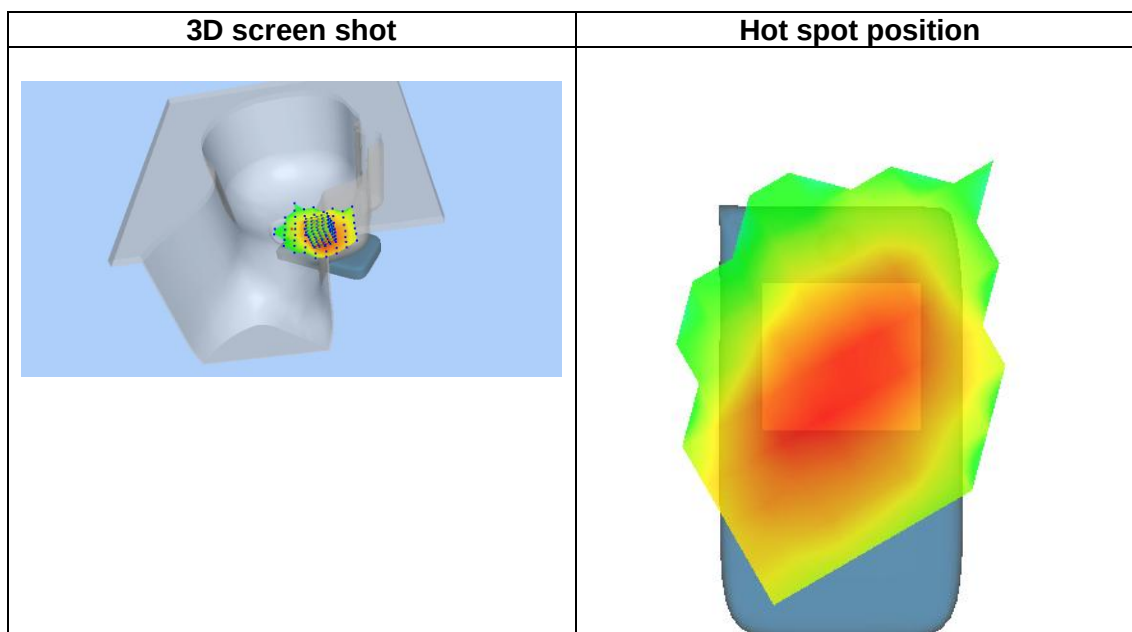
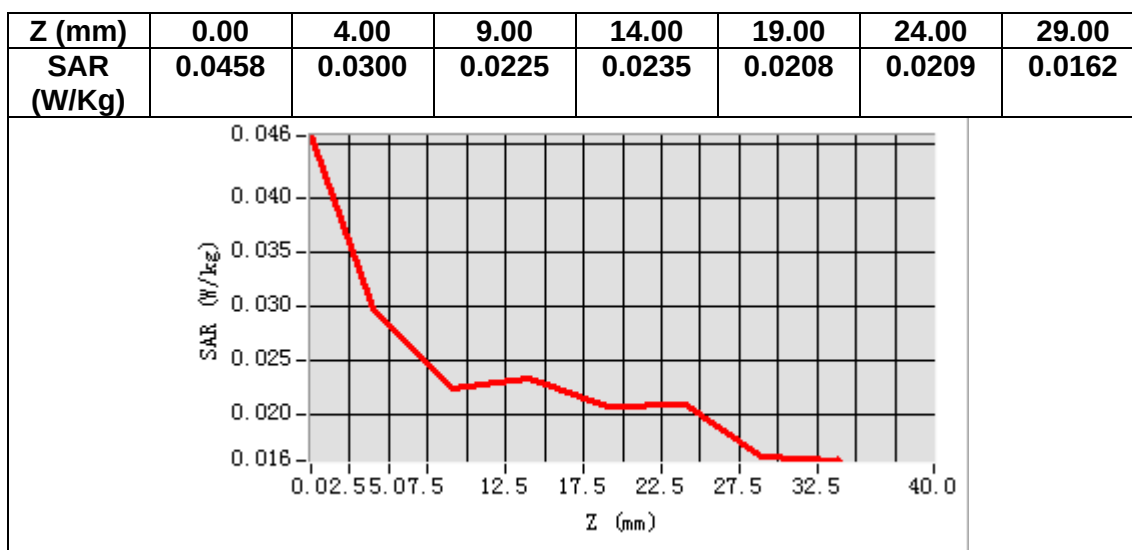




MEASUREMENT 10

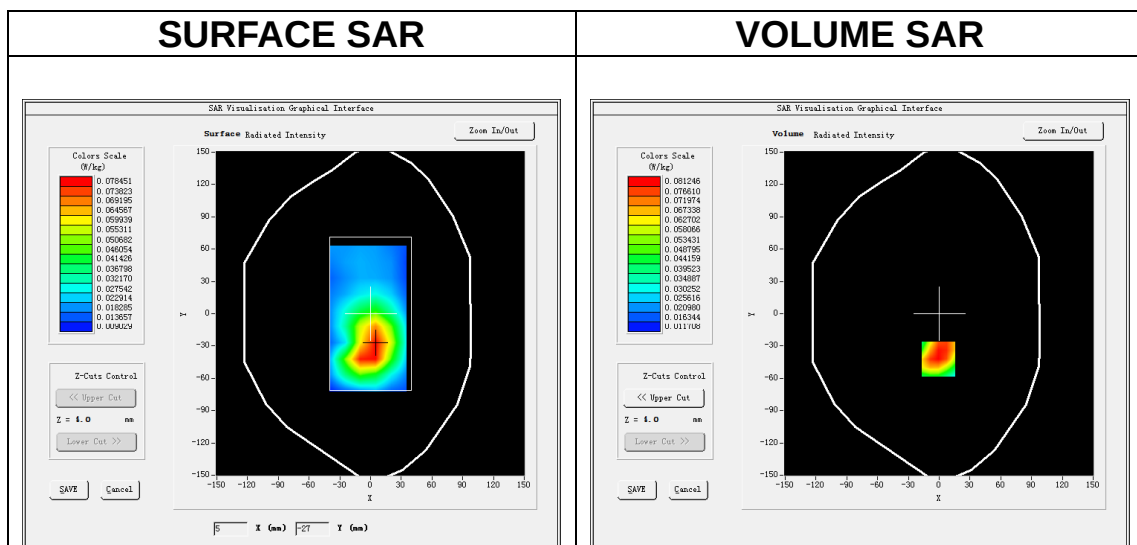
Date of measurement: 15/1/2025

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Body</u>
Band	<u>Band5 WCDMA850</u>
Channels	<u>Middle</u>
Signal	<u>WCDMA (Crest factor: 1.0)</u>
ConvF	<u>2.34</u>

B. SAR Measurement Results

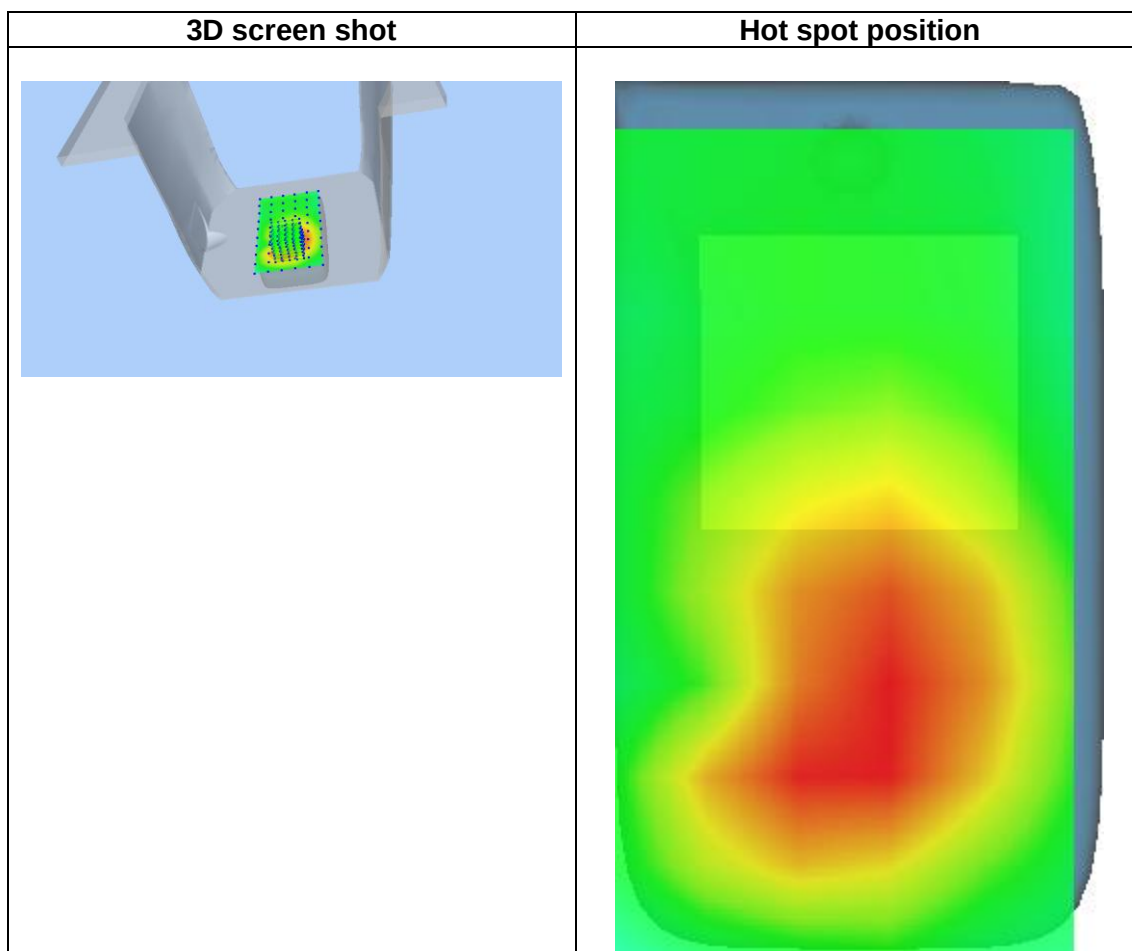
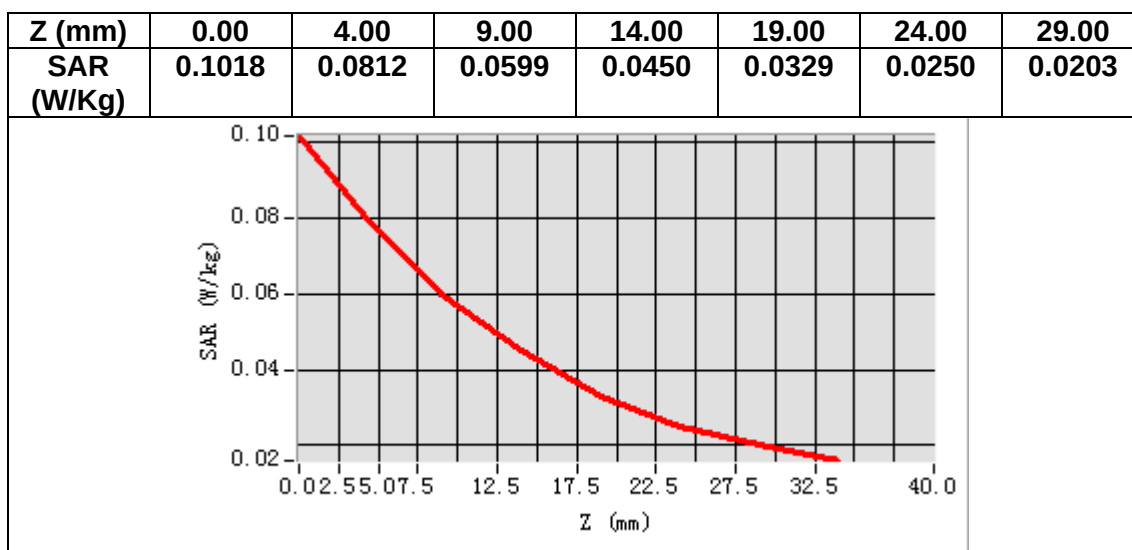
Frequency (MHz)	836.400000
Relative permittivity (real part)	41.885033
Relative permittivity (imaginary part)	19.759706
Conductivity (S/m)	0.918168
Variation (%)	-2.610000



Maximum location: X=-1.00, Y=-42.00

SAR Peak: 0.11 W/kg

SAR 10g (W/Kg)	0.055087
SAR 1g (W/Kg)	0.079511



MEASUREMENT 11

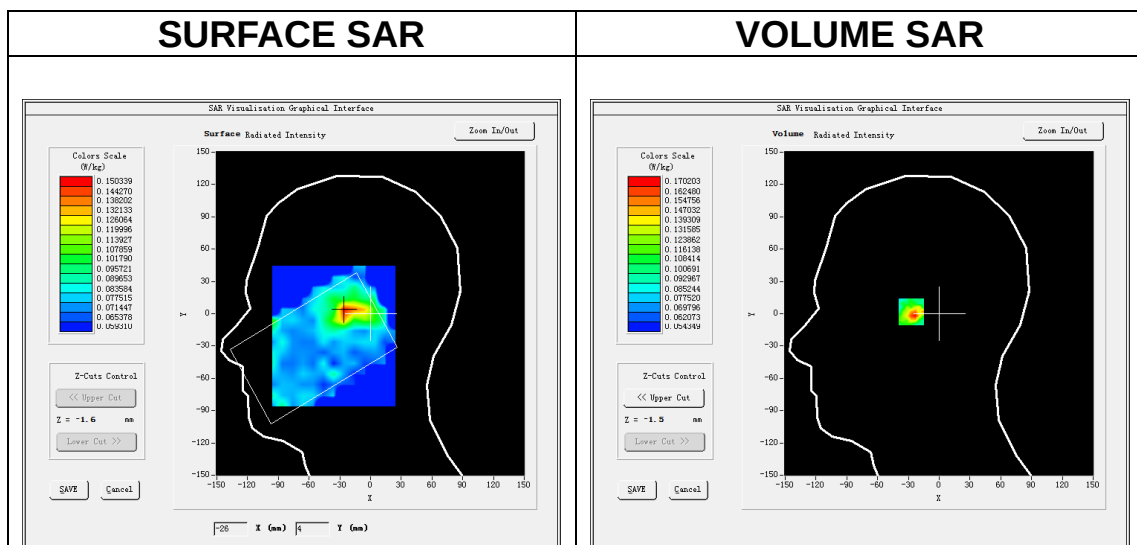
Date of measurement: 10/1/2025

A. Experimental conditions.

Area Scan	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
ZoomScan	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>IEEE 802.11ax U-NII</u>
Channels	<u>Middle</u>
Signal	<u>IEEE802.11ax (Crest factor: 1.0)</u>
ConvF	<u>1.89</u>

B. SAR Measurement Results

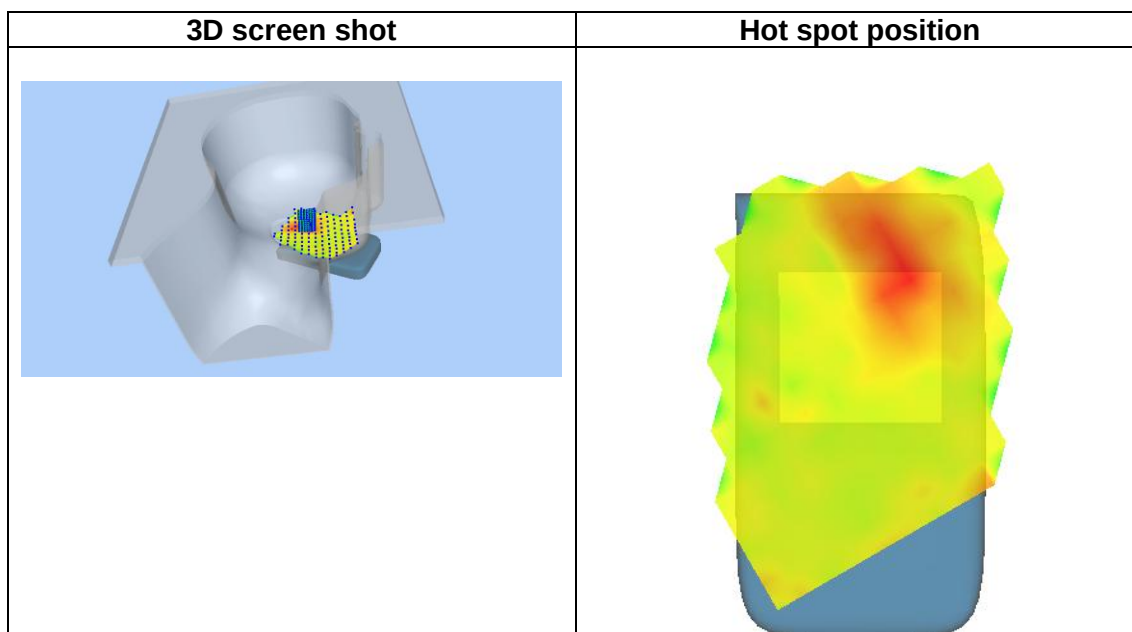
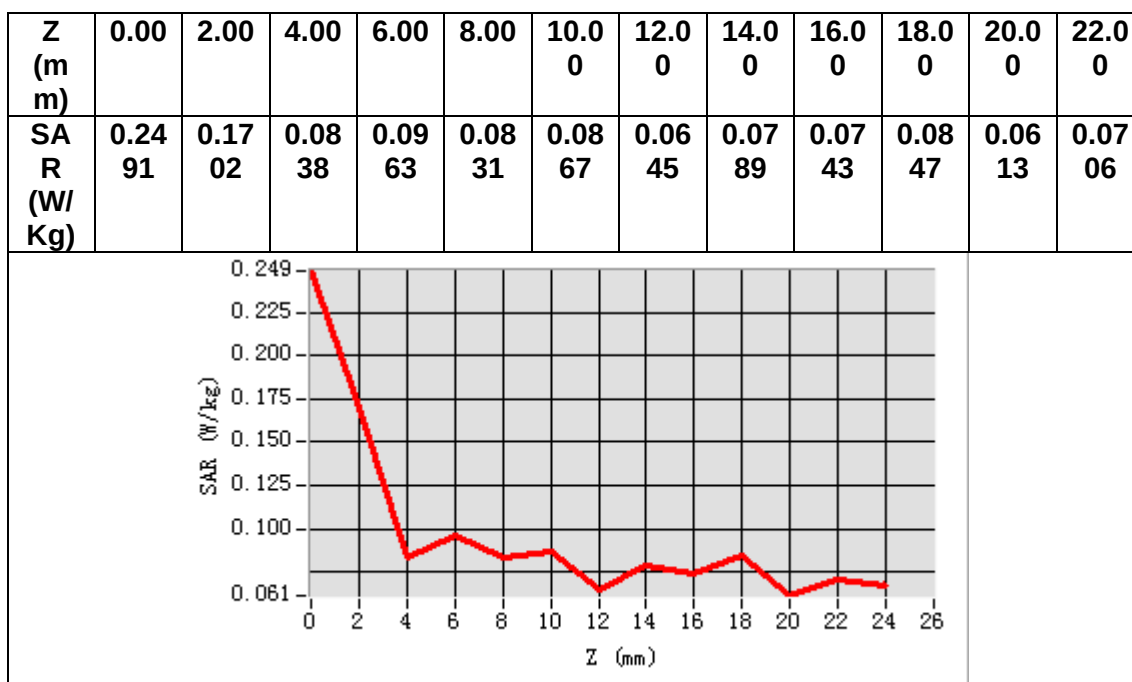
Frequency (MHz)	5200.000000
Relative permittivity (real part)	34.850006
Relative permittivity (imaginary part)	15.738512
Conductivity (S/m)	4.546681
Variation (%)	-3.460000



Maximum location: X=-24.00, Y=3.00

SAR Peak: 0.35 W/kg

SAR 10g (W/Kg)	0.097608
SAR 1g (W/Kg)	0.157535



MEASUREMENT 12

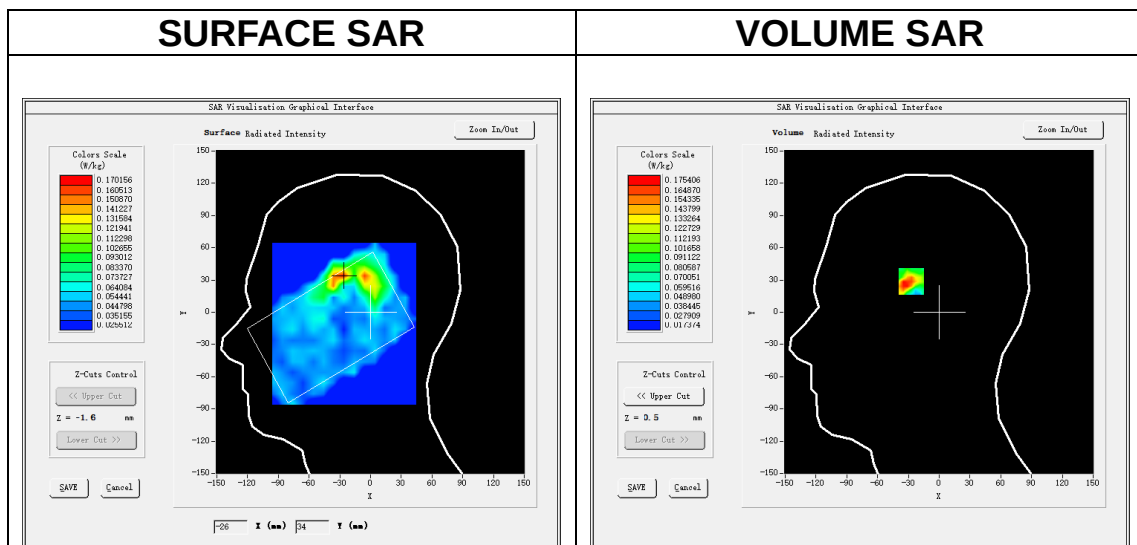
Date of measurement: 4/3/2025

A. Experimental conditions.

Area Scan	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
ZoomScan	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>IEEE 802.11ax U-NII</u>
Channels	<u>High</u>
Signal	<u>IEEE802.11ax (Crest factor: 1.0)</u>
ConvF	<u>1.89</u>

B. SAR Measurement Results

Frequency (MHz)	5240.000000
Relative permittivity (real part)	37.133411
Relative permittivity (imaginary part)	15.762918
Conductivity (S/m)	4.553732
Variation (%)	-4.140000

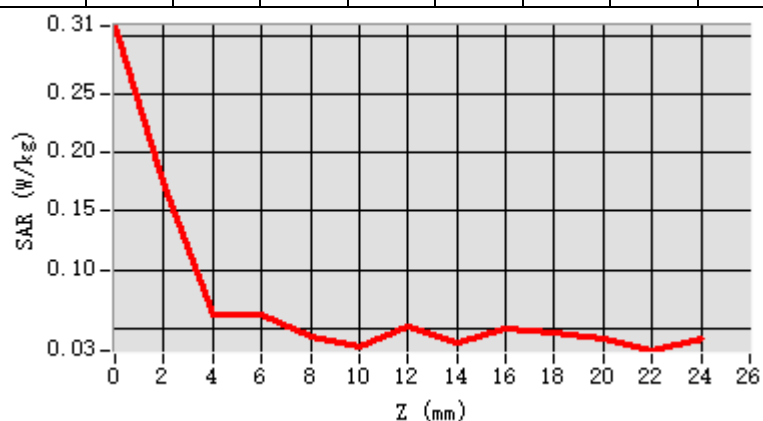


Maximum location: X=-27.00, Y=34.00

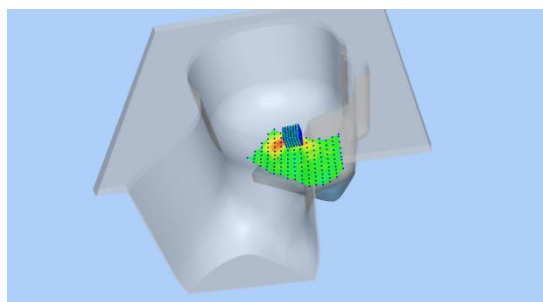
SAR Peak: 0.49 W/kg

SAR 10g (W/Kg)	0.082489
SAR 1g (W/Kg)	0.173096

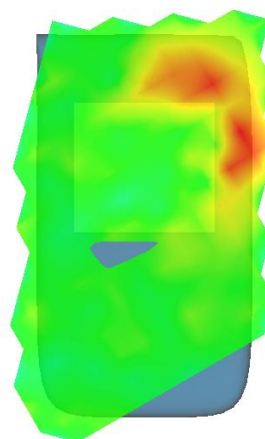
Z (m m)	0.00	2.00	4.00	6.00	8.00	10.0	12.0	14.0	16.0	18.0	20.0	22.0
SAR (W/ Kg)	0.30 80	0.17 54	0.06 16	0.06 27	0.04 26	0.03 54	0.05 14	0.03 77	0.05 05	0.04 58	0.04 20	0.03 12



3D screen shot



Hot spot position



MEASUREMENT 13

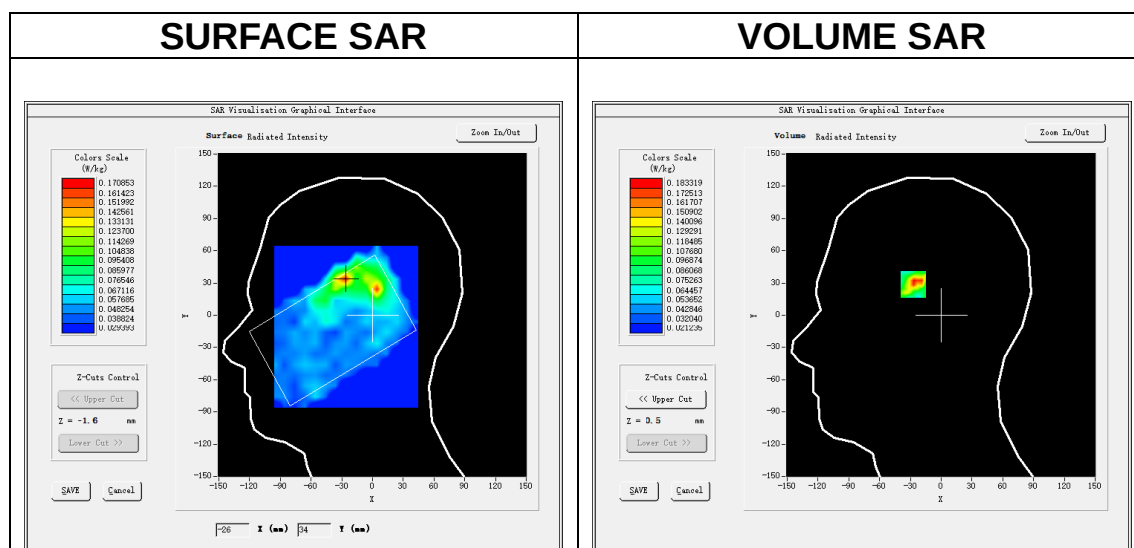
Date of measurement: 4/3/2025

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>Middle</u>
<u>Signal</u>	<u>IEEE802.11ac (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.89</u>

B. SAR Measurement Results

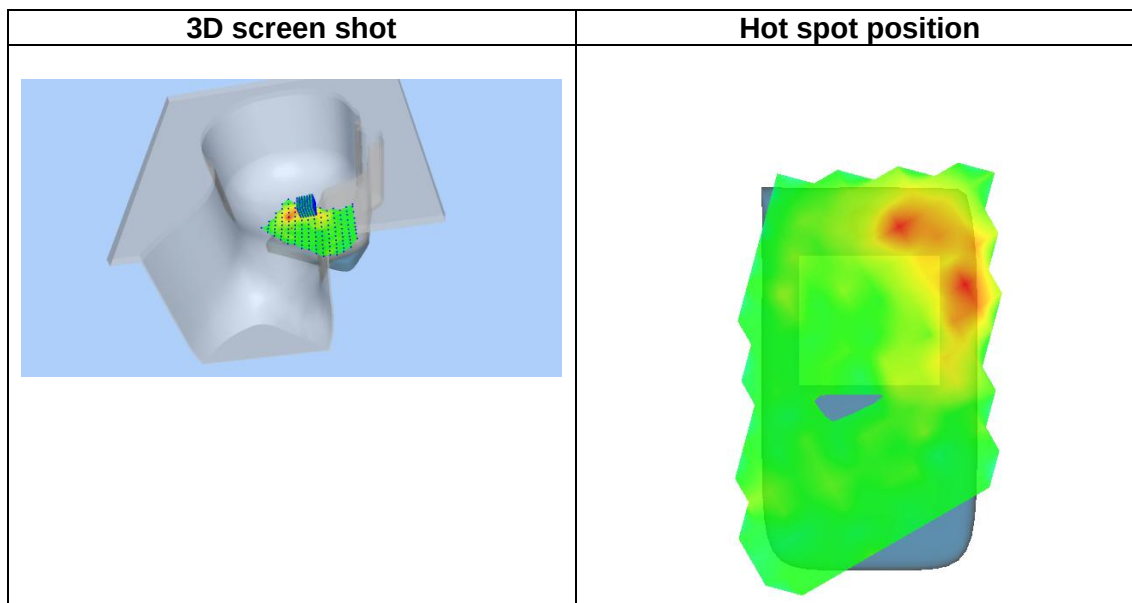
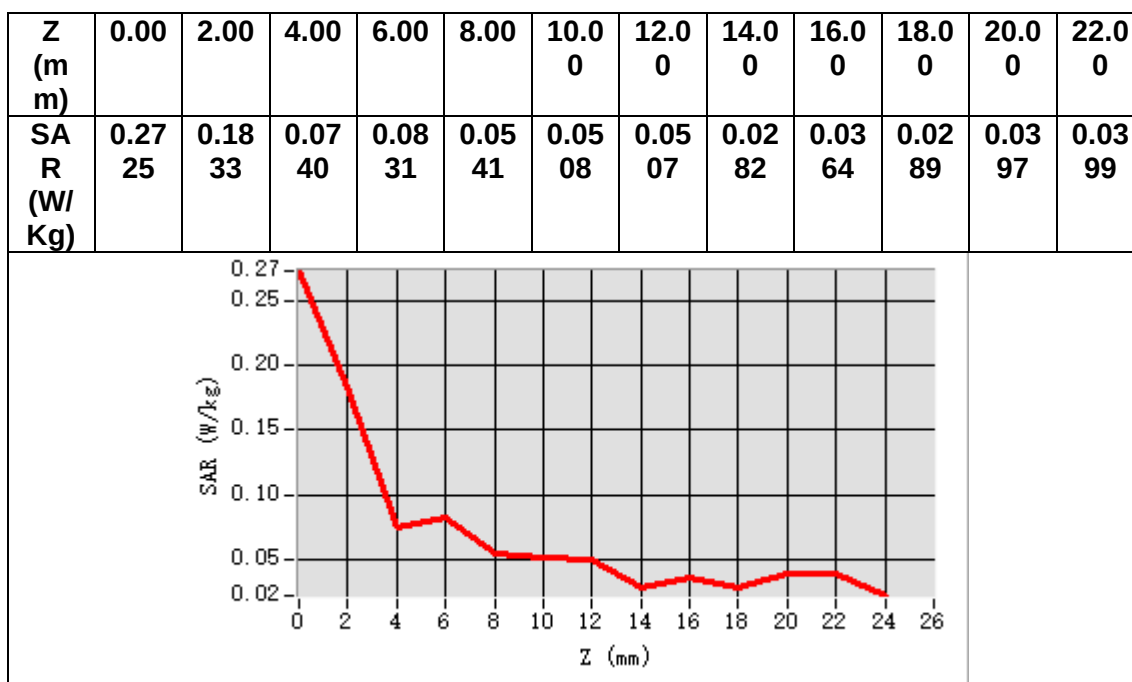
Frequency (MHz)	5230.000000
Relative permittivity (real part)	37.133411
Relative permittivity (imaginary part)	15.762918
Conductivity (S/m)	4.553732
Variation (%)	0.040000



Maximum location: X=-27.00, Y=34.00

SAR Peak: 0.48 W/kg

SAR 10g (W/Kg)	0.082139
SAR 1g (W/Kg)	0.158479



MEASUREMENT 14

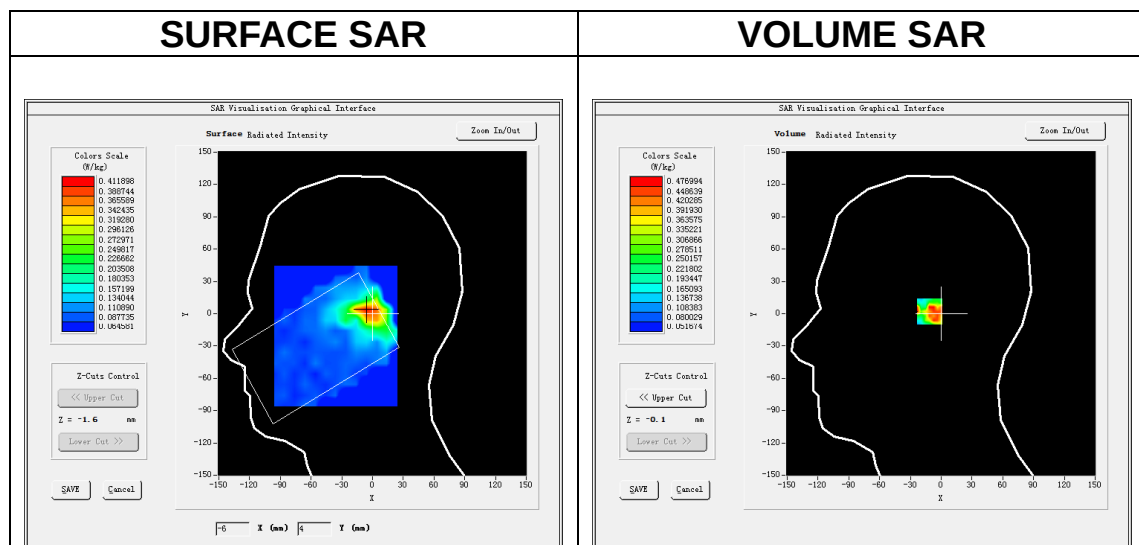
Date of measurement: 9/1/2025

A. Experimental conditions.

Area Scan	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
ZoomScan	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>IEEE 802.11a U-NII</u>
Channels	<u>Middle</u>
Signal	<u>IEEE802.11a (Crest factor: 1.0)</u>
ConvF	<u>1.90</u>

B. SAR Measurement Results

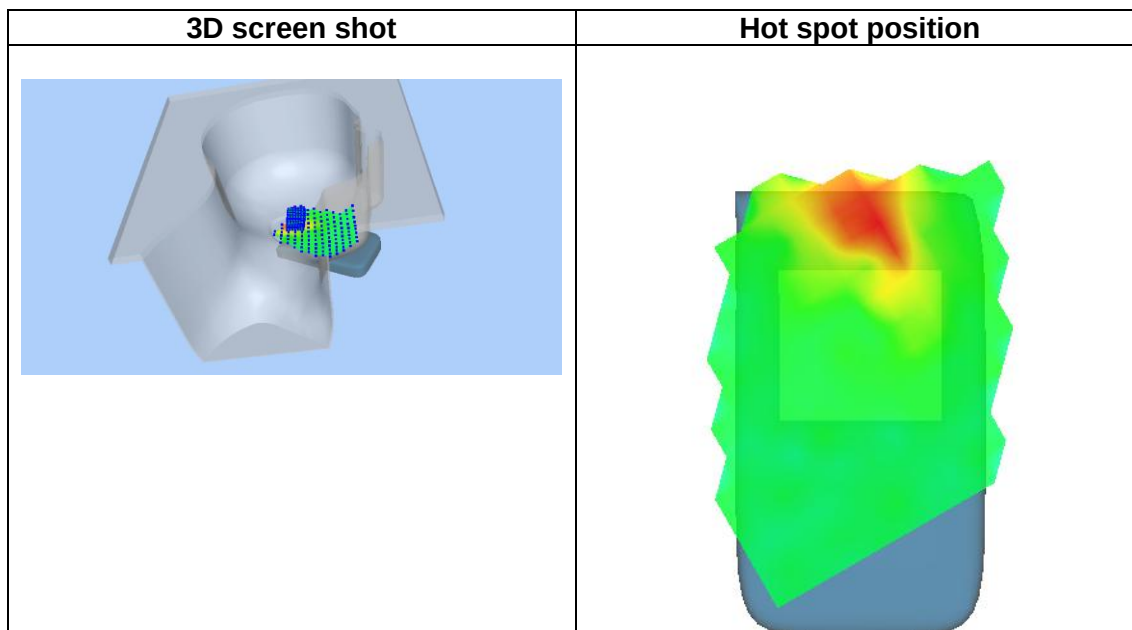
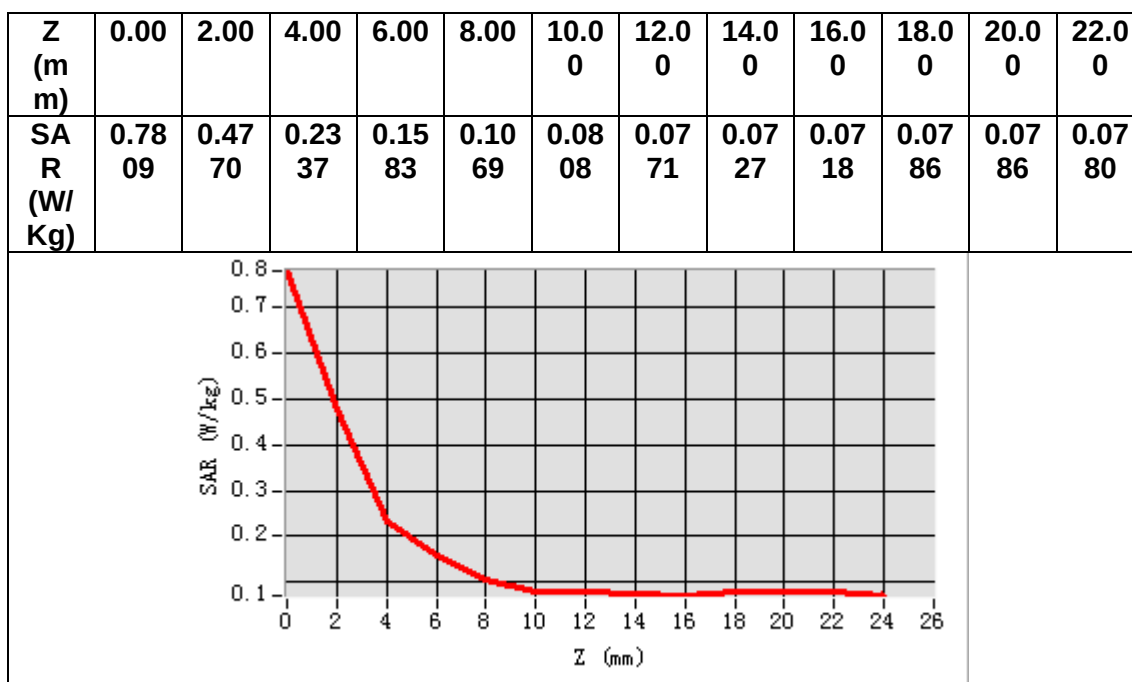
Frequency (MHz)	5785.000000
Relative permittivity (real part)	34.003571
Relative permittivity (imaginary part)	15.738214
Conductivity (S/m)	5.108087
Variation (%)	-1.850000



Maximum location: X=-6.00, Y=2.00

SAR Peak: 1.39 W/kg

SAR 10g (W/Kg)	0.199865
SAR 1g (W/Kg)	0.416915



MEASUREMENT 15

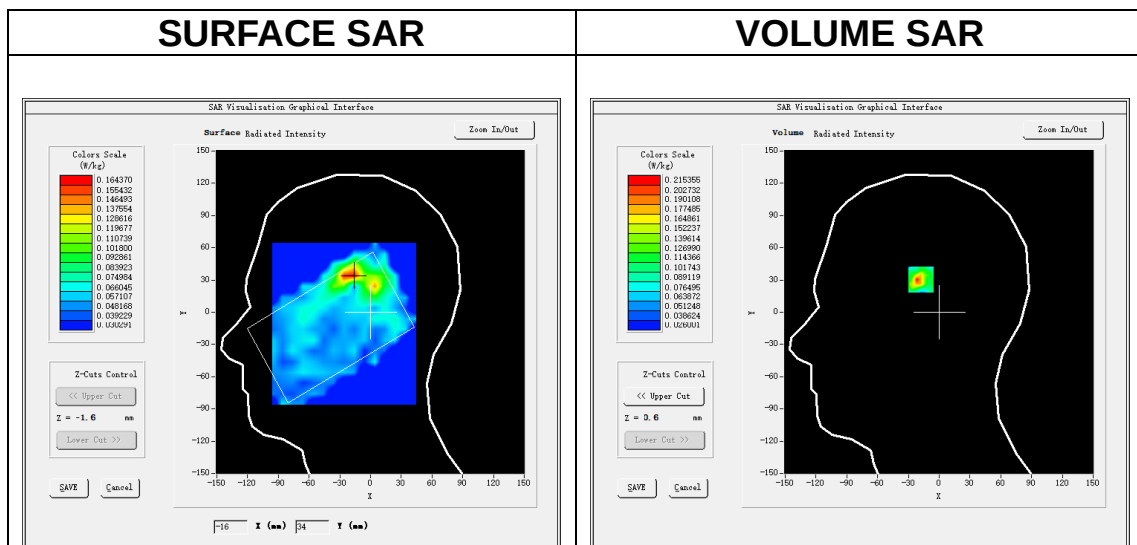
Date of measurement: 9/1/2025

A. Experimental conditions.

Area Scan	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
ZoomScan	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>IEEE 802.11ax U-NII</u>
Channels	<u>Middle</u>
Signal	<u>IEEE802.11ax (Crest factor: 1.0)</u>
ConvF	<u>1.90</u>

B. SAR Measurement Results

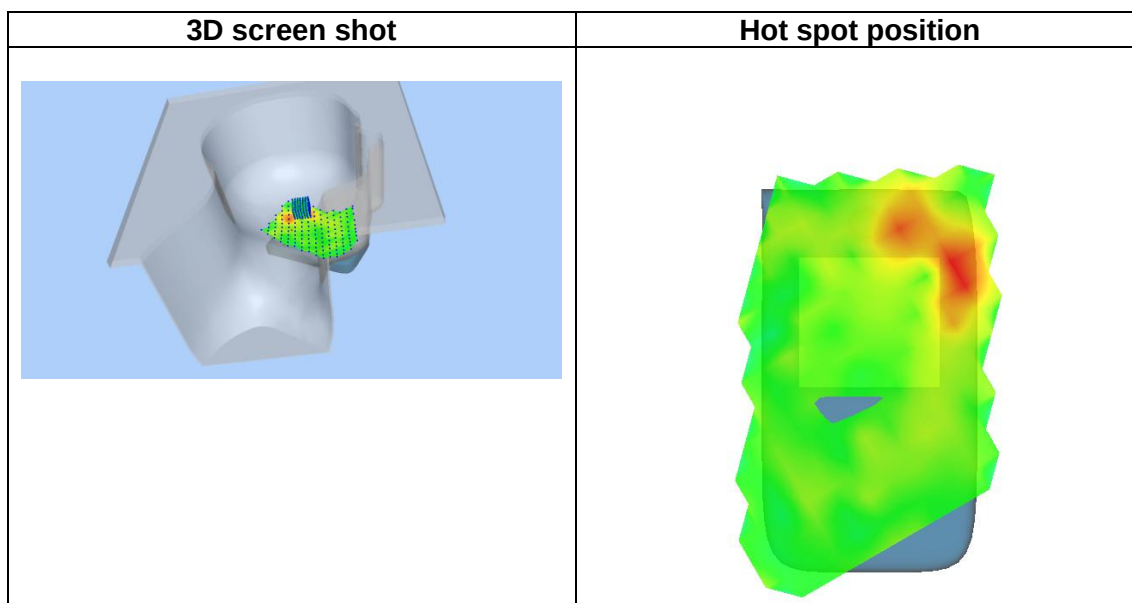
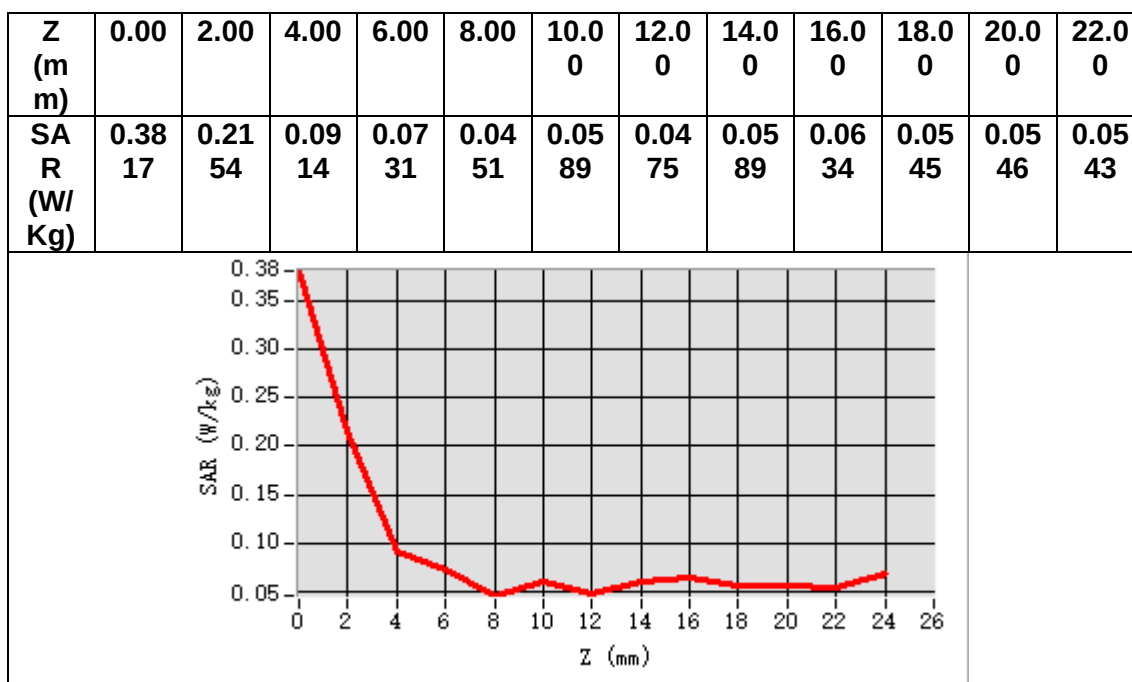
Frequency (MHz)	5795.000000
Relative permittivity (real part)	36.149654
Relative permittivity (imaginary part)	15.697167
Conductivity (S/m)	5.044895
Variation (%)	4.240000



Maximum location: X=-18.00, Y=36.00

SAR Peak: 0.56 W/kg

SAR 10g (W/Kg)	0.090936
SAR 1g (W/Kg)	0.191686



MEASUREMENT 16

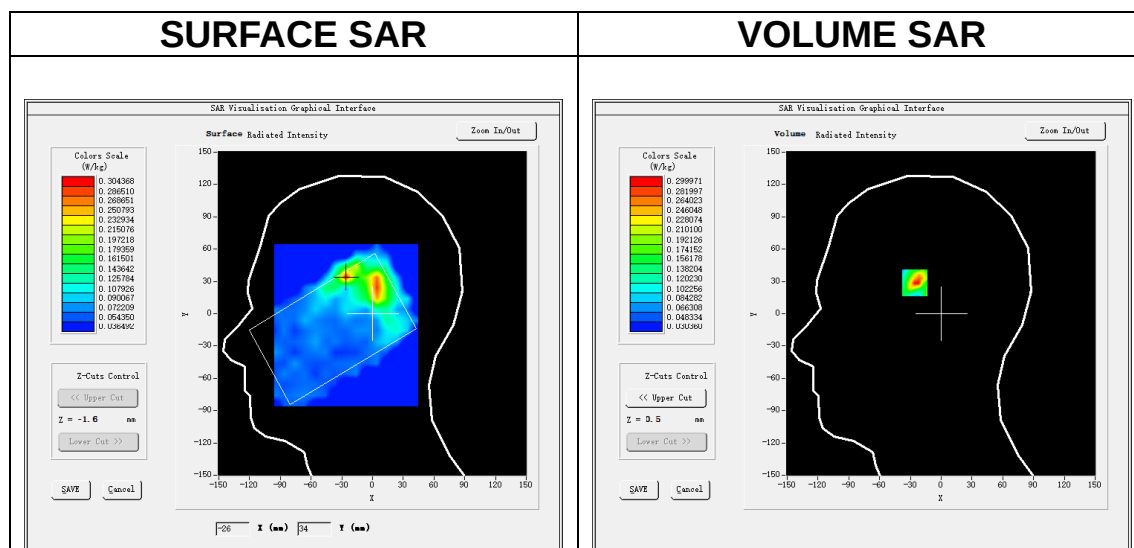
Date of measurement: 9/1/2025

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 802.11n U-NII</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>IEEE802.11n (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.90</u>

B. SAR Measurement Results

Frequency (MHz)	5795.000000
Relative permittivity (real part)	36.149654
Relative permittivity (imaginary part)	15.697167
Conductivity (S/m)	5.044895
Variation (%)	-1.500000

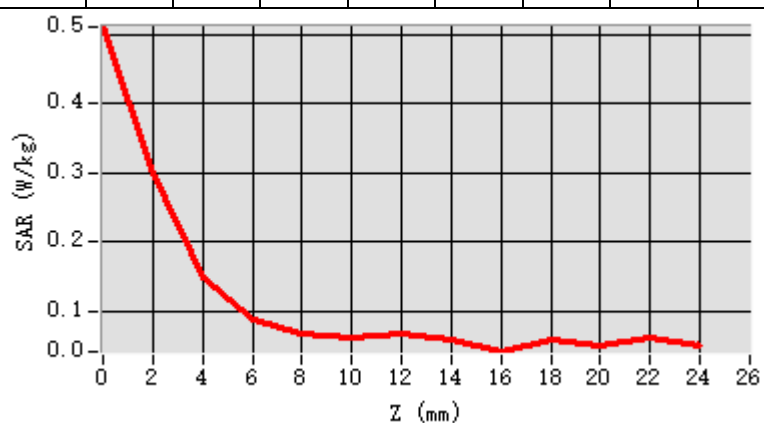


Maximum location: X=-26.00, Y=34.00

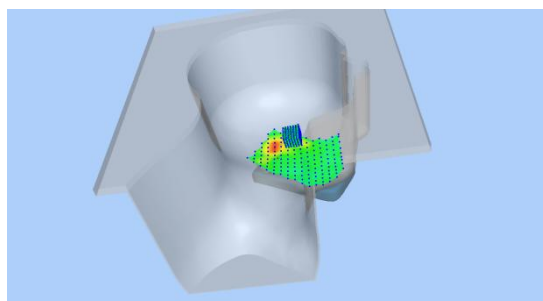
SAR Peak: 0.85 W/kg

SAR 10g (W/Kg)	0.126827
SAR 1g (W/Kg)	0.285675

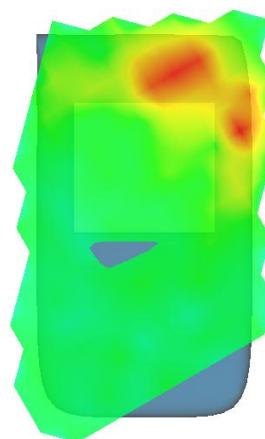
Z (m m)	0.00	2.00	4.00	6.00	8.00	10.0 0	12.0 0	14.0 0	16.0 0	18.0 0	20.0 0	22.0 0
SAR (W/ Kg)	0.51 02	0.30 00	0.14 79	0.08 69	0.06 59	0.06 08	0.06 57	0.05 73	0.04 07	0.05 70	0.04 83	0.05 96



3D screen shot



Hot spot position



MEASUREMENT 17

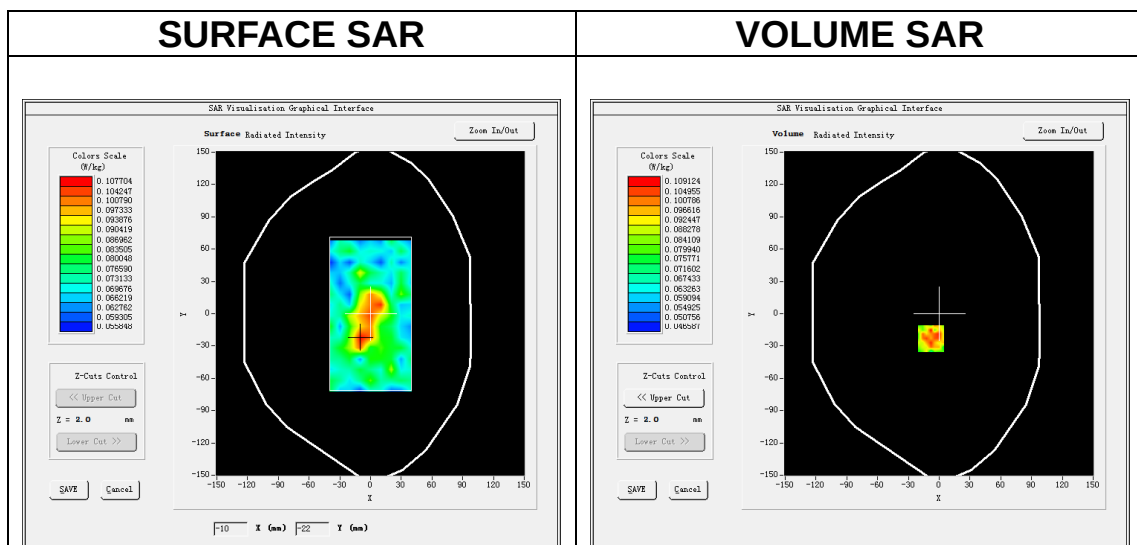
Date of measurement: 10/1/2025

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>Low</u>
<u>Band</u>	<u>IEEE 802.11ax U-NII</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>IEEE802.11ax (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.89</u>

B. SAR Measurement Results

Frequency (MHz)	5200.000000
Relative permittivity (real part)	34.850006
Relative permittivity (imaginary part)	15.738512
Conductivity (S/m)	4.546681
Variation (%)	-1.920000

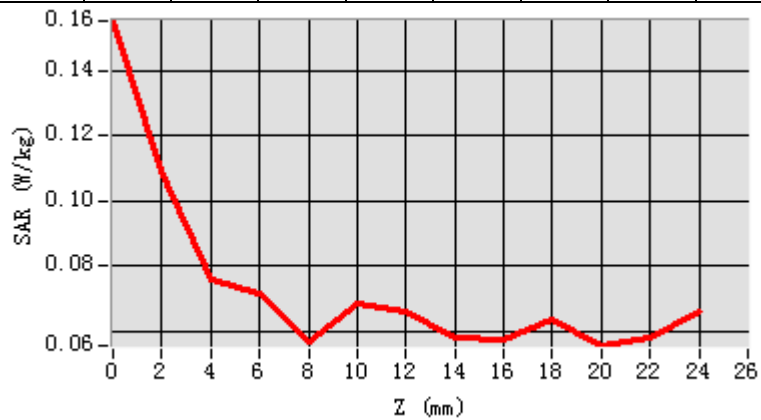


Maximum location: X=-8.00, Y=-23.00

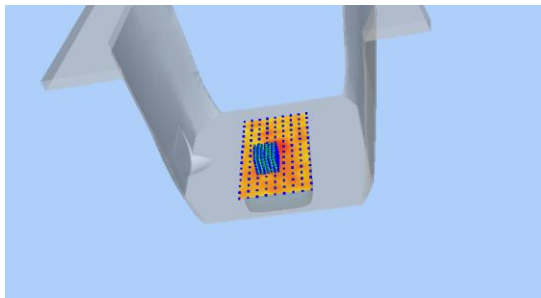
SAR Peak: 0.17 W/kg

SAR 10g (W/Kg)	0.073113
SAR 1g (W/Kg)	0.085866

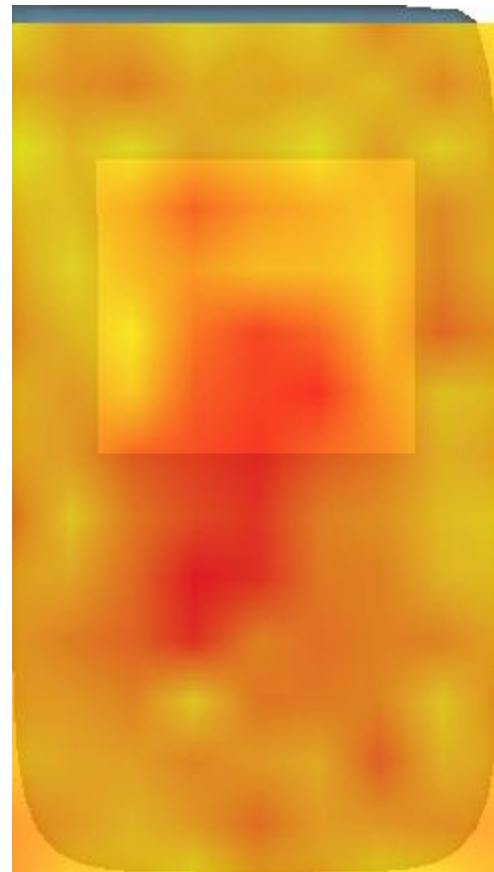
Z (m m)	0.00	2.00	4.00	6.00	8.00	10.0 0	12.0 0	14.0 0	16.0 0	18.0 0	20.0 0	22.0 0
SAR (W/ Kg)	0.15 52	0.10 91	0.07 58	0.07 20	0.05 73	0.06 87	0.06 63	0.05 82	0.05 77	0.06 34	0.05 57	0.05 83



3D screen shot



Hot spot position



MEASUREMENT 18

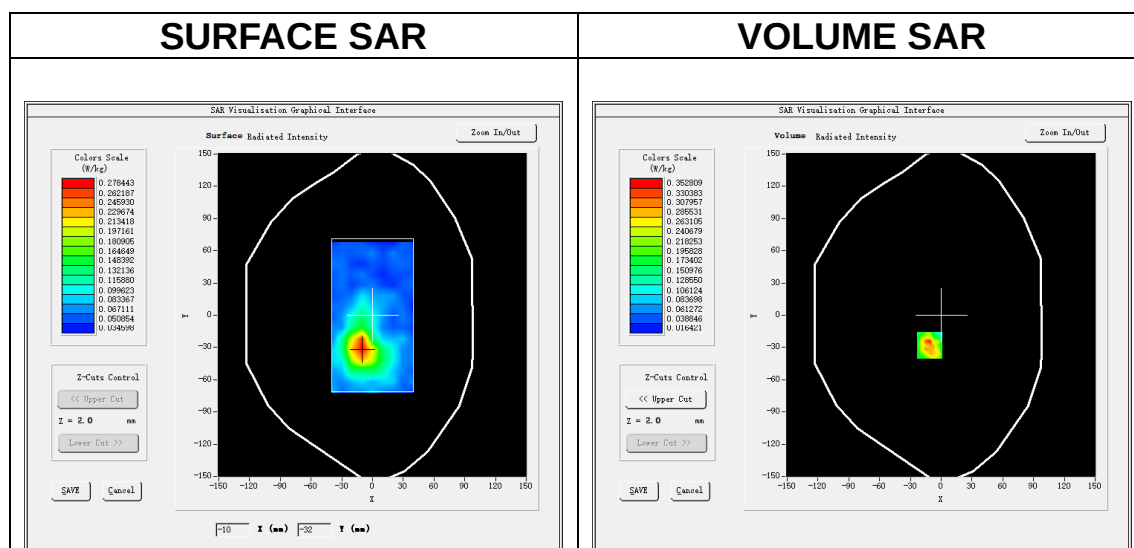
Date of measurement: 4/3/2025

A. Experimental conditions.

Area Scan	<u>dx=10mm dy=10mm, h= 2.00 mm</u>
ZoomScan	<u>7x7x12,dx=4mm dy=4mm dz=2mm</u>
Phantom	<u>Validation plane</u>
Device Position	<u>Body</u>
Band	<u>IEEE 802.11a U-NII</u>
Channels	<u>Middle</u>
Signal	<u>IEEE802.11ax (Crest factor: 1.0)</u>
ConvF	<u>1.89</u>

B. SAR Measurement Results

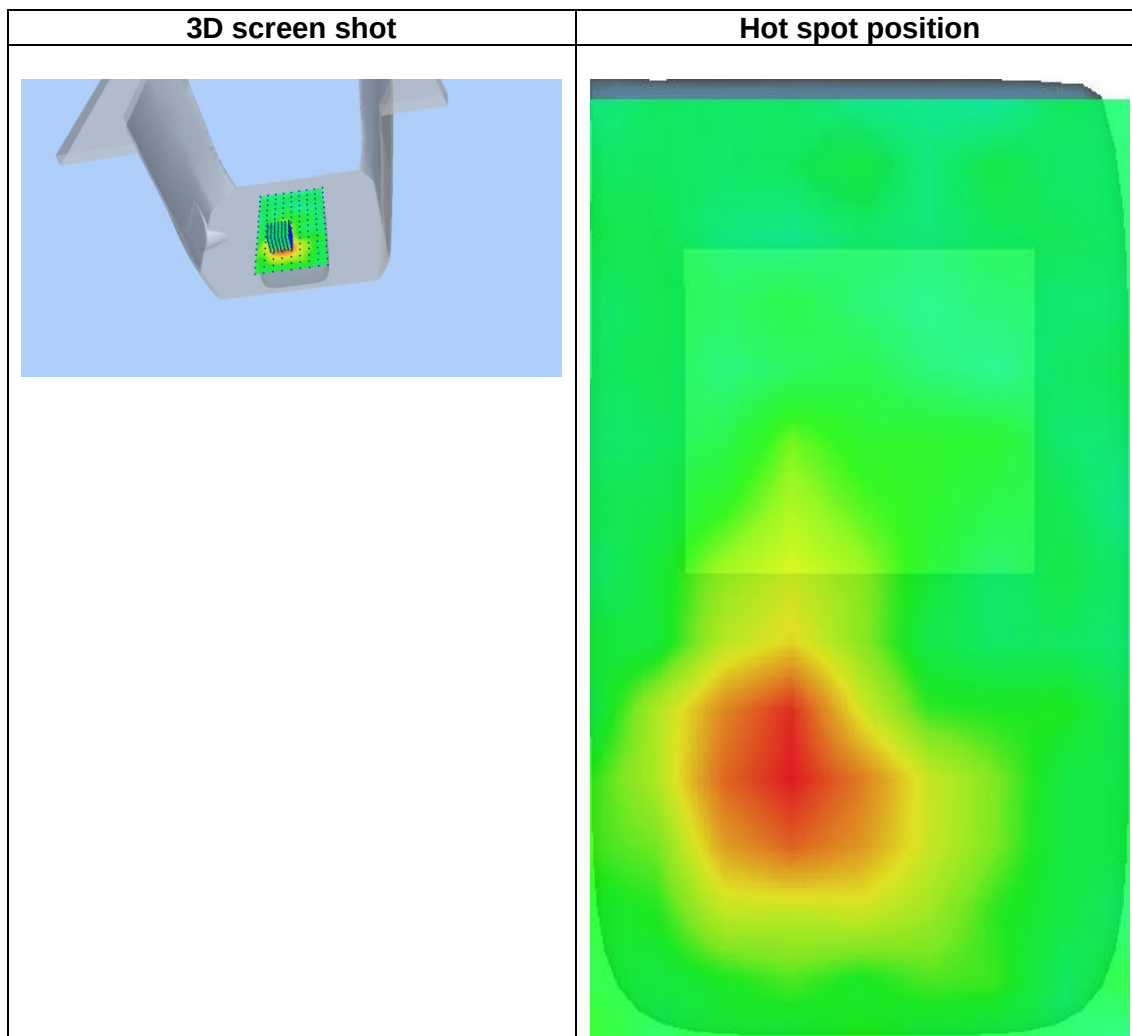
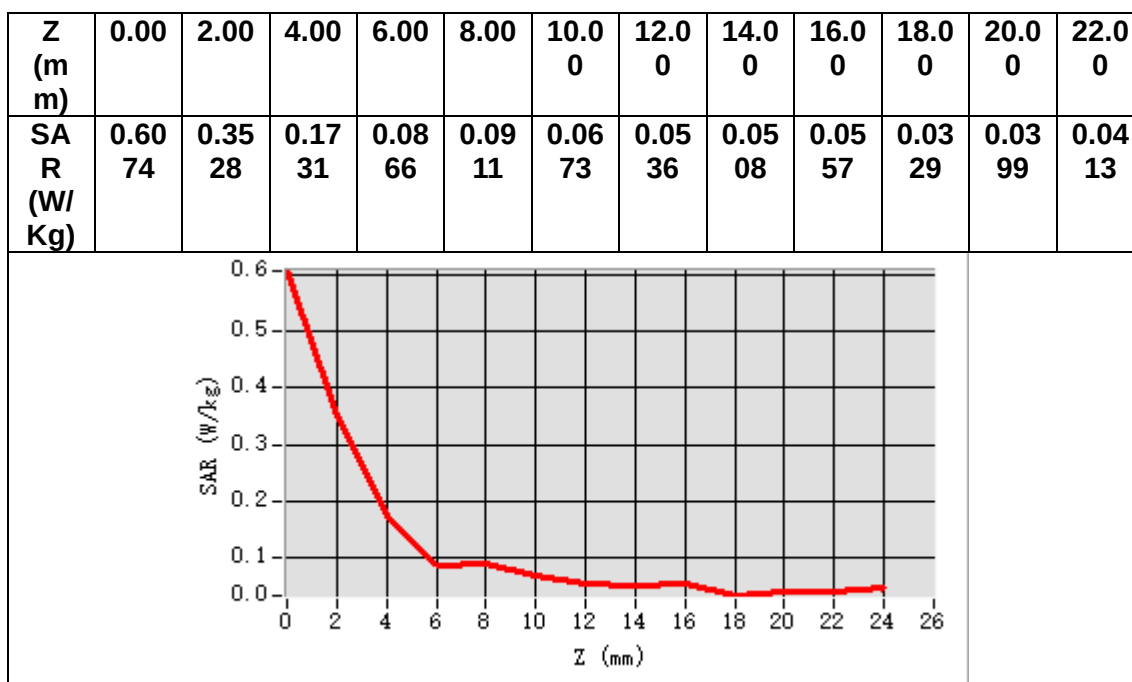
Frequency (MHz)	5240.000000
Relative permittivity (real part)	37.133411
Relative permittivity (imaginary part)	15.762918
Conductivity (S/m)	4.553732
Variation (%)	-0.090000



Maximum location: X=-11.00, Y=-28.00

SAR Peak: 0.65 W/kg

SAR 10g (W/Kg)	0.103403
SAR 1g (W/Kg)	0.195184



MEASUREMENT 19

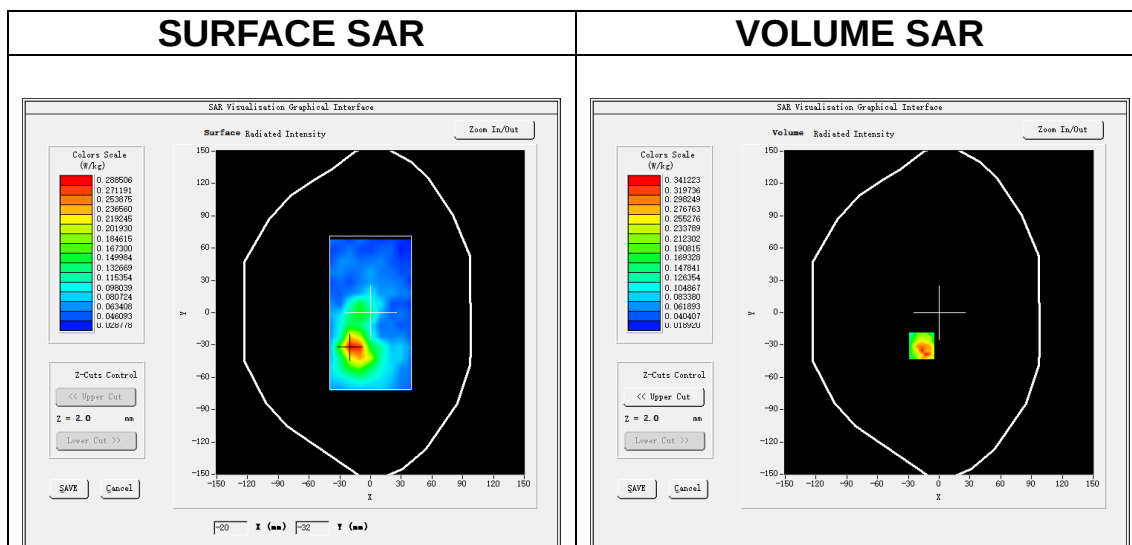
Date of measurement: 4/3/2025

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 802.11a U-NII</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>IEEE802.11ac (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.89</u>

B. SAR Measurement Results

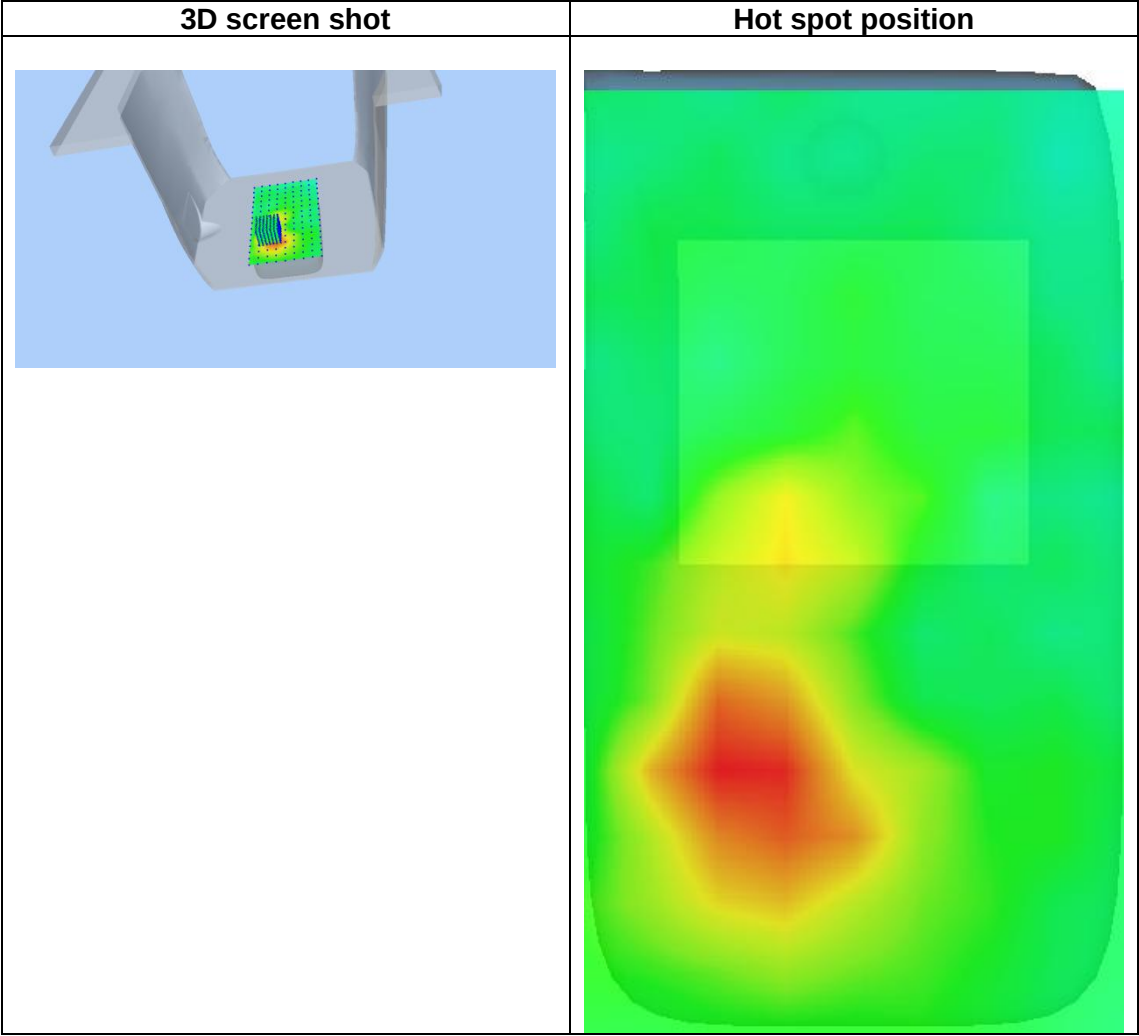
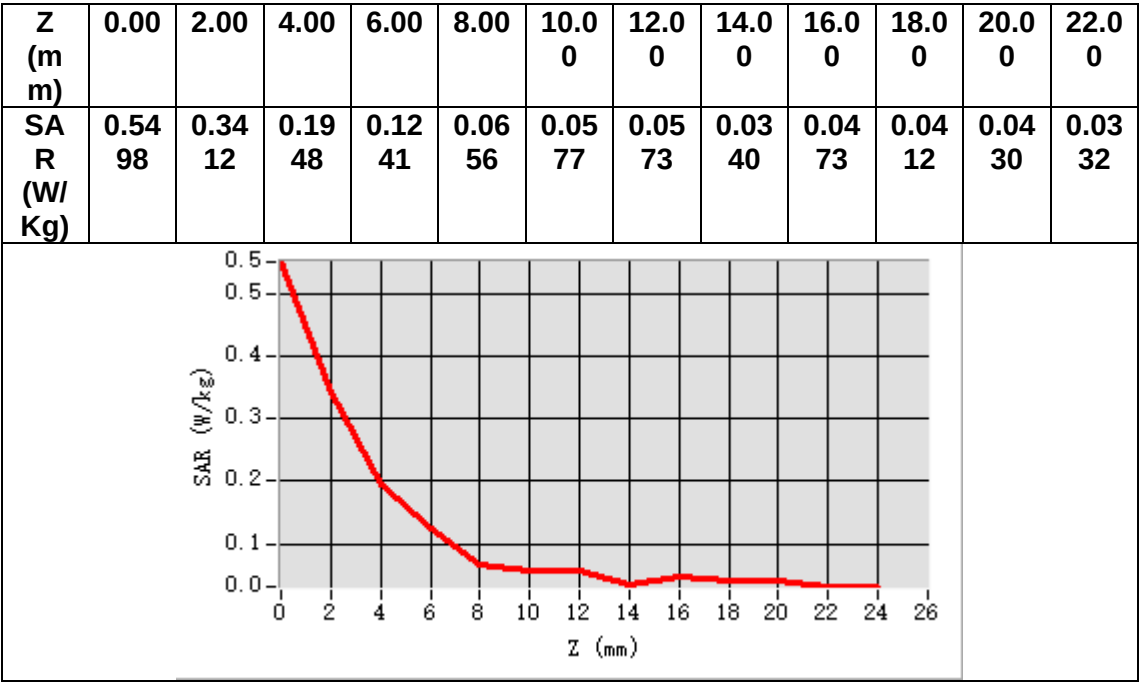
Frequency (MHz)	5230.000000
Relative permittivity (real part)	37.133411
Relative permittivity (imaginary part)	15.762918
Conductivity (S/m)	4.553732
Variation (%)	-0.750000



Maximum location: X=-17.00, Y=-31.00

SAR Peak: 0.61 W/kg

SAR 10g (W/Kg)	0.104683
SAR 1g (W/Kg)	0.199871



MEASUREMENT 20

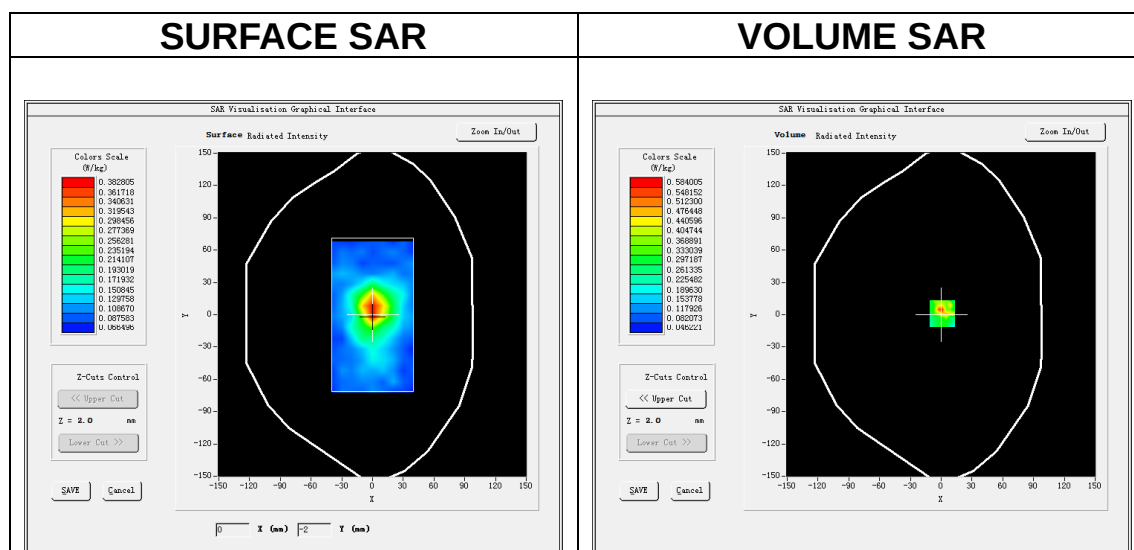
Date of measurement: 9/1/2025

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 802.11a U-NII</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>IEEE802.a (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.90</u>

B. SAR Measurement Results

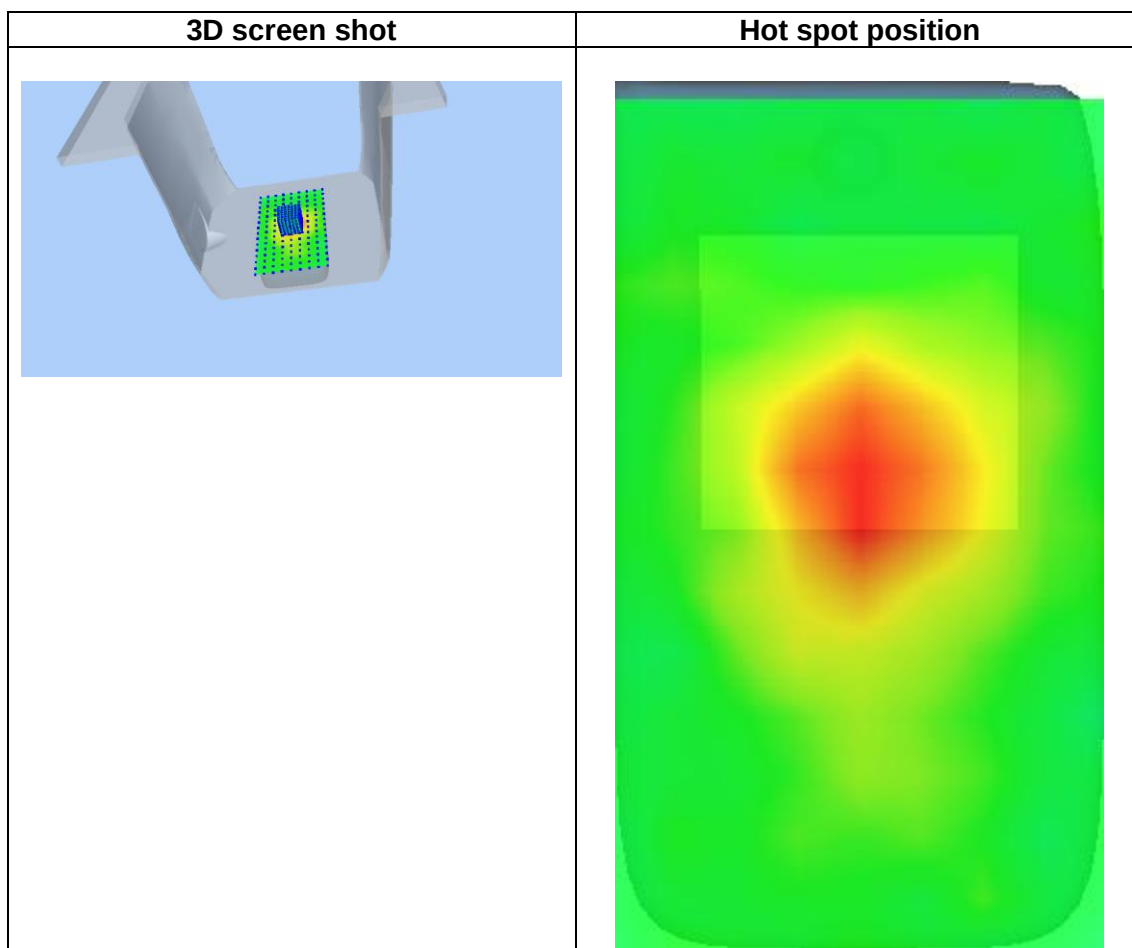
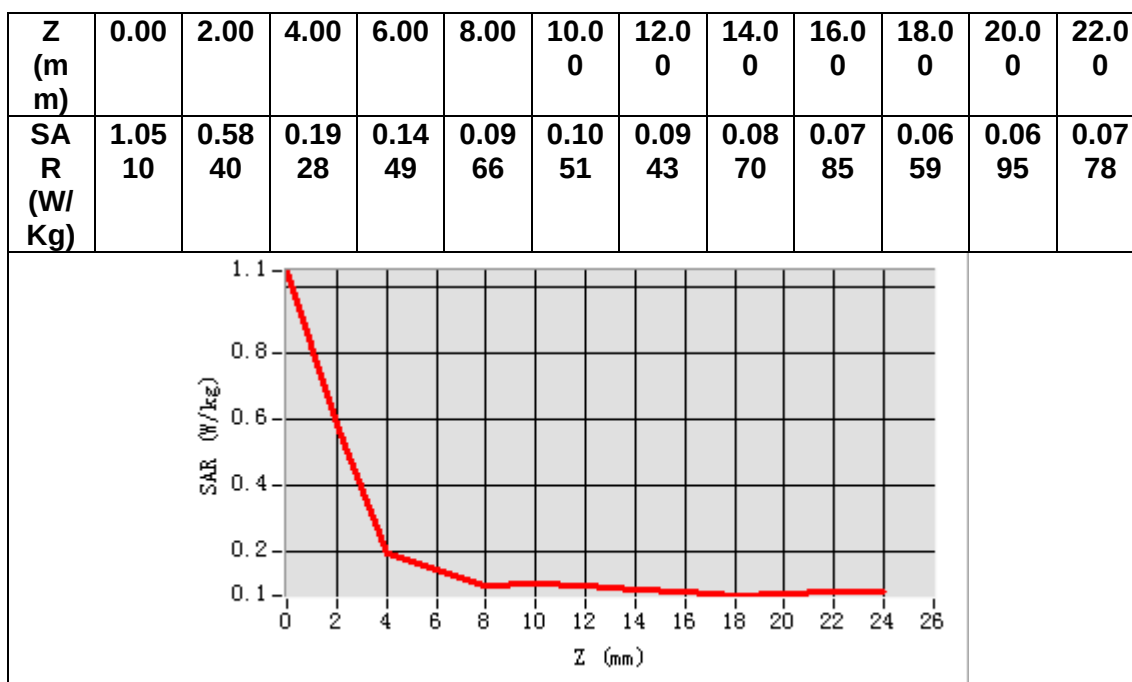
Frequency (MHz)	5785.000000
Relative permittivity (real part)	34.079571
Relative permittivity (imaginary part)	15.738214
Conductivity (S/m)	5.058087
Variation (%)	0.830000



Maximum location: X=1.00, Y=1.00

SAR Peak: 1.12 W/kg

SAR 10g (W/Kg)	0.159723
SAR 1g (W/Kg)	0.313518



MEASUREMENT 21

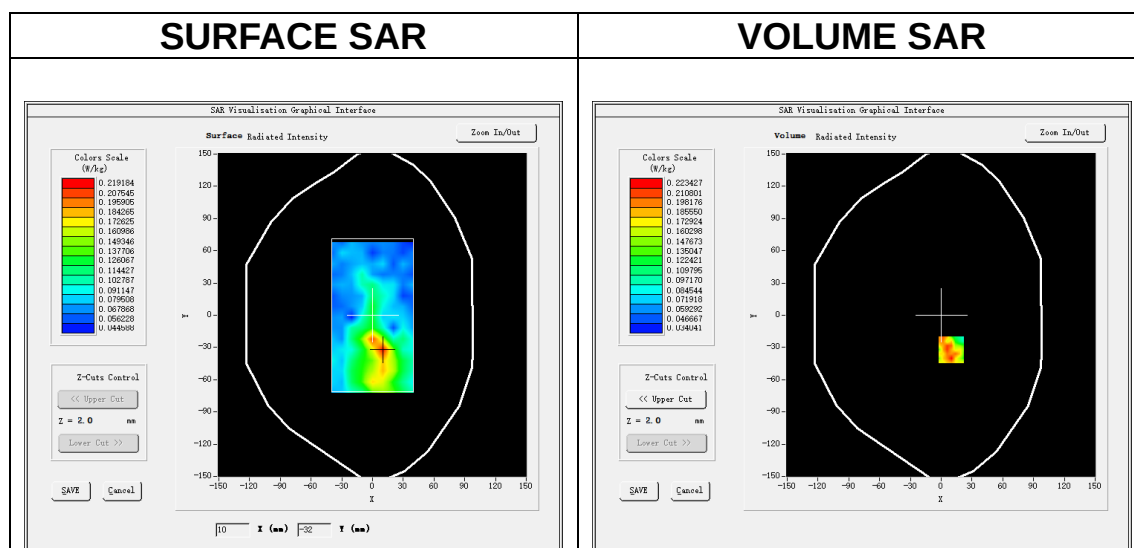
Date of measurement: 9/1/2025

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 802.11ax U-NII</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>IEEE802.11ax (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.90</u>

B. SAR Measurement Results

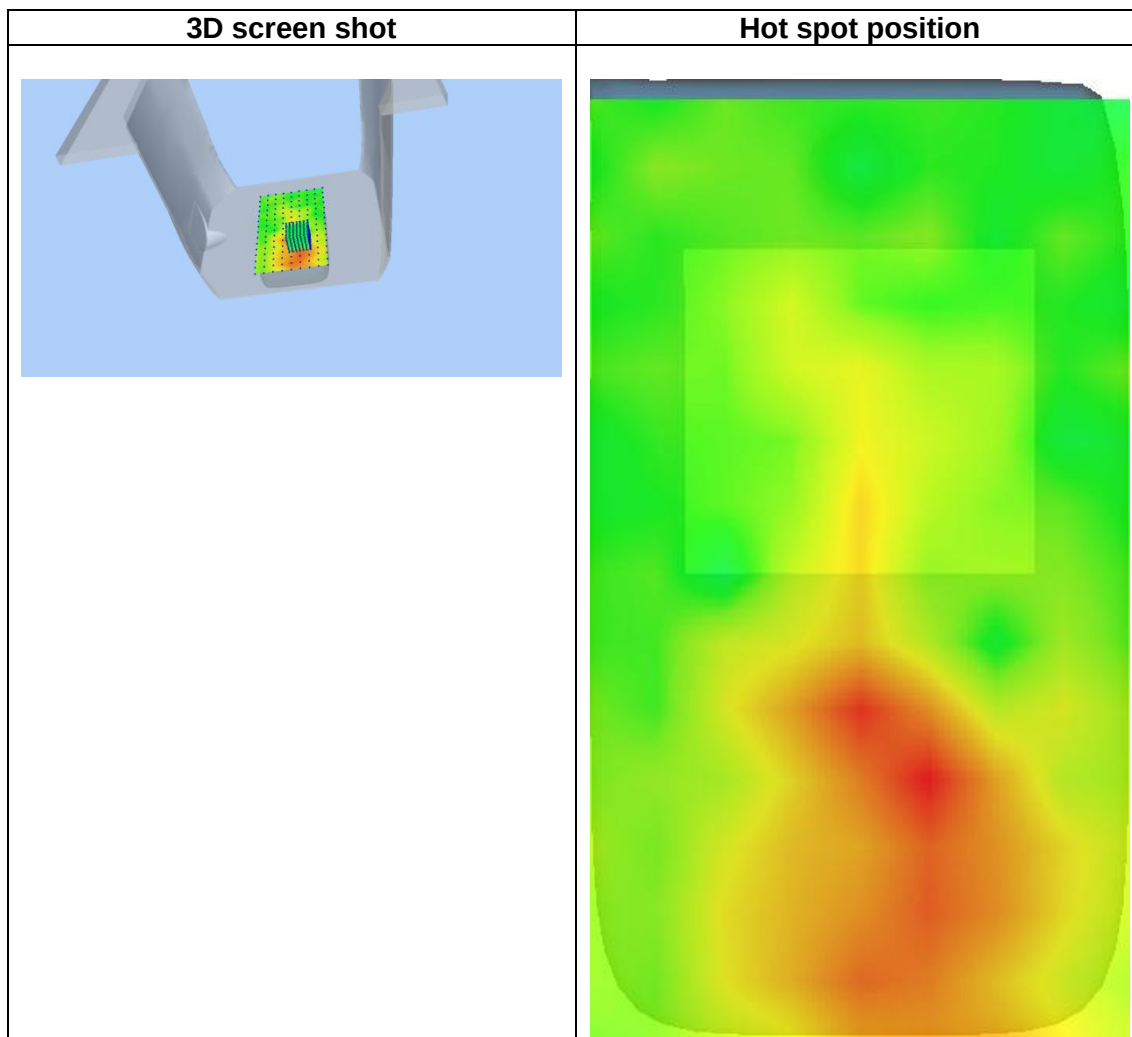
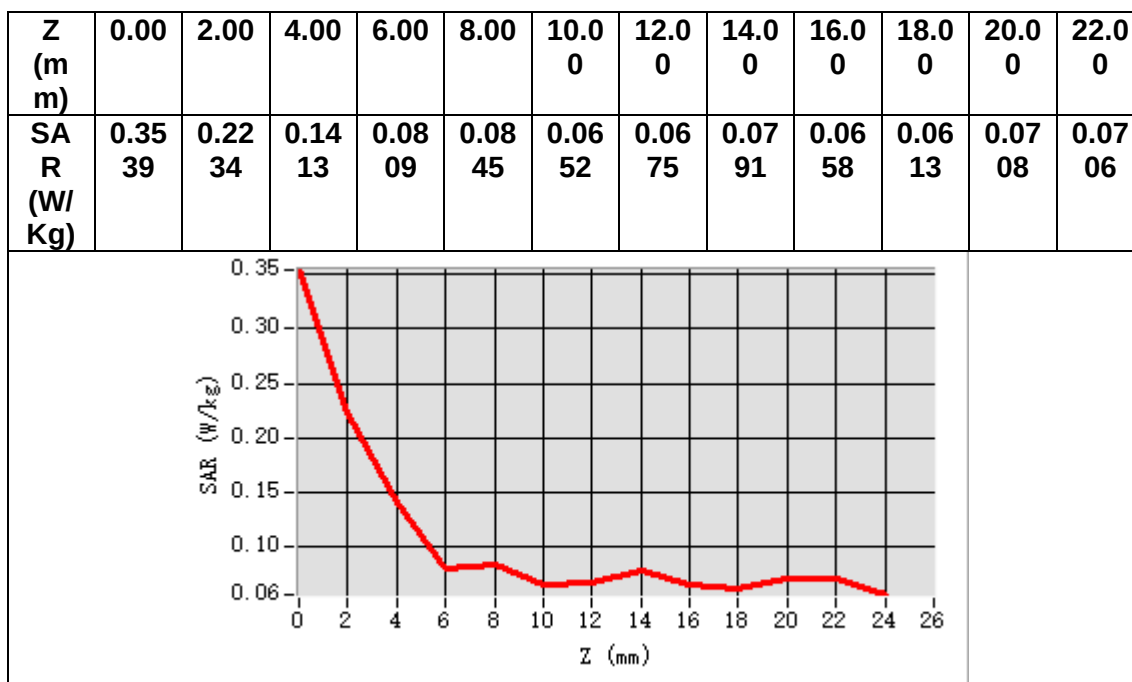
Frequency (MHz)	5795.000000
Relative permittivity (real part)	36.149654
Relative permittivity (imaginary part)	15.697167
Conductivity (S/m)	5.044895
Variation (%)	-4.640000



Maximum location: X=10.00, Y=-32.00

SAR Peak: 0.40 W/kg

SAR 10g (W/Kg)	0.095565
SAR 1g (W/Kg)	0.146719



MEASUREMENT 22

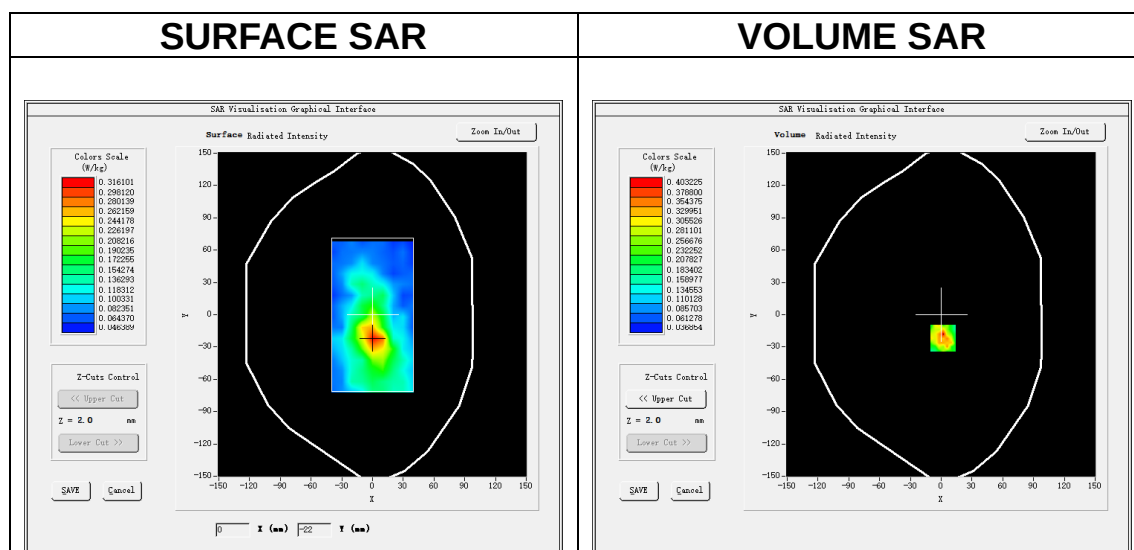
Date of measurement: 9/1/2025

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 802.11n U-NII</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>IEEE802.11n (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>1.90</u>

B. SAR Measurement Results

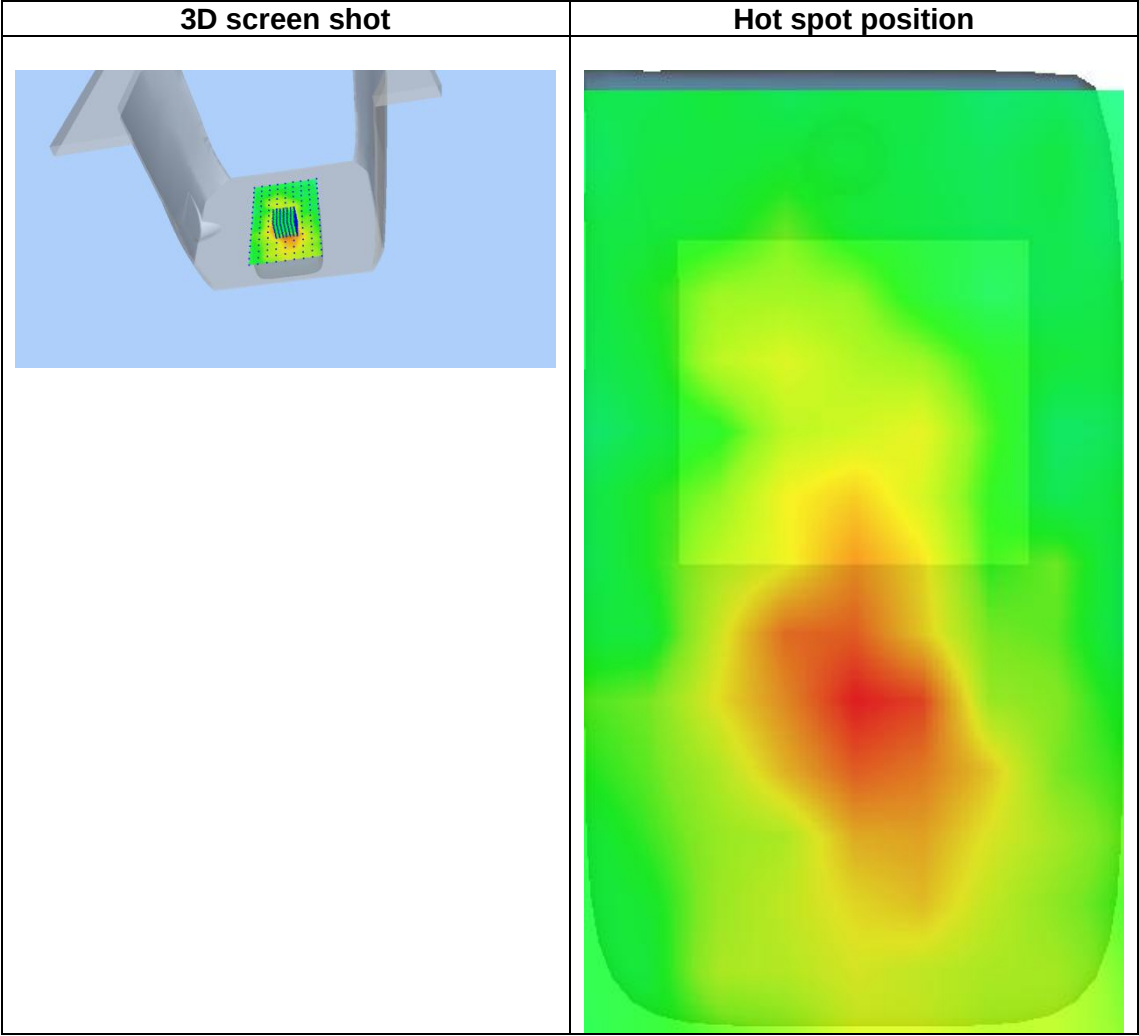
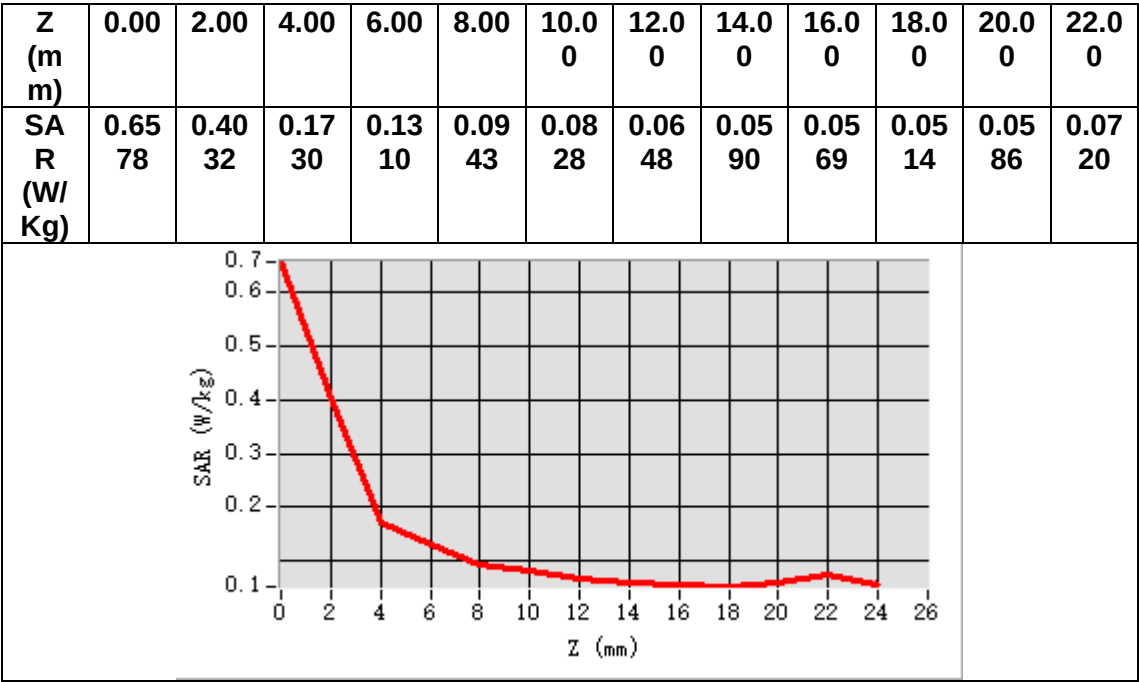
Frequency (MHz)	5795.000000
Relative permittivity (real part)	36.149654
Relative permittivity (imaginary part)	15.697167
Conductivity (S/m)	5.044895
Variation (%)	-3.410000



Maximum location: X=2.00, Y=-22.00

SAR Peak: 0.70 W/kg

SAR 10g (W/Kg)	0.125512
SAR 1g (W/Kg)	0.224464



MEASUREMENT 23

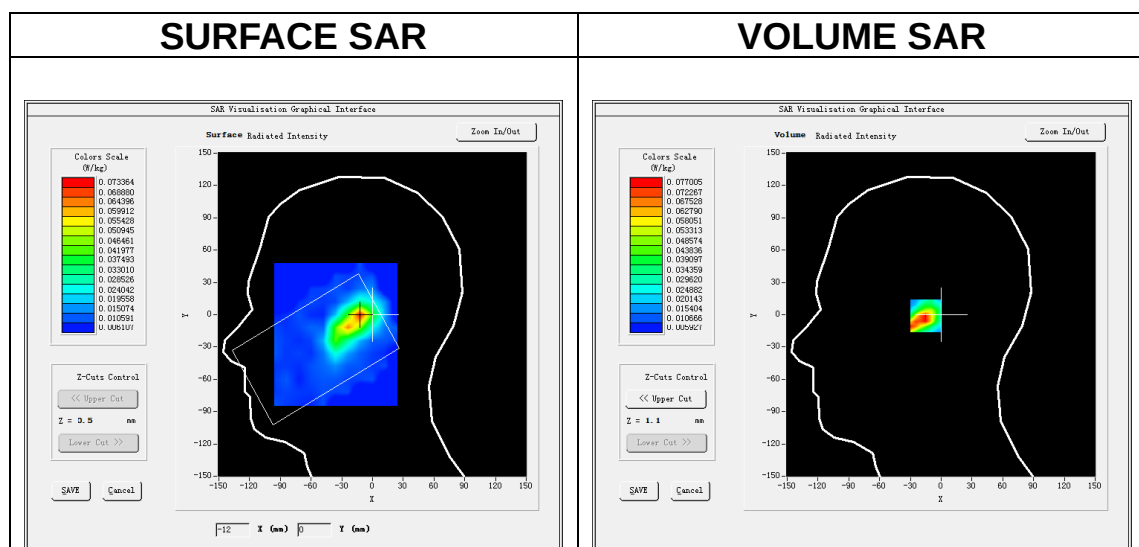
Date of measurement: 13/1/2025

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>2.74</u>

B. SAR Measurement Results

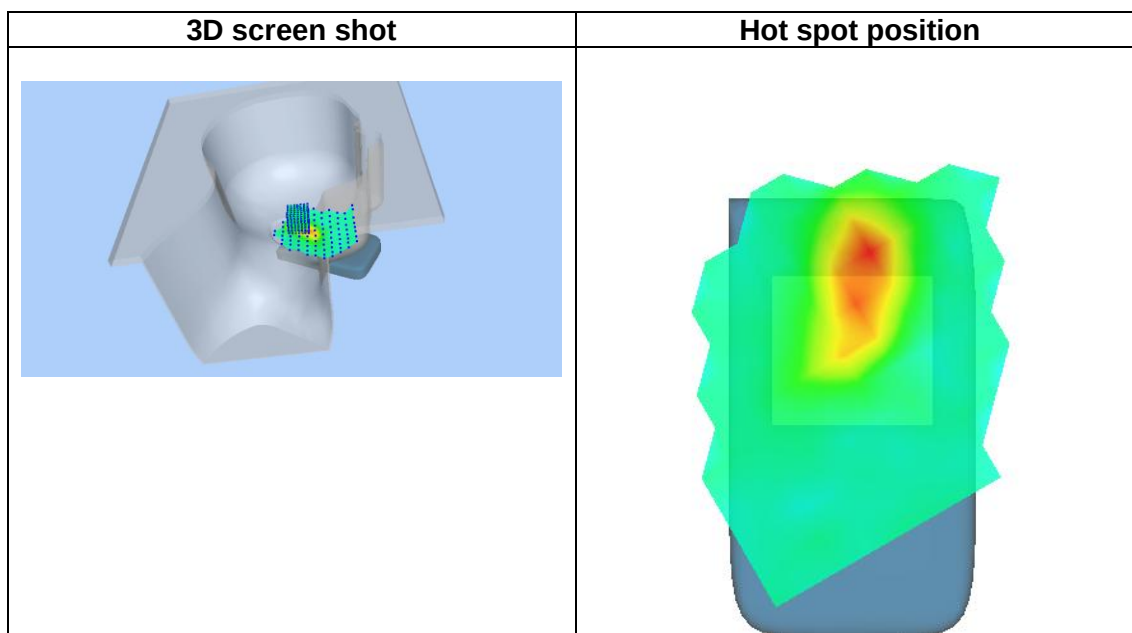
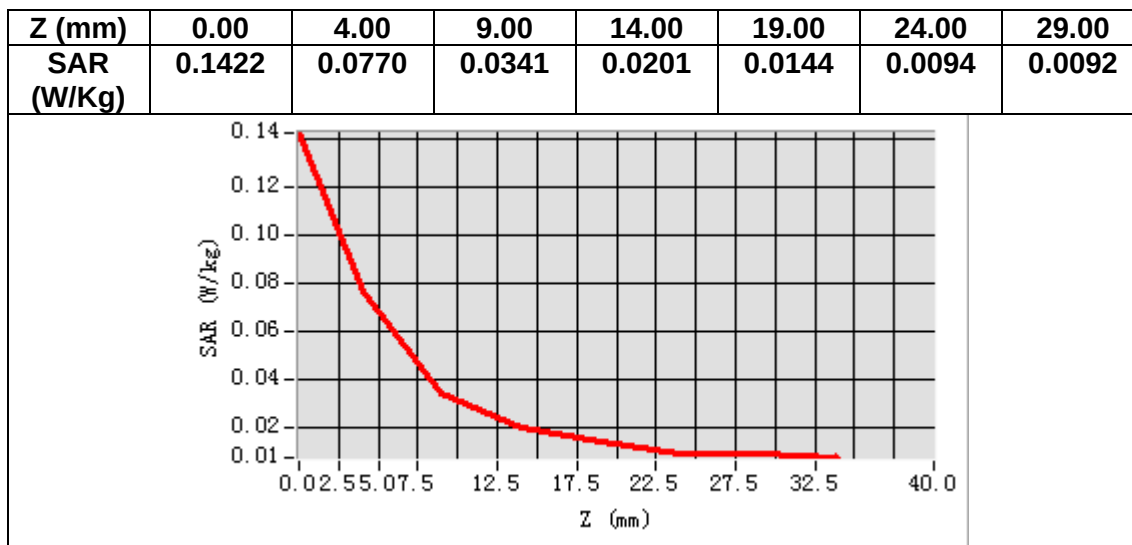
Frequency (MHz)	2437.000000
Relative permittivity (real part)	37.784435
Relative permittivity (imaginary part)	12.766513
Conductivity (S/m)	1.728444
Variation (%)	0.610000



Maximum location: X=-12.00, Y=-1.00

SAR Peak: 0.15 W/kg

SAR 10g (W/Kg)	0.034122
SAR 1g (W/Kg)	0.071678



MEASUREMENT 24

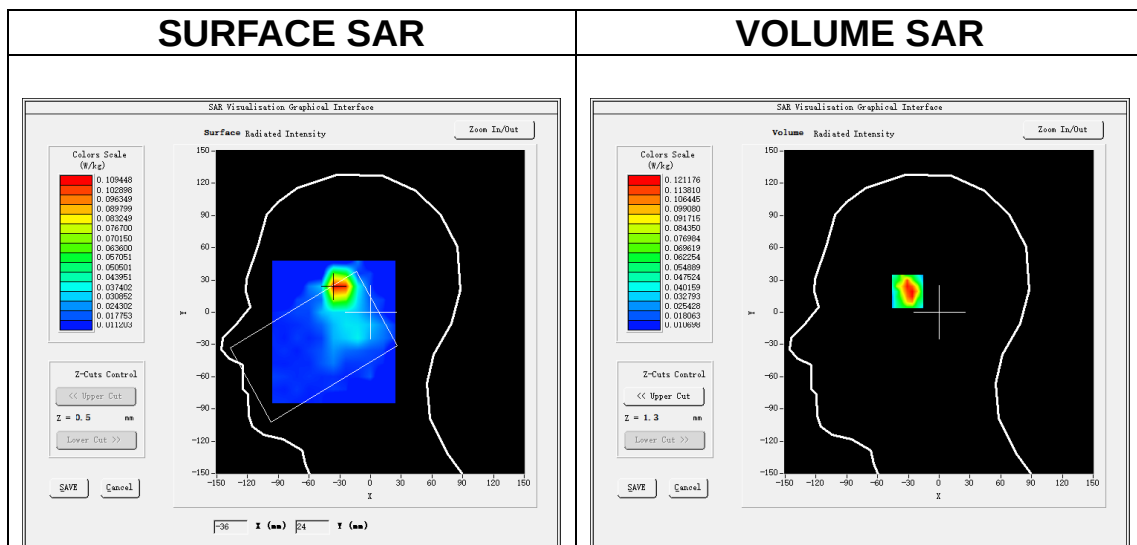
Date of measurement: 13/1/2025

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>2.74</u>

B. SAR Measurement Results

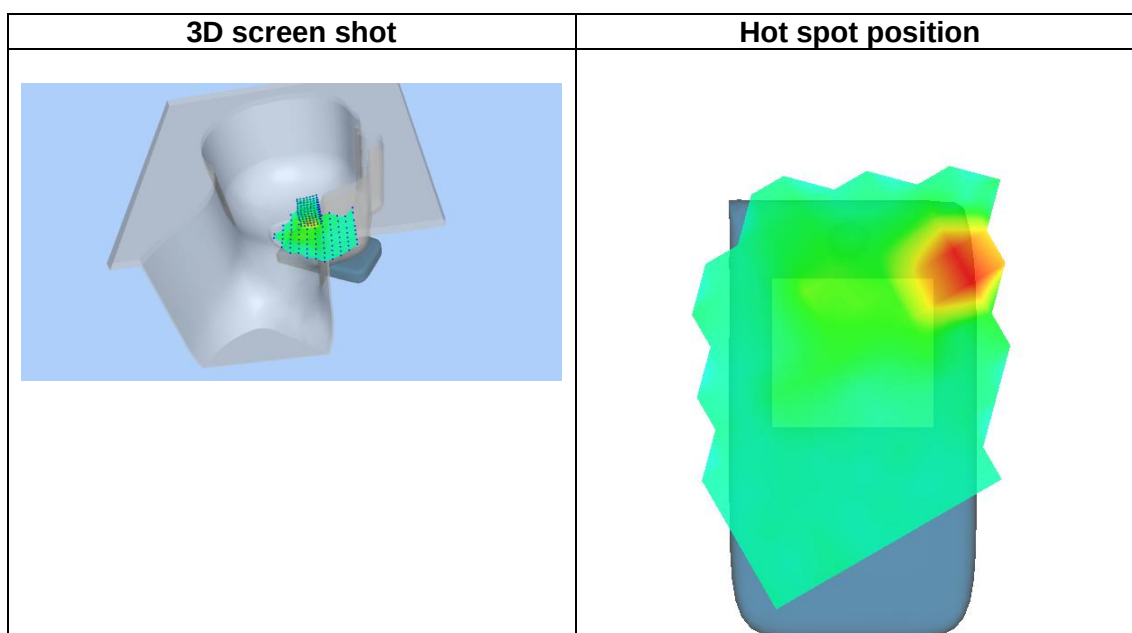
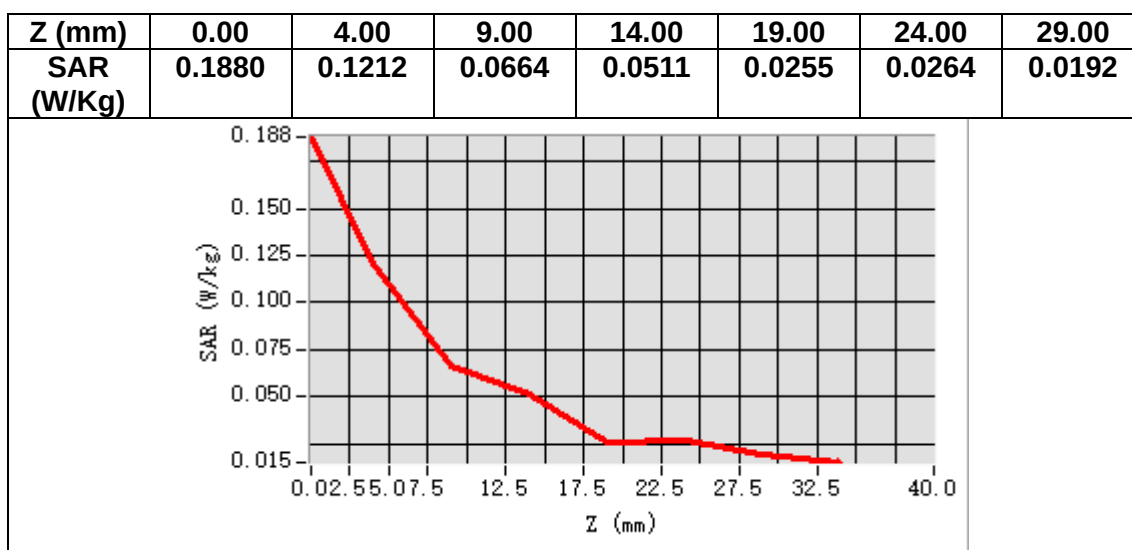
Frequency (MHz)	2437.000000
Relative permittivity (real part)	37.784435
Relative permittivity (imaginary part)	12.766513
Conductivity (S/m)	1.728444
Variation (%)	-2.230000



Maximum location: X=-31.00, Y=23.00

SAR Peak: 0.20 W/kg

SAR 10g (W/Kg)	0.059575
SAR 1g (W/Kg)	0.107158



MEASUREMENT 25

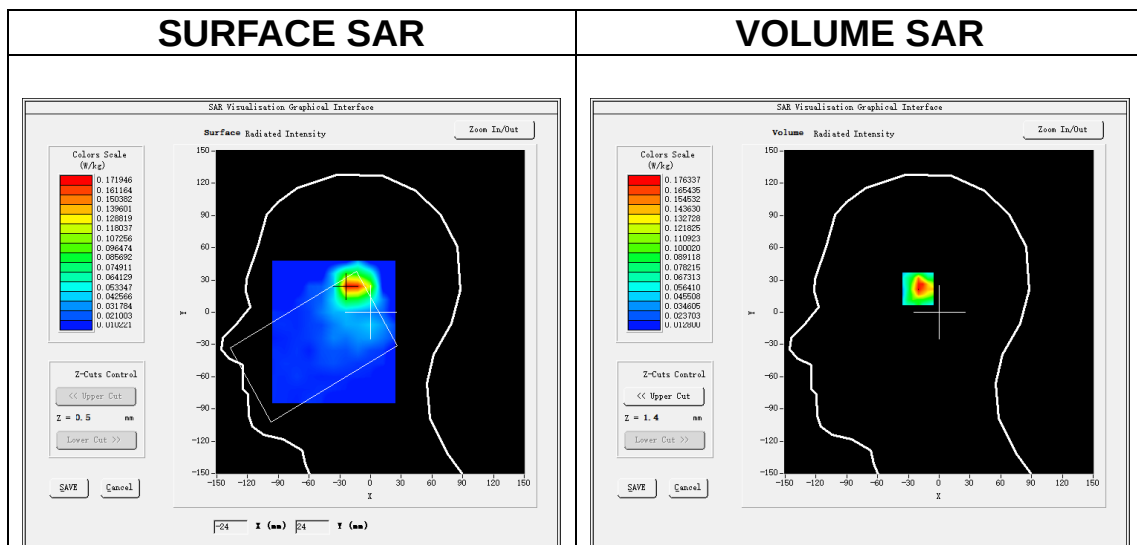
Date of measurement: 13/1/2025

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>2.74</u>

B. SAR Measurement Results

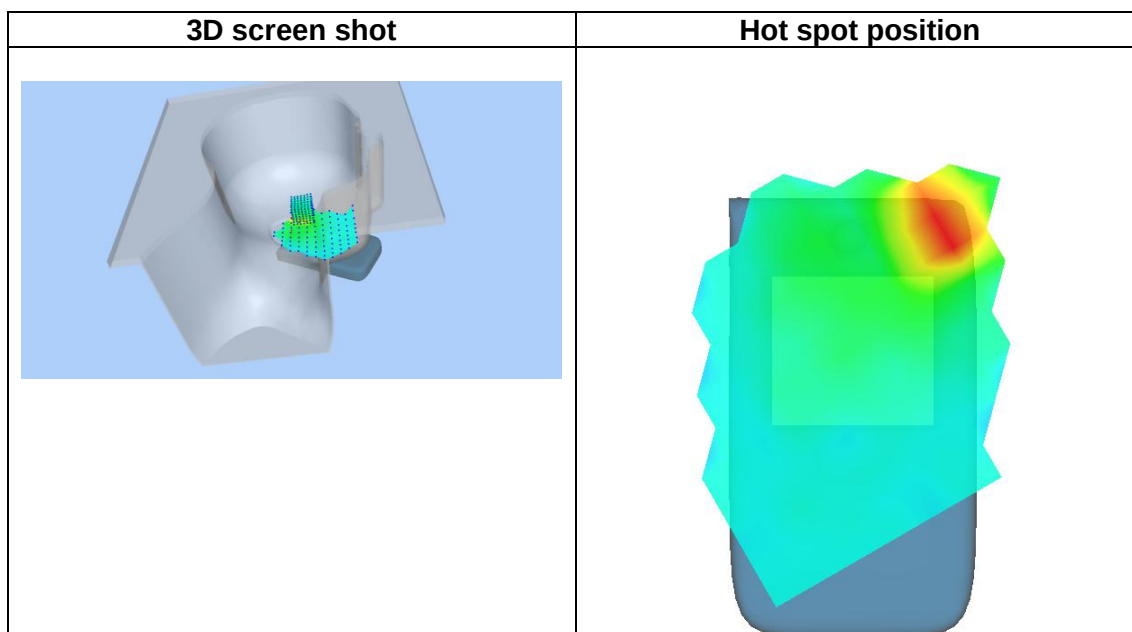
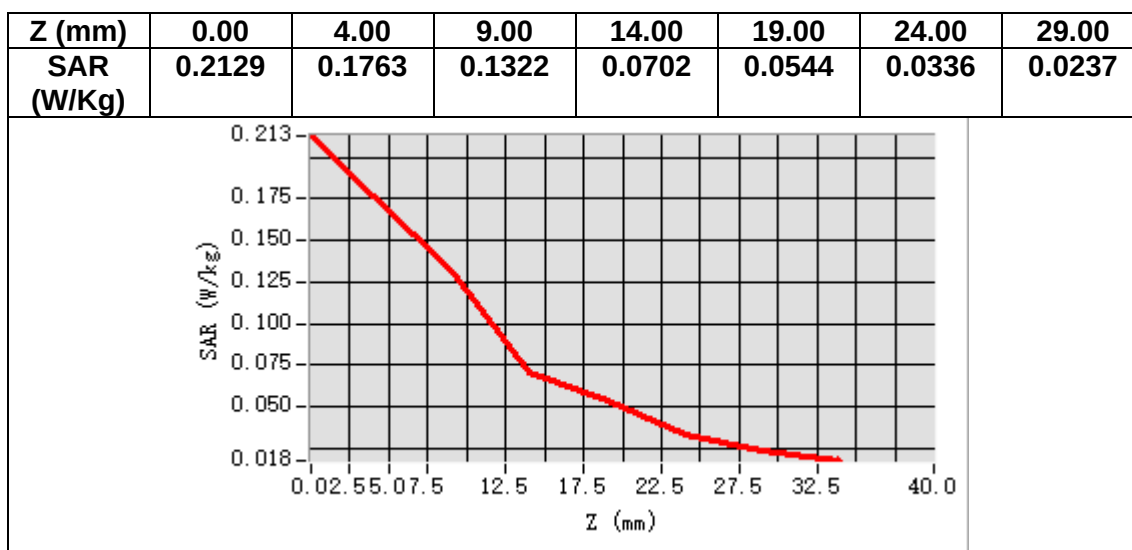
Frequency (MHz)	2437.000000
Relative permittivity (real part)	37.784435
Relative permittivity (imaginary part)	12.766513
Conductivity (S/m)	1.728444
Variation (%)	-1.640000



Maximum location: X=-20.00, Y=24.00

SAR Peak: 0.27 W/kg

SAR 10g (W/Kg)	0.084138
SAR 1g (W/Kg)	0.152772



MEASUREMENT 26

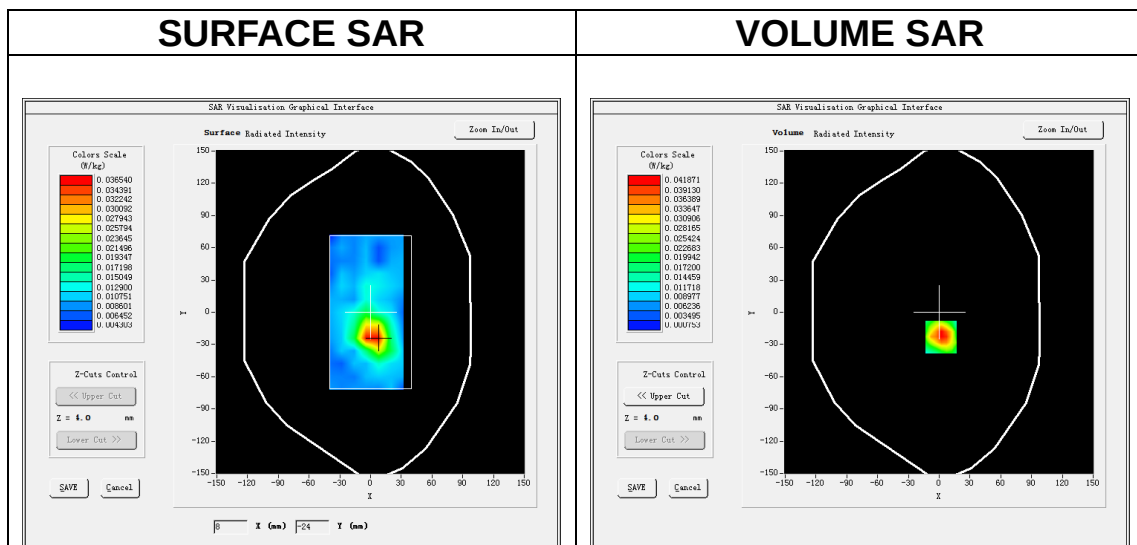
Date of measurement: 13/1/2025

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>2.74</u>

B. SAR Measurement Results

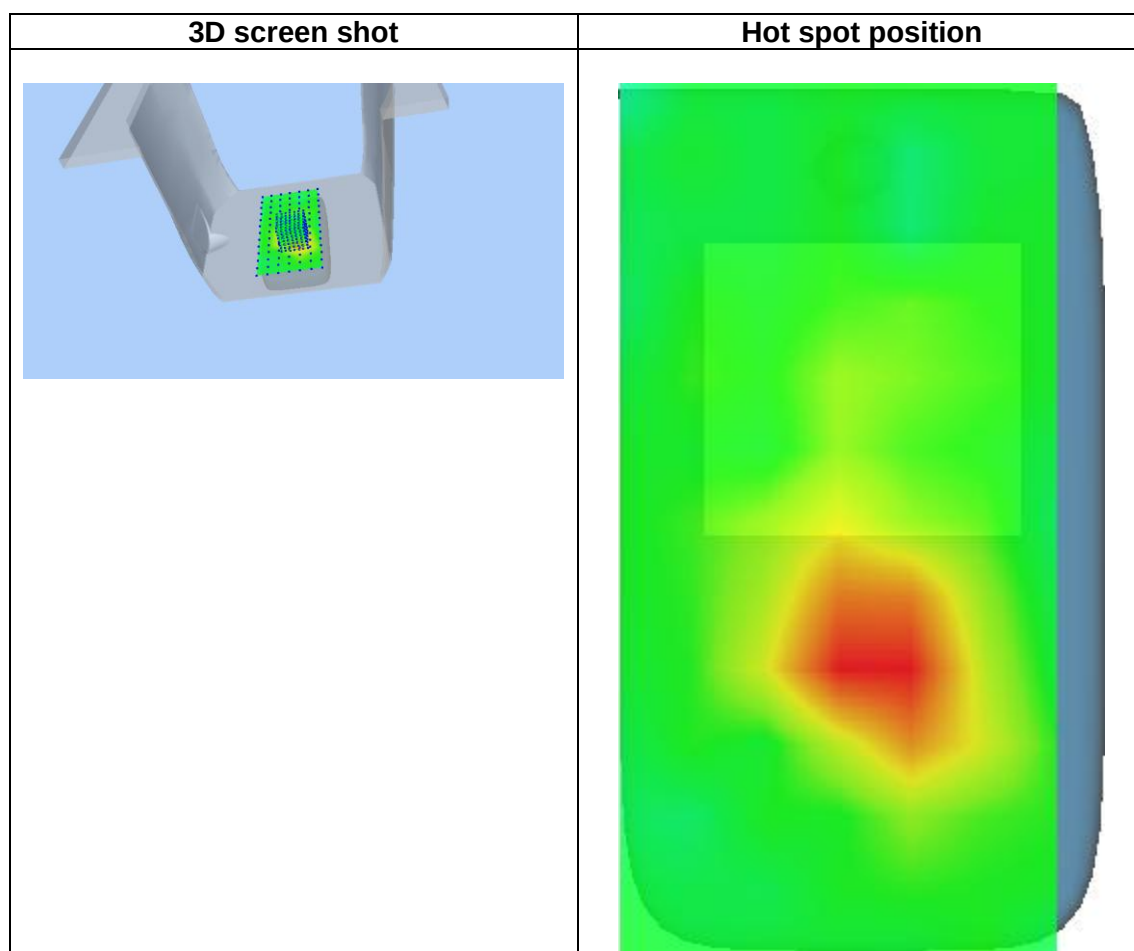
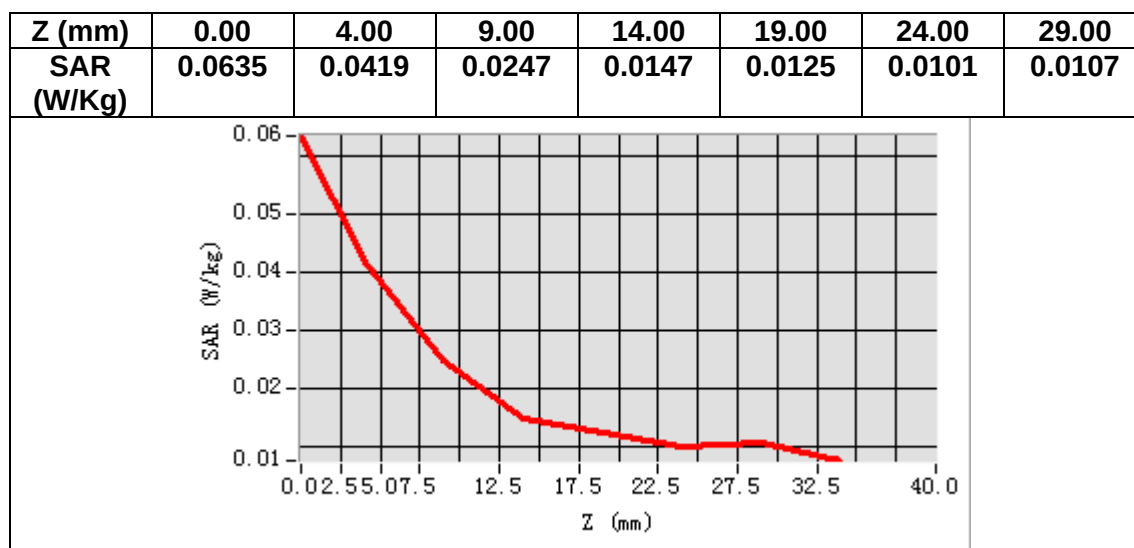
Frequency (MHz)	2437.000000
Relative permittivity (real part)	37.784435
Relative permittivity (imaginary part)	12.766513
Conductivity (S/m)	1.728444
Variation (%)	1.280000



Maximum location: X=2.00, Y=-23.00

SAR Peak: 0.07 W/kg

SAR 10g (W/Kg)	0.022584
SAR 1g (W/Kg)	0.041910



MEASUREMENT 27

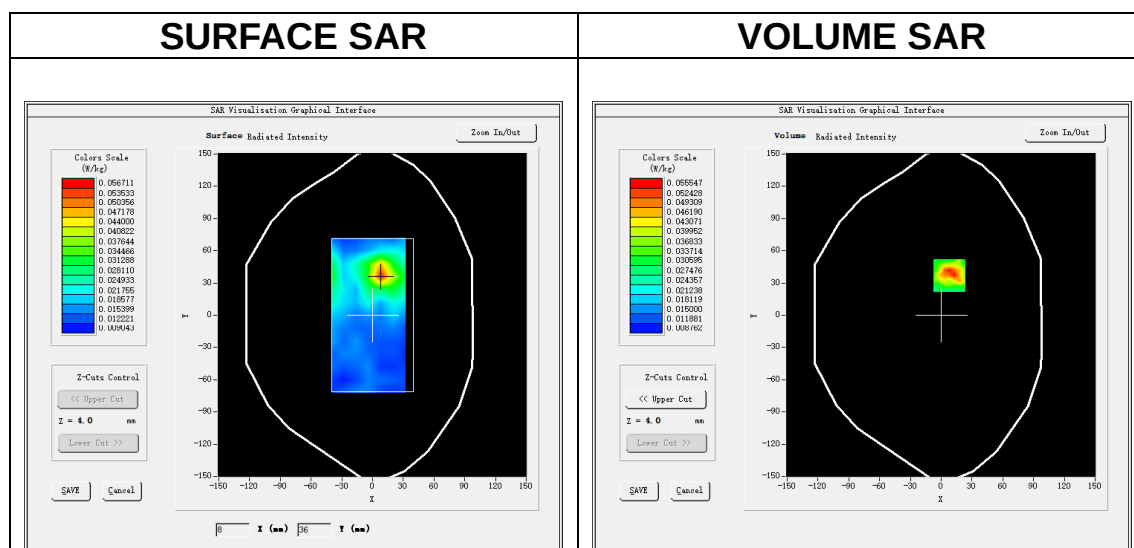
Date of measurement: 13/1/2025

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>2.74</u>

B. SAR Measurement Results

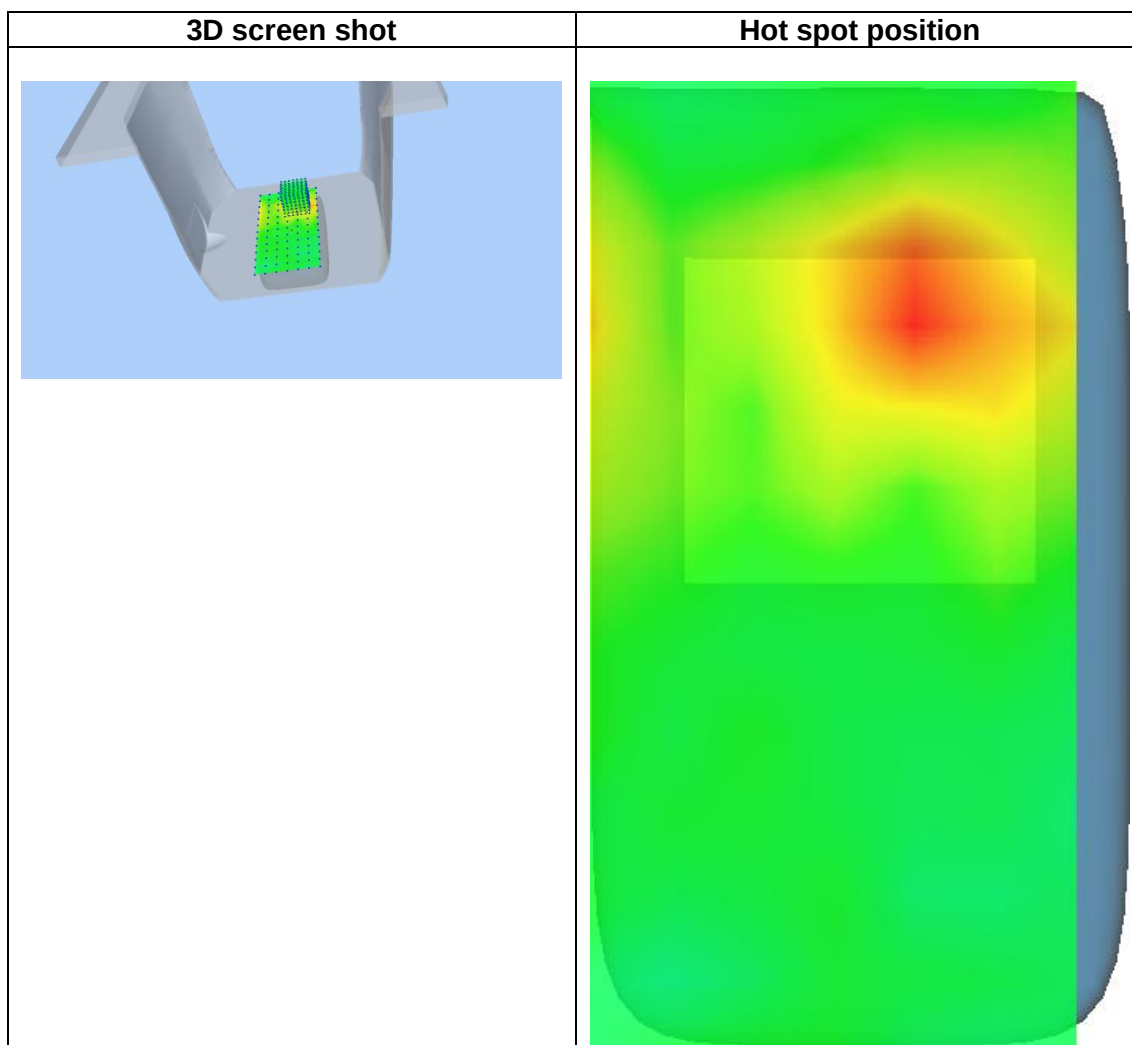
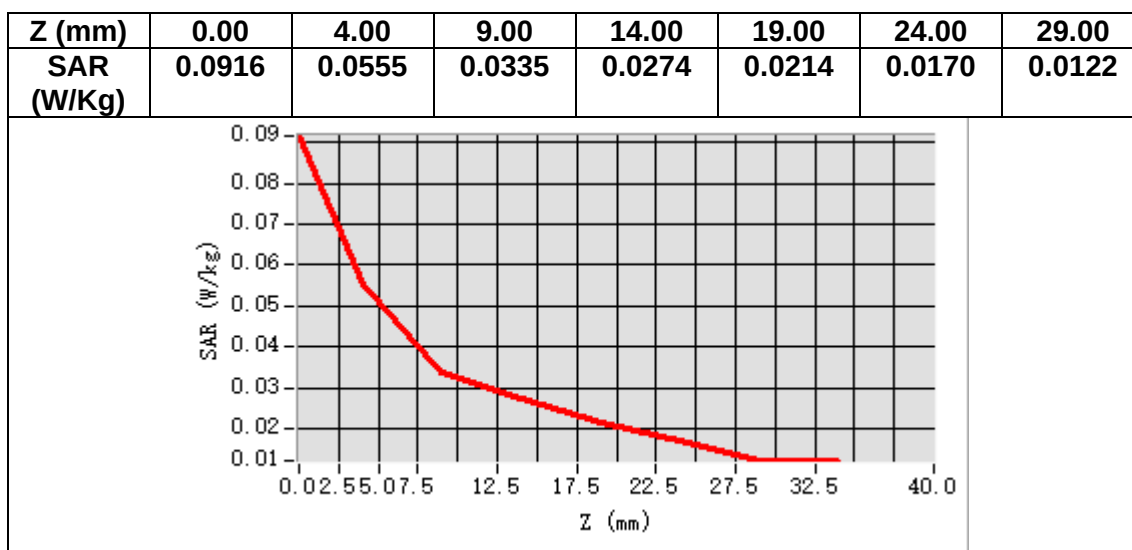
Frequency (MHz)	2437.000000
Relative permittivity (real part)	37.784435
Relative permittivity (imaginary part)	12.766513
Conductivity (S/m)	1.728444
Variation (%)	1.350000



Maximum location: X=8.00, Y=37.00

SAR Peak: 0.08 W/kg

SAR 10g (W/Kg)	0.031195
SAR 1g (W/Kg)	0.049465



MEASUREMENT 28

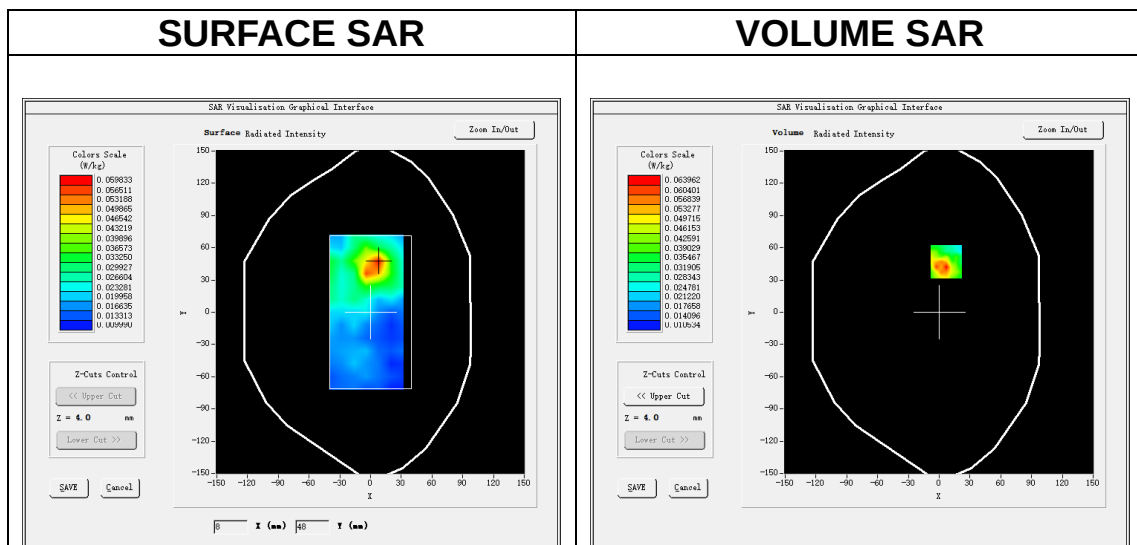
Date of measurement: 13/1/2025

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 802.11n ISM</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>IEEE802.11n (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.74</u>

B. SAR Measurement Results

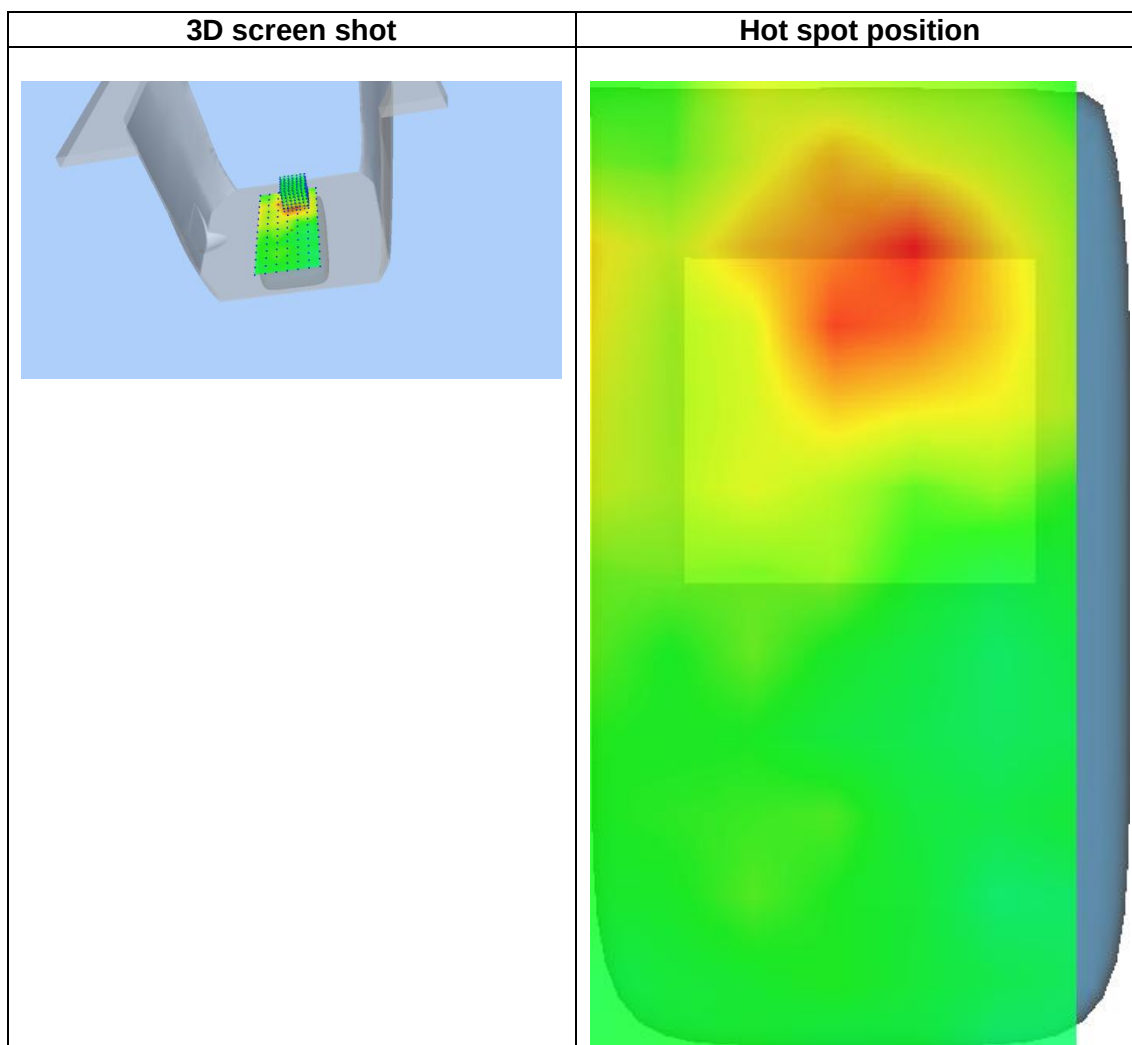
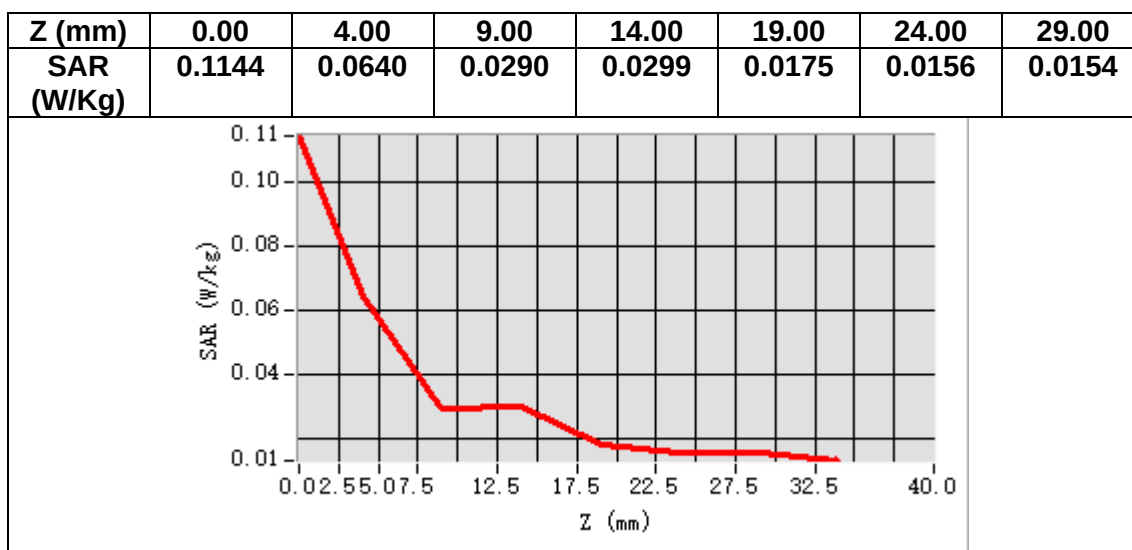
Frequency (MHz)	2437.000000
Relative permittivity (real part)	37.784435
Relative permittivity (imaginary part)	12.766513
Conductivity (S/m)	1.728444
Variation (%)	15.180000



Maximum location: X=7.00, Y=47.00

SAR Peak: 0.11 W/kg

SAR 10g (W/Kg)	0.035194
SAR 1g (W/Kg)	0.055364



MEASUREMENT 29

Date of measurement: 19/1/2025

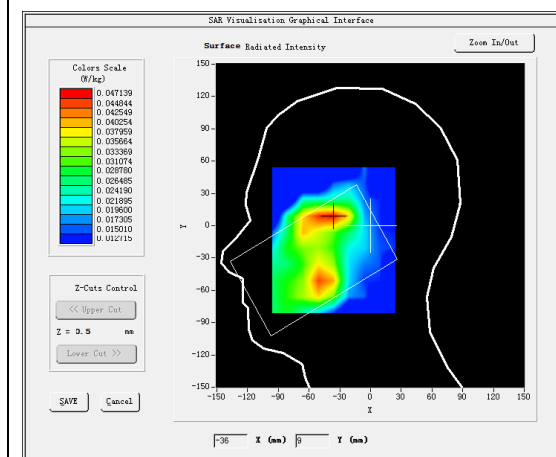
A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>LTE band 2</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>
ConvF	<u>2.57</u>

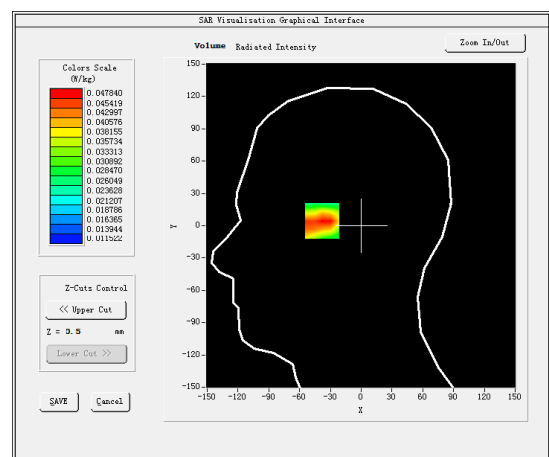
B. SAR Measurement Results

Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.799321
Relative permittivity (imaginary part)	13.876998
Conductivity (S/m)	1.389769
Variation (%)	0.480000

SURFACE SAR



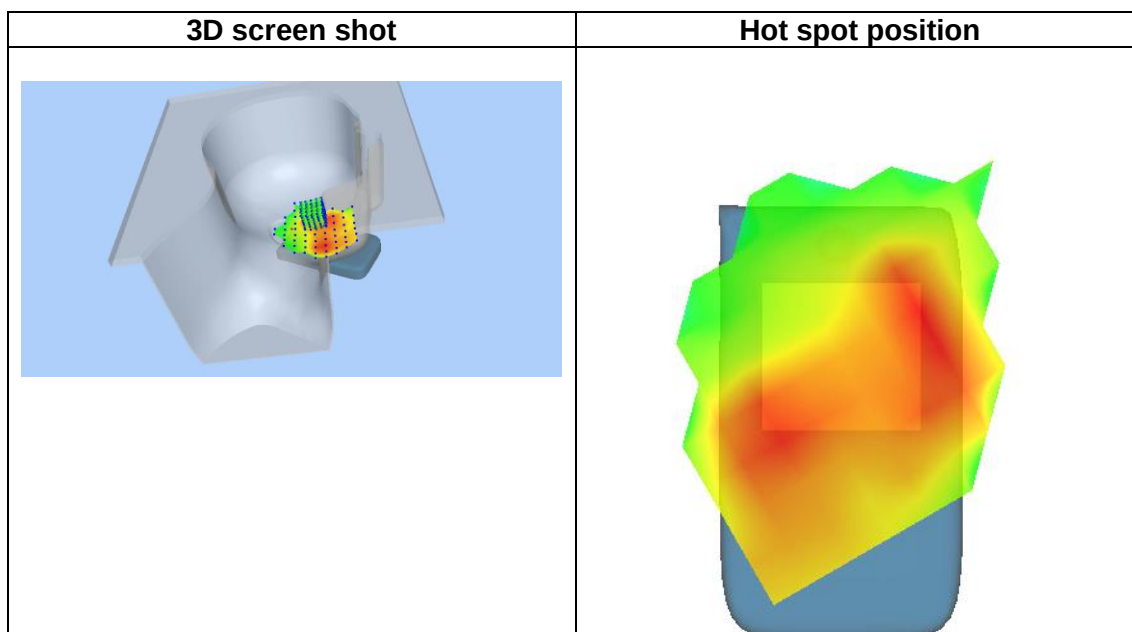
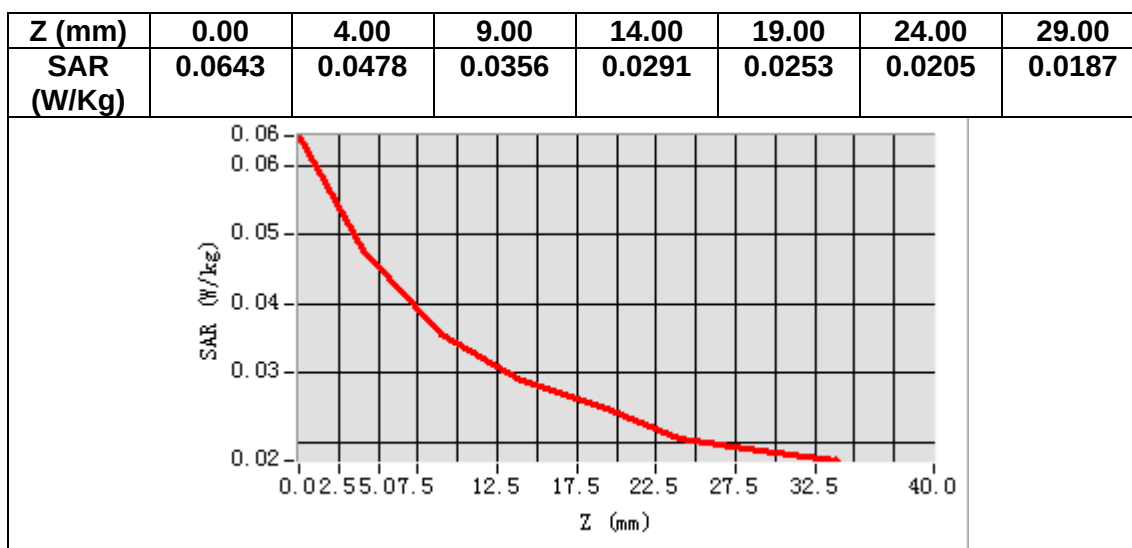
VOLUME SAR



Maximum location: X=-38.00, Y=8.00

SAR Peak: 0.06 W/kg

SAR 10g (W/Kg)	0.033727
SAR 1g (W/Kg)	0.048056



MEASUREMENT 30

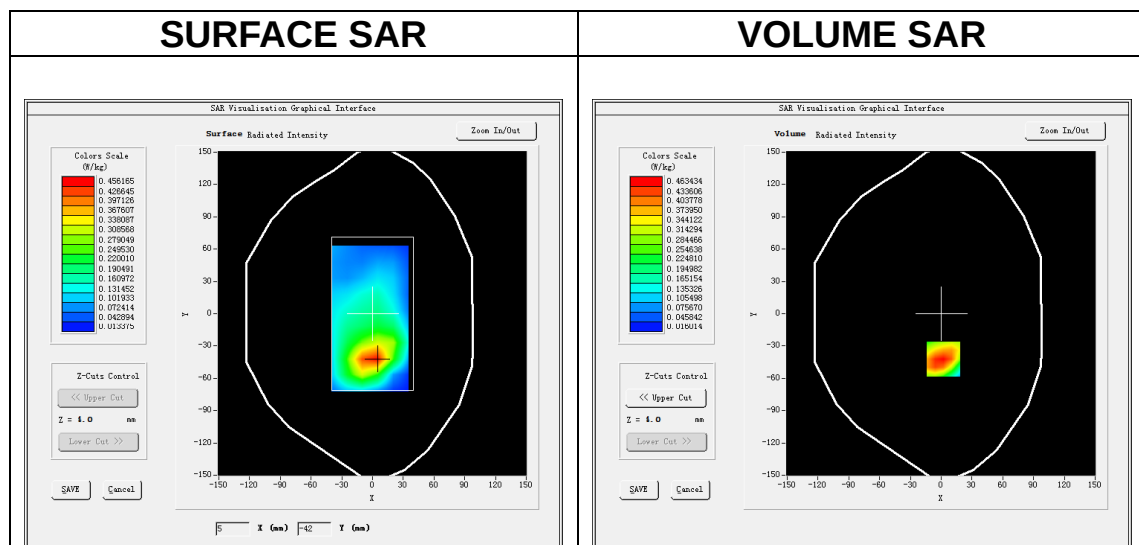
Date of measurement: 19/1/2025

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>2.57</u>

B. SAR Measurement Results

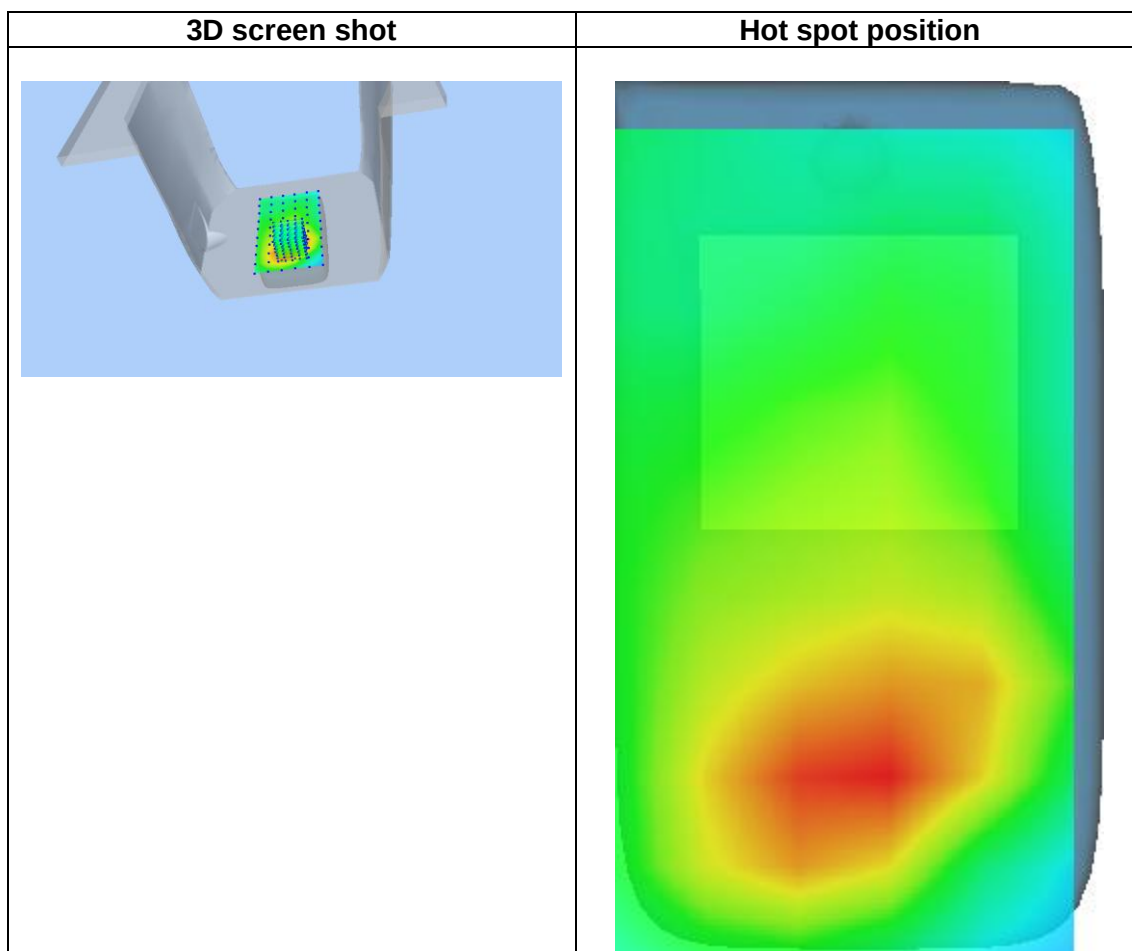
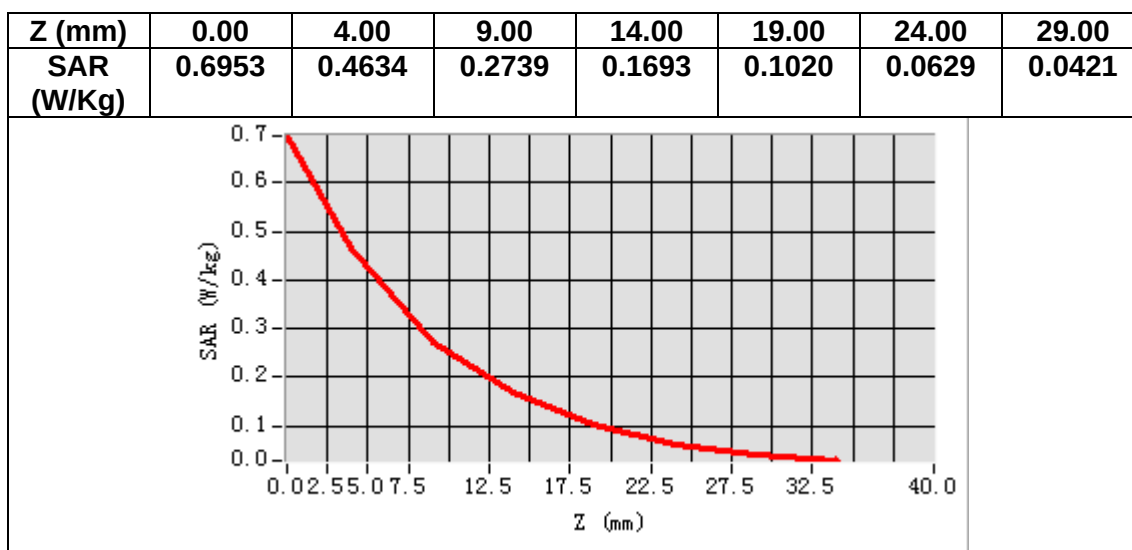
Frequency (MHz)	1880.000000
Relative permittivity (real part)	38.799321
Relative permittivity (imaginary part)	13.876998
Conductivity (S/m)	1.389769
Variation (%)	-0.370000



Maximum location: X=2.00, Y=-42.00

SAR Peak: 0.70 W/kg

SAR 10g (W/Kg)	0.256571
SAR 1g (W/Kg)	0.457028



MEASUREMENT 31

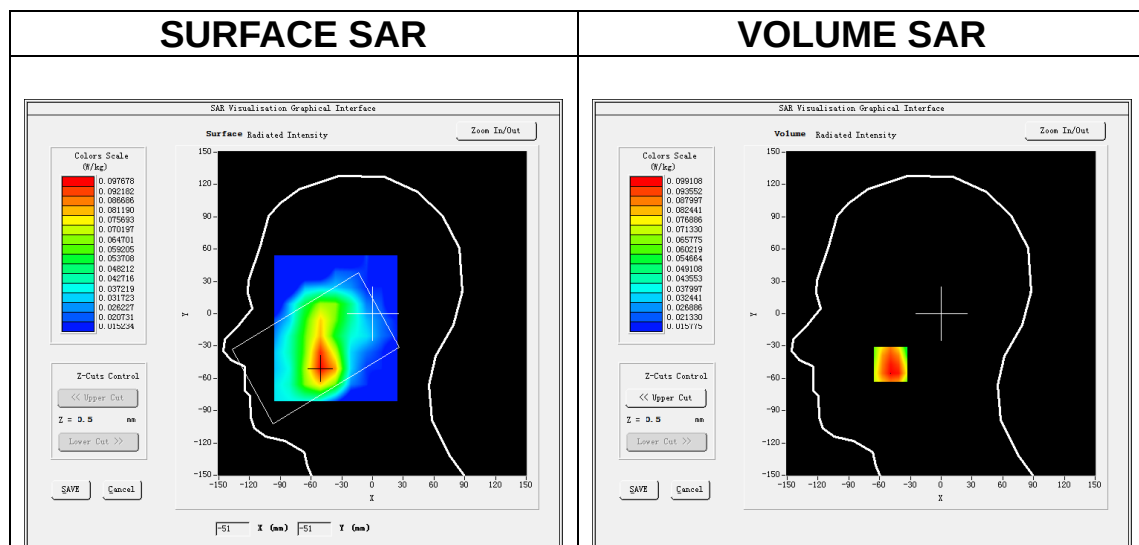
Date of measurement: 17/1/2025

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>2.51</u>

B. SAR Measurement Results

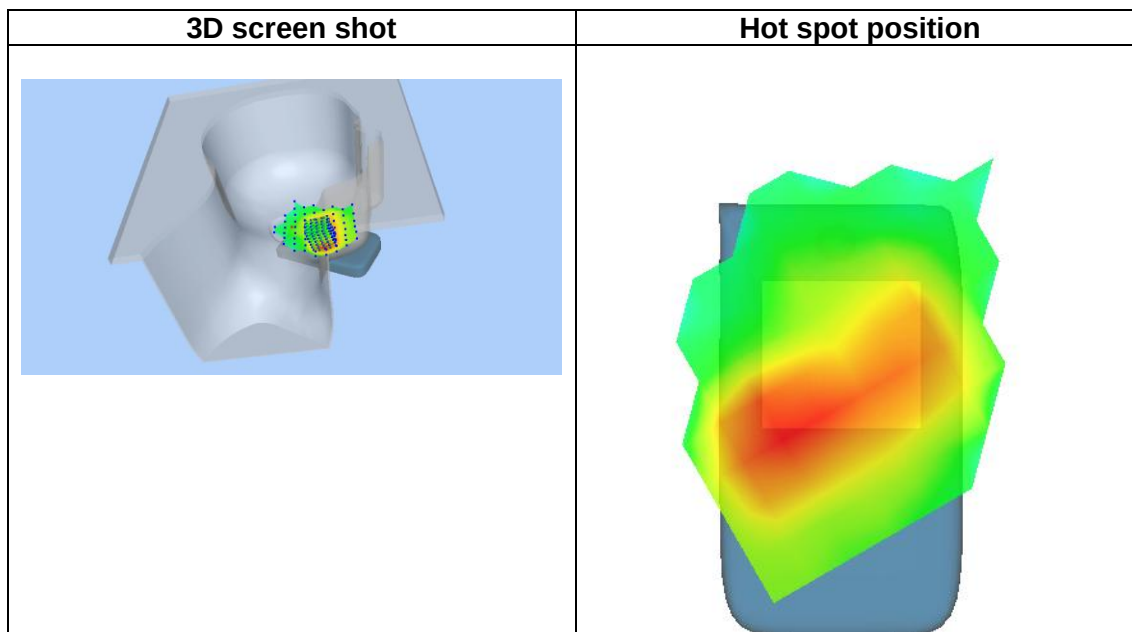
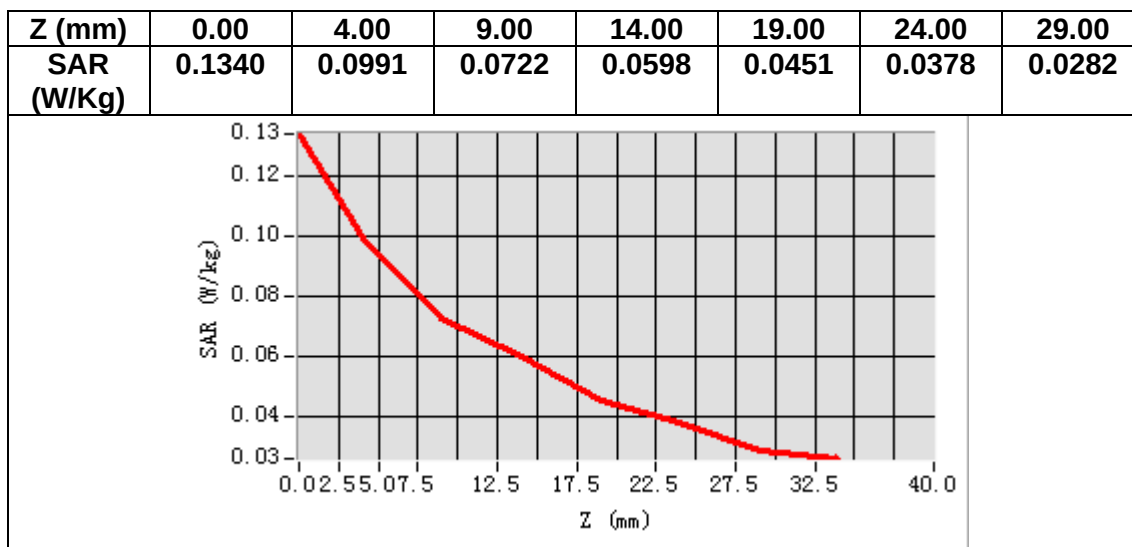
Frequency (MHz)	1732.500000
Relative permittivity (real part)	39.570110
Relative permittivity (imaginary part)	13.775790
Conductivity (S/m)	1.325920
Variation (%)	0.230000



Maximum location: X=-49.00, Y=-47.00

SAR Peak: 0.13 W/kg

SAR 10g (W/Kg)	0.067581
SAR 1g (W/Kg)	0.095703



MEASUREMENT 32

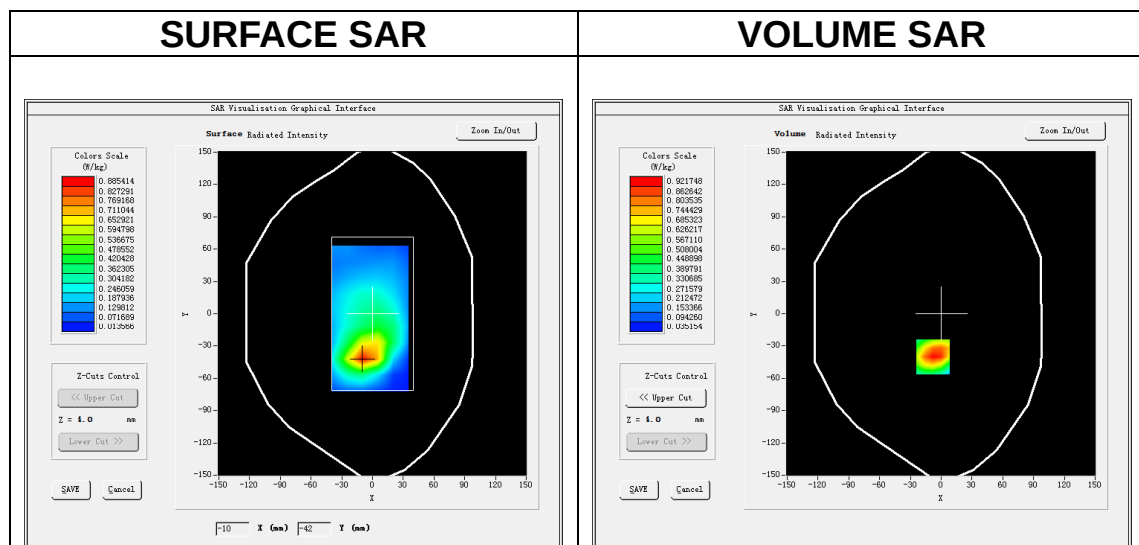
Date of measurement: 17/1/2025

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>2.51</u>

B. SAR Measurement Results

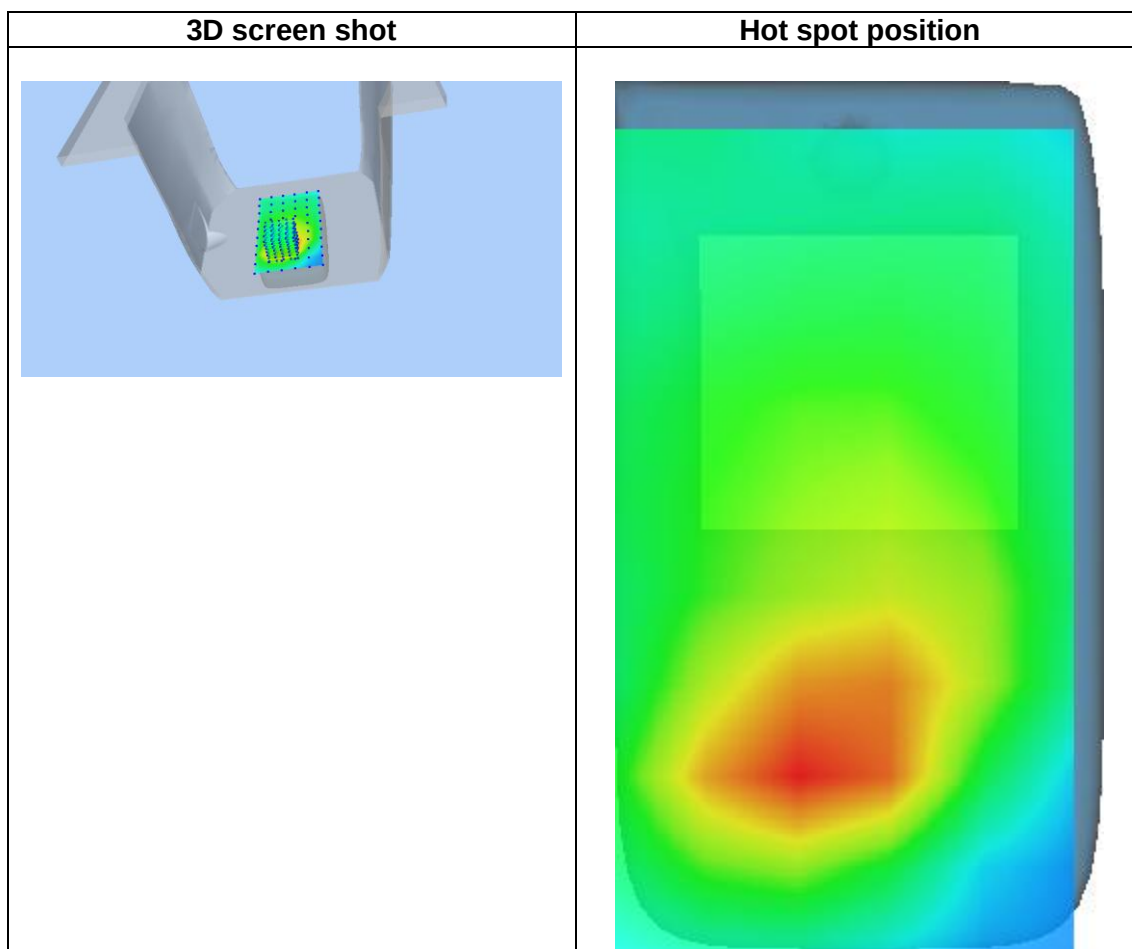
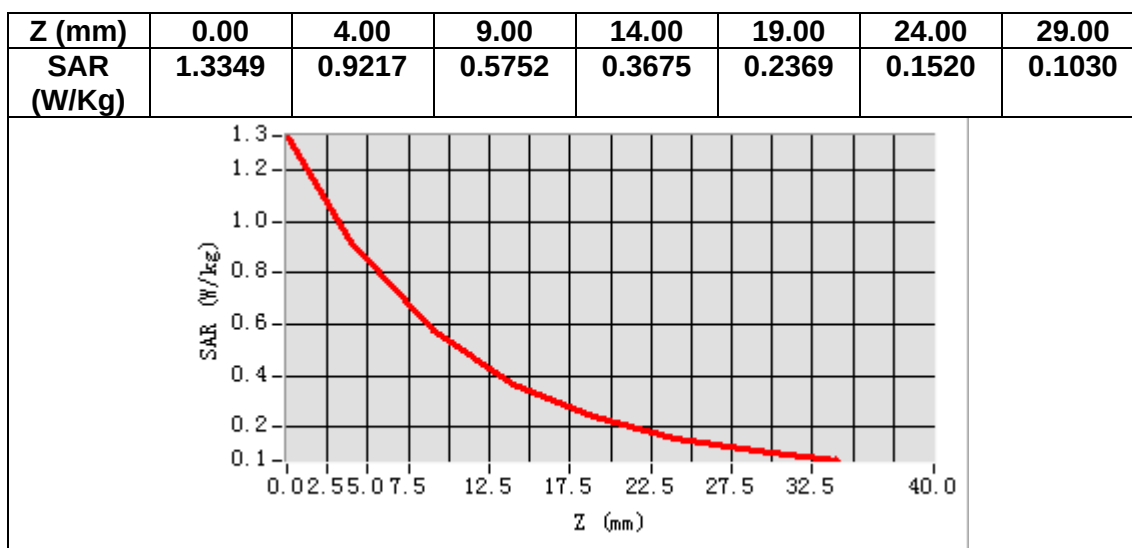
Frequency (MHz)	1732.500000
Relative permittivity (real part)	39.570110
Relative permittivity (imaginary part)	13.775790
Conductivity (S/m)	1.325920
Variation (%)	-0.550000



Maximum location: X=-8.00, Y=-40.00

SAR Peak: 1.36 W/kg

SAR 10g (W/Kg)	0.507514
SAR 1g (W/Kg)	0.878879



MEASUREMENT 33

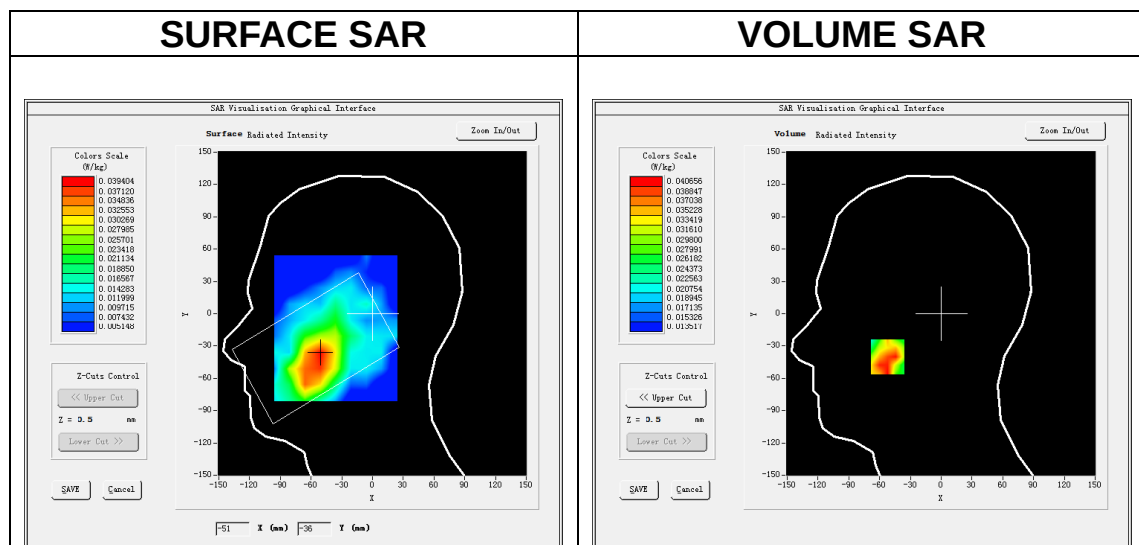
Date of measurement: 15/1/2025

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>2.34</u>

B. SAR Measurement Results

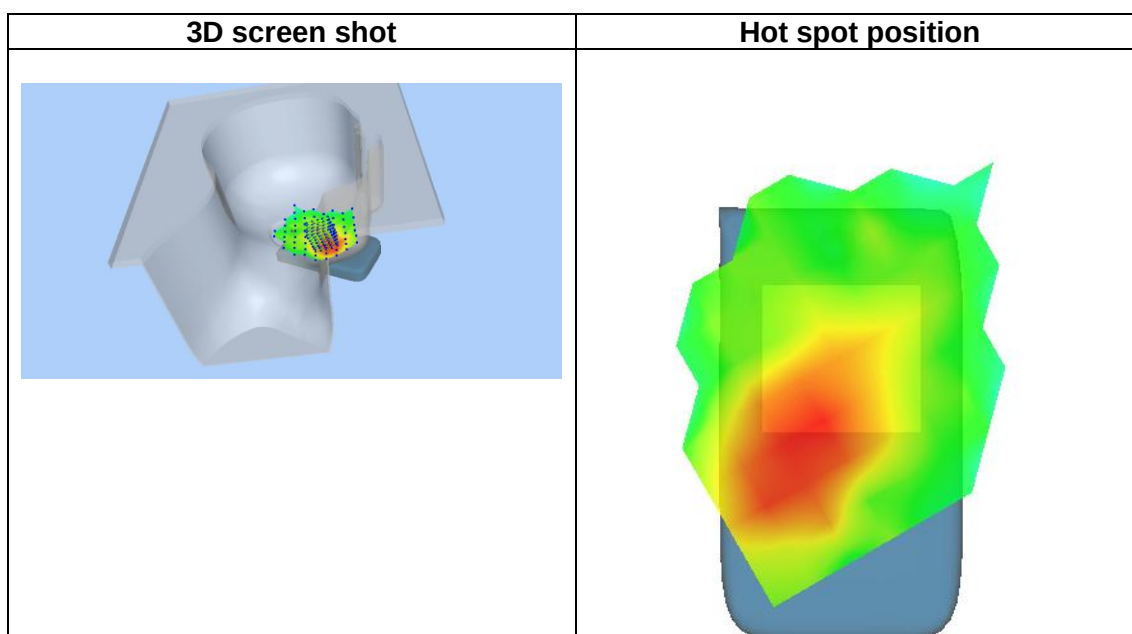
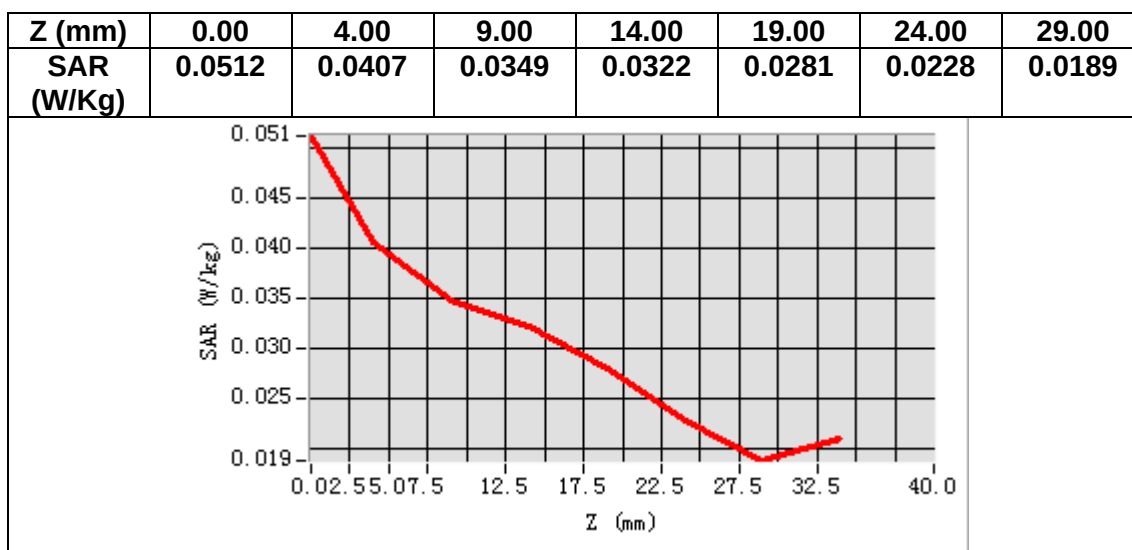
Frequency (MHz)	836.500000
Relative permittivity (real part)	41.887623
Relative permittivity (imaginary part)	19.758366
Conductivity (S/m)	0.918215
Variation (%)	1.820000



Maximum location: X=-52.00, Y=-40.00

SAR Peak: 0.05 W/kg

SAR 10g (W/Kg)	0.033867
SAR 1g (W/Kg)	0.041237



MEASUREMENT 34

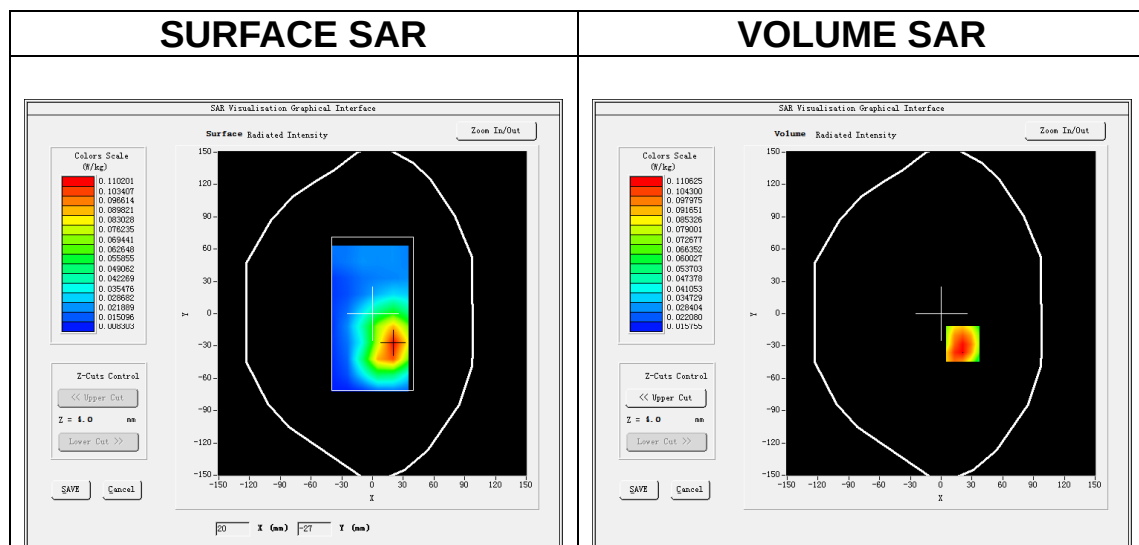
Date of measurement: 15/1/2025

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>2.34</u>

B. SAR Measurement Results

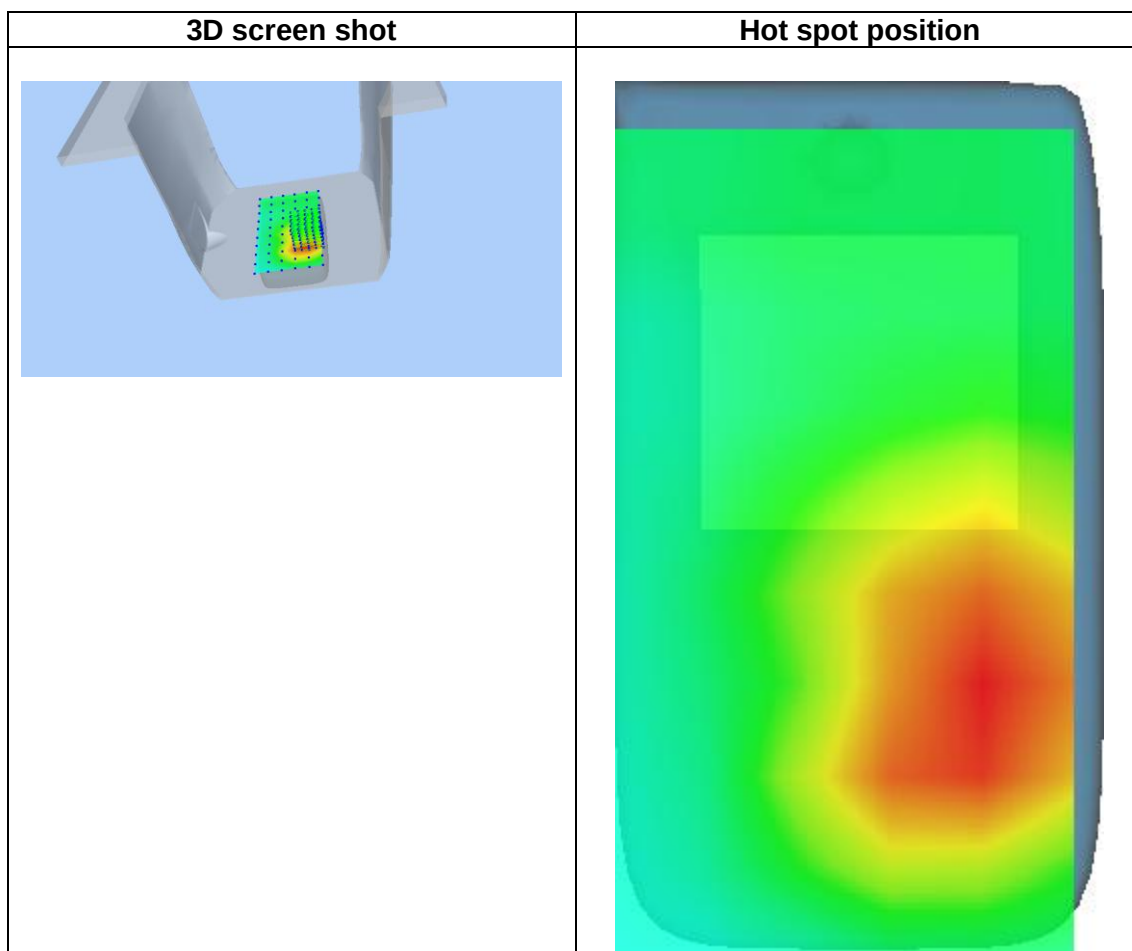
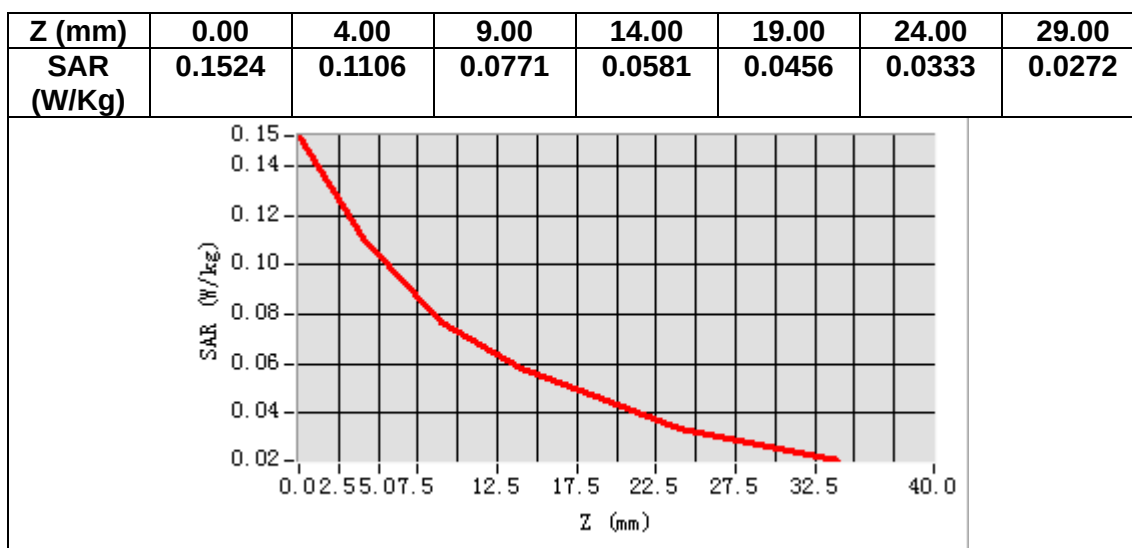
Frequency (MHz)	836.500000
Relative permittivity (real part)	41.887623
Relative permittivity (imaginary part)	19.758366
Conductivity (S/m)	0.918215
Variation (%)	-1.240000



Maximum location: X=21.00, Y=-28.00

SAR Peak: 0.15 W/kg

SAR 10g (W/Kg)	0.074372
SAR 1g (W/Kg)	0.108746



MEASUREMENT 35

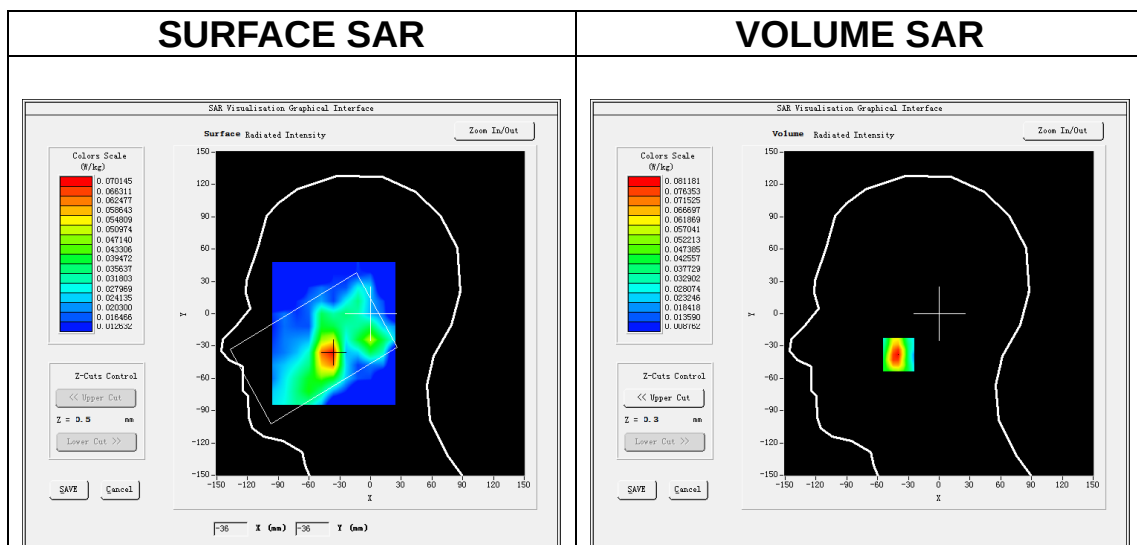
Date of measurement: 14/1/2025

A. Experimental conditions.

Area Scan	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
ZoomScan	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>LTE band 7</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>
ConvF	<u>2.51</u>

B. SAR Measurement Results

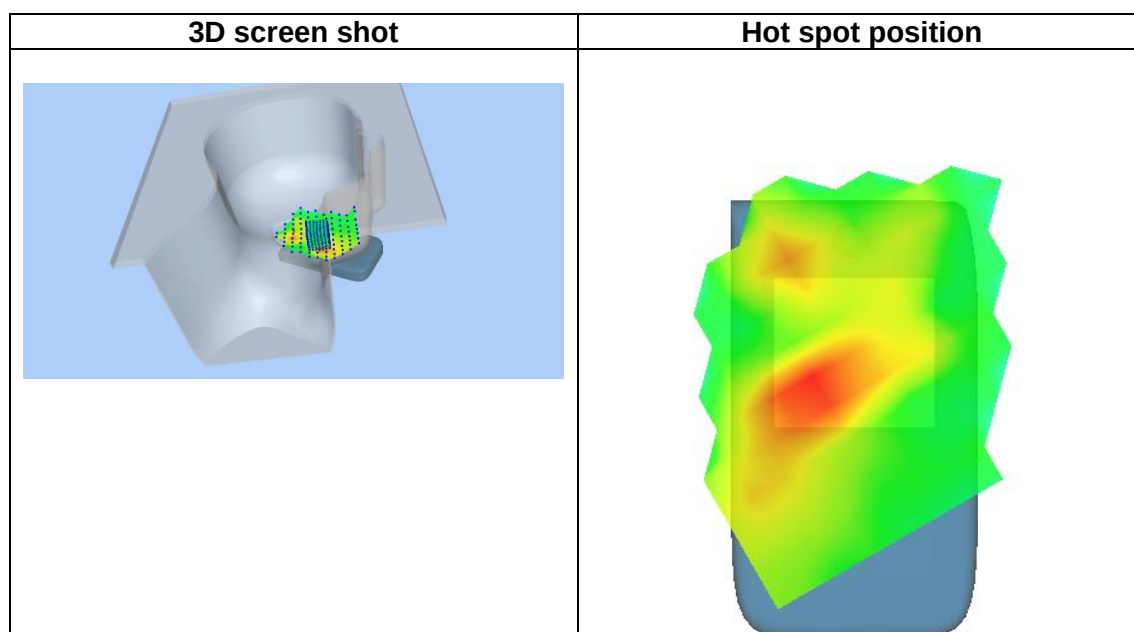
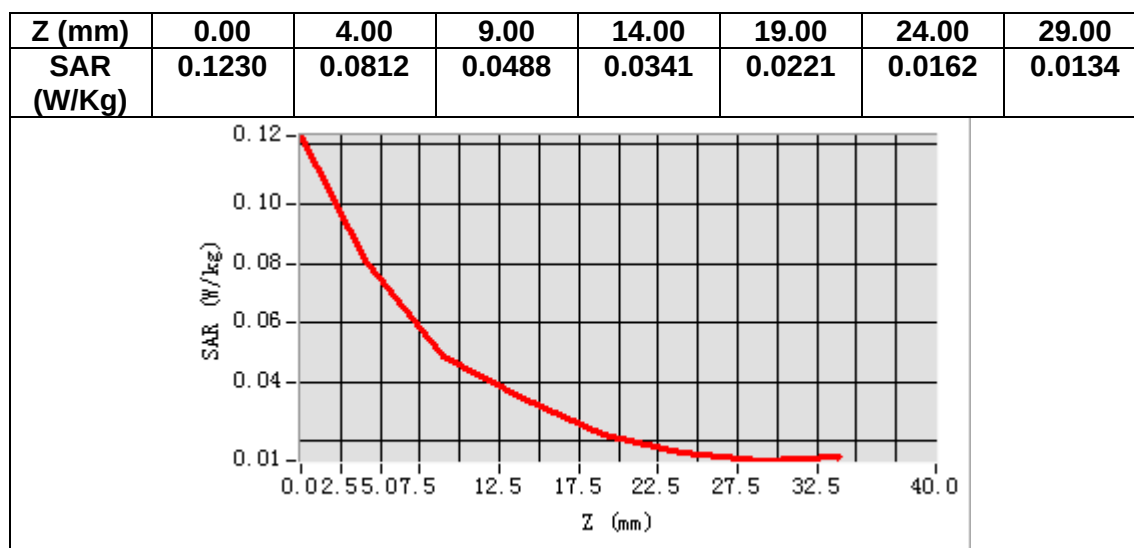
Frequency (MHz)	2535.000000
Relative permittivity (real part)	38.968700
Relative permittivity (imaginary part)	13.384456
Conductivity (S/m)	1.884978
Variation (%)	0.930000



Maximum location: X=-39.00, Y=-38.00

SAR Peak: 0.12 W/kg

SAR 10g (W/Kg)	0.041413
SAR 1g (W/Kg)	0.074874



MEASUREMENT 36

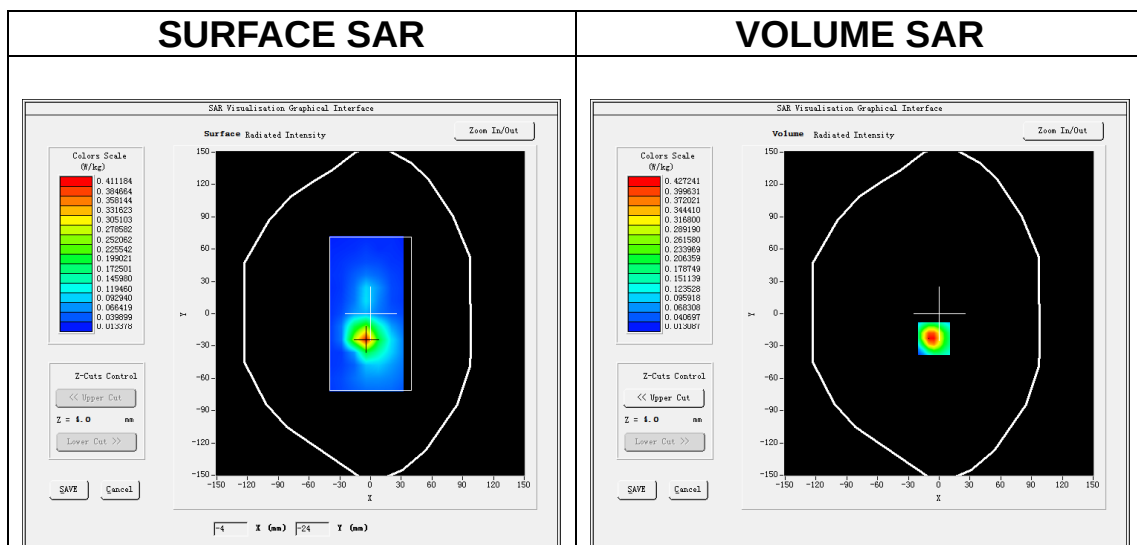
Date of measurement: 14/1/2025

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>2.51</u>

B. SAR Measurement Results

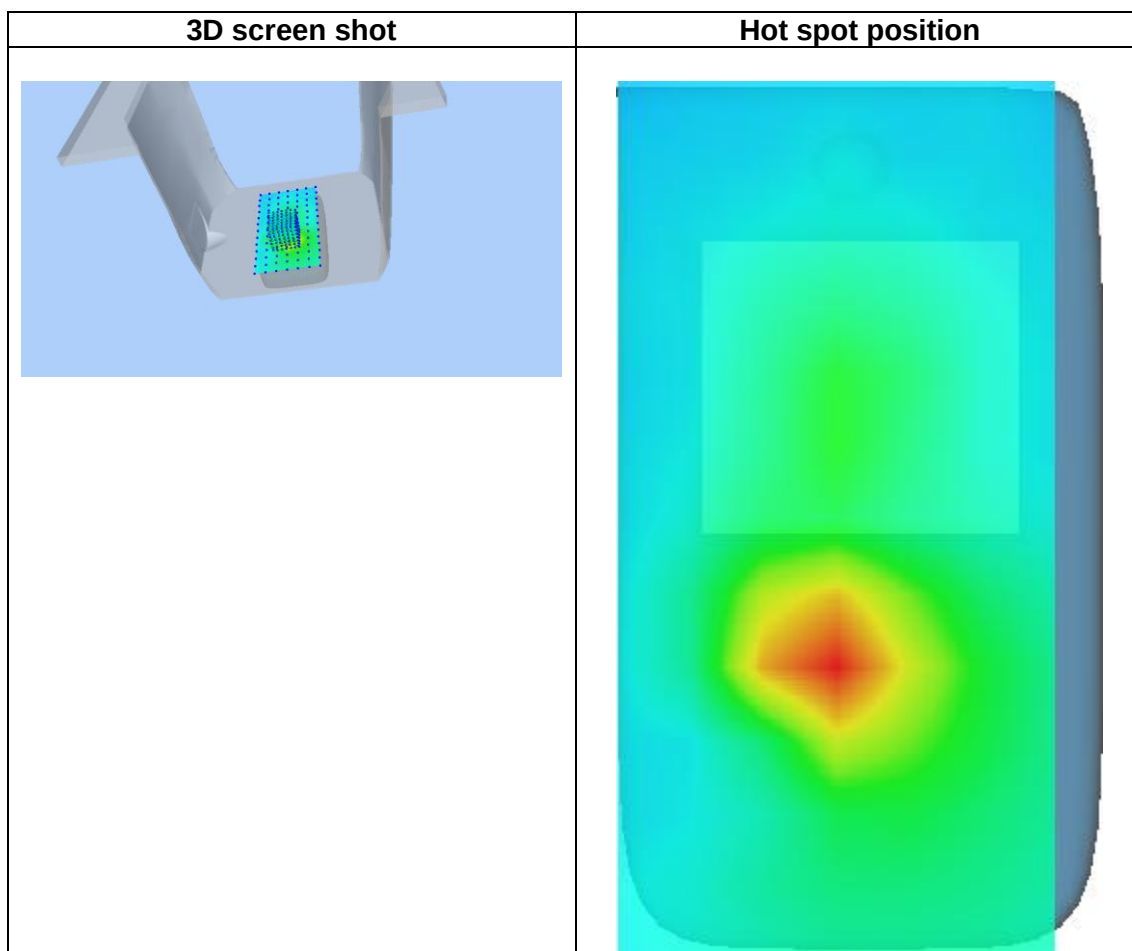
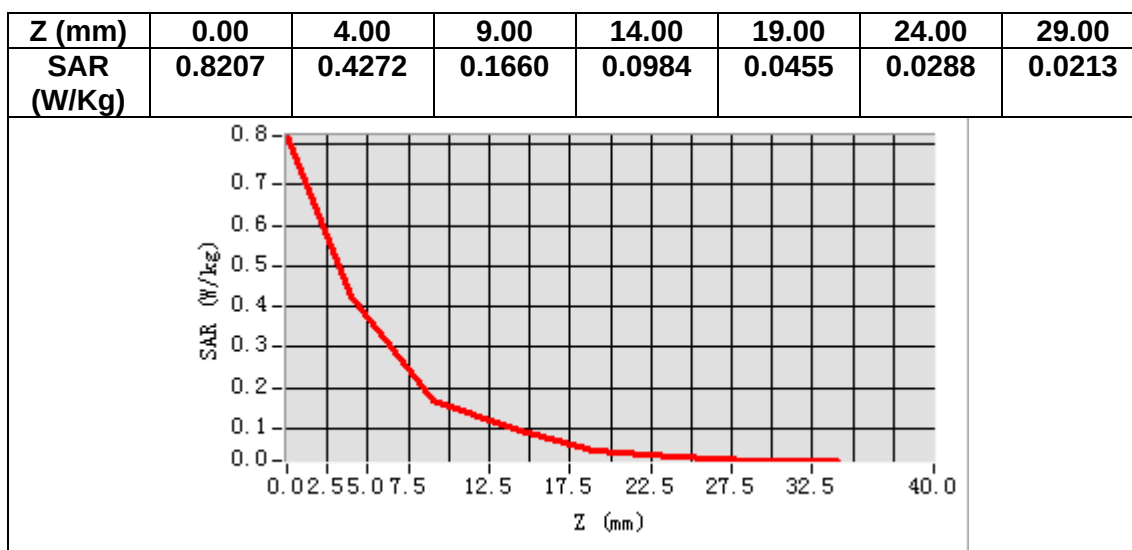
Frequency (MHz)	2535.000000
Relative permittivity (real part)	38.968700
Relative permittivity (imaginary part)	13.384456
Conductivity (S/m)	1.884978
Variation (%)	0.270000



Maximum location: X=-5.00, Y=-23.00

SAR Peak: 0.76 W/kg

SAR 10g (W/Kg)	0.173900
SAR 1g (W/Kg)	0.401466



MEASUREMENT 37

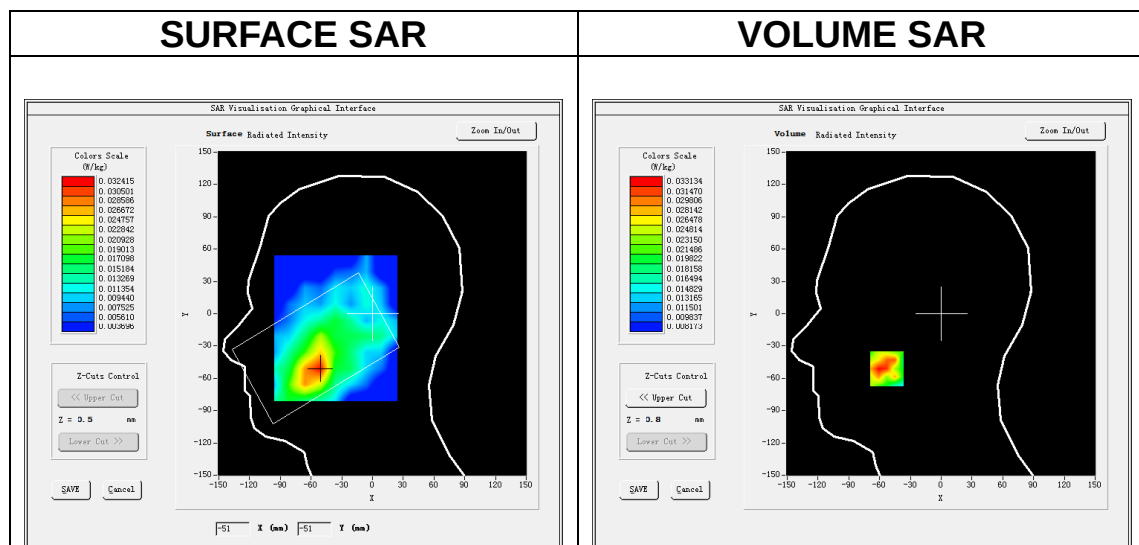
Date of measurement: 16/1/2025

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>2.42</u>

B. SAR Measurement Results

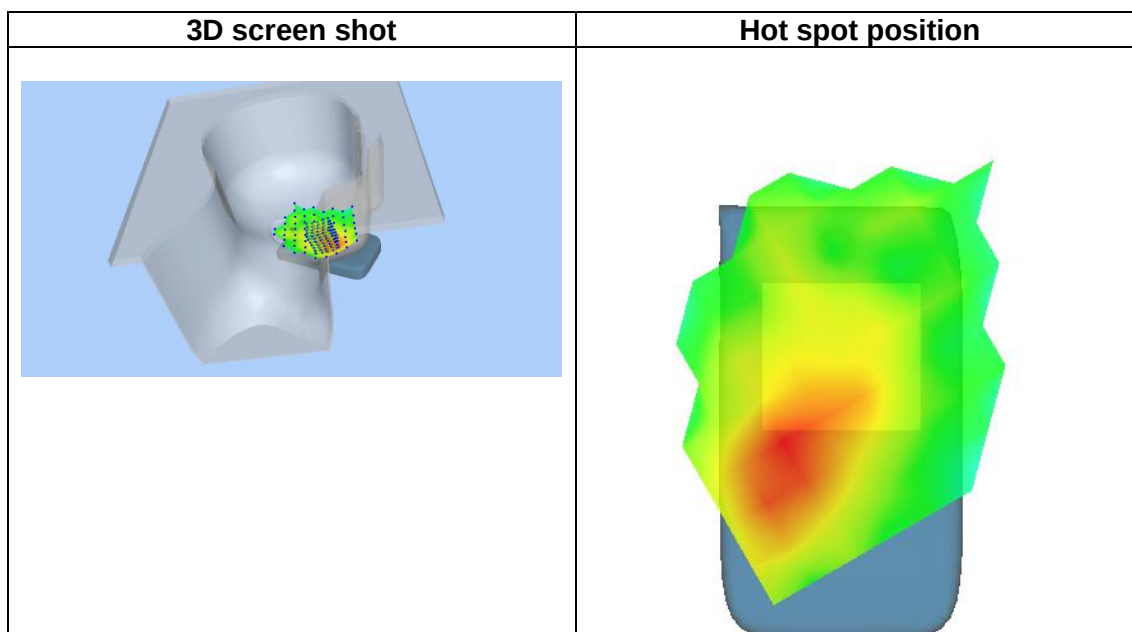
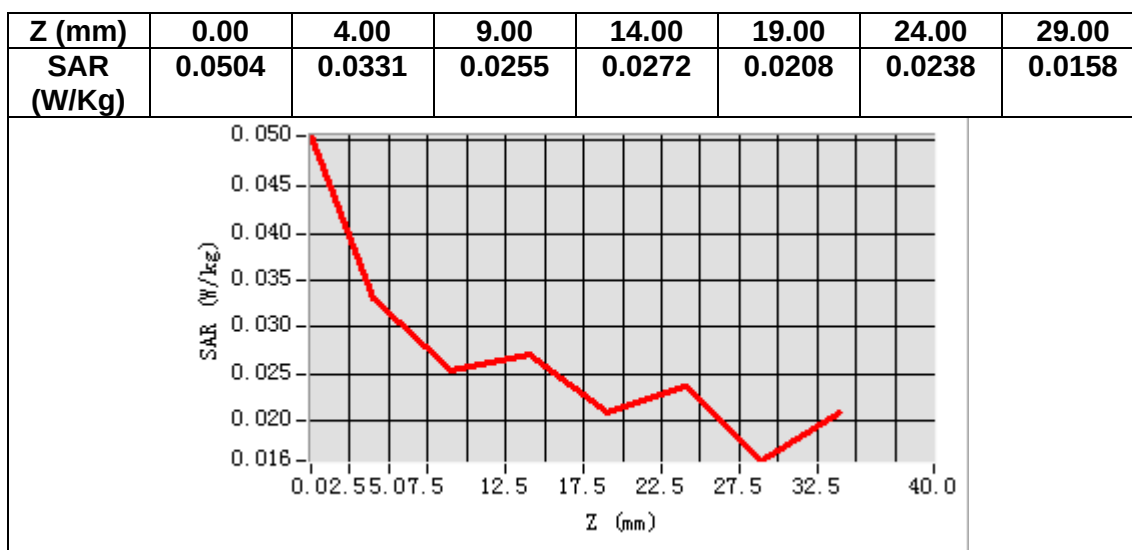
Frequency (MHz)	707.500000
Relative permittivity (real part)	40.964417
Relative permittivity (imaginary part)	21.874931
Conductivity (S/m)	0.859806
Variation (%)	1.480000



Maximum location: X=-53.00, Y=-51.00

SAR Peak: 0.05 W/kg

SAR 10g (W/Kg)	0.026515
SAR 1g (W/Kg)	0.033550



MEASUREMENT 38

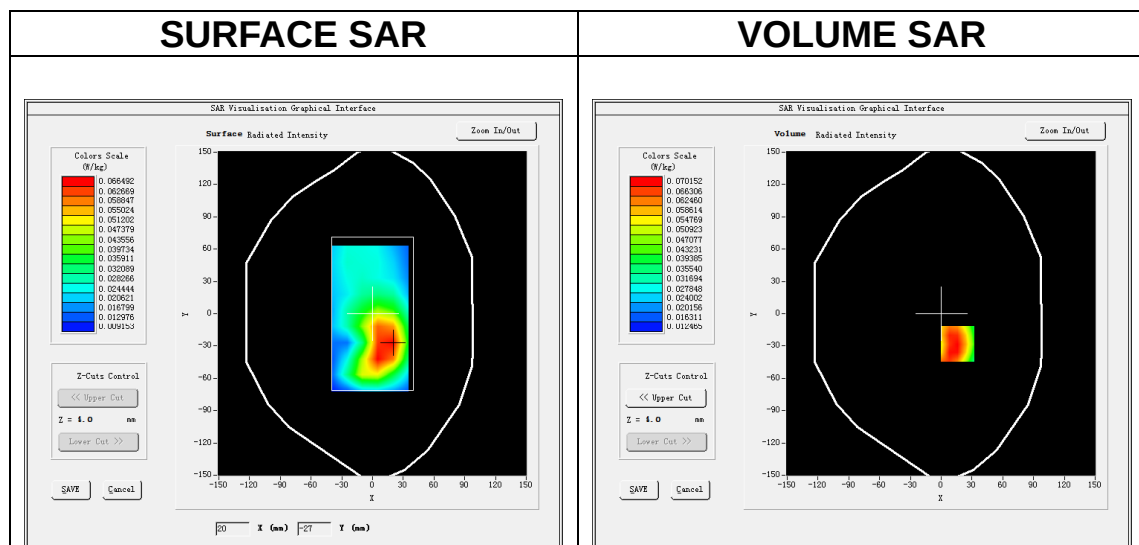
Date of measurement: 16/1/2025

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>2.42</u>

B. SAR Measurement Results

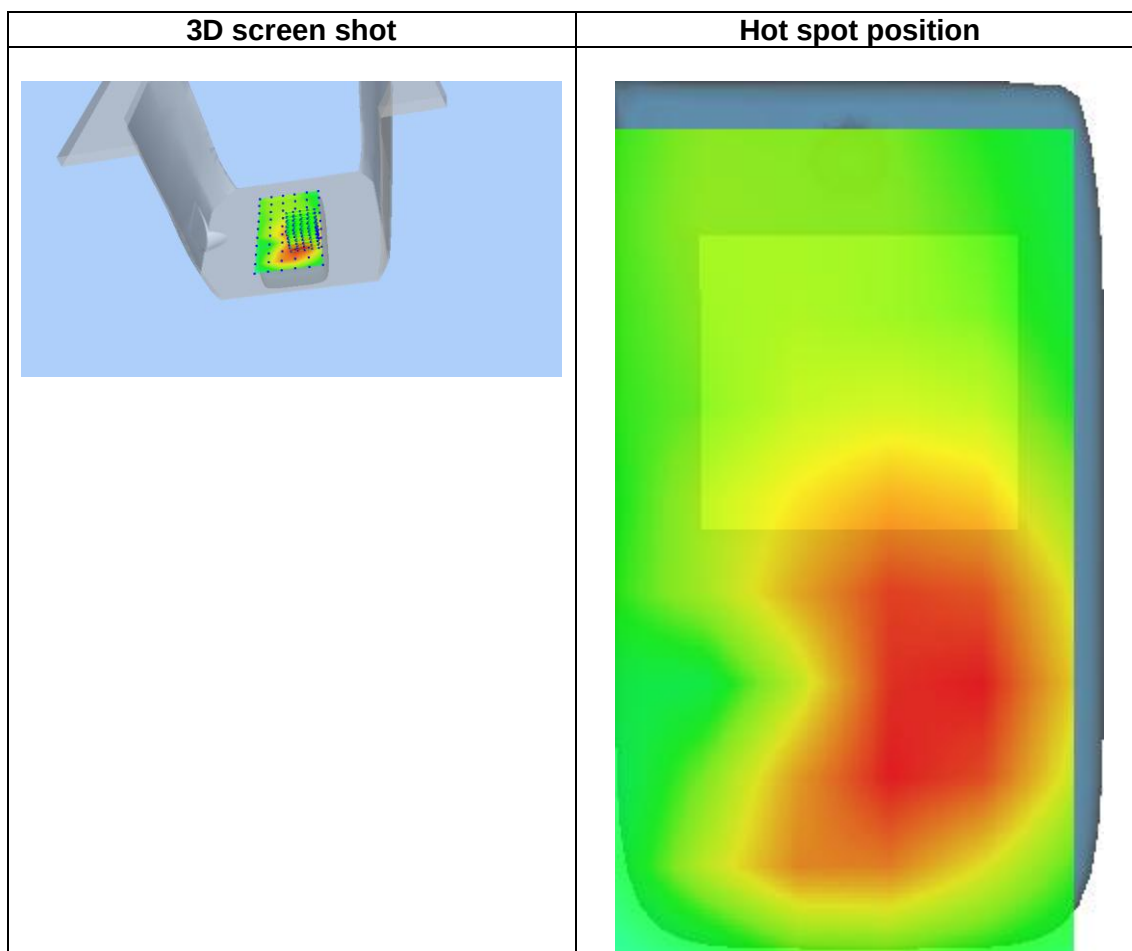
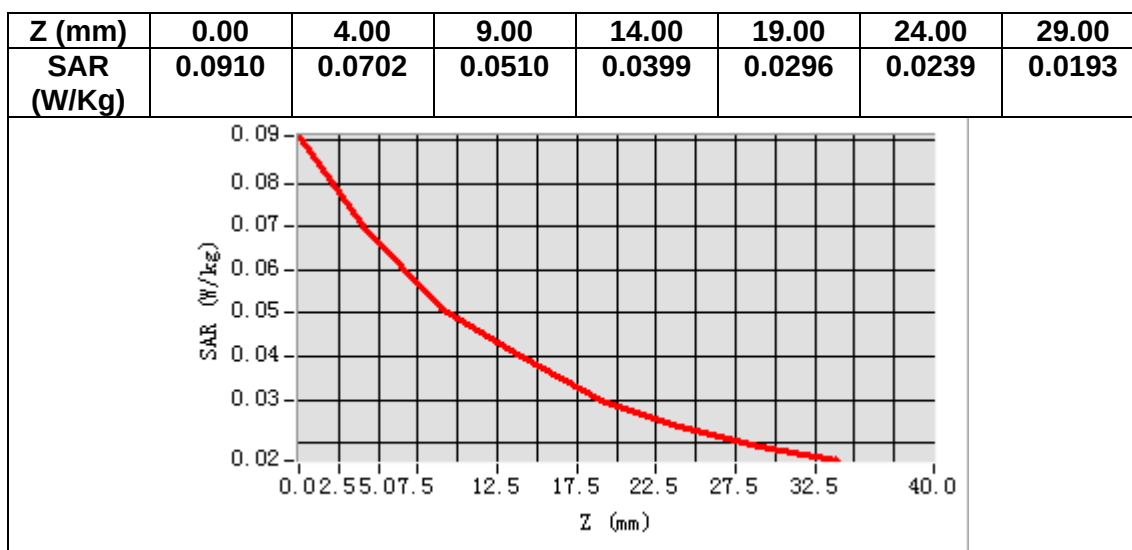
Frequency (MHz)	707.500000
Relative permittivity (real part)	40.964417
Relative permittivity (imaginary part)	21.874931
Conductivity (S/m)	0.859806
Variation (%)	0.650000



Maximum location: X=16.00, Y=-28.00

SAR Peak: 0.10 W/kg

SAR 10g (W/Kg)	0.048056
SAR 1g (W/Kg)	0.069116



MEASUREMENT 39

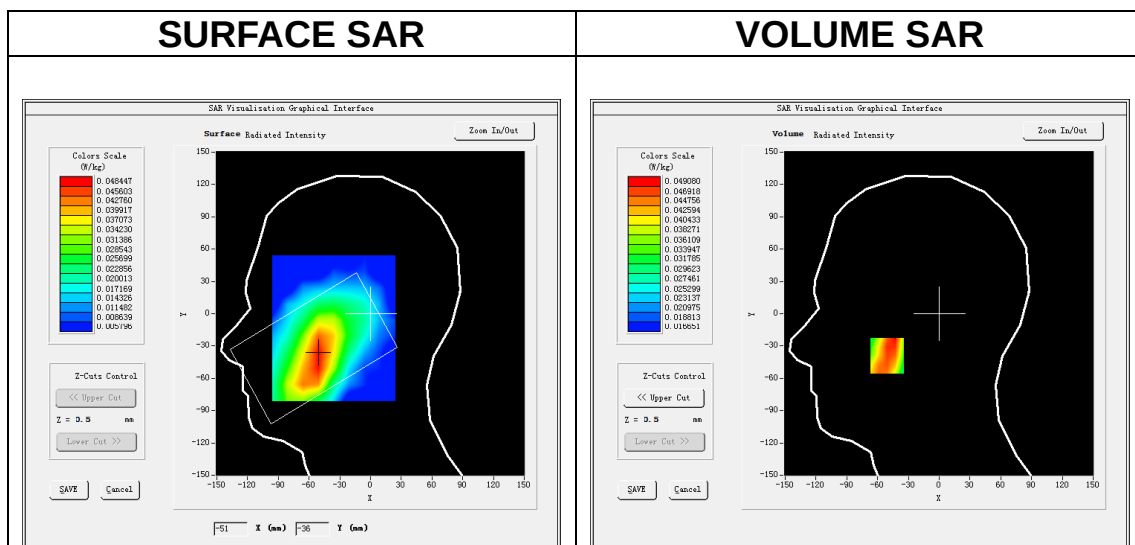
Date of measurement: 16/1/2025

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>2.42</u>

B. SAR Measurement Results

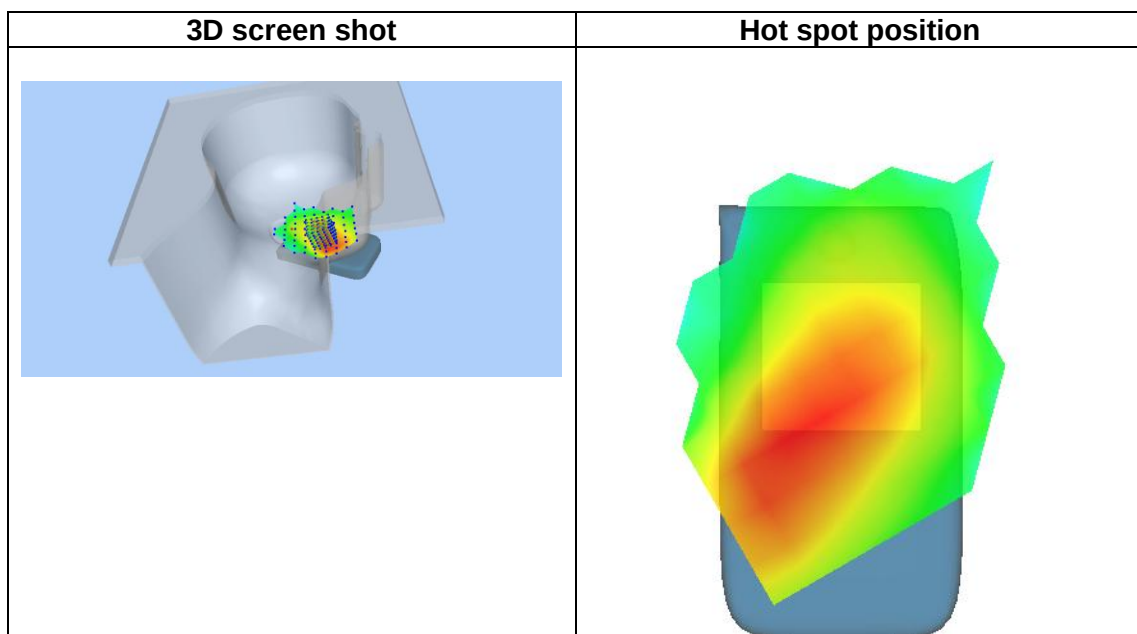
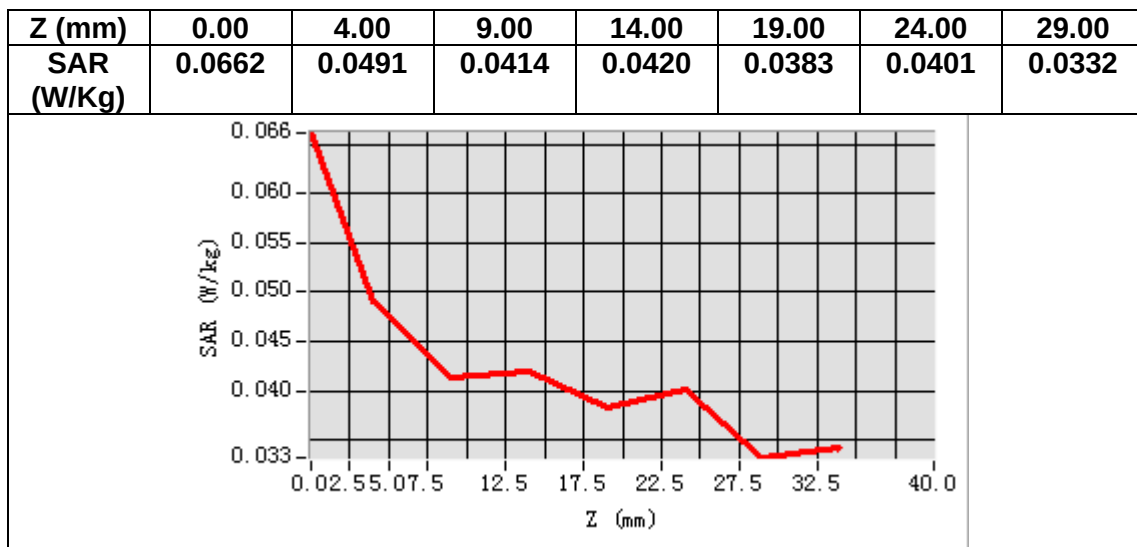
Frequency (MHz)	710.000000
Relative permittivity (real part)	40.949066
Relative permittivity (imaginary part)	21.815380
Conductivity (S/m)	0.860496
Variation (%)	-0.780000



Maximum location: X=-51.00, Y=-39.00

SAR Peak: 0.06 W/kg

SAR 10g (W/Kg)	0.043460
SAR 1g (W/Kg)	0.049203



MEASUREMENT 40

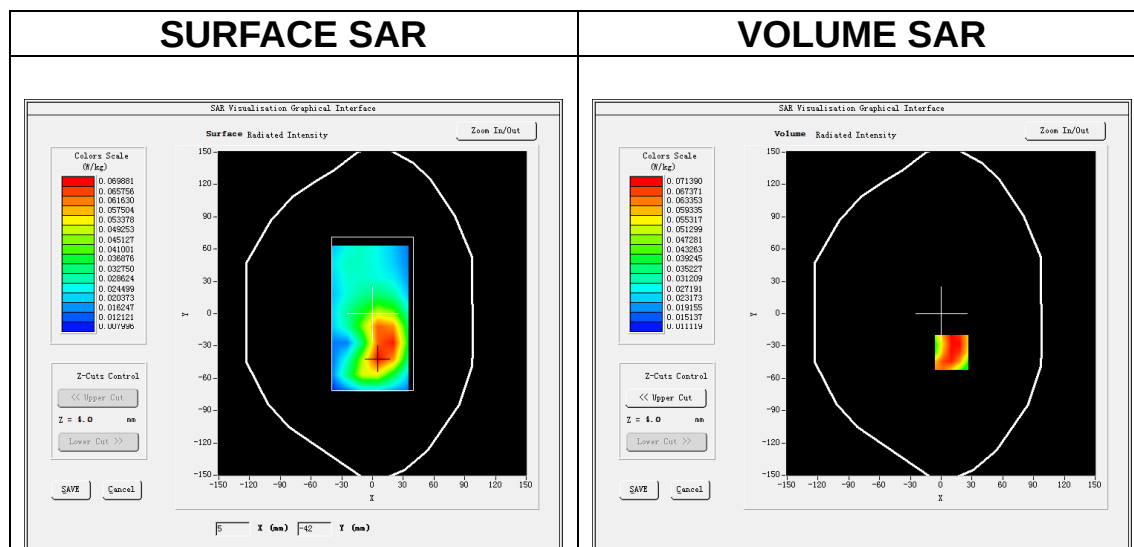
Date of measurement: 16/1/2025

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>2.42</u>

B. SAR Measurement Results

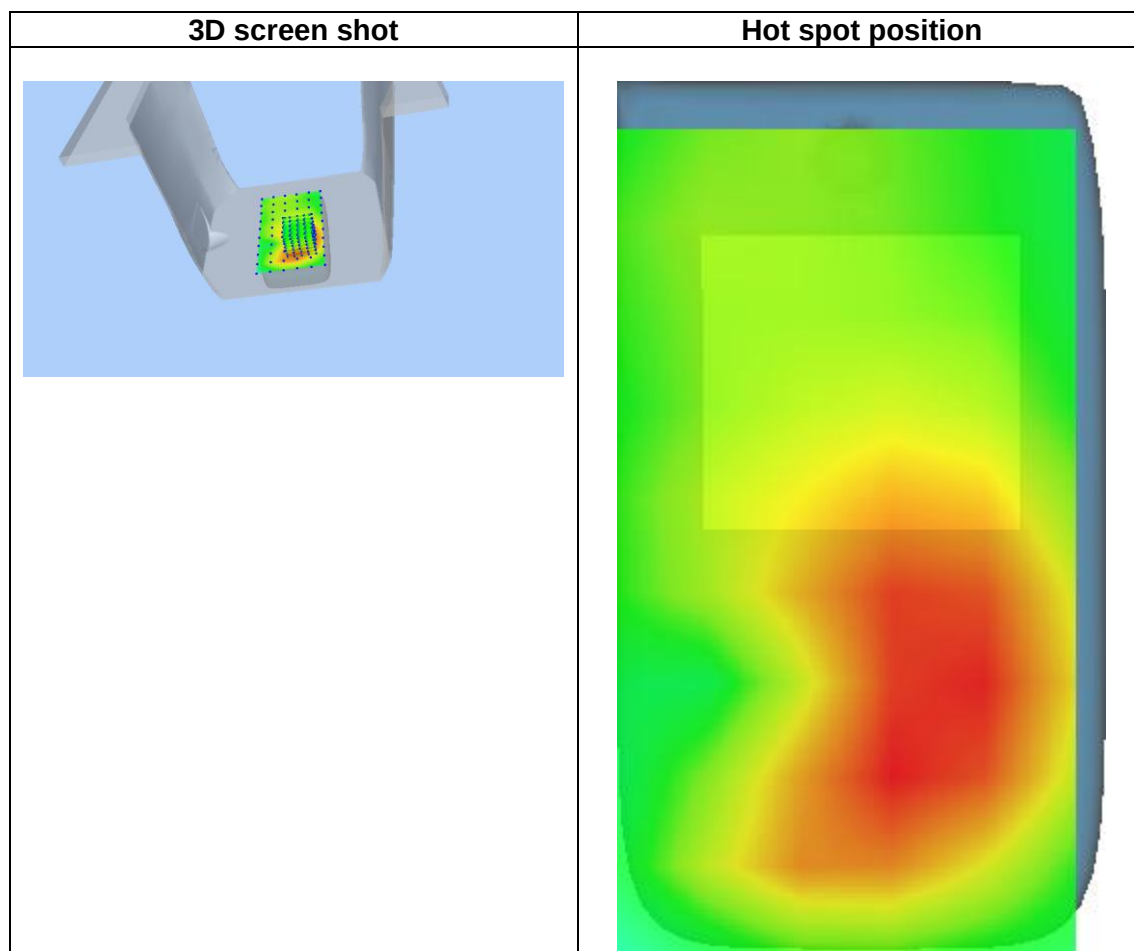
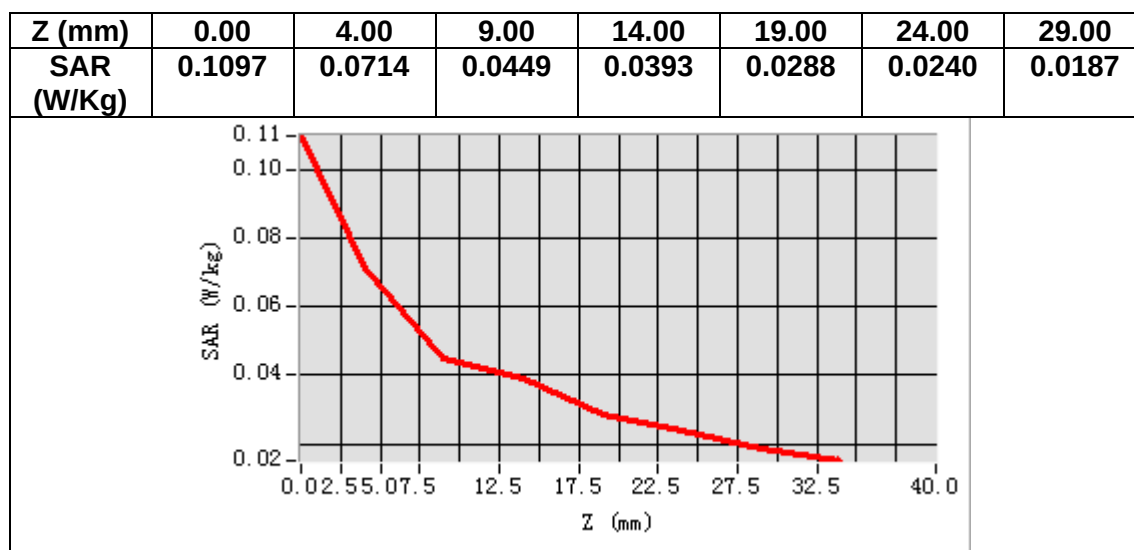
Frequency (MHz)	710.000000
Relative permittivity (real part)	40.949066
Relative permittivity (imaginary part)	21.815380
Conductivity (S/m)	0.860496
Variation (%)	-0.760000



Maximum location: X=10.00, Y=-36.00

SAR Peak: 0.10 W/kg

SAR 10g (W/Kg)	0.049359
SAR 1g (W/Kg)	0.070314



MEASUREMENT 41

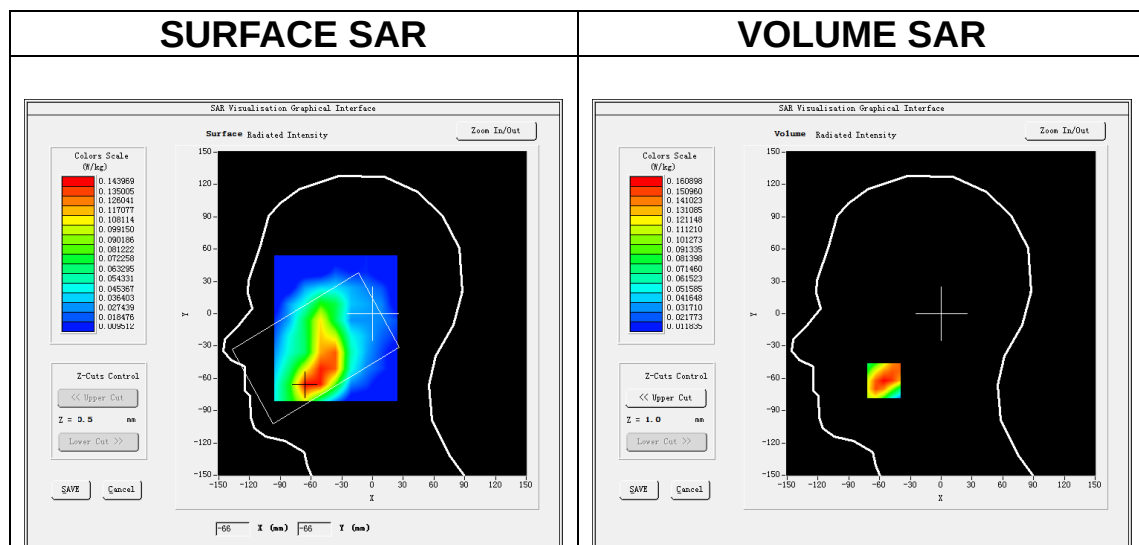
Date of measurement: 19/1/2025

A. Experimental conditions.

Area Scan	<u>dx=15mm dy=15mm, h= 5.00 mm</u>
ZoomScan	<u>5x5x7,dx=8mm dy=8mm dz=5mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>LTE band 25</u>
Channels	<u>Middle</u>
Signal	<u>LTE (Crest factor: 1.0)</u>
ConvF	<u>2.57</u>

B. SAR Measurement Results

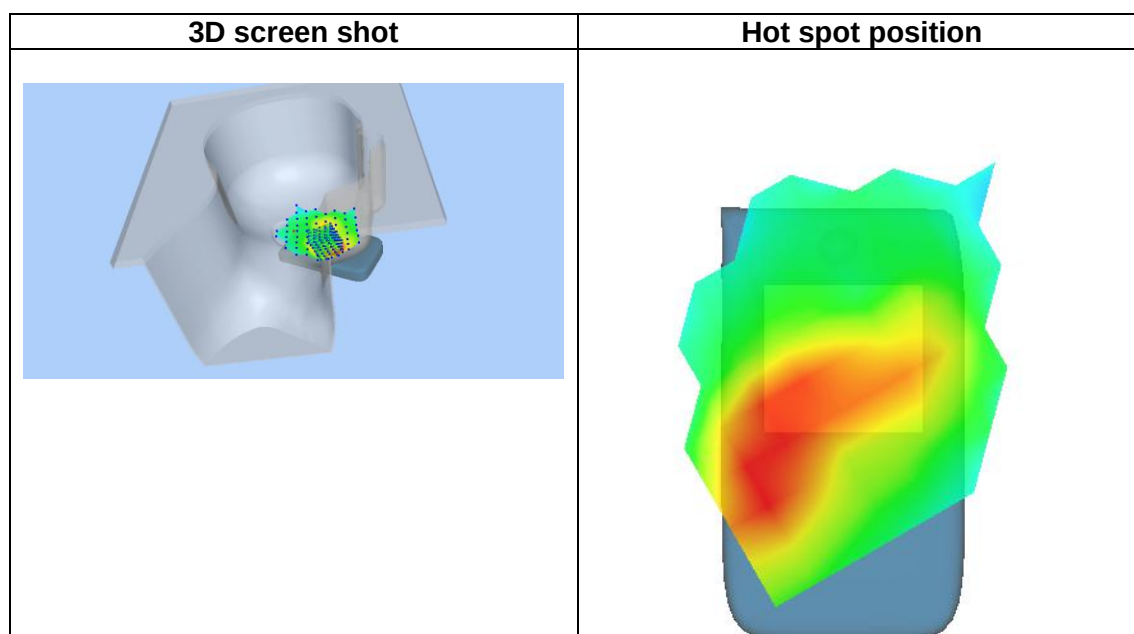
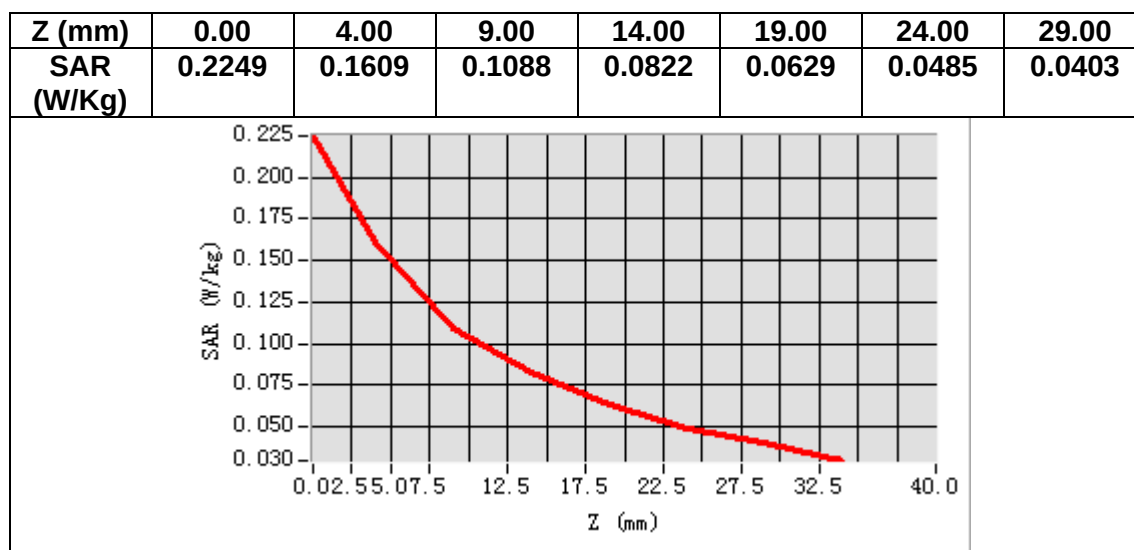
Frequency (MHz)	1882.500000
Relative permittivity (real part)	38.799419
Relative permittivity (imaginary part)	13.905798
Conductivity (S/m)	1.453928
Variation (%)	0.890000



Maximum location: X=-56.00, Y=-62.00

SAR Peak: 0.23 W/kg

SAR 10g (W/Kg)	0.104271
SAR 1g (W/Kg)	0.160473



MEASUREMENT 42

Date of measurement: 19/1/2025

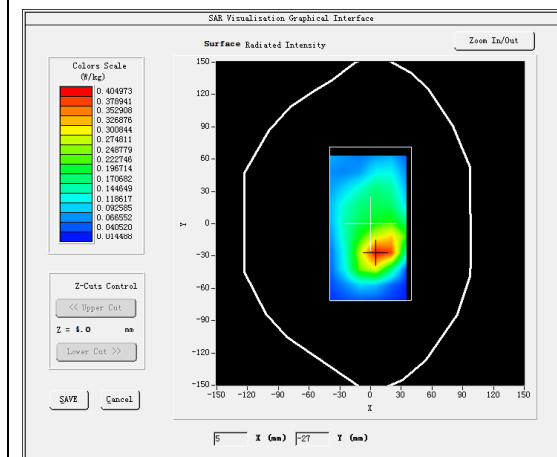
A. Experimental conditions.

<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 25</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>LTE (Crest factor: 1.0)</u>
<u>ConvF</u>	<u>2.57</u>

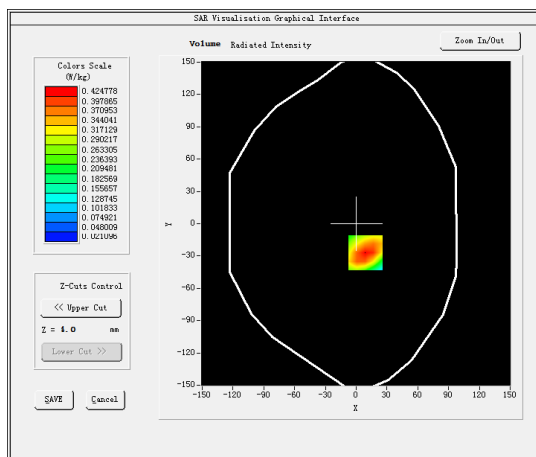
B. SAR Measurement Results

Frequency (MHz)	1882.000000
Relative permittivity (real part)	38.799419
Relative permittivity (imaginary part)	13.905798
Conductivity (S/m)	1.453928
Variation (%)	-0.470000

SURFACE SAR



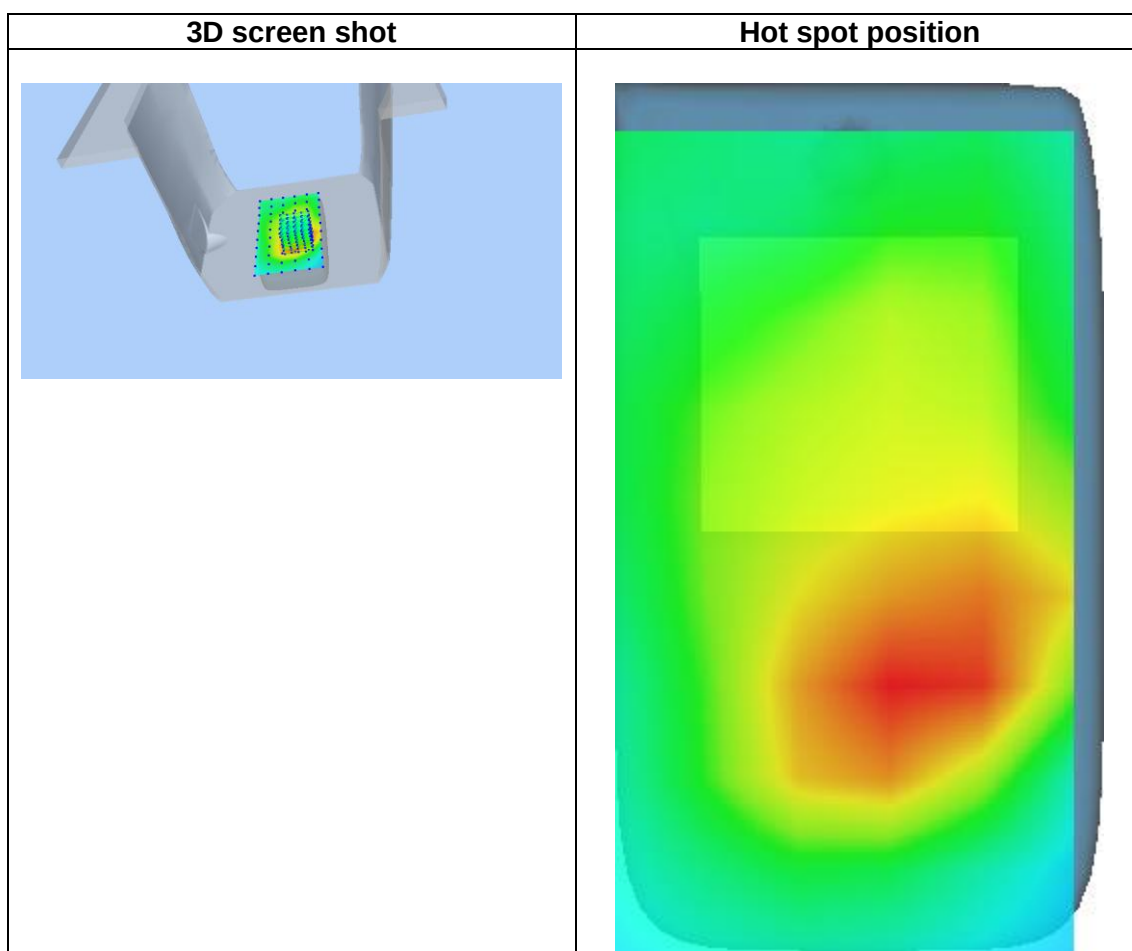
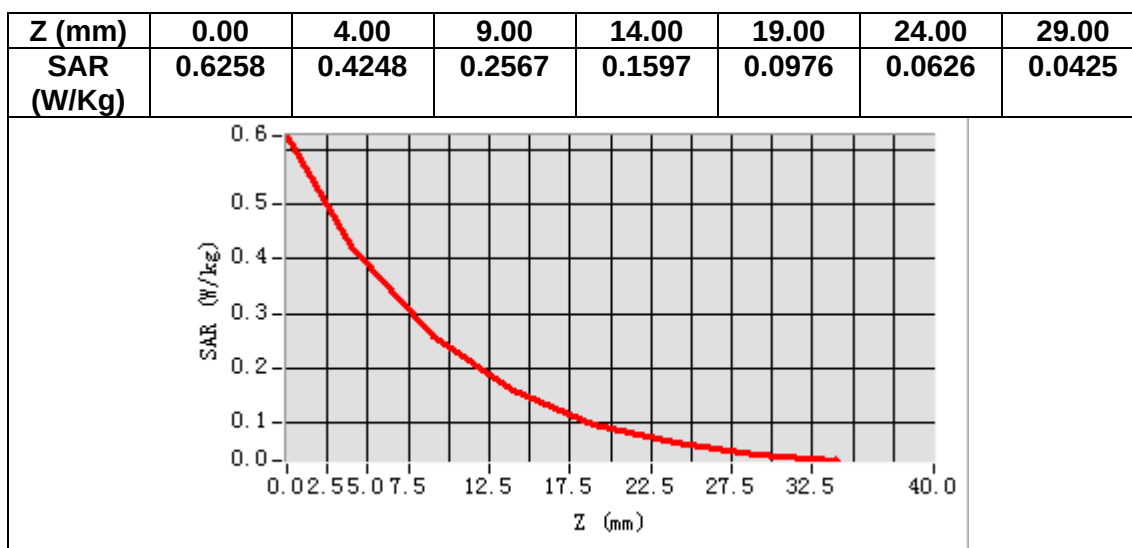
VOLUME SAR



Maximum location: X=9.00, Y=-27.00

SAR Peak: 0.63 W/kg

SAR 10g (W/Kg)	0.238160
SAR 1g (W/Kg)	0.417706



MEASUREMENT 43

Date of measurement: 11/1/2025

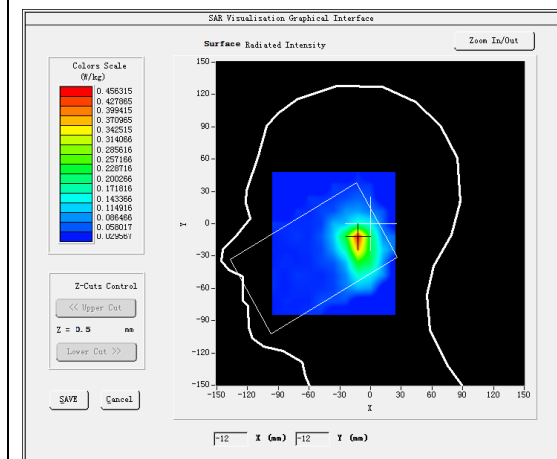
A. Experimental conditions.

Area Scan	<u>dx=12mm dy=12mm, h= 5.00 mm</u>
ZoomScan	<u>7x7x7,dx=5mm dy=5mm dz=5mm</u>
Phantom	<u>Left head</u>
Device Position	<u>Cheek</u>
Band	<u>SA n78</u>
Channels	<u>Middle</u>
Signal	<u>Crest factor: 1.0</u>
ConvF	<u>2.15</u>

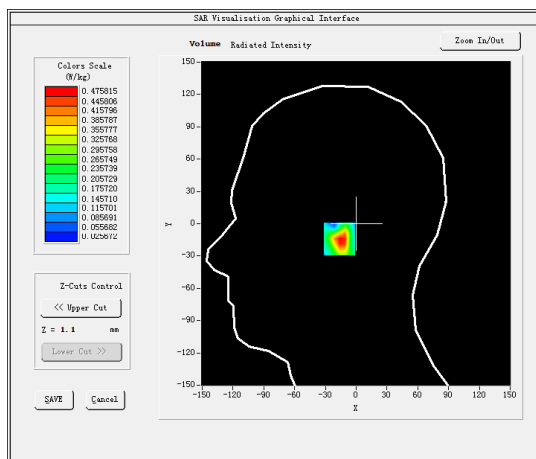
B. SAR Measurement Results

Frequency (MHz)	3549.989990
Relative permittivity (real part)	37.094822
Relative permittivity (imaginary part)	14.456518
Conductivity (S/m)	2.851139
Variation (%)	-0.110000

SURFACE SAR



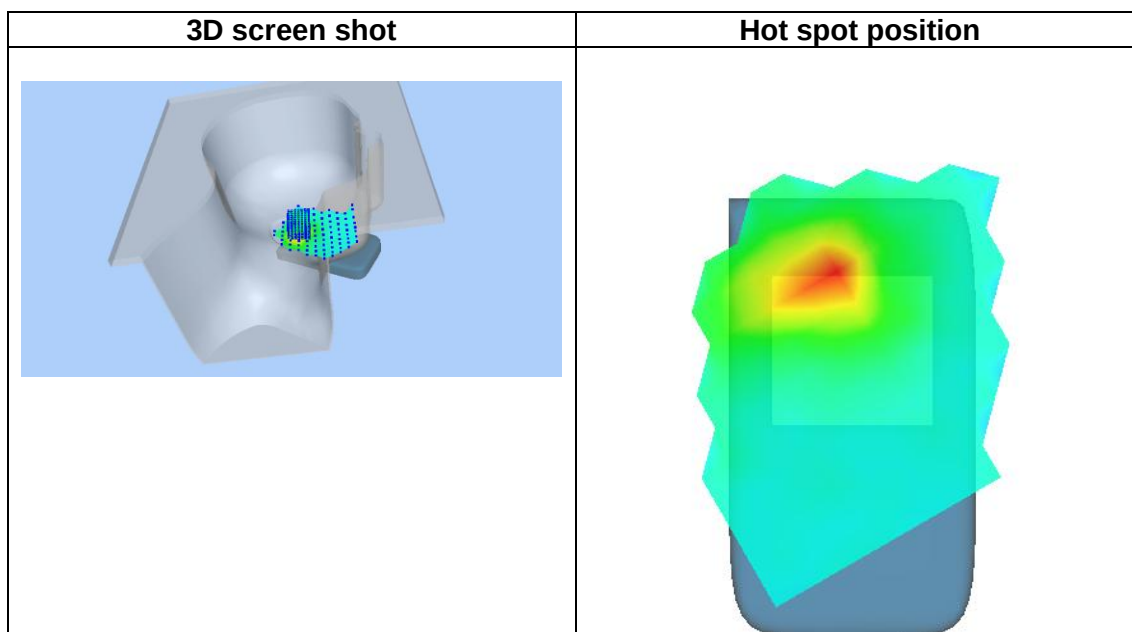
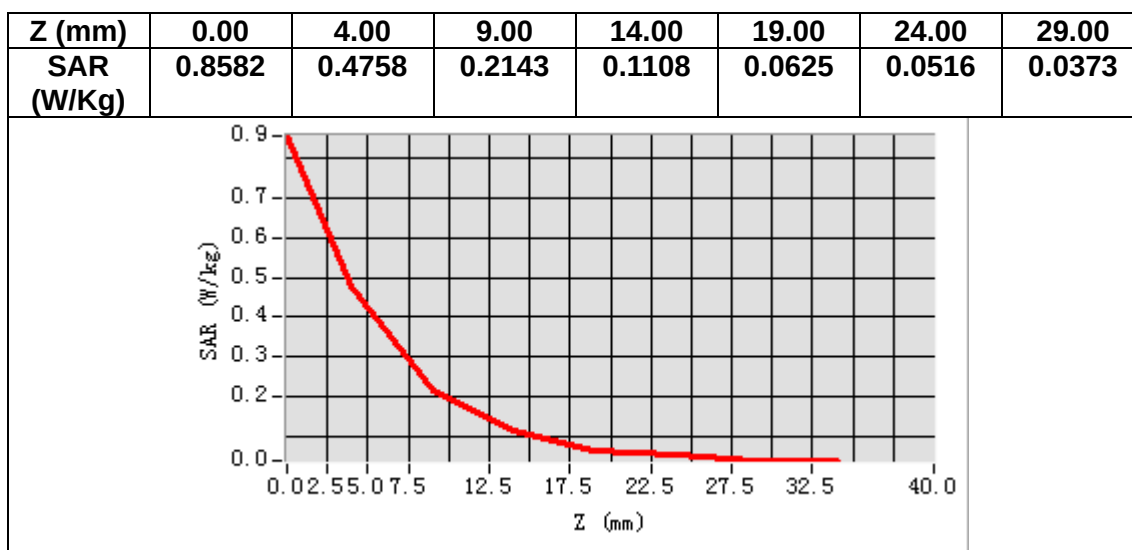
VOLUME SAR



Maximum location: X=-12.00, Y=-14.00

SAR Peak: 0.88 W/kg

SAR 10g (W/Kg)	0.204535
SAR 1g (W/Kg)	0.455109



MEASUREMENT 44

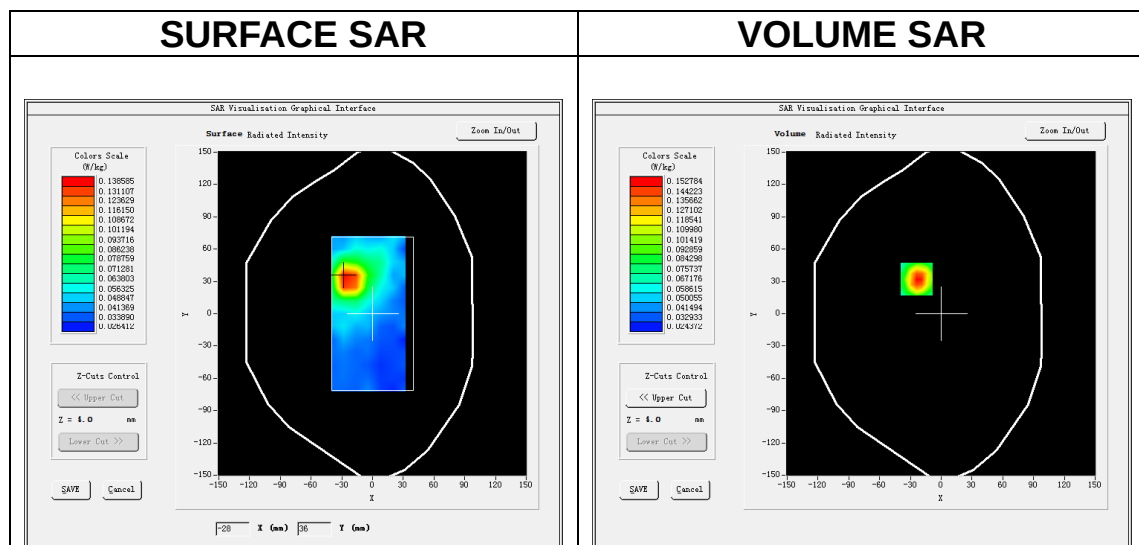
Date of measurement: 11/1/2025

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>2.15</u>

B. SAR Measurement Results

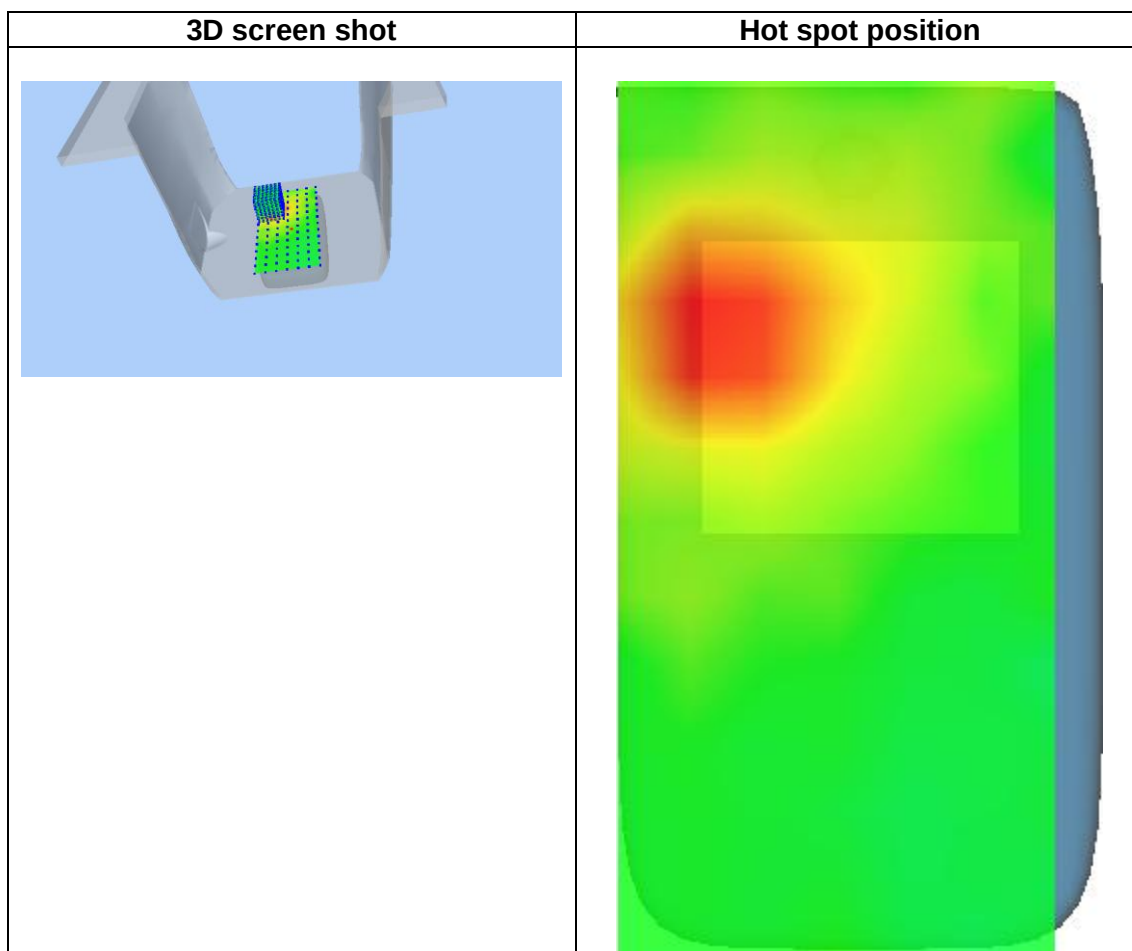
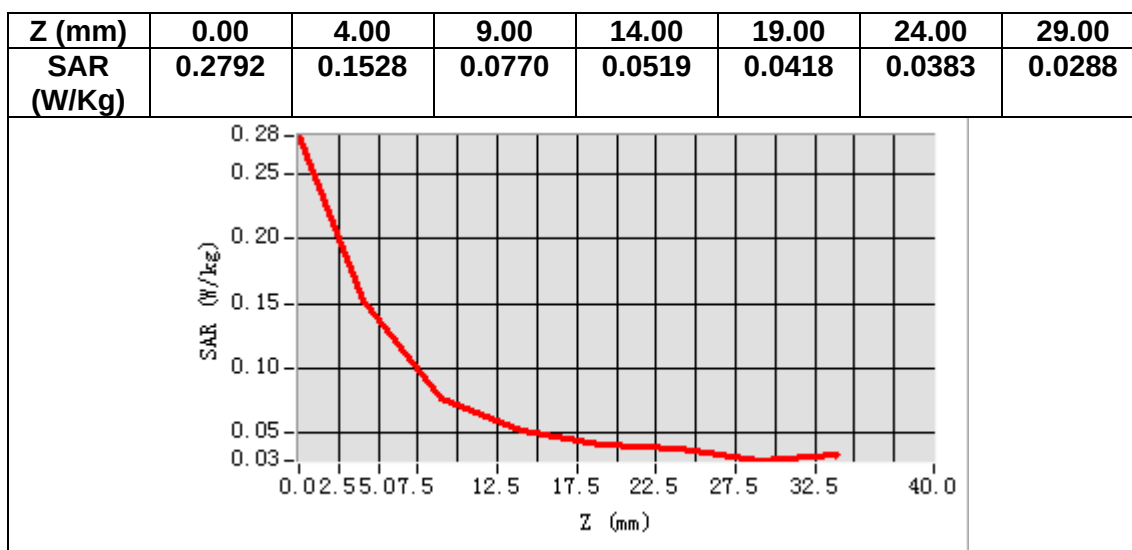
Frequency (MHz)	3549.989990
Relative permittivity (real part)	37.094822
Relative permittivity (imaginary part)	14.456518
Conductivity (S/m)	2.851139
Variation (%)	-4.810000



Maximum location: X=-24.00, Y=32.00

SAR Peak: 0.27 W/kg

SAR 10g (W/Kg)	0.080236
SAR 1g (W/Kg)	0.146262



MEASUREMENT 45

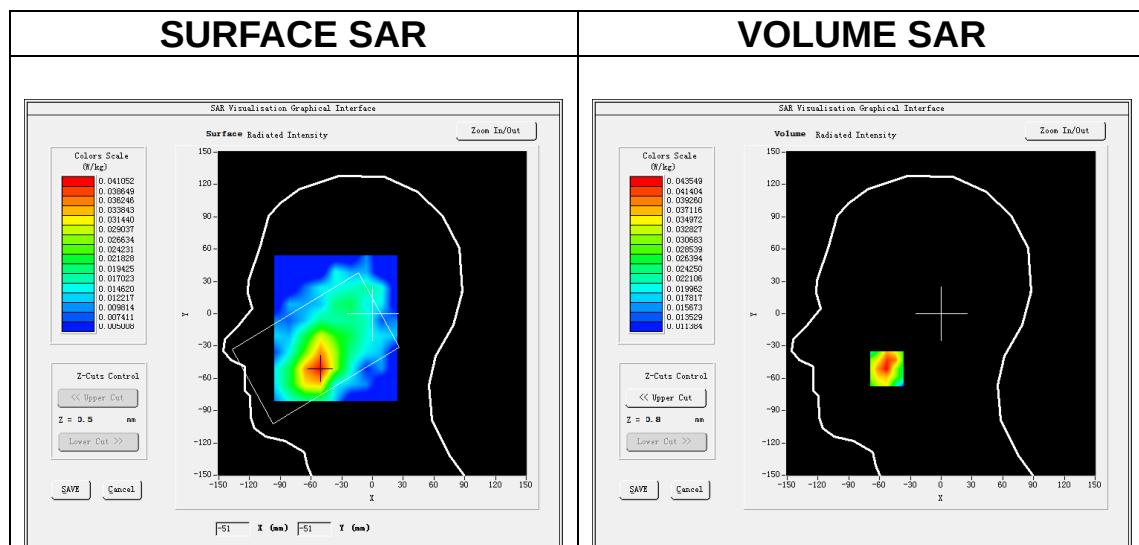
Date of measurement: 16/1/2025

A. Experimental conditions.

Area Scan	dx=15mm dy=15mm, h= 5.00 mm
ZoomScan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Left head
Device Position	Cheek
Band	FDDBand26
Channels	Middle
Signal	Crest factor: 1.0
ConvF	2.34

B. SAR Measurement Results

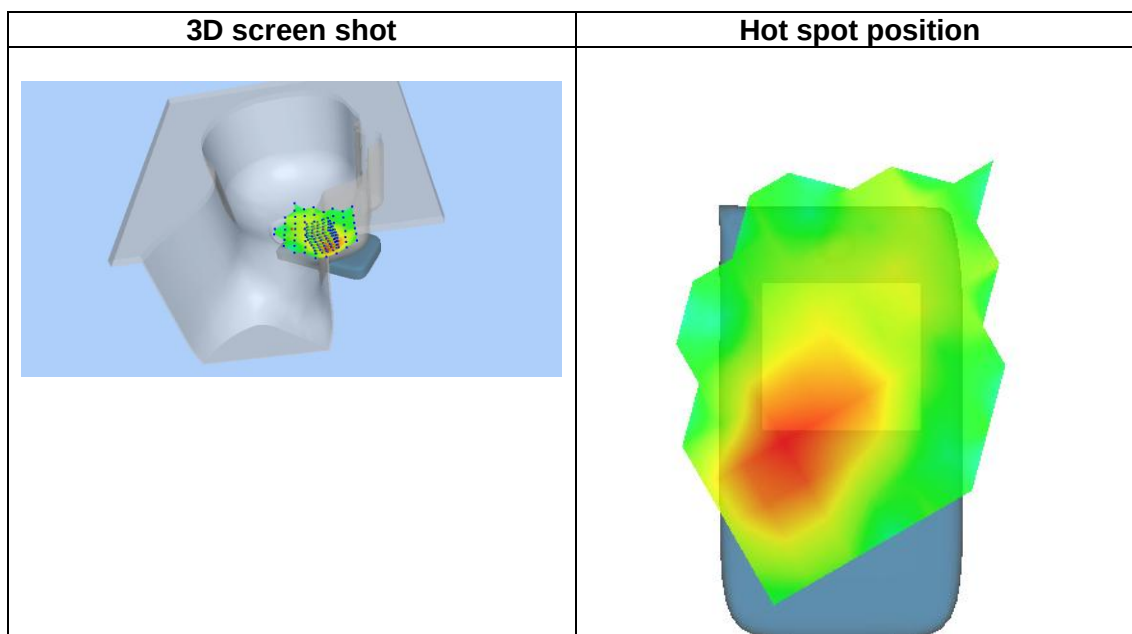
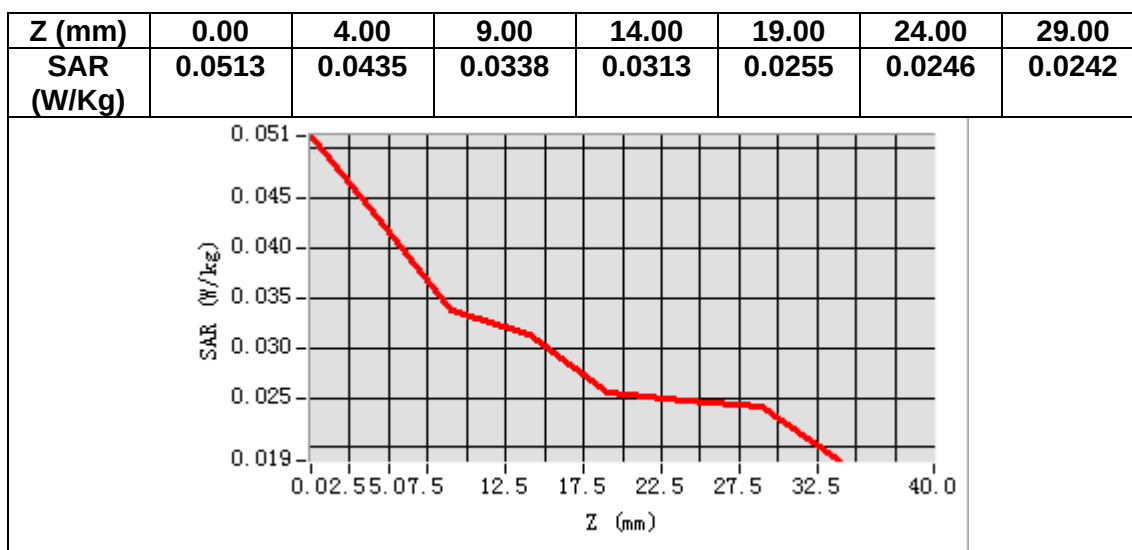
Frequency (MHz)	831.500000
Relative permittivity (real part)	39.594868
Relative permittivity (imaginary part)	21.277981
Conductivity (S/m)	0.982925
Variation (%)	-4.950000



Maximum location: X=-53.00, Y=-51.00

SAR Peak: 0.06 W/kg

SAR 10g (W/Kg)	0.034773
SAR 1g (W/Kg)	0.044893



MEASUREMENT 46

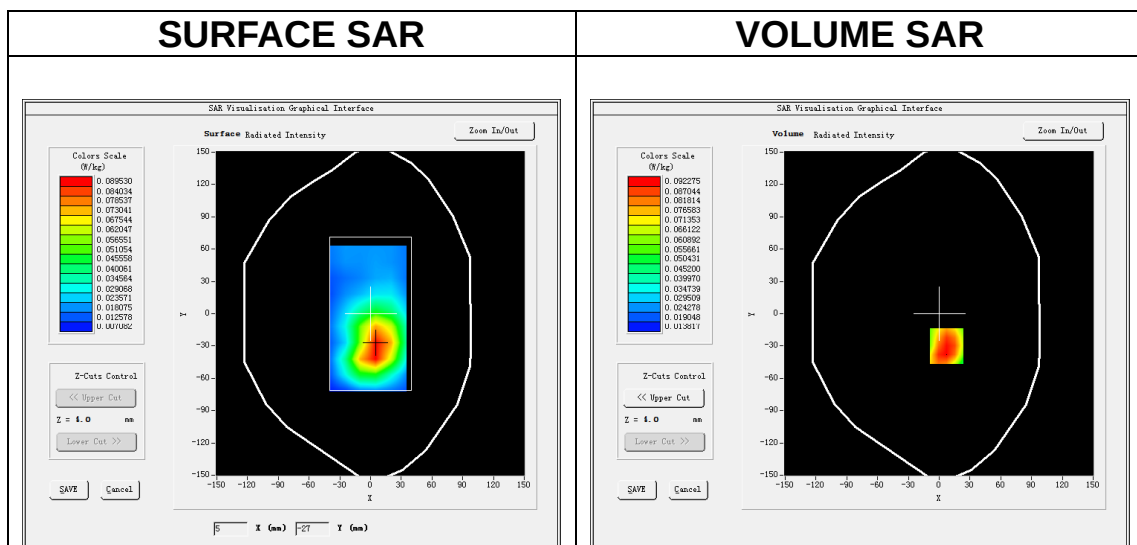
Date of measurement: 16/1/2025

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>FDDBand26</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>Crest factor: 1.0</u>
<u>ConvF</u>	<u>2.34</u>

B. SAR Measurement Results

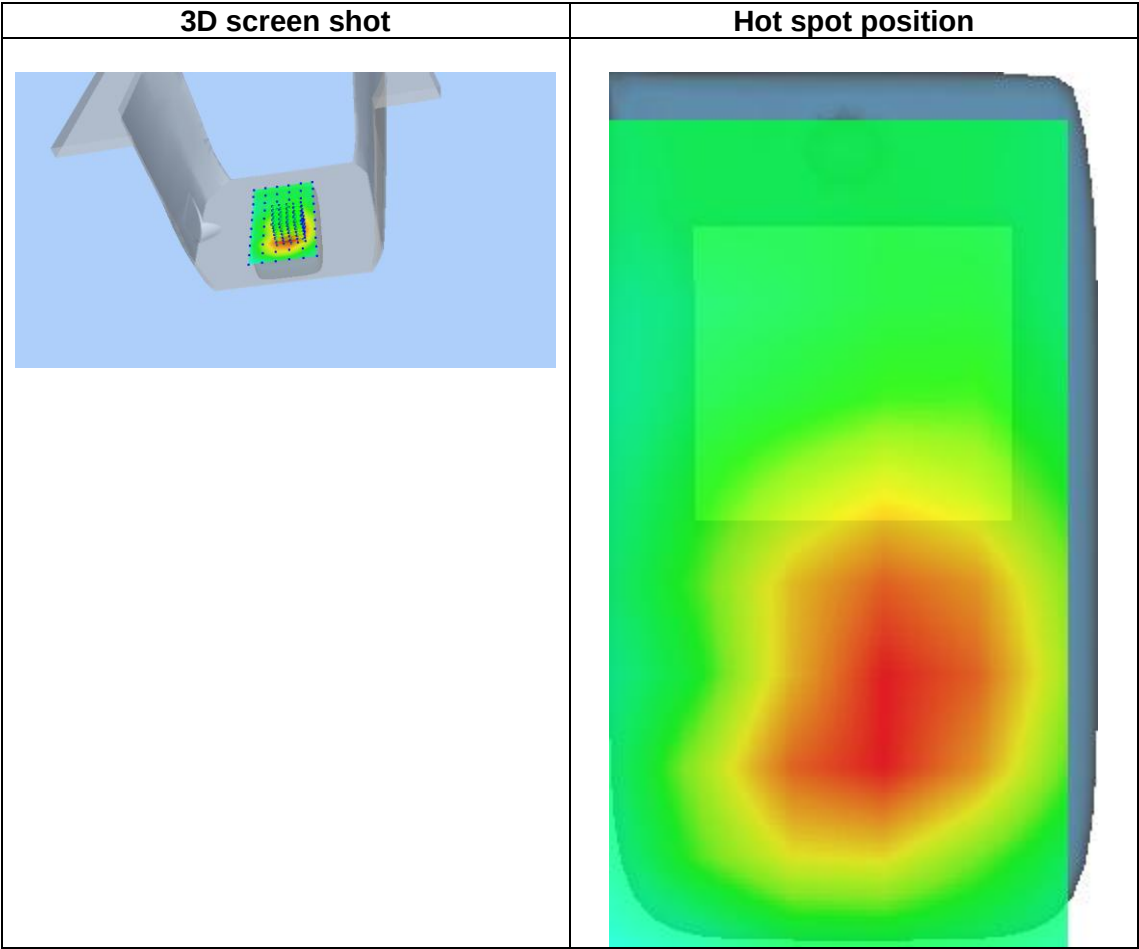
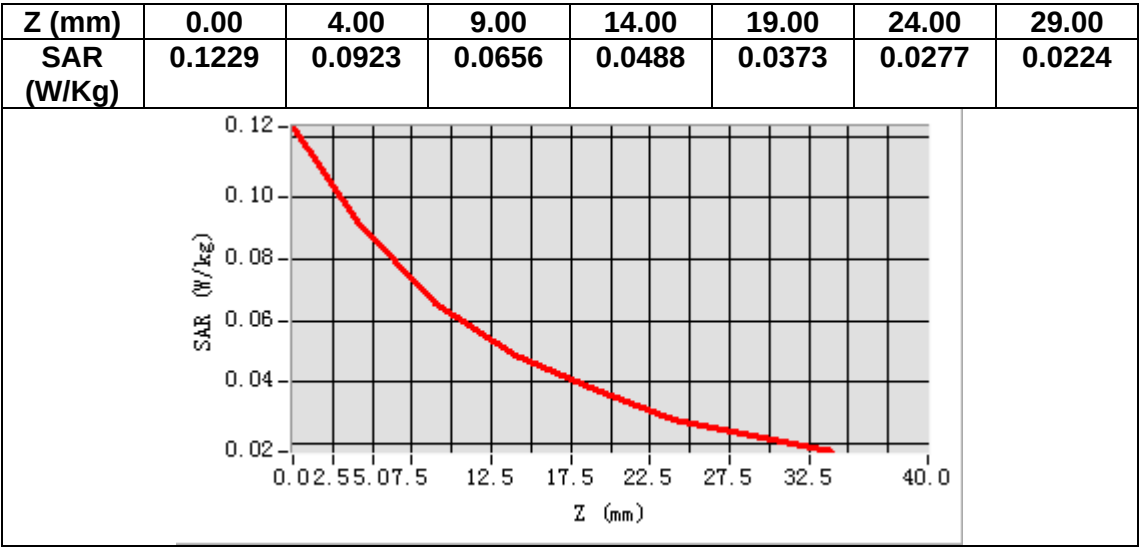
Frequency (MHz)	831.500000
Relative permittivity (real part)	41.740803
Relative permittivity (imaginary part)	19.550657
Conductivity (S/m)	0.903132
Variation (%)	2.650000



Maximum location: X=7.00, Y=-30.00

SAR Peak: 0.12 W/kg

SAR 10g (W/Kg)	0.061894
SAR 1g (W/Kg)	0.089995



MEASUREMENT47

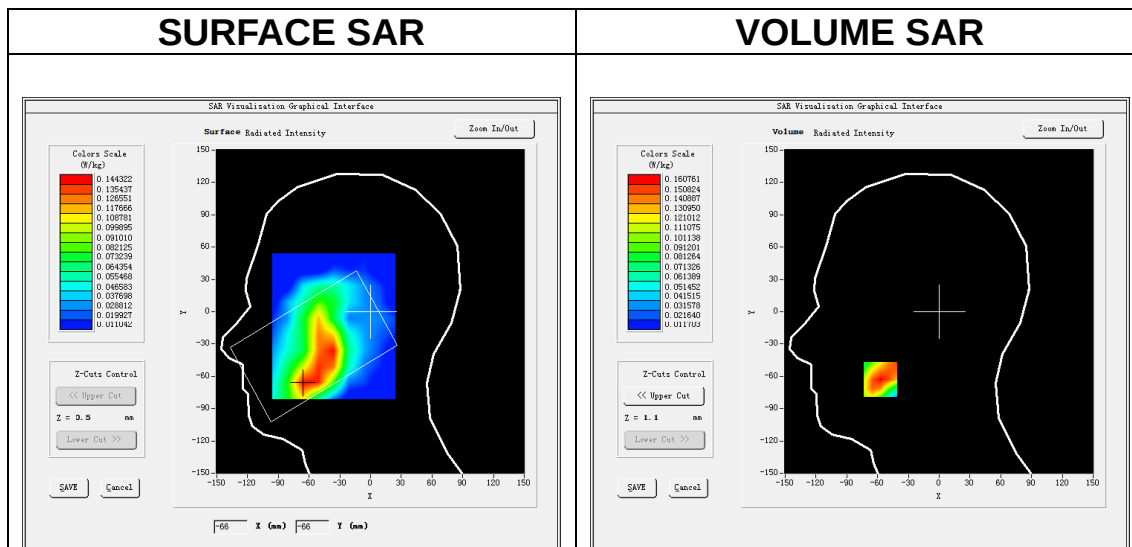
Date of measurement: 18/1/2025

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>FDDBand66</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>Crest factor: 1.0</u>
<u>ConvF</u>	<u>2.51</u>

B. SAR Measurement Results

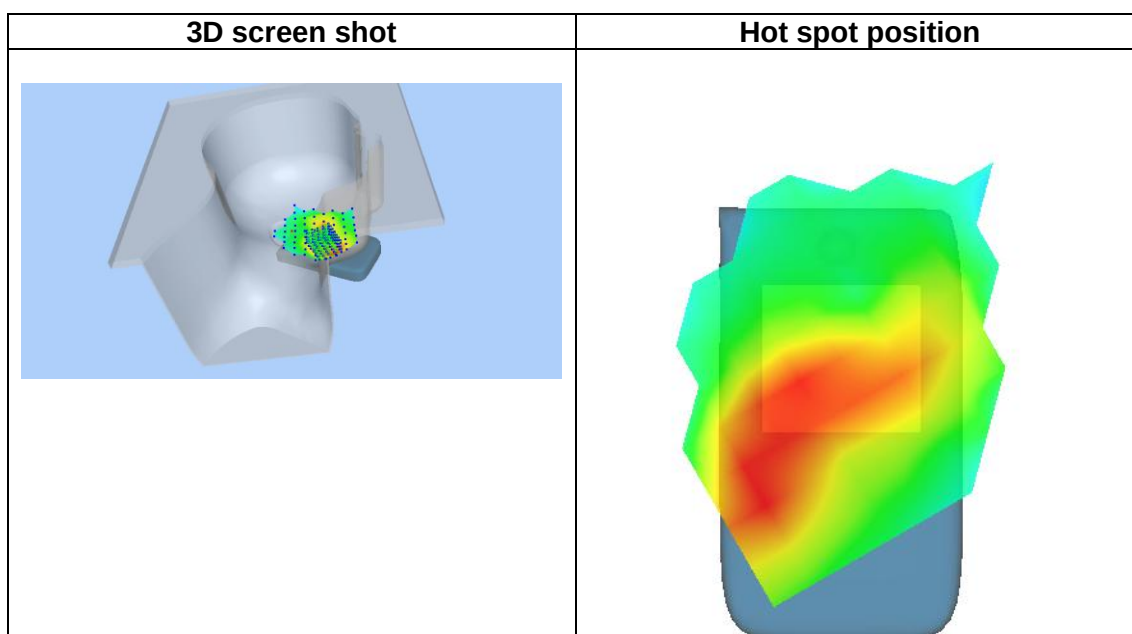
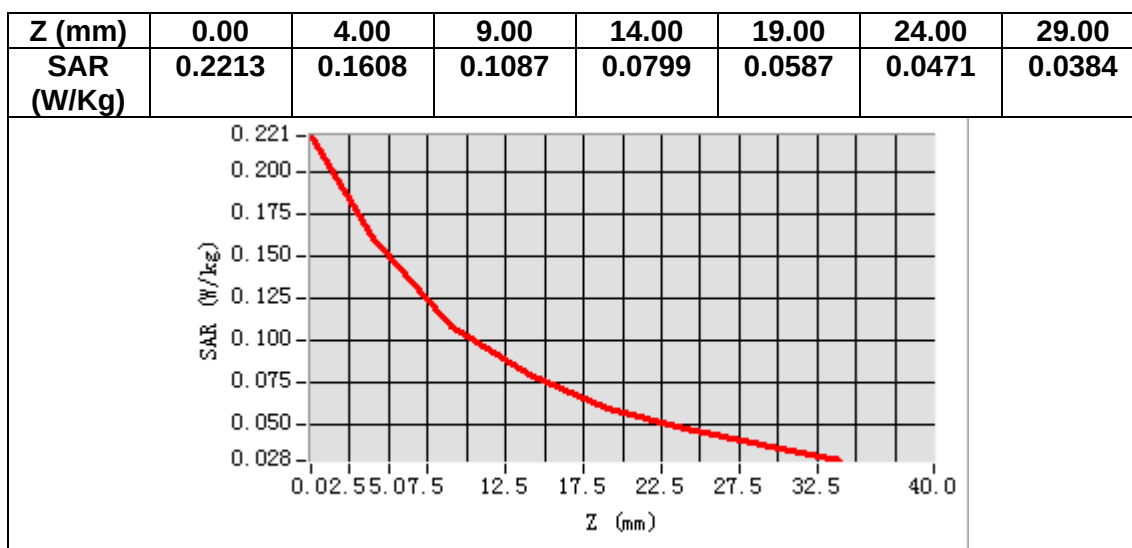
Frequency (MHz)	1745.000000
Relative permittivity (real part)	39.685829
Relative permittivity (imaginary part)	13.920798
Conductivity (S/m)	1.349544
Variation (%)	3.220000



Maximum location: X=-57.00, Y=-63.00

SAR Peak: 0.23 W/kg

SAR 10g (W/Kg)	0.102135
SAR 1g (W/Kg)	0.154750



MEASUREMENT 48

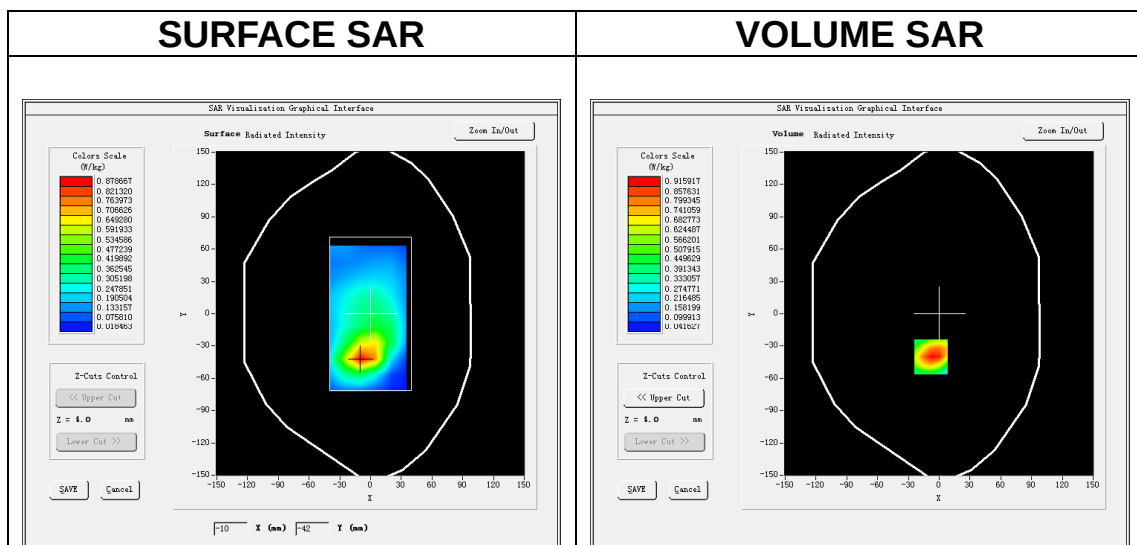
Date of measurement: 18/1/2025

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>FDDBand66</u>
<u>Channels</u>	<u>Middle</u>
<u>Signal</u>	<u>Crest factor: 1.0</u>
<u>ConvF</u>	<u>2.51</u>

B. SAR Measurement Results

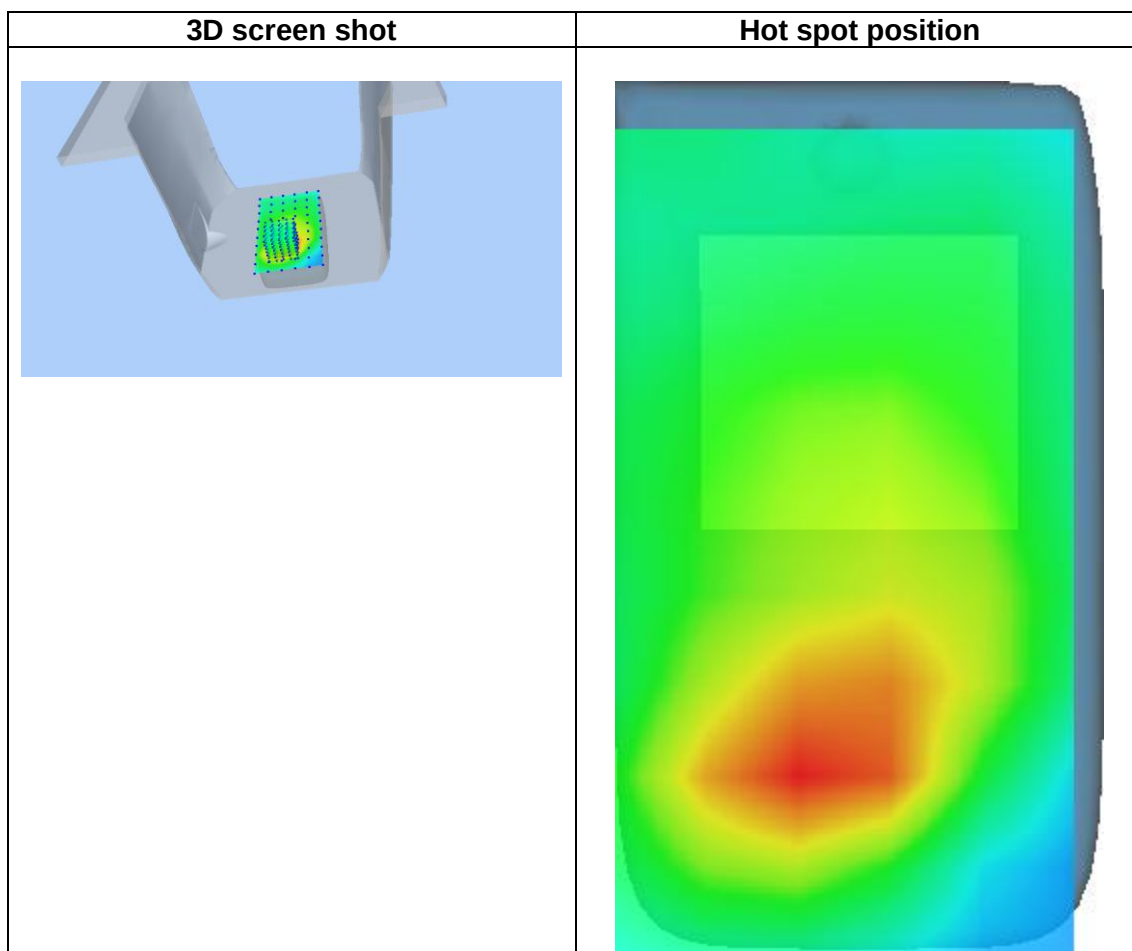
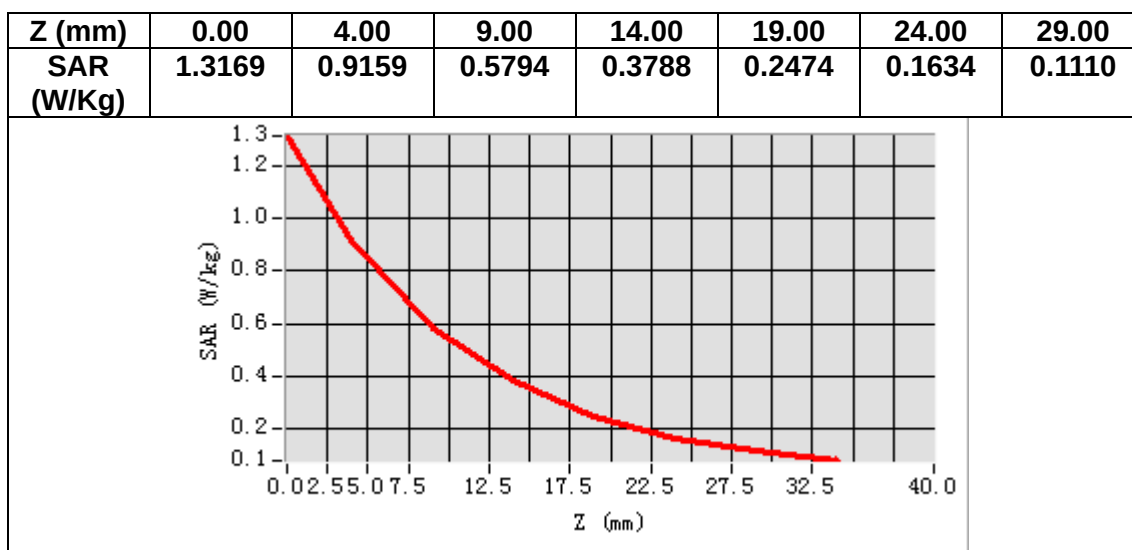
Frequency (MHz)	1745.000000
Relative permittivity (real part)	39.685829
Relative permittivity (imaginary part)	13.920798
Conductivity (S/m)	1.349544
Variation (%)	-1.240000



Maximum location: X=-8.00, Y=-40.00

SAR Peak: 1.34 W/kg

SAR 10g (W/Kg)	0.511454
SAR 1g (W/Kg)	0.874247



14. Appendix D. Calibration Certificate

Table of contents
E Field Probe - 4024-EPGO-442
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

DocuSign Envelope ID: 223C1A7C-4751-4B95-8502-1618DC0951E3



COMOSAR E-Field Probe Calibration Report

Ref : ACR.278.12.24.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.: 4024-EPGO-442

Calibrated at MVG

Z.I. de la pointe du diable

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

Calibration date: 10/04/2024



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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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COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.278.12.24.BES.A

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Distribution :	SHENZHEN NTEK TESTING TECHNOLOGY CO., LTD.

Issue	Name	Date	Modifications
A	Cyrille ONNEE	10/4/2024	Initial release

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TABLE OF CONTENTS

1	Device Under Test	4
2	Product Description	4
2.1	General Information	4
3	Measurement Method	4
3.1	Sensitivity	4
3.2	Linearity	5
3.3	Isotropy	5
3.4	Boundary Effect	5
3.5	Probe Modulation Response	6
4	Measurement Uncertainty	6
5	Calibration Results	6
5.1	Calibration in air	6
5.2	Calibration in liquid	7
6	Verification Results	9
7	List of Equipment	9

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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	4024-EPGO-442
Product Condition (new / used)	New
Frequency Range of Probe	0.15 GHz-7.5GHz
Resistance of Three Dipoles at Connector	Dipole 1: R1=0.206 MΩ Dipole 2: R2=0.223 MΩ Dipole 3: R3=0.235 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.

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Ref: ACR.278.12.24.BES.A

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:

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

where

$SAR_{uncertainty}$ is the uncertainty in percent of the probe boundary effect

d_{be} is the distance between the surface and the closest *zoom-scan* 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 $SAR_{uncertainty}[\%]$ for scanning distances larger than 4mm is 1.0% Limit, 2%).

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Ref: ACR.278.12.24.BES.A

3.5 PROBE MODULATION RESPONSE

MVG's probe were evaluated experimentally with various modulated signal and the deviation from CW response were found neglectable in the used power range of the probe. So the correction to taking into account the linearization parameters for different modulation is null, therefore the CW factor given in this report can be used whatever the measured modulation

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.

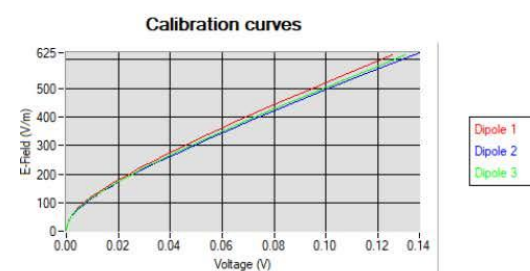
The estimated expanded uncertainty (k=2) in calibration for SAR (W/kg) is +/-14% for the frequency range 600-7500MHz.

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.

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

Page: 6/10

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Ref: ACR.278.12.24.BES.A

where

V_i =voltage readings on the 3 channels of the probe

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

Normi=dipole sensitivity given below for the 3 channels of the probe

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 ($\mu\text{V}/(\text{V}/\text{m})^2$)
0.73	0.79	0.78

DCP dipole 1 (mV)	DCP dipole 2 (mV)	DCP dipole 3 (mV)
105	109	103

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:

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

Page: 7/10

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where

a=the larger cross-sectional of the waveguide

b=the smaller cross-sectional of the waveguide

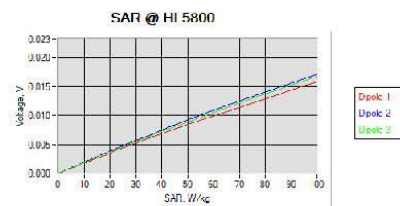
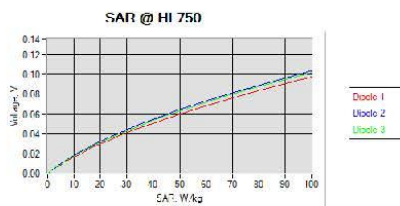
δ =the skin depth for the liquid in the waveguide

Pw=the power delivered to the liquid

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	2.42
HL850	835	2.34
HL900	900	2.24
HL1800	1800	2.51
HL1900	1900	2.57
HL2000	2000	2.64
HL2300	2300	2.73
HL2450	2450	2.74
HL2600	2600	2.51
HL3300	3300	2.11
HL3500	3500	2.15
HL3700	3700	2.08
HL3900	3900	2.27
HL4200	4200	2.39
HL4600	4600	2.30
HL4900	4900	2.13
HL5200	5200	1.89
HL5400	5400	1.97
HL5600	5600	1.88
HL5800	5800	1.90

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



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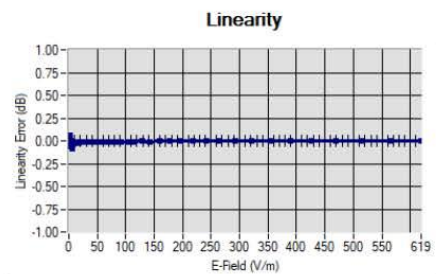


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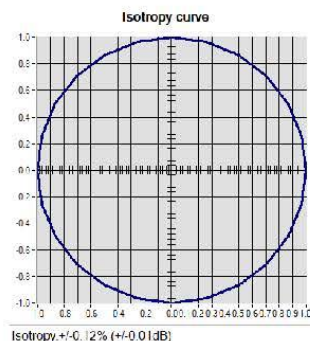
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6 VERIFICATION RESULTS

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 $\pm 1.90\%$ (± 0.08 dB)



7 LIST OF EQUIPMENT

Equipment Summary Sheet				
Equipment Description	Manufacturer / Model	Identification No.	Current Calibration Date	Next Calibration Date
CALIPROBE Test Bench	Version 2	NA	Validated. No cal required.	Validated. No cal required.
Network Analyzer	Rohde & Schwarz ZVM	100203	08/2021	08/2026
Network Analyzer – Calibration kit	Rohde & Schwarz ZV-Z235	101223	07/2022	07/2025
Multimeter	Keithley 2000	4013982	02/2023	02/2026
Signal Generator	Rohde & Schwarz SMB	106589	03/2022	03/2025
Amplifier	MVG	MODU-023-C-0002	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Power Meter	NI-USB 5680	170100013	06/2021	06/2026
USB Sensor	Keysight U2000A	SN: MY62340002	10/2022	10/2025
Directional Coupler	Krytar 158020	131467	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Fluoroptic Thermometer	LumaSense Luxtron 812	94264	09/2022	09/2025
Coaxial cell	MVG	SN 32/16 COAXCELL_1	Validated. No cal required.	Validated. No cal required.

Page: 9/10

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Waveguide	MVG	SN 32/16 WG2_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_0G600_1	Validated. No cal required.	Validated. No cal required.
Waveguide	MVG	SN 32/16 WG4_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_0G900_1	Validated. No cal required.	Validated. No cal required.
Waveguide	MVG	SN 32/16 WG6_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_1G500_1	Validated. No cal required.	Validated. No cal required.
Waveguide	MVG	SN 32/16 WG8_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_1G800B_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_1G800H_1	Validated. No cal required.	Validated. No cal required.
Waveguide	MVG	SN 32/16 WG10_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_3G500_1	Validated. No cal required.	Validated. No cal required.
Waveguide	MVG	SN 32/16 WG12_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_5G000_1	Validated. No cal required.	Validated. No cal required.
Waveguide	MVG	SN 32/16 WG14_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_7G000_1	Validated. No cal required.	Validated. No cal required.
Temperature / Humidity Sensor	Testo 184 H1	44235403	02/2024	02/2027