SAR 1g (W/Kg)	0.291617



3D screen shot



Hot spot position



MEASUREMENT 9

Date of measurement: 8/4/2024

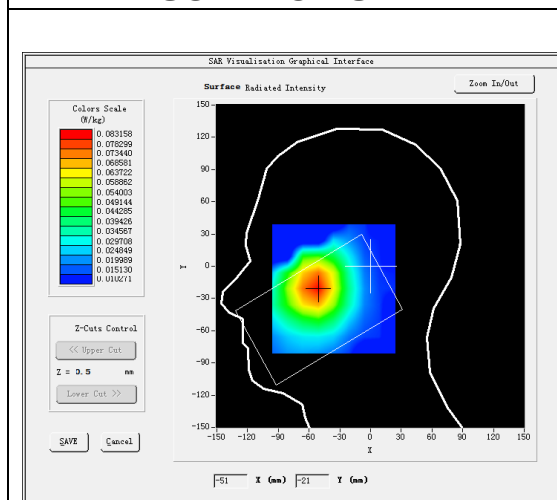
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>Band5 WCDMA850</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>WCDMA (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.32</u>

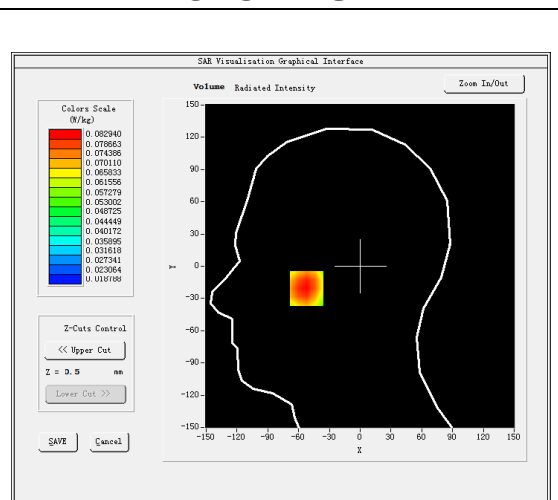
B. SAR Measurement Results

Frequency (MHz)	836.400000
Relative permittivity (real part)	41.006798
Relative permittivity (imaginary part)	19.082279
Conductivity (S/m)	0.886690
Variation (%)	-2.070000

SURFACE SAR



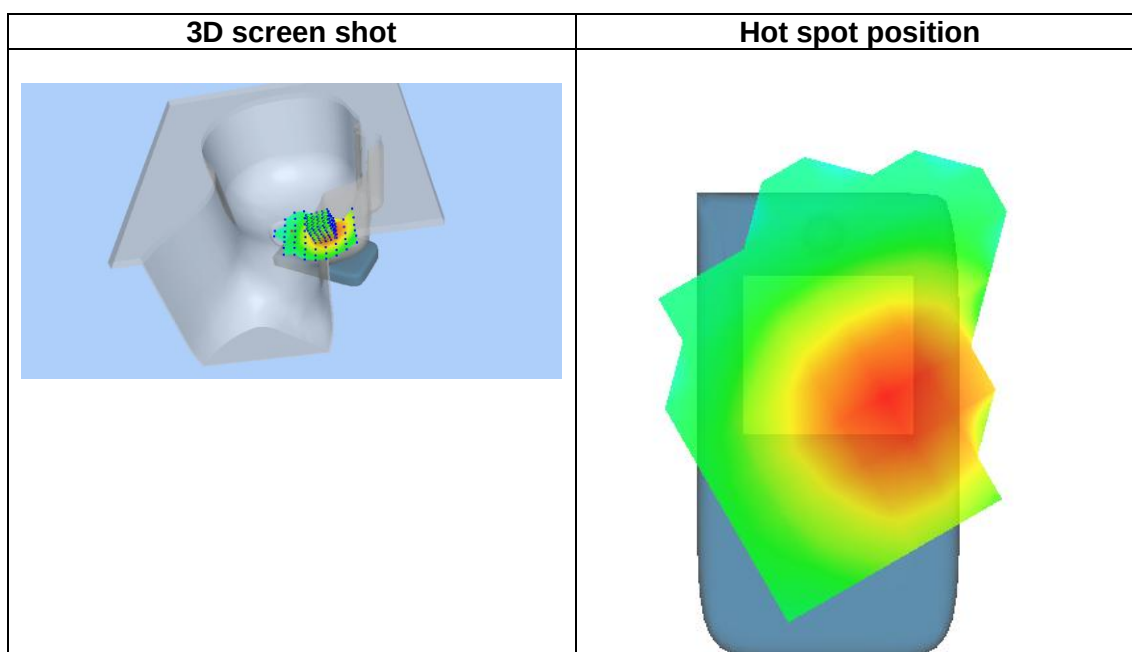
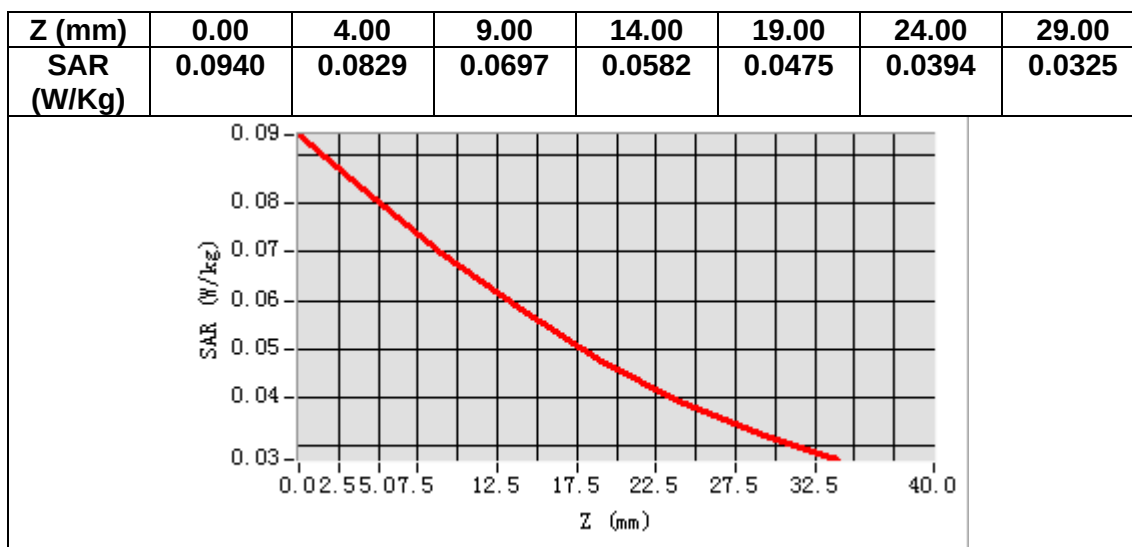
VOLUME SAR



Maximum location: X=-52.00, Y=-20.00

SAR Peak: 0.09 W/kg

SAR 10g (W/Kg)	0.062961
SAR 1g (W/Kg)	0.080290



MEASUREMENT 10

Date of measurement: 8/4/2024

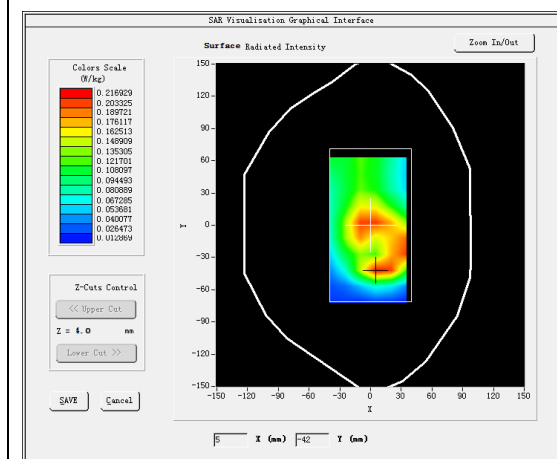
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>Band5 WCDMA850</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>WCDMA (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.32</u>

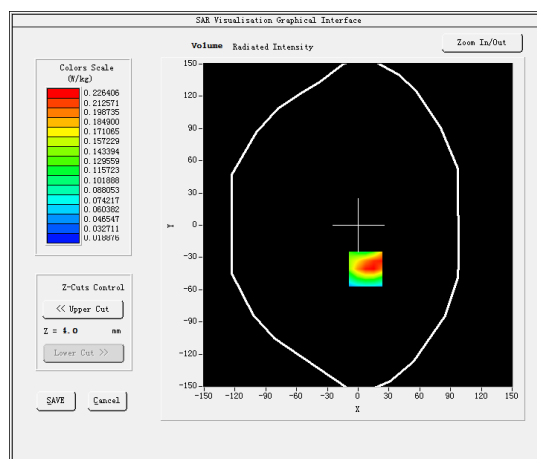
B. SAR Measurement Results

Frequency (MHz)	836.400000
Relative permittivity (real part)	41.006798
Relative permittivity (imaginary part)	19.082279
Conductivity (S/m)	0.886690
Variation (%)	-2.450000

SURFACE SAR



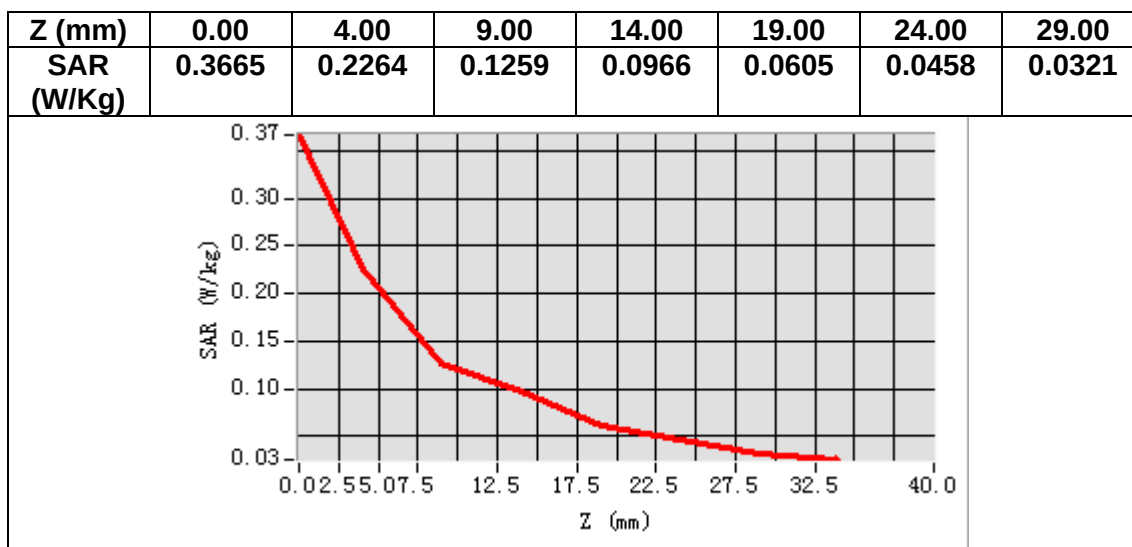
VOLUME SAR



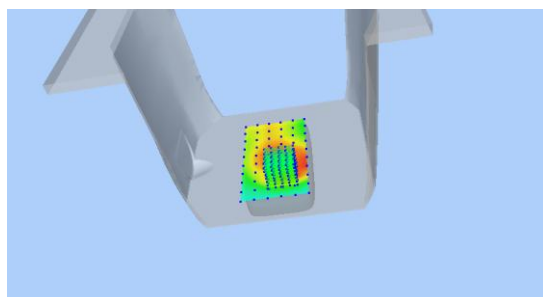
Maximum location: X=7.00, Y=-41.00

SAR Peak: 0.35 W/kg

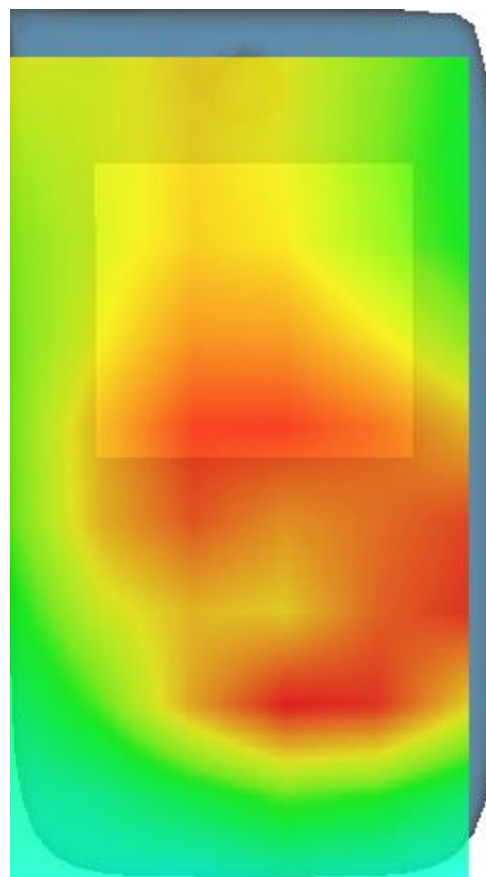
SAR 10g (W/Kg)	0.130309
SAR 1g (W/Kg)	0.221332



3D screen shot



Hot spot position



MEASUREMENT 11

Date of measurement: 12/4/2024

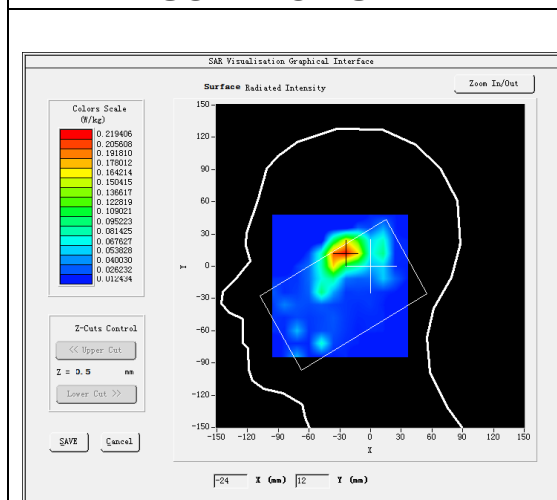
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>Bluetooth</u>
<u>Channels</u>	<u>High</u>
<u>Signal</u>	<u>Bluetooth (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.85</u>

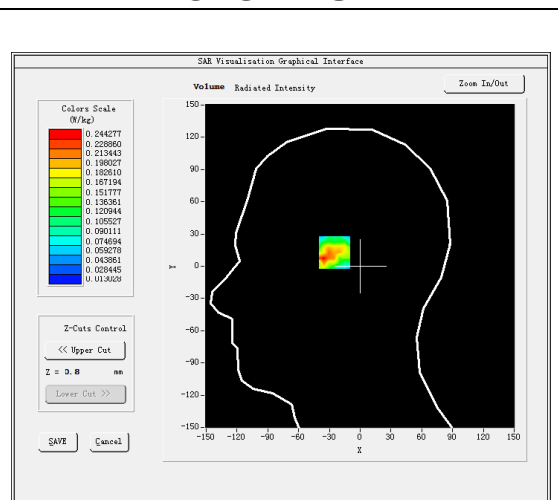
B. SAR Measurement Results

Frequency (MHz)	2480.000000
Relative permittivity (real part)	37.575235
Relative permittivity (imaginary part)	13.040978
Conductivity (S/m)	1.796757
Variation (%)	-3.340000

SURFACE SAR



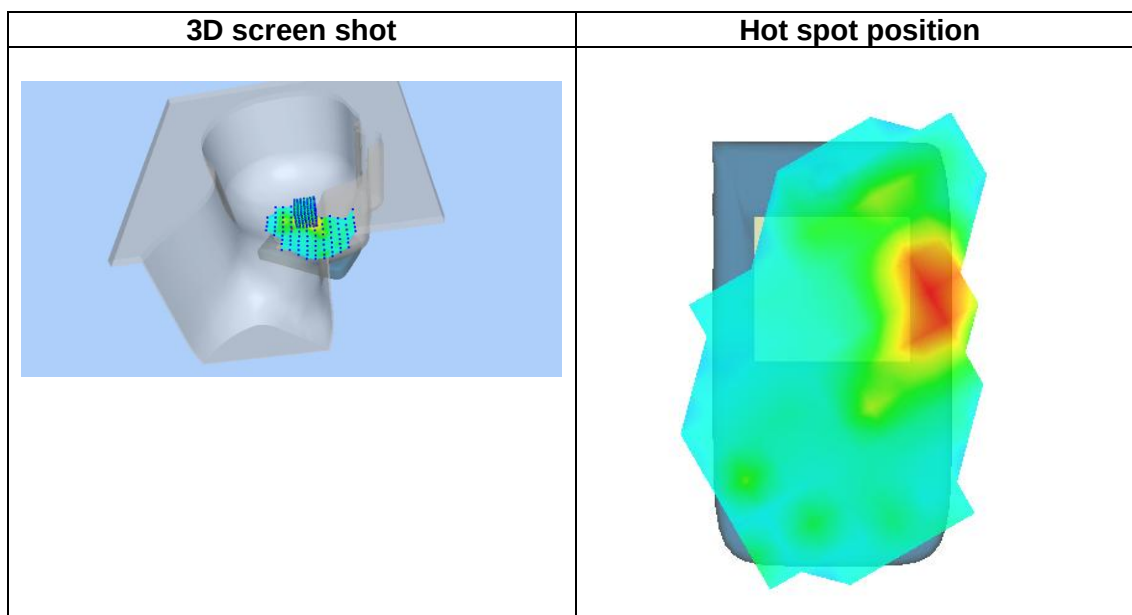
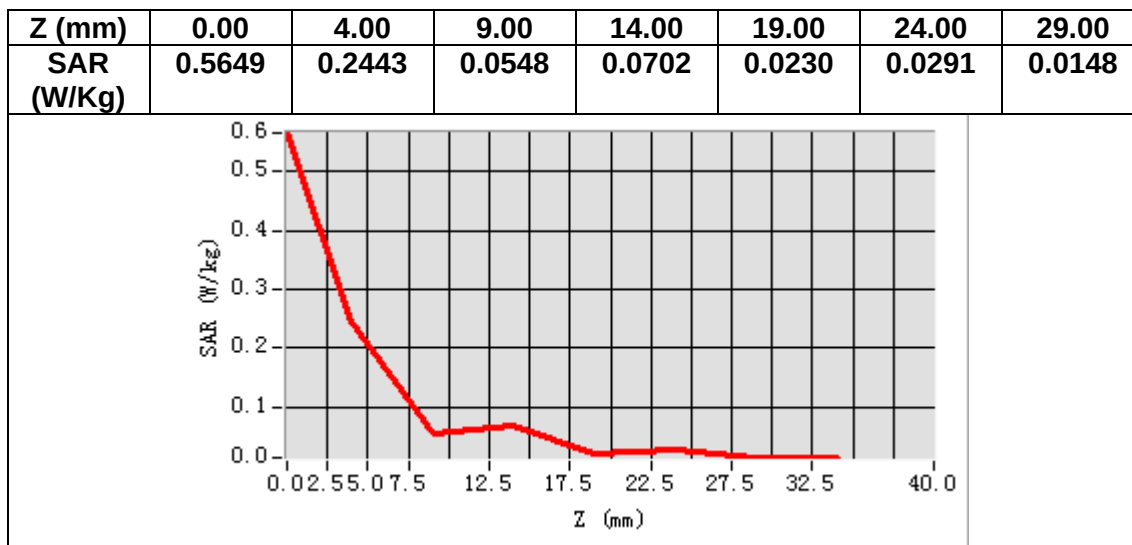
VOLUME SAR



Maximum location: X=-24.00, Y=14.00

SAR Peak: 0.42 W/kg

SAR 10g (W/Kg)	0.108741
SAR 1g (W/Kg)	0.211761



MEASUREMENT 12

Date of measurement: 12/4/2024

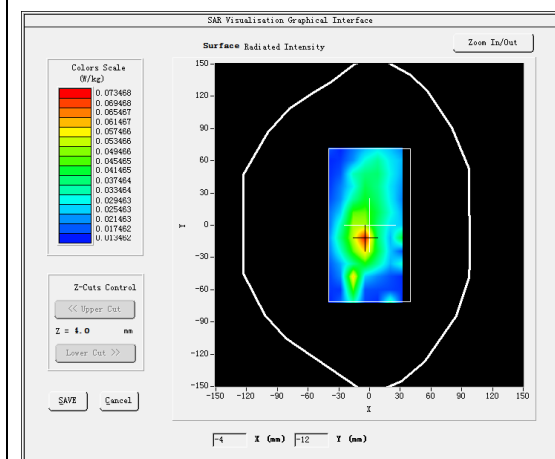
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>Bluetooth</u>
<u>Channels</u>	<u>High</u>
<u>Signal</u>	<u>Bluetooth (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.85</u>

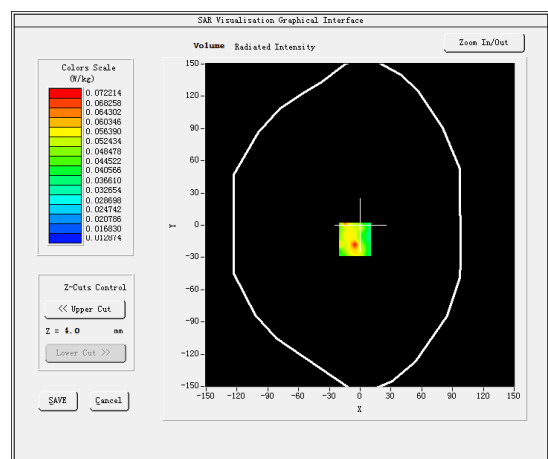
B. SAR Measurement Results

Frequency (MHz)	2480.000000
Relative permittivity (real part)	37.575235
Relative permittivity (imaginary part)	13.040978
Conductivity (S/m)	1.796757
Variation (%)	-0.760000

SURFACE SAR



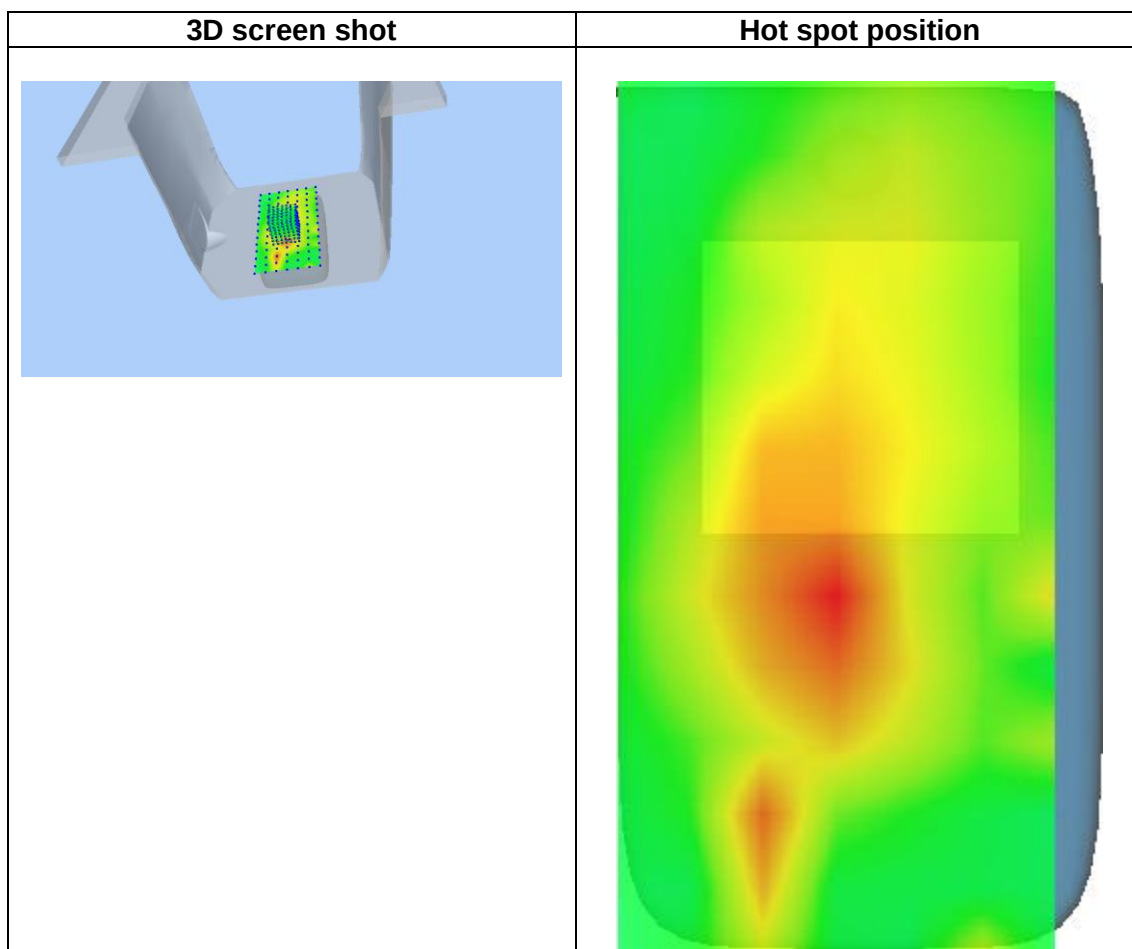
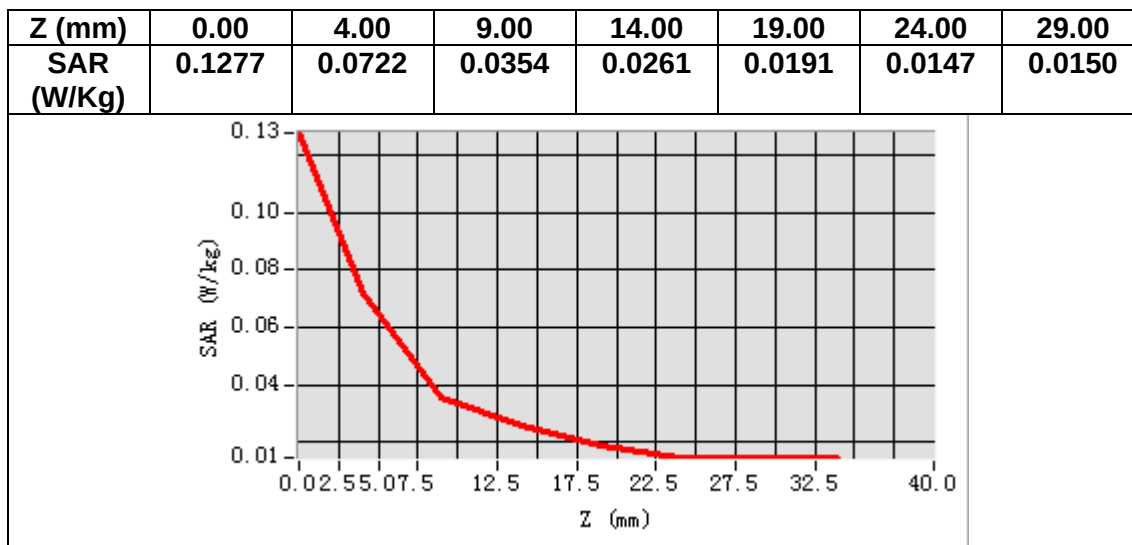
VOLUME SAR



Maximum location: X=-5.00, Y=-13.00

SAR Peak: 0.13 W/kg

SAR 10g (W/Kg)	0.036340
SAR 1g (W/Kg)	0.060008



MEASUREMENT 13

Date of measurement: 21/4/2024

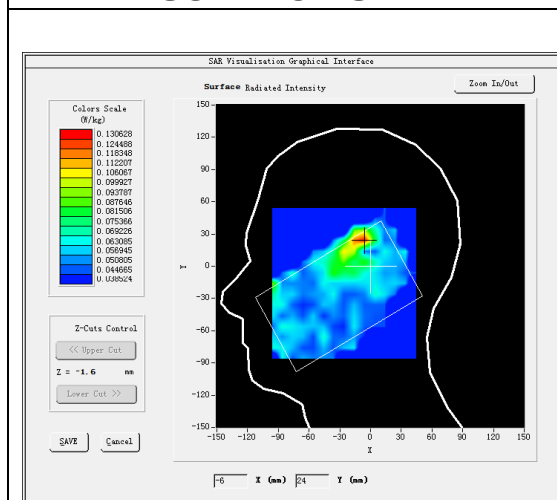
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
<u>ZoomScan</u>	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>IEEE 802.11ac U-NII</u>
<u>Channels</u>	<u>High</u>
<u>Signal</u>	<u>IEEE802.11ac (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.07</u>

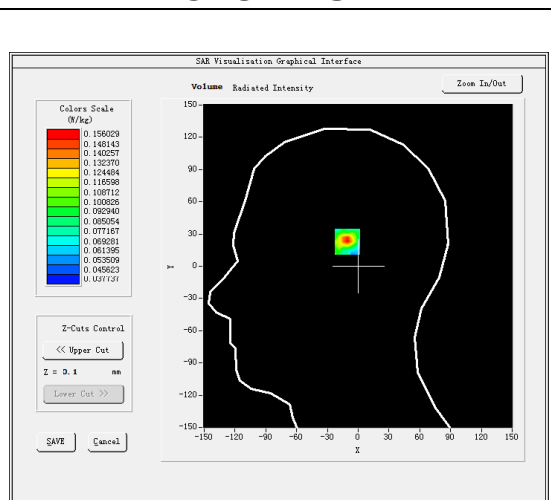
B. SAR Measurement Results

Frequency (MHz)	5230.000000
Relative permittivity (real part)	34.390342
Relative permittivity (imaginary part)	15.666192
Conductivity (S/m)	4.551899
Variation (%)	-1.930000

SURFACE SAR



VOLUME SAR

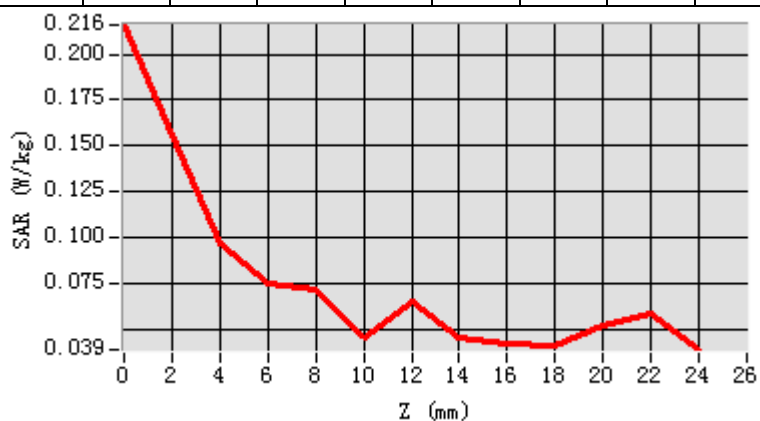


Maximum location: X=-7.00, Y=25.00

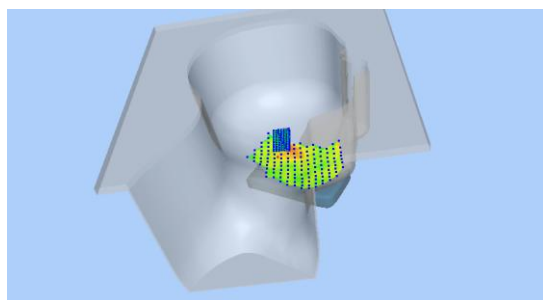
SAR Peak: 0.35 W/kg

SAR 10g (W/Kg)	0.078823
SAR 1g (W/Kg)	0.140711

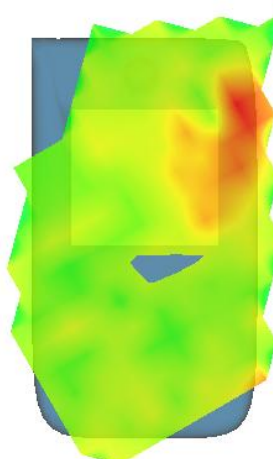
Z (m m)	0.00	2.00	4.00	6.00	8.00	10.0 0	12.0 0	14.0 0	16.0 0	18.0 0	20.0 0	22.0 0
SAR (W/ Kg)	0.21 59	0.15 60	0.09 70	0.07 52	0.07 14	0.04 58	0.06 55	0.04 49	0.04 21	0.04 08	0.05 22	0.05 88



3D screen shot



Hot spot position



MEASUREMENT 14

Date of measurement: 20/4/2024

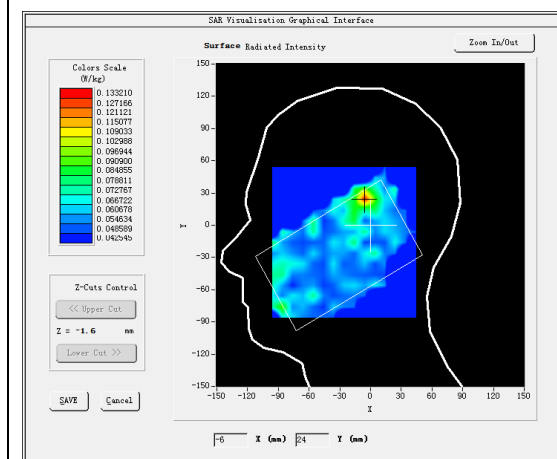
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
<u>ZoomScan</u>	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>IEEE 802.11ac U-NII</u>
<u>Channels</u>	<u>High</u>
<u>Signal</u>	<u>IEEE802.11ac (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.04</u>

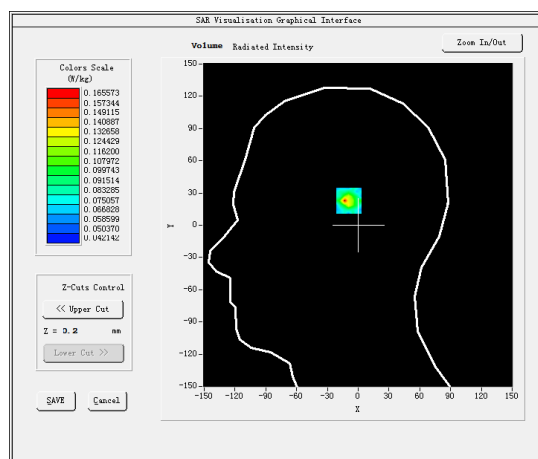
B. SAR Measurement Results

Frequency (MHz)	5795.000000
Relative permittivity (real part)	33.899743
Relative permittivity (imaginary part)	16.061959
Conductivity (S/m)	5.171058
Variation (%)	-2.830000

SURFACE SAR



VOLUME SAR

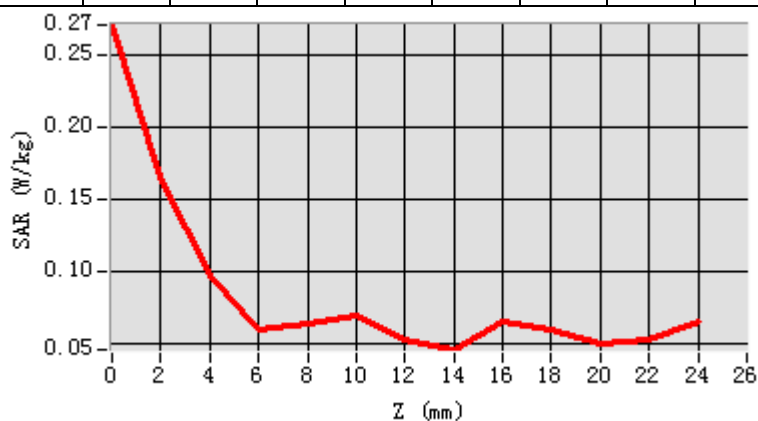


Maximum location: X=-6.00, Y=25.00

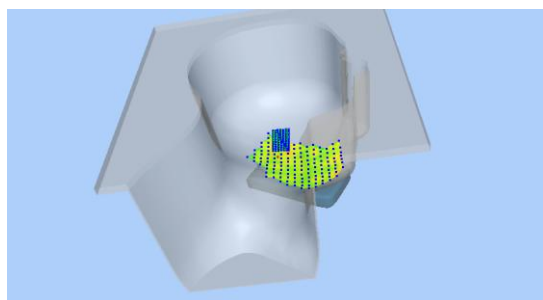
SAR Peak: 0.46 W/kg

SAR 10g (W/Kg)	0.076377
SAR 1g (W/Kg)	0.140698

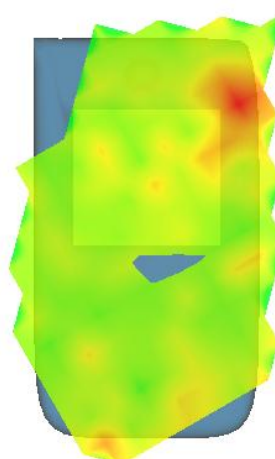
Z (m m)	0.00	2.00	4.00	6.00	8.00	10.0 0	12.0 0	14.0 0	16.0 0	18.0 0	20.0 0	22.0 0
SAR (W/ Kg)	0.27 10	0.16 56	0.09 74	0.05 96	0.06 40	0.06 90	0.05 21	0.04 56	0.06 53	0.05 89	0.05 00	0.05 23



3D screen shot



Hot spot position



MEASUREMENT 15

Date of measurement: 21/4/2024

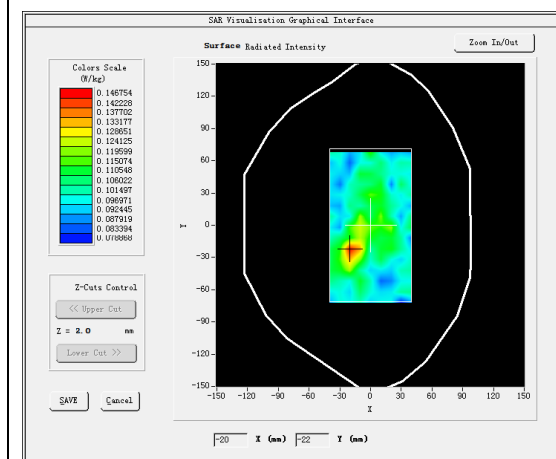
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
<u>ZoomScan</u>	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>IEEE 802.11ac U-NII</u>
<u>Channels</u>	<u>High</u>
<u>Signal</u>	<u>IEEE802.11ac (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.07</u>

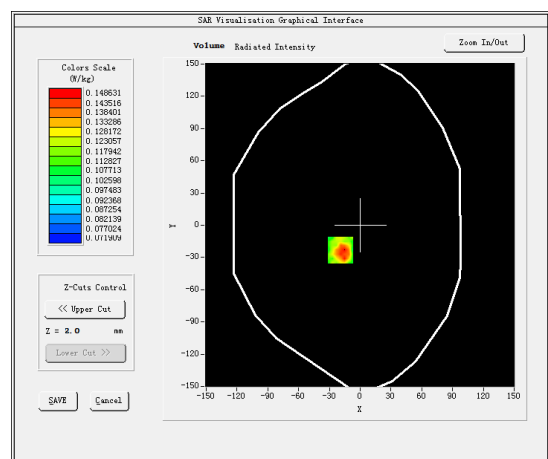
B. SAR Measurement Results

Frequency (MHz)	5230.000000
Relative permittivity (real part)	34.390342
Relative permittivity (imaginary part)	15.666192
Conductivity (S/m)	4.551899
Variation (%)	-2.060000

SURFACE SAR



VOLUME SAR

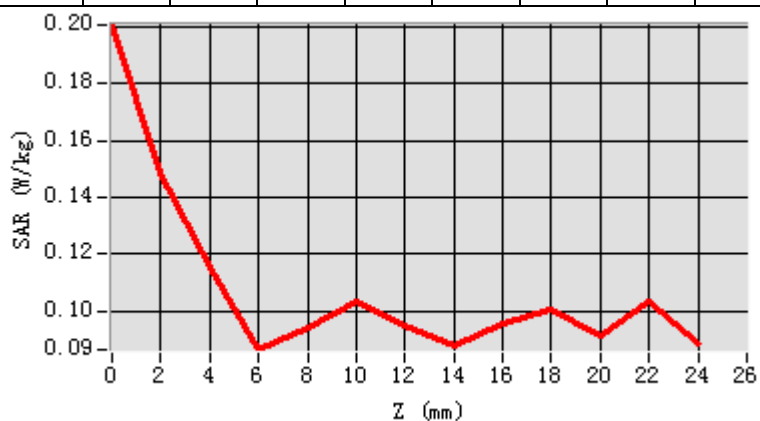


Maximum location: X=-19.00, Y=-23.00

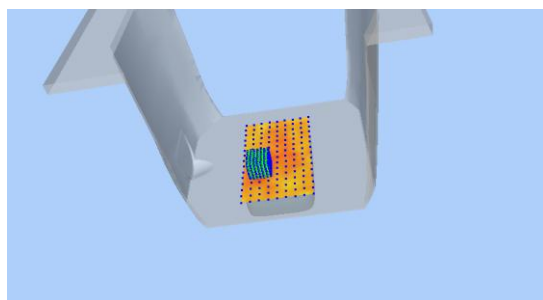
SAR Peak: 0.22 W/kg

SAR 10g (W/Kg)	0.105930
SAR 1g (W/Kg)	0.124646

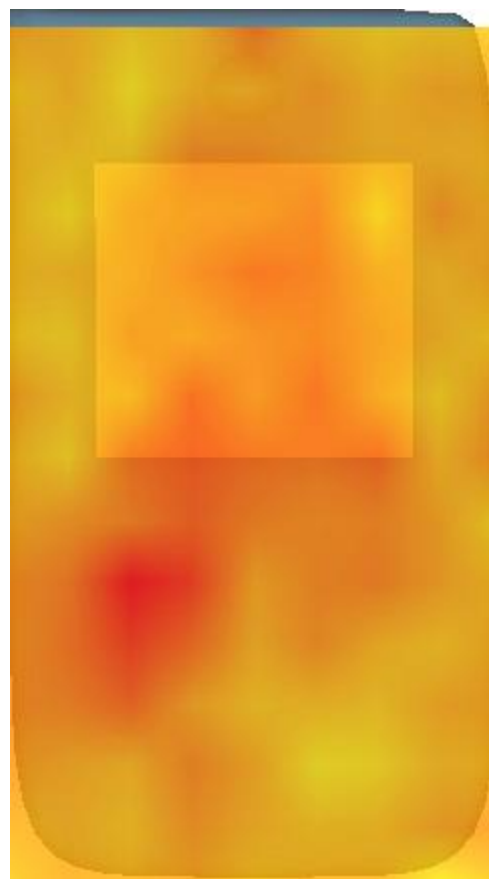
Z (m m)	0.00	2.00	4.00	6.00	8.00	10.0 0	12.0 0	14.0 0	16.0 0	18.0 0	20.0 0	22.0 0
SAR (W/ Kg)	0.20 09	0.14 86	0.11 56	0.08 63	0.09 44	0.10 35	0.09 46	0.08 78	0.09 53	0.10 01	0.09 11	0.10 30



3D screen shot



Hot spot position



MEASUREMENT 16

Date of measurement: 20/4/2024

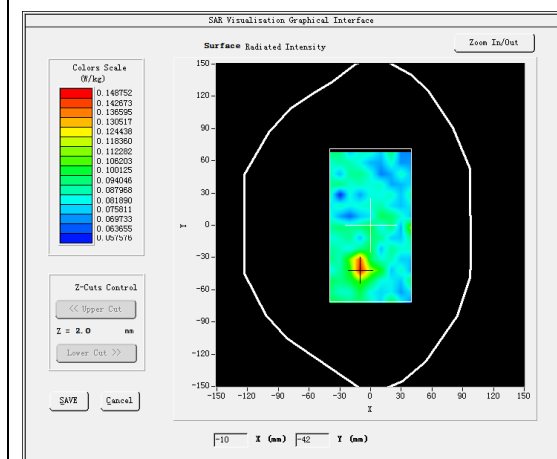
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
<u>ZoomScan</u>	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>IEEE 802.11ac U-NII</u>
<u>Channels</u>	<u>High</u>
<u>Signal</u>	<u>IEEE802.11ac (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.04</u>

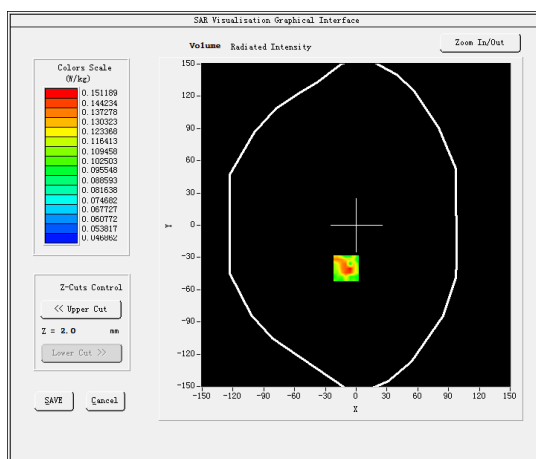
B. SAR Measurement Results

Frequency (MHz)	5795.000000
Relative permittivity (real part)	33.899743
Relative permittivity (imaginary part)	16.061959
Conductivity (S/m)	5.171058
Variation (%)	0.680000

SURFACE SAR



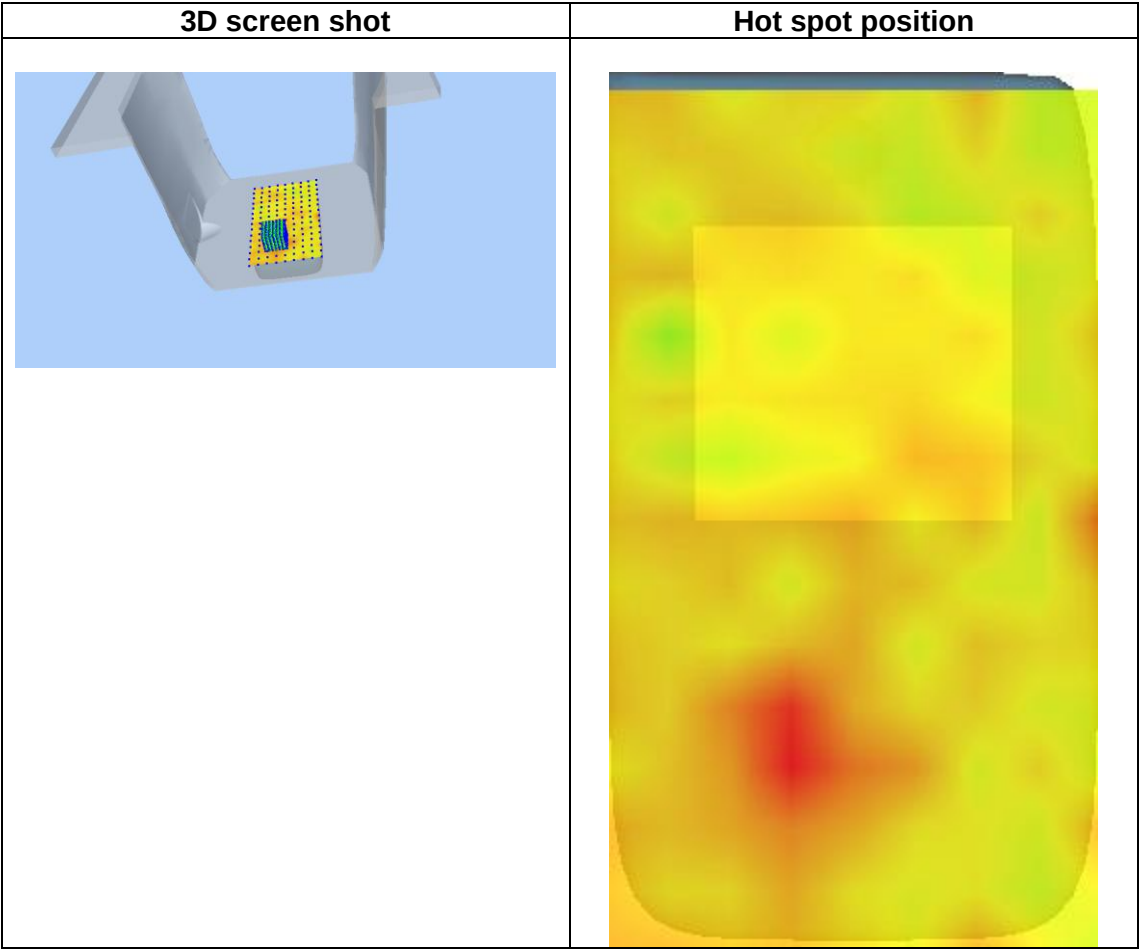
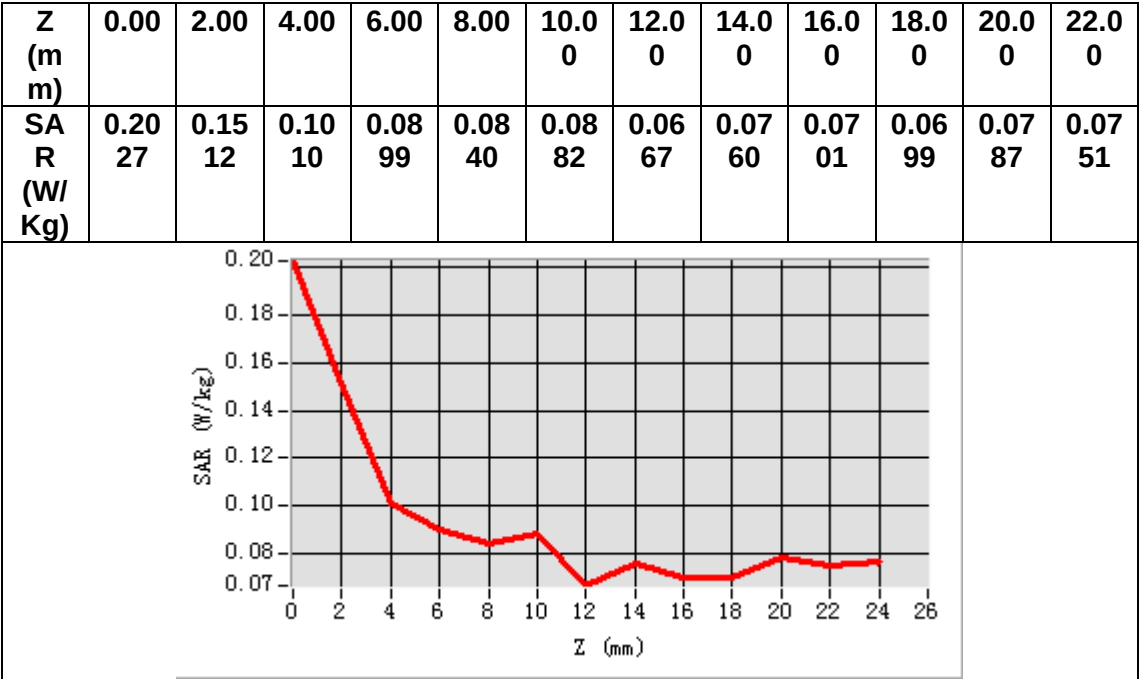
VOLUME SAR



Maximum location: X=-10.00, Y=-40.00

SAR Peak: 0.22 W/kg

SAR 10g (W/Kg)	0.089256
SAR 1g (W/Kg)	0.114076



MEASUREMENT 17

Date of measurement: 12/4/2024

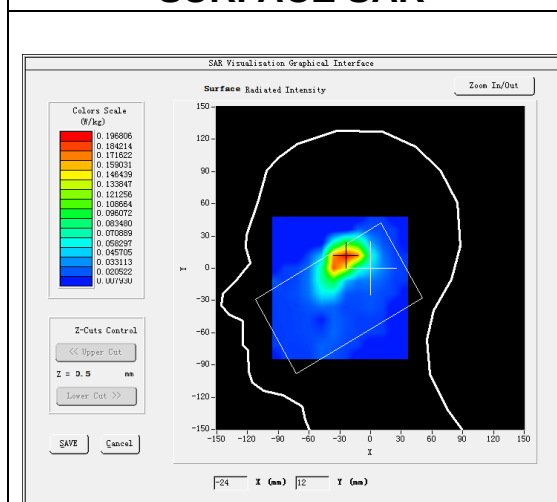
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>IEEE 802.11b ISM</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>IEEE802.11b (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.85</u>

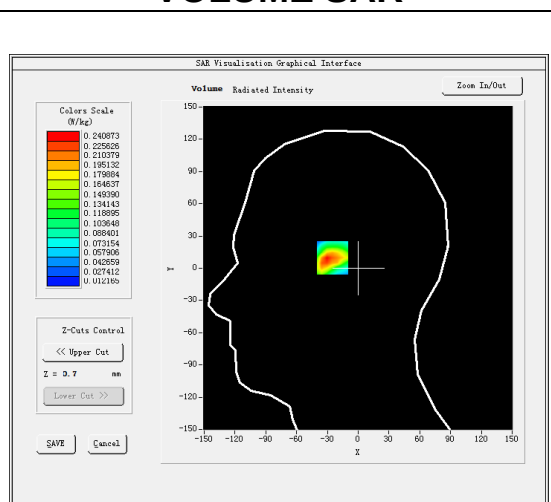
B. SAR Measurement Results

Frequency (MHz)	2437.000000
Relative permittivity (real part)	37.726734
Relative permittivity (imaginary part)	12.814278
Conductivity (S/m)	1.734911
Variation (%)	-1.180000

SURFACE SAR



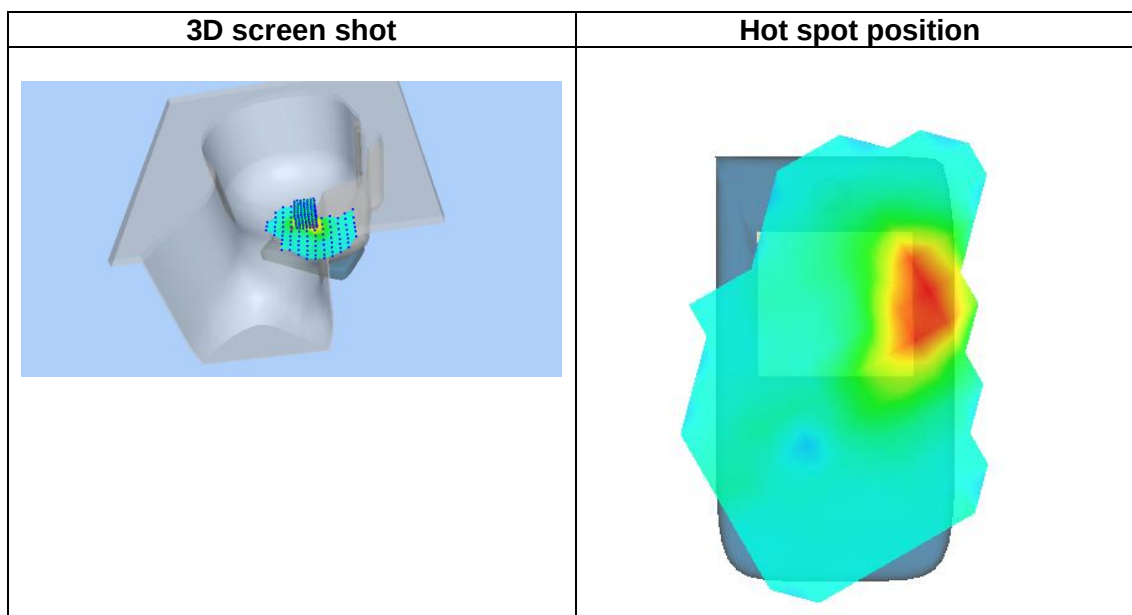
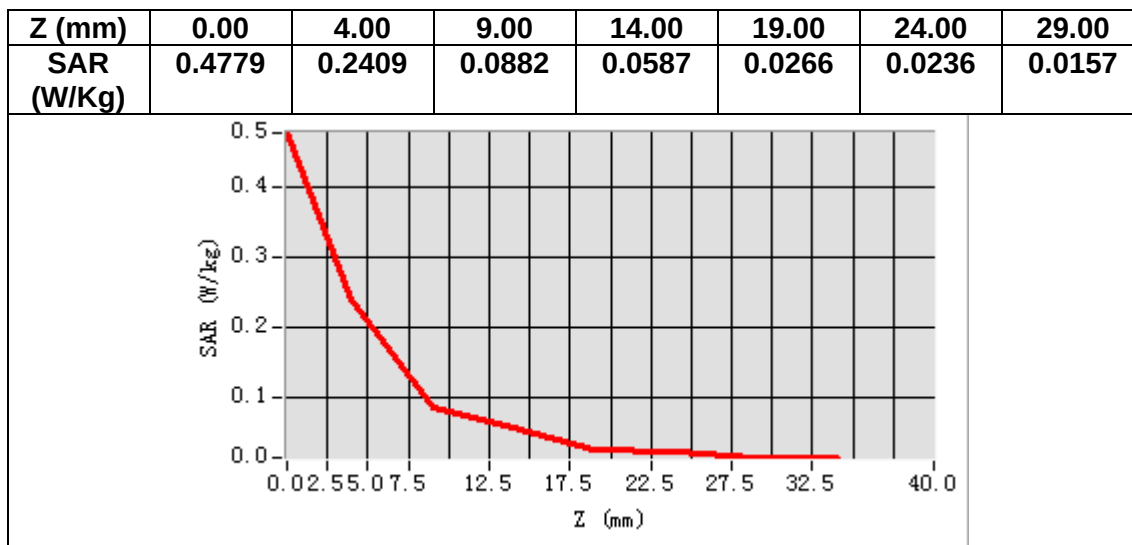
VOLUME SAR



Maximum location: X=-24.00, Y=11.00

SAR Peak: 0.43 W/kg

SAR 10g (W/Kg)	0.105062
SAR 1g (W/Kg)	0.220916



MEASUREMENT 18

Date of measurement: 12/4/2024

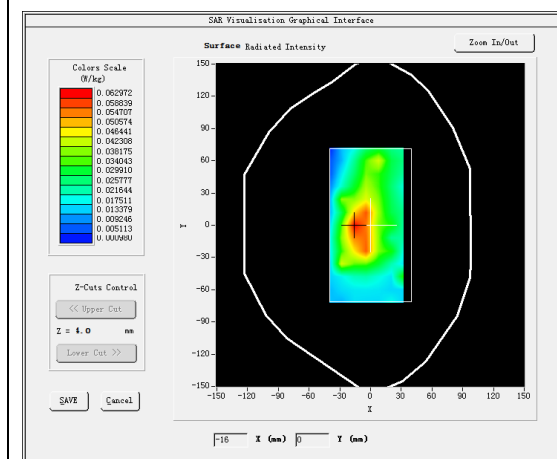
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>IEEE 802.11b ISM</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>IEEE802.11b (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.85</u>

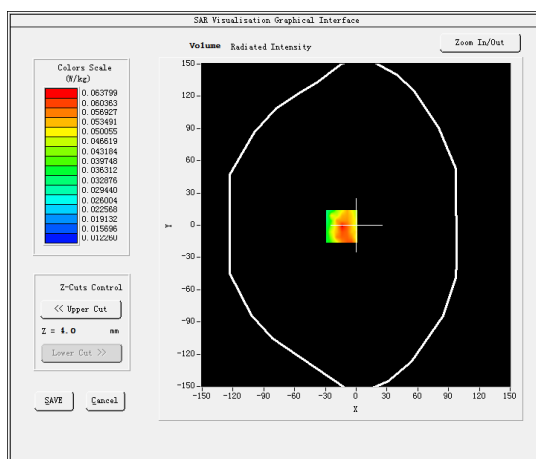
B. SAR Measurement Results

Frequency (MHz)	2437.000000
Relative permittivity (real part)	37.726734
Relative permittivity (imaginary part)	12.814278
Conductivity (S/m)	1.734911
Variation (%)	1.209999

SURFACE SAR



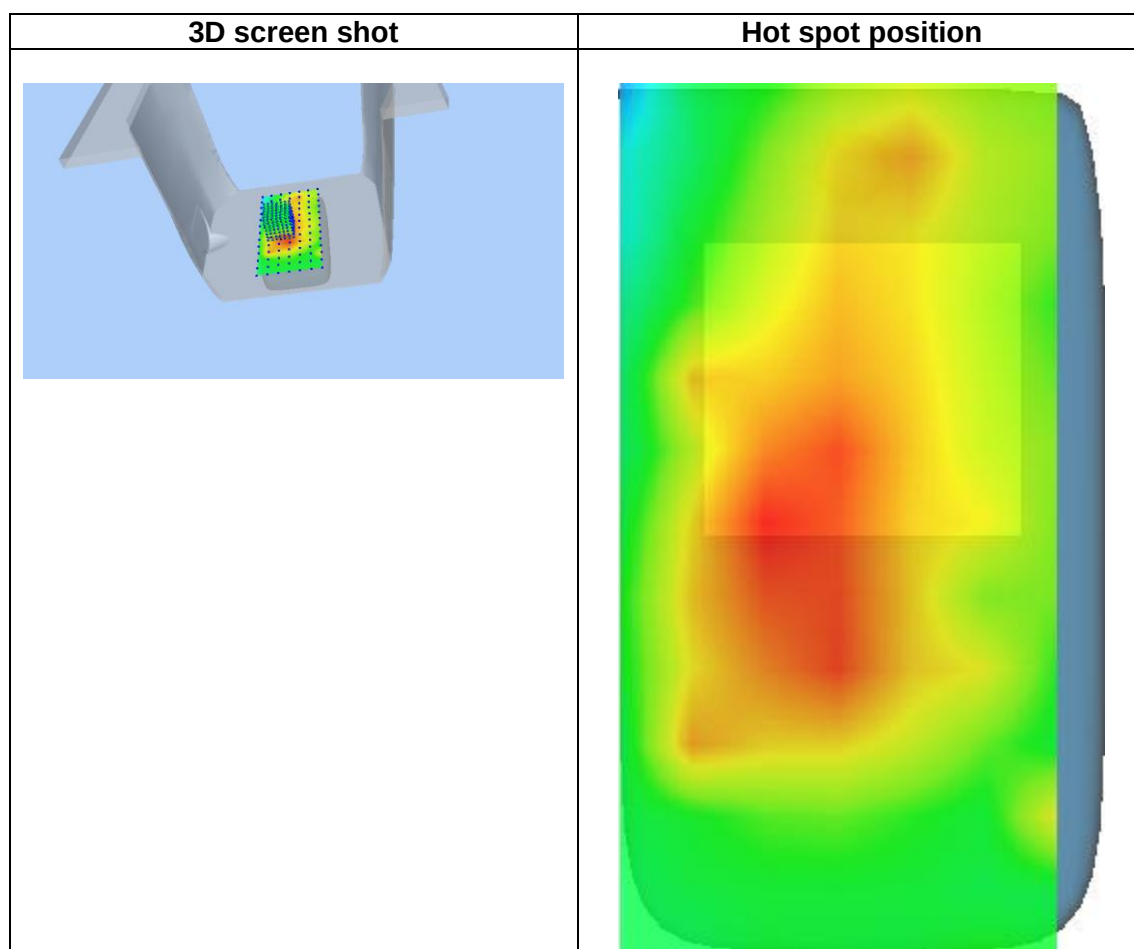
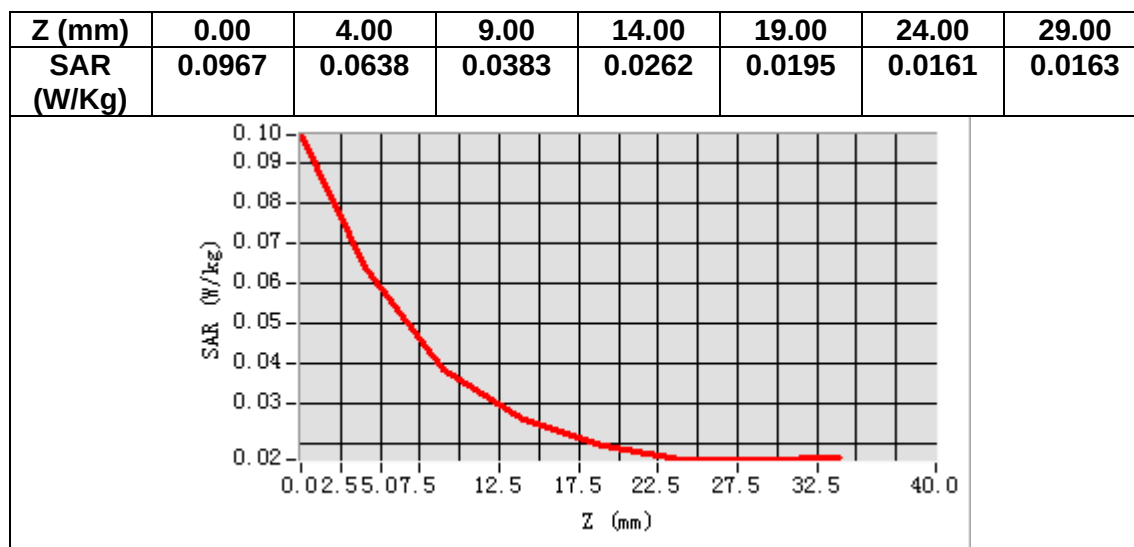
VOLUME SAR



Maximum location: X=-14.00, Y=-1.00

SAR Peak: 0.10 W/kg

SAR 10g (W/Kg)	0.037204
SAR 1g (W/Kg)	0.058180



MEASUREMENT 19

Date of measurement: 9/4/2024

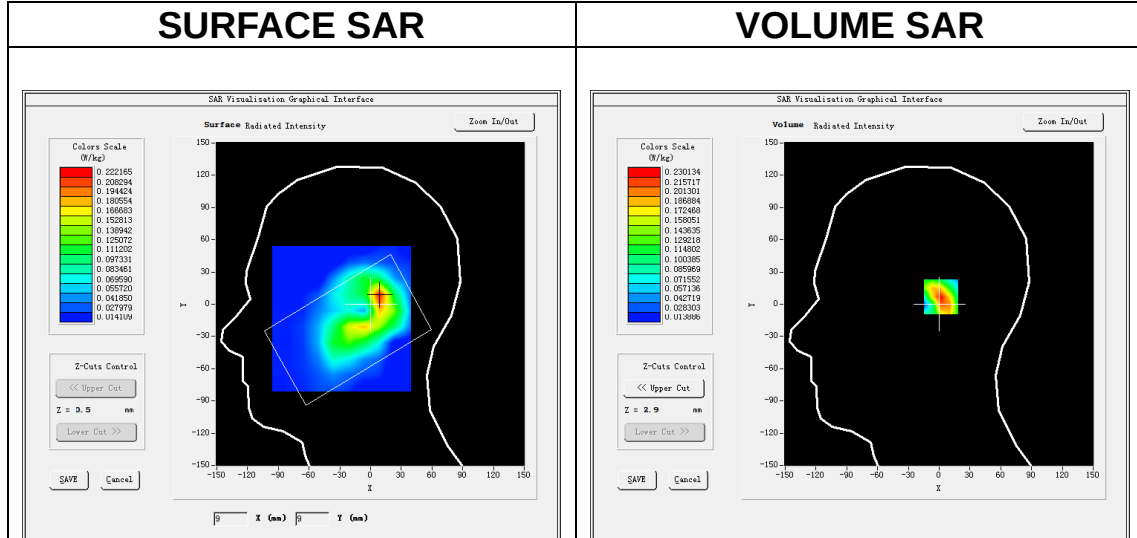
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>LTE band 2</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.63</u>

B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.100822
Relative permittivity (imaginary part)	13.853208
Conductivity (S/m)	1.446891
Variation (%)	0.030000

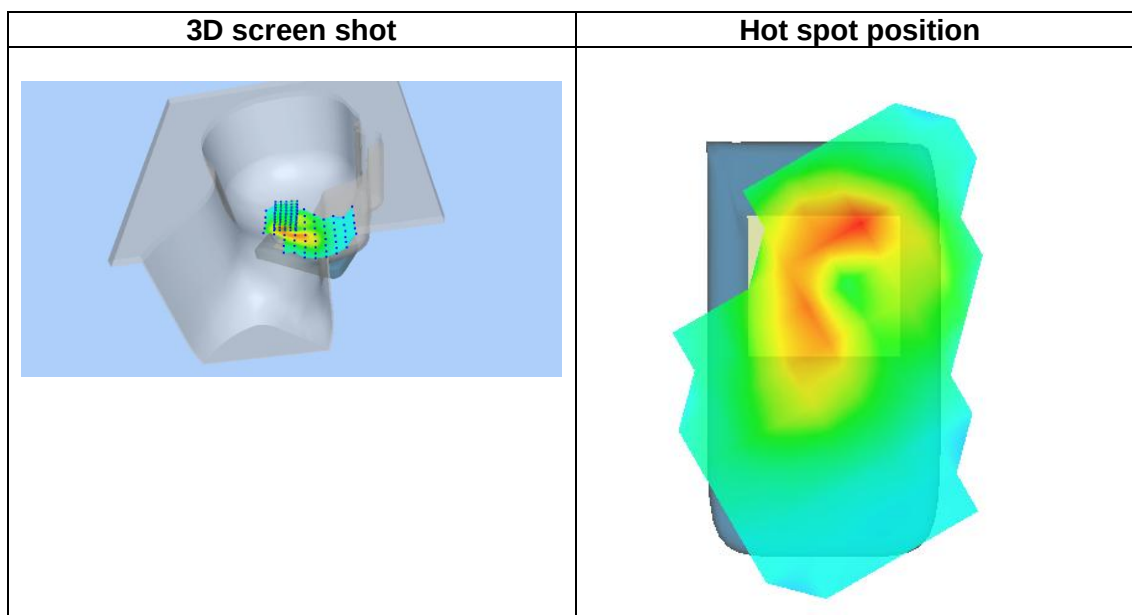
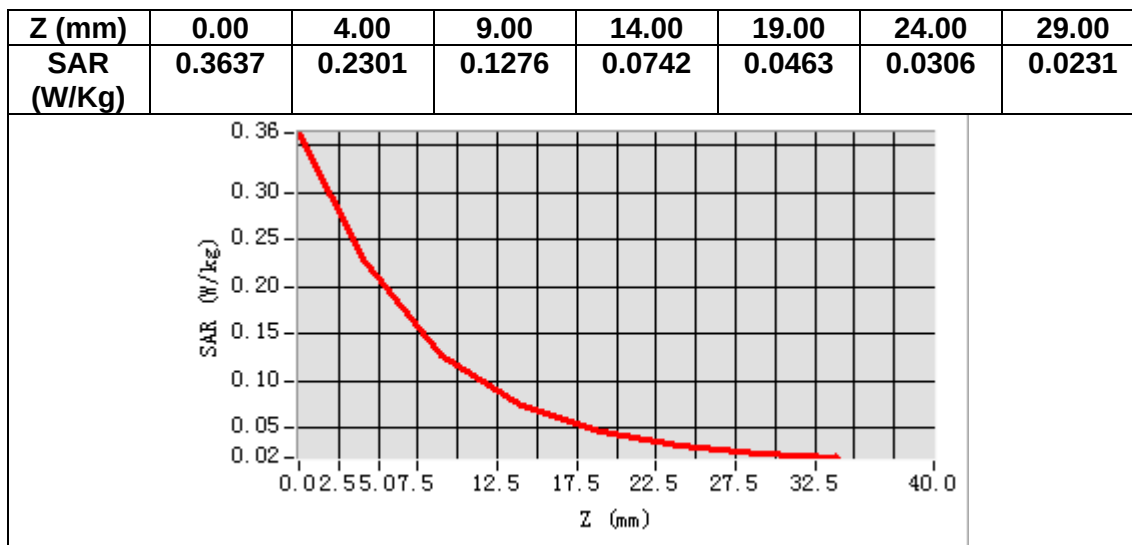
SURFACE SAR



Maximum location: X=9.00, Y=7.00

SAR Peak: 0.37 W/kg

SAR 10g (W/Kg)	0.117813
SAR 1g (W/Kg)	0.220972



MEASUREMENT 20

Date of measurement: 9/4/2024

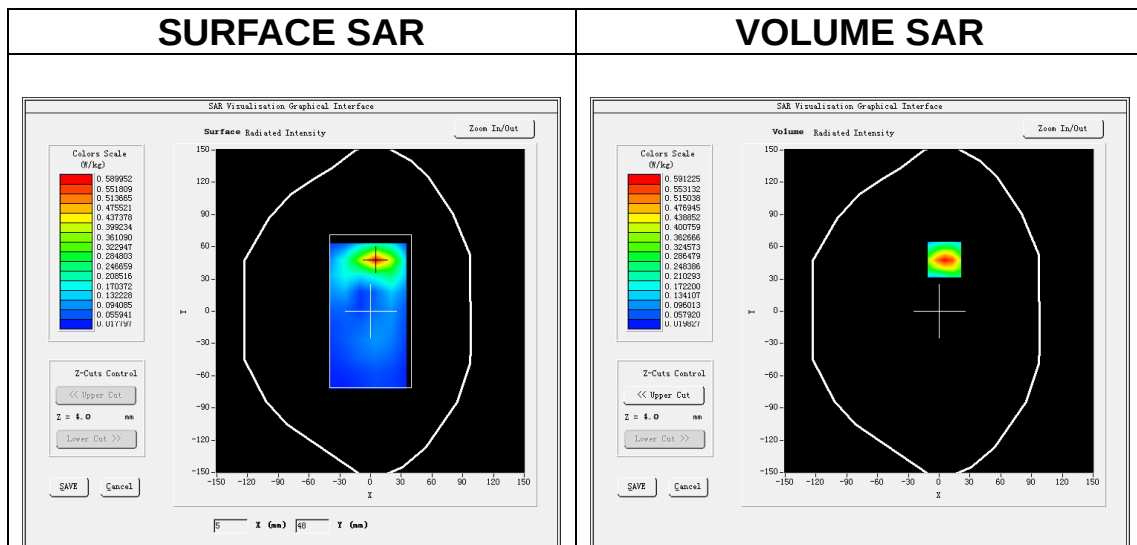
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 2</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.63</u>

B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	39.100822
Relative permittivity (imaginary part)	13.853208
Conductivity (S/m)	1.446891
Variation (%)	-0.870000

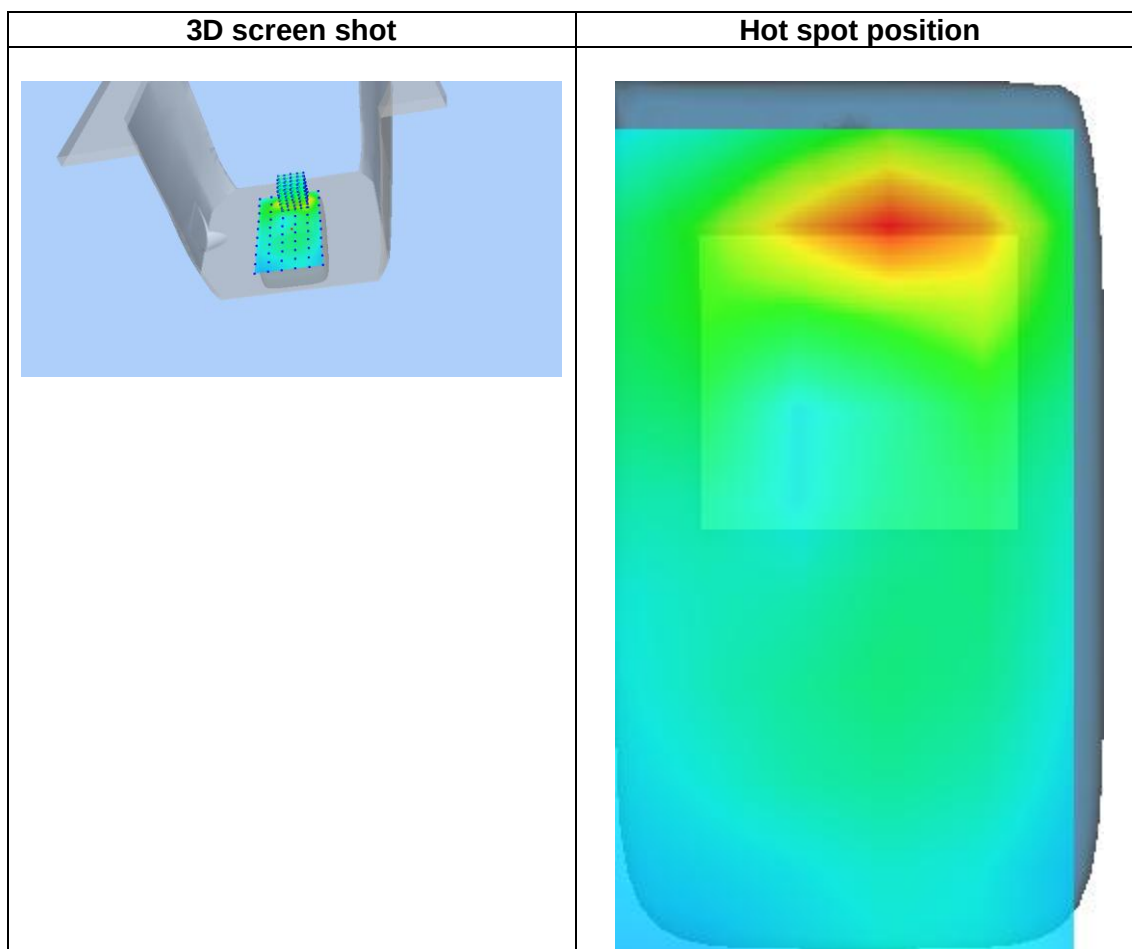
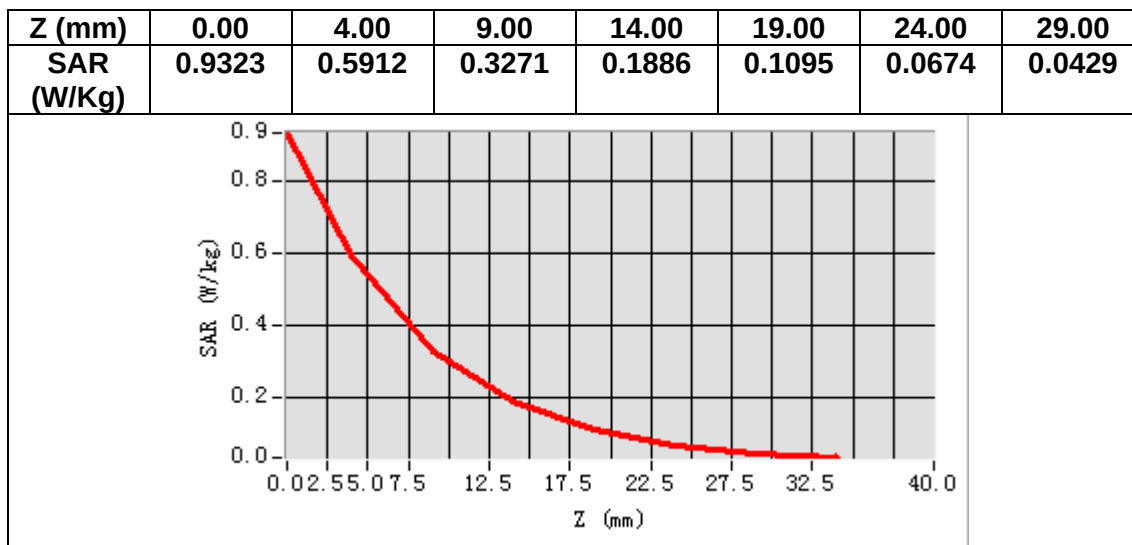
SURFACE SAR



Maximum location: X=5.00, Y=48.00

SAR Peak: 0.93 W/kg

SAR 10g (W/Kg)	0.285494
SAR 1g (W/Kg)	0.562152



MEASUREMENT 21

Date of measurement: 10/4/2024

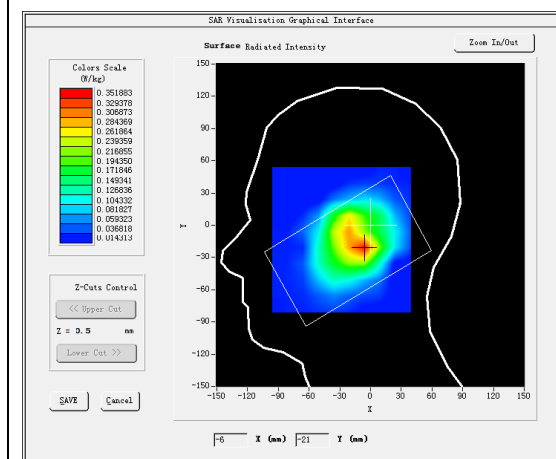
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>LTE band 4</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.45</u>

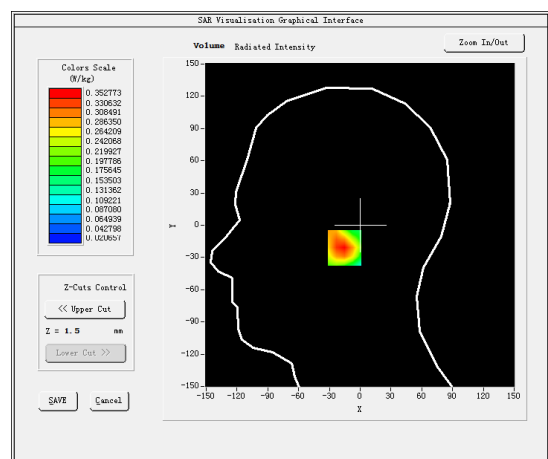
B. SAR Measurement Results

Frequency (MHz)	1732.500000
Relative permittivity (real part)	39.669003
Relative permittivity (imaginary part)	13.907113
Conductivity (S/m)	1.338560
Variation (%)	-0.270000

SURFACE SAR



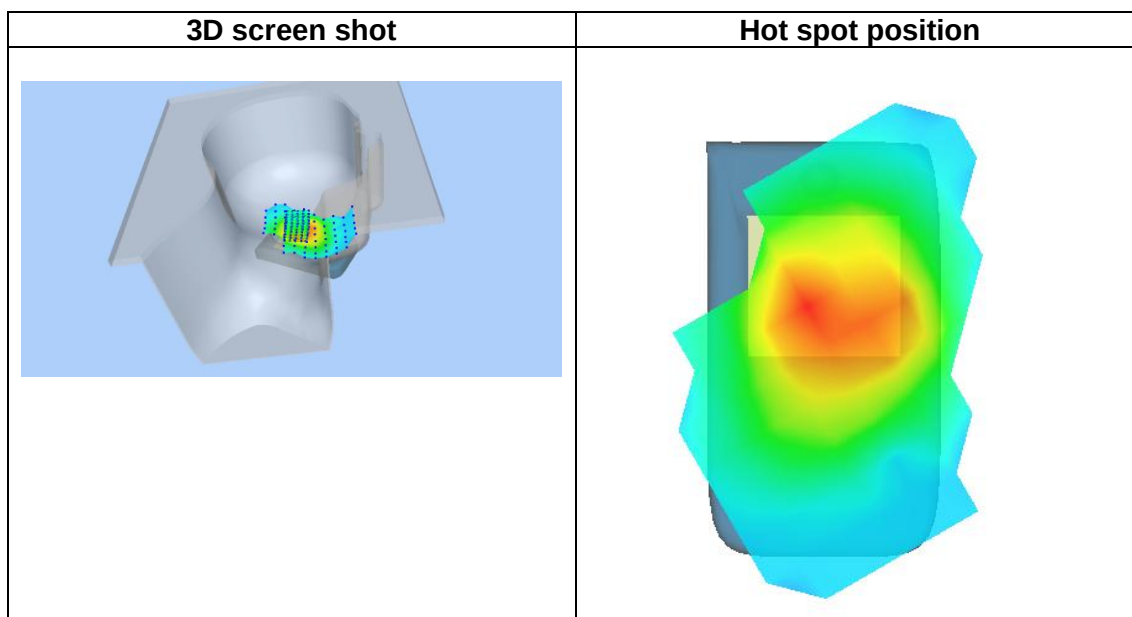
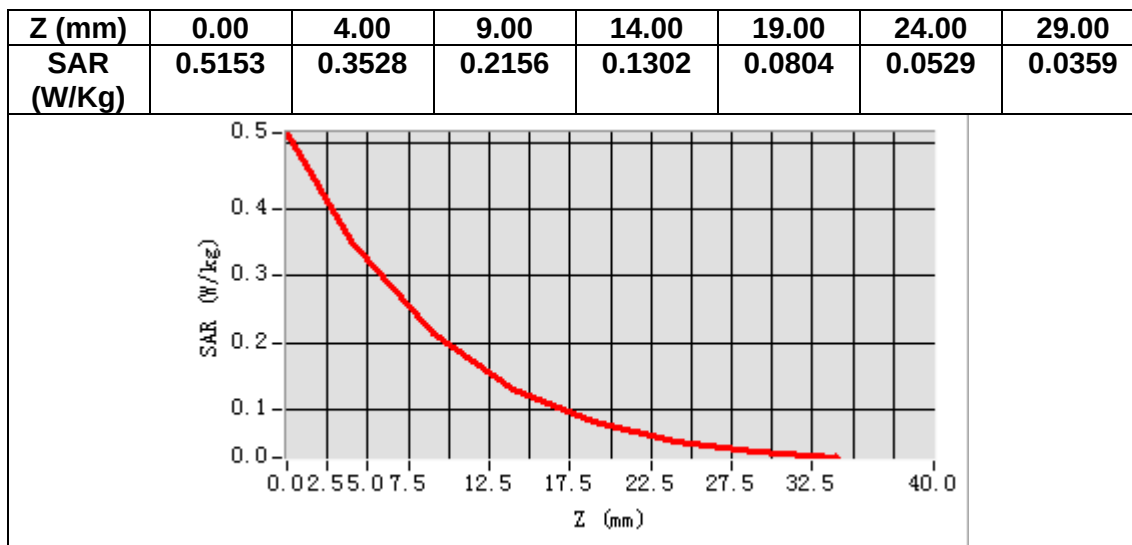
VOLUME SAR



Maximum location: X=-7.00, Y=-21.00

SAR Peak: 0.52 W/kg

SAR 10g (W/Kg)	0.196373
SAR 1g (W/Kg)	0.336387



MEASUREMENT 22

Date of measurement: 10/4/2024

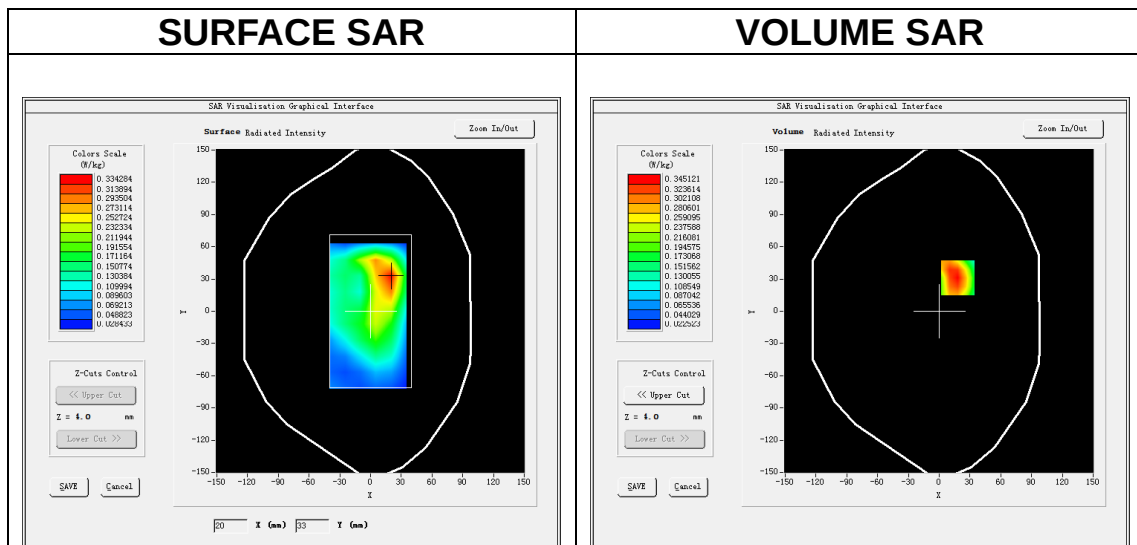
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 4</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.45</u>

B. SAR Measurement Results

Frequency (MHz)	1732.500000
Relative permittivity (real part)	39.669003
Relative permittivity (imaginary part)	13.907113
Conductivity (S/m)	1.338560
Variation (%)	-3.220000

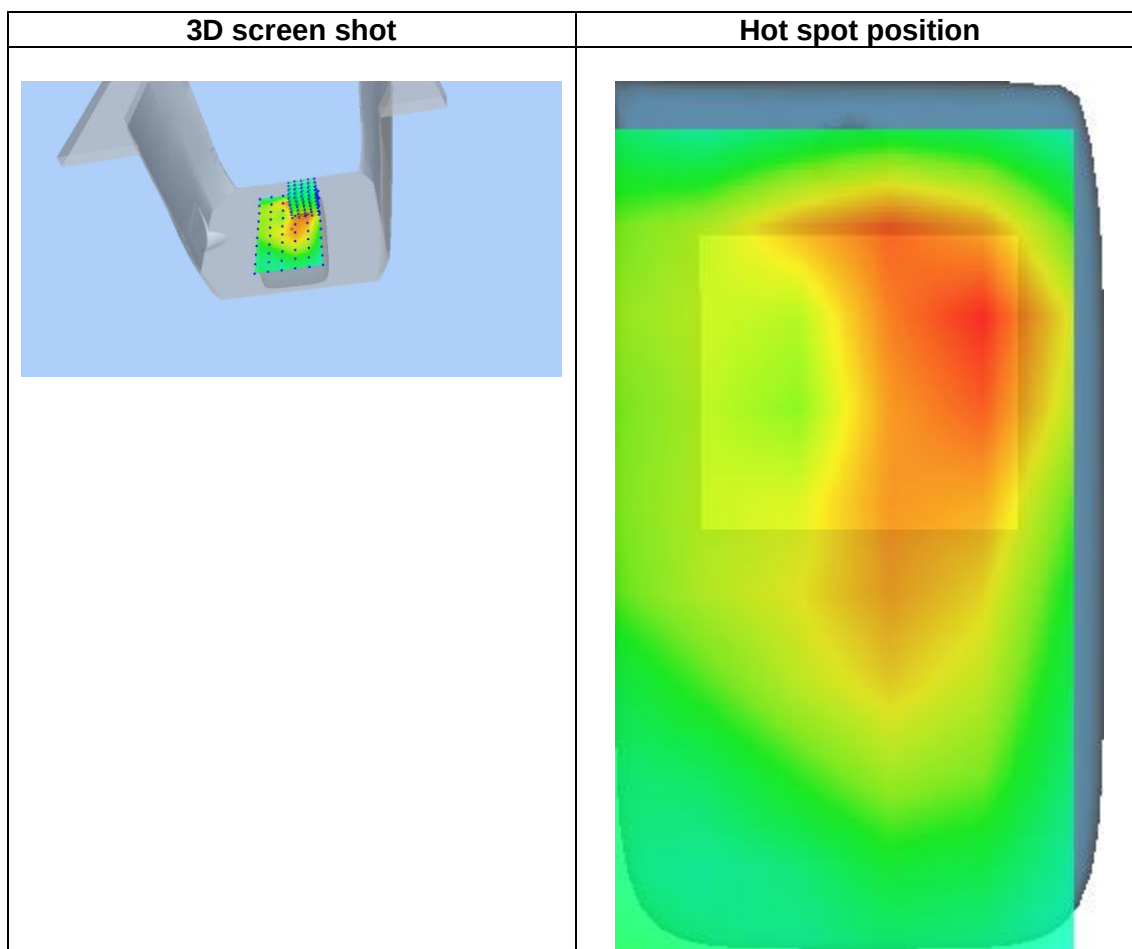
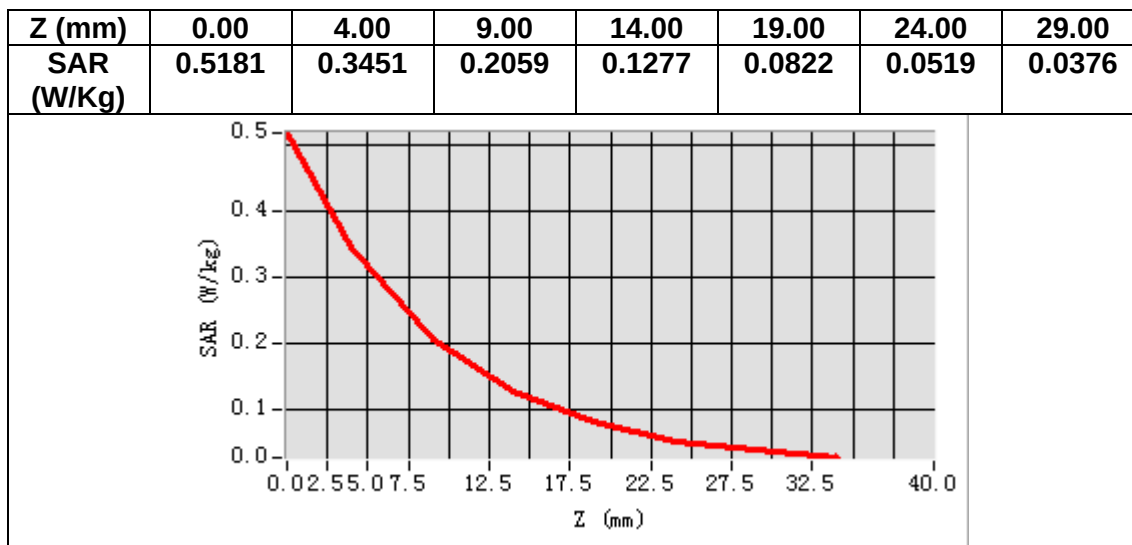
SURFACE SAR



Maximum location: X=18.00, Y=31.00

SAR Peak: 0.53 W/kg

SAR 10g (W/Kg)	0.194447
SAR 1g (W/Kg)	0.334116



MEASUREMENT 23

Date of measurement: 8/4/2024

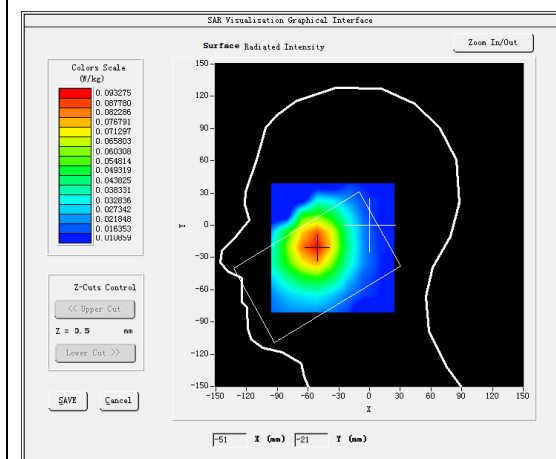
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>LTE band 5</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.32</u>

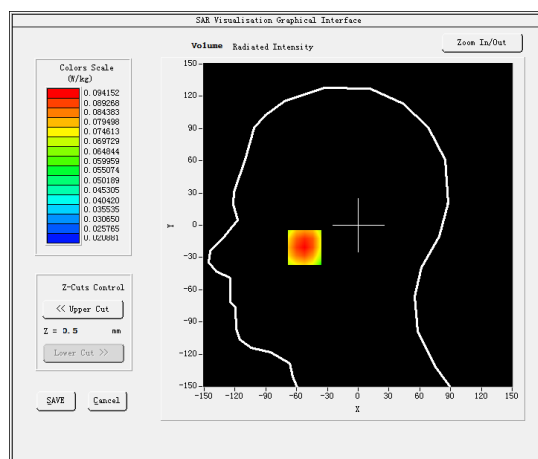
B. SAR Measurement Results

Frequency (MHz)	836.500000
Relative permittivity (real part)	41.009068
Relative permittivity (imaginary part)	19.084080
Conductivity (S/m)	0.886880
Variation (%)	3.320000

SURFACE SAR



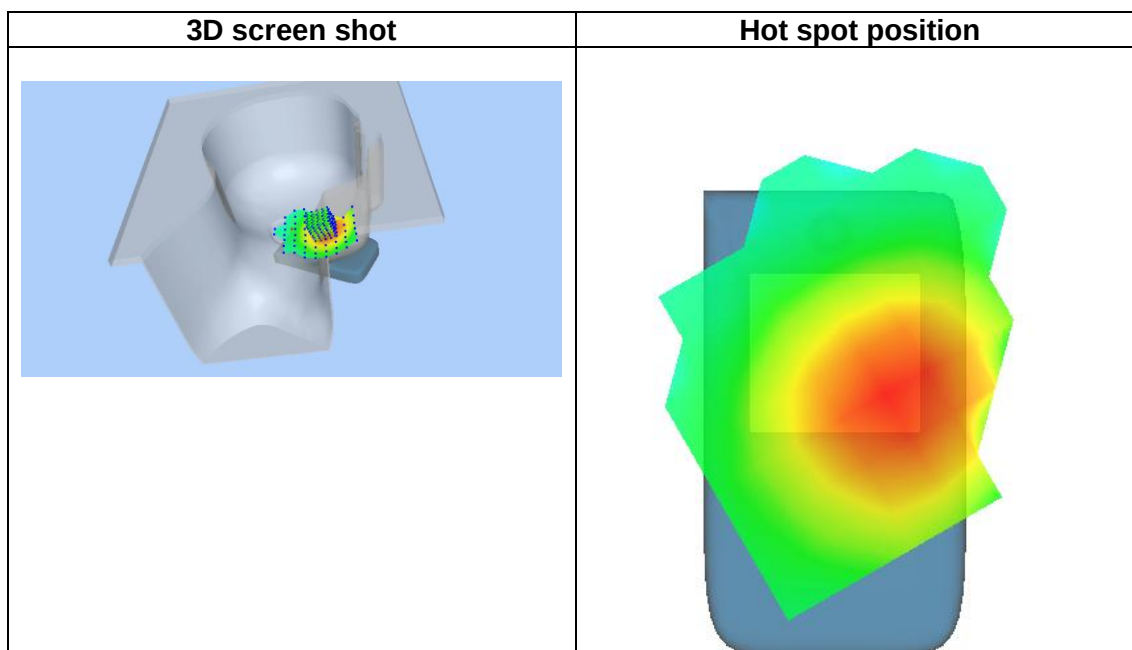
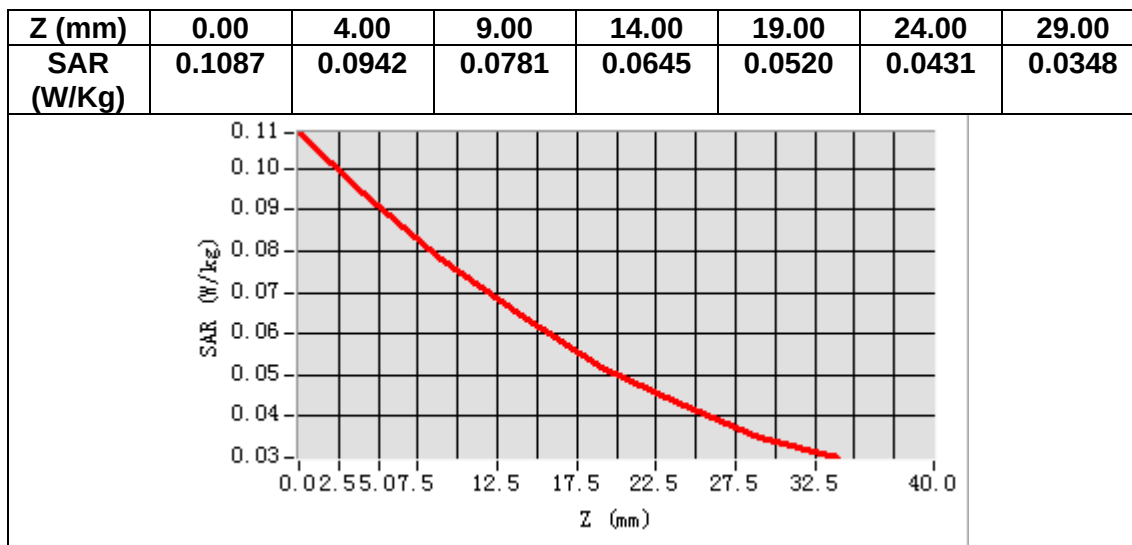
VOLUME SAR



Maximum location: X=-52.00, Y=-20.00

SAR Peak: 0.11 W/kg

SAR 10g (W/Kg)	0.070490
SAR 1g (W/Kg)	0.091176



MEASUREMENT 24

Date of measurement: 8/4/2024

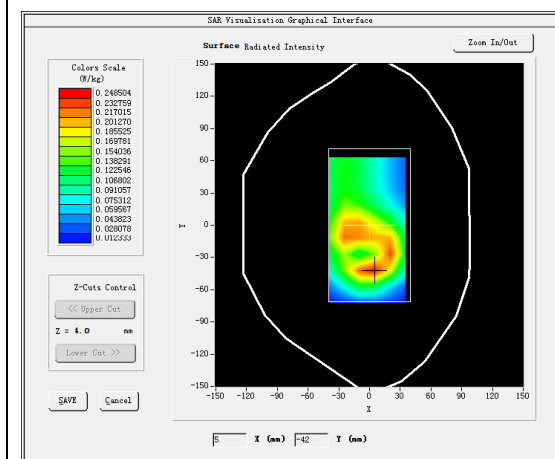
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 5</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.32</u>

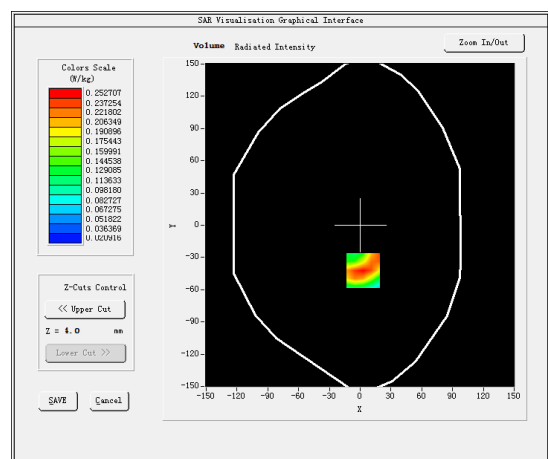
B. SAR Measurement Results

Frequency (MHz)	836.500000
Relative permittivity (real part)	41.009068
Relative permittivity (imaginary part)	19.084080
Conductivity (S/m)	0.886880
Variation (%)	1.020000

SURFACE SAR



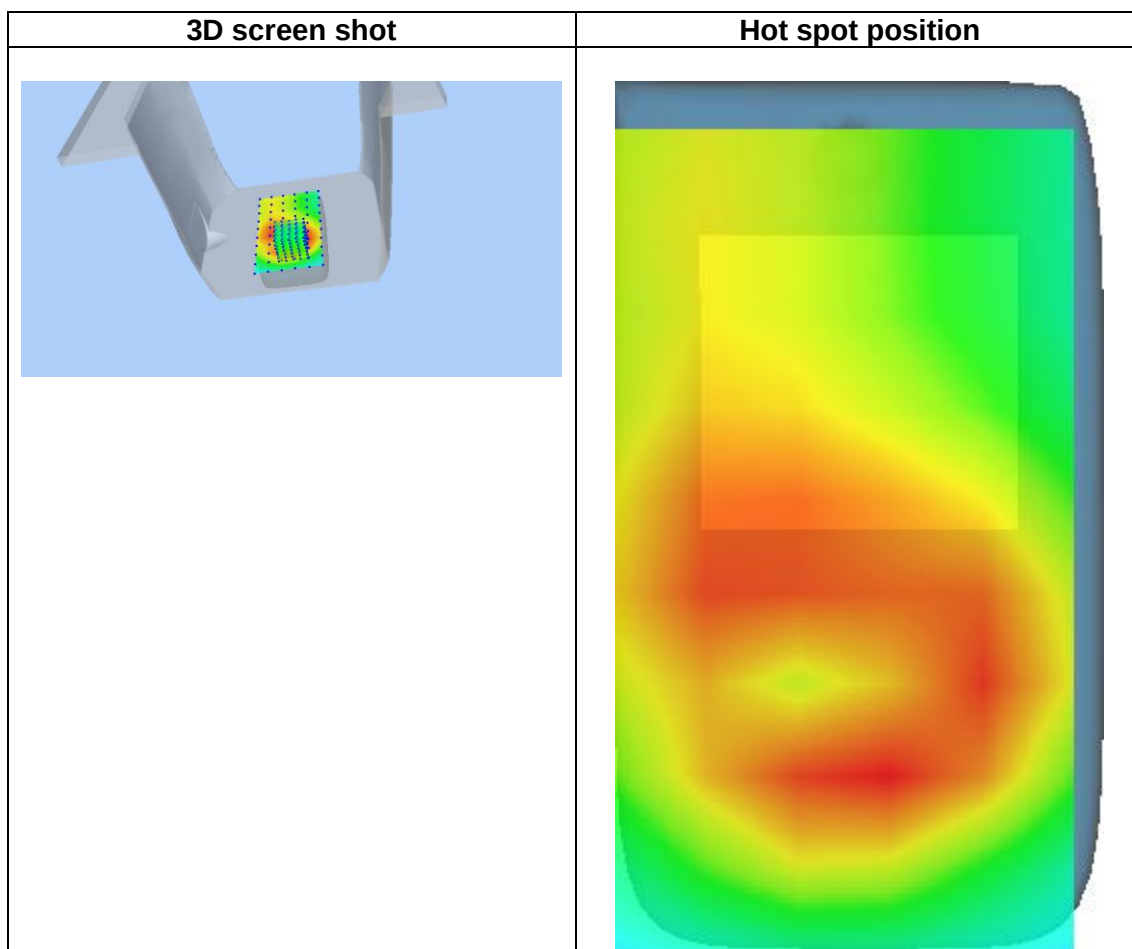
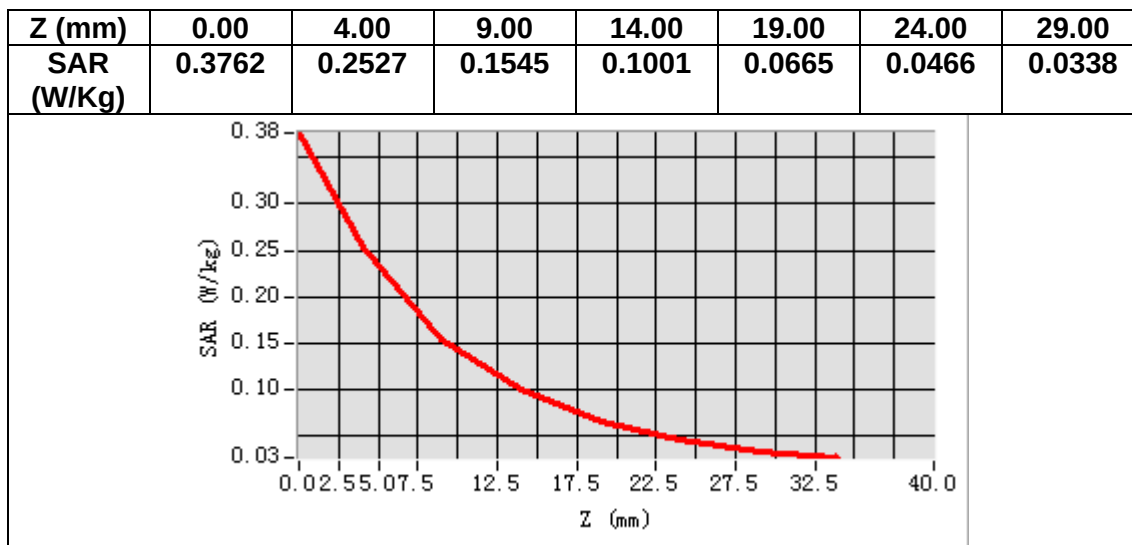
VOLUME SAR



Maximum location: X=3.00, Y=-42.00

SAR Peak: 0.38 W/kg

SAR 10g (W/Kg)	0.138618
SAR 1g (W/Kg)	0.239963



MEASUREMENT 25

Date of measurement: 16/4/2024

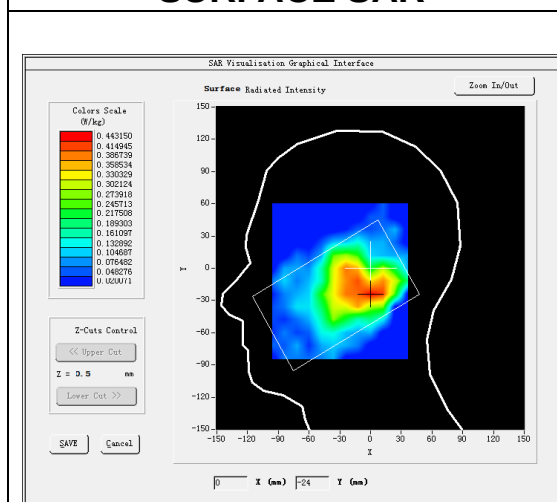
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>LTE band 7</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.65</u>

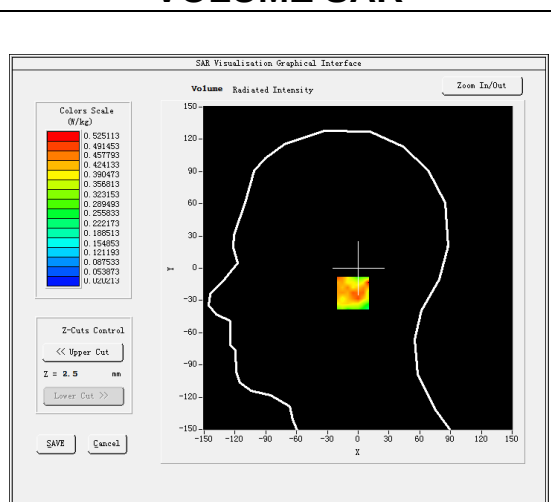
B. SAR Measurement Results

Frequency (MHz)	2535.000000
Relative permittivity (real part)	39.157543
Relative permittivity (imaginary part)	13.515832
Conductivity (S/m)	1.903480
Variation (%)	1.470000

SURFACE SAR



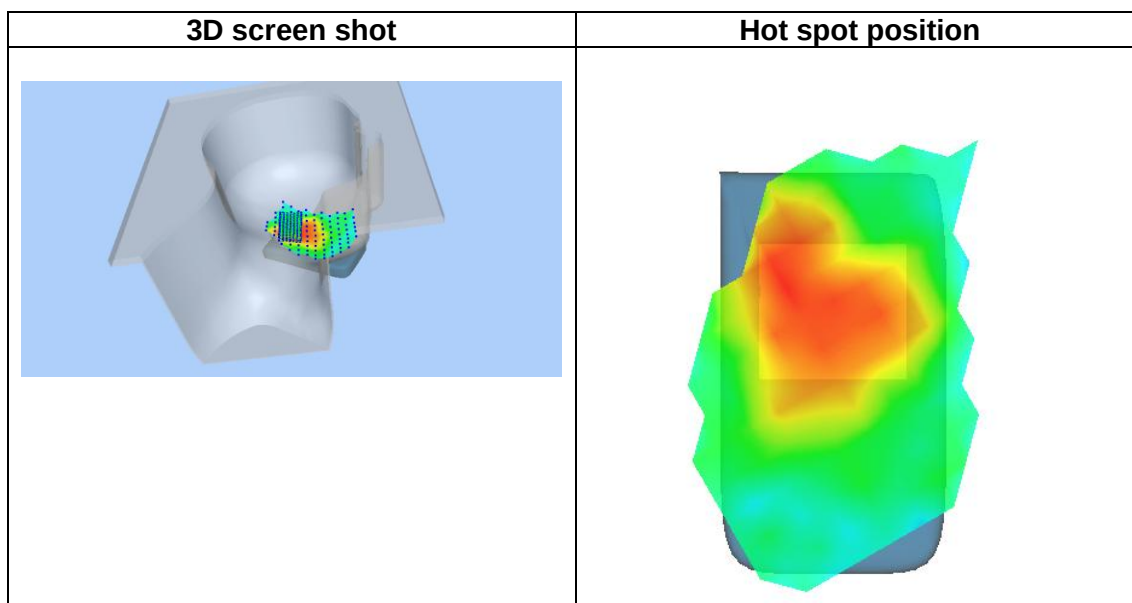
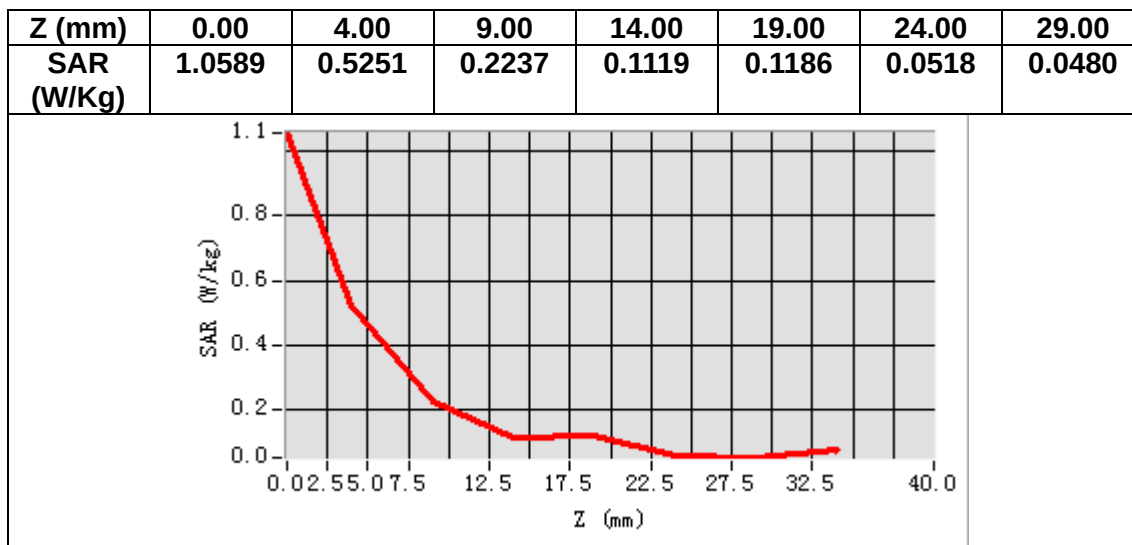
VOLUME SAR



Maximum location: X=1.00, Y=-23.00

SAR Peak: 0.97 W/kg

SAR 10g (W/Kg)	0.261029
SAR 1g (W/Kg)	0.438397



MEASUREMENT 26

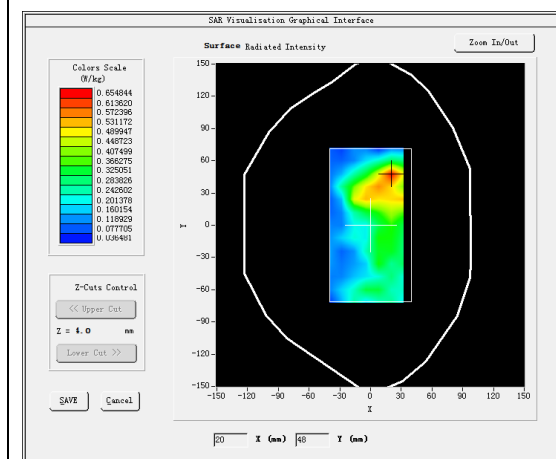
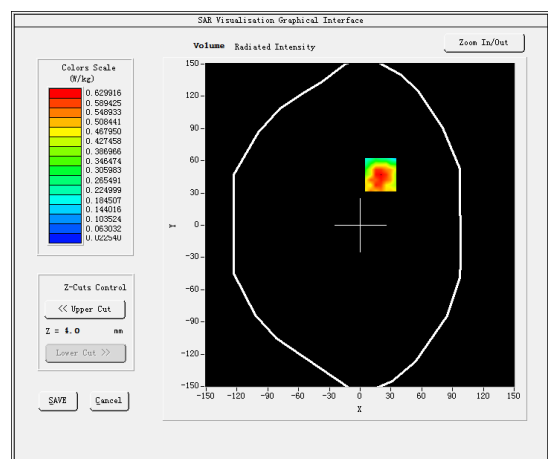
Date of measurement: 16/4/2024

A. Experimental conditions.

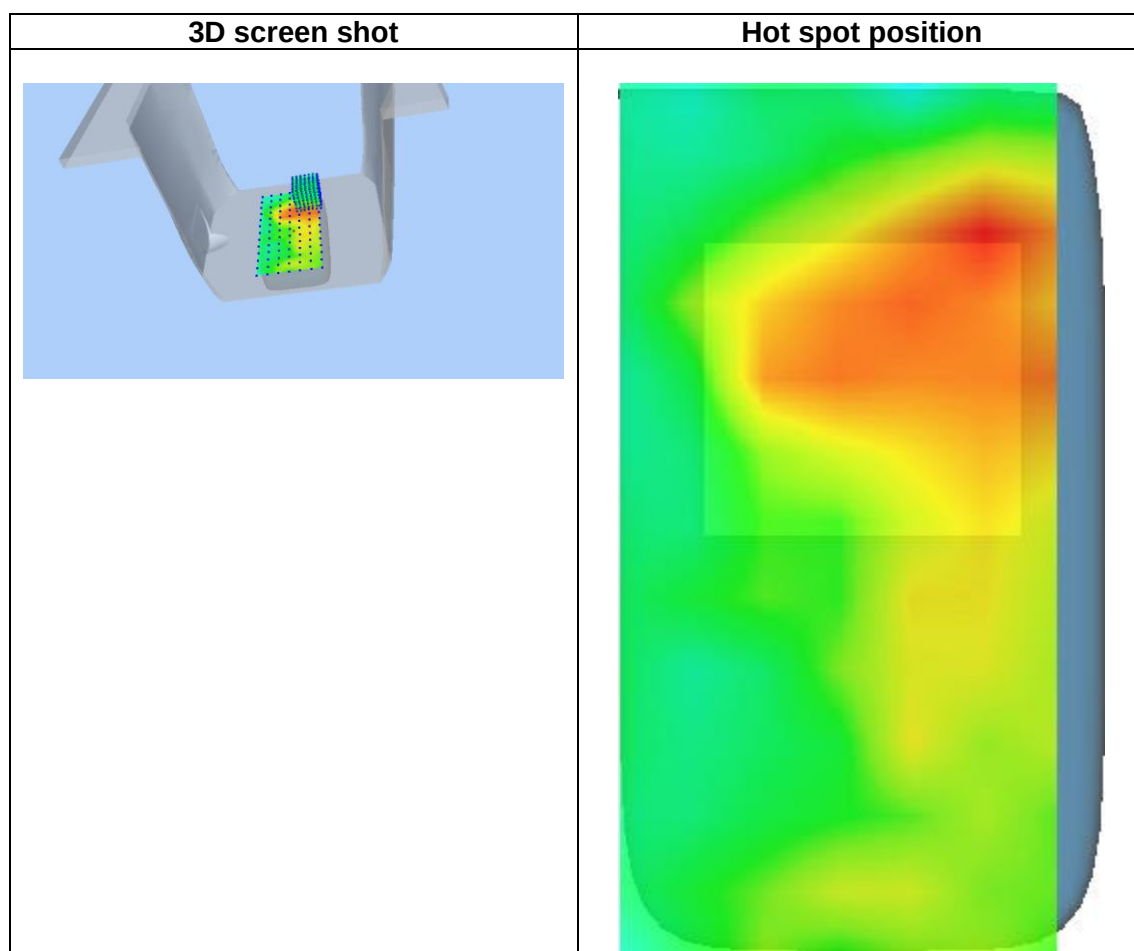
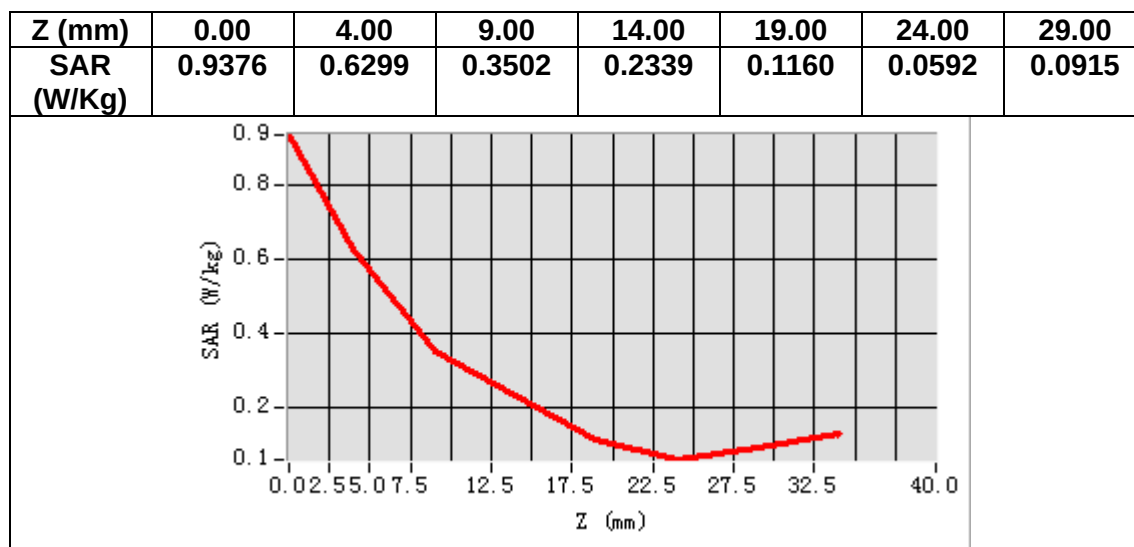
<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 7</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.65</u>

B. SAR Measurement Results

Frequency (MHz)	2535.000000
Relative permittivity (real part)	39.157543
Relative permittivity (imaginary part)	13.515832
Conductivity (S/m)	1.903480
Variation (%)	1.620000

SURFACE SAR**VOLUME SAR****Maximum location: X=20.00, Y=47.00****SAR Peak: 1.13 W/kg**

SAR 10g (W/Kg)	0.329162
SAR 1g (W/Kg)	0.586458



MEASUREMENT 27

Date of measurement: 19/4/2024

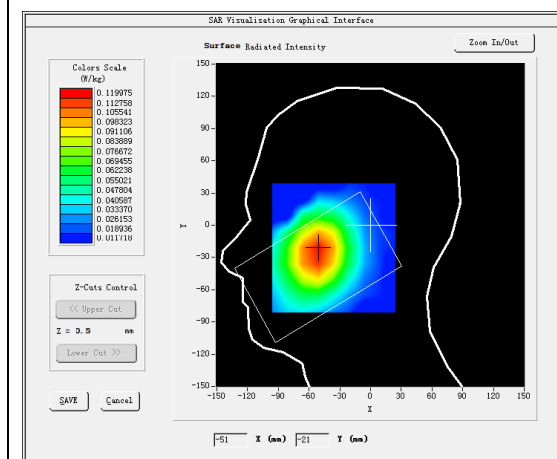
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>LTE band 12</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.37</u>

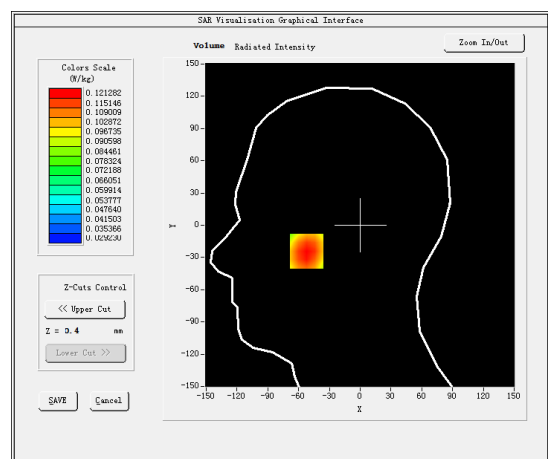
B. SAR Measurement Results

Frequency (MHz)	707.500000
Relative permittivity (real part)	41.615261
Relative permittivity (imaginary part)	22.004171
Conductivity (S/m)	0.864886
Variation (%)	0.270000

SURFACE SAR



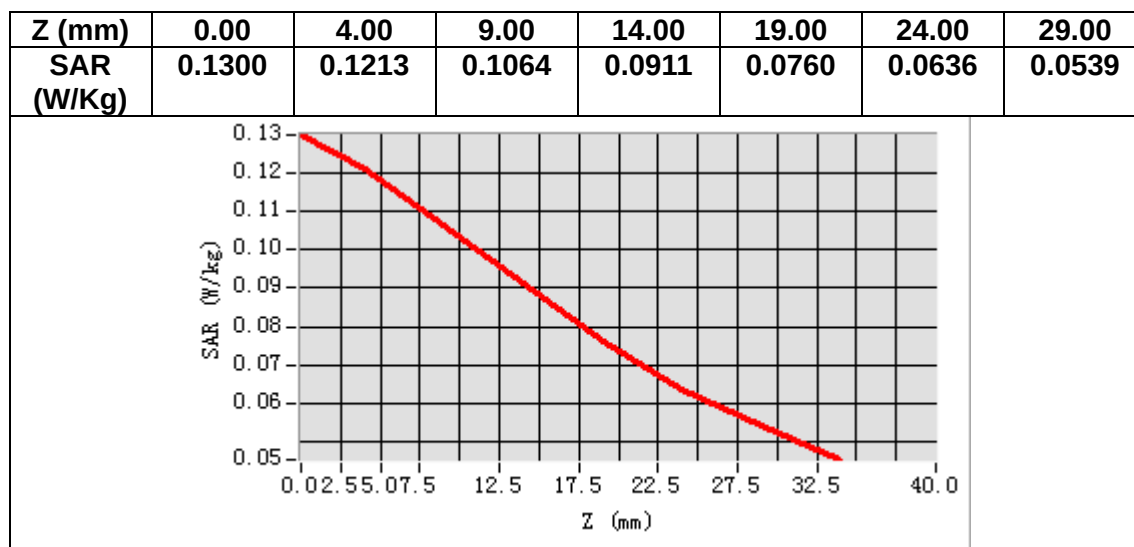
VOLUME SAR



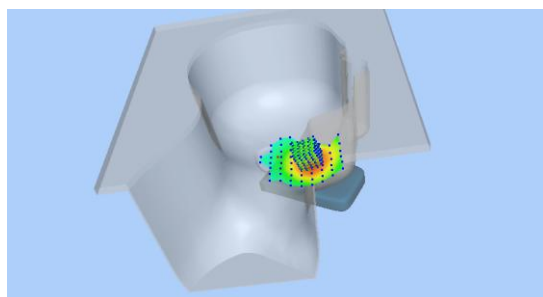
Maximum location: X=-52.00, Y=-24.00

SAR Peak: 0.13 W/kg

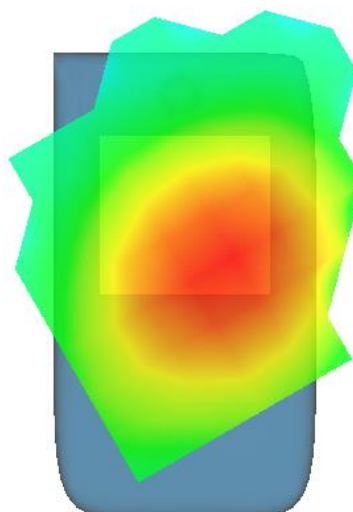
SAR 10g (W/Kg)	0.096064
SAR 1g (W/Kg)	0.117949



3D screen shot



Hot spot position



MEASUREMENT 28

Date of measurement: 19/4/2024

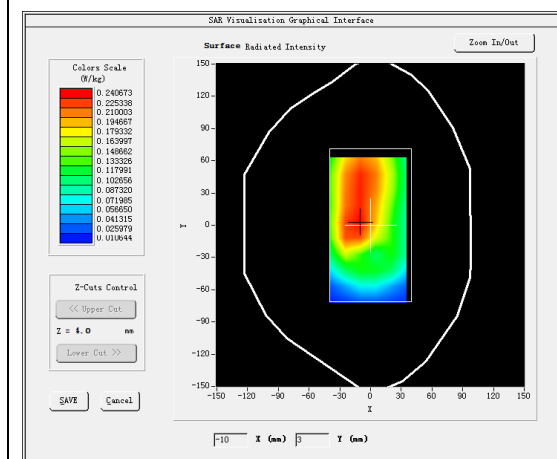
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 12</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.37</u>

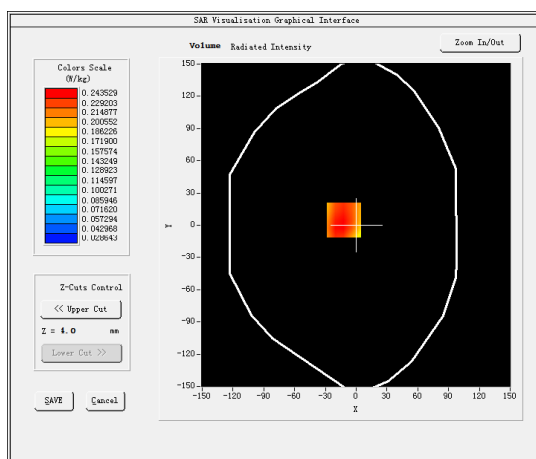
B. SAR Measurement Results

Frequency (MHz)	707.500000
Relative permittivity (real part)	41.615261
Relative permittivity (imaginary part)	22.004171
Conductivity (S/m)	0.864886
Variation (%)	-0.750000

SURFACE SAR



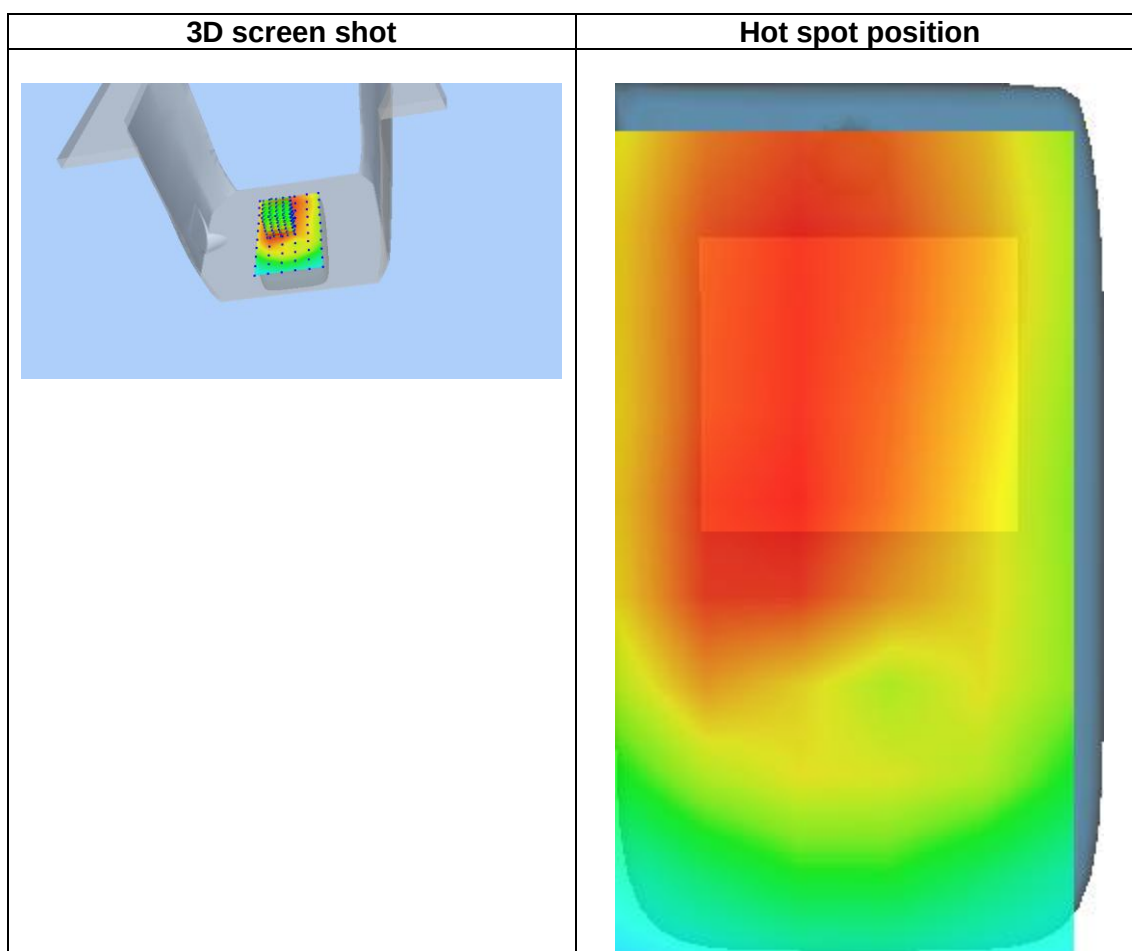
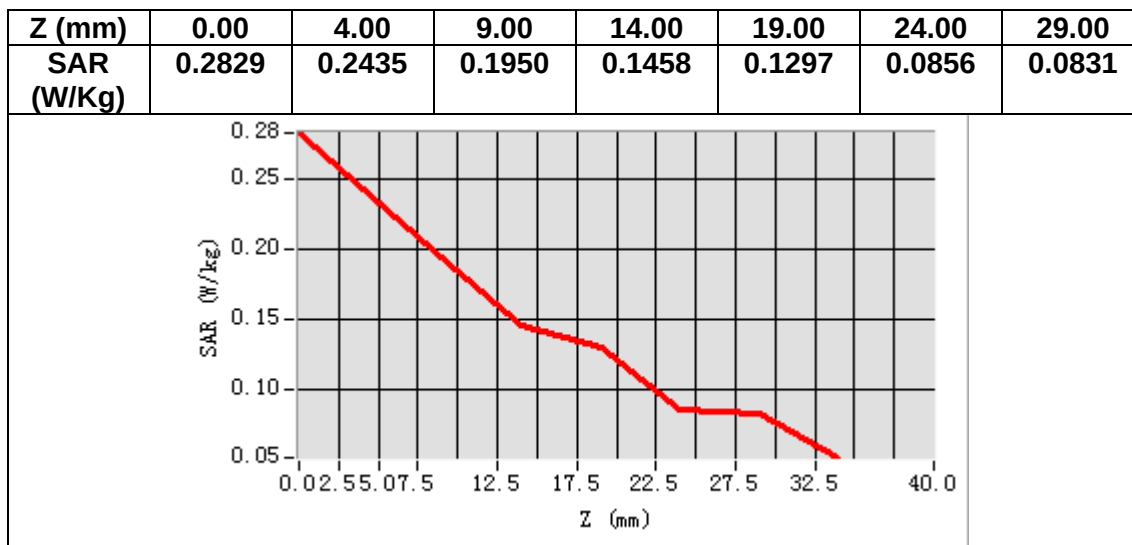
VOLUME SAR



Maximum location: X=-12.00, Y=5.00

SAR Peak: 0.30 W/kg

SAR 10g (W/Kg)	0.182856
SAR 1g (W/Kg)	0.238937



MEASUREMENT 29

Date of measurement: 19/4/2024

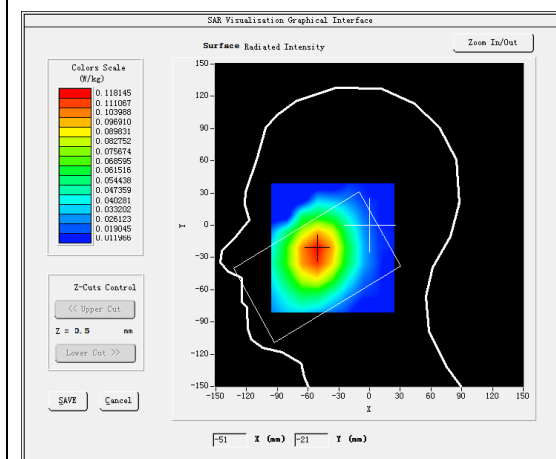
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>LTE band 17</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.37</u>

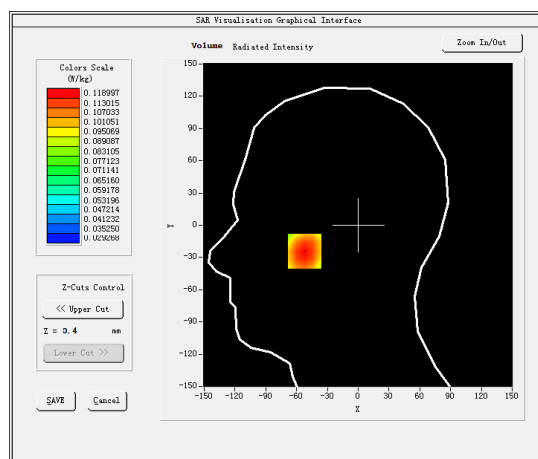
B. SAR Measurement Results

Frequency (MHz)	710.000000
Relative permittivity (real part)	41.599911
Relative permittivity (imaginary part)	21.944620
Conductivity (S/m)	0.865593
Variation (%)	0.410000

SURFACE SAR



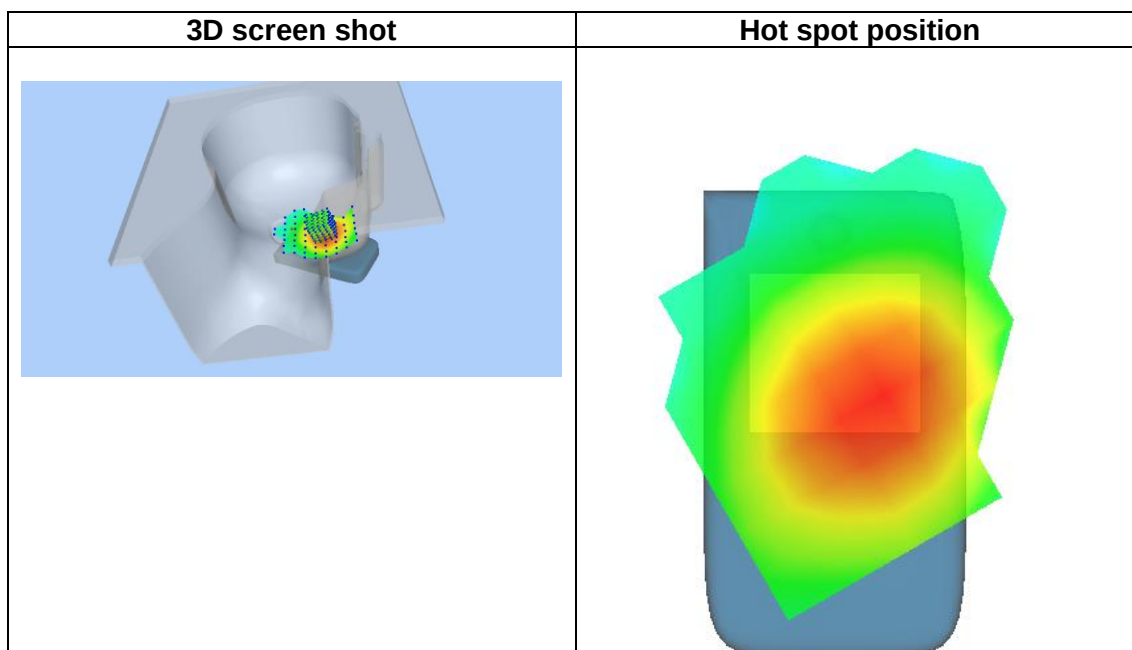
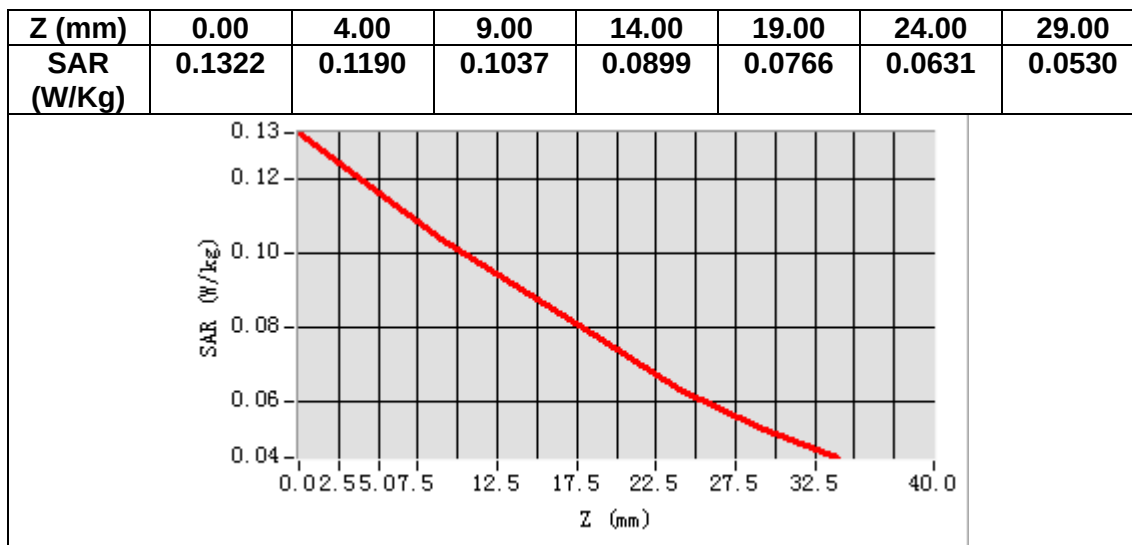
VOLUME SAR



Maximum location: X=-52.00, Y=-24.00

SAR Peak: 0.13 W/kg

SAR 10g (W/Kg)	0.094443
SAR 1g (W/Kg)	0.116296



MEASUREMENT 30

Date of measurement: 19/4/2024

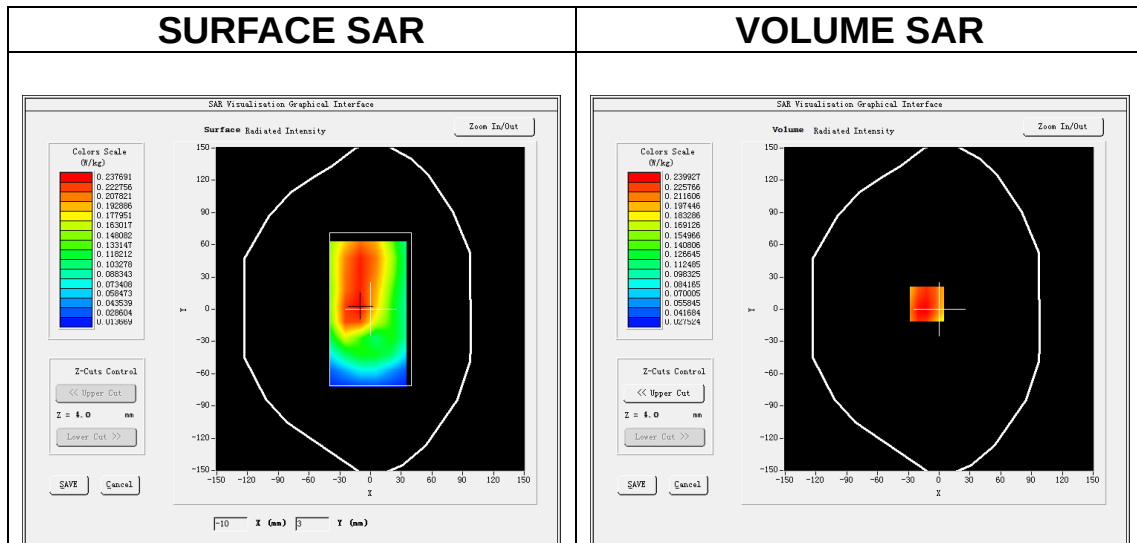
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>5x5x7, dx=8mm dy=8mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 17</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.37</u>

B. SAR Measurement Results

Frequency (MHz)	710.000000
Relative permittivity (real part)	41.599911
Relative permittivity (imaginary part)	21.944620
Conductivity (S/m)	0.865593
Variation (%)	-0.870000

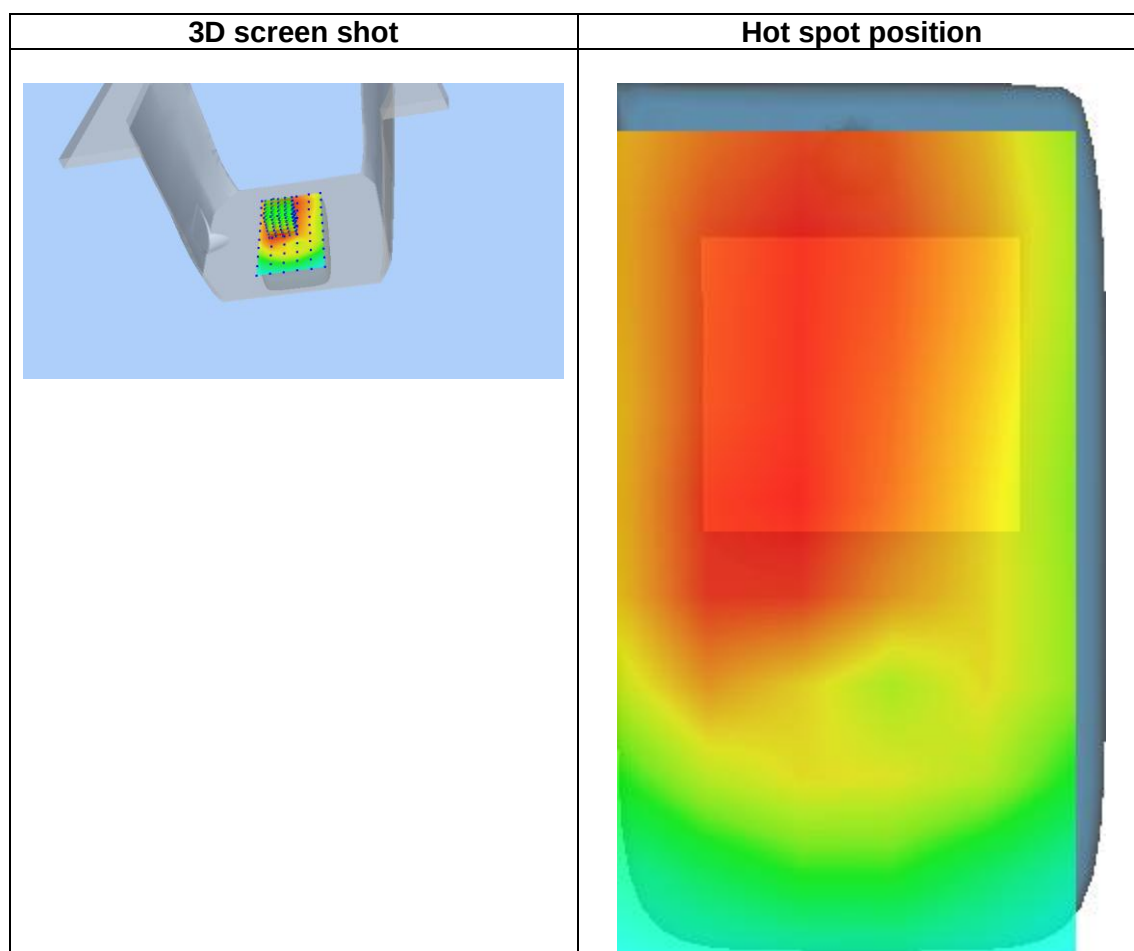
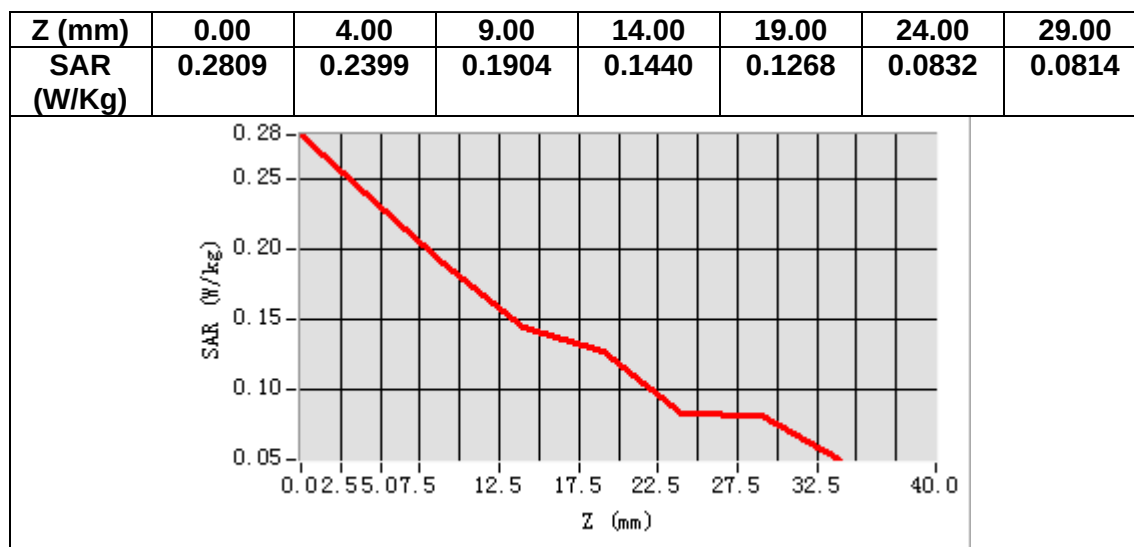
SURFACE SAR



Maximum location: X=-12.00, Y=5.00

SAR Peak: 0.29 W/kg

SAR 10g (W/Kg)	0.179453
SAR 1g (W/Kg)	0.235011



MEASUREMENT 31

Date of measurement: 16/4/2024

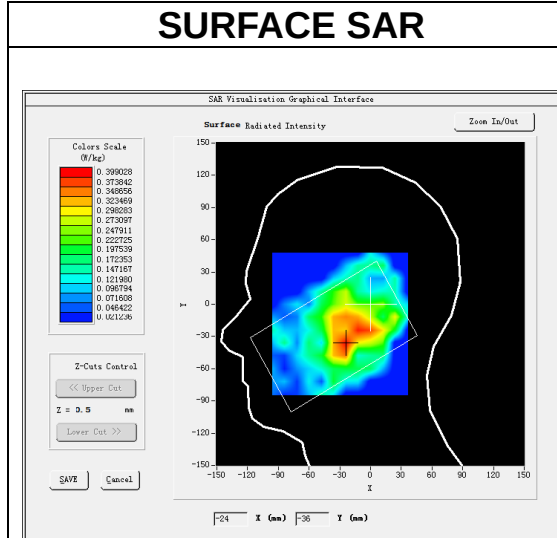
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>LTE band 38</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.65</u>

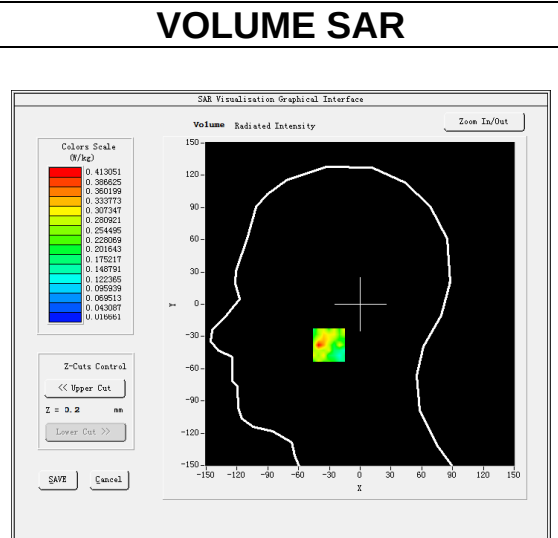
B. SAR Measurement Results

Frequency (MHz)	2595.000000
Relative permittivity (real part)	38.789642
Relative permittivity (imaginary part)	13.729632
Conductivity (S/m)	1.979355
Variation (%)	2.010000

SURFACE SAR



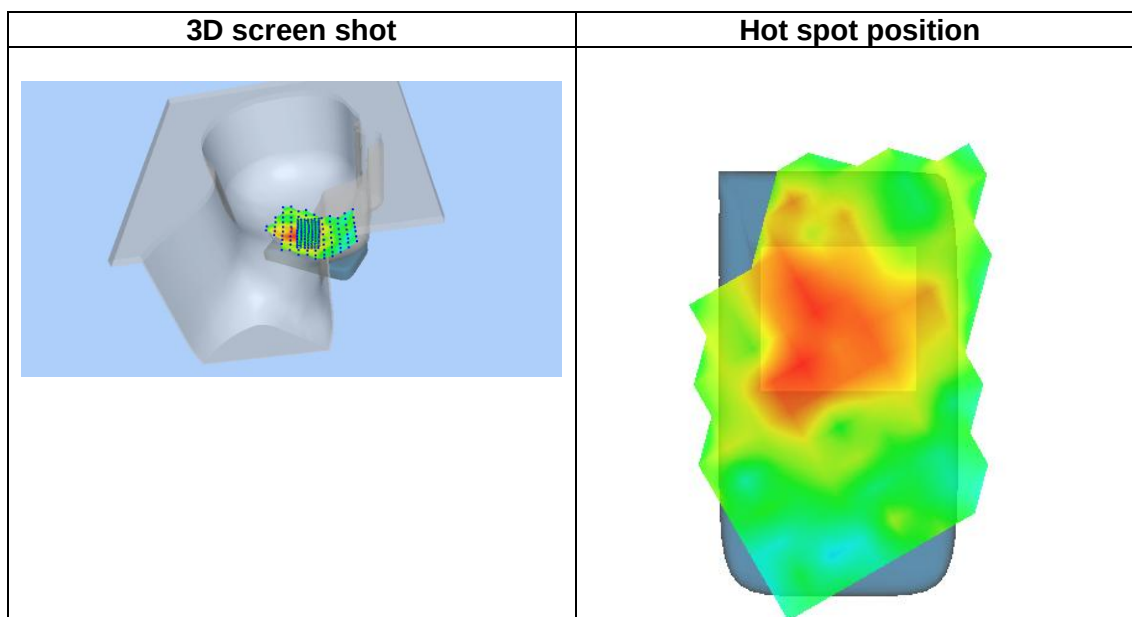
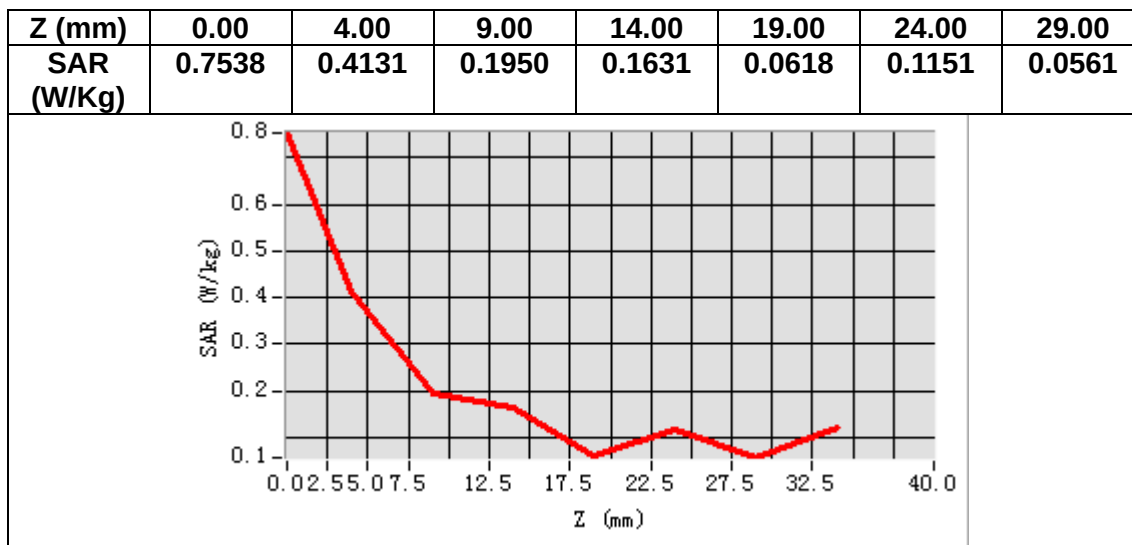
VOLUME SAR



Maximum location: X=-25.00, Y=-38.00

SAR Peak: 0.83 W/kg

SAR 10g (W/Kg)	0.199384
SAR 1g (W/Kg)	0.346787



MEASUREMENT 32

Date of measurement: 16/4/2024

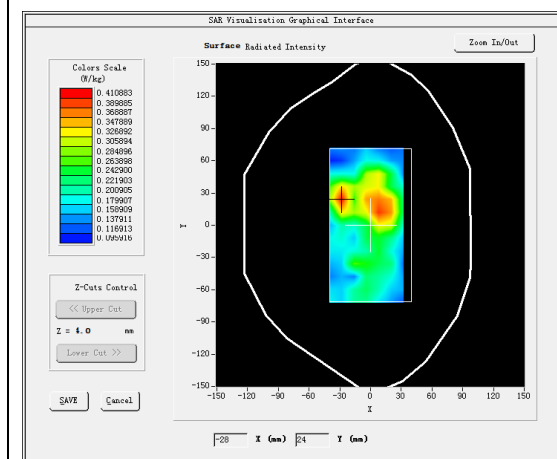
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 38</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.65</u>

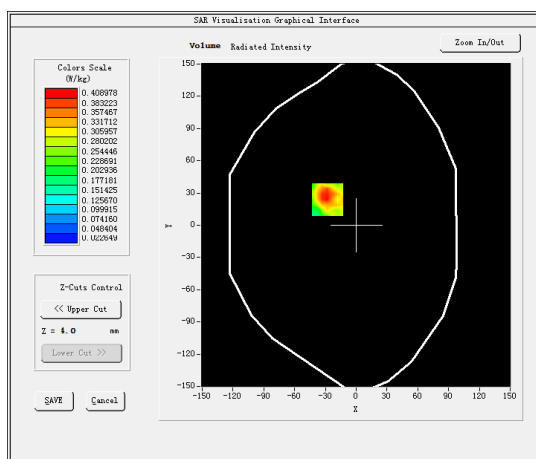
B. SAR Measurement Results

Frequency (MHz)	2595.000000
Relative permittivity (real part)	38.789642
Relative permittivity (imaginary part)	13.729632
Conductivity (S/m)	1.979355
Variation (%)	4.830000

SURFACE SAR



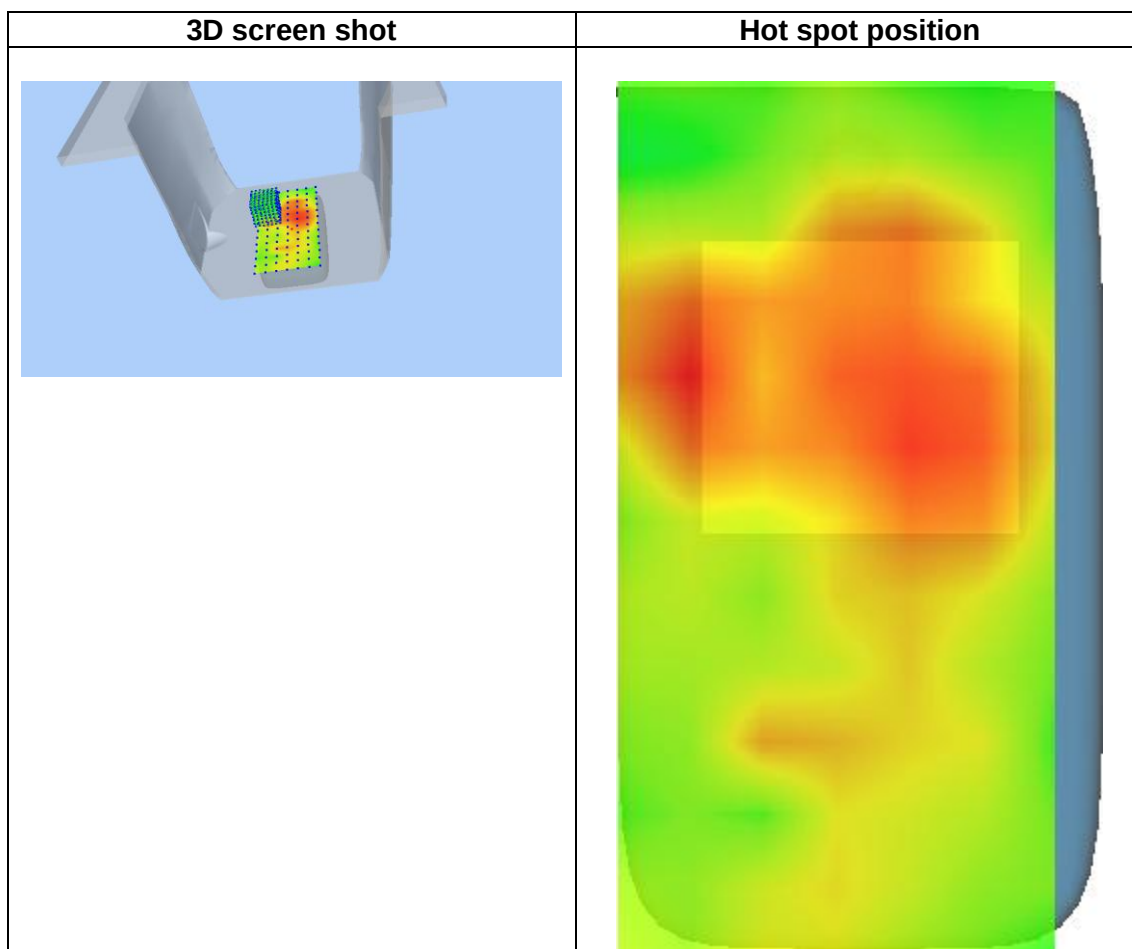
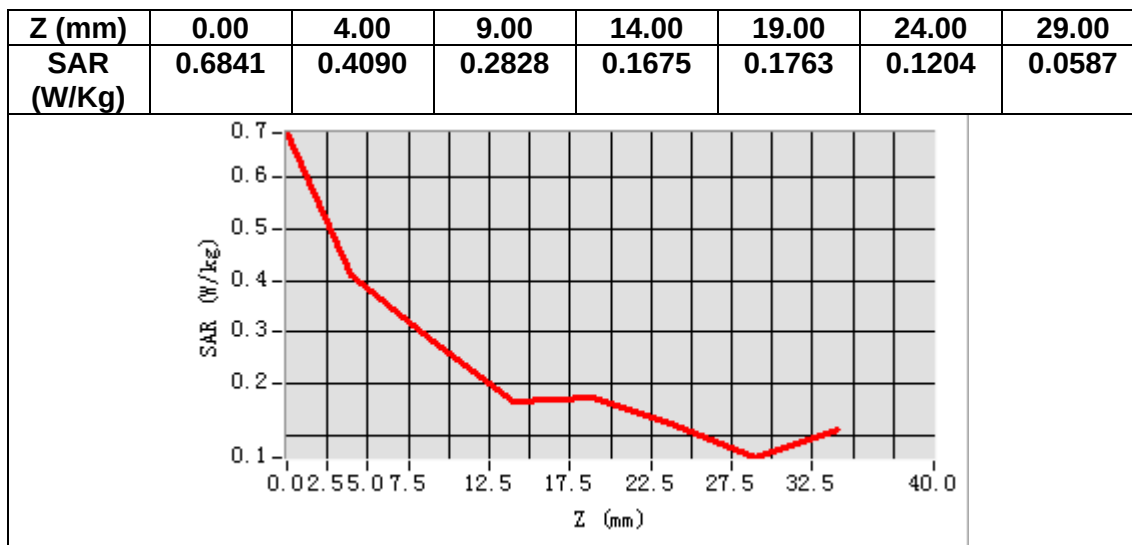
VOLUME SAR



Maximum location: X=-28.00, Y=24.00

SAR Peak: 0.68 W/kg

SAR 10g (W/Kg)	0.249154
SAR 1g (W/Kg)	0.399755



MEASUREMENT 33

Date of measurement: 16/4/2024

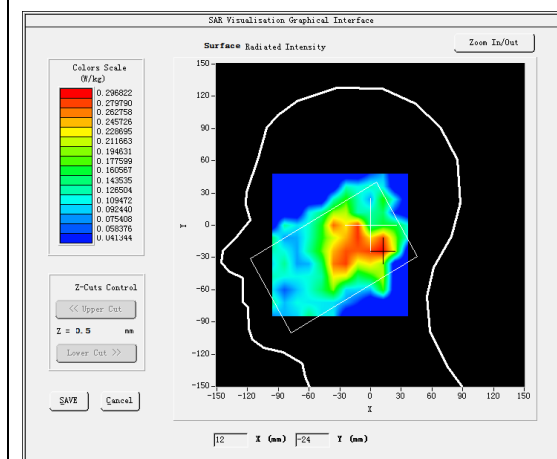
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>LTE band 41</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.65</u>

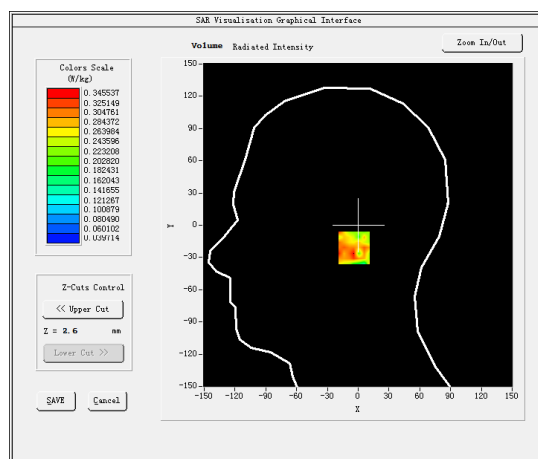
B. SAR Measurement Results

Frequency (MHz)	2593.000000
Relative permittivity (real part)	38.876041
Relative permittivity (imaginary part)	13.679432
Conductivity (S/m)	1.970598
Variation (%)	2.380000

SURFACE SAR



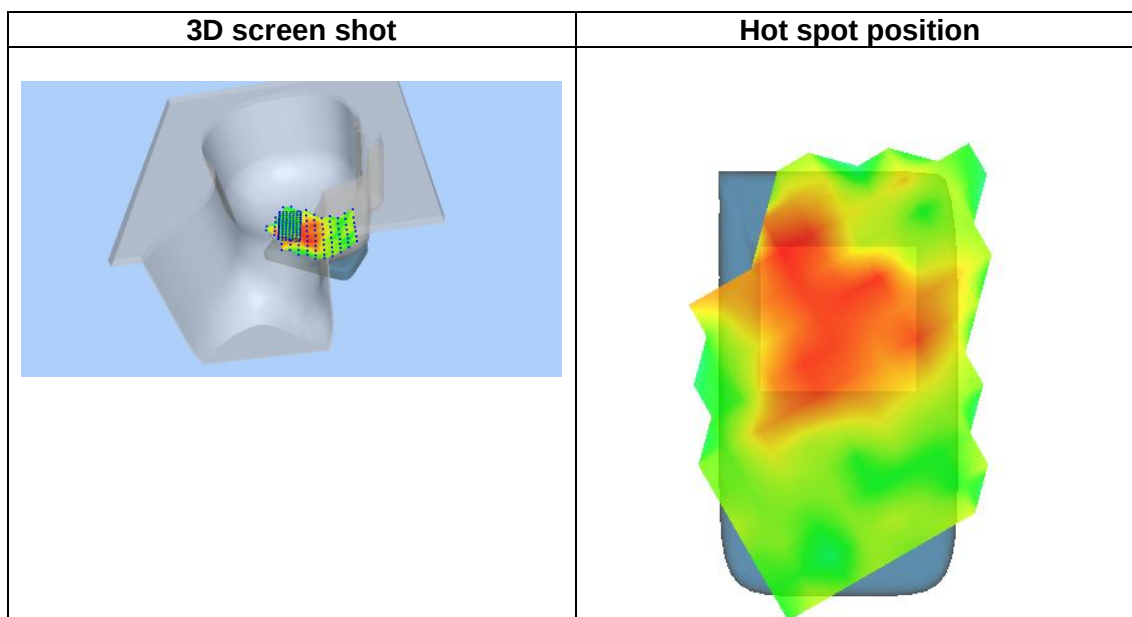
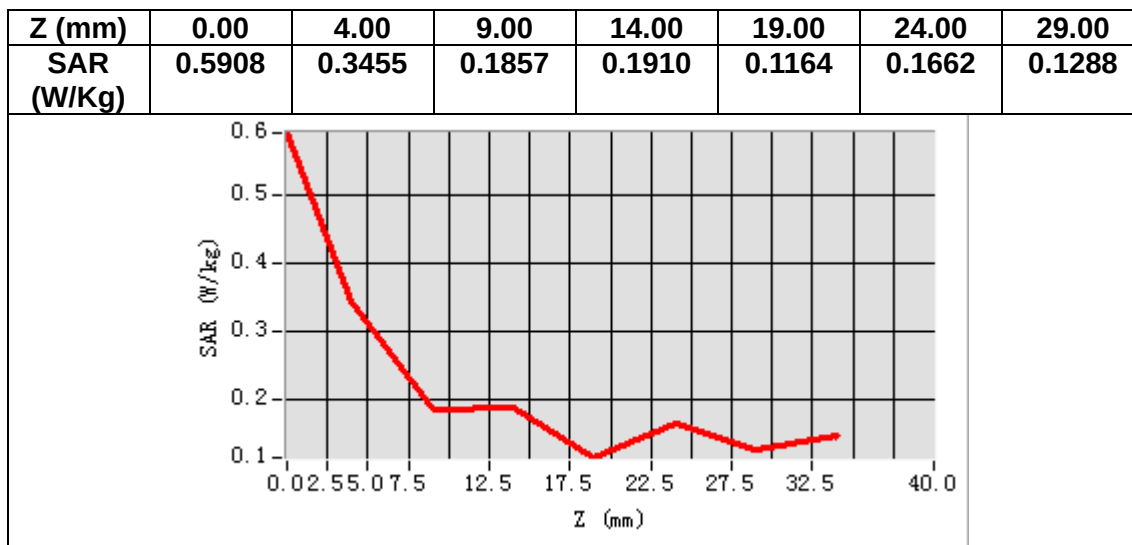
VOLUME SAR



Maximum location: X=2.00, Y=-21.00

SAR Peak: 0.66 W/kg

SAR 10g (W/Kg)	0.207536
SAR 1g (W/Kg)	0.321939



MEASUREMENT 34

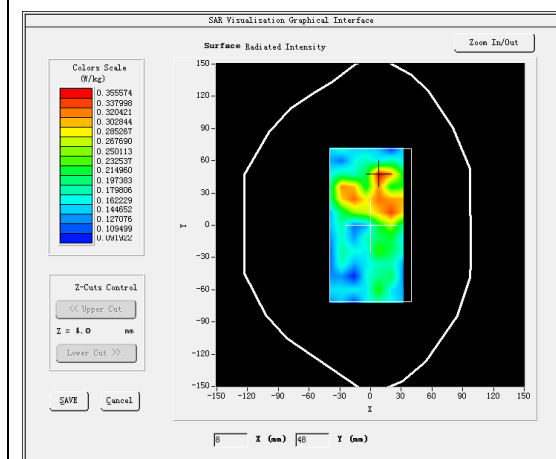
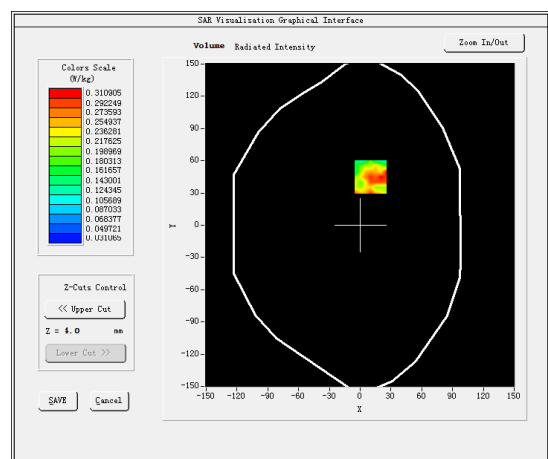
Date of measurement: 16/4/2024

A. Experimental conditions.

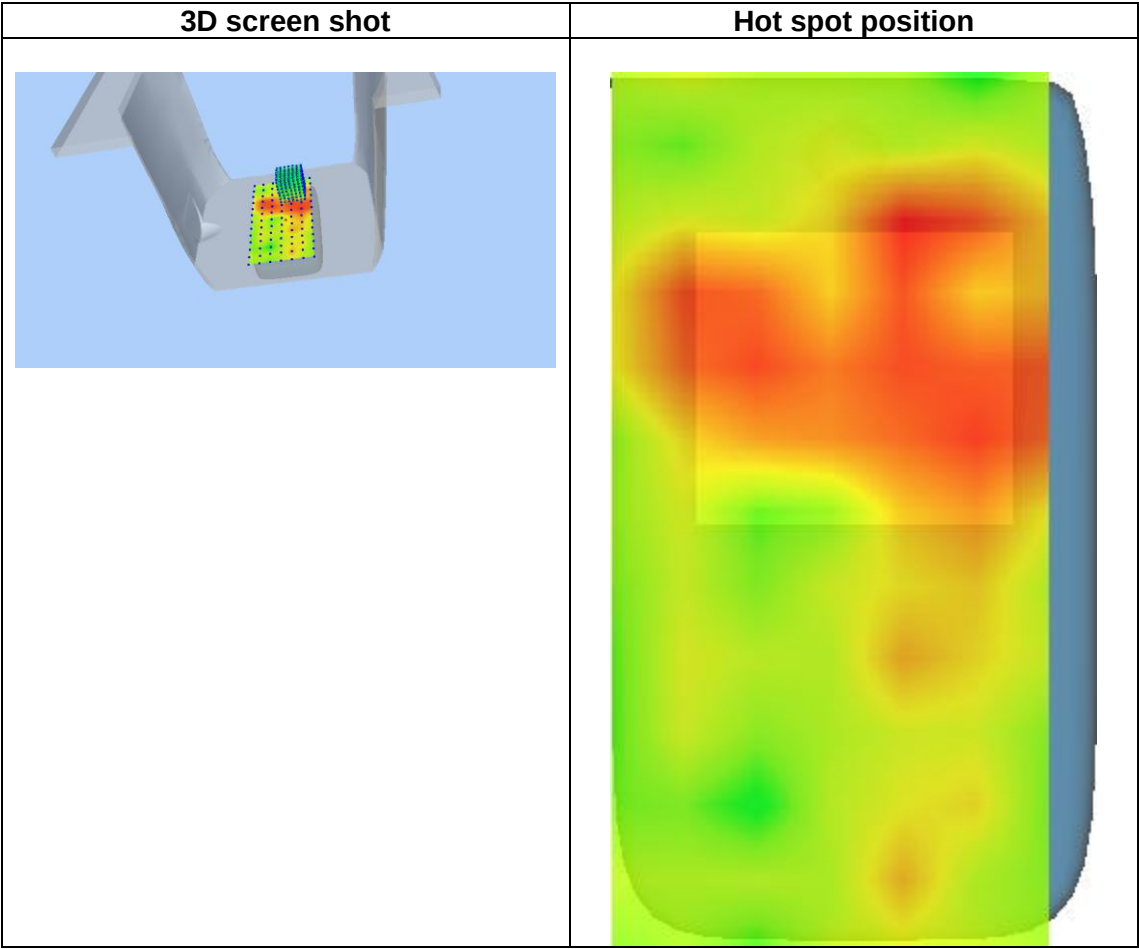
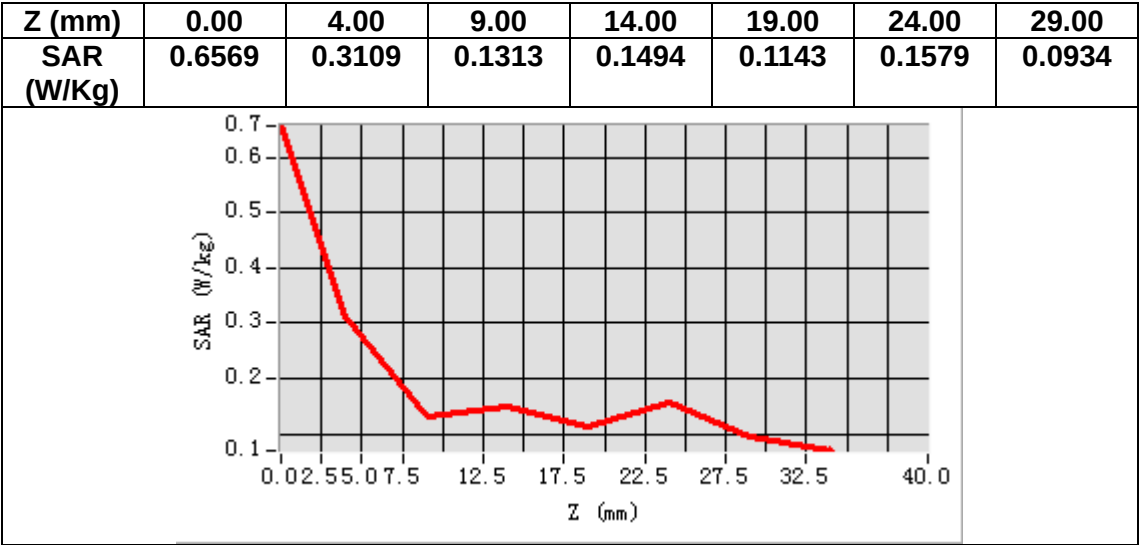
<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>LTE band 41</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.65</u>

B. SAR Measurement Results

Frequency (MHz)	2593.000000
Relative permittivity (real part)	38.876041
Relative permittivity (imaginary part)	13.679432
Conductivity (S/m)	1.970598
Variation (%)	-1.300000

SURFACE SAR**VOLUME SAR****Maximum location: X=10.00, Y=45.00****SAR Peak: 0.54 W/kg**

SAR 10g (W/Kg)	0.193821
SAR 1g (W/Kg)	0.292085



MEASUREMENT 35

Date of measurement: 7/4/2024

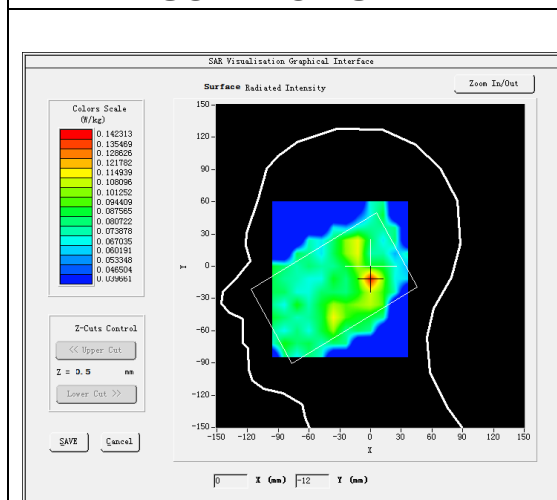
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Left head</u>
<u>Device Position</u>	<u>Cheek</u>
<u>Band</u>	<u>SA_n78</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>(Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.20</u>

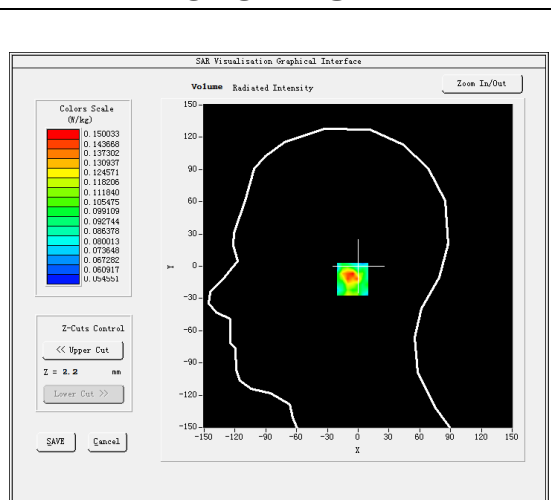
B. SAR Measurement Results

Frequency (MHz)	3499.990000
Relative permittivity (real part)	37.884593
Relative permittivity (imaginary part)	14.443988
Conductivity (S/m)	2.808545
Variation (%)	-2.050000

SURFACE SAR



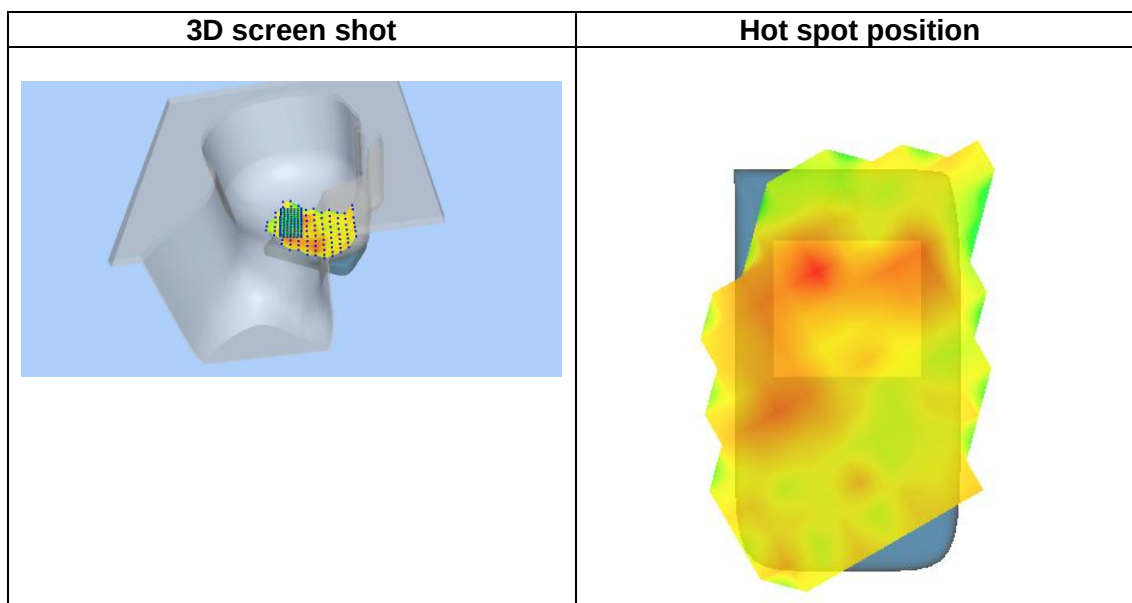
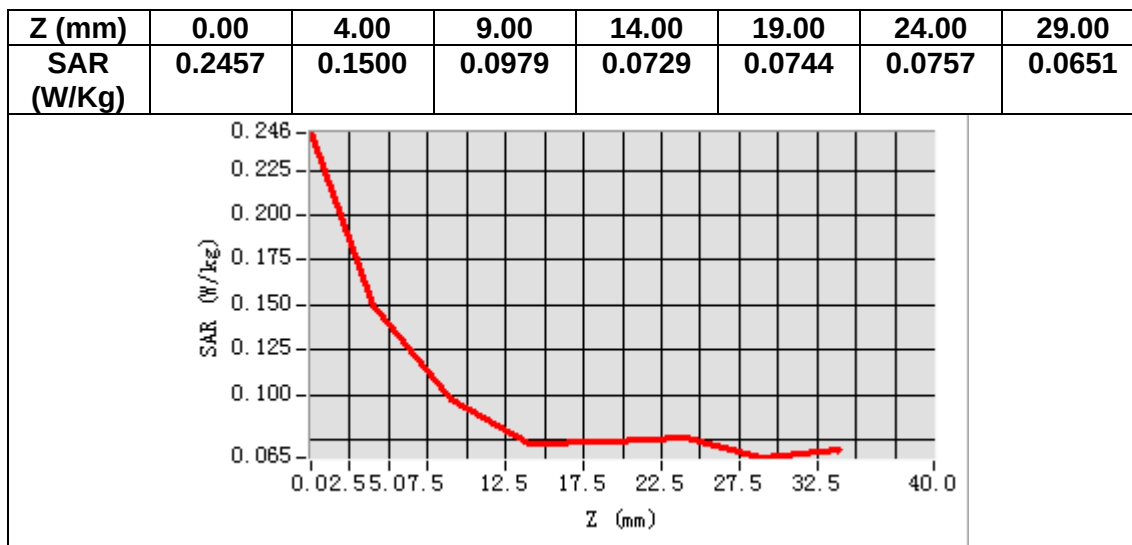
VOLUME SAR



Maximum location: X=0.00, Y=-12.00

SAR Peak: 0.26 W/kg

SAR 10g (W/Kg)	0.092860
SAR 1g (W/Kg)	0.135174



MEASUREMENT 36

Date of measurement: 7/4/2024

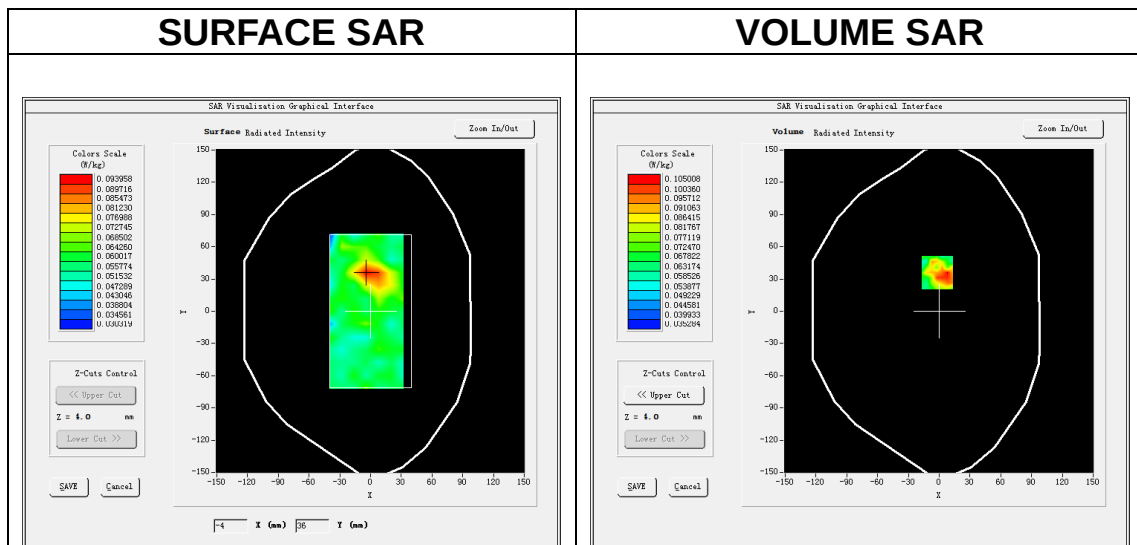
A. Experimental conditions.

<u>Area Scan</u>	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
<u>ZoomScan</u>	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
<u>Phantom</u>	<u>Validation plane</u>
<u>Device Position</u>	<u>Body</u>
<u>Band</u>	<u>SA_n78</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>(Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.20</u>

B. SAR Measurement Results

Frequency (MHz)	3499.990000
Relative permittivity (real part)	37.884593
Relative permittivity (imaginary part)	14.443988
Conductivity (S/m)	2.808545
Variation (%)	2.349998

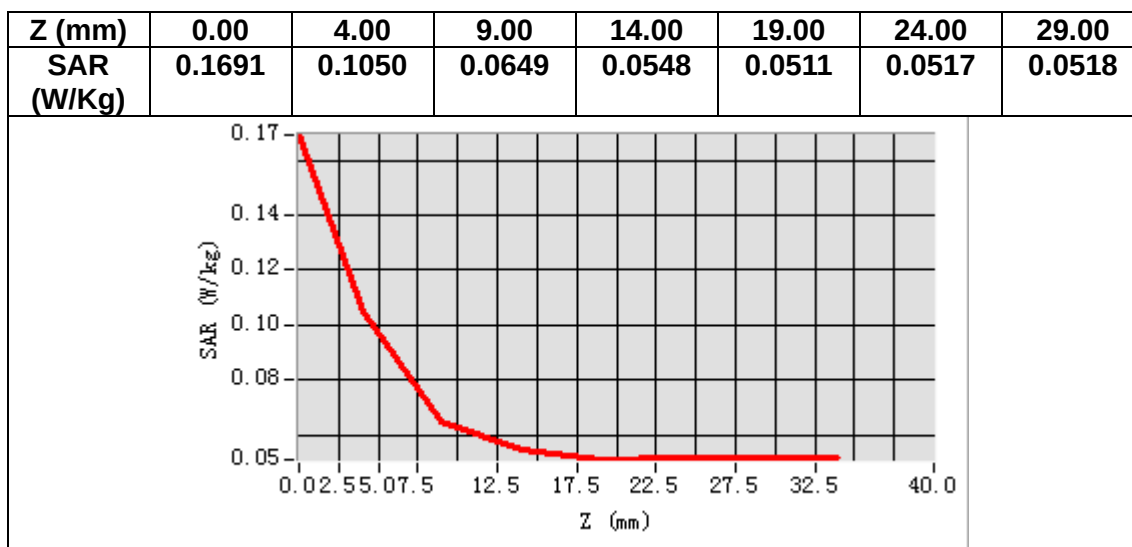
SURFACE SAR



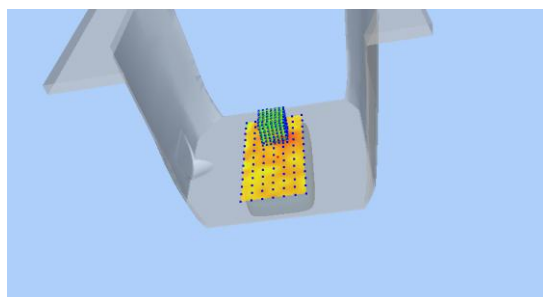
Maximum location: X=-2.00, Y=36.00

SAR Peak: 0.19 W/kg

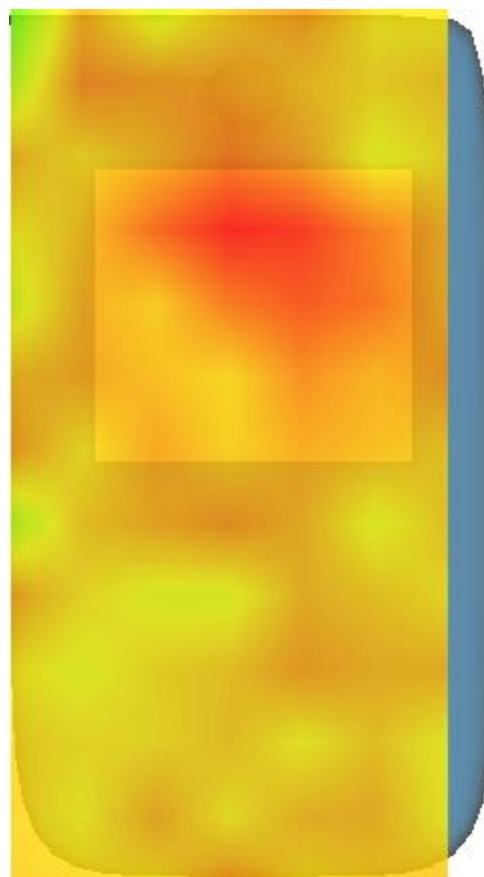
SAR 10g (W/Kg)	0.071475
SAR 1g (W/Kg)	0.100619



3D screen shot



Hot spot position



14. Appendix D. Calibration Certificate

Table of contents
E Field Probe - 3423-EPGO-426
750 MHz Dipole - SN 03/15 DIP 0G750-355
835 MHz Dipole - SN 03/15 DIP 0G835-347
1800 MHz Dipole - SN 03/15 DIP 1G800-349
1900 MHz Dipole - SN 03/15 DIP 1G900-350
2450 MHz Dipole - SN 03/15 DIP 2G450-352
2600 MHz Dipole - SN 03/15 DIP 2G600-356
3500 MHz Dipole - SN 09/12 DIP 3G500-360
5000-6000 MHz Dipole - SN 13/14 WGA 33



COMOSAR E-Field Probe Calibration Report

Ref : ACR.261.11.23.BES.A

SHENZHEN NTEK TESTING TECHNOLOGY CO., LTD.

BUILDING E, FENDA SCIENCE PARK, SANWEI
COMMUNITY, XIXIANG STREET,
BAO'AN DISTRICT, SHENZHEN GUANGDONG, CHINA
MVG COMOSAR DOSIMETRIC E-FIELD PROBE
SERIAL NO.: 3423-EPGO-426

Calibrated at MVG

Z.I. de la pointe du diable

Technopôle Brest Iroise – 295 avenue Alexis de Rochon
29280 PLOUZANE - FRANCE

Calibration date: 09/18/2023



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).



COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.261.11.23.BES.A

	Name	Function	Date	Signature
Prepared by :	Cyrille ONNEE	Measurement Responsible	9/18/2023	
Checked & approved by:	Jérôme Luc	Technical Manager	9/18/2023	
Authorized by:	Yann Toutain	Laboratory Director	9/19/2023	

Yann
Toutain IDSignature
numérique de
Yann Toutain ID
Date : 2023.09.19
09:08:14 +02'00'

	Customer Name
Distribution :	SHENZHEN NTEK TESTING TECHNOLOGY CO., LTD.

Issue	Name	Date	Modifications
A	Cyrille ONNEE	9/18/2023	Initial release



COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.261.11.23.BES.A

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COMOSAR E-FIELD PROBE CALIBRATION REPORT

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1 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR DOSIMETRIC E FIELD PROBE
Manufacturer	MVG
Model	SSE2
Serial Number	3423-EPGO-426
Product Condition (new / used)	New
Frequency Range of Probe	0.15 GHz-7.5GHz
Resistance of Three Dipoles at Connector	Dipole 1: R1=0.261 MΩ Dipole 2: R2=0.213 MΩ Dipole 3: R3=0.233 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	2 mm
Maximum external diameter	8 mm
Probe Tip External Diameter	2.5 mm
Distance between dipoles / probe extremity	1 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.



COMOSAR E-FIELD PROBE CALIBRATION REPORT

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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 0.01 W/kg to 100 W/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:

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

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%).



COMOSAR E-FIELD PROBE CALIBRATION REPORT

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4 MEASUREMENT UNCERTAINTY

The guidelines outlined in the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards were followed to generate the measurement uncertainty associated with a SAR probe calibration using the waveguide or calorimetric cell technique depending on the frequency.

The estimated expanded uncertainty (k=2) in calibration for SAR (W/kg) is +/-11% for the frequency range 150-450MHz.

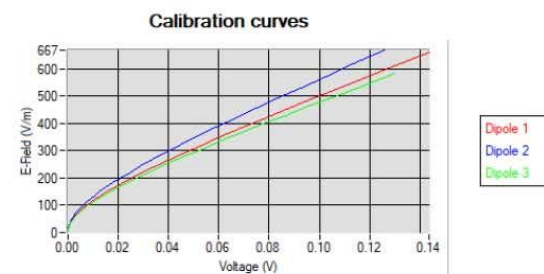
The estimated expanded uncertainty (k=2) in calibration for SAR (W/kg) is +/-14% for the frequency range 600-7500MHz.

5 CALIBRATION RESULTS

Ambient condition	
Liquid Temperature	20 +/- 1 °C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-70 %

5.1 CALIBRATION IN AIR

The following curve represents the measurement in waveguide of the voltage picked up by the probe toward the E-field generated inside the waveguide.



From this curve, the sensitivity in air is calculated using the below formula.

$$E^2 = \sum_{i=1}^3 \frac{V_i (1 + V_i / DCP_i)}{Norm_i}$$

where

V_i =voltage readings on the 3 channels of the probe

DCP_i =diode compression point given below for the 3 channels of the probe

$Norm_i$ =dipole sensitivity given below for the 3 channels of the probe



COMOSAR E-FIELD PROBE CALIBRATION REPORT

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Normx dipole 1 ($\mu\text{V}/(\text{V}/\text{m})^2$)	Normy dipole 2 ($\mu\text{V}/(\text{V}/\text{m})^2$)	Normz dipole 3 ($\mu\text{V}/(\text{V}/\text{m})^2$)
0.78	0.62	0.85

DCP dipole 1 (mV)	DCP dipole 2 (mV)	DCP dipole 3 (mV)
105	108	107

5.2 CALIBRATION IN LIQUID

The calorimeter cell or the waveguide is used to determine the calibration in liquid using the formula below.

$$\text{ConvF} = \frac{E_{\text{liquid}}^2}{E_{\text{air}}^2}$$

The E-field in the liquid is determined from the SAR measurement according to the below formula.

$$E_{\text{liquid}}^2 = \frac{\rho \text{ SAR}}{\sigma}$$

where

σ =the conductivity of the liquid

ρ =the volumetric density of the liquid

SAR=the SAR measured from the formula that depends on the setup used. The SAR formulas are given below

For the calorimeter cell (150-450 MHz), the formula is:

$$\text{SAR} = c \frac{dT}{dt}$$

where

c =the specific heat for the liquid

dT/dt =the temperature rises over the time

For the waveguide setup (600-75000 MHz), the formula is:

$$\text{SAR} = \frac{4P_W}{ab\delta} e^{-\frac{2z}{\delta}}$$

where

a =the larger cross-sectional of the waveguide

b =the smaller cross-sectional of the waveguide

δ =the skin depth for the liquid in the waveguide

P_W =the power delivered to the liquid



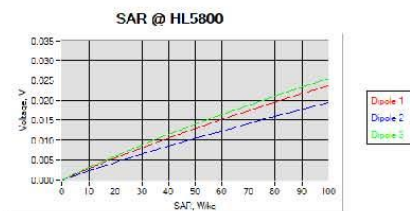
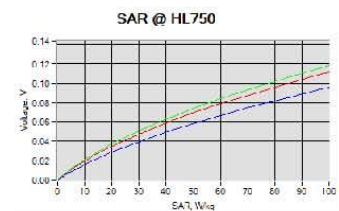
COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.261.11.23.BES.A

The below table summarize the ConvF for the calibrated liquid. The curves give examples for the measured SAR depending on the voltage in some liquid.

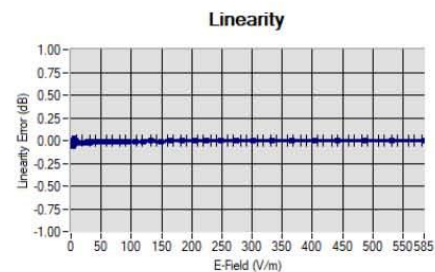
Liquid	Frequency (MHz*)	ConvF
HL750	750	2.37
HL850	835	2.32
HL900	900	2.23
HL1800	1800	2.45
HL1900	1900	2.63
HL2000	2000	2.83
HL2300	2300	2.81
HL2450	2450	2.85
HL2600	2600	2.65
HL3300	3300	2.21
HL3500	3500	2.20
HL3700	3700	2.11
HL3900	3900	2.40
HL4200	4200	2.40
HL4600	4600	2.33
HL4900	4900	2.37
HL5200	5200	2.07
HL5400	5400	2.11
HL5600	5600	2.20
HL5800	5800	2.04

(*) Frequency validity is ± 50 MHz below 600 MHz, ± 100 MHz from 600 MHz to 6 GHz and ± 700 MHz above 6 GHz

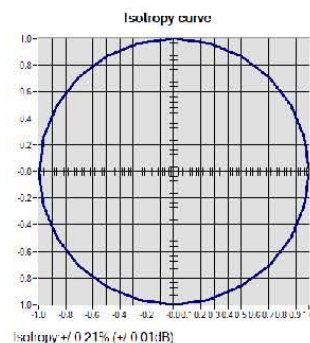


6 VERIFICATION RESULTS

The figures below represent the measured linearity and axial isotropy for this probe. The probe specification is ± 0.2 dB for linearity and ± 0.15 dB for axial isotropy.



Linearity: $\pm 1.42\%$ (± 0.06 dB)



Isotropy: $\pm 0.21\%$ (± 0.01 dB)